

PRODUCTS BROCHURE



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Aviation Filtration

Filter Water Separators

HORIZONTAL

Compact Horizontal Filter/Separator Vessels for Fixed Installations offers significant operating advantages over vertical designs.

Easier Cartridge Change

The horizontal filter/separator design provides more convenient access to the cartridges than the vertical design.

Effluent Cleanliness

A horizontal filter/separator must be drained to change the elements. This prevents the possibility of getting dirt in the effluent that can occur if the operator does not fully drain a vertical vessel when changing elements. The separator mounting holes on a horizontal vessel are in a vertical plane at the top of the vessel so it is nearly impossible to get dirt in the effluent when cartridges are being changed.

Lower Cost

A horizontal filter/separator will normally cost less than a vertical filter/separator of the same rated flow, for the same specifications.

Industry Qualified

Velcon HV Series Horizontal Filter/Separators are fully qualified to API Publication 1581, Fifth Edition, Group II, Class B (fixed installations). These units incorporate one piece threaded base coalescer elements for easy, reliable installation and reusable one piece Teflon® coated screen separators.

Horizontal Filter/Separator Vessels							
Model	Flow Rates			Elements			
	LPM	USGPM	M³/H	No.	Coalescer	No.	Separator
HV-1422	386	102	23	2	I-622C5TB	1	SO-424V5
HV-1428	457	121	27	2	I-628C5TB	1	SO-424V5
HV-1828	862	228	51	3	I-628C5TB	1	SO-430V
HV-1833	1037	274	62	3	I-633C5TB	1	SO-436V
HV-1838	1188	314	71	3	I-638C5TB	1	SO-436V
HV-2233	1385	366	83	4	I-633C5TB	2	SO-424V
HV-2238	1612	426	96	4	I-638C5TB	2	SO-430V
HV-2244	1888	499	113	4	I-644C5TB	2	SO-436V
HV-2638	2017	633	121	5	I-638C5TB	2	SO-624VA
HV-2644	2361	624	121	5	I-644C5TB	2	SO-630VA
HV-2656	2914	770	175	5	I-656C5TB	2	SO-633VA
HV-2844	3308	874	198	7	I-644C5TB	2	SO-640V
HV-2856	3652	955	219	6	I-656C5TB	2	SO-644V
HV-2856	4261	1126	255	7	I-656C5TB	2	SO-648V
HV-3256	4765	1267	287	9	I-656C5TB	4	SO-646V5
HV-3456	5389	1424	323	10	I-656C5TB	5	SO-644VA5
HV-3856	6464	1708	388	12	I-656C5TB	6	SO-644VA5
HV-4056	7543	1993	452	14	I-656C5TB	7	SO-644V5
HV-4256	8622	2278	517	16	I-656C5TB	7	SO-648V5

Vessel availability is typically 12-14 Working Weeks

Each vessel is supplied with an initial (commissioning) set of elements

Vessels can be manufactured from Aluminium, Stainless Steel or Carbon Steel

*Other part numbers may be available

**Element model numbers may vary depending on spider fitted

***Flow rates may vary according to API specification requirements

Filter Water Separators

VERTICAL

Compact Filter/Separator Vessels for Fixed Installations

Description

Units are designed for ease of maintenance with one piece threaded base coalescers and reusable one-piece Teflon® coated screen separators. The 85 Series coalescer cartridges used in most of these vessels have been field proven to give exceptionally long service life.

Features

- Compact Design
- Code Qualification
- Simplified Maintenance
- Field Proven Performance

Industry Qualified

Velcon VV Series Vertical Filter/Separators are fully qualified to API Publication 1581, Fifth Edition, Group II, Class B (fixed installations). These units incorporate one piece threaded base coalescer elements for easy, reliable installation and reusable one piece Teflon® coated screen separators.

Vertical Filter/Separator Vessels							
Model	Flow Rates			Elements			
	LPM	USGPM	M³/H	No.	Coalescer	No.	Separator
VV-1614	227	60	13	2	I-614C5TB	1	SO-614VA5
VV-1622	386	102	23	2	I-622C5TB	1	SO-623VA5
VV-1828	514	136	30	2	I-628C5TB	1	SO-624V5
VV-2028	772	204	46	3	I-628C5TB	2	SO-623VA5
VV-2033	889	235	53	3	I-633C5TB	2	SO-624VA5
VV-2238	1078	285	64	3	I-638C5TB	2	SO-624VA5
VV-2433	1521	402	91	5	I-633C5TB	2	SO-630PV5
VV-2438	1807	476	108	5	I-638C5TB	2	SO-636PV5
VV-2644	2059	544	123	5	I-644C5TB	2	SO-640PV5
VV-2656	2771	600	136	5	I-656C5TB	2	SO-644PV5
VV-3044	2532	669	152	6	I-644C5TB	3	SO-633VA5
VV-3044	2952	780	177	7	I-644C5TB	3	SO-640VA5
VV-3056	3221	851	193	6	I-656C5TB	3	SO-644PV5
VV-3056	3815	1008	229	7	I-656C5TB	4	SO-644PV5
VV-3056	4361	1153	262	8	I-656C5TB	4	SO-644PV5
VV-3456	5454	1441	327	10	I-656C5TB	5	SO-644V5
VV-3656	5991	1583	359	11	I-656C5TB	6	SO-640V5
VV-3856	6816	1801	409	13	I-656C5TB	6	SO-644VA5
VV-4056	7634	2017	458	14	I-656C5TB	7	SO-644PV5
VV-4256	8277	2187	497	16	I-656C5TB	7	SO-646V5
VV-4456	9462	2500	568	18	I-656C5TB	8	SO-646V5

Vessel availability is typically 12-14 Working Weeks

Each vessel is supplied with an initial (commissioning) set of elements

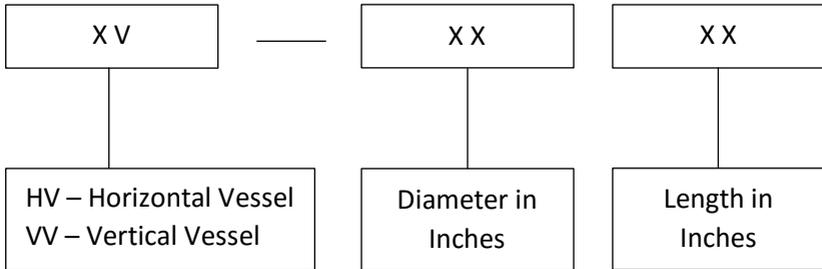
Vessels can be manufactured from Aluminium, Stainless Steel or Carbon Steel

*Other part numbers may be available

**Element model numbers may vary depending on spider fitted

***Flow rates may vary according to API specification requirements

Vessel Selection Guide



Filter Monitors

WATER ABSORBING FILTERS

Horizontal Aquacon® for Aircraft Fuelling Trucks, Hydrant Carts, and Cabinets.

Description

The Velcon CDF Monitor Vessels, equipped with the CDF® Cartridges, provide superior performance and reliability for assuring clean, dry fuel. These vessels are for use downstream of filter/separators or on refueler trucks. The presence of water and/or dirt in the influent fuel is indicated by an increase in the pressure differential (or a decrease in flow rate if the monitor housing is not equipped with a differential pressure gauge). These changes are the result of flow restriction caused by dirt filtration or water absorption in the media. The rapidity of these changes will depend on the quantity of water or contaminant present.

Features

- Carbon Steel & Lightweight aluminium construction. Also available in less expensive carbon steel housings with aluminium manifolds.
- Compact size minimizes space requirements on mobile refuelling equipment, in cabinets, and at loading racks.
- Qualified to the Energy Institute's specification for fuel monitors when fitted with CDF® Cartridges.
- Water-absorbing/Flow-restricting means that additional water defence equipment, such as an electronic water detecting probe or a float control and slug valve, is not needed per EI 1581
- Rugged Construction allows the vessel deck plate to exceed the 220 psid hydrostatic test requirement.

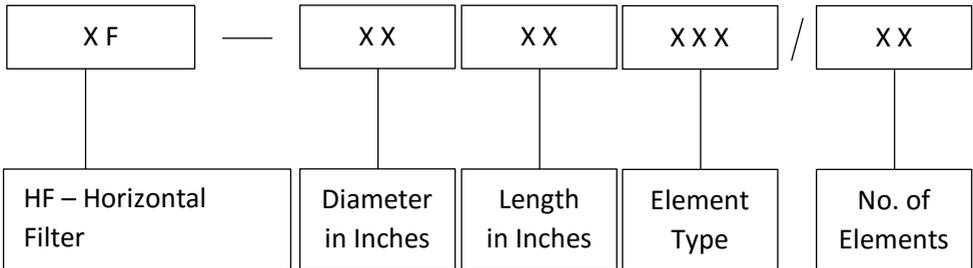
Filter Monitors Vessels					
Model	Flow Rates			Elements	
	LPM	USGPM	M ³ /H	No.	Model
HF-515CDF/2	113	30	6	2	CDF-215P
HF-530CDF/3	340	90	20	3	CDF-230P
HF-615CDF/4	227	60	13	4	CDF-215P
HF-630CDF/4	450	120	27	4	CDF-230P
HF-815CDF/6	340	90	20	6	CDF-215P
HF-830CDF/5	546	150	34	5	CDF-230P
HF-830CDF/7	794	210	47	7	CDF-230P
HF-1030CDF/10	1135	300	68	10	CDF-230P
HF-1030CDF/14	1589	420	95	14	CDF-230P
HF-1430CDF/20	2271	600	136	20	CDF-230P
HF-1430CDF/24	2725	720	163	24	CDF-230P
HF-1630CDF/30	3406	900	204	30	CDF-230P
HF-1830CDF/36	4087	1080	245	36	CDF-230P
HF-1830CDF/40	4542	1200	272	40	CDF-230P

Vessel availability is typically 12-14 Working Weeks

Each vessel is supplied with an initial (commissioning) set of elements

Vessels can be manufactured from Aluminium, Stainless Steel or Carbon Steel

Vessel Selection Guide



*Other part numbers may be available

**Element model numbers may vary depending on spider fitted

***Flow rates may vary according to API specification requirements

Micro Filters

STANDARD DESIGN FEATURES

- 150 psi welded steel ASME Code construction.
- Choice of micron rating from 0.5 to 75 microns.
- Choice of pleated or depth type media.
- Epoxy coated interior, primed exterior.
- Buna-N O-ring cover seals.

RECOMMENDED OPTIONAL ACCESSORIES

- Automatic Air Eliminator
- Pressure Relief Valve
- Differential Pressure Gauge
- Drain Valve(s)
- Sampling Probes
- ASME Code Stamp

TYPICAL APPLICATIONS

- Jet Fuels
- Diesel Fuels
- Gasoline

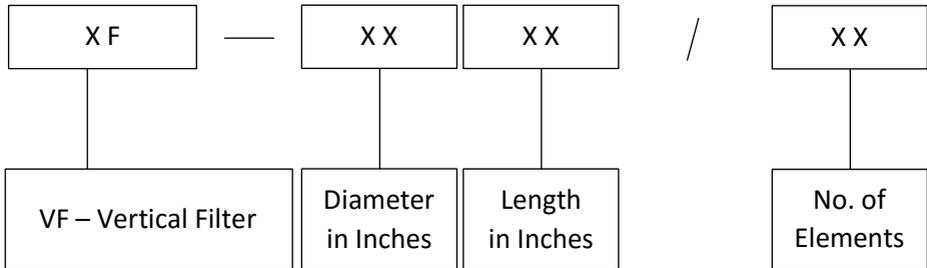
Micro Filter Vessels					
Model	Flow Rates			Elements	
	LPM	USGPM	M ³ /H	No.	Model
VF-1629/3	1146	300	68	3	FO-644A3
VF-2644/6	3883	1026	233	6	FO-644A3
VF-2644/7	4530	1197	272	7	FO-644A3
VF-2644/8	5177	1368	310	8	FO-644A3
VF-2844/10	6472	1710	388	10	FO-644A3
VF-3244/12	7766	3063	466	12	FO-644A3
VF-3344/15	9708	2565	582	15	FO-644A3
VF-3644/18	11650	3078	699	18	FO-644A3
VF-4544/20	12944	3420	777	20	FO-644A3
VF-4544/24	15533	4104	932	24	FO-644A3
VF-5144/30	19417	5130	1165	30	FO-644A3
VF-5444/40	25889	6840	1554	40	FO-644A3

Vessel availability is typically 12-14 Working Weeks

Each vessel is supplied with an initial set of elements

Vessels can be manufactured from Aluminium, Stainless Steel or Carbon Steel

Vessel Selection Guide



*Other part numbers may be available

**Element model numbers may vary depending on spider fitted

***Flow rates may vary according to API specification requirements

Filter Elements

COALESCERS

FEATURES

- Cost effective particle and emulsified water removal from hydrocarbon fluids
- Easy installation and replacement with one-piece design
- Choice of Threaded Base or Open End cartridges
- Choice of All-Fiberglass Media or Combination Fiberglass and Pleated Media
- Field proven performance
- Ongoing qualification testing to meet changing commercial and military requirements

GENERAL

Coalescer cartridges are employed as the first stage in filter/separator vessels for hydrocarbon fluids. They perform two functions: (1) coalesce (combine) highly dispersed, emulsified water particles into larger water drops and (2) filter-out particulate contaminants.

HOW COALESCER CARTRIDGES WORK

The top photo shows a highly magnified view of the coalescing process. Tiny droplets of water contact and adhere to strands of fiberglass. Flow pushes the droplets along the strand until they reach an intersection of strands where they combine with other droplets (coalesce) into large drops. These large drops are then carried to the outside surface of the cartridge. Having a higher specific gravity than the hydrocarbon fluid, they release and settle to the bottom of the vessel. The larger the drops, the faster and more efficiently they fall out.

In general, particle removal efficiency increases with coalescing efficiency. This is accomplished by employing a tighter, finer filtration media. Flow direction is from inside to outside of the cartridge. This minimizes surface velocity and helps prevent the water drops from breaking up and being carried downstream.

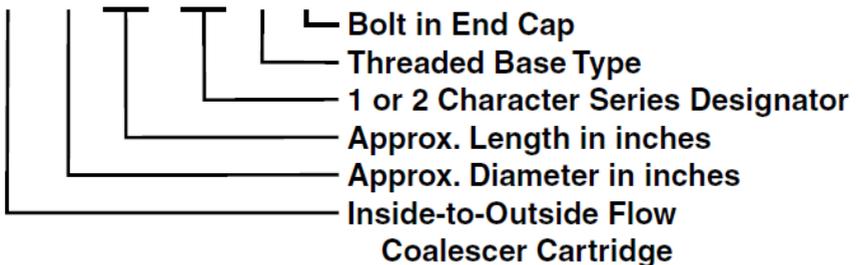
APPLICATIONS

Coalescer cartridges are used primarily to coalesce emulsified water and remove particles from hydrocarbon fluids. The largest single application is the filtration of aviation jet fuel. They are also used with other types of fuels, process streams in refineries and petrochemical plants, and condensate streams where natural gas is produced. Other liquids can be separated if they are immiscible, the specific gravities differ, and high concentrations of surface active agents are not present. As a rule of thumb, if a sample of the mixture readily separates in an hour or two, a coalescer can probably be used. If the mixture hasn't separated after 24 hours, coalescing probably won't work.

MODEL SELECTION

Velcon Model Numbers include significant product information. *Example:*

I - 6 2 8 C 5 T B



Note that **I-628C5** would designate the open end version of this cartridge.

Filter Elements

SEPARATORS

FEATURES

- Optimum 2nd stage water removal
- Choice of Teflon® Coated Screen, Synthetic or Pleated Paper Media
- Field proven performance
- Largest selection of replacement elements

GENERAL

Separator Cartridges are employed as the second stage in filter/separator vessels. Their sole function is to repel coalesced water drops produced by the first stage cartridges while allowing hydro-carbon fluids to pass through. Water drops settle into the filter/separator sump and are not carried downstream. All particle filtering is done by the first stage coalescer cartridge.

HOW SEPARATOR CARTRIDGES WORK

Flow direction is from outside-to-inside. The top photo insert shows water being repelled by the hydrophobic separator medium on the cartridge's outside surface. Hydrocarbon fluids, on the other hand, easily pass through and exit the separator cartridge. Cartridges with three different types of repelling media are offered: Teflon Coated Screen (TCS) Cartridges are, by far, the most popular type of separator cartridge. With proper cleaning and inspection (see Velcon Form #1242), cost effective TCS elements can be reused over many coalescer cartridge change out cycles. And, TCS cartridges generate considerably less static charge than pleated paper cartridges. These features have made them the preferred choice for aircraft fueling applications. Pleated Paper Cartridges cannot be reused and are replaced at every coalescer cartridge changeout. They are often used with diesel and other fuel oils which may contain materials that adhere to TCS cartridges and cannot be cleaned off. Synthetic Media Cartridges can be cleaned a maximum of two times. They are intended for customers who do not want to take the time to clean separators.

SEPARATOR CARTRIDGE PERFORMANCE

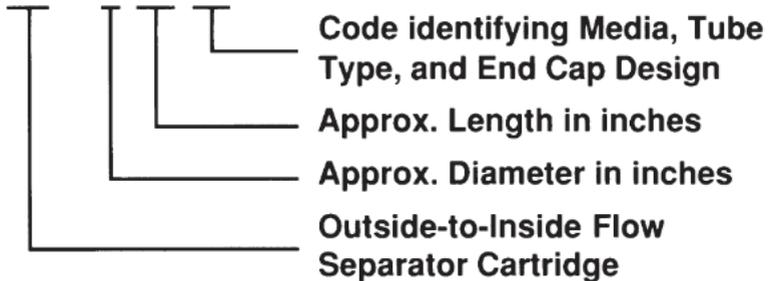
Maintaining a uniform flow along the length of the cartridge optimizes performance and reduces the number of cartridges required. Flow is controlled by a tube, inside each cartridge, through which the hydrocarbon fluid exits the cartridge and the filter/separator vessel. Two styles of inner tube are offered.

Cartridges with uniform hole pattern inner tubes are adequate for many applications. However, where optimum flow distribution is required, cartridges with variable hole pattern inner tubes are recommended. When converting older equipment, a lesser number of variable hole pattern cartridges is usually required. Operating costs will therefore be reduced.

MODEL SELECTION

Velcon Model Numbers include significant product information. *Example:*

S O - 6 3 6 P V



Filter Elements

CDF MONITORS

BENEFITS

CDF® P SERIES are qualified to EI 1583 Sixth Edition specification for Aviation Fuel Filter Monitors.

IMPROVED SALT WATER PERFORMANCE

IMPROVED WATER CAPACITY

IMPROVED WATER REMOVAL EFFICIENCY

CONDUCTIVE END CAPS and adhesive reduce static charge within the vessel.

O-RING SEAL minimizes the possibility of bypassing contaminated fuel at differential pressures up to 175 psi.

RUGGED CONSTRUCTION collapse strength exceeds 175 psi differential pressure.

DESCRIPTION

The Velcon CDF® P Series cartridges are designed to provide superior performance and reliability in standard fuel monitor housings through a unique, proprietary combination of media that absorbs water, filters solids that may be present in the fuel and reduces static charge. The cartridge has injection moulded endcaps that are bonded to the media and an O-ring seal on the outlet end. This minimizes the possibility of bypassing contaminated fuel or transmission of water downstream at low flow rates. As the cartridge removes water and/or dirt from the influent fuel, differential pressure will increase and the flow rate will decrease. These changes are the result of flow restriction caused by dirt retention or water absorption in the media. The rate of these changes depends on the quantity of water or dirt contamination in the fuel.

El Specification 1583 Sixth Edition Information

Velcon’s new CDF® P Series Cartridges incorporate several structural features due to requirements of the Sixth Edition of EI 1583. Some of these features and resulting benefits include:

- Increased product conductivity decreases the risk of electrostatic discharges
- Improved media structure lowers the risk of media migration
- Lower initial DP - a major factor for installations that require changing cartridges at 15 PSID.
- New structure that provides longer cartridge life in the presence of small amounts of water

Some of the new requirements of the sixth edition of EI 1583 are:

- 18 lab qualification tests vs. 14 for the 4th edition
- Testing salt resistance
- Testing cartridge conductivity
- Testing structural integrity
- Testing for any trace SAP migration
- Water slug test at low flow (10% of rated flow)
- Low water (50 ppmv) at low flow (10% of rated flow)

MODEL SELECTION

Cartridge Flow Rate USGPM	Velcon Model Number	Overall Length	Replacements for:		
			Facet Model Number	Racor Model Number	Faudi Model Number
5	CDF-205P	5 ¹³ / ₁₆ "	FG-205 (-3, -4, or -6) GNG-205	RMO-205-4-E —	M.2-134 (/4 or /E)
10	CDF-210P	10 ¹³ / ₁₆ "	FG-210 (-3, -4, or -6) GNG-210	FMI-10203 FM-10202 RMO-210-4-E	M.2-261 (/4 or /E)
15	CDF-215P	15 ¹³ / ₁₆ "	FG-215 (-3, -4, or -6) GNG-215	FMI-15203 FM-15202 RMO-215-4-E	M.2-387 (/4 or /E)
20	CDF-220P	20 ¹³ / ₁₆ "	FG-220 (-3, -4, or -6) GNG-220	FMI-20203 FM-20202 RMO-220-4-E	M.2-515 (/4 or /E)
25	CDF-225P	25 ¹³ / ₁₆ "	FG-225 (-3, -4, or -6) GNG-225	FMI-25203 FM-25202 RMO-225-4-E	M.2-642 (/4 or /E)
30	CDF-230P	30 ¹³ / ₁₆ "	FG-230 (-3, -4, or -6) GNG-230	FMI-30203 FM-30202 RMO-230-4-E	M.2-770 (/4 or /E)

All cartridges are packaged 20 per carton

Filter Elements

Micro Filter Elements

DETAILS

- Large Surface Area – Allows high flow rate with low initial pressure drop and maximum contaminant holding capacity.
- Resin Impregnated Media – Maintains strength, resists effects of water and heat.
- 75 psi Collapse Strength – Heavy gauge carbon steel center tubes give safety margin against pressure surges.
- Coated Steel Components – Resist corrosion from most industrial fluids.
- Corrugated Media – Prevents pleat pinch-off, assuring all filtration media is utilized.
- Buna-N Gaskets – The best general gasket material available assures positive seal in most fluids.
- Thermoset Bonding Material – Durable endcap-to-media bond prevents internal bypassing.
- Threaded base filter cartridges – Available for easier installation.

APPLICATIONS

Velcon Pleated Media Cartridges are suitable for a broad range of polar and non-polar fluids. Recommended for applications where the contaminant is granular (non-colloidal), allowing maximum utilization of the high surface area.

CARTRIDGE INFORMATION

The following table lists a few of the broad range of available Velcon cartridges. Your local Velcon Representative can provide more complete information.

(See next page)

Dimensions	Model	Nominal Micron Rating	Protective Outer Wrap	
4" x 12¼" x 1¾" ID	FO-412PL2	2	No	
	FO-412PL5	5	No	
4" x 18" x 1¾" ID	FO-418PL5	5	No	
	FO-418PL15	15	No	
For VF-61 & VF-61E Housing	FO-512PL1/2	½	No	
	FO-512PL05	5	No	
	FO-512PL25	25	No	
For VF-62 Housing	FO-524PL1/2	½	No	
	FO-524PL05	5	No	
	FO-524PL25	25	No	
6" x 14½" x 3½" ID	FO-614PLF½	½	No	
	FO-614PLF1	1	No	
	FO-614PLF2	2	No	
	FO-614PLF5	5	No	
	FO-614PLF5M	5	Yes	
	FO-614PLF10	10	No	
	FO-614PLF15	15	No	
	FO-614PLF15M	15	Yes	
	FO-614PLF25	25	No	
	FO-614PLF25M	25	Yes	
6" x 29" x 3½" ID	FO-629PLF1/4	¼	Yes	
	FO-629PLF1/2	½	Yes	
	FO-629PLF1	1	Yes	
	FO-629PLF2	2	Yes	
	FO-629PLF5	5	Yes	
	FO-629PLF10	10	Yes	
	FO-629PLF20	20	Yes	
	FO-629PLF25	25	Yes	
	6" x 29" Threaded Base	FO-629PLF1/2TB	½	Yes
		FO-629PLF1TB	1	Yes
FO-629PLF2TB		2	Yes	
FO-629PLF5TB		5	Yes	
FO-629PLF25TB		25	Yes	

Dimensions	Model	Nominal Micron Rating	Protective Outer Wrap
6" x 44" x 3½" ID	FO-644PLF1/2	½	No
	FO-644PLF1M	1	Yes
	FO-644PLF2M	2	Yes
	FO-644PLF5M	5	Yes
	FO-644PLF10M	10	Yes
	FO-644PLF15M	15	Yes
	FO-644PLF25M	25	Yes
6" x 44" Threaded Base	FO-644PLF1/4TB	¼	Yes
	FO-644PLF1/2TB	½	Yes
	FO-644PLF1TB	1	Yes
	FO-644PLF2TB	2	Yes
	FO-644PLF5TB	5	Yes
	FO-644PLF10TB	10	Yes
6" x 56" x 3½" ID	FO-656PLF1M	1	Yes
6" x 56" Threaded Base	FO-656PLF1/2TB	½	Yes
	FO-656PLF1TB	1	Yes
	FO-656PLF2TB	2	Yes
	FO-656PLF5TB	5	Yes
	FO-656PLF25TB	25	Yes
6¼" x 18" x 2¾/16" ID	FO-718PLP3	0.3	No
	FO-718PL1/2	½	No
	FO-718PL01	1	Yes
	FO-718PL02	2	Yes
	FO-718PL05	5	Yes
	FO-718PL10	10	Yes
	FO-718PL15	15	Yes
6¼" x 36" x 2¾/16" ID	FO-718PL25	25	Yes
	FO-718PL50	50	Yes
	FO-736PLP3	0.3	No
	FO-736PL1/2	½	No
8" x 22½" x 2" ID	FO-736PL05	5	Yes
	FO-736PL15	15	Yes
	FO-822PLP3	0.3	No
8" x 29½" x 2" ID	FO-822PL1/2	½	No
	FO-822PL05	5	No
8" x 29½" x 2" ID	FO-829PL05	5	No

Spares and Accessories

SPARES

Spares mainly include the filter elements which the model numbers of these can be found on the name plates on the filter vessel along with the quantities needed.

EPS recommend to have an operating set and an additional spare set on standby in case there is a bad batch of fuel.

If your filter vessel is from another manufacturer than Parker Velcon (such as Faudi or PecoFacet) and still rated to the same API regulations, then the elements are interchangeable and equivalents can be supplied, all that is required is the model number (located on the name plate) of the filter element.

When replacing the elements it is good practice to replace the lid seal 'O' Ring as opening and closing the lid case cause the 'O' Ring to deteriorate, which in turn will cause the filter vessel to leak.

ACCESSORIES

The most common accessories for the filter vessels are differential pressure gauges, pressure relief valves and air eliminators.

Reason for use:

- Differential Pressure Gauges – if the filters are blocked through water or dirt, the differential pressure (DP) will increase, once the DP reaches a specific point it is imperative that the filter elements are changed
- Pressure Relief Valves – the filter vessels are designed to ASME VIII pressure vessel standards, should the pressure rise above the rated figure (commonly 10 Bar) the pressure relief valve (PRV) should operate to relieve the filter vessel from excess pressure
- Air Eliminators – on initial start-up of the system there will be a lot of air in the system, this needs to be vented to allow the fuel in and protection for the rare occurrence that air should enter the system and be pumped through to prevent an air pocket in the fuelling system.

Schultz DP Gauge

Schultz Engineered Products Model SC-5150 Direct Reading piston type differential pressure indicator is designed to accurately and reliably read differential pressure across filter vessels. The gauge consists of a spring and a corrosion resistant piston moving inside an annealed glass cylinder. Differential pressure is easily read from the top of the piston.



- Glass Cylinder Pressure tested to 1200 psi, To provide a safety factor of 4 at max operating pressure of 300 psi
- Thermal expansion characteristics of piston and cylinder are matched so binding does not occur during temperature variations
- Eliminates 3 way manifold and subtraction method of determining differential pressure
- Design provides automatic dampening against pressure fluctuations so calibration will not be affected
- Easily changed 10 micron filter
- Housings available in black anodized aluminium, nickel plated aluminium
- 0-15 psi or 0-30 psi Differential Pressure indication ranges available
- Extremely Rugged housing protects internal components

Page 22

Specs:

Pressure: 300 psi max operating

Temperature: -40°F to + 160°F (-40°C to + 71°C)

Accuracy: +/- 1/2 psi

Seals: Viton

Fittings: 1/4 N.P.T.

Flange Material: 300 series S/S or 6061 Aluminium (anodized or nickel plated)

Aluminum

0-15 psi (0 - 1.0 kg/cm) SC -5150 - 15

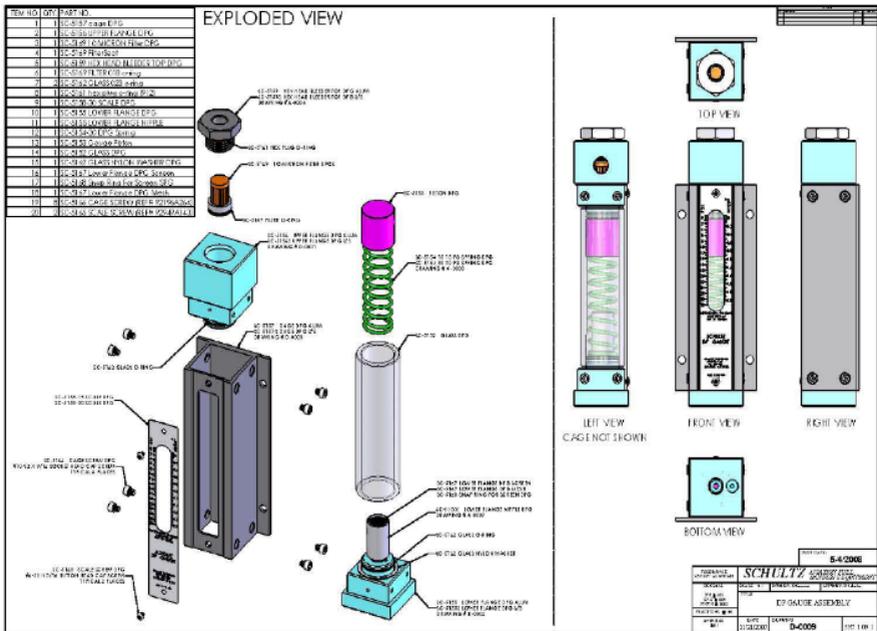
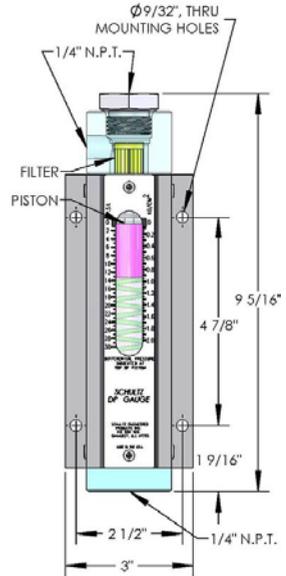
0-30 psi (0 - 2.0 kg/cm) SC -5150 - 30

Stainless Steel

0-15 psi (0 - 1.0 kg/cm) SC -5150 - 15 - S

0-30 psi (0 - 2.0 kg/cm) SC -5150 - 30 - S

- OPTION A Ultraviolet shield for av gas use
- OPTION B 1/4 N.P.T. port located at the top of the gauge
- OPTION C UV resistant nickel plate finish
- OPTION E Spring return 3 way valve
- OPTION F Integral Spring return 3 Way valve
- OPTION I 0-30 psi scale 1-15 GO 15-30 NO-GO
- OPTION J 0-30 psi scale 1-25 GO 25-30 NO-GO
- OPTION K 0-15 psi scale 1-13 GO 13-15 NO-GO
- OPTION P Maximum DP peak hold



Fuel Nozzles

Underwing Refuelling Nozzles

Cla-Val Refuelling Nozzle
347GF



DETAILS

The use of all new, internal interlock technology results in a smaller, thinner, lighter Nozzle. The body of the Nozzle, adjacent to the connection head, has a very small outside diameter. This means that the Model 347GF Nozzle will easily connect to all aircraft, even the newer, smaller private jets and regional jets that are incorporating smaller and smaller refuelling ports. Even with the compact size, the connection head features high strength, hardened, Stainless Steel components to assure superior durability to withstand the toughest, most abusive environments.

- Designed per SAE AS5877
- Connects to MS24484 Single Point Adapter
- Six Slot Connection Head
- Integrated Durable Swivel Joint
- Light Weight and Compact Size
- All Aluminium and Stainless Steel Construction
- Fuel Resistant Seals

The Cla-Val 347GF Nozzle is designed per SAE AS5877 and is constructed entirely of aluminium and stainless steel, with fuel resistant Nitrile, Acetal and Polyurethane seals. All aluminium surfaces are anodized or coated to prevent corrosion. No copper, zinc, or alloys thereof are used in construction. The 347GF Nozzle connects to an aircraft “single point adapter” conforming to specification MS24484.

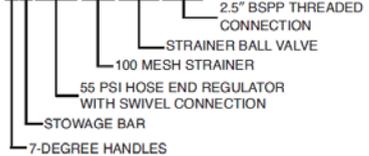
The Cla-Val 347GF Nozzle is designed to maximize safe refuelling operations. An internal interlock system, fully contained within the nozzle, prevents it from being opened when not connected to an aircraft adapter. In addition, when connected to an aircraft adapter, the 347GF Nozzle cannot be removed until the operating lever is first rotated to the fully closed position.

this base model number, following the flow chart above from left to right. See example below:

347GF-7GSVM100QDV25



347GF-7SRC100SBV25B



AVAILABLE OPTIONS FOR THE 437GF

H	STANDARD HANDLES	40	40 MESH STRAINER
L	LONG HANDLES	60	60 MESH STRAINER
7	STANDARD HANDLES WITH 7° BEND	100	100 MESH STRAINER
15	STANDARD HANDLES WITH 15° BEND	QD	STANDARD QUICK DISCONNECT
G	GROUNDING CABLE	QDV	DRY BREAK QUICK DISCONNECT
V	VACUUM BREAKER	SBV	349GF STRAINER BALL VALVE
S	STOWAGE BAR	20	2-INCH NPT THREADS
R3C	35 PSIG HOSE END REGULATOR WITH SWIVEL CONNECTION	20B	2-INCH BSPP THREADS
R4C	45 PSIG HOSE END REGULATOR WITH SWIVEL CONNECTION	25	2.5-INCH NPT THREADS
R5C	55 PSIG HOSE END REGULATOR WITH SWIVEL CONNECTION	25B	2.5-INCH BSPP THREADS
R3	35 PSIG HOSE END REGULATOR WITH FLANGED OUTLET	30	3-INCH NPT THREADS
R4	45 PSIG HOSE END REGULATOR WITH FLANGED OUTLET	30B	3-INCH BSPP THREADS
R5	55 PSIG HOSE END REGULATOR WITH FLANGED OUTLET		
D-3C	D-3 MALE QD INLET WITH SWIVEL CONNECTION		
D-3CR	D-3 MALE QD INLET WITH FLANGED CONNECTION		
M	MALE QUICK DISCONNECT ADAPTER		



Schultz Nozzle Gauge Guard

PATENT PENDING



Open



Closed

This patent pending design allows a safe installation of a pressure gauge onto the Whittaker (F-116 or F-117) single point nozzle. The installation of the Gauge guard requires that no modifications be made to the nozzle. During fuelling, the gauge is visible through stainless steel gauge guard. When closed, the gauge is retracted into guard, protecting it from damage. The gauge guard gives the added benefit of protecting the nozzle body boss from damage.

- For the Whittaker F-116 and F-117 Single point nozzles.
- Protects nozzle pressure gauge when not fuelling.
- When in fuelling position gauge is visible.
- Kit includes stainless steel guard, 0-100 psi liquid filled pressure gauge and adapter fitting.

Part No.	Description
SC-3000	Schultz stainless steel gauge guard.
SC-3001	0-100 Psi liquid filled pressure gauge, stainless steel housing and internals.
SC-3002	Special stainless steel adapter fitting 1/8" npt to 3/8" npt.
SC-3008	Complete kit includes all of the above components.

Fuel Nozzles

Overwing Refuelling Nozzles

Emco Wheaton
G457 Hot Refuelling Nozzle

EMCO WHEATON

A Gardner Denver Product

DETAILS

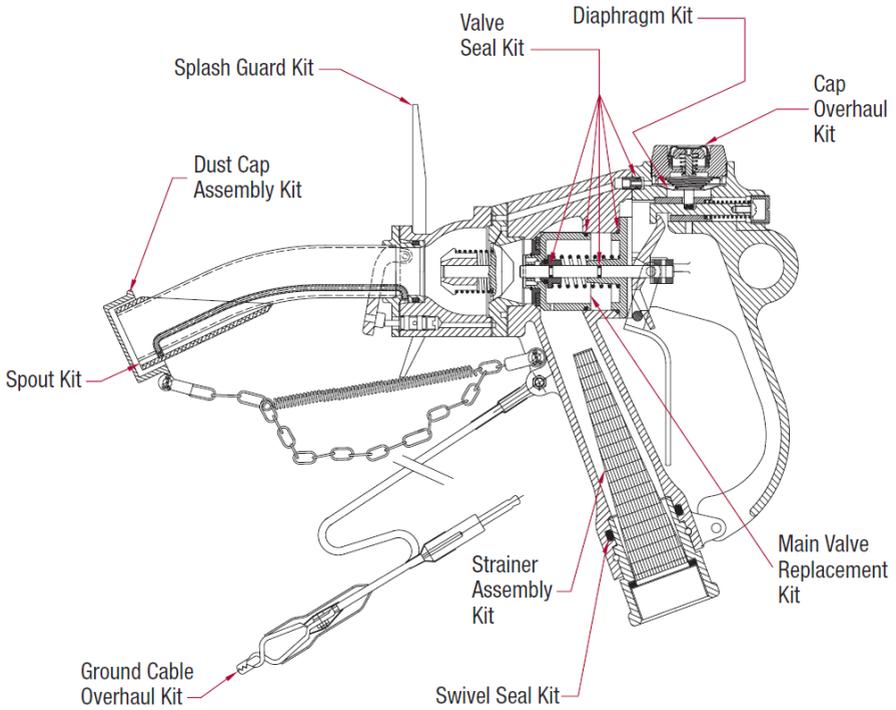
The G457 Helicopter Refuelling Nozzle was originally developed by Emco Wheaton for military applications. This nozzle is designed to ensure that fuel cannot be accidentally delivered into the engine air intake during hot refuelling. Commercial Helicopter operators will appreciate the significant cost advantages in terms of the reduction in turbine cold starts occurring from the ability to safely refuel with rotors turning.

FEATURES

- Proximity (deadman) lever which automatically shuts off fuel delivery on withdrawal of the nozzle spout from the filler neck;
- High Level shut off by fuel sensor in spout, also equipped with anti-froth device;
- Manual override for tank filling to absolute maximum capacity;
- Supplied complete with 100 mesh inlet strainer, dust cap, and grounding wire;
- Black anodised finish for all-weather protection;
- Tested for temperatures as low as -30°C ;
- Fuel resistant Buna-N splashguard;
- High level shut-off maintained down to flow rate of 37.8 litres/min (10 US gal/min);
- Flow control mechanism is capable of handling pressures up to 110 psi;
- Swivel integrated into nozzle;
- NATO specification

MODEL SELECTION

SPARES KITS AVAILABLE



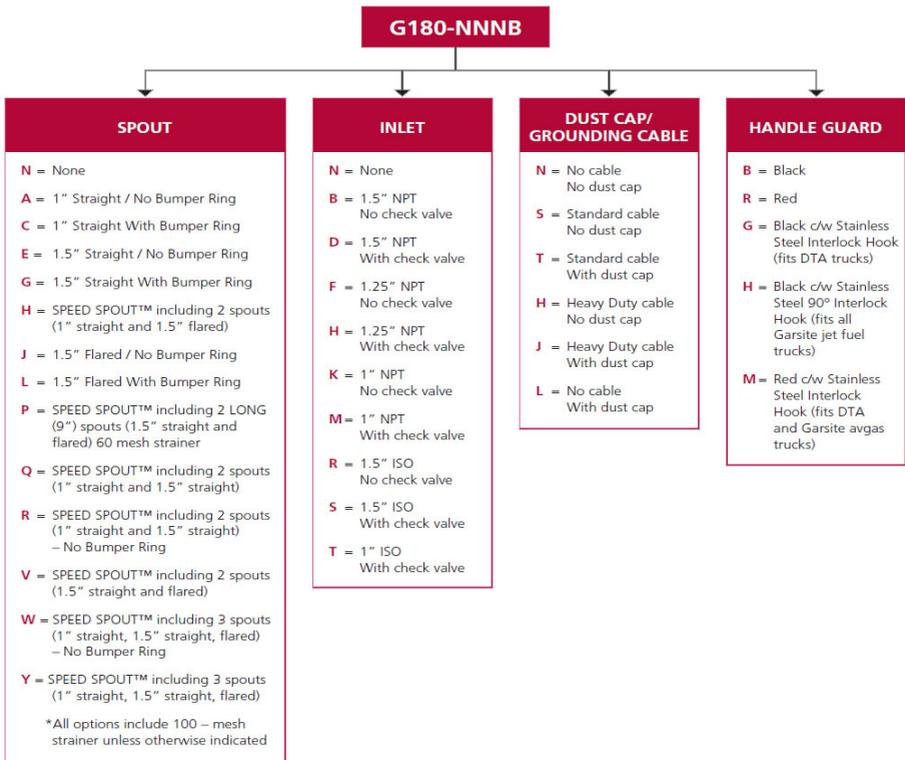
G180 Overwing Nozzle

DETAILS

The G180 Nozzle is built on a modified G457 chassis. The G457 has been the preferred nozzle of many military organizations around the world for many years. In opting for the G180, you will benefit from the experience we have gained in the field with this proven design.

- Weight of nozzle with 1.5" straight spout, inlet check valve and bumper ring = 6.95 lbs (3.15 kg)
- Seals are compatible with all jet and aviation fuels.

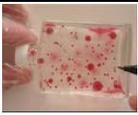
MODEL SELECTION



Aviation Fuel Quality Control

Fuel Test Components

IMAGE	DESCRIPTION	PART NUMBER
	Shell Water Detector Capsules (1 Box Contains 80 Test Capsules)	SWDCAPS
	5ml Nylon Syringe (for use with SWDCAPS)	SYR5
	5ml Nylon Syringe – New Single Handed (for use with SWDCAPS)	SYRB5
	Jet A-1 Test Kit (Contains: 500ml glass sample jar, 500ml tin storage can, PVC gloves, hydrometer jar, hydrometer 0.775 to 0.825, thermometer ASTM 12c/IP64c -10 to +102°C, 5ml nylon syringe, 1 box of Shell water detector capsules and instructions)	JETA1KIT
	Jet A-1 Millipore Sampling Kit (Shell field type Millipore Sampling Kit, used for collecting particles in the fuel on site, portable kit)	JETA1MIL
	Glass Sample Jar 3.5L	MS503
	Wire Cage for 3.5L Jar	MS504
	Hydrometers (a variety of ranges available)	HD4061
	Hydrometer Jar	HJ355

	<p>Thermometers (ASTM 12c/IP64c)</p>	TL5122
	<p>10" Stainless Steel Funnel</p>	FUN10
	<p>10 or 12L Stainless Steel Bucket with Crocodile Clip and Bonding Cable</p>	MS502
	<p>Kolor Kut Water Finding Paste</p>	KWP
	<p>Rectangular Retention Sample Cans (5L)</p>	5LCAN
	<p>Microbmonitor 2 (MM-005) Box of 5 Tests</p>	ECHA16/MM/02

Fuel Sampling Components



Specs:

Max Pressure: 600 PSI

Materials: Stainless steel, Aluminium

O Rings: Viton

Actuator Interchange: SPEN 4 GTP-722 SC-2055

Connection: 1/4 NPT

Schultz QD Sample connections are used to obtain accurate fuel samples. There are several configurations available, from our patented Accu-Sample to our basic QD. There are over 15,000 plus units in service worldwide. Available in stainless steel and aluminium. Dust caps are included in sampling kits. See page 2 of bulletin for configurations.

DESCRIPTION :

QD Kit 3 w/ 1/4 " MNPT Stainless w/ 90 deg elbow and 2 1/4 " probe.	SC-2003-0
QD Kit 5 w/ 1/4 " MNPT Stainless w/ 2 1/4 " integral probe.	SC-2005-0
QD Kit 5 w/ 1/4 " MNPT Stainless w/ 2 1/4 " probe.	SC-2005-1
ACCU-SAMPLE 1/4 " MNPT Stainless steel.	SC-2007-0
ACCU-SAMPLE 1/4 " MNPT Stainless w/ 2 1/4 "Integral probe left flow.	SC-2007-1
ACCU-SAMPLE 1/4 " MNPT Stainless w/ 2 1/4 "Integral probe right flow.	SC-2007-2
ACCU-SAMPLE 1/4 " MNPT Stainless w/ custom length integral probe.	SC-2007-3
ACCU-SAMPLE 1/4 " MNPT Stainless w/ 90 deg elbow and 2 1/4 " probe.	SC-2007-4
ACCU-SAMPLE 1/4 " MNPT Stainless w/ tee and Integral 2 1/4 " probe.	SC-2007-5
ACCU-SAMPLE 1/4 " MNPT Stainless w/ tee and 2 1/4 " probe.	SC-2007-6
QD Female 1/4 " NPT Alum	SC-2050-0
QD Male 1/4 " NPT Alum	SC-2050-1
QD Female 1/4 " NPT Stainless	SC-2051-0
QD Male 1/4 " NPT Stainless	SC-2051-1
PROBE 1/4 " NPT Hex 4" pipe.	SC-2052-0
PROBE 1/4 " NPT Hex custom length add length to part#	SC-2053-0
QD Dust cap and chain.	SC-2054-0
ACTUATOR Female 1/4 " NPT Stainless	SC-2055-0
ACTUATOR Male 1/4 " NPT Stainless	SC-2055-1
ACTUATOR Male 1/4 " NPT Stainless	SC-2055-2
ACTUATOR Male 1/8" NPT Stainless	SC-2056-0
ACTUATOR Knurl 1/4 " NPT Aluminium	SC-2057-0



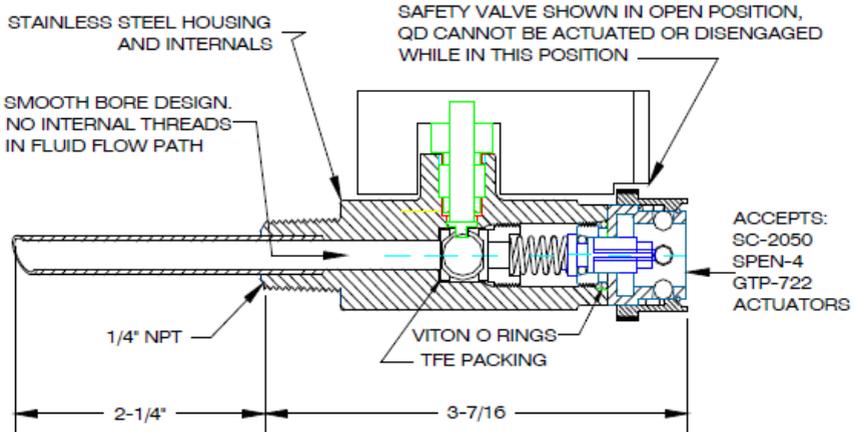
Accu-Sample™

In the past, Aviation Fuel sample connections requiring a shut-off valve were constructed from off-the-shelf parts configured into a kit. These kits included a separate probe, valve and Quick Disconnect, resulting in multiple connections and O-rings. The Coupling was assembled by pipe fittings with Teflon tape sealant. These kits were assembled by the customer, often requiring an extra labour cost seldom accounted for.

ASTM Aviation Fuel Particulate Contamination test method D 2276, A2.3 requires a sample point. Part 2.3.1 states ... “Care should be taken in such cases to avoid trapping or general contamination”... and 2.3.2. “Sample Valve Connection... must have a minimum of internal recesses which could cause the hold up of contamination”....

With this in mind, we developed the ACCU-SAMPLE™ with an integral ball valve and probe. The ACCU-SAMPLE™ surpasses currently existing designs by eliminating multiple connections and recesses where contaminate, particulate and/or sediment might be trapped. This ensures accurate sampling. The unibody design utilizes only one ¼” NPT connection, resulting in three times less leak points than other designs. To further minimize internal recesses, internal threads exposed to fluid discharge path have been eliminated. Special handle design will not allow coupler to be engaged or disengaged while ball valve is in the “OPEN” position. Coupler ends are interchangeable with existing manufacturers’ actuators. Through advanced design the ACCU-SAMPLE™ offers a better solution for your sampling connection needs.





◆ Patented

- ◆ Made to conform to ASTM Specifications A2.3.1 & A2.3.2.
- ◆ Unibody coupler minimizes fittings & internal recesses
- ◆ Smooth Bore eliminates threads, which could trap sediment, thereby insuring accurate fuel samples.
- ◆ Fewer pipe fittings, O-rings and internal surface variations provide increased safety over previous offered designs.
- ◆ Safety Handle prevents coupler from being engaged or disengaged while valve is open preventing unnecessary fuel discharge.
- ◆ Stainless steel unibody construction w/ Teflon seals and O-rings.
- ◆ Compact design.
- ◆ 2-1/4" Probe Length, custom lengths available.
- ◆ Quick disconnect coupling end features stainless steel internal components.

Sample Jars

4L CAPACITY

4 Litre inline fuel sampler is used for visual inspection of fuel. It allows the operator to check the density and temperature of the fuel when used with the optional Hydrometer and Thermometer tubes. It is compatible with the Shell and CASRI water detector capsules when supplied with the optional Internal Water Detector fitting or External Water Detector fitting.



Main features:

- Stainless Steel hinged lid
- Machined Aluminium lid frame
- Machined Aluminium base with white fuel resistant centre
- High Nitrile seals as standard (other seal materials can be supplied)
- Clear Boro-silicate glass

New standard feature:

4L Samplers will be supplied as standard with the new Stainless Steel Ball with built in Water Detector Capsule catcher. The Ball & Capsule Catcher is all one solid piece, there is no risk of the capsule catcher coming loose and falling into the pipeline. This new feature comes as standard at no extra





Hydrometer Tube
04L-JAR-0007



Thermometer Tube
04L-JAR-0011



Internal Water Detector Fitting
04L-JAR-0013



Internal Water Detector Fitting with Tube
04L-JAR-0035



Internal Velcon Hydrokit Fitting
04L-JAR-0018

The 4 Litre Inline Fuel Sampler can be supplied with External Water Detector or Hydrokit fitting.



General Information:

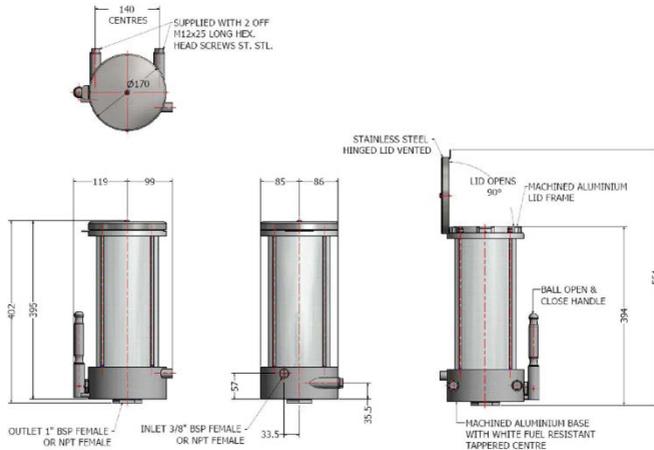
The External Water Detector fitting or Hydrokit Fitting is fitted to the inlet of the 4 Litre Sampler and is used taking a fuel Samples and allows the operator to check for water in the fuel.

Ordering Information:

Part Number	Description
SAMP-EWD-0001B0	External Water Detector Fitting BSP
SAMP-EWD-0001N0	External Water Detector Fitting NPT
SAMP-HYD-0001B0	External Hydrokit Fitting BSP
SAMP-HYD-0001N0	External Hydrokit Fitting NPT
04L-JAR-0001B0	4 Litre Sampler BSP Connections
04L-JAR-0001B1	4 Litre Sampler BSP c/w Hydrometer & Thermometer Tube
04L-JAR-0001B2	4 Litre Sampler BSP c/w Hydro, Thermo Tubes & Internal SWD Fitting
04L-JAR-0001B3	4 Litre Sampler BSP c/w Internal Hydrokit Fitting
04L-JAR-0001B4	4 Litre Sampler BSP c/w Internal SWD Fitting
04L-JAR-0001B5	4 Litre Sampler BSP c/w Hydrokit, Thermo and Hydro Fittings
04L-JAR-0001B6	4 Litre Sampler BSP c/w Offshore Paint
04L-JAR-0001N0	4 Litre Sampler NPT Connections
04L-JAR-0001N1	4 Litre Sampler NPT c/w Hydrometer & Thermometer Tube
04L-JAR-0001N2	4 Litre Sampler NPT c/w Hydro, Thermo Tubes & Internal SWD Fitting
04L-JAR-0001N3	4 Litre Sampler NPT c/w Internal Hydrokit Fitting
04L-JAR-0001N4	4 Litre Sampler NPT c/w Internal SWD Fitting
04L-JAR-0001N5	4 Litre Sampler NPT c/w Hydrokit, Thermo and Hydro Fittings
04L-JAR-0001N6	4 Litre Sampler NPT c/w Offshore Paint

Can be supplied with:

- Spring Close Handle Ball Valve on the Inlet
- Stainless Support Stand
- Fabricated Pipework and Valves to suit Customer Requirements



Product Recover Tanks

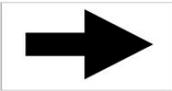
250L CAPACITY



- 250 Litre capacity (other sizes available on request)
- 2mm 316L Stainless Steel construction
- 2 fixed wheels & 2 turning wheels
- 2" manual outlet valve
- Top inspection hatch c/w strainer and removable lid
- Low point sump drain



Aviation Safety Decals

IMAGE	DESCRIPTION	PART NUMBER
	Jet A-1 Decal 115 x 40mm Jet A-1 Decal 250 x 90mm Jet A-1 Decal 600 x 200mm	JET115X40 JET250X90 JET600X200
	Jet A-1 Decal 75 x 65mm	JET75X65
	Avgas Decal 115 x 40mm Avgas Decal 250 x 90mm Avgas Decal 600 x 200mm	AV115X40 AV250X90 AV600X200
	Avgas Decal 75 x 65mm	AV75X65
JP-5, JP-8 and other fuel types are available on request		
	No Smoking Decal 100 x 60mm No Smoking Decal 200 x 120mm	SMOKE100X60 SMOKE200X120
	Flow Direction Arrow 180 x 90mm	ARROW180X90
	Flammable Liquid Decal 100 x 100mm Flammable Liquid Decal 200 x 200mm	FLAMLIQ100 FLAMLIQ200

All decals are suitable for offshore and outdoor conditions.

Earth Bonding

Manual Rewind

EPS manufactured manual rewind earth bonding reels, complete with Raco clip and cable. All reels are continuity tested.

Specs:

- Cable Details – 16x14x0.15 Single Copper Braid
3mm Diameter
- Cover – Transparent Green PVC
- Electrical Resistance – Less than 0.5ohms
(suitable for Aviation refuelling)



Reel Selection Guide

EPS

BR

XX

Length in
Meters

Spring Rewind

Coming Soon

Positive Earth Bonding

The VESM02 static grounding reel provides a suitable alternative to spiral cable for use with the Earth-Rite range of static grounding systems, especially for areas where self-retracting cable reels are a standard requirement. The reel can be used in conjunction with systems that are used to ground road tanker trucks, railcars and other items of plant requiring static grounding protection. The reel is ATEX certified for installation in Zone 1 and Zone 21 hazardous areas and connection to all certified Earth-Rite Intrinsically Safe monitoring systems. The reel is supplied with 15 metres (50 ft.) of Newson Gale's 2 conductor static dissipative cable. The main body of the reel is made of powder coated steel and the weight of the reel, including clamp and cable, is 11.5 kg (25 lbs).

Ordering Code: VESM02



- Certified for ATEX Zone 1 and 21 hazardous areas.
 - Self-retracting with up to 15 metres (50 feet) of Hytrel® protected cable.
 - Silver plated ultra low resistance slip ring contacts.
 - Includes 3 metres (10 feet) of cable for connection to all Earth-Rite static grounding systems.
 - Adjustable guide arm provides flexible installation options.
 - Includes auto locking ratchet for constant tension.
 - Adjustable ball stop and spring included.
- Optional pivot base provides increased angle of use.
 - Available with VESX90-IP stainless steel grounding clamp.

Hoses

Aviation Refuelling Hoses

Elaflex 'Yellow Band' aircraft refuelling hoses, suitable for all aviation gasolines and jet fuels (JET A-1, deicing fluids and motor oils. Temperature range - 30° up to + 70° Celsius. Electrical resistance between 10³ and 106 Ohm.

Type HD-C
EN ISO 1825 - type C



Lining: Nitrile rubber (NBR), antistatic, no fuel solubility
Reinforcement: Textile braids without metallic strands
Cover: Chloroprene (CR), conductive, ozone and flame resistant, highly abrasion resistant

Standard type 'HD-C' with two textile braids. Light weight, flexible hose for pressure service. Burst pressure > 80 bar / 1200 psi.

Application: Hydrant inlet and into-plane hose. Up to size 2½" as deck hose. The hose does not kink with a permanent pressure of least 0.5 bar.

Weight Per Meter	Hose Size			Working Pressure bar	Test Pressure bar	Max. Vacuum bar	Min. Reel Dia. mm	Max. Coil Length Meter	Part Number
	ID inch	ID mm	OD mm						
0.6	¾"	19	31	20	40	0.6	200	40	HD 19 C
0.8	1"	25	37			0.5	200	80	HD 25 C
1.0	1¼"	32	44			0.4	225	80	HD 32 C
1.2	1½"	38	51			0.3	270	80	HD 38 C
1.9	2"	50	66			0.2	400	80	HD 50 C
2.4	2½"	63	79			0.15	600	40	HD 63 C
2.8	3"	75	91			-	600	40	HD 75 C
3.7	4"	100	116			-	900	40	HD 100 C

Aviation Suction/Discharge Hoses

Elaflex Suction/discharge hard wall hose with galvanised steel helix for high suction and for gravity discharge. Burst pressure > 80 bar / 1200 psi.

Type TW-E
EN ISO 1825 - type E



Application: For tank trucks and the connection between truck and trailer as well as riser systems. Not approved for hydrant inlet and into-plane fuelling.

Weight Per Meter	Hose Size			Working Pressure bar	Test Pressure bar	Max. Vacuum bar	Min. Reel Dia. mm	Max. Coil Length Meter	Part Number
	ID inch	ID mm	OD mm						
1.4	1½"	38	51	20	40	0.8	400	40	TW 38 E
2.1	2"	50	66			0.8	500	40	TW 50 E
2.8	2½"	63	79			0.8	550	40	TW 63 E
3.3	3"	75	91			0.8	600	40	TW 75 E
4.7	4"	100	116			0.8	900	40	TW 100 E

Aviation Special PHD Type Hoses

Special type 'PHD' with non-metallic plastic helix and thick wall for enhanced lateral stability. Burst pressure > 80 bar / 1200 psi.

Type PHD-F
EN ISO 1825 - type F



Application: For alternative fuelling and defuelling operation. Up to size 2½" the diameter remains stable even with low bending radius.

Weight Per Meter	Hose Size			Working Pressure bar	Test Pressure bar	Max. Vacuum bar	Min. Reel Dia. mm	Max. Coil Length Meter	Part Number
	ID inch	ID mm	OD mm						
1.5	1½"	38	54	20	40	0.8	400	40	PHD 38 F
2.1	2"	50	67			0.8	500	40	PHD 50 F
2.9	2½"	63	81			0.7	550	40	PHD 63 F
3.6	3"	75	93			0.6	600	40	PHD 75 F

Aviation Special VHD Type Hoses

Special type 'VHD' with three textile braids and thicker wall for lower bending radii and good suction rates. Burst pressure > 100 bar / 1500 psi.

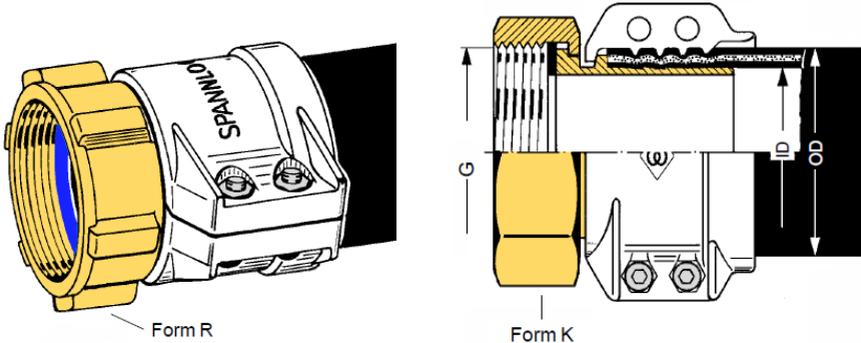


Application: Fortified hose suitable for reel-, into-plane and hydrant inlet operations, as well as riser systems. In non-pressure situations this type is more stable against kinking and flattening.

Weight Per Meter	Hose Size			Working Pressure bar	Test Pressure bar	Max. Vacuum bar	Min. Reel Dia. mm	Max. Coil Length Meter	Part Number
	ID inch	ID mm	OD mm						
1.4	1½"	38	52	20	40	0.6	400	40	VHD 38 C
2.0	2"	50	67			0.5	500	40	VHD 50 C
2.8	2½"	63	81			0.4	550	40	VHD 63 C
3.4	3"	75	93			0.2	600	40	VHD 75 C
4.4	4"	100	118			-	-	40	VHD 100 C

Hose End Fittings

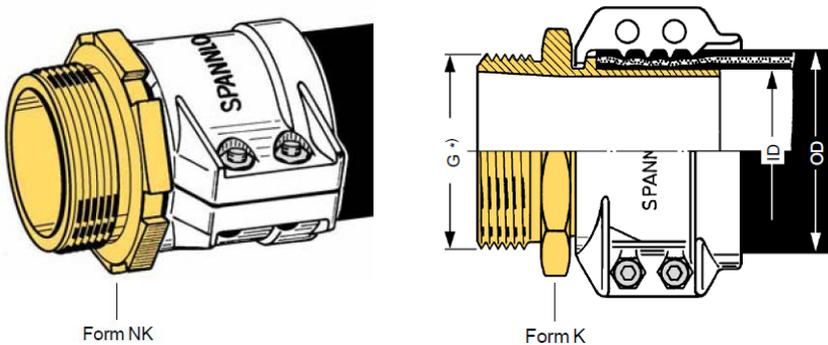
FEMALE



Female hose fittings with re-usable Spannloc bolted clamps of hot stamped aluminium. Bolts and nuts steel zinc plated and chromed. Working pressure up to 25 bar. Chemical resistance chart see page 250.

Available in Zinc Plated Brass, Aluminium or Stainless Steel

MALE



Male hose fittings with re-usable Spannloc bolted lamps of hot stamped aluminium. Bolts and nuts of steel zinc plated and chromed. Working pressure up to 25 bar. Chemical resistance chart see page 250.

Available in Zinc Plated Brass, Aluminium or Stainless Steel

Other Fittings such as ANSI150 Flanges etc are available.

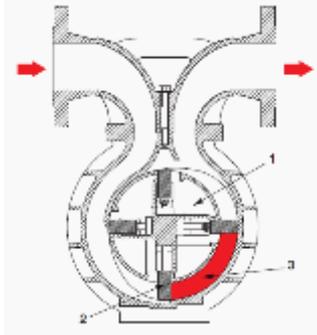
Flow Measuring

Flow Meters

POSITIVE DISPLACEMENT



The ISOIL Positive Displacement Meter (PD meter) is a system with freely-moving blades used to measure petroleum products such as fuels, bio-fuels and refined liquid hydrocarbons. Its simple design with only two pairs of blades and one moving rotor makes it exceptionally robust and allows the user to make significant savings on maintenance costs.



The product enters the measuring chamber following the direction of the arrow. The rotor and blades assembly (1-2) is set in motion by the pressure of the liquid on blades. A certain amount of liquid (3) is held between 2 blades and then directed to the discharge manifold. The volume of liquid measured at each rotation is therefore equal to 4 times the measured quantity (3). The smooth curves the meter pieces provide a steady, non-fluctuating flow resulting in low head loss.

METERS:

Meter Model	Line Size	Max. Flow Rate	Body Material	Pressure Rating
SBM 32	1.5"	350lpm	Carbon Steel	10 Bar
SBM 75	2"	500lpm	Aluminium	10 Bar
SBM 75MK2	2"	500lpm	Aluminium	10 Bar
SBM 150	3"	1,300lpm	Aluminium	10 Bar
BM 200	3"	1,300lpm	Carbon Steel	10 Bar
BM 400	4"	2,400lpm	Carbon Steel	10 Bar
BM 600	6"	3,400lpm	Carbon Steel	10 Bar
BMX 200	3"	1,300lpm	316L St/St	10 Bar
BMX 400	4"	2,400lpm	316L St/St	10 Bar
BMX 600	6"	3,400lpm	316L St/St	10 Bar
LMB 1000	8"	7,850lpm	Carbon Steel	10 Bar
LMB 3000	10"	15,700lpm	Carbon Steel	10 Bar

ACCESSORIES:

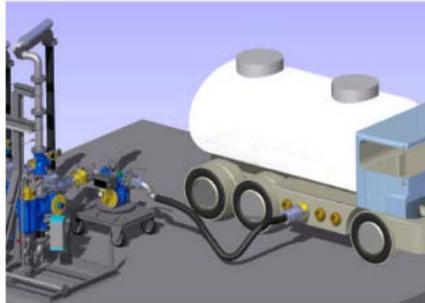
- Veeder Root Mechanical Register
- Mechanical Preset
- 360° Mechanical Counter Device
- Mechanical Ticket Printer
- Pulse Transmitter (ATEX Approved)
- Strainer Air Eliminator
- Electrical Register (Vega T)
- PT100 Pressure Sensor
- Electronic Ticket Printer
- Large Figure Display (ATEX Approved)

Other meter models & accessories are available

Master Meters

Still now a usual way of proving positive displacement meters is by means of proving tanks, specially designed and built tanks of known capacity. These methods, when carefully conducted by skilled operators, can be accurate, but they lay themselves open to many errors. They are also slow and the equipment is cumbersome.

The Master Meter system has been designed to simplify the whole procedure of checking the accuracy of a meter. In many applications this can be done with the meter under test in its normal operating position, and the equipment is easily transportable.



The Master Meter consists of a standard series P.D. Meter (mounted in a Carry Frame, mobile trolley, Road Going Trailer or Skid Base). The direction of flow through the meter is indicated by arrows on the meter manifold. It must be emphasized that the Master Meter, although robust, is a precision instrument and must be properly handled and treated to ensure that it maintains its accuracy.

TRAILER MOUNTED



Mounted to an EPS fabricated road towable trailer, designed for to be used on roads in the United Kingdom (other countries are available if specification is provided)

TROLLEY MOUNTED



Mounted to an EPS modified hand towable trolley, easy manoeuvrability with pneumatic tyres

SKID MOUNTED



Mounted to an EPS fabricated skid frame, with fork lifting tyres to manoeuvre.

Upon ordering please specify what accessories you would like to have fitted, all EPS manufactured Master Meters come with the following:

- Mechanical Register
- Mechanical Temperature Gauge (Calibrated)
- Mechanical Pressure Gauge (Calibrated)
- Pressure Relief Valve
- Vacuum Relief Valve
- Isolation Valve
- Flow Restricting Valve (and Shut Off)
- Earth Bonding

Optional Extras can include the following:

- Inlet/Outlet Fittings (Camlocks, Dry Disconnects etc)
- Hoses, Various Lengths with Various End Fittings
- 'Y' Piece Inlet/Outlets
- Strainers & Air Eliminators
- Electronic Register (24v or 220v)
- 24v Battery Box (ATEX Approved)
- Slops Tanks
- Weather Proof Covers

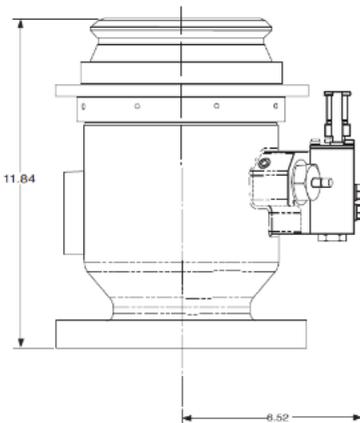
Valves and Couplings

352GF Hydrant Pit Valves

- Conforms to API Bulletin 1584 3rd Edition
- Pneumatic or manual deadman operated
- Optional manual override for the pneumatic deadman version
- Optional excess flow shut-off for both the pneumatic and manual deadman versions
- Body of ductile iron and Stainless Steel (not available in Aluminium)
- Fits within 13 inch diameter pits
- 3 year warranty



Dimensions (inches)



The Model 352GF Hydrant Pit Valve is a Deadman operated on/off valve designed for use in aircraft refuelling. It typically bolts to the terminus of an underground fuel delivery piping system and qualifies as the final shut-off device for such systems per NFPA 30.

The outlet of the Model 352GF Hydrant Pit Valve can be connected to by any 4 inch API style hydrant pit coupler, such as the Cla-Val Model 351GF-15 Hydrant Coupler and 353GF Pressure Control Coupler. It conforms to, or exceeds, the requirements of API 1584, third edition.

The Model 352GF Hydrant Pit Valve can be ordered with either a Manual Deadman Pilot or a Pneumatic Deadman Pilot. When fitted with a Pneumatic Pilot, an optional Manual Override can be added to provide a way to close the Pit Valve even with Deadman air pressure actively applied.

The upper body of the Model 352GF Hydrant Pit Valve that conforms to the API third edition profile is made of hardened Stainless Steel. The lower body is made of Ductile Iron. Aluminium is not used for these critical pressure containing components. By utilizing Stainless Steel and Ductile Iron only, the Model 352GF Hydrant Pit Valve completely conforms to the requirements of NFPA 30 for use as a pipeline terminus valve in underground pits.

The Model 352GF Hydrant Pit Valve is a piston style, pilot operated valve. It incorporates a servicing valve which allows for the removal of the pilot for service without the need to de-pressurize the delivery system. The Model 352GF Hydrant Pit Valve is small enough to fit into a 13 inch pit box with the use of an offset adapter plate.

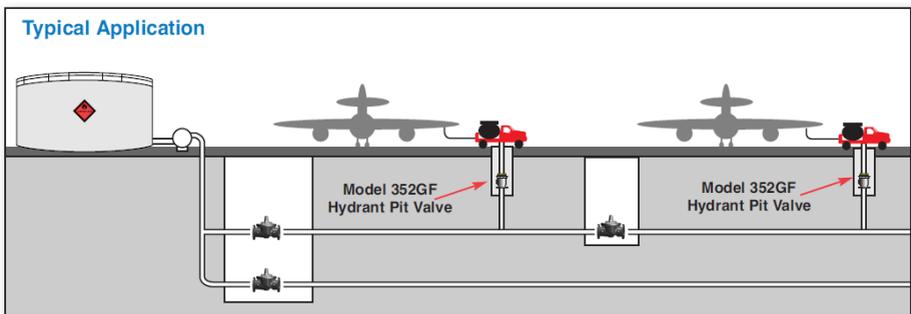
MATERIALS SPECIFICATION

- Body Material Ductile Iron ASTM A536 65-45-12
- API Adapter Stainless Steel (Grade 410 - hardened to Brinnell 345/365)
- Pilot Valve Aluminium
- Seals Nitrile and Fluorocarbon
- Internal Treatment of Body Electroless Nickel-Plated to MIL-C-26047 (4 to 6mm penetration)
- Treatment of Poppet Hard Anodized
- Treatment of Piston Hard Anodized
- Cap Polyurethane Company
- Corrosion Protection Electroless Nickel-Plated to MIL-C-26047 (4 to 6mm penetration)

ORDERING INFORMATION

Option	Description
4	Pit Valve 4" Inlet ANSI150
6	Pit Valve 6" Inlet ANSI150
A	Air Pilot
D	Air Pilot with Defuel
F	Fusible Plug Assembly
M	Manual Pilot
O	Air Release
R	Adapter Assembly 4" x 6"
S4	Stone Guard 4" with Snap Ring
S6	Stone Guard 6" with Snap Ring
I	20 mesh Strainer 4" and 6"

Example: 352GF-4AOS4
Standard Pit Valve with 4" inlet flange ANSI150 with pneumatic operated pilot valve and lanyard override s/w stone guard on inlet



353GF Pressure Control Coupler

- Conforms to API Bulletin 1584 3rd Edition
- Pneumatic or Hydraulic Deadman Options
- Accurate Nozzle Pressure Regulation
- Excellent Surge Pressure Control
- Deadman and Fuel Sense Connections Conveniently Located
- Bleed Valve(s) supplied, on the Pilot Block
- Standard Folding Operating Lever



The Model 353GF Pressure Control Coupler is a hydrant coupler used in jet aircraft refuelling operations. It connects to a hydrant pit valve or hydrant pit adapter to allow pressurized fuel to flow from an underground pipeline and into the receiving aircraft. It incorporates a Deadman operated, direct acting pressure regulator that protects the receiving aircraft from excess pressure and from damage due to pressure surges.

The Model 353GF Pressure Control Coupler has been designed and tested to conform to all requirements of API 1584 “Four Inch Hydrant System Components and Arrangements”, Third Edition. The Coupler makes a very robust connection to any 4 inch API style hydrant pit valve or hydrant adapter. This connection greatly exceeds the side-pull requirements of the API Bulletin 1584. Yet, because of the use of hardened Stainless Steel balls to make this connection, the Coupler can easily turn when connected to remove stress on the intake hose connected to the outlet of the Coupler.

The Model 353GF Pressure Control Coupler incorporates a pressure regulating valve that is deadman operated. The Coupler can be configured to accept either compressed air (Option A) or pressurized fuel (Option H) as the motive deadman fluid. Connection points for both the deadman signal and the feed-back fuel sense signal are conveniently located on the Pilot Block on the top of the Coupler. These connections are also positioned to reduce the stress on deadman and fuel sense hoses.

Additionally, Bleed Valves are provided on the side of the Pilot Block so that entrapped air in the Fuel Sense hose and Hydraulic Deadman hose (if Option H is selected) can easily be purged. These Bleed Valves feature an outlet sized for a 1/8 inch diameter hose that can be slid onto the outlet of the Bleed Valve to direct the bled fuel into a catch container, thereby eliminating fuel spillage during the purging.

When pressure is applied to the deadman port on the top of the Coupler, the pressure regulating valve opens to allow flow into the receiving aircraft. The opening time is controlled by a fixed, non-adjustable orifice, conforming to the requirements of API 1584. Failing (relieving) the Deadman pressure causes the Model 353GF Pressure Control Coupler to close. For Couplers with Option A (Air Deadman), the closing time is adjustable beyond a range of 0.5 second to 2.0 seconds. This adjustment is located on the side of the Pilot Block on the top of the Coupler. For Couplers with Option H (Hydraulic Deadman), closing time is a function of the Deadman plumbing system on the refuelling vehicle.

The Model 353GF Pressure Control Coupler is a remote sense regulator. It controls the pressure connected to the Fuel Sense port on the top of the Coupler. Ideally, the Fuel Sense source will be a Venturi that is adjusted to simulate the pressure in the refuelling Nozzle connected to the receiving aircraft. (Otherwise, the Fuel Sense source should be as close to the Nozzle on the refuelling vehicle as is practicable.) This "Nozzle pressure" is then adjustable by regulating the Deadman pressure. Raising the Deadman pressure increases the Nozzle pressure. The difference between the Deadman pressure and the resultant Nozzle pressure is about 20 psig.

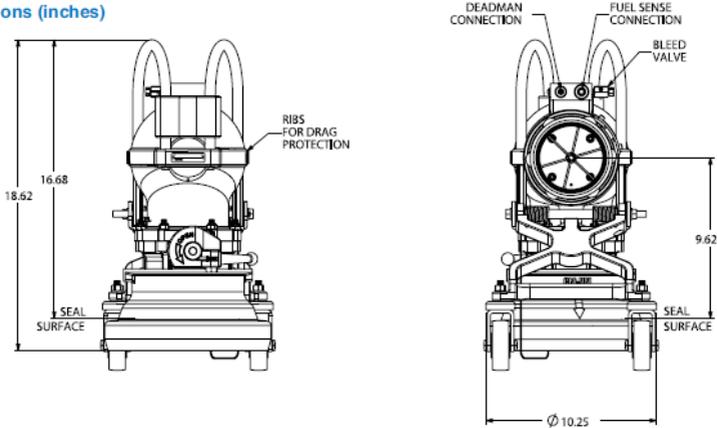
The Model 353GF Pressure Control Coupler is supplied with a Folding Operating Lever. The Lever is spring loaded so that it folds against the body of the Coupler when not in use to prevent damage during handling and transportation.

The Cla-Val Model 353GF Pressure Control Coupler is designed and constructed of high strength aluminium and stainless steel. Both the large and small pistons within the Coupler are made of stainless steel, a Cla-Val exclusive, providing for superior, long lasting sealing and a high level of durability. It also utilizes the latest in low friction seal technology to ensure accurate operation. The overall pressure drop through the fully open Model 353GF Pressure Control Coupler is the lowest available.

This allows for the fastest possible refuelling cycles.

Specific additional equipment is required for Couplers with Option H, Hydraulic Deadman. See Cla-Val document number 206396 "Installation Instructions and Required Equipment" for more information.

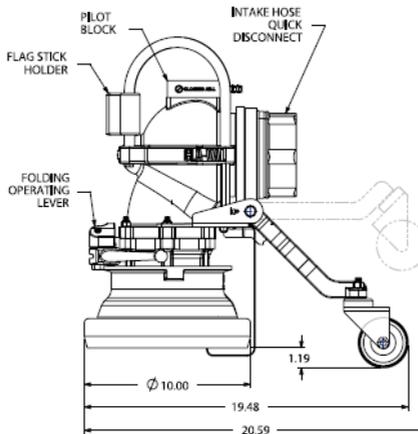
Dimensions (inches)



MODEL NUMBER SCHEME:
353GF-

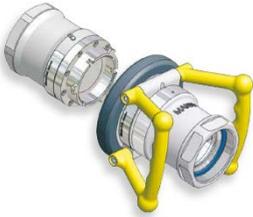
- F = FLAG STICK HOLDER
- C = CARRIAGE ASSEMBLY
- A = AIR DEADMAN OR
- H = HYDRAULIC DEADMAN

- 2B=2.5 INCH BSPP OUTLET THREAD
- 2N=2.5 INCH NPT OUTLET THREAD
- 3B=3 INCH BSPP OUTLET THREAD
- 3N=3 INCH NPT OUTLET THREAD
- 4B=4 INCH BSPP OUTLET THREAD
- 4N=4 INCH NPT OUTLET THREAD



Dry Disconnect and ISO45 (Aviation) Couplings

MANN-TEK DACOUPPLINGS (DRY AVIATION COUPLINGS)



Compatibility:

- ISO 45
- MS24484
- NATO STANAG 3105
- British Aerospace Specification 2C14

The DACouplings include a bayonet type connector and are flanged or threaded to suit installation requirements. Each Tank unit contains a “fail safe” spring loaded valve seating on a tapered seat. The valve is controlled by the action of coupling and uncoupling the Hose unit.

The Dry Aviation Couplings are designed for use in aviation and military refuelling systems with a maximum working pressure of 10 bar (150 psi). Working temperature range lies within -38oC (-36oF) to +60oC (+140oF), observe that special low temperature seals are used in cold environments. This coupling is not configured for under wing refuelling.

All units can also be used as bottom loading or primary points refuelling vehicles. All units are manufactured to accept the international standard: 2½" the point bayonet, hose end refuelling nozzles, according to: ISO 45 / MS24484 / NATO STANAG 3105 / British Aerospace Specification 2C14.

The couplings consist of high strength Aluminium Body, Coupling ring in Gunmetal and Bayonet flange and inner parts in Stainless Steel and Aluminium.
All wetted parts in Aluminium and Stainless Steel.

Reasons to use the Mann-Tek DACouplings:

- **Spill free handling of hoses and loading arms** for loading and unloading tank trucks, rail tankers and tank containers.
- **Minimization of spillage and product** loss keeps the environment free from Hazardous Vapours and Liquids.
- **“Easy to Use”** – design saves time
- **Reliability and easy servicing** saves your investment.
- **ISO 45 2½" is compatible** with existing aviation couplings according to STANAG 3105.
- **Approvals** according to the European Directives PED and ATEX and the international requirements ADR.

Available in selective units that are fitted with setting rings. These have slots cut into them to match up with the corresponding pins on the selective sleeve on the hose unit.

They can be fitted with a Filter Strainer. The Filter Strainer is designed to adapt on the DACoupling according to the ISO45 standard. The integrated view glass makes it easy to check when the filter has to be cleaned. Easy servicing is guaranteed by a new bayonet connection. The Filter Strainers are available with 2½" BSP/NPT and 3" BSP/NPT connections. Sight flow indicator with male BSP thread screws into an ISO 45 Hose Unit with female threads. There are 3 different filter types, 45 mesh, 60 mesh and 100 mesh.

Push and turn

- It's coupled

Fail Safe Design
Double locking device



Other Mann-Tek Products are available.

Other Couplings

CAMLOCK COUPLINGS

Available in a variety of sizes and materials

Part Selection:

Image	Description	Image	Description
	Part DC (Dust Cap)		Part DP (Dust Plug)
	Part A		Part B
	Part C		Part D
	Part E		Part F

Contact Details

Head Quarters

New House Farm, Maldon Road, Steeple, Essex, CM0 7RR, United Kingdom

Telephone
+44(0)1621 773292

Fax
+44(0)1621 772353

Email
sales@easternsupplies.co.uk



Order Form

Name	
Company	
Telephone	
Email	
Requirement Details	
Part Number (if Known)	
Quantity Required	
Required By	
Detailed Description of Requirements	

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