MOTOR VEHICLE ATTRIBUTES

STATUS REPORT

Transportation Systems Center
Research and Special Programs Administration
U.S. Department of Transportation
Cambridge, MA 02142

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1.0 Summary

The Transportation Systems Center (TSC) was requested by the National Highway Traffic Safety Administration's (NHTSA) Office of Vehicle Research to compile and computerize a data base of vehicle safety attributes for automobiles and trucks. The data base was developed as a source of vehicle specifications and dimensions for research in the areas of Crash Avoidance and Crashworthiness.

As a result of this effort, a series of data bases has been developed by TSC. The data bases include information from manufacturers and other sources on automobiles and trucks and their respective dimensions and specifications. TSC also developed a data base of automobile interior and exterior dimensions collected through a program of direct measurement of automobiles.

Other data bases were obtained from within the automotive industry and NHTSA during the course of this study. TSC transferred these data bases along with the above mentioned TSC data bases onto the National Institutes of Health's (NIH) computer system in Statistical Analysis Systems (SAS) data sets for NHTSA/TSC research use.

The information within the data base will aid NHTSA and TSC researchers in relating vehicle characteristics to injuries and fatalities by providing data input for computer modeling and the formulation of accident-avoidance concepts. The vehicle safety attributes data base will be up-dated on a continuing basis to reflect changing trends in the vehicle population.

2.0 Introduction

2.1 Background

TSC was requested by NHTSA to assemble a computerized data base of vehicle safety attributes. These attributes include relevant dimensions and specifications for automobiles and trucks. The sources for these attributes include published technical literature, manufacturers data, trade journals and, when required, direct measurement of selected vehicles. The information from these sources may exist in either hard-copy or computer files. The data base for automobiles was started late in FY'82 and is continuing. Sources of information were identified, data collected, and computer entry completed in FY'84. Truck data sources and required attributes were defined, initial data collection completed and computer files assembled. Some sources for motorcycle data have been identified and relevant attributes from these sources examined for possible inclusion in the data base if NHTSA requires such action in the future. These attributes are included here for completeness.

2.2 Objectives

The vehicle attributes data base will provide to researchers in NHTSA's Office of Vehicle Research's Crash Avoidance and Crashworthiness Divisions a source of information on vehicle specifications and dimensions. Such information is needed to relate vehicle characteristics to injuries and fatalities, as input data to computer models, and to formulate accident-avoidance concepts.

The following pages will document the existing data bases that have been developed and those that are in the process of being developed, as well as the

development of future requirements for this effort. The documentation includes a descriptive explanation of the data bases and lists their contents. The vehicle model years covered by each data base are given in Table 1. The specific contents of each data base and the information required by a user to access the data are found in the Appendices.

An important aspect of this effort is to delineate any future requirements and updates. We recognize that the users of these data bases are diverse in their needs and requirements and users' comments are solicited in this regard (see Appendix C).

2.3 Approach

The approach that was adapted for this effort was evolutionary. After an initial list of automobile safety attributes (see Appendix H) was established as a basic foundation, the list was supplemented by other related data as it became available or as the needs of other researchers became evident. The results of this effort to date have been a series of separate data bases (Appendix C through Appendix L), some of which contain redundant information and where recognized data gaps exist.

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Table 1

PRESENTLY AVAILABLE AUTOMOTIVE DATA BASES

Data Base	DSNAME	VOL	Years Covered	Number of Vehicles	Contents
Make/Model Codes	~~NEWCODES~~ CODES	~~FILE37~~		All vehicles listed in data bases	Common identifying make/model codes
General Motors	GMSPCS	~~FILE37~~	75-83	All GM Cars	150 interior and exterior dimensions
NHTSA Interior Restraint	INTERIOR	~~FILE37~~	78	U.S. passenger cars (foreign and domestic)	156 interior and restraint system dimensions
Volkswagen			65-75	U.S passenger cars (foreign and domestic)	
	VWATTS	~~FILE37~~		~~4000~~ 4495	104 descriptive vehicle and dimensional data points
	VWWGT	~~FILE37~~		33 ~~32~~	63 weight break-down variables
	GEOMETRY	~~FILE37~~		48 262	93 interior geometry measurements
NHTSA Crash Pulse			75-84	Representative Automobiles	Dynamic crash test results
	SEG1	~~FILE37~~			
	SEG2	FILE37			
	SEG3	FILE37			
	SEG4	FILE37			
	SEG5	FILE37			
TSC Safety				150 per year domestic/foreign	72 interior and exterior dimensions
	VEH75	FILE37	75		
	VEH79	FILE37	79		
	VEH80	FILE37	80		
TSC Measurement	HH	FILE37	75-83	150 domestic and foreign	49 interior and equipment dimensions

Table 1 (Con't)

PRESENTLY AVAILABLE AUTOMOTIVE DATA BASES

Data Base	DSNAME	VOL	Years Covered	Number of Vehicles	Contents
TSC Truck Data Base	MEDIUM HEAVY	FILE37 FILE37	75-83	U.S. medium and heavy trucks (foreign and domestic)	104 descriptive vehicle attributes and exterior dimensions
U.S Truck Driver Anthropometric Data Base	ANTHRO	~~FILE37~~ 053534 053543	na	na	112 descriptive static and dynamic anthropometric attributes

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3.0 Data Base Development

3.1 Automobile Data Sources

A number of sources have been utilized in the process of constructing the automobile vehicle data base. These sources included: manufacturer-supplied information on their vehicles' dimensions and specifications; NHTSA crash test results and passsenger restraint information; measurement data gathered by TSC; MVMA Specifications; and a historical data base of vehicular information for makes and models of all manufacturers that was compiled by Volkswagen. In addition, the R.L. Polk National Vehicle Population Profile has been utilized to obtain counts of vehicle registrations.

3.1.1 Polk National Vehicle Population Profile

The Polk National Vehicle Population Profile (NVPP) is a census of official state vehicle registration records. The NVPP is prepared from two primary elements: Vehicle Identification Number (VIN) and the registrant's address. The vehicle is identified in separate Polk data bases as a passenger car or truck, by: make, model year, series, body style and engine size. Vehicle manufacturer's specifications are used to decipher the items contained within the VIN.

Each year, the R.L. Polk Company obtains calendar year totals of registrations by vehicle make and model from all states. The Polk data is grouped into four modules: domestic automobiles, imported automobiles, light trucks, and medium/heavy trucks. The data is available at the national, state and county levels. TSC examined data on the national level only.

The Polk automobile data files contain the following characteristics: registered vehicle counts, manufacturer, series, body style, number of cylinders, displacement (inches for domestics, centimeters for imports), engine code, carburetion, fuel type, curb weight, wheelbase, and standard tire size. The Polk information also indicates whether the vehicle has front wheel drive or a transversely mounted engine.

3.1.2 MVMA Forms

The automobile data contained in the Motor Vehicle Manufacturers Association (MVMA) Specifications Forms is probably the most thorough and up-to-date automobile data source available. MVMA oversees the development, collection, and compilation of the passenger car specification forms which are completed by both domestic and foreign automobile manufacturers.

MVMA data forms contain engine, vehicle emission, electrical, drive unit, brake, steering, suspension, convenience equipment, weight, and car and body information. This or similiar data has been collected from as early as 1950; however, complete and readily accessible data is only available from 1975 to the present.

For imported cars, the Automobile Importers of America collects the MVMA specifications. For 1975 to 1980, the data compiled on foreign cars was not complete. More recent years (1980 through 1984) represent more dependable data in terms of the number of vehicles and the MVMA attributes.

In general, the MVMA data is broken down by year, manufacturer, and car line. A sample specification form is provided in Appendix A for a 1980 Chrysler Plymouth Horizon. This and similar MVMA specification forms were used as the major source of data for the TSC data base, which is described in Section 3.1.7.

3.1.2.1 SAE and MVMA References

References for most of the specifications in the MVMA forms can be found in the Society of Automotive Engineer's (SAE) Handbook. The MVMA Specifications Forms also contain their own Key Sheets and definitions describing the exterior car and body dimensions given in their data. The SAE Handbook contains a collection of SAE standards, recommended practices, and information reports. For instance, detailed definitions and descriptions of the car and body data in MVMA are given in the "Motor Vehicle Dimensions - SAE Recommended Practice J1100". SAE J1100 is provided in Appendix B. SAE also publishes other automotive reports of interest such as "Motor Vehicle Seating Systems - SAE Recommended Practice J879b".

3.1.3 Manufacturer Sources

Some manufacturers produce supplements to the MVMA specifications. In all cases, these supplements are a detailed extension of the MVMA specifications. The attributes in these detailed specifications are clearly defined in SAE J1100.

3.1.3.1 General Motors

General Motors (GM) has produced the most complete set of detailed supplements. GM supplements range from 1975 through the present including all of their model year cars within this period. Each contains 151 interior and exterior dimensions. GM has transformed this data into a computerized data base. TSC has entered this data base at the National Institutue of Health (NIH) computer in a Statistical Analysis System (SAS) data set. In this form it can be manipulated and used in statistical analysis. The car attribute contents of this SAS data set are in Appendix C.

3.1.3.2 Other Sources

No other manufacturer has developed annual detailed supplements as complete as GM's. Ford has produced MVMA supplements of car and body dimensions for 1975 through 1980 model passenger cars. In addition, Ford has developed a data base of 42 attributes and specifications for 1978 through 1984 vehicles. The interior and exterior dimensions and other specifications of the Ford data base are listed in Appendix D. The data exists in machine-readible form on a magnetic tape.

Chrysler has MVMA supplements for 1979 to 1983 model year cars. This data is in machine-readable form, and TSC requested a copy of the data base from the manufacturer, but, has yet, to obtain this data.

American Motors Corporation (AMC) developed an MVMA Specification Form Supplement for its 1981 model year cars. This data exists only in hardcopy form.

3.1.4 NHTSA Enforcement Data

In 1977, the National Highway Traffic Safety Administration (NHTSA) requested that all domestic and foreign automobile manufacturers provide certain dimensional data from the front occupant compartment of their 1978 passenger cars. The resulting response was extensive. GM, Ford, Chrysler and AMC provided at least a representative sampling of their 1978 models. Most major foreign manufacturers also responded with significant data.

The interior data is also entered on the NIH computer in a SAS data base. Interior attributes in this data are listed in Appendix E, along with a geometrical reference for the data.

3.1.5 Volkswagen Data

Another automobile data source is from the Engineering Model of Future Motor Vehicles performed by Volkswagen (VW) Research Division under contract to NHTSA. The data base was completed in 1976 and contains information on most domestic passenger cars dating back to 1965. The data consists of design, performance, and other pertinent variables affecting safety. These attributes are divided up into five separate categories: descriptive vehicle data, dimensional (geometric) data, weight break-down data, safety attributes, and miscellaneous data.

Three of the five categories: descriptive vehicle data, dimensional data and weight data; exist as separate computer files in a SAS data set. The descriptive vehicle data makes up the majority of the VW data base, with 104 attributes for approximately 4000 vehicle models. The geometric data set consists of 93 variables for 48 models, and the weight break-down data was collected for 63 aspects of 32 vehicles. Documentation and definitions do exist in VW's Final Report for all five categories. Appendix F contains the variable contents of the three files of the VW data base. This information has also been entered by TSC into the NIH computer in a SAS format.

3.1.6 Crash Data

Crashworthiness data exists as a result of dynamic crash testing performed by the Automated Sciences Group for NHTSA. For each test crash, the following test specification data was collected: general test information, vehicle information, barrier or rollover information, occupant information, and instrumentation information. The data exists for representative vehicles from model years 1975 to 1984 in a SAS data base on the NIH computer. Appendix G provides a list of the data's variables. Complete documentation and reference material can be found in the "Dynamic Crash Test Information Guide" and "Collision Deformation Classification (SAE Recommended Practice J224a)."

3.1.7 TSC Data

3.1.7.1 TSC Computer Program Development

The TSC effort initially focused on development of a vehicle attributes data base for those 1975, 1979, and 1980 model year

vehicles which were most heavily represented in the traffic stream. Specifically, all makes and models with more than 10,000 total registrations were included in the data base. This resulted in approximately 200 models for each model year.

MVMA vehicle specification data was transcribed by hand from hard copy documents onto coding forms for keypunching and computer entry. The R.L. Polk data was loaded into a separate data base, accessed to obtain the specific vehicles with more registrations than 10,000, and a sequential file created. A series of Fortran programs were written on the TSC DEC System-10 to merge the two files and create a resultant file, which has the MVMA attributes appended to the Polk data records. Sample listings for the data were designed and used to correct data entry errors. Ultimately, the data was transferred to NIH for SAS retrieval. The data elements on the final file are listed in Appendix H.

3.1.7.2 TSC Measurement Program

TSC has developed a data base of interior dimensions and vehicle equipment through direct measurement of 150 automobiles. The data already collected has been stored in SAS (see Appendix I). Similar data on additional vehicles can be gathered in the future, if NHTSA requires such data.

3.1.7.3 TSC Automobile Engine Data

In order to establish an automotive engine data base, we performed an initial investigation into automotive engine data. TSC selected 22 available attributes which could have safety implications. These attributes could serve as a basis for the engine data base. These attributes are shown in Appendix J. The data will cover foreign and domestic engines from 1975 to present. To date, NHTSA has not required that this data be available in SAS computer files.

3.1.8 Common Codes

TSC has inserted a common code in each of the applicable automobile data bases found in SAS. This common code designates the manufacturer and model names for each vehicle, using the same numbering system that was developed in the "Engineering Model of Future Motor Vehicles - Final Report". The report was the result of a study conducted by Volkswagen for NHTSA under contract DOT HS-5-01273.

The common code consists of a numerical manufacturer code (MCODE) from 1 to 56, representing 56 domestic and foreign vehicle manufacturers, and a model code (MODCODE) from 1 to N for each vehicle model within that manufacturer's product line. For example, an American Motors Ambassador is identified in each data base as MCODE=1 and MODCODE=6, and the Toyota Corolla 1200 is consistantly labeled MCODE=56 and MODCODE=6.

The Volkswagen contract was completed in 1976. Therefore, TSC has identified all vehicles introduced by the various manufacturers since the publication of the final VW report and assigned vehicle model codes to each consistant with the pre-1976 vehicle designations.

The common code will facilitate user mobility between the data bases. A complete list of the common codes can be obtained from the NIH file DSNAME = CODES on FILE37.

3.1.9 Trade Journals and Reference Books

Several other automobile data sources exist in hardcopy form. There are several trade journals that contain passenger car information. The April issue of Automotive Industries is annually the "Engineering Specifications and Statistical Issue". It contains engine and selected body data for domestic and foreign cars. Automotive News publishes selected MVMA specifications. Automotive Fleet gives data on certain car specifications (like MVMA) and Environmental Protection Agency (EPA) ratings. Also, Commercial Car Journal contains selected body dimensions and EPA ratings. Finally, World Cars is a reference book that provides annual general specifications for all domestic and foreign cars available in a given year.

3.2 Truck Data Sources

The development of a data base of truck safety attributes began with a literature search, which provided potential sources of data such as: the Polk National Vehicle Population Profile (NVPP), the Gasoline and Diesel Truck Index digests, several manufacturers' data manuals and annual specification

issues of Pickup, Van & 4WD, Commercial Car Journal, Fleet Owner, and International Automotive Industries.

These four trade journals contain specifications for truck models equipped with standard features. The data listed in each magazine was found to be included in both the Truck Index digests and manufacturer's data books.

The literature search also indicated several SAE and MVMA reports on anthropometric studies of truck and bus drivers as sources of data on cab interior layout and design.

3.2.1 Polk National Vehicle Population Profile

As described in Section 3.1.1, the Polk National Vehicle Population Profile is a census of official state vehicle registration records. The Polk data is divided into four volumes: domestic cars, imported cars, light trucks and medium/heavy trucks.

Within the Polk modules, medium/heavy trucks are further identified by gross vehicle weight, wheels by wheels driving, cab configuration and diesel engine manufacturer. The light truck volume more closely resembles the Polk automobile modules. For all trucks, the address of the registrant is used for geographic coding by state and county. The number of vehicles in operation as of the most current (1981) edition of Polk is given for each truck model.

The Polk data played a major role in the development of the truck safety attributes data base. The Polk data for light and medium/heavy

trucks was sorted and listed by decreasing vehicle registration count and cumulative percentage of the vehicle population, and served as a guide in the determination of the 1,000 vehicle count cut-off point that included the majority of the current fleet.

Each of the truck characteristics listed above was transferred directly from the Polk computer tapes and served as the first 20 attributes of the data base.

3.2.2 Truck Index

Truck Index, Inc. of Anaheim, CA publishes a yearly digest of current model highway-rated trucks and tractors. The digest is divided into two publications, one each dedicated to gasoline and diesel engine-driven vehicles. Each year Truck Index covers the leading manufacturers for gasoline and diesel trucks, providing specifications for each model in a manufacturer's production line. Specifications include: gross vehicle and gross curb weight ratings; engines; chassis diagrams and dimensions; chassis weights and weight distributions; frames; transmissions; clutches; axles and capacities; suspensions; steering, electrical, and cooling systems; drive lines; wheels, rims, and tires; body materials; and window glass areas. Component information is listed for standard and optional equipment.

The Truck Index digests were used in extracting the bulk of the information for the data base. An extensive search has located the Gasoline and Diesel Truck Index for 1975 through 1983. The Truck Index exists only in hard copy and must be transferred to machine

readable form. The hard copy were coded and keypunched, edited, proofed and entered into a SAS data set. The complete list of truck attributes from Polk and the Truck Index that were entered into a data base is shown in Appendix K. An example from the Truck Index for one truck model is shown in Appendix N.

3.2.3 Manufacturers' Data Manuals

Manufacturers' Data Manuals are compiled as an aid to dealership sales representatives in their analysis of proper truck specification and selection. The manuals list capacities, dimensions, and standard and optional equipment for each model. There is also detailed information on axles, suspensions, steering systems, brakes, cab bodies, electrical systems, engines, cooling systems, frames, transmissions, drivelines, wheels and tires. Some manuals provide a chapter on truck selection and performance criteria.

Several data manuals have been found in the libraries of TSC, NHTSA, SAE and others. However, manuals for each of the major manufacturers could not be compiled for the time period of 1975 to present.

3.2.4 Interior Dimensions and Anthropometric Data

Four sources of data on interior dimensions were found through the literature search. The first three are reports published by the Federal Highway Administration's Bureau of Motor Carrier Safety (FHWA/BMCS) and the Society of Automotive Engineers (SAE). The

last source located was developed through an SAE study and is recorded in machine readable form.

The first report, "A Nationwide Survey of Truck and Bus Drivers," was published in two volumes by the FHWA in March 1977. Volume I describes the results of a survey of nearly 4000 truck and bus drivers, which collected biographical data, vehicle data, and information on the nature of their employment and their hours of service. Volume II details a program in which a mobile lab was constructed to collect data on static and dynamic anthropometry, reach envelope, sleep envelope and force production to steering wheel and brake/clutch pedals on truck and bus drivers.

The second FHWA report, published in February 1980, is entitled "Interior Cab Dimensions of Heavy Duty Motor Vehicles." The report describes a survey of truck manufacturers' cab design practices. This survey responded to complaints that restrictions in overall vehicle length have decreased interior cab dimensions to a point where drivers cannot properly manipulate the controls and safely operate the vehicle, or that the lack of space induces fatigue. The study indicated that available data on anthropometric dimensions is outdated, and the variation in such data now covers a wider range with the increase of female drivers in the trucking population.

Reports published in January 1983 and May 1984 by SAE, "U.S. Truck Driver Anthropometric and Truck Work Space Data Survey" reported anthropometric, demographic and interior cab design data on a

nationwide sample of male and female heavy-duty truck drivers. In addition to standard anthropometric measurement apparatus, a specially designed cab buck was constructed for the project, with a seat and steering wheel that could be uniquely adjusted to accomodate the driver population.

In developing the cab buck, ten truck manufacturers were asked to provide ranges of interior dimensions for their model lines (see Appendix M). This data was digitized by SAE, and a copy of the tape secured by TSC. TSC has entered this data into a SAS NIH computer file and is shown in Appendix M.

3.2.5 Truck Engine Data

A list of 15 identifying attributes for truck engines has been established, as shown in Appendix N. Data can be included in the truck data bases if required by NHTSA in the future. The engine models to be included in the data base can be determined from the Polk National Vehicle Population Profile (NVPP), which is being sorted as per engine, engine population count, percent of the total fleet population and cumulative percent to determine data input cut-off points.

Engine data can be obtained from the 1981 Polk data, and the Gasoline and Diesel Truck Index digests. The Polk NVPP contains six of the 15 attributes that are being collected on truck engines. The remainder, which include physical properties such as dimensions and weight, can be extracted from the Truck Index. If there are gaps in the information, the data base can be supplemented from trade journals, manufacturers'

data books, and additional sources as required. Data has been extracted for a sample truck engine, a Detroit Diesel Model 4-53N, as listed in Appendix N.

3.3 Motorcycle Data Sources

Data sources for motorcycles and the attributes associated with these sources have been identified. The sources include Polk registrations, trade journals, and motorcycle magazines. Establishment of a motorcycle data base utilizing these attributes can be accomplished if NHTSA requires such data. However, the sources and their related characteristics are included here for completeness. Polk registration data at the state level on motorcycles is available only by special order at a cost of approximately $30,000. As summaries of this data are available from other sources (see below) and the needs of NHTSA were not fully established in regard to motorcycles, it was determined that Polk data would not be acquired at this time.

Data on motorcycles is available from the manufacturers. An example of this data is included in Appendix O, from U.S. Suzuki's Press Kit. It includes specifications and photographs of each model.

The Motorcycle Industry Council, Inc. (MIC) each year publishes Motorcycle Statistical Annual. This publication includes information on the motorcycle market, manufacturers and distributors, usage, and the owner. Polk registration data on a state-by-state basis is summarized in the MIC publication. An example of the registration data taken from the 1981

Motorcycle Statistical Annual, which uses FHWA information, is also given in the Appendix.

Another source of data are the motorcycle enthusiast's magazines such as Cycle World. These magazines publish both technical and performance specifications. An example of these specifications is given in Appendix 0, along with a list of attributes that would be available for motorcycles from the various identified data sources that were described above.

4.0 Future Requirements

The vehicle attributes data base was created to provide NHTSA and TSC with a source of vehicle specifications and dimensional data.

The data base should be continually maintained and expanded as new vehicle models are introduced into the marketplace. This will ensure that the data base will provide a consistant and up to date source of vehicle dimensions and specifications for current and future vehicle crash avoidance and crashworthiness research.

APPENDIX A

MVMA SPECIFICATION FORM

MVMA Specification Forms are completed annually by foreign and domestic automobile manufacturers for each car and light truck marketed in the U.S.

Manufacturer	Car Line	
CHRYSLER CORPORATION	PLYMOUTH HORIZON	
Mailing Address	Model Year	Issued 6-1-79
DETROIT, MICHIGAN 48288	1980	Revised (*)

MVMA Specifications Forms
Passenger Car
METRIC (U.S. Customary)

Table of Contents

1	Car Models
2	Power Teams
3-7	Engine
7	Exhaust System
8	Fuel System
9	Cooling System
10, 11	Vehicle Emission Control
12-14	Electrical
15-17	Drive Units
18	Tires and Wheels
18, 19	Brakes
20	Steering
21	Suspension — Front and Rear
22	Body — Miscellaneous Information
22	Frame
23	Convenience Equipment
24	Vehicle Mass (Weight)
25	Optional Equipment Mass (Weight)
26-30	Car and Body Dimensions — including Fiducial Marks, Glass, Lamps and Headlamp Shape
31-35	Car and Body Dimension Key Sheets
36	Index

NOTE:

1. This form uses both SI metric units and U.S. Customary units. The Metric unit of measurement is presented first and the U.S. Customary unit follows in parentheses.
2. UNLESS OTHERWISE INDICATED
   a. Specifications apply to standard models without optional equipment. Significant deviations are noted.
   b. Nominal design dimensions are used throughout these specifications.
   c. All linear dimensions are in millimeters (inches) and all mass (weight) specifications are in kilograms (pounds).
3. The General Specifications herein are those in effect at date of completion and are subject to change without notice by the manufacturer.
4. A printed or computer tape supplement containing additional Car and Body Dimensions and/or drawings (based in part on SAE J1100a "Motor Vehicle Dimensions") may be available from the manufacturer.

APPENDIX A

MVMA SPECIFICATION FORM (CONT.)

MVMA Specifications Form
Passenger Car
METRIC (U.S. Customary)

Car Line* PLYMOUTH HORIZON
Model Year 1980 Issued 6-1-79 Revised (*)

Car Models

Model Description (Include Line Drawings of Vehicles if Desired)	Make Carline Series Body Type (Mfr's Model Code)	No. of Designated Seating Positions (Front, Rear)	Max. Trans. Cargo Load — Kilograms (Pounds)
HORIZON TC3			
2 + 2 HATCHBACK	ML24	4 (2/2)	52 (115)
HORIZON			
4-DOOR HATCHBACK	ML44	4 (2/2)	52 (115)

SPECIFICATIONS FOR THE "PLYMOUTH TURISMO TC3" ARE IDENTICAL TO THE "PLYMOUTH HORIZON TC3" EXCEPT AS NOTED IN THIS DOCUMENT.

*MVMA SPECIFICATIONS ARE ALSO AVAILABLE FOR THE FOLLOWING PLYMOUTH CAR LINES: PLYMOUTH VOLARE', PLYMOUTH GRAN FURY, AND PLYMOUTH GRAN FURY SALON.

SPECIFICATIONS FOR THESE CAR LINES MAY BE FOUND IN SEPARATE DOCUMENTS.

MVMA Specifications Form
Passenger Car
METRIC (U.S. Customary)

Car Line PLYMOUTH HORIZON
Model Year 1980 Issued 6-1-79 Revised (*)

Power Teams (indicate whether standard or optional)

SAE Net bhp (brake horsepower) and net torque corrected to 85° F and 29.38 in. Hg atmospheric pressure

SERIES AVAILABILITY	ENGINE						TRANSMISSION	AXLE RATIO (Std. first) (Indicate A/C ratio)
	Displacement cm³ (Liters)	Carb. Barrels	Compr. Ratio	SAE Net at RPM: kW (bhp)	SAE Net at RPM: Torque N·m (lb ft)	Exhaust System*		
FEDERAL								
ALL	1.7 (104.7)	2	8.2	48 (65) @ 5200	115 (85) @ 2400	S	MANUAL	3.37
							AUTOMATIC	3.48
CALIFORNIA								
ALL	1.7 (104.7) (8)	2	8.2	48 (65) @ 5200	115 (85) @ 2400	S	MANUAL	3.37
							AUTOMATIC	3.48

APPENDIX A

MVMA SPECIFICATION FORM (CONT.)

MVMA Specifications Form
Passenger Car
METRIC (U.S. Customary)

Car Line: PLYMOUTH HORIZON
Model Year: 1980 Issued: 6:1:79 Revised (*):

Engine Description/Carb.	1.7 L (104.7 IN.^{3}) 2 bbl

Engine — General

*Total dressed engine mass/weight, dry		132.3 (291.7)
Type (In-line, V and Angle, Flat) Location (Front, Mid, Rear)		FOUR-CYLINDER, IN-LINE, OHC VERTICAL (FRONT)
No. of cylinders		4
Bore		79.5 (3.13)
Stroke		86.4 (3.40)
Piston Displacement cm^3 (pi^3)		1716 (104.7)
Bore Spacing (CL to CL)		87.8 88.2 (3.45 3.47)
Cyl. No. system (front to rear)**	L Bank	RIGHT TO LEFT AS INSTALLED IN CAR: 1, 2, 3, 4
	R Bank	--
Firing Order		1-3-4-2
Cylinder Head Material		CAST ALUMINUM
Cylinder Block Material		CAST IRON
Cylinder Block deck height		219.9 220.1 (8.66/8.66)
Number of mtg. points	Front	ONE (ENGINE FRONT)
	Rear	ONE LEFT, ONE RIGHT (ENGINE REAR)
Engine installation position (Transverse, Longitudinal)		CYLINDER BORE CENTERLINE INCLINED 16° TO REAR OF ENGINE COMPARTMENT (TRANSVERSE)
Recommended fuel Leaded, unleaded		UNLEADED
Fuel octane/cetane index (R + M) / 2		87 (MINIMUM)
Cylinder Head Volume — cm^3		24.8 ± 1.5
Head Gasket Thickness (Compressed)		1.81 (0.072)
Head Gasket Volume — cm^3		9.32
Deck clearance (minimum (above or below block))		2.3 (0.090)
Minimum Combustion Chamber Volume — cm^3		CLEARANCE VOLUME 37.56

Engine — Pistons

Material			ALUMINUM WITH LEAD COATING
Description and finish			CAST ALUMINUM WITH STEEL STRUTS, LEAD PLATED AND SLED RUNNER SKIRTS
Mass, g (weight, oz) — Piston Only			365 ± 8 (12.9)
Clearance (limits)	Top land		0.515 0.555 (0.0203 0.0218)
	Skirt	Top	0.015 0.173 (0.0006 0.0068)
		Bottom	0.010 0.038 (0.0004 0.0015)
Ring groove diameter	No. 1 ring		71.3 71.5 (2.80 2.81)
	No. 2 ring		71.3 71.6 (2.80 2.81)
	No. 3 ring		70.4 70.6 (2.77 2.78)

*Dressed engine mass/weight includes the following: STARTER, ALTERNATOR, CARBURETOR, AIR CLEANER, IGNITION SYSTEM, MANIFOLD, WATER PUMP, FUEL PUMP, ENGINE MOUNTED EMISSION CONTROLS, STANDARD FAN & DRIVE BELTS & OIL FILTER, 2 ENGINE MOUNTS AND THROTTLE CONTROLS AS REQUIRED.

**[illegible]

MVMA Specifications Form
Passenger Car
METRIC (U.S. Customary)

Car Line: PLYMOUTH HORIZON
Model Year: 1980 Issued: 6:1:79 Revised (*):

Engine Description/Carb.: 1.7 L (104.7 IN.^{3}) 2 bbl

Engine — Piston Rings

Function (top to bottom)	No. 1, oil or comp		COMPRESSION
	No. 2 (4+ or comp		COMPRESSION
	No. 3 oil or comp		OIL
Compression	Description — Material, coating, etc	#1	CAST IRON, STANDARD TWIST, CHROME FLAT FACE
		#2	CAST IRON, SCRAPER GROVE, TAPER FACE
	Width		NO. 1: 1.728/1.74 (0.068); NO. 2: 1.978/1.99 (0.078)
	Gap		0.3/0.5 (0.012/0.020)
Oil	Description — material, coating, etc		3-PIECE ABUTMENT-TYPE, STAINLESS STEEL EXPANDER WITH CHROME PLATED RAILS
	Width		3.60/3.84 (0.1417/0.1512)
	Gap		NOT APPLICABLE
Expanders			SEE ABOVE

Engine — Piston Pins

Material			STEEL
Length			62.4/63.0 (2.46/2.48)
Diameter			21.997/22.001 MEASURED @ 21° C (0.866)
Type	Located in rod, in piston, floating, etc		FULL FLOATING WITH WIRE RETAINERS IN PISTON
	Bushing	In rod or piston	IN ROD
		Material	BRONZE
Clearance	In piston		0.001/0.009 (0.00004/0.00035)
	In rod		0.011/0.021 (0.000433/0.000826)
Direction & amount offset in piston			0.9 (0.035) MAJOR THRUST SIDE

Engine — Connecting Rods

Material			FORGED STEEL
Mass, g (weight, oz)			636/744 (22.4/26.2)
Length (center to center)			135.95/136.05 (5.35/5.38)
Bearing	Material & Type		TRI-METAL LEAD OVER PLATE ON COPPER ON STEEL BACKING
	Overall length		19.0/18.7 (0.748/0.736)
	Clearance (limits)		0.018/0.074 (0.0007/0.0029)
	End Play		0.06/0.31 (0.0020/0.0122)

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MVMA SPECIFICATION FORM (CONT.)

MVMA Specifications Form
Passenger Car
METRIC (U.S. Customary)

Car Line PLYMOUTH HORIZON
Model Year 1980 Issued 6-1-79 Revised (*)

Engine Description/Carb: 1.7 L (104.7 IN. ^{3}) 2 bbl

Engine — Crankshaft

Material			FORGED STEEL
Vibration damper type			NONE
End thrust taken by bearing (No.)			THREE
Crankshaft end play			0.090/0.271 (0.004/0.011)
Main bearing	Material & type		TRI-METAL LEAD OVER PLATE ON COPPER STEEL BACKING
	Clearance		0.016/0.075 (0.0006/0.0029)
	Journal dia. and bearing overall length	No. 1	54 x 19 (2.12 x 0.748)
		No. 2	54 x 19 (2.12 x 0.748)
		No. 3	54 x 21 (2.12 x 0.827)
		No. 4	54 x 19 (2.12 x 0.748)
		No. 5	54 x 19 (2.12 x 0.748)
		No. 6	- -
		No. 7	- -
	Dist. & aux. cyl. offset		NONE
	No. bolts/main brg. cap		TWO
Crankpin journal diameter			45.96/45.98 (1.81)

Engine — Camshaft

Location			OVERHEAD
Material			CHILLED IRON
Bearings	Material		ALUMINUM
	Number		FIVE
Type of drive	Gear, chain or belt		BELT
	Crankshaft gear or sprocket material		SINTERED STEEL
	Camshaft gear or sprocket material		SINTERED STEEL
	Timing chain	No. of links	121
	Chain or Belt	Width	18.4/19.8 (0.724/0.780)
		Pitch	9.525 (0.375)

MVMA Specifications Form
Passenger Car
METRIC (U.S. Customary)

Car Line PLYMOUTH HORIZON
Model Year 1980 Issued 6-1-79 Revised (*)

Engine Description/Carb: 1.7 L (104.7 IN. ^{3}) 2 bbl

Engine — Valve System

Hydraulic lifters (Yes, opt., No)			NOT AVAILABLE
Valve rotator, type (intake, exhaust)			NON ROTATING
Push rods dia., length, material			NONE
Rocker ratio			NONE
Operating tappet clearance (indicate hot or cold)	Intake		0.2/0.3 (0.008/0.012) HOT; 0.15/0.25 (0.006/0.010) COLD (ENGINE NOT RUNNING)
	Exhaust		0.4/0.5 (0.016/0.020) HOT; 0.35/0.45 (0.014/0.018) COLD
Timing (based on top of ramp points)	Intake	Opens (°BTC)	14
		Closes (°ABC)	56
		Duration (deg.)	250
	Exhaust	Opens (°BBC)	51
		Closes (°ATC)	13
		Duration (deg.)	244
Valve open overlap (deg.)			27
Intake Valve	Material		VALVE STEEL
	Overall length		98.7 (3.89)
	Actual overall head dia.		33.8/34.1 (1.33/1.34)
	Angle of seat & face (deg.)		45°/45° 33'
	Seat insert material		SINTERED STEEL
	Stem diameter		7.955/7.970 (0.313/0.314)
	Stem to guide clearance		0.03/0.067 (0.001/0.003)
	Lift (at zero lash)		10.3 (0.406)
	Outer spring press. & length	Valve closed — N at mm (lb. at in.)	172.6 ± 8.9 @ 32.6 (38.80 @ 1.28)
		Valve open — N at mm (lb. at in.)	447.0 ± 22.7 @ 22.3 (100.48 @ 0.878)
	Inner spring press. & length	Valve closed — N at mm (lb. at in.)	70.7 ± 4.9 @ 28.6 (15.89 @ 1.13)
		Valve open — N at mm (lb. at in.)	215.7 ± 10.7 @ 18.5 (48.49 @ 0.720)
Exhaust Valve	Material		2-PIECE VALVE STEEL WITH STELLITE FACES
	Overall length		98.6 (3.87)
	Actual overall head dia.		31.0/31.3 (1.22/1.23)
	Angle of seat & face (deg.)		45°/45° 33'
	Seat insert material		SINTERED STEEL
	Stem diameter		7.935/7.95 (0.312/0.313)
	Stem to guide clearance		0.05/0.087 (0.02/0.003)
	Lift (at zero lash)		10.3 (0.406)
	Outer spring press. & length	Valve closed — N at mm (lb. at in.)	172.6 ± 8.9 @ 32.6 (38.80 @ 1.28)
		Valve open — N at mm (lb. at in.)	447.0 ± 22.7 @ 22.3 (100.48 @ 0.878)
	Inner spring press. & length	Valve closed — N at mm (lb. at in.)	70.7 ± 4.9 @ 28.6 (15.89 @ 1.13)
		Valve open — N at mm (lb. at in.)	215.7 ± 10.7 @ 18.3

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MVMA SPECIFICATION FORM (CONT.)

MVMA Specifications Form
Passenger Car
METRIC (U.S. Customary)

Car Line PLYMOUTH HORIZON
Model Year 1980 Issued 6-1-79 Revised (*)

Engine Description/Carb.	1.7 L (104.7 IN.^{3}) 2 bbl

Engine — Lubrication System

Type of lubrication (splash, pressure assist)	Main bearings	PRESSURE
	Connecting rods	PRESSURE
	Piston pins	SPLASH
	Camshaft bearings	PRESSURE
	Tappets	SPLASH
	Timing gear or chain	NONE
	Cylinder walls	SPLASH
Oil pump type		GEAR PUMP
Nominal oil pressure (kPa or psi) at engine rpm		400 TO 600 (60 TO 90) @ 2000
Type oil intake (floating, stationary)		STATIONARY
Oil filter system (full flow, part other)		FULL FLOW
Capacity of crankcase less interchangeable (qt.)		3.8 (4)
Oil grade recommended (SAE viscosity and temperature range)		CONSISTENTLY ABOVE 0°C (+32°F): SAE 20W-40, 20W-50, 30 CONSISTENTLY ABOVE -23°C (-10°F): SAE 10W-30, 10W-40, 10W-50 RANGE BETWEEN 16°C (60°F) TO -23°C (-10°F): SAE 10W CONSISTENTLY BELOW 16°C (60°F) TO -23°C (-10°F): SAE 5W-30, 5W-40, AND SAE 5W-20* *SAE 5W-20 NOT RECOMMENDED FOR SUSTAINED HIGH SPEED VEHICLE OPERATION
Engine service rating (SD, SE, etc.)		SE

Engine — Exhaust System

Type (single, single with cross over, dual, other)		SINGLE (WITH SPECIAL FLEXIBLE MANIFOLD CONNECTION)
Muffler inc. & Type (reverse flow, straight thru, separate resonator)		ONE, REVERSE FLOW
Resonator inc. & type		NONE
Exhaust Pipe	Front OD, wall thickness	50.8 x 1.35 (2.00 x 0.053)
	Main OD, wall thickness	FED: 50.8 x 1.35 (2.00 x 0.053); CALIF: 47.6 x 1.35 (1.88 x 0.053)
	Material	STAINLESS STEEL
Intermediate Pipe	OD & wall thickness	38.0 x 1.1 (1.5 x 0.043)
	Material	STAINLESS STEEL
Tail Pipe	OD & wall thickness	38.0 x 1.1 (1.5 x 0.043)
	Material	ALUMINIZED STEEL

MVMA Specifications Form
Passenger Car
METRIC (U.S. Customary)

Car Line PLYMOUTH HORIZON
Model Year 1980 Issued 6-1-79 Revised (*)

Engine Description/Carb.	1.7 L (104.7 IN.^{3}) 2 bbl

Engine — Fuel System (See supplementary page for Details of Fuel Injection, Supercharger, Turbocharger, etc. if used)

Induction type: Carburetor, fuel injection, etc.			CARBURETOR
Fuel Tank	Rated capacity — L (U.S. gals.)		49 (13.0)
	Filler location		RIGHT REAR QUARTER PANEL
Fuel Pump	Type (elec. or mech.)		MECHANICAL
	Location		LEFT SIDE OF TRANSVERSE MOUNTED ENGINE
	Pressure range — kPa (psi)		30.5 TO 40.6 (4.42 TO 5.89)
Fuel Filter	Type		FUEL TANK (PLASTIC); CARBURETOR (PAPER)
	Location		ONE IN FUEL TANK; ONE INTEGRAL WITH CARBURETOR
Carburetor	Choke type		ELECTRIC
	Intake manifold heat control (exhaust or water)		NONE
	Air cleaner type	Standard	PAPER ELEMENT
		Optional	- -
	Idle spd. rpm (spec. neutral or drive)	Manual (Neu.)	900
		Propane (Neu.)	1000
		Automatic (Neu.)	900
		Propane (Neu.)	1000
	Idle A/F mix		PROPANE IDLE ENRICHMENT: CHECK EMISSION CONTROL LABEL

Carburetor Supplementary Information

Model Usage	Engine Displ. — L (in.^{3})	Transmission	Carburetors		No. Used and Type Barrels	Barrel Size MM (in.)
			Make	Model		
4 CYL. WITHOUT A/C	1.7 (104.7)	MANUAL	HOLLEY	R-9108A	1, 2	P: 32 (1.3) S: 36 (1.4)
				R-8676A*		
		AUTOMATIC		R-9110A		
				R-8841A*		
4 CYL. WITH A/C	1.7 (104.7)	MANUAL	HOLLEY	R-9109A	1, 2	P: 32 (1.3) S: 36 (1.4)
				R-8840A*		
		AUTOMATIC		R-9111A		
				R-8842A*		

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MVMA SPECIFICATION FORM (CONT.)

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Passenger Car
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Car Line PLYMOUTH HORIZON
Model Year 1980 Issued 6-1-79 Revised (*)

Engine Description/Carb. 1.7 L (104.7 IN.^{3}) 2 bbl

Engine — Cooling System

Coolant recovery system (std. opt. none)			STANDARD
Radiator cap relief valve pressure — kPa (psi)			110.3 ± 3.5 (16 ± 1.2)
Coolant thermostat	Type (index, bypass)		SPRING LOADED ENGINE BYPASS
	Starts to open at °C (°F)		90.6 (195)
Water pump	Type (centrifugal, other)		CENTRIFUGAL
	GPM 1000 pump rpm		--
	Number of pumps		ONE
	Drive (V-belt, other)		V-BELT
	Bearing Type		INTEGRAL BALL BEARING
Bypass recirculation type (inter., ext.)			--
Radiator core type (cross flow, vertical, cellular, tube and fin, other)			CROSS-FLOW
Cooling System Capacity	With heater — L (qt)		5.7 (6.0)
	Without heater — L (qt)		--
	Opt. equipment specify — L (qt)		5.7 (6.0)
Water jackets full length of cylinders (y/n)			NO
Water all around cylinder (yes, no)			NO
Radiator hose	Lower	Number and type (molded, straight)	ONE, MOLDED
		Inside diameter	31.8 (1.25) & RADIATOR; 39.1 (1.50) & ENGINE
	Upper	Number and type (molded, straight)	ONE, MOLDED
		Inside diameter	25.4 (1.0)
	By-pass	Number and type (molded, straight)	ONE, MOLDED
		Inside diameter	17.8 (0.7)
Radiator (Core)	Standard	Width	501 (19.7)
		Height	373 (14.7)
		Thickness	21 (0.827)
	A/C	Width	501 (19.7)
		Height	373 (14.7)
		Thickness	21 (0.827) MANUAL TRANS.; 32 (1.26) AUTOMATIC TRANS.
	Heavy duty	Width	
		Height	
		Thickness	
Fan (standard)	Number of blades & spacing		6
	Diameter		355.6 (14.0")
	Ratio — fan to crankshaft rpm		--
	Fan cutout type		ELECTRIC MOTOR
	Drive Type, Number of Fans		--
Fan (optional)	No. of blades and spacing		
	Diameter		
	Ratio — fan to crankshaft rpm		
	Fan cut out type		
	Drive Type, Number of Fans		

MVMA Specifications Form
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Car Line PLYMOUTH HORIZON
Model Year 1980 Issued 6-1-79 Revised (*)

Engine Description/Carb. 1.7 L (104.7 IN.^{3}) 2 bbl

Vehicle Emission Control

Exhaust Emission Control	Type (Air injection engine modifications, other)		AIR INJECTION, EXHAUST GAS RECIRCULATION, ENGINE MODIFICATIONS, CATALYTIC CONVERTER
	Air Injection Pump	Type	POSITIVE DISPLACEMENT ROTARY VANE
		Displacement — cm^3 (in^3)	180.3 (11)
		Drive ratio	0.95:1
		Drive type	V-BELT
		Relief valve (type)	SPRING LOADED VANE
		Filter (describe)	CENTRIFUGAL
	Air Injection System	Air distribution (head, manifold, etc.)	SINGLE ENTRY
		Point of entry	(a)
		Injection tube i.d.	15 (0.59)
		Check valve type	RUBBER DIAPHRAGM
		Backfire protection (type)	DIVERTER VALVE
	Exhaust Gas Recirculation System	Type (controlled flow, open orifice, other)	CONTROLLED FLOW
		Valve type	VACUUM ACTUATED POPPET VALVE
		Valve location	INTAKE MANIFOLD
		Control energy source	PORTED CARBURETOR VACUUM
		Exhaust source	EXHAUST MANIFOLD
		Exhaust cooler type	NONE
		Orifice no. and size	ONE: 10.0 (0.39) DIA.
		Point of exhaust injection (space, carburetor, manifold, other)	INTAKE MANIFOLD FLOOR
	Catalytic Converter System	Catalyst — Type	FEDERAL: OXIDATION; CALIF.: 3 WAY CATALYST + OXIDATION
		Catalyst — Volume — L (in^3)	FED: 0.38 + 1.475 (22 + 90); CALIF: 2.79 + 1.475 (170 + 90)
		Substrate type	MONOLITHIC
		Container location	BELOW EXHAUST FLOOR AND UNDER SEAT
	Other	CARBURETOR HEATED AIR	THERMOSTAT IN AIR CLEANER REGULATES INTAKE AIR TEMPERATURE BY MIXING HEATED AIR WITH AMBIENT AIR IN FRONT OF RADIATOR YOKE

(a) FEDERAL: EXHAUST MANIFOLD OUTLET;
CALIFORNIA: EXHAUST MANIFOLD OUTLET COLD; CATALYTIC CONVERTER HOT

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Passenger Car
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Car Line: PLYMOUTH HORIZON
Model Year: 1980 Issued: 6-1-79 Revised (*):

Engine Description/Carb.: 1.7 L (104.7 IN.^{3}) 2 bbl

Vehicle Emission Control (Continued)

Crankcase Emission Control	Type (ventilates to atmos., induction system, other)	Standard	CLOSED INDUCTION SYSTEM
		Optional	- -
	Control Unit	Make and model	CHRYSLER INTROL DIVISION: 5214088
		Location	IN VENT LINE BETWEEN CYLINDER HEAD AND AIR CLEANER
		Energy source (manifold vacuum, carburetor, other)	MANIFOLD VACUUM
		Energy source (manifold vacuum, carburetor, other)	
		Control method (variable orifice, fixed orifice, other)	VARIABLE ORIFICE
	Complete System	Discharges (to intake manifold, other)	INTAKE MANIFOLD
		Air inlet (breather cap, other)	CARBURETOR AIR CLEANER
		Flame arrestor (screen, other)	CRANKCASE VENT VALVE AND CYLINDER HEAD COVER BAFFLES
Evaporative Emission Control	Fuel Tank	Thermal expansion volume — dm^3 (ft^3)	8.14 (0.287)
		Relief Pressure kPa (psi) and location	FUEL FILLER CAP 58.3 (8.5)
		Vacuum relief kPa (psi) and location	FUEL FILLER CAP 5.3 (0.8)
		Vapor-liquid separator type	ORIFICE IN TANK MOUNTED ROLLOVER VALVE
		Vapor vented to (crankcase, canister, other)	CANISTER
	Carburetor	Vapor vented to (crankcase, canister, other)	CANISTER
	Vapor Storage	Storage provision (crankcase, canister, other)	CANISTER
		Volume — cm^3 (ft^3) or capacity (grams)	50 GRAMS
		Control valve type	CARBURETOR PURGE PORT

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Engine Description/Carb.: 1.7 L (104.7 IN.^{3}) 2 bbl

Electrical — Supply System

Battery	Make and Model		5206808
	Voltage Rtg — V — & Total Plates		12-54
	SAE Designation No and/or capacity		26-310 310A @ 0°F
	Location		LEFT FRONT FENDER SIDE SHIELD
Generator or Alternator	Make		CHRYSLER
	Model		5206971
	Type and rating		65
	Output at engine idle (neutral) A		- -
	Ratio — Gen. to Crk rev		2.25:1
Regulator	Make		CHRYSLER
	Model		4091060
	Type		VOLTAGE CONTROL
	Regulated	Voltage	14.33 ± 0.10
		Current A	- -
	Voltage test conditions	Temperature — °C (°F)	32 (90)
		Load A	5
		Other	- -

Electrical — Starting System

Starting Motor	Make		NIPPONDENSO	BOSCH
	Model		5206265 (a) 5206270 (b)	5206255 (a) 5206260 (b)
Motor Drive	Engagement Type		SOLENOID	
	Pinion engages from (front, rear)		FRONT	
	Number of teeth	Pinion	9	
		Flywheel — Manual	125	
		Flywheel — Auto	132	

(a) MANUAL TRANSMISSION
(b) AUTOMATIC TRANSMISSION

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Car Line PLYMOUTH HORIZON
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Engine Description/Carb.: 1.7 L (104.7 IN.^{3}) 2 bbl

Electrical — Ignition System — Distributor

Distributor	Manual	FEDERAL: 5206935	CALIFORNIA: 5206945
	Automatic	FEDERAL: 5206925	CALIFORNIA: 5206945
Timing	Manual	12° BTC	10° BTC
	Automatic	12° BTC	10° BTC

Distributor Model	CENTRIFUGAL ADVANCE Crankshaft Degrees at Engine RPM			VACUUM ADVANCE Crankshaft Deg at kPa (in of Hg)	
	Start	Intermediate	Maximum	Start	Maximum
5206935	0° @ 1150	16° @ 1800	22° @ 5600	4° – 10"	20°
5206925	0° @ 1150	12° @ 1600	22° @ 5600	4° – 11"	25°
5206945	COMBUSTION COMPUTER WITH FEEDBACK CARBURETOR CONTROLLER				

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Engine Description/Carb.: 1.7 L (104.7 IN.^{3}) 2 bbl

Electrical — Ignition System

Type	Conventional — Std. Opt., N A		NOT AVAILABLE
	Transistorized — Std. Opt. N A		STANDARD
	Other (specify)		COMBUSTION COMPUTER WITH FEEDBACK CARBURETOR CONTROLLER (Calif. Models)
Coil	Make		ESSEX OR PRESTOLITE OR MOPAR
	Model		4111468 4111467
	Current	Engine stopped — A	3.0
		Engine idling — A	1.9
Spark Plug	Make		MOPAR
	Model		3874490 – P-65PR
	Thread (mm)		14
	Tightening torque — N m (lb ft)		34–45 (25–33)
	Gap		0.9–1.0 (0.039–0.035)

Electrical — Suppression

Locations & type	

Electrical — Instrument and Equipment

Speedometer	Type	MAGNETIC TORQUE DRIVE
	Trip odometer (std., opt., N A)	OPTIONAL (a)
EGR maintenance indicator		- -
Charge indicator	Type	AMMETER (SHUNT TYPE)
	Warning device	- -
Temperature indicator	Type	- -
	Warning device	- -
Oil pressure indicator	Type	LIGHT (ENGINE)*
	Warning device	- -
Fuel indicator	Type	ELECTRIC THERMAL
	Warning device	- -
Windshield Wiper	Type — standard	NON-DEPRESS ELECTRIC 2-SPEED (W./PULSE WIPE)
	Type — optional	- -
	Blade length	406.4 (16)
	Swept area — cm^2 (in^2)	4-DOOR: 4781 (741); 2-DOOR: 4762 (738)
Windshield Washer	Type — standard	ELECTRIC
	Type — optional	- -
	Fluid level indicator	- -
Horn	Type	FOUR-INCH SEA SHELL
	Number used	ONE LO NOTE STD.; HIGH NOTE OPT. (b)
	Current draw (A) per horn	4–6
Other		*INDICATES HIGH COOLANT TEMPERATURE OR LOW OIL PRESSURE.

(a) STD. TURISMO TC3

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MVMA SPECIFICATION FORM (CONT.)

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Passenger Car
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Car Line PLYMOUTH HORIZON
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Engine Description/Carb. — 1.7 L (104.7 IN.^{3}) 2 bbl

Drive Units — Clutch (Manual Transmission)

Make & type		BORG & BECK DRY DISC.	LUK, DRY DISC.
Type pressure plate springs		BELLEVILLE	
Total spring load — N (lb)		3889–4631 (874–1041)	3850–4450 (865–1000)
No. of clutch driven discs		ONE	
Clutch facing	Material	WOVEN ASBESTOS	
	Manufacturer	U.S. RAY BESTOS	FERODO
	Part number	165–10559	A3190-321
	Rivets/Plate	16	
	Rivet size	7.42 (0.92)	7.5 (0.295)
	Outside & inside dia.	190 x 134.5 (7.48 x 5.30)	190 x 134 (7.48 x 5.28)
	Total oil area cm^2 and d_2	282.9 (43.8)	285 (44.2)
	Thickness	3.43 (0.135)	3.5 (0.137)
	Engagement cushion method	WAVE SPRING SEGMENTS	
Release bearing	Type & method of lubrication	BALL THRUST BEARING LUBED BY TRANSMISSION OIL	
Torsional damping	Methods springs, friction material	COIL SPRINGS AND STEEL FRICTION WASHERS	COIL SPRINGS AND FIBER FRICTION WASHERS

Drive Units — Transmissions

Manual 3 speed (std., opt'l, N.A.)	N.A.
Manual 4 speed (std., opt., N.A.)	STANDARD
Manual 5 speed (std., opt., N.A.)	N.A.
Manual overdrive (std., opt., N.A.)	N.A.
Automatic (std., opt., N.A.)	OPTIONAL

Drive Units — Manual Transmission

Number of forward speeds			4
Transmission ratios	In first		3.45
	In second		1.94
	In third		1.29
	In fourth		0.97
	In fifth		--
	In reverse		3.17
Synchronized meshing, specify gears			1, 2, 3, 4
Shift lever location			FLOOR
Lubricant	Capacity — L (pt.)		1.25 (2.6)
	Type recommended		API GL-4, MIL-L-2105, SAE 80W 90
	SAE viscosity number	Summer	--
		Winter	--
		Extreme cold	--

MVMA Specifications Form
Passenger Car
METRIC (U.S. Customary)

Car Line PLYMOUTH HORIZON
Model Year 1980 Issued 6-1-79 Revised (*)

Engine Description/Carb. — 1.7 (104.7 IN.^{3}) 2 bbl

Drive Units — Automatic Transmission

Trade name		
Type (describe)		TORQUE CONVERTER WITH AUTOMATICALLY OPERATED PLANETARY TRANSMISSION & PARALLEL AXIS FINAL DRIVE
Selector location		FLOOR OPERATED
Gear Ratios	P	--
	R	2.10
	N	--
	D	1.00
	L2	1.47
	L1	2.47
Max. upshift speed — drive range — km/h (mph)		101 (63)
Max. kickdown speed, drive range — km/h (mph)		96 (60)
Torque Converter	Number of elements	THREE
	Max. ratio at stall	1.97:1
	Type of cooling (air, liquid)	LIQUID
	Nominal diameter	241 (9.5)
Lubricant	Capacity — refill — L (pt.)	TRANSMISSION: 6.86 (14.5) FINAL DRIVE 1.12 (2.37)
	Type recommended	DEXRON OR DEXRON II AUTOMATIC TRANSMISSION FLUID
Special transmission features		

Drive Units — Axle

Type (front, rear)			FRONT
Description			PARALLEL AXES HELICAL GEARS
Limited Slip differential, type			--
Drive Pinion Offset			--
No. of differential pinions			TWO
Pinion adjustment (shim, other)			--
Pinion bearing adj. (shim, other)			--
Wheel bearing type			DOUBLE ROW BALL BEARING
Lubricant	Capacity — L (pt.)		1.3 (2.8)
	Type recommended		DEXRON OR DEXRON II AUTOMATIC TRANSMISSION FLUID
	SAE viscosity number	Summer	--
		Winter	--
		Extreme cold	--

Axle Ratio Tooth Combinations (See "Power Teams" for axle ratio usage)

Axle Ratio	OVERALL TOP GEAR RATIO		3.48:1	3.37
No. of teeth	Pinion		19	18
	Ring gear		54	54
Ring Gear O.D.			184.45 (7.26)	
Transaxle	Transfer Gear Ratio		1.22	1.22
	Final Drive Ratio		2.84	3.00

APPENDIX A

MVMA SPECIFICATION FORM (CONT.)

MVMA Specifications Form
Passenger Car
METRIC (U.S. Customary)

Car Line PLYMOUTH HORIZON
Model Year 1980 Issued 6-1-79 Revised (*)

Engine Description/Carb.		1.7 L (104.7 IN.^{3}) 2 bbl	
Drive Units — Propeller Shaft			
Number used		TWO	
Type (straight tube, tube-in-tube, universal-universal, damper, etc.)	Right	TUBE	
	Left	SOLID BAR	
Outer diameter* and wall thickness (S)	Manual 3 speed trans	**	
	Manual 4 speed trans	40 x 645.5 x 2.7 (1.57 x 25.4 x 0.106)	27 x 364 (1.06 x 14.3)
	Manual 5 speed trans	**	
	Overdrive	**	
	Automatic transmission	40 x 557 x 2.7 (1.57 x 21.9 x 0.106)	27 x 376 (1.06 x 14.8)
Inter-mediate bearing	Type (plain, anti-friction)	NONE	
	Lubrication (fitting, prepack)	**	
Slip joint	Type	**	
	Number of teeth	**	
	Spline O.D.	**	
Universal joints	Make and Mfg. No. — Inner	GKN - GI69	
	Make and Mfg. No. — Outer	GKN 87AC	
	Number used	TWO	
	Type (ball and trunnion, cross)	RZEPPA	TRIPOD CV
	Rear attach (u-bolt, clamp, etc.)	**	
	Bearing — Type (plain, anti-friction)	BALL	ANTI-FRICTION
	Bearing — Lubrication, fitting, prepack	PREPACK	
Drive taken through (torque tube or arms, springs)		ENGINE MOUNTS	
Torque taken through (torque tube or arms, springs)		**	

* Center to center of universal joints, or to centerline of rear attachment

(S) LENGTH TO NEAREST MILLIMETER (INCH)

MVMA Specifications Form
Passenger Car
METRIC (U.S. Customary)

Car Line PLYMOUTH HORIZON
Model Year 1980 Issued 6-1-79 Revised (*)

			BODY TYPE	
Engine Description/Carb.			24	44
Drive Units — Tires And Wheels (Standard)				
TIRES	Size, load range, ply		P175/75R13, B, 2/2	P155/80R13, B, 2/2
	Type (bias, rad al, etc.)		GLASS RADIAL	
	Inflation pressure (cold) for recommended max. vehicle load	Front kPa (psi)	241 (35)	
		Rear kPa (psi)	241 (35)	
	Rev./mile — at 70 km/h (45 mph)		897	921
WHEELS	Type & material		DISC STEEL	
	Rim size & flange type		13 x 5.0 JJ	13 x 4.5 JB
	Wheel offset		40 (1.6)	
	Attachment	Type (bolt or stud)	STUD	
		Circle diameter	100 (3.94)	
		Number & size	4 - M12 x 1.5 MM	
	Spare wheel (same or other)		P165/75D13 (LOW MILEAGE SPARE) (a)	
Drive Units — Tires And Wheels (Optional)				
Size, load range, ply			P175/75R13, B, 2/2	P165/75R13, B, 2/2
Type (bias, radial, etc.)			STEEL RADIAL	GLASS RADIAL
Wheel type & material			DISC STEEL	DISC STEEL
Rim (size, flange type, and offset)			13 x 5.0 JB 40 (1.6)	13 x 5.0 JB 40 (1.6)
Size, load range, ply			P185/70R13, B, 2/2	P175/75R13, B, 2/2
Type (bias, radial, etc.)			ARAMID RADIAL	STEEL RADIAL
Wheel type & material			DISC STEEL	DISC STEEL
Rim (size, flange type, and offset)			13 x 5.0 JB 40 (1.6)	13 x 5.0 JB 40 (1.6)
Size, load range, ply			P185/70 R13, (b)	
Type (bias, radial, etc.)			ARAMID RADIAL	
Wheel type & material			CAST ALUMINUM	
Rim (size, flange type, and offset)			13 x 5.5 JB 40 (1.6)	
Size, load range, ply				
Type (bias, radial, etc.)				
Wheel type & material				
Rim (size, flange type, and offset)				
Size, load range, ply				
Type (bias, radial, etc.)				
Wheel type & material				
Rim (size, flange type, and offset)				
Brakes — Parking				
Type of control			HAND RELEASE LEVER	
Location of control			FLOOR - BETWEEN FRONT SEATS	
Operates on			REAR WHEELS	
If separate from service brakes	(Type (internal or external))			
	(Drum diameter			
	(Lining size (length x width x thickness))			

(a) CONVENTIONAL SPARE STD. TURISMO TC3
(b) STD. TURISMO TC3

APPENDIX A

MVMA SPECIFICATION FORM (CONT.)

MVMA Specifications Form Passenger Car METRIC (U.S. Customary)

Car Line PLYMOUTH HORIZON
Model Year 1980 Issued 6-1-79 Revised (*)

Body Type And/Or Engine Displacement: 24, 44

Brakes — Service

Item	24, 44
Brake Type (std., Opt., N.A.) — Drum — Front	NOT AVAILABLE
Brake Type — Drum — Rear	STANDARD
Brake Type — Disc — Front	STANDARD
Brake Type — Disc — Rear	NOT AVAILABLE
Self-adjusting (std., opt., N.A.)	STANDARD FRONT: NOT AVAILABLE REAR
Special Valving — Type (proportion, delay, metering, other)	NOT AVAILABLE
Power Brake (std., opt., N.A.)	OPTIONAL (a)
Booster Type (remote, integral vac., hyd., etc.)	INTEGRAL - VACUUM
Anti skid device type (std., opt., N.A.)	NOT AVAILABLE
Effective area — cm² (in.²)*	373.42 (57.88)
Gross lining area — cm² (in.²)**	384.46 (59.59)
Swept area — cm² (in.²)***	1274.32 (197.5)
Rotor — Outer working diameter — F	228 (8.98)
Rotor — Outer working diameter — R	- -
Rotor — Thickness — F	12.64 (0.498)
Rotor — Thickness — R	- -
Rotor — Material & type (vented solid) — F	CAST IRON - SOLID
Rotor — Material & type (vented solid) — R	- -
Drum — Diameter (nominal) — FRONT	- -
Drum — Diameter (nominal) — REAR	200 (7.87)
Drum — Type and material	CAST COMPOSITE - CAST IRON
Wheel cyl. inner bore — Front	48 (1.89)
Wheel cyl. inner bore — Rear	15.94 (0.628)
Master Cylinder — Bore (NOM)	22.27 (0.877)
Master Cylinder — Stroke (NOM)	20.88 (0.822)
Pedal arc ratio — OVERALL	MANUAL: 8.1:1; POWER: 5.1
Line pressure at 445 N (100 lb) pedal load — MPa (psi)	MANUAL: 8.44 (1225); POWER: 9.05 (1315)
Lining Clearance Per Shoe — Front	NO MAJOR ADJUSTMENT
Lining Clearance Per Shoe — Rear	0.35 (0.014) DIA.
Brake lining — Front Wheel (b) — Bonded or riveted rivets/seg	RIVETED 5 SHOE
Brake lining — Front Wheel — Rivet size	3.57 (0.014) DIA x 7.57 (0.3)
Brake lining — Front Wheel — Manufacturer	
Brake lining — Front Wheel — Lining Code	
Brake lining — Front Wheel — Material	MOLDED METALLIC
Brake lining — Front Wheel — Size**** — Prim. or out board	3581 x 12.34 (5.55 x 0.486)
Brake lining — Front Wheel — Size**** — Second or in board	3581 x 12.34 (5.55 x 0.486)
Brake lining — Front Wheel — Shoe thickness (no lining)	4.65 (0.183)
Brake lining — Rear Wheel — Bonded or riveted rivets/seg	BONDED
Brake lining — Rear Wheel — Manufacturer	
Brake lining — Rear Wheel — Lining Code	
Brake lining — Rear Wheel — Material	ROLLED ASBESTOS
Brake lining — Rear Wheel — Size**** — Prim. or out board	201.22 x 29.97 x 4.73 (7.92 x 1.18 x 0.188)
Brake lining — Rear Wheel — Size**** — Second or in board	201.22 x 29.97 x 4.73 (7.92 x 1.18 x 0.188)
Brake lining — Rear Wheel — Shoe thickness (no lining)	2.57 (0.101)

*Excludes rivet holes, grooves, chamfers, etc.
**Includes rivet holes, grooves, chamfers, etc.
***Total swept area for four brakes (Drum brake: Width of lining contact with each brake x its contact circumference; Disc brake: Square of Outer Working ... [illegible])
(b) AREA x THICKNESS (a) STD. TURISMO TC3

MVMA Specifications Form Passenger Car METRIC (U.S. Customary)

Car Line PLYMOUTH HORIZON
Model Year 1980 Issued 6-1-79 Revised (*)

Steering

Item	24	44
Manual (std., opt., N.A.)	STANDARD	
Power (std., opt., N.A.)	OPTIONAL (a)	
Adjustable steering wheel (tilt, swing, other) — Type and description	- -	
Adjustable steering wheel — (Std., opt., N.A.)	NOT AVAILABLE	
Wheel diameter — Manual	381 (15)	
Wheel diameter — Power	381 (15)	
Turning diameter m (feet) — Outside front — Wall to wall (l. & r.)	11.0 (36.1)	11.0 (36.1)
Turning diameter — Outside front — Curb to curb (l. to r.)	10.1 (33.3)	10.4 (34.0)
Turning diameter — Inside rear — Wall to wall (l. to r.)	5.4 (17.7)	5.8 (18.9)
Turning diameter — Inside rear — Curb to curb (l. to r.)	5.7 (18.6)	5.9 (19.2)
Manual — Gear — Type	RACK AND PINION	
Manual — Gear — Make	CAM GEARS	
Manual — Gear — Ratios — Gear	- -	
Manual — Gear — Ratios — Overall	22:1	
Manual — No. wheel turns (stop to stop)	4	
Power — Type (coaxial, linkage, etc.)	INTEGRAL POWER GEAR	
Power — Make	SAGINAW	
Power — Gear — Type	RACK AND PINION WITH INTEGRAL POWER UNIT	
Power — Gear — Ratios — Gear	- -	
Power — Gear — Ratios — Overall	18:1	
Power — Pump driven by	CRANKSHAFT	
Power — No. wheel turns (stop to stop)	3.2	
Linkage — Type	RACK AND PINION TYPE (ROD & BALL JOINT DIRECT ATTACH. TO GEAR)	
Linkage — Location (front or rear of wheels, other)	REAR OF WHEELS	
Linkage — Drag links (trans. or longit.)	NONE	
Linkage — Tie rods (one or two)	2 (TIE ROD INNERS INTEGRAL WITH RACK AND PINION GEAR)	
Steering Axis — Inclination at camber (deg.)	13.363	
Steering Axis — Bearings (type) — Upper	BALL BEARING	
Steering Axis — Bearings (type) — Lower	BALL JOINT	
Steering Axis — Bearings (type) — Thrust	- -	
Steering spindle & joint type	ISO-STRUT WITH LOWER BALL	
Wheel Spindle — Diameter — Inner bearing	76 (3.0) OD: 40 (1.57) ID	
Wheel Spindle — Diameter — Outer bearing	- -	
Wheel Spindle — Thread size	M22 x 15	
Wheel Spindle — Bearing type	DOUBLE ANGULAR CONTACT BALL BEARING	
Wheel Align at curb mass (wt.) — Service checking — Caster (deg.)	NON ADJUSTABLE	
Wheel Align — Service checking — Camber (deg.)	+ .3° (-.2° TO + .8°)	
Wheel Align — Service checking — Toe in (outside track mm (in.))	1.6 (1/16) OUT: 3.2 (1/8) OUT TO 0	
Wheel Align — Service reset — Caster	SAME AS ABOVE	
Wheel Align — Service reset — Camber	SAME AS ABOVE	
Wheel Align — Service reset — Toe-in	SAME AS ABOVE	
Wheel Align — Periodic M.V. inspection — Caster	- -	
Wheel Align — Periodic M.V. inspection — Camber	-.8° TO + 1.4°	
Wheel Align — Periodic M.V. inspection — Toe-in	10 (0.4") TOE OUT TO 5 (.2") TOE IN	

(a) STD. TURISMO TC3

APPENDIX A

MVMA SPECIFICATION FORM (CONT.)

MVMA Specifications Form
Passenger Car
METRIC (U.S. Customary)

Car Line PLYMOUTH HORIZON
Model Year 1980 Issued 6-1-79 Revised (*)

Body Type And/Or Engine Displacement

		24	44	24	44
		STANDARD (S12)		FIRM FEEL (S14) (b)	HEAVY DUTY (S13)
Suspension — General		(See Supplement page for details on Air Suspension)			
Provision for car leveling		NONE			
Provision for brake dip control		INCLINED CONTROL ARM AND STRUT			
Provision for acc. squat control		NONE			
Special provisions for car jacking		SILL JACKING: SCISSORS - TYPE SILL JACK, FOUR JACK SUPPORTS BEING LOCATED AT EACH END OF BODY SIDE SILLS			
Shock absorbers front & rear	Type	HYDRAULIC			
	Make	FRONT: DELCO; REAR: MONROE			
	Piston dia	DELCO 32 (1.26); MONROE: 25.4 (1.0)			
Other special features		OFFSET SPRING, CAMBER ADJUSTMENT, NEGATIVE SCRUB RADIUS			
Suspension — Front					
Type and description		ISO-STRUT			
Travel	Full Jounce FROM	102.2 (4.02)	107.3 (4.22)	102.2 (4.02)	107.3 (4.22)
	Full Rebound CURB (a)	71.8 (2.83)	66.7 (2.63)	71.8 (2.83)	66.7 (2.63)
Spring	Type (coil, leaf, other)	COIL			
	Material	AISI 5160H (CHROMIUM ALLOY STEEL)			
	Size (coil design height & I.D., bar length & dia.)	202 x 152 I.D. (7.95 x 5.98 I.D.)			
	Spring rate — N/mm (lb/in.)	14.9 (85)		18.4 (105)	
	Rate at wheel — N/mm (lb/in.)	19.1 (109)		21.0 (120)	
Stabilizer	Type (link, linkless, frameless)	LINK			
	Material & bar diameter	AISI 1095 SPRING STEEL 22 (0.866)		25.4 (1.0)	22 (0.866)
Suspension — Rear					
Type and description		SEMI INDEPENDENT TRAILING ARM TYPE			
Drive and torque taken through		- -			
Travel	Full Jounce FROM	107 (4.21)	133.2 (5.24)	107 (4.21)	133.2 (5.24)
	Full Rebound CURB (a)	90 (3.54)	63.8 (2.51)	75 (2.95)	48.8 (1.92)
Spring	Type (coil, leaf, other)	COIL			
	Material	AISI 5160H (CHROMIUM ALLOY STEEL)			
	Size (length x width, coil design height & I.D., bar length & dia.)	DESIGN HEIGHT - 247 ID: 85, WIRE DIA: 10.4		DESIGN HEIGHT - 247 ID: 85, WIRE DIA.: 10.9	
	Spring rate — N/mm (lb/in.)	15.8 (90)		19.3 (110)	
	Rate at wheel — N/mm (lb/in.)	16.2 (93)		19.8 (113)	
	Mounting insulation type	RUBBER			
	If leaf: No. of leaves	- -			
	Shackle (comp. or tens.)	- -			
Stabilizer	Type (link, linkless, frameless)	NONE		FRAMELESS	NONE
	Material & bar diameter	- -		HSLA Steel 16 (0.63)	- -
Tire type		NONE		NONE	

(a) 24 WITH P175 75 R13 TIRES
44 WITH P155 80 R13 TIRES
(b) STD. TURISMO TC3

MVMA Specifications Form
Passenger Car
METRIC (U.S. Customary)

Car Line PLYMOUTH HORIZON
Model Year 1980 Issued 6-1-79 Revised (*)

Body Type

		ALL
Body — Miscellaneous Information		
Type of finish (lacquer, enamel, other)		BUFFABLE ACRYLIC ENAMEL
Hinge Location (front, rear) HOOD		REAR
Hood counterbalance (type)		NONE
Hood release control (internal, external)		INTERNAL
Vehicle Ident. No. Location		LEFT END OF INSTRUMENT PANEL
Vent window control method (crank, friction pivot, power)	Front	NONE
	Rear	NONE
Seat cushion type	Front	ZIG-ZAG ELEMENT PLATFORM W/FULL VOLUME FOAM
	Rear	FULL VOLUME FOAM
	3rd Seat	- -
Seat back type	Front	FULL FOAM
	Rear	FULL FOAM
	3rd Seat	- -
Method of holding luggage compart. lid open		GAS PRESSURIZED STRUTS
Position of spare tire storage		WHEEL WELL

Frame

Type and description (Separate frame, unitized frame, partially-unitized frame)	UNITIZED CONSTRUCTION

APPENDIX A

MVMA SPECIFICATION FORM (CONT.)

MVMA Specifications Forms
Passenger Car
METRIC (U.S. Customary)

Car Line PLYMOUTH HORIZON
Model Year 1980 Issued 6:1:79 Revised (*)

	Body Type 24	Body Type 44
Convenience Equipment		
Power windows: Side Windows	N.A.	
Power windows: Vent Windows	N.A.	
Power windows: Backlight or tailgate	N.A.	
Power seats specify type as well as availability	N.A.	
Reclining front seat backs (R & L or both)	OPT. BUCKET - RIGHT ONLY	
Radios specify type as well as availability	STD. AM - FM OPT. AM - FM STEREO (c)	STD. AM OPT. AM - FM, AM - FM STEREO
Rear seat speaker	OPT. SINGLE, DUAL (a)	N.A. (b)
Power antenna	N.A.	
Clock	STD.	
Air Conditioner specify type	OPT. SINGLE MANUAL W/FRONT HEATER	
Speed warning device	N.A.	
Speed control device	OPT.	
Ignition key lamp	STD.	
Dome lamp	STD.	
Glove compartment lamp	STD.	
Luggage compartment lamp	STD.	
Underhood lamp	N.A.	
Courtesy lamp	STD.	
Map lamp	STD.	
Cornering lamp	N.A.	
Rear window defroster electrically heated	STD.	
Rear window defogger	N.A.	
Theft protection — type	LOCKING STEERING COLUMN - STD. LOCKING GAS CAP - OPT. INSIDE HOOD RELEASE - STD.	
RR Wiper Washer	OPT.	

(a) AM FM STEREO INCLUDES SPEAKERS IN LEFT AND RIGHT FRONT DOORS AND TWO REAR SEAT SPEAKERS.
(b) AM FM STEREO INCLUDES SPEAKERS IN LEFT AND RIGHT FRONT DOORS.
(c) AM/FM STEREO STD TURISMO TC3

MVMA Specifications Form
Passenger Car
METRIC (U.S. Customary)

Car Line PLYMOUTH HORIZON
Model Year 1980 Issued 6:1:79 Revised (*)

ESTIMATED

Model	Vehicle Mass (Weight) CURB MASS kg (Weight lb)* Front	Rear	Total	% PASS WEIGHT DISTRIBUTION Pass in Front: Front	Pass in Front: Rear	Pass in Rear: Front	Pass in Rear: Rear	SHIPPING MASS kg (Weight lb)**
4 CYLINDER MODELS								
HORIZON TC3								
2 & 2 HATCHBACK	620 (1366)	377 (831)	997 (2197)	47.9	52.1	20.5	79.5	969 (2137)
HORIZON								
4 DOOR HATCHBACK	608 (1340)	369 (814)	977 (2154)	49.7	50.3	20.0	80.0	960 (2094)

*BASE CAR ESTIMATED CURB WEIGHT INCLUDES AUTOMATIC TRANSMISSION
CURB WEIGHT – THE WEIGHT OF VEHICLE WITH STANDARD EQUIPMENT WITH FULL QUANTITIES OF GAS, OIL AND WATER.

SHIPPING WEIGHT: SAME AS CURB WEIGHT EXCEPT 3 GALLONS OF GASOLINE.

*Reference — SAE J1100a Motor Vehicle Dimensions, Curb Weight Definition
**Shipping Mass (Weight) definition —

APPENDIX A

MVMA SPECIFICATION FORM (CONT.)

MVMA Specifications Form
Passenger Car
METRIC (U.S. Customary)

Car Line PLYMOUTH HORIZON
Model Year 1980 Issued 6-1-79 Revised (*)

ESTIMATED

Optional Equipment Mass (Weight)*

Equipment Differential Mass (Weights)	Mass (kg) Weight (lb) Front	Rear	Total	Remarks
POWER BRAKES	2.3	0	2.3	
	(5)	0	(5)	
POWER STEERING	8.6	.5	9.1	
	(19)	(1)	(20)	
CARGO COMPARTMENT DRESS UP	-.5	10.0	9.5	2 DOOR (INCLUDES SILENCER PACKAGE)
	(-1)	(22)	(21)	
CARGO COMPARTMENT DRESS UP	0	11.8	11.8	4 DOOR (INCLUDES SILENCER PACKAGE)
	(0)	(26)	(26)	
TONNEAU COVER	-.5	2.8	2.3	
	(-1)	(6)	(5)	
ACCESSORY FLOOR - F & R	1.3	1.4	2.7	
	(3)	(3)	(6)	
AIR CONDITIONING	35.8	-2.7	33.1	
	(79)	(-6)	(73)	
REAR WIPER - WASHERS	-.5	4.1	3.6	
	(-1)	(9)	(8)	
UNDERCOATING	.9	1.8	2.7	
	(2)	(4)	(6)	
SPOILER - REAR LIFTGATE	-.5	4.1	3.6	
	(-1)	(9)	(8)	
SUN ROOF	2.3	4.1	6.4	
	(5)	(9)	(14)	
BUMPER GUARDS - FRT & REAR	1.3	1.4	2.7	
	(3)	(3)	(6)	
LUGGAGE RACK	1.8	3.2	5.0	2 DOOR
	(4)	(7)	(11)	
LUGGAGE RACK	2.3	4.5	6.8	4 DOOR
	(5)	(10)	(15)	
FIRM FEEL SUSPENSION	.9	2.7	3.6	
	(2)	(6)	(8)	
HEAVY DUTY SUSPENSION	.4	.5	.9	
	(1)	(1)	(2)	
CONVENTIONAL SPARE TIRE	0	1.4	1.4	
	(0)	(3)	(3)	
4 SPEED MANUAL TRANSMISSION	-32.2	.9	-31.3	
	(-71)	(2)	(-69)	
SPEED CONTROL	2.3	0	2.3	
	(5)	(0)	(5)	
MAX. COOLING	4.1	-.5	2.6	NON AIR CONDITIONING CARS
	(9)	(-1)	(8)	
AM FM MULTIPLEX RADIO	.9	.5	1.4	2 DOOR
	(2)	(1)	(3)	
AM FM MULTIPLEX RADIO	1.3	1.8	3.1	4 DOOR
	(3)	(4)	(7)	

* Also see Figure — General Section for discussion of engine mass (wt)

MVMA Specifications Form
Passenger Car
METRIC (U.S. Customary)
Car and Body Dimensions See Key Sheets for definitions

Car Line PLYMOUTH HORIZON
Model Year 1980 Issued 6-1-79 Revised (*)

All dimensions to ground are for comparative purposes only. Dimensions are to be shown for all base body models of each car line. SAE Rel. No. refers to the definition published in SAE Recommended Practice J1100a "Motor Vehicle Dimensions," unless otherwise specified.

SAE Rel. No.	Body Type 24	44
Width		
Tread — Front W101	1426 (56.1)	
Tread — Rear W102	1412 (55.6)	
Vehicle width W103	1694 (66.7)	1670 (65.8)
Body width at SgRP — front W117	1676 (66.0)	1620 (63.8)
Vehicle width — front doors open W120	3850 (151.6)	3311 (130.7)
Vehicle width — rear doors open W121	- -	2762 (108.7)
Length		
Wheelbase L101	2456 (96.7)	2520 (99.2)
Vehicle length L103	4388 (172.8)	4187 (164.8) (8)
Overhang — front L104	929 (36.6)	818 (32.2) (8)
Overhang — rear L105	1003 (39.5)	848 (33.4) (8)
Upper structure length L123	N.A.	
Rear wheel CL "X" coordinate L127	2546 (100.2)	2610 (102.8)
Cowl point "X" coordinate L125	541 (21.3)	533 (21.0)
Height*		
Passenger Distribution (Driver) PDI 2.3	2-FRONT, 2-REAR	
Trunk/Cargo load	NONE	
Vehicle height H101	1300 (51.2)	1359 (53.5)
Cowl point to ground H116	899 (35.4)	
Deck point to ground H138	N.A.	
Rocker panel front to ground H112	231 (9.1)	221 (8.7)
Bottom of door closed front to grd H133	264 (10.4)	282 (11.1)
Rocker panel rear to ground H111	213 (8.4)	241 (9.5)
Bottom of door closed rear to grd H135	- -	272 (10.7)
Ground Clearance*		
Front bumper to ground H102	325 (12.8)	340 (13.4)
Rear bumper to ground H104	264 (10.4)	297 (11.7)
Bumper to ground — front at curb mass (wt) H103	360 (14.2)	358 (14.1)
Bumper to ground — rear at curb mass (wt) H109	334 (13.1)	363 (14.3)
Angle of approach H106	33.8°	34.0°
Angle of departure H107	14.4°	19.5°
Ramp breakover angle H147	10.6°	9.1°
Rear axle differential to ground H153	197 (7.8)	
Min. running ground clearance H156	127 (5.0)	
Location of min. run. grd. clear	CATALYTIC CONVERTER	

All linear dimensions are in millimeters (inches) and all mass (weight) specifications are in kilograms (pounds).

* All vehicle height and ground clearances are made at the Manufacturer's Design Load Weight unless otherwise specified. Manufacturers Design Load Weight is defined with indicated passenger distribution and trunk/cargo load.

(8) INCLUDES GUARDS

APPENDIX A

MVMA SPECIFICATION FORM (CONT.)

MVMA Specifications Form
Passenger Car
METRIC (U.S. Customary)
Car and Body Dimensions See Key Sheets for definitions

Car Line PLYMOUTH HORIZON
Model Year 1980 Issued 6-1-79 Revised (*)

	SAE Ref. No.	Body Type 24	Body Type 44
Front Compartment			
SgRP-front, "X" coordinate	L31	1420 (55.9)	1409 (55.5)
Effective head room	H61	946 (37.2)	972 (38.3)
Effective T Point head room	H75	--	--
Max. diff. leg room — accelerator	L34	1077 (42.4)	1068 (42.0)
SgRP — front to heel	H30	215 (8.5)	240 (9.4)
Design H point fore/aft travel	L17	191 (7.5)	191 (7.5)
Shoulder room	W3	1326 (52.2)	1314 (51.7)
Hip room	W5	1336 (52.6)	1336 (52.6)
Upper body opening to ground	H50	1176 (46.3)	1250 (49.2)
Steering Wheel Angle	H18	25.5°	25.5°
Cowl Angle	L40	26°	26°
Rear Compartment			
SgRP Point-cowl-to-distance	L50	667 (26.3)	749 (29.5)
Effective head room	H63	874 (34.4)	949 (37.4)
Effective T Point head room	H76	--	--
Max. effective leg room	L51	729 (28.7)	837 (33.0)
SgRP — second to heel	H31	273 (10.7)	302 (11.9)
Knee clearance	L48	-84 (-3.3)	-32 (-1.3)
Compartment room	L3	547 (21.5)	619 (24.4)
Shoulder room	W4	1292 (50.9)	1309 (51.5)
Hip room	W6	1172 (46.1)	1178 (46.4)
Lower body opening to ground	H51	--	1242 (48.9)
Luggage Compartment			
Usable luggage capacity — Low fill	V1	Est. 303 (10.7) (a)	247 (10.5) (b)
Liftover height	H195	724 (28.5)	759 (29.9)

All linear dimensions are in millimeters (inches)

(a) WITH TONNEAU COVER
(b) WITH SHELF PANEL

MVMA Specifications Form
Passenger Car
METRIC (U.S. Customary)
Car and Body Dimensions See Key Sheets for definitions

Car Line PLYMOUTH HORIZON
Model Year 1980 Issued 6-1-79 Revised (*)

	SAE Ref. No.	Body Type 24	Body Type 44
Station Wagon — Third Seat			
Shoulder room	W35		
Hip room	W36		
Effective leg room	L58		
Effective head room	H88		
Effective T Point head room	H89		
Seat facing direction	SD1		
Station Wagon — Cargo Space			
Cargo length — open — front	L200		
Cargo length — open — second	L201		
Cargo length — closed — front	L202		
Cargo length — closed — second	L203		
Cargo length at belt — front	L204		
Cargo length at belt — second	L205		
Cargo width — wheelhouse	W201		
Rear opening width at floor	W203		
Opening width at belt	W204		
Max. rear opening width above belt	W205		
Cargo height	H201		
Rear opening height	H202		
Tail gate to ground height	H250		
Front seat back to load floor height	H197		
Cargo volume index — m^3 (ft^3)	V2		
Hidden cargo volume — m^3 (ft^3)	V4		
Hatchback — Cargo Space			
Front seat back to load floor height	H197	597 (23.5)	617 (24.3)
Cargo length at front seat Back Height	L208	922 (36.3)	950 (37.4)
Cargo length at floor — front	L209	1565 (61.6)	1560 (61.4)
Cargo volume index — m^3 (ft^3)	V3	0.959 (33.9)	1.013 (35.8)
Hidden cargo volume — m^3 (ft^3)	V4		

A printed or computer tape supplement containing additional car and body dimensions and/or drawings (based in part on SAE J1100a "Motor Vehicle Dimensions") may be available from the manufacturer

All dimensions are in millimeters (inches)

APPENDIX A

MVMA SPECIFICATION FORM (CONT.)

MVMA Specifications Form
Passenger Car
METRIC (U.S. Customary)
Car and Body Dimensions See Key Sheets for definitions

Car Line _____
Model Year _____ Issued _____ Revised (*) _____

Body Type

Vehicle Fiducial Marks

Fiducial Mark Number*	Define Coordinate Location
Front	
Rear	

Fiducial Mark Number

Front	HW2*	
	L54	
	H81	
	H183	
	H163	
Rear	HW22	
	L55	
	H82	
	H162	
	H184	

MVMA Specifications Form
Passenger Car
METRIC (U.S. Customary)
Car and Body Dimensions See Key Sheets for definitions

Car Line PLYMOUTH HORIZON
Model Year 1980 Issued 6-1-79 Revised (*) _____

Body Type

	SAE Rel. No.	24	44
Glass			
Backlight slope angle	H121	--	--
Windshield slope angle	H122	59° 30'	53° 50'
Tumble-Home	W122	25°	20° 30'
Windshield glass exposed surface area — cm^2 (in^2)	S1	7 856 (1218)	7 764 (1203)
Side glass exposed surface area — cm^2 (in^2)	S2	10 436 (1618)	10 488 (1626)
Backlight glass exposed surface area — cm^2 (in^2)	S3	11 326 (1756)	6 803 (1054)
Total glass exposed surface area — cm^2 (in^2)	S4	29 618 (4591)	25 055 (3883)
Windshield glass type		LAMINATED SAFETY GLASS	
Side glass type		HEAT TREATED SAFETY GLASS	
Backlight glass type		HEAT TREATED SAFETY GLASS	
Lamps and Headlamp Shape*			
Height above ground to center of bulb or marker — Headlamp (H127)	Highest**	655 (25.8)	630 (24.8)
	Lowest		
Height above ground to center of bulb or marker — Tail (H128)	Highest	653 (25.7)	688 (27.1)
	Lowest		
Height above ground to center of bulb or marker — Sidemarker	Front	411 (16.2)	635 (25.0)
	Rear	653 (25.7)	601 (26.8)
Distance from CL of car to center of bulb — Headlamp	Inside		
	Outside**	566 (22.3)	485 (19.1)
Distance from CL of car to center of bulb — Tail	Inside		
	Outside	661 (26.0)	607 (23.9)
Distance from CL of car to center of bulb — Directional	Front	572 (22.5)	683 (26.9)
	Rear	335 (13.2)	485 (19.1)
Headlamp Shape		RECTANGULAR	

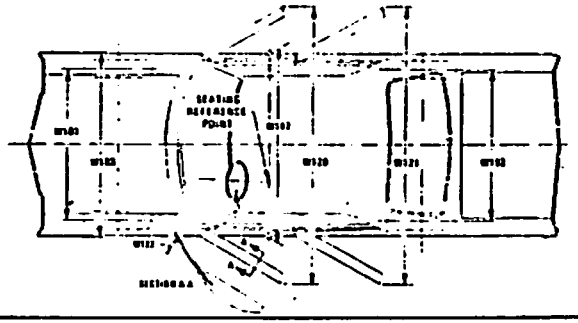
*Measured at curb mass (weight)

MVMA SPECIFICATION FORM (CONT.)

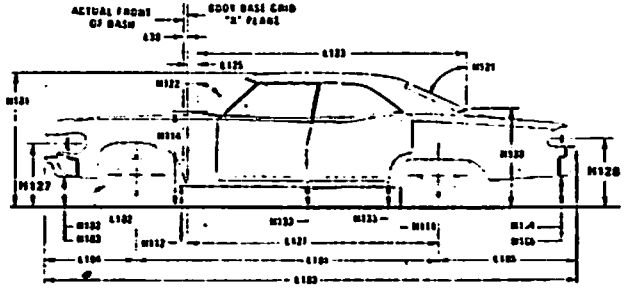
MVMA Specifications Form
Passenger Car
METRIC (U.S. Customary)

Exterior Car And Body Dimensions — Key Sheet

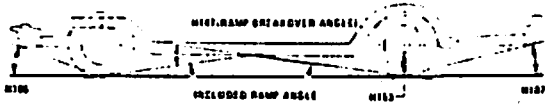
Exterior Width



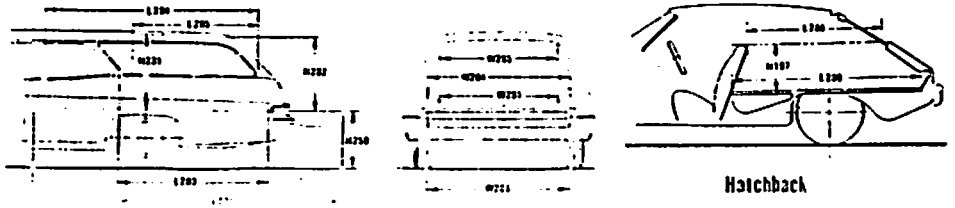
Exterior Length & Height



Exterior Ground Clearance



Cargo Space

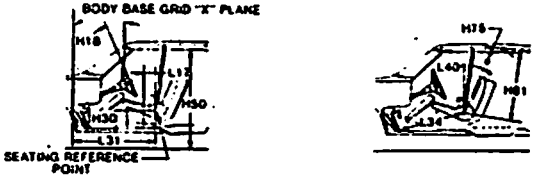


Hatchback

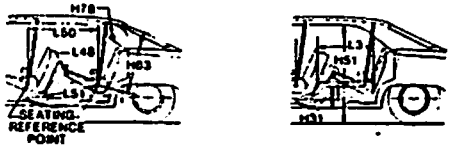
MVMA Specifications Form
Passenger Car
METRIC (U.S. Customary)

Interior Car And Body Dimensions — Key Sheet

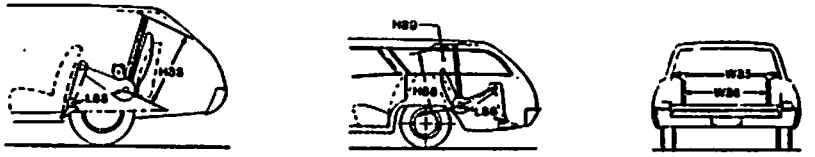
Front Compartment



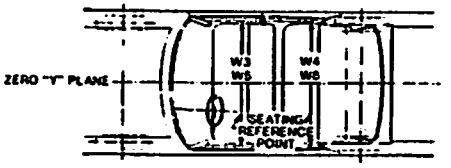
Rear Compartment



Third Seat



Interior Width



APPENDIX A

MVMA SPECIFICATION FORM (CONT.)

MVMA Specifications Form
Passenger Car
METRIC (U.S. Customary)

Exterior Car And Body Dimensions — Key Sheet
Dimensions Definitions

Seating Reference Point

SEATING REFERENCE POINT means the manufacturer's design reference point which —
(a) Establishes the rearmost normal design driving or riding position of each designated seating position in a vehicle,
(b) Has coordinates established relative to the design vehicle structure;
(c) Simulates the position of the pivot center of the human torso and thigh, and
(d) Is the reference point employed to position the two dimensional templates described in SAE Recommended Practice J826, "Manikins for Use in Defining Vehicle Seating Accommodations," November 1962.

Width Dimensions

W101 TREAD — FRONT. The dimension measured between the tire centerlines at the ground.

W102 TREAD — REAR. The dimension measured between the tire centerlines at the ground. In case of dual wheels, the dimension will be measured to the centerline of tire and wheel assemblies.

W103 VEHICLE WIDTH. The maximum dimension measured between the widest point on the vehicle, excluding exterior mirrors, flexible mud flaps, marker lamps, but including bumpers, moldings, sheet metal protrusions or dual wheels if standard equipment.

W117 BODY WIDTH AT SgRP — FRONT. The dimension measured laterally between the widest points on the body at the SgRP - front, excluding door handles applied moldings or appliques.

W120 VEHICLE WIDTH — FRONT DOORS OPEN. The dimension measured between the widest point on the front doors in maximum hold open position.

W121 VEHICLE WIDTH — REAR DOORS OPEN. The dimension measured between the widest point on the rear doors in maximum hold-open position. For vehicles with a rear door on only one side, this dimension is to the zero "Y" plane.

W122 TUMBLE HOME STRAIGHT SIDE GLASS. The angle measured from a vertical to the outside surface of the front door glass at the SgRP "X" plane.
CURVED SIDE GLASS. The angle measured from a vertical to a chord extending from the upper DLO to the lower DLO at the outside surface of the front door glass at the front SgRP "X" plane.

Length Dimensions

L30 FRONT OF DASH "X" COORDINATE. A minus (-) dimension indicates actual front of dash is forward of the zero "X" plane.

L101 WHEELBASE (WB). The dimension measured longitudinally between front and rear wheel centerlines. In case of dual rear axles, the dimension shall be to the midpoint of the centerlines of the rear wheels.

L102 TIRE SIZE. As specified by the manufacturer.

L103 VEHICLE LENGTH. The maximum dimension measured longitudinally between the foremost point and the rearmost point on the vehicle, including bumper, bumper guards, two hooks and/or rub strips, if standard equipment.

L104 OVERHANG — FRONT. The dimension measured longitudinally from the centerline of the front wheels to the foremost point on the vehicle including bumper, bumper guards, two hooks and/or rub strips if standard equipment.

L105 OVERHANG — REAR. The dimension measured longitudinally from the centerline of the rear wheels, or in the case of dual rear axles, the dimension shall be the midpoint of the centerlines of the rear wheels, to the rearmost point on the vehicle including rear bumpers, bumper guards, two hooks and rub strips if standard equipment.

L123 UPPER STRUCTURE LENGTH. The dimension measured longitudinally from the cowl point to the deck point.

L127 REAR WHEEL CENTERLINE "X" COORDINATE or in the case of dual rear axles, the coordinate shall be in the midpoint of the distance between the rear axle centerlines.

L125 COWL POINT "X" COORDINATE.

Height Dimensions

H101 VEHICLE HEIGHT. The dimension measured vertically from the highest point on the vehicle body to ground.

H114 COWL POINT TO GROUND. Measured at zero "Y" plane.

H138 DECK POINT TO GROUND. Measured at zero "Y" plane.

H112 ROCKER PANEL — FRONT TO GROUND. The dimension measured vertically from the foremost point on the bottom of the rocker panels, excluding flanges, to ground.

H132 BOTTOM OF DOOR OPEN — FRONT TO GROUND. The dimension measured vertically from the bottom outside corner of the door on the lock pillar side, in maximum hold-open position, to ground.

H111 ROCKER PANEL — REAR TO GROUND. The dimension measured vertically from the bottom of the rocker or side quarter panel at the front of the rear wheel opening excluding flanges, to ground.

H134 BOTTOM OF DOOR OPEN — REAR TO GROUND. The dimension measured vertically from the bottom outside corner of the door on the lock pillar side, in maximum hold open position, to ground.

H135 BOTTOM OF DOOR CLOSED — REAR TO GROUND. The dimension measured vertically from the bottom outside corner of the door on the lock pillar side, in maximum closed position, to ground.

H121 BACKLIGHT SLOPE ANGLE. The angle between the vertical reference line and the surface of backlight at vehicle zero "Y" plane. For curve backlight, the angle is to chord of backlight arc from lower DLO to upper DLO.

H122 WINDSHIELD SLOPE ANGLE. The angle between the vertical reference line and a chord of the windshield are running from the lower DLO to the upper DLO at the vehicle zero "Y" plane. In the case of wrap over glass, the angle to be measured will be formed by a chord 180 in. (457 mm) long, drawn from the lower DLO to the intersecting point on the windshield.

H127 HEADLAMP TO GROUND — CURB WEIGHT. The dimensional measured vertically from the centerline of the lowest headlamp lens to ground.

H128 TAILLAMP TO GROUND — CURB WEIGHT. The dimension measured vertically from the centerline of the upper bulb to ground.

Ground Clearance Dimensions

H102 FRONT BUMPER TO GROUND. The minimum dimension measured vertically from the lowest point on the front bumper to ground, including bumper guards, if standard equipment.

H103 FRONT BUMPER TO GROUND — CURB WEIGHT. Measured in the same manner as H104.

H104 REAR BUMPER TO GROUND. The minimum dimension measured vertically from the lowest point on the rear bumper to ground, including bumper guards, if standard equipment.

H105 REAR BUMPER TO GROUND — CURB WEIGHT. Measured in the same manner as H104.

H106 ANGLE OF APPROACH. The angle measured between a line tangent to the front tire static loaded radius and the initial point of structural interference forward of the front tire to ground. The limiting structural component shall be designated.

MVMA Specifications Form
Passenger Car
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Interior Car And Body Dimensions — Key Sheet
Dimensions Definitions

H107 ANGLE OF DEPARTURE. The angle measured between a line tangent to the rear tire static loaded radius and the initial point of structural interference rearward of the rear tire to ground. The limiting component shall be designated.

H147 REAR BREAKOVER ANGLE. The angle measured between two lines tangent to the front and rear tire static loaded radius and intersecting at a point on the underside of the vehicle which defines the largest ramp over which the vehicle can roll.

H153 REAR AXLE DIFFERENTIAL TO GROUND. The minimum dimension measured from the rear axle differential to ground.

H158 MINIMUM RUNNING GROUND CLEARANCE. The minimum dimension measured from the sprung vehicle to ground. Specify location.

Front Compartment Dimensions

PD1 PASSENGER DISTRIBUTION — FRONT.

L31 SgRP — FRONT "X" COORDINATE.

H61 EFFECTIVE HEAD ROOM — FRONT. The dimension measured along a line 8 deg. rear of vertical from the SgRP — front to the headline, plus 4.0 in. (102 mm).

H75 EFFECTIVE T-POINT HEAD ROOM — FRONT. The minimum radius from the T-point to the headlining plus 30 in. (762 mm).

L34 MAXIMUM EFFECTIVE LEG ROOM — ACCELERATOR. The dimension measured along a line from the ankle pivot center to the SgRP — front plus 10.0 in. (254 mm) measured with right foot on the undepressed accelerator pedal. For vehicles with SgRP to heel (H30) greater than 18 in., the accelerator pedal may be depressed as specified by the manufacturer. If the accelerator is depressed, the manufacturer shall place foot flat on pedal and note the depression of the pedal.

H30 SgRP — FRONT TO HEEL. The dimension measured vertically from the SgRP — front to the accelerator heel point.

L17 DESIGN H-POINT — FRONT TRAVEL. The dimension measured horizontally between the design H-point — front in the foremost and rearmost seat trace positions.

W3 SHOULDER ROOM — FRONT. The minimum dimension measured laterally between the trimmed surfaces on the "X" plane through the SgRP — front within the belt line and 10.0 in. (254 mm) above the SgRP — front.

W5 HIP ROOM — FRONT. The minimum dimension measured laterally between the trimmed surfaces on the "X" plane through the SgRP — front within 1.0 in. (25mm) below and 3.0 (76 mm) above the SgRP — front and 3.0 (76 mm) fore and aft of the SgRP — front.

H150 UPPER BODY OPENING TO GROUND — FRONT. The dimension measured vertically from the trimmed body opening to the ground on the SgRP — front "X" plane.

H18 STEERING WHEEL ANGLE. The angle measured from a vertical to the surface plane of the steering wheel.

L40 BACK ANGLE — FRONT. The angle measured between a vertical line through the SgRP — front and the torso line. If the seatback is adjustable, use the normal driving and riding position specified by the manufacturer.

Rear Compartment Dimensions

PD2 PASSENGER DISTRIBUTION — SECOND.

L50 SgRP COUPLE DISTANCE. The dimension measured horizontally from the driver SgRP — front to the SgRP — second.

H63 EFFECTIVE HEAD ROOM — SECOND. The dimension measured along a line 8 deg. rear of vertical from the SgRP to the headlining, plus 4.0 in. (102 mm).

H76 EFFECTIVE T-POINT HEAD ROOM — SECOND. Measured in the same manner as H75.

L51 MINIMUM EFFECTIVE LEG ROOM — SECOND. The dimension measured along a line from the ankle pivot center to the SgRP — second plus 10.0 in. (254 mm).

H31 SgRP — SECOND TO HEEL. The dimension measured vertically from the SgRP — second to the two dimensional device heel point on the depressed floor covering.

L48 KNEE CLEARANCE — SECOND. The minimum dimension measured from the knee pivot to the back of front seatback minus 2.0 in. (51 mm).

L3 COMPARTMENT ROOM — SECOND. The dimension measured horizontally from the back of front seat to the front of the second seatback at a height tangent to the top of the second seat cushion.

W4 SHOULDER ROOM — SECOND. The minimum dimension measured laterally between trimmed surfaces on the "X" plane through the SgRP — second within 10.0-15.0 in. (254-406 mm) above the SgRP — second.

W6 HIP ROOM — SECOND. Measured in the same manner as W5.

H51 UPPER BODY OPENING TO GROUND — SECOND. The dimension measured vertically from the trimmed body opening to the ground on the "X" plane 13.0 in. (330 mm) forward of the SgRP — second.

Luggage Compartment Dimensions

V1 USABLE LUGGAGE CAPACITY — Total of volumes of individual pieces of standard luggage set plus H-boxes stowed in the luggage compartment in accordance with the procedure described in paragraph 8.2 of SAE J1100a.

H195 LIFTOVER HEIGHT. The dimension measured vertically from the luggage compartment lower opening at the zero "Y" plane to ground.

Station Wagon — Third Seat Dimensions

PD3 PASSENGER DIRECTION — THIRD.

W85 SHOULDER ROOM — THIRD. Measured in the same manner as W5.

W86 HIP ROOM — THIRD. Measured in the same manner as W5.

L86 EFFECTIVE LEG ROOM — THIRD. The dimension measured along a line from the ankle pivot center to the SgRP — third plus 10.0 in. (254 mm).

H86 EFFECTIVE HEAD ROOM — THIRD. The dimension, measured along a line 8 deg. from the SgRP — third to the headlining rear of vertical plus a constant of 4.0 in. (102 mm).

H89 EFFECTIVE T-POINT HEAD ROOM — THIRD. Measured in the same manner as H75.

Station Wagon — Cargo Space Dimensions

L200 CARGO LENGTH — OPEN — FRONT. The minimum dimension measured longitudinally from the back of the front seatback at the height of the undepressed floor covering to the rearmost point on the undepressed floor covering on the open tailgate or cargo surface if the rear closure is a conventional door type tailgate, at the zero "Y" plane.

L201 CARGO LENGTH — OPEN — SECOND. The dimension measured longitudinally from the back of the second seatback at the height of the undepressed floor covering on the open tailgate or cargo floor surface if the rear closure is a conventional door type tailgate, at the zero "Y" plane.

L202 CARGO LENGTH — CLOSED — FRONT. The minimum dimension measured horizontally from the back of the front seat at the height of the undepressed floor covering to the rearmost point on the undepressed floor covering on the closed tailgate or tail door for station wagons, trucks and mpv's at the zero "Y" plane.

APPENDIX A

MVMA SPECIFICATION FORM (CONT.)

MVMA Specifications Form
Passenger Car
METRIC (U.S. Customary)

Interior Car And Body Dimensions — Key Sheet
Dimensions Definitions

L203 CARGO LENGTH — CLOSED — SECOND The dimension measured horizontally from the back of the second seat at the height of the undepressed floor covering to the rearmost point on the undepressed floor covering on the closed tailgate or tailgate for station wagons, trucks and mpvs at the zero "Y" plane.

L204 CARGO LENGTH AT BELT — FRONT The minimum dimension measured horizontally from the back of the front seatback at the seatback top to the foremost normal surface of the closed tailgate or inside surface of the cab back panel at the height of the belt on the zero "Y" plane

L205 CARGO LENGTH AT BELT — SECOND The minimum dimension measured horizontally from the back of the second seatback at the seatback top to the foremost normal surface of the closed tailgate at the height of the belt, on the zero "Y" plane

W201 CARGO WIDTH — WHEELHOUSE. The minimum dimension measured laterally between the trimmed wheelhousings at floor level. For any vehicle not trimmed measure the sheet metal

W203 REAR OPENING WIDTH AT FLOOR The minimum dimension measured laterally between the limiting interferences of the rear opening at floor level.

W204 REAR OPENING WIDTH AT BELT The minimum dimension measured laterally between the limiting interferences of the rear opening at belt height or top of pick up box

W205 REAR OPENING WIDTH ABOVE BELT The minimum dimension measured laterally between the limiting interferences of the rear opening above the belt height

H201 CARGO HEIGHT The dimension measured vertically from the top of the undepressed floor covering to the headlining at the rear wheel "X" coordinated on the zero "Y" plane

H202 REAR OPENING HEIGHT. The dimension measured vertically from the top of the undepressed floor covering to the upper trimmed opening on the zero "Y" plane with rear door fully open

H250 TAILGATE TO GROUND (CURB WEIGHT) The dimension measured vertically from the top of the undepressed floor covering on the lowered tailgate to ground on the zero "Y" plane.

V2 STATION WAGON

Measured in inches

$$\frac{W4 \times H201 \times L204}{1728} = Ft.^3$$

Measured in mm

$$\frac{W4 \times H201 \times L204}{10^9} = m^3 \text{ (cubic meter)}$$

V4 HIDDEN CARGO VOLUME. As specified by the manufacturer

Hatchback — Cargo Space Dimensions
All hatchback cargo dimensions are to be taken with the front seat in full down and rear position, and the rear seat folded down. The hatchback door is in the closed position. (For electrically adjusted seats, see the manufacturer's specifications for Design "H" Point).

H197 FRONT SEATBACK TO LOAD HEIGHT. The dimension measured vertically from the horizontal tangent to the top of the seatback to the undepressed floor covering

L208 CARGO LENGTH AT FRONT SEATBACK HEIGHT. The minimum horizontal dimension from the "X" plane tangent to the rearmost surface of the driver's seatback to the inside limiting interference of the hatchback door on the vehicle zero "Y" plane

L209 CARGO LENGTH AT FLOOR — FRONT — HATCHBACK. The minimum horizontal dimension measured at floor level from the rear of the front seatback to the normal limiting interference of the hatchback door on the vehicle zero "Y" plane.

V3 HATCHBACK

Measured in inches

$$\frac{\frac{L208 + L209}{2} \times W4 \times H197}{1728} = Ft^3$$

Measured in mm

$$\frac{\frac{L208 + L209}{2} \times W4 \times H197}{10^9} = m^3 \text{ (cubic meter)}$$

MVMA Specifications Form
Passenger Car
METRIC (U.S. Customary)

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APPENDIX B

SAE J1100

The SAE Recommended Practice J1100 defines a uniform set of interior and exterior dimensions for passenger cars, multipurpose passenger vehicles and trucks.

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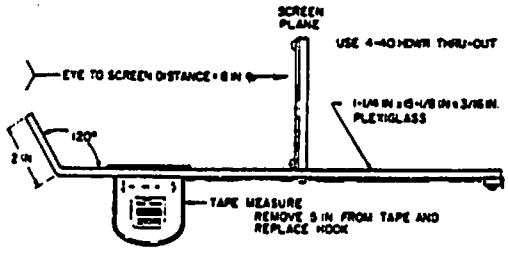

FIG. 7—DIMENSIONAL DATA

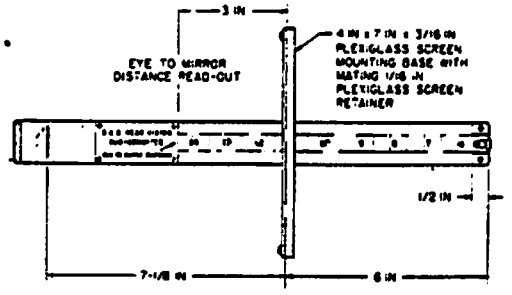

TABLE 3—TABLE OF VALUES FOR CONSTRUCTING MEASURING SCREEN (8-IN. EYE-TO-MEASURING PLANE DISTANCE)

Deg. from Visual Axis	Tangent Value	Eye-to-Plane Distance, mm	Printed Screen Line Distance from Center	
			mm	in.
1	0.017446	203.2	3.547	0.140
2	0.034927	203.2	7.095	0.279
3	0.052741	203.2	10.64	0.419
5	0.087769	203.2	17.77	0.700
10	0.17633	203.2	35.83	1.41
11	0.19438	203.2	39.49	1.55
12	0.21256	203.2	43.19	1.70
13	0.23087	203.2	46.91	1.85
14	0.24933	203.2	50.66	2.00
15	0.26793	203.2	54.44	2.14
20	0.36397	203.2	73.93	2.91
25	0.46631	203.2	94.73	3.73
30	0.57735	203.2	117.31	4.62

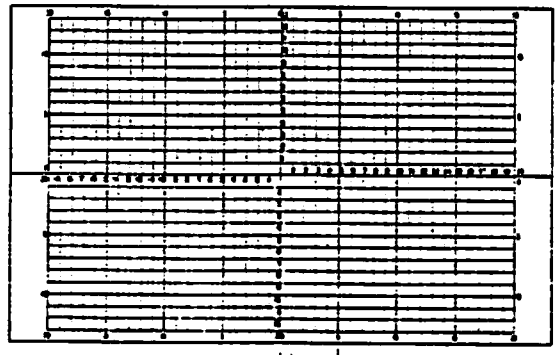

FIG. 8—MEASURING GRID

person directly below the eye on the upper portion of the cheekbone (zygomatic facial bone). The evaluator should use the eye which he would normally use for sighting purposes which would be his dominant eye.

5.1.3 Sight the center of the grid at the 0 deg intersecting lines and place the sighting point at the mirror center. Hold the measuring device securely at this position and establish the points which define the extremities of the mirror.

5.4 General

5.4.1 While practice with this device improves the accuracy of the evaluation, reproducibility should be of the order of ±1 deg after only a few determinations.

5.4.2 The values obtained by this technique are for the monocular field seen through the mirror. Conversion from monocular to binocular may be accomplished by use of Tables 1 and 2 and paragraph 4.2.9.

MOTOR VEHICLE DIMENSIONS—SAE J1100 JUL79 SAE Recommended Practice

Report of the Human Factors Engineering Committee, approved September 1973, last revised July 1979

1. Scope—This SAE Recommended Practice defines a uniform set of interior and exterior dimensions for passenger cars, multipurpose passenger vehicles and trucks.

2. General—The dimensions in this standard will enable the measurement of a vehicle as designed. The prefix "A" may precede a dimension taken from a vehicle as built which will enable a comparison between vehicles as designed and or built.

The standard supersedes the dimension definitions in J1100—Passenger Car Dimensions—previously contained in Section E-1 and Truck Dimensions previously contained in E-7 of the SAE Drawing Standards.

All dimensions are defined normal to the three-dimensional reference system except for ground related dimensions which are defined normal to ground with the vehicle loaded to a design load weight, unless otherwise defined in the dimension definition. All dimensions are measured to the base vehicle and do not include Regular Production Options (RPO's) or accessory parts, unless otherwise specified by the dimension definition.

The dimensions in this standard are classified in groups of relevant interest. Each dimension is assigned a code which is composed of a prefix letter denoting the direction or type of dimension and a number issued in sequence as required by each prefix letter. The code is interpreted as follows:

The prefix letter:

W—Width dimensions
H—Height dimensions
PD—Passenger distribution dimensions
L—Length dimensions
S—Surface area dimensions
SD—Seat facing direction dimensions
V—Volume dimensions

The number:

1-99	Interior dimensions
101-199	Exterior dimensions
201-299	Cargo or luggage dimensions
301-399	Interior dimensions—Unique for Truck and MPV's
401-499	Exterior dimensions—Unique for Truck and MPV's
501-599	Cargo Dimensions—Unique for Truck and MPV's

2.1 Interior Dimensions—All interior dimensions are defined with an adjustable front seat in its rearmost normal driving position resulting in the design H-point being positioned at the seating reference point SgRF position. All other adjustable features, such as an adjustable steering wheel, an adjustable seat height, a seatback that adjusts independently from the seat cushion, power 4-way or 6-way seats, etc., shall be positioned in their normal driving position as specified by the manufacturer. Steering wheel shall be positioned with front wheels in straight ahead position.

APPENDIX B

SAE J1100 (CONT.)

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All interior dimensions are defined on the Y-plane of the driver, unless otherwise defined in the dimensions definition. The H-point machine and two-dimensional drafting template specified in SAE J826b (January, 1974) shall use the 95th percentile leg segments.

2.2 Exterior Dimensions—All exterior dimensions terminate at the outside surface of sheet metal, bumpers or integral moldings unless otherwise specified. The front wheels shall be positioned in the straight ahead position. All exterior dimensions define the proportional shape of the vehicle as opposed to its designed pieces. For example, when two vehicles with the same front end profile are designed, one with a built on bumper and one with the bumper integrated with the front end, the front end length dimension (L126) on both vehicles will be the same.

2.3 Cargo Dimensions—All dimensions are measured with the front seat positioned the same as for interior dimensions and all rear seats folded as specified by the manufacturer. All head restraints shall be in the stowed position and considered part of the seat.

2.4 Luggage Capacity—The luggage capacity will be measured with the use of simulated luggage described in paragraph 8.1 and properly installed, detailed in paragraph 8.2, in a luggage compartment separate from the passenger compartment.

3. Definitions of Terms

3.1 Motor Vehicles

3.1.1 PASSENGER CAR—A vehicle with motive power, except a multipurpose passenger vehicle, motorcycle, or trailer, designed for carrying 10 persons or less.

3.1.1.1 *Station Wagon*—A passenger car with an extended upper to increase the cargo and/or passenger capacity.

3.1.1.2 *Hatchback*—A passenger car with the rear access door encompassing the back light.

3.1.2 MULTIPURPOSE PASSENGER VEHICLE (MPV)—A vehicle with motive power, except a trailer, designed to carry 10 persons or less which is constructed either on a truck chassis or with special features for occasional off-road operation.

3.1.3 TRUCK—A vehicle with motive power, except a trailer, designed primarily for the transportation of property or special purpose equipment.

3.1.3.1—Light Truck is the classification of a self-propelled vehicle which is designed primarily to transport property or special purpose equipment and has a maximum gross vehicle weight rating (GVWR) of 10,000 pounds (4,536 kg) or less.

GVWR is the value specified by the vehicle manufacturer as the loaded weight of a single vehicle.

3.1.3.2—Heavy Truck is the classification of a self-propelled vehicle which is designed primarily to transport property or special purpose equipment and has a gross vehicle weight rating over 10,000 pounds (4,536 kg).

3.2 Vehicle Weights—Specific vehicle weights with the addition of specified loads are defined below. These vehicle weights are established to enable uniform static comparisons of dimensions affected by the ground plane and vehicle pitch (attitude).

3.2.1 CURB WEIGHT—The weight of a motor vehicle with standard equipment only; maximum capacity of engine fuel, oil and coolant. For heavy trucks, the weight does not include engine fuel.

3.2.2 DESIGN LOAD WEIGHT—PASSENGER CAR—Curb weight, plus passengers and luggage or cargo load as specified by manufacturer, each passenger weighing 150 lb (68 kg).

3.2.3 DESIGN LOAD WEIGHT HEIGHT—TRUCKS AND MPV's—The height of a motor vehicle with the front and rear suspension at the manufacturers design loaded condition and the front and rear springs loaded to their rated capacity.

3.3 Three-Dimensional Reference System—The relationship of three orthogonal planes established by the manufacturers in the initial design stages of the vehicle and which remain permanent. The planes are used to determine dimensional relationships within the vehicle (Fig. 1 of SAE J182a (September, 1973)) and are defined below:

3.3.1 ZERO "Y" PLANE—Centerline body zero plane is a vertical plane which passes through the longitudinal centerline of the vehicle.

3.3.2 ZERO "X" PLANE—Vertical body zero plane is a plane normal to the "Y" plane.

3.3.3 ZERO "Z" PLANE—Horizontal body zero plane is a plane normal to the "X" and "Y" planes.

3.3.4 NEGATIVE COORDINATE—The negative direction is forward of the zero "X" plane, left of the zero "Y" plane, and below the zero "Z" plane.

3.3.5 COORDINATE DIMENSION—All points of interest are described as coordinate dimensioned from the intersection of the zero planes in the three-dimensional reference system. X, Y, Z coordinates are dimensioned to their respective planes.

3.4 Vehicle Fiducial Marks (See SAE J182a (September, 1973))—These [illegible] marks or indentations on the vehicle as described by

ence system by X, Y, Z coordinates and to ground with the vehicle at a specified vehicle weight.

3.5 Eyellipse—(See SAE J941e (March, 1977).)

3.6 Two- and Three-Dimensional Devices—(See SAE J826b (January, 1974).)

3.7 Head Position Contour—(See SAE J1052 (August, 1974).)

3.8 Head Contour Locator Line—Fixed Seat—(See SAE J1052 (August, 1974).)

3.9 Eyellipse and Head Contour Locator Line—(See SAE J941e (March, 1977).)

3.10 T-Point—Any point on the above 3.8 Head Contour Locator Line—Fixed Seat.

3.11 H-Point—The H-point is the pivot center of the torso and thigh on the two- or three-dimensional devices used in defining and measuring vehicle seating accommodation. (See SAE J826b (January, 1974).)

3.11.1 DESIGN H-POINT—The design H-point is located on a drawing by the H-point on the two-dimensional drafting template placed in any designated seating position. If the designated seating position can be adjusted, the path of the design H-point through the full seat adjustment establishes the design H-point travel line and can be dimensionally described by coordinates relative to the three-dimensional reference system.

3.11.2 SEATING REFERENCE POINT (SgRP)—The manufacturer's design reference point is a unique design H-point which:

a) Establishes the rearmost normal design driving or riding position of each designated seating position which includes consideration of all modes of adjustment, horizontal, vertical and tilt, in a vehicle;

b) Has X, Y, Z coordinates established relative to the designed vehicle structure;

c) Simulates the position of the pivot center of the human torso and thigh, and

d) Is the reference point employed to position the two-dimensional drafting template with the 95th percentile leg described in SAE Recommended Practice "Devices for Use in Defining and Measuring Vehicle Seating Accommodation—SAE J826b (January, 1974).

3.11.3 ACTUAL H-POINT—The actual H-point is located in an actual vehicle by the H-point on the three-dimensional H-point machine with the 95th percentile leg installed in any designated seating position per instructions in SAE J826b (January, 1974) and can be dimensionally located by coordinates relative to the three-dimensional reference system.

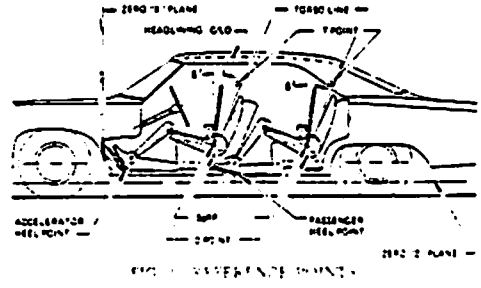
3.12 Designated Seating Position—Any plan view location intended by the manufacturer to provide seating accommodation while the vehicle is in motion, for a person at least as large as a 5th percentile adult female, except auxiliary seating accommodations such as temporary or folding jump seats.

3.13 D-Point—D-point is the lowest point on the buttocks contour of the seated two- or three-dimensional device in the installed position.

3.14 Cowl Point—Cowl point is a point on the rearmost exposed cowl sheet metal on the zero "Y" plane. In the case of a hidden wiper system, the point is on the windshield glazing at the height of the cowl panel, including molding on the zero "Y" plane. (See Fig. 19.)

3.15 Deck Point—Deck point is a point on the foremost exposed upper back panel or tailgate sheet metal on the zero "Y" plane. In the case of a deck lid extending to the rear window, the point is on the rear window glazing or rear window glazing molding at the height of the deck lid panel, including moldings, on the zero "Y" plane. (See Fig. 19.)

3.16 Accelerator Heel Point (AHP)—Accelerator heel point is located at the intersection of the two- or three-dimensional device heel point and the depressed floor covering with the shoe on the undepressed accelerator pedal and the foot angle at a minimum of 87 deg. For vehicles with SgRP to heel (H30) greater than 18 in, the accelerator pedal may be depressed as specified by the manufacturer. If the depressed pedal is used, the foot must be flat on



APPENDIX B

SAE J1100 (CONT.)

the accelerator pedal.

3.17 Centerline of Occupant (C/LO)—Centerline of occupant is the "Y" coordinate of the H-point and is represented by the centerplane of the occupant or H-point machine in each designated seating position.

3.18 Torso Line—Torso line is the line on the two-dimensional drafting template connecting the shoulder reference point (see SAE J826b (January, 1974)) and the H-point (corresponds to centerline of headroom probe in full back position of H-point machine).

3.19 Front of Dash—Front of dash represents a vertical tangent to the foremost predominating surface of the dash panel at the centerline of driver, disregarding flanges and small localized formations. The dash panel is usually the vertical extension of the toe panel.

3.20 Undepressed Floor Covering—Undepressed floor covering is the surface of the floor covering at a designated point in the vehicle without any load applied to the covering.

3.21 Depressed Floor Covering—Depressed floor covering is the surface of the floor covering at a designated point in the vehicle with a load applied to the covering as specified by the manufacturer.

3.22 Daylight Opening (DLO)—Daylight opening is the maximum unobstructed opening through any glass aperture, including reveal or garnish moldings adjoining the glass, according to a given direction or projection. If not specified, the dimension will be the horizontal projection.

3.23 Thigh Centerline—Line connecting H-point and knee pivot point. (See SAE J826b (January, 1974).)

3.24 Leg Centerline—Line connecting knee pivot point and ankle pivot point. (See SAE J826b (January, 1974).)

3.25 Normal Top of Frame—Truck—The longest normal surface of the top flange of the truck frame within the wheelbase.

3.26 Cargo Floor—The surface for supporting cargo including ribs or undepressed floor covering.

4. Fiducial Mark Dimensions

4.1 Fiducial Mark—Number 1

L54—"X" coordinate
W21—"Y" coordinate
H81—"Z" coordinate
H161—Height "Z" coordinate to ground at curb weight
H163—Height "Z" coordinate to ground

4.2 Fiducial Mark—Number 2

L55—"X" coordinate
W22—"Y" coordinate
H82—"Z" coordinate
H162—Height "Z" coordinate to ground at curb weight
H164—Height "Z" coordinate to ground

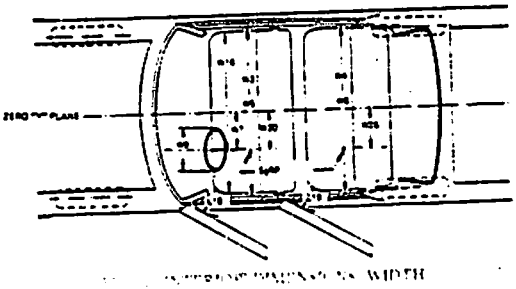
4.3 Fiducial Mark—Number 3

L56—"X" coordinate
W23—"Y" coordinate
H83—"Z" coordinate
H167—Height "Z" coordinate to ground at curb weight
H165—Height "Z" coordinate to ground

5. Interior Dimensions

5.1 Front Seat Compartment Dimensions (Driver unless otherwise specified)

PD1—Passenger distribution—front
L31—SgRP—front, "X" coordinate
W20—SgRP—front, "Y" coordinate
H70—SgRP—front, "Z" coordinate
L37—Rearmost design H-point—front, "X" coordinate
W24—Rearmost design H-point—front, "Y" coordinate
H91—Rearmost design H-point—front, "Z" coordinate
H5—SgRP—front to ground. The dimension measured vertically from the SgRP to ground.



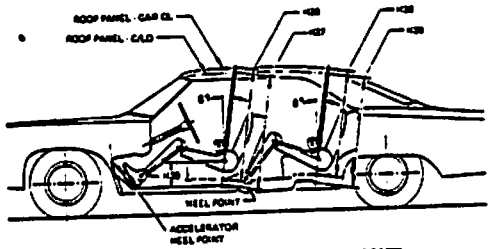


FIG. 3—INTERIOR DIMENSIONS, HEIGHT

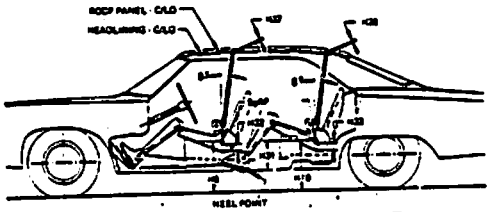


FIG. 4—INTERIOR DIMENSIONS, HEIGHT

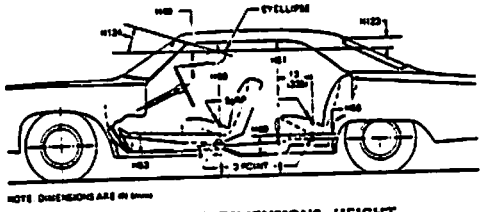


FIG. 5—INTERIOR DIMENSIONS, HEIGHT

L53—SgRP—front to heel. The dimension measured horizontally from the SgRP—front to the accelerator heel point.

H30—SgRP—front to heel. The dimension measured vertically from the SgRP—front to the accelerator heel point.

L17—Design H-point—front travel. The dimension measured horizontally between the design H-point—front in the foremost and rearmost seat track positions.

L23—Normal driving and riding seat track level. The dimension measured horizontally between a point on the design H-point travel line from the SgRP to the displaced point on the design H-point travel line with the seat moved to the foremost seat position, but not to include seat track travel used for purposes other than normal driving and riding positions.

H58—Design H-point rise. The dimension measured vertically between the design H-point—front in the foremost and rearmost seat track positions.

H59—Normal driving and riding design H-point rise. The dimension measured vertically between the SgRP and the foremost design H-point in the normal driving and riding seat track travel (L23) position.

H79—SgRP differential, side to center. The dimension measured vertically from the driver SgRP to the center occupant SgRP.

H5J—D-point—front to heel. The vertical dimension from the D-point to the accelerator heel point.

H56—D-point—front to floor. The minimum dimension measured from the D-point—front to the underbody sheet metal at the SgRP "Y" plane.

H54—D-point—center passenger—front to tunnel. The minimum dimension measured from the D-point—front to the underbody sheet metal at the zero "Y" plane.

H65—D-point—front—differential, side to center. The dimension measured vertically from the driver D-point to the center occupant D-point.

H61—Effective head room—front. The dimension measured along a line 8 deg rear of vertical from the SgRP—front to the headlining, plus 4.0 in (102 mm).

H37—Headlining to roof panel—front. The dimension measured from the intersection of the headlining and the extended effective head room line [illegible] sheet metal.

APPENDIX B

SAE J1100 (CONT.)

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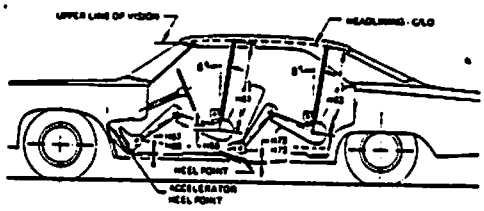


FIG. 6—INTERIOR DIMENSIONS, HEIGHT

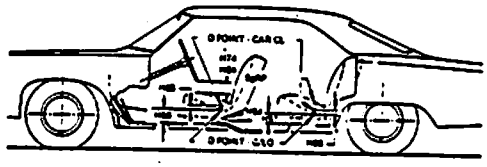


FIG. 7—INTERIOR DIMENSIONS, HEIGHT

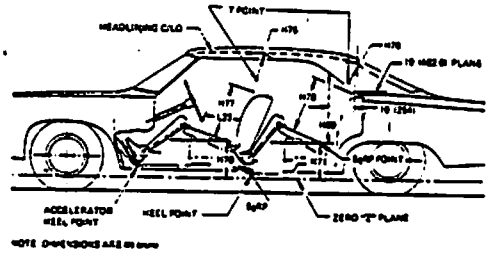


FIG. 8—INTERIOR DIMENSIONS, HEIGHT

H75—Effective T-point head room—front. The minimum radius from the T-point to the headlining plus 30 in (762 mm).

L38—Driver head clearance to windshield garnish. The minimum distance measured between the SAE 95th percentile driver head position contour—side view and the windshield garnish molding, weatherstrip or glazing surface on the Y-plane intersecting the rear view top of contour.

W32—Driver head clearance to roof rail garnish. The minimum distance measured between the SAE 95th percentile driver head position contour—rear view and the roof rail garnish molding, weatherstrip or glazing surface on the X-plane intersecting the side view top of contour.

H35—Driver head clearance to headlining The vertical distance measured between the top of the 95th percentile driver head position contour and the interior surface.

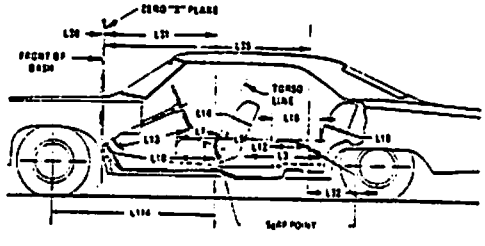


FIG 9—INTERIOR DIMENSIONS, LENGTH

W38—Driver hea clearance—minimum. The minimum distance measured between the SAE 95th percentile driver head position contour—rear view and the interior surface on the X-plane intersecting the side view top of contour.

H26—Interior body height—front at zero "Y" plane. The dimension measured along a line 8 deg rear of vertical which lies on the zero "Y" plane and passes through the SgRP—front "X" and "Z" coordinate from the nearest obstruction or underbody sheet metal to the roof sheet metal.

H27—Interior body height—front at SgRP "Y" plane. The dimension measured along a line 8 deg rear of vertical which passes through the SgRP—front from the nearest obstruction or underbody sheet metal to the roof sheet metal.

L34—Maximum effective leg room—accelerator. The dimension measured along a line from the ankle pivot center to the SgRP—front plus 10.0 in (254 mm) measured with right foot on the undepressed accelerator pedal. For vehicles with SgRP to heel (H30) greater than 18 in, the accelerator pedal may be depressed as specified by the manufacturer. If the accelerator is depressed, the manufacturer shall place foot flat on pedal and note the depression of the pedal.

H67—Floor covering thickness—undepressed—front. The dimension measured vertically from the surface of the undepressed floor covering to the underbody sheet metal at the accelerator heel point.

H68—Floor covering thickness—depressed—front. The dimension measured vertically from the accelerator heel point to the underbody sheet metal.

L40—Back angle—front. The angle measured between a vertical line through the SgRP—front and the torso line. If the seatback is adjustable, use the normal driving and riding position specified by the manufacturer.

L42—Hip angle—front. The angle measured between torso line and thigh centerline.

L44—Knee angle—front. The angle measured between thigh centerline and lower leg centerline measured on the right leg.

L46—Foot angle—front. The angle measured between the lower leg centerline and a line tangent to the ball and heel of the bare measured on the right leg. (Reference J826b (January, 1974).)

W2—Shoulder room—front. The minimum dimension measured laterally between the trimmed door or quarter trim surfaces on the "X" plane through the SgRP—front at the height between the belt line and 10.0 in (254 mm) above the SgRP—front, excluding the door assist strap and attaching parts.

W3—Hip room—front. The minimum dimension measured laterally between the trimmed surfaces on the "X" plane through the SgRP—front within 1.0 in (25 mm) below and 3.0 in (76 mm) above the SgRP—front and 3.0 in (76 mm) fore and aft of the SgRP—front.

L114—Front wheel C/L to front SgRP. The horizontal dimension measured between the front wheel centerline and the SgRP.

W300—Engine cover width—left. The maximum dimension measured laterally between the zero "Y" plane and the left side of engine cover, excluding flanges at floor.

W301—Engine cover width—right. The maximum dimension measured laterally between the zero "Y" plane and the right side of the engine cover, excluding flanges at floor.

L308—Engine cover length. The maximum dimension measured horizontally from front of dash to rear of engine cover, excluding the flanges at floor.

H311—Engine cover height. The vertical dimension from accelerator heel point to top of engine cover.

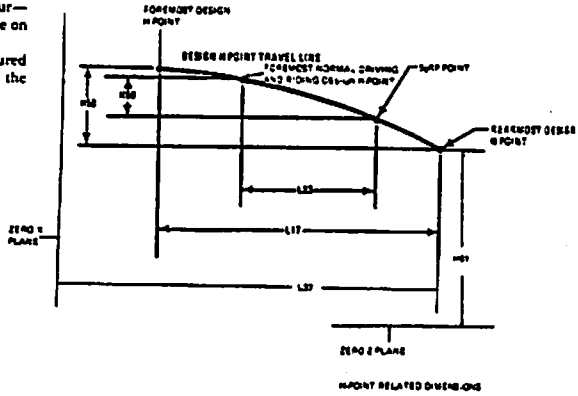


FIG. 9A

APPENDIX B

SAE J1100 (CONT.)

5.2 Second Seat Compartment Dimensions (Left outboard passenger unless otherwise specified)

PD2—Passenger distribution—second

L35—SgRP—second, "X" coordinate.

W25—SgRP—second, "Y" coordinate.

H71—SgRP—second, "Z" coordinate.

H10—SgRP—second to ground. Measured in the same manner as H5.

H31—SgRP—second to heel. The dimension measured vertically from the SgRP—second to the two-dimensional device heel point on the depressed floor covering.

H80—SgRP—differential, side to center—second. The dimension measured vertically from the SgRP—second to the center occupant SgRP—second.

L32—SgRP—second to rear wheel centerline. The dimension measured horizontally from the SgRP—second to the centerline of the rear wheels.

L50—SgRP couple distance. The dimension measured horizontally from the driver SgRP—front to the SgRP—second.

L3—Compartment room—second. The dimension measured horizontally from the back of front seat to the front of the second seatback at a height tangent to the top of the second seat cushion.

H37—D-point—second to floor. The minimum dimension measured from the D-point to the underbody sheet metal at the SgRP "Y" plane.

H35—D-point—center passenger—second to tunnel. The minimum dimension measured from the D-point to the underbody sheet metal at the zero "Y" plane.

H69—D-point to heel point—second. The vertical dimension from the D-point to heel point with the front seat in rearmost position.

H66—D-point—differential, side to center—second. The dimension measured vertically from D-point to the center occupant D-point.

H63—Effective head room—second. The dimension measured along a line 8 deg rear of vertical from the SgRP to the headlining, plus 4.0 in (102 mm).

H38—Headlining to roof panel—second. The dimension measured from the intersection of the headlining and the extended effective head room line normally to the roof sheet metal.

H76—Effective T-point head room—second. Measured in the same manner as H75.

W33—Head clearance to roof rail garnish—second. The minimum distance measured between the SAE 95th percentile head position contour—rear view and the roof rail garnish molding, weatherstrip or glazing surface on the X-plane intersecting the side view top of contour.

H36—Head clearance to headlining—second. The vertical distance measured between the top of the SAE 95th percentile head position contour and the headlining.

W39—Head clearance—minimum—second. The minimum distance measured between the SAE 95th percentile head position contour—rear view and the interior surface of the X-plane intersecting the side view top of contour.

L39—Head clearance to back window garnish. The minimum distance measured between the SAE 95th percentile head position contour—side view and the back window, garnish molding, weatherstrip or glazing surface on the Y-plane intersecting the rear view top of contour.

H28—Interior body height—second at zero "Y" plane. The dimension measured along a line 8 deg rear of vertical which lies on the zero "Y" plane and passes through the SgRP—second "X" and "Z" coordinates, from the underbody sheet metal to the roof sheet metal.

H29—Interior body height—second at SgRP "Y" plane. The dimension measured along a line 8 deg rear of vertical which passes through the SgRP—second from the underbody sheet metal to the roof sheet metal.

L51—Minimum effective leg room—second. The dimension measured along a line from the ankle pivot center to the SgRP—second plus 10.0 in (254 mm).

L48—Knee clearance—second. The minimum dimension measured from the knee pivot center to the back of front seatback minus 2.0 in (51 mm).

H72—Floor covering thickness—undepressed—second. The dimension measured vertically from the surface of the undepressed floor covering to the underbody sheet metal at the heel point.

H73—Floor covering—depressed—second. The dimension measured vertically from the heel point to the underbody sheet metal.

L41—Back angle—second. The angle measured between a vertical line through the SgRP—second and the torso line.

L43—Hip angle—second. The angle measured between torso line and thigh centerline.

L45—Knee angle—second. The angle measured between thigh centerline and lower leg centerline.

L47—Foot angle—second. The angle measured between the lower leg centerline and a line tangent to the ball and heel of the three-dimensional devices bare foot flesh line. (Reference J826b (January, 1974).)

W4—Shoulder room—second. The minimum dimension measured laterally between the trimmed door or quarter trim surfaces in the "X" plane through SgRP—second, excluding the door assist strap and attaching parts.

W6—Hip room—second. Measured in the same manner as W5.

5.3 Third Seat Compartment Dimensions (Left outboard forward facing passenger unless otherwise specified)

PD3—Passenger distribution—third.

SD1—Seat facing direction—third.

L36—SgRP—third "X" coordinate.

W26—SgRP—third "Y" coordinate.

H88—SgRP—third "Z" coordinate.

H85—SgRP—third to ground.

H87—SgRP—third to heel point.

L85—SgRP couple distance—third. The dimension measured horizontally from the SgRP—second to the SgRP—third.

L92—Compartment room—third. The horizontal dimension from the back of the second seat to the front of the third seatback, at a height tangent to the top of the third seat cushion. For rear-facing third seat, measure to the closure.

H90—D-point—third to floor. Measured in the same manner as H37.

H67—D-point to heel point—third. Measured in the same manner as H60.

H86—Effective head room—third. The dimension measured along a line 8 deg from the SgRP—third to the headlining rear of vertical plus a constant of 4.0 in (102 mm).

H84—Headlining to roof—third. Measured in the same manner as H38.

H89—Effective T-point head room—third. Measured in the same manner as H75.

W34—Head clearance to roof rail garnish—third. The minimum distance measured between the SAE 95th percentile head position contour—rear view and the roof rail garnish molding, weatherstrip or glazing surface on the X-plane intersecting the side view top of contour.

H39—Head clearance to headlining—third. The vertical distance measured between the top of the SAE 95th percentile head position contour and the headlining.

W40—Head clearance—minimum—third. The minimum distance measured between the SAE 95th percentile head position contour—rear view and the vehicle interior on the X-plane intersecting the side view top of contour.

L86—Effective leg room—third. The dimension measured along a line from the ankle pivot center to the SgRP—third plus 10.0 in (254 mm).

L87—Knee clearance—third. The minimum dimension from the knee pivot center to the back of second seatback minus a constant of 2.0 in (51 mm). With rear-facing third seat, dimension is measured to closure.

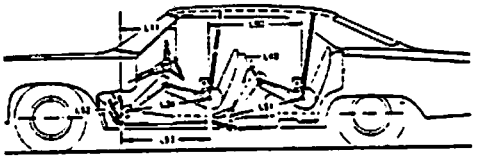


FIG. 10—INTERIOR DIMENSIONS, LENGTH

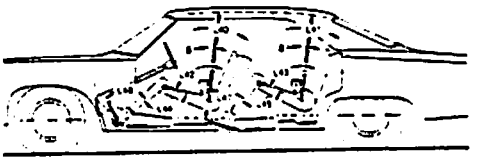
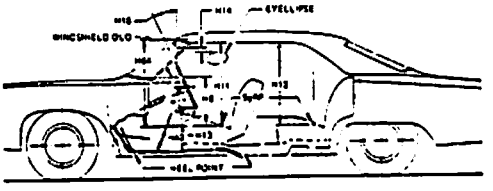


FIG. 11—INTERIOR DIMENSIONS, LENGTH



34.48

L88—Back angle—third. Measured in the same manner as L41.
L89—Hip angle—third. Measured in the same manner as L43.
L90—Knee angle—third. Measured in the same manner as L45.
L91—Foot angle—third. Measured in the same manner as L47.
W35—Shoulder room—third. Measured in the same manner as W4.
W36—Hip room—third. Measured in the same manner as W5.

5.4 Seat, Entrance and Exit Dimensions

W16—Cushion width—front. The maximum dimension measured laterally across the trimmed width of the front seat cushion.

H32—Cushion deflection—front. The dimension measured vertically from the free to the depressed front seat cushion (see SAE J826b (January, 1974)) on the SgRP—front "Y" plane.

H33—Cushion deflection—second. The dimension measured vertically from the free to the depressed second seat cushion (see SAE J826b (January, 1974)) SgRP—second "Y" plane.

H34—Cushion deflection—third. The dimension measured vertically from the free to the depressed third seat cushion (see SAE J826b (January, 1974)) on the SgRP—third "Y" plane.

L9—Cushion depth—front. The dimension measured horizontally from the front edge of the cushion to an "X" plane tangent to the undepressed seatback at a height tangent to the top of the seat cushion.

L16—Cushion depth—second. The dimension measured horizontally from the front edge of the cushion to an "X" plane tangent to the undepressed seatback at a height tangent to the top of the seat cushion.

L21—Cushion depth—third. The dimension measured horizontally from the front edge of the cushion to an "X" plane tangent to the undepressed seatback at a height tangent to the seat cushion.

L10—Effective cushion depth—front. The dimension measured horizontally from the front edge of the cushion to the SgRP.

L12—Effective cushion depth—second. The dimension measured horizontally from the front edge of the cushion to the SgRP.

L24—Effective cushion depth—third. The dimension measured horizontally from the front edge of the cushion to the SgRP.

H77—Seatback height—front. A dimension measured along the torso line from the SgRP—front to a line normal to the torso line and tangent to the top of the seatback soft trim or head restraint in the stowed position.

H78—Seatback height—second. A dimension measured along the torso line from the SgRP—second seat to a line normal to the torso line and tangent to the top of the seatback soft trim.

H92—Seatback height—third. A dimension measured along the torso line from the SgRP—third seat to a line normal to the torso line and tangent to the top of the seatback soft trim.

L14—Seatback thickness—front. The maximum dimension measured through the front seatback, excluding bolsters.

L15—Seatback thickness—second. The maximum dimension measured through the second seatback, excluding bolsters.

L20—Seatback thickness—third. The maximum dimension measured through the third seatback, excluding bolsters.

H74—Steering wheel to cushion. The minimum dimension measured between the steering wheel, with the front wheels in the straight ahead position, and the undepressed seat cushion on the steering wheel center "Y" plane.

H94—Steering wheel to cushion—minimum. The minimum dimension measured between the steering wheel, with the steering wheel turned to its lower position, and the undepressed seat cushion on the steering wheel center "Y" plane.

L22—Steering wheel to seatback. The minimum distance measured between the steering wheel, in its straight ahead position, and the undepressed seatback on the steering wheel center "Y" plane.

H40—Steering wheel to accelerator heel point. The minimum vertical dimension measured from the lowest edge of the steering wheel, in the straight ahead position, to the accelerator heel point.

H11—Entrance height—front. The dimension measured vertically from the SgRP—front "X" plane to the upper trimmed body opening at SgRP station.

H12—Entrance height—second. The dimension measured vertically from the SgRP—second to the upper trimmed body opening at a section 13 in (330 mm) forward of the SgRP.

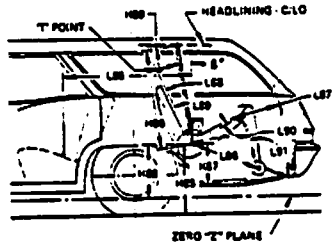
H50—Upper body opening to ground—front. The dimension measured vertically from the trimmed body opening to the ground on the SgRP—front "X" plane.

H51—Upper body opening to ground—second. The dimension measured vertically from the trimmed body opening to the ground on the "X" plane 13.0 in (330 mm) forward of the SgRP—second.

H69—Exit height—second. The dimension measured vertically from the SgRP—second to the upper trimmed body opening 10 in (254 mm) forward of the intersection of the trimmed body opening and a horizontal plane 19 in (483 mm) above the SgRP—second seat.

H115—Step height—front. The dimension will be to the top of the sill plate bead at the center of the lower door opening. If there is a step, the dimension measured vertically from the ground to the first step entering the vehicle.

H116—Step height—second. The dimension will be to the top of the sill



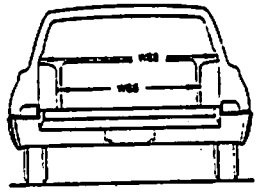
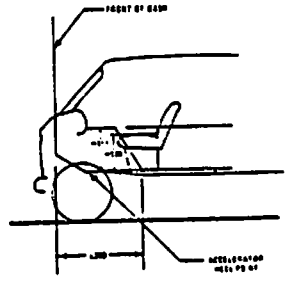
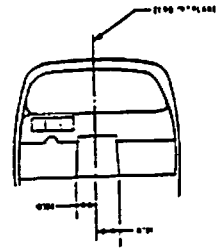


FIG. 13—INTERIOR DIMENSIONS, STATION WAGON THIRD SEAT





APPENDIX B

SAE J1100 (CONT.)

plate bead at the center of the lower door opening. If there is a step, the dimension measured vertically from the ground to the first step entering the vehicle.

H130—Step height—front (curb weight). The dimension will be to the top of the sill plate bead at the center of the lower door opening. If there is a step, the dimension measured vertically from the ground to the first step entering the vehicle.

H131—Step height—second (curb weight). The dimension will be to the top of the sill plate bead at the center of the lower door opening. If there is a step, the dimension measured vertically from the ground to the first step entering the vehicle.

H326—Seat cushion height—front. The vertical dimension from the point of intersection of the horizontal tangent to the top of the seat cushion and the vertical tangent to the front of the seat cushion, to accelerator heel point.

H445—Second step height—front. The vertical dimension from the first step entering vehicle to second step. If there is no second step, the dimension will be to the top of the sill plate bead at the center of the lower door opening.

H446—Second step height—second. The vertical dimension from the first step entering vehicle to second step. If there is no second step, the dimension will be to the top of the sill plate bead at the center of the lower door opening.

L18—Entrance foot clearance—front. The minimum dimension measured horizontally between the trimmed front seat cushion frame or supporting structure and the trimmed door or pillar at a height between the sill plate bead and 4.0 in (102 mm) above the bead with the door in the maximum hold-open position.

L19—Entrance foot clearance—second.

Four-Door Models—Same as L18.

Two-Door Models—The minimum dimension measured horizontally between the trimmed front seat with front seatback tilted forward, and the trimmed lock pillar, trimmed quarter panel, or trimmed rear seat cushion at a height between the sill plate bead and 4.0 in (102 mm) above the bead with the door in the maximum hold-open position.

5.3 Vision and Control Dimensions (Driver unless otherwise specified)

H6—SgRP—front to windshield lower DLO. The dimension measured vertically from the SgRP—front to the windshield lower or hood molding DLO at C LO.

H64—SgRP—front to windshield upper DLO. The dimension measured vertically from the SgRP—front to the windshield upper DLO at C LO.

H25—Belt height—front. The dimension measured vertically from the SgRP—front to the bottom of the side window DLO at SgRP "X" plane.

H123—Evellipse to backlight upper opening. The vertical distance from a horizontal plane tangent to the top of the SAE 95th percentile evellipse to the highest horizontal line of vision through the backlight upper trimmed body opening at zero "Y" plane.

H124—Vision angle to windshield upper DLO. The angle from the horizontal to a plane tangent to the top of the SAE 95th percentile evellipse and to the upper trimmed body opening measured at C LO.

H49—Evellipse to top of steering wheel. The dimension measured vertically from a horizontal plane tangent to the bottom of the SAE 95th percentile evellipse to the top of the steering wheel, in the straight ahead position. A minus (−) dimension indicates the bottom of the evellipse is located below the top of the steering wheel.

H14—Evellipse to bottom of inside rear view mirror. The dimension measured vertically from a horizontal plane tangent to the top of the SAE 95th percentile evellipse to the bottom edge of rear view mirror frame in the lowest usable position of adjustment. A minus (−) dimension indicates the mirror is located below the horizontal plane. If the mirror is located on the instrument panel, the dimension will be measured from the top of the mirror frame in the highest usable position to the bottom of SAE 95th percentile evellipse.)

H9—Steering wheel maximum outside diameter. Define if other than round.

H18—Steering wheel angle. The angle measured from a vertical to the surface plane of the steering wheel.

H7—Steering wheel center "Y" coordinate. The steering column center is the point located by the intersection of the steering column axis with the plane tangent to the upper surface of the steering wheel rim.

L11—Accelerator heel point to steering wheel center. The dimension measured horizontally from the AHP to the intersection of the steering column centerline and a plane tangent to the upper surface of the steering wheel rim.

H17—Accelerator heel point to the steering wheel center. The dimension measured vertically from the AHP—front to the intersection of the steering column centerline to a plane tangent to the upper surface of the steering wheel rim.

Note: The steering column center is used instead of the wheel center to eliminate error that could occur with a non-symmetrical steering wheel.

H13—Steering wheel to centerline of thigh. The minimum dimension [illegible] steering wheel with [illegible] the tangent

L7—Steering wheel torso clearance. The minimum dimension measured in the side view from the rearmost edge of the steering wheel, with front wheels in the straight ahead position, to the torso line.

H122—Windshield slope angle. The angle between the vertical reference line and a chord of the windshield are running from the lower DLO to the upper DLO at the vehicle zero "Y" plane. In the case of wrap over glass, the angle to be measured will be formed by a chord 18.0 in (457 mm) long, drawn from the lower DLO to the intersecting point on the windshield.

H121—Backlight slope angle. The angle between the vertical reference line and the surface of backlight at vehicle zero "Y" plane. For curve backlight, the angle is to chord of backlight are from lower DLO to upper DLO.

W122—Tumble-home.

Straight Side Glass—The angle measured from a vertical to the outside surface of the front door glass at the SgRP "X" plane.

Curved Side Glass—The angle measured from a vertical to a chord extending from the upper DLO to the lower DLO, at the outside surface of the front door glass at the front SgRP "X" plane.

W41—Side glass radius. Specify location.

H30—Steering wheel to door clearance. The minimum dimension from the steering wheel rim to the nearest body obstruction. Specify location.

L13—Brake pedal knee clearance. The minimum dimension measured in side view from the lower edge of the steering wheel rim to the centerline of the brake pedal face with pedals in the free position.

L52—Brake pedal to accelerator. The minimum dimension measured in the side view from the center of the brake pedal face to the center of the accelerator pedal face with pedals in free position. A minus (−) dimension indicates that the brake pedal is lower than the accelerator pedal.

L324—SgRP to windshield upper DLO. The horizontal dimension from the SgRP to the point of tangency of the horizontal line of vision (described in dimension H64) to body upper structure.

6. *Exterior Dimensions*

6.1 Exterior Width Dimensions

W101—Tread—front. The dimension measured between the tire centerlines at the ground.

W102—Tread—rear. The dimension measured between the tire centerlines at the ground. In case of dual wheels, the dimension will be measured to the centerline of tire and wheel assemblies.

W103—Vehicle width. The maximum dimension measured between the widest point on the vehicle, excluding exterior mirrors, flexible mud flaps, marker lamps, but including bumpers, moldings, sheet metal protrusions or dual wheels, if standard equipment.

H114—Cowl point to ground. Measured at zero "Y" plane.

W116—Body width—maximum. The dimension measured between the widest point on the body, excluding mirrors, hardware and applied moldings, but including fenders when integral with body.

W117—Body width at SgRP—front. The dimension measured laterally between the widest points on the body at the SgRP—front, excluding door handles, applied moldings, or appliques.

W106—Front fender width. The dimension measured between the widest points at the front wheel centerline, excluding moldings.

W107—Rear fender width. The dimension measured between the widest points at the rear wheel centerline, excluding moldings.

W120—Vehicle width—front doors open. The dimension measured between the widest point on the front doors in maximum hold-open position.

W121—Vehicle width—rear doors open. The dimension measured between the widest point on the rear doors in maximum hold-open position. For vehicles with a rear door on only one side, this dimension is to the zero "Y" plane.

W409—Vehicle width—tail doors open. The dimension measured between the widest point on the tail doors in the maximum hold-open position.

W410—Outside mirror width. The dimension measured between the widest point on the outside mirrors. The standard right and left mirror adjusted for normal driving will be shown unless otherwise noted. When only one outside mirror is standard, the dimension will be to the zero "Y" plane.

6.2 Exterior Height Dimensions

H101—Vehicle height. The dimension measured vertically from the highest point on the vehicle body to ground.

H158—Roof thickness. The dimension measured vertically from the top of the roof to the upper DLO at the 50.0 in (1270 mm), "X" plane SgRP station, or less, if DLO obscured.

H159—Side glass height. The dimension measured vertically between the upper and lower DLO at the 50.0 in (1270 mm), "X" plane SgRP station, or less, if DLO obscured.

H160—Body thickness. The dimension measured vertically from the lower DLO to the bottom of the rocker panel, excluding any flanges, at the 50.0 in (1270 mm), "X" plane SgRP station, or less, unless [illegible] specified.

H126—[illegible] "Z" plane [illegible] ground—front. The [illegible]

APPENDIX B

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34.50

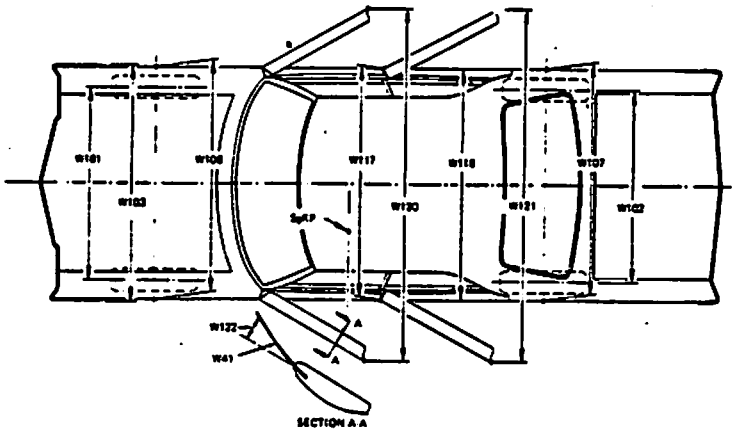

FIG. 14—EXTERIOR DIMENSIONS, WIDTH

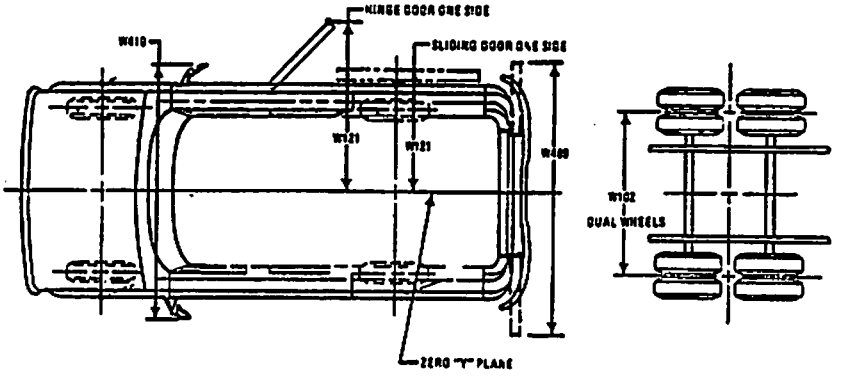

FIG. 15—EXTERIOR DIMENSIONS, WIDTH—TRUCK

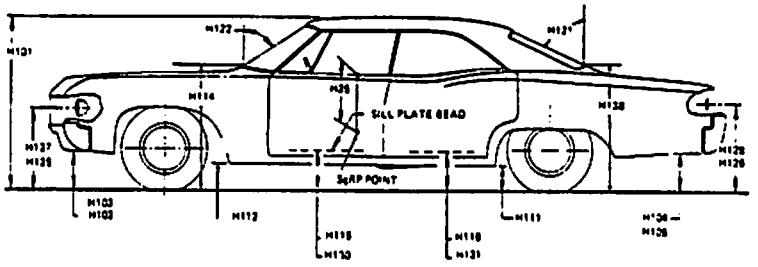

FIG. 16—EXTERIOR DIMENSIONS HEIGHT

APPENDIX B

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34.51

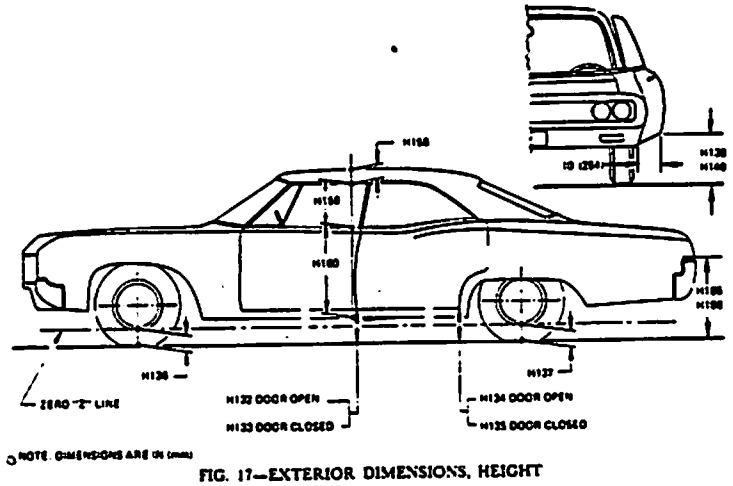


FIG. 17—EXTERIOR DIMENSIONS, HEIGHT

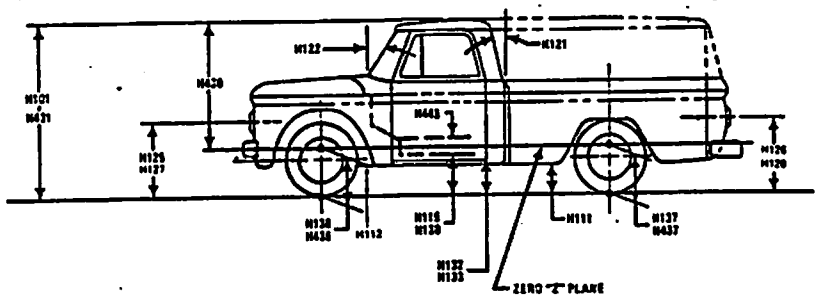


FIG. 18—EXTERIOR DIMENSIONS, HEIGHT—TRUCK

H137—Zero "Z" plane to ground—rear. The dimension measured vertically at rear wheel centerline to ground. In the case of dual rear axles, the dimension will be taken at centerline between the rear wheels.

H111—Rocker panel—rear to ground. The dimension measured vertically from the bottom of the rocker or side quarter panel at the front of the rear wheel opening, excluding flanges, to ground.

H112—Rocker panel—front to ground. The dimension measured vertically from the foremost point on the bottom of the rocker panel, excluding flanges, to ground.

H132—Bottom of door open—front to ground. The dimension measured vertically from the bottom outside corner of the door on the lock pillar side, in maximum hold-open position, to ground.

H133—Bottom of door closed—front to ground. The dimension measured vertically from the bottom outside corner of the door on the lock pillar side, in maximum closed position, to ground.

H134—Bottom of door open—rear to ground. The dimension measured vertically from the bottom outside corner of the door on the lock pillar side, in maximum hold-open position, to ground.

H135—Bottom of door closed—rear to ground. The dimension measured vertically from the bottom outside corner of the door on the lock pillar side, in maximum closed position, to ground.

H138—Deck point to ground. Measured at zero "Y" plane.

H139—Bottom of door ajar, front to ground. The dimension measured vertically from the bottom outside corner of the door on the lock pillar side, open 10 in (254 mm) to the ground.

H140—Bottom of door ajar—rear to ground. The dimension measured vertically from the bottom outside corner of the door on the lock pillar side, open 10 in (254 mm) to ground.

H196—Liftover height. The dimension measured vertically from the luggage compartment lower opening at the zero "Y" plane to ground.

H196—Liftover height—curb weight. The dimension measured vertically from the luggage compartment lower opening at the zero "Y" plane to ground.

H125—Headlamp to ground. The dimension measured vertically from the centerline of the lowest headlamp lens to ground.

H126—Taillamp to ground. The dimension measured vertically from the centerline of the upper bulb to ground.

H127—Headlamp to ground—curb weight. The dimension measured vertically from the centerline of the lowest headlamp lens to ground.

H128—Taillamp to ground—curb weight. The dimension measured vertically from the centerline of the upper bulb to ground.

H401—Maximum overall height—tilt cab servicing. The vertical dimension from the highest point on the cab to ground, including exhaust outlet or other attached components, measured at the point of maximum height during tilting of the cab.

H438—Body height. The "Z" coordinate of highest point of roof.

H431—Vehicle height (curb weight). The dimension measured vertically from the highest point on the vehicle body to ground.

H436—Zero "Z" plane to ground—front (curb weight). The dimension measured vertically at front wheel centerline to ground.

H437—Zero "Z" plane to ground—rear (curb weight). The dimension measured vertically at rear wheel centerline to ground. In the case of dual rear axles, the dimension will be taken at centerline between the rear wheels.

6.3 Exterior Length Dimensions

L101—Wheelbase (WB). The dimension measured longitudinally between front and rear wheel centerlines. In case of dual rear axles, the dimension shall be to the midpoint of the centerlines of the rear wheels.

L101—Overhang—front. The dimension measured longitudinally from the

34.52

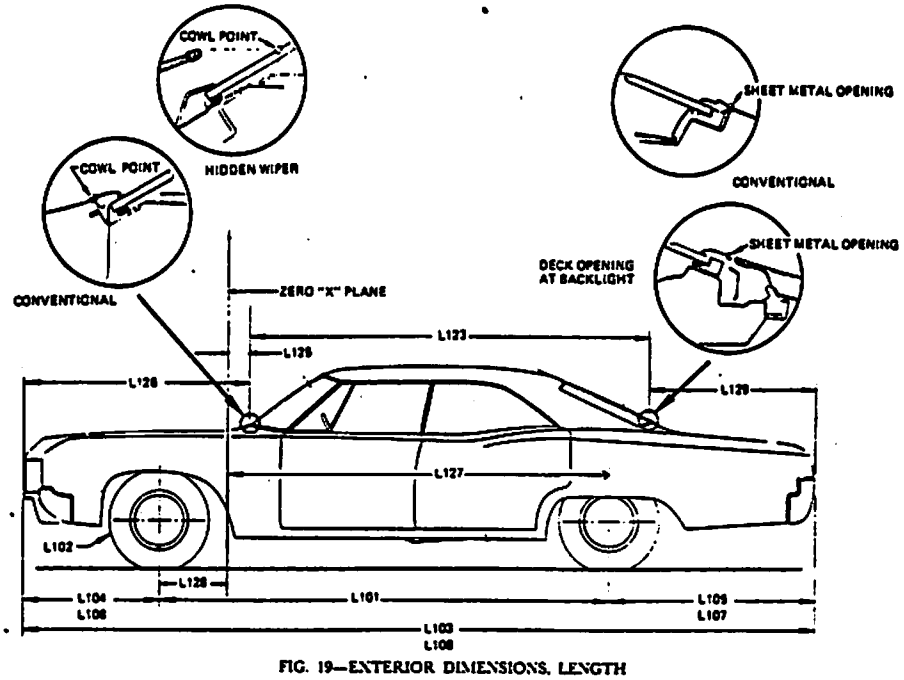


FIG. 19—EXTERIOR DIMENSIONS, LENGTH

centerline of the front wheels to the foremost point on the vehicle, including bumper, bumper guards, tow hooks and or rub strips, if standard equipment.

L106—Overhang—front—RPO. This dimension is measured the same as L104 except all RPO items are included.

L105—Overhang—rear. The dimension measured longitudinally from the centerline of the rear wheels; or in the case of dual rear axles, the dimension shall be the midpoint of the centerlines of the rear wheels, to the rearmost point on the vehicle, including rear bumpers, bumper guards, tow hooks and rub strips, if standard equipment.

L107—Overhang—rear—RPO. This dimension is measured the same as L105 except all RPO items are included.

L103—Vehicle length. The maximum dimension measured longitudinally between the foremost point and the rearmost point on the vehicle, including bumper, bumper guards, tow hooks and or rub strips, if standard equipment.

L108—Vehicle length—RPO. This dimension is measured the same as L103 except all RPO items are included.

L126—Front end length. The dimension measured longitudinally from the cowl point to the foremost point on the vehicle at the zero "Y" plane, excluding ornamentation or bumpers. In cases where bumpers and/or grills are integrated with the profile, measurement is made at the foremost point of front end contour.

L123—Upper structure length. The dimension measured longitudinally from the cowl point to the deck point.

L129—Rear end length. The dimension measured longitudinally from the deck point to the rearmost visible point of the body sheet metal at the zero "Y" plane, excluding ornamentation or bumpers.

L128—Front wheel centerline "X" coordinate.

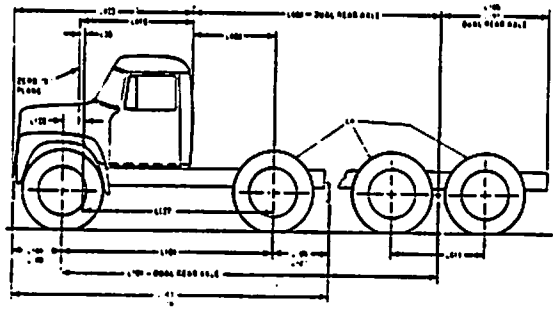
L127—Rear wheel centerline "X" coordinate. In the case of dual rear axles, the coordinate shall be the midpoint of the distance between the rear axle centerlines.

L125—Cowl point "X" coordinate.

L30—Front of dash "X" coordinate. A minus (−) dimension indicates actual front of dash is forward of the zero "X" plane.

L403—Front of bumper to back of cab (BBC). A horizontal dimension from the front of the front bumper to the back of cab at zero "Y" plane.

L404—Cab to rear axle (CA). A horizontal dimension from the rear of the



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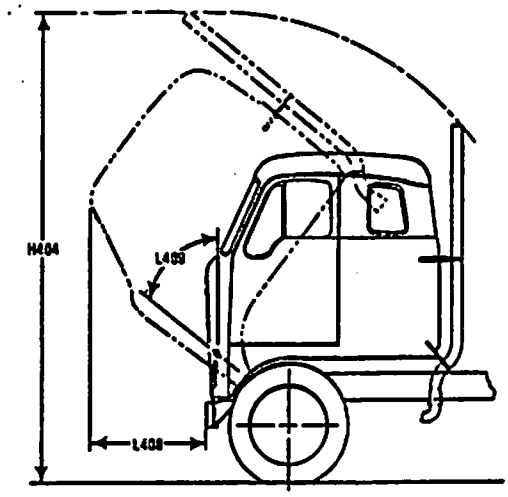

FIG. 21—CAB SERVICING DIMENSIONS

cab to the centerline of the rear axle. In the case of dual rear axles, the dimension shall be to their midpoint.

L408—Front bumper to cab—tilt cab servicing position. The horizontal dimension from the front of bumper to the foremost point of the cab, measured with the cab in the maximum servicing tilt position.

L409—Cab servicing tilt angle. The maximum angle of cab tilt for servicing, measured from a vertical line.

L410—Cab length. A longitudinal dimension from front of dash to back of cab at zero "Y" plane.

L411—Dual rear axle spacing. Horizontal dimension from centerline of forward rear axle to centerline of rearward rear axle at the zero "Y" plane.

6.4 Ground Clearance Dimensions

H106—Angle of approach. The angle measured between a line tangent to the front tire static loaded radius arc and the initial point of structural interference forward of the front tire to ground. The limiting structural component shall be designated.

H107—Angle of departure. The angle measured between a line tangent to the rear tire static loaded radius arc and the initial point of structural interference rearward of the rear tire to ground. The limiting component shall be designated.

H147—Ramp breakover angle. The angle measured between two lines tangent to the front and rear tire static loaded radius and intersecting at a point on the underside of the vehicle which defines the largest ramp over which the vehicle can roll.

L102—Tire size. As specified by the manufacturer.

L4—Tire size—rear only if different than front. As specified by manufacturer.

H108—Static load—tire radius—front. Specified by the manufacturer in accordance with Composite Tire Section Standard.

H109—Static load—tire radius—rear. Specified by the manufacturer in accordance with Composite Tire Section Standard.

H102—Front bumper to ground. The minimum dimension measured vertically from the lowest point on the front bumper to ground, including bumper guards, if standard equipment.

H103—Front bumper to ground—curb weight. Measured in the same manner as H102.

H104—Rear bumper to ground. The minimum dimension measured vertically from the lowest point on the rear bumper to ground, including bumper guards, if standard equipment.

H105—Rear bumper to ground—curb weight. Measured in the same manner as H104.

H148—Front suspension to ground. The minimum dimension measured from the front suspension to ground. Specify component.

H149—Oil pan to ground. The minimum dimension measured from sheet metal or drain plug to ground.

H150—Flywheel/converter housing and transmission assembly to ground. The minimum dimension measured from flywheel converter housing transfer case and or transmission assembly to ground.

H151—Frame structure to ground. The minimum dimension measured approximately midway between front and rear axles including cross bars and x-members to ground.

H152—Exhaust system to ground. The minimum dimension measured from the exhaust system to ground. Specify location.

H153—Rear axle differential to ground. The minimum dimension measured from the rear axle differential to ground.

H154—Fuel tank to ground. The minimum dimension measured from sheet metal or drain plug, including supports or straps to ground.

H155—Spare tire well to ground. The minimum dimension measured from the spare tire well or spare tire including supports to ground.

H156—Minimum running ground clearance. The minimum dimension measured from the sprung vehicle to ground. Specify location.

7. Cargo Dimensions

W291—Cargo width—wheelhouse. The minimum dimension measured laterally between the trimmed wheelhousings at floor level. For any vehicle not trimmed, measure the sheet metal.

W203—Rear opening width at floor. The minimum dimension measured laterally between the limiting interferences of the rear opening at floor level.

W204—Rear opening width at belt. The minimum dimension measured laterally between the limiting interferences of the rear opening at belt height or top of pickup box.

W205—Rear opening width above belt. The minimum dimension measured laterally between the limiting interferences of the rear opening above the belt height.

W500—Cargo width at floor. The maximum dimension measured laterally between the limiting interferences at the floor level. This dimension shall include ribs and pillars, but will exclude wheelhouses.

H197—Front seatback to load floor height. The dimension measured vertically from the horizontal tangent to the top of the seatback to the undepressed floor covering.

H198—Second seatback to load floor height. The dimension measured vertically from the second seatback to the undepressed floor covering.

H201—Cargo height. The dimension measured vertically from the top of the undepressed floor covering to the headlining at the rear wheel "X" coordinate on the zero "Y" plane.

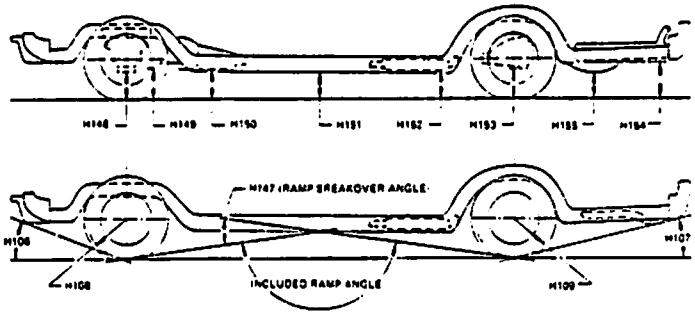

FIG. 22—GROUND CLEARANCE DIMENSIONS

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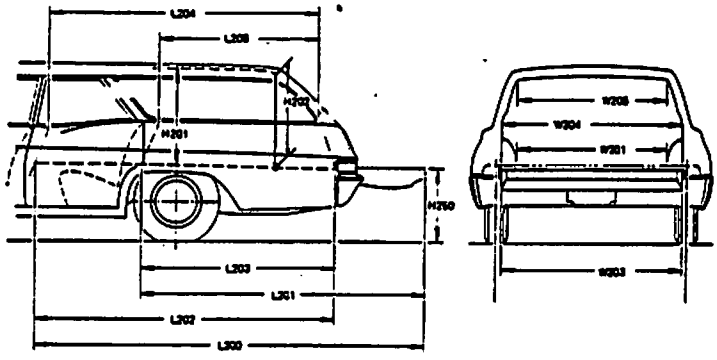


FIG. 23—CARGO SPACE DIMENSIONS, STATION WAGON

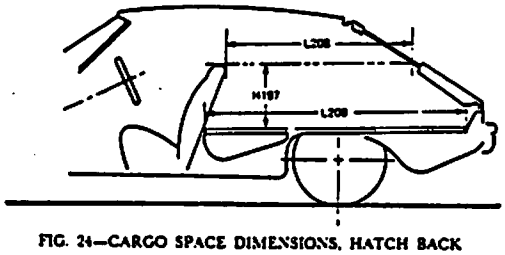


FIG. 24—CARGO SPACE DIMENSIONS, HATCH BACK

H202—Rear opening height. The dimension measured vertically from the top of the undepressed floor covering to the upper trimmed opening on the zero "Y" plane with rear door fully open.

H250—Tailgate to ground (curb weight). The dimension measured vertically from the top of the undepressed floor covering on the lowered tailgate to ground on the zero "Y" plane.

H501—Cargo floor height to ground. A vertical dimension from the cargo floor intersection with closed rear tailgate or cargo door to ground.

H502—Cargo floor height to ground (curb weight). A vertical dimension from the cargo floor intersection with closed rear tailgate or cargo door to ground.

H503—Pickup body height. The minimum dimension measured vertically from the top of cargo floor to the top of the pickup body at the rear wheel "X" coordinate.

H504—Wheelhouse height. The maximum vertical dimension from top of cargo floor to the top of rear wheelhouse.

H505—Maximum cargo height. The maximum vertical dimension rear of the front seat from the cargo floor to roof bow or headlining at the zero "Y" plane.

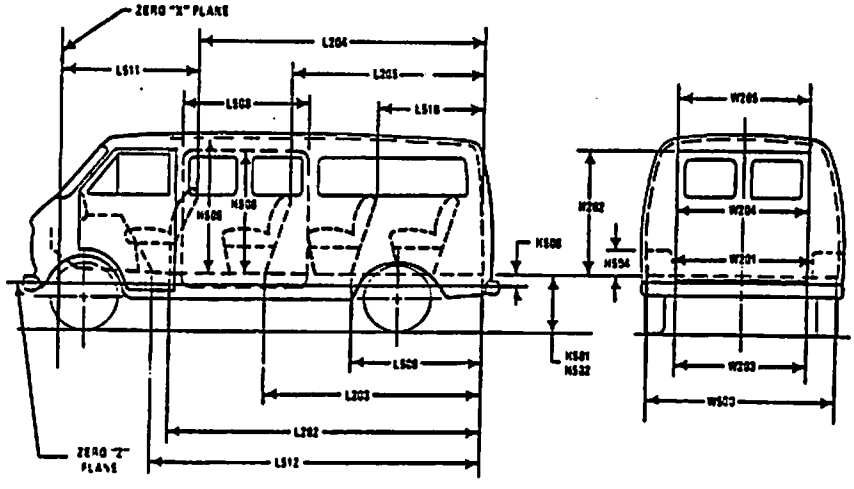
H506—Cargo floor height. The "Z" coordinate of the top of cargo floor.

H507—Frame height. The "Z" coordinate of normal top of frame.

H508—Side cargo door opening height. The dimension measured vertically from the top of the undepressed floor covering or cargo floor to the upper side trimmed opening with side cargo doors open.

L200—Cargo length—open—front. The minimum dimension measured longitudinally from the back of the front seatback at the height of the undepressed floor covering to the rearmost point on the undepressed floor covering on the open tailgate or cargo surface if the rear closure is a conventional door type tailgate, at the zero "Y" plane.

L201—Cargo length—open—second. The dimension measured longitudinally from the back of the second seatback at the height of the undepressed floor covering to the rearmost point on the undepressed floor covering on the



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open tailgate or cargo floor surface if the rear closure is a conventional door type tailgate, at the zero "Y" plane.

L202—Cargo length—closed—front. The minimum dimension measured horizontally from the back of the front seat at the height of the undepressed floor covering to the rearmost point on the undepressed floor covering on the closed tailgate or taildoor for station wagons, trucks and mpv's at the zero "Y" plane.

L203—Cargo length—closed—second. The dimension measured horizontally from the back of the second seat at the height of the undepressed floor covering to the rearmost point on the undepressed floor covering on the closed tailgate or taildoor for station wagons, trucks and mpv's at the zero "Y" plane.

L204—Cargo length at belt—front. The minimum dimension measured horizontally from the back of the front seatback at the seatback top to the foremost normal surface of the closed tailgate or inside surface of the cab backpanel at the height of the belt, on the zero "Y" plane.

L205—Cargo length at belt—second. The minimum dimension measured horizontally from the back of the second seatback at the seatback top to the foremost normal surface of the closed tailgate at the height of the belt, on the zero "Y" plane.

L208—Cargo length at front seatback height—hatchback. The minimum horizontal dimension from the "X" plane tangent to the rearmost surface of the driver's seatback to the inside limiting interference of the hatchback door on the vehicle zero "Y" plane.

L209—Cargo length at floor—front—hatchback. The minimum horizontal dimension measured at floor level from the rear of the front seatback to the normal limiting interference of the hatchback door on the vehicle zero "Y" plane.

L210—Cargo length at second seatback height—hatchback. The minimum dimension measured from the "X" plane tangent to the rearmost surface of the second seatback or the load floor, which is stowed at least ½ the H198 dimension height above the rear load floor, to the rearmost inside limiting interference on the zero "Y" plane.

L211—Cargo length at floor—second—hatchback. The minimum horizontal dimension measured at floor level from the rear of the second seatback or load floor panel to the normal limiting interference of the hatchback door on the vehicle zero "Y" plane.

L304—Cab to pickup body. The horizontal dimension from rear of cab to the front of the pickup body, measured at the zero "Y" plane.

L305—Pickup body length at floor. The dimension measured longitudinally from inside the front of pickup body to the inside of the closed tailgate measured at floor level at the zero "Y" plane.

L306—Pickup body length at top of body. The dimension measured longitudinally from inside front of pickup body to the inside top of the closed tailgate measured at top of the pickup body at the zero "Y" plane.

L307—Cargo body overall length. A longitudinal dimension of the overall cargo body length at the zero "Y" plane.

L308—Side cargo door opening length. The minimum dimension measured longitudinally between the limiting interferences with side cargo doors in maximum hold-open position.

L309—Cargo length—closed—third. The minimum dimension measured horizontally from the back of the third seat (including seat support and restraint system) at the height of the undepressed floor covering on the closed tailgate or taildoor at the zero "Y" plane. For vehicles with more than three seats, specify seat location along with dimension.

L310—Cargo length at belt—third. The minimum dimension measured horizontally from the back of the third seat back to the foremost normal surface of the closed tailgate or taildoor at the height of the belt, on zero "Y" plane. For vehicle with more than three seats, specify seat location along with dimension.

L311—Front cargo surface. The "X" coordinate of the front cargo surface. This surface is the rearmost point of driver's seat, on trucks with closed cargo area and is the front surface of the inside of cargo box on trucks with open cargo area.

L312—Cargo length to engine cover. The dimension measured longitudinally for the rear of the engine cover to the closed tailgate or taildoor at the zero "Y" plane. The dimension shall be at height of the cargo floor surface. If floor surface at engine cover is above cargo floor surface, then length is taken at floor to engine cover intersection height.

8. Luggage Capacity (Passenger car excluding station wagon and hatchback)

V1 Usable Luggage Capacity—Total of volumes of individual pieces of standard luggage set plus H-boxes stowed in the luggage compartment in accordance with the procedure described in paragraph 8.2.

8.1 Standard Luggage Set—The standard luggage set consists of a set of replicas of luggage and golf bags with contents. A set of shoe-type boxes

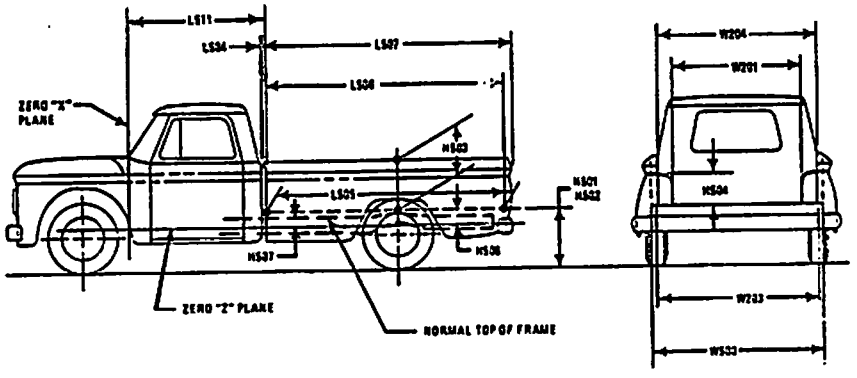

FIG. 26—CARGO SPACE DIMENSIONS, TRUCK WITH OPEN CARGO AREA

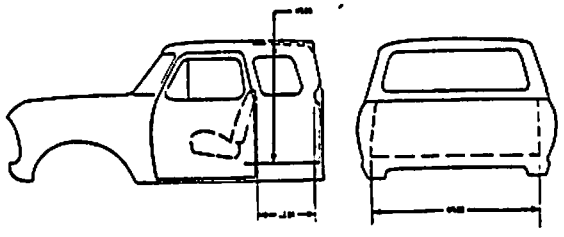

FIG. 27—CARGO SPACE DIMENSIONS, TRUCK WITH CLOSED CARGO AREA

34.56

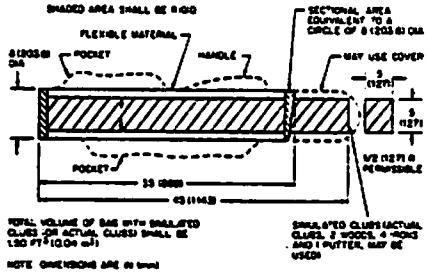

FIG. 28—GOLF BAG

(H-boxes) are optionally used with the standard luggage set. Descriptions and sizes of the luggage pieces are detailed in Table 1.

8.2 Procedure for Determining Usable Luggage Capacity—Place, in random order, as many as one standard luggage set of luggage into the luggage compartment, excluding H-boxes. When the best load is obtained using the standard luggage set, H-boxes may be added to arrive at the final load. Pieces from subsequent standard luggage sets may be used when the previous set is placed in the luggage compartment. A piece from the standard luggage set may be removed to place an H-box in the compartment, provided the removed piece is replaced.

The standard equipped spare tire and tools shall be properly installed in the luggage compartment. They may be loosened and moved to the limits of the attaching hardware and then retightened to attain the most advantageous position. Standard parts of the vehicle normally stored in the luggage compartment, such as a convertible top, shall be in the stored position when the usable luggage capacity is determined.

The luggage compartment lid or access door must close and lock freely without forcing or excessive slamming with all of the luggage in place in the compartment.

9. Cargo Volume Index

V2 Station wagon.

Measured in inches

$$\frac{W4 \times H201 \times L204}{1728} = Ft^3$$

Measured in mm

$$\frac{W4 \times H201 \times L204}{10^9} = m^3 \text{ (cubic meter)}$$

V3 Hatchback.

Measured in inches

$$\frac{\frac{L208 + L209}{2} \times W4 \times H197}{1728} = Ft^3$$

Measured in mm

$$\frac{\frac{L208 + L209}{2} \times W4 \times H197}{10^9} = m^3 \text{ (cubic meter)}$$

V4 Hidden Luggage Capacity—Rear of Front Seat. The total volumes of individual pieces of one set of standard luggage stowed in any hidden cargo area below the load floor rear of the front seat.

V5 Trucks and mpv's with open area.

Measured in inches

$$\frac{L506 \times W500 \times H503}{1728} = Ft^3$$

Measured in mm

$$\frac{L506 \times W500 \times H503}{10^9} = m^3 \text{ (cubic meter)}$$

V6 Trucks and mpv's with closed area.

Measured in inches

$$\frac{L204 \times W500 \times H505}{1728} = Ft^3$$

Measured in mm

$$\frac{L204 \times W500 \times H505}{10^9} = m^3 \text{ (cubic meter)}$$

V8 Hidden Luggage Capacity—Rear of Second Seat. The total volumes of individual pieces of one set of standard luggage stowed in any hidden cargo area below the load floor rear of the second seat.

V10 Station Wagon Cargo Volume Index.

Measured in inches

$$\frac{H201 \times L205 \times \frac{W4 + W201}{2}}{1728} = Ft^3$$

Measured in mm

$$\frac{H201 \times L205 \times \frac{W4 + W201}{2}}{10^9} = m^3 \text{ (cubic meter)}$$

V11 Hatchback Cargo Volume Index—Usable luggage (one (1) standard luggage set) below floor:

Measured in inches

$$\frac{\frac{L210 + L211}{2} \times W4 \times H198}{1728} = Ft^3$$

Measured in mm

$$\frac{\frac{L210 + L211}{2} \times W4 \times H198}{10^9} = m^3 \text{ (cubic meter)}$$

10. Glass Areas

S1—Windshield area.

S2—Side windows area. Includes the front door, rear door, vents, and rear quarter windows on both sides of the vehicle.

S3—Backlight areas.

S4—Total area. Total of all areas (S1 + S2 + S3).

TABLE 1—STANDARD LUGGAGE SET

Luggage (with Conventional Handles)	Bag Size		Letter	No	Volume/Piece	
	in	mm			ft³	m³
Men's 2-suiter	9 x 19 x 24	229 x 483 x 610	A	4	2.375	0.067
Ladies overnight	6.5 x 13 x 18	165 x 330 x 457	B	4	0.880	0.025
Ladies cartman	9 x 16 x 26	229 x 406 x 660	C	2	2.167	0.061
Ladies wardrobe	8.5 x 18 x 21	216 x 457 x 533	D	2	1.859	0.053
Ladies train case	8 x 9 x 15	203 x 229 x 381	E	2	0.625	0.018
Men's overnight	7 x 14 x 21	178 x 356 x 533	F	2	1.191	0.034
Golf bag containing 2 woods, 4 irons, 1 putter 10-1/2 shoes, 2 golf balls	See Fig. 28		G	2	1.530	0.043
H-boxes	5 x 5 x 12.5	152 x 114 x 325	H	20	0.353	0.026

APPENDIX B

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◇ DIMENSION INDEX—HEIGHT DIMENSIONS

Dimension and Location			Dimension and Location			Dimension and Location			Dimension and Location		
Ident.	Section No.	Fig. No.	Ident.	Section No.	Fig. No.	Ident.	Section No.	Fig. No.	Ident.	Section No.	Fig. No.
H5	5.1	4	H61	5.1	6	H104	6.3	16	H153	6.3	22
H6	5.5	12	H62	5.3		H105	6.3	16	H154	6.3	22
H10	5.2	4	H63	5.2	6	H106	6.3	22	H155	6.3	22
H11	5.4	12	H64	5.5	12	H107	6.3	22	H156	6.3	
H12	5.4	12	H65	5.1	7	H108	6.3	22	H158	6.2	17
H13	5.5	12	H66	5.2	7	H109	6.3	22	H159	6.2	17
H14	5.5	12	H67	5.1	6	H111	6.2	16, 18	H160	6.2	17
H17	5.5	12	H68	5.1	6	H112	6.2	16, 18	H161	4.1	
H18	5.5	12	H69	5.4	8	H114	6.1	16	H162	4.2	
H25	5.5	16	H70	5.1	8	H115	5.4	16, 18	H163	4.1	Fig. 1 of SAE J182a
H26	5.1	3	H71	5.2	8	H116	5.4	16	H164	4.2	
H27	5.1	3	H72	5.2	6	H121	5.5	16, 18	H167	4.3	
H28	5.2	3	H73	5.2	6	H122	5.5	16, 18	H168	4.2	
H29	5.2	3	H74	5.4	7	H123	5.5	5	H195	6.2	17
H30	5.1	3	H75	5.1	8	H124	5.5	5	H196	6.2	17
H31	5.2	4	H76	5.2	8	H125	6.2	16, 18	H197	7	24
H32	5.4	4	H77	5.4	8	H126	6.2	16, 18	H198	7	
H33	5.4	4	H78	5.4	8	H127	6.2	16, 18	H201	7	23
H34	5.4		H79	5.1		H128	6.2	16, 18	H202	7	23, 25
H35	5.1		H80	5.2		H130	5.4	16, 18	H230	7	23
H36	5.2		H81	4.1	Fig. 1 of SAE J182a	H131	5.4	16	H311	5.1	13A
H37	5.1	4	H82	4.2		H132	6.2	17, 18	H326	5.4	13A
H38	5.2	4	H83	4.3		H133	6.2	17, 18	H404	6.2	21
H39	5.3		H84	5.3		H134	6.2	17	H430	6.2	18
H40	5.4	12	H85	5.3	13	H135	6.2	17	H431	6.2	18
H49	5.5	5	H86	5.3	13	H136	6.2	17, 18	H436	6.2	18
H50	5.4	5	H87	5.3	13	H137	6.2	17, 18	H437	6.2	18
H51	5.4	5	H88	5.3	13	H138	6.2	16	H445	5.4	18
H53	5.1	5	H89	5.3	13	H139	6.2	17	H446	5.4	
H54	5.1	7	H90	5.3		H140	6.2	17	H501	7	25, 26
H55	5.2	5	H91	5.1	9A	H147	6.3	22	H502	7	25, 26
H56	5.1	7	H92	5.4		H148	6.3	22	H503	7	26
H57	5.2	7	H94	5.4	7	H149	6.3	22	H504	7	25, 26
H58	5.1	6, 9A	H101	6.2	16, 18	H150	6.3	22	H505	7	25, 27
H59	5.1	9A	H102	6.3	16	H151	6.3	22	H506	7	25, 26
H60	5.2	5	H103	6.3	16	H152	6.3	22	H507	7	26
									H508	7	25

◇ LENGTH DIMENSIONS

Dimension and Location			Dimension and Location			Dimension and Location			Dimension and Location		
Ident.	Section No.	Fig. No.	Ident.	Section No.	Fig. No.	Ident.	Section No.	Fig. No.	Ident.	Section No.	Fig. No.
L3	5.2	9	L36	5.3		L89	5.3	13	L205	7	23, 25
L4	6.3	20	L37	5.1	9A	L90	5.3	13	L208	7	24
L7	5.5	9	L38	5.1		L91	5.3	13	L209	7	24
L9	5.4	9	L39	5.2		L92	5.3		L210	7	
L10	5.4	9	L40	5.1	11	L101	6.3	19, 20	L211	7	
L11	5.5	10	L41	5.2	11	L102	6.3	19	L308	5.1	13A
L12	5.4	9	L42	5.1	11	L103	6.3	19, 20	L324	5.5	
L13	5.5	9	L43	5.2	11	L104	6.3	19, 20	L403	6.3	20
L14	5.4	9	L44	5.1	11	L105	6.3	19, 20	L404	6.3	20
L15	5.4	9	L45	5.2	11	L106	6.3	19, 20	L408	6.3	21
L16	5.4	9	L46	5.1	11	L107	6.3	19, 20	L409	6.3	21
L17	5.1	9A	L47	5.2	11	L108	6.3	19, 20	L410	6.3	20
L18	5.4	3	L48	5.2	10	L114	5.1	9	L411	6.3	20
L19	5.4	2	L50	5.2	10	L123	6.3	19	L504	7	26
L20	5.4		L51	5.2	10	L125	6.3	19	L505	7	26
L21	5.4		L52	5.5	10	L126	6.3	19	L506	7	26
L22	5.4	8	L53	5.1	10	L127	6.3	19, 20	L507	7	26
L23	5.1	9A	L54	4.1	Fig. 1 of SAE J182a	L128	6.3	19, 20	L508	7	25
L24	5.4		L55	4.2		L129	6.3	19	L509	7	25
L30	6.3	9, 20	L56	4.3		L200	7	23	L510	7	25
L31	5.1	9	L85	5.3	13	L201	7	23	L511	7	25, 26
L32	5.2	9	L86	5.3	13	L202	7	23, 25	L512	7	25
L34	5.1	10	L87	5.3	13	L203	7	23, 25			
L35	5.2	9	L88	5.3	13	L204	7	23, 25, 27			

◇ GLASS AREA DIMENSIONS

Ident.	Section No.	Fig. No.
S1	10	—
S2	10	—
S3	10	—
S4	10	—

◇ PASSENGER DISTRIBUTION DIMENSIONS

Ident.	Section No.	Fig. No.
PD1	5.1	—
PD2	5.2	—
PD3	5.3	—

◇ LUGGAGE AND CARGO VOLUME INDEX DIMENSIONS

Ident.	Section No.	Fig. No.
V1	8.1	—
V2	9	—
V3	9	—
V4	9	—
V5	9	—
V6	9	—
V8	9	—
V10	9	—
V11	11	—

◇ SEAT FACING DIRECTION DIMENSION

Ident.	Section No.	Fig. No.
SD1	5.3	—

SAE J1100 (CONT.)

34.5R

⊕ WIDTH DIMENSIONS

Dimension and Location			Dimension and Location			Dimension and Location			Dimension and Location		
Ident.	Section No.	Fig. No.	Ident.	Section No.	Fig. No.	Ident.	Section No.	Fig. No.	Ident.	Section No.	Fig. No.
W3	5.1	2	W24	5.1	2	W83	5.3	13	W122	5.5	14
W4	5.2	2	W25	5.2		W86	5.3	13	W201	7	23, 25, 26
W5	5.1	2	W26	5.3		W101	6.1	14	W203	7	23, 25, 26
W6	5.2	2	W30	5.5		W102	6.1	14, 15	W204	7	23, 25, 26
W7	5.3	2	W32	5.1		W103	6.1	14	W205	7	23, 25
W9	5.5	2	W33	5.2		W106	6.1	14	W300	5.1	13A
W16	5.4	2	W34	5.3		W107	6.1	14	W301	5.1	13A
W20	5.1	2	W38	5.1		W116	6.1	14	W409	6.1	15
W21	4.1	Fig. 1 of SAE J182a	W39	5.2		W117	6.1	14	W410	6.1	15
W22	4.2		W40	5.3		W120	6.1	14	W500	7	23, 26, 27
W23	4.3		W41	5.5	14	W121	6.1	14, 15			

Definition	Dim. Ident.	Section No.	Fig. No.	Definition	Dim. Ident.	Section No.	Fig. No.
Accelerator Heel Point To Steering Wheel Center	L11	5.5	10	Driver Head Clearance to Roof Rail Garnish	W32	5.1	
Accelerator Heel Point To Steering Wheel Center	H17	5.5	12	Driver Head Clearance to Windshield Garnish	L38	5.1	
Angle of Approach	H106	6.3	22	Effective Cushion Depth—Front	L10	5.4	9
Angle of Departure	H107	6.3	22	Effective Cushion Depth—Second	L12	5.4	9
Back Angle—Front	L40	5.1	11	Effective Cushion Depth—Third	L24	5.4	
Back Angle—Second	L41	5.2	11	Effective Head Room—Front	H61	5.1	6
Back Angle—Third	L88	5.3	13	Effective Head Room—Second	H62	5.2	6
Backlight Area	S3	10		Effective Head Room—Third	H86	5.3	13
Backlight Slope Angle	H121	5.5	36, 18	Effective Leg Room—Third	L86	5.3	13
Bed Height—Front	H25	5.5	16	Effective T-Point Head Room—Front	H75	5.1	8
Body Height	H430	6.2	18	Effective T-Point Head Room—Second	H76	5.2	8
Body Thickness	H160	6.2	17	Effective T-Point Head Room—Third	H89	5.3	13
Body Width at SgRP—Front	W117	6.1	14	Engine Cover Height	H311	5.1	13A
Body Width—Maximum	W116	6.1	14	Engine Cover Length	L208	5.1	13A
Bottom of Door Ajar—Front to Ground	H139	6.2	17	Entrance Foot Clearance—Front	L18	5.4	2
Bottom of Door Ajar—Rear to Ground	H140	6.2	17	Entrance Foot Clearance—Second	L19	5.4	2
Bottom of Door—Closed—Front to Ground	H133	6.2	17, 18	Entrance Height—Front	H11	5.4	12
Bottom of Door—Closed—Rear to Ground	H135	6.2	17	Entrance Height—Second	H12	5.4	12
Bottom of Door—Open—Front to Ground	H132	6.2	17, 18	Exhaust System to Ground	H152	6.3	22
Bottom of Door—Open—Rear to Ground	H134	6.2	17	Eye Height—Second	H49	5.4	8
Brake Pedal Knee Clearance	L13	5.5	9	Eyeellipse to Backlight Upper Opening	H123	5.5	9
Brake Pedal to Accelerator	L52	5.5	10	Eyeellipse to Bottom of Inside Rear View Mirror	H14	5.5	12
Cab Length	L410	6.3	20	Eyeellipse to Top of Steering Wheel	H49	5.5	9
Cab Servicing Tilt Angle	L409	6.3	21	Fiducial Mark Number 1			
Cab to Pickup Body	L504	7	26	X Coordinate	L54	4.1	
Cab to Rear Axle	L404	6.3	20	Y Coordinate	W21	4.1	
Cargo Body Overall Length	L507	7	26	Z Coordinate	H81	4.1	
Cargo Floor Height	H506	7	25, 26	Height—Z Coordinate to Ground	H103	4.1	
Cargo Floor Height to Ground	H501	7	25, 26	Height—Z Coordinate to Ground at Curb Weight	H161	4.1	
Cargo Floor Height to Ground—(Curb Weight)	H502	7	25, 26	Fiducial Mark Number 2			
Cargo Height	H201	7	23	X Coordinate	L55	4.2	
Cargo Length at Belt—Front	L204	7	23, 25, 27	Y Coordinate	W22	4.2	
Cargo Length at Belt—Second	L205	7	23, 25	Z Coordinate	H82	4.2	
Cargo Length at Belt—Third	L510	7	25	Height—Z Coordinate to Ground	H104	4.2	
Cargo Length at Floor—Front Hatchback	L209	7	24	Height—Z Coordinate to Ground at Curb Weight	H162	4.2	
Cargo Length at Front Seatback Height—Hatchback	L208	7	24	Fiducial Mark Number 3			
Cargo Length—Closed—Front	L202	7	23, 25	X Coordinate	L56	4.3	
Cargo Length—Closed—Second	L203	7	23, 25	Y Coordinate	W23	4.3	
Cargo Length—Closed—Third	L509	7	25	Z Coordinate	H83	4.3	Fig. 1 of SAE J182a
Cargo Length—Open—Front	L200	7	23	Height—Z Coordinate to Ground	H105	4.3	
Cargo Length—Open—Second	L201	7	23	Height—Z Coordinate to Ground at Curb Weight	H167	4.3	
Cargo Length to Engine Cover	L512	7	25	Floor Covering Depressed—Second	H73	5.2	6
Cargo Volume Index (Hatchback)	V3	9		Floor Covering Thickness Depressed—Front	H68	5.1	
Cargo Volume Index (Station Wagon)	V2	9		Floor Covering Thickness Undepressed—Front	H67	5.1	6
Cargo Width at Floor	W500	7	25, 26, 27	Floor Covering Thickness Undepressed—Second	H72	5.2	6
Cargo Width—Wheelhouse	W201	7	23, 25, 26	Flywheel Converter Housing and Transmission Assembly to Ground	H150	6.3	22
Compartment Room—Second	L3	5.2	9	Foot Angle—Front	L46	5.1	11
Compartment Room—Third	L92	5.3		Foot Angle—Second	L47	5.2	11
Cowl Point to Ground	H114	6.1	16	Foot Angle—Third	L91	5.3	13
Cowl Point—X Coordinate	L125	6.3	19	Frame Height	H307	7	25
Cushion Deflection—Front	H32	5.4	4	Frame Structure to Ground	H151	6.3	22
Cushion Deflection—Second	H33	5.4	4	Front Bumper to Cab—Tilt Cab Servicing Position	L408	6.3	21
Cushion Deflection—Third	H34	5.4		Front Bumper to Ground	H102	6.3	16
Cushion Depth—Front	L9	5.4	9	Front Bumper to Ground—Curb Weight	H103	6.3	16
Cushion Depth—Second	L10	5.4	9	Front Cargo Surface	L511	7	25, 26
Cushion Depth—Third	L21	5.4		Front End Length	L126	6.3	19
Cushion Width—Front	W16	5.4	2	Front Fender Width	W106	6.1	14
Deck Point to Ground	H138	6.2	16	Front of Bumper to Back of Cab	L403	6.3	20
Design H Point Front Travel	L17	5.1	9A	Front of Dash—"X" Coordinate	L30	6.3	9, 20
Design H Point Rise	H58	5.1	6, 9A	Front Seatback to Load Floor Height	H197	7	24
D Point—Center Pass.—Second—to Tunnel	H55	5.2	7	Front Suspension to Ground	H148	6.3	22
D Point—Front Differential—Side to Center	H65	5.1	7	Front Wheel C.L to Front SgRP	L114	5.1	9
D Point—Front to Floor	H56	5.1	7	Front Wheel C.L X Coordinate	L128	6.3	19, 20
D Point—Front to Heel	H53	5.1	5	Fuel Tank to Ground	H134	6.3	22
D Point—Front to Tunnel Center Passenger	H54	5.1	5	Head Clearance—Minimum—Second	W39	5.2	
D Point—Differential—Side to Center—Second	H66	5.2	7	Head Clearance—Minimum—Third	W40	5.3	
D Point—Second to Floor	H57	5.1	7	Head Clearance to Back Window Garnish	L39	5.2	
D Point—Third—to Floor	H90	5.3		Head Clearance to Headlining—Second	H36	5.2	
D Point to Heel Point—Second	H60	5.2	5	Head Clearance to Headlining—Third	H39	5.3	
D Point to Heel Point—Third	H62	5.3		Head Clearance to Roof Rail Garnish—Second	H33	5.2	
Dual Rear Axle Spacing	L411	6.3	20				
[illegible]	W38	5.1					
[illegible]	H92	5.1					

APPENDIX B

SAE J1100 (CONT.)

• WIDTH DIMENSIONS (continued)

Definition	Dim. Ident.	Section No.	Fig. No.
Head Clearance to Roof Rail Garnish—Third	W34	5.3	
Headlamp to Ground	H125	6.2	16, 18
Headlamp to Ground—Curb Weight	H127	6.2	16, 18
Headlining to Roof Panel—Front	H37	5.1	4
Headlining to Roof Panel—Second	H38	5.2	4
Headlining to Roof—Third	H84	5.3	
Hidden Cargo Volume	V4	9	
Hip Angle—Front	L42	5.1	11
Hip Angle—Second	L43	5.2	11
Hip Angle—Third	L89	5.3	13
Hip Room—Front	W5	5.1	2
Hip Room—Second	W6	5.2	2
Hip Room—Third	W86	5.3	13
Interior Body Height—Front at SgRP Y Plane	H27	5.1	3
Interior Body Height—Front at Zero Y Plane	H26	5.1	3
Interior Body Height—Second—at SgRP Y Plane	H29	5.2	3
Interior Body Height—Second—at Zero Y Plane	H28	5.2	3
Knee Angle—Front	L44	5.1	11
Knee Angle—Second	L45	5.2	11
Knee Angle—Third	L90	5.3	13
Knee Clearance—Second	L48	5.2	10
Knee Clearance—Third	L87	5.3	13
Liftover Height	H195	6.2	17
Liftover Height—Curb Weight	H196	6.2	17
Maximum Cargo Height	H505	7	25, 27
Maximum Effective Leg Room—Accelerator	L34	5.1	10
Maximum Overall Height—Tilt Cab Servicing	H404	6.2	21
Minimum Effective Leg Room—Second	L51	5.2	10
Minimum Running Ground Clearance	H156	6.3	
Normal Driving and Riding Design H Point Rise	H59	5.1	9A
Normal Driving and Riding Seat-Track Travel	L23	5.1	9A
Oil Pan to Ground	H149	6.3	22
Outside Mirror Width	W410	6.1	15
Overhang—Front	L104	6.3	19, 20
Overhang—Front—RPO	L106	6.3	19, 20
Overhang—Rear	L105	6.3	19, 20
Overhang—Rear—RPO	L107	6.3	19, 20
Passenger Distribution—Front	PD1	5.1	
Passenger Distribution—Second	PD2	5.2	
Passenger Distribution—Third	PD3	5.3	
Pick-Up Body Height	H503	7	26
Pick-Up Body Length at Floor	L505	7	26
Pick-Up Body Length At Top of Body	L506	7	26
Ramp Breakover Angle	H147	6.3	22
Rear Axle Differential to Ground	H153	6.3	22
Rear Bumper to Ground	H104	6.3	16
Rear Bumper to Ground—Curb Weight	H105	6.3	16
Rear End Length	L129	6.3	19
Rear Fender Width	W107	6.1	14
Rearmost Design H Point—Front			
X Coordinate	L37	5.1	9A
Y Coordinate	W24	5.1	
Z Coordinate	H91	5.1	9A
Rear Opening Height	H202	7	23, 25
Rear Opening Width Above Belt	W205	7	23, 25
Rear Opening Width at Belt	W204	7	23, 25, 26
Rear Opening Width at Floor	W203	7	23, 25, 26
Rear Wheel C.L X Coordinate	L127	6.3	19, 20
Rocker Panel—Front—to Ground	H112	6.2	16, 18
Rocker Panel—Rear—to Ground	H111	6.2	16, 18
Roof Thickness	H158	6.2	17
Seatback Height—Front	H77	5.4	8
Seatback Height—Second	H78	5.4	8
Seatback Height—Third	H92	5.4	
Seatback Thickness—Front	L14	5.4	9
Seatback Thickness—Second	L15	5.4	9
Seatback Thickness—Third	L20	5.4	
Seat Cushion Height—Front	H326	5.4	13A
Seat Facing Direction—Third	SD1	5.3	
Second Step Height—Front	H445	5.4	18
Second Step Height—Second	H446	5.4	
SgRP Couple Distance—Second	L50	5.4	10
SgRP Couple Distance—Third	L85	5.3	13
SgRP Differential—Side to Center	H79	5.1	
SgRP Differential—Side to Center	H83	5.2	
SgRP Front to Ground	H5	5.1	4
SgRP—Front to Heel	L53	5.1	10
SgRP Front to Heel	H30	5.1	3
SgRP Front to Windshield Lower DLO	H6	5.5	12
SgRP Front to Windshield Upper DLO	H64	5.5	12
SgRP—Front—X Coordinate	L31	5.1	9
SgRP—Front—Y Coordinate	W20	5.1	2
SgRP—Front—Z Coordinate	H70	5.1	8
SgRP—Second to Ground	H10	5.2	4
SgRP—Second to Heel	H31	5.2	4
SgRP—Second to Rear Wheel C.L	L32	5.2	9
SgRP—Second—X Coordinate	L35	5.2	9
SgRP—Second—Y Coordinate	W25	5.2	2
SgRP—Second—Z Coordinate	H71	5.2	8
SgRP—Third to Ground	H85	5.3	13
SgRP—Third to Heel Point	H87	5.3	13
SgRP—Third—X Coordinate	L36	5.3	
SgRP—Third—Y Coordinate	W26	5.3	
SgRP—Third—Z Coordinate	H88	5.3	13
SgRP to Windshield Upper DLO	L324	5.5	
Shoulder Room—Front	W3	5.1	2
Shoulder Room—Second	W4	5.2	2
Shoulder Room—Third	W83	5.3	13
Side Cargo Door Opening Height	H508	7	25
Side Cargo Door Opening Length	L508	7	25
Side Glass Height	H159	6.2	17
Side Glass Radius	W41	5.5	14
Side Window Area	S2	10	
Spare Tire Well to Ground	H155	6.3	22
Static Load—Tire Radius—Front	H108	6.3	22
Static Load—Tire Radius—Rear	H109	6.3	22
Steering Wheel Angle	H18	5.5	12
Steering Wheel Center—Y Coordinate	W7	5.5	2
Steering Wheel Maximum Outside Diameter	W9	5.5	2
Steering Wheel to Accelerator Heel Point	H40	5.4	12
Steering Wheel to C L Thigh	H13	5.5	12
Steering Wheel to Cushion	H74	5.4	7
Steering Wheel to Cushion—Minimum	H94	5.4	7
Steering Wheel to Door Clearance	W30	5.5	
Steering Wheel to Seatback	L27	5.4	8
Steering Wheel Torso Clearance	L7	5.5	9
Step Height—Front	H115	5.4	16, 18
Step Height—Front—Curb Weight	H130	5.4	16, 18
Step Height—Second	H116	5.4	16
Step Height—Second—Curb Weight	H131	5.4	16
Tailgate to Ground	H250	7	23
Tail Lamp to Ground	H126	6.2	16, 18
Tail Lamp to Ground—Curb Weight	H128	6.2	16, 18
Tire Size	L102	6.3	19
Tire Size—Rear	L4	6.3	20
Total Area	S4	10	
Tread—Front	W101	6.1	14
Tread—Rear	W102	6.1	14, 15
Tumble Home	W122	5.5	14
Upper Body Opening to Ground—Front	H50	5.4	5
Upper Body Opening to Ground—Second	H51	5.4	5
Upper Structure Length	L123	6.3	19
Usable Luggage Capacity	V1	8.1	
Vehicle Height	H101	6.2	16, 18
Vehicle Height—Curb Weight	H431	6.2	18
Vehicle Length	L103	6.3	19, 20
Vehicle Length—RPO	L108	6.3	19, 20
Vehicle Width	W103	6.1	14
Vehicle Width—Front Doors Open	W120	6.1	14
Vehicle Width—Rear Doors Open	W121	6.1	14, 15
Vehicle Width—Tail Doors Open	W409	6.1	15
Vision Angle to Windshield Upper DLO	H124	5.5	5
Wheelbase	L101	6.3	19, 20
Wheelhouse Height	H504	7	25, 26
Windshield Area	S1	10	
Windshield Slope Angle	H122	5.5	16, 18
Zero Z Plane to Ground—Front	H136	6.2	17, 18
Zero Z Plane to Ground—Front—Curb Weight	H436	6.2	18
Zero Z Plane to Ground—Rear	H137	6.3	17, 18
Zero Z Plane to Ground—Rear—Curb Weight	H437	6.2	18

APPENDIX C

GENERAL MOTORS DATA BASE

The General Motors data base is a listing of 151 interior and exterior dimensions of GM cars, covering the model years 1975 to 1983.

EXTERIOR WIDTH

W101	Tread-Front
W102	Tread-Rear
W103	Max. Overall Width of Car
W116	Max. Overall Width of Body
W117	Max. Bodywidth @ No. 2 Pillar
W106	Front Fender Overall Width
W107	Rear Fender Overall Width
W120	Max. Overall Car Width, Front Doors Open
W121	Max. Overall Car Width, Rear Doors Open

LENGTH

L30	Body '0' to Actual Front of Dash
L101	Wheelbase
L104	Overhang, Front
L105	Overhang, Rear
L103	Overall, Length
L126	Front End Length at Centerline
L123	Upper Structure Length @ Car ℄
L129	Rear End Length @ Centerline
L127	Body '0' to ℄ of Rear Wheels
L125	Body '0' Plane to Windshield Cowl Point
L128	Body '0' to ℄ of Front Wheels
L102	Tire Size

HEIGHT

	Design Load (Pass. Distr.)
H101	Overall Height
H114	Hood at Rear to Ground
H112	Rocker Panel to Ground-Front
H111	Rocker Panel to Ground-Rear
H132	Bottom of Door to Ground, Open-Front
H134	Bottom of Door to Ground, Open-Rear
H122	Windshield Slope Angle
H125	Headlamp to Ground
H126	Tail Lamp to Ground
H136	Division Body '0' to Ground-Front
H137	Division Body '0' to Ground-Rear
H133	Bottom of Door to Ground, Closed-Front
H135	Bottom of Door to Ground, Closed-Rear
H158	Roof Thickness
H159	DLO Height
H160	Body Thickness
H195	Liftover Height

GROUND CLEARANCE

HEIGHT

H102	Front Bumper to Ground
H104	Rear Bumper to Ground
H106	Angle of Approach
H107	Angle of Departure
H147	Ramp Breakover Angle
H148	Front Suspension to Ground
H149	Oil Pan to Ground
H150	Flywheel Housing/Trans. Assy. to Ground
H151	Frame to Ground
H152	Exhaust System to Ground
H153	Differential to Ground
H154	Fuel Tank to Ground
H155	Tire Well to Ground
H156	Minimum Running Ground Clearance
	Position on Car

FIDUCIAL MARKS

L54	Fiducial Mark to Vert. Body 'O'-Front
L55	Fiducial Mark to Vert. Body 'O'-Rear
H81	Fiducial Mark to Horz. Body 'O'-Front
H82	Fiducial Mark to Horz. Body 'O'-Rear
H163	Fiducial Mark to Ground-Front (DESIGN)
H164	Fiducial Mark to Ground-Rear (DESIGN)
H161	Fiducial Mark to Ground-Front (CURB)
H162	Fiducial Mark to Ground-Rear (CURB)

GLASS AREA

S1	Windshield Area
S2	Side Windows Area
S3	Backlight Areas
S4	Total Area

APPENDIX C

GENERAL MOTORS DATA BASE (CONT.)

INTERIOR

FRONT COMPARTMENT

L31	Body Zero Line to H Point
W20	℄ Occupant to ℄ Car
H70	H Point to Body Zero
H61	Effective Head Room
H37	Headlining to Roof @ CLO
L34	Maximum Effective Leg Room-Accelerator
H30	H Point to Heel Point
H67	Undepressed Floor Covering Thickness
L40	Back Angle
L42	Hip Angle
L44	Knee Angle
L46	Foot Angle
H65	D Point Differential-Side to Side
H54	D Point to Tunnel
H56	D Point to Floor
L53	H Point to Heel Point
L17	H Point Travel
H58	H Point Rise
H75	Effective T Point Head Room
L68	T Point to Windshield Garnish Molding
W19	Lateral Head Clearance
H5	H Point to Ground

REAR COMPARTMENT

L50	H Point Couple Distance
L35	Body Zero Line to H Point
W25	℄ Occupant to ℄ Car
H71	H Point to Body Zero
H63	Effective Head Room
H38	Headlining to Roof @ CLO
L51	Minimum Effective Leg Room
H31	H Point to Heel Point
H68	Depressed Floor Covering Thickness
L48	Knee Clearance
L3	Rear Compartment Room
L41	Back Angle
L43	Hip Angle
L45	Knee Angle
L47	Foot Angle
H66	D Point Differential-Side to Side
H55	D Point to Tunnel
H57	D Point to Floor
H76	Effective T Point Head Room
H10	H Point to Ground

HATCHBACK–CARGO SPACE DIMENSIONS

H197	Front Seat Back to Load Floor Height
L208	Cargo Length at Front Seat Back Height
L209	Cargo Length at Floor-Front Seat
V3	Hatchback-Cargo Index Volume

SEAT AND ENTRANCE - FRONT

W3	Shoulder Room
W5	Hip Room
W16	Seat Width
H50	Upper Body Opening to Ground
H11	Entrance Height
H115	Step Height (Design)
H130	Step Height (Curb)
L18	Entrance - Foot Clearance
H32	Seat Cushion Deflection
L14	Thickest Point of Seat Back @ CLO
H3	Seat Chair Height
L9	Seat Depth
H26	Interior Body Height M/M @ ℄
H27	Interior Body Height M/M @ CLO

SEAT AND ENTRANCE - REAR

W4	Shoulder Room
W6	Hip Room
H51	Upper Body Opening to Ground
H12	Entrance Height
H116	Step Height (Design)
H131	Step Height (Curb)
H69	Exit Height
L19	Entrance - Foot Clearance
H33	Seat Cushion Deflection
L15	Thickest Point of Seat Back @ CLO
H8	Seat Chair Height
L16	Seat Depth
H28	Interior Body Height M/M @ ℄
H29	Interior Body Height M/M @ CLO

VISION AND CONTROL

H6	H Point to Windshield Bottom OLO
H14	Eyellipse to Bottom of Rearview Mirror
H25	Belt Height - Front
W7	Steering Wheel Center to ℄ Car
W9	Steering Wheel Outside Diameter
H18	Steering Wheel Angle - Vertical
H49	Eyellipse to Top of Steering Wheel
L7	Steering Wheel Torso Clearance
H13	Steering Wheel to ℄ of Thigh
L13	Brake Pedal Knee Clearance
L52	Brake Pedal to Accelerator
W122	Tumble - Home

LUGGAGE

V1	Usable Luggage Capacity

APPENDIX C

GENERAL MOTORS DATA BASE (CON'T)

SAS DICTIONARY

DSN=WSM1XNX.GMSPCS VOL=SER=FILE37

ALPHABETIC LIST OF VARIABLES

#	VARIABLE	TYPE	LENGTH	POSITION	#	VARIABLE	TYPE	LENGTH	POSITION
4	BODY_LIN	CHAR	1	45	59	H61	NUM	3	507
124	H3	NUM	3	1027	50	H62	NUM	8	515
129	H8	NUM	8	1139	26	H101	NUM	8	243
118	H11	NUM	8	979	43	H102	NUM	8	379
131	H12	NUM	8	1083	44	H104	NUM	8	387
149	H13	NUM	8	1227	45	H106	NUM	8	395
142	H14	NUM	8	1171	46	H107	NUM	8	403
146	H18	NUM	8	1203	29	H111	NUM	8	267
143	H25	NUM	8	1179	23	H112	NUM	8	259
126	H26	NUM	8	1043	27	H114	NUM	8	251
127	H27	NUM	8	1051	119	H115	NUM	8	987
140	H28	NUM	8	1155	132	H116	NUM	8	1091
141	H29	NUM	8	1163	32	H122	NUM	8	291
75	H30	NUM	8	635	53	H123	NUM	8	299
93	H31	NUM	8	819	54	H126	NUM	8	307
122	H32	NUM	8	1011	120	H130	NUM	8	995
136	H33	NUM	8	1123	133	H131	NUM	8	1099
73	H37	NUM	8	619	50	H132	NUM	8	275
95	H38	NUM	8	803	37	H133	NUM	8	331
147	H40	NUM	8	1211	31	H134	NUM	8	283
117	H50	NUM	8	971	38	H135	NUM	8	339
130	H51	NUM	8	1075	35	H136	NUM	8	315
82	H54	NUM	8	691	34	H137	NUM	8	323
107	H55	NUM	8	891	47	H147	NUM	8	411
83	H56	NUM	8	699	48	H148	NUM	8	419
103	H57	NUM	8	899	49	H149	NUM	8	427
90	H58	NUM	8	755	50	H150	NUM	8	435
86	H59	NUM	8	723	51	H151	NUM	8	443
72	H61	NUM	8	611	52	H152	NUM	8	451
95	H63	NUM	8	795	53	H153	NUM	8	459
81	H65	NUM	8	683	54	H154	NUM	8	467
106	H66	NUM	8	883	55	H155	NUM	8	475
76	H67	NUM	8	643	56	H156	NUM	8	483
134	H69	NUM	8	1107	39	H158	NUM	8	347
71	H70	NUM	8	603	40	H159	NUM	8	355
94	H71	NUM	8	787	41	H160	NUM	8	363
99	H73	NUM	8	827	65	H161	NUM	8	539
87	H75	NUM	8	731	64	H162	NUM	8	547
109	H76	NUM	8	907	61	H163	NUM	8	523

ALPHABETIC LIST OF VARIABLES (CONT)

#	VARIABLE	TYPE	LENGTH	POSITION	#	VARIABLE	TYPE	LENGTH	POSITION
62	H164	NUM	8	531	21	L123	NUM	8	203
42	H195	NUM	8	371	24	L125	NUM	8	227
110	H197	NUM	8	915	20	L126	NUM	8	195
5	IDENT	CHAR	37	46	23	L127	NUM	8	219
131	L3	NUM	8	843	25	L128	NUM	8	235
143	L7	NUM	8	1219	22	L129	NUM	8	211
125	L9	NUM	8	1035	111	L208	NUM	8	923
150	L13	NUM	8	1235	112	L209	NUM	8	931
123	L14	NUM	8	1019	3	MAKE	NUM	8	37
137	L15	NUM	8	1131	155	MCODE	NUM	8	1275
139	L16	NUM	8	1147	154	MODCODE	NUM	8	1267
89	L17	NUM	8	747	2	MODEL	CHAR	31	6
121	L18	NUM	8	1003	65	S1	NUM	8	555
135	L19	NUM	8	1115	66	S2	NUM	8	563
85	L23	NUM	8	715	67	S3	NUM	8	571
15	L30	NUM	8	155	68	S4	NUM	8	579
69	L31	NUM	8	587	153	V1	NUM	8	1259
74	L34	NUM	8	627	113	V3	NUM	8	939
92	L35	NUM	8	771	114	W3	NUM	8	947
88	L38	NUM	8	739	123	W4	NUM	8	1059
77	L40	NUM	8	651	115	W5	NUM	8	955
102	L41	NUM	8	851	129	W6	NUM	8	1067
73	L42	NUM	8	659	144	W7	NUM	8	1187
103	L43	NUM	8	859	145	W9	NUM	8	1195
79	L44	NUM	8	667	116	W16	NUM	8	963
104	L45	NUM	8	867	70	W20	NUM	8	595
80	L46	NUM	8	675	93	W25	NUM	8	779
105	L47	NUM	8	875	6	W101	NUM	8	83
100	L48	NUM	8	835	7	W102	NUM	8	91
91	L50	NUM	8	763	8	W103	NUM	8	99
97	L51	NUM	8	811	11	W106	NUM	8	123
151	L52	NUM	8	1243	12	W107	NUM	8	131
84	L53	NUM	8	707	9	W116	NUM	8	107
57	L54	NUM	8	491	10	W117	NUM	8	115
53	L55	NUM	8	499	13	W120	NUM	8	139
16	L101	NUM	8	163	14	W121	NUM	8	147
19	L103	NUM	8	187	152	W122	NUM	8	1251
17	L104	NUM	8	171	1	YEAR	CHAR	2	4
18	L105	NUM	8	179					

APPENDIX D

FORD DATA BASE

The Ford data base consists of 42 dimensions and specifications for 1978 through 1984 Ford vehicles.

	EXTERIOR
L103	OVERALL LENGTH
L104	OVERHANG -FRT
L101	WHEELBASE
L105	OVERHANG -RR
L113F	FRT WHL C/L TO HEEL PT
L114F	FRT WHL C/L TO H PT
L115F	RR WHL C/L TO 2ND H PT
H101	VEHICLE HEIGHT
H114	COWL HEIGHT
W1C1	TREAD -FRT
W102	TREAD -RR
W117	BODY WIDTH AT H PT
H122	W/S SLOPE ANGLE
W122	TUMBLEHOME -SIDE GLASS
	INTERIOR
H5C	BODY OPN TO 3RD - FRT
H61	EFF HEAD ROOM - FRT
L34	MAX EFF L/ROOM - ACCEL
W3	SHOULDER RM - FRT MVMA
W5	HIP ROOM - FRT
H25	BELT HEIGHT
H53	D PT TO ACCEL HEEL PT
L5C	H PT COUPLE DIST
H63	EFF HEAD ROOM - REAR
L51	EFF LEG ROOM - REAR
L48	KNEE CLEARANCE-2ND
W4	SHOULDER ROOM - REAR
W6	HIP ROOM - REAR
V1	USABLE LUG CAPACITY
V2	CARGO VOL - SW
L1C2	TIRE SIZE
L102	
SPEC1	FUEL CAPACITY
SPEC2	CRUISE RANGE
SPEC3	GVW
SPEC4	PAY LOAD
H86L	EFF HEAD ROOM - 3RD-L
L86L	EFF LEG ROOM - 3RD-L
H86R	EFF HEAD ROOM - 3RD-R
L86R	EFF LEG ROOM - 3RD-R
H2C1	CARGO HEIGHT
H2C2	REAR OPENING HEIGHT
H501	CARGO FLOOR TO GRD
V1C	CARGO VOL INDEX-2ND-SW

APPENDIX E

NHTSA INTERIOR RESTRAINT DATA BASE

The NHTSA Interior Restraint data base is a record of front compartment passenger and restraint system dimensions for most 1978 U.S. passenger cars.

SEAT AND OCCUPANT RESTRAINT SYSTEM INSTALLATION GEOMETRY IN FRONT OCCUPANT COMPARTMENTS OF 1978 MODEL VEHICLES

CODE

A -- Uppermost point on seat back (with head restraint removed).

A_1 -- Uppermost point on head restraint with head restraint in the lowest position.

A_2 -- Uppermost point on head restraint with head restraint in the highest position.

B -- Intersection of undepressed seat and seat back cushions at ℄ of vehicle occupant(s) in the designated seating position.

C -- Uppermost front edge of seat cushion at ℄ of vehicle occupant(s) in the in the designated seating position.

D -- Intersection of floor pan and toe board at ℄ of vehicle passenger in the designated seating position.

E -- Upper edge of windshield daylight line at ℄ of vehicle occupant(s) in the designated seating position.

F -- Lower edge of windshield daylight line at ℄ of vehicle occupant(s) in the designated seating position.

G -- Rearmost edge of the instrument panel at ℄ of vehicle passenger in the designated seating position

S -- Outer edge of armrest at transverse vertical plane through the H point

S_w -- Length of armrest parallel to the ℄ of the vehicle

M -- Intersection point of door inner panel, top of armrest and transverse vertical plane through the H point

N -- Intersection of door glass daylight opening bottom inner surface with the transverse vertical plane through the H point

O -- Intersection of door glass daylight opening top inner surface with the transverse plane through the H point

P -- Intersection point of roof inner panel, transverse vertical plane through the H point and midsagittal plane of the vehicle occupant(s) in the designated seating position.

R -- Top edge of vehicle sill at transverse vertical plane through the H point.

$H_{n, f, r}$ - H point location of vehicle occupant(s) with seat in nominal and most forward and rearward position adjustments.

H_d -- H point translation due to seat cushion deflection.

HH -- Edge of seat at transverse vertical plane through the H point.

K & L(n,f,r) -- Bottomost edge of steering wheel rim (K) and intersection point of steering wheel rotation with the rearmost plane of the steering wheel rim (L) in nominal, most forward and most rearward adjusted position.

θ -- Nominal seat back angle with respect to vertical.

ϕ -- Nominal seat angle with respect to horizontal.

δ -- Nominal steering wheel rotation plane with respect to vertical.

σ -- Toe board inclination angle with respect to horizontal at ℄ of passenger in the designated seating position.

APPENDIX E

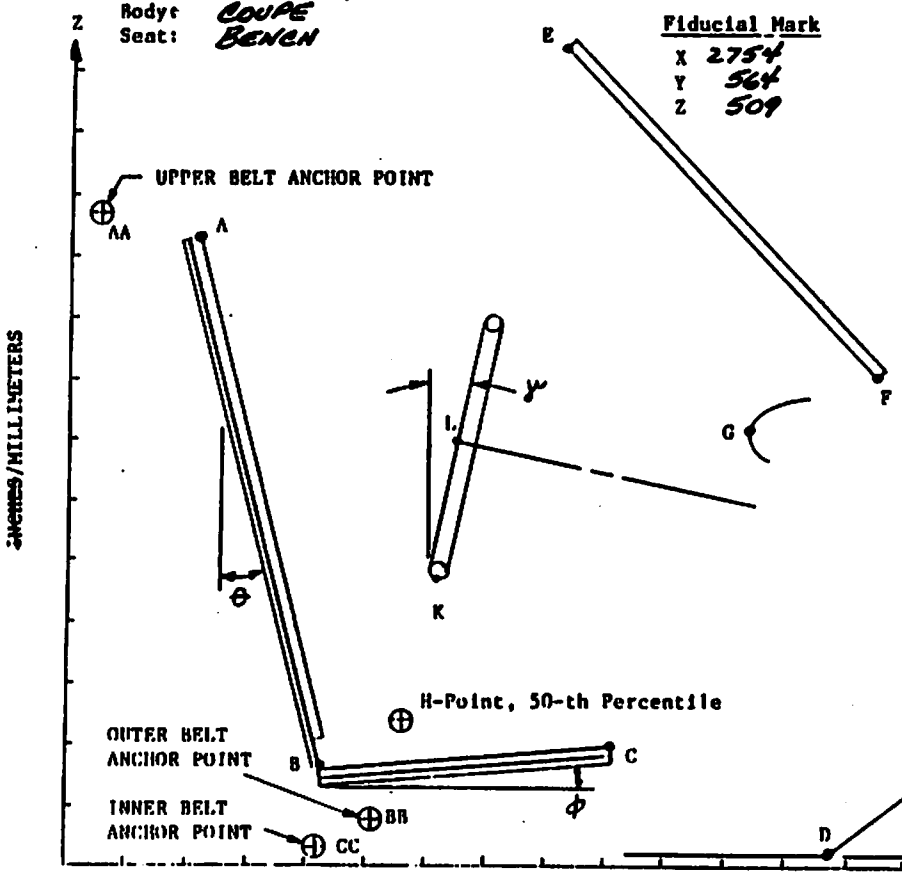
NHTSA INTERIOR RESTRAINT DATA BASE (CONT.)

USC 1624
Attachment 51
Sheet 1

SEAT AND OCCUPANT RESTRAINT SYSTEM INSTALLATION GEOMETRY
1978 MODEL GENERAL MOTORS PASSENGER CARS

Vehicle: CHEVROLET
Model: IMPALA & CAPRICE
Body: COUPE
Seat: BENCH

Side View
R.H. PASSENGER



METRIC
COORDINATES
(relative to arbitrary reference lines)

POINT	X	Z	Y*
A	3450	1167	+381
A(1)	3468	1256	+381
A(2)	3482	1304	+381
B	3188	636	+381
C	2730	688	+381
D	2163	488	+381
E	2751.5	1521.5	+381
F	2263	1187	+381
G	2555.5	1209.5	+381
H(n)	3018	704	+381
H(f)	2932.5	715.5	+381
H(r)	3098.5	692.5	+381
H(d)	—	25	—
K(n)	—	—	—
K(f)	—	—	—
K(r)	—	—	—
L(n)	—	—	—
L(f)	—	—	—
L(r)	—	—	—
θ	24°	—	—
Φ	8°	—	—
ψ	—	—	—
δ	56°	—	—
AA	3702	1451	+635
BB	3153	529	+690
CC	3200	482	+114
IIII	3098.5	646	+667

*From ℄ of vehicle, + to right

APPENDIX E

NHTSA INTERIOR RESTRAINT DATA BASE (CONT.)

USC 1624
Attachment 51
Sheet 2

SEAT AND OCCUPANT RESTRAINT SYSTEM INSTALLATION GEOMETRY
1978 MODEL GENERAL MOTORS PASSENGER CARS

End View

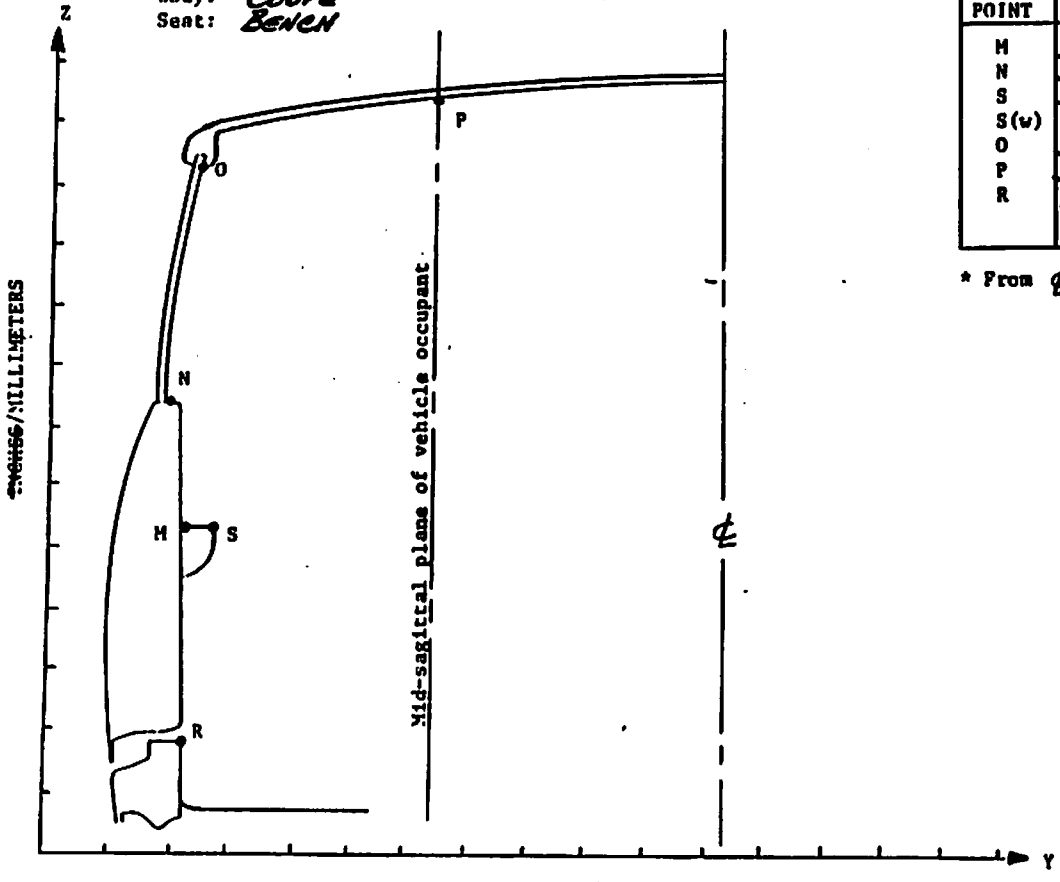
Vehicle: CHEVROLET
Model: IMPALA & CAPRICE
Body: COUPE
Seat: BENCH

R.H. PASSENGER

METRIC
COORDINATES
(relative to arbitrary reference lines)

POINT	X	Z	Y*
H	3098.5	900.5	+775.5
N	3098.5	1120.2	+838.7
S	3098.5	898	+692
S(w)	473.5	—	—
O	3098.5	1490.9	+644.7
P	3098.5	1569	+381
R	3098.5	552	+674.6

* From ℄ of vehicle, + to right



~~INCHES~~/MILLIMETERS

~~INCHES~~/MILLIMETERS

APPENDIX E

NHTSA INTERIOR RESTRAINT DATA BASE (CON'T)

SAS DICTIONARY

DSN=WSM1XNX.INTERIOR VOL=SER=FILE37

ALPHABETIC LIST OF VARIABLES

#	VARIABLE	TYPE	LENGTH	POSITION	#	VARIABLE	TYPE	LENGTH	POSITION
9	A	CHAR	2	75	43	DY	NUM	8	[illegible]
17	A1	CHAR	2	127	44	DZ	NUM	8	501
21	A2	CHAR	2	153	49	E	CHAR	2	535
13	AA	CHAR	2	101	50	EX	NUM	8	337
14	AAX	NUM	8	103	51	EY	NUM	8	345
15	AAY	NUM	8	111	52	EZ	NUM	8	353
16	AAZ	NUM	8	119	53	F	CHAR	2	361
10	AX	NUM	8	77	57	FI	CHAR	2	387
11	AY	NUM	8	85	58	FIX	NUM	8	389
12	AZ	NUM	8	93	59	FIY	NUM	8	397
18	A1X	NUM	8	129	60	FIZ	NUM	8	405
19	A1Y	NUM	8	137	6	FPX	NUM	8	51
20	A1Z	NUM	8	145	7	FPY	NUM	8	59
22	A2X	NUM	8	155	8	FPZ	NUM	8	67
23	A2Y	NUM	8	163	54	FX	NUM	8	363
24	A2Z	NUM	8	171	55	FY	NUM	8	371
25	B	CHAR	2	179	56	FZ	NUM	8	379
47	BB	CHAR	2	205	61	G	CHAR	2	413
30	BBX	NUM	8	207	65	GA	CHAR	2	439
31	BBY	NUM	8	215	66	GAX	NUM	8	441
32	BBZ	NUM	8	223	67	GAY	NUM	8	449
3	BODY	CHAR	7	23	68	GAZ	NUM	8	457
26	BX	NUM	8	181	69	GB	CHAR	2	465
27	BY	NUM	8	189	70	GBX	NUM	8	467
28	BZ	NUM	8	197	71	GBY	NUM	8	475
33	C	CHAR	2	231	72	GBZ	NUM	8	483
37	CC	CHAR	2	257	73	GF	CHAR	2	491
38	CCX	NUM	8	259	74	GFX	NUM	8	493
39	CCY	NUM	8	267	75	GFY	NUM	8	501
40	CCZ	NUM	8	275	76	GFZ	NUM	8	509
34	CX	NUM	8	233	62	GX	NUM	8	415
35	CY	NUM	8	241	63	GY	NUM	8	423
36	CZ	NUM	8	249	64	GZ	NUM	8	431
41	D	CHAR	2	283	77	HD	CHAR	2	517
45	DE	CHAR	2	309	78	HDX	NUM	8	519
46	DEX	NUM	8	311	79	HDY	NUM	8	527
47	DEY	NUM	8	319	80	HDZ	NUM	8	535
48	DEZ	NUM	8	327	81	HF	CHAR	2	543
42	DX	NUM	8	285	82	HFX	NUM	8	545

ALPHABETIC LIST OF VARIABLES (CON'T)

#	VARIABLE	TYPE	LENGTH	POSITION	#	VARIABLE	TYPE	LENGTH	POSITION
83	HFY	NUM	8	553	125	LRY	NUM	8	813
84	HFZ	NUM	8	561	124	LRZ	NUM	8	821
85	HH	CHAR	2	569	159	LX	NUM	8	1039
86	HHX	NUM	8	571	159	LY	NUM	8	1047
87	HHY	NUM	8	579	160	LZ	NUM	8	1055
23	HHZ	NUM	8	587	125	M	CHAR	2	329
89	HN	CHAR	2	595	1	MANUAF	CHAR	8	4
90	HNX	NUM	8	597	2	MODEL	CHAR	11	12
91	HNY	NUM	8	605	126	MX	NUM	8	831
92	HNZ	NUM	8	613	127	MY	NUM	8	839
93	HR	CHAR	2	621	128	MZ	NUM	8	847
94	HRX	NUM	8	623	129	N	CHAR	2	855
95	HRY	NUM	8	631	130	NX	NUM	8	857
96	HRZ	NUM	8	639	131	NY	NUM	8	865
97	K	CHAR	2	647	132	NZ	NUM	8	873
101	KF	CHAR	2	673	133	O	CHAR	2	881
102	KFX	NUM	8	675	134	OX	NUM	8	835
103	KFY	NUM	8	683	135	OY	NUM	8	891
104	KFZ	NUM	8	691	136	OZ	NUM	8	899
105	KN	CHAR	2	699	137	P	CHAR	2	907
106	KNX	NUM	8	701	138	PX	NUM	8	909
107	KNY	NUM	8	709	139	PY	NUM	8	917
108	KNZ	NUM	8	717	140	PZ	NUM	8	925
109	KR	CHAR	2	725	141	R	CHAR	2	933
110	KRX	NUM	8	727	142	RX	NUM	8	935
111	KRY	NUM	8	735	143	RY	NUM	8	943
112	KRZ	NUM	8	743	144	RZ	NUM	8	951
99	KX	NUM	8	649	145	S	CHAR	2	959
99	KY	NUM	8	657	4	SEAT	CHAR	7	30
100	KZ	NUM	8	665	5	SIDE	CHAR	14	37
137	L	CHAR	2	1037	149	SW	CHAR	2	985
113	LF	CHAR	2	751	150	SWX	NUM	8	987
114	LFX	NUM	8	753	151	SWY	NUM	8	995
115	LFY	NUM	8	761	152	SWZ	NUM	8	1003
116	LFZ	NUM	8	769	146	SX	NUM	8	961
117	LN	CHAR	2	777	147	SY	NUM	8	969
118	LNX	NUM	8	779	148	SZ	NUM	8	977
119	LNY	NUM	8	787	153	TH	CHAR	2	1011
120	LNZ	NUM	8	795	154	THX	NUM	8	1013
121	LR	CHAR	2	803	155	THY	NUM	8	1021
122	LRX	NUM	8	805	156	THZ	NUM	8	1029

APPENDIX F

VOLKSWAGEN DATA BASE

The Volkswagen data base covers U.S. passenger cars, foreign and domestic, for the years 1965 to 1976. The data is made up of 104 vehicle descriptors, 93 geometric measurements and weight break-down data for 63 vehicle components.

	DESCRIPTIVE DATA	
1	TYPE OF VEHICLE	
2	MANUFACTURER COUNTRY	
3	MODEL YEAR	
4	MARKET CLASS	
5	BODY TYPE	
6	MANUFACTURER	
7	MODEL	
8	NUMBER OF PASSENGERS	
9	RETAIL PRICE (CURRENT DOLLAR)	
10	SALES OF MODEL YEAR (REGISTRATION FIGURES)	
	VEHICLE WEIGHT	
11	CURB WEIGHT (LBS)	
12	INERTIA WEIGHT (LBS)	
13	LOAD DISTIBUTION FRONT/REAR	
	VEHICLE DIMENSIONS (ALL DIMENSIONS ARE IN ACCORDANCE WITH MVMA SPECIFICATIONS AND SAE J 1100)	
	WIDTH (IN)	
14	TREAD FRONT	W 101
15	TREAD REAR	W 102
16	MAXIMUM OVERALL CAR WIDTH	W 103
17	BODY WIDTH AT NO. 2 PILLAR	W 117
18	MAXIMUM FRONT DOORS OPEN	W 120
19	MAXIMUM REAR DOORS OPEN	W 121
	LENGTH (IN)	
20	BODY 0 TO FRONT OF DASH	L 30
21	WHEELBASE	L 101
22	OVERALL CAR LENGTH	L 103
23	OVERHANG FRONT	L 104
24	OVERHANG REAR	L 105
25	BODY UPPER STRUCTURE LENGTH	L 123
26	BODY 0 LINE TO C/L OF REAR WHEEL	L 127
27	BODY 0 LINE TO W/S COWL POINT	L 130

APPENDIX F

VOLKSWAGEN DATA BASE (CONT.)

	HEIGHT (IN)	
28	OVERALL HEIGHT	H 101
29	COWL HEIGHT	H 114
30	DECK HEIGHT	H 138
31	ROCKER PANEL FRONT TO GROUND FROM FRONT WHEEL C/L	H 112
32	BOTTOM OF FRONT DOOR TO GROUND	H 133
33	ROCKER PANEL REAR TO GROUND FROM REAR WHEEL C/L	H 111
34	BOTTOM OF REAR DOOR TO GROUND	H 135
35	WINDSHIELD SLOPE ANGLE (DEGREES)	H 122
36	HEADLAMPS TO GROUND	H 125
	GROUND CLEARANCE (IN)	
37	BUMPER TO GROUND FRONT	H 102
38	BUMPER TO GROUND REAR	H 104
39	ANGLE OF APPROACH (DEGREES)	H 106
40	ANGLE OF DEPARTURE (DEGREES)	H 107
41	REAR AXLE DIFFERENTIAL TO GROUND	H 153
42	MINIMUM RUNNING CLEARANCE	H 156
	FRONT COMPARTMENT (IN)	
43	H POINT TO BODY 0 LINE	L 31
44	EFFECTIVE HEAD ROOM	H 61
45	EFFECTIVE T POINT HEAD ROOM	H 75
46	MAXIMUM EFFECTIVE LEG ROOM-ACCELERATOR	L 34
47	H POINT TO HEEL POINT	H 30
48	H POINT TRAVEL	L 17
49	SHOULDER ROOM	W 3
50	HIP ROOM	W 5
51	UPPER BODY OPENING TO GROUND	H 50
52	STEERING WHEEL ANGLE VERTICAL (DEGREES)	H 18
53	BACK ANGLE FRONT (DEGREES)	L 40
	REAR COMPARTMENT (IN)	
54	H POINT COUPLE DISTANCE	L 50
55	EFFECTIVE HEAD ROOM	H 63
56	EFFECTIVE T POINT HEAD ROOM	H 76
57	MINIMUM EFFECTIVE LEG ROOM	L 51
58	H POINT TO HEEL POINT	H 31
59	MINIMUM KNEE ROOM	L 48
60	REAR COMPARTMENT ROOM	L 3
61	SHOULDER ROOM	W 4
62	HIP ROOM	W 6
63	UPPER BODY OPENING TO GROUND	H 51

APPENDIX F

VOLKSWAGEN DATA BASE (CONT.)

	LUGGAGE COMPARTMENT, TANK CAPACITY		
64	USABLE LUGGAGE CAPACITY (CU. FT.)	V	1
65	TANK CAPACITY (US GALS.)		
	CONFIGURATION		
66	BODY CONSRUCTION		
	POWER PLANT		
67	TYPE OF ENGINE		
68	WORKING PROCESS		
69	TRANSVERSE ENGINE		
70	INSTALLATION IN CHASSIS		
71	CYLINDER ARRANGEMENT		
72	NUMBER OF CYLINDERS		
73	BORE (IN)		
74	STROKE (IN)		
75	DISPLACEMENT (CU IN)		
76	COMPRESSION RATIO		
77	MAXIMUM HORSE POWER (SAE NET)		
78	ROTATIONS PER MINUTE @ HP MAX.		
	TRANSMISSION AND DRIVETRAIN		
79	TRANSMISSION		
80	AXLE RATIO (STANDARD)		
81	FRONT OR REAR WHEEL DRIVE		
	TIRES AND WHEELS		
82	TIRE LOAD RANGE		
83	TIRE TYPE		
84	TIRE PRESSURE FRONT (PSI)		
85	TIRE PRESSURE REAR (PSI)		
86	WHEEL DIAMETER (IN)		
	BRAKES		
87	SERVICE BRAKE TYPE FRONT		
88	SERVICE BRAKE TYPE REAR		
89	BRAKE CIRCUIT		
90	BOOSTER		
91	BRAKE POWER PROPORTIONING VALVE, FRONT AXLE		
92	BRAKE POWER PROPORTIONING VALVE, REAR AXLE		
93	BRAKE BALANCE FRONT/REAR		
94	EFFECTIVE AREA		

APPENDIX F

VOLKSWAGEN DATA BASE (CONT.)

STEERING

95 STEERING RATIO (OVERALL)

FUEL ECONOMY (MILES PER GALLON)

96 EPA COMBINED
97 EPA CITY
98 EPA HIGHWAY

AERODYNAMICS AND ACCELERATION

99 VEHICLE DRAG COEFFICIENT
100 FRONTAL AREA OF CAR (SQ FT)
101 VEHICLE ACCELERATION (0-60 MPH) (SEC)

ACCESSORIES AND AUXILIARIES

102 AIR CONDITIONING (STANDARD)
103 POWER STEERING (STANDARD)
104 POWER BRAKING (STANDARD)

APPENDIX F

VOLKSWAGEN DATA BASE (CON'T)

SAS DICTIONARY - VEHICLE DESCRIPTORS

DSN=WSM1XNX.VWATTS VOL=SER=FILE37

ALPHABETIC LIST OF VARIABLES

#	VARIABLE	TYPE	LENGTH	POSITION	#	VARIABLE	TYPE	LENGTH	POSITION
101	ACCEL	NUM	8	304	32	H133	NUM	8	252
102	AIR_COND	NUM	8	212	34	H135	NUM	8	268
71	ARRCYLS	NUM	8	564	30	H139	NUM	8	236
80	AXLE_RT	NUM	8	636	41	H153	NUM	8	324
93	BBALFR	NUM	8	740	42	H156	NUM	8	332
95	BDY_CNST	NUM	8	524	12	INERT_WT	NUM	8	92
5	BOD_TYP	NUM	8	36	78	INSTALL	NUM	8	556
90	BOOST	NUM	8	716	50	L3	NUM	8	476
73	BORE	NUM	8	580	48	L17	NUM	8	330
91	BPPVF	NUM	8	724	20	L30	NUM	8	156
92	BPPVR	NUM	8	732	43	L31	NUM	8	340
89	BRKCIRC	NUM	8	708	46	L34	NUM	8	364
76	COMP_RT	NUM	8	604	53	L40	NUM	8	420
11	CURB_WT	NUM	8	84	59	L43	NUM	8	468
72	CYLS	NUM	8	572	54	L50	NUM	8	423
75	DISP	NUM	8	596	57	L51	NUM	8	452
94	EFF_AREA	NUM	8	748	21	L101	NUM	8	164
97	EPA_CITY	NUM	8	772	22	L103	NUM	8	172
99	EPA_COMB	NUM	8	764	23	L104	NUM	8	180
98	EPA_HWY	NUM	8	780	24	L105	NUM	8	188
100	FRT_AREA	NUM	8	795	25	L123	NUM	8	196
81	FRWD	NUM	8	644	26	L127	NUM	8	204
52	H13	NUM	8	412	27	L130	NUM	8	212
47	H30	NUM	8	372	13	LDISTFR	NUM	8	100
58	H31	NUM	8	460	2	MANU_COU	NUM	8	12
51	H50	NUM	8	404	4	MAR_CL	NUM	8	28
63	H51	NUM	8	500	6	MCODE	NUM	8	44
44	H61	NUM	8	348	7	MODCODE	NUM	8	52
55	H63	NUM	8	436	8	NUM_PASS	NUM	8	60
45	H75	NUM	8	356	104	PWR_BRK	NUM	8	328
56	H76	NUM	8	444	103	PWR_STR	NUM	8	320
28	H101	NUM	8	220	78	RPM	NUM	8	620
37	H102	NUM	8	292	9	RT_PRICE	NUM	8	68
38	H104	NUM	8	300	77	SAE_HP	NUM	8	612
39	H106	NUM	8	308	10	SALES	NUM	8	76
40	H107	NUM	8	316	87	SERRFT	NUM	8	692
33	H111	NUM	8	260	88	SERRR	NUM	8	700
31	H112	NUM	8	244	85	STEER_R	NUM	8	756
29	H114	NUM	8	229	74	STROKE	NUM	8	588
35	H122	NUM	8	276	65	TANK	NUM	8	516
36	H125	NUM	8	284	62	TIRE_LR	NUM	8	652

ALPHABETIC LIST OF VARIABLES (CON'T)

#	VARIABLE	TYPE	LENGTH	POSITION
33	TIRE_TYP	NUM	8	660
34	TIREPF	NUM	8	668
35	TIREPR	NUM	8	676
29	TRANS	NUM	8	628
69	TRAV_ENG	NUM	8	548
67	TYP_ENG	NUM	8	532
64	V1	NUM	8	508
99	VEH_DRAG	NUM	8	738
1	VEH_TYP	NUM	8	4
49	W3	NUM	8	388
51	W4	NUM	8	404
50	W5	NUM	8	396
52	W6	NUM	8	412
14	W101	NUM	8	108
15	W102	NUM	8	116
16	W103	NUM	8	124
17	W117	NUM	8	132
18	W120	NUM	8	140
19	W121	NUM	8	148
96	WHLDIA	NUM	8	764
98	WK_PROC	NUM	8	780
3	YEAR	NUM	8	20

APPENDIX F

VOLKSWAGEN DATA BASE (CONT.)

Geometric Data Catalog (based on manufacturer or measurement data)

Node No.	Description	Fig.
	Interior Pass. Compartment	
1		
2	4 characteristic points of dashbord-driver	3.2.3-1
3		
4		
5		
6	4 characteristic points of dashbord in front of right passenger	3.2.3-1
7		
8		
9	steering wheel, upper edge middle pos.	3.2.3-1
10	" " lower " middle pos.	
11	" Column end middle pos.	
12	" wheel, total angular displacement (degrees) (1) steering wheel, total longitudinal displacement (2)	
13	steering wheel, diameter (3) seat displacement (1)	
14	H-point, driver (50 % male)	3.2.3-1
15	T-point, driver (50 % male)	
16	H-point driver, foremost position	
17	T-" " , " "	
18	H-" " , rearmost "	
19	T-" " , " "	
20	H-" , rear passenger, left (50 % male)	
21	T-" , rear passenger, left (50 % male)	
22	dashboard to lower edge seatback	3.2.3-2
23	front seatback to rear seatback	3.2.3-2

APPENDIX F

VOLKSWAGEN DATA BASE (CONT.)

Node No.	Descripton	Fig.
24	front seat cushion heigt above floor	3.2.3-2
25	front seat cushion height above ground	3.2.3-2
26	rear seat cushion height above floor	3.2.3-2
27	rear seat cushion height above ground	3.2.3-2
28	seat back edge to heel point front	3.2.3-2
29	seat back edge to heel point rear	3.2.3-2
	Belt Anchorage Points	
30	B-pillar low } driver	
31	tunnel } driver	
32	B-pillar high } driver	
	Window interior side, intersection of edge curves	
33	} windscreen	3.2.3-3
34	} windscreen	3.2.3-3
35	} windscreen	3.2.3-3
36	} windscreen	3.2.3-3
37	} rear window	3.2.3-3
38	} rear window	3.2.3-3
39	} rear window	3.2.3-3
40	} rear window	3.2.3-3
41	} front side window	3.2.3-4
42	} front side window	3.2.3-4
43	} front side window	3.2.3-4
44	} front side window	3.2.3-4
45	} rear side window	3.2.3-4
46	} rear side window	3.2.3-4
47	} rear side window	3.2.3-4
48	} rear side window	3.2.3-4

APPENDIX F

VOLKSWAGEN DATA BASE (CONT.)

Node No.	Description	Fig.
	Door Openings (y coordinate should be that of the door frame which is most relevant for occupant impact)	
49	front door opening	3.2.3-5
50		
51		
52		
53		
54		
55	rear door opening	3.2.3-5
56		
57		
58		
59		
60		
61	lower edge of side door sill (A-pillar)	
62	lower edge of side door sill (C-pillar)	
	Exterior Shape, Engine and Fuel Position	
63	6 characteristic points of front shape at y = 0	3.2.3-6
64		
65		
66		
67		
68		

APPENDIX F

VOLKSWAGEN DATA BASE (CONT.)

Node No.	Description	Fig.
69		
70		
71	6 characteristic points of front	3.2.3-6
72	shape at $y = \frac{W103}{4}$	
73	(W 103 see MVMA spec.)	
74		
75	upper left front corner of engine	
76	" " " " " hard engine	
77	lower left rear corner of engine	
78	rearmost point of transmission	
79	firewall	
80	lower edge of rear bumper	3.2.3-7
81	upper " " " "	3.2.3-7
82	rear end of fuel tank	3.2.3-7
83	center of fuel filling hole	3.2.3-7
84	rear end of spare wheel	
85	rim diameter	
	Axles	
86	front axle	
87	rear axle	
	Front beam	
88		
89	3 characteristic points of	
90	front beam	
	Drivetrain	
91	center of gravity of engine-transmission unit	
92	mass of engine (1)	
	mass of transmission (2)	
93	inertia moments of engine-transmission unit	

APPENDIX F

VOLKSWAGEN DATA BASE (CONT.)

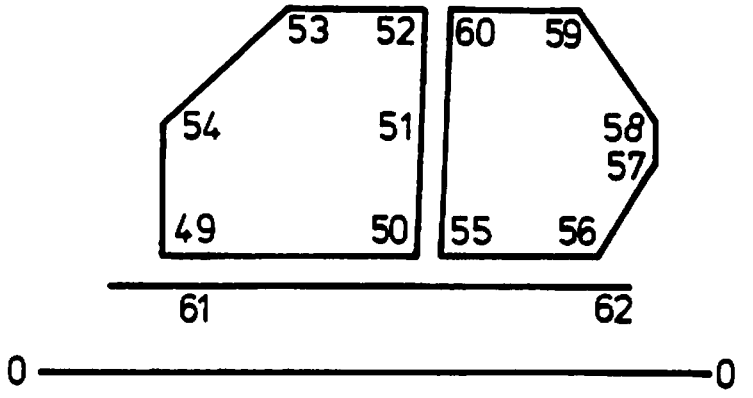


Fig. 3.2.3-5 Door Openings

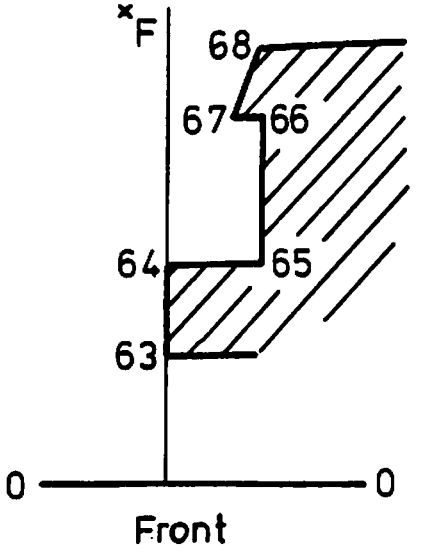


Fig. 3.2.3-6
Front Shape

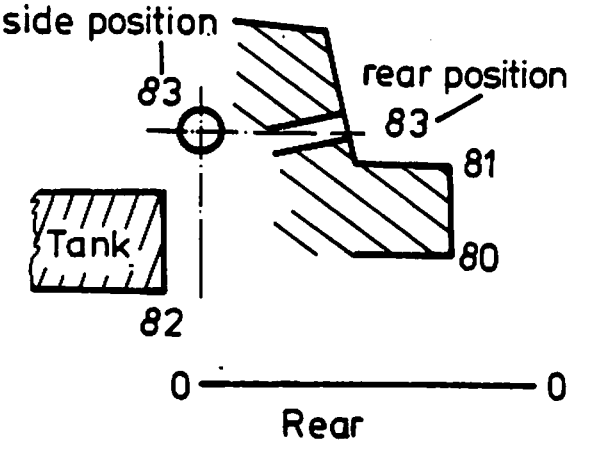


Fig. 3.3.3-7
Vehicle Rear

APPENDIX F

VOLKSWAGEN DATA BASE (CONT.)

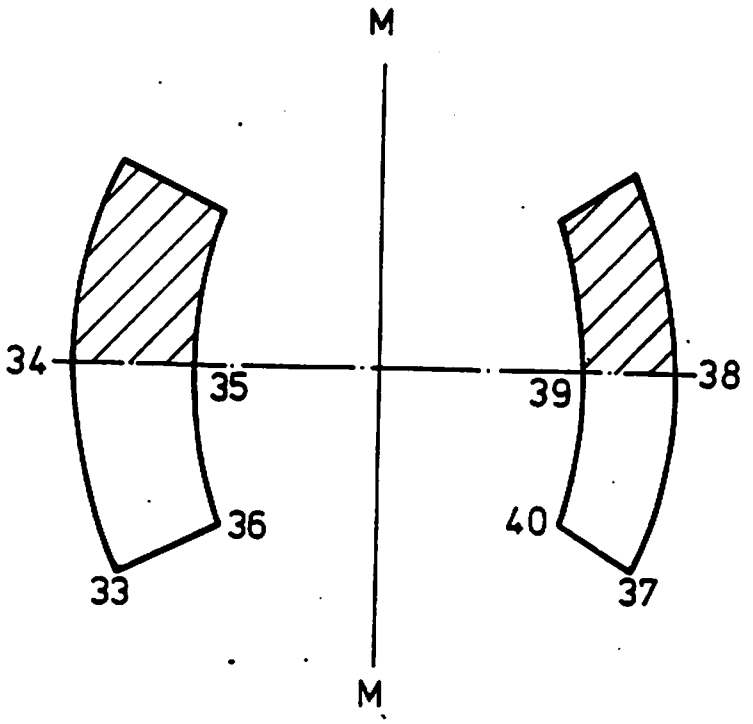
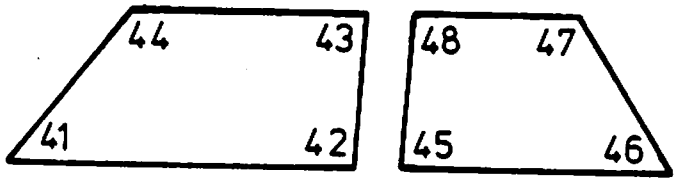


Fig. 3.2.3-3 Front and Rear Window



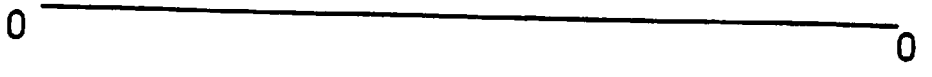


Fig. 3.2.3-4 Side Windows

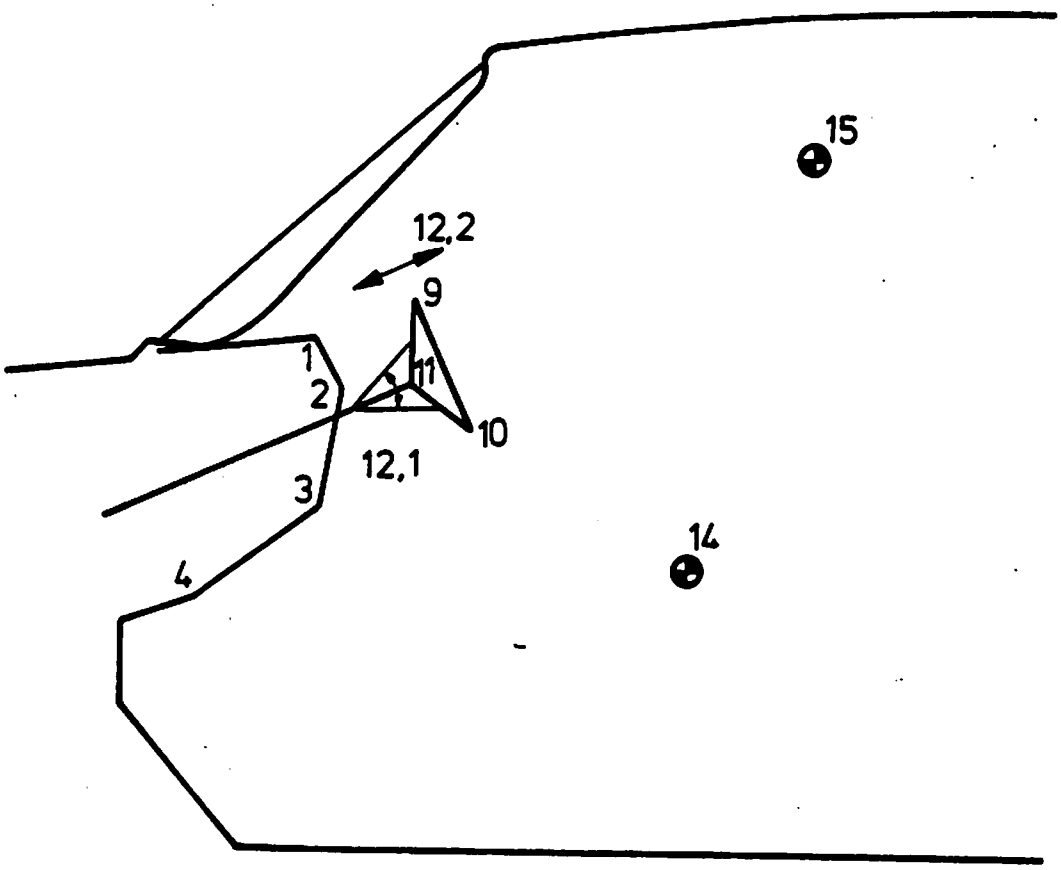


Fig. 3.2.3 - 1 Interior Compartment

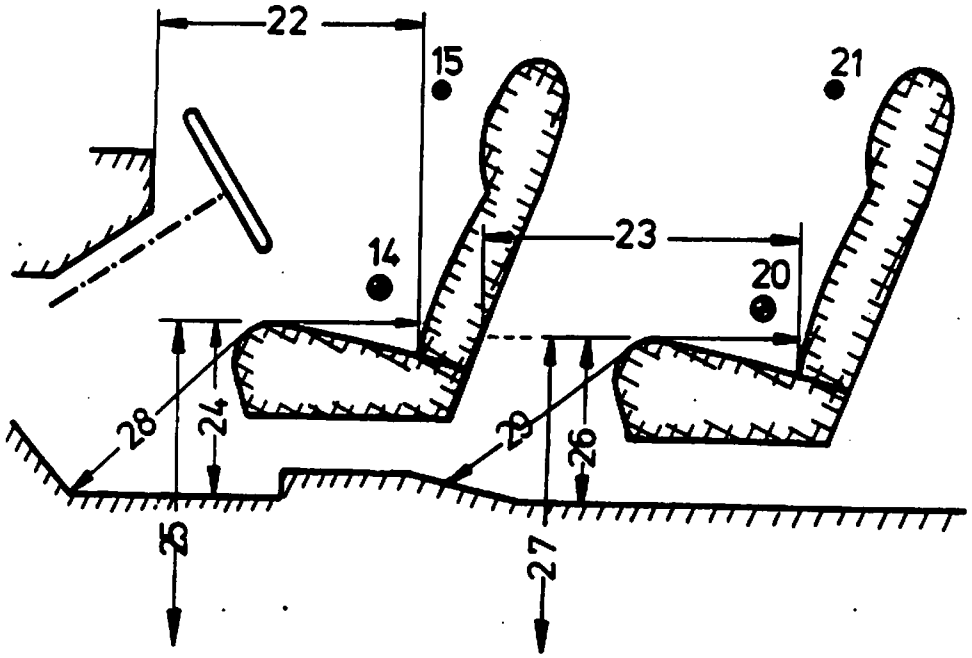


Fig. 3.2.3 - 2 PASS. COMPARTMENT DISTANCES

APPENDIX F

VOLKSWAGEN DATA BASE (CON'T)

SAS DICTIONARY - GEOMETRY DATA

DSN=WSM1XNX.GEOMETRY VOL=SER=FILE37

ALPHABETIC LIST OF VARIABLES

#	VARIABLE	TYPE	LENGTH	POSITION	#	VARIABLE	TYPE	LENGTH	POSITION
1	MAKEMOD	NUM	8	4	57	N19Z	NUM	8	452
[illegible]	N22	NUM	8	508	6	N2X	NUM	8	44
[illegible]	N23	NUM	8	516	7	N2Y	NUM	8	52
[illegible]	N24	NUM	8	524	8	N2Z	NUM	8	60
[illegible]	N25	NUM	8	532	58	N20X	NUM	8	460
68	N26	NUM	8	540	59	N20Y	NUM	8	468
69	N27	NUM	8	548	60	N20Z	NUM	8	476
70	N28	NUM	8	556	61	N21X	NUM	8	484
71	N29	NUM	8	564	62	N21Y	NUM	8	492
3	N1X	NUM	8	20	63	N21Z	NUM	8	500
4	N1Y	NUM	8	28	9	N3X	NUM	8	68
5	N1Z	NUM	8	36	10	N3Y	NUM	8	76
30	N10X	NUM	8	236	11	N3Z	NUM	8	84
31	N10Y	NUM	8	244	72	N30X	NUM	8	572
32	N10Z	NUM	8	252	73	N30Y	NUM	8	580
33	N11X	NUM	8	260	74	N30Z	NUM	8	588
34	N11Y	NUM	8	268	75	N31X	NUM	8	596
35	N11Z	NUM	8	276	76	N31Y	NUM	8	604
36	N12ANG	NUM	8	284	77	N31Z	NUM	8	612
37	N12LONG	NUM	8	292	78	N32X	NUM	8	620
38	N13DIA	NUM	8	300	79	N32Y	NUM	8	628
39	N13SEAT	NUM	8	308	80	N32Z	NUM	8	636
40	N14X	NUM	8	316	81	N33X	NUM	8	644
41	N14Y	NUM	8	324	82	N33Y	NUM	8	652
42	N14Z	NUM	8	332	83	N33Z	NUM	8	660
43	N15X	NUM	8	340	84	N34X	NUM	8	668
44	N15Y	NUM	8	348	85	N34Y	NUM	8	676
45	N15Z	NUM	8	356	86	N34Z	NUM	8	684
46	N16X	NUM	8	364	87	N35X	NUM	8	692
47	N16Y	NUM	8	372	88	N35Y	NUM	8	700
48	N16Z	NUM	8	380	89	N35Z	NUM	8	708
49	N17X	NUM	8	388	90	N36X	NUM	8	716
[illegible]	N17Y	NUM	8	396	91	N36Y	NUM	8	724
[illegible]	N17Z	NUM	8	404	92	N36Z	NUM	8	732
[illegible]	N18X	NUM	8	412	93	N37X	NUM	8	740
[illegible]	N18Y	NUM	8	420	94	N37Y	NUM	8	748
54	N18Z	NUM	8	428	95	N37Z	NUM	8	756
55	N19X	NUM	8	436	96	N38X	NUM	8	764
56	N19Y	NUM	8	444	97	N38Y	NUM	8	772

ALPHABETIC LIST OF VARIABLES (CON'T)

#	VARIABLE	TYPE	LENGTH	POSITION	#	VARIABLE	TYPE	LENGTH	POSITION
[illegible]	N33Z	NUM	8	780	138	N52X	NUM	8	1100
[illegible]	N39X	NUM	8	788	139	N52Y	NUM	8	1108
100	N39Y	NUM	8	796	140	N52Z	NUM	8	1116
101	N39Z	NUM	8	804	141	N53X	NUM	8	1124
12	N4X	NUM	8	92	142	N53Y	NUM	8	1132
13	N4Y	NUM	8	100	143	N53Z	NUM	8	1140
14	N4Z	NUM	8	108	144	N54X	NUM	8	1148
102	N40X	NUM	8	812	145	N54Y	NUM	8	1156
103	N40Y	NUM	8	820	146	N54Z	NUM	8	1164
104	N40Z	NUM	8	828	147	N55X	NUM	8	1172
105	N41X	NUM	8	836	148	N55Y	NUM	8	1180
106	N41Y	NUM	8	844	149	N55Z	NUM	8	1188
107	N41Z	NUM	8	852	150	N56X	NUM	8	1196
108	N42X	NUM	8	860	151	N56Y	NUM	8	1204
109	N42Y	NUM	8	868	152	N56Z	NUM	8	1212
110	N42Z	NUM	8	876	153	N57X	NUM	8	1220
111	N43X	NUM	8	884	154	N57Y	NUM	8	1228
112	N43Y	NUM	8	892	155	N57Z	NUM	8	1236
113	N43Z	NUM	8	900	156	N58X	NUM	8	1244
114	N44X	NUM	8	908	157	N58Y	NUM	8	1252
115	N44Y	NUM	8	916	158	N58Z	NUM	8	1260
116	N44Z	NUM	8	924	159	N59X	NUM	8	1268
117	N45X	NUM	8	932	160	N59Y	NUM	8	1276
118	N45Y	NUM	8	940	161	N59Z	NUM	8	1284
119	N45Z	NUM	8	948	18	N6X	NUM	8	140
120	N46X	NUM	8	956	19	N6Y	NUM	8	148
121	N46Y	NUM	8	964	20	N6Z	NUM	8	156
122	N46Z	NUM	8	972	162	N60X	NUM	8	1292
123	N47X	NUM	8	980	163	N60Y	NUM	8	1300
124	N47Y	NUM	8	988	164	N60Z	NUM	8	1308
125	N47Z	NUM	8	996	165	N61X	NUM	8	1316
126	N48X	NUM	8	1004	166	N61Y	NUM	8	1324
127	N48Y	NUM	8	1012	167	N61Z	NUM	8	1332
128	N48Z	NUM	8	1020	168	N62X	NUM	8	1340
129	N49X	NUM	8	1028	169	N62Y	NUM	8	1348
130	N49Y	NUM	8	1036	170	N62Z	NUM	8	1356
131	N49Z	NUM	8	1044	171	N63X	NUM	8	1364
15	N5X	NUM	8	116	172	N63Y	NUM	8	1372
16	N5Y	NUM	8	124	173	N63Z	NUM	8	1380
17	N5Z	NUM	8	132	174	N64X	NUM	8	1388
132	N50X	NUM	8	1052	175	N64Y	NUM	8	1396
133	N50Y	NUM	8	1060	176	N64Z	NUM	8	1404
134	N50Z	NUM	8	1068	177	N65X	NUM	8	1412
135	N51X	NUM	8	1076	178	N65Y	NUM	8	1420
136	N51Y	NUM	8	1084	179	N65Z	NUM	8	1428
137	N51Z	NUM	8	1092	180	N66X	NUM	8	1436

ALPHABETIC L T OF VARIABLES (CONT)

#	VARIABLE	TYPE	LENGTH	POSI ION	#	VARIABLE	TYPE	LENGTH	POSITION
181	N66Y	NUM	8	444	26	N8Z	NUM	8	204
182	N66Z	NUM	8	452	222	N8OX	NUM	8	1772
183	N67X	NUM	8	460	223	N9OY	NUM	8	1780
184	N67Y	NUM	8	468	224	N3OZ	NUM	8	1788
185	N67Z	NUM	8	476	225	N81X	NUM	8	1796
186	N68X	NUM	8	484	226	N81Y	NUM	8	1804
187	N68Y	NUM	8	492	227	N81Z	NUM	8	1812
188	N68Z	NUM	8	500	228	N82X	NUM	8	1820
189	N69X	NUM	8	1508	229	N82Y	NUM	8	1828
190	N69Y	NUM	8	1516	230	N82Z	NUM	8	1836
191	N69Z	NUM	8	1524	231	N83X	NUM	8	1844
21	N7X	NUM	8	164	232	N83Y	NUM	8	1852
22	N7Y	NUM	8	172	233	N83Z	NUM	8	1860
23	N7Z	NUM	8	180	234	N84X	NUM	8	1868
192	N70X	NUM	8	1532	235	N84Y	NUM	8	1876
193	N70Y	NUM	8	1540	234	N34Z	NUM	8	1884
194	N70Z	NUM	8	1548	237	N85X	NUM	8	1892
195	N71X	NUM	8	1556	238	N85Y	NUM	8	1900
196	N71Y	NUM	8	1564	239	N85Z	NUM	8	1908
197	N71Z	NUM	8	1572	240	N86X	NUM	8	1916
198	N72X	NUM	8	1580	241	N86Y	NUM	8	1924
199	N72Y	NUM	8	1538	242	N86Z	NUM	8	1932
200	N72Z	NUM	8	1596	243	N87X	NUM	8	1940
201	N73X	NUM	8	1604	244	N87Y	NUM	8	1948
202	N73Y	NUM	8	1612	245	N87Z	NUM	8	1956
203	N73Z	NUM	8	1620	246	N88X	NUM	8	1964
204	N74X	NUM	8	1628	247	N88Y	NUM	8	1972
205	N74Y	NUM	8	1636	248	N88Z	NUM	8	1980
206	N74Z	NUM	8	1644	249	N89X	NUM	8	1988
207	N75X	NUM	8	1652	250	N89Y	NUM	8	1996
208	N75Y	NUM	8	1660	251	N89Z	NUM	8	2004
209	N75Z	NUM	8	1668	27	N9X	NUM	8	212
210	N76X	NUM	8	1676	28	N9Y	NUM	8	220
211	N76Y	NUM	8	1684	29	N9Z	NUM	8	228
212	N76Z	NUM	8	1692	252	N90X	NUM	8	2012
213	N77X	NUM	8	1700	253	N90Y	NUM	8	2020
214	N77Y	NUM	8	1708	254	N90Z	NUM	8	2028
215	N77Z	NUM	8	1716	255	N91X	NUM	8	2036
216	N78X	NUM	8	1724	256	N91Y	NUM	8	2044
217	N78Y	NUM	8	1732	257	N91Z	NUM	8	2052
218	N78Z	NUM	8	1740	258	N92ENG	NUM	4	2060
219	N79X	NUM	8	1748	259	N92TRANS	NUM	8	2068
220	N79Y	NUM	8	1756	260	N93X	NUM	8	2076
221	N79Z	NUM	8	1764	261	N93Y	NUM	8	2084
24	N8X	NUM	8	188	262	N93Z	NUM	8	2092
25	N8Y	NUM	8	196	2	SOURCE	NUM	8	12

APPENDIX F

VOLKSWAGEN DATA BASE (CONT.)

VEHICLE WEIGHT BREAKDOWN SCHEME

Item	Description	
1	VEHICLE DESIGNATION TYPE	
2	Base vehicle curb weight (without fuel and lubricants)	
	Chassis	
3	Engine	
4	Engine Electric	
5	Transmission	
6	Engine-Transmission-Suspension	
7	Wheel suspension	
8	Supporting knuckle	Suspension of front axle
9	Front wheel suspension	
10	Stabilizer	
11	Shock absorber	
12	Front axle	
13	Steering	
14	Wishbone	Suspension of rear axle
15	Rear wheel suspension	
16	Stabilizer	
17	Shock absorber	

APPENDIX F

VOLKSWAGEN DATA BASE (CONT.)

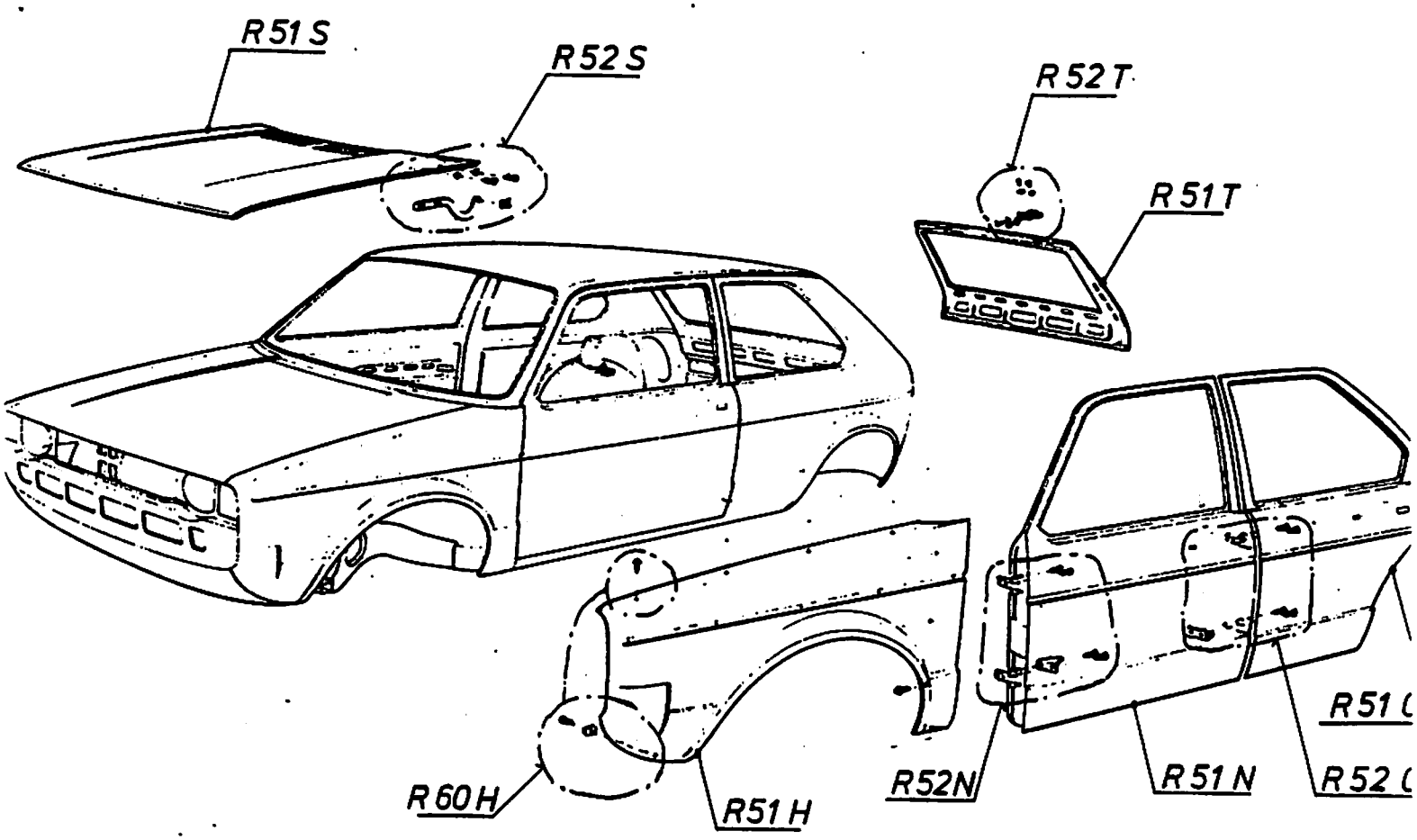
Item	Description
18	Rear axle
19	Brakes
20	Foot and hand levers
21	Fuel tank
22	Wheels and tires
23	Chassis total
	Body
24	Body in white
25	Glass and tracking
26	Body components
27	Air extractor ventilation
28	Heating system
29	Bumper system front
30	Bumper system rear
31	Electric
32	Interior trim and attenuation
33	Belts and belts attachment
34	Equipment
35	Exterior molding
36	Seats
37	Other body components
38	Body total
39	Passengers
40	Luggage

APPENDIX F

VOLKSWAGEN DATA BASE (CONT.)

Item	Description		
	Body in White in Detail		
41	Body Platform	R 51 E	
42	Front End	R 51 F	
43	Front side panel	R 51 G	Front
44	Front fenders	R 51 H	structure
45	Hoad assembly	R 51 S	
46	Dashboard		
47	Roof	R 51 L	
48	Front doors	R 51 N	
49	Rear doors	R 51 O	
50	Side panel (wheel housing)	R 51 P	
51	Rear End	R 51 R	Rear
52	Deck lid assembly	R 51 T	structure
53	Glove compartment hinge		
54	Front door hinge	R 52 N	
55	Rear door hinge	R 52 O	
56	Hood hinge	R 52 S	
57	Deck lid hinge	R 52 T	
58	Paint		
59	Air duct in body		
60	Cover sheet for engine		
61	Fastening front fender	R 60 H	
62	Fastening dashboard		
63	Fastening rear fender		

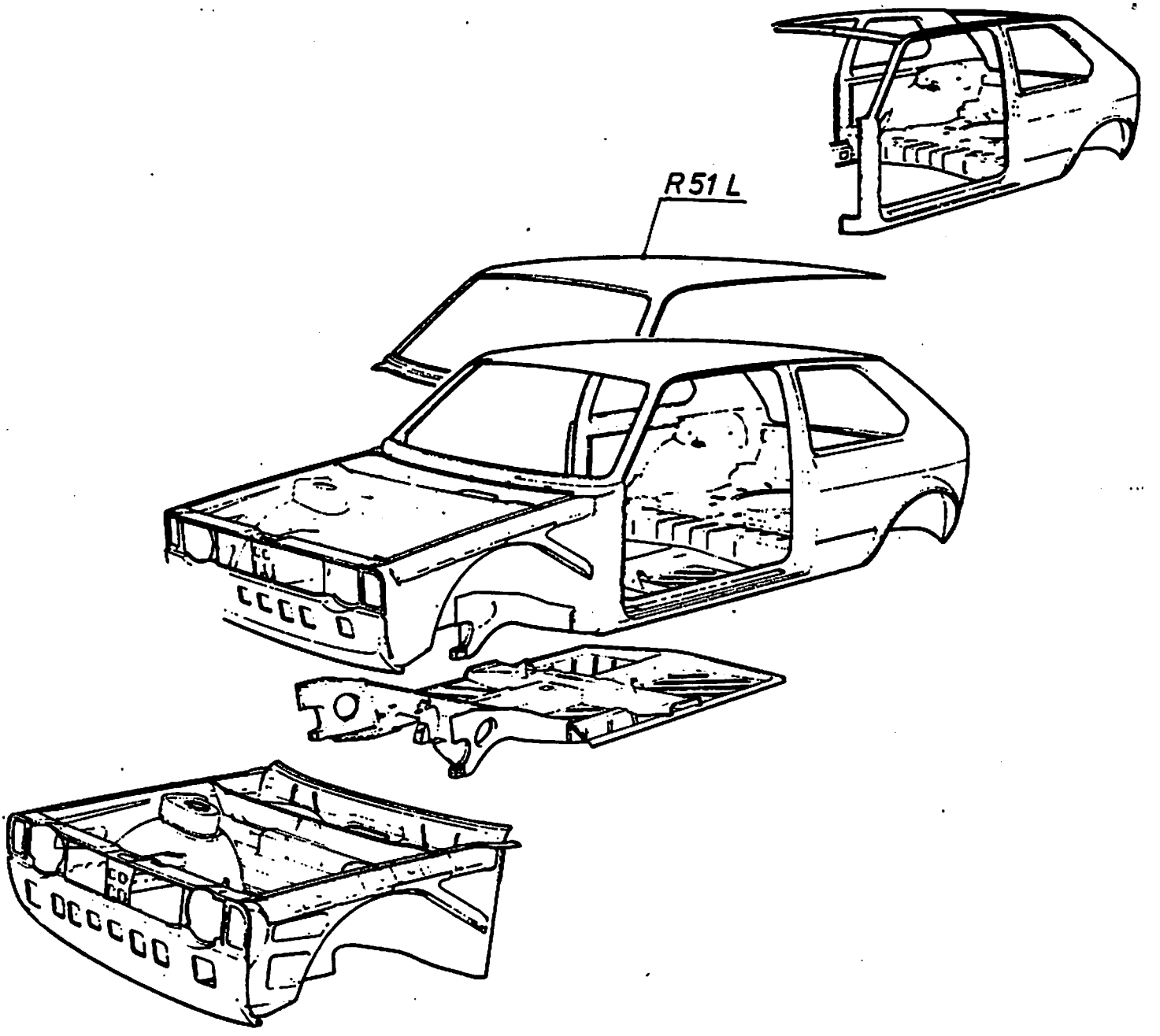
VOLKSWAGEN DATA BASE (CONT.)



Body in White (Complete)

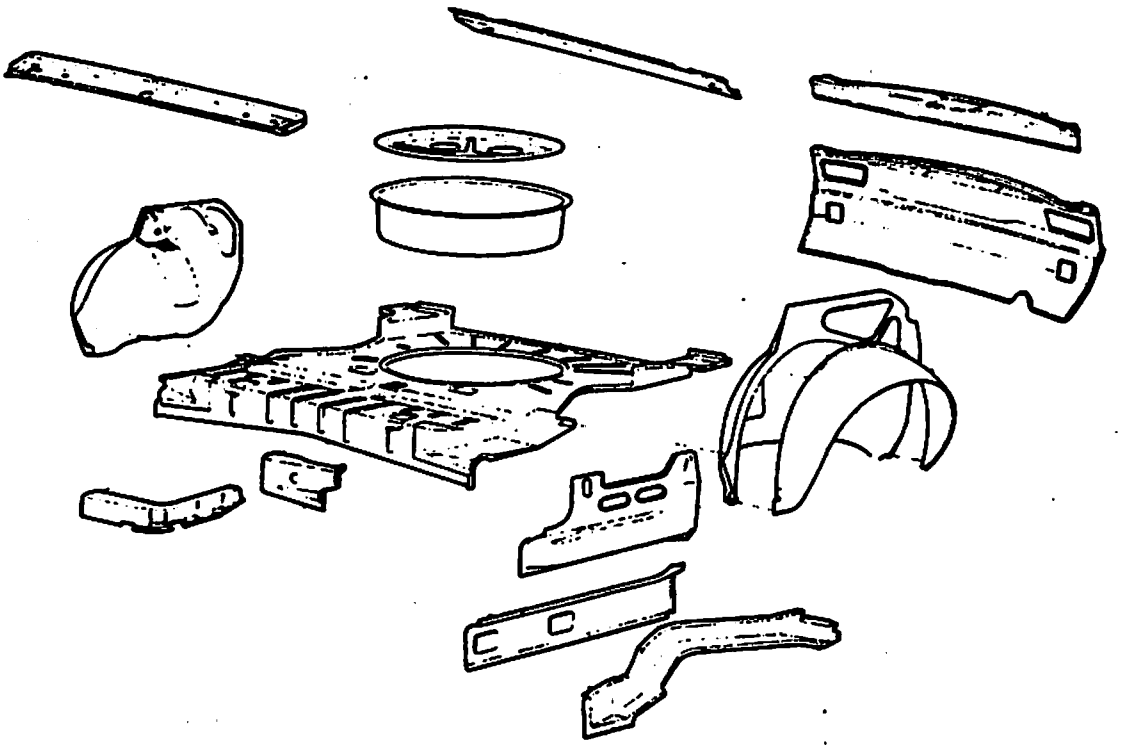
APPENDIX F

VOLKSWAGEN DATA BASE (CONT.)

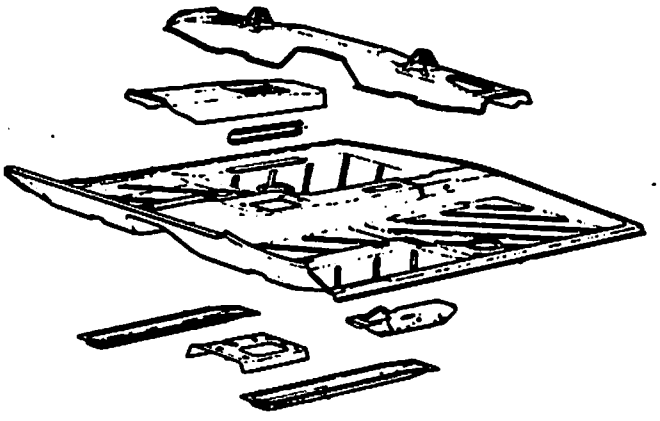


Body in White (Main Groups)

VOLKSWAGEN DATA BASE (CONT.)



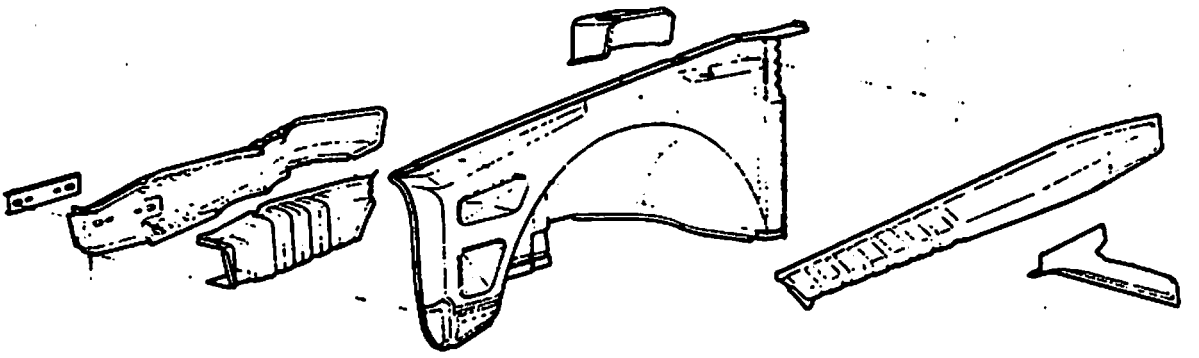
R51R Rear End



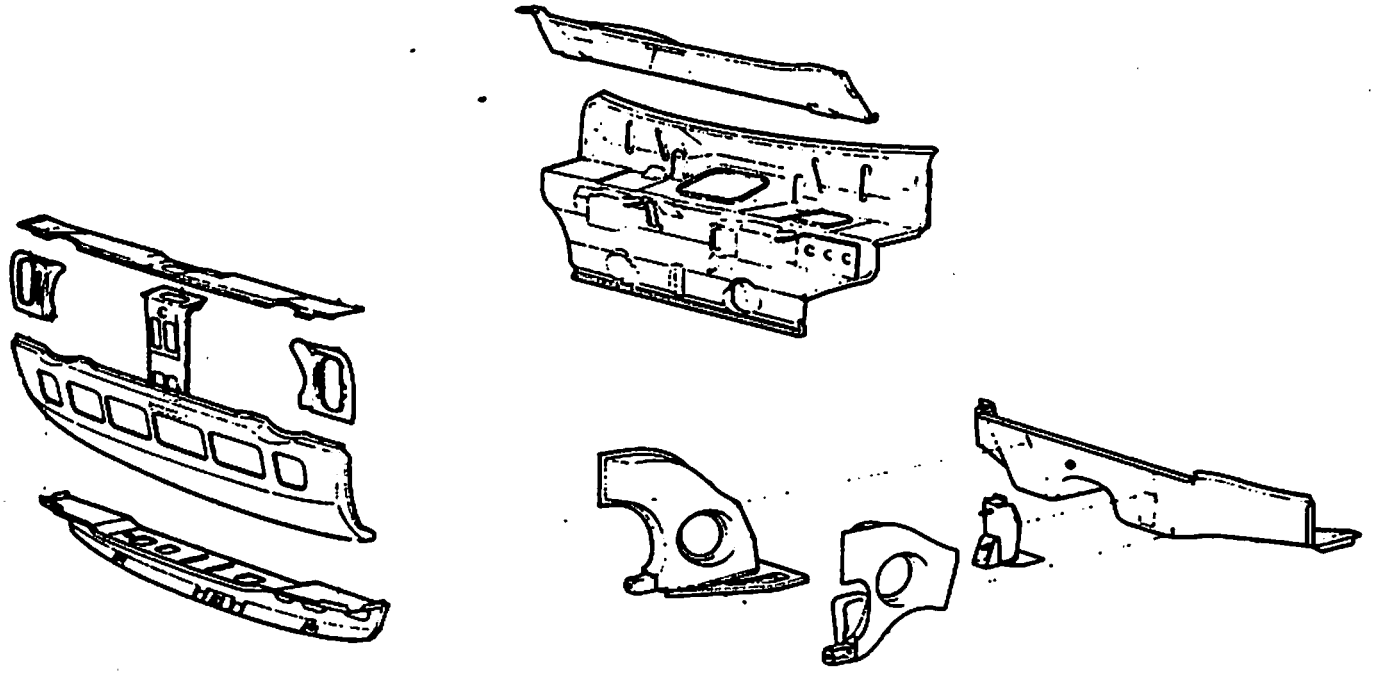
R51E Body Platform

APPENDIX F

VOLKSWAGEN DATA BASE (CONT.)



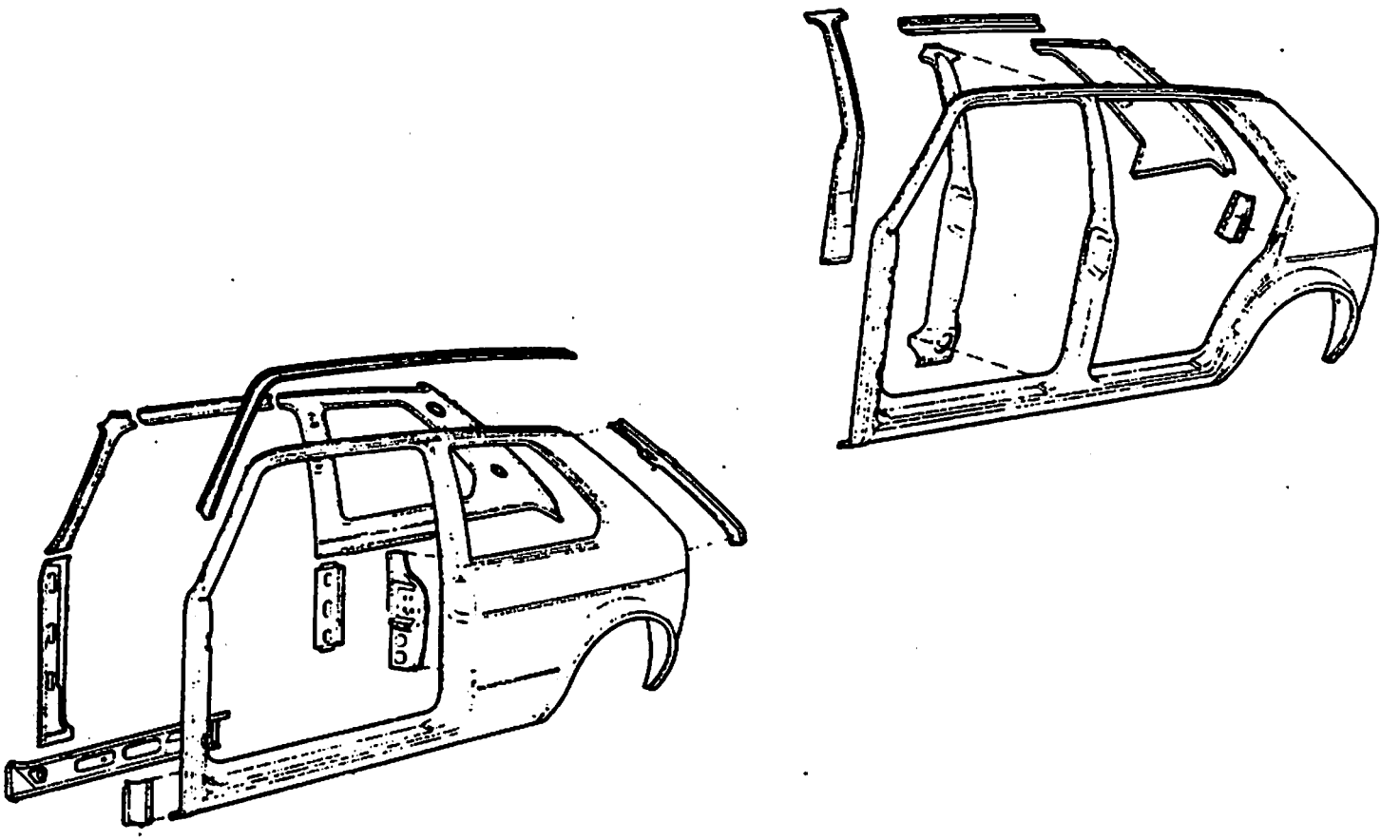
R 51 G Front Side Panel



R 51 F Front End

APPENDIX F

VOLKSWAGEN DATA BASE (CONT.)



R 51 P Side Panel

APPENDIX F

VOLKSWAGEN DATA BASE (CON'T)

SAS DICTIONARY - WEIGHT BREAK-DOWN DATA

DSN=WSM1XNX.VWWGT VOL=SER=FILE37

ALPHABETIC LIST OF VARIABLES

#	VARIABLE	TYPE	LENGTH	POSITION	#	VARIABLE	TYPE	LENGTH	POSITION
1	I1	NUM	8	4	40	I40	NUM	8	316
2	I2	NUM	8	12	41	I41	NUM	8	324
3	I3	NUM	8	20	42	I42	NUM	8	332
4	I4	NUM	8	28	43	I43	NUM	8	340
5	I5	NUM	8	36	44	I44	NUM	8	348
6	I6	NUM	8	44	45	I45	NUM	8	356
7	I7	NUM	8	52	46	I46	NUM	8	364
8	I8	NUM	8	60	47	I47	NUM	8	372
9	I9	NUM	8	68	48	I48	NUM	8	380
10	I10	NUM	8	76	49	I49	NUM	8	388
11	I11	NUM	8	84	50	I50	NUM	8	396
12	I12	NUM	8	92	51	I51	NUM	8	404
13	I13	NUM	8	100	52	I52	NUM	8	412
14	I14	NUM	8	108	53	I53	NUM	8	420
15	I15	NUM	8	116	54	I54	NUM	8	428
16	I16	NUM	8	124	55	I55	NUM	8	436
17	I17	NUM	8	132	56	I56	NUM	8	444
18	I18	NUM	8	140	57	I57	NUM	8	452
19	I19	NUM	8	148	58	I58	NUM	8	460
20	I20	NUM	8	156	59	I59	NUM	8	468
21	I21	NUM	8	164	60	I60	NUM	8	476
22	I22	NUM	8	172	61	I61	NUM	8	484
23	I23	NUM	8	180	62	I62	NUM	8	492
24	I24	NUM	8	188	63	I63	NUM	8	500
25	I25	NUM	8	196					
26	I26	NUM	8	204					
27	I27	NUM	8	212					
28	I28	NUM	8	220					
29	I29	NUM	8	228					
30	I30	NUM	8	236					
31	I31	NUM	8	244					
32	I32	NUM	8	252					
33	I33	NUM	8	260					
34	I34	NUM	8	268					
35	I35	NUM	8	276					
36	I36	NUM	8	284					
37	I37	NUM	8	292					
38	I38	NUM	8	300					
39	I39	NUM	8	308					

APPENDIX G

NHTSA CRASH PULSE DATA BASE

The NHTSA Crash Pulse data base is a record of vehicle collision crash pulses taken from test collisions on representative automobiles from 1975 to 1984.

DESCRIPTION

Test Title
Test Date
Test Performer
Contract Number
Test Reference Number
Test Objectives
Test Type
Test Configuration
Closing Speed
Impact Angle (Degrees)
Offset Distance (Inches)
Side Impact Point (Inches)
Test Track Surface
Test Track Condition
Ambient Temperature (F)
Type of Recorder
Data Link to Recorder
Test Anomaly
Description of other Anomalies

Vehicle Identification Number
Vehicle Make
Vehicle Model
Year
Engine Type
Engine Displacement
Transmission Type
Body Type
Test Weight
Wheelbase
Vehicle Length
Vehicle Width
Vehicle C.G. Distance Behind Front Axle
Steering Column Attachment to Dash
Steering Column Collapse Mechanism
Vehicle Modification Indicator
General Description of Vehicle Modification
Vehicle Speed
Travel Angle
Principal Direction of Impact Force
Vehicle Damage Index
Bumper Engagement
Sill Engagement
A-Pillar Engagement
Length of Direct Contact Damage
Exterior Damage Penetration Distances
Distance Between Center of Damage Area and C.G. Axis
Maximum Crush Distance

Type of Barrier
Diameter of Pole Barrier
Angle of Fixed Barrier
Absolute Speed of Barrier if Moving
Total Weight of Barrier if Moving

APPENDIX G

NHTSA CRASH PULSE DATA BASE (CONT.)

Rigid or Yielding Barrier

Rollover Test Type

Speed of Rollover Test Cart

Angle of Rollover Test Cart

Vehicle Orientation on Rollover Test Cart

Additional Description of Barrier or Rollover Test

Vehicle Containing Occupant

Seating Position

Seat Location

Occupant Type

Occupant Age

Occupant Height

Occupant Weight

Occupant Size Percentile

Occupant Sex

Occupant Simulated Age

Manufacturer of Dummy and Serial Number

Clearance Distances

Restraint System Type

Knee Restraint Description

Air Bag/Belt Deployment

Head Contact Region

Chest or Abdomen Contact Region

Leg Contact Region

Sequential Number of Data Curve on Tape

Sensor Type

Sensor Location

Occupant Attachment

Vehicle or Occupant Region Where Sensor is Attached

Natural Frequency of Sensor

Prefilter Frequency

Damping Ratio of Sensor

Number of Digital Points Defining Data Curve

Time Zero Point

Time Increment

Measurement Units for Data Curve

Axis Direction of Sensor

Initial Velocity

Data Quality

APPENDIX G

NHTSA CRASH PULSE DATA BASE (CON'T)

SAS DICTIONARY

DSN=WSM1XNX.SEG1 VOL=SER=FILE37

ALPHABETIC LIST OF VARIABLES

#	VARIABLE	TYPE	LENGTH	POSITION	FORMAT
17	ANOMAL	CHAR	3	135	
8	CLSSPD	NUM	8	133	
4	CONNO	CHAR	14	41	
18	DSCAN	CHAR	20	188	
9	IMPANG	NUM	3	141	
11	IMPPNT	NUM	8	157	
16	LINK	CHAR	3	182	
10	OFFSET	NUM	3	149	
15	RECTYP	CHAR	3	179	
14	TEMP	NUM	8	171	
2	TITLE	CHAR	26	12	
13	TKCOND	CHAR	3	168	
12	TKSURF	CHAR	3	165	
7	TSTCFN	CHAR	3	130	
1	TSTDAT	NUM	8	4	MMDDYY8.
5	TSTOBJ	CHAR	72	55	
3	TSTPRF	CHAR	3	38	
19	TSTREF	CHAR	8	208	
6	TSTTYP	CHAR	3	127	

APPENDIX G

NHTSA CRASH PULSE DATA BASE (CON'T)

SAS DICTIONARY

DSN=WSM1XNX.SEG2 VOL=SER=FILE37

ALPHABETIC LIST OF VARIABLES

#	VARIABLE	TYPE	LENGTH	POSITION
25	APLENG	CHAR	1	209
23	BMPENG	CHAR	1	207
9	BODY	CHAR	2	63
16	COLMEC	CHAR	3	106
34	CRDIST	NUM	8	274
33	DAMDST	NUM	8	266
7	ENGDSP	CHAR	12	49
6	ENGINE	CHAR	5	44
26	LENCNT	NUM	8	210
3	MAKE	NUM	8	20
18	MODDSC	CHAR	64	110
4	MODEL	NUM	8	28
17	MODIND	CHAR	1	109
27	PD1	NUM	8	213
28	PD2	NUM	8	226
29	PD3	NUM	8	234
30	PD4	NUM	8	242
31	PD5	NUM	8	250
32	PD6	NUM	8	258
21	PDOF	NUM	8	190
24	STLENG	CHAR	1	208
15	STRCOL	CHAR	1	105
10	TESTWT	NUM	8	65
8	TRANSM	CHAR	2	61
20	TRVANG	NUM	8	182
1	TSTREF	CHAR	3	4
14	VCGLOC	NUM	8	97
22	VDI	CHAR	9	198
2	VEHNO	NUM	8	12
12	VLNGTH	NUM	8	51
19	VSPEED	NUM	8	174
13	VWIDTH	NUM	8	89
11	WHLBAS	NUM	8	73
5	YEAR	NUM	8	36

APPENDIX G

NHTSA CRASH PULSE DATA BASE (CON'T)

SAS DICTIONARY

DSN=WSM1XNX.SEG3 VOL=SER=FILE37

ALPHABETIC LIST OF VARIABLES

#	VARIABLE	TYPE	LENGTH	POSITION
4	BARANG	NUM	8	23
3	BARDIA	NUM	8	15
12	BRDSN	CHAR	72	73
7	BRIGID	CHAR	1	47
2	BSHAPE	CHAR	3	12
5	BSPEED	NUM	8	31
6	BTOTWT	NUM	8	39
10	CAPTAN	NUM	8	57
9	CARTSP	NUM	8	49
8	POLTYP	CHAR	1	48
1	TSTREF	CHAR	3	4
11	VEHOR	NUM	8	65

APPENDIX G

NHTSA CRASH PULSE DATA BASE (CON'T)

SAS DICTIONARY

DSN=WSM1XNX.SEG4 VOL=SER=FILE37

ALPHABETIC LIST OF VARIABLES

#	VARIABLE	TYPE	LENGTH	POSITION
19	AD	NUM	3	150
24	AIRDEP	CHAR	2	180
17	CD	NUM	3	134
11	CDAGE	NUM	3	56
25	CNTRG1	CHAR	2	182
26	CNTRG2	CHAR	2	184
27	CNTRG3	CHAR	2	186
18	CS	NUM	8	142
12	DUMAN	CHAR	33	64
20	HD	NUM	3	153
13	HH	NUM	3	102
15	HR	NUM	8	118
16	HS	NUM	8	126
14	HW	NUM	3	110
21	KD	NUM	9	166
23	KNEDSC	CHAR	3	177
6	OAGE	NUM	3	23
5	OCTYPE	CHAR	1	22
7	OHEIGH	NUM	8	31
9	OPCENT	NUM	3	47
10	OSEX	CHAR	1	55
8	OWEIGH	NUM	8	39
22	RESTRN	CHAR	3	174
4	STLOC	CHAR	1	21
3	STPSTN	CHAR	1	20
1	TSTREF	CHAR	8	4
2	VEHOCC	NUM	3	12

APPENDIX G

NHTSA CRASH PULSE DATA BASE (CON'T)

SAS DICTIONARY

DSN=WSM1XNX.SEG5 VOL=SER=FILE37

ALPHABETIC LIST OF VARIABLES

#	VARIABLE	TYPE	LENGTH	POSITION
14	AXIS	CHAR	1	79
12	DELT	NUM	8	68
9	DMPRTO	NUM	3	44
15	INIVEL	NUM	8	80
7	NATFRQ	NUM	8	28
10	NOPTS	NUM	8	52
2	NUMBER	NUM	8	12
5	OCCATT	CHAR	1	24
8	PREFIL	NUM	8	36
16	QUALTY	CHAR	30	88
6	SENATT	CHAR	3	25
4	SENLOC	CHAR	2	22
3	SENTYP	CHAR	2	20
11	TOPT	NUM	8	60
1	TSTREF	CHAR	3	4
13	UNITS	CHAR	3	76

APPENDIX H

TSC AUTOMOBILE SAFETY DATA BASE

The TSC data base on automobile safety attributes includes the following data on vehicle population counts, standard equipment and interior and exterior dimensions.

available in R.L. Polk

1. Vehicle Number (1, 2, 3, etc.)
2. Count
3. Model Year
4. Make
5. Series/Model
6. Body Style
7. Curb Weight
8. GVW
9. Standard Tire Size
10. Wheelbase
11. Front Wheel Drive - (yes/no)
12. Transverse Engine - (yes/no)
13. 4-Wheel Drive - (yes/no)
14. Engine Displacement and Cylinders
15. Market Class - Manufacturers'
16. Market Class - EPA
17. Body Line
18. 2-Door/4-Door
19. Brake Type - front and rear (disc/drum)
20. Power Brake - (standard/optional/not available)
21. Brake Effective Area
22. Antiskid Device - (standard/optional/not available)
23. Power Steering - (standard/optional/not available)

APPENDIX H

TSC AUTOMOBILE SAFETY DATA BASE (CONT.)

24. Rear Window Defroster - (standard/optional/not available)
25. Rear Window Defogger - (standard/optional/not available)
26. Front/Rear Load Distribution
27. Bumper to Firewall (L104 + L101 - L127)**
28. Engine Block - "x" dimension
29. Front Bumper Height (H102) ✓
30. Windshield Slope Angle (H122)
31. Windshield Location (L125 + L104 + L101 - L127)**
32. Front Tread Width (W101)
33. Rear Tread Width (W102)
34. Upper Body Opening to Ground (H50)
35. Vehicle Height (H101)
36. Static Load Tire Radius Front (H108)
37. Cowl Point to Ground (H114)
38. Deck Point to Ground (H138)
39. Rocker Panel to Ground-Rear (H111)
40. Rocker Panel to Ground-Front (H112)
41. Sill Height (H133)
42. Vehicle Width (W117)
43. Shoulder Room-Front (W3)
44. Hip Room-Front (W5)
45. Head Lamp to Ground (H127)
46. Tail lamp to Ground (H128)
47. Passenger Distribution-Front (PD-1)

** These dimensions should be entered into the data base separately, not collectively as a single item.

APPENDIX H

TSC AUTOMOBILE SAFETY DATA BASE (CONT.)

48. Seating Reference Point-Front "x" coordinate (L31)
49. Effective Head Room (H61)
50. Effective T-Point Head Room-Front (H75)
51. Maximum Effective Leg Room-Accelerator (L34)
52. Seating Reference Point-Front to Heel (H30)
53. Design H-Point - Front Travel (L17)
54. Steering Wheel Angle (H18)
55. Back Angle-Front (L40)

APPENDIX H

TSC AUTOMOBILE SAFETY DATA BASE (CON'T)

SAS DICTIONARY

DSN=WSM1XNX.VEH75 VOL=SER=FILE37
DSN=WSM1XNX.VEH79 VOL=SER=FILE37
DSN=WSM1XNX.VEH80 VOL=SER=FILE37

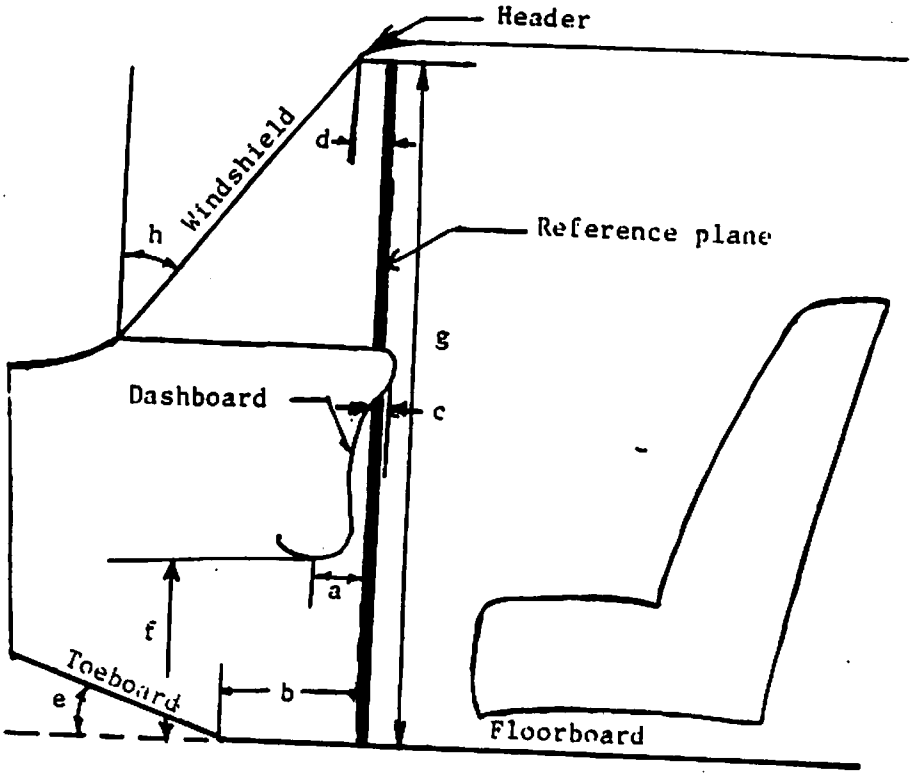
ALPHABETIC LIST OF VARIABLES

#	VARIABLE	TYPE	LENGTH	POSITION	#	VARIABLE	TYPE	LENGTH	POSITION
34	ANTISKID	CHAR	1	221	61	L31	NUM	3	409
29	BDY_LN	CHAR	5	198	64	L34	NUM	8	433
40	BMP_FW	NUM	8	241	68	L40	NUM	8	465
25	BODY	CHAR	20	162	71	L101	NUM	8	489
9	BODY_CD	CHAR	2	43	70	L104	NUM	3	481
33	BRK_AREA	NUM	8	213	69	L125	NUM	8	473
30	BRK_FRT	CHAR	2	208	72	L127	NUM	8	497
31	BRK_RER	CHAR	2	210	4	MAKE_CD	CHAR	2	28
13	CARB_CD	CHAR	1	52	23	MANU_NAM	CHAR	21	111
16	COUNT	NUM	8	55	74	MANUAB	CHAR	2	535
3	COUNTY	NUM	8	20	75	MCODE	NUM	8	537
17	CURB_WT	NUM	8	63	26	MKT_CL	NUM	3	182
10	CYL_CD	CHAR	2	45	73	MODCODE	CHAR	30	505
11	DISPLACE	CHAR	4	47	60	PD_1	NUM	8	401
29	DOORS	CHAR	5	203	32	PWR_BRK	CHAR	1	212
12	ENG_CD	CHAR	1	51	35	PWR_STR	CHAR	1	222
27	EPA_CL	NUM	8	190	37	RER_FOG	CHAR	1	224
38	FRT_LOAD	NUM	8	225	36	RER_FRST	CHAR	1	223
15	FUEL_CD	CHAR	1	54	39	RER_LOAD	NUM	8	233
19	FWD	CHAR	1	79	7	SER_NO_A	CHAR	1	39
6	GROUP	CHAR	1	38	22	SER_NO_8	CHAR	10	101
57	H18	NUM	8	457	8	SER_CD	CHAR	3	40
55	H30	NUM	8	441	24	SER_MOD	CHAR	30	132
47	H50	NUM	8	297	2	STATE	NUM	8	12
62	H61	NUM	8	417	21	TIRE_SIZ	CHAR	20	81
63	H75	NUM	8	425	20	TRS_ENG	CHAR	1	80
48	H101	NUM	8	305	1	VEH_NO	NUM	8	4
42	H102	NUM	8	257	56	W3	NUM	8	369
49	H108	NUM	8	313	57	W5	NUM	8	377
52	H111	NUM	8	337	45	W101	NUM	8	281
53	H112	NUM	8	345	46	W102	NUM	8	289
54	H113	NUM	8	353	55	W117	NUM	8	361
50	H114	NUM	8	321	18	WHEEL_BA	NUM	8	71
43	H122	NUM	8	265	44	WS_LOC	NUM	8	273
58	H127	NUM	8	385	41	X_DIM	NUM	8	249
59	H128	NUM	8	393	5	YEAR	NUM	8	30
51	H138	NUM	8	329					
14	HT_CD	CHAR	1	53					
66	L17	NUM	8	449					

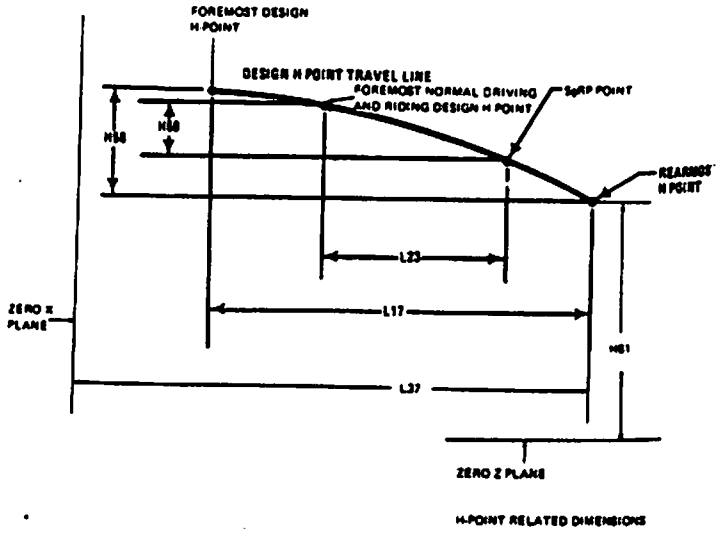
APPENDIX I

TSC AUTOMOBILE MEASUREMENT DATA BASE

The Automobile Measurement data base, thus far, is a record of equipment and interior dimensions for 120 vehicles.



a = Ref. plane to bottom of dashboard
b = Ref. plane to floor board/toeboard
c = Ref. plane to edge of dashboard
d = Ref. plane to header
e = Toeboard to floorboard angle
f = Floorboard to bottom of dashboard
g = header to floorboard
h = windhield angle



H-POINT RELATED DIMENSIONS

APPENDIX I

TSC AUTOMOBILE MEASUREMENT DATA BASE (CONT.)

Line No.	Measurement to be made	Stan-dard	Meas. left	Meas. center	Meas. right
1	Reference plane to edge of dashboard (horizontal distance)	inches	2.125	5.625	5.250
2	Reference plane to windshield upper header (DLO horizontal distance)	inches	- 7.125	- 6.500	- 7.125
3	Reference plane to dashboard bottom (horizontal distance)	inches	8.000	9.375	8.875
4	Reference plane to toeboard/floorboard (horizontal distance)	inches	13.750		12.625
5	Height of dashboard bottom from floorboard (vertical distance)	inches	15.000	11.500	15.000
6	Height of windshield header from floorboard (vertical distance)	inches	40.875		41.875
7	Accelerator pedal heelpoint to steering wheel center plane (vertical)	inches	23.750		
8	Accelerator pedal heelpoint to steering wheel center plane (horizontal)	inches	18.750		
9	"H" point to windshield upper D.L.O. (vertical distance)	inches	30.125		
10	"H" point to windshield lower D.L.O. (vertical distance)	inches	15.000		
11	Normal driving (1 notch up from rear) seat level (vertical distance)	inches	3.000		
12	Design "H" point rise - distance between 1 notch from front and #11	inches	0.250		
13	Tire Size P165/75R13 Tire radius	inches	11.250	Tire Pressure	F. 35 R. 35
14	Engine Type 105 CID 4 cyl in line Block length	inches	15.500		
15	Distance between dashboard center and driver center (horizontal distance)	inches	13.500		

Transmission type manual	
Power brakes no	Power steering no
Tinted glass yes	Amber directionals (rear) yes
Side markers Lighted yes Reflector yes	Remote mirror left no right none
Column mounted controls (ex. directionals) hazard flasher	
Seat type bucket	Tilt steering wheel no
Number of horns 1	Instrument panel lights
Extra lights (fog, passing, driving) no	
Halogen head lights no	
Tire wear bars visible no	

APPENDIX I

TSC AUTOMOBILE MEASUREMENT DATA BASE (CON'T)

SAS DICTIONARY

DSN=WSM1XNX.HH VOL=SER=FILE37

ALPHABETIC LIST OF VARIABLES

#	VARIABLE	TYPE	LENGTH	POSITION
24	AHP_STWH	NUM	8	221
23	AHP_STWV	NUM	8	213
53	AMBER_D	CHAR	6	471
35	ARM_L	NUM	8	309
36	ARM_W	NUM	8	317
60	COL_MCTL	CHAR	30	523
61	CTRA_B	NUM	8	503
62	CTRB_C	NUM	8	511
67	DEPTHB_A	NUM	8	551
66	DISTB_A	NUM	8	543
5	DISTC	NUM	8	69
4	DISTL	NUM	8	61
6	DISTR	NUM	8	77
19	DSH_FLRC	NUM	8	181
18	DSH_FLRL	NUM	8	173
20	DSH_FLRR	NUM	8	189
42	ENG_BLKL	NUM	8	389
41	ENG_TYP	CHAR	20	369
1	ENUM	NUM	8	4
33	H_ARMH	NUM	8	293
34	H_ARMV	NUM	8	301
26	H_LODLO	NUM	8	237
25	H_UPDLO	NUM	8	229
57	HAL_LMPS	CHAR	6	497
21	HEADRFLL	NUM	8	197
22	HEADRFLR	NUM	8	205
32	HPT_RISE	NUM	8	285
52	INST_PNL	CHAR	6	465
65	LATSP_A	NUM	8	635
64	LATSP_B	NUM	8	627
63	LATSP_C	NUM	8	619
50	LTD_MKRS	CHAR	6	453
56	NO_HRNS	NUM	8	489
59	NO_REG	NUM	8	515
31	NORMSEAT	NUM	8	277
45	PWR_BRK	CHAR	6	409
43	PWR_STR	CHAR	6	441
8	REF_DBC	NUM	8	93
7	REF_DBL	NUM	8	85
9	REF_DBR	NUM	8	101
11	REF_DLOC	NUM	8	117
10	REF_DLOL	NUM	8	109
12	REF_DLOR	NUM	8	125
51	REF_MKRS	CHAR	6	459
16	REF_TOEL	NUM	8	157
17	REF_TOER	NUM	8	165
14	REFDBOTC	NUM	8	141
13	REFDBOTL	NUM	8	133
15	REFDBOTR	NUM	8	149
54	RM_MRL	CHAR	6	477
55	RM_MRR	CHAR	6	483
3	RPD	NUM	8	53
47	SEAT_TYP	CHAR	20	421
27	SGRP_DPL	NUM	8	245
28	SGRP_DPR	NUM	8	253
29	SGRP_TRF	NUM	8	261
30	SGRP_TRR	NUM	8	269
49	TILT	CHAR	6	447
48	TIRE_BRS	CHAR	6	397
39	TIRE_PRF	NUM	8	353
40	TIRE_PRR	NUM	8	361
38	TIRE_RAD	NUM	8	345
37	TIRESIZE	CHAR	20	325
46	TNT_GLS	CHAR	6	415
44	TRANS	CHAR	6	403
2	VEH	CHAR	41	12
58	XTRA_LGT	CHAR	12	503

APPENDIX J

TSC AUTOMOBILE ENGINE DATA BASE

The TSC Automobile Engine data base would contain the following 22 data points for foreign and domestic automobile engines for the years 1975 to present.

1 Engine Manufacturer
2 Engine Models (years)
3 Car Lines (where engine applies)
4 Cubic Inch Displacement (CID)
5 Carburetor (barrels)
6 SAE Net KW (RPM)
7 SAE Net Torque (RPM)
8 Total Dry Weight
9 Engine Type (incline, v, angle, flat)
10 Engine Location (front, middle, rear)
11 No. of Cylinders
12 Bore
13 Stroke
14 Cylinder Head Material
15 Cylinder Block Material
16 Cylinder Block Deck Height
17 No. of Mounting Points (front)
18 No. of Mounting Points (rear)
19 Engine Installation Position
20 Engine Length
21 Engine Width
22 Engine Height

APPENDIX K

TSC TRUCK DATA BASE

TSC has compiled a data base of 78 safety attributes of light, medium and heavy trucks for the years 1975 to present.

1 - Year
2 - Manufacturer
3 - Series/Chassis Model
4 - Vehicle Count
5 - GVW Rating
6 - GCW Rating
7 - Engine Manufacturer (Standard Engine)
8 - Engine Model (Standard Engine)
9 - Fuel (Standard Engine)
10 - Vehicle Type (i.e. 6x4)
11 - Body Style (CBE/BBC, etc.)
12 - Number of Axles
13 - Wheelbase (Standard/Minimum/Maximum)
14 - Length from Back of Cab to Rear of Truck (Std./Min./Max.)
15 - Length from Back of Cab to Centerline Rear Axle(s) (Std./Min./Max.)
16 - Length from Centerline Rear Axle(s) to Center Fifth Wheel
17 - Overall Length (Std./Min./Max.)
18 - Length from Front Bumper to Rear of Cab
19*- Rear Axle Spacing(s) to Fifth Wheel
20 - Length of Overhang - Tilt Cab
21 - Length from Front Bumper to Center Front Axle (Front Overhang)
22 - Interior Length of Bed
23 - Cab Width
24*- Width of Outer Tread
25*- Front Tread
26*- Rear Tread
27 - Overall Height
28 - Height to Truck Bed
29 - Height from Bed to Cab Roof
30 - Height to Top of Cargo Box
31 - Gross Curb Weight Distribution by Axle (F/R for Std.//Min.//Max.)
32 - Gross Vehicle Weight Distribution by Axle (F/R for Std.//Min.//Max.)
33 - Front Axle Model
34 - Front Axle Type
35 - Front Axle Capacity
36 - Rear Axle Model
37 - Rear Axle Type
38 - Rear Axle Capacity
39 - Rear Axle Ratio Range
40 - Air/Hydraulic Brake System
41 - Type of Brake (F/R, Drum or Disc)
42 - Brake Actuator Type (Cam, S-Cam, Wedge, Hydraulic Piston, Caliper)
43 - Brake Actuator Size by Axle (F/R)
44 - Brake Lining Area (F/R or Total)
45 - Brake Antilock (Yes/No)
46 - Brake Air Compressor Capacity
47 - Brake Vacuum Cylinders - Number/Type/Size by Axle

APPENDIX K

TSC TRUCK DATA BASE (CONT)

48 - Front Brake Limiting Valve (Standard/Optional)
49 - Trailer Brake Controls (Standard/Optional)
50 - Type of Parking Brake System
51 - Parking Brake Size
52 - Parking Brake Area
53 - Frame Material
54 - Frame Section Modulus
55 - Fuel Tank Capacity (Tank A/Tank B, if more than one tank standard)
56 - Fuel Tank Material (Tank A/Tank B)
57 - Fuel Tank Location (Tank A/Tank B)
58 - Steering Make/Model
59 - Steering Type
60 - Power Steering
61 - Steering Ratio
62 - Steering Wheel Diameter
63*- Number of Spokes on Steering Wheel
64 - Suspension Type - Front
65 - Suspension Specifications - Front
66 - Suspension Capacity - Front
67 - Suspension Type - Rear
68 - Suspension Specifications - Rear
69 - Suspension Capacity - Rear
70 - Transmission Make/Model
71 - Standard Tires (F/R)
72 - Standard Rims (F/R)
73 - Standard Wheels (F/R)
74 - Cab Body Materials
75*- Windshield/Window Dimensions
76*- Mirror Type
77*- Mirror Size
78 - Air Conditioning (Standard/Optional)

* - Data not Readily Available on all truck models

APPENDIX K

TSC TRUCK DATA BASE (CONT)

SAS DICTIONARY

DSN=WSM1XNX.MEDIUM VOL=SER=FILE37
DSN=WSM1XNX.HEAVY VOL=SER=FILE37

ALPHABETIC LIST OF VARIABLES

#	VARIABLE	TYPE	LENGTH	POSITION	#	VARIABLE	TYPE	LENGTH	POSITION
51	ACTU_FR	CHAR	5	435	33	GCW_FMAX	NUM	8	268
55	ACTU_R	CHAR	25	459	32	GCW_FMIN	NUM	8	260
52	ACTU_SZF	CHAR	9	440	31	GCW_FSTD	NUM	8	252
56	ACTU_SZR	CHAR	9	484	36	GCW_RMAX	NUM	8	292
104	AIR_COND	CHAR	1	1255	35	GCW_RMIN	NUM	8	284
59	ANTILOCK	CHAR	1	501	34	GCW_RSTD	NUM	8	276
44	AXLECAPF	NUM	8	373	5	GVW	CHAR	11	35
46	AXLECAPR	NUM	8	406	39	GVW_FMAX	NUM	8	316
43	AXLEMODF	CHAR	25	343	38	GVW_FMIN	NUM	8	308
45	AXLEMODR	CHAR	25	381	37	GVW_FSTD	NUM	8	300
7	AXLES	CHAR	3	57	42	GVW_RMAX	NUM	8	340
53	BR_AREAF	NUM	8	449	41	GVW_RMIN	NUM	8	332
57	BR_AREAR	NUM	8	493	40	GVW_RSTD	NUM	8	324
50	BRAKE_FR	CHAR	2	433	27	H101	NUM	8	220
54	BRAKE_R	CHAR	2	457	25	L104	NUM	8	204
49	BRAKESYS	CHAR	3	430	24	L403	NUM	8	196
58	BRK_ADJ	CHAR	9	512	60	LIN_VALV	CHAR	1	510
20	CA_MAX	NUM	8	164	14	L101MAX	NUM	8	116
19	CA_MIN	NUM	8	156	13	L101MIN	NUM	8	108
18	CA_STD	NUM	8	148	12	L101STD	NUM	8	100
98	CAB_MATL	CHAR	30	1129	23	L103MAX	NUM	8	188
17	CE_MAX	NUM	8	140	22	L103MIN	NUM	8	180
16	CE_MIN	NUM	8	132	21	L103STD	NUM	8	172
15	CE_STD	NUM	8	124	2	MANUF	CHAR	3	12
52	COMP_CAP	NUM	8	502	103	MIR_SIZE	CHAR	8	1247
3	CONFIG	CHAR	21	60	102	MIR_TYPE	CHAR	15	1232
4	COUNT	NUM	8	27	53	NUMVAC_F	NUM	8	521
9	ENGMAN	CHAR	3	81	56	NUMVAC_R	NUM	8	544
10	ENGMOD	CHAR	15	84	22	OUTER_TR	NUM	8	228
72	FRAMEMAT	CHAR	25	609	69	PARK_BRK	CHAR	25	557
73	FRAMESEC	NUM	8	634	71	PKBRAREA	CHAR	8	601
74	FT_CAP_A	NUM	8	642	70	PKBRK_SZ	CHAR	9	592
77	FT_CAP_B	NUM	8	676	61	POWERST	CHAR	1	730
76	FT_LOC_A	CHAR	5	671	48	RATIOMAX	NUM	8	422
79	FT_LOC_B	CHAR	5	705	47	RATIOMIN	NUM	8	414
75	FT_MAT_A	CHAR	21	650	101	REARWIND	CHAR	7	1225
78	FT_MAT_B	CHAR	21	684	94	RIMS_F	CHAR	6	1092
11	FUEL	CHAR	1	99	95	RIMS_R	CHAR	9	1039
6	GCW	CHAR	11	46	1	SERIES	CHAR	12	15

ALPHABETIC LIST OF VARIABLES (CON'T)

#	VARIABLE	TYPE	LENGTH	POSITION
100	SIDEWIND	NUM	8	1217
34	SPOKES	NUM	8	747
32	ST_RATIO	NUM	8	731
30	STEERMOD	CHAR	20	710
33	STWHLDIA	NUM	8	739
87	SUS_CAPF	CHAR	11	820
90	SUS_CAPR	CHAR	31	931
85	SUS_TYPF	CHAR	45	755
88	SUS_TYPR	CHAR	80	831
86	SUSSPECF	CHAR	20	800
89	SUSSPECR	CHAR	20	911
92	TIRES_F	CHAR	20	1042
93	TIRES_R	CHAR	20	1062
61	TP_BR_CN	CHAR	1	511
91	TRANSMIS	CHAR	80	962
29	TREAD_F	NUM	8	236
30	TREAD_R	NUM	8	244
55	VAC_SZ_F	NUM	8	536
58	VAC_SZ_R	NUM	8	559
54	VAC_TYPF	CHAR	7	529
57	VAC_TYPR	CHAR	7	552
26	W117	NUM	8	212
95	WHEELS_F	CHAR	15	1097
97	WHEELS_R	CHAR	17	1112
99	WINDSHLD	NUM	8	1209
1	YEAR	NUM	8	4

APPENDIX L

TSC TRUCK DATA BASE - SAMPLE TRUCK

Data has been extracted from the Truck Index for a sample vehicle, a 1979 GMC Model C6DO42.

GMC Model C6DO42

1	Year	1979
2	Manufacturer	GMC
3	Series/Chassis Model	C6DO42
4	Vehicle Count (Polk 1981 Registration Data)	7294
5	GVW Rating	16,000 - 25,200 lbs.
6	GCW Rating	21,000 - 45,000 lbs.
7	Engine Manufacturer (Standard Engine)	Detroit Diesel
8	Engine Model (Standard Engine)	4-53N
9	Fuel (Standard Engine)	Diesel
10	Vehicle Type	4 x 2
11	Body Style (CBE/BBC, etc.)	CBE/97.5" BBC
12	Number of Axles	2
13	Wheelbase (Standard/Minimum/Maximum)	149/2125/218"
14	Back of Cab to Rear of Truck (Std/Min/Max)	132/100/253.25"
15	Back of Cab to Centerline Rear Axle(s) (Std/Min/Max)	84/60/152.5"
16	Centerline Rear Axle(s) to Center Fifth Wheel	-
17	Overall Length (Std/Min/Max)	229/197/350"
18	Front Bumper to Rear of Cab	-
19*	Rear Axle Spacing(s) to Fifth Wheel	-
20	Overhang - Tilt Cab	-
21	Front Bumper to Center Front Axle	32"
22	Interior Length of Bed	-
23	Cab Width	89-7/18"
24*	Width of Outer Tread	88-1/4"
25*	Front Tread	-
26*	Rear Tread	68.75"
27	Overall Height	89.5"
28	Height to Truck Bed	36.5"
29	Height from Bed to Cab Roof	53-3/8"
30	Height to Top of Cargo Box	-
31	Gross Curb Weight Distribution by Axle (F/R for Std/Min/Max)	-
32	Gross Vehicle Weight by Axle	3687/2106 3621/2098 3872/2435
33	Front Axle Model	GMC
34	Front Axle Type	I-beam
35	Front Axle Capacity	7000 lbs.
36	Rear Axle Model	GMC H-150
37	Rear Axle Type	Single Reduction
38	Rear Axle Capacity	15,000 lbs.
39	Rear Axle Ratio Range	6.17
40	Air/Hydraulic Brake System	Hydraulic
41	Type of Brake (F/R, Drum or Disc)	Drum/Drum

APPENDIX L

TSC TRUCK DATA BASE - SAMPLE TRUCK (CON'T)

42	Brake Actuator Type (Cam, Wedge, etc.)	-
43	Brake Actuator Size by Axle (F/R)	15x3/15x4
44	Brake Lining Area (F/R or Total)	199.4/248.7 sq.in.
45	Brake Antilock (Yes/No)	No
46	Brake Air Compressor Capacity	900 cu.in.
47	Brake Vacuum Cylinders - Number/Type/Size by Axle	-
48	Front Brake Limiting Valve (Standard/Optional)	-
49	Trailer Brake Controls (Standard/Optional)	Optional
50	Type of Parking Brake System	Internal expanding on Transmission
51	Parking Brake Size	9x3
52	Parking Brake Area	62.8 sq.in.
53	Frame Material	Steel channel
54	Frame Section Modulus	9.38 cu.in.
55	Fuel Tank Capacity (Tank A/Tank B, if more than one tank standard)	20 gal.
56	Fuel Tank Material (Tank A/Tank B)	-
57	Fuel Tank Location (Tank A/Tank B)	RH frame rail
58	Steering Make/Model	Saginaw 553
59	Steering Type	Recirculating ball & sector nut
60	Power Steering (Standard/Optional)	Optional
61	Steering Ratio	28.14:1
62	Steering Wheel Diameter	18"
63*	Number of Spokes on Steering Wheel	3
64	Suspension Type - Front	Steel leaf springs
65	Suspension Specifications - Front	53.75x3, 7-leaf
66	Suspension Capacity - Front	2900/3500 lbs.
67	Suspension Type - Rear	Variable rate, 2-stage
68	Suspension Specifications - Rear	54x2.5, 10-leaf
69	Suspension Capacity - Rear	6825/7500 lbs.
70	Transmission Make/Model	Clark 280VO
71	Standard Tires (F/R)	8.25-20E 10 pr. tube
72	Standard Rims (F/R)	6.0
73	Standard Wheels (F/R)	10 hole FN disc
74	Cab Body Materials	Steel construction
75*	Windshield/Window Dimensions	Windshield-1447 sq.in. Side Window-546 sq.in. Rear Window-330 sq.in.
76*	Mirror Type	West Coast
77*	Mirror Size	16x6
78	Air Conditioning (Standard/Optional)	Optional

* - Data not readily available on all truck models

APPENDIX M

U.S. TRUCK DRIVER ANTHROPOMETRIC DATA BASE

This data base is the result of a Society of Automotive Engineers study entitled: U.S. Truck Driver Anthropometric and Truck Work Space Data Survey. Anthropometric, demographic and interior cab design data were recorded on a nationwide sample of 183 male and 23 female heavy-duty truck drivers. Three configurations were tested during the survey. In Configuration A, only the seat fore-aft position could be adjusted. Configuration B permitted the seat fore-aft position and wheel position to be adjusted. In Configuration C, the seat height could be adjusted in addition to seat fore-aft and wheel position.

Case Number
Subject Number
Sex
Cabover or Conventional
Pedal Blocked or Unblocked
Condition

Config. A: Fore-aft seat position (cm)
Config. B: Fore-aft seat position (cm)
Config. B: Vertical wheel position (cm)
Config. B: Fore-aft wheel position (cm)
Config. B: After wheel change, vertical wheel position (cm)
Config. B: After wheel change, fore-aft wheel position (cm)
Config. B: After wheel change, fore-aft position of seat (cm)

Config. C, no jacket: Fore aft seat position (cm)
Config. C, no jacket: Vertical wheel position (cm)
Config. C, no jacket: Fore-aft wheel position (cm)
Config. C, no jacket: Seat height (cm)
Group

Config. A: Seat belt length (mm)
Config. A: Stomach-steering wheel clearance (cm)
Config. A: Left knee, foot on clutch, vertical position (mm)
Config. A: Left knee, foot on clutch, fore-aft position (mm)
Config. A: Forewardmost stomach-steering wheel clearance (cm)
Config. A: Forewardmost fore-aft position of seat (cm)

Config. B: Steering column angle (degrees from horizontal)
Config. B: Stomach-steering wheel clearance (cm)
Config. B: Left knee, foot on clutch, vertical position (mm)
Config. B: Left knee, foot on clutch, fore-aft position (mm)
Config. B: Top of head, vertical distance (mm)
Reach Probe: Right top (mm)
Reach Probe: Left top (mm)
Reach Probe: Right bottom (mm)
Reach Probe: Left bottom (mm)
Foot Reach (mm)
Config. B: After wheel change, steering column angle (degrees from horizontal)

Config. C, no jacket: Seat belt length (mm)
Config. C, no jacket: Steering column angle (degrees from horizontal)
Config. C, no jacket: Seat back angle
Config. C, no jacket: Stomach steering wheel clearance (cm)
Config. C, no jacket: Top of head, vertical distance (mm)
Config. C, no jacket: Preferred wheel diameter
Subject has Config. C jacket data
Subject has both jacket and no jacket data in Config. C

Config. C, with jacket: Seat belt length (mm)
Config. C, with jacket: Steering column angle (degrees from horizontal)
Config. C, with jacket: Seat back angle
Config. C, with jacket: Stomach-steering wheel clearance (cm)
Config. C, with jacket: Top of head, vertical distance (mm)
Config. C, with jacket: Preferred wheel diameter

APPENDIX M

U.S. TRUCK DRIVER ANTHROPOMETRIC DATA BASE (CONT.)

Config. C, with jacket: Fore-aft seat position (cm)
Config. C, with jacket: Fore-aft wheel position (cm)
Config. C, with jacket: Vertical wheel position (cm)
Config. C, with jacket: Seat height (cm)
Preferred sleep posture - length (mm)
Preferred sleep posture - width (mm)
Preferred sleep posture - height (mm)
Prone sleep posture - length (mm)
Prone sleep posture - width (mm)
Prone sleep posture - height (mm)
Fetal sleep posture - width (mm)
Fetal sleep posture - height (mm)
Stature with shoes (cm)
Weight with shoes (lbs)
Shoe length (cm)
Shoe width (cm)
Weight, no shoes (lbs)
Height, no shoes (cm)
Standing stomach girth (cm)
Standing stomach depth (cm)
Foot length (cm)
Foot width (cm)
Hand length (cm)
Hand width (cm)
Seated stomach depth (cm)
Knee height (cm)
Buttocks-popliteal length (cm)
Buttocks-knee length (cm)
Seated stomach girth (cm)
Shoulder breadth (cm)
Elbow breadth (cm)
Hip breadth (cm)
Sitting height (cm)
Sitting eye height (cm)
Sitting shoulder height (cm)

Arm length (cm)
Popliteal height (cm)

Truck make

Truck model

Truck year (oldest year listed)
Configuration
Type of truck
Equipped with: Sleeper berth
Equipped with: Tilt steering wheel
Equipped with: Power steering
Equipped with: Telescope steering column
Equipped with: Suspension seat
Equipped with: Translating steering column
Equipped with: Vertically adjustable seat
Adjust seat differently when hauling a load

Adjust seat: At start of shift
Adjust seat: After a short time driving
Adjust seat: About half way through shift
Adjust seat: Near end of shift
Adjust Seat: Other

Ethnic background
Age
Years commercial truck experience
Base State

Type of company

Are you an owner-operator
Usual area of operations

Drive mostly

APPENDIX M

U.S. TRUCK DRIVER ANTHROPOMETRIC DATA BASE (CON'T)

SAS DICTIONARY

DSN=WSM1XNX.ANTHRO VOL=SER=FILE37

ALPHABETIC LIST OF VARIABLES

#	VARIABLE	TYPE	LENGTH	POSITION	#	VARIABLE	TYPE	LENGTH	POSITION
19	ABELTL	NUM	8	148	53	CJSTHGT	NUM	8	420
102	ADJ_HALF	NUM	8	812	47	CJSTNWHL	NUM	8	372
99	ADJ_HAUL	NUM	8	788	52	CJVWHL	NUM	8	412
104	ADJ_OTHR	NUM	8	828	51	CJWHL	NUM	8	404
101	ADJNRSEG	NUM	8	804	49	CJWLDIA	NUM	8	388
103	ADJNREND	NUM	8	820	36	CNJBELT	NUM	8	284
100	ADJSTART	NUM	8	796	37	CNJCLANG	NUM	8	292
106	AGE	NUM	8	844	40	CNJHEAD	NUM	8	316
24	AMINSEAT	NUM	8	188	14	CNJSEAT	NUM	8	108
111	AREA_OP	NUM	8	884	38	CNJSTANG	NUM	8	300
65	ARM_L	NUM	8	676	17	CNJSTHGT	NUM	8	132
7	ASEAT	NUM	8	52	39	CNJSTMWL	NUM	8	308
23	ASTOMMIN	NUM	8	180	15	CNJVWHL	NUM	8	116
20	ASTOMWHL	NUM	8	156	16	CNJWHL	NUM	8	124
22	AUPKNEE	NUM	8	172	41	CNJWLDIA	NUM	8	324
21	AUPKNEEV	NUM	8	164	6	COND	NUM	8	44
105	BASE_ST	NUM	8	860	90	CONFIG	NUM	8	716
25	BCOLANG	NUM	8	196	112	DRIVELOC	NUM	8	892
35	BCOLANG2	NUM	8	276	80	ELBBRD	NUM	8	636
29	BHEAD	NUM	8	228	105	ETHNIC	NUM	8	836
43	BOTHDATA	NUM	8	340	61	FETAL_H	NUM	8	484
3	BSEAT	NUM	8	60	60	FETAL_W	NUM	8	476
13	BSEAT2	NUM	8	100	79	FOOT_L	NUM	8	556
26	BSTOMWHL	NUM	8	204	71	FOOT_W	NUM	8	564
28	BUPKNEE	NUM	8	220	34	FOOTRCH	NUM	8	268
27	BUPKNEEV	NUM	8	212	19	GROUP	NUM	8	140
76	BUT_POPL	NUM	8	604	72	HAND_L	NUM	8	572
77	BUTKNEE	NUM	8	612	73	HAND_W	NUM	8	580
9	BVWHL	NUM	8	68	31	HIPBRD	NUM	8	644
11	BVWHL2	NUM	8	84	57	HT_NOSHO	NUM	8	532
10	BWHL	NUM	8	76	62	HT_SHOE	NUM	8	492
12	BWHL2	NUM	8	92	42	JDATA	NUM	8	332
4	CAB	NUM	8	28	75	KNEE_HT	NUM	8	596
1	CASE_NO	NUM	6	4	87	MAKE	NUM	8	692
44	CJBELT	NUM	8	348	33	MODEL	NUM	8	700
45	CJCOLANG	NUM	8	356	89	MODELYR	NUM	8	708
48	CJHEAD	NUM	8	380	110	OWN_OP	NUM	8	876
50	CJSEAT	NUM	8	396	5	PEDAL	NUM	8	36
46	CJSTANG	NUM	8	364	66	POPL_H	NUM	8	684

ALPHABETIC LIST OF VARIABLES (CON'T)

#	VARIABLE	TYPE	LENGTH	POSITION
56	PREF_H	NUM	8	444
54	PREF_L	NUM	8	428
55	PREF_W	NUM	8	436
59	PRONE_H	NUM	8	468
57	PRONE_L	NUM	8	452
58	PRONE_W	NUM	8	460
94	PWR_STR	NUM	8	748
33	RPLBOT	NUM	8	260
31	RPLTOP	NUM	8	244
32	RPRBOT	NUM	8	252
30	RPRTOP	NUM	8	236
78	SEATSTOM	NUM	8	620
3	SEX	NUM	8	20
79	SHLDRBRD	NUM	8	628
64	SHLDRHT	NUM	8	668
66	SHOE_L	NUM	8	508
65	SHOE_W	NUM	8	516
43	SIT_EYE	NUM	8	560
82	SIT_HT	NUM	8	652
92	SLEEPER	NUM	8	732
74	SSTOMDEP	NUM	8	588
69	ST_STOMD	NUM	8	548
68	ST_STOMG	NUM	8	540
2	SUBJ_NO	NUM	8	12
96	SUSPSEAT	NUM	8	764
95	TELE_COL	NUM	8	756
93	TILT_WHL	NUM	8	740
97	TRANSCOL	NUM	8	772
100	TYPE_CO	NUM	8	368
91	TYPE_TRK	NUM	8	724
99	VADJSEAT	NUM	8	780
66	WT_NOSHO	NUM	8	524
63	WT_SHOE	NUM	8	500
107	YRS_EXP	NUM	8	352

APPENDIX N

TSC TRUCK ENGINE DATA BASE

The TSC Truck Engine data base would contain the following 15 data points for gasoline and diesel truck engines for the years 1975 to 1983 if NHTSA requires the data in a SAS format.

1 Engine Manufacturer
2 Engine Model
3 Fuel
4 Engine Type
5 Cylinders
6 Bore & Stroke
7 CID
8 Horsepower @ RPM/Type
9 Torque @ RPM/Type
10 Compression Ratio
11 Aspiration
12 Dry Weight
13 Length
14 Width
15 Height

APPENDIX N

TSC TRUCK ENGINE DATA BASE (CON'T)

Data has been extracted from the Truck Index for a sample truck engine, a 1979 Detroit Diesel Model 4-53N.

Detroit Diesel Model 4-53N

1	Engine Manufacturer	Detroit Diesel
2	Engine Model	4-53N
3	Fuel	Diesel
4	Engine Type	In-line 4, 2-cycle OHV
5	Cylinders	4
6	Bore & Stroke	3.875x4.50
7	CID	212 cu.in.
8	Horsepower @ RMP/Type	136 @ 2800/Gross HP
9	Torque @ RPM/Type	282 @ 1800/Gross Torque
10	Compression Ratio	21.0:1
11	Aspiration	Natural
12	Dry Weight	1110 lbs
13	Length	-
14	Width	-
15	Height	-

APPENDIX O

MOTORCYCLE ATTRIBUTES

1 Manufacturer
2 Model
3 Counts (by Model)
4 Registrations by State
5 Engine Specifications includeing displacement, # of cylinders, HP and torque
6 Gear ratios
7 Suspension, front and rear
8 Tire type
9 Brake type, front and rear
10 Brake swept area
11 Brake loading
12 Wheelbase
13 Rake and trail
14 Handlebar width
15 Seat height
16 Seat width
17 Footpeg height
18 Ground clearance
19 Test Weight
20 Weight distributions, front and rear
21 GVWR
22 Load capacity
23 Performance specifications including braking distance

GS550LZ

MIDDLEWEIGHT CUSTOM CRUISER

One of the hottest "L" series models, the 1982 GS550LZ comes with more performance and styling extras than ever before. In fact, it's the most complete 550-class custom cruiser anywhere.

SUZUKI

FEATURES

- **New Air Front Forks**
- **New Style Mag Type Wheels**
- **New Instruments**
- **New Slotted Front Disc Brake**
- **New Aluminum Muffler Brackets**
- **New Raised White Letter Tires**
- **New Fingertip Choke Lever**
- **New Combined Function LH Handlebar Switch**
- **New Rectangular Aluminum Front Brake Reservoir**
- 4 Cylinder DOHC Engine
- Gear Position Indicator
- Transistorized Ignition
- Automatic Cam Chain Tensioner
- Wide Tires
- Quartz-Halogen Headlight
- Fuel Gauge
- Leading Axle Front Forks
- O-Ring Sealed Drive Chain
- 6-Speed Transmission
- Needle Bearing Suspended Swing Arm
- Tapered Roller Steering Head Bearings
- Low Friction Fork Bushings
- Accessory Terminal
- Starter Interlock

SPECIFICATIONS

ITEM	SPECIFICATION	ITEM		SPECIFICATION
Engine Type	Four-stroke, DOHC, 4 cylinders	Overall Width		870mm (34.3 in)
Displacement	549cc	Overall Height		1,180mm (46.5 in)
Bore & Stroke	56 x 55.8mm	Seat Height		775mm (30.5 in)
Compression Ratio	8.6:1	Wheelbase		1,450mm (57.1 in)
Carburetor	Four, constant velocity Mikuni BS32SS	Ground Clearance		140mm (5.5 in)
		Dry Weight		199kg (439 lbs)
Lubrication	Wet sump	Suspension	FRONT	Air, oil damped, leading axle
Ignition	Transistorized		REAR	Oil damped, 5 load settings
Starter	Electric	Brakes	FRONT	Slotted Disc
Transmission	6-speed		REAR	Drum
Final Drive	#50 (530) chain, O-ring sealed	Tires	FRONT	90/90-19 52H
			REAR	130/90-16 67H
Overall Length	2,205mm (86.8 in)	Fuel Tank Capacity		12 lit (3.2 gal)
		Color		Black, Red

Specifications are subject to change without prior notice.

SUZUKI.82

PERFORMANCE ABOVE ALL

APPENDIX O

MOTORCYCLE ATTRIBUTES (CONT.)

MOTORCYCLE INDUSTRY COUNCIL, INC. SPECIFICATIONS

ESTIMATED U.S. MOTORCYCLE POPULATION
MODEL TYPE, ENGINE DISPLACEMENT, AND YEAR

	1980		Revised 1979	
	Number of Motorcycles	% of Total	Number of Motorcycles	% of Total
Model Type				
On-Highway	3,720,000	50.3%	3,664,000	48.4%
Off-Highway*	1,565,000	21.1%	1,529,000	20.2%
Dual Purpose	2,115,000	28.6%	2,384,000	31.4%
	7,400,000	100.0%	7,577,000	100.0%
Engine Displacement				
Under 125 cc	1,789,000	24.2%	2,016,000	26.6%
125-349 cc	2,077,000	28.1%	2,023,000	26.7%
350-449cc	1,275,000	17.2%	1,302,000	17.2%
450-749 cc	968,000	13.1%	973,000	12.8%
Over 749 cc	1,291,000	17.4%	1,263,000	16.7%
	7,400,000	100.0%	7,577,000	100.0%
Year Sold New				
1980	967,600	13.1%	-	-
1979	987,300	13.3%	1,000,500	13.2%
1978	863,900	11.7%	904,500	11.9%
1977	870,300	11.7%	963,200	12.7%
1976	768,800	10.4%	890,800	11.8%
1975	568,400	7.7%	684,400	9.0%
1974	590,700	8.0%	738,500	9.7%
1973	564,800	7.6%	728,500	9.6%
1972	399,100	5.4%	520,900	6.9%
1971	272,200	3.7%	362,400	4.8%
1970	164,700	2.2%	221,500	2.9%
1969	82,200	1.1%	109,000	1.5%
Prior to 1969	304,000	4.1%	464,800	6.0%
	7,400,000	100.0%	7,577,000	100.0%

*Includes competition motorcycles.

Model Type Definitions: On-Highway motorcycles are those certified by the manufacturer as being in compliance with the Federal Motor Vehicle Safety Standards, and designed primarily for use on public roads. Off-Highway motorcycles are those which *are not* certified by the manufacturer as being in compliance with the Federal Motor Vehicle Safety Standards. Dual Purpose motorcycles are certified by the manufacturer as being in compliance with the Federal Motor Vehicle Safety Standards, and designed with the capability for use on public roads as well as off-highway recreational use. Mopeds and nopeds are not icluded in 1979 and 1980 motorcycle population estimates.

APPENDIX O

MOTORCYCLE ATTRIBUTES (CONT.)

MOTORCYCLE INDUSTRY COUNCIL, INC. SPECIFICATIONS

NEW MOTORCYCLE REGISTRATIONS
10 LEADING BRANDS BY MARKET SHARE, 1975-1980

Make	1980 Rank	1980 Mrkt. Share	1979 Rank	1979 Mrkt. Share	1978 Rank	1978 Mrkt. Share	1977 Rank	1977 Mrkt. Share	1976 Rank	1976 Mrkt. Share	1975 Rank	1975 Mrkt. Share
Honda	1	38.6%	1	39.2%	1	35.3%	1	40.5%	1	37.9%	1	40.2%
Yamaha	2	23.4%	2	23.1%	2	25.9%	2	21.2%	2	20.4%	3	16.2%
Kawasaki	3	15.7%	3	14.9%	3	15.6%	3	16.8%	3	17.1%	2	17.2%
Suzuki	4	16.2%	4	13.3%	4	13.2%	4	11.2%	4	11.4%	4	12.6%
Harley-Davidson	5	4.9%	5	6.3%	5	6.6%	5	6.1%	5	6.8%	5	6.9%
Vespa	6	.8%	7	.7%	-	-	-	-	-	-	-	-
BMW	7	.4%	6	.7%	7	.6%	6	.9%	6	.9%	6	1.0%
Triumph	8	.3%	8	.6%	6	.8%	7	.7%	7	.9%	8	.5%
Husqvarna	9	.2%	10	.3%	9	.4%	10	.3%	-	-	10	.5%
Can Am	10	.1%	-	-	-	-	-	-	-	-	-	-
Hodaka	-	-	9	.3%	8	.5%	8	.6%	8	.6%	-	-
Bultaco	-	-	-	-	10	.3%	9	.3%	-	-	9	.5%
Norton	-	-	-	-	-	-	-	-	9	.6%	7	.6%
Indian	-	-	-	-	-	-	-	-	10	.4%	-	-

NEW MOTORCYCLE REGISTRATIONS BY STATE, 1975-1980

Total U.S.	1975 748,778	1976 783,100	1977 648,558	1978 764,097	1979 881,186	1980 838,193
State						
Alabama	10,947	13,615	18,325	14,400	16,630	14,869
Alaska	1,685	3,025	3,631	2,636	2,099	2,151
Arizona	7,887	8,729	10,202	9,134	10,074	10,760
Arkansas	6,145	6,190	533	3,200	5,622	6,219
California	70,142	83,626	106,106	110,072	115,978	95,966
Colorado	12,093	12,104	13,792	12,572	15,790	14,018
Conn.	7,428	8,623	9,026	8,500	11,493	10,961
Delaware	1,463	1,485	1,408	1,191	1,792	1,807
D.C.	515	661	763	519	703	648
Florida	29,772	27,770	30,890	26,994	33,129	40,383
Georgia	17,424	16,914	21,662	19,055	22,566	24,380
Hawaii	855	966	1,344	1,900	685	1,669
Idaho	7,477	8,898	9,937	8,623	9,213	8,179
Illinois	38,321	40,397	41,157	35,168	36,507	35,022
Indiana	21,957	21,705	24,560	21,267	21,306	20,885
Iowa	19,944	16,107	16,747	22,953	31,712	28,570
Kansas	11,116	11,575	11,594	10,231	13,984	14,085
Kentucky	11,184	9,596	10,697	8,137	6,490	6,068
Louisiana	14,109	15,609	19,749	18,487	20,251	29,045
Maine	3,475	4,941	5,243	5,244	5,455	6,070
Maryland	12,115	13,264	14,386	11,726	12,172	11,688
Mass.	10,772	10,400	12,231	9,815	11,836	11,797
Michigan	40,020	38,085	38,581	29,901	29,930	23,644
Minn.	18,343	19,972	21,039	18,385	20,001	21,649
Miss.	7,136	7,260	9,045	8,989	9,348	11,271
Missouri	16,078	17,310	16,239	13,336	16,435	16,378
Montana	6,209	5,993	7,028	5,541	4,870	5,088
Nebraska	8,155	8,637	8,413	7,037	8,505	8,470
Nevada	2,673	2,991	3,642	3,584	4,425	3,494
N. H.	4,007	4,842	5,668	4,152	5,956	5,570
New Jersey	15,921	19,253	20,012	17,195	19,617	19,496
New Mexico	4,767	6,591	7,881	7,529	8,001	8,098
New York	29,774	31,256	35,267	31,197	38,684	38,897
N. C.	13,916	13,076	11,752	8,370	7,828	12,285
N. D.	4,211	4,245	4,090	3,724	3,678	4,258
Ohio	43,442	39,836	38,783	32,329	32,966	30,197
Oklahoma	N/A	N/A	N/A	N/A	N/A	N/A
Oregon	15,256	17,058	15,802	16,329	16,621	15,288
Penn.	40,074	39,857	37,796	30,751	35,936	35,232
R. I.	2,252	2,542	3,166	2,440	2,883	3,507
S. C.	8,539	6,070	5,760	4,815	5,308	6,435
S. D.	4,041	4,532	3,481	4,216	4,966	5,298
Tenn.	13,883	12,813	12,894	11,609	11,252	11,390
Texas	49,680	57,106	68,035	61,603	78,087	75,235
Utah	8,488	9,993	10,711	9,691	11,745	10,227
Vermont	1,965	2,506	2,695	2,403	2,467	2,802
Virginia	12,040	10,974	9,770	9,840	10,740	10,392
Washington	25,189	31,485	32,544	28,708	32,756	29,066
West Va.	7,279	7,405	7,481	5,389	5,787	5,211
Wisconsin	21,038	22,190	18,708	19,918	23,367	23,255
Wyoming	2,876	2,840	3,322	3,292	3,279	3,262

APPENDIX P

RESEARCH REQUIREMENTS SURVEY

The following survey forms will be distributed to NHTSA and TSC personnel involved in programs addressing crash avoidance and crashworthiness to solicit their current and future needs for the following categories of vehicle data.

VEHICLE SAFETY ATTRIBUTES
RESEARCH PRIORITY RATINGS

RATING SYSTEM:
0 = No Importance
1 = Somewhat Important
2 = Important
3 = Very Important
4 = Critical

	ATTRIBUTE CATEGORY	LEVEL OF IMPORTANCE: CRASH AVOIDANCE TRUCKS	CRASH AVOIDANCE AUTOS	CRASH WORTHINESS TRUCKS	CRASH WORTHINESS AUTOS
Vehicle:	Axles				
	Brakes				
	Engine				
	Frame				
	Fuel Tank				
	General Attributes				
	Photometrics				
	Restraint Systems				
	Steering				
	Structural Materials				
	Suspension				
	Tires, Wheels, Rims				
	Transmission				
	Vision				
	Windshield/Ventilation				
Interior Dimensions:	Front Seat				
	Second Seat				
	Third Seat				
	Seat Entrance and Exit				
	Vision and Control				
Exterior Dimensions:	Height				
	Length				
	Width				
	Structural Shape Profiles				
	Ground Clearance				
Other Dimensions:	Cargo Dimensions				
	Luggage Capacity				
	Cargo Volume Index				
	Glass Area				

APPENDIX P

RESEARCH REQUIREMENTS SURVEY (CONT.)

ADDITIONAL ATTRIBUTES

(T) = Truck Characteristic

RATING SYSTEM:

0 = No Importance
1 = Somewhat Important
2 = Important
3 = Very Important
4 = Critical

ATTRIBUTE CATEGORY		LEVEL OF IMPORTANCE: CRASH AVOIDANCE TRUCKS	CRASH AVOIDANCE AUTOS	CRASH WORTHINESS TRUCKS	CRASH WORTHINESS AUTOS
Vehicle:					
Axles:	Front Axle Scrub Radius (T)				
Brakes:	Brake Proportioning				
	Brake Pedal Force				
	Brake Force Gain				
	Brake Heat Sink Mass				
	Slack Adjuster Length (T)				
	Wedge Angle (T)				
	Brake Lining Type				
	Application & Release Times				
	Brake Pressure Distribution				
	Condition - In-Service				
	Adjustment - In-Service				
	Repeated Application Perf.				
	Performance on a Curve				
	Retarders				
	Stopping Distance				
	Brake Pedal Resistance				
	Adhesion Utilization				

APPENDIX P

RESEARCH REQUIREMENTS SURVEY (CONT.)

ATTRIBUTE CATEGORY		LEVEL OF IMPORTANCE			
		CRASH AVOIDANCE		CRASH WORTHINESS	
		TRUCKS	AUTOS	TRUCKS	AUTOS
Engine:					
Frame:	Structure				
	Weight				
	Materials				
Fuel Tank:	Capacity				
	Location				
	Material				
	Protection				
General:	Vehicle Center of Gravity				
	Manufacturer's Specification of Maximum Loaded Center of Gravity				
	Roll Center of Gravity				
	NASS, FARS - Fatalities per Mile				
	Vehicle Exposure - (% Urban/Rural, etc.)				
	Vehicle Miles Traveled				
	Driver Statistics - (Age, Sex, etc.)				

APPENDIX P

RESEARCH REQUIREMENTS SURVEY (CONT.)

ATTRIBUTE CATEGORY		LEVEL OF IMPORTANCE			
		CRASH AVOIDANCE		CRASH WORTHINESS	
		TRUCKS	AUTOS	TRUCKS	AUTOS
Photometrics:	Front/Rear Photometrics				
	Front/Rear Mounting Locations				
	Headlamp Adjustment				
	Position on Vehicle				
	In-Use Condition				
	Reflectors and Lamps				
Restraint Systems:	Type (Active/Passive)				
	No. of Systems in Vehicle				
	Configuration(s)				
	Geometry				
	In-Use Condition				
	Usage				
Steering:	Type				
	Power Assist - (Availability/% Supplied)				
	In-Use Condition				
	Performance Criteria				
	Turning Radius				
	Steering Wheel Geometry				
	Steering Column Geometry				
	Wheel Turn - Stop to Stop				

APPENDIX P

RESEARCH REQUIREMENTS SURVEY (CONT.)

ATTRIBUTE CATEGORY		LEVEL OF IMPORTANCE: CRASH AVOIDANCE TRUCKS	CRASH AVOIDANCE AUTOS	CRASH WORTHINESS TRUCKS	CRASH WORTHINESS AUTOS
Structural Materials:	Force Deflection Curves for: Selected Instrument Panel Points				
	Selected Steering Wheel Points				
	Vehicle Structure				
Suspension:	Standard Type Front/Rear				
	Optional Type Front/Rear				
	Suspension Free Play				
	Suspension Stiffness - (Vertical/Roll)				
	"g" Force on Curve				
	Slalom Times				
	Steering Effects				
	In-Use Condition				
Tires, Wheels, Rims:	Tire Longitudinal & Lateral Traction				
	Tire Cornering Stiffness				
	Load/Deflection Properties				
	Standard/Optional Tires (Manufacturer & Type)				
	Maximum Load Rating				
	FMVSS 109 Test Results				
	SAE J918c Test Results: Minimum Braking Energy				
	Tire Endurance				
	High Speed Performance				
	Strength				
	Materials, Belts & Plies				

APPENDIX P

RESEARCH REQUIREMENTS SURVEY (CONT.)

ATTRIBUTE CATEGORY		LEVEL OF IMPORTANCE: CRASH AVOIDANCE TRUCKS	CRASH AVOIDANCE AUTOS	CRASH WORTHINESS TRUCKS	CRASH WORTHINESS AUTOS
Transmission:					
Vision:	Driver Field of View				
	J1050a Manufacturer's Results				
	Rear Vision Dimensions				
	Side & Rear Mirrors:				
	Field of View				
	Distance to Eyellipse				
	Distance to SgRP				
	Dimensions				
	Radius of Curvature				
	Reflectivity				
	Rotation				
Windshield and Ventilation:	Air Conditioning				
	Washer/Wiper System Specs.				
	Rear Defroster/Defogger				
	Air Changes per Minute				
Interior Dimensions:					
Front Seat:	J1100 Dimensions (Specify)				
	Type of Seating				
	Seat Geometry				
	Range of Seat Adjustment - Horizontal & Vertical				
	Dashboard Profile				
	Headroom				
	Left Door to Driver CL				
	Knee to Instrument Panel Dist				

APPENDIX P

RESEARCH REQUIREMENTS SURVEY (CONT.)

ATTRIBUTE CATEGORY		LEVEL OF IMPORTANCE: CRASH AVOIDANCE TRUCKS	CRASH AVOIDANCE AUTOS	CRASH WORTHINESS TRUCKS	CRASH WORTHINESS AUTOS
Interior Dimensions					
Front Seat: (Continued)	Pass. Chest to Instru. Panel				
	Driver Chest to Instru. Panel				
	Head to Windshield Distance				
Second Seat:	J1100 Dimensions (Specify)				
Third Seat:	J1100 Dimensions (Specify)				
Seat Entrance and Exit:	J1100 Dimensions (Specify)				
Vision and Control:	J1100 Dimensions (Specify)				
	Driver Eyellipse Height				
	Hand Controls Geometry				
	Accel./Brake Pedal Geom.				
	Driver Side Instru Panel Geom				
	Pass. Side Instru. Panel Geom				
Exterior Dimensions:					
Height:	J1100 Dimensions (Specify)				
	Door Dimensions				
	Windshield Angle				
	Windshield Header Geometry				

APPENDIX P

RESEARCH REQUIREMENTS SURVEY (CONT.)

ATTRIBUTE CATEGORY		LEVEL OF IMPORTANCE			
		CRASH AVOIDANCE		CRASH WORTHINESS	
		TRUCKS	AUTOS	TRUCKS	AUTOS
Exterior Dimensions					
Height: (Continued)	Fifth Wheel Height (T)				
	Pintle Hook Height (T)				
	Front Bumper Bottom to Ground				
Length:	J1100 Dimensions (Specify)				
Width:	J1100 Dimensions (Specify)				
Structural Shape Profiles:	Front Profile				
	Side Profile				
	Rear Profile				
Ground Clearance:	J1100 Dimensions (Specify)				
	Height of Frame Rails				
Other Dimensions:					
Cargo Dimensions:	J1100 Dimensions (Specify)				
Luggage Capacity:	J1100 Dimensions (Specify)				
Cargo Volume Index:	J1100 Dimensions (Specify)				

APPENDIX P

RESEARCH REQUIREMENTS SURVEY (CONT.)

ATTRIBUTE CATEGORY	LEVEL OF IMPORTANCE			
	CRASH AVOIDANCE		CRASH WORTHINESS	
	TRUCKS	AUTOS	TRUCKS	AUTOS
Glass Area: J1100 Dimensions (Specify)				
_____				
_____				

APPENDIX Q

COMMON CODES

SAS DICTIONARY

DSN=WSM1XNX.CODES VOL=SER=FILE37

ALPHABETIC LIST OF VARIABLES

#	VARIABLE	TYPE	LENGTH	POSITION
1	MANUAB	CHAR	2	4
5	MANUNAME	CHAR	15	53
2	MCODE	NUM	8	6
4	MODCODE	NUM	8	45
3	MODEL	CHAR	31	14

APPENDIX Q

COMMON CODES (CON'T)

OBS	MANUNAME	MCODE	MODEL	MODCODE
1	AMC	1	AMBASSADOR	8
2	AMC	1	AMBASSADOR DPL	13
3	AMC	1	AMBASSADOR SST	14
4	AMC	1	AMBASSADOR 880	20
5	AMC	1	AMBASSADOR 990	18
6	AMC	1	AMX	7
7	AMC	1	GREMLIN	1
8	AMC	1	HORNET	3
9	AMC	1	JAVELIN	9
10	AMC	1	JAVELIN AMX	22
11	AMC	1	JAVELIN SST	10
12	AMC	1	MARLIN	19
13	AMC	1	MATADOR	4
14	AMC	1	MATADOR BROUGHAM	23
15	AMC	1	MATADOR X	24
16	AMC	1	PACER	2
17	AMC	1	RAMBLER	5
18	AMC	1	RAMBLER ROGUE	12
19	AMC	1	RAMBLER CLASSIC	21
20	AMC	1	RAMBLER 220	17
21	AMC	1	RAMBLER 440	11
22	AMC	1	REBEL	6
23	AMC	1	REBEL SST	16
24	AMC	1	REBEL 770	15
25	AMC	1	SPIRIT	25
26	AMC	1	CONCORD	26
27	AMC	1	EAGLE	27
28	AMC	1	CONCORD/AMX	28
29	ALFA_ROMEO	21	ALFETTA	1
30	ALFA_ROMEO	21	BERLINA	3
31	ALFA_ROMEO	21	VELOCE	2
32	ALFA_ROMEO	21	GTV6 2.5	4
33	ALFA_ROMEO	21	ALFA 6	5
34	ALFA_ROMEO	21	SPORT	6
35	AUDI	22	AUDI 100	1
36	AUDI	22	FOX	2
37	AUDI	22	AUDI 4000	3
38	AUDI	22	AUDI 5000	4
39	AUDI	22	AUDI SUPER 90	5
40	AUDI	22	QUATTRO SPORT	6
41	BUICK	2	APOLLO	2
42	BUICK	2	APOLLO S/R	14
43	BUICK	2	CENTURION	10
44	BUICK	2	CENTURY	3
45	BUICK	2	CENTURY CUSTOM	13
46	BUICK	2	CENTURY REGAL	12
47	BUICK	2	ELECTRA	5
48	BUICK	2	ELECTRA LIMITED	28
49	BUICK	2	ELECTRA CUSTOM	11
50	BUICK	2	ESTATE	6
51	BUICK	2	GRAN SPORT RIVERIA	26
52	BUICK	2	GS 350	19
53	BUICK	2	400	20
54	BUICK	2	LE SABRE	4
55	BUICK	2	LE SABRE CUSTOM	9
56	BUICK	2	REGAL	8

APPENDIX Q

COMMON CODES (CONT)

OBS	MANUNAME	MCODE	MODEL	MODCODE
57	BUICK	2	RIVIERA	7
58	BUICK	2	SKYHAWK	1
59	BUICK	2	SKYLARK	16
60	BUICK	2	SKYLARK CUSTOM	22
61	BUICK	2	SKYLARK GRAN SPORT	24
62	BUICK	2	SKYLARK SPECIAL DE LUXE	21
63	BUICK	2	SKYLARK S/R	15
64	BUICK	2	SPECIAL	25
65	BUICK	2	SPORTWAGON	23
66	BUICK	2	WILDCAT	17
67	BUICK	2	WILDCAT CUSTOM	18
68	BUICK	2	WILDCAT DE LUXE	27
69	BRITISH_LEYLAND	23	AUSTIN MARINA	1
70	BRITISH_LEYLAND	23	JAGUAR E	13
71	BRITISH_LEYLAND	23	JAGUAR XJ S	14
72	BRITISH_LEYLAND	23	JAGUAR XJ6C	4
73	BRITISH_LEYLAND	23	JAGUAR XJ6L	5
74	BRITISH_LEYLAND	23	JAGUAR XJ12C	6
75	BRITISH_LEYLAND	23	JAGUAR XJ12L	7
76	BRITISH_LEYLAND	23	MG-B	2
77	BRITISH_LEYLAND	23	MIDGET 1500	3
78	BRITISH_LEYLAND	23	TRIUMPH GT-6	12
79	BRITISH_LEYLAND	23	TRIUMPH STACK	11
80	BRITISH_LEYLAND	23	TRIUMPH SPITFIRE	8
81	BRITISH_LEYLAND	23	TR 6	9
82	BRITISH_LEYLAND	23	TR 7	10
83	BRITISH_LEYLAND	23	AUSTIN AMERICA	15
84	BRITISH_LEYLAND	23	TR 8	16
85	BMW	24	BMW 2002	1
86	BMW	24	BMW 3.0	3
87	BMW	24	BMW 530 I	2
88	BMW	24	BMW 320 I	4
89	BMW	24	BMW 528 I	5
90	BMW	24	BMW 633 CSI	6
91	BMW	24	B 733 I	7
92	BMW	24	BMW 630 CSI	8
93	CADILLAC	3	CALAIS	3
94	CADILLAC	3	DE VILLE	4
95	CADILLAC	3	ELDORADO	2
96	CADILLAC	3	FLEETWOOD BROUGHAM	5
97	CADILLAC	3	FLEETWOOD 60 SPECIAL	7
98	CADILLAC	3	FLEETWOOD 75	6
99	CADILLAC	3	SEVILLE	1
100	CADILLAC	3	60 SPECIAL BROUGHAM	8
101	CADILLAC	3	CIMARRON	9
102	CHRYSLER	5	CORDOBA	1
103	CHRYSLER	5	IMPERIAL CROWN	7
104	CHRYSLER	5	IMPERIAL LE BARON	5
105	CHRYSLER	5	NEWPORT	2
106	CHRYSLER	5	NEWPORT CUSTOM	8
107	CHRYSLER	5	NEW YORKER	3
108	CHRYSLER	5	NEW YORKER BROUGHAM	9
109	CHRYSLER	5	TOWN & COUNTRY	4
110	CHRYSLER	5	300	6
111	CHRYSLER	5	LEBARON	10
112	CHEVROLET	4	BELAIR	11

APPENDIX Q

COMMON CODES (CONT)

OBS	MANUNAME	MCODE	MODEL	MODCODE
113	CHEVROLET	4	BISCANE	26
114	CHEVROLET	4	BROOKWOOD	46
115	CHEVROLET	4	CAMARO	4
116	CHEVROLET	4	CAMARO LT	16
117	CHEVROLET	4	CAPRICE	27
118	CHEVROLET	4	CAPRICE CLASSIC	13
119	CHEVROLET	4	CAPRICE CLASSIC CUSTOM	20
120	CHEVROLET	4	CAPRICE CLASSIC SPORT	29
121	CHEVROLET	4	CAPRICE ESTATE	14
122	CHEVROLET	4	CHEVELLE	5
123	CHEVROLET	4	CHEVELLE DE LUXE	23
124	CHEVROLET	4	CHEVELLE SS	38
125	CHEVROLET	4	CHEVELLE 300	31
126	CHEVROLET	4	CHEVELLE 300 DE LUXE	32
127	CHEVROLET	4	CHEVETTE	54
128	CHEVROLET	4	CHEVROLET	7
129	CHEVROLET	4	CHEVY 2	36
130	CHEVROLET	4	CONCOUR	52
131	CHEVROLET	4	CONCOURS ESTATE	35
132	CHEVROLET	4	CORSA	39
133	CHEVROLET	4	CORVAIR MONZA	25
134	CHEVROLET	4	CORVAIR 500	24
135	CHEVROLET	4	CORVETTE	8
136	CHEVROLET	4	GREENBRIA	51
137	CHEVROLET	4	IMPALA	12
138	CHEVROLET	4	IMPALA CUSTOM	19
139	CHEVROLET	4	IMPALA SPORT	28
140	CHEVROLET	4	IMPALA SUPER SPORT	53
141	CHEVROLET	4	KINGSWOOD	48
142	CHEVROLET	4	KINGSWOOD ESTATE	49
143	CHEVROLET	4	LAGUNA	9
144	CHEVROLET	4	LAGUNA ESTATE	22
145	CHEVROLET	4	LAGUNA TYPE S 3	30
146	CHEVROLET	4	MALIBU	10
147	CHEVROLET	4	MALIBU CLASSIC	18
148	CHEVROLET	4	MALIBU CLASSIC ESTATE	17
149	CHEVROLET	4	MALIBU ESTATE	21
150	CHEVROLET	4	MALIBU SUPER SPORT	25
151	CHEVROLET	4	MONTE CARLO	6
152	CHEVROLET	4	MONZA	1
153	CHEVROLET	4	NOMAD	33
154	CHEVROLET	4	NOMAD CUSTOM	34
155	CHEVROLET	4	NOVA	3
156	CHEVROLET	4	NOVA CUSTOM	15
157	CHEVROLET	4	NOVA CONCOURS	56
158	CHEVROLET	4	NOVA SS	37
159	CHEVROLET	4	SCOOTER	55
160	CHEVROLET	4	SPORTVAN	40
161	CHEVROLET	4	SPORTVAN CUSTOM	41
162	CHEVROLET	4	SPORTVAN DE LUXE	42
163	CHEVROLET	4	TOWNSMAN	47
164	CHEVROLET	4	VEGA	2
165	CHEVROLET	4	VEGA COUPE	50
166	CHEVROLET	4	CITATION	57
167	CHEVROLET	4	CAVALIER	58
168	CHEVROLET	4	CELEBRITY	59

APPENDIX Q

COMMON CODES (CON'T)

OBS	MANUNAME	MCODE	MODEL	MODCODE
169	DODGE	6	ASPEN	31
170	DODGE	6	ASPEN CUSTOM	32
171	DODGE	6	ASPEN SPECIAL EDITION	43
172	DODGE	6	CHALLENGER	5
173	DODGE	6	CHALLENGER R/T	18
174	DODGE	6	CHARGER	3
175	DODGE	6	CHARGER R/T	11
176	DODGE	6	CHARGER SE	23
177	DODGE	6	CHARGER SPECIAL EDITION	35
178	DODGE	6	CHARGER SPORT	42
179	DODGE	6	CHARGER 500	20
180	DODGE	6	CORONET	2
181	DODGE	6	CORONET BROUGHAM	36
182	DODGE	6	CUSTOM 880	39
183	DODGE	6	CORONET CRESTWOOD	21
184	DODGE	6	CORONET CUSTOM	22
185	DODGE	6	CORONET DELUXE	19
186	DODGE	6	CORONET R/T	10
187	DODGE	6	CORONET SUPERBEE	7
188	DODGE	6	CORONET 440	8
189	DODGE	6	CORONET 500	9
190	DODGE	6	DART	1
191	DODGE	6	DART CUSTOM	28
192	DODGE	6	DART GT	15
193	DODGE	6	DART GTS	16
194	DODGE	6	DART SPORT	26
195	DODGE	6	DART SPORT 340	27
196	DODGE	6	DART SWINGER	24
197	DODGE	6	DART SWINGER SPECIAL	25
198	DODGE	6	DART SPECIAL EDITION	34
199	DODGE	6	DART SPORT 360	33
200	DODGE	6	DART 270	14
201	DODGE	6	MONACO	6
202	DODGE	6	MONACO BROUGHAM	40
203	DODGE	6	MONACO CUSTOM	41
204	DODGE	6	MONACO 500	17
205	DODGE	6	POLARA	12
206	DODGE	6	POLARA CUSTOM	29
207	DODGE	6	POLARA 500	13
208	DODGE	6	ROYAL MONACO	4
209	DODGE	6	ROYAL MONACO BROUGHAM	30
210	DODGE	6	SPORTSMAN	38
211	DODGE	6	OMNI	44
212	DODGE	6	DIPLOMAT	45
213	DODGE	6	ST. REGIS	46
214	DODGE	6	MAGNUM XE	47
215	DODGE	6	ARIES	48
216	DODGE	6	400	49
217	DODGE	6	MIRADA	50
218	DODGE	6	COLT	51
219	FORD	7	COBRA	15
220	FORD	7	COUNTRY SEDAN	22
221	FORD	7	COUNTRY SQUIRE	23
222	FORD	7	CUSTOM	16
223	FORD	7	CUSTOM 500	19
224	FORD	7	ELITE	6

APPENDIX Q

COMMON CODES (CONT)

OBS	MANUNAME	MCODE	MODEL	MODCODE
225	FORD	7	FAIRLANE	14
226	FORD	7	FAIRLANE GT	32
227	FORD	7	FAIRLANE 500	25
228	FORD	7	FAIRLANE 500 FASTBACK	26
229	FORD	7	FALCON	13
230	FORD	7	FUTURA	24
231	FORD	7	FUTURA SPORT	30
232	FORD	7	FUTURA SPORT COUPE	48
233	FORD	7	GALAXIE	17
234	FORD	7	GALAXIE 500	45
235	FORD	7	GALAXIE 500 FASTBACK	29
236	FORD	7	GALAXIE 500 LTD	47
237	FORD	7	GALAXIE 500 XL	46
238	FORD	7	GRANADA	4
239	FORD	7	GRANADA GHIA	38
240	FORD	7	GRAN TORINO	12
241	FORD	7	GRAN TORINO BROUGHAM	39
242	FORD	7	GRAN TORINO ELITE	49
243	FORD	7	GRAN TORINO SPORT	43
244	FORD	7	GRAN TORINO SQUIRE	44
245	FORD	7	LTD	7
246	FORD	7	LTD BROUGHAM	33
247	FORD	7	LTD COUNTRY SQUIRE	41
248	FORD	7	LTD LANDAU	40
249	FORD	7	MAVERICK	3
250	FORD	7	MAVERICK GRABBER	34
251	FORD	7	MUSTANG	10
252	FORD	7	MUSTANG FASTBACK	31
253	FORD	7	MUSTANG GRANDE	36
254	FORD	7	MUSTANG MACH 1	35
255	FORD	7	MUSTANG 2	2
256	FORD	7	MUSTANG 2 GHIA	37
257	FORD	7	MUSTANG 2 MACH 1	42
258	FORD	7	RANCH WAGON	21
259	FORD	7	PINTO	1
260	FORD	7	THUNDERBIRD	9
261	FORD	7	THUNDERBIRD LANDAU	20
262	FORD	7	TORINO	5
263	FORD	7	TORINO GT	27
264	FORD	7	TORINO GT FASTBACK	28
265	FORD	7	VILLAGER	50
266	FORD	7	WAGON	8
267	FORD	7	XL	18
268	FORD	7	FAIRMONT	51
269	FORD	7	ECONOLINE/SUPERVAN	52
270	FORD	7	ESCORT	53
271	FORD	7	EXP	54
272	FORD	7	FIESTA	55
273	FIAT	25	FIAT X1/9	1
274	FIAT	25	FIAT 124	3
275	FIAT	25	FIAT 128	2
276	FIAT	25	FIAT 131	4
277	FIAT	25	FIAT 850	5
278	FIAT	25	BRAVA	6
279	FIAT	25	STRADA	7
280	FORD_KOELN	26	CAPRI 2300	1

APPENDIX Q

COMMON CODES (CON'T)

OBS	MANUNAME	MCODE	MODEL	MODCODE
281	FORD_KOELN	26	CAPRI 2800	2
282	HONDA	53	CIVIC	1
283	HONDA	53	CIVIC CVCC	2
284	HONDA	53	ACCORD	3
285	HONDA	53	PRELUDE	4
286	HONDA	53	600	5
287	HONDA	53	WAGOVAN	6
288	LINCOLN-MERCURY	8	BOBCAT	3
289	LINCOLN-MERCURY	8	BROUGHAM	17
290	LINCOLN-MERCURY	8	CALIENTE	29
291	LINCOLN-MERCURY	8	CAPRI	31
292	LINCOLN-MERCURY	8	COLONY PARK	11
293	LINCOLN-MERCURY	8	COMET	4
294	LINCOLN-MERCURY	8	COMET 202	30
295	LINCOLN-MERCURY	8	COMMUTER	19
296	LINCOLN-MERCURY	8	CONTINENTAL	1
297	LINCOLN-MERCURY	8	CONTINENTAL MARK 3	13
298	LINCOLN-MERCURY	8	CONTINENTAL MARK 4	2
299	LINCOLN-MERCURY	8	COUGAR	7
300	LINCOLN-MERCURY	8	COUGAR ELIMINATOR	25
301	LINCOLN-MERCURY	8	COUGAR XR 7	24
302	LINCOLN-MERCURY	8	CYCLONE	12
303	LINCOLN-MERCURY	8	CYCLONE FASTBACK	27
304	LINCOLN-MERCURY	8	CYCLONE GT	22
305	LINCOLN-MERCURY	8	CYCLONE GT FASTBACK	28
306	LINCOLN-MERCURY	8	CYCLONE SPOILER	23
307	LINCOLN-MERCURY	8	GRAN MARQUIS	10
308	LINCOLN-MERCURY	8	MARANDA	15
309	LINCOLN-MERCURY	8	MARQUIS	8
310	LINCOLN-MERCURY	8	MARQUIS BROUGHAM	9
311	LINCOLN-MERCURY	8	MONARCH	5
312	LINCOLN-MERCURY	8	MONARCH GHIA	34
313	LINCOLN-MERCURY	8	MONTCLAIRE	18
314	LINCOLN-MERCURY	8	MONTEGO	6
315	LINCOLN-MERCURY	8	MONTEGO BROUGHAM	5
316	LINCOLN-MERCURY	8	MONTEGO GT	2
317	LINCOLN-MERCURY	8	MONTEGO MX	20
318	LINCOLN-MERCURY	8	MONTEGO MX BROUGHAM	21
319	LINCOLN-MERCURY	8	MONTEGO VILLAGER	36
320	LINCOLN-MERCURY	8	MONTERY	14
321	LINCOLN-MERCURY	8	MONTERY CUSTOM	26
322	LINCOLN-MERCURY	8	PARK LANE	16
323	LINCOLN-MERCURY	8	S 55	33
324	LINCOLN-MERCURY	8	MARK 5	37
325	LINCOLN-MERCURY	8	VERSAILLES	38
326	LINCOLN-MERCURY	8	TOWN CAR	39
327	LINCOLN-MERCURY	8	MARK 6	40
328	LINCOLN-MERCURY	8	LYNX	41
329	LINCOLN-MERCURY	8	LN7	42
330	LINCOLN-MERCURY	8	ZEPHYR	43
331	LINCOLN-MERCURY	8	MARAUDA	44
332	MERCEDES	27	MERCEDES 220	10
333	MERCEDES	27	MERCEDES 230	2
334	MERCEDES	27	MERCEDES 240	1
335	MERCEDES	27	MERCEDES 280	3
336	MERCEDES	27	MERCEDES 280C	14

APPENDIX Q

COMMON CODES (CON'T)

OBS	MANUNAME	MCODE	MODEL	MODCODE
337	MERCEDES	27	MERCEDES 280S	6
338	MERCEDES	27	MERCEDES 280SE	13
339	MERCEDES	27	MERCEDES 280SEL	11
340	MERCEDES	27	MERCEDES 300	5
341	MERCEDES	27	MERCEDES 300SEL	12
342	MERCEDES	27	MERCEDES 450 SE	7
343	MERCEDES	27	MERCEDES 450SEL	4
344	MERCEDES	27	MERCEDES 450 SL	9
345	MERCEDES	27	MERCEDES 450SLC	8
346	MERCEDES	27	MERCEDES 600	15
347	MERCEDES	27	MERCEDES 250	16
348	MERCEDES	27	MERCEDES 4.5	17
349	MERCEDES	27	MERCEDES 350	18
350	MERCEDES	27	MERCEDES 380	19
351	MITSUBISHI	51	COLT CAROUSEL	1
352	MAZDA	54	COSMO	6
353	MAZDA	54	MAZDA RX2	1
354	MAZDA	54	MAZDA RX3	2
355	MAZDA	54	MAZDA RX4	3
356	MAZDA	54	MAZDA 808	4
357	MAZDA	54	MIZER	5
358	MAZDA	54	GLC	7
359	MAZDA	54	MAZDA RX7	8
360	MAZDA	54	MAZDA 626	9
361	MAZDA	54	MAZDA R100	10
362	MAZDA	54	MAZDA 618	11
363	NISSAN	52	DATSUN B 210	3
364	NISSAN	52	DATSUN PL 510	6
365	NISSAN	52	DATSUN PL 610	1
366	NISSAN	52	DATSUN PL 620	2
367	NISSAN	52	DATSUN PL 710	5
368	NISSAN	52	DATSUN 1200	7
369	NISSAN	52	DATSUN 260-Z	4
370	NISSAN	52	DATSUN 310	8
371	NISSAN	52	DATSUN 200 SX	9
372	NISSAN	52	DATSUN 810	10
373	NISSAN	52	DATSUN 280-ZX	11
374	NISSAN	52	DATSUN 240-Z	12
375	NISSAN	52	DATSUN PL-311	13
376	NISSAN	52	MAXIMA	14
377	NISSAN	52	F10	15
378	NISSAN	52	SENTRA	16
379	NISSAN	52	STANZA	17
380	OLDSMOBILE	9	CUSTOM CRUISER	5
381	OLDSMOBILE	9	CUTLASS	3
382	OLDSMOBILE	9	CUTLASS CRUISER	18
383	OLDSMOBILE	9	CUTLASS S	21
384	OLDSMOBILE	9	CUTLASS SUPREME	10
385	OLDSMOBILE	9	DELMONT 88	15
386	OLDSMOBILE	9	DELTA CUSTOM	16
387	OLDSMOBILE	9	DELTA CUSTOM CRUISER	19
388	OLDSMOBILE	9	DELTA 88	4
389	OLDSMOBILE	9	DELTA 88 CUSTOM	20
390	OLDSMOBILE	9	DELTA 88 ROYAL	9
391	OLDSMOBILE	9	DYNAMIC 88	11
392	OLDSMOBILE	9	F 85	12

APPENDIX Q

COMMON CODES (CON'T)

OBS	MANUNAME	MCODE	MODEL	MODCODE
393	OLDSMOBILE	9	JETSTAR 1	23
394	OLDSMOBILE	9	JETSTAR 88	22
395	OLDSMOBILE	9	NINETY-EIGHT	6
396	OLDSMOBILE	9	NINETY-EIGHT REGENCY	25
397	OLDSMOBILE	9	OMEGA	2
398	OLDSMOBILE	9	OMEGA BROUGHAM	24
399	OLDSMOBILE	9	OMEGA SALON	13
400	OLDSMOBILE	9	STARFIRE	1
401	OLDSMOBILE	9	TORONADO	7
402	OLDSMOBILE	9	TORONADO BROUGHAM	14
403	OLDSMOBILE	9	VISTA CRUISER	8
404	OLDSMOBILE	9	4-4-2	17
405	OLDSMOBILE	9	OLDS 98	26
406	OLDSMOBILE	9	FIRENZA	27
407	OPEL	28	MANTA	1
408	OPEL	28	OPEL GT	3
409	OPEL	28	OPEL I900	2
410	OPEL	28	ISUZU	4
411	OPEL	28	OPEL	5
412	OPEL	28	31/DELUXE	6
413	OPEL	28	39/DELUXE	7
414	OPEL	28	36/DELUXE	8
415	OPEL	28	91/KADETTE	9
416	OPEL	28	99/KADETTE	10
417	OPEL	28	RALLYE	11
418	PLYMOUTH	10	AAR-CUDA	20
419	PLYMOUTH	10	BARACUDA	9
420	PLYMOUTH	10	BELVEDERE	11
421	PLYMOUTH	10	BELVEDERE GTX	14
422	PLYMOUTH	10	BELVEDERE 2	39
423	PLYMOUTH	10	CUDA	15
424	PLYMOUTH	10	FURY	4
425	PLYMOUTH	10	FURY CUSTOM	33
426	PLYMOUTH	10	FURY CUSTOM SUBURBAN	34
427	PLYMOUTH	10	FURY SALON	26
428	PLYMOUTH	10	FURY SPORT	19
429	PLYMOUTH	10	FURY SPORT SUBUAN	27
430	PLYMOUTH	10	FURY SUBURBAN	25
431	PLYMOUTH	10	FURY 2	16
432	PLYMOUTH	10	FURY 3	17
433	PLYMOUTH	10	FURY 3 FAST TOP	22
434	PLYMOUTH	10	GRAN COUPE	24
435	PLYMOUTH	10	GRAN FURY	5
436	PLYMOUTH	10	GRAN FURY BROUGHAM	6
437	PLYMOUTH	10	GRAN FURY CUSTOM	30
438	PLYMOUTH	10	GRAN FURY CUSTOM SUBURBAN	31
439	PLYMOUTH	10	GRAN FURY SPORT SUBURBAN	32
440	PLYMOUTH	10	GRAN FURY SUBURBAN	29
441	PLYMOUTH	10	ROAD RUNNER	8
442	PLYMOUTH	10	SATELLITE	12
443	PLYMOUTH	10	SATELLITE CUSTOM	43
444	PLYMOUTH	10	SATELLITE REGENT	46
445	PLYMOUTH	10	SATELLITE SEBRING	44
446	PLYMOUTH	10	SATELLITE SEBRING PLUS	45
447	PLYMOUTH	10	SPORT FURY FAST TOP	21
448	PLYMOUTH	10	SPORT SATELLITE	13

APPENDIX Q

COMMON CODES (CON'T)

OBS	MANUNAME	MCODE	MODEL	MODCODE
449	PLYMOUTH	10	VALIENT	3
450	PLYMOUTH	10	VALIENT BROUGHAM	7
451	PLYMOUTH	10	VALIENT CUSTOM	36
452	PLYMOUTH	10	VALIENT DUSTER	1
453	PLYMOUTH	10	VALIENT DUSTER CUSTOM	35
454	PLYMOUTH	10	VALIENT DUSTER 340	23
455	PLYMOUTH	10	VALIENT DUSTER 360	37
456	PLYMOUTH	10	VALIENT SCAMP	2
457	PLYMOUTH	10	VALIENT SCAMP SPECIAL	28
458	PLYMOUTH	10	VALIENT SIGNET	10
459	PLYMOUTH	10	VALIENT 100	38
460	PLYMOUTH	10	VIP	18
461	PLYMOUTH	10	VOLARE	40
462	PLYMOUTH	10	VOLARE CUSTOM	41
463	PLYMOUTH	10	VOLARE PREMIER	42
464	PLYMOUTH	10	HORIZON	47
465	PLYMOUTH	10	VOYAGER	48
466	PLYMOUTH	10	SAPPORO	49
467	PLYMOUTH	10	RELIANT	50
468	PLYMOUTH	10	ARROW	51
469	PLYMOUTH	10	CHAMP	52
470	PLYMOUTH	10	CRICKET	53
471	PONTIAC	11	ASTRE	1
472	PONTIAC	11	ASTRE SAFARI	2
473	PONTIAC	11	ASTRE SJ	25
474	PONTIAC	11	BONNEVILLE	9
475	PONTIAC	11	CATALINA	8
476	PONTIAC	11	CATALINA BROUGHAM	30
477	PONTIAC	11	CATALINA SAFARI	20
478	PONTIAC	11	EXECUTIVE	22
479	PONTIAC	11	FIREBIRD	4
480	PONTIAC	11	FIREBIRD SPIRIT	14
481	PONTIAC	11	FIREBIRD FORMULA	13
482	PONTIAC	11	FIREBIRD TRANS AM	15
483	PONTIAC	11	GRAND AM	6
484	PONTIAC	11	GRAND LEMANS	36
485	PONTIAC	11	GRAND PRIX	12
486	PONTIAC	11	GRAND PRIX SJ	38
487	PONTIAC	11	GRAND SAFARI	19
488	PONTIAC	11	GRAND VILLE	21
489	PONTIAC	11	GRAND VILLE BROUGHAM	10
490	PONTIAC	11	GTO	28
491	PONTIAC	11	LEMANS	5
492	PONTIAC	11	LEMANS LUXURY	18
493	PONTIAC	11	LEMANS SAFARI	7
494	PONTIAC	11	LEMANS SPORT	34
495	PONTIAC	11	LEMANS SPORT COUPE	17
496	PONTIAC	11	SAFARI WAGON	11
497	PONTIAC	11	STAR CHIEF	31
498	PONTIAC	11	STAR CHIEF EXECUTIVE	33
499	PONTIAC	11	SUNBIRD	37
500	PONTIAC	11	TEMPEST	23
501	PONTIAC	11	TEMPEST CUSTOM	26
502	PONTIAC	11	TEMPEST CUSTOM SAFARI	32
503	PONTIAC	11	TEMPEST SAFARI	27
504	PONTIAC	11	VENTURA	3

APPENDIX Q

COMMON CODES (CON'T)

OBS	MANUNAME	MCODE	MODEL	MODCODE
505	PONTIAC	11	VENTURA CUSTOM	16
506	PONTIAC	11	VENTURA SJ	24
507	PONTIAC	11	VENTURA 2	29
508	PONTIAC	11	2 + 2	35
509	PONTIAC	11	PHOENIX	39
510	PONTIAC	11	T1000	40
511	PONTIAC	11	J2000	41
512	PONTIAC	11	6000	42
513	PORSCHE	30	PORSCHE 911	2
514	PORSCHE	30	PORSCHE 911 CARRERA	3
515	PORSCHE	30	PORSCHE 911 S COUP	4
516	PORSCHE	30	PORSCHE 911 TURBO	6
517	PORSCHE	30	PORSCHE 912 E	5
518	PORSCHE	30	PORSCHE 914	1
519	PORSCHE	30	PORSCHE 924	7
520	PORSCHE	30	PORSCHE 928	8
521	PORSCHE	30	PORSCHE 930	9
522	PORSCHE	30	PORSCHE 944	10
523	PEUGEOT	29	PEUGEOT 504	1
524	PEUGEOT	29	PEUGEOT 604	2
525	PEUGEOT	29	PEUGEOT 505	3
526	RENAULT	31	RENAULT 5 TL	7
527	RENAULT	31	RENAULT 12	1
528	RENAULT	31	RENAULT 14	3
529	RENAULT	31	RENAULT 15	4
530	RENAULT	31	RENAULT 15 TL	2
531	RENAULT	31	RENAULT 17 GORDINI	5
532	RENAULT	31	RENAULT 17 TL	6
533	RENAULT	31	LECAR	8
534	RENAULT	31	GORDINI	9
535	RENAULT	31	18I	10
536	RENAULT	31	FUEGO	11
537	SAAB	32	SAAB 96	2
538	SAAB	32	SAAB 97	3
539	SAAB	32	SAAB 99	1
540	SAAB	32	SONNET	4
541	SAAB	32	SAAB 900	5
542	SAAB	32	SAAB 95	6
543	SUBARU	55	SUBARU DL 1400	1
544	SUBARU	55	SUBARU DL 1600	6
545	SUBARU	55	SUBARU GF 1400	3
546	SUBARU	55	SUBARU GF 1600	7
547	SUBARU	55	SUBARU GL COUPE 1400	2
548	SUBARU	55	SUBARU STANDARD	8
549	SUBARU	55	SUBARU STAR	5
550	SUBARU	55	SUBARU 4WD	4
551	SUBARU	55	SUBARU FE	9
552	SUBARU	55	SUBARU DELUXE	10
553	SUBARU	55	SUBARU DL ALL-STAR	11
554	SUBARU	55	SUBARU GSR	12
555	SUBARU	55	SUBARU DL/GL	13
556	TOYOTA	56	CARINA	5
557	TOYOTA	56	CELICA	2
558	TOYOTA	56	COROLLA 1200	6
559	TOYOTA	56	COROLLA 1600	1
560	TOYOTA	56	CORONA	3

APPENDIX Q

COMMON CODES (CON'T)

OBS	MANUNAME	MCODE	MODEL	MODCODE
561	TOYOTA	56	MARK 2	4
562	TOYOTA	56	COROLLA CUSTOM	7
563	TOYOTA	56	SUPRA	8
564	TOYOTA	56	CRESSIDA	9
565	TOYOTA	56	MX MARK 2	10
566	TOYOTA	56	CROWN	11
567	TOYOTA	56	SR5	12
568	TOYOTA	56	COROLLA	13
569	TOYOTA	56	STARLET	14
570	TOYOTA	56	TERCEL	15
571	VOLKSWAGON	33	BEATLE (TYPE 1)	1
572	VOLKSWAGON	33	DASHER	3
573	VOLKSWAGON	33	RABBIT	2
574	VOLKSWAGON	33	SCIROCCO	4
575	VOLKSWAGON	33	KARMAN GHIA	6
576	VOLKSWAGON	33	VW 412 (TYPE 4)	7
577	VOLKSWAGON	33	VW 1600 (TYPE 3)	5
578	VOLKSWAGON	33	TRANSPORTER	8
579	VOLKSWAGON	33	KOMBI CAMPMOBILE	9
580	VOLKSWAGON	33	FASTBACK	10
581	VOLKSWAGON	33	SQUAREBACK	11
582	VOLKSWAGON	33	JETTA	12
583	VOLKSWAGON	33	VW 412	13
584	VOLVO	34	VOLVO 142	6
585	VOLVO	34	VOLVO 144	7
586	VOLVO	34	VOLVO 145	5
587	VOLVO	34	VOLVO 164	4
588	VOLVO	34	VOLVO 183	8
589	VOLVO	34	VOLVO 242	1
590	VOLVO	34	VOLVO 244	2
591	VOLVO	34	VOLVO 245	3
592	VOLVO	34	VOLVO 262	10
593	VOLVO	34	VOLVO 264	9
594	VOLVO	34	VOLVO 265	11
595	VOLVO	34	VOLVO 1800	12
596	VOLVO	34	VOLVO 1225	13