English Translation Version for Reference Only

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China Civil Aviation Technical Standard Order

This China Civil Aviation Technical Standard Order (CTSO) is issued according to Part 37 of the China Civil Aviation Regulations (CCAR-37). Each CTSO is a criterion which the concerned aeronautical materials, parts or appliances used on civil aircraft must comply with when it is presented for airworthiness certification.

Crewmember Demand Oxygen Mask

1. Purpose.

This China Civil Aviation Technical Standard Order (CTSO) is for manufacturers applying for crewmember demand oxygen mask CTSO authorization (CTSOA). This CTSO prescribes the minimum performance standards(MPS) that Crewmember Demand Oxygen Mask must first meet for approval and identification with the applicable CTSO marking.

2. Applicability.

This CTSO is applicable for new applications after the effective date of this CTSO. Major design changes to article approved under this CTSO will require a new authorization in accordance with section 21.353 of CCAR-21R4.

3. Requirements.

New models of crewmember demand oxygen mask identified and manufactured on or after the effective date of this CTSO must meet the MPS qualification and documentation requirements in SAE International (SAE), Aerospace Standard (AS) 8026A, Crewmember Demand Oxygen Mask for Transport Category Aircraft, dated October 2001, as modified by appendix 1 of this CTSO. Crewmember oxygen masks are separated into four types:

Type I: Quick donning mask with integral breathing valve(s)

Type II: Quick donning mask without integral breathing valve(s)

Type III: Non-quick donning mask with integral breathing valve(s), and

Type IV: Non-quick donning mask without integral breathing valve(s).

a. Functionality. This CTSO's standards apply to crewmember demand oxygen masks to be used with straight demand, diluter-demand and pressure-demand oxygen systems on transport category aircraft. The oxygen mask design should be either oronasal, covering the mouth and nose, or full face, covering the mouth, nose and eyes.

b. Environmental Qualification. Test the equipment according to test procedures in AS8026A, paragraph 4.5.

c. Deviations. For using alternative or equivalent means of

compliance to the criteria in this CTSO, the applicant must show that the equipment maintains an equivalent level of safety. Apply for a deviation under the provision of 21.368(a) in CCAR-21R4.

4. Marking.

a. Mark at least one major component (mask assembly) permanently and legibly with all the information in section 21.423(b) of CCAR-21R4, except for the following:

(1) 21.423(b)(2). Use the name, type, and part number. Do not use the optional model number;

(2) 21.423 (b)(3). Use the date of manufacture (elastomer cure date). Do not use the optional serial number.

b. Mark the mask assembly permanently and legibly with the following:

(1) Size (if more than one size is manufactured) ;

(2) Type (see paragraph 3 above) ;

(3) Maximum approved altitude (per AS8026A, paragraph 4.6.3) ;

(4) “Non-pressure Demand” or “Pressure Demand” .

c. Also, mark the following permanently and legibly, with at least the manufacturer’s name, subassembly part number, and the CTSO number:

(1) Each component that is easily removable (without hand tools);

(2) Each interchangeable element;

(3) Each subassembly of the article that manufacturer determined may be interchangeable.

d. Identify deviations granted to the article by marking “Deviation. See installation/instruction manual (IM)” after the CTSO number.

e. Optional marking is permitted to allow aircraft-specific or operational-specific installation limitations, such as: “FOR USE ON {insert aircraft type or serial number} ONLY,” “FOR USE ON AIRCRAFT USED IN PART {insert number} OPERATIONS ONLY,” or “SEE DRAWING NO. {insert number} FOR INSTALLATION LIMITATIONS.”

5. Application Data Requirements.

The applicant must furnish the responsible certification personnel with the related data to support design and production approval. The application data include a statement of conformance as specified in section 21.353(a)(1) in CCAR-21R4 and one copy each of the following technical data:

a. Operating instructions and equipment limitations, sufficient to describe the equipment’s operational capability. Describe any deviations in detail. If needed, identify equipment by part number, version, revision, and criticality level of software/hardware, classification for use, and environmental categories.

b. Installation procedures and limitations, sufficient to ensure that the crewmember demand oxygen mask, when installed according to the installation procedures, still meets this CTSO's requirements. Limitations must identify any unique aspects of the installation. Finally, the limitations must include a note with the following statement:

"This article meets the minimum performance and quality control standards required by a CTSO. Installation of this article requires separate approval."

c. Schematic drawings of the installation procedures.

d. Wiring diagrams of the installation procedures.

e. List of components, by part number, that make up the crewmember demand oxygen mask complying with the standards prescribed under this CTSO. Include vendor part number cross-references, when applicable.

f. A component maintenance manual (CMM), covering periodic maintenance, calibration, and repair, for the continued airworthiness of the installed crewmember demand oxygen mask. Include recommended cleaning and sterilization procedures, inspection intervals, and service life. Describe the details of deviations granted, as noted in paragraph 5.a of this CTSO.

g. Material and process specifications list.

h. The quality system description required by section 21.358 of

CCAR-21R4, including functional test specifications. The quality system should ensure that it will detect any change to the approved design that could adversely affect compliance with the CTSO MPS, and reject the article accordingly.

i. Manufacturer's CTSO qualification test report.

j. Nameplate drawing with the information required by paragraph 4 of this CTSO.

k. List of all drawings and processes (including revision level) that define the article's design. For a minor change, follow the directions in 21.369 of CCAR-21R4. Show any revisions to the drawing list only on CAAC request.

6. Manufacturer Data Requirements.

Besides the data given directly to the authorities, have the following technical data available for review by the authorities:

a. Functional qualification specifications for qualifying each production article to ensure compliance with this CTSO.

b. Equipment calibration procedures.

c. Corrective maintenance procedures within 12 months after CTSO authorization.

d. Schematic drawings.

e. Wiring diagrams.

f. Material and process specifications.

g. Results of the environmental tests conducted per paragraph 3.b of this CTSO.

7. Furnished Data Requirements.

If furnishing one or more articles manufactured under this CTSO to one entity (such as an operator or repair station), provide one copy of the data in paragraphs 5.a through 5.f of this CTSO. Add any other data needed for the proper installation, certification, use, or for continued airworthiness, of the crewmember demand oxygen mask.

8. Availability of Referenced Documents.

a. Order SAE documents from:

Society of Automotive Engineers, Inc.

400 Commonwealth Drive, WARRENDALE, PA 15096-001, USA.

You may also order them online from www.sae.org.

b. Order RTCA documents from:

Radio Technical Commission for Aeronautics, Inc.

1150 18th Street NW, Suite 910, Washington D.C. 20036.

You may also order them online from www.rtca.org.

APPENDIX 1. MPS FOR CREWMEMBER DEMAND OXYGEN MASKS

This appendix prescribes the MPS for crewmember demand oxygen masks. The applicable standard is SAE AS8026A, Crewmember Demand Oxygen Mask for Transport Category Aircraft, dated October 2001. It is modified as follows:

SAE AS8026A citation	**Modification**
Section 1, SCOPE	Disregard.
Paragraph 3.1.1	Revise to read: “General: Use materials of a type, grade and quality that experience and/or tests have shown suitable for the purpose. Do not use materials that contaminate oxygen or are adversely affected by continuous service with oxygen. Use the following test methods to verify compliance with materials requirements established in a design specification.”
Paragraph 3.1.1 a. Resistance to Flammability	Revise to read: “Except for small parts like knobs, triggers, fasteners, seals and electrical parts that don’t contribute significantly to fire propagation, materials including packaging must comply with 25.853(a) in CCAR-25R4 and Appendix F, Part I(a)(1)(iv) in CCAR-25R4.”
Paragraph 3.1.3	Revise to read: “Cleaning and Sterilizing: Make the oxygen mask of materials that permit cleaning and sterilizing without adverse effects, and without major disassembly. The cleaning method must be either manufacturer recommended, or according to SAE ARP1176, Oxygen System Component Cleaning and Packaging. Include cleaning and sterilizing procedures in the CMM, per paragraph 5.f of this CTSO.”
Paragraph 3.1.4	Revise to read: “Elastomeric Components: Attach to the mask a tag or leaflet describing service life limits of elastomeric components and a suggested method to inspect for deterioration in these components. If not attached, include the tag with the packaged mask as delivered to the user. Silicone rubber parts, having unlimited shelf life, are exempt from this requirement. Include life limits and inspection procedures in the

	CMM, per paragraph 5.f of this CTSO.”
Paragraph 3.3 Identification	Disregard. Find marking requirements in paragraph 4 of this CTSO.
Paragraph 3.5 Suspension:	Revise to read: Store the oxygen mask face piece of Type I and Type II masks in a container, mounted (panel or sidewall) or attached to a suspension device. The mask assembly must be donned using only one hand and operating in 5 seconds or less, without disturbing eyeglasses. After donning, the mask must not prevent immediate communication between crewmembers of the airplane intercommunications system. Type III and Type IV oxygen masks may be similarly installed, and may be designed to require use of two hands and/or take more than 5 seconds to don.
Paragraph 3.12 Communications	Revise to read: Oxygen mask design shall permit the installation of a microphone and connecting communications cable. When microphones are furnished with the masks, these must conform to CTSO-C139a, or CAAC approved equivalent requirements.
Paragraph 5.1.4	Disregard.
Paragraph 5.1.5	Disregard.