ENGINEERING CS

2021 PRODUCT **CATALOGUE**

A V I A T I O N

M A R I N E

I N D U S T R I A L

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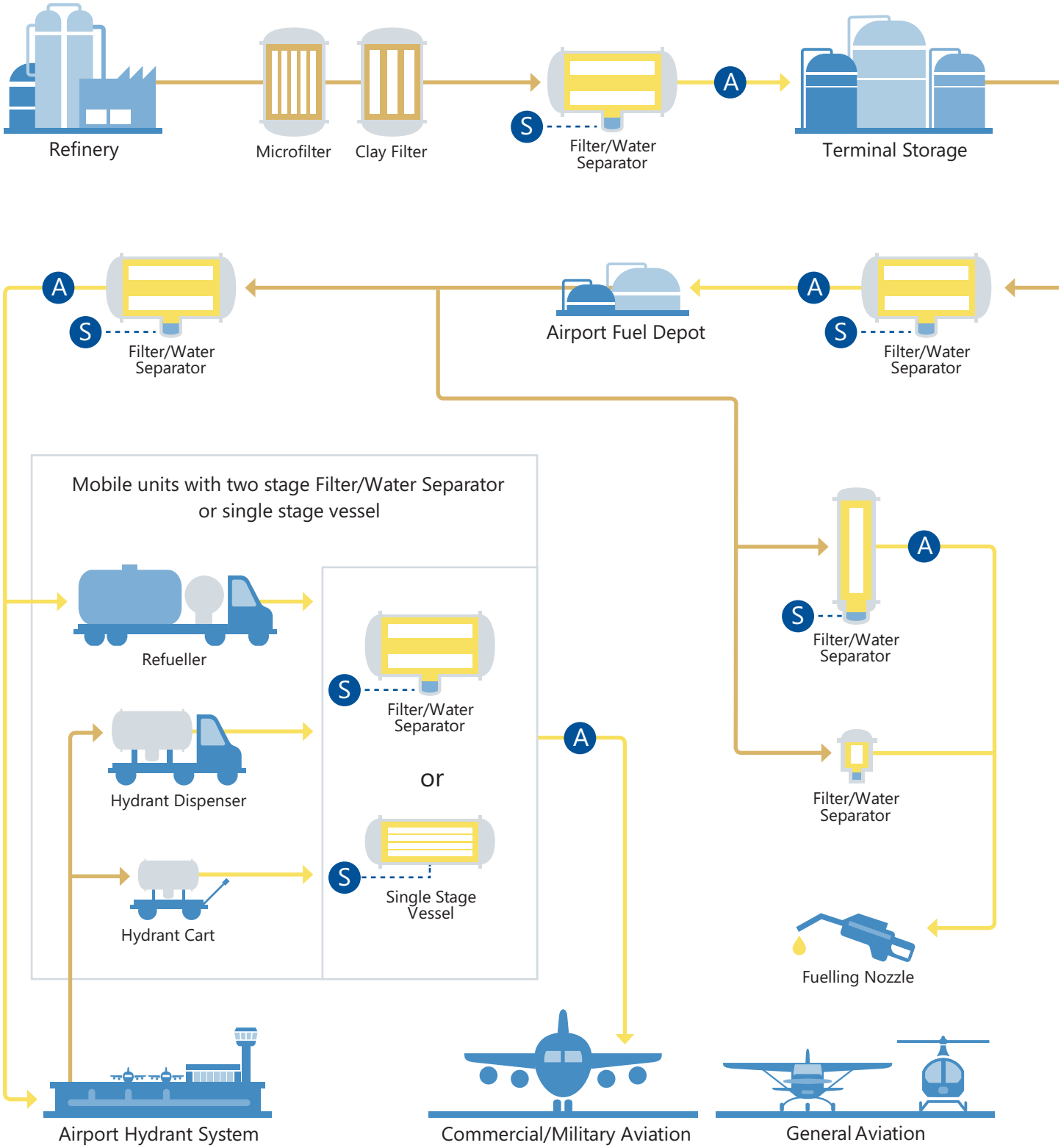
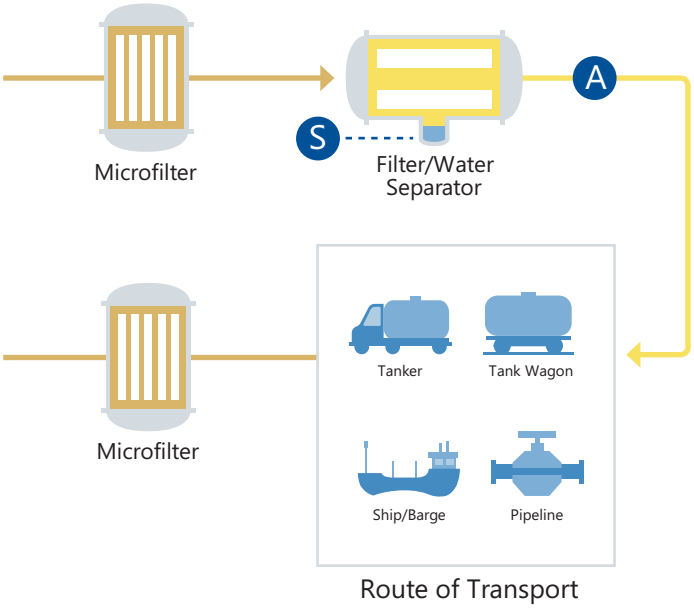
Typical Distribution System for Clean Dry Aviation Fuel





A Clean and Dry Fuel

S Risk of Contaminated Fuel

Filter/Water Separators (acc. to EI 1581)
Filter/water separators intended for use in commercial aviation fuel (defined as Category C), military aviation fuel (defined as Category M), military aviation fuel containing a thermal stability additive (defined as Category M100) and industrial fuel. A filter/water separator is a two-stage system designed to remove free water and particulate from fuel at refineries, terminals, fuel depots, refuellers and hydrant dispensers.

Microfilters (acc. to EI 1590)
Microfilters are designed to be used as prefilters protecting downstream elements in filter/water separators. Microfilters remove particulate in aviation & industrial fuel handling systems.

Filter Monitors (acc. to EI 1583)
Filter Monitors were designed to remove low levels of dirt and absorb low levels of free water from aviation fuels.

Clay Treater
Clay Treaters are designed to remove surfactants from aviation fuels.

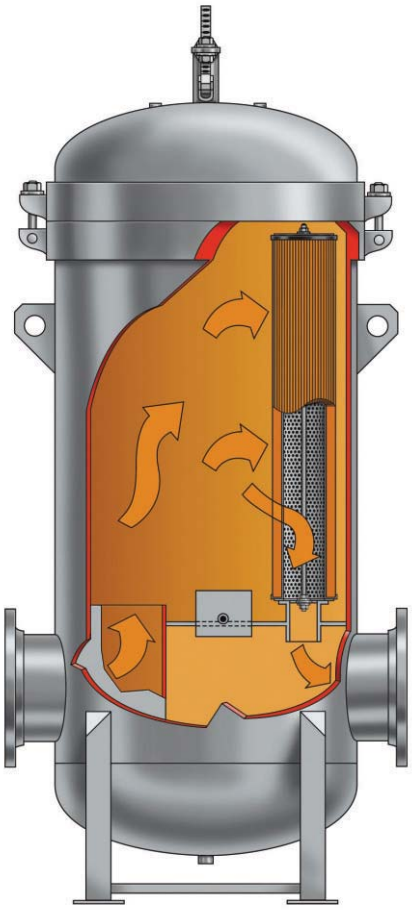
introduction

The aim of this brochure is to explain the background, principles of operation and importance of Microfilters, Clay Filters, Filter/Separators and Filter Monitor units in refuelling operations.

It is not meant to be a servicing manual but simply to provide users with a basic understanding of the techniques and methods employed in removing water and solid contaminants from fuels.

ICS provides total filtration from a single source by bringing together the products, experience and expertise of our company to meet all your filtration needs. This collaboration insures that customers receive the best filtration and on-time delivery directly to each business location–to protect people, equipment and the environment.

We work with the best brands...



How it works

A particulate removing filter system uses a single stage element. When contaminated fuel enters the vessel, particulate (rust, scale, dirt and other contaminants) is removed, providing clean fuel to your engine and equipment.

Application

Micro Filters are used wherever there is a demand for high quality, economic and reliable filtration. They are designed to continuously remove fine particulate such as rust, dirt, sand and pipe scale from fuel oil systems .

These highly efficient micro-filters are used at refineries, bulk fuel depots, transfer stations and airports predominantly prior to Filter/Separators to protect and prolong coalesce element life.

Design of construction:

- Shell design - Acc. to the EI 1596
- Filter elements – EI 1590 suitable
- Material - Welded carbon steel or stainles steel construction, other materials available on request
- Design pressure - 10.3 bar (150 PSI) at 121°C; higher pressure and temperature ratings available on request.
- Surface finish - Acc. to the EI 1541 protective coating.
- M series are designed with quick opening closure and equipped with air eliminator, relief valve, differential pressure indicator, drain valve, etc
- Head closures - Swing bolt closure
- Head gasket - Buna-N O-ring
- Inlet and outlet permanently marked
- Exterior - Primer coated
- Interior - Epoxy coated
- Can be used in both aviation or industrial applications

Performance guarantee:

- Effluent fuel downstream of microfilter element shall contain less than 0.15 mg/L.
- Media migration –Effluent fuel downstream of the microfilter element shall contain less than 10 fibres per litre.

Options

- Air eliminator
- Pressure relief valve,
- Differential pressure switch,
- Differential pressure transmitter,
- Sampling probe , etc.

M Series Microfilters

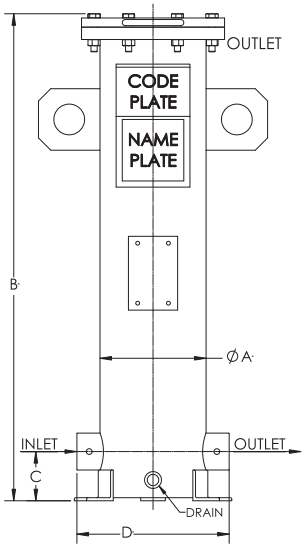
M Series filter housings use any of M Series high efficiency filter cartridges. A single pass of product through the system removes solids such as rust, dirt, scale, granules and other particles commonly found in liquid process streams.

M Series filter housings are available in three styles in several standard sizes to accommodate specific flow and filtration requirements. They are designed with no internal moving parts to provide easy service and reduced maintenance costs. Each housing is manufactured using quality materials and workmanship to give long-lasting, dependable service.

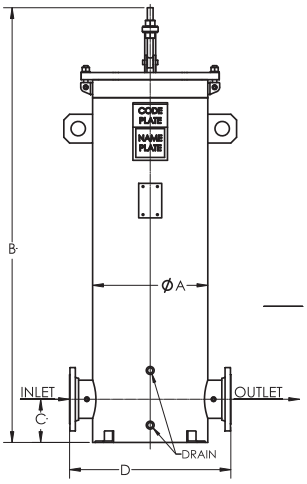
M Series filter housings can be fitted with either multiple single-length cartridges, stacked 1, 2 or 3 high, or their double-length or triple-length equivalents.

M Series Microfilters

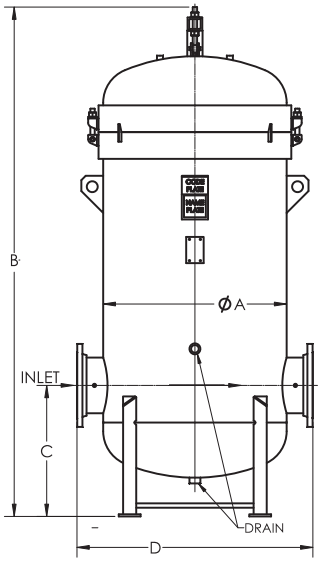
AVIATION & MARINE & INDUSTRIAL



STYLE A



STYLE B



STYLE C

MODEL NUMBER	FLOW RATE (lpm) AVIATION MARINE	FLOW RATE (lpm) INDUSTRIAL (5 micron) 45 SSU 6 CS	97 SSU 20 CS	190 SSU 40 CS	INLET/ OUTLET	DIMENSIONS (mm) A	B	C	D	HOUSING LIQUID VOLUME (ltr)	HOUSING DRY WEIGHT (kgs)	STYLE
1M-114	250	250	190	95	Dn50	220	615	105	315	20	50	A
1M-214	500	500	380	190	Dn50	220	1005	105	315	35	65	A
1M-314	755	750	570	285	Dn50	220	1380	105	315	45	75	A
2M-314	1515	1500	1140	570	Dn100	355	1850	155	560	135	205	B
3M-314	2270	2250	1710	855	Dn100	405	1850	155	610	185	240	B
4M-314	3025	3000	2280	1140	Dn150	460	1910	190	660	240	295	B
6M-314	4540	4500	3420	1710	Dn150	510	1920	190	710	295	355	B
11M-314	8325	8250	6270	3135	Dn200	710	2625	610	915	775	555	C
18M-314	13625	13500	10260	5130	Dn250	865	2780	685	1170	1195	885	C
27M-314	20440	20250	15390	7695	Dn300	1070	2965	765	1370	1970	1225	C

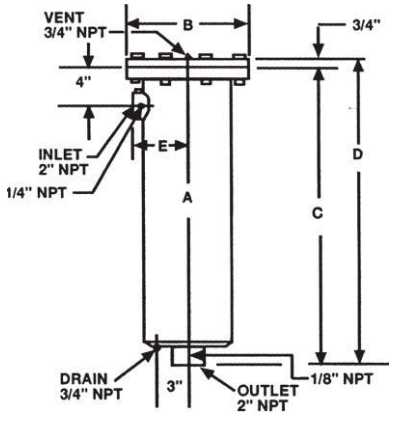
Other sizes available on request.

Consult factory for details & accessories.

MS Series Microfilters

AVIATION

MODEL NUMBER	FLOW RATE (lpm) AVIATION	INLET/ OUTLET	DIMENSIONS (mm) A	B	C	D	E	HOUSING LIQUID VOLUME (ltr)	HOUSING DRY WEIGHT (kgs)
MS-1C-A	250	Dn50	220	295	900	920	180	26	45
MS-2C-A	500	Dn50	220	295	1265	1285	180	38	56
MS-3C-A	760	Dn50	220	295	1620	1640	180	50	90



NOTES:

a. Cartridges are selected separately to fit specific application requirements.

b. All elements are mounted against knife edge seals.

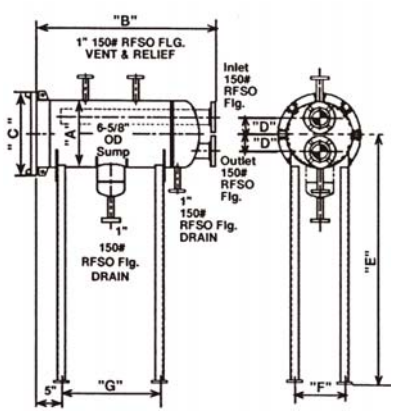
c. These models do not comply with EI 1596 specs.

d. Consult factory for flow rates when using EI 1590 Qualified elements.

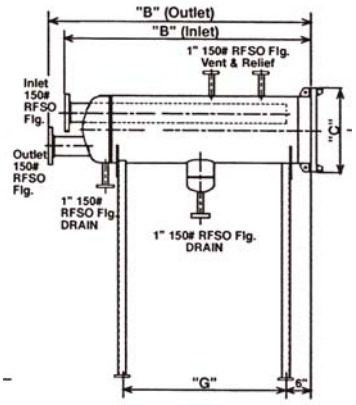
e. Inlet chamber to be hydrostatic tested at 115 psi (7.9 bar).

f. Consult factory for flow rates of industrial applications.

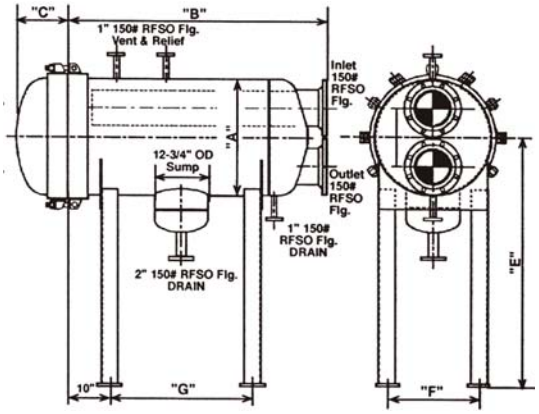
g. All dimensions, weights and volumes are approximate and are for estimating purpose only and should not be used for installation purposes.



STYLE C



STYLE B



STYLE A

MODEL NUMBER	FLOW RATE (lpm) INDUSTRIAL (5 micron) 45 SSU 6 CS	97 SSU 20 CS	190 SSU 40 CS	INLET/ OUTLET	DIMENSIONS (mm) A	B	C	D	E	F	G	HOUSING LIQUID VOLUME (ltr)	HOUSING DRY WEIGHT (kgs)	STYLE
3MH-214	1500	1140	570	Dn80	405	1130	510	105	1525	305	610	120	190	C
3MH-314	2250	1710	855	Dn100	405	1660 1585	510	105	1525	305	1015	190	260	B
6MH-314	4500	3420	1710	Dn150	510	1695 1595	610	140	1525	380	1015	300	380	B
11MH-314	8250	6270	3135	Dn200	710	1600	320	180	1525	560	890	790	580	A
18MH-314	13500	10260	5130	Dn250	915	1705	405	230	1525	710	890	1210	910	A

Other sizes available on request.

Consult factory for details & accessories.

NOTES:

a. Cartridges are selected separately to fit specific application requirements.

b. All elements are mounted against knife edge seals.

c. These models do not comply with EI 1596 specs.

d. Consult factory for flow rates when using EI 1590 Qualified elements.

e. Inlet chamber to be hydrostatic tested at 115 psi (7.9 bar).

f. Consult factory for flow rates of industrial applications.

g. All dimensions, weights and volumes are approximate and are for estimating purpose only and should not be used for installation purposes.

Microfilter Cartridges

M Series
Pleated Paper Filter Cartridges for Industrial Applications

M Series high efficiency pleated paper filter cartridges are designed to effectively remove solid contaminants such as rust, dirt, scale, granular and other types of solids. These cartridges known as the MP Series high efficiency filter cartridges are constructed to meet the demanding requirements of the industrial filter market.

Media with high efficiencies throughout the life of the cartridges are available in ratings of 0.5 to 75 microns.

The combination of multimedia pleated paper fiberglass sheets provides a unique depth filter with a large surface area.

Pleated paper filter media is made from a variety of natural and synthetic fibers. The fibers are bonded using various resins to provide excellent filtration and solids holding characteristics.

Applications

- Fuels
- Rolling Oils
- Insulating Oils
- Paints
- Liquid Plastics
- Waxes
- Lube Oils
- Coolants
- Varnishes
- Base Oils
- Solvents (Stoddard Based)
- Petroleum Based and Synthetic Hydraulic Fluids

Benefits

- Higher efficiency and longer service life = lower operating costs
- High efficiency cartridge provides superior solids holding capacity
- New spirally wound core reduces cartridge weight resulting in lower freight costs
- All metal components are epoxy powder coated to protect against corrosion
- Gaskets are Buna-N
- Available in numerous micron ratings: 0.5, 1, 2, 5, 10, 15, 25, 40, and 75
- Flow direction: Outside to In
- Design collapse pressure: 75 psid (5.17 bar)
- Initial differential pressure: 2 psi (0.14 bar) or less

Microfilter Cartridges

FA Series
Pleated Paper Filter Cartridges for Aviation Aplications

FA Series microfilters offer superior filtration for removing ultra-fine solid contaminants such as rust, scale, granular and other types of solids from aviation fuel systems.

FA Series microfilters are manufactured using proprietary combinations of Micro Fiberglass and Cellulose to achieve the desired removal rating. The pleated filter media in the FA Series is supported by epoxy coated wire to ensure mechanical stability.

Standard Design Features

- Removal Efficiency: Effluent solids <0.15 mg/liter
- Structural Strength: <72.5 psig

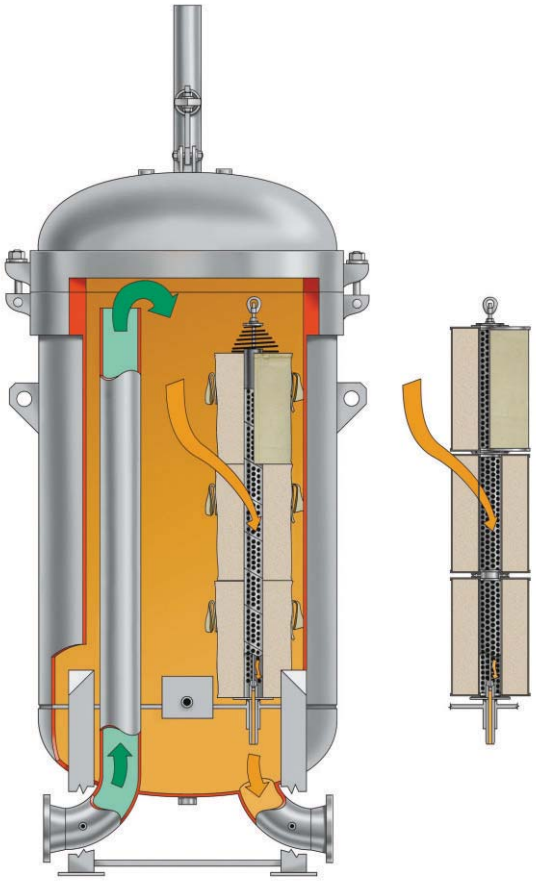
Benefits

- Synthetic media provides high efficiencies, superior strength and durability
- One piece construction reduces downtime, cartridge change-out costs and eliminates filter bypass concerns
- Retention ratings available in 1, 2, and 3 microns
- All metal components are treated against corrosion. Spirally wound core reduces weight resulting in lower freight costs

Materials

- Filter Media: Micro Fiberglass/Cellulose, Wire-backed
- End Caps: Steel Powder Coated
- Center Tube: Spiral Wound Steel Powder Coated
- Gaskets: Buna-N
- Adhesive: Plastisol

Clay Treaters



How it works

The product flows through the housing inlet chamber and equalizer tube. The equalizer tube evenly distributes product through each clay cartridge. Clay elements are vibra-packed to capacity with the highest grade of Attapulgus clay. This clay has the appearance of very fine sand, with each granule having hundreds of tiny, fiber-like crystals that capture molecular surfactants.

Application

The main function of a clay filter is to remove unwanted surface active surfactants, coloring and other additives which may be present from the refining process or during transportation of Jet Fuel.

These unwanted surfactants can accumulate in the coalescer elements of a filter/water separator and reduce their water removal efficiency. Therefore such clay filter vessels are normally installed in front of a filter/water separator vessel.

To enable optimum performance of the adsorption process of the Attapul-gas Clay, the recommended flow rate per element is 25 l/min.

Design of Contruction

- Design pressure: 10 bar
- Design temperature: -10 to + 50°C
- Design code: ASME Sec. VIII , Div. 1
- Material of construction: Carbon Steel or stainless steel
- Internal coating: acc. to MIL-C-4556
- Other design pressures as well as other materials like aluminum or stainless steel are available upon request.

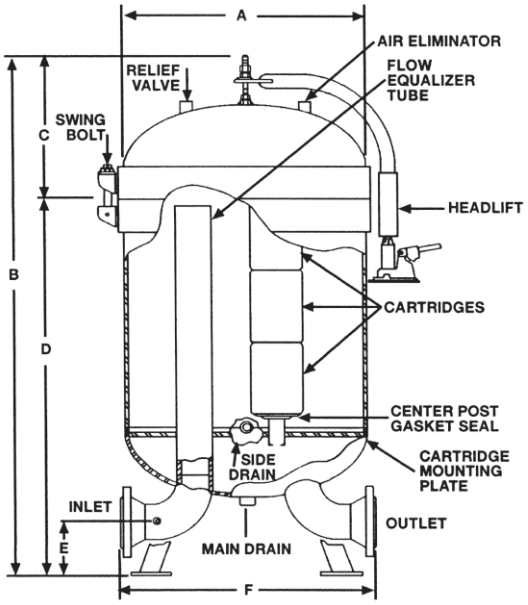
Accessories

For improved operation, clay filter may fitted with some or all of the following accessories:

- Automatic air eliminator
- Differential pressure gauge
- Pressure relief valve

F Series Clay Treaters

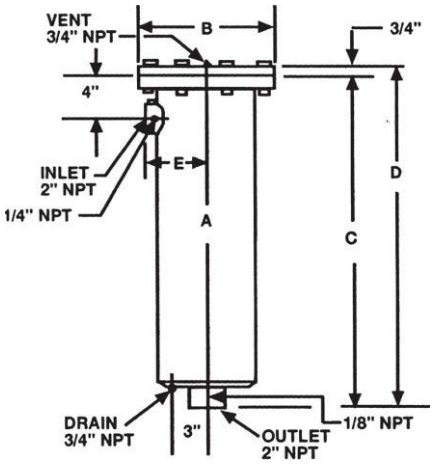
AVIATION & INDUSTRIAL



MODEL NUMBER	FLOW RATE (lpm) AVIATION	FLOW RATE (lpm) INDUSTRIAL DIESEL	FLOW RATE (lpm) INDUSTRIAL GASOLINE	INLET/ OUTLET	DIMENSIONS (mm) A	B	C	D	E	F	HOUSING LIQUID VOLUME (ltr)	HOUSING DRY WEIGHT (kgs)
13F3-C	1040	640	1280	Dn100	815	13235	325	2225	155	765	1090	870
24F3-C	1890	1160	2320	Dn100	1085	3410	425	2300	155	765	2070	1475
31F3-C	2460	1510	3020	Dn150	1240	3580	475	2415	190	1195	2660	2025
40F3-C	3180	1950	3900	Dn150	1390	3690	530	2470	190	1095	3310	2440
50F3-C	3975	2445	4890	Dn200	1545	3880	590	2610	230	1400	4420	3165
60F3-C	4770	2935	5870	Dn200	1705	3930	645	2610	230	1525	5460	3765
67F3-C	5325	3275	6550	Dn200	1855	4015	705	2645	230	1575	5945	4355

FS Series Clay Treaters

AVIATION



MODEL NUMBER	FLOW RATE (lpm) AVIATION	INLET/ OUTLET	DIMENSIONS (mm) A	B	C	D	E	HOUSING LIQUID VOLUME (ltr)	HOUSING DRY WEIGHT (kgs)
FS-2C-A	25	Dn50	220	295	1265	1285	180	38	56
FS-3C-A	50	Dn50	220	295	1620	1640	180	50	90

NOTES:

a. Cartridges are selected separately to fit specific application requirements.

b. All elements are mounted against knife edge seals.

c. Clay treater cartridges are not installed at factory prior to shipment.

d. Inlet chamber to be hydrostatic tested at 115 psi (7.9 bar).

e. All dimensions, weights and volumes are approximate and are for estimating purpose only and should not be used for installation purposes.

Clay Treaters

CA-718 Carbon Treater Cartridges

The primary purpose of carbon treatment are;

- to remove chlorine, chlorinated organic compounds, odors and unwanted colors,
- the deoiling of industrial water
- the deodorization and decolorization of hydrocarbon based solvents.

Specially selected carbon has a large surface area and porous structure. It also has a high rate adsorptive capacity for the effective removal of solutes.

Standard Design Features

- Maximum adsorptive and filtration area
- Vibra-packed clay minimizes settling
- Hoisting handles expedite cartridge installation and changeout
- Flow direction: Outside to in
- 4-19 lpm flow rate per cartridge (flow rates may vary, but the lower value offers the maximum adsorbency and the most efficient purification for each liter processed)

Materials

- Canister Cartridge
- Polypropylene center tube
- Felt center tube migration barrier
- Non-woven polyester inner wraps
- Vibra-packed with 8 x 30 carbon to capacity
- Heavy-duty metal hoisting handle
- Engineered plastic end caps
- Polyester outer wrap
- Buna-N gaskets on both ends for assured sealing

Application

Absoption of;

- Hydrocarbons
- Organics
- Color
- Taste
- Chlorine
- Halogenated organics from potable, process, and plant effluent water

Clay Treaters

C-766-4 Clay Treater Cartridges

The primary purpose of clay treatment is to protect aviation & industrial fuel filtration systems by;

- to remove acids or products of oxidation from lube and hydraulic oils
- to remove additives and surfactants commonly found in fuel.

Specially selected Attapulgus clay greatly resists water saturation and provides maximum surfactant adsorptivity and filtration area found in clay treater cartridges.

Standard Design Features

- Maximum adsorptive and filtration area
- Greatly resists water saturation
- Vibra-packed clay minimizes settling
- Interchangeable with other manufacturer's bag and canister clay treater cartridges
- Hoisting handles expedite cartridge installation and changeout
- Flow direction: Outside to in
- 19-27 lpm flow rate per cartridge for aviation fuels, 15-19 lpm flow rate for diesel (flow rates may vary, but the lower value offers the maximum adsorbency and the most efficient purification for each liter processed)

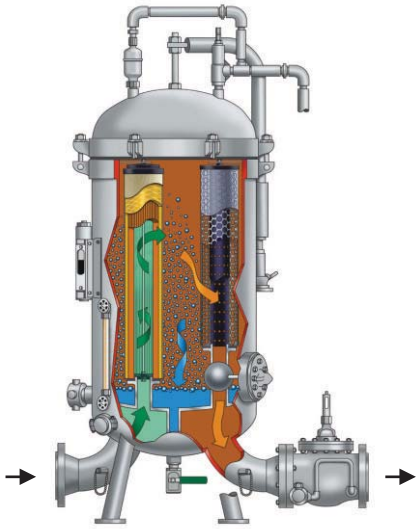
Materials

- Canister Cartridge
- Perforated metal center tube
- Non-woven polyester inner migration barrier
- Vibra-packed with Attapulgus clay to capacity
- Heavy-duty metal hoisting handle
- Reinforced Plastic Endcaps
- Polyester outer wrap
- Buna-N gaskets on both ends for assured sealing

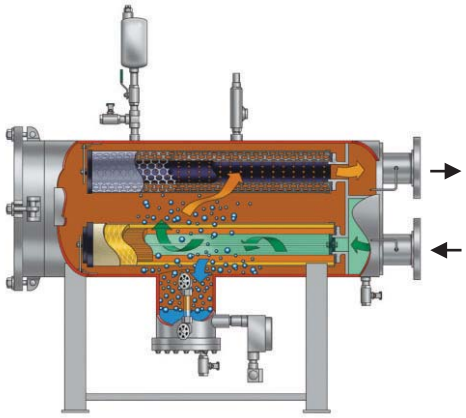
Application

Clay treater cartridges may be used to remove soluble contaminants such as acids, waxes, gums, resins, asphaltanes, sludges, carbon residues and colloidal particles from lubricating, hydraulic, seal, quench and insulating oils (in circuit breaker, transformers). They may also be used for surfactant removal from jet fuel, gasoline, kerosene and diesel. They are often used to remove color from fuel to help bring back its normal appearance.

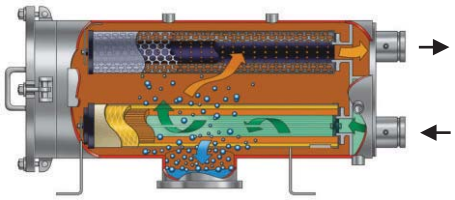
Coalescer Separators (Filter Water Separator)



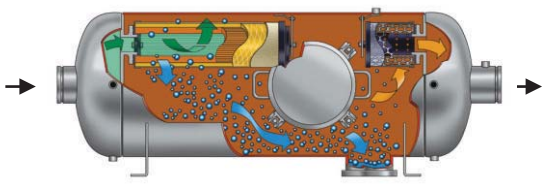
Vertical Two-Stage Coalescer Separator Flow Diagram (including optional accessories)



Typical Horizontal End Opening Coalescer Separator Flow Diagram for Fixed Installation (including optional accessories)



Typical Horizontal End Opening Coalescer Separator Flow Diagram for Mobile Equipment



Typical Horizontal Side Opening Coalescer Separator Flow Diagram for Mobile Equipment

Standard Housing Design

- Welded carbon steel construction—other materials available on request
- Design pressure: 150 psi @ 120℃ other design pressures available on request
- Inlet, outlet and drain connections permanently marked
- Interior: Epoxy coated
- Exterior: Prime coated
- Swing bolt head closures
- Buna-N o-ring closure seal
- Knife edge cartridge mounting seals
- Spider plate attached to vessel wall
- Sloping cartridge plate to drain connection
- 4" inlet/outlet cleanout/inspection connections (when permitted by design)
- Can be used in both aviation or industrial applications

How it works

Two-stage coalescer separators are the primary defense against fuel contamination by water and dirt. The coalescer separator housings contain both first-stage coalescer and second-stage separator cartridges with no internal moving parts. The product is pumped under pressure to flow through the housing inlet chamber and inside/out through the multi-media coalescer cartridge. This multi-media cartridge configuration traps and holds minute solid particles to less than one micron, while forcing small water droplets to commingle and grow into heavier, larger drops that fall by gravity to the housing sump area. The cleaned fuel continues to flow outside/in through the second-stage separator cartridges. These separator cartridges strip any remaining water droplets from the fuel allowing only clean, dry fuel to pass.

Coalescer Separators (Filter Water Separator)

Category M Coalescer Separator housings are for Military F24, JP-8 or JP-5 fuel. Type S qualifications can be used at all filtration points in an aviation fueling system.

Category C Coalescer Separator housings are for commercial aviation fuel. Type S qualifications can be used at all filtration points in an aviation fueling system.

Type S is meant to be used at filtration points where significant levels of water and dirt in the product can be expected.

Reliable Performance

ICS Engineering coalescer separators are a result of continuous research and development to meet the ever demanding performance requirements in the aviation fuel handling industry. This, along with proven field performance, provides quality products that meet current specifications as well as specific customer requirements for installations in refineries, bulk storage terminals, heliports, airports, etc.

Options

- Automatic air eliminator with check valve
- Pressure relief valve
- Differential pressure gauge
- Pilot control valve
- Pilot tester
- Water slug control valve
- Electrical water-level alarm
- Water drain valves
- Liquid level gauge
- Blind cover for pilot control mounting flange
- Sampling probes
- Working platform and ladder

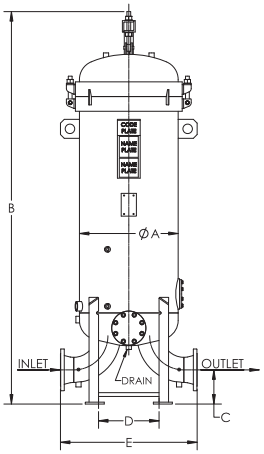
Coalescer Separators (Filter Water Separator)

Vertical Coalescer Separators

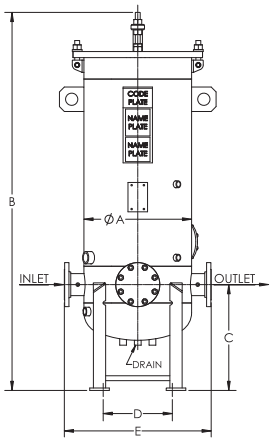
Coalescer Separators (Filter Water Separator)

EI 1581, Category C & M, Type S

Vertical Coalescer Separators



STYLE A



STYLE B

MODEL NUMBER	FLOW RATE (lpm) AVIATION CAT.C / TYPE S	FLOW RATE (lpm) AVIATION CAT.M / TYPE S	INLET/ OUTLET	DIMENSIONS (mm) A	B	C	D	E	HOUSING LIQUID VOLUME (ltr)	HOUSING DRY WEIGHT (kgs)	STYLE
VCS-222-116	415	320	Dn50	405	1685	510	255	610	135	240	B
VCS-328-218	840	655	Dn80	510	1870	535	325	715	245	340	B
VCS-433-224	1260	985	Dn100	560	2050	555	365	765	340	410	B
VCS-543-243	2300	1795	Dn150	660	2630	230	410	915	625	545	A
VCS-556-340	2960	2305	Dn150	660	2785	230	410	915	680	555	A
VCS-656-344	3550	2765	Dn150	660	2785	230	410	915	680	570	A
VCS-756-440	4140	3225	Dn200	710	2905	255	445	1145	795	690	A
VCS-856-444	4740	3690	Dn200	760	2920	255	495	1170	945	760	A
VCS-956-540	5345	4150	Dn200	810	2940	255	530	1170	1080	815	A
VCS-1056-544	5920	4610	Dn200	865	2985	255	565	1220	1210	850	A
VCS-1256-644	7100	5530	Dn250	915	3145	280	615	1400	1460	1170	A
VCS-1356-744	7700	5995	Dn250	1020	3170	280	675	1425	1760	1180	A
VCS-1656-844	9460	7360	Dn300	1070	3300	305	715	1680	2005	1360	A

Other sizes available on request.

NOTES:

a. Coalescers & separators are selected separately to fit specific application requirements.

b. All elements are mounted against knife edge seals.

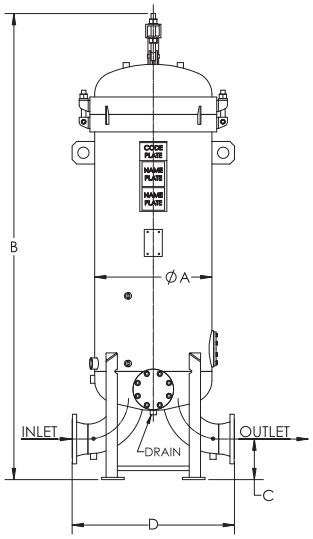
c. Nameplate to be stamped with EI classified data.

d. Inlet chamber to be hydrostatic tested at 115 psi (7.9 bar).

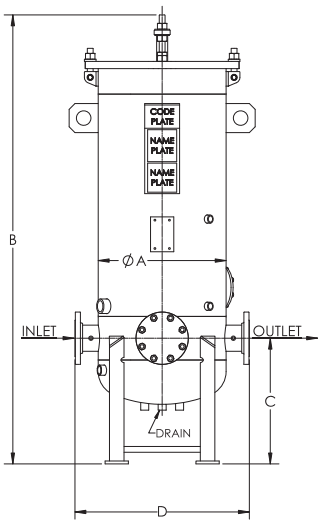
e. All dimensions, weights and volumes are approximate and are for estimating purpose only and should not be used for installation purposes.

Coalescer Separators (Filter Water Separator)

Vertical Coalescer Separators



STYLE A



STYLE B

MODEL NUMBER	FLOW RATE (lpm) INDUSTRIAL 31 SSU 1 CS	36 SSU 3 CS	45 SSU 6 CS	97 SSU 20 CS	INLET/ OUTLET	DIMENSIONS (mm) A	B	C	D	HOUSING LIQUID VOLUME (ltr)	HOUSING DRY WEIGHT (kgs)	STYLE
VCS-222-122	550	340	170	35	Dn50	405	1310	155	435	130	275	B
VCD-243-222	1020	625	300	95	Dn80	460	1945	155	585	220	320	B
VCS-328-222	1020	625	300	95	Dn80	510	1615	155	585	230	340	B
VCS-343-228	1515	925	450	130	Dn100	510	1975	155	710	295	385	B
VCS-443-328	2025	1230	605	185	Dn100	610	2035	155	710	415	450	B
VCS-456-428	2725	1665	810	245	Dn150	610	2450	190	915	520	475	B
VCS-643-428	3045	1855	905	265	Dn150	660	2165	190	940	500	500	B
VCS-743-433	3535	2155	1060	320	Dn150	710	2385	190	915	625	590	A
VCS-656-533	4070	2480	1210	360	Dn150	710	2735	190	915	760	625	A
VCS-843-533	4070	2480	1210	360	Dn150	765	2420	190	915	740	660	A
VCS-1043-633	5070	3085	1510	450	Dn200	865	2525	230	1220	945	885	A
VCS-856-733	5430	3290	1625	490	Dn200	815	2885	230	1170	1005	840	A
VCS-1243-733	6095	3710	1815	545	Dn200	915	2575	230	1220	1100	975	A
VCS-1343-833	6585	4010	1965	605	Dn200	965	2600	230	1220	1250	1065	A
VCS-1643-1033	8100	5075	2440	735	Dn250	1070	2725	255	1375	1610	1475	A
VCS-1943-1528	9620	6015	2940	865	Dn250	1220	2655	255	1525	1735	1660	A
VCS-1656-1728	10860	6930	3225	950	Dn250	1220	3025	255	1525	2160	1720	A
VCS-2056-2228	13575	8290	4032	1180	Dn300	1375	3170	305	1755	3370	2000	A
VCS-2456-2628	16290	9950	4840	1430	Dn300	1525	3265	305	1805	4375	2550	A
VCS-2856-3028	19000	11600	5640	1660	Dn350	1675	3630	355	2035	5225	2925	A

Other sizes available on request.

NOTES:

a. Coalescers & separators are selected separately to fit specific application requirements.

b. All elements are mounted against knife edge seals.

c. Nameplate to be stamped with EI classified data.

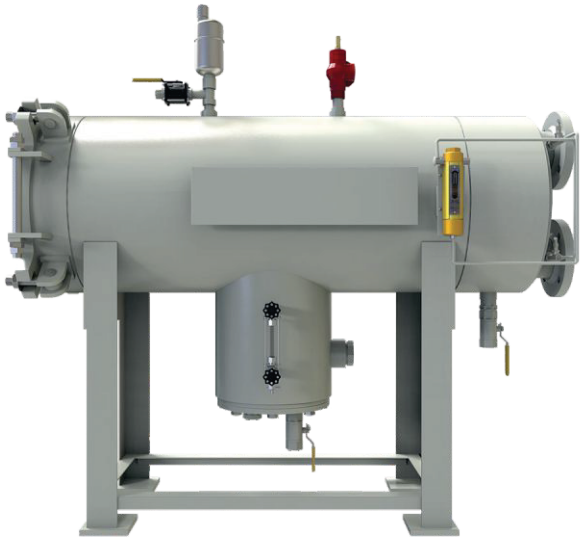
d. Inlet chamber to be hydrostatic tested at 115 psi (7.9 bar).

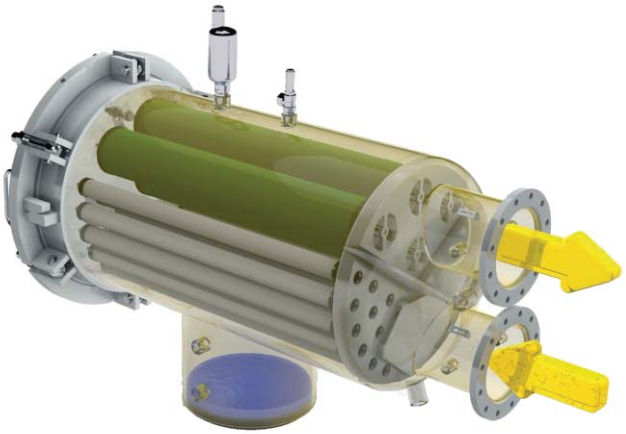
e. Consult factory for flow rates of indıustrial applications.

f. All dimensions, weights and volumes are approximate and are for estimating purpose only and should not be used for installation purposes.

Coalescer Separators (Filter Water Separator)

Horizontal Coalescer Separators



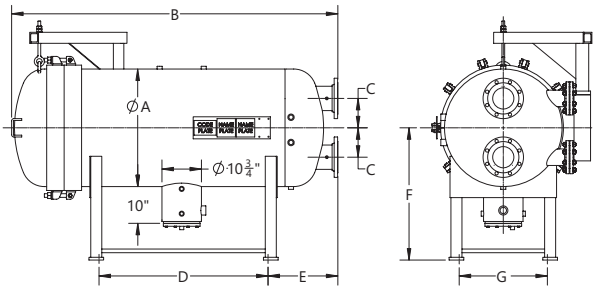


Coalescer Separators (Filter Water Separator)

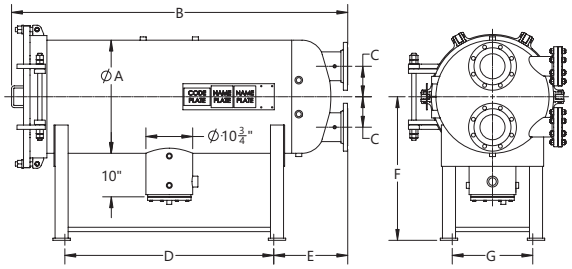
AVIATION & MARINE

EI 1581, Category C & M, Type S

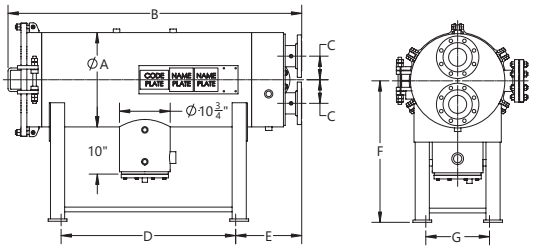
Horizontal Coalescer Separators (End Opening)



STYLE A



STYLE B



STYLE C

MODEL NUMBER	FLOW RATE (lpm) AVIATION CAT.C / TYPE S	INLET/ OUTLET	DIMENSIONS (mm) A	B	C	D	E	F	G	HOUSING LIQUID VOLUME (ltr)	HOUSING DRY WEIGHT (kgs)	STYLE
HCS-222-1324	395	Dn50	355	1055	105	460	345	635	245	90	195	C
HCS-322-1424	595	Dn80	405	1010	130	405	345	710	255	110	230	C
HCS-333-1436	925	Dn80	405	1285	130	660	355	710	255	145	250	C
HCS-343-133	1265	Dn100	460	1590	130	965	355	740	305	230	320	C
HCS-443-143	1685	Dn100	510	1585	130	940	355	765	345	275	350	C
HCS-556-233	2595	Dn150	560	1930	155	1245	380	790	395	405	430	B
HCS-756-248	3785	Dn150	660	1970	180	1245	420	840	470	570	600	B
HCS-856-340	4670	Dn150	815	2260	205	1220	460	915	610	1025	770	A
HCS-1056-348	5840	Dn200	915	2315	205	1220	485	965	685	1325	895	A

MODEL NUMBER	FLOW RATE (lpm) AVIATION CAT.M / TYPE S	INLET/ OUTLET	DIMENSIONS (mm) A	B	C	D	E	F	G	HOUSING LIQUID VOLUME (ltr)	HOUSING DRY WEIGHT (kgs)	STYLE
HCS-322-1424	595	Dn80	405	1010	130	405	345	710	255	110	230	C
HCS-333-1436	920	Dn80	405	1285	130	660	355	710	255	145	250	C
HCS-438-138	1140	Dn80	560	1455	155	815	355	790	345	305	385	C
HCS-456-229	1810	Dn100	610	1970	155	1220	380	815	420	490	480	B
HCS-556-236	2290	Dn150	660	1970	180	1220	435	840	470	575	600	B
HCS-756-248	3060	Dn150	815	1925	205	840	485	915	610	855	730	A

Other sizes available on request.

NOTES:

a. Coalescers & separators are selected separately to fit specific application requirements.

b. All elements are mounted against knife edge seals.

c. Nameplate to be stamped with EI classified data.

d. Inlet chamber to be hydrostatic tested at 115 psi (7.9 bar).

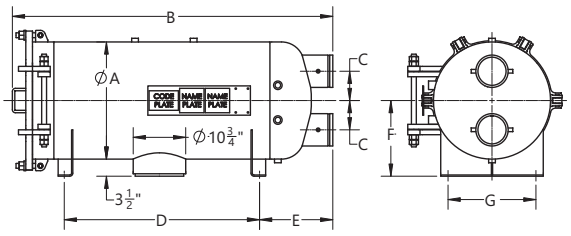
e. All dimensions, weights and volumes are approximate and are for estimating purpose only and should not be used for installation purposes.

Coalescer Separators (Filter Water Separator)

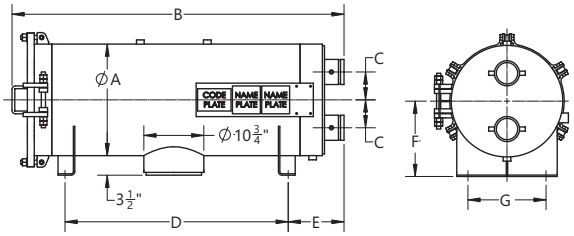
AVIATION

EI 1581, Category C, Type S-LW

Horizontal Coalescer Separators for Mobile Equipment (End Opening)



STYLE A



STYLE B

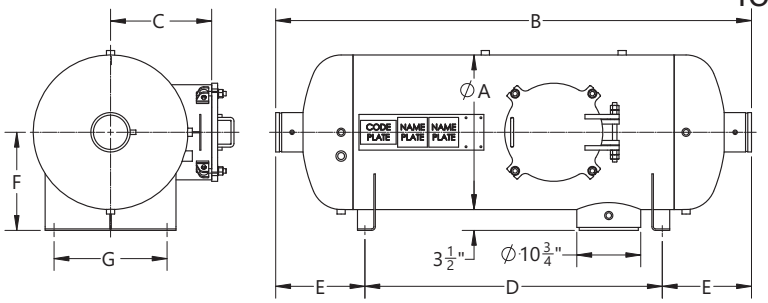
MODEL NUMBER	FLOW RATE (lpm) AVIATION CAT.C / TYPE S-LW	INLET/ OUTLET (mm)	DIMENSIONS (mm) A	B	C	D	E	F	G	HOUSING LIQUID VOLUME (ltr)	HOUSING DRY WEIGHT (kgs)	STYLE
HCS-216-1318	380	50	355	835	105	460	205	270	230	60	115	B
HCS-322-1424	785	80	405	1010	130	535	250	295	280	105	160	B
HCS-333-1436	1215	80	405	1220	130	710	275	295	280	125	170	B
HCS-338-130	1415	100	460	1365	130	865	270	320	305	180	230	B
HCS-343-133	1665	100	460	1520	130	1015	270	320	305	210	240	B
HCS-438-138	1890	100	510	1375	130	890	250	345	355	230	260	B
HCS-356-144	2140	100	460	1820	130	1320	260	320	305	255	260	B
HCS-443-144	2220	100	510	1515	130	1015	255	345	355	255	275	B
HCS-543-229	2775	150	560	1615	155	990	355	370	405	325	305	A
HCS-456-229	2850	150	560	1950	155	1320	355	370	405	400	340	A
HCS-643-236	3330	150	610	1670	155	1015	380	395	460	400	365	A
HCS-556-236	3565	150	610	1970	155	1320	380	395	460	480	410	A
HCS-656-244	4280	150	660	1970	180	1320	380	420	485	570	510	A
HCS-756-248	4985	150	660	1965	205	1320	380	420	485	565	510	A

Coalescer Separators (Filter Water Separator)

AVIATION

EI 1581, Category C, Type S-LW

Horizontal Coalescer Separators for Mobile Equipment (Side Opening)



NOTES:

a. Coalescers & separators are selected separately to fit specific application requirements.

b. All elements are mounted against knife edge seals.

c. Nameplate to be stamped with EI classified data.

d. Inlet chamber to be hydrostatic tested at 115 psi (7.9 bar).

e. All dimensions, weights and volumes are approximate and are for estimating purpose only and should not be used for installation purposes.

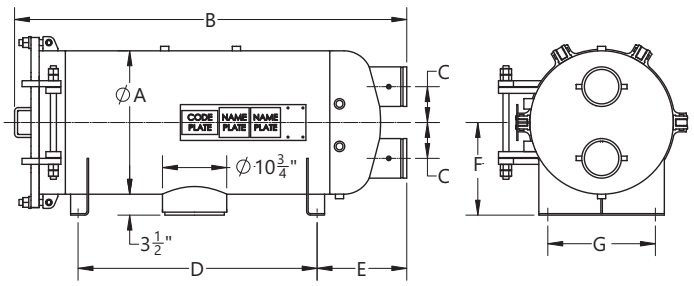
MODEL NUMBER	FLOW RATE (lpm) AVIATION CAT.C / TYPE S-LW	INLET/ OUTLET (mm)	DIMENSIONS (mm) A	B	C	D	E	F	G	HOUSING LIQUID VOLUME (ltr)	HOUSING DRY WEIGHT (kgs)
HCS-M-428-39	1210	100	460	1930	330	1270	330	320	305	265	260
HCS-M-528-39	1515	100	510	1955	355	1270	345	345	355	340	285
HCS-M-633-49	2020	150	560	2110	380	1400	355	370	405	435	330
HCS-M-733-59	2525	150	610	2135	405	1400	370	395	460	530	365
HCS-M-1028-69	3030	150	660	2035	435	1270	380	420	485	570	385
HCS-M-1233-89	3975	150	765	2210	485	1400	405	470	585	835	465

Coalescer Separators (Filter Water Separator)

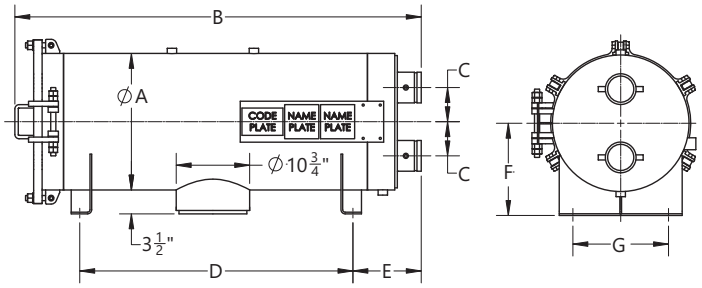
AVIATION

EI 1581, Category M, Type S

Horizontal Coalescer Separators for Mobile Equipment (End Opening)



STYLE A



STYLE B

MODEL NUMBER	FLOW RATE (lpm) AVIATION CAT.M / TYPE S	INLET/ OUTLET (mm)	DIMENSIONS (mm)							HOUSING LIQUID VOLUME (ltr)	HOUSING DRY WEIGHT (kgs)	STYLE
			A	B	C	D	E	F	G			
HCS-322-1424	595	80	405	1010	130	535	250	295	280	105	160	B
HCS-333-1436	920	80	405	1285	130	710	275	295	280	125	170	B
HCS-438-138	1200	80	560	1455	155	865	275	370	405	275	320	B
HCS-456-229	1800	100	610	1970	155	1320	380	395	460	480	410	A
HCS-556-236	2275	150	660	1970	180	1320	380	420	485	570	510	A

Other sizes available on request.

NOTES:

a. Coalescers & separators are selected separately to fit specific application requirements.

b. All elements are mounted against knife edge seals.

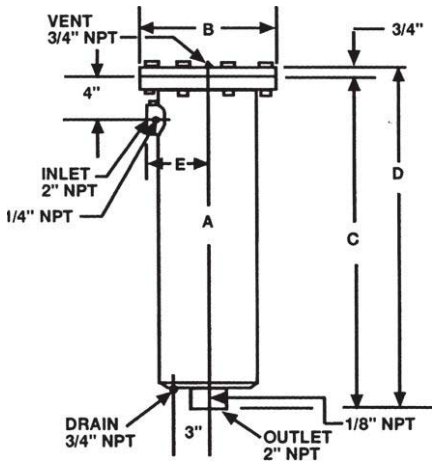
c. Nameplate to be stamped with EI classified data.

d. Inlet chamber to be hydrostatic tested at 115 psi (7.9 bar).

e. All dimensions, weights and volumes are approximate and are for estimating purpose only and should not be used for installation purposes.

Coalescer Separators (Filter Water Separator)

Vertical Coalescer Separators



MODEL NUMBER	FLOW RATE (lpm) AVIATION	FLOW RATE (lpm) INDUSTRIAL DIESEL	FLOW RATE (lpm) INDUSTRIAL GASOLINE	INLET/ OUTLET (mm)	DIMENSIONS (mm) A	B	C	D	E	HOUSING LIQUID VOLUME (ltr)	HOUSING DRY WEIGHT (kgs)
VCS-123-7-1S412FC	95	100	205	50	220	295	900	920	180	26	45
VCS-223-7-1S422FC	190	155	375	50	220	295	1270	1285	180	40	55
VCS-323-7-1S432FC	285	255	635	50	220	295	1625	1640	180	50	70

NOTES:

a. Coalescers & separators are selected separately to fit specific application requirements.

b. All elements are mounted against knife edge seals.

c. Inlet chamber to be hydrostatic tested at 115 psi (7.9 bar).

d. All dimensions, weights and volumes are approximate and are for estimating purpose only and should not be used for installation purposes.

Coalescer Separators (Filter Water Separator)

CB Series Coalescer Cartridges for Industrial Applications
VCS or HCS Series Coalescer Separators

CB Series coalescer cartridges provide high flow and low initial pressure drop. There cartridges are widely used in petroleum bulk storage terminals, turbine fuels, lube oils, refineries, and many other industrial applications.

Each coalescer cartridge is constructed of various media, precisely arranged in many layers and pleats, and wrapped around a perforated metal centre tube for balanced flow and structural strength. All are encased in an outer sock material.

Cartridges are 6" OD (152 mm) by 3 1/2" ID (89 mm) and are available in standard lenghts from 11 1/4" (280 mm) to 57 1/4" (1450 mm).

Standard Design Features

- Multi-layered media for increased solids holding capacity
- Solids removal: 5 micron
- Water removal down to 10 ppm
- Balanced cartridge flow characteristics
- Self-centering rod mount or screw base
- Maximum recommended operating temperature: 115ºC
- Maximum differential pressure: 75 psi (5.25 kg/cm2)
- Flow direction: Inside to out
- pH range from 5 to 9

Materials

- All metal components coated to protect against corrosion
- Standard gaskets are Buna-N -other materials available on request

Coalescer Separators (Filter Water Separator)

CM Series Coalescer Cartridges for Aviation Applications
VCS or HCS Series Coalescer Separators

The CM Series colaescer cartridges are available in two cartridge mounting styles; self-centering rod mount and screw base.

The rod mount style has treated metal end caps, while the screw base ends are injection molded, glass-filled nylon. This screw base material offers superior strength and ease of maintenance - uniform threads, no shrinkage, no galling and no gasket to recover.

A permanently affixed Buna gasket seals against the V-type knife edge mounting adaptor to provide a positive seal. It will not separate from the cartridge during installation or change out.

Standard Design Features

- Multi-layered media for increased solids holding capacity
- Ultra-fine solids removal
- Maximum water coalescence
- Balanced cartridge flow characteristics
- Recommended maximum operating temperature: 115ºC
- Withstands excess of 75 psi (5.17 bar) differential pressure
- pH range from 5 to 9
- Choice of self-centering rod or screw base coalescer cartridge mounting styles

Materials

- All metal components are treated against corrosion
- Screw base ends are injection molded, glass-filled nylon with locked-in gaskets
- Buna-N gaskets-other materials are available upon request

For Maximum Water Coalescing Efficiency And Solids Holding Capacity

CM Series coalescer cartridges offer the finest performance available. This line of high flow coalescer cartridges removes ultra-fine solids and enhances separation of water from aviation fuel.

Built for balanced fluid flow-thru and structural strength, each CM Series coalescer cartridge is a single piece construction of various combined media, precisely arranged in many layers and pleats, wrapped around a coated, perforated metal center tube- all encased in an outer sock material.

All are 6" OD (152 mm) by 3."
ID (89 mm) and available in standard interchangeable nominal lengths in increments from 11." (290 mm) to 57." (1450 mm).

Coalescer Separators (Filter Water Separator)

SS Series Separator Cartridges for Industrial Applications
VCS or HCS Series Coalescer Separators

SS Series synthetic separator cartridges feature a specially developed hydrophobic synthetic media which offers all the permanent features of Teflon screen, combined with ease of repair and lower cost. Synthetic mesh is wrapped around a treated, perforated metal shell, then adhesive bonded to gasketed metal end caps.

The centre tube design provides balanced flow of product (radially inward) throughout the cartridge. All metal components are treated to resist corrosion.

The synthetic mesh is designed for more effective water repelling characteristics assuring long, troublefree service. For compatibility in extreme operating conditions, other gasket, adhesive and metal materials are available.

Standard Design Features

- Superior water repelling characteristics over Teflon and paper
- More resistant to surfactants
- Cleanable and reusable
- Maximum recommended operating temperature: 115ºC
- pH range from 5 to 9
- Designed for balanced flow through cartridge
- Flow direction: Outside to in

Materials

- Synthetic mesh 50 micron
- Treated metal components for corrosion protection
- Buna-N gaskets
- Other gasket, adhesive and metal materials are available on request

Coalescer Separators (Filter Water Separator)

SM Series Separator Cartridges for Aviation Applications

VCS or HCS Series Coalescer Separators

SM Series synthetic separator cartridges feature a specially developed treated hydrophobic media. This media provides improved separation of fine water drops compared to standard Teflon screen.

An ultrasonically seamed double tube of the synthetic screen is placed around an epoxy coated metal shell, then adhesive bonded to metal end caps with gaskets.

SM Series separators design provides balanced flow of product throughout the cartridge. All metal components are treated to resist corrosion. For compatibility in extreme operating conditions, other gasket, adhesive and metal materials are available.

Standard Design Features

- Cleanable and reusable
- Superior water barrier
- Recommended maximum operating temperture: 115°C
- pH range from 5 to 9
- Designed for balanced flow through cartridge
- Flow direction: Outside to in

Materials

- Synthetic mesh coated screen
- Treated metal components for corrosion protection
- Buna-N gaskets-other gasket, adhesive and metal materials are available upon request

Monitor Filters

HFG Series Horizontal monitor housings, equipped with FG Series monitor cartridges, continually check the entire flow of fuel, not just mere samples, for water or solids contamination. By performing three jobs, the FG Series monitors assure clean, dry fuel. They absorb free and emulsified water, remove ultra-fine solids, and shut down system flow when hit with a localized slug of water. They are designed to flow from the outside to inside at a rate of 1 gpm (3.79 lpm) per inch of length.

Monitor housings are built to ASME Code, constructed of carbon steel and designated for maximum working pressure of 150 psi (10.3 bar). They are furnished with FG Series monitor cartridges that meet and exceed the latest edition of EI Specification 1583 Aviation Fuel Filter Monitors with Absorbent Type Elements.

Standard Housing Design
- h EI 1596 Design & Construction
- h Welded carbon steel construction —other materials available on request
- h ASME Code, Section VIII construction
- h Maximum working pressure: 150 psi (10.3 bar)
- h Swing bolt closures on 219 mm. OD housings and larger
- h Buna-N closure o-ring—other materials available
- h Exterior: Prime coated
- h Interior: Epoxy coated (EI 1541)
- h Spider plate
- h For mobile and/or stationary applications

Standard Connections
- h Flanged inlet and outlet connections
- h Drain connection: ¾" NPT
- h Vent and relief valve connections: ¾" NPT
- h Differential pressure gauge connections: ¼" NPT

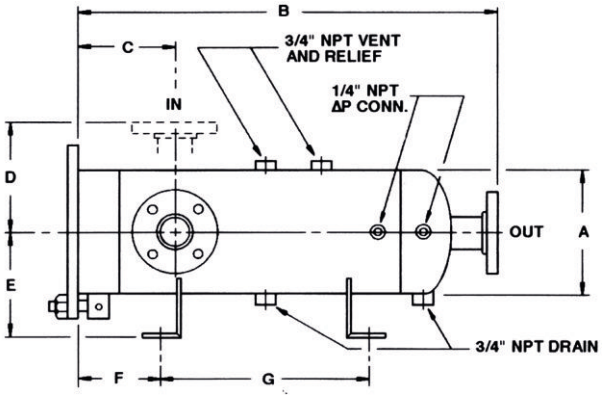
Options
- h Automatic air eliminator*
- h Automatic air eliminator check valve
- h Pressure relief valve*
- h Differential pressure gauge*
- h Sampling probes*
- h Manual drain valve

*Mandatory for EI 1596

WARNING:
MONITOR CARTRIDGES SHOULD NEVER BE USED WITH FUELS CONTAINING ANTI-ICING ADDITIVES SUCH AS FSII, PRIST AND DI-EGME. THIS INCLUDES PRE-MIXED AND MILITARY FUELS CONTAINING THESE ADDITIVES. THE USE OF MONITOR CARTRIDGES WITH FUELS CONTAINING ANTI-ICING ADDITIVES MAY RESULT IN
(1) A FAILURE OF THE MONITOR CARTRIDGE AND/OR
(2) MIGRATION OF FILTRATION MEDIA INTO THE FUEL STREAM, EITHER OF WHICH COULD POTENTIALLY CAUSE DAMAGE TO OR SUDDEN FAILURE OF THE CORRESPONDING ENGINE.
THE SUPPLIER SHALL NOT BE LIABLE IN ANY RESPECT FOR ANY DAMAGE OR LOSS THAT ARISES FROM THE USE OF MONITOR CARTRIDGES WITH FUELS CONTAINING ANTI-ICING ADDITIVES. SUCH USE IS ENTIRELY AT THE USER'S RISK.

Monitor Filters

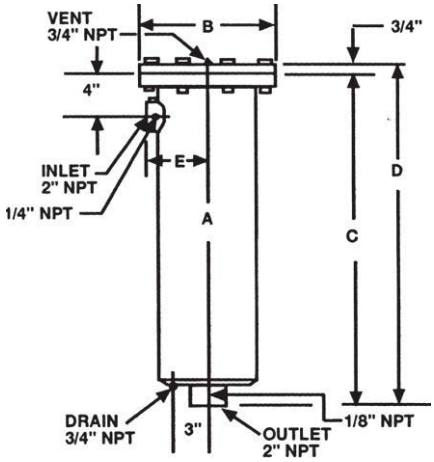
AVIATION & MARINE



MODEL NUMBER	FLOW RATE (lpm) AVIATION MARINE	INLET/ OUTLET	DIMENSIONS (mm) A	B	C	D	E	F	G	HOUSING LIQUID VOLUME (ltr)	HOUSING DRY WEIGHT (kgs)
HFG-C-5210	190	Dn50	170	710	180	180	160	155	330	12	110
HFG-C-5220	380	Dn50	170	965	180	180	160	155	585	15	115
HFG-C-5230	570	Dn50	170	1220	180	180	160	155	840	22	120
HFG-C-10220	760	Dn80	220	1015	205	205	185	155	610	30	140
HFG-C-10230	1135	Dn100	220	1320	230	205	185	155	915	40	160
HFG-C-20230	2270	Dn150	325	1400	255	255	240	155	965	75	175
HFG-C-30230	3405	Dn150	355	1400	255	280	255	155	965	115	205
HFG-C-40230	4540	Dn150	405	1425	255	305	280	155	965	150	225

VFGM Series Monitor Filters

AVIATION



MODEL NUMBER	FLOW RATE (lpm) AVIATION	INLET/ OUTLET	DIMENSIONS (mm) A	B	C	D	E	HOUSING LIQUID VOLUME (ltr)	HOUSING DRY WEIGHT (kgs)
VFGM-1C-1614	220	Dn50	220	295	900	920	180	26	45
VFGM-2C-1628	440	Dn50	220	295	1265	1285	180	38	56
VFGM-3C-1643	655	Dn50	220	295	1620	1640	180	50	90

Other sizes available on request.

NOTES:

a. Cartridges are selected separately to fit specific application requirements.

b. All elements are mounted against knife edge seals.

c. These models do not comply with EI 1596 specs.

d. Consult factory for flow rates when using EI 1590 Qualified elements.

e. Inlet chamber to be hydrostatic tested at 115 psi (7.9 bar).

f. All dimensions, weights and volumes are approximate and are for estimating purpose only and should not be used for installation purposes.

Monitor Filters

FG Series
Monitor Cartridges

2" (51 mm.) nominal outside diameter FG Series monitor cartridges perform three jobs—they absorb free and emulsified water, remove ultra-fine solids and shut down system flow when hit with a localized slug of water, giving you clean, dry fuel. The FG Series monitor cartridges are designed to flow from the outside to inside at a rate of 1 gpm (3.79 lpm) per inch of length.

Filter monitor vessels are fitted with monitor elements and used on aircraft refuelling vehicles, hydrant dispensers and other mobile fuelling equipment.

- Max. 15 ppm free water in outlet stream
- Max. 0.26 mg/l (average) particles in outlet stream
- Outer diameter of monitor elements: 2 inch
- Nominal micron rating of monitor elements: 1 µm

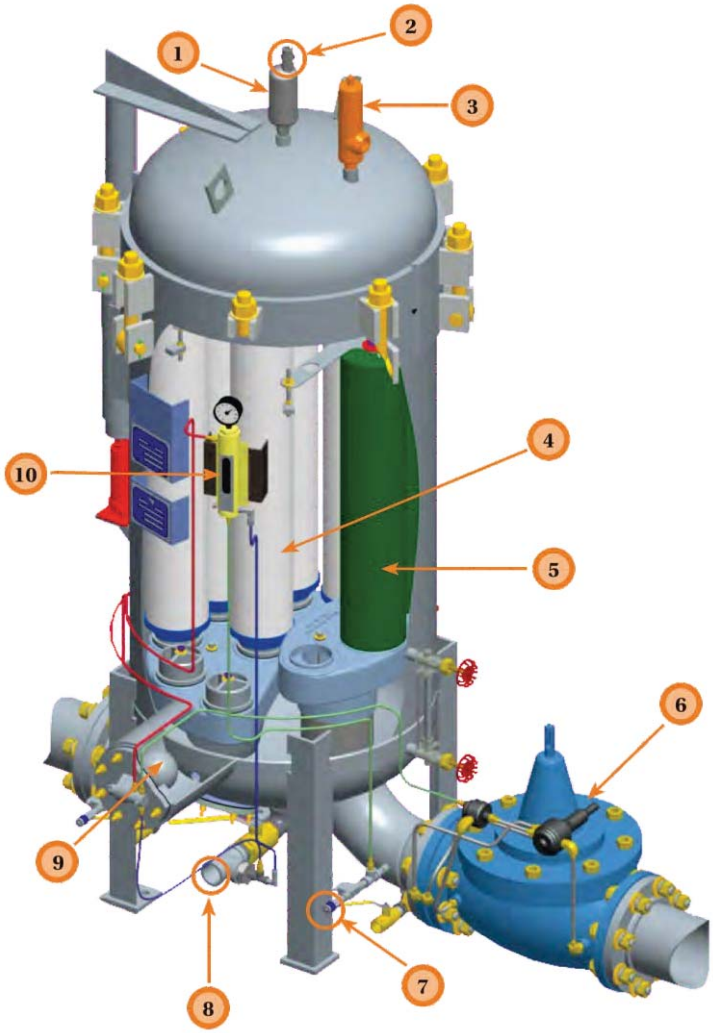
The presence of water or solids in the incoming fuel will be indicated by an increase in the pressure differential or a decrease in the flow rate as the cartridges reach their maximum capacity for solids, water or a combination of both. When either happens, the cartridges should be replaced.

Each FG Series monitor cartridge is constructed of various water absorbent media, plus fine filtration layers wrapped around a molded center tube for balanced flow and structural strength—all encased in a protective outer sock material. The end cap material is of injection molded, glass-filled nylon which provides superior strength and ease of maintenance. This material gives excellent support for the o-ring on the mounting/adaptor end.

Standard Design Features

- Multi-layered media for increased solids holding, water removal and shutdown protection
- New conductive end caps with anti-static properties which greatly reduce the possibility of static discharge during the fueling process
- Structurally withstands a minimum of 174 psid (12 bar)
- Not adversely affected by exposure to temperatures varying from -54 °C to 71°C

Function of Filter Separator Accessories



1 Automatic Air Eliminator

Provides air vent to permit escape of trapped air during filling of vessel. When unit is completely filled with fuel, air eliminator automatically closes.

2 Check Valve

Prevents air from siphoning into the vessel through the air eliminator.

3 Pressure Relief Valve

This valve can be set to open at a desired pressure to exhaust excess pressure built up in the system, due to thermal expansion in a non-

4 Coalescer Element

Designed to remove solid contaminants, to break the emulsion of water in the product into droplets, and to enlarge these droplets so that they will drop out of the product. The flow is from the inside to the outside of the coalescer.

5 Separator Element

Repels coalesced water droplets and prevents them from going downstream. The flow is from the outside to the inside.

6 Slug Valve

In the event of excessive water build-up, the slug valve, on signal from the float control, will shut down all flow through the system until excess water can be drained off. The slug valve can be provided with a rate-of-flow control which will prevent excessive flow rates through the filter/separator.

7 Sampling Probe

The purpose of the probe is to insure that fuel samples are representative of the fuel in the pipe. The probe penetrates through the pipe coupling that is welded to the pipe. There is no possibility of rust and dirt that usually collects in stagnant pockets reaching the filter membrane test capsule.

8 Manual Drain

Opened daily to remove any accumulated water and to sample the fuel in the sump. This also helps to evaluate the condition of the coalescer. It is also opened to completely drain the vessel when changing

9 Float Control

Rides the interface between fuel and water, and by its up and down movement, opens and closes ports to generate hydraulic signals to automatic valves. Parker AFD recommends the "ballast" type float control for easier checking of the integrity of the float ball.

10 Pressure Gauge

The direct reading differential pressure gauge is used to measure the pressure difference between the inlet and outlet of a filter/separator, thus providing an indication of element condition.

ENGINEERING

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