

European Aviation Safety Agency

European Technical Standard Order (ETSO)

Subject: PRESSURE INSTRUMENTS — FUEL, OIL, AND HYDRAULIC

1 — Applicability

This ETSO gives the requirements which fuel, oil, and hydraulic pressure instruments that are manufactured on or after the date of this ETSO must meet in order to be identified with the applicable ETSO marking.

2 — Procedures

2.1 — General

Applicable procedures are detailed in CS-ETSO, Subpart A.

2.2 — Specific

None.

3 — Technical conditions

3.1 — Basic

3.1.1 — Minimum performance standard

Standards set forth in the SAE Aerospace Standard (AS) document: SAE AS 408C 'Pressure Instruments — Fuel, Oil, and Hydraulic' from July 1, 2001, unless otherwise specified by Appendix 1 to this ETSO.

3.1.2 — Environmental standard

Testing fuel, oil, and hydraulic pressure instruments must be in accordance with SAE AS408C section 7 and see CS-ETSO, Subpart A, paragraph 2.1, for environmental test procedures.

3.1.3 — Software

If fuel, oil, and hydraulic pressure instrument includes a digital computer, see CS-ETSO, Subpart A, paragraph 2.2, for software development.

3.1.4 Airborne electronic hardware

See CS-ETSO, Subpart A, paragraph 2.4.

3.2 — Specific

None.

3.2.1 — Failure condition classification

See CS-ETSO, Subpart A, paragraph 2.4.

Failure of the function defined in paragraph 3.1.1 of this ETSO has been determined to be a major failure condition. The applicant must develop the system to at least the design assurance level commensurate with this failure condition.

4 – Marking

4.1 – General

Marking is detailed in CS-ETSO, Subpart A, paragraph 1.2;.

4.2 – Specific

a) At least one major component of the fuel, oil, and hydraulic pressure instrument shall be marked permanently and legibly with all the information as provided for in SAE AS408C, Section 3.2 (except paragraph 3.2.b).

b) Mark 'Fire-resistant' or 'Fireproof' information legibly and permanently.

5 – Availability of referenced document

See CS-ETSO, Subpart A, paragraph 3.

APPENDIX 1

MINIMUM PERFORMANCE STANDARDS (MPSs) FOR PRESSURE INSTRUMENTS — FUEL, OIL, AND HYDRAULIC

1. The MPSs applying to this ETSO are provided in SAE AS408C, Pressure Instruments — Fuel, Oil, and Hydraulic, dated July 1, 2001, except for paragraphs 3.1, 3.1.1, 3.1.2, and 3.2.b.

Here are provided the modifications to be applied to the referenced SAE document:

AS408C	modification:
Title	Replace 'Pressure Instruments — Fuel, Oil, and Hydraulic (Reciprocating Engine Powered Aircraft)' Substitute: 'Pressure Instruments — Fuel, Oil, and Hydraulic'.
Section 1.1	Replace '... primarily for use with reciprocating engine powered transport aircraft, ...' Substitute: '... for use with civil aircraft, ...'
AS408C section 7	modification:
Para 7.13	Use test conditions in SAE AS1055 Rev D, 'Fire Testing of Flexible Hose, Tube Assemblies, Coils, Fittings, and Similar System Components', dated June 1, 1997, Sections 4 and 5. The following test conditions from the environmental standards mentioned in paragraph 3.1.2 above are added.
Para 7.14	Section 16, Power Input.
Para 7.15	Section 17, Voltage Spike.
Para 7.16	Section 18, Audio Frequency Conducted Susceptibility — Power Inputs.
Para 7.17	Section 19, Induced Signal Susceptibility
Para 7.18	Section 20, Radio Frequency Susceptibility.

2. The performance of fuel, oil, and hydraulic pressure instruments can be enhanced or made superior to this specification, depending on intended application and configuration.