



U.S. Department
of Transportation
**Federal Aviation
Administration**

Advisory FILE Circular

Subject: INDEX OF AVIATION TECHNICAL
STANDARD ORDERS

Date: 4/12/84
Initiated by: AWS-110

AC No: 20-110B
Change:

1. PURPOSE. This advisory circular (AC) describes the public procedure the Federal Aviation Administration (FAA) will use to develop and issue Technical Standard Orders (TSO's) for aeronautical products to be used on civil aircraft. The AC presents an index of the FAA TSO's which contain the minimum performance standards for specified materials, parts, processes, and appliances used on civil aircraft. In addition to the current listing of TSO's in Appendices 1 and 2, Appendix 3 of the AC contains a listing of TSO's being proposed and for which a notice of availability has been published in the Federal Register. Finally, Appendix 4 contains a listing of TSO's being developed by the FAA.

2. CANCELLATION. Advisory Circular 20-110A, Index of Aviation Technical Standard Orders, dated January 12, 1983, is canceled.

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 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 the remainder of FAR 37. Amendment 21-50 became effective on September 9, 1980.

5. PUBLIC PROCEDURE. The following is the public procedure 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 proposed TSO's and will 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 to allow public participation at the early stages of document development.

b. Documents prepared and issued by an organization that are incorporated by reference in proposed or final TSO's will be available to any interested person only from that organization.

c. 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.

d. The FAA will use several methods to ensure that the public is afforded early opportunities to take part in the TSO decisionmaking process. Proposed TSO's are normally distributed to the public for comment through the use of mailing lists. Any individual or organization can request to be placed on the TSO mailing list. A notice of availability for comment of all proposed TSO's is published in the Federal Register, and a copy of the final TSO is mailed to all persons on the mailing list.

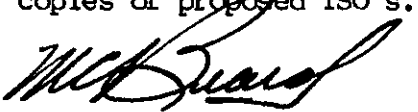
e. Any person wishing to submit comments on a proposed TSO will be given 90 days from its issuance date to do so. All comments received on or before the closing date for comments will be considered by the Administrator before issuing a final TSO. Late comments may also be considered as long as no additional 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 in the FAA Headquarters Building (FOB-10A), Room 335, 800 Independence Avenue, S.W., Washington, D.C. 20591, between 8:30 a.m. and 4:30 p.m., Monday thru Friday.

g. Copies of all proposed and final TSO's will also be available at FAA Headquarters in the Office of Airworthiness, Aircraft Engineering Division (AWS-100), and at all FAA Regional Aircraft Certification Offices (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 in numerical sequence (Appendix 1) and by subject matter (Appendix 2). The proposed TSO's for which a notice of availability has been published or will be published are contained in Appendices 3 and 4 respectively. All TSO standards contained in FAR 37 Subpart B as of September 9, 1980, are current under the TSO revision program, unless Appendices 1 and 2 of this AC shows a more current revision letter.

7. HOW TO OBTAIN TSO's. To obtain a copy of any of the TSO's listed in Appendices 1, 2, and 3, write to: Federal Aviation Administration, Office of Airworthiness, Aircraft Engineering Division (AWS-100), 800 Independence Avenue, S.W., Washington, D.C. 20591. Indicate in your request whether you desire to have your name placed on our mailing list to receive future issuances of the TSO's, notices for public comment on proposed TSO's, or copies of proposed 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-C2c - 10/19/83	Airspeed Indicator (Pitot Static)	*
* TSO-C3c - 10/19/83	Turn-and-Slip Indicator	*
TSO-C4c	Bank and Pitch Instruments (Indicating Gyro-Stabilized Type) (Gyroscopic Horizon, Attitude Gyro)	
* TSO-C5d - 10/19/83	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-C13d - 1/3/83	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)	

* Denotes New or Revised TSO

<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 Safetying Devices	
TSO-C22f	Safety Belts	
TSO-C23b	Personnel Parachute Assemblies	
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-C36d - 3/21/84	Airborne ILS Localizer Receiving Equipment	*

* Denotes New or Revised TSO

<u>TSO Number</u>	<u>Subject Title</u>	
* TSO-C37c - 8/3/81	VHF Radio Communications Transmitting Equipment Operating Within the Radio Frequency Range of 118-136 Megacycles	*
* TSO-C38c - 8/3/81	VHF Radio Communications Receiving Equipment Operating Within the Radio Frequency Range of 118-136 Megacycles	*
TSO-C39a	Aircraft Seats and Berths	
* TSO-C40b - 8/3/81	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-C43a - 8/18/83	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-C50c - 1/31/83	Aircraft Audio and Interphone Amplifiers	*
TSO-C51a	Aircraft Flight Recorder	
TSO-C52a	Flight Directors	
* Denotes New or Revised TSO		

<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-C57a - 1/31/83	Aircraft Headsets and Speakers (For Air Carrier Aircraft)	*
* TSO-C58a - 1/31/83	Aircraft Microphones (For Air Carrier Aircraft)	*
TSO-C59	Airborne Selective Calling Equipment (For Air Carrier Aircraft)	
* TSO-C60a - 8/3/81	Airborne Loran-A Receiving Equipment Operating Within the Radio Frequency Range of 1800-2000 Kilocycles (For Air Carrier Aircraft)	*
TSO-C62c	Aircraft Tires	
* TSO-C63c	Airborne Weather Radar Equipment	*
TSO-C64	Oxygen Mask Assembly Continuous Flow, Passenger (For Air Carrier Aircraft)	
* TSO-C65a	Airborne Doppler Radar Ground Speed and/or Drift Angle Measuring Equipment (For Air Carrier Aircraft)	*
* TSO-C66b - 8/3/81	Airborne Distance Measuring Equipment (For Air Carrier Aircraft)	*
TSO-C67	Airborne Radar Altimeter Equipment (For Air Carrier Aircraft)	

* Denotes New or Revised TSO

<u>TSO Number</u>	<u>Subject Title</u>	
* TSO-C68a - 8/18/83	Airborne Automatic Dead Reckoning Computer Equipment Utilizing Aircraft Heading and Doppler-Obtained Ground Speed and Drift Angle Data (For Air Carrier Aircraft)	*
* TSO-C69a - 6/3/83	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-C77a - 7/20/81	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-C88a - 8/18/83	Automatic Pressure Altitude Digitizer Equipment	*
TSO-C89	Oxygen Regulators, Demand	
TSO-C90a	Cargo Pallets, Nets, and Containers	

* Denotes New or Revised TSO

<u>TSO Number</u>	<u>Subject Title</u>	
TSO-C91	Emergency Locator Transmitters	
TSO-C92b	Ground Proximity Warning-Glide Slope Deviation Alerting Equipment	
TSO-C93	Airborne Interim Standard Microwave Landing System Converter Equipment	
* TSO-C94a - 8/12/81	Airborne Omega Receiving Equipment	*
* TSO-C95 - 8/18/83	Mach Meters	*
* TSO-C96 - 6/22/82	Anticollision Lights System	*
TSO-C97	Lithium Sulfur Dioxide Batteries	
* TSO-C99 - 6/27/83	Protective Breathing Equipment	*
* TSO-C100 - 5/28/82	Child Restraint Systems	*
* TSO-C102 - 4/2/84	Airborne Radar Approach and Beacon Systems for Helicopters	*
* TSO-C104 - 6/22/82	Microwave Landing Systems (MLS) Airborne Receiving Equipment	*

* Denotes New or Revised TSO

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-C77a
<u>Communications</u>	
<u>Amplifiers</u>	
Aircraft Audio and Interphone Amplifiers	TSO-C50c
<u>Locator Transmitter</u>	
Emergency Locator Transmitters	TSO-C91
<u>Microphones</u>	
Aircraft Headsets and Speakers (For Air Carrier Aircraft)	TSO-C57a
Aircraft Microphones (For Air Carrier Aircraft)	TSO-C58a
<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-C37c
VHF Radio Communications Receiving Equipment Operating Within the Radio Frequency Range of 118-136 Megacycles	TSO-C38c

<u>Subject Title</u>	<u>TSO Number</u>
<u>HF</u>	
HF Radio Communication Transmitting and Receiving Equipment Operating Within 1.5 to 30 Megahertz	TSO-C31c/C32c
<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
Child Restraint Systems	TSO-C100
<u>Seats, Berths, and Safety Belts</u>	
Aircraft Seats and Berths (Type I Transport, 6 _g 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

<u>Subject Title</u>	<u>TSO Number</u>
<u>Environmental Protection Equipment</u>	
<u>Air-Speed Tubes</u>	
Air-Speed Tubes (Electrically Heated)	TSO-C16
<u>Weather and Radar Equipment</u>	
Airborne Radar Approach and Beacon Systems for Helicopters	TSO-C102
Airborne Weather Radar Equipment	TSO-C63c
<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-C88a
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

Subject TitleTSO Number

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

Engine Instruments

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

Landing Gear

Aircraft Skis

TSO-C28

Aircraft Tires

TSO-C62c

Aircraft Wheels and Brakes

TSO-C26c

Twin Seaplane Floats

TSO-C27

Lights

Aircraft Position Lights

TSO-C30b

Anticollision Light System

TSO-C96

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-C68a
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-C65a
Airborne ILS Glide Slope Receiving Equipment	TSO-C34c
Airborne ILS Localizer Receiving Equipment	TSO-C36d
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-C60a
Airborne Omega Receiving Equipment	TSO-C94
Airborne Radio Marker Receiving Equipment	TSO-C35d
Airborne Radio Receiving and Direction Finding Equipment	TSO-C41a
Airborne Weather and Ground Mapping Pulsed Radars	TSO-C63c
Microwave Landing Systems (MLS) Airborne Receiving Equipment	TSO-C104
VOR Radio Receiving Equipment Operating Within the Radio Frequency Range of 108-118 Megacycles (For Air Carrier Aircraft)	TSO-C40b

<u>Subject Title</u>	<u>TSO Number</u>
<u>Oxygen</u>	
<u>Crewmembers</u>	
Crewmember Demand Oxygen Masks	TSO-C78
Protective Breathing Equipment	TSO-C99
<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-C90a
<u>Survival Equipment</u>	
<u>Ground Proximity Warning</u>	
Ground Proximity Warning-Glide Slope Deviation Alerting Equipment	TSO-C92b
<u>Rafts/Slides/Life Preservers/Parachutes</u>	
Emergency Evacuation Slides	TSO-C69a
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

Notice of availability of the following proposed TSO's has been published in the Federal Register for public comment:

Subject TitleTSO NumberCommunications

Emergency Locator Transmitter	TSO-C91a
HF Radio Communication Transmitting and Receiving Equipment Operating Within 1.5 to 30 Megahertz	TSO-C31d/C32d

Electrical Power

Engine-Driven Direct Current Generator/Starter - Generators	TSO-C56a
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Fire Protection

Powerplant Fire Detection Instruments (thermal and flame contact types)	TSO-C11e
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Instruments

Aircraft Altimeter, Pressure Actuated Sensitive Type	TSO-C10c
Bank and Pitch Instruments (Indicating Gyro-Stabilized Type, Gyroscopic Horizon, Attitude Gyro)	TSO-C4d
Low Range Radio Altimeters	TSO-C87a
Rate of Climb Indicator Pressure Actuated (Vertical Speed Indicator)	TSO-C8c
Turn and Slip Indicator	TSO-C3c

Landing Gear

Aircraft Wheels and Wheel-Brake Assemblies (Addendum 1)	TSO-C26c
Aircraft Tires (Addendum 1)	TSO-C62c

<u>Subject Title</u>	<u>TSO Number</u>
<u>Navigation</u>	
ILS Glide Slope Receiving Equipment Operating Within 328.6 to 335.4 Megahertz	TSO-C34d
<u>Survival Equipment</u>	
Personal Parachute Assemblies	TSO-C23c
Liferafts (reversible and nonreversible)	TSO-C70a
<u>NEW TSO's</u>	
A-C Generators	TSO-C98
Overspeed Warning Instruments	TSO-C101
Continuous Flow Oxygen Mask Assembly (for non-transport category)	TSO-C103
Optional Display Equipment for Weather and Ground Mapping Radar Indicator	TSO-C105
Air Data Computer	TSO-C106
Passive Thunderstorm Detection Systems	TSO-C110

APPENDIX 4
Index of TSO's Being Developed by Subject Matter

Notice of availability of the following proposed TSO's will be published in the Federal Register for public comment:

<u>Subject Title</u>	<u>TSO Numbers</u>
Safety Belt Systems	TSO-C22g
Airborne Automatic Direction Finding (ADF) Equipment	TSO-C41d
Pressure Instruments - Fuel, Oil, and Hydraulic (Reciprocating Engine Powered Aircraft)	TSO-C47a
Automatic Pressure Altitude Reporting Code Generating	TSO-C83 (New)
Nickel Cadmium Vented Rechargeable Aircraft Batteries (non-sealed, main- tainable type)	TSO-C107 (New)
Airborne Area Navigation Equipment Using VOR/DME Reference Facility Sensor Input	TSO-C108 (New)
Airborne Navigation Data Storage System	TSO-C109 (New)
Aircraft Flight Recorder (Extended Parameters)	(New)

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