

Advisory Circular

U S Department of Transportation Federal Aviation Administration

Subject	INDEX OF AVIATION TECHNICAL STANDARD ORDERS	Date 5/30/97 Initiated by AIR-120	AC No 20-l 10 J Change

- This Partition (FAA) will use to develop and issue Technical Standard Orders (TSO's) for aeronautical articles to be used on civil aircraft. The AC presents an index of the FAA TSO's which contain minimum performance standards for specified materials, parts, processes, and appliances used on civil aircraft.
- 2 <u>CANCELLATION</u> Advisory Circular 20-1 1 OH, Index of Aviation Technical Standard Orders, dated May 6, 1993, is canceled
- 3 <u>RELATED FAR SECTIONS</u> Federal **Aviation Regulations** (FAR), Part 21, Subpart 0
- 4 <u>BACKGROUND</u> On June **2, 1980**, by Amendment 21-50 to FAR Part 21, **the** FAA adopt4 a new **public** procedure for **issuing** TSO's for **specified materials**, parts, processes, and **appliances** used on **civil aircraft**, relocated the substance of Subpart A of FAR Part 37 to Subpart 0 of FAR Part 21, and revoked the **remainder** of FAR Part 37 Amendment 21-50 became **effective** on **September** 9, 1980
- 5 <u>PUBLIC PROCEDURE</u> The **following** is the **public** procedure the FAA **will** use to develop and issue final TSO's for specific articles used on civil aircraft
- a The FAA will continue to develop proposed TSO's and will use, by reference in the TSO, documents prepared and issued by organizations such as the RTCA, Inc (RTCA) and the Society of Automotive Engineers (SAE) Notices of RTCA meetings and invitations will continue to be published in the Federal Register to allow public participation at the early stages of document development
- b Copies of documents prepared and issued by an organization that are incorporated by reference in proposed or final TSO's will be made available to interested persons in accordance with FAA regulations
- Any person may request the Administrator to revise or issue a new TSO by submitting a description of the revision sought or a description of the new article for which a TSO is requested

- d The FAA will use several methods to ensure that the pubbe is afforded early opportunities to take part in the TSO decisionmaking p-s Proposed TSO's are normally distributed to the pubbe for comment through the use of mailing lists. Any individual or organization can request to be placed on the TSO mailing lists. A notice of availability for comment of each proposed TSO is published in the Federal Register, and a copy of each final TSO is mailed to all persons on the mailing list.
- e Any person wishing to submit comments on a proposed TSO may do so All comments received on or before the closing date for comments will be considered by the Administrato r before issuing a final TSO Late comments may also be considered as long as no additional expense or delay in processing the TSO is incurred
- f All comments submitted will be available, both before and after the closing date for comments, for examination by interested persons. Comments are located at the FAA Headquarters in the Aircraft Certification Service, Aircraft Engineering Division (AIR-100), Ram 815,800 Independence Avenue, SW, Washington, D.C. 20591, between 8 30 am and 4 30 pm, Monday thru Friday
- g Copies of proposed TSO's, FAA Resolution of Comments, and final TSO's will also be available at the FAA Headquarters in the Aircraft Certification Service, Aircraft Engineering Division (AIR-100), and at all FAA Regional Aircraft Certification Of&ices (ACO's) Final TSO's will not be published in the Federal Register
- 6 INDEX OF TSO's For the reader's convenience, the index of TSO's is presented both numerical sequence (appendix 1) and by subject matter (appendix 2) All TSO standards contained in FAR Part 37, Subpart B, as of September 9, 1980, are current under the TSO revision program, unless appendix 1 of this AC shows a later revision date
- 7 HOW TO OBTAIN TSO's To obtain a copy of any of the TSO's listed in appendices 1 or 2, write to the US Department of Transportation, Subsequent Distribution Office, Ardmore East Business Center, 3341 Q 75th Avenue, Landover, MD 20785 To have your name placed on our mailing list to receive future issuances of TSO's, notices for pubbe comment on proposed TSO's or copies of proposed TSO's, write to the Federal Aviation Administration, Aircraft Engineering Division (AIR-100), 800 Independence Avenue, SW, Washington, D C 20591

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AC 20-110J Appendix 1

5/30/97

APPENDIX 1. INDEX OF TSO'S IN NUMBERICAL SEQUENCE

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Subject Title
Cargo and Baggage Compartment Smoke Detection Instruments
Airspeed Instruments
Turn and Slip Instrument
Bank and Pitch Instruments (Indicating Gryro-Stabilized Type) (Gyroscopic Horizon, Attitude Gyro)
Direction Instrument, Non-magnetic (Gyro-Stabilized Type)
Direction Instrument, Magnetic (Gyro-Stabilized Type)
Direction Instrument, Magnetic Non-Stabilized Type (Magnetic Compass)
Vertical Velocity Instrument (Rate-of-Climb)
Automatic Pilots
Aircraft Altimeter, Pressure Actuated Sensitive Type
Fire Detectors (Thermal Sensing and Flame Contact)
Life Preservers
Aircraft Fabric, Intermediate Grade, External Covering Material
Aircrast Fabric, Grade A, External Covering Material
Ax-Speed Tubes (Electrically Heated)
Portable Water-Solution Type Fire Extinguishers
Combustion Heaters
Special Aircraft Turnbuckle Assemblies and/or Turnbuckle Safetying Devices
Safety Belts
Personnel Parachutes Assemblies

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TSO Number	Subject Title
TSO-C25a	Aircraft Seats and Berths (Type I Transport, 6g Forward Load)
TSO-C26c - 5/18/84	Aircraft Wheels and Wheel-Brakes Assemblies, with Addendum
TSOC27	Twm Seaplane Floats
TSO-C28	Aircraft Skis
TSO-C30c · 5/12/89	Aircraft Position Lights
TSO-C31d - 4/30/84	High Frequency (HF) Radio Communication Transmitting Equipment Operating Within Radio Frequency Range of 15 to 30 Megahertz
TSO-C32d ~ 4/30/84	High Frequency (HF) Radio Communication Receiving Equipment Operating Within the Radio Frequency Range of 15 of 30 Megahertz
TSO-C34e - 1/15/88	ILS Glide Slope Receiving Equipment Operating Within 328 6 to 335 4 Megahertz
TSO-C35d	Airborne Radio Marker Receiving Equipment
TSO-C36e • 1/25/88	ILS Localizer Receiving Equipment
TSO-C37d • 9/23/92	VHF Radio Communications Transmitting Equipment Operating Within 117 975 to 137 000 Megahertz
TSO-C38d • 9/23/92	VHF Radio Communications Receiving Equipment Operating Within 117 975 to 137 000 Megahertz
TSO-C39b -4/1/87	Aircraft Seats and Berths
TSO-C40c - 1/25/88	VOR Radio Receiving Equipment Operating Within the Radio Frequency Range of 108-118 Megahertz
TSO-C41d ~ 5/6/85	Airborne Automatic Direction Fmdmg (ADF) Equipment
TSOC42	Propeller Feathering Hose Assemblies (Rubber and Wire Brad Construction)

TSO Number	Subject Title
TSO-C43b - 8/8/91	Temperature Instruments
TSO-C44b - 5110195	Fuel Flowmeters
TSO-C45a • 2/28/95	Manifold Pressure Indicating Instruments
TSO-C46a	Maximum Alowable Airspeed Indicator Systems
TSO-C47	Pressure Instruments - Fuel, Oil, and Hydraulic
TSO-C48	Carbon Monoxide Detector Instruments
TSO-C49b • 5/30/95	Electric Tachometer Magnetic Drag (For Air Carrier Aircraft)
TSO-C50c - 1131183	Audic Selector Panels and Amplifiers
TSO-C52b • 5/30/95	Flight Directors
TSO-C53a	Fuel and Engine Oil System Hose Assemblies (Rubber or Tetrafluoreothylene Tube and Wire Braid Construction)
TSOC54	stall Warning Instruments
TSO-C55	Fuel and Oil Quantity Instruments (For Reciprocating Engine Aircraft)
TSO-C56a - 4/12/84	Engine-Driven Direct Current Generators/Starter Generators
TSO-C57a • 1/31/83	Aircraft Headsets and Speakers
TSO-C58a - 1/31/83	Aircraft Microphones (For An Carner Aircraft)
TSO-C59	Airborne Selective Calling Equipment (For Aircraft)
TSO-C60b • 5/11/88	Airborne Area Navigation Equipment Using Loran C Inputs

TSO Number	Subject Title
TSO-C62d - 9/7/90	Aircraft Tires
TSO-C63c - 8/18/83	Airborne Weather and Ground Mapping Pulsed Radars
TSO-C64a - 8/25/89	Oxygens Mask Assembly Continuous Flow, Passenger (For Air Carrier Aucraft)
TSO-C65a - 8/18/83	Airborne Doppler Radar Ground Speed and/or Drift Angle Measuring Equipment (For Air Carrier Aircraft)
TSO-C66c = 1/18/91	Distance Measuring Equipment @ME) Operating within the Radio Frequency Range of 960-1215 Megahertz
TSO-C67	Airborne Radar Altimeter Equipment (For Air Carrier Aircraft)
TSO-C68a - 8/18/83	Airborne Automatic Dead Reckoning Computer Equipment Utilizing Aircraft Heading and Doppler Ground Speed and Drift Angle Data (For Air Carrier Aircraft)
TSO-C69b - 8/17/88	Emergency Evacuation Slides, Ramps, and Slide/Raft Combinations
TSO-C70a - 4/13/84	Liferafts (Reversible and Nonreversible)
TSO-C71	Airborne Static ("DC to DC") Electrical Power Converter (For Air Carrier Aucraft)
TSO-C72c - 2/19/87	Individual Flotation Devices
TSO-C73	Static Electrical Power Invertor
TSO-C74c	Airborne ATC Transponder Equipment
TSO-C75	Hydraulic Hose Assemblies
TSO-C76	Fuel Dram Valves
TSO-C77a - 7/20/81	Gas Turbine Auxiliary Power Units

TSO Number	Subject Title
TSO-C78	Crewmember Demand Oxygen Masks
TSO-C79	Fire Detector (Radiation Sensing Type)
TSO-C80	Flexible Fuel and Oil Cell Material
TSO-C85a - 3/7/96	Survivor Locator Lights
TSO-C87	Airborne Low-Range Radio Altimeter
TSO-C88a - 8/18/83	Automatic Pressure Altitude Reporting Code Generating Equipment
TSO-C89	Oxygen Regulators, Demand
TSO-C90c - 4/3/92	Cargo Pallets, Nets, and Containers
TSO-C91a - 4/29/85	Emergency Locator Transmitters (ELT) Equipment
TSO-C92c - 3/19/96	Ground Pxoimity Warning-Glide Slope Deviation Alerting Equipment
TSO-C93	Airborne Interim Standard Microwave Landing System Converter Equipment
TSO-C94a - 8/12/81	Omega Receiving Equipment Operating Within the Radio Frequency Range of 10 2 to 13 6 Kilohertz
TSO-C95 - 8/18/83	Mach Meters
TSO-C96a - 4/7/89	Anticollision Lights System
TSO-C97	Lithium Sulfur Dioxide Batteries
TSO-C99 - 6/27/83	Protective Breathing Equipment
TSO-C101 - 2/19/87	Over Speed Warning Instruments
TSO-C102 - 4/2/84	Airborne Radar Approach and Beacon Systems for Helicopters

TSO Number	Subject Title
TSO-C103 - 4/12/84	Continuous Flow Oxygen Mask Assembly (For Non-Transport Category Aircraft)
TSO-C104 - 6/22/82	Microwave Landing Systems (MLS) Airborne Receiving Equipment
TSO-C105 - 6/13/84	Optional Display Equipment for Weather and Ground Mapping Radar Indicators
TSO-C106 - 1/15/88	Air Data Computer
TSO-C109 - 12/9/85	Airborne Navigation Data Storage System
TSO-C110a - 10/26/88	Airborne Passive Thunderstorm Detection Systems
TSO-Cl12 - 2/5/86	Air Traffic Control Radar Beacon System/Mode Select (ATCRBS/Mode S) Airborne Equipment
TSO-Cl13 - 10/27/86	Au-borne Multipurpose Electronic Display
TSO-C114 - 3/27/87	Torso Restraint Systems
TSO-C115b - 9/30/94	Airborne Area Navigation Equipment Using Multi-Sensor Inputs
TSO-Cl16 • 3/1/90	Crewmember Protective Breathing Equipment
TSO-C117a - 8/1/96	Airborne Windshear Wammg and Escape Guidance Systems for Transport Airplanes
TSO-C118 - 8/5/88	Traffic Alert and Collision Avoidance System (TCAS) Airborne Equipment, TCAS I
TSO-C119a - 4/9/90	Traffic Alert and Collision Avoidance System (TCAS) Airborne Equipment, TCAS II
TSO-C120 • 1/26/88	Airborne Area Navigation Equipment Using Omega/VLF Inputs

5/30/97 AC 20-110J Appendix 1

TSO Number	Subject Title
TSO-C121 - 3/1/90	Underwater Locating Devices (Acoustic) (Self-Powered)
TSO-C122 • 4/1 1/94	Devices that Prevent Blocked Channels Used in Two-Way Radio Communications due to Similtaneous Transmissions
TSO-C123a - 8/2/96	Cockpit Voice Recorder Systems
TSO-C124b • 8/1/96	Flight Data Recorder Systems
TSO-Cl26 - 12/23/92	406 MHz Emergency Locator Transmitter (ELT)
TSO-C127 - 3/30/92	Rotorcraft and Transport Au-plane Seating Systems
TSO-C128 • 7/20/93	Devices that Prevent Blocked Channels Used in Two-Way Radio Communications due to Unintentional Transmissions
TSO-C129a - 2/20/96	Airborne Supplemental Navigation Equipment Using the Global Positioning System (GPS)

APPENDIX 2 INDEX OF TSO'S GROUPDED BY SUBJECT MATTERS

Subject Title	TSO Number
Air Conditioning	
Combustion	TSO-C20
Auto Flight	
Automatic Pilots	TSO-C9c
Airborne Auxiliary Power	
Gas Turbine Auxiliary Power Umts	TSO-C77a
Communications Equipment	
<u>Amplifiers</u>	
Audio Selector Panels and Amplifiers	TSO-C50c
<u>Microphones</u>	
Aircraft Headsets and Speakers	TSO-C57a
Aircraft Microphones (For Au Camer Aircraft)	TSO-C58a
Selective Calling Equipment	
Airborne Selective Calling Equipment (For Air Caner Aircraft)	TSO-C59
<u>VHF</u>	
VHF Radio Communications Transmitting Equipment Operating Within 117 975 to 137 000 Megahertz	TSO-C37d
VHF Radio Communications Receiving Equipment Operating Within 117 975 to 137 000 Megahertz	TSO-C38d

Communications Equipment (Continued)

<u>HF</u>

High Frequency (HF) Radio Communication Transmitting Equipment Operating Within the Radio Frequency Range of 15 and 30 Meghertz

TSO-C3 Id

High Frequency (HF) Radio Communication Receiving Equipment Operating Within the Radio Frequency Range 1 5 to 30 Megahertz

Underwater Locating Devices (Acoustic) (Self-Powered)

TSO-C32d

TSO-C121

Voice Recorders

Cockpit Voice Recorder Systems TSO-C123a

Electrical Power

Airborne Static ("DC to DC") Electrical Power Converter
(For Air Carrier Aircraft)

Engine-Driven Direct Current Generators/Starter-Generators

TSO-C56a

Lithium Sulfur Dioxide Batteries

TSO-C97

Static Electrical Power Inverter TSO-C73

Equipment Furnishings

Aircraft Fabrics

Aircraft Fabric Intermediate Grade, External
Covering Material
TSO-C14b
Aircraft Fabric, Grade A, External Covering Material
TSO-C15d

<u>Turnbuckles</u>

Special Aircraft Turnbuckle Assemblies and/or
Turnbuckle Safetymg Devices TSO-C2 lb

Subject Title	TSO Number	
Equipment Furnishing (Continued)		
Seats. Berths. and Safety Belts		
Aircraft Seats and Berths (Type I Transport, 6g Forward Load)	TSO-C25a	
Aircraft Seats and Berths	TSO-C39b	
safety Belts	TSO-C22g	
Torso Restraint Systems	TSO-C114	
Fire Protection Equipment		
Cargo and Baggage Compartment Smoke Detection Instruments	TSO-C1	
Carbon Monoxide Detector Instruments	TSO-C48	
Fire Detectors (Thermal Sensing and Ionization Sensing Types)	TSO-C1 le	
Fire Detector (Radiation Sensing Type)	TSO-C79	
Portable Water-Solution Type Fire Extinguishers	TSO-C19b	
Fuel/Oil/Hydraulic_Equipment		
Fuel Flowmeters	TSO-C44b	
Flexible Fuel and Oil Cell Material	TSO-C80	
Fuel and Engine Oil System Hose Assemblies (Rubber or Tetrafluoreothylene Tube and Wire Braid Construction)	TSO-C53a	
Fuel Dram Valves	TSO-C76	
Hydraulic Hose Assemblies	TSO-C75	

Subject Title		TSO Number	
Environmenta	Environmental Protection Equipment		
Aır-Sp	eed Tubes		
	Air-Speed Tubes (Electrically Heated)	TSO-C16	
Weath	er and Radar Equipment		
	Airborne Passive Thunderstorm Detection Systems	TSO-C110a	
	Airborne Radar Approach and Beacon Systems for Helicopters	TSOC102	
	Airborne Weather and Ground Mapping Pulsed Radars	TSO-C63c	
Instruments			
<u>Flight</u>	Instruments		
	Air Computer	TSO-C106	
	Airborne Low-Range Radio Altimeter	TSO-C87	
	time Radar Altimeter Equipment (For Ak Carner Aircraft)	TSO-C67	
	Aircraft Altimeter, Pressure Actuated Sensitive Type	TSO-C10b	
	Airspeed Instruments	TSO-C2d	
	Automatic Pressure Altitude Reporting Code Code Generating Equipment	TSO-C88a	
	Bank and Pitch Instruments (Indicating Gyro-Stablized Type) (Gyroscopic Horizon, Attitude Gyro)	TSO-C4c	
	Cockpit Voice Recorder System	TSO-C123a	
	Direction Instrument, Magnetic (Gyro-Stablized Type)	TSO-C6d	
	Direction Instrument, Magnetic Non-Stablized Type) (Magnetic Compass)	TSO-C7d	

Subject Title	TSO Number
Instruments (Continued)	
Flight Instruments (Continued)	
Direction Instrument, Non-Magnetic (Gyroscopically Stablized)	TSO-C5e
Electric Tachmeter, Magnetic (Gyroscopically Stablized)	TSO-C49a
Flight Data Recorder Systems	TSO-C124a
Flight Directors	TSO-C52a
Mach Meters	TSO-C95
Maximum Allowable Airspeed Indicator Systems	TSO-C46a
Over speed Warning Instruments	TSO-C101
Vertical Velocity Instrument (Rate-of-Climb)	TSO-C8d
stall Warning Instruments	TSO-C54
Temperature Instruments	TSO-C43b
Turn and Slip Instruments	TSO-C3c
Engine Instruments	
Fuel and Od Quantity Instruments (For Reciprocating Engine Aircraft)	TSO-C55
Manifold Pressure Indicating Instruments	TSO-C45
Pressure Instruments - Fuel, 011, and Hydraulic	TSO-C47
Landing Gear Equipment	
Aircraft Skis	TSO-C28
Aircraft Tires	TSO-C62d

Subject Title	2	TSO Number		
Landing Gear Equipment (Continued)				
	Aircraft Wheels and Brakes, With Addendum I	TSO-C26c		
	Twn Seaplane Floats	TSO-C27		
<u>Lights</u>				
	Aircraft Position Lights	TSO-C30c		
	Anticollsion Lights System	TSO-C96a		
Navigation Equipment				
	Airborne ATC Transport Equipment	TSO-C74		
	Airborne Automatic Dead Reckoning Computer Equipment Utilizing Aircraft Heading and Doppler Ground Speed and Drift Angle Data (For Air Carrier Aircraft)	TSO-C68a		
	Airborne Distance Measuring Equipment @ME) Operating Within the Radio Frequency Range of 960-1215 Megahertz	TSO-C66c		
	Air Traffic Control Radar Beacon System/Mode Select (ATCRBS/Mode S) Airborne Equipment	TSO-C112 ,		
	Airborne Doppler Radar Ground Speed and/or Drift Angle Measuring Equipment (For Air Carrier Aircraft)	TSO-C65a		
	Airborne ILS Glide Slope Receiving Equipment Operating Within 328 6 to 335 4 Megahertz	TSO-C34e		
	Airborne ILS Localizer Receiving Equipment	TSO-C36e		
	Airborne Interim Standard Microwave Landing System Converter Equipment	TSO-C93		
	Airborne Multipurpose Electronic Display	TSO-Cl13		

Subject Title	TSQ Number		
Navigation Equipment (Continued)			
Airborne Area Navigation Equipment Using Mulh-Sensor Inputs	TSO-C115b		
Airborne Area Navigation Equipment Using Omega/VLF Inputs	TSOC 120		
Aubome Area Navigation Equipment Loran-C Inputs	TSO-C60b		
Airborne Omega Receiving Equipment	TSO-C94a		
Airborne Radio Marker Receiving Equipment	TSO-C35d		
Aubome Automatic Direction Fmdmg (ADF) Equipment	TSO-C4ld		
Airborne Navigation Data Storage System	TSO-C109		
Aubome Supplemental Navigation Equipment Using the Global Postioning System (GPS)	TSO-C129a		
Aubome Weather and Ground Mapping Pulsed Radars	TSO-C63c		
Airborne Windshear Warning and Escape Guidance System for Transport Airplanes	TSO-C117a		
Optional Display Equipment for Weather and Ground Mapping Radar Indicators	TSO-C105		
Microwave Landing Systems (MLS) Au-borne Receiving Equipment	TSO-C104		
Traffic Alert and Collision Avoidance System (TCAS) Airborne Equipment, TCAS I	TSO-C118		
Traffic Alert and Collision Avoidance System (TCAS), Airborne Equipment, TCAS II	TSO-C119a		
VOR Radio Receiving Equipment Operating Within the Radio Frequency Range of 108-1 18 Megahertz	TSO-C40c		

Subject Matter	TSO Number		
Oxygen Equipment			
Continuous Flow Oxygen Mask Assembly (For Non-Transport Category Aircraft)	TSO-Cl03		
Crewmember Demand Oxygen Masks	TSO-C78		
Crewmember Protective Breathing Equipment	TSO-C116		
Oxygen Mask Assembly Continuous Flow, Passenger (For Air Carrier Aircraft)	TSO-C64a		
Oxygen Regulators, Demand	TSO-C89		
Protective Breathing Equipment	TSO-C99		
Propeller (Hose Assemblies)			
Propeller Feathering Hose Assemblies (Rubber and Wire Braid Construction)	TSO-C42		
Structure (Containers, Pallets, Nets)			
Cargo Pallets, Nets, and Containers	TSO-C90c		
Survival Equipment			
Ground Proximity Warning			
Ground Proximity Warning-Glide Slope Deviation Alerting Equipment	TSO-C92c		
Locator Transmitter			
Survivor Locator Lights	TSO-C85		
406 Mhz Emergency Locator Transmitter (ELT)	TSO-C126		
Emergency Locator Transmitter (ELT) Equipment	TSO-C9la		

Subject Title	TSO Number
Rafts/Slides/Life Preservers/Parachutes	
Emergency Evacuation Slides	TSO-C69b
Individual Floation Devices	TSO-C72c
Life Preservers	TSO-C13f
Liferafts (Reversible and Nonreversible)	TSO-C70a
Parachutes	TSO-C23d