

DATE 6/2/80

# ADVISORY CIRCULAR



DEPARTMENT OF TRANSPORTATION  
Federal Aviation Administration  
Washington, D.C.

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**Subject:** INDEX OF AVIATION TECHNICAL STANDARD ORDERS

1. PURPOSE. This advisory circular presents the index of the Federal Aviation Administration (FAA) Technical Standard Orders (TSO's) which contain the minimum performance standards for specified materials, parts, processes, and appliances used on civil aircraft. Also enclosed is a list of proposed TSO's (which the FAA anticipates will be issued within the succeeding 12 months from the date of this advisory circular), and information on how to obtain copies.
2. EFFECTIVE DATE. This advisory circular becomes effective September 9, 1980.
3. RELATED FAR SECTIONS. Federal Aviation Regulations (FAR), Part 21, Subpart O.
4. BACKGROUND. On June 2, 1980, by Amendment 21-50 to FAR 21, the FAA adopted a new public procedure for issuing Technical Standard Orders (TSO's) for specified materials, parts, processes, and appliances used on civil aircraft, relocated the substance of Subpart A of FAR 37 to Subpart O of FAR 21, and revoked FAR 37. Amendment 21-50 becomes effective on September 9, 1980.
5. NEW PUBLIC PROCEDURE. The following is the public procedure, in detail, the FAA will use to develop and issue final TSO's for specified articles used on civil aircraft:
  - a. The FAA will continue to develop draft TSO's and will continue to use, by reference in the TSO, documents prepared and issued by organizations such as the Radio Technical Commission for Aeronautics (RTCA) and the Society of Automotive Engineers (SAE). Notices of RTCA meetings and invitations will continue to be published in the Federal Register. This will allow public participation at the early stages of document development.

b. Any interested 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.

c. The FAA will use several methods to ensure that the public is afforded early opportunities to take part in the TSO decisionmaking process. A draft TSO will be circulated for public comment through the use of mailing lists. Any individual or organization can request to be placed on the TSO mailing list. All those on the list will receive drafts of each TSO. In addition, this advisory circular will list those TSO's the FAA anticipates will be issued within the succeeding 12 months. This advisory circular will also list each current TSO and provide information on how to obtain copies of those desired. Finally, the FAA will publish periodically a notice in the Federal Register of each proposed TSO and provide notice of how to obtain a copy.

d. Any individual or organization wishing to obtain copies of specific TSO's, or all draft TSO's proposed by the FAA may be placed on a mailing list by submitting a request addressed to the Federal Aviation Administration, Office of Airworthiness, Aircraft Engineering Division (AWS-100), 800 Independence Avenue, S.W., Washington, D.C. 20591. Any person wishing to submit comments on a proposed TSO will be given 90 days from the date of the notice in the Federal Register.

e. All comments received on or before the closing date for comments will be considered by the Administrator before issuing a final TSO.

f. All comments submitted will be available, both before and after the closing date for comments, for examination by interested persons in Room 335, FAA Headquarters Building (FOB-10A), 800 Independence Avenue, S.W., Washington, D.C. 20591, between 8:30 a.m. and 5:00 p.m.

g. Copies of the final TSO will be mailed to all persons on the mailing list. As in the past, documents prepared and issued by an organization that are incorporated by reference in the TSO will continue to be available to any interested person only from that organization. Final TSO's will not be published in the Federal Register.

h. Copies of all draft and final TSO's will also be available at FAA Headquarters in the Office of Airworthiness, Aircraft Engineering Division (AWS-100), and at all regional Flight Standards Engineering and Manufacturing offices.

i. The new procedure has numerous opportunities for the public to participate in the development of each TSO. These are:

(1) Participation in the development of documents prepared and issued by industry organizations which the FAA may use by reference in a TSO.

(2) Mailing lists to circulate a draft TSO to the public for comment.

(3) This advisory circular listing each TSO the FAA anticipates will be issued within the succeeding 12 months.

(4) Notice in the Federal Register announcing the availability of each draft TSO and invitation for comment.

(5) A period of at least 90 days to submit comments.

6. INDEX OF TSO'S. For reader convenience, an index of TSO's is presented both in numerical sequence (Appendix 1) and by subject matter (Appendix 2). The proposed TSO's which the FAA anticipates will be issued within the succeeding 12 months from the date of this advisory circular are contained in Appendix 3. To obtain a copy of any of the TSO's listed in the appendices, please write to: Department of Transportation, Federal Aviation Administration, Office of Airworthiness, Aircraft Engineering Division (AWS-100), 800 Independence Avenue, S.W., Washington, D.C. 20591. Please indicate in your request whether you desire to have your name placed on our mailing list to receive future issuances of the TSO's.



M. C. ~~BEARD~~  
Director of Airworthiness

APPENDIX 1  
Index of TSO's in Numerical Sequence

<u>TSO Number</u>	<u>Subject Title</u>
TSO-C1b	Cargo and Baggage Compartment Smoke Detection Instruments
TSO-C2b	Airspeed Indicator (Pitot Static)
TSO-C3b	Turn-and-Slip Indicator
TSO-C4c	Bank and Pitch Instruments (Indicating Gyro-Stabilized Type) (Gyroscopic Horizon, Attitude Gyro)
TSO-C5c	Direction Instrument, Nonmagnetic Gyro-Stabilized Type (Directional Gyro)
TSO-C6c	Direction Instrument, Magnetic (Gyro-Stabilized Type)
TSO-C7c	Direction Instrument, Magnetic Non-stabilized Type (Magnetic Compass)
TSO-C8b	Rate of Climb Indicator, Pressure Actuated (Vertical Speed Indicator)
TSO-C9c	Automatic Pilots
TSO-C10b	Aircraft Altimeter, Pressure Actuated Sensitive Type
TSO-C11d	Fire detectors (Thermal Sensing and Ionization Sensing Types)
TSO-C12c	Liferafts (Twin Tube)
TSO-C13c	Life Preservers
TSO-C14a	Aircraft Fabric, Intermediate Grade; External Covering Material
TSO-C15c	Aircraft Fabric, Grade A; External Covering Material
TSO-C16	Air-Speed Tubes (Electrically Heated)

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<u>TSO Number</u>	<u>Subject Title</u>
TSO-C17a	Fire Resistant Aircraft Sheet and Structural Material
TSO-C19b	Portable Water-Solution Type Fire Extinguishers
TSO-C20	Combustion Heaters
TSO-C21a	Special Aircraft Turnbuckle Assemblies and/or Turnbuckle Safelying Devices
TSO-C22f	Safety Belts
TSO-C23b	Parachutes
TSO-C25a	Aircraft Seats and Berths (Type I Transport, 6g Forward Load)
TSO-C26c	Aircraft Wheels and Brakes
TSO-C27	Twin Seaplane Floats
TSO-C28	Aircraft Skis
TSO-C30b	Aircraft Position Lights
TSO-C31c	High Frequency (HF) Radio Communication Transmitting Equipment Operating Within the Radio Frequency Range of 1.5 to 30 Megacycles
TSO-C32c	High Frequency (HF) Radio Communication Receiving Equipment Operating Within the Radio Frequency Range of 1.5 to 30 Megacycles
TSO-C34c	Airborne ILS Glide Slope Receiving Equipment
TSO-C35d	Airborne Radio Marker Receiving Equipment
TSO-C36c	Airborne ILS Localizer Receiving Equipment

<u>TSO Number</u>	<u>Subject Title</u>
TSO-C37b	VHF Radio Communications Transmitting Equipment Operating Within the Radio Frequency Range of 118-136 Megacycles
TSO-C38b	VHF Radio Communications Receiving Equipment Operating Within the Radio Frequency Range of 118-136 Megacycles
TSO-C39a	Aircraft Seats and Berths
TSO-C40a	VOR Radio Receiving Equipment Operating Within the Radio Frequency Range of 108-118 Megacycles (For Air Carrier Aircraft)
TSO-C41c	Airborne Radio Receiving and Direction Finding Equipment
TSO-C42	Propeller Feathering Hose Assemblies (Rubber and Wire Braid Construction)
TSO-C43	Temperature Indicators
TSO-C44a	Fuel Flowmeters
TSO-C45	Manifold Pressure Indicating Instruments
TSO-C46a	Maximum Allowable Airspeed Indicator Systems
TSO-C47	Pressure Instruments - Fuel, Oil, and Hydraulic
TSO-C48	Carbon Monoxide Detector Instruments
TSO-C49a	Electric Tachometer: Magnetic Drag (For Air Carrier Aircraft)
TSO-C50b	Aircraft Audio and Interphone Amplifiers
TSO-C51a	Aircraft Flight Recorder
TSO-C52a	Flight Directors

<u>TSO Number</u>	<u>Subject Title</u>
TSO-C53a	Fuel and Engine Oil System Hose Assemblies (Rubber or Tetrafluoroethylene Tube and Wire Braid Construction)
TSO-C54	Stall Warning Instruments
TSO-C55	Fuel and Oil Quantity Instruments (For Reciprocating Engine Aircraft)
TSO-C56	Engine-Driven Direct Current Generators for Aircraft Certificated Under Part 25
TSO-C57	Aircraft Headsets and Speakers (For Air Carrier Aircraft)
TSO-C58	Aircraft Microphones (For Air Carrier Aircraft)
TSO-C59	Airborne Selective Calling Equipment (For Air Carrier Aircraft)
TSO-C60	Airborne Loran-A Receiving Equipment Operating Within the Radio Frequency Range of 1800-2000 Kilocycles (For Air Carrier Aircraft)
TSO-C62c	Aircraft Tires
TSO-C63b	Airborne Weather Radar Equipment
TSO-C64	Oxygen Mask Assembly Continuous Flow, Passenger (For Air Carrier Aircraft)
TSO-C65	Airborne Doppler Radar Ground Speed and/or Drift Angle Measuring Equipment (For Air Carrier Aircraft)
TSO-C66a	Airborne Distance Measuring Equipment (For Air Carrier Aircraft)
TSO-C67	Airborne Radar Altimeter Equipment (For Air Carrier Aircraft)

<u>TSO Number</u>	<u>Subject Title</u>
TSO-C68	Airborne Automatic Dead Reckoning Computer Equipment Utilizing Aircraft Heading and Doppler-Obtained Ground Speed and Drift Angle Data (For Air Carrier Aircraft)
TSO-C69	Emergency Evacuation Slides
TSO-C70	Liferafts (Nonreversible)
TSO-C71	Airborne Static ("DC to DC") Electrical Power Converter (For Air Carrier Aircraft)
TSO-C72b	Individual Flotation Devices
TSO-C73	Static Electrical Power Inverter
TSO-C74c	Airborne ATC Transponder Equipment
TSO-C75	Hydraulic Hose Assemblies
TSO-C76	Fuel Drain Valves
TSO-C77	Gas Turbine Auxiliary Power Units
TSO-C78	Crewmember Demand Oxygen Masks
TSO-C79	Fire Detectors (Radiation Sensing Type)
TSO-C80	Flexible Fuel and Oil Cell Material
TSO-C84	Cockpit Voice Recorder
TSO-C85	Survivor Locator Lights
TSO-C87	Airborne Low-Range Radio Altimeter
TSO-C88	Automatic Pressure Altitude Digitizer Equipment
TSO-C89	Oxygen Regulators, Demand
TSO-C90	Cargo Pallets, Nets, and Containers



<u>TSO Number</u>	<u>Subject Title</u>
TSO-C91	Emergency Locator Transmitters
TSO-C92a	Ground Proximity Warning-Glide Slope Deviation Alerting Equipment
TSO-C93	Airborne Interim Standard Microwave Landing System Converter Equipment
TSO-C94	Airborne Omega Receiving Equipment
TSO-C97	Lithium Sulfur Dioxide Batteries

APPENDIX 2  
Index of TSO's By Subject Matter

<u>Subject Title</u>	<u>TSO Number</u>
<u>Air Conditioning</u>	
Combustion Heaters	TSO-C20
<u>Auto Flight</u>	
Automatic Pilots	TSO-C9c
<u>Airborne Auxiliary Power</u>	
Gas Turbine Auxiliary Power Units	TSO-C77
<u>Communications</u>	
<u>Amplifiers</u>	
Aircraft Audio and Interphone Amplifiers	TSO-C50b
<u>Locator Transmitter</u>	
Emergency Locator Transmitters	TSO-C91
<u>Microphones</u>	
Aircraft Microphones (For Air Carrier Aircraft)	TSO-C58
<u>Selective Calling Equipment</u>	
Airborne Selective Calling Equipment (For Air Carrier Aircraft)	TSO-C59
<u>VHF</u>	
VHF Radio Communications Transmitting Equipment Operating Within the Radio Frequency Range of 118-136 Megacycles	TSO-C37b
VHF Radio Communications Receiving Equipment Operating Within the Radio Frequency Range of 118-136 Megacycles	TSO-C38b

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<u>Subject Title</u>	<u>TSO Number</u>
<u>Voice Recorders</u>	
Cockpit Voice Recorder	TSO-C84
<u>Electrical Power</u>	
Airborne Static ("DC to DC") Electrical Power Converter (For Air Carrier Aircraft)	TSO-C71
Engine-Driven Direct Current Generators for Aircraft Certificated Under Part 25	TSO-C56
Lithium Sulfur Dioxide Batteries	TSO-C97
Static Electrical Power Inverter	TSO-C73
<u>Equipment/Furnishings</u>	
<u>Aircraft Fabrics</u>	
Aircraft Fabric Intermediate Grade; External Covering Material	TSO-C14a
Aircraft Fabric, Grade A; External Covering Material	TSO-C15c
Special Aircraft Turnbuckle Assemblies and/or Turnbuckle Safetying Devices	TSO-C21a
<u>Seats, Berths, and Safety Belts</u>	
Aircraft Seats and Berths (Type I Transport, 6 <sub>g</sub> Forward Load)	TSO-C25a
Aircraft Seats and Berths	TSO-C39a
Safety Belts	TSO-C22f

<u>Subject Title</u>	<u>TSO Number</u>
<u>Fire Protection</u>	
<u>Fire Detection</u>	
Fire Detectors (Thermal Sensing and Ionization Sensing Types)	TSO-C11d
Fire Detectors (Radiation Sensing Type)	TSO-C79
<u>Fire Extinguishers</u>	
Portable Water-Solution Type Fire Extinguishers	TSO-C19b
<u>Fire Resistant Material</u>	
Fire Resistant Aircraft Sheet and Structural Material	TSO-C17a
<u>Fuel</u>	
<u>Flowmeters</u>	
Fuel Flowmeters	TSO-C44a
<u>Fuel and Oil Cell Material</u>	
Flexible Fuel and Oil Cell Material	TSO-C80
<u>Fuel Hose Assemblies</u>	
Fuel and Engine Oil System Hose Assemblies (Rubber or Tetrafluoroethylene Tube and Wire Braid Construction)	TSO-C53a
<u>Fuel Valves</u>	
Fuel Drain Valves	TSO-C76
<u>Hydraulic</u>	
<u>Hose Assemblies</u>	
Hydraulic Hose Assemblies	TSO-C75

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<u>Subject Title</u>	<u>TSO Number</u>
<u>Ice and Rain Protection</u>	
<u>Air-Speed Tubes</u>	
Air-Speed Tubes (Electrically Heated)	TSO-C16
<u>Weather and Radar Equipment</u>	
Airborne Weather Radar Equipment	TSO-C63b
<u>Instruments</u>	
<u>Detectors</u>	
Cargo and Baggage Compartment Smoke Detection Instruments	TSO-C1b
Carbon Monoxide Detector Instruments	TSO-C48
<u>Flight Instruments</u>	
Airborne Low-Range Radio Altimeter	TSO-C87
Airborne Radar Altimeter Equipment (For Air Carrier Aircraft)	TSO-C67
Aircraft Altimeter, Pressure Actuated Sensitive Type	TSO-C10b
Aircraft Flight Recorder	TSO-C51a
Airspeed Indicator (Pitot Static)	TSO-C2b
Automatic Pressure Altitude Digitizer Equipment	TSO-C88
Bank and Pitch Instruments (Indicating Gyro-Stabilized Type) (Gyroscopic Horizon, Attitude Gyro)	TSO-C4c
Direction Instrument, Magnetic (Gyro-Stabilized Type)	TSO-C6c
Direction Instrument, Magnetic Non-stabilized Type (Magnetic Compass)	TSO-C7c

<u>Subject Title</u>	<u>TSO Number</u>
Direction Instrument, Nonmagnetic Gyro-Stabilized Type (Directional Gyro)	TSO-C5c
Electric Tachometer, Magnetic Drag (for Air Carrier Aircraft)	TSO-C49a
Flight Directors	TSO-C52a
Maximum Allowable Airspeed Indicator Systems	TSO-C46a
Rate of Climb Indicator, Pressure Actuated (Vertical Speed Indicator)	TSO-C8b
Stall Warning Instruments	TSO-C54
Temperature Indicators	TSO-C43
Turn-and-Slip Indicator	TSO-C3b
<u>Engine Instruments</u>	
Fuel and Oil Quantity Instruments (For Reciprocating Engine Aircraft)	TSO-C55
Manifold Pressure Indicating Instruments	TSO-C45
Pressure Instruments - Fuel, Oil, and Hydraulic	TSO-C47
<u>Landing Gear</u>	
Aircraft Skis	TSO-C28
Aircraft Tires	TSO-C62c
Aircraft Wheels and Brakes	TSO-C26c
Twin Seaplane Floats	TSO-C27
<u>Lights</u>	
Aircraft Position Lights	TSO-C30b
Survivor Locator Lights	TSO-C85

<u>Subject Title</u>	<u>TSO Number</u>
<u>Navigation Equipment</u>	
Airborne ATC Transponder Equipment	TSO-C74c
Airborne Automatic Dead Reckoning Computer Equipment Utilizing Aircraft Heading and Doppler Obtained Ground Speed and Drift Angle Data (For Air Carrier Aircraft)	TSO-C68
Airborne Distance Measuring Equipment (For Air Carrier Aircraft)	TSO-C66a
Airborne Doppler Radar Ground Speed and/or Drift Angle Measuring Equipment (For Air Carrier Aircraft)	TSO-C65
Airborne ILS Glide Slope Receiving Equipment	TSO-C34c
Airborne ILS Localizer Receiving Equipment	TSO-C36c
Airborne Interim Standard Microwave Landing System Converter Equipment	TSO-C93
Airborne Loran-A Receiving Equipment Operating Within the Radio Frequency Range of 1800-2000 Kilocycles (For Air Carrier Aircraft)	TSO-C60
Airborne Omega Receiving Equipment	TSO-C94
Airborne Radio Marker Receiving Equipment	TSO-C35d
Airborne Radio Receiving and Direction Finding Equipment	TSO-C41a
VOR Radio Receiving Equipment Operating Within the Radio Frequency Range of 108-118 Megacycles (For Air Carrier Aircraft)	TSO-C40a

<u>Subject Title</u>	<u>TSO Number</u>
<u>Oxygen</u>	
<u>Crewmembers</u>	
Crewmember Demand Oxygen Masks	TSO-C78
<u>Passenger</u>	
Oxygen Mask Assembly Continuous Flow, Passenger (For Air Carrier Aircraft)	TSO-C64
<u>Regulators</u>	
Oxygen Regulators, Demand	TSO-C89
<u>Propellers</u>	
<u>Hose Assemblies</u>	
Propeller Feathering Hose Assemblies (Rubber and Wire Braid Construction)	TSO-C42
<u>Structure</u>	
<u>Containers, Pallets, Nets</u>	
Cargo Pallets, Nets, and Containers	TSO-C90
<u>Survival Equipment</u>	
<u>Ground Proximity Warning</u>	
Ground Proximity Warning-Glide Slope Deviation Alerting Equipment	TSO-C92a
<u>Rafts/Slides/Life Preservers/Parachutes</u>	
Emergency Evacuation Slides	TSO-C69
Individual Flotation Devices	TSO-C72b
Life Preservers	TSO-C13c
Liferafts (Twin Tube)	TSO-C12c
Liferafts (Nonreversible)	TSO-C70
Parachutes	TSO-C23b



APPENDIX 3  
Index of Proposed TSO's by Subject Matter

<u>Subject Title</u>	<u>Existing TSO To Be Revised</u>
<u>Communications</u>	
<u>VHF</u>	
VHF Radio Communications Transmitting Equipment Operating Within the Radio Frequency Range of 118-136 Megacycles	TSO-C37b
VHF Radio Communications Receiving Equipment Operating Within the Radio Frequency Range of 118-136 Megacycles	TSO-C38b
<u>Electrical Power</u>	
A-C Generators	(New)
<u>Equipment/Furnishings</u>	
Child Restraint Systems	(New)
Protective Breathing Equipment	(New)
<u>Instruments</u>	
Aircraft Composite Cockpit Voice and Flight Data Recorder	(New)
Aircraft Flight Recorders (Extended Parameters)	(New)
Automatic Pressure Altitude Digitizer Equipment	TSO-C88
Bank and Pitch Instruments (Indicating Gyro-Stabilized Type, Gyroscopic Horizon, Attitude Gyro)	TSO-C4c
Mach Meters	(New)
Rate of Climb Indicator, Pressure Actuated (Vertical Speed Indicator)	TSO-C8b
Aircraft Altimeter, Pressure Actuated Sensitive Type	TSO-C10b

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<u>Subject Title</u>	<u>Existing TSO To Be Revised</u>
Temperature Indicators	TSO-C43
Turn-and-Slip Indicator	TSO-C3b
<u>Lights</u>	
Anti-Collision Light Systems	(New)
<u>Navigation</u>	
Airborne Distance Measuring Equipment (For Air Carrier Aircraft)	TSO-C66a
Airborne Loran-A and Loran-C Receiving Equipment Operating Within the Radio Frequency Ranges of 1800-2000 Kilohertz and 90-110 Kilohertz, respectively	TSO-C60
VOR Radio Receiving Equipment Operating Within the Radio Frequency Range of 108-118 Megacycles (For Air Carrier Aircraft)	TSO-C40a
<u>Survival Equipment</u>	
<u>Rafts/Slides/Life Preservers/Parachutes</u>	
Emergency Evacuation Slides	TSO-C69
Life Preservers	TSO-C13c
Liferafts (Nonreversible)	TSO-C70