



API/IP 1581 Specifications and qualification procedures for aviation jet fuel filter/separators, 5th Edition

Addendum 20th December 2006

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2.1.2 is amended to read:

A filter/coalescer is an element that is capable of removing dirt and of coalescing fine droplets of water in the fuel to sizes that can be removed in the filter/separator vessel. Filter/coalescers are classified as Type S, Type S-LD (low dirt) and Type S-LW (low water) according to the amount of dirt and water the elements are capable of removing as defined in Section 2.3.

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Add new Section 2.3.4 and renumber existing Sections 2.3.4, 2.3.4.1 and 2.3.4.2 to Sections 2.3.5, 2.3.5.1 and 2.3.5.2

2.3.4 Type S-LW filter/separators

Type S-LW filter/separators (also known as coalescer/separators) shall only be used for mobile applications where minimal amounts of water can be expected in the jet fuel. The qualification requirements for Type S-LW filter/separators are:

- (a) The Type S-LW filter/separator shall be able to maintain rated flow when it is contaminated with particulate to the level specified in Section 4 without the contamination in the effluent fuel exceeding the level specified in Section 3.1.1.
 - (b) The Type S-LW filter/separator shall be able to effectively remove water from fuel without exceeding the effluent free-water levels specified in Section 3.1.1 when 0,5 % water is added according to the procedures specified in Section 4.
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2.4.1.2 (a) is amended to read:

- (a) Filter/separators qualified by testing to Category M100 do not qualify for Category M. Separate tests shall be conducted independently of any Category M100 tests to qualify filter/separators for Category M.
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2.4.2 is amended to read:

Filter/separators qualified as Type S by testing also qualify as Type S-LD and S-LW at the tested flow rate and conditions.

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Add new second paragraph to 3.2.2.7 before the 'Note':

Water shall drain freely from the entire vessel and sump. A sump having a flat, level base does not meet this requirement. Vessel designs (i.e. lid sealing schemes) that create void spaces that can trap water do not meet this requirement.

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3.2.2.14 is amended to read:

Unless special installation conditions require otherwise, access to the elements shall be provided by a hinged or pivoted vessel cover. The use of swing bolts is recommended to facilitate quick access to the interior of the vessel. To permit access to the far end of a vertical vessel for maintenance purposes, a vertical vessel's length-to-diameter ratio shall be limited by the following expressions, unless otherwise specified by the purchaser:

For vessels ≤ 61 cm (24 inch) diameter: $L/D \leq 1,75$

For vessels > 61 cm (24 inch) diameter: $L/D \leq 2,5$

where:

L is the distance from the deck plate or manifold to the lid opening, and

D is the inside diameter of the vessel.

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The last paragraph of 4.4.5.4 is amended to read:

Although normally filter/separator vessels are qualified to remove 3 % water, vessels may exist in conditions where there is limited potential for water contamination (e.g. systems with independent water detection) and less performance may be acceptable. For such applications, filter/coalescer and separator systems can be qualified as Type S-LW by reducing the water injection rate during qualification to 0,5 % by volume instead of 3 %. Vessels so qualified should be clearly marked as Type S-LW. For more information see Annex B.

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Add new Annex B:

ANNEX B

INFORMATIVE ANNEX

This Annex is provided for information. The following are not mandatory requirements of this specification.

This specification details laboratory testing requirements and acceptable levels of selected aspects of performance for three Types of filter/coalescer and separator systems: Type S, S-LD and S-LW.

A premise of API 1581 3rd edition was that fuel should be cleaner as it passed through the distribution system thus lower levels of dirt and water removing performance were acceptable as the fuel approached aircraft. This premise was reviewed in the process of preparing API/IP 1581 4th edition and rejected as inappropriate. The specification writers selected Class B systems as offering a dependable level of dirt and water removal performance and derived the requirements for 4th/5th edition Type S systems from 3rd edition Class B systems.

Systems of two other Types are defined by API/IP 1581 5th edition as amended: Type S-LD (low dirt) and S-LW (low water). S-LD systems are envisioned for use in historically clean systems and in applications immediately downstream of microfilters where elements are essentially never changed out because of high differential pressure. The premise for this

Type was that a more efficient product might be developed if unnecessary dirt holding capacity was relaxed. At this time no Type S-LD products have been developed and consideration will be given to dropping this Type in a future revision of the specification.

Type S-LW systems have less continuous water handling capacity than Type S systems. Type S-LW systems are tested with a 0,5 % water challenge instead of 3 %. It is anticipated that a coalescer and separator combination can be used for both Type S-LW and Type S systems. The main difference being that the Type S will have a lower rated flowrate than the Type S-LW system to compensate for the extra water loading.

The advantage of Type S-LW over Type S systems is that the Type S-LW systems can be smaller and lighter rendering them easier to use in mobile applications. **Users should appreciate that it is not appropriate to use Type S-LW systems in all mobile applications.** A user should conduct an appropriate risk assessment before specifying Type S or Type S-LW. Some general guidelines are:

- Hydrant servicers intended for use with hydrant systems known to periodically be wet should use Type S systems to maximize water handling capability.
- Mobile applications which have an independent system to detect water (e.g. water probe, optical sensor or appropriate procedure) may normally use Type S-LW filter/coalescer and separator systems even when used on wet hydrant systems. (Note that the use of online water sensors could permit a dual-rated Type S/S-LW system to, by lowering the flowrate when water is detected, switch from Type S-LW to Type S operation.)
- Refuellers operated such that free water content is well-controlled normally would be fitted with Type S-LW systems.
- Type S-LW systems are not intended for, and **should not be used in**, fixed applications.

Note: API and EI are developing a new Recommended Practice to provide users with guidance concerning the application of aviation filtration products. It is intended that the information in this Annex will be moved to the Recommended Practice in a future revision of API/IP 1581.
