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NHTSA Field Crash Investigation 2024 Coding and Editing Manual

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16. Abstract NHTSA's field crash investigation-based data collection programs consist of data from the Crash Investigation Sampling System (CISS), Special Crash Investigations (SCI), and the Crash Injury Research & Engineering Network (CIREN). The CISS builds on the long running National Automotive Sampling System Crashworthiness Data System (NASS CDS). The NHTSA investigation-based programs collect detailed crash data to help scientists and engineers analyze motor vehicle crashes and injuries. CISS collects data on a representative sample of minor, serious, and fatal crashes involving at least one passenger vehicle – cars, light trucks, SUVs, and vans – towed from the scene. Beginning in 2024 CISS also collects information on non-motorist crashes. This publication is the coding manual for CISS, SCI, and CIREN for 2024.			
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Introduction

Overview

The National Highway Traffic Safety Administration has collected crash data since the early 1970s to support its mission to reduce motor vehicle crashes, injuries, and deaths on our Nation's highways. NHTSA's crash data collection program consists of the Crash Investigation Sampling System (CISS), the Fatality Analysis Reporting System (FARS), the Crash Report Sampling System (CRSS), Special Crash Investigations (SCI), Non-Traffic Surveillance (NTS), the Crash Injury Research & Engineering Network (CIREN), and special studies conducted to address various safety topics. The CISS builds on the retiring, long-running National Automotive Sampling System Crashworthiness Data System (NASS CDS). CISS collects detailed crash data to help scientists and engineers analyze motor vehicle crashes and injuries. CISS collects data on a representative sample of minor, serious, and fatal crashes each involving at least one passenger vehicle – a car, a light truck, an SUV, or a van – towed from the scene.

How It Works

After a crash has been sampled, trained crash technicians obtain data from crash sites by documenting scene evidence such as skid marks, fluid spills, and struck objects. They locate the vehicles involved, document the crash damage and identify interior components that were contacted by the occupants. On-site inspections may be followed-up with confidential interviews of the crash victims and reviews of medical records for injuries sustained in the crash. CISS uses emerging technologies and methods to acquire quality data.

The crash technicians are interested only in information that will help them understand the nature and outcome of the crashes. Personal information such as names, addresses, license and registration numbers, and even specific crash locations are not included in public CISS files.

Sampling

CISS randomly selects thousands of police crash reports (PCRs) at law enforcement agencies in selected areas across the country. The areas reflect the geography, population, miles driven, and crashes in the United States. To be eligible for the CISS sample, a crash must involve at least one towed passenger vehicle.

Cooperation

CISS depends on the participation and cooperation of law enforcement agencies, hospitals, physicians, medical examiners, coroners, insurance companies, salvage facilities, tow yard operators, repair shops, and the people involved in crashes. Cooperation from law enforcement agencies enables CISS to list and select crashes to be studied. PCRs provide key information on the location of the crash, the vehicles involved, and where the injured were taken for medical care. They are obtained and treated as confidential documents. Law enforcement agencies also permit access to certain roadways and crashed vehicles. NHTSA is recognized by the Department of Health and Human Services as a Public Health Authority, allowing the medical

community to provide access to its records. Medical records are the primary source of data on the nature and severity of injuries.

Tow yards, repair facilities, and impound lots provide access to damaged vehicles. CISS crash technicians photograph vehicles at these sites, measure vehicle damage, document safety systems, and record the sources of occupant injury.

Confidential interviews with victims who were involved in crashes provide crash details, insights into how crashes occur, the extent of injuries, treatment received, safety system performance, and work time lost.

Collectively, information from these sources provides a detailed picture of a crash – from just before the crash through medical care received by the injured.

How the Information Is Used

The data collected by the CISS field teams is used by NHTSA and others for a variety of purposes:

- Identifying existing and emerging highway safety problems;
- Obtaining detailed crash performance data for passenger vehicles, including the vehicle safety systems and designs;
- Learning more about the nature of crash-related injuries and the relationship between the type and severity of a crash and the resulting injuries; and
- Assessing the effectiveness of motor vehicle standards and highway safety programs.

After all personal identifiers are removed, information collected by CISS is made available to other Federal agencies; State and local governments; universities; research institutions; automobile, trucking, and insurance industries; and the general public.

Non-Motorist Inclusion

On November 15, 2021, Congress passed the Bipartisan Infrastructure Law (BIL). Under § 24108(e) Congress authorizes the Secretary of Transportation to enhance the collection of crash data by upgrading the Crash Investigation Sampling System to include – (1) additional data collection sites; (2) an expanded scope that includes all crash types; and (3) on-scene investigation protocols.

The scope of CISS from 2016 to 2023 was police-reported motor vehicle crashes on a trafficway involving a passenger vehicle towed from the scene resulting in a PCR. The expanded CISS scope beginning in 2024 will also include police-reported crashes initiated on a trafficway involving a non-motorist with a K, A, or B injury on the PCR. CISS excludes parking lot crashes and private property crashes occurring outside of the trafficway; those crashes are captured in NHTSA's Non-Traffic Surveillance (NTS) system.

A non-motorist crash in CISS involve a person who is not in a motor vehicle. It includes the following.

- Occupant of a Non-Motor-Vehicle Transport Device - refers to people riding in an animal-drawn conveyance, on an animal, etc.

- Pedestrian - all pedestrians except for those in/on personal conveyances includes a person pushing a vehicle
- Bicyclist - all people (operator and passengers) on a bicycle and a person being pulled by a bicycle (e.g., in a wagon or bike trailer).
- Other Cyclist - unicycles and tricycles.
- Person on Personal Conveyances - pedestrians using personal conveyances. A personal conveyance is a device, other than a transport device, used by a pedestrian for personal mobility assistance or recreation. These devices can be motorized or human powered, but not propelled by pedaling.
 - Includes motorized and non-motorized wheelchairs
 - Exclusions: Golf cart, Low-Speed Vehicles (LSVs), Go-carts, Minibike, “Pocket” motorcycles, Motor scooters, Moped
- CISS excludes occupants in trains and people inside buildings

NOTE: Non-motorist-specific elements, attributes, and coding guidance can be found in the NHTSA Field Crash Investigation 2024 Non-Motorist Coding and Editing Manual.

More Information

For more information on CISS technical operations and field procedures, contact:

National Highway Traffic Safety Administration
National Center for Statistics and Analysis
Crash Investigation Division, NSA0110
1200 New Jersey Avenue SE
Washington, DC 20590
NHTSACrashInvestigationDivision@dot.gov
800-934-8517

For statistical publications and information, case data, or data files, contact:

National Highway Traffic Safety Administration
National Center for Statistics and Analysis
Data Reporting and Information Division, NSA0230
1200 New Jersey Avenue SE
Washington, DC 20590
800-934-8517
ncsaweb@dot.gov

Auto Safety Hotline

Do you need information on auto safety recalls, crash test results, or fuel economy ratings? Do you have a complaint about a possible motor vehicle safety defect?

Call the Auto Safety Hotline, toll-free: 888-327-4236.

Case Form

Case Form Overview

The Case Form provides a basic overall view of the case. It provides a description of the crash sequence and case peculiarities (vehicle or environment). It also provides information regarding the vehicles and people involved in the crash.

Through this form the technician is able to provide a quick reference of the crash particulars to the quality control center, a clinical user, or any other person interested in the CISS case.

The form is divided into 10 main tabs.

- Crash
- Structure
- Case Summary
- Events
- Scene
- EMS
- Interview
- Log
- Case Notes
- Edit Checks

The **Crash** tab provides basic overview information about the case. This includes the case number and category, date and time of the crash, location, technician, approval status, due date, and association to any special study.

The **Structure** tab provides the structure for the case after case assignment. All case applicable vehicles and occupants are identified on this tab. This tab provides a tracking mechanism for medical records. The tab also tracks dates associated with the case.

The **Case Summary** tab provides the technician a means for giving a textual description of the crash. The Summary should provide a non-jargon account of the crash.

The **Events** tab lists all harmful events associated with the crash.

The **Scene** tab contains the scene diagram for the case.

The **EMS** tab provides documentation about the EMS services received in the crash.

The **Interview** tab lists all occupants of CISS-applicable vehicles and provides a place to deposit the completed Interview form into the case.

The **Log** tab provides quality control review items for scene documentation and case dates.

The **Case Notes** tab permits the technician/reviewer to include typewritten notes about specific items or components of the case.

The **Edit Checks** tab provides a summary list of all the edit checks currently present for the case.

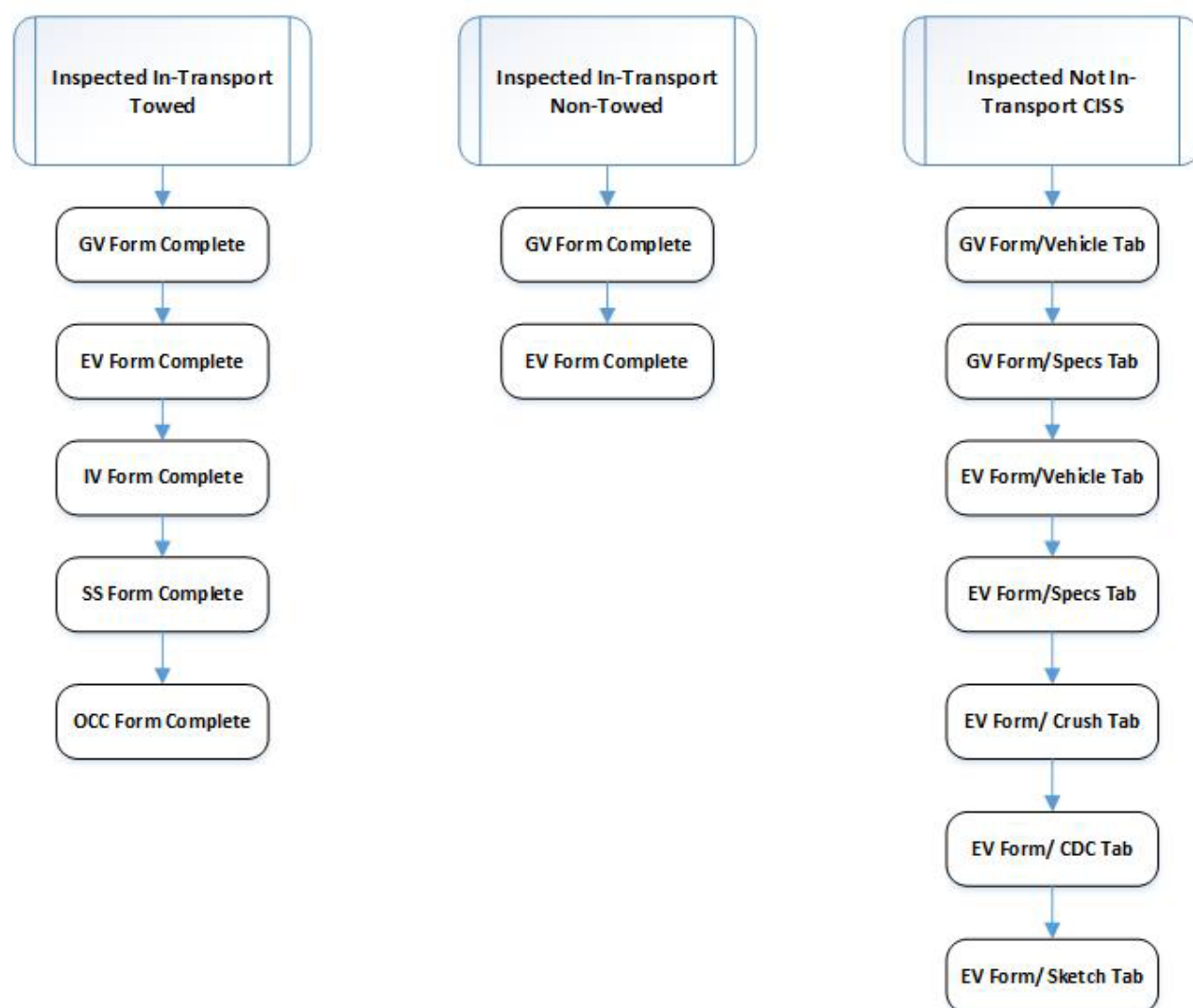


Figure 1. Required forms and tabs, CISS- Applicable Vehicles

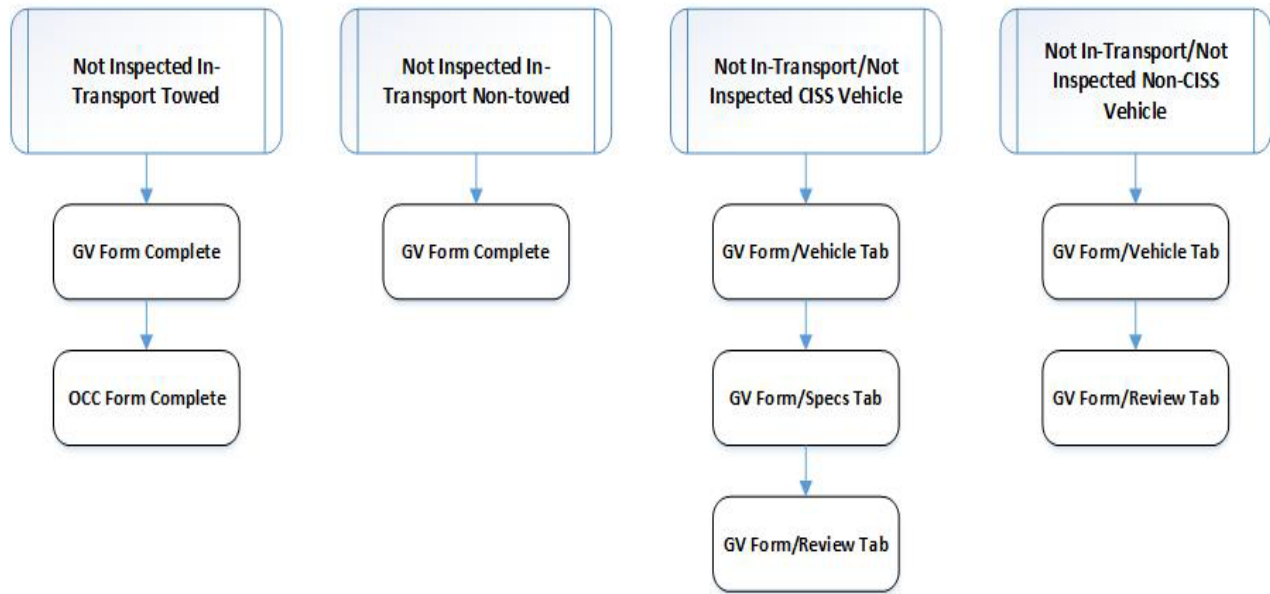


Figure 2. Required forms and tabs, not inspected

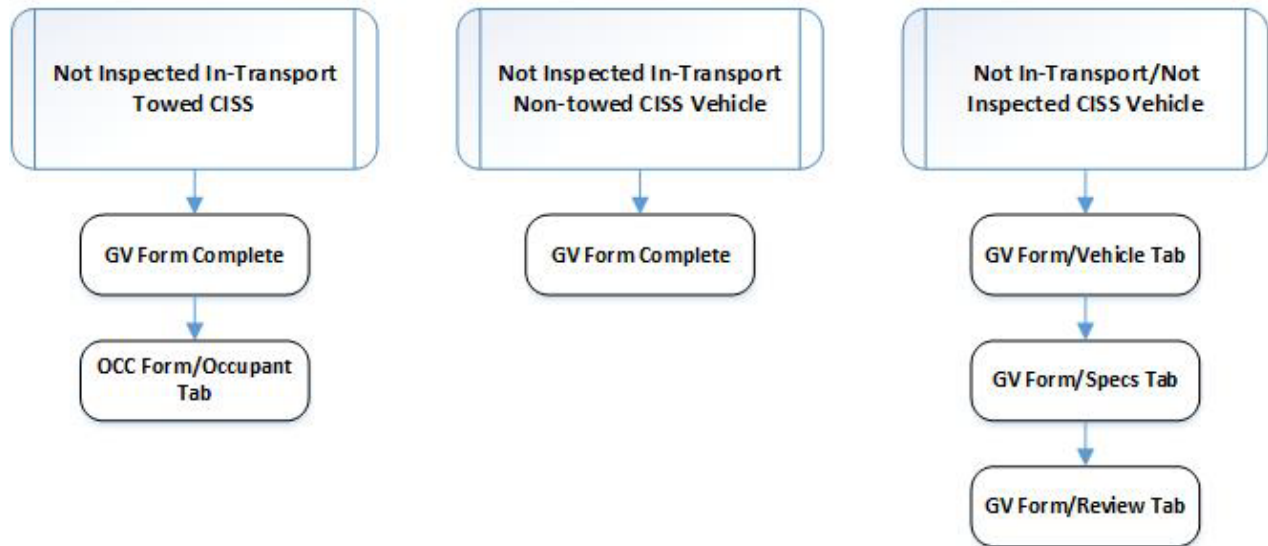


Figure 3. Required Forms and Tabs, Not Inspected



Figure 4. Required Forms and Tabs, Working Vehicles

Crash**Case Number**

Screen Name: **Case Number**
SAS Data Set: **CRASH**
SAS Variable: **CASENUMBER**
Database Name: **CISS.CISS.CRASH.CASENUM**

Element Attributes**Range****Source**

Assigned by Automated Case Selection System

Remarks

This variable is assigned by ACSS and cannot be changed.

This variable reports Study ID - PSU #, Year, Case Number, and Category. No numbers will be skipped. If a case must be dropped, the number will not be reused. Example: 1-99-2016-009-01.

Cases sampled within the CISS sampling frame are numbered 001-499. Cases selected outside of the CISS sampling frame as part of a special study data collection effort are numbered outside of the normal range by the ACSS.

Domain

Screen Name: **Domain**
SAS Data Set: **CRASH**
SAS Variable: **CATEGORY**
Database Name: **CISS.CISS.CRASH.DOMAIN**

Element Attributes**Range**

CISS Sampling Categories — 1, 2, 3, 4, 5, 6, 7, 8, 9, 10

Source

Assigned by Automated Case Selection System

Remarks

This variable is generated by the ACSS and cannot be changed.

The Category is the letter identifying which CISS sampling classification the case is assigned.

For further information refer to the CISS Sampling Manual.

Date of Crash (Month/Day/Year)

Screen Name: **Date of Crash**
SAS Data Set: **CRASH**
SAS Variable: **CRASHYEAR, CRASHMONTH, DAYOFWEEK**
Database Name: **CISS.CISS.CRASH.CRASHDATE**

Element Attributes

Month:	01 to 12
Day:	01 to 31
Year:	Calendar year of the crash

Source

Rolled up from PARSE and assigned by Automated Case Selection System.

Remarks

This variable is assigned by the ACSS and cannot be changed.

Time of Crash

Screen Name: **Time of Crash**
SAS Data Set: **CRASH**
SAS Variable: **CRASHTIME**
Database Name: **CISS.CISS.CRASH.CRASHTIME**

Element Attributes

00:00-23:59	
99:99	Unknown

Source

Rolled up from PARSE and assigned by Automated Case Selection System.

Range

00:00-23:59, 99:99

Remarks

This variable is assigned by the ACSS and cannot be changed.

PCR Number

Screen Name: **PCR Number**
SAS Data Set: **N/A**
SAS Variable: **N/A**
Database Name: **CISS.CISS.CRASH.PARNUMBER**

Element Attributes

Police report number recorded from the PCR.

Source

Police Report

Remarks

This variable reports the police report number as entered into the ACSS and cannot be changed. For further information, refer to the CISS Sampling Manual.

Police Jurisdiction

Screen Name: **Jurisdiction**
SAS Data Set: **N/A**
SAS Variable: **N/A**
Database Name: **CISS.CISS.CRASH.PJID**

Element Attributes

Primary Sampling Unit (PSU) specific list of sampled police jurisdiction

Source

Rolled up from PARSE and assigned by Automated Case Selection System.

Remarks

This variable reports the sampled police jurisdiction from which the case was selected. This variable is selected in the ACSS and cannot be changed.

Technician Assigned to Case

Screen Name: **Crash Technician**
SAS Data Set: **N/A**
SAS Variable: **N/A**
Database Name: **CISS.CISS.RESEARCHER**

Element Attributes

PSU Specific

Source

CISS Personnel Roster

Remarks

Select the name of the technician assigned the case.

PSU Reviewer

Screen Name: **PSU Reviewer**
SAS Data Set: **N/A**
SAS Variable: **N/A**
Database Name: **CISS.CISS.PSUREVIEWER**

Element Attributes

PSU Specific

Source

CISS Personnel Roster

Remarks

Select the name of the technician assigned the case.

Case Reviewer

Screen Name: **Case Reviewer**
SAS Data Set: **N/A**
SAS Variable: **N/A**
Database Name: **CISS.CISS.REVIEWER**

Element Attributes

Quality Control Center Roster
Injury Coding Center Roster

Source**Remarks**

Select the name of the reviewer who reviewed the majority of the case.

Case Status

Screen Name: **Case Status**
 SAS Data Set: **N/A**
 SAS Variable: **N/A**
 Database Name: **CISS.CISS.CRASH.STATUS**

Element Attributes

Database	SAS
7	PSU active
2	PSU complete
3	Quality control center review
4	Quality control center complete
12	Injury ready
9	Injury active
6	Injury Complete
11	Approved
8	Published
10	Unapproved
5	Dropped
	ICC return to zone
	Zone return to ICC
	PSU review Complete
	Under PSU review

Source

System assigned

Remarks

The Case Status is an indicator of a case's status in the CDAN system. It is a system assigned variable that is dependent upon the creation of the case or other user actions (case release, approval, etc.). Some of the attributes are program specific.

Preliminary Approval

Screen Name: **Preliminary Approval**
SAS Data Set: **N/A**
SAS Variable: **N/A**
Database Name: **CISS.CISS.CRASH.PRELIMAPPROVE**

Element Attributes

Yes
No

Source**Remarks**

Cases can be preliminarily approved by the ZC. Preliminarily approved cases will be visible on the web to the public.

Case Due Date

Screen Name:	Due Date
SAS Data Set:	N/A
SAS Variable:	N/A
Database Name:	CISS.CISS.CRASH.DUE DATE

Element Attributes

Date generated by Automated Case Selection System

Source

Automated Case Selection System

Remarks

This variable is generated by the ACSS and cannot be changed. The case due date is generally five weeks after sampling date. Technicians should submit cases to quality control center by Case Due Date.

Case Identification Number

Screen Name: **Case ID**
SAS Data Set: **CRASH**
SAS Variable: **CASEID**
Database Name: **CISS.CISS.CRASH.CASEID**

Element Attributes

Unique Number generated by the CISS web program

Source

CISSWeb Program

Remarks

This variable is generated by the CISS web program and cannot be changed.

Type of Case

Screen Name: **Case Type**
 SAS Data Set: **N/A**
 SAS Variable: **N/A**
 Database Name: **CISS.CISS.CRASH.CASETYPE**

Element Attributes

Database	SAS
1	CISS
3	CIREN
5	SCI
6	SCI combo

Source

System Assigned – primary, Technician – secondary

Remarks

Case Type is assigned by the system during the case creation process. It may also be updated to one of the combination types (SCI-CISS, etc.). The Case Type determines the structure of the case within CISSWeb. Due to the differing structure of the different Case Types, it also affects which consistency checks will be applicable to the case.

SCI

Assigned to cases created through the CISSWeb Create – SCI Case feature. Cases assigned to this Case Type belong solely to the SCI program.

CISS

Assigned to cases created by the CISS program. Cases assigned to this Case Type belong solely to the CISS program.

CIREN

Assigned to cases created through the CISSWeb Create – CIREN Case feature. Cases assigned to this Case Type belong solely to the CIREN program.

SCI Combo

Assigned to cases originally assigned to CISS; however, the case is later picked up and augmented by the SCI program. This Case Type is assigned by the user.

Global Position - Latitude

Screen Name: **Global Position - Lat**
SAS Data Set: **N/A**
SAS Variable: **N/A**
Database Name: **CISS.CISS.CRASH.GPSLAT**

Element Attributes**Source**

Technician determined — primary sources are the scene inspection and PCR.

Remarks

Record the latitude of the crash location (prioritizing the location of the first harmful event when possible) in degrees to the nearest 0.00000. The data may be entered in degrees, minutes, seconds (DD MM SS) or decimal format (DDD.ddddd).

Global Position - Longitude

Screen Name: **Global Position - Long**
SAS Data Set: **N/A**
SAS Variable: **N/A**
Database Name: **CISS.CISS.CRASH.GPSLON**

Element Attributes**Source**

Technician determined — primary sources are the scene inspection and PCR

Remarks

Record the longitude of the crash location (prioritizing the location of the first harmful event when possible) in degrees to the nearest 0.00000. The data may be entered in degrees, minutes, seconds (DD MM SS) or decimal format (DDD.ddddd).

For longitude, the value should always be negative. The format for data entry has the negative sign pre-coded.

Case Form Structure Overview

The case form serves as the foundation of a CISS case; the structure is established and several variable selections are preset based upon data entered in the case form.

Any time data on the case form needs to be changed all field collection forms (EV, IV, etc.) must be closed before changes are made on the case form. For instance, it may be determined from the PCR that the crash involved the front plane of vehicle 1; the case form would reflect a frontal impact. However, at the time of inspection, it is determined that the left plane is involved. If the EV form for vehicle 1 is already opened, the technician will need to save then exit the form. The change can now be made on the case form and the EV form re-opened.

When the sampling procedure is complete and cases have been selected, the new cases will be listed in the CISSWeb program. The new cases should be structured on the same day as selection: (1) to remove them from the new cases list and activate them and (2) to prepare the cases to receive data.

The following is a summary to assist in structuring a case.

- Open CISSWeb and select the case to be structured. The Crash tab opens first; most of the variables will be filtered in from the sampling program. Only the technician and owner variables need to be completed. Click on the drop-down arrow and select name from the drop-down list.
- The Structure tab has several sub-tabs, but only the vehicle and occupant sub-tabs need data entered to structure a case. The case subtab opens first, but it only serves as an overview of the data entered on the other sub-tabs.
 - The vehicle sub-tab allows the vehicle types to be identified as CDS in-transport,
 - CDS not in-transport, and non-CDS. Click on the “Add Vehicle” icon to enter a new vehicle into the case structure. The vehicle type assigned will determine what options are made available in the field forms.
 - The occupant sub-tab allows the number of vehicle occupants to be entered in the case. Click on the “Add Occupant” icon to enter a new occupant into the case structure. Select the vehicle number for the occupant being listed and assign an occupant number. The current protocol is to use the police assigned occupant numbers. It is important to understand that the column under **Occupant #** refers to the number assigned to that occupant, not the total number of occupants in the vehicle. If a vehicle contained three occupants, the “Add Occupant” icon would be used three separate times to enter each occupant.
- The Events tab allows for the entry of single or more than one events that occur in a crash sequence. The events are entered in the order that they occurred by clicking on the “Add Event” icon. An event between two vehicles should be listed with the lower numbered vehicle first. This event does not need to be listed twice, once from each vehicle’s perspective. For instance, if an event is listed with the front of vehicle 1 striking the left of vehicle 2, it does not need to be listed again with the left of vehicle 2 striking the front of vehicle 1.

With these steps completed, the case is structured and ready for data entry. There are other variables on the Case form that need to be completed; refer to the specific sections of the manual for assistance in their completion.

Structure/Case

Total Number of Vehicles in Crash

Screen Name: **Vehicles – Total All Vehicles**
SAS Data Set: **CRASH**
SAS Variable: **VEHICLES**
Database Name: **N/A**

Element Attributes

The total number of vehicles (in-transport, CISS, and non-CISS) in the crash with the exception on non-contact vehicles.

Source

Technician-determined

Remarks

- Includes all contacted vehicles that are listed on the PCR.
- Each CISS case must have at least one in-transport and towed CISS-applicable vehicle.

Non-contact vehicles listed on the police reports should **not** be structured in the case; however, they should be included on the scene diagram.

Vehicle information must be entered for each motor vehicle involved in the crash. For example, one CISS-applicable vehicle is towing another by a non-fixed linkage (rope, chain, etc.). Assuming both vehicles are involved in a crash event, data are required for both vehicles. If the linkage was fixed (see below for “fixed linkage”) only the power unit would be considered in-transport. If it is contacted, it would be structured in the case. If it is not directly involved in a contact event and its lost cargo is its only involvement, it would be treated as a non-contact vehicle.

When one motor vehicle is towing another, the number of vehicles depends on the crash circumstances and the type of linkage between the vehicles. A fixed linkage is defined as one that has the purpose of keeping the towed unit separated from the power unit by a distance that is essentially constant. Included in this definition are cradle linkages where the towed unit has two or more wheels off the ground. A non-fixed linkage (such as a rope or a chain.) required the towed unit to be manually controlled. If the linkage between the units is fixed, consider only the vehicle that is the power/towing unit and consider the towed unit as cargo throughout the entire crash sequence, regardless of subsequent events/impacts sustained by the towed unit. In other words, a vehicle towed by a fixed linkage:

- is not considered as an in-transport vehicle,
- will not have vehicle information entered, and
- is considered as cargo associated with the power unit.

If a fixed linkage is used, the power/towing unit is only structured in the case if it is contacted. If its only involvement is the towed vehicle becoming detached, the power/towing unit is

considered as a non-contact vehicle. The detached vehicle is treated as cargo throughout the crash.

Similar events would include:

- an axle breaking from a towed vehicle and striking another vehicle;
- a boat trailer breaking free from the power unit and struck by another vehicle; or
- cargo falling from a large truck and striking a passing vehicle.

In each of these examples the contacted object separating from the power unit is treated as cargo. The power unit would only be structured in the case if it experienced contact damage. Otherwise it would be included only on the scene diagram.

If the linkage between the units is non-fixed, each vehicle is considered in-transport, and all vehicles involved in the crash sequence should be recorded individually. Hit-and-run crashes occasionally cause some confusion. Vehicle information is entered for each motor vehicle involved in the crash independent of the amount of information collected on the vehicles by the police.

Number of CISS in-Transport Vehicles in Crash

Screen Name: **Vehicles - CISS in-Transport**
SAS Data Set: **N/A**
SAS Variable: **N/A**
Database Name: **N/A**

Element Attributes

The total number of CISS in-transport vehicles in the crash.

Source

Technician-determined

Remarks

The number of CISS in-transport vehicles is rolled up from the Structure/Vehicles screen.

Number of CISS Not-in-Transport Vehicles in Crash

Screen Name: **Vehicles - CISS Not in-Transport**
SAS Data Set: **N/A**
SAS Variable: **N/A**
Database Name: **N/A**

Element Attributes

The total number of CISS not-in-transport vehicles in the crash.

Source

Technician-determined

Remarks

The number of CISS not-in-transport vehicles is rolled up from Structure/Vehicles.

Vehicles in Crash

Screen Name: **Vehicles - Non-CISS**
SAS Data Set: **N/A**
SAS Variable: **N/A**
Database Name: **N/A**

Element Attributes

The total number of non-CISS vehicles in the crash.

Source

Technician-determined

Remarks

The number of non-CISS vehicles is rolled up from the Structure/Vehicles tab.

Total Number of Occupants in CISS Vehicles in-Transport

Screen Name: **Occupants – Total Number**
SAS Data Set: **N/A**
SAS Variable: **N/A**
Database Name: **N/A**

Element Attributes

The total number of occupants in vehicles in the crash.

Source

Technician-determined

Remarks

The total number of occupants is rolled up from the Structure/Occupants tab.

Total Number of Medical Records in Case

Screen Name: **Medical Records – Total Number**
SAS Data Set: **N/A**
SAS Variable: **N/A**
Database Name: **N/A**

Element Attributes

The total number of medical records required for occupants of CISS in-transport vehicles in the crash.

Source

Technician-determined

Remarks

This total number of medical records requested or received for occupants of CISS vehicles in-transport is rolled up from the Structure/Medical Records tabs.

Vehicle Number

Screen Name: **Veh #**
SAS Data Set: **GV**
SAS Variable: **VEHNO**
Database Name: **CISS.CISS.VEH.VEHNUM**

Element Attributes

As numbered

Source

Technician-determined

Remarks

Each motor vehicle (regardless of body type) listed on the PCR is assigned a unique number. Vehicle numbers are to be assigned consecutively according to the order listed on the PCR.

Transport Status

Screen Name: **Transport Status**
 SAS Data Set: **N/A**
 SAS Variable: **N/A**
 Database Name: **N/A**

Element Attributes

Database	SAS
1	CISS in-transport
3	NON CISS
2	CISS NOT-in-transport

Source

Technician-determined

Remarks

All vehicles involved in the crash must be counted. All in-transport CISS, non-CISS, and inspected not-in-transport vehicles that are struck by any CDC-applicable in-transport vehicle must be counted. For additional guidance on transport status see CISS sampling manual.

CISS in-transport

Used when the vehicle has been determined to be a CISS-applicable vehicle that is in-transport. This is technician-determined and may not necessarily agree with the police report. For example, the PCR may list a “parked vehicle” as a struck vehicle: upon inspecting the scene the technician determines there is no “legal” parking at the scene, so the PCR-reported parked vehicle becomes an in-transport vehicle.

NON CISS

Used when the vehicle is not a CISS-applicable vehicle.

CISS NOT in-transport

Used when the inspected vehicle has been determined to be a CISS-applicable vehicle that is not-in-transport. This is technician-determined and may not necessarily agree with the police report.

Date of Vehicle Inspection

Screen Name: **Inspected**
SAS Data Set: **N/A**
SAS Variable: **N/A**
Database Name: **CISS.CISS.VEH.INSPECTDATE**

Element Attributes

Month:	01 to 12
Day:	01 to 31
Year:	As appropriate

Source

Date is rolled up from the Vehicle Exterior Form, Vehicle screen.

Remarks

Inspection date - the date the inspection was begun. This does not count unsuccessful attempts to locate the vehicle. Some data must be collected from the vehicle.

The technician enters the date on the Vehicle Exterior Form, Vehicle screen and it automatically rolls up to this variable.

Number of Occupants in This Vehicle

Screen Name: **Occupants**
SAS Data Set: **N/A**
SAS Variable: **N/A**
Database Name: **N/A**

Element Attributes

Total number of occupants in this vehicle

Source

The number of occupants is rolled up from the Case Form, Structure, and Occupant screen.

Remarks

Vehicle Number

Screen Name: **Veh #**
SAS Data Set: **GV**
SAS Variable: **VEHNO**
Database Name: **CISS.CISS.VEH.VEHNUM**

Element Attributes

As numbered from vehicle tab

Source

Technician-determined

Remarks

Technician selects “add occupant” from Quick Add case items on the left of the screen. This opens a drop-down list of all the vehicles entered on the Structure/Vehicles screen. The technician then selects the vehicle number for which to enter the rest of the data.

Occupant Number

Screen Name: OCC #
SAS Data Set: OCC
SAS Variable: OCCNO
Database Name: CISS.CISS.OCC.OCCNUM

Element Attributes

As numbered

Source

Technician-determined

Remarks

Select “add occupant” and assign the occupant to the vehicle occupied.

Occupant numbers must be assigned sequentially, beginning in the passenger compartment area with “1.” No numbers may be skipped. Assign numbers left to right and front to back among occupants.

Assign numbers last to people on the vehicle or in an unenclosed area. People appended to vehicle for motion (e.g., bicyclist holding onto vehicle) are either pedestrians or other nonmotorists and not occupants; therefore, no form is completed, and no number is assigned.

For seating locations where more than one occupant occupies the seat, begin numbering the occupant seated in the seat first. For each additional occupant in the lap or lying across, assign one number higher. If an occupant is on the floor in front of a person assign one number higher.

Interview Results

Screen Name: **Interview Results**
 SAS Data Set: **N/A**
 SAS Variable: **N/A**
 Database Name: **N/A**

Element Attributes

Database	SAS
1	Yes
0	No

Source

Technician-determined

Remarks

An interview is required for in-transport, CISS-applicable vehicles, in the following circumstances:

- When a **child 12 or younger** is present in the vehicle,
- For vehicles equipped with certain **crash avoidance technologies** (lane keeping, braking, etc.),
- When the occupants of the vehicles were treated at **uncooperative medical facilities and/or signed medical release required, or**
- When there is a need to **locate the case vehicle** and other methods have failed.

If there are no surviving occupants over 18 years old an interview is not required.

Note: When the PCR KABCO reports an "A" or "B" injury severity (including PCR narrative) **and** there is no EMS agency and no medical facility listed anywhere on the PCR, recommend contacting the occupant/surrogate to find out whether the person was treated and if so, where the treatment occurred.

Interview Completion Date

Screen Name: **Completed**
SAS Data Set: **N/A**
SAS Variable: **N/A**
Database Name:

Element Attributes

Month:	01 to 12
Day:	01 to 31
Year:	As appropriate

Source

Technician-determined

Remarks

Interview Results

Screen Name: **Interview Results**
 SAS Data Set: **N/A**
 SAS Variable: **N/A**
 Database Name: **CISS.CISS.INTERVIEW.RESULT**

Element Attributes

Database	SAS
1	Unable to contact or locate
2	Hit-and-run
3	Fatal-surrogate not available
4	In intensive-care-surrogate not available
6	Refused interview
7	Insurance company refusal
8	Attorney refusal or litigation
9	No return of questionnaire
10	Other (specify)
11	Partial interview
12	Complete interview
-8887	Not applicable

Source

System Assigned – primary, Technician - secondary.

Remarks

Rolled up from Occupant From/Log/Interview.

Vehicle Number

Screen Name: **Vehicle #**
SAS Data Set: **N/A**
SAS Variable: **N/A**
Database Name: **CISS.CISS.MEDICAL.VEHID**

Element Attributes

As numbered

Source

Technician-determined

Remarks

Technician selects the appropriate vehicle from the drop-down list that lists a number for each CISS vehicle in the case.

Medical record data must be entered on the Case/Structure/Medical Records tab for all case occupants that received medical treatment or were fatal due to the crash.

Occupant Number

Screen Name: **Occupant #**
SAS Data Set: **N/A**
SAS Variable: **N/A**
Database Name: **CISS.CISS.MEDICAL.OCCID**

Element Attributes

As numbered

Source

Technician-determined

Remarks

Technician selects the appropriate occupant from the drop-down list that lists a number for each occupant in the vehicle selected in the previous variable.

Medical record data must be entered on the Case/Structure/Medical Records tab for all case occupants that sought medical treatment or were fatal due to the crash.

Medical Record

Screen Name: **Medical Record**
 SAS Data Set: **N/A**
 SAS Variable: **N/A**
 Database Name: **CISS.CISS.MEDICAL.RECORDTYPE**

Element Attributes

Database	SAS
3	Admission records
17	Autopsy - external
16	Autopsy - internal
18	Death certificate
15	Discharge face sheet
4	Discharge summary
8	Emergency room records
11	EMS record
7	History/physical examination
10	Lay coroner
5	Operative report
14	Other (specify)
2	Post-ER medical record
9	Private physician
6	Radiographic
19	Urgent care clinic

Source

Technician-determined

Remarks

For all applicable occupants, the technician selects Add Medical Record. On the Medical Record edit window, the technician selects the applicable check boxes corresponding to the medical record type that are needed for this occupant. When the medical record data is received, the technician verifies and updates the Medical Record window. Do not request medical records for an uninjured occupant if only a BAC test result is needed; check with the police jurisdiction for a revised crash report or supplemental report.

Note: For police reported "K" injuries be familiar with State and region protocols for requesting the medical examiner/coroner reports and death certificates when applicable.

Medical records should be requested when it is known people were transported directly to a medical facility or sought treatment later at a medical facility (primary care). This includes

transfer from one primary care facility to another primary care facility due to the crash. It is not necessary to request rehabilitation, chiropractic, or physical therapy records.

Also, when the police EMS and hospital fields are blank with no further information available for occupants with "A" and "B" injury severities, we recommend finding out where they were treated to request the medical records.

Medical record data must be entered on the Case/Structure/Medical Records tab for all CISS applicable case occupants that sought medical treatment due to the crash. Additionally, add an entry when a case occupant is fatal due to the crash (unless rare regional exception is in place).

Do not request records from rehabilitation facilities (secondary care facilities), chiropractors, or physical therapy.

Autopsy - internal

Internal examination of a deceased person by a licensed or official medical examiner. The examination should be a systematic review all major body regions and organs. Overall anatomical structure and condition should be detailed in conjunction with injury detail (location and measurement) and evidence of possible pre-morbid conditions. An accurate cause of death should be documented. "Autopsy – Internal" is selected when the autopsy includes both an internal and external examination.

Autopsy - external

External examination of a deceased person by a licensed or official medical examiner. The examination will consist of a visual record of the person from general body build and features to details of visible external injury (lacerations, contusions, open fractures, etc.). A cause of death will be determined from the examiner's external findings.

Death certificate

A document giving pertinent identifying information about a deceased person and certifying the manner of death.

Post-ER medical record

Medical chart documentation for a person admitted to a hospital after initial evaluation in the emergency room (ER) or trauma resuscitation unit (TRU). Documentation may be from physicians, nurses, therapists, or other health care providers who provide services for the person during the hospital stay. This documentation will cover the period of time from transfer from the ER/TRU till discharge.

Admission records

Initial documentation for a person admitted to a health care facility. The documentation usually includes insurance information and permissions for the admitting facility to treat the person. Rights of the person as they relate to treatment and stay are outlined. The person's admitting physician will be recorded in this document. Issues related to advance directives and living wills are often documented in these records.

Discharge face sheet

This documentation is typically only one sheet long and identifies the person discharged with post-discharge instructions. Details usually include dates of admission and discharge, reason for admission, diagnostic codes, medications, and post-discharge plans. Post-discharge plans may refer to prescriptions, therapies, follow-up visits or other related issues still pending related to the person's discharge.

Discharge summary

A broad overview of a person's hospital course for a unique admission. The summary usually contains the person's medical doctor of record, admission and discharge dates, diagnoses, medical history, procedures performed, complications and discharge status. With the exception of the person's complete chart this document typically provides the best overall review of hospital experience for a person.

Operative report

A detailed narrative of a medical procedure performed on a person. The document should identify the medical staff performing the procedure, date and times of the procedure, reason for procedure (diagnosis), and a detailed narrative of the procedure from start to finish.

Radiographic

A report generated by a radiologist (M.D.) on the findings of a radiologic image or procedure. Typically these reports describe contents of X-rays, CAT scans, or MRI's.

History/physical examination (H&P)

Documentation of an initial medical evaluation of a person by a health care provider. The examination should contain a chief complaint (why the person is seeking medical attention). The person's medical history should be included and a complete physical assessment of each body section should be detailed. Basic vitals should be included and the H&P should conclude with a care plan. This includes consultations.

Emergency room records

Medical chart documentation for a person during their stay in the emergency room. Documentation may be from physicians, nurses, therapists, or other health care providers. Documentation should include an H&P and a disposition plan. Includes freestanding ER.

Private physician

Documentation from a physician encounter in a private office.

Urgent care clinic

Documentation from a clinic focused on the delivery of ambulatory care in a dedicated medical facility outside of a traditional emergency room. Urgent care centers primarily treat injuries requiring immediate care, but not serious enough to require an ER visit. Urgent care centers are distinguished from similar healthcare centers such as emergency departments by their scope of conditions treated and available facilities on-site. Examples include medical clinics.

Other (specify)

Documentation of medical or injury status not previously mentioned. This can include a toxicology report from an external toxicology facility.

EMS record

A report from the transporting emergency team detailing a person's health status at the crash scene and during transport to a health care facility. The report may document visible injury (lacerations) and possible injury (deformed ankle). Vital signs are generally documented as well. Details related to extrication and restraint status might be included in this record.

Lay coroner

Documentation from a person appointed by local government to assign cause of death in fatal injury cases in that jurisdiction. These people are usually not medical doctors, and the injury/cause of death is typically derived from an external exam of the expired person.

Medical Facility

Screen Name: **Medical Facility**
SAS Data Set: **N/A**
SAS Variable: **N/A**
Database Name: **CISS.CISS.MEDICAL.FACILITY**

Element Attributes

Site specific

Source

Technician-determined

Remarks

Technician selects the appropriate medical facility from the drop-down list. If more than one facility is used by this occupant, the technician must select “Add Another Medical Record” for each facility.

When an emergency unit responded to the scene of the crash, an EMS record should be requested for each occupant with a PCR-reported injury.

This includes any time there is information that an emergency unit responded to the scene of the crash an EMS record should be requested for each occupant with a PCR-reported injury.

Medical Release

Screen Name: **Medical Release**
SAS Data Set: **N/A**
SAS Variable: **N/A**
Databasename: **CISS.CISS.MEDICAL.RELEASE**

Element Attributes

Database	SAS
1	Not required
2	Required-not obtained
3	Required-obtained

Source

Technician-determined

Remarks

The technician selects the appropriate response from the drop-down list.

Not Required is also coded when an occupant goes to an unknown facility and it unknown whether the facility requires a medical release.

Date Medical Record Was Requested

Screen Name: **Requested**
SAS Data Set: **N/A**
SAS Variable: **N/A**
Database Name: **CISS.CISS.MEDICAL.REQUESTED**

Element Attributes

Month:	01 to 12
Day:	01 to 31
Year:	As appropriate

Source

Technician-determined

Remarks

Technician enters the date that the medical record was requested.

This element should be left blank when the Medical Record Reason is non-cooperative hospital, or a medical release required-not obtained.

Follow-Up Request

Screen Name: **Follow-Up Request**
 SAS Data Set: **N/A**
 SAS Variable: **N/A**
 Database Name: **N/A**

Element Attributes

Month:	01 to 12
Day:	01 to 31
Year:	As appropriate

Source

Technician-determined

Remarks

Follow-Up Request may be required and are added by selecting the follow-up request button.

The number of follow-up requests automatically roll into parenthesis next to Follow-Up Request (#) per medical record entry.

Example: Follow-Up Request (1) indicates one follow-up request was sent by CTA.

Use Follow-Up Request (#) when:

- Team sends re-request when a “No Record of Treatment” was initially received from facility (CISSWeb medical record reason is initially coded “no record of treatment”).
- Team sends re-request for medical updates (CISSWeb medical record reason is initially coded “update pending” or “partial record obtained – update pending”).

Medical Follow-Up

Enter Date of Follow-Up and any applicable notes regarding the follow-up.

Date Medical Record Was Received

Screen Name: **Received**
SAS Data Set: **N/A**
SAS Variable: **N/A**
Database Name: **CISS.CISS.MEDICAL.RECEIVED**

Element Attributes

Month:	01 to 12
Day:	01 to 31
Year:	As appropriate

Source

Technician-determined

Remarks

Technician enters the date that the medical record was received.

This element should be left blank when the Medical Record Reason is no record of treatment, non-cooperative hospital, medical release required-not obtained, or record not obtained.

Date Medical Record Was Forwarded to Injury Coding Center

Screen Name: **Forwarded to injury coding center**
SAS Data Set: **N/A**
SAS Variable: **N/A**
Database Name: **CISS.CISS.MEDICAL.FORWARDED**

Element Attributes

Month:	01 to 12
Day:	01 to 31
Year:	As appropriate

Source

Technician-determined

Remarks

Technician enters the date that the medical record was forwarded to the injury coding center.

This element should be left blank when the Medical Record Reason is no record of treatment, non-cooperative hospital, or a medical release required-not obtained.

Medical Record Obtained or Reason Why Not

Screen Name: **Reason**
 SAS Data Set: **N/A**
 SAS Variable: **N/A**
 Database Name: **CISS.CISS.MEDICAL.REASON**

Element Attributes

Database	SAS
5	Hospital out-of-study area
2	Medical release required-not obtained
1	No record of treatment at medical facility
4	Non-cooperative hospital
12	Partial record obtained - no update pending
13	Partial record obtained - update pending
6	Private Physician would not release data
10	Record not obtained
9	Record not received before file closeout
11	Record obtained
7	Unknown if medically treated
8	Update pending

Source

Technician-determined

Remarks

Technician selects the appropriate response from the drop-down list.

Record not obtained

Examples of record not obtained include:

- Medical facility will not release the data without the DOB and unable to obtain the DOB. This also includes when the occupant is a minor and unable to obtain the DOB.
- When a facility is legally unable to release the record.

This is not selected when the record has not been received before releasing the case to the quality control center (reason will remain “update pending”).

Record not received before file closeout

Coded by injury coding center or NHTSA Headquarters when medical updates have not been received prior to the date the file is closed and released to the public.

Non-cooperative hospital

Hospital will not cooperate with program or will not release medical information with a signed medical release.

Partial Record Obtained - No Update Pending

When partial medical records are received and there is a one-time request limit in place where the remaining records cannot be requested (e.g., third-party record service or facility limits the number of requests).

Partial Record Obtained – Update Pending

Prior to case submission to the quality control center: Technician recognizes requested medical record types were not received, sends follow-up request for missing record types pending response from the medical facility.

This also includes when a partial record is received and a follow-up request can be sent (e.g., there are no request limits in place by a facility or third-party record service).

Unknown if medically treated

Can select when police reports indicate occupant is injured and transported to an unknown medical facility and no other information is available regarding treatment. For example, police report indicates transport; however does not list the medical facility and interviewee does not know if occupant sought treatment.

Update Pending

Selected when the medical record has been requested and waiting for the medical record or response from the medical facility.

This includes when an initial request contained incorrect information and the correct facility/person/crash information was re-requested (e.g., Interview obtained after initial request or revised PCR provided up-to-date information).

Notes

Screen Name:	Notes
SAS Data Set:	N/A
SAS Variable:	N/A
Database Name:	CISS.CISS.MEDICALRECORDS_NOTE

Element Attributes**Source**

Technician

Remarks

This tab is for relevant medical record information. Do not enter personal identifiers.

Examples:

1. For V2-O4: no record obtained - occupant is a minor, the required DOB was not obtained to process request.
2. V1-O1 and O2 – Parent uncooperative giving hospital information unable to request information.
3. V3-O1 occupant refused to sign medical release.

Sample Date

Screen Name: **Sample Date**
SAS Data Set: **N/A**
SAS Variable: **N/A**
Database Name: **CISS.CISS.CRASH.SAMPLEDATE**

Element Attributes

Month
Day
Year

Source

Automated case selection system.

Remarks

The Sample date is rolled up from PARSE program.

Case Summary Overview

The case summary provides the quality control center, a clinical user, or any other person interest-ed in the CISS case a quick reference of crash particulars by providing an overview of important characteristics of the crash.

The case summary tables are populated from other parts of the case and every automatically generated case summary includes the following seven tables: vehicle, roadway, pre-crash, conditions, vehicle damage (including events), occupant, and occupant injury. When applicable, additional tables are present in the case summary with information regarding WinSmash and EDR delta Vs, rollover, fire, child seats, and avoidance equipment activation.

Summary/Vehicles**Vehicle Number**

Screen Name: #
SAS Data Set: N/A
SAS Variable: N/A
Database Name: CISS.CISS.VEH.VEHNUM

Element Attributes**Source**

Rolled up from Case Structure/Vehicle Tab.

Remarks

The vehicle number of each in-transport vehicle and inspected not in-transport vehicle in the crash is indicated.

Vehicle Year

Screen Name: **Year**
SAS Data Set: **N/A**
SAS Variable: **N/A**
Database Name: **CISS.CISS.VEH.MODELYEAR**

Element Attributes**Source**

Rolled up from General Vehicle Form/Vehicle Tab.

Remarks

Refer to the General Vehicle Form/Model Year.

Vehicle Make

Screen Name: **Make**
SAS Data Set: **N/A**
SAS Variable: **N/A**
Database Name: **CISS.CISS.VEH.Make**

Element Attributes**Source**

Rolled up from General Vehicle Form/Vehicle Tab.

Remarks

Refer to the General Vehicle Form/Make.

Vehicle Model

Screen Name: **Model**
SAS Data Set: **N/A**
SAS Variable: **N/A**
Database Name: **CISS.CISS.VEH.MODEL**

Element Attributes**Source**

Rolled up from General Vehicle Form/Vehicle Tab.

Remarks

Refer to the General Vehicle Form/Model.

Damage Plane

Screen Name: **Damage Plane**
 SAS Data Set: **N/A**
 SAS Variable: **N/A**
 Database Name: **CISS.CISS.VEH_CRASH.DAMAGEPLANE**

Element Attributes

Database	SAS
3	Front
5	Left side
4	Right side
6	Back
7	Top
8	Undercarriage
9	Unknown
2	Noncollision

Medium/Heavy Trucks

Database	SAS
20	Front
22	Left side
21	Right side
19	Back of unit with cargo area (rear of trailer or straight truck)
16	Back (rear of tractor)
17	Rear of cab
18	Front of cargo area
23	Top
24	Undercarriage
25	Noncollision

Source

Technician-determined

Remarks

The technician must determine the **most severe impact** and choose the associated damage plane.

All efforts should be made to determine the plane of damage. The vehicle inspection, occupant interview, police report, tow yard operator, damage to other vehicles or objects should be considered.

If there is absolutely no information available, then “Unknown” may be used. However, it should rarely be selected.

Damage Severity

Screen Name: **Severity**
SAS Data Set: **N/A**
SAS Variable: **N/A**
Database Name: **N/A**

Element Attributes

Light
Moderate
Severe
Unknown

Source

Rolled up from General Vehicle Form/Delta V tab.

Remarks**Unknown**

Used if no vehicle inspection is completed.

Component Malfunction

Screen Name: **FSN**
SAS Data Set: **N/A**
SAS Variable: **N/A**
Database Name: **CISS.FSN.FSNID**

Element Attributes**Source**

Field Safety Notification

Remarks

This is not editable by the technician. If a Field Safety Notification form has been completed by the technician this field will indicate its presence.

Any vehicular component that is suspected to have potentially malfunctioned during the crash sequence should be noted.

Summary Tables

Roadway Summary

Screen Name: Roadway
SAS Data Set: *N/A*
SAS Variable: *N/A*
Database Name: *N/A*

Element Attributes

Range

Source

Rolled up from General Vehicle form.

Remarks

The table is generated based on General Vehicle Form coding and includes the relation to junction, trafficway flow, number of travel lanes, initial travel lane, and traffic control devices. For additional details refer to the corresponding variable in the General Vehicle Form section.

PreCrash Summary

Screen Name: Pre-crash
SAS Data Set: *N/A*
SAS Variable: *N/A*
Database Name: *N/A*

Element Attributes**Range****Source**

Rolled up from General Vehicle form.

Remarks

The table is generated based on General Vehicle Form coding and includes the pre-event movement, critical pre-crash category, critical pre-crash event, and crash type. For additional details refer to the corresponding variable in the General Vehicle Form section.

Conditions Summary

Screen Name: Conditions
SAS Data Set: *N/A*
SAS Variable: *N/A*
Database Name: *N/A*

Element Attributes**Range****Source**

Rolled up from General Vehicle form.

Remarks

The table is generated based on General Vehicle Form coding and includes lighting, atmospheric, and surface conditions. For additional details refer to the corresponding variable in the General Vehicle Form section.

Damage Summary

Screen Name: Damage
SAS Data Set: *N/A*
SAS Variable: *N/A*
Database Name: *N/A*

Element Attributes**Range****Source**

Rolled up from General Vehicle form.

Remarks

The table is generated based on General Vehicle Form coding and includes number of events, highest severity impact, most severe CDC, and type of impact. For additional details refer to the corresponding variable in the General Vehicle Form section.

Occupant Summary

Screen Name: Occupant
SAS Data Set: *N/A*
SAS Variable: *N/A*
Database Name: *N/A*

Element Attributes**Range****Source**

Rolled up from Occupant form.

Remarks

The table is generated based on Occupant Form coding and includes role, age, sex, seat position, and safety equipment. For additional details refer to the corresponding variable in the Occupant Form section.

Occupant Injury Summary

Screen Name: Occupant Injury
SAS Data Set: *N/A*
SAS Variable: *N/A*
Database Name: *N/A*

Element Attributes**Range****Source**

Rolled up from Occupant form.

Remarks

The table is generated based on Occupant Form coding and includes maximum injury description, maximum injury severity on the Abbreviated Injury Scale (AIS), involved physical component (IPC) configuration, IPC area, and IPC. For additional details refer to the corresponding variable in the Occupant Form section.

WinSmash Delta V Summary

Screen Name: WinSmash Delta V (for highest severity impact)
SAS Data Set: *N/A*
SAS Variable: *N/A*
Database Name: *N/A*

Element Attributes**Range****Source**

Rolled up from General Vehicle and Exterior form.

Remarks

The table is generated (when applicable) based on General Vehicle and Exterior Form coding and includes basis for delta V, total delta V, longitudinal delta V, lateral delta V, barrier equivalent speed, and reconstruction confidence level. For additional details refer to the corresponding variable in the General Vehicle and Exterior Form section.

EDR Delta V Summary

Screen Name: EDR Delta V (for highest severity impact)
SAS Data Set: *N/A*
SAS Variable: *N/A*
Database Name: *N/A*

Element Attributes**Range****Source**

Rolled up from General Vehicle and Exterior form.

Remarks

The table is generated (when applicable) based on General Vehicle and Exterior Form coding and includes Collision Deformation Classification (CDC) associated with the EDR event, EDR event description, maximum EDR longitudinal delta V, maximum EDR lateral delta V, and EDR impact speed. For additional details refer to the corresponding variable in the General Vehicle and Exterior Form section.

Rollover Summary

Screen Name: Rollover
SAS Data Set: *N/A*
SAS Variable: *N/A*
Database Name: *N/A*

Element Attributes**Range****Source**

Rolled up from General Vehicle form.

Remarks

The table is generated (when applicable) based on General Vehicle Form coding and includes rollover initiation type, rollover initiation location, direction of initial roll, and number of rollover quarter turns. For additional details refer to the corresponding variable in the General Vehicle Form section.

Fire Summary

Screen Name: Fire
SAS Data Set: *N/A*
SAS Variable: *N/A*
Database Name: *N/A*

Element Attributes**Range****Source**

Rolled up from General Vehicle form.

Remarks

The table is generated (when applicable) based on General Vehicle Form coding and includes fire occurrence severity and origin of fire. For additional details refer to the corresponding variable in the General Vehicle Form section.

Ejection Summary

Screen Name: Ejection
SAS Data Set: *N/A*
SAS Variable: *N/A*
Database Name: *N/A*

Element Attributes**Range****Source**

Rolled up from Occupant form.

Remarks

The table is generated (when applicable) based on Occupant Form coding and includes ejection type, ejection area, ejection medium, and ejection medium status. For additional details refer to the corresponding variable in the Occupant Form section.

Child Seat Summary

Screen Name: Child Seat
SAS Data Set: *N/A*
SAS Variable: *N/A*
Database Name: *N/A*

Element Attributes**Range****Source**

Rolled up from Occupant form.

Remarks

The table is generated (when applicable) based on Occupant Form coding and includes child seat location, child seat orientation, child seat type, LATCH use, and child seat manufacturer. For additional details refer to the corresponding variable in the Occupant Form section.

Avoidance Equipment Activation Summary

Screen Name: Avoidance Equipment Activation
SAS Data Set: *N/A*
SAS Variable: *N/A*
Database Name: *N/A*

Element Attributes**Range****Source**

Rolled up from Exterior form.

Remarks

The table is generated (when applicable) based on Exterior Form coding and includes avoidance equipment type, avoidance equipment available, and avoidance equipment activation. For additional details refer to the corresponding variable in the Exterior Form section.

Crash Events Overview

A “crash” is the total set of one or more “events” that result from an unstabilized situation such that at least one harmful event occurs not directly resulting from a cataclysm. The crash is concluded in time when all events that originated from the unstabilized situation have stabilized.

A crash is considered applicable to the CISS if one of its events resulted in harm and that event involved an in-transport CISS-applicable vehicle that was reported on a police report as being towed from the scene of the crash.

Harm can be either an impact or a noncollision event. An impact is defined as any vehicle-to-vehicle or vehicle-to-object (fixed or non-fixed, stationary or non-stationary) contact that results in vehicle damage, injury, or property damage. Noncollision events such as fire/explosion, occupant fell from vehicle, occupant injury without vehicle impact, etc., are included in these variables.

Below are some examples of non-qualifying events and the technician should not include them in the crash sequence.

Exclude events such as:

- Not in-transport vehicle strikes pedestrian, pedalcyclist, or other nonmotorist.
- Not in-transport vehicle strikes an object (fixed or non-fixed).
- Not in-transport vehicle strikes other not-in-transport vehicle.
- Pedestrian (pedalcyclist, other nonmotorist) strikes an object.
- Pedestrian (pedalcyclist, other nonmotorist) strikes a not-in-transport vehicle.
- Pedestrian, pedalcyclist, or other nonmotorist inter-impact.

The crash events variables are designed to provide descriptions of all qualifying events that occurred in the crash sequence. Events are listed in chronological sequence. In events involving impacts with objects, the object is identified subsequent to the vehicle. Code events as they occur during the crash sequence.

With this chronological sequence of qualified crash events in the CISS database, analysts can review the entire series of events involving motor vehicles. Various areas of concern to the highway safety community will be easily assessed using these variables. For instance, the injury severity in crashes can be assessed relative to the number and type of impacts involved.

Likewise, certain collision configurations may create a greater hazardous condition for the occupants. A possible area of analysis would be the mix of vehicle classes or the types of objects the vehicles strike.

Complete these variables based upon an accurate and complete reconstruction of the vehicle dynamics involved in the crash.

An example of a crash sequence follows.

Vehicle 1 (a compact passenger car) went out of control on a wet roadway and struck a median guardrail with its front (Event 1). The vehicle was redirected by the guardrail and reentered the roadway, where it struck vehicle 2 (a large pickup truck) (Event 2) in the left side with its front. Vehicle 1 spun to a stop in the roadway. During Event 2 the driver hit his head on the door pillar, breaking his neck (not a coded event). Vehicle 2, out-of-control, ran off the roadway and struck a pedestrian with its front (Event 3).

Note: For the driver of Vehicle 1, breaking his neck is not a separate codeable event. Rather, this injury, and almost all occupant injuries resulting from occupant interior contact, is a result of a collision event. In order for an event to be considered a rollover, the vehicle must rotate 90° or more about any true longitudinal or lateral axis.

Event Number

Screen Name: **Event No**
SAS Data Set: **EVENT**
SAS Variable: **EVENTNO**
Database Name: **CISS.CISS.EVENT.SEQNUM**

Element Attributes

As assigned

Source

Technician-determined

Remarks

The technician selects “Add Event”; this opens a new detail tab for each event. This number is automatically assigned by the application as each event is entered. The events will be displayed in chronological sequence. The technician must enter the events in proper order.

Vehicle Number

Screen Name: **Vehicle**
SAS Data Set: **EVENT**
SAS Variable: **VEHNUM**
Database Name: **CISS.CISS.EVENT.VEHID**

Element Attributes

As entered into Case Form/Structure/Case Summary/Total All Vehicles

Source

Technician-determined by selecting the vehicle from the drop-down list.

Remarks

Vehicle numbers must be consecutive beginning with “1.” Vehicle numbers are rolled up from those listed in the vehicle tab. A vehicle may be listed in more than one event.

Class of Vehicle

Screen Name: **Class of Vehicle**
 SAS Data Set: **EVENT**
 SAS Variable: **CLASS1**
 Database Name: **CISS.CISS.VEH.VEHCLASS**

Element Attributes

Database	SAS	
0	0	Not a motor vehicle
1	1	Subcompact/mini (wheelbase < 254 cm)
2	2	Compact (wheelbase 254 but < 265 cm)
3	3	Intermediate (wheelbase >=265 but < 278 cm)
4	4	Full size (wheelbase >=278 but < 291 cm)
5	5	Largest (wheelbase >=291 cm)
9	9	Unknown passenger car size
14	14	Compact utility vehicle
15	15	Large utility vehicle (<= 4,536 kg GVWR)
16	16	Utility station wagon (<=4,536 kg GVWR)
19	19	Unknown utility type
20	20	Minivan (<=4,536 kg GVWR)
21	21	Large van (<=4,536 kg GVWR)
24	24	Van-based school bus (<=4,536 kg GVWR)
28	28	Other van type (<=4,536 kg GVWR)
29	29	Unknown van type (<=4,536 kg GVWR)
30	30	Compact pickup truck (<=4,536 kg GVWR)
31	31	Large pickup truck (<=4,536 kg GVWR)
38	38	Other pickup truck (<=4,536 kg GVWR)
39	39	Unknown pickup truck type (<=4,536 kg GVWR)
45	45	Other light truck (<=4,536 kg GVWR)
48	48	Unknown light truck type (<=4,536 kg GVWR)
49	49	Unknown light vehicle type
50	50	School bus (excludes van-based) (> 4,536 kg GVWR)
58	58	Other bus (> 4,536 kg GVWR)
59	59	Unknown bus type
60	60	Truck (> 4,536 kg GVWR)
67	67	Tractor without trailer
68	68	Tractor - trailer
78	78	Unknown medium/heavy truck type
79	79	Unknown light/medium/heavy truck type

Database	SAS	
80	80	Motored cycle
90	90	Other vehicle
99	99	Unknown

Source

This variable is derived from application inputs from the GV Form/Vehicle and Specifications Tab.

Remarks

This variable is the same variable that appears in the Identification section of the Vehicle Tab on the General Vehicle Form and Vehicle Exterior Form.

Subcompact/mini (wheelbase < 254 cm)

Choose based upon wheelbase

Compact (wheelbase >= 254 but < 265 cm)

Choose based upon wheelbase

Intermediate (wheelbase >= 265 but < 278 cm)

Choose based upon wheelbase

Full size (wheelbase >= 278 but < 291 cm)

Choose based upon wheelbase

Largest (wheelbase >= 291 cm)

Choose based upon wheelbase

Unknown passenger car size

Used when it is known that a vehicle is a passenger car but the wheelbase is unknown.

Compact utility vehicle

Refers to vehicle models defined as **Compact utility** under Body Type. Use this attribute if the size of the utility vehicle is unknown.

Large utility vehicle (<= 4,536 kg GVWR)

Refers to vehicle models defined as **Large utility** under Body Type. Refers to full-size multipurpose vehicles primarily designed around a shortened pickup truck chassis. While generally a station wagon body style, some models are equipped with a removable top.

Utility station wagon (<= 4,536 kg GVWR)

Refers to vehicle models defined as **Utility station wagon** under Body Type. Refers primarily to a pickup truck-based chassis enlarged to a station wagon.

Unknown utility type

Is defined as **Utility, unknown body type** under Body Type. This attribute is used when it is known that the vehicle is a utility vehicle, but there is insufficient data to determine the specific type.

Minivan (<= 4,536 kg GVWR)

Refers to vehicle models defined as **Minivan** under Body Type. Refers to down-sized passenger or cargo vans.

Large van (<= 4,536 kg GVWR)

Refers to vehicle models defined as **Large van** under Body Type. Refers to a standard size cargo or passenger van.

Van-based school bus (<= 4,536 kg GVWR)

Is a passenger van designed to carry students (passengers) to and from educational facilities and/or related functions. The vehicles are characteristically painted yellow and clearly identified as school buses. Use this attribute regardless of whether the vehicle is owned by a school system or a private company. Van-based school buses converted for other uses (e.g., church bus) also take this attribute. Refers to vehicles defined as **Van-based school bus** under Body Type.

Other van type (<= 4,536 kg GVWR)

Refers to vehicle models defined as **Step van or walk-in van, Van-based motorhome, Van-based other bus and code Other van type** under Body Type.

Unknown van type (<= 4,536 kg GVWR)

Used when it is known that this vehicle is a light van, but its specific type cannot be determined. Refers to vehicles described as **Unknown van type** under Body Type.

Compact pickup truck

Refers to vehicle models defined as attributes of **Compact pickup truck** in Body Type. Used to describe a pickup truck having a width of 178 cm or less.

Large pickup truck

Refers to vehicle models defined as **Large pickup truck** under Body Type. Used to describe a pickup truck having a width greater than 178 cm.

Other pickup truck (<= 4,536 kg GVWR)

Refers to vehicle models defined as **Pickup with slide-in camper** and **Convertible pickup** under Body Type.

Unknown pickup truck (<= 4,536 kg GVWR)

Refers to vehicle models defined as **Unknown pickup-style light conventional truck type** under Body Type.

Other light truck (<= 4,536 kg GVWR)

Refers to vehicle models defined as **Cab, chassis-based (includes rescue vehicles, light stake, dump, and tow truck), Truck-based panel, Light truck-based motorhome (chassis mounted), and Other light conventional truck type** under Body Type.

Unknown light truck type

Refers to vehicle models defined as **Unknown light truck type** under Body Type.

Unknown light vehicle type (automobile, utility, van, or light truck)

Refers to vehicle models defined as **Unknown light vehicle type (automobile, utility, van, or light truck)** under Body Type.

School bus (excludes van-based) (> 4,536 kg GVWR)

Refers to those vehicle models defined as **School bus (designed to carry students, not cross country or transit)** under Body Type.

Other bus (>4,536 kg GVWR)

Describes those vehicle models included in **Other bus type (e.g., transit, intercity, bus-based motorhome)** under Body Type.

Unknown bus type

Refers to those vehicle models described as **Unknown bus type** under Body Type.

Truck (> 4,536 kg GVWR)

Is defined under Body Type, as **Step van (>4,536 kg GVWR), Single unit straight truck (4,536 kg < GVWR = 8,845), Single unit straight truck (8,845 kg < GVWR = 11,793), Single unit straight truck (>11,793 kg GVWR), Single unit straight truck, GVWR unknown and Medium/heavy truck-based motorhome.**

Tractor without trailer

Refers to **Truck-tractor with no cargo trailer** under Body Type.

Tractor-trailer

Is defined in attributes **Truck-tractor pulling one trailer, Truck-tractor pulling two or more trailers** and **Truck-tractor (unknown if pulling trailer)** under Body Type.

Unknown medium/heavy truck type

Used when the only available information indicates a truck of medium/heavy size. Refer to **Unknown medium/heavy truck type** under Body Type.

Unknown truck type (light/medium/heavy)

Refers to those vehicles described by **Unknown truck type (light/medium/heavy)** under Body Type.

Motored cycle

Refers to Body Type, **Motorcycle, Moped (motorized bicycle), 3-wheel motorcycle or moped, Other motored cycle (minibike, motorscooter)** and **Unknown motored cycle type**.

Other vehicle

Refers to all vehicles described by **ATV (All-Terrain Vehicle)** and **ATC (All-Terrain Cycle), Snowmobile, Farm equipment other than trucks,** or **Other vehicle type** under Body Type.

Unknown

Used when there is a lack of information regarding the type of vehicle. This lack of information prohibits the accurate classification of this vehicle using one of the preceding codes. This attribute is equivalent to Body Type, **Unknown body type**.

General Area of Damage

Screen Name: **General Area of Damage**
 SAS Data Set: **EVENT**
 SAS Variable: **GAD1**
 Database Name: **CISS.CISS.EVENT.AREADAMAGE**

Element Attributes

Database	SAS	
2	N	Noncollision
9	9	Unknown

CDC Applicable and Other Vehicles

Database	SAS	
3	F	Front
4	R	Right side
5	L	Left side
6	B	Back
7	T	Top
8	U	Undercarriage

TDC Applicable Vehicles

Database	SAS	
20	F	Front
21	R	Right side
22	L	Left side
19	B	Back of unit with cargo area (rear of trailer or straight truck)
16	D	Back (rear of tractor)
17	C	Rear of cab
18	V	Front of cargo area
23	T	Top
24	U	Undercarriage
25	N	Noncollision

Source

Technician-determined

Remarks

Angled Horizontal Impacts (corner impact): Angled impacts initially involving the corner area and then extending into the front and side or rear and side area are difficult to classify. These impacts should be classified “F,” “B,” “L,” or “R” in accordance with the following guidelines (listed in **order of descending priority**):

1. If the projected area of initial contact can be determined, use the appropriate character.
2. If the projected area of initial contact cannot be determined, use the direction of principal force to determine the appropriate character. If the direction of force is less than 45 deg from the 12 o'clock or 6 o'clock directions, use “F” or “B.” If the direction of force is greater than 45 deg, use “L” or “R.”
3. If the direction of force cannot be determined with sufficient accuracy, use the projected area of greatest contact to determine the appropriate character. If the length of contact across the front or rear of the vehicle exceeds the length of contact along the side, use “F” or “B.” Use “L” or “R” if the length of contact along the side is greater.

Rollover Configurations: Similar consideration should be given to top versus side deformation in a rollover sequence. In the latter circumstance, however, principal emphasis is given to the projected area of primary contact (that is, area of greatest overall deformation) rather than initial contact. Also, damage to the greenhouse area (“P” in Column 4) is given priority over other vehicle areas such as “F” and “B.” Contact damage is classified in accordance with the following guidelines (listed in **order of descending priority**):

1. If the projected area of primary contact can be determined, use the appropriate character.
2. If the projected area of primary contact cannot be determined, use the angle of force in the vertical plane (above or below the horizontal clock face) to determine the appropriate character. If the direction of force is less than 45° from the vertical axis, use “T.” If the direction of force is greater than 45° from the vertical axis, use “L” or “R.”
3. If the direction of force cannot be determined with sufficient accuracy, use the projected area of greatest contact to determine the appropriate character. If the deformation area on the left or right side exceeds the deformation area on the top, use “L” or “R,” respectively. Use “T” if the deformation area is greater on the top.

Noncollision

Must be used whenever the corresponding Vehicle Number or Object Contacted Category is coded Noncollision.

Unknown

Must be coded when the General Area of Damage - on a vehicle is not known from any reliable source.

For vehicles that are CDC applicable (e.g., pickups, light vans, and passenger cars) the guidelines from J224MAR80 must be applied, and the attributes provided under the “CDC Applicable and Other Vehicles” category must be used. This includes rollovers.

For vehicles that are TDC applicable (i.e., medium/heavy trucks) use the guidelines and the attributes provided under the “TDC Applicable Vehicles” category.

Object Contacted

Screen Name: **Object Contacted**
 SAS Data Set: **EVENT**
 SAS Variable: **OBJCONT**
 Database Name: **CISS.CISS.EVENT.OBJECTCONTACT**

Element Attributes

Database	SAS	
01-30	01-30	Vehicle Number

Noncollision

Database	SAS	
31	31	Overturn - rollover (excludes end-over-end)
32	32	Rollover - end-over-end
33	33	Fire or explosion
34	34	Jackknife
35	35	Other intra-unit damage (specify):
36	36	Noncollision injury
38	38	Other noncollision (specify):
39	39	Noncollision - details unknown

Collision With Fixed Object

Database	SAS	
41	41	Tree (<= 10 cm in diameter)
42	42	Tree (> 10 cm in diameter)
43	43	Shrubbery or bush
44	44	Embankment
45	45	Breakaway pole or post (any diameter)
47	47	Cable barrier guardrail
48	48	Guardrail Face
49	49	Guardrail End
50	50	Non-breakaway pole or post (<= 10 cm in diameter)
51	51	Non-breakaway pole or post (> 10 cm but <= 30 cm in diameter)
52	52	Non-breakaway pole or post (> 30 cm in diameter)
53	53	Non-breakaway pole or post (diameter unknown)
54	54	Concrete traffic barrier
55	55	Impact attenuator
56	56	Other traffic barrier (specify):

Database	SAS	
57	57	Fence
58	58	Wall
59	59	Building
60	60	Ditch or culvert
61	61	Ground
62	62	Fire hydrant
63	63	Curb
64	64	Bridge
68	68	Other fixed object (specify):
69	69	Unknown fixed object

Collision with Non-fixed Object

Database	SAS	
72	72	Pedestrian
73	73	Cyclist or cycle
74	74	Other nonmotorist or conveyance (specify)
75	75	Vehicle occupant
76	76	Animal
77	77	Railway vehicle
78	78	Trailer, disconnected in-transport
79	79	Object fell from vehicle in-transport
88	88	Other non-fixed object (specify):
89	89	Unknown non-fixed object

Other event (specify)

Database	SAS	
98	98	Other event (specify):

Unknown event or object

Database	SAS	
99	99	Unknown event or object

Source

Technician-determined. Primary sources are the scene and vehicle inspections; secondary sources include the police report and interviewees.

Remarks**Vehicle Number**

If the object contacted by the vehicle under consideration was a motor vehicle, select the Vehicle Number assigned to that vehicle.

Noncollision

Crash circumstances, which result in nonimpact-related damage or harm.

Overturn — rollover (excludes end-over-end)

Used whenever a vehicle rolls over or overturns primarily about the longitudinal axis. This event is reported in the crash sequence variables on the Case Form. It is assumed a rollover will generally involve contact with the road surface or ground. In this situation, the object contacted is encoded **Overturn - rollover** and not **Ground**.

Rollover — end-over-end

Used whenever a vehicle rolls over or overturns primarily about the lateral axis of the vehicle.

Fire or explosion

Used whenever a vehicle fire or explosion occurs during the crash sequence or as a result of the crash.

Jackknife

Used whenever there is sufficient uncontrolled rotation (articulation) between a towing unit and a trailing unit such that they contact each other resulting in direct damage to the towing unit. Jackknife may occur to any vehicle that is pulling a trailing unit by a fixed linkage so long as the trailing unit and the pulling vehicle are capable of rotating (articulating) with respect to each other.

Other intra-unit damage (specify)

Used whenever there is sufficient uncontrolled motion (other than **Jackknife**) between a towing unit and a trailing unit such that they contact each other resulting in direct damage to the towing unit.

Noncollision Injury

Used when the event is a noncollision injury (e.g., fell from vehicle)

Other noncollision (specify)

Used only in consultation with the quality control center.

Noncollision — details unknown

Used when it is known that the event was a noncollision but specifics are not known.

Collision with fixed object

When a vehicle impacts a tree, shrubbery, bush, pole or post and causes the fixed object or any portion thereof to become dislodged or airborne such that the object or portion thereof subsequently falls on the vehicle, the appropriate object contacted attribute for the object in its dislodged or airborne state is the same as when the object was initially.

Tree (≤ 10 cm in diameter) and Tree (> 10 cm in diameter)

Refer to the diameter of the tree measured on the horizontal plane at the point of impact.

Shrubbery or bush

Refers to vegetation that is usually of a woody multi-stemmed variety and in most instances is low growing rather than tall. Some common examples are boxwood, hawthorn, and mountain laurel.

Embankment

Used only when damage or injury results from a vehicle striking an embankment.

Breakaway pole or post (any diameter)

Refers to a pole or post that is mounted on a base designed to readily disengage or fracture from a striking vehicle above a predetermined force level. A pole or post fitted with such a device is a breakaway pole or post; otherwise, it is a non-breakaway pole. Common types of breakaway bases are illustrated on the following pages.

Examples of breakaway poles or posts follow:

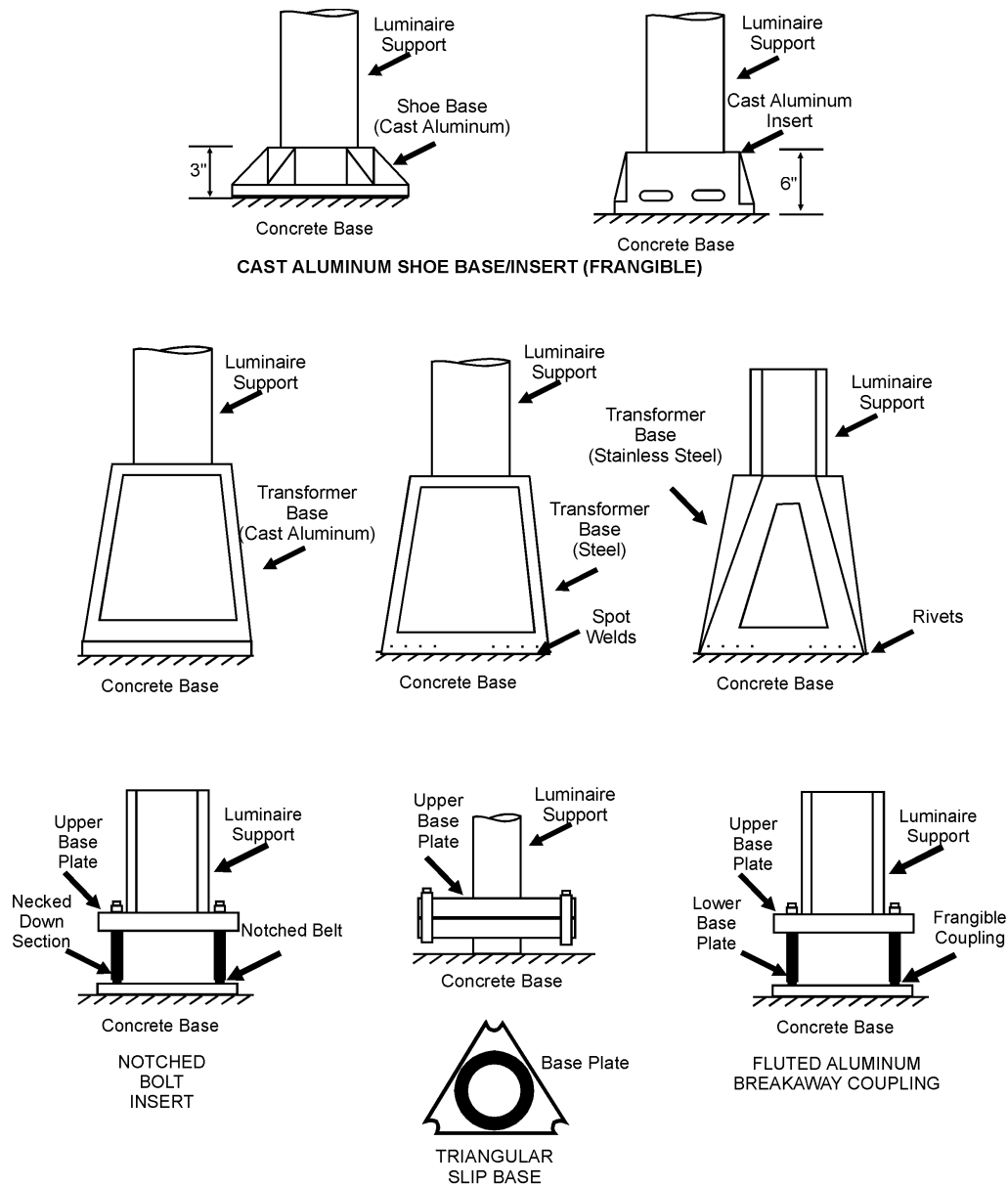


Figure 5. Breakaway pole or post (any diameter)

Concrete traffic barrier

Refers to the longitudinal traffic barriers constructed of concrete and located: on the outside of the road surface, in a median, or in gore areas. This includes all temporary concrete barriers regardless of location (e.g., temporary Jersey barrier on a bridge being used to control traffic during bridge repair/construction). Concrete walls (vertical side surfaces) do not apply here, see Wall. Below are a few of the common designs of concrete traffic barriers.

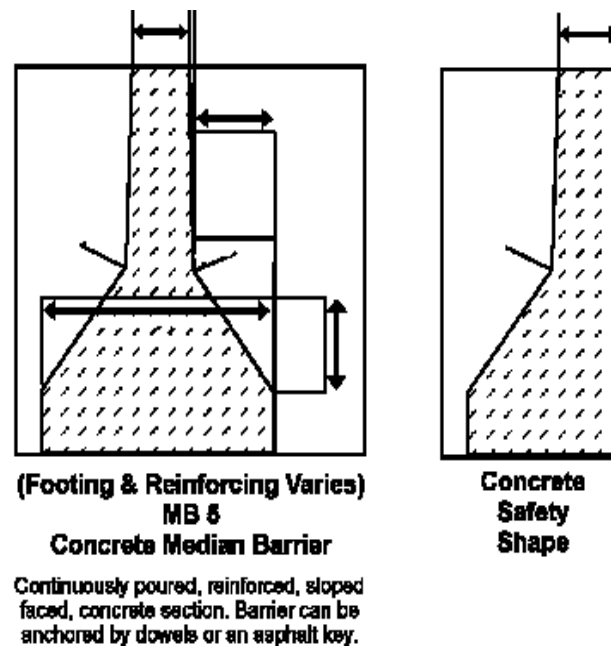


Figure 6. Common designs of concrete traffic barriers

Impact attenuator

Refers to crash cushions that are barriers placed in front of fixed objects on the highway to absorb energy, and thus, to mitigate the injury effects of collisions at such sites. A number of common impact attenuating devices may be encountered; therefore, be sure to photograph them when encountered.

Other traffic barrier (specify)

Refers to any type of barrier not described in the listed attributes.

Wall

Refers to solid, vertical faced, concrete, brick, stone, or other structurally sound roadside devices that may act as a traffic barrier in some locations. Do not confuse this attribute with **Fence** or **Building**. In most instances a wall will be backfilled with soil and will act as a vertically faced embankment.

Building

Used when the vehicle impacts a roofed and walled structure built for permanent use. The type of construction material used is not of interest, nor is the use of the building.

Fence

Includes both the fence material and the support posts.

Ditch or culvert

Refers to: (1) a man-made structure for drainage purposes, or (2) a man-made structure that allows passage over a drainage area and is that part of the structure that is intended to channel flow through the structure and maintain the stability/integrity of the road bed. If the culvert structure has a portion above the road surface that is of sufficient height to engage above the wheels of an errant CISS-applicable vehicle and redirect it, that part of the structure is considered an **Other traffic barrier**. When the sides of the ditch are approximately of equal height, it makes no difference that side of the ditch was struck; however, if the struck side is substantially higher than the other side, enter **Embankment** as the object contacted. Substantial means that an embankment exists with or without a ditch.

Ground

Refers to an impact with the ground. Collisions that may be classified using this attribute include (but are not limited to) vehicles that sustain undercarriage damage by (1) straddling the pavement and shoulder and striking a prominent pavement lip, or (2) free falls or vaults from the road surface to the ground.

Fire hydrant

Refers to the roadside device used by fire departments to provide water for fighting fires. Usually made of steel, these devices are also referred to as fire plugs or fire stand pipes in some areas.

Curb

Used when the vehicle contacts a raised element at the edge of a roadway. Curbs are used to: control drainage, act as deterrents to vehicles leaving the pavement at hazardous points, delineate the edge of the pavement, present a more finished appearance, and assist in the orderly development of the roadway edge. Often a curb serves two or more of these purposes.

Cable barrier guardrail

Refers to a guardrail consisting of 2 to 4 wire cables supported by cable mounts that are attached to steel posts.



Figure 7. Cable barrier guardrail

Guardrail Face

Refers to a cold formed standard W Section or thrie-beam of steel rigid beam elements bolted to posts usually with offset blocks.

Guardrail End

Refers to the end of a guardrail. Guardrails can have a separate flat or rounded piece of metal attached to the end of an expanse of guardrail face.



Figure 8. Guardrail end

Bridge

Encompasses all structural members of an overpass structure used for vehicular or pedestrian traffic. This attribute includes guardrails, permanent concrete barriers, bridge rail/walls, bridge piers, bridge abutments, bridge parapet ends, wing walls associated with bridge abutments, and support columns. Individual components of a bridge collectively become the bridge.

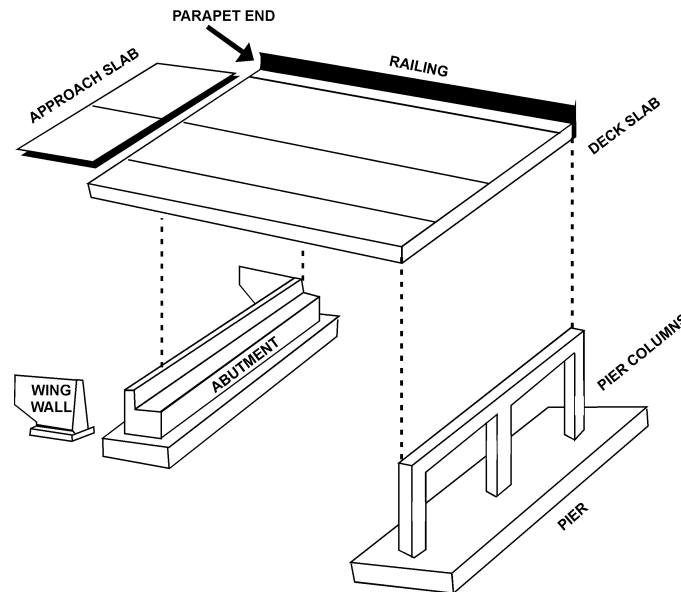


Figure 9. Bridge components

Other fixed object

Used for any other object of sufficient mass or anchored such that it is not readily movable; compare with **Other non-fixed object**. Examples include large boulders, large logs (fallen trees), etc.

Unknown fixed object

Used when it is known that the vehicle struck a fixed object, but the specific type of object is not known.

Non-Breakaway Pole or Post

When a vehicle impacts a tree, shrubbery, bush, pole, or post and causes the fixed object or any portion thereof to become dislodged or airborne such that the object or portion thereof subsequently falls on the vehicle, the appropriate object contacted attribute for the object in its dislodged or airborne state is the same as when the object was initially.

Pole or post (≤ 10 cm in diameter)

Refers to a pole or post whose diameter, when measured using the method shown above, is less than or equal to ten cm, and the pole or post is not mounted on a breakaway base.

Pole or post (> 10 but ≤ 30 cm in diameter)

Refers to a pole or post that is not mounted on a breakaway base and whose diameter is within the range specified.

Pole or post (> 30 cm in diameter)

Refers to poles or posts that are of the correct size and are not mounted on a breakaway base.

Pole, post — diameter unknown

Used for any pole or post, not on a breakaway base, of unknown diameter.

Use the words “pole” and “post” in a general sense and include all types of supports for utility lines, light standards, post-mounted mailboxes, warning devices, signs, and traffic control signals. Privately owned, as well as publicly owned, highway devices are included in these attributes. They may be made of wood, metal, or concrete and may have various cross-sectional shapes and dimensions. The pole or post must be nontemporary (i.e., have a permanent base or be anchored in the ground). Fence posts are not included in these attributes.

The following diagrams indicate the proper measurement for determining the “diameter” for use in coding pole/post:

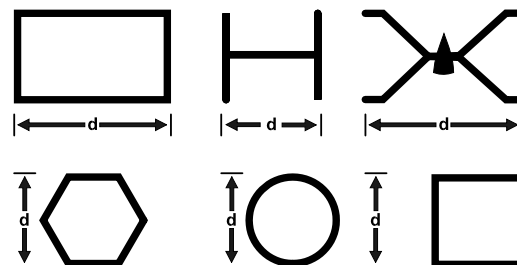


Figure 10. Proper measurement for determining the “diameter” for use in coding pole/post

Collision with non-fixed object**Pedestrian**

Defined as any person who is on a traffic way or on a sidewalk or path contiguous with a traffic way, and who is not in or on a nonmotorist conveyance (including a baby carriage, coaster wagon, ice skates, roller skates, push cart, scooter, skate board, skis, sled, wheelchair, rickshaw, etc.). This includes people who are in contact with the ground, roadway, etc., but who are holding onto a vehicle. A nonmotorist conveyance is defined as any human-powered device by which a nonmotorist may move, or by which a pedestrian or nonmotorist may move another nonmotorist, other than by pedaling. This includes those people in a nonmotorist conveyance who hold onto a motor vehicle in motion. Excluded are pedalcyclists.

Cyclist or cycle

Refers to any occupant of a pedalcycle, the cycle, or both. This includes those cyclists who hold onto a motor vehicle in motion.

Other nonmotorist or conveyance

Refers to a person who is not an occupant of a motor vehicle in-transport, a pedestrian, or a cyclist. A nonmotorist conveyance includes a baby carriage, coaster wagon, ice skates, roller skates, push cart, scooter, skate board, skis, sled, wheelchair, rickshaw, etc. This includes those people in a nonmotorist conveyance who hold onto a motor vehicle in motion. Excluded are pedalcyclists. Use this attribute if the impact was with a nonmotorist conveyance or a nonmotorist associated with a nonmotorist conveyance (if an animal is associated with this impact, see **Animal**). This attribute also would be used for the occupants of a motor vehicle not in-transport, but only if they become separated from the not in- transport vehicle.

Vehicle occupant

Used when the object contacted was any person who was an occupant of a motor vehicle in-transport; two examples follow. Use this attribute for an occupant who falls from a vehicle and is subsequently run over before stabilization occurred. In addition, use this attribute for any motorcyclist who separates from his/her motorcycle during impact and subsequently impacts a motor vehicle before stabilization occurred.

Animal

Used if the object contacted was an animal (stationary or nonstationary). Where a nonmotorist was associated with the animal (i.e., on the animal, or on or in an animal powered nonmotor vehicle transport device) use the following scheme. If the contact is to:

1. the animal; the animal and the person; the animal and the conveyance; or the animal, conveyance, and the person; use the attribute **Animal**;
2. the conveyance, or to the person, or to both the conveyance and the person, use the **Other nonmotorist or conveyance**.

Railway vehicle

Refers to any moving or non-moving vehicle that travels on rails. This includes vehicles that are dual purpose, i.e., a vehicle designed to use both road and rail, if at the time of the crash the vehicle is on rails. Examples include trolleys on rails and trains.

Trailer, disconnected in-transport

Used when the vehicle is contacted by or contacts a trailer that has become detached from its towing unit while the towing unit was in-transport. The type of trailer is not of interest; the only factors to consider are the detachment of the trailer and the transport status of the towing unit.

Object fell from vehicle in-transport

Used when the vehicle is contacted by or contacts an object that was being carried by or was attached to a vehicle in-transport but fell from or became detached from that vehicle, for example, a detached side mirror, spare tire, cargo, etc. Detached trailers are entered under trailer, disconnected in-transport.

Other non-fixed object

Refers to any moveable object that is either readily moveable or is moving and is not specifically named above. Examples include trash cans, grocery carts, unoccupied pedalcycles, small boulders, sheared poles, etc.

Other event (specify)

Used when an event occurs that cannot be classified using one of the existing attributes or definitions. A complete description should be given as well as describing the event in the Case Summary.

Unknown event or object

Used whenever the object contacted is not known or if an unknown event occurs and the technician cannot determine what the event consisted of and how to enter it.

Class of Vehicle Contacted

Screen Name: **Object Contacted-Class of Vehicle**
 SAS Data Set: **EVENT**
 SAS Variable: **CLASS2**
 Database Name: **CISS.CISS.EVENT.VEHCONTACTCLASS**

Element Attributes

Database	SAS	
0	0	Not a motor vehicle
1	1	Subcompact/mini (wheelbase <254 cm)
2	2	Compact (wheelbase <=254 but <265 cm)
3	3	Intermediate (wheelbase >=265 but <278 cm)
4	4	Full size (wheelbase >=278 but <291 cm)
5	5	Largest (wheelbase >=291 cm)
9	9	Unknown passenger car size
14	14	Compact utility vehicle
15	15	Large utility vehicle (<=4,536 kg GVWR)
16	16	Utility station wagon (<=4,536 kg GVWR)
19	19	Unknown utility type
20	20	Minivan (<=4,536 kg GVWR)
21	21	Large van (<=4,536 kg GVWR)
24	24	Van-based school bus (<=4,536 kg GVWR)
28	28	Other van type (<=4,536 kg GVWR)
29	29	Unknown van type (<=4,536 kg GVWR)
30	30	Compact pickup truck (<=4,536 kg GVWR)
31	31	Large pickup truck (<=4,536 kg GVWR)
38	38	Other pickup truck (<=4,536 kg GVWR)
39	39	Unknown pickup truck type (<=4,536 kg GVWR)
45	45	Other light truck (<=4,536 kg GVWR)
48	48	Unknown light truck type (<=4,536 kg GVWR)
49	49	Unknown light vehicle type
50	50	School bus (excludes van-based) (>4,536 kg GVWR)
58	58	Other bus (>4,536 kg GVWR)
59	59	Unknown bus type
60	60	Truck (>4,536 kg GVWR)
67	67	Tractor without trailer
68	68	Tractor - trailer
78	78	Unknown medium/heavy truck type
79	79	Unknown light/medium/heavy truck type

Database	SAS	
80	80	Motored cycle
90	90	Other vehicle
99	99	Unknown

Source

This variable is derived from application inputs from the GV Form/Vehicle and Specifications Tab.

Remarks

See the descriptions listed under Class of Vehicle.

Not a motor Vehicle

Used when an object is struck.

General Area of Damage of Vehicle Contacted

Screen Name: **Object Contacted-General Area of Damage**
 SAS Data Set: **EVENT**
 SAS Variable: **OBJCONT**
 Database Name: **CISS.CISS.EVENT.VEHCONTACTDAMAGE**

Element Attributes

Database	SAS	
1	0	Not a motor vehicle
2	N	Noncollision
9	9	Unknown

CDC Applicable and Other Vehicles

Database	SAS	
3	F	Front
4	R	Right side
5	L	Left side
6	B	Back
7	T	Top
8	U	Undercarriage

TDC Applicable Vehicles

Database	SAS	
20	F	Front
21	R	Right side
22	L	Left side
19	B	Back of unit with cargo area (rear of trailer or straight truck)
16	D	Back (rear of tractor)
17	C	Rear of cab
18	V	Front of cargo area
23	T	Top
24	U	Undercarriage

Source

Technician-determined

Remarks

The General Area of Damage (GAD) is determined by identifying the plane that sustained the primary overall damage pattern.

Not a motor Vehicle

Used when an object is struck.

Scene**Scene Diagram****Date Scene Completed (Month/Day/Year)**

Screen Name: **Scene Complete**
SAS Data Set: **N/A**
SAS Variable: **N/A**
Database Name: **CISS.CISS.SCENE.COMPLETED**

Element Attributes

Month:	01 to 12
Day:	01 to 31
Year:	Year

Source

Technician

Remarks

Enter the date that the required scene inspection (including field sketch) was completed.

Scene Files

Screen Name:

SAS Data Set: N/A

SAS Variable: N/A

Database Name: CISS.CISS.SCENE.FILENAME

Element Attributes**Source****Remarks**

This screen lists the files that have been uploaded. The date is also recorded when the file is uploaded.

Case Note

Screen Name: **Case Note**
SAS Data Set: **N/A**
SAS Variable: **N/A**
Database Name: **CISS.CISS.CASE_NOTE.NOTES**

Element Attributes**Source**

Technician

Remarks

This tab is a place for any notes relevant to the case.

Edit Checks

Screen Name: **Edit Checks**
SAS Data Set: **N/A**
SAS Variable: **N/A**
Database Name: **EDITCHECK.dbo.EDITCHECKRUNDETAIL**

Element Attributes**Source****Remarks**

This tab indicates all of the edit checks that are applicable to this case.

General Vehicle Form

General Vehicle Form Overview

The General Vehicle Form provides information for all motor vehicles involved in the case's harmful events.

The form is divided into several main tabs.

- Vehicle
- Specifications
- Official Records
- Precrash
- Driver
- Rollover
- Reconstruction
- Delta V
- Log

The **Vehicle** tab provides basic identification information regarding this vehicle, as well as the type of inspection completed. The amount of information completed on this form is determined by the vehicle type:

- CISS in-transport: All tabs are completed.
- CISS not in-transport, optionally inspected: Vehicle and Specifications tabs only.
- Non-CISS vehicle: Vehicle, Official Records, Precrash, Driver, and Log tabs.

The **Specifications** tab lists the dimensions of the vehicle.

The **Official Records** tab lists information normally gleaned from the police report or medical records.

The **Precrash** tab provides information normally collected during the scene inspection. It details the different precrash characteristics of the roadway for this vehicle.

The **Driver** tab provides information about the movement of the vehicle during the precrash phase of the crash.

The **Rollover** tab provides information regarding any rollover a vehicle may have experienced during the crash. If no rollover event occurred for this vehicle, then all fields will be coded "No rollover."

The **Reconstruction** tab provides basic trajectory information regarding the vehicle.

The **Delta V** tab provides delta V information for the vehicle's highest-severity impact.

The **Log** tab includes management information regarding the case.

Vehicle Number

Screen Name: **Number**
SAS Data Set: **GV**
SAS Variable: **VEHNO**
Database Name: **CISS.CISS.VEH.VEHNUM**

Element Attributes

Generated Number

Range**Source**

Generated when vehicle is selected to open General Vehicle Form

Remarks

Vehicle Model Year

Screen Name: **Identification—Model Year**
SAS Data Set: **GV**
SAS Variable: **MODEL_YR**
Database Name: **CISS.CISS.VEH.MODEL_YEAR**

Element Attributes

Database	SAS	
	1900	current data collection year plus one
-9999	9999	Unknown

Range

1900 - current year+1

Source

Primary source is the VIN during vehicle inspection; secondary sources include the police report and interviews.

Remarks**Unknown**

Used if the vehicle model year cannot be determined.

Vehicle Make

Screen Name: **Identification—Make**
SAS Data Set: **GV**
SAS Variable: **Make**
Database Name: **CISS.CISS.VEH.Make**

Element Attributes

Database	SAS	
		Vehicle Make-as Used
99	99	Unknown manufacturer

Source

Vehicle inspection, police report, and interview

Remarks

Select the vehicle make for this vehicle. Make Model list is in the Appendix.

Unknown

Used for a “hit-and-run” vehicle unless reliable evidence indicates the make of the vehicle.

Vehicle Model

Screen Name: **Identification—Model**
SAS Data Set: **GV**
SAS Variable: **MODEL**
Database Name: **CISS.CISS.VEH.MODEL**

Element Attributes

Database	SAS	
		Vehicle Model-as Used
999	999	Unknown

Source

Vehicle inspection, police report, and interview

Remarks

Select the vehicle model for this vehicle. Make Model list is in the Appendix.

Unknown

Used for a “hit-and-run” vehicle unless reliable evidence indicates the model of the vehicle.

Vehicle Body Category

Screen Name: **Body Category**
 SAS Data Set: **GV**
 SAS Variable: **BODYCAT**
 Database Name: **CISS.CISS.VEH.BODYCAT**

Element Attributes

Database	SAS	
1	1	Automobiles
2	2	Automobile derivatives
3	3	Utility vehicles
4	4	Van-based light trucks
5	5	Light conventional trucks
6	6	Other light trucks
7	7	Buses (excludes van-based GVWR ≤ 4,536 kg)
8	8	Medium/heavy trucks
9	9	Motored cycles
10	10	Other vehicles
11	11	Motor homes
-9999	99	Unknown body type

Source

Vehicle inspection, police report, interview, VIN

Remarks**Automobiles**

These light vehicles referred to as automobiles, are designed primarily to transport passengers.

Automobile derivatives

This describes certain passenger cars that have been modified to perform cargo-related tasks.

Utility vehicles (< 4,536 kg GVWR)**Van-based light trucks (< 4,536 kg GVWR)****Light conventional trucks (pickup style cab, < 4,536 kg GVWR)**

350, 3500 series vehicle types are always considered a light truck.

Other light trucks (< 4,536 kg GVWR)

Other Light Trucks are used to describe vehicles that are based upon a conventional light pickup frame, but a commercial or recreational body has been affixed to the frame rather than a pickup box.

Buses (excludes van-based buses GVWR ≤ 4,536 kg)

Buses are defined as any medium/heavy motor vehicle designed primarily to transport large groups of passengers.

Medium/heavy trucks (> 4,536 kg GVWR)

Medium/Heavy Trucks describe a single unit truck specifically designed for carrying cargo on the same chassis as the cab. They pertain to a truck-tractor designed for towing trailers or semi-trailers. Although towing is their primary purpose, some truck-tractors are equipped with cargo areas located rearward of the cab. Excludes 350 and 3500 series regardless of GVWR.

Motored cycles (does not include all-terrain vehicles/cycles)**Other vehicles**

Other Vehicles describe all motored vehicles that are designed primarily for off-road use. It is also selected when the body type of the vehicle is unknown.

Body Type

Screen Name: **Body Type**
 SAS Data Set: **GV**
 SAS Variable: **BODYTYPE**
 Database Name: **CISS.CISS.VEH.BODYTYPE**

Element Attributes**CISS Applicable Vehicles**

Automobiles

Database	SAS	
01	01	Convertible (excludes sun-roof, T-bar)
02	02	2-door sedan, hardtop, coupe
03	03	3-door/2-door hatchback
17	17	3-door coupe
04	04	4-door sedan, hardtop
05	05	5-door/4-door hatchback
06	06	Station wagon (excluding van- and truck-based)
07	07	Hatchback, number of doors unknown
08	08	Sedan/hardtop, number of doors unknown
09	09	Other or unknown automobile type

Automobile Derivatives

Database	SAS	
10	10	Auto-based pickup (includes El Camino, Caballero, Ranchero, Brat, and Rabbit pickup)
11	11	Auto-based panel (cargo station wagon, auto-based ambulance or hearse)
12	12	Large limousine-more than four side doors or stretched chassis
13	13	3-wheel automobile or automobile derivative

Utility Vehicles (<=4,536 kg GVWR)

Database	SAS	
14	14	Compact Utility (Utility Vehicle Categories “Small” and “Midsize”) (examples include: 4-Runner, Amigo, Bravada, Bronco 76 and before, Bronco II, Cherokee 84 and after, Defender, Discovery, Dispatcher, Explorer, Geo Tracker, Golden Eagle, Grand Vitara, Jeep CJ-2 - CJ-7, Laredo, Montero, Mountaineer, Navajo, Passport, Pathfinder, Raider, RAV4, RX-

Database	SAS	
		300, Renegade, Rocky, Rodeo, S-10 Blazer, S-15 Jimmy, Samurai, Scrambler, Sidekick, Sportage, Thing, Trooper, Trooper II, Wrangler, Xterra, X-90)

Utility Vehicles (<=4,536 kg GVWR)

Database	SAS	
15	15	Large utility (ANSI D.16-2017 Utility Vehicle Categories and “Full Size” “Large”) (examples include: Bronco-full-size 78 and after, full-size Blazer, Expedition, full-size Jimmy, Hummer, Jeep Cherokee 83 and before, Durango, Escalade, Landcruiser, LX450, Navigator, Ramcharger, RangeRover, Scout, Tahoe, Trailduster, Yukon)
16	16	Utility station wagon (includes suburban limousines, Suburban, Travellall, Grand Wagoneer)
19	19	Utility, unknown body type

Van-Based Light Trucks (<=4,536 kg GVWR)

Database	SAS	
20	20	Minivan (Chrysler Town and Country, Caravan, Grand Caravan, Voyager, Voyager, Honda-Odyssey, etc.)
21	21	Large van-includes van-based buses (B150-B350, Sportsman, Royal Maxiwagon, Ram, Tradesman, etc.)
22	22	Step van or walk-in van (<=4,536 kg GVWR)
28	28	Other van type (Hi-Cube Van, Kary)
29	29	Unknown van type

Light Conventional Trucks (Pickup-style cab, <=4,536 kgs GVWR)

Database	SAS	
33	33	Convertible pickup
34	34	Light pickup
39	39	Unknown (pickup style) light conventional truck type

Other Light Trucks (<=4,536 kgs GVWR)

Database	SAS	
40	40	Cab chassis based (includes rescue vehicles, light stake, dump, and tow truck)
41	41	Truck based panel
42	42	Light-truck-based motorhome (chassis-mounted)

Database	SAS	
45	45	Other light conventional truck type
48	48	Unknown light truck type
49	49	Unknown light vehicle type (automobile, utility, van, or light truck)

Other Vehicles

Buses (Excludes Van Based-Based $\geq 4,536$ kg GVWR)

Database	SAS	
50	50	School bus
51	51	Cross country/intercity bus
52	52	Transit bus (city bus)
55	55	Van-based bus GVWR > 10,000 lb
58	58	Other bus type
59	59	Unknown bus type

Medium/Heavy Trucks (> 4,536 kg GVWR)

Database	SAS	
60	60	Step van (>10,000 lb GVWR)
61	61	Single-unit straight truck or cab-chassis (10,000 lb < GVWR < = 19,500 lb)
62	62	Single-unit straight truck or cab-chassis (19,500 lb < GVWR < or =26,000 lb)
63	63	Single-unit straight truck or cab-chassis (GVWR > 26,000 lb)
64	64	Single unit straight truck, GVWR unknown
65	65	Medium/heavy truck-based motorhome
66	66	Truck-tractor (cab only, or with any number of trailing unit; any weight)
67	67	Medium/heavy pickup (>10,000 lb GVWR)
78	78	Unknown medium/heavy truck type

Unknown truck type (light/medium/heavy)

Database	SAS	
79	79	Unknown truck type (light/medium/heavy)

Motored Cycles (Does Not Include All-Terrain Vehicles/Cycles)

Database	SAS	
80	80	Motorcycle
81	81	Moped (motorized bicycle)
82	82	3-wheel motorcycle or moped - not all-terrain vehicle
83	83	Off-road motorcycle (2-wheel)
84	84	Motor scooter
85	85	Unenclosed 3-wheel motorcycle/unenclosed autocyce (1 rear wheel)
86	86	Enclosed 3-wheel motorcycle/enclosed autocyce (1 rear wheel)

Source

Vehicle inspection, police report, and interview

Remarks

If the GVWR cannot be determined, assume it is less than 4,536 kg. The vehicle stays the same GVWR as it was sampled.

Automobiles

These light vehicles, referred to as automobiles, are designed primarily to transport passengers.

01 Convertible (excludes sun-roof, T-bar)

Refers to a passenger car equipped with a removable or retractable roof. To qualify for this attribute, the entire roof must open. Convertible roofs are generally fabric; however, removable hardtops are also included. This attribute takes priority over 2-door or 4-door attributes.

02 2-door sedan, hardtop, coupe

Refers to a passenger car equipped with two doors for ingress/egress and a separate trunk area for cargo (i.e., trunk lid hinged below the backlight). Folding rear seats do not necessarily violate the separate “trunk area” concept.

03 3-door/2-door hatchback

Refers to a passenger car equipped with two doors for ingress/egress and a rear hatch opening for cargo (i.e., hinged above the backlight). The cargo area is not permanently partitioned from the passenger compartment area.

17 3-door coupe

Refers to a passenger car equipped with three doors (two front seat and one rear seat) for ingress/egress and a separate trunk area for cargo (i.e., trunk lid hinged below the backlight). Folding rear seats do not necessarily violate the separate “trunk area” concept.

04 4-door sedan, hardtop

Refers to a passenger car equipped with four doors for ingress/egress and a separate trunk area for cargo (i.e., trunk lid hinged below the backlight). Folding rear seats do not necessarily violate the separate “trunk area” concept.

05 5-door/4-door hatchback

Refers to a passenger car equipped with four doors for ingress/egress and a rear hatch opening for cargo (i.e., hinged above the backlight). The cargo area is not permanently partitioned from the passenger compartment area.

06 Station wagon (excluding van- and truck-based)

Refers to a passenger car with an enlarged cargo area. The entire roof covering the cargo area is generally equal in height from front to rear and full height side glass is installed between the C and D-pillars. The rearmost area is not permanently partitioned from the forward passenger compartment area (e.g., “horizontal window shades” to hide cargo do not constitute partitions).

07 Hatchback, number of doors unknown

Refers to a passenger car with an unknown number of doors for ingress/egress and a rear hatch opening for cargo (i.e., hinged above the backlight). The cargo area is not permanently partitioned from the passenger compartment area.

09 Other or Unknown automobile type

Refers to any passenger car that cannot be described by other automobile attributes or it is known that the vehicle is a passenger car, but there is insufficient data to determine the type.

Automobile Derivatives

This describes certain passenger cars that have been modified to perform cargo-related tasks.

10 Auto-based pickup

Refers to a passenger car-based, pickup type vehicle (includes El Camino, Caballero, Ranchero, Brat, and Rabbit pickup). The roof area (and side glass) rearward of the front seats on a station wagon have been removed and converted into a pickup-type cargo box.

11 Auto-based panel

Refers to an automotive station wagon that may have sheet metal rearward of the B-pillar rather than glass (cargo station wagon, auto-based ambulance/hearse).

12 Large Limousine-more than four side doors or stretched chassis

Refers to an automobile that has sections added within its wheelbase (more than four side doors) or stretched chassis to increase length and passenger/cargo carrying capacity.

13 3-wheel automobile or automobile derivative

Refers to 3-wheel vehicles with an enclosed passenger compartment.

Utility Vehicles (<=4,536 kg GVWR)**Multi-purpose vehicles (MPV)**

Designed to have off-road capabilities. These vehicles are generally four-wheel drive (4 x 4), have increased ground clearance, and are equipped with a strong frame. Four-wheel drive automobiles are not considered MPVs.

14 Compact utility (utility Vehicle categories “Small” and “Midsize”)

Refers to a short wheelbase and narrow tracked multi-purpose vehicle designed to operate in rugged terrain. (examples include: 4-Runner, Amigo, Bravada, Bronco ‘76 and before, Bronco II, Cherokee ‘84 and after, Defender, Discovery, Dispatcher, Explorer, Geo Tracker, Golden Eagle, Grand Vitara, Jeep CJ-2 - CJ-7, Laredo, Montero, Mountaineer, Navajo, Passport, Pathfinder, Raider, RAV4, RX-300, Renegade, Rocky, Rodeo, S-10 Blazer, S-15 Jimmy, Samurai, Scrambler, Sidekick, Sportage, Thing, Trooper, Trooper II, Wrangler, Xterra, X-90)

15 Large utility (ANSI D.16-2017 utility vehicle categories and “Full Size” and “Large”)

Refers to full-size multi-purpose vehicles primarily designed around a shortened pickup truck chassis. While generally a station-wagon-style body, some models are equipped with removable tops (examples include: Bronco-full-size ‘78 and after, full-size Blazer, Expedition, full-size Jimmy, Hummer, Jeep Cherokee 83 and before, Durango, Escalade, Landcruiser, LX450, Navigator, Ramcharger, RangeRover, Scout, Tahoe, Trailduster, Yukon).

16 Utility station wagon (includes suburban limousines, Suburban, Travellall, Grand Wagoneer)

Refers primarily to a pickup-truck-based chassis enlarged to a station wagon (examples include: Chevrolet Suburban, Excursion, GMC Suburban, Travelall, Grand Wagoneer, includes suburban limousine).

19 Utility vehicle, unknown body type

Used when it is known that the vehicle is a utility vehicle, but there is insufficient data to determine the specific type. Class of Vehicle is entered as (Compact utility vehicle).

Van-Based Light Trucks (<=4,536 kg GVWR)

Light trucks (<=4,536 kg GVWR) are designed to maximize cargo/passenger area versus overall length. Basically a “box on wheels,” these vehicles are identifiable by their enclosed cargo/passenger area and relatively short (or non-existent) hood.

20 Minivan

Refers to down-sized cargo or passenger vans (examples include: Aerostar, Astro, Caravan, Expo Wagon, Grand Caravan, Grand Voyager, Lumina APV, Mazda MPV, Mini-Ram, Mitsubishi Minivan, Nissan Minivan, Odyssey, Previa, Quest, Safari, Sienna, Silhouette, Town and Country, Toyota Minivan, Toyota Van, Trans Sport, Vanagon/Camper, Venture, Villager, Vista, Voyager, Windstar).

21 Large van-includes van-based buses (B150-B350, Sportsman, Royal Maxiwagon, Ram, Tradesman, etc.)

Refers to a standard cargo or passenger van (examples include: B150-B350, Sportsman, Royal, Maxiwagon, Ram, Tradesman, Voyager 83 and before, E150-E350, Econoline, Clubwagon, Chateau, G10-G30, Chevy Van, Beauville, Sport Van, G15-G35, Rally Van, Vandura). These vans will generally have a larger capacity in both volume and GVWR.

22 Step-van or walk-in van (<= 10,000 lb GVWR)

Refers to a multi-stop delivery vehicle with a GVWR less than or equal to 4,536 kg. Examples are the Grumman LLV used by the U.S. Postal Service or the Aeromate manufactured by Utilimaster Motor Corporation.

28 Other van type (Hi-Cube Van, Kary)

Refers to a cargo or delivery van where that chassis and cab portions from the B-pillar forward of this vehicle are the same as in Minivans and Large Vans with a frame mounted cargo area unit added behind the driver/cab area, or if the van cannot be described as a Minivan, Large Van, Step-van or a Van-based motorhome. Annotate the van type when using this attribute. This attribute takes priority over Minivans and Large Vans.

29 Unknown van type

Used when it is known that this vehicle is a light van, but its specific type cannot be determined.

Light Conventional Trucks (Pickup-Style Cab, <=4,536 kg GVWR)

Light Conventional Trucks are used to describe vehicles commonly referred to as pickup trucks and some of their derivatives. These light trucks are characteristically designed with a small cab containing a single row of seats (extended cabs with additional seats are available for some models), a large hood covering a conventional engine placement, and a separate open box area (approximately 180 to 240 cm long) for cargo.

33 Convertible pickup refers to a pickup truck equipped with a removable or retractable roof. To qualify for this code, the entire roof must open. Convertible roofs are generally fabric; however, removable hardtops are also included. This code takes priority over compact and large pickups.

34 (Light pickup)

Refers to a single unit straight truck with a pickup body style and a GVWR of 10,000 lb or less.

39 Unknown pickup-style light conventional truck

Used when this vehicle is a light conventional trucks, but there is insufficient data to determine the specific attribute.

Other Light Trucks (<=4,536 kg GVWR)

Other Light Trucks are used to describe vehicles that are based upon a conventional light pickup frame, but a commercial or recreational body has been affixed to the frame rather than a pickup box.

40 Cab chassis-based (includes rescue vehicles, light stake, dump, and tow truck)

Used to describe a light vehicle with a pickup-style cab and a commercial (non-pickup) body attached to the frame. Included are pickup-based ambulances and tow trucks.

41 Truck-based panel

Used to describe a truck-based station wagon that has sheet metal rather than glass above the beltline rearward of the B-pillars.

42 Light truck-based motorhome (chassis-mounted)

Used to describe a frame-mounted recreational unit attached to a light van or conventional chassis.

45 Other light conventional truck type

Used for light conventional trucks that cannot be described elsewhere.

48 Unknown light truck type

Used when it is known that the vehicle is a light truck chassis-based vehicle but insufficient data exist to specify what type of light truck it is.

49 Unknown light vehicle type (automobile, utility vehicle, van, or light truck)

Used when it is known that the vehicle is a light vehicle, but insufficient data exists to specify what type of light truck it is.

Buses (excludes van-based)

Buses are defined as any medium/heavy motor vehicle designed primarily to transport large groups of passengers.

50 School bus

Designed to carry students, not cross country or transit, is a bus designed to carry passengers to and from educational facilities and/or related functions. The vehicles are characteristically painted yellow and clearly identified as school buses. Use this attribute

regardless of whether the vehicle is owned by a school system or a private company. School buses converted for other uses (e.g., church bus) also take this attribute.

51 Cross country/intercity bus

Describes a bus body type designed to travel long distances between cities (e.g., Greyhound).

52 Transit bus (city bus)

Describes a bus body type designed for public transportation typically within a city.

55 Van-based bus GVWR greater than 10,000 lb

Describes a bus body type built on a van-based chassis.

58 Other bus type

Describes a vehicle designed/converted to carry nine or more people, including the driver, not described by the attributes school bus, cross country/intercity bus, transit bus, or van-based bus. Examples include a specialized tour bus or bus-based motor home.

59 Unknown bus type

Used when it is known the transport device is a bus but there is insufficient data to choose between attributes School bus and Other bus type.

Medium/Heavy Trucks (> 4,536 kg GVWR)

Medium/Heavy Trucks describe a single unit truck specifically designed for carrying cargo on the same chassis as the cab.

They pertain to a truck-tractor designed for towing trailers or semi-trailers. Although towing is their primary purpose, some truck-tractors are equipped with cargo areas located rearward of the cab.

60 Step van (GVWR greater than 10,000 lb)

Defines a single unit enclosed body with a GVWR greater than 4,536 kg and an integral driver's compartment and cargo area. Step vans are generally equipped with a folding driver seat mounted on a pedestal and a sliding door for easy ingress/egress.

61 Single-unit straight truck or cab-chassis (10,000 lb < GVWR < or = 19,500 lb)

Describes a non-articulated truck designed to carry cargo. This vehicle can be described as a cab chassis or a cut away. The GVWR of the vehicle must exceed 4,536 kg and be less than or equal to 8,845 kg.

62 Single-unit straight truck or cab-chassis (19,500 lb < GVWR < or = 26,000 lb)

Describes a non-articulated truck designed to carry cargo. The GVWR of the vehicle must exceed 8,845 kg and be less than or equal to 11,793 kg.

63 Single-unit straight truck or cab-chassis (GVWR > 26,000 lb)

Describes a non-articulated truck designed to transport cargo with a GVWR in excess of 11,793 kg. Use this attribute if it is known that the GVWR of a single unit straight truck is greater than 4,536 kg but there is insufficient data to specify the type of single unit truck.

64 Single-unit straight truck or cab-chassis (GVWR unknown)

Used when the transport vehicle is a single unit straight truck but the GVWR is unknown.

65 Medium/heavy truck-based motorhome

Describes a recreational vehicle mounted on a single unit medium/heavy truck chassis.

66 Truck-tractor (cab only, or with any number of trailing unit; any weight)

Describes a fifth wheel equipped tractor-trailer power unit. The number of trailing units is not a consideration.

67 Medium/heavy pickup (>10,000 lb GVWR)

Describes a single-unit straight truck with a pickup body style with a GVWR greater than 10,000 lb. Examples include the Ford Super Duty 350, 450, or 550.

73 Camper or motorhome, unknown truck type

Used when it is known the vehicle is a camper or motor home, but the truck type is unknown.

78 Unknown medium/heavy truck type

Used when the only available information indicates a truck of medium/heavy size.

Unknown truck type (light/medium/heavy)**79 Unknown truck type (light/medium/heavy)**

Used when it is known that this vehicle is a truck, but there is insufficient data to classify the vehicle further.

Motored Cycles (does not include all-terrain vehicles/cycles)**80 Motorcycle**

Used when the vehicle is a 2-wheeled open (i.e., no enclosed body) vehicle propelled by an internal combustion engine. Motorcycles equipped with side cars also take this attribute.

81 Moped (motorized bicycle)

Used when the vehicle is a motorized bicycle capable of moving either by pedaling or by an internal combustion engine.

82 3-wheel motorcycle or moped - not all-terrain vehicle

Used when the vehicle is a 3-wheeled open vehicle propelled by an internal combustion engine or a 3-wheeled motorized bicycle capable of moving either by pedaling or by an internal combustion engine.

83 Off-road motorcycle (2-wheel)

Used when the vehicle is a 2-wheeled open vehicle propelled by a motor designed or built for off-road use only.

84 Motor scooter

A light 2-wheeled open motor vehicle on which the driver sits over an enclosed engine with legs together and feet resting on a floorboard.

85 Unenclosed 3-wheel motorcycle/unenclosed auticycle (1 rear wheel)

A large motorcycle with three wheels, configured with two front wheels and a saddle with handle bars or seat and a steering wheel but not completely enclosed.

86 Enclosed 3-wheel motorcycle/enclosed auticycle (1 rear wheel)

A large motorcycle with three wheels, configured with two front wheels, a seat and steering wheel and completely enclosed.

87 Unknown 3-wheel motorcycle type

Used when the vehicle is known to be a 3-wheel motorcycle but it is not known if attribute 82 (3-wheel Motorcycle (2 Rear Wheels)), 85 (Unenclosed 3-Wheel Motorcycle/Unenclosed Auticycle (1 Rear Wheel)), or 86 (Enclosed 3-Wheel Motorcycle/Enclosed Auticycle (1 Rear Wheel)) applies.

88 Other motored cycle type (mini-bikes, motor scooters, pocket motorcycles, “pocket bikes”)

Used when the vehicle in question does not qualify for attributes motorcycles, moped, three wheeled motorcycle or moped (e.g., motor scooter).

89 Unknown motored cycle type

Used when it is known that the vehicle is a motored cycle, but no further data is available.

Other Vehicles

Other Vehicles describe all motored vehicles that are designed primarily for off-road use.

90 ATV/ATC all-terrain cycle

Used for off-road recreational vehicles that cannot be licensed for use on public roadways. ATVs have 4 or more wheels and ATCs have 2 or 3 wheels. Generally, the tires have low pressure and wide profile (i.e., flotation/balloon).

91 Snowmobile

Refers to a vehicle designed to be operated over snow propelled by an internal combustion engine.

92 Farm equipment other than trucks

Refers to farming implements other than trucks propelled by an internal combustion engine (farm tractors, combines, etc.).

93 Construction equipment other than trucks (includes graders)

Refers to construction equipment other than trucks propelled by an internal combustion engine (bulldozer, road grader, etc.).

94 Low-speed vehicles (LSV)/neighborhood electric vehicles (NEV)

Refers to a vehicle that is designed for travel on secondary roads with speed limits equal to or less than 35 mph. LSVs can sometimes resemble golf carts but differ in that they must adhere to Federal Motor Vehicle Safety Standard (FMVSS) 500. Provisions of FMVSS 500 include the following.

The vehicle must have the following.

- Four wheels
- Top speed of at least 20 mph, but it cannot exceed 25 mph
- GVWR less than 3,001 lb
- Head, turn signal and tail lamps
- Reflex reflectors
- Parking brake
- Rear view mirrors
- Windshield
- Seat belts
- 17-character VIN

95 Golf cart

A motor vehicle that is designed and manufactured for operation on a golf course for sporting or recreational purposes. Golf carts or golf cars are different from code 94 (low-speed vehicle (LSV)/ neighborhood electric vehicle (NEV)) in that if they are manufactured to go less than 20 mph they are not subject to the FMVSS 500. As a result, golf carts will not have a 17-digit VIN. Golf carts will have a nonstandard serial number that may be reported in the case material. Also, typically golf carts will not have safety features required of LSVs/NEVs under the FMVSS like seat belts, head lights, turn signal and tail lamps, rear view mirrors, etc.

96 Recreational off-highway vehicle

ROVs are intended to be used on terrain similar to that on which all-terrain vehicles (ATVs) are used. ROVs are distinguished from ATVs by the presence of a steering wheel instead of a handle bar for steering, bench or bucket seats for the driver and passengers

instead of straddle seating, and foot controls for throttle and braking instead of levers located on the handle bar. In addition, ROVs have a rollover protective system (ROPS), restraint systems, and a maximum speed greater than 30 mph.

97 Other vehicle type

Used when the motorized vehicle in question does not qualify for Construction equipment other than trucks, farm equipment other than trucks, snowmobile, ATV (all-terrain vehicle) and ATC (all-terrain cycle) (go-cart, dune buggy, “kit” car, etc.).

98 Unknown vehicle type

Unknown Vehicle Type describes all motored vehicles where the body type cannot be differentiated among a light vehicle type, bus, medium/heavy truck, motored cycle, or any other motored vehicle type.

99 Unknown body type

Used when there is no available information regarding the type of vehicle. This lack of information prohibits the accurate classification of this vehicle within one of the preceding attributes.

Class of Vehicle

Screen Name: **Class of Vehicle**
 SAS Data Set: **GV**
 SAS Variable: **VEHCLASS**
 Database Name: **CISS.CISS.VEH.VEHCLASS**

Element Attributes

Database	SAS	
1	1	Subcompact/mini (wheelbase < 254 cm)
2	2	Compact (wheelbase ≥ 254 but < 265 cm)
3	3	Intermediate (wheelbase ≥ 265 but < 278 cm)
4	4	Full size (wheelbase ≥ 278 but < 291 cm)
5	5	Largest (wheelbase ≥ 291 cm)
9	9	Unknown passenger car size
14	14	Compact utility vehicle
15	15	Large utility vehicle (≤ 4,536 kg GVWR)
16	16	Utility station wagon (≤ 4,536 kg GVWR)
19	19	Unknown utility type
20	20	Minivan (≤ 4,536 kg GVWR)
21	21	Large van (≤ 4,536 kg GVWR)
24	24	Van-based school bus (≤ 4,536 kg GVWR)
28	28	Other van type (≤ 4,536 kg GVWR)
29	29	Unknown van type (≤ 4,536 kg GVWR)
30	30	Compact pickup truck (≤ 4,536 kg GVWR)
31	31	Large pickup truck (≤ 4,536 kg GVWR)
38	38	Other pickup truck (≤ 4,536 kg GVWR)
39	39	Unknown pickup truck type (≤ 4,536 kg GVWR)
45	45	Other light truck (≤ 4,536 kg GVWR)
48	48	Unknown light truck type (≤ 4,536 kg GVWR)
49	49	Unknown light vehicle type
50	50	School bus (excludes van-based) (> 4,536 kg GVWR)
58	58	Other bus (> 4,536 kg GVWR)
59	59	Unknown bus type
60	60	Truck (> 4,536 kg GVWR)
67	67	Tractor without trailer
68	68	Tractor - trailer
78	78	Unknown medium/heavy truck type
79	79	Unknown light/medium/heavy truck type

Database	SAS	
80	80	Motored cycle
90	90	Other vehicle
99	99	Unknown

Source

This variable is derived from application inputs from the GV Form/Vehicle and Specifications Tab.

Remarks

This variable is the same variable that appears in the Identification section of the Vehicle Tab on the General Vehicle Form and Vehicle Exterior Form.

Passenger Vehicles

Subcompact/mini (wheelbase < 254 cm)

Choose based upon wheelbase.

Compact (wheelbase >= 254 but < 265 cm)

Choose based upon wheelbase.

Intermediate (wheelbase >= 265 but < 278 cm)

Choose based upon wheelbase.

Full size (wheelbase >= 278 but < 291 cm)

Choose based upon wheelbase.

Largest (wheelbase >= 291 cm)

Choose based upon wheelbase.

Unknown passenger car size

Used when it is known that a vehicle is a passenger car but the wheelbase is unknown.

Utility Vehicles

Compact utility vehicle

Refers to vehicle models defined as Compact utility under Body Type. Use this attribute if the size of the utility vehicle is unknown.

Large utility vehicle (<= 4,536 kg GVWR)

Refers to vehicle models defined as Large utility under Body Type. Refers to full-size multipurpose vehicles primarily designed around a shortened pickup truck chassis. While generally a station wagon body style, some models are equipped with a removable top.

Utility station wagon (<= 4,536 kg GVWR)

Refers to vehicle models defined as Utility station wagon under Body Type. Refers primarily to a pickup truck-based chassis enlarged to a station wagon.

Unknown utility type

Is defined as Utility, unknown body type under Body Type. This attribute is used when it is known that the vehicle is a utility vehicle, but there is insufficient data to determine the specific type.

Van-Based Vehicles**Minivan (<= 4,536 kg GVWR)**

Refers to vehicle models defined as Minivan under Body Type. Refers to down-sized passenger or cargo vans.

Large van (<= 4,536 kg GVWR)

Refers vehicle models defined as Large van under Body Type. Refers to a standard size cargo or passenger van.

Van-based school bus (<= 4,536 kg GVWR)

Is a passenger van designed to carry students (passengers) to and from educational facilities and/or related functions. The vehicles are characteristically painted yellow and clearly identified as school buses. Use this attribute regardless of whether the vehicle is owned by a school system or a private company. Van-based school buses converted for other uses (e.g., church bus) also take this attribute refers to vehicles defined as Van-based school bus under Body Type.

Other van type (<= 4,536 kg GVWR)

Refers to vehicle models defined as Step van or walk-in van, Van-based motorhome, Van-based other bus and code Other van type under Body Type.

Unknown van type (<= 4,536 kg GVWR)

Used when it is known that this vehicle is a light van, but its specific type cannot be determined. Refers to vehicles described as Unknown van type under Body Type.

Pickup Trucks**Compact pickup truck**

Refers to vehicle models defined as attributes of Compact pickup truck in Body Type. Used to describe a pickup truck having a width of 178 cm or less.

Large pickup truck

Refers to vehicle models defined as Large pickup truck under Body Type. Used to describe a pickup truck having a width greater than 178 cm.

Other pickup truck (<= 4,536 kg GVWR)

Refers to vehicle models defined as Pickup with slide-in camper and Convertible pickup under Body Type.

Unknown pickup truck (<= 4,536 kg GVWR)

Refers to vehicle models defined as Unknown pickup-style light conventional truck type under Body Type.

Other light truck (<= 4,536 kg GVWR)

Refers to vehicle models defined as Cab, chassis-based (includes rescue vehicles, light stake, dump, and tow truck), Truck-based panel, Light truck-based motorhome (chassis mounted), and Other light conventional truck type under Body Type.

Unknown light truck type

Refers to vehicle models defined as Unknown light truck type under Body Type.

Unknown light vehicle type (automobile, utility, van, or light truck)

Refers to vehicle models defined as Unknown light vehicle type (automobile, utility, van, or light truck) under Body Type.

Bus**School bus (excludes van-based) (> 4,536 kg GVWR)**

Refers to those vehicle models defined as School bus (designed to carry students, not cross country or transit) under Body Type.

Other bus (>4,536 kg GVWR)

Describes those vehicle models included in Other bus type (e.g., transit, intercity, bus-based motorhome) under Body Type.

Unknown bus type

Refers to those vehicle models described as Unknown bus type under Body Type.

Medium/heavy truck**Truck (> 4,536 kg GVWR)**

Is defined under Body Type, as **Step van (>4,536 kg GVWR)**, **Single unit straight truck (4,536 kg < GVWR <= 8,845)**, **Single unit straight truck (8,845 kg < GVWR <= 11,793)**,

Single unit straight truck (>11,793 kg GVWR), **Single unit straight truck, GVWR unknown** and **Medium/heavy truck-based motorhome**.

Tractor without trailer

Refers to **Truck-tractor with no cargo trailer** under Body Type.

Tractor-trailer

Is defined in attributes **Truck-tractor pulling one trailer**, **Truck-tractor pulling two or more trailers** and **Truck-tractor (unknown if pulling trailer)** under Body Type.

Unknown medium/heavy truck type

Used when the only available information indicates a truck of medium/heavy size. Refer to **Unknown medium/heavy truck type** under Body Type.

Unknown truck type (light/medium/heavy)

Refers to those vehicles described by **Unknown truck type (light/medium/heavy)** under Body Type.

Motorcycle**Motored cycle**

Refers to Body Type, Motorcycle, Moped (motorized bicycle), 3-wheel motorcycle or moped, Other motored cycle (minibike, motor scooter) and Unknown motored cycle type.

Other vehicle

Refers to all vehicles described by ATV (All-Terrain Vehicle) and ATC (All-Terrain Cycle), Snowmobile, Farm equipment other than trucks, or Other vehicle type under Body Type.

Unknown

Used when there is a lack of information regarding the type of vehicle. This lack of information prohibits the accurate classification of this vehicle using one of the preceding codes. This attribute is equivalent to Body Type, Unknown body type.

Vehicle Identification Number

Screen Name: **Vehicle Identification Number VIN**
 SAS Data Set: **GV**
 SAS Variable: **VIN**
 Database Name: **CISS.CISS.VEH.VIN**

Element Attributes

000000000000000000	VIN not required on vehicle

Enter the entire or partial VIN, left justify

999999999999999999	Unknown

Source

Primary source is vehicle inspection; a secondary source is the police report.

Remarks

If a vehicle is inspected, the VIN must be obtained from the vehicle. The PCR may be used to obtain a VIN when a vehicle inspection is not obtained (i.e., non-tow CISS-applicable *and* WinSMASH is not applicable; or Body Category, equals **Buses, Medium/Heavy Trucks, Motorcycles, or Other Vehicles**.

Enter the entire VIN; leave “**blank**” any column that does not have a VIN character. If part of the VIN is missing or not decipherable, leave the missing or decipherable column blank. Use VIN Assist to check the VIN. Additionally, in CISSWeb the VIN can be checked on the GV Form by going to *Process/VIN Check Routine*.

000000000000000000

Enter a “0” in each position for vehicles not required to have a VIN. (e.g., go cart).

999999999999999999

If the entire VIN is unknown, or missing, enter a “9” in each position.

If the vehicle is a motor home or school bus, the vehicle chassis VIN is coded and the secondary manufacturer’s number should be annotated if indicated on the PCR.

If the vehicle is manufactured by the Ford Motor Company (prior to 1980) and the VIN begins or ends with a script, “*f*,” the “*f*” is not entered. Proceed to the next character, as in the example below.

VIN: *f*3 U 6 2 S 1 0 0 9 3 2 *f*

CODE: 3 U 6 2 S 1 0 0 9 3 2

In addition, if any hyphens, periods, or blank spaces are contained in the string of alphanumeric characters, ignore them as in the example below.

VIN: S M - E 3 0 7 6 4 2 1

CODE: S M E 3 0 7 6 4 2 1

Vehicle Special Use

Screen Name: **Vehicle Special Use**
 SAS Data Set: **GV**
 SAS Variable: **SPECUSE**
 Database Name: **CISS.CISS.VEH.SPECUSE**

Element Attribute

Database	SAS	
5	0	No special function
8	1	Taxi
12	10	Vehicle used for electronic ride-hailing (transportation network company)
11	2	Vehicle used as school bus
10	3	Vehicle used as other bus
4	4	Military
7	5	Police
1	6	Ambulance
2	7	Fire truck
6	8	Non-transport emergency services vehicle
3	9	Incident response
9	99	Unknown

Source

Technician-determined; primary source is the police report; secondary sources include vehicle inspection, and interviewees.

Remarks

No special use

Used when no source indicates or implies that this vehicle was applicable to any of the special uses listed below.

Taxi, vehicle used as school bus, and Vehicle used as other bus

Are “*this trip*” specific. The vehicle must be “on duty” as either a taxi or as a bus. External identification on the vehicle as a bus or taxi is not sufficient to determine its special use.

Taxi

Used when this vehicle was being used during this trip (at the time of the crash) on a “fee-for-hire” basis to transport people. Most of these vehicles will be marked and formally registered as taxis; however, vehicles that are used as taxis, even though they are not registered are included here. ***Taxis and drivers who are off-duty*** at the time of the crash ***are not included***.

Vehicle used for electronic ride-hailing (transportation network company)

Used when this vehicle was actively working for a transportation network company (TNC), such as Uber and Lyft, at the time of the crash. If the vehicle was off duty and in use as a personal vehicle, use code No Special Use. A TNC may also be called a Mobility Service Provider (MSP). Both apply here as they both connect paying passengers seeking transportation with vehicles/drivers via websites and mobile apps.

Vehicle used as school bus

Used if this motor vehicle (Body Type, need not equal School Bus) satisfies all of the following criteria:

- externally identifiable to other traffic units as a school/pupil transport vehicle. The vehicle may be equipped with flashing lights and/or a sway stop arm, and traffic may be required to stop for the vehicle when occupants enter or exit;
- operated, leased, owned, or contracted by a public or private school-type institution;
- whose occupants, if any, are associated with the institution; and,
- the vehicle is in operation at the time of the crash to and from the school or on a school-sponsored activity or trip.

Vehicle used as other bus

Used when this motor vehicle is designed for transporting more than 10 people and does not satisfy all of the above criteria of a school bus.

Military, police, ambulance, and fire truck or car

Are considered to be in use at all times. Special use means “in use” and not necessarily emergency use. External identification to the normal driving public is the sole criterion.

Military

Used for any vehicle that is owned by any of the Armed Forces regardless of body type. This attribute includes:

- military police vehicles;
- military ambulances;
- military hearses; and
- military fire vehicles.

Police

Refers to a vehicle equipped with police emergency devices (lights and siren) that is owned or subsidized by any local, county, State or Federal Government entity. The police vehicle is presumed to be in special use at all times, although not necessarily in “emergency use.” Vehicles not owned by a government entity that are used by law enforcement officers (e.g., undercover) are excluded.

Ambulance

Used for any readily identifiable (lights or markings) vehicles designed to transport sick or injured people. The ambulance is presumed to be in special use at all times, although not necessarily in “emergency use.”

Fire truck

Used for any readily identifiable (lights or markings) vehicles specially designed and equipped to respond to fire, hazmat, medical, and extrication incidents. This attribute includes medium and heavy vehicles such as engines, pumpers, ladder, platform aerial apparatus, heavy rescue vehicles, water tenders or tankers, brush or wilderness firefighting vehicles, etc. Privately owned vehicles, which are not in authorized use, even if equipped with lights, do not qualify (the volunteer firefighter’s vehicle).

Non-transport emergency services vehicle

Used for any readily identifiable (lights or markings) vehicles that do not meet the criteria for Ambulance or Fire Truck and are specially designed and equipped to respond to fire, hazmat, medical, and extrication incidents. This attribute includes light vehicles such as sedans, vans, SUVs, pickups, trucks, motorcycles, etc. Privately owned vehicles, which are not in authorized use, even if equipped with lights, do not qualify (the volunteer firefighter’s vehicle).

Incident response

Government vehicles typically equipped with a variety of tools, emergency medical equipment, traffic cones and control signs, absorbent material (for responding to spills), emergency and work lighting. These multi-purpose response units are intended to assist law enforcement, fire and rescue personnel with trafficway incident management.

Unknown

Used when no information is available to determine special use for this trip (e.g., a hit-and-run vehicle).

Transport Status

Screen Name: **Transport Status**
 SAS Data Set: **GV**
 SAS Variable: **TRANSTAT**
 Database Name: **CISS.CISS.VEH.TRANSPORT**

Element Attributes

Database	SAS	
1	1	In-transport
2	2	Not in-transport
3	3	Working vehicle

Range

Source

Technician-determined

Remarks

This is technician-determined and may not necessarily agree with the police report.

If the PCR has conflicting information regarding the vehicle's transport status, assume the vehicle is in-transport. For example: If the coded box indicates the vehicle was legally parked but the narrative states the vehicle was illegally parked, then consider this vehicle as in-transport.

If there is any doubt as to whether the vehicle is in-transport, notify your quality control center immediately.

If the PCR is unclear whether the motor vehicle is actually in the act of performing work at the time of the crash, the default is to consider the motor vehicle as **not** working. Careful attention must be taken to review the narrative, diagram and coded boxes, for an accurate determination.

In-transport

Used when it is determined that the vehicle is in-transport. This means the vehicle is in motion on a Trafficway or any part of the vehicle is within the boundaries of the roadway.

Examples of in-transport vehicles seen in CISS:

- A police vehicle used to indicate the roadway is closed due to a previous crash or the roadway is impassable because of a pothole or a tree fell across the roadway is considered to be in-transport. The portion of the roadway past the police vehicle is considered to be closed; that is, outside the trafficway.
- A cement truck depositing its load for a homeowner's driveway or walkway.
- Friendly neighbor using his pickup truck to plow the roadway in their neighborhood.
- A passenger vehicle located partially on the roadway and the shoulder.

Not in-transport

Used when it is determined that the vehicle is not in-transport. Not in-transport vehicles are defined as:

- Stationary vehicles outside the boundaries of the roadway.
- Vehicles in motion outside the trafficway.

Examples of Not In-Transport Vehicles:

- Lawn service truck spraying fertilizer, etc., across homeowner's lawn.
- Disabled passenger car pulled onto shoulder of roadway.
- Minivan parked on the street during the hours parking is allowed.
- Tractor plowing the corn field loses control and strikes the barn.

Working vehicle

Used when it is determined that the vehicle was in the act of performing highway construction, maintenance or utility work when it became involved in the crash. This "work" may be located within or outside the trafficway boundaries, including portions of the trafficway closed for construction. This code does not include private construction/maintenance vehicles, or vehicles such as garbage trucks, delivery trucks, taxis, emergency vehicles, tow trucks, etc.

Examples of working vehicles include:

- Asphalt/steam roller working in a highway construction zone paving the roadway or flattening dirt.
- State highway maintenance crew painting lane lines on the road, mowing grass on the roadside or median, repairing potholes, removing debris from the roadway, etc.
- Utility truck or a "cherry picker," performing maintenance on power lines along the roadway or maintaining a traffic signal.
- A private excavating company contracted by the State digging the foundation for a new overpass.
- A State, county, or privately owned snow plow, plowing ice/snow as part of a highway maintenance activity.
- Street sweeper sweeping the street.
- A vehicle in a mobile work convoy displaying arrow boards or other signaling devices warning motorists of the work activity.
- A law enforcement vehicle that is participating strictly in a stationary construction or mobile maintenance activity as a traffic slowing, control, signaling or calming influence.

Working vehicles do not include personal motor vehicles performing a "neighborly" activity (such as plowing the neighborhood streets). Additionally, vehicles not specifically contracted to AND in the act of performing highway construction, maintenance or utility work are excluded.

When the vehicle is not in the act of performing "work" and involved in a crash, these highway construction, maintenance or utility vehicles are not working vehicles and can be:

- In-transport when in motion or stopped on a roadway; or
- Not in-transport when stopped off the roadway.

Examples:

Example #1: A vehicle removing ice/snow from the roadway is involved in a crash with a motor vehicle off the roadway. Does this crash qualify for CISS?

Answer: The vehicle is considered to be a working vehicle and therefore, not in-transport. The motor vehicle off the roadway is also considered to be not in-transport. Therefore, this crash does not qualify for CISS.

Example #2: A highway maintenance vehicle is removing ice/snow from the roadway and strikes and kills a pedestrian. Does this crash qualify for CISS?

Answer: This crash does not qualify because the highway maintenance vehicle is considered a working motor vehicle and by definition is not in-transport as it was doing work at the time of the incident.

Example #3: A highway maintenance vehicle removing ice/snow from the roadway strikes a passenger vehicle also traveling on the roadway. The passenger vehicle sustains disabling damage and was towed from the scene of the crash. Does this crash qualify for CISS?

Answer: This crash qualifies because the passenger vehicle was in-transport and towed due to damage. This is a single vehicle crash.

Example #4: A passenger vehicle traveling along the roadway loses control and strikes a tractor plowing the corn field. Does this qualify for CISS?

Answer: This crash does indeed qualify for CISS. This is a single vehicle crash where the only vehicle involved in the crash is the passenger vehicle.

Vehicle Has Trailer

Screen Name: **Vehicle Has Trailer**
 SAS Data Set: **N/A**
 SAS Variable: **N/A**
 Database Name: **CISS.CISS.VEH.HASTRAILER**

Element Attributes

Database	SAS	
0		No
1		Yes
2		Unknown

Range**Source**

Technician-determined

Remarks

This is technician-determined and may not necessarily agree with the police report.

Remarks**No**

Used when no source indicates that the vehicle was pulling a trailer at the time of the crash.

Yes

Used when there is a positive indication that the vehicle was pulling a trailer at the time of the crash.

Unknown

Used when no source provides an indication whether or not the vehicle was towing a trailer at the time of the crash.

Curb Weight

Screen Name: **Weight - Curb Weight**
 SAS Data Set: **GV**
 SAS Variable: **CURBWT**
 Database Name: **CISS.CISS.VEH_SPEC.CURBWT**

Element Attributes

Curb weight of vehicle (kg)

Database	SAS	
-9999	999	Unknown

Range

450 – 100,000

Source

Technician-determined

Remarks

Enter this vehicle's curb weight.

Do not confuse the rated GVWR with the curb weight since it is likely to be significantly greater than the curb weight.

“Vehicle” is defined in this variable to mean the same vehicle identified under **Body Type**.

If the **vehicle model** is known, but the engine size is unknown (e.g., 6 or 8 cylinders), code the average between the high and low curb weights for the model and annotate that the “average” was reported.

When the vehicle specifications do not report the vehicle weight with the proper engine size, adjustments must be made. First, try to determine the weight differences from the vehicle specifications. If the weight difference cannot be determined from the specifications, then adjust as follows: 8 cyl. To 6 cyl. - subtract 100 lb/45 kg; 6 cyl. To 4 cyl. - subtract 75 lb/34 kg.

Add 100 lb/45 kg to the shipping weight to obtain a curb weight on all CISS-applicable vehicles.

Towed trailing units are considered cargo weight and not included in the vehicle curb weight.

Unknown

Used when the curb weight of this vehicle cannot be determined.

Source of Curb Weight Information

Screen Name: **Curb Weight Source**
 SAS Data Set: **GV**
 SAS Variable: **CURBSRC**
 Database Name: **CISS.CISS.VEH_SPEC.CURBWTSOURCE**

Element Attributes

Database	SAS	
1	1	AAMA
2	2	Automotive News
3	3	Branham Automobile Reference Book
6	4	Gasoline Truck, Import, Truck and Diesel Truck Index
4	5	Canadian Specifications (WINSPECS)
7	8	Other (specify)
5	9	Curb weight unknown

Source

Technician-determined

Remarks

The WINSPECS application should be consulted first. If the specification is not available in the Canadian Specifications then another resource may be used.

If no other information is available, data from brochures obtained from vehicle dealers may be used. In addition, manufacturer on-line specifications and internet resources, such as, carsdirect.com or Edmunds.com maybe used. Any source other than those listed above requires the source to be entered under the “**Other**” attribute with a specified source provided.

Additionally, annotate “**Other**” source used in the Case Note Tab. The source/link should be provided in the Case Note Tab.

Cargo Weight

Screen Name: **Weight - Cargo Weight**
 SAS Data Set: **GV**
 SAS Variable: **CARGOWT**
 Database Name: **CISS.CISS.VEH.CARGOWT**

Element Attributes

Cargo weight of vehicle (kg)

Database	SAS	
-9999	9999	Unknown

Source

Technician-determined — inputs include vehicle inspection, interview, PCR, tow yard operator

Remarks

If Towed Trailing Unit is Yes – towed trailing unit, then the weight of the trailer and its cargo is coded here. Cargo may also be located in the passenger compartment area and/or trunk.

If there is no cargo then enter the value as zero.

Do not include the weight of the occupants in the cargo weight. The weight of the occupants is included (along with cargo and vehicle curb weight) as a component of the single value that represents the vehicle's combined weight in the integrated WinSMASH Program, if used.

Cargo weight includes optional add-on equipment. Code cargo weight only if the total exceeds 100 lb.

Includes:

- Tools and tool boxes
- Construction equipment
- Lumber
- Luggage

Excludes:

- Weight of occupants

Unknown

Used if the cargo weight is unknown or if it is unknown if there is cargo in the vehicle.

Source of Cargo Weight Information

Screen Name: **Weight - Cargo Weight Source**
SAS Data Set: **GV**
SAS Variable: **CARGOSRC**
Database Name: **CISS.CISS.VEH.CARGOWTSOURCE**

Element Attributes

Database	SAS	
3	5	Non-CISS vehicle
7	1	Vehicle inspection
2	2	Interview
5	3	PCR
6	4	Tow yard operator
4	8	Other (specify)
1	9	Cargo weight unknown

Source

Technician-determined

Remarks

This reports the source from which the cargo weight was obtained.

Inspection Type

Screen Name: **Inspection - Type of Inspection**
 SAS Data Set: **GV**
 SAS Variable: **INSPTYPE**
 Database Name: **CISS.CISS.VEH.INSPECT**

Element Attributes

No inspection
Complete inspection
Partial inspection non-tow
Partial inspection partially repaired
Partial inspection - photos only
Partial inspection - other (specify)
Vehicle fully repaired

Source

Technician-determined

Remarks

This attribute reports the inspection type, or describes the primary reason that the vehicle was not inspected. Select the most appropriate attribute.

No Inspection

Used when no vehicle inspection is obtained.

Complete inspection

Used when a complete vehicle inspection is obtained. Both the exterior and interior must be completed on an un-repaired vehicle with all measurements and images obtained. Do not use this attribute for vehicles with missing components, or where applicable measurements cannot be obtained.

Partial inspection non-tow

Used for inspected non-towed vehicles. If the non-towed vehicle is under repair or completely repaired, do not use this attribute.

Partial inspection partially repaired

Used when an inspection is obtained, but components have been disassembled or repaired, preventing complete inspection.

Partial inspection-photos only

Used when outside source photographs are used. For further information refer to the NHTSA Field Crash Investigation Photography Protocols Manual (internal unpublished manual).

Partial inspection – other (specify)

Used when only partial inspection data are obtained for reasons not described above, e.g., a tow-truck took the vehicle away during the inspection, photos only inspection.

Vehicle fully repaired

Used when the inspected vehicle is completely repaired.

Date of Inspection

Screen Name:	Inspection-Date of Inspection
SAS Data Set:	N/A
SAS Variable:	N/A
Database Name:	CISS.CISS.VEH.INSPECTDATE

Element Attributes

Date that vehicle was inspected

Source

Technician-determined

Remarks

The inspection date is the date when a majority of the inspection is complete. This does not count unsuccessful attempts to locate the vehicle.

Specifications

Several sources for obtaining vehicle specifications information are listed below:

The WINSPECS application should be consulted first. If the specification is not available in the Canadian Specifications then another resource may be used.

Data from brochures obtained from vehicle dealers may be used. In addition, manufacturer on-line specifications and internet resources, such as, carsdirect.com or Edmunds.com maybe used. Any source other than those listed above requires the source to be entered under the “**Other**” attribute with a specified source provided.

Additionally, annotate “**Other**” source used in the Case Note Tab. The source/link should be provided in the Case Note Tab.

If a vehicle specification source cannot be located or does not appear reliable, the QCC has several additional resources listed below.

Passenger Vehicle Specifications

American Automobile Manufacturers Association of the U.S., Inc.

Automotive News

Crain Automotive Group, Inc.

Branham Automobile Reference Book

Branham Publishing Company

Gasoline Truck Index, Import Truck Index, and Diesel Truck Index

Truck Index, Inc.

If written vehicle specifications cannot be found, after consultation of the quality control center, the technician may take the measurements from an exemplar vehicle.

Wheelbase

Screen Name: **Original Specifications—Wheelbase**
SAS Data Set: **VEHSPEC**
SAS Variable: **WHEELBASE**
Database Name: **CISS.CISS.VEH_SPEC.WHEELBASE**

Element Attributes

Database	SAS	
		Enter to the nearest centimeter.
-9999	999	Unknown

Range

100 – 650 cm

Source

WINSPECS, vehicle specifications, exemplar vehicle

Remarks

The coding of this variable reflects the length of the vehicle's original or undamaged wheelbase to the nearest centimeter.

Unknown

Used when this vehicle's original wheelbase cannot be determined.

Overall Length

Screen Name: **Original Specifications—Overall Length**
SAS Data Set: **VEHSPEC**
SAS Variable: **OAL**
Database Name: **CISS.CISS.VEH_SPEC.LENGTH**

Element Attributes

Database	SAS	
		Enter to the nearest centimeter
-9999	999	Unknown

Range

100 – 850 cm

Source

WINSPECS, vehicle specifications, exemplar vehicle

Remarks

Enter the overall length of the vehicle, as determined from source material, to the nearest centimeter.

Any add-on equipment is excluded from the overall length of the vehicle (i.e., a pickup with an after-market bumper added).

Unknown

Used when this vehicle's original overall length cannot be determined.

Maximum Width

Screen Name: **Original Specifications - Maximum Width**
SAS Data Set: **VEHSPEC**
SAS Variable: **MAXWIDTH**
Database Name: **CISS.CISS.VEH_SPEC.WIDTH**

Element Attributes

Database	SAS	
		Enter to the nearest centimeter
-9999	999	Unknown

Range

100 – 350 cm

Source

WINSPECS, vehicle specifications, exemplar vehicle

Remarks

Enter the overall/maximum width of the vehicle, as determined from source material, to the nearest centimeter.

Unknown

Used when this vehicle's original overall width cannot be determined.

Weight DistributionScreen Name: **Original Specifications—Weight Distribution**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.VEH_SPEC.DISTRIBUTION****Element Attributes**

Database	SAS	
		Enter between 0% and 100%
-9999	9999	Unknown

Range

0-100%

Source

Vehicle Specifications

Remarks

Weight Distribution describes the percentage of vehicle weight supported by the front axle, and must be between 0% and 100%

Unknown

Used when this vehicle's original weight distribution cannot be determined.

Curb Weight

Screen Name: **Original Specifications—Curb Weight**
 SAS Data Set: **VEHSPEC**
 SAS Variable: **CURBWT**
 Database Name: **CISS.CISS.VEH_SPEC.CURBWT**

Element Attributes

Database	SAS	
		Curb weight of vehicle (kg)
-9999	9999	Unknown

Range

450 – 6,500

Source

Technician determined

Remarks

Enter this vehicle's curb weight.

Do not confuse the rated GVWR with the curb weight since it is likely to be significantly greater than the curb weight.

“Vehicle” is defined in this variable to mean the same vehicle identified under Body Type.

If the vehicle model is known, but the engine size is unknown (e.g., 6 or 8 cylinders), code the average between the high and low curb weights for the model and annotate that the “average” was reported.

When the vehicle specifications do not report the vehicle weight with the proper engine size, adjustments must be made. First, try to determine the weight differences from the vehicle specifications. If the weight difference cannot be determined from the specifications, then adjust as follows: 8 cyl. To 6 cyl. - subtract 100 lb/45 kg; 6 cyl. To 4 cyl. - subtract 75 lb/34 kg.

If a source material reports “shipping weight” add 100lb/45 kg to obtain a curb weight on all CISS-applicable vehicles.

Towed trailing units are considered cargo weight and not included in the vehicle curb weight.

Unknown

Is entered when the curb weight of this vehicle cannot be determined.

Average Track Width

Screen Name: **Original Specifications—Average Track**
 SAS Data Set: **VEHSPEC**
 SAS Variable: **TRACKWIDTH**
 Database Name: **CISS.CISS.VEH_SPEC.AVGTRACK**

Element Attributes

Database	SAS	
		Code to the nearest centimeter
-9999	999	Unknown

Range

100-200, 999

Source

WINSPECS, vehicle specifications, exemplar vehicle

Remarks

Enter the average track width of the vehicle to the nearest centimeter.

If vehicle specifications cannot be obtained, and there are no post-manufacture modifications, and there is no significant damage to the axles, then you can get the value from the case vehicle. Measure both undamaged track widths on the vehicle and record the average.

If an axle is damaged such that an average value cannot be determined, use the measurement of the undamaged axle as the average encoded value.

If both axles are significantly damaged record the value from an exemplar vehicle.

If the vehicle is equipped with dual rear wheels (i.e., some full-size pickup trucks) the track width is measured from the center of the space between the wheels on both sides.

Unknown

Used in the following situations:

- The axles are significantly damaged and there are no specifications available for this vehicle, and an exemplar vehicle was not measured.
- The axle is significantly damaged and there were post-manufacture modifications that would alter the track width.
- The measurements were not obtained from this vehicle or an exemplar vehicle and there are no specifications available.

Front Overhang

Screen Name: **Original Specifications—Front Overhang**
 SAS Data Set: **VEHSPEC**
 SAS Variable: **OVERHANG_FRT**
 Database Name: **CISS.CISS.VEH_SPEC.OVERHANGFRONT**

Element Attributes

Database	SAS	
		Code to the nearest centimeter
-9999	999	Unknown

Range

25-150, 999

Source

WINSPECS, vehicle specifications, undamaged measurements or an exemplar vehicle

Remarks

Enter the front overhang, as determined from source material, of the vehicle to the nearest centimeter.

Note: the technician should record, on the sketch page, the front and rear stringline measurements. These measurements will closely represent the original overhang measurements provided a reference line was established and the axles were not moved.

This measurement is required for all end impacts. If it is a side impact and the front overhang is not available use **Unknown**.

Unknown

Used in the following situations:

- The axles are significantly damaged and there are no specifications available for this vehicle, and an exemplar vehicle was not measured.
- The axle is significantly damaged *and* there were post-manufacture modifications that would alter the front overhang.
- The measurements were not obtained from this vehicle or an exemplar vehicle and there are no specifications available.

Rear Overhang

Screen Name: **Original Specifications—Rear Overhang**
SAS Data Set: **VEHSPEC**
SAS Variable: **OVERHANG_REAR**
Database Name: **CISS.CISS.VEH_SPEC.OVERHANGREAR**

Element Attributes

Database	SAS	
		Code to the nearest centimeter
-9999	999	Unknown

Range

25-200, 999

Source

WINSPECS, vehicle specifications, undamaged measurements or an exemplar vehicle.

Remarks

Enter the rear overhang, as determined from source material, of the vehicle to the nearest centimeter.

Note: the technician should record, on the sketch page, the front and rear stringline measurements. These measurements will closely represent the original overhang measurements provided a reference line was established and the axles were not moved.

Unknown

Used in the following situations:

- The axles are significantly damaged and there are no specifications available for this vehicle, and an exemplar vehicle was not measured.
- The axle is significantly damaged *and* there were post-manufacture modifications that would alter the rear overhang.
- The measurements were not obtained from this vehicle or an exemplar vehicle and there are no specifications available.

Undeformed End Width

Screen Name: **Original Specifications—Undeformed End Width**
SAS Data Set: **VEHSPEC**
SAS Variable: **UEW**
Database Name: **CISS.CISS.VEH_SPEC.ENDWIDTH**

Element Attributes

Database	SAS	
		Code to the nearest centimeter
-9999	999	Unknown

Range

100-250, 999

Source

Vehicle inspection, or an exemplar vehicle

Remarks

The undeformed end width is the undamaged dimension of the contacted end plane measured between the apex of both bumper corners.

Unknown

If the vehicle cannot be directly measured and an exemplar vehicle cannot be found, then enter unknown.

Engine Cylinders

Screen Name: **Original Specifications—Engine Cylinders**
SAS Data Set: **VEHSPEC**
SAS Variable: **ENG_CYL**
Database Name: **CISS.CISS.VEH_SPEC.CYLINDERS**

Element Attributes

Database	SAS	
		Code the number of cylinders
		Not applicable
-9999	99	Unknown

Range

1-14, 99

Source

Vehicle inspection, specifications, VIN

Remarks

The coding of this variable reflects the number of cylinders in the vehicle. The information can be found in vehicle specifications. It may also be found in owner's manuals.

Not applicable

Used for vehicles that do not have a combustible engine, an example is a completely electric vehicle.

Unknown

If the number of engine cylinders cannot be determined, then enter unknown.

Engine Displacement

Screen Name: **Original Specifications—Engine Displacement**
SAS Data Set: **VEHSPEC**
SAS Variable: **ENG_DISP**
Database Name: **CISS.CISS.VEH_SPEC.DISPLACEMENT**

Element Attributes

Database	SAS	
		Code to the nearest tenth of a liter
		Not applicable
-9999	99	Unknown

Range

0.6-10.0, 99

Source

Vehicle inspection, specifications, VIN

Remarks

The coding of this variable reflects the vehicle's engine displacement. The information can be found in vehicle specifications. It may also be found in owner's manuals, or from the vehicle inspection.

Enter the vehicle's engine displacement. It is recorded to the nearest tenth of a liter.

Not applicable

Used for vehicles that do not have a combustible engine, an example is completely electric vehicle.

Unknown

If the displacement cannot be determined, then enter unknown.

Type of Transmission

Screen Name: **Type of Transmission**
SAS Data Set: **VEHSPEC**
SAS Variable: **TRANSMISSION**
Database Name: **CISS.CISS.VEH_SPEC.TRANSMISSION**

Element Attributes

Database	SAS	
2	1	Manual
1	2	Automatic
4	3	Electric motor only
3	9	Unknown

Source

Vehicle inspection, VIN

Remarks

The coding of this variable reflects the type of transmission that is in the vehicle.

This variable is being collected for use in modifying input to the WINSMASH computer program.

Manual

The vehicle has a manual transmission.

Automatic

The vehicle has an automatic transmission.

Electronic Motor Only

Used for vehicles without a liquid fuel engine.

Unknown

It cannot be determined what type of transmission is in the vehicle.

Drive Wheels

Screen Name: **Drive Wheels**
 SAS Data Set: **VEH_SPEC**
 SAS Variable: **DRVWHEELS**
 Database Name: **CISS.CISS.VEH_SPEC.DRIVEWHEELS**

Element Attributes

Database	SAS	
3	1	Front-wheel drive
4	2	Rear-wheel drive
2	3	4-wheel drive
1	4	All-wheel drive
5	9	Unknown

Source

Vehicle inspection, VIN

Remarks

The coding of this variable reflects the type of drive wheels power the vehicle.

This variable is being collected for use in modifying input to the WINSMASH computer program.

Front-wheel drive

In a front-wheel drive vehicle, power from the engine is transferred to the front tires.

Rear-wheel drive

In a rear-wheel drive vehicle, power from the engine is transferred to the rear tires.

Four-wheel drive

In a 4-wheel drive vehicle, power is delivered to all four wheels only when the driver requests it.

All-wheel drive

In an all-wheel drive vehicle, power is distributed to all four of the vehicle's tires, all of the time.

Unknown

Use this when it cannot be determined what type of drive wheels power the vehicle.

Multi-Stage or Altered Vehicle

Screen Name: **Is This a Multi-Stage Manufactured Vehicle and/or a Certified Altered Vehicle?**
 SAS Data Set: **VEHSPEC**
 SAS Variable: **ALTVEH**
 Database Name: **CISS.CISS.VEH_SPEC.CERTMODS**

Element Attributes

Database	SAS	
2	0	No post-manufacturer modifications
4	1	Yes-post-manufacturer modifications (specify)
3	9	Unknown if vehicle is modified

Source

Vehicle inspection

Remarks

Under the “Code of Federal Regulations, Title 49 - Transportation” Chapter V Part 567, Sections 567.5 and 567.7, a label certifying compliance with all Federal Motor Vehicle Safety Standards must be affixed to a multi-stage manufactured vehicle or altered (post-manufactured) vehicle.

A multi-stage manufactured vehicle will generally begin as a chassis-cab (incomplete vehicle) and subsequently end up in final-stage as a pickup-based utility truck (dump truck, flat bed, stake body, tow truck, etc.) or a van derivative (van conversion, high-cube, motor home, etc.).

Altered vehicles will generally involve a major modification of basic components such as suspension, frame, power plants, etc., with work generally performed by a recognized auto body shop. The lengthening of a standard automobile chassis to create a limousine would be one example of the type of alteration that would qualify for certification.

To determine if the vehicle qualifies, locate the certification label that should include one of the following statements:

Multi-stage vehicle

Incomplete manufactured vehicle (chassis-cab) certification label should include the statement: **“Chassis-Cab Manufactured by”** or **“Chassis-Cab Mfd. by.”**

Intermediate manufactured vehicle certification label should have the following statement: **“Intermediate Manufactured by”** or **“Intermediate Mfd. by.”**

Final manufactured vehicle certification label should have the following statements: **“Manufactured By”** or **“Mfd. by”** and **“Incomplete Vehicle Manufactured by”** or **“Inc Veh Mfd. by.”**

Altered vehicle

An altered vehicle certification label should include the statement: **“This vehicle was altered by (individual or corporate name) in. (month and year in which alterations were completed) and as altered it conforms to all applicable Federal Motor Vehicle Safety Standards affected by the alteration and in effect in. (month, year).**

These labels are generally affixed in one of the following areas on the driver’s side of the vehicle.

- hinge pillar
- door-latch post
- door edge that meets the door-latch post
- left side of the instrument panel
- inward-facing surface of driver’s door

No post-manufacturer modifications

Used when this vehicle was a full-line manufactured vehicle. Full-line is interpreted as a vehicle that is completely assembled at the end of a plant assembly line of its original manufacturer. This would include vehicles that only require cosmetic additions such as additional paint, mirrors, wheels, etc., to be customer ready.

Yes — post-manufacturer modifications

Used for multi-stage vehicles and/or altered certified vehicles. This includes vehicles that were in various stages of completion (i.e., incomplete, intermediate, final).

Vehicles that are altered via “backyard modification (addition of air shocks, spring spacers, cosmetic alteration including sheet metal and paint, etc.) are not identified as certified altered vehicles. Only those businesses that specialize in vehicle alterations (i.e., limo body shops, etc.) where a label of alteration is required by Federal regulations and is present on the vehicle are identified in this element.

An image of the certification label is essential and must be included with the case. Categorize this image in the Miscellaneous Category.

Unknown

Used in the following situations.

- The vehicle fits the description of a multi-stage or altered vehicle, but the technician was not able to view the label for positive identification.
- The label was removed/destroyed so a clear determination of whether the vehicle was a certified multi-stage or altered vehicle could not be made.

THIS VEHICLE WAS ALTERED BY:

IN: 08-02		
GVWR	GAWR FRT	GAWR RR
4271 LB	2130 LB	2141 LB
1937 KG	966 KG	971 KG

AND AS ALTERED IT CONFORMS TO ALL
APPLICABLE FEDERAL MOTOR VEHICLE
SAFETY, BUMPER, THEFT PREVENTION
STANDARDS AFFECTED BY THE
ALTERATION AND IN EFFECT IN: 08-02

VIN: _____
PASS. CAR

SIS 080808

MANUFACTURED BY:

DATE OF MANUFACTURE 08 mo. 01 yr.
INCOMPLETE VEHICLE MANUFACTURED BY:

DATE INC. VEH. MFD. 05 mo. 01 yr.

GVWR 9,200

GAWR FRONT 4,410 with _____
75R16 tires,

16X6.5 rims, @ 00 psi cold SINGLE

GAWR INTERMEDIATE (1) _____ with _____
_____ tires,

_____ rims, @ _____ psi cold _____

GAWR INTERMEDIATE (2) _____ with _____
_____ tires,

_____ rims, @ _____ psi cold _____

GAWR REAR 6,004 with _____
75R16 tires,

16X6.5 rims, @ 00 psi cold SINGLE

THIS VEHICLE CONFORMS TO ALL
APPLICABLE FEDERAL MOTOR VEHICLE
SAFETY STANDARDS IN EFFECT IN: 05 mo. 01 yr.

VEHICLE IDENTIFICATION NUMBER: _____

VEHICLE TYPE: TRUCK (14-99562)

Figure 11. Sample images of the certification labels

Suspected Post-Manufacturer Modifications

Screen Name: **Suspected post-manufacturer modifications**
SAS Data Set: **VEHSPEC**
SAS Variable: **SUSPMODS**
Database Name: **CISS.CISS.VEH_SPEC.SUSPECTMODS**

Element Attributes

Check box

Range**Source**

Vehicle inspection, technician-determined

Remarks

The purpose of this variable is to determine if the vehicle has been modified so that the handling and crashworthiness characteristics are affected. This is based upon a suspicion by the technician at the time of the vehicle inspection.

Examples of modifications:

- Smaller or larger tires
- Body lift kit
- Lowered body
- Altered suspension
- Composite front body panels
- Brush guards and push bars

Examples of modifications that are not considered:

- Changing the side rear view mirrors
- Aftermarket window tinting
- Additional lighting attached to the roof

Official Records

Vehicle Removal

Screen Name: **Vehicle Removal**
 SAS Data Set: **GV**
 SAS Variable:
 Database Name: **CISS.CISS.VEH.TOWSTATUS**

Element Attributes

Database	SAS	
3	0	Not towed
4	1	Towed due to disabling damage
5	2	Towed not due to disabling damage
7	7	Towed, unknown Reason
2	8	Not reported
6	9	Unknown

Source

Police crash report

Remarks

This data element describes the mode in which the vehicle left the scene of the crash. To wing includes vehicles carried from the scene on a flatbed tow truck.

This element plays no role in sample category determination.

If the vehicle is a combination vehicle (power unit and at least one trailer), the power unit and/or trailer are considered when determining tow status. If the available information indicates the power unit, or trailer of a combination unit, sustained enough damage to require towing, consider this vehicle as towed due to damage.

Towed due to disabling damage

Used for any towing that is due to disabling damage caused by this crash that prohibits vehicle movement under its own power. Towed due to disabling damage includes any towing when the reason for towing is unknown. In other words, if a vehicle is reported in the case material as towed but it cannot be determined whether it was due to disabling damage or for other reasons, then the **default assumption** is that this vehicle was towed due to disabling damage.

- If a vehicle was pushed by hand or by another vehicle after the crash because it was not drivable, then use **Towed Due to Disabling Damage**.
- If a vehicle was towed due to damage **AND** for other reasons such as driver arrest, then code this vehicle as **Towed Due to Disabling Damage**.

Towed not due to disabling damage

Used when the vehicle has been towed but the towing results from other than disabling damage (minor damage, functional damage, mired vehicles, driver arrested, injured driver, etc.).

Towed, unknown reason

Used if the vehicle is towed, but the reason for towing is unknown. For example, a vehicle is reported in the case material as towed but it cannot be determined whether it was due to disabling damage or for other reasons.

Not towed

Used when it is specifically indicated in the available information that the vehicle was not towed or when the preponderance of the information available indicates that the vehicle was driven away or was not towed.

NOTE: The Police Crash Report narrative may be used to supersede and/or clarify the above information.

Not reported

If a State's crash report manual instructs to leave blank data blocks that are not applicable, then a blank in those data blocks are NOT considered "**Not reported.**"

Code **Not reported** in these two situations:

No field or coding block exists on the State's crash report to provide the information to code this element AND no other information is available to code the element (e.g., narrative, diagram, case material).

A field or coding block exists on the State's crash report that would provide the information needed to code this element, but it has been left blank, AND no other information is available to code the element (e.g., narrative, diagram, case material).

Unknown

Used when the investigating officer indicates it was unknown as to how the vehicle was removed.

State-Specific Coding Rules for Towing**Alabama**

Revision Date: 8/26/2019

Crash Report Title and Version:

Alabama Uniform Traffic Crash Police Report Revised (6/2006)

VEHICLE REMOVAL – PCR section (UNIT) subsections "Damage Severity," "Towed?"

"Vehicle Towed by Whom" and "Towed to Where"

- If “Damage Severity” 1- (None Visible), 2- (Minor), or 3- (Major Not Disabled) and “Towed?,” “Vehicle Towed by Whom,” or “Towed to Where” gives an indication of towed, enter (Towed Not Due to Disabling Damage).
- If “Damage Severity” 4- (Major) and “Towed?,” “Vehicle Towed by Whom,” or “Towed to Where” gives an indication of towed, enter (Towed Due to Disabling Damage).
- If “Damage Extent” 99- (Unknown) or left Blank, and “Towed?,” “Vehicle Towed by Whom,” or “Towed To Where” gives an indication of towed, enter (Towed, Unknown Reasons).
- If “Towed?,” “Vehicle Towed by Whom,” and “Towed to Where” all gives an indication of Not being towed, enter (Not Towed).
- If “Towed?,” “Vehicle Towed by Whom,” and “Towed to Where” are all left blank, enter (Not reported).

CRSS Coding Rules

Arizona

Revision Date: 8/26/19

Crash Report Title and Version:

Arizona Crash Report Revised (11/2017)

Arizona Crash Report Revised (5/2014)

Vehicle Removal – PCR field “Disabled/Not Disabled (Check Box),” “Vehicle Removed To,” and “Vehicle Removed By”

- If “Disabled/Not Disabled (Check Box)” (Not Disabled), or Blank and “Vehicle Removed To,” or “Vehicle Removed By” gives an indication of towed, enter (**Towed Not Due to Disabling Damage**).
- If “Disabled/Not Disabled (Check Box)” (Disabled) and “Vehicle Removed To,” or “Vehicle Removed By” gives an indication of towed, enter (**Towed Due to Disabling Damage**).
- If “Vehicle Removed To,” and “Vehicle Removed By” all gives an indication of Not being towed, enter (**Not Towed**).
- If “Vehicle Removed To,” and “Vehicle Removed By” are all left blank, enter (**Not reported**).

State-Specific Coding Rules for Towing

California

Revision Date: 8/26/2019

Crash Report Title and Version:

State of California Department of California Highway Patrol Traffic Collision Report, CHP 555 Revised (4/2011)

Vehicle Removal – PCR fields “Vehicle Damage” and “Disposition of Vehicle”

- If “Vehicle Damage” (None), and “Disposition of Vehicle” gives an indication of towed, enter **(Towed Not Due to Disabling Damage)**.
- If “Vehicle Damage” (Minor), and “Disposition of Vehicle” gives an indication of towed, enter **(Towed Not Due to Disabling Damage)**.
- If “Vehicle Damage” (Unknown), (Moderate), (Major), (Roll -Over), or Blank, and “Disposition of Vehicle” gives an indication of towed, enter **(Towed, Unknown Reasons)**.
- If “Vehicle Damage” gives an indication of Not being towed, enter **(Not Towed)**.
- If “Vehicle Damage” is blank, enter **(Not reported)**.

Idaho

Revision Date: 9/25/2019

Crash Report Title and Version:

Idaho Vehicle Collision Report IDT 0090 (Rev. 03-11)

Vehicle Removal – PCR fields “Extent of Deformity” and “Towed Due to Damage” and “If Yes, Towed By”

- If “Extent of Deformity” (No Damage), (Very Minor), (Minor), (Minor-Moderate), (Moderate), or (Moderate-Severe) and “Towed Due to Damage” and/or “If Yes, Towed By” entries give an indication of towed, enter (Towed Not Due to Disabling Damage).
- If “Extent of Deformity” (No Damage), (Very Minor), (Minor), (Minor-Moderate), (Moderate), or (Moderate-Severe) and “Towed Due to Damage” and/or “If Yes, Towed By” entries give an indication of not towed, enter (Not Towed).
- If “Extent of Deformity” (Severe) and “Towed Due to Damage” and/or “If Yes, Towed By” entries give an indication of either towed or not towed, enter (Towed Due to Disabling Damage).
- If “Extent of Deformity” (Unknown), or Blank, and “Towed Due to Damage” and/or “If Yes, Towed By” entries give an indication of towed, enter (Towed, Unknown Reasons).
- If “Extent of Deformity” (Unknown), or Blank, and “Towed Due to Damage” and/or “If Yes, Towed By” gives an indication of not towed, or is Blank, enter (Not Towed).

Illinois

Revision Date: 9/4/2019

Crash Report Title and Version:

Illinois Traffic Crash Report (1/2013)

Vehicle Removal

- For Illinois Crash Report (2013) – PCR fields “Towed (Due to Crash) Check Box,” “Towed By/To,” “Damaged Area”
- The following table **ONLY** applies when there is no clarifying information anywhere in the case material.

Table 1. Clarifying information for case matererial

“Towed (Due to Crash)” Values	“Towed By/To” Values	“Damaged Areas” Values	Code
Yes	Name of Company or Location	11 Total (All Areas)	(Towed Due to Disabling Damage)
		Not Code 11	(Towed, Unknown Reason)
	Blank	11 Total (All Areas)	(Towed Due to Disabling Damage)
		Not Code 11	(Towed, Unknown Reason)
No	Name of Company or Location	Any Code	(Towed Not Due to Disabling Damage)
	Blank	00 None	(Not Towed)
		Not Code 00	(Not Reported)
Blank	Name of Company or Location	00 None	(Towed Not Due to Disabling Damage)
		Not Code 00	(Towed, Unknown Reason)
	Blank	Any Code	(Not Reported)

Crash Report Title and Version:

Illinois Traffic Crash Report (1/2019)

For Illinois Crash Report (2019) – PCR field “Damage Extent” “Towed (Due to Crash),” “Towed Due To,” and “Towed By/To”

- If “Damage Extent” 0- (No Damage), 1- (Minor Damage), or 2- (Functional Damage) and “Towed (Due To Crash),” “Towed Due To,” or “Towed By/To” gives an indication of towed, enter code (**Towed Not Due to Disabling Damage**).
- If “Damage Extent” 3- (Disabling Damage) and “Towed (Due to Crash),” “Towed Due To,” or “Towed By/To” gives an indication of towed, enter code (**Towed Due to Disabling Damage**).
- If “Damage Extent” 4- (Not Reported), 9- (Unknown), or left Blank
- “Towed (Due to Crash)” is (Yes), “Towed Due To,” is (Disabling Damage) and “Towed By/To” gives an indication of towed, enter code (**Towed Due to Disabling Damage**).
- “Towed (Due to Crash)” is (Yes), “Towed Due To,” is (Not Disabling Damage) and “Towed By/To” gives an indication of towed, enter code (**Towed Not Due to Disabling Damage**).
- “Towed (Due to Crash),” “Towed Due To,” and “Towed By/To” conflicts among each other but atleast one gives an indication of towed, enter code (**Towed, Unknown**)

Reasons). “Towed (Due to Crash),” “Towed Due To,” “Towed By/To,” all gives an indication of Not being towed, enter code **(Not Towed)**.

- If “Towed (Due to Crash),” “Towed Due To,” and “Towed By/To” all gives an indication of Not being towed, enter code **(Not Towed)**.
- If “Towed (Due to Crash),” “Towed Due To,” and “Towed By/To” are all left blank, enter code **(Not Reported)**.

Indiana

Revision Date: 9/25/2019

Crash Report Title and Version:

Indiana Officer’s Standard Crash Report - Electronic Version

Vehicle Removal – PCR fields “Towed?,” “Towed To,” “Towed By,” and “Areas Damaged (More Than One)” – No damage severity or disablement on PCR other than Narrative

- If “Areas Damaged (Multiples)” is None check box, and Yes in the “Towed?” box and any entry in either “Towed To” or “Towed By” box gives an indication of tow, enter **(Towed Not Due to Disabling Damage)**.
- If “Areas Damaged (More Than One)” is None check box, and No in the “Towed?” box and any entry in either “Towed To” or “Towed By” box gives an indication of tow, enter **(Towed Not Due to Disabling Damage)**.
- If Yes in the “Towed?” box and any entry in either “Towed To” or “Towed By” box that gives an indication of tow, enter **(Towed, Unknown Reasons)**.
- If Yes in the “Towed?” box and entries in “Towed To” or “Towed By” box that do not give an indication of tow, or are blank, enter **(Towed, Unknown Reasons)**.
- If No in the “Towed?” box and any entry in either “Towed To” or “Towed By” box gives an indication of tow, enter **(Towed, Unknown Reasons)**.
- If No in the “Towed?” box and entries in “Towed To” and “Towed By” box that does not give an indication of tow, enter **(Not Towed)**.

Maine

Revision Date: 9/6/2019

Crash Report Title and Version:

State of Maine Crash Report Revised (8/2018)

Vehicle Removal – PCR field “Extent of Damage”

- If “Extent of Damage” (Towed Due to Disabling Damage), enter **(Towed Due to Disabling Damage)**.
- If “Extent of Damage” (No Damage Observed), (Minor Damage), (Functional Damage), or Blank, enter **(Not reported)**.

Massachusetts

Revision Date: 8/27/2019

Crash Report Title and Version:

Commonwealth of Massachusetts Motor Vehicle Crash Police Report Revised (1/2013)

Vehicle Removal –PCR field “Towed From Scene?”

- If “Towed From Scene?” 3- (Yes, Other Reason Not Disabled), enter **(Towed Not Due to Disabling Damage)**.
- If “Towed From Scene?” 1- (Yes, Vehicle or Trailer Disabled), enter **(Towed Due to Disabling Damage)**.
- If “Towed From Scene?” 2- (No), enter **(Not Towed)**.
- If “Towed From Scene?” 99- (Unknown), enter **(Reported as Unknown)**.
- If “Towed From Scene?” is Blank, enter **(Not reported)**.

Missouri

Revision Date: 9/25/2019

Crash Report Title and Version:

Missouri Uniform Crash Report

Vehicle Removal – PCR fields “Towed From Scene,” “Towed Due to Disabling Damage” and “Towed By” – No damage severity or disablement on PCR other than Narrative

- If Yes “Towed From Scene,” Yes “Towed Due to Disabling Damage” and “Towed By” has an entry that gives an indication of tow, enter **(Towed Due to Disabling Damage)**.
- If Yes “Towed From Scene,” Yes “Towed Due to Disabling Damage” and “Towed By” has an entry that is blank, or does not give an indication of tow, enter **(Towed Due to Disabling Damage)**.
- If Yes “Towed From Scene,” No “Towed Due to Disabling Damage” and “Towed By” has an entry that is blank, or gives an indication of tow, enter **(Towed Not Due to Disabling Damage)**.
- If No “Towed From Scene,” No “Towed Due to Disabling Damage” and “Towed By” has an entry that is blank, or gives an indication of tow, enter **(Towed, Unknown Reasons)**.
- If No “Towed From Scene,” No “Towed Due to Disabling Damage” and “Towed By” has an entry that is blank, or gives an indication of tow, enter **(Towed, Unknown Reasons)**.
- If No “Towed From Scene,” No “Towed Due to Disabling Damage” and “Towed By” has an entry that does not give an indication of tow, enter **(Not Towed)**.

Montana

Revision Date: 9/25/2019

Crash Report Title and Version:

Montana Vehicle Crash Report

Vehicle Removal – PCR fields “Damage Extent (for this vehicle)” and “Vehicle Removal” and “Vehicle Towed By”

- If “Damage Extent (for this vehicle)” (Disabling), and “Vehicle Removal” and/or “Vehicle Towed By” give an indication of tow, enter **(Towed Due to Disabling Damage)**.
- If “Damage Extent (for this vehicle)” (No Damage, (Minor Damage), (Functional Damage), or (Unknown), or is blank, and “Vehicle Removal” and/or “Vehicle Towed By” gives an indication of tow, enter **(Towed Not Due to Disabling Damage)**.
- If “Damage Extent (for this vehicle)” is blank, and “Vehicle Removal” and/or “Vehicle Towed By” is blank, or either box gives an indication of not towed, enter **(Not Towed)**.

New Jersey

Revision Date: 9/6/2019

Crash Report Title and Version:

New Jersey Police Crash Investigation Revised (1/2017)

Vehicle Removal – PCR fields “Extent of Damage,” and “Vehicle Removed To: (Check Boxes Below)”

- If “Extent of Damage” 01- (None), 02- (Minor), or 03- (Moderate/Functional) and “Vehicle Removed To: (Check Boxes)” gives an indication of towed, enter **(Towed Not Due to Disabling Damage)**.
- If “Extent of Damage” 04- (Disabling), and “Vehicle Removed To: (Check Boxes)” is checked gives an indication of towed, enter **(Towed Due to Disabling Damage)**.
- If “Extent of Damage” is Blank, and “Vehicle Removed To: (Check Boxes)”
 - “Vehicle Removed To: (Check Boxes Below)” is checked (Towed Disabled) or (Towed Disabled & Impounded), enter **(Towed Due to Disabling Damage)**
 - Vehicle Removed To: (Check Boxes Below)” is checked (Towed Impounded), enter **(Towed Not Due to Disabling Damage)**
- If “Vehicle Removed To: (Check Boxes)” is checked (Driven), (Left at Scene), or (Dash -), enter **(Not Towed)**.
- If “Vehicle Removed To: (Check Boxes Below)” is Blank, enter **(Not reported)**.

New York

Revision Date: 9/10/2019

Crash Report Title and Version:

New York State Department of Motor Vehicles Police Accident Report Revised (6/2004)

Vehicle Removal – PCR fields “Most Damage,” and “Vehicle Towed By”

- If “Most Damage” 18- (No Damage), and “Vehicle Towed By” gives an indication of towed, enter **(Towed Not Due to Disabling Damage)**.
- If “Most Damage” 17- (Demolished), and “Vehicle Towed By” gives an indication of towed, enter **(Towed Due to Disabling Damage)**.
- If “Most Damage” 1-13, 14- (Undercarriage), 15- (Trailer), 16- (Overturned), 19- (Other), or Blank, and “Vehicle Towed By” gives an indication of towed, enter **(Towed, Unknown Reasons)**.
- If “Vehicle Towed By” gives an indication of Not being towed, or left blank, enter **(Not Towed)**.

Ohio

Revision Date: 9/10/2019

Crash Report Title and Version:

Traffic Crash Report Revised (1/2012)

Traffic Crash Report Revised (Unknown Date)

Vehicle Removal – PCR fields “Damage Scale,” and “Towed By”

- If “Damage Scale” (Functional), (Minor), or (None) and “Towed By” gives an indication of towed, enter **(Towed Not Due to Disabling Damage)**.
- If “Damage Scale” (Disabling) and “Towed By” gives an indication of towed, enter **(Towed Due to Disabling Damage)**.
- If “Damage Scale” (Unknown), or left Blank, and “Towed By” gives an indication of towed, enter **(Towed, Unknown Reasons)**.
- If “Towed By” gives an indication of Not being towed or left Blank, enter **(Not Towed)**.

Oklahoma

Revision Date: 9/16/2019

Crash Report Title and Version:

Official Oklahoma Traffic Collision Report Revised (1/2007)

Vehicle Removal – PCR fields “Extent of Damage,” and “Vehicle Removal”

- If “Extent of Damage” 0- (None), 2- (Minor), or 3- (Functional) and “Vehicle Removal” gives an indication of towed, enter **(Towed Not Due to Disabling Damage)**.
- If “Extent of Damage” 4- (Disabling), and “Vehicle Removal” gives an indication of towed, enter **(Towed Due to Disabling Damage)**.
- If “Extent of Damage” 0- (N/A), 9- (Unknown), or Blank, and “Vehicle Removal” gives an indication of towed, enter **(Towed, Unknown Reasons)**.
- If “Vehicle Removal” 3- (Remained at Scene), or 4- (Driven From Scene), enter **(Not Towed)**.

- If “Vehicle Removal” 9- (Unknown), enter **(Reported as Unknown)**.
- If “Vehicle Removal” is Blank, enter **(Not reported)**.

Pennsylvania

Revision Date: 9/16/2019

Crash Report Title and Version:

PA Electronic Crash Report (Unavailable)

Vehicle Removal – PCR fields “Damage Indicator,” “Vehicle Towed,” and “Towed By”

- If “Damage Indicator” 0- (None), 1- (Minor), or 2- (Functional) and “Vehicle Towed,” or “Towed By” gives an indication of towed, enter **(Towed Not Due to Disabling Damage)**.
- If “Damage Indicator” 3- (Disabling), and “Vehicle Towed,” or “Towed By” gives an indication of towed, enter **(Towed Due to Disabling Damage)**.
- If “Damage Indicator” 9- (Unknown), or Blank, and “Vehicle Towed,” or “Towed By” gives an indication of towed, enter **(Towed, Unknown Reasons)**.
- If “Vehicle Towed,” and “Towed By” both give an indication of Not being towed, enter **(Not Towed)**.
- If “Vehicle Towed,” and “Towed By” are both Blank, enter **(Not reported)**.

Rhode Island

Revision Date: 9/25/2019

Crash Report Title and Version:

State of Rhode Island Uniform Crash Report

Vehicle Removal – PCR fields “Extent of Damage” and “Vehicle Towed?” and “Towing Company Name”

- If “Extent of Damage” is 4 Disabling Damage (> \$1000), and “Vehicle Towed?” and/or “Towing Company Name” give an indication of tow, enter **(Towed Due to Disabling Damage)**.
- If “Extent of Damage” is 2 Minor damage (<= \$1000) 3 Functional Damage (> \$1000) and “Vehicle Towed?” and/or “Towing Company Name” give an indication of tow, enter **(Towed Not Due to Disabling Damage)**.
- If “Extent of Damage” is 1 No Damage Observed, or Blank, and “Vehicle Towed?” and/or “Towing Company Name” gives an indication of tow, enter **(Towed, Unknown Reasons)**.
- If “Extent of Damage” is 1 No Damage Observed, or Blank, and “Vehicle Towed?” and/or “Towing Company Name” gives no indication of being towed, enter **(Not Towed)**.

Texas

Revision Date: 8/12/2019

Crash Report Title and Version:

Texas Peace Officer's Crash Report (Form CR-3 1/1/2018), Revised (1/2018)

Texas Peace Officer's Crash Report (Form CR-3 1/1/2015 ALTERNATE), Revised (1/2015)

Vehicle Removal – PCR fields “Vehicle Damage Rating 1 & 2,” and “Tow By”

- If “Vehicle Damage Rating 1 & 2” 0-4, or 5 and “Tow By” gives an indication of towed, enter code **(Towed Not Due to Disabling Damage)**.
- If “Vehicle Damage Rating 1 & 2” 6-7, and “Tow By” gives an indication of towed, enter code **(Towed Due to Disabling Damage)**.
- If “Vehicle Damage Rating 1 & 2” VB-1, VB-7, TP-0, VX-0, NA, or Blank, and “Tow By” gives an indication of towed, enter code **(Towed, Unknown Reasons)**.
- If “Tow By” gives an indication of Not being towed, enter code **(Not Towed)**.
- If “Tow By” is Blank, enter code **(Not reported)**.

Utah

Revision Date: 8/22/2019

Crash Report Title and Version:

DI 9 State of Utah Investigating Officer's Report of Traffic Crash, Revised (3/2006)

Vehicle Removal – PCR fields “Extent of Deformity,” “Property Disposition,” and “Towed By:”

- If “Extent of Deformity” 00- (None), 01- (Minor), or 02- (Moderate) and “Property Disposition,” or “Towed By:” gives an indication of towed, enter **(Towed Not Due to Disabling Damage)**.
- If “Extent of Deformity” 03- (Severe), and “Property Disposition,” or “Towed By:” gives an indication of towed, enter **(Towed Due to Disabling Damage)**.
- If “Extent of Deformity” 99- (Unknown), or Blank, and “Property Disposition,” or “Towed By:” gives an indication of towed, enter **(Towed, Unknown Reasons)**.
- If “Property Disposition,” and “Towed By:” gives an indication of Not being towed, enter **(Not Towed)**.
- If “Property Disposition,” and “Towed By:” are Blank, enter **(Not reported)**.

Virginia

Revision Date: 8/12/2019

Crash Report Title and Version:Commonwealth of Virginia Department of Motor Vehicles Police Crash Report (Form FR300P)
Revised (1/2012)

Vehicle Removal – PCR fields “Vehicle Damage,” and “Towed”

- If “Vehicle Damage” 3- (No Damage) and “Towed” gives an indication of towed, enter **(Towed Not Due to Disabling Damage)**.
- If “Vehicle Damage” 7- (Totaled), and “Towed” gives an indication of towed, enter **(Towed Due to Disabling Damage)**.
- If “Vehicle Damage” 0- (Not Provided), 1- (Not Applicable), 2- (Unknown), 4- (Overturned), 5- (Motor), 6- (Undercarriage), 8- (Fire), 9- (Other), or Blank, and “Towed” gives an indication of towed, enter **(Towed, Unknown Reasons)**.
- If “Towed” gives an indication of Not being towed, enter **(Not Towed)**.
- If “Towed” is Blank, enter **(Not reported)**.

Washington

Revision Date: 9/25/2019

Crash Report Title and Version:

State of Washington Police Traffic Collision Report

Vehicle Removal – PCR fields “Vehicle Towed” and “Towed By” – No damage severity or disablement on PCR other than Narrative

- If “Vehicle Towed” is Yes and “Towed By” gives an indication of tow, or is blank, enter **(Towed, Unknown Reasons)**.
- If “Vehicle Towed” is No and “Towed By” does not give an indication of tow, or is blank, enter **(Not Towed)**.

Wisconsin

Revision Date: 8/23/2019

Crash Report Title and Version:

Effective (1/2017)

Vehicle Removal – PCR Fields “Extent Of Damage,” and “Towed Due to Damage”

- If “Extent Of Damage” (No Damage), (Minor), or (Functional) and “Towed Due to Damage” Gives An Indication Of Towed, Enter **(Towed Not Due to Disabling Damage)**.
- If “Extent Of Damage” (Disabling) and “Towed Due to Damage” Gives An Indication Of Towed, Enter **(Towed Due to Disabling Damage)**.
- If “Extent Of Damage” (Unknown), or Blank, and “Towed Due to Damage” Gives An Indication Of Towed, Enter **(Towed, Unknown Reasons)**.
- If “Towed Due to Damage” Gives An Indication Of Not Being Towed, Enter **(Not Towed)**.
- If “Towed Due to Damage” Is Blank, Enter **(Not reported)**.

Posted Speed Limit

Screen Name: **Posted Speed Limit**
 SAS Data Set: **GV**
 SAS Variable: **SPEEDLIMIT**
 Database Name: **CISS.CISS.VEH_PRECRASH.SPEEDPOSTED**

Element Attributes

Database	SAS	
		Enter posted speed limit in kph
-8841	000	No statutory limit
-9999	999	Unknown

Range

0-122, 999

Source

Primary sources are scene inspection or statutory law. **Do not** use the police report as a substitute for the scene inspection, but it can be used as a secondary source.

Remarks

A speed limit must be identified for all known crash scene locations.

If no speed limit sign is posted within a reasonable distance from the location of the first crash event along the approach leg of the roadway this vehicle was traveling on, then reference State statutes to obtain the applicable statutory maximum speed limit for the location (local or State).

Disregard advisory or other speed signs that do not indicate the legal speed limit. **Do not confuse** advisory signs on entrance/exit ramps or near intersections with the *actual legal* maximum speed limit.

If a State has a statute that uniformly reduces the maximum allowable speed within or near a construction zone, then code the indicated reduced limit.

No statutory limit

Used for roadways that are neither posted nor have a statutory limit (parking lot roadways or entrance/exits, service station entrance/exits, or driveways, etc.).

Unknown

Used only in rare situations where a crash scene cannot be located.

Is the Driver Present?

Screen Name: **Driver Present**
SAS Data Set: **GV**
SAS Variable: **DRPRESENT**
Database Name: **CISS.CISS.VEH.DRVRPRESENT**

Element Attributes

Database	SAS	
1	0	No driver present
3	1	Yes
2	9	Unknown

Source

Technician-determined - inputs include the police report and interviews.

Remarks

This variable serves as a flag to identify driverless motor vehicles in-transport.

No Driver Present

Used if no driver was physically in the vehicle at the time that it was involved in the crash.

Selecting this attribute will preclude you from entering alcohol presence, other drug presence and precrash information for this vehicle.

Yes

Includes those instances when the motor vehicle was a “hit-and-run” vehicle.

Unknown

Used when it is not known if the driver was in the vehicle at the time of the crash.

Occupant Number

Screen Name: **Occupant Number**
SAS Data Set: **N/A**
SAS Variable: **N/A**
Database Name: **CISS.CISS.DRIVER.OCCID**

Element Attributes

Occupant Number

Source

Technician-determined

Remarks

Select the occupant number of the person who is the driver.

Note: Occupants are entered on the Case Form/Structure Tab/Occupants sub-tab.

Police-Reported Alcohol Presence

Screen Name: **PCR Alcohol Presence**
 SAS Data Set: **GV**
 SAS Variable: **PARALCOHOL**
 Database Name: **CISS.CISS.DRIVER.ALCOPRESENT**

Element Attributes

Database	SAS	
1	0	No alcohol present
4	1	Yes - alcohol present
2	8	Not reported
5	7	No driver present
3	9	Unknown

Source

Police report

Remarks

The phrase “alcohol present” means that the police report indicates that the driver had consumed an alcoholic beverage. Presence is not an indication that alcohol was in any way a cause of the crash, even though it may have been. Finding opened or unopened alcoholic beverages in the vehicle does not by itself constitute presence.

No alcohol present

Used if the investigating officer’s assessment (as reported on the police report) is that no alcohol was present in the driver.

Yes alcohol present

Used if the police indicate alcohol presence in the driver via: (1) a specific data element on the police report form, (2) the police charge the driver with DWI/DUI, (3) the police mention in the narrative section of the report that the driver had been drinking (or alcohol was present or involved), or (4) the police report has a positive blood alcohol concentration (BAC) test result (BAC > .00).

Not reported

Used if no coded data block exists on the crash report and no other information is available. If a coded data block exists and left blank use this attribute.

Unknown

Used if alcohol presence is indicated as unknown. In general, police reports have blocks to check either positive or negative alcohol presence. However, if a police report has a provision for the

investigating officer to respond “unknown presence,” then use unknown. In addition, use unknown for hit-and-run drivers unless clear evidence to the contrary exists.

Some PCR's have a block labeled “Alcohol/Drugs.” If “presence” is indicated, and it cannot be determined that was used (narrative, arrest/charged section, etc.), then assume alcohol presence. If the police report indicates that a driver was charged with DWI (driving while intoxicated or driving while impaired) and no clarification is offered to indicate if the DWI was alcohol-related or other drug-related (i.e., a specific data element; mentioned in the narrative section; BAC results), then assume alcohol presence.

Alcohol Test for Driver

Screen Name: **Alcohol Test**
 SAS Data Set: **GV**
 SAS Variable: **ALCTEST**
 Database Name: **CISS.CISS.DRIVER.ALCOTEST**

Element Attributes

Database	SAS	
3	0	None given
2	1	Test performed
4	2	Test refused
7	7	No driver present
6	8	BAC test performed, results unknown
5	9	Unknown if test given

Source

Police report, medical reports (if injured), or other official sources

Remarks

No psychomotor (police observation of driver actions) test results are coded here. Also, be aware of preliminary test results. These preliminary tests, including an instrumented field screening test, indicate the presence of alcohol, but not necessarily the particular content level. Preliminary tests are designed to segregate candidates for further testing from those people where the suspected presence of alcohol is either nonexistent or too low for additional tests.

Test Performed

When a test for BAC is administered either by the police or at a treatment facility.

Test Refused

When the person refuses to voluntarily take a BAC test, and no subsequent test is given.

None Given

When no BAC test is administered.

BAC test performed, results unknown

When the BAC test has been administered, but the results are unknown. Selecting this attribute will automatically blank out the Test Result variable.

Unknown

Used when it is not known if a test was administered.

Alcohol Test Result

Screen Name: **Test Result**
 SAS Data Set: **GV**
 SAS Variable: **ALCTESTRESULT**
 Database Name: **CISS.CISS.DRIVER.ALCOTESTRESULT**

Element Attributes

Database	SAS	
		Enter BAC
-9993	887	No driver present
-9996	995	None given
-9994	996	Test refused
-9997	997	BAC test performed, results unknown
-9995	998	Unknown if test given
-9999	999	Unknown

Range

000-490 (0-.490), 887, 995-999

Source

Police report, medical reports, or other official sources

Remarks

BAC measures the alcohol per unit volume of blood. The standard measure is expressed as the number of **grams per deciliter** (tenth of a liter) expressed as a decimal. (e.g., .05 = 50 mg/100 ml; .15 = 150 mg/100 ml = g/dL). A BAC test could be a blood, breath, or urine test.¹

If the BAC was given on the police report or subsequently added after the case was initiated, enter the reported value. In essence, if any BAC is obtained, enter the reported value. For example, a BAC of 117 mg/dl is coded as 0.117.

During autopsy the medical examiner may draw vitreous humor that is fluid from the eye. Vitreous humor is not considered blood and should not be used as measure for BAC level.

Not applicable

If the previous variable Driver- Alcohol Test is coded as “BAC test performed, results unknown,” then this field is pre-filled.

¹ Editor’s note: Each State reports the results of BAC tests differently. See NHTSA’s *Digest of Impaired Driving and Selected Beverage Control Laws*, 30th Edition, Current as of December 31, 2015 (Report No. Dot HS 812 394) for specific State examples.

Source of Alcohol Test Result

Screen Name: **Source**
 SAS Data Set: **GV**
 SAS Variable: **ALCTESTSRC**
 Database Name: **CISS.CISS.DRIVER.ALCOSOURCE**

Element Attributes

Database	SAS	
0	0	No alcohol test result
1	1	Police reported
3	2	Medical record
4	3	Autopsy
5	4	Lay coroner
6	6	No driver present
8	7	Other (specify)

Source

Police report, medical reports, or other official sources

Remarks

Enter source of data used to code the BAC. Examples include PCR and medical reports. Medical reports include autopsy report, ER report, discharge summary, nurse's notes, etc.

Police-reported

Used when the BAC information is obtained from any record associated with the police.

Medical record

Used when the BAC information was obtained from any medical report (ER report, discharge summary, nurses' notes, etc.).

Other (specify)

Used when the BAC information is obtained from some source other than those listed above. An example is a verbal BAC from an **official** source.

Other Drugs Overview

These variables focus upon “other drugs.” For the purpose of these variables the word “drug” is defined in nonmedical terms. A “drug” is any chemical substance, natural or synthetic that, when taken into the human body, can impair the ability of the person to operate a motor vehicle safely. The word “other” in this phrase means all “drugs” except alcohol, nicotine, aspirin, and drugs administered post-crash.

No laboratory, no matter how modern its equipment or competent its staff, can identify all drugs that are currently abused. Add to this the fact that new drugs, both licit and illicit, become available every week, and it soon becomes evident that the capacity for drug abuse always stays ahead of the capacity for chemical drug detection. Even if the laboratory does have the capability of identifying a particular drug, it will require that the drug be present at a specific minimum **concentration** before it can conclude that a “real” chemical detection has occurred. This is referred to as the **detection threshold**, and it varies from drug to drug and from one chemical analytic method to another. Some of the analytic methods used by some laboratories to detect certain drugs do not actually seek to find the drug itself, but look instead for a **metabolite** of the drug. A metabolite is a chemical breakdown product of the drug.

Police-Reported Other Drug Presence

Screen Name: **PCR Other Drug Presence**
 SAS Data Set: **GV**
 SAS Variable: **DRPRESENT**
 Database Name: **CISS.CISS.DRIVER.DRUGPRESENT**

Element Attributes

Database	SAS	
1	0	No other drug present
3	1	Yes other drug present
7	7	Not reported
4	8	No driver present
2	9	Unknown

Source

Police report

Remarks

The phrase “other drug present” includes all prescription, over-the-counter medications, marijuana, as well as “illicit” substances (e.g., cocaine, heroin.). Also, “other drug present” means that the driver had ingested another drug prior to the crash, but it is not an indication that the drug usage was in any way the cause of the crash (or event), even though it may have been. Finding other drugs in the vehicle does not by itself constitute presence.

No other drug present

Used if the investigating officer’s assessment (as reported on the police report) is that no other drugs were present in the driver.

Yes other drug present

Used if the police indicate another drug presence in the driver via: (1) a specific data element on the PCR, or (2) the police mention in the narrative section of the report that the driver had ingested another drug.

Not reported

Used if no coded data block exists on the crash report and no other information is available. If a coded data block exists and left blank use this attribute.

Unknown

Used if other drug presence is indicated as unknown on the PCR. A growing number of police reports have blocks to check either positive or negative other drug presence. However, if a police report has a provision for the investigating officer to respond “unknown presence, “then use this

attribute. In addition, use this attribute for hit-and-run drivers unless clear evidence to the contrary exists.

Note: The police report must have a specific block on the PCR to report “Other Drug” presence, or it must be specifically mentioned in the narrative section. Some PCRs have a block labeled “**Alcohol/Drugs.**” If “presence” is indicated, and it cannot be determined that was used (narrative, arrest/charged section, etc.), then assume alcohol presence. If the police report indicates that a driver was charged with DWI (driving while intoxicated or driving while impaired) and no clarification is offered to indicate if the DWI was alcohol-related or other-drug-related (i.e., a specific data element; mentioned in the narrative section; BAC results), then assume alcohol presence.

Other Drug Test Result

Screen Name: **Other Drug Test Result**
 SAS Data Set: **GV**
 SAS Variable: **DRUGTEST**
 Database Name: **CISS.CISS.DRIVER.DRUGRESULT**

Element Attributes

Database	SAS	
1	0	No specimen test given
2	1	Drug not found in specimen
3	2	Drug found in specimen (specify)
4	3	Specimen test given, results unknown or not obtained
6	8	No driver present
5	9	Unknown if specimen test given

Source

Police report, medical reports, or other official sources

Remarks

If a medical, police report, or other official source says that a certain drug was “screened for” or that it was “not detected,” then you know that a specimen test was used. In addition, the presence of a measured quantity of an “other drug” means that a specimen test was given. The specimen used in the test that obtained the measurement could be blood, urine, or another specimen (e.g., nasal swab, saliva). Some drugs are tested using particular types of specimen; others can be tested in several ways. Technicians need to review toxicology or other official records carefully to determine which specimens were used for the driver’s evaluation. Specimens are hierarchically ordered with a blood test taking preference over a urine test and urine over other.

Drug not found in specimen

Used if it is known that the driver had at least one type of specimen tested for other drugs *and* the test results came back “negative.”

Drug found in specimen, specify

Used if it is known that the driver had at least one type of specimen tested for other drugs (excluding alcohol, nicotine, aspirin, and drugs administered post-crash) and that the driver had a positive test result. A positive test result is any measured quantity that exceeds the detection threshold of the laboratory that performed the test.

Specimen test given, results unknown or not obtained

Used if it is known that the driver had at least one type of specimen tested for other drugs, but the results of that test are unknown or not reported.

Unknown if specimen test given

Used when it cannot be determined if the driver was administered a specimen test for other drugs. This attribute should also be selected if it is known that the driver received treatment at a medical facility but the medical records have not been obtained.

Driver's ZIP Code

Screen Name: **ZIP Code**
 SAS Data Set: **GV**
 SAS Variable: **ZIP**
 Database Name: **CISS.CISS.DRIVER.ZIP**

Element Attributes

Database	SAS	
		Enter driver's 5-digit ZIP Code
2	00001	Not a resident of U.S. or Territories
	99998	No driver present
3	99999	Unknown

Range

Range is a compilation of Sections 6 and 12 of the 2016 National 5-Digit ZIP Code & Post Office Directory, Volume 2, N-W

Source

Primary source is the police report; secondary sources include interviewees, medical records, and other official documents.

Remarks**Prioritization of data sources:**

First, use the PCR. For the purposes of this variable, a driver is considered to reside at the address listed on the PCR. This address was most likely taken from the driver's license given to the police officer and/or from the licensing State's driver's license file.

Second, use official records (e.g., medical). If the driver's ZIP Code cannot be obtained from the PCR, then use official records, if available, to determine the correct ZIP Code.

Third, use internet. When part of an address is known, the internet can be utilized to search for a zip code.

During the process of obtaining the interview, the vehicle inspection, or the associated medical records, technicians will discover, for some drivers, a conflict between the address listed on the PCR and the driver's current address. In conflict situations, always enter the ZIP Code for the address given on the PCR or on an official document before entering the ZIP Code from the information obtained during the interview.

Driver not a resident of U.S. or territories

Used when the address found on the PCR or obtained from medical records, or during the interview indicates that the driver resides at an address that has not been assigned a ZIP Code by the U.S. Post Office.

Unknown

Used whenever the ZIP cannot be determined. For example, use Unknown for “hit-and-run” drivers and for any driver’s address that you discover is fictitious. In addition, use Unknown if the driver, licensed or not, has no permanent address. For example, the driver could be living out of his/her vehicle (camper, motorhome, etc.), or the driver could be “homeless.”

Race

Screen Name: **Driver Race**
 SAS Data Set: **GV**
 SAS Variable: **RACE**
 Database Name: **CISS.CISS.OCC.RACE**

Element Attributes

Database	SAS	
27	1	White
9	2	Black or African American
5	3	Asian
17	4	Native Hawaiian or Other Pacific Islander
4	5	American Indian or Alaska Native
20	7	Other (specify):
18	8	No driver present
24	9	Unknown

Source

Technician-determined; primary source is the interviewee; secondary sources include police report, medical records, and other official documents.

Remarks

Note: Although this variable is on the **Official Records Tab**, this variable is a “self-identification” by the occupant. This information can be obtained from any of the above sources; however, it is not always an “official record.” When using secondary sources, the ethnicity must be specifically mentioned in the document.

The concept of race as used by the U.S. Census Bureau reflects self-identification; it does not denote any clear-cut scientific definition of biological stock. Self-identification represents self-classification by people according to the race with which they identify themselves. For drivers with parents of different races who cannot provide a single response, use the race of the driver’s mother; however, if a single response cannot be provided for the driver’s mother, the first race reported by the driver is encoded.

Hispanic is not a race but rather an ethnic origin. People of Spanish origin may be of any race. Ethnicity is coded separately in a separate element.

Prioritization of data sources

First, use interviewee data. Ask the interviewee what the driver considers their race and ethnic origin to be. If the response does not clearly fit into one of the race and ethnic origin categories, then use the information provided by the interviewee concerning the driver’s nationality/ethnic origin to select the correct element value.

Second, use the PCR. If race is given on the PCR and the PCR scheme is compatible with this variable, then use the PCR information.

In addition, the driver's ***name*** is not a reliable indicator of race and ***cannot be used*** when selecting the applicable element value for this variable.

Third, use official records (e.g., medical). If the data needed cannot be obtained from the interviewee and is not available or usable from the PCR, then use official records, if available, to determine the correct element attribute.

Element Attributes

White

Used for drivers who consider themselves a person having origins in any of the original peoples of Europe, the Middle East or North Africa.

Black or African American

Used for drivers who consider themselves a person having origins in any of the black racial groups of Africa. Terms such as "Haitian" or "Negro" can be used in addition to "Black or African American."

Asian

Used for drivers who consider themselves a person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand and Vietnam.

Native Hawaiian or Other Pacific Islander

Used for drivers who consider themselves a person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands.

American Indian or Alaska Native

Used for drivers who consider themselves a person having origins in any of the original peoples of North and South America (including Central America), and who maintains tribal affiliation or community attachment.

Other

Used for drivers who consider themselves to be of a race not described above. Use this attribute for descriptions such as: Eurasian, Cosmopolitan, inter-racial, multi-racial etc.

Unknown

Used when the source available do not provide sufficient information to classify the driver's race.

Ethnicity

Screen Name: **Driver Ethnicity**
 SAS Data Set: **GV**
 SAS Variable: **ETHNICITY**
 Database Name: **CISS.CISS.OCC.ETHNICITY**

Element Attributes

Database	SAS	
1	1	Hispanic or Latino
2	2	Not Hispanic or Latino
3	8	No driver present
-9999	9	Unknown

Source

Technician-determined; primary source is the interviewee; secondary sources include police report, medical records, and other official documents.

Remarks

Note: Although this variable is on the **Official Records Tab**, this variable is a “self-identification” by the occupant. This information can be obtained from any of the above sources; however, it is not always an “official record.” When using secondary sources, the ethnicity must be specifically mentioned in the document.

The concept of ethnicity as used by the U.S. Census Bureau reflects self-identification; it does not denote any clear-cut scientific definition of biological stock. Self-identification represents self-classification by people according to the ethnicity with which they identify themselves. For drivers with parents of different ethnicity who cannot provide a single response, use the ethnicity of the driver’s mother; however, if a single response cannot be provided for the driver’s mother, the first ethnicity reported by the driver is encoded.

Prioritization of data sources

First, use interviewee data. Ask the interviewee what the driver considers their ethnicity to be. If the response does not clearly fit into one of the ethnicity categories, then use the information provided by the interviewee concerning the driver’s nationality/ethnic origin to select the correct element value.

Second, use the PCR. If ethnicity is given on the PCR and the PCR scheme is compatible with this variable, then use the PCR information. If PCR only has a category for Race but still report "Hispanic" as the race, then that is sufficient enough for this variable.

If the PCR only indicates White/Caucasian, Black/Negro, or Other, then the PCR contains insufficient information for this variable. Additional information is required to determine the ethnicity. In addition, the driver’s **name** is not a reliable indicator of ethnicity and **cannot be used** when selecting the applicable element value for this variable. For example, a name such as:

Hector Smith, does not indicate the ethnicity (e.g., Hispanic or Not Hispanic) since the person may or may not consider themselves to be of Hispanic descent.

Third, use official records (e.g., medical). If the data needed cannot be obtained from the interviewee and is not available or usable from the PCR, then use official records, if available, to determine the correct element attribute.

Element Attributes

Hispanic or Latino

Used for drivers who consider themselves a person of Cuban, Mexican, Puerto Rico, South or Central American or other Spanish culture or origin, regardless of race. The term, “Spanish origin,” can be used in addition to “Hispanic or Latino.”

Not Hispanic or Latino

Used for drivers who consider themselves as not being of Cuban, Mexican, Puerto Rico, South or Central American or other Spanish culture or origin, regardless of race.

Unknown

Used when the source available do not provide sufficient information to classify the driver’s ethnic origin.

Environment

Within Interchange area

Screen Name: **Trafficway-Within Interchange Area**
 SAS Data Set: **GV**
 SAS Variable: **RELICT1**
 Database Name: **CISS.CISS.VEH_PRECRASH.TRAFFICWAYREL**

Element Attributes

Database	SAS	
	0	No
	1	Yes
	9	Unknown

Source

Technician-determined — Primary source is the scene inspection; secondary sources include the police report and interviews.

Remarks

The coding of this data element is done in two related fields (Within Interchange Area and Specific Location) and based on the location of this vehicle just prior to the critical precrash event. It identifies the crash location with respect to presence in an interchange area and the crash's location with respect to presence in or proximity to components typically in junction or interchange areas.

An interchange is a system of interconnecting roadways in conjunction with one or more grade separations, providing for the movement of traffic between two or more roadways on different levels.

No

Used if the vehicle location just prior to the critical precrash event occurs outside of the boundaries of an interchange.

Yes

Used if the location of this vehicle just prior to the critical precrash event is within an interchange area.

Unknown

Used when the location of this vehicle just prior to the critical precrash event is unknown.

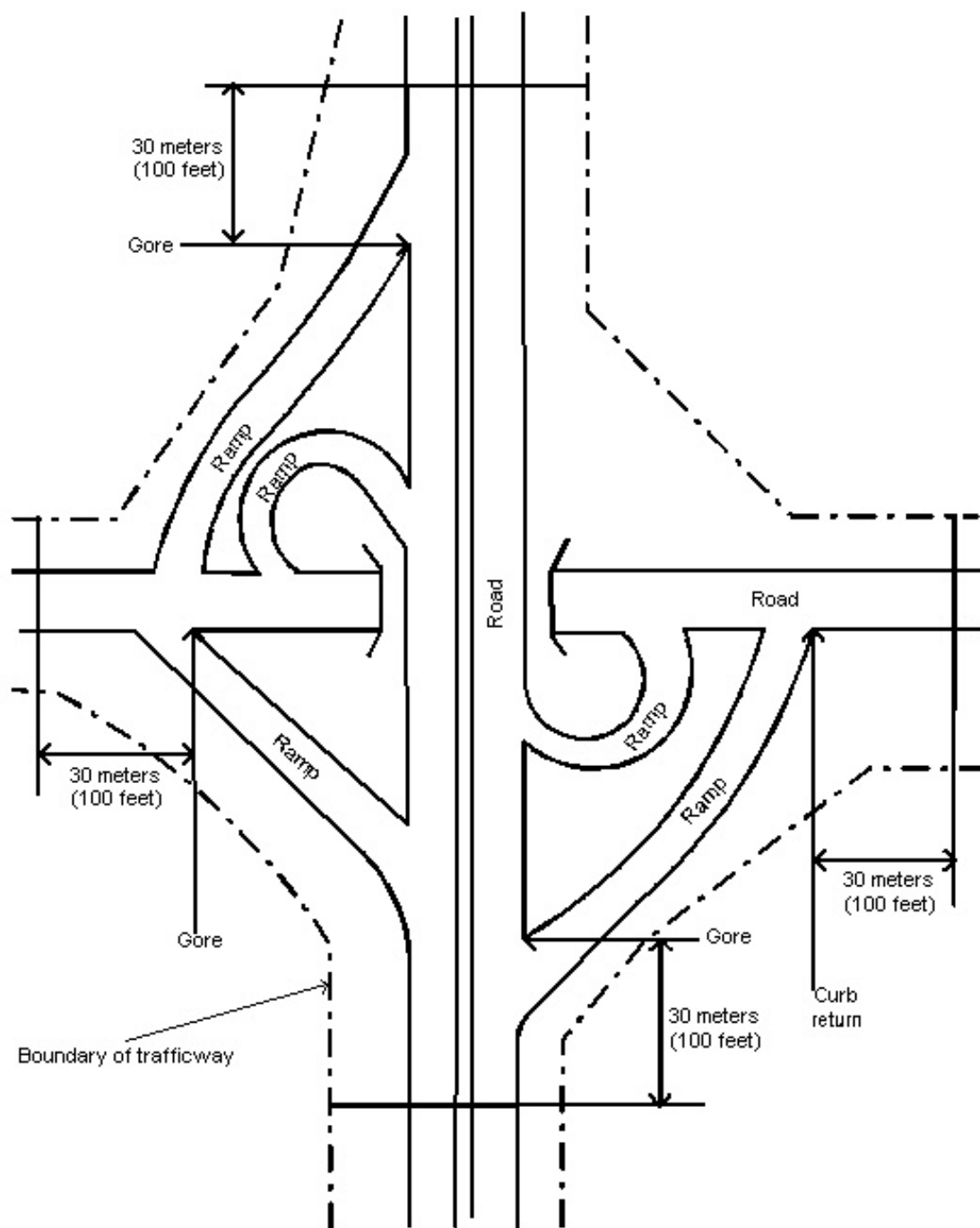


Figure 12. The interchange area

Specific Location

Screen Name: **Trafficway-Specific Location**
 SAS Data Set: **GV**
 SAS Variable: **RELICT2**
 Database Name: **CISS.CISS.VEH_PRECRASH.TRAFFICWAYREL**

Element Attributes

Database	SAS	
	1	Non-junction
	2	Intersection
	3	Intersection-related
	5	Entrance/Exit-Ramp-Related
	20	Entrance/Exit Ramp
	06	Railway Grade Crossing
	07	Crossover-Related
	04	Driveway Access
	08	Driveway-Accesss-Related
	16	Shared-Used Path Crossing
	17	Acceleration/Deceleration Lane
	18	Through Roadway
	19	Other Location Within Interchange Area
	99	Unknown

Source

Technician-determined — Primary source is the scene inspection, secondary sources include the police report and interviews.

Remarks

The coding of this data element is done in two related fields (Within Interchange Area and Specific Location) and based on the location of this vehicle just prior to the critical precrash event. It identifies the crash's location with respect to presence in an interchange area and the crash's location with respect to presence in or proximity to components typically in junction or interchange areas.

Non-Junction

Used for crashes where the location of this vehicle just prior to the critical precrash event occurs **outside** an interchange area and does not occur in or related to a junction, ramp, rail grade crossing, crossover, or shared-use path or trail. This attribute includes crashes that occur on a parking lot way (access road) at the connection of a parking aisle.

Intersection

Used when the the location of this vehicle just prior to the critical precrash event occurs in an area that: (1) contains a crossing or connection of two or more roadways not classified as a driveway access, and (2) is embraced within the prolongation of the lateral curb lines or, if none, the lateral boundary lines of the roadways. Where the distance along a roadway between two areas meeting these criteria is less than 10 meters, the two areas and the roadway connecting them are considered to be parts of a single intersection.

Intersection-Related

Used when the location of this vehicle just prior to the critical precrash event: (1) occurs on an approach to or exit from an intersection and (2) results from an activity, behavior, or control related to the movement of traffic units through the intersection,

Notes:

- For crashes where the location of this vehicle just prior to the critical precrash event occurs in a crosswalk at an intersection area, use **Intersection-Related**.
- For Traffic Circles and Roundabouts, enter **Intersection** the location of this vehicle just prior to the critical precrash event occurs within the area formed by the prolongation of curb or edge lines of the approach legs of the intersection, regardless of whether or not the collision was in any way related to an intersection. Use **Intersection-Related** if the location of this vehicle just prior to the critical precrash event occurs in the central island or any directional island that serves the rotary intersection.

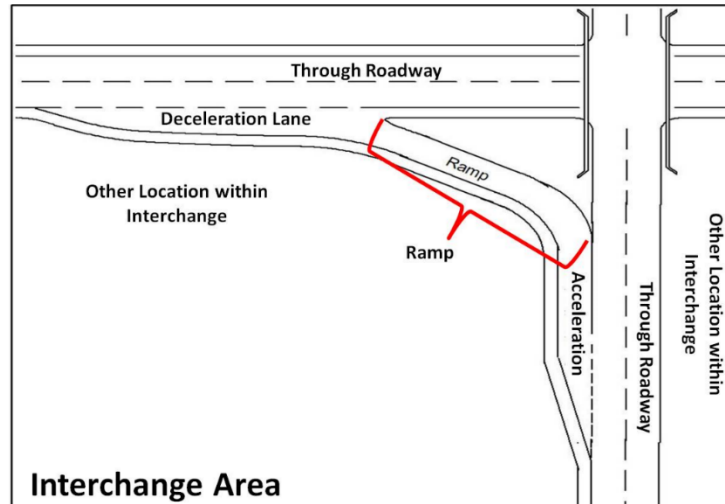


Figure 13. Interchange Area

Entrance/Exit-Ramp- Related

Used when the location of this vehicle just prior to the critical precrash event occurs off the entrance/exit ramp roadway but is related to the use of or entry onto the ramp.

Note: If the location of this vehicle just prior to the critical precrash event occurs in the intersection of a ramp, then use **Intersection**. If the location of this vehicle just prior to the critical precrash event occurs on the ramp outside of an intersection of the ramp and the surface roadway and is related to the movement of traffic through the intersection, then use **Intersection-Related**.

Entrance/Exit Ramp

Used when the location of this vehicle just prior to the critical precrash event occurs **on** an entrance or exit ramp roadway and is not the result of an activity, behavior, or control related to the movement of traffic units through an intersection. This would include all the areas between the gore and entrance/exit ramp intersection.

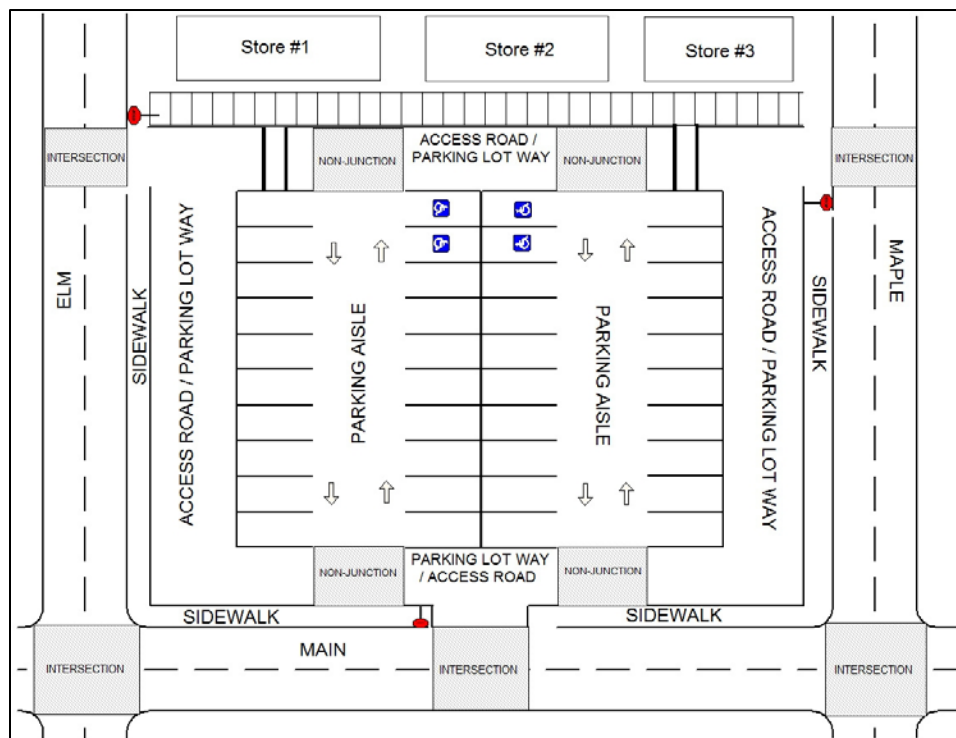


Figure 14. Example Parking Lot Area

Railway Grade Crossing

Used when the location of this vehicle just prior to the critical precrash event occurred in the area formed by the at-grade connection of a railroad bed and a roadway. Crashes occurring outside a railway grade crossing due to traffic congestion associated with a railway grade crossing are considered non-junction.

Crossover-Related

Used when the location of this vehicle just prior to the critical precrash event occurs in a crossover or on approach to or exit from a crossover and related to the use of the crossover.

Note: A crossover is the area of the median of a divided trafficway where motor vehicles are permitted to cross the opposing lane of traffic or execute a U-turn. Breaks in a median designated for “authorized vehicles only” are not considered crossovers.

Driveway Access

Used when the location of this vehicle just prior to the critical precrash event occurs:

1. on a driveway access (See ANSI D.16-2017)
2. or involves a road vehicle entering or leaving by way of a driveway access where at least one traffic unit (vehicle, pedalcyclist, or pedestrian) is physically on the driveway access within the trafficway.

This attribute includes crashes occurring on sidewalks within the driveway access.

Examples:

- A car turning into a private residence driveway strikes a bicyclist riding on the sidewalk that crosses over the driveway access.
- A tractor trailer backing out of a business entrance onto the trafficway, while partially on the driveway access, is struck by a car on the roadway.

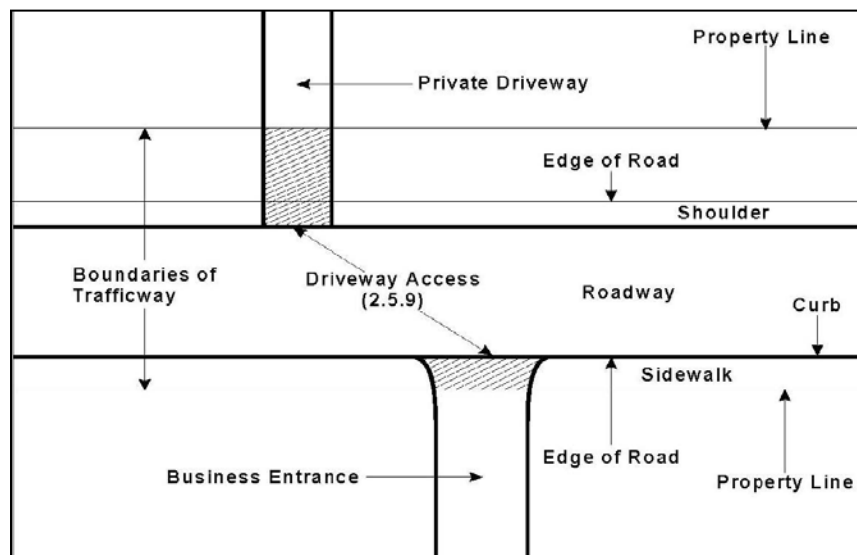


Figure 15. Driveway Access

Driveway Access Related

Used when the location of this vehicle just prior to the critical precrash event:

1. occurs adjacent to a driveway,
2. does not occur on a **Driveway Access**, but
3. results from an activity, behavior, or control related to the movement of traffic units onto or out of a driveway (See ANSI D.16-2017).

Examples:

- A vehicle attempting to turn left into a driveway from the eastbound lanes is struck broadside by another vehicle traveling in the westbound lanes,
- A vehicle that has just entered the trafficway from a driveway is struck in the rear before it can gain speed.

Note: When a driveway access junction is within an intersection and the crash would meet the criteria of driveway access or driveway access related, enter **Intersection** if the location of this vehicle just prior to the critical precrash event was within the boundaries of the intersection or **Intersection-Related** if it was not, but related to the intersection. If there is not sufficient detail available to differentiate between driveway access and driveway access related, but it is known that the vehicle was coming out of (or going into) a driveway, default to **Driveway-Access-Related**.

Shared-Use Path Crossing

Used when the location of this vehicle just prior to the critical precrash event occurs at the crossing of a roadway and a shared-use path (see **Note** below for the definition of a shared use path). At least one non-motorist has to be physically in the crossing of the roadway and the shared-use path, and the crash has to be related to the use of it. If the crossing of a roadway and a shared-use path overlaps/coincides with a crosswalk in a non-intersection area (e.g., mid-block), then select **Shared-Use Path Crossing**.

Note: A shared-use path is a bikeway **physically separated** from motorized vehicular traffic by an open space or barrier and either within the highway right of way or an independent right of way. Shared-use paths will also be used by pedestrians, skaters, wheelchairs, joggers, and other non-motorist users. A shared-use path is not a sidewalk, and where a shared-use path crosses another land way is similar to, but not, a crosswalk. A shared-use path crossing may overlap/coincide with a crosswalk.

Acceleration/Deceleration Lane

Used when the location of this vehicle just prior to the critical precrash event occurs on the roadway in an interchange area on an auxiliary or speed-change lane that allows vehicles to accelerate to highway speeds before entering the through roadway or decelerate to safe speeds to negotiate a ramp without interrupting traffic flow on the through roadway exited.

Through Roadway is used when the location of this vehicle just prior to the critical precrash event occurs on the roadway within an interchange area but **does not** occur:

- In an intersection or related to an intersection
- On an entrance/exit ramp or related to the use of the ramp
- In an acceleration/deceleration lane.

Other Location Within Interchange Area

Used when the location of this vehicle just prior to the critical precrash event occurs within an Interchange, off the roadway (e.g., median, shoulder, roadside) and is not related to the use of or the entry onto a ramp.

Examples:

- A vehicle on the through roadway portion of the interchange departs the roadway and overturns in the median.
- A vehicle leaves the through roadway portion of the interchange and strikes a vehicle parked on the shoulder.

Unknown

Used when police indicate unknown.

Type of Intersection

Screen Name: **Type of Intersection**
 SAS Data Set: **GV**
 SAS Variable:
 Database Name: **CISS.CISS.VEH_PRECRASH.TYPEOFINTERSECTION**

Element Attributes

Database	SAS	
	1	Not an Intersection
	2	Four-Way Intersection
	3	T-Intersection
	4	Y-Intersection
	5	Traffic Circle
	6	Roundabout
	7	Five Point, or More
	10	L-Intersection
	11	Other Intersection Type

Source

Technician-determined — Primary source is the scene inspection, secondary sources include the police report and interviews.

Remarks

The data element value selected should be based on the location of this vehicle just prior to the critical precrash event and is only applicable to intersection or intersection-related crashes.

If it is known that a rotary type of intersection was involved but it is not known if it was a **Traffic Circle** or a **Roundabout**, default to a **Traffic Circle**.

Intersection refers to an area that 1) contains a crossing or connection of two or more roadways not classified as driveway access, and 2) is embraced within the prolongation of the lateral curb lines, or if none, the lateral boundary lines of the roadways. Where the distance along a roadway between two areas meeting these criteria is less than 33 feet, the two areas and the roadway connecting them are considered to be parts of a single intersection. (See ANSI D.16-20017)

Not an Intersection

Identifies that this crash was not intersection or intersection-related.

Four-Way Intersection

Refers to two roadways that cross or connect.

T-Intersection

Refers to an intersection where two roadways connect, and one roadway does not continue across the other roadway. The roadways form a “T.”

Y-Intersection

Refers to an intersection where three roadways connect and none of the roadways continue across the other roadways. The roadways form a “Y.”

Traffic Circle

Refers to an intersection of roads where motor vehicles must travel around a circle to continue on the same road or leave on any intersecting road. A Traffic Circle must meet the following criteria:

- Entering traffic is controlled by a stop sign, traffic signal, or by no traffic control
- Parking is allowed within the circle
- Pedestrians are allowed access to the central island
- Circle traffic can be required to yield to entering traffic

Roundabout

Refers to an intersection of roads where motor vehicles must travel around a circle to continue on the same road or leave on any intersecting road. (See Figure 16 below.) A Roundabout must meet the following criteria:

- Entering traffic is controlled by a yield sign only
- Circulating traffic has the right of way
- Pedestrian access is allowed behind the yield sign line
- No parking is allowed in the circle

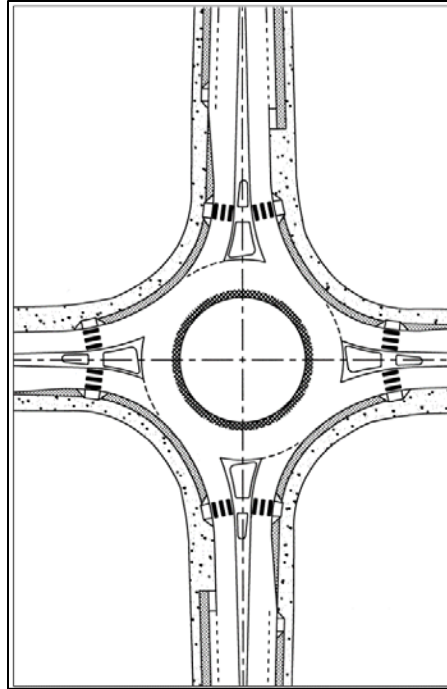


Figure 16. Example of Single-Lane Roundabout

Five-Point, or More

Refers to an intersection where more than two roadways cross or connect.

L-Intersection

Refers to a two-armed intersection in which one roadway intersects with another roadway but neither roadway extends beyond the other roadway. (Note: This should be configured as an intersection where the arms consist of two different named trafficways.)

Other Intersection Type

Refers to an intersection design not captured under one of the other attributes.

Trafficway Flow

Screen Name: **Trafficway-Flow**
 SAS Data Set: **GV**
 SAS Variable: **TRAFFLOW**
 Database Name: **CISS.CISS.VEH_PRECRASH.TRAFFICWAYFLOW**

Element Attributes

Database	SAS	
6	1	Divided trafficway-median strip without positive barrier
5	2	Divided trafficway-median strip with positive barrier
4	3	One-way traffic
7	4	Not physically divided (two-way traffic)
8	5	Not physically divided with two-way left turn lane
9	9	Unknown

Source

Technician-determined-Primary source is the scene inspection; secondary sources include the police report and interviews.

Remarks

A roadway is that part of a trafficway where vehicles travel. A divided trafficway is composed of two or more roadways. A trafficway that has a median that is designed as a two-way left turn lane is considered to be one roadway for lane identification purposes.

If the characteristics of the vehicle's roadway environment just prior to the critical precrash event is represented by the junction of two or more roadways, choose the trafficway flow on the basis of the most representative description of the approach leg to the junction for this vehicle.

If the collision occurred (other than in a junction) select the attribute on the basis of the most representative description of the characteristics of the vehicle's roadway environment just prior to the critical precrash event. If this is off the roadway, select the attribute on the basis of the most representative description of the roadway leading to the point of departure.

The technician selects the descriptor that best represents the vehicle's environment just prior to the critical precrash event. If the flow is designed to separate traffic, then choose accordingly.

Not physically divided (two-way traffic)

Used whenever there is no median. Generally, medians are not designed to legally carry traffic.

Note: Although gores separate roadways, and traffic islands (associated with channels) separate travel lanes, neither is involved in the determination of trafficway division.

Not physically divided with two-way left turn lane

Used whenever the trafficway is physically divided by a two-way left turn lane that is designed to allow left turns to driveways, shopping centers, businesses, etc., while at the same time providing a separation of opposing straight-through travel lanes.

Divided trafficway-median strip without positive barrier

Used whenever the trafficway is physically divided; however, the division is unprotected (e.g., vegetation, gravel, paved medians, trees, water, embankments, and ravines that separate a trafficway (i.e., all non-manufactured barriers). **Note:** Raised curbed medians **DO NOT** constitute a positive barrier in and by themselves. The unprotected medians can be of any width, however, painted paved flush areas, and must be 1.2 m in width to constitute a median strip.

Divided trafficway — median strip with positive barrier

Used whenever the traffic is physically divided and the division is protected by any concrete, metal, or other type of longitudinal barrier (i.e., all manufactured barriers). Also bridges or underpass support structures and bridge rails take this attribute.

One way trafficway

Used primarily whenever the trafficway is undivided and traffic flows in one direction (e.g., one-way streets). However, this attribute can also be selected where a median is present so long as all the traffic on the trafficway goes in the same direction. An example occurs where the opposing roadway of the same named trafficway had to be split by such a distance that the right-of-way divides to accommodate other property. If (rare) one of the trafficways is further divided into several roadways by a median, then in this instance **One way trafficway** should be selected. Included are entrance and exit ramps.

Unknown

Used if the trafficway flow cannot be determined (e.g., ongoing construction and movable traffic barriers moved or removed since the crash date).

Travel Lanes

Screen Name: **Roadway-Number of Travel Lanes**
 SAS Data Set: **GV**
 SAS Variable: **RDLANES**
 Database Name: **CISS.CISS.VEH_PRECRASH.NUMLANES**

Element Attributes

Database	SAS	
5	1	One
9	2	Two
8	3	Three
2	4	Four
1	5	Five
7	6	Six
6	7	Seven or more
10	9	Unknown

Source

Technician-determined – Primary source is the scene inspection – secondary sources include the police report and interviews.

Remarks

The attribute is determined from the same roadway that was used to determine the **Trafficway Flow**. If traffic flows in both directions and is undivided, select the number of lanes in both directions. If the trafficway is divided into two or more roadways, select only the number of lanes for the roadway on which the vehicle under consideration was traveling.

If turn bays, acceleration, deceleration, or center 2-way left turn lanes exist and are physically located within the cross section of the roadway, and these lanes are the most representative of the driver's environment just prior to the critical precrash event, then they are to be included in the number of lanes. Channelized lanes are separated from other through or turn-related lanes. (**Note:** The separation normally will not involve a physical barrier.) Because a channelized lane is separated, it should not be included unless it is preceded by a turn bay or turn lane and this bay or lane is felt to be most representative of the driver's environment just prior to impact.

The number of lanes counted does not include any of which are rendered unusable by restriction of the right-of-way (e.g., closed due to construction). Show lanes on the scaled diagrams and annotate why a lane is closed.

Only those lanes ordinarily used for motor vehicle travel should be considered when completing this variable (i.e., pedestrian/bicycle lanes are excluded).

In a number of instances, there will be uncertainty as to the number of lanes due to: (1) nonstandard roadway widths; (2) variability of width in the same roadway due to disrepair and

other reasons; or (3) absence of lane, center, and edge lines, etc. The number selected in these cases should represent the number of operational lanes based on customary or observed usage.

On a road that has legal parking such that the legal parking area ends short of the junction of the roadway with another roadway or drive; and the space left between the end of the legal parking area and the beginning of the junction can be used for turning by a vehicle on the roadway, do not consider this additional area as another travel lane (regardless of customary or observed usage in this instance).

This area should be construed as additional width to the existing travel lane. The only time that another lane will be counted at a junction is when that space is expressly designated for turning, e.g., by lane (line or turn arrow) marking, signs or signals.

The number of lanes for driveways, wide-mouth parking lots, etc., should be selected as follows:

If it is possible to determine the number of lanes through either lane markings or observed or customary use, select the actual number of lanes present.

If the number of lanes cannot be accurately established, select **Unknown**.

If the vehicle was on or in a driveway (see Relation to Junction, definitions for **Driveway**, **alley access-related**, or in a crossover (primarily designed as an opening in a median used for U-turns) that is in essence a private way, select the number of lanes for that vehicle.

Initial Travel Lane

Screen Name: **Initial Travel Lane**
 SAS Data Set: **GV**
 SAS Variable: **INITLANE**
 Database Name: **CISS.CISS.VEH_PRECRASH.INITIALLANE**

Element Attributes

Database	SAS	
1	1	One
2	2	Two
3	3	Three
4	4	Four
5	5	Five
6	6	Six
7	7	Seven
8	8	Eight or more
98	98	Other
-9999	99	Unknown

Source

Technician-determined; inputs include scene inspection and police report.

Remarks

This element assesses the location of the vehicle prior to the critical envelope. Select the attribute that best describes the predominant lane of the vehicle during that time period.

One

Right curb or road edge lane in direction of traffic flow.

Two

Second lane counting from right curb or road edge lane in direction of traffic flow.

Three

Third lane counting from right curb or road edge lane in direction of traffic flow.

Four

Fourth lane counting from right curb or road edge lane in direction of traffic flow.

Five

Fifth lane counting from right curb or road edge lane in direction of traffic flow.

Six

Sixth lane counting from right curb or road edge lane in direction of traffic flow.

Seven

Seventh lane counting from right curb or road edge lane in direction of traffic flow.

Eight

Eighth or more lanes counting from right curb or road edge lane in direction of traffic flow.

Other

Used when the vehicle's location prior to entering the critical crash envelope is a parking lane, shoulder, driveway access, wrong direction, or any area other than a travel lane for the appropriate flow of traffic.

Unknown

Used when the vehicle's travel lane prior to entering the critical envelope is unknown.

Line Type-Right

Screen Name: **Line Type - Right**
 SAS Data Set: **GV**
 SAS Variable: **LINERIGHT**
 Database Name: **CISS.CISS.VEH_PRECRASH.LINETYPERIGHT**

Element Attributes

Database	SAS	
5	0	None
1	1	Solid white
2	2	Solid yellow
3	3	Dotted/dashed white
4	4	Dotted/dashed yellow
6	5	Raised pavement marker
-9999	9	Unknown

Source

Technician-determined; inputs include scene inspection and police report.

Remarks

Line markings are used to convey messages to roadway users. They indicate which part of the road to use, and indicate where passing is allowed. This element describes the travel lane line type during the pre-movement phase of the crash.

In the circumstances where a solid AND dotted/dashed line is present (i.e., legal passing on a two-lane divided roadway) select the first line a vehicle would cross. If both a painted line AND a raised pavement marker is present, select the appropriate painted line type.

Solid White

A continuous white lane line that marks the right edge of the roadway or separates lanes of traffic moving in the same direction.

Solid Yellow

A continuous yellow line that separates traffic flowing in opposite directions. A solid yellow line indicates that passing is prohibited.

Dotted/Dashed White

A series of broken white line segments at regular intervals. A dashed white line indicates that lane changes are allowed.

Dotted/Dashed Yellow

A series of broken yellow line segments at regular intervals. A dashed yellow line indicates that passing is allowed.

Raised Pavement Marker

A device with a height of at least 10 mm (0.4 in.) mounted on or in a road surface that is intended to be used as a positioning guide or to supplement or substitute for pavement markings.

In some States raised pavement markers are commonly used in lieu of painted strips for marking roads. These markers may be white or yellow, depending on the specific application, following the same basic colors of their analogous white and yellow painted lines. Three types of raised pavement markings are used to form roadway lines. It is believed that these types of roadway markings are the hardest for an LDW sensor system to process. Type A and Type AY are non-reflective circular domes that are approximately 4 in. (10 cm) in diameter and approximately 0.7 in. (1.8 cm) high. Type C and D are square markings that are retro reflective in two directions measuring approximately 4 x 4 x 0.5 in. (10 x 10 x 5 cm), and Type G and H that are the same as C and D only retro reflective in a single direction.

Line Type-Left

Screen Name: **Line Type - Left**
 SAS Data Set: **GV**
 SAS Variable: **LINELEFT**
 Database Name: **CISS.CISS.VEH_PRECRASH.LINETYPELEFT**

Element Attributes

Database	SAS	
5	0	None
1	1	Solid white
2	2	Solid yellow
3	3	Dotted/dashed white
4	4	Dotted/dashed yellow
6	5	Raised pavement marker
-9999	9	Unknown

Source

Technician-determined; inputs include scene inspection and police report.

Remarks

Line markings are used to convey messages to roadway users. They indicate which part of the road to use and indicate where passing is allowed. This element describes the travel lane line type during the pre-movement phase of the crash.

In the circumstances where a solid AND dotted/dashed line is present (i.e., legal passing on a two-lane divided roadway) select the first line a vehicle would cross. If both a painted line AND a raised pavement marker is present, select the appropriate painted line type.

Solid White

A continuous white lane line that marks the right edge of the roadway or separates lanes of traffic moving in the same direction.

Solid Yellow

A continuous yellow line that separates traffic flowing in opposite directions. A solid yellow line indicates that passing is prohibited.

Dotted/Dashed White

A series of broken white line segments at regular intervals. A dashed white line indicates that lane changes are allowed.

Dotted/Dashed Yellow

A series of broken yellow line segments at regular intervals. A dashed yellow line indicates that passing is allowed.

Raised Pavement Marker

A device with a height of at least 10 mm (0.4 in.) mounted on or in a road surface that is intended to be used as a positioning guide or to supplement or substitute for pavement markings.

In some States raised pavement markers are commonly used in lieu of painted strips for marking roads. These markers may be white or yellow, depending on the specific application, following the same basic colors of their analogous white and yellow painted lines. Three types of raised pavement markings are used to form roadway lines. It is believed that these types of roadway markings are the hardest for an LDW sensor system to process. Type A and Type AY are non-reflective circular domes that are approximately 4 in. (10 cm) in diameter and approximately 0.7 in. (1.8 cm) high. Type C and D are square markings that are retro reflective in two directions measuring approximately 4 x 4 x 0.5 in. (10 x 10 x 5 cm), and Type G and H that are the same as C and D only retro reflective in a single direction.

Rumble Strip Present-Initial Travel Lane

Screen Name: **Rumble Strip-Initial Travel Lane**
 SAS Data Set: **GV**
 SAS Variable: **RUMBINIT**
 Database Name: **CISS.CISS.VEH_PRECRASH.RUMBLEINITIALLANE**

Element Attributes

Database	SAS	
4	0	None
1	1	Left rumble strip present
2	2	Right rumble strip present
3	3	Left and right rumble strip present
-9999	9	Unknown

Source

Technician-determined; inputs include scene inspection and police report.

Remarks

Rumble strips are pavement irregularities installed to warn drivers of lane or roadway departures. This element captures the presence of rumble strips adjacent to the vehicles initial travel lane along the direction of travel during the pre-event movement phase of the crash.

Rumble strips are an effective countermeasure for reducing lane and roadway departure crashes. The noise and vibration produced by rumble strips alert drivers when they leave the traveled way. Rumble stripes is the term used for rumble strips painted with a retroreflective coating to increase the visibility of the pavement edge at night and during inclement weather conditions.

Please be careful not to confuse raised pavement travel lane markers (Botts' dots) with rumble strips. These are generally used as lane or roadway edge markers and in gore areas and are NOT considered rumble strips.

Types of Rumble Strips

- Center line rumble strips are an effective countermeasure to reduce head-on collisions and opposite-direction sideswipes (often referred to as cross-over or cross-center-line crashes). Center-line rumble strips are primarily used to warn drivers whose vehicles are crossing center lines of two-lane, two-way roads. These will typically be left rumble strips for this element.
- Shoulder rumble strips are an effective means of reducing run-off-the-road crashes. They are primarily used to warn drivers when they have drifted from their lane. Edge line rumble strips are a variation on shoulder rumble strips and place the pavement marking within the rumble strip, improving the visibility of the marking. These are more commonly used on roads with narrow shoulders. Shoulder rumble strips will typically be right rumble strips for this element.

- Transverse rumble strips are used to alert drivers of an unexpected change in the roadway, such as the need to change lanes, slow down or stop, or changes in the roadway alignment. These rumble strips are not intended to reduce run-off-road crashes. Typical locations for these rumble strips are on approaches to intersections, toll plazas, horizontal curves, and work zones. Transverse rumble strips ARE NOT considered rumble strips for this element.

No rumble strip present

Used when there is no rumble strip present in this vehicle's initial travel lane.

Left rumble strip present

Used when there is a rumble strip present adjacent to the left side of the initial travel lane.

Right rumble strip present

Used when there is a rumble strip present adjacent to the right side of the initial travel lane.

Left and right rumble strip present

Used when there is a rumble strip present adjacent to the left and right side of the initial travel lane.

Rumble Strip Present-Road

Screen Name: **Rumble Strip-Road**
 SAS Data Set: **GV**
 SAS Variable: **RUMBROAD**
 Database Name: **CISS.CISS.VEH_PRECRASH.RUMBLEROADWAY**

Element Attributes

Database	SAS	
4	0	None
1	1	Left rumble strip present
2	2	Right rumble strip present
3	3	Left and right rumble strip present
-9999	9	Unknown

Source

Technician-determined; inputs include scene inspection and police report.

Remarks

Rumble strips are pavement irregularities installed to warn drivers of lane or roadway departures. This element captures the presence of rumble strips in the vehicles road along the direction of travel during the pre-event movement phase of the crash.

Rumble strips are an effective countermeasure for reducing lane and roadway departure crashes. The noise and vibration produced by rumble strips alert drivers when they leave the traveled way. Rumble stripes is the term used for rumble strips painted with a retroreflective coating to increase the visibility of the pavement edge at night and during inclement weather conditions.

Please be careful not to confuse raised pavement travel lane markers (Botts' dot) with rumble strips. These are generally used as lane or roadway edge markers and in gore areas and are NOT considered rumble strips.

Types of Rumble Strips

- Center line rumble strips are an effective countermeasure to reduce head-on collisions and opposite-direction sideswipes (often referred to as cross-over or cross- center line crashes). Center line rumble strips are primarily used to warn drivers whose vehicles are crossing center lines of two-lane, two-way roads. Center line rumble strips ARE NOT considered left side rumble strips for this element. This element is focused on rumble strips for the road and not the initial travel lane.
- Shoulder rumble strips are an effective means of reducing run-off-the-road crashes. They are primarily used to warn drivers when they have drifted from their lane. Edge line rumble strips are a variation on shoulder rumble strips and place the pavement marking within the rumble strip, improving the visibility of the marking. These are more commonly used on roads with narrow shoulders.

- Transverse rumble strips are used to alert drivers of an unexpected change in the roadway, such as the need to change lanes, slow down or stop, or changes in the roadway alignment. These rumble strips are not intended to reduce run-off-road crashes. Typical locations for these rumble strips are on approaches to intersections, toll plazas, horizontal curves, and work zones. Transverse rumble strips ARE NOT considered rumble strips for this element.

No rumble strip present

Used when there is no rumble strip present in this vehicle's road.

Left rumble strip present

Used when there is a rumble strip present adjacent to the left side of the road.

Right rumble strip present

Used when there is a rumble strip present adjacent to the right side of the road.

Left and right rumble strip present

Used when there is a rumble strip present adjacent to the left and right side of the road.

Roadway Alignment

Screen Name: **Roadway-Alignment**
SAS Data Set: **GV**
SAS Variable:
Database Name: **CISS.CISS.VEH_PRECRASH.ALIGNMENT**

Element Attributes

Database	SAS	
6	1	Straight
3	2	Curve right
2	3	Curve left
7	9	Unknown

Source

Technician-determined—Primary source is scene inspection; secondary sources include the police report and interviews.

Remarks

This element is determined from the same roadway that was used to determine Trafficway Flow. Select the descriptor that best represents the vehicle's environment just prior to this vehicle's critical precrash event.

Any perceptually determined curvature of a roadway constitutes a curve.

Straight

Refers to a roadway that has no perceptually determined curvature.

Curve right and curve left

Refer to a perceptually determined curvature of a roadway. The vehicle's direction of travel determines whether the curvature is right or left.

Roadway Profile

Screen Name: **Roadway-Profile**
 SAS Data Set: **GV**
 SAS Variable: **PROFILE**
 Database Name: **CISS.CISS.VEH_PRECRASH.PROFILE**

Element Attributes

Database	SAS	
4	1	Level
8	2	Uphill grade ($\geq 2\%$)
3	3	Hillcrest
1	4	Downhill grade ($\geq 2\%$)
7	5	Sag
2	9	Unknown

Source

Technician-determined—Primary source is scene inspection; secondary sources include police report and interviews.

Remarks

The element attribute is determined from the same roadway that was used to determine **Trafficway Flow**. Measure the area most representative of the precrash environment. To determine the grade, the vertical measurement is divided by the horizontal value; the result is a percentage value of the grade.

Level

Used when the roadway surface tangent gradient is less than or equal to 2% (i.e., vertical divided by horizontal (vertical/horizontal)).

Uphill grade ($\geq 2\%$)

Used when the roadway profile is uphill or positive, relative to the direction of travel of this vehicle.

Hillcrest

Refers to a surface in vertical transition between two points of tangency.



Figure 17. Hillcrest figure

Downhill grade ($\geq 2\%$)

Used when the roadway profile is downhill or negative, relative to the direction of travel for this vehicle.

Sag

Refers to a surface in vertical transition between two points of tangency.



Figure 18. Sag figure

Surface Type

Screen Name: **Roadway-Surface Type**
 SAS Data Set: **GV**
 SAS Variable: **SURFTYPE**
 Database Name: **CISS.CISS.VEH_PRECRASH.SURFACETYPE**

Element Attributes

Database	SAS	
3	1	Concrete
1	2	Bituminous (asphalt)
2	3	Brick or block
8	4	Slag, gravel, or stone
4	5	Dirt
7	8	Other, specify:
9	9	Unknown

Source

Technician-determined primary source is scene inspection; secondary sources include police report and interviews.

Remarks

This element attribute is determined from the same roadway that was used to determine the **Trafficway Flow**. If the lateral cross section contains lanes of more than one surface type, select the surface type of the lane the driver's vehicle was traveling on just prior to this vehicle's critical precrash event.

Concrete

Used when the road surface is made of a material consisting of a conglomerate of gravel, pebbles, broken stone, or slag, in a mortar or cement matrix.

Bituminous (asphalt)

Used when the road surface is made of a product obtained by the distillation of coal and petroleum. Also referred to in non-technical terms as "blacktop."

Brick or block

Used when the road surface is constructed of paving stone (cobblestone, paving bricks, etc.).

Slag, gravel, or stone

Used when the road surface is constructed of a loose material primarily consisting of the elements of slag, gravel, or stone.

Dirt

Used when the improved road surface is made of a natural earthen surface.

Other specify

Used for another type of surface such as wood.

Unknown

Used when the surface type is unknown.

Surface Condition

Screen Name: **Surface Condition**
 SAS Data Set: **GV**
 SAS Variable:
 Database Name: **CISS.CISS.VEH_PRECRASH.SURFACECOND**

Element Attributes

Database	SAS	
1	1	Dry
13	2	Wet
10	3	Snow
9	4	Slush
2	5	Ice/frost
12	6	Water (standing, moving)
8	7	Sand
3	8	Mud, dirt, gravel
6	9	Oil
7	98	Other, (specify):
11	99	Unknown

Source

Technician-determined primary source is the police report; secondary sources include interviews, and scene inspection.

Remarks

This element attribute is based on the location that best represents the Precrash Environment data. The element should be selected based on the same lanes used to select Trafficway Flow.

It is possible for different surface conditions to exist on the same roadway (e.g., intermittent wet and dry sections). The technician should consider the condition most representative of the roadway immediately prior to this vehicle's critical precrash event.

Sand, mud, dirt, gravel, or oil

Used when the attribute is present on another road surface. (i.e., a dirt road would not receive this attribute solely due to presence). If the sand; mud, dirt, gravel, or oil occurs in combination with moisture conditions **Wet**, **Snow/Slush**, **Ice/Frost**, or **Water (Standing, Moving)** then select the moisture condition.

Lighting Conditions

Screen Name: **Conditions - Light**
 SAS Data Set: **GV**
 SAS Variable: **LIGHTCOND**
 Database Name: **CISS.CISS.VEH_PRECRASH.LIGHTCOND**

Element Attributes

Database	SAS	
5	1	Daylight
2	2	Dark
1	3	Dark, but lighted
4	4	Dawn
6	5	Dusk
9	9	Unknown

Source

Technician-determined — Primary source is the police report; secondary sources include interviews and scene inspection.

Remarks

The light condition best representing the precrash conditions at the time of the crash. Used based on ambient and artificial sources.

Dark

Should be selected when the crash occurred after dusk and before dawn, and no artificial light source is present at the scene.

Dark but lighted

Should be selected when the crash occurred after dusk and before dawn, and artificial light source are present at the scene.

Note: **Dark** and **Dark, but lighted** include crashes occurring in tunnels.

Unknown

Should be selected when it cannot be reasonably determined what the light conditions were at the time of the crash.

Atmospheric Conditions

Screen Name: **Conditions - Atmospheric**
 SAS Data Set: **GV**
 SAS Variable: **WEATHER**
 Database Name: **CISS.CISS.VEH_PRECRASH.WEATHERCOND**

Element Attributes

Database	SAS	
7	5	Fog, smog, smoke
12	2	Rain
15	4	Snow
3	9	Blowing snow
13	6	Severe crosswinds
1	7	Blowing sand, soil, dirt
5	1	Clear
6	8	Cloudy
14	3	Sleet or hail
8	10	Freezing rain or freezing drizzle
11	98	Other (specify):
16	99	Unknown

Source

Technician-determined — primary source is the police report; secondary sources include interviews and scene inspection.

Remarks

The atmospheric condition is selected with respect to the conditions just prior to the critical event. Select the attribute that had the most effect on the visibility of the driver. The element attributes are oriented toward precipitation, or particle dispersion, which may affect the driver visibility.

It is possible for different drivers to experience different conditions.

Fog, smog, smoke

This attribute is selected when one of the below conditions affects driver visibility.

- Fog is described as condensed water vapor in cloudlike masses lying close to the ground and limiting visibility.
- Smog is described as a fog made heavier and darker by smoke and chemical fumes; *also*: a photochemical haze caused by the action of solar ultraviolet radiation on atmosphere polluted with hydrocarbons and oxides of nitrogen from automobile exhaust.

- Smoke is described as a vaporous system made up of small particles of carbonaceous matter in the air, resulting mainly from the burning of organic material, such as wood or coal.

Rain

Used when the precipitation falling at the time of the crash is predominately in the form of water droplets.

Snow

Used when the precipitation falling at the time of the crash is predominately in the form of translucent ice crystals originating in the upper atmosphere as frozen particles of water vapor. This attribute includes rain mixed with snow. Accumulation is not necessary to select this attribute.

Blowing snow

Used when wind driven snow reduces visibility and causes significant drifting. Blowing snow may be snow that is falling and/or loose snow on the ground picked up by the wind.

Severe crosswinds

Used when the wind is blowing at right angles to the effected vehicle. Severe crosswinds are considered when the wind is blowing over 39 mph (63 kph).

Blowing sand, soil, dirt

Used when sand, soil or dirt particles are picked up from the surface of the earth by the wind and that affects driver visibility.

Clear

Used when the sky has less than 50-percent cloud cover.

Cloudy

Used when the sky has more than 50-percent cloud cover.

Sleet or hail

Used when the precipitation falling at the time of the crash is predominately in the form of frozen or partially frozen raindrops.

Freezing rain or freezing drizzle

A fine mist or rain passing from a liquid to a solid state due to temperature drop.

Other (specify)

Used when there is a relevant weather-related factor that is not described in the preceding elements. Specify the nature of this factor in detail.

Unknown

Used when there is insufficient information to determine what weather conditions were present at the time of the crash.

Traffic Control Device

Screen Name: **Traffic Control - Device**
 SAS Data Set: **GV**
 SAS Variable: **TRAFDEV**
 Database Name: **CISS.CISS.VEH_PRECRASH.TRAFFICDEV**

Element Attributes

Database	SAS	
4	0	No traffic control
13	1	Traffic control signal (not RR crossing)
12	2	Stop sign
17	3	Yield sign
11	4	School zone sign
8	5	Other regulatory sign (specify):
16	6	Warning sign (not RR crossing)
15	7	Unknown sign
6	8	Miscellaneous/other controls including RR controls (specify):
14	9	Unknown

Source

Technician-determined — primary source is scene inspection; secondary sources include the police report and interviews.

Remarks

This attribute is determined from the same roadway used to define the Trafficway Flow. The technician should select the descriptor that best controls traffic in the vehicle's environment just prior to this vehicle's critical precrash event.

This variable measures the above-ground traffic control that regulate vehicular traffic. Excluded are any controls that **solely** regulate pedestrians (e.g., wait/walk signals).

Focus on the road segment just prior to the location of the critical precrash event and select the traffic control device that is (are) **most related** to this event. In-junction crashes should be based on the presence of a traffic control device for the roadway on which the vehicle is traveling. For non-junction crashes, traffic control devices should be selected based on their relationship to the crash circumstances and **not** be based merely on presence.

Regulatory signs: Give notice of traffic laws or regulations.

Warning signs: Call attention to conditions on or adjacent to a highway or street that are potentially hazardous to traffic operations.

Guide signs: Show route designations, destinations, directions, distances, services, points of interest, and other geographical recreational or cultural information. Guide signs do not constitute traffic controls.

Signs come in standard shapes. The **octagon** is exclusively used for the STOP sign. The **equilateral triangle**, with one point downward, is used exclusively for the YIELD sign. The **round** shape is used for the advance warning of a railroad crossing and for the civil defense evacuation route marker. The **pennant** shape, an isosceles triangle, with its longest axis horizontal, is used to warn of no passing zones. The **diamond** shape is used only to warn of existing or possible hazards either on or adjacent to the roadway or adjacent thereto. The **(vertical) rectangle**, ordinarily with the longer dimension vertical, is used for regulatory signs, with the exception of STOP signs and Traffic Control Device YIELD signs. The **(horizontal) rectangle**, ordinarily with the longer dimension horizontal is used for route markers and recreational area guide signs.

The **pentagon**, point up, is used for School Advance and School Crossing signs. **Other** shapes are reserved for special purposes; for example, the shield or other characteristic design for route markers and cross buck for railroad crossings.

Signs can be distinguished by their color. The following general rules apply. **Red** is used as a background color on prohibitory type regulatory signs (e.g., STOP, Do Not Enter, Wrong Way). It is also used as the circular outline and diagonal bar prohibitory symbol. **Black** may be used as a background (e.g., ONE WAY); it is used as a message on white, yellow and orange signs. **White** is used as the background for route markers, guide signs, and regulatory signs (except STOP). It is used as the legend for brown, green, blue, black and red signs. **Orange** is used only as a background color for construction and maintenance signs. **Yellow** is used as a background color for warning signs and for school signs. **Brown**, **Green**, and **Blue** are used as a background color for guide signs.

Pavement markings are used to supplement the regulations or warnings of other devices such as traffic signs or signals. In other instances, they are used alone and produce results that cannot be obtained by the use of any other device. Pavement markings can convey warnings or information to the driver without diverting his attention from the roadway. **Pavement markings are not considered when completing this variable.**

The technician should consider the intent of this question. If at the time of the crash there was no intent to control (regulate or warn) vehicle traffic, then select **No traffic controls**; otherwise, select the appropriate value.

For example, if the intersection is channelized and controlled differently on the channel than on the through lanes (e.g., signal and yield sign), report the traffic controls depending on whether the roadway (Number of Travel Lanes) was chosen based on its through lanes or its channelized lanes.

The attributes are in prioritized order. This means that **Traffic Control Signal** takes precedence over **school zone signs**, **other regulatory signs**, and **warning signs**.

If a school guard, police officer, or other officially designated person controls both pedestrian and vehicular traffic, select **miscellaneous/other controls, including RR controls**.

Note: The only exception to the prioritization rule is that any *Officially designated* person (**miscellaneous controls**) takes precedence over any other attribute.

No traffic control

Used when there is no above ground sign or signal to regulate traffic flow. If a traffic control device has been deactivated (e.g., traffic signal that emits no signal) during certain times of the day and was deactivated at the time of the crash select **No** used for regulatory signs.

Traffic control signal (not RR crossing)

Includes a traffic control that has been recently installed, but not activated as of the time of the crash.

Use **Traffic control signal (not RR crossing)** for all of the following:

- Any signal that processes through the green, amber, and red cycles. The source of the actuation is of no concern.
- A green, amber and red cycling signal that a signal is missing or inoperable.
- A green, amber, and red cycle capability, but is being used to flash amber/red or red/red.
- A flashing beacon — capable of only flashing amber/red or red/red signals.
- Lane use control signals including turn arrows and controls that govern the direction of traffic flow in lanes (e.g., electrically controlled overhead “X” or arrow used at different times of the day or on bridges to govern the direction of traffic flow in the lane.)

Any portable signal that controls traffic flow (i.e., gas-powered directional signal to divert traffic for an impending lane closure).

A traffic control signal that is out (e.g., due to a power failure) and was related to the crash, should be indicated as present, unless a temporary control stop sign, police officer, miscellaneous controls etc. has been inserted, in which case the temporary control should be selected.

Note: Regulatory signs that are *enhanced* by flashing lights should be selected based on their regulatory design. (e.g., a stop sign with a flashing light should be coded as a stop sign - disregard the flashing light).

Stop sign

Used when a trafficway is controlled by an octagon-shaped sign, with white letters and border on a red background.

Yield sign

Used when a trafficway is controlled by an equilateral-shaped triangle, with one point downward, having a red border band and white interior and the word “YIELD” in red inside the border band.

School zone sign

Used when a school zone warning sign is present. These signs may include a 5-sided sign with the point at the top, a rectangular, school speed zone sign, or some other black printing on a yellow background sign.

A school zone sign is selected only if the crash occurred during the time the sign was in effect (i.e., school must be in-session). If the sign was in effect, it does not matter whether or not children were present. The time of the crash should also be correlated to the day of the week and the effect of holidays, vacations, etc.

Other regulatory sign (specify):

Used when a regulatory sign other than a “stop” or “yield” sign is present. “Other” signs include speed limit signs, movement signs (NO TURN, LEFT TURN ONLY, DO NOT ENTER, WRONG WAY, ONE WAY, etc.), parking signs (e.g., NO PARKING, EMERGENCY PARKING ONLY), and other miscellaneous signs (ROAD CLOSED TO THROUGH TRAFFIC, WEIGHT LIMIT, etc.)

Warning sign (Not RR crossing)

Used when a sign is used to warn of an existing or potentially hazardous condition on or adjacent to a highway or street. Generally warning signs are diamond-shaped with black legend and a border on a yellow background. Examples include TURN SIGNS, CURVE SIGNS, WINDING ROAD SIGN, STOP AHEAD SIGN, “T” SYMBOL SIGNS, etc. Some warning signs are horizontal rectangles, for example, a large arrow sign intended to give notice of a sharp change in alignment in the direction of travel.

Unknown sign

Used when a regulatory sign ***was present*** at the time of collision but was removed or not available during the scene inspection to determine its type and the PCR is not specific about a traffic control presence.

Miscellaneous/other controls including RR controls (specify):

Used when the following are present:

A construction warning sign (any black on orange diamond shaped sign).

- Railroad crossing controls are present (e.g., any gates, flashing lights, bells, cross buck, or railroad crossing sign, circle with a black “X” on a yellow background).
- ***Officially designated*** person controls both pedestrian and vehicular traffic (police officer, crossing guard, flag person, etc.)

Note: An ***officially designated*** person controlling traffic takes precedence over any other attributes.

Traffic Control Device Functioning

Screen Name: **Traffic Control—Functioning**
 SAS Data Set: **GV**
 SAS Variable: **TRAFFUNCT**
 Database Name: **CISS.CISS.VEH_PRECRASH.TRAFFICDEVFUNC**

Element Attributes

Database	SAS	
3	0	No traffic control
1	1	Traffic control device not functioning (specify):
6	2	Traffic control device functioning properly
5	9	Unknown

Source

Technician-determined—inputs include scene inspection, interviews, and police report.

Remarks**Traffic control device not functioning (specify):**

Used in the following situations:

- The traffic control device was not operating.
- The traffic control device reported has some function, but the function was improper, inadequate, or operating erratically (e.g., signal works but was stuck on red).
- The traffic control device was defaced, badly worn, rotated so it could not be seen, covered with snow, lying on ground, etc.

Traffic control device functioning properly

Used when the traffic control device was functioning as designed at the time of the crash.

Unknown

Used when the status of the traffic control device, at the time of the crash, cannot be determined.

Shoulder Width

Screen Name: **Shoulder Width**
 SAS Data Set: **GV**
 SAS Variable: **SHLDRWIDTH**
 Database Name: **CISS.CISS.VEH_PRECRASH.SHOULDERWIDTH**

Element Attributes

Database	SAS	
0.0	0.0	When the value cannot be measured, but is estimated under 10 cm
0.1 - 9.6	0.1- 9.6	Entered value (meters)
9.7	9.7	≥ 9.7 m
9.8	9.8	Not applicable
9.9	9.9	Unknown

Source

Technician-determined—Primary source is the scene inspection/scene diagram — secondary sources include the police report and digital imagery.

Remarks

The attribute is only coded when a vehicle departs a roadway and strikes a fixed object. If there is no fixed object struck, this variable is coded “**Not applicable.**”

The roadway departure is determined from the same roadway that was used to determine the **Number of Travel Lanes**. The shoulder of the roadway is assessed for the side of the road the vehicle departed. The measurement is taken from the edge of the roadway (delineated or common use) to the farthest edge of the shoulder.

This variable establishes the width of the stabilized shoulder available to this vehicle. In circumstances where there are edge lines, measure shoulder width from the center of the edge line to the outside edge of the shoulder. Where there is no edge line, measure from the outside edge of the roadway to the outside edge of the shoulder.

The value should be measured from the final scene diagram by using the measurement tool or can be measured in the field.

The measurement should be to the nearest tenth of a meter (i.e., 1.2 m). This width will be used by the Federal Highway Administration in analysis of crashes where vehicles struck fixed objects off the road.

0.0

When objects such as concrete jersey barriers, guardrails, signs, etc., are near the edge of the shoulder and attempting to measure would jeopardize technician safety (i.e., jersey barrier in median of city interstate) simply code 0.0 for 10 cm or less.

0.1 – 9.6

The measurement should be to the nearest tenth of a meter (i.e., 1.2 m).

9.7 $\geq$ 9.7 m

Used when the shoulder width measurement is 9.7 m or more.

9.8 Not applicable

Used when a vehicle does not strike an object off the road.

9.9 Unknown

Used when it is known that a vehicle struck an off-road object, but the technician could not measure or accurately estimate the distance.

Struck Object Length

Screen Name: **Struck Object Length**
 SAS Data Set: **GV**
 SAS Variable: **STRKLENGTH**
 Database Name: **CISS.CISS.VEH_PRE-CRASH.OBJECTLENGTH**

Element Attributes

Database	SAS	
		Length
0 - 119	0 - 119	Entered value (cm)
120	120	Entered when object is 120 cm or greater
998	998	Not applicable
999	999	Unknown

Source

Technician-determined - Primary source is the scene inspection/scene diagram — secondary sources include the police report and digital imagery.

Remarks

The attribute is only coded when a vehicle departs a roadway and strikes a fixed object. This includes vehicles rolling over. If there is no fixed object struck, this variable is coded “**Not applicable.**”

A Fixed object struck subsequent to the rollover event is included if an event is assigned.

The object length is assessed for the first object contacted after the vehicle departs the shoulder (or roadway if there is no shoulder). The value should be measured at the scene but can be measured from the final diagram only when Total Station was used to document the direct damage length.

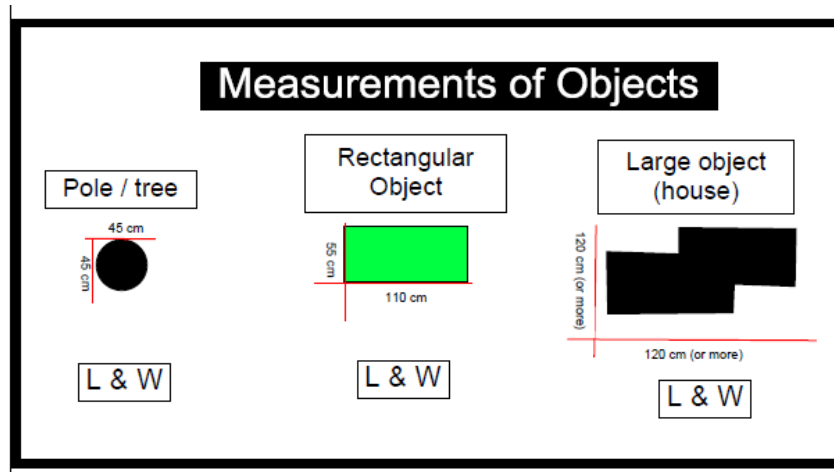


Figure 19. Example measurements

The measurements should be to the nearest centimeter (i.e., 045 cm by 056 cm).

The limit for both values is 119 cm. Any value 120 cm or more should be coded 120.

This length will be used by the FHWA in analysis of crashes where vehicles struck fixed objects off the road.

120

Used for values 120 cm or more.

Not applicable

Used when a fixed object was not struck off the road.

Unknown

Used when it is known that a vehicle struck an off-road object, but the technician could not measure or accurately measure the object.

Struck Object Width

Screen Name: **Struck Object Width**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.VEH_PRE-CRASH.OBJECTWIDTH**

Element Attributes

Database	SAS	
		Width
0 - 119	0 - 119	Entered value (cm)
120	120	Entered when object is 120 cm or greater
998	998	Not applicable
999	999	Unknown

Source

Technician-determined—Primary source is the scene inspection/scene diagram — secondary sources include the police report and digital imagery.

Remarks

The attribute is only coded when a vehicle departs a roadway and strikes a fixed object. If there is no fixed object struck, this variable is coded “**Not applicable.**”

The object width is assessed for the first object contacted after the vehicle departs the shoulder (or roadway if there is no shoulder). The value should be measured at the scene but can be measured from the final diagram only when Total Station was used to document the object width.

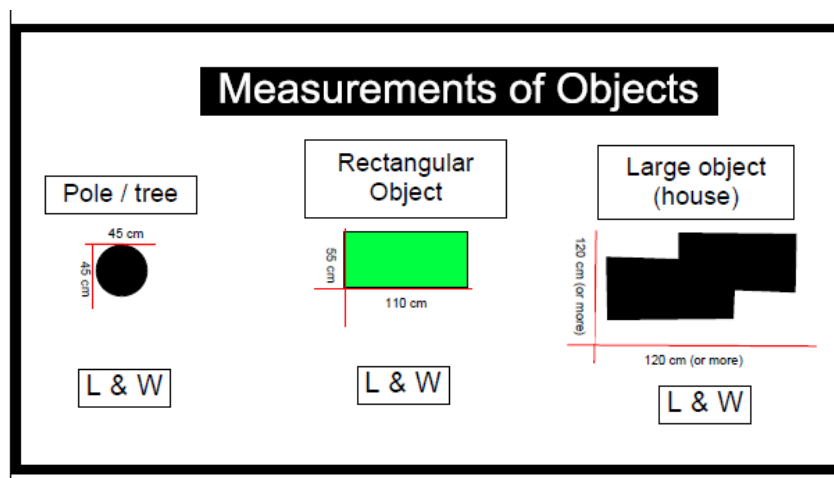


Figure 20. Example measurements

The measurements should be to the nearest centimeter (i.e., 045 cm by 056 cm).

The limit for both values is 119 cm. Any value 120 cm or more should be coded 120.

This width will be used by the FHWA in analysis of crashes where vehicles struck fixed objects off the road.

120

Used for values 120 cm or more.

Not applicable

Used when a fixed object was not struck off the road.

Unknown

Used when it is known that a vehicle struck an off-road object, but the technician could not measure or accurately measure the object.

Struck Object Height

Screen Name: **Struck Object Height**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.VEH_PRE-CRASH.OBJECTHEIGHT**

Element Attributes

Database	SAS	
		Height
0	0	Entered value when height is at or near ground level
-1 to -119	-1 to -119	Entered value (cm)
-120	-120	Entered when object height is less than or equal to 20 cm
1 to 119	1 to 119	Entered value (cm)
120	120	Entered when object height 120 cm or more
998	998	Not applicable
999	999	Unknown

Source

Technician-determined - Primary source is the scene inspection/scene diagram — secondary sources include the police report and digital imagery.

Remarks

The attribute is only coded when a vehicle departs a roadway and strikes a fixed object. If there is no fixed object struck, this variable is coded “**Not applicable.**”

The object height is assessed for the first object contacted after the vehicle departs the shoulder (or roadway if there is no shoulder). The value should be measured at the scene, with a vertical reference scale present for the images.

The limit for both values is 119 cm. Any value 120 cm or more should be coded 120.

This height will be used by the FHWA in analysis of crashes where vehicles struck fixed objects off the road.

Entered Value 0

Is used when the height of the struck object is at or near ground level. This would be a rare occurrence, an example being a vehicle vaulting a ditch and striking the upslope of the ditch at or near the ground level where the vault began.

Entered Value -001 to -119

Negative values are used when the direct contact height of the damage falls below grade (i.e., ditch).

The height of the damage to the object reflects the distance from the ground to the top of the damage on the object (ditch).

Entered Value 001 to 119

Positive values reflect contact vertical heights above grade (i.e., pole).

The height of the damage to the object reflects the distance from the ground to the top of the direct damage on the object. Trees, poles, fences etc., reflect the distance off the ground vertically to the top of the direct damage. Guardrail heights are measured from the ground to the top of the direct damage to guardrail in an area most representative of the precrash height.

120

Used for values 120 cm or more.

Not applicable

Used when a fixed object was not struck off the road.

Unknown

Used when it is known that a vehicle struck an off-road object, but the technician could not measure or accurately measure the object.

Distance From Edge of Road

Screen Name: **Distance From Edge of Road**
 SAS Data Set: **GV**
 SAS Variable: **EDGEDISTX, EDGEDISTY, EDGDISTZ**
 Database Name: **CISS.CISS.VEH_PRECRASH.DISTANCEX, DISTANCEY, DISTANCEZ**

Element Attributes

Database	SAS	
0.0	0	On road edge
0.0-98.9	0.0-98.9	Enter Value - distance to struck object (meters)
99.0	99	>= 99 m
99.8	99.8	Not applicable
99.9	99.9	Unknown

Source

Technician-determined - Primary source is the scene inspection/scene diagram — secondary sources include the police report and digital imagery.

Remarks

The attribute is only coded when a vehicle departs a road and strikes a fixed object. If there is no fixed object struck, this variable is coded “**Not applicable.**”

Values are coded in X, Y and Z directions.

- X dimension is the longitudinal distance from road edge departure to struck object
- Y dimension is lateral distance from road edge to object
- Z dimension is straight line distance form road edge to struck object

Graphically represented by:

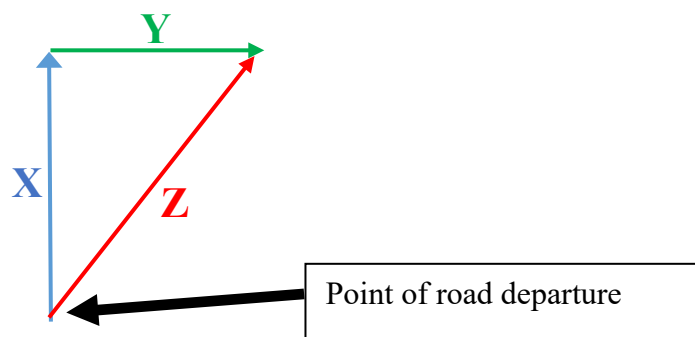


Figure 21. Graphic representation of X, Y, and Z directions

The dimensions can be measured from the final scene diagram because there may not be a documented point at the scene for either the road departure point or the “X” intercept point.

If the object specific location cannot be determined (moved, not replaced, etc.) a reasonable dimension can be estimated at scene or from final case diagram.

This width will be used by the FHWA in analysis of crashes where vehicles struck fixed objects off the road.

Not applicable

Used when a fixed object was not struck off the road.

Unknown

Used when it is known that a vehicle struck an off-road object, but the technician could not measure or accurately measure the object.



Some roadway configurations place fixed objects between two roadways as seen in this struck guardrail example. In this case, the fog line should be used as the edge of the road for obtaining measurements.

Figure 22. Roadway configuration

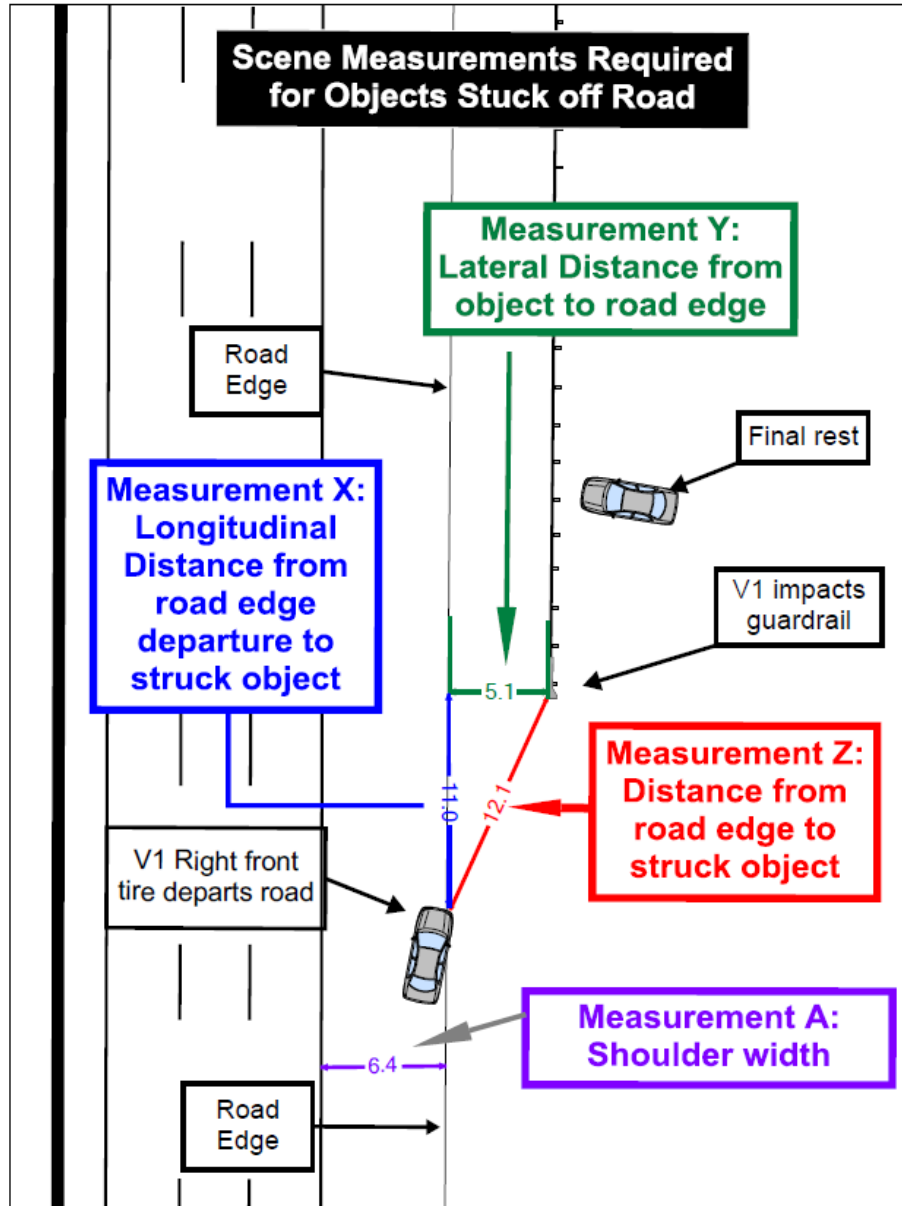


Figure 23. Roadway configuration

Intersection departures, T-intersections, and curves are documented using the CG path of the vehicle.

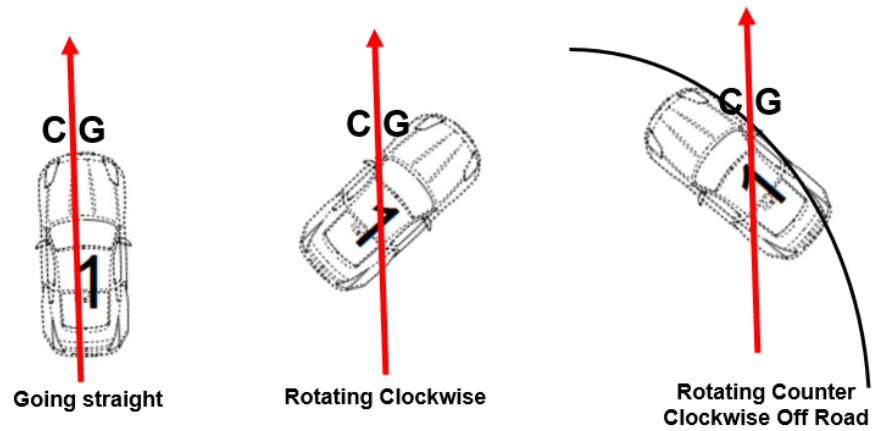


Figure 24. Example CG path of vehicle

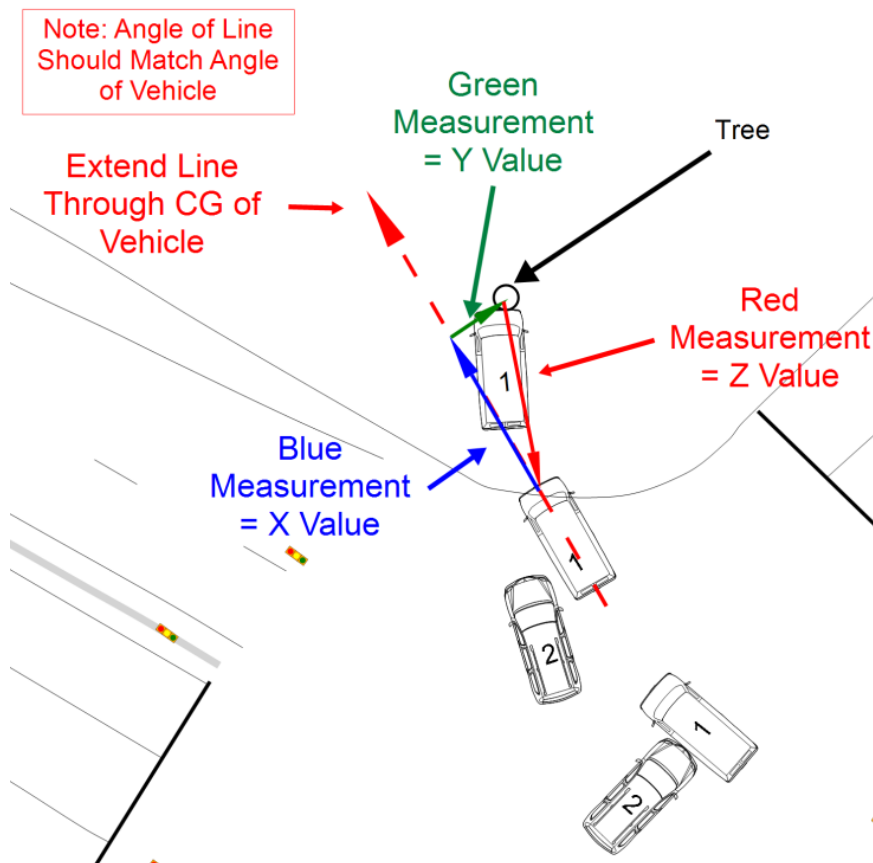


Figure 25. Example of CG path of vehicle

Precrash Data Overview

Precrash variables are completed for each of the in-transport vehicles in the case. This means that the entire crash is first completed from the perspective of one vehicle, then from the perspective of a second vehicle, if any, and so forth. The precrash variables are the following.

- Driver's Distraction/Inattention to Driving (Prior to Recognition of Critical Event)
- Pre-Event Movement (Prior to Recognition of Critical Event)
- Critical Precrash Category
- Critical Precrash Event
- Attempted Avoidance Maneuver
- Pre-Impact Stability
- Pre-Impact Location
- Crash Type

The precrash variables are designed to identify the following:

- What was this vehicle doing just prior to the critical precrash event?
- What made this vehicle's situation critical?
- What was the avoidance response, if any, to this critical situation, and
- What was the movement of the vehicle just prior to impact?

The most important determination that must be made for each in-transport vehicle is: What was this vehicle's Critical Precrash Event, (i.e., what action by this vehicle, another vehicle, person, animal, or non-fixed object was critical to this vehicle's crash?). Once the critical event is determined, the remaining precrash variables are coded relative to this selected **Critical Precrash Event**.

Do not consider culpability as a factor for determining precrash data. Many crash scenarios will suggest fault, but this is considered coincidental rather than by design.

Critical Crash Envelope

The critical crash envelope begins at the point where:

- the driver recognizes an impending danger (e.g., deer runs into the roadway), or
- the vehicle is in an imminent path of collision with another vehicle, pedestrian, pedalcyclist, other nonmotorist, object, or animal.

The critical crash envelope ends when:

- (a) the driver has made a successful avoidance maneuver, and
- (b) has full steering control, and
- (c) the vehicle is tracking; or
- the driver's vehicle impacts another vehicle, pedestrian, pedalcyclist, other nonmotorist, object, or animal.

Simple Single Critical Crash Envelope

Most crashes involve only a single critical crash envelope in which the object contacted is captured under the Critical Pre-Crash Event, (e.g., a vehicle is traveling straight on a roadway and a deer runs into the roadway and is struck by the vehicle). This scenario, and similar ones, are very straightforward and will not present many problems.

Complex Single Critical Crash Envelope

However, some single critical crash envelopes are more complex.

Example A: A driver avoids one obstacle and *immediately* impacts another vehicle, person, object, or animal. Because *immediate* is defined as **not** having an opportunity, or sufficient time, to take any additional avoidance actions, the Critical Pre-Crash Event is related to the vehicle, person, object, or animal that the driver successfully avoided instead of the vehicle's first harmful event (i.e., its impact); see examples 4 and 7 below.

Example B: The driver avoids an obstacle only to (a) lose steering control and/or (b) have the vehicle stop tracking, and the vehicle subsequently impacts another vehicle, person, object, or animal. Regardless of whether the driver:

- attempted to regain steering control,
- caused the vehicle to resume a tracking posture, or
- avoided the struck vehicle, person, object, or animal.

The Critical Pre-Crash Event is similarly related to the vehicle, person, object, or animal that the driver successfully avoided because the driver's critical crash envelope was never stabilized.

In both examples above, the Attempted Avoidance Maneuver records the successful action taken to avoid the Critical Pre-Crash Event.

Vehicles that are not involved in an impact with another vehicle, person, object, or animal in the sequence of crash events (that define this crash) are not included in the CISS; data is not collected for these vehicles. However, these vehicles are included in the Crash Collision Diagram.

The coding order for a single critical crash envelope is illustrated on the next page.

More Than One Critical Crash Envelope

When a case involves several critical crash envelopes, select only the final critical crash envelope. In this situation, encode the variable Pre-Event Movement (Prior to Recognition of Critical Event) as: **Successful avoidance maneuver to a previous critical event**. The final critical crash envelope is the one that resulted in this vehicle's first harmful event (i.e., its impact) as shown in the following illustration.

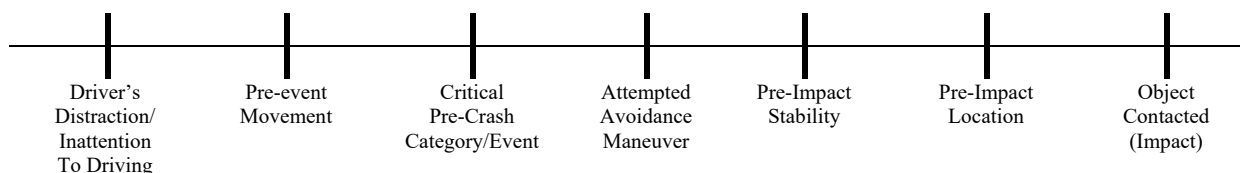


Figure 26. Typical order of a single critical crash envelope

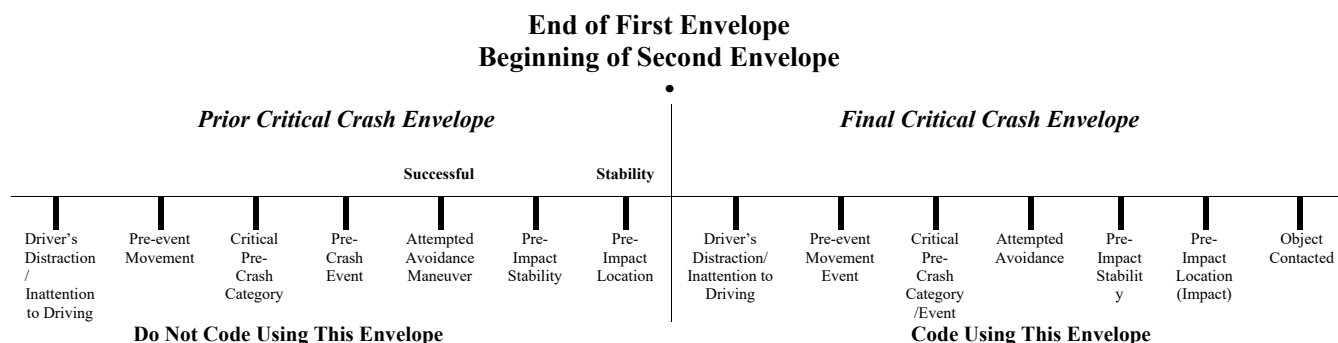


Figure 27. Typical order of critical crash envelopes

When there is doubt as to whether this vehicle had experienced a complex single, or several critical crash envelopes, choose the Critical Pre-Crash Category/Event, to the vehicle, person, object, or animal that the driver successfully avoided (i.e., default to Complex Single). See Complex Single Critical Crash Envelope examples A and B above.

The following pages have: a method protocol, a flowchart illustrating the proper method and protocol for determining the precrash variables, and eight examples of various crash event sequences that contain one or more critical crash envelopes.

Method Protocol

Consider the information obtained from the Police Report, scene and vehicle inspections, and from the interviewee as inputs to your decision making process.

- Determine Critical Pre-Crash Category/Critical Pre-Crash Event.
- What action by this vehicle, another vehicle, person, animal, or object was critical to this driver becoming involved in the crash (i.e., use the “BUT FOR”* test)?
- ASK yourself questions (a) through (f) below. Proceed through each question that applies to the crash you are researching. Stop when the answer to the questions is “Yes.” This is the Critical Pre-Crash Category.
 - a. Did the vehicle exhibit a control loss?
 - b. Does the evidence suggest that the vehicle was in an environmentally dangerous position?
 - c. Was another vehicle “in” this vehicle’s lane?
 - d. Was another vehicle entering into this vehicle’s lane?

- e. Was a pedestrian, pedalcyclist, or other nonmotorist in or approaching this vehicle's path?
- f. Was an animal in or approaching this vehicle's path or was an object in this vehicle's path?
- Determine Driver's Distraction/Inattention to Driving.
- Determine Pre-Event Movement (Prior to Recognition of Critical Event).
- Determine Attempted Avoidance Maneuver.
What does your information indicate that the driver tried to do to avoid the crash?
- Determine Pre-Impact Stability.
- Determine Pre-Impact Location.

***For example:**

"But for" Vehicle # going left-of-center, this vehicle would not have been involved in this crash.

"But for" having entered into the intersection, this vehicle would not have been involved in this crash.

Pre-Crash Methodology Flowchart

***For example:**

"But for" Vehicle # going left-of-center, this vehicle would not have been involved in this crash.

"But for" having entered into the intersection, this vehicle would not have been involved in this crash.

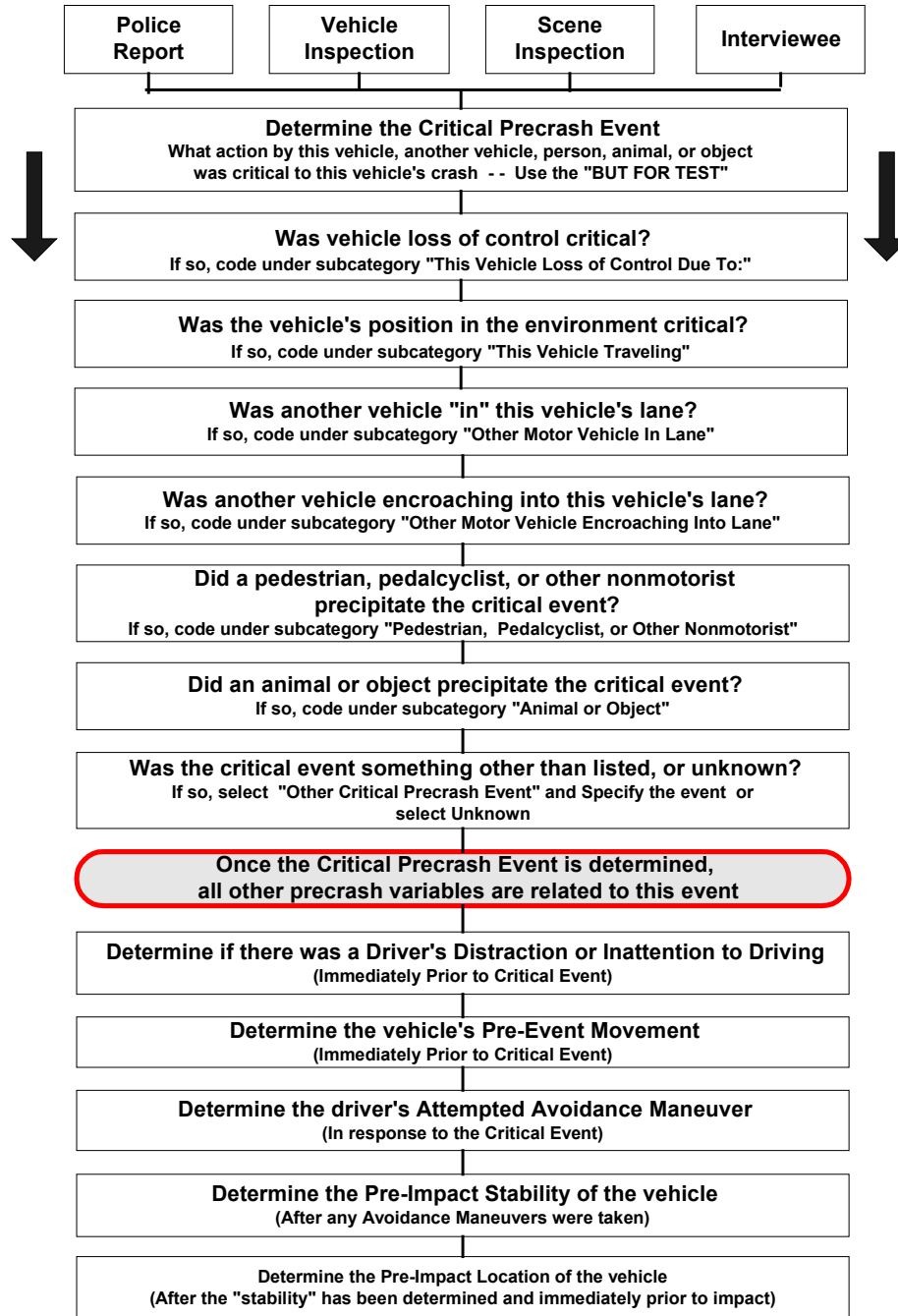


Figure 28. Flow chart

Pre-Crash General Rules

1. Attempted Avoidance Maneuver assesses what the driver's action were during the critical crash envelope in response to his/her realization of impending danger.
2. The mere presence of a traffic control signal/sign typically does not make the situation critical when determining Critical Pre-Crash Event.
3. For example: A single vehicle approaches a stop sign and departs the right side of the road striking a tree, in an attempt to avoid passing through the intersection. The sign has no bearing and therefore, does *not* make the situation critical.
4. When you know the Critical Pre-Crash Category, but are unable to select a specific Critical Pre-Crash Event, use the following guideline:
5. Default to one of the "Other" or unknown attributes within each Critical Pre-Crash Event category, rather than coding the entire Critical Pre-Crash Category as "Other critical precrash event."
6. If control is loss due to driver illness such as heart attacks, diabetic comas, etc., then Critical Pre-Crash Event should be coded as "Other cause of control loss."
7. When coding Critical Pre-Crash Category as "This vehicle loss of control." the loss of control must have occurred prior to the driver doing any avoidance maneuver. If the driver attempts a maneuver (brakes, steers, etc.) as a result of the driver's perception of a vehicle, object, pedestrian, or nonmotorist, then select the vehicle, object, pedestrian, or nonmotorist as the critical event because that is what made the situation critical. If the vehicle is in a yaw prior to the driver taking an avoidance action, then loss-of-control is what made it critical (critical curve scuff, hydroplaning, etc.).
8. When determining Critical Pre-Crash Category/Event, if you do not know from available sources which driver had the right-of-way at a controlled or uncontrolled intersection use the following as a guideline:
 - a. If the junction is controlled by a 3-way/4-way stop sign, or is uncontrolled, then use the common rule that ***the vehicle on the right has the right-of-way*** for determining encroachment.
 - b. If the junction is controlled by an on-colors traffic control device, and both drivers claim a green light, then both vehicles are in an environmentally dangerous position, and Critical Pre-Crash Event for both vehicles should be **This Vehicle Traveling** (Critical Pre-Crash category) Crossing over (passing through) intersection (Critical Pre-Crash Event).
9. When two vehicles are initially traveling on the same trafficway and one executes a left turn with the right-of-way (i.e., green arrow), use **Other Motor Vehicle Encroaching Into Lane - From opposite direction-over right lane line** for the turning vehicle's critical event. This applies to Crash Types 68-69.

If the vehicles were initially on different trafficways (Crash Types 76-77 and 82-83) the critical event for the vehicle turning left with the right-of-way should be **Other Motor Vehicle Encroaching – From crossing street across path**.

10. "Fixed" objects (trees, poles, fire hydrants, etc.,) cannot be in the roadway.

11. A motor vehicle is stopped in a travel lane and is struck by another motor vehicle ricocheting off a vehicle. The Critical Pre-Crash Event for the vehicle struck by the ricocheting vehicle is in the category of either: **Other Motor Vehicle in Lane** or **Other Motor Vehicle Encroaching Into Lane**.
12. Pre-Impact stability should be indicated as “**Tracking**” if the following are met:
 - a. no skid marks are present at the scene,
 - b. the PCR or the interviewee does not indicate skidding, AND
 - c. the vehicle did not rotate 30° or more (either clockwise or counterclockwise).

Trafficway and its component definitions (i.e., roadway, road, shoulder, and median) can be found in the ANSI D.16-2017 Manual on the Classification of Motor Vehicle Traffic Accidents.

Distraction

Driver's Distraction/Inattention to Driving

Screen Name: **Driver's Distraction/Inattention to Driving**
 SAS Data Set: **GV**
 SAS Variable: **DISTRACT**
 Database Name: **CISS.CISS.VEH_PRECRASH.DISTRACTION**

Element Attributes

Database	SAS	
12	0	No driver present
13	1	Attentive or not distracted
14	2	Looked but did not see
15	3	Inattentive or distracted
16	9	Unknown

Source

Technician-determined — inputs include interviews, medical records and police report.

Remarks

Intoxication and medical episodes (heart attack, diabetic coma, syncope, etc.) are not considered distractions. Despite complicating the driving task, they are regarded as more of a condition than a distraction.

No driver present

Is pre-coded if on the Official Records Tab the “Driver Present?” variable is coded as “No driver present.”

Attentive or not distracted

Used when the driver is known to have been completely attentive to driving prior to realization of impending danger or just prior to impact if realization of an impending critical event does not occur.

Looked but did not see

Used when the driver is paying attention to driving, but does not see the relevant vehicle, object, etc. This attribute should be used when a driver has an opportunity to take some action prior to impact, but the driver takes no action and no other distractions apply. This situation frequently occurs when an overtaking vehicle is in the driver’s “blind spot” or at intersections when you look both ways and a crossing vehicle is not noticed. This attribute also includes sun glare contributing to not seeing the relevant vehicle, object, etc. If the driver sees the vehicle, object, etc., but does not consider it a danger and no other distractions apply then select Attentive or not distracted.

Inattentive or distracted

Used when the driver was inattentive or distracted prior to the realization of an impending critical event or just prior to impact if realization of an impending critical event does not occur.

Once this attribute is selected, options come into view where the technician can select all distractions that apply.

Unknown

Used when it is unknown if this driver was fully attentive to driving prior to realization of impending danger or just prior to impact if realization of an impending critical event does not occur. Use this attribute if no interview is obtained and there is no other source of information regarding this driver's attention to driving prior to realization of impending danger.

Driver's Distractions

Screen Name: **Driver's Distraction/Inattention to Driving**
 SAS Data Set: **DISTRACT**
 SAS Variable: **DISTRACTN**
 Database Name: **CISS.CISS.DRIVER_DISTRACT.DISTRACTID**

Element Attributes

Database	SAS	
		Inattentive or distracted:
7	1	Sleepy or fell asleep
5	2	Inattentive or lost in thought
16	3	Manually operating an electronic communication device (texting, typing, dialing)
2	4	Talking on hands-free electronic device
1	5	Talking on hand-held electronic device
13	6	Other device brought into the vehicle (navigation, game, video, etc)
3	7	Device/control integral to the vehicle
12	8	Passenger
4	9	Other inside the vehicle (eating, personal hygiene, smoking, etc.)
10	10	Outside the vehicle (includes unspecified external distractions)
9	99	Distracted, unknown type

Source

Technician-determined — inputs include interviews, medical records, and police report.

Remarks

Select all the attributes that describe this driver's **inattention** to driving prior to the driver's realization of an impending critical event or just prior to impact if realization of an impending critical event does not occur. If this driver's vehicle has two critical crash envelopes, record the attribute that best describe the driver's attention **prior to the first Critical Pre-Crash Event** (i.e., prior to realization of the impending danger that the driver successfully avoided). Intoxication and medical episodes (heart attack, diabetic coma, syncope, etc.) are not considered distractions.

Sleepy or fell asleep

Used when the driver was sleeping or dozing prior to realization of impending danger or just prior to impact if realization did not occur.

Inattentive or lost in thought

Used when the driver is thinking about items other than the driving task (daydreaming).

Manually operating an electronic communication device (texting, typing, dialing)

The driver was in the act of manually manipulating an electronic communication device (cell phone, smart phone, hand-held radio, etc.). The types of device manipulation includes texting, typing, and dialing.

Talking on hands-free electronic device

The driver was conversing using a hands-free electronic device such as Bluetooth equipped headset/earpiece or vehicle-integrated system.

Talking on hand-held electronic device

The driver was conversing on a hand-held electronic device such as a cell phone.

Other device brought into the vehicle (navigation, game, video)

The driver was in the act of using an electronic device for some purpose other than communicating, such as operating a navigation device, playing a game, or watching a video.

Device/Controls integral to the vehicle

Used when the driver is distracted while using a device in the vehicle including adjusting windows, adjusting door locks, adjusting side view mirrors, adjusting rear view mirror, adjusting seat, adjusting steering wheel, and adjusting seat belt, using vehicle's cigarette lighter, etc. (Included here is **all** OEM equipment).

Passenger

Used when the driver was distracted by another occupant in this vehicle. Examples include conversing with or looking at another occupant.

Other inside the vehicle (eating, personal hygiene, smoking, etc.)

Other distractions inside the vehicle affecting the driver. This may include actions taken by the driver such as eating, drinking, smoking, etc., or distractions within the vehicle originating from neither the driver nor passengers, such as a pet or flying insect.

Outside the vehicle (includes unspecified external distractions)

Used when the driver was distracted by an outside person, object or event. Examples include animals on the roadside or a previous crash. Do not use this attribute for a person, object or event that the driver has recognized and for which the driver has taken some action (e.g., avoiding a pedestrian on the roadway).

Distracted, unknown type

Used when it is known that this driver was inattentive prior to realization of impending danger or just prior to impact if realization did not occur, but details of the distraction are unknown.

Pre-First Harmful Event Sequence

Screen Name: **Pre-First Harmful Event Sequence**
 SAS Data Set: **PRE_FHE**
 SAS Variable: **PREEVENT**
 Database Name: **CISS.CISS.HARM_EVENT.HARMEVENTID**

Element Attributes

Database	SAS	
0	0	No driver present
6	1	No pre first harmful event sequence
2	2	Lane departure-left side
4	3	Lane return-left side
3	4	Lane departure-right side
5	5	Lane return-right side
8	6	Roadway departure-left side
10	7	Roadway return-left side
9	8	Roadway departure-right side
11	9	Roadway return-right side
7	98	Other (specify)
12	99	Unknown

Source

Technician-determined inputs include interviews, scene inspection, and police reports.

Remarks

This variable describes **lateral** vehicle movements along the vehicle's trajectory **after** the critical event, and immediately before the first impact. For the purposes of this variable, lateral movement components are defined as lane departures/returns, roadway departures/returns, and a limited number of other motions (i.e., non-contact power unit jackknife and trailer swing). If the vehicle changed lanes before the critical envelope, this should not be included.

Power unit jackknife and trailer swing events that result in contact between the vehicle's units are excluded because these types of events are considered harmful events. Additionally, end departure is not included, as it does not involve a lateral departure.

Roadway or lane departure includes any tire/wheel departing roadway or travel lane. When a vehicle legally parked on the roadside/parking lane is struck by an in-transport vehicle, this is considered a Roadway Departure for the vehicle striking the legally parked vehicle.

In cases where a lane departure/return also represents a roadway departure/return, the maneuver should be classified in the roadway category. Specifically, road designated element values take precedence over lane designated element values. Code every lane/roadway departure and return.

Since the technician will sequence all lateral movements, certain attributes may be used several times.

If there are no lateral movement components between the end of the pre-event movement phase and the initiation point of the first harmful event, this variable should be coded No pre-first harmful event maneuver sequence. For example, if an inattentive driver suddenly realizes that traffic forward of his position is stopped, applies heavy braking inputs causing the vehicle to skid forward to impact without departing its travel lane, then code No pre-first harmful event maneuver sequence.

No pre-first harmful event sequence

Used when there are no lateral movement components in this vehicle's trajectory prior to the first harmful event.

Lane departure-left side

Used when this vehicle departs the left side of the travel lane prior to the first harmful event. If the lane departure also represents a road departure, code this event in the road departure category.

Lane return-left side

Used when the subject vehicle returns to the left side of the travel lane, after a previous departure, prior to the first harmful event. If the lane return also represents a road return, code this event in the road return category.

Lane departure-right side

Used when this vehicle departs the right side of the travel lane prior to the first harmful event. If the lane departure also represents a road departure, code this event in the road departure category.

Lane return-right side

Used when the subject vehicle returns to the right side of the travel lane, after a previous departure, prior to the first harmful event. If the lane return also represents a road return, code this event in the road return category.

Roadway departure-left side

Used when this vehicle departs the left side of the roadway prior to the first harmful event.

Roadway return-left side

Used when the subject vehicle returns to the left side of the roadway, after a previous road departure, prior to the first harmful event.

Roadway departure-right side

Used when this vehicle departs the right side of the roadway prior to the first harmful event.

Roadway return-right side

Used when the subject vehicle returns to the right side of the roadway, after a previous road departure, prior to the first harmful event.

Other (specify)

Used when the subject vehicle experiences a lateral movement component that is not described in preceding elements. Non-contact power unit jackknifes and trailer swings are included in this attribute. For Example: When the subject vehicle leaves its initial roadway and enters a different roadway (i.e., travels through the median) use this attribute (Example 4 below).

No driver present

Used when there is no driver present in the vehicle at the time of the crash.

Unknown

Used when there is insufficient information to determine the subject vehicle's trajectory between the end of the pre-event movement phase and the initiation point of the first harmful event or when there is insufficient information to determine specific lateral movement components.

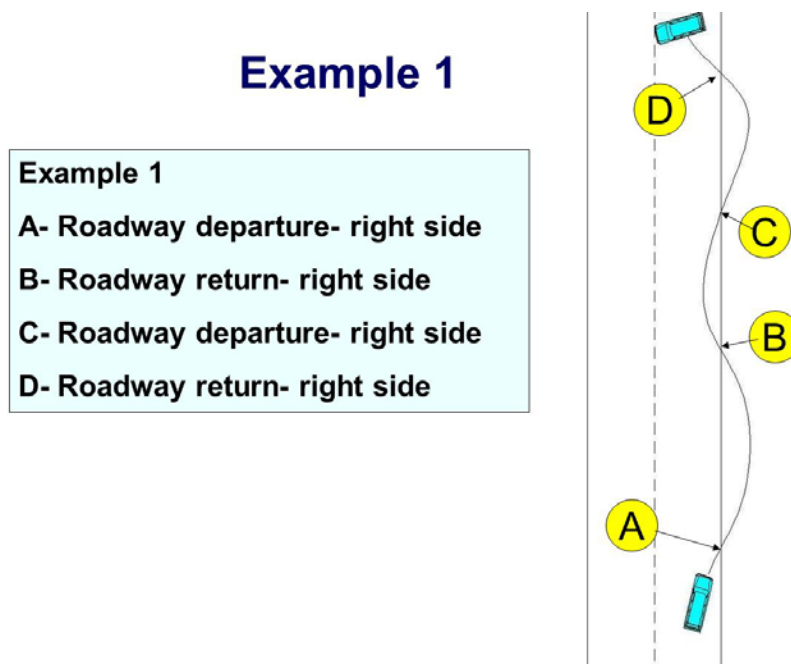


Figure 29. Pre-FHE Example 1

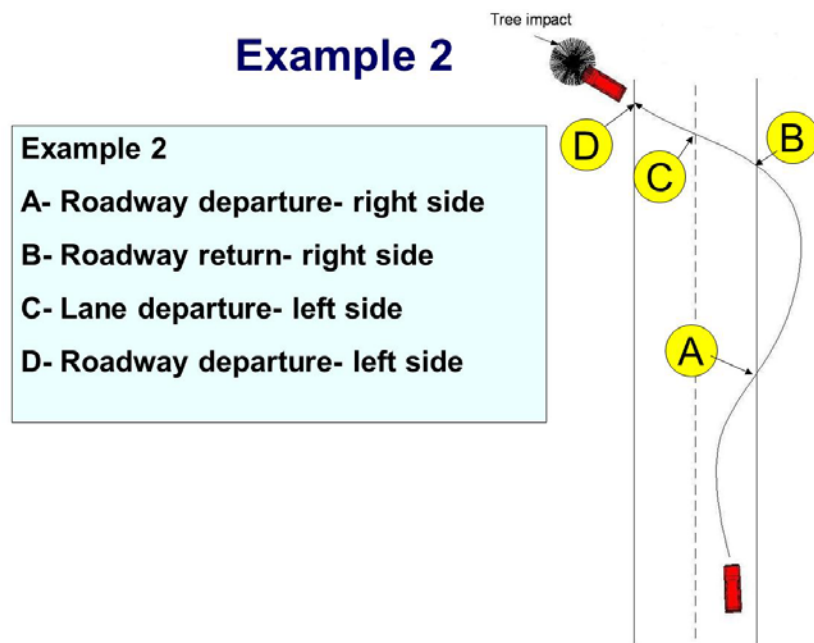


Figure 30. Pre-FHE Example 2

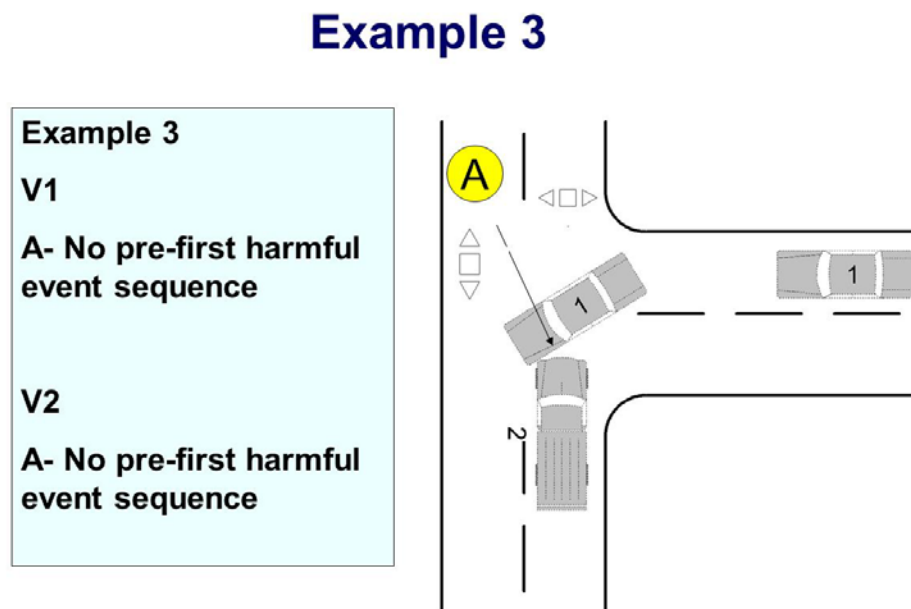


Figure 31. Pre-FHE Example 3

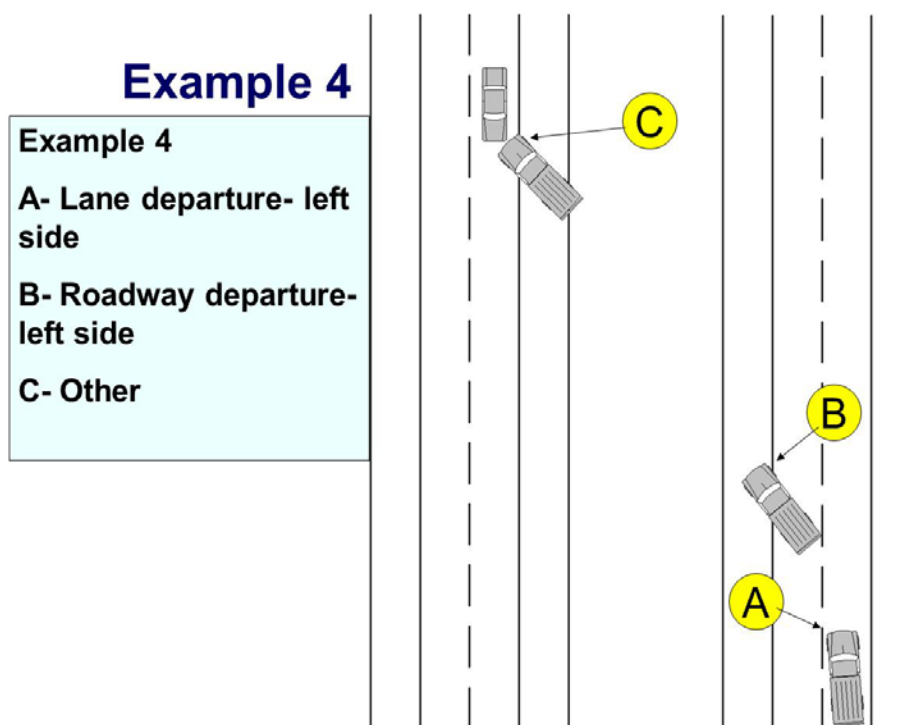


Figure 32. Pre-FHE Example 4

Example 5

Example 5
V2-Legally Parked Vehicle
V1-
A-Roadway departure-
right side

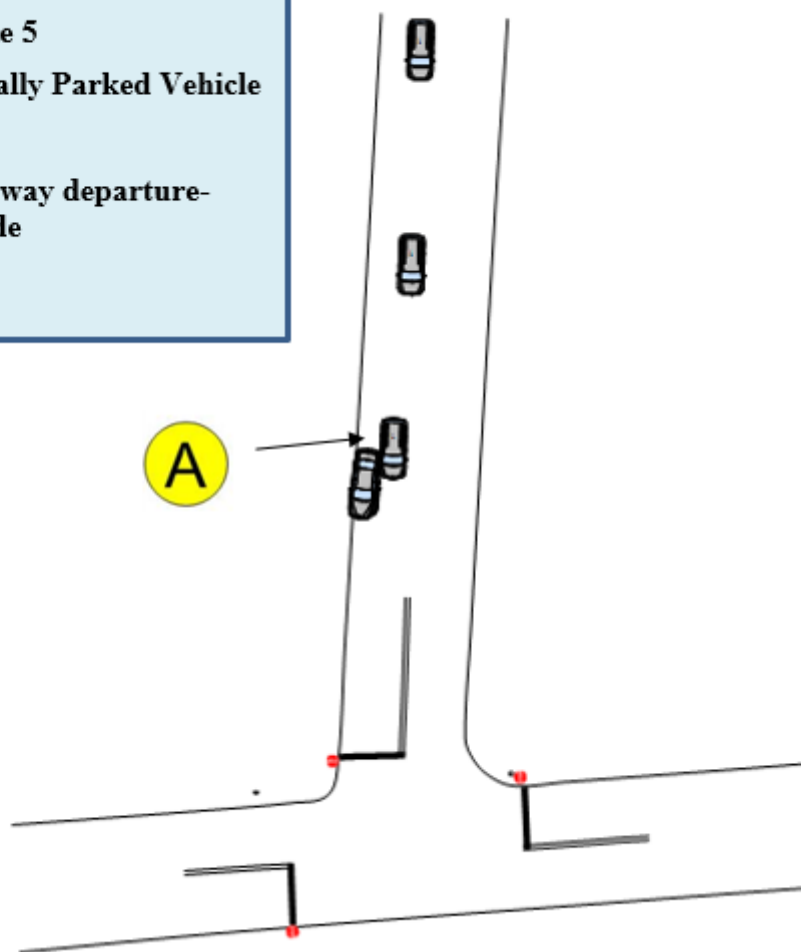


Figure 33. Pre-FHE Example 5

Pre-Crash

Pre-Event Movement (Prior to Recognition of Critical Event)

Screen Name: **Pre-Event Movement (Prior to Recognition of Critical Event)**
 SAS Data Set: **GV**
 SAS Variable: **REMOVE**
 Database Name: **CISS.CISS.VEH_PRECRASH.MOVEMENT**

Element Attributes

Database	SAS	
12	0	No driver present
7	1	Going straight
4	2	Decelerating in road
1	3	Accelerating in road
15	4	Starting in road
16	5	Stopped in road
14	6	Passing or overtaking another vehicle
5	7	Disabled or parked in travel lane
8	8	Leaving a parking position
6	9	Entering a parking position
19	10	Turning right
18	11	Turning left
9	12	Making a U-turn
2	13	Backing up (other than for parking position)
11	14	Negotiating a curve
3	15	Changing lanes
10	16	Merging
17	17	Successful avoidance maneuver to a previous critical event
13	98	Other (specify):
20	99	Unknown

Source

Technician-determined — inputs include scene, interviews, EDR, and police report.

Remarks

Record the attribute that best describes this vehicle's activity prior to the driver's realization of an impending critical event or just prior to impact if the driver took no action or had no time to attempt any evasive maneuvers.

Actions taken by the driver, of this vehicle, *after realization* of an impending danger are captured in Attempted Avoidance Maneuver.

No driver present

Is pre-coded if on the Official Records Tab the “Driver Present?” variable is coded as “No driver present.”

Going straight

Used when this vehicle’s path of travel was straight ahead without any attempted or intended changes.

Decelerating in road

Used when this vehicle was traveling straight ahead within the road and was decelerating.

Accelerating in road

Used when this vehicle was traveling straight ahead within the road and was accelerating.

Starting in road

Used when this vehicle was in the process of starting forward from a stopped position within the road (e.g., start up from traffic signal).

Stopped in road

Used when this vehicle was stopped momentarily, with the motor running within the road (e.g., stopped for traffic signal).

Passing or overtaking another vehicle

Used when this vehicle was traveling straight ahead and was in the process of passing or overtaking another vehicle on the left or right.

Disabled or parked in travel lane

Used when this vehicle was parked in a travel lane (e.g., double parked, disabled) with a driver present in the vehicle.

Leaving a parking position

Used when this vehicle was entering the travel lane from a parking area adjacent to the traffic lanes.

Entering a parking position

Used when this vehicle was leaving the travel lane to a parking area adjacent to the traffic lanes (i.e., in the process of parking).

Turning right

Used when this vehicle was moving forward and turned right, changing lanes from one roadway to a different roadway (e.g., from or to a driveway, parking lot, or intersection).

Turning left

Used when this vehicle was moving forward and turned left, changing lanes from one roadway to a different roadway (e.g., from or to a driveway, parking lot, or intersection).

Making a U-turn

Used when this vehicle was making a U-turn on the trafficway.

Backing up (other than for parking position)

Used when this vehicle was traveling backwards within the trafficway. Do not use this attribute if the vehicle was backing into a parking space. (See **Entering parking position**)

Negotiating a curve

Used when this vehicle was continuing along a road that curved to the right or left.

Changing lanes

Used when this vehicle was traveling straight ahead and changed travel lanes to the right or left while on the same roadway.

Merging

Used when this vehicle was moving forward and merging from the left or right into a traffic lane (e.g., roadway narrows, exit/entrance ramps).

Successful avoidance maneuver to a previous critical event

Used when this vehicle responded to a previous critical event and successfully avoided an impact. However, this maneuver precipitated a subsequent critical crash envelope, which resulted in this vehicle's first impact.

Other (specify)

Used when this vehicle's pre-event movement is known but none of the specified attributes are applicable. The movement must be specified in the "specify box."

Unknown

Used when the vehicle's movement prior to the driver's realization of an impending critical event is unknown.

Critical Pre-Crash Category

Screen Name: **Critical Pre-Crash Category**
 SAS Data Set: **GV**
 SAS Variable: **CRITCAT**
 Database Name: **CISS.CISS.VEH_PRECRASH.CRITCAT**

Element Attributes

Database	SAS	
6	1	This vehicle loss of control
7	2	This vehicle traveling
4	3	Other motor vehicle in lane
3	4	Other motor vehicle encroaching into lane
5	5	Pedestrian or pedalcyclist, or other nonmotorist
1	6	Object or animal
2	8	Other (specify)
8	9	Unknown

Source

Technician-determined — inputs include scene inspection, vehicle inspection, driver interview, and police report.

Remarks

When more than one condition applies and it cannot be determined that one had a greater effect, choose the higher listed element (i.e., **This Vehicle Loss of Control** takes precedence over **This Vehicle Traveling**).

This vehicle loss of control

These identify situations where the critical factor leading to the collision involved control loss of this vehicle. Control loss can be related to either mechanical failure or environmentally induced vehicle instability.

This vehicle traveling

These identify situations where the critical factor leading to the collision involves the travel path of this vehicle.

Other motor vehicle in lane

These identify situations where the critical factor leading to the collision involved the travel of the other vehicle in the same lane as this vehicle.

Other motor vehicle encroaching into lane

These identify situations where the critical factor leading to the collision involves the other vehicle's movement into or across this vehicle's travel lane from another lane, intersection, driveway, or ramp.

Pedestrian or pedalcyclist, or other nonmotorist

These identify situations where the critical factor leading to the collision for this vehicle involved a pedestrian, pedalcyclist, or other nonmotorist. A pedalcyclist is defined as a person riding a pedal power conveyance (bicycle, tricycle, etc.). A nonmotorist is defined as a person riding on or in a conveyance that is not motorized or propelled by pedaling (baby carriage, skate board, roller blades, etc.).

Object or animal

These identify situations where the critical factor leading to the collision for this vehicle involved an object or animal.

Other (specify)

Used when a critical factor not previously listed resulted in the collision for this vehicle. Previous impacts in the crash are not considered as other critical precrash events. For example, use this attribute if the critical event developed from this vehicle's departure from a driveway.

Unknown

Used when the critical precrash event that resulted in the collision is not known. Missing interviews do not automatically result in the use of the "Unknown" attribute.

Critical Pre-Crash Event

Screen Name: **Critical Pre-Crash Event**
 SAS Data Set: **GV**
 SAS Variable: **CRITEVENT**
 Database Name: **CISS.CISS.VEH_PRECRASH.CRITEVENT**

Element Attributes**This Vehicle Loss of Control Due To**

Database	SAS	
5	1	Blowout/flat tire
41	2	Stalled engine
7	3	Disabling vehicle failure (e.g., wheel fell off) (specify)
25	4	Non-disabling vehicle problem (e.g., hood flew up) (specify)
40	5	Poor road conditions (puddle, pot hole, ice, etc.) (specify)
47	6	Traveling too fast for conditions
29	8	Other cause of control loss (specify)
51	9	Unknown cause of control loss

This Vehicle Traveling

Database	SAS	
32	10	Over the lane line on left side of travel lane
33	11	Over the lane line on right side of travel lane
53	12	Off the edge of the road on the left side
54	13	Off the edge of the road on the right side
9	14	End departure
48	15	Turning left
49	16	Turning right
6	17	Crossing over (passing through) junction
42	18	This vehicle decelerating
55	19	Unknown travel direction
56	20	This vehicle backing
57	21	This vehicle making a u-turn

Other Motor Vehicle in Lane

Database	SAS	
31	50	Other vehicle stopped
46	51	Traveling in same direction with lower or steady speed

Database	SAS	
44	52	Traveling in same direction while decelerating
45	53	Traveling in same direction with higher speed
43	54	Traveling in opposite direction
24	55	In crossover
4	56	Backing
52	59	Unknown travel direction of other motor vehicle in lane

Other Motor Vehicle Encroaching Into Lane

Database	SAS	
10	60	From adjacent lane (same direction) over left lane line
11	61	From adjacent lane (same direction) over right lane line
21	62	From opposite direction over left lane line
22	63	From opposite direction over right lane line
23	64	From parking lane/shoulder
15	65	From crossing street, turning into same direction
12	66	From crossing street, across path
14	67	From crossing street turning into opposite direction
13	68	From crossing street, intended path not known
19	70	From driveway, turning into same direction
16	71	From driveway, across path
18	72	From driveway, turning into opposite direction
17	73	From driveway, intended path not known
20	74	From entrance to limited access highway
8	78	Encroachment by other vehicle details unknown

Pedestrian or Pedalcyclist, or Other Nonmotorist

Database	SAS	
38	80	Pedestrian in road
37	81	Pedestrian approaching road
39	82	Pedestrian unknown location
35	83	Pedalcyclist or other nonmotorist in road (specify)
34	84	Pedalcyclist or other nonmotorist approaching road (specify)
36	85	Pedalcyclist or other nonmotorist unknown location (specify)

Object or Animal

Database	SAS	
3	87	Animal in road
2	88	Animal approaching road
1	89	Animal - unknown location
27	90	Object in road
26	91	Object approaching road
28	92	Object unknown location

Other (specify)

Database	SAS	
30	98	Other critical precrash event (specify):
50	99	Unknown

Source

Technician-determined — inputs include scene inspection, vehicle inspection, driver interview, and police report.

Remarks

The selection of the **Critical Pre-Crash Category** will determine what **Critical Pre-Crash Events** are available to select.

When more than one condition applies and it cannot be determined which one had a greater effect, choose the higher listed element.

This variable identifies the critical event that made the crash imminent (i.e., something occurred that made the collision possible). Responsive actions to this situation, if any, are coded under **Attempted Avoidance Maneuver**.

A precrash event is coded for each vehicle and identifies the circumstances leading to this vehicle's first impact in the crash.

Do not refer to culpability. Many crash scenarios will suggest fault, but this should be coincidental rather than by design. As an example, vehicle 1 was speeding when vehicle 2 crossed vehicle 1's path from a driveway. The situation that made the precrash event critical for vehicle 1 (since it did not lose control) was vehicle 2's movement across vehicle 1's path **and not** vehicle 1's speed.

This Vehicle Loss of Control**Blow out or flat tire**

Used when a vehicle in motion loses control as the result of an immediate tire disruption. Examples include blow out, rapid air loss, tread separation, etc.

Stalled engine

Refers to a vehicle that is in motion and loses engine power. A stalled engine situation must precipitate a collision to be coded in this variable. A vehicle that is stopped as the result of an engine malfunction does not take this attribute.

Disabling vehicle failure (e.g., wheel fell off)

Used when a mechanical malfunction, such as a component of the vehicle suspension or steering system, leads to the critical reason for the collision. Specify which component failure was involved in the space provided under this element.

Non-disabling vehicle problem (e.g., hood flew up)

Used when some mechanical abnormality occurred to this vehicle that leads to the critical reason for the collision. The abnormality must not be disabling damage. A space is provided under this element to specify the non-disabling vehicle problem.

Poor road conditions (puddle, pothole, ice, etc.)

Captures control loss due to suddenly encountered environmental conditions of the roadway. These conditions must have initiated the precrash event that resulted in the collision. A space is provided under this element to specify the road condition attributed to initiating the precrash event.

Traveling too fast for conditions

Identifies this vehicle's movement relative to its surroundings in which the subsequent loss of control lead to the collision. This attribute applies when the loss of control is due to the vehicle traveling at a speed that was unsafe for the road configuration or conditions and has no bearing on the speed limit. An example is a roadway departure on a curve where the driver failed to negotiate and departed the roadway resulting in an impact. If the driver merely steered straight while in a curve and departed the roadway, then the category This Vehicle Traveling may apply.

Other cause of control loss, specify

Used when it was determined that this vehicle's loss of control was the primary reason that made the event critical and the above attributes do not adequately identify the control loss condition. This attribute includes situations when control loss was due to driver illness such as heart attack, diabetic comas, etc., (see Pre-Crash General Rule #4). Drivers who are impaired by alcohol and/or drugs are not included unless physically ill at the time. The condition cited should be annotated in the space provided.

Unknown cause of control loss

Used when it is known control loss made the situation critical, but it is not known whether the vehicle or the environment caused the control loss.

This Vehicle Traveling

The attributes identify situations where the critical factor leading to the collision involving the travel path of this vehicle.

Over the lane line on left side of travel lane

Used when this vehicle departs its lane to the left and is entering or had entered the adjoining lane or shoulder. The change of travel path by this vehicle must precipitate the critical event for the collision. As an example, this vehicle attempts to pass another vehicle on the other vehicle's left and is struck by a vehicle traveling within its travel lane in the opposite direction.

However, by modifying the scenario slightly, the lane change may not always be the factor leading to the precrash event. Consider the same situation where this vehicle is passing to the left of the lead vehicle. If an animal runs into the roadway and is struck by this vehicle, then the correct choice would be **Animal in road**.

Over the lane line on right side of travel lane

Used when this vehicle departs its lane to the right and is entering or had entered the adjoining lane or shoulder. To use this attribute, change of travel path by this vehicle must precipitate the critical event for the collision. As an example, this vehicle attempts to pass another vehicle on the other vehicle's right and is struck in the rear by a vehicle traveling within its travel lane in the same direction. The correct choice for this vehicle would be Over the lane line on right side of travel lane.

However, by modifying the scenario slightly the lane change may not always be the factor leading to the precrash event. Consider the same situation where this vehicle is passing to the right of the lead vehicle. If an animal runs into the roadway and is struck by this vehicle, then the correct choice would be **Animal in road**.

Off the edge of the road on the left side

Identifies a situation where the initial precrash event occurred beyond the left side shoulder area. This also includes departure into a median.

Off the edge of the road on the right side

Identifies a situation where the initial precrash event occurred beyond the right side shoulder area.

End departure

Used when the vehicle departs the end of the roadway (e.g., T-intersection).

Turning left

Used when this vehicle attempts a left turn from its roadway or driveway to another roadway or driveway.

Turning right

Used when this vehicle attempts a right turn from its roadway or driveway to another roadway or driveway.

Making a U-Turn

Used when this vehicle attempts to make a U-turn. When it cannot be determined if the vehicle is making a left or a U-turn, default to left turn.

Backing

Used when this vehicle was backing in a travel lane or backing into the roadway from a driveway, shoulder, or parking lane.

Crossing over (passing through) junction

Identifies this vehicle's travel as proceeding through the junction without any planned turning.

This vehicle decelerating

Used when the vehicle is decelerating.

Unknown travel direction

Used for those occasions where this vehicle's travel made the situation critical, but it is unknown which travel direction this vehicle was moving.

Other Motor Vehicle in Lane

These attributes identify situations where the critical factor leading to the collision involved the travel of the other vehicle in the same lane as this vehicle.

Other vehicle stopped

Identifies a situation where the other vehicle is not in motion (i.e., stopped, parked, disabled) and in this vehicle's travel lane.

Traveling in same direction with lower steady speed

Used when the other vehicle was the lead vehicle in the same travel lane, traveling in the same direction, and was traveling slower than this vehicle.

Traveling in same direction while decelerating

Used when the other vehicle was the lead vehicle in the same travel lane, traveling in the same direction, and was decelerating.

Traveling in same direction with higher speed

Used when the speed of the other vehicle was higher than this vehicle or accelerating. The other vehicle must be overtaking this vehicle.

Traveling in opposite direction

Used when the other vehicle was in this vehicle's travel lane and traveling head-on in the opposite direction of this vehicle.

In crossover

Used when the other vehicle enters a crossover already occupied by this vehicle. A crossover is defined as a designated opening within a median used primarily for “U-turns.”

Backing

Identifies a situation where the other vehicle was in the process of backing up while in this vehicle’s travel lane.

Unknown travel direction of other motor vehicle in lane

Used for situations where the other vehicle’s activity (while in the same lane as this vehicle) precipitated the precrash event, but the travel direction and/or speed could not be determined.

Other Motor Vehicle Encroaching Into Lane

These attributes identify situations where the critical factor leading to the collision involves the other vehicle’s movement into or across this vehicle’s travel lane from another lane, intersection, driveway, or ramp.

From adjacent lane (same direction) — over left lane line

Used when the other vehicle was traveling in the same direction as this vehicle and crosses the left lane line with respect to this vehicle’s travel lane (i.e., other vehicle crosses its right lane line).

From adjacent lane (same direction) — over right lane line

Used when the other vehicle was traveling in the same direction as this vehicle and crosses the right lane line with respect to this vehicle’s travel lane (i.e., other vehicle crosses its left lane line).

From opposite direction — over left lane line

Identifies a situation where the other vehicle crosses the left lane line while traveling in the opposite direction from this vehicle.

From opposite direction — over right lane line

Identifies a situation where the other vehicle crosses the right lane line while traveling in the opposite direction from this vehicle.

From parking lane/shoulder

Used when the other vehicle was departing a parking lane, shoulder, median or roadside and entering the travel lane of this vehicle.

From crossing street, turning into same direction

Used when the other vehicle was turning from another roadway onto this vehicle’s roadway and attempted to travel in the same direction as this vehicle.

From crossing street, across path

Used when the other vehicle was continuing straight through the intersection and attempted to cross over this vehicle's roadway.

From crossing street, turning into opposite direction

Used when the other vehicle was entering an intersection from another roadway and was turning or attempting to turn onto this vehicle's roadway in the opposite travel direction of this vehicle.

From crossing street, intended path not known

Used when the other vehicle's entrance into the intersection was the critical factor that led to the collision; however, the other vehicle's travel direction could not be determined.

From driveway, turning into same direction

Used when the other vehicle was turning from a driveway onto this vehicle's roadway and attempted to travel in the same direction as this vehicle.

From driveway, across path

Used when the other vehicle was entering this vehicle's roadway from a driveway and was continuing straight across to another driveway or roadway.

From driveway, turning into opposite direction

Used when the other vehicle was entering this vehicle's roadway from a driveway and was attempting to turn into the opposite travel direction of this vehicle.

From driveway, intended path not known

Used to identify driveway-related precrash events where details surrounding the other vehicle's intended path are not known.

From entrance to limited access highway

Used for entrance ramp situations where the other vehicle was attempting to enter (merge) onto the limited access highway that was being traveled by this vehicle.

Encroachment by other vehicle — details unknown

Used for situations where the other vehicle initiated the critical precrash event, but circumstances surrounding the other vehicle's encroachment are not known.

Pedestrian or Pedalcyclist, or Other Nonmotorist

These attributes identify situations where the critical factor leading to the collision for this vehicle involved a pedestrian, pedalcyclist, or other nonmotorist. A pedalcyclist is defined as a person riding a pedal power conveyance (bicycle, tricycle, etc.). A nonmotorist is defined as a person riding on or in a conveyance that is not motorized or propelled by pedaling (baby carriage, skate board, roller blades, etc.).

Pedestrian in road

Used when a pedestrian was present (sitting, standing, walking, or running, etc.) in the road.

Pedestrian approaching road

Identifies situations where a pedestrian was within the trafficway and moving toward the road or attempting to enter the road, but was not on the road.

Pedestrian — unknown location

Used when it was determined the presence or action of a pedestrian was the critical factor that led to this vehicle's collision, but the location or action of the pedestrian was not known.

Pedalcyclist or other nonmotorist in road (specify)

Used when a pedalcyclist or other nonmotorist was present in the road (irrespective of relative motion).

Pedalcyclist or other nonmotorist approaching road (specify)

Identifies situations where the pedalcyclist or other nonmotorist was within the trafficway and moving toward the road or attempting to enter the road, but was not on the road.

Pedalcyclist or other nonmotorist — unknown location, (specify)

Used when it was determined the presence or action of a pedalcyclist or other nonmotorist was the critical factor that led to this vehicle's collision, but the action of the pedalcyclist or other nonmotorist was not known.

Object or Animal

These attributes identify situations where the critical factor leading to the collision for this vehicle involved an object or animal.

Animal in road

Used when an animal was present (i.e., stationary or moving) in the road.

Animal approaching road

Identifies situations where an animal was within the trafficway and moving toward the road or attempting to enter the road, but not on the road.

Animal - unknown location

Used when it was determined the presence or action of an animal was the critical factor that led to this vehicle's collision, but the action of the animal was not known.

Object in road

Used when an object was present in the road. An object is defined as being either fixed or non-fixed (only non-fixed objects are captured in this attribute).

Object approaching road

Identifies situations where an object was within the trafficway and moving toward the road, but not on the road.

Object — unknown location

Used when it was determined the presence or movement of an object was the critical factor that led to this vehicle's collision, but details surrounding the location of the object were not known.

Other (specify)

These attributes identify situations where the critical factor leading to the collision for this vehicle was not previously listed.

Other Critical Pre-Crash Event (specify)

Used when a critical factor not previously listed resulted in the collision for this vehicle. Previous impacts in the crash are not considered as "other critical precrash events." For example, use this code if the critical event developed from this vehicle's departure from a driveway.

Unknown

Used when the critical precrash event that resulted in the collision is not known. Missing interviews do not automatically result in the use of this "Unknown" code.

Table 2. Pre-Crash Event Scenarios for Different Rear-End Collision Situations

Two Vehicle Collisions			Trailing Vehicle	Lead Vehicle
1.	Both vehicles in motion. Leading vehicle, traveling at steady speed, is struck from behind by trailing vehicle.	Pre-Event Movement	Going straight	Going straight
		Critical Pre-Crash Category	Other motor vehicle in lane	Other motor vehicle in lane
		Critical Pre-Crash Event	Traveling in same direction with lower steady speed	Traveling in same direction with higher speed
2.	Both vehicles traveling at same speed. Lead vehicle decelerates and trailing vehicle continues at initial speed. Trailing vehicle eventually applies brakes before striking the lead vehicle that is not yet stopped.	Pre-Event Movement	Going straight	Going straight
		Critical Pre-Crash Category	Other motor vehicle in lane	This vehicle traveling
		Critical Pre-Crash Event	Traveling in same direction while decelerating	This vehicle decelerating
3.	Both vehicles traveling at same speed. Lead vehicle stops and is immediately struck by trailing vehicle.	Pre-Event Movement	Going straight	Going straight
		Critical Pre-Crash Category	Other motor vehicle in lane	Other motor vehicle in lane
		Critical Pre-Crash Event	Traveling in same direction while decelerating	Traveling in same direction with higher speed
4.	Lead vehicle is stopped on roadway and is struck by a trailing vehicle.	Pre-Event Movement	Going straight	Stopped in road
		Critical Pre-Crash Category	Other motor vehicle in lane	Other motor vehicle in lane
		Critical Pre-Crash Event	Other vehicle stopped	Traveling in same direction with higher speed
5.	Lead and trailing vehicle stopped on roadway. Lead vehicle backs into trailing vehicle.	Pre-Event Movement	Stopped in road	Stopped in road
		Critical Pre-Crash Category	Other motor vehicle in lane	This vehicle traveling
		Critical Pre-Crash Event	Backing	Backing

Table 3. Coding Critical Pre-Crash Event Scenarios for Different Rear-End Collision Situations

Three Vehicle Collisions			Trailing Vehicle	Middle Vehicle	Lead Vehicle
6.	Two vehicles stopped in traffic, struck by decelerating trailing vehicle	Pre-Event Movement	Decelerating	Stopped in road	Stopped in road
		Critical Pre-Crash Category	Other motor vehicle in lane	Other motor vehicle in lane	Other motor vehicle in lane
		Critical Pre-Crash Event	Other vehicle stopped	Traveling in same direction while decelerating	Traveling in same direction with higher speed
7.	Lead vehicle stopped in traffic, middle vehicle decelerating, trailing vehicle strikes middle vehicle that strikes lead vehicle.	Pre-Event Movement	Going straight	Decelerating	Stopped in road
		Critical Pre-Crash Category	Other motor vehicle in lane	Other motor vehicle in lane	Other motor vehicle in lane
		Critical Pre-Crash Event	Traveling in same direction while decelerating	Traveling in same direction with higher speed	Traveling in same direction with higher speed

Attempted Avoidance Maneuver

Screen Name: **Attempted Avoidance Maneuver**
 SAS Data Set: **GV**
 SAS Variable: **MANUEVER**
 Database Name: **CISS.CISS.VEH_PRECRASH.AVOIDMANUEVER**

Element Attributes

Database	SAS	
10	0	No driver present
9	1	No Avoidance Maneuver
16	2	Braking
7	3	Braking and steering left
8	4	Braking and steering right
17	5	Braking and unknown steering direction
12	6	Releasing brakes
13	7	Steering left
14	8	Steering right
1	9	Accelerating
2	10	Accelerating and steering left
3	11	Accelerating and steering right
11	98	Other action (specify)
15	99	Unknown

Source

Technician-determined — all available sources of information

Remarks

Attempted avoidance maneuvers are movements/actions taken by the driver, within a *critical crash envelope*, in response to a Critical Pre-Crash Event (see **Pre-Crash Data Overview** for an expanded discussion on precrash definitions). Attempted avoidance maneuvers occur *after* the driver has *realization* of an impending danger. This variable assesses what the driver's action were in response to his/her realization.

Most crashes have only one critical crash envelope and thus only one Critical Pre-Crash Event; however, several critical crash envelopes with their respective Critical Pre-Crash Events, can exist.

This variable may be used independently: (1) of any maneuvers associated with this driver's Crash Type, and (2) this vehicle's first associated crash event.

Select the element value that best describes the actions taken by the driver in response to the Critical Pre-Crash Event, within the *critical crash envelope* that occurred just prior to this

vehicle's impact. When there was a known action (e.g., braking), but you cannot determine whether there was more than one action (e.g., braking and steering left), default to the known action (e.g., braking).

EDR data variables such as Service Brake on/off, Steering Input, and Speed Vehicle Indicated should be scrutinized to code Avoidance Maneuver. It is important to take the Crash Reconstruction into consideration when using EDR data to code this variable.

No Driver Present

Is pre-coded if on the Official Records Tab the "Driver Present?" variable is coded as "No driver Present."

No avoidance maneuver

Used whenever the driver did not attempt any evasive (pre-impact) maneuvers.

Braking

Driver or crash report indication; EDR reported application of brakes within precrash data

Releasing brakes

Driver or crash report indication; EDR reported release of brakes within precrash data

Steering left

Driver or crash report indication; EDR reported 5-degree change of steering angle over 1 second

Steering right

Driver or crash report indication; EDR reported 5-degree change of steering angle over 1 second

Braking and steering left**Braking and steering right****Braking and unknown steering direction****Accelerating**

Driver or crash report indication; EDR reported application of throttle within precrash data

Accelerating and steering left**Accelerating and steering right****Other Action**

Used when an action is not listed above, or a combination of the actions above is attempted.

Unknown

Used when it is unknown if the driver attempted an avoidance action.

Pre-Impact Stability

Screen Name: **Pre-Impact Stability**
 SAS Data Set: **GV**
 SAS Variable: **PRESTAB**
 Database Name: **CISS.CISS.VEH_PRECRASH.STABILITY**

Element Attributes

Database	SAS	
1	0	No driver present
7	1	Tracking
6	2	Skidding longitudinally rotation less than 30°
4	3	Skidding laterally clockwise rotation
5	4	Skidding laterally counterclockwise rotation
2	8	Other vehicle loss-of-control (specify)
3	9	Pre-crash stability unknown

Source

Technician-determined — inputs include vehicle and scene evidence, interviews and police report.

Remarks

The purpose of this variable is to assess the stability of the vehicle **after** the critical event, but before the impact. The stability of the vehicle prior to an avoidance action is not considered except in the following situation:

A vehicle that is out of control (e.g., yawing clockwise) prior to an avoidance maneuver is coded as **Other vehicle loss-of-control** only if an avoidance action was taken in response to an impending danger.

Thus, this variable focuses upon this vehicle's dynamics after the critical event.

No driver present

Is pre-coded if on the Official Records Tab the "Driver Present?" variable is coded as "No driver Present."

Tracking

Used when there is no brake lockup and the vehicle continued along its intended path without rotation. Stopped, slowing, turning, or accelerating to avoid a rear-end collision are examples.

Skidding longitudinally — rotation less than 30°

Used when there is brake lockup or whenever tire marks are apparent without brake lockup (braking or non-braking) and rotation is less than 30° clockwise or counterclockwise. If there is no information to support rotation greater than or equal to 30°, then use this attribute.

Skidding laterally — clockwise rotation

Used when the vehicle rotates clockwise, relative to the driver's seating position. The vehicle must rotate 30° or more. This attribute also applies when the driver attempts a steering input (i.e., steers right), but the vehicle rotates clockwise.

Skidding laterally — counterclockwise rotation

Used when the vehicle rotates counterclockwise, relative to the driver's seating position. The vehicle must rotate 30° or more. This attribute also applies when the driver attempts a steering input (i.e., swerves left), but the vehicle rotates counterclockwise.

Other vehicle loss-of-control, (specify)

Used when a driver loses control of a vehicle prior to the critical event.

Pre-Crash stability unknown

Used when the stability of the vehicle, after the Critical Event, cannot be determined.

Pre-Impact Location

Screen Name: **Pre-Impact Location**
 SAS Data Set: **GV**
 SAS Variable: **PRELOC**
 Database Name: **CISS.CISS.VEH_PRECRASH.LOCATION**

Element Attributes

Database	SAS	
3	0	No driver present
6	1	Stayed in original travel lane
7	2	Stayed on roadway but left original travel lane
8	3	Stayed on roadway, not known if left original travel lane
1	4	Departed roadway
4	5	Remained off roadway
5	6	Returned to roadway
2	7	Entered roadway
9	9	Unknown

Source

Technician-determined — inputs include vehicle and scene evidence, interviews and police report.

Remarks

The purpose of this variable is to assess the location of the vehicle **after** the critical event, and immediately before the first impact. Select the attribute that best describes the location of the vehicle (i.e., perimeter of the vehicle from the case diagram).

No driver present

Is pre-coded if on the Official Records Tab the “Driver Present?” variable is coded as “No driver present.”

Stayed in original travel lane

Used when the vehicle remained within the boundaries of its initial travel lane.

Stayed on roadway but left original travel lane

Used when the perimeter of the vehicle departed its initial travel lane; however, the vehicle remained within the boundaries of the roadway (travel lanes).

Stayed on roadway, not known if left original travel lane

Used when it cannot be ascertained whether the vehicle remained within its initial travel lane. To use this attribute, the vehicle must have remained within the boundaries of the roadway.

Departed roadway

Used when the vehicle departed the roadway as a result of a precrash motion. The roadway departure *must not be* related to the post-impact trajectory of a crash within the roadway. Use this attribute for vehicles crossing a median into oncoming traffic.

Remained off roadway

The precrash motion occurred outside the boundaries of the roadway. This includes traveling on the shoulders, within the median, on the roadside, or off the trafficway.

Returned to roadway

Used when the vehicle was on the roadway, went off the roadway and then returned to the same roadway during precrash motion.

Entered roadway

Used when the vehicle was not previously on the roadway and then the vehicle enters the roadway during precrash motion.

Unknown

The precrash motion of the vehicle cannot be determined.

Crash Category

Screen Name: **Crash Category**
 SAS Data Set: **GV**
 SAS Variable: **CRASHCAT**
 Database Name: **N/A**

Element Attributes

Database	SAS	
	1	Single driver
	2	Same trafficway, same direction
	3	Same trafficway, opposite direction
	4	Changing trafficway, vehicle turning
	5	Intersecting paths (vehicle damage))
	6	Miscellaneous

Remarks

Variables Crash Type (Category) and Crash Type (Configuration); are used for categorizing the collisions of drivers involved in crashes. A collision is defined here as the first harmful event in a crash between a vehicle and some object, accompanied by property damage or human injury. The object may be another vehicle, a person, an animal, a fixed object, the road surface, or the ground. The first harmful event may also involve plowing into soft ground, if severe vehicle deceleration results in damage or injury. A road departure without damage or injury is not defined as a collision.

To determine the proper crash type, refer to the three step decision process outlined below:

Step 1 - Determine the appropriate Crash Category.

Step 2 - Determine the appropriate Crash Configuration.

Step 3 - Determine the specific Crash Type from the graphic icons.

The attributes for this variable are the categories. The configuration and specific crash type attributes are further discussed under variables Crash Configuration, and Crash Type.

The definitions of each of the six categories are as follows:

Single driver

The first harmful event involves a collision between an in-transport vehicle and an object, or an off-roadway rollover. A harmful event involving two in-transport vehicles is excluded from this category. **Note:** the impact location on the vehicle is not a consideration for crash types in this category.

Same trafficway, same direction

The first harmful event occurred while both vehicles were traveling in the same direction on the same trafficway.

Same trafficway, opposite direction

The first harmful event occurred while both vehicles were traveling in opposite directions on the same trafficway.

Change trafficway, vehicle turning

The first harmful event occurred when the vehicle is either turning or merging while attempting to change from one trafficway to another trafficway. Trafficway for this variable is loosely defined to include driveways, alleys and parking lots when a vehicle is either entering or exiting a trafficway.

Intersecting paths (vehicle damage)

The first harmful event involves situations where vehicle trajectories intersect. It is important to note the location of damage to each vehicle for crash typing. The location of damage to each vehicle is important to determine the correct crash type.

Miscellaneous

The first harmful event involves a crash type that cannot be described in the Categories above and thus is included in this category. Select this category, if there is insufficient information to choose between categories. Included are vehicles that are backing, third or subsequent vehicles involved in the crash, U-turns, etc.

Each category is subdivided into crash configuration. The configurations are described under **Crash Configuration**.

Crash Type

Screen Name: **Crash Type**
 SAS Data Set: **GV**
 SAS Variable: **CRASHTYPE**
 Database Name: **CISS.CISS.VEH_PRECRASH.CRASHTYPE**

Element Attributes

Database	SAS	
		As assigned by the selection on the next screens
0	0	No Impact
1-93	1-93	01 - 93
98	98	Other Crash Type
99	99	Unknown
		SEE FOLLOWING VARIABLES FOR CODES

Source

Technician-determined — inputs include police report, scene inspection, vehicle inspection, and interview.

Remarks

The Crash Type is a numeric value assigned by selecting the **Crash Category** and the **Crash Configuration** on the next screens/pages. The number can be directly entered or edited here; however, the two-step process of selecting the Crash Category and Crash Configuration is preferred to visualize the crash scenario.

The first harmful event may include a collision between a vehicle and some object, accompanied by property damage or human injury. The object may be another vehicle, a person, an animal, a fixed object, the road surface, or the ground. If the first collision is a rollover, the impact is with the ground or road surface. The collision may also involve plowing into soft ground, if severe vehicle deceleration results in damage or injury. A road departure without damage or injury is not defined as a harmful event.

Crash Configuration

Screen Name: **Crash Configuration**
 SAS Data Set: **GV**
 SAS Variable: **CRASHCONF**
 Database Name: **N/A**

Element Attributes**Single driver**

Database	SAS	
	A	Right roadside departure
	B	Left roadside departure
	C	Forward impact

Same trafficway, same direction

Database	SAS	
	D	Rear-end
	E	Forward impact
	F	Sideswipe/angle

Same trafficway, opposite direction

Database	SAS	
	G	Head-on
	H	Forward impact
	I	Sideswipe/angle

Change trafficway vehicle turning

Database	SAS	
	J	Turn across path
	K	Turn into path

Intersecting paths (vehicle damage)

Database	SAS	
	L	Straight paths

Miscellaneous

Database	SAS	
	M	Backing, etc.

Source

Technician-determined — inputs include police report, scene inspection, vehicle inspection, and interview.

Remarks

Each category is further defined by a Crash Configuration. The Configurations are discussed on the following page.

Single driver

Right roadside departure; left roadside departure - The vehicle departed either the right or left side of road with the first harmful event occurring off the road. Right versus left is based on the side of the road departed immediately prior to the first harmful event.

Forward impact - The vehicle struck an object on the trafficway while moving forward.

Same trafficway, same direction

Rear-end — The front of the overtaking vehicle struck the rear of the other vehicle. **Note**, even if the rear-ended vehicle had started to make a turn, code here (not in **Change Trafficway Vehicle Turning**).

Forward impact — The front of the overtaking vehicle struck the rear of the other vehicle, following a steering maneuver around a noninvolved vehicle or object.

Sideswipe/angle — The two vehicles are involved in a shallow, glancing impact involving the side of one or both vehicles. **Note**: CDC guidelines for sideswipes are not considered when assessing this configuration.

Same trafficway, opposite direction

Head-on — The frontal area of one vehicle struck the frontal area of another.

Forward impact — The frontal area of one vehicle struck the frontal area of another following a steering maneuver around a noninvolved vehicle or an object.

Sideswipe/angle — The two vehicles are involved in a shallow, glancing impact involving the side of one or both vehicles.

Changing trafficway, vehicle turning

Turn across path — The two vehicles were initially on the same trafficway when one vehicle tried to turn onto another trafficway and pulled **in front of** the other vehicle. Vehicles making a U-turn are identified in **Miscellaneous**.

Turn into path — The two vehicles were initially on different trafficways when one attempted to turn into the same trafficway as the other vehicle. **Note:** the focus of this configuration is on the turning maneuver from one trafficway to another and not on the vehicles' plane of contact.

Intersecting paths (vehicle damage)

Straight paths — The two vehicles were proceeding (or attempting to proceed) straight ahead.

Miscellaneous

Backing, etc. — One of the two vehicles involved was a backing vehicle, regardless of its location on the trafficway or the damage location on the vehicles. Any crash configuration that cannot be described in the categories above is included here (U-turns, third or subsequent vehicles involved in the crash, etc.).

Crash Type

Screen Name: **Crash Type**
 SAS Data Set: **GV**
 SAS Variable: **CRASHTYPE**
 Database Name: **CISS.CISS.VEH_PRECRASH.CRASHTYPE**

Element Values**Crash Category: Single Driver****Crash Configuration Right Roadside Departure**

Database	SAS	
01	01	Drive off road
02	02	Control/traction loss
03	03	Avoid collision with vehicle, pedestrian, animal
04	04	Specifics other
05	05	Specifics unknown

Crash Configuration Left Roadside Departure

Database	SAS	
06	06	Drive off road
07	07	Control/traction loss
08	08	Avoid collision with vehicle, pedestrian, animal
09	09	Specifics other
10	10	Specifics unknown

Crash Configuration Forward Impact

Database	SAS	
11	11	Parked vehicle
12	12	Stationary object
13	13	Pedestrian/animal
14	14	End departure
15	15	Specifics other
16	16	Specifics unknown

Crash Category: Same Trafficway, Same Direction**Crash Configuration Rear-End**

Database	SAS	
20	20	Stopped
21	21	Stopped, straight
22	22	Stopped, left
23	23	Stopped, right
24	24	Slower
25	25	Slower, going straight
26	26	Slower, going left
27	27	Slower, going right
28	28	Decelerating (slowing)
29	29	Decelerating (slowing), going straight
30	30	Decelerating (slowing), going left
31	31	Decelerating (slowing), going right
32	32	Specifics other
33	33	Specifics unknown

Crash Configuration: Forward Impact

Database	SAS	
34	34	This vehicle's frontal area strikes another vehicle
35	35	This vehicle is struck by frontal area of another vehicle
36	36	This vehicle's frontal area strikes another vehicle
37	37	This vehicle is struck by frontal area of another vehicle
38	38	This vehicle's frontal area strikes another vehicle
39	39	This vehicle is struck by frontal area of another vehicle
40	40	This vehicle's frontal area strikes another vehicle
41	41	This vehicle is struck by frontal area of another vehicle
42	42	Specifics other
43	43	Specifics unknown

Crash Configuration: Sideswipe/Angle

Database	SAS	
44	44	Straight ahead on left
45	45	Straight ahead on left/right
46	46	Changing lanes to the right
47	47	Changing lanes to the left

Database	SAS	
48	48	Specifics other
49	49	Specifics unknown

Crash Category: Same Trafficway Opposite Direction

Crash Configuration: Head-On

Database	SAS	
50	50	Lateral move (left/right)
51	51	Lateral move (going straight)
52	52	Specifics other
53	53	Specifics unknown

Crash Configuration: Forward Impact

Database	SAS	
54	54	This vehicle's frontal area strikes another vehicle
55	55	This vehicle is struck by frontal area of another vehicle
56	56	This vehicle's frontal area strikes another vehicle
57	57	This vehicle is struck by frontal area of another vehicle
58	58	This vehicle's frontal area strikes another vehicle
59	59	This vehicle is struck by frontal area of another vehicle
60	60	This vehicle's frontal area strikes another vehicle
61	61	This vehicle is struck by frontal area of another vehicle
62	62	Specifics other
63	63	Specifics unknown

Crash Configuration: Sideswipe/Angle

Database	SAS	
64	64	Lateral move (left/right)
65	65	Lateral move (going straight)
66	66	Specifics other
67	67	Specifics unknown

Crash Category: Change Trafficway Vehicle Turning

Crash Configuration: Turn Across Path

Database	SAS	
68	68	Initial opposite directions (left/right)
69	69	Initial opposite directions (going straight)
70	70	Initial same directions (turning right)
71	71	Initial same directions (going straight)
72	72	Initial same directions (turning left)
73	73	Initial same directions (going straight)
74	74	Specifics other
75	75	Specifics unknown

Crash Configuration: Turn Into Path

Database	SAS	
76	76	Turn into same direction (turning left)
77	77	Turn into same direction (going straight)
78	78	Turn into same direction (turning right)
79	79	Turn into same direction (going straight)
80	80	Turn into opposite directions (turning right)
81	81	Turn into opposite directions (going straight)
82	82	Turn into opposite directions (turning left)
83	83	Turn into opposite directions (going straight)
84	84	Specifics other
85	85	Specifics unknown

Crash Category: Intersecting Paths (Vehicle Damage)

Crash Configuration Straight Paths

Database	SAS	
86	86	Striking from the right
87	87	Struck on the right
88	88	Striking from the left
89	89	Struck on the left
90	90	Specifics other
91	91	Specifics unknown

Crash Category: Miscellaneous

Crash Configuration: Backing, etc.

Database	SAS	
92	92	Backing vehicle
93	93	Other vehicle or object
98	98	Other crash type
99	99	Unknown crash type
00	00	No impact

Source

Technician-determined — inputs include police report, scene inspection, vehicle inspection, and interview.

Remarks**Crash Category: Single Driver**

The crash types in **Single Driver** involve an impact between a vehicle and an object. The other Categories identify specific collision combinations that must be coded in specified pairs (i.e., the pair attribute defines the Crash Type). As an example, the combination Rear-end, stopped and Rear-end, specifics other or Rear-end, stopped and Slower, straight ahead are not valid since Rear-end, stopped only has meaning when linked to Stopped.

A crash involving a vehicle striking a “driverless in-transport vehicle” is coded, “**specifics other**” in the appropriate configuration-category. For example, a vehicle that impacts the rear of a driverless in-transport vehicle is encoded Rear-end, specifics other.

In crashes involving more than two vehicles or in collision sequences involving a combination of vehicle-to-object-to-vehicle impacts, code the Crash Type for the vehicle involved in the first harmful event. All other vehicles are coded **Other Crash Type**.

Keep in mind that **intended actions** play an important role in the coding scheme. For example, crash type Slower, turning left is selected over type (Slower, straight ahead) if the subject vehicle was traveling slower with the **intention** of turning left. **Note:** the turning action need not have occurred prior to the collision. The driver’s **intent** to turn is the key.

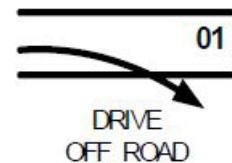
The **configurations** are delineated into specific crash types. These types can be identified by referring to the crash type diagrams.

Crash Configuration: Right Roadside Departure

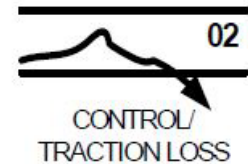
The vehicle departed the right side of the road with the first harmful event occurring off the road.

01 Right roadside departure: drive off road

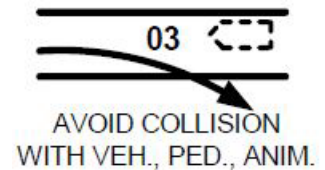
Enter “01” when the vehicle departed the road under a controlled situation (the driver was distracted, fell asleep, intentionally departed, etc).

**02 Right roadside departure: control/traction loss**

Enter “02” when there is evidence that the vehicle lost traction or “got away” from the driver in some other way (e.g., the vehicle spun off the road as a result of surface conditions, oversteer phenomena, or mechanical malfunctions). If doubt exists, code “01” (Right Roadside Departure, Drive Off Road).

**03 Right roadside departure: avoid collision with vehicle, pedestrian, animal**

Enter “03” when the vehicle departed the road to avoid something on the road. Phantom vehicle situations, pedestrians, bicyclists, and other cyclists and nonmotorists are included here.

**04 Right roadside departure: specifics other**

Enter “04” if the vehicle departed the road to avoid something on the road other than a vehicle, pedestrian, or animal. Also use “Specifics other” for crashes involving a driverless in-transport vehicle.

04
SPECIFICS
OTHER

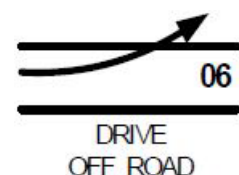
05 Right roadside departure: specifics unknown

Enter “05” if the vehicle departed the right side of the road for unknown reasons.

05
SPECIFICS
UNKNOWN

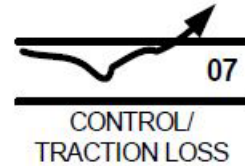
Crash Configuration: Left Roadside Departure**06 Left roadside departure: drive off road**

Enter “06” when the vehicle departed the road under a controlled situation (the driver was distracted, fell asleep, intentionally departed, etc.)

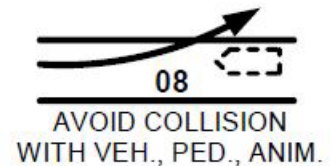


07 Left roadside departure: control/traction loss

Enter “07” if there is evidence that the vehicle lost traction or “got away” from the driver in some other way (e.g., the vehicle spun off the road as a result of surface conditions, oversteer phenomena, or mechanical malfunctions.) If doubt exists, code “06” (Left Roadside Departure, Drive Off Road).

**08 Left roadside departure: avoid collision with vehicle, pedestrian, animal**

Enter “08” when the vehicle departed the road to avoid something on the road. Phantom vehicle situations, pedestrians, bicyclists, and other cyclists and nonmotorists are included here.

**09 Left roadside departure: specifics other**

Enter “09” if the vehicle departed the road to avoid something on the road other than a vehicle, pedestrian, or animal. Also, use “specifics other” for crashes involving a driverless in-transport vehicle.

09
SPECIFICS
OTHER

10 Left roadside departure: specifics unknown

Enter “10” if the vehicle departed the left side of the road for unknown reasons.

10
SPECIFICS
UNKNOWN

Crash Configuration: Forward Impact

The vehicle struck an object on the road or off the end of a trafficway while moving forward.

11 Forward impact: parked vehicle

Enter “11” if the crash involves impact with a parked vehicle on either side of the road.

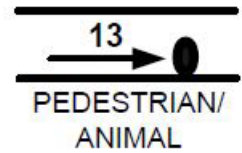
**12 Forward impact: stationary object**

Enter “12” if the crash involves impact with a stationary object on either side of the road.

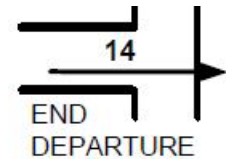


13 Forward impact: pedestrian/animal

Enter “13” if the first harmful event involves impact with a pedestrian or animal on the road. Pedestrians, bicyclists, and other cyclists and nonmotorists are included here. Vehicle plane of contact is NOT a consideration.

**14 Forward impact: end departure**

Enter “14” when the vehicle ran off the end of the road and crashed into something.

**15 Forward impact: specifics other**

Enter “15” for impacted (striking or struck) railway vehicles and nonstationary objects on the road. Also use “Specifics other” for crashes involving a driverless in-transport motor vehicles.

15
SPECIFICS
OTHER

16 Forward impact: specifics unknown

Enter “16” when the PCR indicates a single driver was involved in a forward impact collision, but no further classification is possible.

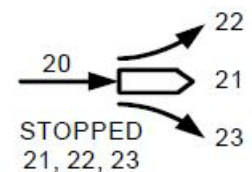
16
SPECIFICS
UNKNOWN

Crash Category: Same Trafficway, Same Direction**Crash Configuration: Rear-End**

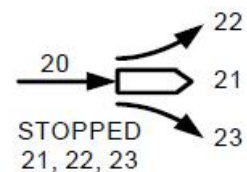
The front of the overtaking vehicle struck the rear of the other vehicle. Note, even if the rear-ended vehicle had started to make a turn, code here (not in Crash Category: Change in Trafficway, Vehicle Turning).

20 Rear-end: stopped

Enter “20” for a vehicle that impacts another vehicle from the rear when the struck vehicle was stopped in the trafficway.

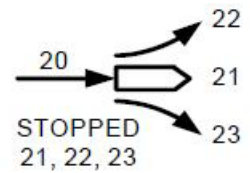
**21 Rear-end: stopped, straight**

Enter “21” for a rear-ended vehicle that was stopped in the trafficway, and was intending to proceed straight ahead.

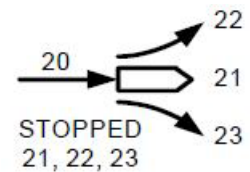


22 Rear-end: stopped, left

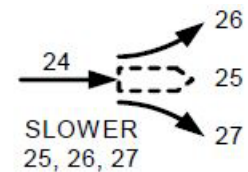
Enter “22” for a rear-ended vehicle that was stopped in the trafficway, intending to make a left turn.

**23 Rear-end: stopped, right**

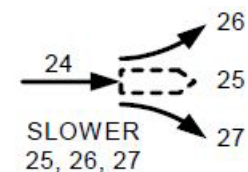
Enter “23” for a rear-ended vehicle that was stopped in the trafficway, intending to make a right turn.

**24 Rear-end: slower**

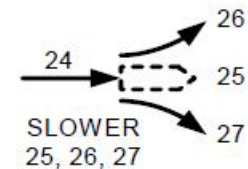
Enter “24” for a vehicle that impacts another vehicle from the rear when the struck vehicle was going slower than the striking vehicle.

**25 Rear-end: slower, going straight**

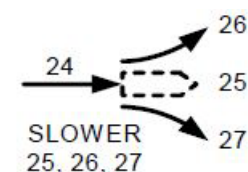
Enter “25” for a rear-ended vehicle that was going slower than the other vehicle while proceeding straight ahead.

**26 Rear-end: slower, going left**

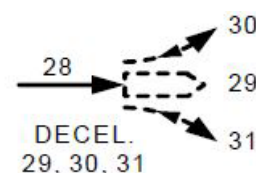
Enter “26” for a rear-ended vehicle that was going slower than the other vehicle while intending to turn left.

**27 Rear-end: slower, going right**

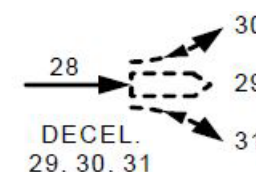
Enter “27” for a rear-ended vehicle that was going slower than the other vehicle while intending to turn right.

**28 Rear-end: decelerating (slowing)**

Enter “28” for a vehicle impacts another vehicle from the rear when the struck vehicle was slowing down.

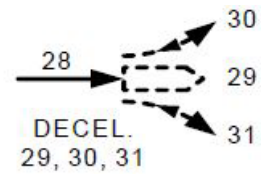
**29 Rear-end: decelerating (slowing), going straight**

Enter “29” for a rear-ended vehicle that was slowing down while proceeding straight ahead.

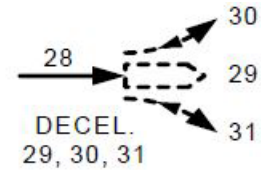


30 Rear-end: decelerating (slowing), going left

Enter “30” for a rear-ended vehicle that was slowing down while intending to turn left.

**31 Rear-end: decelerating (slowing), going right**

Enter “31” for a rear-ended vehicle that was slowing down while intending to turn right.

**32 Rear-end: specifics other**

Enter “32” for rear-end collisions that cannot be described in “20”-“31.” Enter “Specifics other” for crashes involving a driverless in-transport vehicle.

(EACH - 32)

SPECIFICS
OTHER**33 Rear-end: specifics unknown**

Enter “33” when the PCR indicates a rear-end collision occurred, but no further classification is possible.

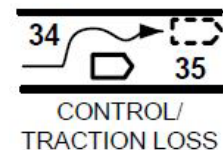
(EACH - 33)

SPECIFICS
UNKNOWN**Crash Configuration: Forward Impact**

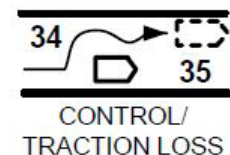
The front of the overtaking vehicle struck the rear of the other vehicle, following a steering maneuver, left or right, around a noninvolved vehicle or object.

34 Forward impact: control/traction loss

Enter “34” for a vehicle that’s frontal area impacts another vehicle due to loss of control or traction (during a maneuver to avoid a collision with a non-involved vehicle) while both are traveling on the same trafficway in the same direction.

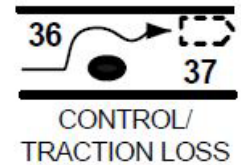
**35 Forward impact: control/traction loss**

Enter “35” for a vehicle that is struck by the frontal area of another vehicle due to loss of control or traction (during a maneuver to avoid a collision with a non-involved vehicle) while both are traveling on the same trafficway in the same direction.

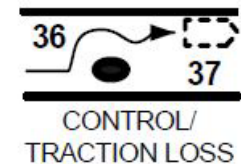


36 Forward impact: control/traction loss

Enter “36” for a vehicle that’s frontal area impacts another vehicle due to loss of control or traction (during a maneuver to avoid a collision with an object) while both are traveling on the same trafficway in the same direction.

**37 Forward impact: control/traction loss**

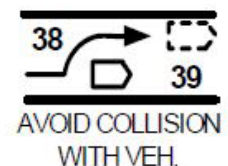
Enter “37” for a vehicle that is struck by the frontal area of another vehicle due to loss of control or traction (during a maneuver to avoid a collision with an object) while both are traveling on the same trafficway in the same direction.

**38 Forward impact: avoid collision with vehicle**

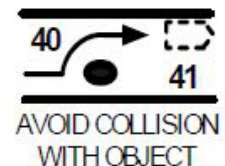
Enter “38” for a vehicle that struck the rear of another vehicle with its front plane while maneuvering to avoid collision with a non-involved vehicle, when loss of control or traction was not a factor, and both were traveling on the same trafficway, in the same direction.

**39 Forward impact: avoid collision with vehicle**

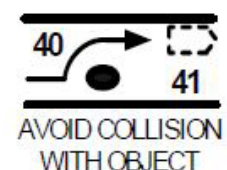
Enter “39” for a vehicle that was struck by the frontal area of another vehicle that was maneuvering to avoid a collision with a non-involved vehicle, when loss of control or traction was not a factor, and both were traveling on the same trafficway, in the same direction.

**40 Forward impact: avoid collision with object**

Enter “40” for a vehicle that struck the rear of another vehicle with its front plane while maneuvering to avoid collision with an object, when loss of control or traction was not a factor, and both were traveling on the same trafficway, in the same direction.

**41 Forward impact: avoid collision with object**

Enter “41” for a vehicle that was struck by the frontal area of another vehicle that was maneuvering to avoid a collision with an object, when loss of control or traction was not a factor, and both were traveling on the same trafficway, in the same direction.



42 Forward impact: specifics other**(EACH - 42)**

Enter “42” (for both vehicles) for a forward impact collision that occurred while both vehicles were traveling on the same trafficway, in the same direction, and the striking vehicle was attempting to avoid a vehicle or an object that cannot be described by “34” - “40.”

SPECIFICS
OTHER

Also, use this code for crashes involving a driverless in-transport vehicle that would otherwise qualify for this configuration.

43 Forward impact: specifics unknown**(EACH - 43)**

Enter “43” when the PCR indicates that a forward impact collision occurred while both vehicles were traveling on the same trafficway and in the same direction, but no further classification was possible.

SPECIFICS
UNKNOWN
Crash Configuration: Sideswipe/Angle

The two vehicles are involved in an impact involving the side of one or both vehicles.

The following four codes, “44” (Sideswipe/Angle, straight ahead on left), “45” (Sideswipe/Angle, straight ahead on left/right), “46” (Sideswipe/Angle, changing lanes to the right), “47” (Sideswipe/Angle, changing lanes to the left), identify relative vehicle positions (left versus right) and lane of travel intentions (straight ahead versus changing lanes). From these four codes, four combinations are permitted. They are the following.

- “44” and “45”
- “46” and “45”
- “45” and “47”
- “46” and “47”

When used in combination, these codes refer to a sideswipe or angle collision that involved a vehicle to the left of a vehicle to the right where:

- neither vehicle (codes “44” and “45”) intended to change its lane;
- the vehicle on the left (code “46”) was changing lanes to the right, and the vehicle on the right (code “45”) was not intending to change its lane;
- the vehicle on the left (code “45”) was not intending to change its lane, and the vehicle on the right (code “47”) was changing lanes to the left; and
- the vehicle on the left (code “46”) was changing lanes to the right, and the vehicle on the right (code “47”) was changing lanes to the left.

In addition, when:

- the right sides of the two vehicles strike following a 180-degree rotation of the vehicle on the right, or
- the left sides of the two vehicles strike following a 180-degree rotation of the vehicle on the left.

Select the appropriate combination depending upon:

- their positions (i.e., left versus right) and
- the intended lane of travel (straight ahead versus changing lanes) of their drivers.

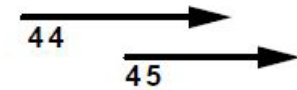
44 Sideswipe/angle: straight ahead on left

See discussion under Configuration: Sideswipe/Angle, above for an explanation of when this attribute applies.



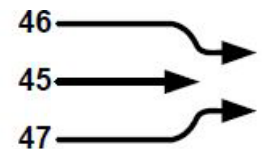
45 Sideswipe/angle: straight ahead on left/right

See discussion under Configuration: Sideswipe/Angle, above for an explanation of when this attribute applies.



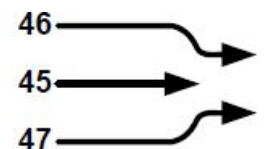
46 Sideswipe/angle: changing lanes to the right

See discussion under Configuration: Sideswipe/Angle, above for an explanation of when this attribute applies.



47 Sideswipe/angle: changing lanes to the left

See discussion under Configuration: Sideswipe/Angle, above for an explanation of when this attribute applies.



48 Sideswipe/angle: specifics other

Enter "48" if one vehicle was behind the other prior to a sideswipe/angle collision occurring while both vehicles were traveling on the same trafficway and in the same direction.

(EACH - 48)
SPECIFICS
OTHER

For example, use this code when two vehicles are on the same trafficway and going the same direction, and one loses control and is struck in the side by the front of the other vehicle. However, if one vehicle rotates such that the impact is front to front, then use code "98" (Other crash type).

Use this code for crashes involving a driverless in-transport vehicle.

49 Sideswipe/angle: specifics unknown

Enter "49" for sideswipe/angle collisions that occur while both vehicles are traveling on the same trafficway and in the same direction, when no further classification is possible.

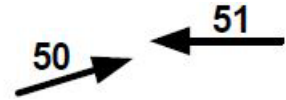
(EACH - 49)
SPECIFICS
UNKNOWN

Crash Category: Same Trafficway, opposite direction**Crash Configuration: Head-On**

The frontal plane of one vehicle struck the frontal plane of another.

50 Head-on: lateral move (left/right)

Enter “50” for a vehicle that LEAVES ITS LANE moves laterally (sideways) immediately before colliding head-on with another vehicle, when the vehicles are traveling on the same trafficway in opposite directions.

**51 Head-on: lateral move (going straight)**

Enter “51” for a vehicle that collides head-on with another vehicle that has IMMEDIATELY LEFT ITS LANE (moved laterally), when the vehicles are traveling on the same trafficway in opposite directions.

**52 Head-on: specifics other**

(EACH - 52)

Enter “52” for a head-on collision that cannot be described by “50”-“51”, “ when the vehicles are traveling on the same trafficway in opposite directions. Clarification: Enter “52” for both vehicles involved in a head-on collision when one is traveling the wrong way on a one way roadway.

SPECIFICS OTHER

Enter “Specifics other” for crashes involving a driverless in-transport vehicle.

53 Head-on: specifics unknown

(EACH - 53)

Enter “53” when the PCR indicates a head-on collision occurred between two vehicles traveling on the same trafficway in opposite directions, when no further classification is possible.

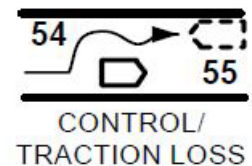
SPECIFICS UNKNOWN

Crash Configuration: Forward Impact

The frontal area of one vehicle struck the frontal area of another following a steering maneuver around a noninvolved vehicle or an object.

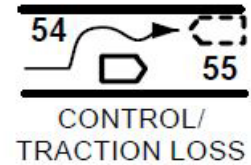
54 Forward impact: control/traction loss

Enter “54” for a vehicle whose frontal area impacts another vehicle due to loss of control or traction (during a maneuver to avoid a collision with a third vehicle) while the vehicles are traveling on the same trafficway in opposite directions.

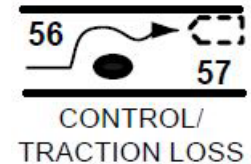


55 Forward impact: control/traction loss

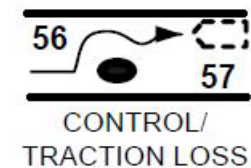
Enter “55” for a vehicle that is struck by the frontal area of another vehicle due to loss of control or traction (during a maneuver to avoid a collision with a third vehicle) while the vehicles are traveling on the same trafficway in opposite directions.

**56 Forward impact: control/traction loss**

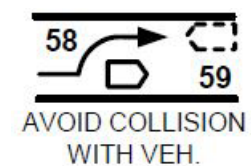
Enter “56” for a vehicle whose frontal area impacts another vehicle due to loss of control or traction (during a maneuver to avoid a collision with an object) while the vehicles are traveling on the same trafficway in opposite directions.

**57 Forward impact: control/traction loss**

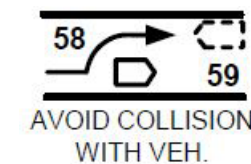
Enter “57” for a vehicle that is struck by the frontal area of another vehicle due to loss of control or traction (during a maneuver to avoid a collision with an object) while the vehicles are traveling on the same trafficway in opposite directions.

**58 Forward impact: avoid collision with vehicle**

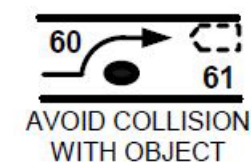
Enter “58” for a vehicle whose frontal area impacts another vehicle while maneuvering to avoid a collision with a non-involved vehicle, when loss of control or traction was not a factor, and the vehicles were traveling on the same trafficway, in opposite directions.

**59 Forward impact: avoid collision with vehicle**

Enter “59” for a vehicle that was struck by the frontal area of another vehicle that was maneuvering to avoid collision with a non-involved vehicle, when loss of control or traction was not a factor and the vehicles were traveling on the same trafficway, in opposite directions.

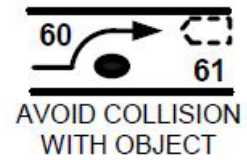
**60 Forward impact: avoid collision with object**

Enter “60” for a vehicle that struck the front of another vehicle with the front plane while maneuvering to avoid collision with an object, when loss of control or traction was not a factor, and the vehicles were traveling on the same trafficway, in opposite directions.



61 Forward impact: avoid collision with object

Enter "61" for a vehicle that was struck by the frontal area of another vehicle that was maneuvering to avoid collision with an object, when loss of control or traction was not a factor, and the vehicles were traveling on the same trafficway, in opposite directions.

**62 Forward impact: specifics other**

(EACH - 62)

Enter "62" for forward impact collisions occurring while the vehicles were traveling on the same trafficway in opposite directions that cannot be Described by "54"- "61." Enter "Specifics other" for crashes involving a "driverless in-transport vehicle."

SPECIFICS
OTHER**63 Forward impact: specifics unknown**

(EACH - 63)

Enter "63" when the PCR indicates a forward impact collision occurred while the vehicles were traveling on the same trafficway in opposite directions, but no further classification is possible.

SPECIFICS
UNKNOWN**Crash Configuration: Sideswipe/Angle**

The two vehicles are involved in an impact involving the side of one or both vehicles.

64 Sideswipe/angle: lateral move (left/right)

Code "64" identifies the vehicle that infringed upon the other vehicle (code "65") in a Crash Category: Change Trafficway Opposite Direction, Crash Configuration: Sideswipe/Angle collision. Enter "64" for the vehicle that left its lane (moved laterally) leading to the collision.

**65 Sideswipe/angle: lateral move (going straight)**

Enter "65" for the vehicle that was infringed upon by the other vehicle (code "64") in a Crash Category: Change Trafficway Opposite Direction, Crash Configuration: Sideswipe/Angle collision.

**66 Sideswipe/angle: specifics other**

(EACH - 66)

Enter "66" for sideswipe/angle collisions occurring while both vehicles were traveling on the same trafficway in opposite directions that cannot be Described by "64"- "65." However, if one vehicle rotates such that the impact is front to front or front to rear, and did not result from a steering maneuver around a noninvolved

SPECIFICS
OTHER

vehicle or an object (category H) then use code “98” (Other crash type). Enter “Specifics other” for crashes involving a driverless in-transport vehicle.”

67 Sideswipe/angle: specifics unknown

(EACH - 67)

Enter “67” when the PCR indicates a sideswipe/angle collision occurred while both vehicles were traveling on the same trafficway in opposite directions, but no further classification is possible.

SPECIFICS UNKNOWN

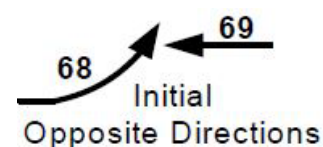
Crash Category: Changing Trafficway, Vehicle Turning

Configuration J. Turn Across Path

The two vehicles were initially on the same trafficway when one vehicle tried to turn onto another trafficway and pulled in front of the other vehicle. Vehicles making a U-turn are identified in Category VI. Miscellaneous.

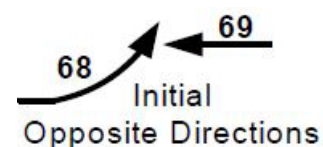
68 Turn across path: initial opposite directions (left/right)

Code “68” identifies the vehicle that turned across the path of another vehicle (code) in a Category IV, Configuration J collision, in which the vehicles were initially traveling in opposite directions.



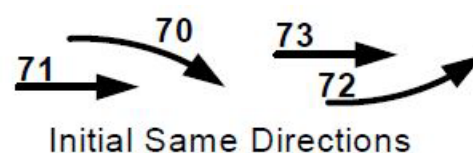
69 Turn across path: initial opposite directions (going straight)

Enter “69” for a vehicle involved in a collision in which another vehicle (code “68” across its Path, and in which the vehicles were initially traveling in opposite directions.



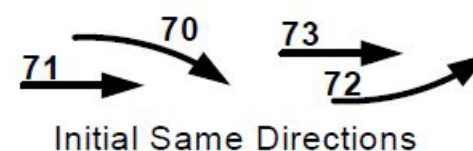
70 Turn across path: initial same directions (turning right)

Enter “70” for a vehicle that turned right, across the path of another vehicle (code “71”), when both vehicles were initially traveling in the same direction.



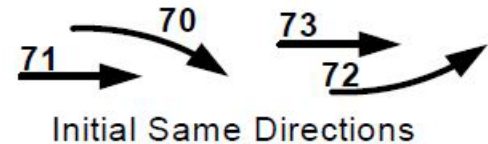
71 Turn across path: initial same directions (going straight)

Enter “71” for a vehicle whose path was crossed by a vehicle turning right (code “70”), when both vehicles were initially traveling in the same direction.

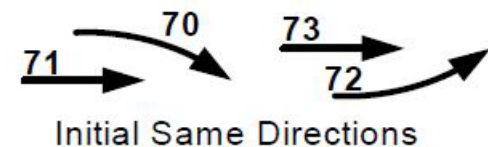


72 Turn across path: initial same directions (turning left)

Enter “72” for a vehicle that turned left, across the path of another vehicle (code “73”), when both vehicles were initially traveling in the same direction.

**73 Turn across path: initial same directions (going straight)**

Enter “73” for a vehicle whose path was crossed by a vehicle turning left (code “72”), when both vehicles were initially traveling in the same direction.

**74 Turn across path: specifics other**

Enter “74” for collisions in which one vehicle turned across another’s path, which cannot be described by “68”-“72.” Enter “Specifics other” for crashes involving a driverless in-transport vehicle.

(EACH - 74)

SPECIFICS
OTHER**75 Turn across path: specifics unknown**

Enter “75” when the PCR indicates one vehicle turned across another’s path, causing a collision, but no further classification is possible.

(EACH - 75)

SPECIFICS
UNKNOWN**Crash Configuration: Turn Into Path**

The two vehicles were initially on different trafficways when one attempted to turn into the same trafficway as the other vehicle.

Note: the focus of this configuration is on the turning maneuver from one trafficway to another and not on the vehicles’ plane of contact.

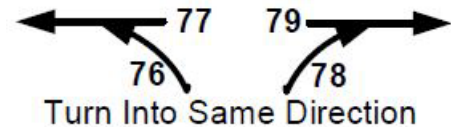
76 Turn into same direction (turning left)

Enter “76” for a vehicle that turned left, into the path of another vehicle (code “77”), so that both vehicles were traveling in the same direction at the time of the collision.



77 Turn into same direction (going straight)

Enter “77” for a vehicle involved in a collision in which another vehicle (code “76”) turned left, into its path, so that both vehicles were traveling in the same direction at the time of the collision.

**78 Turn into same direction (turning right)**

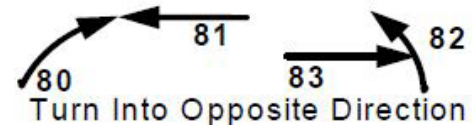
Enter “78” for a vehicle that turned right, into the path of another vehicle (code “79”), so that both vehicles were traveling in the same direction at the time of the collision.

**79 Turn into same direction (going straight)**

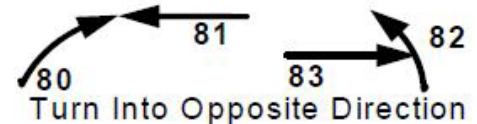
Enter “79” for a vehicle involved in a collision in which another vehicle (code “78”) turned right, into its path, so that both vehicles were traveling in the same direction at the time of the collision.

**80 Turn into opposite directions (turning right)**

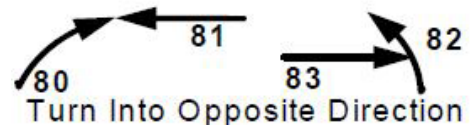
Enter “80” for a vehicle that turned right, into the path of another vehicle (code “81”), so that the vehicles were traveling in opposite directions at the time of the collision.

**81 Turn into opposite directions (going straight)**

Enter “81” for a vehicle involved in a collision in which another vehicle (code “80”) turned right, into its path, so that the vehicles were traveling in opposite directions at the time of the collision.

**82 Turn into opposite directions (turning left)**

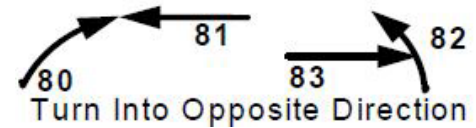
Enter “82” for a vehicle that turned left, into the path of another vehicle (code “83”), so that the vehicles were traveling in opposite directions at the time of the collision.



Code “82” is used when the driver’s vehicle was in the act of making a left turn (e.g., from a driveway, parking lot or intersection). Do not confuse this situation with “**Crash Configuration: Straight Paths.**” The driver’s intended path is the prime concern.

83 Turn into opposite directions (going straight)

Enter “83” for a vehicle involved in a collision in which another vehicle (code “82”) turned left, into its path, so that the vehicles were traveling in opposite directions at the time of the collision.



84 Turn into path: specifics other

(EACH - 84)

Enter “84” for collisions in which one vehicle turned across another’s path, which cannot be described by “76”-“83.” Enter “Specifics other” for crashes involving a driverless in-transport vehicle.

SPECIFICS
OTHER

85 Turn into path: specifics unknown

(EACH - 85)

Enter “85” when the PCR indicates one vehicle turned into another’s path, causing a collision, but no further classification is possible.

SPECIFICS
UNKNOWN

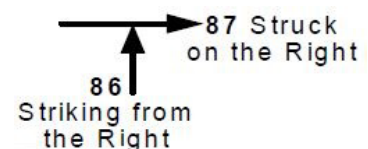
Crash Category: Intersecting Paths (Vehicle Damage)

Crash Configuration: Straight Paths

The two vehicles were proceeding (or attempting to proceed) straight ahead.

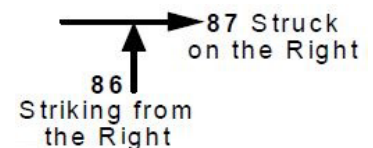
86 Straight paths striking from the right

Enter “86” for a vehicle that strikes the right side of another vehicle (code “87”) from the right when both vehicles were going straight at the time of the collision, i.e., right side damage to 87, front damage to 86.



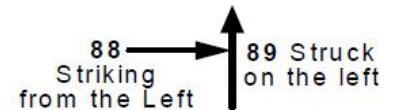
87 Straight paths struck on the right

Enter “87” for a vehicle that is struck on the right side by another vehicle (code “86”) from the right when both vehicles were going straight at the time of the collision, i.e., right side damage to 87, front damage to 86.

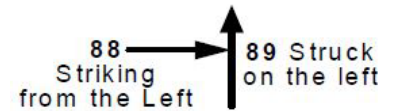


88 Straight paths striking from the left

Enter “88” for a vehicle that strikes another vehicle (code “89”) from the left when both vehicles were going straight at the time of the collision, i.e., left side damage to 89, front damage to 88.

**89 Straight paths struck on the left**

Enter “89” for a vehicle that is struck on the left side by another vehicle (code “88”) from the left when both vehicles were going straight at the time of the collision, i.e., left side damage to 89, front damage to 88.

**90 Straight paths specifics other**

(EACH - 90)

Enter “90” for collisions in which two vehicles, both going straight, collide when their paths intersect, which cannot be described by “86”-“89.” Enter “Specifics other” for crashes involving a driverless in-transport vehicle.

SPECIFICS
OTHER**91 Straight paths specifics unknown**

(EACH - 91)

Enter “91” when the PCR indicates two vehicles, both going straight, collided when their paths intersected, but no further classification is possible.

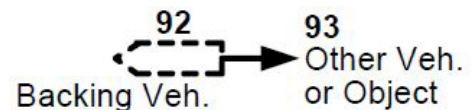
SPECIFICS
UNKNOWN**Crash Category: Miscellaneous****Crash Configuration: Backing, etc.**

One of the two vehicles involved was a backing vehicle, regardless of its location on the trafficway or the damage location on the vehicles.

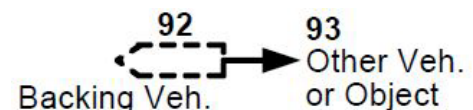
Any crash configuration that cannot be described in the above Crash Categories is included here.

92 Backing, etc.:backing vehicle

Enter “92” for a backing vehicle that was involved with another vehicle (code 93) or object.

**93 Backing, etc.: other vehicle or object**

Enter “93” for the vehicle that was involved with the backing vehicle (code 92).



98 Backing, etc.: other crash type

Code “98” is used for those events and collisions that do not reasonably fit any of the specified types. This code includes (but is not limited to):

- Rollovers on the road,
- U-turns,
- Third or subsequent vehicles involved in a crash, or
- The second involved vehicle, when the first harmful event involved a vehicle-to-object collision or a noncollision.

98 Other Accident Type**99 Unknown Accident Type****00 No Impact****99 Backing, etc.: unknown crash type**

Code “99” when the crash category or configuration is unknown.

98 Other Accident Type**99 Unknown Accident Type****00 No Impact****00 Backing, etc.: no impact**

Code “00” identifies noncollision events (fire, immersion, etc.) Rollovers on the road should be coded as Crash Type “98” **Other Accident Type**.

98 Other Accident Type**99 Unknown Accident Type****00 No Impact**

Rollover

Rollover Data Overview

The following variables provide a coded assessment of the occurrence of a rollover for this vehicle. A rollover is defined as any vehicle rotation of 90° or more about any true longitudinal or lateral axis. A rollover may occur at any time during the crash sequence. When determining rollover presence, consider only the power unit, not any towed or trailing units. The variables also attempt to identify:

- What initiated the rollover,
- At what plane of the vehicle exterior the tripping force was applied, and
- The direction of the initial roll.

Rollover Type

Screen Name: **Rollover Data-Type**
 SAS Data Set: **GV**
 SAS Variable: **ROLLTYPE**
 Database Name: **CISS.CISS.ROLLOVER.ROLLTYPE**

Element Attributes

Database	SAS	
1	0	No rollover (no overturning)
2	1	Rollover — longitudinal axis
4	2	Rollover — end-over-end (i.e., primarily about the lateral axis)
5	9	Overturn, details unknown

Source

Primary sources are the vehicle and scene inspections; secondary sources include photographs, police report, driver interviews, and other interviewees.

Remarks

Rollover is defined as any vehicle rotation of 90° or more about any true longitudinal or lateral axis. Rollover can occur at any time during the collision and is coded independently of other configuration questions.

No rollover (no overturning)

Select this code if uncertainty exists concerning whether or not this vehicle rolled over. In addition, use this attribute if a trailer attached to the vehicle rolled over but the vehicle itself did not.

Longitudinal axis

Used when the vehicle rolls primarily from side-to-side (e.g., from left side, to top, to right side). If it is known that it rolled over the longitudinal axis, but the number of turns is unknown, then indicate **Longitudinal axis** and indicate **Unknown** on the next variable.

Rollover — end-over-end (i.e., primarily about the lateral axis)

Used when the rollover is mainly end-over-end. This attribute is used when a rollover is a combination of a side-to-side and end-over-end roll, and it cannot be determined which type of rollover is most prevalent.

Note: Rollover Types indicated as Rollover – end-over-end (i.e., primarily about the lateral axis) will automatically code all the rollover variables to reflect an end-over-end rollover.

Rollover (overturn), details unknown

Used when it is known that the vehicle rolled over, but the rollover details cannot be determined. If it is known that it rolled over the longitudinal axis, but the number of turns is unknown, then indicate **Longitudinal axis** and indicate **Unknown** on the next variable.

Number of Quarter Turns

Screen Name: **Rollover Data-Quarter Turns**
 SAS Data Set: **GV**
 SAS Variable: **ROLLTURN**
 Database Name: **CISS.CISS.ROLLOVER.QTURNS**

Element Attributes

Database	SAS	
		Enter the number of quarter turns:
0	0	No rollover
-8888	98	End-over-end
-9999	99	Unknown

Range

1-20, Unknown

20 includes, 21 or more quarter rolls

Source

Primary sources are the vehicle and scene inspections; secondary sources include photographs, police reports, driver interviews, and other interviewees.

Remarks**Enter the number of quarter turns**

Based on the technician's crash reconstruction. A "quarter turn" is defined as a rotation of 90° about the longitudinal axis of the vehicle; this does not include rotation about the vertical axis, commonly called yaw. Therefore, if a vehicle rolled about the longitudinal axis onto its roof (i.e., side- to-side roll), then it would be considered a 180° roll and entered as "2" quarter turns.

In the example below, the vehicle rolled from its upright position to left side, to top, then to the right side, and back onto its wheels. This would be indicated as "4" quarter turns.

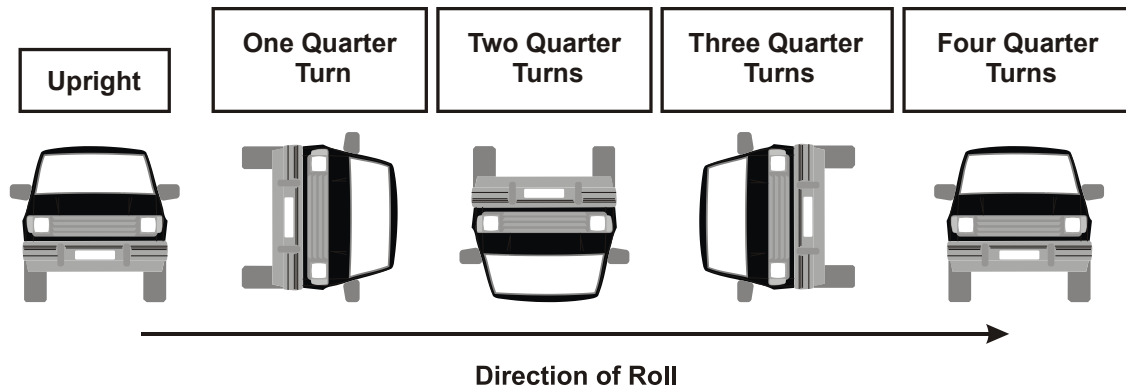


Figure 34. Example of a roll

Unknown

Used when it cannot be determined the number of quarter turns the vehicle did during the rollover sequence.

Interrupted Roll

Screen Name: **Interrupted roll**
 SAS Data Set: **GV**
 SAS Variable: **ROLLINTRPT**
 Database Name: **CISS.CISS.ROLLOVER.INTERRUPT**

Element Attributes

Database	SAS	
2	0	No rollover
6	1	Yes
4	2	No
1	8	End-over-end
5	9	Unknown

Source

Vehicle inspection, scene inspection, interviews, and police report.

Remarks

The purpose of this variable is to determine if the vehicle's rollover sequence was acted upon by another vehicle or object between the trip point and the final rest position. Examples may include the vehicle striking a tree with its top during the rollover sequence, or contacting an object in the environment. This impact should have an effect on the distance the vehicle would have traveled from trip point to final rest.

Note:

If the technician determines that the rollover sequence was interrupted, an event and CDC must be assigned to the vehicle damage from the object that interrupted the roll.

Yes

Used when the rollover sequence was interrupted.

No

Used when the rollover sequence was not interrupted.

Unknown

Used when it is unknown if the rollover sequence was interrupted.

Pre-Rollover Maneuver

Screen Name: **Maneuver**
 SAS Data Set: **GV**
 SAS Variable: **ROLLPREMAN**
 Database Name: **CISS.CISS.ROLLOVER.PREMANEUVER**

Element Attributes

Database	SAS	
4	0	No rollover
3	1	Departing roadway (to paved surface)
2	2	Departed roadway (to non-paved surface)
8	7	Returning to roadway (from paved surface)
7	4	Returning to roadway (from non-paved surface)
6	5	On roadway maneuver
5	6	Off roadway maneuver
10	8	Rollover end-over-end
9	9	Unknown

Source

Technician-determined — primary sources are the scene and vehicle inspections. Secondary sources are photographs, police report, driver interviews, and other interviewees.

Remarks

Determine the last controlled maneuver, relative to the roadway, prior to the initiation of the rollover.

No rollover

No rollover occurred involving this vehicle.

Departing roadway (to paved surface)

Vehicle departs roadway to a paved shoulder, gore or other area as the last movement prior to the tripping point. This area is usually delineated by painted lines or ceramic dots.

Departing roadway (to non-paved surface)

Vehicle departs roadway to an unpaved shoulder or unimproved area as the last movement prior to the trip point.

Returning to roadway (from paved surface)

Vehicle returns to the roadway from a paved shoulder or other area as the last movement prior to the trip point. Painted lines or ceramic dots usually delineate this area.

Returning to roadway (from non-paved surface)

Vehicle returns to the roadway from an unpaved shoulder or other area as the last movement prior to the trip point.

On Roadway maneuver

The vehicle remained predominantly on the roadway and the trip point is on the roadway or immediately next to it.

Off Roadway maneuver

The vehicle departed the roadway completely. While off the roadway the vehicle began or completed a maneuver different than the one that took it off the roadway.

Unknown

The technician is unable to determine the maneuvers or location of the vehicle just prior to the rollover initiation. This code should be used only in very rare instances.

Rollover Initiation Type

Screen Name: **Rollover Initiation-Type**
 SAS Data Set: **GV**
 SAS Variable: **ROLLINITYPE**
 Database Name: **CISS.CISS.ROLLOVER.INITTYPE**

Element Attributes

Database	SAS	
2	0	No rollover
10	1	Trip-over
8	2	Flip-over
11	3	Turn-over (specify)
5	4	Climb-over
7	5	Fall-over
4	6	Bounce-over
6	7	Collision with another vehicle
9	8	Other rollover initiation type (specify)
99	98	End-over-end
12	99	Unknown

Source

Technician-determined — primary sources are the scene and vehicle inspections. Secondary sources are photographs, police report, driver interviews, and other interviewees.

Remarks

Various types of rollovers are identified above. A vehicle action that cannot be categorized under any of the above elements should be coded **Other rollover initiation type** and specified in the space provided. The attributes below are used for rollovers initiated about the longitudinal axis. Rollover Types indicated as Rollover – end-over-end (i.e., primarily about the lateral axis) will automatically code all of the rollover variables to reflect an end-over-end rollover.

Trip-over

Used when the vehicle's lateral motion is suddenly slowed or stopped, inducing a rollover. The opposing force may be produced by a curb, pot-holes, or pavement/soil dug into by a vehicle's wheels.

Trip-Over:
The vehicle's lateral motion is resisted by opposing force, inducing roll moment.

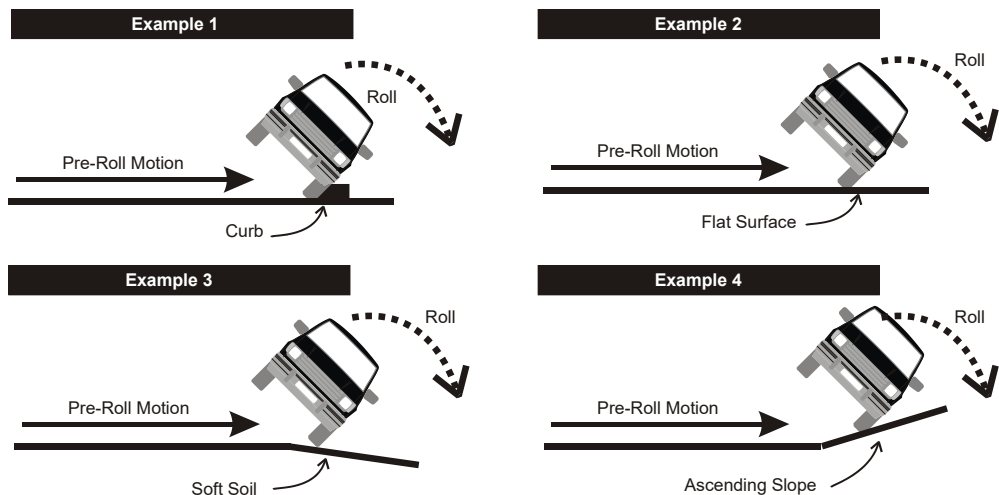


Figure 35. Examples of trip-over

Flip-Over

Used when the vehicle is rotated about its longitudinal axis by a ramp-like object may be in a yaw when it comes in contact with the ramp-like object. For example, if the vehicle traveling forward climbs the down turned end of a guardrail and rolls over about its longitudinal axis, use this code. To use this, the vehicle's roll need not begin on the ramp-like structure or object, For example, if the vehicle transverses the turned-down end of a guardrail, continues along the level portion, then rolls back toward the side of the guardrail from which it came, use this code.

Flip-Over

Forward moving vehicle is vigorously rotated about its longitudinal axis by a ramp-like object such as a guardrail taper or ditch back slope.

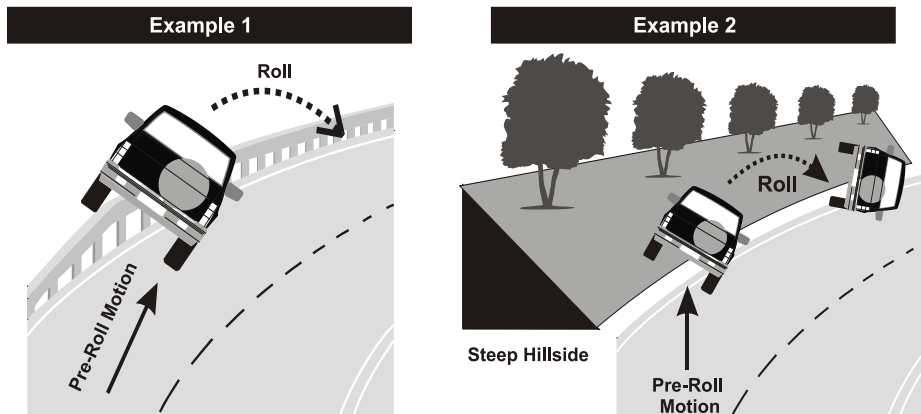


Figure 36. Examples of flip-over

Turn-Over

Used when centrifugal forces from a sharply turning or rotating vehicle produce a rollover when resisted by normal surface friction. This type of rollover is more likely to occur in vehicles with a higher center of gravity than most passenger vehicles. The surface type includes pavement surfaces plus gravel, grass, dirt, etc. The distinction between Turn-over and Trip-over is that no

furrowing, gouging, etc., occurs to the surface at the point of trip. In addition, see remarks for Fall-over below. When turnover is selected, the justification must be entered.

Turn Over:

Centrifugal forces from a sharply turning or rotating vehicle produce a rollover moment when resisted by surface friction.

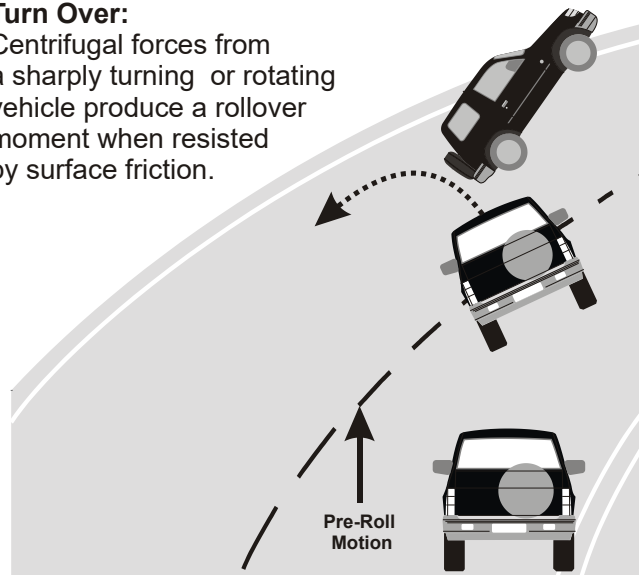


Figure 37. Example of turn-over

Climb-Over

Used when a vehicle climbs up and over a fixed object such as a barrier or guardrail. The object should be high enough to lift the vehicle completely off the ground (i.e., the height should exceed the radius of the vehicle's largest diameter wheel). The vehicle must roll to the opposite side from which it approached the object.

Climb-Over

Vehicle climbs up and over fixed object such as a guardrail

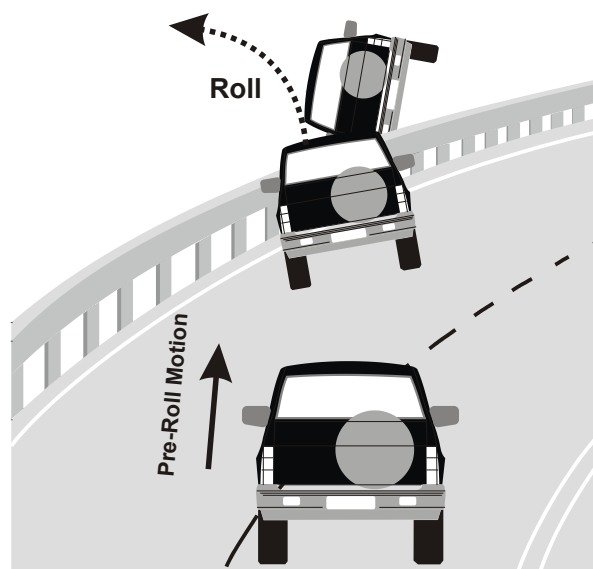


Figure 38. Examples of climb-over

Fall-Over

Used when the surface the vehicle is traversing slopes downward in the direction of movement of the vehicle's center-of-gravity such that the vehicle's center of gravity becomes outboard of its wheels. The distinction between this and Turn-over above involves the negative slope of the traversed surface. If the rotation and/or the surface friction causes the trip, then use Turn-over; however, if the slope is so negative that a line straight downward through the vehicle's center-of-gravity (as shown in the illustration) would fall outside the vehicle's track, then use this attribute. For example, if a vehicle goes off the road and encounters a substantial surface drop off because of the elevated nature of the road in relation to its environment (cliff, ditch, etc.), then use this attribute.

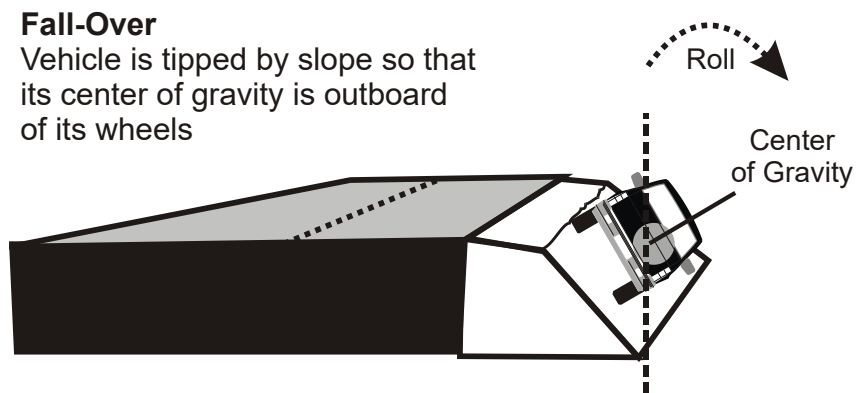


Figure 39. Example of fall-over

Bounce-Over

Used when a vehicle deflects off of a fixed object (such as a guardrail, barrier, tree, or pole) or a not-in-transport vehicle such that the vehicle's rotation causes it to overturn. The deflection momentum contributes to a rollover. To use this attribute, the rollover must occur in close proximity to the object from which it deflected. For example, if a vehicle strikes a center median barrier and rotates across two traffic lanes prior to the vehicle rolling over, then Trip-over or Turn-over would apply.

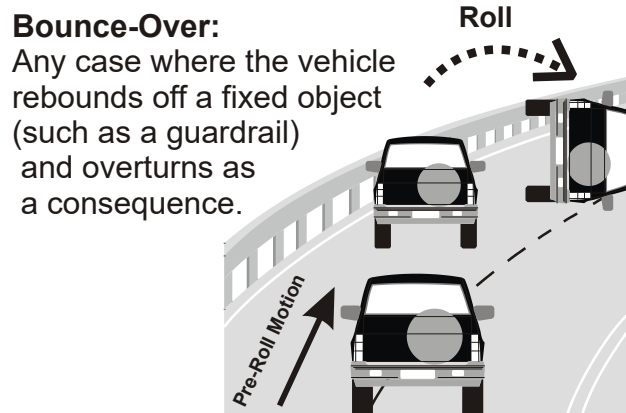


Figure 40. Example of bounce-over

Collision with another vehicle

Used when an impact with another vehicle causes the rollover. The rollover must be the immediate result of the impact between the vehicles (e.g., intersection crashes where a vehicle is struck in the side and the momentum of the struck vehicle results in the rollover, or offset end-to-end type crashes when one vehicle will vault over the tapered end of another vehicle resulting in a rollover). Otherwise use attributes above. For example, if a vehicle is struck in the side *and* the vehicle rotates *and* does not produce any wheel/rim gouges or furrows in the surface nor encounters any prominent raised objects (e.g., a high curb) *and* overturns in close proximity to the point of impact, then use this attribute.

Other rollover initiation type

Used when this vehicle's rollover initiation type cannot be described above. Whenever this is used, the technician is required to *specify* the type of rollover that occurred.

Unknown

Used when the type of rollover initiation is unknown.

End-over-end

Automatically entered when the type of rollover is end-over-end.

Location of Rollover Initiation

Screen Name: **Rollover Initiation-Location**
 SAS Data Set: **GV**
 SAS Variable: **ROLLINLOC**
 Database Name: **CISS.CISS.ROLLOVER.INITLOC**

Element Attributes

Database	SAS	
2	0	No rollover
5	1	On roadway
6	2	On shoulder - paved
7	3	On shoulder - unpaved
4	4	On roadside or divided trafficway median
99	8	End-over-end
8	9	Unknown

Source

Technician-determined — primary source is the scene inspection. Secondary sources are vehicle inspection, photographs, police report, driver interviews, and other interviewees.

Remarks

This variable defines the location of the trip point or start of the vehicle's roll that was identified in, Rollover Initiation Type. Physical evidence on and/or off the roadway should be used to identify the point of initial roll. Scenes with no physical evidence such as gouges in the pavement or ground may be determined by the secondary sources listed above.

On roadway

Used when the rollover initiates in the travel lanes of the roadway (i.e., between painted edgelines or between roadway edges when painted edgelines are absent). The median between roadways (divided highways such as thruways or expressways) is identified as codes On shoulder—paved, On shoulder—unpaved, or On roadside or divided trafficway median as described below. ANSI defines a **roadway** as that part of a trafficway designed, improved, and ordinarily used for motor vehicle travel, and excludes any shoulder alongside the roadway.

On shoulder — paved

Used when the rollover initiation occurs on a paved surface outside the painted edgeline or the outer edge or pavement seam of the roadway. A shoulder may exist within the median of a divided highway or on the outermost edge of the roadway. A shoulder is defined as that part of a trafficway contiguous with the roadway for emergency use, for accommodation of stopped road vehicles, and for lateral support of the roadway structure.

On shoulder — unpaved

Used when the rollover initiation begins within the confines of the *improved* area (i.e., gravel or stone) contiguous with the roadway. Unpaved shoulders, for CISS purposes, are composed of loose gravel or stone. Combination gravel/stone and asphalt surfaces, such as macadam or “chip and seal,” are considered as paved. Roadways without an improved, contiguous surface will be considered as not having shoulders.

On roadside or divided trafficway median

Used when the rollover initiation occurs outside the roadway and the shoulder. There are roads where sod or dirt will support the roadway edge. When the rollover initiation occurs within this area, use this attribute because this roadway does not have shoulders. In addition, shoulders end wherever most curbs or fixed objects begin. If the trip begins on a curb that is adjacent on one side to a sidewalk, turf, or dirt, then use this attribute. If the roll is initiated by a fixed object then use this attribute. Care must be exercised with some mountable curbs. If the mountable curb has paving on both sides and its primary function is to control water runoff, then use **On shoulder—paved**.

Rollover Initiation Object Contacted Class

Screen Name: **Rollover Initiation—Object Contacted Class**
 SAS Data Set: **N/A**
 SAS Variable: **N/A**
 Database Name: **CISS.CISS.ROLLOVER.INITOBJCLASS**

Element Attributes

Database	SAS	
1		Vehicle
2		Noncollision
3		Collision with fixed object
5		Collision with non-fixed object
7		Other event (specify)
6		Unknown event or object
8		Rollover end-over-end

Source

Technician-determined — primary source is the scene inspection. Secondary sources are vehicle inspections, photographs, police reports, driver interviews, and other interviewees.

Remarks

The Object Contacted codes in the next variable are grouped into specific classes. The class is first selected and then the object lists are filtered for items in that specific class.

Vehicle

Used when the object contacted that caused this vehicle to rollover is another vehicle.

Noncollision

Is automatically entered by the program when a “Turn Over” or “Fall Over” is selected as the rollover initiation type, or when the rollover was initiated by a jackknife noncollision. Additionally, this code is used for end-over-end rollovers.

Collision with a fixed object

Used when an impact with a fixed object (a tree, breakaway pole or post, embankment, curb, etc.) caused the rollover.

Non-breakaway pole or post

Used when the object contacted that caused the vehicle to rollover was a non-breakaway pole or post.

Collision with a non-fixed object

Used when the collision that initiated the rollover is a non-fixed object (motor vehicle not in-transport, animal, railway vehicle, trailer disconnected in-transport, etc.).

Rollover Initiation Object Contacted

Screen Name: **Rollover Initiation—Object Contacted**
 SAS Data Set: **GV**
 SAS Variable: **ROLLOBJ**
 Database Name: **CISS.CISS.ROLLOVER.INITOBJECT**

Element Attributes

Database	SAS	
-8866	0	No rollover

Vehicle number (1-30)

Noncollision

Database	SAS	
31	31	Overturn – rollover (excludes end-over-end)
32	32	Rollover – end-over-end
34	34	Jackknife

Collision With Fixed Object

Database	SAS	
41	41	Tree (<=10 cm in diameter)
42	42	Tree (> 10 cm in diameter)
43	43	Shrubbery or bush
44	44	Embankment
45	45	Breakaway pole or post (any diameter)
100	47	Cable barrier guardrail
48	48	Guardrail Face
49	49	Guardrail End

Non-Breakaway Pole or Post

Database	SAS	
50	50	Nonbreakaway pole or post (<=10 cm in diameter)
51	51	Nonbreakaway pole or post (> 10 cm but <= 30 cm diameter)
52	52	Nonbreakaway pole or post (> 30 cm in diameter)
53	53	Nonbreakaway pole or post (diameter unknown)
54	54	Concrete traffic barrier
55	55	Impact attenuator
56	56	Other traffic barrier (specify)

Database	SAS	
57	57	Fence
58	58	Wall
59	59	Building
60	60	Ditch or culvert
61	61	Ground
62	62	Fire hydrant
63	63	Curb
64	64	Bridge
68	68	Other fixed object (specify):
69	69	Unknown fixed object

Collision with Non-fixed Object

Database	SAS	
74	74	Other nonmotorist or conveyance (specify):
76	76	Animal
102	77	Railway vehicle
78	78	Trailer, disconnected in-transport
79	79	Object fell from vehicle in-transport
88	88	Other non-fixed object (specify):
89	89	Unknown non-fixed object

Other Event

Database	SAS	
98	98	Other event (specify)

Unknown Event or Object

Database	SAS	
99	99	Unknown event or object

Source

Technician-determined — primary sources are the scene and vehicle inspections; secondary sources include the police report and interviewees.

Remarks

This variable is related to Rollover Initiation Type, and identifies the source of the force that acted upon the vehicle that resulted in the rollover. These attributes are obtained from the

Exterior Vehicle Form, CDC tab, Object Contacted attributes. If the rollover was initiated by an impact that was assigned a CDC, then the applicable element value will be selected for this variable. If the rollover was not initiated by a CDC applicable impact, then it is unlikely that the same value will be selected. Therefore, the technician must determine the cause (i.e., initiation force) of the rollover and consequently the object contacted during the rollover. For example, if a vehicle strikes a curb that trips the vehicle, then select **Curb** even though the CDC Object Contacted for the rollover would probably equal **Overturn- rollover**.

Similarly, if a vehicle vaults a longitudinal barrier (Climb-over), then select **Concrete traffic barrier** or **Other traffic barrier**, depending upon the longitudinal barrier design. If a yawing vehicle rolls as a result of centrifugal forces caused by normal surface friction or as a result of burrowing into soft soil, then select **Ground** because the ground applied the force that acted as the tripping mechanism for the rollover.

Vehicle number

Select the vehicle number to report the vehicle that struck this vehicle and caused the rollover to occur (i.e., Rollover initiation type must equal Collision with another vehicle). Select the vehicle number of the vehicle that initiated the rollover to this vehicle. This will be most common when one vehicle (generally with a high center of gravity) is involved in an offset head-on crash with a second vehicle (possibly with a lower sloping front end) resulting in a vaulting type rollover. Do not use these attributes if the vehicle rolls over subsequent to its impact with another vehicle but because of centrifugal force or a tripping mechanism. These latter two causes would take priority.

Turn-over — fall-over

Excludes end-over-end and is used when the vehicle roll is precipitated by centrifugal or gravitational forces and Rollover Initiation Type, has been selected **Turn-over** or **Fall-over**.

Jackknife

Used when a vehicle rolls over as result of a jackknife and the sole reason for the rollover is the force applied by the jackknifing trailer. For example, if a vehicle is pulling a trailer and the trailer jackknifes (i.e., 90° rotation and intra-unit damage) and overturns, for whatever reason (trailer tires furrow in soft earth, centrifugal force, trailer trips, load shifts causing it to tip, etc.), **and** the trailer's overturning causes this vehicle to overturn, then use this. However, if a centrifugal force or tripping mechanism causes the vehicle to overturn with or without the trailer overturning, then use another attribute.

Tree (< 10 cm in diameter)

Used when a vehicle impacts a tree that has a diameter of 10 cm or less and the tree either (1) acts like a rigid barrier or (2) bends or breaks causing the vehicle to rollover (i.e., Rollover Initiation Type equals Trip-over, Flip-over, or Bounce-over). Select another attribute when a vehicle strikes a tree and experiences a subsequent rollover due to centrifugal forces or other tripping mechanisms.

Tree (> 10 cm in diameter)

Used when a vehicle strikes a tree with a diameter of greater than 10 cm and the tree either (1) acts like a rigid barrier or (2) bends or breaks causing the vehicle to rollover (i.e., Rollover Initiation Type equals Trip-over, Flip-over, or Bounce-over). Select another attribute when a vehicle strikes a tree and experiences a subsequent rollover due to centrifugal forces or other tripping mechanisms.

Shrubby or bush

Used when a vehicle strikes shrubbery or bushes and the contacted object causes the vehicle to rollover (i.e., Rollover Initiation Type equals Trip-over or Flip-over). This will be a very rare occurrence. Subsequent rollovers that result from centrifugal forces or other tripping mechanisms take priority for this variable.

Embankment

Used when a vehicle rides up or over an embankment and the vehicle rolls over as a result of the angle of the embankment (i.e., Rollover Initiation Type equals Flip-over or Fall-over). Vehicles that dig into the surface of an embankment and rollover as a result of this tripping mechanism are captured in **Ground**.

Breakaway pole or post (any diameter)

Used whenever a vehicle strikes a breakaway pole or post (of any diameter) and that pole/post yields creating a ramping mechanism that causes a vehicle rollover. Select another attribute if a vehicle rolls over subsequent to the impact as a result of centrifugal forces or other tripping mechanisms.

Pole or post (<= 10 cm in diameter)

Used whenever a vehicle strikes a non-breakaway pole with a diameter of 10 cm or less and that pole either (1) acts like a rigid barrier or (2) breaks or bends causing the vehicle to rollover (i.e., Rollover Initiation Type equals Flip-over or Bounce-over). Do not use this attribute if a vehicle rolls over subsequent to the impact as a result of centrifugal forces or other tripping mechanisms.

Pole or post (> 10 cm but <= 30 cm in diameter)

Used whenever a vehicle strikes a non-breakaway pole with a diameter greater than 10 cm but less than or equal to thirty cm and that pole either (1) acts like a rigid barrier or (2) breaks or bends causing the vehicle to rollover (i.e., 6 equals Flip-over or Bounce-over). Select another attribute if a vehicle rolls over subsequent to the impact as a result of centrifugal forces or other tripping mechanisms.

Pole or post (>> 30 cm in diameter)

Used whenever a vehicle strikes a non-breakaway pole with a diameter greater than thirty cm and that pole either (1) acts like a rigid barrier or (2) breaks or bends causing the vehicle to rollover (i.e., Rollover Initiation Type equals Flip-over or Bounce-over). Select another attribute if a vehicle rolls over subsequent to the impact as a result of centrifugal forces or other tripping mechanisms.

Pole or post (diameter unknown)

Used whenever a vehicle strikes a pole or post of an unknown diameter and that pole either (1) acts like a rigid barrier or (2) breaks or bends causing the vehicle to rollover (i.e., Rollover Initiation Type equals Flip-over or Bounce-over). Do not use this attribute if a vehicle rolls over subsequent to the impact as a result of centrifugal forces or other tripping mechanisms.

Concrete traffic barrier

Used whenever a vehicle strikes a concrete traffic barrier and that impact causes a rollover (i.e., Rollover Initiation Type equals Flip-over, Climb-over, or Bounce-over). Rollovers that occur subsequent to the impact as a result of centrifugal force or other tripping mechanisms are not considered here. Refer to variable Objected Contacted for examples and definitions of concrete traffic barriers.

Impact attenuator

Used whenever a vehicle strikes a crash cushion (refer to variable Objected Contacted) and that impact causes a rollover (i.e., Rollover Initiation Type equals Flip-over or Bounce-over). Rollovers that occur subsequent to the impact as a result of centrifugal force or other tripping mechanisms are not considered here.

Other traffic barrier

Used whenever a vehicle strikes a non-concrete longitudinal barrier as defined in variable Objected Contacted and that impact causes a rollover (i.e., Rollover Initiation Type equals Flip-over, Climb-over, or Bounce-over). Rollovers that occur subsequent to the impact as a result of centrifugal force or other tripping mechanisms are not considered here.

Cable barrier guardrail

Refers to a guardrail consisting of 2 to 4 wire cables supported by cable mounts that are attached to steel posts.

Guardrail face

Refers to a cold formed standard W Section or thrie-beam of steel rigid beam elements bolted to posts usually with offset blocks.

Guardrail end

Refers to the end of a guardrail. Guardrails can have a separate flat or rounded piece of metal attached to the end of an expanse of guardrail face.

Fence, wall, and building

Are selected whenever one of these objects is contacted and that impact causes a rollover (i.e., Rollover Initiation Type equals Trip-over, Flip-over, Climb-over, or Bounce-over). Definitions of these objects are defined in variable Object Contacted. Rollovers that occur subsequent to the impact as a result of centrifugal impacts and tripping mechanisms are not considered for these attributes.

Ditch or culvert

Used whenever a vehicle enters a ditch or culvert and the vehicle rolls over as a result of the slope of the ditch/culvert (i.e., Rollover Initiation Type equals Flip-over or Fall-over). Refer to variable Objected Contacted for definition of ditch or culvert. Vehicles in a ditch that dig into the surface and rollover as a result of this tripping mechanism are captured in **Ground**.

Ground

Used when a vehicle rolls over as a result of contact with the ground (i.e., Rollover Initiation Type equals Trip-over). “Ground” applies whether the rollover resulted from digging into soft soil, tripping over an accumulation of dirt or gravel, or gouging into the pavement. Vehicles that dig into the ground on embankments or in ditches and rollover, as a result of that digging, take this attribute.

Fire hydrant

Used whenever a vehicle strikes a fire hydrant and that impact causes a rollover. A fire hydrant is defined as a roadside device used by fire departments to provide water for fighting fires. Vehicles that rollover subsequent to a fire hydrant impact but not as a direct result of that impact (i.e., other tripping force) do not take this attribute.

Curb

Includes both mountable and barrier curbs as described for variable Objected Contacted. Curbs that act as a tripping mechanism will frequently have an impact (CDC) associated with them although this is not a criterion for using this attribute. When a curb acts as a tripping mechanism, Rollover Initiation Type is coded Trip over.

Bridge

Used whenever a vehicle strikes a bridge and that impact causes a rollover (i.e., Rollover Initiation Type equals Flip-over, Climb-over, or Bounce-over). Refer to variable Objected Contacted for the definition of a bridge. Vehicles that rollover subsequent to a bridge impact but not as a direct result of that impact (i.e., other tripping force) do not take this attribute.

Other fixed object

Used when a fixed object, other than those previously identified struck and that impact causes a rollover. Do not use this attribute if a vehicle rolls over subsequent to the impact as a result of centrifugal forces or other tripping mechanisms.

Unknown fixed object

Used when an unknown fixed object is struck and that impact causes a rollover. Do not use this attribute if a vehicle rolls over subsequent to the impact as a result of centrifugal forces or other tripping mechanisms.

Passenger car, light truck, van, or other vehicle not in-transport

Used when a vehicle strikes a not-in-transport passenger car, light truck, van, or any other motor vehicle that is not a medium/heavy truck or bus and that impact causes the vehicle to rollover (i.e., Rollover Initiation Type equals Flip-over, Climb-over, or Bounce-over). Vehicles that

rotate and rollover as a result of centrifugal forces or other tripping mechanisms are not captured in this response.

Medium/heavy truck or bus not in-transport

Used when a vehicle strikes a not-in-transport medium/heavy truck or bus and that impact causes the vehicle to rollover (i.e., Rollover Initiation Type equals Flip-over, Climb-over, or Bounce-over). Vehicles that rotate and rollover as a result of centrifugal forces or other tripping mechanisms are not captured in this response.

Animal

Used when a vehicle strikes an animal and that impact causes the vehicle to rollover. This should be a very rare occurrence. Subsequent rollovers due to other tripping mechanisms are not captured in this response.

Railway vehicle

Used when a vehicle involved in a crash with a railway vehicle and the impact causes the vehicle to rollover. A railway vehicle is described as any moving or non-moving vehicle that travels on rails. This includes vehicles that are dual purpose, i.e., a vehicle designed to use both road and rail, if at the time of the crash the vehicle is on rails. Examples are trolleys on rails and trains.

Trailer, disconnected in-transport

Used to report a trailer that has been disconnected from its power unit and subsequently struck this vehicle and caused the rollover to occur. This will likely occur when a small trailer is involved in a head-on crash with a larger vehicle resulting in a vaulting type rollover. Do not use this attribute if the vehicle rolls over subsequent to an initial impact as centrifugal forces or tripping mechanisms take priority.

Object fell from vehicle in-transport

Used to report an object that was being carried by or was attached to a vehicle in-transport but fell from or became detached from that vehicle and subsequently struck this vehicle and caused the rollover to occur. Do not use this attribute if the vehicle rolls over subsequent to an initial impact as centrifugal forces or tripping mechanisms take priority.

Other non-fixed object

Used when a non-fixed object, other than those described in the above attributes is struck and that impact causes a rollover. Do not use this attribute if a vehicle rolls over subsequent to the impact as a result of centrifugal forces or other tripping mechanisms.

Unknown non-fixed object

Used when an unknown non-fixed object is struck and that impact causes a rollover. Do not use this attribute if a vehicle rolls over subsequent to the impact as a result of centrifugal forces or other tripping mechanisms.

Other event

Used when circumstances exist that cannot be captured in the element values above (e.g., loadshift, high winds).

Unknown object

Used when variable a vehicle rolled over and the cause of the rollover (tripping mechanism) cannot be determined.

Location on Vehicle Where Initiating Rollover Force Is Applied

Screen Name: **Rollover Specifics — Location on Vehicle Where Initiating Rollover Force is Applied**
 SAS Data Set: **GV**
 SAS Variable: **ROLLTRIP**
 Database Name: **CISS.CISS.ROLLOVER.INITAPPLIED**

Element Attributes

Database	SAS	
1	0	No rollover
10	1	Wheels/tires
7	2	Side plane
2	3	End plane
8	4	Undercarriage
5	5	Other location on vehicle (specify):
3	6	Non-contact rollover forces (specify):
99	8	End-over-end
9	9	Unknown

Source

Technician-determined — primary source is vehicle inspection. Secondary sources are scene inspection, photographs, police report, driver interviews, and other interviews.

Remarks

Generally, the forces that initiate a rollover are applied at the wheels/tires. Occasionally the tripping force is applied at the undercarriage (e.g., when a vehicle mounts a guardrail) or at the side or end plane (e.g., when a barrier or another vehicle strikes the front or side plane of the vehicle and flips or initiates the rollover sequence). The purpose of this variable is to identify the specific point on the vehicle where the initiating rollover force was applied.

Wheels/tires

Used whenever the initiating force is applied to the wheels or tires. The most common occurrences involve wheel/tire strikes to potholes and curbs, and wheels that gouge the pavement or dig into the earth.

Side plane

Used whenever the side plane other than the wheels and tires is contacted and that contact initiates the rollover.

End plane

Used whenever the end plane of the vehicle is contacted and sustained the rollover initiating force. For example, a vehicle was traveling at a high rate of speed when it struck a concrete median barrier (i.e., Rollover Initiation Object Contacted, equals Concrete traffic barrier with its front left corner. The barrier redirects the vehicle upward and back towards the roadway. As a result, the vehicle rolls over; therefore use this attribute.

Undercarriage

Used when the rollover was caused by a force acting primarily through the undercarriage plane. For example, a vehicle strikes a guardrail (i.e., Rollover Initiation Object Contacted equals Other traffic barrier (includes guardrail)) with its front right. The vehicle climbs up and over the guardrail and rolls over; therefore use this attribute.

Other location on vehicle

Used when the tripping force is applied at a location that cannot be captured above. This attribute should be rarely used and only after consultation with the quality control center.

Non-contact rollover forces

Used when the vehicle roll is precipitated by centrifugal or gravitational forces (i.e., Rollover Initiation Type equals Turn-over or Fall-over). Specify the non-contact rollover force on the line provided.

Undercarriage

Used when the rollover was caused by a force acting primarily through the through the undercarriage plane. For example, a vehicle strikes a guardrail with its front right. The vehicle climbs up and over the guardrail and rolls over; therefore use this code.

Direction of Initial Roll

Screen Name: **Rollover Specifics—Direction of Initial Roll**
 SAS Data Set: **GV**
 SAS Variable: **ROLLDIR**
 Database Name: **CISS.CISS.ROLLOVER.INITDIR**

Element Attributes

Database	SAS	
1	0	No rollover
5	1	Roll right-primarily about the longitudinal axis
4	2	Roll left-primarily about the longitudinal axis
99	8	Rollover-end-over-end
6	9	Unknown roll direction

Source

Technician-determined — primary sources are the scene and vehicle inspections. Secondary sources are the police report, driver, and other interviews.

Remarks

During a side-over-side rollover, generally the corner or roof rail with the maximum crush is the trailing side. Also, grass, dirt or damage to the wheels of the leading edge should be observed. This will be a good indication of a roll to the right or a roll to the left. Striations or directional gouge marks on the vehicle are a good indication of a vehicle's roll along the longitudinal or lateral axis. Physical evidence at the crash scene, including yaw marks, scuffing, or gouging will also provide insight into the direction of the initial roll. It will not be uncommon to combine both vehicle and scene evidence when determining the direction of the initial roll.

Roll right

Used when the vehicle rolls over with the right side leading. This is a clockwise rollover from the driver's view.

Roll left

Used when the vehicle rolls over with the left side leading. This is a counterclockwise rollover from the driver's view.

Estimated Distance From Trip Point to Final Rest Position

Screen Name: **Estimated distance**
 SAS Data Set: **GV**
 SAS Variable: **ROLLDIST**
 Database Name: **CISS.CISS.ROLLOVER.ESTDIST**

Element Attributes

Database	SAS	
-8866	888	No rollover

Enter to the nearest meter

Database	SAS	
-8887	998	End-over-end
-9999	999	Unknown

Range

1-500+

500 includes any measured distance above 500 m

Source

Vehicle inspection and scene inspection. A PCR can be a secondary source if a scaled reconstruction of the crash is documented.

Remarks

The purpose of this variable is to determine the **estimated** distance from tripping point to the final rest position of the vehicle that rolled over. The measurement should be obtained along a linear path. Total distance in meters rounded to the nearest whole number, examples 41.4 m = 41 m or 41.5 m = 42 m.

This measurement should be measured in the field along the path of the vehicle and the final rest measurement should be taken to the center of gravity (CG) of the vehicle at final rest. The measurements should start from the end of the vehicles tire marks if any are observed.

In cases where an accurate estimate of the distance cannot be obtained, (i.e., vehicle rolled down a ravine or off a cliff) "Unknown" should be coded.

If a vehicle rolls and then slides to final rest, the entire distance from the point of trip to final rest will be measured.

In the situation where the vehicle overturns and climbs a positive embankment and stops, then gravity causes the vehicle to slide or roll down the embankment, code only the distance traveled during the initial roll, (i.e., distance up the embankment.).

See the following examples.

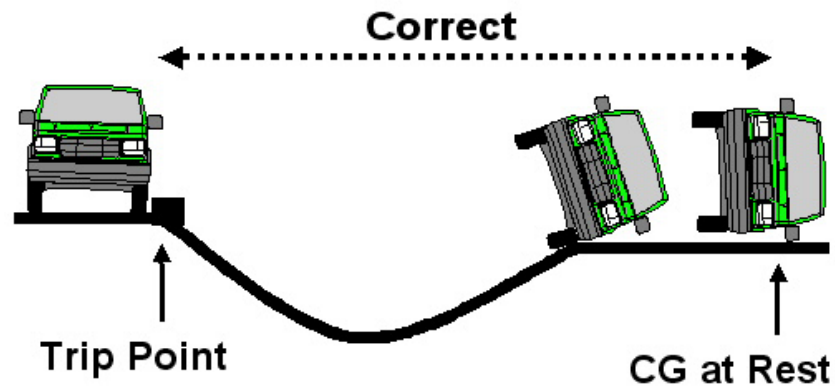


Figure 41. Example 1

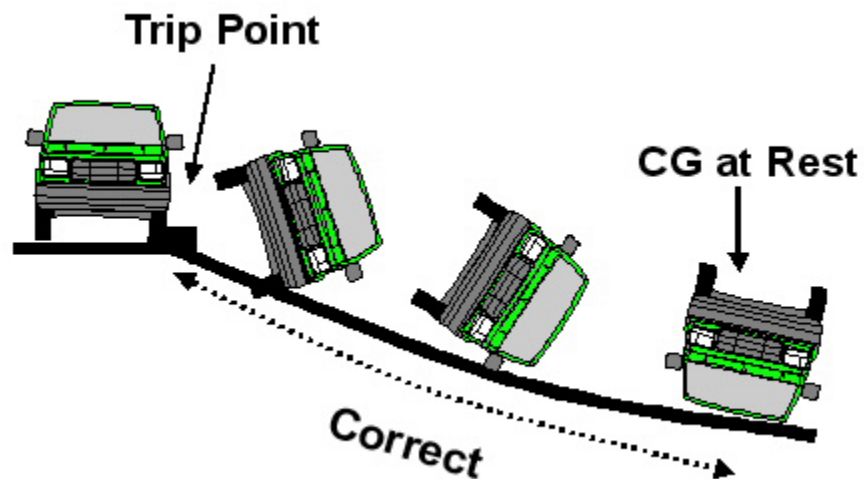


Figure 42. Example 2

Unknown

Used when the technician could not determine the distance from initial point of roll to final rest.

Reconstruction

Type of Impact for Highest Delta V

Screen Name: **Heading Angle at Impact for Highest Delta V—Impact Category**
 SAS Data Set: **GV**
 SAS Variable: **HEADANGLECAT**
 Database Name: **CISS.CISS.VEH_CRASH.HEADANGLECAT**

Element Attributes

Database	SAS	
2	995	Impact with vehicle
4	996	Non horizontal impact
3	997	Non-collision
1	998	Impact with object
5	999	Unknown

Source

Technician-determined - inputs include vehicle inspection, scene diagram

Remarks

Select the impact category that describes this vehicle's most severe impact. **Note:** when selecting this attribute, parked vehicles are considered vehicles and not objects.

Impact with vehicle

Used when this vehicle's highest delta V impact is with another vehicle. If this impact is a non-horizontal impact, then select **Non-horizontal impact**.

Non horizontal impact

Used when the Highest Delta V for this vehicle involves a non-horizontal impact. Even though rollovers involve non-horizontal forces, you should select Noncollision.

Non-collision

Used when the Highest Delta V for this vehicle involves a Noncollision event.

Impact with object

Used when a collision with an object results in this vehicle's highest delta V. If this impact is a non-horizontal impact, then select **Non-horizontal impact**.

Unknown

Used only when you cannot determine which impact is the highest delta V.

Heading Angle for This Vehicle

Screen Name: **Heading Angle at Impact for Highest Delta V—Angle - This Vehicle**
 SAS Data Set: **GV**
 SAS Variable: **DVANGTHIS**
 Database Name: **CISS.CISS.VEH_CRASH.HEADANGLE**

Element Attributes

Database	SAS	
000-355	000-355	Code actual value
888	888	Not a CISS Vehicle
996	996	Non-horizontal impact
997	997	Noncollision
998	998	Impact with object
-9999	999	Unknown

Source

Scene diagram

Remarks

Heading Angle for This Vehicle, records the heading angle for this vehicle's highest delta V when this impact was with another vehicle. Heading Angle for Other Vehicle, records the corresponding angle for the other vehicle. Keep in mind, the angles may not simply be the opposite match. For instance, the highest delta V for V1 may have been its impact with V2. The heading angles for V1 and V2 at their impact would be coded for V1. If the impact with V1 was also the highest delta V for V2, the heading angles would be reversed when coding this section for V2. However, the highest delta V for V2 may be an impact with V3. In this case, the heading angles for the impact between V2 and V3 would be coded in this section for V2. Parked vehicles are considered vehicles and not objects.

For vehicle-to-vehicle collisions, use your scene diagram referencing system to determine the heading angles at the point of impact for **this vehicle's** highest delta V. All measurements are referenced to the north arrow on the diagram. The heading angle of each vehicle is determined by projecting the longitudinal axis of the vehicle through the extension of the north arrow. The angle value is obtained by using a 360° protractor and measuring in a clockwise direction from the north arrow, in 5° increments. The north arrow always represents 0°). The angle is a positive value. The following diagrams exemplify the measurement technique.

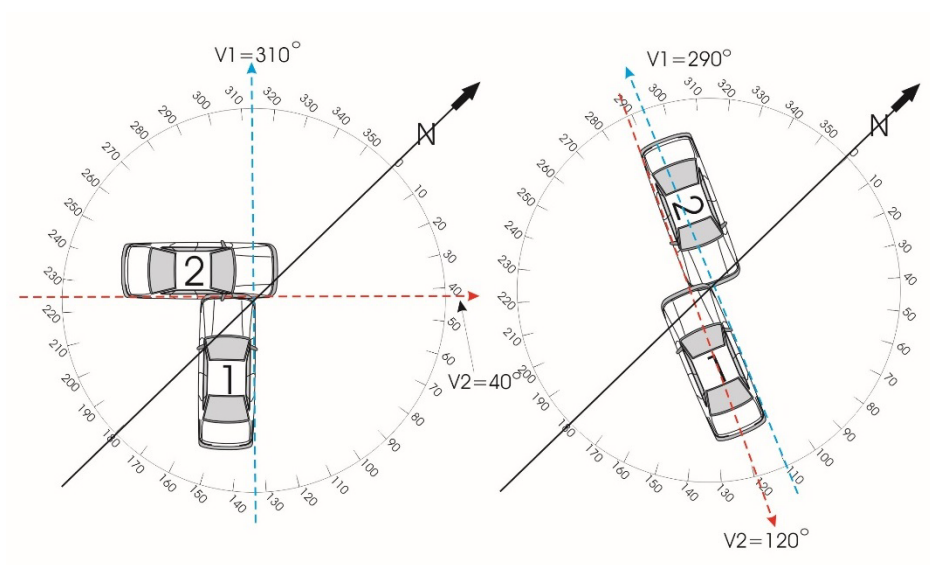


Figure 43. Measuring technique

Heading Angle for Other Vehicle

Screen Name: **Heading Angle at Impact for Highest Delta V—Angle - Other Vehicle**
 SAS Data Set: **GV**
 SAS Variable: **DVANGOTH**
 Database Name: **CISS.CISS.VEH_CRASH.HEADANGLEOTHER**

Element Attributes

Database	SAS	
000-355	000-355	Code actual value
996	996	Non-horizontal impact
997	997	Noncollision
998	998	Impact with object
-9999	999	Unknown

Source

Scene diagram

Remarks

Heading Angle for Other Vehicle, records the heading angle for the other vehicle's highest delta V when this impact was with another vehicle. Heading Angle for This Vehicle, records the corresponding angle for this vehicle (vehicle being coded). Parked vehicles are considered vehicles and not objects.

For vehicle-to-vehicle collisions, use your scene diagram referencing system to determine the heading angles at the point of impact for *the other vehicle's* highest delta V. All measurements are referenced to the north arrow on the diagram. The heading angle of each vehicle is determined by projecting the longitudinal axis of the vehicle through the extension of the north arrow. The angle value is obtained by using a 360° protractor and measuring in a clockwise direction from the north arrow, in 5° increments. The north arrow always represents 0°. The angle is a positive value.

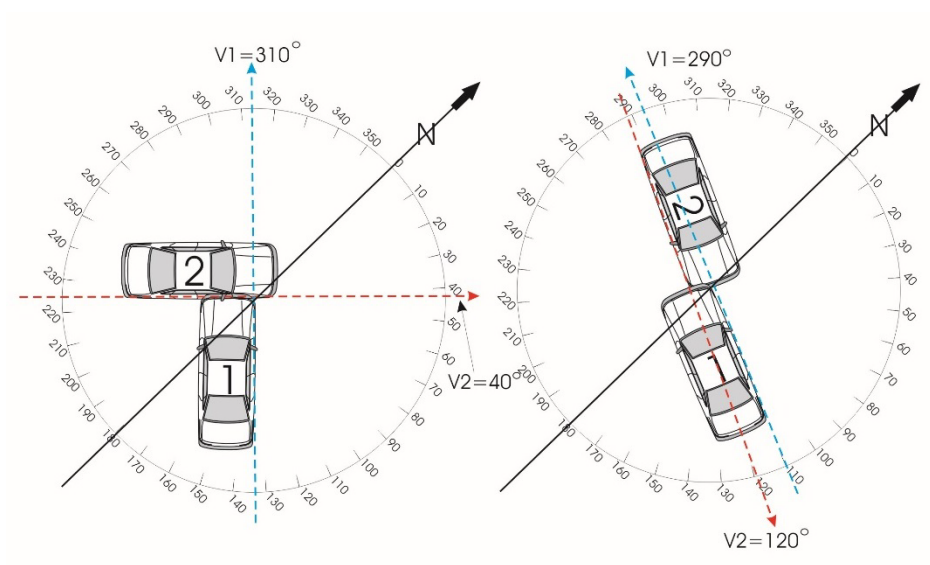


Figure 44. Measuring technique

Towed Trailing Unit

Screen Name: **Reconstruction Data—Towed Trailing Unit**
 SAS Data Set: **GV**
 SAS Variable: **TOWHITCH**
 Database Name: **CISS.CISS.VEH_CRASH.TRAILER**

Element Attributes

Database	SAS	
1	0	No Trailing Units
9	1	Yes, Towed Trailing Unit
5	9	Unknown

Source

Vehicle inspection, interviews, and police report

Remarks

A trailing unit attached by a fixed linkage includes horse trailers, fifth wheel trailers, travel trailers, camper trailers, boat trailers, truck trailers, towed motor vehicles, or any other trailer.

If this variable is **Yes — towed trailing unit**, then enter the weight of the trailer as well as any cargo it may be carrying in variable Vehicle Cargo Weight.

No towed unit

Used when a trailing unit is not being towed by and this CISS-applicable vehicle.

Yes — towed trailing unit

Used when a trailing unit is being towed by and this CISS-applicable vehicle.

Unknown

Used when it is uncertain if there was a towed trailing unit.

Documentation of Trajectory Data

Screen Name: **Reconstruction Data - Documentation of Trajectory Data**
 SAS Data Set: **GV**
 SAS Variable:
 Database Name: **CISS.CISS.VEH_CRASH.TRAJDOC**

Element Attributes

Database	SAS	
1	0	No
3	1	Yes

Source

Technician-determined — inputs include scene inspection, vehicle inspection, police report, and interviews.

Remarks

The purpose of this variable is to assess the availability of crash induced physical evidence for impact and final rest, including several impacts.

No

Means there was insufficient crash induced physical evidence to **know or approximate** the point of impact and final rest position for this vehicle's Highest Delta V CDC.

Yes

Used when sufficient crash induced physical evidence is available to **know or approximate** the point of impact and final rest position for this vehicle's Highest Delta V CDC, independently of whether the WinSMASH program trajectory algorithm could be used (several impacts, missing vehicle, etc.).

For several impacts assess this variable with respect to the highest delta V impact. To code "Yes" the point of impact must be known as well its next point of impact or, if the highest delta V impact is the last impact for this vehicle, its final rest position.

When a non-horizontal and/or rollover type collision is the highest delta V impact for this vehicle, use **Yes** if the point of impact (trip point or first contact) and final rest position are known.

The word "approximated" as used above means that the impact and final rest positions do not need to be known precisely, but they are reasonably accurate based on the available physical evidence.

Post-Collision Condition of Tree or PoleScreen Name: **Reconstruction Data—Post-Collision Condition of Tree or Pole**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.VEH_CRASH.POSTOBJCOND****Element Attributes**

Database	SAS	
3	0	Not collision (for highest delta V) with tree or pole
4	1	Not damaged
2	2	Cracked/sheared
8	3	Tilted < 45°
9	4	Tilted ≥ 45°
11	5	Uprooted tree
7	6	Separated pole from base
6	7	Pole replaced
5	8	Other (specify)
10	9	Unknown

Source

Technician-determined - input includes vehicle and scene inspection, PCR, interviews, official records.

Remarks

This variable records the condition of the struck **Tree, Pole, or Post** for this vehicle's most severe impact.

Not collision (for highest delta V) with tree or pole

Used when the Object Contacted, that produced this vehicle's most severe impact, was not with a tree or pole (e.g., vehicle-to-vehicle collision).

Not damaged

Used when the tree or pole has no visible damage or minor surface damage.

Cracked/sheared

Used when the pole or tree is cracked (10% or more of the fibers), sheared, or bent. Bent and cracked poles may be tilted and the bending/cracking can be at any height. This **Tree, Pole, or Post** attribute takes precedence over Tilted < 45°, Tilted ≥ 45°, and Uprooted tree. Fallen limbs do not constitute "cracked" for a tree; the assessment is made at the tree's trunk. This **does not** describe metal breakaway poles sheared at their base (see (Separated pole from base).

Tilted < 45°

Used when the pole or tree that is inclined at less than a 45° angle as a result of this collision. If the tree/pole is also cracked, then use **Cracked/sheared**).

Tilted >= 45°

Used when the pole or tree that is inclined at a 45° angle or greater as a result of this collision. If the tree/pole is also cracked, then use **Cracked/sheared**).

Uprooted tree

Used when the tree was completely or partially torn out of the ground; the tree trunk remained intact; however, the root system was pulled from the soil.

Breakaway pole separated from base

Used when the breakaway pole has sheared or separated at the point where it was designed to do so.

Pole replaced

Used when a replacement pole has been installed and insufficient data exist to categorize the damage to the original pole. This attribute takes precedence over **Unknown**.

Other (specify)

Used when the **Tree, pole, or post** damage cannot be captured by the preceding attributes.

Unknown

Used when no data can be obtained regarding the **Tree, pole, or post** or the most severe impact cannot be determined.

Delta V

The completion of the variables on the delta V tab depends on whether or not the vehicle was inspected (i.e., General Vehicle Tab “Vehicle Type of Inspection”).

If the vehicle inspection is NOT completed and a missing vehicle WinSMASH run was completed, the technician will complete the variables on the delta V tab of the General Vehicle Form. The data used will be for the highest delta V calculated for this vehicle.

If the vehicle is at least partially inspected, the delta V information will be entered on the Vehicle Exterior Form/CDC tab/Detail subtab.

In NHTSAs investigation-based programs vehicle crush profiles/measurements are used in conjunction with Collision Deformation Classification (CDC), vehicle specifications, and stiffness ratings to provide inputs for the WinSMASH reconstruction program. WinSMASH generates delta V, or change in velocity, which is a good indicator of crash severity.

CDCs are assigned for every impact to a CISS-applicable vehicle involved in the crash and crush measurements are required for the most severe impact for each towed vehicle. Crush measurements are NOT required in some situations:

- Impacts that are NOT the most severe impact to this vehicle in the crash
 - If unsure of most severe impact, several impacts may need to be measured.
- If there is NO deformation to the frame rail in sideswipe or corner impacts (S or E in CDC column 6).
- If the vehicle rolls over during the crash sequence, vertical and lateral rollover measurements should be obtained. Only measure the crush for initial impact PRIOR to roll, if it's a significant impact and damage NOT masked by rollover damage.
- For example, intersection crash where the passenger car strikes an SUV in driver's door and the SUV tips one quarter turn and slides to rest.

When crush measurements are NOT required, damage information will be limited to: Direct Damage Width, Direct Damage Location, and approximate Max Crush Location/Extent. Unknown should be entered for crush plane Category, Field L Location, Field L, Field L-D, Smash L, and Direct D.

Event Number for Highest Severity Impact

Screen Name: **Highest Severity Impact—Event Number**
SAS Data Set: **GV**
SAS Variable: **DVEVENT**
Database Name: **CISS.CISS.VEH_CRASH.DVENTID**

Element Attributes

Database	SAS	
1-30	1-30	Code sequence number
-9999	99	Unknown event

Range

1-as selected/roll-up

Source

Roll-up from Vehicle Exterior Form/CDC, Technician-determined

Remarks

The Event Number that the technician selects as the highest severity impact is rolled-up from the Vehicle Exterior Form/CDC. If there is no Vehicle Exterior Form the technician selects the Event Number for the highest severity impact.

Basis for Computer Generated Delta V for Highest Severity Impact

Screen Name: **Highest Severity Impact—Basis for Delta V**
 SAS Data Set: **GV**
 SAS Variable: **DVBASIS**
 Database Name: **CISS.CISS.VEH_CRASH.DVBASIS**

Element Attributes**When no Vehicle Inspection is completed**

Database	SAS	
0	0	Not inspected
3	3	SMASH missing vehicle

When vehicle is inspected

Delta V Calculated

Database	SAS	
1	1	SMASH - damage only
2	2	SMASH - damage and trajectory
3	3	SMASH - missing vehicle
4	4	SMASH - damage with CDC only

Delta V Not Calculated

Database	SAS	
5	5	At least one vehicle is beyond scope of SMASH
6	6	Rollover
7	7	Other non-horizontal forces
8	8	Sideswipe type damage
9	9	Severe override
10	10	Yielding object
11	11	Overlapping damage
12	12	Insufficient data (specify)
98	98	Other (specify)
99	99	Unknown

Source

Roll-up from Vehicle Exterior Form/CDC, or selected if vehicle was not inspected. Technician-determined — inputs include WinSMASH output (if applicable), vehicle inspection, scene inspection, police report, and photographs.

Remarks

This variable is used to indicate: (1) which CISSWeb WinSMASH program or routine was used to compute this vehicle's highest delta V or (2) the reason a CISSWeb WinSMASH program was not applied to the most severe impact.

The Basis for Delta V for the highest severity impact is rolled-up from the Vehicle Exterior Form/CDC when the vehicle involved in the highest severity impact have been inspected to the extent that integrated WinSMASH is used to calculate delta V values. If one vehicle is inspected and one is not inspected for the highest severity impact, the technician selects WinSMASH Missing vehicle to input reconstructed delta V values. If no vehicle is inspected, thus no Exterior Form, for the vehicle involved in the highest severity impact, select "not inspected" and the remaining variables on this tab will be disabled (pre-coded unknown).

No Vehicle Inspection**Not inspected**

This vehicle has no delta V data due to the vehicle not being inspected AND the WinSMASH missing vehicle option is not applicable (i.e., other involved vehicle not inspected, or this is the only vehicle in the crash)

SMASH - missing vehicle

This vehicle was not inspected, and the delta V data was generated by the WinSMASH Missing vehicle option using basic information about this vehicle and the inspected vehicle's known damage data.

Vehicle Inspection Completed**Delta V Calculated****SMASH - damage and trajectory**

The WinSMASH output is based on trajectory evidence documented at the scene, in addition to complete vehicle damage.

SMASH - damage only

The WinSMASH output is based upon complete vehicle damage only.

SMASH - Missing vehicle

In a two vehicle impact only this vehicle was inspected (damage measurements and CDC obtained), and for the other vehicle, the damage measurements (including CDC) are missing; however, enough data are available to use the WinSMASH Missing Vehicle option.

SMASH - damage with CDC only

The WinSMASH output is based on a two vehicle collision with insufficient vehicle damage documentation. The two vehicle collision must include: one complete vehicle inspection and the other vehicle must have a complete CDC. Additional crush profile information such as the WinSMASH L, "D," etc., may be entered to improve the results.

Delta V Not Calculated**At least one vehicle is beyond scope of SMASH**

One of the vehicles (which may be this vehicle) involved in this impact cannot be adequately represented by the parameters in an acceptable reconstruction size/stiffness category (large truck, motorcycle, bus, etc.). As a general rule in CISS, any vehicle that is not applicable for a CDC is not applicable for the CISSWeb WinSMASH program.

For the following codes: All vehicles within scope (CDC applicable) of WinSMASH program but one of the collision conditions is beyond the scope of the WinSMASH program or other acceptable reconstruction techniques, regardless of the adequacy of damage data.

Rollover

The involved vehicle fits the vehicle parameters for an acceptable WinSMASH program; however, the rollover collision is beyond the scope of the program.

Other non-horizontal forces

The involved vehicle fits the vehicle parameter for an acceptable WinSMASH program; however, the other non-horizontal force is beyond the scope of the program e.g., large object falling on vehicle).

Sideswipe type damage

The involved vehicle fits the vehicle parameters for an acceptable WinSMASH program; however, the sideswipe type of collision is beyond the scope of the program.

Severe override

The involved vehicle fits the vehicle parameters for an acceptable WinSMASH program; however, the severe override type of collision is beyond the scope of the program.

Yielding object

The involved vehicle fits the vehicle parameters for an acceptable WinSMASH program; however, the collision with a yielding object (e.g., sheared utility pole) is beyond the scope of the program.

Overlapping damage

The involved vehicle fits the vehicle parameters for an acceptable WinSMASH program; however, collisions involving overlapping damage (i.e., more than one impact in the same area) are beyond the scope of the program.

Insufficient data (specify)

The involved vehicles and the collision type are applicable for an acceptable WinSMASH program, but due to insufficient data on one or both of the vehicles or object, an acceptable WinSMASH program cannot be used.

Other (specify)

Delta V could not be calculated for a reason not identified in the current pick list. The reason must be specified on the line provided.

Total Delta V for Highest Severity Impact

Screen Name: **Highest Severity Impact Computer Generated Delta V—Total**
SAS Data Set: **GV**
SAS Variable: **DVTOTAL**
Database Name: **CISS.CISS.VEH_CRASH.HIGHDV**

Element Attributes

Database	SAS	
1-160	1-160	Nearest kph
999	999	Unknown

Source

Technician-determined - Entered from WinSMASH program if the vehicle is not inspected. If inspected, data is rolled-up from Vehicle Exterior Form/CDC.

Range

1-160, 999

Remarks

The total delta V for the highest severity impact, automatically generated by the CISSWeb WinSMASH, is rolled-up from the Vehicle Exterior Form/CDC. If this vehicle was not inspected, and a missing vehicle algorithm was used to calculate the delta V information, the data is entered here.

999

Is rolled-up from the Vehicle Exterior Form/CDC when the results for this impact are unobtainable.

Longitudinal Delta V for Highest Severity Impact

Screen Name: **Highest Severity Impact Computer Generated Delta V—Longitudinal Component**
 SAS Data Set: **GV**
 SAS Variable: **DVLONG**
 Database Name: **CISS.CISS.VEH_CRASH.HIGHDVLONG**

Element Attributes

Database	SAS	
		Nearest kph
999	999	Unknown

Source

Technician-determined - Entered from the WinSMASH program if the vehicle is not inspected. If inspected, the data is rolled-up from Vehicle Exterior Form/CDC.

Range

-160 - 160, 999

Remarks

The longitudinal delta V for the highest severity impact, automatically generated by the CISSWeb WinSMASH, is rolled-up from the Vehicle Exterior Form/CDC. If this vehicle was not inspected, and a missing vehicle algorithm was used to calculate the delta V information, the data is entered here.

999

Is rolled-up from the Vehicle Exterior Form/CDC when the results for this impact are unobtainable.

Lateral Delta V for Highest Severity Impact

Screen Name: **Highest Severity Impact Computer Generated Delta V—Lateral Component**
SAS Data Set: **GV**
SAS Variable: **DVLAT**
Database Name: **CISS.CISS.VEH_CRASH.HIGHDVLAT**

Element Attributes

Database	SAS	
		Nearest kph
999	999	Unknown

Source

Technician-determined - Entered from WinSMASH program if vehicle not inspected; If inspected, Rolled-up from Vehicle Exterior Form/CDC.

Range

-160 - 160, 999

Remarks

The lateral delta V for the highest severity impact, automatically generated by the CISSWeb WinSMASH, is rolled-up from the Vehicle Exterior Form/CDC. If this vehicle was not inspected, and a missing vehicle algorithm was used to calculate the delta V information, the data is entered here.

999

Is rolled-up from the Vehicle Exterior Form/CDC when the results for this impact are unobtainable.

Energy Absorption for Highest Severity Impact

Screen Name: **Highest Severity Impact Computer Generated Delta V—Energy Absorption**
 SAS Data Set: **GV**
 SAS Variable: **DVENERGY**
 Database Name: **CISS.CISS.VEH_CRASH.HIGHDVENERGY**

Element Attributes

Database	SAS	
		Nearest joule
9999999	9999999	Unknown

Source

Technician-determined - Entered from the WinSMASH program if the vehicle is not inspected.
 If inspected the data is rolled-up from Vehicle Exterior Form/CDC.

Range

40-1000000, 9999999

Remarks

The Energy Absorption for the highest severity impact, automatically generated by the CISSWeb WinSMASH, is rolled-up from the Vehicle Exterior Form/CDC. If this vehicle was not inspected, and a missing vehicle algorithm was used to calculate the delta V information, the data is entered here.

9999999

Is rolled-up from the Vehicle Exterior Form/CDC when the results for this impact are unobtainable.

Impact Speed for Highest Severity Impact

Screen Name: **Highest Severity Impact Computer Generated Delta V—Impact Speed**
 SAS Data Set: **GV**
 SAS Variable: **DVSPEED**
 Database Name: **CISS.CISS.VEH_CRASH.HIGHSPEED**

Element Attributes

Database	SAS	
		Nearest kph
998	998	Damage and trajectory run not made
999	999	Unknown

Source

Technician-determined - Rolled-up from Vehicle Exterior Form/CDC.

Range

1-160, 998, 999

Remarks

The Impact speed for the highest severity impact, automatically generated by the CISSWeb WinSMASH (damage and trajectory), is rolled-up from the Vehicle Exterior Form/CDC.

998

Is rolled up from the Vehicle Exterior Form/CDC tab when the impact did not include the Trajectory portion of the WinSMASH program for calculated delta V's (i.e., does not include BES only runs.)

999

Is rolled-up from the Vehicle Exterior Form/CDC when the results for this impact are unobtainable.

Moment Arm for Highest Severity Impact

Screen Name: **Moment Arm**
SAS Data Set: **GV**
SAS Variable: **DVMOMENT**
Database Name: **CISS.CISS.VEH_CRASH.HIGHDVMOMENT**

Element Attributes

Database	SAS	
		Nearest CM
999	999	Unknown

Source

Technician-determined - Entered from the WinSMASH program if the vehicle is not inspected. If inspected the data is rolled-up from Vehicle Exterior Form/CDC.

Range

(-650) - (+650)

Remarks

The moment arm of principal force for the highest severity impact, automatically generated by the CISSWeb WinSMASH, is rolled-up from the Vehicle Exterior Form/CDC. If this vehicle was not inspected, and a missing vehicle algorithm was used to calculate the delta V information, the data is entered here.

999

Is rolled-up from the Vehicle Exterior Form/CDC when the results for this impact are unobtainable.

Confidence Level for Highest Severity Impact

Screen Name: **Highest Severity Impact Computer Generated Delta V—Confidence Level**
 SAS Data Set: **GV**
 SAS Variable: **DVCONF**
 Database Name: **CISS.CISS.VEH_CRASH.DVCONFIDENCE**

Element Attributes

Database	SAS	
6	0	No reconstruction
5	1	Collision fits model — results appear reasonable
3	2	Collision fits model — results appear high
4	3	Collision fits model — results appear low
2	4	Borderline reconstruction

Source

Technician-determined from WinSMASH program results, vehicle inspection, and scene inspection data.

Remarks

This variable captures the quality of this vehicle's WinSMASH program results for the highest severity impact by evaluating the results, and the data used to create those results, for this impact.

No reconstruction

Used when WinSMASH is not used for the highest severity impact or it is used only to get a barrier equivalent speed (BES) or an estimated delta V for the highest severity impact.

Collision fits model - results appear reasonable

Used if the results of the WinSMASH in comparison to the actual collision are believed to be within an acceptable range for this impact

Collision fits model - results appear high

Used if the results of the WinSMASH in comparison to the actual collision appear to over represent this impact. For example, vehicle damage is minor (bumper stroke only), and the total delta V is 25 kph.

Collision fits model - results appear low

Used if the results of the WinSMASH in comparison to the actual collision appear to underrepresent this impact. For example, vehicle damage is severe (60 cm of distributed frontal crush), injury level is high (AIS-3, 4, 5), and the total delta V is 15 kph.

Borderline reconstruction

Used if the results of the WinSMASH in comparison to the actual collision are within an acceptable range for this impact; however, some collision conditions were borderline for the WinSMASH reconstruction (See the EV Form WinSMASH overview).

The attribute is also selected:

- for all vehicles for which the delta V is determined by the WinSMASH Missing Vehicle and the results appear reasonable;
- when the sixth character of the CDC is coded as an “E” (corner impact);
- for all vehicles that have been coded as an underride or override;
- side impact at the wheel or fenders only areas.

Barrier Equivalent Speed for Highest Severity Impact

Screen Name: **Barrier Equivalent Speed**
SAS Data Set: **GV**
SAS Variable: **BES**
Database Name: **CISS.CISS.VEH_CRASH.HIGHBARRIER**

Element Attributes

Database	SAS	
		Nearest kph
999	999	Unknown

Source

WinSMASH program

Range

1-160, 999

Remarks

Record the barrier equivalent speed from the WinSMASH results for this impact, if this vehicle was **not inspected and** a WinSMASH Missing Vehicle algorithm was run. If the vehicle **was inspected**, and WinSMASH was completed, the results will roll up to this screen from the Vehicle Exterior Form/CDC tab.

To generate barrier equivalent speed for car to object impacts the WinSMASH program is used. For these runs treat the struck object as an immovable barrier.

For car to object impacts where the object moves or sustains damage (poles, trees, large trucks, etc.) or the object is struck (horizontally) during a rollover use the WinSMASH program and treat the object as a rigid barrier.

Estimated Severity for Highest Severity Impact

Screen Name: **Estimated Highest Delta V—Technician Determined**
 SAS Data Set: **GV**
 SAS Variable: **DVEST**
 Database Name: **CISS.CISS.VEH_CRASH.DVESTIMAGE**

Element Attributes

Database	SAS	
0	0	Reconstruction delta V coded

Estimated Delta V

Database	SAS	
1	1	Less than 10 kph
2	2	10 kph < 25 kph
3	3	25 kph < 40 kph
4	4	40 kph < 55 kph
5	5	>= 55 kph

Other estimates of damage severities

Database	SAS	
6	6	Minor
7	7	Moderate
8	8	Severe
99	9	Unknown

Source

Technician-determined

Remarks

The value that is in this variable is rolled up from the Vehicle Exterior Form, CDC tab.

If the vehicle was not inspected the variable is automatically pre-coded as either:

- Reconstruction delta V coded, or
- Unknown

based on which selection was made previously on **Basis for Delta V**.

Reason Vehicle Inspection Not Completed

Screen Name: **Reason Vehicle Inspection Not Completed**
 SAS Data Set: **N/A**
 SAS Variable: **N/A**
 Database Name: **CISS.GV_QUALITY.REASONNOINPECT**

Element Attributes

Database	SAS	
6		Non-CISS-applicable vehicle
3		Complete inspection
13		Partial inspection under repair
12		Partial inspection repaired
10		Partial inspection Non-Tow
11		Partial inspection other (specify)
16		Vehicle cannot be located
17		Vehicle destroyed
19		Vehicle outside study area
18		Vehicle impounded
20		Vehicle sold
4		Hit-and-run vehicle
8		Owner could not be located
9		Owner refusal
5		Insurance company refusal
1		Attorney refusal or litigation
14		Repair or tow facility refusal
15		Stolen
21		Wrong name/address on PCR
2		Caseload/staff turnover
7		Other (specify)

Remarks

This attribute reports the inspection type, or describes the primary reason that the vehicle was not inspected. Select the most appropriate attribute.

Non-CISS-applicable vehicle

Used when the structured vehicle is not CISS applicable.

Complete inspection

Used when a complete vehicle inspection is obtained. Both the exterior and interior must be completed on an un-repaired vehicle with all measurements and images obtained. Do not use this

attribute for vehicles with missing components, or where applicable measurements cannot be obtained.

Partial inspection – under repair

Used when an inspection is obtained, but components have been disassembled or repaired, preventing complete inspection.

Partial inspection – repaired

Used when the inspected vehicle is completely repaired.

Partial inspection – non-Tow

Used for inspected non-towed vehicles. If the non-towed vehicle is under repair or completely repaired, do not use this attribute.

Partial inspection – other (specify)

Used when only partial inspection data are obtained for reasons not described above, e.g., a tow-truck took the vehicle away during the inspection, photos only inspection.

Vehicle cannot be located

Is coded when, after numerous attempts, the technician is unable to discover the location of the vehicle. If the location remains unknown due to refusal of any involved party, do not use this attribute.

Vehicle destroyed

Is coded when the vehicle's last location is known, and the technician-determines that the vehicle has been crushed or otherwise destroyed such that no usable data can be obtained through an inspection.

Vehicle outside study area

Is coded when the vehicle's location (from the PSU office) is of sufficient distance so that the travel time, when added to the inspection time, will exceed eight hours. If the vehicle is less than three hours driving time from the PSU office, do not code this attribute.

Vehicle impounded

Is coded when the police or another official agency has possession of the vehicle for evidentiary purposes, and the technician is denied access to both the exterior and interior.

Vehicle sold

Is coded when the vehicle has been sold to an unidentified party.

Hit-and-run vehicle

Is coded when the vehicle departed the crash scene, and no identifying data about the vehicle or its occupants are available.

Owner could not be located

Is coded when, after numerous attempts, the owner of the vehicle cannot be contacted and the owner's permission is required to inspect the vehicle. Use this attribute when it is established that the vehicle is in the owner's possession or otherwise under the owner's management and no other source is available to allow the inspection.

Owner refusal

Is coded when it is established that the vehicle is in the owner's possession or otherwise under the owner's management and the owner has refused to allow the inspection.

Insurance company refusal

Is coded when it is established that the vehicle is in the insurance company's possession or otherwise under the insurance company's management and the insurance company has refused to allow the inspection. Use this attribute to describe salvage yards that require insurance company permission to inspect, but such permission cannot be obtained.

Attorney refusal or litigation

Is coded when an attorney, generally as a result of litigation, denies the inspection. In cases where the owner refuses based on attorney advice, do not use this attribute.

Repair or tow facility refusal

Is coded when it is established that the vehicle is in the tow or repair facility's possession, and the facility has refused to allow the inspection.

Stolen

Is coded when, after the crash, a vehicle is stolen and its location is unknown.

Wrong name/address on PCR

Is coded when all contact information for the owner/driver is incorrectly reported on the PCR and the correct information cannot be determined. Technicians should exhaust all investigative avenues before coding this response.

Caseload/staff turnover

Note: This attribute may only be selected with quality control center permission. This describes conditions where the majority of the team members depart unexpectedly, or where there are no trained technicians at the team.

Other (specify)

Is coded when no other listed choices are applicable. Specify the reason as briefly as possible. This choice should be used very rarely.

PSU Case Review

The case review process is a critical part of CISS quality control. Reviews are completed at the PSU, quality control center, and NHTSA levels. The CISSWeb program is equipped with an electronic case review that allows suggested changes to be entered and stored in the case. It is imperative that cases be reviewed in a tab-by-tab manner.

When conducting an electronic case review, it is important to enter the case in the “PSU Review” mode. Select “File” from the menu bar and select “PSU Review” from the opened window. All aspects of the case can be reviewed in this mode, but no changes can be made to the case. The method for suggesting changes varies with the type of data being reviewed.

Fixed variables have drop-down boxes that open a window of attributes from which to choose. In the “PSU Review” mode, select the variable for which a suggested change will be made. When the variable box is shaded blue, push the F5 key on the keyboard. A window will pop up displaying the coded attribute, a suggestion box for recommending a new attribute, and a comment box. The suggestion box will contain the same attribute choices available during data entry. Use the proposed attribute change and, if needed, enter justification for the change in the comment box. A list of the suggested changes is compiled under “Review” on the menu bar.

Case components such as summaries, scene diagrams, or sketches can be viewed in the “PSU Review” mode, but suggestion boxes are not available. Select the “Review” option from the menu bar and select the “Notes” option. A text box appears in which any suggestions can be entered. It is recommended to enter each suggested change on a new line of text to allow for easier reading and for additional comments from the case technician.

When the review is complete, the case technician should enter the case through the “Technician Entry” mode so that potential changes can be made. Suggested variable changes that are agreed upon should be changed in the case. For suggestions with which the case technician disagrees, justification for retaining the variable as coded may be entered in the comment box. Similarly, justification may be entered for suggestions in the “Notes” section that are not acted upon.

It is important to leave all case review notes and suggestions in the case for use in quality control center review.

Exterior Vehicle Form

Tire Overview

Federal law requires tire manufacturers to place standardized information on the sidewall of all tires. This information identifies and describes the fundamental characteristics of the tire and also provides a tire identification number for safety standard certification and in case of a recall.

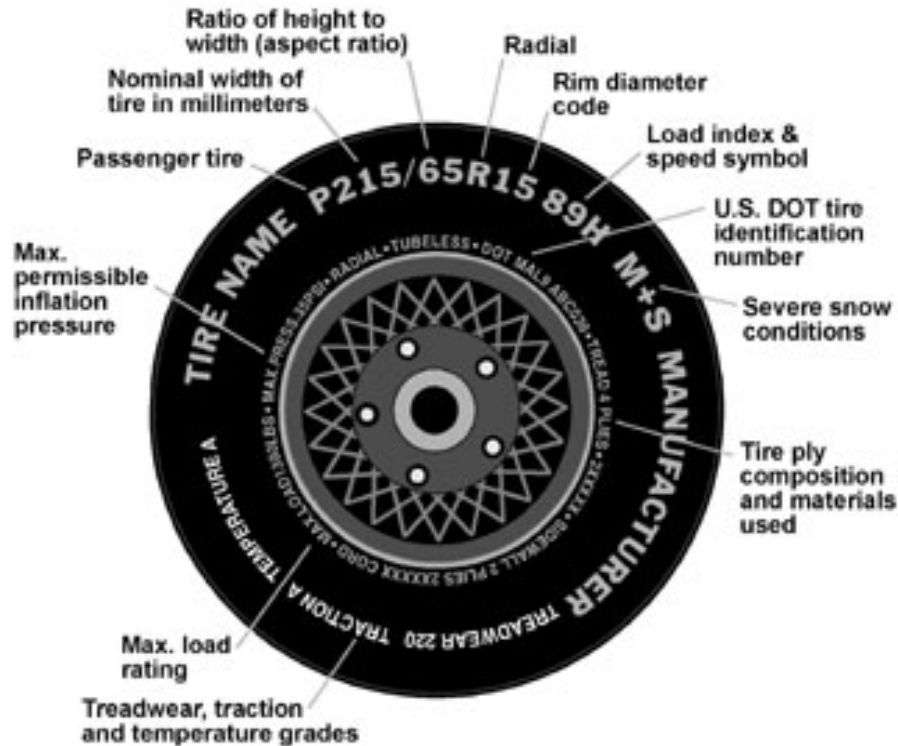


Figure 45. Information on passenger vehicle tires

Tire Size: P215/65R15 89H

P

The “P” indicates the tire is for passenger vehicles.

Next number (i.e., 215)

This three-digit number gives the width in millimeters of the tire from sidewall edge to sidewall edge. In general, the larger the number, the wider the tire.

Next number (i.e., 65)

This two-digit number, known as the aspect ratio, gives the tire’s ratio of height to width. Numbers of 70 or lower indicate a short sidewall for improved steering response and better overall handling on dry pavement.

R

The “R” stands for radial. Radial ply construction of tires has been the industry standard for the past 20 years.

Next number (i.e., 15)

This two-digit number is the wheel or rim diameter in inches. If you change your wheel size, you will have to purchase new tires to match the new wheel diameter.

Next number (i.e., 89)

This two- or three-digit number is the tire’s load index. It is a measurement of how much weight each tire can support. You may find this information in your owner’s manual. If not, contact a local tire dealer. **Note:** You may not find this information on all tires because it is not required by law.

Speed rating (i.e., H)

The speed rating denotes the speed at which a tire is designed to be driven for extended periods of time. The ratings range from 99 miles per hour (mph) to 186 mph. These ratings are listed below. **Note:** You may not find this information on all tires because it is not required by law.

Letter Rating	Speed Rating
Q	99 mph
R	106 mph
S	112 mph
T	118 mph
U	124 mph
H	130 mph
V	149 mph
W	168* mph
Y	186* mph

*For tires with a maximum speed capability over 149 mph, tire manufacturers sometimes use the letters ZR. For those with a maximum speed capability over 186 mph, tire manufacturers always use the letters ZR.²

M+S

The “M+S” or “M/S” indicates that the tire has some mud and snow capability. Most radial tires have these markings; hence, they have some mud and snow capability.

² Since the scale stops at Y, the Z only means “anything beyond Y,” and the R doesn’t mean the 106 mph rating; rather it just means the word “rating” itself. So ZR means “any rating beyond Y.”

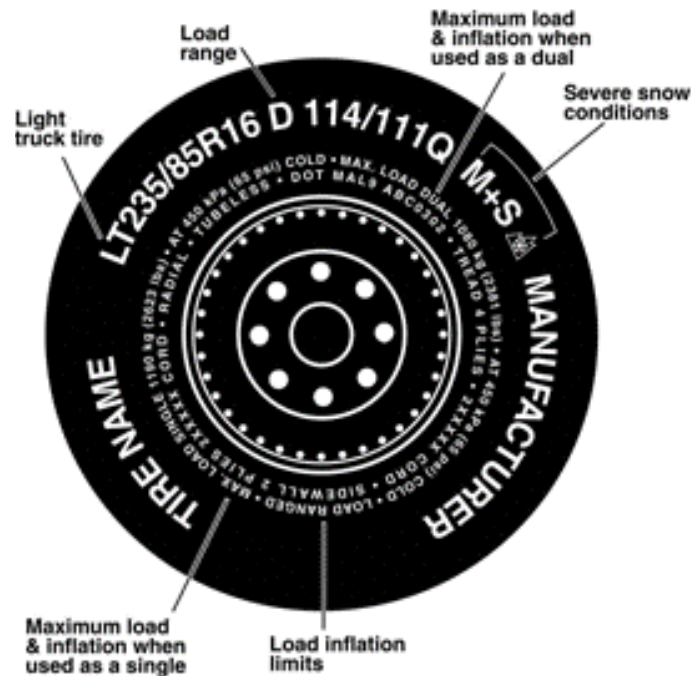


Figure 46. Information on light truck tires

Tires for light trucks have other markings besides those found on the sidewalls of passenger tires.

LT

The “LT” indicates the tire is for light trucks.

Max. load dual kg (lb) at kPa (psi) Cold

This information indicates the maximum load and tire pressure when the tire is used as a dual, that is, when four tires are put on each rear axle (a total of six or more tires on the vehicle).

Max. load single kg (lb) at kPa (psi) Cold

This information indicates the maximum load and tire pressure when the tire is used as a single.

Load range

This information identifies the tire's load-carrying capabilities and its inflation limits.

Snow tires

In some heavy snow areas, local governments may require true snow tires, those with very deeply cut tread. These tires should only be used in pairs or placed on all four wheels. Make sure you purchase snow tires that are the same size and construction type as the other tires on your vehicle.

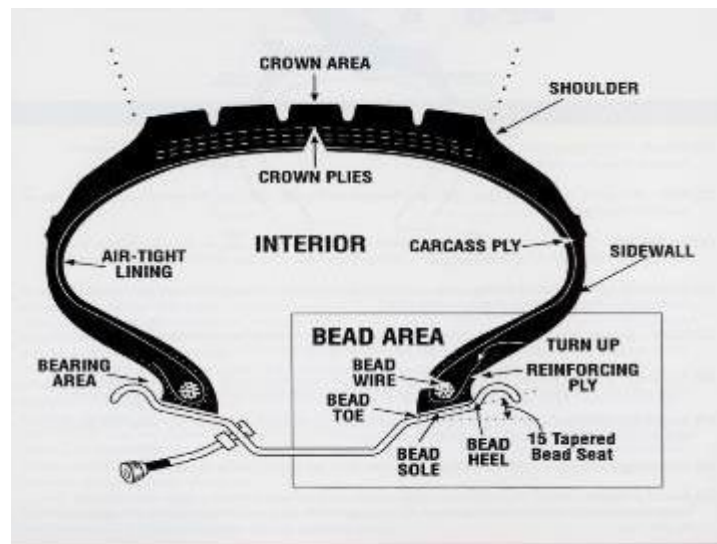


Figure 47. Basic tire nomenclature

The sidewall

A special rubber compound is used in the sidewall of the tire, which adds flexibility and weathering resistance. Some tires, such as higher end performance tires, may also incorporate steel and/or nylon inserts to provide quicker steering response.

The bead

Tire bead bundles secure the tire to the wheel. They are large monofilament steel cords that are wound together to form a cable or ribbon-type configuration. The casing plies are looped around the bead bundles holding them in place. Bead filler, a rubber compound, is incorporated within the bead configuration and extends up into the sidewall area. The rubber compound used on the outside bead area is usually a hard, durable compound that withstands the rigors of mounting and chafing.

Grooves

The grooves are channels for water evacuation between tread and road surface.

Tread

Contact area with road surface using various compound strategies like maximizing grip or mileage.

Shoulder

The shoulder is a transition element between tread and sidewall for traction during cornering and maneuvering.

Bead wire

A rigid cable serving as an anchor around which body plies are wrapped and that secures tire to rim flange area.

Airtight lining

Special rubber compound highly impervious to air migration for maintaining air pressure without leaking.

Crown

The center area of a tire's tread.

Sidewall

The portion of the tire between the bead and the tread. It is flexible to soak up bumps yet stiff to limit tire rollover.

Bead heel

The bead heel is the outer bead edge that fits against the wheel flange.

Bead toe

The bead toe is the inner bead edge closest to the tire centerline.

Carcass/casing

The main body of the tire consisting of wire beads and body plies. The carcass does not include the tread or sidewall rubber.

Tire to Inspection Interval

Screen Name:	Inspection Interval
SAS Data Set:	GV
SAS Variable:	
Database Name:	N/A

Element Attributes

Number of days

Source

Calculated field.

This variable is designed to calculate the number of days from crash date to vehicle inspection date.

Tires General**Total Gross Vehicle Weight Rating**

Screen Name: **Total GVWR (kg)**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS.VEH.GVWR_TOT**

Element Attributes

Database	SAS	
600-6000		Indicate the total GVWR as indicated on the tire or other placard.
-9999	9999	Unknown

Source

Vehicle inspection/placard

Remarks

The GVWR is the maximum permissible total weight of the unit, including the vehicle itself plus all fluids, optional equipment, accessories, all cargo, driver and passengers. The tire placard may be found in any number of places: B-pillar, door, glove compartment door, center console, truck lid, etc.

Front Gross Axle Weight RatingScreen Name: **Gross Axle Weight Rating Front (kg)**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.VEH.GAWR_FRONT****Element Attributes**

Database	SAS	
		Indicate the front GAWR as indicated on the tire or other placard.
-9999	9999	Unknown

Source

Vehicle inspection

Range

454-3742, 9999

Remarks

The front gross axle weight rating (GAWR) is the maximum weight that the front axle, suspension and tire system is designed to carry.

Rear Gross Axle Weight RatingScreen Name: **Gross Axle Weight Rating Rear (kg)**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.VEH.GAWR_REAR****Element Attributes**

Database	SAS	
		Indicate the rear GAWR as indicated on the tire placard.
-9999	9999	Unknown

Source

Vehicle inspection

Range

454-3742, 9999

Remarks

The rear gross axle weight rating (GAWR) is the maximum weight that the rear axle, suspension and tire system is designed to carry.

Manufacturer's Recommended Front/Rear Tire Size

Screen Name: **Recommended Front/Rear Size**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.VEH.TIRE_SPEC.FRONTSIZE TYPE**
TIRE_SPEC.REARSIZE TYPE

Element Attributes

Database	SAS	
1	1	P-Metric (specify)
2	2	Light Truck Metric (specify)
3	3	Light Truck High Flotation (specify)
4	4	Light Truck Numeric (specify)
	997	No Additional Recommendation
8	8	Other (specify)
-9999	9	Unknown

Source

Vehicle inspection from placard on vehicle

Remarks

If the tire size is unknown, but it is known to be a P-metric or LT-light truck tire size, code tire as "Unknown."

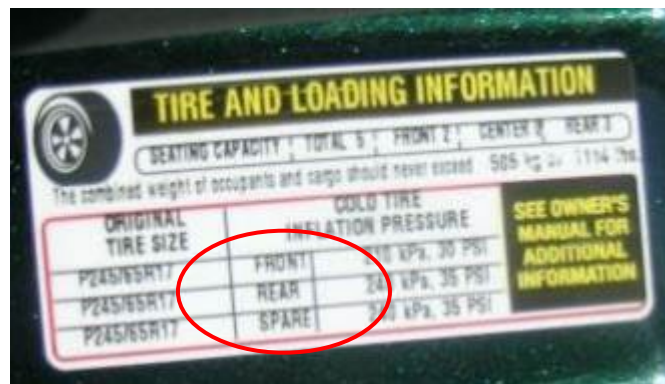


Figure 48. Sample placard

65= Aspect Ratio

R= Radial Construction

15= Rim Diameter in Inches

Light Truck Metric L T n n n/n n a n n

LT235/75R15

LT= Light Truck Tire

235= Section Width in Millimeters

75= Aspect Ratio

R= Radial Construction

15= Rim Diameter in Inches

Light Truck High Flotation n n X n n . n n a n n L T

31X10.50R15LT

31= Tire Diameter in Inches

10.50= Section Width in Millimeters

R= Radial Construction

LT= Light Truck Tire

15= Rim Diameter in Inches

Light Truck Numeric n . n n a n n . n L T

8.75R16.5LT

8.75=Section Width in Inches

R=Radial Construction

16.5=Rim Diameter in Inches

LT=Light Truck Designation

Manufacturer Recommended Cold Tire Pressure Front/RearScreen Name: **Recommended (pressure in kilopascals) Front/Rear Cold Pressure**

SAS Data Set:

SAS Variable:

Database Name:

Element Attributes

Database	SAS	
		Indicate the recommended cold tire pressure for the front/rear tires
		Entry defaults to psi, but may also be entered in kPa
	997	No recommendation
-9999	999	Unknown

Source

Vehicle inspection

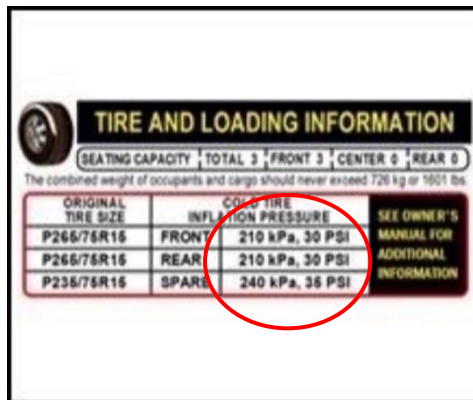
Range

69-552, 997, 999

Remarks

Enter recommended pressure in psi/kPa (program automatically converts psi to kPa).

If the tire placard or owner's manual doesn't specify whether the recommended tire pressure is a hot or cold pressure, assume that it is a cold pressure.

*Figure 49. Sample placard*

Tire/List/Detail**Tire Location**

Screen Name: **Location**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS.TIRE.TIRELOC**

Element Attributes

Database	SAS	
1	1	RF (right front)
2	2	LF (left front)
3	3	RR (right rear)
4	4	LR (rear)

Source

Vehicle inspection

Remarks

Select the location (on the graphic) of the tire being examined. If there are double tires on a vehicle, only record information on the outer tires.

Tire Manufacturer

Screen Name: **Manufacturer**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS.TIRE.TIREMake**

Element Attributes

Database	SAS	
	1-181	(see list)
-8887	887	Tire missing
-8888	888	Other make (specify)
-9999	999	Unknown

Source

Vehicle inspection

Range

1-181, 887, 888,999

Remarks

Choose the manufacturer from drop-down list. The name of the manufacturer maybe found on the sidewall of the tire. If it cannot be read then indicate “Unknown.”

If the tire is missing and cannot be examined then indicate “Tire missing.” If the wheel hub is resting on the tire or the tire can be found elsewhere (i.e., in the bed of a pickup) and it can be ascertained that this is the “missing” tire for the vehicle, and then indicate the appropriate information about the tire.

Manufacturers that are presently in the database can be found on the following pages.

Akuret	1
American	2
American Radial	3
Apache	4
Arizonian	5
Armstrong	6
Astro	7
Atlas	8
Aurora	9
Avon	10
Allegianceiv	177
Barum	11
Bfgoodrich	12
Big O	13
Bilt-Mor	14
Bradley	15
Bridgestone	16
Brigadier	17
Brunswick	18
Carquest	19
Cascade	20
Cavalier	21
Ceat	22
Centennial	23
Cheng Shin	24
Co-Op	28
Concorde	25
Contental/Tag	26
Continental	27
Cooper	29
Cooper-Export	30
Cordovan	31
Cornell	32
Cosmo	33
Crestwood	34
Crown	35
Danzig	36
Dayton	37
Dean	38
Definity	182
Delta	39
Denman	40
Diamond	41
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Doral	43
Double Coin	44
Douglas	45
Dunlop	46

Duralon	47
Dynastar	48
Eldorado	49
Electra	50
Embassy	51
Escort	52
Eurotech	53
Exxon	54
Falken	55
Federal	56
Firestone	57
Fisk	58
Formula	59
Frontier	60
Fulda	61
Futura	62
Fuzion	183
General	63
Gillete	64
Gislaved	65
Goodrich	66
Goodyear	67
Gt Tire	68
Gt Tire Us	69
Guardian	70
Guardsman	71
Hallmark	72
Hankook	73
Hercules	74
High Country	75
Hood	76
Hoosier	77
Jetzon	78
Jupiter	79
K-Mart	85
Kelly	80
Kelly-Springfield	81
Kingstar	82
Kirkland	83
Kirkwood	84
Kumho	86
Laramie	87
Lassa	88
Lee	89
Lemans	178
Liberator	179
M&H	90
Mabor	91

Marshal	92
Mastercraft	93
Maxxis	94
Medalist	95
Mentor	96
Merit	97
Michelin	98
Mickey Thompson	99
Miller	100
Mitas	101
Modi	102
Mohawk	103
Monarch	104
Montgomery Ward	105
Mrf	106
Multi-Mile	107
Nankang/Bradley	108
National	109
Nexen	184
Nitto	110
Nokian	111
Ntb	112
Ohtsu	113
Other (Specify)	8888
Pacemark	114
Panther	115
Parkway	116
Parnelli	117
Patriot	118
Peerless	119
Penske	120
Phillips	121
Pirelli	122
Polaris	123
Pos-A-Trac	124
Pos-A-Traction	125
Pathfinder	181
Primewell	185
Regul	126
Reliant	127
Remington	128
Republic	129
Reynolds	130
Riken	131
Road King	132
Roadmaster	133
Roadpro	134
Runway	135

Exterior Vehicle Form

Tire/List/Detail

Sears	136
Semperit	137
Shell	138
Sidewinder	139
Sieberling	140
Sigma	141
Solo-Tech	142
Sonic	143
Spartan	144
Sport Iv	145
Star	146
Starfire	147
Sumitomo	148
Summit	149
Super Sport	150
Tacoma	151

Tbc	152
Telstar	153
Temco	154
Tigar	155
Tire Missing	8887
Tnt	156
Tosco 76	157
Touring Supreme	158
Toyo	159
Tredtech	160
Tribune	161
Turnpike Usa	162
Ultra-Tech	163
Union 76	164
Uniroyal	165
Universal	166

Unknown	9999
Vanderbilt	167
Viking	168
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Vogue	170
Vredestein	171
Wanli	186
Western Auto	172
Westlake	187
Winston	173
Woosung	174
Wynstar	180
Yks	175
Yokohama	176

Tire Model

Screen Name: **Model**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS.TIRE.TIREMODEL**

Element Attributes

Database	SAS	
-8888	8	Specify model
-9999	9	Unknown

Source

Vehicle inspection

Remarks

The name of the model may be found on the sidewall of the tire. If it cannot be read then indicate "Unknown."

Tire Type on VehicleScreen Name: **Size**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.TIRE.TIRESIZETYPE****Element Attributes**

Database	SAS	
1	1	P-metric (specify)
2	2	Light truck metric (specify)
3	3	Light truck high flotation (specify)
4	4	Light truck numeric (specify)
8	8	Other (specify)
-9999	9	Unknown

Source

Vehicle inspection

Remarks

Tire Size on Vehicle

Screen Name: **Size**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.TIRE.TIRESIZE**

Element Attributes

Database	SAS	
1	1	P-metric (specify)
2	2	Light truck metric (specify)
3	3	Light truck high flotation (specify)
4	4	Light truck numeric (specify)
8	8	Other (specify)
-9999	9	Unknown

Source

Vehicle inspection

Remarks

There will be many characters on the tire sidewall that identify various characteristics of the tire. We are only interested in recording the tire size information. This information is embossed in various ways depending on the type of tire.

a=alpha value to enter **n**=numeric value to enter

P=P-Metric tire *precoded* **LT**=Light Truck designation *precoded*

P-Metric P n n n/n n a n n

P215/65R15, P215/65R15

P= Passenger Car Tire

215= Section Width in Millimeters

65= Aspect Ratio

R= Radial Construction

15= Rim Diameter in Inches

Light Truck Metric L T /

LT235/75R15

LT= Light Truck Tire

235= Section Width in Millimeters

75= Aspect Ratio

R= Radial Construction

15= Rim Diameter in Inches

Light Truck High Flotation X . L T

31X10.50R15LT

31= Tire Diameter in Inches

10.50= Section Width in Millimeters

R= Radial Construction

LT= Light Truck Tire

15= Rim Diameter in Inches

Light Truck Numeric . . L T

8.75R16.5LT

8.75=Section Width in Inches

R=Radial Construction

16.5=Rim Diameter in Inches

LT=Light Truck Designation

Tire Identification Number

Screen Name: **TIN**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.TIRE.TIN**

Element Attributes

Specify tire identification number
 99999 9999 9999 Unknown
 Enter characters in each section left justified
 “#” entered for unreadable characters
 3 to 13 characters will be present
 Spaces for places without characters

Range

Numbers 0 – 9
 Capital letters except I and Q. Letters G, O, S, and Z are seldom used.
 Spaces for places without characters
 “#” entered for unreadable characters
 3 to 13 characters will be present

Source

Vehicle inspection

Remarks

The tire identification number is used to identify the tire manufacturer, tire size, and week of manufacture. The tire identification number may be present in the form of a shortened version or a complete version. It will be preceded by the letters **DOT** or **DOT-R**. These characters might also appear above or below the tire identification number. They are NOT part of the tire identification number.

Photo documentation of the TIN is required.

Enter all 9s if the tire identification number is unknown:

9	9	9	9	9	9	9	9	9	9	9	9	9
—	—	—	—	—	—	—	—	—	—	—	—	—

A complete tire identification number will appear as:

DOT **XX**₁ **XX**₂ **XXXX**₃ **NNNN**₄

DOT **XX**₁ **XXX**₂ **XXXX**₃ **NNNN**₄

1. Manufacturers assigned identification
2. Tire size code
3. Tire characteristics or brand name code (OPTIONAL 1-4 characters)
4. Date of manufacture (3 digits old standard, 4 digits new standard)

The last section represents the week and year of manufacture. The first two symbols identify week. The third and fourth symbols identify year (only one digit for the old tire identification number standard).

Example: 0101 means the first week of 2001, or the week beginning Sunday, January 7, 2001, and ending Saturday, January 13, 2001

One side of the tire will have the full tire identification number; the other side will have a partial tire identification number that will not include the date field.

Only read the tire identification number present on the outside of the tire.



Figure 50. Sample tire identification

H Y C 6 6 1 1 _ _ _ _

Note missing third section at right. There can't be a 61st week of a year.



Figure 51. Sample tire identification

Y	6	U	R	4	4	2				
—	—	—	—	—	—	—	—	—	—	—

Note the second section is listed together with first section



Figure 52. Sample tire identification

2	E	0	6				2	4	0	2
—	—	—	—	—	—	—	—	—	—	—

Note that there are attachment points for the plate in the tire mold on either side of “2402.”



Figure 53. Sample tire identification

H	4	H	8	J	E	N	5	1	0	4
—	—	—	—	—	—	—	—	—	—	—



Figure 54. Sample tire identification

A	P	H	H	W	H	T	2	1	3
—	—	—	—	—	—	—	—	—	—

The tire identification number (TIN), which must appear on virtually all new and retreaded motor vehicle tires sold in the United States, plays an important role in identifying which tires are subject to recall and remedy campaigns for safety defects and noncompliances. On April 13, 2015, two amendments were made to the TIN requirements.

First, because NHTSA has run out of two symbol codes to identify new tire plants, NHTSA expanded the first portion of the TIN, previously known as the manufacturer identifier, but more commonly referred to as a “plant code,” from two symbols to three for manufacturers of new tires. This amendment substantially increased the number of unique combinations of characters that can be used to identify individual manufacturers of new tires.

Second, NHTSA standardized the length of the tire identification number to eliminate confusion that could arise from the variable length of tire identification numbers. This amendment standardized the length of the TIN at 13 symbols for new tires (Figure 52) and 7 symbols for retreaded tires (Figure 53), making it easier to identify a TIN from which a symbol is missing. These requirements became effective on April 13, 2015, and will be phased in over 10 years. During this period, tires with the old requirements will be produced along with the new fixed length, 13 symbol TIN incorporating the three symbol “plant code.”

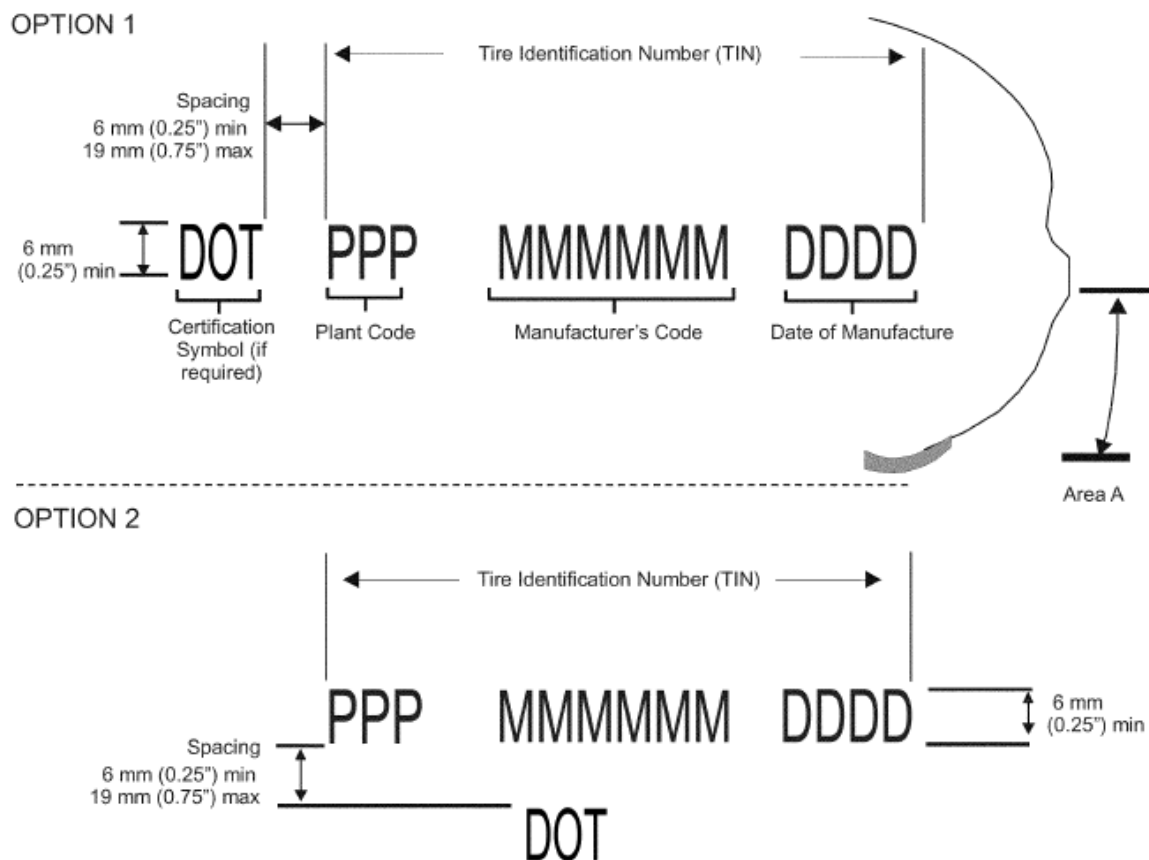


Figure 55. TIN requirements for new tires

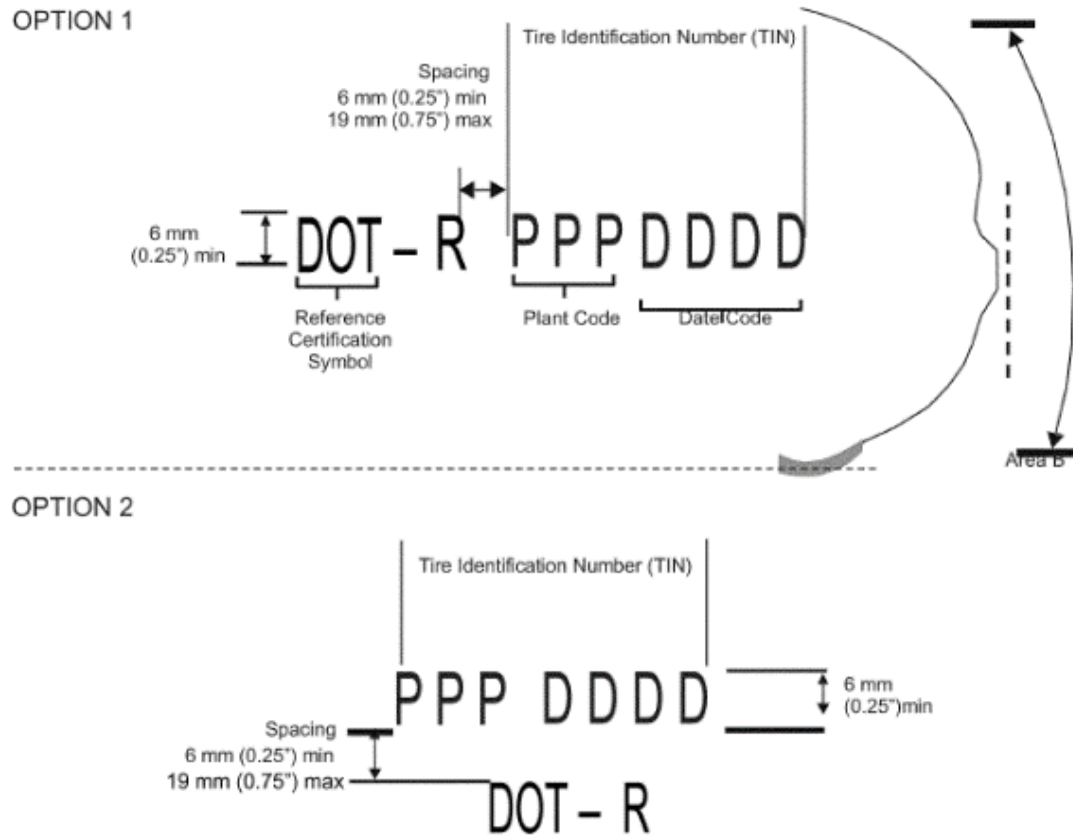


Figure 56. TIN requirements for retread tires

Minimum Tread Depth

Screen Name: **Tread Depth**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS.TIRE.TDEPTH**

Element Attributes

Database	SAS	
		Specify tread depth
		Entry defaults to 1/32 inch, but may also be entered in mm
-9999	99	Unknown

Range

0 mm – 25 mm

Source

Vehicle inspection

Remarks

Indicate the tread depth in mm.

The Minimum Tire Tread Depth is to be measured using the supplied tire tread depth indicator. The measurement should be taken on the shallowest groove of the tread. Be careful not to measure on a wear bar indicator. The measurement is to be documented to the nearest 32nd inch.

If tread depth is measured at 25 mm or more, code as 25 mm.

Tire Restricted

Screen Name: **Restricted**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS.TIRE.RESTRICT**

Element Attributes

Database	SAS	
2	2	No
1	1	Yes
3	0	Not applicable
4	9	Unknown

Source

Vehicle inspection

Remarks

The variable reflects the tire/wheel restriction that occurred as a result of the crash. This variable is being collected for use in modifying input to the WINSMASH computer program.

A restricted tire is a tire that, due to crash forces, is unable to rotate. The tire could be trapped by surrounding vehicle parts or is damaged by the impact. The tire is in a “locked position.” It is important to note that some damaged components (i.e., fender, quarter panel, wheel well) could be in contact with the tire and yet not be considered as restricted, if the fender, quarter panel can be physically moved or some rotation can be observed.

No

The wheel/tire was not restricted.

Yes

The wheel/tire was physically restricted.

N/A

There is no wheel/tire for this position or if the tire is missing at the time of the vehicle inspection.

Unknown

Use this selection when it cannot be determined if the wheel/tire was restricted as a result of the crash.

Tire Damage

Screen Name: **Damage**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.TIRE_DAMAGE.DAMAGED**

Element Attributes

Database	SAS	
		None visible
-9999	99	Unknown
2	1	Tread separation
5	2	Sidewall separation
3	3	Tire puncture in tread
4	4	Tire puncture in sidewall
6	5	Tire cut/torn
8	6	Tire rotted
7	7	De-beaded
77	88	Other (specify)

Source

Vehicle inspection

Remarks

Observations of the tire by the technician at the time of the vehicle inspection.

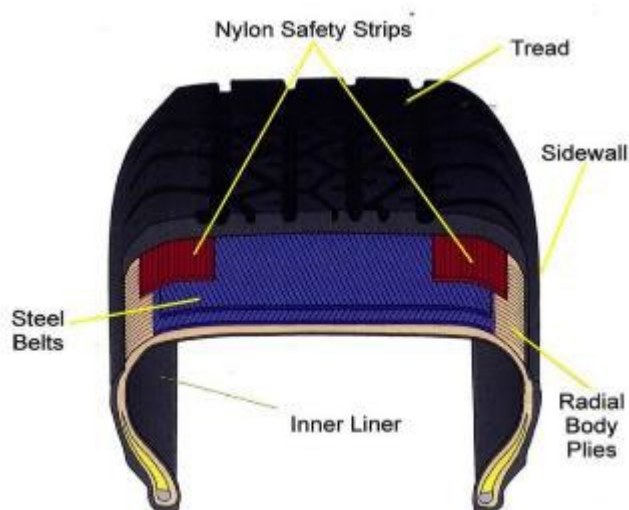


Figure 57. Sample tire parts

None visible

Includes no visible damage to the tire. This includes grass in the rim, cracked rims, superficial scuffing.

Tread separation

Tread is the outermost grooved part of the tire that comes in contact with the road. Tread separation occurs when the tread of the tire peels away from the inner liner or the carcass (portion of the tire that holds air) exposing the inner tire, belts, and cords. This separation makes tire blow out and increases the likelihood an accident will occur.

Sidewall separation

The sidewalls are the portions of the tire between the beads and the tread compounded of rubber with high flex and weather resistance to control the ride and provide support. Sidewall separation means the parting of the rubber compound from the cord material in the sidewall.

Tire puncture in tread

A hole made by a sharp point object on the Tread of the tire.

Tire puncture in sidewall

A hole made by a sharp point object on the Sidewall of the tire.

Tire cut/torn

Figure 58. Sample tire damage

The following pictures show cut/torn tire on the sidewall.

Tire rotted

Rubber degrades when exposed to heat, oxygen, ozone, and other elements. With age, rotted tires develop cracks on the sidewall and tread.



Figure 59. Sample tire damage

Tire de-beaded

The Bead is a structure composed of high tensile strength steel wire formed into hoops that function as anchors for the plies and hold the tire assembly onto the rim of the wheel. An indication of de-beading is a visual separation of the bead from the rim.



Figure 60. Sample tire damage

Note: A flat tire does not necessarily constitute as a de-beaded tire. It is possible to have a flat tire and the beads are not displaced or un-seated from the rim tapered bead seat.

Other (specify)

Refers to any damage observed that is not listed. This includes bead separation that is a breakdown of bond between components in the bead area. The bead can be broken or bent. Tire bulging is included here.

Crash Avoid

Equipment Type

Screen Name: **Equipment Type**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.EQUIP.EQUIPD**

Element Attributes

Database	SAS	
0		Not applicable
1		Lane keeping support
15		Lane departure warning
16		Crash imminent braking
17		Forward collision warning
3		Blind spot detection
8		Automatic crash notification
4		Daytime running lights
9		Rearview video system
10		Dynamic brake support
11		Pedestrian automatic emergency braking
12		Advanced lighting
13		Adaptive cruise control

Source

Technician-determined. Including vehicle inspection, interview, and resource material.

Remarks

The following elements are only collected for model year vehicles 2010 and newer:

Lane keeping support (LKS)

Uses information provided by sensors in a lane departure warning system (LDW) system to determine whether a vehicle is about to move out of its lane of travel. If so, LKS activates by correcting the steering, braking or accelerating one or more of the wheels, or a combination of both, resulting in the vehicle returning to its intended lane of travel.

Lane departure warning (LDW)

Is a system that alerts drivers when they unintentionally drift out of their lanes without a turn signal. LDW use a camera to monitor lane markings to detect when a vehicle is veering out of its lane of travel and alerts the driver through a haptic, visual, or audible alert so that the driver can

steer the vehicle back into its lane. An active turn signal in the direction in which the vehicle is moving or driver braking will disable a LDW system.

Crash imminent braking (CIB)

Systems provide automatic braking when forward-looking sensors indicate that a crash is imminent and the driver has not braked. If the driver does not take any action to avoid the crash, crash imminent braking (CIB) automatically applies the vehicle's brakes to slow or stop the car, avoiding the crash or reducing its severity.

Forward collision warning (FCW)

Uses forward-facing sensors to detect when a vehicle is approaching a slower moving or stopped vehicle, or, in some cases, a stationary object, in its lane of travel. If vehicles get too close due to the speed of the rear vehicle, the FCW alerts the driver through a haptic, visual, or audible alert so that the driver can apply the brakes or steer the vehicle in an effort to avoid or mitigate the impending crash. It's important to note that FCW systems do not take full control of the vehicle or keep the driver from operating it.

Blind spot detection (BSD)

Uses sensors to monitor the blind spots on either side of the vehicle. The system alerts the driver with audio and/or visual signals whenever another vehicle is in that blind spot. Some systems have enhanced warnings when the driver is intentionally changing lanes and a vehicle is either in or is about to enter a blind spot in the lane into which the vehicle is about to move. Some systems also may activate the brake or steering controls to keep the vehicle in its lane.

Automatic crash notification (ACN)

Also known as Automatic Collision Notification. Automatically and wirelessly transmits a crash notification to a public safety answering point (PSAP) in the area of the crash. In most cases, when the ACN sensor detects either that an air bag has deployed or there's been a dramatic and sudden deceleration, the system automatically connects to an operator, who will then be able to communicate with passengers in the vehicle after a crash. The operator is also able to collect basic information from the vehicle, without passenger input, to provide to emergency responders so they can easily locate and reach the scene of the crash.

Daytime running lamp (DRL)

Are steady burning identically colored lamps that are used to improve the conspicuity of a vehicle from the front and front sides when the regular headlamps are not required for driving. DRLs are automatically switched on when a vehicle is put in gear. Daytime running lamps are permitted but not required on passenger cars, multipurpose passenger vehicles (MPV), trucks, and buses in the United States. DRLs may be any pair of lamps on the front of the vehicle other than parking lamps or fog lamps. Each original equipment and replacement lamp used as a daytime running lamp (DRL), unless optically combined with a headlamp, must be permanently marked "DRL" on its lens in letters not less than 3 mm high.

Rearview video system (RVS)

Also known as a backup camera, is a video technology that helps prevent backover crashes by providing an image of the area directly behind the vehicle. When a driver shifts a vehicle into

reverse, the RVS shows—either in the dashboard or in a small display in the rearview mirror—an image of the area behind the vehicle. The field of view includes a 10-foot by 20-foot zone directly behind the vehicle. Rearview video systems are not a replacement for mirrors or turning around to look; rather, they're an added safety tool for revealing hidden dangers.

Dynamic brake support (DBS)

Systems use sensors to determine when driver-applied braking is insufficient to avoid an imminent crash. In these situations, DBS automatically supplements the driver's braking.

Pedestrian automatic emergency braking (PAEB)

Also known as frontal pedestrian impact mitigation braking—is a safety technology that provides automatic braking for vehicles when pedestrians are in the forward path of the vehicle's travel and the driver has taken insufficient action to avoid an imminent crash. PAEB systems typically use cameras, but some also use a combination of cameras and radar sensors.

Advanced lighting

Vehicle lighting features designed to improve visibility and/or conspicuity. Advanced Lighting features include:

Automatic beam switching uses a camera to automatically switch the vehicle's headlight between high beams and low beams, depending on whether other vehicles are present. The driver still has the option to manually switch between low and high beams.

Automatic leveling are self-leveling headlights that have an additional level sensor that determines if the car is tilted forward or back. For example, if a car is driving over a large bump, when the front of the car hits the bump, the lights lift up.

Dynamic bending lights are designed to make driving at night easier and safer. Instead of constantly shining straight ahead, dynamic bending lights are designed to turn as the steering wheel does.

Amber rear turn signals are used in place of the traditional red turn signals.

Adaptive cruise control (ACC)

Uses a camera and/or sensors to automatically adjust the vehicle's speed to keep a pre-set distance from the vehicle in front of it.

Equipment Available

Screen Name: **Available**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS.EQUIP.AVAIL**

Element Attributes

Database	SAS	
0	0	Not applicable
1	1	No
2	2	Yes
9	99	Unknown

Source

Technician-determined. Including vehicle inspection, interview, and resource material.

Remarks

This element is only collected for model vehicles 2010 and newer.

Is the equipment listed in Equipment Type, available in this vehicle? In addition to buttons/switches, there may be instrument panel lights to indicate system presence.

Equipment Activate

Screen Name: **Activate**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS.EQUIP.ACTIVATE**

Element Attributes

Database	SAS	
0	0	Not applicable
1	1	No
2	2	No - Manually disabled
3	3	Yes
9	99	Unknown

Source

Technician-determined. Including vehicle inspection, interview, and resource material.

Remarks

This element is only collected for model vehicles 2010 and newer.

No

Used when the technician is aware that the listed equipment item was not activated.

No - Manually disabled

Used when the technician is aware that the listed equipment was disabled by a switch of some type. This includes a subscription or a service that has expired or was not renewed.

Yes

Used when the technician is aware that there was an indication the equipment activated.

Unknown

Used when the technician cannot determine if the equipment activated.

Fuel Systems

Record **all** fuel systems, and code any damage to fuel cell. If fuel cell is damaged other variables are required to be coded.

Note: Code fuel type, damage to fuel cell, and leakage location for each fuel system noted. Code other variables only if a leak, damage, or fire occurred.

Fuel System Number

Screen Name: **Fuel System Number**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS.FUEL.FUELNUM**

Element Attributes

List fuel cells

Remarks

Use “Add Fuel” to add a fuel system for **each** fuel system in the vehicle.

This variable records those fuel systems that are permanently affixed to the vehicle as an energy reservoir for the vehicle’s engine. Some vehicles may be equipped with reserve cells. (i.e., one or more cells connected in series and controlled by the driver).

Extra fuel cells on-board vehicles that are not designed to supply fuel to the vehicle’s engine are not considered for this variable. Some examples include: fuel cans, bottled gas, and ancillary tanks for occupational-related work (construction, etc.).

An electric fuel cell, hydrogen fuel cell or compressed natural gas (CNG) is considered a fuel system.

Fuel Type

Screen Name: **Fuel Type**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.FUEL.FUELTYPE**

Element Attributes

Database	SAS	
1	1	Gasoline
17	17	Gasoline/ethanol (E85)
18	18	Gasoline/methanol (M85)
2	2	Diesel
3	3	CNG (compressed natural gas)
4	4	LPG (liquid petroleum gas) also known as propane
5	5	LNG (liquid natural gas)
19	7	Ethanol (E100)
20	6	Methanol (M100)
21	16	Lithium-ion battery
16	15	Nickel-metal hydride (NiMH)
9	9	Hydrogen fuel cell
98	98	Other (specify):
99	99	Unknown fuel type

Source

Primary source is the vehicle inspection; secondary source is the interviewee.

Remarks

These variables record the fuel type available in each fuel system during this crash sequence. The type of fuel the engine was operating on will normally be indicated on the vehicle. Typical locations include, but are limited to fuel door, filler cap, fuel gauge and vehicle owner's manual.

Gasoline

Volatile mixture of flammable liquid hydrocarbons derived from crude oil and used principally as a fuel for internal-combustion engines. Use this attribute for gasoline and ethanol mixture. This is commonly called "gasohol" that is a mixture of gasoline and ethanol (10%) or methanol (3%).

Gasoline/ethanol (E85)

Mixture of 85 percent ethanol and 15 percent of unleaded gasoline. This vehicle can operate on 100% gasoline or E85. This fuel type is used in flexible fuel vehicles (FFVs).

Gasoline/methanol (M85)

Mixture of 85 percent methanol and 15 percent of premium unleaded gasoline. This vehicle can operate on 100% gasoline or M85.

Diesel

Volatile mixture of flammable liquid hydrocarbons derived from crude oil and used principally as a fuel for internal-combustion engines. It has the same process as gasoline but not as refined. This attribute includes bio-diesel fuel.

Compressed natural gas

Compressed natural gas, or CNG, is natural gas under pressure that remains clear, odorless, and non-corrosive. Although vehicles can use natural gas as either a liquid or a gas, most vehicles use the gaseous form compressed to pressures above 3,100 psi.

Liquid petroleum gas, also known as propane

Motor fuel propane, otherwise known as liquefied petroleum gas (LPG), is produced as part of natural gas processing and crude oil refining. In natural gas processing, the heavier hydrocarbons that naturally accompany natural gas, such as LPG. Propane is a gas that can be turned into a liquid at a moderate pressure, 160 psi, and is stored in pressure tanks at about 200 psi at 100 °F.

Liquid natural gas

Liquefied natural gas is natural gas in a liquid form that is clear, colorless, odorless, non-corrosive, and non-toxic. LNG is produced when natural gas is cooled to -259 °F, through a process known as liquefaction. During this process, the natural gas, which is primarily methane, is cooled below its boiling point, whereby certain concentrations of hydrocarbons, water, carbon dioxide, oxygen, and some sulfur compounds are either reduced or removed. LNG is also less than half the weight of water, so it will float if spilled on water.

Ethanol (E100)

Fuel that is produced by fermenting a biomass (corn), commonly called grain alcohol.

Methanol (M100)

Methanol (methyl alcohol) is a fuel type made from natural gas. This fuel is commonly referred to as “neat” 100 percent methanol.

Lithium-ion battery

Family of rechargeable battery types in which lithium ions move from the negative electrode to the positive electrode during discharge, and back when charging. This type of battery is commonly referred to as a Li-ion battery. A lithium polymer battery is included in this attribute.

Nickel-metal hydride

Similar to the nickel-cadmium battery but containing less toxic material and has a higher capacity. Commonly referred to as NiMH.

Hydrogen fuel cell

Hydrogen is the simplest, lightest, and most plentiful element in the universe, made up of one proton and one electron revolving around the proton. In its normal gaseous state hydrogen is colorless, odorless, tasteless, non-toxic, and burns invisibly. Fuel cells generate electricity from a catalyst-facilitated chemical reaction between hydrogen and oxygen ions in a cell. Several cells combined makeup a fuel cell stack. Fuel cell systems have relatively few moving parts, and their only byproducts are water and heat when pure hydrogen is used as the fuel.

Other (specify)

Used for any type of fuel used that is not described in the above attributes. This includes alternative energy sources, i.e., flywheel technology. Included in this attribute are the following battery types: lead acid, nickel iron, sodium metal chloride, and sodium sulfur. Annotate for specific information.

Unknown fuel type

Used when the vehicle was totally destroyed, or the fuel type cannot be determined.

Damage to Fuel Cell

Screen Name: **Damage to Fuel Cell**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.FUEL.DAMAGE**

Element Attributes

Database	SAS	
1	1	No damage to cell
2	2	Deformed, no seam separation
3	3	Deformed, with a seam separation
4	4	Punctured
5	5	Lacerated (ripped)
6	6	Abraded (scraped)
7	7	Filler neck separation from the fuel cell
8	8	Other damage (specify):
9	9	Unknown

Source

Vehicle inspection

Remarks

These variables record the damage to the fuel cell that occurred during the sequence of crash events. The objective of these variables is to identify damage to the fuel cell that may or may not result in a loss of fuel system integrity. If the fuel cell has more than one form of damage, enter the damage that resulted in a fuel system integrity loss. If there were several types of integrity loss then select the first attribute that applies.

Refer to the *NHTSA Field Crash Investigation Photography Protocol* (internal unpublished manual) for a detailed description of the required photographs.

In addition, annotate any precrash damage to the fuel tank.

No damage to fuel cell

Used when the fuel cell is *not* damaged during the sequence of crash events.

Deformed, no seam separation

Used when the fuel cell was deformed or crushed during the crash and the seam did not fail. Tanks that do not have a seam (e.g., extruded fuel cells such as high-density polyethylene, HDPE) should be evaluated for deformation and encoded under this attribute if applicable.

Deformed, with a seam separation

Used when the fuel cell was deformed or crushed during the crash and the seam failed. Single piece extruded cells (i.e., no seams, HDPE) that experience integrity loss are ***not*** entered here.

Punctured

Used when the fuel cell was punctured, perforated or pierced during the collision sequence.

Lacerated (ripped)

Used when the fuel cell was lacerated, cut, sliced, ripped, or torn during the collision sequence.

Abraded (scraped)

Used when the fuel cell was abraded or scraped during the collision sequence.

Filler neck separation from the fuel tank

Used when the filler neck was separated from the fuel cell during the collision sequence.

Other damage (specify)

Used when damage to the fuel cell cannot be described in other attributes. HDPE cells that are crushed to the point that they crack, causing an integrity loss of the fuel cell, are included here.

Unknown

Used when the fuel cell damage cannot be determined.

Fuel System Leakage Location

Screen Name: **Leakage Location**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.FUEL.LEAKLOC**

Element Attributes

Database	SAS	
1	1	No fuel leakage

Primary Area of Leakage

Database	SAS	
2	2	Cell
3	3	Filler neck
4	4	Cap
5	5	Lines/pump/filter
6	6	Vent/emission recovery
7	8	Other (specify):
8	9	Unknown
		Not applicable

Source

Vehicle inspection

Remarks

These variables provide information on fuel retention by the fuel system during the crash sequence. The objective of these variables is to report fuel system leakage. If the fuel system has leakage from more than one source, enter the leakage that resulted in a fire. If there are several areas of leakage and no fire, then enter the most severe area of leakage. If the severity cannot be determined, then use attributes in the priority listed.

Refer to the *NHTSA Field Crash Investigation Photography Protocol (internal unpublished manual)* for a detailed description of the required photographs.

If no fuel leakage was caused by the crash, record no fuel leakage. If the fuel system was leaking prior to the collision, (corrosion to tank, loose fuel line, etc.) annotate the information. In this variable leakage can only occur from impact damage.

No fuel leakage

Used when there has been no loss in fuel retention.

Cell

Used when the fuel cell was leaking as a result of an impact during the crash sequence. Also use this attribute when leakage occurs as a result of all the filler neck separating from the fuel cell.

Filler neck

Used when the filler neck is the source of fuel leakage as a result of an impact during the crash sequence.

Cap

Used when the mouth of the filler neck or the filler cap is the source of fuel leakage that occurred as a result of damage from an impact during this vehicle's crash sequence.

Lines/pump/filter

Used when fuel was leaking from the fuel system lines, pump and/or fuel filter as a result of an impact during the crash sequence.

Vent/emission recovery

Used when fuel was leaking from the vent or emission recovery system as a result of an impact during the crash sequence.

Other (specify)

Used when fuel was leaking, as a result of the crash, from other than the sources specified above.

Unknown

Used when it cannot be determined if the fuel system experienced any leakage, or the source of the fuel system leakage could not be determined.

Location of Fuel Cell

Screen Name: **Location of Fuel Tank**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.FUEL.CELLLOC**

Element Attributes

Database	SAS	
1	1	Aft of rear axle centered
2	2	Aft of rear axle left side
3	3	Aft of rear axle right side
4	4	Forward of rear axle centered
5	5	Forward of rear axle left side
6	6	Forward of rear axle right side
7	7	Over the rear axle
8	8	Other (specify):
9	9	Unknown
-8887		Not applicable

Source

Vehicle inspection

Remarks

This variable identifies the locations of this vehicle's fuel cells. Refer to the *NHTSA Field Crash Investigation Photography Protocol* (internal unpublished manual) for a detailed description of the required photographs.

Aft of rear axle centered

Used to identify fuel cells located in back of the center of the rear wheels (rear axle) and in the center of the vehicle (e.g., between the frame rails if present).

Aft of rear axle left side

Used to identify fuel cells located in back of the center of the rear wheels (rear axle) and on the left side of the vehicle (e.g., between the frame rails and the outer body surface).

Aft of rear axle right side

Used to identify fuel cells located in back of the center of the rear wheels (rear axle) and on the right side of the vehicle (e.g., between the frame rails and the outer body surface).

Forward of center of the rear wheels (rear axle) centered

Used to identify fuel cells located in front of the center of the rear wheels (rear axle) and in the center of the vehicle (e.g., between the frame rails if present).

Forward of center of the rear wheels (rear axle) left side

Used to identify fuel cells located in front of the center of the rear wheels (rear axle) and in the left side of the vehicle (e.g., between the frame rails and the outer body surface).

Forward of center of the rear wheels (rear axle) right side

Used to identify fuel cells located in front of the center of the rear wheels (rear axle) and in the right side of the vehicle (e.g., between the frame rails and the outer body surface).

Over the rear axle

Used when any part of the fuel cell is located over the center of the rear wheels (rear axle).

Other (specify)

Used when the fuel cell is in a location other than as specified in the previous attributes. Included in this attribute are fuel cells located inside the passenger compartment, trunk, cargo area, pickup bed, etc. The location is specified in the space provided.

Unknown

Used when the fuel cell location cannot be determined and an exemplar vehicle cannot be located.

Type of Fuel Cell

Screen Name: **Type of Fuel Cell**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS.FUEL.CELLTYPE**

Element Attributes

Database	SAS	
1	1	Metallic
2	2	Non-metallic
3	9	Unknown
0		Electric/solar powered
-8887		Not applicable

Source

Vehicle inspection

Remarks

This variable records the composition of the fuel cell that is permanently affixed to the vehicle as an energy reservoir for the vehicle's engine.

Metallic

Used for fuel cells made from metal. This would include steel, aluminum (alloys), stainless steel, etc.

Non-metallic

Used for fuel tanks that are made from plastic. Plastic tanks are composed of high-density polyethylene (HDPE).

Unknown

Used when the type of tank material could not be determined:

- technician could not make a determination due to inaccessibility, or
- vehicle was dismantled during inspection and the fuel tank was not available.

Location of Filler Cap

Screen Name: **Location of Filler Cap**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.FUEL.CAPLOC**

Element Attributes

Database	SAS	
1	1	On back plane
6	2	Over the rear axle on left side plane
7	3	Over the rear axle on right side plane
2	4	Aft of rear axle on left side plane
3	5	Aft of rear axle on right side plane
4	6	Forward of rear axle on left side plane
5	7	Forward of rear axle on right side plane
8	8	Other (specify):
9	9	Unknown
0		Electric/solar powered
-8887		Not applicable

Source

Vehicle inspection, secondary source exemplar vehicle

Remarks

These variables identify the location of the fuel tank filler cap in its original undamaged position on the vehicle.

Be sure to photograph the tank and surrounding area. Refer to the *NHTSA Field Crash Investigation Photography Protocol* (internal unpublished manual) for a detailed description of the required photographs.

On back plane

Used when the fuel tank filler cap is located on the back plane of the vehicle.

Over the rear axle on left side plane

Used when any part of the fuel tank filler cap is located over the center of the rear wheels (rear axle) on the left side plane. This attribute takes precedence over the following attributes.

Over the rear axle on right side plane

Used when any part of the fuel tank filler cap is located over the center of the rear wheels (rear axle) on the right side plane. This attribute takes precedence over the following attributes.

Aft of rear axle on left side plane

Used when the fuel tank filler cap is located behind the center of the rear wheels (rear axle) and on the left side plane of the vehicle.

Aft of rear axle on right side plane

Used when the fuel tank filler cap is located behind the center of the rear wheels (rear axle) and on the right side plane of the vehicle.

Forward of rear axle on left side plane

Used when the fuel tank filler cap is located in front of the center of the rear wheels (rear axle) on the left side plane of the vehicle.

Forward of rear axle on right side plane

Used when the fuel tank filler cap is located in front of the center of the rear wheel (rear axle) on the right side plane of the vehicle.

Other (specify)

Used when the fuel tank filler cap is in a location other than as specified above. The location is specified in the space provided.

Unknown

Used when the fuel tank filler cap location cannot be determined and an exemplar vehicle cannot be located (e.g., the vehicle was totally destroyed).

Pre-Crash Condition of Fuel Cell

Screen Name: **Pre-Crash Condition**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.FUEL.PRECOND**

Element Attributes

Database	SAS	
0	0	Electric/solar powered
1	1	No damage
2	2	Corroded
3	3	Leaking
4	4	Abraded
5	8	Other (specify):
6	9	Unknown
-8887		Not applicable

Source

Vehicle inspection, secondary source is the interview.

Remarks

These variables record the damage to the fuel tank that was present prior to the crash. The objective of these variables is to identify damage to the fuel tank that was not a result of the crash. When more than one damage is present select the choice that is higher on the list.

No damage

Used when the fuel tank was *not* damaged prior to the crash.

Corroded

Used when corrosion damage is evident on the fuel tank.

Leaking

Used when there is evidence of leakage present and it can be determined that it is not a result of the collision sequence of events.

Abraded

Used when there is evidence of abrasion or scraping on the fuel tank not a result of the crash.

Other (specify)

Used to indicate other damage not listed above.

Unknown

Used when the perish condition of the fuel tank cannot be determined.

Fire

Fire Occurrence

Screen Name: **Fire Occurrence**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS.FIRE.SEVERITY**

Element Attributes

Database	SAS	
1	0	No fire
2	1	Minor fire
3	2	Major fire
9	9	Unknown

Source

Primary source is the vehicle inspection; secondary sources include the interviewee, police report, and occupant medical records.

Remarks

Fire events are added on the Case Form/Events Tab.

In order to classify fire damage, a fire must have occurred to this vehicle. (1) The fire could have resulted from an impact with another vehicle or object that consequently caused a fuel system integrity failure or electrical short circuit. (2) If the fire resulted from a noncollision event (electrical short circuit, fuel leakage, etc.) that occurred prior to this vehicle striking another vehicle or object, and if the crash qualifies for the CISS, then both the noncollision event and all subsequent events are entered on the Case Form Events Tab.

As it pertains to the occurrence of fire, the crash circumstances are not considered stabilized until the threat of damage to this vehicle, or injury consequences to this vehicle's occupants, has ceased. Therefore, the crash sequence is not considered stabilized until all occupants have exited the vehicle and the scene has been declared safe by police or other authority. Fires that occur at a later time to vehicles abandoned at the scene (in open fields, on hillsides, etc.) or to vehicles removed from the scene to another location (tow yard, curbside, etc.) are not considered part of the crash sequence.

Minor

Is a general term used to describe the degree of fire involvement and is used in the following situations.

- Engine-compartment-only fire
- Trunk-compartment-only fire
- Partial-passenger-compartment-only fire
- Undercarriage-only fire
- Tire-only fire

Major

Identifies those situations where the vehicle experienced a greater fire involvement than defined under “minor” above and is used in the following situations.

- Combined engine and passenger compartment fire (either partial or total passenger compartment involvement).
- Total passenger compartment fire.
- Combined trunk and passenger compartment fire (either partial or total passenger compartment involvement).
- Combined undercarriage and passenger compartment (either partial or total passenger compartment involvement).
- Combined tire and passenger compartment (either partial or total passenger compartment involvement).

Unknown

Used when it cannot be determined if this vehicle sustained a fire related to the crash, e.g., a fire was reported, but this vehicle was repaired prior to inspection.

Origin of Fire

Screen Name: **Origin of Fire**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.FIRE.ORIGIN**

Element Attributes

Database	SAS	
	0	No fire
1	1	Vehicle exterior (front, side, back, top)
2	2	Exhaust system
3	3	Fuel tank (and other fuel retention system parts)
4	4	Engine compartment
5	5	Cargo/trunk compartment
6	6	Instrument panel
7	7	Passenger compartment area
8	8	Other location (specify):
	77	Vehicle not inspected
	88	Not a CISS vehicle
9	99	Unknown

Source

Primary source is the vehicle inspection; secondary sources include the interviewee, and police report.

Remarks

This variable identifies the location of fire initiation and should not be confused with the magnitude of the fire. As an example, if the vehicle appeared totally “burned,” passenger compartment area would not necessarily be used unless the fire began in the vehicle’s interior.

For many fires it will be difficult to determine fire origin especially when the entire vehicle was involved. The technician should look for “hot” spots that generally appear lighter in coloration and are often accompanied by warped or melted metal. If several fires occur to the same vehicle, choose the fire that started within this vehicle (i.e., choose an interior fire over an exterior fire), then choose the fire with the greater severity.

Vehicle exterior (front, side, back, top)

Identifies fire source as occurring external to the vehicle. This generally occurs in a multi-vehicle collision where another vehicle initiates the fire and the fire is then introduced to this vehicle.

Exhaust system

Used when components of the exhaust system initiated the fire. Components of the exhaust system include: exhaust pipes, muffler/resonator, and catalytic converter.

Fuel tank (and other fuel retention system parts)

Includes: the fuel tank, fuel supply and vent lines, tank filler neck, and fuel filler cap. Use this attribute when the fuel tank area (defined above) sustains damage such that fuel leaks and is ignited by sparks from contact with the surface of crushing metal components, or is ignited by hot surfaces of the vehicle or object that is involved in producing the damage (e.g., lamp filaments, hot engine components of a striking vehicle).

Do not use this if fuel leakage occurs and is ignited in this vehicle's engine compartment (i.e., use Engine compartment). If fuel leakage occurs in the fuel tank area and spills onto and is ignited by hot exhaust system components, then use Exhaust system.

Engine compartment

Used when the fire initiates in the area (open or enclosed) that houses the engine. Generally, most engine compartments are located at the front end of the vehicle under the hood. However, some engines are mounted midway (referred to as mid-engine) on the chassis, and some are located at the rear of the vehicle.

The reason for fire initiation in these areas is inconsequential (whether fuel or electrical), but the fire's relative location to the engine is the important consideration.

Cargo/trunk compartment

Identifies areas that are separated from the passenger compartment by a solid partition. In passenger automobiles, the partition will generally be formed by the seat back, package shelf, and trunk lid. However, areas designed to accommodate cargo (e.g., the area behind the second seat of a station wagon) are not considered a cargo compartment unless these areas were walled off by a solid partition. Please note: a grate fencing is not considered a solid partition. A solid partition is generally composed of a material that limits air flow between areas.

- Cargo boxes on pickup trucks are generally separated from the occupant compartment by the back wall of the cab and are classified as a cargo compartment. Please note, operable windows in backlights of pickup cabs are considered part of the solid partition, regardless of opening status.
- Light vans will generally not have a separate cargo compartment unless a solid wall was installed.

Instrument panel

Used when the fire originated under the instrument panel. The instrument panel is defined as the panel extending horizontally from A-pillar to A-pillar and vertically from the lower part of the windshield to the lowest vertical edge of the panel.

Passenger Compartment area

Used when the fire initiated within the designated passenger area. This includes cargo areas adjacent to seating areas that were not separated by a solid partition.

Other location

Used when none of the other attributes apply. Included in this attribute are fires occurring with wheels or brakes.

Unknown

Used when the location of where the fire initiated cannot be determined.

- The vehicle was totally destroyed by fire and the origin could not be determined.
- A combination of areas was involved but an estimate of point of origin could not be made.
- A fire was reported, but the vehicle was repaired prior to inspection.

Crush Profile**Profile Number**

Screen Name: Profile #

SAS Data Set:

SAS Variable:

Database Name: *CISS.CISS.CRUSH_PROFILE.IMPACTID*

Element Attributes**Range**

1-as assigned

Source

Vehicle inspection.

Remarks

This field cannot be edited. The Profile Number that is displayed on the Profile subtab is determined by selecting a specific crush profile on the Crush Profile tab/Location subtab.

Event Number**Screen Name:** Event #**SAS Data Set:****SAS Variable:****Database Name:** *CISS.CISS.DAMAGE_LOC.EVENTID***Element Attributes****Range**

1-as selected

Source

Vehicle inspection.

Remarks

The technician chooses from the events that they have previously specified in the case structure for this vehicle.

Note: For each crush profile to be documented on the profile tab a specific location line must first be completed including.

Profile #

Event #

Direct Damage Location

Field L Location

Max Crush

Note: There can be more than one crush profile for each event. It is imperative that the proper plane is measured. Follow the Vehicle Measurement Techniques Guideline (internal unpublished manual).

Category**Screen Name:** Category**SAS Data Set:****SAS Variable:****Database Name:** *CISS.CISS.CRUSH_PROFILE.PLANECAT***Element Attributes**

Database	SAS	
1		Side
2		End
3		Top (specify)
7		Rollover
4		Under (specify)
-99		Unknown
8		Not Applicable

Range**Source**

Vehicle inspection

Remarks

This is the impact plane on which measurements are being taken. This field must be selected in order to enter a crush profile.

A fully repaired vehicle should be coded as Not Applicable°.

CDC Number

Screen Name: CDC #

SAS Data Set:

SAS Variable:

Database Name: *CISS.CRUSH_X_DEFORM.DEFORMID/CRUSHID*

Element Attributes

Generated (# and plane of contact) from documented CDCs

Range

1-5

Source

Vehicle inspection.

Remarks

The element attributes are generated from the CDCs entered on the CDC/Detail Tab (e.g., 1-F Front, 2-L Left Side). Select the CDC number that matches the event/damage for which you are going to document the crush profile. There may be several CDCs that describe a single impact to a vehicle (i.e., chain-link fence penetration impacts).

Location of Max Crush**Screen Name:** Max Crush**SAS Data Set:****SAS Variable:****Database Name:** *CISS.CISS.DAMAGE_LOC.MAXLOC***Element Attributes****Source**

Vehicle inspection

Remarks

This variable is used to reference a retrievable point on the vehicle for CDC, WinSMASH inputs and Direct D on the damaged plane. Locate an end of damage with respect to the post-crash center point of the end plane or, for side impacts, to an undamaged axle. This field is used to assist with CDC assignments. The following examples include the data that are required.

- 10cm right of center point
- 5 cm forward of the rear axle

For rollover crashes, select the rollover max crush location as described in “Vertical Level at Which Crush Measurements Are Taken for a Particular Crush Profile.”

When crush measurements are NOT required, damage information will be limited to: Direct Damage Width, Direct Damage Location, and approximate Max Crush Location/Extent.

Unknown should be entered for crush plane Category, Field L Location, Field L, Field L-D, Smash L, and Direct D.

Width (CDC)**Screen Name:** Direct Damage Width (DDW)**SAS Data Set:****SAS Variable:****Database Name:** *CISS.CISS.DAMAGE_LOC.WIDTHCDC***Element Attributes**

Database	SAS	
		Entered number
-9999	999	Unknown

Range

1-659, 999

Source

Vehicle inspection

Remarks

The direct damage width measured on the vehicle that is used in determining the CDC for this impact/event. The direct contact damage is measured along and parallel to the damaged plane (do not bend the tape).

A CDC width should be obtained for rollover cases. If the CDC begins with 00T, then measure the CDC width laterally with preference given to the greenhouse. If the CDC begins with 00L/R, then measure the CDC width longitudinally.

When crush measurements are NOT required, damage information will be limited to: Direct Damage Width, Direct Damage Location, and approximate Max Crush Location/Extent.

Unknown should be entered for crush plane Category, Field L Location, Field L, Field L-D, Smash L, and Direct D.

Direct Damage Reference Location**Screen Name:** Direct Damage Reference**SAS Data Set:****SAS Variable:****Database Name:****Element Attributes**

Database	SAS	
		Entered number
999	999	Unknown

Range

1-1,000

Source

Vehicle inspection

Remarks

This variable is a measured value used to reference a retrievable point on the vehicle for CDC, WinSMASH inputs and Direct D on the damaged plane. Locate an end of damage with respect to the post-crash center point of the end plane or, for side impacts, when possible, to an undamaged axle.

The following examples show the data that will ultimately populate the Direct Damage Location grid once the reference location value, direct damage location, and direct damage direction variables are coded.

- 10cm right of center point extending right
- 5 cm forward of the rear axle extending forward

Direct Damage Reference Location is not required when Category = Rollover

When crush measurements are NOT required, damage information will be limited to: Direct Damage Width, Direct Damage Location, and approximate Max Crush Location/Extent.

Unknown should be entered for crush plane Category, Field L Location, Field L, Field L-D, Smash L, and Direct D.

Direct Damage Location**Screen Name:** Direct Damage Location**SAS Data Set:****SAS Variable:****Database Name:** *CISS.CISS.DAMAGE_LOC.DDLOC***Element Attributes**

Database	SAS	
1		Forward of Front Axle
2		Rear of Front Axle
3		Forward of Rear Axle
4		Rear of Rear Axle
5		Right of Center Point
6		Left of Center Point
777		Not Measured - Rollover
888		Not Applicable
999		Unknown

Source

Vehicle inspection

Remarks

This variable is used to reference a retrievable point on the vehicle for CDC, WinSMASH inputs and Direct D on the damaged plane. Describe the damage location with respect to the post-crash center point of the end plane or, for side impacts, when possible, to an undamaged axle.

The following examples show the data that will ultimately populate the Direct Damage Location grid once the reference location value, direct damage location, and direct damage direction variables are coded.

- 10cm right of center point extending right
- 5 cm forward of the rear axle extending forward

Direct Damage Location is not required when Category = Rollover, Not Measured – Rollover will prefill.

When crush measurements are NOT required, damage information will be limited to: Direct Damage Width, Direct Damage Location, and approximate Max Crush Location/Extent.

Unknown should be entered for crush plane Category, Field L Location, Field L, Field L-D, Smash L, and Direct D.

Direct Damage Direction**Screen Name:** Direct Damage Direction**SAS Data Set:****SAS Variable:****Database Name:****Element Attributes**

Database	SAS	
1		Extending Forward
2		Extending Rearward
3		Extending Right
4		Extending Left
777		Not Measured - Rollover
888		Not Applicable
999		Unknown

Source

Vehicle inspection

Remarks

This variable is used to reference a retrievable point on the vehicle for CDC, WinSMASH inputs and Direct D on the damaged plane. Describe the damage direction with respect to the post-crash center point of the end plane or, for side impacts, when possible, to an undamaged axle.

The following examples show the data that will ultimately populate the Direct Damage Location grid once the reference location value, direct damage location, and direct damage direction variables are coded.

- 10cm right of center point extending right
- 5 cm forward of the rear axle extending forward

Direct Damage Direction is not required when Category = Rollover, Not Measured – Rollover will prefill.

When crush measurements are NOT required, damage information will be limited to: Direct Damage Width, Direct Damage Location, and approximate Max Crush Location/Extent.

Unknown should be entered for crush plane Category, Field L Location, Field L, Field L-D, Smash L, and Direct D.

Direct +/- D**Screen Name:** Direct +/- D**SAS Data Set:****SAS Variable:****Database Name:** *CISS.CISS.DAMAGE_LOC.SMASHD***Element Attributes**

Entered number

Range

-390 299, 997, 999, -9999

Source

Vehicle inspection

Remarks

This is the Direct +/- D that will be used for the WinSMASH program. It is the measurement from the damaged center of the end plane or damaged wheelbase to the center of the direct damage. Indicate whether "D" is a positive or negative value.

When crush measurements are NOT required, damage information will be limited to: Direct Damage Width, Direct Damage Location, and approximate Max Crush Location/Extent.

Unknown should be entered for crush plane Category, Field L Location, Field L, Field L-D, Smash L, and Direct D.

Field L**Screen Name:** Field L**SAS Data Set:****SAS Variable:****Database Name:** *CISS.CISS.DAMAGE_LOC.FIELDL***Element Attributes**

Database	SAS	
		Entered number
-9999	999	Unknown

Range

1-1,000

Source

Vehicle inspection

Remarks

Enter the Field L used during the vehicle inspection to measure the crush profile. The Field L represents both direct and induced damage as measured parallel to the damaged plane. This measurement is used to locate the position of the C-measurements. It should be noted that for side plane impacts, where minor contact damage such as surface scratches outside of the deflection points are ignored when identifying the damage yoke; however, surface scratches from the same impact are included when determining the direct damage for CDC.

When crush measurements are NOT required, damage information will be limited to: Direct Damage Width, Direct Damage Location, and approximate Max Crush Location/Extent.

Unknown should be entered for crush plane Category, Field L Location, Field L, Field L-D, Smash L, and Direct D.

Field L Reference Location**Screen Name:** Field L Reference**SAS Data Set:****SAS Variable:****Database Name:****Element Attributes**

Database	SAS	
		Entered number
999	999	Unknown

Range

1-1,000

Source

Vehicle inspection

Remarks

This variable is a measured value used to reference a retrievable point on the vehicle for CDC, WinSMASH inputs and Direct D on the damaged plane. Locate an end of damage with respect to the post-crash center point of the end plane or, for side impacts, when possible, to an undamaged axle.

The following examples show the data that will ultimately populate the Field L Location grid once the reference location value, field L location, and field L damage direction variables are coded.

- 10cm right of center point extending right
- 5 cm forward of the rear axle extending forward

Field L Reference Location is not required when Category = Rollover

When crush measurements are NOT required, damage information will be limited to: Direct Damage Width, Direct Damage Location, and approximate Max Crush Location/Extent.

Unknown should be entered for crush plane Category, Field L Location, Field L, Field L-D, Smash L, and Direct D.

Location of Field L**Screen Name:** Field L Location**SAS Data Set:****SAS Variable:****Database Name:** *CISS.CISS.DAMAGE_LOC.FIELDLLOC***Element Attributes**

Database	SAS	
1		Forward of Front Axle
2		Rear of Front Axle
3		Forward of Rear Axle
4		Rear of Rear Axle
5		Right of Center Point
6		Left of Center Point
777		Not Measured - Rollover
888		Not Applicable
999		Unknown

Source

Vehicle inspection

Range**Remarks**

This variable is used to reference a retrievable point on the vehicle for CDC, WinSMASH inputs and Direct D on the damaged plane. Locate an end of damage with respect to the post-crash center point of the end plane or, for side impacts, to an undamaged axle.

The following examples show the data that will ultimately populate the Field L Location grid once the reference location value, field L location, and field L damage direction variables are coded.

- 10cm right of center point extending right
- 5 cm forward of the rear axle extending forward

Field L Location is not required when Category = Rollover, Not Measured – Rollover will prefill.

When crush measurements are NOT required, damage information will be limited to: Direct Damage Width, Direct Damage Location, and approximate Max Crush Location/Extent.

Unknown should be entered for crush plane Category, Field L Location, Field L, Field L-D, Smash L, and Direct D.

Field L Damage Direction**Screen Name:** Field L Damage Direction**SAS Data Set:****SAS Variable:****Database Name:****Element Attributes**

Database	SAS	
1		Extending Forward
2		Extending Rearward
3		Extending Right
4		Extending Left
777		Not Measured - Rollover
888		Not Applicable
999		Unknown

Source

Vehicle inspection

Remarks

This variable is used to reference a retrievable point on the vehicle for CDC, WinSMASH inputs and Direct D on the damaged plane. Describe the damage direction with respect to the post-crash center point of the end plane or, for side impacts, when possible, to an undamaged axle.

The following examples show the data that will ultimately populate the Field L Location grid once the reference location value, field L location, and field L damage direction variables are coded.

- 10cm right of center point extending right
- 5 cm forward of the rear axle extending forward

Field L Damage Direction is not required when Category = Rollover, Not Measured – Rollover will prefill.

When crush measurements are NOT required, damage information will be limited to: Direct Damage Width, Direct Damage Location, and approximate Max Crush Location/Extent.

Unknown should be entered for crush plane Category, Field L Location, Field L, Field L-D, Smash L, and Direct D.

Field L +/- D**Screen Name:** Field L +/- D**SAS Data Set:****SAS Variable:****Database Name:** *CISS.CISS.DAMAGE_LOC.FIELD***DD****Element Attributes**

Database	SAS	
		Entered number
-9999	999	Unknown

Range

-500 500, 997, 999

Source

Vehicle inspection

Remarks

This is the Field L +/- D that will be used for the WinSMASH program. It is the measurement from the center of the damaged end plane or wheelbase to the center of the Field L. Indicate whether "D" is a positive or negative value.

Field L-D will always be zero on end plane impacts.

When crush measurements are NOT required, damage information will be limited to: Direct Damage Width, Direct Damage Location, and approximate Max Crush Location/Extent.

Unknown should be entered for crush plane Category, Field L Location, Field L, Field L-D, Smash L, and Direct D.

WinSMASH L**Screen Name:** SMASH L**SAS Data Set:****SAS Variable:****Database Name:** *CISS.CISS.DAMAGE_LOC.SMASHL***Element Attributes**

Database	SAS	
		Entered number
-9999	999	Unknown

Range

1-1,000

Source

Vehicle inspection

Remarks

The WinSMASH L is the “L” that will be used for the WinSMASH program. This equals the **Field L** for all side impacts. Use the **Undeformed End Width** for all end impacts.

When crush measurements are NOT required, damage information will be limited to: Direct Damage Width, Direct Damage Location, and approximate Max Crush Location/Extent.

Unknown should be entered for crush plane Category, Field L Location, Field L, Field L-D, Smash L, and Direct D.

Vertical Level at Which Crush Measurements Are Taken for a Particular Crush Profile

Screen Name: Plane of Impact

SAS Data Set:

SAS Variable:

Database Name: *CISS.CISS.CRUSH_PROFILE.PLANE*

Element Attributes

End Plane

Database	SAS	
21		(+) Bumper
22		(+) Above Bumper
23		(-) Free Space Contour
23		(-) Free Space EAD
24		(+) Stand Adjustment
25		(-) Stand Adjustment

Side

Database	SAS	
1		(+) Sill
2		(+) Mid Door
3		(+) Upper Door
4		(+) Lower Door
5		(-) Free Space Contour
6		(+) Stand Adjustment
7		(-) Stand Adjustment

Top

Database	SAS	
30		(+) Top

Under

Database	SAS	
32		(+) Under

Rollover (Vertical)

Database	SAS	
87		Unknown
70		Right A-pillar
71		Left A-pillar
72		Right B-pillar
73		Left B-pillar
74		Right C-pillar
75		Left C-pillar
76		Right D-pillar
77		Left D-pillar
78		Left windshield header
79		Right windshield header
80		Left back light header
81		Right back light header
82		Right roof
83		Left roof
85		Right side
84		Left side
86		Other (specify)

Rollover (Lateral)

Database	SAS	
60		Unknown
40		Right A-pillar
41		Left A-pillar
42		Right B-pillar
43		Left B-pillar
44		Right C-pillar
45		Left C-pillar
46		Right D-pillar
47		Left D-pillar
48		Left windshield header
49		Right windshield header
50		Left back light header
51		Right back light header
56		Right roof
54		Left roof

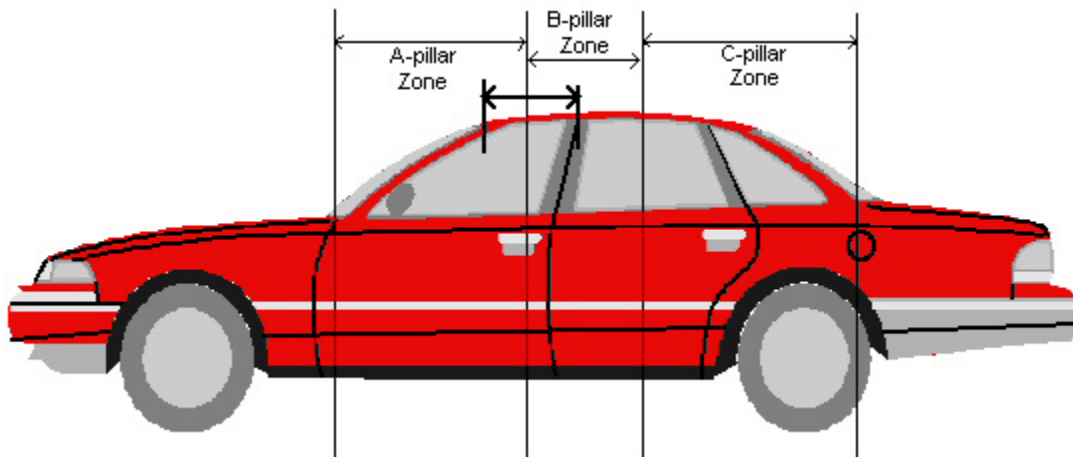
Database	SAS	
58		Right side
57		Left side
59		Other (specify)

Source

Vehicle inspection

Remarks

On the first line select the vertical level at which the crush profile is measured (i.e., bumper, above bumper, sill, mid-door, etc.). Use Edit/Insert at the top of the screen to insert another line. On the next line select an operator (Free-space and/or Stand Adjustment) to adjust the measurements. The values are entered at the Max and C1 through C6 positions. Then insert another line and select Result for the computer to generate the actual crush. After the results are generated, if changes are made to Cs or freespace, select result again to re-generate the new results. If more than one vertical level is measured for averaging (i.e., bumper and above bumper), then insert another line and select the second vertical level and follow the same procedures as above. After you get your second result, the computer will generate the average at the bottom of the screen.

Selection criteria for rollover (top) or (side)Side plane **measurement** protocol:*Figure 61. Side plane measurement protocol*

A-pillar zone starts at the base of the A-pillar and extends to half of the width between the windshield top frame point and the mid-point of the B-pillar.

B-pillar zone starts where the A-pillar zone ends and extends to the half of the width between the mid-point of the B pillar and the mid-point of the C-pillar or where the B-pillar ends.

C-pillar zone starts where B-pillar zone ends and extends to the half of the width between the mid-point of the C-pillar and the mid-point of the D-pillar or where the C-pillar ends.

D-pillar zone starts where C-pillar zone ends and extends to the half of the width between the mid-point of the D-pillar and the mid-point of the E-pillar or where the D-pillar ends.

Top plane measurement protocol:

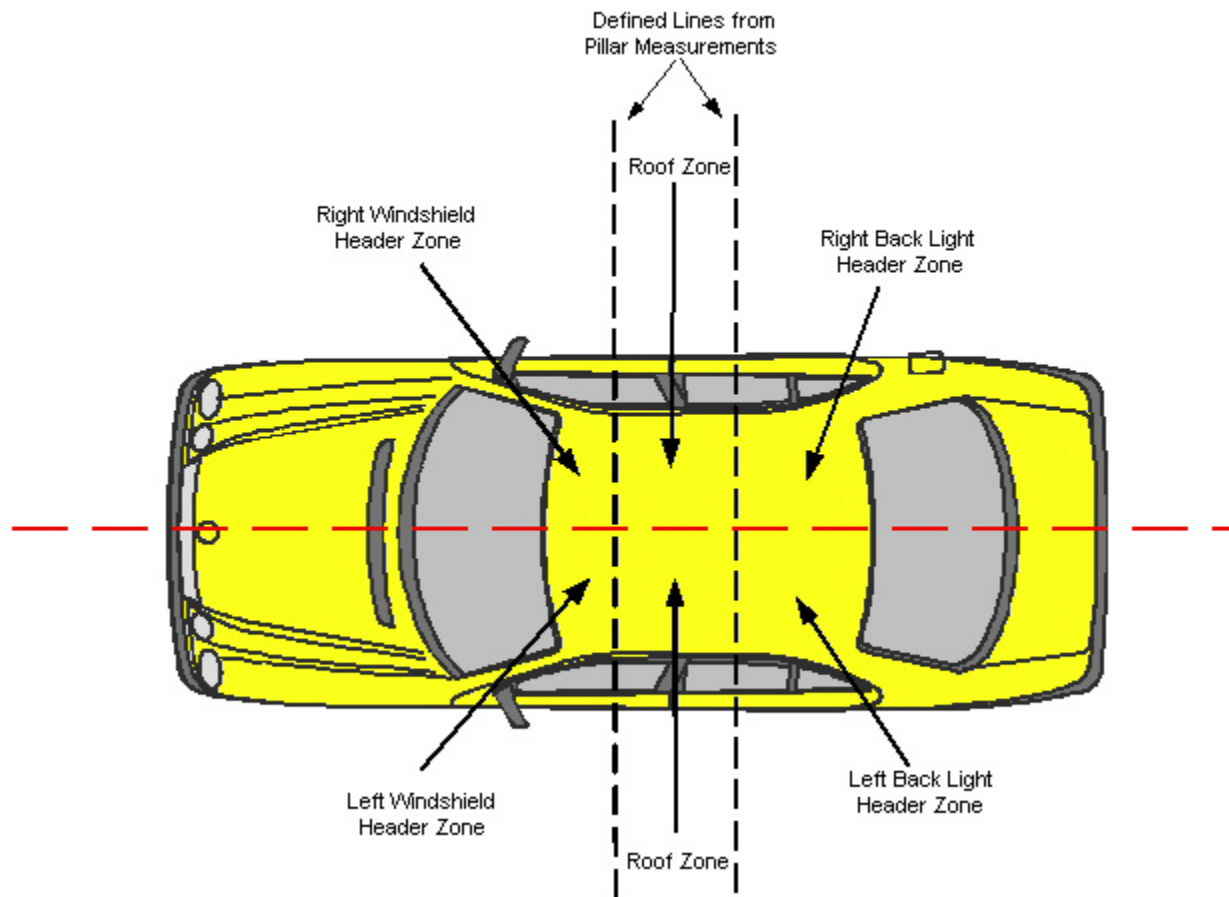


Figure 62. Top plane measurement protocol

The defined zones created in the Side Plane measurement protocol should be extended onto the Top Plane. This allows for the Top Plane to be zoned as the above illustration depicts. The Roof Zone is the entire area from Windshield Header Zone to the Back Light Header Zone.

Crush caused by contact with an object during the rollover is measured at the component with the maximum amount of crush. This is considered for obtaining the maximum crush for the greenhouse area of the vehicle.

Reference Document for Rollover Crashes

Rollover Crush Zones:

A-pillar zone starts at the base of the A-pillar and extends to half of the width between the windshield top frame point and the mid-point of the B-pillar.

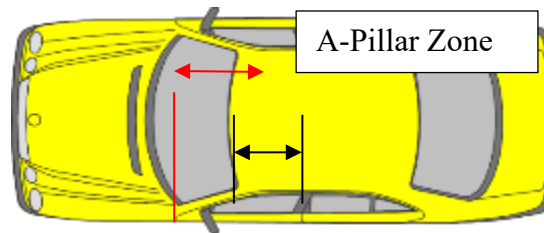


Figure 63. A-Pillar zone

B-pillar zone starts where the A-pillar zone ends and extends to the half of the width between the mid-point of the B pillar and the mid-point of the C-pillar or where the B-pillar ends.

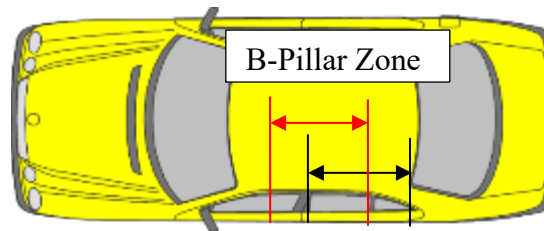


Figure 64. B-Pillar zone

C-pillar zone starts where B-pillar zone ends and extends to the half of the width between the mid-point of the C-pillar and the mid-point of the D-pillar or where the C-pillar ends.

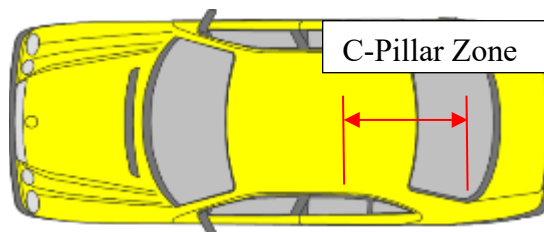


Figure 65. C-Pillar zone

D-pillar zone starts where C-pillar zone ends and extends to the half of the width between the mid-point of the D-pillar and the mid-point of the E-pillar or where the D-pillar ends.

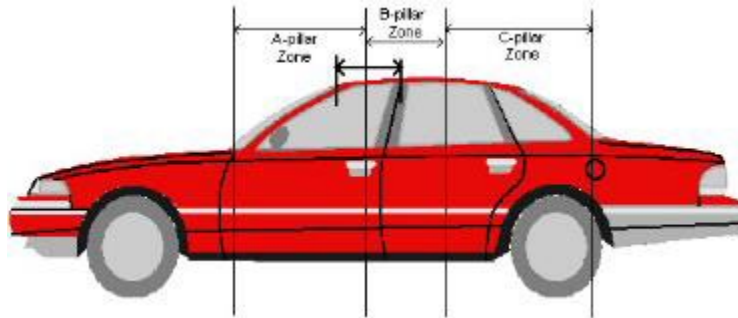


Figure 66. D-Pillar zone

The defined zones created in the Side Plane measurement protocol should be extended onto the Top Plane. This allows for the Top Plane to be zoned as the above illustration depicts. The Roof Zone is the entire area from Windshield header Zone to the Back Light Header Zone.

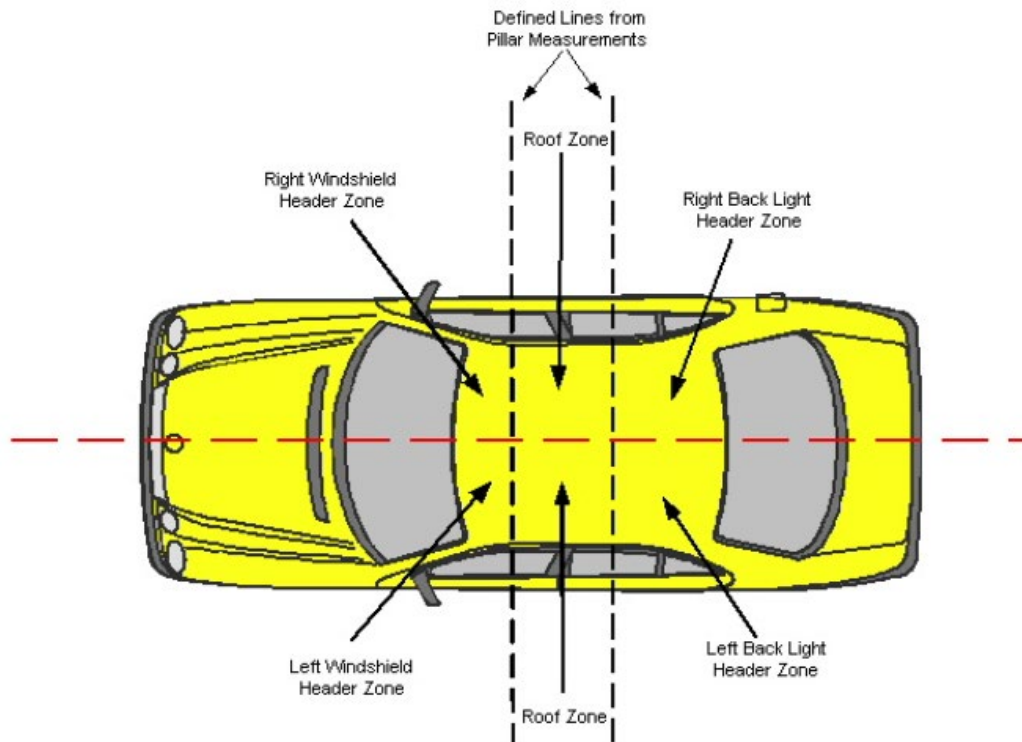
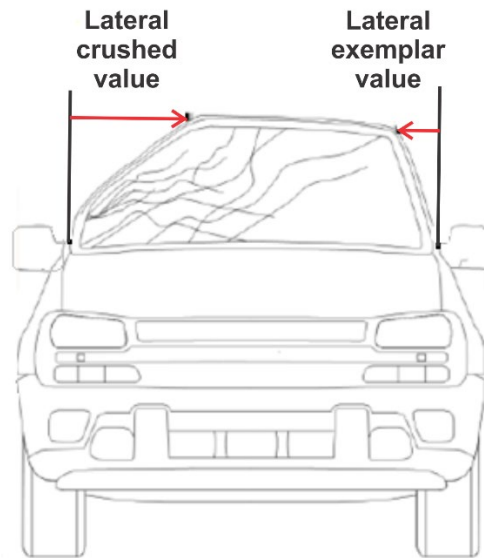


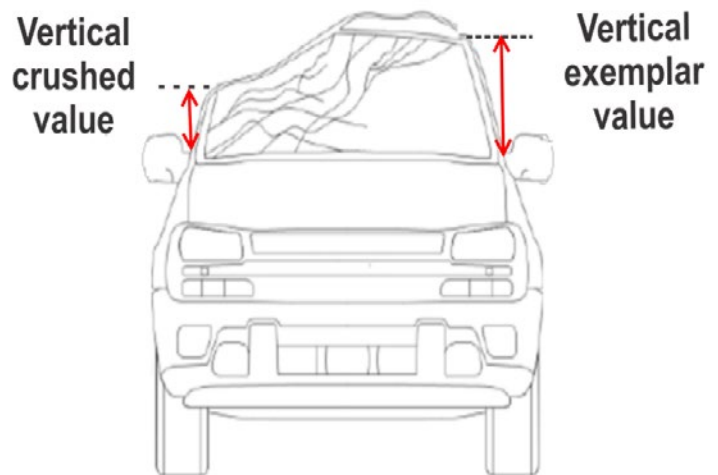
Figure 67. Defined zones on the top plane

Using tape measures or pocket rods, measure the maximum lateral crush from a fixed location on the vehicle such as the base of the side window to the **most** displaced component (i.e., roof side rail, A-pillar, etc.). To obtain a comparison (exemplar) value, measure the undamaged side of the vehicle or an exemplar from the same location. The difference of the two values is the resultant maximum lateral crush.



Measurement of lateral max crush

Using tape measures or pocket rods, measure the maximum vertical crush from a fixed location on the vehicle such as the base of the side window, base of the windshield, or base of the backlight. To obtain a comparison (exemplar) value, measure the undamaged side of the vehicle or an exemplar from the same location. The difference of the two values is the resultant maximum vertical crush.



Measurement of vertical max crush

EV Form***Crush Tab/Location***

Rollovers require two crush profiles. Complete a location line for each plane, a top plane and a side plane. Rollover crush should be confined to the green house. In this situation there will be two profiles for the same event number.

Direct Damage Location:

Rollover damage should be described as area of primary contact, (i.e., right roof rail or left side roof rail to center of roof.)

Location of Field L:

A Field L is not measured for rollovers, in the text field “not measured rollover” should be entered.

Location of Max Crush:

Should be described as retrievable point on the damaged plane.

Crush Tab/Profile

Field L: Unknown

WinSMASH L: Unknown

Field L +/- D: Unknown

Direct +/- D: Unknown

Width CDC: Should be obtained

Category:

Rollover Side: For **Lateral** Crush Measurement

Plane of Impact: Select from Below

Right A-pillar

Left A-pillar

Right B-pillar

Left B-pillar

Right C-pillar

Left C-pillar

Right D-pillar

Left D-pillar

Unknown

Other

Rollover Top: For **Vertical** Crush Measurement

Plane of Impact: Select from Below

Right windshield header

Left windshield header

Right roof

Left roof

Right back light header

Left back light header

Right side

Left side

Unknown

Other

Crush Measurement Grid:

Only use Max Crush

Must have a **Result Line**

Maximum Crush for This Vertical Level of Crush Measurements for This Crush ProfileScreen Name: **Max**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.CRUSH_PROFILE.MAXC****Element Attributes**

Database	SAS	
		Entered number
	997	Not applicable
-9999	999	Unknown

Range

Blank, 0-250, 997, 999

Source

Vehicle inspection

Remarks

This is the maximum crush measured at the vehicle for the profile being documented. Maximum crush is determined after free space is subtracted and/or stand adjustment is added (+) or subtracted (minus) if appropriate.

If the Max crush falls at a C location, the values at that C location must also be entered here, along with any freespace or stand adjustments.

When averaging techniques are used, Max crush is NOT averaged.

Rollover crashes

This is the maximum crush measured at the component selected in Plane of Impact. A different measurement area can be selected for the Vertical and Lateral measurements.

C1, C2, C3, C4, C5, C6

Screen Name: C1, C2, C3, C4, C5, C6
 SAS Data Set:
 SAS Variable:
 Database Name: CISS.CISS.CRUSH_PROFILE.C1
 CISS.CISS.CRUSH_PROFILE.C2
 CISS.CISS.CRUSH_PROFILE.C3
 CISS.CISS.CRUSH_PROFILE.C4
 CISS.CISS.CRUSH_PROFILE.C5
 CISS.CISS.CRUSH_PROFILE.C6

Element Attributes

Database	SAS	
		Entered number
	997	Not applicable
-9999	999	Unknown

Range

Blank, 0-250, 997, 999

Source

Vehicle inspection

Remarks

The damage measurements associated with a specific impact/CDC are entered regardless of the use of a reconstruction program. Record the C-values for each impact to the nearest centimeter.

Record two, four, or six C-measurements (as appropriate) on the line for the crush profile being documented. On the line beneath, annotate the free space to be subtracted and/or stand adjustment. If only 2 or 4 C-values are obtained select N/A for the remaining C-values.

Rollover Documentation

Crush Rollover documentation records the maximum crush laterally and vertically. The maximum crush zones are identified differently for the lateral and vertical measurement. The lateral max crush and the vertical max crush can be located at different areas of the vehicle greenhouse. The maximum crush zone must be in the greenhouse area of the vehicle.

CDC/Summary/Detail**Event Number**

Screen Name: **Event No.**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS.DEFORM.EVENTID**

Element Attributes

Entered number

Range

1-20

Source

Vehicle inspection

Remarks

Once the CDC/Detail tab is selected the technician must select “Add CDC” from the Main Menu at the top of the screen to activate the tab. This will automatically insert 1 of 1 for the CDC #.

The technician chooses from the events that they have previously specified in the case structure for this vehicle.

Deformation Number

Screen Name: N/A
SAS Data Set:
SAS Variable:
Database Name:

Element Attributes

1 - 5

Range

1-5

Source

Vehicle inspection

Remarks

Certain impacts to a vehicle require more than one CDC to describe the damage.

One example are impacts with an object such as a fence or cable barrier guardrail where there is continuous contact with the object as it contacts several planes of the vehicle. The fence or the cable barrier guardrail initially contacts the front of the vehicle, then as the vehicle proceeds into the fence or cable barrier guardrail, it contacts the vehicle sides and the top of the vehicle. There will be a separate CDC entered for each of these planes.

The other situation involves an impact where the vehicle initially contacts another vehicle with its front then rotates and causes a slap to the side of the vehicle. This would require a different CDC to two different planes.

General Area of DamageScreen Name: **GAD**

SAS Data Set:

SAS Variable:

Database Name:

Element Attributes**Range****Source**

Roll-up from Case Form/Events

Remarks

The technician CANNOT enter information in this field. It is entered on the Case Form/Events tab, and rolls-up to this screen.

Object Contacted Category and ObjectScreen Name: **Object Contacted Category and Object**

SAS Data Set:

SAS Variable:

Database Name:

Element Attributes

Database	SAS	
01-30	01-30	Vehicle Number

Noncollision

Database	SAS	
31	31	Overturn - rollover (excludes end-over-end)
32	32	Rollover - end-over-end
33	33	Fire or explosion
34	34	Jackknife
35	35	Other intra-unit damage (specify):
36	36	Noncollision injury
38	38	Other noncollision (specify):
39	39	Noncollision — details unknown

Collision With Fixed Object

Database	SAS	
41	41	Tree (≤ 10 cm in diameter)
42	42	Tree (> 10 cm in diameter)
43	43	Shrubbery or bush
44	44	Embankment
45	45	Breakaway pole or post (any diameter)
50	50	Non-breakaway pole or post (≤ 10 cm in diameter)
51	51	Non-breakaway pole or post (> 10 cm but ≤ 30 cm in diameter)
52	52	Non-breakaway pole or post (> 30 cm in diameter)
53	53	Non-breakaway pole or post (diameter unknown)
54	54	Concrete traffic barrier
55	55	Impact attenuator
56	56	Other traffic barrier (specify):
57	57	Fence
58	58	Wall
59	59	Building

Database	SAS	
60	60	Ditch or culvert
61	61	Ground
62	62	Fire hydrant
63	63	Curb
64	64	Bridge
68	68	Other fixed object (specify):
69	69	Unknown fixed object
		Cable barrier guardrail
48	48	Guardrail face
49	49	Guardrail end

Collision with Non-fixed Object

Database	SAS	
72	72	Pedestrian
73	73	Cyclist or cycle
74	74	Other nonmotorist or
		Or conveyance (specify):
75	75	Vehicle occupant
76	76	Animal
102	77	Railway vehicle
78	78	Trailer, disconnected in-transport
79	79	Object fell from vehicle in-transport
88	88	Other non-fixed object (specify):
89	89	Unknown non-fixed object

Other event (specify)

Database	SAS	
98	98	Other event (specify):

Unknown event or object

Database	SAS	
99	99	Unknown event or object

Source

Technician-determined: primary sources are the scene and vehicle inspections; secondary sources include the police report and interviewees.

Remarks

Once the Event Number is selected the Object Contacted Category and Object will roll-up to these fields from the Case Form/Events Tab. If the event is not listed or incorrect, it must be entered on the Case Form/Events Tab.

See **Case Form/Events** for details on coding attributes.

Direction of Force

Screen Name: **Force Direction**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS.DEFORM.DOF**

Element Attributes

Database	SAS	
		Used number (to nearest 10 deg)
-8888	998	Non horizontal force
-9999	999	Unknown

Range

0 – 350, 998, 999

Source

Restricted to vehicle inspection, photographs, or EDR/PDOF calculator.

Remarks**0-350**

An estimated CDC is indicated for each impact. In this estimate, select the principal direction of force in positive increments of 10°. Thus, if the direction appeared to be approximately 10° to the right of straight-ahead, indicate “10.” If the direction of force appeared to be 10° left of straight-ahead, indicate “350.” The final coding of the CDC reflects the direction of force in clock positions.

Non-horizontal Force

This classification should be used whenever the resultant force direction is more than 15° above or below the horizontal plane. Impacts occurring while the vehicle is inverted are included here. In addition, use this selection in any other circumstance that is consistent with the directions contained in SAE J224_202205.

Unknown

Select this when the force direction cannot be determined via vehicle inspection or images/photographs.

End Shift

Screen Name:

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.DEFORM.ENDSHIFT****Element Attributes**

Yes

No

Unknown

Source

Vehicle inspection

Remarks**YES:** used when end, side or greenhouse shifting has occurred.**NO:** used when no shifting has occurred.

Unknown: used when shifting cannot be determined due to an incomplete vehicle inspection. If no measurements were obtained, but sufficient images or technician observation was present, yes or no can and should be coded.

Endshift is defined in SAE J224_202205. It is further refined in Vehicle Measurement Techniques in appendix B (internal unpublished manual). This variable should be coded according to those resources, but in short:

- End plane impacts are considered shifted if the end shifted by 10 cm or more. For lateral shift, both frame rails must be shifted, and in the same direction. For vertical shift, only one frame rail need be shifted.
- Side plane impacts are considered shifted If the vehicle is bowed in such a way that the damaged centerline of the vehicle is shifted 10 cm or more on either end of the vehicle.
- Greenhouse shifting also occurs, usually in rollovers. If the entire roof is shifted sideways, enough so that it is visually evident that shifting has occurred, generally about 2-3 cm, we consider it shifted. Be careful to differentiate between vertical crush pulling both roof rails inward verses actual shifting.

Clock

Screen Name: **Clock**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS.DEFORM.CLOCK**

Element Attributes

00	Non horizontal force
1 – 12	Direction of clock force
99	Unknown

Source

Restricted to vehicle inspection or photographs.

Remarks

The clock direction is a calculation from the **Direction of Force** previously entered.

Override/Underride (This Vehicle)Screen Name: **Over/Underride**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.DEFORM.OVERUNDER****Element Attributes**

Database	SAS	
	1	None
	2	Override
	3	Underride
	4	Medium/heavy truck or bus override
	9	Unknown

Source

Vehicle inspection (with exceptions as noted)

Remarks**None**

Used when both vehicles are inspected and there is no override/underride, or not an end-to-end impact between two CISS vehicles; or no medium/heavy truck or bus override.

Override

Used when 2 CISS-applicable vehicles are involved in an end-to-end impact, and this vehicle overrides the other vehicle

Underride

Used when 2 CISS-applicable vehicles impact (end-to-end), and this vehicle underrides the other vehicle.

Medium/heavy truck or bus override

Used when a CISS-applicable vehicle's end strikes the end or side of a medium/heavy truck or bus and this CISS vehicle's end (front or back) *underrides* the medium/heavy truck or bus.

Unknown

It cannot be determined if an override/underride occurred, or the impact configuration for two CISS-applicable vehicles cannot be determined.

Override/Underride is coded from the perspective of vehicle impact configuration and is ***not*** based on coding in columns 5 and/or 6 of the CDC, or vehicle measurement techniques (i.e., the "13-cm" rule for WinSMASH purposes). It is only relevant for end-to-end impacts between two

CISS-applicable vehicles, or any impact between a CISS-applicable vehicle's end (front or back) and the end or side of a Medium/heavy truck or bus.

This variable is intended to capture those instances where there is an uneven damage pattern caused by uneven amounts of crush at different vertical levels of the front and/or rear planes of the vehicle. Because of the different crush stiffness' involved in these locations, these variables are included to alert the vehicle safety analysts to uneven crush patterns in front and rear impacts, which are not identified in the CDC (i.e., columns 5 and/or 6).

For this variable an impact with a not-in-transport vehicle (either CISS applicable or a medium/heavy truck) is considered a vehicle-to-vehicle impact and not a vehicle-to-object impact.

The term "override" means a vehicle overrode (i.e., goes on top of) the bumper (front or rear) of the other vehicle (except for trucks/buses where the impact configuration does not matter.) The term "underride" means a vehicle underrode (i.e., goes below) the bumper (front or rear) of the other vehicle (except for trucks/buses where the impact configuration does not matter.)

If a vehicle is not equipped with a bumper (e.g., rear of some pickup trucks), then consider the equivalent end structure for coding these variables.

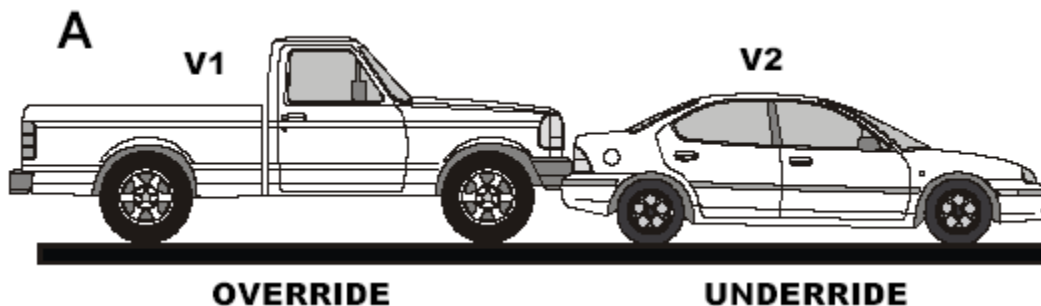


Figure 68. Situation A

As indicated in **Situation A**, the trunk area of V2 is damaged (i.e., "crushed") while the rear bumper is relatively undisturbed. This explains the uneven damage pattern. Conversely, the front of V1 is "crushed" at bumper height only, or is crushed *uniformly* at the bumper and grille levels (i.e., an "even" damage pattern). Even though V1 may not exhibit the uneven damage pattern, it would still receive an applicable override code due to the resultant underride damage to V2.

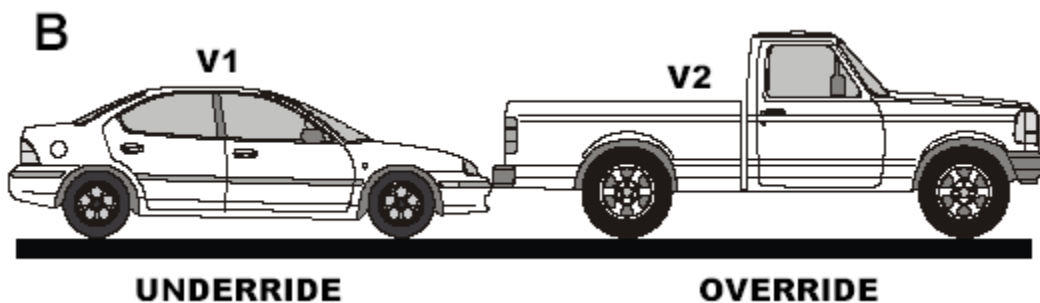


Figure 69. Situation B

When the bumper receives measurable crush and the area above the bumper also receives measurable crush, the override/underride codes are applicable if the impact configuration applies.

For example, (**Situation B**) the front bumper (V1) may be crushed 2” rearward and the grille area may be crushed 6” rearward. While the averaging technique rule for WINSMASH does not apply for the different levels of crush, the impact may in fact meet the configuration rule for the override/underride variables.

Heading Angle

Screen Name: **Heading Angle**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.VEH_CRASH.HEADANGLE**

Element Attributes

Database	SAS	
	000-355	Code actual value
	888	Not a CISS vehicle
	996	Non-horizontal impact
	997	Noncollision
	998	Impact with object
-9999	999	Unknown

Source

Scene diagram

Remarks

Heading Angle records the heading angle for this vehicle for the below described circumstances:

- Vehicle to vehicle impacts only.
- Vehicle must have a Winsmash run.
- The heading angle is to be coded for the highest calculated delta V for this vehicle.

Use the scene diagram referencing system to determine the heading angles at the point of impact for **this vehicle and for and this CDC only**. All measurements are referenced to the north arrow on the diagram. The heading angle of each vehicle is determined by projecting the longitudinal axis of the vehicle through the extension of the north arrow. The angle value is obtained by using a 360° protractor and measuring in a clockwise direction from the north arrow, in 5° increments. The north arrow always represents 0°. The angle is a positive value.

Deformation Location

Screen Name: **Deformation Location**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.DEFORM.DEFLOC**

Element Attributes

Database	SAS	
F	F	Front
R	R	Right side
L	L	Left side
B	B	Back (rear)
T	T	Top
U	U	Undercarriage
9	9	Unknown

Source

Restricted to vehicle inspection or photographs.

Remarks

Often, the deformation location is clearly contained on a particular plane. However, when the damage is contained over several planes, apply the following guidance from the Appendix of the SAE J224_202205.

Angled Horizontal Impacts (corner impact): Angled impacts initially involving the corner area and then extending into the front and side or rear and side area are difficult to classify. These impacts should be classified “F,” “B,” “L,” or “R” in accordance with the following guidelines (listed in **order of descending priority**):

1. If the projected area of initial contact can be determined, use the appropriate character.
2. If the projected area of initial contact cannot be determined, use the direction of principal force to determine the appropriate character. If the direction of force is less than 45 deg from the 12 o'clock or 6 o'clock directions, use “F” or “B.” If the direction of force is greater than 45°, use “L” or “R.”
3. If the direction of force cannot be determined with sufficient accuracy, use the projected area of greatest contact to determine the appropriate character. If the length of contact across the front or rear of the vehicle exceeds the length of contact along the side, use “F” or “B,” respectively. Use “L” or “R” if the length of contact along the side is greater.

Rollover Configurations: Similar consideration should be given to top versus side deformation in a rollover sequence. In the latter circumstance, however, principal emphasis is given to the projected area of primary contact (that is, area of greatest overall deformation) rather than initial contact.

Also, damage to the greenhouse area (“P” in Column 4) is given priority over other vehicle areas such as “F” and “B.” Contact damage is classified in accordance with the following guidelines (listed in **order of descending priority**):

1. If the projected area of primary contact can be determined, use the appropriate character.
2. If the projected area of primary contact cannot be determined, use the angle of force in the vertical plane (above or below the horizontal clock face) to determine the appropriate character. If the direction of force is less than 45° from the vertical axis, use “T.” If the direction of force is greater than 45° from the vertical axis, use “L” or “R.”
3. If the direction of force cannot be determined with sufficient accuracy, use the projected area of greatest contact to determine the appropriate character. If the deformation area on the left or right side exceeds the deformation area on the top, use “L” or “R,” respectively. Use “T” if the deformation area is greater on the top.

Specific Longitudinal or Lateral LocationScreen Name: **Long/Lateral**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.DEFORM.LONGLATLOC****Element Attributes**

Front, Rear

Database	SAS	
9	D	Distributed-side or end
10	L	Left-front or rear
11	C	Center-front or rear
12	R	Right-front or rear
13	F	Side front-left or right
14	P	Side center section - L or R
15	B	Side rear - left or right
16	Y	Side (F + P) or end (L + C)
17	Z	Side (P + B) or end (C + R)
59	9	Unknown

Top or Undercarriage/Side Impact

Database	SAS	
18	D	Distributed (F+P+B)/side or end
19	F	Front section
20	P	Center section
21	B	Rear section
22	Y	F+P
23	Z	P+B
	F	Side front — left or right
	P	Side center section — L or R
	B	Side rear — left or right
24	9	Unknown
	L	Left — front or rear
	C	Center — front or rear
	R	Right- — front or rear

Source

Restricted to vehicle inspection or photographs.

Remarks

Refer to the documents entitled: SAE J224_202205 for detailed definitions of the Element Attributes as well as instruction on proper usage.

For the purpose of determining the “P” zone of a minivan or an SUV, treat them as a station wagon. The “P” zone of a station wagon is defined as from the base of the windshield to the rear of the second seat.

Specific Vertical or Lateral LocationScreen Name: **Vertical/Lateral**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.DEFORM.VERTLATLOC****Element Attributes**

CDC (Vertical - Front, Rear, or Side Impacts)

Database	SAS	
25	A	All
26	H	Top of frame to top
27	E	Everything below belt line
28	G	Belt line and above
29	M	Middle — top of frame to belt line or hood
30	L	Frame — top of frame, frame, bottom of frame (including undercarriage)
31	W	Below undercarriage level (wheels and tires only)
32	9	Unknown

CDC (Lateral - Top and Undercarriage Impacts)

Database	SAS	
33	D	Distributed
34	L	Left
35	C	Center
36	R	Right
37	Y	Left and center (L + C)
38	Z	Right and center (R + C)
39	9	Unknown

Source

Restricted to vehicle inspection or photographs.

Remarks

Refer to the document entitled: SAE J224_202205 for detailed definitions of the Element Attributes as well as instruction on proper usage.

Type of Damage Distribution

Screen Name: **Distribution**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.DEFORM.DISTRIB**

Element Attributes

Database	SAS	
40	W	Wide impact area
41	N	Narrow impact area
42	S	Sideswipe
43	O	Rollover (includes side)
44	A	Overhanging structure
45	E	Corner
46	K	Conversion impact type
47	U	No residual deformation
48	9	Unknown

Source

Restricted to vehicle inspection or photographs.

Remarks

Refer to the documents entitled: SAE J224_202205 for detailed definitions of the Element Attributes as well as instruction on proper usage.

Note: When recording a “K” conversion impact type enter the first half of the “K” conversion in one CDC and enter the second half of the “K” conversion in the next CDC.

Deformation Extent GuideScreen Name: **Extent**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.DEFORM.EXTENT****Element Attributes**

Database	SAS	
49	1	One
50	2	Two
51	3	Three
52	4	Four
53	5	Five
54	6	Six
55	7	Seven
56	8	Eight
57	9	Nine
58	99	Unknown

Source

Restricted to vehicle inspection or photographs.

Remarks

Extent zone is based on direct damage only. When two crush profiles are averaged, use the largest maximum **resultant** crush for your extent zone (i.e., do not average the maximum crush).

Refer to the documents entitled: SAE J224_202205 for detailed definitions of the Element Attributes as well as instruction on proper usage.

CDC- Summary

Screen Name:

SAS Data Set:

SAS Variable:

Database Name:

Element Attributes

Source

Remarks

Auto generated as previous CDC variable are entered.

Side Impact

Direct Damage to Pillar

Screen Name: **Direct Damage to Pillar**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.CDC_PILLAR.PILLARID**

Element Attributes

Database	SAS	
1		A-pillar
2		B-pillar
3		C-pillar
4		Other (specify)
-9999		Unknown
-9998		None
-8887		Not applicable

Source

Vehicle inspection

Remarks

Select all that apply.

This variable applies to the following crash configurations:

- Vehicle to vehicle
- Frontal plane to side plane
- Only for vehicle with side plane impact damage
- CDC fourth character of D, P, Y or Z

This variable only captures those **vehicle-to-vehicle** impacts where the other contacting vehicle sustained an associated frontal impact. The other contacting vehicle must be a CISS-applicable vehicle.

This indicates that the vehicle sustained direct damage to a pillar from the striking vehicle. This variable applies observations of the technician at the time of inspection. If door panels are crushed up against the pillar as a result of direct contact from the front of the striking vehicle, consider this as direct damage to the pillar.

Other (specify)

Used to describe a pillar that sustains direct damage from the striking vehicle that is not listed in the given attribute list.

Unknown

Used when the technician cannot determine if any pillar sustained direct damage from the striking vehicle.

None

Used when the technician does not observe direct pillar damage at the time of inspection.

Not applicable

Used when the max crush falls outside of the “P” zone.

Vertical Height of Sill

Screen Name: **Sill Height**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.DEFORM.SILLHEIGHT**

Element Attributes

Database	SAS	
		Enter to the nearest centimeter
-8887	887	Not applicable
-9999	999	Unknown

Range

005-100, 887, 999

Source

Vehicle inspection, exemplar vehicle, manufacturer specifications

Remarks

Enter to the nearest centimeter.

Measure the vertical distance between the ground and the sill where it meets the door seam at or as near as possible to the b-pillar. The preferred measurement is taken at the vehicle inspection. This measurement is the precrash condition of the vehicle.



Figure 70. How to measure vertical distance

This variable only captures those **vehicle-to-vehicle** impacts where the other contacting vehicle sustained an associated frontal impact. The other contacting vehicle must be a CISS-applicable vehicle. In addition, the measurement is only captured for those impacts where CDC columns 3 and 4 for this vehicle equal LY, LP, LZ, LD, RY, RP, RZ, or RD.

For vehicles with post-manufacturer modifications (certified or not) exemplar vehicles or manufacturer specifications should not be used. In addition, if the vehicle has sustained post-

crash damage such that the measurement would not reasonably approximate the precrash height use an exemplar vehicle measurement.

Note: The presence of flat tires alone would not disqualify the capture of a known measurement.

Not applicable

Use this code for impacts where CDC column 3 and 4 do not equal LY, LP, LZ, LD, RY, RP, RZ, or RD. This code is also used when the other vehicle does not sustain an associated frontal impact, or is not a CISS-applicable vehicle. Use this code when the max crush falls outside of the “P” zone. For the purpose of determining the “P” zone of a minivan or an SUV, treat them as a station wagon. The “P” zone of a station wagon is defined as from the base of the windshield to the rear of the second seat.

Unknown

When the measurement cannot be determined or reasonably approximated.

Height of Max Door CrushScreen Name: **Cmax Height**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.DEFORM.DOORCRUSH****Element Attributes**

Database	SAS	
		Enter to the nearest centimeter
-9999		Unknown
-8887		Not applicable

Source

Vehicle inspection

Remarks

This measurement is obtained at the time of the vehicle inspection. Do not use an exemplar vehicle or manufacturer specifications for this variable.

This variable applies to the following crash configurations:

- Vehicle to vehicle
- Frontal plane to side plane
- Only for vehicle with side plane impact damage
- CDC column 4 character of D, P, Y, or Z

Enter to the nearest centimeter

Measure the vertical distance between the ground and area of the max crush sustained in the “P” zone.” For the purpose of determining the “P” zone of a minivan or an SUV, treat them as a station wagon. The “P” zone of a station wagon is defined as from the base of the windshield to the rear of the second seat.

This variable only captures those **vehicle-to-vehicle** impacts where the other contacting vehicle sustained an associated frontal impact. The other contacting vehicle must be a CISS-applicable vehicle.

Care should be taken when determining this post-crash measurement. If the vehicle has had post-manufacturer modifications (certified or not) the use of exemplar vehicles or manufacturer specifications should not be used. In addition, if the vehicle has sustained other post-crash damage such that the measurement would not correctly capture the height (e.g., missing wheel, vehicle split in half) use the Unknown code. The presence of flat tires alone would not disqualify the capture of a known measurement.

Unknown

Used when the technician cannot obtain or determine the height of the max crush.

Not applicable

Used when the max crush falls outside of the “P” zone.

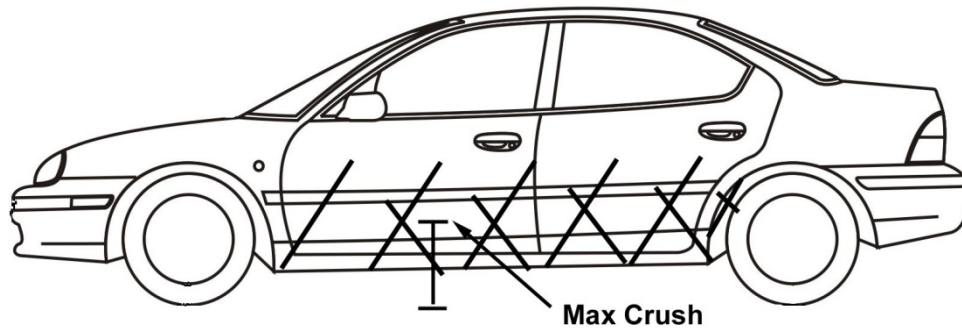


Figure 71. Example of Max Crush

Door Sill DifferentialScreen Name: **Door Sill Diff**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.DEFORM.DOORSILLDIFF****Element Attributes**

Database	SAS	
		Enter to the nearest centimeter
-9999		Unknown
-8887		Not applicable

Source

Vehicle inspection

Remarks

This variable captures the post-crash lateral distance between the sill level versus the maximum crush in the “P”-zone. Measure this whenever the max crush is in the “P” zone. For the purpose of determining the “P” zone of a minivan or an SUV, treat them as a station wagon. The “P” zone of a station wagon is defined as from the base of the windshield to the rear of the second seat.

This variable applies to the following crash configurations:

- Vehicle to vehicle
- Frontal plane to side plane
- Only for vehicle with side plane impact damage
- CDC column 4 character of D, P, Y, or Z

This variable only captures those **vehicle-to-vehicle** impacts where the other contacting vehicle sustained an associated frontal impact. The other contacting vehicle must be a CISS-applicable vehicle.

Enter to the nearest centimeter

Measure the lateral distance between the sill versus the maximum crush in the “P” zone. The measurement between two positions should be on the same vertical plane.

The measurement must be taken at a right angle to the vehicle’s longitudinal axis.

Measurement at the sill level would be taken at the outermost portion of the sill.

Code “0” for those situations when the maximum “P” zone crush falls outside the perimeter of the sill (e.g., negligible crush).

Zero would also be used in those situations where all qualifying criteria are met, but no contact is made to the door panel.

Unknown

Used when the technician cannot determine or obtain the DSD.

Not applicable

Used when the max crush is outside of the “P” zone.

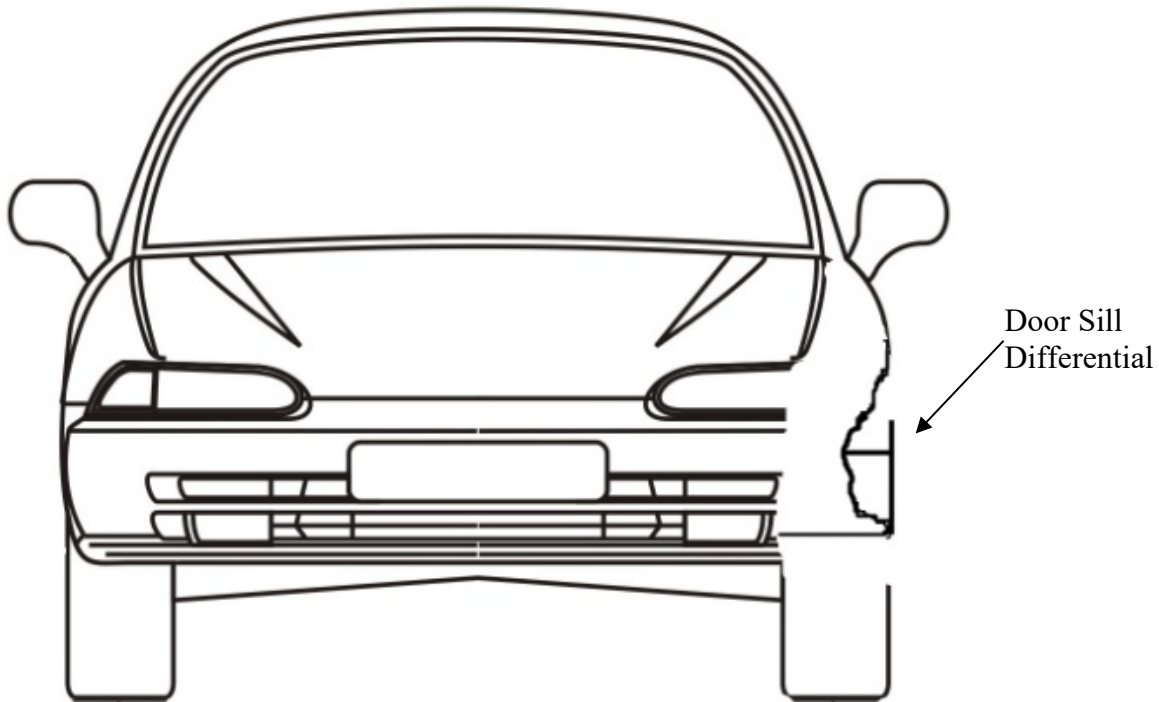


Figure 72. Door sill differential

WinSMASH Overview

The WinSMASH software is a simplified two-dimensional mathematical analysis of a vehicle's crash events. The software is designed to reconstruct vehicle-to-vehicle collisions and vehicle-to-large object collisions and make a standardized assessment of the severity of an impact. The software uses detailed measurements from the crash scene, vehicle damage, and vehicle stiffness characteristics to compute energy absorbed by the vehicle to estimate the change in velocity, delta V and BES. WinSMASH is the culmination of crash investigation data collection. It should be run once all of the obtainable case data has been collected and coded into the case. Scene and vehicle inspections as well as interview responses each contain data that will be drawn into WinSMASH to produce a final calculation. WinSMASH is often among the final things done in the completion of a case.

Delta V is the change in velocity of the vehicles during approach period, i.e., the time between initial contact and when the maximum crush occurs (and common velocity attained) at the interface. The delta V is considered a good indicator of the crash severity because it approximates the speed of the collision between the vehicle's occupants and the interior that causes injuries. The BES is defined as the speed with which a vehicle would have to collide with a fixed barrier in order to absorb the same amount of energy or produce the same amount of crush. No information from the collision partner is required to estimate the BES.

The WinSMASH program can also compute the impact speed if detailed measurements of impact and final rest positions are entered into the program. The program assumes the impact was instantaneous and at some point during the impact both vehicles reached a common velocity. The vehicle properties are averaged properties for the vehicle class. Uniform crush stiffness is assumed across the front, rear and side of the vehicle. Due to these assumptions, WinSMASH can't be used for the following collisions.

- Rollovers
- Sideswipes
- Non-horizontal forces
- Severe override/underride
- Undercarriage impacts
- More than one impacts to the same area

For collisions where not enough information is available to calculate the energy dissipated by the collision partner, WinSMASH can only be used to compute the BES using the Vehicle-to-Barrier option. The following collisions should be set-up with the Vehicle-to-Barrier option and only the **BES** should be entered into CISSWeb, for a vehicle impact with yielding fixed objects; animals/pedestrians/cyclists; moving railway vehicles/large trucks; vehicle towing trailers/vehicles.

Two separate and independent methods, namely **Damage Analysis** and **Trajectory Analysis**, can be used to estimate the change in vehicle speeds experienced by the vehicles.

Damage Analysis

The Damage Analysis algorithm is the most often used option in WinSMASH. The Damage Analysis makes use of detailed measurements of the structural deformation of each vehicle to

arrive at an estimate of the energy required to produce the observed vehicle damage. The program assumes a linear relationship between the crush energy and the depth of residual crush. This algorithm can be used to generate delta V when the scene data is not available. The input data needed for Damage Analysis are: Crush Profile, Vehicle Specifications, Vehicle Size, and Stiffness Categories. Based on the length of the wheelbase, model year and bodystyle, the vehicles are grouped into 12 categories. Each category is assigned a single set of stiffness coefficients: d0 and d1. The program automatically selects a stiffness category once the vehicle model year, bodystyle and wheelbase is entered and “Get Vehicle Stiffness” button is pressed within WinSMASH program.

Vehicle 1		Speed Change (Damage)	
Total:	19.0	km/h	
Longitudinal:	17.9	km/h	
Latitudinal:	6.5	km/h	
PDOF:	200.0	deg	
Energy Dissipated	11484	Joules	Moment Arm of Principal Force -40.7 cm CCW
Barrier Equivalent Speed	10.1	km/h	Change in Angular Velocity -50.0 degrees/second
Used the d0 and d1 values estimated from vehicle size			

Vehicle 2		Speed Change (Damage)	
Total:	34.0	km/h	
Longitudinal:	-33.5	km/h	
Latitudinal:	-5.9	km/h	
PDOF:	10.0	deg	
Energy Dissipated	93556	Joules	Moment Arm of Principal Force -12.6 cm CCW
Barrier Equivalent Speed	40.2	km/h	Change in Angular Velocity -34.8 degrees/second
Used the d0 and d1 values estimated from vehicle size			

Figure 73. Summary of WinSMASH results using damage analysis

Damage and Trajectory Analysis

The Trajectory Analysis makes use of trajectory data (e.g., skid marks, impact positions and final rest positions). It is based on work-energy relationships for the spinout and the conservation of linear momentum for the collision. The program estimates the vehicle separation speed from the information about the rest position, skid marks, local friction, point of collision, etc. The momentum equations are used to compute the impact speed.

- Reconciliation of Different Results Between Damage and Trajectory (WinSMASH)**
 The axial collision solution is used when the initial velocity vectors are within 10° of parallel, i.e., collinear impacts. Examples of use in WinSMASH are: head-on collisions, rear-end collisions, vehicles sliding sideways traveling straight into an oncoming vehicle or a stationary barrier, barrier impacts, etc.

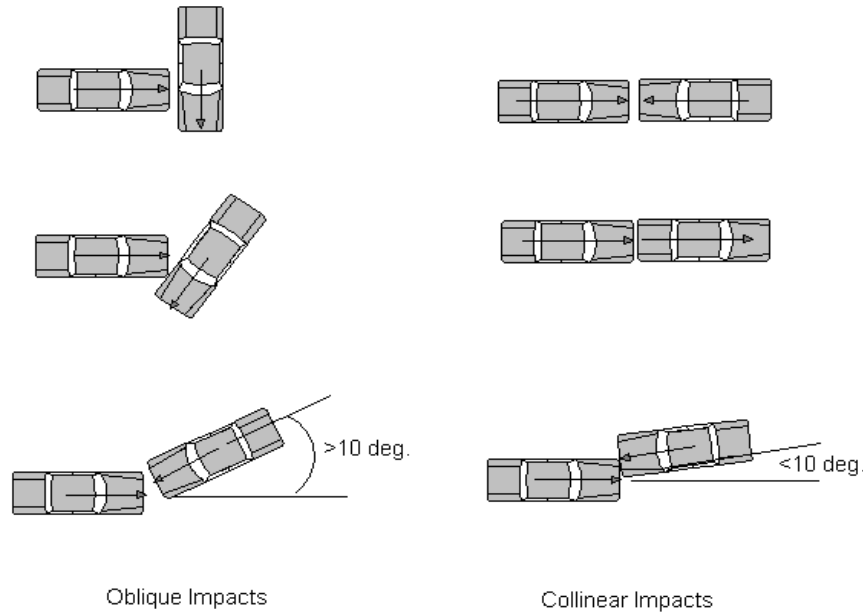


Figure 74. Illustration of impacts

The transition between the axial and angular solutions (i.e., a velocity vector change from within 10° of parallel to just outside 10° of parallel) may sometimes produce abrupt changes in delta V results. Therefore, the technician should remember to examine the results carefully.

The axial collision printout will calculate impact speed (spinout and damage) and the SPEED CHANGE (DAMAGE), which should be used if the results are reasonable.

	Speed Change (Damage)		Impact Speed (Damage and Spinout)	
Total:	77.0	km/h	93.6	km/h
Longitudinal:	-77.0	km/h	93.6	km/h
Latitudinal:	0.0	km/h	0.0	km/h
PDOF:	0.0	deg		
Energy Dissipated	489401	joules	Moment Arm of Principal Force	-54.0 cm CCW
Barrier Equivalent Speed	77.3	km/h	Change in Angular Velocity	-286.4 degrees/second
Used the d0 and d1 values estimated from vehicle size				

Figure 75. Summary of WinSMASH results using damage and trajectory for an axial collision ($<10^\circ$)

- The conservation of linear momentum solution is used for angled or oblique collisions (greater than 10° from parallel). The reconstruction program produces two independent estimates of delta V. The Total, longitudinal, and Lateral delta Vs associated with “**Damage Analysis**” should be compared respectively to the total, longitudinal and lateral delta Vs associated with “**linear momentum and trajectory analysis.**” The results will seldom be precisely equal. Experience indicates that a satisfactory agreement exists between two estimates when their delta V components differ by no more than 4 kph or 10

percent, whichever is greater, and the angles are within the same o'clock direction. Be sure, when comparing delta Vs, to compare the respective components calculated from two methods. When the agreement is not satisfactory, the data associated with each option should be reviewed for accuracy.

Once the speed changes agree satisfactorily, the results for Total, longitudinal, and Lateral speed changes are each averaged and the averaged values must be entered on the Exterior Vehicle Form. If agreement cannot be reached between the two methods, contact the quality control center.

Vehicle	Specifications	Damage	Scene	Motion	Friction	Results	Review
Vehicle 1							
Existing Results		Speed Change (Damage)		Speed Change (Momentum and Spinout)		Impact Speed (Momentum and Spinout)	
Total		100 [km/h]		108 [km/h]		64 [km/h]	
Longitudinal		-94 [km/h]		-103 [km/h]		64 [km/h]	
Lateral		-34 [km/h]		-34 [km/h]		0 [km/h]	
PDOF		20 [deg]		18 [deg]			
Energy Dissipated		336,868 [J]		Moment Arm of Principal Force		0.0 [cm]	
Barrier Equivalent Speed		93 [km/h]		Change in Angular Velocity		-272 [deg/s]	
Average stiffness based on category is used.							
Vehicle 2							
Existing Results		Speed Change (Damage)		Speed Change (Momentum and Spinout)		Impact Speed (Momentum and Spinout)	
Total		42 [km/h]		45 [km/h]		89 [km/h]	
Longitudinal		-41 [km/h]		-45 [km/h]		89 [km/h]	
Lateral		-7 [km/h]		-3 [km/h]		0 [km/h]	
PDOF		10 [deg]		3 [deg]			
Energy Dissipated		210,242 [J]		Moment Arm of Principal Force		0.0 [cm]	
Barrier Equivalent Speed		48 [km/h]		Change in Angular Velocity		-3 [deg/s]	
Vehicle-specific stiffness from database is used.							

Figure 76. Summary of WinSMASH results for an oblique collision ($>10^\circ$)

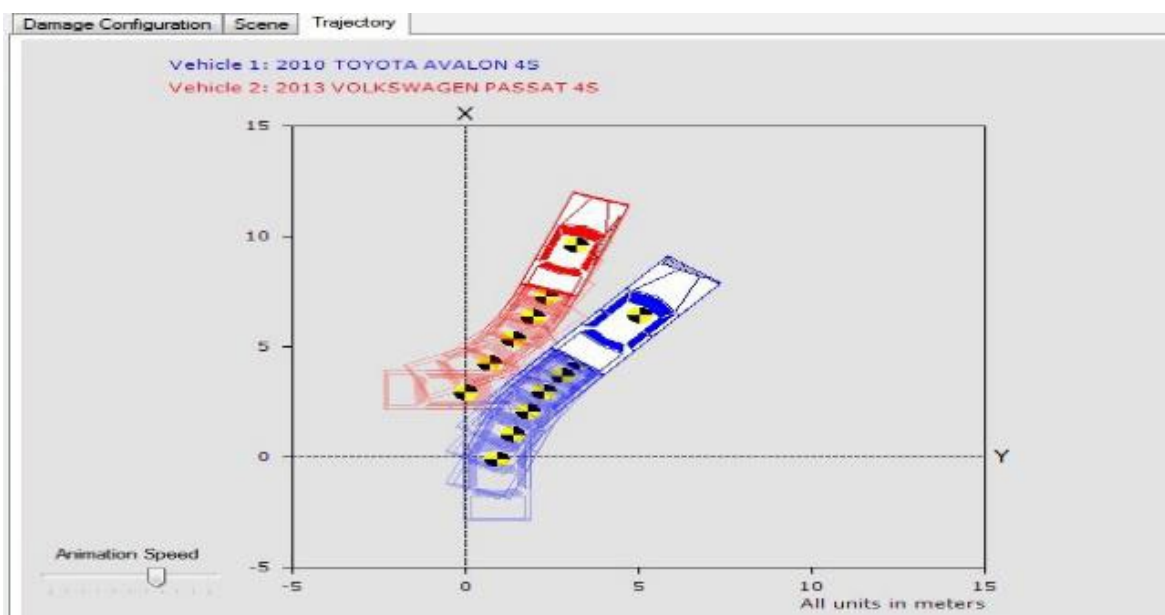


Figure 77. Vehicle trajectory simulation for oblique collision

Calculation Types

The following sections describe the various calculation type options available in the program.

Note: the integrated version of the WinSMASH program pre-fills most of the fields in the program using data entered in CISSWeb. The user can only change: stiffness category, weight, heading angle and PDOF. The integrated WinSMASH should be rerun if any of the data used in the program is updated in CISSWeb.

1. Standard

The standard option is used to reconstruct vehicle-to-vehicle collisions when input data for both vehicles are available. Both Damage Analysis and Trajectory Analysis can be used in this option. The program will only use the damage analysis algorithm if scene data is not entered in the program. For a standard reconstruction the following data are required:

a. Damage Analysis

V1	V2
Vehicle Specifications, Curb Weight	Vehicle Specifications, Curb Weight
Crush Profile (C_1 - C_n), Damage Length	Crush Profile (C_1 - C_n) Damage Length
CDC	CDC
Heading Angle and PDOF	Heading Angle and PDOF
Size and Stiffness Category	Size and Stiffness Category

b. Damage and Trajectory Analysis (the following additional data are required)

Impact location and final rest position	Impact location and final rest position
Slip angle and friction	Slip angle and friction

2. Barrier

The Barrier option is used to reconstruct a vehicle impact with a fixed object. This option works the same way as the standard option, except that input data for only one vehicle are entered. This option is also used to compute the BES of the vehicle in collisions that violate the assumptions of the WinSMASH model e.g., impact with yielding objects, animals/pedestrian/cyclists, moving railway vehicles/large trucks, towed trailers or vehicles, or more than one impact to the same area.

a. Damage Analysis

V1
Vehicles Specifications, Curb Weight
Crush Profile (C_1 - C_n), Damage Length
CDC
Heading Angle and PDOF
Size and Stiffness Category

b. Damage and Trajectory Analysis (the following additional data are required)

Impact Location and Final Rest Position
Slip Angle and Friction

3. Missing Vehicle

The Damage Analysis algorithm also has the option (Missing Vehicle) to estimate the delta V when the data for one of the vehicles in a vehicle-to-vehicle collision is missing. The same assumption outlined above applies to the Missing Vehicle algorithm. Collisions that violate those assumptions can't be modeled with Missing Vehicle option. In the Missing Vehicle algorithm, the energy absorbed by the missing vehicle is directly computed from the energy of the known vehicle and the stiffness coefficients of each vehicle. The program estimates the PDOF of the missing vehicle from the heading angle and PDOF of the known vehicle and heading angle of the missing vehicle. The following data are required for a Missing Vehicle option:

a. Damage Analysis

V1	V2
Vehicles Specifications, Curb Weight	Vehicles Specifications, Curb Weight
Crush Profile (C_1 - C_n), Damage Length	--
CDC	General Area of Damage
Heading Angle and PDOF	Heading Angle
Size and Stiffness Category	Size and Stiffness Category

4. CDC Only

The CDC Only option is used for vehicle-to-vehicle collisions when insufficient damage data are documented for one of the vehicles. Both vehicles must have a complete CDC and damage data for one vehicle must be available. The algorithm computes the crush profile of the second vehicle by using damage length (if entered) and the damage extent coded in the CDC. Additional information (e.g., SMASH L, and offset distance) can be entered to improve the results. It should be noted; that in many cases where insufficient data is documented for one of the vehicles, a “missing Vehicle” algorithm is the preferred choice and routinely produces better results.

V1	V2
Vehicles Specifications, Curb Weight	Vehicles Specifications, Curb Weight
Crush Profile (C ₁ - C _n), Damage Length	Damage Length
CDC	CDC
Heading Angle and PDOF	Heading Angle
Size and Stiffness Category	Size and Stiffness Category

Table of Weights to Be Used for Known Occupants With Unknown Weight

For known occupants with unknown weights, use the occupant’s age or age group in the table below to determine the appropriate weight to add.

(All weights are in kg based on 50th percentile for each age group)

Age (months)	0-2	3-5	6-8	9-11
Weight (Male)	5.3	7.2	8.4	9.5
Weight (Female)	4.7	6.7	7.8	9.1

Age (years)	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Weight (Male)	11.3	14.0	15.7	18.1	20.1	23.1	26.0	29.7	31.8	36.5	45.8	47.6	56.7	61.4
Weight (Female)	11.1	13.1	15.1	17.9	19.9	22.2	24.5	28.7	34.2	38.7	44	50.9	51.4	53.8

Age (years)	15	16	17	18	19	20-29	30-39	40-49	50-59	60-69	70-79	>=80
Weight (Male)	65.5	68.7	71.1	76.4	73.7	80.7	86.6	89.1	88..8	88.6	83.3	77.6
Weight (Female)	58.1	60.0	60.7	62.1	62.6	67.9	72.8	74.4	75.9	74.6	71.9	64.0

Source of Information:

Fryar, C. D., Gu, Q., Ogden, C. L., & Flegal, K. M. (2016). Anthropometric reference data for children and adults: United States, 2011–2014. National Center for Health Statistics, *Vital Health Stat* 3(39). 2016. www.cdc.gov/nchs/data/series/sr_03/sr03_039.pdf

Remarks

- If both occupant sex and age are unknown, use 20-29-year-old male, i.e., 81 kg (178 lb), as a default.
- If occupant is known to be a child (unknown age and sex) use 7-year-old male, 26 kg (57 lb), as a default.

CISSWeb WinSMASH

Run WinSMASH program from the desktop and select the WinSMASH Calculation Type (Standard, Missing, Barrier, or CDC-Only) using the following delta V decision rules that are listed in order of preference.

Enter the vehicle, specifications, and damage data obtained from the vehicle inspection. If additional data to run trajectory analysis is available from the scene inspection, enter it in scene, motion and friction tabs.

Delta V, Barrier Equivalent, and Speed Estimate Decision Rules

- If all information on the vehicle is known, use the WinSMASH program Standard (for vehicle to vehicle) or Barrier (vehicle to object) calculation type. If the results look reasonable, complete the delta V variables of the CDC tab of the Exterior Vehicle (EV) Form including the BES using the results from WinSMASH. If the exact point of impact and final rest positions are known and entered in the WinSMASH, in addition to all vehicle damage information, the program uses the Damage and Trajectory algorithm and computes the Impact Speed. Use the results from WinSMASH to complete the delta V variables of the CDC tab of the Exterior EV Form including the Impact Speed and the BES. Select the basis for delta V as “Damage and Trajectory Routine.”
- If you have one complete inspected vehicle and one non-inspected or partially inspected vehicle, then use the WinSMASH *Missing Vehicle* calculation type. The Missing Vehicle calculation is also used when corner impact damage does not require a crush profile to be measured for one of the vehicles. If the results are reasonable, complete the delta V variables of the CDC tab of the EV Form including the BES using the results from WinSMASH. Select the basis for delta V for both vehicles as “Missing Vehicle.” If the results look reasonable for the completely inspected vehicle, code the “Confidence level” on the General Vehicle (GV) Form, as “Collision fits model – results appear reasonable.” If these results are high or low, code this and annotate the reason. The “Confidence Level” for the WinSMASH results of the non-inspected vehicle will be coded as “Borderline reconstruction.”
- For car-to-object impacts where the object moves or sustains damage (poles, trees, large trucks, or large animals etc.) or the object is struck (horizontally) during a rollover, use the WinSMASH damage routine and treat the object as a rigid barrier. If the results look reasonable code **only** the BES. Select the Basis for Total Delta V as “Yielding Object.” to code BES only, type “999” in the total delta V block; CISSWeb will then prefill all delta V variables except BES. You must then code the BES. For smaller non-fixed objects select Estimated Highest Delta V as minor. Select the Basis for Total Delta V as appropriate (e.g., “Yielding object”).
- For vehicle-to-vehicle or vehicle-to-object impacts where a crush profile is roughly estimated or you only have a CDC for the vehicles involved (partially repaired vehicle, only have photos of damage, etc.), use the WinSMASH damage routine to get an estimated delta V. If the results look reasonable select the calculated delta V as a range in Estimated Highest Delta V. Select the Basis for Total Delta V as appropriate (e.g., “insufficient data”). **Side note** - the vehicle-to-object currently must be done in the stand-alone program.

- For vehicle-to-object impact with a CISS-applicable vehicle that cannot be adequately represented by the parameters in an acceptable reconstruction size/stiffness category (winch, non-standard bumper/add-on brush guard, etc.), referred to here as **altered vehicle**, use the WinSMASH damage routine to get an estimated delta V. If the results look reasonable, select the calculated delta V as a range in Estimated Highest Delta V. If a crush profile cannot be obtained then select Estimated Highest Delta V as Minor, Moderate, or Severe. Select the Basis for Total Delta V as appropriate (e.g., “Vehicle is beyond scope”).
- For vehicle-to-vehicle impacts where one of the vehicles is **altered** (see sixth bullet) use the WinSMASH damage routine to get an estimated delta V. Code BES only for unaltered vehicle and select the calculated delta V as a range in Estimated Highest Delta V for **both** vehicles. If both vehicles are altered, then select the calculated delta V as a range in Estimated Highest Delta V for both vehicles and do not code BES.
- For cases where there are two or more significant impacts with overlapping or masking of damage such that individual crush profiles cannot be obtained then select the Basis for Total Delta V as “Overlapping Damage” and select Estimated Highest Delta V as Minor, Moderate, or Severe. **Note:** For vehicle-to-vehicle impacts where one vehicle is known and the other has masked damage as described above, treat the masked vehicle as a missing vehicle and follow Delta V, barrier equivalent and speed estimate decision rules: bullet point number 2 instructions.
- For sideswipe, severe override/underride, undercarriage, non-horizontal and rollover type impacts, select the Basis for Total Delta V as appropriate (Sideswipe, Non-horizontal, etc.) and select Estimated Highest Delta V as Minor, Moderate, or Severe.
- For cases where one vehicle has complete inspection and nothing is known about the other vehicle (PCR indicates a “sedan”) run barrier option of WinSMASH. Code the BES and select the calculated delta V as a range in Estimated Highest Delta V.

Definitions for Minor, Moderate, or Severe:

Rollover - damage assessment priority shall be given to passenger compartment.

Top Plane

Minor is used when there is surface scratching or dents; includes CDC extent zones 1 & 2.

Moderate is used when the passenger compartment maximum crush extends into CDC extent zone 3.

Severe is used when the passenger compartment maximum crush is greater than CDC extent zone 3.

Side Plane

Minor is used when there is surface scratching or dents with no passenger compartment intrusion.

Moderate is used when there is 25 cm (10 inches) or less passenger compartment intrusion.

Severe is used when there is greater than 25 cm (10 inches) passenger compartment intrusion.

Swiping Type Impacts

Minor is used when there is minor crush that does not result in passenger compartment intrusion.

Moderate is used when the maximum crush extends beyond the side door impact protection (i.e., door beam) that can result in up to 25cm (10 inches) passenger compartment intrusion.

Severe is used when the maximum crush results in greater than 25 cm (10 inches) passenger compartment intrusion.

Severe Override/Underride Impacts

Minor is used when only the hood/trunk and tops of fenders are involved and there is no passenger compartment intrusion.

Moderate is used when only the hood/trunk and tops of fenders are involved and there is minimal passenger compartment intrusion.

Severe is used when only the hood/trunk and tops of fenders are involved and there is major passenger compartment intrusion.

Undercarriage Impacts

Minor is used when it is a swiping type impact with surface scratching or dents.

Moderate is used when modest crush or bending occurs.

Severe is used when significant crush or bending occurs.

Overlapping (Masked) Impacts

Minor is used when the maximum crush attributed to the most severe impact (estimate) is less than 10 cm.

Moderate is used when the maximum crush attributed to the most severe impact (estimate) is 10cm-35cm.

Severe is used when the maximum crush attributed to the most severe impact (estimate) is greater than 35cm.

Other Non-Horizontal Impacts

Minor is used when the maximum crush is less than 10 cm.

Moderate is used when the maximum crush is 10cm-35cm.

Severe is used when the maximum crush is greater than 35cm.

Run WinSMASH program by clicking on WinSMASH icon on the desktop. Make sure the latest version of WinSMASH is installed on your machine. Select the appropriate

calculation type based on the rules listed in previous section. Enter the data in vehicle, specifications, damage tabs. View the graphics and make sure the crash configuration accurately reflects the crash you are investigating. Press “Get Stiffness” button in “Specifications” tab to select the appropriate stiffness for the vehicle. Finally, press calculation to obtain the results. Evaluate the results and code the data in CISSWeb CDC/detail tab.

While still in the program, save the WinSMASH file using the naming convention YYYYSPSUCCC.CR5. The CR5 extension is the default for WinSMASH. Several runs may have been made to get the final results, but only the final run used to code data into the case needs to be saved. Attach the file to the case on the Documents tab on the Case Form.

Total Delta V

Screen Name: **DELTA V–Total**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS.DEFORM.DVTOTAL**

Element Attributes

Generated kph

	999	Unknown

Range

1-160, 999

Source

WinSMASH program

Remarks

The total delta V is automatically generated by the CISSWeb WinSMASH program for this impact.

Unknown

Used when the results for this impact are unobtainable or unreasonable.

Longitudinal Delta V

Screen Name: **DELTA V—Longtdl**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS.DEFORM.DVLONG**

Element Attributes

Generated kph

	999	Unknown

Range

-160 - +160, 999

Source

WinSMASH program

Remarks

Lateral Delta V

Screen Name: **DELTA V—Lateral**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS.DEFORM.DVLAT**

Element Attributes

Generated kph

	999	Unknown

Range

-160 - +160, 999

Source

WinSMASH program

Remarks

The lateral component of delta V is automatically generated by the CISSWeb WinSMASH program for this impact.

Energy AbsorptionScreen Name: **Energy**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.DEFORM.DVENERGY****Element Attributes**

Generated joules

	9,999,999	Unknown

Range

150 – 1,100,000, 9,999,999

Source

WinSMASH program

Remarks

The energy absorption is automatically generated by the CISSWeb WinSMASH program for this impact.

Impact Speed

Screen Name: **Impact**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS.DEFORM.DVIMPACT**

Element Attributes

Generated kph

	998	Damage and trajectory run not made
	999	Unknown

Range

1 – 160, 998, 999

Source

WinSMASH program — damage and trajectory routine

Remarks

The impact speed is automatically generated by the CISSWeb WinSMASH damage and trajectory program for this impact.

Moment Arm of Principal ForceScreen Name: **Moment Arm**

SAS Data Set:

SAS Variable:

Database Name:

Element Attributes

Generated Nearest cm

	999	Unknown

Range

- 650 -- +650, 999

Source

WinSMASH program

Remarks

The moment arm of principal force is the perpendicular distance between the principal direction of force and the center of gravity (CG) of the vehicle. The force is assumed to act at the centroid of the damage area. The positive value of the moment arm represents the clockwise rotation of the vehicle. And the negative value of the moment arm represents the counter-clockwise rotation of the vehicle.

The moment arm is automatically generated by the CISSWeb WinSMASH program.

Barrier Equivalent SpeedScreen Name: **Barrier**

SAS Data Set:

SAS Variable:

Database Name: ***CISS.CISS.DEFORM.DVBARRIER*****Element Attributes**

Generated kph

	999	Unknown

Range

1-160, 999

Source

WinSMASH program

Remarks

The BES is automatically generated by the CISSWeb WinSMASH for this impact.

The BES is defined as the speed with which a vehicle would have to collide with a fixed barrier in order to absorb the same amount of energy or produce the same amount of crush as in this crash. The same energy absorption could come out of collisions with different delta Vs, leading to different potential injuries. BES, therefore, is a more appropriate way of comparing collisions with similar struck objects. The BES is calculated using mass and energy absorbed by each vehicle. No information is required of the collision partner for BES calculations. Whereas, the total amount of energy (both Vehicle 1 and Vehicle 2) is required to calculate the approach delta V. For impacts between two similar vehicles, if the mass of one vehicle is significantly greater than its collision partner, then the delta V equals the BES. Also, if the stiffness of one vehicle is significantly greater than the collision partner then the delta V is proportional to their mass ratio and the BES.

Estimated Severity

Screen Name: **Estimated**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.DEFORM.DVEST**

Element Attributes

Database	SAS	
1	0	Reconstruction Delta V

Estimated Delta V

Database	SAS	
2	1	Less than 10 kph
3	2	Delta V (10 kph < 25 kph
4	3	Delta V (25 kph < 40 kph
5	4	Delta V (40 kph < 55 kph
6	5	Delta V (55 kph

Other estimates of damage severities

Database	SAS	
7	6	Minor
8	7	Moderate
9	8	Severe
10	9	Unknown

Source

Technician-determined

Remarks

Reconstruction delta V is selected whenever the WinSMASH program is used to estimate and code delta V results.

The purpose of this variable is to record an estimate of the delta V for those situations where the CISSWeb WinSMASH program (including the BES) cannot be properly used (e.g., overlapping damage, crush profile not measured, severe underride/override, swiping, or rollover type impacts).

For car-to-car or car-to-object impacts where a crush profile is roughly estimated or you only have a CDC for all vehicles involved (partially repaired vehicle, only have photos of damage, etc.), use the WinSMASH damage routine to get an estimated delta V. If the results look

reasonable, then record the calculated delta V as a range in the Estimated Highest Delta V. Record the Basis for Total Delta V as appropriate (insufficient data, etc.).

For cases where there are two or more significant impacts with overlapping or masking of damage such that individual crush profiles cannot be obtained then record the Basis for Total Delta V as overlapping damage and record the Estimated Highest Delta V as minor, moderate or severe.

Minor, Moderate and Severe are defined below for different damage types:

Rollover — damage assessment priority shall be given to passenger compartment.

Top Plane

Minor	Used when there is surface scratching or dents; includes CDC extent zones 1 and 2.
Moderate	Used when the passenger compartment maximum crush extends into CDC extent zone 3.
Severe	Used when the passenger compartment maximum crush is greater than CDC extent zone 3.

Side Plane

Minor	Used when there is surface scratching or dents with no passenger compartment intrusion.
Moderate	Used when there is 25 cm or less passenger compartment intrusion.
Severe	Used when there is greater than 25 cm passenger compartment intrusion.

Swiping Type Impacts

Minor	Used when there is minor crush that does not result in passenger compartment intrusion.
Moderate	Used when the maximum crush extends beyond the side door impact protection (i.e., door beam) that can result in up to 25cm passenger compartment intrusion.
Severe	Used when the maximum crush results in greater than 25cm passenger compartment intrusion.

Severe Override/underride Impacts

Minor	Used when only the hood/trunk and tops of fenders are involved and there is no passenger compartment intrusion.
Moderate	Used when only the hood/trunk and tops of fenders are involved and there is minimal passenger compartment intrusion.
Severe	Used when only the hood/trunk and tops of fenders are involved and there is major passenger compartment intrusion.

Undercarriage Impacts

Minor	Used when it is a swiping type impact with surface scratching or dents.
Moderate	Used when modest crush or bending occurs.
Severe	Used when significant crush or bending occurs.

Overlapping (Masked) Impacts

Minor	Used when the maximum crush attributed to the most severe impact (via estimate) is less than 10cm.
Moderate	Used when the maximum crush attributed to the most severe impact (via estimate) is 10cm -35cm.
Severe	Used when the maximum crush attributed to the most severe impact (via estimate) is greater than 35cm.

Other Non-Horizontal Impacts

Minor	Used when the maximum crush is less than 10 cm.
Moderate	Used when the maximum crush is 10cm -35cm.
Severe	Used when the maximum crush is greater than 35cm.

Other Non-Horizontal Impacts

Minor	is coded when the maximum crush is less than 10 cm.
Moderate	is coded when the maximum crush is 10cm -35cm.
Severe	is coded when the maximum crush is greater than 35cm.

End Plane Impact

CDC damage distribution is W - wide

Minor	Used when there is 10 cm of crush or less.
Moderate	Used when the crush is more than 10 cm, but the CDC extent zone does not exceed zone 2.
Severe	Used when the CDC extent zone is 3 or greater.

CDC damage distribution is E - corner

Minor	Used when the crush does not exceed CDC extent zone 1.
Moderate	Used when the crush exceeds zone 1, but does not exceed zone 3.
Severe	Used when the CDC extent zone is 4 or greater.

Side Plane Impact

When the maximum crush is inside the P-zone

Minor Used when there is no lateral intrusion on this side, and the CDC extent zone is 1.

Moderate Used when the CDC extent zone is 1 or 2, or when CDC extent zone is 1 and there is a lateral intrusion on this side.

Severe Used when the CDC extent zone is 3 or greater.

When the maximum crush is outside the P-zone

Minor Used when there is 10 cm of crush or less.

Moderate Used when there is more than 10 cm of crush, but CDC extent zone is 1 or 2.

Severe Used when CDC extent zone is 3 or higher.

Severity Rank

Screen Name: **Rank**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS.DEFORM.DVRANK1**

Range

1-2

Element Attributes

As selected

Source

Technician-determined

Remarks

Indicate the **Rank** using the below listed the event that resulted in the severity that has been coded. If a delta V, BES, or estimate is known, then the **Rank** of the event must be entered.

- The rank of an event is based on the total delta V and the estimated severity coded in **Estimated Severity**. The most severe event is assigned the rank of 1.
- Generally, an event that results in the most damage to the vehicle is considered the most severe and assigned the rank of 1.
- In rare instances where it is difficult to determine the most severe event: For planar impacts, use the reconstruction delta V, BES, or the severity/extent of damage to rank an event using the following hierarchy:
 - If the coded reconstruction delta V accurately represents the severity of an event, the event with the highest delta V is considered most severe and assigned the rank of 1.
 - Use the BES in absence of a delta V to rank an event.
 - If the coded reconstruction delta V does not accurately represent the severity of the event, for example in a corner impact, underide or override, use the severity/extent of damage to rank the event.

If a planar impact preceded a rollover or vice versa, the impact that caused the most damage to the vehicle and harm to its occupant is considered more severe. Unknown is not used.

Basis for Delta V Entry

Screen Name: **Basis**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.DEFORM.DVBASIS**

Element Attributes**Delta V Calculated**

	1	WinSMASH - Damage only
	2	WinSMASH - Damage and trajectory
	3	WinSMASH - Missing vehicle
	4	WinSMASH - Damage with CDC only

Delta V Not Calculated

	5	At least one vehicle is beyond the scope of SMASH
	6	Rollover
	7	Other non-horizontal forces
	8	Sideswipe type damage
	9	Severe override
	10	Yielding object
	11	Overlapping damage
	12	Insufficient data (specify):
	98	Other (specify):

Source

Technician-determined — inputs include WinSMASH output (if applicable), vehicle inspection, scene inspection, police report, and photographs.

Remarks

This variable is used to indicate: (1) that CISSWeb WinSMASH Calculation Type was used to compute this vehicle's highest delta V or (2) the reason a CISSWeb WinSMASH program was not applied to the most severe impact.

Delta V Calculated**SMASH - Damage and trajectory**

The WinSMASH output is based on trajectory evidence documented at the scene, in addition to complete vehicle damage.

WinSMASH - Damage only

The WinSMASH output is based upon complete vehicle damage only.

WinSMASH - Missing vehicle

In a two vehicle impact only this vehicle was inspected (damage measurements and CDC obtained), and for the other vehicle, the damage measurements (including CDC) are missing; however, enough data are available to use the WinSMASH Missing Vehicle option.

WinSMASH - Damage with CDC only

The WinSMASH output is based on a two vehicle collision with insufficient vehicle damage documentation. The two vehicle collision must include: one complete vehicle inspection and the other vehicle must have a complete CDC. Additional crush profile information such as the WinSMASH L, "D," etc., may be entered to improve the results.

Delta V Not Calculated**At least one vehicle is beyond scope of WinSMASH**

One of the vehicles (which may be this vehicle) involved in this impact cannot be **adequately represented** by the parameters in an acceptable reconstruction size/stiffness category (large truck, motorcycle, bus, etc.). As a general rule in CISS, any vehicle that is not applicable for a CDC is not applicable for the CISSWeb WinSMASH program.

For the following codes: All vehicles are within scope (CDC applicable) of WinSMASH program, but one of the collision conditions is beyond the scope of the WinSMASH program or other acceptable reconstruction techniques, regardless of the adequacy of damage data.

Rollover

The involved vehicle fits the vehicle parameters for an acceptable WinSMASH program; however, the rollover collision is beyond the scope of the program.

Other non-horizontal forces

The involved vehicle fits the vehicle parameter for an acceptable WinSMASH program; however, the other non-horizontal force is beyond the scope of the program, e.g., large object falling on vehicle).

Sideswipe type damage

The involved vehicle fits the vehicle parameters for an acceptable WinSMASH program; however, the sideswipe type of collision is beyond the scope of the program.

Severe override

The involved vehicle fits the vehicle parameters for an acceptable WinSMASH program; however, the severe override type of collision is beyond the scope of the program.

Yielding object

The involved vehicle fits the vehicle parameters for an acceptable WinSMASH program; however, the collision with a yielding object (e.g., sheared utility pole) is beyond the scope of the program.

Overlapping damage

The involved vehicle fits the vehicle parameters for an acceptable WinSMASH program; however, collisions involving overlapping damage (i.e., more than one impact in the same area) are beyond the scope of the program.

Insufficient data (specify)

The involved vehicles and the collision type are applicable for an acceptable WinSMASH program, but due to insufficient data on one or both of the vehicles or object, an acceptable WinSMASH program cannot be used.

Other (specify)

Delta V could not be calculated for a reason not identified in the current pick list. The reason must be specified on the line provided.

EDR Overview

The EDR information collected in CISSWeb corresponds to the data elements in Table I and II of the Code of Federal Regulations (CFR) Title 49, Part 563 - Event Data Recorders, referred to as “Part 563.” This manual describes how the data extracted from the Bosch Crash Data Retrieval (CDR) reports was mapped onto the Part 563 Table I and II fields.

Note: If imaging the EDR while in the field is problematic, the technician should contact their QCC Coordinator for guidance.

Part 563 Data Elements

Data elements found in Part 563 Table I are required for all vehicles. Each vehicle equipped with an EDR must record all of the data elements listed in Table I, during the interval/time and at the sample rate specified in that table. Data elements found in Part 563 Table II are required for vehicles under specified conditions. If the vehicle equipped with an EDR records any of these data elements, the data element must comply with the specifications set in the regulation. Table A shows the Part 563 data elements that will be coded in CISSWeb. EDR information will be entered whenever an EDR is read by the field technician or by other personnel who provide information from the EDR to the technician.

Information will be entered for as many events as the EDR has recorded. The event may be a deployment event, a near deployment event, or neither (just information from the latest ignition cycle).

In most cases if the EDR file (with extension CDRx) is imaged from the vehicle using Bosch CDR kit and attached to the case, the EDR data will be automatically populated in CISSWeb. The quality control center will manually code the data for EDR files obtained in a PDF or printed report. The technician should always code the following data elements in CISSWeb:

1. EDR information Obtained?

And if EDR is imaged then code:

2. Imaging Method

Make sure to attach the EDR file to the case if the file is imaged from the vehicle or obtained from other sources.

Table 4. Part 563 Table I and II cross-referenced to EDR database tables

Part 563 Table #	Part 563 Data Element	EDR Table
I	Delta V, longitudinal	EDRVDATA
I	Maximum delta V longitudinal	EDREVENT
I	Time, maximum delta V	EDREVENT
I	Speed, vehicle indicated	EDRVDATA
I	Engine throttle	EDRVDATA
I	Accelerator pedal	EDRVDATA
I	Service brake	EDRVDATA
I	Ignition cycle, crash	EDREVENT
I	Ignition cycle, download	EDRSUMMARY
I	Seat belt status, driver	EDRRESTRAINT
I	Frontal air bag warning lamp	EDREVENT
I	Frontal air bag deployment, time to first stage, driver	EDRRESTRAINT
I	Frontal air bag deployment, time to first stage, right front passenger	EDRRESTRAINT
I	Multi-event, number of event	EDREVENT
I	Time from event 1 to 2	EDREVENT
I	Complete file recorded	EDREVENT
II	Lateral acceleration	EDRVDATA
II	Longitudinal acceleration	EDRVDATA
II	Normal acceleration	EDRVDATA
II	Delta V, lateral	EDRVDATA
II	Maximum delta V, lateral	EDREVENT
II	Time maximum delta V, lateral	EDREVENT
II	Time for maximum delta V, resultant	EDREVENT
II	Engine rpm	EDRVDATA
II	Vehicle roll angle	EDRVDATA
II	ABS activity	EDRVDATA
II	Stability control	EDRVDATA
II	Steering input	EDRVDATA
II	Seat belt status, right front passenger	EDRRESTRAINT
II	Frontal air bag suppression switch status, right front passenger	EDRRESTRAINT
II	Frontal air bag deployment, time to nth stage, driver	EDRRESTRAINT
II	Frontal air bag deployment, time to nth stage, passenger	EDRRESTRAINT
II	Frontal air bag deployment, nth stage disposal, driver	EDRRESTRAINT
II	Frontal air bag deployment, nth stage disposal, right front passenger	EDRRESTRAINT

Part 563 Table #	Part 563 Data Element	EDR Table
II	Side air bag deployment, time to deploy, driver	EDRRESTRAINT
II	Side air bag deployment, time to deploy, right front passenger	EDRRESTRAINT
II	Side curtain/tube air bag deployment, time to deploy, driver side	EDRRESTRAINT
II	Side curtain/tube air bag deployment, time to deploy, right side	EDRRESTRAINT
II	Pretensioner deployment, time to fire, driver	EDRRESTRAINT
II	Pretensioner deployment, time to fire, right front passenger	EDRRESTRAINT
II	Seat track position switch, foremost, status, driver	EDRRESTRAINT
II	Seat track position switch, foremost, status, right front passenger	EDRRESTRAINT
II	Occupant size classification, driver	EDRRESTRAINT
II	Occupant size classification, right front passenger	EDRRESTRAINT
II	Occupant position classification, driver	EDRRESTRAINT
II	Occupant position classification, right front passenger	EDRRESTRAINT

The following sections describe the definitions and attributes of the EDR data elements coded in CISSWeb. Several values, shown in B, are global codes that may be used for all EDR database table data elements. “Not reported” (-9999) indicates that the data element was not in the Bosch report. “No event recorded” (-9990) indicates that the EDR report did not capture any events and thus did not capture any values for data elements. “Reported, data not valid” (-9998) indicates that the data element was listed on the report, but the corresponding value was not a valid value, e.g., “N/A,” “Invalid,” “Data Not Available.”

Table 5. Global codes

Database	SAS	Meaning
-9990	6	No event recorded
-9998	8	Reported, data not valid (e.g., “Invalid”)
-9999	7	Not reported (i.e., not on the Bosch report, “N/A,” “Data Not Available”)

Note: EDR modules report speed and delta V in mph or kph or both in mph and kph. If the value is reported in mph it is converted to kph. If the EDR module recorded delta V in both kph and mph units, then the kph value is used rather than converting mph to kph. All decimal digits are kept during conversion for consistency.

1 mph = 1.61 kph

EDR Information obtained

Screen Name: **EDR information obtained?**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.VEH. EDRREAD**

Element Attributes

Database	SAS	
3		EDR information not obtained - EDR submitted to manufacturer
4		EDR information not obtained - Hardware issue (specify)
5		EDR information not obtained - Other reasons (specify)
6		EDR information not obtained - Permission not received (specify)
7		EDR information not obtained - Software issue (specify)
8		EDR information not obtained - Vehicle damage prevents accessing EDR data.
9		EDR information not obtained - Vehicle make/model not supported by software or hardware
11	1	Yes - Data entered
12	2	Yes - No event recorded
-9999	99	Unknown

Source

Technician determined, vehicle inspection

Remarks

This variable should be coded regardless of whether or not the EDR is successfully imaged.

EDR information not obtained - EDR submitted to manufacturer

Use this when any module of any make/model of vehicle is submitted to the manufacturer for imaging. This attribute should be updated when module data is received.

EDR information not obtained - Hardware issue (specify)

This is to be used only if the vehicle is equipped with an EDR supported by the commercially available software AND a problem arises in making the necessary connections to the vehicle. Examples:

- cable to the on-board diagnostic plug (OBD) will not fit
- no power to the EDR or the cable to the module does not fit

EDR information not obtained - Other reasons (specify)

This is to be used only if the vehicle is equipped with an EDR supported by the commercially available software/hardware AND the other attributes do not apply. Please specify the reason.

EDR information not obtained - Permission not received (specify)

is to be used if the EDR equipped vehicle is supported by the commercially available software/hardware and the technician was refused permission to access or image the data from the EDR. Also, use this attribute if permission was not granted to cause further damage to the vehicle to gain access.

EDR information not obtained - Software issue (specify)

This is to be used only if the vehicle is equipped with an EDR supported by the commercially available software AND

- all necessary connections to the vehicle were made, and
- the software indicates an error, such as:
 - translation error, or
 - no communication to the air bag module.

EDR information not obtained - Vehicle damage prevents accessing EDR data

Is used when the technician determines the vehicle is equipped with and EDR supported by the commercially available software/hardware and the vehicle has been damaged so that:

- The electrical system is compromised so that the technician cannot access necessary connections, i.e., the on-board diagnostic (OBD) plug is damaged or induced damage prevents access to the OBD, and
- Vehicle damage prevents access to the control module.

Photo documentation of the damage must be provided.**EDR information not obtained - Vehicle make/model not supported by software**

Is used when the technician determines that this vehicle is not supported by the commercially available software/hardware

Yes - Data entered

Is used when the technician obtains data from the EDR.

Yes - No event recorded

Is used when the technician obtains data from the EDR but the events recorded indicates none.

Unknown

This is to be used only if the vehicle is equipped with an EDR supported by the commercially available software/hardware and the EDR couldn't be imaged. Unknown is defined as the technician couldn't obtain the EDR data due to the status of the control module being unknown. Examples:

- module not in vehicle
- module replaced, i.e., current module in vehicle is not the same one as involved in the crash

Imaging Method

Screen Name: **Imaging Method**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS.VEH.METHOD**

Element Attributes

Database	SAS	
1	3	Direct to module
2	1	DLC
3	4	Third party
4	2	Fuse block

Source

Technician-determined vehicle inspection

Remarks

Choose the attribute that describes the method that was used to image the EDR data.

Direct to module

The commercially available hardware is directly connected to the control module.

DLC (diagnostic link connector)

The commercially available hardware is connected to the DLC port also known as the OBD (on-board diagnostics) port. DLC excludes vehicles back-powered using the fuse block method.

Third party

The image was supplied by the manufacturer, law enforcement, insurance companies, or any other third party.

Fuse block

The fuse block method is similar to the DLC method; however, power is not available and the fuse block was used to back-power the module

Total Number of EDR Events

Screen Name:	Total Num. of EDR Events
SAS Data Set:	
SAS Variable:	
Database Name	CISS.CISS.EDRSUMMARY.EVENT_COUNT
Part 563 Table:	N/A

Element Attributes

Total number of events captured by EDR

Source

This is a calculated total number of EDR events derived from EDR database entries.

Module Type

Screen Name: **Module Type**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.EDRSUMMARY.MODULE_TYPE**
 Part 563 Table: **N/A**

Element Attributes

Type of module that the record was obtained from.

Database	SAS	
0	1	Air bag control module
1	2	Powertrain control module
2	3	Rollover sensor
3	3	Pedestrian protection module
4	4	Active safety module
-9999	7	Not reported

Source

OEM	Report Data Element	Modification
Chrysler	EDR Device Type	-
Ford	EDR Device Type	-
GM	EDR Device Type	-
Honda	EDR Device Type	-
Mazda	EDR Device Type	-
Toyota	EDR Device Type	-
Daimler	EDR Device Type	-

Ignition Cycle, Download

Screen Name: **Ignition Cycle Download**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.EDRSUMMARY.IGCYCLE_DOWNLOAD**
 Part 563 Table: **Table I (Element 08 of 15)**

Element Attributes

The number of power cycles applied to the recording device at the time when the data was downloaded since the first use of the EDR.

Database	SAS Value	
0-xxxxxx	0-xxxxxx	Number of ignition cycles at download
-9999	99998	Not reported

Source

OEM	Report Data Element	Modification
Chrysler	Ignition cycle, download Ignition cycle, current Ignition cycle, download (present in document)	-
Ford	Ignition cycle, download (first record) Ignition cycle, download (second record) Ignition cycle, download (third record)	-
GM	Ignition cycles at investigation Ignition cycle at investigation Ignition cycle, download (ignition cycles at investigation)	-
Honda	Ignition cycle, download	-
Mazda	Ignition cycle, download	-
Toyota	-	-
Volvo	-	
Daimler	Ignition cycle, download (cycle)	

Remarks

Ford “Ignition Cycle, Download (First Record),” “Ignition Cycle, Download (Second Record),” and “Ignition Cycle, Download (Third Record)” report an identical number of cycles in successful downloads.

CDR Version Collected

Screen Name: **CDR Version Collected**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS.EDRSUMMARY.CDR_VERSION_COLLECTED**
Part 563 Table: **N/A**

Element Attributes

The Bosch CDR software version used to download the EDR data.

Source

OEM	Report Data Element	Modification
Chrysler	Collected with CDR version	-
Ford	Collected with CDR version	-
GM	Collected with CDR version	-
Honda	Collected with CDR version	-
Mazda	Collected with CDR version	-
Toyota	Collected with CDR version	-
Volvo	Collected with CDR version	-
Daimler	Collected with CDR version	-

CDR Version Reported

Screen Name: **CDR Version Reported**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS.EDRSUMMARY.CDR_VERSION_REPORTED**
Part 563 Table: **N/A**

Element Attributes

The Bosch CDR software version used to report the EDR data.

Source

OEM	Report Data Element	Modification
Chrysler	Reported with CDR version	-
Ford	Reported with CDR version	-
GM	Reported with CDR version	-
Honda	Reported with CDR version	-
Mazda	Reported with CDR version	-
Toyota	Reported with CDR version	-
Daimler	Reported with CDR version	-

Vehicle Identification Number

Screen Name: **EDR VIN**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS.EDRSUMMARY.VIN**
Part 563 Table: **N/A**

Element Attributes

User-entered VIN that has been truncated.

Source

OEM	Report Data Element	Modification
Chrysler	User-entered VIN	-
Ford	User-entered VIN	-
GM	User-entered VIN	-
Honda	User-entered VIN	-
Mazda	User-entered VIN	-
Toyota	User-entered VIN	-
Daimler	User-entered VIN	-

CDR Module Name

Screen Name: **CDR Module Name**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS.EDRSUMMARY.CDR_MODULE_NAME**
Part 563 Table: **N/A**

Element Attributes

The name of EDR module. This can be found by opening the cdrx file in Notepad. The second line in the file is the module name. This variable is collected for internal use only.

ECU Generation

Screen Name: **ECU Generation**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS.EDRSUMMARY.ECU_GENERATION**
Part 563 Table: **N/A**

Element Attributes

The generation or version of the EDR/ECU. This variable is collected for internal use only.

EDR Event Number

Screen Name: **EDR Event Number**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS.EDREVENT.EDR_EVENTNO**

Element Attributes

An integer that starts from 1 for each EDR case and is assigned sequentially to each event in an EDR case.

Source**Remarks**

The EDR event number should not be interpreted as the order in which events occurred.

When combined with “caseyear,” “psu,” “caseid,” and “vehno,” this key can be used to merge event table recorders with other EDR table entries.

These events do not directly relate to the event number given in CISS.

Some Toyota and Chrysler EDR modules count frontal and side records as separate events.

Event Description

Screen Name: **Event Description**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS.EDREVENT.EVENT_TYPE**
Part 563 Table: **Not a Part 563 element**

Element Attributes

The unmodified event description as given in the EDR report.

Source

OEM	Report Data Element	Modification
Chrysler	Event recovered	-
Ford	Event recovered	-
GM	Event recovered	-
Honda	Event recovered	-
Mazda	Event recovered	-
Toyota	Event recovered Events recorded	-
Daimler	Event recovered	-

Remarks

The unmodified event description as given in the EDR report.

Not a Part 563 element.

CDC Event

Screen Name: **Related to this crash**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.EDREVENT.**
 Part 563 Table: **Not a Part 653 Element**

Element Attributes

List the CDC that relates to this EDR event.

Database	SAS	
		Choose event number/CDC from drop-down list
-8887	95	Event not related to this crash
-8879	97	Not reported
-9999	99	Unknown

Source

Technician-determined.

Remarks

If an exact determination cannot be made when attempting to assign a CDC event to a non-deployment or deployment event then **Unknown** should be selected. Choose the CDC event if it has been established beyond any doubt that the non-deployment or deployment is related to it. More than one EDR events may be linked to the same CDC event.

Choose event number from drop-down list

Choose from the list of events previously listed for this vehicle.

Event not related to this crash

If there is a recorded event not related to this crash.

Unknown

If a positive determination cannot be made as to which event the EDR data is associated with, select this attribute.

Maximum Delta V, Longitudinal

Screen Name: **Max Delta V Longitudinal**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.EDREVENT.MAX_DVX**
 Part 563 Table: **Table I (Element 02 of 15)**

Element Attributes

The maximum value of the cumulative change in velocity, as recorded by the EDR, along the longitudinal axis.

Units: kph

Database	SAS	
0-xxxx	0-xxxx	Maximum longitudinal delta V
-9999	997	Not reported
-9998	888	Invalid data

Source

OEM	Report Data Element	Modification
Audi	Maximum Delta V, Longitudinal (mph kph)	“Invalid Data” → -9998 “Data not available” → 9999
Daimler	Maximum Delta V Longitudinal (mph kph)	Converted to kph “Invalid Data” → -9998
Chrysler	Maximum Delta V Longitudinal (mph kph)	-
Ford	Maximum Delta V, Longitudinal (mph kph)	-
GM	Maximum SDM Recorded Velocity Change When Deployment Command Criteria Was Met (mph) Maximum SDM Recorded Velocity Change (mph) Maximum Delta V, Longitudinal (Maximum Longitudinal SDM Recorded Vehicle Velocity Change for FSR Event) mph Maximum SDM Algorithm Longitudinal Velocity Change (mph) Longitudinal SDM Recorded Vehicle Velocity Change at time of Maximum SDM Recorded Vehicle Velocity Change mph	Converted to kph
Honda	Maximum Delta V, Longitudinal (mph)	Converted to kph
Mazda	Maximum Delta V, Longitudinal (mph)	Converted to kph
Toyota	Max Longitudinal Delta V (mph)	Converted to kph

OEM	Report Data Element	Modification
VW	Maximum Delta V, Longitudinal (mph kph)	“Invalid Data” → -9998 “Data not available” → -9999

1 mph = 1.61 kph

Time to Maximum Delta V, Longitudinal

Screen Name: **Time to Max Delta V Longitudinal**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.EDREVENT.MAX_DVX_TIME**
 Part 563 Table: **Table I (Element 03 of 15)**

Element Attributes

The time from crash time zero to the point where the maximum value of the cumulative change in velocity is found, as recorded by the EDR, along the longitudinal axis. The definition of time zero varies by module and OEM.

Units: msec

Database	SAS	
0-xxx	0-xxx	Time to maximum longitudinal delta V
-9999	9997	Not reported
-9998	8888	Invalid data

Source

OEM	Report Data Element	Modification
Audi	Time, Maximum Delta V Longitudinal (msec)	“Invalid Data” → -9998 “Data not available” → -9999
Daimler	Time, Maximum Delta V Longitudinal (msec)	“Invalid Data” → -9998
Chrysler	Time to Maximum Delta V Longitudinal (msec) Time, Maximum Delta V, Longitudinal (msec)	-
Ford	Time, Maximum Delta V Longitudinal (msec)	-
GM	Time, Maximum Delta V (Time From FSR Time Zero to Maximum Longitudinal SDM Recorded Vehicle Velocity Change)(msec)	-
Honda	Time, Maximum Delta V, Longitudinal (msec)	-
Mazda	Time, Maximum Delta V, Longitudinal (msec)	-
Toyota	-	-
VW	Time, Maximum Delta V, Longitudinal (msec)	“Invalid Data” → -9998

Ignition Cycle, CrashScreen Name: **Ignition Cycle-Crash**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.EDREVENT.IGCYCLE_CRASH**Part 563 Table: **Table I (Element 07 of 15)****Element Attributes**

The number of power cycles applied to the recording device at the time of the crash.

Database	SAS	
0-xxxxxx	0-xxxxxx	Number of ignition cycles at event
-9999	99997	Not reported
-9998	99998	Invalid data

Source

OEM	Report Data Element	Modification
Chrysler	Ignition Cycles, Crash Ignition Cycle, Crash	-
Daimler	Ignition Cycle, Crash (cycle)	-
Ford	Ignition Cycle, Crash Ignition Cycle Key on Timer at Start of Frontal Event (sec) Ignition Cycle Key on Timer at Start of Side Event (sec)	-
GM	Ignition Cycles at Deployment Level Ignition Cycles at Event Ignition Cycle, Crash (Ignition Cycles at Event) Ignition Cycles at Deployment Ignition Cycles at Non-Deployment	-
Honda	Ignition Cycle, Crash	-
Mazda	Ignition Cycle, Crash	-
Toyota	-	-
VW	Ignition Cycle, Crash (cycle)	“Invalid Data” → -9998

Frontal Air Bag Warning LampScreen Name: **Frontal Air Bag Warning Lamp Status**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.EDREVENT.ABFRONT_WARNING_LAMP**Part 563 Table: **Table I (Element 10 of 15)****Element Attributes**

Indicates whether the warning lamp required by FMVSS No. 208 is on or off.

Database	SAS	Formatted Value	Meaning
0	0	Off	Frontal air bag warning lamp is off
1	1	On	Frontal air bag warning lamp is on
-9999	7	-Not reported	

Source

OEM	Report Data Element	Modification
Chrysler	Air Bag Warning Lamp, on/off Air Bag Warning Lamp “On” at Event Air Bag Warning Lamp	-
Ford	Frontal Air Bag Warning Lamp, on/off Frontal Air Bag Warning Lamp, on/off Warning Lamp Command at Start of event	-
GM	SIR Warning Lamp Status this Ignition Cycle SIR Warning Lamp Status Frontal Air Bag Warning Lamp (SIR Warning Lamp Status 0.5 Seconds Prior to Time Zero)	“Off” → 0 “On” → 1 “Data Invalid” → -9998
Honda	Frontal Air Bag Warning Lamp (on/off)	-
Mazda	Frontal Air Bag Warning Lamp (on/off)	“Off” → 0 “On” → 1
Maserati	Air Bag Warning Lamp, on/off	“Off” → 0 “On” → 1
Nissan	Frontal Air Bag Warning Lamp (on/off)	“Off” → 0 “On or Blinking” → 1
Toyota	-	-
Volvo	Frontal Air Bag Warning Lamp	“Off” → 0 “On” → 1
Daimler	Air Bag Warning Lamp (AWL)	“Off” → 0 “On” → 1

Multi-Event, Number of EventsScreen Name: **Multi-Event, Num of Events**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.EDREVENT.MULTEVENT_NUM_EVENTS**Part 563 Table: **Table I (Element 13 of 15)****Element Attributes**

The occurrence of 2+ events, the first and last of which begin not more than 5 seconds apart.

Database	SAS	
0-x	0-x	Number of Events
-9999		Not reported
-9998		Invalid data

Source

OEM	Report Data Element	Modification
Chrysler	Multi-event, Number of Events Multi-Event, Number of Events (1,2)	-
Daimler	Multi-Event, Number of Events	
Ford	Multi-Event, Number of Events (1,2) Multi-Event, Number of Events	-
GM	Multi-Event, Number of Events (Event Counter)	“SNA” → -9999
Honda	Multi-Event, Number of Events	-
Mazda	Multi-Event, Number of Events (1, 2)	-
Maserati	Multi-Event, Number of Events (1, 2)	-
Nissan	Multi-Event, Number of Events (1, 2)	Single event or 1st event of multi-event → 1 2nd event of multi-event → 2
Toyota	-	-
VW	Multi-Event, Number of Events	“Invalid Data” → -9998” Reserved” → -9999 “Data Not Available” → -9999

Remarks

Part 563 only requires the recording of 2 events, but some EDR modules record more.

Time From Event 1 to 2

Screen Name: **Time From Event 1 to 2**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.EDREVENT.TIME_BTWN_EVENTS**
 Part 563 Table: **Table I (Element 14 of 15)**

Element Attributes

The elapsed time from time zero of the first event to time zero of the second event.

Units: sec

Database	SAS	
xxxx	xxxx	Time between events
-9997		Time between events exceeds 5.0 seconds
-9998		Reported, data not valid
-9999		Not reported

Source

OEM	Report Data Element	Modification
Chrysler	Time From Event 1 to 2 (sec)	“N/A” → -9998
	Time From Event 1 to 2 (Time since last event)(sec)	“> 5” → -9997
Daimler	Time From Previous Event to Current Event (msec)	Converted to seconds “Data Not Available” → -9999
Ford	Time From Event 1 to 2 (msec)	Converted to sec “> 5” → -9997
GM	Time Between Events (sec)	“Data Not Available” → -9999
	Time Between Non-Deployment and Deployment Events (sec)	“N/A” → -9999
	Time Between Deployment and Deployment Level Events (sec)	“SNA” → -9999
	Time Between This Event and the Previous Event (sec)	
	Time From Event 1 to 2 (Time Between Events) (seconds)	
Honda	Time From Event 1 to 2 (sec)	
Mazda	Time From Event 1 to 2 (sec)	“SNA” → -9998

OEM	Report Data Element	Modification
Maserati	Time From Event 1 to 2 (sec)	"> 5" → -9997
Nissan	Time From Event 1 to 2 (sec)	"N/A" → -9998
Toyota	Time From Pre-Crash TRG (msec) Time From Previous TRG (msec) Time (msec)	Converted to seconds "-16381 or greater" → -9997
VW	Time From Previous Event to Current Event (msec)	Converted to seconds "Invalid Data" → -9998 "Data Not Available" → -9999

Complete File Recorded

Screen Name: **Complete File Recorded**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.EDREVENT.COMPLETE_FILE_RECORDED**
 Part 563 Table: **Table I (Element 15 of 15)**

Element Attributes

Indicates whether the process of saving captured EDR data into a non-volatile memory for subsequent retrieval was completed successfully.

Database	SAS		
0	0	No	File recording was interrupted
1	1	Yes	Complete file successfully recorded
-9999	-	Not reported	

Source

OEM	Report Data Element	Modification
Audi	Complete File Recorded	“Completed Successfully” → 1 “Incomplete Data” → 0 “No” → 0
Chrysler	Complete File Recorded (Yes, No) Complete File Recorded	“Complete” → 1 “Interrupted” → 0
Daimler	Complete File Recorded, Generic, Prio 1 Data	Completed Successfully → 1
Ford	Complete File Recorded (Yes,No) Frontal Event Recording Complete Side Event Recording Complete	“Complete” → 1 “Yes” → 1 “No” → 0
GM	Event Recording Complete Complete File Recorded (Event Recording Complete)	-
Honda	Complete File Recorded (Yes/No)	“Yes” → 1 “No” → 0
Mazda	Complete File Recorded (Yes/No)	“Yes” → 1 “No” → 0
Nissan	Complete File Recorded (Yes/No)	“Yes (Complete)” → 1 Completed Successfully → 1 “No (Not Complete)” → 0

OEM	Report Data Element	Modification
Toyota	Recording Status, Front/Rear Crash Info.	“Complete” → 1
	Recording Status, Side Crash Info.	“Interrupted” → 0
	Recording Status, Rollover Crash Info.	
Volvo	Complete File Recorded (Yes/No)	“Yes” → 1
		“No” → 0
VW	Complete File Recorded	Incomplete Data → 0
		Completed Successfully → 1

Maximum Delta V, LateralScreen Name: **Max Delta V Lateral**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.EDREVENT.MAX_DVY**Part 563 Table: **Table II (Element 05 of 30)****Element Attributes**

The maximum value of the cumulative change in velocity, as recorded by the EDR, of the vehicle along the lateral axis.

Units: kph

Database	SAS	
0-xxxx	0-xxxx	Maximum lateral delta V
-9999		Not reported
-9998		Invalid data

Source

OEM	Report Data Element	Modification
Audi	Maximum Delta V Lateral (mph kph)	“Invalid Data” → -9998 “Data not available” → -9999
Daimler	Maximum Delta V Lateral (mph kph)	Converted to kph “Invalid Data” → -9998
Chrysler	Maximum Delta V Lateral (mph kph)	-
Ford	Maximum Delta V, Lateral (mph kph)	-
GM	Maximum Delta V, Lateral (Maximum Lateral SDM Recorded Vehicle Velocity Change for FSR Event) mph Lateral SDM Recorded Vehicle Velocity Change at time of Maximum SDM Recorded Vehicle Velocity Change mph	Converted to kph
Honda	Maximum Delta V, Lateral (mph)	Converted to kph
Mazda	Maximum Delta V, Lateral (mph)	Converted to kph
Nissan	Maximum Delta V, Lateral (mph)	Converted to kph “N/A” → -9999
Toyota	-	-
VW	Maximum Delta V, Lateral (mph)	Converted to kph “Invalid Data” → -9998 “Data not available” → -9999

1 mph = 1.61 kph

Time Maximum Delta V, LateralScreen Name: **Time to Max Delta V Lateral**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.EDREVENT.MAX_DVY_TIME**Part 563 Table: **Table II (Element 06 of 30)****Element Attributes**

The time from crash time zero to the point where the maximum value of the cumulative change in velocity is found, as recorded by the EDR, along the lateral axis.

Units: msec

Database	SAS	
0-xxx	0-xxx	Time to maximum lateral delta V
-9999		Not reported
-9998		Invalid data

Source

OEM	Report Data Element	Modification
Audi	Time, Maximum Delta V Lateral (msec)	“Invalid Data” → -9998 “Data not available” → -9999
Daimler	Time, Maximum Delta V Lateral (msec)	“Invalid Data” → -9998
Chrysler	Time to Maximum Delta V Lateral (msec) Time, Maximum Delta V, Lateral (msec)	-
Ford	Time, Maximum Delta V Lateral (msec)	-
GM	Time Maximum Delta V, Lateral (Time From FSR Time Zero to Maximum Lateral SDM Recorded Vehicle Velocity Change)(msec)	-
Honda	Time, Maximum Delta V, Lateral (msec)	-
Mazda	Time, Maximum Delta V, Lateral (msec)	-
Toyota	-	-
VW	Time, Maximum Delta V, Lateral (msec)	“Invalid Data” → -9998 “Data not available” → -9999

Remarks

The definition of time zero varies by module and OEM.

Time for Maximum Delta V, ResultantScreen Name: **Time to Max Delta V Resultant**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.EDREVENT.MAX_DVTOTAL_TIME**Part 563 Table: **Table II (Element 07 of 30)****Element Attributes**

The time from crash time zero to the point where the maximum delta V resultant occurs, as recorded by the EDR or processed during data download.

Units: msec

Database	SAS	
0-xxx	0-xxx	Time to maximum resultant delta V
-9999		Not reported
-9998		Invalid data

Source

OEM	Report Data Element	Modification
Audi	Time, Maximum Delta V, Resultant (msec)	“Invalid Data” → -9998 “Data not available” → -9999
Chrysler	-	-
Ford	-	-
GM	-	-
Honda	Time, Maximum Delta V, Resultant (msec)	-
Mazda	Time, Maximum Delta V, Resultant (msec)	-
Nissan		
Toyota	-	-
Volvo		
VW	Time, Maximum Delta V, Resultant (msec)	“Invalid Data” → -9998 “Data not available” → -9999

Remarks

The definition of time zero varies by module and OEM.

Occupant Role

Screen Name: **Seating Position**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS.EDRRESTRAINT.OCCUPANT**
Part 563 Table: **N/A**

Element Attributes

Database	SAS	
0	0	Driver
1	1	Right front passenger

Remarks

This value does not relate to the occupant number given in CISS.

Seat Belt StatusScreen Name: **Seat Belt Status**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.EDRRESTRAINT.BELT_STATUS**Part 563 Table: **Table I (Element 09 of 15) - Driver (occupant=0)****Table II (Element 13 of 30) - Right Front Passenger (occupant=1)****Element Attributes**

The signal from the safety system that is used to determine that an occupant's seat belt (for both driver and right front passenger) is buckled or not buckled.

Database	SAS	Formatted	Value
0	0	No	Occupant belt status was unbuckled
1	1	Yes	Occupant belt status was buckled
-9998		-	Reported, data not valid
-9999		-	Not reported

Source

OEM	Report Data Element	Modification
Audi	Seat Belt Status, Driver	"Not Belted" → 0
	Seat Belt Status, Front Passenger	"Belted" → 1
		"Invalid Data" → -9998
Chrysler	Seat Belt Status, Driver (if Equipped)	"Unbuckled" → 0
	Seat Belt Status, Outboard Front Passenger	"Not Buckled" → 0
	Seat Belt Status, Passenger (if Equipped)	"Buckled" → 1
		"Faulted" → -9998
BMW	Seat Belt Status, Driver	"Not Belted" → 0
	Seat Belt Status, Passenger	"Unbelted" → 0
		"Belted" → 1
Daimler	Seat Belt Status, Driver	"Not Belted" → 0
	Seat Belt Status, Passenger	"Belted" → 1
Ford	Seat Belt Status, Driver	"Unbuckled" → 0
	Driver Seat Belt Switch Circuit Status at	"Not Buckled" → 0
	Algorithm Wake-Up	"Unbelted" → 0
	Driver's Belt Switch Circuit Status	"Passenger
	Driver Seat Belt Circuit Status	Not Buckled" → 0
	Driver Belt Switch Circuit Status at Start of Event	"Driver Not Buckled" → 0
	Seat Belt Status, Front Passenger	"Buckled" → 1
		"Belted" → 1

OEM	Report Data Element	Modification
	Passenger Seat Belt Switch Circuit Status at Algorithm Wake-up Passenger's Belt Switch Circuit Status Right Front Passenger Seat Belt Circuit Status Passenger Belt Switch Circuit Status at Start of Event	"Passenger Buckled" → 1 "Driver Buckled" → 1
GM	Driver Belt Switch Circuit Status (if Equipped) Driver's Belt Switch Circuit Status Seat Belt Status, Driver (Driver Belt Switch Circuit Status) (if Equipped) Passenger's Belt Switch Circuit Status Passenger Belt Switch Circuit Status (if Equipped) Seat Belt Status, Right Front Passenger (Passenger Belt Switch Circuit Status) (if Equipped)	"Unbuckled" → 0 "Not Buckled" → 0 "Buckled" → 1
Honda	Seat Belt Status, Driver Seat Belt Status, Right Front Passenger	"Off" → 0 "Unbuckled" → 0 "On" → 1 "Buckled" → 1
Mazda	Seat Belt Status, Driver Seat Belt Status, Right Front Passenger	"Unbelted" → 0 "Belted" → 1
Mitsubishi	Seat Belt Status, Driver Seat Belt Status, Right Front Passenger	"Unbelted" → 0 "Belted" → 1
Nissan	Seat Belt Status, Driver Seat Belt Status, Right Front Passenger	"Off (Unfastened)" → 0 "On (Fastened)" → 1 "Unbelted" → 0 "Belted" → 1
Subaru	Seat Belt Status, Driver Seat Belt Status, Passenger	"Unbuckled" → 0 "Buckled" → 1
Toyota	Seat Belt Status, Driver Buckle Switch, Driver Buckle Switch, Left Seat Seat Belt Status, Front Passenger Buckle Switch, Passenger Buckle Switch, Right Seat	"Unbuckled" → 0 "Unbelted" → 0 "OFF" → 0 "Buckled" → 1 "Belted" → 1 "ON" → 1
Volvo	Seat Belt Status, Driver Seat Belt Status, Passenger	"Off, Unbuckled" → 0 "On, Buckled" → 1
VW	Seat Belt Status, Driver Seat Belt Status, Front Passenger	"Not Belted" → 0 "Belted" → 1 "Invalid Data" → -9998

Time to Frontal Air Bag Deployment, First Stage

Screen Name: **Time to Frontal Air Bag Deployment, First Stage**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.EDRRESTRAINT.ABFRONT_STAGE1_TIME**
 Part 563 Table: **Table I (Element 11 of 15) - Driver (occupant=0)**
Table I (Element 12 of 15) - Right Front Passenger (occupant=1)

Element Attributes

The elapsed time between time zero and the time when the first stage of a frontal air bag was commanded to deploy.

Units: msec

Database	SAS	
0-xxx	0-xxx	Frontal air bag time to first stage deployment
-9996		Frontal air bag deployed, no time specified
-9997		Frontal air bag not deployed
-9998		Reported, data not valid
-9999		Not reported

Source

OEM	Report Data Element	Modification
Chrysler	Frontal Air Bag Deployment, First Stage, Driver	“Yes” → -9996
	Frontal Air Bag Deployment, Time to First Stage Deployment, Driver (msec)	“No” → -9997
	Frontal Air Bag Deployment, Time to Deploy, First Stage, Driver (msec)	“Exceeded storage range” → -9998
	Frontal Air Bag Deployment, First Stage, Passenger	
	Frontal Air Bag Deployment, Time to First Stage Deployment, Passenger (msec)	
	Frontal Air Bag Deployment, Time to Deploy, First Stage, Outboard Front Passenger (msec)	
Ford	Frontal Air Bag Deployment, Time to First Stage Deployment, Driver (msec)	“Not Deployed” → -9997
	Driver First Stage Deployment Time (msec)	“N/A” → -9997
	Driver First Stage Air Bag Deployment Time (msec)	“No Deploy” → -9997
		“Not Deployed” → -9997
	Time Between Algorithm Enable and Air Bag First Stage Deployment (msec)	“N/A” → -9997
		“No Deploy” → -9997

OEM	Report Data Element	Modification
GM	Driver First Stage Time From Algorithm Enable to Deployment Command Criteria Met (msec)	“Suppressed” → -9997
	Driver First Stage Time From Algorithm Enable to Deployment Command Criteria Met (msec)	“Data Not Available” → -9999
	Frontal Air Bag Deployment, Time to First Stage Deployment, Driver (Driver First Stage Time From Time Zero to Deployment Command Criteria Met) (msec)	
	Time From FSR Event Enable to Driver First Stage Deployment Command Criteria Met (msec)	
	Passenger First Stage Time From Algorithm Enable to Deployment Command Criteria Met (msec)	
	Passenger First Stage Time Algorithm Enabled to Deployment Command Criteria Met (msec)	
	Frontal Air Bag Deployment, Time to First Stage Deployment, Right Front Passenger (Passenger First Stage Time From Time Zero to Deployment Command Criteria Met) (msec)	
	Time From FSR Event Enable to Passenger First Stage Deployment Command Criteria Met (msec)	
	Algorithm Enable to Maximum SDM Recorded Velocity Change (msec)	
Honda	Frontal Air Bag Deployment, Time to Deploy First Stage, Driver (msec)	-
	Frontal Air Bag Deployment, Time to Deploy First Stage, Right Front Passenger (msec)	
Mazda	Frontal Air Bag Deployment, Time to Deploy/First Stage, Driver (msec)	“N/A” → -9999
	Frontal Air Bag Deployment, Time to Deploy/First Stage, Right Front Passenger (msec)	“SNA” → -9999
Nissan	Frontal Air Bag Deployment, Time to Deploy/First Stage, Driver (msec)	“N/A” → -9997
	Frontal Air Bag Deployment, Time to Deploy/First Stage, Right Front Passenger (msec)	“Invalid” → -9998
Toyota	Time to Deployment Command, Front Air Bag, Driver (msec)	“Not Commanded” → -9997
	Frontal Air Bag Deployment, Time to First Stage Deployment, Driver (msec)	“N/A” → -9997
	Time to Deployment Command, Front Air Bag, Passenger (msec)	“No” → -9997
		“SNA” [†] → -9998

OEM	Report Data Element	Modification
	Frontal Air Bag Deployment, Time to First Stage Deployment, Front Passenger (msec)	
Volvo	Frontal Air Bag Deployment, Time to Deploy First Stage, Driver (msec) Frontal Air Bag Deployment, Time to Deploy First Stage, Passenger (msec)	“Not Deployed” → -9997 “Not Commanded” → -9997 “Not Equipped” → -9998 “>250” → -9996
Daimler	Frontal Air Bag, Time to First Stage Deployment, Driver (msec) Frontal Air Bag, Time to First Stage Deployment, Front Passenger (msec)	“Not Deployed” → -9997 “Data Not Available ” → -9997
BMW	Frontal Air Bag, Time to First Stage Deployment, Driver (msec) Frontal Air Bag, Time to First Stage Deployment, Front Passenger (msec)	“Not Deployed” → -9997 “Data Not Available” → -9997

† Signal Not Available

Note

For GM, deployment time for single-stage air bags are loaded into the first-stage deployment time field.

Time to Frontal Air Bag Deployment, Second Stage

Screen Name: **Time to Frontal Air Bag Deployment, Second Stage**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.EDRRESTRAINT.ABFRONT_STAGE2_TIME**
 Part 563 Table: **Table II (Element 15 of 30) - Driver (occupant=0)**
Table II (Element 16 of 30) - Right Front Passenger (occupant=1)

Element Attributes

The elapsed time from crash time zero to the deployment command for the nth stage of a frontal air bag.

Units: msec

Database	SAS	
0-xxx	0-xxx	Frontal air bag time to second stage deployment
-9996		Frontal air bag second stage fired, no time specified
-9997		Frontal air bag second stage not fired
-9998		Reported, data not valid
-9999		Not reported

Source

OEM	Report Data Element	Modification
Chrysler	Frontal Air Bag Deployment, Second Stage, Driver	“Yes” → -9996
	Frontal Air Bag Deployment, Time from First Stage to Second Stage Deployment, Driver (msec)	“No” → -9997
	Frontal Air Bag Deployment, Time Between Squib #1 and Squib #2, Driver (msec)	“Exceeded storage range” → -9998
	Frontal Air Bag Deployment, Time From T0 to Second Stage Deployment, Driver (msec)	
	Frontal Air Bag Deployment, Time to Second Stage , Driver (msec)	
	Frontal Air Bag Deployment, Second Stage, Passenger	
	Frontal Air Bag Deployment, Time From First Stage to Second Stage Deployment, Passenger (msec)	
	Frontal Air Bag Deployment, Time Between Squib #1 and Squib #2, Passenger (msec)	
	Frontal Air Bag Deployment, Time From T0 to Second Stage Deployment, Passenger (msec)	“Yes” → -9996
	Frontal Air Bag Deployment, Time to Second Stage, Outboard Front Passenger (msec)	“No” → -9997

OEM	Report Data Element	Modification
Ford	Frontal Air Bag Deployment, Time to Second Stage, Driver (msec) Driver Second Stage Deployment Time (msec) Driver Second Stage Air Bag Deployment Time (msec) Time Between Algorithm Enable and Air Bag Second Stage Deployment (msec) Frontal Air Bag Deployment, Time to Second Stage, front passenger (msec) Passenger Second Stage Deployment Time (msec) Passenger Second Stage Air Bag Deployment Time (msec)	“Not Deployed” → -9997 “N/A” → -9997 “No Deploy” → -9997 “Not Deployed” → -9997 “N/A” → -9997 “No Deploy” → -9997
GM	Driver Second Stage Time From Algorithm Enable to Deployment Command Criteria Met (msec) Driver Second Stage Time Algorithm Enabled to Deployment Command Criteria Met (msec) Frontal Air Bag Deployment, Time to Second Stage, Driver (Driver Second Stage Time From Time Zero to Deployment Command Criteria Met) (msec) Time From FSR Event Enable to Driver Second Stage Deployment Command Criteria Met (msec) Passenger Second Stage Time From Algorithm Enable to Deployment Command Criteria Met (msec) Passenger Second Stage Time Algorithm Enabled to Deployment Command Criteria Met (msec) Frontal Air Bag Deployment, Time to Second Stage, Right Front Passenger (Passenger Second Stage Time From Time Zero to Deployment Command Criteria Met) (msec) Time From FSR Event Enable to Passenger Second Stage Deployment Command Criteria Met (msec)	“Suppressed” → -9997 “Data Not Available” → -9998
Honda	Frontal Air Bag Deployment, Time to Second Stage, Driver (msec) Frontal Air Bag Deployment, Time to Second Stage, Right Front Passenger (msec)	-
Mazda	Frontal Air Bag Deployment, Time to Second Stage, Driver (msec)	-
Nissan	Frontal Air Bag Deployment, Time to Second Stage, Driver (msec)	“N/A” → -9997 “Invalid” → -9998

OEM	Report Data Element	Modification
	Frontal Air Bag Deployment, Time to Second Stage, Right Front Passenger (msec)	
Toyota	Frontal Air Bag Deployment, Time to Second Stage, Driver (msec) Frontal Air Bag Deployment, Time to Second Stage, Front Passenger (msec)	“Not Commanded” → - 9997 “N/A” → -9997 “No” → -9997 “SNA” [†] → -9998
Volvo	Frontal Air Bag Deployment, Time to Deploy Second Stage, Driver (msec) Frontal Air Bag Deployment, Time to Deploy Second Stage, Passenger (msec)	“Not Deployed” → -9997 “Not Commanded” → -9997 “Not Equipped” → -9998 “> 250” → -9996
Daimler	Frontal Air Bag, Time to Second Stage Deployment, Driver (msec) Frontal Air Bag, Time to Second Stage Deployment, Front Passenger (msec)	“Not Deployed” → -9997 “Data Not Available” → -9997
BMW	Frontal Air Bag, Time to Second Stage Deployment, Driver (msec) Frontal Air Bag, Time to Second Stage Deployment, Front Passenger (msec)	“Not Deployed” → -9997

[†] Signal Not Available

Remarks

All vehicles assumed to have only two stages.

Frontal Air Bag Suppression Switch StatusScreen Name: **Frontal Air Bag Suppression Switch Status**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.EDRRESTRAINT.ABFRONT_SUPPRESS**Part 563 Table: **Table II (Element 14 of 30) - Right Front Passenger (occupant=1)****Element Attributes**

The status of the switch indicating whether an air bag suppression system is on or off.

Database	SAS	Formatted	Value
0	0	Off	Frontal air bag not suppressed
1	1	On	Frontal air bag suppressed
2	2	Auto	Suppressed if occupied, unless occupied by child
-9998		-	Reported, data not valid
-9999		-	Not reported

Source

OEM	Report Data Element	Modification
BMW	-xxxxxx	“Suppressed” → 1
Chrysler	-	-
Ford	Passenger Air Bag Switch Position During Event	“Deactivated” → 1 “Activated” → 0
GM	OS Status at Event Enable (if Equipped) Passenger Front Air Bag Suppression Switch Circuit Status Passenger SIR Suppression Switch Circuit Status (if Equipped) Passenger SIR Suppression Switch Circuit Status (if Equipped) Passenger SIR Suppression Switch Circuit Status	“Air Bag Suppressed” → 1 “On” → 1 “Suppressed” → 1 “Air Bag Not Suppressed” → 0 “Off” → 0 “Not Suppressed” → 0 “Data Not Available” → -9998
Honda	Occupant Size Classification, Right Front Passenger Air Bag Suppressed (Yes/No)	“Yes” → 1 “No” → 0
Mazda	Frontal Air Bag Suppression Switch Status	-
Nissan	Frontal Air Bag Suppression Switch Status	“On (AS air bag inhibit)” → 1 “Off (AS air bag deploy)” → 0
Toyota	Front Passenger Air Bag Disable Switch	“Auto” → 2

OEM	Report Data Element	Modification
	Frontal Air Bag Suppression Switch Status, Front Passenger	“On”→ 1 “Off” → 0 “SNA” † → -9998
Daimler	-	-

† Signal Not Available

Frontal Air Bag Deployment, Disposal

Screen Name: **Frontal Air Bag Deployment, Disposal**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.EDRRESTRAINT.ABFRONT_DISPOSAL**
 Part 563 Table: **Table II (Element 17 of 30) - Driver (occupant=0)**
Table II (Element 18 of 30) - Right Front Passenger (occupant=1)

Element Attributes

Indicates whether the deployment command of the second (or higher, if present) stage of a frontal air bag for the purpose of disposing the propellant from the air bag device.

Database	SAS	Formatted	Value
0	0	No	Second stage deployment was not for the purpose of disposal
1	1	Yes	Second stage deployment was a disposal
-9999		-	Not reported

Source

OEM	Report Data Element	Modification
Audi	Front Air Bag, Second Stage Disposal, Driver Front Air Bag, Second Stage Disposal, Front Passenger	“No Disposal” → 0 “Disposal” → 1 “Data Not Available” → -9999
Chrysler	-	-
Ford	-	-
GM	Driver Second Stage Deployment Loop Commanded for Disposal (if Equipped) Passenger Second Stage Deployment Loop Commanded for Disposal (if Equipped)	“Disposal” → 1
Honda	Frontal Air Bag Deployment, nth Stage Disposal, Driver (Yes/No) Frontal Air Bag Deployment, nth Stage Disposal, Right Front Passenger (Yes/No)	“No” → 0 “No (Not disposal)” → 0 “Yes” → 1 “Yes (disposal)” → 1
Mazda	Frontal Air Bag Deployment, Second Stage Disposal, Driver (Yes/No) Frontal Air Bag Deployment, Second Stage Disposal, Right Front Passenger (Yes/No)	-
Nissan		
Toyota	-	-

OEM	Report Data Element	Modification
Daimler	Frontal Air Bag Deployment, Second Stage Disposal, Driver	“No Disposal” → 0
		“Disposal” → 1
	Frontal Air Bag Deployment, Second Stage Disposal, Front Passenger	“Data Not Available” → -9999

Time to Side Air Bag DeploymentScreen Name: **Time to Side Air Bag Deployment**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.EDRRESTRAINT.ABSIDE_TIME**Part 563 Table: **Table II (Element 19 of 30) - Driver (occupant=0)****Table II (Element 20 of 30) - Right Front Passenger (occupant=1)****Element Attributes**

The elapsed time from crash time zero to the deployment command for a side air bag.

Units: msec

Database	SAS	
0-xxx	0-xxx	Side air bag time to deployment
-9996		Side air bag deployed, no time specified
-9997		Side air bag not deployed
-9998		Reported, data not valid
-9999		Not reported

Source

OEM	Report Data Element	Modification
Audi	Side Air Bag Time to Deployment First Stage, Driver (msec)	Deployment at Time Zero → 0
	Side Air Bag, Time to Deployment First Stage, Front Passenger (msec)	“Not Deployed” → -9997 “Invalid Data” → -9998
BMW		

OEM	Report Data Element	Modification
Chrysler	Side Seat Air Bag Deployment, Left	“Yes” → -9996
	Side Air Bag Deployment, Left Side (if Equipped)	“No” → -9997
	Side Air Bag Deployment, Left	
	Seat Mounted Side Air Bag Deployment, Left Side Row #1 (if Equipped)	
	Side Air Bag Deployment, Left Side (if Equipped)	
	Side Seat Air Bag Deployment, Right	
	Side Air Bag Deployment, Right Side (if Equipped)	
	Side Air Bag Deployment, Right	
	Seat Mounted Side Air Bag Deployment, Right Side Row #1 (if Equipped)	
	Side Air Bag Deployment, Right Side (if Equipped)	
Ford	Side Air Bag Deployment, Time to First Stage, Driver (msec)	“Not Deployed” → -9997
	Driver Side Air Bag Deployment Time (msec)	“N/A” → -9997
	Side (thorax) Air Bag Deployment, Time to Deploy, Driver (msec)	“No Deploy” → -9997
	Side (Thorax) Air Bag Deployment, Time to Deploy, Driver Side (msec)	
	Side (Thorax) Air Bag Deployment, Time to Deploy, Right Front Passenger (msec)	
	Side Air Bag Deployment, Time to First Stage, Front Passenger (msec)	
	Passenger Side Air Bag Deployment Time (msec)	
	Side (Thorax) Air Bag Deployment, Time to Deploy, Right Front Passenger (msec)	

OEM	Report Data Element	Modification
GM	Driver Thorax/Curtain Time From Algorithm Enable to Deployment Command Criteria Met (msec) Side Air Bag Deployment, Time to Deploy, Driver (Driver Thorax/Curtain Time From Time Zero to Deployment Command Criteria Met) (msec) Time From FSR/Rollover Event Enable to Driver Thorax/Curtain Deployment Command Criteria Met (msec) Passenger Thorax/Curtain Time From Algorithm Enable to Deployment Command Criteria Met (msec) Side Air Bag Deployment, Time to Deploy, Right Front Passenger (Passenger Thorax/Curtain Time From Time Zero to Deployment Command Criteria Met) (msec) Time From FSR/Rollover Event Enable to Passenger Thorax/Curtain Deployment Command Criteria Met (msec)	“Data Not Available” → -9998 “Data Invalid” → -9998
Honda	Side Air Bag Deployment, Time to Deploy, Driver (msec) Side Air Bag Deployment, Time to Deploy, Right Front Passenger (msec)	-
Mazda	-	-
Nissan	Side Air Bag Deployment, Time to Deploy, Driver (msec) Side Air Bag Deployment, Time to Deploy, Right Front Passenger (msec)	“N/A” → -9997 “Invalid” → -9998
Toyota	Side Air Bag Deployment, Time to Deploy (if Equipped) (msec) Recorded Side*	“Not Commanded” → -9997 “No” → -9997 “N/A” → -9997 “SNA” → -9999 “Already Deployed” → -9996
Volvo	Left Side Air Bag, Time to Deploy (msec) Right Side Air Bag, Time to Deploy (msec)	“Not Deployed” → -9997 “Not Commanded” → -9997 “Not Equipped” → -9998 “> 250” → -9996

OEM	Report Data Element	Modification
Daimler	Side Air Bag, Time to Deployment First Stage, Driver (msec)	“Not Deployed” → -9997
	Side Air Bag, Time to Deployment First Stage, Front Passenger (msec)	“Data Not Available” → -9997
VW	Side Air Bag, Time to Deployment First Stage, Driver (msec)	Deployment at Time Zero → 0
	Side Air Bag, Time to Deployment First Stage, Front Passenger (msec)	“Not Deployed” → -9997
		“Invalid Data” → -9998

Remarks

Toyota modules do not identify the side of torso air bag deployment and it is assumed to be on the recorded side.

Time to Side Curtain/Tube DeploymentScreen Name: **Time to Side Curtain/Tube Deployment**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.EDRRESTRAINT.ABCURT_TIME**Part 563 Table: **Table II (Element 21 of 30) - Driver (occupant=0)****Table II (Element 22 of 30) - Right Front Passenger (occupant=1)****Element Attributes**

The elapsed time from crash time zero to the deployment command for a curtain air bag.

Units: msec

Database	SAS	
0-xxx	0-xxx	Curtain air bag time to deployment
-9996		Curtain air bag deployed, no time specified
-9997		Curtain air bag not deployed
-9998		Reported, data not valid
-9999		Not reported

Source

OEM	Report Data Element	Modification
Audi	Side Curtain/Tube Air Bag, Time to Deployment, Driver Side (msec) Side Curtain/Tube Air Bag, Time to Deployment, Passenger Side (msec)	Deployment at Time Zero → 0 “Not Deployed” → -9997 “Invalid Data” → - 9998
Chrysler	Commanded Left Side Curtain Air Bag Deployment Side Curtain Air Bag Deployment, Left Curtain Air Bag Deployment, Left Side (if Equipped) Commanded Right Side Curtain Air Bag Deployment Side Curtain Air Bag Deployment, Right Curtain Air Bag Deployment, Right Side	“Yes” → -9996 “No” → -9997
Ford	Side Curtain Air Bag Deployment, Time to Deploy, Driver Side (msec) Curtain Air Bag Deployment, Time to First Stage, Driver (msec) Driver CURTAIN Air Bag Deployment Time (msec) Side Curtain Air Bag Deployment, Time to Deploy, Driver Side (msec)	“Not Deployed”→ -9997 “N/A” → -9997 “No Deploy”→ -9997

OEM	Report Data Element	Modification
	Side Curtain Air Bag Deployment, Time to Deploy, Passenger Right Side (msec) Curtain Air Bag Deployment, Time to First Stage, Front Passenger (msec) Passenger Curtain Deployment Time (msec) Side Curtain Air Bag Deployment, Time to Deploy, Right Side (msec)	
GM	Passenger Side or Roof Rail/Head Curtain Time From Algorithm Enable to Deployment Command Criteria Met (msec) Driver Side or Roof Rail/Head Curtain Time From Algorithm Enable to Deployment Command Criteria Met (msec)	“N/A” → -9998
Honda	Side Curtain/Tube Air Bag Deployment, Time to Deploy, Driver Side (msec) Side Curtain/Tube Air Bag Deployment, Time to Deploy, Right Side (msec)	-
Mazda	-	-
Nissan	Side Curtain/Tube Air Bag Deployment, Time to Deploy, Driver Side (msec) Side Curtain/Tube Air Bag Deployment, Time to Deploy, Right Side (msec)	“N/A” → -9997 “Invalid” → -9998
Toyota	Side Curtain Air Bag Deployment, Time to Deploy, Driver (msec) Side Curtain Air Bag Deployment, Time to Deploy, Passenger (msec) Side Curtain Air Bag Deployment, Time to Deploy (if Equipped) (msec) Recorded Side*	“Not Commanded” → -9997 “No” → -9997 “N/A” → -9997 “SNA” → -9999 “Already Deployed” → -9996
Volvo	Left Side Curtain, Time to Deploy (msec) Right Side Curtain, Time to Deploy (msec)	““Not Deployed” → -9997 “Not Commanded” → -9997 “Not Equipped” → -9998
Daimler	Side Curtain/Tube Air Bag, Time to Deployment, Driver Side (msec) Side Curtain/Tube Air Bag, Time to Deployment, Passenger Side (msec)	“Not Deployed” → -9997 “Data Not Available” → -9997
VW	Side Curtain/Tube Air Bag, Time to Deployment, Driver Side (msec)	Deployment at Time Zero → 0 “Not Deployed” → -9997

OEM	Report Data Element	Modification
	Side Curtain/Tube Air Bag, Time to Deployment, Passenger Side (msec)	“Invalid Data” → -9998

† Signal Not Available

Remarks

Some Toyota modules (*) do not identify the side of torso air bag deployment and it is assumed to be on the recorded side.

Time to Pretensioner Deployment (Part 563 Field)Screen Name: **Time to Pretensioner Deployment**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.EDRRESTRAINT.PRETEN_TIME**Part 563 Table: **Table II (Element 23 of 30) - Driver (occupant=0)****Table II (Element 24 of 30) - Right Front Passenger (occupant=1)****Element Attributes**

The elapsed time from crash time zero to the deployment command for the seat belt pretensioner. If several pretensioner locations provide time to deployment, the smallest time is reported.

Units: msec

Database	SAS	
0-xxx	0-xxx	Time to pretensioner deployment
-9996		Pretensioner deployed, no time specified
-9997		Pretensioner not deployed
-9998		Reported, data not valid
-9999		Not reported

Source

This field is derived from the 3 pretensioner fields shown below and recorded by the OEMs. Pretensioner Time (preten_time) is set to the smallest of these 3 fields.

Variable name	Description
retr_preten_time	Time to Retractor Pretensioner Deployment
buck_preten_time	Time to Buckle Pretensioner Deployment
unsp_preten_time	Time to Unspecified Pretensioner Deployment

OEM	Report Data Element	Modification
Chrysler	Commanded Driver Pretensioner Deployment Commanded Passenger Pretensioner Deployment	-
Ford	Frontal and Pretensioner Fire time (msec) Belt Tensioner Deployment, Time to First Stage, Driver (msec) Driver Pretensioner Time Deployment Time (msec) Driver Pretensioner Deployment Time (msec) Time Between Algorithm Enable and Seat Belt Pretensioner Deployment (msec)	“Not Deployed”→ -9997 “N/A” → -9997 “No Deploy” → -9997 “Unbuckled”→ -9997

OEM	Report Data Element	Modification
	Belt Tensioner Deployment, Time to First Stage, Front Passenger (msec) Passenger Pretensioner Time Deployment Time (msec) Passenger Pretensioner Deployment Time (msec)	
GM	Pretensioner Deployment, Time to Fire, Driver (Driver Pretensioner Time From Time Zero to Deployment Loop #1 or Loop #2 Command Criteria Met) (msec) Time From FSR/Rollover Event Enable to Driver Pretensioner Loop #1 or Loop #2 Deployment Command Criteria Met (msec) Driver Pretensioner Time From Algorithm Enable to Deployment Loop #1 or Loop #2 Command Criteria Met (msec) Pretensioner Deployment, Time to Fire, Right Front Passenger (Passenger Pretensioner Time From Time Zero to Deployment Loop #1 or Loop #2 Command Criteria Met) (msec) Time From FSR/Rollover Event Enable to Passenger Pretensioner Loop #1 or Loop #2 Deployment Command Criteria Met (msec) Passenger Pretensioner Time From Algorithm Enable to Deployment Loop #1 or Loop #2 Command Criteria Met (msec)	“Data Not Available” → -9998
Honda	Pretensioner Deployment, Time to Fire, Driver (msec) Pretensioner Deployment, Time to Fire, Right Front Passenger (msec)	-
Mazda	Pretensioner Deployment, Time to Fire, Driver (msec) Lap Pretensioner Deployment, Time to Fire, Driver (msec)	-
Nissan	-	
Toyota	Pretensioner Deployment, Time to Fire, Driver (msec) Pretensioner Deployment, Time to Fire, Front Passenger Time to Deployment Command, Pretensioner (msec) Pretensioner Deployment, Time to Fire (msec)	“Already Deployed” → -9996 “Not Commanded” → -9997 “N/A” → -9997 “No” → -9997 “SNA” † → -9998

OEM	Report Data Element	Modification
Volvo	-	
Daimler	For Driver, minimum of the following: Pretensioner (1), Time to Deploy, Driver (msec) Pretensioner (2), Time to Deploy, Driver (msec) Pretensioner (3), Time to Deploy, Driver (msec) For RFP, minimum of the following: Pretensioner (1), Time to Deploy, Front Passenger (msec) Pretensioner (2), Time to Deploy, Front Passenger (msec) Pretensioner (3), Time to Deploy, Front Passenger (msec)	-

† Signal Not Available

Remarks

Part 563 does not specify a location for the pretensioner deployment data element.

EDR modules that report several pretensioner locations do not necessarily report the same time to deployment.

Time to Retractor Pretensioner Deployment

Screen Name: **Time to Retractor Pretensioner Deployment**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.EDRRESTRAINT.RETR_PRETEN_TIME**
 Part 563 Table: **Table II (Element 23 of 30) - Driver (occupant=0)**
Table II (Element 24 of 30) - Right Front Passenger (occupant=1)

Element Attributes

The elapsed time from crash time zero to the deployment command for the seat belt retractor pretensioner.

Units:msec

Database	SAS	
0-xxx	0-xxx	Time to pretensioner deployment
-9996		Pretensioner deployed, no time specified
-9997		Pretensioner not deployed
-9998		Reported, data not valid
-9999		Not reported

Source

OEM	Report Data Element	Modification
Audi	Pretensioner, Time to First Stage Deployment, Driver (msec) Pretensioner, Time to First Stage Deployment, Front Passenger (msec)	“Not Deployed” → -9997 “Deployment at Time Zero” → 0
Chrysler	Seat Belt Pretensioner Deployment, Driver Retractor (if Equipped) Commanded Driver Retractor Pretensioner Deployment Retractor Pretensioner, Driver Seat Belt Pretensioner Deployment, Driver (if Equipped) Seat Belt Pretensioner Deployment, Driver, Retractor (if Equipped) Commanded Passenger Retractor Pretensioner Deployment Commanded Front Right Side Seat Air Bag Deployment Retractor Pretensioner, Passenger	“Yes” → -9996 “No” → -9997 “Yes” → -9996

OEM	Report Data Element	Modification
	Seat Belt Pretensioner Deployment, Front Passenger (if Equipped) Seat Belt Pretensioner Deployment, Front Passenger, Retractor (if Equipped)	“No” → -9997
Daimler		
Ford	Pretensioner (Retractor) Deployment, Time to Fire, Driver (msec) Pretensioner (Retractor) Deployment, Time to Fire, Right Front Passenger (msec)	“Not Deployed” → -9997 “N/A” → -9997 “No Deploy” → -9997
GM	-	-
Honda	-	-
Mazda	-	-
Toyota	-	-
Volvo	Driver Shoulder Belt Pretensioner, Time to Deploy (msec) Passenger Shoulder Belt Pretensioner, Time to Deploy (msec)	“Not Deployed” -9997 “Not Commanded” → -9997 “Not Equipped” → -9998
VW	Pretensioner, Time to First Stage Deployment, Driver (msec) “Pretensioner, Time to First Stage Deployment, Front Passenger (msec)	“Not Deployed” → -9997 “Deployment at Time Zero” → 0

Remarks

Part 563 does not specify a location for the pretensioner deployment data element.

EDR modules that report several pretensioner locations do not necessarily report the same time to deployment.

Time to Buckle Pretensioner DeploymentScreen Name: **Time to Buckle Pretensioner Deployment**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.EDRRESTRAINT.BUCK_PRETEN_TIME**Part 563 Table: **Table II (Element 23 of 30) - Driver (occupant=0)****Table II (Element 24 of 30) - Right Front Passenger (occupant=1)****Element Attributes**

The elapsed time from crash time zero to the deployment command for the seat belt buckle pretensioner.

Units: msec

Database	SAS	
0-xxx	0-xxx	Time to pretensioner deployment
-9996		Pretensioner deployed, no time specified
-9997		Pretensioner not deployed
-9998		Reported, data not valid
-9999		Not reported

Source

OEM	Report Data Element	Modification
Chrysler	Buckle Pretensioner, Driver	“Yes” → -9996
	Seat Belt Pretensioner Deployment, Driver, Buckle (if Equipped)	“No” → -9997
	Anchor Pretensioner, Driver	
	Buckle Pretensioner, Passenger	
	Seat Belt Pretensioner Deployment, Front Passenger, Buckle (if Equipped)	
	Anchor Pretensioner, Passenger	
Ford	Pretensioner (Buckle) Deployment, Time to Fire, Driver (msec)	“Not Deployed” → -9997
		“N/A” → -9997
	Pretensioner (Anchor) Deployment, Time to Fire, Driver (msec)	“No Deploy” → -9997
GM	-	-
Honda	-	-
Mazda	Lap Pretensioner Deployment, Time to Fire, Driver (msec)	-
Toyota	-	-
Nissan	-	-

OEM	Report Data Element	Modification
Volvo	Driver Lap Belt Pretensioner, Time to Deploy (msec) Passenger Lap Belt Pretensioner, Time to Deploy (msec)	“Not Deployed” → -9997 “Not Commanded” → -9997 “Not Equipped” → -9998
Daimler	-	-

Remarks

Part 563 does not specify a location for the pretensioner deployment data element.

EDR modules that report several pretensioner locations do not necessarily report the same time to deployment.

Seat Track Position Switch, Foremost?Screen Name: **Seat Track Position Switch, Foremost?**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.EDRRESTRAINT.SEAT_TRACK_POSITION**Part 563 Table: **Table II (Element 25 of 30) - Driver (occupant=0)****Table II (Element 26 of 30) - Right Front Passenger (occupant=1)****Element Attributes**

The status of the switch that is installed to detect whether the seat is moved to a forward position.

Database	SAS	Formatted	Value
0	0	No	Occupant seat is located in a not forward position
1	1	Yes	Occupant seat is located in a forward position
-9998		-	Reported, data not valid
-9999		-	Not reported

Source

OEM	Report Data Element	Modification
Audi	Seat Track Position Switch Status, Driver Seat Track Position Switch Status, Front Passenger	“Rear” → 0 “Not Foremost” → 0 “Foremost” → 1 “Data Not Available” → -9999
BMW	Seat Track Position Switch Status, Driver Seat Track Position Switch Status, Foremost, Front Passenger Seat Track Position Switch, Foremost, Status, Driver	“Not Foremost” → 0 “Foremost” → 1 “No” → 0 “Yes” → 1 “Not Foremost (middle/rear)” → 0 “Data Not Available” → -9999
Daimler	Seat Track Position Switch Status, Driver Seat Track Position Switch Status, Front Passenger	“Rear” → 0 “Middle” → 0 “Not Foremost (middle/rear)” → 0 “Foremost” → 1 “Data Not Available” → -9999
Chrysler	Seat Track Position Sensor, Driver (if Equipped)	“In Frontal Zone” → 1 “Frontal Zone” → 1

OEM	Report Data Element	Modification
	Seat Track Position Switch, Foremost, Status, Driver Seat Track Position Sensor, Passenger (if Equipped) Seat Track Position Switch, Foremost, Status, Outboard Front Passenger Seat Track Position Switch, Foremost, Status, Passenger	“Not in Frontal Zone” → 0 “Not Frontal Zone” → 0 “Not Configured” → -9999 “Not Present” → -9999 “Undetermined” → -9999 “Data Invalid” → -9998 “Data Not Available” → -9999 “SNA” † → -9999 “DTC Present” → -9998 “Faulted” → -9998
Ford	Driver Seat Track Position Switch Fault at Algorithm Wake-up Driver Seat Track Forward of Switch Point at Algorithm Wake-Up Seat Track Position Switch, Foremost, Status, Driver Driver Seat Forward of Switch Point Driver Seat Position at Start of Event Seat Track Position Switch, Foremost, Status, Passenger Seat Track Position Switch, Foremost, Status, Front Passenger	“Forward” → 1 “No” → 1 “Not Forward” → 0 “Rearward” → 0 “Yes” → 0 “Undefined” → -9999 “Indeterminate” → -9999 “Invalid” → -9999
GM	Driver Seat Position Status (if Equipped) Seat Track Position Switch, Foremost, Status, Driver (Driver Seat Position Status) (if Equipped) Seat Track Position Switch, Foremost, Status, Driver (Driver Seat Position Status) Passenger Seat Position Status (if Equipped) Seat Track Position Switch, Foremost, Status, Right Front Passenger (Passenger Seat Position Status) (if Equipped)	“Forward” → 1 “Rearward” → 0 “Data Not Available” → -9999
Honda	Seat Track Position Switch, Foremost, Status, Driver	“Yes” → 1 “No” → 0
Mazda	Seat Track Position Switch, Foremost, Status, Driver	“Forward” → 1 “Rearward” → 0
Toyota	Seat Track Position Switch, Foremost, Status, Driver	“Forward” → 1 “Rearward” → 0

OEM	Report Data Element	Modification
	Seat Position, Driver	“Invalid” → -9998 “SNA” †→ -9999 “Yes” → 1 “No” → 0
Volvo	Seat Track Position Switch, Foremost, Status, Driver Seat Track Position Switch, Foremost, Status, Front Passenger	“Yes” → 1 “No” → 0
VW	Seat Track Position Switch Status, Driver Seat Track Position Switch Status, Front Passenger	“Rear” → 0 “Not Foremost” → 0 “Foremost” → 1 “Data Not Available” → -9999

† Signal Not Available

Remarks

Ford EDR modules indicate “yes” to indicate rearward and “no” to indicate “forward.”

Occupant Size Classification

Screen Name: **Occupant Size Classification**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.EDRRESTRAINT.OCC_SIZE**

Part 563 Table: **Table II (Element 27 of 30) - Driver (occupant=0)**

Table II (Element 28 of 30) - Right Front Passenger (occupant=1)

Element Attributes

Classifies occupant size.

Database	SAS	
0	0	Empty
1	1	Child
2	2	5th percentile female
3	3	Larger than 5th percentile female
4	4	Child or Empty
5	5	Adult, size not specified
-9998		Reported, data not valid
-9999		Not reported

Source

OEM	Report Data Element	Modification
Audi	Occupant Size Classification, Front Passenger	Empty → 0 Empty/Child → 4 ≥5% Female → 5
BMW	Occupant Size Classification, Driver Occupant Size Classification, Front Passenger (Child)	“Child” → 1 “Empty/Child” → 4 “≥5% Female” → 5 “Data Not Available” → -9999 “Unknown” → -9999
Daimler	Occupant Size Classification, Front Passenger	“Empty” → 0 “5% Female” → 2 “50% Male” → 3
Chrysler	Occupant Size Classification, Right Front Passenger	“Empty” → 0 “Child” → 1 “Not Child” → 5 “Not a Child” → 5 “Undetermined” → -9999

OEM	Report Data Element	Modification
		“SNA” → -9999
Ford	OCS Passenger State at Algorithm Wake-Up	“Empty” → 0
	Occupant Size Classification, Front Passenger	“Non adult” → 1
	(Child size Yes/No Hex value)	“Child size” → 1
	Passenger Occupant Classification Status	“Occupied disable” → 1
	Passenger Classification Status at Algorithm Wake-Up	“Small adult” → 2
		“Medium adult” → 3
	Last Passenger OCS Classification at Start of Event	“Large adult” → 3
		“Yes” → 4
		“Occupied enable” → 5
		“No” → 5
		“Adult” → 5
		“Indeterminate” → -9999
		“Invalid” → -9999
		“Undefined” → -9999
GM	Passenger Classification Status (if Equipped)	“Empty” → 0
	Passenger Classification Status	“Not Applicable” → 0
	Occupant Size Right Front Passenger Child	“Small Child” → 1
	(Passenger Classification Status)	“Small Adult” → 2
		“No (Small Adult)” → 2
		“Small Occupant Classification Type #1)” → 2
		“Small Occupant Classification Type #2)” → 2
		“Large Occupant Classification Type #1)” → 3
Honda	Occupant Size Classification, Right Front	“No” → 5
	Passenger Air Bag Suppressed (Yes/No)	“Yes” → 4
Mazda	Occupant Size Classification, Front Passenger	“Not Adult” → 4
		“Adult” → 5
Nissan	Occupant Size Classification, Front Passenger, child	“Yes” → 1
		“No” → 5
		“50% Male” → 3
Toyota	Occupant Size Classification, Front Passenger	“Not Occupied” → 0
	Occupancy Status, Passenger	“Child” → 1
		“AF05” → 2
		“AF05 (Not Child)” → 2
		“AM50” → 3
		“AM50 (Not Child)” → 3

OEM	Report Data Element	Modification
		“Child or Not Occupied” → 4 “Adult” → 5 “Invalid” → -9998 “Undetermined” → -9999 “Occupied” → -9999
Volvo	Occupant Size Right Front Passenger Child	“Yes” → 1 “No” → 5
Daimler	Occupant Size Classification, Front Passenger	“Empty” → 0 “Child” → 1 “50% Male” → 3
VW	Occupant Size Classification, Front Passenger	“Empty” → 0 “Not Empty” → 5 “Empty/Child” → 4 “Empty or Child” → 4

Remarks

Ford EDR modules indicate “yes” to indicate a child occupant and “no” to indicate an adult occupant.

When those GM EDR modules with “Passenger Seat Occupancy Status” = “Empty,” occ_size is set to “Empty.”

Occupant Position ClassificationScreen Name: **Occupant Out of Position?**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.EDRRESTRAINT.OCC_POSITION**Part 563 Table: **Table II (Element 29 of 30) - Driver (occupant=0)****Table II (Element 30 of 30) - Right Front Passenger (occupant=1)****Element Attributes**

The classification indicating that the seating posture of a front outboard is determined as being out-of-position.

Database	SAS	Formatted	Value
0	0	No	Occupant is not out of position
1	1	Yes	Occupant is out of position
-9999		-	Not reported

Source

OEM	Report Data Element	Modification
BMW	Occupant Position Classification, Driver Occupant Position Classification, Front Passenger	Data Not Available" → -9999
Chrysler	-	-
Ford	-	-
GM	-	-
Honda	-	-
Mazda	-	-
Toyota	-	-
Daimler	-	-

Time Series Data Elements

The following pages describe the Pre- and Post- crash time series data elements from EDR that are coded in CISSWeb. The data for each of the time series parameters is stored for each event. Table C shows the point code (pcode), description, and units of each time series data element. Pcodes are the index used to store a time series in the database. The data elements are coded in Pre-Crash and Post- Crash sections on the screen. To add a data element, select “Add data Element” then pick a data element from drop-down list. Enter time and values for as many data points as found in the EDR files. Once entered for one data element, the time column can be copied to other data element to avoid repetition. The time and values of the data element should be entered in units listed in the Table C.

Table 6. Pre-crash data elements code descriptions

pcode	Parameter Description	Data Type	Time Units	Value/Units
1010	Vehicle Speed	Real	sec	kph
1020	Engine Throttle	Real	sec	%
1030	Accelerator Pedal	Real	sec	%
1040	Service Brake	Coded	sec	0) non-engaged (1) engaged
1050	Engine Speed	Real	sec	rpm
1060	ABS Activity	Coded	sec	0) non-engaged (1) engaged
1070	Stability Control	Coded	sec	0) non-engaged (1) engaged
1080	Steering Input	Real	sec	degrees
2010	Delta V, Longitudinal	Real	msec	kph
2020	Delta V, Lateral	Real	msec	kph
2030	Acceleration, Longitudinal	Real	msec	g
2040	Acceleration, Lateral	Real	msec	g
2050	Acceleration, Normal	Real	msec	g
2060	Vehicle Roll Angle	Real	msec	degrees

Speed, Vehicle Indicated

Screen Name: **Vehicle Speed**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.EDRVDATA**
 Part 563 Table: **Table I (Element 04 of 15)**

Element Attributes

The vehicle speed indicated by a manufacturer-designated subsystem designed to indicate the vehicle's ground travel speed during vehicle operation.

PCode: 1010

PTime Units: sec

PValue Units: kph

Database	SAS	
0-xxxx	0-xxxx	Vehicle speed
-9998		Reported, data not valid
-9999		Not reported

Source

OEM	Report Data Element	Modification
Chrysler	Speed, Vehicle Indicated (mph)	Converted to kph
Ford	Speed mph	Converted to kph
GM	Speed mph	Converted to kph
Honda	Speed, Vehicle Indicated (mph)	Converted to kph
Mazda	Speed, Vehicle Indicated (mph)	Converted to kph
Nissan	Speed, Vehicle Indicated (mph)	Converted to kph
Toyota	Vehicle Speed mph	Converted to kph
Daimler	Speed, Vehicle Indicated (mph)	Converted to kph

Remarks

Precrash time in some Toyota modules with more than one event will append the word “count” (e.g., “-5 count”) because the “time between integers (-5 through -1) cannot be determined.” In the database they are reported with a leading “-999”:

“-5 count” → “-9995”

“-4 count” → “-9994”

“-3 count” → “-9993”

“-2 count” → “-9992”

“-1 count” → “-9991”

Time zero is displayed as “0 (TRG)” because the “time between the last integer and TRG cannot be determined.” This is simply reported as 0.

1 mph = 1.61 kph

Engine Throttle

Screen Name: **Engine Throttle (% full)**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.EDRVDATA**
 Part 563 Table: **Table I (Element 05 of 15)**

Element Attributes

The driver-requested acceleration as measured by the throttle position sensor on the accelerator pedal compared to the fully depressed position.

PCode: 1020

PTime Units: sec

PValue Units: percent

Database	SAS	
0-xx	0-xx	Engine throttle
-9998		Reported, data not valid
-9999		Not reported

Source

OEM	Report Data Element	Modification
Chrysler	Engine Throttle, % Full	-
Ford	-	-
GM	Throttle Position (%) Percent Throttle	-
Honda	-	-
Mazda	Engine Throttle, % Full	-
Nissan	-	
Toyota	-	-
Daimler	-	-

Accelerator Pedal

Screen Name: **Accelerator Pedal (% full)**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.EDRVDATA**
 Part 563 Table: **Table I (Element 05 of 15)**

Element Attributes

The driver-requested acceleration as measured by the throttle position sensor on the accelerator pedal compared to the fully depressed position.

PCode: 1030

PTime Units: sec

PValue Units: percent

Database	SAS	
0-xx	0-xx	Accelerator pedal
-9998		Reported, data not valid
-9999		Not reported

Source

OEM	Report Data Element	Modification
Chrysler	Accelerator Pedal, % Full	-
Ford	Accelerator Pedal % Full'	-
GM	Accelerator Pedal Position (percent)	-
Honda	PCM Derived Accelerator Pedal Position, % Full	-
Mazda	-	-
Nissan	Accelerator Pedal, % full Accelerator Pedal (%)	-
Toyota	-	-
Daimler	Accelerator Pedal (%)	-

Service Brake

Screen Name: **Service Brake**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.EDRVDATA**
 Part 563 Table: **Table I (Element 06 of 15)**

Element Attributes

The status of the device that is installed in or connected to the brake pedal system to detect whether the pedal was pressed.

PCode: 1040

PTime Units: sec

PValue Units: Engaged/Non-Engaged

Database	SAS	
0	0	Non-engaged
1	1	Engaged
-9998		Reported, data not valid
-9999		Not reported

Source

OEM	Report Data Element	Modification
Chrysler	Service Brake	-
Ford	Service Brake	“Faulted” → -9998 “Off” → 0 “On” → 1 “Not Allowed” →
GM	Brake Switch Circuit State	-
Honda	Service Brake (on/off)	-
Mazda	Service Brake (on/off)	-
Nissan	Service Brake (on/off) Service Brake Activation	“Off (Brake Not Activated)” → 0 “Off” → 0 “On (Brake Activated)” → 1 “On” → 1
Toyota	Brake Switch	-
Volvo	Service Brake (on/off)	“Off” → 0 “On” → 1

OEM	Report Data Element	Modification
Daimler	Service Brake Activation	“Off” → 0
		“On” → 1

Engine rpm

Screen Name: **Engine rpm**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.EDRVDATA**
 Part 563 Table: **Table II (Element 08 of 30)**

Element Attributes

For vehicles powered by internal combustion engines, this indicates the number of revolutions per minute of the main crankshaft of the vehicle's engine.

For vehicles not entirely powered by internal combustion engines, this indicates the number of revolutions per minute of the motor shaft at the point at which it enters the vehicle transmission gearbox.

PCode: 1050

PTime Units: sec

PValue Units: rpm

Database	SAS	
0-xxxx	0-xxxx	Engine rpm
-9998	8	Reported, data not valid
-9999	7	Not reported

Source

OEM	Report Data Element	Modification
Chrysler	Engine rpm	-
Ford	Engine rpm	-
GM	Engine Speed (rpm)	-
Honda	Engine rpm	-
Mazda	-	-
Nissan	Engine rpm	
Toyota	Engine rpm (rpm)	-
Daimler	-	-

Remarks

Pre-crash time in some Toyota modules with more than one event will append the word “count” (e.g., “-5 count”) because the “time between integers (-5 through -1) cannot be determined.” In the database they are reported with a leading “-999”:

“-5 count” → “-9995”

“-4 count” → “-9994”

“-3 count” → “-9993”

“-2 count” → “-9992”

“-1 count” → “-9991”

Time zero is displayed as “0 (TRG)” because the “time between the last integer and TRG cannot be determined.” This is simply reported as 0.

ABS Activity

Screen Name: **ABS Activity**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.EDRVDATA**
 Part 563 Table: **Table II (Element 10 of 30)**

Element Attributes

Indicates whether the antilock brake system (ABS) is actively controlling the vehicle's brakes.

PCode: 1060

PTime Units: sec

PValue Units: Engaged/Non-Engaged

Database	SAS	
0	0	Non-engaged
1	1	Engaged
-9998		Reported, data not valid
-9999		Not reported

Source

OEM	Report Data Element	Modification
Audi	ABS Activity	no abs activity → 0 abs activity → 1
Chrysler	ABS Activity	No → 0 Yes → 1
Ford	ABS Activity	Non-Engaged → 0 Engaged → 1
GM	Antilock Brake System Active (if Equipped)	Non-Engaged → 0 Engaged → 1
Honda	ABS Activity (on/off)	-
Mazda	-	-
Nissan	-	-
Toyota	ABS Control Status	OFF → 0 ON → 1
Daimler	ABS Activity	no abs activity → 0 abs activity → 1
BMW	ABS Activity (Engaged, Non-engaged)	no abs activity → 0

OEM	Report Data Element	Modification
		abs activity → 1
Volvo		
VW	ABS Activity	no ABS activity → 0 ABS activity → 1

Stability Control

Screen Name: **Stability Control**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.EDRVDATA**
 Part 563 Table: **Table II (Element 11 of 30)**

Element Attributes

Indicates whether stability control (any device that complies with FMVSS No. 126, “Electronic stability control systems”) is engaged.

PCode:1070

PTime Units:sec

PValue Units: Engaged/Non-Engaged

Database	SAS	
0	0	Non-engaged
1	1	Engaged
-9998		Reported, data not valid
-9999		Not reported

Source

OEM	Report Data Element	Modification
Audi	Stability Control	no ESC activity → 0 ESC activity → 1
Chrysler	Stability Control	Off → 0 On (not engaged) → 0 On, Engaged → 1 Engaged → 1
Ford	Stability Control	Non-Engaged → 0 Engaged → 1
GM	Vehicle Dynamics Control Active (if Equipped)	No → 0 Yes → 1
Honda	Stability Control (on/off, Engaged)	Off Non-Engaged → 0 On Non-Engaged → 0 On Engaged → 1
Mazda	-	-
Nissan	-	
Toyota	VSC Control Status	Off → 0

OEM	Report Data Element	Modification
		OFF (Disable) → 0 On (Enable) → 0 Engaged → 1
Daimler	Stability Control	no ESC activity → 0 ESC activity → 1
BMW	Stability Control (On Engaged, Non-engaged)	Non-engaged → 0 No ESC Activity → 1 No DSC Activity → 1 ESC Deactivated by Driver → 0 On, Engaged → 1 ESC Activity → 1 Unknown → -9999
Volvo	Stability Control (on/off, Engaged) Stability Control Status	Off Non-Engaged → 0 On Non-Engaged → 0 On Engaged → 1 Engaged → 1 Faulty → - 9998
VW	Stability Control	no ESC activity → 0 ESC activity → 1

Steering Input

Screen Name: **Steering Input (deg)**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.EDRVDATA**
 Part 563 Table: **Table II (Element 12 of 30)**

Element Attributes

The angular displacement of the steering wheel measured from the straight-ahead position (position corresponding to zero average steer angle of a pair of steered wheels).

PCode: 1080

PTime Units: sec

PValue Units: degrees

Database	SAS	
0-xx	0	Steering input
-9998		Reported, data not valid
-9999		Not reported

Source

OEM	Report Data Element	Modification
Chrysler	Steering Input (degrees) (if Equipped)	-
Ford	Steering Wheel Angle (degrees)	-
GM	Steering Wheel Angle (degrees) (if Equipped)	-
Honda	Steering Input (degrees)	-
Mazda	-	-
Nissan	Steering Input (degrees)	
Toyota	-	-
Daimler	-	-

Remarks

Precrash time in some Toyota modules with more than one event will append the word “count” (e.g., “-5 count”) because the “time between integers (-5 through -1) cannot be determined.” In the database they are reported with a leading “-999”:

“-5 count” → “-9995”

“-4 count” → “-9994”

“-3 count” → “-9993”

“-2 count” → “-9992”

“-1 count” → “-9991”

Time zero is displayed as “0 (TRG)” because the “time between the last integer and TRG cannot be determined.” This is simply reported as 0.

Delta V, Longitudinal

Screen Name: **Delta V, Longitudinal**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.EDRVDATA**
 Part 563 Table: **Table I (Element 01 of 15)**

Element Attributes

The cumulative change in velocity, as recorded by the EDR of the vehicle, along the longitudinal axis, starting from crash time zero and ending at 0.25 seconds, recorded every 0.01 seconds.

PCode: 2010

PTime Units: msec

PValue Units: kph

Database	SAS	
0-xxxx	0-xxxx	Longitudinal delta V
-9998		Reported, data not valid
-9999		Not reported

Source

OEM	Report Data Element	Modification
Chrysler	Delta V, Longitudinal (mph)	Converted to kph
Ford	Cumulative Longitudinal Velocity Change (mph) Delta V, longitudinal (mph) Delta V, longitudinal (km/h)	Converted to kph Converted to kph -
GM	Cumulative longitudinal velocity change (mph) Delta V, longitudinal (km/h)	Converted to kph -
Honda	Delta V, longitudinal	Converted to kph
Mazda	Delta V, longitudinal	Converted to kph
Nissan	Longitudinal Delta V	Converted to kph
Toyota	Longitudinal Delta V (mph)	Converted to kph
Volvo	Delta V, longitudinal (mph)	Converted to kph
Daimler	Delta V, longitudinal (mph)	Converted to kph

Remarks

If the EDR module recorded delta V in both kph and mph units, then the kph value is used rather than converting mph to kph.

1 mph = 1.61 kph

Delta V, Lateral

Screen Name: **Delta V, Lateral**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.EDRVDATA**
 Part 563 Table: **Table II (Element 04 of 30)**

Element Attributes

The cumulative change in velocity, as recorded by the EDR of the vehicle, along the lateral axis, starting from crash time zero to end of event time, recorded every 10 milliseconds.

PCode:2020

PTime Units: msec

PValue Units: kph

Database	SAS	
0-xxxx	0-xxxx	Lateral delta V
-9998		Reported, data not valid
-9999		Not reported

Source

OEM	Report Data Element	Modification
Chrysler	Delta V, Lateral (mph)	Converted to kph
Ford	Cumulative Lateral Velocity Change (mph) Delta V, lateral (mph) Delta V, lateral (km/h)	Converted to kph Converted to kph -
GM	Delta V, lateral (mph) Delta V, lateral (km/h)	Converted to kph -
Honda	Delta V, Lateral	Converted to kph
Mazda	Delta V, Lateral	Converted to kph
Nissan	Lateral Delta V	Converted to kph
Toyota	Lateral Delta V, Air Bag ECU Sensor (mph)	Converted to kph
Daimler	Delta V, Lateral (mph)	Converted to kph

Remarks

If the EDR module recorded delta V in both kph and mph units, then the kph value is used rather than converting mph to kph.

1 mph = 1.61 kph

Acceleration, Longitudinal

Screen Name: **Acceleration, Longitudinal**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.EDRVDATA**
 Part 563 Table: **Table II (Element 02 of 30)**

Element Attributes

The component of the vector acceleration of a point in the vehicle in the x-direction. The longitudinal acceleration is positive in the direction of forward vehicle travel.

PCode: 2030

PTime Units: msec

PValue Units: mG

Database	SAS	
0-xxxx	0-xxxx	Longitudinal acceleration
-9998		Reported, data not valid
-9999		Not reported

Source

OEM	Report Data Element	Modification
Chrysler	Longitudinal Acceleration (g)	-
Ford	Long. Acceleration (g's)	-
GM	Longitudinal Acceleration (g)	-
Honda	Acceleration, Longitudinal	-
Mazda	Acceleration, Longitudinal	-
Nissan	Longitudinal Acceleration	-
Toyota	-	-
Volvo	Longitudinal Acceleration (g)	"Written but No Data Available" → -9998
Daimler	-	-

Acceleration, Lateral

Screen Name: **Acceleration, Lateral**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.EDRVDATA**
 Part 563 Table: **Table II (Element 01 of 30)**

Element Attributes

The component of the vector acceleration of a point in the vehicle in the y-direction. The lateral acceleration is positive from left to right, from the perspective of the driver when seated in the vehicle facing the direction of forward vehicle travel.

PCode: 2040

PTime Units: msec

PValue Units: G

Database	SAS	
0-xxxx	0-xxxx	Lateral acceleration
-9998		Reported, data not valid
-9999		Not reported

Source

OEM	Report Data Element	Modification
Chrysler	Lateral Acceleration (g)	-
Ford	Lat. Acceleration (g's)	-
GM	Lateral Acceleration (g)	"Data Invalid" → - 9998
Honda	Acceleration, Lateral	-
Mazda	Acceleration, Lateral	-
Nissan	Lateral Acceleration	-
Toyota	Lateral Acceleration, Air Bag ECU Sensor (m/sec ²)	Converted to g
Volvo	Lateral Acceleration (g)	"Written but No Data Available" → -9998
Daimler	-	-

Acceleration, Normal

Screen Name: **Normal Acceleration**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.EDRVDATA**
 Part 563 Table: **Table II (Element 03 of 30)**

Element Attributes

The component of the vector acceleration of a point in the vehicle in the z-direction. The normal acceleration is positive in a downward direction and is zero when the accelerometer is at rest.

PCode: 2050

PTime Units: sec

PValue Units: G

Database	SAS	
0-xxxx	0-xxxx	Normal acceleration
-9998		Reported, data not valid
-9999		Not reported

Source

OEM	Report Data Element	Modification
Chrysler	-	-
Ford	-	-
GM	Vertical Acceleration (g)	-
Honda	Acceleration, Normal	-
Mazda	-	-
Nissan	-	-
Toyota	-	-
Volvo	Normal Acceleration (g)	“Written but No Data Available” → -9998
Daimler	-	-

Vehicle Roll Angle

Screen Name: **Roll Angle (deg)**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.EDRVDATA**
 Part 563 Table: **Table II (Element 09 of 30)**

Element Attributes

The angle between the vehicle's y-axis and the ground plane.

PCode: 2060

PTime Units: msec

PValue Units: degrees

Database	SAS	
0-xxx	0-xxx	Vehicle roll angle
-9998	8	Reported, data not valid
-9999	7	Not reported

Source

OEM	Report Data Element	Modification
Chrysler	-	-
Ford	Vehicle Roll Angle (degrees)	-
GM	Vehicle Roll Angle (degrees)	-
Honda	-	-
Mazda	Roll Angle	-
Nissan	-	-
Toyota	Roll Angle (degrees)	Time units for 04EDR Toyota modules changed from millisec to seconds
Volvo	Vehicle Roll Angle (deg)	
Daimler	-	-

Sketches

Instructions for Completion of Vehicle Damage Sketch

The Vehicle Sketch enables technicians to report data that are not encoded and might otherwise be omitted from the case. Pertinent data such as scrapes, scratches, buckling, paint transfers, and other indications of engagement or relative motion are reported on this page. Accurately sketching the beginning and end of direct damage is important in verifying CDCs, since in some cases crush measurements are not obtained.

Sketch the vehicle damage profile on the outlines provided, using the established protocol below.

- Use cross hatches to indicate direct damage.
- Highlight induced damage and/or remote buckling with diagonal lines.

Although technicians are reporting a vehicle's crash-related damage, other damage may be observed that existed prior to the crash or is towing damage. This type of damage must also be indicated and annotated accordingly.

Relevant measurements are required on the Vehicle Sketch page in order to support other data elements. For side impacts, record the damaged wheelbase both on the baseline area for the sketch page and the appropriate baseline tab to the left.

CDC extent zone measurements are required; although, only the measurements that pertain to the damaged plane are needed (hood length for frontal, side extents for side impacts, etc.). Note: The extent zone measurements are precrash measurements that can be obtained from an exemplar vehicle, scaled model, an undamaged plane or WinSpecs. If doubt exists concerning whether an impact is to a front or a side plane, obtain both front and side extent zone measurements.

In addition, front or back precrash bumper height measurements must be obtained for vehicles sustaining any corresponding end plane impact with another vehicle (in-transport or not in-transport) (i.e., column (3) of CDC (including non-selected CDCs) must equal "F" or "B").

- Measure from the bottom of the bumper face (reinforcement bar) to the ground.

Measure the length of beds of all inspected pickup trucks. If the bed is damaged, measure the length where the damage is the least. The overhead view on the sketch page has a place to record the bed length. This is a separate and different measurement than the CDC extent zone measurement shown on the left plane view of the sketch page.

The following screens exemplify the procedures to complete the vehicle sketches.

Vehicle Types

Select vehicle type.

Size and Style

Next, select the End, Side, or Top tab for completing the sketches. Then double click on the image to begin sketching the damage and documenting the required measurements.

Vehicle Sketch Examples

Cross hatching (XXXX)-direct damage

Single hatch (///)-induced damage

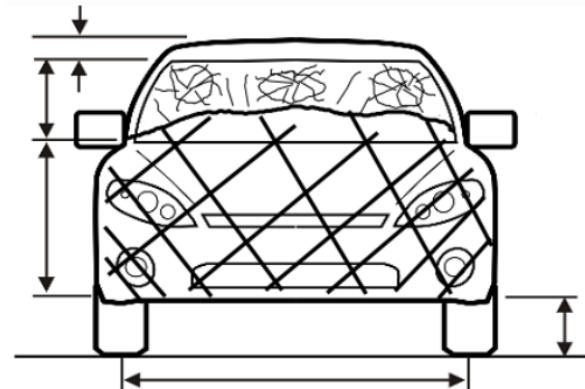


Figure 78. Example 1 – Front

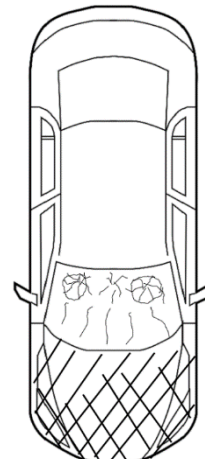
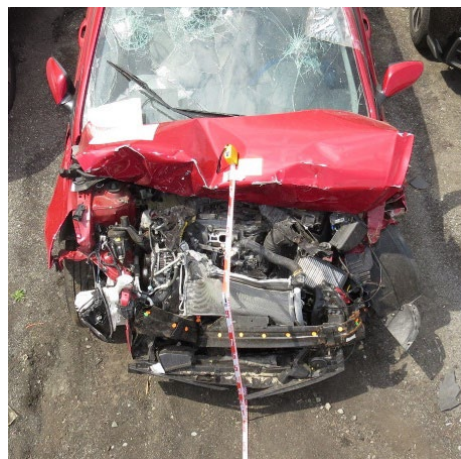


Figure 79. Example 2 – Top (front)

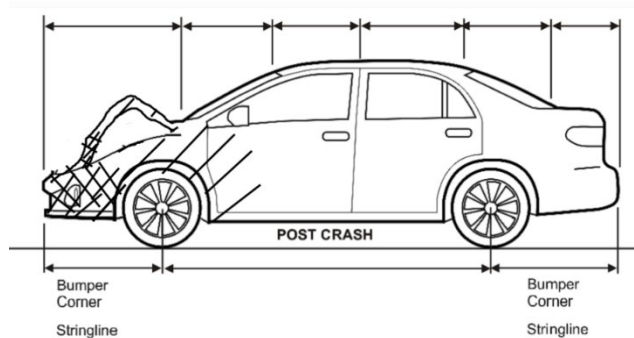
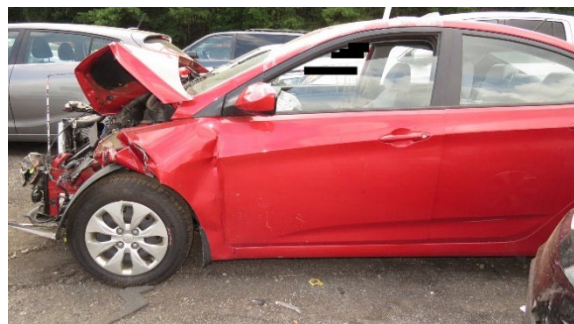


Figure 80. Example 3 – Left side

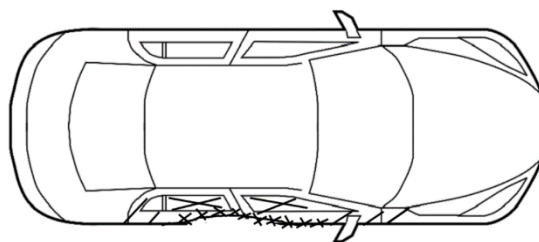


Figure 81. Example 4 –Right (top)

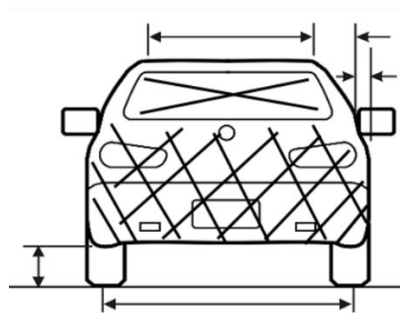


Figure 82. Example 5 - Rear

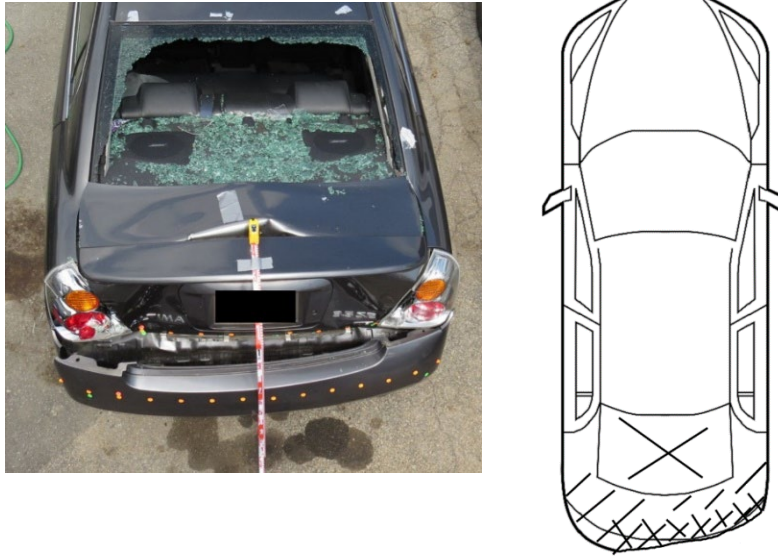


Figure 83. Example 6 – Top (rear)

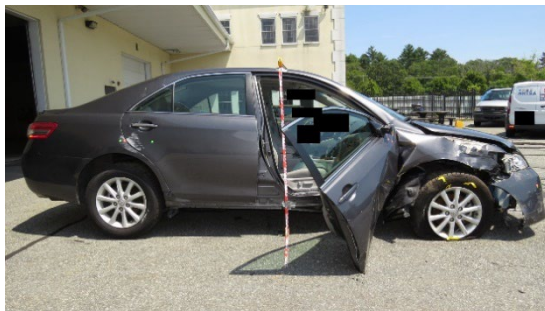


Figure 84. Example 7 – Right side

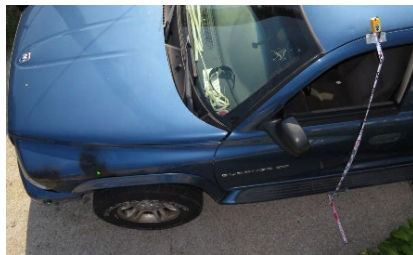


Figure 85. Example 8 – Left side (top)

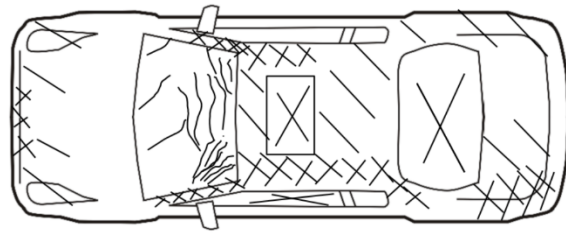


Figure 86. Example 9 – Rollover - Top

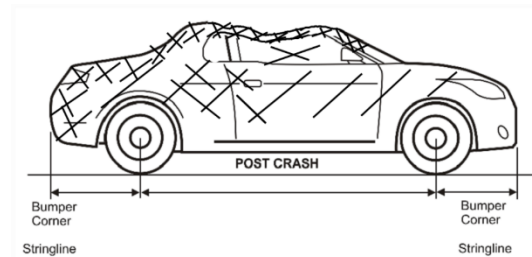


Figure 87. Example 9 – Rollover - Right

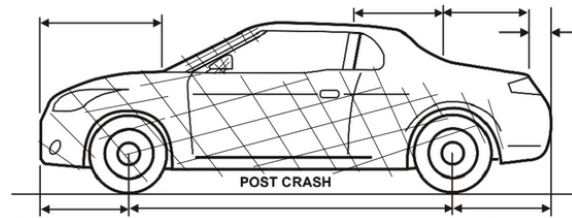


Figure 88. Example 9 – Rollover - Left

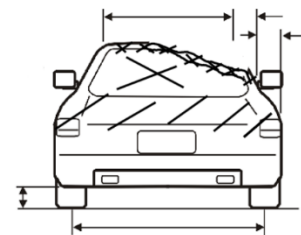
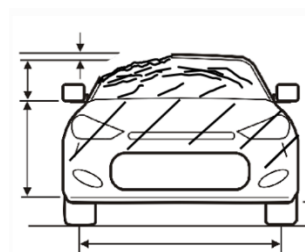


Figure 89. Example 9 – Rollover - End

Side Door Lateral Width

Screen Name: **Lateral - Door**

SAS Data Set:

SAS Variable:

Database Name:

Element Attributes

Database	SAS	
		Enter to the nearest centimeter
-8887	887	Not applicable
-9999	999	Unknown

Range

002-025, 887, 999

Source

Vehicle inspection, exemplar vehicle, manufacturer specification

Remarks

Used for determining CDC extent zone one for side impacts.

Enter to the nearest centimeter

Measure the undamaged (i.e., original) lateral distance between the bottom of the side glass (at beltline) to the outermost extent of the door. Measurement can be taken from either an undamaged door panel or opposite, undamaged side plane.

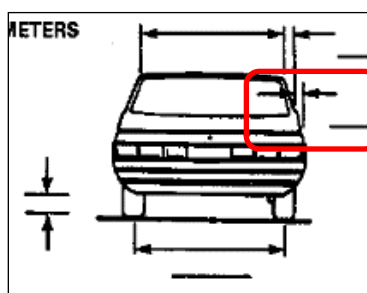


Figure 90. Illustration of the side door lateral width measurement

Do not include any door hardware (e.g., door handles or mirrors).

Not applicable

This extent zone **is not** relevant to the plane struck.

Unknown

This extent zone **is** relevant to the plane struck but; isn't collected due to the tech being unable to acquire it, **or** the measurement isn't needed due to the depth of crush.

Side Glass Lateral Width

Screen Name: **Lateral - Glazing**

SAS Data Set:

SAS Variable:

Database Name:

Element Attributes

Database	SAS	
		Enter to the nearest centimeter
-8887	887	Not applicable
-9999	999	Unknown

Range

001-035, 887, 999

Source

Vehicle inspection, exemplar vehicle, manufacturer specification

Remarks

Used for determining CDC extent zone two for side impacts.

Enter to the nearest centimeter

Measure the undamaged (i.e., original) lateral distance between the bottom of the side glass to the top of the side glass of the same window. Do not consider the window frame when determining the top and bottom of the side glass. Measurement can be taken from either an undamaged door panel or opposite, undamaged side plane.

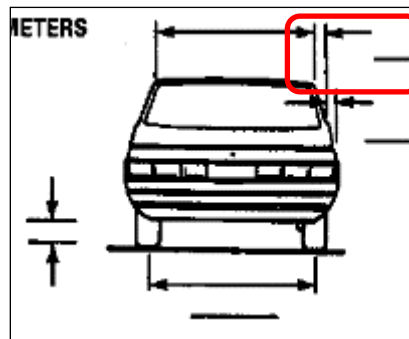


Figure 91. Illustration of the side glass lateral width measurement

Not applicable

This extent zone **is not** relevant to the plane struck.

Unknown

This extent zone **is** relevant to the plane struck but; isn't collected due to the tech being unable to acquire it, **or** the measurement isn't needed due to the depth of crush.

Roof Lateral WidthScreen Name: **Lateral - Roof**

SAS Data Set:

SAS Variable:

Database Name:

Element Attributes

Database	SAS	
		Enter to the nearest centimeter
-8887	887	Not applicable
-9999	999	Unknown

Range

70-205, 887, 999

Source

Vehicle inspection, exemplar vehicle, manufacturer specification

Remarks

Used for determining CDC extent zone three through eight for side impacts.

Enter to the nearest centimeter

Measure the undamaged (i.e., original) lateral distance between the top of the side glass to the top of the side glass on the opposing side of the vehicle. Do not consider the window frame when determining the top of the side glass. Usually obtained from an undamaged exemplar vehicle or the vehicle inspection, if the roof width can be determined. This measurement can be obtained mathematically by doubling the first two extent zones dimensions and subtracting the result from the overall vehicle width.

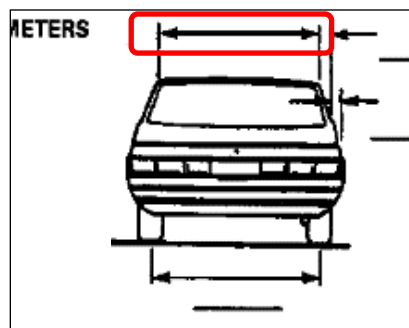


Figure 92. Illustration of the roof lateral width measurement

Not applicable

This extent zone **is not** relevant to the plane struck.

Unknown

This extent zone **is** relevant to the plane struck but; isn't collected due to the tech being unable to acquire it, **or** the measurement isn't needed due to the depth of crush.

Side Door Vertical Height

Screen Name: **Vertical - Door**

SAS Data Set:

SAS Variable:

Database Name:

Element Attributes

Database	SAS	
		Enter to the nearest centimeter
-8887	887	Not applicable
-9999	999	Unknown

Range

040-135, 887, 999

Source

Vehicle inspection, exemplar vehicle, manufacturer specifications

Remarks

Used for determining CDC extent zone six through eight for Top impacts, and two through four for Undercarriage impacts.

Enter to the nearest centimeter

Measure the undamaged (i.e., original) vertical distance between the bottom of the side glass and the bottom of the sill. Measurement can be taken from either an undamaged door panel or opposite, undamaged side plane.

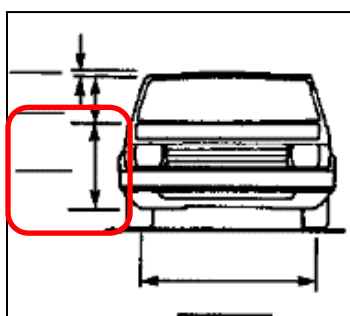


Figure 93. Illustration of the side door vertical height measurement

Not applicable

This extent zone **is not** relevant to the plane struck.

Unknown

This extent zone **is** relevant to the plane struck but; isn't collected due to the tech being unable to acquire it, **or** the measurement isn't needed due to the depth of crush.

Side Glass Vertical Height

Screen Name: **Vertical - Glazing**

SAS Data Set:

SAS Variable:

Database Name:

Element Attributes

Database	SAS	
		Enter to the nearest centimeter
-8887	887	Not applicable
-9999	999	Unknown

Range

015-085, 887, 999

Source

Vehicle inspection, exemplar vehicle, manufacturer specifications

Remarks

Used for determining CDC extent zone three through five for Top impacts, and six through eight for Undercarriage impacts.

Enter to the nearest centimeter

Measure the undamaged (i.e., original) maximum vertical distance between the bottom and top extent of the side glass (not including the window frame). Measurement can be taken from either an undamaged door panel or opposite, undamaged side plane.

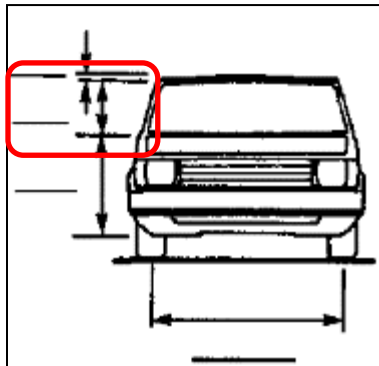


Figure 94. Illustration of the side glass vertical height measurement

Not applicable

This extent zone **is not** relevant to the plane struck.

Unknown

This extent zone **is** relevant to the plane struck but; isn't collected due to the tech being unable to acquire it, **or** the measurement isn't needed due to the depth of crush.

Roof Vertical Height

Screen Name: **Vertical - Roof**

SAS Data Set:

SAS Variable:

Database Name:

Element Attributes

Database	SAS	
		Enter to the nearest centimeter
-8887	887	Not applicable
-9999	999	Unknown

Range

001-030, 887, 999

Source

Vehicle inspection, exemplar vehicle, manufacturer specifications

Remarks

Used for determining CDC extent zone two for top impacts.

Enter to the nearest centimeter

Measure the undamaged (i.e., original) vertical distance between the uppermost extent of the side glass (not including the window frame) and the top of the roof. Measurement can be taken from either an undamaged door panel or opposite, undamaged side plane.

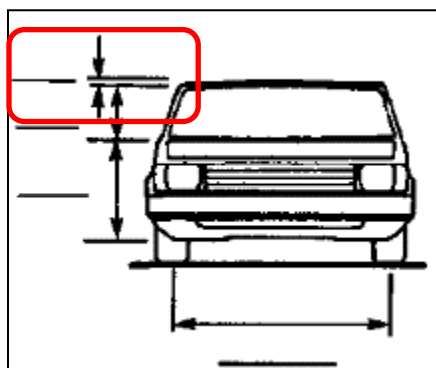


Figure 95. Illustration of the vertical roof height measurement

Not applicable

This extent zone **is not** relevant to the plane struck.

Unknown

This extent zone **is** relevant to the plane struck but; isn't collected due to the tech being unable to acquire it, **or** the measurement isn't needed due to the depth of crush.

Original Front Bumper Height

Screen Name: **Bumper Height - Front**

SAS Data Set:

SAS Variable:

Database Name:

Element Attributes

Database	SAS	
		Enter to the nearest centimeter
-8887	887	Not applicable
-9999	999	Unknown

Range

010-150, 887, 999

Source

Vehicle inspection, exemplar vehicle, manufacturer specifications

Remarks

Enter to the nearest centimeter

Front precrash bumper height measurements must be obtained for vehicles sustaining any front plane impact with another vehicle (in- transport or not in-transport) (i.e., column (3) of CDC (including non-selected CDCs) must equal "F").

Measure from the bottom of the bumper face (reinforcement bar) to the ground.

Include a calibrated instrument (contour gauge rod or 1 meter scale) in the photographs of the vehicle's bumper height.

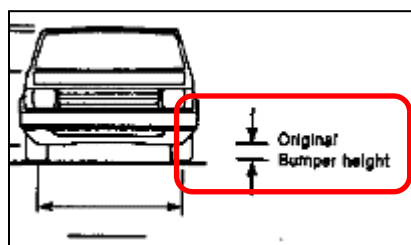


Figure 96. Illustration of the original front bumper height measurement

Not applicable

This extent zone is not relevant to the plane struck.

Unknown

This extent zone is relevant to the plane struck, but isn't collected due to the tech being unable to acquire it, or the measurement is not needed due to the depth of crush.

Original Rear Bumper Height

Screen Name: **Rear Bumper Ht**

SAS Data Set:

SAS Variable:

Database Name:

Element Attributes

Database	SAS	
		Enter to the nearest centimeter
-8887	887	Not applicable
-9999	999	Unknown

Range

010-150, 887, 999

Source

Vehicle inspection, exemplar vehicle, manufacturer specification

Remarks

Enter to the nearest centimeter

Rear precrash bumper height measurements must be obtained for vehicles sustaining any rear plane impact with another vehicle (in- transport or not in-transport) (i.e., column (3) of CDC (including non-selected CDCs) must equal "B").

- Measure from the bottom of the bumper face (reinforcement bar) to the ground.
- Include a calibrated instrument (contour gauge rod or 1 meter scale) in the photographs of the vehicle's bumper height.

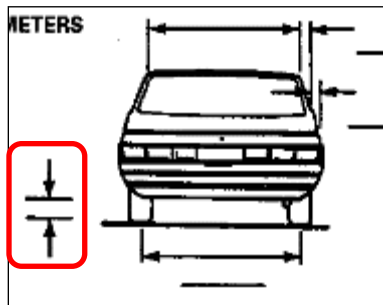


Figure 97. Illustration of the original rear bumper height measurement

Not applicable

This extent zone is not relevant to the plane struck.

Unknown

This extent zone is relevant to the plane struck, but isn't collected due to the tech being unable to acquire it, or the measurement is not needed due to the depth of crush.

Original Hood Extent

Screen Name: **End - Hood**
 SAS Data Set:
 SAS Variable:
 Database Name:

Element Attributes

Database	SAS	
		Enter to the nearest centimeter
-8887	887	Not applicable
-9999	999	Unknown

Range

015-225, 887, 999

Source

Vehicle inspection, exemplar vehicle, manufacturer specification

Remarks

This measurement is obtained to determine CDC extent zone one through five for frontal impacts.

Enter to the nearest centimeter

Measure the original (i.e., precrash) longitudinal distance along the centerline of the vehicle between the original maximum front extent of the vehicle (e.g., front stringline) and the most forward extent of the base of the windshield (i.e., where the visible portion of the glass ends).

At the windshield, this measurement is normally taken at the center point where the windshield meets the instrument panel. Note: This measurement is often available in WinSpecs (Canadian Specifications).

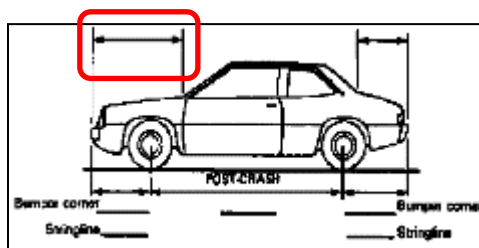


Figure 98. Illustration of the original hood extent measurement

Not applicable

This extent zone **is not** relevant to the plane struck.

Unknown

This extent zone is relevant to the plane struck, but isn't collected due to the tech being unable to acquire it, or the measurement is not needed due to the depth of crush.

Original Windshield ExtentScreen Name: **End - Windshield**

SAS Data Set:

SAS Variable:

Database Name:

Element Attributes

Database	SAS	
		Enter to the nearest centimeter
-8887	887	Not applicable
-9999	999	Unknown

Range

001-150, 887, 999

Source

Vehicle inspection, exemplar vehicle, manufacturer specification

Remarks

This measurement is obtained to determine the CDC Extent Zone for frontal impacts to all vehicle types.

Enter to the nearest centimeter

Measure the original (i.e., precrash) longitudinal measurement along the centerline of the vehicle between the original forward extent of the vehicle's windshield to the rear extent of the windshield (at windshield header).

Not applicable

This extent zone **is not** relevant to the plane struck.

Unknown

This extent zone **is** relevant to the plane struck but; isn't collected due to the tech being unable to acquire it, **or** the measurement isn't needed due to the depth of crush.

Original Windshield to B PillarScreen Name: **Front – Pillar**

SAS Data Set:

SAS Variable:

Database Name:

Element Attributes

Database	SAS	
		Enter to the nearest centimeter
-8887	887	Not applicable
-9999	999	Unknown

Range

010-150, 887, 999

Source

Vehicle inspection, exemplar vehicle, manufacturer specification

Remarks

This measurement is obtained to determine CDC Extent Zone seven and eight for frontal impacts.

Enter to the nearest centimeter

Measure the original (i.e., precrash) longitudinal distance between the B Pillar and the top edge of the windshield (at the windshield header) along the vehicle's centerline. The measurement should be taken to the longitudinal center of the B Pillar.

Not applicable

This extent zone **is not** relevant to the plane struck.

Unknown

This extent zone is relevant to the plane struck, but isn't collected due to the tech being unable to acquire it, or the measurement is not needed due to the depth of crush.

Original Backlight to B Pillar Length

Screen Name: **BL – B PILLAR**

SAS Data Set:

SAS Variable:

Database Name:

Element Attributes

Database	SAS	
		Enter to the nearest centimeter
-8887	887	Not applicable
-9999	999	Unknown

Range

000-300, 887, 999

Source

Vehicle inspection, exemplar vehicle, manufacturer specification

Remarks

This measurement is obtained to determine the CDC Extent Zone for rear impacts to automobiles, station wagons, utility vehicles, and vans.

Enter to the nearest centimeter

Measure the original (i.e., precrash) longitudinal measurement between the original forward extent of the vehicle's backlight to the center of the top of the B pillar. The measurement should be taken along the centerline of the vehicle.

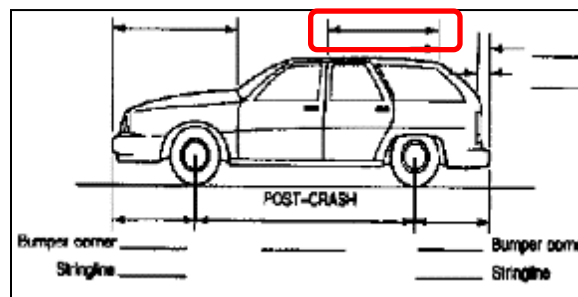


Figure 99. Illustration of the original backlight to B pillar length measurement

Not applicable

This extent zone **is not** relevant to the plane struck.

Unknown

This extent zone is relevant to the plane struck, but isn't collected due to the tech being unable to acquire it, or the measurement is not needed due to the depth of crush.

Original Backlight LengthScreen Name: **End - Backlight**

SAS Data Set:

SAS Variable:

Database Name:

Element Attributes

Database	SAS	
		Enter to the nearest centimeter
-8887	887	Not applicable
-9999	999	Unknown

Range

001-150, 887, 999

Source

Vehicle inspection, exemplar vehicle, manufacturer specification

Remarks

This measurement is obtained to determine the CDC Extent Zone for rear impacts to automobiles, station wagons, utility vehicles, and vans. Please refer to SAE J224_202205 for further explanation and description.

Enter to the nearest centimeter

Measure the original (i.e., precrash) longitudinal measurement between the original forward extent of the vehicle's backlight to the rear extent of the backlight along the vehicle's centerline.

Not applicable

This extent zone **is not** relevant to the plane struck.

Unknown

This extent zone is relevant to the plane struck, but isn't collected due to the tech being unable to acquire it, or the measurement is not needed due to the depth of crush.

Original Trunk Length

Screen Name: **End - Trunk**

SAS Data Set:

SAS Variable:

Database Name:

Element Attributes

Database	SAS	
		Enter to the nearest centimeter
-8887	887	Not applicable
-9999	999	Unknown

Range

010-145, 887, 999

Source

Vehicle inspection, exemplar vehicle, manufacturer specification

Remarks

This measurement is obtained to determine the CDC Extent Zone for rear impacts to automobiles, station wagons, utility vehicles and vans. Please refer to SAE J224_202205 for further explanation and description.

Enter to the nearest centimeter

Measure the original (i.e., precrash) longitudinal measurement between the original maximum rear extent of the vehicle's rear bumper and the most rearward extent of the backlight.

Normally this measurement is taken to the base of the backlight; however, there are rare situations when the upper edge of the glazing projects further rearward than the bottom edge. In this circumstance, the measurement is taken to the upper edge of the glazing.

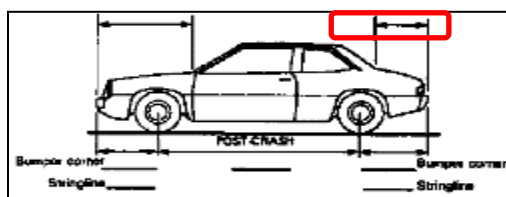


Figure 100. Illustration of the original trunk length measurement

Not applicable

This extent zone **is not** relevant to the plane struck.

Unknown

This extent zone is relevant to the plane struck, but isn't collected due to the tech being unable to acquire it, or the measurement is not needed due to the depth of crush.

Original Pickup Rear Extent

Screen Name: **P/U Rear**
 SAS Data Set:
 SAS Variable:
 Database Name:

Element Attributes

Database	SAS	
		Enter to the nearest centimeter
-8887	887	Not applicable
-9999	999	Unknown

Range

90-400, 887, 999

Source

Vehicle inspection, exemplar vehicle, manufacturer specification

Remarks

This measurement is obtained to determine CDC extent zones for rear impacts to pickup trucks.

Enter to the nearest centimeter

Measure the original (i.e., precrash) longitudinal measurement between the original maximum rear extent of the vehicle (e.g., rear Stringline) and the center of the B Pillar.

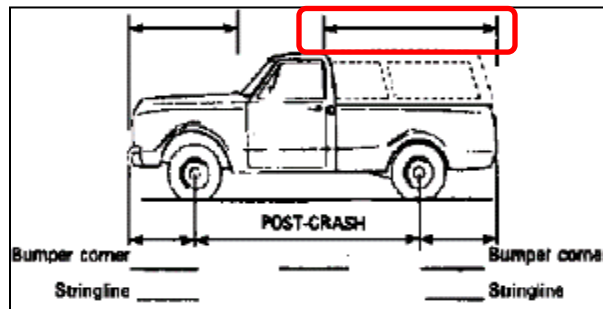


Figure 101. Illustration of the original pickup rear extent measurement

Not applicable

This extent zone **is not** relevant to the plane struck.

Unknown

This extent zone is relevant to the plane struck, but isn't collected due to the tech being unable to acquire it, or the measurement is not needed due to the depth of crush.

Original Pickup Bed LengthScreen Name: **Bed Length**

SAS Data Set:

SAS Variable:

Database Name:

Element Attributes

Database	SAS	
		Enter to the nearest centimeter
-8887	887	Not applicable
-9999	999	Unknown

Range

90-250, 887, 999

Source

Vehicle inspection

Remarks

This measurement is obtained to verify specifications of pickup trucks.

Enter to the nearest centimeter

Measure the original (i.e., precrash) longitudinal distance of the inside of the pickup truck's bed.

Not applicable

This extent zone **is not** relevant to the plane struck.

Unknown

This extent zone is relevant to the plane struck, but isn't collected due to the tech being unable to acquire it, or the measurement is not needed due to the depth of crush.

Baseline Measurement – Left/Right Side Front StringlineScreen Name: **Left – FSL/Right - FSL**

SAS Data Set:

SAS Variable:

Database Name:

Element Attributes

Database	SAS	
		Enter to the nearest centimeter
-8887	887	Not applicable
-9999	999	Unknown

Range

025-250, 887, 999

Source

Vehicle inspection

Remarks**Enter to the nearest centimeter**

Measure the distance between the post-crash position of the left/right side front axle and the front stringline. Note: This measurement can often be found in WinSpecs (Canadian specs) as the front overhang.

Normally the axle position is measured from the center of the outer hub of the wheel; however, if the front wheel exhibits a steer angle or is missing, approximate or use the position of the ball joint or axle.

Include any stringline adjustments.

Obtain this measurement for all vehicles where an end plane stringline is set up regardless of its repair state.

Not applicable

Use this code when the vehicle does not sustain an end plane impact or when an end plane stringline is not set up.

Unknown

When the measurement cannot be determined or obtained. This includes completely repaired vehicles.

Baseline Measurement – Left/Right Side Front CornerScreen Name: **Left – FBC/Right - FBC**

SAS Data Set:

SAS Variable:

Database Name:

Element Attributes

Database	SAS	
		Enter to the nearest centimeter
-8887	887	Not applicable
-9999	999	Unknown

Range

000-250, 887, 999

Source

Vehicle inspection

Remarks**Enter to the nearest centimeter**

Measure the distance between the post-crash position of the left/right side front axle and the associated front bumper corner.

Normally the axle position is measured from the center of the outer hub of the wheel; however, if the front wheel exhibits an angle or is missing, approximate or use the position of the ball joint or axle.

This measurement is obtained for any end plane or side impacts.

If the bumper structure (including the bumper re-bar) is missing, take the measurement to the next rigid structure.

Not applicable

Used when a vehicle is fully repaired, or does not sustain a front or side impact.

Unknown

When the measurement cannot be determined or obtained.

Baseline Measurement – Left/Right Side WheelbaseScreen Name: **Left – WB/Right - WB**

SAS Data Set:

SAS Variable:

Database Name:

Element Attributes

Database	SAS	
		Enter to the nearest centimeter
-8887	887	Not applicable
-9999	999	Unknown

Range

050-650, 887, 999

Source

Vehicle inspection

Remarks**Enter to the nearest centimeter**

Measure the distance between the post-crash position of the left/right side front axle and rear axle.

Normally the axle position is measured from the center of the outer hub of the wheel; however, if the front wheel exhibits an angle or is missing, approximate or use the position of the ball joint or axle.

Not applicable

Used when a vehicle is fully repaired.

Unknown

When the measurement cannot be determined or obtained.

Baseline Measurement – Left/Right Side Rear CornerScreen Name: **Left – RBC/Right - RBC**

SAS Data Set:

SAS Variable:

Database Name:

Element Attributes

Database	SAS	
		Enter to the nearest centimeter
-8887	887	Not applicable
-9999	999	Unknown

Range

000-250, 887, 999

Source

Vehicle inspection

Remarks**Enter to the nearest centimeter**

Measure the distance between the post-crash position of the left/right side rear axle and the associated rear bumper corner.

Normally the axle position is measured from the center of the outer hub of the wheel; however, if the rear wheel is missing, approximate or use the position of the axle.

This measurement is obtained for any end plane or side impacts.

If the bumper structure (including the bumper re-bar) is missing, take the measurement to the next rigid structure.

Not applicable

Used when a vehicle is fully repaired, or does not sustain a front or side impact.

Unknown

When the measurement cannot be determined or obtained.

Baseline Measurement – Left/Right Side Rear StringlineScreen Name: **Left – ROH/Right - ROH**

SAS Data Set:

SAS Variable:

Database Name:

Element Attributes

Database	SAS	
		Enter to the nearest centimeter
-8887	887	Not applicable
-9999	999	Unknown

Range

050-450, 887, 999

Source

Vehicle inspection

Remarks**Enter to the nearest centimeter**

Measure the distance between the post-crash position of the left/right side rear axle and the rear stringline. Note: This measurement can often be found in WinSpecs (Canadian specs) as the rear overhang.

Normally the axle position is measured from the center of the outer hub of the wheel; however, if the rear wheel is missing, approximate or use the position of the axle.

Include any stringline adjustments.

Obtain this measurement for all vehicles where an end plane stringline is set up regardless of its repair state.

Not applicable

Use this code when the vehicle does not sustain an end plane impact or when an end plane stringline **is not set up**.

Unknown

When the measurement cannot be determined or obtained. This includes completely repaired vehicles.

Interior Vehicle Form

Integrity

Is There Passenger Compartment Integrity Loss?

Screen Name: N/A

SAS Data Set:

SAS Variable:

Database Name:

Element Attributes

0	No integrity loss
1	Yes integrity loss
9	Unknown integrity loss

Source

Vehicle inspection

Remarks

No integrity loss.

Is selected when the doors, roof, and glazing (as listed below) remained intact during the impact sequence.

Unknown

Used in the following situations:

- extrication damage masked integrity loss, and
- integrity loss could not be determined due to circumstances beyond the technician's control.

Passenger Compartment IntegrityScreen Name: **Passenger Compartment Integrity**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.COMPART_INTEGRITY.CINTEGRID****Element Attributes**

Database	SAS	
2	1	Windshield
3	2	Door (side)
4	3	Door/hatch (back door)
5	4	Roof
6	5	Roof glass
7	6	Side window
8	7	Rear window (backlight)
-9999		Unknown
-9998	0	No Integrity loss

Source

Vehicle inspection

Remarks

Select all that apply.

The question of integrity loss is assessed with respect to impact-related damage. The damage can be either direct or induced. Passengers and cargo can also create integrity loss. Damage that is not impact-related (e.g., fire, extrication) is not considered.

Consider the passenger compartment as a “package” that is designed to contain the occupant. If an opening occurs of sufficient magnitude through which an occupant could have been ejected totally or partially (although it is not necessary for an occupant to have been ejected), the integrity of the compartment should be considered to have been lost. While it is difficult to define the magnitude of the opening in a universal manner, the minimum size of the opening would be equivalent to the head of most adults (approximately 15- to 20 cm). Components that may lose their integrity are restricted to the windshield glazing, window glazing (side, rear, or roof), door or roof.

Doors that open upon impact or glazing that is broken during the impact sequence are considered integrity loss. However, doors that were left open prior to an impact do not constitute damage-related loss of integrity and should be reported under **Door, Tailgate or Hatch Opening**, select **Other**.

Windshield

Is selected when the glazing is either holed/slit or displaced sufficiently to allow an adult size head to pass through.

Door (side)

Refers to the door structure and excludes glazing areas. The window frame is considered part of the door. All side doors, whether hinged or sliding are considered here. A door is defined as a structure that allows ingress/egress to the occupant compartment of the vehicle and has hinges and locking mechanism.

Door/hatch (back door)

Identifies integrity loss of the back door structure and not the glazing. Back doors include hatchback, tailgate, and lift back. In situations where the rear hatch or upper portion of the tailgate is made entirely of glazing material and secured with a latching mechanism, only the latching mechanism should be considered for this attribute. Integrity loss through shattered or displaced rear window glazing is identified in **Rear window**.

Roof

Refers only to the roof structure and not glazing areas. Roof structures containing metal panels (e.g., T-top roofs) are reported here as well as closed convertible tops.

Roof glass

Reports glazing material in the roof structure that is broken or displaced. If the roof glazing disintegrated or allowed for integrity loss in some other fashion and the sunroof sliding shade panel is closed, this still should be considered as integrity loss.

Side window

Refers to glazing that was broken or displaced during the crash sequence. Glazing that was totally open prior to the crash and broken (i.e., sidelight rolled down into the door area) is not entered as integrity loss.

Rear window (backlight)

Includes backlights, hatchbacks/tailgates/lift backs, and rear door glazing that were broken or displaced.

Unknown

Used when an integrity loss could not be determined.

Post-Crash Integrity Loss

Screen Name: **Post-Crash Integrity Loss**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS.INTERIOR.INTLOSS**

Element Attributes

Check Box

Database	SAS	
0	0	No/Unknown
1	1	Yes

Source

Vehicle inspection

Remarks**Post-crash integrity loss**

Is selected when the technician determines that what appears to be integrity loss is caused by post-crash actions. Examples:

- The windshield collapses due to extreme outside temperature
- Fire/EMS cut windshield out for extrication
- Fire/EMS cut the pillars or doors for extrication

Door, Tailgate, or Hatch Opening Overview

It is the intent of these variables to capture whether a passenger compartment door, tailgate, or hatch opened or remained closed during the crash sequence. The reason the doors came open during the crash is also reported.

The areas of interest include the left front, right front, left rear, right rear, and tailgate/hatch doors (i.e., LF, RF, LR, LR2, LR3, RR, RR2, RR3, and TG/H, respectively). The LF and RF doors are the forward most side doors on the left and right sides of a vehicle and the LR and RR doors are the next door (or set of doors) rearward of the LF and RF doors. There are situations where two adjacent doors are used to cover a single opening (i.e., side or rear of a cargo van). These should be treated as a single door. Side doors are applicable whether hinged or on tracks.

A door is defined as a structure that allows ingress/egress to the occupant compartment of the vehicle and has hinges and locking mechanism.

Generally, hatch doors meet the following criteria:

- provide access to the rear cargo area of a passenger car type vehicle, through a large opening backlight,
- are composed primarily of glass and may or may not be framed,
- are hinged at the top and latched at the bottom, and
- are not used in conjunction with a lower door or tailgate.

Some vehicles are equipped with frameless glass hatches that may shatter as a result of an impact. This situation is considered a glazing loss (refer to **Glazing**) rather than a hatch opening unless the hatch did, in fact, open prior to the glass breaking (i.e., release of the latching/hinging mechanism). Some glass hatches may be bordered by a narrow band of metal. The condition of this metal band is the focus of this variable group. These remarks also apply when the upper window of a tailgate assembly is being considered.

Generally, tailgates exist on the rear end plane of a utility/station wagon type vehicles. They may be one- or two-piece assemblies. In the instance of a two-piece unit, they will be hinged at the top and bottom with a horizontal seam. One-piece units may be hinged at the top for some vehicles or at the bottom with retracting rear windows for others. Pickup truck tailgates are not included in these variables.

Rear doors may be single or double units covering a single opening. The rear doors are hinged on one or both sides with a vertical seam present in dual door applications. Rear doors are most commonly found on van type vehicles and are indicated under descriptor - "TG/H."

Door, Tailgate, or Hatch Location

Screen Name: **Location**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS.INTEGRITY.ILOCID**

Element Attributes

Database	SAS		
1	1	LF	Left front
2	2	RF	Right front
3	3	LR	Left rear
4	4	RR	Right rear
5	5	TG/H Tail gate/hatch	

Source

Vehicle inspection

Remarks

Information is precoded and a choice is made for filling in subsequent variables.

Door, Tailgate, or Hatch OpeningScreen Name: **Opening**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.INTEGRITY.OPENING****Element Attributes**

Database	SAS	
16	N/A	No door/gate/hatch
17	1	Door/gate/hatch remained closed and operational
18	2	Door/gate/hatch came open during collision
19	3	Door/gate/hatch jammed shut
21	9	Unknown

Source

Vehicle inspection

Remarks

This variable identifies the operational status of a door, tailgate or hatch during a crash sequence. Priority is given to doors that “**open**” during the collision. Doors that are pushed inwards and jammed, such that a gap or space occurs, are captured under this variable as **door/gate/hatch jammed shut**. The gap or space that occurs is coded under the variable **Integrity Loss**. Where several doors cover a single opening, and the disposition of each door was different, select the response for the door that is first identified in the following priority list:

- Door/gate/hatch came open during collision
- Door/gate/hatch jammed shut
- Other (specify)
- Door/gate/hatch remained closed and operational
- Unknown

As an example, if one door came open and the other was jammed shut, the proper response would be Door/gate/hatch came open during collision. Gaps caused by body deformation are not selected as door opening events. These gaps will be selected in Passenger Compartment Integrity.

No door/gate/hatch

Is selected when no OEM door, tailgate, or hatch exists in the appropriate area (i.e., LF, RF, LR, RR, and TG/H).

Door/gate/hatch remained closed and operational

For any door, tailgate, or hatch that did not open during the crash sequence and remained operational.

Door/gate/hatch came open during collision

Is selected when the door assembly opened during the crash sequence, irrespective of the cause. Further, the magnitude of the opening created is inconsequential when selecting this response. Note, if this response is selected then the **Damage/Separation** responses for the next variable, must be indicated, based on what caused the door/hatch to come open. The technician must consider the potential that a sprung-mass situation may exist. In this condition, the door may have been opened after the crash, but due to vehicle body stresses the door cannot be shut. This is an important consideration when assessing whether the door came open during the collision.

Door/gate/hatch jammed shut

Is selected when a door is rendered inoperable due to being jammed shut. Inoperable is defined as the inability of the technician to open the door wide enough (through the use of reasonable force) to allow passage of an adult head. It is irrelevant whether the jamming is a result of latch or hinge failure, the displacement of adjacent body panels, or direct damage. Undamaged locked doors should not be considered as jammed or inoperable. Doors that were pried open following the crash are an indication of jamming and should be closely examined. In this situation, the technician should thoroughly annotate and photograph the door area to support this conclusion.

Unknown

Used when the technician could not make a performance assessment of the door, tailgate or hatch.

Damage/Separation Associated With Door, Tailgate, or Hatch Opening in CollisionScreen Name: **Damage/Separation**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.INTEGRITY.OPENINGFAIL****Element Attributes**

Database	SAS	
		No door/gate/hatch
22	1	Door not opened/separation not assessed
23	2	Door operational
24	3	Latch/striker separation due to damage
25	4	Hinge separation due to damage
26	5	Door structure separation due to damage
27	6	Door support (i.e., pillar, sill, roof side rail, etc.) separation due to damage
28	7	Latch/striker and hinge separation due to damage
29	8	Other separation (specify):
30	9	Unknown
		Door not opened

Source

Vehicle inspection

Remarks

This variable is designed to capture the reason a door opened during the collision sequence.

No door/gate/hatch

Is automatically selected when:

- no door, tailgate, or hatch exists,
- the door/tailgate/hatch did not open during the crash sequence, or
- the door/tailgate/hatch is jammed shut.

Doors that were open prior to the crash (hatchbacks open for cargo reasons, ventilation, etc.) also are reported here.

Door not opened

Is automatically selected when:

- the door/tailgate/hatch did not open during the crash sequence, or
- the door/tailgate/hatch is jammed shut, or

- damage/failure associated with door, tailgate, or hatch.

Door operational

Is selected when the door, tailgate, or hatch opened during the crash sequence, but the unit was undamaged and remained operational.

Latch/striker separation due to damage

Is selected when the door, tailgate, or hatch opened as a result of a separation of the latch/striker assembly. The separation must be due to damage, either direct or induced, and must result in the forced unlatching of the latch/striker assembly or shearing of the striker post.

Hinge separation due to damage

Is selected to indicate that a hinge separation exists as a result of either direct or induced damage. A hinge separation includes the complete separation of the hinge assembly from the door structure, pillar or of the two or more components that comprise the hinge assembly.

Door structure separation due to damage

Is selected anytime the door structure sustained damage that allowed the latch, striker, or hinge to separate from the mounting surface (i.e., torn metal). The door structure is defined as all components of the door assembly exclusive of the door skin.

Door support (pillar, sill, roof side rail, etc.)

Is selected to define situations where the latch/striker assembly did not separate, but the door support areas are damaged sufficiently to allow for the door to open. This includes, but is not limited to, the damage of pillars, sills and/or roof side rails at its most severe level.

Latch/striker and hinge separation due to damage

Latch/striker and hinge separation due to damage is used to describe situations where the entire door and adjacent components (i.e., pillars) are torn away by an impact. Separation must be present to the latch/striker and at least one hinge, resulting in the door opening (i.e., door partially or completely torn off).

Other separation (specify)

Used to indicate that an opening exists that cannot be described with the attributes above. This includes vehicles with a canvas roof and door structure (Jeeps, etc.).

Unknown

Used when it cannot be determined which attribute applies.

Glazing Type and Damage Overview

Glazing is defined for these variables as a covering for openings in the vehicle's structure that has the ability to allow light to pass. The areas of interest include: the windshield, sidelight windows, backlight (hatchback, tailgate, lift back, rear window), and roof. Composition of glazing materials in use include: glass, plastic, and glass-plastic.

The potential for occupant ejection is a major concern of rule makers at NHTSA. These variables are designed to record the successes and failures of occupant containment by glazing when there is an occurrence of occupant contact to the glazing, or glazing damage by impact forces or vehicle damage.

There is glass that involves a plastic anti-lacerative layer applied to the inner surface of windshields (such as Inner Shield, Securiflex, etc.). Glass - plastic should not be confused with the current design of laminate windshields that are made with a layer of plastic (Polyvinyl Butyral) between two layers of annealed glass.

Technicians are required to thoroughly inspect all glazing for direct occupant contact/damage and record their findings. Glazing variables are only coded if an occupant contacts the glazing or in the event of any ejection(s). Code only the glazing that is contacted. If an ejection occurred, code any damaged glazing or opened/removed glazing that could have permitted the ejection to occur.

Glazing variables are divided into four sections.

1. **Type**
2. **Precrash Glazing Status**
3. **Impact Damage**
4. **Occupant Damage**

These sections are further divided into fourteen specific areas of interest or Locations:

WS = Windshield

LF = Left front window (driver's window)

RF = Right front window

LR = Left rear window (adjacent to LF window)

LR2 = 2nd left rear window (adjacent to LR window)

LR3 = 3rd left rear window (adjacent to LR2 window)

RR = Right rear window (adjacent to RF window)

RR2 = 2nd right rear window (adjacent to RR window)

RR3 = 3rd right rear window (adjacent to RR2 window)

BL = Backlight, tailgate/hatchback/liftgate window

LBL = Left backlight (left side of a divided backlight, i.e., rear doors on some vans)

RBL = Right backlight (right side of a divided backlight, i.e., rear doors on some vans)

Roof = Sun roof, moon roof, T-roof, etc.

Other = Other sidelights, door wing windows, and any other light not identified above

The “other” category (as noted) encompasses areas where glazing may be directly contacted by occupants and not identified by a specific location. This would include wing windows located in door areas. In the event more than one “other” area was involved, select the area with the highest priority number as ranked above. When more than one glazing has priority, the technician should select the glazing that is closest to the front of the vehicle with the left side taking precedence over the right side. The technician must specify the selected glazing in the space provided.

Was There a Suspected Ejection or Contact With Any Glazing?

Screen Name: **Was there a suspected ejection or contact with any glazing?**

SAS Data Set:

SAS Variable:

Database Name:

Element Attributes

Yes

No

Unknown

Source**Remarks**

This variable identifies any occupant contact to the glazing or ejection during the crash sequence.

If occupant contact to glazing is present, the contacted piece of glazing must be documented.

In the event of an ejection, all damaged glazing must be documented.

Yes

Is selected when an occupant directly contacted any glazing of the vehicle or complete or partial occupant ejection occurred.

No

Is selected when there are no direct occupant contact detected on any glazing and no occupant ejection occurred.

Unknown

Is selected when it cannot be determined if occupant contact or ejection occurred due to significant vehicle damage resulting from circumstances such as a major fire, extensive extrication, vehicle salvage, etc.

Location of Window/Windshield Glazing

Screen Name: **Location**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.GLAZING.GLOCID**

Element Attributes

Database	SAS	
1	1	Windshield (WS)
2	2	Left front window (driver's window) (LF)
3	3	Right front window (RF)
4	4	Left rear window (adjacent to LF window) (LR)
5	5	2nd left rear window (adjacent to LR window) (LR2)
		3rd left rear window (adjacent to LR2 window) (LR3)
6	6	Right rear window (adjacent to RF window) (RR)
7	7	2nd right rear window (adjacent to RR window) (RR2)
		3rd right rear window (adjacent to RR2 window) (RR3)
10	8	Backlight, tailgate/hatchback/liftgate window (BL)
11	9	Left backlight (left side of a divided backlight, i.e., rear doors on some vans) (LBL)
12	10	Right backlight (right side of a divided backlight, i.e., rear doors on some vans) (RBL)
15	11	Sun roof, moon roof, T-roof, etc. (Roof)
20	98	Other sidelights, door wing windows, and any other light not identified above (Other)

Source

Vehicle inspection

Remarks

Information is pre-coded and a choice is made for filling in subsequent variables.

Type of Window/Windshield GlazingScreen Name: **Type**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.GLAZING.GLAZETYPE****Element Attributes**

Database	SAS	
1	0	NA No glazing
2	1	AS-1 - Laminated
3	2	AS-2 - Tempered
37	11	AS-2 - Laminated
38	12	AS-2 - Laminated-with aftermarket tint
5	4	AS-2 - Tempered-with aftermarket tint
4	3	AS-3 - Tempered-tinted (original)
39	13	AS-3 - Laminated tinted (original)
40	14	AS-3 - Laminated tinted (with additional aftermarket tint)
6	5	AS-3 - Tempered-tinted (with additional aftermarket tint)
41	15	AS-6 - Flexible plastic safety glazing
8	7	Glazing removed prior to crash
42	98	Other (specify):
43	99	Unknown

Source

Vehicle inspection

Remarks

Glazing types are identified by unique AS (American Standard) numbers that are etched in the glazing surface. The AS numbers are generally grouped with other glazing information and together make up an informational symbol referred to as a “watermark” (see diagram below). The arrow indicates the “AS number” within the watermark.

*Figure 102. Sample label*

Glazing types are used whether or not the glazing area was identified as damaged from impact forces or direct occupant contact. When all side and rear windows have been broken out, examine the window track or frame for remnants of broken glass. If glass is present and the remnants are small clear granules (or cracked in granule size pieces), then it is permissible to select (AS-2 Tempered). If these remnants are tinted, then it is permissible to select (AS-3 - Tempered - tinted original). If these remnants have any plastic tint shield clinging to them, then it is permissible to select (AS-2 Tempered – with aftermarket tint) or (AS-3 Tempered - tinted with additional aftermarket tint). If the glazing of the side glass appears to be held together by plastic coating, then it is permissible to select AS2/3 Laminated, respectively.

No glazing

Is selected for specific areas where the body structure was not designed to accept glazing (solid roof structure, etc.).

AS-1 - Laminated

Refers to a layer of plastic between two layers of glass. This type of glazing is widely used in current windshield installations.

AS-2 - Tempered

Refers to glass that is designed to break into small glass granules when damaged.

AS-2 - Laminated

Refers to glass that is composed of two pieces of glass laminated together by a plastic interlayer. This type of glass when damaged does not break into small granules.

AS-2 - Laminated-with aftermarket tint

Refers to AS-2-Laminated glazing that has an aftermarket plastic tint applied.

AS-2 - Tempered - with aftermarket tint

Refers to AS-2 glazing that has an aftermarket plastic tint shield applied.

AS-3 - Tempered - tinted (original)

Refers to manufactured tinted (privacy) glass that has the ability to break into small glass granules when damaged. Glazing that has an aftermarket plastic tint shield applied should be listed as **AS-2 - Tempered - with aftermarket tint**.

AS-3 - Laminated - tinted (original)

Refers to manufactured tinted glass that is composed of two pieces of glass laminated together by a plastic interlayer. This type of glass when damaged does not break into small granules.

AS-3 - Laminated tinted (with additional aftermarket tint)

Refers to AS-3 Laminated glazing that has an additional aftermarket plastic tint shield applied.

AS-3 - Tempered – tinted (with additional aftermarket tint)

Refers to AS-3 glazing that has an additional aftermarket plastic tint shield applied.

AS-6 - Flexible plastic safety glazing

Refers to plastic side and rear windows. This type of glazing is usually found in convertibles and Jeeps.

Glazing removed prior to crash

Includes sun roofs, T-tops, etc., which were removed from their respective areas prior to the crash.

Other (specify)

Refers to any glazing that has an AS number different from AS-1, AS-2, AS-3 and AS-6. Write the AS number of the glazing in the “specify” space provided. This includes plastic (AS-11C), bullet proof (AS-10), and anti-lacerative (AS-14).

Unknown

Used in the following situations:

- Due to factors beyond the technician’s control, an adequate determination of glazing presence could not be made.
- A reasonable determination of the “AS” number could not be made.

Window Precrash StatusScreen Name: **Precrash Status**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.GLAZING.PRE-CRASHSTATUS****Element Attributes**

Database	SAS	
11	0	N/A No glazing
12	1	Fixed
13	2	Closed
14	3	Partially opened
15	4	Fully opened
16	7	Glazing removed prior to crash
17	9	Unknown

Source

Vehicle inspection with verification from interview, if possible.

Remarks

This variable records the operational modes of the glazing prior to the crash.

No glazing

Used for specific areas where the body structure was not designed to accept glazing (solid roof structure, etc.).

Fixed

Identifies glazing that is not designed to open (windshields, etc.).

Closed

Refers to any operable glazing that was fully closed (i.e., no air gaps).

Partially opened

Refers to any operable glazing that is not firmly closed (i.e., air gaps present) and not fully opened. Note, the technician should select the placement of the window in relationship to the opening and not by window design limitations (i.e., rear sedan windows designed not to fully open).

Fully opened

Refers to any operable glazing that is attached to the vehicle (i.e., window tracks) and was placed in the open position such that the glazing was not restricting the opening of the vehicle structure.

This element is assessed independently of window design limitations (i.e., side windows designed to only roll down halfway cannot receive this attribute).

Glazing removed prior to crash

Includes sun roofs, T-tops, etc., that were removed from their respective areas prior to the crash.

Unknown

Used in the following situation:

- Due to factors beyond the technician's control, an adequate determination of glazing presence could not be made.

Glazing Damage From Impact ForcesScreen Name: **Impact Damage**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.GLAZING.IMPACTDAMAGE****Element Attributes**

Database	SAS	
18	0	N/A No glazing
19	1	No glazing damage from impact forces
20	2	Glazing in place and cracked from impact forces
21	3	Glazing in place and holed from impact forces
22	4	Glazing out-of-place (cracked or not) and not holed from impact forces
23	5	Glazing out-of-place and holed from impact forces
24	6	Glazing disintegrated from impact forces
25	7	Glazing removed prior to crash
26	9	Unknown if damaged

Source

Vehicle inspection

Remarks

This variable identifies damage to the glazing as a result of impact forces and/or vehicle damage (including damage from interior loose objects). Damage caused by direct occupant contact should be recorded in the variable **Occupant Damage**.

Note: Glazing that are retracted into vehicle body panels (i.e., fully open) are to be assessed. Caution should be used in assessing glazing that have post-crash damage from sun/heat buildup and or extrication.

No glazing

Used for specific areas where the body structure was not designed to accept glazing (solid roof structure, etc.).

No glazing damage from impact forces

Is selected when there was no damage to the glazing from impact forces. Glazing damage for these variables is defined as cracking, holed, out-of-place or disintegrated. Glazing that is scratched is considered not damaged.

Glazing in place and cracked from impact forces

Is selected when the glazing remained within the confines of its specific area and was cracked. Displaced glazing that was not totally separated from the vehicle should be treated as “in place.” This would include windshields with partial bond separation and dislodged side glazing.

Glazing in place and holed from impact forces

Is selected when the glazing was “holed.” “Holed” refers to a hole or slit in the glazing that is large enough in size to allow passage of an adult head (approximately 15- to 20 cm). For the purpose of this variable, the hole or slit must have been produced by impact force and/or vehicle damage and not by direct occupant contact.

Glazing out-of-place (cracked or not) and not holed from impact forces

Refers to glazing that was totally separated from the vehicle as the result of impact forces and/or vehicle damage. Windshields with 100 percent bond separation should receive this attribute. Caution must be exercised by the technician not to consider shattered tempered glass (sidelights, etc.) as out-of-place. This situation should be identified as **Glazing disintegrated from impact forces**.

Glazing out-of-place and holed from impact forces

Refers to glazing that was totally separated from the vehicle during the crash sequence and was holed/slit as the result of impact forces or vehicle damage. “Holed” refers to either a hole or slit in the glazing that is large enough in size to allow passage of an adult head (approximately 15- to 20 cm).

Glazing disintegrated from impact forces

Refers to glazing that was totally destroyed by impact forces or vehicle damage. This usually occurs with shattered tempered glass (sidelights, etc.). Windshields that are separated from the vehicle should not be considered disintegrated. Uncertainty may exist when determining the cause of shattered sidelight glazing when the collision occurred adjacent to an occupied seat. As a rule of thumb, impact forces and/or vehicle damage generally cause disintegration of the sidelight prior to occupant contact.

Glazing removed prior to crash

Includes sun roofs, T-tops, etc., which were removed from their respective areas prior to the crash.

Unknown if damaged

Is selected in the following situations:

- The degree of damage could not be determined as the result of post-impact damage (extrication, towing operations, etc.).
- Due to factors beyond the technician’s control, an adequate determination of glazing damage could not be made (catastrophic type vehicle damage, etc.). This should be a rare occurrence.

- The cause of glazing damage (i.e., impact forces versus occupant contact) could not be determined by the technician. Caution, it is anticipated this reason will be rarely used. When confronted with this dilemma, every effort must be made to select a known value for damaged glazing.

Glazing Damage From Occupant ContactScreen Name: **Occupant Damage**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.GLAZING.OCCDAMAGE****Element Attributes**

Database	SAS	
27	0	NA (No glazing)
28	1	No occupant contact
29	2	Glazing contacted by occupant but no glazing damage
30	3	Glazing in place and cracked by occupant contact
31	4	Glazing in place and holed by occupant contact
32	5	Glazing out-of-place (cracked or not) by occupant contact and not holed by occupant contact
33	6	Glazing out-of-place by occupant contact and holed by occupant contact
34	7	(Glazing removed prior to crash)
35	8	Glazing disintegrated by occupant contact
36	9	Unknown if contacted by occupant

Source

Vehicle inspection

Remarks

These variables report direct occupant contact to the glazing during the crash sequence. The responses are prioritized, the further you go down the list, the higher the priority, (**Glazing in place and holed by occupant contact** takes precedence over **Glazing in place and cracked by occupant contact**, etc.).

Note: Glazing which are retracted into vehicle body panels (i.e., fully open) are to be assessed.

No occupant contact

Is selected when there are no direct occupant contact detected on the glazing.

Glazing contacted by occupant but no glazing damage

Is selected when an occupant directly contacted the glazing, but the contact did not result in glazing damage.

Glazing in place and cracked by occupant contact

Refers to glazing that was damaged (not holed) by direct occupant contact. The term “in place” describes glazing that has remained within the confines of its specific area. Displaced glazing

that was not totally separated from the vehicle should be treated as “in place.” This would include windshields with partial bond separation and dislodged side glazing.

Glazing in place and holed by occupant contact

Is selected when the glazing was “holed.” “Holed” refers to a hole or slit in the glazing that was produced by direct occupant contact. This opening is equivalent in size to the space necessary to allow passage of an adult head (approximately 15– to 20 cm).

Glazing out-of-place (cracked or not) by occupant contact and not holed by occupant contact.

Refers to glazing that was directly contacted by an occupant and was totally separated from the vehicle during the crash sequence. Windshields with 100 percent bond separation are reported here. Caution must be exercised by the technician not to consider shattered tempered glass (sidelights, etc.) as out-of-place. This situation is reported as **Glazing disintegrated by occupant contact**.

Glazing out-of-place by occupant contact and holed by occupant contact

Refers to glazing that was contacted and holed by direct occupant contact and totally separated from the vehicle during the crash sequence. “Holed” refers to a hole or slit in the glazing that was produced by direct occupant contact. This opening is equivalent in size to the space necessary to allow passage of an adult head (approximately 15– to 20 cm).

Glazing removed prior to crash

Includes sun roofs, T-tops, etc., that were removed from their respective areas prior to the crash. Glazing retracted into vehicle body panels (i.e., fully open) is not considered in this element.

Glazing disintegrated by occupant contact

Refers to glazing that was totally destroyed by direct occupant contact. This usually occurs with shattered tempered glass (sidelights, etc.). Windshields that were separated from the vehicle should not be considered disintegrated. Uncertainty may exist when determining the cause of shattered sidelight glazing when the collision occurred adjacent to an occupied seat. As a rule of thumb, impact forces and/or vehicle damage generally cause disintegration of the sidelight prior to occupant contact. If the glazing is indicated in **Impact Damage** as “Disintegrated by Impact Forces” this variable must be coded as **No Occupant Contact**.

Unknown if contacted by occupant

Is selected in the following situations:

- Direct occupant contact/damage could not be determined due to post-impact damage (extrication, towing operations, etc.).
- Due to factors beyond the technician’s control, an adequate determination of direct occupant contact/damage could not be made.

Occupant Area Intrusion Overview

If there is no intrusion select the “No Intrusion” button on the Sketch subtab.

Displacement of less than three cm is not considered to be an intrusion.

Loosely hanging panels or trim are also not considered as an intrusion unless reinforced or backed by a rigid component. For example, if the plastic trim piece surrounding the A pillar separated from the pillar and moved further into the occupant compartment, the trim would not be considered an intrusion if it could easily be moved or pushed out of the way. However, if a deformed portion of the pillar or another component reinforced the trim, it would be recorded as an intrusion. As a general guideline, consider the consequence to a striking occupant – would the trim piece move out of the way, or be held in place by a reinforcing component.

Intrusion results whenever the internal boundary surface of the passenger compartment is moved inward due to direct or indirect damage resulting from the application of a crushing force to the exterior surface of a vehicle. An exterior component can intrude into the passenger compartment. A passenger compartment is defined as that interior occupant space that is normally available for occupant seating, based upon both the vehicle design and seat configuration at the time of the crash. Adjacent cargo areas and other enclosed areas are included for consideration in the following situations:

- The area behind the last row of seats designed by the manufacturer for cargo is integral with the passenger compartment.
- An area where a seat row was either removed or folded down to accommodate cargo.

Intrusion can occur from the vertical, longitudinal, or lateral direction. Intrusion can also occur from the displacement of interior seatbacks and/or seat cushions.

Measurement of Passenger Compartment Intrusion

Types of Intrusion

Two types of intrusions occur most often in crashes. They are:

Type A: Intrusion that is limited to one part of the passenger compartment and where the other side of the vehicle remains relatively free of distortion. This is likely to be the case in the majority of crashes. In many cases it will be possible to obtain undeformed vehicle dimensions as the vehicle is symmetrical about the longitudinal centerline.

Type B: Intrusion that occurs in many sections of the passenger compartment with little of the vehicle remaining free of distortion. In this case, it will be necessary to obtain “original” dimensions by comparison with a second (unintruded) vehicle of the same type.

Establishment of Reference Axis. In order to compare one side of a vehicle with the other or compare two vehicles, a coordinate system within the vehicle is required. An example of Type A and Type B intrusions are shown in Figure 101.

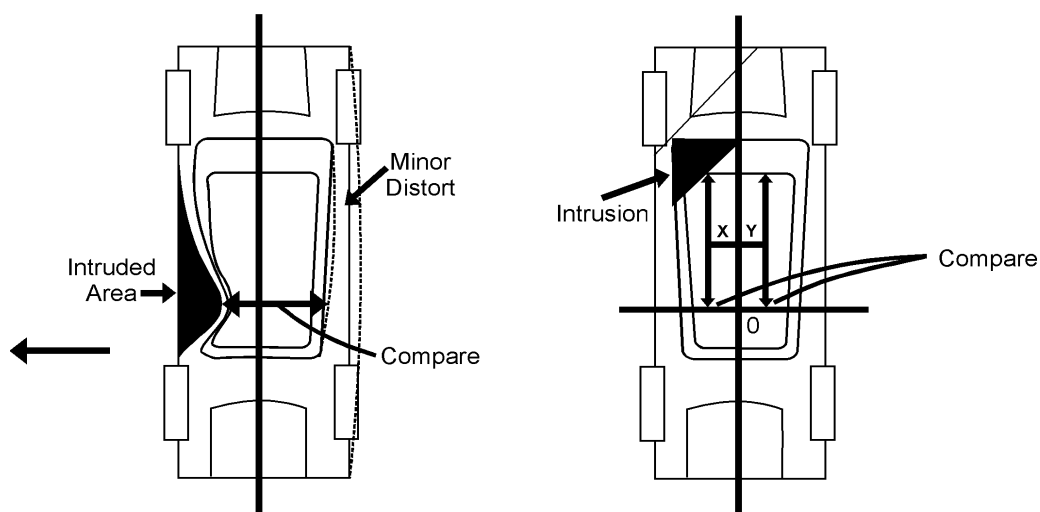
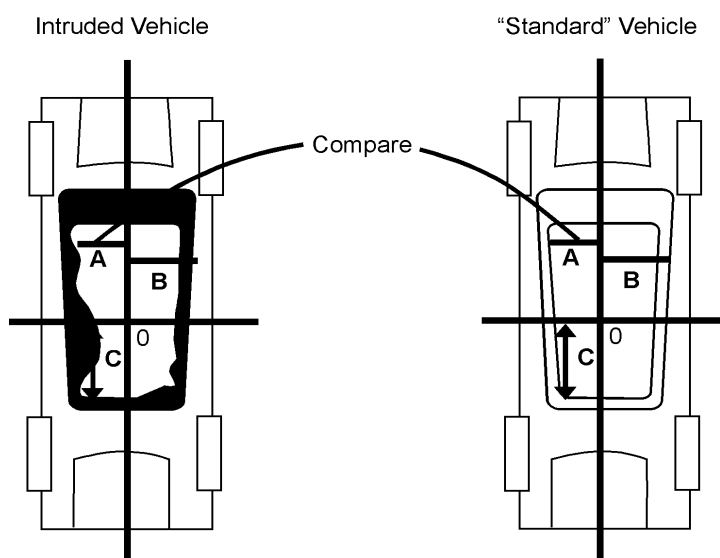
TYPE A INTRUSION:**TYPE B INTRUSION:**

Figure 103. Illustration of Type A and Type B intrusions

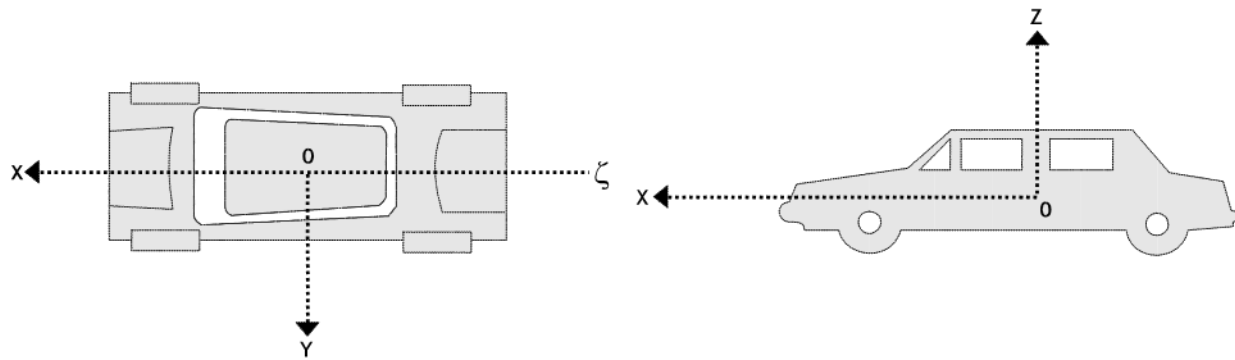


Figure 104. Illustration of x-axis on longitudinal centerline

The x-axis is on the longitudinal centerline of the vehicle. This could be set up along the transmission drive shaft tunnel for a rear-wheel-drive vehicle or along a centerline that is equidistant from the sides of the vehicle in a front-wheel-drive vehicle.

The y-axis is in a side-to-side or lateral direction. This plane may be set up in any convenient location that can be readily established in the “reference” vehicle.

The z-axis is the vertical axis. A location at the top of the transmission drive shaft tunnel may be convenient to reference roof collapse in many cases. The point established by these intersecting planes defines the origin (**O**).

Establishing a frame of reference and measuring intrusion can be simplified.

- In a frontal collision, there is rarely intrusion at the rear, and vice-versa for a rear collision.
- Side impacts generally damage only one side of the vehicle.
- Roof impacts leave the floor pan undistorted.
- Not all intrusions require the establishment of all three axes.

The final ordering of intrusions reflects the intrusion severity as recorded in column three (i.e., Magnitude of Intrusion variables).

An intruded component is assessed for its Dominant Crush Direction as determined from the Magnitude of Intrusion. For example, an instrument panel may intrude both longitudinally and vertically. The coded intrusion will reflect the instrument panel with the dominant crush direction (vertical or longitudinally). If the dominant intrusion is not perceptibly different in the field (i.e., an exemplar vehicle is required for comparison measurements) the technician should document the component (i.e., instrument panel) in both directions. However, during the quality control process of the case, only the instrument panel intrusion with the greater magnitude is coded, the other intrusion row is deleted.

This system is defined by an orthogonal set of axes (x-y-z) and an origin. (**O**) as shown in Figure 2. The position of the origin is typically on the longitudinal centerline of the vehicle and has an arbitrary location, both vertically and longitudinally. However, its location must be identical for the intruded and “reference” vehicle. Note, the axes are referenced to the floor plane of the vehicle.

Note: The extent of a component intrusion into a row sector should not exceed the pre-impact dimension of that sector. For example, if the front row width is 150 cm, each sector is equal to 50 cm. If the driver-side door panel intrudes 60 cm laterally, the intrusion is listed as:

Front Row Left (sector 11) Intrusion Magnitude = 50cm (maximum amount for that sector)

Front Row Middle (sector 12) Intrusion Magnitude = 10cm (the remaining amount for the door panel intrusion).

Catastrophic should only be used to describe intrusion damage that is so severe that the technician is unable to discern any of the following:

- specific occupant locations,
- intruding components, or
- magnitude of intrusions and dominant crush.

Row Widths

Screen Name:
 SAS Data Set:
 SAS Variable:
 Database Name:

Element Attributes

Database	SAS	
		Record to the nearest centimeter
	9998	Not applicable
	9999	Unknown

Source

Vehicle inspection

Remarks

Row widths are not required if no intrusions were observed

The interior space of a vehicle is divided into specific sectors as outlined in the following diagram. These sectors are based upon seat rows and not occupant seat locations. Cargo areas open to the passenger area (station wagons, vans, etc.) are assessed in these variables. Intrusion into the trunk area of an automobile with a rear seat position or into a cargo area covered by a privacy curtain/shelf is excluded.

A vehicle row width is intended to capture the amount of lateral room available in the passenger compartment. However, the variety of designs incorporated in door and side panels makes it essential that row widths be measured at a uniform location. When obtaining a row width measurement:

- Take the measurement at the beltline level, just below the greenhouse,
- Use a point longitudinally near the center of the door panel or side panel,
- Use an undamaged area of the door panel or side panel - if one side is damaged, a half-width measurement can be taken from the undamaged side, then doubled, and
- Exclude any recessed or protruding components of the panel surface.

Intrusions/Detail

Intrusion Number

Screen Name: N/A

SAS Data Set:

SAS Variable:

Database Name:

Element Attributes

Automatically generated by data entry system, sequential numbers

Source

Vehicle inspection

Remarks

Row

Screen Name: **Row**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.INTRUSION.ROW**

Element Attributes

Database	SAS	
1	1	Front row
2	2	Second row
3	3	Third row
4	4	Fourth row
28627	5	Fifth row
5	97	Catastrophic
8	8	More than one/other severe intrusions
6	98	Other
7	99	Unknown

Source

Vehicle inspection

Remarks

The interior space of a vehicle is divided into specific sectors as outlined in the following diagram. These sectors are based upon seat rows and **not** occupant seat locations. Cargo areas open to the passenger area (station wagons, vans, etc.) are assessed in these variables but are not divided into sectors. Intrusion into the trunk area of an automobile with a rear seat position or into a cargo area covered by a privacy curtain/shelf is excluded.

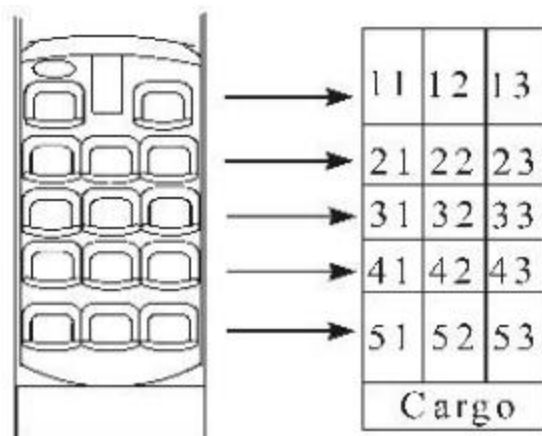


Figure 105. Illustration of seating positions

Front Row, Second Row, Third Row, Fourth Row, and Fifth Row are identified by the presence of an installed seat. When the entire seat row is folded down or removed prior to the crash, this area is considered an **Other** enclosed area.

The following rules guide us in the determination of “seat rows” versus “other enclosed areas” and in the derivation of the lateral dimension of each row sector.

Cargo areas in passenger cars that are separated from the passenger compartment are not considered for intrusion. This would include trunk areas and rear cargo areas of hatchbacks and station wagons that were covered by a privacy curtain/shelf. The area above the seating rows is considered for intrusion and would be listed under **Other** enclosed area.

The area behind the front row of a pickup truck where jump seats are installed should be identified by the status of these seats prior to the crash. When at least one seat was in the operational mode (i.e., open) at the time of the crash, the entire area is listed as row 2. Otherwise, this area is assessed under **Other** enclosed area.

A problematic area in vans is the situation where a row was removed prior to the crash. A seat row area that was removed prior to an crash should be selected as an **Other** enclosed area; however, it should be tabulated as a seat row to identify any sequential rows.

Vans with single seating positions behind the Front Row (usually high back swivel chairs) are compressed into a single seat row.

Catastrophic

Used when the intrusion damage to the occupant compartment is so severe that none of this vehicle’s seat positions can be referenced to any of the following: specific occupant locations, intruding components, magnitude of intrusions, or dominant crush. When catastrophic is selected, the program automatically encodes the **Area** as “other”; the **Magnitude** as “Catastrophic”; and the **Crush Direction** as “Catastrophic.” **The technician must** select the **Intruded Component** as “Catastrophic”; **AND** leave the columns for **Comparison**, **Intruded**, and **Intrusion** blank.

More than one/other severe intrusions

Used when passenger compartment intrusion is severe in several locations and when some intrusions can be fully or partially documented, but other intrusions are suspected and cannot be identified. At least one partial or complete intrusion must be coded when **More than one/other severe intrusions** is selected and this selection must be the last coded line of intrusion.

Other

Used for the following situations:

- Cargo areas open to the passenger area (station wagons, vans, etc.)
- When the entire seat row is folded down to the floor level or removed prior to the crash.

When **Other** is used to describe either of the situations above, that area is regarded as one sector and is not divided into the three sectors used for rows with seats.

Unknown

Used for the following situations:

- The technician cannot determine if there was any intrusion.
- The vehicle was under repair (or repaired) at the time of inspection.

Position

Screen Name: **Position**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.INTRUSION.LOCPOS**

Element Attributes

Database	SAS	
1	1	Left
2	2	Middle
3	3	Right
5	5	Cargo
6	97	Catastrophic
4	88	More than one/other severe intrusions
99	99	Unknown

Source

Vehicle inspection

Remarks

Each row is equally divided into three sectors regardless of the seating configuration.

In the situation where half of the row is folded down (i.e., split back seats) to accommodate cargo, the entire lateral area (wall-to-wall) is divided into three equal sectors.

The following rules guide us in the determination of “seat rows” versus “other enclosed areas” and in the derivation of the lateral dimension of each row sector.

The lateral occupant space dimension for the front seat row is obtained by measuring the distance from the vehicle’s side-surface to side-surface (undamaged dimension) and dividing by three. **Note, there is no implied correlation between seating capacity and sectors.**

The area behind the front row of a pickup truck where jump seats are installed should be identified by the status of these seats prior to the crash. When at least one seat was in the operational mode (i.e., open) at the time of the crash, the entire area is divided into three sectors.

Left

Is defined as the left sector of the row (i.e., sectors 11, 21, 31, 41, 51). The lateral dimension of this area is mathematically determined by dividing the original wall-to-wall dimension by three.

Middle

Is defined as the center sector of the row (i.e., sectors 12, 22, 32, 42, 52).

Right

Is defined as the right sector of the row (i.e., sectors 13, 23, 33, 43, 53).

Cargo

Is defined as an entire seat row without seats or an area behind a seat row that is open to the passenger compartment. This area is not divided into three sections.

Intrusion Location

Screen Name: N/A
 SAS Data Set:
 SAS Variable:
 Database Name:

Element Values

Front Row	Second Row	Third Row
11 Left	21 Left	31 Left
12 Middle	22 Middle	32 Middle
13 Right	23 Right	33 Right

Fourth Row	Fifth Row
41 Left	51 Left
42 Middle	52 Middle
43 Right	53 Right

Source

Vehicle inspection

Remarks

The interior space of a vehicle is divided into specific sectors as outlined in the following diagram. These sectors are based upon seat rows and **not occupant seat locations**. Cargo areas open to the passenger area (station wagons, vans, etc.) are assessed in these variables.

Intrusion into the trunk area of an automobile with a rear seat position or into a cargo area covered by a privacy curtain/shelf is excluded.

When the entire seat row is folded down or removed prior to the crash, this area is considered an **Other** enclosed area.

The following rules guide us in the determination of “seat rows” versus “other enclosed areas” and in the derivation of the lateral dimension of each row sector.

Cargo areas in passenger cars that are separated from the passenger compartment are not considered for intrusion. This would include trunk areas and rear cargo areas of hatchbacks and station wagons that were covered by a privacy curtain/shelf. The area above the privacy curtain/shelf is considered for intrusion and would be listed under **Other** enclosed area.

The area behind the front row of a pickup truck where jump seats are installed should be identified by the status of these seats prior to the crash. When at least one seat was in the operational mode (i.e., open) at the time of the crash, the entire area is listed as row 2. Otherwise, this area is assessed under **Other** enclosed area.

A problematic area in vans is the situation where a row was removed prior to the crash. A seat row area that was removed prior to an crash should be selected as an **Other** enclosed area; however, it should be tabulated as a seat row to identify any sequential rows.

Catastrophic

Used when the intrusion damage to the occupant compartment is so devastating that the technician is not able to discern any of the following: specific occupant locations, intruding components, magnitude of intrusions, and dominant crush. When catastrophic is selected, the program automatically encodes the **Area** as “other”; the **Magnitude** as “Catastrophic”; and the **Crush Direction** as “Catastrophic.” **The technician must** select the **Intruded Component** as “Catastrophic”; **AND** leave the columns for **Comparison**, **Intruded**, and **Intrusion** blank.

Other (specify):

Is an area where no defined row exists. This would include an area where the entire seat row was folded down prior to the crash. Occasionally, the middle seat row in a passenger van will be removed leaving only the front and rearmost seat rows. If intrusion occurs within this area, the location should be identified here and specified.

Unknown

Used for the following situations:

- The technician cannot determine if there was any intrusion.
- The vehicle was under repair (or repaired) at the time of inspection.

Area

Screen Name: **Area**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS.INTRUSION.AREA**

Element Attributes

Database	SAS	
1		Interior components
2		Exterior components
3		Other
4		More than one/other severe intrusions
7		Catastrophic

Source

Vehicle inspection

Remarks

This variable filters the forthcoming intruding components with respect to whether they were internal or external to the occupant compartment.

Intruded ComponentScreen Name: **Intruded Component**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.INTRUSION.COMPONENT****Element Attributes**

Interior Components

Database	SAS	
1	1	Steering assembly
2	2	Instrument panel left
3	3	Instrument panel center
4	4	Instrument panel right
5	5	Toe pan
6	6	A (A1/A2)-pillar
7	7	B-pillar
8	8	C-pillar
9	9	D-pillar
10	10	Side panel - forward of the A1/A2-pillar
12	12	Side panel - rear of the B-pillar
13	13	Roof (or convertible top)
14	14	Roof side rail
15	15	Windshield
16	16	Windshield header
17	17	Window frame
18	18	Floor pan (includes sill)
19	19	Backlight header
20	20	Front seat back
21	21	Second seat back
22	22	Third seat back
24	24	Fifth seat back
25	25	Seat cushion
26	26	Back door/panel (e.g., tailgate)
27	27	Other interior component (specify):
35	35	Door/forward upper quadrant
36	36	Door/forward lower quadrant
37	37	Door/rear upper quadrant
38	38	Door/rear lower quadrant
41	41	Door-undetermined location

Exterior Components

Database	SAS	
28	30	Hood
29	31	Outside surface of this vehicle (specify):
30	32	Other exterior object in the environment (specify):
31	33	Unknown exterior object
32	34	Grab handles
	97	Catastrophic

Other Component

Database	SAS	
40	96	More than one/other severe intrusions
33	98	Intrusion of exterior unlisted component

Source

Vehicle inspection

Remarks

Select the component that has reduced the occupant space for that sector. An intruded component is assessed for its Dominant Crush Direction as determined from the Magnitude of Intrusion. For example, an instrument panel may intrude both longitudinally and vertically. The final coded intrusion will reflect the instrument panel with the dominant crush direction (vertical or longitudinally). If the dominant intrusion cannot be determined in the field (i.e., an exemplar vehicle is required for comparison measurements) the technician should document the component (i.e., instrument panel) in both directions. However, during final completion of the case, only the instrument panel intrusion with the greater magnitude is coded, the other intrusion row is deleted.

Interior Components:**Steering assembly**

Consists of the entire steering column that includes the steering rim, hub, and spokes.

Instrument panel left

Refers to the left one-third of the panel. This should correlate with the same lateral dimension generated for the sector "11" (Front Seat Left) in variables Row and Position.

Instrument panel center

Refers to the center one-third area of the instrument panel. This should correlate with the same lateral dimension generated for the sector "12" (Front Seat Middle) in variable Row and Position.

Instrument panel right

Refers to the right one-third of the instrument panel. This should correlate with the same lateral dimension generated for the sector “13” (Front Seat Right) in variables Row and Position.

Toe pan

Refers to the front portion of the floor that angles up to meet the dash panel. Foot controls are included.

A (A1/A2)-pillar

Refers to the upper and lower portion of the forward most structural post of the passenger compartment on both side planes. Some vehicles (e.g., GM APV minivan) are designed with two upper A-pillars on each side. The forward most pillar is called an A1-pillar that is primarily designed to secure the windshield to the vehicle. The second pillar is labeled as an A2-pillar. This pillar generally lends support to the roof and also helps to establish the front door opening. Annotation should be provided on the Interior Vehicle Form specifying that pillar was most severely intruded.

B-pillar

Refers to the upper and lower portion of the structural post located at the rear edge of the front doors on both side planes. It should be noted, some vehicles do not have upper B-pillars.

C-pillar

Refers to the upper and lower portion of the structural side post located at the rearmost edge of the rear door of a four door vehicle or the upper portion of the structural side post located between the backlight and side window glass on two door vehicles.

D-pillar

Refers to the upper and lower portion of the structural post rearward of the C-pillar. D-pillars are usually available on station wagons, vans, or utility vehicles. The D-pillar is not to be confused with the C-pillar that is the rearmost pillar of the passenger compartment on most two and four door vehicles.

Side panel forward of the A1/A2-pillar

Refers to the interior panel located on the side of the vehicle and forward of the front doors. This includes areas directly below the instrument panel sometimes referred to as a “kickpanel.”

See **A-pillar** for A1/A2 definition.

Side panel rear of the B-pillar

Refers to any side surface area excluding doors, window frames, and associated glazing rearward of the B-pillar, below the roof rail, above the sill, and in front of any back door or wall.

Roof (or convertible top)

Refers to the top structural member of the greenhouse supported by the side pillars, windshield header and backlight header.

Roof side rail

Refers to the longitudinal horizontal stiffeners located along the edge of the roof.

Windshield

Refers to the lateral glazing located at the forward most surface of the greenhouse.

Windshield header

Refers to the front forward lateral edge of the roof directly above the windshield.

Window frame

Refers to the longitudinal frame that encloses the side window glazings and composes that portion of the door above the window sill. This includes the triangular plastic piece at leading edge of the window frame.

Floor pan (includes sill)

Refers to the floor of the vehicle. This includes the lower portion of the passenger compartment (e.g., door sills).

Backlight header

Refers to the rear most lateral edge of the roof directly above the backlight.

Front seat back

Refers to the back support of the front seat.

Second seat back

Refers to the back support of any second-row seat.

Third seat back

Refers to the back support of any third-row seat.

Fourth seat back

Refers to the back support of any fourth-row seat.

Fifth seat back

Refers to the back support of any fifth-row seat.

Seat cushion

Refers to the horizontal portion of the seat assembly that was designed for seating.

Back door/panel (e.g., tailgate)

Refers to the interior surface and related components of the back door or if no door exists, the interior surface of the back wall.

Other interior component

Refers to any interior component that may intrude into an occupant seating position.

Door/forward upper quadrant/lower quadrant

The doors are visually divided into quadrants. The longitudinal measurement is taken at the beltline along the window frame. The vertical measurement is taken at the midpoint of the door, from the top edge to the bottom edge of the inner door panel.

The quadrants are rarely equal in size. They are named as follows: Forward Upper Quadrant (FUQ), Forward Lower Quadrant (FLQ), Rear Upper Quadrant (RUQ), and Rear Lower Quadrant (RLQ). Select the quadrant that best represents the most intruded quadrant of the door. Only one quadrant can be selected per door.

Door/rear upper quadrant/lower quadrant

The doors are visually divided into quadrants. The longitudinal measurement is taken at the beltline along the window frame. The vertical measurement is taken at the midpoint of the door, from the top edge to the bottom edge of the inner door panel.

The quadrants are rarely equal in size. They are named as follows: Forward Upper Quadrant (FUQ), Forward Lower Quadrant (FLQ), Rear Upper Quadrant (RUQ), and Rear Lower Quadrant (RLQ). Select the quadrant that best represents the most intruded quadrant of the door. Only one quadrant can be selected per door.

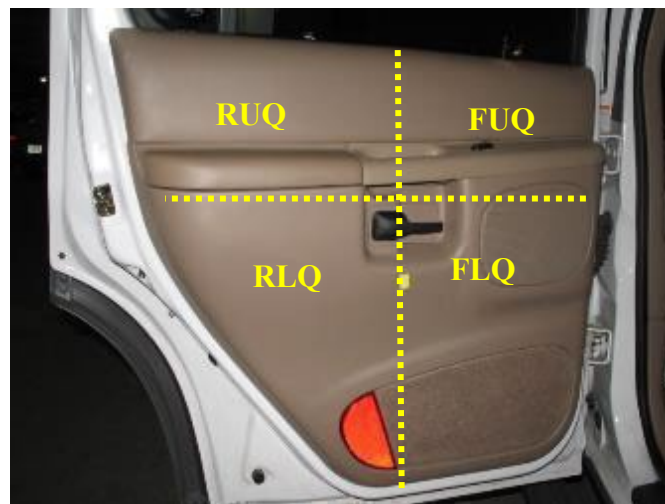


Figure 106. Illustration of quadrants

Exterior Components:**Hood**

Refers to the horizontal structure covering the front compartment of the vehicle located forward of the windshield.

Outside surface of this vehicle

Is selected when any outside surface of this vehicle not mentioned above has violated the internal boundary surface of the passenger compartment (spare tire, jack, outside mirror, etc.).

Other exterior object in the environment

Refers to an object external to the vehicle (trees, poles, other vehicle, etc.) that penetrates the internal boundary of this vehicle.

Unknown exterior object

Is selected if there is evidence that an object intruded but it's unknown what that object was.

Intrusion of exterior unlisted component

Used if there is intrusion of any component not listed above.

Comparison Value (of Intrusion)

Screen Name: **Comparison**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS.INTRUSION.COMPARE**

Element Attributes

Database	SAS	
		Record to the nearest centimeter
		Catastrophic
-9999		Unknown

Source

Vehicle inspection

Remarks

Follow the instructions for determining vehicle intrusions, establishing axes, and determining comparison values found in **Occupant Area Intrusion Overview**.

Enter the comparison value for the intruded component.

Intruded Value (of Intrusion)Screen Name: **Intruded**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.INTRUSION.INTRUDED****Element Attributes**

Database	SAS	
		Record to the nearest centimeter
		Catastrophic
-9999		Unknown

Range**Source**

Vehicle inspection

Remarks

Follow the instructions for determining vehicle intrusions, establishing axes, and determining intruded values found in **Occupant Area Intrusion Overview**.

Enter the comparison value for the intruded component.

IntrusionScreen Name: **Intrusion**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.INTRUSION.INTRUSION****Element Attributes**

Database	SAS	
		Record to the nearest centimeter
-8861	977	Catastrophic
-9999	999	Unknown

Source

Vehicle inspection

Range

1-160, 997(catastrophic), 999 (unknown)

Remarks

Follow the instructions for determining vehicle intrusions, establishing axes, and determining Intrusion values found in **Occupant Area Intrusion Overview**.

The intrusion value is computed if the technician enters both an **Intruded** value and a **Comparison** value.

The extent of a component intrusion into a row sector should not exceed the pre-impact dimension of that sector. For example, if the front row width is 150 cm, each sector is equal to 50 cm. If the driver-side door panel intrudes 60 cm laterally, the intrusion is listed as:

Front Row Left (sector 11) Intrusion Magnitude = 50 cm (maximum amount for that sector)

Front Row Middle (sector 12) Intrusion Magnitude = 10 cm (the remaining amount for the door panel intrusion).

If the magnitude cannot be measured, but can be visibly seen, estimate the intrusion in the Magnitude variable that follows this variable.

Unknown

Used in the following situations.

- The technician cannot determine if there was any intrusion.
- The vehicle was under repair at the time of inspection.
- The technician was not able to measure or reasonably estimate the intrusion.

Magnitude of IntrusionScreen Name: **Magnitude**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.INTRUSION.MAGNITUDE****Element Attributes**

Database	SAS	
0	0	<= 2 cm
1	1	>= 3 cm but < 8 cm
2	2	>= 8 cm but < 15 cm
3	3	>= 15 cm but < 30 cm
4	4	>= 30 cm but < 46 cm
5	5	>= 46 cm but < 61 cm
6	6	>=61 cm
7	7	Catastrophic
9	8	More than one/other severe intrusions
8	9	Unknown

Source

Vehicle inspection

Remarks

When the **Intrusion** is calculated by the program, is automatically assigns a magnitude or range to the intrusion. The technician may select a magnitude for an intruded component while awaiting comparison values. If the magnitude cannot be measured, due to physical limitations but can be visibly seen, estimate the magnitude of the intrusion.

Unknown

Used in the following situations:

- The technician cannot determine if there was any intrusion.
- The vehicle was under repair at the time of inspection.
- The technician was not able to measure or reasonably estimate the intrusion.

Crush Direction

Screen Name: **Crush Direction**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.INTRUSION.CRUSHDIR**

Element Attributes

Database	SAS	
1	1	Vertical
2	2	Longitudinal
3	3	Lateral
4	7	Catastrophic
	8	More than one/other severe intrusions
5	9	Unknown

Source

Vehicle inspection

Remarks

This variable assesses the direction of displacement for the intruded component. The direction of movement is determined independently from the PDOF applied to the vehicle.

Vertical

Refers to components that intrude into the passenger compartment from either an upward or downward direction.

Longitudinal

Refers to components that move forward or rearward into the passenger compartment.

Lateral

Refers to components that are displaced either left or right within the passenger compartment.

Unknown

Used for the following situations:

- The technician cannot determine if there was any intrusion.
- The vehicle was under repair at the time of inspection.

Intrusion/Sketch

Intrusion Sketch Completion

The following should be included for all intrusion sketches:

- Row width for all rows in the vehicle.
- Row widths are not required if no intrusions were observed.
- A rough sketch of the intruded components and their approximate displacement.
- Cross out or erase rows that are not present in the vehicle.
- Applicable annotations.

Max Door Intrusion Quadrant sketch:

Sketch the intruded component and indicate the amount of intrusion.

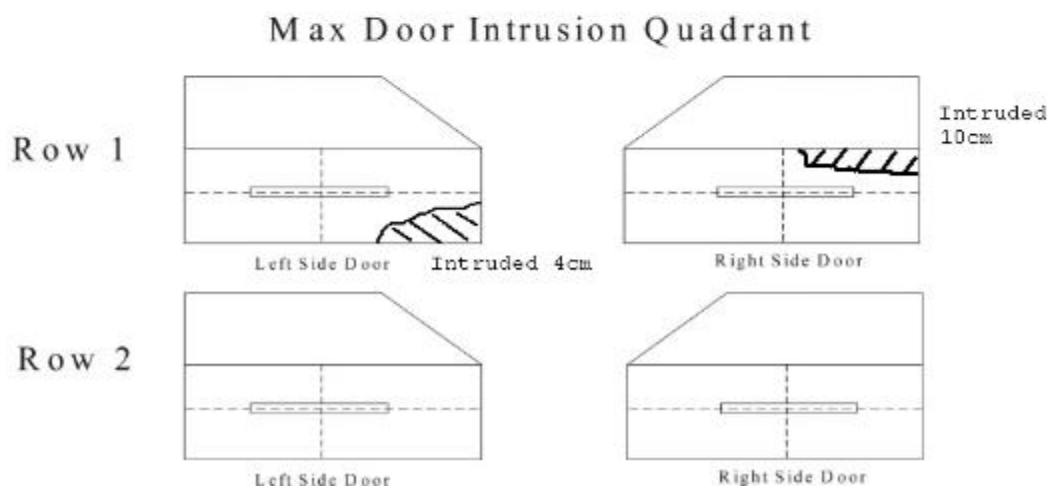
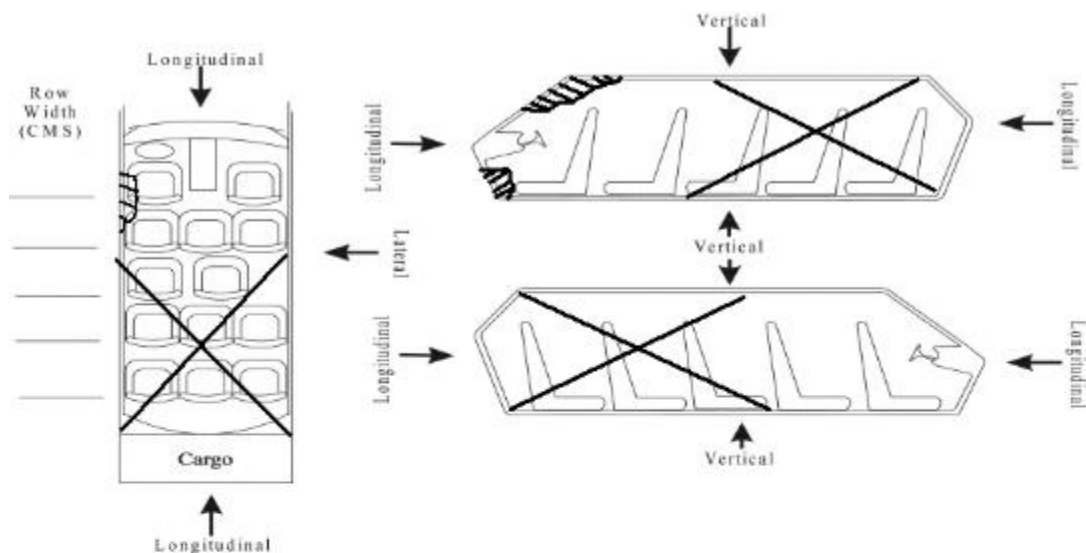


Figure 107. Max Door Intrusion Quadrant sketch

Adaptive (Assistive) Driving Equipment

Screen Name: **Adaptive Driving Equipment**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.INTERIOR.ADAPTEQUIPEXIST**

Element Attributes

Database	SAS	
1	0	No adaptive driving equipment
2	1	Yes, adaptive driving equipment installed, check all that apply
3	9	Unknown

Source

Investigator determined — primary source is the vehicle inspection, secondary source is driver interview.

Remarks

Adaptive driving equipment is defined as equipment whose primary purpose is to assist people with disabilities in the operation of a vehicle. This variable is designed to capture those vehicles that have this type of after-market adaptive driving equipment installed. Use of the equipment at the time of the crash is irrelevant. Be alert for evidence of equipment that may have been removed between the time of the crash and the time of inspection. The device must be present at the driving position (e.g., wheelchair tie downs).

No adaptive driving equipment

Used when it is determined that no adaptive equipment was present in the vehicle at the time of the crash.

Yes, adaptive driving equipment installed, check all that apply

Used when it is determined that adaptive equipment was present in the vehicle at the time of the crash. Use of the equipment at the time of the crash is not to be considered.

Unknown

Used when it cannot be determined if any adaptive driving devices were installed in the vehicle at the time of the crash.

Adaptive (Assistive) Driving Equipment

Screen Name: **Adaptive Driving Equipment**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.ADAPT.ADAPTID**

Element Attributes

Database	SAS	
1	1	Hand controls for braking/acceleration
2	2	Steering control devices (attached to OEM steering wheel)
3	3	Steering knob attached to steering wheel
4	4	Low effort power steering (unit or device)
5	5	Replacement steering wheel (i.e., reduced diameter)
6	6	Joy-stick steering controls
7	7	Wheelchair tie-downs
8	8	Modifications to seat belts (specify)
9	9	Additional or relocated switches (specify)
10	10	Raised roof
11	11	Wall mounted head rest (used behind wheelchair)
13	12	Pedal extender
12	98	Other adaptive device (specify)
99	99	Unknown type of adaptive device
		Unknown if adaptive driving equipment installed

Source

Investigator determined — primary source is the vehicle inspection, secondary source is driver interview.

Remarks

Adaptive driving equipment is defined as equipment whose primary purpose is to assist people with disabilities in the operation of a vehicle. This variable is designed to capture those vehicles that have this type of after-market adaptive driving equipment installed. Use of the equipment at the time of the crash is irrelevant. Be alert for evidence of equipment that may have been removed between the time of the crash and the time of inspection. The device must be present at the driving position (e.g., wheelchair tie downs).

Adaptive equipment installed, check all that apply

Used when it is determined that adaptive equipment was present in the vehicle at the time of the crash. Use of the equipment at the time of the crash is not to be considered.

Hand controls for braking/acceleration

Does not include normal cruise control.

Steering control devices (attached to OEM steering wheel)

Includes handles and arms used to assist in the operation of the vehicle.

Steering knob attached to steering wheel

Used to help in the turning of the vehicle. May sometimes be referred to as a “suicide knob.”

Low effort power steering (unit or device)

Can possibly be identified by looking under the hood for an enhanced pump.

Replacement steering wheel (i.e., reduced diameter)

Some after-market suppliers have “chain-link” type steering wheels, they are **NOT** considered as adaptive equipment for people with disabilities.

Joy-stick steering controls**Wheelchair tie-downs**

Are selected **ONLY** if they are present at the drivers’ location.

Modifications to seat belts (specify)

Comfort devices such as lamb’s wool coverings are **NOT** considered here.

Additional or relocated switches (specify)**Raised roof**

Will look like a second roof, not a camper-van type.

Wall mounted head rest (used behind wheelchair)

Are selected **ONLY** if they are present at the drivers’ location.

Other adaptive device (specify)

Must be specified and sketched if possible. As an example, after-market pedal extenders used specifically for assist people with disabilities in the operation of the foot controls would be included in this element.

Unknown type of adaptive device

Used when it is known there is an adaptive device for the driver, but the type of device is unknown.

Steering Column

Steering Column Type

Screen Name: **Column Type**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.INTERIOR.COLUMNTYPE**

Element Attributes

Database	SAS	
1	1	Fixed column
2	2	Tilt column
3	3	Telescoping column
4	4	Tilt and telescoping column
5	8	Other column type (specify):
6	9	Unknown

Source

Vehicle inspection

Remark

Fixed column

Refers to a non-adjustable steering column. Note if “Fixed column” is selected the variables Tilt Adjustment and Telescoping Adjustment will be pre-coded as “No tilt steering column” and “No telescoping column,” respectively.

Tilt column

Refers to a steering column designed to allow the steering wheel or column to be tilted at an angle selected by the operator to improve driving comfort. The presence of these types can generally be verified by the existence of an extra control stalk on the column. This stalk is separate from the turn signal, headlight, or wiper controls and is usually mounted near the bend point of the tilt wheel, or near the lower part of the instrument panel for the tilt column. Characteristically, the control stalk is unmarked and may be located on the left or right side of the column in relative proximity to the steering wheel end. Some vehicles are equipped with a “lever” device on the underside of the column, which allows placement of the entire column for driver comfort.

Telescoping column

Refers to a steering column that has an adjustable length. The column can be shortened or lengthened to suit operator comfort.

Tilt and telescoping column

Refers to a column that has both the tilt wheel and adjustable length features.

Other column type (specify)

Includes steering columns that cannot be described above. This would include swing away columns, etc.

Unknown

Unknown is used if the column type cannot be determined.

Tilt Steering Column AdjustmentScreen Name: **Tilt Adjustment**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.INTERIOR.TILTADJUST****Element Attributes**

Database	SAS	
1	0	No tilt steering column
2	1	Full up
3	2	Between full up and center
4	3	Center
5	4	Between center and full down
6	5	Full down
7	9	Unknown

Source

Investigator-determined; primary source is the vehicle inspection, other input is driver interview.

Remarks

This variable is used to describe the pre-impact tilt position of adjustable steering columns.

Full up

Refers to a vertically adjustable steering column that was in its highest position possible at the time of the crash.

Between full up and center

Refers to a vertically adjustable steering column that was somewhere between full up and the center position at the time of the crash.

Center

Refers to a vertically adjustable steering column that was in the center-most position (e.g. equal amounts of adjustment both above and below this position) at the time of the crash.

Between center and full down

Refers to a vertically adjustable steering column that was somewhere between the center and full down position at the time of the crash.

Full down

Refers to a vertically adjustable steering column that in its lowest possible position at the time of the crash.

Unknown

Is selected when: it cannot be determined if the vehicle was equipped with a vertically adjustable steering column or the technician cannot determine the pre-impact position of the vertically adjustable steering column.

Telescoping Steering Column Adjustment

Screen Name: **Telescoping Adjustment**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.INTERIOR.TELEADJUST**

Element Attributes

Database	SAS	
1	0	No telescoping steering column
2	1	Full back
3	2	Between full back and midpoint
4	3	Midpoint
5	4	Between midpoint and full forward
6	5	Full forward
7	9	Unknown

Source

Investigator-determined; primary source is the vehicle inspection, other input is driver interview.

Remarks

This variable is used to describe the pre-impact telescoping position of adjustable steering columns.

No telescoping steering column

Is selected when the steering column does not have an adjustment to move the steering column/wheel longitudinally (forward and backward).

Full back

Refers to a longitudinally adjustable steering column that was in its rearward-most position (toward the rear of the vehicle) at the time of the crash.

Between full back and midpoint

Refers to a longitudinally adjustable steering column that was somewhere between the full back position (toward the rear of the vehicle) and the center position at the time of the crash.

Midpoint

Refers to a longitudinally adjustable steering column that was in the center-most position (midpoint of the overall movement range) at the time of the crash.

Between midpoint and full forward

Refers to a longitudinally adjustable steering column that was somewhere between the center position and the full forward position (toward the front of the vehicle) at the time of the crash.

Full forward

Refers to a longitudinally adjustable steering column that was in the forward most position (toward the front of the vehicle) at the time of the crash.

Unknown

Is selected when it cannot be determined if the vehicle was equipped with a longitudinally adjustable steering column or the technician cannot determine the pre-impact position of the longitudinally adjustable steering column.

Location of Rim/Spoke Deformation

Screen Name: **Location of Rim/Spoke Deformation**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.INTERIOR.RIMDEFLOC**

Element Attributes

Database	SAS	
1	0	No steering rim deformation

Quarter Sections

Database	SAS	
2	1	Section A
3	2	Section B
4	3	Section C
5	4	Section D

Half Sections

Database	SAS	
6	5	Upper half of rim/spoke
7	6	Lower half of rim/spoke
8	7	Left half of rim/spoke
9	8	Right half of rim/spoke
10	9	Complete steering wheel collapse
11	10	Undetermined location
12	99	Unknown

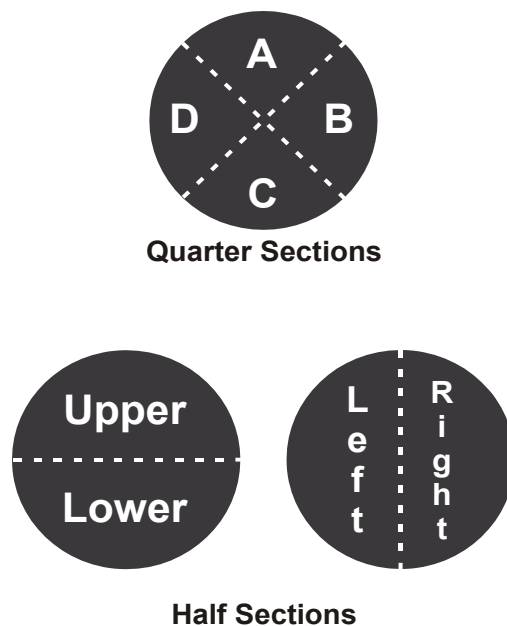


Figure 108. Illustration of quarter and half sections

Source

Vehicle inspection

Remarks

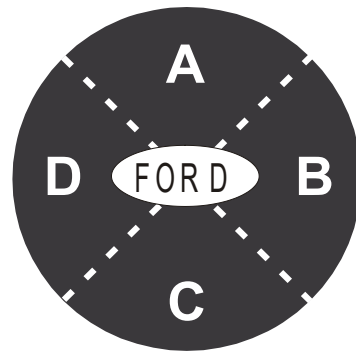
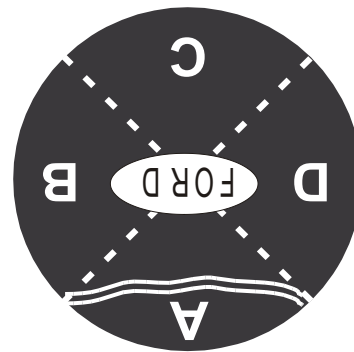
The variable **Rim/Spoke Deformation** must be coded with a value, in order to classify the **Location of Rim/Spoke Deformation**.

The steering wheel rim is divided into four quarter sections (A to D) and four half sections (upper half, lower half, left half, right half).

Note, the half designation should not be considered as a grouping of quarter sections.

The accompanying diagrams identify the location of the quarter and half sections.

Evaluate the deformation of the rim with respect to the wheel design and not the wheel position observed during the vehicle inspection. For example, if the designed top section was deformed and rotated to the bottom position, then the correct response for this variable is Quarter Sections - Section A; see below.

**Straight Ahead Position****Post-Impact Position***Figure 109. Sample diagrams of quarter and half sections*

When evaluating which quarter or half to encode, place primary emphasis upon downward deflection (toward the instrument panel) since the coding captures occupant-caused deformation. When two half sections are deformed, select the half with the greatest deformation.

Complete steering wheel collapse

Is selected in the event two half sections are deformed axially downward (toward the instrument panel) beyond the hub.

Undetermined location

Is selected when it is known the rim was deformed, but as the result of extrication or other post-impact activity the original deformed section could not be determined.

Unknown

Is selected in the following situations:

- It is not known if the rim was deformed by occupant contact.
- An assessment of rim damage could not be made as the vehicle was repaired.

Steering Rim/Spoke Deformation

Screen Name: **Rim /Spoke Deformation**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.INTERIOR.RIMDEF**

Element Attributes

Database	SAS	
		Record actual measured deformation to the nearest centimeter
-8887		Not applicable
-8888	98	Indeterminate
-9999	99	Unknown

Source

Vehicle inspection

Range

0-20, 98, 99

Remarks

The intent is to capture deformation caused by occupant contact rather than induced damage.

The center of the steering wheel hub is the reference plane for determining magnitude of deformation. A measurement is taken from this reference plane to that area of the rim that has the greatest deformation. This measurement should be referenced to an undisplaced area of the rim or compared to the rim of a similar undamaged vehicle.

The following diagram illustrates this measurement procedure. The undeformed edge is 8 cm from the reference line. The deformed edge is 5 cm from the reference line. Therefore, 3 cm of deformation occurred.

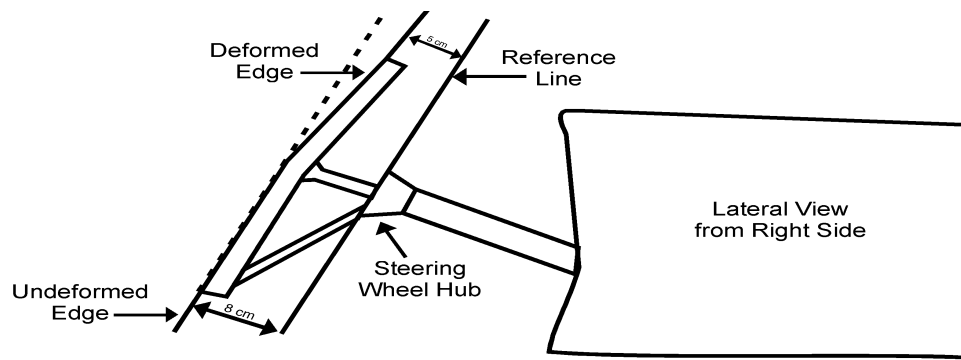


Figure 110. Illustration of measurement procedure

Value of zero

Is entered when there was no deformation caused by occupant contact of the rim or spokes. Check your observation by placing a flat object (i.e., clipboard) across the plane of the steering rim prior to selecting this attribute.

Value of 1

Is entered when the deformation is greater than zero but less than 1.5 cm.

Indeterminate

Is selected when the situation does not permit the direct measurement of a deformed rim.

Unknown

Is selected in the following situations:

- It is not known if the rim was deformed by occupant contact.
- An assessment of rim damage cannot be made because the vehicle is repaired.

Steering/Worksheet

Comparison Value

Screen Name: **Comparison Value**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS.STEER_DEFORM.COMPVALUE**

Element Attributes

Database	SAS	
0		No steering rim deformation
		Record actual measured deformation to the nearest cm.
		Actual measured value in cm
-9999		Unknown

Source

Vehicle inspection

Remarks

Refer to the measurement diagram illustrated in **Rim/Spoke Deformation**.

The intent is to capture deformation caused by occupant contact rather than induced damage.

The center of the steering wheel hub is the reference plane for determining magnitude of deformation. A measurement is taken from this reference plane to that area of the rim that has the greatest deformation. This measurement should be referenced to an undisplaced area of the rim or compared to the rim of a similar undamaged vehicle.

Damage Value

Screen Name: **Damage Value**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS.STEER_DEFORM.DAMVALUE**

Element Attributes

Database	SAS	
0		No steering rim deformation
		Record actual measured deformation to the nearest cm.
		Actual measured value in cm
-9999		Unknown

Source

Vehicle inspection

Remarks

Refer to the measurement diagram illustrated in **Rim/Spoke Deformation**.

The intent is to capture deformation caused by occupant contact rather than induced damage.

The center of the steering wheel hub is the reference plane for determining magnitude of deformation. A measurement is taken from this reference plane to that area of the rim that has the greatest deformation. This measurement should be referenced to an undisplaced area of the rim or compared to the rim of a similar undamaged vehicle.

Deformation

Screen Name: **Deformation**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS.STEER_DEFORM.DEFVALUE**

Element Attributes

Database	SAS	
0		No steering rim deformation
		Record actual measured deformation to the nearest cm
		Actual measured value in cm

Source

Vehicle inspection

Remarks

Refer to the measurement diagram illustrated in **Rim/Spoke Deformation**.

The intent is to capture deformation caused by occupant contact rather than induced damage.

The center of the steering wheel hub is the reference plane for determining magnitude of deformation. A measurement is taken from this reference plane to that area of the rim that has the greatest deformation. This measurement should be referenced to an undisplaced area of the rim or compared to the rim of a similar undamaged vehicle.

Steering/Drawing

Instructions for Completion of Steering Drawing Diagrams

The Steering Drawing Diagrams allows technicians to report data that are not encoded and might otherwise be omitted from the case. The intent is to capture deformation caused by occupant contact rather than induced damage.

The technician should indicate on the drawings what portion of the rim/spoke was deformed. The drawings should reflect coded data in the Steering Column Tab/Location of Rim/Spoke Deformation.

Contact Overview

The Contact tab and corresponding Contact/Sketch sub-tabs provide a valuable link between vehicle interior documentation and occupant injury data. With the reduction of death and injury as the system-wide goal, occupant contacts to the vehicle are of critical concern. Identifying contact evidence helps relate the contacts to a body region of likely cause.

When identifying contact points, begin by assessing the occupant's likely trajectory during the crash sequence. Consider issues such as impact configuration, direction of force, and the use of restraint systems. It is important to have a systematic approach to locating and documenting occupant contact points. Examine the vehicle interior from left to right, top to bottom, or in any similar pattern that allows for a complete and consistent methodology.

Note: It is important that contact identification be based on evidence. PDOF, restraint use, air bag deployment, and other such factors are NOT contact evidence. These issues certainly have an effect on contacts and where they may occur; they are not, however, sufficient basis for coding a contact point.

Begin by locating all of the occupant contact points and highlighting them with the standardized metric contact tape. When all of the identifiable contacts are marked, click on the Contact sub-tab to enter data. On the title bar, select "Edit" and then select "Insert" from the drop-down menu. Enter the tab data as outlined below. The first contact point entered will be identified as contact "A"; each additional contact will be assigned the next letter in the alphabet. Remember, the "Edit/Insert" process must be repeated for each new contact point to be entered. The following variables will be coded for each contact point.

- Area – Select the general area of the vehicle where the contact occurred.
- Component – Select the specific component contacted.
- Evidence – Select the type of evidence identified on the vehicle component.
- Confidence – Select the confidence level that best represents the level of certainty that this is indeed a contact point; **this variable is based on contact certainty, not body region or occupant number certainty.**
- Occupant number – Select the case assigned number of the contacting occupant. If it cannot be determined, assign the contact to the occupant who most likely caused it.
- Body Region – Select the body region of the occupant that is suspected to have caused the contact point. In complex events such as rollovers, this variable will be difficult to code. Select the body region most consistent with the dynamics involved. Do not downgrade the confidence level of the contact based on body region uncertainty.

Cross hatch the contacted area and place the corresponding alphabet letter (assigned during the "Edit/Insert" process) next to the marked area. It is important to be sure that the alphabet character on the sketch matches the contact with the same assigned character. See "Contact/Evidence" for more details. In addition to contacts, areas of ejection or entrapment should be annotated on these sketches.

The air bag tab contains sketches for documenting occupant contact to the air bags. Air bag contacts are best documented on the bag-specific sketches on the air bag tab.

Note: Some technicians may prefer to sketch all of the contact points first, then “Edit/Insert” each on the contact sub-tab. The order of completion is not the key; a methodical, consistent approach is important.

Contact

Screen Name: **Contact**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS.OCC_CONTACT.CONTACTREF**

Element Attributes

A
B
C
D, etc.

Source

Vehicle inspection

Remarks

Identify the contact point. This will correspond to the label used in Sketch 1 or Sketch 2. To add contact points go to the main menu and select “**Edit**” and then “**Insert**” and contact point “B” will appear.

Contact Area LabelScreen Name: **Area**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.OCC_CONTACT.COMPAREA****Element Attributes**

Database	SAS	
1	1	Front
2	2	Left side
3	3	Right side
4	4	Interior
12	12	Left Air Bag
13	13	Right Air Bag
6	6	Roof
7	7	Floor
8	8	Rear
10		Left Door Panel
11		Right Door Panel
9	50	Adaptive (Assistive) Driving Equipment

Source

Vehicle inspection

Remarks

Identify the name of the area of the vehicle interior an occupant contacted. Choose the area from the pick list of valid attributes for interior components.

Contacted Component

Screen Name: **Component**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.OCC_CONTACT.COMP**

Element Values

Front

Database	SAS	
1	1	Windshield
2	2	Mirror
3	3	Sunvisor
4	4	Steering wheel rim
5	5	Steering wheel hub/spoke
6	6	Steering wheel rim/hub/spoke
7	7	Steering column, transmission selector lever, other attachment
8	8	Cellular telephone or CB radio
9	9	Add-on equipment (e.g., tape deck, air conditioner)
13	13	Glove compartment door
15	15	Dr only WS incl 1/+: fr hdr, A pill, instr pnl, mirror, or steering assembly
16	16	Pass only WS incl 1/+: fr hdr, A pill, instr pnl, or mirror
17	17	Windshield reinforced by exterior object (specify)
18	19	Other front object (specify):
100	20	Sunvisor reinforced by front header
101	21	Left instrument panel
102	22	Center instrument panel
103	23	Right instrument panel
104	24	Left lower instrument panel (includes knee bolster)
105	25	Center lower instrument panel (includes knee bolster)
106	26	Right lower instrument panel (includes knee bolster)

Left Side

Database	SAS	
21	53	Left A (A1/A2)-pillar
22	54	Left B-pillar
23	55	Other left pillar (specify):
24	56	Left side window glass

Database	SAS	
25	57	Left side window frame
26	58	Left side window sill
27	59	Lt side glass +: frame, win sill, A pill, B pill, or roof side rail
28	60	Left side glass (Laminated) reinforced by exterior object (specify)
77	61	Other left side object (specify):
595	62	Left side panel forward A1/A2 pillar
596	63	Left side panel rear of B-pillar

Left Door Panel

Database	SAS	
576	576	Left forward upper quadrant
577	577	Left forward lower quadrant
578	578	Left rear upper quadrant
579	579	Left rear lower quadrant
580	580	Left armrest/hardware forward upper quadrant
581	581	Left armrest/hardware forward lower quadrant
582	582	Left armrest/hardware upper quadrant
583	583	Left armrest/hardware rear lower quadrant

Right Side

Database	SAS	
31	103	Right A (A1/A2)-pillar
32	104	Right B-pillar
33	105	Other right pillar (specify):
34	106	Right side window glass
35	107	Right side window frame
36	108	Right side window sill
37	109	Rt side glass +: frame, win sill, A pill, B pill, or roof side rail
38	110	Right side glass (laminated) reinforced by exterior object (specify)
78	111	Other right side object (specify):
597	112	Right side panel forward A1/A2 pillar
598	113	Right side panel rear of B-pillar

Right Door Panel

Database	SAS	
584	584	Right door panel forward upper quadrant

Database	SAS	
585	585	Right door panel forward lower quadrant
586	586	Right door panel rear upper quadrant
587	587	Right door panel rear lower quadrant
588	588	Right armrest/hardware forward upper quadrant
589	589	Right armrest/hardware forward lower quadrant
590	590	Right armrest/hardware rear upper quadrant
591	591	Right armrest/hardware rear lower quadrant

Interior

Database	SAS	
39	151	Seat: includes seat cushion and back support
40	152	Belt restraint webbing/buckle
41	153	Belt restraint B-pillar or door frame attachment point
42	154	Other restraint system component (specify):
43	155	Head restraint system
44	161	Interior loose object (specify)
46	162	Other interior object (specify)
47	163	Center console first row
164	164	Center console second row
165	165	Center console other row
166	166	Fold-down armrest first row
167	167	Fold-down armrest second row
168	168	Fold-down armrest other row
592	592	Child safety seat shell
593	593	Child safety seat harness
594	594	Unknown child safety seat component
572	572	Seat LATCH points for child restraints
573	573	Grab handles
574	574	Engine shroud/cover
575	575	Seatback trays
576	576	Cargo in vehicle

Left Air Bag

Database	SAS	
611	611	Steering wheel hub
612	612	Steering wheel hub compartment cover
615	615	Left bottom instrument panel

Database	SAS	
616	616	Left bottom instrument panel-compartment cover
617	617	Left seat back
618	618	Left door/panel
619	619	Left roof side rail
620	620	Left seat belt
621	621	Left other (specify)

Right Air Bag

Database	SAS	
633	633	Right middle instrument panel
634	634	Right middle instrument panel cover
635	635	Right bottom instrument panel
636	636	Right bottom instrument panel cover
637	637	Right seat back
638	638	Right door/panel
639	639	Right roof side rail
640	640	Right seat belt
641	641	Right other (specify)

Roof

Database	SAS	
54	201	Front/Windshield header
55	202	Rear/Backlight header
56	203	Roof left side rail
57	204	Roof right side rail
58	205	Roof or convertible top
206	206	Roof map light/console
207	207	Sunroof/components
208	208	Roll bar
631	631	Right top instrument panel
632	632	Right top instrument panel cover

Floor

Database	SAS	
59	251	Floor (including toe pan)
60	252	Floor or console mounted transmission lever, including console

Database	SAS	
61	253	Parking brake handle
62	254	Foot controls including parking brake

Rear

Database	SAS	
63	301	Backlight (rear window)
64	302	Backlight storage rack, door, etc.
65	303	Other rear object (specify):

Adaptive (Assistive) Driving Equipment

Database	SAS	
66	401	Hand controls for braking/acceleration
67	402	Steering control devices (attached to OEM steering wheel)
68	403	Steering knob attached to steering wheel
69	404	Replacement steering wheel (i.e., reduced diameter)
70	406	Joy stick steering controls
71	407	Wheelchair tie-downs
72	408	Modification to seat belts (specify):
73	409	Additional or relocated switches (specify):
74	410	Raised roof
75	411	Wall mounted head rest (used behind wheelchair)
76	412	Other adaptive device (specify):

Source

Vehicle inspection

Remarks

The technician should record only those contact mechanisms that can be documented by some physical evidence (scuffs, hair, smudges, dents, cracks, etc.).

Note: Whenever an “other” code is selected as injury source, clearly identify, in the space provided a description of the “other” source.

Steering Rim/Hub/Spoke

Is selected when there is continuous or simultaneous contact by a single body region to the Steering Rim/Hub/Spoke. Additionally, use this attribute when the steering wheel is determined to be the suspected injury source, but it cannot be further determined if the rim/hub/ spoke are involved.

Dr only WS incl 1/+: fr hdr, A pill, instr pnl, mirror, or steering assembly

Should be selected for contacts on the left (driver) side of the vehicle interior. This code applies only when there is a continuous or simultaneous contact to the windshield and one of the listed components by a single body region of the occupant.

Note: Some vehicles (e.g., GM APV minivans) are designed with two upper A-pillars on each side. The forward most pillar is called an A1-pillar that is primarily designed to secure the windshield to the vehicle. The second pillar is labeled as an A2-pillar. This pillar generally lends support to the roof and also helps to establish the front door opening. Annotation should be provided on the Interior Vehicle Form specifying which pillar was most severely intruded.

Pass only WS incl 1/+: fr hdr, A pill, instr pnl, or mirror

Should be selected for contacts on the right (passenger) side of the vehicle interior. This code applies only when there is a continuous or simultaneous contact to the windshield and one of the listed components by a single body region of the occupant.

Windshield reinforced by exterior object

Is selected when, for example, an occupant contacts a windshield that has been reinforced by the hood of the occupant's vehicle.

Lt (Rt) side glass +: frame, win sill, A pill, B pill, or roof side rail

Apply when there is a simultaneous or continuous contact by a single body region of an occupant to the appropriate side window glass and at least one of the listed components. The window sill consists, for this element, of the upper portion of the side interior surface immediately adjacent to the bottom of the side window opening.

Right/Left side glass (Laminated) reinforced by exterior object (specify)

Should be selected when an occupant contacts the side glass that has been determined to be laminated and an exterior object (hood of a vehicle) was reinforcing the glass.

Child safety seat

Child restraint devices have caused confusion when they are the source of the injury. The child restraint (infant/child seat, booster seat, etc.) is considered to be an integral restraint (e.g., the whole seat is the restraint). When the restraint is used by an infant or child it should be coded as one unit. In CISS the analyst is concerned with the complete seat and its performance.

Select this component if contact with a child safety seat occurs from either:

- an infant or child restrained by the child safety seat, or
- any passenger including an infant or child who contacts a child safety seat but is not restrained by that seat.

When anybody member of an infant or child, restrained by a child safety seat, contacts an interior object other than the child safety seat, then code the appropriate interior object (seat, back support; head restraint system, etc.)

Instrument Panel

The instrument panel is visually divided in half longitudinally by placing a line through the steering wheel column at a midpoint where the column enters the panel (see diagram below). The visual separation will serve as the vertical delineation between the “Left Instrument Panel” and the “Left Lower Instrument Panel (including knee bolster)” code. If it cannot be determined if a contact falls above or below this delineation or the contact falls on the delineation, default to the upper part or the “Left Instrument Panel” code.

Left/Right door panel quadrants

The doors are visually divided into quadrants. The longitudinal measurement is taken at the beltline along the window frame. The vertical measurement is taken at the midpoint of the door, from the top edge to the bottom edge of the inner door panel.

The quadrants are rarely equal in size. They are named as follows: Forward Upper Quadrant (FUQ), Forward Lower Quadrant (FLQ), Rear Upper Quadrant (RUQ), and Rear Lower Quadrant (RLQ). Select the quadrant that best represents the contact.

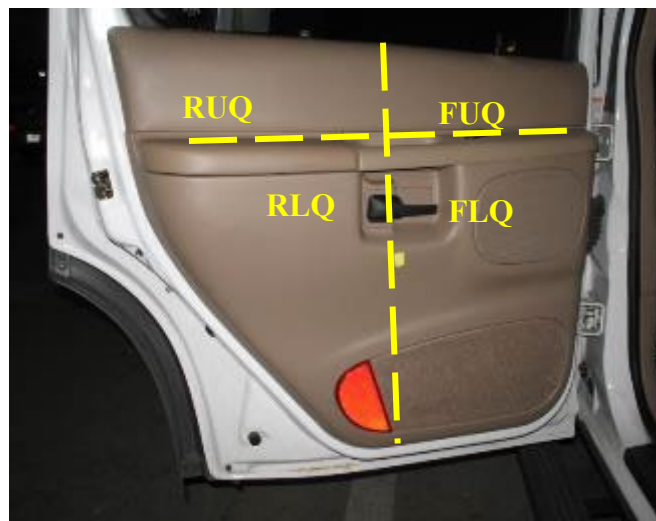


Figure 111. Illustration of the four quadrants

Left/Right hardware/armrest quadrants

The door panel is visually divided as described in left/right door panel quadrants. These attributes are selected if a portion of the armrest or hardware is located within a given quadrants and is contacted. Select the quadrant that best represents the contact.

Compartment cover

Is the flap portion of a deployed air bag.

Occupant Number

Screen Name: **Occupant Number**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS.OCC_CONTACT.OCCID**

Element Attributes

Select occupant number from drop-down list

Source

Vehicle inspection

Remarks

The technician should identify the number of the occupant who is suspected of contacting the identified component, if it can be determined.

An occupant number must be selected, there is no unknown.

Note: If an occupant list for this vehicle does not appear, they must be added into the case structure on the Case Form, Structure tab, Occupant sub-tab).

Body Region

Screen Name: **Body Region**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.OCC_CONTACT.AISID**

Element Attributes

Database	SAS	
170	10	Abdomen
25	15	Ankle – Left
20	20	Ankle – Right
27	22	Ankle - Unknown
180	25	Back
130	30	Buttock – Both
120	35	Buttock – Left
110	40	Buttock – Right
135	45	Buttock – Unknown
210	50	Chest
300	55	Elbow – Left
290	60	Elbow – Right
305	65	Elbow – Unknown
240	70	Face
200	75	Flank – Left
190	80	Flank – Right
205	82	Flank - Unknown
15	85	Foot – Left
10	90	Foot – Right
16	95	Foot – Unknown
160	100	Genitals
360	105	Hand – Left
350	110	Hand – Right
365	115	Hand – Unknown
230	120	Head
150	125	Hip-Left
140	130	Hip – Right
155	135	Hip – Unknown
80	140	Knee – Left
70	145	Knee – Right
85	150	Knee – Unknown

Database	SAS	
320	155	Lower Arm – Left
310	160	Lower Arm – Right
325	165	Lower Arm – Unknown
60	170	Lower Leg – Left
50	175	Lower Leg – Right
65	180	Lower Leg – Unknown
220	185	Neck
260	190	Shoulder – Left
250	195	Shoulder – Right
265	200	Shoulder – Unknown
100	205	Thigh – Left
90	210	Thigh – Right
105	215	Thigh – Unknown
280	220	Upper Arm – Left
270	225	Upper Arm – Right
285	230	Upper Arm – Unknown
340	250	Wrist – Left
330	255	Wrist – Right
345	260	Wrist – Unknown
400	999	Unknown

Source

Vehicle inspection

Remarks

The technician should identify the **suspected** body region of the occupant that contacted the identified component, if it can be determined or presumed.

Evidence

Screen Name: **Evidence**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.OCC_CONTACT.EVIDENCE**

Element Attributes

Database	SAS	
1	1	Bent
2	2	Cracked
3	3	Scuffed
4	4	Transfer (specify)
5	5	Deformed
6	6	Blood
7	7	Hair
8	8	Stretched
9	9	Scratched
10	10	Teeth marks
11	11	Imprint
12	12	Spider web
14	96	Combination (specify)
13	98	Other (specify)

Source

Vehicle inspection

Remarks

The technician should identify the types of contact evidence present (scuff, tissue transfer, tooth mark, etc.) that indicates an occupant contact. Evidence is described as a thing or things that are helpful in forming a conclusion or judgment.

This variable is only for the technician to determine that evidence existed that showed this object was/could have been contacted by an occupant. Occupant kinematics or the PDOF should not be used to determine contacts.

Bent

An object altered from its original shape.

Cracked

Broken so that fissures appear on the surface.

Scuffed

Scraped and roughened surface of an object.

Transfer (specify)

Moving a substance from one surface to another. The technician must specify the type of transfer. Examples:

- Make-up or lipstick transferred from the occupant onto the air bag
- Clothing transferred onto an object from the occupant

Deformed

An object distorted in form and is misshapen.

Blood

Includes plasma, blood cells, and platelets. Blood in and by itself, is not a reliable indicator of a contact point.

Hair

Evidence of a contact point by hair normally consists of hair embedded into an object.

Stretched

Pulling or a straining motion of an object.

Scratched

A series of thin, shallow cuts on a surface.

Teeth marks

Small marks and punctures usually characterized by U-shaped.

Imprint

An impression of a surface created by pressure.

Spider web

Produced by an object striking automobile glass such as a windshield. The cracks from the center of the initial contact point resemble a spider web.

Combination (specify)

More than one type of evidence exists for this contact point. Examples:

- Hair embedded in the windshield with a spider web
- A cracked instrument panel with a scuff mark

Other (specify)

Use this attribute when the contact evidence is not listed in the given attributes.

Confidence Level of Occupant Contact

Screen Name: **Confidence**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS.OCC_CONTACT.CONFIDENCE**

Element Attributes

Database	SAS	
1	1	Certain
2	2	Probable
3	3	Possible
9	9	Unknown

Source

Vehicle inspection

Remarks

This variable specifies the technician's level of confidence that the component was **contacted by an occupant**, based on physical evidence collected during the vehicle inspection.

Certain

Is coded when, based on **visible** physical evidence, it has been established beyond doubt or question that the component was contacted by an occupant.

Probable

Is coded when, in all likelihood, an occupant contacted the component, although the evidence is insufficient to be absolutely sure.

Possible

Is coded when there is more evidence for than against, however, there is room for doubt, due to the lack of substantiating physical evidence.

Unknown

It is unknown whether the component listed as a contact point was contacted by an occupant or some type of induced or post-crash damage.

Instructions for Completion of Vehicle Interior Sketches

Select “Sketches” icon to open the sketch pages.

For each documented Contact Point:

Crosshatch each occupant contact on the sketch that best shows the contacted component.

Label each contact point with a sequential alpha character beginning with the letter “A.”

Provide any annotations as necessary. X out any seats that are not available in the seating geometry of the vehicle. X out any side doors/panels that are not available in the vehicle.

Examples of a basic vehicle interior sketch is shown:

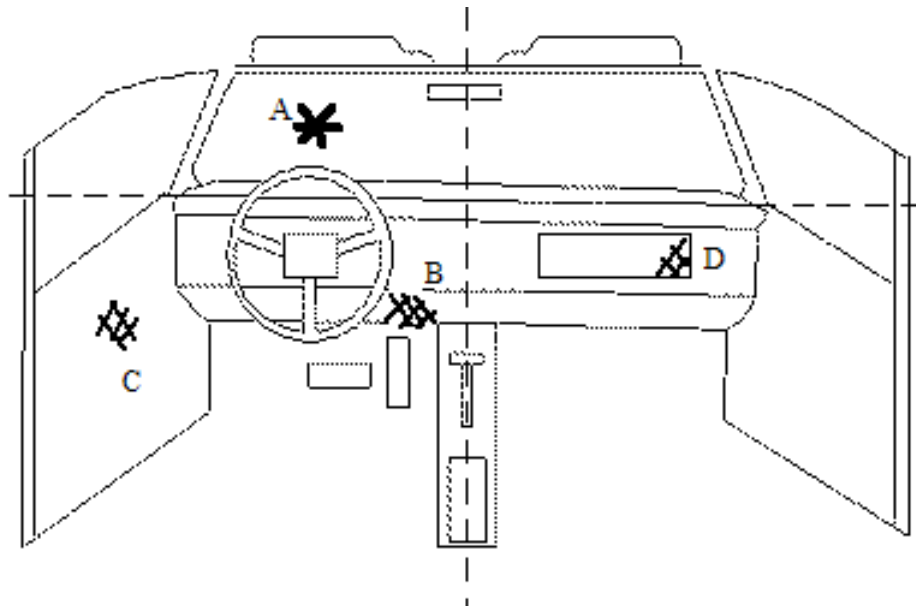


Figure 112. Example of a basic vehicle interior sketch

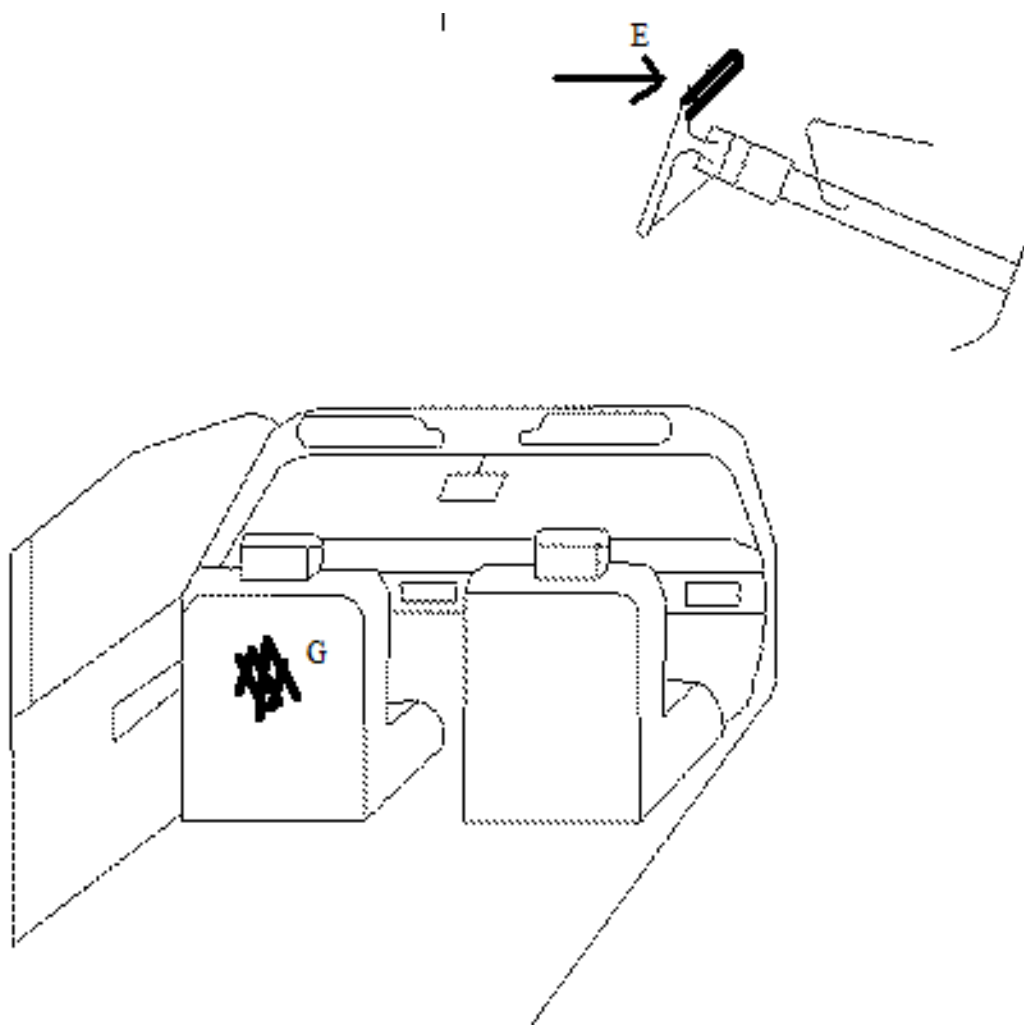


Figure 113. Example of a basic vehicle interior sketch

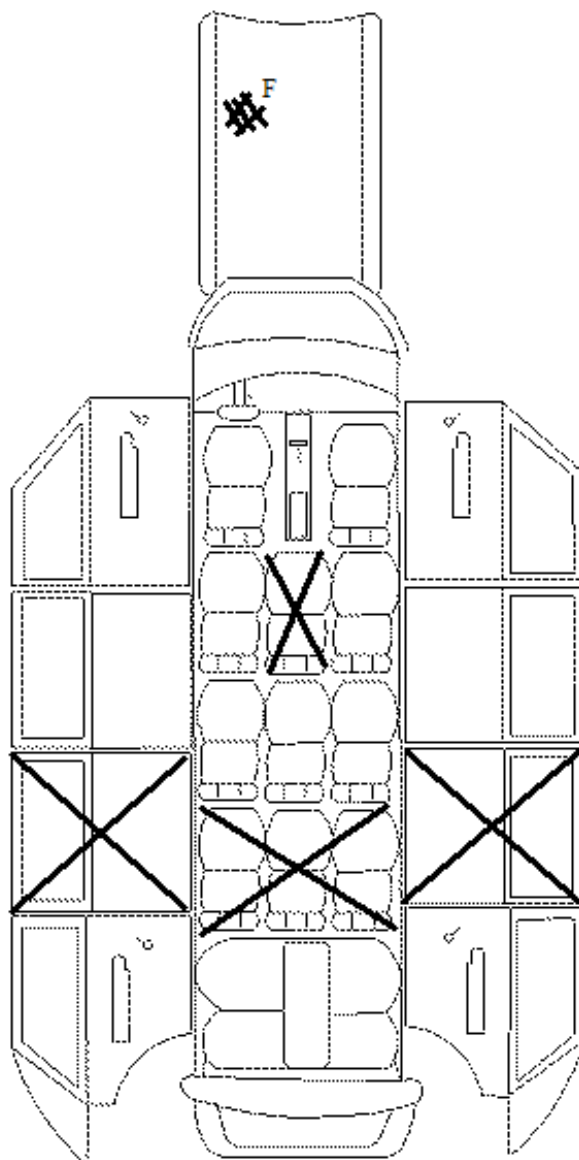


Figure 114. Example of a basic vehicle interior sketch

Ejection Overview

Variables in this section assess occurrence of ejection of an occupant. These variables are coded based upon vehicle inspection. Verification of questionable ejections will come from the interview.

Vehicle ejection has been historically a major cause of increased fatalities and serious injuries. The chances of being killed if ejected are about 1 in 5; whereas, if the occupant remains inside the vehicle, the chances of dying are reduced about 40 times to about 1 in 200. Unfortunately, ejection is that common and has become a significant part of the fatality and severe injury crashes. Further contributing to the ejection problem are the increase in window surface area and more hatchback models. Despite the current emphasis on restraint use through legal requirements for occupants to be seat belted, a significant portion of the population continues to be unrestrained and at risk of ejection.

A problem not often addressed is partial ejection, those instances where some part but not all of an occupant's body is outside the occupant compartment at some time during the crash sequence. It can be and often is fatal if the part outside is the occupant's head. Because of the dynamics of the vehicle and the kinematics of the occupants during an ejection sequence, it is often the person's own vehicle that causes the injury as it rolls onto that person. Intrusion plays no role in ejection coding.

FMVSS developed in response to these problems are FMVSS 201 (Occupant Protection in Interior Impact), FMVSS 205 (Glazing Materials), FMVSS 206 (Door Locks and Door Retention Components), FMVSS 212 (Windshield Mounting), and FMVSS 216 (Roof Crush Resistance Passenger Cars).

Analytically this group of variables is a stand-alone package most of the time. It can form the basis of an analysis without the use or comparison to any other variables. This would be used mostly in exploring the number and types of ejections. Expanding the scope somewhat to include injury severity allows a determination of the increase or decrease in the ejection problem. Inclusion of injury source would provide an idea of the severity of all occurrences of entrapment and ejection. Injury source also provides an idea of the kinematics of the occupant during the sequence. The addition of a cross-tabulation for AIS level would show the relative severity between the injuries incurred inside the vehicle and those outside the vehicle.

Other areas of interest to the analyst are the ejection route and performance of integral structures. The integral structure performance is directly governed by the FMVSS 206 and 212. These areas are of increasing interest to NHTSA since the real world performance can help support the findings from the staged collisions and will help determine the effectiveness of the standards.

Gathering the data is a multistage process that allows the technician to accurately select the variables. It begins with the PCR, which may give an indication of ejection. Vehicle inspection will provide evidence needed to substantiate the ejection. Further, documentation should be obtained through the scene inspection, interview, and injury data. Particular attention should be paid to vehicle inspection since most evidence of ejection will be less apparent and not easily discerned (e.g., partial ejection can occur when design of roof side rail air bag does not cover entire side window and integrity loss occurs).

FMVSS 226, ejection mitigation, was enacted intending to reduce complete and partial ejections during crashes, especially rollover events. This standard establishes requirements for ejection mitigation systems to reduce likelihood of complete and partial occupant ejections through side windows during rollovers or side impact events.

This standard applies to passenger cars, and to multipurpose passenger vehicles, trucks, and buses with GVWRs of 4,536 kg or less, except walk-in vans, modified-roof vehicles, and convertibles. *Ejection mitigation countermeasure* means a device -- except seat belts-- integrated into the vehicle that reduce the likelihood of occupant ejection through a side window opening, and that requires no action by the occupant for activation (e.g., roof side rail air bag).

In summary, this group of variables assesses the level of a very significant problem in today's crash picture. Correct accurate assessment is a result of a multistage research process, which will be individualized by case. Attention to detail will result in a correct assessment. This is an example that is directly tied to the FMVSS, and all gathered data results are a direct evaluation of the applicable standards.

Ejection Detail/List

Ejection/List

All ejections documented on the preceding tabs will be displayed on this tab, which is generally used as an overview for all of the ejections. No fields can be edited here. To edit an ejection, return to the Detail tab and make any corrections.

Ejection Number

Screen Name: **Ejection #**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS.EJECT.EJECTNUM**

Element Value

Number as assigned

Source

Vehicle inspection

Remarks

Each potential ejection is added by the technician as it is located. The system will automatically increment the count. To add an ejection, go to the Title Bar and select “**Edit**” and then “**Insert.**”

Occupant Number

Screen Name:

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.EJECT_X_OCC.OCCID**

Element Attributes

Source

Remarks

Ejection - Type

Screen Name: **Ejection -Type**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.EJECT.EJECTTYPE**

Element Value

Database	SAS	
1	0	No ejection
2	1	Complete ejection
3	2	Partial ejection
4	3	Ejection, unknown degree
5	9	Unknown

Source

Vehicle inspection

Remarks

Ejection refers to people being completely or partially thrown from the vehicle as a result of an impact or rollover. If a person already has a body part protruding from the vehicle (an elbow, arm, etc.) and the PDOF acting on the vehicle would likely cause further protrusions of the body part, then at least partial ejection is selected.

No Ejection

Is selected when there is no indication of any occupant being either partially or fully ejected from the vehicle.

Complete ejection

Is selected when the occupant's body is entirely outside of the vehicle during the crash sequence. It is important to note that even though the body may be outside the vehicle, it may still be in contact with the vehicle. This code also includes occupants who are not initially in the passenger and contiguous cargo area of the vehicle (e.g., pickup beds, boot of a convertible, and people riding on open tailgates).

Partial ejection

Is selected when part of the occupant's body remains **in** the vehicle, and any part of it is outside of the vehicle during the crash sequence. This code **does not apply** to those occupants who are not initially in the passenger and contiguous cargo area of the vehicle, they are indicated as **"Complete ejection."**

Ejection, unknown degree

Is selected when it is suspected or known that an occupant ejection occurred; however, at the time of the vehicle inspection the technician was unable to determine if the ejection was **Partial** or **Complete**.

Unknown

Is selected when:

- the vehicle has been completely repaired, or
- it cannot be determined if an ejection is applicable.

Ejection Area

Screen Name: **Ejection—Area**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.EJECT.EJECTAREA**

Element Attributes

Database	SAS	
11	0	No ejection
1	1	Windshield
2	2	Left front
3	3	Right front
4	4	Left rear
5	5	Right rear
6	6	Rear
7	7	Roof
9	9	Unknown if ejected
8	8	Other area
-9999	99	Unknown

Source

Vehicle inspection

Remarks**Rear**

Is restricted to people riding in a passenger compartment and contiguous cargo area, who are ejected through the rear window, tailgate (station wagon), hatchback, etc.

Roof

Applies to all hardtops, convertibles, sun roofs, T-bar roofs, and detachable hardtops (such as fiberglass tops) that are used to cover areas designed for passenger protection.

Examples follow for how the variables, Ejection Medium, and Medium Status (Immediately Prior to Impact), should be selected when Area equals Roof.

Table 7. Examples

Ejection	Roof Type	Area	Ejection Medium	Medium Status
Ejection	Hardtop, ripped open during crash	Roof	Integral structure	Integral structure
Ejection	Removable hardtop, <u>attached</u> prior to crash	Roof	Integral structure	Integral structure
Ejection	Removable hardtop, <u>detached</u> prior to crash	Roof	Non-fixed roof structure	Open
Ejection	Convertible, in down or open position	Roof	Non-fixed roof structure	Open
Ejection	Convertible, in closed position	Roof	Non-fixed roof structure	Closed
Ejection	Sun or T-bar, closed, and ripped open during crash	Roof	Non-fixed roof structure	Closed
Ejection	Sun or T-bar, open/removed prior to crash	Roof	Non-fixed roof structure	Open

Ejection Attributes are designated for use with areas designed for passenger protection (e.g., passenger cars, vans, light-truck cabs, self-contained mini-recreational vehicles and mini-motor homes). Trailers, add-on campers, etc., are to be assigned **Other area**.

Other area

Also applies to people riding on open tailgates.

Unknown

Is selected when it is known from the vehicle inspection that an occupant was ejected (i.e., partial, full, or unknown degree) however, the area of potential ejection is unknown.

Ejection MediumScreen Name: **Ejection—Medium**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.EJECT.EJECTMEDIUM****Element Attributes**

Database	SAS	
11	0	No ejection
1	1	Door/hatch/tailgate
2	2	Non-fixed roof structure
3	3	Fixed glazing
4	4	Non-fixed glazing (specify)
5	5	Integral structure
	79	Unknown ejection area
7	9	Unknown if ejected
6	8	Other medium (specify)
-.9999	99	Unknown

Source

Vehicle inspection

Remarks**Door/hatch/tailgate**

Includes any door, hatch, or tailgate that is opened during the course of the impact sequence.

Non-fixed roof structure

Applies only to convertible, sun roofs, T-bar roofs, and removable hardtops when retracted/detached prior to the crash.

Fixed glazing

Refers to any glazing in the vehicle that cannot be opened.

Non-fixed glazing

Refers to any glazing in the vehicle that can be opened to any degree.

Integral structureIncludes removable hardtops when attached to the vehicle prior to the crash. This also should be used when any vehicle structure, not designed to be opened (e.g., standard roof), is torn open during the crash such as to permit ejection.

Other medium (specify)

Applies to people riding in pickup beds, on open tailgates, and for other situations that cannot be classified above. In addition, use this attribute when someone is ejected from a trailer, add-on camper, etc.

Unknown

Is selected when the ejection medium it is not known.

Ejection Medium StatusScreen Name: **Ejection—Medium Status**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.EJECT.EJECTMEDIUMSTATUS****Element Attributes**

Database	SAS	
11	0	No ejection
1	1	Open
2	2	Closed
3	3	Integral structure
	79	Unknown ejection area
	89	Unknown if ejected
	99	Unknown

Source

Vehicle inspection

Remarks

This variable is a description of the status of the area through which an occupant was ejected and is the status of the medium immediately prior to the impact.

Open

Applies to convertible roofs, sunroofs, T-bar roofs, windows, doors or tailgates that are completely or partially open immediately prior to impact, or to other open areas of vehicles such as pickup beds, etc.

Closed

Refers to a window that is completely closed when damaged, or to a convertible, sun, or T-bar roof that is closed when damaged. Sun and T-bar roofs are captured here if the ejection occurred through the designed opening in the sun or T-bar roof. However, if the roof was of a sun or T-bar type but the ejection occurred because a sizable opening was torn in the roof structure, then select **Integral structure**. This is also used for fixed glazing such as windshields and backlights that are in place prior to the collision. This also refers to a door that is closed, but when damaged, experiences latch and/or hinge failure causing the door to open.

Integral structure

Should be used when any vehicle structure, not designed to be opened (e.g., standard roof), is torn open during the crash such as to permit ejection.

Unknown

Used when the medium status prior to the impact is unknown.

Entrapment Overview

Entrapment poses a different problem area. Recent years have brought about a vast improvement in the delivery of emergency medical attention to motor vehicle crash victims. This improvement has been achieved through the establishment of regional trauma centers, well-equipped mobile intensive care units manned by trained paramedics even in rural areas, and a general increase in the knowledge of how to treat acute trauma. This improvement has not helped those victims who are restrained within the vehicle by deformed components. The improved care cannot be delivered because the personnel are unable to get to the victim, remove the victim from the vehicle, and deliver the victim to a treatment facility in a reasonable amount of time.

Entrapment is caused by the structure components of the vehicle entangling or intermingling with the occupants, preventing the occupants from exiting the vehicle. Manufacturers have designed crumple zones into vehicles to absorb energy. These structural parts are designed to crumple in a predetermined pattern to absorb the energy during a crash while maintaining the integrity of the passenger compartment. In so doing, the occupants of the vehicle can become entrapped by the structure of the vehicle deforming around them.

Enter any observations or indications of possible entrapment or mobility restrictions. Careful observations should be made of intruding vehicle components, i.e., jammed doors, crushed roof, or other mechanisms that might have restrained the occupants, restricted their mobility, or limited egress from the vehicle.

Extrication tool marks are an indication of entrapment. Although, cutting off the roof of a vehicle is not an indication of entrapment.

Enter any observations or indications of possible entrapment or mobility restriction. Careful observation should be made of intruding vehicle components, jammed doors, crushed roof, or other mechanisms that might have restrained occupants or restricted or limited egress from the vehicle.

If no entrapment was indicated select the “No Entrapment” button and the note area is prefilled.

Entrapment

Screen Name: **Entrapment**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.ENTRAP.ENTRAP**

Element Attributes

Database	SAS	
1	0	Not entrapped/exit not inhibited
2	1	Entrapped/pinned — mechanically restrained
5	2	Could not exit vehicle due to jammed doors
6	3	Could not exit vehicle due to external circumstances (specify)
4	9	Unknown

Source

Technician-determined — inputs include the vehicle inspection, interview and police report.

Remarks

Not entrapped/exit not inhibited

Is used when this occupant exited the vehicle and his/her egress was not inhibited in any way by intruding vehicle components, jammed doors, etc., regardless of injury.

Entrapped/pinned — mechanically restrained

Is used when this occupant was physically restrained in the seat position by an intruding vehicle component. The occupant could not move from the post-impact position without some part of the vehicle being cut away, bent or moved.

Could not exit vehicle due to jammed doors

Is used when this occupant could not exit the vehicle due to all doors being jammed. This occupant, however, could move about within the vehicle. Refers to doors, not row specific. Doors are usually used for ingress/egress of the seating area. A door must have hinges and a locking mechanism, except as follows:

- If a barrier is placed between rows, such as in some taxis and limos, jammed doors would be coded by specific rows.

Could not exit vehicle due to external circumstances (specify)

Is used when exiting the vehicle could cause more harm to the occupants. Examples:

- Fire
- Live electrical wires
- High water

This code requires a specific annotation.

Unknown

Is used when there is no knowledge of the manner of this occupant's exit from the vehicle and generally, no inspection of the vehicle.

Safety Systems Form

Safety Systems Form Overview

The Safety System form captures information about all occupant protection systems in the vehicle. These systems include belt restraints, pretensioners, LATCH systems, air bags, child restraints, and belt positioning devices. Record only information obtained during the vehicle inspection on the Safety Systems form. This form contains shared information on the Seat, Restraints, Air Bag, and Child Seat tabs with the Occupant form.

Technicians must determine the **usage** and **function level** of restraints **for every occupied seating position in the vehicle**. Evaluate belt usage for this crash only.

Consider the following evidence as indicating usage:

- **Belts/fittings damaged by occupant loading:** deformed anchor components, stretched webbing, latch plate peening (loading impression on metal);
- **Position of belts:** laying on seat cushion (cut or whole) or retracted into spool with no dust on the belt over the D-ring and the belt can be spooled out easily;
- **Condition of belts:** slight fraying on belt edges close to latch plate position (older vehicles), no dust on belt at D-ring on pillar, cut for occupant extraction by emergency personnel (usually at an easily accessible position).

Consider the following as evidence of non-usage:

- **Position of belts:** Shoulder portion behind seat back, lap portion tucked into the seat bight, belt locked into place in unused position.
- **Condition of belts:** dirty, dust covered, mechanically unusable (buckle or latch plate damaged, parts missing or otherwise not usable), size adjustment on fixed length belts inappropriate for occupant, cut for convenience or comfort (out of the way, near housings), tucked under seat cushions or into the seat bight.

The usage must be determined on this form using only the evidence in the vehicle at the time of inspection. Do not use inputs from any other sources in coding the Safety Systems screens. Final determination of belt restraint “usage in this crash” is coded on the Occupant Assessment form. Vehicle evidence along with police report information, interviews, relationship of contact points to seat position relative to the PDOF assigned to the vehicle, presence of belt-caused occupant injuries, and presence or absence of ejection are considered before encoding restraint usage on the Occupant Assessment screens. In summary, agreement between the Safety Systems belt coding for usage and the coding in the Occupant form is not required. The vehicle inspection (field) forms are not changed based on additional data obtained; they capture the technician’s determination based on the evidence present during the vehicle inspection. The only time seat belt coding should be changed on the SS form is if the wrong attribute was accidentally selected, NOT when additional data leads to a different final assessment on the OA form.

Every air bag for every seating position, occupied or unoccupied, regardless of deployment, must be listed in the Air Bag tab and completely documented. Deployed air bags must be checked thoroughly to document possible damage to the bag or flaps. Determination of air bag function and injury causation depends on complete documentation of this data. Every air bag for every

seating position must be listed in the Air Bag tab. If the bag is not deployed, presence can be more difficult to determine. Most frontal bags are clearly labeled. Some side and roof bags will also have labels. However, information on possible air bag presence should be obtained before inspection of the vehicle. This information should be obtained from the current MY Safety Equipment list, quality control center, owner's manual, or dealer body shop.

If a vehicle has air bags, it may also have pretensioners. Most recent model year vehicles have pretensioners for the outboard belt restraints in the first seat row and sometimes in the second seat row. These devices are attached to either the retractor or buckle stalk of lap/shoulder belts in seat positions with OEM air bags. The devices reduce slack in belt restraints just prior to air bag deployment. Removal of slack brings the occupant into the correct position for bag deployment. Many of the pretensioners cause the belt to remain in its at-crash position well after the crash. Thus, if the occupant was wearing the belt at deployment, the belt remains spooled out and locked in place. Conversely, if the occupant was unbelted, the belt can be locked in the stored position. Both of these occurrences confirm pretensioner presence. With newer technologies such as electric pretensioners, the technician should be aware that the belt may not be locked in place in either the used or stowed position. A seat belt that can be moved and operates as normal is not necessarily an indication of a lack of pretensioner actuation. The EDR report can be used to determine the type and location of pretensioners present in the vehicle.

Child restraints (if occupied by a child during the crash) must be inspected and completely documented. If it is unknown if the CRS was occupied during the crash, assume it was and code normally. If the child restraint is in the vehicle at the time of inspection, photograph the restraint in its installed position, then remove and photograph the restraint according to the *NHTSA Field Crash Investigation Photography Protocols Manual (internal unpublished manual)*. Complete all applicable coding at the time of inspection. Thoroughly document any damage to the restraint. Do not re-install the Child Safety Seat.

A Field Safety Notification (FSN) should be submitted when there is a suspected component malfunction that occurred during the crash sequence.

Seat

Define the layout of the vehicle's occupant compartment areas as designated by the manufacturer. The intention is to define all locations that are ***designed*** to have a seat, as well as any non-seating area where an occupant was located. The availability/status of the occupied seats at the time of inspection are also coded. While additional seat details are only coded for occupied seats, all locations designed to be a seating position are defined. If the seat was removed or the seat was folded down/stowed, that location is still defined as a designed seating position. If the vehicle has a cargo area integral to the occupant compartment that is ***not*** designed as a seating position (no restraints, seat anchors/tracks, etc.), the cargo area is still defined if occupied; a truck or open pickup bed would not be defined, as they are not contained within the occupant compartment.

Seat Definition

Screen Name: **Seat Location Identification**
 SAS Data Set:
 SAS Variable: **CISS.CISS.SEATLOC.ROW&LOC or
 CISS.CISS.SEATLOC.SEATLOCATION**
 Database Name:

Front Row	Second Row	Third Row
11 - Left side	21 - Left side	31 - Left side
12 - Middle	22 - Middle	32 - Middle
13 - Right side	23 - Right side	33 - Right side
19 - Unknown seat	24 - Far right side	34 - Far right side
	29 - Unknown seat	39 - Unknown seat

Fourth Row	Fifth Row	Other or unknown seating
41 - Left side	51 - Left side	97 - In or on unenclosed area (specify)
42 - Middle	52 - Middle	98 - Other enclosed area (specify)
43 - Right side	53 - Right side	99 - Unknown seat location
44 - Far right side	54 - Far right side	
49 - Unknown seat	59 - Unknown seat	

Source

Vehicle inspection

Remarks

Seat definitions indicate areas of the vehicle, and may not indicate the actual presence of a manufacturer-designated seating position.

“Far right side” is only to be used if the seat has four seating positions.

More than one person may be assigned to a defined area. When this occurs, the appropriate posture is selected to further define the occupant location.

The seating position by the steering wheel should be assigned to the assumed driver of a hit-and-run vehicle unless evidence indicates a different position for the person or people.

If seating in the vehicle is longitudinal rather than lateral, use the basic idea of a vehicle interior being divided laterally into roughly equal thirds and visualize lateral rows of seats to determine what seat position is the best descriptor.

People appended to the vehicle in motion (such as someone hanging on to or riding on top of vehicle) are not considered to be occupants of the vehicle. Below are situations where an occupant may be located within a specified area, but not in a designed seating area:

In or on Unenclosed Area

Includes those occupants riding on a fender, the boot of a convertible, the open cargo box on a light truck, etc.

To select “Unenclosed area,” you must first “click on” the large “other” box to the right of the Seat Definition grid in the application. Then using the variable Seat Type, select “In or on other Unenclosed area (specify).”

Other enclosed area (specify)

If an occupant is within the occupant compartment, but in an area NOT designed by the manufacturer as a seating position, select “Other Enclosed Area” and specify the location of the occupant. For instance, an occupant in kneeling in the open area between bucket seats in positions 11 and 13. Positions 11, 12, and 13 are ALL selected in the Seat Definition grid. Positions 11 and 13 are coded as bucket seats; position 12 is coded as “Other Enclosed Area” and specified as the open space between the front seats (between 11 and 13). An occupant in the cargo area of a minivan (behind the last designated seating row) would be also coded as “Other Enclosed Area,” but specified as being in the designed cargo area. The “other” box to the right of the Seat Definition grid would be selected for an occupant located in the cargo area. If several occupants were in an area, it is selected once from the Seat Definition grid; several occupants can be assigned to that area in the Occupant Form.

Seat Type

Screen Name: **Seat – Type**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.SEATLOC.TYPE**

Element Attributes

Database	SAS	
2	1	Bucket
3	2	Bucket with folding back
4	3	Bench
5	4	Bench with separate back cushions
6	5	Bench with folding back
7	6	Split bench with separate back cushions
8	7	Split bench with folding back
9	8	Pedestal (i.e., column supported)
10	9	Box mounted seat (i.e., van type)
		Other enclosed area (specify)
13	11	Stowed/removed
12	99	Unknown seat type

Source

Vehicle inspection

Remarks

This variable assesses the type of seat present at each occupied position. Because the type of seat may have an effect on occupant kinematics, the type of seat is important to analysts.

The term “folding back” refers to seat backs that are designed to fold significantly forward of upright. These seats usually fold forward to allow easier access to the area behind the seat for egress, ingress and cargo. Seats that recline only rearward are not considered to be folding backs. Folding backs, because of the additional possibility of malfunction of the folding mechanism, take precedence over solid or separate back cushions. “Folding back” is not selected if only the lower part of the seat back folds forward (for an armrest, console or trunk access). If a center seat back is separate from the outboard seat backs and folds forward for an armrest or console (in many light truck type vehicles), it is not coded as a folding back.

If a seat was folded down at the time of inspection, record the data as if the seat was in the upright position.

If a seat was removed or stowed prior to the crash, the seat position will be defined. However, no seat or safety restraint systems, except air bag data, will be coded for that position. A seat is considered stowed if the seat back and bottom move in the act of stowing.

The first-row seats in 2-door vehicles will usually have folding backs. The first-row seats in 4-door vehicles will usually not have folding backs.

Bucket

A bucket seat is a standalone seat intended for a single occupant, and shares no seatback hardware or cushion with any other seating position. Its bottom anchorage or track is attached directly to the vehicle floor, and is also not shared with any other seating position.

Bucket with folding back

A seat may be coded with this attribute if it meets the definition of a bucket seat and also has a seatback that folds forward.

Bench

A bench seat is intended for several occupants, has a single-piece cushion, and a single-piece seatback.

Bench with separate back cushions

Seats may be coded with this attribute if they have a bench type cushion, and have unconnected seatbacks, and the seatbacks do not fold forward.

Bench with folding back

Seats may be coded with this attribute if they have a bench type cushion and have single-piece or multi-piece seatbacks that fold forward.

Split bench

A split bench is a bench seat, the cushion of which is divided into two or more unconnected pieces.

Split bench with separate back cushions

Seats may be coded with this attribute if they have a split-bench type cushion, and have unconnected seatbacks, and the seatbacks do not fold forward.

Split bench with folding back

Seats may be coded with this attribute if they have a split-bench type cushion, and have single-piece or multi-piece seatbacks that fold forward.

Box mounted seat (i.e., van type)

Identifies elevated seats that are attached to a box that is fastened to the floor. The seat tracks are bolted to the top of the box. This type of seat is often found in the front row of vans.

Pedestal (i.e., column supported)

Pedestal seats are often found in vans and may have a swivel mechanism.

Examples of some seat types and the appropriate attributes:

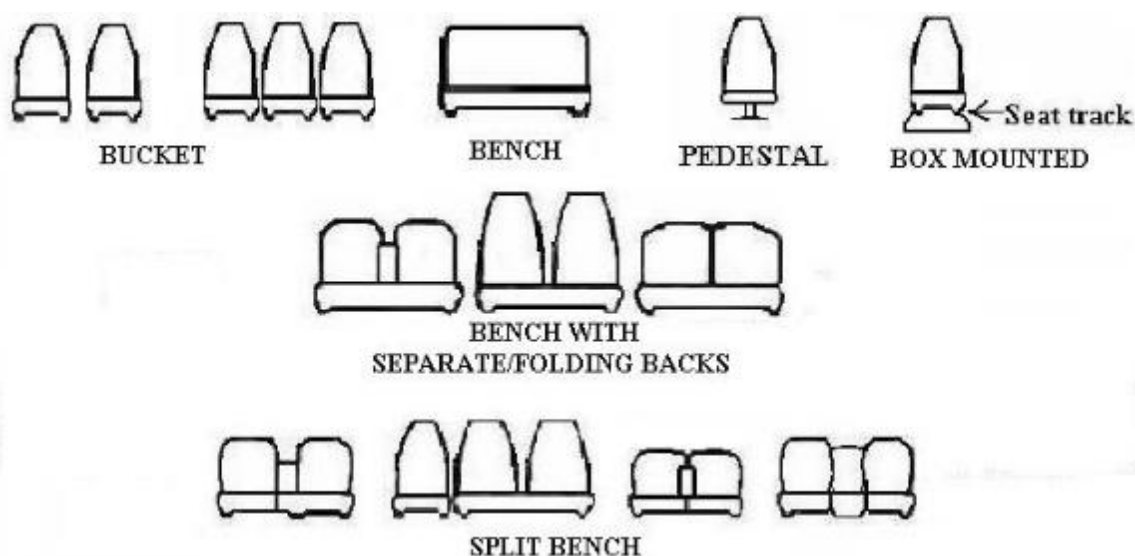


Figure 115. Examples of some seat types and the appropriate attributes

Stowed/Removed

A seat is considered stowed if the seat back and bottom both move during the act of stowing.

Other enclosed area (specify)

If an occupant is within the occupant compartment, but in an area NOT designed by the manufacturer as a seating position, select “Other Enclosed Area” and specify the location of the occupant. For instance, an occupant in kneeling in the open area between bucket seats in positions 11 and 13. Positions 11, 12, and 13 are ALL selected in the Seat Definition grid. Positions 11 and 13 are coded as bucket seats; position 12 is coded as “Other Enclosed Area” and specified as the open space between the front seats (between 11 and 13). An occupant in the cargo area of a minivan (behind the last designated seating row) would be also coded as “Other Enclosed Area,” but specified as being in the designed cargo area.

Unknown seat

Used when the seating position for this occupant is unknown but the row is known. Unknown seat should be used only after exhausting all other means of determining seat position.

Bucket Seats

			
Bucket	Bucket with folding back	Bucket seats	Bucket seats with folding backs

Bench Seats

		
Bench	Bench	Split bench

Figure 116. Examples of bucket, bench, and split bench seats

Seat OrientationScreen Name: **Seat – Orientation**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.SEATLOC.ORIENTATION****Element Attributes**

Database	SAS	
9997	0	Not applicable
1	1	Forward-facing seat
2	2	Rear-facing seat
3	3	Side facing seat (inward)
4	4	Side facing seat (outward)
5	8	Other (specify):
6	9	Unknown Orientation

Source

Vehicle inspection

Remarks

Complete for occupied seating positions only. Most seats are fixed in terms of their orientation within the vehicle; however, some seats (e.g., swivel or reversible) can be oriented in more than one direction. Swivel seats and reversible seats (e.g., some station-wagons or vans) are entered according to their orientation at the time of impact (i.e., **Forward-facing seat** or **Rear-facing seat**).

Forward-facing seat

Used when the seat is oriented towards the front plane of the vehicle.

Rear-facing seat

Used when the seat is oriented towards the rear plane of the vehicle.

Side facing seat (inward)

Used when the seat is oriented towards either the right or left planes of the vehicle and faces inward.

Side facing seat (outward)

Used when the seat is oriented towards either the right or left planes of the vehicle and faces outward.

Other

Used when a seat is oriented such that the above attributes do not apply

Unknown

Used when the seat orientation cannot be determined.

Seat Track Position

Screen Name: **Seat—Track**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.SEATLOC.TRACK**

Element Attributes

Database	SAS	
		Not applicable
1	1	Non-adjustable seat track
2	2	Seat at forward most track position
3	3	Seat between forward most and middle track positions
4	4	Seat at middle track position
5	5	Seat between middle and rear most track position
6	6	Seat at rear most track position
7	9	Unknown seat track position

Source

Vehicle inspection

Remarks

Complete for occupied seating positions only. The technician should attempt to determine the seat position at impact. When the interior inspection begins, the technician should note the position of the seat, then move the seat forward and back along its track and determine the number of positions. When done, the seat should be moved to the position initially observed and photographed.

If the seat has electric adjusters with no distinct track positions, attempt to determine the relative position of the seat and select accordingly.

Non-adjustable seat track

Use this for seats that cannot be moved longitudinally.

Adjustable Seat Track**Seat at forward most track position**

Use this if the seat is at the forward limit of the track.

Seat between forward most and middle track position

Use this if the seat is at any position between the most forward and middle seat positions.

Seat at middle track position

Use this if the seat is in the position mid-range between the forward and rear most track position.

Seat between middle and rear most track position

Use this if the seat is at any position between the middle and rearmost track position.

Seat at rear most track position

Use this attribute if the seat is at the rear limit of the track.

Unknown

Use this attribute if the seat position at impact cannot be determined.

Seat PerformanceScreen Name: **Seat—Performance**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.SEATLOC.PERFORMANCE****Element Attributes**

Database	SAS	
		Not applicable
1	1	Seat assembly intact
2	2	Seat adjuster mechanism separated/deformed
3	3	Seat back folding locks or seat back structure separation (specify)
4	4	Seat tracks/anchors separated/deformed
5	5	Deformed by occupant of this seat
6	6	Deformed by passenger compartment intrusion (specify)
10	10	Deformed by cargo
11	11	Deformed by other occupant
7	7	Combination of above (specify)
88	98	Other (specify)
99	99	Unknown

Source

Vehicle inspection

Remarks

Complete for occupied seating positions only. This variable assesses the performance of the seat. The attributes are indications of whether the seat malfunctioned or was deformed in any way. Select the attribute that corresponds to the appropriate seat performance malfunction or deformation. Minor smudges, scrapes, dents, etc., are not considered deformation. If a malfunction or deformity occurs, then document the malfunction or deformation with a diagram and explanation. In addition, include photographs of the seat malfunction or deformity.

Seat assembly intact

Is used if the seat was not deformed or no portion of the seat structure separated during the crash.

Seat adjuster mechanism separated/deformed

Used if any of the mechanisms used to adjust a seat's "comfort" position are separated or deformed during the crash as a result of occupant loading.

Seat adjuster mechanisms:

- Height adjustment
- Longitudinal (horizontal) seat track adjustment
- Rocker adjustment
- Swivel/rotational adjustment
- Seat back recliner adjustment

For a seat back recliner separation, the seat back must have released in a rearward direction. Do not use this attribute if the seat back moved in a forward direction and the seat has a folding lock mechanism (e.g., front seats in 2-door vehicles); see **Seat back folding locks or seat back structure separation** below. This should be used when adjuster separations have been detected. Be sure to include supportive written and photographic documentation to support all separations/deformities.

Seat back folding locks or seat back structure separation (specify):

Used when the mechanism that is designed to lock the seat back in its upright position deforms or separates allowing the seat back to move forward during the collision as a result of occupant loading. “Seat back” separation refers to forward-facing seats where seat back structural deformities (e.g., seat back hinge points) resulted in a separation of the seat back from its anchorage points. Again, to be considered applicable for this, the seat must have separated/deformed while moving forward during the collision as a result of occupant loading.

Seat tracks/anchors separated/deformed

Used if the seat separates, to any degree, from a seat track during the crash. In addition, use this if the seat anchor that attaches the seat track to the floorpan separates, to any degree, during the crash. Box mounted seats are included in this if a separation occurred between the box and the floor or the box and the seat track/anchor. Seat track or anchor separations/deformities must be a result of occupant loading.

Deformed by occupant of this seat

Used when the seat is changed in form from its original design from occupant loading during the crash. Situations where seats are deformed and also experience mechanical separations should be identified under **Combination of above**.

Deformed by passenger compartment intrusion

Used when the seat is deformed or separated by intrusion of an interior vehicle component or exterior vehicle component into the passenger compartment.

Deformed by cargo

Used when the seat is changed in form from its original design by impact from cargo during the crash. Examples of cargo: spare tire, luggage, construction equipment, tool, and tool box(es).

Deformed by other occupant

Used when the seat is changed in form from its original design by an occupant other than the occupant in this position, during the crash. Situations where seats are deformed and also experience mechanical separations should be identified under **Combination of above**.

Combination of above (specify)

Used when any combination of the above occurs and describes seat malfunctions or deformations. Seat malfunctions or deformations that are not described in the above are reported below. Seat malfunctions or deformations listed in the above take priority over others.

Other

Used when the only seat malfunctions or deformation that occur are not described in the above (e.g., impact forces). If a seat doesn't have a comfort recline and is broken rearward code here.

Unknown

Used if the seat performance cannot be determined.

Does the Seat Have Integrated Passenger Belts?Screen Name: **Seat—Integrated Restraints**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.SEATLOC.INTRESTRAINT****Element Attributes**

Database	SAS	
		Not applicable
1	0	No
2	1	Yes
3	99	Unknown if integrated

Source

Vehicle inspection

Remarks

An integrated seat belt is incorporated into the seat. It is a three point seat belt system that includes a belt having one end affixed to the seat and an opposite end mounted to a retractor secured to the seat. A seat belt latch is mounted to the belt that has a releasable and lockable buckle on the opposite side of the seat. This allows the belt to pull across the passenger lap and the other portion of the belt to cross the upper torso. The belt extends through a guide located at the top of the seat. An integrated seat belt has no pillar attachment point.

If you were to remove the seat and the restraint comes with the seat indicate “Yes.”



Figure 117. Example of an integrated seat belt system

Head Restraint Type at This Occupant PositionScreen Name: **Head Restraint -Type**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.HEAD_RESTRAINT.TYPE****Element Attributes**

Database	SAS	
		Not applicable
1	1	No head restraints
2	2	Integral
4	3	Adjustable
6	4	Add-on
8	8	Other (specify)
9	9	Unknown

Source

Vehicle inspection

Remarks

FMVSS 202 (Head Restraints) only applies to first-row seating positions. Although, the presence or non-presence of head restraints are captured for all occupied seating positions in the vehicle. Some examples of head restraint styles are shown below.

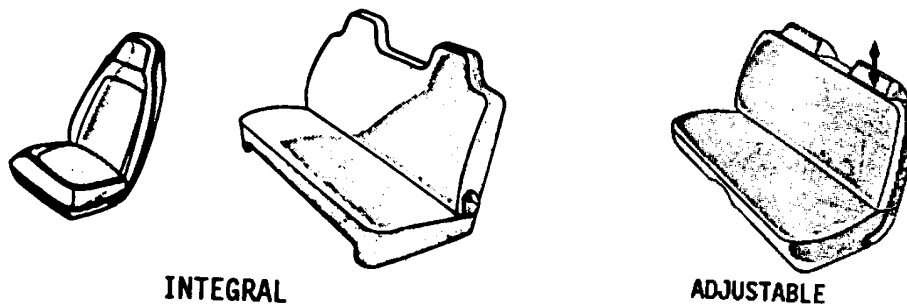


Figure 118. Examples of head restraint styles

No head restraints

Used when (1) no head restraint is available for this seating position, or (2) there had been a head restraint but it had been removed prior to the crash.

Integral

Refers to head restraints that are a continuous part of the seat back structure or those that are a separate structure but are not vertically adjustable. For rear seats only, if an obvious rise or sculpted head restraint is not observed, code as No Head Restraint.

Adjustable

Applies to:

- head restraints that can be moved vertically to accommodate occupants of varying heights, and
- head restraints that have a fixed outer framework and a separate center section that is adjustable vertically.

Add-on

Refers to clamp-on, strap-on, or even bolt-on head restraints on a vehicle not originally equipped with head restraints. This attribute should be used infrequently.

Unknown

Used when the type of head restraint cannot be determined.

Note: Manufacturers are providing head restraints for rear seat occupants. These head restraints may be the same or similar to those used in the front seats, or they may be a slight rise in the rear seat back.

Head Restraint Damage by Occupant at This Occupant PositionScreen Name: **Damage From Occupant**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.HEAD_RESTRAINT.DAMAGE****Element Attributes**

Database	SAS	
		Not applicable
8	1	No head restraints
1	2	No damage
2	3	Damaged during crash
3	9	Unknown

Source

Vehicle inspection

Remarks**No damage**

There was no damage to the head restraint by the occupant.

Damaged during crash

Any damage to a head restraint caused by the occupant seated in that position should be identified.

Unknown

Used when it is unknown if damage to the restraint was caused by an occupant in the appropriate seat position.

Active Head Restraint

Screen Name: **Head Restraint - Active**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS.HEAD_RESTRAINT.ACTIVE**

Element Attributes

Database	SAS	
		Not applicable
0	1	None present
2	2	Present
3	9	Unknown

Source

Vehicle inspection, interview

Remarks

This is captured for occupied seating positions only. There should be a label on the seat indicating the presence of the active head restraint.

Rollover ProtectionScreen Name: **Rollover Protection**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.SEATLOC.ROLLOVERPROTECTION****Element Attributes**

Check Box

Database	SAS	
0	0	No/Unknown (unchecked)
1	1	Yes (checked)

Range**Source**

Vehicle inspection, technician determined

Remarks

The purpose of this variable is to determine if the vehicle's rollover protection system was actuated into an occupied seating position.

Different types of systems are being used by manufacturers, also different names are used (i.e., rollover protection systems -- ROPS or RPS). Rollover sensors will activate roll-bars in events where an imminent rollover is predicted to occur. The roll-bars are integrated in or behind the seats, ensuring there is sufficient clearance for occupant's heads in the event of a crash. Also, an independent module behind each of the two rear-seat passengers' heads could deploy. A rollover need not occur for the rollover protection system to actuate.



Figure 119. Different types of systems are being used by manufacturers

Belt System AvailabilityScreen Name: **Availability**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.SEATBELT_INSP.BELTAVAIL****Element Attributes**

Database	SAS	
1	0	None available
2	1	Belt removed/destroyed
3	2	Shoulder belt
4	3	Lap belt
5	4	Lap and shoulder belt
6	5	Belt available - type unknown
7	6	Shoulder belt (lap belt destroyed/removed)
8	7	Lap belt (shoulder belt destroyed/removed)
9	8	Other belt (specify)
10	9	Unknown if available

Source

Vehicle inspection

Remarks

Code belt availability for occupied seats only. Availability is assessed based on the seat position only if occupied.

Not available

Indicates: that at the time of the crash the designated seating position was not equipped with a manufacture installed or post manufacturer installed belt (lap, shoulder, or lap and shoulder).

Belt removed/destroyed

Indicates that the belt, initially installed at this occupant's seating position, was subsequently removed or destroyed (unbolted, cutout, etc.). If the belt is present but nonfunctional, then select the type of belt available on this variable and use **Inoperative** for **Used in this crash?**

Belts which are knotted, buckled at the rear of the seat (bench or bucket), stored below the seat, etc., are available if they were otherwise operative.

Shoulder belt

Used when this occupant's seat position was equipped with a manual upper torso restraint and no lap belt.

Lap belt

Used when this occupant's seat position is equipped with a belt that secures the pelvic area of the occupant in the seat and there is no manual upper torso belt.

Lap and shoulder belt

Used when both an upper torso belt and a lap (pelvic area) belt are present at this occupant's seat position.

Belt available — type unknown

When the specific belt system cannot be determined, but it is known some type of belt is present, then use this attribute (this **may** occur when inspecting completely burned or stripped vehicles).

Shoulder belt (lap belt destroyed/removed)

Used for integral noncontinuous loop belt systems when the lap belt portion of the belt has been removed or destroyed leaving only the shoulder belt portion present at this occupant's seating position.

Lap belt (shoulder belt destroyed/removed)

Used for integral noncontinuous loop belt systems when the shoulder belt portion of the belt has been removed or destroyed leaving only the lap belt portion present at this occupant's seating position.

Other belt (specify)

Used when the belt system is nonstandard or cannot be described with other attributes. Specify (write out in the Specify Box) the type of belt (5-point competition harness, 4-inch-wide webbing, etc.). In addition, use this attribute if a properly positioned "self-contained" built-in child safety seat was available at this occupant's seating position. Other child restraints are not recorded here.

Unknown

Used when it cannot be determined whether or not belts were available for this occupant's seat position.

Belt System Used in This Crash?Screen Name: **Used in this crash?**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.SEATBELT_INSP.BELTUSE****Element Attributes**

Database	SAS	
0	0	None used not available/removed or destroyed
1	1	Inoperative (specify)
2	2	Shoulder belt
3	3	Lap belt
4	4	Lap and shoulder belt
5	5	Belt used — type unknown
6	8	Other belt used (specify)
7	12	Shoulder belt with child safety seat
8	13	Lap belt with child safety seat
9	14	Lap and shoulder belt with child safety seat
10	15	Belt with child safety seat — type unknown
11	18	Other belt with child safety seat (specify)
12	99	Unknown if belt used

Source

Vehicle inspection

Remarks

Code belt use for occupied seats only. Select the belt system or portion of the system which was in use at the time of the crash by the occupant. The correctness of the use is not assessed on this variable. This variable only identifies belt usage.

None used/not available/removed or destroyed

Used when a belt was available but not worn at the time of the crash. **Note:** the “**not available/removed or destroyed**” within this selection is automatically selected when the corresponding attribute is selected in **Belt Availability**.

Inoperative

Includes belts which are knotted, jammed, tucked behind the seat, or in any other fashion rendered unusable. In addition, use this attribute for belts which are inoperative because of extreme deterioration from aging. A belt system that was completely removed from or cut out of a vehicle is assigned **None used, not available, or belt removed/destroyed**.

Shoulder belt

Used when a shoulder belt alone was in use. This can occur when: (1) the vehicle was not equipped with a lap belt, (2) only the shoulder belt portion of a non-integral system was in use, or (3) when the lap belt portion of a noncontinuous loop integral lap and shoulder belt system was cut out leaving only a functional shoulder belt portion in use.

Lap belt

Used when a lap belt alone was in use. This can occur when: (1) the vehicle was not equipped with a shoulder belt, (2) only the lap belt portion of a non-integral system was in use, or (3) when the shoulder belt portion of a noncontinuous loop integral lap and shoulder belt system was cut out leaving only a functional lap belt portion in use.

Lap and shoulder belt

Used when the occupant is: (1) “encompassed” **both** in the lap and upper torso region by a lap and shoulder belt combination, or (2) using only a portion of an intact integral lap and shoulder belt system. For example, if a person has an integral lap and shoulder belt but is only using the lap portion (i.e., having the shoulder belt behind his or her back), then use this attribute. Improper use of the belt is assessed in the belt positioning variable.

Belt used — type unknown

Used when the type of belt system cannot be determined.

Shoulder/lap/lap and shoulder belt used with child seat

Used when the vehicle’s belt system anchors a child safety seat to the vehicle, or when the lap/shoulder belt is used to restrain a child who is sitting on a booster seat. These attributes do not refer to the belts which are part of the child seat itself.

Belt with child safety seat — type unknown

Used when the vehicle belt type is unknown, not the child safety seat type.

Other belt with child safety seat

Used when a built-in child safety seat is “self-contained” (does not use any part of the regular existing belt system available at the occupant seating position).

Unknown if belt used

Used if it cannot be determined whether or not a belt was in use by the occupant at the time of the crash.

Belt Malfunction Modes During Crash

Screen Name: **Malfunction**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.SEATBELT_INSP.BELTFAIL**

Element Attributes

Database	SAS	
0	0	None used/not available/removed or destroyed
1	1	No belt malfunction
2	2	Torn webbing (stretched webbing not included)
3	3	Broken buckle or latch plate
4	4	Upper anchorage separated
5	5	Other anchorage separated (specify)
6	6	Broken retractor
7	7	Combination of above (specify)
8	8	Other belt malfunction (specify)
9	9	Unknown

Source

Vehicle inspection

Remarks

Code belt malfunction for occupied seats only. If any component of the belt system is suspected to have malfunctioned during the impact as a result of occupant loading, the malfunction is captured in this variable. The malfunction is also recorded on the **Case Form/Summary Tab** and documented with images.

If a malfunction occurs, select the attribute that corresponds to the appropriate belt malfunction mode that describes the component of the restraint system that malfunctioned (i.e., torn webbing, broken buckle or latch plate, anchorage separation, broken retractor). A complete and documented description of the malfunctioning component and the way it malfunctioned must accompany the case.

No belt malfunction

Used when there is no physical evidence from the vehicle inspection to indicate that a malfunction occurred.

Combination of above (specify)

Used when any combination of specified attributes occur and describes belt malfunction modes. Belt malfunction modes that are not described are reported in **other belt malfunction**. Belt malfunctions **with specific attributes** take priority over the **Other belt malfunction** code.

Other belt malfunction (specify)

Used when the only belt malfunction that occur are not described with a specific attribute.

Unknown

Used when it cannot be determined if the belt malfunctioned.

Shoulder Belt Upper Anchorage AdjustmentScreen Name: **Anchorage Adjustment**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.SEATBELT_INSP.BELTANCHOR****Element Attributes**

Database	SAS	
0	0	No manual shoulder belt
1	1	None for shoulder belt
2	2	In full up position
3	3	In mid position
4	4	In full down position
5	5	Position unknown
6	9	Unknown if adjuster present

Source

Vehicle inspection

Remarks

Complete this variable for occupied seats only, regardless of shoulder belt usage.

No upper anchorage adjustment for shoulder belt

Used when a shoulder belt is present but there is no adjustment mechanism at the upper anchorage point.

In full up position

Used when the shoulder belt is equipped with an adjustable upper anchorage point and it was in its highest position at the time of the crash (e.g., closest position to the roof).

In mid position

Used when the shoulder belt is equipped with an adjustable upper anchorage point and it was in a middle position at the time of the crash (somewhere between full up and full down).

In full down position

Used when the shoulder belt is equipped with an adjustable upper anchorage point and it was in its lowest position at the time of the crash (closest position to the floor).

Position unknown

Used when the shoulder belt is equipped with an adjustable upper anchorage point but it cannot be determined what the position was at the time of the crash.

Unknown if adjuster present

Is used when it cannot be determined if the shoulder belt was equipped with an adjustable upper anchorage device. This distinguishes it from “Position unknown.”

Pretensioner Presence/Actuation

Screen Name: **Pretensioner**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.SEATBELT_INSP.BELTPRETEN**

Element Attributes

Database	SAS	
2	0	Not equipped
3	1	Pretensioner not actuated
6	2	Retractor type actuated
1	3	Buckle type actuated
5	4	Retractor and buckle type actuated
4	5	Pretensioner present, Unknown if actuated
8	6	Anchor type actuated
9	7	Retractor and anchor type actuated
10	8	Buckle and anchor type actuated
7	9	Unknown if equipped
11	10	Retractor, buckle, and anchor type actuated

Source

Presence: Vehicle inspection and or reference material

Actuation: Vehicle inspection only (includes EDR)

Remarks

Code pretensioner presence and actuation for occupied seating positions only. Pretensioners can tighten the belt up to 15 cm.

When a collision occurs, a seat belt with a pretensioner detects the incident and tightens the belt before the wearer is propelled forward. This holds the occupant more securely in the seat. Usually vehicles with air bags will have pretensioners, but they may be present in seating positions that do not have air bags ('80s Mercedes).

With newer technologies such as electric pretensioners, the technician should be aware that the belt may not be locked in place in either the used or stowed position. A seat belt that can be moved and operates as normal is not necessarily an indication of a lack of pretensioner actuation. The EDR report can be used to determine the type of pretensioners present in the vehicle and possibly actuation.

The seat belt pretensioners consist of a housing, an initiator, a canister of gas generating materials, a routing cable with a piston attached, and a piston tube. The initiator is part of the seat belt pretensioner deployment loop. When the vehicle is involved in a collision of sufficient force,

a microprocessor causes current to flow through the seat belt deployment loops to the initiator. Current passing through the initiator ignites the material in the canister producing a rapid generation of gas. The gas produced from this reaction actuates the seat belt pretensioners and shortens the seat belt length. Generally, when a front air bag (instrument panel, steering wheel) deploys, the pretensioner will actuate. However, it is possible for the pretensioner to actuate without the air bag deployment.

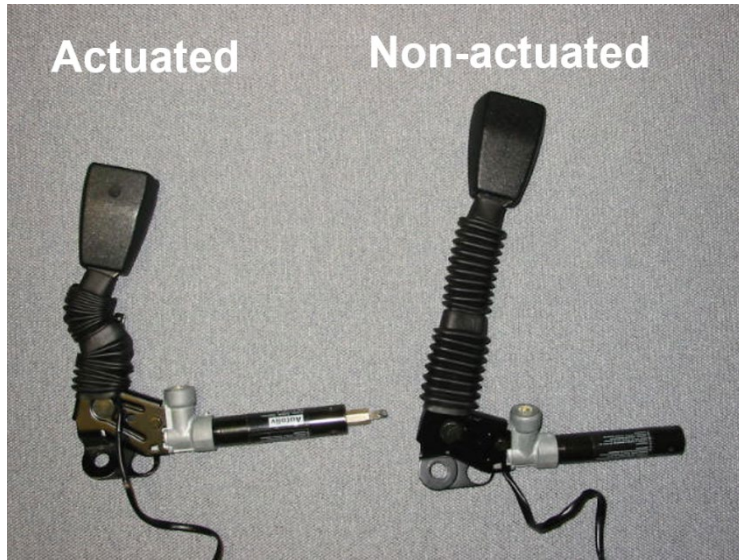


Figure 120. Sample pretensioners

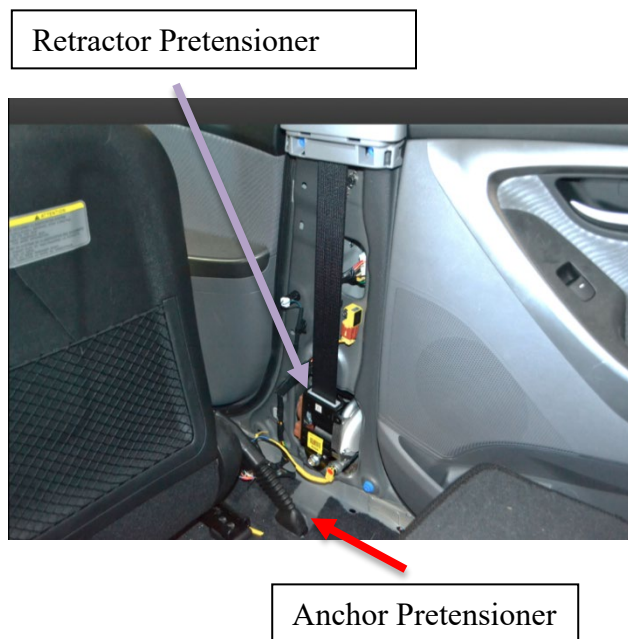


Figure 121. Locations of pretensioners

Seat Belt Positioning Device PresenceScreen Name: **Positioning Device Presence**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.SEATBELT_INSP.BELTPOSDEVICE****Element Attributes**

Database	SAS	
1	0	None present
16	16	Seat belt guide
17	17	Belt extender
18	18	Shoulder belt fit adjuster
15	98	Other (specify)
-9999	99	Unknown if present

Source

Vehicle inspection

Remarks

This variable is coded for any occupied position containing a shoulder belt.

Aftermarket seat belt positioning devices are typically manufactured for use by small stature adults and children to adjust lap and shoulder belt fit and comfort.

These products are not considered “safety devices” and are not tested or regulated by NHTSA.

Seat belt guide

Assists in providing the proper positioning of the seat belt on the occupant. They are typically installed by the vehicle manufacturer.

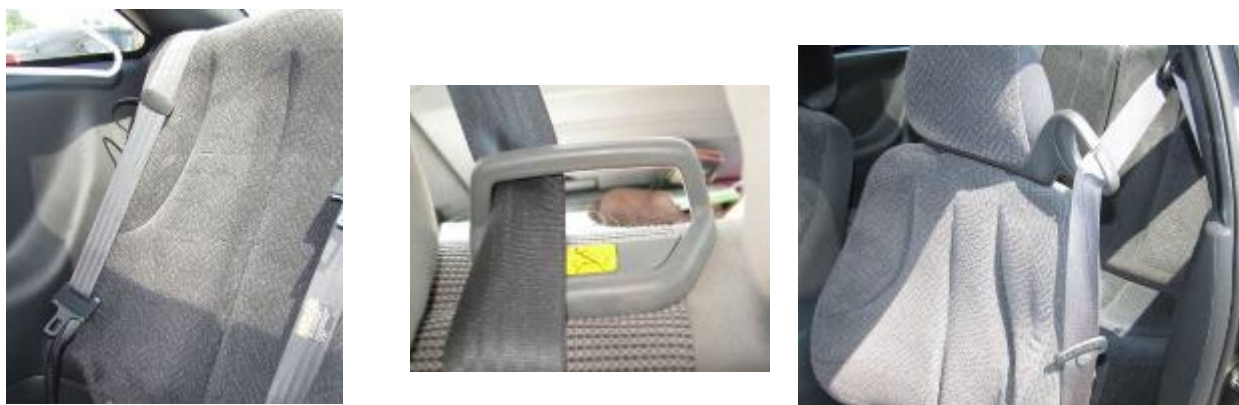


Figure 122. Proper positioning of seat belts

Belt extender

These extenders are lengths of webbing with buckles on both ends to fit onto the belts already in the vehicles. Some extenders are mounted to the seat belt mounting bolts. They can be aftermarket products or obtained via the manufacturer.



Figure 123. Examples of seat belt extenders

Shoulder belt fit adjuster

Typically are aftermarket products, some product names: Belt Buddy, Buckle Buddy, and Child Safer.



Figure 124. Examples of aftermarket products

Other (specify)

Annotate the name and type of device.

Was Seat Belt Routed Through Seat Belt Guides?Screen Name: **Was belt routed through safety guides?**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.SEATBELT_INSP.BELTSAFEROUTE****Element Attributes**

Database	SAS	
1	1	Yes
2	2	No
-9999	99	Unknown
-8887	0	Not applicable

Source

Technician-determined by vehicle inspection and interview

Remarks

This variable is coded when any occupied position contains a belt positioning device. The technician determines if the seat belt was routed through the belt positioning device at the time of the crash. Seat belt guides are used to assist in providing proper positioning of the seat belt on the occupant.

Air Bag Overview

Air bags are supplemental restraint systems that are designed to deploy in certain crashes. Both frontal and side-impact air bags can reduce occupant injuries. The air bag tab captures information about all air bags in the vehicle. All air bags in the vehicle must be inspected and documented completely; this includes the deployed and non-deployed air bags. Deployed air bags must be inspected to document occupant contacts, damage to the air bag membrane and module cover flaps. All contact evidence, damage, and module cover flap configurations must be documented in the appropriate Sketch tabs. Determination of air bag function and injury causation depends on the complete documentation of this data.

Every air bag for every seating position must be listed in the Air Bag tab; this includes non-deployed air bags. The presence of non-deployed air bags can be more difficult to determine. Most frontal bags are clearly labeled with the embossed letters SRS, SIR or SRS/Air Bag on the air bag cover located in the center of the steering wheel (for the driver) and the instrument panel for the front right occupant. Also look for the air bag warning labels typically located on the sun visor. For Side-impact air bags (SAB), look for the embossed letters SRS or Side Air Bag on areas such as the outboard side of the seatback, the door/panel or the overhead roof rail.

Information on possible air bag presence should be obtained before inspection of the vehicle. This information may be obtained from the current model year safety equipment list, quality control center, owner's manual, body shops, etc.

Air Bag Types

Frontal Air Bags

Frontal air bags have been available in passenger cars since the 1970s. In the mid to late 1980s, air bags became more prevalent. By the late 1990s, air bags became standard in all passenger vehicles.

- Driver's air bags
- Located in the steering wheel hub
- Knee air bags located in the lower instrument panel area
- Passenger's air bags
- Located in the top, mid or bottom instrument panel areas

Side-Impact Air Bags (SAB)

SABs are designed to lower the incidence of head or torso injuries during side-impact crashes. Some types of SABs may stay inflated for several seconds during a crash for additional protection in the event of a rollover.

There are three main types of SABs: chest (or torso), head and head/chest combination (or “combo”).

- Chest (or torso) SABs are mounted in the side of the seat (seatback mounted) or in the door/panel and are designed to help protect an occupant’s chest in a side-impact crash. Typically, chest SABs are present in both front seats, but some newer vehicles have them mounted in the rear outboard seat positions.
- Head SABs are usually mounted in the roof rail above the side windows and are designed to help protect an occupant’s head in a side-impact crash. There are two types of head SABs: inflatable curtains and inflatable tubular structures. Typically, inflatable curtains help protect both front and rear occupants in a side-impact crash; many also provide protection from ejection in rollover type crashes. In some vehicles, SABs extend and protect occupants in the 3rd row.
- Head/chest combination (“combo”) SABs are usually mounted in the side of the seat and are typically larger than chest (torso) air bags. Combinations are designed to help protect both the head and chest of an occupant. Some newer vehicles are equipped with combinations in the rear outboard seat positions.

Air Belts

Air belts are seat belts that expand and provide added restraint and protection for rear seat occupants. The inflatable belts spread the load of the crash forces over a larger part of the body. The bag is located inside the fabric of the seat belt. The air belts are designed for use of the rear outboard occupants.

Air Bag**Air Bag Number for This Vehicle**Screen Name: **Air Bag**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.AIRBAG.AIRBAGNUM****Element Attributes**

Air bag number

Source

Vehicle inspection

Remarks

Assigned by the system, one for every single air bag.

If air bags are available for the occupant, indicate the information on all air bags. Do so by inserting another air bag, indicate its location, and complete the information about the air bag.

Seat Location for Air Bag DataScreen Name: **Seat Location**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.SEATLOC_X_AIRBAG.SEATLOCID****Element Attributes**

Seat Location (based on defined seats for this vehicle)

Source

Vehicle inspection

Remarks

Select the seat location from the list of available seats for the available air bag.

If air bags are available for the occupant, indicate the information on all air bags. Do so by inserting another air bag, indicate its location, and complete the information about the air bag.

Deployment Location of Air Bag

Screen Name: **Function – Location**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.AIRBAG.LOCATION**

Element Attributes

Database	SAS	
1	1	Steering wheel hub
2	2	Top instrument panel
3	3	Mid instrument panel
4	4	Bottom instrument panel
12	12	Seat back (outboard)
13	13	Seat back (inboard)
8	6	Door/panel
9	7	Roof side rail
6	8	Seat belt
		Seat cushion (frontal)
		Seat cushion (side)
10	98	Other (specify)
11	99	Unknown

Source

Vehicle inspection

Remarks

Enter the location of the air bag.

Steering wheel hub

Used for an air bag that is designed to deploy from a module integrated with the steering wheel. It is designed to protect the vehicle's driver primarily from frontal impacts. It does not matter if the steering wheel is located on the right side of the vehicle, still code the location of the air bag to the steering wheel.

Top instrument panel

Used for those air bags that deploy rearward from a location on the top of the instrument panel. They are designed to protect front seat passengers primarily from frontal impacts.

Mid instrument panel

Used for those air bags that deploy rearward from a location in the middle of the instrument panel. They are designed to protect front seat passengers primarily from frontal impacts.

Bottom instrument panel

Used for those air bags that deploy rearward from a location in the bottom of the instrument panel. They are designed to protect front seat passengers primarily from frontal impacts. This includes “knee bags.”

Seat back (outboard)

Is located on the outside portion of the seat back and is designed to protect the torso of occupants primarily from side impacts.

Seat back (inboard)

Is located on the inside portion of the seat back and is designed to protect the occupants in far side impacts and occupant to occupant interaction.

Door/panel

Is located in the door is designed to protect the torso of occupants primarily from side impacts. Included in this attribute are air bags that deploy from any side panels.

Roof side rail

Is primarily a curtain type bag that is stored in the roof side rail and is designed to protect the head of occupants primarily from side impacts.

Seat belt

Used for “air belts.” The “air belts” are designed to deploy from seat belts, allowing the forces of the crash to be spread over a large area of the body.

Seat cushion (frontal)

Air bags located under the front of the seat cushion are designed to position the knees upward into a more favorable position for frontal air bag effectiveness.

Seat cushion (side)

Air bags on the outside portion of the seat cushion are designed to protect the torso of occupants primarily from side impacts.

Other (specify)

Used when the location of the air bag cannot be captured in the above attributes such as rear headliner. This should be a rare occurrence. The location of the air bag must be specified.

Unknown

Used when the technician is unable to determine the location of the air bag.

Air Bag Status

Screen Name: **Function - Status**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.AIRBAG.STATUS**

Element Attributes

Database	SAS	
1	1	Air bag available
2	2	Air bag disconnected (specify):
3	3	Air bag not reinstalled
4	9	Unknown if air bag available for this crash

Source

Vehicle inspection

Remarks**Air bag available**

Used when the vehicle is equipped with an air bag for this seating position. Deployment of the air bag system has no bearing on this variable.

Air bag disconnected (specify)

Used when any component of the air bag was rendered inoperative prior to the collision (e.g., fuse removed).

Air bag not reinstalled

Used when the air bag for this seating position was not replaced after a prior deployment to the crash being researched.

Unknown if air bag available for this crash

Used when it cannot be ascertained whether an air bag was available at the time of the crash.

Type of Air Bag

Screen Name: **Function—Type**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.AIRBAG.TYPE**

Element Attributes

Database	SAS	
1	1	Original manufacturer install
3	3	Replacement air bag
2	2	Retrofitted air bag
-8871	70	No air bag available for this crash (disconnected/not reinstalled
	79	Unknown status if air bag available for this crash
4	99	Unknown Type

Source

Vehicle inspection

Remarks**Original manufacturer install**

Used when it can be determined that the vehicle was equipped with an air bag system in this seating position that was installed by the manufacturer at the time the vehicle was built (OEM).

Replacement air bag

Used when it can be determined that the vehicle was equipped with an OEM air bag system for this seating position, and that this system had been replaced due to a previous deployment.

Retrofitted air bag

Used when it can be determined that the vehicle was equipped with an air bag system for this seating position but that the vehicle was not built with a manufacturer equipped air bag system. This is an aftermarket product and should not be confused with Replacement air bag. Replacement retrofit air bags are also included in this category. Annotate the source of the information.

Air Bag Deployment

Screen Name: **Function—Deployment**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.AIRBAG.DEPLOY**

Element Attributes

Database	SAS	
1	1	Deployed during crash (as a result of impact)
2	2	Deployed inadvertently just prior to crash
3	3	Deployed, details unknown
4	4	Noncollision deployment
6	7	Not deployed
-8871	70	No air bag available for this crash (disconnected/not reinstalled)
-8870	79	Unknown status if air bag available for this crash
5	99	Unknown if deployed

Source

Vehicle inspection

Remarks**Deployed during crash (as a result of impact)**

Used when the vehicle is equipped with an air bag and the air bag deployed as a result of an impact that produced a longitudinal deceleration through the vehicle of sufficient magnitude to cause inflation of the air bag. *Note: an air bag is not designed to deploy in every collision.*

Deployed inadvertently just prior to crash

Used when an air bag deploys without an impact having caused its deployment, and the vehicle is subsequently involved in a crash.

Deployed, details unknown

Used when the technician cannot determine if the air bag deployed (1) prior to the crash or (2) during the crash as a result of an impact that produced a deceleration through the vehicle of sufficient magnitude to cause inflation of the air bag.

Noncollision deployment

Used if the air bag deploys during a crash but not as a result of an impact.

For example, a vehicular fire, occurring as a result of

- an impact, or
- a noncollision event.

Unknown if deployed

Used when it is known that the vehicle was equipped with an air bag but the technician is unable to determine if the air bag deployed (for whatever reason). For example, if the vehicle was sufficiently damaged so that a determination of deployment cannot be made from the vehicle inspection or the deployment status at the time of the crash cannot be determined.

Not deployed

Used when an air bag equipped vehicle has one or more impacts, and the air bag did not inflate during the crash.

Indications of Air Bag MalfunctionScreen Name: **Function—Indications of Malfunction**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.AIRBAG.FAILURE****Element Attributes**

Database	SAS	
1	0	No
2	1	Yes (specify)
-8871	70	No air bag available for this crash (disconnected/not reinstalled)
-8870	79	Unknown status if air bag available for this crash
3	99	Unknown

Source

Vehicle inspection

Remarks

This variable identifies possible indications of an air bag malfunction and means that something abnormal may have occurred to the air bag system. It may not necessarily mean that the air bag system was defective.

A vehicle inspection is required in order to report a possible indication of air bag malfunction.

No

Used whenever the air bag deployed and there are no obvious visual indications of an air bag malfunction.

Yes (specify)

Used whenever an indication of possible air bag malfunction is suspected and specifies the malfunction. An indication of an air bag malfunction could be a blowout of the fabric, a rupture along a fabric seam, a cover that does not open properly causing a misaligned deployment, partial inflation, or any number of other problems. If an indication of an air bag malfunction is suspected, document the condition with images, check the “FSN” box for the corresponding vehicle on the Case Summary tab, and call your quality control center for assistance.

Unknown

Used when it is not known if the bag malfunctioned.

Did Air Bag Module Cover Flap/SEAMS Open at Designated Tear Points?Screen Name: **Damage – Flap Open at Tear Points?**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.AIRBAG.FLAPOPEN****Element Attributes**

Database	SAS	
1	0	No
2	1	Yes
-8885	60	Air bag did not deploy
4	69	Unknown if air bag deployed
-8871	70	No air bag available for this crash (disconnected/not reinstalled)
-8870	79	Unknown status if air bag available for this crash
3	99	Unknown flaps/seams opened at tear points

Source

Vehicle inspection

Remarks

A designated tear point is a weakened area of the flap material designed to allow the air bag easy escape from its storage area during deployment. Some air bags in the seat cushion and seat back may not have cover flaps, but will deploy through a seam that separates during the air bag deployment.

No

Used when it can be determined that the module cover flap for this air bag opened somewhere other than their designated tear points. A non-linear tear in the flap is an indication that the flap opened irregularly, not at the designated tear point.

Yes

Used when it can be determined that the module cover flap for this air bag opened up at their designated tear points. Linear and symmetrical tears are good indications of proper separation of the cover flap at their designated tear points.

Unknown if flaps/seams open at tear points

Used when it is not known if the air bag opened at the tear points.

Was the Cover Flap DamagedScreen Name: **Damage—Flap Damaged**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.AIRBAG.FLAPDAMAGE****Element Attributes**

Database	SAS	
1	0	No
2	1	Yes (specify)
-8885	60	Not deploy
4	69	Unknown if deployed
-8871	70	No air bag available for this crash
-8870	79	Unknown if air bag available for this crash
3	99	Unknown if flap damaged

Source

Vehicle inspection

Remarks**No**

Used when it can be determined that no damage was present on the air bag module cover flap. Normal separation/tearing at the designated tear points do not constitute damage.

Yes (specify)

Used when it can be determined that the air bag module cover flap sustained damage. Abnormal separation/tearing at the designated tear points constitute damage. Damage can also be cuts, tears, holes, burns, abrasions, etc. The technician must specify the type of damage that is being reported.

Unknown if flap damaged

Used when it cannot be determined if the air bag flap sustained damage.

Was There Damage to the Air Bag?Screen Name: **Damage—Damage to the Air Bag?**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.AIRBAG.DAMAGE****Element Attributes**

Database	SAS	
1	0	Not damaged

Yes — Air Bag Damaged

Database	SAS	
2	1	Ruptured
3	2	Cut
4	3	Torn
5	4	Holed
6	5	Burned
7	6	Abraded
97	60	Air bag did not deploy
11	69	Unknown if air bag deployed
-8871	70	No air bag available for this crash (disconnected/not reinstalled
-8870	79	Unknown status if air bag available for this crash
8	88	Other damage (specify)
9	95	Damaged, details unknown
10	99	Deployed, unknown if damaged
-8872	96	Post-crash damage

Source

Vehicle inspection

Remarks

If damage types apply select the attribute that most deteriorates the effectiveness of the air bag. If you cannot make this determination then select the attribute in a hierarchical manner from the top of the list down.

Not damaged

Used when no damage to the air bag for this occupant position was sustained.

Ruptured

Describes damage to the air bag that resembles a stellate or star-like pattern of damage, with tears originating from a single point of origin.

Cut

Describes openings in the air bag that are generally linear and have smooth edges.

Torn

Describes openings that have ragged edges but that are generally linear in appearance.

Holed

Describes damage that is circular in appearance with or without ragged edges.

Burned

Describes damage resulting from heat that scorches, melts or burns the bag.

Abraded

Is a pattern of damage to the surface of the bag that appears as a fraying of the surface threads.

Other damage (specify)

Used to describe damage that is not captured in any of the attributes above.

Damaged, details unknown

Used when it is known that the air bag sustained damage, but the type of damage cannot be determined.

Deployed, unknown if damaged

Used when it cannot be determined if the air bag sustained damage.

Post-crash damage

Used when rescue or emergency efforts caused damage to the air bag. Also, use this for damage caused by towing.

Source of Air Bag DamageScreen Name: **Damage—Source of Damage**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.AIRBAG.DAMAGESOURCE****Element Attributes**

Database	SAS	
2	1	Object worn by occupant (specify)
3	2	Object carried by occupant (specify)
4	3	Adaptive/assistive controls, (specify)
12	4	Cover flaps
5	5	Fire in vehicle
6	6	Thermal burns
13	7	Glazing
1	50	Air bag not damaged
10	59	Deployed, unknown of damaged
97	60	Air bag did not deploy
11	69	Unknown if air bag deployed
-8871	70	No air bag available for this crash (disconnected/not reinstalled)
-9999	79	Unknown status if air bag available for this crash
8	88	Other damage source (specify)
9	99	Damaged unknown source
		Post-crash damage

Source

Vehicle inspection

Remarks

This is a hierarchical variable, that is, if more than one element applies, then select the first attribute that applies.

Object worn by occupant (specify)

Is selected when the object is fastened, attached, or worn by the occupant. Be sure to specify the object.

Object carried by occupant (specify)

Used when the object is held in the mouth, the hand, arm, etc., by the occupant. Be sure to specify the object.

Adaptive/assistive controls (specify)

Used when adaptive/assistive controls damage the air bag for this occupant position. Be sure to specify the object/control.

Fire in vehicle

Used when there was a fire in the occupant compartment that damaged the air bag.

Thermal burns

Used when the air bag is burned or scorched by the inflation or chemicals.

Other damage source (specify)

Used whenever there is damage to the air bag and it cannot be fit into any of the categories above.

Damaged, unknown source

Used when there is damage to the air bag, but the source of the damage cannot be determined.

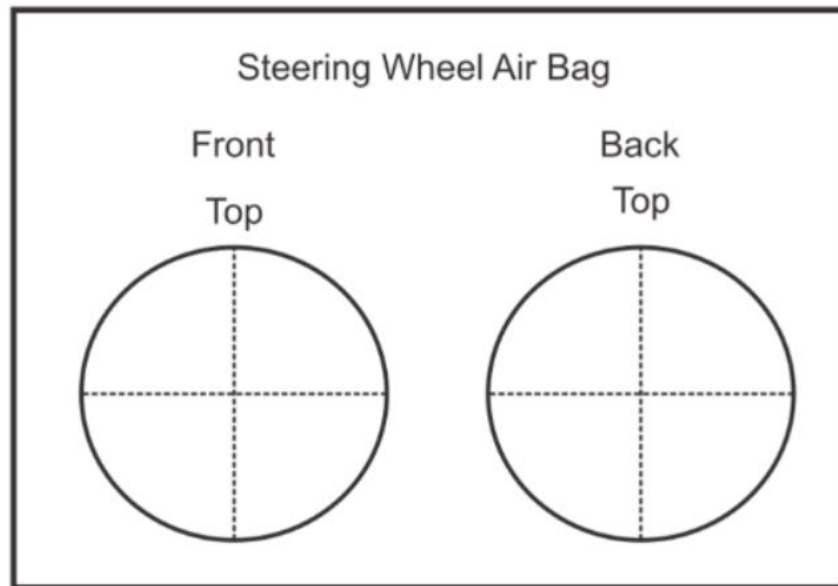
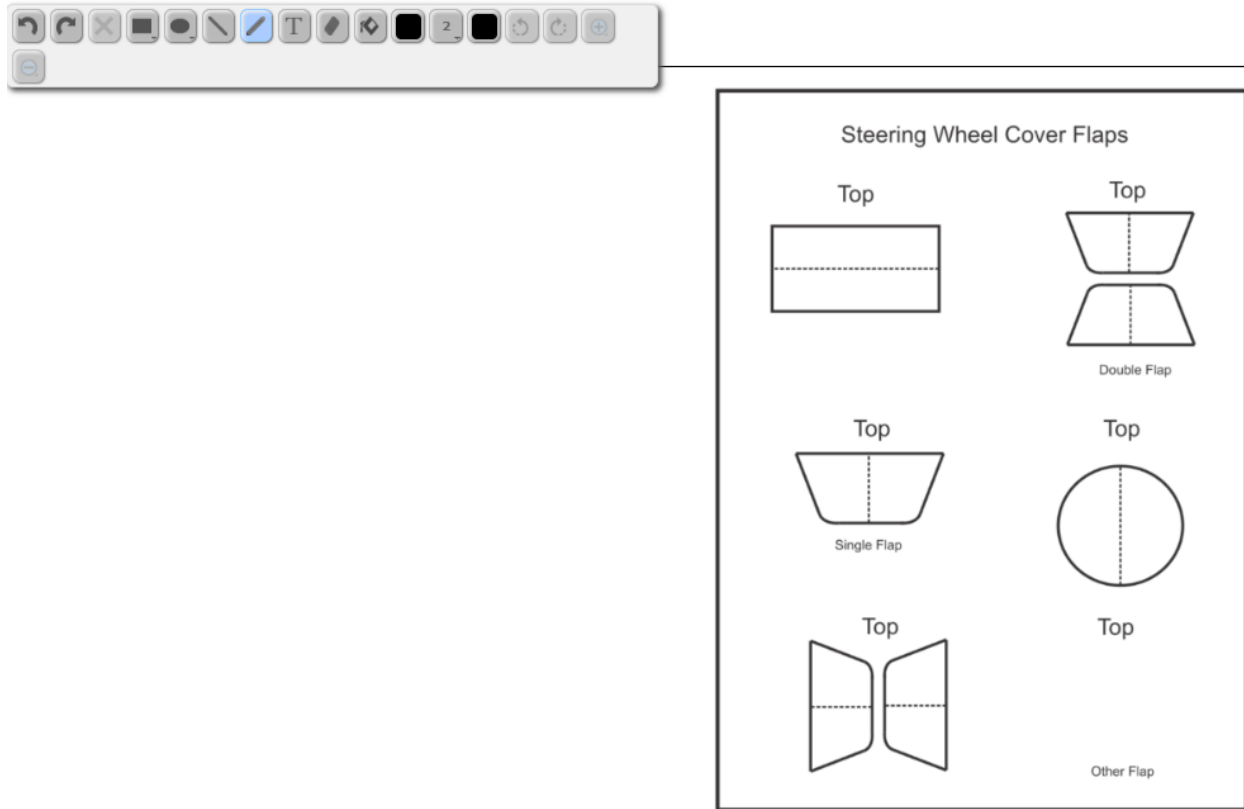
Air Bag/Sketches/Driver

Figure 125. Sketch 1, Damage and contact evidence on driver air bag



The image shows a digital sketching interface. At the top left is a toolbar with various icons for drawing and editing, including lines, rectangles, circles, and text tools. To the right of the toolbar is a large rectangular area containing a diagram titled "Steering Wheel Cover Flaps". The diagram illustrates six different types of steering wheel cover flaps, each with a "Top" view label and a dashed line indicating the fold or seam:

- Top**: A simple rectangle with a horizontal dashed line across the middle.
- Top**: A trapezoidal shape with a vertical dashed line down the center, labeled "Double Flap" below it.
- Top**: A trapezoidal shape with a vertical dashed line down the center, labeled "Single Flap" below it.
- Top**: A circular shape with a vertical dashed line down the center.
- Top**: A shape with two flaps meeting at a central vertical dashed line, labeled "Other Flap" below it.

Figure 126. Sketch 2, Driver air bag module cover flap (sketch damage or contact)



Passenger Front IP Air Bag

Front Top

Back Top

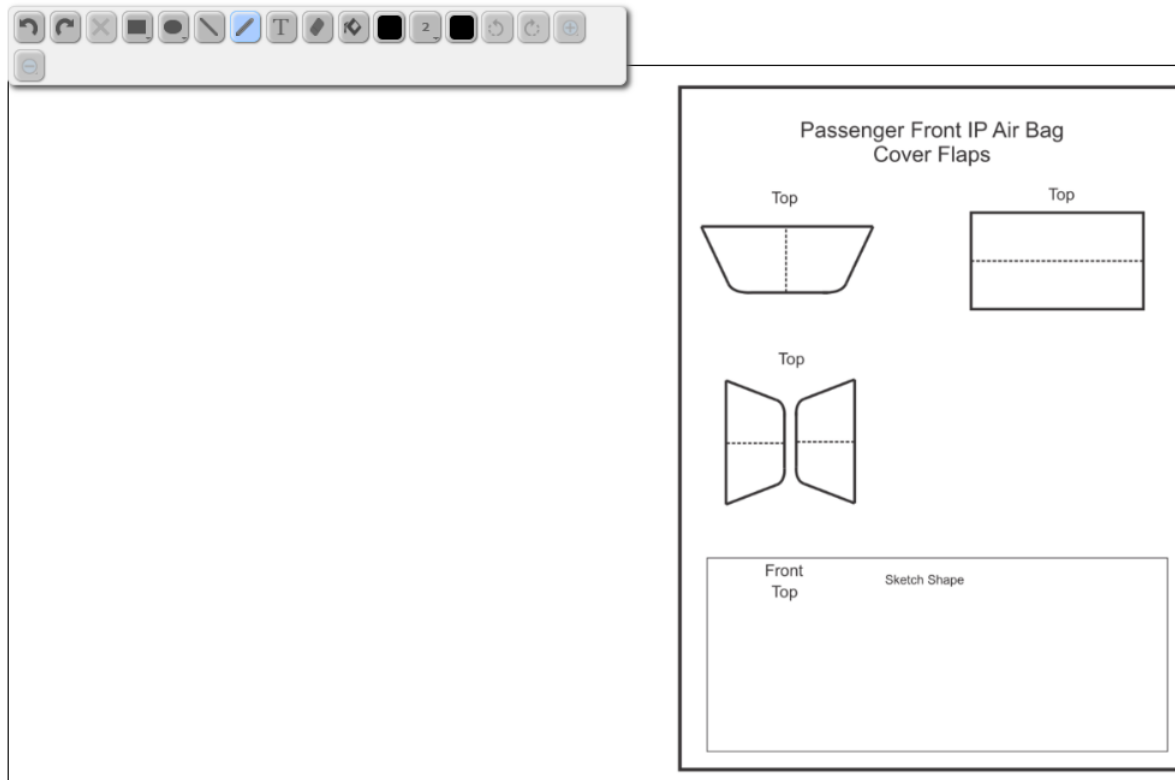
Front Top

Back Top

Front Top Sketch Shape Back Top

The form is a sketching tool for documenting damage and contact evidence on a passenger air bag. It features a toolbar at the top with icons for undo, redo, delete, fill, line, text, eraser, rotate, color selection, and zoom. The main area is divided into sections for sketching the front and back views of the air bag, with labels for 'Front Top' and 'Back Top' views. A 'Sketch Shape' section is also present at the bottom.

Figure 127. Sketch 1, Damage and contact evidence on passenger air bag



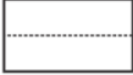
The image shows a digital sketching interface with a toolbar at the top containing various drawing tools like lines, rectangles, and text. The main drawing area contains a sketch titled "Passenger Front IP Air Bag Cover Flaps". The sketch includes three views of the cover flaps, each labeled "Top": a trapezoidal shape on the left, a rectangular shape on the right, and a butterfly-shaped flap in the center. Below these is a large rectangular box with the labels "Front Top" and "Sketch Shape" inside.

Figure 128. Sketch 2, Sketch damage and contact evidence on passenger air bag module cover flap



Side Door Air Bag Driver

Top

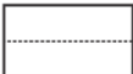


Top



Side Door Air Bag Passenger

Top



Top



Side Door Air Bag Driver Other Shape

Top



Top



Side Door Air Bag Passenger Other Shape

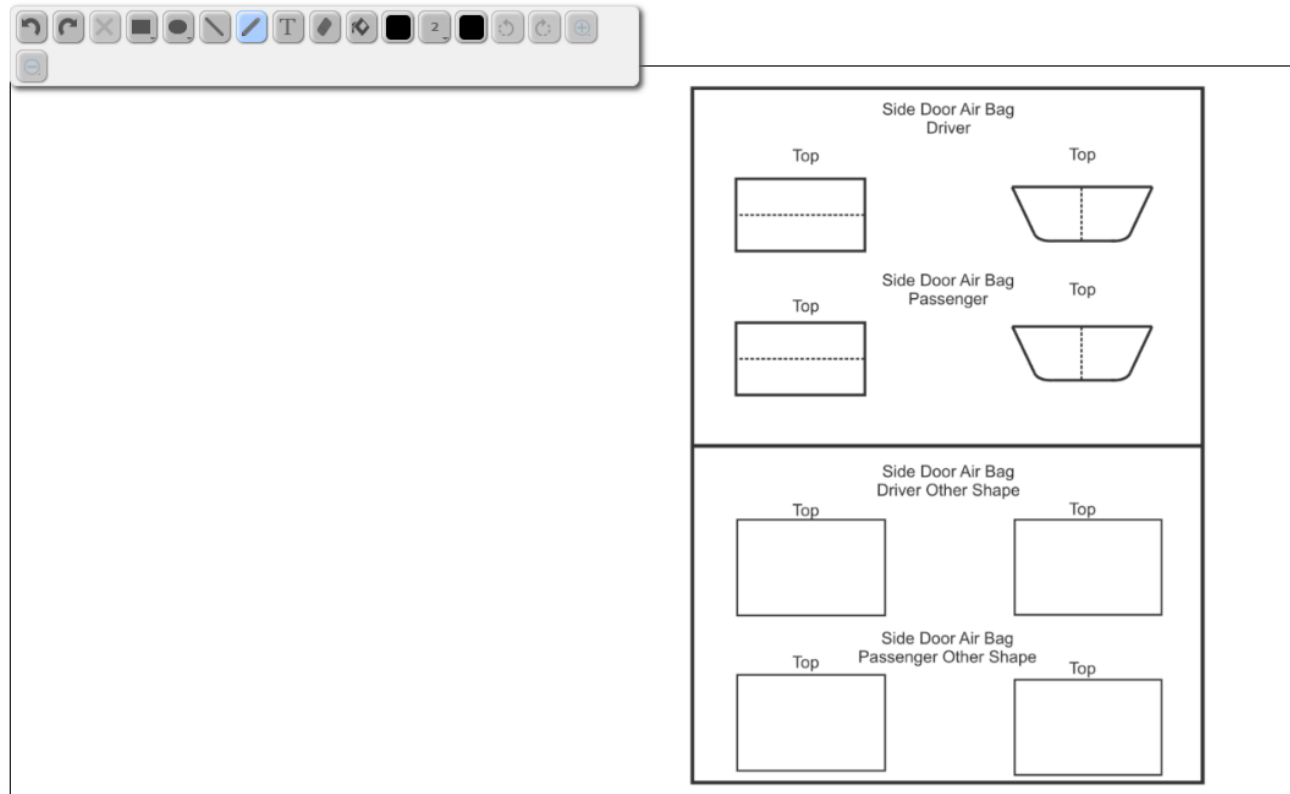
Top



Top



Figure 129. Sketch 1, Damage and contact evidence on door-mounted bag



The form is divided into two main sections. The top section is titled "Side Door Air Bag Driver" and "Side Door Air Bag Passenger". It contains four sketches of air bags, each labeled "Top". The sketches are arranged in a 2x2 grid. The bottom section is titled "Side Door Air Bag Driver Other Shape" and "Side Door Air Bag Passenger Other Shape". It contains four empty rectangular boxes, each labeled "Top", arranged in a 2x2 grid. A toolbar with various drawing tools is located at the top left of the form.

Figure 130. Sketch 2, Sketch any other damage and contact evidence

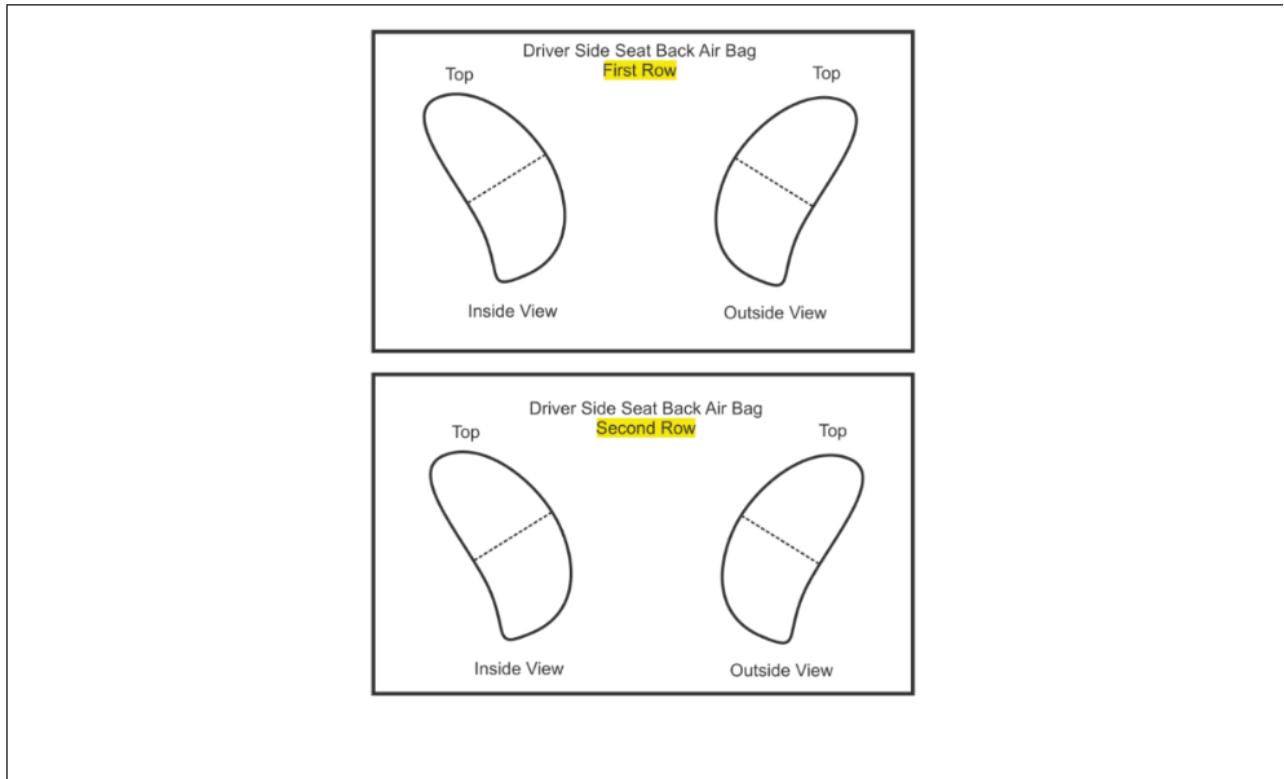


Figure 131. Sketch 1, Damage and contact evidence on seat belt mounted bag

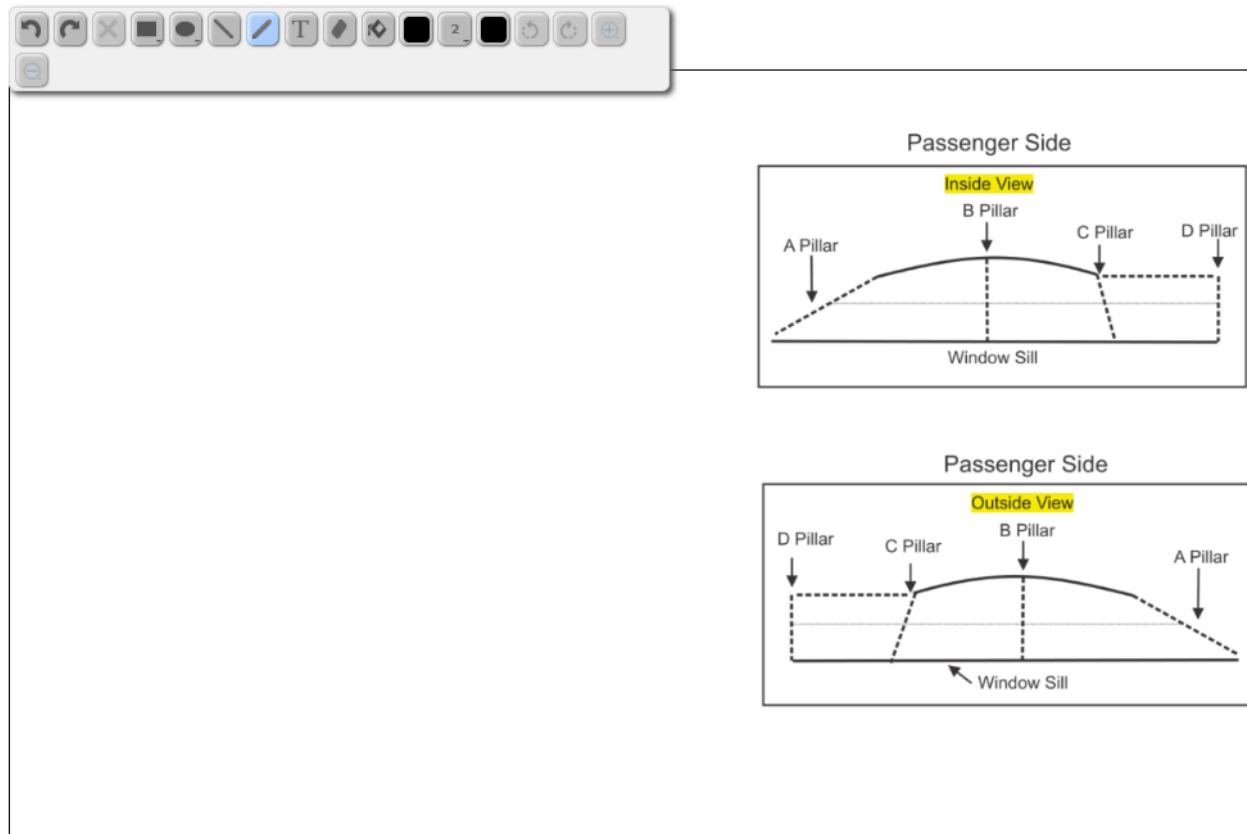


Figure 132. Sketch, Damage and contact evidence on side curtain/tube bag

Sketch #1

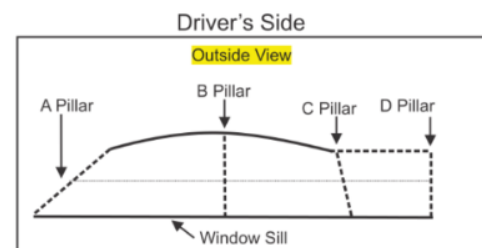
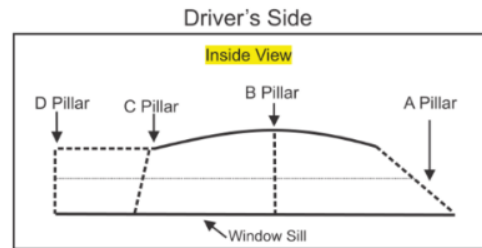


Figure 133. Sketch 2, Damage and contact evidence on side curtain/tube bag

Child Restraint Overview

The CISS is the premier data collection system of real-world crashes and as such it is relied upon to deliver data on high profile vehicle safety components such as child restraints. Complete and thorough documentation in this area is an essential element for the agency to achieve its mission. The variables on the Safety System and Occupant forms were designed to document the usage of CRS installed in towed CISS-applicable vehicles involved in crashes.

Motor vehicle crashes are the leading cause of death and disability for pediatric and adolescent children, and child passenger safety has long been an agency concern. Accordingly, there continues to be a need to collect and compile data on children involved in crashes. Data collected in the past have shown that children may become out of place when they are not secured properly within a CRS. Children frequently escape the CRS' internal harness and in some instances kneel or stand on the vehicle's seat cushion instead of remaining secured in the CRS. In other cases the child is placed within the CRS; however, the caregiver improperly restrained the child and/or incorrectly secured the CRS within the motor vehicle. Historically, correct use and installation of a CRS is a highly effective means of reducing the incidence of serious injury and death to children.

Most States have attempted to address the issue of child safety in motor vehicles with legislation requiring children to be restrained within a CRS and seated in the back row of vehicles. These efforts have resulted in a sharp reduction of injuries and deaths among children, but more data related to the real-world use and performance of child restraints needs to be collected annually. One past and present source of child restraint data is the PCR; however, frequently, the PCR provides inaccurate or incomplete data on the type of CRS and how the child was positioned within it.

NHTSA enacted two FMVSS related to child occupant protection, No. 213, Child Restraint Systems, and No.225, Child Restraint Anchorage Systems (e.g., Lower Anchors and Tethers for Children LATCH). In these standards was the requirement that the testing and performance of child restraints would be under the purview of NHTSA and all CRS and vehicle manufacturers would be required to meet these standards. NHTSA performs controlled testing of child seats in laboratories and crash test facilities, and CISS data is collected to augment this research. Analysts will compare usage, injury severity, and delta V data to assess performance levels among different child restraints. After these analyses, the existing standards will be evaluated to determine their effectiveness and whether updates are warranted. These data also assist the agency in identifying any significant problems common among any child restraint types.

When discovering that a child was present within a CISS-applicable vehicle, the technician should ***conduct the inspection under the presumption that a CRS was present and occupied*** during the crash. If the technician knows a child seat was not occupied at the time of the crash, no documentation is necessary. If they don't know or there is uncertainty, they must document the child seat data. If they find out later the seats were not occupied the data can be discarded. In many cases, the CRS will have already been removed by the police and/or emergency personnel and may be in the possession of the owner, the police jurisdiction, or the treating hospital/trauma center.

When the CRS is not present in the vehicle at the time of the inspection, the technician should make continual attempts to locate and inspect the CRS. Once located, the inspection shall consist of a detailed examination of the CRS, highlighting any observable damage; the internal harness, including evidence on the webbing (stretching, transfers, burn marks, etc.); height/weight/age recommendations (recorded from labeling on the CRS shell); make/model data (also recorded from labeling on the CRS shell); and evidence within the belt paths. After recording the data, a comprehensive set of digital images shall be taken of the CRS, including any damage, and all CRS labeling. It is important that the images of the CRS are taken before it is removed from the vehicle by the technician. These photographs should include how the CRS is installed in the vehicle and the routing of the seat belt or LATCH use.

In addition to the physical inspection of the CRS, a comprehensive interview with the parent/caregiver is vital toward understanding how the CRS was installed in the vehicle and how the child was positioned and restrained during the crash. Information, including what the child was wearing, where the chest retainer clip was positioned, the height and weight of the child and the location of the CRS within the vehicle is critical to understanding whether the CRS functioned as it was designed. Only occupied child seats are coded into CISSWeb; however, if it is unknown if the CRS was occupied code it as being used.

Some vehicles, specifically some types of minivans and sport utility vehicles, integrate a CRS into the second and third rows of the vehicle. These types of child restraints are termed *integrated child restraint systems*, and they should be documented regardless of whether the CRS was occupied at the time of the crash.

Child Seat

Child Restraint Number

Screen Name: N/A

SAS Data Set:

SAS Variable:

Database Name:

Element Attributes

Source

As created by the system.

Remarks

Seat Location for Child Restraint

Screen Name: **Seat Location**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.CHILDSEAT.OCCID**

Element Attributes

Seat Number

Front Row	Second Row	Third Row
11 Left side	21 Left side	31 Left side
12 Middle	22 Middle	32 Middle
13 Right side	23 Right side	33 Right side
	24 Other (specify)	34 Other (specify)

Fourth Row	Fifth Row	Other Rows
41 Left side	51 Left side	Cargo Area
42 Middle	52 Middle	Unknown
43 Right side	53 Right side	
44 Other (specify)	54 Other (specify)	

Source

Vehicle inspection, child restraint system inspection, interview

Remarks

All child restraints found inside the vehicles are to be coded into EDS except for unoccupied seats. This variable assigns a seating location for each CRS. For example, if a vehicle has child restraints present in the second row center and the third row right positions, 22 and 33 should be selected.

There are cases where a child is sitting within a CRS but is not restrained with the lap and shoulder belts or the internal harness. The CRS will still be coded as used and the variables within the CRS section will be coded to reflect the child's unbelted status.

The majority of child restraints are taken from the vehicle either during the removal of the child from the vehicle post-crash or by an occupant/family member after the crash. These restraints can usually be inspected at the home of the interviewee or at the attending hospitals. However, on some occasions the child restraints are discarded prior to the case assignment. In those cases, some details about the CRS can be ascertained during the interview, by on-scene photographs, and by the interior vehicle inspection.

In all cases involving a CRS, it is imperative that the interview is obtained. To properly understand how the CRS was used and how it performed during the crash, the height, weight,

and other supportive information about the child is needed. Additionally, to truly understand the experience of the person who was installed the CRS, a direct interview with that person is vital.

Child Restraint PlacementScreen Name: **Placement**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.CHILDSEAT.PLACEMENT****Element Attributes**

Database	SAS	
1	1	Seat
2	2	Floor
3	3	Lap of other occupant
4	4	Console
-9998	8	Other (specify)
-9999	9	Unknown

Source

Vehicle inspection, child restraint system inspection, interview

Remarks**Seat**

CRS placed on vehicle seat.

Floor

CRS placed on vehicle floor.

Lap of other occupant

CRS placed on lap of another occupant.

Console

CRS placed on console.

Other (specify)

Other position of CRS (specify).

Unknown

Position of CRS could not be determined.

Child Position in Child RestraintScreen Name: **Child Position**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.CHILDSEAT.POSTURE****Element Attributes**

Database	SAS	
-9997	0	Not occupied
1	1	Upright
2	2	Reclined/lying back
3	3	Supine, facing upwards
4	4	Slumped forward
5	5	Slumped to the side
6	6	Kneeling
-9998	8	Other (specify)
-9999	9	Unknown

Source

Interview

Remarks**Not occupied**

Pre-coded

Upright

Child was sitting upright, facing forward.

Reclined/lying back

Child was reclined, between 90 and 45°.

Supine

Child was lying flat, facing upward.

Slumped forward

Child was leaning.

Slumped to the side

Child was leaning to the side from the waist up and their back was not against the back of the child restraint or vehicle, in case of a backless booster seat.

Kneeling

Child was kneeling while in the CRS.

Other (specify)

Any other position of the child that can be determined.

Child Restraint ManufacturerScreen Name: **Manufacturer**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.CHILDSEAT.MANUFACTURER****Element Attributes**

Database	SAS	
		Refer to listing of child restraint manufacturers
997	N/A	Other manufacturer (specify)
-999	999	Unknown manufacturer

Source

Vehicle inspection, child safety seat inspection, interview

Remarks

The manufacturer name is sometimes stamped, sewn or molded onto the exterior surface of the CRS. Removal of padding from the CRS, and an examination of the shell, may be necessary to identify the manufacturer, make, model, serial no. and/or date of manufacture of the CRS. The CRS owner's manual, when available, is a valuable source of information and should be referred to by the technician. The CRS should also have a label permanently attached that identifies the restraint's date of manufacture and model number; this information alone may be used to identify the specific manufacturer and of the seat if no other identifiers exist. In the absence of any other identifying information, take several digital images of the CRS. Those images, used with other resources, are helpful in identifying the make and model of the CRS later. When the manufacturer of the CRS cannot be determined, the attribute **unknown manufacturer** should be selected.

Child Restraint Make

Screen Name: **Make**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS.CHILDSEAT.Make**

Element Attributes

Database	SAS	
		Refer to listing of child restraints
997	N/A	Other make (specify)
-999	999	Unknown make

Source

Vehicle inspection, child safety seat inspection, interview

Remarks

The manufacturer/make name is usually stamped, sewn or molded onto the exterior surface of the CRS. Removal of padding from the CRS, and an examination of the shell, may be necessary to identify the make, model, serial no. and/or date of manufacture of the CRS. The CRS owner's manual, when available, is a valuable source of information and should be referred to by the technician. The CRS should also have a label permanently attached that identifies the restraint's date of manufacture and model number; this information alone may be used to identify the specific manufacturer and make of seat if no other identifiers exist. In the absence of any other identifying information, take several digital images of the CRS. Those images, used with other resources, are helpful in identifying the make and model of the CRS later. When the make of the CRS cannot be determined, the attribute **unknown make** should be selected.

Child Restraint ModelScreen Name: **Model**

SAS Data Set:

SAS Variable:

Database Name: ***CISS.CISS.CHILDSEAT.MODEL*****Element Attributes**

Database	SAS	
		Refer to listing of child restraints
-998	N/A	Other (specify)
-999	998	Unknown model

Source

Vehicle inspection, child safety seat inspection, interview

The manufacturer/make name is usually stamped, sewn or molded onto the exterior surface of the CRS. Removal of padding from the CRS, and an examination of the shell, may be necessary to identify the make, model, serial no. and/or date of manufacture of the CRS. The CRS owner's manual, when available, is a valuable source of information and should be referred to by the technician. The CRS should also have a label permanently attached that identifies the restraint's date of manufacture and model number; this information alone may be used to identify the specific manufacturer and make of seat if no other identifiers exist. In the absence of any other identifying information, take several digital images of the CRS. Those images, used with other resources, are helpful in identifying the make and model of the CRS at a later date. When the model of the CRS cannot be determined, the attribute **unknown model** should be selected. The image below illustrates a typical CRS label.

*Figure 134. A typical CRS label***Date of Manufacture:** 102705 (October 27, 2005)**Model Number:** 8A03QST

Child Restraint TypeScreen Name: **Type**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.CHILDSEAT.SEATTYPE****Element Attributes**

Database	SAS	
1	1	Convertible seat (CSS)
2	2	Forward-facing (FSS)
3	3	Infant seat (ISS)
4	4	Booster seat (BSS)
5	5	Integrated seat (INT)
6	6	Special needs (SNSS)
7	7	Vest (VSS)
8	8	Harness (HSS)
10	10	Booster/forward-facing seat (BSS/FSS)
11	11	Booster/convertible seat (BSS/CSS)
98	98	Other (specify)
99	99	Unknown

Source

Vehicle inspection, child safety seat inspection, interview

Remarks

Once the CRS has been identified by its make and model, the CRS *type* will sometimes automatically be defined. **Since this variable represents how the CRS was designed to be used**, this information should be determined during the child seat inspection and/or by asking appropriate questions during the interview. The type of CRS can be determined in the absence of the make and model names.

Child Restraint How UsedScreen Name: **How Used**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.CHILDSEAT.HOWUSED****Element Attributes**

Database	SAS	
1	1	Infant safety seat (ISS)
2	2	Forward-facing safety seat (FSS)
3	3	Booster safety seat (BSS)
4	4	Integrated seat (INT)
5	5	Harness (HSS)
6	6	Vest (VSS)
7	7	Special needs safety seat (SNSS)
98	98	Other (specify)
-99	99	Unknown

Source

Vehicle inspection, child safety seat inspection, interview

Remarks

Since this variable represents how the CRS was actually used, this information should be determined during the child seat inspection and/or by asking appropriate questions during the interview. How the CRS was used can be determined in the absence of the make and model names.

The following seven pages outline the different types of child restraints a technician will encounter during a crash investigation.

When ISS used with an infant base during a crash, check the 'infant base used' box. When checked, additional fields will open pertaining to the infant base.

Infant safety seat (ISS)

Designed and intended to be used as *rear-facing-only* by newborns and infants weighing up to approximately 22 lb and are typically equipped with either a 3- or 5-point harness. Some infant seats have detachable bases that can be left secured in the vehicle while the infant seat is removed and used as a carrier. When used in the vehicle as a child restraint, the carrier-type infant seat's carrying handle should be folded back in the down position in most cases, and the CRS should recline at a 45-degree angle (carrying handle instructions and angles vary by manufacturer).

Infant seats are typically designed with two or three sets of harness strap slots in the back of the CRS that allows for proper harness strap placement (always adjusted at or below the infant's shoulders). Most harness adjustment mechanisms are mounted behind the seat back and affixed/locked by a metal bar, or clip-type lock. These types of child restraints are also normally equipped with a harness retainer clip that should be positioned to the infant's armpit level. Either the vehicle's belt system (lap or lap portion of a lap/shoulder belt) or the lower LATCH anchors must be used to secure the seat and/or its base to the vehicle.



Figure 135. Common infant seat with detachable base



Figure 136. Infant seat



Figure 137. Infant seat equipped with foot brace to abut seat back

Convertible safety seat (CSS)

Designed and intended to be used either rear or forward-facing for children ranging from birth to approximately 40 lb (usage restrictions will normally be found on the CRS labeling as well as in the owner's manual). All convertible seats have a harness system to secure the child to the CRS. The most common system consists of a 5-point harness with a harness retainer clip that should be adjusted to the armpit level of the child. Although not as common, some child seats may have a T-shield or tray-shield. Note: T- and tray-shield designs have been phased out as manufacturers have not employed this design in several years; however, they are still being used by small numbers of people.

Most convertible seats employ three or more sets of harness slots located on the CRS seat back that are used to adjust the height of the harness; proper slot usage is based on the age and size of the child. Generally, the lowest and middle slots are used when the CRS is in a rear-facing orientation and the top slots are used when the CRS is used forward-facing (the slot position requirements vary by manufacturer). Child seats used in a rear-facing orientation typically range from the birth of the child up to 20 lb. Some seats have a range that extends to as high as 40 lb. Refer to the CRS labeling and the owner's manual for the height and weight requirements for each CRS.



Figure 138. CRS with tray-shield



Figure 139. CRS with T-shield



Figure 140. CRS with tray-shield



Figure 141. CRS with T-shield



Figure 142. CRS with 5-point harness

Either the vehicle's lap and shoulder seat belt system or the Lower Anchors and Tethers for Children (LATCH) system must be used to secure the child seat into the vehicle. As of 2011 it was still not recommended to use both systems simultaneously. However, the top tether should be used in conjunction with either system when in a forward-facing orientation. The LATCH system can only be used when both the CRS and vehicle are equipped with LATCH attachments.

Forward-facing safety seat (FSS)

A forward-facing safety seat is intended to be used by children who are over one year of age and who weigh between 20 and 40 lb. The majority of these seats are equipped with an internal harness and adjustable chest retainer clip; however, some earlier models were designed as a backless booster safety seat with an attached shield. Most forward-facing seats are equipped with three sets of harness slots that allow for the adjustment of the harness straps, at or above the shoulders, as the child grows. Forward-facing-only safety seats are installed in the vehicle with either the lap and shoulder belts or the LATCH system. **Note: The top tether should be used in conjunction with the lap and shoulder belts.**

The majority of forward-facing safety seats convert to belt-positioning booster safety seats by removing the internal harness after the child reaches 40 lb. Because different child seats have different design characteristics, it is important to check the owner's manual for slight usage variations.

Shield booster seats are considered forward-facing-only safety seats when the shield is used. Otherwise, they are considered booster safety seats.



Figure 143. CRS equipped with internal harness and adjustable chest retainer clip



Figure 144. Shield booster seat

Booster safety seat (BSS)

Booster safety seats elevate and position the child and they are intended to be used in a forward-facing orientation with the vehicle's lap and shoulder restraint. There are two main types of booster seats: belt-positioning high-back booster seats and backless booster seats. Many booster seats are hybrid models equipped with detachable seat backs.

Belt-positioning high-back booster seats typically contain shoulder belt channels/positioners (circled in images) that guide the shoulder belt in the proper orientation around the child and the CRS. The head restraint area of the high-back is usually contoured in a half-moon configuration to provide added protection for the child's head.



Figure 145. Belt positioning high back(ed) booster seat

Backless booster seats have no seat back, but they also contain belt channels/positioners under the armrests for correct belt routing. Some backless booster seats are equipped with a shield (the aforementioned shield-boosters) that is removable. Child seats are considered booster seats only if the shield is not used during the crash. Otherwise, they are considered forward-facing safety seats.



Figure 146. Backless booster seat

The detachable seat back booster seat is a hybrid version of those illustrated in to the right and can be used in either manner. The latest variations of these booster seats include lower anchor LATCH anchors (outlined in image) that were uncommon to booster safety seats until 2008. The seat to the right is a LATCH equipped booster seat, widely considered the first of these new types of booster seats. The subject of LATCH is discussed in greater detail later in this (Child Restraint) section of the manual.



Figure 147. Booster seat with lower anchors

Integrated child safety seat (INT)

Integrated child safety seats (also known as built-in child seats) are usually mounted within the seatbacks in the back rows of certain vehicles. The majority of the older models were designed for forward-facing orientation usage only for children of at least one year of age, a height of 33- to 40 inches, and a weight of 20- to 40 lb. Most integrated seats were equipped with a 5-point internal harness system; however, many newer vehicles are equipping their vehicles with integrated booster seats for use by children who weigh up to 80 lb. Many of the forward-facing platforms are being phased out as manufacturers focus on a new generation of booster seats. The newer seats come in many different designs and it is important to check the owner's manual for specific requirements for each integrated child restraint.



Figure 148. Older 5-point harness type of integrated CRS (typically seen in many older minivans)



Figure 149. Newer booster type of integrated CRS newer booster type of integrated CRS

Harness (HSS)

Harnesses are intended to be used on children in a forward-facing orientation who exceed the weight and age restrictions of forward-facing child seats (over 40 lb/exceeding 5 years old). Harnesses are comprised of two straps, connected by a chest retainer clip, that converge into one strap that is designed to affix to the top tether hook of the vehicle. The bottom edges of the straps contain loops near the seat bight for the lap belt to be routed through. The lap belt webbing rests against the child's lap securing the lower body while the straps attach to the top tether hook and protect the torso. Although harnesses are compliant with FMVSS guidelines, they have largely been supplanted by booster seats, and are currently produced by only one manufacturer (EZ-On Products). They are rated to restrain children up to 80 lb; however, with the installation of an aftermarket tether kit, the harness can restrain children up to 168 lb.



Figure 150. Harness

Travel Vests (VSS)

Vests are designed for forward-facing use only and are generally intended for use by children weighing 25 – 40 lb. There are models that can accommodate people from 2 years old through adulthood and up to 168 lb, but they are rare. Vests are comprised of similar adjustable harnesses

and loops to be used in conjunction with the vehicle's lap or lap and shoulder belt and top tethers. Some vests are designed with a 5-point internal harness and zipper activated adjusters to regulate the strap length. Some vests such as those used on special-needs school buses may require a separate aftermarket seat mount to ensure proper usage.



Figure 151. Travel vest

Special needs safety seat (SNSS)

Special needs seats are intended for children with special transportation needs who range from newborn to 100 lb. The majority of these seats are designed for forward-facing use only; however, some can be used in both forward and rear-facing orientations. All SNSS's are configured with 3- or 5-point internal harness systems or some other internal harness configuration. Some are also equipped with belt extenders to be used in coordination with other aftermarket special needs products. These seats are usually much larger than standard forward-facing child restraints.



Figure 152. Special needs safety seat

Other, specify (Not meant for vehicle travel)

Other child seats include all other items a person might use that are not FMVSS 213 or 225 compliant. These products may consist of seats with no labeling identifiable either through post-1990 child seat listings, manufacturer's instructions, or located within the typical literature on the

subject. People have been known to use infant carriers, phone or other books, restaurant/home style booster seats, portable cribs/cradles, wood and plastic platforms and cushions and pillows. All of these examples would fall into the category of Other.

Unknown

Unknown is used when any child restraint cannot be identified. Before defaulting to this attribute all available information should be thoroughly examined (photographs, PCR statements, interview statements, CRS manuals) in an attempt to determine the CRS make, model, and type.

Date of ManufactureScreen Name: **Date of Manufacture**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.CHILDSEAT.DATEMADE****Element Attributes**

Database	SAS	
		MM/DD/YYYY
		Indicate the date of manufacture as indicated on the child restraint
12/30/1899	99/99/9999	Unknown date

Source

Vehicle inspection, child restraint system inspection, interview

Remarks

Indicate the manufacture date as labeled on the child restraint. This information is important in determining the model of the child restraint when it is not otherwise known. The image below displays the expiration date of the child restraint (**MAR 2017**), the date of manufacture (**MAR 2011**), the model number (**00 079021 430 070**) and the model name (**KEYFIT30**).

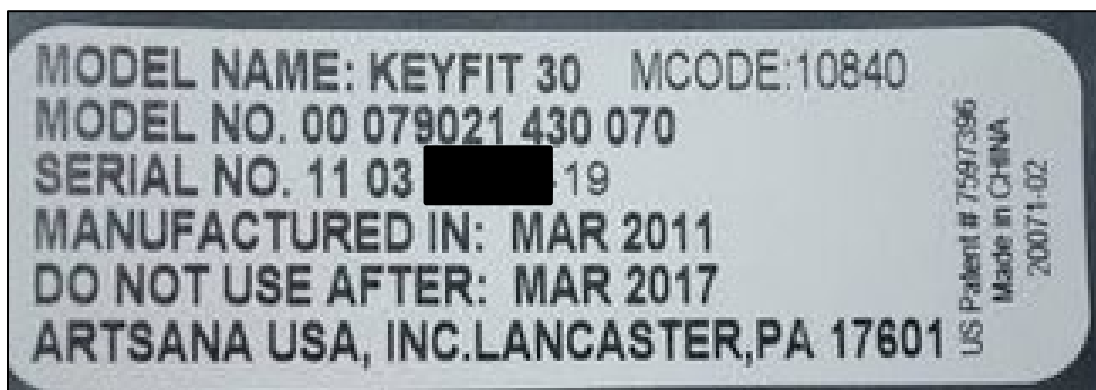


Figure 153. Child restraint label

It should be noted the date can sometimes be displayed differently on the label (e.g., YYYY-MM-DD), but it should always be coded as illustrated above.

Model NumberScreen Name: **Model No**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.CHILDSEAT.MODELNO****Element Attributes**

Indicate the model number as indicated on the child restraint

99999999	Unknown

Source

Vehicle inspection, child restraint system inspection, interview

Remarks

Refer to the image on the previous page for the model number. The model number will default to capital letters.

If the model number of the CRS is unknown, enter the first three 9's, the system will populate the remainder.

Source of Data

Screen Name: **Source of Data**
SAS Data Set:
SAS Variable:
Database Name:

Element Attributes

Database	SAS	
1	1	Vehicle
2	2	Interview
3	3	Vehicle and inspection
4	4	Photographs only
5	5	Official records

Source

Technician-determined

Remarks

Indicate the source of the data for the child restraint information. If the CRS is present within the vehicle at the time of the inspection, use **Vehicle**. If the CRS is inspected at the owner/driver's home, use **Interview**. If the CRS is inspected and no vehicle inspection is obtained, use **Vehicle and Inspection**. Official records include medical records and police reports.

Child Restraint Usage OrientationScreen Name: **Orientation**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.CHILDSEAT.ORIENTATION****Element Attributes**

Database	SAS	
1	1	Rear-facing
2	2	Forward-facing
3	3	Supine
-9998	8	Other (specify)
-9999	9	Unknown

Source

Vehicle inspection, child seat inspection, interview

Remarks**Rear-facing**

The CRS was facing the rear of the vehicle at the time of the crash.

Forward-facing

The CRS was facing the front of the vehicle at the time of the crash.

Supine

The CRS was lying flat at the time of the crash.

Other (specify)

At the time of the crash the CRS was facing in another direction (i.e., sideways, on top, or underneath something).

Unknown

A CRS was present, but the orientation at the time of the crash cannot be determined.

Child Restraint Harness/Shield DesignScreen Name: **Harness/Shield**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.CHILDSEAT.HARNESS****Element Attributes**

Database	SAS	
-8887	0	No harness/shield available
1	1	3-pt. harness
2	2	5-pt. harness
3	3	T-shield
4	4	Tray-shield
5	5	Shield
6	6	6-pt. harness
-9999	9	Unknown

Source

Vehicle inspection, child restraint system inspection, interview

Remarks

This variable explains how the CRS is designed to be used. It does not specify how the CRS was actually used in the crash, or whether it was used as designed.

A harness is similar to a normal seat belt, but it is integrated within the CRS itself. It is designed to restrain the child within the CRS.

Specific examples of harness and shield designs are discussed on the following pages.

3-point harness

Two harness straps that cross the child's shoulders are attached to a latch plate that is inserted into a buckle on the CRS. A retainer clip is also attached to the two harness straps to be positioned to the child's armpit level. These types of harnesses are found mostly in older ISS types and are not as common in recent years.



Figure 154. 3-point harness

5-point harness

These are the most common types of harness straps found in all types of child restraints. The system consists of two straps that cross the shoulders and two straps that cross the child's thighs. A two-piece chest retainer clip connects the shoulder straps and dual latch plates are inserted into the buckle on the CRS.



Figure 155. 5-point harness

T-shield

The harness straps are housed within a T-shaped shield that is inserted into a buckle on the CRS. The harness straps are also connected by an adjustable chest retainer clip. This is another harness system that has been largely phased out and will only be found in older models.



Figure 156. T-shield

Tray-shield

The harness straps are attached to a padded tray that folds down in front of the child's torso and hips. The latch plate is inserted into the buckle on the CRS and is sometimes attached to the tray-shield or is independent. This is another harness system that has been largely phased out and will only be found in older models.



Figure 157. Tray-shield

Shield booster

Shield Boosters are attached to BSS-type restraints and have an internal path for belt routing. They are designed for children up to 60 lb when the CRS is used as a BSS. This is another type of system that has been largely phased out.



Figure 158. Shield booster

6-point harness

The 6-point harness system is very rare for child restraints. The most common type of 6-point harness is illustrated to the right.



Figure 159. 6-point harness

Child Restraint Harness/Shield UseScreen Name: **Harness/Shield**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.CHILDSEAT.HARNESSUSE****Element Attributes**

Database	SAS	
1	0	Not designed with a harness
2	1	Harness/shield not used
3	2	Harness straps in top/highest slot
4	3	Harness straps in the middle slots
5	4	Harness straps in the bottom/lower slots
6	5	Harness used – slot use unknown
7	6	Retrofitted with harness
8	7	Shield used
9	8	Other (specify)
-9999	9	Unknown if harness/shield used

Source

Vehicle inspection, child restraint system inspection, interview

Remarks

Make a determination of the harness/shield usage at the time of the crash. If the CRS was equipped with adjustable harnesses with a slide mechanism rather than Harness slots, indicate where the harness was adjusted (top, middle/bottom) where the harness was positioned.

Not designed with harness

Used if the CRS did not have an internal harness.

Harness/shield not used

Used if the CRS had a harness/shield, but it was not used.

Harness straps in top/highest slots

Used if the harness straps were in the highest slots.

Harness straps in the middle slots

Used if the harness straps were in any one of the middle slots. **Note:** Some child restraints are equipped with five sets of slots. In these cases, use this code if the harness straps are routed through any of the middle slots.

Harness straps in bottom/lower slots

Used if the harness straps were in the lowest slots.

Harness Used, slot use unknown

Used if the technician was unable to determine what set of slots the harness straps were routed through.

Retrofitted with harness

Used if the harness straps were replaced prior to the crash.

Shield used

Used if the CRS was equipped with either a tray or T-shield in lieu of an internal harness system.

Other (specify)

Used if the harness straps were routed unconventionally or through different slots. For example, if the right strap was routed through the top slot and the left slot was routed through a middle slot, this attribute would be selected. Whenever the harness strap usage is questionable, use this attribute and specify further.

Unknown

Used when the harness slot usage cannot be determined.

Child Restraint Retainer ClipScreen Name: **Retainer Clip**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.CHILDSEAT.RETAINER****Element Attributes**

Database	SAS	
0	0	No clip available
1	1	Clip available
-9999	9	Unknown

Source

Vehicle inspection, child restraint system inspection, interview

Remarks

This variable explains how the CRS was designed to be used. It does not specify how the CRS was actually used in the crash, or whether it was used as designed.

A chest retainer clip is a plastic device that attaches the two harness straps. The retainer clip should be threaded correctly and positioned at the child's armpit level. It is designed to keep the shoulder harnesses over the child's shoulders during a crash. The images below illustrate the chest retainer clip.



Figure 160. Retainer clip with T-shield



Figure 161. Retainer clip with 5-point harness

Child Restraint Retainer Clip UseScreen Name: **Retainer Clip**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.CHILDSEAT.RETAINERUSE****Element Attributes**

Database	SAS	
1	0	Not designed with retainer clip
2	1	Retainer clip not used
3	2	Retainer clip used – neck level
4	3	Retainer clip used –chest/armpit level
5	4	Retainer clip used –stomach level
7	5	Retainer clip used – unknown level
6	6	Retrofitted with retainer clip
-9999	9	Unknown if retainer clip used

Source

Vehicle inspection, child restraint system inspection, interview

Remarks

The actual CRS harness retainer clip use at the time of the crash must be determined and coded. The position of the retainer clip on the child is usually determined during the interview with the care giver.

Child Restraint Tether DesignScreen Name: **Upper Tether**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.CHILDSEAT.TETHER****Element Attributes**

Database	SAS	
0	0	No tether available (or not designed with tether)
1	1	Tether available (or designed with tether)
-9999	9	Unknown

Source

Vehicle inspection

Remarks

This variable explains how the CRS was designed to be used. It does not specify how the CRS was actually used in the crash, or whether it was used as designed.

The LATCH system is comprised of a top tether strap and lower anchor straps. This variable is coded if the CRS was equipped with a top tether strap that is used to secure the top of the CRS to the vehicle.



Figure 162. LATCH system top tether attached

Child Restraint Tether UseScreen Name: **Upper Tether**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.CHILDSEAT.TETHERUSE****Element Attributes**

Database	SAS	
1	0	Not designed with tether
2	1	Tether not used
3	2	Tether used
-9999	9	Unknown if tether Used

Source

Vehicle inspection, child restraint system inspection, interview

Remarks

If coded as used, the LATCH tether was anchored to the top tether hook in the vehicle.

Child Restraint Lower Anchor Hook DesignScreen Name: **Lower Anchors**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.CHILDSEAT.LATCH****Element Attributes**

Database	SAS	
0	0	No lower anchors available (or not designed with lower anchors)
2	1	Lower anchors available (or designed with lower anchors)
-9999	9	Unknown

Source

Vehicle inspection, child restraint system inspection, interview

Remarks

This variable explains how the CRS was designed to be used. It does not specify how the CRS was actually used in the crash, or whether it was used as designed.

All child restraints manufactured after September 1, 2002, will have two lower anchor attachments designed to connect to anchorage points inside the vehicle. The lower anchorage points are mounted within the second and third row seat bights and will secure the CRS to the seat independent of the vehicle's seat belts. The child restraints will also have belt paths for use of the seat belt, and the CRS can be secured using either system.



Figure 163. Lower seat anchorage points in vehicle



Figure 164. LATCH lower anchor attachments

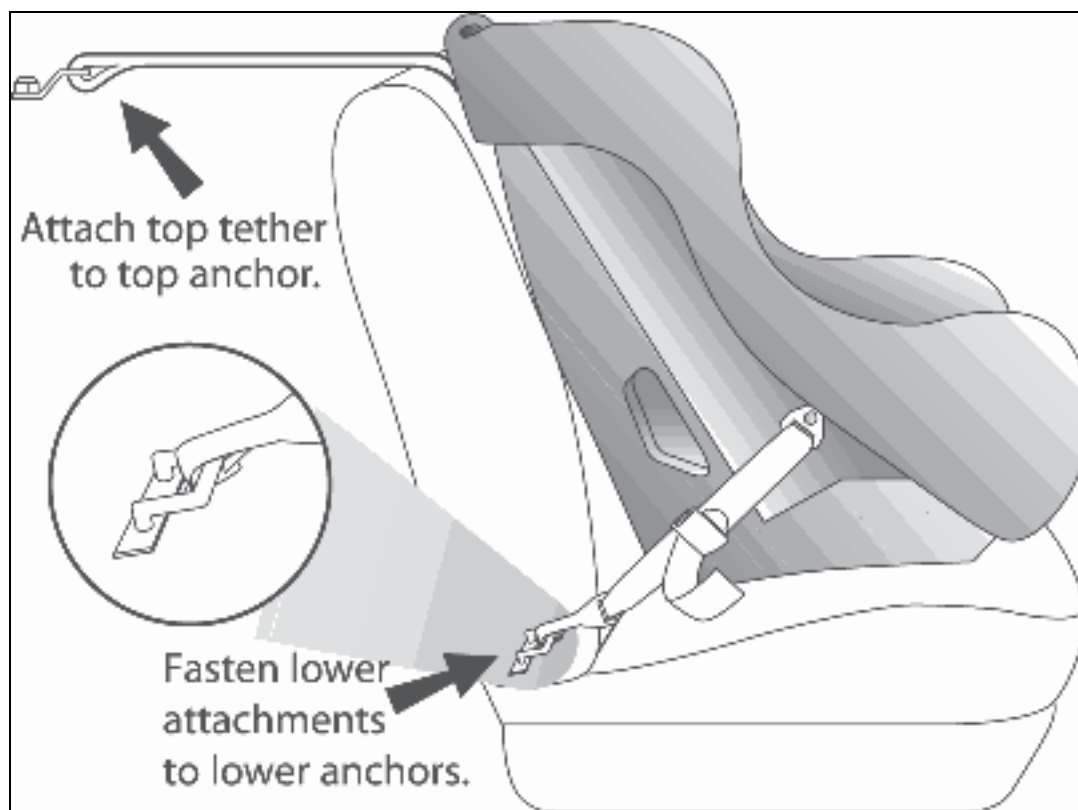


Figure 165. Diagram of LATCH system

Child Restraint Lower Anchor Hook UseScreen Name: **LATCH**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.CHILDSEAT.LATCHUSE****Element Attributes**

Database	SAS	
1	0	Not designed with lower anchors
4	3	Lower anchors not used
2	1	Lower anchors used
-9999	9	Unknown if lower anchors used

Source

Vehicle inspection, child restraint system inspection, interview

Remarks

If coded as used, the lower anchor hooks were affixed to the lower anchors in the vehicle.

Child Restraint Belt Routing/UseScreen Name: **Belt Routing/Use**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.CHILDSEAT.BELTUSE****Element Attributes**

Database	SAS	
5	0	No belt routing
-9998	1	No belt used
1	2	Belt routed through belt positioning slots/channels
2	3	Belt routed through forward-facing slots/channels
3	4	Belt routed through rear-facing slots/channels
4	5	Belt routed unconventionally (specify)
-9999	9	Unknown belt path or if belt routed

Source

Vehicle inspection, child restraint system inspection, interview

Remarks**No belt routing**

The belt was not routed through any slots/channels in the CRS. The belt was used solely to restrain the child sitting in the CRS. *This variable should always be coded as No Belt Routing for booster seats.* This attribute is pre-coded for integral child restraints.

No belt used

No belt was used to either restrain the child or install the CRS.

Belt routed through belt positioning slots/channels

Used when the belts are routed through the designated slots on belt positioning booster seats.

Belt routed through forward-facing slots/channels

The belt was routed through the forward-facing slots or channels built into the CRS.

Belt routed through rear-facing slots/channels

The belt was routed through the rear-facing slots or channels built into the CRS.

Belt routed unconventionally (specify)

Any other type of unconventional belt routing.

Unknown belt path or if belt routed

It is not known what path the belt took around the CRS. If it is not known if the belt was used, indicate that in the seat belt section and choose this attribute for belt routing.

Use of Locking Clip on Vehicle BeltScreen Name: **Locking Clip Use**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.CHILDSEAT.LOCKCLIPUSE****Element Attributes**

Database	SAS	
1	0	None present
2	1	Locking clip used on lap and shoulder belt
3	2	Locking clip used on lap belt only
4	3	Locking clip used on shoulder belt only
5	4	Internal belt lock present and used
6	5	Internal belt lock present and not used
7	6	Internal belt lock present, unknown use
5	8	Other (specify)
9	9	Unknown

Source

Vehicle inspection, child restraint system inspection, interview

Remarks

When a locking clip is found in a vehicle, photographs should be taken. This variable is not assessing the proper use of the locking clip, it is merely identifying where it is positioned on the belt.

A **locking clip** is usually included with the CRS at the time of purchase and is typically found on the back aspect of the CRS seatback. The purpose of a locking clip is to the lock belt systems of vehicles that contain sliding latch plates and emergency locking retractors only (e.g., vehicles that do not have automatic locking capability). Locking clips used on the lap and shoulder belt combination are to be positioned no more than one inch above the latch plate. Seat belts are usually labeled indicating the need of a locking clip and this need is also discussed in the vehicle owner's manual.

None present

When a locking clip was not used in the crash.

Locking clip used on lap and shoulder belt

When the lap and shoulder belts are threaded through as locking clip during the crash.

Locking clip used on lap belt only

When the lap belt is threaded through as locking clip during the crash.

Locking clip used on shoulder belt only

When the shoulder belt is threaded through as locking clip during the crash.



Figure 166. General instructions on how to position locking clip



Figure 167. Locking clip affixed to belt webbing no more than 1 inch above latch plate



Figure 168. Locking clip correctly positioned on belt webbing near sliding latch plate



Figure 169. Locking clip correctly positioned on belt webbing

Internal belt lock present and used

When the internal belt locking mechanism is used.



Figure 170. Example of internal belt lock

Internal belt lock present and not used

When the internal belt locking mechanism is present but not used.

Internal belt lock present, unknown use

When the internal belt locking mechanism is present but unknown if used.

Other (specify)

When it is determined that a locking clip was used but not in a manner stated above. Specify how the locking clip was used.

Unknown

When locking clip or belt locking mechanism use cannot be determined.

Belt Retractor TypeScreen Name: **Belt Retractor**

SAS Data Set:

SAS Variable:

Database Name:

Element Attributes

Database	SAS	
3	0	None Present
2	1	Emergency locking retractor
7	2	Automatic locking retractor
4	3	Switchable retractor in ELR mode
5	4	Switchable retractor in ALR Mode
6	5	Switchable retractor in unknown mode
9	9	Unknown type of retractor

Source

Vehicle inspection, interview

Remarks

This variable is coded for all manual seat belts that are coded for any vehicle position.

If a sewn on latch plate is present, there will most likely be a retractor for both the shoulder portion and the lap portion of the belt. Most likely the shoulder portion will be an ELR and the lap portion will be switchable from ELR to ALR. In this variable we are only interested in the retractor of the lap portion of the belt.

Another type of switchable retractor switches when the belt is pulled all the way out causing the retractor to switch to ALR mode.

Retractors wind up the loose webbing of the unused 3-point seat belt, take up the slack, and provide slight tension on belts that are in use. They are usually located out of sight at an anchor point. Check the vehicle owner's manual and also look for labels on the belt webbing to determine the retractor type.

Note: that some newer vehicles have a switchable retractor that can be manually adjusted from ELR to ALR. Most of them can be switched by pulling the webbing all the way out of the retractor to activate the ALR. In some models, the retractors switch from ELR to ALR with the push of a button. Most switchable retractors have a label on the belt with instructions on how to switch it. Enter the information for the position of the retractor.

Automatic locking retractor (ALR)

The ALR locks in place after being pulled out and allowed to retract about ½" The belt cannot be extended unless it is first fully rewound. It is generally uncomfortable for adults to wear.

Emergency locking retractor (ELR)

The ELR allows the belt to be freely extended or rewound. It locks only when the vehicle slows, changes direction, or stops suddenly. Since the retractor rarely locks during normal driving, it provides more freedom and comfort to an adult driver than an ALR. Some ELRs are vehicle sensitive and lock in direct response to the deceleration of the vehicle. Other ELRs are webbing or belt-sensitive and temporarily lock in response to a quick jerk or pull on the belt. Some ELRs are both vehicle and belt sensitive. Some ELRs have a window shade tension reliever system designed to make 3-point belts more comfortable by allowing “slack” in the shoulder belt. Occupants using these belts “tug” on the shoulder belt to tighten it after they lean forward.

Unknown

Is used when the type of retractor cannot be determined.

Latch Plate TypeScreen Name: **Latch Plate**

SAS Data Set:

SAS Variable:

Database Name:

Element Attributes

Database	SAS	
8	0	Not used/not available
1	1	Sliding
2	2	Light weight locking/cinching
3	3	Locking
4	4	Switchable
5	5	Sewn on
6	9	Unknown Type

Source

Vehicle inspection

Remarks

This variable is coded for all manual seat belts that are coded for any vehicle position.

Sliding

The webbing is threaded through a slot in the latch plate and there is no locking bar. The latch plate slides freely along the webbing, regardless of the angle. Allows the webbing to slip through unrestricted.

Locking

The webbing threads through a locking bar or an adjuster in the latch plate. Once it is tightened, the belt will not loosen until the plate is tilted and the belt is unbuckled.

Lightweight locking/cinching

The same as locking but with more moving parts. As long as the plate is parallel with the webbing the latch plate is locked.

Switchable

Switchable has a switch that locks the belt webbing by sliding a button.

Sewn on

If a sewn on latch plate is present, there will be a retractor for both the shoulder and the lap belt portions. Most likely the shoulder portion will be an ELR and the lap portion will be switchable.

Unknown type



Sliding



Sliding



Lightweight locking/cinching



Lightweight locking/cinching



Locking



Locking



Switchable



Switchable



Sewn on



Sewn On

Figure 171. Examples of manual seat belt latches

LATCH Lower Anchor AvailabilityScreen Name: **LATCH Anchor**

SAS Data Set:

SAS Variable:

Database Name:

Element Attributes

Database	SAS	
1	0	No
2	1	Yes
3	9	Unknown if anchor

Source

Interior vehicle inspection (and/or Interview)

Remarks

Currently, some new passenger vehicles are equipped with lower child seat anchorage points between a vehicle's seat cushion and seat back. Together, the two lower anchorage points and top tether anchorage make the Lower Anchor and Tether for Children (LATCH) system. Since 2002, this system is required in two rear seating positions of all cars, minivans, and light trucks.

A lower anchorage is a small rod or bar located between a vehicle's seat cushion and seat back allowing a child safety seat to be attached or snapped into the vehicle instead of being held secure by the vehicle's belt system. By September 1, 2002, all child safety seats will have two attachments that will connect to the vehicle's lower anchorage attachment points. (Some child seat manufacturers have included lower anchorage points in year 2000 models.)

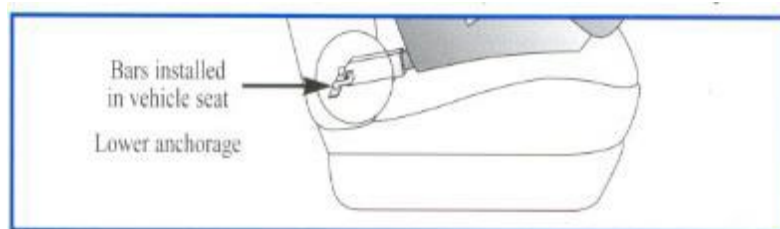


Figure 172. Example of lower child seat anchorage points

LATCH Tether AvailabilityScreen Name: **LATCH Tether**

SAS Data Set:

SAS Variable:

Database Name:

Element Attributes

Database	SAS	
1	0	No
2	1	Yes
3	9	Unknown if tether

Source

Interior vehicle inspection (and/or interview)

Remarks

In some vehicles, such as minivans and station wagons, the tether anchor may be found on the rear floor of the vehicle, on the back of the rear seat, and on the roof area. It may be concealed by some sort of covering that can be removed or “flipped up.”

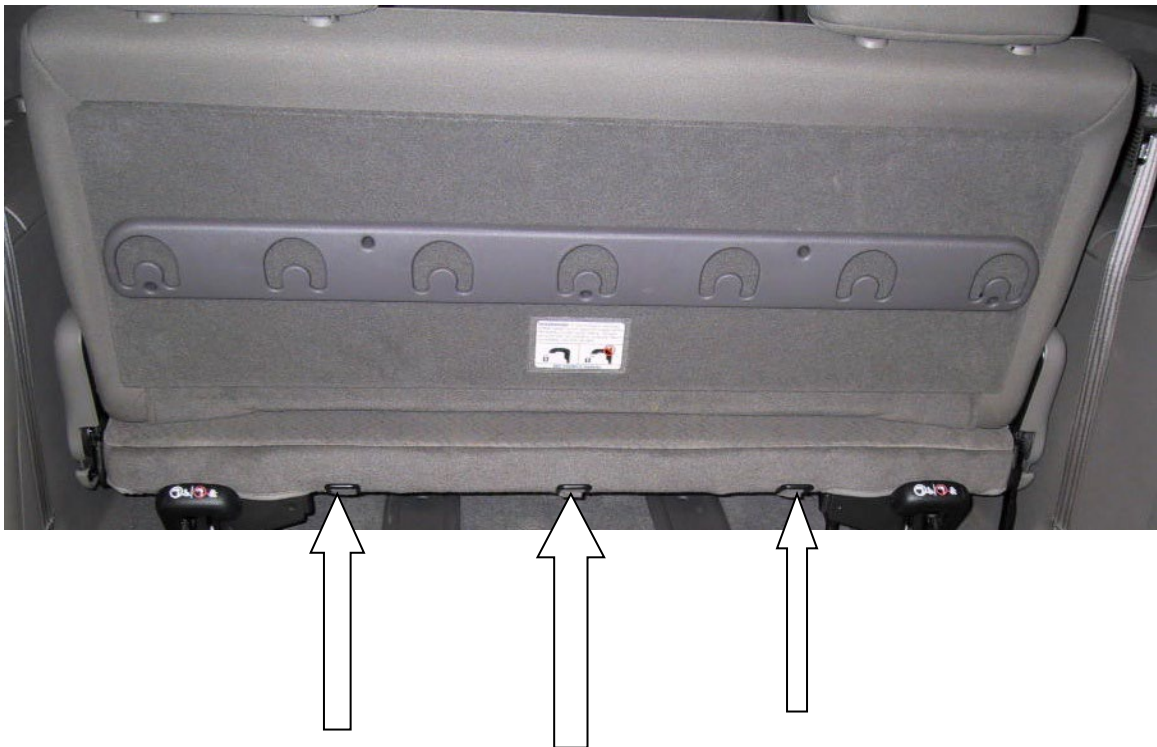


Figure 173. Example of concealed tether anchor points

Occupant Form

Occupant Form Overview

This section provides a base of information that is vital to the analytical process. Ergonomic engineers design the interior of vehicles to be most comfortable for a range of occupants. The height and weight for a particular age bracket are considered in establishing the leg room, head room, and other interior dimensions for a vehicle. Restraint design relies heavily on this type of information. Initial designs of active belts were determined to be very uncomfortable and difficult to wear. The use of a wider range of heights and weights, which also has a bearing on seat adjustments, resulted in belts that were much more comfortable to wear and therefore encouraged use.

Occupant demographics and position play an important role in the injury mechanism, restraint system effectiveness, and vehicle design analysis. For example, the vehicle design, which includes the restraint system, must take into consideration the differences between a 163 centimeter, 45 kilogram driver and a 198 centimeter, 136 kilogram passenger. Both of these occupants must be provided with the same amount of protection by the vehicle in a crash.

Societal costs are also derived from these variables and the related injury assessment variables in this and the Occupant Injury Form.

In many cases the only source for this information is the interview. For this reason, the technician should ask probing questions to elicit complete and accurate responses to these, and all other, variables.

Federal Motor Vehicle Safety Standards--FMVSS 202 (Head Restraints), FMVSS 206 (Door Locks and Door Retention Components), FMVSS 207 (Seating Systems), FMVSS 208 (Occupant Protection), FMVSS 212 (Windshield Mountings), FMVSS 213 (Child Restraint System), FMVSS 214 (Side Door Strength), FMVSS 216 (Roof Structure) and FMVSS 226 (Ejection Mitigation) are all assessed relative to their potential for reduction of injury to occupants. For this reason it is necessary to have the occupant's characteristics as complete as possible for correct and accurate assessment of the various vehicle components and FMVSSs that apply.

The Occupant Form is also where the technician makes their final determination of certain data that is collected from different sources within the case. For example, the Interviewee may say they were wearing the seat belt; the interior vehicle inspection may indicate that no belt was in use at the time of the crash, as recorded in the Safety Systems Form; the medical report **may not** indicate either way. The technician must then make their final decision, based on all available evidence, whether or not the seat belt was worn on the Restraint tab of this form.

Occupant Number

Screen Name: **Number**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS.OCC.OCCNUM**

Element Attributes

Pre-assigned

Source

User assigned on Case Form

Remarks

Occupants for this vehicle must be added into the case structure on the Case Form, Structure tab, Occupant sub-tab.

- Occupant numbers must be assigned sequentially, beginning in the passenger compartment area with “1.” No numbers may be skipped. Assign numbers left to right and front to back among occupants. The order that the occupants are listed on the PAR is not relevant.
- Assign numbers last to people on the vehicle or in an unenclosed area. In addition, occupants that are not listed on a crash report, and no interview is obtained to confirm seating position in the vehicle should also be listed last. Essentially, occupants with known positions in seats should be numbered first.
- People appended to vehicle for motion (e.g., bicyclist holding onto vehicle) are either pedestrians or other nonmotorists and not occupants; therefore, no form is completed, and no number is assigned.
- For seating locations where more than one occupant occupies the seat, begin numbering the occupant seated in the seat first. For each additional occupant in the lap or lying across, assign one number higher. If an occupant is on the floor in front of a person assign one number higher.
- Occupants sharing a seating position should be assigned numbers using the guidelines stated in item #3.

Occupant's Seat Position

Screen Name: **Row/Location**
 SAS Data Set:
 SAS Variable:
 Database Name:

Element Attributes**Source**

Primary source is police reports, secondary source is the interview

Remarks

Front Row	Second Row	Third Row
11 Left side	21 Left side	31 Left side
12 Middle	22 Middle	32 Middle
13 Right side	23 Right side	33 Right side
19 Unknown seat	24 Far right side	34 Far right side
	29 Unknown seat	39 Unknown seat

Fourth Row	Fifth Row
41 Left side	51 Left side
42 Middle	52 Middle
43 Right side	53 Right side
44 Far right side	54 Far right side
49 Unknown seat	59 Unknown seat

Cargo Area

Far right side seating positions (i.e., 14, 24, 34) should only be used if a vehicle's seat row has four seating positions.

The seating position by the steering wheel should be assigned to the assumed driver of a hit-and-run vehicle unless evidence indicates a different position for the person or people.

If seating in the vehicle is longitudinal rather than lateral, use the basic idea of a vehicle interior being divided laterally into roughly equal thirds and visualize lateral rows of seats to determine what seat position is the best descriptor.

People appended to the vehicle in motion are not considered to be occupants of the vehicle.

Unknown seat

Is used when the seating position for this occupant is unknown but the row is known. Unknown seat should be used only after exhausting all other means of determining seat position.

Occupant's Age

Screen Name: Age
 SAS Data Set:
 SAS Variable:
 Database Name: CISS.CISS.OCC.AGE

Element Attributes

Enter actual age in months if under 2 years, in years or months if older than 2 years.

Database	SAS	
-9999	99/999	Unknown

Range

AGEMONTH: 1-24, 36, 48 (multiples of 12 up to 1,440) 9999

AGEYEAR: 999

Source

Primary source is interviewee; secondary sources include police reports and other official records (i.e., medical records)

Remarks

The occupant's age at the time of the crash is recorded with respect to the occupant's last birthday.

If under the age of 2 years enter the actual age in months. If less than 1 month old enter 1 month.

AGEMONTH

Contains the age of the people two years and under and is expressed in months.

AGEYEAR

Contains the age of the people 2 years and older and is expressed in years.

Occupant's Height

Screen Name: **Height**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.OCC.HEIGHT**

Element Attributes

Database	SAS	
		Entry defaults to inches, but may also be entered in cm
-9999	999	Unknown

Range

30 – 220+, 999 cm

Source

Technician-determined — inputs include interviewee or official records (e.g., medical)

Remarks

Enter actual height to nearest inch/centimeter (program automatically converts inches to cm). If the height is greater than 220 cm code as 220 cm and annotate the actual height.

The PCR may be used as a source if it contains this data, but it is superseded if other data exists.

Autopsies often include this information; use it when present.

Occupant's Weight

Screen Name: **Weight**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.OCC.WEIGHT**

Element Attributes

Database	SAS	
		Entry defaults to lb, but may also be entered in kg.
-9999	9999	Unknown

Range

2 – 275+ kg, 999

Source

Technician-determined — inputs include interviewee or official records (e.g., medical)

Remarks

Enter actual weight to nearest pound/kilogram. **The appropriate units must be selected for the English or Metric system.** If the weight is greater than 275 kg code as 275 kg and annotate the actual weight.

The PCR may be used as a source if it contains this data, but it is superseded if other data exists.

Autopsies often include this information; use it when present.

Weight can be calculated from the BMI when height is known using a reverse BMI calculation:
 $(\text{BMI}/703) \times (\text{height in inches} \times \text{height in inches}) = \text{weight in lb.}$

For example: a person 66" with a BMI = 27; $(27 \div 703) \times (66 \times 66) = .0384 \times 4356 = 167 \text{ lb}$

Occupant's Sex

Screen Name: **Sex**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.OCC.SEX**

Element Attributes

Database	SAS	
1	1	Male
2	2	Female
3	3	Female — pregnant - 1st trimester (1st-3rd month)
4	4	Female — pregnant - 2nd trimester (4th-6th month)
5	5	Female — pregnant - 3rd trimester (7th-9th month)
6	6	Female — pregnant - trimester unknown
9	9	Unknown

Source

Primary source is the interview; secondary sources include police report and official records (e.g., medical)

Remarks**Male**

Female

This includes females that are not pregnant at the time of the crash or females with unknown pregnancy status.

Female — pregnant - 1st trimester (1st-3rd month)

Consists of women and girls who are reported to be pregnant and were in the first three months (weeks 1-12) of their pregnancy at the time of the crash.

Female — pregnant - 2nd trimester (4th-6th month)

Consists of women and girls who were reported to be pregnant and were in the second three months (weeks 13-27) of their pregnancy at the time of the crash.

Female — pregnant - 3rd trimester (7th-9th+ month)

Consists of women and girls who were reported to be pregnant and were in the final third of their pregnancy at the time of the crash. Pregnant females who were over nine months (weeks 28+) pregnant are also included.

Female — pregnant - trimester unknown

Consists of women and girls who were reported to be pregnant at the time of the crash but the stage of their pregnancy could not be determined.

Unknown

Is used when the sex of the occupant cannot be determined.

Was There Any Indication That This Pregnant Occupant Lost the Fetus?Screen Name: **Fetal Mortality**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.OCC.FETALMORTALITY****Element Attributes**

Database	SAS	
2	2	No
1	1	Yes
	8	Not applicable

Source

Primary source is the interview, secondary sources include police report and official records (e.g., medical records and autopsy reports)

Remarks

A fetal fatality is indicated when fetal death occurs within 30 days of the crash. The death must have occurred as a consequence of the crash.

No

No is used for a no response during the interview and when not reported. If the technician determines that it is unknown if there was a fetal fatality then the correct response is No.

Yes

Is used when a fetal death occurs within 30 days of the crash and as result of the crash.

N/A

Is a prefill when Sex is not equal to a pregnant female.

Occupant's Role

Screen Name: **Role**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS.OCC.ROLE**

Element Attributes

Database	SAS	
1	1	Driver
2	2	Passenger
9	9	Unknown

Source

Primary source is interviewee; secondary source is other official records.

Remarks

Hit-and-run vehicles are assumed to have only one occupant (unless reliable evidence to the contrary exists), and that person is assumed to be the driver. A driver is an occupant who is in actual physical control of the vehicle. All other people riding in or on the vehicle are considered to be passengers.

Race

Screen Name: **Driver Race**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.OCC.RACE**

Element Attributes

Database	SAS	
1	1	White
2	2	Black or African American
3	3	Asian
4	4	Native Hawaiian or Other Pacific Islander
5	5	American Indian or Alaska Native
7	7	Other (specify):
8	8	No driver present
-9999	9	Unknown

Source

Technician-determined; primary source is the interviewee; secondary sources include police report, medical records, and other official documents.

Remarks

Note: Although this variable is on the **Official Records Tab**, this variable is a “self-identification” by the occupant. This information can be obtained from any of the above sources; however, it is not always an “official record.” When using secondary sources, the Race must be specifically mentioned in the document.

The concept of race as used by the U.S. Census Bureau reflects self-identification; it does not denote any clear-cut scientific definition of biological stock. Self-identification represents self-classification by people according to the race with which they identify themselves. For drivers with parents of different races who cannot provide a single response, use the race of the driver’s mother; however, if a single response cannot be provided for the driver’s mother, the first race reported by the driver is encoded.

Prioritization of data sources:

First, use interviewee data. Ask the interviewee what the driver considers their race to be. If the response does not clearly fit into one of the race categories, then use the information provided by the interviewee concerning the driver’s nationality to select the correct element value.

Second, use the PCR. If race is given on the PCR and the PCR scheme is compatible with this variable, then use the PCR information.

In addition, the driver's ***name*** is not a reliable indicator of race and ***cannot be used*** when selecting the applicable element value for this variable.

Third, use official records (e.g., medical). If the data needed cannot be obtained from the interviewee and is not available or usable from the PCR, then use official records, if available, to determine the correct element attribute.

Element Attributes:

White

Is selected for drivers who consider themselves a person having origins in any of the original peoples of Europe, the Middle East or North Africa.

Black or African American

Is for drivers who consider themselves a person having origins in any of the black racial groups of Africa. Terms such as "Haitian" or "Negro" can be used in addition to "Black or African American."

Asian

Is selected for drivers who consider themselves a person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand and Vietnam.

Native Hawaiian or Other Pacific Islander

Is selected for drivers who consider themselves a person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands.

American Indian or Alaska Native

Is selected for drivers who consider themselves a person having origins in any of the original peoples of North and South America (including Central America), and who maintains tribal affiliation or community attachment.

Other

Is selected for drivers who consider themselves to be of a race not described above. Use this attribute for descriptions such as: Eurasian, Cosmopolitan, inter-racial, etc.

Unknown

Is selected when the source available do not provide sufficient information to classify the driver's race.

Ethnicity

Screen Name: **Driver Ethnicity**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.OCC.ETHNICITY**

Element Attributes

Database	SAS	
1	1	Hispanic or Latino
2	2	Not Hispanic or Latino
8	8	No driver present
-9999	9	Unknown

Source

Technician-determined; primary source is the interviewee; secondary sources include police report, medical records, and other official documents.

Remarks

Note: Although this variable is on the **Official Records Tab**, this variable is a “self-identification” by the occupant. This information can be obtained from any of the above sources; however, it is not always an “official record.” When using secondary sources, the ethnicity must be specifically mentioned in the document.

The concept of ethnicity as used by the U.S. Census Bureau reflects self-identification; it does not denote any clear-cut scientific definition of biological stock. Self-identification represents self-classification by people according to the ethnicity with which they identify themselves. For drivers with parents of different ethnicity who cannot provide a single response, use the ethnicity of the driver’s mother; however, if a single response cannot be provided for the driver’s mother, the first ethnicity reported by the driver is encoded.

Prioritization of data sources:

First, use interviewee data. Ask the interviewee what the driver considers their ethnicity to be. If the response does not clearly fit into one of the ethnicity categories, then use the information provided by the interviewee concerning the driver’s nationality/ethnic origin to select the correct element value.

Second, use the PCR. If ethnicity is given on the PCR and the PCR scheme is compatible with this variable, then use the PCR information.

If the PCR only indicates White/Caucasian, Black/Negro, or Other, then the PCR contains *insufficient* information for this variable. Additional information is required to determine the ethnicity. In addition, the driver’s **name** is not a reliable indicator of ethnicity and **cannot be used** when selecting the applicable element value for this variable. For example, a name such as:

Hector Smith, does not indicate the ethnicity (e.g., Hispanic or Not Hispanic) since the person may or may not consider themselves to be of Hispanic descent.

Third, use official records (e.g., *medical*). If the data needed cannot be obtained from the interviewee and is not available or usable from the PCR, then use official records, if available, to determine the correct element attribute.

Element Attributes:**Hispanic or Latino**

Is selected for drivers who consider themselves a person of Cuban, Mexican, Puerto Rico, South or Central American or other Spanish culture or origin, regardless of race. The term, “Spanish origin,” can be used in addition to “Hispanic or Latino.”

Not Hispanic or Latino

Is selected for drivers who consider themselves as not being of Cuban, Mexican, Puerto Rico, South or Central American or other Spanish culture or origin, regardless of race.

Unknown

Is selected when the source available do not provide sufficient information to classify the driver’s ethnic origin.

Occupant's Eye Wear

Screen Name: **Eye Wear**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.OCC.EYEWEAR**

Element Attributes

Database	SAS	
1	0	No
2	1	Eyeglasses/sunglasses
3	2	Contact lenses
4	3	Contact lenses with sunglasses
10	8	Other (specify)
9	9	Unknown

Source

Technician-determined — primary source is the interview and secondary sources includes vehicle inspection and medical records.

Remarks

The occupant must be wearing the glasses/lenses at the time of the crash.

The presence of glasses in the vehicle does not in itself mean that an occupant was wearing them. Additional information must be obtained to determine that they were worn (injuries, air bag damage, etc.)

No

No eyeglasses/sunglasses or contact lenses were worn by this occupant.

Eyeglasses/sunglasses

If this occupant was wearing eyeglasses or sunglasses at the time of impact.

Contact lenses

If this occupant was wearing contact lenses at the time of impact.

Contact lenses with sunglasses

If the occupant is wearing contact lenses with sunglasses at the time of impact.

Unknown

It is not known if the occupant in this position was wearing eyewear at the time of impact.

Police Reported Air Bag Availability/FunctionScreen Name: **Police Reported–Air Bag Avail/Function**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.OCC.POLICEAIRBAG****Element Attributes**

Database	SAS	
1	0	No air bag available
3	2	Deployed
4	3	Not deployed
5	4	Unknown if deployed
6	9	Police indicated “unknown”
10	7	Not reported

Source

Police report

Remarks

This variable captures what was documented on the PCR regarding the availability and functioning of any air bag system. The entire PCR (especially narrative) must be reviewed to make a determination to code this variable.

Not reported

Is used if no coded data block exists on the crash report and no other information is available. If a coded data block exists and left blank use this attribute.

Police Reported Belt Use

Screen Name: **Police Reported—Belt Use**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.OCC.POLICEBELTUSE**

Element Attributes

Database	SAS	
1	0	None used
3	2	Shoulder belt
4	3	Lap belt
5	4	Lap and shoulder belt
6	5	Belt used, type not specified
7	6	Child safety seat
8	7	Automatic belt
9	8	Other type belt (specify)
10	9	Police indicated “unknown”
11	10	Not reported

Source

Police report

Remarks

This variable captures what was documented on the PCR regarding occupant use of available vehicle restraints (i.e., manual belts, child safety seat, or automatic restraints). Select the first attribute that applies. The entire PCR (especially narrative) must be reviewed to make a determination to code this variable.

None used

Includes if the PCR indicates the belt is unavailable.

Belt used, type not specified

Is used when the PCR indicates that available *belts* were used, but it is unclear what type of belts were actually in use.

Not reported

Is used if no coded data block exists on the crash report and no other information is available. If a coded data block exists and left blank use this attribute.

Police Injury Severity (Police Rating)

Screen Name: **PCR Severity**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.OCC.POLICEPCRSEVERITY**

Element Attributes

Database	SAS	
1	0	O — No injury
2	1	C — Possible injury
3	2	B — Nonincapacitating injury
4	3	A — Incapacitating injury
5	4	K — Killed
6	5	U — Injury, severity unknown
7	6	Died prior to crash
8	9	Unknown

Source

Police report

Remarks

If the police report contains a detailed description of the injuries but does not translate the injuries into the KABCO codes, use the police method for doing so. For example, injuries that are considered to be of an incapacitating nature are classified as “A,” Nonincapacitating-evident injuries are classified as “B,” and possible injuries are “C.” Property damage only (i.e., no injury) is classified as “O.” Injuries described in PCR narrative can NOT be used to supersede KABCOU.

Note: For police reported “K” injuries be familiar with State and region protocols to request the medical examiner/coroner reports and death certificates when applicable.

For police reported “A” and “B” injury severities, find out where people were treated to request the medical records, including when the police EMS and hospital fields are blank (and no further information is listed on the police report).

Enter **Injured, severity unknown** if the police report indicates a “U” or in any other way communicates the idea that the person was injured but the severity is unknown.

Enter **Died prior to crash** only if the police explicitly states the person died prior to the crash. This code is also used if the police report indicates the person died as a result of natural causes (e.g., heart attack), disease, drug overdose or alcohol poisoning. This code does not apply if the police report specifically states that the cause of death is a result of crash-related injury or that on-set occurred after the crash. Further clarification: this code applies if the police report indicates that the person died as a result of natural causes (e.g., heart attack), disease, drug

overdose or alcohol poisoning, but is silent about the time of on-set and if on-set is the result of injuries sustained in the crash.

For Sampling purposes, the entire PCR should be used to determine injury, along with the **Injury Severity** (level of injury) occupant box. As a general rule:

If box A (# numbered injured box) is blank, check box B (injury severity box)

If box B = 0 code **No injury (O)**.

If box A = any value greater than 0 and the injury severity box is blank, code **Unknown injury**

If box B = any value greater than 0, code per Injury Severity All States (state specific) **K, A, B, C, O, U**

If both A and B boxes are blank, code **No injury (O)**.

If occupant/s fled the scene and box A and B are blank, code **No injury (O)**.

U — Injury, severity unknown

Is used when the police report indicates a “U” or in any other way communicates the idea that the person was injured but their severity is unknown.

Died prior to crash

Is only used if the police explicitly so indicate.

The following States use the KABCO injury coding scheme: Illinois (incl. Chicago), Michigan, New Mexico, North Carolina, Texas (incl. Dallas), Wisconsin, and the city of Los Angeles.

Not all States use the KABCOU scheme. Listed below, by State, are alternative schemes; a mapping to the CISS scheme is provided.

Table 8. States not using the KABCOU scheme

State	PCR Code/Definition		CISS Scheme/Code
Alabama			
	1	= Fatal injury	K - 4
	2	= Incapacitating	A - 3
	3	= Non - Incapacitating	B - 2
	4	= Not visible but complains of pain	C - 1
	Blank	= No documentation of driver or occupant injury	O - 0
	99	= Injured severity unknown	-9
Arizona			

State	PCR Code/Definition		CISS Scheme/Code
	5	= Fatal injury	K - 4
	4	= Incapacitating injury	A - 3
	3	= Non-incapacitating evident	B - 2
	2	= Possible Injury	C - 1
	1	= No injury	O - 0
	99/51	= person not present at investigation/ unknown not reported	O - 0
Arkansas			
	1	Fatal Injury	K – 4
	2	Incapacitating Injury	A – 3
	3	Non-Incapacitating Injury	B – 2
	4	Possible Injury	C – 1
	5	Non-Injury	O – 0
	Blank	= Occupant present	O – 0
	Blank	= Occupant not present	O – 0
California			
	1	= Fatal	K - 4
	2	= Severe injury	A - 3
	3	= Other visible injury	B - 2
	4	= Complaint of pain	C - 1
	Blank	= Occupant present	O - 0
	Blank	= Occupant not present	O - 0
Connecticut	K	Fatal Injury	K – 4
	A	Suspected Serious Injury	A – 3
	B	Suspected Minor Injury	B – 2
	C	Possible Injury	C – 1
	O	No Apparent Injury	O – 0
	Blank	= Occupant present	O – 0
	Blank	= Occupant not present	O – 0
Georgia	0	No Apparent Injury (O)	O – 0

State	PCR Code/Definition		CISS Scheme/Code
	1	Fatal Injury (K)	K – 4
	2	Suspected Serious Injury (A)	A – 3
	3	Suspected Minor or Visible Injury (B)	B – 2
	4	Possible Injury or Complaint (C)	C – 1
	Blank	= Occupant present	O – 0
	Blank	= Occupant not present	O – 0
Idaho			
	K	= Killed	K - 4
	A	= Incapacitating	A - 3
	B	= Non-incapacitating	B - 2
	C	= Possible	C - 1
	O	= None evident	O - 0
	U	= Unknown	U - 9

	Driver Injury Status	Nature of Most Severe Injury	CISS Scheme/Code
Indiana			
	Killed	Any value	K-4
	Incapacitating	Any value	A-3
	Non-Incapacitating	Any value	B-2
	Possible	Any value	C-1
	Unknown	Any value except non visible	C-1
	Unknown	Non visible	O-0
	Refused	Any value except Non visible	C-1
	Blank	= Severed	A-3
	Blank	= Internal	A-3
	Blank	= Minor burn	B-2
	Blank	= Severe burn	A-3
	Blank	= Abrasion	B-2
	Blank	= Minor bleeding	B-2

	Driver Injury Status	Nature of Most Severe Injury	CISS Scheme/Code
	Blank	= Severe bleeding (arterial)	A-3
	Blank	= Fracture/dislocation	A-3
	Blank	= Contusion/bruise	B-2
	Blank	= Complaint of pain	C-1
	Blank	= None Visible	O-0
	Blank	= Other (explain in narrative)	Refer to narrative and use descriptions for conversion
	Blank	Blank	O-0

State	PCR Code/Definition		CISS Scheme/Code
Illinois			
	K	= Fatal	K - 4
	A	= Incapacitating injury	A - 3
	B	= Non-incapacitating injury	B - 2
	C	= Reported not evident	C - 1
	O	= No indication of injury	O - 0
	Blank	= Occupant present	O - 0
	Blank	= Occupant not present	O - 0
Maine			
	1	= Fatal	K - 4
	2	= Incapacitating	A - 3
	3	= Non incapacitating	B - 2
	4	= Possible injury	C - 1
	5	= No injury	O - 0
	Blank	= Occupant present	O - 0
	Blank	= Occupant not present	O - 0
Massachusetts			
	1	= Fatal injury	K - 4
	2/7	= Incapacitating	A - 3

State	PCR Code/Definition		CISS Scheme/Code
	3/8	= Non-incapacitating	B - 2
	4/9	= Possible	C - 1
	5/10	= No injury	O - 0
	99	= Unknown	-9
	Blank	= No injury	O - 0
Missouri			
	1	= Fatal	K
	2	= Disabling injury	A
	3	= Evident-not disabling	B
	4	= Probable-not apparent	C
	5	= None apparent	O
	U	= Unknown	U
	N	= NA	O

State	PCR Code/Definition		CISS Scheme/Code
Montana	Column 15		
	0	= No injury	O
	1	= Possible injury	C
	2	= Non-incapacitating evident injury	B
	3	= Incapacitating injury	A
	4	= Fatal injury	K
	5	= Injured, severity unknown	U
	6	=Died prior to accident	U
	9	= Unknown	U
Montana Highway Patrol			
	A	SUSPECTED SERIOUS INJURY	A - 3
	B	SUSPECTED MINOR INJURY	B - 2
	C	POSSIBLE INJURY	C - 1
	K	FATAL INJURY (K)	K - 4
	O	NO INJURY	O - 0
	U	Unknown INJURY	- 9
		DEATH PRIOR TO CRASH EVENT	U - 9
		NonFatalCount	-9

Victim's Physical Condition PCR Column 86	# Injured box Top of Page 1 of PCR	CISS Scheme/Code
New Jersey		
01 Killed	Any value not 0	K-4
02 Incapacitated	Any value not 0	A-3
03 Moderate Injury	Any value not 0	B-2
04 Complaint of Pain	Any value not 0	C-1
05 No Apparent Injury		O-0

Victim's Physical Condition PCR Column 86	# Injured box Top of Page 1 of PCR	CISS Scheme/Code
New Jersey		
(-)	0, Blank	O-0
Blank	0	O-0
00 = Unknown	Any value	U-9
(-)	Any value not 0	C-1
Blank	Any value not 0	C-1

Type of Physical Complaint PCR Column 15	Victim's Physical Condition PCR Column 16	#Injured box Top of Page 1 of PCR	CISS Scheme/ Code
New York			
1-17 Any Entry	1 Apparent Death	Any value not 0	K-4
Any Entry	2 Unconscious 3 Semi-conscious 4 Incoherent	Any value not 0	A-3
1 Amputation 2 Concussion 3 Internal 5 Severe Bleeding 7 Moderate Burn 8 Severe Burn, 9 Fracture-Dislocation 15 Crush Injuries 16 Paralysis 17 Severe Lacerations	5 Shock 6 Conscious	Any value not 0	A-3
4 Minor Bleeding 6 Minor Burn 10 Contusion-Bruise 11 Abrasion	5 Shock 6 Conscious	Any value not 0	B-2
12 Complaint of Pain 13 None Visible 14 Whiplash	5 Shock 6 Conscious	Any value not 0	C-1
13 None Visible or (-)	6 Conscious	Any value not 0	C-1
13 None Visible or (-)	6 Conscious	Blank, 0	O-0
Blank or (-)	Blank or (-)	Blank, 0	O-0

Type of Physical Complaint PCR Column 15	Victim's Physical Condition PCR Column 16	#Injured box Top of Page 1 of PCR	CISSScheme/ Code
New York			
Blank or (-)	Blank or (-)	Any value not 0	C-1
(X) = Unknown	6 Conscious	Any value	C-1
(X) = Unknown	(X) = Unknown	Blank, 0	O-0
(X) = Unknown	(X) = Unknown	Any value not 0	U-9

State	PCR Code/Definition		CISS Scheme/ Code
Oklahoma			
	0	= NA	O - 0
	1	= No injury	O - 0
	2	= Possible injury	C - 1
	3	= Non-incapacitating	B - 2
	4	= Incapacitating	A - 3
	5	= Fatal injury	K - 4
	9	= Injury acquired Unknown Severity	U - 9
Ohio			
	5	= No injury	O - 0
	4	= Possible injury	C - 1
	3	= Non-incapacitating	B - 2
	2	= Incapacitating	A - 3
	1	= Fatal injury	K - 4
Ohio	Blank	= Occupant present	O - 0
	Blank	= Occupant not present	O - 0
Pennsylvania			
	K	= Fatal injury	K - 4
	A	= Suspected serious injury	A - 3

State	PCR Code/Definition		CISS Scheme/ Code
	B	= Suspected minor injury	B - 2
	C	= Possible injury	C - 1
	O	= Not injured	O - 0
	U	= Injury, unknown severity	U - 9
	U	= Unknown (if injured)	O - 0
Rhode Island			
	1	= Complains of pain	C - 1
	2	= Non-incapacitating	B - 2
	3	= Incapacitating	A - 3
	4	= Fatal	K - 4
	5	= No injury	O - 0
	6	= Unknown	U - 9
	Blank	= No Injury	O - 0
South Carolina	0	Not Injured	O – 0
	1	Possible Injury	C – 1
	2	Non-Incapacitating	B – 2
	3	Incapacitating	A – 3
	4	Fatal	K – 4
	Blank	= Occupant present	O – 0
	Blank	= Occupant not present	O - 0
Tennessee	00	No Injury	O – 0
	01	Possible injury	C – 1
	02	Non-Incapacitating Evident	B – 2
	03	Incapacitating	A – 3
	04	Fatal	K – 4

State	PCR Code/Definition		CISS Scheme/ Code
	05	Severity Unknown	U – 5
	06	Died Prior to Accident	Died prior – 6
	99	Unknown if injured	O - 0

State	PCR Code/Definition		CISS Scheme/ Code
Texas			
	4	= Killed	K - 4
	1	= Incapacitating injury	A - 3
	2	= Non-incapacitating injury	B - 2
	3	= Possible injury	C - 1
	5	= Not injured	O - 0
	0	= Unknown	U-9
	N	= No Injury	
	94	=Report invalid	
	95	=Not reported	
Utah			
	01	= No injury	O
	02	= Possible injury	C
	03	= Non-incapacitating evident injury	B
	04	= Incapacitating injury	A
	05	= Fatal	K
	Blank	= Occupant present	O - 0
	Blank	= Occupant not present	O - 0
Virginia			
	0	= not provided unknown if injuries exist	O - 0
	1	= Dead before report made	K - 4
	2	= Visible signs of injury such as bleeding, wound or distorted	A - 3

State	PCR Code/Definition		CISS Scheme/ Code
		member; or had to be carried from scene.	
	3	= Other visible injury, as bruises, abrasions, swelling, limping, etc.	B - 2
	4	= No visible injury, but complaint of pain or momentary unconsciousness	C - 1
	5	= No injury	O - 0
	7	= Dead (non-traffic fatality)	-9
Washington			
	1	= No injury	O - 0
	2	= Dead at scene	K - 4
	3	= Dead on arrival	K - 4
	4	= Dead at hospital	K - 4
	5	= Disabling	A - 3
	6	= Non-disabling (evident injury)	B - 2
	7	= Possible injury	C - 1
	8	= Non-traffic injury	
	9	= Non-traffic fatality	
	Blank	= Unknown if injured	O - 0
Wisconsin			
	K	= Fatal injury	K - 4
	A	= Suspected serious injury	A - 3
	B	= Suspected minor injury	B - 2
	C	= Possible injury	C - 1
	O	= No Apparent injury	O - 0
	Blank	= Occupant present	O - 0
	Blank	= Occupant not present	O - 0

Ejection Overview

Variables in this section provide an assessment of the occurrence of ejection of an occupant. These variables in this section are coded based upon vehicle inspection. Verification of questionable ejections will come from the interview.

Historically, ejection from the vehicle has been a major cause of increased fatalities and serious injuries. The chances of being killed if ejected are about 1 in 5; whereas, if the occupant remains inside the vehicle, the chances of dying are reduced to about 1 in 200. Unfortunately, ejection from the vehicle is not that uncommon and has become a significant part of the fatality and severe injury crashes. Further contributing to the ejection problem is the increase in window surface area and more hatchback models. Despite the current emphasis on restraint use through legal requirements for occupants to be seat belted, a significant portion of the population continues to be unrestrained and at risk to ejection.

A problem not often addressed is that of partial ejection. This refers to those instances where some part but not all of an occupant's body is outside the occupant compartment at some time during the crash sequence. Although it would not seem to be a problem it can be, and often is, fatal if the part outside is the occupant's head. Because of the dynamics of the vehicle and the kinematics of the occupants during an ejection sequence, it is often the occupant's own vehicle that causes the injury as it rolls onto the occupant.

Federal Motor Vehicle Safety Standards (FMVSS) that were developed in response to the problems seen in these areas are FMVSS 201 (Occupant Protection in Interior Impact), FMVSS 205 (Glazing Materials), FMVSS 206 (Door Locks and Door Retention Components), FMVSS 212 (Windshield Mounting), FMVSS 216 (Roof Crush Resistance Passenger Cars), and FMVSS 226 (Ejection Mitigation.)

Analytically this group of variables is a standalone package most of the time. It can form the basis of an analysis without the use or comparison to any other variables. This would be used mostly in exploring the number and types of ejections. Expanding the scope somewhat to include injury severity allows a determination of the increase or decrease in the ejection problem. Inclusion of injury source would provide an idea of the severity of all occurrences of entrapment and ejection. Injury source also provides an idea of the kinematics of the occupant during the sequence. The addition of a cross-tabulation for AIS level would show the relative severity between the injuries incurred inside the vehicle and those outside the vehicle.

Other areas of interest to the analyst are the ejection route and performance of integral structures. The integral structure performance is directly governed by the FMVSS 206 and 212. These areas are of increasing interest to NHTSA since the real world performance can help support the findings from the staged collisions and will help determine the effectiveness of the standards.

Gathering the data, which will allow the technician to accurately select the variables, is a multistage process. It will begin with the PCR that may give an indication of ejection. Inspection of the vehicle will provide the evidence needed to substantiate the ejection. Further, documentation should be obtained through the scene inspection, interview, and injury data. Particular attention should be paid to the vehicle inspection since most evidence of ejection will be less apparent and not easily discerned.

In summary, this group of variables assesses the level of a very significant problem in today's crash picture. Correct accurate assessment is a result of a multistage research process, which will be individualized by case. Attention to detail will result in a correct assessment. This is an example that is directly tied to the FMVSS, and all gathered data results are a direct evaluation of the applicable standards.

Special Conditions for *Ejection and Entrapment*

Using the guidelines given below, *Ejection/Entrapment* variables may be completed for towed CISS-applicable vehicles based on PCR and crash severity when there is ***no vehicle inspection, no interview, and the answer is obvious***. If there is any doubt, annotate accordingly and select **Unknown**.

Select **Not entrapped** for occupants fleeing from towed CISS-applicable vehicles.

For other towed CISS-applicable vehicles:

- **No Ejection** may be used if the PCR specifically so states for a given occupant. For all other occupants about whom the PCR is silent, select **Unknown**.
- If the PCR indicates that an occupant is ejected, this is sufficient to select **Complete ejection** or **Partial ejection** if the PCR so states. If complete versus partial ejection is not stated on the PCR, then select **Ejection, unknown degree** may be used.

Note, however, that these three variables can be used only if the PCR provides sufficient detail.

Entrapment may be selected as **Not entrapped** *if the PCR specifically so states for a given occupant*. For all other occupants about whom the PCR is silent, use **Unknown**.

Recall, however, that if the PCR states that an occupant is entrapped, this is **not sufficient** to select Entrapment (because PCR definition of entrapment is different from CISS definition). Unless Entrapment is verified through other sources, Entrapment must be selected as **Unknown**.

Ejection Number

Screen Name:

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.EJECT.EJECTNUM**

Element Attributes

Source

Remarks

Occupant Number

Screen Name:

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.EJECT_X_OCC.OCCID**

Element Attributes

Source

Remarks

Type of Ejection

Screen Name: **Type**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.EJECT.EJECTTYPE**

Element Value

Database	SAS	
1	0	No ejection
2	1	Complete ejection
3	2	Partial ejection
4	3	Ejection, unknown degree
5	9	Unknown

Source

Technician-determined — inputs include the vehicle inspection, interviewee, medical records, and the police report.

Remarks

Ejection refers to people being completely or partially thrown from the vehicle as a result of an impact or rollover. If a person already has a body part protruding from the vehicle (an elbow, arm, etc.) and the PDOF acting on the vehicle would likely cause further protrusions of the body part, then at least partial ejection is selected.

No Ejection

Is selected when there is no indication of any occupant being either partially or fully ejected from the vehicle.

Complete ejection

Is selected when the occupant's body is entirely outside of the vehicle during the crash sequence. It is important to note that even though the body may be outside the vehicle, it may still be in contact with the vehicle. This code also includes occupants who are not initially in the passenger and contiguous cargo area of the vehicle (e.g., pickup beds, boot of a convertible, and people riding on open tailgates).

Partial ejection

Is selected when part of the occupant's body remains **in** the vehicle, and any part of it is outside of the vehicle during the crash sequence. This code **does not apply** to those occupants who are not initially in the passenger and contiguous cargo area of the vehicle, they are indicated as **"Complete ejection."**

Ejection, unknown degree

Is selected when it is suspected (or known) that an ejection of the occupant occurred; however, at the time of the vehicle inspection the technician was unable to determine if the ejection was **Partial** or **Complete**.

Unknown

Is selected when:

- the vehicle has been completely repaired, or
- it cannot be determined if an ejection is applicable.

Ejection Area

Screen Name: **Area**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.EJECT.EJECTAREA**

Element Attributes

Database	SAS	
11	0	No ejection
1	1	Windshield
2	2	Left front
3	3	Right front
4	4	Left rear
5	5	Right rear
6	6	Rear
7	7	Roof
	89	Unknown if ejected
8	98	Other area (back of pickup, etc.) (specify)
9	99	Unknown

Source

Technician-determined — inputs include the vehicle inspection, interviewee, and the police report

Remarks

The coding of ejection for this variable is done by either linking it to an ejection that has been noted during the vehicle inspection, if present, or inserting one. If No Ejections is selected a link must be completed. In either condition, the information can be modified.

Left front

Is defined as starting at the front of the vehicle and ending at the rear portion of the left front door.

Right front

Is defined as starting at the front of the vehicle and ending at the rear portion of the right front door.

Left rear

Is defined as starting at the b-pillar and extending to the rear of the vehicle.

Right rear

Is defined as starting at the b-pillar and extending to the rear of the vehicle.

Rear

Is restricted to people riding in a passenger compartment, who are ejected through the rear window, tailgate (station wagon), hatchback, etc.

Roof

Applies to all hardtops, convertibles, sun roofs, T-bar roofs, and detachable hardtops (such as fiberglass tops) that are used to cover areas designed for passenger protection.

When **Ejection Area** equals **Roof**, follow examples illustrated below when selecting **Ejection Medium** and **Medium Status** (immediately prior to impact).

Table 9. Examples of selecting Ejection Medium and Medium Status (immediately prior to impact)

Ejection	Roof Type	Area	Ejection Medium	Medium Status
Ejection	Hardtop, ripped open during crash	Roof	Integral structure	Integral structure
Ejection	Removable hardtop, <i>attached</i> prior to the crash	Roof	Integral structure	Integral structure
Ejection	Removable hardtop, <i>detached</i> prior to crash	Roof	Non-fixed roof structure	Open
Ejection	Convertible, in down or open position prior to crash	Roof	Non-fixed roof structure	Open
Ejection	Convertible, in closed position	Roof	Non-fixed roof structure	Closed
Ejection	Sun or T-bar, closed and ripped open during the crash	Roof	Non-fixed roof structure	Closed
Ejection	Sun or T-bar, open/removed prior to the crash	Roof	Non-fixed roof structure	Open

The specific Ejection--Area attributes are designated for use with areas designed for passenger protection (e.g., passenger cars, vans, light truck cabs, self-contained mini-RVs and mini-motor homes). Trailers, add-on campers, etc., are to be assigned **Other area**.

Other area

Also applies to people riding on open tailgates.

Unknown

If the sole source for the ejection is the police report, unless the PCR provides a clear, distinguishable avenue of occupant ejection.

Ejection MediumScreen Name: **Medium**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.EJECT.EJECTMEDIUM****Element Attributes**

Database	SAS	
11	0	No ejection
1	1	Door/hatch/tailgate
2	2	Non-fixed roof structure
3	3	Fixed glazing
4	4	Non-fixed glazing (specify)
5	5	Integral structure
	79	Unknown ejection area
	89	Unknown if ejected
6	98	Other medium (specify)
7	99	Unknown

Source

Technician-determined — inputs include the vehicle inspection, interviewee, and the police report

Remarks

The coding of ejection for this variable is done by either linking it to an ejection that has been noted during the vehicle inspection, if present, or inserting one. In either condition, the information can be modified.

Door/hatch/tailgate

Includes any door, hatch, or tailgate that is opened during the course of the impact sequence.

Non-fixed roof structure

Applies only to convertible, sun roofs, T-bar roofs, and removable hardtops when detached/retracted prior to the crash.

Fixed glazing

Refers to any glazing in the vehicle that cannot be opened.

Non-fixed glazing

Refers to any glazing in the vehicle that can be opened to any degree.

Integral structure

Includes removable hardtops when attached to the vehicle prior to the crash. This also should be used when any vehicle structure, not designed to be opened (e.g., standard roof), is torn open during the crash such as to permit ejection.

Other medium

Applies to people riding in pickup beds, on open tailgates, and for other situations that cannot be classified above. In addition, use this attribute when someone is ejected from a trailer, add-on camper, etc.

Unknown

If the sole source for the ejection is the police report, unless the PCR provides a clear, distinguishable avenue of occupant ejection.

Ejection Medium Status (Immediately Prior to Impact)Screen Name: **Medium Status**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.EJECT.EJECTMEDIUMSTATUS****Element Attributes**

Database	SAS	
11	0	No ejection
1	1	Open
2	2	Closed
3	3	Integral structure
	79	Unknown ejection area
	89	Unknown if ejected
4	99	Unknown status

Source

Technician-determined — inputs include the vehicle inspection, interviewee, and the police report

Remarks

The coding of ejection for this variable is done by either linking it to an ejection that has been noted during the vehicle inspection, if present, or inserting one. In either condition, the information can be modified. This variable is a description of the status of the area through which an occupant was ejected and is the status of the medium immediately prior to the impact.

Open

Applies to convertible roofs, sun roofs, T-bar roofs, windows, doors or tailgates that are completely or partially open immediately prior to impact, or to other open areas of vehicles such as pickup beds, etc.

Closed

Refers to a window that is completely closed when damaged, or to a convertible, sun, or T-bar roof that is closed when damaged. Sun and T-bar roofs are captured here if the ejection occurred through the designed opening in the sun or T-bar roof. However, if the roof was of a sun or T-bar type but the ejection occurred because a sizable opening was torn in the roof structure, then select **Integral structure**. This is also used for fixed glazing such as windshields and backlights that are in place prior to the collision. This also refers to a door that is closed, but when damaged, experiences latch and/or hinge malfunction causing the door to open.

Integral structure

Includes removable hardtops when *attached* to the vehicle prior to the crash. This also should be used when any vehicle structure, not designed to be opened (e.g., standard roof), is torn open during the crash such as to permit ejection.

Unknown

If the sole source for the ejection is the police report, unless there is a clear indication on the PCR of the medium status.

Ejection Comments

If a suspected ejection occurs at a location protected by a deployed side curtain air bag, a Field Safety Notification should be completed.

Entrapment Overview

Entrapment poses a different problem area. Recent years have brought about a vast improvement in the delivery of emergency medical attention to motor vehicle crash victims. This improvement has been achieved through the establishment of regional trauma centers, well equipped Mobile Intensive Care Units manned by trained paramedics even in rural areas, and a general increase in the knowledge of how to treat acute trauma. This improvement has not helped those victims who are restrained within the vehicle by deformed components. The improved care cannot be delivered because the personnel are unable to get to the victim, remove the victim from the vehicle, and deliver the victim to a treatment facility in a reasonable amount of time.

Entrapment is caused by the structure components of the vehicle entangling or intermingling with the occupants, preventing the occupants from exiting the vehicle. Manufacturers have designed crumple zones into vehicles to absorb energy. These structural parts are designed to crumple in a predetermined pattern to absorb the energy during a crash while maintaining the integrity of the passenger compartment. In so doing, the occupants of the vehicle can become entrapped by the structure of the vehicle deforming around them.

Enter any observations or indications of possible entrapment or mobility restrictions. Careful observations should be made of intruding vehicle components, i.e., jammed doors, crushed roof, or other mechanisms that might have restrained the occupants, restricted their mobility, or limited egress from the vehicle.

Extrication tool marks are an indication of entrapment. Although, cutting the roof off of a vehicle is not an indication of entrapment.

Entrapment Details

Entrapment

Screen Name: **Entrapment**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.ENTRAP.ENTRAP**

Element Attributes

Database	SAS	
1	0	Not entrapped/exit not inhibited
2	1	Entrapped/pinned — mechanically restrained
5	2	Could not exit vehicle due to jammed doors
6	3	Could not exit vehicle due to external circumstances (specify)
4	9	Unknown

Source

Technician-determined — inputs include the vehicle inspection, interview and police report

Remarks

Not entrapped/exit not inhibited

Is used when this occupant exited the vehicle and his/her egress was not inhibited in any way by intruding vehicle components, jammed doors, etc.

Entrapped/pinned — mechanically restrained

Is used when this occupant was physically restrained in the seat position by an intruding vehicle component. The occupant could not move from the post-impact position without some part of the vehicle being cut away, bent or moved.

Could not exit vehicle due to jammed doors

Is used when this occupant could not exit the vehicle due to all doors being jammed. This occupant, however, could move about within the vehicle. Refers to doors, not row specific. Doors are usually used for ingress/egress of the occupant seating area. A door must have hinges and a locking mechanism. Except as follows:

- If a barrier is placed between rows, such as in some taxis and limos, jammed doors would be coded by specific rows.

Could not exit vehicle due to external circumstances (specify)

Is used when exiting the vehicle could cause more harm to the occupants. Examples:

- Fire
- Live electrical wires
- High water

This code requires a specific annotation.

Unknown

Is used when there is no knowledge of the manner of this occupant's exit from the vehicle and generally, no inspection of the vehicle.

Occupant Mobility

Screen Name: **Occupant Mobility**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.ENTRAP.MOBILITY**

Element Attributes

Database	SAS	
1	0	Occupant fatal before removed from vehicle
2	1	Removed from vehicle while unconscious or not oriented to time or place
3	2	Removed from vehicle due to perceived serious injuries
4	3	Exited from vehicle with some assistance
5	4	Exited from vehicle under own power
6	5	Occupant fully ejected
7	8	Removed from vehicle for other reasons (specify):
8	9	Unknown

Source

Technician-determined — inputs include fire and or EMS personnel/records, interviews, witnesses, medical records, PCR.

Remarks

The variable attributes are hierarchical.

Do not rely on the interview alone to make this selection. Consider all information (EMS, medicals, etc.) when making your selection.

Occupant fatal before removed from vehicle

Is used when it can be determined that the occupant was deceased prior to removal from the vehicle.

Removed from vehicle while unconscious or not oriented to time or place

Is used when it can be determined that the occupant was unconscious or had diminished awareness (not oriented to time and place) due to the crash when they were removed from the vehicle.

Removed from the vehicle due to perceived serious injuries

Is used when it can be determined that the occupant was injured but conscious and oriented and had to be removed from the vehicle due to their serious injuries (e.g., broken femur). A key factor to consider is the perceived seriousness of the injury. Generally this involves removal by EMS personnel.

Exited the vehicle with some assistance

Is used when the occupant was able to exit the vehicle partially under their own power but their condition was such that some assistance in exiting was necessary.

Exited the vehicle under own power

Is used when the occupant was able to exit the vehicle without assistance from another person.

Occupant fully ejected

Is used when the occupant was completely ejected from the vehicle.

Removed from vehicle for other reasons (specify)

Includes those people who require assistance in exiting the vehicle and would have required assistance even if there had not been a crash i.e., infants, severely disabled, intoxicated people.

Unknown

Is used when the technician cannot reasonably determine the manner of exit by the occupant.

Entrapment/Comment

This screen is for adding further annotations about any entrapment.

If no entrapment is identified, select “No Entrapment” button and the application prefills.

Seat Definition**Occupant Row**

Screen Name:

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.SEATLOC.ROW****Element Attributes****Source**

Interviewee, police report, vehicle inspection and official records

Remarks

Occupant's Seat Position

Screen Name: **Seat Location Identification**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.SEATLOC.LOC**

Element Attributes

Front Row	Second Row	Third Row
11 - Left side	21 - Left side	31 - Left side
12 - Middle	22 - Middle	32 - Middle
13 - Right side	23 - Right side	33 - Right side
19 - Unknown seat	24 - Far right side	34 - Far right side
	29 - Unknown seat	39 - Unknown seat

Fourth Row	Fifth Row	Other or unknown seating
41 - Left side	51 - Left side	97 - In or on unenclosed area (specify)
42 - Middle	52 - Middle	98 - Other enclosed area (specify)
43 - Right side	53 - Right side	99 - Unknown seat locatio
44 - Far right side	54 - Far right side	
49 - Unknown seat	59 - Unknown seat	

Source

Interviewee, police report, vehicle inspection and official records.

Remarks

Seat definitions indicate areas of the vehicle, and may not indicate the actual presence of a manufacturer-designated seating position.

Identify the seat location where this occupant was located. "Click" on the appropriate seat on the screen. *"Far right side" is only to be used if the seat has four seating positions.*

More than one person may be assigned to a defined area. When this occurs, the appropriate posture is selected to further define the occupant location.

The seating position by the steering wheel should be assigned to the assumed driver of a hit-and-run vehicle unless evidence indicates a different position for the person or people.

If a person is between two bucket seats, then they are assigned to that position and their **Posture** is coded as appropriate. An occupant sitting side-by-side of another occupant in the same seating position is placed in that position with their **Posture** indicated as “Sitting side by side another occupant” and the posture is described in the place indicated.

If the only seat in the front seating area is a driver’s seat (bucket, pedestal, etc.) and the occupant was in the area but not in the seat, assign the appropriate seating position (maybe the front right seating location) and the “Posture” will be indicated appropriately.

The “other” box in the Seat Definition grid captures those occupants riding on a fender, the boot of a convertible, the open cargo box on a light truck, etc., or for anyone located in a designated cargo area.

If seating in the vehicle is longitudinal rather than lateral, use the basic idea of a vehicle interior being divided laterally into roughly equal thirds and visualize lateral rows of seats to determine what seat position is the best descriptor.

People appended to the vehicle in motion are not considered to be occupants of the vehicle.

In or on unenclosed area

Includes those occupants riding on a fender, the boot of a convertible, the open cargo box on a light truck, etc.

To select “Unenclosed area,” you must first “click on” the large “other” box to the right of the Seat Definition grid in the application. Then using the variable Seat Type, select “In or on other Unenclosed area (specify).”

Other enclosed area (specify)

If an occupant is within the occupant compartment, but in an area NOT designed by the manufacturer as a seating position, select “Other Enclosed Area” and specify the location of the occupant. For instance, an occupant in kneeling in the open area between bucket seats in positions 11 and 13. Positions 11, 12, and 13 are ALL selected in the Seat Definition grid. Positions 11 and 13 are coded as bucket seats; position 12 is coded as “Other Enclosed Area” and specified as the open space between the front seats (between 11 and 13). An occupant in the cargo area of a minivan (behind the last designated seating row) would be also coded as “Other Enclosed Area,” but specified as being in the designated cargo area. The “other” box to the right of the Seat Definition grid would be selected for an occupant located in the cargo area. If occupants were in an area, it is selected once from the Seat Definition grid; occupants can be assigned to that area in the Occupant Form.

Unknown seat

Is used when the seating position for this occupant is unknown but the row is known. Unknown seat should be used only after exhausting all other means of determining seating position.

Occupant's Posture

Screen Name: **Posture**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.OCC.POSTURE**

Element Attributes

Database	SAS	
1	0	Normal posture
2	1	Kneeling or standing on seat
3	2	Lying on or across seat
4	3	Kneeling, standing or sitting in front of seat
5	4	Sitting sideways or turned
6	5	Sitting on a console
7	6	Lying back in a reclined seat position
8	7	Bracing with feet or hands on a surface of the vehicle
9	8	In the lap of another occupant
10	9	Sharing a seat-sitting side by side
11	10	In a child seat
80	88	Other posture (specify):
99	99	Unknown

Source

Primary source is interviewee; secondary sources include vehicle inspection, police report, or official records (i.e., medical).

Remarks

This variable is designed to capture those instances where an occupant was not in the usual upright, **forward-facing seated position** except for occupants correctly seated in child safety seats.

The occupant's posture is assessed as the last known position that the occupant was in just prior to impact. If the occupant cannot recall his/her position just prior to impact, then assign the last known position just prior to recognizing an impending danger.

The posture of an occupant of a seat or a child safety seat is normal if the occupant is correctly seated in the seat as designed. If the occupant is not seated (i.e., kneeling or standing) in the child safety seat as designed, then the occupant's posture is abnormal and **Other abnormal posture** is used.

It is extremely important in locating injuries associated with various items within the passenger compartment to know as much as possible about the occupant's trajectory or path inside the

vehicle during the collision. The accuracy of this analysis depends on knowing exactly where the occupant was before the collision. Therefore, details about the occupant's posture are necessary.

As an example, if the right front passenger was sitting sideways in the seat facing the driver immediately prior to a frontal collision, it is reasonable to assume that his injuries would be confined to the right side of his body from contact with the instrument panel area. If he is reported simply as "sitting on the seat," his normal position would be with his right toward the door. For the same collision situation described above he would probably then contact the instrument panel with the front of his body rather than the side.

Kneeling or standing on seat

Is used whenever an occupant is not seated but is kneeling or standing on a seat.

Lying on or across seat

Is used whenever an occupant is not seated but is lying with body, or body and legs across one or more seating positions.

Kneeling, standing or sitting in front of seat

Is used whenever an occupant is not seated but is on the floor kneeling, standing, or sitting in front of a seat, which may be occupied.

Sitting sideways or turned

Is used whenever an occupant is seated but is sitting sideways or turned to talk with another occupant or to look out a rear window just prior to impact.

Sitting on a console

Is used whenever an occupant is not in a seat position but is sitting on a console.

Lying back in a reclined seat position

Is used whenever an occupant in a seat position has reclined the seat back rearward and is lying back in the seat.

Bracing with feet or hands on a surface of the vehicle

Is used whenever a seated occupant has assumed a position of bracing on any surface of the vehicle (not including the steering wheel for the driver) just prior to the collision.

Sitting on or in the lap of another occupant

Is used whenever two occupants occupy the same seat position by sitting on, or in the lap of, the other occupant.

Sharing a seat-sitting side by side

Is used when a seated occupant is in the same seating location as another occupant but is not in their lap. Both occupants are considered sharing a seat.

Other abnormal posture (specify)

Includes but is not limited to:

- sitting normally (not kneeling, etc.) in a designed *rearward or side-facing_seat* except for occupants correctly seated in child safety seat
- leaning over in the seat
- being in an enclosed area that does not have designated seating positions
- being in an unenclosed area
- incorrectly seated in a child safety seat
- vehicle seat removed and occupant is in a wheelchair

Unknown

If the occupant's posture cannot be determined.

Occupant's Role

Screen Name: **Role**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS.OCC.ROLE**

Element Attributes

Database	SAS	
1	1	Driver
2	2	Passenger
9	9	Unknown

Source

Primary source is interviewee; secondary source is police report.

Remarks

Hit-and-run vehicles are assumed to have only one occupant (unless reliable evidence to the contrary exists), and that person is assumed to be the driver. All other people riding in or on the vehicle are considered to be passengers.

Seat Attributes

Attributes tab information will roll over from the completed Safety Systems Form and Child Restraint Used variables.

Seat Type

Screen Name: **Seat – Type**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.SEATLOC.TYPE**

Element Attributes

Database	SAS	
1	0	Occupant not seated or no seat
2	1	Bucket
3	2	Bucket with folding back
4	3	Bench
5	4	Bench with separate back cushions
6	5	Bench with folding back
7	6	Split bench with separate back cushions
8	7	Split bench with folding back
9	8	Pedestal (i.e., column supported)
10	9	Box mounted seat (i.e., van type)
11	10	Other seat type (specify)
13	11	Stowed/removed
12	99	Unknown seat type/location

Source

Primary source is the vehicle inspection, secondary sources include: interviewee; police report, or official records (i.e., medical).

Range

0-11, 99

Remarks

This variable assesses the type of seat present at each position. Because the type of seat may have an effect on occupant kinematics, the type of seat is important to analysts.

The term “folding back” refers to seat backs that are designed to fold significantly forward of upright. These seats usually fold forward to allow easier access to the area behind the seat for egress, ingress and cargo. Seats that recline only rearward are not considered to be folding backs. Folding backs, because of the additional possibility of malfunction of the folding mechanism, take precedence over solid or separate back cushions. “Folding back” is not selected if only the lower part of the seat back folds forward (for an armrest, console or trunk access). If a center seat back is separate from the outboard seat backs and folds forward for an armrest or console (in many light truck type vehicles), it is not coded as a folding back.

If a seat was removed or stowed prior to the crash, the seat position will be defined. But, no seat or safety restraint systems except air bag data will be coded for that position. A seat is considered stowed if the seat back and bottom move in the act of stowing.

The first-row seats in 2-door vehicles will usually have folding backs. The first-row seats in 4-door vehicles will usually not have folding backs.

Bucket

A bucket seat is a standalone seat intended for a single occupant, and shares no seatback hardware or cushion with any other seating position. Its bottom anchorage or track is attached directly to the vehicle floor, and is also not shared with any other seating position.

Bucket with folding back

A seat may be coded with this attribute if it meets the definition of a bucket seat and also has a seatback that folds forward.

Bench

A bench seat is intended for several occupants, has a single-piece cushion, and a single-piece seatback.

Bench with separate back cushions

Seats may be coded with this attribute if they have a bench type cushion, and have unconnected seatbacks, and the seatbacks do not fold forward.

Bench with folding back

Seats may be coded with this attribute if they have a bench type cushion and have single-piece or multi-piece seatbacks that fold forward.

Split bench

A split bench is a bench seat, the cushion of which is divided into two or more unconnected pieces.

Split bench with separate back cushions

Seats may be coded with this attribute if they have a split-bench type cushion, and have unconnected seatbacks, and the seatbacks do not fold forward.

Split bench with folding back

Seats may be coded with this attribute if they have a split-bench type cushion, and have single-piece or multiple-piece seatbacks that fold forward.

Box mounted seat (i.e., van type)

Identifies elevated seats that are attached to a box that is fastened to the floor. The seat tracks are bolted to the top of the box. This type of seat is often found in the front row of vans.

Pedestal (i.e., column supported)

Pedestal seats are often found in vans and may have a swivel mechanism.

Examples of some seat types and the appropriate attributes:

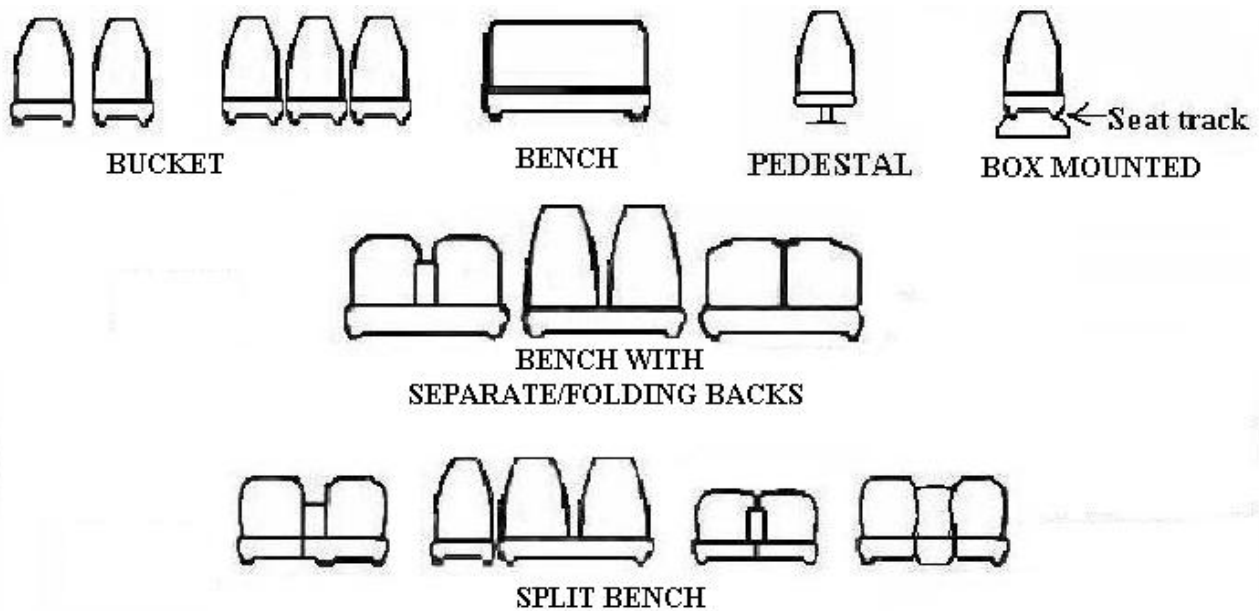


Figure 174. Examples of some seat types and the appropriate attributes

Stowed/removed

A seat is considered stowed if the seat back and bottom both move during the act of stowing.

Unknown

Unknown will be coded if a seat was present for the crash but is unavailable for inspection.

Bucket Seats

			
Bucket	Bucket with folding back	Bucket seats	Bucket seats with folding backs

Bench Seats

		
Bench	Bench	Split bench

Figure 175. Examples of some seat types

Seat OrientationScreen Name: **Seat - Orientation**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.SEATLOC.ORIENTATION****Element Attributes**

Database	SAS	
9997	0	Not applicable
		Occupant not seated, no seat
1	1	Forward-facing seat
2	2	Rear-facing seat
3	3	Side facing seat (inward)
4	4	Side facing seat (outward)
5	8	Other (specify):
6	9	Unknown

Source

Primary source is the vehicle inspection, secondary sources include: interviewee; police report, or official records (i.e., medical).

Remarks

Most seats are fixed in terms of their orientation within the vehicle; however, some seats (e.g., swivel or reversible) can be oriented in more than one direction. Swivel seats and reversible seats (e.g., some station-wagons or vans) are entered according to their orientation at the time of impact (i.e., **Forward-facing seat** or **Rear-facing seat**).

Forward-facing seat

Is used when the seat is oriented towards the front plane of the vehicle.

Rear-facing seat

Is used when the seat is oriented towards the rear plane of the vehicle.

Side facing seat (inward)

Is used when the seat is oriented towards either the right or left planes of the vehicle and faces inward.

Side facing seat (outward)

Is used when the seat is oriented towards either the right or left planes of the vehicle and faces outward.

Other

Is used when a seat is oriented such that the above attributes do not apply.

Unknown

Is used when the seat orientation cannot be determined.

Seat Track Position

Screen Name: **Seat—Track**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.SEATLOC.TRACK**

Element Attributes

Database	SAS	
		Not applicable
	0	Occupant not seated, no seat
1	1	Non-adjustable seat track
2	2	Seat at forward most track position
3	3	Seat between forward most and middle track positions
4	4	Seat at middle track position
5	5	Seat between middle and rear most track position
6	6	Seat at rear most track position
7	9	Unknown seat track position

Source

Technician-determined — Vehicle inspection, interviews confirming, or secondary source.

Remarks

The technician should attempt to determine the seat position at impact. When the technician begins the interior inspection, he/she should note the position of the seat. The technician should then move the seat forward and back along its track and determine the number of positions. Once this has been done, the seat should be moved to the position initially observed and photographed.

If the seat has electric adjusters with no distinct track positions, attempt to determine the relative position of the seat and select accordingly.

Non-adjustable seat track

Use this for seats that cannot be moved longitudinally.

Adjustable Seat Track**Seat at forward most track position**

Use this if the seat is at the forward limit of the track.

Seat between forward most and middle track position

Use this if the seat is at any position between the most forward and middle seat positions.

Seat at middle track position

Use this if the seat is in the position mid-range between the forward and rear most track position.

Seat between middle and rear most track position

Use this if the seat is at any position between the middle and rearmost track position.

Seat at rear most track position

Use this attribute if the seat is at the rear limit of the track.

Unknown

Use this attribute if the seat position at impact cannot be determined.

Seat PerformanceScreen Name: **Seat—Performance**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.SEATLOC.PERFORMANCE****Element Attributes**

Database	SAS	
		Not applicable
	0	Occupant not seated, no seat
1	1	Seat assembly intact
2	2	Seat adjuster mechanism separated/deformed
3	3	Seat back folding locks or seat back structure separation (specify)
4	4	Seat tracks/anchors separated/deformed
5	5	Deformed by occupant of this seat
6	6	Deformed by passenger compartment intrusion (specify)
10	10	Deformed by cargo
11	11	Deformed by other occupant
7	7	Combination of above (specify)
8	98	Other (specify)
9	99	Unknown

Source

Primary source is the vehicle inspection, secondary sources include: interviewee; police report, or official records (i.e., medical) for verification.

Remarks

This variable assesses the performance of the seat. The attributes are indications of whether the seat malfunctioned or was deformed in any way. Select the attribute that corresponds to the appropriate seat performance malfunction or deformation. Minor smudges, scrapes, dents, etc., are not considered deformation. If a malfunction or deformity occurs, then document the malfunction or deformation with a diagram and explanation. In addition, include photographs of the seat malfunction or deformity.

Seat assembly intact

Is used if the seat was not deformed or no portion of the seat structure separated during the crash.

Seat adjuster mechanism separated/deformed

Is used if any of the mechanisms used to adjust a seat's "comfort" position are separated or deformed during the crash as a result of occupant loading.

Seat adjuster mechanisms include:

- Height adjustment
- Longitudinal (horizontal) seat track adjustment
- Rocker adjustment
- Swivel/rotational adjustment
- Seat back recliner adjustment

For a seat back recliner separation, the seat back must have released in a rearward direction. Do not use this attribute if the seat back moved in a forward direction and the seat has a folding lock mechanism (e.g., front seats in 2-door vehicles); see **Seat back folding locks or seat back structure separation** below. Be sure to include supportive written and photographic documentation to support all separations/deformities.

Seat back folding locks or seat back structure separation (specify)

Is used when the mechanism that is designed to lock the seat back in its upright position deforms or separates allowing the seat back to move forward during the collision as a result of occupant loading. “Seat back” separation refers to forward-facing seats where seat back structural deformities (e.g., seat back hinge points) resulted in a separation of the seat back from its anchorage points. Again, to be considered applicable for this, the seat must have separated/deformed while moving forward during the collision as a result of occupant loading.

Seat tracks/anchors separated/deformed

Is used if the seat separates, to any degree, from a seat track during the crash. In addition, use this if the seat anchor that attaches the seat track to the floorpan separates, to any degree, during the crash. Box mounted seats are included in this if a separation occurred between the box and the floor or the box and the seat track/anchor. Seat track or anchor separations/deformities must be a result of occupant loading.

Deformed by occupant of this seat

Is used when the seat is changed in form from its original design from occupant loading during the crash. Situations where seats are deformed and also experience mechanical separations should be identified under **Combination of above**.

Deformed by passenger compartment intrusion

Is used when the seat is deformed or separated by intrusion of an interior vehicle component or exterior vehicle component into the passenger compartment.

Deformed by cargo

Is used when the seat is changed in form from its original design by impact from cargo during the crash. Examples of cargo: spare tire, luggage, construction equipment, tool, and tool box(es).

Deformed by other occupant

Is used when the seat is changed in form from its original design by an occupant other than the occupant in this position, during the crash. Situations where seats are deformed and also experience mechanical separations should be identified under **Combination of Above**.

Combination of above

Is used when any combination of the above occurs and describes several seat malfunctions or deformations. Seat malfunctions or deformations that are not described in the above are reported below. Seat malfunctions or deformations listed in the above take priority over others.

Other

Is used when the only seat malfunction or deformation that occur are not described in the above (e.g., impact forces). If a seat doesn't have a comfort recline and is broken rearward code here.

Unknown

Is used if the seat performance cannot be determined.

Does the Seat Have Integrated Passenger Belts?Screen Name: **Seat—Integrated Restraints**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.SEATLOC.INTRESTRAINT****Element Attributes**

Database	SAS	
		Not applicable
1	1	No
2	2	Yes
3	9	Unknown if integrated

Source

Vehicle inspection

Remarks

An integrated seat belt is incorporated into the passenger seat. It is a three point seat belt system that includes a belt having one end affixed to the seat and an opposite end mounted to a retractor secured to the seat. A seat belt latch is mounted to the belt that has a releasable and lockable buckle on the opposite side of the seat. This allows the belt to pull across the passenger lap and the other portion of the belt to cross the upper torso. The belt extends through a guide located at the top of the seat. An integrated seat belt has no pillar attachment point.

If you were to remove the seat and the restraint comes with the seat indicate “Yes.”



Figure 176. An integrated seat belt system

Head Restraint Type at This Occupant PositionScreen Name: **Head Restraint--Type**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.HEAD_RESTRAINT.TYPE****Element Attributes**

Database	SAS	
		Not applicable
	0	Occupant not seated, no seat
1	1	No head restraints
2	2	Integral
4	3	Adjustable
6	4	Add-on
8	8	Other (specify)
9	9	Unknown

Source

Primary source is the vehicle inspection, secondary sources include: interviewee; police report, or official records (i.e., medical).

Remarks

FMVSS 202 (Head Restraints) only applies to first-row seating positions. Although, the presence or non-presence of head restraints are captured for all seating positions in the vehicle. Some examples of head restraint styles are shown below.

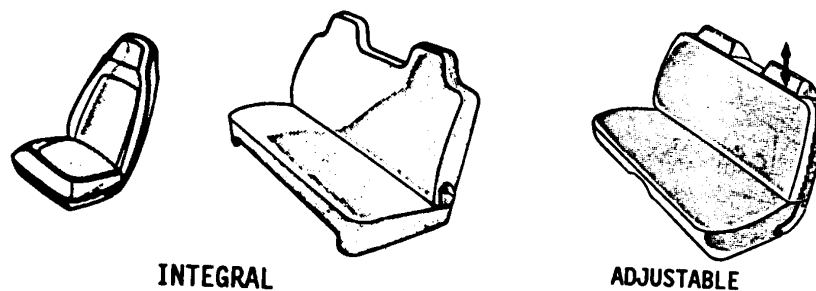


Figure 177. Examples of head restraint styles

Some manufacturers are providing head restraints for rear seat occupants.

No head restraints

Is used when (1) no head restraint is available for this seating position, or (2) there had been a head restraint but it had been removed prior to the crash.

Integral

Refers to head restraints that are a continuous part of the seat back structure or those that are a separate structure but are not vertically adjustable. For rear seats only, if an obvious rise or sculpted head restraint is not observed, code as No Head Restraint.

Adjustable

applies to: head restraints that can be moved vertically to accommodate occupants of varying heights and head restraints that have a fixed outer framework and a separate center section that is adjustable vertically.

Add-on

Refers to clamp-on, strap-on, or even bolt-on head restraints on a vehicle not originally equipped with head restraints. This attribute should be infrequently used.

Unknown

Is used when the type of head restraint cannot be determined.

Head Restraint Damage by Occupant at This Occupant PositionScreen Name: **–Damage From Occupant**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.HEAD_RESTRAINT.DAMAGE****Element Attributes**

Database	SAS	
		Not applicable
	0	Occupant not seated, no seat
8	1	No head restraints
1	2	No damage
2	3	Damaged during crash
3	9	Unknown

Source

Primary source is the vehicle inspection, secondary sources include: interviewee; police report, or official records (i.e., medical).

Remarks

Some manufacturers are providing head restraints for rear seat occupants. These head restraints may be the same or similar to those used in the front seats, or they may be a slight rise in the rear seat back. Any damage to a rear seat head restraint by the occupant in the seat position must be captured regardless of the height of the restraint.

No damage

There was no damage to the head restraint by the occupant.

Damaged during crash

Any damage to a head restraint caused by the occupant in this seating position should be identified and photographed.

Unknown

Is used when it is unknown if damage to the restraint was caused by an occupant in the appropriate seat position.

Active Head Restraint

Screen Name: **Head Restraint - Active**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS.HEAD_RESTRRAINT.ACTIVE**

Element Attributes

Database	SAS	
		Not applicable
	0	Occupant not seated, no seat
0	1	None present
2	2	Present
3	9	Unknown

Source

Vehicle inspection, Interview

Remarks

There should be a label on the seat indicating the presence of the active head restraint.

Rollover ProtectionScreen Name: **Rollover Protection**

SAS Data Set:

SAS Variable:

Database Name:

Element Attributes

Check Box

Database	SAS	
0	0	No/Unknown (unchecked)
1	1	Yes (checked)

Range**Source**

Vehicle inspection, technician-determined

Remarks

The purpose of this variable is to determine if the vehicle's rollover protection system was actuated.

Different types of systems are being used by manufacturers, also different names are used, Rollover Protection Systems (ROPS) or (RPS). In the event of a crash that induces a certain amount of inclination roll-over sensors activate roll-bars that are integrated in or behind the seats, ensuring there is sufficient clearance for occupant's heads in the event of a crash. Also, an independent module behind each of the two rear-seat passengers' heads could deploy. A rollover need not occur for the rollover protection system to actuate.

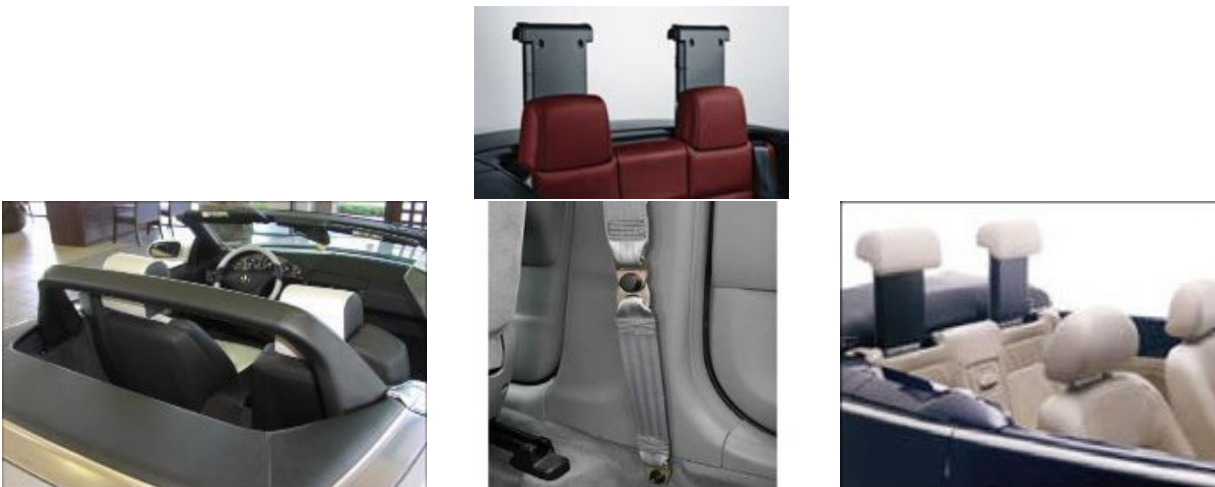


Figure 178. Roll bars

Air Bag Function

Air Bag Function and Damage Tabs roll over from Safety Systems Air Bag Tabs. The Air Bag Evaluation Tab is completed in the Occupant Form.

When the vehicle inspection is not completed and there is known air bag information from the interview, the air bag information is completed in the Occupant Form.

Air Bag Number for This VehicleScreen Name: **Air Bag**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.AIRBAG.AIRBAGNUM****Element Attributes**

Air bag number

Source

Vehicle inspection

Remarks

Assigned by the system, one for every air bag.

If air bags are available for the occupant, indicate the information on all air bags. Do so by inserting another air bag. To insert another air bag use the menu bar and select Edit/Insert, then indicate its location, and complete the information about the air bag.

Location of Air BagScreen Name: **Location**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.AIRBAG.LOCATION****Element Attributes**

Database	SAS	
1	1	Steering wheel hub
2	2	Top instrument panel
3	3	Mid instrument panel
4	4	Bottom instrument panel
12	12	Seat back (outboard)
13	13	Seat back (inboard)
8	6	Door/panel
9	7	Roof side rail
6	8	Seat belt
		Seat cushion (frontal)
		Seat cushion (side)
10	98	Other (specify)
11	99	Unknown

Source

Technician-determined: primary source; vehicle inspection, secondary source; interview

Remarks

Enter the location of the air bag. If air bags are available for the occupant, indicate the information on all air bags. Do so by inserting another air bag. To insert another air bag go to the menu bar and select **Edit/Insert**, then indicate its location, and complete the information about the air bag.

Steering wheel hub

Is used for an air bag that is designed to deploy from a module integrated with the steering wheel. It is designed to protect the vehicle's driver primarily from frontal impacts. Does not matter is the steering wheel is located on the right side of the vehicle, still code the location of the air bag to the steering wheel.

Top instrument panel

Is used for those air bags that deploy rearward from a location on the top of the instrument panel. They are designed to protect front seat passengers primarily from frontal impacts.

Mid instrument panel

Is used for those air bags that deploy rearward from a location in the middle of the instrument panel. They are designed to protect front seat passengers primarily from frontal impacts.

Bottom instrument panel

Is used for those air bags that deploy rearward from a location in the bottom of the instrument panel. They are designed to protect front seat passengers primarily from frontal impacts. This includes “knee bags.”

Seat back (outboard)

Is located on the outside portion of the seat back and is designed to protect the torso of occupants primarily from side impacts.

Seat back (inboard)

Is located on the inside portion of the seat back and is designed to protect the occupants in far side impacts and occupant to occupant interaction.

Pillar (A or B)

Is primarily a tubular shaped bag that is tethered at the A pillar and is stored in the roof side rail and is designed to protect the head of occupants primarily from side impacts.

Door/panel

Is located in the door is designed to protect the torso of occupants primarily from side impacts. Included in this attribute are air bags that deploy from any side panels.

Roof side rail

Is primarily a curtain type bag that is stored in the roof side rail and is designed to protect the head of occupants primarily from side impacts.

Seat belt

Is used for “air belts.” The “air belts” are designed to deploy from seat belts, allowing the forces of the crash to be spread over a larger area of the body.

Seat cushion (frontal)

Air bags located under the front of the seat cushion are designed to position the knees upward into a more favorable position for frontal air bag effectiveness.

Seat cushion (side)

Air bags on the outside portion of the seat cushion are designed to protect the torso of occupants primarily from side impacts.

Other (specify)

Is used when the location of the air bag cannot be captured in the above attributes. This should be a rare occurrence. The location of the air bag must be specified.

Air Bag Status

Screen Name: **Status**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.AIRBAG.STATUS**

Element Attributes

Database	SAS	
1	1	Air bag available
2	2	Air bag disconnected (specify):
3	3	Air bag not reinstalled
4	9	Unknown status if available for this crash

Source

Technician-determined — primary source is vehicle inspection, secondary sources include interview, repair facilities, tow facility, medical records.

Remarks**Air bag available**

Is used when the vehicle is equipped with an air bag for this seating position. Non-deployment of the air bag system has no bearing on this variable.

Air bag disconnected

Is used when any component of the air bag was rendered inoperative prior to the collision (e.g., fuse removed).

Air bag not reinstalled

Is used when the air bag for this seating position was not replaced after a prior deployment to the crash being researched.

Unknown

Is used when it cannot be ascertained whether an air bag was available at the time of the crash.

Type of Air Bag

Screen Name: **Type Of Air Bag**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.AIRBAG.TYPE**

Element Attributes

Database	SAS	
1	1	Original manufacturer install
3	3	Replacement air bag
2	2	Retrofitted air bag
-8871	70	No air bag available for this crash (disconnected/not reinstalled
	79	Unknown status if air bag available for this crash
4	99	Unknown type

Source

Technician-determined — primary source is the interview, secondary sources may include the repair facility and documents found in the vehicle.

Remarks**Original manufacturer install**

Is used when it can be determined that the vehicle was equipped with an air bag system in this seating position that was installed by the manufacturer at the time the vehicle was built (OEM—Original Equipment Manufacturer).

Replacement air bag

Is used when it can be determined that the vehicle was equipped with an OEM air bag system for this seating position and that this system had been replaced due to a previous deployment.

Retrofitted air bag

Is used when it can be determined that the vehicle was equipped with an air bag system for this seating position but that the vehicle was not built with a manufacturer equipped air bag system. This is an aftermarket product and should not be confused with Replacement Air Bag. Replacement Retrofit Air Bags are also included in this category.

Unknown type

With no interview or other confirming source, assume that the type of air bag is unknown.

Air Bag Deployment

Screen Name: **System Deployment**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.AIRBAG.DEPLOY**

Element Attributes

Database	SAS	
1	1	Deployed during crash (as a result of impact)
2	2	Deployed inadvertently just prior to crash
3	3	Deployed, detail unknown
4	4	Non-collision deployment
6	7	Non-deployed
-8871	70	No air bag available for this crash (disconnected/not reinstalled)
-8870	79	Unknown status if air bag available for this crash
5	99	Unknown if deployed

Source

Technician-determined — primary source is vehicle inspection, secondary sources include interview, repair facilities, tow facility, medical records.

Remarks

Although rarely occurring, an air bag may partially deploy. These air bags should be coded under **Deployed during crash**.

Deployed during crash (as a result of impact)

Is used when the vehicle is equipped with an air bag and the air bag deployed (or partially deployed) as a result of an impact that produced a longitudinal deceleration through the vehicle of sufficient magnitude to cause inflation of the air bag. Note, an air bag is not designed to deploy in every collision.

Deployed inadvertently just prior to crash.

Is used when an air bag deploys without an impact having caused its deployment, and the vehicle is subsequently involved in a crash.

Deployed, crash details unknown

Is used when the technician cannot determine if the air bag deployed (1) prior to the crash or (2) during the crash as a result of an impact that produced a deceleration through the vehicle of sufficient magnitude to cause inflation of the air bag.

Non-collision deployment

Is used if the air bag deploys during a crash but not as a result of an impact.

For example, the air bag deploys due to a vehicular fire, occurring as a result of an impact **or** a noncollision event prior to any impacts to this vehicle.

Unknown if deployed

Is used when it is known that the vehicle was equipped with an air bag but the technician is unable to determine if the air bag deployed (for whatever reason). For example, if the vehicle was sufficiently damaged so that a determination of deployment cannot be made from the vehicle inspection or the deployment status at the time of the crash cannot be determined.

Non-deployed

Is used when an air bag equipped vehicle has one or more impacts, and the air bag did not inflate during the crash.

Indications of Air Bag Malfunction

Screen Name: **Indications of Malfunction**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.AIRBAG.FAILURE**

Element Attributes

Database	SAS	
1	0	No
2	1	Yes (specify):
-8871	70	No air bag available for this crash (disconnected/not reinstalled)
-8870	79	Unknown status if air bag available for this crash
3	99	Unknown

Source

Technician-determined — primary source is vehicle inspection, secondary sources include interview, repair facilities, tow facility, medical records.

Remarks

This variable flags “indications of air bag malfunctions” and means that something abnormal has occurred to the air bag system. It may not necessarily mean that the air bag system was defective.

A vehicle inspection is required in order to report an indication of air bag malfunction because the vehicle’s deceleration may have been below the suspected ***threshold*** for the air bag’s deployment.

No

Is used whenever the air bag deployed and there are no indications of an air bag malfunction. Also use this when an air bag did not deploy and no malfunction is suspected and the vehicle inspection indicates that the deceleration sustained by the vehicle was near or below the suspected ***deployment threshold***.

Yes, specify

Is used whenever an indication of an air bag malfunction is suspected and specify the malfunction. An indication of an air bag malfunction could be a blowout of the fabric, a rupture along a fabric seam, a cover that does not open properly causing a misaligned deployment, partial inflation, or any number of other problems. If an indication of an air bag malfunction is suspected, then document the condition with images, then call your quality control center for assistance.

Unknown

Is used when it is not known if the bag malfunctioned.

Seat Location

Screen Name:

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.SEATLOC_X_AIRBAG.SEATLOCID****Element Attributes****Source****Remarks**

Identify the seat location where this occupant was located.

Air Bag/Damage

Did Air Bag Module Cover Flap/Seam Open at Designated Tear Points?

Screen Name: **Module Cover Flap Open at Tear Pts?**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.AIRBAG.FLAPOPEN**

Element Attributes

Database	SAS	
1	0	No
2	1	Yes
-8885	60	Air bag did not deploy
4	69	Unknown if air bag deployed
-8871	70	No air bag available for this crash (disconnected/not reinstalled
-8870	79	Unknown status if air bag available for this crash
3	99	Unknown flaps/seams opened at tear points

Source

Vehicle inspection

Remarks

A designated tear point is a weakened area of the flap material designed to allow the air bag easy escape from its storage area during deployment. Some air bags in the seat cushion and seat back may not have cover flaps, but will deploy through a seam that separates during the air bag deployment.

No

Is used when it can be determined that the module cover flap/seam for this air bag opened somewhere other than their designated tear points. A non-linear tear in the flap is an indication that the flap opened irregularly, not at the designated tear point.

Yes

Is used when it can be determined that the module cover flap/seam for this air bag opened up at their designated tear points. Linear and symmetrical tears are good indications of proper separation of the cover flap at their designated tear points.

Unknown if flaps/seams opened at tear points

Is used when it is not known if the air bag opened at the tear points.

Was the Cover Flap Damaged?Screen Name: **Module Cover Flap Damaged**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.AIRBAG.FLAPDAMAGE****Element Attributes**

Database	SAS	
1	0	No
2	1	Yes (specify)
-8885	60	Not deploy
4	69	Unknown if deployed
-8871	70	No air bag available for this crash
-8870	79	Unknown if air bag available for this crash
3	99	Unknown if flap damaged

Source

Vehicle inspection

Remarks**No**

Is used when it can be determined that no damage was present on the air bag module cover flap. Normal separation/tearing at the designated tear points does not constitute damage.

Yes (specify)

Is used when it can be determined that the air bag module cover flap sustained damage. Abnormal separation/tearing at the designated tear points constitutes damage. Damage can also be cuts, tears, holes, burns, abrasions, etc. The technician must specify the type of damage that is being reported.

Unknown if flap damaged

Is used when it cannot be determined if the air bag flap sustained damage.

Was There Damage to the Air Bag?

Screen Name: **Damage to Air Bag?**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.AIRBAG.DAMAGE**

Element Attributes

Database	SAS	
1	0	Not damaged

Yes — Air Bag Damaged

Database	SAS	
2	1	Ruptured
3	2	Cut
4	3	Torn
5	4	Holed
6	5	Burned
7	6	Abraded
97	60	Air bag did not deploy
11	69	Unknown if air bag deployed
-8871	70	No air bag available for this crash (disconnected/not reinstalled
-8870	79	Unknown status if air bag available for this crash
8	88	Other damage (specify)
9	95	Damaged, details unknown
10	99	Deployed, unknown if damaged
-8872	96	Post-crash damage

Source

Vehicle inspection

Remarks

Damage to the air bag must occur during the crash sequence. If damage types apply select the attribute that most deteriorates the effectiveness of the air bag. If you cannot make this determination then select the attribute in a hierarchical manner from the top of the list down.

Not damaged

Is used when no damage to the air bag for this occupant position was sustained.

Ruptured

Describes damage to the air bag that resembles a stellate or starlike pattern of damage, with tears originating from a single point of origin.

Cut

Describes openings in the air bag that are generally linear and have smooth edges.

Torn

Describes openings that have ragged edges but that are generally linear in appearance.

Holed

Describes damage that is circular in appearance with or without ragged edges. If a burn causes a hole, then select burned.

Burned

Describes damage resulting from heat that scorches, melts, or burns the bag.

Abraded

Is a pattern of damage to the surface of the bag that appears as a fraying of the surface threads.

Other damage (specify)

Is used to describe damage that is not captured in any of the attributes above.

Damaged, details unknown

Is used when it is known that the air bag sustained damage, but the type of damage cannot be determined.

Deployed, unknown if damaged

Is used when cannot be determined if the air bag sustained damage.

Post-crash damage

Is used when rescue or emergency efforts caused damage to the air bag. Also, use this for damage caused by towing.

Source of Air Bag DamageScreen Name: **Source of Damage**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.AIRBAG.DAMAGESOURCE****Element Attributes**

Database	SAS	
2	1	Object worn by occupant (specify)
3	2	Object carried by occupant (specify)
4	3	Adaptive/assistive controls, (specify)
12	4	Cover flaps
5	5	Fire in vehicle
6	6	Thermal burns
14	9	Glazing
-8872	96	Post-crash damage
1	50	Air bag not damaged
10	59	Deployed, unknown of damaged
97	60	Air bag did not deploy
11	69	Unknown if air bag deployed
-8871	70	No air bag available for this crash (disconnected/not reinstalled)
-9999	79	Unknown status if air bag available for this crash
8	88	Other damage source (specify)
9	99	Damaged unknown source

Source

Vehicle inspection (with interview/medical records as confirming source for objects worn/carried by occupant)

Remarks

This is a hierarchical variable, that is, if more than one element applies, then select the first attribute that applies.

Object worn by occupant (specify)

Is selected when the object is fastened, attached, or worn by the occupant. Be sure to specify the object.

Object carried by occupant (specify)

Is used when the object is held in the mouth, the hand, arm, etc., by the occupant. Be sure to specify the object.

Adaptive/assistive controls (specify)

Is used when adaptive/assistive controls damages the air bag for this occupant position. Be sure to specify the object/control.

Cover flaps

Is used when the air bag cover flaps damaged the air bag for this occupant position.

Fire in vehicle

Is used when there was a fire in the occupant compartment that damaged the air bag.

Thermal burns

Is used when the air bag is burned or scorched by the inflator or chemicals.

Other damage source (specify)

Is used whenever there is damage to the air bag and it cannot be fit into any of the categories above. Be sure to specify the object/source.

Unknown

Is used when there is damage to the air bag, but the source of the damage cannot be determined.

Seat Location

Screen Name:

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.SEATLOC_X_AIRBAG.SEATLOCID**

Element Attributes

Source

Interviewee, police report, and vehicle inspection

Remarks

Air Bag Number

Screen Name:

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.AIRBAG.AIRBAGNUM**

Element Attributes

Source

Remarks

Air Bag/Evaluation

Had the Vehicle Been in Previous Crashes?

Screen Name: **Vehicle Previous Crashes**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.AIRBAG.PRIORACCIDENT**

Element Attributes

Database	SAS	
1	1	No previous crashes
2	2	Previous crash without deployment
3	3	One previous crash with deployment
4	4	More than one previous crash with at least one deployment
5	8	Previous crashes, unknown deployment status
6	9	Unknown

Source

Technician-determined — primary source is the interview, secondary source may include a repair facility.

Remarks

No previous crashes

Is used for vehicles that are equipped with an air bag for this occupant position, and have not been involved in any previous crashes.

Previous crash without deployment

Is used when it can be determined that the vehicle had been in previous crash(es) that did not involve an air bag deployment for this air bag.

One previous crash with deployment

Is used when it can be determined that the vehicle had been in only one previous crash and this air bag deployed in that crash.

More than one previous crash with at least one deployment

Is used when it can be determined that the vehicle had been in more than one previous crash at least one of which involved an air bag deployment for this air bag.

Previous crashes, unknown deployment status

Is used when it can be determined that the vehicle had been in at least one previous crash, but the deployment status for this air bag in any of these previous crashes cannot be determined.

Unknown

Is used when it cannot be determined if the vehicle had been in previous crash(es) and/or the air bag deployment status for this air bag cannot be determined.

Had Any Prior Maintenance/Service Been Performed on This Air Bag System?

Screen Name: **Prior Maintenance/Service**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.AIRBAG.PRIORMAIN**

Element Attributes

Database	SAS	
1	1	No prior maintenance
2	2	Yes, prior maintenance (specify)
3	9	Unknown

Source

Technician-determined — primary source is the interview, secondary sources may include repair facilities and or documents found in the vehicle.

Remarks

This variable is specific for the air bag at this occupant's position.

No prior maintenance

Is used when it can be determined that the vehicle was equipped with an air bag system, but never had any maintenance/service performed on the air bag system.

Yes, prior maintenance, specify

Is used when it can be determined that the vehicle was equipped with an air bag system and that the system had some previous maintenance/service performed. If possible, the technician must specify exactly what type of maintenance/service was performed and a date of service if possible.

Unknown

Is used when it cannot be determined if the vehicle's air bag system had previous maintenance/service.

Air Bag Deployment Event Sequence Number

Screen Name: **Event Number**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS.AIRBAG.DEPLOYEVENTID**

Element Attributes

Event #	
60	Air bag did not deploy
69	Unknown if air bag deployed
70	No air bag available for this crash (disconnected/not reinstalled)
79	Unknown status if air bag available for this crash
99	Deployed, unknown event

Source

Primary sources are the scene and vehicle inspections; secondary sources include the police report and the interviewee.

Range

1-35, 60, 69, 70, 79, 99

Remarks**Event #**

Select the event number that is directly related to the deployment for of this occupant position air bag.

Deployed, unknown event

Is used when this air bag for this occupant position deployed, but the event associated with the deployment cannot be determined.

CDC for Air Bag Deployment ImpactScreen Name: **CDC For Deployment Impact**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.AIRBAG.CDCIMPACTDV****Element Attributes**

Database	SAS	
1	1	Highest delta V
2	2	Second highest delta V
3	3	Other delta V (specify)
7	60	Air bag did not deploy
5	69	Unknown if air bag deployed
-8871	70	No air bag available for this crash (disconnected/not reinstalled)
-8870	79	Unknown status if air bag available for this crash
4	99	Deployed, unknown event

Source

Technician-determined — primary sources are the scene and vehicle inspection; secondary sources are the police report and the interviewee.

Remarks

It is not necessary to run a reconstruction program to code this variable. Determination of the proper code can be made by visual estimation if no other means are available.

Highest delta V

Is used when it is determined that the crash event that is associated with the air bag deployment for this occupant position is also the event that produced the highest delta V for this vehicle.

Second highest delta V

Is used when it is determined that the crash event that is associated with the air bag deployment for this occupant position is also the event that produced the second highest delta V for this vehicle.

Other delta V (specify)

Is used when it is determined that the crash event that is associated with the air bag deployment for this occupant position did not produce either the highest or second highest delta V.

Deployed, unknown event

Is used when it cannot be determined which crash event is associated with the air bag deployment for this occupant position.

Child Restraint Overview

The CISS is the premier data collection system of real-world crashes and as such it is relied upon to deliver data on high profile vehicle safety components such as child restraints. Complete and thorough documentation in this area is an essential element for the agency to achieve its mission. The variables on the Safety System and Occupant forms were designed to document the usage of CRS installed in towed CISS-applicable vehicles involved in crashes.

Motor vehicle crashes are the leading cause of death and disability for pediatric and adolescent children, and child passenger safety has long been an agency concern. Accordingly, there continues to be a need to collect and compile data on children involved in crashes. Data collected in the past have shown that children may become out of place when they are not secured properly within a CRS. Children frequently escape the CRS' internal harness and in some instances kneel or stand on the vehicle's seat cushion instead of remaining secured in the CRS. In other cases, the child is placed within the CRS; however, the caregiver improperly restrained the child and/or incorrectly secured the CRS within the motor vehicle. Historically, correct use and installation of a CRS is a highly effective means of reducing the incidence of serious injury and death to children.

Most States have attempted to address the issue of child safety in motor vehicles with legislation requiring children to be restrained within a CRS and seated in the back row of vehicles. These efforts have resulted in a sharp reduction of injuries and deaths among children, but more data related to the real-world use and performance of child restraints needs to be collected annually. One past and present source of child restraint data is the PCR; however, frequently, the PCR provides inaccurate or incomplete data on the type of CRS and how the child was positioned within it.

NHTSA enacted two Federal Motor Vehicle Safety Standards (FMVSS) related to child occupant protection; they are: No. 213, Child Restraint Systems and No.225, Child Restraint Anchorage Systems (e.g., Lower Anchors and Tethers for Children (LATCH)). Within these standards was the requirement that the testing and performance of child restraints would be under the purview of NHTSA and all CRS and vehicle manufacturers would be required to meet these standards. NHTSA performs controlled testing of child seats in laboratories and crash test facilities, and CISS data is collected to augment this research. Analysts will compare usage, injury severity, and delta V data to assess performance levels among different child restraints. After these analyses, the existing standards will be evaluated to determine their effectiveness and whether updates are warranted. These data also assist the agency in identifying any significant problems common among any child restraint types.

When discovering that a child was present within a CISS-applicable vehicle, the technician should ***conduct the inspection under the presumption that a CRS was present and occupied*** during the crash. If the technician knows a child seat was not occupied at the time of the crash, no documentation is necessary. If they don't know or there is uncertainty, they must document the child seat data. If they find out later the seats were not occupied the data can be discarded. In many cases, the CRS will have already been removed by the police and/or emergency personnel and may be in the possession of the owner, the police jurisdiction, or the treating hospital/trauma center.

When the CRS is not present in the vehicle at the time of the inspection, the technician should make continual attempts to locate and inspect the CRS. Once located, the inspection shall consist of a detailed examination of the CRS, highlighting any observable damage; the internal harness, including evidence on the webbing (stretching, transfers, burn marks, etc.); height/weight/age recommendations (recorded from labeling on the CRS shell); make/model data (also recorded from labeling on the CRS shell); and evidence within the belt paths. After recording the data, a comprehensive set of digital images shall be taken of the CRS, including any damage, and all CRS labeling. It is important that the images of the CRS are taken before it is removed from the vehicle by the technician. These photographs should include how the CRS is installed in the vehicle and the routing of the seat belt or LATCH use.

In addition to the physical inspection of the CRS, a comprehensive interview with the parent/caregiver is vital toward understanding how the CRS was installed in the vehicle and how the child was positioned and restrained during the crash. Information, including what the child was wearing, where the chest retainer clip was positioned, the height and weight of the child and the location of the CRS within the vehicle is critical to understanding whether the CRS functioned as it was designed. Only occupied child seats are coded into CISSWeb; however, if it is unknown if the CRS was occupied code it as being used.

Some vehicles, specifically some types of minivans and sport utility vehicles, integrate a CRS into the second and third rows of the vehicle. These types of child restraints are termed *integrated child restraint systems*, and they should be documented regardless of whether the CRS was occupied at the time of the crash.

Child Seat

Child Restraint Number

Screen Name: N/A

SAS Data Set:

SAS Variable:

Database Name:

Element Attributes

Source

As created by the system.

Remarks

Seat Location for Child Restraint

Screen Name: **Seat Location**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.CHILDSEAT.OCCID**

Element Attributes

Seat Number

Front Row	Second Row	Third Row
11 Left side	21 Left side	31 Left side
12 Middle	22 Middle	32 Middle
13 Right side	23 Right side	33 Right side
	24 Other (specify)	34 Other (specify)

Fourth Row	Fifth Row	Other Rows
41 Left side	51 Left side	Cargo Area
42 Middle	52 Middle	Unknown
43 Right side	53 Right side	
44 Other (specify)	54 Other (specify)	

Source

Vehicle inspection, child restraint system inspection, interview

Remarks

All child restraints found inside the vehicles are to be coded into CISSWeb, except for unoccupied seats. This variable assigns a seating location for each CRS. For example, if a vehicle has child restraints present in the second row center and the third row right positions, 22 and 33 should be selected.

There are cases where a child is sitting within a CRS but is not restrained with the lap and shoulder belts or the internal harness. The CRS will still be coded as used and the variables within the CRS section will be coded to reflect the child's unbelted status.

The majority of child restraints are taken from the vehicle either during the removal of the child from the vehicle post-crash or by an occupant/family member after the crash. These restraints can usually be inspected at the home of the interviewee or at the attending hospitals. However, on some occasions the child restraints are discarded prior to the case assignment. In those cases, some details about the CRS can be ascertained during the interview, by on-scene photographs, and by the interior vehicle inspection.

In all cases involving a CRS, it is imperative that the interview is obtained. To properly understand how the CRS was used and how it performed during the crash, the height, weight,

and other supportive information about the child is needed. Additionally, to truly understand the experience of the person who was installed the CRS, a direct interview with that person is vital.

Child Restraint PlacementScreen Name: **Placement**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.CHILDSEAT.PLACEMENT****Element Attributes**

Database	SAS	
1	1	Seat
2	2	Floor
3	3	Lap of other occupant
4	4	Console
-9998	8	Other (specify)
-9999	9	Unknown

Source

Vehicle inspection, child restraint system inspection, interview, medical records, PCR

Remarks**Seat**

CRS placed on vehicle seat.

Floor

CRS placed on vehicle floor.

Lap of Occupant

CRS placed on lap of another occupant.

Console

CRS placed on console.

Other (specify)

Other position of CRS (specify).

Unknown

Position of CRS could not be determined.

Child Position in Child RestraintScreen Name: **Child Position**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.CHILDSEAT.POSTURE****Element Attributes**

Database	SAS	
-9997	0	Not occupied
1	1	Upright
2	2	Reclined/lying back
3	3	Supine, facing upwards
4	4	Slumped forward
5	5	Slumped to the side
6	6	Kneeling
-9998	8	Other (specify)
-9999	9	Unknown

Source

Interview

Remarks**Not Occupied**

Pre-coded

Upright

Child was sitting upright, facing forward.

Reclined/Lying Back

Child was reclined, between 90 and 45°.

Supine

Child was lying flat, facing upward.

Slumped forward

Child was leaning.

Slumped to the side

Child was leaning to the side from the waist up and their back was not against the back of the child restraint or vehicle, in case of a backless booster seat.

Kneeling

Child was kneeling while in the CRS.

Other (specify)

Any other position of the child that can be determined.

Unknown

Unknown position of the child in the CRS.

Child Restraint ManufacturerScreen Name: **Manufacturer**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.CHILDSEAT.MANUFACTURER****Element Attributes**

Database	SAS	
		Refer to listing of child restraint manufacturers
997	N/A	Other manufacturer (specify)
-999	999	Unknown manufacturers

Source

Vehicle inspection, child safety seat inspection, interview

Remarks

The manufacturer name is sometimes stamped, sewn or molded onto the exterior surface of the CRS. Removal of padding from the CRS, and an examination of the shell, may be necessary to identify the manufacturer, make, model, serial no. and/or date of manufacture of the CRS. The CRS owner's manual, when available, is a valuable source of information and should be referred to by the technician. The CRS should also have a label permanently attached that identifies the restraint's date of manufacture and model number; this information alone may be used to identify the specific manufacturer and of the seat if no other identifiers exist. In the absence of any other identifying information, take several digital images of the CRS. Those images, used with other resources, are helpful in identifying the make and model of the CRS later. When the manufacturer of the CRS cannot be determined, the attribute **unknown manufacturer** should be selected.

Child Restraint Make

Screen Name: **Make**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS.CHILDSEAT.Make**

Element Attributes

Database	SAS	
		Refer to listing of child restraints
997	N/A	Other make (specify)
-999	999	Unknown make

Source

Vehicle inspection, child safety seat inspection, interview

Remarks

The manufacturer/make name is usually stamped, sewn or molded onto the exterior surface of the CRS. Removal of padding from the CRS, and an examination of the shell, may be necessary to identify the make, model, serial no. and/or date of manufacture of the CRS. The CRS owner's manual, when available, is a valuable source of information and should be referred to by the technician. The CRS should also have a label permanently attached that identifies the restraint's date of manufacture and model number; this information alone may be used to identify the specific manufacturer and make of seat if no other identifiers exist. In the absence of any other identifying information, take several digital images of the CRS. Those images, used with other resources, are helpful in identifying the make and model of the CRS later. When the make of the CRS cannot be determined, the attribute **unknown make** should be selected.

Child Restraint ModelScreen Name: **Model**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.CHILDSEAT.MODEL****Element Attributes**

Database	SAS	
		Refer to listing of child restraints
-998	N/A	Other (specify)
-999	998	Unknown model

Source

Vehicle inspection, child safety seat inspection, interview

Remarks

The manufacturer/make name is usually stamped, sewn or molded onto the exterior surface of the CRS. Removal of padding from the CRS, and an examination of the shell, may be necessary to identify the make, model, serial no. and/or date of manufacture of the CRS. The CRS owner's manual, when available, is a valuable source of information and should be referred to by the technician. The CRS should also have a label permanently attached that identifies the restraint's date of manufacture and model number; this information alone may be used to identify the specific manufacturer and make of seat if no other identifiers exist. In the absence of any other identifying information, take several digital images of the CRS. Those images, used with other resources, are helpful in identifying the make and model of the CRS at a later date. When the model of the CRS cannot be determined, the attribute **unknown model** should be selected. The image below illustrates a typical CRS label.

*Figure 179. Typical CRS label***Date of Manufacture:** 10/27/05 (October 27, 2005)**Model Number:** 8A03QST

Child Restraint TypeScreen Name: **Type**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.CHILDSEAT.SEATTYPE****Element Attributes**

Database	SAS	
1	1	Convertible safety seat (CSS)
2	2	Forward-facing safety seat (FSS)
3	3	Infant safety seat (ISS)
4	4	Booster safety seat (BSS)
5	5	Integrated safety seat (INT)
6	6	Special needs safety seat (SNSS)
7	7	Vest (VSS)
8	8	Harness (HSS)
10	10	Booster/forward-facing safety seat (BSS/FSS)
11	11	Booster/convertible safety seat (BSS/CSS)
98	98	Other (specify)
99	99	Unknown

Source

Vehicle inspection, child seat inspection, interview

Remarks

Once the CRS has been identified by its make and model, the CRS *type* will sometimes automatically be defined. **Since this variable represents how the CRS was designed to be used**, this information should be determined during the child seat inspection and/or by asking appropriate questions during the interview. The type of CRS can be determined in the absence of the make and model names.

Child Restraint How UsedScreen Name: **How Used**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.CHILDSEAT.HOWUSED****Element Attributes**

Database	SAS	
1	1	Infant safety seat (ISS)
2	2	Forward-facing safety seat (FSS)
3	3	Booster safety seat (BSS)
4	4	Integrated safety seat (INT)
5	5	Harness (HSS)
6	6	Vest (VSS)
7	7	Special needs safety seat (SNSS)
98	98	Other (specify)
-99	99	Unknown

Source

Vehicle inspection, child safety seat inspection, interview, medical records, PCR

Remarks

Since this variable represents how the CRS was actually used, this information should be determined during the child seat inspection and/or by asking appropriate questions during the interview. How the CRS was used can be determined in the absence of the make and model names.

The following seven pages outline the different types of child restraints a technician will encounter during a crash investigation.

When ISS used with an infant base during a crash, check the 'infant base used' box. When checked, additional fields will open pertaining to the infant base.

Infant safety seat (ISS)

Designed and intended to be used as *rear-facing-only* by infants up to two years old and/or weighing up to approximately 40 lb and are typically equipped with either a 3- or 5-point harness. Some infant seats have detachable bases that can be left secured in the vehicle while the infant seat is removed and used as a carrier. When used in the vehicle as a child restraint, the carrier-type infant seat's carrying handle should be folded back in the down position in most cases, and the CRS should recline at a 45-degree angle (carrying handle instructions and angles vary by manufacturer).

Infant seats are typically designed with two or three sets of harness strap slots in the back of the CRS that allows for proper harness strap placement (always adjusted at or below the infant's shoulders). Most harness adjustment mechanisms are mounted behind the seat back and affixed/locked by a metal bar, or clip-type lock. These types of child restraints are also normally equipped with a harness retainer clip that should be positioned to the infant's armpit level. Either the vehicle's belt system (lap or lap portion of a lap/shoulder belt) or the lower LATCH anchors must be used to secure the seat and/or its base to the vehicle.



Figure 180. Infant seat



Figure 181. Common infant seat with detachable base



Figure 182. Infant seat equipped with foot brace to abut seat back

Convertible safety seat (CSS)

Designed and intended to be used either rear or forward-facing for children ranging from birth to approximately 40 lb (usage restrictions will normally be found on the CRS labeling as well as in the owner's manual). All convertible seats have a harness system to secure the child to the CRS. The most common system consists of a 5-point harness with a harness retainer clip that should be adjusted to the armpit level of the child. Although not as common, some child seats may have a T-shield or tray-shield. **Note:** *T- and tray-shield designs have been phased out as manufacturers have not employed this design in several years; however, they are still being used by small numbers of people.*

Most convertible seats employ three or more sets of harness slots located on the CRS seat back that are used to adjust the height of the harness; proper slot usage is based on the age and size of the child. Generally, the lowest and middle slots are used when the CRS is in a rear-facing orientation and the top slots are used when the CRS is used forward-facing (the slot position requirements vary by manufacturer). Child seats used in a rear-facing orientation typically range from the birth of the child up to 20 lb. Some seats have a range that extends to as high as 40 lb. Refer to the CRS labeling and the owner's manual for the height and weight requirements for each CRS.



Figure 183. CRS with tray-shield



Figure 184. CRS with 5-point harness



Figure 185. CRS with T-shield

Either the vehicle's lap and shoulder seat belt system or the LATCH system must be used to secure the child seat into the vehicle. As of 2011 it was still not recommended to use both systems simultaneously. However, the top tether should be used in conjunction with either system when in a forward-facing orientation. The LATCH system can only be used when both the CRS and vehicle are equipped with LATCH attachments.

A forward-facing safety seat is intended to be used by children who are over one year of age and who weigh between 20 and 40 lb. The majority of these seats are equipped with an internal harness and adjustable chest retainer clip; however, some earlier models were designed as a backless booster safety seat with an attached shield. Most forward-facing seats are equipped with three sets of harness slots that allow for the adjustment of the harness straps, at or above the shoulders, as the child grows. Forward-facing-only safety seats are installed in the vehicle with either the lap and shoulder belts or the LATCH system. Note: *The top tether should be used in conjunction with the lap and shoulder belts.*

The majority of forward-facing safety seats convert to belt-positioning booster safety seats by removing the internal harness after the child reaches 40 lb. Because different child seats have different design characteristics, it is important to check the owner's manual for slight usage variations.

Shield booster seats are considered forward-facing-only safety seats when the shield is used. Otherwise, they are considered booster safety seats.



Figure 186. CRS equipped with internal harness and adjustable chest retainer clip



Figure 187. Shield booster seat

Booster safety seat (BSS)

Booster safety seats elevate and position the child and they are intended to be used in a forward-facing orientation with the vehicle's lap and shoulder restraint. There are two main types of booster seats: belt-positioning high-back booster seats and backless booster seats. Many booster seats are hybrid models equipped with detachable seat backs.

Belt-positioning high-back booster seats typically contain shoulder belt channels/positioners (circled in images) that guide the shoulder belt in the proper orientation around the child and the CRS. The head restraint area of the high-back is usually contoured in a half-moon configuration to provide added protection for the child's head.



Figure 188. Belt positioning high back(ed) booster seat

Backless booster seats have no seat back, but they also contain belt channels/positioners under the armrests for correct belt routing. Some backless booster seats are equipped with a shield (the aforementioned shield-boosters) that is removable. Child seats are considered booster seats only if the shield is not used during the crash. Otherwise, they are considered forward-facing safety seats.



Figure 189. Backless booster seat

The detachable seat back booster seat is a hybrid version of those illustrated in to the right and can be used in either manner. The latest variations of these booster seats include lower anchor LATCH anchors (outlined in image) that were uncommon to booster safety seats until 2008. The seat to the right is a LATCH equipped booster seat, widely considered the first of these new types of booster seats. The subject of LATCH is discussed in greater detail later in this (Child Restraint) section of the manual.



Figure 190. Booster seat with lower anchors

Integrated child safety seat (INT)

Integrated child safety seats (also known as built-in child seats) are usually mounted within the seatbacks in the back rows of certain vehicles. The majority of the older models were designed for forward-facing orientation usage only for children of at least one year of age, a height of 33 – 40 inches, and a weight of 20 – 40 lb. Most integrated seats were equipped with a 5-point internal harness system; however, many newer vehicles are equipping their vehicles with integrated booster seats for use by children who weigh up to 80 lb. Many of the forward-facing platforms are being phased out as manufacturers focus on a new generation of booster seats. The newer seats come in many different designs and it is important to check the owner's manual for specific requirements for each integrated child restraint.



Figure 191. Older 5-point harness type of integrated CRS (typically seen in many older minivans)



Figure 192. Newer booster type of integrated CRS



Figure 193. Newer booster type of integrated CRS

Harness (HSS)

Harnesses are intended to be used on children in a forward-facing orientation who exceed the weight and age restrictions of forward-facing child seats (over 40 lb/exceeding 5 years old). Harnesses are comprised of two straps, connected by a chest retainer clip, that converge into one strap that is designed to affix to the top tether hook of the vehicle. The bottom edges of the straps contain loops near the seat bight for the lap belt to be routed through. The lap belt webbing rests against the child's lap securing the lower body while the straps attach to the top tether hook and protect the torso. Although harnesses are compliant with FMVSS guidelines, they have largely been supplanted by booster seats, and are currently produced by only one manufacturer (EZ-On Products, LLC). They are rated to restrain children up to 80 lb; however, with the installation of an aftermarket tether kit, the harness can restrain children up to 168 lb.



Figure 194. Harness

Travel vests (VSS)

Vests are designed for forward-facing use only and are generally intended for use by children weighing 25 – 40 lb. There are models that can accommodate people from 2 years old through adulthood and up to 168 lb, but they are rare. Vests are comprised of similar adjustable harnesses and loops to be used in conjunction with the vehicle's lap or lap and shoulder belt and top tethers. Some vests are designed with a 5-point internal harness and zipper activated adjusters to regulate the strap length. Some vests such as those used on special-needs school buses may require a separate aftermarket seat mount to ensure proper usage.



Figure 195. Travel vest

Special needs safety seat (SNSS)

Special Needs seats are intended for children with special transportation needs who range from newborn to 100 lb. The majority of these seats are designed for forward-facing use only; however, some can be used in both forward and rear-facing orientations. All SNSSs are configured with 3- or 5-point internal harness systems or some other internal harness configuration. Some are also equipped with belt extenders to be used in coordination with other aftermarket special needs products. These seats are usually much larger than standard forward-facing child restraints.



Figure 196. Special needs safety seat (SNSS)

Other, specify (Not meant for vehicle travel)

Other child seats include all other items a person might use that are not FMVSS 213 or 225 compliant. These products may consist of seats with no labeling identifiable either through post-1990 child seat listings, manufacturer's instructions, or located within the typical literature on the subject. People have been known to use infant carriers, phone or other books, restaurant/home-style booster seats, portable cribs/cradles, wood and plastic platforms and cushions and pillows. These examples would fall into the category of Other.

Unknown

Unknown is used when any child restraint cannot be identified. Before defaulting to this attribute all available information should be thoroughly examined (photographs, PCR statements, interview statements, CRS manuals) in an attempt to determine the CRS make, model, and type.

Date of Manufacture

Screen Name: **Date of Manufacture**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.CHILDSEAT.DATEMADE**

Element Attributes

Database	SAS		
			MM/DD/YYYY
			Indicate the date of manufacture as indicated on the child restraint
12/30/18	99	99/99/9999	Unknown date

Source

Vehicle inspection, child restraint system inspection, interview

Remarks

Indicate the manufacture date as labeled on the child restraint. This information is important in determining the model of the child restraint when it is not otherwise known. The image below displays the expiration date of the child restraint (**MAR 2017**), the date of manufacture (**MAR 2011**), the model number (**00 079021 430 070**) and the model name (**KEYFIT30**).

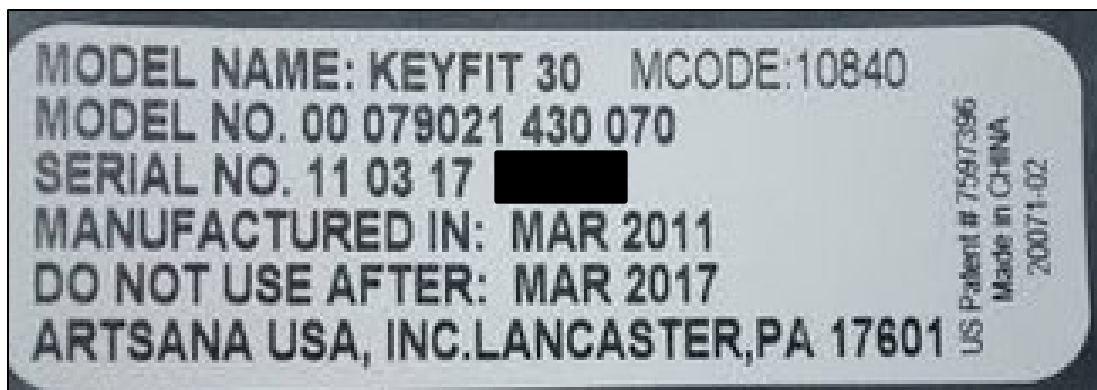


Figure 197. Child restraint label

It should be noted the date can sometimes be displayed differently on the label (e.g., YYYY-MM-DD), but it should always be coded as illustrated above.

Model Number

Screen Name: **Model No**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS.CHILDSEAT.MODELNO**

Element Attributes

Indicate the model number as indicated on the child restraint

99999999	Unknown

Source

Vehicle inspection, child restraint system inspection, interview

Remarks

Refer to the image on the previous page for the model number. The model number will default to capital letters.

If the model number of the CRS is unknown, enter the first three 9s, the system will populate the remainder.

Source of Data

Screen Name: **Source of Data**
SAS Data Set:
SAS Variable:
Database Name:

Element Attributes

Database	SAS	
1	1	Vehicle
2	2	Interview
3	3	Vehicle and Interview
4	4	Photographs Only
5	5	Official Records

Source

Technician-determined

Remarks

Indicate the source of the data for the child restraint information. If the CRS is present in the vehicle at the time of the inspection, use **Vehicle**. If the CRS is inspected at the owner/driver's home, use **Interview**. If the CRS is inspected and no vehicle inspection is obtained, use **Vehicle and Interview**. Official records include medical records and police reports.

Child Restraint Usage OrientationScreen Name: **Orientation**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.CHILDSEAT.ORIENTATION****Element Attributes**

Database	SAS	
1	1	Rear-facing
2	2	Forward-facing
3	3	Supine
-9998	8	Other (specify)
-9999	9	Unknown

Source

Vehicle inspection, child seat inspection, interview, medical records, PCR

Remarks**Rear-facing**

The CRS was facing the rear of the vehicle at the time of the crash.

Forward-facing

The CRS was facing the front of the vehicle at the time of the crash.

Supine

The CRS was lying flat at the time of the crash.

Other (specify)

At the time of the crash the CRS was facing in another direction (i.e., sideways, on top, or underneath something).

Unknown

A CRS was present, but the orientation at the time of the crash cannot be determined.

Child Restraint Harness/Shield Design

Screen Name: **Harness/Shield**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS.CHILDSEAT.HARNES**

Element Attributes

Database	SAS	
-8887	0	No harness/shield available
1	1	3-pt. harness
2	2	5-pt. harness
3	3	T-shield
4	4	Tray-shield
5	5	Shield
6	6	6-pt. harness
-9999	9	Unknown

Source

Vehicle inspection, child restraint system inspection, interview

Remarks

This variable explains how the CRS is designed to be used. It does not specify how the CRS was actually used in the crash, or whether it was used as designed.

A harness is similar to a normal seat belt, but it is integrated within the CRS itself. It is designed to restrain the child within the CRS.

Specific examples of harness and shield designs are discussed on the following pages.

3-point harness

Two harness straps that cross the child's shoulders are attached to a latch plate that is inserted into a buckle on the CRS. A retainer clip is also attached to the two harness straps to be positioned to the child's armpit level. These types of harnesses are found mostly in older ISS types and are not as common in recent years.



Figure 198. 3-point harness

5-point harness

These are the most common types of harness straps found in all types of child restraints. The system consists of two straps that cross the shoulders and two straps that cross the child's thighs. A two-piece chest retainer clip connects the shoulder straps and dual latch plates are inserted into the buckle on the CRS.



Figure 199. 5-point harness

T-Shield

The harness straps are housed within a T-shaped shield that is inserted into a buckle on the CRS. The harness straps are also connected by an adjustable chest retainer clip. This is another harness system that has been largely phased out and will only be found in older models.



Figure 200. T-shield

Tray-shield

The harness straps are attached to a padded tray that folds down in front of the child's torso and hips. The latch plate is inserted into the buckle on the CRS and is sometimes attached to the tray-shield or is independent. This is another harness system that has been largely phased out and will only be found in older models.



Figure 201. Tray-shield

Shield booster

Shield Boosters are attached to BSS-type restraints and have an internal path for belt routing. They are designed for children up to 60 lb when the CRS is used as a BSS. This is another type of system that has been largely phased out.



Figure 202. Shield booster

6-point harness

The 6-point harness system is very rare for child restraints. The most common type of 6-point harness is illustrated to the right.



Figure 203. 6-point harness

Child Restraint Harness/Shield UseScreen Name: **Harness/Shield**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.CHILDSEAT.HARNESSUSE****Element Attributes**

Database	SAS	
1	0	Not designed with a harness
2	1	Harness/shield not used
3	2	Harness straps in top/highest slot
4	3	Harness straps in the middle slots
5	4	Harness straps in the bottom/lower slots
6	5	Harness used – slot use unknown
7	6	Retrofitted with harness
8	7	Shield used
9	8	Other (specify)
-9999	9	Unknown if harness/shield used

Source

Vehicle inspection, child restraint system inspection, interview, medical records, PCR

Remarks

Make a determination of the harness/shield usage at the time of the crash. If the CRS was equipped with adjustable harnesses with a slide mechanism rather than Harness slots, indicate where the harness was adjusted (top, middle/bottom) where the harness was positioned.

Not designed with harness

This attribute is used if the CRS did not have an internal harness.

Harness/shield not used

This attribute is used if the CRS had a harness/shield, but it was not used.

Harness straps in top/highest slots

This attribute is used if the harness straps were in the highest slots.

Harness straps in the middle slots

This attribute is used if the harness straps were in any one of the middle slots. **Note:** Some child restraints are equipped with five sets of slots. In these cases, use this code if the harness straps are routed through any of the middle slots.

Harness straps in bottom/lower slots

This attribute is used if the harness straps were in the lowest slots.

Harness used, slot use unknown

This attribute is used if the technician was unable to determine what set of slots the harness straps were routed through.

Retrofitted with harness

This attribute is used if the harness straps were replaced prior to the crash.

Shield used

This attribute is used if the CRS was equipped with either a Tray or T-shield in lieu of an internal harness system.

Other (specify)

This attribute is used if the harness straps were routed unconventionally or through different slots. For example, if the right strap was routed through the top slot and the left slot was routed through a middle slot, this attribute would be selected. Whenever the harness strap usage is questionable, use this attribute and specify further.

Unknown

This attribute is used when the harness slot usage cannot be determined.

Child Restraint Retainer Clip

Screen Name: **Retainer Clip**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.CHILDSEAT.RETAINER**

Element Attributes

Database	SAS	
0	0	No clip available
1	1	Clip available
-9999	9	Unknown

Source

Vehicle inspection, child restraint system inspection, interview

Remarks

This variable explains how the CRS was designed to be used. It does not specify how the CRS was actually used in the crash, or whether it was used as designed.

A chest retainer clip is a plastic device that attaches the two harness straps. The retainer clip should be threaded correctly and positioned at the child's armpit level. It is designed to keep the shoulder harnesses over the child's shoulders during a crash. The images below illustrate the chest retainer clip.



Figure 204. Retainer clip with T-shield



Figure 205. Retainer clip with 5-point harness

Child Restraint Retainer Clip UseScreen Name: **Retainer Clip**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.CHILDSEAT.RETAINERUSE****Element Attributes**

Database	SAS	
1	0	Not designed with retainer clip
2	1	Retainer clip not used
3	2	Retainer clip used – neck level
4	3	Retainer clip used – chest/armpit level
5	4	Retainer clip used –stomach level
7	5	Retainer clip used – unknown level
6	6	Retrofitted with retainer clip
-9999	9	Unknown if retainer clip used

Source

Vehicle inspection, child restraint system inspection, interview, medical records, PCR

Remarks

The actual CRS harness retainer clip use at the time of the crash must be determined and coded. The position of the retainer clip on the child is usually determined during the interview with the care giver.

Child Restraint Tether DesignScreen Name: **Upper Tether**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.CHILDSEAT.TETHER****Element Attributes**

Database	SAS	
0	0	No tether available (or not designed with tether)
1	1	Tether available (or designed with tether)
-9999	9	Unknown

Source

Vehicle inspection

Remarks

This variable explains how the CRS was designed to be used. It does not specify how the CRS was actually used in the crash, or whether it was used as designed.

The LATCH system is comprised of a top tether strap and lower anchor straps. This variable is coded if the CRS was equipped with a top tether strap that is used to secure the top of the CRS to the vehicle.



Figure 206. LATCH system top tether attached

Child Restraint Tether UseScreen Name: **Upper Tether**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.CHILDSEAT.TETHERUSE****Element Attributes**

Database	SAS	
1	0	Not designed with tether
2	1	Tether not used
3	2	Tether used
-9999	9	Unknown if tether Used

Source

Vehicle inspection, child restraint system inspection, interview, medical records, PCR

Remarks

If coded as used, the LATCH tether was anchored to the top tether hook in the vehicle.

Child Restraint Lower Anchor Hook Design

Screen Name: **Lower Anchors**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.CHILDSEAT.LATCH**

Element Attributes

Database	SAS	
0	0	No lower anchors available (or not designed with lower anchors)
2	1	Lower anchors available (or designed with lower anchors)
-9999	9	Unknown

Source

Vehicle inspection, child restraint system inspection, interview

Remarks

This variable explains how the CRS was designed to be used. It does not specify how the CRS was actually used in the crash, or whether it was used as designed.

All child restraints manufactured after September 1, 2002, will have two lower anchor attachments designed to connect to anchorage points inside the vehicle. The lower anchorage points are mounted within the second and third row seat bights and will secure the CRS to the seat independent of the vehicle's seat belts. The child restraints will also have belt paths for use of the seat belt, and the CRS can be secured using either system.



Figure 207. LATCH lower anchor attachments



Figure 208. Lower seat anchorage points in vehicle

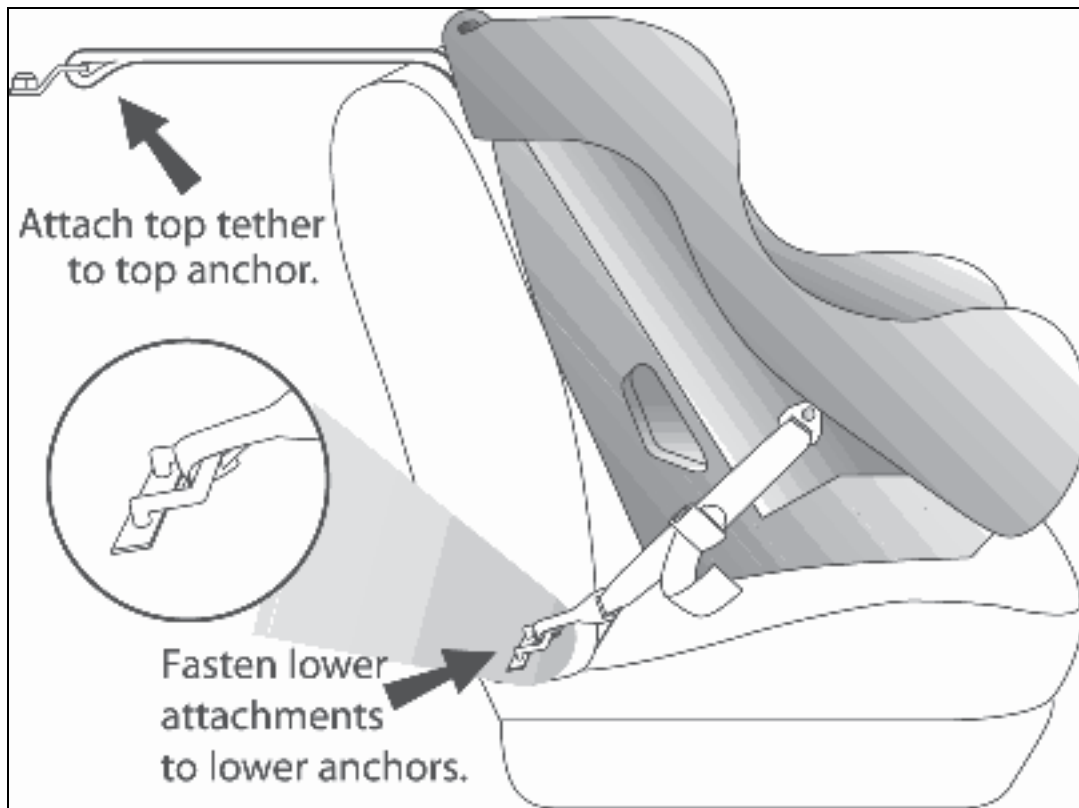


Figure 209. Diagram of LATCH system

Child Restraint Lower Anchor Hook UseScreen Name: **LATCH**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.CHILDSEAT.LATCHUSE****Element Attributes**

Database	SAS	
1	0	Not designed with lower anchors
4	3	Lower anchors not used
2	1	Lower anchors used
-9999	9	Unknown if lower anchors used

Source

Vehicle inspection, child restraint system inspection, interview, medical records, PCR

Remarks

If coded as used, the lower anchor hooks were affixed to the lower anchors in the vehicle.

Child Restraint Belt Routing/UseScreen Name: **Belt Routing/Use**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.CHILDSEAT.BELTUSE****Element Attributes**

Database	SAS	
5	0	No belt routing
-9998	1	No belt used
1	2	Belt routed through belt positioning slots/channels
2	3	Belt routed through forward-facing slots/channels
3	4	Belt routed through rear-facing slots/channels
4	5	Belt routed unconventionally (specify)
-9999	9	Unknown belt path or if belt routed

Source

Vehicle inspection, child restraint system inspection, interview medical records, PCR

Remarks**No belt routing**

The belt was not routed through any slots/channels in the CRS. The belt was used solely to restrain the child sitting in the CRS. ***This variable should always be coded as No Belt Routing for booster seats.*** This attribute is pre-coded for integral child restraints.

No belt used

No belt was used to either restrain the child or install the CRS.

Belt routed through belt positioning slots/channels

Is used when the belts are routed through the designated slots on belt positioning booster seats.

Belt routed through forward-facing slots/channels

The belt was routed through the forward-facing slots or channels built into the CRS.

Belt routed through rear-facing slots/channels

The belt was routed through the rear-facing slots or channels built into the CRS.

Belt routed unconventionally (specify)

Any other type of unconventional belt routing.

Unknown belt path or if belt routed

It is not known what path the belt took around the CRS. If it is not known if the belt was used, indicate that in the seat belt section and choose this attribute for belt routing.

Use of Locking Clip on Vehicle BeltScreen Name: **Locking Clip Use**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.CHILDSEAT.LOCKCLIPUSE****Element Attributes**

Database	SAS	
1	0	None present
2	1	Locking clip used on lap and shoulder belt
3	2	Locking clip used on lap belt only
4	3	Locking clip used on shoulder belt only
5	4	Internal belt lock present and used
6	5	Internal belt lock present and not used
7	6	Internal belt lock present, unknown use
5	8	Other (specify)
9	9	Unknown

Source

Vehicle inspection, child restraint system inspection, interview medical records, PCR

Remarks

When a locking clip is found in a vehicle, photographs should be taken. This variable is not assessing the proper use of the locking clip, it is merely identifying where it is positioned on the belt.

A **locking clip** is usually included with the CRS at the time of purchase and is typically found on the back aspect of the CRS seatback. The purpose of a locking clip is to the lock belt systems of vehicles that contain sliding latch plates and emergency locking retractors only (e.g., vehicles that do not have automatic locking capability). Locking clips used on the lap and shoulder belt combination are to be positioned no more than one inch above the latch plate. Seat belts are usually labeled indicating the need of a locking clip and this need is also discussed in the vehicle owner's manual.

None present

When a locking clip was not used in the crash.

Locking clip used on lap and shoulder belt

When the lap and shoulder belts are threaded through as locking clip during the crash.

Locking clip used on lap belt only

When the lap belt is threaded through as locking clip during the crash.

Locking clip used on shoulder belt only

When the shoulder belt is threaded through a locking clip during the crash.

Internal belt lock present and used

When the internal belt locking mechanism is used.

Internal belt lock present and not used

When the internal belt locking mechanism is present but not used.

Internal belt lock present, unknown use

When the internal belt locking mechanism is present but unknown if used.

Other (specify)

When it is determined that a locking clip was used but not in a manner stated above. Specify how the locking clip was used.

Unknown

When locking clip or belt locking mechanism use cannot be determined.



Figure 210. General instructions on how to position locking clip



Figure 211. Locking clip affixed to belt webbing no more than 1 inch above latch plate



Figure 212. Locking clip correctly positioned on belt webbing near sliding latch plate



Figure 213. Example of internal belt lock

Vehicle

Belt Retractor Type

Screen Name: **Belt Retractor**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.CHILDSEAT.RETRACTOR**

Element Attributes

Database	SAS	
3	0	None present
2	1	Emergency locking retractor
7	2	Automatic locking retractor
4	3	Switchable retractor in ELR mode
5	4	Switchable retractor in ALR mode
6	5	Switchable retractor in unknown mode
9	9	Unknown type of retractor

Source

Vehicle inspection, interview

Remarks

This variable is coded for all manual seat belts that are coded for any vehicle position.

If a sewn-on latch plate is present, there will most likely be a retractor for both the shoulder portion and the lap portion of the belt. Most likely the shoulder portion will be an ELR and the lap portion will be switchable from ELR to ALR. In this variable, we are only interested in the retractor of the lap portion of the belt.

Another type of switchable retractor switches when the belt is pulled all the way out causing the retractor to switch to ALR mode.

Retractors wind up the loose webbing of the unused 3-point seat belt, take up the slack, and provides slight tension on belts that are in use. They are usually located out of sight at an anchor point. Check the vehicle owner's manual and look for labels on the belt webbing to determine the retractor type.

NOTE that some newer vehicles have a switchable retractor that can be manually adjusted from ELR to ALR. Most of them can be switched by pulling the webbing all the way out of the retractor to activate the ALR. In some models, the retractors switch from ELR to ALR with the push of a button. Most switchable retractors have a label on the belt with instructions on how to switch it. Enter the information for the position of the retractor.

Automatic locking retractor (ALR)

The ALR locks in place after being pulled out and allowed to retract about ½” The belt cannot be extended unless it is first fully rewound. It is generally uncomfortable for adults to wear.

Emergency locking retractor (ELR)

The ELR allows the belt to be freely extended or rewound. It locks only when the vehicle slows, changes direction, or stops suddenly. Since the retractor rarely locks during normal driving, it provides more freedom and comfort to an adult driver than an ALR. Some ELRs are vehicle sensitive and lock in direct response to the deceleration of the vehicle. Other ELRs are webbing or belt-sensitive and temporarily lock in response to a quick jerk or pull on the belt. Some ELRs are both vehicle and belt sensitive. Some ELRs have a window shade tension reliever system designed to make 3-point belts more comfortable by allowing “slack” in the shoulder belt. Occupants using these belts “tug” on the shoulder belt to tighten it after they lean forward.

Unknown

Is used when the type of retractor cannot be determined.

LATCH Plate TypeScreen Name: **Latch Plate**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.CHILDSEAT.LATCHPLATE****Element Attributes**

Database	SAS	
8	0	Not used/not available
1	1	Sliding
2	2	Light weight locking/cinching
3	3	Locking
4	4	Switchable
5	5	Sewn on
6	9	Unknown type

Source

Vehicle inspection

Remarks

This variable is coded for all manual seat belts that are coded for any vehicle position.

Sliding

The webbing is threaded through a slot in the latch plate and there is no locking bar. The latch plate slides freely along the webbing, regardless of the angle. Allows the webbing to slip through unrestricted.

Locking

The webbing threads through a locking bar or an adjuster in the latch plate. Once it is tightened, the belt will not loosen until the plate is tilted and the belt is unbuckled.

Lightweight locking/cinching

The same as locking but with more moving parts. As long as the plate is parallel with the webbing the latch plate is locked.

Switchable

Switchable has a switch that locks the belt webbing by sliding a button.

Sewn on

If a sewn on latch plate is present, there will be a retractor for both the shoulder portion and the lap portion of the belt. Most likely the shoulder portion will be an ELR and the lap portion will be switchable.

Unknown type

Is used when the type of latch plate is not determined.



Figure 214. Examples of latch types on seat belts

LATCH Lower Anchor AvailabilityScreen Name: **LATCH Anchor**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.CHILDSEAT.LATCHANCHOR****Element Attributes**

Database	SAS	
1	0	No
2	1	Yes
9	9	Unknown if anchor

Source

Interior vehicle inspection (and/or interview)

Remarks

Currently, some new passenger vehicles are equipped with lower child seat anchorage points between a vehicle's seat cushion and seat back. Together, the two lower anchorage points and top tether anchorage make the LATCH system. Since 2002 this system is required in two rear seating positions of all cars, minivans, and light trucks.

A lower anchorage is a small rod or bar located between a vehicle's seat cushion and seat back allowing a child safety seat to be attached or snapped into the vehicle instead of being held secure by the vehicle's belt system. By September 1, 2002, all child safety seats will have two attachments that will connect to the vehicle's lower anchorage attachment points. (Some child seat manufacturers have included lower anchorage points in year 2000 models.)

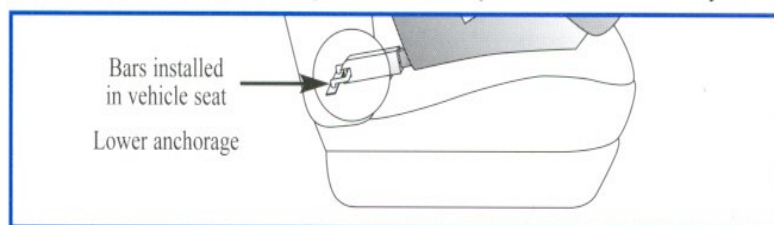


Figure 215. Location of lower anchorage on a seat

LATCH Tether AvailabilityScreen Name: **LATCH Tether**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.CHILDSEAT.LATCHTETHER****Element Attributes**

Database	SAS	
1	0	No
2	1	Yes
9	9	Unknown if tether

Source

Interior vehicle inspection (and/or interview)

Remarks

In some vehicles, such as minivans and station wagons, the tether anchor may be found on the rear floor of the vehicle, on the back of the rear seat, and on the roof area. It may be concealed by some sort of covering that can be removed or “flipped up.”

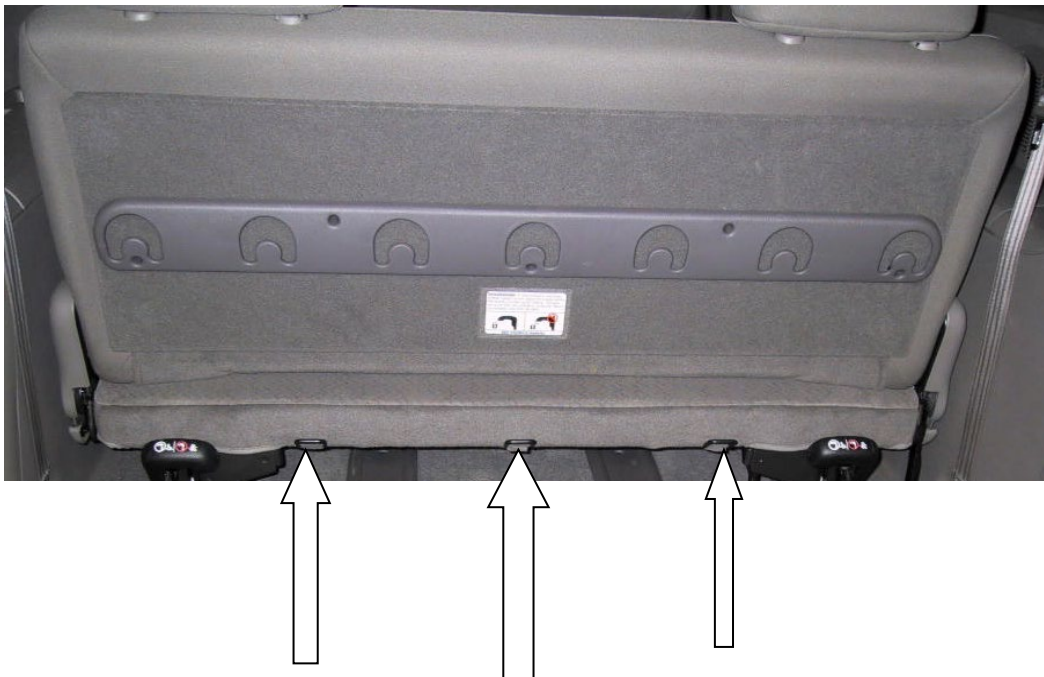


Figure 216. Location of concealed tether anchors

Seat Belt

Belt System Availability

Screen Name: **Availability**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.SEATBELT_ASSESS.BELTAVAIL**

Element Attributes

Database	SAS	
1	0	None available
2	1	Belt removed/destroyed
3	2	Shoulder belt
4	3	Lap belt
5	4	Lap and shoulder belt
6	5	Belt available - type unknown
7	6	Shoulder belt (lap belt destroyed/removed)
8	7	Lap belt (shoulder belt destroyed/removed)
9	8	Other belt (specify)
10	9	Unknown

Source

Technician-determined — primary source is vehicle inspection, secondary sources include medical records, and the interview.

Remarks

The Vehicle **Inspection** portion of this screen shows what was determined **at the vehicle inspection**, which is the primary source of information for those variables. However, this variable represents the technician's final determination of restraint availability; the technician should use all the sources above, placing emphasis on the vehicle inspection information.

Select the belt system that was available for use by the occupant relative to the seat position in the vehicle.

Not available

Indicates: (1) that at the time of the crash the designated seating position was not equipped with a manufacturer installed or post manufacturer installed belt (lap, shoulder, or lap and shoulder).

Belt removed/destroyed

Indicates that the belt, initially installed at this occupant's seating position, was subsequently removed or destroyed (unbolted, cutout, etc.). If the belt is present but nonfunctional, then select the type of belt available on this variable and use Inoperative for Used in This Crash?

Belts that are knotted, buckled at the rear of the seat (bench or bucket), stored below the seat, etc., are available if they were otherwise operative.

Shoulder belt

Is used when this occupant's seat position was equipped with an upper torso restraint and no lap belt.

Lap belt

Is used when this occupant's seat position is equipped with a belt that secures the pelvic area of the occupant in the seat and there is no upper torso belt.

Lap and shoulder belt

Is used when both an upper torso belt and a lap (pelvic area) belt are present at this occupant's seat position.

Belt available — type unknown

Is used when there is no vehicle inspection and there is disagreement regarding the type of belt system among the secondary sources. When the specific belt system cannot be determined, but it is known some type of belt is present, then use this attribute.

Shoulder belt (lap belt destroyed/removed)

Is used for integral noncontinuous loop belt systems when the lap belt portion of the belt has been removed or destroyed leaving only the shoulder belt portion present at this occupant's seating position.

Lap belt (shoulder belt destroyed/removed)

Is used for an integral noncontinuous loop belt systems when the shoulder belt portion of the belt has been removed or destroyed leaving only the lap belt portion present at this occupant's seating position.

Other belt (specify)

Is used when the belt system is nonstandard or cannot be described with other attributes. Specify (write out in the Specify Box) the type of belt (5-point competition harness, 4-inch-wide webbing, etc.) In addition, use this attribute if a properly positioned “built-in” child safety seat was available at this occupant’s seating position. Other child restraints are not recorded here.

Unknown

Is used when it cannot be determined whether or not belts were available for this occupant's seat position.

Belt System Used in This Crash?Screen Name: **Used in this crash?**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.SEATBELT_ASSESS.BELTUSE****Element Attributes**

Database	SAS	
0	0	None used not available/removed or destroyed
1	1	Inoperative (specify)
2	2	Shoulder belt
3	3	Lap belt
4	4	Lap and shoulder belt
5	5	Belt used — type unknown
6	8	Other belt used (specify)
7	12	Shoulder belt with child safety seat
8	13	Lap belt with child safety seat
9	14	Lap and shoulder belt with child safety seat
10	15	Belt with child safety seat — type unknown
11	18	Other belt with child safety seat (specify)
12	99	Unknown if belt used

Source

Technician-determined — primary source is vehicle inspection, secondary sources include EDR, medical records, and the interview.

Remarks

The **Vehicle Inspection** portion of this screen shows what was determined **at the vehicle inspection**, which is the primary source of information for those variables. However, this variable represents the technician's final determination of restraint availability; the technician should use all the sources above, placing emphasis on the vehicle inspection information.

Select the belt system or portion of the system that was in use at the time of the crash by the occupant. The correctness of the use is not assessed on this variable. This variable only identifies belt usage; do not consider the presence and use of a passive belt system.

None used/not available/removed or destroyed

Is used when a belt was available but not worn.

Inoperative (specify)

Includes belts that are knotted, jammed, tucked behind the seat, or in any other fashion rendered unusable. In addition, use this attribute for belts that are inoperative because of extreme deterioration from aging. A belt system that was completely removed from or cut out of a vehicle is assigned None used/not available /removed or destroyed.

Shoulder belt

Is used when a shoulder belt alone was in use. This can occur when: (1) the vehicle was not equipped with a lap belt, (2) only the shoulder belt portion of a nonintegral system was in use, or (3) when the lap belt portion of a noncontinuous loop integral lap and shoulder belt system was cut out leaving only a functional shoulder belt portion in use.

Lap belt

Is used when a manual lap belt alone was in use. This can occur when: (1) the vehicle was not equipped with a shoulder belt, (2) only the lap belt portion of a nonintegral system was in use, or (3) when the shoulder belt portion of a noncontinuous loop integral lap and shoulder belt system was cut out leaving only a functional lap belt portion in use. **Note**, manual lap belts can be used in conjunction with a two-point automatic belt system. For manual and automatic belt combinations, use this attribute for the manual lap belt usage.

Lap and shoulder belt

Is used when the occupant is: (1) "encompassed" **both** in the lap and upper torso region by a manual lap and shoulder belt combination, or (2) using only a portion of an **intact integral** lap and shoulder belt system. For example, if a person has an integral lap and shoulder belt but is only using the lap portion (i.e., having the shoulder belt behind his or her back), then use this attribute.

Belt used — type unknown

Is used when it is known that the type of belt system being used cannot be determined.

Other belt (specify)

Is used when the belt system is nonstandard or cannot be described with other attributes. Specify the type of belt (5-point competition harness, 4-inch-wide webbing, etc.).

Shoulder with child safety seat

Is used when the vehicle's shoulder belt system anchors a child safety seat to the vehicle, or when the shoulder belt is used to restrain a child who is sitting on a booster seat. These attributes do not refer to the belts that are part of the child seat itself.

Lap with child safety seat

Is used when the vehicle's manual lap belt system anchors a child safety seat to the vehicle, or when the lap belt is used to restrain a child who is sitting on a booster seat. These attributes do not refer to the belts that are part of the child seat itself.

Lap and shoulder w/child safety seat

Is used when the vehicle's manual lap and shoulder belt system anchors a child safety seat to the vehicle, or when the lap/shoulder belt is used to restrain a child who is sitting on a booster seat. These attributes do not refer to the belts that are part of the child seat itself.

Belt with child safety seat — type unknown

Is used when the vehicle belt type is unknown, not the child safety seat type.

Other belt with child safety seat (specify)

Is used when a built-in child safety seat is “self-contained” (does not use any part of the regular existing belt system available at the occupant seating position).

Unknown if belt used

Is used if it cannot be determined whether or not a belt was in use by the occupant at the time of the crash.

Position of Belt/Lap Portion of BeltScreen Name: **Lap**

SAS Data Set:

SAS Variable:

Database Name:

Element Attributes

Database	SAS	
0	0	Not equipped/not available/not used
1	1	Snug and low across hips
2	2	Across abdomen
3	3	Used to install child restraint
4	4	Low across hips with extra “slack room”
5	5	Across abdomen with extra “slack room”
98	98	Other position (specify)
99	99	Unknown position

Source

Technician-determined

Remarks

The routing of the lap belt/lap portion (if any) through the child restraint is indicated in the variable “Seat Belt Routing” on the Child Restraint tab.

If two occupants are using one belt code as “Other (specify)” to both occupants and annotate.

Snug and low across hips

The lap belt or lap portion of a belt is snug and low across the hips so that it goes around the front of pelvis, with the webbing lying across the top of thighs.

Across abdomen

The lap belt or lap portion of a belt snug and is across the “belly” or abdomen.

Low across hips with extra “slack room”

The lap belt or lap portion of a belt is low across the hips so that it goes around the front of pelvis, with the webbing lying across the top of thighs and is not tight against the person, but has extra “slack room.”

Across abdomen with extra “slack room”

The lap belt or lap portion of a belt is across the “belly” or abdomen and is not tight against the person, but has extra “slack room.”

Other position (specify)

Is used to document the use of the lap portion in a manner not identified in the above.

Unknown position

Is used if it cannot be determined the position of the belt/lap portion by the occupant at the time of the crash.

Position of Shoulder Belt/Shoulder Portion of BeltScreen Name: **Shoulder**

SAS Data Set:

SAS Variable:

Database Name:

Element Attributes

Database	SAS	
0	0	Not equipped/not available/not used
1	1	Snugly across the collarbone and over shoulder
2	2	Resting on neck
3	3	On edge of shoulder
4	4	Under arm
5	5	Behind occupant's back or seat
10	10	Used to install child restraint
6	6	Across the collarbone and over shoulder with extra "slack room"
7	7	Resting on neck with extra "slack room"
8	8	On edge of shoulder with extra "slack room"
9	9	Under arm with extra "slack room"
98	98	Other position (specify)
99	99	Unknown belt position

Source

Technician-determined

Remarks

The routing of the lap belt/shoulder portion (if any) through the child restraint is indicated in the variable "Seat Belt Routing" on the Child Restraint tab.

If two occupants are using one belt code as "Other (specify)" to both occupants and annotate.

Snugly across the collarbone and over shoulder

The shoulder belt or shoulder portion of a belt fits snugly and is routed over the collarbone and over the shoulder.

Resting on neck

The shoulder belt or shoulder portion of a belt is routed such that it is rubbing against the neck.

On edge of shoulder

The shoulder belt or shoulder portion of belt is worn on the edge of the shoulder.

Under arm

The shoulder belt or shoulder portion of a belt is placed under the arm.

Behind occupant's back or seat

The shoulder belt or shoulder portion of a belt is placed behind the back of the occupant or behind the back of the seat.

Across the collarbone and over shoulder with extra "slack room"

The shoulder belt or shoulder portion of belt is routed over the collarbone and over the shoulder and is not tight against the person, but has extra "slack room."

Resting on neck with extra "slack room"

The shoulder belt or shoulder portion of a belt is routed such that it is rubbing against the neck and is not tight against the person, but has extra "slack room."

On edge of shoulder with extra "slack room"

The shoulder belt or shoulder portion of a belt is worn on the edge of the shoulder and is not tight against the person, but has extra "slack room."

Under arm with extra "slack room"

The shoulder belt or shoulder portion of a belt is placed under the arm and is not tight against the person, but has extra "slack room."

Other position (specify)

Is used to document the use of the shoulder portion in a manner not identified in the above.

Unknown position

Is used if it cannot be determined the position of the manual belt/shoulder portion by the occupant at the time of the crash.

Positive Indication of Belt Malfunction

Screen Name: Malfunction

SAS Data Set:

SAS Variable:

Database Name: *CISS.CISS.SEATBELT_ASSESS.BELTFAIL*

Element Attributes

Database	SAS	
0	0	[None used/not available/removed or destroyed]
1	1	No belt malfunction
2	2	Torn webbing (stretched webbing not included)
3	3	Broken buckle or latch plate
4	4	Upper anchorage separated
5	5	Other anchorage separated (specify)
6	6	Broken retractor
7	7	Combination of above (specify)
8	8	Other belt malfunction (specify)
9	9	Unknown

Source

Technician-determined — primary source is vehicle inspection, additional input may include the interview and police report if a vehicle inspection is obtained.

Remarks

The Vehicle **Inspection** portion of this screen shows what was determined **at the vehicle inspection** that is the primary source of information for these variables. **However**, the technician should use all the available information, placing emphasis on the vehicle inspection information, to make the final determination for completion of this variable.

If any component of the belt system malfunctions during the impact as the result of occupant loading, the malfunction is captured in this variable. The malfunction is also recorded on the **Case Form/Summary Tab** and documented with photographs.

If a malfunction occurs, select the attribute that corresponds to the appropriate belt malfunction mode that describes the component of the restraint system that malfunctioned (i.e., torn webbing, broken buckle or latch plate, anchorage separation, broken retractor). A complete and documented description of the malfunctioned component and the way it malfunctioned must accompany the case.

No belt malfunction

Is used when there is no physical evidence from the vehicle inspection to indicate that a malfunction occurred.

Combination of above (specify)

Is used when any combination of specified attributes occur and describes belt malfunction modes. Belt malfunction modes that are not described are reported in **Other belt malfunction (specify)**. Belt malfunctions **with specific attributes** take priority over the **Other belt malfunction** code.

Other belt malfunction (specify)

Is used when the only belt malfunction that occur are not described with a specific attribute.

Unknown

Is used when it cannot be determined if the belt malfunctioned.

Shoulder Belt Upper Anchorage AdjustmentScreen Name: **Anchorage Adjustment**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.SEATBELT_ASSESS.BELTANCHOR****Element Attributes**

Database	SAS	
0	0	[No shoulder belt]
1	1	None for shoulder belt
2	2	In full up position
3	3	In mid position
4	4	In full down position
5	5	Position unknown
6	9	Unknown if adjuster present

Source

Technician-determined — primary source is vehicle inspection; secondary sources include the interview.

Remarks

Complete this variable regardless of shoulder belt usage.

The Vehicle **Inspection** portion of this screen shows what was determined **at the vehicle inspection** that is the primary source of information for these variables. **However**, the technician should use all the available information, placing emphasis on the vehicle inspection information, to make the final determination for completion of this variable.

None for shoulder belt

Is used when a shoulder belt is present but there is no adjustment mechanism at the upper anchorage point.

In full up position

Is used when the shoulder belt is equipped with an adjustable upper anchorage point and it was in its highest position at the time of the crash (e.g., closest position to the roof).

In mid position

Is used when the shoulder belt is equipped with an adjustable upper anchorage point and it was in a middle position at the time of the crash (somewhere between full up and full down).

In full down position

Is used when the shoulder belt is equipped with an adjustable upper anchorage point and it was in its lowest position at the time of the crash (closest position to the floor).

Position unknown

Is used when the shoulder belt is equipped with an adjustable upper anchorage point but it cannot be determined what the position was at the time of the crash.

Unknown if adjuster present

Is used when it cannot be determined if the shoulder belt was equipped with an adjustable upper anchorage device.

Source of Technician's Determination of Belt UseScreen Name: **Source of Belt Use**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.SEATBELT_ASSESS.BELTUSESOURCE****Element Attributes**

Database	SAS	
1	0	Not equipped/not available
2	1	Vehicle inspection
3	2	Official injury data
4	3	Driver/occupant interview
5	8	Other (specify)
6	9	Unknown if belt used

Source

Technician-determined

Remarks

This variable explains what preponderance of information the technician used to make the determination whether the manual seat belt was used, not whether the belt system was available. The PCR is not an acceptable source to list for belt use determination. If several sources of information are available, select the source that gives the most reliable information.

Vehicle inspection

Is used if the vehicle inspection gave definitive indications that the belt was in use.

Official injury data

Is used if the official injury data makes a specific mention of injury patterns that can be attributed to the use of a seat belt, and the vehicle inspection did not give definitive indications of usage.

Driver/occupant interview

Is used if the vehicle inspection did not give definitive indications of usage or there was no vehicle inspection; however, the interview provided significant information to code belt use.

Other (specify)

Is used when information from other official sources such as the EMS, fire department (e.g., rescue or extrication personnel), or on-scene photographs indicates that the occupant was or was not restrained by a manual or automatic belt at the time of the crash. This includes a complete police reconstruction of the crash. Specify the source of the information.

Unknown if belt used

Is used when it cannot be determined whether a belt was in use by the occupant at the time of the crash.

Seat Belt Positioning Device PresenceScreen Name: **Positioning Device Presence**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.SEATBELT_ASSESS.BELTPOSDEVICE****Element Attributes**

Database	SAS	
1	0	None present
16	16	Seat belt guide
17	17	Belt extender
18	18	Shoulder belt fit adjuster
15	98	Other (specify)
-9999	99	Unknown if present

Source

Vehicle inspection and/or interview

Remarks

This variable is coded for any position containing a shoulder belt.

Aftermarket seat belt positioning devices are typically manufactured for use by small stature adults and children to adjust lap and shoulder belt fit and comfort.

These products are not considered “safety devices” and are not tested or regulated by NHTSA.

Seat belt guide

Assist in providing the proper positioning of the seat belt on the occupant. They are typically installed by the vehicle manufacturer.

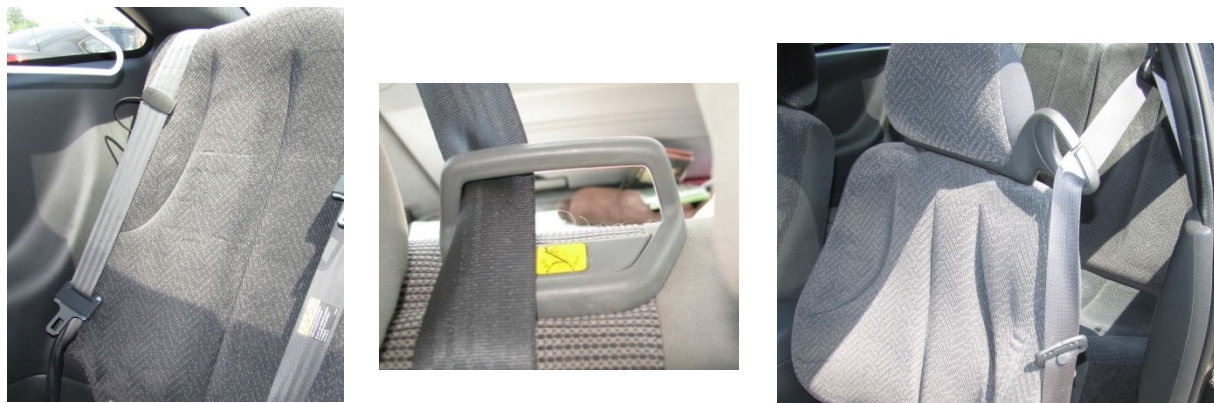


Figure 217. Examples of proper positioning of seat belts

Belt extender

These extenders are lengths of webbing with buckles on both ends to fit onto the belts already in the vehicles. Some extenders are mounted to the seat belt mounting bolts. They can be aftermarket products or obtained via the manufacturer.



Figure 218. Belt extenders

Shoulder belt fit adjuster

Typically, are aftermarket products, some product names: Belt Buddy, Buckle Buddy, and Child Safer.



Figure 219. Shoulder belt fit adjusters

Other (specify)

Annotate the name and type of device.

Seat Belt Positioning Device UseScreen Name: **Position Device Use**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.SEATBELT_ASSESS.BELTPOSDEVICEUSE****Element Attributes**

Database	SAS	
3	3	None present
1	1	Device not used
2	2	Device used
-9999	9	Unknown if device used

Source

Vehicle inspection and interview

Remarks

Was Seat Belt Routed Through Seat Belt Guides?Screen Name: **Was belt routed through safety guides?**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.SEATBELT_ASSESS.BELTSAFEROUTE****Element Attributes**

Database	SAS	
1	1	Yes
2	2	No
-9999	99	Unknown
-8887	0	Not applicable

Source

Technician-determined by vehicle inspection and interview

Remarks

This variable is coded when any position contains a belt position device. The technician determines if the seat belt was routed through the belt positioning device at the time of the crash. Seat belt guides are used to assist in providing proper positioning of the seat belt on the occupant.

Injury/PSU**Mortality**Screen Name: **Mortality**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.OCC_INJURY.MORTALITY****Element Attributes**

Database	SAS	
1	0	Not Fatal
2	1	Fatal
3	2	Fatal — ruled disease (specify)

Source

Technician-determined — inputs include interviewee, police report, and medical records.

Remarks

Official sources (if they exist) take precedence over interview data.

Not Fatal

Is used when death does not occur or occurs more than 30 days after the crash.

Fatal

Is used when death occurs within 30 days of the crash. Death must have occurred as a consequence of injuries sustained in the traffic crash. Interview information alone should not be sufficient to select this attribute.

Fatal — ruled disease (specify)

Is used in two situations. The first is when the effects of a disease can be deemed as a cause of the crash. Cause means that the on-set of the disease occurred prior to the first harmful event. When determining the time of on-set (relative to the first harmful event), the technician can use any information source available. The technician makes his/her determination after weighing all the evidence. (**Note:** The use of all available information sources is restricted to the determination of when the on-set occurred.)

Second is when a medical examiner (or other official vested by the State to verify the cause of death) or an official medical report verifies that the death resulted from either (1) a diseased condition, or (2) not from crash-related injuries.

TreatmentScreen Name: **Treatment**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.OCC_INJURY.TREATMENT****Element Attributes**

Database	SAS	
0	0	No treatment
8	1	Dead on arrival (DOA) at hospital
10	2	Dead prior to admission
1	3	Hospitalization
2	4	Transported and released
3	5	Treatment at scene - non-transported
4	6	Treatment later
6	7	Transported to a medical facility - unknown if treated
5	8	Treatment - other (specify)
7	9	Unknown

Source

Technician-determined — inputs include interviewee, police report, and medical records.

Remarks

Official sources (if they exist) take precedence over interview data.

No treatment

Examples include:

- People transported to a hospital but who refuse treatment, elope, or leave AMA before any treatment is given (including initial vitals, GCS, injuries documented, etc.).
- A person who is declared dead at the scene of the crash and is not transported to a hospital is coded **No treatment**.
- Telemedicine appointment, chiropractor services, and physical therapy services would be considered **No treatment**.
- EMS personnel do not treat nor transport the person and there are no sources of data state otherwise.
- When the PCR KABCO is "O" (no injuries) and there are no sources of data state otherwise (no interview, medical, or PCR narrative).

Note: When the PCR reports an "A" or "B" injury severity **and** there is no EMS agency and medical facility listed anywhere on the PCR (including narrative), recommend contacting the occupant/surrogate to find out whether they were treated or not (and if treated, find out where).

Dead on arrival (DOA) at hospital

Includes people who are transported from the scene to a hospital facility and pronounced dead on arrival **at the hospital**. This means that no treatment was attempted at the hospital facility (no CPR, no examination, no x-rays, etc.)

Dead prior to admission

Includes people who are transported from the scene to a hospital facility and treated in the ER, but died prior to admission. See **Hospital Stay** for hospitalization criteria.

Hospitalization

Is used when hospitalization occurs as a result of injury (need **not** be taken directly to a hospital). See Hospital Stay for hospitalization criteria. Also use this attribute if a person is treated and released, then is subsequently hospitalized as a result of injuries sustained in the crash.

Transported and released

Is used when the person went **directly** from the crash scene to a treatment facility (hospital, clinic, doctor's office, etc.), and the person **is examined** for injuries at the facility. The person need not have been injured. The means of transportation is **not** a consideration.

Treatment at scene — non-transported

Includes treatment at scene such as: first aid, self-treatment, EMT treatment, doctor treatment, etc.--and the person is not transported or does not go to a treatment facility (doctor, clinic, hospital, etc.) as a result of injuries sustained in this crash.

Treatment later

Includes only professional treatment (doctor, clinic, hospital, etc.) where the person:

did not go directly from the scene to treatment,

and

was treated and released.

If a person is treated at the scene, is not transported from the scene, and subsequently receives later treatment (without being hospitalized), then use this attribute. Also use this attribute when the occupant leaves scene to call for help then comes back to the scene and subsequently transported to medical facility.

Treatment — other (specify)

Includes non-professional treatment such as first aid, self-treatment, etc., not at the scene of the crash. If this is used, then Type of Medical Facility (for Initial Treatment), must be assigned Not treated at a medical facility.

Transported to a medical facility-unknown if treated

Is used when the person went **directly** from the crash scene to a treatment facility (hospital, clinic, doctor's office, etc.), and no other information about treatment is known.

If a person survives the injuries and receives treatment at a hospital, but is not admitted for hospitalization, that person's treatment is either Transported and released or Treatment later, depending upon whether the person went directly or indirectly to the hospital. It does not matter if the person is treated for one hour or twelve, only that the person is released following treatment. Nor does it matter if the treatment begins prior to midnight and spans into the following day.

Unknown

Is used when it cannot be determined whether an occupant received treatment for injuries caused by a crash.

Type of Medical Facility (for Initial Treatment)Screen Name: **Initial Facility**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.OCC_INJURY.FACILITYTYPE****Element Attributes**

Database	SAS	
1	0	Not treated at a medical facility
2	1	Trauma center
3	2	Hospital
4	3	Medical clinic
5	4	Physician's office
6	5	Treatment later at medical facility
7	8	Other (specify)
8	9	Unknown

Source

Technician-determined — inputs include police report, interviewee, official records, and the American College of Surgeons classification criteria.

Remarks

The treatment of injuries by a physician immediately (i.e., within one hour) following a crash is of utmost importance in serious injury crashes. In order to assess the quality of immediate care available to the victims in CISS crashes, the following criteria are used to categorize the various treatment facilities. Teams must develop a listing of treatment facilities serving their PSU and categorize each into this variable's scheme. Teams must communicate their facilities list to PSU operations, quality control center, injury coding center, and place the list on CDAN CID Shared Space.

Not treated at a medical facility

Is used when the person was not injured or receives nonprofessional treatment such as first-aid, self-treatment, etc. In addition, use this attribute for people who “died” at the scene or “died in-route” to a medical facility. Treatment at the scene or in-route to a medical facility by emergency medical personnel is **not** considered initial treatment for the purposes of this variable. This is true even if the facility has radio communications with their EMTs. If a person arrives at a medical facility and subsequently dies or is declared dead after some treatment, but prior to admission, then use one of the other attributes. For example, an occupant arrives with no vital signs, CPR in progress, and a “flat” EKG and is declared “dead on arrival” on the ER report.

Trauma center

Is used when the occupant was initially treated at a Level I or Level II Trauma Center as defined by the American College of Surgeon's Committee on Trauma's "Resources for optimal care of the injured patient: 2006."

The fact that a medical facility calls itself a "trauma center" or something of the same nature does not mean that it satisfies the criteria for trauma center. The facility must meet the criteria as noted in the preceding paragraph. Most States have legislation that determines the process for designation of trauma centers within their State. The ACS describes that responsibility as "a geopolitical process by which empowered entities, government or otherwise, are authorized to designate." Teams should contact their "hospitals" and ask each what they consider themselves to be (according to criteria referenced above). Teams should also be alert for communication releases (i.e., newspapers, radio, TV, etc.) that concern the trauma capability status of their area emergency rooms. If the status of a hospital should change, notify the quality control center, PSU operations, injury coding center, and update the PSU Area Documentation on the CDAN CID Shared Space.

Hospital

Is used for all "hospitals" that do not fall into the definition of a Level I or Level II Trauma Center as defined. Freestanding ERs are included.

Medical clinic

Is used for treatment facilities that provide outpatient medical care with related in-house laboratory facilities (e.g., X-ray). These are usually a group practice in which several physicians work cooperatively. This also includes school clinics, workplace clinics, urgent care, or similar facilities if they are staffed by a physician while open. If a doctor is not normally present at a clinic while it is open, then the appropriate attribute is Other.

Physician's office

Is used when the person is initially treated in an office of a professional health care provider that does not qualify for trauma center, hospital, or medical clinic.

Treatment later at medical facility

Includes only professional treatment (doctor, clinic, hospital, etc.) where the person:
did not go directly from the scene to treatment,

and

was treated and released.

If a person is treated at the scene, is not transported from the scene, and subsequently receives later treatment (without being hospitalized), then use this attribute.

Other (specify)

Is used when a health care provider's facility is used for the initial treatment, and the facility does not qualify as a trauma center, hospital, medical clinic, or Physician's office above.

Unknown

Is used when it is unknown what type of initial treatment facility was used or when it is unknown if treatment of any kind was obtained.

Hospital StayScreen Name: **Hospital Stay**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.OCC_INJURY.DAYSHOSPITAL****Element Attributes**

Database	SAS	
	0	Not hospitalized
		Enter the number of days (up through 60)
	61	61 days or more
-9999	99	Unknown

Source

Technician-determined — inputs include interviewee and medical reports.

Remarks

Official sources (if they exist) take precedence over interview data.

Not hospitalized

Is used when the person was not injured or injured but not admitted to the facility (i.e., admission to the facility's emergency room is not "admission" to the facility for the purposes of the hospitalization question). In addition, use this attribute if fatal at scene, pronounced dead on arrival, or survival does not extend beyond the emergency room.

The basis for the number of days is an overnight criterion. Every time a person remains past midnight subsequent to admission, it is one day. However, there are two exceptions. One exception occurs when a person dies on the same day as the admission. In this situation, 1 is entered. The other exception occurs when a person is **admitted** in the early morning hours (between midnight and 7:00 a.m.), usually for observation, and is subsequently released later in the same day (usually late morning or early afternoon) 1 is entered because the person was hospitalized, Treatment equals Hospitalized.

If your information indicates that the person died while in a critical care unit (intensive care/ICU, coronary/CCU, etc.), then at least 1 is entered even if the person expires on the same day. In other words, a person is considered admitted if they are still alive when they are transferred to a critical care unit. On the other hand, in the event that the person survives the emergency room but subsequently dies during surgery, then "Not hospitalized" is used, because a person who goes directly from the emergency room to an operating room is not considered to have been admitted.

If a person is admitted, lives 4 days in the hospital, and subsequently expires, enter 4.

This variable reports the number of days this occupant is hospitalized at a primary care facility. Primary care facilities include medical facilities that receive patients via air transfer (e.g.,

“lifeline” and “medevac”). However, the number of days spent at secondary care facilities (i.e., rehabilitation or convalescent units, centers, facilities; or nursing homes) are ***not*** included in this variable.

Unknown

Is used when it cannot be determined the total number of days an occupant was hospitalized due to injuries sustained in a crash.

Working Days LostScreen Name: **Work Days Lost**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.OCC_INJURY.WORKDAYSLOST****Element Attributes**

Database	SAS	
	0	No working days lost
		Enter the number of days (up through 60)
	61	61 days or more
	62	Fatally injured
-8888	97	Not working prior to crash
-9999	99	Unknown

Source

Primary source is the interviewee; a secondary source is the person's employer.

Remarks

Report the actual number of "work" days lost due to the crash by an employed person or a full-time college student. Children, adolescents, retirees, or unemployed people are included in **Not working prior to crash**.

If no interview is obtained, assume that people over 65 or under 17 are not employed full-time; for these people "Not working prior to crash" is used unless the person is fatally injured.

Employed is defined to mean that the person was scheduled to work at least four hours on each of the days lost. Each such day is counted as a full day so long as the person was scheduled to work at least four hours on the day lost. Do **not** accumulate the hours and convert to equivalent full-time days; however, if the person works less than full-time but greater than four hours per day annotate "part-time" or "PT."

If during the interview a reasonable projection of future days lost can be made, then add those days to those already known to have been lost. If a reasonable projection cannot be made, then select Unknown.

- The days lost need not be due to injury.
- Days lost include Saturdays, Sundays, and afternoon and evening shifts if so scheduled. Do not count double shifts or days at time and one-half pay, etc., as more than one day.
- If the reported work days lost includes a fraction, round one-half day or greater up to a whole day. Less than one-half day is excluded (rounded down).
- If someone loses their job as a result of the crash, then count only the work days lost between the crash and the date of termination, inclusive.

- Do not include days lost by people who were not directly involved in the crash but who lost days because of it (e.g., husband who was not in crash but stayed home to take care of wife who was injured and required assistance).
- If an involved person changes their work schedule as a result of a crash (e.g., to take care of someone injured in the crash), then the work time, which was given up as a result of the crash, shall not be considered as lost.

Not working prior to crash

Is used when a person is not employed, not a full-time college student, or works less than four hours per day. This includes all people (except fatals) who do not qualify to lose working days.

Injured Status

Screen Name: **Injured Status**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.OCC_INJURY.INJUREDSTATUS**

Element Attributes

Database	SAS	
1		Not Injured
2		Injured
3		Injured, details unknown
4		Unknown if injured

Source

Technician-determined — inputs include interviewee, police report, and medical records.

Remarks

This element serves as a gateway element to allow injury coding to be completed on the occupant when INJURED STATUS = Injured. Injuries described in PCR narrative can NOT be used to supersede KABCO.

Not Injured

Is used when there are no injuries identified from any sources.

Injured

Is used when there are injuries identified and injury coding is required.

Injured, Details Unknown

Is used when injuries are identified but details of the injuries are unknown.

Examples include:

- Occupants with KABCO injuries of “A” or “B” and the person was transported to a medical facility but no injury information was obtained.

Unknown if Injured

Is used when the PCR injury severity is “C-injury” and there is no interview and it is unknown if the person received medical treatment.

Mortality Date

Screen Name: **Death - Date**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS.OCC_INJURY.DEATHDATE**

Element Attributes

Enter Date of Death

Source

Injury-coding-center-determined from police report, hospital/medical records, autopsy report, or other official records for actual date of death for fatally injured occupants.

Remarks

Enter the date that the occupant died.

If the physician diagnoses the occupant "brain dead", that is the date/time to be used.

Death Time

Screen Name: **Time**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS.OCC_INJURY.DEATHTIME**

Element Attributes

Enter Time of Death, 0000-2359 hours

Source

Injury-coding-center-determined from police report, hospital/medical records, autopsy report, or other official records for actual time of death for fatally injured occupants.

Remarks

Enter the time that the occupant died using the 24-hour military clock. Do not use the "2400 hours" time.

If the physician diagnoses the occupant "brain dead", that is the date/time to be used.

Time to Death

Screen Name: **Time to Death**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.OCC_INJURY.TIMETODEATH**

Element Attributes

Database	SAS	
-8887	0	Not Fatal
	1-24	Hours to death
	31-60	1 day to 30 days
-8887	96	Fatal, ruled disease
-9999	99	Unknown

Source

Injury-coding-center-determined from police report, hospital/medical records, autopsy report, or other official records for actual time of death for fatally injured occupants.

Range

0, 1-24, 31-60, 96, 99

Remarks

Enter date and time of death. The system computes the time to death based on the crash date and the date and time of death entered previously. This value is valid in CISS only up to 30 days.

Number of Injuries for This OccupantScreen Name: **Num Injuries**

SAS Data Set:

SAS Variable:

Database Name:

Element Attributes

Database	SAS	
	0	No injuries
		The actual number of injuries recorded for this occupant will be rolled up
	97	Injured, severity unknown
	99	Unknown if injured

Source

Injury-coding-center-determined — inputs include official medical records and interviewee data from the PSU and PCR (see limitations below).

Range

0, 1- 95, 97, 99

Remarks

The system rolls the number of injuries coded in the INJURY CODING APPLICATION program to the number of injuries variable.

No injuries are recorded by the system when no injuries have been coded in the INJURY CODING APPLICATION program.

GCS/Vitals Data Obtained

Screen Name: **GCS/Vitals Data Obtained**
SAS Data Set:
SAS Variable:
Database Name: **CISS.OCC_INJURY.GCSOBTAINED**

Element Attributes

Yes/No

Source

Injury-coding-center-determined from all available sources including medical records and interviews

Remarks

This element acts as a filter to allow coding of the hospital vitals/GCS sub tab.

The GCS/Vitals Data Obtained radial dial should equal no when Injury/PSU Treatment element = Treatment Later, including occupants treated later but were hospitalized.

The GCS/Vitals Data Obtained radial dial should equal no when Injury/PSU Treatment element = Treated at Scene not transported.

EMS Data Obtained

Screen Name: **EMS Data Obtained**
SAS Data Set:
SAS Variable:
Database Name: **CISS.OCC_INJURY.EMSOBTAINED**

Element Attributes

Yes/No

Source

Injury-coding-center-determined from all available sources including medical records and interviews

Remarks

This element acts as a filter to allow coding of the EMS sub tab.

The EMS Data Obtained radial dial should equal no when Injury/PSU Treatment element = Treat-ment Later, including occupants treated later but were hospitalized.

The EMS Data Obtained radial dial should equal no when Injury/PSU Treatment element = Treat-ed at Scene not transported or if EMS data is received and the medical facility is non-cooperative.

Comorbidity

Screen Name: **Comorbidity**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.COMORBIDITY_INJURY**

Element Attributes

Database	SAS	
97		None
27		Pregnancy
6		Cardiovascular condition
5		Degenerative spinal condition
4		Impaired coagulation
3		History of musculoskeletal implant, surgery, or fusion
64		Osteoporosis or osteopenia
26		Obesity
98		Other (specify)

Source

Injury-coding-center-determined from all available sources including medical records and interviews

Remarks

Comorbidities are pre-existing conditions, documented in the case subject's medical history, that have the potential to affect the injury severity. The existence of one or more comorbidities in a case subject's medical records does not automatically require their selection as Contributing Factors. A case subject may have many comorbidities documented in their medical history, but those comorbidities may not have been relevant to any of their injuries. The comorbidities available for selection in CISSWeb have been identified, based on experience in the CIREN program, as the most common and likely to affect injury severity or likelihood.

Additional details and coding guidance can be found in the BioTab section of the injury coding manual.

None is also coded when it is unknown if the occupant has any comorbidities.

Medically Reported Cause of Death Injury

Screen Name: **Medically Reported Cause of Death Injury**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.CAUSE_OF_DEATHRH.COD**

Element Attributes

Database	SAS	
	0	Not fatal
	#	Select the injuries that have been identified that reportedly contributed to this occupant's death
-96	96	Mode of death given but specific injuries are not linked to cause of death (specify)
-97	97	Other result (includes fatal ruled disease) (specify)
-99	99	Unknown

Source

Injury-coding-center-determined from official records.

Range

1-95, 96, 97, 99

Remarks

This variable is for recording the injury that was/were determined by the medical professional completing the report, or by trained injury coding center coders using official medical records, to be the cause of death. A "cause of death" statement may appear at the beginning or end of an official medical record or it may also appear in a "diagnosis" section or body of a medical record. Like the coding rule for injuries, probable or possible causes of death are not used. If the occupant was killed and no official medical data was obtained, or the data obtained inadequately describes injuries that could have an effect on the occupant's death, then assign cause of death equal to **Unknown**. If the occupant was killed and acquired medical data do not provide a specific official medically reported cause of death, then the injury coding center will determine if injury data are sufficient to enter the first cause of death, and/or second, and/or third with an appropriate injury row.

Select the injury that caused the death.

If the "cause of death" statement consists of nonspecific indefinite injuries (injuries of head, trunk, etc., blunt force injuries of the chest etc., massive injury, and traumatic injuries) and injuries are detailed in the official medical records such that the cause of death can be logically determined, then choose up to three specific injuries using the following guidelines:

- Proceed by first considering specific AIS-6 injuries, followed by AIS-5, then AIS-4, then AIS-3.

Note: AIS levels do not automatically identify an injury as the selected cause of death. For example, if the occupant has an AIS-6 burn injury but the medical says that the occupant was dead prior to the occupant's vehicle catching on fire, then burn was not the cause of death.

Within each AIS level, determine the contribution the specific injury had on the occupant's chance of survival.

Mode of death given but specific injuries are not linked to cause of death (specify) is used when it is determined that the occupant qualifies for Fatal in variable, Mortality, but specific injuries are not medically reported for the cause of death. The official medical report may give a mode of death such as (1) acute pulmonary embolism, (2) respiratory failure, (3) cardiac arrest, or (4) asphyxiation. This is also used when the cause of death is reported from complications or consequences of injuries.

Other result (specify)

Is used when it is determined that the occupant qualifies for **fatal-ruled disease** in **Mortality**.

If no cause of death is directly from an injury and there is no officially reported mode of death, then encode cause of death as **Other-result**.

Hospital Vital Signs/GCS**Hospital Vital Date**Screen Name: **Vital Date**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.VITALSGCS.SIGNDATE****Element Attributes**

Database	SAS	
		MM/DD/YYYY
		Indicate the date vital signs taken
-99		Unknown

Source

Hospital medical records

Remarks

Hospital Time Vital Sign Taken

Screen Name: **Time Vital Sign Taken**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS.VITALSGCS.SIGNTIME**

Element Attributes

Enter time, in military time format, for the vital signs reading that was taken

9999	Unknown

Source

Hospital medical records

Range

0000-2359, 9999

Remarks

Enter the time the initial vital signs readings were taken.

Unknown

Enter in the first space of the variable, the program will fill in the remainder of the attribute.

Note: Only one vital sign with an unknown time can be entered in the electronic system.

Hospital Elapsed Time Since Crash of Vital Time ReadingScreen Name: **Elapsed Time From Crash**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.VITALSGCS.VITALELAPSEDTIME****Element Attributes**

Number of minutes since crash when vital sign reading is taken

9999	Unknown

Source

Hospital medical records

Range**Remarks**

Information is computed by the system relating to date and time of crash as compared to date and time of vital sign reading.

Hospital Pulse

Screen Name: **Pulse**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS.VITALSGCS.PULSE**

Element Attributes

Database	SAS	
0-300	0-300	Enter pulse of patient
-8888	P	Palpable
-9999	U	Unknown
-9997		Not reported

Source

Hospital medical records

Remarks

Enter the recorded pulse count of the patient. Range is 0 to 300.

P Palpable

Used when palpable is used in the hospital record.

U Unknown

Used when the recorded pulse is recorded and illegible.

Not reported

Used when vitals are taken and pulse was not reported or no vitals were taken.

Hospital Systolic Blood Pressure

Screen Name: **Systolic Systolic Blood Pressure**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.VITALSGCS.SYSTOLIC**

Element Attributes

Database	SAS	
0-300	0-300	Enter systolic value for patient
-8888	P	Palpable
-9999	U	Unknown
-9997		Not reported

Source

Hospital medical records

Remarks

Enter the recorded systolic pressure value of the patient. Range is 0 to 300.

P Palpable

Used when palpable is used in the hospital record.

U Unknown

Used when systolic blood pressure is recorded and illegible.

Not reported

Used when vitals are taken and systolic pressure was not reported or no vitals were taken.

Hospital Diastolic Blood PressureScreen Name: **Diastolic**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.VITALSGCS.DIASTOLIC****Element Attributes**

Database	SAS	
0-300	0-300	Enter diastolic value for patient
-8888	P	Palpable
-9999	U	Unknown
-9997		Not reported

Source

Hospital medical records

Remarks

Enter the recorded diastolic pressure value of the patient. Range is 0 to 300.

P Palpable

Used when palpable is used in the hospital record.

U Unknown

Used when diastolic pressure is taken and illegible.

Not reported

Used when vitals are taken and diastolic pressure was not reported or no vitals were taken.

Hospital Respiratory Rate

Screen Name: **Respiratory Rate**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS.VITALSGCS.RESPRATE**

Element Attributes

Database	SAS	
		Enter the respiratory rate of the patient
-8888	A	Agonal the act of dying
-9999	U	Unknown
-9997		Not reported

Source

Hospital medical records

Range

0-98, 997, 999

Remarks

Enter the recorded diastolic pressure value of the patient.

A - Agonal

Used when agonal is used in the hospital record.

U - Unknown

Used when the respiratory rate is recorded and illegible.

Not reported

Used when vitals are taken and respiratory rate was not reported or no vitals were taken.

Hospital Vitals SourceScreen Name: **Source**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.VITALSGCS.SOURCE****Element Attributes**

Database	SAS	
0		Not available or none
3		Emergency Department
4		Floor
5		Intensive care unit
6		Intermediate care unit
8		Operating room
9		Other (specify)
10		Other hospital
11		Pre-hospital, not specified
12		Radiology
13		Resus. room – not in ED
99		Unknown

Source

Hospital medical records

Range**Remarks**

This element describes the location the initial hospital vital signs were taken.

Hospital Glasgow Coma Scale Total ScoreScreen Name: **Total Score**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.VITALSGCS.GCSTOTALSCORE****Element Attributes**

Database	SAS	
3-15	3-15	Enter the actual value of the initial Glasgow coma scale (GCS) score recorded at medical facility
99	99	Unknown

Source

Hospital medical records

Remarks

Report the actual value of the *initial* GCS score obtained at a medical facility. The Glasgow coma scale assesses three neurological functions: **eye opening**, **motor response**, and **verbal response**. The GCS value can often be found in medical records by looking for the abbreviation “GCS.” The number following the abbreviation is the score unless the value is less than “03” or greater than “15.” It is not uncommon to find the GCS score accompanied by information about eye pupil size and motor strength.

If more than one GCS score is recorded in the document without reference to initial GCS score, then select the GCS score to be entered in the following order:

1. enter the GCS score from the medical record with the earliest time to hospital treatment (i.e., enter ER record over discharge summary)
2. enter the GCS score that appears first in a medical record other than the ER record

If two or more GCS scores are recorded in the same record without reference to time, enter the lowest GCS score.

“15” is entered when the occupant’s medical record does not specifically indicate the GCS score but does indicate one or more of the following pieces of information:

- AxOx3 (alert and oriented times three)
- neurologically intact, normal, etc., or
- CN II-XII okay, normal, intact, etc.

Hospital GCS Eye ScoreScreen Name: **Eye Score**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.VITALSGCS.GCSEYESCORE****Element Attributes**

Database	SAS	
1-4		Enter the actual value of the eye GCS score recorded at medical facility
9999		Unknown
9997		Not reported

Source

Hospital medical records

Remarks

Report the actual value of the *eye* GCS score obtained at a medical facility. The GCS assesses three neurological functions: **eye opening**, **motor response**, and **verbal response**. The GCS value can often be found in medical records by looking for the abbreviation “GCS.”

- 4** - Eyes open spontaneously
- 3** - Eyes open to verbal command, speech, or shout
- 2** - Eyes open to pain. (not applied to face)
- 1** - No eye opening

Not reported

Used when medical indicated any of the following.

- AxOx3 (alert and oriented times three)
- neurologically intact, normal, etc., or
- CN II-XII okay, normal, intact, etc.

Hospital GCS Verbal ScoreScreen Name: **Verbal Score**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.VITALSGCS.GCSVERBALSCORE****Element Attributes**

Database	SAS	
1-5		Enter the actual value of the verbal GCS score recorded at medical facility
9999		Unknown
9997		Not reported

Source

Hospital medical records

Remarks

Report the actual value of the **verbal** GCS score obtained at a medical facility. The GCS assesses three neurological functions: **eye opening**, **motor response**, and **verbal response**. The GCS value can often be found in medical records by looking for the abbreviation “GCS.”

5 - Oriented**4** - Confused conversation, but able to answer questions**3** - Inappropriate responses, words discernible; cries**2** - Incomprehensible sounds or speech**1** - No verbal response**Not reported**

Used when medical indicated any of the following.

- AxOx3 (alert and oriented times three)
- neurologically intact, normal, etc., or
- CN II-XII okay, normal, intact, etc.

Hospital GCS Motor Score

Screen Name: **Motor Score**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.VITALSGCS.GCSMOTORSCORE**

Element Attributes

Database	SAS	
1-5		Enter the actual value of the motor GCS score recorded at medical facility
9999		Unknown
9997		Not reported

Source

Hospital medical records

Remarks

Report the actual value of the **motor** GCS score obtained at a medical facility. The GCS assesses three neurological functions: **eye opening**, **motor response**, and **verbal response**. The GCS value can often be found in medical records by looking for the abbreviation “GCS.”

- 6** - Obeys commands for movement
- 5** - Purposeful movement to painful stimulus
- 4** - Withdraws from pain. (flexion withdrawal)
- 3** - Abnormal (spastic) flexion, decorticate posture
- 2** - Extensor (rigid) response, decerebrate posture
- 1** - No motor response

Not reported

Used when medical indicated any of the following.

- AxOx3 (alert and oriented times three)
- neurologically intact, normal, etc., or
- CN II-XII okay, normal, intact, etc.

Hospital GCS ModifierScreen Name: **Modifier**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.VITALSGCS.GCSMOTORSCORE****Element Attributes**

Database	SAS	
1		Legitimate
2		Intubated
3		Intubated and sedated
4		Chemically sedated
5		Spinal cord injury
97		Not reported

Source

Hospital medical records

Remarks

Report the actual value of the *modified* GCS score obtained at a medical facility. The GCS assesses three neurological functions: **eye opening**, **motor response**, and **verbal response**. The GCS value can often be found in medical records by looking for the abbreviation “GCS.”

Hospital GCS DateScreen Name: **GCS Date**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.VITALSGCS.GCSDATE****Element Attributes**

Database	SAS	
		MM/DD/YYYY
97		Not reported
99		Unknown

Source

Hospital medical records

Remarks

Indicate the date GCS taken date the hospital GCS was taken.

Not reported

Used when date is not recorded.

Hospital Time GCS Sign Taken

Screen Name: **GCS Time Taken**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS.VITALSGCS.GCSTIME**

Element Attributes

Enter time, in military time format, for the GCS

9999	Unknown
9997	Not reported

Source

Hospital medical records

Range

0001-2359, 9999

Remarks

Enter the time that the GCS was taken.

Unknown

Used when the time is recorded and illegible.

Not reported

Used when time is not recorded.

Hospital Elapsed Time Since GCS Score Obtained

Screen Name: **Elapsed Time From Crash**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS.VITALSGCS.**

Element Attributes

Number of minutes since crash the GCS was taken

9999	Unknown

Source

Hospital medical records

Range**Remarks**

Information is computed by the system relating to date and time of crash as compared to date and time of GCS score.

Hospital GCS LocationScreen Name: **Location**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.VITALSGCS.GCSLOCATION****Element Attributes**

Database	SAS	
97		Not available or none
1		At crash site
2		EMS vehicle
3		Emergency department
4		Floor
5		Intensive care unit
6		Intermediate care unit
8		Operating room
9		Other (specify)
10		Other hospital
11		Pre-hospital, not specified
12		Radiology
13		Resus. room – not in ED
99		Unknown

Source

Hospital medical records

Range**Remarks**

This element describes the location the hospital GCS score was taken.

Emergency Medical Service Overview

EMS personnel are integral to the survivability of the people involved in crashes. The following variables attempt to collect some basic information on their involvement with crashes.

Information is required for the first EMS unit that responded to the scene of the crash and administered care or transported any occupants. Correspondingly any occupant who receives care, is transported and injured must have information added.

Any time there is information that an emergency unit responded to the scene of the crash an ems record should be requested for each occupant with a pcr reported injury.

Any time an EMS unit responds to the scene of a crash, all crash involved people are deemed to receive care if a run sheet is filled out for them.

Do not collect EMS information for those occupants who are declared dead at the scene of the crash. These occupants will have **Treatment** coded as **No Treatment** and **Mortality** coded as **Fatal** or **Fatal Ruled Disease**.

Vehicle #Screen Name: **Vehicle #**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.EMS_CARE.VEHNUM****Element Attributes**

System generated vehicle # for the occupant being reported on

Source

EMS records, emergency room records, PCR

Remarks

Occupant #

Screen Name: **Occupant #**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS.EMS_CARE.OCCNUM**

Element Attributes

System generated occupant # for the occupant being reported on

Source

EMS records, emergency room records, PCR

Remarks

Responding Agency TypeScreen Name: **Responding Agency**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.EMS_CARE.EMSTYPE****Element Attributes**

Database	SAS	
1	1	Fire department
2	2	Rescue squad
3	3	Police department
4	4	Trauma unit
5	5	Disaster unit
6	6	Ambulance service unit
7	7	Hospital
8	8	Mortuaries/funeral home
9	9	Other, specify
9999	99	Unknown

Source

EMS records, emergency room records, PCR, interviewee

Remarks

Indicate the responding agency of the EMS vehicle. The classification of that vehicle will be entered under **EMS Form/Vehicles/Responding Emergency Vehicle Type**.

Fire department

Any vehicle that belongs to a fire department will be classified here.

Rescue squad

Make this selection only if it is not associated with a fire department, police department, or hospital.

Police department

Any vehicle that belongs to a police department will be classified here.

Trauma unit

All trauma units that cannot be classified as a fire department, police department, or hospital will fall here.

Disaster unit

This will primarily occur during some national disaster.

Ambulance service unit

An ambulance not otherwise connected with any other type will be entered here.

Hospital

Any unit that belongs to a hospital will be classified here.

Mortuaries/funeral home

In some very rural areas, the only unit available may be from a mortuary or funeral home. In those cases, make this selection.

Other, specify

Use this attribute if the agency type cannot be selected from the above listed attributes. An example would be a military ambulance.

Unknown

If a determination could not be made of the agency type from the available documentation or interviews, select this attribute.

Responding Emergency Vehicle TypeScreen Name: **Type**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.EMS_CARE.VEHTYPE****Element Attributes**

Database	SAS	
1	1	Ambulance
2	2	Fire truck/apparatus
5	8	Other
9	9	Unknown

Source

EMS records, emergency room records, PCR

Remarks

This variable captures information irrespective of the operating authority or organization that is sponsoring/running the vehicle. Thus, a fire department or hospital that uses an ambulance for EMS will be coded as **Ambulance**.

Ambulance

An ambulance is a vehicle that is specifically designed to provide care and transport people. An ambulance run by a fire department should be included here. Helicopters/planes should be included here.

Fire truck/apparatus

Includes any vehicle other than an ambulance run by the fire department.

Other

Any other unit not covered above will be entered here. *This is very unlikely to occur.*

Unknown

If a determination could not be made of the emergency vehicle type from the available documentation or interviews, select this attribute.

Transportation ModeScreen Name: **Mode**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.EMS_CARE.MODE****Element Attributes**

Database	SAS	
1	1	Land
2	2	Air

Source

EMS records, emergency room records, PCR, interviewee

Remarks

Indicate what type of EMS vehicle came to the crash scene or transfer vehicle. Assume it is a road vehicle, unless contrary information is present.

EMS Notified Date

Screen Name: **Notified Date**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS.VITALSGCS.NOTIFIEDDATE**

Element Attributes

Database	SAS	
		MM/DD/YYYY
-99		Unknown

Source

EMS records, emergency room records, PCR, interviewee

Remarks

This variable indicates the notification **date** that **this vehicle was notified** to come to the crash scene. The notification can be made by any source (police, involved people, witnesses, etc.).

EMS Notification TimeScreen Name: **Notified**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.EMS_CARE.NOTIFIED****Element Attributes**

Enter the EMS notification time in military time format.

8888	Not Applicable
9999	Unknown

Source

EMS records, emergency room records, PCR, interviewee

Range

0001-2359

Remarks

This variable indicates the notification **time** that **this vehicle was notified** to come to the crash scene. The notification can be made by any source (police, involved people, witnesses, etc.).

Indicate the time that this unit was notified to come to the crash scene for any occupant in the crash.

Not applicable.

Units which do not respond to the crash site, but do receive patient(s) at a transfer point in order to transfer them to a treatment facility, are entered as **Not Applicable**.

EMS Notified Elapsed Time Since Crash

Screen Name: Notification Elapsed Time From Crash Date

SAS Data Set:

SAS Variable:

Database Name: CISS.CISS.EMS_CARE.

Element Attributes

Number of minutes since crash when EMS was notified

9999	Unknown

Source

EMS records, emergency room records, PCR, interviewee

Range**Remarks**

Information is computed by the system relating to date and time of crash as compared to date and time of EMS notification.

EMS Arrival TimeScreen Name: **Arrived**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.EMS_CARE.ARRIVED_SCENE****Element Attributes**

Enter the EMS arrival on scene time in military time format.

8888	Not applicable
9999	Unknown

Source

EMS records, emergency room records, PCR, interviewee

Range

0001-2359

Remarks

This variable indicates the **time** that **this vehicle arrived at** the crash scene. The notification can be made by any source (police, involved people, witnesses, etc.).

Indicate the time that the EMS unit stops physical motion at the scene. If a person EMT arrives at the scene by private vehicle, that time is NOT the recorded value for this variable.

EMS Time of Departure From the SceneScreen Name: **Departed**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.EMS_CARE.DEPARTED****Element Attributes**

Enter the EMS departure time in military time format.

8886	Transport refused
8888	Not applicable
9999	Unknown

Source

EMS records, emergency room records, PCR, interviewee

Range

0001-2359

Remarks

Enter the time that the unit departed for the treatment unit or transfer vehicle.

Transport refused

Use this attribute when a person refuses transport to a treatment facility, regardless of treatment level at the crash site.

Not applicableUnits that just provide treatment at the crash site and do not transport occupants are entered as **Not applicable**.Units that do not respond to the crash site, but do receive patient at a transfer point in order to transfer them to a treatment facility, are entered as **Not applicable**.**Unknown**

Use this attribute for instances where the time of departure cannot be determined from any source.

EMS Departed Elapsed Time Since CrashScreen Name: **Departed Elapsed Time From Crash Date**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.EMS_CARE.****Element Attributes**

Number of minutes since crash when EMS departed the scene

9999	Unknown

Source

EMS records, emergency room records, PCR, interviewee

Range**Remarks**

Information is computed by the system relating to date and time of crash as compared to date and time of EMS departure.

EMS Arrived at Medical FacilityScreen Name: **Arrived Medical**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.EMS_CARE.ARRIVED_MEDICAL****Element Attributes**

Enter the EMS arrival time in military time format.

8888	Not applicable
9999	Unknown

Source

EMS records, emergency room records, PCR, interviewee

Range

0001-2359

Remarks

Enter the time that the unit with the occupant arrived at the treatment facility.

This may be the unit that responded to the crash site or a unit that received the occupant at a point between the crash site and the treatment facility.

Not applicable

Units that just provide treatment at the crash site and do not transport occupants are entered as **Not applicable**.

Units that leave the scene and only transport occupant to a transfer vehicle are entered as **Not applicable**.

Unknown

Use this attribute for instances where the time of arrival cannot be determined from any source.

EMS Arrived Elapsed Time Since Crash

Screen Name: Arrived Medical Elapsed Time From Crash Date

SAS Data Set:

SAS Variable:

Database Name: CISS.CISS.EMS_CARE.

Element Attributes

Number of minutes since crash when EMS arrived at medical facility

9999	Unknown

Source

EMS records, emergency room records, PCR, interviewee

Range**Remarks**

Information is computed by the system relating to date and time of crash as compared to date and time of EMS departure.

Type of EMS Care AdministeredScreen Name: **Care**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.EMS_CARE.CARE****Element Attributes**

Database	SAS	
4		No care administered
2		Basic life support
1		Advanced life support
3		Care administered, type unknown
5		Unknown if care administered

Source

EMS records, emergency room records, PCR

Remarks

For this variable, the taking of a pulse, blood pressure, or just the general assessment of a person's health is considered care. Therefore, all crash involved people receive care from any EMS unit at the scene. This minimal level of care is considered **Basic Life Support**. However, not all people are transported, and some people refuse transport.

Indicate what type of EMS care was administered:

No care administered

Select this when this occupant was transported but did not receive any treatment *including monitoring of vital signs*.

Basic life support

Includes non-invasive care such as stabilizing the patient, stop bleeding, and opening of air way, vitals, and basic CPR.

Advanced life support

In addition to the care listed under **Basic Life Support**, this includes invasive procedures (IV Fluids, intubation), burn care, and emergency cardiac care/CPR (use of defibrillator).

Care administered, type unknown

Use this attribute in instances where treatment was administered, e.g., severity of injuries but NO details are available.

Unknown if care administered

Use if there is evidence that EMS responded to the crash site but no further information is available about this occupant and the PCR assigns this occupant an injury code of K, A, B or C.

EMS Vital Signs/GCS**EMS Vital Date**Screen Name: **Vital Date**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.EMS_VITAL.SIGNDATE****Element Attributes**

Database	SAS	
		MM/DD/YYYY
		Indicate the date initial vital signs taken
-99		Unknown

Source

EMS and hospital medical records

Remarks

EMS Time Vital Sign Taken

Screen Name: **Time Vital Sign Taken**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS. EMS_VITAL.SIGNTIME**

Element Attributes

Enter time, in military time format, for the initial vital signs reading

9999	Unknown

Source

EMS and hospital medical records

Range

0001-2359, 9999

Remarks

Enter the time that the initial vital signs readings were taken.

EMS Elapsed Time Since Crash of Vital Time ReadingScreen Name: **Elapsed Time From Crash**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.****Element Attributes**

Number of minutes since crash when vital sign reading is taken

9999	Unknown

Source

EMS and hospital medical records

Range**Remarks**

Information is computed by the system relating to date and time of crash as compared to date and time of vital sign reading.

EMS Pulse

Screen Name: **Pulse**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS. EMS_VITAL.PULSE**

Element Attributes

Database	SAS	
0-300	0-300	Enter pulse of patient
-8888	P	Palpable
-9999	U	Unknown
-9997		Not reported

Source

EMS and hospital medical records

Remarks

Enter the recorded pulse count of the patient. Range is 0 to 300.

P - Palpable

Used when palpable is used in the EMS record.

U - Unknown

Used when pulse is recorded and illegible.

Not reported

Used when vitals are taken and pulse not reported or no vitals were taken.

EMS Systolic Blood PressureScreen Name: **Systolic Systolic Blood Pressure**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS. EMS_VITAL.SYSTOLIC****Element Attributes**

Database	SAS	
0-300	0-300	Enter systolic value for patient
-8888	P	Palpable
-9999	U	Unknown
-9997		Not reported

Source

EMS and hospital medical records

Remarks

Enter the recorded systolic pressure value of the patient. Range is 0 to 300.

P - Palpable

Used when palpable is used in the EMS record.

U - Unknown

Used when systolic pressure is recorded and illegible.

Not reported

Used when vitals are taken and systolic blood pressure was not reported or no vitals were taken

EMS Diastolic Blood PressureScreen Name: **Diastolic**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS. EMS_VITAL.DIASTOLIC****Element Attributes**

Database	SAS	
0-300	0-300	Enter diastolic value for patient
-8888	P	Palpable
-9999	U	Unknown
-9997		Not reported

Source

EMS and hospital medical records

Remarks

Enter the recorded diastolic pressure value of the patient. Range is 0 to 300.

P - Palpable

Used when palpable is used in the EMS record.

U - Unknown

Used when diastolic pressure is recorded and illegible.

Not reported

Used when vitals are taken and diastolic pressure was not reported or no vitals were taken

EMS Respiratory Rate

Screen Name: **Respiratory Rate**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS. EMS_VITAL.RESPRATE**

Element Attributes

Database	SAS	
		Enter the respiratory rate of the patient
-8888	A	Agonal
-9999	U	Unknown
-9997		Not reported

Source

EMS and hospital medical records

Range

0-98, 997, 999

Remarks

Enter the recorded diastolic pressure value of the patient.

A - Agonal

Used when agonal is used in the EMS record.

U - Unknown

Used when respiratory rate is recorded and illegible.

Not reported

Used when vitals are taken and respiratory rate was not reported or no vitals were taken.

EMS Vitals SourceScreen Name: **Source**

SAS Data Set:

SAS Variable:

Database Name:

Element Attributes

Database	SAS	
0		Not available or none
1		At crash site
2		EMS vehicle
3		Emergency department
4		Floor
5		Intensive care unit
6		Intermediate care unit
8		Operating room
9		Other (specify)
10		Other hospital
11		Pre-hospital, not specified
12		Radiology
13		Resus. room – not in ED
99		Unknown

Source

EMS and hospital medical records

Range**Remarks**

This element describes the location the EMS vital signs were taken.

At Crash Site

Select this attribute if vitals were taken prior to departure from scene.

EMS Vehicle

Select this attribute if vitals were taken after departure from crash scene and before arrival at medical facility.

EMS Glasgow Coma Scale Total ScoreScreen Name: **Total Score**

SAS Data Set:

SAS Variable:

Database Name:

Element Attributes

Database	SAS	
3-15	3-15	Enter the actual value of the initial GCS Score recorded at medical facility
99	99	Unknown
97		Not reported

Source

EMS and hospital medical records

Remarks

Report the actual value of the **initial** GCS score obtained by EMS. The GCS assesses three neurological functions: **eye opening**, **motor response**, and **verbal response**. The GCS value can often be found in medical records by looking for the abbreviation “**GCS**.” The number following the abbreviation is the score unless the value is less than “03” or greater than “15.” It is not uncommon to find the GCS score accompanied by information about eye pupil size and motor strength.

If more than one GCS Score is recorded in the document without reference to initial GCS score, then select the GCS score to be entered in the following order:

1. enter the GCS score from the medical record with the earliest time to hospital treatment (i.e., enter ER record over discharge summary)
2. enter the GCS score that appears first in a medical record other than the ER record
3. if two or more GCS scores are recorded in the same record without reference to time, enter the lowest GCS score.

“15” is entered when the occupant’s medical record does not specifically indicate the GCS score but does indicate one or more of the following pieces of information:

- AxOx3 (alert and oriented times three)
- neurologically intact, normal, etc., or
- CN II-XII okay, normal, intact, etc.

EMS GCS Eye ScoreScreen Name: **Eye Score**

SAS Data Set:

SAS Variable:

Database Name:

Element Attributes

Database	SAS	
1-4		Enter the actual value of the eye GCS score recorded by EMS
9999		Unknown
9997		Not reported

Source

EMS and hospital medical records

Remarks

Report the actual value of the *eye* GCS score obtained by EMS. The GCS assesses three neurological functions: **eye opening**, **motor response**, and **verbal response**. The GCS value can often be found in medical records by looking for the abbreviation “**GCS**.”

- 4** - Eyes open spontaneously
- 3** - Eyes open to verbal command, speech, or shout
- 2** - Eyes open to pain. (not applied to face)
- 1** - No eye opening

Not reported

Used when medical indicated any of the following.

- AxOx3 (alert and oriented times three)
- neurologically intact, normal, etc., or
- CN II-XII okay, normal, intact, etc.

EMS GCS Verbal ScoreScreen Name: **Verbal Score**

SAS Data Set:

SAS Variable:

Database Name:

Element Attributes

Database	SAS	
1-5		Enter the actual value of the verbal GCS score recorded by EMS
9999		Unknown
9997		Not reported

Source

EMS and hospital medical records

Remarks

Report the actual value of the *verbal* GCS score obtained by EMS. The GCS assesses three neurological functions: **eye opening**, **motor response**, and **verbal response**. The GCS value can often be found in medical records by looking for the abbreviation “**GCS**.”

5 - Oriented**4** - Confused conversation, but able to answer questions**3** - Inappropriate responses, words discernible; cries**2** - Incomprehensible sounds or speech**1** - No verbal response**Not reported**

Used when medical indicated any of the following.

- AxOx3 (alert and oriented times three)
- neurologically intact, normal, etc., or
- CN II-XII okay, normal, intact, etc.

EMS GCS Motor ScoreScreen Name: **Motor Score**

SAS Data Set:

SAS Variable:

Database Name:

Element Attributes

Database	SAS	
1-5		Enter the actual value of the motor GCS score recorded by EMS
9999		Unknown
9997		Not reported

Source

EMS and hospital medical records

Remarks

Report the actual value of the *motor* GCS score obtained by EMS. The GCS assesses three neurological functions: **eye opening**, **motor response**, and **verbal response**. The GCS value can often be found in medical records by looking for the abbreviation “**GCS.**”

- 6** - Obeys commands for movement
- 5** - Purposeful movement to painful stimulus
- 4** - Withdraws from pain. (flexion withdrawal)
- 3** - Abnormal (spastic) flexion, decorticate posture
- 2** - Extensor (rigid) response, decerebrate posture
- 1** - No motor response

Not reported

Used when medical indicated any of the following.

- AxOx3 (alert and oriented times three)
- neurologically intact, normal, etc., or
- CN II-XII okay, normal, intact, etc.

EMS GCS ModifierScreen Name: **Modifier**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.VITALSGCS.GCSMOTORSCORE****Element Attributes**

Database	SAS	
1		Legitimate
2		Intubated
3		Intubated and sedated
4		Chemically sedated
5		Spinal cord injury
97		Not reported

Source

Hospital medical records

Remarks

Report the actual value of the *modified* GCS score obtained by EMS. The GCS assesses three neurological functions: **eye opening**, **motor response**, and **verbal response**. The GCS value can often be found in medical records by looking for the abbreviation “**GCS.**”

EMS GCS DateScreen Name: **GCS Date**

SAS Data Set:

SAS Variable:

Database Name:

Element Attributes

Database	SAS	
		MM/DD/YYYY
-99		Unknown
-97		Not reported

Source

EMS and hospital medical records

Remarks

Indicate the date GCS taken by EMS.

Not reported

Used when date is not recorded.

EMS Time GCS Sign TakenScreen Name: **GCS Time**

SAS Data Set:

SAS Variable:

Database Name:

Element Attributes

Database	SAS	
		Enter time, in military time format, for the GCS
97		Not reported
9999		Unknown

Source

EMS and hospital medical records

Range

0001-2359, 9999

Remarks

Enter the time that the GCS was taken.

Unknown

Enter in the first space of the variable, the program will fill in the remainder of the attribute.

Not reported

Used when time is not recorded.

EMS Elapsed Time Since GCS Score ObtainedScreen Name: **Elapsed Time From Crash**

SAS Data Set:

SAS Variable:

Database Name:

Element Attributes

Database	SAS	
		Number of minutes since crash the GCS was taken
9999		Unknown

Source

EMS and hospital medical records

Range**Remarks**

Information is computed by the system relating to date and time of crash as compared to date and time of GCS score.

EMS GCS LocationScreen Name: **Source**

SAS Data Set:

SAS Variable:

Database Name:

Element Attributes

Database	SAS	
0		Not available or none
1		At crash site
2		EMS vehicle
3		Emergency department
4		Floor
5		Intensive care unit
6		Intermediate care unit
8		Operating room
9		Other (specify)
10		Other hospital
11		Pre-hospital, not specified
12		Radiology
13		Resus. room – not in ED
99		Unknown

Source

EMS and hospital medical records

Range**Remarks**

This element describes the location the EMS GCS score was taken.

Injury Causation Coding

Documentation of injury causation for crashes in NHTSA's investigation-based field crash studies provides researchers valuable vehicle safety and occupant injury data. This manual provides the CISS injury coding center and the SCI researchers with guidelines to complete injury causation coding for each injury documented in CISS and SCI crashes. Injury coding is performed with the VisualAID application, and injury causation coding is entered using the CISSWeb application (prior to 2021, VisualAID was used for injury causation coding as well).

Biotab Injury Causation Methodology

The BioTab, named after the Biomechanics Table in the legacy CIREN data system, provides a means to completely and accurately analyze and document the physical causes of injury based on data obtained from detailed medical records and imaging, in-depth crash investigations, and findings from the medical and biomechanical literature. The BioTab was developed because the terminology and methods previously used to describe and document injury causation from crash investigations were vague and incomplete³. For example, the terms direct and indirect loading were often used to describe how an injury occurred. However, there were situations where these terms are unclear, e.g., was a femoral shaft fracture from knee-to-knee bolster loading from direct loading of the knee or indirect loading of the femur through the knee. In addition, the term inertial loading was often used to describe how tensile neck injuries occurred; however, using this terminology fails to document that neck tension would not have occurred unless the torso was restrained. The BioTab removed these ambiguities by providing a consistent and well-defined manner for coding injuries and recording the biomechanics of injury in crash injury databases.

Coding in the BioTab revolves around the definition of an Injury Causation Scenario (ICS), which identifies and documents the factors that led to a specific injury. All AIS 3+ injuries and some AIS 2 injuries are coded according to the full BioTab (long-form) guidelines. Injuries not coded in the full BioTab are coded in a modified version of BioTab (BioTab Lite or short-form). The AIS 2 injuries requiring long-form coding are those deemed clinically significant for which the more comprehensive causation coding will benefit injury prevention research (see Table 25) for a listing of the AIS 2 injuries requiring long-form BioTab). The elements of an injury causation scenario will identify and describe the following:

1. Whether the injury was caused by another injury (e.g., a rib fracture causes a lung laceration),
2. The Source of Energy (SOE) that led to the occupant loading that caused the injury,
3. The Involved Physical Component (IPC) that caused injury by contacting the occupant and the body region contacted by the IPC,

³ Schneider, L. W., Rupp, J. D., Scarboro, M., Pintar, F., Arbogast, K. B., Rudd, R. W., Sochor, M. R., Stitzel, J., Sherwood, C., MacWilliams, J. B., Halloway, D., Ridella, S., & Eppinger, R. (2011). BioTab – A new method for analyzing and documenting injury causation in motor-vehicle crashes. *Traffic Injury Prevention*, 12:256-265.

4. The path by which force was transmitted from the body region contacted, through body components, to the site of injury,
5. Confidence associated with the IPC and the ICS, and
6. Contributing factors affecting injury likelihood or severity.

The following sections describe the procedures and rules for coding in the BioTab. Blank BioTab coding templates are included in Table 23 for use during case preparation to quickly capture the data to be coded/entered in the CISSWeb application. Example templates for various injury scenarios are provided in the Example and Helpful Hints section.

BioTab Process

The BioTab templates in Table 23 provide a framework for recording all of the information that must be coded in the CISSWeb application for both long-form and short-form injuries. Table 23 (and Figure 220) describes the process flow for coding a long-form BioTab and Table 24 (and Figure 221) describes the process flow for BioTab Lite injuries. The subsequent guidelines will refer to the numbered steps in the diagrams as well as the relevant columns in the templates for clarity (note that numbering of steps and template columns does not correspond).

Long-Form

All AIS 3+ injuries and some AIS 2 injuries are coded according to the full BioTab (long-form) guidelines presented in this section.

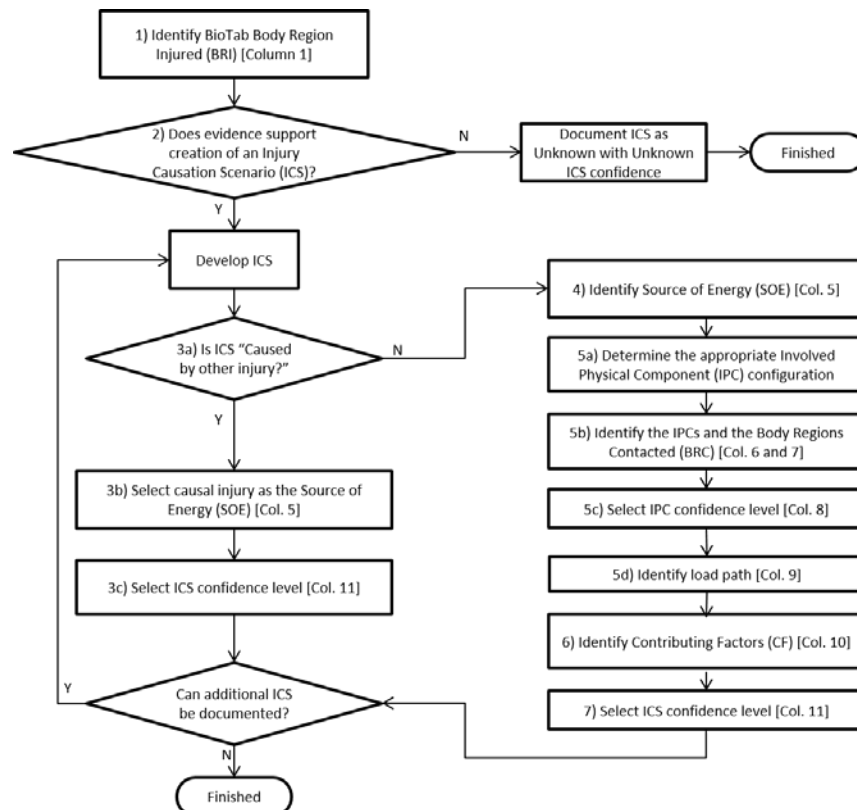


Figure 220. Long-form full BioTab process diagram including references to columns of BioTab Long-Form template

Step 1: Identify the injury and the Body Region Injured (BRI).

- The BioTab process requires the use of a unique list of body regions that is more anatomically specific than the AIS body region indicated by the first digit of the AIS code. CISSWeb narrows down the list of available body regions for the BRI based on the anatomic location of the specific AIS code being coded. In some cases, manual selection may be required. The list of the 20 BioTab body regions is given in Table 22.
- Enter the BRI in column 1 and the AIS code in column 2 of the BioTab Long-Form template.

Step 2: Determine if sufficient evidence exists to support development of an Injury Causation Scenario (ICS).

- An ICS describes, at a minimum, the factors that are necessary for the occurrence of the injury, and may include factors that contributed to the severity of the injury or increased its likelihood.
- If there is insufficient evidence to support development of an ICS describing how the injury occurred, the ICS shall be coded as unknown. An unknown ICS shall be coded according to the guidelines in the BioTab Evidence and Confidence section and assigned an ICS confidence of “Unknown.”
- If there is sufficient physical evidence (e.g., contacts within the vehicle, hypothesized kinematics of the occupant, or patterns of injury) to support a scenario of how an injury occurred, an ICS shall be developed according to the guidelines.
- Occasionally, circumstances arise in which evidence may support two potential injury causation scenarios for an injury. Refer to The Example and Helpful Hints section for further guidance and examples of coding more than one ICS. Any one of the following conditions may be used to justify coding two ICS:
 - The two potential ICSs have **different sources of energy**,
 - The two potential ICSs involve **substantially different occupant kinematics** in response to the same source of energy,
 - Or the two potential ICSs involve **unique BRC/IPC interactions** in response to the same source of energy.
- Enter a succinct description of the ICS in column 4 of the BioTab Long-Form template. The ICS description is not a database element, but provides a quick overview of the injury’s causation when reviewing the case. Typical ICS descriptions include the involved physical component and how it loads the body region contacted. Examples of ICS descriptions include: belt and air bag loading of thorax, knee loading by knee bolster, head contact with A-pillar, etc.

Step 3: Determine if the injury’s causation is the direct result of another injury.

- In some circumstances, the causation for a given injury (induced) is best described as being the direct result of another injury (causal). Most instances of injuries that are caused by other injuries involve a skeletal fracture inflicting damage to neighboring soft tissue (e.g., a displaced femur fracture lacerating the femoral artery). An induced injury should generally not be part of the same organ or component as the causal injury. For example, an acetabulum fracture and a hip dislocation should not be coded as a causal/induced relationship since the dislocation is part of the joint fracture. If the

induced injury is unlikely to have occurred in the absence of the causal injury given the presumed regional mechanism, the use of the induced approach is merited.

- If an injury is caused by another injury, the ICS description must indicate the causal injury. In CISSWeb, select “Other Injury” in the Source of Energy list and then select the causal injury from the list of injuries provided. Changing the causal injury’s AIS code will break the linkage between the induced and causal injury, but changes to the causal injury’s causation coding do not break the linkage. Enter the causal injury in column 5 of the BioTab Long-Form template.
- Selecting a causal injury in CISSWeb will auto-populate fields related to the IPC and Contributing Factors.
- A confidence level of Certain, Probable, or Possible shall be assigned for an induced injury’s ICS. The guidelines defining ICS confidence level assignment are given in Step 7 and Table 19. Enter the ICS confidence in column 11 of the BioTab Long-Form coding template.
- If one ICS describes causation as the result of another injury, a second ICS may be coded, although the second ICS may not also describe the causation as being the result of another injury. The rules for ICS coding in Figure 218 still apply – an induced ICS should not be accompanied by a second, direct ICS that describes the same SOE and IPC/BRC relationship. Proceed to Step 4 if another ICS is to be coded for the injury.

Step 4: Determine the Source of Energy (SOE) for an ICS that does not involve causation by another injury.

- A source of energy is the specific event that produced the injurious loading or circumstance. Possible sources of energy include crash events, air bag deployment, pretensioner deployment, and fire. The majority of SOE will be a crash event or an air bag deployment. Enter the SOE in column 5 of the BioTab Long-Form template.
- If the SOE is a crash event, CISSWeb will provide a list of coded crash events for selection. A selection for an unknown crash event is available in cases where the reviewers are unable to determine the specific crash event that produced the injury.
- If the SOE is an air bag deployment, the action of the air bag deployment must be directly responsible for the injurious loading. That is, the occupant must have interacted with the deploying air bag and the reviewers must be confident that the injury would not have occurred if the occupant had interacted with the air bag after full inflation. When selecting this option, CISSWeb will provide the list of deployed air bags for selection.
- Attributing an injury to a combination of SOEs within the same ICS is prohibited. In cases where the reviewers wish to assign two SOEs, a second ICS must be coded.
- If the reviewers are confident that two SOEs contributed to the same ICS, the most dominant source shall be chosen as the SOE and the other potential source may be captured as a Contributing Factor (e.g., if a crash event combined with a known aggressive pretensioner are thought to both have contributed to the occurrence of a rib fracture, the crash event shall be selected as the SOE and the pretensioner deployment may be included as a Contributing Factor). Strong documentation of the necessity of both sources shall be provided and justified in the “ICS Note” field.

Step 5: Determine the Involved Physical Component (IPC) and related elements for the ICS

- An Involved Physical Component (IPC) is one or more physical components that the case subject contacted in order for the injury to occur. Examples of IPCs include restraints, all parts of the vehicle interior, other occupants, cargo, and any external intruding structure that the occupant contacts, such as a pole or the hood of another vehicle. Indicate the IPC in column 6 of the BioTab Long-Form template.
- There are three types of IPC configurations in the long-form BioTab – Isolated, Tandem, and Critical – and each has unique governing rules. An Isolated IPC occurs when only one point of contact to the occupant is required to produce the injurious loading. A Tandem IPC occurs when components, in series with one another, lead to a single point of contact to the occupant with simultaneous or sequential loading. A Critical IPC configuration occurs when components simultaneously load the occupant at separate and distinct locations. In CISSWeb, select the desired “IPC Configuration” type in the drop-down to generate the applicable IPC fields.
 - **Isolated IPC:** For circumstances where the injurious loading is caused by a single point of contact (or a distributed contact across a larger area of the body, but from only one component) and tandem loading is not required, one or two IPCs may be coded depending on the available evidence. For an ICS that involves an IPC with a confidence level of Probable or Possible, a second, alternate IPC may be coded as long as the two IPCs are adjacent to one another along the occupant’s kinematic path. For the example of a patellar fracture that probably occurred from contact with the underside of the steering column, but possibly occurred from contact with the adjacent knee bolster; the Primary IPC would be the steering column and the Alternate IPC would be the knee bolster. If Primary and Alternate IPCs are coded in an Isolated IPC configuration, both may not be assigned a confidence of Probable and neither may be assigned a confidence of Certain – an ICS with Primary and Alternate IPCs represents a situation where one or the other component is required, but not both. The Primary IPC, denoted as 1.1, belongs in column 6a of the BioTab Long-Form coding template and the Alternate IPC, denoted as 1.2, belongs in column 6b of the BioTab Long-Form coding template. The BRC is the same for the Primary and Alternate IPCs in an Isolated configuration.
 - **Tandem IPCs:** For circumstances where the injurious loading is caused by a single point of contact (or a distributed contact across a larger area of the body) and more than one stacked or reinforced vehicle components are thought to produce the loading in a simultaneous or sequential manner, two or three IPCs may be coded depending on the available evidence. Examples include the head initially contacting the sun visor, which is reinforced by the windshield header; the head initially contacting roof side rail air bag, which is reinforced by another object (i.e., pole); or the chest contacting the seat belt, which is prior to but also reinforced by the air bag, which is itself reinforced by the steering wheel/hub assembly. Alternate IPCs are not possible with a Tandem IPC configuration – an ICS with a Tandem IPC configuration represents a situation where the first and second (and third, if coded) components are involved. The Tandem IPC configuration can accommodate two or three IPCs, and there are no restrictions on

their assigned confidence levels except not being “Unknown.” If the second or third IPC is thought to be more likely than the preceding IPC to produce the injurious loading, this would be indicated with higher confidence assigned to the second or third IPC. A more in-depth discussion of IPC confidence selection is provided in Table 19. The IPC making direct or initial contact with the occupant should be coded as 2.1 in column 6a of the BioTab Long-Form coding template. The next-closest IPC should be coded as 3.1 followed by the third IPC (if applicable) as 4.1 in column 6a of the template.

- **Critical IPCs:** Circumstances occasionally arise where two or three IPCs loading the body at different locations are critical to the occurrence of an injury (i.e., without simultaneous IPCs acting at different locations, the specific injury would not have occurred). If IPCs are critical to the ICS, the first IPC should be coded in Column 6a of the BioTab Long-Form coding template as 5.1. The second critical IPC should be coded in Column 6a as 6.1. If a third critical IPC exists, such as in the case of three-point bending of a long bone, the third critical IPC should be coded in Column 6a as 7.1. One example of a circumstance where two critical IPCs should be coded is a tibial plateau fracture from simultaneous loading of the knee by the knee bolster and the foot by the toepan in a frontal crash. Both IPCs in this injury causation scenario may be coded as certain since the scenario is described as requiring axial compression caused by loading of the foot by the toepan and the restriction on the motion of the knee caused by contact between the knee and the knee bolster. Each IPC in a critical configuration must occur at a separate and distinct anatomic location (e.g., left and right hip, foot and knee, left and right thorax). Alternate IPCs may be coded for any or all of the critical occupant contact locations (5.2, 6.2, or 7.2), though the same rules regarding confidence of the Primary and Alternate IPCs apply as for an Isolated IPC at each contact point. While the Critical IPC configuration represents a condition where the first and second (and third, if coded) contact points are required, the inclusion of one or the other via the Primary/Alternate option at each contact point allows even more flexibility. See Table 19 for more information on IPC confidence rules.
- In CISSWeb, select the appropriate “IPC Area” and “IPC” from the drop-down lists based on the chosen IPC configuration. After selecting the Area, a focused list of components is generated for the Involved Physical Component selection.
- One of the 20 BioTab body regions shall be selected as the Body Region Contacted (BRC) by the IPC that led to the injury. All injuries in motor-vehicle crashes that are not burns or induced by other injuries will involve contact between a body region and a physical component. In general, determining body region contacted is fairly straightforward, though some circumstances require special coding. For the example of a belt-restrained occupant experiencing a tensile neck injury without head contact, the body region contacted is the thorax and the IPC is the shoulder belt. This is because restraint of the thorax by the shoulder belt allows the relative motion between head and torso that causes the tensile neck injury. Enter the BRC in column 7 of the BioTab Long-Form template based on the configuration-specific requirements.
- The chosen IPC must be supported with evidence from the case. By default, the PDOF of a crash event and the resulting occupant kinematics exist as evidence to support an IPC selection. Some examples of IPC evidence include, but are not limited to: damage to the

IPC, contact marks, glass/debris in wounds, etc. For the example of a patellar fracture from either contact with the steering column or the knee bolster, there must be either contact marks on the steering column or knee bolster, or evidence that would place the occupant's knee in the area of the steering column or knee bolster at the time of impact (e.g., right foot braking would position the knee over the steering column). While IPC evidence is not coded for CISS or SCI cases, it should nevertheless be considered when selecting the IPC and its associated confidence level. A discussion of evidence-related factors for an IPC is provided in Table 17.

- A confidence level of Certain, Probable, or Possible shall be assigned for each IPC. The guidelines defining IPC confidence level assignment are given in Table 19. If insufficient evidence exists to identify a plausible IPC, the IPC shall be coded as “Injured, Unknown Source” and the IPC confidence level shall be coded as “Unknown.” Enter the IPC confidence in column 8 of the BioTab Long-Form coding template. An unknown IPC does not necessarily require an unknown ICS.
- A load path shall be established between the body region contacted and the body region injured. All body component paths should be established using the connectivity between the BioTab body regions listed in Table 22. For example, a hip injury from knee loading in a frontal crash would have a body component path of knee to thigh to hip. In some cases, a non-contiguous path may be required. CISSWeb provides a list of options for the Load Path based on the BRC and BRI selections, but also provides an “Other (specify)” option if none of the selected paths are appropriate. The load path may be indicated in column 9 of the BioTab Long-Form template.
-  Attention: For multi-event crashes, when an air bag has deployed in a prior event and is incapable of offering protection for subsequent events, the air bag does not need to be included as an IPC if it is essentially a layer of fabric between the occupant and the IPC. In these scenarios, the coding should indicate that the air bag did not provide protection against contact with the underlying IPC. For an Isolated IPC scenario, the air bag cannot be included as an IPC and a Contributing Factor indicating the air bag was deflated must be added to indicate the IPC contact occurred through the deflated air bag. For a Tandem IPC scenario, the air bag may be included in the IPC chain if determined to have been even somewhat capable of dissipating energy (e.g., in the second of two closely spaced crash events when the air bag deployed in the first and was thought to be still somewhat efficacious in the second).

Step 6: Determine whether there were any Contributing Factors (CF) for the ICS

- Contributing Factors are any conditions that may have played a role in the ICS for a particular injury, but were not required for the injury to have occurred. Contributing Factors may have increased the likelihood of the injury occurring or may have affected the severity or nature of the injury. Enter any CF in column 10 of the BioTab Long-Form template.
- Some common examples of CF may involve diseases (e.g., osteoporosis), use of medications (e.g., anticoagulants), medical conditions (e.g., pregnancy), intrusions to the occupant compartment (e.g., for a hip fracture in a frontal crash, IP intrusion may be a CF), loading by another occupant that is not the causal factor in an injury occurring (e.g., in the case of a right-front passenger struck by the right front passenger door who experiences right-sided rib fractures from contact with the door and loading of the left

chest by the unrestrained driver), improper restraint use (e.g., improperly positioned belts or an improperly secured child restraint system), and high crash severity. The available selections for CF are defined in detail in Table 20. In CISSWeb, select one or more appropriate CF in the list provided. If there are no CF, select “None” as the field cannot be left blank. Selecting “Intrusion” or “Comorbidity” require further selection of specific elements from the crash case. Selecting “Seat belt interaction” or “CRS used improperly” enable a text box to enter specific details.

- Factors leading to the crash (e.g., occupant loss of consciousness) should not be coded as a CF unless these factors directly contributed to the occurrence of injury (e.g., occupant loses consciousness and slumps out of a conventional occupant position prior to impact).

Step 7: Determine the confidence level for each ICS

- Each ICS must be supported with evidence from the case. By default, the PDOF of a crash event and the resulting occupant kinematics exist as evidence to support an ICS. Some examples of ICS evidence include, but are not limited to: increased excursion of an unbelted occupant, contacts indicating kinematics, and vehicle dynamics that affect occupant trajectory. While ICS evidence is not coded for CISS or SCI cases, it should nevertheless be considered when defining the ICS and its associated confidence level. A discussion of evidence-related factors for an ICS is provided in the ICS Evidence section.
- A confidence level of “Certain,” “Probable,” or “Possible” shall be assigned for each ICS that is not unknown. The guidelines defining ICS confidence level assignment are given in Table 17. Indicate the ICS confidence in column 11 of the BioTab Long-Form coding template.
- For the confidence level of an ICS to be “Certain,” there must be one and only one ICS and there must be compelling evidence for all parts of the scenario (i.e., the investigators must have high confidence in the choice of the SOE, the resulting occupant kinematics, and the association between the characteristics of the injury and the loading mechanism).
- If ICSs exist, then the confidence levels on the two ICSs can be Probable for the first and Possible for the second or Possible for both ICSs. Two ICSs for the same injury cannot both be Probable and neither may be Certain.

Short-Form

The BioTab Lite is a modified version of the BioTab for less severe injuries where the detailed description of the causation is not justified. The types of injuries described by the BioTab Lite consist of AIS 1 and the majority of AIS 2 injuries. The modifications for BioTab Lite basically reduce the options available in the full BioTab. The ability to create Injury Causation Scenarios (ICS) and select Involved Physical Components (IPC) has been eliminated. The coding of Contributing Factors was also eliminated.

BioTab Lite will capture only one ICS with only a primary IPC. The ICS requires a confidence level and follows the same rules for selecting the confidence level in Table 17 with the exception that the rules for ICSs do not apply. The IPC choice for BioTab Lite is simply the most probable one available based on the evidence collected. The associated IPC confidence level follows the same requirements as IPC confidence in full BioTab with the exception that the rules for IPCs do not apply.

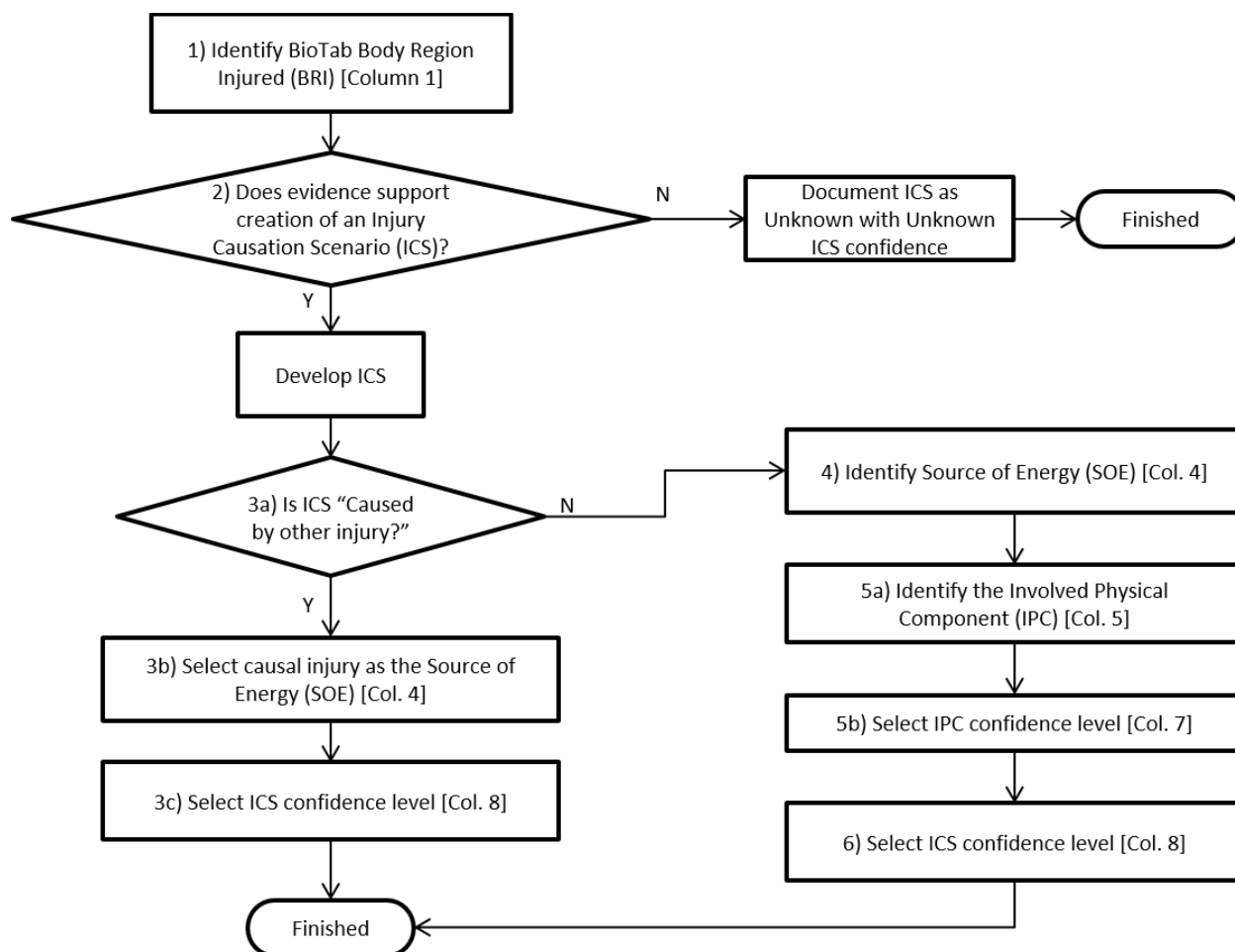


Figure 221. Short-form BioTab Lite process diagram including references to columns of BioTab Short-Form template

Step 1: Identify the injury and the Body Region Injured (BRI)

- The BioTab process requires the use of a unique list of body regions that is more anatomically specific than the AIS body region indicated by the first digit of the AIS code. CISSWeb narrows down the list of available body regions for the BRI based on the anatomic location of the specific AIS code being coded. In some cases, manual selection may be required. The list of 20 BioTab body regions is given in Table 22.
- Enter the BRI in column 1 and the AIS code in column 2 of the BioTab Short-Form template.

Step 2: Determine if sufficient evidence exists to support development of an Injury Causation Scenario (ICS)

- A short-form ICS describes, simply, the factors that are necessary for the occurrence of the injury.
- If there is insufficient evidence to support development of an ICS describing how the injury occurred, the ICS shall be coded as unknown. An unknown ICS shall be coded

according to the guidelines BioTab Evidence and Confidence section and assigned an ICS confidence of “Unknown.”

- If there is sufficient physical evidence (e.g., contacts within the vehicle, hypothesized kinematics of the occupant, or patterns of injury) to support a scenario of how an injury occurred, an ICS shall be developed according to the guidelines.
 - When there is no vehicle inspection, code SOE Unknown and ICS Confidence Unknown (regardless of interview or medical patterns/inferences). The application will auto fill IPC fields with “injured, unknown source” when ICS confidence is unknown.
- Enter a succinct description of the ICS in column 3 of the BioTab Short-Form template. The ICS description is not a database element, but provides a quick overview of the injury’s causation when reviewing the case. Typical ICS descriptions include the involved physical component and how it loads the body region contacted. Examples of ICS descriptions include: belt and air bag loading of thorax, knee loading by knee bolster, head contact with A-pillar, etc.

Step 3: Determine if the injury’s causation is the direct result of another injury

- In some circumstances, the causation for a given injury (induced) is best described as being the direct result of another injury (causal). Most instances of injuries that are caused by other injuries involve a skeletal fracture inflicting damage to neighboring soft tissue (e.g., a displaced femur fracture lacerating the femoral artery). An induced injury should generally not be part of the same organ or component as the causal injury. For example, an acetabulum fracture and a hip dislocation should not be coded as a causal/induced relationship since the dislocation is part of the joint fracture. If the induced injury is unlikely to have occurred in the absence of the causal injury given the presumed regional mechanism, the use of the induced approach is merited.
- If an injury is caused by another injury, the ICS must indicate the causal injury. In CISSWeb, select “Other Injury” in the Source of Energy list and then select the causal injury from the list of injuries provided. Changing the causal injury’s AIS code will break the linkage between the induced and causal injury, but changes to the causal injury’s causation coding do not break the linkage. Enter the causal injury in column 4 of the BioTab Short-Form template.
- Selecting a causal injury in CISSWeb will auto-populate fields related to the IPC.
- A confidence level of Certain, Probable, or Possible shall be assigned for an induced injury’s ICS. The guidelines defining ICS confidence level assignment are given in Step 6 and Table 17. Enter the ICS confidence in column 8 of the BioTab Short-Form coding template.

Step 4: Determine the Source of Energy (SOE) for an ICS that does not involve causation by another injury

- A source of energy is the specific event that produced the injurious loading or circumstance. Possible sources of energy include crash events, air bag deployment, pretensioner deployment, and fire. The majority of SOE will be a crash event or an air bag deployment. Indicate the SOE in column 4 of the BioTab Short-Form template.

- If the SOE is a crash event, CISSWeb will provide a list of coded crash events for selection. A selection for an unknown crash event is available in cases where the reviewers are unable to determine the specific crash event that produced the injury.
- If the SOE is an air bag deployment, the action of the air bag deployment must be directly responsible for the injurious loading. That is, the occupant must have interacted with the deploying air bag and the reviewers must be confident that the injury would not have occurred if the occupant had interacted with the air bag after full inflation. When selecting this option, CISSWeb will provide the list of deployed air bags for selection.
- Only one SOE may be coded for each BioTab Lite injury due to the restriction of one ICS per injury.

Step 5: Determine the Involved Physical Component (IPC) and confidence

- An Involved Physical Component (IPC) is the physical component that the case subject contacted that led to the injury. Examples of IPCs include restraints, all parts of the vehicle interior, other occupants, cargo, and any external intruding structure that the occupant contacts, such as a pole or the hood of another vehicle. Indicate the IPC in column 5 of the BioTab Short-Form template.
- In CISSWeb, select the appropriate “IPC Area” and “IPC” from the drop-down lists. After selecting the “IPC Area,” a filtered list of components is generated for the “IPC” selection.
- One of the 20 BioTab body regions shall be determined as Body Region Contacted (BRC) by the IPC that led to the injury. The BRC for a Short-Form injury is not entered in CISSWeb, but would be entered in column 6 of the BioTab Short-Form template.
- The chosen IPC must be selected with consideration of the evidence in the case. By default, the PDOF of a crash event and the resulting occupant kinematics exist as evidence to support an IPC selection. Some examples of IPC evidence include, but are not limited to: damage to the IPC, contact marks, glass/debris in wounds, etc. While IPC evidence is not coded for BioTab Lite, it should nevertheless be considered when selecting the IPC and associated confidence level.
- A confidence level of Certain, Probable, or Possible shall be assigned for the IPC. The guidelines defining IPC confidence level assignment are given in Table 19. If insufficient evidence exists to identify a plausible IPC, the IPC shall be coded as “Injured, Unknown Source” and the IPC confidence level shall be coded as “Unknown.” Enter the IPC confidence in column 7 of the BioTab Short-Form coding template.

Step 6: Determine ICS confidence

- The ICS must be developed with consideration of the evidence in the case. By default, the PDOF of a crash event and the resulting occupant kinematics exist as evidence to support an ICS. While ICS evidence is not coded for BioTab Lite, it should nevertheless be considered when defining the ICS and associated confidence level.
- A confidence level of “Certain,” “Probable,” or “Possible” shall be assigned for the ICS. The guidelines defining ICS confidence level assignment are given in Table 17. Indicate the ICS confidence in column 8 of the BioTab Short-Form coding template.
- For the confidence level of an ICS to be “Certain,” there must be compelling evidence for all parts of the scenario (i.e., the investigators must have high confidence in the choice of

the SOE, the resulting occupant kinematics, and the association between the characteristics of the injury and the loading mechanism).

Special Considerations

Coding Multiple ICS

Occasionally, evidence exists to support two Injury Causation Scenarios (ICSs). If two ICSs are proposed, the answer to one of the following three questions must be yes, otherwise only a single ICS should be coded. Note that if ICSs are coded, neither ICS can be assigned a confidence of “Certain” (see Table 17).

1. Do the two proposed ICSs have different sources of energy (e.g., the SOE is crash for proposed ICS #1 and air bag for proposed ICS #2)?

For cases involving crash events, the first event and the second event are considered separate sources of energy (i.e., two different ICS should be coded if proposed ICS #1 hypothesizes that the injury occurred in the first event and proposed ICS #2 speculates that injury occurred in the second event).

2. Do the two proposed ICSs involve **substantially** different occupant kinematics occurring as a result of the same SOE?

In general, the phrase “substantially different occupant kinematics” involves any occupant kinematics that result in contact with non-adjacent vehicle interior components that cannot be described as lying along the same kinematic path. For example, two ICSs should be coded if proposed ICS #1 involves the driver moving forward and to the left and contacting the A-pillar and proposed ICS #2 involves the occupant moving forward and to the right contacting the center instrument panel. Components, such as the windshield header that span the occupant compartment, should be split into thirds for determining adjacency (e.g., the driver side windshield header and A-pillar are adjacent, but the A-pillar and the center windshield header are not adjacent). Occupant kinematics during the loading phase of the crash and during rebound are considered to be substantially different (i.e., two ICSs should be coded if, in the first ICS, injury is hypothesized to occur during the deceleration phase of the crash and if the second ICS injury is hypothesized to have occurred during rebound). Sufficient evidence must exist to support the possibility of the two sets of kinematics as part of the same crash event and a justification must be included in the causation Note.

3. Do the two proposed ICSs involve unique BRC/IPC combinations associated with the same SOE?

If the BioTab-defined body region contacted for the injury differs for the proposed scenarios, a second ICS should be coded. For example, two ICS should be coded for a brain injury that is thought to occur from either head contact with the vehicle interior or from belt restraint of the chest where the resulting angular motion of the head occurs without head contact. This rule allows the possibility of mixed IPC configurations as long as at least one BRC/IPC relationship differs between the two ICS – consider an ICS with an Isolated IPC and an ICS with Critical IPCs where one of the critical IPCs contacts the same BRC as in the Isolated IPC example (e.g., the first ICS involves door contact to left hip and the

second ICS involves critical IPCs of door to left hip and center console to right hip). This condition does not permit an ICS with an Isolated IPC and an ICS with Tandem IPCs where the BRC and first-contacted IPC are the same (e.g., the first ICS involves chest contact to the shoulder belt and the second ICS involves chest contact to the belt in tandem with the air bag – the best approach would be to only code the Tandem IPC scenario). A justification must be included in the “ICS Note.”

BioTab Evidence and Confidence

The following sets of guidelines provide a structured method for identifying and classifying evidence, as well as using the evidence to determine an appropriate confidence level for Injury Causation Scenarios (ICSs) and Involved Physical Components (IPCs) in the BioTab.

ICS Evidence

Evidence used to establish an ICS includes indications that support the occupant kinematics leading to the BRC/IPC interaction and the loading mechanism causing the injury. Indications supporting an ICS may be physical, electronic, testimonial, or scientific in nature. The primary evidence-related considerations for building an ICS include:

1. The **Source of Energy** that initiates the transfer of injurious energy to the occupant
The review team must identify any valid sources of energy capable of producing each injury. A valid source of energy is one that imparts sufficient energy to the occupant in a manner that has the **potential** to produce the injury. Fewer potential sources of energy during the crash sequence increase overall confidence in an ICS. Minor crash events are unlikely to qualify as a valid source of energy for serious injuries.
2. Overall **occupant kinematics** produced by the SOE and consistency with other ICS associated with the same SOE
The kinematic response to the chosen SOE in the context of the entire crash must support the occupant’s interaction with the chosen IPC for each associated ICS. In multi-event crashes, consideration of the temporal history of the occupant’s motion must be made. Precrash maneuvers, crash-induced vehicle dynamics, and interactions within the occupant compartment affect the occupant’s overall trajectory within the passenger compartment during the crash sequence, but the event-specific kinematics should provide a reasonable level of support for the motion required for the described interaction. For an air bag SOE, sufficient evidence must exist to support the notion that the BRC was adjacent to the air bag deployment location at the time of deployment (i.e., demonstrate relationship between any kinematic responses and deployment timing and/or occupant proximity to module) and a discussion of the conditions must be included in the Notes field for the ICS.
3. **Biomechanical soundness** of the injury mechanism
The nature of the injury being coded may provide evidence to support the injury mechanism associated with the ICS. The mechanism occurring both regionally and at the organ/component-level should be considered when determining the biomechanical soundness of the causation. The extent to which the case evidence

and the hypothesized causation scenario agree with established injury biomechanics knowledge (findings in the literature or in laboratory studies relating specific injury types and patterns to regional and/or organ/component loading conditions) lends credence to the overall scenario. Furthermore, the presence of case subject comorbidities and their effects on the likelihood of the injury, as well as the nature and severity of the injury, serve to support the soundness of the injury mechanism in the context of the established scenario.

Electronic indications supporting an ICS are based on the interpretation of the case vehicle's Event Data Recorder (EDR). While EDRs from different makes and models provide varying levels of detail, the report shall always be interpreted in conjunction with the physical evidence to verify the report's contents. Typical EDR findings that support development of an ICS include belt use (or lack thereof), braking, seat track position, air bag deployments and timing, and crash pulse characteristics. The limitations of the EDR and the relationships between EDR events and crash events must be considered when interpreting the EDR report. Electronic evidence gathered from the EDR will generally inform establishing the source of energy and occupant kinematics.

Testimonial evidence includes information gathered from the interviews of the case occupant or other occupants in the case vehicle that provide insight into the condition and position of the case occupant at the time of the crash.

The concept of scientific evidence, as noted above, generally refers to the application of physical laws of motion to the vehicle and occupant to hypothesize the occupant's trajectory during the events immediately prior to and during the crash sequence. A well-reasoned attempt to characterize the occupant's kinematic response must consider the other types of evidence available, as well as laboratory experience, in establishing a consistent time-history of the occupant's interaction with their environment.

ICS Confidence

Table 17 lists guidelines for selecting ICS confidence levels. These guidelines are based on the potential sources of energy available to produce the injury, the consistency among the BRC and IPC in the context of the hypothesized occupant kinematics, and the plausibility of the documented injury mechanism in the context of established injury biomechanics research.

Table 10. ICS Confidence Guidelines

Evidence-related factor in ICS Evidence section	Certain	Probable	Possible	Unknown
1. Source of energy	High confidence in all three factors with only one valid SOE	High confidence in two of the three factors with the third being plausible	All three factors are plausible	Insufficient evidence available to develop an ICS – ICS must be “Unknown” see BioTab Evidence and Confidence section
2. Occupant kinematics				
3. Injury mechanism soundness				

An ICS may be coded as “Certain” only if there is not a second ICS coded for the same injury. If two ICS are coded for the same injury, only one may be coded as “Probable.”

ICS Unknown

When circumstances arise in which there is insufficient evidence to develop an ICS to describe an injury’s causation, the ICS must be coded as unknown. An unknown ICS must be coded according to Table 2 for short-form and long-form injuries. The selection of “Unknown” as “ICS Confidence” will auto-populate other variables as shown in Table 18. An “ICS Note” may be entered for long-form injuries if relevant.

Table 11. Unknown ICS Coding Requirements

Element	Selection	Element	Selection
<i>BRI</i>	<i>BioTab region applicable to injury</i>	BRC	“Unknown”
<i>SOE</i>	“Unknown”	Load Path	“Unknown”
IPC Configuration	“Isolated IPC”	Contributing Factors	None selected
<i>IPC Area and IPC</i>	<i>“Injured, Unknown Source”</i>	<i>ICS Confidence Level</i>	“Unknown”
<i>IPC Confidence Level</i>	“Unknown”	<i>ICS Note</i>	<i>Optionally, provide a brief justification for the inability to develop an ICS</i>
<i>Italicized elements represent required selections for an unknown ICS in BioTab Lite (short-form)</i>			

IPC Evidence

Evidence supporting the choice of an IPC includes all indications that support BRC/IPC contact and the potential for injurious loading associated with the BRC/IPC contact. Indications supporting BRC/IPC contact may be physical, electronic, testimonial, or scientific in nature. The primary evidence-related factors that must be considered when deciding on an IPC include:

1. Marks on the IPC or **IPC damage** (scuffs, cloth transfers, damaged interior components, spider web cracks in windshield, makeup transfers, hair, bruises on other occupants, etc.) provide physical evidence gathered from the vehicle and/or scene inspection.

Note that not all marks on vehicle interior components are caused by occupant contacts. Marks on vehicle interior components can occur from intrusion or buckling of the vehicle structure, extrication, or from contact with free moving cargo. Also, lack of visible deformation or damage to a vehicle component is not necessarily indicative of a lack of contact. Many vehicle components are highly elastic and therefore recover to their precrash shape and location after deforming substantially in a crash. For similar reasons, dynamic crush of the vehicle and dynamic intrusion into the occupant compartment in a crash will almost always be greater than or equal to the post-crash crush and intrusion. Also note that blood transfers can be indicative of the final resting position or the post-crash motion of the occupant, but are not directly indicative of contact with an IPC (although the

final resting position of the occupant can support the occupant kinematics required for contact with an IPC or an ICS).

2. **Spatial consistency** between the initial position/posture, the crash dynamics, and the resulting occupant kinematics, as established by the ICS-level elements, and the IPC that was contacted is based on a combination of physical, electronic, testimonial, and scientific evidence.

The crash dynamics must support the occupant kinematics required to move the body region contacted from its precrash posture/location into the IPC. Initial position and posture may not be known with certainty, but physical and/or interview evidence may help establish the occupant's position at the time of impact. An important consideration in establishing the initial position is whether prior vehicle dynamics, either from precrash maneuvers or prior impact events, may have affected the occupant's positioning. In the case of an air bag fling injury, the occupant's initial position/posture and the crash dynamics should support that the flung body region was adjacent to the air bag location at the time of deployment and the probable occupant kinematics caused by the air bag fling should support IPC contact.

3. **Biomechanical consistency** between superficial injuries to the occupant at the BRC (e.g., contusions or skin abrasions/lacerations), the underlying pattern of injury, the IPC contacted, and the loading mechanism applied by contact with the IPC is based on a combination of physical and scientific evidence.

Contact evidence on the occupant includes contusions, abrasions, or lacerations. Consistency between the marks on the occupant, patterns of injury, the IPC contacted, and the loading mechanism can only be achieved if the IPC that loads the BRC is capable of producing the observed patterns of superficial injuries and if the mechanism of loading applied from contact with the IPC can cause the injury that is being coded. For example, a left orbit fracture in a left sided (9 o'clock) impact with a tree would be considered consistent if (1) abrasions on the skin were consistent with contact with a tree or side glass (i.e., if there was glass or bark in the wound) and (2) the pattern of the orbit fracture was consistent with the facial compression that occurred from contact with the tree.

Electronic indications supporting contact with an IPC are based on the interpretation of the case vehicle's event data recorder (EDR). While EDRs from different makes and models provide varying levels of detail, the report shall always be interpreted in conjunction with the physical evidence to verify the report's contents. Typical EDR findings that support BRC/IPC contact include belt use (or lack thereof), braking, seat track position, air bag deployments and timing, and crash pulse characteristics. The limitations of the EDR and the relationships between EDR events and crash events must be considered when interpreting the EDR report. Electronic evidence gathered from the EDR will generally inform spatial consistency.

Testimonial evidence includes information gathered from the interviews of the case occupant or other occupants in the case vehicle that provide insight into the condition and position of the case occupant at the time of the crash.

The concept of scientific evidence as noted above generally refers to the application of physical laws of motion to the vehicle and occupant to hypothesize the occupant's trajectory during the events immediately prior to and during the crash sequence. A well-reasoned attempt to

characterize the occupant's kinematic response must consider the other types of evidence available, as well as laboratory experience, in establishing a consistent time-history of the occupant's interaction with their environment.

IPC Confidence

Table 19 lists evidence-based guidelines for selecting IPC confidence levels. These guidelines are based on the three evidence-related factors described in the ICS Evidence section and address how the varying levels of certainty that are associated with each factor affect the confidence level associated with an IPC. For example, for an IPC to be coded as "Certain," the review team must be sure that two of the following three items are true and that the remaining item is not inconsistent with the other two: (1) damage to the IPC is from occupant contact with the BRC, (2) the occupant's positioning and presumed kinematics for the associated event support contact between the IPC and BRC, and 3) there exists sound biomechanical basis that the loading mechanism applied by BRC contact with the IPC could result in the coded injury and in any associated abrasions, contusions, or lacerations.

Assigning IPC confidence levels for a Tandem IPC configuration requires further consideration of the relative contribution of each IPC to the overall injurious loading occurring with the ICS. Even if the evidence-related factors for an IPC support selection of a "Certain" confidence, if that IPC was determined to only contribute a small portion of the injurious loading, the confidence for that IPC should be decreased to indicate a smaller role in the loading from the tandem engagement.

Table 12. IPC Confidence Guidelines

Evidence-related factor in the ICS Evidence section	Certain	Probable	Possible	Unknown
1) IPC damage (contact evidence)	High confidence that two of the factors are true and the third is not inconsistent	High confidence that one of the factors is true and others are not inconsistent	No inconsistencies among the factors	Insufficient consistent evidence available to identify IPC – IPC must be “Injured, Unknown Source”
2) Spatial consistency (kinematics)				
3) Biomechanical consistency (injury patterns)				
IPC Configuration-specific Rules				
Isolated	Disallowed if Primary and Alternate IPCs coded	May be selected for Primary IPC, but not both if Primary and Alternate IPCs coded	May be coded for one or both IPCs	-
Tandem	May be coded for any or all IPCs	May be coded for any or all IPCs	May be coded for any or all IPCs	-
	Chosen confidence level also indicates the extent to which each IPC contributed to the injurious loading. A higher confidence for a second or third IPC in a tandem chain indicates the injury was more likely caused by engagement with the second or third component.			
Critical	Disallowed if Primary and Alternate IPCs coded	May be selected for Primary IPC, but not both if Primary and Alternate IPCs coded	May be coded for any or all IPCs	-
	Confidence rules apply independently at each BRC/IPC location for Critical 2-point and Critical 3-point configurations			

In an Isolated or Critical IPC configuration when Primary and Alternate IPCs are coded, neither IPC may be coded as “Certain,” and only one may be coded as “Probable” (higher confidence is assumed for the Primary IPC). The confidence rules apply within each ICS, and IPC confidence coding within one ICS is independent of the other coded ICS.

Contributing Factors

Contributing Factors are any conditions that may have played a role in the ICS for a particular injury, but were not required for the injury to have occurred. Contributing Factors may have increased the likelihood of the injury occurring or may have affected the severity or nature of the injury. The available Contributing Factors and rules regarding their use are provided in Table 20.

Table 13. Contributing Factors Attributes and Rules

Contributing Factor	Use	Usage Rules
Comorbidity (pick)	This attribute may be selected when a documented comorbid condition is deemed relevant to the severity of the injury. Multiple comorbidities may be selected.	-see Table 21 for a listing of the standard comorbidities with suggestions for their use
	Example: An adult occupant sustained a large SDH in a moderate two-event frontal crash: BRC=head, IPC=steering wheel or left IP. The occupant is on anticoagulant therapy, which was thought to make the SDH worse.	
High ΔV	This attribute may be selected when the severity of the impact associated with the coded SOE was demonstrably beyond that of typical crash tests in similar crash configurations. The purpose of this attribute is to indicate that the vehicle's structure and restraint systems were likely taxed beyond reasonable performance levels.	-Use WinSMASH or EDR total ΔV -For unbelted occupants in frontal impacts, $\Delta V > 48$ km/h -For belted occupants in frontal impacts, $\Delta V > 64$ km/h -For side impacts, $\Delta V > 45$ km/h -Absent EDR- or WinSMASH-based ΔV , crash investigator shall use judgment to assess severity relative to threshold
	Example: A belt-restrained second-row adult occupant sustained a flexion-induced cervical spine injury in a frontal crash: BRC=thorax, IPC=belt. The EDR-indicated ΔV was 68 km/h, which most certainly produced more severe flexion in the occupant's cervical spine.	
Improper restraint use (specify)	This attribute may be selected when the belt restraint was not used as intended or, for pediatric cases, when an incorrect CRS installation or inappropriate CRS use may have influenced the severity of the injury. The incorrect or inappropriate use must be documented.	-A justification describing the nature of the inappropriate use or incorrect installation must be included in the specify field -Extensive documentation of restraint or CRS, including method of installation, is required
	Example: In a frontal crash with a one-year-old in a forward-facing CRS in the second row left position sustaining a complex vault skull fracture: BRC=head, IPC=row one seatback. The child's head was able to make contact with the seat structure due to significant slack found in the LATCH straps used to secure the CRS in the vehicle.	

Contributing Factor	Use	Usage Rules
Intrusion (pick)	This attribute may be selected when intrusion into the occupant compartment may have influenced the severity of the injury.	-Referenced intrusion must relate to an IPC selected for this ICS
	Example: A driver sustained a calcaneus fracture in a moderate severity frontal crash: BRC=foot, IPC=floor. Six cm of post-crash intrusion was recorded for the toe pan, which was thought to have increased the likelihood of this injury.	
Late or no air bag deployment	This attribute may be selected when case evidence indicates that air bag deployment timing may have lagged the excursion of the occupant such that injury severity was increased.	-EDR documentation required -If the late or absent deployment was a necessary condition for the ICS, select this attribute as ICS Evidence instead of Contributing Factor
	Example:	
Loose object or cargo	Select this attribute when the coded injury may have been exacerbated by a documented loose object or cargo in the case vehicle. The loose object or cargo may have interacted directly or indirectly with the occupant to increase severity.	-Crash case must document interior loose object or cargo-induced damage to occupant compartment -Does not apply if loose object or cargo is an IPC for this injury
	Example: In a frontal crash where the second row occupant sustains rib fractures: BRC=thorax, IPC=belt. Trunk cargo loading and deforming the second-row seatback increased thoracic loading to the seat belt.	
Seat belt interaction (specify)	This attribute may be selected when the characteristics of the occupant's anatomical interaction with the seat belt during the SOE event influenced injury severity for the BRI.	-A justification describing the nature of the interaction must be included in the specify field -Not applicable if belt improperly used
	Example: In a frontal crash where the right front passenger sustains a bowel injury: BRC=abdomen, IPC=seat belt. The occupant submarined the lap belt and the increased compression of the abdomen helped produce a bowel transection	
Seat belt payout due to load limiter	This attribute may be selected when substantial documented payout of the shoulder belt from the load limiter supports a more injurious contact between the BRC and IPC.	-Photographic documentation of belt webbing required -Not applicable if IPC intrusion exceeds 8 cm
	Example: In a frontal crash with a short-statured driver who sustains a brain injury: BRC=head, IPC=A-pillar (convincing contact with no intrusion). A 20 cm section of shoulder belt webbing waffling/abrasion demonstrates substantial payout enabling more injurious BRC/IPC contact.	
Unbelted case occupant	This attribute may be selected when the case occupant's lack of belt use may have influenced injury severity. Increased severity should be based on a relative comparison of a belted occupant under similar conditions.	-Non-use of belt by case occupant must be unambiguous and supported by physical or EDR evidence

Contributing Factor	Use	Usage Rules
		-Does not apply to misuse or partial use of belt
	Example: In a frontal crash where the driver sustains sixteen rib fractures: BRC=thorax, IPC=steering wheel combination. The moderately sized occupant overpowered the air bag in the $\Delta V=43$ km/h impact.	
Unbelted other occupant	This attribute may be selected when the kinematics of an unbelted occupant in the case vehicle may have exacerbated the case occupant's injury. Kinematics of the other occupant must be consistent with those of the case occupant for the SOE.	-Non-use of belt must be unambiguous and supported by physical or EDR evidence
	Example: In a left-side impact where the driver sustains left-sided rib fractures (ribs 1-10): BRC=thorax, IPC=door rear upper quadrant. An unbelted, moderately sized right front passenger was in the vehicle and the case occupant has soft tissue injuries on their right thorax.	
Other (specify)	This attribute may be selected when relevant factors not described by other options provides support for increased injury severity.	-Specify field must contain a brief justification
	Example 1: In a frontal crash, a wheelchair-seated occupant sustains a mesentery tear: BRC=abdomen, IPC=lap belt. The occupant wore the three-point belt appropriately, but fit was affected by the routing around the wheelchair. Seat belt interaction may also be a valid CF in this case. This can include seat belt extender usage. Example 2: In a right-side impact to the fender, a right front passenger sustains two right lateral rib fractures: BRC=thorax, IPC=door rear upper quadrant. The nature of the impact did not trigger the side impact torso air bag, which may have affected the thoracic loading.	
None	This attribute must be selected to indicate that no other identified factors increased injury severity.	-n/a

Comorbidity Usage

Comorbidities in BioTab are pre-existing conditions, documented in the case subject's medical history, that have the potential to affect the injury severity. The existence of one or more comorbidities in a case subject's medical records does not automatically require their selection as Contributing Factors. A case subject may have many comorbidities documented in their medical history, but those comorbidities may not have been relevant to any of their injuries. The comorbidities available for selection in CISSWeb (Table 21) have been identified, based on experience in the CIREN program, as the most common and likely to affect injury severity or likelihood.

Table 14. Comorbidity descriptions and keywords

Comorbidity	Description	Guidelines and keywords
Cardiovascular condition	Reduced flexibility of a person's vasculature due to disease or plaque may increase the risk of tears or ruptures	-Atherosclerosis, myocardial infarction, coronary artery disease
	Vascular injuries in the thorax or neck may be more likely to occur in case subjects with a history of cardiovascular problems. Subjecting these regions to sudden rotations or motions may create sufficient strain in hardened tissues to produce ruptures or tears.	
Degenerative spinal condition	Conditions that affect the mobility of the spine can lead to lower fracture tolerance and affect overall load distribution for the occupant	-DISH (diffuse idiopathic skeletal hyperostosis), ankylosing spondylitis, degenerative spinal disease, Schmorl's nodes
	These conditions can substantially reduce the tolerance of the spine as they reduce mobility and increase brittleness of the overall structure. Instead of allowing the head to freely move due to flexion or lateral bending of the neck in response to crash loads, the brittle and less-flexible structure cannot absorb energy and instead sustains fracture.	
History of musculoskeletal implant, surgery, or fusion	Skeletal hardware or alterations have the potential to affect tolerance and load distribution in the body	-Joint (hip, knee, etc.) replacement, arthroplasty, rod insertion, internal fixation, arthrodesis
	Structural changes associated with implants or fusions may create stress concentrations that predispose an anatomic location to injury. The interface between implants and the native skeletal components may be more susceptible to failure due to crash loads. Generally, extremity injuries in the vicinity of an implant or fusion should be considered for application of this comorbidity.	
Impaired coagulation	A compromised ability to clot blood can lead to more extensive bleeding	-Hemophilia, acquired coagulopathy, bleeding disorder, blood thinner therapy, anticoagulant, heparin. (Fragmin, Lovenox), warfarin. (Coumadin.), Eliquis, Pradaxa, Xarelto
	Hemorrhages and hematomas may become larger than would be expected due to blood that cannot clot. This would	

Comorbidity	Description	Guidelines and keywords
	primarily be used with bleeding-related codes where the size of a subdural hemorrhage or amount of IVH is documented to be large even though the severity of the insult may not be very high. Its use will be rare. The most common injuries where this would be a factor are brain bleeds and hemothorax/hemomediastinum. This may also be a factor for something like a pelvic ring fracture that's upcoded due to blood loss.	
Obesity	People with a higher body mass index (BMI) can be at greater risk for injury due to poor belt fit and the increased mass for the restraints to manage during a crash	-BMI 30 or higher ($BMI = m/h^2$ where m is mass in kg and h is height in m) -Obese, morbidly obese
	Restraint forces increase with greater occupant mass, and the energy-absorption features of seat belts and air bags may max out with heavier occupants. Also, studies have demonstrated that excess adipose tissue allows for greater occupant excursion during a crash since the extra tissue delays engagement between the seat belt and bony structures.	
Osteoporosis or osteopenia	People with low bone mineral density may be more susceptible to fractures or may sustain fractures with greater comminution even in lower severity crashes	-DXA T-score between -1.0 and -2.5 is osteopenic, while below -2.5 is osteoporotic -low bone mass, low bone mineral density
	Bone strength decreases with the increased porosity associated with osteoporosis and osteopenia.	
Pregnancy	Anatomic and hormonal changes associated with pregnancy may affect belt fit and tolerance to injury.	-any trimester
	Hormonal changes during pregnancy tend to permit laxity to develop in ligaments, which may allow excessive joint motion in some cases. In the second and third trimester, when belly size increases	
Other (specify)	While the selections above should cover most cases of comorbidities that affect injury causation, there may be occasions where a unique documented physical or medical condition is	-ankylosis, paraplegia, recent abdominal surgery, cirrhosis of the liver, cerebral atrophy

Comorbidity	Description	Guidelines and keywords
	considered a potential contributor to injury likelihood or severity.	
	Examples include paraplegia and the associated muscle and bone atrophy due to lack of use; brain atrophy in older people that may allow more motion of the brain inside the skull; or the presence of scar tissue or incomplete healing associated with previous surgery in the same body region.	

BioTab Body Regions

Table 22 identifies the BioTab body regions for the BRI and BRC selections. The table also identifies the anatomic components assigned to each body region. For extremity injuries that affect a long bone and a joint, select the associated joint as the BRI.

Table 15. BioTab body regions and their organs and components

BioTab Body Region	Organs and Components
Head/Face	Skull or cranial vault, base of skull, brain, facial bones, eyes, ears, nose, mouth
Neck	Trachea, esophagus, carotid and vertebral arteries (note AIS rules for head versus neck vasculature)
Cervical Spine	Vertebrae, discs, ligaments, spinal cord
Shoulder	Proximal humerus (above surgical neck), clavicle, scapula, acromion, glenoid
Arm	Shaft of humerus (surgical neck to supracondylar ridge)
Elbow	Distal humerus, proximal radius, proximal ulna (generally above tuberosities)
Forearm	Shaft of radius, shaft of ulna
Wrist	Distal radius, distal ulna, carpal bones, radial styloid, ulnar styloid
Hand	Metacarpals, phalanges
Thorax	Ribs and sternum, hollow organs, diaphragm, airways, great vessels
Thoracic Spine	Vertebrae, discs, ligaments, spinal cord, great vessels and connecting vasculature
Abdomen	More than one hollow organs, liver, spleen, kidney, pancreas, peritoneum, uterus, abdominal aorta and connecting vasculature, common iliac artery and vein†
Lumbar Spine	Vertebrae, ligaments, discs, spinal cord
Pelvis	Pelvic bones (except acetabulum), blood vessels (internal/external iliac artery and vein†), pelvic contents, reproductive organs
Hip	Head and neck of femur, intertrochanteric region, acetabulum of pelvis, blood vessels
Thigh	Shaft of femur, subtrochanteric region, supracondylar region
Knee	Patella, femoral condyles, proximal tibia, proximal fibula
Leg	Shaft of tibia, shaft of fibula
Ankle	Distal tibia, distal fibula, talus

BioTab Body Region	Organs and Components
Foot	Metatarsal bones, phalangeal bones, tarsal bones (includes calcaneus)

† Iliac artery injuries may be assigned a BRI of abdomen or pelvis in CISSWeb and the BRI should be chosen depending on the specific location of the case subject's injury. In general, the common iliac artery and common iliac vein should be associated with BRI=Abdomen and internal or external iliac artery or vein should be associated with BRI=Pelvis.

BioTab Templates

Long-Form Template

A template containing the elements for full BioTab coding is shown in Table 16. The template, as shown, is applicable for a single ICS – a second template, with the correct ICS number indicated in column 3, may be completed for injuries requiring two ICS.

Table 16. Long-Form BioTab coding template

1	2	3	4	5		6a	6b	7	8a	8b	9	10	11
BRI	AIS	ICS#	ICS	Causal Inj. or SOE	IPC Config.	Primary IPC	Alternate IPC	BRC	Primary IPC Conf.	Alternate IPC Conf.	Path	CF	ICS Conf.
		1 or 2			<i>Isolated</i>	1.1	1.2		1.1	1.2			
					<i>Tandem</i>	2.1			2.1				
						3.1			3.1				
						4.1			4.1				
					<i>Critical</i>	5.1	5.2		5.1	5.2			
						6.1	6.2		6.1	6.2			
						7.1	7.2		7.1	7.2			

BRI = Body Region Injured; ICS = Injury Causation Scenario; SOE = Source of Energy; IPC = Involved Physical Component; BRC = Body Region Contacted; Conf. = Confidence; CF = Contributing Factor

Short-Form Template

A template containing the elements for BioTab Lite coding is shown in Table 17.

Table 17. Short-Form BioTab coding template

1	2	3	4	5	6	7	8
BRI	AIS	ICS	Causal Inj. or SOE	IPC	BRC	IPC Conf.	ICS Conf.
				1.1		1.1	

BRI = Body Region Injured; ICS = Injury Causation Scenario; SOE = Source of Energy; IPC = Involved Physical Component; BRC = Body Region Contacted; Conf. = Confidence

BioTab Coding Tips

ICS:

- When coding an induced injury ICS, enter the causal injury, CF, and ICS Confidence (columns 6-9 of long form and 5-7 of short form are not applicable)
- Examples of ICS descriptions are “knee loading into knee bolster,” “belt and air bag loading of thorax,” “tibia loading between floor and knee bolster,” etc.
- Two ICS may be coded for injuries requiring the long-form BioTab, but only one for short-form BioTab
- An ICS Confidence may be “Certain” only if there is one ICS
- Two ICS may be coded if: one describes an induced causation, each ICS has a different SOE, each ICS involves substantially different kinematics, or both involve unique BRC/IPC combinations

IPC:

- Typically, a single IPC is sufficient in an Isolated IPC configuration, but a second option may be coded in a Primary or Alternate arrangement for long-form injuries. The Primary and Alternate IPCs, entered in cells 1.1 and 1.2, must be adjacent to one another.
- If an occupant contacts a combination of stacked or sequential IPCs, use the Tandem IPC configuration and select two (or three) adjacent IPCs. The IPC closest to the occupant should be entered into the IPC 2.1 cell with 3.1 and 4.1 containing the subsequent IPCs.
- When points of contact are required to produce an injury, a Critical IPC configuration involving two (or three) contact points may be coded. Each BRC/IPC site may be coded with a Primary and Alternate IPC. At a minimum, IPCs are required in cells 5.1 and 6.1. A third contact point may be entered in cell 7.1. Alternates IPCs for any of the BRC sites may be entered in 5.2, 6.2, or 7.2.

Load Path:

- The load path should begin at the BRC and end at the BRI. Non-contiguous paths are rare, but may be coded in special cases.

Confidence Levels: C = Certain, PR = Probable, PO = Possible, U = Unknown:

- Use available evidence to establish confidence levels
- IPC can be C even if ICS is PR or PO
- ICS can be C even if IPC is PR or PO
- If coding two ICS, neither can be C and both cannot be PR
- If coding Primary and Alternate in Isolated IPC configuration, neither can be C and both cannot be PR
- If coding Tandem IPC configuration, any and all IPCs can be C
- If coding Critical IPC configuration, any and all IPCs can be C if only one IPC per BRC/IPC pair (i.e., no Alternate IPC)
- If coding Primary and Alternate IPCs in Critical IPC configuration, neither can be C and both cannot be PR (at each BRC site)

Examples and Helpful Hints

Completed Example Templates

The following example templates reference NASS-CDS or CIREN cases accessible through the public case viewers.

Isolated IPC

NASS-CDS 2013-75-066-3-2: simple right femur shaft fracture in a frontal crash

1	2	3	4	5		6a	6b	7	8a	8b	9	10	11
BRI	AIS	ICS#	ICS	Causal Inj. or SOE	IPC Config.	Primary IPC	Alternate IPC	BRC	Primary IPC Conf.	Alternate IPC Conf.	Path	CF	ICS Conf.
Thigh	853251.3	1	Knee loading of glove compartment door	Crash event #4	Isolated	1.1 Front Glove compartment door	1.2 n/a	Knee	1.1 Certain	1.2 n/a	Knee to thigh	None	Certain
					Tandem	2.1			2.1				
						3.1			3.1				
						4.1			4.1				
					Critical	5.1	5.2		5.1	5.2			
						6.1	6.2		6.1	6.2			
						7.1	7.2		7.1	7.2			

Isolated Primary/Alternate IPC

NASS-CDS 2011-74-128-2-1: right extra-articular talar neck fracture in a frontal crash

1	2	3	4	5		6a	6b	7	8a	8b	9	10	11
BRI	AIS	ICS#	ICS	Causal Inj. or SOE	IPC Config.	Primary IPC	Alternate IPC	BRC	Primary IPC Conf.	Alternate IPC Conf.	Path	CF	ICS Conf.
Ankle	857351.2	1	Foot loading of floor or pedal			1.1 Floor Floor	1.2 Floor Foot controls	Foot	1.1 Probable	1.2 Possible	Foot to ankle	None	Certain
					Tandem	2.1			2.1				
						3.1			3.1				
						4.1			4.1				
					Critical	5.1	5.2		5.1	5.2			
						6.1	6.2		6.1	6.2			
						7.1	7.2		7.1	7.2			

Tandem IPC

NASS-CDS 2015-81-051-1-1: rib fractures in frontal crash of a restrained driver

1	2	3	4	5		6a	6b	7	8a	8b	9	10	11
BRI	AIS	ICS#	ICS	Causal Inj. or SOE	IPC Config.	Primary IPC	Alternate IPC	BRC	Primary IPC Conf.	Alternate IPC Conf.	Path	CF	ICS Conf.
Thorax	450203.3	1	Thoracic loading to belt, air bag, and steering wheel	Crash event #1	Isolated	1.1	1.2		1.1	1.2		None	Certain
					Tandem	2.1 Interior Belt restraint webbing		Thorax	2.1 Certain		n/a		
						3.1 Left Air Bag Steering wheel hub			3.1 Certain				
						4.1 Front Steering wheel rim/hub/spoke			4.1 Possible				
					Critical	5.1	5.2		5.1	5.2			
						6.1	6.2		6.1	6.2			
						7.1	7.2		7.1	7.2			

Critical IPC 2-point

CIREN 352203868: driver right hip fracture in left side impact

1	2	3	4	5		6a	6b	7	8a	8b	9	10	11
BRI	AIS	ICS#	ICS	Causal Inj. or SOE	IPC Config.	Primary IPC	Alternate IPC	BRC	Primary IPC Conf.	Alternate IPC Conf.	Path	CF	ICS Conf.
Hip	856251.2	1	Hip loading due to door and center console	Crash event #1	<i>Isolated</i>	1.1	1.2		1.1	1.2		Intrusion (left door)	Certain
					<i>Tandem</i>	2.1			2.1				
						3.1			3.1				
						4.1			4.1				
					<i>Critical</i>	5.1 Left door Rear lower quadrant	5.2 n/a	Left hip	5.1 Probable	5.2 n/a	n/a		
						6.1 Interior Center console first row	6.2 n/a	Right hip	6.1 Probable	6.2 n/a	n/a		
						7.1	7.2		7.1	7.2			

Distal versus Proximal Tibia

CIREN 588817897: left and right distal tibia (and fibula and talus) fractures in frontal crash

1	2	3	4	5		6a	6b	7	8a	8b	9	10	11
BRI	AIS	ICS#	ICS	Causal Inj. or SOE	IPC Config.	Primary IPC	Alternate IPC	BRC	Primary IPC Conf.	Alternate IPC Conf.	Path	CF	ICS Conf.
Ankle	854371.2	1	Foot loading from floor	Crash event #1	<i>Isolated</i>	1.1 Floor Floor (including toe pan)	1.2 n/a	Foot	1.1 Probable	1.2 n/a	Foot to ankle	Comorbidity (osteoporosis), Intrusion (toe pan), High delta V	Certain

CIREN 317789550: left and right tibia plateau fractures in frontal crash (generally accepted as a “nutcracker” type of injury requiring compression between two points)

1	2	3	4	5		6a	6b	7	8a	8b	9	10	11
BRI	AIS	ICS#	ICS	Causal Inj. or SOE	IPC Config.	Primary IPC	Alternate IPC	BRC	Primary IPC Conf.	Alternate IPC Conf.	Path	CF	ICS Conf.
Knee	854171.2	1	Tibia loading between foot and knee	Crash event #1	<i>Critical</i>	5.1 Floor Floor (including toe pan)	5.2 n/a	Foot	5.1 Probable	5.2 n/a	Foot to ankle to leg to knee	Comorbidity (osteoporosis), Unbelted case occupant	Probable
						6.1 Front Left lower instrument panel	6.2 n/a	Knee	6.1 Probable	6.2 n/a	n/a		

Note – the long-form template table was simplified for display purposes

Two ICS

CIREN 352240671: driver splenic laceration in left side impact with seat-mounted air bag deployment

1	2	3	4	5		6a	6b	7	8a	8b	9	10	11
BRI	AIS	ICS#	ICS	Causal Inj. or SOE	IPC Config.	Primary IPC	Alternate IPC	BRC	Primary IPC Conf.	Alternate IPC Conf.	Path	CF	ICS Conf.
Abdomen	544224.3	1	Abdomen loading by side impact air bag	Seat back side air bag deployment	<i>Isolated</i>	1.1 Left air bag Left seat back	1.2 n/a	Abdo-men	1.1 Probable	<u>1.2</u> n/a	n/a	None	Probable

1	2	3	4	5		6a	6b	7	8a	8b	9	10	11
BRI	AIS	ICS#	ICS	Causal Inj. or SOE	IPC Config.	Primary IPC	Alternate IPC	BRC	Primary IPC Conf.	Alternate IPC Conf.	Path	CF	ICS Conf.
Abdomen	544224.3	2	Door panel loading of abdomen	Crash event #1	<i>Isolated</i>	1.1 Left Door Panel Left armrest. hardware RLQ	1.2 n/a	Abdo-men	1.1 Probable	1.2 n/a	n/a	None	Possible

Note – the long-form template table was simplified for display purposes (Tandem and Critical IPC Configuration options removed)

AIS 2 Injuries Requiring Long-Form BioTab*Table 18. AIS 2 injuries requiring long-form BioTab completion*

110604.2	251211.2	542222.2	650609.2	752261.2	854371.2	857652.2
110804.2	251212.2	542623.2	650610.2	752263.2	854442.2	857662.2
140407.2	251213.2	542624.2	650616.2	752271.2	854454.2	857671.2
140416.2	251214.2	542812.2	650617.2	752273.2	854455.2	857672.2
140428.2	251215.2	542822.2	650622.2	752311.2	854461.2	858112.2
140440.2	251216.2	543024.2	650624.2	752313.2	854462.2	858152.2
140466.2	251221.2	543026.2	650626.2	752351.2	854463.2	858164.2
140470.2	251222.2	543224.2	650630.2	752353.2	854465.2	858171.2
140605.2	251223.2	543520.2	650632.2	752361.2	854472.2	858172.2
140613.2	251224.2	543622.2	710604.2	752363.2	854500.2	858173.2
140621.2	251231.2	543800.2	710804.2	752371.2	854551.2	858174.2
140631.2	251232.2	544024.2	711004.2	752373.2	854552.2	873030.2
140639.2	251235.2	544212.2	711005.2	770530.2	854561.2	873031.2
140642.2	251236.2	544222.2	713004.2	770531.2	854562.2	873032.2
140643.2	251604.2	544422.2	713005.2	770730.2	854571.2	873033.2
140675.2	251814.2	544624.2	714002.2	770731.2	854572.2	873034.2
140678.2	310604.2	544822.2	714003.2	771030.2	856100.2	873035.2
140693.2	310804.2	545024.2	751100.2	771031.2	856151.2	874030.2
140694.2	316004.2	545026.2	751111.2	772033.2	856200.2	874031.2
140696.2	410604.2	545222.2	751151.2	772330.2	856251.2	874032.2
140697.2	410804.2	545424.2	751161.2	772331.2	856261.2	874033.2
150000.2	411000.2	630210.2	751171.2	810604.2	856271.2	874034.2
150400.2	416004.2	630212.2	751221.2	810804.2	857200.2	874035.2
150402.2	440604.2	630214.2	751251.2	811004.2	857201.2	877130.2
161003.2	441406.2	630216.2	751261.2	811005.2	857251.2	877131.2
161004.2	441407.2	650204.2	751271.2	813004.2	857252.2	877132.2
210604.2	441602.2	650209.2	751331.2	813005.2	857261.2	877133.2
210804.2	441699.2	650210.2	751351.2	814004.2	857262.2	877134.2
216004.2	442202.2	650216.2	751361.2	814006.2	857271.2	877135.2
240402.2	442208.2	650217.2	751371.2	840204.2	857272.2	
250200.2	442209.2	650222.2	751800.2	840404.2	857300.2	
250610.2	442402.2	650224.2	751900.2	840407.2	857301.2	
250611.2	450202.2	650226.2	752000.2	840502.2	857351.2	
250612.2	450210.2	650230.2	752001.2	840802.2	857352.2	

250613.2	450804.2	650232.2	752111.2	841002.2	857361.2	
250614.2	510100.2	650404.2	752113.2	854111.2	857362.2	
250615.2	510604.2	650409.2	752151.2	854151.2	857371.2	
250616.2	510804.2	650410.2	752153.2	854161.2	857372.2	
250800.2	516004.2	650416.2	752161.2	854171.2	857452.2	
250804.2	540622.2	650417.2	752163.2	854221.2	857462.2	
250806.2	540623.2	650422.2	752171.2	854251.2	857471.2	
251002.2	541422.2	650424.2	752173.2	854261.2	857472.2	
251006.2	541622.2	650426.2	752211.2	854271.2	857552.2	
251200.2	541812.2	650430.2	752213.2	854331.2	857562.2	
251201.2	541822.2	650432.2	752251.2	854351.2	857571.2	
251205.2	542022.2	650604.2	752253.2	854361.2	857572.2	

BioTab Body Region Mechanisms*Table 19. Regional injury mechanisms applicable to each BioTab body region*

BioTab Body Region	Compression	Shear	Puncture	Cutting	Crushing	Thermal	Chemical	Linear Acceleration	Rotational Kinematics	Tension	Flexion	Extension	Medial/Lateral Bending	Medial Bending	Lateral Bending	Torsion	Bending	Compression+Rate	Dorsiflexion	Plantarflexion	Inversion	Eversion
Head/Face	✓	✓	✓	✓	✓	✓	✓	✓	✓													
Neck	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓									
C-Spine	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓			✓						
Shoulder	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓										
Arm	✓	✓	✓	✓	✓	✓	✓									✓	✓					
Elbow	✓	✓	✓	✓	✓	✓	✓				✓	✓				✓						
Forearm	✓	✓	✓	✓	✓	✓	✓									✓	✓					
Wrist	✓	✓	✓	✓	✓	✓	✓				✓	✓				✓						
Hand	✓	✓	✓	✓	✓	✓	✓				✓	✓					✓					
Thorax	✓	✓	✓	✓	✓	✓	✓	✓										✓				
T-Spine	✓	✓	✓	✓	✓	✓	✓				✓	✓	✓			✓						
Abdomen	✓	✓	✓	✓	✓	✓	✓	✓										✓				
L-Spine	✓	✓	✓	✓	✓	✓	✓				✓	✓	✓			✓						
Pelvis	✓	✓	✓	✓	✓	✓	✓			✓												
Hip	✓	✓	✓	✓	✓	✓	✓			✓												
Thigh	✓	✓	✓	✓	✓	✓	✓									✓	✓					
Knee	✓	✓	✓	✓	✓	✓	✓				✓	✓		✓	✓	✓						
Leg	✓	✓	✓	✓	✓	✓	✓									✓	✓					

BioTab Body Region	Compression	Shear	Puncture	Cutting	Crushing	Thermal	Chemical	Linear Acceleration	Rotational Kinematics	Tension	Flexion	Extension	Medial/Lateral Bending	Medial Bending	Lateral Bending	Torsion	Bending	Compression+Rate	Dorsiflexion	Plantarflexion	Inversion	Eversion
Ankle	✓	✓	✓	✓	✓	✓	✓									✓			✓	✓	✓	✓
Foot	✓	✓	✓	✓	✓	✓	✓				✓	✓					✓					

Injuries List/Detail**Injury Number**

Screen Name: N/A

SAS Data Set:

SAS Variable:

Database Name:

Element Attributes

Sequential number assigned by the system to each coded injury.

Source

Application assigned field

Remarks

The injury coding application generates a consecutive number for each injury inserted per occupant beginning with the number 1. No duplicate numbers or skipped numbers allowed.

AIS Code

Screen Name: **AIS Code**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS.INJURYCODES.AIS_CODE**

Element Attributes

AIS 2015 Update codes (7-digit numeric field describing injury)

Source

Injury-coding-center-determined based on the current NHTSA Injury Coding Manual; inputs include medical records, interviewee, and PCR data.

Remarks

AIS 2015 is available from the Association for the Advancement of Automotive Medicine (AAAM).

Involved Physical Component

Screen Name: **IPC**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.INJURYCODES.IPC**

Element Attributes

Front

Database	SAS	
1	1	Windshield
2	2	Mirror
3	3	Sunvisor
4	4	Steering wheel rim
5	5	Steering wheel hub/spoke
6	6	Steering wheel (combination of rim and hub/spoke)
7	7	Steering column, transmission selector lever, other attachment
10	10	Mounted electronic equipment (phone, laptop, GPS, etc.)
13	13	Glove compartment door
19	19	Other front object (specify):
21	21	Left instrument panel
22	22	Center instrument panel
23	23	Right instrument panel
25	25	Center lower instrument panel (includes knee bolster)
26	26	Right lower instrument panel (includes knee bolster)
27	27	Left, center instrument panel, junction
28	28	Right, center instrument panel, junction
24	24	Left lower instrument panel (includes knee bolster)
25	25	Center lower instrument panel (includes knee bolster)
26	26	Right lower instrument panel (includes knee bolster)
29	29	Left lower instrument panel, center console, junction
30	30	Right lower instrument panel, center console, junction
	122	Floating infotainment system

Left Side

Database	SAS	
53	53	Left A (A1/A2)-pillar
54	54	Left B-pillar
55	55	Other left pillar (specify):

Database	SAS	
56	56	Left side window glass
57	57	Left side window frame
58	58	Left side window sill
60	60	Other left side object (specify)
62	62	Left side panel forward of A1/A2 pillar
63	63	Left side panel rear of the B-pillar
64	64	Left A-pillar, instrument panel, door, junction
65	65	Left A-pillar, windshield header, roof side rail, roof junction
66	66	Left B-pillar, roof side rail, roof, junction
67	67	Left B-pillar, door, junction
68	68	Left C-pillar, roof side rail, roof, junction

Left Door Panel

Database	SAS	
73	73	Left forward upper quadrant
74	74	Left forward lower quadrant
75	75	Left rear upper quadrant
76	76	Left rear lower quadrant
81	81	Left door panel unknown/several quadrant
77	77	Left hardware/armrest forward upper quadrant
78	78	Left hardware/armrest forward lower quadrant
79	79	Left hardware/armrest rear upper quadrant
80	80	Left hardware/armrest rear lower quadrant
82	82	Left hardware/armrest unknown/several quadrant

Right Side

Database	SAS	
103	103	Right A (A1/A2)-pillar
104	104	Right B-pillar
105	105	Other right pillar (specify):
106	106	Right side window glass
107	107	Right side window frame
108	108	Right side window sill
111	111	Other right side object (specify)
112	112	Right side panel forward of A1/A2 pillar
113	113	Right side panel rear of the B-pillar
114	114	Right A-pillar, instrument panel, door, junction

Database	SAS	
115	115	Right A-pillar, windshield header, roof side rail, roof, junction
116	116	Right B-pillar, roof side rail, roof, junction
117	117	Right B-side pillar, door, junction
118	118	Right C-pillar, roof side rail roof, junction

Right Door Panel

Database	SAS	
121	121	Right forward upper quadrant
122	122	Right forward lower quadrant
123	123	Right rear upper quadrant
124	124	Right rear lower quadrant
129	129	Right door panel unknown/several quadrant
125	125	Right hardware/armrest forward upper quadrant
126	126	Right hardware/armrest forward lower quadrant
127	127	Right hardware/armrest rear upper quadrant
128	128	Right hardware/armrest rear lower quadrant
130	130	Right hardware/armrest unknown/several quadrant

Interior

Database	SAS	
140	140	This occupants seat cushion
141	140	This occupants seat back
142	142	This occupants seat, unknown cushion or back
143	143	Other seating position seat cushion
144	144	Other seating position seat back
145	145	Other seating position, unknown cushion or back
170	170	Lap portion of belt restraint
171	171	Shoulder portion of belt restraint
153	153	Belt restraint B-pillar or door frame attachment point
154	154	Other restraint system component (specify):
157	157	This occupants head restraint
158	158	Other seating position head restraint
160	160	Other occupants (specify):
161	161	Interior loose objects (specify):
163	163	Other interior object (specify):
172	172	Transmission shifter
164	164	Center console first row

Database	SAS	
165	165	Center console second row
166	166	Center console other row
167	167	Fold-down armrest first row
168	168	Fold-down armrest second row
169	169	Fold-down armrest other row
271	271	Child safety seat shell, (i.e., shell interior, exterior, base, cup holder, padding, head restraint, handle)
272	272	Child safety seat harness system, (i.e., harness system straps, retainer clip, t-shield, tray-shield, shield, latchplate, buckle
273	273	Unknown child safety seat component
570	570	Same occupant contact (specify) (ex. knee)
572	572	Seat latch points for child restraints
573	573	Grab handles
574	574	Engine shroud/cover
575	575	Seatback trays
576	576	Cargo in vehicle

Roof

Database	SAS	
201	201	Front header
202	202	Rear header
203	203	Roof left side rail
204	204	Roof right side rail
205	205	Roof or convertible top
206	206	Roof map light/console
207	207	Sunroof/components'
208	208	Roll bar

Floor

Database	SAS	
251	251	Floor (including toe pan)
253	253	Parking brake handle
254	254	Foot controls including parking brake

Rear

Database	SAS	
301	301	Backlight (rear window)
302	302	Backlight storage rack, door, etc.
303	303	Other rear object (specify):

Left Air Bag

Database	SAS	
611	611	Steering wheel hub
612	612	Steering wheel hub compartment cover
615	615	Left bottom instrument panel
616	616	Left bottom instrument panel- compartment cover
617	617	Left seat back
618	618	Left door/panel
619	619	Left roof side rail
620	620	Left seat belt
621	621	Left other air bag (specify)

Right Air Bag

Database	SAS	
631	631	Right top instrument panel
632	632	Right top instrument panel- compartment cover
633	633	Right middle instrument panel
634	634	Right middle instrument panel - compartment cover
635	635	Right bottom instrument panel
636	636	Right bottom instrument panel- compartment cover
637	637	Right seat back
638	638	Right door/panel
639	639	Right roof side rail
640	640	Right seat belt
641	641	Right other air bag (specify)

Adaptive (Assistive) Driving Equipment

Database	SAS	
401	401	Hand controls for braking/acceleration
401	402	Steering control devices (attached to OEM steering wheel)
403	403	Steering knob attached to steering wheel

Database	SAS	
405	405	Replacement steering wheel (i.e., reduced diameter)
406	406	Joy stick steering controls
407	407	Wheelchair tie-downs
408	408	Modification to seat belts (specify):
409	409	Additional or relocated switches (specify):
410	410	Raised roof
411	411	Wall mounted head rest (used behind wheelchair)
412	412	Other adaptive device (specify):

Exterior of Occupant's Vehicle

Database	SAS	
451	451	Hood
452	452	Outside hardware (e.g., outside mirror, antenna)
453	453	Other exterior surface or tires (specify):
454	454	Unknown exterior objects

Exterior of Other Motor Vehicle

Database	SAS	
501	501	Front bumper
502	502	Hood edge
503	503	Other front of vehicle (specify):
504	504	Hood
505	505	Hood ornament
506	506	Windshield, roof rail, A-pillar
507	507	Side surface
508	508	Side mirrors

Exterior of Other Motor Vehicle

Database	SAS	
509	509	Other side protrusions (specify):
510	510	Rear surface
511	511	Undercarriage
512	512	Tires and wheels
513	513	Other exterior of other motor vehicle (specify):
514	514	Unknown exterior of other motor vehicle

Other Vehicle or Object

Database	SAS	
551	551	Ground
598	598	Other object (specify):
599	599	Unknown object (specify)
552	598	Tree
553	598	Pole
554	598	Traffic barrier (includes: jersey barrier, guardrail, etc.)

Noncontact Injury

Database	SAS	
601	601	Fire in vehicle
602	602	Flying glass
603	603	Other noncontact injury source (specify):
604	604	Air bag exhaust gases
697	697	Injured, unknown source

Source

Injury-coding-center-determined – inputs include vehicle inspection, interviewee, and medical records.

Remarks

Code the attribute that best describes the involved physical components. Use all available information including occupant kinematics, posture, and safety system function to select the component. When applicable, the IPC configuration captures any reinforcement by other objects.

Left/right lower instrument panel, center console, junction

Can include center lower instrument panel.

Center console first row, center console second row, center console other row

Can include the fold-down console that can fold up into a seatback (e.g., seen in pickup trucks; for example an F-150).

Other interior object

Is selected when the component falls within the interior and cannot be captured by specific area attributes. Examples include: broken glass between occupant and component causing injury; loose maplight console (hanging down by wires), object held by occupant, police mounted equipment attached to the center console).

Other front object

Is selected when the component falls within the front left, center, and right thirds and cannot be captured under specific front attributes or Left side, Right side, Interior, Roof, Floor, Rear, Adaptive (Assistive driving equipment), Exterior of Occupant's vehicle, Exterior or other motor vehicle, Other vehicle or object, or Noncontact Injury area attributes.

Lap portion of belt restraint: This can include the buckle and LATCH hardware.

Center console first row: This can include vehicles with a fold-down seatback/console that is a console in the folded down position (e.g., some pickup models middle seat position).

This occupants seat back: This can include those vehicles with a fold-down seatback/console that is a seat back in the upright position.

Other seating position seat back: This can include those vehicles with a fold-down seatback/console that is a seat back in the upright position.

Other noncontact injury source (specify): This can include submersion in water.

Other restraint system component

Examples include upper mounted integrated belt.

Cargo in vehicle

Is described as cargo inside the vehicle. Examples: spare tire, construction equipment, tools and tool box(es).

Air bag compartment cover

Is the flap portion of a deployed air bag.

Localizer

Screen Name: **Localizer**
 SAS Data Set:
 SAS Variable:
 Database Name: **CISS.CISS.INJURYCODES.LOCALIZER**

Element Attributes

General L1	General L2	
Right	Vertebrae C1	Rib 8
Left	Vertebrae C2	Rib 9
Midline	Vertebrae C3	Rib 10
Bilateral	Vertebrae C4	Rib 11
Multiple	Vertebrae C5	Rib 12
Upper	Vertebrae C6	Teeth-Central Incisor
Lower	Vertebrae C7	Teeth-Lateral Incisor
Right Anterior/Frontal	Vertebrae T1	Teeth-Canine
Right Middle/Parietal	Vertebrae T2	Teeth-First Premolar
Right Posterior/Occipital	Vertebrae T3	Teeth-Second Premolar
Right Inferior/Temporal/ Lower	Vertebrae T4	Teeth-First Molar
Right Superior/Upper	Vertebrae T5	Teeth-Second Molar
Right Multiple	Vertebrae T6	Teeth-Third Molar
Right Body/Shaft	Vertebrae T7	Scalp
Right Lateral	Vertebrae T8	Forehead
Right Medial	Vertebrae T9	Face
Left Anterior/Frontal	Vertebrae T10	Eye
Left Middle/Parietal	Vertebrae T11	Eyelids
Left Posterior/Occipital	Vertebrae T12	Ear
Left Inferior/Temporal/ Lower	Vertebrae L1	Nose
Left Superior/Upper	Vertebrae L2	Lips
Left Multiple	Vertebrae L3	Neck
Left Body/Shaft	Vertebrae L4	Shoulder
Left Lateral	Vertebrae L5	Arm
Left Medial	2 Finger/Toe	Elbow
Bilateral Anterior/Frontal	3 Finger/Toe	Forearm
Bilateral Middle/Parietal	4 Finger/Toe	Wrist
Bilateral	5 Finger/Toe	Hand
Posterior/Occipital	1 Finger/Toe	Fingers
Bilateral Inferi- or/Temporal/Lower	Rib 1	Torso
Bilateral Superior/Upper	Rib 2	Back
Bilateral Multiple	Rib 3	Flank
	Rib 4	Chest
	Rib 5	Abdomen
	Rib 6	Buttocks
	Rib 7	Genitalia
		Perineum

Hip
 Thigh
 Knee
 Leg
 Ankle
 Foot
 Toes
 Wrist Bone-Pisiform
 Wrist Bone-Scaphoid
 Wrist Bone-Trapezium
 Wrist Bone-Trapezoid
 Wrist Bone-Triquetral
 Wrist Bone-Capitate
 Wrist Bone-Hamate
 Wrist Bone-Lunate
 Foot Bone-Cuneiform
 Foot Bone-Talus
 Foot Bone- Navicular
 Foot Bone-Cuboid
 Foot Bone-Calcaneus
 Metacarpal/Metatarsal

Abdomen
 External Oblique Muscle
 Internal Oblique Muscle
 Psoas Major Muscle
 Psoas Minor Muscle
 Quadratus Lumborum
 Muscle
 Rectus Abdominis Muscle
 Transverse Abdominis
 Muscle
 Colon
 Ascending Colon
 Descending Colon
 Transverse Colon
 Sigmoid Colon
 Gonadal Arteries
 Hepatic Arteries
 Gonadal Veins
 Hepatic Veins
 Inferior Mesenteric Vein
 Portal Veins
 Renal Veins
 Common Iliac Artery

Face
 Buccinator Muscle
 Depressor Anguli Oris
 Muscle
 Depressor Labii Muscle
 Digastric Muscle
 Frontalis Muscle
 Hyoglossus Muscle
 Levator Anguli Oris
 Muscle
 Levator Labii Anterior
 Muscle
 Levator Labii Superioris
 Muscle
 Masseter Muscle
 Mentalis Muscle
 Mylohyoid Muscle
 Orbicularis Oculi Muscle
 Orbicularis Oris Muscle
 Procerus Muscle
 Risorius Muscle
 Stylohyoid Muscle
 Temporal Muscle
 Zygomaticus Major
 Muscle
 Zygomaticus Minor
 Muscle
 Chin
 Alveolar Ridge with Teeth
 Maxillary Alveolar Ridge
 Mandibular Alveolar
 Ridge
 External Carotid
 Nasalis Superior Muscle
 Nasalis Inferior Muscle
 Frontal Bone
 Hard Palate Bone
 Lacrimal Bone
 Maxillary Bone
 Nasal Bone
 Nasal Concha Bone
 Occipital Bone
 Parietal Bone
 Temporal Bone
 Vomer Bone
 Zygomatic Bone

Orbital Bones
 Mandible Bone

Lower Extremities
 Abductor Digiti Minimi
 Muscle
 Abductor Hallucis Muscle
 Extensor Digitorum
 Brevis Muscle
 Extensor Hallucis Brevis
 Muscle
 Flexor Digitorum Brevis
 Muscle
 Gluteus Maximus Muscle
 Gluteus Medius Muscle
 Gluteus Minimus Muscle
 Iliacus Muscle
 Inferior Gemellus Muscle
 Obturator Externus Muscle
 Obturator Internus Muscle
 Pisiformis Muscle
 Quadratus Femoris Muscle
 Superior Gemellus Muscle
 Extensor Digitorum
 Longus Muscle
 Extensor Hallucis Longus
 Muscle
 Flexor Digitorum Longus
 Muscle
 Flexor Hallucis Muscle
 Gastrocnemius Muscle
 Peroneus Brevis Muscle
 Peroneus Longus Muscle
 Soleus Muscle
 Tibialis Anterior Muscle
 Tibialis Posterior Muscle
 Adductor Brevis Muscle
 Adductor Longus Muscle
 Adductor Magnus Muscle
 Bicep Femoris Muscle
 Gracilis Muscle
 Pectineus Muscle
 Rectus Femoris Muscle
 Sartorius Muscle
 Semimembranosus Muscle
 Semitendinosus Muscle

Tensor Faciae Latae Muscle
 Vastus Intermedius Muscle
 Vastus Lateralis Muscle
 Vastus Medialis Muscle
 Tibial Collateral Ligament
 Fibular Collateral Ligament
 Achilles Tendon
 Ankle Ligaments
 Hip Ligaments
 Joints of Lower Extremities Ligaments
 Knee Ligaments
 Patellar Ligament
 Sacrotuberous Ligament
 Tibial Anterior Artery
 Tibial Posterior Artery
 Peroneal Artery
 Plantar Veins
 Saphenous Small Vein
 Tibial Vein Anterior
 Tibial Vein Posterior
 Saphenous Vein
 Femoral Lateral Nerve
 Femoral Posterior Nerve
 Femoral Nerve
 Gluteal Superior Nerve
 Inferior Gluteal Nerve
 Obturator Nerve
 Pudendal Nerve
 Sacral Plexus
 Sciatic Nerve
 Os Coxae Bone
 Pelvic Bone Back
 Pelvic Bone
 Pelvic Bone Front
 Sacrum Bone
 Symphysis Pubis Bone
 Ilium Bone
 Ischium Bone
 Pubis Bone
 Coccyx Bone
 LE Above Knee
 LE Below Knee

Anterior Cruciate Ligament
 Posterior Cruciate Ligament
 Acetabulofemoral Ligament

Neck

Levator Scapula Muscle
 Omohyoid Muscle
 Platysma Muscle
 Scalene Anterior Muscle
 Scalene Middle Muscle
 Scalene Posterior Muscle
 Semispinalis Caervicis Muscle
 Semispinalis Capitis Muscle
 Splenius Capitis Muscle
 Sternocleidomastoid Muscle
 Sternohyoid Muscle
 Sternothyroid Muscle
 Thyrohyoid Muscle
 Trapezius Muscle
 Internal Carotid
 Common Carotid
 External Carotid
 Sublingual Glands
 Submandibular Gland
 Parotid Gland
 Thyroid_Gland
 Epiglottis

Thorax

Diaphragm Muscle
 Iliocostalis Muscle
 Intercostal Large Front Muscle
 Intercostal Large Muscle
 Intercostal Small Muscle
 Latissimus Dorsi Muscle
 Longissimus Muscle
 Pectoralis Major Muscle
 Pectoralis Minor Muscle
 Rhomboid Major Muscle

Rhomboid Minor Muscle
 Serratus Anterior Muscle
 Spinalis Muscle
 Inferior Vena Cava Artery
 Superior Vena Cava Artery
 Thoracic Veins
 Coronary Vein
 Costal Ribs Bones
 Lung Lobe 1
 Lung Lobe 2
 Lung Lobe 3
 Sternum

Upper Extremities

Biceps Lateral Muscle
 Biceps Medial Muscle
 Brachialis Muscle
 Coracobrachialis Muscle
 Triceps Lateral Muscle
 Triceps Long Muscle
 Triceps Medial Muscle
 Abductor Pollicis Longus Muscle
 Anconeus Muscle
 Brachioradialis Muscle
 Extensor Carpi Radialis Longus Muscle
 Abductor Minimi Digiti Muscle
 Abductor Pollicis Brevis Muscle
 Adductor Pollicis Muscle
 Bicep Brachii Muscle
 Extensor Carpi Ulnaris Muscle
 Extensor Digiti Minimi Muscle
 Extensor Digitorum Muscle
 Flexor Carpi Radialis Muscle
 Flexor Carpi Ulnaris Muscle
 Flexor Digitorum
 Profundus Muscle

Flexor Digitorum	Cephalic Vein
Superficialis Muscle	Humerus Bone
Flexor Pollicis Longus	Radius Bone
Muscle	Ulna Bone
Pronator Quadratus Muscle	Clavicle Bone
Pronator Teres Muscle	Scapula Bone
Supinator Muscle	
Extensor Indicis Muscle	
Extensor Pollicis Brevis	
Muscle	
Extensor Pollicis Longus	
Muscle	
Palm Muscles	
Palmaris Longus Muscle	
Deltoid Muscle	
Infraspinatus Right Muscle	
Subscapularis Muscle	
Supraspinatus Muscle	
Teres Major Muscle	
Teres Minor Muscle	
Triceps Tendon	
Flexor Retinaculum	
Tendon	
Hand Ligaments	
Wrist Ligaments	
Sternoclavicular Ligament	
Interosseus Membrane of	
Forearm	
Shoulder Ligaments	
Capsule Ligament	
Elbow Ligaments	
Bicipital Aponeurosis	
Upper Extremity Arteries	
Interosseous Artery	
Profunda Arteries	
Radial Artery	
Ulnar Artery	
Palmer Arch Arteries	
Upper Extremity Veins	
Forearm Veins	
Intersseous Vein	
Median Cubital Vein	
Radial Vein	
Ulnar Vein	
Palm Veins	
Axillary Vein	

Source

Injury-coding-center-determined--inputs include interviewee, medical records, and PCR data.

Remarks

The localizers are linked to AIS codes based on valid combinations developed for use in the CISS system.

ICS Number

Screen Name: **ICS Number**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS.INJURYCODES.ICS_NUMBER**

Element Attributes**Source**

Injury-coding-center-determined

Range**Remarks**

IPC ConfigurationScreen Name: **IPC Configuration**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.INJURYCODES.IPC_CONFIGURATION****Element Attributes**

Database	SAS	
		Isolated
		Tandem
		Critical 2-point
		Critical 3-point

Source

Injury-coding-center-determined

Range**Remarks**

See Injury Causation Coding Overview section for additional details.

Body Region InjuredScreen Name: **Body Region Injured (BRI)**

SAS Data Set:

SAS Variable:

Database Name:

Element Attributes

Database	SAS	
1		Head/face
2		Neck
3		Cervical spine
4		Shoulder
5		Arm
6		Elbow
7		Forearm
8		Wrist
9		Hand
10		Thorax
11		Thoracic spine
12		Abdomen
13		Lumbar spine
14		Pelvis
15		Hip
16		Thigh
17		Knee
18		Leg
19		Ankle
20		Foot
-9999		Unknown

Source

Injury-coding-center-determined

Remarks

See Injury Causation Coding Overview section for additional details.

Source of EnergyScreen Name: **Source of Energy (SOE)**

SAS Data Set:

SAS Variable:

Database Name:

Element Attributes

Database	SAS	
1		Crash event #
2		Air bag #
3		Pretensioner
4		Fire
8		Crash event -Unknown #
9		Unknown

Source

Injury-coding-center-determined

Remarks

See Injury Causation Coding Overview section for additional details.

Crash event #

Select from available events.

Air bag #

Select from available air bags.

Pretensioner

This attribute should only be selected after NHTSA approval.

Crash event - Unknown #

Is selected when the injuries came from a crash event; however, the specific event is unknown.

Body Region ContactedScreen Name: **Body Region Contacted (BRC)**

SAS Data Set:

SAS Variable:

Database Name:

Element Attributes

Database	SAS	
1		Head/face
2		Neck
3		Cervical spine
4		Shoulder
5		Arm
6		Elbow
7		Forearm
8		Wrist
9		Hand
10		Thorax
11		Thoracic spine
12		Abdomen
13		Lumbar spine
14		Pelvis
15		Hip
16		Thigh
17		Knee
18		Leg
19		Ankle
20		Foot
-9999		Unknown

Source

Injury-coding-center-determined

Remarks

See Injury Causation Coding Overview section for additional details.

Load Path

Screen Name: **Load Path**
SAS Data Set:
SAS Variable:
Database Name:

Element Attributes**Source**

Injury-coding-center-determined

Remarks

See Injury Causation Coding Overview section for additional details.

Contributing FactorsScreen Name: **Contributing Factors**

SAS Data Set:

SAS Variable:

Database Name:

Element Attributes

Database	SAS	
22		Comorbidity (pick)
14		High DV
10		Improper restraint use (specify)
7		Intrusion (pick)
16		Loose object or cargo
17		Possible late air bag deployment
21		Seat belt interaction (specify)
18		Seat belt payout due to load limiter
11		Unbelted case occupant
19		Unbelted other occupant
13		Other (specify)
15		None

Source

Injury-coding-center-determined

Remarks

See Injury Causation Coding Overview section for additional details.

ICS Confidence LevelScreen Name: **Confidence Level**

SAS Data Set:

SAS Variable:

Database Name:

Element Attributes

Database	SAS	
1		Certain
2		Probable
3		Possible
9		Unknown

Source

Injury-coding-center-determined

Remarks

See Injury Causation Coding Overview section for additional details.

IPC Confidence LevelScreen Name: **IPC Confidence Level**

SAS Data Set:

SAS Variable:

Database Name:

Element Attributes

Database	SAS	
1		Certain
2		Probable
3		Possible
9		Unknown

Source

Injury-coding-center-determined

Remarks

See Injury Causation Coding Overview section for additional details.

Interview

Interviewer

Screen Name: **Interviewer**
SAS Data Set:
SAS Variable:
Database Name:

Element Attributes

PSU Specific

Source

CISS Personnel Roster

Remarks

Select the name of the crash technician or crash technician assistant completing the interview.

Interviews are only required in CISS in the following circumstances:

- When a child 12 or younger is present in the vehicle,
- For vehicles equipped with certain crash avoidance technologies,
- When the occupants of the vehicles were treated at uncooperative medical facilities,
- When, for whatever purpose, contact has been established with a qualified interviewee.

If the driver is a fatality and no other adults are in the vehicle, no interview is required.

Note: When the PCR KABCO reports an "A" or "B" injury severity (including PCR narrative) **and** there is no EMS agency and no medical facility listed anywhere on the PCR, recommend contacting the occupant(s)/surrogate(s) to find out whether they were treated and if so, where they were treated.

Interviewee

Screen Name: **Interviewee**
SAS Data Set:
SAS Variable:
Database Name:

Element Attributes

1	No interview
2	Same person
4	Surrogate, other occupant
5	Surrogate, relative or friend
3	Surrogate, more than one interview from above categories (specify)

Source**Remarks**

Interviews are only required in CISS in the following circumstances:

- When a child 12 or younger is present in the vehicle,
- For vehicles equipped with certain crash avoidance technologies,
- When the occupants of the vehicles were treated at uncooperative medical facilities,
- When there is a need to locate the case vehicle and other methods have failed.

If the driver is a fatality and no other adults are in the vehicle, no interview is required.

Note: When the PCR KABCO reports an "A" or "B" injury severity (including PCR narrative) **and** there is no EMS agency and no medical facility listed anywhere on the PCR, recommend contacting the occupant(s)/surrogate(s) to find out whether they were treated and if so, where they were treated.

Manner

Screen Name: **Manner**
SAS Data Set:
SAS Variable:
Database Name: **CISS.CISS.INTERVIEW.MANNER**

Element Attributes

No attempt
Telephone
In-person
Questionnaire
Unknown

Source**Remarks**

Interviews are only required in CISS in the following circumstances:

- When a child 12 or younger is present in the vehicle,
- For vehicles equipped with certain crash avoidance technologies,
- When the occupants of the vehicles were treated at uncooperative medical facilities,
- When there is a need to locate the case vehicle and other methods have failed.

If the driver is a fatality and no other adults are in the vehicle, no interview is required.

Note: When the PCR KABCO reports an "A" or "B" injury severity (including PCR narrative) **and** there is no EMS agency and no medical facility listed anywhere on the PCR, recommend contacting the occupant(s)/surrogate(s) to find out whether they were treated and if so, where they were treated.

Interview ResultsScreen Name: **Result**

SAS Data Set:

SAS Variable:

Database Name: **CISS.CISS.OCC.INTERVIEWCOMPLETE****Element Attributes**

Database	SAS	
1		Unable to contact or locate
2		Hit-and-run
3		Fatal-surrogate not available
4		In intensive-care-surrogate not available
6		Refused interview
7		Insurance company refusal
8		Attorney refusal or litigation
9		No return of questionnaire
10		Other (specify)
11		Partial interview
12		Complete interview
-8887		Not applicable

Source

System assigned – primary, technician - secondary

Remarks

Select the last response from the appropriate driver or occupant interview section of the Interview Contact Log.

Unable to contact or locate

Is used only when an appropriate response cannot be selected from the other attributes.

Hit-and-run

Is used when the occupant's vehicle left the scene of the crash and no data are available about to the identity of the occupant.

Fatal - surrogate not available

Is used when this occupant was fatally injured in the crash and no surrogates exist to obtain a partial interview.

In intensive care - surrogate not available

Is used when this occupant was admitted into intensive care as a result of this crash and no surrogates exist to obtain a partial interview before file close-out.

Refused interview

Is used when the owner of the vehicle has been contacted and refuses to allow an interview.

Insurance company refusal

Is used when the insurance company responsible for the vehicle is contacted and refuses to authorize an interview of the occupant.

Attorney refusal or litigation

Is used when an interview is denied by an attorney, generally as a result of litigation.

No return of questionnaire

Is used when the only contact to the occupant is via a questionnaire, and the questionnaire is not returned before file close-out.

Other (specify)

Is used when no interview was obtained and the above attributes do not adequately capture the reason an interview was not obtained.

Partial interview

Is used when an interview is obtained but all required questions (listed under the “Complete interview” definition) have not been answered.

Complete interview

Is used when all required data with respect to crash sequence, vehicle information and injuries are obtained from either the driver or another occupant of the same vehicle.

Not applicable

Is used when an interview is not required for this occupant.

Interview Completion DateScreen Name: **Completed**

SAS Data Set:

SAS Variable:

Database Name:

Element Attributes

Month:	01 to 12
Day:	01 to 31
Year:	As appropriate

Source

Technician-determined

Remarks

When the technician completes the interview the date of completion is entered here.

Interviews are only required in CISS in the following circumstances:

- When a child 12 or younger is present in the vehicle,
- For vehicles equipped with certain crash avoidance technologies,
- When the occupants of the vehicles were treated at uncooperative medical facilities,
- When there is a need to locate the case vehicle and other methods have failed.

If the driver is a fatality and no other adults are in the vehicle, no interview is required.

Note: When the PCR KABCO reports an "A" or "B" injury severity (including PCR narrative) **and** there is no EMS agency and no medical facility listed anywhere on the PCR, recommend contacting the occupant(s)/surrogate(s) to find out whether they were treated and if so, where they were treated.

Appendix A: Make/Model Passenger Vehicles

*The following Make/Model List includes up to the 2019 vehicle production year. Beginning with data collection in 2020, the vPic program is being used for Make/Model determinations.

Make: Acura (54) (ACUR)**Automobiles**

Codes	Models	Includes	Model Years	Body Types
031	Integra	GS, LS, RS, GS-R, Type R	1986-2001, 9999	03-05, 07, 09
032	Legend	L, LS, GS, Special Edition, GS-R	1986-95, 9999	02, 04, 08, 09
033	NSX (For 1991-2005 only. For 2016 on see model 043.)	NSX-T	1991-2005, 9999	02
034	Vigor	--	1992-94, 9999	04
035	TL	3.2, 3.5, 3.7, SH-AWD (AT/MT)	1996-2014, 9999	04
036	RL/RLX	3.5, 3.7, Hybrid, Sport Hybrid	1996-2018, 9999	04
037	CL	2.2, 2.3, 3.0, 3.2, Type S	1997-2003, 9999	02
038	RSX	2.0, Type S	2002-06, 9999	03
039	TSX	2.4, 3.5, Hybrid, Special Edition, V6	2004-14, 9999	04, 06, 09
040	ZDX	3.7, SH-AWD	2010-13, 9999	05
041	ILX	2.0, 2.4, Hybrid, Premium, A-Spec, Special Edition, AcuraWatch Plus, Technology Plus	2013-18, 9999	04
043	NSX (2016 on. For 1991-2005 see model 033.)	Sport, GT3, Sport Hybrid	2016-18, 9999	02
044	TLX	2.4, 3.6 V-6, Standard, GT Package, A-Spec, Advance Package, Technology Package	2015-18, 9999	04
398	Other (automobile)	--	1986-2018, 9999	02-09
399	Unknown (automobile)	--	1986-2018, 9999	02-09

Light Trucks

Codes	Models	Includes	Model Years	Body Types
401	SLX	--	1996-2000, 9999	14
402	RDX	2.3, SH-AWD, Standard, Advance, AcuraWatch Plus, Technology	2007-18, 9999	14
421	MDX	Standard, Sport Hybrid, Technology/ Advance/ Entertainment Package	2001-18, 9999	15
499	Unknown (light truck)	--	1996-2018, 9999	19

Unknown

Codes	Models	Includes	Model Years	Body Types
999	Unknown (ACURA)	--	1986-2018, 9999	49

Make: Alfa Romeo (31) (ALFA)**Automobiles**

Codes	Models	Includes	Model Years	Body Types
031	Spider (Spyder)	Roadsters, Veloce, Quadrifoglio, Duetto, Graduate, 1600/1750/1900/ 2000 roadsters, Giulia, Giulietta, Giulietta Veloce, Tipo	1933-94, 9999	01, 02, 09
032	Sports Sedan	4-door sedans (except 164); Milano, Giulietta, Super, Berlina, Alfetta, Giulia 1750/1900/2000/2600 sedans, Alpha 90	1933-89, 9999	04
033	Sprint/Special	2-door coupes; Alfetta GT, Monteval, 1750/1900/2000/ 2600 GTV, Sprint GT, GT Veloce, Giulia, Giulietta, Super, GTA, GTV, GTZ, TZ2	1933-80, 9999	02
034	GTV-6	--	1981-86, 9999	02
035	164 (Alpha 164)	LS, Q, Quadrifoglio	1990-95, 9999	04
036	4c	Launch Edition, Base	2014-18, 9999	01, 02, 09

Codes	Models	Includes	Model Years	Body Types
037	Giulia	Base, Ti, Quadrifoglio	2016-18, 9999	04
398	Other (automobile)	Alfa, Montreal	1933-95, 2014-18, 9999	01-04, 08, 09
399	Unknown (automobile)	--	1933-95, 2014-18, 9999	01-04, 08, 09

Light Trucks

Codes	Models	Includes	Model Years	Body Types
401	Stelvio	Base, Ti, Quadrifoglio	2018	14

Unknown

Codes	Models	Includes	Model Years	Body Types
999	Unknown (ALFA ROMEO)	--	2018	49

Make: AM General (03) (AMGN)**Light Trucks**

Codes	Models	Includes	Model Years	Body Types
401	Dispatcher	Post Office (Jeep)	1965-94, 9999	14
402	Hummer	H3 (Base, Luxury, Adventure, Limited Edition), x, Alpha	2006-11, 9999	14
421	Hummer (SUV from 1993-2003; see 431 for 2004 on) (for pickup, see model 481)	Slantback-HMSB, H1, H2	1992-2003, 9999	15
431	Hummer (2004 on; see model 421 for 1993-2003)	H1 (Base, Luxury, Adventure), H2 (Base, Luxury, Adventure), Limousine	2004-11, 9999	16
441	MV-1	SE, DX, LX, Taxi	2013-15, 9999	20
466	Dispatcher	DJ-Series-Post Office Van	1965-91, 9999	22
481	Hummer (pickup) (for SUV see model 421 for 1993-2003; see 431 for 2004 on)	H1, H2 (Base, Luxury, Adventure, Limited Edition), Alpha	1992-2011, 9999	34
482	Hummer	H3T (Adventure, Luxury, Alpha)	2009-11, 9999	34

Codes	Models	Includes	Model Years	Body Types
498	Other (light truck)	--	1940-2011, 2013-15, 9999	14-16, 19, 20, 22, 33, 34, 39, , 40, 41, 42, 45, 48
499	Unknown (light truck)	--	1940-2011, 2013-15, 9999	14-16, 19, 20, 22, 33, 34, 39, 40, 41, 42, 45, 48, 49

Medium/Heavy Trucks

Codes	Models	Includes	Model Years	Body Types
884	Medium/Heavy Truck	Military off-road	1965-2011, 9999	60-64, 71, 72, 78
898	Other (medium/heavy truck)	--	1965-94, 9999	60-64, 71, 72, 78

Buses

Codes	Models	Includes	Model Years	Body Types
983	Bus: Rear engine, Flat front	Transit	1965-94, 9999	52
988	Other (bus)	--	1965-94, 9999	50-52, 58, 59
989	Unknown bus type	--	1965-94, 9999	50-52, 58, 59

Other and Unknown Vehicle

Codes	Models	Includes	Model Years	Body Types
998	Other (vehicle)	--	1965-94, 9999	92, 93, 97
999	Unknown (AM GENERAL)	--	1965-2011, 2013-15, 9999	49, 79, 99

Make: American Motors* (01) (AMER)**Automobiles**

Codes	Models	Includes	Model Years	Body Types
001	Rambler American	Rogue, 220, 330, 440, 440-H, Scrambler Deluxe, Custom, Super, Classic, Brougham, SC	1954-69, 9999	01, 02, 04, 06, 08, 09
002	Rebel	Mariner, Briarcliff, Westerner, The Machine, SST, 550, Grant, King	1967-70, 9999	01, 02, 04, 06, 08, 09
002	Matador	Brougham, X, Oleg Cassini, Barcelona, Police, The Machine	1971-78, 9999	02, 04, 06, 08, 09
002	Marlin	Black, Radar, Tahiti, Marlin II	1965-67, 9999	02, 08, 09
003	Ambassador	800, 880, 990, SST, DPL, Brougham, DDL, Limited	1958-74, 9999	02, 04, 06, 08, 09
004	Pacer	D/L, X, Limited	1975-80, 9999	02, 03, 06, 09
005	AMX	(2-seater only)	1968-70, 9999	02, 03, 09
006	Javelin	SST, AMX (1971-1974)	1968-74, 9999	02, 03, 09
007	Hornet	SST, Sportabout, AMX D/L, SC-360, Gucci Edition, Levi Trim Package, X	1970-77, 9999	02-04, 06, 08, 09
007	Concord	AMX Limited, D/L, Levi Trim, Sport, Base, Sundancer	1978-83, 9999	01-04, 06, 08, 09
008	Gremlin	Base, X, Levi Trim, GT, AMX	1970-78, 9999	03, 09
008	Spirit	GT, AMX, D/L, SST	1979-83, 9999	02, 03, 09

Codes	Models	Includes	Model Years	Body Types
009	Eagle	Sport, Series 30, Sundancer, Limited	1980-88, 9999	01-04, 06, 08, 09
010	Eagle SX-4	50 Series, Kammback, Sport	1981-84, 9999	02, 03, 09
398	Other (automobile)	--	1940-88, 9999	01-04, 06, 08, 09
399	Unknown (automobile)	--	1940-88, 9999	01-04, 06, 08, 09

***Note:** Alliance, Encore, Premier (including L, DL, and Limited) are coded under [Renault \(46\)](#).

Make: Audi (32) (AUDI)

Automobiles

Codes	Models	Includes	Model Years	Body Types
031	Super 90	--	1966-72, 9999	02, 04, 06, 08, 09
032	100	S, CS, LS, GL, Quattro (1989-on)	1970-77; 1989-94, 9999	02, 04, 06, 08, 09
033	Fox	--	1973-79, 9999	02, 04, 06, 08, 09
034	4000	Quattro, Coupe, Coupe GT, CS, S	1980-93, 9999	02, 04, 08, 09
035	5000	Quattro, CS, S, CS Turbo Quattro, T	1978-93, 9999	04, 06, 09
036	80/90	Quattro, Coupe Quattro	1988-95, 9999	04
037	200	Turbo Quattro	1989-92, 9999	04, 06, 09
038	V-8 Quattro	100 series	1990-94, 9999	04
039	Coupe Quattro	4000 series	1990-91, 9999	02, 03, 09
040	S4 (1992-1994; 2000-2011 only. See model 055 for 2012 on)/S6 (1992-1994; 2000-2011 only. See model 056 for 2013 on.)	Quattro, Avant Quattro (Wagon), 3.0, 4.2 Saloon, Avant (2.7), RS4, Special Edition, V10, 5.6, 5.2	1992-95; 2000-11, 9999	01, 04, 06, 09
041	Cabriolet (1994-1998)	--	1994-98, 9999	01

Codes	Models	Includes	Model Years	Body Types
042	A6	Avant Quattro Wagon (3.0L, 3.0T), Quattro (2.7T, 4.2), FrontTrak (2.8, 3.0L), RS6, 3.2, S Line, 3.0T (Premium, Premium Plus, Prestige), 2.0T (Premium, Premium Plus), Special Edition	1995-2018, 9999	04, 06, 09
043	99999	Avant Wagon (1.8T, 2.0T, 2.8, 3.0, 3.2), Avant Quattro Wagon, FrontTrak (1.8, 2.8, 3.0), Quattro (1.8T, 2.0T, 3.0, 3.2), Special Edition, S Line, 2.0T (Premium, Premium Plus, Prestige)	1996-2018, 9999	01, 04, 06, 09
044	A8	4.2 Quattro, L, W12, NWB, 3.0T, 4.0T, TDI, Sport	1997-2018, 9999	04
045	TT/TTS	FWD, Quattro AWD, 180, 225 Quattro Roadster, FrontTrak (180), 1.8L, 2.0, 3.2L, S Line, RS (Premium, Premium Plus, Prestige), 2.0T (Premium Plus, Prestige), RS	2000-18, 9999	01-03, 09
046	S8	4.2 Quattro, 5.2, 4.0 TFSI, Plus (4.0)	2001-03; 2007-09; 2012-18, 9999	02, 04, 08, 09
047	Allroad (2001-05 only. See 403 for 2013 on)	QuattroWagon, 2.7T, 4.2	2001-05, 9999	06
048	A3	2.0T/FSI, 3.2 S Line (Premium, Premium Plus), TDI, 1.8, Prestige, Sportback e-tron (Premium, Premium Plus, Prestige)	2006-18, 9999	01, 03, 04, 05, 09
049	A5	2.0, 2.0T, 3.2, (Premium, Premium Plus, Prestige), Quattro	2008-18, 9999	01, 02, 05, 09
050	R8	4.2, 5.2, Spyder (V8, V10), GT (Spyder), (V8, V10, V10 Plus)	2008-18, 9999	01, 02, 09
051	A7	Premium, Premium Plus, Prestige, (3.0 TFSI/TDI)	2008-10, 2012-18, 9999	04, 05, 09

Codes	Models	Includes	Model Years	Body Types
052	S5	4.2, 3.0T (Premium Plus, Prestige), Quattro	2008-18, 9999	01, 02, 05, 09
054	RS5	4.2 Prestige, V8	2013-15, 9999	01, 02, 09
055	S4 (2012 on only. See model 040 for 1992-1994; 2000-2011)	3.0T Prestige, Premium Plus	2012-18, 9999	04
056	S6 (2013 on. See model 040 for 1992-1994; 2000-2011)	4.0TFSI Premium Plus, Prestige	2013-18, 9999	04
057	S7	4.0, Premium Plus, Prestige	2013-18, 9999	04, 05, 09
058	RS7	4.0 TFSI, Performance	2014-18, 9999	05
059	S3	2.0 (Premium Plus, Prestige)	2015-18, 9999	04, 05, 09
060	RS3	--	2018	04
398	Other (automobile)	--	1970-2018, 9999	01-06, 08, 09
399	Unknown (automobile)	--	1970-2018, 9999	01-06, 08, 09

Light Trucks

Codes	Models	Includes	Model Years	Body Types
401	Q7	3.6/4.2, 3.0T, TDI (Premium, Premium Plus, Prestige) Hybrid, S Line,	2007-18, 9999	14
402	Q5	2.0T, 3.2, 3.0T (Premium, Premium Plus, Prestige), Hybrid (2.0)	2008-18, 9999	14
403	Allroad (2013 on. For 2001-2005 see model 047.)	2.0T (Premium, Premium Plus, Prestige)	2013-18, 9999	14
404	SQ5	3.0 (Premium Plus, Prestige)	2014-18, 9999	14
405	Q3	2.0 TFSI (Premium Plus, Prestige)	2015-18, 9999	14
499	Unknown (light truck)	--	2007-18, 9999	14

Unknown

Codes	Models	Includes	Model Years	Body Types
999	Unknown (AUDI)	--	1966-2018, 9999	19, 99

Make: Austin/Austin-Healey (33) (AUST)**Automobiles**

Codes	Models	Includes	Model Years	Body Types
031	Marina	GT	1973-75, 9999	01-04, 08, 09
032	America	--	1968-72, 9999	02
033	Healey Sprite	Mark II, MKIV/Princess (Special Order)	1958-70, 9999	01, 04, 09
034	Healey 100/3000	M, S, Mark III	1953-67, 9999	01
035	Mini/Mini Cooper/Mini Moke	850, S	1960-69, 9999	01, 02, 06, 09
398	Other (automobile)	A35, A40, Westminster, Cambridge, Somerset, Seven, Hereford, Sports, Sheerline, Atlantic, Countryman, Dorset, Devon	1947-75, 9999	01-04, 06, 08, 09
399	Unknown (automobile)	--	1947-75, 9999	01-04, 06, 08, 09

Make: BMW (34) (BMW)**Automobiles**

Codes	Models	Includes	Model Years	Body Types
031	1600/1800/2000/2002	Ti, Tii, Tilux, TR, CS, 1600-2, SA, Turbo, A, 1500, 2600, 501, 502	1955-76, 9999	01-04, 08, 09
032	Coupe (before 1975)	2800CS, 3.0CS, 3.0csi, 3.0csl, 3200, 503, 507, M1, 1802, 2000c/cs, 2002	1956-76, 9999	01-03, 09
033	Bavarian Sedan	2500, 2800, 2.8 Bavarian	1969-74, 9999	04
034	3-series	3.0s/si, 318i/is/ti/ic, 320i, 323iS/iC/i/Ci, 325e/es/i/iS/ii/C/Ci/Cic/xi/iT/xiT, Sport Wagon (iT/xiT), 328d/i/iS/ti/ iC/Ci/x/xi, xDrive, 330e/i/Ci/ Cic/xi, 335i/is/xi/d, 340i, xDrive, ActiveHybrid, M3, Gran Turismo (328i), 340i	1971-2018, 9999	01-06, 08, 09

Codes	Models	Includes	Model Years	Body Types
035	5-series	524i, 525i/xi, 528i/iT/xi, xDrive, 530e/i/iT/xi, 533i, 535d/i/xi, xDrive, 550i, xDrive 540/i/iA/iT, TD Sport Wagon, 525i/iT, (wagon 1992-93), M5, 545i, 550i/ix, Gran Turismo (535i, 550i), ActiveHybrid 5	1975-2018, 9999	04-06, 09
036	6-series	630, 633, 635, csi, M6, L6, 640i, 645Ci, 650i/ix, Neiman Marcus Edition, xDrive, Alpina B, B6, Gran Turismo (640i)	1976-89, 2004-18, 9999	01, 02, 04, 05, 08, 09
037	7-series	733i, 735i, L7, 740 e/d/i/L/iL /iA/Li Protection, 750 i/iL/Li/ Lxi/ix Protection, 745i/Li, 760i/Li, Alpina B7, Individual, ActiveHybrid 7, xDrive, M760i	1978-2018, 9999	04
038	8-series	840Ci/cia, 850i/iS/Ci/Cia	1991-97, 9999	02
039	Z3	2.3/2.8/2.5i/3.0i Roadster, MRoadster, MCoupe, 2.8/3.0i Coupe	1996-2003, 9999	01-03, 09
040	Z8	--	2000-03, 9999	01
041	V5	--	2007-08, 9999	06
042	Z4	2.5i, 2.8i, 3.0i/si, 3.5i/is, Z4M/s/sDrive, 28i, 30i, 35s	2003-16, 2018, 9999	01, 02, 09
043	1-Series	128i, 135i/is, Electric	2008-14, 9999	01, 02, 09
044	X6 (For 2008-2015. For 2016 on, see model 404.)	35i, 50i, ActiveHybrid, M, xDrive	2008-15, 9999	05
045	i3	Base, Range Extender	2014-17, 9999	03
046	i8	--	2014-17, 9999	02
047	4-Series	428i, 435i, xDrive, M4, 430i, 440i	2014-18, 9999	01, 02, 04, 08, 09
048	2-Series	228i, 230i, M235i, M240i, XDrive	2015-18, 9999	01, 02, 09
049	X4	28i, 35i, M40i	2015-18, 9999	05
398	Other (automobile)	--	1955-2018, 9999	01-06, 08, 09

Codes	Models	Includes	Model Years	Body Types
399	Unknown (automobile)	--	1955-2018, 9999	01-06, 08, 09

Light Trucks

Codes	Models	Includes	Model Years	Body Types
401	X5 (For 2000-17 (for models manufactured as 2017 during the 2016 model year). For 2017 models manufactured during the 2017 model year on, see model 421)	3.0i/si, 4.0is, 4.4i, 4.6is, 4.8is, M, 35d, Premium, 35d/i, 50i, Sport Activity, Premium. sDrive	2000-17, 9999	14
402	X3	25i, 28 d/i, 30i/xDrive, 35i, 4.8is, M40i, M Sports, xLine, Luxury Package	2004-18, 9999	14
403	X1	28i/is, 35i, xDrive, xLine	2012-18, 9999	14
404	X6 (For 2016 on. For 2008-2015, see model 044.)	35i, 50i, xDrive, sDrive, M	2016-18, 9999	14
405	X2	--	2018	14
421	X5 (For 2017 models manufactured during the 2017 model year on. For 2000-17 (for models manufactured as 2017 during the 2016 model year), see model 401)	35i/d, 40e, 50i, M	2017-18, 9999	15
499	Unknown (light truck)	--	2000-18, 9999	14, 15, 19

Motorcycles

Codes	Models	Includes	Model Years	Body Types
703	125-349cc	G310	1948-66, 2017-18, 9999	80, 84, 89
705	450-749cc	--	1950-2003; 2006-18, 9999	80, 84, 89
706	750cc and over	--	1969-2018, 9999	80, 84, 89
709	Unknown cc	--	1948-2018, 9999	80, 84, 89

Unknown

Codes	Models	Includes	Model Years	Body Types
999	Unknown (BMW)	--	1948-2018, 9999	49, 99

Make: Buick (18) (BUIC)**Automobiles**

Codes	Models	Includes	Model Years	Body Types
001	Special/Skylark	GS (350, 400, 455), Deluxe GS California, Sport Wagon, Custom Roadmaster (1946-59), Skylark Edition	1936-73, 9999	01, 02, 04, 06, 08, 09
002	LeSabre/Centurion/Wildcat	Estate Wagon, Invicta, Custom, Limited, T-Type, Ltd, C.M.I, LE, Celebration Edition, Best Seller	1959-2005, 9999	01, 02, 04, 06, 08, 09
003	Electra/Electra 225/Park Avenue (1991-on)	Limited, Park Avenue, Ultra, Base, Prestige, SE	1959-2005, 9999	01, 02, 04, 06, 08, 09
004	Roadmaster	Estate Wagon, Limited	1991-96, 9999	04, 06, 09
005	Riviera	S-Type, T-Type, Coupe Anniversary Edition, Silver Arrow	1963-93; 1995-99, 9999	01, 02, 09
007	Century	Luxus, T-Type, FWD (82-on), Custom, Regal (72-77), Limited, LE, SE, Base, Special	1954-2005, 9999	01, 02, 04, 06, 08, 09
008	Apollo/Skylark	Skylark (75), S/R	1973-76, 9999	02-04, 08, 09
010	Regal (RWD only)	Turbo, Luxus, Grand National GNX, T-Type	1978-88, 9999	02, 04, 06, 08, 09
012	Skyhawk	S-Type, Roadhawk, T-Type, GT	1975-80; 1982-89, 9999	02-04, 06, 08, 09
015	Skylark (76-85)	S/R, S, Limited, Sport, T-Type	1975-85, 9999	02-04, 08, 09
018	Somerset/Skylark	Skylark (86-on), Somerset, GS, Regal, Custom, Limited, T-Type	1985-98, 9999	02, 04, 08, 09
019	Regal (2011 on)	GS, CXL, Turbo, Premium I/ II, Base, Grand National, Sport Touring, Sportback/GS, TourX	2011-18, 9999	04, 05, 06, 09

Codes	Models	Includes	Model Years	Body Types
020	Regal (FWD)	Limited, Custom, Gold, Grand Sport GS, LS, Sport	1987-2004, 9999	02, 04, 08, 09
021	Reatta	--	1988-91, 9999	01, 02, 09
022	LaCrosse	CX, CXL (FWD/AWD), CXS, Super, Leather, Premium I/II, Touring, Preferred, Essence	2005-18, 9999	04
023	Lucerne	CX, CXL V6, CXL V8, CXS, Super, Special Edition	2006-11, 9999	04
024	Enclave (2008-12 model years only. For 2013 on see model 421.)	CX, CXL (FWD/AWD)	2008-12, 9999	06
025	Verano	Base, Convenience, Leather, Turbo, Premium, Sport, Touring	2012-18, 9999	04
026	Cascada	1SV, Base, Premium, Sport Touring	2016-18, 9999	01
031	Opel Kadett	--	1965-72, 9999	02, 04, 06, 08, 09
032	Opel Manta	1900, Luxus, Rallye, Sports Coupe	1966-75, 9999	02, 04, 06, 08, 09
033	Opel GT	--	1969-75, 9999	02
034	Opel Isuzu	Deluxe, Sport	1976-79, 9999	02, 04, 08, 09
398	Other (automobile)	--	1965-2018, 9999	01-04, 06, 08, 09
399	Unknown (automobile)	--	1950-2018, 9999	01-04, 06, 08, 09

Light Trucks

Codes	Models	Includes	Model Years	Body Types
401	Rendezvous	CX, CXL, Ultra, Plus	2002-07, 9999	14
402	Rainier	CXL, CXL Plus	2004-07, 9999	14
404	Encore	Convenience, Leather, Premium, Base, Sport Touring, Preferred (I, II), Essence	2013-18, 9999	14
405	Envision	Preferred, Premium (I, II) Essence, Base	2016-18, 9999	14

Codes	Models	Includes	Model Years	Body Types
421	Enclave (2013 on. See model 024 for 2008-12 model years.)	Convenience, Leather, Premium, Avenir	2013-18, 9999	15
441	Terraza	CX, CXL	2005-07, 9999	20
498	Other (light truck)	--	2002-07, 2013-18, 9999	14, 15, 19, 20
499	Unknown (light truck)	--	2002-07, 2013-18, 9999	14, 15, 19, 20

Unknown

Codes	Models	Includes	Model Years	Body Types
999	Unknown (BUICK)	--	1946-2018, 9999	49

Make: Cadillac (19) (CADI)**Automobiles**

Codes	Models	Includes	Model Years	Body Types
003	Deville/Fleetwood (except Limousine)	Coupe de Ville, Sedan de Ville, Fleetwood Brougham, Fleetwood 60 Special, d'Elegance, Concours, DHS, DTS	1940-2005, 9999	01, 02, 04, 08, 09
004	Limousine	Fleetwood 75, Formal, Deville-based, DTS	1940-2018, 9999	12
005	Eldorado	Biarritz, El-doro, Touring Coupe, ESC, ETC	1967-2003, 9999	01, 02, 09
006	Commercial Series	Ambulance/Hearse, Professional	1940-2018, 9999	09, 10-12
009	Allante'	--	1987-93, 9999	01, 02, 09
014	Seville	Elegante, STS, SLS	1976-2004, 9999	04
016	Cimarron	D'Oro	1982-88, 9999	04
017	Catera	Sport	1997-2001, 9999	04
018	CTS/CTC	Luxury, Luxury Sport, V-Series, 2.0L, 2.8L, 3.0L, 3.6L, 6.2L Supercharged, Premium, Performance, Standard, Luxury, V-Sport	2003-18, 9999	02-04, 06, 08, 09

Codes	Models	Includes	Model Years	Body Types
019	XLR	Neiman Marcus Edition, V-Series, Standard, Platinum	2004-09, 9999	01
020	SRX	V6, V8, Sports Package, 2.8L Turbo, 3.0L, Luxury, Performance, Premium, Standard	2004-16, 9999	06
021	STS	V6, V8, V-Series, Luxury, Premium, Standard, Platinum, 3.6L	2005-11, 9999	04
022	DTS	Luxury I, II, III, V8, 3.6L, Performance, Platinum	2006-11, 9999	04
023	XTS	Standard, Luxury, Premium, Platinum, V-Sport, Limousine, Funeral Hearse, Twin Turbo	2013-18, 9999	04, 09, 11, 12
024	ATS	2.0L/2.5L/3.6L (Standard, Luxury, Performance, Premium, Turbo) V-Series	2013-18, 9999	02, 04, 08, 09
025	ELR	--	2014-16, 9999	02
026	CT6	2.0L (Turbo, Luxury) 3.0L (Twin Turbo, Platinum, Luxury), 3.6L (Premium Luxury, Platinum), Plug-In	2016-18, 9999	04
398	Other (automobile)	--	1965-2018, 9999	01, 02, 04, 06, 08, 09, 11, 12
399	Unknown (automobile)	--	1950-2018, 9999	01, 02, 04, 06, 08, 09, 11, 12

Light Trucks

Codes	Models	Includes	Model Years	Body Types
401	XT5	3.6L (Base, Luxury, Premium, Platinum)	2017-18, 9999	14
421	Escalade/ESV (from 2004 on; see 431 for 2003 only)	4WD, 2WD, 6.2L, Standard, Platinum, Limousine, Hybrid, Luxury, Premium	1999-2000; 2002-18, 9999	15
431	Escalade ESV (2003 only)	Luxury, Premium, Platinum	2003, 9999	16

Codes	Models	Includes	Model Years	Body Types
480	Escalade EXT (from 2002 -2006; for 2007 on see 481)	4WD, 2WD	2002-06, 9999	34
481	Escalade EXT (from 2007 on; see 480 for 2002-2006)	4WD, 2WD, Luxury, Premium, Standard	2007-13, 9999	34
498	Other (light truck)	--	1999-2000; 2002-18, 9999	14, 15, 16, 19, 34
499	Unknown (light truck)	--	1999-2000; 2002-18, 9999	19, 39, 49

Unknown

Codes	Models	Includes	Model Years	Body Types
999	Unknown (CADILLAC)	--	1940-2018, 9999	49

Make: Chevrolet (20) (CHEV)**Automobiles**

Codes	Models	Includes	Model Years	Body Types
001	Chevelle/Malibu (through '83)	Classic, Councours, Laguna**, S-3, Greenbriar, Estate, 300, SS-396/454, Deluxe	1963-83, 9999	01, 02, 04, 06, 08, 09
002	Impala/Caprice (For SS from 2014 on, use 20-021.)	Biscayne, Belair, Super Sport, Classic, Classic Brougham, Townsman, Brookwood, Kingswood, LS, LT, LTZ, Sport, SS, Luxury, Premier	1955-96; 2000-18, 9999	01, 02, 04, 06, 08, 09
004	Corvette	Stingray, C5, Z06, Z06-R 50th Anniversary Edition, Commemorative Edition, Indy Pace Car, ZR1, Grand Sport, 427, 1LZ, 2LZ, 3LZ, ZL1	1953-82; 1984-2018, 9999	01-03, 09
006	Corvair	Monza, Corsa, 500, Yenko	1960-69, 9999	01, 02, 04, 06, 08, 09
007	El Camino	Royal Knight, SS	1958-94, 9999	10
008	Nova (-'79)	Chevy II, LN, LE, Concours, SS-350/396, Rally	1962-79, 9999	01-04, 06, 08, 09

Codes	Models	Includes	Model Years	Body Types
009	Camaro	SS, RS, LT, Berlinetta, Iroc-Z, Z/28, LS, LT, ZL1, 2.0L, 3.6L, 6.2L	1967-2002, 2010-18, 9999	01-03, 09
010	Monte Carlo (through '88)	LS, SS, Aerocoupe, Landau, Z34	1970-88, 9999	02
011	Vega	GT, Cosworth	1971-77, 9999	02-04, 06, 08, 09
012	Monza	Spyder, 2 + 2, Towne Coupe	1974-80, 9999	02-04, 06, 08, 09
013	Chevette	S, Scooter, CS	1976-87, 9999	03-05, 07, 09
015	Citation	X-11, Citation II	1980-85, 9999	02-05, 07, 08, 09
016	Cavalier	CS, RS, Z24, LS, Sport, Special Value Package	1982-2005, 9999	01-04, 06, 08, 09
017	Celebrity	CS, Eurosport, VR	1982-90, 9999	02, 04, 06, 08, 09
019	Beretta/Corsica	GT, GTZ, LT, LTZ, PX, QX, KX, LX, MX, Z26	1982-96, 9999	02, 04, 05, 08, 09
020	Lumina	Z-34, Euro, LTZ, LS	1990-2001, 9999	02, 04, 06, 08, 09
021	SS (For 2014 on. For Impala/Caprice SS use model 20-002.)	LS, LT, LTZ	2014-17, 9999	04
022	Cobalt	LS, LT, LTZ, SS, SS, Base Supercharged, Sport, VL	2005-11, 9999	02, 04, 08, 09
023	HHR	LS, 1LT, 2LT, SS, Panel	2006-11, 9999	06
024	Traverse (2009-2012 only. For 2013 on see model 423.)	LS, LT, LTZ	2009-12, 9999	06
025	Cruze	LS, LT, LTZ, ECO, Turbo Diesel, Limited, Premier	2011-18, 9999	02, 04, 05, 08, 09
026	Volt	Premier, LT	2011-18, 9999	05
027	Caprice PPV	--	2011-18, 9999	04
028	Sonic	Base, LS, LT, LTZ, RS, Premier	2012-18, 9999	04, 05, 09
029	Spark	LS, LT, EV, ACTIV	2013-18, 9999	05
031	Spectrum	--	1985-89, 9999	02-05, 08, 09
032	Nova/Geo Prism/Prism	CL, NUMMI-built vehicles, LSi	1985-2002, 9999	02-05, 07-09
033	Sprint/Geo Sprint	(Cultus - foreign)	1985-89, 9999	03, 05, 07, 09

Codes	Models	Includes	Model Years	Body Types
034	Geo Metro/Metro	Lsi, Xfi	1989-2001, 9999	01, 03-05, 07, 09
035	Geo Storm	Gsi	1985-93, 9999	02, 03, 09
036	Monte Carlo (1995 on)	FWD, LS, Z34, LS, LT, LTZ, SS, Sport Edition	1995-2007, 9999	02
037	Malibu/Malibu Maxx	Base, L, LS, LT, LTZ, SS, Hybrid, ECO, Classic, Limited, Premier	1997-2018, 9999	04-06, 09
038	SSR	Signature Series, LS, LS5, 1SS, 2SS, 3SS	2003-06, 9999	10
039	Aveo/Aveo 5	Base, LS, LT, Special Value	2004-11, 9999	04, 05, 09
040	Bolt	Lt, Premier	2017-18, 9999	05
398	Other (automobile)	Fleetmaster, Fleetline, Styline Special, One-fifty, Bel-Air, Del Ray, Biscayne	1930-2018, 9999	01-09, 10-11
399	Unknown (automobile)	--	1930-2018, 9999	01-09, 10-11

**Nomad, Malibu, Laguna, and other similar terms may be used on all models as a reflection of trim type.

Light Trucks

Codes	Models	Includes	Model Years	Body Types
401	S-10 Blazer/TrailBlazer (2002 only; for 2003 on, see 403)	S-10 p/u based, LS, LT, ZR2 TrailBlazer, Xtreme, ZR2, LS, LT, LTZ, EXT	1982-2005, 9999	14
402	Geo Tracker/Tracker	Lsi, LT, ZR2	1989-2004, 9999	14
403	TrailBlazer (from 2003 on; for 2002, see 401)	LS, LT, LTZ, North Face Edition, EXT, SS (LS/LT)	2003-09, 9999	14
404	Equinox	L, LS, LT, LTZ, Sport, Premier, Turbo (Base and Diesel)	2005-18, 9999	14
405	Captiva	Sport, LS, LT, LTZ	2012-15, 9999	14
406	Trax	LS, LT, LTZ, Premier	2015-18, 9999	14
421	Fullsize Blazer/Tahoe	K-series, fullsize p/u based, LS, LT, LTD, LTZ, 4WD, Z71, Hybrid, Premier	1969-2018, 9999	15
422	Suburban (from 2004 on; see 431 for 1950-2003)	LS, LT, LTZ, Z71, Premier	2004-18, 9999	15

Codes	Models	Includes	Model Years	Body Types
423	Traverse (2013 on. For 2009-2012 see model 024.)	L, LS, LT (Cloth, Leather), LTZ, Premier	2013-18, 9999	15
431	Suburban (from 1950-2003; see 422 for 2004 on)	all models (C1500/2500, K1500/2500), LS, LT, Z71	1950-2003, 9999	16
441	Astro Van	Minivan, Cargo, Passenger, LT, LS, Conversion	1985-2005, 9999	20
442	Lumina APV	Minivan, MPV	1990-96, 9999	20
443	Venture	Cargo, Passenger, Plus, LS, LT, Value, Value Plus, Extended, W. B. Edition, Entertainer	1997-2005, 9999	20
444	Uplander	Base, LS, LT, LT(AWD), LT Entertainer	2005-08, 9999	20
445	City Express	LS, LT	2015-18, 9999	20
461	G-series van	Beauville, Chevy Van, Sport Van, G10-G30, Express, G1500/2500/3500, LT, LS	1957-2018, 9999	21, 22, 28, 29
466	P-series van	--	1965-99, 9999	22, 28, 29
470	Van derivative	Parcel Van, High-cube	1965-2018, 9999	22, 28, 29
471	S-10/T-10 Pickup	4 x 4, Fleetside, Extended, Crew, LS, S-10, Xtreme, ZR2, ZR5, electric pickup*	1982-2005, 9999	34, 39, 40, 42, 48
472	LUV	Imported pickup	1972-91, 9999	34, 39, 40, 42, 48
473	Colorado	Z71, Z85, Sport, LS, LT, Work, Value, Shoreline, Midnight (LT, Z71), Trail Boss	2004-12, 2015-18, 9999	34

Codes	Models	Includes	Model Years	Body Types
481	C, K, R, V-Series pickup/ Silverado	C10-C30, K10-K30, R10-R30, V10-V30, Silverado: 1500 (C-K, HD), 2500 (C-K, HD), 3500 (CK), ST, LS, LT, Z71, Fleetside, Sportside, CrewCab, SS, Hybrid, LTZ, WT, High Country, Rally ½, Midnight (HD, Base), Realtree, Custom Sport HD, Blackout, Special Ops, High Country	1940-2018, 9999	34, 39, 40, 42
482	Avalanche	1500/2500 Premium, North Face Edition, Z71, Z66, LS, LT, LTZ, Black Diamond	2002-13, 9999	34
498	Other (light truck)	--	1940-2018, 9999	14-16, 19, 20-22, 28, 29, 34, 39, 40, 42, 45, 48
499	Unknown (light truck)	--	1932-2018, 9999	14-16, 19, 20-22, 28, 29, 34, 39, 40, 42, 45, 48, 49

MOTOR HOME

Codes	Models	Includes	Model Years	Body Types
850	Motor Home	Truck-based	1949-2018, 9999	65, 73

Medium/Heavy Trucks

Codes	Models	Includes	Model Years	Body Types
870	Medium/Heavy Van-Based Vehicle	Express 3500/4500	1957-2018, 9999	55, 61-64
880	Medium/Heavy Pickup (pickup-style only – over 10,000 lb)	--	1953-2017, 9999	67
881	Medium/Heavy – CBE	C50/60/65; M60/65; H70/80/90; J70/80/90; Bison 90; Kodiak (C4500) all other CBE	1955-2018, 9999	60-64, 66, 71, 72, 78
882	Medium/Heavy – COE low entry	T60/65, all other COE low entry	1960-2018, 9999	60-64, 66, 71, 72, 78
883	Medium/Heavy – COE high entry	Titan 90, all other COE high entry	1971-80, 9999	60-64, 66, 71, 72, 78

Codes	Models	Includes	Model Years	Body Types
884	Medium/Heavy – Unknown engine location	--	1951-2018, 9999	60-64, 66, 71, 72, 78
890	Medium/Heavy – COE entry position unknown	--	1965-2018, 9999	60-64, 66, 71, 72, 78
898	Other (medium/heavy truck)	--	1949-2018, 9999	60-64, 66, 71, 72, 78

Buses

Codes	Models	Includes	Model Years	Body Types
981	Bus**: Conventional (Engine out front)	S-60 series	1967-2018, 9999	50-52, 58, 59
988	Other (bus)	--	1965-2018, 9999	50-52, 58, 59
989	Unknown (bus)	--	1965-2018, 9999	50-52, 58, 59

** Use code “989” (bus) if the front plane or the engine location is unknown.

Other and Unknown Vehicle

Codes	Models	Includes	Model Years	Body Types
998	Other (vehicle)	--	1934-2018, 9999	92, 93, 97
999	Unknown (CHEVROLET)	--	1933-2018, 9999	49, 79, 99

Make: Chrysler/Daimler Chrysler (06) (CHRY)**Automobiles**

Codes	Models	Includes	Model Years	Body Types
009	Cordoba	Crown, 300, LS	1975-83, 9999	02
010	New Yorker (through 78)/ Newport/5th Avenue/ Imperial (1979-83) (excludes all FWD)	Town and Country, Brougham, Custom, Royal, 300 (through 1971) Frank Sinatra editions (FS), Royal Limo, Windsor Wagon/ Ambulance	1946-89, 9999	01, 02, 04, 06, 08, 09, 11, 12
014	New Yorker/E-Class/ Imperial (1990-93)/ Fifth Avenue	FWD vehicles, Turbo, Salon	1980-93, 9999	02, 04, 08, 09
015	Laser	Turbo, XE, XT	1984-86, 9999	03

Codes	Models	Includes	Model Years	Body Types
016	LeBaron	Premium, Salon (RWD), Landau, LX, Town and Country cars and wagon, Medallion, FWD except GTS or GTC Sport Coupe	1977-94, 9999	01-09
017	LeBaron GTS/GTC	GT, GTS-Turbo, GTC-Sport Coupe	1982-95, 9999	01-09
018	200	Limited (Base, Platinum), LX, Touring, S, Super S, C (Base, Platinum)	2011-17, 9999	01, 04, 09
021	SRT Viper	Standard, GTS, TA, GT3-R, GTS-R	2013-14, 9999	02
031	TC (Maserati Sport)	Turbo Convertible	1988-91, 9999	01-03, 09
035	Conquest	TSI, Turbo	1987-89, 9999	03
041	Concorde	LX, Lxi, Limited	1993-2004, 9999	04
042	LHS	New Yorker (1994-on)	1994-97; 1999-2001, 9999	04
043	Sebring	JX, Jxi, LX, Lxi, GTC, Tsi, Limited, Plus, Platinum, Touring, Signature Series	1995-2011, 9999	01, 02, 04, 08, 09
044	Cirrus	LX, Lxi	1995-2000, 9999	04
050	Executive	Sedan and Limo	1983-87, 9999	04, 09, 11, 12
051	300M/300/300C/300S	Special, Platinum, Touring, Limited, SRT, Signature Series, SRT8, LX, SRT, Heritage, Great American, Walter P. Chrysler, Glacier, Executive Series, Luxury, Motown Edition, John Varvatos Edition	1999-2018, 9999	04
052	PT Cruiser	Base, Touring, Limited, GT, Turbo, Dream Cruiser, Platinum, Series 4, Signature Series, Street Cruiser, Pacific Coast Highway, LX, Sunset Blvd.	2001-10, 9999	01, 06, 09
053	Prowler (for 2002) (1997, 1999-01 see Plymouth)	Roadster, Black Tie Edition	2002	01

Codes	Models	Includes	Model Years	Body Types
054	Pacifica	Premium, Luxury, Touring, Signature Series, LX, Hybrid	2004-08, 9999	06
055	Crossfire	Limited, SRT6, Standard	2004-08, 9999	01, 02, 09
398	Other (automobile)	--	1946-2018, 9999	01-09, 11, 12
399	Unknown (automobile)	--	1946-2018, 9999	01-09, 11, 12

Light Trucks

Codes	Models	Includes	Model Years	Body Types
421	Aspen	Limited, Signature, Hybrid	2007-09, 9999	15
441	Town and Country	Minivan, SX, L, LX, Lxi, Ltd., SWB, LWB, AWD, FWD, eL, eX, Touring, Platinum, Signature Series, Limited, 30th Anniversary, S	1990-2016, 9999	20
442	Voyager (2000 on; 1984-00 see Plymouth)	Base, Popular, Value, LX, eC	2000-03, 9999	20
443	Pacifica	LX, Touring (Base, L, L Plus) Limited, Hybrid	2017-18, 9999	20
499	Unknown (light truck)	--	1990-2018, 9999	15, 20, 29

Unknown

Codes	Models	Includes	Model Years	Body Types
999	Unknown (CHRYSLER)	--	1946-2018, 9999	49

Make: Coda (26)**Automobiles**

Codes	Models	Includes	Model Years	Body Types
001	Coda	--	2012-13, 9999	04, 05, 09
398	Other (automobile)	--	2012-13, 9999	04, 05, 09
399	Unknown (automobile)	--	2012-13, 9999	04, 05, 09

Make: Daewoo (64) (DAEW)**Automobiles**

Codes	Models	Includes	Model Years	Body Types
031	Lanos	S, SE, SX, Sport	1999-2002, 9999	03, 04, 09
032	Nubira	SX, CDX, SE	1999-2002, 9999	04, 06, 09
033	Leganza	SE, SX, CDX	1999-2002, 9999	04
398	Other (automobile)	--	1999-2002, 9999	03, 04, 05, 06, 07, 09
399	Unknown (automobile)	--	1999-2002, 9999	03-07, 09

Make: Daihatsu (60) (DAIH)**Automobiles**

Codes	Models	Includes	Model Years	Body Types
031	Charade	--	1988-94, 9999	03, 04, 09

Light Trucks

Codes	Models	Includes	Model Years	Body Types
401	Rocky	--	1990-92, 9999	14

Unknown

Codes	Models	Includes	Model Years	Body Types
999	Unknown (DAIHATSU)	--	1988-94, 9999	03, 04, 09, 14

Make: Dodge (07) (DODG)**Automobiles**

Codes	Models	Includes	Model Years	Body Types
001	Dart (1960-76 only. For 2013 on; see model 029.)	170, 270, Custom, GT, Swinger, Demon, 340, 360, Special, Sport, Special Edition	1960-76, 9999	01, 02, 04, 06, 08, 09
002	Coronet/Magnum/Charger (through 1978)	Brougham, Custom, Superbee, 500, Crestwood, Deluxe, XE, R/T, 440, SE, Police	1964-79, 9999	01, 02, 04, 06, 08, 09

Codes	Models	Includes	Model Years	Body Types
003	Polara/Monaco/ Royal Monaco	Custom, Special, Police, Taxi, Crestwood, Brougham	1964-78, 9999	01, 02, 04, 06, 08, 09
004	Viper	RT/10, GTS, ACR, SRT-10, GT, SRT	1992-2010, 2017, 9999	01, 02, 09
005	Challenger (1970-74 only; see model 028 for 2008 on)	R/T, T/A, Rallye	1970-74, 9999	01, 02, 09
006	Aspen	Custom, Special Edition, Police, R/T, Sport	1976-80, 9999	02, 04, 06, 08, 09
007	Diplomat	Medallion, S, Salon, SE	1977-89, 9999	02, 04, 06, 08, 09
008	Omni/Charger (1983-87; for 2006 on see vehicle model 024)	024, DeTomaso, Miser, Charger 2.2, GLH, Custom, Shelby, GLHS, America, Expo, SE	1978-90, 9999	03, 05, 07, 09
009	Mirada	--	1980-83, 9999	02
010	St Regis	Police, Taxi	1979-81, 9999	04
011	Aries (K)	Custom, SE, LE	1981-89, 9999	02, 04, 06, 08, 09
012	400	LS	1982-83, 9999	01, 02, 04, 08, 09
013	Rampage (car-based pickup)	2.2, GT, Sport	1982-84, 9999	10
014	600	ES, Turbo, SE	1983-88, 9999	01, 02, 04, 08, 09
015	Daytona	Turbo Z, C/S Competition, Shelby Z/CSX, Pacifica, IROC R/T	1984-93, 9999	03
016	Lancer	Pacifica, Turbo, ES, Shelby	1985-89, 9999	02-09
017	Shadow	ES, Turbo, America	1987-94, 9999	01-03, 05, 07, 09
018	Dynasty	--	1988-93, 9999	02, 04, 08, 09
019	Spirit	ES, Shelby, R/T	1989-95, 9999	01, 02, 04, 08, 09
020	Neon	Competition, Highline, SE, ES, ACR R/T, SRT-4, SXT	1995-2005, 9999	02, 04, 08, 09
021	Magnum	SE, SXT, R/T, SRT8	2005-08, 9999	06

Codes	Models	Includes	Model Years	Body Types
024	Charger (2006 on; see model 008 for 1983-87)	Daytona (Base, 392), SRT8, R/T, SE, SXT, Super Bee, 3.5L, Rallye, Plus, Max, Road and Track, Blacktop, 100th Anniversary, Red Line, Road & Track, Scat Pack, SRT 392, SRT, Hellcat, Blacktop	2006-18, 9999	04
025	Caliber	SE, SXT, R/T, SRT4, Sport, Heat, Mainstreet, Rush, Uptown, Express	2007-12, 9999	05
026	Avenger	SE, SXT, R/T, Heat, Express, Blacktop	2008-15, 9999	04
027	Journey	SE, SXT, R/T, Heat, Hero, Uptown, Express, Crew, Mainstreet, Lux, American Value Package, Blacktop, AVP, SXT Plus, Limited, Crossroad (Base, Plus), GT	2009-18, 9999	06
028	Challenger (2008 on; for 1970-74 see model 005)	SRT (392, Hellcat), SE, R/T (Plus, Classic, Scat Pack, Road & Track), Shaker, Plus Shaker), Plum Crazy Edition, Classic, SXT, SXT Plus, Rallye Redline, Blacktop, Shaker, 100th Anniversary, T/A (Base, Plus, 392), 392 Hemi Scat Pack Shaker, SRT (392, HellCat), GT, Demon	2008-18, 9999	02
029	Dart (2013 on. See model 001 for 1960-1976 model years.)	Limited, Rallye, SE, SXT, Special Edition, Mopar '13, Aero, GT, Blacktop	2013-16, 9999	04
033	Challenger	all import	1978-83, 9999	02
034	Colt (includes 2WD Vista)	GT, Custom, Carousel, Premier, Deluxe, E, DL, GTS, Turbo, RS	1974-94, 9999	02-09
035	Conquest	Turbo	1984-89, 9999	03
039	Stealth	RT, ES	1991-96, 9999	02, 03, 09
040	Monaco	--	1990-92, 9999	02, 04, 08, 09

Codes	Models	Includes	Model Years	Body Types
041	Intrepid	ES, R/T, S, SE, SXT	1993-2004, 9999	04
042	Avenger (see model 026 for 2008 on)	ES	1995-2000, 9999	02
043	Stratus	ES, SE, R/T, Plus, SXT	1995-2007, 9999	02, 04, 08, 09
398	Other (automobile)	--	1946-2018, 9999	01-09, 10, 12
399	Unknown (automobile)	--	1946-2018, 9999	01-09, 10, 12

Light Trucks

Codes	Models	Includes	Model Years	Body Types
401	RaiderSport	Sport	1986-94, 9999	14
402	Durango (1998-2003 only; see model 422 for 2004 on)	Sport, R/T, SLT, SXT, Plus, Blacktop	1998-2003, 9999	14
403	Nitro	SLT, SXT, R/T, SE, Heat, Detonator, Shock	2007-11, 9999	14
421	Ramcharger	--	1974-93, 9999	15
422	Durango (2004 on; see 402 for 1998-2003 models)	ST, SLT, Limited, SXT (Base, Plus), Adventurer, Hybrid, Express, Crew, LUX, Citadel, R/T, Blacktop, Plus, Rallye, GT	2004-18, 9999	15
441	Vista Van	4x4 (Only)	1984-91, 9999	20
442	Caravan/Grand Caravan	Mini Ram Van, 112 & 19 WB, SE, ES, LE, Sport, EX, eC, eL, AWD, Sport, EPIC-elec* SXT, C/V, Special Edition, Cargo, Hero, American Value Package, R/T, Crew, Blacktop, AVP, 30th Anniversary, SE Plus, SXT Plus	1984-2018, 9999	20
443	Ram C/V	Tradesman	2013-17, 9999	20
444	Promaster City	Cargo, Passenger, Tradesman (Base, SLT), Wagon (Base, SLT)	2015-18, 9999	20

Codes	Models	Includes	Model Years	Body Types
461	B-Series Van/fRam Van/ Ram Wagon	Sportsman, Royal, Maxiwagon, Ram, B1500-B3500, Tradesman, Ram Maxivan (1500, 2500, 3500), Ram Wagon (1500, 2500, 3500) Conversion, Cargo Van (1500: van, non-maxi van, maxi van; 2500: non-maxi, maxi van; 3500: non-maxi), Dodge Wagon (1500, 2500, 3500)	1963-2003, 9999	21, 28, 40, 41, 42, 48
462	Sprinter	Cargo, Passenger	2003-09, 9999	21, 28
463	Ram Promaster	Cargo, Chassis, Cutaway, 1500 (Low Roof, High Roof), 2500 (Low Roof, High Roof), 3500 (Low Roof, High Roof)	2014-18, 9999	21, 28
470	Van Derivative	Kary Van, Parcel Van	1971-2018, 9999	28, 29
471	D50, Colt pickup, Ram 50/Ram 100	--	1979-93, 9999	34, 39
472	Dakota	R/T, Limited Edition, Quad Cab, Club Cab, Plus, SLT, ST, SXT, Sport, Laramie, TRX, SE, Big Horn, Lone Star, TRX4	1987-2012, 9999	33, 34, 39, 40
481	D, W-Series pickup	Custom, Royal, Ram, Miser, D100-D350, W100-W350	1955-93, 9999	34, 39, 40, 42

Codes	Models	Includes	Model Years	Body Types
482	Ram Pickup	1500 (Limited, Longhorn, Rebel, Laramie, Sport, Big Horn, SLT, Express, ST, Black, Tradesman, EcoDiesel, Outdoorsman, Stinger Yellow) 2500 (Limited, Laramie, Longhorn, Power Wagon, Big Horn, ST, SLT, Outdoorsman, Tradesman), 3500 (Limited, Laramie, Longhorn, Power Wagon, Big Horn, ST, SLT, Outdoorsman, Tradesman), Quad Cab, SLT, SLT+, ST, SRT-10, Laramie, Rumble Bee, Power Wagon, Daytona, TRX Off-Road, Sport, Black Ram, Red Wings Edition, Lone Star, Limited Tungsten	1994-2018, 9999	34, 39, 40, 42
498	Other (light truck)	--	1979-2018, 9999	14, 15, 19, 20-22, 28, 29, 33, 34, 39, 40, 41, 42, 45, 48
499	Unknown (light truck)	--	1949-2018, 9999	14, 15, 19, 20-22, 28, 29, 33, 34, 39, 40, 41, 42, 45, 48, 49

MOTOR HOME

Codes	Models	Includes	Model Years	Body Types
850	Motor Home	Truck-based	1952-2018, 9999	65, 73

Medium/Heavy Trucks

Codes	Models	Includes	Model Years	Body Types
870	Medium/Heavy Van-Based Vehicle	Sprinter, Promaster	1971-2009, 2014-18, 9999	55, 61-64
880	Medium/Heavy Pickup (pickup-style only – over 10,000 lb)	--	1953-2018, 9999	67
881	Medium/Heavy – CBE	--	1966-2018, 9999	60-64, 66, 71, 72, 78

Codes	Models	Includes	Model Years	Body Types
882	Medium/Heavy – COE low entry	--	1967-77, 9999	60-64, 66, 71, 72, 78
883	Medium/Heavy – COE high entry	--	1967-77, 9999	60-64, 66, 71, 72, 78
884	Medium/Heavy – Unknown engine Location	--	1962-2018, 9999	60-64, 66, 71, 72, 78
890	Medium/Heavy – COE entry position unknown	--	1965-77, 9999	60-64, 66, 71, 72, 78
898	Other (medium/heavy truck)	--	1930-2018, 9999	60-64, 66, 71, 72, 78

Buses

Codes	Models	Includes	Model Years	Body Types
981	Bus**: Conventional (Engine out front)	(not van based)	1966-77, 9999	50-52, 58, 59
988	Other (bus)	--	1965-77, 9999	50-52, 58, 59
989	Unknown (bus)	--	1965-77, 9999	50-52, 58, 59

**Use code “989” (bus) if the front plane or the engine location is unknown.

Other and Unknown Vehicle

Codes	Models	Includes	Model Years	Body Types
998	Other (vehicle)	--	1965-2018, 9999	92, 93, 97
999	Unknown (DODGE)	--	1952-2018, 9999	49, 79, 99

Make: Eagle* (10) (EGIL)**Automobiles**

Codes	Models	Includes	Model Years	Body Types
034	Summit (excludes wagon)	DL, LX, ES, ESi	1989-96, 9999	02-04, 08, 09
037	Talon	FWD, Tsi, Tsi-FWD, Esi	1990-98, 9999	02, 03, 09
040	Premier	LX, ES, ES Limited	1988-92, 9999	02, 04, 08, 09
041	Vision	Esi, Tsi	1993-97, 9999	04
044	Medallion	DL, LX	1988-89, 9999	04, 06, 09
045	Summit Wagon	FWD, AWD, DX, LX (Mitsubishi)	1992-96, 9999	06
398	Other (automobile)	--	1988-98, 9999	02-04, 06, 08, 09

Codes	Models	Includes	Model Years	Body Types
399	Unknown (automobile)	--	1988-98, 9999	02-04, 06, 08, 09

*Note: Eagle model listed under American Motors.

Make: Fiat (36) (FIAT)

Automobiles

Codes	Models	Includes	Model Years	Body Types
031	124 (Coupe/Sedan)	Sport	1967-75, 9999	01, 02, 04, 06, 08, 09
032	124 Spider/Racer	Spider 2000/1500	1968-83, 9999	01, 02, 09
033	Brava/131	--	1975-82, 9999	02, 04, 06, 08, 09
034	850 (Coupe/Spider)	--	1967-73, 9999	01, 02, 09
035	128	--	1972-79, 9999	01, 02, 04, 06, 08, 09
036	X-1/9	--	1975-83, 9999	01, 02, 09
037	Strada	--	1979-83, 9999	03, 05, 07, 09
038	500/500c	Abarth, Pop, Sport, Lounge, e, Cabrio, Turbo, Cattiva, Gucci, eSport, GQ Edition, 1957 Edition	2012-18, 9999	02, 03, 09
039	124 Spider	Classica, Abarth	2017-18, 9999	01
398	Other (automobile)	600, 1100	1967-83, 2011-18, 9999	01-09
399	Unknown (automobile)	--	1967-83, 2011-18, 9999	01-09

Light Trucks

Codes	Models	Includes	Model Years	Body Types
401	500L	Pop, Easy, Trekking, Lounge, Urbana	2014-18, 9999	14
402	500X	Pop, Easy, Trekking, Lounge, Trekking Plus	2016-18, 9999	14
499	Unknown (light truck)	--	2014-18, 9999	14, 19

Medium/Heavy Trucks

Codes	Models	Includes	Model Years	Body Types
882	Medium/Heavy – COE low entry	--	1967-83, 9999	60-64, 66, 71, 72, 78
883	Medium/Heavy – COE high entry	--	1967-83, 9999	60-64, 66, 71, 72, 78
890	Medium/Heavy – COE entry position unknown	--	1967-83, 9999	60-64, 66, 71, 72, 78
898	Other (medium/heavy truck)	--	1967-83, 9999	60-64, 66, 71, 72, 78

Other and Unknown Vehicle

Codes	Models	Includes	Model Years	Body Types
998	Other (vehicle)	--	1967-83, 9999	92, 93, 97
999	Unknown (FIAT)	--	1967-83; 2011-18, 9999	99

Make: Ford (12) (FORD)**Automobiles**

Codes	Models	Includes	Model Years	Body Types
001	Falcon	FuturaSprint, GT, Futura	1960-70, 9999	02, 04, 06, 08, 09
002	Fairlane	Torino (1968-70), 500, Brougham	1955-70, 9999	01, 02, 04, 06, 08, 09
003	Mustang/Mustang II	Mach(I), Boss (302), Grande, Cobra (SVT), Ghia, SVO, GT (Premium, Base, Cal Spec. Pkg.), LX, Shelby (GT350, GT350R, GT500, GT500KR), Deluxe, Premium, Bullitt, V6 (Base, Premium, Pony), Fastback (V6, GT, Premium, Ecoboost)	1964-2018, 9999	01-03, 09
004	Thunderbird (all sizes)	Landau, Heritage, Turbo coupe, Elan, Fila, Sport, LX, SC, Deluxe, Premium, Pacific Coast Edition, 50th Anniversary Edition	1955-98; 2002-05, 9999	01, 02, 04, 08, 09
005	LTD II	S, Squire, Brougham	1977-79, 9999	02, 04, 06, 08, 09

Codes	Models	Includes	Model Years	Body Types
006	LTD/Custom/Galaxy (all sizes)	XL, Landau, Ranch Wagon, Country Squire, S, 500, Brougham, XL, GT	1963-86, 9999	01, 02, 04, 06, 08, 09
007	Ranchero	Falcon/Fairlane based Torino/LTD II based	1960-79, 9999	10
008	Maverick	Grabber	1969-78, 9999	02, 04, 08, 09
009	Pinto	Pony, MPG, ESS	1971-80, 9999	02, 03, 06, 09
010	Torino/Gran Torino/Elite	GT, Cobra, Sport, Squire, Brougham	1971-76, 9999	01, 02, 04, 06, 08, 09
011	Granada	ESS, Ghia	1975-82, 9999	02, 04, 06, 08, 09
012	Fairmont	Futura, Sport Coupe	1978-83, 9999	02, 04, 06, 08, 09
013	Escort/EXP/ZX2	L, GL, GLX, SS, GT, LX, LXE, SE, ZX2, Deluxe, Premium, Standard	1981-2003, 9999	02-09
015	Tempo	L, GL, GLX, Sport, 4X4	1984-94, 9999	02, 04, 08, 09
016	Crown Victoria (For 2011 on, code as vehicle model 398)	LX, LTD Crown Victoria, LX Sport	1981-2011, 9999	02, 04, 06, 08, 09
017	Taurus/Taurus X	MT-5, L, GL, LX, SHO, G, SE, SVG, SES, SEL, Limited, Eddie Bauer, Police Interceptor	1986-2018, 9999	04, 06, 09
018	Probe	GL, LX, GT	1988-97, 9999	03
021	Five Hundred	SE, SEL, Limited	2005-07, 9999	04
022	Freestyle	SE, SEL, Limited	2005-07, 9999	06
023	Fusion	I4 S/SE/SEL, V6 SE/SEL, S, SE, Sport, Hybrid (S, SE, Platinum, Titanium), Titanium (Hybrid, Energi) Energi (SE, Platinum, Titanium), Platinum	2006-18, 9999	04
024	Edge	SE, SEL, SEL Plus, Limited, Sport, Titanium	2007-18, 9999	06
025	Flex	SE, SEL, Limited, Titanium	2009-18, 9999	06
026	City	--	2000-02, 9999	02, 04, 08, 09, 94

Codes	Models	Includes	Model Years	Body Types
027	C-Max	Hybrid (SE, Titanium), Energi, SE, SEL	2013-18, 9999	05
031	English Ford	Cortina, Anglia, Zephyr/ Zodiac Mark III	1946-70, 9999	02, 04, 06, 08, 09
032	Fiesta (For 2018 on, code as vehicle model 398)	Sport, Ghia, S, SE, SES, SEL, Titanium, ST	1978-80, 2011-17, 9999	03-05, 09
033	Festiva	L, GL	1988-93, 9999	03
034	Laser	--	1993-94, 9999	02, 03, 09
035	Contour	Sport, LX, SE, SVT	1994-2001, 9999	04
036	Aspire	--	1994-97, 9999	03, 05, 07, 09
037	Focus	ZX3, LX, SE, ZTS, SVT, ZX4, ZX4, ST, ZX5, ZXW, S, SES, SEL, SE, Titanium, Electric, ST, RS	2000-18, 9999	02-06, 08, 09
038	GT	--	2004-08, 2018, 9999	01, 02, 09
398	Other (automobile)	Deluxe, Ford Six, Mainline, Crestline, Futura, Galaxie, Model A, Fiesta (2018 on)	1923-2018, 9999	01-09, 10, 11, 94
399	Unknown (automobile)	--	1923-2018, 9999	01-09, 10, 11, 94

Light Trucks

Codes	Models	Includes	Model Years	Body Types
401	Bronco (through 1977)/ Bronco II/Explorer/ Explorer Sport	Eddie Bauer, XL, XLT, Explorer (1990 on) XLS, Explorer Sport (Value, Choice Premium), NBX, Adrenalin, Ironman, Police Interceptor, Base, Limited, Platinum	1966-77; 1983-2018, 9999	14
402	Escape	XLS (Value, Sport, V6 Choice/Premium), XLT (Choice, Premium, Sport), Hybrid (Base, Limited), No Boundaries, Limited, S, SE, SEL, Titanium	2001-18, 9999	14
403	EcoSport	S, SE, SES	2018	14

Codes	Models	Includes	Model Years	Body Types
421	Bronco-full-size (1978-on)	Eddie Bauer, Custom, XL, XLT	1978-96, 9999	15
422	Expedition	EL, XLS, XLT (4x4, 4x2), Eddie Bauer (4x4, 4x2), NBX, Sport, NBX, Limited, King Ranch, Funk Master Flex Edition, XL, Platinum, XLT MAX, Limited MAX, Platinum MAX	1996-2018, 9999	15
423	Excursion	XLT, Limited (LTD), Ultimate, Premium, XLS, Eddie Bauer	2000-05, 9999	16
441	Aerostar	XLT, Cargo Van	1985-97, 9999	20
442	Windstar	GL, LX, XLT, Splash, Cargo Limited, SE, SEL	1995-2003, 9999	20
443	Freestar	Base, LX, SE, S, SEL, SES, Limited	2004-07, 9999	20
444	Transit Connect	XL, (Van, Wagon), XLT (Van, Wagon), Premium, EV, Titanium	2010-18, 9999	20
461	E-Series Van/Econoline	Clubwagon (XL, XLT), Chateau, (XL, XLT), Parcel Van, Econoline Wagon E-150 (XL/ XLT/ Premium); E-350 XL/XLT/ Extended), E-250 (EXT)	1960-2018, 9999	21, 22, 28, 29
462	Transit	Van, Wagon (XL, XLT)	2014-18, 9999	21, 28, 29
470	Van Derivative	--	1960-2018, 9999	28, 29
471	Ranger	Supercab, 4x4, STX, SL, SLT, Splash, XL (Standard/ Super Cab), XLT, Tremor (Standard/Super Cab/Off-Road/FX4), Edge (Regular/ Super Cab), EV* (electric), Level II, Sport	1982-2012, 9999	34, 39, 40, 42
473	Explorer Sport Trac	2WD/4WD, Value, Choice, Premium, XLS, XLT, Adrenalin, Limited	2001-11, 9999	34

Codes	Models	Includes	Model Years	Body Types
481	F-Series pickup	F100, F150-F350, (XL, XLT, Crew Cab, Super Cab, Regular Cab, Lariat, Super Duty, Flareside, Styleside, SVT Lightning, Fireside, Harley-Davidson Edition, King Ranch, SuperCrew, STX, Heritage Edition, Sport Edition, FX4, FX2), F450 (10, 000 GVWR and under) (see model 880 for F450 >10, 000 GVWR), Amarillo Package, Platinum, Cabala's, STX, SVT Raptor, Limited	1940-2018, 9999	34, 39, 40, 42
498	Other (light truck)	--	1972-2018, 9999	14-16, 19, 20, 21, 28, 29, 34, 39, 40, 41, 42, 45, 48
499	Unknown (light truck)	--	1928-2018, 9999	14-16, 19, 20-22, 28, 29, 34, 39, 40, 41, 42, 45, 48-49

MOTOR HOME

Codes	Models	Includes	Model Years	Body Types
850	Motor Home	Truck-based, F-550	1956-2018, 9999	65, 73

Medium/Heavy Trucks

Codes	Models	Includes	Model Years	Body Types
870	Medium/Heavy Van-Based Vehicle	Econoline E350, E450, Transit	1956-2018, 9999	55, 61-64
880	Medium/Heavy Pickup (pickup-style only – over 10, 000 lb)	Super Duty 350, F450/550, Lariat, XL, XLT, King Ranch	1953-2018, 9999	67
881	Medium/Heavy – CBE	F-5 through F-8, L-series, FT-series, Super Duty F-Series: 450/550/650/750/800 (does not include pickup style)	1953-2018, 9999	60-64, 66, 71, 72, 78
882	Medium/Heavy – COE low entry	C/CT series, LCF	1964-2018, 9999	60-64, 66, 71, 72, 78

Codes	Models	Includes	Model Years	Body Types
883	Medium/Heavy – COE high entry	C/CLT series, LCF	1967-2018, 9999	60-64, 66, 71, 72, 78
884	Medium/Heavy – Unknown engine location	--	1956-2018, 9999	60-64, 66, 71, 72, 78
890	Medium/Heavy – COE entry position unknown	--	1956-2018, 9999	60-64, 66, 71, 72, 78
898	Other (medium/heavy truck)	--	1965-2018, 9999	60-64, 66, 71, 72, 78

Buses

Codes	Models	Includes	Model Years	Body Types
981	Bus**: Conventional (Engine out front)	B-series (not van based), F-Series	1964-2018, 9999	50, 52, 58, 59
988	Other (bus)	--	1940-2018, 9999	50, 52, 58, 59
989	Unknown (bus)	--	1940-2018, 9999	50, 52, 58, 59

** Use code “989” (bus) if the front plane or the engine location is unknown.

Other and Unknown Vehicle

Codes	Models	Includes	Model Years	Body Types
998	Other (vehicle)	--	1940-2018, 9999	92, 93, 97
999	Unknown (FORD)	--	1923-2018, 9999	49, 79, 99

Make: GMC (23) (GMC)**Automobiles**

Codes	Models	Includes	Model Years	Body Types
007	Caballero	--	1965-87, 9999	10
008	Acadia (2007-2012 only. For 2013 on see model 423.)	SLE, SLT, Denali, SL	2007-12, 9999	06
399	Unknown (automobile)	--	1965-2012, 9999	06, 10

Light Trucks

Codes	Models	Includes	Model Years	Body Types
401	Jimmy/Typhoon/Envoy	S-15 based, (100.5 WB), T15, SLE, SL, SLS, SLT, XL, XUV, Denali	1983-2009, 9999	14

Codes	Models	Includes	Model Years	Body Types
402	Terrain	SL, SLE, SLT, Denali, Diesel	2010-18, 9999	14
421	Full-size Jimmy/Yukon	Fullsize pickup based, K5, K18, SL, SLE, SLT, SLS, Diamond Edition, Yukon Denali, Denali, Hybrid, Premium Edition	1969-2018, 9999	15
422	Suburban/Yukon XL (2004 on; see 431 for 1950- 2003)	Yukon XL (Denali - 1500-2500), SLE, SLT, Hybrid	2004-18, 9999	15
423	Acadia (2013 on. For 2007-2012 see model 008.)	FWD/AWD, Denali, SL, SLE, SLT, All-Terrain	2013-18, 9999	15
431	Suburban/Yukon XL (1950-2003 only; see 422 for 2004 on)	all models, SLE, C16, C26, K16, K26, C1500-2500, K1500-2500, Yukon XL (Denali - 1500-2500)	1950-2003, 9999	16
441	Safari (Minivan)	SLT, SLX, SLE, M15, L15, SL	1985-2005, 9999	20
461	G-series van/Savana	Rally Van, Vandura, G15-G35, Savana (G1500-3500) SLT, Extended, SLE, LS, LT, Uplifter, WT, Cargo	1965-2018, 9999	21, 22, 28, 29
466	P-series van	--	1965-2018, 9999	22, 28, 29
470	Van derivative	Hi-Cube, Magna Van, Value Van, Parcel Van	1965-2018, 9999	28, 29
471	S15/T15/Sonoma	4 X 4, Syclone, SL, SLS, SLE, Extended/Crew Cab, ZR2, ZRX, ZR5	1982-2004, 9999	34, 39, 40, 42
472	Canyon	Base, SLE, SL, SLT, Z71, Z85, Work Truck, Crew Cab, Extended Cab, Denali, All-Terrain	2004-18, 9999	34

Codes	Models	Includes	Model Years	Body Types
481	C, K, R, V-series pickup/Sierra	Excluding Yukon, C15-C35, K15-K35, R15-R35, V15-V35, Sierra, C/K1500, 2500, 3500, Sportside, X81, SL, Special, SLE, Classic, Extended Cab, Denali, 1500HD/2500HD, C3, Hybrid, SLT, Work Truck, 5SA	1940-2018, 9999	34, 39, 40, 42
498	Other (light truck)	--	1930-2018, 9999	14-16, 19, 20-22, 28, 29, 34, 40, 42, 45, 48
499	Unknown (light truck)	--	1951-2018, 9999	14-16, 19, 20-22, 28, 29, 34, 39, 40, 42, 45, 48, 49

MOTOR HOME

Codes	Models	Includes	Model Years	Body Types
850	Motor Home	--	1950-2018, 9999	65, 73

Medium/Heavy Trucks

Codes	Models	Includes	Model Years	Body Types
870	Medium/Heavy Van-Based Vehicle	Savana 3500, 4500	1965-2018, 9999	55, 61-64
880	Medium/Heavy Pickup (pickup-style only – over 10,000 lb)	--	1953-2018, 9999	67
881	Medium/Heavy – CBE	W5000/6000/7000 series, Kodiak Brigadier/General models, Top Kick	1967-2018, 9999	60-64, 66, 71, 72, 78
882	Medium/Heavy – COE low entry	W6000/W7000, all other COE, low entry, W/WT Series	1968-2018, 9999	60-64, 66, 71, 72, 78
883	Medium/Heavy – COE high entry	Astro 95, all other COE, high entry, T Series	1969-2018, 9999	60-64, 66, 71, 72, 78
884	Medium/Heavy – Unknown engine location	--	1948-2018, 9999	60-64, 66, 71, 72, 78
890	Medium/Heavy – COE entry position unknown	--	1967-2018, 9999	60-64, 66, 71, 72, 78
898	Other (medium/heavy truck)	--	1930-2018, 9999	60-64, 66, 71, 72, 78

Buses

Codes	Models	Includes	Model Years	Body Types
981	Bus**: Conventional (Engine out front)	B6000	1950-2018, 9999	50-52, 58, 59
988	Other (bus)	--	1965-2018, 9999	50, 58, 59
989	Unknown (bus)	--	1950-2018, 9999	50-52, 58, 59

** Use code "989" (bus) if the front plane or the engine location is unknown.

Other and Unknown Vehicle

Codes	Models	Includes	Model Years	Body Types
998	Other (vehicle)	--	1965-2018, 9999	92, 93, 97
999	Unknown (GMC)	--	1940-2018, 9999	49, 79, 99

Make: Grumman/Grumman Olson⁴ (25) (GRUM)**Light Trucks**

Codes	Models	Includes	Model Years	Body Types
401	LLV	Postal vehicle	1987-2004, 9999	22
441	Step-in van	Multi-stop, step van	1987-2004, 9999	22
498	Other (light truck)	--	1987-2004, 9999	22
499	Unknown (light truck)	--	1987-2004, 9999	22

Medium/Heavy Trucks

Codes	Models	Includes	Model Years	Body Types
881	Medium/Heavy – CBE	--	1987-2004, 9999	60-64, 66, 71, 72, 78
882	Medium/Heavy – COE low entry	--	1987-2004, 9999	60-64, 66, 71, 72, 78
883	Medium/Heavy - COE high entry	--	1987-2004, 9999	60-64, 66, 71, 72, 78
884	Medium/Heavy - engine location unknown	--	1987-2004, 9999	60-64, 66, 71, 72, 78

⁴ Now Morgan Olson

Codes	Models	Includes	Model Years	Body Types
890	Medium/Heavy - entry position unknown	--	1987-2004, 9999	60-64, 66, 71, 72, 78
898	Other (medium/heavy truck)	--	1987-2004, 9999	60-64, 66, 71, 72, 78

Buses

Codes	Models	Includes	Model Years	Body Types
983	Bus**: Flat front, rear engine	Transit	1950-2004, 9999	50-52, 58, 59
988	Other (bus)	--	1950-2004, 9999	50-52, 58, 59
989	Unknown (bus)	--	1950-2004, 9999	50-52, 58, 59

** Use code "989" (bus) if the front plane or the engine location is unknown.

Unknown

Codes	Models	Includes	Model Years	Body Types
999	Unknown (GRUMMAN/GRUMMAN-OLSON)	--	1950-2004, 9999	79, 99

Make: Honda (37) (HOND)

([Acura: See "54"](#))

Automobiles

Codes	Models	Includes	Model Years	Body Types
031	Civic/CRX, del Sol	1300, 1500, CVCC, DX, EX, VX, CX, FE, CRX, CRX Si, S, Si, HF, LX, 4WD Wagon, GX (NGV), HX, VTEC, VP, Si, Civic, Hybrid, Special Edition, EX-L, DX-VP, LX-S, Natural Gas, Sport, Sport Touring, EX-T, LX-P, Touring, Type R	1973-2018, 9999	02-09

Codes	Models	Includes	Model Years	Body Types
032	Accord	LX (V-6, ULEV), LXI, DX, CVCC, SE-I, LX-I, V-6, SJE, SME, SMH, SMK, EX (Wagon, ULEV, V-6), SE (ULEV), Special Edition, Hybrid (Base, EX-L, Touring), Value Package, LX-S, LX-P, EX-L, Crosstour (EX, EX-L, EX(V6), EX-L (V6), Premium, Plug-In Hybrid, Sport, Hybrid (EX-L, Touring), Touring, Sport Special Edition, EX-T	1976-2018, 9999	02-09
033	Prelude	S, Si, VTEC, SNF, SH, SE	1979-2001, 9999	02
034	600	Coupe, Sedan	1968-72, 9999	02
035	S2000	Roadster, CR	2000-09, 9999	01
036	EV Plus*	*Electric vehicle (EV+)	1997-2000, 9999	03
037	Insight	*(Gasoline-Electric), MT/CVT, LX, EX	2000-06, 2010-14, 9999	03, 05, 09
038	FCX/Clarity	Hydrogen Vehicle, Clarity, Electric, Fuel Cell	2004-14, 2017-18, 9999	03, 05, 09
039	Fit	Base, DX, LX, Sport, EV, EX, EX-L	2006-18, 9999	05
041	CR-Z	EX, Hybrid, Sport, LX, EX-L	2010-16, 9999	03
398	Other (automobile)	--	1968-2018, 9999	01-09
399	Unknown (automobile)	--	1968-2018, 9999	01-09

Light Trucks

Codes	Models	Includes	Model Years	Body Types
401	Passport	LX, EX, DX, EX-L	1994-2002, 9999	14
402	CR-V	LX, EX, Special Edition (SE), SC, EX-L, Touring	1997-2018, 9999	14
403	Element	DX, EX, EX-P, LX, SC, Dog Friendly	2003-11, 9999	14

Codes	Models	Includes	Model Years	Body Types
404	HR-V	EX, EX-L, LX	2016-18, 9999	14
421	Pilot	EX, EX-L, LX, SE, Value Package, Touring, Elite	2003-18, 9999	15
441	Odyssey	LX, EX, EX-L (Res, NAVI), Touring, Touring Elite, SE, Special Edition	1995-2018, 9999	20
471	Ridgeline	RT, RTL, RTL-T, RTL-E, RTS, RTX, Sport, Black Edition	2006-14, 2017-18, 9999	34
499	Unknown (light truck)	--	1994-2018, 9999	14, 15, 19, 20, 34, 49

Motorcycles

Codes	Models	Includes	Model Years	Body Types
701	0-50 cc	--	1978-2018, 9999	80, 81, 83, 84, 88, 89
702	51-124 cc	--	1965-2018, 9999	80, 81, 83, 84, 88, 89
703	125-349 cc	--	1965-2018, 9999	80, 83, 84, 88, 89
704	350-449 cc	--	1965-2018, 9999	80, 83, 84, 88, 89
705	450-749 cc	--	1970-2018, 9999	80, 83, 84, 88, 89
706	750 cc or greater	--	1970-2018, 9999	80, 82, 83, 84, 87, 88, 89
709	Unknown cc	--	1965-2018, 9999	80, 81, 83, 84, 88, 89

All Terrain Vehicles

Codes	Models	Includes	Model Years	Body Types
732	51-124cc	--	1972-2018, 9999	90, 96
733	125-349cc	--	1972-2018, 9999	90, 96
734	350cc or greater	--	1996-2018, 9999	90, 96
739	Unknown cc	--	1972-2018, 9999	90, 96

Other and Unknown Vehicle

Codes	Models	Includes	Model Years	Body Types
998	Other (vehicle)	Go Carts	1968-2018, 9999	95, 97*
999	Unknown (HONDA)	--	1965-2018, 9999	49, 99

Make: Hyundai (55) (HYUN)**Automobiles**

Codes	Models	Includes	Model Years	Body Types
031	Pony	Pony Excel (Foreign)	1979-88, 9999	02, 03, 09
032	Excel	GL, GLS, GS	1984-94, 9999	03-05, 07, 09
033	Sonata	GL, GLS, LX, SE, Limited, Hybrid (SE, Limited), 2.0T (Sport, Limited), Sport, Eco, Plug-in	1989-2018, 9999	04
034	Scoupe	LS, Turbo	1991-95, 9999	02
035	Elantra	GLS, GL, GT, Limited, SE, Touring (GLS, SE), GS, Sport, Value Edition, ECO	1992-2018, 9999	02, 04-06, 08, 09
036	Accent	L, GL, GS, Gsi, GT, GLS, SE, Blue, Sport, Limited, Value Edition, SEL	1995-2018, 9999	03-05, 07, 09
037	Tiburon	FX, GT, GS, SE, Limited	1997-2008, 9999	02, 03, 09
038	XG300(2001)/ XG350 (2002 on)	L	2001-05, 9999	04
039	Azera (For 2018 on, code as vehicle model 398)	SE, Limited, GLS	2006-17, 9999	04
040	Equus	Signature, Ultimate	2011-16, 9999	04
041	Genesis (For 2017 on, see models 043 and 044)	3.8, 4.6, 2.0T, R-Spec, Grand Touring, Premium, Track, 5.0 R-Spec, Ultimate	2009-16, 9999	02, 04, 08, 09
042	Veloster	Base, Turbo, Re-Mix, R-Spec, RE-FLEX Edition, Rally Edition	2012-17, 9999	03, 09

Codes	Models	Includes	Model Years	Body Types
043	Genesis (G80)	Standard, Premium, Sport, Ultimate (RWD/AWD)	2017-18, 9999	04
044	Genesis (G90)	Premium, Ultimate (RWD/AWD)	2017-18, 9999	04
045	Ioniq	Electric, Hybrid, Plug-In Hybrid	2017-18, 9999	05
398	Other (automobile)	Azera (2018 on)	1984-2018, 9999	02-09
399	Unknown (automobile)	--	1984-2018, 9999	02-09

Light Trucks

Codes	Models	Includes	Model Years	Body Types
401	Santa Fe	GL, GLS, LX, Limited (Base, Ultimate), SE (Base, Ultimate), Sport (Base, 2.0T Ultimate), 2.0T	2001-18, 9999	14
402	Tucson	GL, GLS, LX, Limited, SE, Fuel Cell, ECO, Sport	2005-18, 9999	14
403	Veracruz (2007 only)	GLS, Limited, SE	2007	14
404	Kona	--	2018	14
421	Veracruz (2008 on; see 403 for 2007 only)	GLS, Limited, SE	2008-12, 9999	15
441	Entourage	GLS, Limited, SE	2007-09, 9999	20
499	Unknown (light truck)	--	2001-18, 9999	14, 15, 19, 20

Unknown

Codes	Models	Includes	Model Years	Body Types
999	Unknown (HYUNDAI)	--	1979-2018, 9999	49, 99

Make: Imperial (08) (CHRY)

Automobiles

Codes	Models	Includes	Model Years	Body Types
010	Imperial	LeBaron, Mark Cross, Crown Imperial	1954-75, 9999	01, 02, 04, 08, 09
398	Other (automobile)	--	1965-75, 9999	01-09

Codes	Models	Includes	Model Years	Body Types
399	Unknown (automobile)	--	1965-75, 9999	01-09

Make: Infiniti (58) (INFI)

Automobiles

Codes	Models	Includes	Model Years	Body Types
031	M30	--	1990-92, 9999	01, 02, 09
032	Q45	Standard Touring, Q45t, Luxury, Sport, Premium	1990-2006, 9999	04
033	G20	G20t, Touring, Standard, Luxury	1991-96; 1999-2002, 9999	04
034	J30	--	1993-97, 9999	04
035	I30	Standard, Touring, Luxury	1996-2001, 9999	04
036	I35	Touring, Luxury	2002-04, 9999	04
037	G25/G35/G37	x, 6MT, Journey, Sport, Special Edition, IPL	2003-13, 9999	01, 02, 04, 08, 09
038	M35/M37/M45/M56	Sport, x, Hybrid	2003-13, 9999	04
039	FX35/FX37/FX45/FX50	--	2003-13, 9999	06
040	EX35	Journey	2008-13, 9999	06
041	Q50	Base (3.7 Premium/AWD/ Hybrid) S (3.7 Premium/AWD/Hybrid), Eau Rogue, 2.0t (AWD, Premium, Sport, Pure, Luxe), 3.0t (Premium, Sport, Luxe, AWD), Red Sport 400, Hybrid (Base, Premium, Luxe)	2014-18, 9999	04
042	Q60	Journey, AWD, 6MT, IPL (Base and 6MT), S, Neiman Marcus, 2.0t (Base, AWD, Premium, Pure, Luxe), 3.0t (Premium, AWD, Luxe, Sport), Sport (Base, AWD), Red Sport 400 (Base, AWD)	2014-18, 9999	01, 02, 09

Codes	Models	Includes	Model Years	Body Types
	Q70	Hybrid, 3.7 (Base, Luxe, AWD), 5.6 (Base, Luxe, AWD) L 3.7 (Base, AWD), 5.6 (Base, Luxe, AWD)	2014-18, 9999	04
044	QX50	Base, AWD, Journey	2014-18, 9999	06
045	Q40	--	2015-16, 9999	04
047	QX30	Luxury, Premium, Sport	2017-18, 9999	05
398	Other (automobile)	--	1990-2018, 9999	01, 02, 04, 06, 08, 09
399	Unknown (automobile)	--	1990-2018, 9999	01, 02, 04, 06, 08, 09

Light Trucks

Codes	Models	Includes	Model Years	Body Types
401	QX4	Luxury	1997-2003, 9999	14
402	JX35	Luxury, AWD	2013	14
403	QX60	3.5, AWD, Hybrid	2014-18, 9999	14
404	QX70	3.7, 5.0, AWD	2014-17, 9999	14
421	QX56	--	2004-13, 9999	15
422	QX80	Base, AWD, 4WD, Limited	2014-18, 9999	15
499	Unknown (light truck)	--	1997-2018, 9999	14, 15, 19

Unknown

Codes	Models	Includes	Model Years	Body Types
999	Unknown (INFINITI)	--	1990-2018, 9999	49, 99

Make: Isuzu (38) (ISU)

Automobiles

Codes	Models	Includes	Model Years	Body Types
031	I-Mark	S, RS, Turbo, DOHC	1981-90, 9999	02-04, 08, 09
032	Impulse	Turbo, RS	1983-92, 9999	02, 03, 09
033	Stylus	--	1991-94, 9999	04
398	Other (automobile)	--	1981-94, 9999	02-04, 08, 09
399	Unknown (automobile)	--	1981-94, 9999	02-04, 08, 09

Light Trucks

Codes	Models	Includes	Model Years	Body Types
401	Trooper/Trooper II	Deluxe, LS, S, LTD	1984-2002, 9999	14
402	Rodeo/ Rodeo Sport	S, LS, LSE	1991-2004, 9999	14
403	Amigo	--	1989-94; 1998-2000, 9999	14
404	VehiCROSS	VXO	1999-2001, 9999	14
405	Axiom	XS	2002-04, 9999	14
421	Ascender	LS, S, Limited, Luxury	2003-08, 9999	15
441	Oasis	S, LS	1996-99, 9999	20
471	P'up (pickup)	4 X 4	1976-95, 9999	34, 39
472	Hombre	S, XS, XS Space Cab	1996-2000, 9999	34, 39, 40, 42
473	i-280/i-290	S, LS, Luxury	2006-2008, 9999	34
474	i-350/i-370	LS, Limited, S	2006-2008, 9999	34
498	Other (light truck)	--	1981-2008, 9999	14, 15, 20, 34, 39, 40, 42
499	Unknown (light truck)	--	1981-2008, 9999	14, 15, 19, 20, 34, 39, 40, 42, 48, 49

Medium/Heavy Trucks

Codes	Models	Includes	Model Years	Body Types
881	Medium/Heavy – CBE	--	1981-2004, 9999	60-64, 66, 71, 72, 78
882	Medium/Heavy – COE low entry	NOR, NPR, NQR, N Series	1981-2018, 9999	60-64, 66, 71, 72, 78
883	Medium/Heavy – COE, high entry	FRR, FRRI, FSR, FTR, FVR, F Series	1981-2018, 9999	60-64, 66, 71, 72, 78
884	Medium/Heavy – Unknown engine location	--	1981-2018, 9999	60-64, 66, 71, 72, 78
890	Medium/Heavy – COE entry position unknown	--	1981-2018, 9999	60-64, 66, 71, 72, 78
898	Other (medium/heavy truck)	--	1981-2018, 9999	60-64, 66, 71, 72, 78, 97

Buses

Codes	Models	Includes	Model Years	Body Types
981	Bus**: Conventional (Engine out front)	--	1981-2018, 9999	50-52, 58, 59
982	Bus: Front engine, Flat front	--	1981-2018, 9999	50-52, 58, 59
983	Bus: Rear engine Flat front	--	1981-2018, 9999	50-52, 58, 59
988	Other (bus)	--	1981-2018, 9999	50-52, 58, 59
989	Unknown (bus)	--	1981-2018, 9999	50-52, 58, 59

**Use code "989" (bus) if the front plane or the engine location is unknown.

Unknown

Codes	Models	Includes	Model Years	Body Types
999	Unknown (ISUZU)	--	1981-2018, 9999	49, 79, 99

Make: Jaguar (39) (JAGU)**Automobiles**

Codes	Models	Includes	Model Years	Body Types
031	XJ-S, XK8 Coupe	S, SC, GT, H.E.	1976-2008, 9999	01, 02, 09
032	XJ/ XJL/ XJ6/ 12/ XJR/ XJ8/ XJ8L Sedan/ Coupe	Mk II, Mk X, XJ, 3.85, 3.8, 340/420 Sedan; XJ8(LWB, L, Vanden Plas, Sport); XJ6(L), C, L, Vanden Plas, III, GT, Super 8, Limited, Portfolio, Supersport, Supercharged, Ultimate, Standard Wheelbase, Long Wheelbase, R-Sport	1949-2018, 9999	02, 04, 08, 09
033	XK-E	V12, Roadster, 120, 140, 150, 2+2	1946-74, 9999	01-03, 09
034	S-Type	3.0, 4.0, 4.2, Base, Sport, L, R, VDP Edition	2000-08, 9999	04
035	XKR/XK	Victory Edition, Portfolio, 175 Limited Edition, Black Pack, XKR-S, Touring, GT, Final Fifty	2000-15, 9999	01-03, 09
036	X-Type	2.5, 3.0, Sport, VDP Edition	2002-08, 9999	04, 06, 09

Codes	Models	Includes	Model Years	Body Types
037	XF/XF-R	4.2 Luxury, S, Premium Luxury, Supercharged, 3.0, 2.0T, Portfolio, Sport, Prestige, R-Sport, S, Sportbrake (First Edition, S)	2008-18, 9999	04, 06, 09
038	F-Type	S, V8, Project 7, Premium, SVR, Type R, British Design Edition, R-Dynamic, 400 Sport	2014-18, 9999	01, 03, 09
039	XE	Premium, Prestige, R-Sport	2016-18, 9999	04
398	Other (automobile)	--	1949-2018, 9999	01-04, 06, 08, 09
399	Unknown (automobile)	--	1949-2018, 9999	01-04, 06, 08, 09

Light Trucks

Codes	Models	Includes	Model Years	Body Types
401	F-Pace	20d/35t (Premium, Prestige, First Edition, Sport, R-Sport)	2017-18, 9999	14
402	E-Pace	Base, S, SE, R-Dynamic, First Edition	2018	14

Unknown

Codes	Models	Includes	Model Years	Body Types
999	Unknown (JAGUAR)	--	1946-2018, 9999	49, 99

Make: Jeep* (Includes Willys/Kaiser Jeep) (02) (AMER)****Automobiles**

Codes	Models	Includes	Model Years	Body Types
001	Compass	Base, Sport, Limited, Latitude, Altitude, High Altitude, SE, 75th Anniversary Edition	2007-18, 9999	06

Light Trucks

Codes	Models	Includes	Model Years	Body Types
401	CJ-2/CJ-3/CJ-4	Military	1940-66, 9999	14

Codes	Models	Includes	Model Years	Body Types
402	CJ-5/CJ-6/CJ-7/CJ-8	Scrambler, Renegade, Golden Eagle, Laredo, Wrangler,	1967-93, 9999	14
403	YJ series/Wrangler	SE, Sport (Base, S), Sahara, X, Rubicon (Base, Hard Rock), Unlimited (Altitude, Dragon, Freedom, Polar, Rubicon X. Willys Wheeler, Sport, S, Sahara), Islander, Call of Duty: Black Ops Edition, Moab, Altitude, Freedom, Rio Grande, 60th/65th Anniversary Edition, Apex, Columbia, Golden Eagle, Rocky Mountain, Willys, Willys Wheeler (Base, W), Black Bear, 75th Anniversary Edition, Winter, Rubicon Recon	1986-95; 1997-2018, 9999	14
404	Cherokee (1984-on) (For Grand Cherokee for 2014 on use 02-422.)	Limited, Laredo, Pioneer, Sport, Grand Cherokee, TSi, Briarwood, Country, RHD, SE, Classic, Overland, Special Edition, SRT8, Summit, Laredo X, Overland Summit, Altitude, Trail Hawk, Sport, Latitude (Base, Plus), Limited, 75th Anniversary, Sport Altitude, High Altitude	1984-2018, 9999	14
405	Liberty	Sport, Limited Edition, Renegade, Columbia Edition, Rocky Mountain Edition, CRD, Special Edition, Latitude, Jet	2002-13, 9999	14
406	Commander	Base, Limited, Overland, Sport, Rocky Mountain	2006-10, 9999	14
407	Patriot	Sport (Base, SE), Limited, Latitude, X, Altitude, High Altitude, Freedom Edition, 75th Anniversary Edition	2007-17, 9999	14

Codes	Models	Includes	Model Years	Body Types
408	Renegade	Trail Hawk, Latitude, Sport, Altitude, Limited, Desert Hawk, 75th Anniversary Edition	2015-18, 9999	14
421	Cherokee (through 1983)	Wide Track, Chief, Commando, Jeepster	1969-83, 9999	15
422	Grand Cherokee (For 2014 on. Use model 404 for model years prior to 2013.)	Laredo (Base/E), Limited, Overland, Summit, SRT (Laredo Base, E 75th Anniversary Edition Base, E, Altitude, Limited, Overland, Summit), Trailhawk, 75th Anniversary Edition (Base, Limited), Altitude	2014-18, 9999	15
431	Grand Wagoneer	Custom, Brougham Limited, Wagoneer	1971-91; 1993, 9999	15
481	Pickup	J-10, J-20, Honcho	1940-93, 9999	34, 39, 40, 42
482	Comanche	Chief	1986-92, 9999	34, 39, 40, 42
498	Other (light truck)	--	1940-2018, 9999	14, 15, 19, 34, 39, 40, 41, 42, 45, 48, 49
499	Unknown (light truck)	--	1940-2018, 9999	14, 15, 19, 34, 39, 40, 41, 42, 45, 48, 49

Unknown

Codes	Models	Includes	Model Years	Body Types
999	Unknown (JEEP)	--	1940-2018, 9999	49

*Note that Jeep DJ-series are coded under [Make 03, MODEL 466](#)

**Willys Jeep can be coded 401 or 999.

Make: KIA (63) (KIA)**Automobiles**

Codes	Models	Includes	Model Years	Body Types
031	Sephia	RS, LS, GS	1994-01, 9999	04
032	Rio/Rio5	Cinco (Wagon), LX, SX, EX, S	2001-18, 9999	04-06, 09
033	Spectra/Spectra5	GS, GSX, GX, LS, LX, EX, SX	2000-09, 9999	04, 05, 09

Codes	Models	Includes	Model Years	Body Types
034	Optima	LX, SE, V6, EX, SX, SX Turbo, Hybrid, Limited, SXL, Plug In, S	2001-18, 9999	04
035	Amanti	--	2004-10, 9999	04
036	Rondo	EX, LX	2007-10, 9999	06
037	Soul	Base, sport, +, !, White Tiger, EV, Tarmac	2009-18, 9999	06
038	Forte	2.0 (EX, LX, SX) 2.4 (SX), Koup (EX, LX, SX) 5 (EX, LX, SX), S	2010-18, 9999	02, 04, 05, 08, 09
039	Cadenza	Premium, Limited, Technology	2012-18, 9999	04
040	K900	V6 (Premium, Luxury), V8 (Luxury)	2014-18, 9999	04
041	Stinger	--	2018	05
398	Other (automobile)	--	1994-2018, 9999	02, 04-06, 08, 09
399	Unknown (automobile)	--	1994-2018, 9999	02, 04-06, 08, 09

Light Trucks

Codes	Models	Includes	Model Years	Body Types
401	Sportage	EX, LX, 4WD, Limited, SX, Base, Turbo	1995-2003, 2005-18, 9999	14
402	Sorento	EX, EX-V6, L, LX, LX-V6, SX, SX-V6, Limited, Limited-V6, SXL	2003-18, 9999	14
403	Niro	FE, EX, LX, Touring (Base, Launch Edition, Graphite Edition), Plug-In	2017-18, 9999	14
421	Borrego	EX, LX, LTD	2008-10, 9999	15
441	Sedona	EX, L, LX, L, SX, Limited, SXL	2002-12, 2014-18, 9999	20
498	Other (light truck)	--	1995-2018 9999	14, 15, 19, 20
499	Unknown (light truck)	--	1995-2018, 9999	14, 15, 19, 20

Unknown

Codes	Models	Includes	Model Years	Body Types
999	Unknown (KIA)	--	1994-2018, 9999	49

Make: Lancia (40) (LNCI)**Automobiles**

Codes	Models	Includes	Model Years	Body Types
031	Beta Sedan – HPE	Zagato	1976-82, 9999	02, 04, 06, 08, 09
032	Zagato	--	1976-82, 9999	01, 02, 09
033	Scorpion	(Mote Carlo- Europe Only)	1977	02
398	Other (automobile)	Stratos, Fulvia, Flavia, Appia, Aurelia, Aprilia	1946-82, 9999	01-09
399	Unknown (automobile)	--	1946-82, 9999	01, 02, 04, 06, 08, 09

*Note: Lancia did not import in 1980. 1982 - last year imported

Make: Land Rover (62) (LNDR)**Light Trucks**

Codes	Models	Includes	Model Years	Body Types
401	Discovery (For 2017 on, see model 425)	SD, SE, SE7, LE, LSE, Series II, Kalahari Edition, S, HSE, G-4 Edition	1994-2004, 9999	14
402	Defender	90	1993-95; 1997, 9999	14
403	Freelander (2004 on; see 422 for 2002-03.)	HSE, SE, S, SE3, G4 Edition	2004-05, 9999	14
404	Range Rover Evoque	Pure (Premium, Plus), Prestige, Dynamic, SE (Base, Premium), HSE (Base, Dynamic), Autobiography, Landmark Edition, Convertible	2012-18, 9999	14
405	Discovery Sport	HSE (Base, Luxury), SE	2015-18, 9999	14

Codes	Models	Includes	Model Years	Body Types
421	Range Rover	County, County SE, Great Divide, Hunter, LSE, County LWB, 4.0SE, 4.6HSE, S, SE, HSE, Westminster, Limited Edition, Supercharged, Sport (HST, SE, SVR, HSE (Base, Dynamic), Supercharged, Autobiography), Supercharged, HSE-LUX, Autobiography (Base, Black), Standard Wheelbase (Base, HSE, Supercharged, Autobiography, SV Autobiography DYNAMIC), Long Wheelbase (Supercharged, Autobiography, SV Autobiography), PHEV	1987-2018, 9999	15
422	Freelander (2002-03 only; see 403 for 2004 on)	HSE, SE, S, SE3	2002-03, 9999	15
423	LR3/LR4	HSE, SE, LUX, Plus, V8, Limited Edition, HSE Silver Edition, Landmark Edition	2005-16, 9999	15
424	LR2	i6, TD4, HSE, LUX, Plus	2007-16, 9999	15
425	Discovery (For model years 1994-2004, see model 401)	SE, HSE, HSE Luxury, First Edition, Sport (HSE, HSE Luxury, SE)	2017-18, 9999	15
426	Velar	Base, B-Dynamic, First Edition	2018	15
498	Other (light truck)	Land Rover (1948-1990), Range Rover (before 1987)	1948-2018, 9999	14, 15, 19
499	Unknown (light truck)	--	1948-2018, 9999	14, 15, 19

Make: Lexus (59) (LEXS)**Automobiles**

Codes	Models	Includes	Model Years	Body Types
031	ES-250/300/300h/330/350	Black Diamond Edition, Premium Plus, Ultra Luxury, Hybrid	1990-2018, 9999	04
032	LS-400/430/460/L/600h/L	LS-F Sport, Hybrid, Nightfall Edition	1990-2018, 9999	04
033	SC-400/300	2-Door Coupe	1992-2000, 9999	02
034	GS-300/350/400/430/450h/460	Hybrid, F Sport, Turbo, F	1993-2018, 9999	04
035	IS-250/300/350/500/200t	SportCross, Sport, F, C, F Sport, Turbo	2001-18, 9999	01, 04, 05, 09
036	SC-430	Special Edition, Pebble Beach	2002-10, 9999	01
037	HS 250h	Premium	2010-12, 9999	04
038	CT 200h	F Sport	2011-17, 9999	05
039	LFA	Standard, Special	2012-17, 9999	01, 02, 09
040	RC	300, 350, 350h, F Sport, Turbo, F	2015-18, 9999	01, 02, 09
042	LC Series	500, 500h	2018	02
398	Other (automobile)	--	1990-2018, 9999	01, 02, 04, 05, 08, 09
399	Unknown (automobile)	--	1990-2018, 9999	01, 02, 04, 05, 08, 09

Light Trucks

Codes	Models	Includes	Model Years	Body Types
401	RX300/350	2WD, 4WD	1999-03, 9999	14
402	GX470	Sport, Premium	2003-09, 9999	14
403	RX330/350/400h/450h	Hybrid, Thundercloud, Mark Levinson Package, F Sport	2004-18, 9999	14
404	GX460	Sport, Premium, Luxury	2010-18, 9999	14
405	NX	200t, 300, 300h, F Sport, Hybrid, Turbo	2015-18, 9999	14
421	LX450/470/570	--	1996-2018, 9999	15
499	Unknown (light truck)	--	1996-2018, 9999	14, 15, 19

Unknown

Codes	Models	Includes	Model Years	Body Types
999	Unknown (LEXUS)	--	1990-2018, 9999	49

Make: Lincoln (13) (LINC)**Automobiles**

Codes	Models	Includes	Model Years	Body Types
001	Continental (through '81)/ Town Car	Continental, (through '81), Signature/Designer Series, Town Car ('81 on, body 04 only), Cartier, Executive, L, Premium, Ballistic Protection Edition, Ultimate, Designer Series, Limited	1940-2011, 9999	01, 02, 04, 08, 09, 11, 12
002	Mark	I, II, III, IV, V, VI, VII, VIII LSC, Signature/Designer Series	1956-98, 9999	01, 02, 04, 08, 09
005	Continental ('82 on)	Signature/Designer Series, Luxury	1982-2002, 9999	02, 04, 08, 09, 12
011	Versailles	--	1977-80, 9999	04
012	LS	Convenience, Premium, Sport, Luxury, Ultimate	2000-06, 9999	04
013	Zephyr/MKZ	FWD, AWD, Hybrid (Premier 400A, Select 500A, Reserve 600A), 2.0L, 3.7L, EcoBoost, Premiere (100A), Select (200A), Reserve (300A), Black Label (Vineyard, Chalet, Thoroughbred), 3.0L	2006-18, 9999	04
014	MKX	FWD, AWD, Black Label (Modern Heritage, Indulgence, Thoroughbred, The Muse), Premiere, Select, Reserve	2007-18, 9999	06
015	MKS	EcoBoost, 3.7L FWD/AWD	2008-16, 9999	04
016	MKT	EcoBoost, TownCar, 3.5L, 3.7L, Premiere, Reserve	2010-18, 9999	06, 09, 11, 12

Codes	Models	Includes	Model Years	Body Types
017	Continental	Black Label Edition (Rhapsody, Chalet, Thoroughbred), Select, Premiere, Reserve	2017-18, 9999	04
398	Other (automobile)	Cosmopolitan, Capri, Premiere	1940-2018, 9999	01-09, 10-12
399	Unknown (automobile)	--	1940-2018, 9999	01-09, 10-12

Light Trucks

Codes	Models	Includes	Model Years	Body Types
401	Aviator	Premium, Luxury, Ultimate, Kitty Hawk Edition	2003-06, 9999	14
402	MKC	FWD, AWD, Black Label (Modern Heritage, Center Stage, Indulgence), Premiere, Select, Reserve	2015-18, 9999	14
421	Navigator	2WD, 4WD, Premium, Luxury, Ultimate, L, 5.4L, Premiere, Select, Reserve (Base, L), Black Label	1997-2018, 9999	15
481	Blackwood	--	2002	34
482	Mark LT	2WD, 4WD	2006-08, 9999	34
498	Other (light truck)	--	1997-2018, 9999	14, 15, 19, 34
499	Unknown (light truck)	--	1997-2018, 9999	14, 15, 19, 49

Unknown

Codes	Models	Includes	Model Years	Body Types
999	Unknown (LINCOLN)	--	1990-2018, 9999	49

Make: Mazda (41) (MAZD)**Automobiles**

Codes	Models	Includes	Model Years	Body Types
031	RX2	--	1970-74, 9999	02, 04, 06, 08, 09
032	RX3	--	1970-78, 9999	02, 04, 06, 08, 09
033	RX4	--	1974-78, 9999	02, 04, 06, 08, 09
034	RX7	S, GS, GSL, SE	1979-96, 9999	01-03, 09
035	323/GLC/Protégé/Protégé 5	DX, Protégé (1990-on), DX, LX, ES, Mazdaspeed	1977-2003, 9999	03-07, 09
036	Cosmo	--	1976-78, 9999	02
037	626	GT, GS, GSL, SE, DX, LX, ES	1979-2002, 9999	02, 04, 05, 08, 09
038	808	--	1972-77, 9999	02, 04, 06, 08, 09
039	Mizer	--	1976	02, 04, 06, 08, 09
040	R-100	--	1950-72, 9999	02
041	616/618	--	1968-72, 9999	02, 04, 08, 09
042	1800	--	1968-72, 9999	04, 06, 09
043	929	--	1988-95, 9999	04
044	MX-6	Turbo, LS, M-Edition	1988-97, 9999	02
045	Miata/MX-5	Miata (LS), SE, SV, Mazdaspeed, Sport, Touring, Grand Touring, Club, Special, Special Edition, PRHT, RF (Club, Grand Touring)	1990-97; 1999-2018, 9999	01
046	MX-3	GS	1992-95, 9999	02
047	Millenia	L, S, P, Millennium Edition	1995-02, 9999	04
048	MP3	Limited Edition	2001	04
049	RX-8	Sport AT, Shinka, Touring, Grand Touring, R3, Plus	2003-14, 9999	04
050	Mazda6	Grand Touring, Sport, Mazdaspeed6, Grand Sport, SV, Plus, Touring	2003-18, 9999	04-06, 09

Codes	Models	Includes	Model Years	Body Types
051	Mazda3	i, (Sport, Touring, Grand Touring, SV) s (Touring, Grand Touring), SP23, Value, Mazdaspeed3, Touring 2.5	2004-18, 9999	04-06, 09
052	Mazda5	Sport, Touring, Grand Touring	2006-10, 2012-15, 9999	06
053	CX-7	i, s, Sport, Touring, Grand Touring, SV	2007-12, 9999	05
054	CX-9 (2007-12 only. For 2013 on see model 421.)	Sport, Touring, Grand Touring	2007-12, 9999	06
055	Mazda2	Sport, Touring	2011-15, 9999	05
056	CX-3	Sport, Touring, Grand Touring	2016-18, 9999	05
398	Other (automobile)	1200, 616	1950-2018, 9999	02, 03, 09
399	Unknown (automobile)	--	1950-2018, 9999	01-09

Light Trucks

Codes	Models	Includes	Model Years	Body Types
401	Navajo	--	1991-94, 9999	14
402	Tribute	DX, DX-V6, LX-V6, ES-V6, ES, LX, i, s, Hybrid, Sport, Grand Touring, Touring	2001 to 12, 9999	14
403	CX-5	Sport, Touring, Grand Touring, Diesel	2013-18, 9999	14
421	CX-9 (2013 on. See model 054 for 2007-12 model years.)	Sport, Touring, Grand Touring, Signature	2013-18, 9999	15
441	MPV	LX, ES, DX, All Sport, LX-SV	1989-98; 2000-06, 9999	20
471	Pickup/ B-Series Pickup	B2000, B2200, B2300, SE-5, LX, SE (2WD, 4WD), SX, DS, Cab Plus, B2500/B2600/ B3000/B4000, Dual Sport Cab	1972-2009, 9999	34, 39, 40, 42, 48
498	Other (light truck)	--	1965-2018, 9999	14, 15, 19, 20, 34, 39, 40, 42

Codes	Models	Includes	Model Years	Body Types
499	Unknown (light truck)	--	1965-2018, 9999	14, 15, 19, 20, 34, 39, 40, 42, 48, 49

Unknown

Codes	Models	Includes	Model Years	Body Types
999	Unknown (MAZDA)	--	1950-2018, 9999	49

Make: Mercedes-Benz (42) (MERZ)**Automobiles**

Codes	Models	Includes	Model Years	Body Types
031	200/220/230/240/ 250/260/280/300/ 320/420	Sedan and 5-passenger "C" only; SE, CD, D, SD, TD, TE, CE, E; DOES NOT include 280 SE (1975 on) or 300 SD-see code 037; C-Class up to 1993, E-Class up to 1997	1950-97, 9999	01, 02, 04, 06, 08, 09, 12
032	230/280 SL	2-seater only	1964-71, 9999	01, 02, 09
033	300/350/380/450/500/ 560 SL	2-seater only; 300/500 SL (1990 on)	1972-94, 9999	01, 02, 09
034	350/380/420/450/560 SLC	--	1973-94, 9999	02
035	280/300 SEL	--	1967-72, 9999	02, 04, 08, 09
036	300/380/420/450/500/ 560/SEL & 500/560, 600 SEC & 300/350 SDL	--	1973-94, 9999	02, 04, 06, 08, 09
037	300/380/450 SE	280 S, 280 SE (1975 on), 300 SD Sedan/350 SD	1968-94, 9999	01, 02, 04, 08, 09
038	600, 6.9 Sedan	Pullman	1978-87, 9999	04, 12
039	190	D, E, 2.3, 2.5	1984-93, 9999	04, 06, 09
040	300	CE Cabriolet	1993-94, 9999	01
041	400/500E	--	1992-94, 9999	01, 02, 04, 06, 08, 09
042	C Class (94 on)	C220/C230 (Kompressor)/C240/250/280/300/320/350/400 (W)/C32/36/43/55/63/63S AMG, Sport, Luxury, 450 (AMG), 350e Plug-In Hybrid	1994-2018, 9999	02, 04, 06, 08, 09

Codes	Models	Includes	Model Years	Body Types
043	S Class (95 on)	S320/350/400(V)/420/430/450/500/550/560 (V/e/ Maybach)/600(V), 55/63/65 (AMG), Hybrid, 4-M, S600 (Maybach)	1995-2018, 9999	01, 02, 04, 08, 09
044	SL Class (95 on)	SL320/400/450/500/550(R)/600(R), Silver Arrow Edition, SL55/63/65 AMG	1995-2018, 9999	01, 02, 09
045	SLK	SLK230/250/280/300/320/350 (Sport), Kompressor, SLK 32/55 (AMG), Special Edition	1998-2016, 9999	01
046	CL Class	CL500/550/600, CL55/63/65 AMG	1998-2014, 9999	02
047	CLK	CLK 320/350/430/500/550, Cabriolet, CLK 55/63/65 AMG	1998-2009, 9999	01, 02, 09
048	E Class ('97 on)	250/300/TD, 320/350 (4-M, A, C, S, W)/400/420/430/500/550 (4-M, A, C, W), 43/55/63/63S AMG, 320CDI, Hybrid	1996-2018, 9999	01, 02, 04, 06, 08, 09
049	SLR	McLaren, 722 Edition	2005-10, 9999	01, 02, 09
050	R Class	R320/350/500, R63 AMG	2006-12, 9999	06
051	CLS Class	CLS400/500/550, CLS55/63/ 63S AMG	2006-18, 9999	04
052	SLS Class	AMG (C/GT) Final Edition	2011-15, 9999	01, 02, 09
053	B Class	250e	2014-17, 9999	05
054	CLA Class	250, 45 (AMG)	2014-18, 9999	04
055	GLA Class	250, 45 (AMG)	2015-18, 9999	05
056	AMG GT S	450	2016-18, 9999	02
057	SLC Series	300, 43 (AMG)	2017-18, 9999	01
398	Other (automobile)	--	1946-2018, 9999	01-09, 10-12
399	Unknown (automobile)	--	1946-2018, 9999	01-09, 10-12

Light Trucks

Codes	Models	Includes	Model Years	Body Types
401	M/ML Class	ML250/320/350/400/430/450/500/550, 55/63 AMG Special Edition, Hybrid, 4-M	1998-2015, 9999	14
402	G Class	G500/550, G55/63/65 (AMG)	2002-18, 9999	14
403	GLK Class	220/250/280/320/350	2010-15, 9999	14
404	GLE Class	300d, 350/550e, 43/63/63S AMG, Coupe (450, AMG – 43/63S)	2016-2018, 9999	14
405	GLC Class	300, 43 (AMG), Coupe (300, AMG 43)	2016-2018, 9999	14
421	GL Class	GL320/350/450/550, GL63 (AMG)	2007-16, 9999	15
422	GLS Class	450, 550, 63 (AMG)	2017-18, 9999	15
461	Sprinter	(for 2004-2010 see “Freightliner“ and “Dodge“)	2002-03, 2010-18, 9999	21, 22, 28, 29
462	Metris	Cargo, Passenger	2016-2018, 9999	20
470	Van derivative	Kurbstar	1982-2018, 9999	28, 29
498	Other (light truck)	--	1946-2018, 9999	14-16, 19, 21, 22, 40, 41, 42, 45, 48
499	Unknown (light truck)	--	1946-2018, 9999	14-16, 19, 21, 22, 28, 29, 40, 41, 42, 45, 48, 49

Medium/Heavy Trucks

Codes	Models	Includes	Model Years	Body Types
870	Medium/Heavy Van-Based Vehicle	Sprinter	2002-03, 2010-18, 9999	55, 61-64
881	Medium/Heavy – CBE	--	1965-91, 9999	60-64, 78
882	Medium/Heavy – COE low entry	--	1965-91, 9999	60-64, 78
883	Medium/Heavy – COE high entry	--	1965-91, 9999	60-64, 78

Codes	Models	Includes	Model Years	Body Types
884	Medium/Heavy – Unknown engine location	--	1965-91, 9999	60-64, 78
890	Medium/Heavy – COE entry position unknown	--	1965-91, 9999	60-64, 78
898	Other (medium/heavy truck)	--	1965-91, 9999	60-64, 78

Buses

Codes	Models	Includes	Model Years	Body Types
981	Bus**: Conventional (Engine out front)	--	1965-91, 9999	50-52, 58, 59
988	Other (bus)	--	1965-91, 9999	50-52, 58, 59
989	Unknown (bus)	--	1965-91, 9999	92-93, 97

**Use code “989” (bus) if the front plane or the engine location is unknown.

Other and Unknown Vehicle

Codes	Models	Includes	Model Years	Body Types
998	Other (vehicle)	--	1965-2018, 9999	49, 79, 99
999	Unknown (MERCEDES BENZ)	--	1965-2018, 9999	49, 79, 99

Make: Mercury (14) (MERC)

([Merkur: See “56”](#))

Automobiles

Codes	Models	Includes	Model Years	Body Types
002	Cyclone	GT, CJ, Spoiler	1964-70, 9999	01, 02, 09
003	Capri-domestic (for 1967 see 008)	RS, Turbo, GS, Black Magic, 5.0	1979-86; 1989-94, 9999	01, 03, 09
004	Cougar (For 1967-1997. See 038 for 1999-2002) /XR7 (1967-1997)	Villager, Brougham, RS, LS, GS, Eliminator, XR-7	1967-97, 9999	01, 02, 04, 06, 08, 09

Codes	Models	Includes	Model Years	Body Types
006	Marquis/Monterey (car version; for van version 2004 on see code 444) /Grand Marquis	Marauder (prior to 2003, 2003 on see code 039), Montclair, X-100, 5-55, Parklane, S-55, Custom, Brougham Grand Marquis (GS, LS), Medalist, Turnpike, Colony Park, GS, LS, LSE, Limited Edition, Palm Beach Edition	1952-2011, 9999	01, 02, 04, 06, 08, 09
008	Comet	Caliente, Capri (1967), GT, Voyager, 202, 404, Villager Wagon	1960-79, 9999	01, 02, 04, 06, 08, 09
009	Bobcat	Runabout, Villager Wagon	1975-80, 9999	03, 06, 09
010	Montego (prior to 1976; for 2005 on see code 020)	GT, MX, Villager, Brougham, Comet (1968-1970)	1968-76, 9999	01, 02, 04, 06, 08, 09
011	Monarch	Ghia	1975-80, 9999	02, 04, 08, 09
012	Zephyr	GS, Z-7	1978-83, 9999	02, 04, 06, 08, 09
013	Lynx/LN7	L, LS, GS, RS, XR-3	1981-87, 9999	03, 05-07, 09
015	Topaz	L, LS, GS, 4x4, XR5, LTS, Sport	1984-94, 9999	02, 04, 08, 09
017	Sable	LS, GS (Premium), GS Plus, Platinum Edition, Premier, Base	1986-2005, 2008-09, 9999	04, 06, 09
020	Montego (2005 on)	Luxury, Premier	2005-07, 9999	04
021	Milan	I-4, V6 (Base/Premier), Hybrid	2006-11, 9999	04
031	Capri-foreign	Capri II, 2+2	1970-77, 9999	03
033	Pantera-foreign	deTomaso	1972-74, 9999	01-09, 10
036	Tracer	L, GL, LTS, GS, LS	1988-99, 9999	03-06, 09
037	Mystique	GS, LS	1995-2000, 9999	04
038	Cougar (1999-2002)	V-6, I-4, S, Sport, CR, XR	1999-2002, 9999	02, 03, 09
039	Marauder	M75, 300A	2003-04, 9999	04
398	Other (automobile)	--	1962-2011, 9999	01-09, 10
399	Unknown (automobile)	--	1952-2011, 9999	01-09, 10

Light Trucks

Codes	Models	Includes	Model Years	Body Types
401	Mountaineer	Convenience, Luxury, Premier (4.0/4.6L)	1996-2010, 9999	14
402	Mariner	Convenience, Luxury, Premier, Hybrid	2005-11, 9999	14
443	Villager	LS, GS, Nautica, Estate, Sport, Sport Plus, Popular	1993-2002, 9999	20
444	Monterey (van version; for car version prior to 2004 see code 006)	Convenience, Luxury, Premier	2004-07, 9999	20
498	Other (light truck)	--	1993-2011, 9999	14, 20
499	Unknown (light truck)	--	1993-2011, 9999	49

Unknown

Codes	Models	Includes	Model Years	Body Types
999	Unknown (MERCURY)	--	1950-2011, 9999	49

Make: Merkur (56) (MERK)**Automobiles**

Codes	Models	Includes	Model Years	Body Types
031	XR4Ti	Turbo	1985-89, 9999	03
032	Scorpio	Turbo	1988-90, 9999	05
398	Other (automobile)	--	1985-90, 9999	03-05, 07, 09
399	Unknown (automobile)	--	1985-90, 9999	03-05, 07, 09

Make: MG (43) (MG)**Automobiles**

Codes	Models	Includes	Model Years	Body Types
031	Midget	GAN I/II/III/4/5, MK I, MK II, MKIII	1962-80, 9999	01
032	MGB	MK I/II/IV, 600 Limited, V-8	1955-80, 9999	01, 02, 09
033	MGB	GT, MK III	1967-74, 9999	02, 03, 09
034	MGA	1500, 1600, YT, TC, TD/II, MK I/II, A	1945-62, 9999	01, 02, 09

Codes	Models	Includes	Model Years	Body Types
035	TA/TC/TD/TF	Y-Type, 430, TDC	1945-62, 9999	01, 02, 09
036	MGC	GT	1968-69, 9999	01, 02, 09
037	Magnette/Sports Sedans	ZB, ZA/YA/YB, MK III, MK IV, 1100, 1300	1945-66, 9999	02, 04, 08, 09
398	Other (automobile)	--	1945-80, 9999	01-04, 08, 09
399	Unknown (automobile)	--	1945-80, 9999	01-04, 08, 09

Make: Mitsubishi (52) (MITS)

Automobiles

Codes	Models	Includes	Model Years	Body Types
031	Starion	2+2, LE, Turbo, ESI	1982-89, 9999	03
032	Tredia	L, LS, Turbo	1982-88, 9999	04
033	Cordia	L, Turbo	1982-88, 9999	03
034	Galant	ECS, Sigma (through '88), ES, LS, DE, GTS-V6, I-4, Special Edition, Ralliart, Sport Edition, SE, FE	1985-2012, 9999	04
035	Mirage (For 1985-2002. For 2014 on use model 048.)	L, Turbo, GS, LS, DS, DE, ES	1985-2002, 9999	02-04, 08, 09
036	Precis	--	1987-94, 9999	03, 05, 07, 09
037	Eclipse	GS, DOHL, Turbo, GS-T, GSX, Spyder, RS, GT, GTS, Remix Edition, SE, Sport. Special Edition	1990-2012, 9999	01-03, 09
038	Sigma	(Prior '89 see 034)	1989-90, 9999	04
039	3000 GT	SL, VR-4, Spyder	1991-99, 9999	01-03, 09
040	Diamante	LS, ES, LE, VR-X	1992-2004, 9999	04, 06, 09
041	iMEV (For 2018 on, code as vehicle model 398)	ES, SE	2012-17, 9999	05
045	Expo Wagon	LRV, Sport	1992-95, 9999	06
046	Lancer/Lancer Sportback/Lancer Evolution	ES (2.0, 2.4), LS, O-Z, Rally, Evolution VII/VIII/IX/X, Sport, Ralliart LS, MR Edition, DE, GSR, GTS, Touring, SE, GT, SEL, FE	2002-17, 9999	04-06, 09

Codes	Models	Includes	Model Years	Body Types
047	Outlander	ES, LS, SE, XLS, Limited, GT, Sport, SE-S, GT-S, SEL, GT 3.0 S-AWC, Plug-In Hybrid	2003-18, 9999	05, 06, 09
048	Mirage (2014 on. For 1985-2002 use 52-035.)	DE, ES, SE, GT, G4 (ES, SE)	2014-18, 9999	04, 05, 09
398	Other (automobile)	500, 1000, Debonair, Galant (1969), iMEV (2018 on)	1960-2018, 9999	01-09
399	Unknown (automobile)	--	1960-2018, 9999	01-09

Light Trucks

Codes	Models	Includes	Model Years	Body Types
401	Montero/Montero Sport	Sport, LS, SR, XLS, ES, LTD, 20th Anniversary Edition, SE	1983-2006, 9999	14
402	Endeavor	LS, SE, XLS, Limited	2004-12, 9999	14
441	Minivan	LS	1987-90, 9999	20
471	Pickup	Mighty Max, SPX, 4x4	1983-96, 9999	34, 39, 40, 42, 48
472	Raider	LS, Durocross, XLS	2006-10, 9999	34
498	Other (light truck)	--	1983-2012, 9999	14, 20, 34, 39, 40, 42
499	Unknown (light truck)	--	1983-2012, 9999	14, 20, 34, 39, 40, 42, 48, 49

Medium/Heavy Trucks

Codes	Models	Includes	Model Years	Body Types
882	Medium/Heavy – COE low entry	FUSO FE/FG/FH/FK/FM	1983-2018, 9999	60-64, 66, 71, 72, 78
898	Other (medium/heavy truck)	--	1983-2018, 9999	60-64, 66, 71, 72, 78

Buses

Codes	Models	Includes	Model Years	Body Types
981	Bus**: Conventional (Engine out front)	--	1981-2004, 9999	50-52, 58, 59
982	Bus: Front engine, Flat Front	--	1981-2004, 9999	50-52, 58, 59

Codes	Models	Includes	Model Years	Body Types
983	Bus: Rear engine, Flat front	--	1981-2004, 9999	50-52, 58, 59
988	Other (bus)	--	1981-2004, 9999	50-52, 58, 59
989	Unknown (bus)	--	1981-2004, 9999	50-52, 58, 59

**Use code "989" (bus) if the front plane or the engine location is unknown

Unknown

Codes	Models	Includes	Model Years	Body Types
999	Unknown (MITSUBISHI)	--	1983-2018, 9999	49, 79, 99

Make: Nissan/Datsun (35) (NISS) - (DATS)

Automobiles

Codes	Models	Includes	Model Years	Body Types
031	F-10	--	1977-78, 9999	03, 05-07, 09
032	200SX/240SX	SE, SE-R, LE	1977-98, 9999	01-03, 09
033	210/1200/B210	110 series, Honeybee	1971-82, 9999	02-04, 06, 08, 09
034	Z-car, ZX	240/260/280Z&ZX, 300 ZX, 2+2, Turbo	1970-96, 9999	01-03, 09
035	310	SPL	1979-82, 9999	02, 03, 05, 07, 09
036	510	PL, WPL	1968-73; 1978-81, 9999	02-09
037	610	PL, HL	1973-76, 9999	02-04, 06, 08, 09
038	710	PL	1974-77, 9999	02-04, 06, 08, 09
039	810/Maxima	SE (Titanium Special), GXE, GLE, 2.5 (S/SR/SL/SV), 3.5SE/SL/SEL /S/SV/SR, Platinum Edition, Midnight Edition	1977-2018, 9999	04, 06, 09
040	Roadster	SPL311, SRL311, 1500, 1600, 2000, convertible, Fairlady	1950-70, 9999	01
041	311/411	1000, Bluebird, PL311/PL312/PL410/PL411/RL411	1959-67, 9999	04, 06, 09

Codes	Models	Includes	Model Years	Body Types
042	Stanza	XE	1982-93, 9999	03-07, 09
043	Sentra	E, XE, GXE, S, SE, SE-R (Spec V), GLE, CA, 2.5LE, 1.8, 1.8S, 2.0/S/SL/SR, Special Edition, Platinum Edition, Spec-V, FE, SV, FE+S, Nismo, SR Turbo	1982-2018, 9999	02, 04, 06, 08, 09
044	Pulsar	NX, EXA (1986 on)	1983-90, 9999	02, 03, 05, 07, 09
045	Micra	--	1987-94, 9999	01-05, 07-09
046	NX 1600/2000	T-bar coupe	1991-94, 9999	02, 03, 09
047	Altima	XE, GXE, SE, GLE, 2.5 S/SL/SR/SV, 3.5 S/SE/SL/SR/ SV, SE-R, Hybrid, SR (Base, Midnight), Platinum, Special Edition	1993-2018, 9999	02, 04, 08, 09
048	350Z/370Z	Enthusiast, Performance, Touring, Track, Base, 35th Anniversary, Grand Touring, Nismo, 40th Anniversary, Sport, Sport Tech, Nismo Tech, Touring Sport, Heritage Edition (Magnetic Black and Chicane Yellow)	2003-18, 9999	01, 02, 09
049	Murano	SE, SL, S, LE, SV, CrossCabriolet, Platinum, S Plus	2003-18, 9999	01, 06, 09
050	Versa	1.8S/SL, 1.6 S/SV/SL, Plus, Note (S, S Plus, SV, SR, SL), S Plus, SR, SV Special Edition	2007-18, 9999	04, 05, 09
051	Rogue	S, SL, SV, Krom/Special Edition, Select (S), Sport	2008-18, 9999	06
052	Cube	1.8 S/SL, Krom Edition, Indigo Edition	2009-14, 9999	06
053	GT-R	Base, Premium, Black Edition, Track Edition, Nismo, 45th Anniversary	2009-18, 9999	02
055	Leaf	S, SL, SV	2011-18, 9999	05
398	Other (automobile)	110 sedan, K110	1955-2018, 9999	01-09, 10

Codes	Models	Includes	Model Years	Body Types
399	Unknown (automobile)	--	1955-2018, 9999	01-09, 10

Light Trucks

Codes	Models	Includes	Model Years	Body Types
401	Pathfinder	MPV, 4X4, XE, LE, SE, S, Off-Road, FE+, SV, Silver Edition, Hybrid, SL (Tech, Premium), Platinum, SL	1986-2018, 9999	14
402	Xterra	XE (I-4), SE, (S/C), SE-R, Spec V, X, S, Off-Road, Pro-4X	2000-15, 9999	14
403	Juke	S, SL, SV, Nismo, Nismo RS	2011-18, 9999	14
421	Pathfinder Armada	LE, SE, SE Off-Road, Titanium, Platinum (Base/Reserve), SV, SL	2004-18, 9999	15
441	Van	XE, GXE	1987-91, 9999	20
442	Axxess	--	1989-90, 9999	20
443	Quest	XE, GXE, SE, GLE, 3.5 S/SE/SL, Special Edition, SV, LE, Platinum	1993-2002; 2004-09, 2011-17, 9999	20
444	Altra EV*	(electric vehicle*)	1998-2005, 9999	20
446	NV200/eNV200	S, SV, Taxi, Compact Cargo, Passenger (S, SL, SV), HD Cargo	2013-18, 9999	20
461	NV	1500 (S, SV), 2500 HD (S, SV), 3500 (S, SV, SL)	2011-18, 9999	21, 22, 28, 29
471	Datsun/Nissan Pickup (1955-1997)	120, 620 series, King Cab, Hardbody, XE, SE	1955-97, 9999	34, 39, 40, 42
472	Frontier (1998 on)	XE, SE, S/C (Regular Cab, King Cab, Desert Runner, Crew Cab), Open-Sky, SVE, Nismo, Pro-4X, LE, SV, SL, S, Diesel Runner	1998-2018, 9999	34, 39, 40, 42
473	Titan (from 2004-06; see 481 for 2007 on)	E, LE, SE, XE	2004-06, 9999	34

Codes	Models	Includes	Model Years	Body Types
481	Titan (from 2007 on; see 473 for 2004-06)	LE, SE, XE, PRO-4X, S, SV, SL, XD (S, SV, SL, Platinum Reserve), Platinum, Platinum Reserve	2007-18, 9999	34
498	Other (light truck)	Patrol (1960)	1955-2018, 9999	14, 15, 20, 21, 22, 34, 39
499	Unknown (light truck)	--	1955-2018, 9999	14, 15, 19, 20, 29, 34, 39, 40, 42, 48, 49

Medium/Heavy Trucks

Codes	Models	Includes	Model Years	Body Types
870	Medium/Heavy Van-Based Vehicle	NV	2011-18, 9999	55, 61-64
883	Medium/Heavy – COE high entry	--	1986-2018, 9999	60-64, 66, 71, 72, 78
898	Other (medium/heavy truck)	--	1986-2018, 9999	60-64, 66, 71, 72, 78

Unknown

Codes	Models	Includes	Model Years	Body Types
999	Unknown (NISSAN/DATSUN)	--	1950-2018, 9999	49, 79, 99

Make: Oldsmobile (21) (OLDS)**Automobiles**

Codes	Models	Includes	Model Years	Body Types
001	Cutlass (RWD-only)	Supreme, S, LS, Salon, Brougham Vista Cruiser, F85 (through 1972), Rallye 350, Hurst Olds, 442, Calais (through 1985), Classic (88)	1960-88, 9999	01, 02, 04, 06, 08, 09
002	Delta 88/LSS	Royale, Custom, Delta, Jetstar 88, Delmont 88, Starfire (Through 1966), Custom Cruiser, Jetfire, Eighty-Eight (LS, 50th Anniv. Edition)	1949-99, 9999	01-04, 06, 08, 09
003	Ninety-Eight/Regency	Luxury, Futuramic, Brougham	1949-99, 9999	01, 02, 04, 08, 09

Codes	Models	Includes	Model Years	Body Types
005	Toronado	XS, XSR, Trofeo, Brougham Custom	1966-92, 9999	02
006	Commercial Series	Ambulance/Hearse	1940-2003, 9999	09, 10-12
012	Starfire	SX, GT, ST	1975-80, 9999	01-03, 09
015	Omega	X-body type, Brougham	1973-85, 9999	02-04, 08, 09
016	Firenza	S, LS, SX, Cruiser, GT	1982-88, 9999	03-06, 07, 09
017	Ciera	Cutlass Ciera, Cutlass Cruiser, Brougham, ES (International)	1982-96, 9999	01, 02, 04, 06, 08, 09
018	Calais	GT, ES, 500	1985-91, 9999	02, 04, 08, 09
020	Cutlass (FWD)	Supreme (Excludes Ciera), GLS, GL	1988-99, 9999	01, 02, 04, 08, 09
021	Achieva/Alero	SC, SL, GX, GL (1, 2, 4), GLS	1992-2004, 9999	02, 04, 08, 09
022	Aurora	3.5L, 4.0L, Collector's Series	1995-99; 2001-03, 9999	04
023	Intrigue	GL, GX, GLS	1997-2002, 9999	02, 04, 08, 09
398	Other (automobile)	66/68/70/90, Dynamic 70	1930-2004, 9999	01-09, 10-12
399	Unknown (automobile)	--	1930-2004, 9999	01-09, 10-12

Light Trucks

Codes	Models	Includes	Model Years	Body Types
401	Bravada	2WD, 4WD, Collector's Series	1991-94; 1996-2004, 9999	14
441	Silhouette	GL, GLS, Series I, Series II, GS Premier Edition, Collector's Series	1990-2004, 9999	20
499	Unknown (light truck)	--	1932-2004, 9999	14, 20, 49

Unknown

Codes	Models	Includes	Model Years	Body Types
999	Unknown (OLDSMOBILE)	--	1932-2004, 9999	49

Make: Peugeot (44) (PEUG)**Automobiles**

Codes	Models	Includes	Model Years	Body Types
031	304	--	1971-72, 9999	04-06, 09
032	403	Station Wagon	1955-67, 9999	01, 04, 06, 09
033	404	Station Wagon	1961-70, 9999	01, 04, 06, 09
034	504/505	STI, STX, Turbo, S, STI, STX, GL, GLS Liberte, Station Wagon, DSL, DL, GLX	1970-91, 9999	04-06, 09
035	604	SL, D	1977-84, 9999	04
036	405	Mi-16, DL, S	1989-91, 9999	04, 06, 09
398	Other (automobile)	202, 203	1945-91, 9999	01-09
399	Unknown (automobile)	--	1945-91, 9999	01-09

Motorcycles

Codes	Models	Includes	Model Years	Body Types
701	0-50 cc	--	1965-83, 9999	81
702	51-124cc	--	1965-83, 9999	81
709	Unknown cc	--	1965-83, 9999	81

Unknown

Codes	Models	Includes	Model Years	Body Types
999	Unknown (PEUGEOT)	--	1960-91, 9999	99

Make: Plymouth (09) (PLYM)**Automobiles**

Codes	Models	Includes	Model Years	Body Types
001	Valiant/Scamp/Duster (through 1976)	100, 200, Brougham, Signet, Custom, Special, 340, 360, Twister	1960-76, 9999	01, 02, 04, 06, 08, 09
002	Satellite/Belvedere	Belvedere I/II, GTX, Roadrunner (through 1974), Brougham, Sebring, Sebring Plus, Superbird	1951-74, 9999	01, 02, 04, 06, 08, 09, 10-12
003	Fury (Fury Gran through '78)	I, II, III, Roadrunner (1975), Suburban, Salon, VIP, Sport	1957-78, 9999	01, 02, 04, 06, 08, 09

Codes	Models	Includes	Model Years	Body Types
004	Gran Fury ('80 on)	Sedan, Coupe, Salon	1980-89, 9999	02, 04, 06, 08, 09
005	Barracuda	Formula, S, 340, Gran Coupe, AAR, Cuda	1964-74, 9999	01, 02, 09
006	Volare'	Custom, Premier, Roadrunner (1976 on), Police	1976-80, 9999	02, 04, 06, 08, 09
007	Caravelle	Turbo, SE	1985-88, 9999	04
008	Horizon/Turismo	TC-3, Turismo 2.2, Miser, America, Custom, SE, Duster (1985 on), Expo	1978-90, 9999	03, 05, 07, 09
011	Reliant (K)	SE, LE, Reliant America, Limited	1981-89, 9999	02, 04, 06, 08, 09
013	Scamp- (car-based p/u)	GT, 2.2	1982-84, 9999	10
017	Sundance	RS, Turbo, Sundance Duster, America	1987-94, 9999	03, 05, 07, 09
019	Acclaim	LX, LE	1989-95, 9999	04
020	Neon (2002 and on, see Dodge)	Sport, Competition, Highline	1995-2001, 9999	02, 04, 08, 09
031	Cricket	--	1971-72, 9999	04, 06, 09
032	Arrow	GS, GT, Fire Arrow	1976-80, 9999	03
033	Sapporo	all imported	1978-83, 9999	02, 03, 09
034	Champ/Colt import (includes 2WD Vista)	Turbo, Custom, GL, SE, DL, E Station wagon (1984 on)	1979-94, 9999	02-09
035	Conquest	TSI	1984-87, 9999	03
037	Laser	RS, Turbo	1989-94, 9999	02, 03, 09
038	Breeze	--	1996-2000, 9999	04
039	Prowler (1997, 1999-2001 only. For 2002 on, see Chrysler)	Roadster, Black Tie Edition	1997; 1999-2001, 9999	01
398	Other (automobile)	Regant, Fleet, Savoy, Concord, Cambridge	1930-95, 9999	01-09, 10-12
399	Unknown (automobile)	--	1965-2001, 9999	01-09, 10-12

Light Trucks

Codes	Models	Includes	Model Years	Body Types
421	Trailduster	--	1974-93, 9999	15
441	Vista Van	4X4 (only)	1987-94, 9999	20
442	Voyager (minivan) (2000 and on, see Chrysler)	SE, LX, Grand Voyager, SE Expresso, EPIC-electric*	1984-2001, 9999	20
461	Van-fullsize (B-series)	Voyager (through 1983), Sport, Premier	1965-95, 9999	21
471	Arrow pickup (foreign)	--	1975-91, 9999	34, 39
498	Other (light truck)	--	1965-2001, 9999	15, 20, 21, 28, 29, 34, 39, 42, 45, 48
499	Unknown (light truck)	--	1974-2001, 9999	15, 20, 21, 29, 34, 39, 48, 49

Other and Unknown Vehicle

Codes	Models	Includes	Model Years	Body Types
998	Other (vehicle)	--	1965-2001, 9999	92, 93, 97
999	Unknown (PLYMOUTH)	--	1957-2001, 9999	49

Make: Pontiac (22) (PONT)**Automobiles**

Codes	Models	Includes	Model Years	Body Types
001	Lemans (See model 031 for 1988 on)/Tempest (through 1970)	Safari, T-37, Luxury, Grand Sport, GTO (through 1973), GT-37, Sprint, Judge, Grand AM (73-75), Grand Lemans	1961-81, 9999	01, 02, 04, 06, 08, 09
002	Bonneville/Catalina/Parisienne	Brougham, Grand Safari, Safari, Grandville, 2+2, Executive, Starchief, SE, SSE, SSEi, G, SLE, GXP	1954-2005, 9999	01, 02, 04, 06, 08, 09
005	Fiero	2M4, 2M6, GT, SE	1984-89, 9999	02
008	Ventura/GTO	II, SJ, Sprint, GTO (74-77), Custom, Base, LS2	1971-77; 2004-06, 9999	02-04, 08, 09
009	Firebird/Trans AM	Esprit, Formula, GTA, Redbird, Yellowbird, Skybird, SE, Bandit, TransAm	1967-2002, 9999	01-03, 09

Codes	Models	Includes	Model Years	Body Types
010	Grand Prix (RWD)	J, LJ, SJ, Brougham, 2+2, GT, STE, SE	1962-87, 9999	01, 02, 09
011	Astre	Safari, SJ, Custom	1975-77, 9999	02, 03, 06, 09
012	Sunbird (through 1980; 1985 on see model 016)	Safari, Sport, Formula	1976-80, 9999	01-09
013	T-1000/1000	2T	1981-87, 9999	03, 05, 07, 09
015	Phoenix	LJ, SJ	1977-84, 9999	02-05, 07-09
016	Sunbird (1985-1994 only) /J-2000/Sunfire (1995 on)	LE, SE, GT, 2000 Convertible, 2J, S, SE, GT, 1SA, 1SB, 1SC, 1SV	1982-2005, 9999	01-09
017	6000	STE, SE, LE	1982-91, 9999	02, 04, 06, 08, 09
018	Grand AM	SE, LE, GT, GT1, SE1, SE2, SC/T Package	1973-2005, 9999	02, 04, 08, 09
019	G5	Base, GT	2007-10, 9999	02
020	Grand Prix (FWD)	LE, SE, STE, GT, McLaren Turbo, GTP, Limited Edition, 40th Anniversary Edition, GXP	1988-2008, 9999	01, 02, 04, 08, 09
022	G6	Base, GT, GTP, Value Leader, GXP	2005-10, 9999	01, 02, 04, 08, 09
023	Solstice	GXP	2006-10, 9999	01, 02, 09
024	G8	GT, GXP	2008-10, 9999	04
025	G3	--	2009-10, 9999	04, 05, 09
031	Lemans (1988 on)	LE, SE, Tempest Canadian	1988-93, 9999	01-09
032	Vibe	GT, AWD, HB	2003-10, 9999	06
398	Other (automobile)	Torpedo, Streamliner, Chieftain Star Chief, Super Chief	1946-2010, 9999	01-09, 10
399	Unknown (automobile)	--	1926-2010, 9999	01-09, 10

Light Trucks

Codes	Models	Includes	Model Years	Body Types
401	Aztek	GT, SE, 1SA, 1SB, 1SC, Rally Edition	2001-05, 9999	14
403	Torrent	GXP	2006-09, 9999	14

Codes	Models	Includes	Model Years	Body Types
441	Trans Sport/ Montana/SV6	SE, Montana, Extended, Versatrak, 1SV, 1SA, 1SX, 1SY, 1SE, Chrome Sport,	1990-2009, 9999	20
499	Unknown (light truck)	--	1990-2009, 9999	14, 20, 49

Unknown

Codes	Models	Includes	Model Years	Body Types
999	Unknown (PONTIAC)	--	1951-2010, 9999	49

Make: Porsche (45) (PORS)**Automobiles**

Codes	Models	Includes	Model Years	Body Types
031	911/996	L, S, E, T, SC, Carrera (2, 4, Cabriolet, S, Targa, T), GT, Slopenose, 4S, Targa, Speedster, Turbo (Base, S, S Exclusive, Cabriolet), B series, S- Coupe, Cabriolet (S), GT2, GT3 (RS), GT, GTS, 4 GTS (Carrera/Targa)	1965-2018, 9999	01, 02, 09
032	912	1600, E, T	1966-69; 1976, 9999	01, 02, 09
033	914	1.7, 1.8, 2.0, S, 914/4/6	1970-76, 9999	01
034	924	Turbo, S	1977-88, 9999	01-03, 09
035	928	S, S4, GT, GTS	1978-95, 9999	02, 03, 09
036	930	Turbo	1979	02
037	944	Turbo, S, S2	1983-91, 9999	01-03, 09
038	959	Not Imported to U.S.	1989-94, 9999	01-03, 09
039	968	--	1992-95, 9999	01, 02, 09
040	986/Boxster	Boxster, Boxster Cabriolet, S Roadster, S Anniversary, Limited Edition, Spyder, Black Edition, GTS	1997-2016, 9999	01
041	Cayman	S, Hybrid, Black Edition, R, GTS, GT4	2006-16, 9999	02

Codes	Models	Includes	Model Years	Body Types
042	Panamera	S, 4, 4S, Turbo, Turbo S, Hybrid, GTS, S, Platinum Edition, Executive, Edition, Exclusive, Sport Turismo (Base/4S/E-Hybrid/S E-Hybrid/Turbo)	2010-18, 9999	05, 06, 09
043	918	Spyder, Weissach Pkg	2013-17, 9999	01, 02, 09
044	718	Cayman (Base, S, GTS), Boxster (Base, S, GTS)	2017-18, 9999	01, 02, 09
398	Other (automobile)	Spyder, Speedster (prior to '65), 356 (A, B, C) Grund, America, Super, 1500	1948-2018, 9999	01-03, 05, 09
399	Unknown (automobile)	--	1948-2018, 9999	01-03, 05, 09

Light Trucks

Codes	Models	Includes	Model Years	Body Types
401	Macan	S, S Diesel, Turbo, GTS	2014-18, 9999	14
421	Cayenne	Turbo, S, Titanium, GTS (PD Edition), Transsyberia, Hybrid, Diesel	2003-18, 9999	15
499	Unknown (light truck)	--	2003-18, 9999	14, 15, 19

Unknown

Codes	Models	Includes	Model Years	Body Types
999	Unknown (PORSCHE)	--	1965-2018, 9999	99

Make: Renault (46) (RENA)

Automobiles

Codes	Models	Includes	Model Years	Body Types
031	LeCar	R-5, R5TL, GTL, TL, DLX	1976-83, 9999	02-05, 07-09
032	Dauphine/10/R-8 Caravelle	all models, R-1190, R8 - 1100	1955-71, 9999	01, 02, 04, 08, 09
033	12	R-12L, R-12TL/GTL	1972-77, 9999	04, 06, 09
034	15	R-15TL	1973-76, 9999	02, 03, 09
035	16	R-16, R-1152	1969-72, 9999	06

Codes	Models	Includes	Model Years	Body Types
036	17	R17, Gordini Coupe, R17TL	1972-80, 9999	01, 02, 09
037	18i/Sportwagon	R18i, Deluxe, DLX	1981-86, 9999	04, 06, 09
038	Fuego	TL, TS, GTL, GTS, Turbo	1982-85, 9999	02, 03, 09
039	Alliance/Encore GTA, Convertible	L, DL, Limited, X-37	1983-87, 9999	01-05, 07-09
041	Alpine	GT, GTA Coupe, Not imported to U.S.	1971-90, 9999	02, 03, 09
044	Medallion **	DL, LX	1987	04, 06, 09
045	Premier**	--	1987	04
398	Other (automobile)	Juvaquatre, 4CV, Fregate, Domaine	1946-90, 9999	01-09, 10, 11
399	Unknown (automobile)	--	1946-90, 9999	01-09, 10, 11

**Note: Medallion and Premier listed under Eagle after 1987.

Make: Saab (47) (SAA)

Automobiles

Codes	Models	Includes	Model Years	Body Types
031	99/99E/900	S, GL, GLE, L, LE, 2CM, 4CM Turbo, Cabriolet, 2EM, 4EM, CM, SE	1969-98, 9999	01-05, 07-09
032	Sonnett	II, III, 97	1967-74, 9999	02
033	95/96	V-4, M, S, M-S, Special	1959-73, 9999	02, 06, 09
034	9000	S, Turbo, CS, CD, CDE, E, AERO, CSE	1985-98, 9999	04, 05, 09
035	9-3/9-3x	SE (Hot), Viggen, Linear Arc, Vector, Aero, 2.0T, SportCombi, Combi, Estate	1999-2012, 9999	01, 03-07, 09
036	9-5	SE, Aero, 2.3T, Set, Arc, Linear, Aero, SportCombi, 2.5T, Turbo X, Vector	1999-2012, 9999	02, 04, 06, 08, 09
037	9-2x	Linear, Aero	2005-06, 9999	05
038	9-4x	--	2009-12, 9999	06
398	Other (automobile)	Monte Carlo 850, GT850, GT750, 92/93	1950-2012, 9999	01-09

Codes	Models	Includes	Model Years	Body Types
399	Unknown (automobile)	--	1950-2012, 9999	01-09

Light Trucks

Codes	Models	Includes	Model Years	Body Types
401	9-7x	Arc, Linear, 4.2i, 5.3i, Altitude Edition, Aero	2005-11, 9999	14

Unknown

Codes	Models	Includes	Model Years	Body Types
999	Unknown (SAAB)	--	1950-2012, 9999	49

Make: Saturn (24) (STRN)**Automobiles**

Codes	Models	Includes	Model Years	Body Types
001	SL	SL, SL1, SL2	1991-2002, 9999	04
002	SC	SC1, SC2	1991-2002, 9999	02, 09, 17
003	SW	SW1, SW2	1993-2001, 9999	06
004	EV1/EGV1*	Electric Vehicle (Gen II)	1997-2003, 9999	02
005	LS	LS, LS1, LS2, L100/L200/ L300, L300-1/2/3	2000-05, 9999	04
006	LW	LW1, LW2, LW200/ LW300-1/2/3	2000-04, 9999	06
007	Ion	Quad-coupe, I3, Red Line	2003-07, 9999	04, 09, 17
008	Sky	Red Line	2007-10, 9999	01
009	Aura	XE, XR, Hybrid	2007-10, 9999	04
010	Outlook	XE, XR	2007-10, 9999	06
011	Astra	XE, XR, Sport	2008-10, 9999	03, 05, 09
398	Other (automobile)	--	1991-2010, 9999	02-06, 08, 09, 17
399	Unknown (automobile)	--	1991-2010, 9999	02-06, 08, 09, 17

Light Trucks

Codes	Models	Includes	Model Years	Body Types
401	Vue	Red Line, 4, V6, Green Line, XE, XR-4, XR-V6	2002-10, 9999	14
441	Relay	2, 3	2005-07, 9999	20
499	Unknown (light truck)	--	2002-10, 9999	14, 20

Unknown

Codes	Models	Includes	Model Years	Body Types
999	Unknown (SATURN)	--	1991-2010, 9999	49

Make: Scion (67) (SCIO)**Automobiles**

Codes	Models	Includes	Model Years	Body Types
031	xB (2012 on. See Toyota for 2004-2011)	1.0, 2.0 Series, Limited Edition, 10th Anniversary	2012-15, 9999	06
032	tC (2012 on. See Toyota for 2005-2011)	1.0 Series, Limited Edition, 8.0 Series, 10th Anniversary	2012-16, 9999	03
033	xD (2012 on. See Toyota for 2007-2011)	Limited Edition, 10th Anniversary	2012-14, 9999	05
034	iQ (2012 on. See Toyota for 2010-2011)	10th Anniversary	2012-14, 9999	03
035	FR-S	10th Anniversary	2013-16, 9999	02
036	iA	--	2016	04
037	iM	--	2016	05
398	Other (automobile)	--	2012-16, 9999	02-06, 08, 09
399	Unknown (automobile)	--	2012-16, 9999	02-06, 08, 09

Make: Smart (65) (SMRT)**Automobiles**

Codes	Models	Includes	Model Years	Body Types
031	Fortwo	Pure, Prime, Passion, Proxy, Electric, Brabus	2008-18, 9999	01, 02, 09
398	Other (automobile)	--	2008-18, 9999	01, 02, 09
399	Unknown (automobile)	--	2008-18, 9999	01, 02, 09

Make: Sterling (61) (STLG)**Automobiles**

Codes	Models	Includes	Model Years	Body Types
031	827	Li, SL, S, SLI	1987-91, 9999	04, 05, 09
398	Other (automobile)	825, S, SL, Oxford Edition	1987-91, 9999	04, 05, 09
399	Unknown (automobile)	--	1987-91, 9999	04, 05, 09

Make: Subaru (48) (SUBA)**Automobiles**

Codes	Models	Includes	Model Years	Body Types
031	Loyale (1990 on)/DL/FE/G/GF/GL/GLF/ STD	4-wheel drive, S, 1300, 1400, 1600, 1800, A15L, A44L, Touring Wagon, Turbo	1972-94, 9999	02-09
032	Star	FF -1 Star, 1100	1971	02, 04, 06, 08, 09
033	360	--	1958-70, 9999	02
034	Legacy/Outback (prior to 2003 only; see 045 for 2003 on)	L, LS, LSI, 4WD, Outback (Limited, Ltd, Sport, VDC, L.L. Bean Edition), GT, Brighton, Sport Utility Sedan (Ltd.), 30th Anniv. Outback, H-6, 35th Anniv., 2.5, 2.5i (Base, Premium, Sport, Limited) GT, spec. B, 3.0R, Limited, Premium, Sport, 3.6R (Base, Limited)	1990-2018, 9999	04-06, 09
035	XT/XT6	4WD Turbo, convertible, DL, GL	1985-91, 9999	01, 02, 09
036	Justy	DL, GL, 4WD	1987-94, 9999	03, 05, 07, 09
037	SVX	LS, LSL, XR, Lsi	1992-97, 9999	02
038	Impreza	L, LS, Brighton, Outback Sport, RS, L-Sport, LX, 2.5i/RS/S/TS/ GT, WRX, WRX Sport/STI/SS/ TR, Limited Edition, Premium, SE, STI, STI-S, 2.0i (Premium, Limited, Sport, Sport Limited)	1993-2018, 9999	02, 04-06, 08, 09

Codes	Models	Includes	Model Years	Body Types
039	RX	--	1986-89, 9999	03, 04, 09
043	Brat	DL, GL	1978-87, 9999	10
044	Baja	Sport, Turbo	2003-07, 9999	10
045	Outback (2003 on; see 034 for prior to 2003)	H6-VDC, 35th Anniversary Edition, 2.5, 2.5i (Premium, Limited), 2.5XT, 3.0R, Special Edition, VDC Limited, Sport, L.L. Bean Edition, 3.0R. Premium, 3.6R (Limited)	2003-18, 9999	04-06, 09
046	BRZ	Premium, Limited, tS	2013-18, 9999	03
047	WRX (2015 on; see 038 for prior to 2015)	Premium, Limited, STi (Base, Limited, Type RA)	2015-18, 9999	04
398	Other (automobile)	--	1968-2018, 9999	01-09, 10
399	Unknown (automobile)	--	1968-2018, 9999	01-09, 10

Light Trucks

Codes	Models	Includes	Model Years	Body Types
401	Forester	L, S, 2.5i, 2.0XT, 2.5X, 2.5XS, 2.5XT, L.L. Bean Edition, Limited (Plus), Sport, Premium, Touring	1997-2018, 9999	14
402	B9 Tribeca	Base, Limited, Special Edition, Premium, Touring, 3.6R	2006-14, 9999	14
403	XV Crosstrek	2.0i Premium/Limited, Hybrid (Premium, Touring)	2013-18, 9999	14
499	Unknown (light truck)	--	1997-2018, 9999	14

Unknown

Codes	Models	Includes	Model Years	Body Types
999	Unknown (SUBARU)	--	1958-2018, 9999	49

Make: Suzuki (53) (SUZI)**Automobiles**

Codes	Models	Includes	Model Years	Body Types
031	Swift/SA310	Gti, GTX, GLX, GA, GT, GL	1989-2001, 2010, 9999	03-05, 07, 09
032	Esteem	GL, GLX, GLX+	1995-2002, 9999	04, 06, 09
033	Aerio	S, G, LX, SX (Wagon), Luxury	2002-07, 9999	04, 06, 09
034	Forenza	S, LX, EX, Premium, Convenience, Popular	2004-08, 9999	04, 06, 09
035	Verona	S, LX, EX, Luxury	2004-06, 9999	04
036	Reno	S, LX, EX, Premium, Convenience	2005-08, 9999	05
040	SX4/SX4 Crossover	Base, Sport, Convenience, Touring, L, S, SD, SE, GTS, LE, SportBack, JX, Premium, Tech Value Package	2007-13, 9999	04, 05, 09
041	Kizashi	GTS, S, SE, SLS, Sport	2010-13, 9999	04
398	Other (automobile)	800 Fronte, Alto	1981-2013, 9999	03-07, 09
399	Unknown (automobile)	--	1981-2013, 9999	03-07, 09

Light Trucks

Codes	Models	Includes	Model Years	Body Types
401	Samurai	Standard, Deluxe, JL	1986-96, 9999	14
402	Sidekick/Vitara/ Vitara V6	JS, JX, JLX, JLS, Sport, Grand Vitara (1999-2002 only; see model 404 for 2003 on) (JS, JLX, JLS, Ltd.) XL-7 (2002 only; see model 405 for 2003 on) LX	1989-2004, 9999	14
403	X-90	--	1996-98, 9999	14
404	Grand Vitara (2003 on; see model 402 for models prior to 2003)	JS, JLX, JLS, Limited, GX, LX, XV6, Premium, Xsport, Luxury, Special Edition, Ultra Adventure Edition	2003-13, 9999	14

Codes	Models	Includes	Model Years	Body Types
405	XL-7 (2003 on; see 402 for 2002 model year)	Standard, Touring, Limited, GX, LX, Premium, Luxury	2003-09, 9999	14
481	Equator	Comfort, Premium, Sport, RMZ-4	2009-13, 9999	34
498	Other (light truck)	Jimmy	1981-2013, 9999	14, 34
499	Unknown (light truck)	--	1981-2013, 9999	14, 34

Motorcycles

Codes	Models	Includes	Model Years	Body Types
701	0-50cc	--	1970-2013, 9999	80, 81, 83, 84, 88, 89
702	51-124cc	--	1970-2018, 9999	80, 81, 83, 84, 88, 89
703	125-349cc	--	1969-2018, 9999	80, 83, 84, 88, 89
704	350-449cc	--	1970-93; 2000-18, 9999	80, 83, 84, 88, 89
705	450-749cc	--	1969-2018, 9999	80, 83, 84, 88, 89
706	750cc-over	--	1970-2018, 9999	80, 83, 84, 88, 89
709	Unknown cc	--	1969-2018, 9999	80-84, 87-89

All Terrain Vehicles

Codes	Models	Includes	Model Years	Body Types
731	0-50cc	--	1969-87; 2002-04, 2009-18, 9999	90, 96
732	51-124cc	--	1969-2004, 2009-18, 9999	90, 96
733	125-349cc	--	1969-2018, 9999	90, 96
734	350cc or greater	--	1969-93; 1998-2018, 9999	90, 96
739	Unknown cc	--	1969-2018, 9999	90, 96

Unknown

Codes	Models	Includes	Model Years	Body Types
999	Unknown (SUZUKI)	--	1969-2018, 9999	49, 99

Make: Toyota (49) (TOYT)**Automobiles**

Codes	Models	Includes	Model Years	Body Types
031	Corona	Mark II, Custom, 1900, 2000, Deluxe	1966-83, 9999	02, 04, 06, 08, 09
032	Corolla	1100, 1200, 1600, SR-5, LE, DX, CE, Deluxe, Custom, FX, FX16, Sport, GTS, VE, S, XRS, XLE, CE, L, Special Edition, LE Eco, 50th Anniversary, XSE, iM	1969-2018, 9999	02-09
033	Celica	1900, 2000, GT, ST, GTS, VE, GT-S	1971-2006, 9999	01-03, 09
034	Supra	Celica Supra, Soarer, Turbo	1979-98, 9999	03
035	Cressida	--	1978-92, 9999	04-06, 09
036	Crown	2300, 2600, Toyopets	1958-71, 9999	02, 04, 06, 08, 09
037	Carina	2000	1972-73, 9999	02
038	Tercel	Corolla Tercel, 4WD, EZ, DX, LE, DLX, CE	1980-99, 9999	02-09
039	Starlet	--	1981-84, 9999	03
040	Camry	LE, Deluxe, XLE, DLX, SE, All-Trac, CE, SE, Limited Edition, L, Hybrid (CVT/LE/XLE/SE), XSE, Special Edition	1983-2018, 9999	02, 04-06, 08, 09
041	MR-2/MR Spyder	Super Charged	1984-95; 2000-07, 9999	01, 02, 09
042	Paseo	Turbo, T-bar	1992-97, 9999	01, 02, 09
043	Avalon	XL, XLS, Limited, Touring, XLE, Hybrid, Premium, Sport, Plus	1995-2018, 9999	04
044	Solara	Camry Solara (SE, SLE, Sport)	1999-2009, 9999	01, 02, 09
045	ECHO	--	2000-05, 9999	02, 04, 08, 09

Codes	Models	Includes	Model Years	Body Types
046	Prius *	*Electric hybrid, Touring, II, III, IV, V (2/3/4/5), (CVT), 3rd Generation (2/3/4/5), Plug-In. (Base/Advanced), c (1/2/3/4), Persona Series, Two, Two Eco, Three, Three Touring, Four, Four Touring, Prime (Plus, Premium, Advanced)	2001-18, 9999	03-06, 07, 09
047	Matrix	Base, XR, XRS, STD, S, SD, L	2003-13, 9999	06
048	Scion xA	RS 1.0	2004-06, 9999	05
049	Scion xB (2004-2011 only. See 67-031 for 2012 on.)	1.0, 2.0 Series	2004-11, 9999	06
050	Scion tC (2005-2011 only. See 67-032 for 2012 on.)	1.0 Series	2005-11, 9999	03
051	Yaris	Liftback, S, CE, HB, LB, LE, RS, SE, L, iA	2007-18, 9999	03-05, 09
052	Scion xD (2007-2011 only. See 67-033 for 2012 on.)	--	2007-11, 9999	05
053	Venza	LE, XLE, Limited	2009-15, 9999	05
054	Scion iQ (2010-2011 only. See 67-034 for 2012 on.)	--	2010-11, 9999	04
055	Mirai	--	2016-18, 9999	04
056	86	--	2017-18, 9999	03
398	Other (automobile)	2000 GT Coupe (1960s), Sports 800, Viper, Tiara	1960-2018, 9999	01-09, 10
399	Unknown (automobile)	--	1960-2018, 9999	01-09, 10

Light Trucks

Codes	Models	Includes	Model Years	Body Types
401	4-Runner	SR5 (Base, Limited), Limited, Sport, Trail, TRD Pro, TRD Off-Road (Base, Premium)	1984-2018, 9999	14

Codes	Models	Includes	Model Years	Body Types
402	RAV4*	L, LE, EVs-electric*, Sport, Limited, Hybrid (Limited, SE, XLE), XLE, Platinum, Adventure, SE	1996-2018, 9999	14
403	Highlander	Limited, Hybrid, Sport, SE, Plus, LE, LE Plus, XLE, Platinum	2001-18, 9999	14
404	FJ Cruiser	Baja 1000, FJ, SE, TRD, AT, MT	2007-14, 9999	14
405	C-HR	XLE, XLE Premium	2018	14
421	Land Cruiser	4WD	1964-2018, 9999	15
422	Sequoia	SR5, Limited, Platinum	2001-18, 9999	15
441	Minivan (1984-90)/ Previa (1991 on)	LE, Cargo, DX, XLE	1984-97, 9999	20
442	Sienna	CE, LE, XLE, Symphony, Limited, SE, L	1998-2018, 9999	20
471	Pickup	SR-5, Extra Cab, Sport, LN44, Chinook, Wonder Wagon	1974-95, 9999	34, 39, 40, 42
472	Tacoma	SR5, Xtracab, Limited, PreRunner, Side Step, Double Cab, S-Runner, 2.7L, 4.0L X-Runner, T/X, T/X Pro, Access Cab, TRD (Sport, Pro, Off-Road), SR	1995-2018, 9999	34, 39, 40, 42
481	T-100	DX, SR5, Limited, Xtracab	1993-98, 9999	34, 39, 40, 42
482	Tundra	SR5 (Access Cab), LTD, (Access Cab), Double Cab, Darrell Waltrip Special Edition, CrewMax, 4.0L, 4.6L, 5.7L, Limited, SR, 1794 Edition, Platinum, TRD Pro	1999-2018, 9999	34, 39, 40, 42
498	Other (light truck)	--	1970-2018, 9999	14, 15, 19, 20, 29, 34, 39
499	Unknown (light truck)	--	1973-2018, 9999	14, 15, 19, 20, 34, 39, 40, 42, 48, 49

Unknown

Codes	Models	Includes	Model Years	Body Types
999	Unknown (TOYOTA)	--	1966-2018, 9999	49

Make: Triumph (50) (TRIU)**Automobiles**

Codes	Models	Includes	Model Years	Body Types
031	Spitfire	I, II, III, IV, 1500	1962-81, 9999	01, 02, 09
032	GT-6	MK3	1967-73, 9999	01, 02, 09
033	TR4	TR2, TR3, TR4A	1958-68, 9999	01, 02, 09
034	TR6	--	1969-76, 9999	01, 02, 09
035	TR7/TR8	--	1975-81, 9999	01, 02, 09
036	Herald	Vitesse	1960-74, 9999	01, 02, 06, 09
037	Stag	--	1971-73, 9999	01, 02, 09
398	Other (automobile)	1800, 2000, Mayflower, Renown, 1200	1946-81, 9999	01, 02, 04, 08, 09
399	Unknown (automobile)	--	1946-81, 9999	01, 02, 04, 08, 09

Motorcycles

Codes	Models	Includes	Model Years	Body Types
701	0-50cc	--	1965-83, 9999	80
702	51-124cc	--	1965-83, 9999	80
703	125-349cc	--	1950-74, 9999	80
704	350-449cc	--	1950-71, 9999	80
705	450-749cc	--	1950-2018, 9999	80
706	750cc or greater	--	1950-2018, 9999	80
709	Unknown cc	--	1950-2018, 9999	80
799	Unknown (motored cycle)	--	1950-2018, 9999	80

Unknown

Codes	Models	Includes	Model Years	Body Types
999	Unknown (TRIUmph)	--	1950-2018, 9999	99

Make: Volkswagen (30) (VOLK)**Automobiles**

Codes	Models	Includes	Model Years	Body Types
031	Karmann Ghia	--	1954-75, 9999	01, 02, 09
032	Beetle 1300/1500	Flat windshield, 94.5 WB	1948-77, 9999	01, 02, 09
033	Super Beetle	Curved windshield 95.3 WB	1971-80, 9999	01, 02, 09
034	411/412	Squareback/Fastback	1971-74, 9999	03, 04, 09
035	Squareback/Fastback	Type 3, 1600	1965-74, 9999	02
036	Rabbit	L, GTI, Sport, LS, Custom, DL, Deluxe, S	1975-84, 2006-09, 9999	01, 03, 05-07, 09
037	Dasher	--	1974-81, 9999	03, 05-07, 09
038	Scirocco	16V	1975-88, 9999	02
040	Jetta/Jetta SportsWagen	III, GL (TDI, 1.9L, 2.0L), GLI (2.0T, VR6), GLS (1.8T, 1.8L/1.9L/ 2.0L/2.8L/ TDI/VR6), GT, Carat, TDI, GLX (VR6/ 2.8L), Turbo Diesel, 2.5L Wolfsburg Edition, S/SE/ SEL, Value Edition. 2.0T, 3.6, Autobahn, Hybrid (SE, SEL, SEL Premium), Premium, Edition 30, 1.4T, Sport	1981-2018, 9999	02, 04, 06, 08, 09
041	Quantum	Synco	1982-88, 9999	02, 04, 06, 08, 09

Codes	Models	Includes	Model Years	Body Types
042	Golf/Cabriolet/Cabrio/ GTI/ GLI	Golf II, GTI (GLS, GLX 1.8T/2.0T/2.8L), GT, GL(1.8T/VR6/2.0L/1.9L/ TDI), Golf III, GLS (1.8T/1.8L/1.9L/ 2.0/TDI), Wolfsburg, Cabrio (GL, GLS, GLX), 20th Anniversary, R32, MkV, Convenience, R, 2.5L, Driver's Edition, SE, SEL, Autobahn, Launch EditionSport Wagen (S, SE, SEL), eGolf (SE, SEL Premium), Alltrack (S, SE, SEL), Alltrack	1985-2018, 9999	01, 03, 05-09
043	Rabbit Pickup	car-based pickup	1980-83, 9999	10
044	Fox	GL	1987-94, 9999	02, 04, 06, 08, 09
045	Corrado	--	1989-94, 9999	02
046	Passat (CC - 2008 through 2011; see 052 for 2012 on)	GL, GLS (1.8T, Synchro, V6), TDI, GLX (1.8T, 2.0T, W8, Synchro, V6), 4MOTION, 3.6 GL, Value Edition, CC, Highline, Komfort, 2.5 (S/SE), Wolfsburg Edition, Sport, Premium, Clean Diesel, SEL, R-Line	1990-2018, 9999	04, 06, 09
047	New Beetle	GL GLS TDI, 1.8T/1.8L/ 1.9L/2.0L/2.5/2.5L Synchro/ V6, GLX (1.8T), Turbo, Turbo S, Fender Edition, Sun and Sound, R-Line, GSR, Clean Diesel, Classic, SE, SEL, Dune, #PinkBeetle, Coast	1998-2010, 2012-18, 9999	01, 03, 09
048	Phaeton	3.2L, 4.2L, V6, V8, W12	2002-11, 9999	04
051	Eos	2.0T, 3.2L, Executive, Komfort, Luxury, Turbo, VR6, Sport, Final Edition	2006-16, 9999	01

Codes	Models	Includes	Model Years	Body Types
052	CC (For 2012 on. See model 046 for 2008-2011.)	Luxury, Sport, Sport Plus, VR6, R-Line, 2.0T, 4MOTION, Executive, V6	2012-17, 9999	04
053	Arteon	--	2019	05
398	Other (automobile)	--	1965-2019, 9999	01-09, 10
399	Unknown (automobile)	--	1956-2019, 9999	01-09, 10

Light Trucks

Codes	Models	Includes	Model Years	Body Types
401	The Thing (181)	--	1973-75, 9999	14
402	Tiguan	S, SE, SEL, R-Line, 4MOTION, 2.0T, Wolfsburg, Sport, Premium	2008-18, 9999	14
403	Atlas	S, V6 (S, 4MOTION, Launch Edition, SE)	2018	14
421	Touareg/Touareg 2	V6, V8, V10, VR6 FSI, Lux, Executive, Hybrid, Sport, R-Line, X Special Edition, TDI, Wolfsburg	2003-17, 9999	15
441	Vanagon/Camper	Bus, Kombi, Van	1955-91, 9999	20
442	Eurovan	GLS, MV, Camper, Weekender Package	1992-04, 9999	20
443	Routan	S, SE, SEL Premium/RSE	2009-13, 9999	20
498	Other (light truck)	--	1967-2018, 9999	14, 15, 19, 20
499	Unknown (light truck)	--	1965-2018, 9999	14, 15, 19, 20, 49

Other and Unknown Vehicle

Codes	Models	Includes	Model Years	Body Types
998	Other (vehicle)	--	1965-2019, 9999	92, 93, 97
999	Unknown (VOLKSWAGEN)	--	1956-2019, 9999	49

Make: Volvo (51) (VOLV)**Automobiles**

Codes	Models	Includes	Model Years	Body Types
031	122	S	1958-68, 9999	02, 04, 06, 08, 09
032	140/142/144/145 *	S, E, GL, GLS, Deluxe	1968-74, 9999	02, 04, 06, 08, 09
033	164	S, E	1970-75, 9999	04
034	240 series*/DL/GL/GLT	242, 244, 245, DL, GL, GLT, Deluxe	1975-93, 9999	02, 04, 06, 08, 09
035	260 series/GLE	264, 265, 262, c, Volvo Coupe, Volvo Diesel	1976-82, 9999	02, 04, 06, 08, 09, 12
036	1800	E, S, ES, P1800	1960-73, 9999	02, 06, 09
037	PV544	PV444	1947-65, 9999	04, 06, 09
038	760/780	GLE, Turbo, Bertone Coupe	1983-92, 9999	02, 04, 06, 08, 09, 12
039	740	GLE, GT, Turbo, GL, SE	1983-92, 9999	04, 06, 09
040	940	GLE, Turbo, SE	1991-95, 9999	04, 06, 09, 12
041	960	--	1992-97, 9999	04, 06, 09, 12
042	850	GLT, Turbo, T-5, GTAS, GTMS Cross Country	1993-97, 9999	04, 06, 09
043	70 Series (For XC70 for 2014 on, use model code 402)	C70 (LT, HT, T5), S70 (GLT, T5, AWD) V70 (R, SC Cross Country, GLT, T5, M, 2.4T, 2.4, 2.5T, T6, R, 3.2) LPT, HPT. XC70	1998-2013, 9999	01, 02, 04, 06, 08, 09
044	90 Series	S90, V90	1998	04, 06, 09
045	80 Series	S80 (2.9, T6, Executive, Premier) 2.5, 2.5T, 3.2, V8	1999-2017, 9999	04
046	40 Series	S40, V40, LSE, 2.5i, T5, 2.4i, R-Design	2000-11, 9999	04, 06, 09
047	60 Series	S60 (2.4T, 2.4, 2.5 AWD, T5, Polestar), 2.4M, 2.5T, R, T5, T6, R-Design, Drive-E, Cross Country, Dynamic, Inscription, Polestar	2001-18, 9999	04
048	V50	2.4i, T5, R-Design	2005-11, 9999	06
049	C30	1.0, 2.0, T5, R-Design	2008-13, 9999	03

Codes	Models	Includes	Model Years	Body Types
050	XC60	3.2, T5 (Dynamic, Inscription), T6 (Dynamic Inscription, R-Design), R-Design, Drive-E, Momentum	2008-18, 9999	06
051	V60	T5, T6, R-Design, Drive-E, Cross Country, Polestar, Dynamic	2014-18, 9999	06
052	V90	Cross Country (Volvo Ocean Race, Inscription, R-Design)	2017-18, 9999	06
053	S90	T5 (Momentum, Inscription), T6 (Momentum, Inscription)	2017-18, 9999	04
398	Other (automobile)	--	1958-2018, 9999	01-09, 10-12
399	Unknown (automobile)	--	1958-2018, 9999	01-09, 10-12

Light Trucks

Codes	Models	Includes	Model Years	Body Types
401	XC90	2.5T(AWD), T6(AWD), V8, 3.2, R-Design, SVR7, First Edition, T5, Plug-In, Excellence, T8, Momentum, Inscription, Excellence	2003-18, 9999	14
402	XC70 (For 2014 on. For prior to 2013, use model code 043)	3.2, T6, Drive-E	2014-17, 9999	14
403	XC40	Momentum, R-Design	2018	14
499	Unknown (light truck)	--	2003-18, 9999	14

Medium/Heavy Trucks

Codes	Models	Includes	Model Years	Body Types
881	Medium/Heavy – CBE	--	1981-93; 1996-2018, 9999	60-64, 66, 78
882	Medium/Heavy – COE low entry	--	1981-93; 1996-2004, 9999	60-64, 66, 78
883	Medium/Heavy – COE high entry	--	1981-93; 1996-2004, 9999	60-64, 66, 78

Codes	Models	Includes	Model Years	Body Types
884	Medium/Heavy – Unknown engine location	--	1981-93; 1996-2018, 9999	60-64, 66, 71, 72, 78
890	Medium/Heavy – COE entry position unknown	--	1981-93; 1996-2018, 9999	60-64, 66, 78
898	Other (medium/heavy truck)	--	1981-93; 1996-2018, 9999	60-64, 66, 71, 72, 78

Buses

Codes	Models	Includes	Model Years	Body Types
981	Bus**: Conventional (Engine out front)	--	1981-2005, 9999	50-52, 58, 59
983	Bus: Rear engine, Flat front	--	2014-18, 9999	50-52, 58, 59
988	Other (bus)	--	1965-2018, 9999	50-52, 58, 59
989	Unknown (bus)	--	1965-2018, 9999	50-52, 58, 59

**Use “981” (bus) if the front plane or the engine location is unknown.

OTHER AND Unknown

Codes	Models	Includes	Model Years	Body Types
998	Other (Vehicle)	--	1958-2018, 9999	92, 93, 97
999	Unknown (VOLVO)	--	1958-2018, 9999	49, 79, 99

Make: Yugo (57) (YUGO)**Automobiles**

Codes	Models	Includes	Model Years	Body Types
031	GV/GVL/GVX	All models, Cabriolet	1986-92, 9999	01-03, 09

Make: Other Domestic Manufacturers (29)**Automobiles**

Codes	Models	Includes	Model Years	Body Types
001	Studebaker/Avanti	Lark, Gran Turismo, Hawk, Cruiser, all associated subseries, light pickup, Studebaker XUV/XUT, Lister	1940-91; 2001-07, 9999	01, 02, 04, 06, 08, 09, 16, 34, 39

Codes	Models	Includes	Model Years	Body Types
002	Checker	Marathon, Superba, Taxi, Aerobus	1965-82, 9999	04, 06, 09, 12
003	Panoz	Esperante (Magnussen Edition), GT, GTS, GTLM, JRD, Abruzzi, Roadster, GTR1, 25th Anniversary, Spyder (GT)	2000-18, 9999	01, 02, 09
004	Saleen	S7, S281, 435S, S302 (White Label, Yellow Label, Black Label), 570, 620, FOURSIXTEEN	2001-15, 9999	01, 02, 04, 08, 09
005	Tesla	Roadster (Base, Sport) Model S (Base, Signature, Performance), Model X, Super Charger, Model 3	2008-18, 9999	01, 04, 05, 09, 14
398	Other (automobile)	Desoto, Excalibur, Stutz, FiberFab, Hudson, Packard, Consulier, Gatsby, Auburn, Phaeton, Citicar, Clenet	1930-91, 9999	01-09, 10-13
399	Unknown Make	--	1940-2018, 9999	01-09, 10-13, 14, 16, 19, 39

Make: Other Import (69)

Automobiles

Codes	Models	Includes	Model Years	Body Types
031	Aston Martin	Lagonda, Vantage, Volante, Saloon, DB Mark III, DB4, DB4GT, DB5, DB6, DB7 (Heritage/Vantage/Volante), V12 (Vanquish S/Zagato/ Vantage, Vantage S), V8 (Vantage/ Vantage S), DB9 (Carbon Edition, GT), Rapide (S), Cygnet, Carbon Black, One-77, Virage (Coupe/ Volante), DBS (Coupe/ Volante), CC100, Vantage GT, Rapid S, Vulcan, GT12, DB11	1950-2018, 9999	01-09
032	Bricklin	--	1965-91, 9999	02
033	Citroen	--	1965-91, 9999	02-09

Codes	Models	Includes	Model Years	Body Types
034	DeLorean	--	1981-83, 9999	02
035	Ferrari	F355 (Berlinetta, GTS, Spider, F1), F430, F456 (GTA, M, GT, MGTA), F550 (Maranello, Barchetta Pininfarina), 360/430 (Spider, Modena, Challenge) Maranello, Berlinetta, MGT (Vintage), Enzo, Challenge Stradale, 575M, 612 Scaglietti, Superamerica, 599 GTB/GTO, California (T), 418 Italia, FF, SA Aperta, 458 (Spider/ Italia/ Challenge/ Speciale (A)), F12 Berlinetta, FF, LaFerrari, 488 GTB/Spider, GTC4Lusso, F12TDF, F60 America	1965-2018, 9999	01-05, 07-09
036	Hillman	--	1965-91, 9999	01-09
037	Jensen	Healy-Interceptor, 541R	1965-91, 9999	01-05, 07-09
038	Lamborghini	Countach, 5000S, Jalpa, Diablo, Miura, Murciélago (LP640), Galladoro, LP 550-2/560-4/570-4/670-4/700-4, CP, Aventador (J, SV, LP750-4, Roadster), Sesto Elemento, Spyder, Superlegga, Aventador, Gallardo, Veneo, Huracan (Base, Spyder), 350GT	1965-2018, 9999	01, 02, 04, 08, 09
039	Lotus	Europe, Espirit (V8, GT-3, V8-GT) Elise, Exige, Evora (Range/GTE/400), California, Club Racer, Sport, 2-Eleven, Black, Bespoke	1967-2018, 9999	01, 02, 03, 04, 08, 09
040	Maserati	Biturbo, Ghibli, 3200 GT, Quattroporte, Spyder GT, Sports GT, Executive GT, 90th Anniversary, MC12, GranSport, GranTurismo, GranCabrio, Stradale, Kubang, Sport, MC, S, GTS, S Q4, MC Centennial Edition, Levante, Alfier	1965-99; 2002-18, 9999	01-05, 07-09, 14
041	Morris	Minor	1965-91, 9999	01-09, 10
042	Rolls-Royce/Bentley	Rolls-Royce: Cloud/ Shadow series, Silver Spur, Silver Dawn, Silver Spirit, Silver Seraph, Corniche, Park Ward), Phantom (Drophead), Ghost; Bently: (Arnaze, Azure, Continental (GT, Speed Black Edition), Mulliner), Brooklands, Goodwood, EWB, 4, Mulsanne, Flying Spur, Super Sports, Wrath, Dawn	1926-2018, 9999	01, 02, 04, 08, 09

Codes	Models	Includes	Model Years	Body Types
044	Simca	--	1965-91, 9999	01-09
045	Sunbeam	--	1965-91, 9999	01, 02, 04, 08, 09
046	TVR	--	1965-91, 9999	01, 02, 09
048	Desta	--	1985-99, 9999	14, 15, 19
049	Reliant	--	1960-91, 9999	01-09
052	Bertone	X/19	1989-91, 9999	01, 02, 09
053	Lada	--	1965-91, 9999	01-09
054	Mini Cooper	Mark I, II, III, S, SE, Sport, MC40, Traveller, John Cooper Works, Clubman, Countryman, Paceman, Coupe, All 4, Roadster, Convertible	1961-74; 2002-18, 9999	01, 03, 06, 09
055	Morgan (2003 on; Prior to 2003 see 398)	Aero 8, Plus 8, V6, Classic Range, AeroMax, 4/4 Sport, Super Sports Junior, Plus 4, 4 Seater, Aero, Eva GT, 3 Seater, 4/4, Plus 8, SP1, AR Plus 4	2003-18, 9999	01, 02, 09
056	Maybach	57, 57S, 62, 62S, Laudualet, Zeppelin, Guard	2003-14, 9999	04
057	Spyker	C8, Base, T, Laviolette, Aileron, Spyder, Double 12R, Double 12S, C12 Zagato, L2014 M85, D, B6 Venator	2005-15, 9999	01, 02, 09, 17
058	Koenigsegg	CC8S, CCR, CCX, CCXR, CCGT, Trevita, Agera, CC8S, Agera R/S, Special Edition, Regera, One:1	2007-18, 9999	01
061	Mahindra	Scorpio (Lx, Sle, Vls, Vlx)	2010-18, 9999	14, 34

Codes	Models	Includes	Model Years	Body Types
062	Caterham	Classic, Roadsport, Academy, Superlight (R300/R400/R500), CSR, Seven (280/360/480/620R), SP 300R, Aeroseven, Superflight Twenty, 60th Anniversary Edition	2011-18, 9999	01
063	McLaren	MP4-12C, P15, 675LT, 540C, 12C GT Spirit, 650S, P1	2011-18, 9999	01
064	Bugatti	Veyron 164 (Grand Sport, Super Sport), Vitesse, Chiron	2005-18, 9999	01, 02, 09
398	Other (automotive)	Morgan (Prior to 2003; 2003 on see 055), Singer, Gazelle, Fisker	1928-2018, 9999	01-09, 10-13, 17
399	Unknown Make	--	1928-2018, 9999	01-09, 10, 19, 39

Appendix B: Size Category Definitions

Table 20. Vehicle Size Categories for Automobiles, Pickups, and SUVs

Size Category	Name	Min Wheelbase (cm)	Max Wheelbase (cm)	Bodystyles
1	Minicar	0	240	2S, 4S, 3H, 5H, CV, SW, LM, 2C
2	Subcompact Car	241	258	2S, 4S, 3H, 5H, CV, SW, LM, 2C
3	Compact Car	259	280	2S, 4S, 3H, 5H, CV, SW, LM, 2C
4	Intermediate Car	281	298	2S, 4S, 3H, 5H, CV, SW, LM, 2C
5	Full-Size Car	299	313	2S, 4S, 3H, 5H, CV, SW, LM, 2C
6	Large Car	314	999	2S, 4S, 3H, 5H, CV, SW, LM, 2C
12	Minivan	0	315	MV, VN
13	Full-Size Van	316	999	MV, VN
14	Small SUV	0	266	UV, 2U, 4U
15	Full-Size SUV	267	999	UV, 2U, 4U
16	Small Pickup	0	289	PU, 4P, EX
17	Full-Size Pickup	290	999	PU, 4P, EX

Bodystyles:

2S – 2-Door Sedan, 4S – 4-Door Sedan, 3H – 3-Door Hatchback, CV – Convertible, SW – Station Wagon,

LM – Limousine, 2C – 2-Door Coupe

MV – Mini Van, VN – Van

SUV – Sports Utility Vehicle, UV – Utility Vehicle, 2U – 2-Door Utility Vehicle, 4U – 4-Door Utility Vehicle

PU – Pickup, 4P – 4-Door Pickup, EX – Extended Cab Pic

Appendix C: Pre-Crash Examples

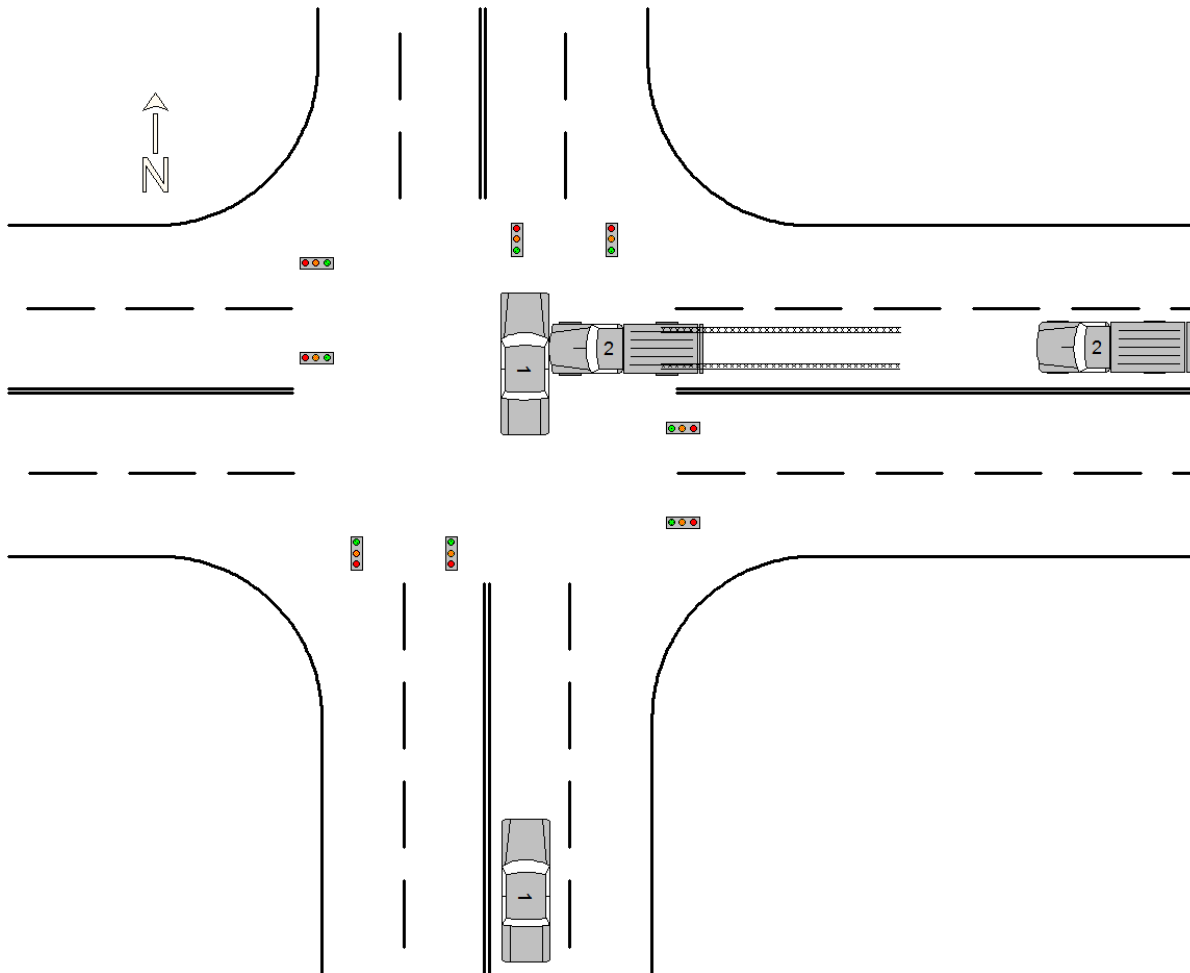
Example 1

Figure 222. Intersection diagram – example 1

Vehicle 1 was traveling northbound on a four-lane roadway. Vehicle 2 was traveling westbound on an intersecting four-lane roadway. The intersection was controlled by traffic signals. Both vehicles entered the intersection and the right side of Vehicle 1 was struck by the front of Vehicle 2. Police could not determine which vehicle had the right-of-way, both drivers claimed to have a green light.

There were no indications of distractions identified by police on the crash report or during CISS interviews. The EDR from Vehicle 1 was imaged and the data was found to be associated with this crash. The precrash data indicated the brake switch was activated at the T-minus-1-second data point, although there were no skid marks present at the scene. Vehicle 2 was not equipped with an EDR, but there were pre-impact skids present at the scene.

Table 21. Situation matrix – example 1

Example 1	Vehicle 1	Vehicle 2
Driver's Distraction/Inattention	Attentive or not distracted	Attentive or not distracted
Pre-Event Movement	Going straight	Going straight
Critical Pre-Crash Category	This vehicle traveling	This vehicle traveling
Critical Pre-Crash Event	Crossing over (passing through) junction	Crossing over (passing through) junction
Attempted Avoidance Maneuver	Braking	Braking
Pre-Impact Stability	Tracking	Skidding longitudinally rotation less than 30°
Pre-Impact Location	Stayed in original travel lane	Stayed in original travel lane
Crash Type	87	86

In this example, the **Critical Crash Envelopes** for both vehicles (V₁CCE and V₂CCE) begin at the point where the driver's recognize the impending danger. The **Critical Crash Envelopes** end at the point of impact with the other vehicle.

Since it could not be determined which vehicle had the right-of-way, the **Critical Event** is determined using Pre-Crash General Rule #6b. It states if the junction is controlled by an on-colors traffic control device, and both drivers claim a green light, then both vehicles are in an environmentally dangerous position and the **Critical Event** for both vehicles should be *This vehicle traveling-crossing over (passing through) junction*.

Using all the available information, including scene inspection, interviews, and EDR it was determined that both vehicles **Attempted Avoidance Maneuver** was *Braking*.

Vehicle 1's **Pre-Impact Stability** was *Tracking* because no skid marks were identified on the PCR or at the scene inspection. *Skidding longitudinally rotation less than 30°* was selected for Vehicle 2's **Pre-Impact Stability** because tire marks were present at the scene and the scene evidence did not indicate rotation.

It is important keep in mind the type of traffic control (traffic signal versus stop sign) when determining right-of-way. Using the same scenario, but substituting stops signs for the traffic signals would change the **Critical Event** for both vehicles. Pre-Crash General Rule #6a states that if the junction is controlled by a 3-way or 4-way stop sign, or is uncontrolled, the vehicle on the right (Vehicle 2 in this case) would have had the right-of-way for determining encroachment.

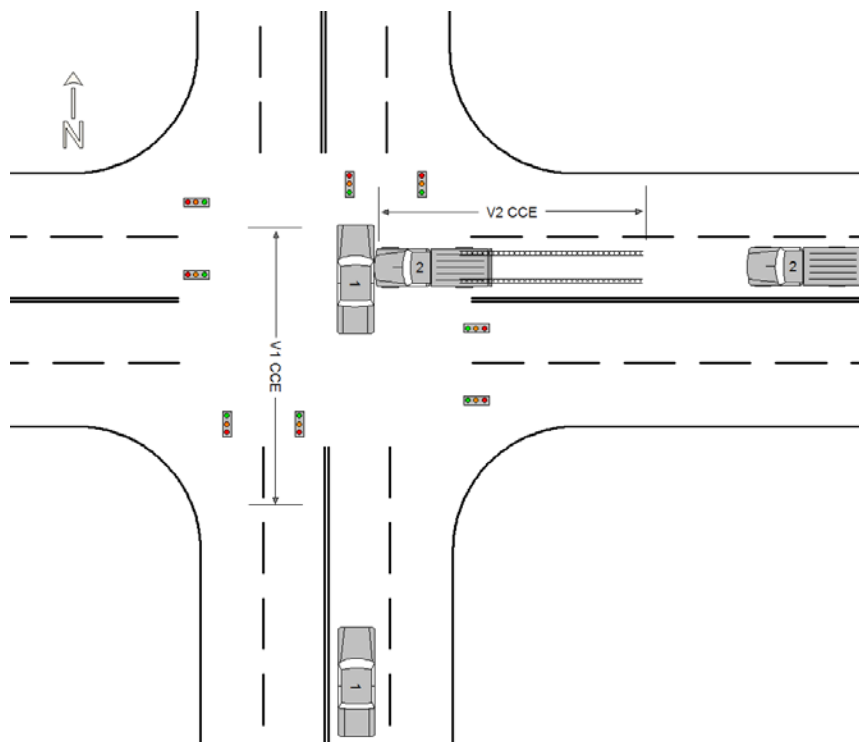


Figure 223. Intersection diagram – example 1

Example 2

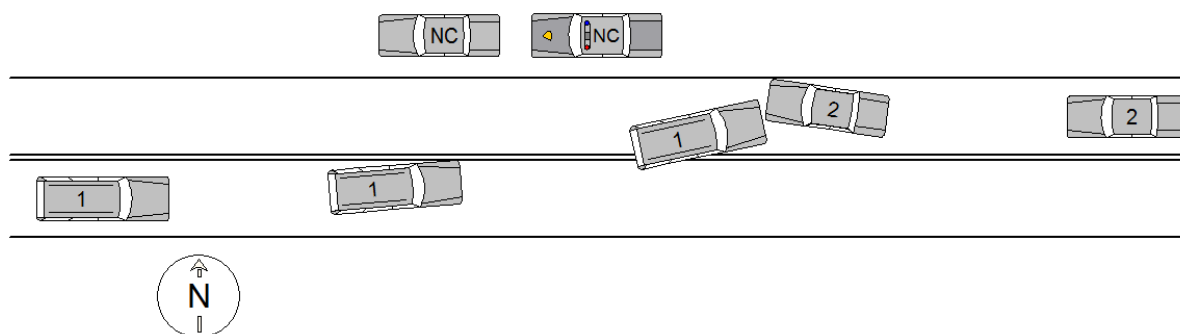


Figure 224. Intersection diagram – example 2

Vehicle 1 and Vehicle 2 are traveling in opposite directions on the same roadway. A police car (with lights activated) is making a traffic stop on the north side of the road. The driver of Vehicle 1 is looking at the activity on his left. Before he can react, Vehicle 1 crosses the centerline and strikes the front of Vehicle 2. The driver of Vehicle 2 also noticed the police activity, but he was attentive to the slowing traffic ahead. Vehicle 2 attempted to avoid the crash by braking and steering right.

Table 22. Situation matrix – example 2

Example 2	Vehicle 1	Vehicle 2
Driver's Distraction/Inattention	(Inattentive or distracted) Outside the vehicle	Attentive or not distracted
Pre-Event Movement	Going straight	Going straight
Critical Pre-Crash Category	This vehicle traveling	Other motor vehicle encroaching into lane
Critical Pre-Crash Event	Over the lane line on left side of travel lane	From opposite direction over left lane line
Attempted Avoidance Maneuver	No avoidance maneuver	Braking and steering right
Pre-Impact Stability	Tracking	Tracking
Pre-Impact Location	Stayed on roadway but left original travel lane	Stayed in original travel lane
Crash Type	50	51

In this example, Vehicle 1 has one **Critical Crash Envelope** (V_1CCE) that begins at the point where Vehicle 1 is in an imminent collision path with Vehicle 2. Vehicle 1's **Critical Crash Envelope** ends at the point of impact with Vehicle 2.

Vehicle 2's **Critical Crash Envelope** (V_2CCE) begins when the driver recognizes impending danger and ends at the point of impact with Vehicle 1.

When determining **Crash Type** it is important to keep in mind that some **Crash Configurations** are plane of impact dependent, while others are not. In this case the **Crash Type** for Vehicle 1 and Vehicle 2 is "50" and "51," Head-on respectively since it involved the front planes of both vehicles. If the collision had involved the side of one or both of the vehicles, then the **Crash Type** would have been "64" and "65," Angle/Sideswipe.

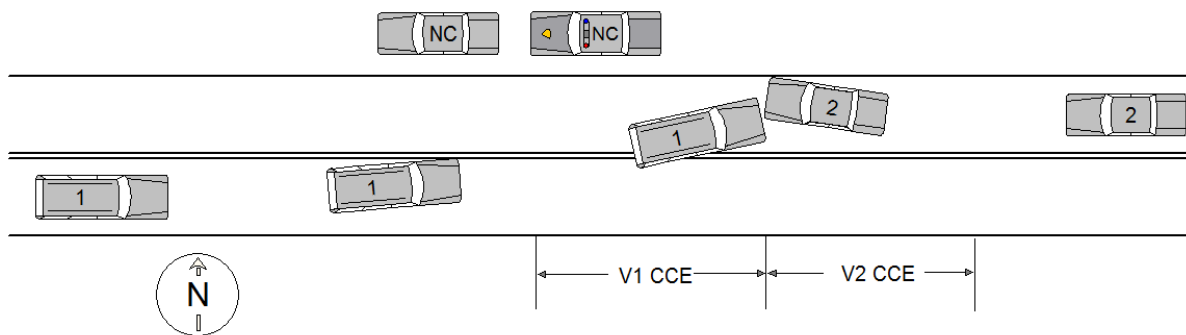


Figure 225. Intersection diagram – example 2

Example 3

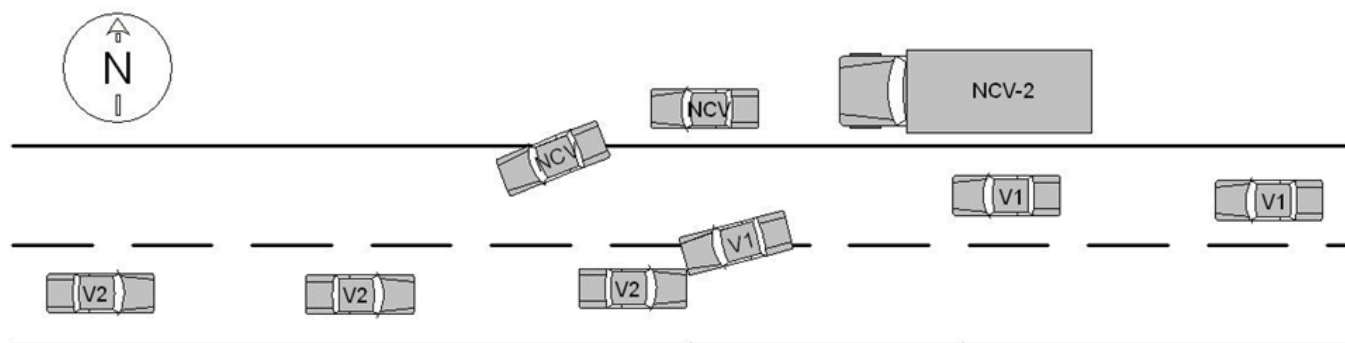


Figure 226. Intersection diagram – example 3

Vehicle 1 and Vehicle 2 are traveling in opposite directions on the same roadway. A non-contact vehicle (NCV) is parked in front of a non-contact heavy truck on the road shoulder and suddenly enters the roadway into Vehicle 1's travel lane. The driver of Vehicle 1 instantly brakes and steers left to avoid the non-contact vehicle. Vehicle 1 crosses over the center line and *immediately* impacts the front of Vehicle 2. Vehicle 2 had no avoidance maneuvers. There were no indications of distractions identified by police on the crash report or during CISS interviews.

Table 23. Situation matrix – example 3

Example 3	Vehicle 1	Vehicle 2
Driver's Distraction/Inattention	Attentive or not distracted	Attentive or not distracted
Pre-Event Movement	Going straight	Going straight
Critical Pre-Crash Category	Other motor vehicle encroaching into lane	Other motor vehicle encroaching into lane
Critical Pre-Crash Event	From parking lane/shoulder	From opposite direction over left lane line
Attempted Avoidance Maneuver	Braking and steering left	No avoidance actions
Pre-Impact Stability	Tracking	Tracking
Pre-Impact Location	Stayed on roadway but left original travel lane	Stayed in original travel lane
Crash Type	58	59

In this example, Vehicle 1 has one **Critical Crash Envelope** (V₁CCE). Vehicle 1's **Critical Crash Envelope** involved a successful avoidance of a non-contact vehicle and resulted in an immediate impact to Vehicle 2. Vehicle 1's **Critical Crash Envelope** was initiated by the non-contact vehicle; afterwards there was no opportunity for subsequent avoidance actions. Therefore, the encroachment of the non-contact vehicle into Vehicle 1's travel lane is coded as the **Critical Pre-Crash Event** for Vehicle 1. Vehicle 1's **Avoidance Maneuver** is coded as the action taken to avoid the non-contact vehicle.

Vehicle 2 has one **Critical Crash Envelope** (V₂CCE) that begins at the point where Vehicle 1 is in an imminent path of collision with Vehicle 2 and ends at the point of impact with Vehicle 1.

Tracking is selected as Vehicle 1's **Pre-Impact Stability** since no tire marks were present.

Vehicle 1's Pre-Impact Location is *Stayed on roadway but left original travel lane*. This attribute best describes the location of the vehicle after the critical event and before impact.

The non-contact vehicle and the non-contact truck were not involved in an impact in the sequence of crash events and are therefore not coded in CISS. However, the non-contact vehicle and truck must be shown on the scene diagram to substantiate Pre-Crash coding.

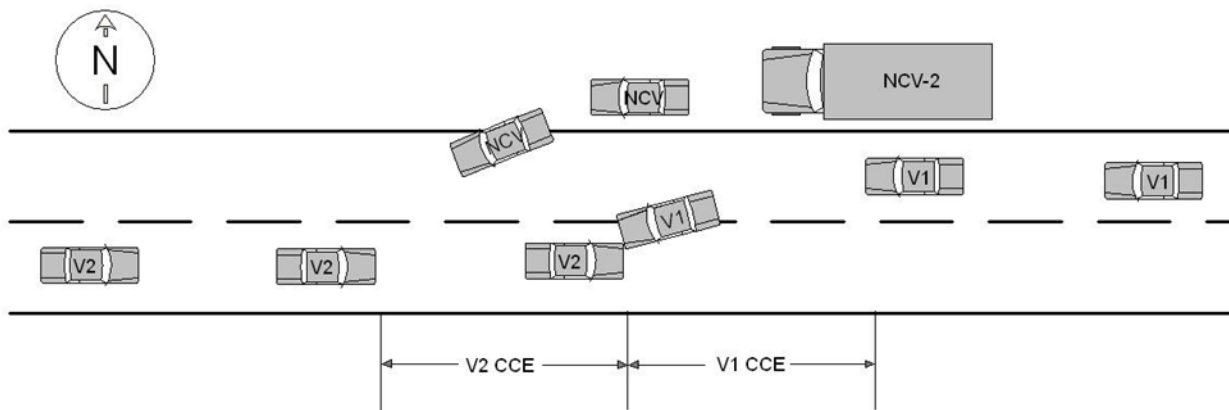


Figure 227. Intersection diagram – example 3

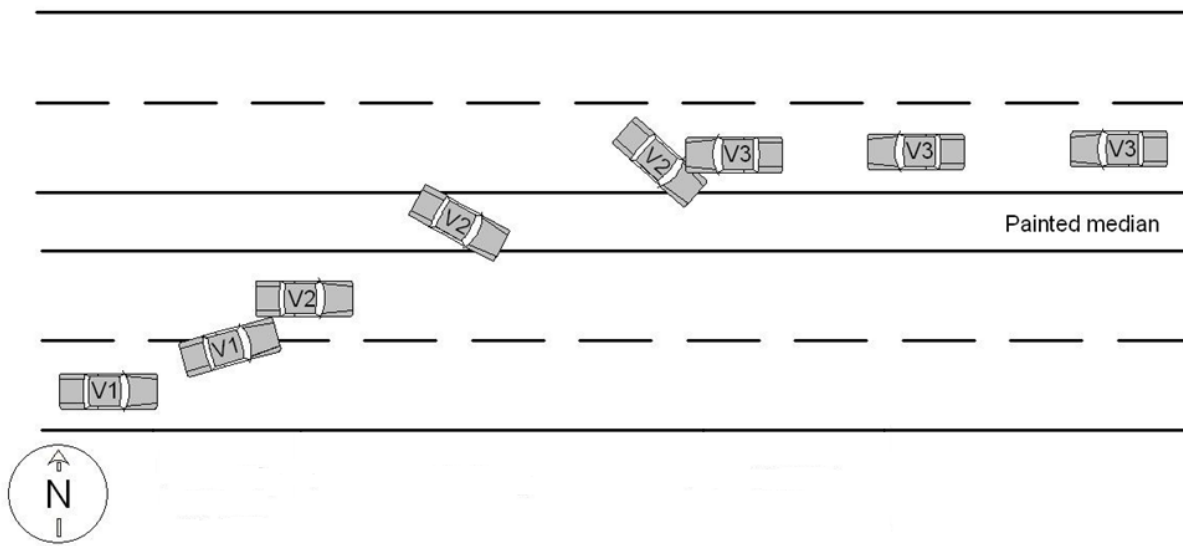
Example 4

Figure 228. Intersection diagram – example 4

Vehicle 1 and Vehicle 2 are traveling in the same direction in adjacent lanes on a divided highway (with a painted median). Vehicle 1 has a tire blow out and loses control, crosses the left lane line and impacts the right rear of Vehicle 2. Vehicle 2 is redirected across the painted median, skidding and rotating clockwise, and subsequently impacts Vehicle 3. Vehicle 3 attempted to avoid Vehicle 2 by steering right and accelerating. There were no indications of distractions identified by police on the crash report or during CISS interviews.

Table 24. Situation matrix – example 4

Example 4	Vehicle 1	Vehicle 2	Vehicle 3
Driver's Distraction/Inattention	Attentive or not distracted	Attentive or not distracted	Attentive or not distracted
Pre-Event Movement	Going straight	Going straight	Going straight
Critical Pre-Crash Category	This vehicle loss control due to	Other motor vehicle encroaching into lane	Other motor vehicle encroaching into lane
Critical Pre-Crash Event	Blow out or flat tire	From adjacent lane (same direction) - over right lane line	From opposite direction - over left lane line
Attempted Avoidance Maneuver	No avoidance maneuver	No avoidance maneuver	Accelerating and steering right
Pre-Impact Stability	Tracking	Tracking	Tracking
Pre-Impact Location	Stayed on roadway, but left original travel lane	Stayed in original travel lane	Stayed in original travel lane
Crash Type	45	44	98

In this example, Vehicle 1 has one **Critical Crash Envelope** (V₁CCE) that begins with control loss due to the tire blow out and ends at the point of impact with Vehicle 2. The blow out is the **Critical Pre-Crash Event**.

Vehicle 2 has two **Critical Crash Envelopes** (V₂CCE₁ and V₂CCE₂). Vehicle 2's first **Critical Crash Envelope** (V₂CCE₁) begins when Vehicle 1 enters Vehicle 2's travel lane and ends at the point of impact with Vehicle 1. Vehicle 2's second **Critical Crash Envelope** (V₂CCE₂) begins immediately after the first impact and ends at the point of impact with Vehicle 3. Use the **Critical Crash Envelope** that resulted in Vehicle 2's first impact (V₂CCE₁), because CISS is only interested in coding the **Critical Crash Envelope** that leads to a vehicle's first harmful event.

Vehicle 3 has one **Critical Crash Envelope** (V₃CCE) that begins when Driver 3 recognizes and reacts to Vehicle 2 that is in an imminent path of collision with Vehicle 3 and ends at the point of impact with Vehicle 2.

The **Crash Type** for Vehicle 1 and Vehicle 2 is "45'- '44,' *Sideswipe/Angle: Straight ahead*, respectively based on their positions (i.e., left versus right) and because Vehicle 1 did not intend to change lanes. Situations involving vehicles that intended to change lanes are captured with **Crash Type** codes "46' and "47,' *Sideswipe/Angle: Changing lanes*.

The **Crash Type** for Vehicle 3 is “98, ’ *Other*” since it was not involved in the first harmful event in the crash.

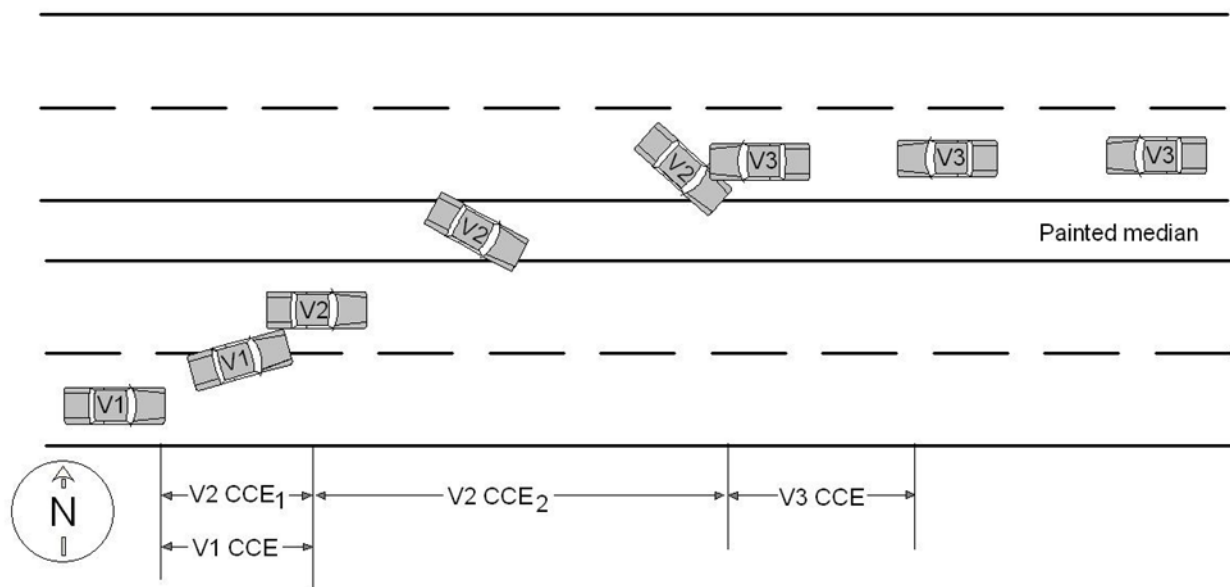


Figure 229. Intersection diagram – example 4

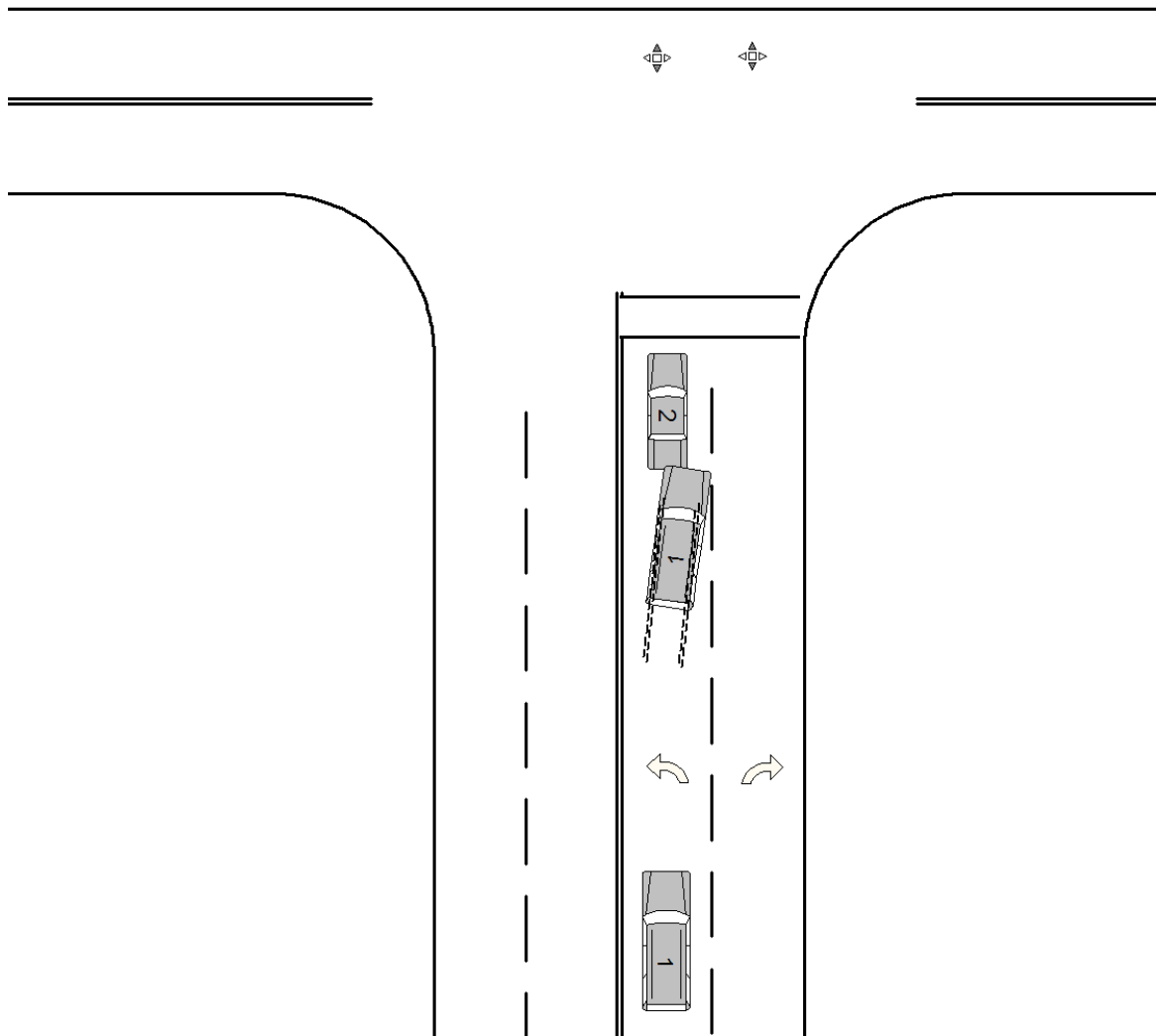
Example 5

Figure 230. Intersection diagram – example 5

Vehicle 2 is stopped waiting to turn left in a left turn lane at an intersection controlled by a traffic signal. Vehicle 1 approaches the intersection and the driver is texting. Vehicle 1's driver looks up at the last minute and brakes and steers right leaving tire marks, but cannot avoid striking the rear of Vehicle 2. There were no indications of distractions identified by police on the crash report or during CISS interviews for the driver of Vehicle 2.

Table 25. Situation matrix – example 5

Example 5	Vehicle 1	Vehicle 2
Driver's Distraction/Inattention	(Inattentive or Distracted) Manually operating and electronic communication device	Attentive or not distracted
Pre-Event Movement	Going straight	Stopped in road
Critical Pre-Crash Category	Other vehicle in lane	Other vehicle in lane
Critical Pre-Crash Event	Other vehicle stopped	Traveling in same direction with higher speed
Attempted Avoidance Maneuver	Braking and steering right	No avoidance maneuver
Pre-Impact Stability	Skidding longitudinally rotation less than 30°	Tracking
Pre-Impact Location	Stayed in original travel lane	Stayed in original travel lane
Crash Type	20	22

In this example, Vehicle 1's **Critical Crash Envelope** (V₁CCE) begins at the point the driver recognizes Vehicle 2 is stopped in the lane, and ends at the point of impact with Vehicle 2.

Vehicle 2's **Critical Crash Envelope** (V₂CCE) begins at ends at the point of impact.

Vehicle 1's **Driver's Distraction/Inattention** is *(Inattentive or Distracted) Manually operating and electronic communication device*. Texting is captured in this attribute.

The Pre-Event Movement and Critical Event coding can be tricky in rear end crash scenarios. Refer to the **Pre-Crash Event Scenarios for Different Rear-End Collision Situations** following the Pre-Crash Examples for additional guidance.

The **Crash Type** for Vehicle 2 is "22," *Rear-end: Stopped left* because it was stopped and intended to turn left at the intersection.

The **Pre-Impact Stability** for Vehicle 1 is Skidding longitudinally rotation less than 30° as opposed to Tracking because tire marks were present and rotation was minimal.

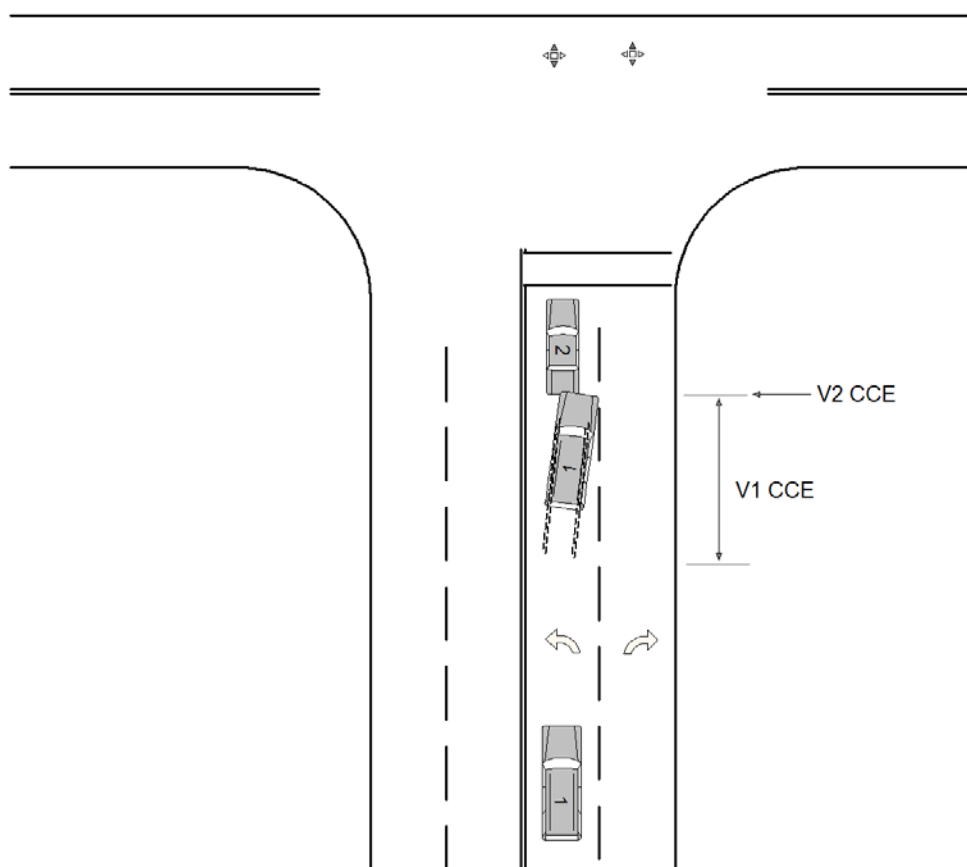


Figure 231. Intersection diagram – example 5

Example 6

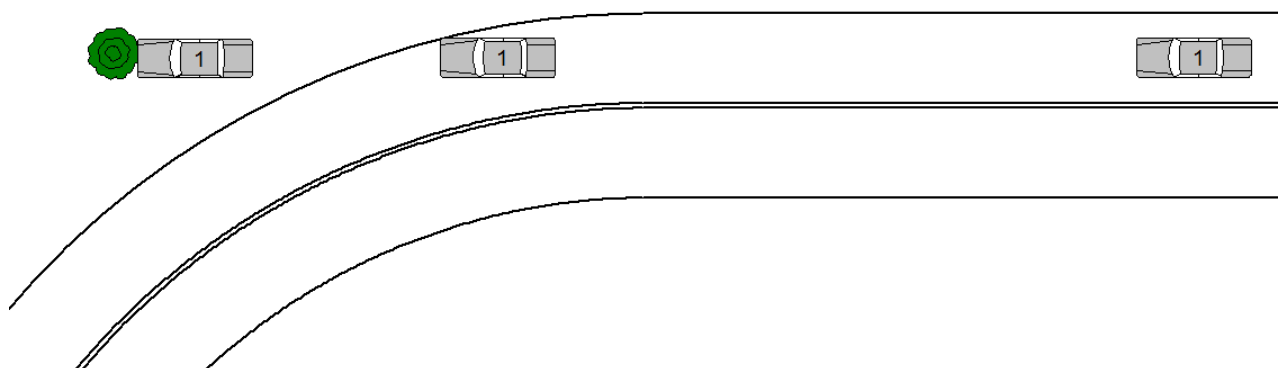


Figure 232. Intersection diagram – example 6

Vehicle 1 is traveling on a two-lane roadway and the driver, who is diabetic, has a hypoglycemic attack and begins to lose consciousness. The vehicle departs the right side of the road as it enters a curve and strikes a tree.

Table 26. Situation matrix – example 6

Example 6	Vehicle 1
Driver's Distraction/Inattention	Not distracted
Pre-Event Movement	Going straight
Critical Pre-Crash Category	This vehicle loss of control due to
Critical Pre-Crash Event	Other cause of control loss
Attempted Avoidance Maneuver	None
Pre-Impact Stability	Tracking
Pre-Impact Location	Departed roadway
Crash Type	01

Driver Distraction/Inattention is coded as *Attentive or not distracted*. Intoxication, heart attack, diabetic coma and syncope are not considered distractions.

Vehicle 1's **Critical Crash Envelope** (V₁CCE) begins at the point where the vehicle is in imminent path of a collision with the tree and ends at impact.

The **Critical Event** is coded *This vehicle control loss due to: Other cause of control loss* following Pre-Crash General Rule #4 that addresses loss of control because of driver illness.

The **Pre-Event Movement** element describes the vehicle's activity just prior to the **Critical Event**, in this case, *Going straight*.

The **Crash Type** for Vehicle 1 is “01, ’ *Right roadside departure: Drive off road*. Do not confuse the **Critical Event Category** coding of *This vehicle control loss due to* with the **Crash Type** “02, ’ *Right roadside departure: Control/Traction loss*.

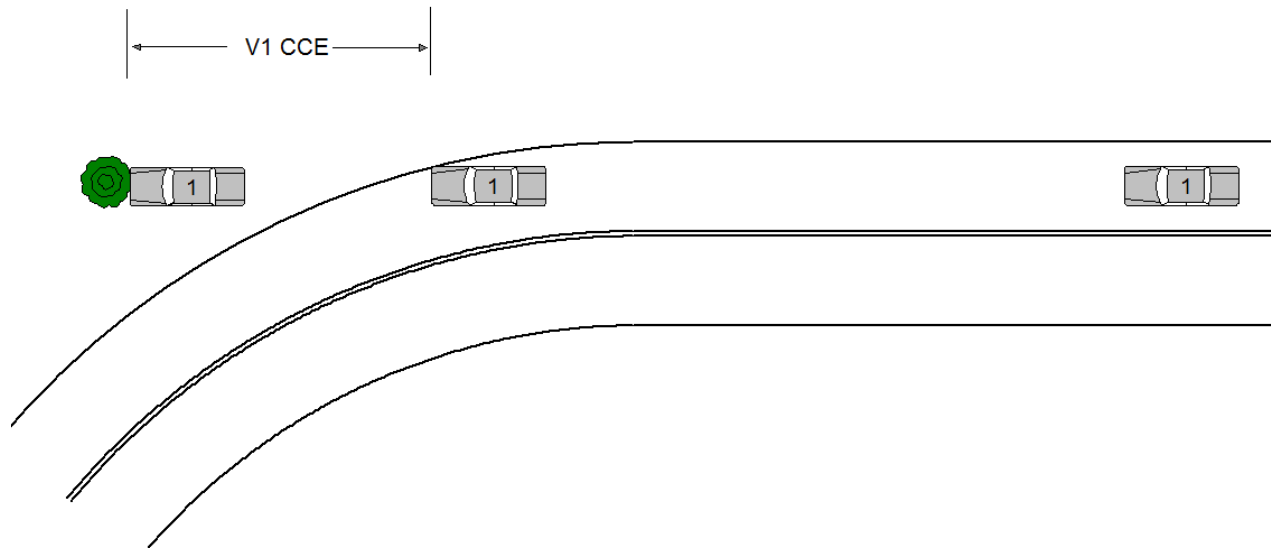


Figure 233. Intersection diagram – example 6

Example 7

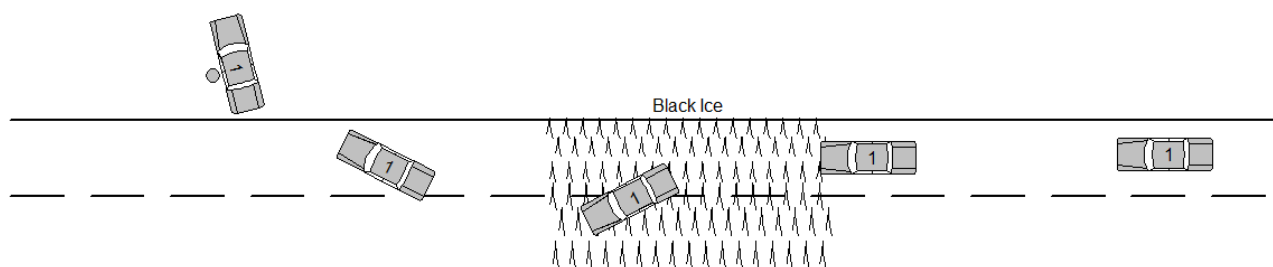


Figure 234. Intersection diagram – example 7

Vehicle 1 is traveling on a two-lane roadway with moderate snow falling. The driver suddenly encounters black ice on the roadway, loses control, and begins to rotate counterclockwise. The driver attempts to regain control by braking and steering right, but overcorrects and the vehicle departs the right side of the roadway and strikes a pole. There were no indications of distractions identified by police on the crash report or during CISS interviews.

Table 27. Situation matrix – example 7

Example 7	Vehicle 1
Driver's Distraction/Inattention	Attentive or not distracted
Pre-Event Movement	Going straight
Critical Pre-Crash Category	This vehicle loss of control due to
Critical Pre-Crash Event	Poor road conditions (specify)
Attempted Avoidance Maneuver	Braking and steering right
Pre-Impact Stability	Skidding laterally clockwise rotation
Pre-Impact Location	Departed roadway
Crash Type	02

Vehicle 1's **Critical Crash Envelope** (V₁CCE) begins when the vehicle encounters the black ice and ends at impact with the pole.

The **Critical Event** in this example is *This vehicle control loss due to: Poor road conditions-Specify (Black ice)*.

It can be difficult to determine the **Critical Event** in cases when weather, road conditions, roadway alignment, and speed all potentially play a role in the crash. Examples 7 and 8 are prime examples, *Poor road conditions*, *Too fast for conditions*, or *This vehicle traveling* category attributes (i.e., *Off the edge of the road on the right side*) could be selected based on the circumstances.

Typically, *Poor road conditions* such as ice and puddles are “suddenly” encountered by the driver and not ongoing situations.

- *Too fast for conditions* applies when the vehicles movement and speed were not appropriate relative to the vehicles surroundings; roadway curves are often involved.
- If neither of these *Loss of control Critical Events* apply, then *This vehicle traveling* category attributes are appropriate.

Pre-Impact Stability is assessed after the **Critical Event** and any avoidance actions so *Skidding laterally clockwise rotation* is selected in this case.

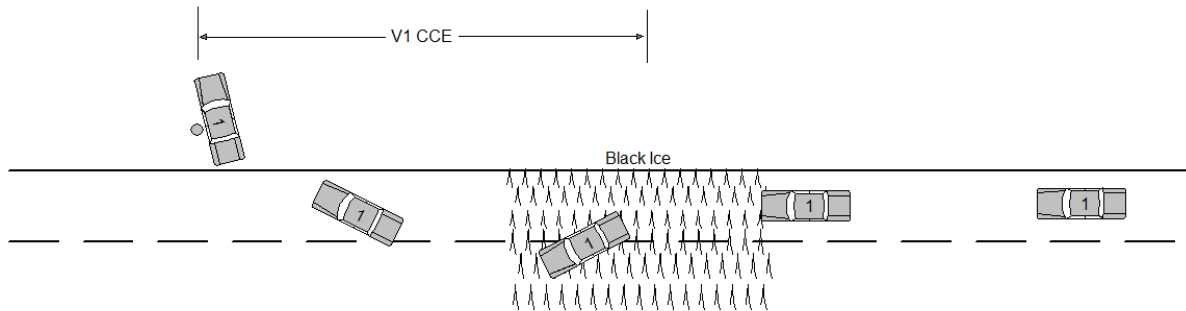


Figure 235. Intersection diagram – example 7

Example 8

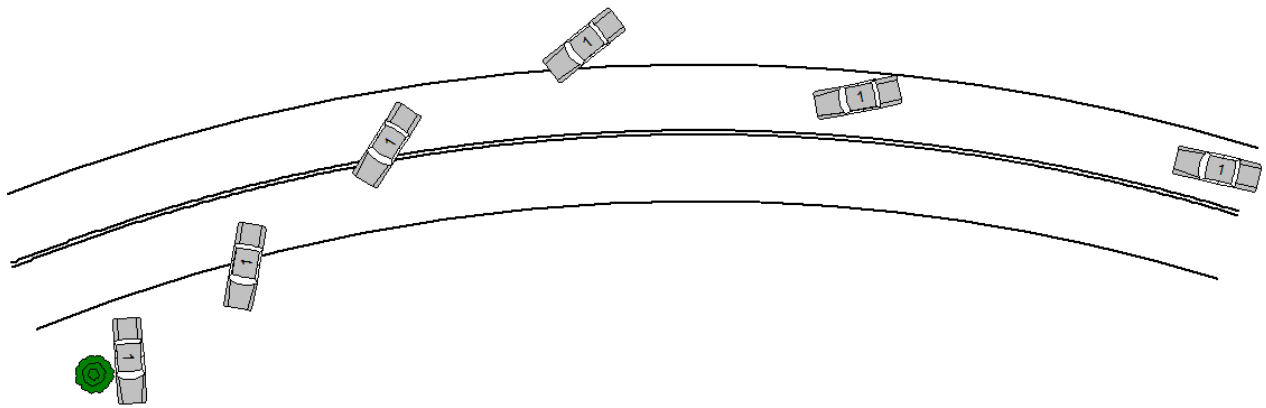


Figure 236. Intersection diagram – example 8

Vehicle 1 is traveling on a two-lane roadway with heavy rain falling. Police estimate the driver was traveling 55 mph in this 35 mph speed zone. While negotiating a curve the driver loses control on the rain-slickened road and the vehicle slides off the right edge of the road but does not sustain an impact. The driver steers left in an attempt to regain control, crosses both travel lanes, and departs the left side of the road before striking a tree with its right side. There were no indications of distractions identified by police on the crash report or during CISS interviews.

Table 28. Situation matrix – example 8

Example 8	Vehicle 1
Driver's Distraction/Inattention	Attentive or not distracted
Pre-Event Movement	Negotiating a curve
Critical Pre-Crash Category	This vehicle loss of control due to
Critical Pre-Crash Event	Traveling too fast for conditions
Attempted Avoidance Maneuver	Steering left
Pre-Impact Stability	Skidding laterally counterclockwise rotation
Pre-Impact Location	Departed roadway
Crash Type	07

In this example, Vehicle 1 has one **Critical Crash Envelope** (V₁CCE) that begins when the driver begins to lose control and the vehicle begins to rotate counterclockwise. The envelope ends at impact with the tree. This crash is not a **Critical Crash Envelope** scenario because Vehicle 1 never regained control.

The **Critical Event** is coded *This vehicle control loss due to: Too fast for conditions* because the vehicles movement and speed were not appropriate relative to the vehicle's surroundings (heavy rain and curve).

The **Pre-Impact Location** is coded *Departed roadway* since the element is based on the location of the vehicle after the critical event, and immediately before the first impact.

The **Crash Type** element is based on the first harmful event and the vehicle did not strike anything when it departed the right side of the road, therefore, '07, ' *Left roadside departure-Control/traction loss* is selected as the **Crash Type**.

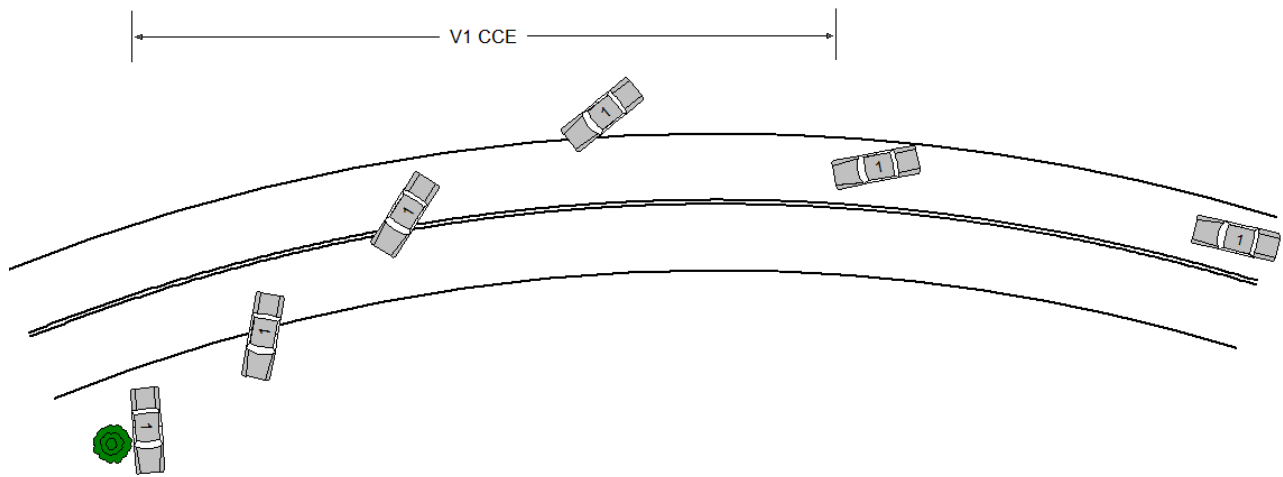


Figure 237. Intersection diagram – example 8

Example 9

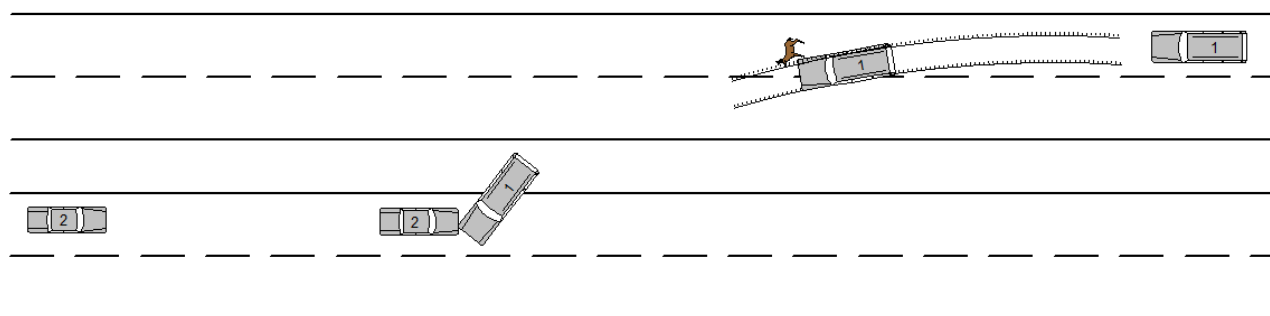


Figure 238. Intersection diagram – example 9

Vehicle 1 is traveling westbound on a highway with a posted speed limit of 55 mph. Vehicle 2 is traveling east on the same highway in sunny and dry conditions. A deer suddenly enters the roadway from the right and the driver of Vehicle 1 attempts to brake and steer left, leaving several meters of tire marks, but strikes the deer. Vehicle 1 then goes into a counterclockwise yaw and crosses into the oncoming lanes and strikes Vehicle 2.

The EDR in both vehicles were imaged and the data was found to be associated with this crash. The EDR precrash data indicated Vehicle 1's speed was 55 mph leading up to impact with the deer and confirmed the braking and steering maneuvers. Vehicle 2's speed was steady at 75 mph prior to impact and showed no braking. The scene evidence confirmed no pre-impact tire marks for Vehicle 2, with impact in the center of its original lane.

The driver of Vehicle 1 had a BAC of .15 g/dL and was charged with driving under the influence, but there were no indications of distraction identified on the crash report or during CISS interviews. The driver of Vehicle 2 was killed.

Table 29. Situation matrix – example 9

Example 9	Vehicle 1	Vehicle 2
Driver's Distraction/Inattention	Attentive or not distracted	Unknown
Pre-Event Movement	Going straight	Going straight
Critical Pre-Crash Category	Object or animal	Other motor vehicle encroaching into lane
Critical Pre-Crash Event	Animal in road	From opposite direction over left lane line
Attempted Avoidance Maneuver	Braking and steering left	No avoidance actions
Pre-Impact Stability	Skidding longitudinally rotation less than 30°	Tracking
Pre-Impact Location	Stayed on roadway, but left original travel lane	Stayed in original travel lane

Example 9	Vehicle 1	Vehicle 2
Crash Type	13	98

Vehicle 1 has two **Critical Crash Envelopes** (V₁CCE1 and V₁CCE2). Vehicle 1's first **Critical Crash Envelope** (V₁CCE1) begins when the driver recognizes the deer in the roadway and ends at the point of impact with the deer. Vehicle 1's second **Critical Crash Envelope** (V₁CCE2) begins immediately after the first impact and ends at the point of impact with Vehicle 2. The precrash coding is based on the **Critical Crash Envelope** that resulted in Vehicle 1's first impact (V₁CCE1).

Vehicle 2 has only one **Crash Envelope** (V₂CCE) that begins when it's in imminent path of collision with Vehicle 1 and ends at impact.

Attentive or not distracted is selected for Vehicle 1 **Driver's Distraction/Inattention**. The driver took evasive maneuvers to avoid the deer and there were no other indications of distractions identified by police or the CISS technician. It's important to note that the BAC level for the driver of Vehicle 1 plays no role in distraction coding.

The **Pre-Impact Location** for Vehicle 1 is *Stayed on roadway- but left original travel lane* since part of the vehicle was out of its original lane prior to impact with the deer. Similarly, vehicles that depart the road and strike a curb are coded as *Departed the roadway* even though the majority of the vehicle is still on the roadway.

The **Crash Type** for Vehicle 1 is "13," *Pedestrian/Animal on road*.

Vehicle 2 **Driver's Distraction/Inattention** is coded *Unknown*; the deceased driver could not be interviewed and there was no other information available to assess the driver's attention level.

The fact that Vehicle 2 was traveling 20 mph over the speed limit does not affect the **Critical Event** coding of *Other vehicle encroaching into lane- From opposite direction over left lane line*. The situation that made the event critical was Vehicle 1's movement and not Vehicle 2's speed.

Since the EDR precrash data showed no braking and there was no scene evidence to indicate **Attempted Avoidance Maneuvers** *No avoidance actions* was selected for Vehicle 2.

The **Crash Type** for Vehicle 2 is "98," *Other* since it was not involved in the first harmful event in the crash.

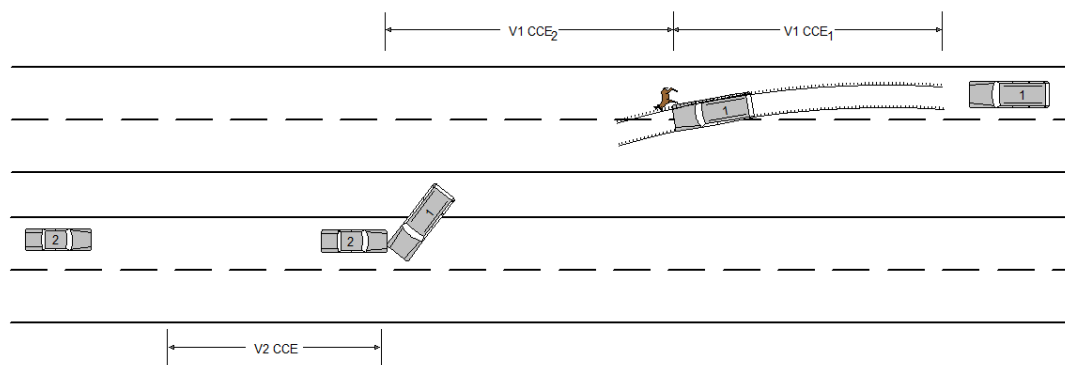


Figure 239. Intersection diagram – example 9

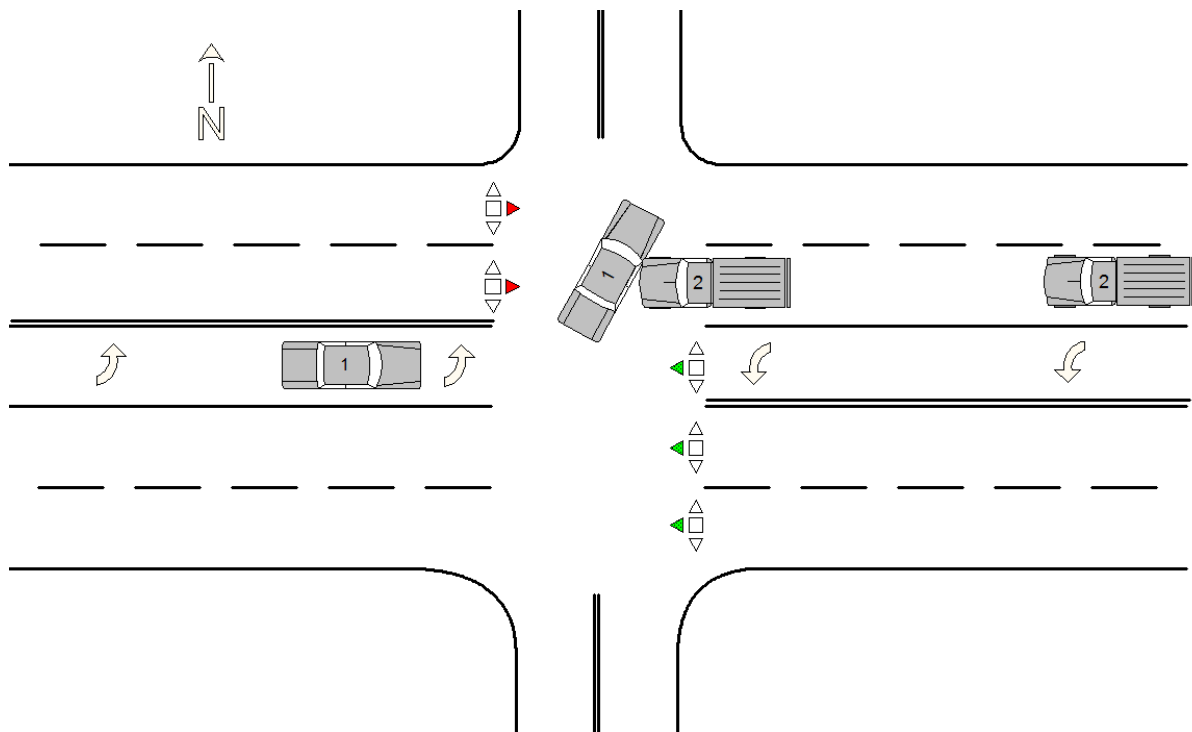
Example 10

Figure 240. Intersection diagram – example 10

The crash occurred at the intersection of a five lane east/west roadway with center left turn lane and a two-lane north/south roadway. The intersection was controlled by traffic signals. Vehicle 1 was eastbound in the left turn lane of the five-lane roadway. Vehicle 2 was traveling west on the same roadway. Vehicle 1, which had a green turn arrow, attempted to turn left to go north on the intersecting two-lane road. Vehicle 2 passed through the intersection and its front struck the right side of Vehicle 1. There was no evidence of avoidance actions by either of the vehicles involved.

There were no indications of distractions identified by police on the crash report or during CISS interviews for the driver of Vehicle 1. The PCR did not detail the circumstances regarding Vehicle 2's passing through the intersection, but the driver was cited for running a red light. Vehicle 2's driver could not be located for a CISS interview.

Table 30. Situation matrix - example 10

Example 10	Vehicle 1	Vehicle 2
Driver's Distraction/Inattention	Attentive or not distracted	Unknown
Pre-Event Movement	Turning left	Going straight
Critical Pre-Crash Category	Other motor vehicle encroaching into lane	This vehicle traveling
Critical Pre-Crash Event	From opposite direction over right lane line	Crossing over (passing through) junction
Attempted Avoidance Maneuver	No avoidance actions	No avoidance actions
Pre-Impact Stability	Tracking	Tracking
Pre-Impact Location	Stayed in original travel lane	Stayed in original travel lane
Crash Type	68	69

In this example, the **Critical Crash Envelope** for both vehicles (V₁CCE) and (V₂CCE) begin when they are in an imminent path of collision. The **Critical Crash Envelopes** end at the point of impact.

The first portion of Pre-Crash General Rule #7 applies to this crash. It states, “When two vehicles are initially traveling on the same trafficway and one executes a left turn with the right-of-way (i.e., green arrow), use *Other motor vehicle encroaching into lane -From opposite direction over right lane line* for the turning vehicle's **Critical Event**.”

A similar principle applies for Vehicle 1's **Pre-Impact Location**; it's considered to have *Stayed in original travel lane* while making the turn. Consider Vehicle 1's “lane” as continuing left as they negotiate the turn through the intersection.

Vehicle 2's **Driver's Distraction/Inattention** is coded *Unknown* since there was no interview and the PCR did not provide any information on distractions.

Vehicle 2's **Attempted Avoidance Maneuvers** were coded *No avoidance actions*. It should be noted that the absence of interview information does not necessarily prohibit attempted avoidance maneuver determination. Scene inspection, PCR, EDR data, etc., can all be used to identify avoidance actions.

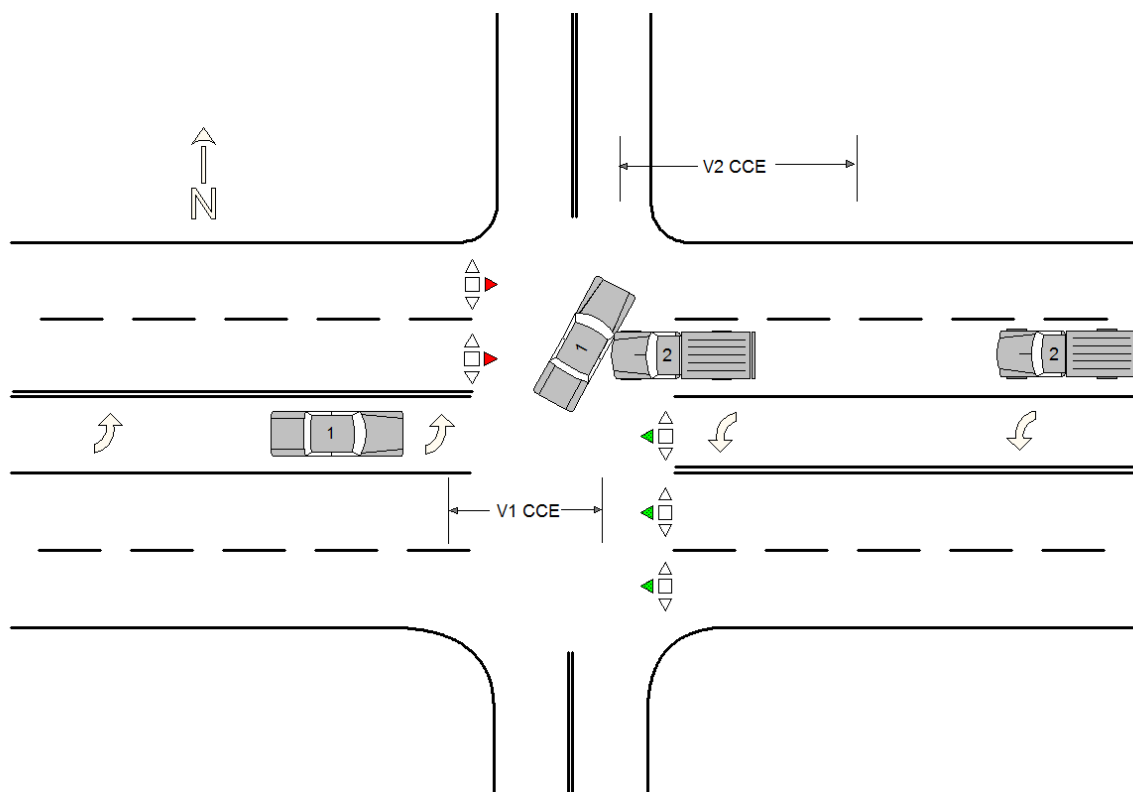


Figure 241. Intersection diagram – example 10

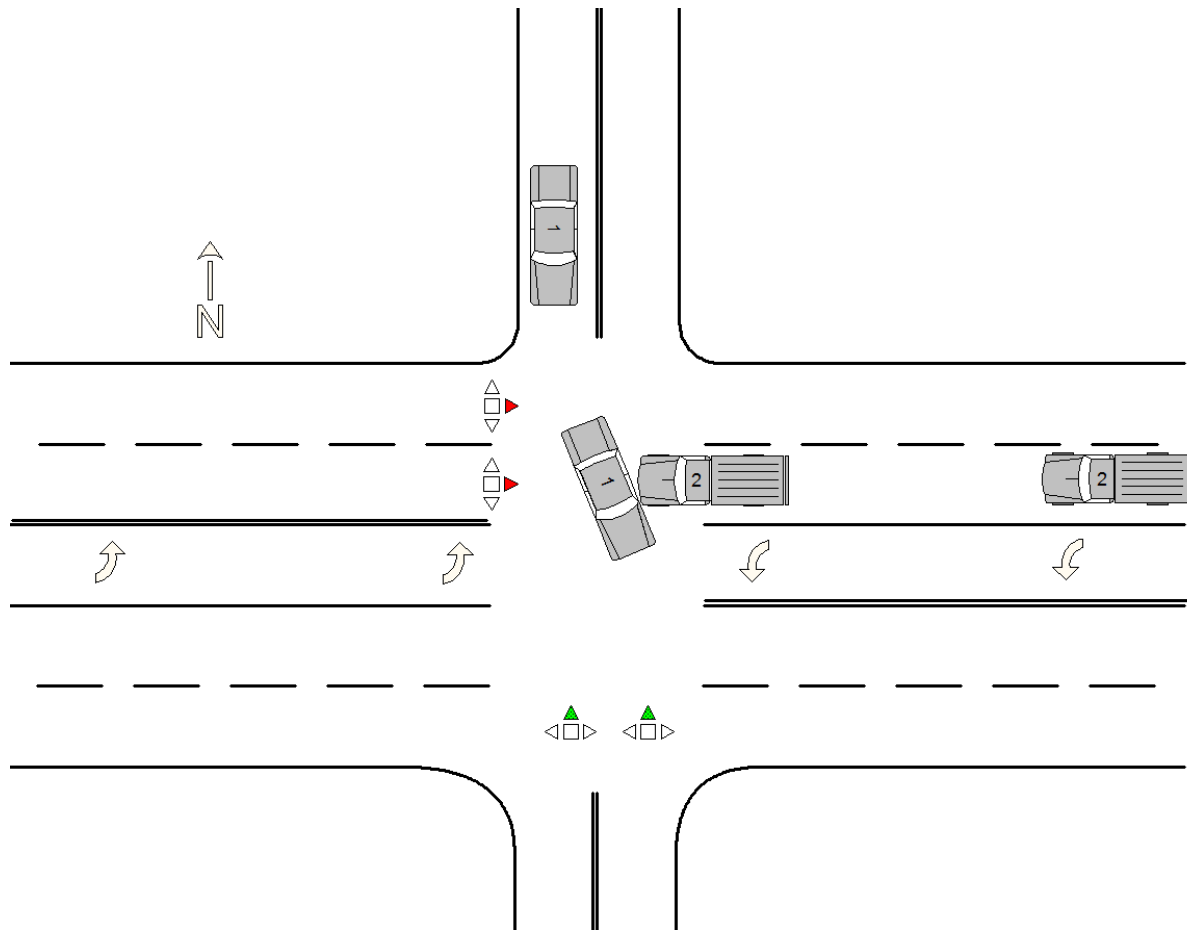
Example 11

Figure 242. Intersection diagram – example 11

The crash occurred at the intersection of a five lane east/west roadway with center left turn lane and a two-lane north/south roadway. The intersection was controlled by traffic signals. Vehicle 1 was southbound on the two--lane roadway. Vehicle 2 was traveling west on the five-lane roadway. Vehicle 1, which had a green turn arrow, attempted to turn left to travel east on the intersecting five-lane road. Vehicle 2 passed through the intersection and its front struck the left side of Vehicle 1.

The driver of Vehicle 1 was attentive and took no avoidance actions. Vehicle 2's driver reported that he was thinking about an issue at work and did not notice the traffic signal until the last moment. He applied his brakes, but no tire marks were present.

Table 31. Situation matrix - example 11

Example 11	Vehicle 1	Vehicle 2
Driver's Distraction/Inattention	Attentive or not distracted	(Inattentive or Distracted) Inattentive or lost in thought
Pre-Event Movement	Turning left	Going straight
Critical Pre-Crash Category	Other motor vehicle encroaching into lane	This vehicle traveling
Critical Pre-Crash Event	From crossing street across path	Crossing over (passing through) junction
Attempted Avoidance Maneuver	No avoidance actions	Braking
Pre-Impact Stability	Tracking	Tracking
Pre-Impact Location	Stayed in original travel lane	Stayed in original travel lane
Crash Type	82	83

In this example, Vehicle 1's **Critical Crash Envelope** (V₁CCE) begins at the point where Vehicle 1 is in an imminent collision path with Vehicle 2 and ends at the point of impact.

Vehicle 2's **Critical Crash Envelope** (V₂CCE) begins when the driver recognizes Vehicle 1 turning in front of it in the intersection and ends at impact.

The second portion of Pre-Crash General Rule #7 applies to this crash. It states, "When two vehicles are initially traveling on *different* trafficways the **Critical Event** for the vehicle turning left with the right-of-way should be *Other vehicle encroaching into lane-From crossing street across path*."

Vehicles initially on *different* trafficways are captured in **Crash Type Configuration "K, ' Turn Into Path (Crash Types "76' - '85")**. So in this case the **Crash Types** for Vehicle 1 and Vehicle 2 are "82' and "83' respectively. Turning vehicles initially on the same trafficway are coded in **Crash Type Configuration "J, ' Turn across path (Crash Types "68' - '75")**. Unlike many of the other **Crash Types**, the plane contacted on the vehicle is irrelevant for the *Change trafficway (Category IV) Crash Types*.

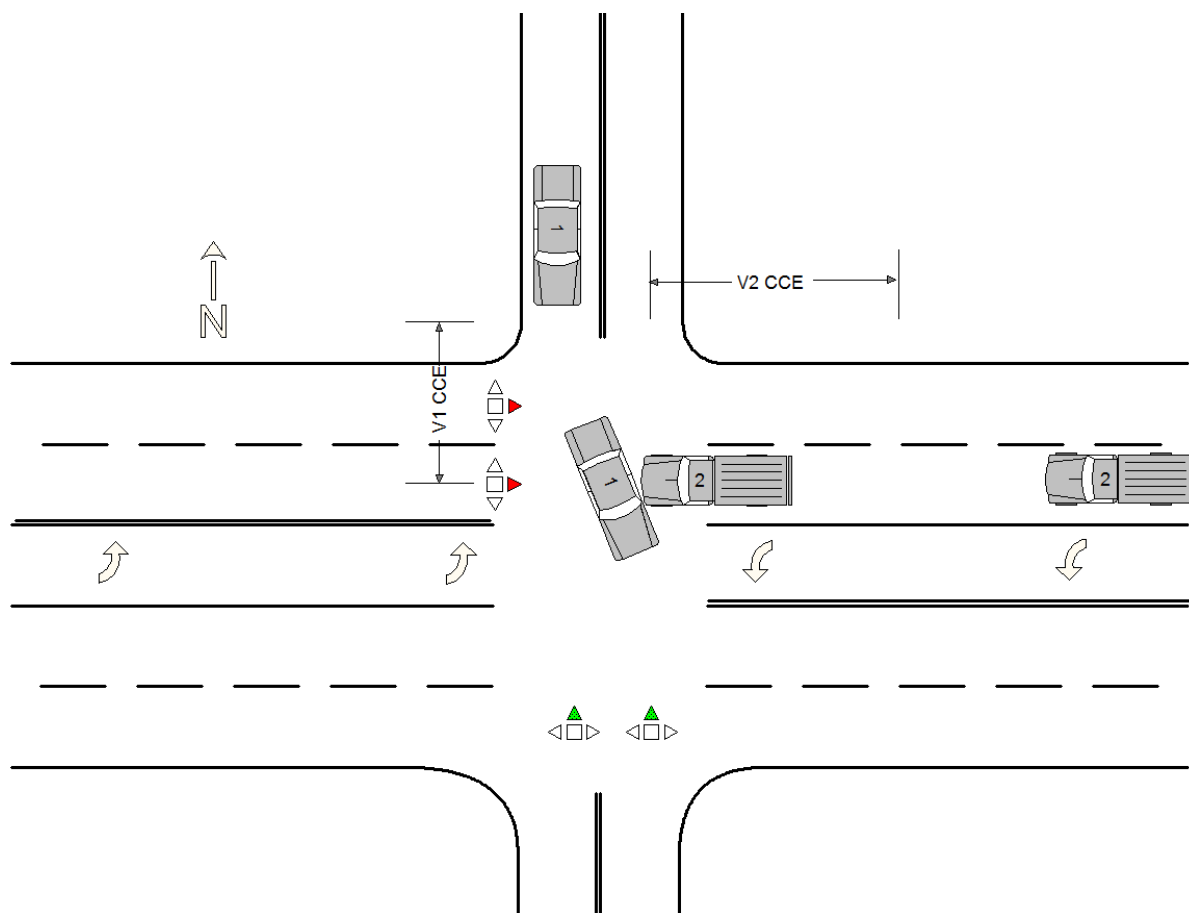


Figure 243. Intersection diagram – example 11

Example 12

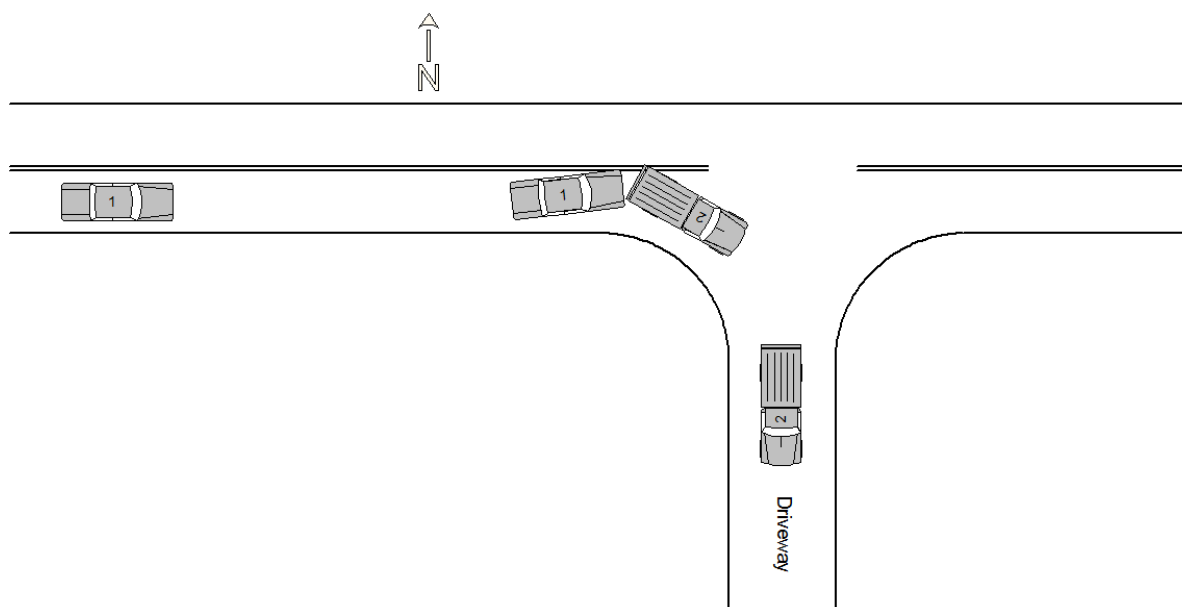


Figure 244. Intersection diagram – example 12

Vehicle 1 was eastbound on a two-lane roadway. Vehicle 2 was backing out of a driveway on the south side of the road, intending to travel east. Vehicle 1 braked and steered left, but was unable to avoid striking the rear of Vehicle 2. The driver of Vehicle 2 stated he saw the other vehicle approaching, but misjudged its speed.

Vehicle 1's EDR indicated it was traveling 50 mph in the 35 mph speed zone and applied the brakes at the T minus 2 data point prior to impact, but did not leave tire marks. There were no indications of distractions identified by police for either driver on the crash report or during CISS interviews.

Table 32. Situation matrix - example 12

Example 12	Vehicle 1	Vehicle 2
Driver's Distraction/Inattention	Attentive or not distracted	Attentive or not distracted
Pre-Event Movement	Going straight	Backing up
Critical Pre-Crash Category	Other motor vehicle encroaching into lane	This vehicle traveling
Critical Pre-Crash Event	From driveway, turning into same direction	Backing
Attempted Avoidance Maneuver	Braking and steering left	No avoidance actions
Pre-Impact Stability	Tracking	Tracking
Pre-Impact Location	Stayed in original travel lane	Entered roadway
Crash Type	93	92

In this example, Vehicle 1's **Critical Crash Envelope** (V₁CCE) begins at the point where the driver recognizes Vehicle 2 is backing into the roadway and recognizes the danger. The **Critical Crash Envelope** for Vehicle 1 ends at impact.

Vehicle 2's **Critical Crash Envelope** (V₂CCE) begins when it's in imminent path of collision with Vehicle 1 and ends at impact.

Although Vehicle 1 was traveling 15 mph over the speed limit, the **Critical Pre-Crash Category** for Vehicle 1 is *Other vehicle encroaching into lane*. The situation that made the event critical was Vehicle 2's movement (backing out of the driveway) and not Vehicle 1's speed. The **Critical Event** for Vehicle 1 is *From driveway turning into same direction*, since Vehicle 2 *intended* to travel east in the same direction as Vehicle 1.

The **Critical Event** for Vehicle 2 is *This vehicle traveling- Backing*.

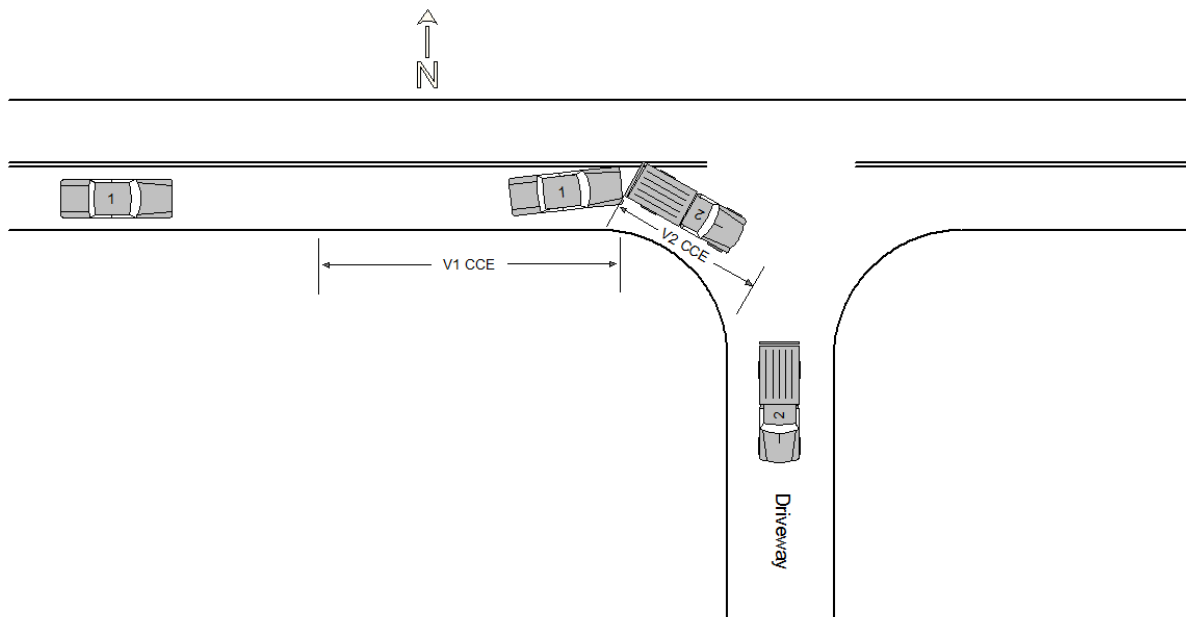


Figure 245. Intersection diagram – example 12

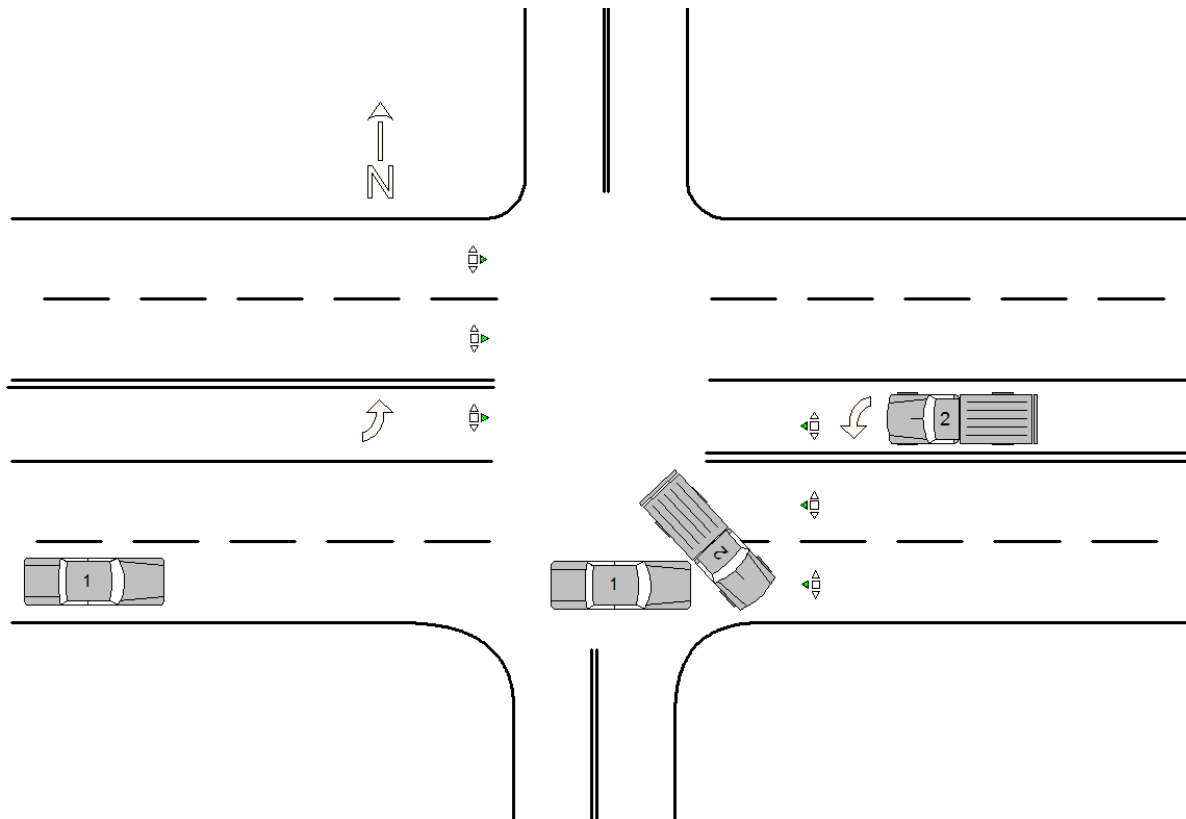
Example 13

Figure 246. Intersection diagram – example 13

Vehicle 1 was eastbound on a five-lane roadway with center left turn lanes approaching an intersection controlled by a traffic signal. Vehicle 2 was westbound on the same roadway in the left turn lane. The signal was solid green for eastbound and westbound traffic. Vehicle 2 attempted to make a U-turn at the intersection to travel east and was struck in the right side by the front of Vehicle 1. The driver of Vehicle 2 stated he did not see Vehicle 1 approaching. The driver of Vehicle 1 was attentive and saw the other vehicle approaching but did not think it would attempt to turn. Police charged the driver of Vehicle 2 with failure to yield.

Table 33. Situation matrix - example 13

Example 13	Vehicle 1	Vehicle 2
Driver's Distraction/Inattention	Attentive or not distracted	Looked but did not see
Pre-Event Movement	Going straight	Making a U-turn
Critical Pre-Crash Category	Other motor vehicle encroaching into lane	This vehicle traveling
Critical Pre-Crash Event	From opposite direction over left lane line	Making U-turn
Attempted Avoidance Maneuver	No avoidance actions	No avoidance actions
Pre-Impact Stability	Tracking	Tracking
Pre-Impact Location	Stayed in original travel lane	Stayed on roadway but left original travel lane
Crash Type	98	98

In this example, Vehicle 1's **Critical Crash Envelope** (V₁CCE) begins at the point where the driver recognizes Vehicle 2 is making a U-turn in front of them and ends at impact.

Vehicle 2's **Critical Crash Envelope** (V₂CCE) begins when it's in imminent path of collision with Vehicle 1 and ends at impact.

The **Critical Event** for Vehicle 1 is *Other vehicle encroaching into lane-From opposite direction over left lane line*.

The **Pre-Event Movement** and **Critical Event** for Vehicle 2 is *Making a U-turn*. If it is unclear if a vehicle is *Turning left* or *Making a U-turn*, default to *Turning Left*.

The key to the **Critical Event** coding in this case is that Vehicle 2 did not have the right of way while making the U-turn. If the scenario was altered such that Vehicle 2 was making a legal U-turn *with* the right of way, the first portion of Pre-Crash General Rule #7 would apply and Vehicle 2's **Critical Event** would be *Other motor vehicle encroaching into lane -From opposite direction over right lane line*.

The **Crash Type** for both vehicles is, '98, ' *Other crash type*. This **Crash Type** is used for collisions that do not reasonably fit into any of the specified types. This code includes (but is not limited to):

- Rollovers on the road,
- U-turns,
- Third or subsequent vehicles involved in a crash, or
- The second involved vehicle, when the first harmful event involved a vehicle-to-object collision or noncollision.

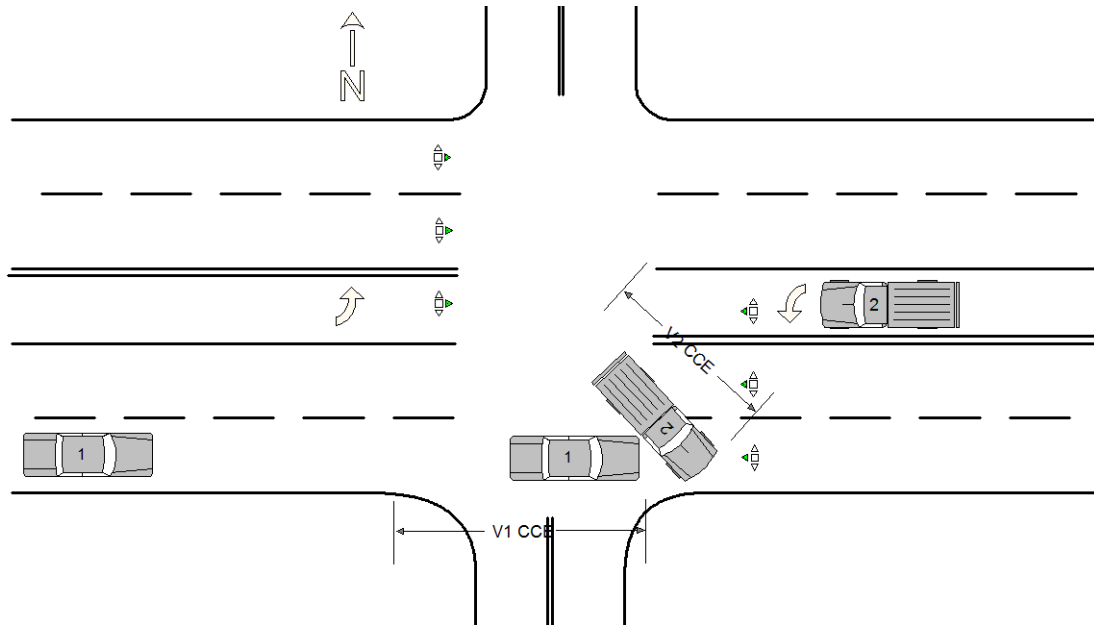
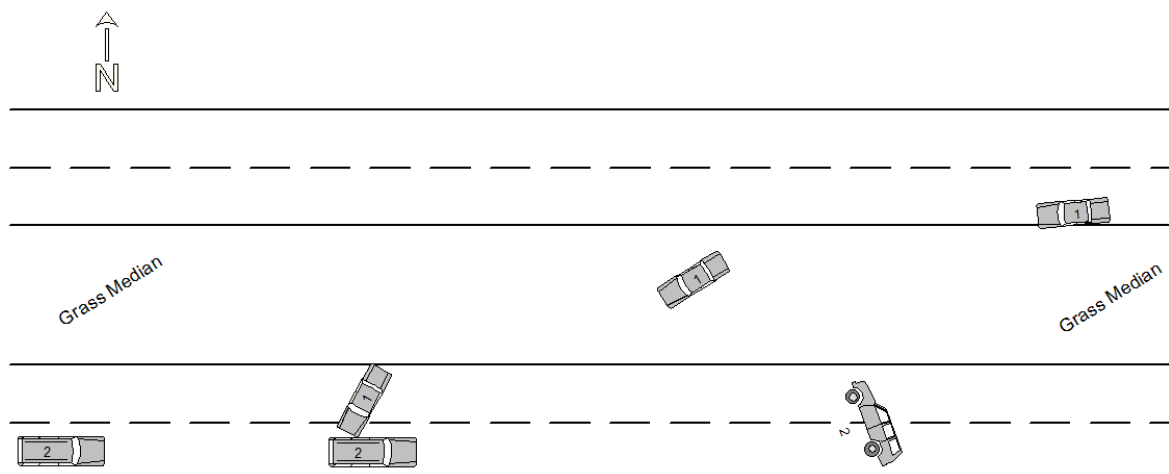


Figure 247. Intersection diagram – example 13

Example 14*Figure 248. Intersection diagram – example 14*

Vehicle 1 was traveling westbound on a median divided highway. Vehicle 2 was traveling east on the same highway. The driver of Vehicle 1 reportedly fell asleep and drifted off the left side of the roadway. Vehicle 1 crossed the median and entered the eastbound lanes where its front struck the left side of Vehicle 2. After initial impact Vehicle 2 rotated counterclockwise and rolled over one quarter turn, coming to rest on its right side. There were no indications of distractions identified by police on the crash report or during CISS interviews for the driver of Vehicle 2.

Table 34. Situation matrix - example 14

Example 14	Vehicle 1	Vehicle 2
Driver's Distraction/Inattention	(Inattentive or Distracted) Sleepy or fell asleep	Attentive or not distracted
Pre-Event Movement	Going straight	Going straight
Critical Pre-Crash Category	This vehicle traveling	Other motor vehicle encroaching into lane
Critical Pre-Crash Event	Off the edge of the road on the left side	From opposite direction over left lane line
Attempted Avoidance Maneuver	No avoidance actions	No avoidance actions
Pre-Impact Stability	Skidding laterally counterclockwise rotation	Tracking
Pre-Impact Location	Departed roadway	Stayed in original travel lane
Crash Type	64	65

In this example, Vehicle 1's **Critical Crash Envelope** (V₁CCE) begins at the point where the vehicle leaves the initial roadway and ends at impact.

Vehicle 2's **Critical Crash Envelope** (V₂CCE) begins when the driver recognizes the other vehicle approaching and ends at impact.

The **Pre-Impact Stability** for Vehicle 1 is *Skidding laterally counterclockwise rotation* since the vehicle rotated 30° or more. The driver need not make any steering inputs or leave tire marks for this attribute to be selected.

Tracking is the appropriate selection for Vehicle 2's **Pre-Impact Stability**. Pre-Crash General Rule #10 states that a vehicle is considered to be tracking if the following conditions are met:

- No skids are present at the scene,
- The PCR or the interviewee does not indicate skidding, and
- The vehicle did not rotate 30° or more.

Median scenarios sometime cause confusion with the **Pre-Impact Location** element. *Departed roadway* is used for vehicles crossing a median into oncoming traffic, as Vehicle 1 does in this case. A vehicle is considered to have *Returned to roadway* only if it returned to the *same* roadway it was initially traveling on after the **Critical Event**.

The **Crash Type** for Vehicle 1 and Vehicle 2 is "64' and "65,' *Angle/Sideswipe* respectively since it involved the side plane of one or both of the vehicles. If the collision had involved the front plane of both vehicles, then the **Crash Type** would have been "50' and "51,' *Head-on*.

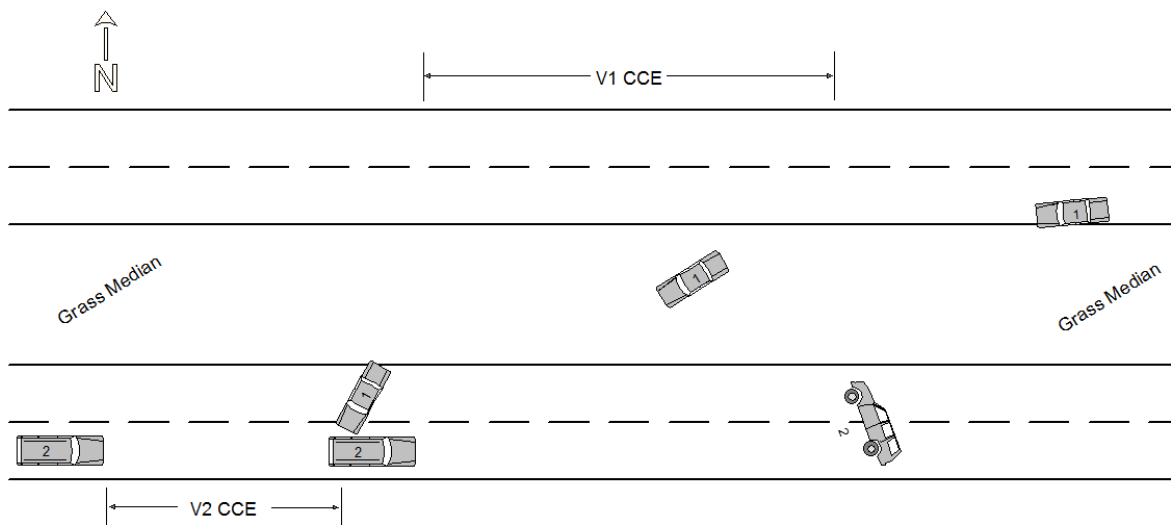


Figure 249. Intersection diagram – example 14

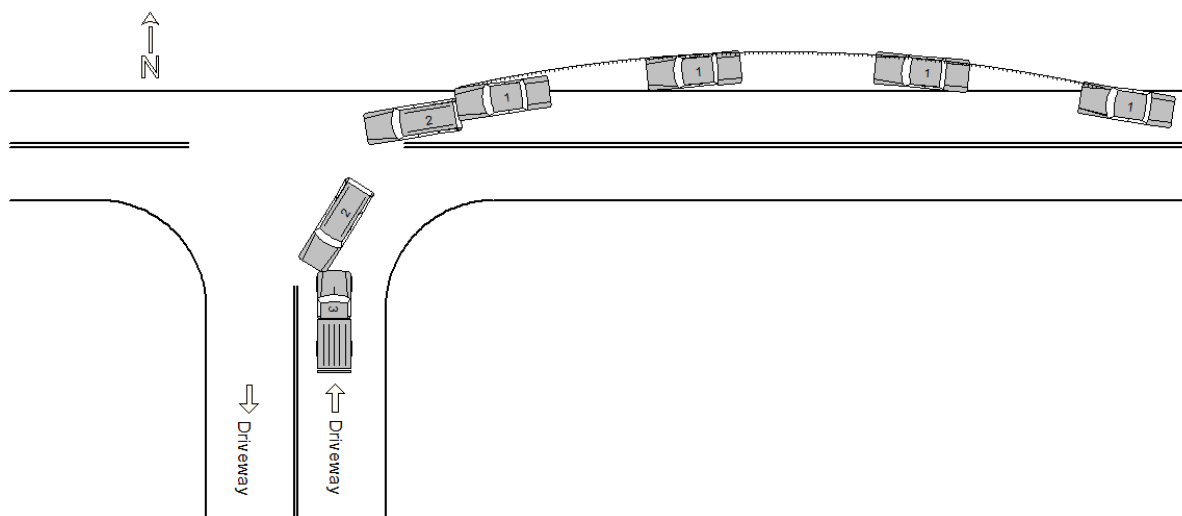
Example 15

Figure 250. Intersection diagram – example 15

Vehicle 1 was traveling west on a two-lane roadway with a private driveway on the south side of the road. Vehicle 2 was westbound ahead of Vehicle 1 and was decelerating so it could turn left into the private drive. Vehicle 3 was stopped-facing north on the private drive. The driver of Vehicle 1 was reportedly daydreaming and did not see Vehicle 2 decelerating in the lane ahead. After realizing Vehicle 2 was in its lane, the driver of Vehicle 1 braked and steered right off the right side of the road (leaving tire marks) and then steered left back into the travel lanes. The front of Vehicle 1 struck the rear of Vehicle 2. The initial impact pushed Vehicle 2 forward into Vehicle 3. There were no indications of distractions or avoidance maneuvers identified by police on the crash report or during CISS interviews for Vehicle 2 or Vehicle 3.

Table 35. Situation matrix - example 15

Example 15	Vehicle 1	Vehicle 2	Vehicle 3
Driver's Distraction/Inattention	(Inattentive or Distracted) Inattentive or lost in thought	Attentive or not distracted	Attentive or not distracted
Pre-Event Movement	Going straight	Going straight	Stopped in road
Critical Pre-Crash Category	Other motor vehicle in lane	This vehicle traveling	Other motor vehicle encroaching into lane
Critical Pre-Crash Event	Traveling in same direction while decelerating	This vehicle decelerating	From crossing street-turning into opposite direction
Attempted Avoidance Maneuver	Braking and steering right	No avoidance maneuver	No avoidance maneuver
Pre-Impact Stability	Skidding longitudinally rotation less than 30°	Tracking	Tracking
Pre-Impact Location	Returned to roadway	Stayed in original travel lane	Stayed in original travel lane
Crash Type	28	30	98

In this example Vehicle 1's **Critical Crash Envelope** (V₁CCE) begins when the driver recognizes Vehicle 2 is decelerating ahead, and ends with impact with Vehicle 2.

Vehicle 2 has two **Critical Crash Envelopes** (V₂CCE₁ and V₂CCE₂). Vehicle 2's first **Critical Crash Envelope** (V₂CCE₁) begins when it is in imminent path of a collision with Vehicle 1 and ends at the point of impact with Vehicle 1. Vehicle 2's second **Critical Crash Envelope** (V₂CCE₂) begins immediately after the first impact and ends at the point of impact with Vehicle 3. Use the **Critical Crash Envelope** that resulted in Vehicle 2's first impact (V₂CCE₁), because CISS is only interested in coding the **Critical Crash Envelope** that leads to a vehicle's first harmful event.

The **Critical Event** for Vehicle 1 is *Other motor vehicle in lane-Traveling in same direction while decelerating*, even though the vehicle departed the right side of the roadway prior to striking Vehicle 2. Determining the **Critical Event** can be made easier by using the "But For" test. In this example "But For" Vehicle 2 being in this vehicle's lane, it would not have been involved in the crash.

Vehicle 1's **Attempted Avoidance Maneuver** is *Braking and steering right*, because that was the driver's initial action in response to the realization of impending danger. Vehicle 1 steering left back into the roadway is not considered in this case.

The **Pre-Impact Location** for Vehicle 1 is *Returned to roadway*, since the vehicle returned to the *same* roadway during the precrash motion.

The **Crash Type** for Vehicle 1 and Vehicle 2 is "28'-30,' Rear-End: Decelerating, Going left" respectively based on three factors:

1. The front to rear impact configuration,
2. Vehicle 2's decelerating (as opposed to stopped or lower steady speed), and
3. Vehicle 2's *intent* to turn left into the private drive.

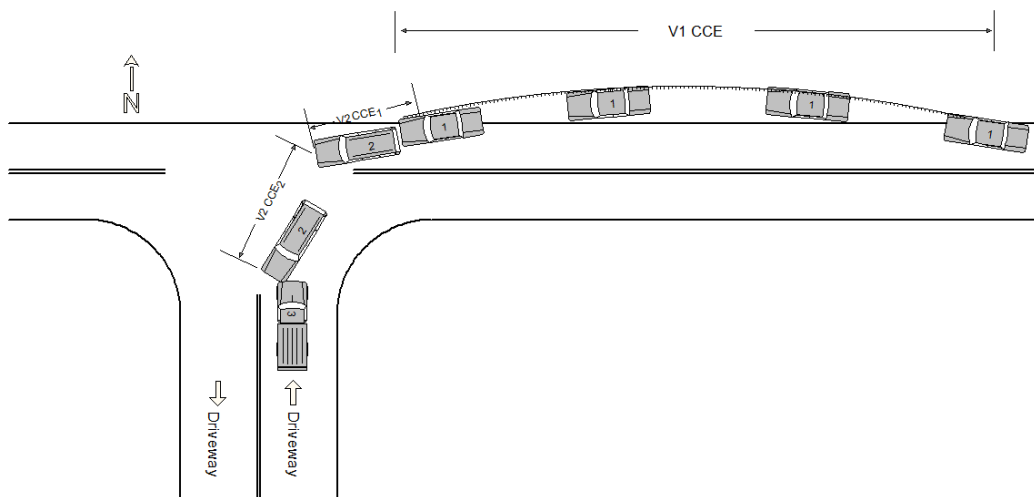


Figure 251. Intersection diagram – example 15

Example 16

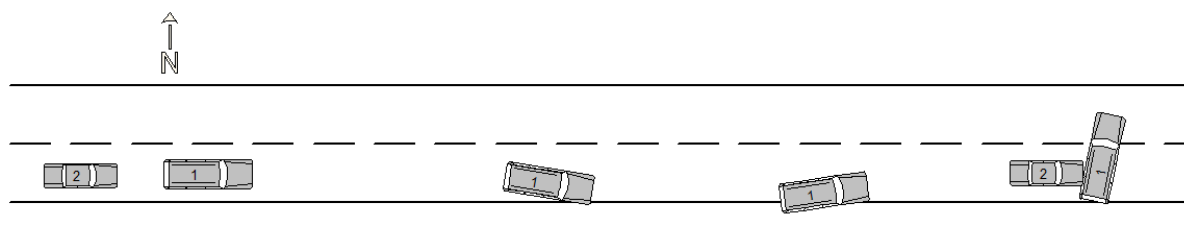


Figure 252. Intersection diagram – example 16.

Vehicle 1 was traveling east in the right lane of a straight and level divided highway with shoulders. Vehicle 2 was eastbound in the right lane behind Vehicle 1. Conditions were daylight with rain falling and fog. All indications are that both vehicles were driving at or near the speed limit. Vehicle 1 edged off the right side of the roadway onto the shoulder and the driver overcorrected, braking and steering left back into its original lane. The vehicle went into a counterclockwise yaw and was struck in the left side by the front of Vehicle 2.

Police indicated the driver of Vehicle 1 was distracted, although the driver denied this during the CISS interview. There were no indications of distractions identified by police on the crash report or during CISS interviews for the driver of Vehicle 2.

Table 36. Situation matrix - example 16

Example 16	Vehicle 1	Vehicle 2
Driver's Distraction/Inattention	(Inattentive or Distracted) Distracted, unknown type	Attentive or not distracted
Pre-Event Movement	Going straight	Going straight
Critical Pre-Crash Category	This vehicle traveling	Other motor vehicle in lane
Critical Pre-Crash Event	Over the lane line on the right side of travel lane	Traveling in same direction while decelerating
Attempted Avoidance Maneuver	Braking and steering left	No avoidance maneuver
Pre-Impact Stability	Skidding laterally counterclockwise rotation	Tracking
Pre-Impact Location	Returned to roadway	Stayed in original travel lane
Crash Type	48	48

Vehicle 1's **Critical Crash Envelope** (V₁CCE) begins when the driver realizes the vehicle is departing the travel lane and ends at impact.

The **Critical Crash Envelope** for Vehicle 2 (V₂CCE) begins when the driver recognizes the danger ahead, and ends at impact.

Inattentive or distracted, Distracted, unknown type is selected for Vehicle 1 **Driver's Distraction/Inattention**. Police reported the driver was distracted, although the specific distraction was not identified, and the driver later denied any distractions. Distraction determination should be based on all available information including interviews and police report.

The presence of rain and fog does not affect Vehicle 1's **Critical Event** of *Over the lane line on the right side of travel lane* in this case. Do not assume that *This vehicle loss of control Critical Events* such as *Poor road conditions* or *Traveling too fast for conditions* are always selected just because the weather and/or road conditions were not optimal.

When determining **Crash Type** it is important to keep in mind that some **Crash Configurations** are plane of impact dependent, while others are not. In this case the **Crash Type** for both vehicles are "48, ' Sideswipe/Angle: Specifics other. The vehicles were traveling in the same trafficway in the same direction (**Crash Type Category II**) and the impact involved the side of one or both of the vehicles (**Crash Type Configuration F**). If the impact had been front to rear, **Crash Configuration D (Rear-End)** would have applied.

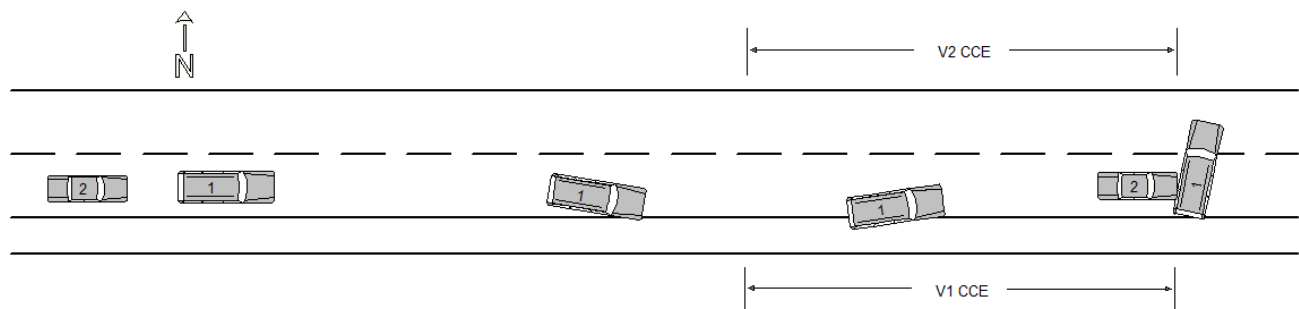


Figure 253. Intersection diagram – example 16

Example 17

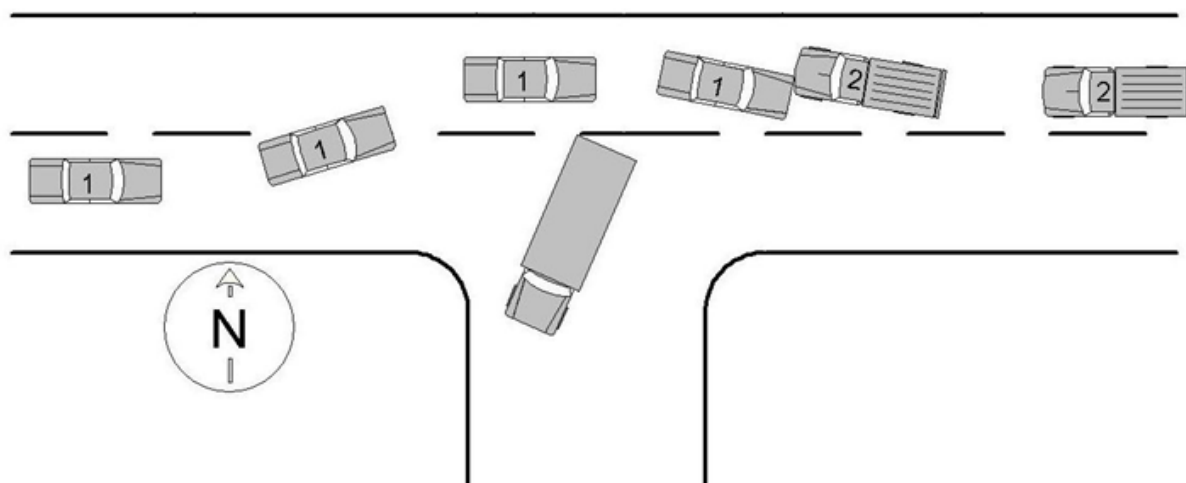


Figure 254. Intersection diagram – example 17

Vehicle 1 is traveling eastbound. A non-contact vehicle (NCV) is westbound and attempts to turn left in front of Vehicle 1 into an intersecting private driveway. Vehicle 1 braked and steered left to avoid the non-contact vehicle. The driver of Vehicle 1 successfully avoided the non-contact vehicle and maintained full control, but crossed into the westbound lane. Now traveling the wrong way in the westbound lane, Vehicle 1 attempted to steer right and return to the eastbound lane but struck Vehicle 2 head on. Vehicle 2 attempted to avoid the crash by braking and steering right. There were no indications of distractions identified by police on the crash report or during CISS interviews.

Table 37. Situation matrix - example 17

Example 17	Vehicle 1	Vehicle 2
Driver's Distraction/ Inattention	Attentive or not distracted	Attentive or not distracted
Pre-Event Movement	Successful avoidance maneuver to a previous critical event	Going straight
Critical Pre-Crash Category	Other motor vehicle in lane	Other motor vehicle in lane
Critical Pre-Crash Event	Traveling in opposite direction	Traveling in opposite direction
Attempted Avoidance Maneuver	Steering right	Braking and steering right
Pre-Impact Stability	Tracking	Tracking
Pre-Impact Location	Stayed in original travel lane	Stayed in original travel lane
Crash Type	52	52

In this example, Vehicle 1 has two **Critical Crash Envelopes** (V_1CCE_1 and V_1CCE_2). Vehicle 1's first **Critical Crash Envelope** (V_1CCE_1) ends at the point where the driver of Vehicle 1 made a successful avoidance maneuver and maintained full control of the vehicle. Vehicle 1's second **Critical Crash Envelope** (V_1CCE_2) begins shortly after the successful avoidance maneuver and ends at the point of impact with Vehicle 2. For coding purposes use the **Critical Crash Envelope** that resulted in Vehicle 1's first impact (V_1CCE_2).

Vehicle 2 has one **Critical Crash Envelope** (V_2CCE_1) that begins at the point where the driver of Vehicle 2 recognizes Vehicle 1 in their lane and ends at the point of impact with Vehicle 1.

The **Crash Type** for both vehicles is coded "52, 'Head-on: Specifics other' because Vehicle 1 had full control traveling the wrong way.

The non-contact vehicle was not involved in an impact with another vehicle, person, animal, or object in the sequence of crash events and is therefore not included in CISS. However, the non-contact vehicle must be shown on the scene diagram to substantiate the Pre-Crash coding.

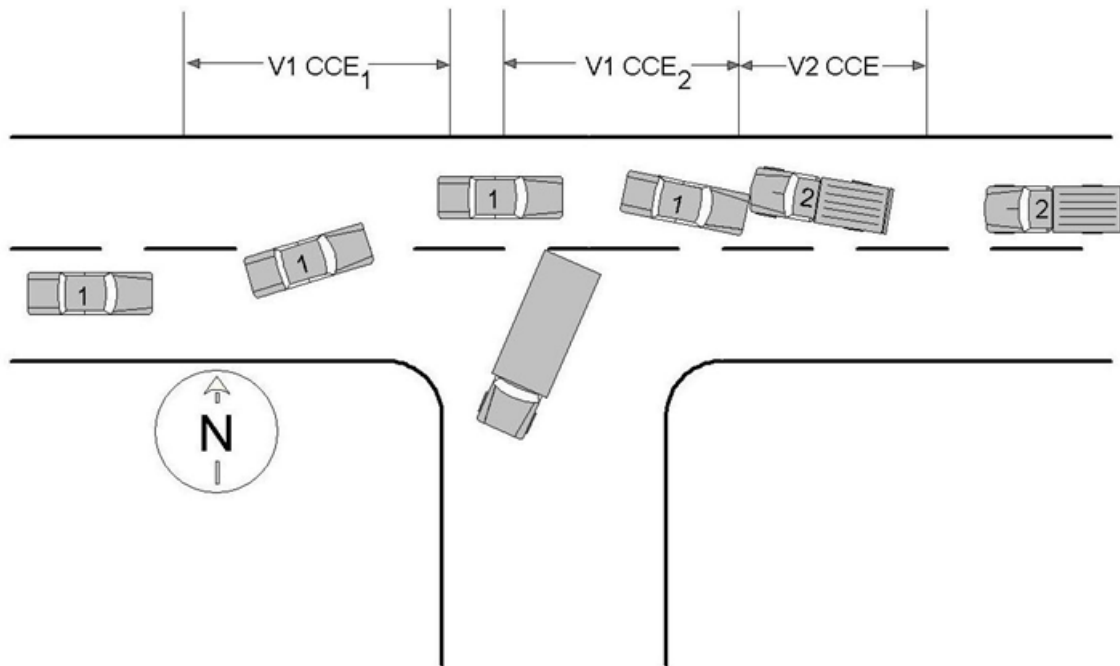
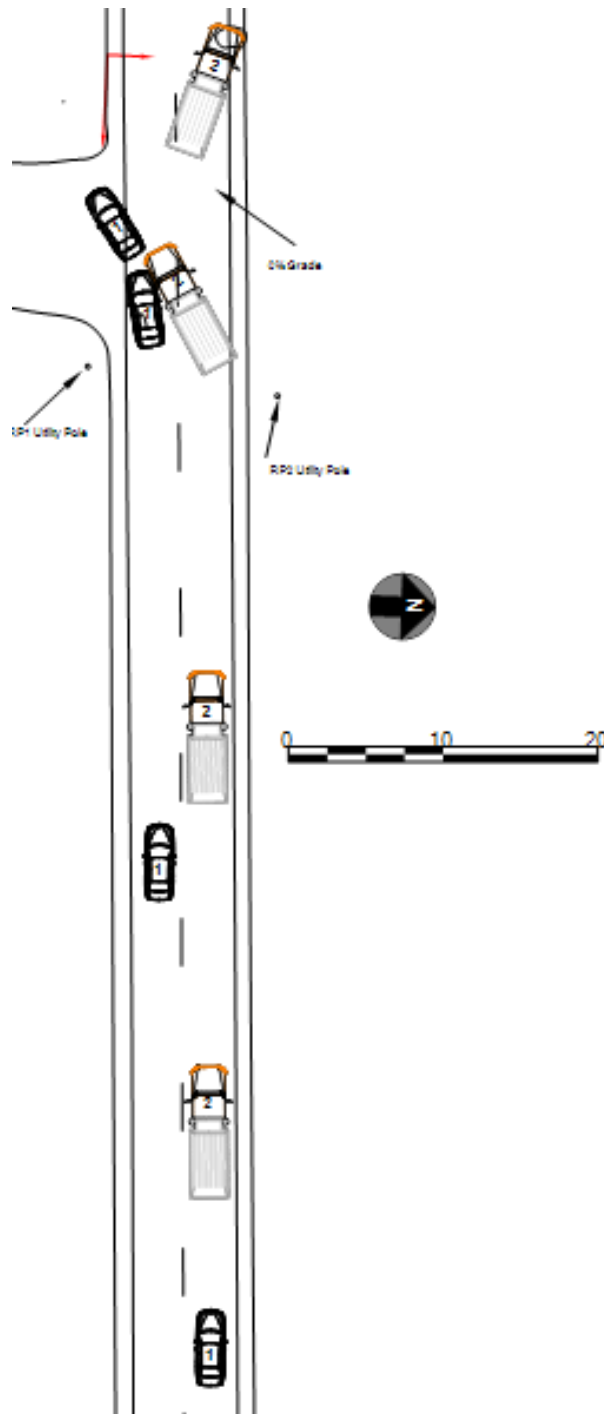


Figure 255. Intersection diagram – example 17

Example 18

V1 and V2 were both traveling west on a two-lane, two-way road. Both drivers were attentive. V1 departed its travel lane to the left, attempting to pass V2. V2 was a medium/heavy truck, making a left turn. V1 steered left in an attempt to avoid the crash, but the front of V1 struck the left side of V2.

Example #18	Vehicle 1	Vehicle 2
Driver's Distraction/Inattention	Attentive or not distracted	Attentive or not distracted
Pre-Event Movement	Passing or overtaking another vehicle	Turning left
Critical Pre-Crash Category	Other motor vehicle encroaching into lane	This vehicle traveling
Critical Pre-Crash Event	From adjacent lane (same direction) over right lane line	Turning Left
Attempted Avoidance Maneuver	Steering left	Unknown
Pre-Impact Stability	Tracking	Tracking
Pre-Impact Location	Stayed in original travel lane	Stayed in original travel lane
Crash Type	73	72

In this example, Vehicle 1's **Critical Crash Envelope** (V1CCE) begins at the point where the driver recognizes Vehicle 2 is turning left. The Critical Crash Envelope for Vehicle 1 ends at impact.

Vehicle 2's **Critical Crash Envelope** (V2CCE) begins when it's in imminent path of collision with Vehicle 1 and ends at impact.

Although V1 was passing V2, the **Critical Pre-Crash Category** for Vehicle 1 is *Other vehicle encroaching into lane*. The situation that made the event critical was V2's movement (turning left) and not Vehicle 1's passing. The **Critical Event** for Vehicle 1 is *Other Vehicle Encroaching, From adjacent lane (same direction) over right lane line*, since Vehicle 2 intended to turn left.

The **Critical Event** for Vehicle 2 is *This Vehicle Traveling, Turning Left*.

Example 19

Rear-end crashes sometimes cause confusion with precrash coding. Two key points must be determined to accurately code the *Pre-Event Movement*, *Critical Pre-Crash Category*, and *Critical Pre-Crash Event*:

- Was the lead vehicle stopped, decelerating, or traveling at a steady speed?
- Did the trailing vehicle decelerate prior to impact?

The following scenarios should be used as a guide.

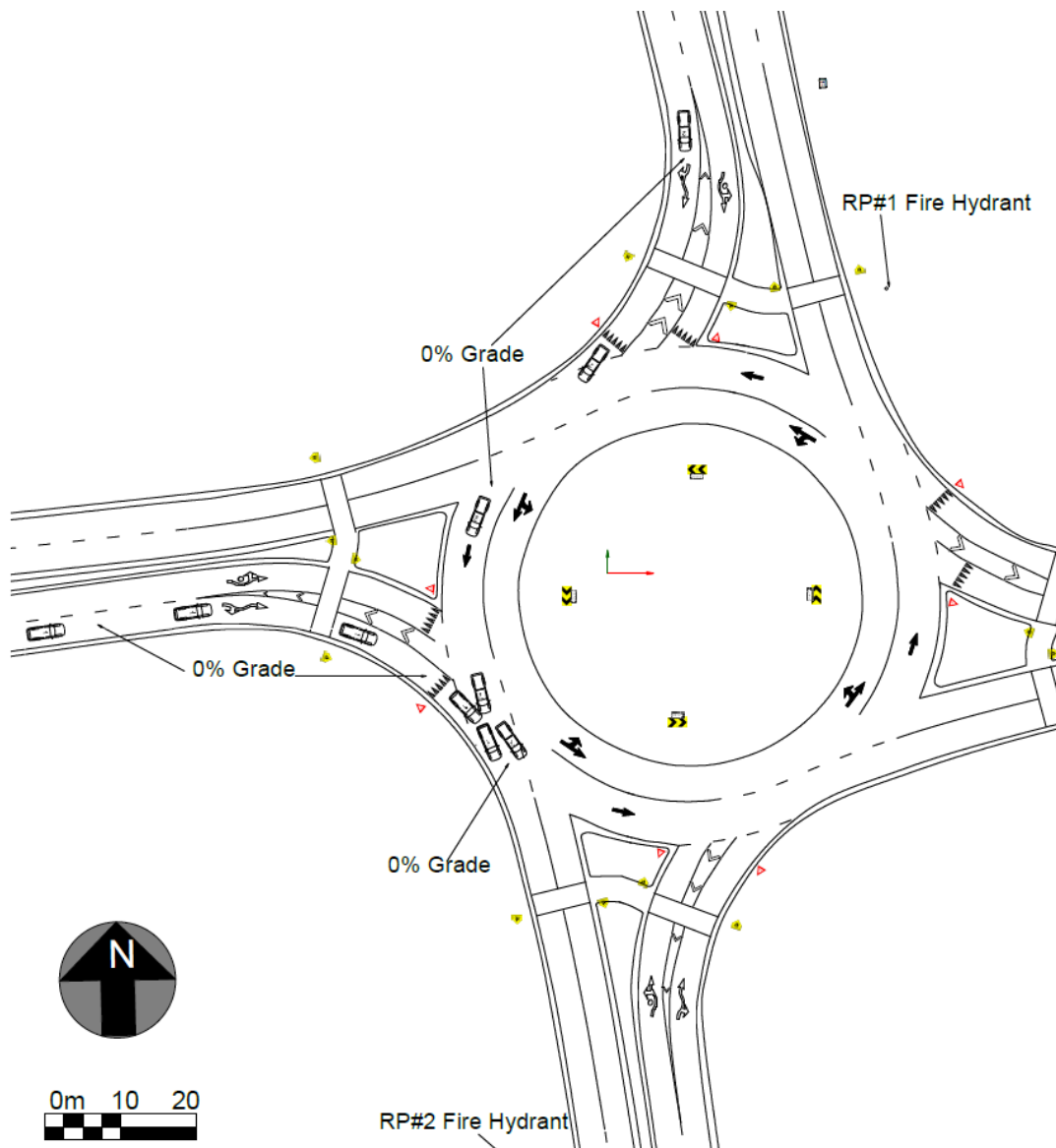
Table 38. Pre-Crash Event Scenarios for Different Rear-End Collision Situations

Two Vehicle Collisions			Trailing Vehicle	Lead Vehicle
1)	Both vehicles in motion. Leading vehicle, traveling at steady speed, is struck from behind by trailing vehicle.	Pre-Event Movement	Going straight	Going straight
		Critical Pre-Crash Category	Other motor vehicle in lane	Other motor vehicle in lane
		Critical Pre-Crash Event	Traveling in same direction with lower steady speed	Traveling in same direction with higher speed
2)	Both vehicles traveling at same speed. Lead vehicle decelerates and trailing vehicle continues at initial speed. Trailing vehicle eventually applies brakes before striking the lead vehicle that is not yet stopped.	Pre-Event Movement	Going straight	Going straight
		Critical Pre-Crash Category	Other motor vehicle in lane	This vehicle traveling
		Critical Pre-Crash Event	Traveling in same direction while decelerating	This vehicle decelerating
3)	Both vehicles traveling at same speed. Lead vehicle stops and is immediately struck by trailing vehicle.	Pre-Event Movement	Going straight	Going straight
		Critical Pre-Crash Category	Other motor vehicle in lane	Other motor vehicle in lane
		Critical Pre-Crash Event	Traveling in same direction while decelerating	Traveling in same direction with higher speed
4)	Lead vehicle is stopped on roadway and is struck by a trailing vehicle.	Pre-Event Movement	Going straight	Stopped in road
		Critical Pre-Crash Category	Other motor vehicle in lane	Other motor vehicle in lane
		Critical Pre-Crash Event	Other vehicle stopped	Traveling in same direction with higher speed
5)		Pre-Event Movement	Stopped in road	Stopped in road

Two Vehicle Collisions			Trailing Vehicle	Lead Vehicle
	Lead and trailing vehicle stopped on roadway. Lead vehicle backs into trailing vehicle.	Critical Pre-Crash Category	Other motor vehicle in lane	This vehicle traveling
		Critical Pre-Crash Event	Backing	Backing

Table 39. Pre-Crash Event Scenarios for Different Rear-End Collision Situations

Three Vehicle Collisions			Trailing Vehicle	Middle Vehicle	Lead Vehicle
6)	Two vehicles stopped in traffic, struck by decelerating trailing vehicle	Pre-Event Movement	Decelerating	Stopped in road	Stopped in road
		Critical Pre-Crash Category	Other motor vehicle in lane	Other motor vehicle in lane	Other motor vehicle in lane
		Critical Pre-Crash Event	Other vehicle stopped	Traveling in same direction while decelerating	Traveling in same direction with higher speed
7)	Lead vehicle stopped in traffic, middle vehicle decelerating, trailing vehicle strikes middle vehicle that strikes lead vehicle.	Pre-Event Movement	Going straight	Decelerating	Stopped in road
		Critical Pre-Crash Category	Other motor vehicle in lane	Other motor vehicle in lane	Other motor vehicle in lane
		Critical Pre-Crash Event	Traveling in same direction while decelerating	Traveling in same direction with higher speed	Traveling in same direction with higher speed

Example 20

Vehicle 1 was traveling west entering a roundabout and its entry was controlled by a yield sign. Vehicle 2 was traveling south through the two-lane roundabout in the right lane after entering on the north end of the roundabout. The left front of Vehicle 1 was struck by the front of Vehicle 2. Vehicle 1's driver stated they thought V2 was going to turn west and so they entered the roundabout. V2 driver stated they were traveling in the roundabout when Vehicle 1 entered their lane. V2 applied the brakes at the last second but could not avoid the crash.

Example #20	Vehicle 1	Vehicle 2
Driver's Distraction/Inattention	Attentive or not distracted	Attentive or not distracted
Pre-Event Movement	Turning right	Negotiating a curve
Critical Pre-Crash Category	This vehicle traveling	Other motor vehicle encroaching into lane
Critical Pre-Crash Event	Turning right	From crossing street, turning into same direction
Attempted Avoidance Maneuver	No avoidance maneuver	Braking
Pre-Impact Stability	Tracking	Tracking
Pre-Impact Location	Stayed in original travel lane	Stayed in original travel lane
Crash Type	78	79

In this example, Vehicle 1's **Critical Crash Envelope (V1CCE)** begins when it's in imminent path of collision with Vehicle 2 and ends at impact.

Vehicle 2's **Critical Crash Envelope (V2CCE)** begins when the driver recognizes the impending danger from Vehicle 1 encroaching and ends at the point of impact with Vehicle 1.

In some situations, a vehicle entering a roundabout or traffic circle may be on a predominately straight path. However, vehicles making their initial entry into a roundabout should have a **Pre-Event Movement** of *Turning right*. The **Pre-Event Movement** for vehicles already inside the roundabout or traffic circle is *Negotiating a curve*.

The **Critical Precrash Category/Event** for Vehicle 1 is *This vehicle traveling, Turning right*. The **Critical Precrash Category/Event** for V2 is *Other motor vehicle encroaching into lane, From crossing street, turning into same direction*. Vehicles already in the roundabout or traffic circle have the right-of-way over vehicles approaching and entering, unless otherwise directed by traffic control devices.

The **Pre-Impact Location** for vehicles entering or exiting the roundabout or traffic circle is *Stayed in original travel lane*.

Vehicles initially on different trafficways are captured in **Crash Type Configuration** '*K, Turn Into Path*'. So, in this case the **Crash Types** for Vehicle 1 and Vehicle 2 are '*78*' and '*79*' respectively.

Appendix D: Pre-Crash Scenarios

This appendix addresses the Pre-Event Movement, Critical Event, and Crash Type coding for common precrash scenarios.

Of significance in each scenario is the direction vehicles are traveling, determination of right-of-way, and planes of initial impact.

Right-Left Road Departure Scenario A

Vehicle travels off right side of road.

Table 40. Right-Left Road Departure Scenario A

Pre-Event Movement	Going straight
Critical Pre-Crash Category	This vehicle traveling
Critical Pre-Crash Event	Off edge of the road on the right side
Crash Type	01

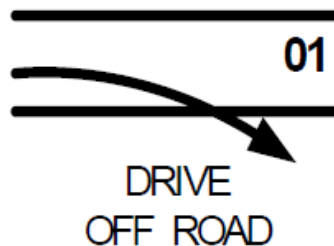


Figure 256. Crash Type 01

Crash Type Impact Planes

Impact plane not a consideration for this crash type.

Notes

Pre-Event Movement = Negotiating curve also applies.

Typically, distraction/inattention crashes (fell asleep, distracted, lost in thought).

Same scenario for left side of road Critical Pre-Crash Event and Crash Type 06.

Right-Left Road Departure Scenario B

Driver is ill and vehicle departs right side of road.

Table 41. Right-Left Road Departure Scenario B

Pre-Event Movement	Going straight
Critical Pre-Crash Category	This vehicle lost control due to
Critical Pre-Crash Event	Other cause of control loss
Crash Type	01

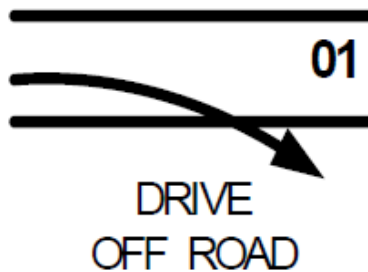


Figure 257. Crash Type 01

Crash Type Impact Planes

Impact plane not a consideration for this crash type.

Notes

Pre-Event Movement = Negotiating curve also applies.

Other cause of control loss includes situations when control loss was due to driver illness such as heart attack, diabetic comas, etc. (Pre-Crash General Rule). Drivers who are impaired by alcohol and/or drugs are not included unless physically ill at the time.

Same scenario for left side of road Crash Type 06.

Right-Left Road Departure Scenario C

Vehicle negotiating curve at high rate of speed in rain and departs right side of road.

Table 42. Right-Left Road Departure Scenario C

Pre-Event Movement	Negotiating curve
Critical Pre-Crash Category	This vehicle traveling
Critical Pre-Crash Event	Too fast for conditions
Crash Type	02

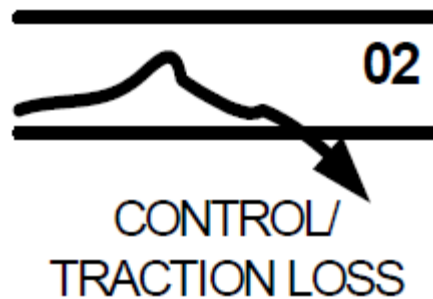


Figure 258. Crash Type 02

Crash Type Impact Planes

Impact plane not a consideration for this crash type.

Notes

Pre-Event Movement = Going straight also applies.

Too fast for conditions applies when the vehicles movement and speed not appropriate relative to the vehicles surroundings. Curves are commonly involved.

Same scenario for left side of road Crash Type 07.

Right-Left Road Departure Scenario D

Vehicle suddenly encounters ice on the roadway and departs right side of road.

Table 43. Right-Left Road Departure Scenario D

Pre-Event Movement	Going straight
Critical Pre-Crash Category	This vehicle lost control due to
Critical Pre-Crash Event	Poor road conditions
Crash Type	02

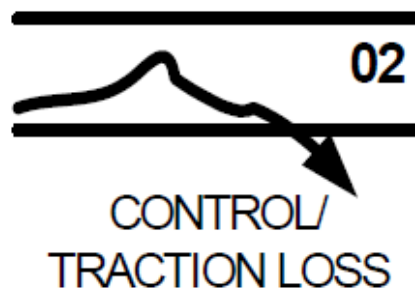


Figure 259. Crash Type 02

Crash Type Impact Planes

Impact plane not a consideration for this crash type.

Notes

Pre-Event Movement = Negotiating curve also applies.

Poor road conditions is used when conditions such as ice and puddles are “suddenly” encountered by the driver and not ongoing situations.

Same scenario for left side of road Crash Type 07.

Right-Left Road Departure Scenario E

Driver attempts to avoid deer and departs right side of road.

Table 44. Right-Left Road Departure Scenario E

Pre-Event Movement	Going straight
Critical Pre-Crash Category	Object or animal
Critical Pre-Crash Event	Animal in road
Crash Type	03

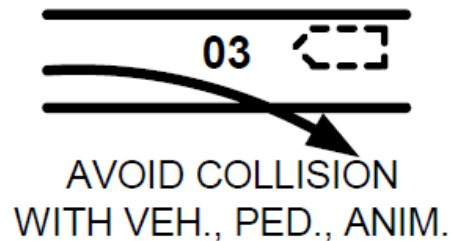


Figure 260. Crash Type 03

Crash Type Impact Planes

Impact plane not a consideration for this crash type.

Notes

Pre-Event Movement = Negotiating curve also applies

If available information reveals an animal was likely present, the animal in road or animal approaching road Critical Pre-Crash Events are appropriate.

Pedestrian, Pedalcyclist, or Other Nonmotorist Critical Pre-Crash Category follows the same logic.

Same scenario for left side of road Crash Type 08.

Right-Left Road Departure Scenario F

Driver attempts to avoid another vehicle encroaching into their lane from the opposite direction and departs right side of road.

Table 45. Right-Left Road Departure Scenario F

Pre-Event Movement	Going straight
Critical Pre-Crash Category	Other vehicle encroaching into lane
Critical Pre-Crash Event	From opposite direction – over left lane line
Crash Type	03

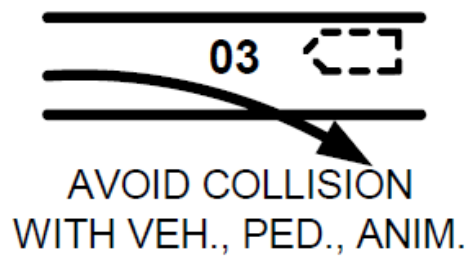


Figure 261. Crash Type 03

Crash Type Impact Planes

Impact plane not a consideration for this crash type.

Notes

Pre-Event Movement = Negotiating curve also applies

If available information reveals another vehicle encroaching was likely the critical factor leading to the crash, the other vehicle encroaching Critical Pre-Crash Category is appropriate.

Same scenario for left side of road Crash Type 08.

Forward Impact Scenario

Driver strikes a parked vehicle on the shoulder.

Table 46. Forward Impact Scenario

Pre-Event Movement	Going straight
Critical Pre-Crash Category	This vehicle traveling
Critical Pre-Crash Event	Over the lane line on right side of travel lane
Crash Type	11

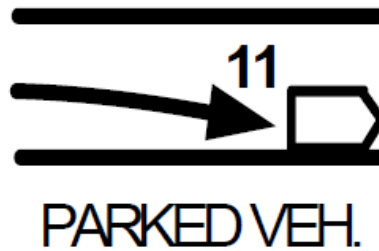


Figure 262. Crash Type 11

Crash Type Impact Planes

Impact plane not a consideration for this crash type.

Notes

Pre-Event Movement = Negotiating curve also applies

Same scenario for left side of road, crash type remains 11.

Rear End Scenario A

Both vehicles traveling at same speed.

Leading vehicle decelerates and comes to a stop.

Trailing vehicle strikes lead vehicle.

Table 47. Rear End Scenario A

	Trailing	Leading
Pre-Event Movement	Going straight	Going straight
Critical Pre-Crash Category	Other motor vehicle in lane	Other motor vehicle in lane
Critical Pre-Crash Event	Traveling in same direction while decelerating	Traveling in same direction with higher speed
Crash Type	20	21

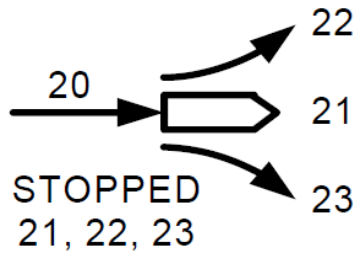


Figure 263. Crash Type 20, 21, 23

Crash Type Impact Planes

Must be front to back impact planes for this crash type.

Notes

If leading vehicle **intended** to turn left or right, crash types 22 and 23 apply.

Pre-Event Movement = Negotiating curve also applies

Rear End Scenario B

Leading vehicle is stopped.

Trailing vehicle strikes lead vehicle.

Table 48. Rear End Scenario B

	Trailing	Leading
Pre-Event Movement	Going straight	Stopped in road
Critical Pre-Crash Category	Other motor vehicle in lane	Other motor vehicle in lane
Critical Pre-Crash Event	Other vehicle stopped	Traveling in same direction with higher speed
Crash Type	20	21

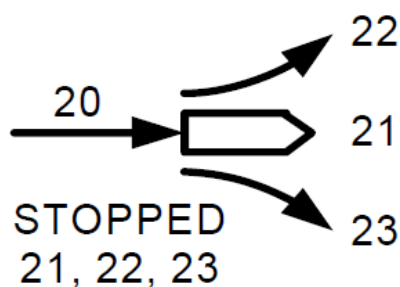


Figure 264. Crash Type 20, 21, 23

Crash Type Impact Planes

Must be front to back impact planes for this crash type.

Notes

If leading vehicle **intended** to turn left or right, crash types 22 and 23 apply.

Pre-Event Movement = Negotiating curve also applies

Rear End Scenario C

Leading and middle vehicle are stopped.

Trailing vehicle decelerating, but does not stop in time.

Table 49. Rear End Scenario C

	Trailing	Middle	Leading
Pre-Event Movement	Decelerating	Stopped in road	Stopped in road
Critical Pre-Crash Category	Other motor vehicle in lane	Other motor vehicle in lane	Other motor vehicle in lane
Critical Pre-Crash Event	Other vehicle stopped	Traveling in same direction while decelerating	Traveling in same direction with higher speed
Crash Type	20	21	98

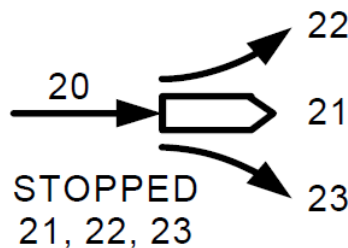


Figure 265. Crash Type 20, 21, 23

Crash Type Impact Planes

Must be front to back impact planes for this crash type.

Notes

If middle vehicle **intended** to turn left or right, crash types 22 and 23 apply.

Pre-Event Movement = Negotiating curve also applies

Rear End Scenario D

Trailing vehicle traveling at steady speed.

Leading vehicle traveling at slower steady speed struck from behind.

Table 50. Rear End Scenario D

	Trailing	Leading
Pre-Event Movement	Going straight	Going straight
Critical Pre-Crash Category	Other motor vehicle in lane	Other motor vehicle in lane
Critical Pre-Crash Event	Traveling in same direction with lower steady speed	Traveling in same direction with higher speed
Crash Type	24	25

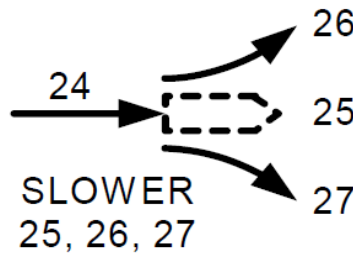


Figure 266. Crash Type 24, 25, 26, 27

Crash Type Impact Planes

Must be front to back impact planes for this crash type.

Notes

If leading vehicle **intended** to turn left or right, crash types 26 and 27 apply.

Pre-Event Movement = Negotiating curve also applies

Rear End Scenario E

Both vehicles traveling at same speed.

Leading vehicle decelerates.

Trailing vehicle decelerates before striking lead vehicle that is NOT yet stopped.

Table 51. Rear End Scenario E

	Trailing	Leading
Pre-Event Movement	Going straight	Going straight
Critical Pre-Crash Category	Other motor vehicle in lane	This vehicle traveling
Critical Pre-Crash Event	Traveling in same direction while decelerating	This vehicle decelerating
Crash Type	28	29

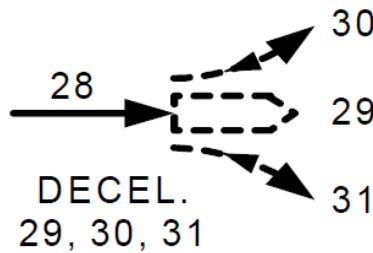


Figure 267. Crash Type 28, 29, 30, 31

Crash Type Impact Planes

Must be front to back impact planes for this crash type.

Notes

If leading vehicle intended to turn left or right, crash types 30 and 31 apply.

Pre-Event Movement = Negotiating curve also applies

Rear End Scenario F

Leading vehicle stopped.

Middle vehicle decelerating.

Trailing vehicle strikes middle vehicle.

Table 52. Rear End Scenario F

	Trailing	Middle	Leading
Pre-Event Movement	Going straight	Decelerating	Stopped in road
Critical Pre-Crash Category	Other motor vehicle in lane	Other motor vehicle in lane	Other motor vehicle in lane
Critical Pre-Crash Event	Traveling in same direction while decelerating	Traveling in same direction with higher speed	Traveling in same direction with higher speed
Crash Type	28	29	98

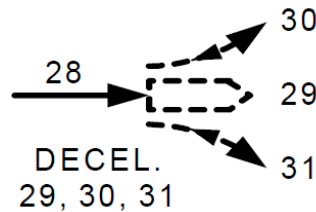


Figure 268. Crash Type 28, 29, 30, 31

Crash Type Impact Planes

Must be front to back impact planes for this crash type.

Notes

If middle vehicle **intended** to turn left or right, crash types 30 and 31 apply.

Pre-Event Movement = Negotiating curve also applies

Same Direction/Angle Sideswipe Scenario A

Both vehicles traveling in **same** direction on same roadway.

Both vehicles **intended** to go straight.

Vehicle on left moves into vehicle on the right's lane.

Table 53. Same Direction/Angle Sideswipe Scenario A

	Vehicle on Left	Vehicle on Right
Pre-Event Movement	Going straight	Going straight
Critical Pre-Crash Category	This vehicle traveling	Other vehicle encroaching into lane
Critical Pre-Crash Event	Over lane line on right side of travel lane	From adjacent lane (same direction) — over left lane line
Crash Type	44	45

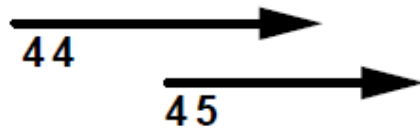


Figure 269. Crash Type 44, 45

Crash Type Impact Planes

Must involve side plane of one or both vehicles.

Notes

Pre-Event Movement = Negotiating curve also applies.

Same Direction/Angle Sideswipe Scenario B

Both vehicles traveling in **same** direction on same roadway.

Both vehicles **intended** to go straight.

Vehicle on right moves into vehicle on the left's lane.

Table 54. Same Direction/Angle Sideswipe Scenario B

	Vehicle on Left	Vehicle on Right
Pre-Event Movement	Going straight	Going straight
Critical Pre-Crash Category	Other vehicle encroaching into lane	This vehicle traveling
Critical Pre-Crash Event	From adjacent lane (same direction) — over right lane line	Over lane line on left side of travel lane
Crash Type	44	45

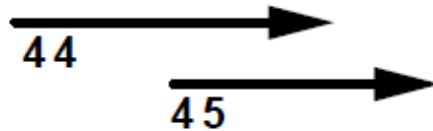


Figure 270. 44, 45

Crash Type Impact Planes

Must involve side plane of one or both vehicles.

Notes

Pre-Event Movement = Negotiating curve also applies.

Same Direction/Angle Sideswipe Scenario C

Both vehicles traveling in **same** direction on same roadway.

Vehicle on the left **intended** to change lanes to the right.

Vehicle on the right **intended** to go straight.

Vehicle on left moves into vehicle on the right's lane.

Table 55. Same Direction/Angle Sideswipe Scenario C

	Vehicle on Left	Vehicle on Right
Pre-Event Movement	Going straight	Going straight
Critical Pre-Crash Category	This vehicle traveling	Other vehicle encroaching into lane
Critical Pre-Crash Event	Over lane line on right side of travel lane	From adjacent lane (same direction) — over left lane line
Crash Type	46	45

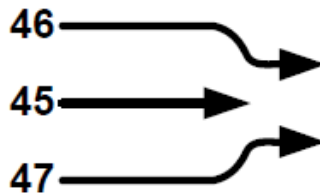


Figure 271. 45, 46, 47

Crash Type Impact Planes

Must involve side plane of one or both vehicles.

Notes

Pre-Event Movement = Negotiating curve also applies.

Same Direction/Angle Sideswipe Scenario D

Both vehicles traveling in **same** direction on same roadway.

Vehicle on the left **intended** to go straight.

Vehicle on the right **intended** to change lanes to the left.

Vehicle on right moves into vehicle on the left's lane.

Table 56. Same Direction/Angle Sideswipe Scenario D

	Vehicle on Left	Vehicle on Right
Pre-Event Movement	Going straight	Going straight
Critical Pre-Crash Category	Other vehicle encroaching into lane	This vehicle traveling
Critical Pre-Crash Event	From adjacent lane (same direction) — over right lane line	Over lane line on left side of travel lane
Crash Type	45	47

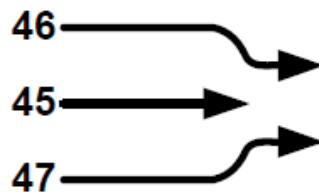


Figure 272. 45, 46, 47

Crash Type Impact Planes

Must involve side plane of one or both vehicles.

Notes

Pre-Event Movement = Negotiating curve also applies.

Same Direction/Angle Sideswipe Scenario E

Both vehicles traveling in **same** direction on same roadway.

Vehicle on the left **intended** to change lanes to the right.

Vehicle on the right **intended** to change lanes to the left.

Both vehicles changed lanes.

Table 57. Same Direction/Angle Sideswipe Scenario E

	Vehicle on Left	Vehicle on Right
Pre-Event Movement	Going straight	Going straight
Critical Pre-Crash Category	This vehicle traveling	This vehicle traveling
Critical Pre-Crash Event	Over lane line on right side of travel lane	Over lane line on left side of travel lane
Crash Type	46	47

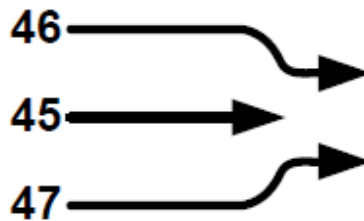


Figure 273. Crash Type 45, 46, 47

Crash Type Impact Planes

Must involve side plane of one or both vehicles.

Notes

Pre-Event Movement = Negotiating curve also applies.

Same Direction/Angle Sideswipe Scenario F

Both vehicles traveling in **same** direction on **same** roadway.

The striking vehicle departs the travel lane to the right shoulder and is returning to the travel lane.

The struck vehicle is in lane 1 going straight.

Table 58. Same Direction/Angle Sideswipe Scenario F

	Striking Vehicle	Struck Vehicle
Pre-Event Movement	Passing or overtaking another vehicle	Going straight
Critical Pre-Crash Category	This vehicle traveling	Other motor vehicle encroaching into lane
Critical Pre-Crash Event	Over lane line on left side of travel lane	From parking lane/shoulder
Crash Type	48	48

(EACH - 48)

SPECIFICS
OTHER

Figure 274. Crash Type 48

Crash Type Impact Planes

Must involve side plane of one or both vehicles.

However, if one vehicle rotates such that the impact is front to front, then use code “98” (Other crash type).

Notes

Pre-Event Movement = Negotiating curve also applies.

Opposite Direction/Head On Scenario A

Vehicles traveling in **opposite** direction on same roadway.

Table 59. Opposite Direction/Head On Scenario A

	Crossed into oncoming lane	Struck
Pre-Event Movement	Going straight	Going straight
Critical Pre-Crash Category	This vehicle traveling	Other vehicle encroaching into lane
Critical Pre-Crash Event	Over lane line on left side of travel lane	From opposite direction – over left lane line
Crash Type	50	51

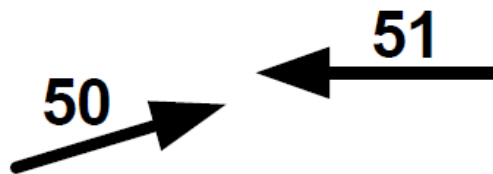


Figure 275. Crash Type 50, 51

Crash Type Impact Planes

Must involve front plane of both vehicles.

Notes

Pre-Event Movement = Negotiating curve also applies.

Opposite Direction/Head On Scenario B

Vehicles traveling in **opposite** direction on same roadway.

One vehicle traveling wrong way.

Table 60. Opposite Direction/Head On Scenario B

	Wrong way	Struck
Pre-Event Movement	Going straight	Going straight
Critical Pre-Crash Category	Other motor vehicle in lane	Other motor vehicle in lane
Critical Pre-Crash Event	Traveling in opposite direction	Traveling in opposite direction
Crash Type	52	52

(EACH - 52)

SPECIFICS OTHER

Figure 276. Crash Type 52

Crash Type Impact Planes

Must involve front plane of both vehicles.

Notes

Pre-Event Movement = Negotiating curve also applies.

Opposite Direction/Angle Sideswipe Scenario

Vehicles traveling in **opposite** direction on same roadway.

Table 61. Opposite Direction/Angle Sideswipe Scenario

	Crossed into oncoming lane	Struck
Pre-Event Movement	Going straight	Going straight
Critical Pre-Crash Category	This vehicle traveling	Other vehicle encroaching into lane
Critical Pre-Crash Event	Over lane line on left side of travel lane	From opposite direction – over left lane line
Crash Type	64	65

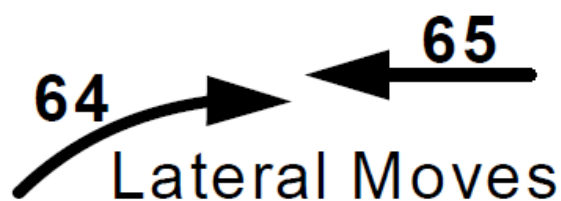


Figure 277. Crash Type 64, 65

Crash Type Impact Planes

Must involve side plane of one or both vehicles.

Notes

Pre-Event Movement = Negotiating curve also applies.

Left Turn Scenario A

Vehicles traveling in **opposite** direction on **same** roadway.

Turning vehicle has right of way.

Table 62. Left Turn Scenario A

	Turning Left	Going Straight
Pre-Event Movement	Turning left	Going straight
Critical Pre-Crash Category	Other vehicle encroaching	This vehicle traveling
Critical Pre-Crash Event	From opposite direction over right lane line	Crossing over (passing through) junction
Crash Type	68	69

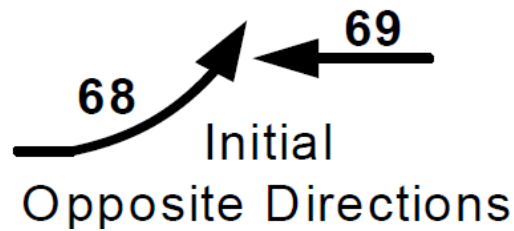


Figure 278. Crash Type 68, 69

Crash Type Impact Planes

Impact plane not a consideration for this crash type.

Notes

None

Left Turn Scenario B

Vehicles traveling in **opposite** direction on **same** roadway.

Vehicle going straight has right of way.

Table 63. Left Turn Scenario B

	Turning Left	Going Straight
Pre-Event Movement	Turning left	Going straight
Critical Pre-Crash Category	This vehicle traveling	Other vehicle encroaching into lane
Critical Pre-Crash Event	Turning left	From opposite direction over left lane line
Crash Type	68	69

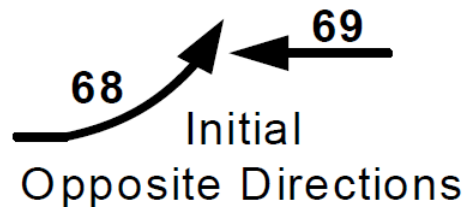


Figure 279. Crash Type 68, 69

Crash Type Impact Planes

Impact plane not a consideration for this crash type.

Notes

None

Left Turn Scenario C

Vehicles traveling in **opposite** direction on **same** roadway.

Unknown which vehicle has right of way.

Table 64. Left Turn Scenario C

	Turning Left	Going Straight
Pre-Event Movement	Turning left	Going straight
Critical Pre-Crash Category	This vehicle traveling	This vehicle traveling
Critical Pre-Crash Event	Turning left	Crossing over (passing through) intersection
Crash Type	68	69

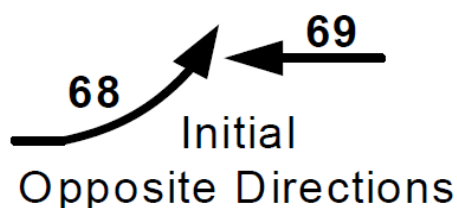


Figure 280. Crash Type 68, 69

Crash Type Impact Planes

Impact plane not a consideration for this crash type.

Notes

Pre-crash general rule applies in this situation. Since it's unknown which vehicle has the right of way, both vehicles are considered in the critical event category of this vehicle traveling.

Left Turn Scenario D

Vehicles traveling in **same** direction on **same** roadway.

Turning vehicle attempting to turn onto a different roadway or driveway.

Table 65. Left Turn Scenario D

	Turning Left	Going Straight
Pre-Event Movement	Turning left	Going straight
Critical Pre-Crash Category	This vehicle traveling	Other vehicle encroaching into lane
Critical Pre-Crash Event	Turning left	Over lane line on right side of travel lane
Crash Type	72	73

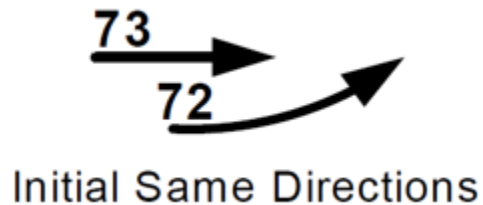


Figure 281. Crash Type 73, 74

Crash Type Impact Planes

Impact plane not a consideration for this crash type.

Notes

None

Left Turn Scenario E

Vehicle turning into **same** direction from **different** roadway.

Vehicle going straight has right of way.

Table 66. Left Turn Scenario E

	Turning Left	Going Straight
Pre-Event Movement	Turning left	Going straight
Critical Pre-Crash Category	This vehicle traveling	Other vehicle encroaching into lane
Critical Pre-Crash Event	Turning left	From crossing street, turning into same direction
Crash Type	76	77

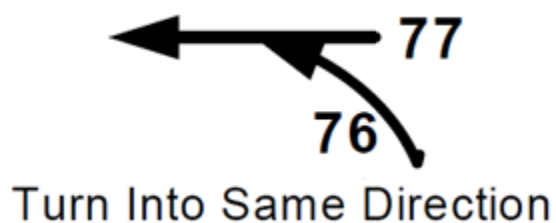


Figure 282. Crash Type 76, 77

Crash Type Impact Planes

Impact plane not a consideration for this crash type.

Notes

None

Left Turn Scenario F

Vehicle turning into **same** direction from **driveway**.

Vehicle going straight has right of way.

Table 67. Left Turn Scenario F

	Turning Left	Going Straight
Pre-Event Movement	Turning left	Going straight
Critical Pre-Crash Category	This vehicle traveling	Other vehicle encroaching into lane
Critical Pre-Crash Event	Turning left	From driveway, turning into same direction
Crash Type	76	77

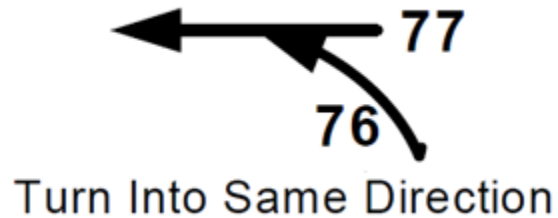


Figure 283. Crash Type 76, 77

Crash Type Impact Planes

Impact plane not a consideration for this crash type.

Notes

None

Left Turn Scenario G

Vehicle turning into **same** direction from **different** roadway or **driveway**.

Turning vehicle has right of way.

Table 68. Left Turn Scenario G

	Turning Left	Going Straight
Pre-Event Movement	Turning left	Going straight
Critical Pre-Crash Category	Other vehicle encroaching into lane	This vehicle traveling
Critical Pre-Crash Event	From crossing street across path	Crossing over (passing through) intersection
Crash Type	76	77

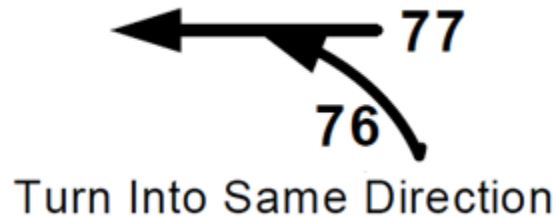


Figure 284. Crash Type 76, 77

Crash Type Impact Planes

Impact plane not a consideration for this crash type

Notes

Pre-crash general rule applies in this situation.

Left Turn Scenario H

Vehicle turning into **opposite** direction from **different** roadway or **driveway**.

Turning vehicle has right of way.

Table 69. Left Turn Scenario H

	Turning Left	Going Straight
Pre-Event Movement	Turning left	Going straight
Critical Pre-Crash Category	Other vehicle encroaching into lane	This vehicle traveling
Critical Pre-Crash Event	From crossing street across path	Crossing over (passing through) intersection
Crash Type	82	83



Figure 285. Crash Type 82, 83

Crash Type Impact Planes

Impact plane not a consideration for this crash type.

Notes

Pre-crash general rule applies in this situation.

Left Turn Scenario J

Vehicle turning into **opposite** direction from **different** roadway.

Vehicle going straight has right of way.

Table 70. Left Turn Scenario J

	Turning Left	Going Straight
Pre-Event Movement	Turning left	Going straight
Critical Pre-Crash Category	This vehicle traveling	Other vehicle encroaching into lane
Critical Pre-Crash Event	Turning left	From crossing street, turning into opposite direction
Crash Type	82	83

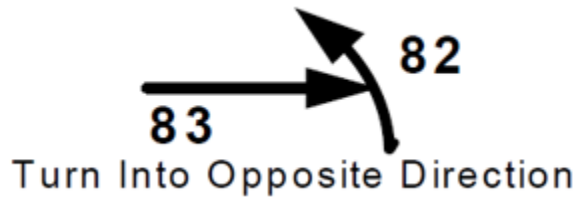


Figure 286. Crash Type 82, 83

Crash Type Impact Planes

Impact plane not a consideration for this crash type.

Notes

None

Left Turn Scenario K

Vehicle turning into **opposite** direction from **driveway**.

Vehicle going straight has right of way.

Table 71. Left Turn Scenario K

	Turning Left	Going Straight
Pre-Event Movement	Turning left	Going straight
Critical Pre-Crash Category	This vehicle traveling	Other vehicle encroaching into lane
Critical Pre-Crash Event	Turning left	From driveway, turning into opposite direction
Crash Type	82	83

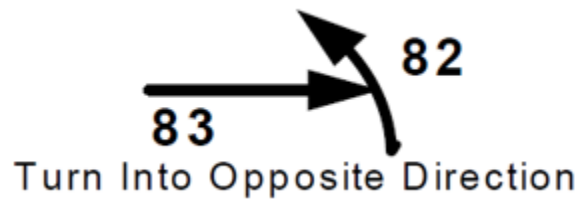


Figure 287. Crash Type 82, 83

Crash Type Impact Planes

Impact plane not a consideration for this crash type.

Notes

None

Right Turn Scenario A

Vehicles traveling in **same** direction on **same** roadway.

Turning vehicle attempting to turn onto a different roadway or driveway.

Table 72. Right Turn Scenario A

	Turning Right	Going Straight
Pre-Event Movement	Turning right	Going straight
Critical Pre-Crash Category	This vehicle traveling	Other vehicle encroaching into lane
Critical Pre-Crash Event	Turning right	Over lane line on left side of travel lane
Crash Type	70	71



Figure 288. Crash Type 70, 71

Crash Type Impact Planes

Impact plane not a consideration for this crash type.

Notes

None

Right Turn Scenario B

Vehicle turning into **same** direction from **different** roadway or **driveway**.

Turning vehicle has right of way.

Table 73. Right Turn Scenario B

	Turning Right	Going Straight
Pre-Event Movement	Turning right	Going straight
Critical Pre-Crash Category	Other vehicle encroaching into lane	This vehicle traveling
Critical Pre-Crash Event	From crossing street across path	Crossing over (passing through) intersection
Crash Type	78	79

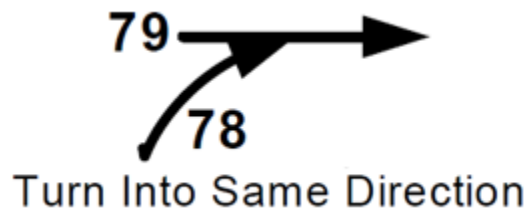


Figure 289. Crash Type 78, 79

Crash Type Impact Planes

Impact plane not a consideration for this crash type.

Notes

None

Right Turn Scenario C

Vehicle turning into **same** direction from **different** roadway.

Vehicle going straight has right of way.

Table 74. Right Turn Scenario C

	Turning Right	Going Straight
Pre-Event Movement	Turning right	Going straight
Critical Pre-Crash Category	This vehicle traveling	Other vehicle encroaching into lane
Critical Pre-Crash Event	Turning right	From crossing street, turning into same direction
Crash Type	78	79

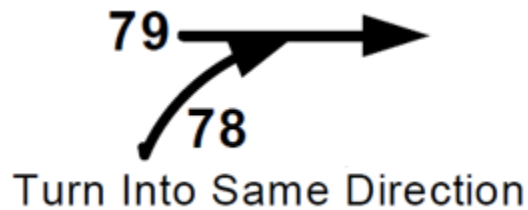


Figure 290. Crash Type 78, 79

Crash Type Impact Planes

Impact plane not a consideration for this crash type.

Notes

None

Right Turn Scenario D

Vehicle turning into **same** direction from **driveway**.

Vehicle going straight has right of way.

Table 75. Right Turn Scenario D

	Turning Right	Going Straight
Pre-Event Movement	Turning right	Going straight
Critical Pre-Crash Category	This vehicle traveling	Other vehicle encroaching into lane
Critical Pre-Crash Event	Turning right	From driveway, turning into same direction
Crash Type	78	79

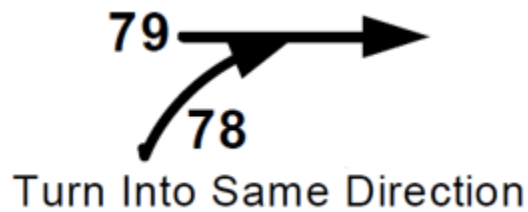


Figure 291. Crash Type 78, 79

Crash Type Impact Planes

Impact plane not a consideration for this crash type.

Notes

None

Right Turn Scenario E

Vehicle turning into **opposite** direction from **driveway**.

Vehicle going straight has right of way.

Table 76. Right Turn Scenario E

	Turning Right	Going Straight
Pre-Event Movement	Turning right	Going straight
Critical Pre-Crash Category	This vehicle traveling	Other vehicle encroaching into lane
Critical Pre-Crash Event	Turning right	From driveway, turning into opposite direction
Crash Type	80	81

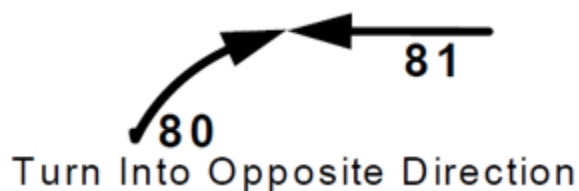


Figure 292. Crash Type 80, 81

Crash Type Impact Planes

Impact plane not a consideration for this crash type.

Notes

None

Right Turn Scenario F

Vehicle turning into **opposite** direction from **different** roadway.

Vehicle going straight has right of way.

Table 77. Right Turn Scenario F

	Turning Right	Going Straight
Pre-Event Movement	Turning right	Going straight
Critical Pre-Crash Category	This vehicle traveling	Other vehicle encroaching into lane
Critical Pre-Crash Event	Turning right	From crossing street, turning into opposite direction
Crash Type	80	81

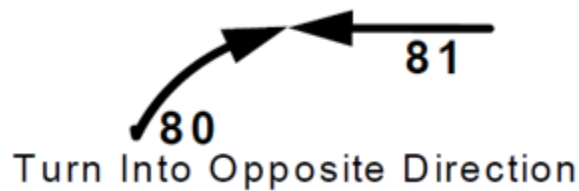


Figure 293. Crash Type 80, 81

Crash Type Impact Planes

Impact plane not a consideration for this crash type.

Notes

None

Straight Paths Scenario A

Both vehicles going straight on intersecting roadways.

Striking vehicle (frontal impact) has right of way.

Table 78. Straight Paths Scenario A

	Striking Going Straight	Struck Going Straight
Pre-Event Movement	Going straight	Going straight
Critical Pre-Crash Category	Other vehicle encroaching into lane	This vehicle traveling
Critical Pre-Crash Event	From crossing street, across path	Crossing over (passing through) intersection
Crash Type	86	87

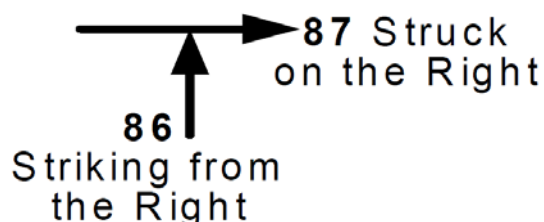


Figure 294. Crash Type 86, 87

Crash Type Impact Planes

Striking vehicle (86) must be frontal impact.

Struck vehicle (87) must be right side impact.

Notes

None

Straight Paths Scenario B

Striking vehicle going straight on **roadway**.

Struck vehicle going straight from intersecting **driveway**.

Striking vehicle (frontal impact) has right of way.

Table 79. Straight Paths Scenario B

	Striking Going Straight	Struck Going Straight
Pre-Event Movement	Going straight	Going straight
Critical Pre-Crash Category	Other vehicle encroaching into lane	This vehicle traveling
Critical Pre-Crash Event	From driveway, across path	Crossing over (passing through) intersection
Crash Type	86	87

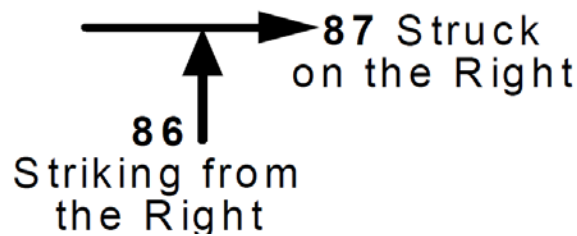


Figure 295. Crash Type 86, 87

Crash Type Impact Planes

Striking vehicle (86) must be frontal impact.

Struck vehicle (87) must be right side impact.

Notes

None

Straight Paths Scenario C

Both vehicles going straight on intersecting **roadways**.

Struck vehicle (right side impact) has right of way.

Table 80. Straight Paths Scenario C

	Striking Going Straight	Struck Going Straight
Pre-Event Movement	Going straight	Going straight
Critical Pre-Crash Category	This vehicle traveling	Other vehicle encroaching into lane
Critical Pre-Crash Event	Crossing over (passing through) intersection	From crossing street, across path
Crash Type	86	87

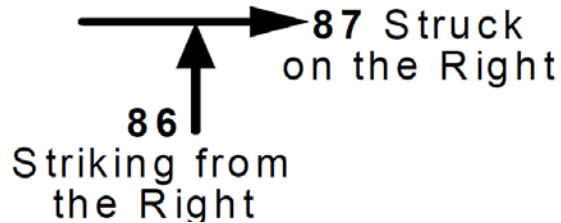


Figure 296. Crash Type 86, 87

Crash Type Impact Planes

Striking vehicle (86) must be frontal impact.

Struck vehicle (87) must be right side impact.

Notes

None

Straight Paths Scenario D

Struck vehicle going straight on **roadway**.

Striking vehicle going straight from intersecting **driveway**.

Struck vehicle (right side impact) has right of way.

Table 81. Straight Paths Scenario D

	<i>Striking Going Straight</i>	<i>Struck Going Straight</i>
Pre-Event Movement	Going straight	Going straight
Critical Pre-Crash Category	This vehicle traveling	Other vehicle encroaching into lane
Critical Pre-Crash Event	Crossing over (passing through) intersection	From driveway, across path
Crash Type	86	87

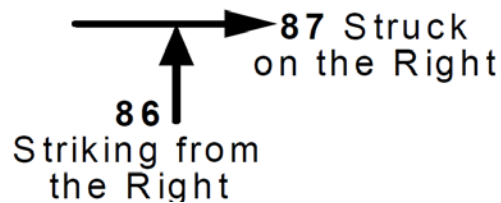


Figure 297. Crash Type 86, 87

Crash Type Impact Planes

Striking vehicle (86) must be frontal impact.

Struck vehicle (87) must be right side impact.

Notes

None

Straight Paths Scenario E

Both vehicles going straight on intersecting **roadways**.

Striking vehicle (frontal impact) has right of way.

Table 82. Straight Paths Scenario E

	Striking Going Straight	Struck Going Straight
Pre-Event Movement	Going straight	Going straight
Critical Pre-Crash Category	Other vehicle encroaching into lane	This vehicle traveling
Critical Pre-Crash Event	From crossing street, across path	Crossing over (passing through) intersection
Crash Type	88	89

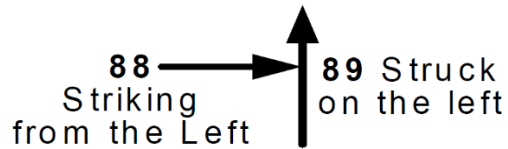


Figure 298. Crash Type 88, 89

Crash Type Impact Planes

Striking vehicle (88) must be frontal impact.

Struck vehicle (89) must be left side impact.

Notes

None

Straight Paths Scenario F

Striking vehicle going straight on **roadway**.

Struck vehicle going straight from intersecting **driveway**.

Striking vehicle (frontal impact) has right of way.

Table 83. Straight Paths Scenario F

	Striking Going Straight	Struck Going Straight
Pre-Event Movement	Going straight	Going straight
Critical Pre-Crash Category	Other vehicle encroaching into lane	This vehicle traveling
Critical Pre-Crash Event	From driveway, across path	Crossing over (passing through) intersection
Crash Type	88	89

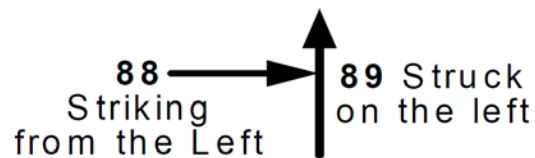


Figure 299. Crash Type 88, 89

Crash Type Impact Planes

Striking vehicle (88) must be frontal impact.

Struck vehicle (89) must be left side impact.

Notes

None

Straight Paths Scenario G

Both vehicles going straight on intersecting **roadways**.

Struck vehicle (left side impact) has right of way.

Table 84. Straight Paths Scenario G

	Striking Going Straight	Struck Going Straight
Pre-Event Movement	Going straight	Going straight
Critical Pre-Crash Category	This vehicle traveling	Other vehicle encroaching into lane
Critical Pre-Crash Event	Crossing over (passing through) intersection	From crossing street, across path
Crash Type	88	89

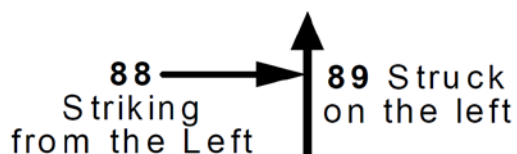


Figure 300. Crash Type 88, 89

Crash Type Impact Planes

Striking vehicle (88) must be frontal impact.

Struck vehicle (89) must be left side impact.

Notes

None

Straight Paths Scenario H

Struck vehicle going straight on **roadway**.

Striking vehicle going straight from intersecting **driveway**.

Struck vehicle (left side impact) has right of way.

Table 85. Straight Paths Scenario H

	Striking Going Straight	Struck Going Straight
Pre-Event Movement	Going straight	Going straight
Critical Pre-Crash Category	This vehicle traveling	Other vehicle encroaching into lane
Critical Pre-Crash Event	Crossing over (passing through) intersection	From driveway, across path
Crash Type	88	89

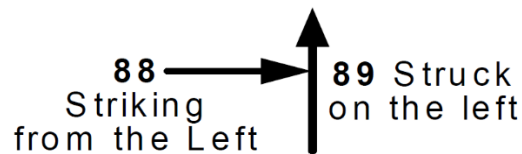


Figure 301. Crash Type 88, 89

Crash Type Impact Planes

Striking vehicle (88) must be frontal impact.

Struck vehicle (89) must be left side impact.

Notes

None

U-Turn Scenario A

Other vehicle **going straight**.

Vehicle making **U-turn** is initially traveling in opposite direction, and attempts to make U-turn from left turn lane.

Vehicle **going straight** has right of way.

Table 86. U-Turn Scenario A

	U-Turn	Going Straight
Pre-Event Movement	Making U-turn	Going straight
Critical Pre-Crash Category	This vehicle traveling	Other vehicle encroaching into lane
Critical Pre-Crash Event	Making U-turn	From opposite direction over left lane line
Crash Type	98	98

98 Other Accident Type

Figure 302. Crash Type 98

Crash Type Impact Planes

Impact plane not a consideration for this crash type.

Notes

None

U-Turn Scenario B

Other vehicle **going straight**.

Vehicle making **U-turn** is initially traveling in opposite direction, and attempts to make **U-turn** from left turn lane at signal controlled intersection.

Vehicle making **U-turn** has right of way.

Table 87. U-Turn Scenario B

	U-Turn	Going Straight
Pre-Event Movement	Making U-turn	Going straight
Critical Pre-Crash Category	Other vehicle encroaching into lane	This vehicle traveling
Critical Pre-Crash Event	From opposite direction over right lane line	Crossing over (passing through) intersection
Crash Type	98	98

98 Other Accident Type

Figure 303. Crash Type 98

Crash Type Impact Planes

Impact plane not a consideration for this crash type.

Notes

None

U-Turn Scenario C

The vehicle intending to make a **U-turn** is ahead of the vehicle going straight in the same lane and pulls onto the right shoulder to make a **U-turn**.

Other vehicle traveling behind the vehicle making a U-turn is **going straight**.

Table 88. U-Turn Scenario C

	U-Turn	Going Straight
Pre-Event Movement	Making U-turn	Going straight
Critical Pre-Crash Category	This vehicle traveling	Other vehicle encroaching into lane
Critical Pre-Crash Event	Making U-turn	From parking lane/shoulder
Crash Type	98	98

98 Other Accident Type

Figure 304. Crash Type 98

Crash Type Impact Planes

Impact plane not a consideration for this crash type.

Notes

Pre-Event Movement = Negotiating curve also applies for vehicle NOT making U-turn

Appendix E: Code Descriptors

Add # to end of any CD if several present

Code	Description
BODY	Position of a body
BUIL	Building
BR	Any other type of Barrier (not Jersey style)
BRIDGE	Bridge
C	Crush Measurements/10 cm increments Note: each crush profile is a separate job
CU	Crush measurement Underride (above bumper or Sill level)
CW	Crosswalk
CUL	Culvert
CBT	Curb top (Target top of curb if possible)
CBB	Curb Bottom (Target top of curb if possible)
CONSTR	Construction Sign (Target base of sign, if struck base of post)
DLB	Ditch Line-Bottom
DLT	Ditch Line-Top
DRAIN	Any type of Drain
DY	Double Yellow Line
DYWR	Double Yellow Line with Reflectors
DYWRS	Double Yellow Line with Rumble Strip
DRCTION	Direction Sign (Target base of sign, if struck base of post)
DEB	Debris
ELV	Elevation (If cone or other target is used HT= cone or other target height)
EP	Edge of Pavement
EUP	Edge of Unpaved
FH	Fire Hydrant
FN	Fence
FCP	Front Center Point
FCPADJ	Front Center Point-Adjusted
FW	Furrow
GOU	Gouge (Target beginning and end)
GR	Guardrail (Target bottom of guardrail)
GRP	Guardrail Post
GW	Guy-Wire (Target base of wire)
JB	Jersey Barrier (Target top of barrier)
LIGHT	Top (center) of streetlight or other illumination source
LLD	Lane Line Dashed
LLDWR	Lane Line Dashed with Reflector
LLDWRS	Lane Line Dashed with Rumble Strip

Code	Description
LLS	Lane Line Solid (Target inside of one line)
LLSWDP	Lane Line Solid with Delineator Post
LLSWR	Lane Line Solid with Reflector
LLSWRS	Lane Line Solid with Rumble Strip
LF	Front Left Wheel Final Rest (add V# if multiple)
LR	Rear Left Wheel Final Rest (add V# if multiple)
LIQ	Liquid Spill
PARKING	Parking Sign (Target base of sign, if struck base of post)
PEDALCY	Pedalcycle final rest (includes bikes, scooters, etc.)
PEDSIGN	Pedestrian sign or signal (Target center of sign or signal)
PKL	Parking Line
POI	Point of Impact
POLE	Includes any pole or post (i.e., Light Pole, Utility Pole)
PROPM	Property Marker
PTAL	Painted Turn Arrow-Left (2 points needed)
PTALS	Painted Turn Arrow-Left and Straight (3 points needed)
PTALSR	Painted Turn Arrow-Left, Straight, and Right (4 points needed)
PTAR	Painted Turn Arrow-Right (2 points needed)
PTAS	Painted Turn Arrow-Straight
RF	Front Right Wheel at Final Rest (add V# if multiple)
RR	Rear Right Wheel at Final Rest (add V# if multiple)
RCP	Rear Center Point
RCPADJ	Rear Center Point-Adjusted
ROCK	Rock or Rock Wall
RP	Reference Point (RP# should proceed code descriptor, For example: RP1POLE, RP2SWR)
RPM	Raised Pavement Marker
RRX	Railroad track
RS	Rumble Strip (not associated with painted line)
SCR	Scratches
SHO	Shoulder area between Edge of Pavement (EP) and surface change
SHRB	Shrubbery-Bushes
SIGN	Any other sign type (Target base of sign, if struck base of post)
SL	Stop Line
SPDLMT	Speed Limit Sign (Target base of sign, if struck base of post)
SM	Survey Marker
SNOW	Snowbank
SWR	Sewer top (Target the center unless diameter needed, then target center and a side)

Code	Description
SW	Sidewalk
STOP	Stop Sign (Target base of sign, if struck base of post)
TM	Tire Mark (Any mark created by a tire including skid marks)
TREE	Tree (Measure diameter with tape measure, Target center of tree)
TREELN	Tree line
TS	Traffic Signal (Target center of signal)
UTM	Utility Marker
WALL	Wall
WARN	Warning Sign (Target base of sign, if struck base of post)
YIELD	Yield Sign (Target base of sign, if struck base of post)

Notes:

Z = Prefix used for the first point on any line

X = Prefix used for all other points on that line

Single points do not require Z or X prefix

Add number to end of any Code Descriptor when several present. For example, EP1, EP2, etc.

Do not create a Code Descriptor for road departure area. Use a Code Descriptor already on the list and make an annotation on the Field Measurements paper indicating which point was used for the road departure.

XYZ measurements for first object struck are obtained from the final diagram and not measured using the Total Station.

Appendix F: Diagram Guidelines

Basic Diagram Guidelines

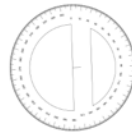
1. Remove Total Station points and code descriptors from final drawing for .pdf and .far files.

2. Use 'NHTSA North Arrow 7' from the NHTSA custom symbols folder. It should be enlarged from the default size.



a) North arrow should be aligned with Total Station north ordinate (short line of data log).

i) Note the Angle displayed is not relative to North. The NHTSA protractor from the NHTSA custom symbols folder should be used for vehicle heading angles.



3. A white background color should be used for a completed diagram prior to file saving.

a) Do not use color in the diagram to indicate lane markings.

4. Reference Points should be labeled with description in addition to RP#.

a) Example: RP1 Light Pole, RP2 Sewer Top, etc.

5. Use the Scale Bar for each diagram from the Measurements ribbon.



a) The bar size can be changed for best representation but must end in increment of 0 or 5.

b) Align the scale bar below the north arrow as uniformly as possible.

6. The NHTSA Template (Power Tools/Template/NHTSA Template) should be added to all diagrams prior to printing with Case # (Study-PSU-Year-Case-Domain).

a) CISS Example: 1-45-2024-123-01

b) CIREN Example: 3-C1-2024-123

c) SCI Example: 5-S1-2024-CR24123

7. Vehicles

a) Use the closest corresponding vehicle from the NHTSA custom symbols folder for a template (not the square vehicles from Power Tools/Vehicle Specs). The vehicle type

should match (i.e., passenger, SUV, pickup). The length and width of vehicle must be changed to be consistent with specifications. Wheelbase cannot be edited in the software.

- b) Use a number only for vehicle designations (1, 2, 3, etc.). The number should be oriented with the front of the vehicle.
- c) Use the dashed outline function to show vehicle movement.



- i) The dashed vehicle can be grouped with the vehicle number and copied
- d) Use solid lined vehicles to show vehicle stopped or at final rest.



- e) Pre-impact, impact, and post-impact dynamics must be included.
- f) In rollover crashes, scaled side and undercarriage views should be used as needed to depict the rollover sequence. Vehicle height from specifications should be used for width of scaled side profiles

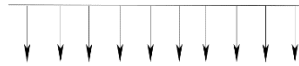


- 8. Do not label each event unless it helps explain the crash sequence.
- 9. At least 5 points must be shot for each road segment, even if the line appears straight.

10. Grade Measurements

- a) Show a calculated grade for each vehicle in pre-crash and post-crash (if applicable). Show as a +/- %, use the first whole number of the calculated grade. The grade should be placed beside the roadway with a callout indicating the area where the measurement was taken.
 - i) Examples: 3.7% = “+3% Grade”, -4.2% = “-4% Grade”
 - ii) Level should be indicated by “0% Grade”
- b) Grades for rollovers are to be shown on the diagram as follows:
 - i) Pre-crash
 - (1) Include superelevation if curve

- ii) Rollover initiation
- iii) Roll initiation to final rest
- c) Embankments and ditches should include the grade (+/- %)
- i) The grade should be (+ or -) based on the path of the vehicle
- ii) Use arrows to indicate downhill direction



11. Five files should be saved into CISSWeb for scenes documented with Total Station.

- a) .nik/.raw, .csv, .pdf, .far, and a scanned or uploaded document labeled _FS for the Field Sketch and Field Measurement pages
- b) Scenes not documented with Total Station (satellite imagery) should have three files saved, .pdf and .far, and a scanned or uploaded document labeled _FS for the Field Sketch and Field Measurement pages. These diagrams should include the disclaimer “Scaled Diagram from Satellite Image”.

12. If a collision occurs within 60m (approximately 10 car lengths) from intersection, and is related to the intersection, then the entire intersection must be documented.

- a) When a collision is related to an intersection, but occurs more than 60m from the intersection, the intersection is not required to be documented. However, a callout should be added to indicate the distance to the intersection.

13. Trees

- a) Do not use canopy trees except to illustrate a potential view obstruction.



- b) Tree lines along the side of a roadway should be indicated with a call out of “Tree Line” with trees placed intermittently.
- c) A scaled circle from drawing tools should be used for contacted trees. ○
- d) Various tree types are in the Symbols/Crash Library/Landscape ribbon

14. Signs and poles

- a) All contacted signs or poles are required to be placed on the diagram.
- i) A scaled circle from drawing tools should be used for contacted signs or poles. ○

- b) All regulatory (e.g., stop, yield, one-way) and warning signs (curve ahead) are required
- c) Guide signs (e.g., exit signs) are only required if they pertain to the crash
- d) Place a speed limit sign on diagram only if present.
- e) For non-contacted signs, use symbols/signs within FARO Zone to designate the type of sign.
 - i) Signs are located in the Symbols/Crash Library/Signs ribbon



15. The type of object, and diameter/dimensions of the first object struck (FOS) should be included on a callout near the object off the road.

- a) The FOS layout is standardized
 - i) Insert the FOS template from the NHTSA custom symbols folder

First Object Struck:
 (Enter Object Description Ex: Tree, Curb, Light Pole, etc...)
 L____m W____m H____m

- ii) Double click to edit
- iii) Change the text (Enter Object Description...) to whatever was struck
- iv) Length (L), Width (W), and Height (H) dimensions are entered on the next line by replacing the underscores with a value in tenths of meters

- b) Example:
 - First Object Struck:
 - Tree
 - L .35m W.35m H.50m

16. Use the 'NHTSA Traffic Light' from the NHTSA custom symbols folder to indicate location and direction of a traffic signal.



17. Points documented using the Total Station that are NOT associated with the crash scene such as inaccurate edge of pavement points from high grass, passing vehicles, or unrelated tire marks, should be deleted from the .nik/.raw on the Total Station prior to saving the files and scene completion.

18. Use satellite imagery if Total Station measurements were not obtained.
 - a) These diagrams should include the disclaimer “Scaled Diagram from Satellite Image” which should be placed just under the scale bar.
19. If a combination of Total Station measurements and satellite imagery were used, the diagram should include the disclaimer “Scaled Satellite Image was Used for Portions of Diagram”. A callout should identify the section(s) of diagram where satellite imagery was used.
20. When a RP(s) is located too far outside the print frame, add a callout describing the approximate distance the RP was located outside the frame and an arrow pointing in its direction.
21. Non-contact vehicles should be labeled ‘NC’ on the diagram.

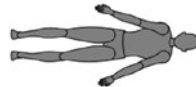
Additional Basic Diagram Guidelines For Non-Motorist Crashes

22. The following standard non-motorist symbols found in FARO Zone should be used.

- a) Pre impact pedestrians – Symbols/Crash Library/Bodies ribbon/Top_1 symbol

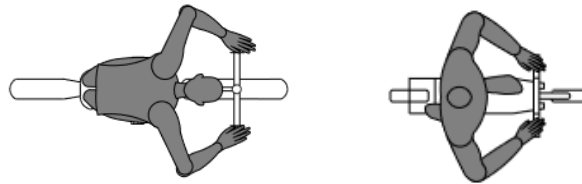


- b) Final rest pedestrians – Symbols/Crash Library/Bodies ribbon/Face Down symbol

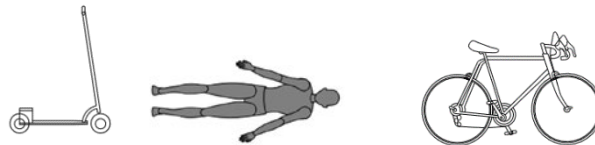


- c) Bicycles, scooters, skateboards, and other pedalcycles – Symbols/Transportation Library/Recreation ribbon

- i) Use the overhead view symbols with rider for precrash depictions



- ii) Use the pedestrian face down symbol and the pedalcycle on its appropriate side for final rest



- d) Standard streetlight (no overhang) – Crash Library/Traffic Control ribbon/Lamppost



- e) Streetlight (w/overhang) – Crash Library/Traffic Control ribbon/Street Light



23. All potential sources of lighting, including streetlights, business signs, etc. must be documented.

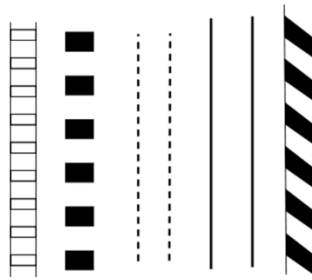
- a) Two points for streetlights are required. Document the base of the streetlight and the center of the illumination area.

- i) For streetlights with overhang use the circle portion of the symbol for the base, and the oval portion of the symbol for the illumination area.

24. Pedestrian signals should be documented at the center of the signal. The symbol is located in the Symbols/Crash Library/Traffic Control ribbon/Ped Crossing



25. The appropriate crosswalk pattern must be depicted using the crosswalk symbols from the NHTSA custom symbols



26. All objects such as poles, signs, trees, shrubbery, foliage, buildings, etc. near the precrash line of sight for the non-motorist and vehicle must be documented.

DOT HS 813 744
December 2025



U.S. Department
of Transportation
**National Highway
Traffic Safety
Administration**

