



**Deviation request #70 for an ETSO approval for CS-ETSO applicable to
Pressure Instruments (ETSO-C47a) and
Electric Tachometer: Magnetic Drag (Indicator and Generator) (ETSO-C49b)
Consultation Paper**

1. Introductory note

The hereby presented deviation request shall be subject to public consultation, in accordance with EASA Management Board Decision No 7-2004 as amended by EASA Management Board Decision No 12-2007¹ products certification procedure dated 11. September 2007, Article 3 (2.) of which states:

“Deviations from the applicable airworthiness codes, environmental protection certification specifications and/or acceptable means of compliance with Part 21, as well as important special conditions and equivalent safety findings, shall be submitted to the panel of experts and be subject to a public consultation of at least 3 weeks, except if they have been previously agreed and published in the Official Publication of the Agency. The final decision shall be published in the Official Publication of the Agency.”

Version 5 of this documents is an editorial change after consultation. With version 5 the number of the deviations of section 2 and 3 were changed to ETSO-C47a#3 and ETSO-C47a#4.

2. ETSO-C47a#3 Pressure Instruments

Deviate from SAE AS408C section 4.1.4 and provide approximately the same size for the title, the numerals, and the units of measure instead of using different letter sizes.

Requirement:

SAE AS 408C 4.1.4

Instrument Title: The instrument title when used shall be of the same approximate size but no larger than the numerals. The title may be of the same finish as the numerals. The units of measure (PSI x 1000 or PSI as applicable) shall appear on the dial in lettering noticeably smaller than either the numerals or title.

Industry:

Deviate from SAE AS408C section 4.1.4 to display the units of measure approximately the same size as the numerals and title. ELOS is provided by the clarity of combination of tape indicator and digital readout. The title and digital readout are of the same size but displayed apart from each other to enhance view ability.

EASA:

We accept the proposed deviation especially for electronic displays. The requirement aims for immediate visibility of the important information while trying to separate the important from the less important information through letter size. We agree that the goal may be achieved by different means as well.

¹) <http://easa.europa.eu/management-board/meetings/2007/04/MB%20Decision%2012-2007%20amending%20the%20certification%20procedure.pdf>

3. ETSO-C47a#4 Pressure Instruments

Deviate from ETSO-C47a 4.2 and SAE AS 408C and do not mark the unit with the explosion and fire resistance category, for display equipment not fitted with pressure sensor.

Requirement:

ETSO-C47a

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 in SAE AS408C, Section 3.2 (except paragraph 3.2.b).
- b) Mark "Fire resistant" or "Fireproof" information legibly and permanently

SAE AS 408C

3.2 Identification:

The following information shall be legibly and permanently marked on the instrument or attached thereto:

- a. Name of instrument
- b. SAE AS408C
- c. Manufacturer's part number
- d. Manufacturer's serial number or date of manufacture
- e. Manufacturer's name and/or trademark
- f. Range
- g. Rating (Electrical, vacuum, etc.)
- h. Explosion category

Industry:

Deviate from ETSO-C47a section 4.2 and SAE AS408C section 3.2, for marking the instrument with explosion category and "Fire resistant" or "Fireproof". The instrument displays data from an external pressure sensing system; and C47a is not the primary ETSO. Equivalent Level of Safety is provided by including this information in the Environmental Qualification Form.

EASA:

We accept the proposed deviation. Providing the information in the data package available to the installer is a sufficient way to address environmental restrictions. It is not necessary having this information visible when handling the unit e.g. during maintenance or installation.

4. ETSO-49b#6 Electric Tachometer: Magnetic Drag (Indicator and Generator)

Deviate from SAE AS 404C section 4.1.1 and provide an up-stretching tape indicator as per ARP 4102-7 Appendix C (fix tape – engine) or ARP 4102-7 Appendix A (moving tapes – EADI) plus a digital indication instead of a pointer and a dial.

Requirement:

SAE AS 404C

4.1.1 Indication: Engine speed shall be indicated by means of one or more moving pointers or dials. Relative movement of the pointer with respect to the dial shall be clockwise for increasing RPM.

Industry:

In addition to the deviation ETSO-C49b#1 allowing the use of the current revision SAE AS 404C instead of the revision B, required by ETSO-C49b, we deviate from SAE AS 404C section 4.1.1 and provide a digital indication along with a moving-tape indicator with up-stretching tape indicating increasing speed.

EASA:

We accept the deviation as a stretching tape in combination with a digital indication of the actual value is considered equivalent to using a pointer and a dial to indicate a system status like engine speed.