



DEFENCE ESTATES
Delivering Estate Solutions to Defence Needs

Specification 46



Aviation fuel filtration



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Aviation fuel filtration

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Foreword

This Specification was prepared under the patronage of the Defence Fuels and Lubricants Distribution Committee.

This Specification is for the use of Top Level Budget Holders (TLBHs) for application by the Project Sponsors, Property Managers (**PROMs**), Establishment Works Consultants (EWCs), Works Services Managers (WSMs) and other parties involved in the specification and installation of aviation fuel filtration equipment at petroleum storage depots, oil fuel depots and aviation fuel installations on the Ministry of Defence (MOD) Estate.

The principal users of this Specification are expected to be Project Sponsors, to influence the preparation of the Statement of Requirements: EWC specifiers and WSM designers, installers and maintainers for works which fall within the property services remit; and Project Managers, designers and installers for projects.

For MOD Establishments occupied by United States Visiting Forces (USVF) additional requirements may apply in relation to United States Military Specifications (Mil Spec).

This Specification incorporates the requirements of:

- DBF STAN 49-3 Design and Performance Requirements of Fuel Filter Water Separators for Military Use
- DBF STAN 49-5 Filter, Fluid, Pressure (Precoat Type for Aviation Fuels)
- NATO STANAG 3583 Differential Pressure Gauges for Filter Water Separators
- NATO STANAG 3967 Design and Performance Requirements for Aviation Fuel Filter Separator Vessels and Coalescer and Separator Elements.

and supercedes:

- Standard Specification (M&E) No. 25 Precoat Filters, Filter Water Separators and Fuel Monitors for Aviation Fuel, DOE/PSA.

Amendments to this Specification will be advised by Defence Estates (DE) Technical Bulletin, issued to PROM and TLBH Works staff. It is the responsibility of the user to check with the PROM or Project Sponsor if amendments have been issued. There is a feedback sheet at Annex B for suggested changes or developments to the document.

Technical advice and assistance can be obtained from DE. Approaches may be through local DE offices or directly to the Focal Point:

Head of Bulk Petroleum Installations
Specialist Services
Fuels and Mechanical
Defence Estates
Blakemore Drive
SUTTON COLDFIELD
West Midlands
B75 7RL

Notwithstanding that this document sets out the specification for filtration equipment and is the MOD preferred solution, its use does not absolve a Project Manager from any responsibility for the design, neither does its existence constrain him from using alternatives, provided such alternatives can be demonstrated to provide a result of equal safety, quality and cost effectiveness. Attention is drawn to the requirement for Product Conformity Certification (PCC) for filter water separator vessels and elements. PCC shall be supported with documentary evidence that the vessel and elements are fully compliant with DEF STAN 49-3 Design and Performance Requirements of Fuel Filter Water Separators for Military Use.

This Specification has been devised for the use of the Crown and its Contractors in the execution of contracts for the Crown. The Crown hereby excludes all liability (other than liability for death or personal injury) whatsoever and howsoever arising (including, but without limitation, negligence on the part of the Crown, its servants or agents) for any loss or damage however caused where the Specification is used for any other purpose.

Compliance with a DE Specification will not of itself confer immunity from legal obligations.

Abbreviations

BS	British Standard
DE	Defence Estates
DEO	Defence Estate Organisation
DWS	Defence Works Services
EWC	Establishment Works Consultant
IP	Index of Protection (for equipment), Institute of Petroleum (for publications)
MOD	Ministry of Defence
PCC	Product Conformity Certification
PROM	Property Manager
TLBH	Top Level Budget Holder
WSM	Works Services Manager

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1 Introduction

1.1 SCOPE

This Specification has been produced in order to specify the requirements for the design and construction of aviation fuel filtration equipment on the MOD Estate. It is equally applicable to new build and refurbishment works.

This Specification is applicable to:

- petroleum storage depots
- oil fuel depots
- aviation fuel installations.

This Specification only applies to aviation fuels for use in jet aircraft ie. AVCAT/AVTUR. It does not apply to AVGAS nor ground fuels such as CIVGAS or diesel.

1.2 ARRANGEMENT

Section 1 indicates the application of this Specification to the MOD Estate and indicates the general requirements that all fuel filtration equipment should meet.

Section 2 advises the requirements for specification, scope of supply, performance and testing for precoat filters.

Section 3 defines the requirements for filter water separators in terms of scope of supply, performance, type of equipment and testing requirements.

Section 4 provides information concerning the scope of supply, performance and testing requirements for fuel monitors.

Annex A contains the data sheets, which should be initiated by the organisation requiring the equipment and completed by the equipment manufacturer.

Annex B contains the Change Suggestion Form.

1.3 GENERAL REQUIREMENTS

1.3.1 Environmental conditions

All equipment shall be designed for outdoor installation. Items shall be unaffected by frost, tropical rain and high humidity and shall be suitable for the ambient temperatures stated in the data sheets.

1.3.2 Design pedigree

Only standard designs in current production, with a proven history of reliable operation in hydrocarbon service should be offered. Prototype or unproven designs will not be considered.

1.3.3 Preservation

Equipment shall be prepared for despatch to site as follows:

- all openings to atmosphere shall be closed by means of flanges or plugs securely bolted or screwed in place
- oil filled compartments or equipment shall be emptied and a rust inhibitor applied
- suitable supports shall be provided for internal parts which might become damaged in transit.

Any special requirements for the removal of preservative shall be clearly indicated on the equipment and repeated in the commissioning instructions.

1.3.4 Special tools and spare parts

The equipment manufacturer shall provide one set of commissioning spares and special tools, together with a list of recommended operating spares, for a two year period.

2 Precoat filters

2.1 APPLICATION

The precoat filter is installed at the aviation fuel installation at the receiving end of all cross-country pipelines to remove pipeline solids contamination.

2.2 SCOPE OF SUPPLY

The precoat filter manufacturer's scope of supply shall include, but not be limited to, the following for each monitor:

- filter
- initial media fill
- system for applying and maintaining correct media level on the media supports
- system for discharging spent media and contaminants to a slops tank
- system for mixing suspensions of media with aviation fuel
- differential pressure gauge
- relief valve
- automatic air vent
- pumps and motors as required by the manufacturer's design
- auxiliary pipework
- inspection and testing
- painting and preservation
- documentation
- special tools and spare parts.

The following items are excluded from the precoat filter manufacturer's scope of supply:

- slops tank
- site installation.

2.3 DOCUMENTATION REQUIREMENTS

Proposal requirements:

- general arrangement drawing showing overall dimensions, weights, location, type and size of all termination points; foundation requirements and element removal distances
- completed data sheets
- cross-sectional drawing showing internal layout of the precoat filter
- schematic indicating the manufacturer's scope of supply.

'As-installed' requirements:

- all of the documentation submitted at the time of the proposal but revised to indicate a true record of the equipment supplied
- relief valve test certification
- differential pressure gauge calibration certificate
- hydrostatic test certification
- installation and commissioning procedures
- operation and maintenance manuals.

2.4 PERFORMANCE

The performance requirements are stated in Section 6 of DEF STAN 49-5 Filter, Fluid, Pressure (Precoat Type for Aviation Fuels).

The filter manufacturer shall complete the pressure drop and holding capacity sections of the data sheet. The holding capacity is defined as the time taken for the maximum pressure drop to be reached at the rated flow rate for various inlet contamination levels.

2.5 PRESSURE CONTAINMENT

Precoat filters shall be designed and constructed to BS 5500 Specification for Unfired Fusion Welded Pressure Vessels or any other national pressure vessel code (eg. ASME).

The design pressure and temperature shall be defined on the data sheet.

Any element or part of the vessel, which is subjected to differential pressure due to normal flow of fuel shall be capable of being tested at twice the differential pressure without any damage.

2.6 FLANGE TERMINATIONS

All termination flanges shall be in accordance with BS 1560 Part 3 Section 3.1 Specification for Steel Flanges. Flanges shall be Class 150 unless otherwise stated on the data sheet. Bolt holes shall straddle centrelines.

2.7 AUXILIARY PIPING

Auxiliary piping shall be in accordance with FS 05 Specification for Specialist Works on Petroleum Installations - Mechanical, DWS.

2.8 AUXILIARY EQUIPMENT

The following equipment shall be fitted to each precoat filter:

- a) Automatic air vent.
- b) Pressure relief valve in accordance with FS 05 Specification for Specialist Works on Petroleum Installations - Mechanical, DWS sized and selected by the precoat filter manufacturer.
- c) Piston type differential pressure gauge complying with the requirements of Annex C of DEF STAN 49-3 Design and Performance Requirements of Fuel Filter Water Separators for Military Use.

- d) A differential pressure sensing instrument capable of actuating a local audible alarm and an audible and visual alarm in the control room. The instrument shall be certified for the hazardous area classification, gas grouping and environmental protection as defined on the data sheet.
- e) Sight glasses on the fuel inlet and outlet pipework in accordance with FS 05 Specification for Specialist Works on Petroleum Installations - Mechanical, DWS.
- f) Lockable drain valves at the low points of all tanks, vessels and pumps.

2.9 MEDIA

The following requirements apply to the precoat filter media:

- a) The media shall be compatible with the fuel and its additives and shall not cause any change in the fuel that would prevent it from meeting its specification. The use of asbestos is not permitted.
- b) Media retention shall be by an adequately supported stainless steel mesh material. The design of the retention system shall allow backflushing of the media and be such that neither mechanical handling equipment or disconnection of the main pipework is required.
- c) The filter shall be arranged such that spent media and dirt shall be backflushed to a slops tank. During backflushing, all flow shall be directed to the slops tank and no filtered fuel shall be produced. The media system shall be arranged such that the main fuel flow is used for media deposition commensurate with filtered fuel being produced. The time for a complete media change ie. backflushing and deposition shall not be longer than five minutes at the rated fuel flow.
- d) The need for a media change shall be initiated by the differential pressure reaching the value specified by the manufacturer on the data sheet.

2.10 ELECTRIC MOTORS

Motors shall be of the totally enclosed squirrel cage induction type complying with the relevant parts of BS 4999 General Requirements for Rotating Electrical Machines and BS 5000 Rotating Electrical Machines of Particular Types or for Particular Applications. They shall be certified for the hazardous area classification, gas grouping and environmental protection as defined on the data sheet. They shall have characteristics to suit the electricity supply and the required power output and shall be continuously rated. They shall be fitted with grease lubricated ball or roller bearings, including a thrust bearing if required. Lubrication of bearings shall be possible without the need for any dismantling.

The motor shall have a rating not less than 115% of the power required at the duty point.

Motor windings insulation shall be Class F.

Motor condensation heaters shall be provided with connections, which shall be brought out to a separate terminal box.

2.11 ACCESS

The vessel design shall allow access for the inspection of all interior surfaces when opened for maintenance purposes.

2.12 MATERIALS OF CONSTRUCTION

Materials in contact with the fuel shall not be affected by the fuel, by water, or by water containing soluble fuel additives nor shall the materials have any effect upon the fuel. Metals and alloys that are fuel wetted shall be corrosion resistant or protected by a coating system in accordance with Spec 032 Internal Coating of Aviation Fuel Tanks, DEO. Dissimilar metals that will initiate and promote corrosion, if in contact, shall not be allowed. Copper, copper alloys, light metal alloys containing more than 4% copper, zinc or zinc alloys, cadmium, lead and lead alloys shall not be used in components exposed to the fuel.

2.13 PAINTING

The equipment manufacturer shall paint all external surfaces to his standard paint system suitable for an exposed saline environment. The paint system shall be resistant to the fuel.

2.14 NAMEPLATES

Each precoat filter shall be provided with a permanently attached nameplate made of non-corrodible material detailing:

- manufacturer's name and serial number
- design code, pressure (bar g) and temperature (°C)
- hydrostatic test pressure (bar g)
- rated capacity (m³/hr)
- quantity and stock number of the elements
- date of manufacture.

Additional information may be required to be displayed dependent on the design code.

2.15 TESTING

2.15.1 Hydrostatic testing

All pressure containing parts shall be hydrostatically tested in accordance with the relevant design code to which they are designed and constructed.

2.15.2 Motors

Motors shall be tested at the motor manufacturer's works in accordance with the 'Routine Check Tests', as detailed in BS 4999 Part 143 General Requirements for Rotating Electrical Machines: Specification for Tests.

2.15.3 Filtration

Filtration tests shall be undertaken in accordance with Section 14 of DEF STAN 49-5 Filter, Fluid, Pressure (Precoat Type for Aviation Fuels).

3 Filter water separators

3.1 APPLICATION

Filter water separators are used to remove dirt, particulate and water contamination from hydrocarbons. The separator is of a two stage design, the first set of elements coalesce water droplets in the fuel, whilst the second removes particulate matter.

3.2 SCOPE OF SUPPLY

The filter water separator manufacturer's scope of supply shall include, but not be limited to, the following for each separator:

- separator
- set of coalescer and separator elements
- differential pressure gauge
- relief valve
- automatic air vent
- automatic water drain valve
- automatic fuel shut off valve (when specified on the data sheet)
- differential pressure shut-off feature (when specified on the data sheet)
- differential pressure alarm (when specified on the data sheet)
- inspection and testing
- painting and preservation
- documentation
- special tools and spare parts.

The following items are excluded from the filter water separator manufacturer's scope of supply:

- site installation.

3.3 DOCUMENTATION REQUIREMENTS

Proposal requirements:

- general arrangement drawing showing overall dimensions, weights, location, type and size of all termination points; foundation requirements and element removal distances
- completed data sheets
- cross-sectional drawing showing internal layout of all elements and flow paths.

'As-installed' requirements:

- all of the documentation submitted at the time of the proposal but revised to indicate a true record of the equipment supplied
- relief valve test certification
- differential pressure gauge calibration certificate

3 Filter water separators

- hydrostatic test certification
- installation and commissioning procedures
- operation and maintenance manuals.

3.4 PRODUCT CONFORMITY CERTIFICATION

Before any filter water separator vessel or elements can be offered to the MOD, the manufacturer shall have supplied to the Service Authority named in the contract, Product Conformity Certification.

The requirements for Product Conformity Certification are defined in DEF STAN 49-3 Design and Performance Requirements of Fuel Filter Water Separators for Military Use.

3.5 PERFORMANCE, DESIGN, CONSTRUCTION AND TESTING REQUIREMENTS

The requirements for performance, design, construction and testing are defined in DEF STAN 49-3 Design and Performance Requirements of Fuel Filter Water Separators for Military Use, unless modified by the following clauses.

3.5.1 Materials of construction

Materials in contact with the fuel shall not be affected by the fuel, by water, or by water containing soluble fuel additives, nor shall the materials have any effect upon the fuel. Metals and alloys that are fuel wetted shall be corrosion resistant or protected by a coating system in accordance with Spec 032 Internal Coating of Aviation Fuel Tanks, DEO. Dissimilar metals that will initiate and promote corrosion, if in contact, shall not be allowed. Copper, copper alloys, light metal alloys containing more than 4% copper, zinc or zinc alloys, cadmium, lead and lead alloys shall not be used in components exposed to the fuel.

3.5.2 Painting

The equipment manufacturer shall paint all external surfaces to his standard paint system suitable for an exposed saline environment. The paint system shall be resistant to the fuel. Inlet and outlet piping connections are to be permanently marked.

3.5.3 Auxiliary Equipment

The following equipment shall be fitted to each filter water separator:

- a) Automatic air vent.
- b) Pressure relief valve in accordance with FS 05 Specification for Specialist Works on Petroleum Installations - Mechanical, DWS sized and selected by the precoat filter manufacturer.
- c) Piston type differential pressure gauge complying with the requirements of Annex C of DEF STAN 49-3 Design and Performance Requirements of Fuel Filter Water Separators for Military Use.
- d) An armoured sight glass shall be installed on the sump to observe the level of water accumulation. The sight glass shall extend to; as close as possible to or below the bottom of the sump and shall contain a coloured density sensitive ball that floats on water and sinks in fuel. The sight glass shall be equipped with stainless steel isolation valves and a bottom drain cock.

3 Filter water separators

- e) Inlet and outlet sample points complying with the requirements of Annex B of DEF STAN 49-3 Design and Performance Requirements of Fuel Filter Water Separators for Military Use.
- f) Manual drain valve complying with the requirements of Annex B of DEF STAN 49-3 Design and Performance Requirements of Fuel Filter Water Separators for Military Use.
- g) An automatic drain valve shall be fitted complying with the requirements of Annex B of DEF STAN 49-3 Design and Performance Requirements of Fuel Filter Water Separators for Military Use. A facility shall be provided to functionally test the operation of the drain valve and (when fitted) the fuel shut-off valve.
- h) An automatic fuel shut-off valve shall only be provided if specified on the data sheet. The valve shall be installed on the outlet pipework and shall be hydraulically operated. The valve shall normally be open but shall close when either, the fuel flow through the valve exceeds the design flow of the separator or if the water draining capacity of the automatic drain valve is exceeded. Normal operation of the separator shall continue automatically after water has drained from the sump or the fuel flow has reduced.
- i) When specified on the data sheet, a differential pressure shut-off feature shall be provided, which will stop the flow when the maximum differential pressure across the filter is reached. After each shut-off, the feature shall be manually reset to permit normal operation.
- j) If specified on the data sheet, a differential pressure sensing instrument shall be fitted, which shall be capable of providing an audible and visual alarm in the control room. The instrument shall be certified for the hazardous area classification, gas grouping and environmental protection as defined on the data sheet.

4 Fuel monitors

4.1 APPLICATION

Monitors shall be installed at aviation fuel installations downstream of the filter water separators. The fuel monitor shall fail safe in that it shall shut off the flow of fuel in the event of excessive concentrations of free water being present in the fuel.

4.2 SCOPE OF SUPPLY

The fuel monitor manufacturer's scope of supply shall include, but not be limited to, the following for each monitor:

- monitor
- set of elements
- differential pressure gauge
- relief valve
- automatic air vent
- inspection and testing
- painting and preservation
- documentation
- special tools and spare parts.

The following items are excluded from the fuel monitor manufacturer's scope of supply:

- site installation.

4.3 DOCUMENTATION REQUIREMENTS

Proposal requirements:

- general arrangement drawing showing overall dimensions, weights, location, type and size of all termination points; foundation requirements and element removal distances
- completed data sheets
- cross-sectional drawing showing internal layout of all elements and flow paths.

'As-installed' requirements:

- all of the documentation submitted at the time of the proposal but revised to indicate a true record of the equipment supplied
- relief valve test certification
- differential pressure gauge calibration certificate
- hydrostatic test certification
- installation and commissioning procedures
- operation and maintenance manuals.

4.4 MONITOR AND ELEMENT PERFORMANCE QUALIFICATION

The monitor and elements shall be tested in accordance with the requirements of 'Specifications and Qualification Procedures - Aviation Fuel Filter Monitors with Absorbent Type Elements', IP.

The test fuel shall be F 34.

4.5 DESIGN, CONSTRUCTION AND TESTING REQUIREMENTS

The requirements for design, construction and testing are defined in Specifications and Qualification Procedures - Aviation Fuel Filter Monitors with Absorbent Type Elements, IP unless modified by the following clauses.

4.5.1 Flange terminations

All termination flanges shall be in accordance with BS 1560 Part 3 Section 3.1 Specification for Steel Flanges. Flanges shall be Class 150 unless otherwise stated on the data sheet. Bolt holes shall straddle centrelines.

4.5.2 Auxiliary equipment

The following equipment shall be fitted to each fuel monitor:

- a) Automatic air vent.
- b) Pressure relief valve in accordance with FS 05 Specification for Specialist Works on Petroleum Installations - Mechanical, DWS sized and selected by the fuel monitor manufacturer.
- c) Piston type differential pressure gauge complying with the requirements of Annex C of DEF STAN 49-3 Design and Performance Requirements of Fuel Filter Water Separators for Military Use.
- d) Lockable sample point valves on the inlet and outlet connections.
- e) Lockable drain valves at the low points of all internal compartments.

4.5.3 Materials of construction

Materials in contact with the fuel shall not be affected by the fuel, by water, or by water containing soluble fuel additives, nor shall the materials have any effect upon the fuel. Metals and alloys that are fuel wetted shall be corrosion resistant or protected by a coating system in accordance with Spec 032 Internal Coating of Aviation Fuel Tanks, DEO. Dissimilar metals that will initiate and promote corrosion, if in contact, shall not be allowed. Copper, copper alloys, light metal alloys containing more than 4% copper, zinc or zinc alloys, cadmium, lead and lead alloys shall not be used in components exposed to the fuel.

4.5.4 Painting

The equipment manufacturer shall paint all external surfaces to his standard paint system suitable for an exposed saline environment. The paint system shall be resistant to the fuel.

4.5.5 Nameplates

Each fuel monitor shall be provided with a permanently attached nameplate made of non-corrodible material detailing:

- manufacturer's name and serial number
- design code, pressure (bar g) and temperature (°C)
- hydrostatic test pressure (bar g)
- rated capacity (mVhr)
- quantity and stock number of the elements
- date of manufacture.

Additional information may be required to be displayed dependent on the design code.

Annex A Data sheets

PRECOAT FILTER

To be completed by the originating authority	
Equipment title and no:	
Location:	Fuel:
Design pressure (bar g):	Flowrate (m ³ /hr): rated
Inlet pressure (bar g): min max	Electrical supply voltage (V):
Ambient temperature (°C): min max	Electrical supply frequency (Hz):
Hazardous area classification:	Electrical phase:
Gas group:	Maximum motor starting current (%FLC):
Environmental protection (IP):	
Finish paint colour:	
To be completed by the precoat filter manufacturer	
Manufacturer's name:	
Design code:	Model type and number:
Design temperature (°C):	Design pressure (bar g):
Flange terminations size (mm)/class (#)/facing	Element manufacturer and code:
- inlet:	No. of elements required:
- outlet:	Pressure drop across precoat filter (bar) at rated flow
- drain:	- clean media:
- relief valve:	- dirty media:
- automatic air vent:	- maximum allowable for media change:
Materials of construction	Holding capacity at rated flow
- vessel shell:	- 20 mg/1 inlet contamination:
- vessel end:	- 10 mg/1 inlet contamination:
- vessel internals:	- 5 mg/1 inlet contamination:
- media:	- 1 mg/1 inlet contamination:
- pump casing:	Pump
- auxiliary tanks:	- manufacturer/model no:
- pipework:	Motor
Differential pressure sensor	- manufacturer/frame size:
- manufacturer/model no:	- rating (kw):
Automatic air vent	Relief valve
- make/model/size	- make/model/size:
	- set point (bar g):


FILTER WATER SEPARATOR

To be completed by the originating authority	
Equipment title and no:	
Location:	Fuel:
Design pressure (bar g):	Flowrate (m ³ /hr): rated
Inlet pressure (bar g): min max	
Ambient temperature (°C): min max	Automatic fuel shut off valve: Req'd/Not req'd
Hazardous area classification:	Differential pressure shut off feature: Req'd/Not req'd
Gas group:	Differential pressure alarm: Req'd/Not req'd
Environmental protection (IP):	
Finish paint colour:	
To be completed by the separator manufacturer	
Manufacturer's name:	Model type and number:
Design code:	Design pressure (bar g):
Design temperature (°C):	Element manufacturer, code and no. required
Flange terminations size (mm)/class (#)/facing	- coalescer:
- inlet:	- separator:
- outlet:	Pressure drop across separator (bar) at rated flow
- drain:	- clean elements:
- relief valve:	- dirty elements:
- automatic air vent:	- maximum allowable for element change:
- water drain valve:	Anticipated element life under rated conditions:
Materials of construction:	Relief valve
- vessel shell:	- make/model/size:
- vessel end:	- set point (bar g):
- vessel internals:	Automatic air vent
- elements:	- make/model/size
Differential pressure gauge	Automatic water drain valve
- make/model	- make/model/size
Differential pressure sensor	Automatic fuel shut off valve
- make/model:	- make/model/size

FUEL MONITOR

To be completed by the originating authority	
Equipment title and no:	
Location:	Fuel:
Design pressure (bar g):	Flowrate (m ³ /hr): rated
Inlet pressure (bar g): min max	
Ambient temperature (°C): min max	
Finish paint colour:	
To be completed by the fuel monitor manufacturer	
Manufacturer's name:	
Design code:	Model type and number:
Design temperature (°C):	Design pressure (bar g):
Flange terminations size (mmVclass (#)/facing	Element manufacturer and code:
- inlet:	No. of elements required:
- outlet:	Pressure drop across monitor (bar) at rated flow
- drain:	- clean elements:
- relief valve:	- dirty elements:
- automatic air vent:	- maximum allowable for element change:
Materials of construction:	Anticipated element life under rated conditions:
- vessel shell:	Relief valve
- vessel end:	- make/model/size:
- vessel internals:	- set point (bar g):
- elements:	Automatic air vent
Differential pressure gauge	- make/model/size
- make/model	

Annex B Change suggestion form

	<p>Defence Estates Specialist Services Fuels and Mechanical Blakemore Drive Sutton Coldfield B75 7RL</p>	<p>Spec 046 Aviation fuel filtration Change suggestion form</p>
<p>Originator:</p>	<p>Date:</p>	
	<p>Reference:</p>	
<p>Change Suggestion</p>		
<p>Section:</p>	<p>Page:</p>	
<p>Change Detail:</p> <p style="text-align: right;">Continuation Sheet included? Y <input type="checkbox"/> N <input type="checkbox"/></p>		
<p>Reason:</p> <p style="text-align: right;">Continuation Sheet included? Y <input type="checkbox"/> N <input type="checkbox"/></p>		
<p>DE Review</p>		
<p>Action:</p>	<p>Reference:</p>	
	<p>Action Date:</p>	
	<p>Approved:</p>	
	<p>Actioned:</p>	

