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Merek : "PECO"

General Products Catalog



Aerospace
Engineered Materials
Filtration
Fluid Connections
Hydraulics
Instrumentation



PECO Oil & Gas Filtration

General Products Catalog



ENGINEERING YOUR SUCCESS.

Parker Hannifin Corporation, global leader in motion and control technologies, delivers an unmatched breadth of engineered products and solutions. Our commitment to our customers is backed by the strength that comes from over 100 years of knowledge and experience.

About PECO

For over 80 years the PECO brand of products has led the way in oil & gas filtration solutions. Customers trust the PECO brand for quality and performance to handle complex contaminant management issues. Total cost of filtration is not just about how much a filter costs, but rather how much overall cost of maintenance it can reduce. Adding PECO filtration equipment to your process will diminish contaminant build-up in process equipment, protect critical equipment from damage, help minimize downtime, lower energy consumption, and keep products within spec.

The PECO breadth of products continues to evolve, with safety and innovation in mind, for an ever-changing industry landscape and an environmentally conscious world.



Your Contaminant Management Partner

In oil & gas applications, contaminants come in a wide variety of forms. Not only are we dealing with removal of solids, liquids and gases but also complex mixtures which create sludges, gels and foams. At Parker we believe that proper oil & gas filtration shouldn't be solved by just one type of equipment or cartridge style. That is why we have a variety of PECO filter vessels and cartridges to handle even the most difficult of contaminant removal challenges. We always believe "The Contaminant Dictates the Method" upon which filter products we select. With over eight PECO categories of filter vessels and a multitude of PECO depth or pleated cartridge options, we can ensure the right selection for our customers' application needs.

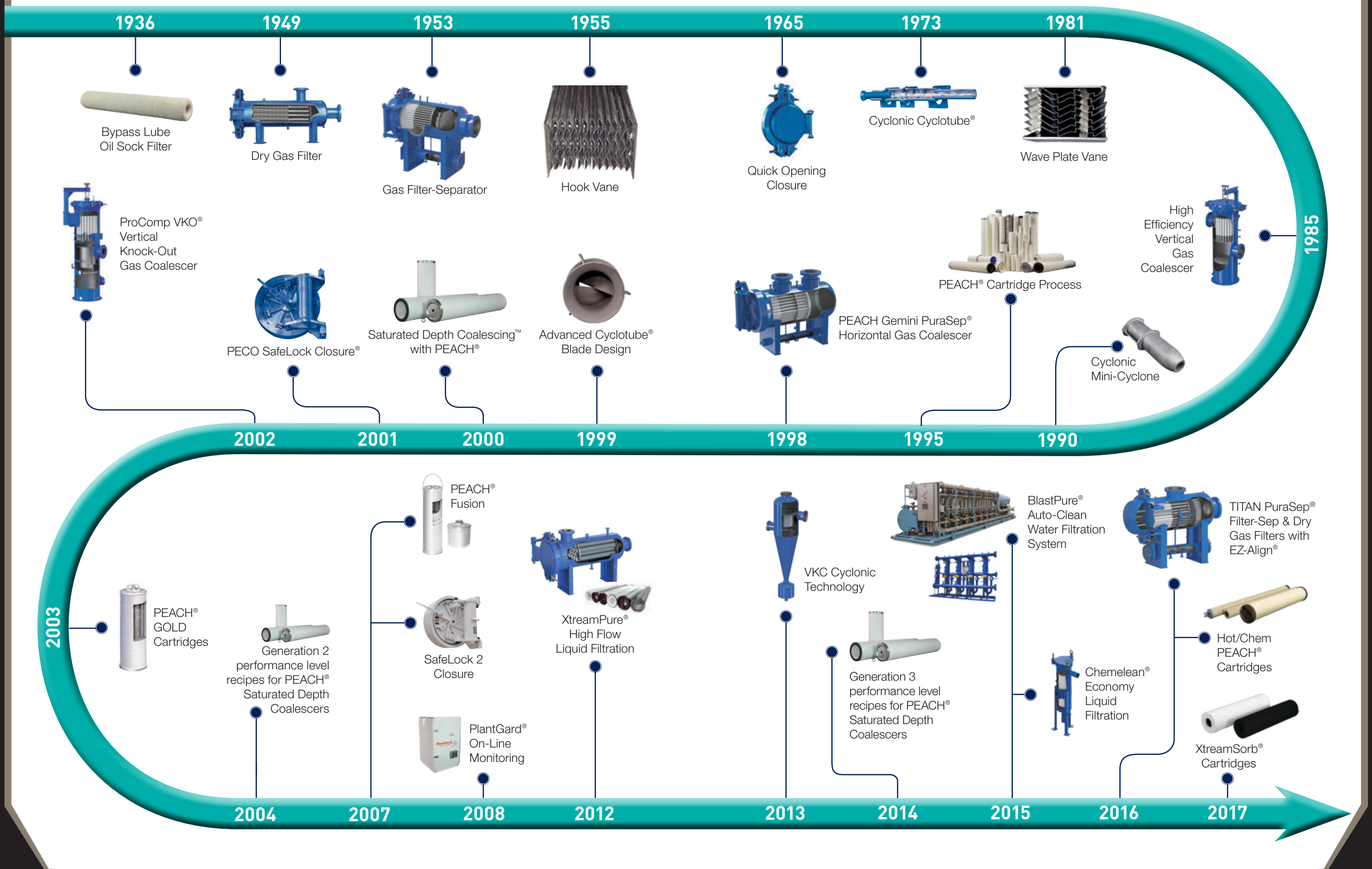
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PROVIDING FILTRATION & SEPARATION FOR THE OIL & GAS INDUSTRY

- Offshore Exploration & Production
- Power Generation
- Water Disposal
- City Gates
- Gas Gathering
- Vehicle CNG
- Gas Processing
- NGL Pipeline & Storage
- Gas Transmission
- Fractionation
- Gas Storage
- Refining
- LNG Liquefaction
- Petrochemical



ALL YOUR FILTRATION NEEDS IN ONE LOCATION

PECO - FILTRATION EQUIPMENT SELECTION GUIDE

**Wet Gas
High Capacity
Filtration &
High Efficiency
Coalescing**
0.3 µm



PEACH Gemini PuraSep®
Series PGCPH



PEACH Gemini PuraSep®
Series PGCPH-Slug

**Wet Gas Aerosol
Liquid High
Efficiency
Coalescing**
0.3 µm



Series 89



Series 77V



Series 77V-VKO

**Wet Gas
Filtration
& Separation
Filter-Sep**
1 µm



Series 85



TITAN PuraSep®
Series 75HTL



TITAN PuraSep®
Series 75VTL



Boot-Sep™
Series GPFS

**Wet Gas Bulk
Liquid
Separation**
3–10 µm



Series 95V

Series 95SV



Series 95V-CT



Series 95SV-CT



Series 95H-VBANK



Series 95H-CT



Series 95H-WP

Dry Gas Filtration
1 µm



TITAN PuraSep®
Series 70HTL



TITAN PuraSep®
Series 70VTL



Series 30



Series 30F



Series 95V-MC

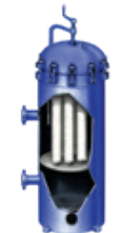
Liquid Filtration
1–100 µm



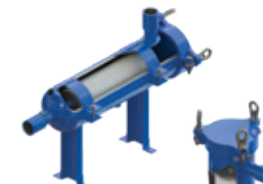
XtreamPure®
Series 55VX



XtreamPure®
Series 55HX



Series 55



Chemelean®
Series 55C



**Liquid Phase
Coalescing**



XtreamPhase®
Series 110V



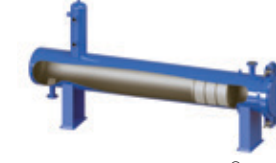
XtreamPhase®
Series 110H w/cartridges



XtreamPhase®
Series 110H w/wafer pack



XtreamPhase®
Series 110H w/cartridges



XtreamPhase®
Series 110HR w/wafer pack



XtreamPhase®
Series 110HR w/cartridges

**Liquid
Adsorption**



Series 10



Series 10FB



XtreamSorb®
Series 14

PECO - FILTRATION EQUIPMENT SELECTION GUIDE

PEACH Gemini PuraSep®

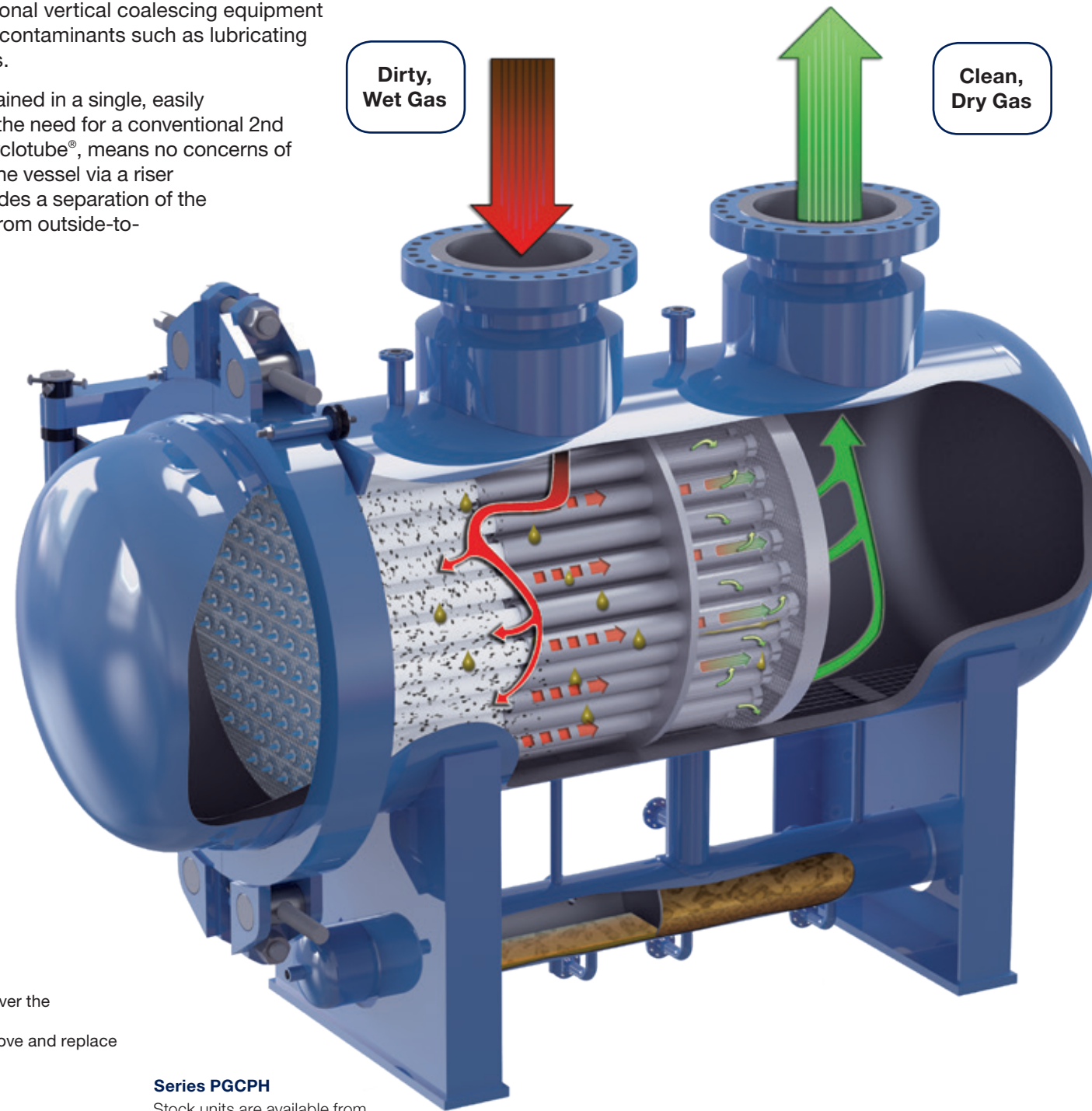
Horizontal Gas Coalescer

The **PEACH Gemini PuraSep** is an innovative product in gas coalescing technology which provides the solids loading capabilities of a filter-separator with the liquid removal efficiency of a vertical coalescer. This patented design provides ultra-clean gas with high efficiency removal of solid and liquid contaminants down to 0.3 microns. It can effectively handle higher inlet solid and liquid loads versus conventional vertical coalescing equipment and is designed to remove a wide range of liquid contaminants such as lubricating oils, low surface tension liquids and aerosol mists.

Two stages of coalescing and separation are contained in a single, easily replaceable PEACH Gemini cartridge. Eliminating the need for a conventional 2nd stage mist extraction device, such as a vane or Cyclotube®, means no concerns of plugging or corrosion. The cartridge seats inside the vessel via a riser tube with the use of a chevron seal. The seal provides a separation of the cartridge so that gas entering the vessel will flow from outside-to-inside through the front of the cartridge (1st stage) where solids are removed and coalescing is begun. Once past the chevron seal, the gas will flow inside-to-outside through the back of the cartridge (2nd stage) providing a smooth transition of coalesced liquids from the 1st stage into the 2nd stage. Keeping in mind the importance today's customer places on minimizing operation and maintenance costs, simple, quick and trouble-free operation has been incorporated into the PEACH Gemini PuraSep design.

Features & Benefits

- **Provides Ultra-Clean Gas**
 - 7 times greater solids loading capacity than a vertical coalescer
 - 28 times greater liquid handling capacity than a vertical coalescer
 - High efficiency coalescing down to 0.3 microns
- **Two Stage Design**
 - 1st stage removes bulk liquids and solids particulate
 - 2nd stage removes coalesced liquids
- **Full End Closure**
 - Minimizes confined space entry
- **Gas Entry on Pipe Risers**
 - Knocks out bulk liquids
 - Decreases turbulent gas entry
 - Protects cartridges from damage
- **User Friendly Design**
 - No tools required to change-out cartridges
 - Lightweight mounting plate with handles that easily fits over the bayonet end caps of the cartridge
 - Liquid Impingement Baffles in 2nd stage are easy to remove and replace
- **Advanced Cartridge Technology**
 - PEACH® depth, helical style design
- **Dual Downcomers to 1st Stage Sump**
 - Eliminates vapor locking during upset conditions



Series PGCPH

Stock units are available from 10" through 60" diameter at 600# ANSI rating.



Cartridge Series PGC

Available in polyester or polypropylene medias at various Performance Levels to handle many different kinds of coalescing applications.

The PEACH Gemini PuraSep utilizes **PEACH® Gemini** (Series PGC) cartridges. The cartridge is manufactured from PEACH technology which is a unique, patented process for making a synthetic gradient depth filter. PGC cartridges are rigid enough to withstand abrasion and heavy liquids, yet maintain porosity and permeability for extended contaminant removal capacity. They provide a tortuous (axial, radial and helical) flow path for the wet gas to take through the depth of the media, increasing the probability for contaminant particles to impact fibers and be captured throughout the depth of the media. They also incorporate the concept of Saturated Depth Coalescing™ to provide an open 3D depth matrix structure which allows liquids to saturate the media depth and grow to fullest potential, then drain with gravity when the droplet is ready.

28X more liquid capacity and 7X greater solids capacity than a vertical coalescer

Typical Applications:

- Compressor Suction & Discharge
- Pre/Post Contactor
- Landfill Gas
- Propane Refrigeration System
- Solid Desiccant or Molecular Sieve Beds
- Turbine Fuel Gas
- Metering Stations
- Plant Feed
- Low NOx Burner Tip Protection
- Storage Withdrawal



Vertical Gas Coalescers

The **Series 77V** gas coalescer is a highly efficient mist and aerosol remover down to the 0.3 micron level. Series 77V coalescers work best with minimal solids and low surface tension liquids such as lube oil and NGL with minimal liquid loading. Standard design includes PEACH technology Saturated Depth Coalescing cartridges, full diameter Quick Opening Closure, stilling screen and outlet baffle. Units are designed from 8" through 72" diameter and constructed in accordance with all major design codes. A Series 77V-VKO is available for higher liquid load capacity and utilizes a patented Vertical Knock-Out device.

Stock units are available in 8", 16", 26", 34" and 48" diameters at 600# ANSI rating.

Typical Applications:

- Compressor Discharge Lube Oil Recovery
- Compressor Fuel Gas
- Molecular Sieve Bed Protection
- Process Liquid Reclaiming
- Propane Refrigeration System
- Turbine Fuel Gas

Series 77V-VKO

Series 77V



Vertical coalescers utilize **PEACH® DynaCeptor™** (Series NGGC) coalescing cartridges. The cartridge is manufactured from PEACH technology utilizing the concept of Saturated Depth Coalescing™ to provide an open 3D depth matrix structure which allows liquids to saturate the media depth and grow to fullest potential, then drain with gravity when the droplet is of the appropriate weight and size. This technology is extremely different than pleated products which have to be tight to screen down to 0.3 micron and shed the coalesced liquids off quickly to prevent high differential pressure and potential cartridge rupture.

Cartridge Series NGGC

Available in polyester or polypropylene medias at various Performance Levels to handle many different kinds of coalescing applications.



Series 89

Vertical, Small Volume Gas Coalescers

The **Series 89** gas coalescer is used for smaller volume applications with a maximum liquid loading of 8 gallons per day. They hold one coalescer cartridge and are designed and code stamped in accordance with ASME Code Section VIII Div. 1.

Stock units are available from 6" through 10" diameter at 150# ANSI rating.

Typical Application: Primary Driver Fuel Gas



Series GPFS

Boot-Sep™ Gas Filter-Separators for Production & Gathering

The **Boot-Sep Series GPFS** is designed specifically for the demands of the natural gas production and gathering industry providing three types of units in stock, ready for same day shipment and competitive pricing. Boot-Sep filter-separators are easy to install and maintain and come with FibrSep GX synthetic depth cartridge technology. Whether you're building a new gathering system or trying to improve the performance of existing compressors and processing equipment, the Boot-Sep is a great investment for your filtration needs!

Stock units are designed and constructed to ASME code and available in horizontal configurations in 12", 16" and 24" diameter sizes.

Typical Application: Compressor Fuel Gas



Series 85

Vertical, Small Volume Gas Filter-Separators

The **Series 85** filter-separator is used for smaller volume applications such as fuel gas conditioning filtration for compressors and engines used throughout the industry. They are designed and code stamped in accordance with ASME Code Section VIII Div. 1.

Stock units are available from 6" through 10" diameter at 150# ANSI rating.

Typical Application: Compressor Fuel Gas

FibrSep™ GX (Series FGX) cartridges are the perfect pairing to the Boot-Sep vessel. The cartridges provide an upgrade in filtration performance from traditional fiberglass cartridges at an economical price point. FibrSep GX is a great choice for those changing cartridges on a scheduled maintenance versus maximum differential pressure.



Cartridge Series FGX
Available in polyester media at 1 micron filtration.

PEACH® DynaSep™ (Series PCHG) cartridges are used in the Series 85 filter-separator. This PEACH technology cartridge is a great choice for removing deformable and shear-sensitive contaminants found in natural gas applications. The rigid structure maintains an open porosity and permeability, while the tortuous flow path increases the probability for contaminants to impact filter fibers.

Cartridge Series PCHG

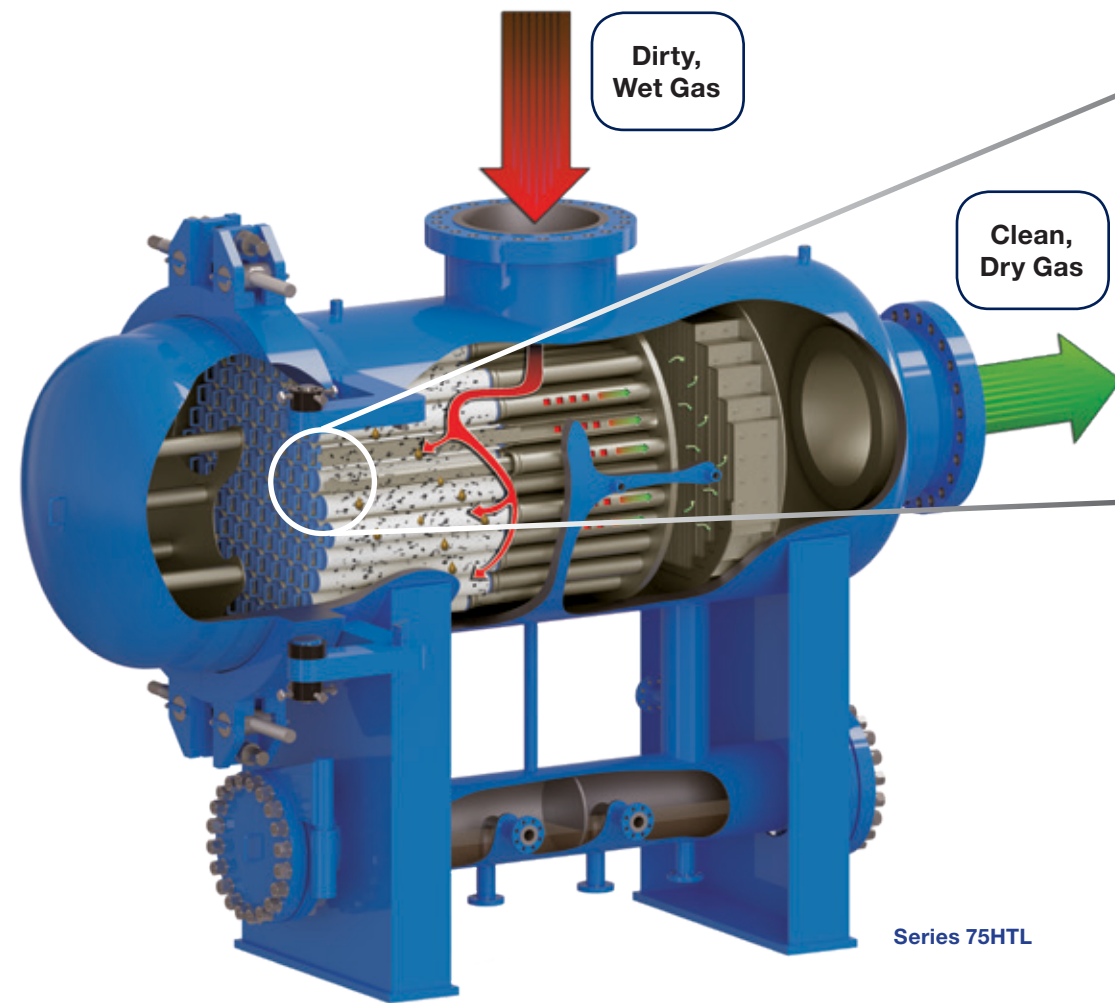
Available in polyester and polypropylene medias at 0.1, 0.3, 0.5, 1, 5 and 10 micron filtration.



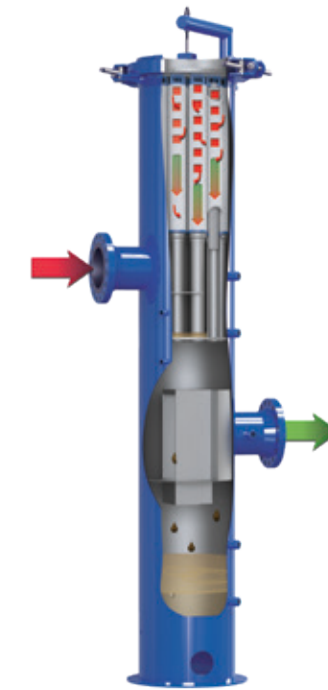
WARNING: This product can expose you to chemicals including 1,3-Butadiene, Carbon Black or Nickel (Metallic) which are known to the State of California to cause cancer; or Bisphenol A (BPA) which is known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

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Titan PuraSep®



Series 75HTL



Series 75VTL

Reduce cartridge change-out time by 85% or more*

Features & Benefits

- **Two Stage Design**
 - 1st stage removes bulk liquids and particulate
 - 2nd stage removes coalesced liquids
- **Full End Closure**
 - Minimizes confined space entry
- **Backflow Plate**
 - No tools required to remove
 - Permanently fixed in closure
 - Ensures cartridge installed correctly
 - Prevents cartridge from unseating
- **EZ-Align®**
 - Holds cartridge concentric to riser
 - Prevents cartridge sagging
 - Allows for quick change-out of cartridges
 - Ensures cartridge sealing
- **Gas Entry on Pipe Risers**
 - Knocks out bulk liquids
 - Decreases turbulent gas entry
 - Protects cartridges from damage
- **Redesigned Cartridge End Caps**
 - No tools required to install or remove cartridges
- **Advanced Cartridge Technology**
 - PEACH depth, helical style design
 - Pleated, large surface area style design
- **High Performance Mist Extraction Device**
 - Unique "wave" vane profile
 - Resists plugging by semi-solid contaminants
- **Dual Downcomers to 1st Stage Sump**
 - Eliminates vapor locking during upset conditions



Cartridge Series EZ-PCHG

Available in polyester and polypropylene medias at 0.1, 0.3, 0.5, 1, 5 and 10 micron filtration.

PEACH® DynaSep™ (Series EZ-PCHG) cartridges are used in the TITAN PuraSep filter-separator. This PEACH technology cartridge is a great choice for removing deformable and shear-sensitive contaminants typically found in natural gas applications. The rigid structure maintains an open porosity and permeability, while the tortuous flow path increases the probability for contaminants to impact filter fibers.

Gas Filter-Separators

Filter-Separator technology was introduced by PECO in 1953 and has been an integral part of the industry ever since.

Parker now takes the PECO design to a whole new level, once again demonstrating our commitment to provide the best possible technology to our customers.

The **TITAN PuraSep** is the first of its kind quick change filter-separator **Series 75** or dry gas filter Series 70. This new design truly revolutionizes the product and promotes Parker's direction of launching products that are safer, faster and easier to operate as well as provide value in reducing overall operational/maintenance costs for our customers. The design incorporates **EZ-Align®** to greatly reduce cartridge change-out time by 85% or more compared to the traditional design.

Sizes range from 10" through 84" diameter at 600# ANSI rating in horizontal and vertical configurations.

Typical Applications:

- Compressor Suction
- Landfill Gas
- Gas Storage
- Pre/Post Contactor
- Plant Feed
- Withdrawal

Patent Pending

* Change-out time reduction based on a comparison of a 48" TITAN PuraSep design and a 48" traditional filter-sep design (using double open end cartridges with washer/nut/thread assemblies). Does not include closure opening or closing time.

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Series 70VTL

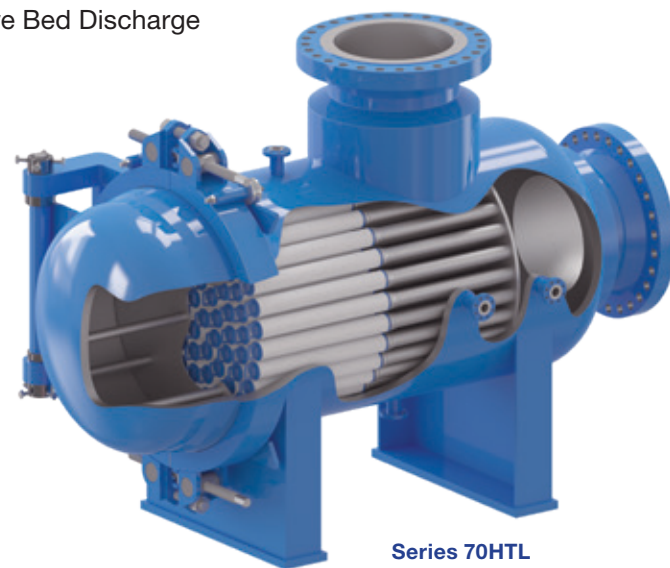
Dry Gas Filters

The **Series 70** dry gas filters are now part of the **TITAN PuraSep®** line which provides a quick change-out of cartridges through the incorporation of **EZ-Align®**. The filter is designed to handle a variety of applications to remove dry, solid contaminants.

Sizes range from 6” through 84” diameter at 600# ANSI rating in horizontal and vertical configurations.

Typical Applications:

- Dry gas pipelines
- Molecular Sieve Bed Discharge



Series 70HTL

TruGard™ (Series EZ-PSFG) cartridges are recommended for use in the TITAN PuraSep dry gas filter if dry, solid particulates, that are not shear-sensitive, are present. TruGard has an optimized pleat design which provides a high surface area for contaminant removal. Rigid, solid particles form a cake on the upstream side of the pleats.



Cartridge Series EZ-PSFG
Available in polyester and polypropylene medias at 0.5, 1, 5, 10, 20 and 50 micron filtration.

PEACH® DynaSep™ (Series EZ-PCHG) cartridges are recommended for use in the TITAN PuraSep dry gas filter if iron sulfide/black powder particulate is present. These types of contaminants are extremely shear-sensitive and are better removed through the use of PEACH technology depth filtration.



Cartridge Series EZ-PCHG
Available in polyester and polypropylene medias at 0.1, 0.3, 0.5, 1, 5 and 10 micron filtration.



In-Line Dry Gas Filters

Typical Applications:

- Clean, Dry Fuel Gas
- City Gates
- Instrument Air
- Regulator Stations
- Turbine Meters



Series 30

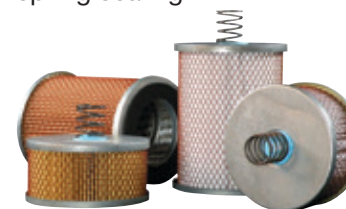
Series 30 is a cast steel design available in 2”, 3” and 4” flange connections at 150#, 300# and 600# ANSI ratings.



Series 30F

Series 30F is a fabricated steel design available in 2” through 12” flange connections at 150#, 300# and 600# ANSI ratings and is designed in accordance with ASME Code Section VIII Div. 1.

GritGard™ cartridges are constructed of pleated media to trap rigid, solid particles and aid in building a “filter cake”. Flow is outside-to-inside and with compression spring sealing.



Cartridge Series PEPP & PEPS
Available in polyester or cellulose medias from 2 micron to 20 micron.

A unique PEACH version of this cartridge is available in our **DynaGard™** Series for handling shear-sensitive contaminants or for providing greater durability versus pleats.



Cartridge Series PCHG-6-3.12 & PCHG-6-7.18

PleatGard™ cartridges are constructed of pleated media to trap rigid, solid particles and aid in building a “filter cake”. Cartridges are similar to a bag design flowing inside-to-outside and trapping contaminants on the inside. This leaves the vessel clean once the cartridge is removed.



Cartridge Series PS-559, PS-5519, PS-819
Available in polyester media from 2 micron to 20 micron.



Cartridge Series PCHG-30F

A unique PEACH version of this cartridge is available in our **DynaGard™** Series for handling shear-sensitive contaminants or for providing greater durability versus pleats.

WARNING: This product can expose you to chemicals including 1,3-Butadiene, Carbon Black, Formaldehyde, Nickel (Metallic), which are known to the State of California to cause cancer, or Bisphenol A (BPA) which is known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

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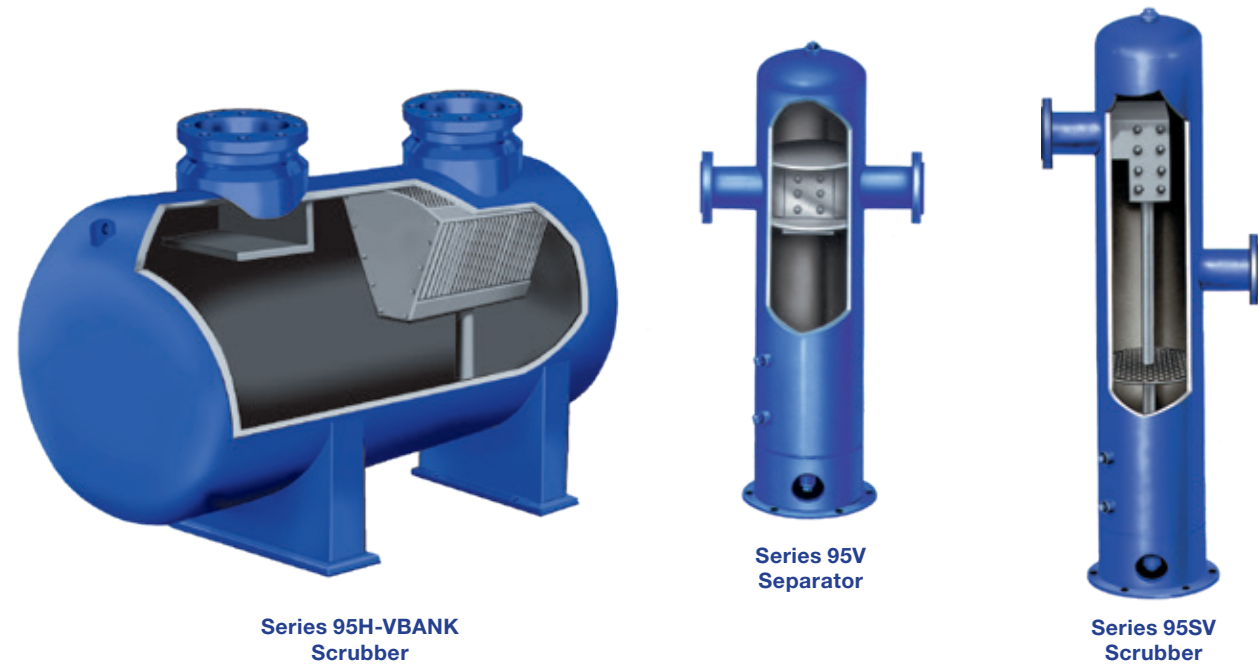
Vane Style - Gas Separators & Scrubbers

The **Series 95** vane mist extractor can be found throughout the industry as production separators, three phase separators, knock-out drums and in a variety of other applications where liquid removal is required. The Series 95 uses the proprietary Wave Plate Vane mist extractors for high efficiency, reliable, free liquid and aerosol mist removal. Units are available in a Separator design where inlet and outlet connections are in-line or in a Scrubber design where inlet and outlet connections are alt-line which allows for the handling of slugs of liquid.

Sizes range from 12" through 120" diameter up to 600# ANSI rating in vertical and horizontal configurations.

Typical Applications:

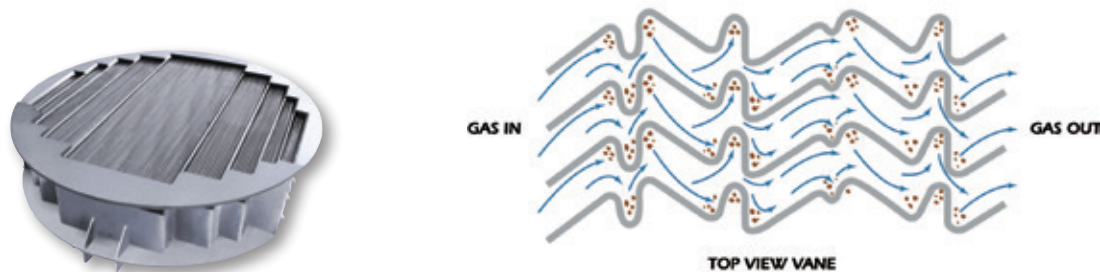
- Processing Plant Feed
- Metering Stations
- Gas Storage
- Compressor Stations
- Regulator Stations
- Natural Gas Power Plants



WAVE PLATE VANES

The Wave Plate Vane provides a controlled change of direction for the gas stream. Liquid droplets impinge upon the vane plates and become trapped in individual drain passages where they collect and coalesce until heavy enough to drain out by gravity.

- 98% efficiency of liquid droplets 8-10 microns and larger
- High liquid loading capability
- Best for removing hydrocarbon liquids and water
- 4 to 1 turndown ratio



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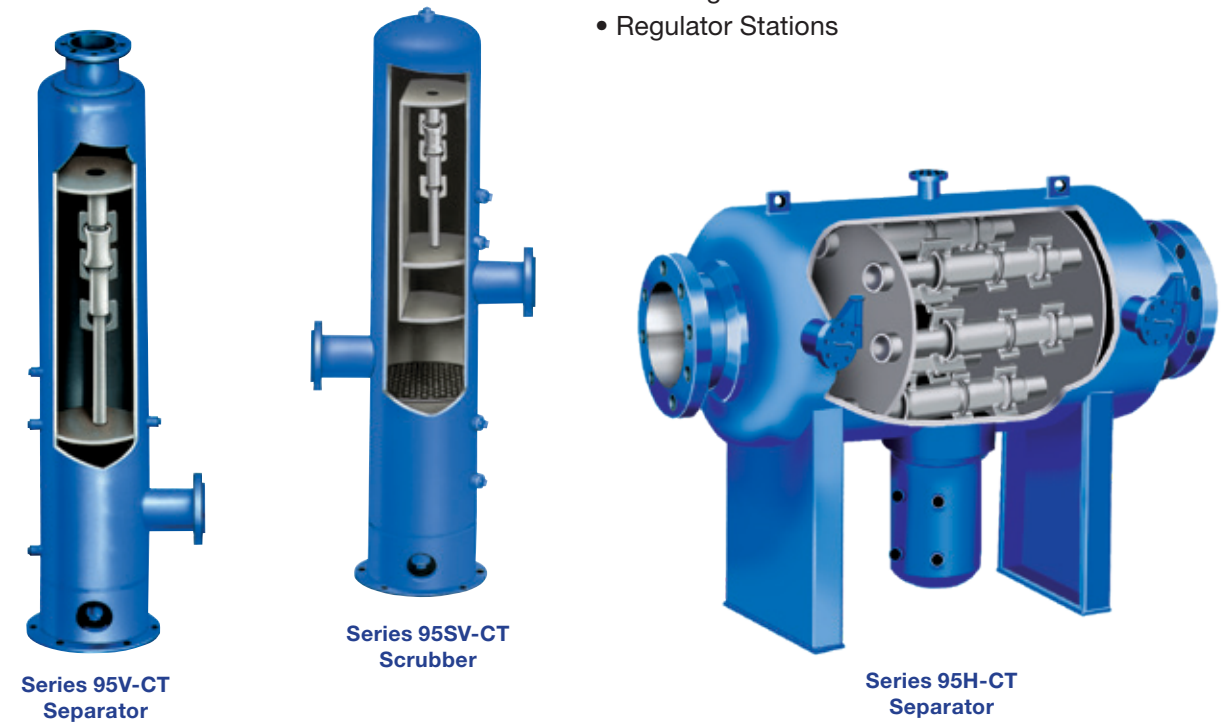
Cyclotube® Style - Gas Separators & Scrubbers

The **Series 95-CT** proprietary two stage vertical tube separation system has proven to yield high efficiencies for mechanical or non-disposable separation devices. The **Cyclotube** is used in numerous gas streams for bulk liquid separation and offers a higher efficiency option to vanes. They have a lower susceptibility to plugging and work well with low surface tension "crawling" type liquids. Units are available in a Separator design where inlet and outlet connections are in-line or in a Scrubber design where inlet and outlet connections are alt-line which allows for the handling of slugs of liquid.

Sizes range from 12" through 120" diameter up to 600# ANSI rating in vertical and horizontal configurations.

Typical Applications:

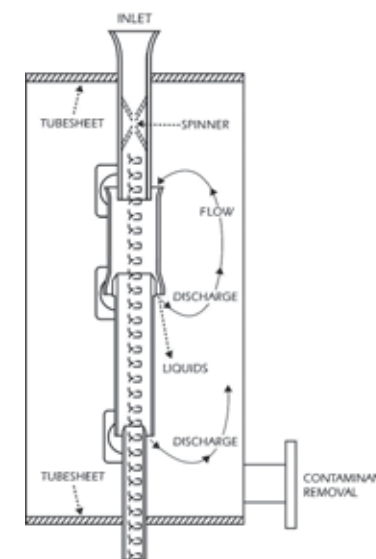
- Compressor Interstage
- Metering Stations
- Regulator Stations



CYCLOTUBE®

The Cyclotube takes the incoming gas stream and applies a centrifugal motion to it which separates particles from the gas. The inertia imparted upon the liquid particles by the swirling motion forces them to the outer wall, where they are ejected into a quiescent zone for removal.

- 98% liquid droplets 3-5 microns and larger
- Best for removing lube oil, glycol, paraffin, brine, asphaltenes
- Low susceptibility to plugging
- Highest efficiency on "crawling" liquids and low surface tension liquids
- 4 to 1 turndown ratio



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Vertical Knock-Out Gas Cyclone Separators

The **Series 95VKC** (Vertical Knockout Cyclone) is a rugged, bulk solids removal, gas separator. The Series 95VKC is designed to handle high flow rates and a larger volume of solids than a typical cyclone separator. The vertical knockout cyclone resists plugging in the presence of wet solids and operates at a lower pressure drop than other cyclone separators. The unit is designed to remove greater than 85% of 10 micron and larger contaminant, up to 40,000 ppm in the influent. Removing solids from the sump is easy with clean-out valves or a manway to facilitate the removal.

The Series 95VKC can be used upstream of dry gas filters to reduce the cartridge change-out frequency for black powder or other high solids loading applications. The Series 95VKC has a turndown ratio of 4 to 1.

Typical Applications:

- Large diameter pipeline compressor inlet
- Protection against pigging operation



Series 95VKC

Auto-Cleaning Metallic Filters

For Gas & Liquid Applications

For high temperature applications or harsh chemical environments, Parker provides full metallic solutions for gas/solid and liquid/solid separation based on sintered media technologies. The sintered metal cartridges can withstand temperatures up to 1450°F and filters contaminants on its media surface which then builds a “cake” to achieve efficiencies up to 99.9% at 1 micron.

The vertical, skid mounted units offer continuous, maintenance free operation through a backflushing or backpulsing sequence to remove the contaminant (“cake”) from the sintered metal cartridges.

Metallic systems can be used in the following applications where catalyst recovery, product recovery, particulate matter emissions monitoring and environmental regulations are required.

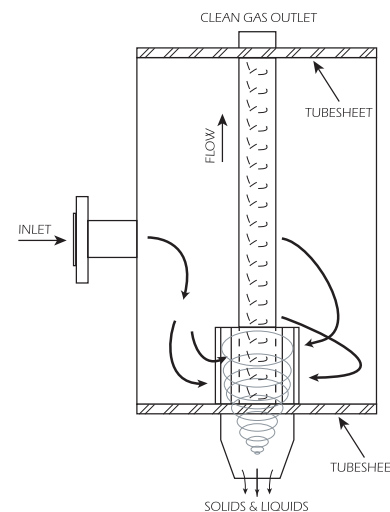
- Oil Refining – FCC or CCR hoppers, FCC regenerator flue gas, FCC slurry oil
- Petrochemicals – PP, PE, EDC, PTA/CTA
- Ore Smelting – Cu, Al, Pt, Ni
- Gasification – coal, biomass
- Nuclear
- Fine Chemicals



Series 95V-MC

Mini-Cyclone Gas Separators

The **Series 95V-MC** (Mini-Cyclone) is a liquid or solids cyclonic gas separator. The Series 95V-MC offers a high efficiency, contaminant removal system that will remove dry solids in the gas stream up to 600 ppm(w) and free liquids to 20,000 ppm. The Series 95V-MC provides a rated efficiency for 100% removal of dry solid particles 8 micron and larger. For a liquid mist the Series 95-MC will remove 100% of the liquid particles 5 micron and larger including low surface tension liquid contaminants. The Series 95V-MC has a turndown ratio of 4 to 1.



Typical Applications:

- Upstream of fuel gas coalescer
- Upstream of storage gas withdrawal locations
- Upstream and downstream of amine and glycol contact towers

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Engineered Filtration & Separation Skid Packages

Parker offers custom, complete packaged skid units which can be equipped to include a variety of PECO filtration equipment coupled with instrumentation, valves, piping, electrical, insulation, etc., to be ready for “Plug and Play” installation at the job-site.

The skid packages can be arranged in a variety of configurations in order to satisfy our customer’s needs. Please consult the factory for more information regarding skid packages.



- Fuel Gas Filtration Skids
- Duplex Filtration Skids
- Portable
- Efficient
- Cost Effective
- Turn Key
- Custom Design

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BlastPure®

Auto-Clean Water Filtration System

For High Contaminant Loads >1000 ppm

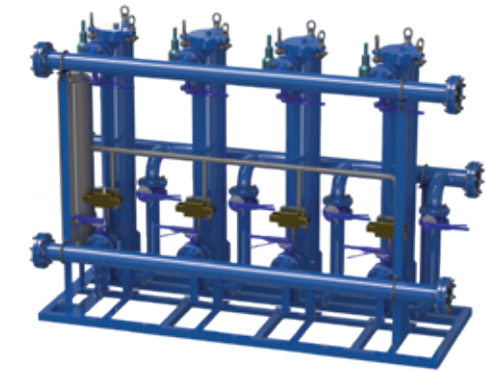
BlastPure Series BPS water filtration systems are self-contained and field proven to remove heavy concentrations of bulk solids and semi-solids from a water stream without the use of consumable bags or cartridges. Automatic continuous operation and media cleaning are driven by an industrial rated micro-controller. Operation can be easily adjusted through a locally mounted HMI screen.

BlastPure utilizes a cyclonically aided filtration system designed to minimize backflushing cycles and waste generation. The filtration system employs a unique backflush that literally “blasts” the system’s stainless steel filter media clean of the most troublesome fouling type contaminants during the cleaning cycle.

BlastPure can be sized for any water filtration application and can be employed as permanent facility units or as mobile units for flow back sites or other field operation services. The systems can handle a contaminant concentration up to 20% with removal levels from 100 to 500 microns available.

Typical Applications:

- Pre-frac water filtration
- Final stage water polishing filtration
- Injection pump and reservoir protection
- Truck off-load service
(handling heavily fouled water loaded with gel, oil, and drilling mud)



Series BPS 14
14 Barrels/Minute
Manual System



Series BPS 30
30 Barrels/Minute
Automatic System, Hands-Free
Operation, Computer Control



Dirty Influent



Clean Effluent



The pictures above show the backflush cleaning process of the BlastPure system. The dirty, contaminated water is literally blasted off the metallic filter cartridges during the cleaning cycle. The water color coming out from the blast goes from dark to clear as the filter cartridges are cleaned and prepared to be put back online.

XtreamPure®

High Flow Capacity & High Contaminant Loading Liquid Filters

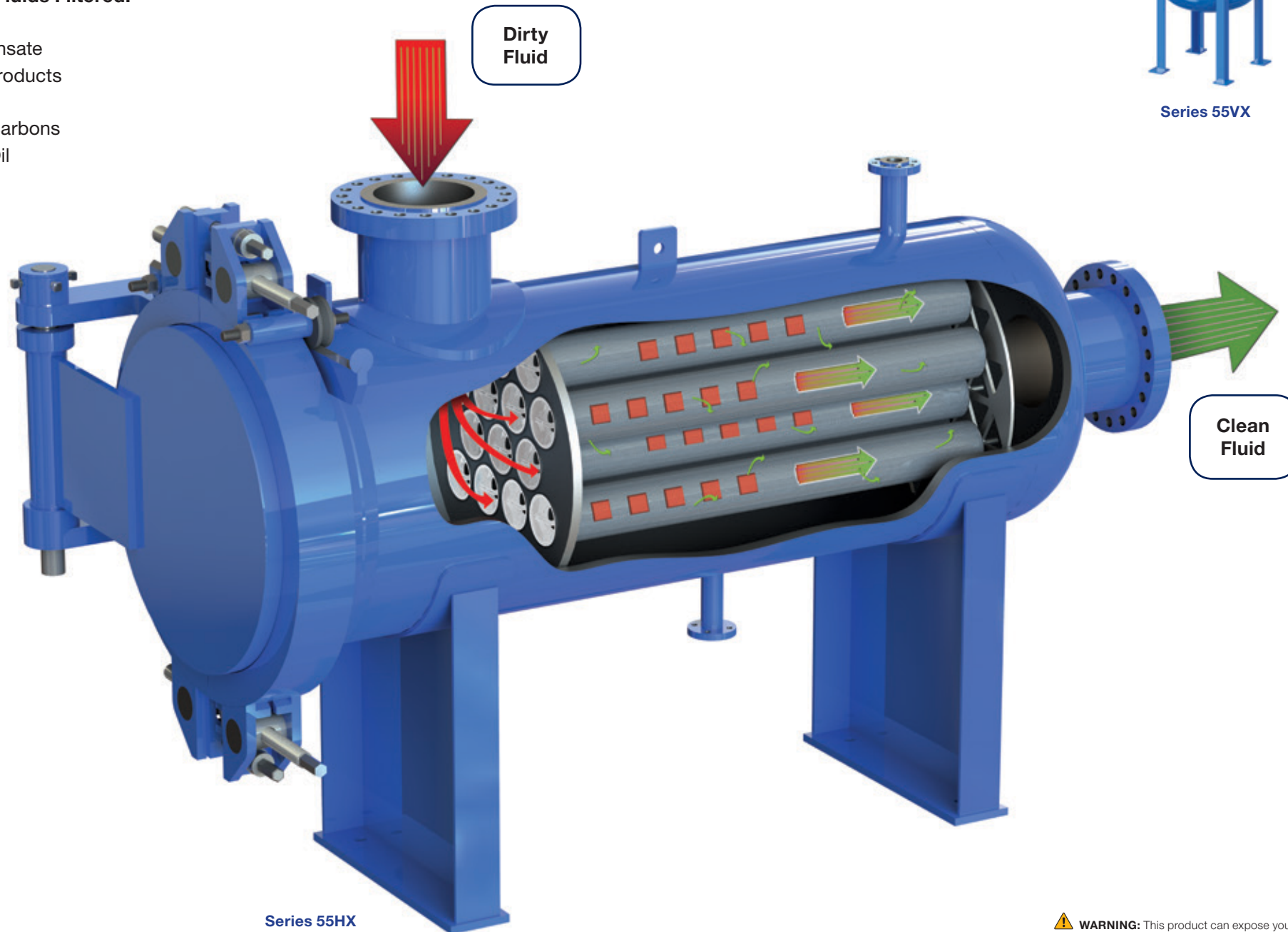
The **XtreamPure** vessel and cartridge line removes particulate in liquid applications with flow rates over 200 gpm. It provides high capacity filtration for virtually any liquid application by utilizing large 6" diameter cartridges in 40", 60" and 80" lengths with a variety of material choices for compatibility and performance needs. The inside-to-outside flow through the cartridge ensures contaminant is captured within the cartridge allowing a cleaner cartridge extraction during change-outs.

Sizes range from 10" through 84" diameter up to 600# ANSI rating in horizontal and vertical configurations.

Stock units are available in 10" and 18" diameter at 150# and 600# ANSI ratings.

Typical Fluids Filtered:

- Amine
- Condensate
- Final Products
- Glycol
- Hydrocarbons
- Lube Oil
- Water



Series 55HX



Series 55VX

Features & Benefits

- **User Friendly Design**
 - No tools required to change out cartridges
- **Full End Closure**
 - Minimizes confined space entry
- **Large Diameter Cartridges**
 - Allows for high flow rates so less cartridges needed in vessel versus conventional 2.5"OD style and reduced vessel diameter
 - High contaminant loading capacity
- **Flow Direction**
 - Inside-to-outside flow direction through cartridge keeps contaminants within the cartridge providing a cleaner vessel during cartridge removal
- **Cartridge Basket Supports**
 - Protect and support cartridges
 - Can be replaced in the event necessary
- **Wide Range of Cartridge Styles**
 - Pleated, PEACH® Depth, Bags, Strainers



Cartridge Series XP
Available in different styles with various media choices for best contaminant removal selection.

XtreamPure (Series XP) cartridges offer a complete line of different styles to choose from depending on your fluid streams temperature, compatibility and cleanliness needs. The offering includes:

- Pleated Style in glass, polyester, polypropylene and cellulose medias
- PEACH Depth Style in polyester or polypropylene medias
- Bag Style in polyester or polypropylene medias
- Strainer Style in stainless steel material

WARNING: This product can expose you to chemicals including 1,3-Butadiene, Carbon Black, Formaldehyde, Nickel (Metallic), or Glass Wool which are known to the State of California to cause cancer, or Bisphenol A (BPA) which is known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

Chemelean®

Economy Liquid Filters for Flow Rates up to 200 gpm

The **Chemelean** vessel and cartridge line offers versatility to adapt to a wide variety of process liquid applications up to 200 gpm. The vessel comes in two sizes to hold either a 20" length cartridge or 40" length cartridge. Chemelean cartridges come in a wide range of media choices for suitable fluid compatibility.



Series 55C
with Legs

Stock units are available in 8" diameter at 150# ANSI rating.

2" NPT standard connections with option for changing to 2" flange connections.

Dual rated: 275 psig at 250°F without corrosion allowance and 150 psig at 250°F with 1/8" corrosion allowance.

Typical Fluids Filtered:

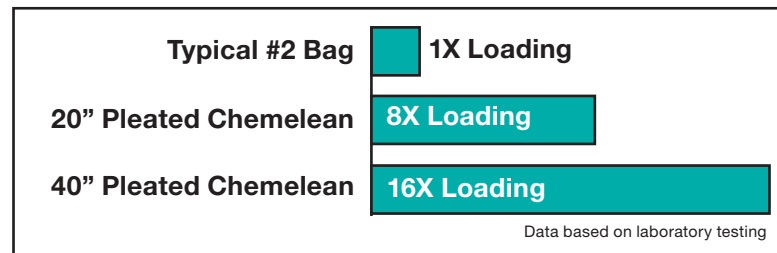
- Amine
- Condensate
- Final Products
- Glycol
- Hydrocarbons
- Lube Oil
- Water



Series 55C
with Saddles

LONG LIFE ALTERNATIVE TO BAG VESSELS!

Contaminant Loading Comparison



Tired of changing out bag filters so often? Before you buy your next bag filter vessel, consider purchasing a Chemelean filter vessel instead!

Chemelean filters provide excellent contaminant loading so cartridge change-out typically becomes less frequent than a bag...and that keeps your process up and running!

Cartridge Series CM

Available in pleated polypropylene, polyester, glass or cellulose and PEACH® polyester or polypropylene.



WARNING: This product can expose you to chemicals including 1,3-Butadiene, Carbon Black, Formaldehyde, Nickel (Metallic), or Glass Wool which are known to the State of California to cause cancer, or Bisphenol A (BPA) which is known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

XtreamSorb®

PECO carbon vessels utilize high quality activated carbon to adsorb dissolved liquid impurities from process streams such as air, gas, water, amine and glycol. Removal of these impurities is critical to prevent problems such as foaming, odor and contaminant build up.



Series 14



Series XS Cartridge

Liquid Adsorber using Carbon Block & PEACH®

The **Series 14** uses a cartridge combination of porous, extruded carbon block and outer PEACH filter sleeve. This form of activated carbon maximizes hydrocarbon removal efficiency and limits carbon fines into the fluid stream. The PEACH sleeve filters particulate and absorbs hydrocarbons, extending the on-stream life of the carbon block it encases. The cartridge design provides an additional benefit in that it is lighter weight than a traditional carbon canister. Diameters from 14" through 66" are available to all major codes with 1/8" corrosion allowance. The Series 14 typically offers a smaller footprint compared to a Series 10 under the same design conditions.

Liquid Adsorbers using Granular Activated Carbon



Series 10
with Canisters

The **Series 10** uses activated carbon canisters to allow fast, easy change-outs through a full diameter Quick Opening Swing-Bolt Closure. Diameters from 14" through 66" are available to all major codes with 1/8" corrosion allowance. Stock Units are available in 14", 24" and 36" diameter at 150# ANSI rating.

The **Series 10FB** uses a fixed bed of activated carbon beneficial for large liquid and gas purification services. The 10FB utilizes an outlet header lateral system to eliminate bed channeling and carbon fine discharge. Diameters from 24" through 140" are available to all major codes with 1/8" corrosion allowance.



Series 10FB
Fixed Bed



CarboMax™ Canisters

Activated carbon bound in a canister form is a safe, easy to manage, and economical way to effectively remove dissolved impurities from process streams such as amine and glycol systems. Parker uses the highest quality activated carbon making sure that high efficiency adsorption is achieved.

CarboMax™ Bulk

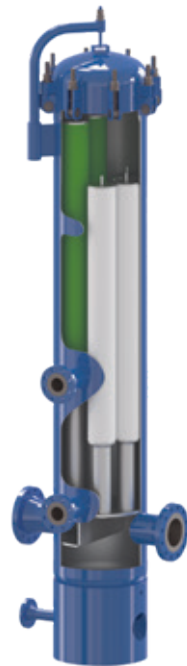
Loose activated carbon and non-activated support carbon for fixed bed style vessels. Available in 4x12 and 8x30 mesh sizes.

WARNING: This product can expose you to chemicals including 1,3-Butadiene, Carbon Black or Nickel (Metallic) which are known to the State of California to cause cancer, or Bisphenol A (BPA) which is known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

XtreamPhase®

Two-Stage Liquid/Liquid Phase Coalescers

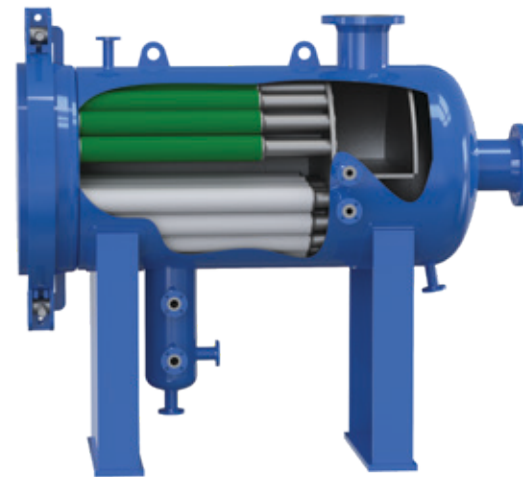
The **Series 110V** vertical coalescer and **Series 110H** horizontal coalescer utilize first stage hydrophillic coalescer cartridges and second stage hydrophobic separator cartridges to perform liquid/liquid separation. The two-stage design handles immiscible liquids with an inlet concentration up to 5% by volume (50,000 PPMV) and removes free and entrained water down to 10 PPMV or less. Designs are available from 14" through 60" diameter.



Series 110V

Separation of free and entrained water from:

- Aromatics
- Condensate
- Diesel
- Gasoline
- Kerosene
- LPG
- Lube Oil



Series 110H



XtreamPhase®

DOE Style, Coalescer Cartridge Options

- Series C depth glass coalescer
- Series IPC depth glass coalescer w/ internal pleat pack
- Series PLPC depth PEACH coalescer
- Series TLPC pleated Timlar™ fluoropolymer coalescer

XtreamPhase®

DOE Style, Separator Cartridge Options

- Series S resin impregnated pleated cellulose separator
- Series S-SH synthetic hydrophobe screen separator
- Series S-TF teflon coated screen separator



XtreamPhase®

Single-Stage Liquid/Liquid Phase Coalescers

The single-stage **Series 110HXP** and **110HRXP** utilize hydrophillic coalescer high flow style cartridges to coalesce a discontinuous phase fluid from a continuous phase fluid. The single-stage **Series 110H** and **110HR** do the same thing except utilize a wafer pack instead of cartridges. The vessel length is designed to provide enough settling distance after the coalescer cartridge or wafer pack to allow for coalesced droplets to separate from the continuous phase fluid. In this design the difference in density between the two fluids needs to be at least 20%. The single-stage design handles immiscible liquids with an inlet concentration up to 10% by volume (100,000 PPMV). Removal of the discontinuous phase fluid down to 15-20 PPMV is achieved using the coalescer cartridge style. When using wafer packs, the removal level will vary from 15 to 75 PPMV depending upon the wafer pack material chosen. Designs are available from 8" through 84" diameter. Three Phase Separator designs are also available.

Separation of:

- Amine from Hydrocarbons
- Caustic from Fuels
- Free Water from Hydrogen Peroxide

- Hydrocarbon from Quench Water
- Oil from Ammonia
- Oil from Water



Series 110HXP



Series 110H



Series 110HRXP



Series 110HR



XtreamPhase®

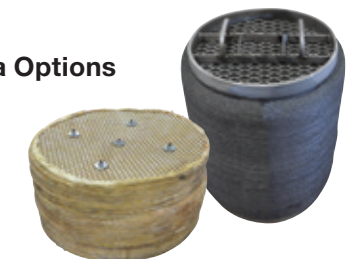
High Flow Style, Coalescer Cartridge Options

- Series XPLC-C depth glass coalescer
- Series XPLC-IPC depth glass coalescer w/ internal pleat pack
- Series XPLC-HCP depth Hot/Chem PEACH coalescer
- Series XPLC-PLPC depth PEACH coalescer
- Series XPLC-TLPC pleated Timlar™ fluoropolymer coalescer

XtreamPhase® Packs

Wafer Shaped Mass Packed Coalescing Media Options

- Excelsior (wood)
- Fiberglass
- Stainless Steel Wool



WARNING: This product can expose you to chemicals including 1,3-Butadiene, Carbon Black, Formaldehyde, Nickel (Metallic), or Glass Wool which are known to the State of California to cause cancer, or Bisphenol A (BPA) which is known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

GLOBAL OIL & GAS FILTRATION OFFICES

North America

USA Oil & Gas Filtration

Mineral Wells, TX
940-325-2575
industrialprocess.na@parker.com

Canada Oil & Gas Filtration

Calgary, Canada
403-717-2891
industrialprocess.na@parker.com

Asia Pacific

Malaysia Oil & Gas Filtration

Kuala Lumpur, Malaysia
+603-8941-2366
IPF_Malaysia@parker.com

Korea Oil & Gas Filtration

Gyeonggi-do, Korea
+82-31-359-0782
KFDsales@parker.com

Europe & Middle East

Europe Oil & Gas Filtration

United Kingdom
+44 (0)191-402-9200
peco.emea@parker.com

Middle East Oil & Gas Filtration

Dubai, UAE
+971-4-886-5401
peco.emea@parker.com

Latin America

Latin America Oil & Gas Filtration

São José dos Campos, Brazil
+55-12-4009-3500
falecom@parker.com



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Parker Hannifin Corporation
Industrial Process Filtration Division
www.parker.com/ipf



02

Merek : **“VELCON”**

Products for Aviation Fuel

Clean Diesel - Solutions for Diesel Fuel Cleanliness



aerospace
climate control
electromechanical
filtration
fluid & gas handling
hydraulics
pneumatics
process control
sealing & shielding



Products for Aviation Fuel Handling

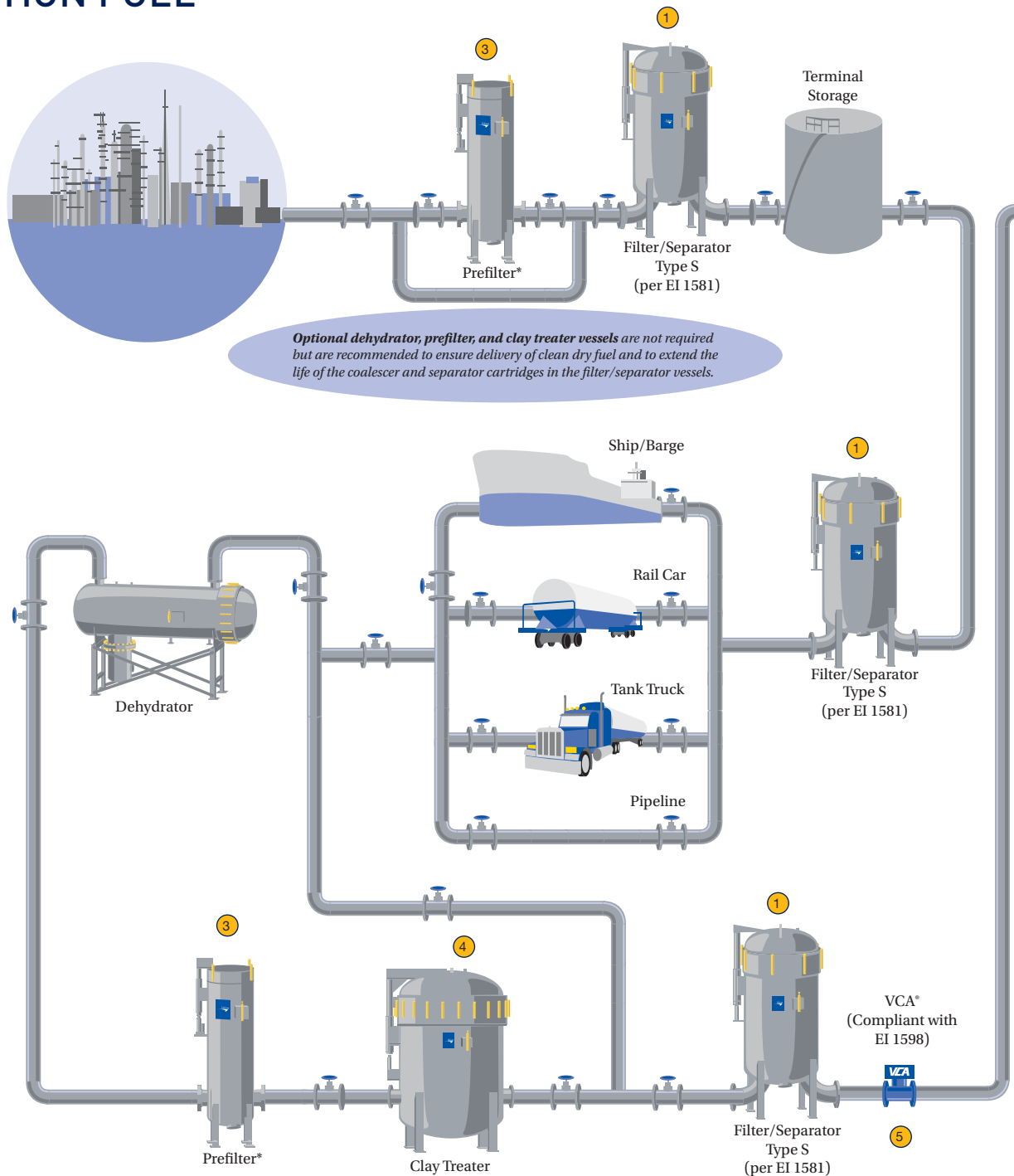


The Hydraulic & Fuel Filtration Division (HFFD) of Parker Hannifin manufactures a wide range of best in class Parker Velcon filtration and separation solutions and fuel condition monitoring products for use in assuring clean dry aviation fuel.

As the global leader in aviation bulk fuel filtration, Parker HFFD proprietary products range from micronic filters, fiberglass coalescers, separators, water absorbent cartridges, and clay canisters designed to meet required industry standards.

This includes a complete line of cartridges qualified to the latest editions of EI specifications: EI 1581, EI 1583, EI 1590 as well as housings that meet best in class EI 1596 requirements.

TYPICAL DISTRIBUTION SYSTEM FOR CLEAN DRY AVIATION FUEL

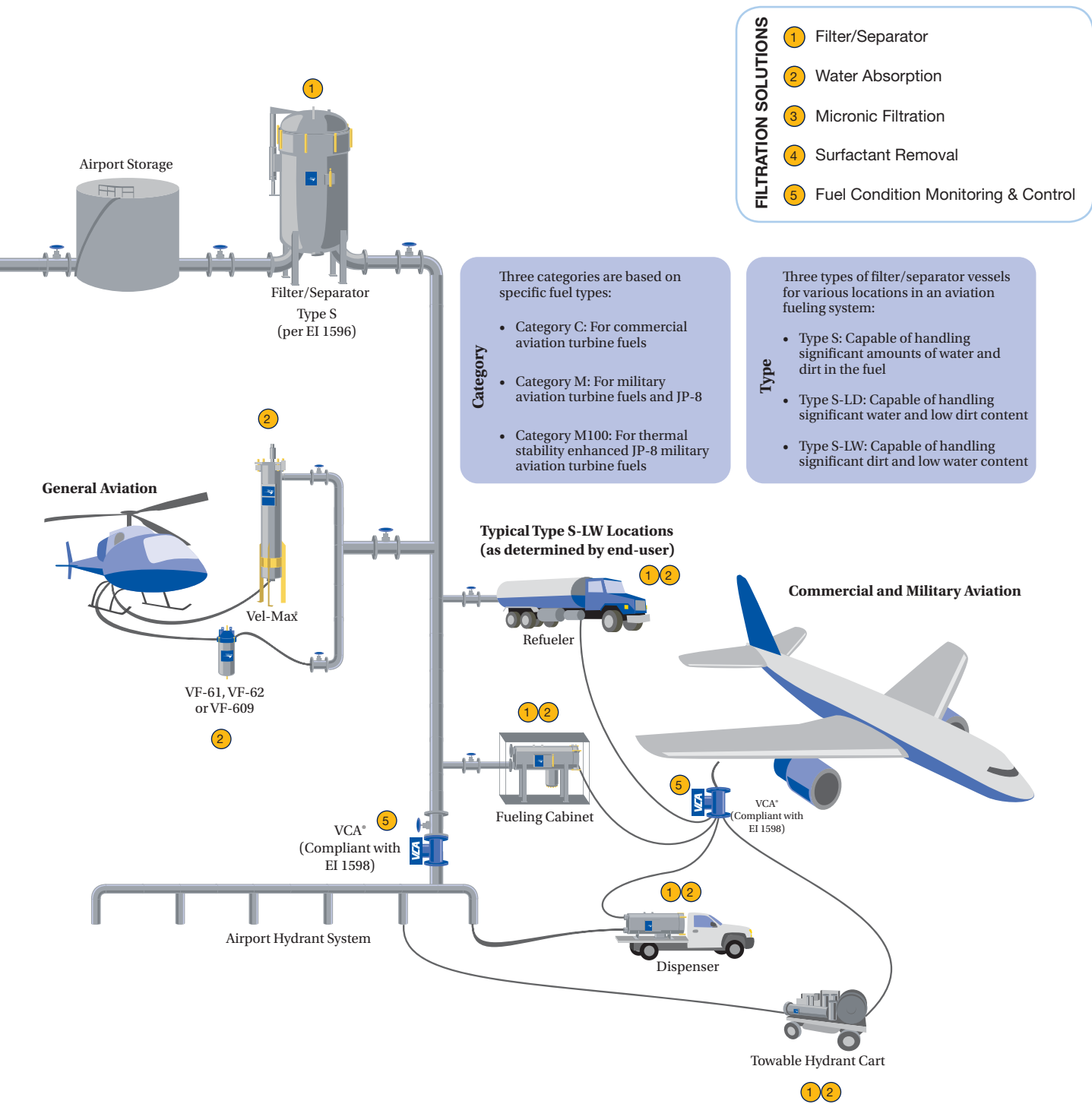


Parker HFFD research testing and product development team continues to seek innovative solutions to many fuel quality problems and issues. Among some of Parker HFFD's most recent product innovations are the:

- DPM™ – Differential Pressure Module monitors differential pressure of filter monitor or filter water separator vessels
- FDPM® MKII – Flow Differential Pressure Module, Mark II provides automatic reporting of flow corrected differential

pressure for varying flow rates.

- VCA® – Velcon Contaminant Analyzer for real-time fuel quality analysis in the field.
- VCA-CV – The VCA combined with a Cla-Val valve.



Category

Three categories are based on specific fuel types:

- Category C: For commercial aviation turbine fuels
- Category M: For military aviation turbine fuels and JP-8
- Category M100: For thermal stability enhanced JP-8 military aviation turbine fuels

Type

Three types of filter/separator vessels for various locations in an aviation fueling system:

- Type S: Capable of handling significant amounts of water and dirt in the fuel
- Type S-LD: Capable of handling significant water and low dirt content
- Type S-LW: Capable of handling significant dirt and low water content

Typical Type S-LW Locations (as determined by end-user)

* Prefilter elements compliance with EI 1590 and vessel compliance with EI 1596 is customer dependent. Optional EI 1583 Qualified Vessels/Absorbent Type Cartridges for jet fuel without anti-icing additive.

1 Filter/Separator

Filter/Separators are two-stage vessels designed to remove dirt and separate water from aviation fuel at refineries, product terminals, fuel farms, and on refueling vehicles.

They continuously coalesce and separate water, which collects in the vessel sump where it can be drained. Velcon Filter/Separators have passed numerous tests qualifying them to the latest EI 1581 edition. Construction is to ASME Code and EI1596 Specifications. Units qualified to military specifications are also available.



Vessels

- Fixed Installations
 - VV Vertical Vessels
 - HV Horizontal Vessels
- Mobile Fueling Equipment
 - HV Horizontal Vessels
 - HVS Horizontal Vessels



Coalescer Cartridges

Used as a first-stage cartridge in Filter/Separators. Remove particulates and coalesce water into large water droplets. Available in open-ended or threaded base designs.

Separator Cartridges

Second stage cartridges in Filter/Separators repel coalesced water drops which then collect in the sump for easy removal. Available in Teflon® Coated Screen, Synthetic Media or Pleated Paper Media.

2 Water Absorption

Velcon's Water Absorbent Filters are single-stage filter vessel systems which remove water and dirt from Avgas and Jet Fuel and provide protection from water at the point of final fuel filtration. When a monitor system's water holding capacity is reached, the flow of fuel is restricted. Units meet EI 1596 Specifications. Construction is to ASME Code Section VIII.

Vessels

- Fixed or Mobile Units
 - AHM or HM Horizontal Monitor Vessels
 - AVM or VM Vertical Monitor Vessels
- High Capacity Aquacon® Units
 - HA Horizontal Vessels
 - VA Vertical Vessels



CDF® Fuel Monitor

Absorb water and filter particulate from Avgas and Jet Fuel. Provide protection against water slug transmission.

Aquacon®

Filter particulate matter and absorb water with great efficiency. Water capacity is approximately 40 times greater than 2" diameter monitor cartridges. Also provide protection against water slugs.



3 Micronic Filtration

Micronic vessels offer economical particulate prefiltration upstream of clay units or Filter/Separators. Units available to meet EI1596 Specifications. Construction is to ASME Code Section VIII.

Vessels

- Fixed Installations
 - VF, VFAP (EI1596) Vertical Filter Vessels
 - HF, HFAP (EI 1596) Horizontal Filter Vessels

Pleated Filter

Corrugated pleated media with large surface area for filtration of particulate contaminants. Available in open-ended or threaded base designs.

Fiberglass Filter

Progressively finer layers of fiberglass filter colloidal or slimy contaminants.

Commissioning Cartridges

Commissioning Cartridges (FI Series) can be used in place of coalescers to remove heavy solid contaminants during start up.



4 Surfactant Removal

Clay Vessels & Elements are placed upstream of F/S vessels prior to pre-filtration to remove surfactants and protect coalescer and separator elements. Construction is to ASME Code Section VIII.

Vessels

- Fixed Installations
 - VC Clay Element Vessels

Clay Cartridges

Clay canisters use a low volatile matter (LVM), 60-90 mesh, with a superior water tolerant Attapulgite clay that has a lower tolerance for aggregating. The clay cartridges remove surfactants from jet fuel and other petroleum products.



5 Fuel Condition Monitoring & Control

Parker Velcon line of fuel condition monitoring solutions range from fixed on-line systems such as the Velcon Contaminant Analyzer (VCA®) to portable in-field systems such as the icountACM20, and icountBSplus. All are designed to provide reliable accurate results in very short time.

The VCA is an on-line monitoring system with the capability of detecting solid and liquid contaminants and can be configured to shut off flow when contaminant levels exceeds your defined threshold perimeters. In addition, the telemetry option allows for remote monitoring on a global scale via cellular network.

The icount particle analyzers are designed for monitoring and testing of solid contaminants. Parker HFFD offers four types of systems depending on your application needs. All products can be used as an on-line monitoring system or be completely portable while providing real-time or immediate results with the capability of storing of test results.

VCA® (Velcon Contaminant Analyzer)

MILITARY GRADE IN-LINE, FULL-FLOW SENSOR SYSTEM THAT SIMULTANEOUSLY DETECTS AND DIFFERENTIATES BETWEEN PARTICULATE AND WATER CONTAMINANTS IN REAL TIME.

The VCA can detect pipe scales, particulate and water from truck pipelines, dirt and water from storage or refullers vehicles.

The VCA, in combination with a proper filtration system, can provide assurance that the fueling system receives, maintains and dispenses fuel that meets ASTM D975 and ISO 4406 cleanliness levels.

As a “full-flow” analyzer, the VCA mounts within a fuel delivery system thereby providing a true representation of the pipeline contents. The VCA analyzes fuel at flow rates higher than 1000 gallons per minute through a 3, 4, or 6-inch diameter pipeline.



FDPM® (Flow Differential Pressure Module)

AUTOMATIC CALCULATION OF CORRECTED DIFFERENTIAL PRESSURE FOR VARYING FLOW RATES

The FDPM® MK II builds on its field tested predecessor. Designed to comply with the requirements of industry standards such as A4A 103 and JIG Guidelines, the FDPM® MK II eliminates this normally complicated calculation by automatically calculating the condition of the filters inside a vessel based on the inputs from differential pressure and flow-rate sensors. FDPM® MK II can be used with either mobile or stationary equipment.



DPM™ (Differential Pressure Module)

DIFFERENTIAL PRESSURE MONITORING AND SHUTDOWN SYSTEM

The DPM continuously monitors the differential pressure between the inlet and outlet of a filter monitor or filter water separator vessel in order to evaluate the condition of internal filter elements.

In the event that the filter differential pressure reaches maximum allowable pressure, the industrial strength relay on board the DPM control unit breaks the deadman circuit, immediately terminating the refueling operation. The system can only be overridden/reset by inserting a supervisor key. The DPM can also be placed in an override status in order to conduct the required DP Gauge free movement test.



icountACM20

STATE-OF-THE-ART FUEL CONTAMINATION MONITORING. THE FIRST FULLY FUNCTIONAL PARTICLE COUNTER APPROVED FOR USE ON AVIATION FUELS.

The icountACM20 Portable Particle Counter has been developed from existing technology for monitoring contamination in AVTur and other hydrocarbon fuels, in accordance with Energy Institute (EI) Method IP 564.

In addition, the ACM can also be used to monitor fuels from existing sampling points in locations from refineries, pipelines, distribution terminals, fuel supply storage.



Mission

Parker Velcon is committed to being the world's preferred company for the expert solutions we deliver to our customers.

Values

Superior customer service

Profitable growth

Meet or exceed customer expectations

Accountability

Integrity

U.S.A.

Tom Muzik
Business Unit Manager - Aviation
tom.muzik@parker.com
+1 719 5315855

CANADA

Rob Guglielmi
Regional Sales Manager
robert.guglielmi@parker.com
+1 519 6227363

SOUTH AMERICA

Scott Thomas
Territory Sales Manager
scott.thomas@parker.com
+1 763 2283897

NORTH EUROPE

Richard Hooton
Market Development Manager
richard.hooton@parker.com
+44 (0)7785 521957

SOUTH EUROPE, AFRICA

David Cassagne
Market Development Manager
david.cassagne@parker.com
+33 164 70 77 20

SOUTH AFRICA

Steven Finn
Global Market Development
Manager
steven.finn@parker.com
+27 (0) 11 392 5633

EASTERN EUROPE, MIDDLE EAST

Mark Hoye
Market Development Manager
mark.hoye@parker.com
+971 50 3426142

ASIA PACIFIC

Dennis Hughes
Business Development Manager
dennis.hughes@parker.com
+ 61 (0)3 9589 0196





CLEANDiesel[®]
Solutions for Diesel Fuel Cleanliness



ENGINEERING YOUR SUCCESS.



PRODUCT CATALOG

Hydraulic & Fuel Filtration Division

Publication Number: 2300-CD_R-
2300-CD Issue 1, Dated: October 1, 2016

SAFETY WARNING

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

This document and other information from Parker-Hannifin Corporation, its subsidiaries and authorized distributors provide product or system options for further investigation by users having technical expertise.

The user, through its own analysis and testing, is solely responsible for making the final selection of the system and components and assuring that all performance, endurance, maintenance, safety and warning requirements of the application are met. The user must analyze all aspects of the application, follow applicable industry standards, and follow the information concerning the product in the current product catalog and in any other materials provided from Parker or its subsidiaries or authorized distributors.

To the extent that Parker or its subsidiaries or authorized distributors provide component or system options based upon data or specifications provided by the user, the user is responsible for determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the components or systems.

CONTACT INFORMATION

Parker Hannifin Corporation
Hydraulic & Fuel Filtration Division
16810 Fulton County Road #2
Metamora, OH 43540

www.parker.com/hydraulicfilter
Main Phone: 419 644 4311

Technical E-mail: HFDtechsupport@parker.com
Technical Phone: 419 644 0294

Customer Service E-mail: HFDinsidesales@parker.com
Customer Service Phone: 419 644 0232

Service E-mail: HFDcmcsupport@parker.com
Service Phone: 419 644 0294

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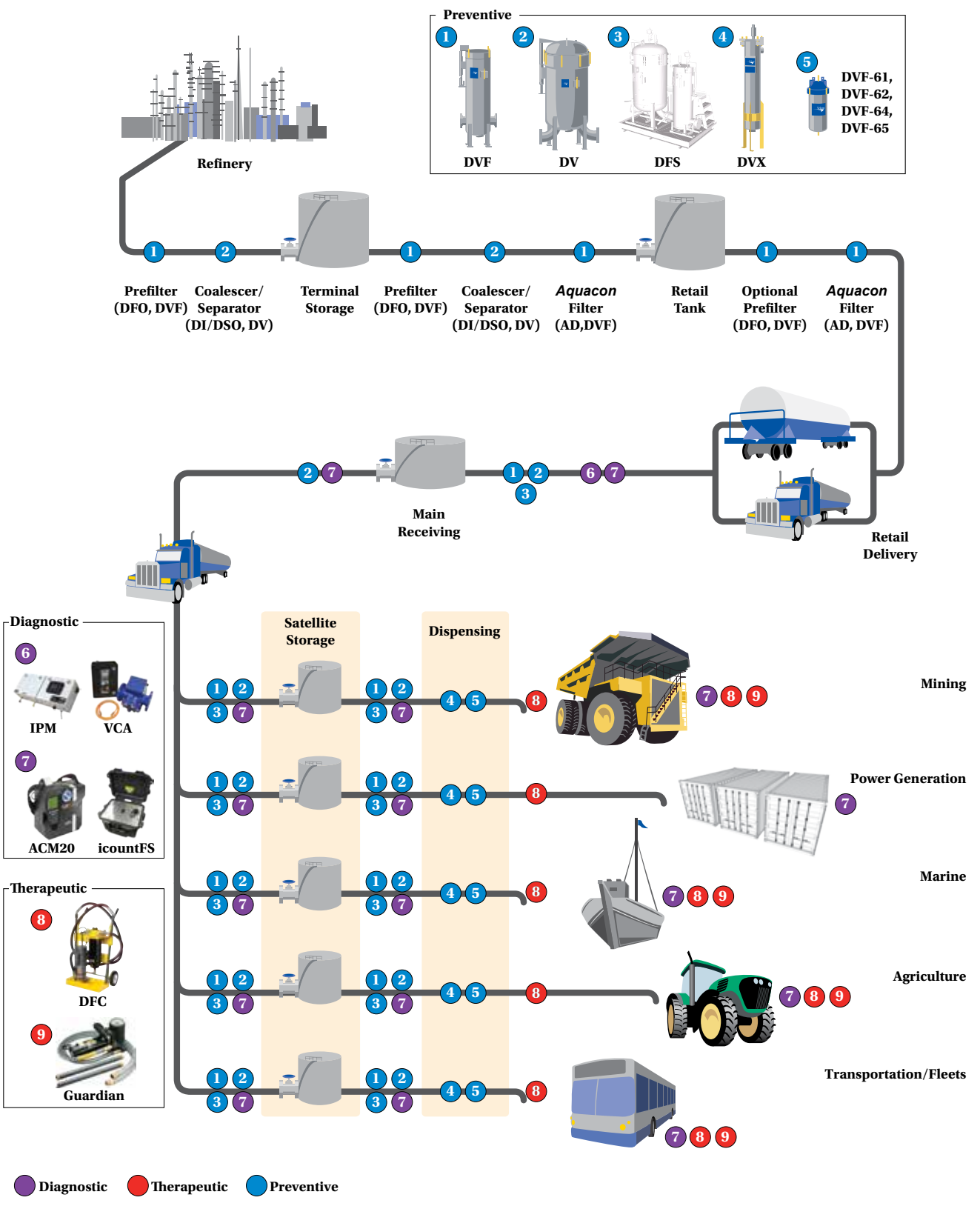
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Filtration for Diesel Fuel Handling

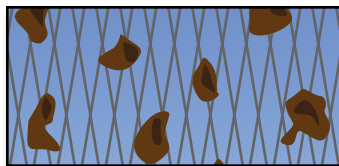


CLEAN Diesel®



Filtration & Fuel Condition Monitoring

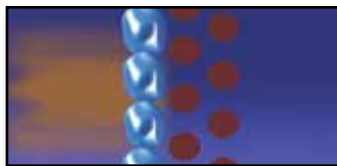
Solutions Ensuring Clean Dry Fuel



Particulate Filtration

Removing fine and abrasive silica and pipe scale particles reduces engine wear, increases uptime and allows our customers to meet equipment warranty specifications. From 5 to 5,000 gpm (23 to 22,730 lpm), DFO Series filters can meet critical downstream ISO 4406 Cleanliness Standards in both bulk and dispensing (Point-of-Use) applications.

- Reduced operating costs due to fewer repair and replacement of equipment
- Reliable engine performance with ISO 4406 cleanliness standards compliant fuel
- Extends uptime as less maintenance is required
- More efficient fuel consumption



Protection from particulate and Water (Absorption)

Parker HFF has been the leader in providing products that can absorb (chemically bind) free water, while filtering particulate from diesel fuel. Our **Aquacon** AD Series products have over a 30 year history of proven application success and is ideal for use in fuel polishing.

- Removes particulate and water contaminants in fuels to meet stringent downstream ISO 4406, ASTM D975 and EN 590:2009 cleanliness standards for both diesel or biodiesel fuels
- Filtration prevents damage to injectors
- Constricts flow when media reaches capacity
- For applications up to 5,000 gpm (22,730 lpm)



Particle & Water Removal (Coalescing)

Water is the primary cause of pump and injector failures in diesel engines and can displace diesel fuel's lubricant coating on high precision injector components. Water can be introduced throughout the fuel delivery process. Parker DI Series coalescer and DSO Series separator work together to separate water and aid in removing water from diesel fuel.

- Removes water from bulk diesel fuel
- Meets stringent ASTM D975 and ISO 4406 fuel cleanliness standards
- Flow rates from 20 to 5,000 gpm (91 to 22,730 lpm)



Condition Monitoring Solutions Fast and Reliable

In the past testing fuel quality has always been costly, time consuming and done in laboratories. Some tests can take days resulting in slow response to prevent poor quality fuel from contaminating components in expensive equipment. Although on-board filtration systems are in place to perform some filtration, these systems were not designed to deal with high contamination levels.

As a result, strain on these systems leads to frequent maintenance and even bypass of contaminants. Increasing costly downtime, repairs and/or replacements.

Hydraulic and Fuel Filtration Division's line of fuel condition monitoring solutions range from fixed on-line systems such as the (Velcon) Contaminant Analyzer (VCA) and Integrated Particulate Monitor (IPM) to portable in-field systems such as the icountACM20, icountFS, and icountBSplus. All are designed to provide reliable accurate results in a short amount of time.

The VCA is an online monitoring system with the capability of detecting solid and liquid contaminants and can be configured to shut off flow when contaminant levels exceed your defined threshold. In addition, the telemetry option allows for remote monitoring on a global scale via cellular network.

The icount particle analyzers are designed for monitoring and testing of solid contaminants. All products can be used as an on-line monitoring system or be completely portable while providing real-time or immediate results with the capability of storing test results.



Fuel Condition Monitoring

Parker HFFD offers various unique tools that will allow monitoring of diesel fuel quality throughout the distribution process, and through custody transfers with the correct blend of products, from disposable test kits to real-time precision instrumentation that measures particulate and water contamination simultaneously.

- **Contaminant Analyzer for Diesel (VCA-D) is a military grade in-line full flow sensor system that simultaneously detects and differentiates between solid particulates and water contaminants in real time. The VCA-D detects pipe scales, particulates and water from truck pipelines, dirt and water from storage**
- **icountACM20, icountBSplus, icountFS and IPM are portable and online particle counters with proven laser detection technology**

Primary Markets



Mining

Today's electronically controlled diesel engines utilize the latest high pressure common rail systems that require pressures approaching 40,000 psi (2,758 bar) with injection nozzle sizes down to 2 microns. Meeting downstream ISO 4406 Cleanliness Standards for bulk fuel storage, dispensing, and during transfer can be challenging. HFF offers the filtration and process fuel monitoring technologies that extend equipment uptime and assures clean dry fuel.



Retail

Retailers rely on their fuel suppliers to provide quality fuels that meet regulatory and engine manufacture requirements. Nevertheless, fuel stored and transported can acquire particulate and water contaminants that lower the quality below required specifications. HFF's filtration and separation solutions are designed to remove these contaminants and return fuel quality to desired levels.



Refinery/Terminals

In the process of refining, storing in terminals and distributing bulk diesel fuel, contaminants such as abrasive silica, pipe scale and water are commonly introduced. As fuel is transported, it can quickly deteriorate fuel quality below ISO 4406 Cleanliness Standards required for use in today's diesel engines. Our filtration and separation solutions are designed to remove contaminants so the fuel supplied to customers meet or exceed original manufacturer required specifications.



Transportation

Fuel is the number one operating cost for transportation fleets. Poor fuel quality directly affects maintenance cost, fuel expenditure, fuel efficiency and overall operating costs. From monitoring the quality of the fuel source to ensuring engines utilize fuels that meet ISO 4406 Cleanliness Standards, we provides solutions to help manage and meet your diesel fuel needs.



Power Generation

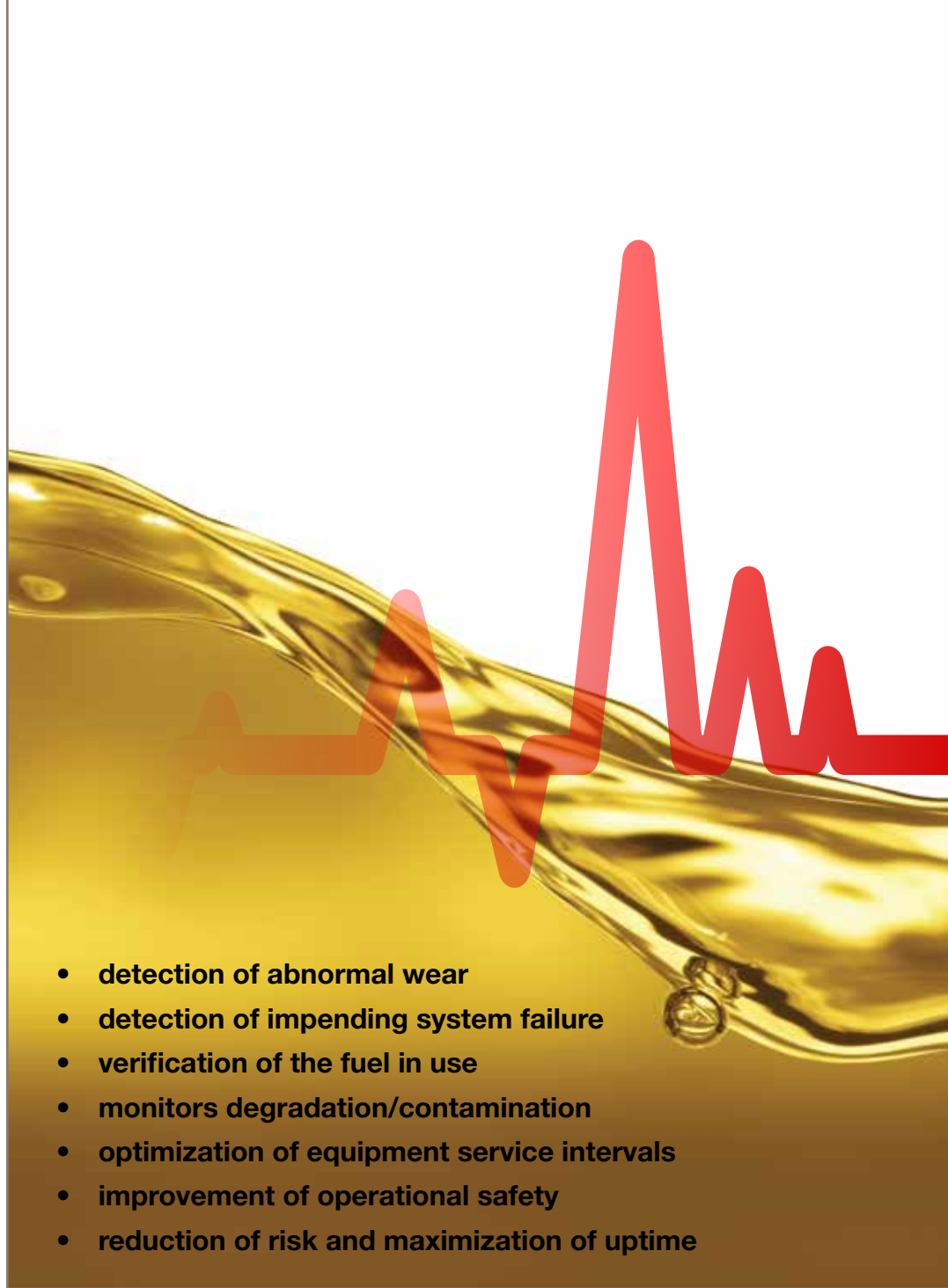
Diesel powered plants require large fuel storage reservoirs and tank farms that must be available on demand. Our filtration and separation products are used to remove particulate and water and to ensure that fuel quality meets engine ISO Cleanliness Standards in order to assure reliability.

CLEAN Diesel®

Diesel and Biodiesel fuels may leave a refinery clean, but fuel quality can vary at the time it is dispensed due to contamination accumulated during transport and storage. Operators and engine manufacturers report that the majority of engine issues are due to dirt and/or water in the fuel. As diesel engines adopt more efficient High Pressure Common Rail (HPCR) systems, demands for removal of abrasive particles smaller than 6 microns are rapidly becoming a standard. Clean diesel fuel plays an important role in reducing maintenance and overall operating cost.

For over 60 years, Parker HFFD has supplied filters for fuel conditioning for applications from 5 gpm (23 lpm) to more than 5,000 gpm (22,730 lpm). Our proven bulk fuel handling experience in combination with the world's largest indoor fuel lab have allowed us to develop a range of high quality products to meet the most stringent diesel and biodiesel fuel market needs.

Image courtesy of APR Energy PLC



- detection of abnormal wear
- detection of impending system failure
- verification of the fuel in use
- monitors degradation/contamination
- optimization of equipment service intervals
- improvement of operational safety
- reduction of risk and maximization of uptime

Diagnostic

Monitors, Detects, Alerts



VCA[®]

Velcon Contaminant Analyzer

Simultaneous Detection of Solid and Water Contaminants at Full-Flow

The VCA system with a proper filtration system can provide assurance that the fueling system receives, maintains, and dispenses fuel that meets ASTM D975 and ISO 4406 cleanliness levels.

As a “full-flow” analyzer, the VCA mounts within a fuel delivery system thereby providing a true representation of the pipeline contents. The VCA analyzes fuel at varying flow rates but it can also analyze fuel at rates higher than 1000 gallons per minute through a 3 or 4-inch pipeline (contact Velcon for other sizes).

The VCA uses two separate sensor technologies to consistently differentiate between water and solid contaminants.

The VCA analyzes the contents of flowing fuel in a pipeline approximately 600 times a second, and outputs an averaged result every two seconds in mg/l, ppm, and a representative ISO 4406 code.

The VCA is an ideal tool to either measure the quality of fuel at receipt, assuring agreed upon cleanliness specification are met, or at dispensing points. The VCA provides data to reassure the user that fuel cleanliness is within limits, and where not, it can be set to alarm or signal delivery system shutdown.



VCA - U.S. Patent No. 7,518,719
VCA-CV - U.S. Patent No. 8,498,750

Features and Benefits

- Ability to simultaneously differentiate between free water and solid particulates allows for a greater diagnostic accuracy of contamination sources
- Fuel quality accountability upon receipt with record of fuel quality at dispensing point
- System alarm or relay signal to shutdown control when fuel contaminant level is exceeded
- Reduce equipment downtime by preventing particulate and water from entering fuel storage
- Fuel system peace of mind with real-time constant monitoring of fuel condition
- Fully Compliant with EI 1598 Second Edition
- Flow sensor operates VCA only during fueling (US Patent No. 7,518,719)
- Full flow analysis – no sampling errors
- Isokinetic Compliance
- Minimal Pressure Loss
- Fouling Resistant Windows
- Real-time PC-Based Graphical User Interface for data viewing/capturing
- Real-time RS-232 Data Stream to tie into Data Management Systems (optional)
- Easy installation cable/wiring
- Optional On-line Data Viewing/Storage System

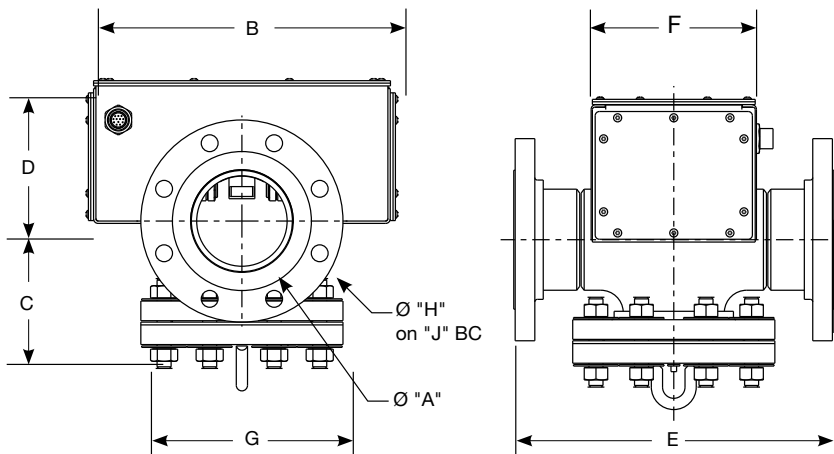
VCA[®]

Specifications

- Contaminant Measurement/Standard
 - Particulate Contaminant
 - mg/l (milligrams per liter)
 - ISO 4406 Reference Codes
 - Water Contaminant
 - ppm (parts per million)
- Mechanical
 - Pressure Rating: 150 psi (10 bar)
 - Flange Class: ANSI 150
 - Wetted Materials: Powder Coated Steel, Stainless Steel, and Glass
- Electrical
 - Configurable Output Control Alarm Relay
 - Certification: Class 1 Zone 2, IP65, NEMA 4x
 - Cable Length: 15 ft (4.57 m)
 - Requirements: 12-36VDC 4A or 110-240VAC
 - Control Box Dimensions: 12"W x 16"H x 8"D
- Data Output
 - PC-Based Interface
 - Graphical User Interface (GUI)
 - Real-Time Data
 - Scalable data graphing
 - Local Data Storage
 - On-Board Data Logging (CSV)
 - User Configurable Alarms (Current & Average Values)
 - Downloadable to USB Storage Device
 - Additional SCADA integration (optional)

Part Number	Description
VCA-D3	VCA for 3" diameter
VCA-D4	VCA for 4" diameter

Dimensions



Per Fueling Session:
E-mail Field Data Reporting
(with cellular telemetry option)

Pipe Diameter (in.)	Dimensions in (mm)								
	A	B	C	D	E	F	G	H	J
3	3 (76)	13 1/16 (348)	4 3/4 (121)	5 11/16 (144)	13 5/8 (346)	8 1/8 (206)	7 1/2 (191)	3/4 (19)	6 (152)
4	4 (102)	13 1/16 (348)	5 1/2 (140)	6 1/4 (159)	14 1/4 (362)	7 3/8 (187)	9 (229)	3/4 (19)	7 1/2 (191)

Dimensions shown are for estimating purposes only. For exact dimensional detail, please contact Hydraulic & Fuel Filtration Division of you local HFF representative.

icountACM20

icount Aviation Condition Monitoring with Diesel Fuel Compatability

State-of-the-Art Fuel Contamination Monitoring

The icountACM20 Portable Particle Counter was developed from existing technology for monitoring contamination in AVTur and other hydrocarbon fuels, in accordance with Energy Institute (EI) Method IP 564.

In addition, the ACM can also be used to monitor fuels from existing sampling points in locations from refineries, pipelines, distribution terminals, fuel supply storage.

Features and Benefits

- 2 minutes test time
- Optical scanning analysis and measurement of actual particles and inference to water presence
- Primary outputs: 4, 6, 14, 21, 25, 30 μ counts per ml
- % Volume distribution, via graphical display on handset and printout
- ISO 7-22 in accordance with ISO 4406-1999
- 32 Character two line dot matrix LCD. Full alphanumeric entry facility on keypad
- Access up to 300 saved test
- Calibration in accordance with Parker Calibration Procedure CM20-N, which complies to ISO11171:1999, Clause 6 (Omitting Annex F)
- Re-calibration every 12 months by a dedicated Parker Service Center
- 420 bar Max. Working Pressure
- +5° C to +80° C
- Interface via RS232 (USB serial cable to RS232 option available)
- On-board rear mounted pump for lab sampling
- On-board battery and carry case with wheels (13 kg total weight)
- 12v DC input, 6 "D" cell batteries or rechargeable battery pack
- Integrated 16 column printer for hard copy data
- Complies with all relevant EC declarations of conformity
- Integrated Mounted Pump:
 - Powered directly from ACM20
 - Direct sampling from fuel sample bottles or tank via 3 meter inlet suction tube
 - Incorporated double speed flush and test sequence
 - Managed flow rate/correct volume sample as per IP 564 test method



Applications

- Fuel Testing Laboratories - DEFSTAN 91-91 Issue 6
- Distribution Terminals/Hubs: use on receipt and outbound supply. Also provide checks for filtration performance, tank cleanliness and product quality
- Storage: reduce settling time by monitoring to determine if dispersed contamination are below acceptable levels
- Airport Fuel Farm: monitoring of fuels into storage, through fuel farm, hydrant system and during uplift into wing
- Oil and Gas Platforms: monitor filtration performance, system cleanliness and quality of delivered product

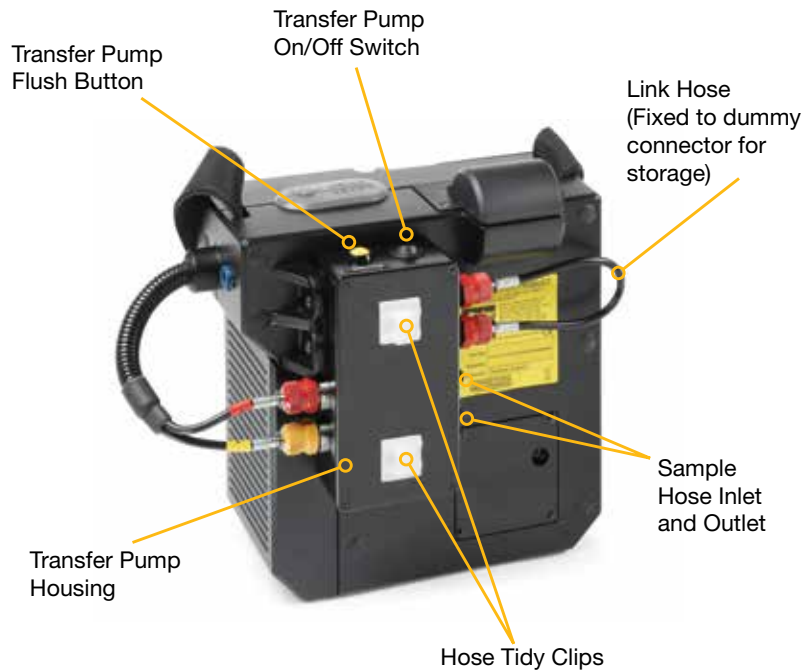


icountACM20

Specifications

- **Construction:** ABS structural foam and injection moulded case
Hand-held display - ABS
Keypad fluoro-silicone rubber
- **Mechanical Components:** Brass, plated steel, stainless steel and aluminium
- **Seals:** Fluorocarbon
- **Hoses:** Nylon (Kevlar braided microbore). Stainless steel armoured ends
- **Flow Rate:** 25 - 28ml/min (dictated by CMP) 100ml/min with additional flush button
- **Fluid Compatibility:** Hydrocarbon Fuel, Mineral Oil. For other fluids consult Parker
- **Fuse:** 1.25 amp fast blow fuse included for overload protection (spare supplied)
- **icountACM20 Technology:** Patented flow cell, light obscuration
- **Repeatability/Accuracy:** As per or better than ISO 11171
- **Coincidence:** 40,000 particles per ml
- **Viscosity Range:** 1 -100 centistokes
- **icountACM20 Weight:** 17.6 lbs.
- **Monitor Carrying Case:** Astra Board case
- **Carrying Case Weight:** 11 lbs.

icountACM20 - Rear View



Input Power Socket (note that you will have to remove the plastic dust cap to access the 12Vdc power socket)

A fast blow 1.25A fuse and the RS232 connection are located behind the removable cover plate. The RS232 interface is provided to download all test data stored in the instrument.



Field Monitoring

For use in non-hazardous areas, the icountACM20 is designed for online sampling of hydrocarbon fuels, utilizing existing “quick connect” sampling points such as the Millipore Adaptor.

icountACM20

Part Number	Description		Part Number	Description	
ACM202024US ACM202024UK ACM202024EUR	icountACM20 Portable Particle Counter with US,UK or EUR Plug		ACC6NE023	UK Battery Charger	
ACC6NE008	UK Power Supply		ACC6NE024	EUR Battery Charger	
ACC6NE009	EUR Power Supply		ACC6NE025	US Battery Charger	
ACC6NE010	US Power Supply		ACC6NW003	Waste Bottle	
ACC6ND000	1m Process Cable Assembly		ACC6NE013	Re-Chargeable Battery Pack Assembly	
ACC6NE027	2m Process Cable Assembly		ACC6NE006	Downloadable Software	
ACC6NE029	Throttle Kit		ACC6NE019	Carrying Case for ACM202024	
ACC6NE015	Printer Paper 5 Rolls		ACC6NE014	Printer Ribbon	
SERMISC067	500ml Verification Fluid				

icountFS

icount Fuel Sampler

Portable Condition Monitoring for Fuel Systems

The icountFS (iFS) is an innovative solution to the challenge of measuring the quality of hydrocarbon fuels in many different applications: from renewable energy, marine and offshore, to manufacturing, mobile, agriculture, military and aerospace.

Compact, lightweight and robust, the truly portable iFS makes field analysis simple, quick and easy.

Able to sample directly from a barrel, vehicle fuel tank or from pipes in a fuel system with the addition of a pressure reducing adaptor; the iFS is undoubtedly the most adaptable contamination service tool available today.



Powerful and easy to use



Lightweight and portable

The system is completely self contained, with laser detection particle counter, battery and pump plus memory with web page generator for data download onto any PC or laptop - combined into a single unit. The iFS uses Parker's proven laser detection technology, which delivers precise, repeatable, reproducible results, in real time detection of both particulates, down to 4 microns (c) and dissolved water.

Just as importantly, the iFS has been developed to offer a wealth of features, combined with simplicity and ease of use, at a cost that is far lower than competing systems, and which fits within most maintenance budgets. Fluid viscosity as high as 300cSt (usable range) will be able to pass through the detector at the proper flow rate.

Features and Benefits

- Quick connections for testing fluid online and offline
- Reporting Standards ISO4406:1999, NAS1638 and RH% moisture sensor display in high intensity OLED format
- Data Storage up to 250,000 test points of information
- Compact, lightweight and robust, truly portable iFS makes field analysis simple, quick and easy
- Able to sample directly from a barrel and vehicle fuel tank or from an online fueling system with the addition of a pressure reducing adaptor
- Completely self contained, with laser detection particle counter (icountPD), rechargeable battery and flow management pump
- No special software needed
- Embedded web page generator for data downloading. Connect via Ethernet (universal RJ45) or WiFi to PC, laptop, or smartphone.
- Fast detection of the presence of contamination with a sampling period from 5 seconds to 999 seconds

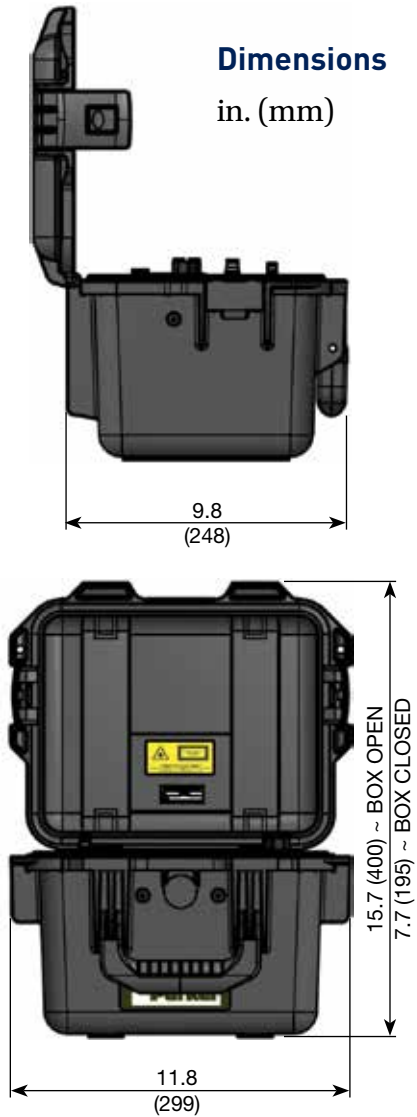
icountFS

The iFS quality condition monitor for hydrocarbon fuels uses advanced technology to produce extremely repeatable results. At the heart of the system is a sophisticated laser detector, using a light obscuration flow cell, providing continuous measurement of fluid flow passing through a sample tube.

Measurements are taken every second as standard, although measurement intervals and test period can be defined by the user, with results being reported immediately and updated in real time. Data is displayed on a built-in OLED digital display and can also be stored for subsequent upload via the embedded icount's web page interface connecting through an RJ45 cable.



Dimensions in. (mm)



icountFS

Models Available

Part Number	Fluid Type	Calibration	Connection	Option
IFS3210US	Fuel	MTD	Offline	None
IFS3220US	Fuel	MTD	On line	None
IFS3221US	Fuel	MTD	On line	WiFi

Part Number	Description		Part Number	Description	
ACC6NE000	Sample Hose Kit (1m & 3m)		ACC6NK001	1 pair Sample Bottles	
ACC6NE034	1m Hose		ACC6ND001	10 pair Sample Bottles	
			ACC6NE002	50 pair Sample Bottles	
ACC6NN046	On-line Probe		SERMISC067	500ml Verification Fluid	
ACC6NE003	1m Extension Hose & Couplings Set - 2 Hoses		ACC6NE008	UK Power Supply	
ACC6NN003	2m Hose Set - 2 Hoses		ACC6NE009	EUR Power Supply	
ACC6NN005	5m Hose Set - 2 Hoses		ACC6NE010	US Power Supply	

icountBSplus

icount Bottle Sampler

The Benchtop Solution to Fluid Contamination Bottle Sampling

The revolutionary icountBSplus is an advanced, fully contained bottle sampling system that ensures fast, accurate and repeatable detection of contamination in diesel fuels. Compact and portable, the icountBSplus is ideal for use in the laboratory, on-line or off-line applications.

The system is fully accredited to all particle counting standards - ISO, NAS, AS and GOST - including the latest ISO medium dust certification and is backed by Parker Hannifin's global customer support network. The icountBSplus uses proven laser particle detection technology, with intuitive touch screen control, integrated long life rechargeable battery and a robust easy to clean enclosure, to deliver exceptional product quality and performance.

The icountBSplus is quick to setup and use, delivers rapid test results and offers a wide range of features to help you improve the reliability, productivity and profitability of your production equipment.



Features and Benefits

- Easy access wake up switch
- Built-in printer
- High resolution backlit touch screen
- Sample preparation chamber
- Stylus pen stored safely in base
- Robust outer panel design
- Low cost solution for monitoring fluid life and reducing machine downtime
- Easy to setup and use this CE compliant instrument
- Selectable 12 language instruction manual menu
- Optional on-line fluid measurement capability
- Independent monitoring of contamination
- Calibration to ISO procedures
- 8 fixed channel size analysis
- Integrated relative humidity moisture sensor
- Selectable test sample sizes: 25, 50, 75 and 100ml
- Selectable flush sample sizes: 10, 15, 20, 25, 50, 75 & 100ml
- Selectable number of samples taken in one time: 1, 2, 3, 4 or 5 tests
- Mineral fluid/fuel compatible construction
- Percentage saturation reporting (for the moisture sensor option)
- Testing capability of up to 500 continuous tests (override auto warning option available)
- Data exporting method to USB (in XML format)
- Modular design for easy servicing
- On-board high quality pump and motor configuration
- High resolution color touch-screen panel and the
- Integrated printer (selectable on/off feature)
- Self-diagnostic software
- Power-saving sleep mode with integrated wake up/power button
- On and off line pressure capability
- Quick sample bottle analysis with variable test time options from 15 seconds and volume capacities from 25ml
- On-board compressor and 'shop' air capability
- On-board thermal printer
- Environmentally controlled front loading bottle chamber
- Selectable 12-language instruction manual menu
- Analysis of fluid moisture and temperature capability
- Repeatable and re-producible result performance to ISO4406:1999, NAS1638 AS4509E and GOST 17216:2001 (Differential and Cumulative) particle count distributions
- icountBSplus has the capability for on-line fluid measurement configuration as well as off-line fluid sampling
- Design concept allowing for portability. DC and rechargeable battery pack power option built in
- CE compliant
- Fluid resistant touch type screen panel
- 500 test memory (fully downloadable)

icountBSplus

Specifications

Principle of Operation	Laser based light obscuration
Dimensions	H=20.9" x W=7.48" (8.27" Door) x D=16.1"
Weight	31 lb. (14kg)
Mechanical Composition	Stainless steel 316, plated mild steel and aluminum
Plastics Composition	Precision polyurethane RIM moldings and ABS plastic
Environmental Operating Temperature (Tested)	41°F to 140°F (+5°C to +60°C)
Operating RH Range	20 - 85% [Tested at 86°F (30°C), no condensation]
Storage Temperature	40°F to 194°F (4°C to 90°C)
Storage RH Range	10 - 90% (Tested at 30°C, no condensation)
Channel Sizes	MTD - >4μ(c), >6μ(c), >14μ(c), >21μ(c), >38μ(c), >70μ(c), ACFTD - >2μ, >5μ, >15μ, >25μ, >50μ, >100μ
Analysis Range	ISO 7 to 21, NAS 0 to 12
Contamination Standards	MTD - ISO 4406:1999 & NAS 1638; ACFTD - ISO 4406:1987, ISO 4406:1991, NAS 1638, and AS4059 Rev E <i>For further contamination standards consult Parker</i>
Calibration Standard	ISO MTD and ACFTD calibration to traceable ISO Standards. <i>Contact Parker for further details</i>
Fluid Management	Maximum single sample = 100ml, Minimum single sample = 10ml
Possible Test Configurations	User selectable from single test up to 5 tests per run (eg. 1 x 100ml up to 5 x 50ml per run)
Pre- Test Flush Volume	Minimum = 10ml, Maximum = 100ml
Viscosity Range	5 to 400 cSt
Fluid Compatibility	Mineral oils, petroleum and hydrocarbon based fluids. For all other fluids, consult factory.

icountBSplus

Specifications

Sample Bottle Size	No specific bottle required. Maximum size = 2.95" (Dia.) x 5.90" (H). Maximum volume = 250 ml
Memory Storage	500 tests (capacity warning after 450 tests)
Output Display	Backlight 256 color STN transmissive
Output Display Resolution	320 x 3 (RGB) (H) x 240 (W) dots
Display Active Area	115 (H) x 86 (W) mm
Data Input	Icon driven resistive touch screen
Printer	Thermal dot- line printing
Printer Paper	Ø50mm (57mm x 25mm)
Test Certification	Calibration & Certificate of Conformity
Power Supply	DC output - 12V @ 6.60Amps, 80 watts max. AC input - 100 to 240V @ 1.2Amps (50-60Hz), AC input - 100 to 240V @ 1.2Amps (50-60Hz)
Battery Power	2 hours (recommended to be fully charged every 3 months)
Battery Stand By Time	1 month (then 1 hour of operation)
Battery Fuse	6.3 Amps (anti-surge)
Air Pressure Source	50 psi (3.5 bar) internal mini- compressor or 101 psi (7 bar) shop air

icountBSplus

Dimensions
in. (mm)



Part Number	Description		Part Number	Description	
IBS3100	icountBSplus Advanced Bottle Sampler Testing		ACC6NW011	USB Memory Stick	
			ACC6NW012	Manual on CD	
			ACC6NW020	Transit Case	
ACC6NW001	250ml Sample Bottle 2-Pack		SERMISC049	500ml Verification Fluid	
ACC6NW002	250ml Sample Bottle (50) 2-Packs		ACC6NW009	1m Waste Tube Clear	
ACC6NW003	Vapor/Waste Bottle		ACC6NW010	1m Waste Tube Blue	
ACC6NW005	Printer Paper Reel				

Integrated Particulate Monitor

IPM™ Series

Most Up-to-Date Technology in Solid Particle Contamination Analysis

The IPM is a compact, permanently mounted laser based particle detector module that provides a cost-effective solution to fluid management and contamination control.

The IPM measures particle contamination continuously utilizing the Parker icountPD (IPD), updates the display, and outputs ISO code values to an RS-232, CAN bus or Cellular (GSM) Data Acquisition Module.

The laser based, leading edge technology is a cost effective market solution to fluid management and contamination control.



Principles of operation

The IPM measures particle contamination continuously updates the display, output options and limit relay every second, and does not perform a “one-off” test. This means that even if the Measurement Period is set to 60 seconds, the display, output and limit relay all report the presence of dirt in the oil in just a few seconds—it does not wait until the end of the Measurement Period before reporting the result.

The IPM has just one setting to control the accuracy, stability and sensitivity of the measurements and that is the “Measurement Period.” This can be set from five seconds to 180 seconds. The longer the Measurement Period, the more contaminant is measured, averaging out any spikes seen on a smaller sample. The shorter the Measurement Period the more sensitive the IPM is to variation of contaminant

level, but also the performance on clean systems can be reduced. Thus, the user can select how sensitive the IPM is to spikes of contaminant, and how quickly it responds to contamination levels above the set point (“limits”).

The Measurement Period is factory set to 60 seconds, updated on a second by second basis, giving an effectively continuous readout of the level of contamination.

Features and Benefits

- Independent online monitoring of system contamination trends
- Cost effective solution in monitoring fuel cleanliness and reducing machine downtime
- LCD display with alarm output warnings
- Continuous performance for dependable analysis
- Diesel, kerosene fuel compatible construction
- Self-diagnostic software
- PC/PLC integration technology using Data Acquisition RS-232 or CAN bus output
- Reporting interval through visual display, RS-232, CAN bus or Cellular data acquisition module

Specifications

- Diagnostic self-check start-up time 5 seconds after power up
- Reporting interval through visual display, CAN bus, Serial, or Cellular
- Digital LED display update time every second
- Principle of operation Laser diode optical detection of actual particulates
- Reporting codes ISO 7-12, NAS 0-12, (AS 00-12 contact Parker)
- Calibration by recognized on-line methods, confirmed by the relevant ISO procedures
- Calibration recommendation 12 months
- Performance +/- 1 ISO Code (dependant on stability of flow)
- Reproducibility/Repeatability better than 1 ISO code
- Hydraulic connection M16x2 hydraulic test points
- Optimum flow range through the device is approximately 60 ml/min
- Viscosity range 10 to 500 cSt
- Operating fluid: 32°F to 185°F (0°C to 85°C)
- Working pressure 30 to 100 psi (2 to 7 bar)

Integrated Particulate Monitor

IPM-200 Series

Ordering Information

Part Number	Description
IPM-210	CAN bus or RS-232 Output
IPM-220	MOD bus over TCP/IP
IPM-230	Cellular Telemetry Output



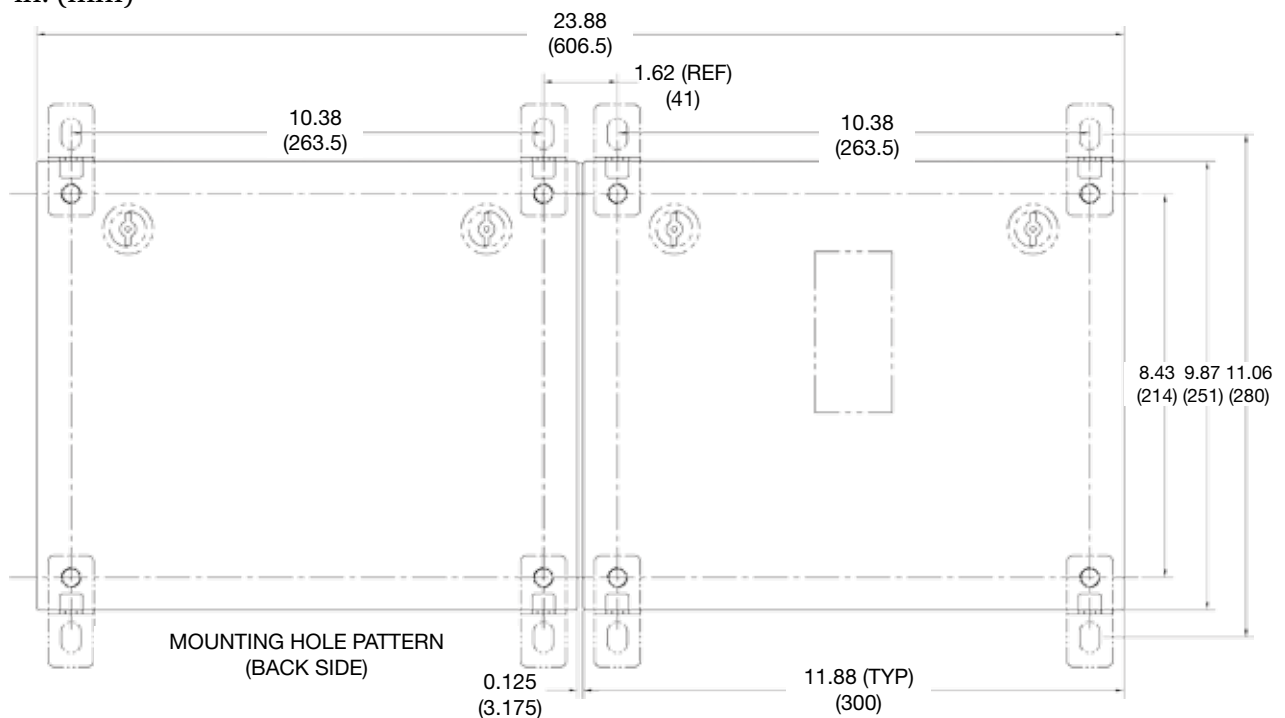
Standard Components

Qty.	Description
1	IPM-200 Series Unit Enclosure
1	Installation and Operation Manual
1	Software, OEM, CD's
1	Sampling Hose Set, 5 m long, P/N ACC6NN005
1	Probe, Twin Sample Port, P/N ACC6NN046
1	Mounting Hardware
1	Enclosure Lid Key



Dimensions

in. (mm)



Integrated Particulate Monitor

IPM-100 Series

Ordering Information

Part Number	Description
IPM-110	CAN bus or RS-232 to Customer Control System, No LCD Display
IPM-120	MOD bus over TCP/IP, No LCD Display

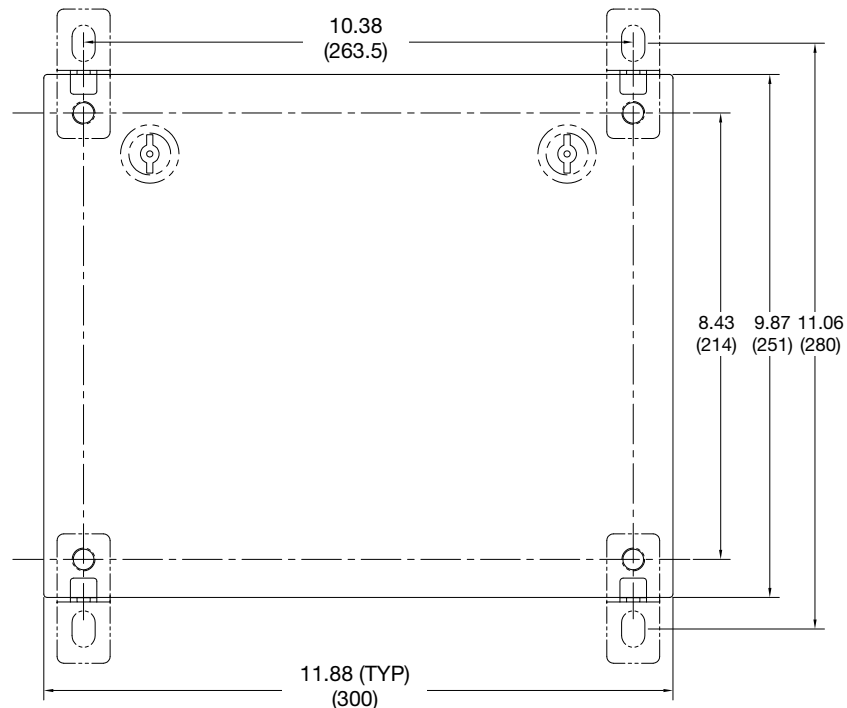
Standard Components

Qty.	Description
1	IPM-100 Series Unit Enclosure
1	Installation and Operation Manual
1	Sampling Hose Set, 5 m long, P/N ACC6NN005
1	Mounting Hardware
1	Enclosure Lid Key



Dimensions

in. (mm)



Flow Differential Pressure Module

FDPM®

Automatic Calculation of Corrected Differential Pressure for Varying Flow Rates

The FDPM MK II builds on its field tested predecessor. Designed to comply with the requirements of industry standards such as ATA 103 and JIG Guidelines, the FDPM MK II eliminates this normally complicated calculation by automatically calculating the condition of the filters inside a vessel based on the inputs from differential pressure and flow-rate sensors. FDPM MK II can be used with either mobile or stationary equipment.



Features and Benefits

- Designed with A4A 103 & JIG Guidelines data collection requirements in mind
- Removes human judgment regarding condition of filters
- Simplified for the refueling operator yet highly configurable by the fuel master
- Interactive touch screen display enables easy operation even for gloved users
- Condition based alarms can be set to halt the fueling operation
- Intelligent detection of sudden increases or decreases in differential pressure
- Security codes prevent resetting of key values by unauthorized personnel
- Over 3 years of data logging automatically stored via a MicroSD card

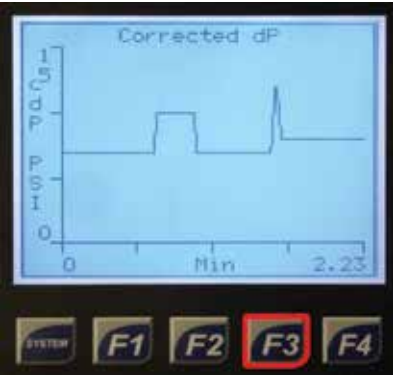
Interactive Touch Screen Display



F1- Corrected dP and Flow Information



F2- Tabulated Averaged and Maximum Values for the Refueling Session



F3- Real-time Corrected dP Chart



F4- Supervisor Menu

Display Outputs

- Corrected DP
- Actual DP
- Flow Rate
- Peak corrected and actual DP
- DP rise or drop alarm

Flow Differential Pressure Module

Specifications

Inputs

- 12 -24VDC, 300 mA (Power), AC/DC Converter
- Flow Rate Input: 0-8 Volts Minimum (24 Volts Max)
- One of the Following:
 - 2 Pressure Transducers: 4 -20 mA
 - 1 Differential Pressure Transducer: 4 -20 mA

Deadman Switching Relay

- 3A @250 VAC Max

Weight

- 4 pounds (1.8 kg)

Safety/Compliance

- IP 65
- NEMA 4X
- ATEX Directive Class 1 Zone 2 Group D

Visual Outputs/Indicators

- Interactive Touch Screen
- Daylight Readable
- Optional Amber Light: Warning Indicator
- Optional Red Light: Critical Indicator
- Corrected Differential Pressure
- Actual Differential Pressure
- Flow Rate
- Peak Corrected and Actual Differential Pressure
- Real-Time Corrected Differential Pressure Charting
- Sudden DP Rise or Drop Alarm

Data Logging

- Removable Micro SD Card (Included)
- >36 Months Data (MS Excel Compatible)
- 60 Second Logging Interval (User Configurable)
- Data Download via USB (Optional)

Data Outputs

- RS232 (ASCII Serial Data Stream)

Measurement Units

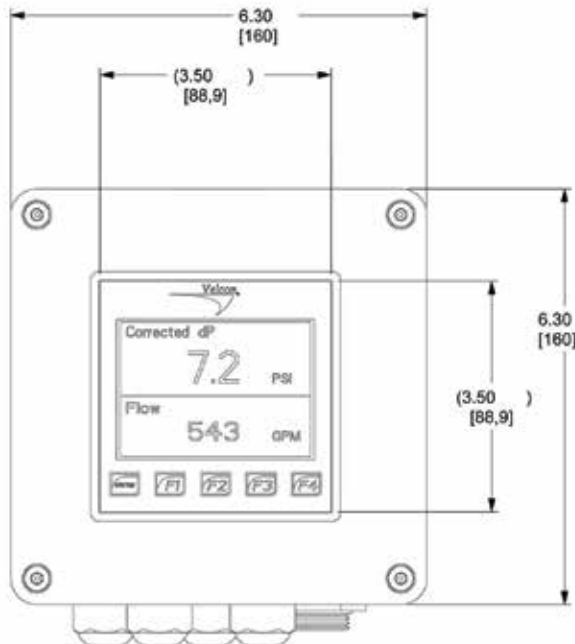
- psi, US gpm
- bar, lpm

Alarm triggers

- Warning Alarms (Amber Light)
 - 12 psi or 0.8 bar (User Configurable)
 - Pressure Greater than the System Rating
 - Change in DP (User Configurable)
- Critical Alarms (Red Light)
 - External Switch Relay (Deadman)
 - 15 psi or 1.0 bar (User Configurable)
 - Change in DP (User Configurable)

Dimensions

in. (mm)



Front View

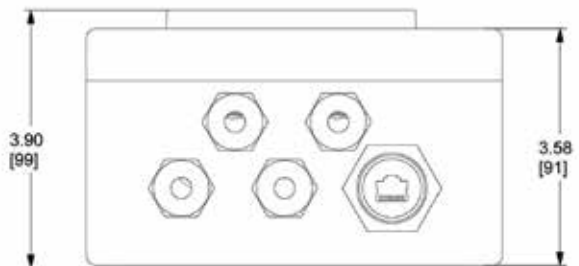
Ordering Information

Part Numbers	Description
FDPM-MKII	FDPM Unit
764X021	Pressure Transducers



Options

- Pressure Sensors
 - 2x Pressure Transducers - Class I Division I
 - 1x Differential Pressure Transducers - Class I Division I
 - 1x Differential Pressure Transducers - IP65 NEMA 4



Bottom View

icountPD[®]

icount Particle Detector

The Most Up-to-Date Technology in Solid Particle Detection

The design dynamics, attention to detail, and small size of the permanently mounted, on-line particle detector brings a truly innovative product to all industry. The laser based, leading-edge technology is a cost effective market solution to fluid management and contamination control.

3 Versions Available

Standard icountPD is designed for test stand, flushing skids, filter carts and other industrial applications.

icountPDR is designed for mobile equipment or any outside use other than hazardous environment.

icountPDZ is intended for applications that require a Zone II safety such as off-shore platforms or any other hazardous environment.

For Zone I applications the standard icountPD can be used within a NEMA7 enclosure.



Features and Benefits

- Independent monitoring of system contamination trends.
- Early warning LED or digital display indicators for Low, Medium and High contamination levels.
- Cost effective solution in prolonging fluid life and reducing machine downtime.
- Visual indicators with power and alarm output warnings.
- Continuous performance for dependable analysis.
- Hydraulic, phosphate ester & fuel fluid compatible construction.
- Self diagnostic software.
- Fully integrated PC/PLC integration technology such as: RS232 and 0-5 Volt, 4-20mA, and CANBUS J1939.



icountPD



icountPDR



icountPDZ

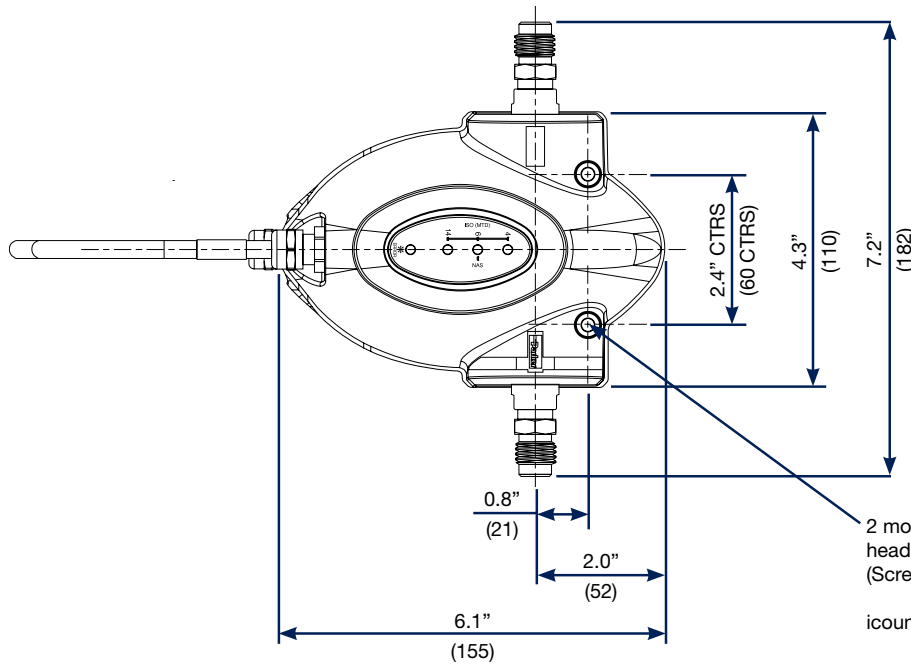
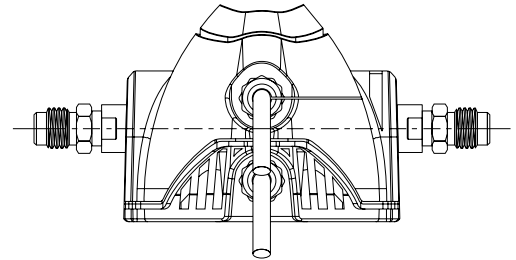
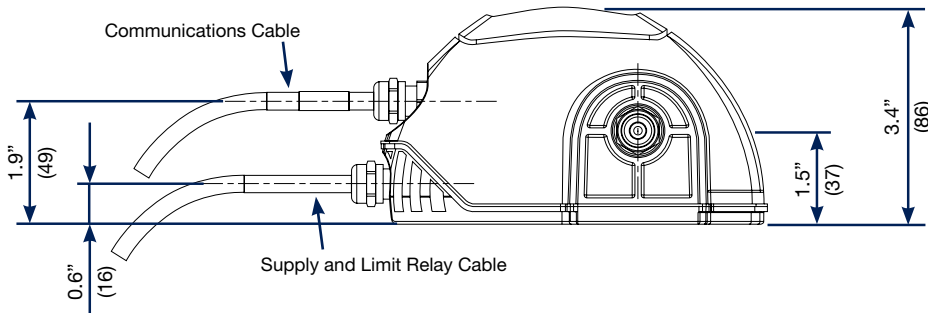
icountPD[®]/icountPDR/icountPDZ

Specifications

Diagnostic self check start-up time	5 seconds
Measurement period	5 to 180 seconds
Reporting interval through RS232	0 to 3600 seconds
Digital LED display update time	Every second
Limit relay output	Changes occur +/- 1 ISO code at set limit (Hysteresis ON) or customer set (Hysteresis OFF)
4-20mA output signal	Continuous
Principle of operation	Laser diode optical detection of actual particulates
Reporting codes	ISO 7 – 21, NAS 0 – 12, (AS 00 – 12 contact Parker) Icount will also report less than ISO 7, subject to the statistical uncertainty defined in ISO4406:1999, which is shown in the RS232, reporting results as appropriate e.g “>6”
Calibration	By recognized on-line methods, confirmed by the relevant International Standards Organization procedures
Calibration recommendation	12 months (24 months for icountPDZ)
Performance	+/- 1 ISO Code (dependant on stability of flow)
Reproducibility / Repeatability	Better than 1 ISO Code
Power requirement	Regulated 9 to 40Vdc
Maximum current draw	150mA
Hydraulic connection	icountPD: M16 x 2 hydraulic test points (5/8” BSF for aggressive version) icountPD Z2: Size: 066, Connection: EO 24 cone end
Flow range through the device	40 to 140 ml/min (optimum flow = 60ml/min)
Online flow range via System 20 Inline Sensors	Size 0 = 1.6 to 6.6 gpm (7.2 to 30 lpm); (optimum flow = 3.9 gpm (18 lpm)) Size 1 = 6.3 to 26.4 gpm (28.6 to 120 lpm); (optimum flow = 18.5 gpm (84 lpm)) Size 2 = 44.9 to 100 gpm (204.1 to 454 lpm); (optimum flow = 66 gpm (300 lpm))
Required differential pressure across Inline Sensors	5.8 psi (0.4 bar) minimum
Viscosity range	10 to 500 cSt, 1 to 500 cSt
Temperature (icountPD and icountPDR)	Operating environment: -4°F to +140°F (-20°C to +60°C) Storage: -40°F to +176°F (-40°C to +80°C) Operating fluid: +32°F to +185°F (0°C to +85°C)
Temperature (icountPDZ)	Operating environment: -22°F to +140°F (-30°C to +60°C) Storage: -40°F to +176°F (-40°C to +80°C) Operating fluid: +41°F to +176°F (+5°C to +80°C)
Working pressure	30 to 6,000 psi (2 to 420 bar)
Operating humidity range	5% RH to 100% RH
Certification	IP66 rated (icountPD), IP69K (icountPDZ) EMC/RFI – EN61000-6-2:2001(icountPD, PDR), EN6100-6-2:2005 (icountPDZ) EN61000-6-3:2001(icountPD, PDR), EN61000-6-3:2007 (icountPDZ)
Materials	Stainless Steel case construction (icountPDZ) Stainless Steel hydraulic block (icountPD and icountPDR) Fluorocarbon seals
Dimensions	icountPD: 7.2” x 6.1” x 3.4” (182mm x 155mm x 86mm) icountPDR: 4.52” x 7.01” x 4.53” (114.7mm x 178.8mm x 115mm) icountPDZ: 10.2” x 4.49” x 4.33” (260mm x 114mm x 110mm)
Weight	icountPD: 2.9 lbs. (1.3 kg), icountPDZ: 5.73 lbs. (2.6 kg)
Default Settings	See table on page 32

icountPD[®]

Dimensions/Installation



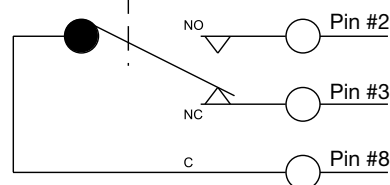
2 mounting locations to suit M5 socket head cap screw.
(Screw pack supplied with icountPD)

icountPD flange thickness = 0.4" (10mm)

Maximum Torque 5Nm

*Limit Relay Wiring Instructions

NORMALLY OPEN
NORMALLY CLOSED
COMMON



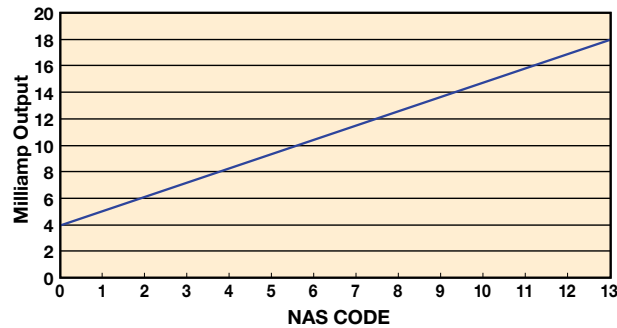
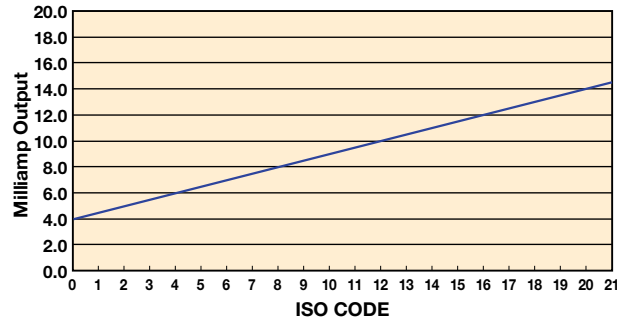
Dimensions

in. (mm)

icountPD[®]

Variable mA Output Settings

The following table can be used to equate the analog output for channels A, B, and C independently.
Example: ISO code 12 is equal to 10mA.



mA	ISO	mA	NAS
4.0	0	4	00
4.5	1	5	0
5.0	2	6	1
5.5	3	7	2
6.0	4	8	3
6.5	5	9	4
7.0	6	10	5
7.5	7	11	6
8.0	8	12	7
8.5	9	13	8
9.0	10	14	9
9.5	11	15	10
10.0	12	16	11
10.5	13	17	12
11.0	14	18	**
11.5	15	19	**
12.0	16	20	ERROR
12.5	17		
13.0	18		
13.5	19		
14.0	20		
14.5	21		
15.0	**		
15.5	**		
16.0	**		
16.5	**		
17.0	**		
17.5	**		
18.0	**		
18.5	**		
19.0	OVERRANGE		
19.5	OVERRANGE		
20.0	ERROR		

4-20mA output settings

ISO Setting

mA current = (ISO Code / 2) + 4

eg. 10mA = (ISO 12 / 2) + 4

or

ISO Code = (mA current - 4) * 2

eg. ISO 12 = (10mA - 4) * 2

NAS Setting

mA current = NAS Code + 5

eg. 15mA = NAS 10 + 5

or

NAS Code = mA current - 5

eg. NAS 10 = 15mA - 5

Variable Voltage Output Settings

The variable voltage output option has the capability of two different voltage ranges: a 0-5Vdc range as standard, and a user-selectable 0-3Vdc range.

The full list of commands on how to change the voltage output is available from Parker.

The following tables can be used to relate the analog output to an ISO or NAS code.

For example, in a 0-5Vdc range, ISO code 16 is equal to an output of 3.5Vdc. In a 0-3Vdc range, ISO code 8 is equal to an output of 1.0Vdc.

Table relating ISO codes to voltage output

ISO	Err	0	1	2	3	4	5	6	7	8	9	10	11
0-5Vdc	<0.2	0.3	0.5	0.7	0.9	1.1	1.3	1.5	1.7	1.9	2.1	2.3	2.5
0-3Vdc	<0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3

ISO	12	13	14	15	16	17	18	19	20	21	22	Err
0-5Vdc	2.7	2.9	3.1	3.3	3.5	3.7	3.9	4.1	4.3	4.5	4.7	>4.8
0-3Vdc	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.4	>2.45

Table relating NAS codes to voltage output

ISO	Err	00	0	1	2	3	4	5	6	7	8	9	10	11	12	Err
0-5Vdc	<0.4	0.6	0.9	1.2	1.5	1.8	2.1	2.4	2.7	3.0	3.3	3.6	3.9	4.2	4.5	>4.6
0-3Vdc	<0.2	N.S.	0.3	0.5	0.7	0.9	1.1	1.3	1.5	1.7	1.9	2.1	2.3	2.5	2.7	>2.8

icountPD[®]

Display Parameters (ISO 4406/NAS 1638)

Digital display indication

The digital display will show the actual measured codes, the channel (μ) size and the user definable limits. Visible display of the channel size and user definable limits will alternate.

The order of trigger for both of the codes and moisture sensor option is:

- Solid digit(s) = code(s) that are at or below the set point (limit)

- Flashing digit(s) = code(s) that are above the set point (limit)
- The display for ISO4406 and NAS1638 are identical. The ISO display is shown below.



LED display indication

The LED display uses 3 sets of LED for the indication of ISO 4406 and NAS1638 code figures. Individual code lights will trigger based on the customer settings. The order of trigger will be:

- Solid green = one ISO code, or better, below the set point (limit)
- Blinking green = ISO code at the set point (limit)
- Solid red = one ISO code above the set point (limit)
- Blinking red = two ISO codes, or more, above the set point (limit)

icountPDZ

ATEX Approved Online Particle Detector

For Use in Explosive and Hazardous Areas

The icountPD Particle Detector from Parker represents the most up to date technology in solid particle contamination analysis. This compact, permanently mounted laser-based ATEX approved particle detector module is designed for use in Zone II areas and is housed in a robust Stainless Steel IP69K approved enclosure that provides a cost effective solution to fluid management and contamination control.



Features and Benefits

- Independent monitoring of system contamination trends.
- Assembled in an approved and certified Stainless Steel enclosure to comply with ATEX Directive 94/9/EC.
- Can be used in explosive and hazardous areas.
- ATEX Zone II.
- Certified to CE Ex II 3GD,Ex nA IIC T4 Gc,Ex tc IIIC Dc SIRA 09ATEX4340X and IECEx SIR 09.0137X (-30°C<Ta<+60°C).
- Warning limit relay outputs for low, medium and high contamination levels.
- Continuous performance for prolonged analysis.
- Self diagnostic software.
- Full PC/PLC integration technology such as:- RS232 and 0-5Volt, 4-20mA, CAN(J1939) (Contact Parker for other options.)
- Setup and Data logging support software included.

icountPD® Auxiliary Flow Device

This simple to use flow control device fits on the downstream (outlet) side of the icountPD and is fitted with a differential pressure valve that adjusts the system flow to a range inside the icountPD specifications.



P/N ACC6NN019

Working pressure range	145 to 4351 psi (10 to 300 bar)
Differential pressure range	145 to 4351 psi (10 to 300 bar)
Working viscosity range	10 to 150 cSt (59 to 696 SUS)

icountPD[®]/icountPDR/icountPDZ

Optional Accessories				
Description	Part Number	IPD	IPDR	IPDZ
	Aviation/ Diesel Fuel			
1 Meter Hose Length	ACC6NN001	X		
2 Meter Hose Length	ACC6NN003	X		
5 Meter Hose Length	ACC6NN005	X		
1/4" BSP Test point	ACC6NN007	X		
1/8" BSP Test point	ACC6NN009	X		
1/8" NPT Test point	ACC6NN011	X		
Single Point Sampler	SPS2021	X	X	X
US Power Supply	ACC6NE010	X	X	X
European Power Supply	ACC6NN013	X	X	X
5 meter, M12, 8-pin plug and socket cable kit*	ACC6NN014	X		
Deutsch 12-pin connector kit	ACC6NN016	X	X	
RS232 to USB converter	ACC6NN017	X	X	X
12" long M12 8-way RS232 & power cable kit	ACC6NN018	X		X
External Flow Device	ACC6NN019	X	X	X
M12, 12 way cable	ACC6NN024		X	

Standard Default Settings for all icountPDs		Default if Options Fitted	
Comms echo	OFF	Relay hysteresis	ON
Verbose errors	OFF	Relay operation for particle limits	ON
STI Sensors used	OFF	Digital display orientation	0 degrees
Reporting standards	ISO	Digital display brightness level	3-mid
Particle limits	19/18/15	0-5V/0-3V output voltage range	0-5V
Measurement period	60 seconds		
Reporting interval	30 seconds		
Power-on mode	AUTO		
Auto start delay	5 seconds		
Date Format	dd/mm/yy		

* Cable Kit consists of two 5 meter cables to enable all output options (Communications cable and Relay/Power Supply cable).

icountPD[®]

icount Particle Detector

How to Order

Select the desired symbol (in the correct position) to construct a model code. Example:

BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	BOX 6	BOX 7	BOX 8
IPD	1	2	2	2	2	1	30

BOX 1: Basic Assembly	
Symbol	Description
IPD	Standard Particle Detector
IPDR	Particle Detector - Robust
IPDZ	Particle Detector - Hazardous (Zone 2)

BOX 2: Fluid Type ^{1,2}	
Symbol	Description
1	Mineral Oil
2	Phosphate Ester (iPD, iPDR only)
3	Aviation Fuel (4channel) (iPD, iPDZ only)

BOX 3: Calibration	
Symbol	Description
2	MTD

BOX 4: Display	
Symbol	Description
1	None (iPD, iPDZ only)
2	LED (iPD only)
3	Digital (iPD only)

BOX 5: Limit Relay	
Symbol	Description
1	No (iPDR only)
2	Yes

BOX 6: Communication ^{3,4}	
Symbol	Description
2	RS232/4-20mA
3	ES232/0-5V (iPD, iPDR only)
5	RS232/CAN-bus (J1939)

BOX 7: Moisture	
Symbol	Description
1	No
2	Yes

BOX 8: Cable Connector ^{5,6}	
Symbol	Description
10	Deutsch DT Series (iPD, iPDR only)
30	M12, 8-pin plug connector (iPD, iPDZ only)
40	M12, 12-pin plug connector (iPDR only)

Notes:

- When "3" is selected in Box 2, "1" must be selected in Box 7.
- Aviation Fuel option can also be used for diesel fluids.
- For iPD and iPDR units, when "5" is selected in Box 6, "10" must be selected in Box 8.
- When "3" is selected in Box 2, "3" cannot be selected in Box 4.
- Contact Parker for additional communication options (RS485, GPRS, LAN, WiFi, Sat, etc.)
- The required connecting cables are available as a kit. The kit consists of two 5 meter cables (Communications cable and Relay/Power Supply cable) to enable all output options. See Accessory table on page 32 for applicable part number.

Hydrokit®

Hydrokit HFD Series

Detection of Free Water in Diesel

The HYDROKIT is an effective “Go, No-Go” field test designed to periodically check for free water, which is removed to ppm levels by properly operating filter/ separators, Aquacon, and monitor vessels. Samples are normally taken downstream of the vessel, but they can also be taken at other points in the fuel distribution system. The HYDROKIT is designed to indicate free water in excess of 200 ppm by changing the powder contained in the sample tube to a pink color. Other concentrations can be estimated using the other colors on the card.



The HYDROKIT provides better water determination than ASTM D2709 or D4176. The HYDROKIT is designed for “fail-safe” operation, with false negative readings unlikely. Almost any error in performing the test will indicate the presence of wet fuel. If the sample indicates the presence of excessive water, it is always a good practice to repeat the test on a second sample.

Features and Benefits

- Easy to Use – Automatically controls the sample size. Simple evaluation by color comparison.
- Shelf Life – For details on shelf life refer to date on box or contact us at 1-800-531-0180.
- Responds Consistently – Responds consistently in a wide variety of undyed diesel fuels.
- Carefully Controlled Quality – Manufactured by Parker HFFD to strict quality control specifications.

Application

- Diesel Fuel, undyed

Ordering Information

Part Number	Description
HKD 25	Hydrokit with 25 test tubes

Each model above comes complete with:

- Sample tubes
- Wide mouth glass sample jar(s)
- Needle holder assembly
- Instruction card
- Color indicator comparison card

Par-Test™

Fluid Analysis

Complete laboratory analysis.

Fluid analysis has proven to be a critical tool for any preventive maintenance program. Fluid analysis is able to identify potential problems that cannot be detected by human senses. A comprehensive fluid analysis program can help prevent major hydraulic or lube oil system failures.

Par-Test is a complete laboratory analysis, performed on a small volume of fluid. The report you receive is a neatly organized three page format. One may quickly analyze the test results of an individual sample and/or look at a trend analysis for up to five different samples. Two types of services are offered through Par-Test, a water base fluid analysis kit or a petroleum base fluid analysis kit. For both types of services the Par-Test kit includes a pre-cleaned glass bottle, mailing container with pre-addressed label, sample information data sheet (to be completely filled out by end user) and the following analysis:

Petroleum Base Kit

- Particle Count
- Photomicrograph
- Free Water Analysis
- Spectrometric Analysis
- Viscosity Analysis
- Water Analysis (PPM)
- Neutralization Analysis

Water Base Kit

- Particle Count
- Photomicrograph
- Spectrometric Analysis
- Viscosity Analysis
- Neutralization Analysis



Part Numbers	Description
927293	Petroleum base fluid kit (Carton of 10 bottles)
932995	Water based fluid kit (Single test bottle)

Fluid sampling for Par-Test involves important steps to insure you are getting a representative sample. Often, erroneous sample procedures will disguise the true nature of the system fluid. A complete sampling procedure is detailed on the back of this brochure. There also is a National Fluid Power Association standard (NFPA T2.9.1-1972) and an American National Standards Institute Standard (ANSI B93.13-1972) for extracting samples from a fluid power system.

Par-Test™

Fluid Analysis

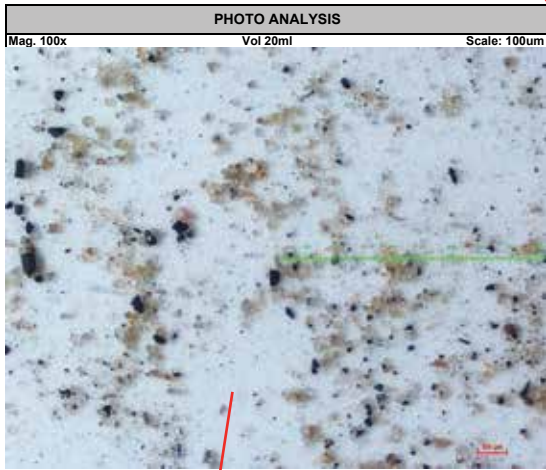
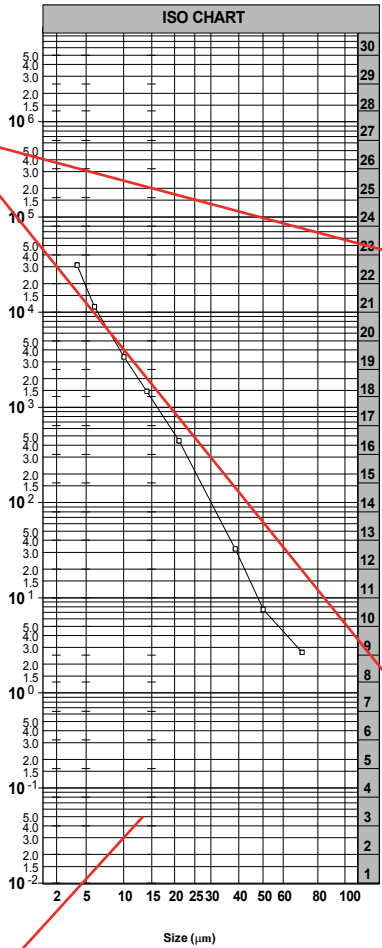
For our Par-Test™ customers, the analysis report is available online for your ease and convenience. Historical data is also available. Visit www.partestlab.com

SAMPLE CODE: 12/9/6	DATE: 03/23/16		PARTEST Fluid Analysis Service Parker Hannifin Corporation 1016 E. Airport Rd. Stillwater, OK 74075 Tel: (405) 624-0400 Fax: (405) 624-0401
Clean Fluids Company 1234 Filtration Ave ISO, OH, 181613 ATTN: Valued Customer			

COMPANY NAME: Clean Fluids Company	SAMPLE DATE: 3/16/2016
SYSTEM TYPE:	HOURS: (on oil): (on unit):
EQUIPMENT TYPE:	SYSTEM VOLUME:
MACHINE ID: Cat?	FLUID TYPE: Diesel
FILTER ID:	ANALYSIS PERFORMED: N2,S,T,V4,W

Size	Counts per ml	ISO Code
>4 µm(c)	31041.9	22/21/18
>6 µm(c)	11388.5	
>10 µm(c)	3375.2	
>14 µm(c)	1473.5	
>21 µm(c)	445.0	
>38 µm(c)	32.4	
>50 µm(c)	7.5	
>70 µm(c)	2.7	

FREE WATER PRESENT
NO



ALARMS/REMARKS	
No recommended ISO target level	
Blank = No alarm provided due to insufficient information	
Report	1=Normal (All tests Normal) **See below
Number	2=Caution (One or more tests=Caution or 1 Attn Req.)
Alarm	3=Attention Required (Two or more tests=Attn Req)

**If no recommended cleanliness level is provided the Alarm system will not take in account the particle count

Sample Data

Information supplied by the user regarding the fluid to be analyzed. Complete and accurate information is crucial for a useful analysis.

Particle Count

Results are reported over 6 different particle size ranges and expressed as an ISO code (modified). The counts are per milliliter of fluid and the reporting is cumulative; ie. The particle count in the >2 micron row includes the number of particles greater than 5, 10, 15, 25 and 50 microns as well as particles between 2-5 microns in size. Particle resuspension method is utilized for water based fluid samples.

Free Water Analysis

Determines if the water present is beyond the saturation point of the fluid. At the saturation point, the fluid can no longer dissolve or hold any more water.

Photo Analysis

A photomicrograph of a small volume of fluid (20 ml) magnified 100X. This analysis gives a quick glance at the contamination present in the fluid. Each line of the graduated scale represents 20 microns in size.

The full color photomicrograph helps identify particles which would otherwise be grouped by class.


ISO Chart

Graphically illustrates the particle count on a graph. The recommended cleanliness code level, if given on the submittal form, is shown by a broken line on the ISO chart.

Par-Test™ Fluid Analysis

FLUID ANALYSIS REPORT

Page 2

SAMPLE CODE: 12/9/6	DATE: 03/23/16		PARTEST Fluid Analysis Service Parker Hannifin Corporation 1016 E. Airport Rd. Stillwater, OK 74075 Tele: (405) 624-0400 Fax: (405) 624-0401
Clean Fluids Company 1234 Filtration Ave ISO, OH, 181613			
ATTN: Valued Customer			

For our Par-Test™ customers, the analysis report is available online for your ease and convenience. Historical data is also available. Visit www.partestlab.com



SPECTROMETRIC ANALYSIS		
WEAR METALS AND ADDITIVES	PPM BY WEIGHT	*STATUS
IRON	<1.0	
COPPER	4.0	
CHROMIUM	<1.0	
LEAD	<1.0	
ALUMINUM	<1.0	
TIN	<1.0	
SILICON	<1.0	
ZINC	<1.0	
MAGNESIUM	<1.0	
CALCIUM	<1.0	
PHOSPHORUS	3.0	
BARIUM	<1.0	
BORON	<1.0	
SODIUM	<1.0	
MOLYBDENUM	<1.0	
SILVER	<1.0	
NICKEL	<1.0	
TITANIUM	<1.0	
MANGANESE	<1.0	
ANTIMONY	<1.0	

*VL = VERY LOW L = LOW N = NORMAL H = HIGH VH = VERY HIGH

The Spectrometric Analysis reports the ppm level of 20 different wear metals and additives in the sample. Generally the first 7 and last 5 elements are considered wear elements not normally present in hydraulic oil. Zinc through molybdenum (shaded) represent some common additives in oil. If a baseline oil sample (new oil out of a drum) is provided, then comments on the analyzed sample can be provided on whether the status of the elements are low, normal, or high.

VISCOSITY ANALYSIS - ASTM D445	
CST@100C:	SUS@210F:
CST@40C: 1.71	SUS@100F: 31.6

Viscosity at 40C (100F) is reported in Centistokes (cSt) and SUS (Saybolt Universal Seconds). The test is conducted in accordance with ASTM D445 procedures for determining the kinematic viscosity of fluids.

NEUTRALIZATION ANALYSIS - ASTM D974	
TAN:	0.08

The Total Acid Number (TAN) test measures the acidity of a hydraulic fluid. The higher the number, the more acidic the fluid. Over time this may mean the fluid is becoming oxidized.

WATER ANALYSIS - ASTM D6304	
WATER CONTENT (ppm):	62.1

The water analysis test shows the actual parts per million of water in a sample. This is known as the Karl Fischer titration test and is conducted in accordance with ASTM D6304.

Comments
No baseline oil for Diesel is present in our current baseline oil library. Please forward a new/fresh oil sample for analysis.

Viscosity Analysis

Viscosity is a very important property of a fluid in terms of system performance. Viscosity expresses the internal friction between molecules in the fluid. Typically a breakdown in viscosity will be seen as an increase. Both SSU at 100° F and cSt at 40° C are reported.

Neutralization Analysis

Referred to as the Total Acid Number (TAN) this titration test measures the acid level of the sample fluid. The production of acidic material causes oxidation degradation or aging of most fluids. This activity is promoted by elevated temperatures, presence of entrained metal particles, and intimate contact with air. It is the rate of increase of the TAN during any given time period that is significant, not just the absolute value.

Water Analysis

Karl Fischer test gives accurate measure of water concentration in the sample fluid. The results are reported in parts per million (PPM) and allow for detection of water levels well below the saturation point.

Remarks

Quick statements or alerts about any unusual results from one of the tests reported on this page.

Spectrometric Analysis

Results obtained by Rotating Disk Electrode (ROE) Spectrometer and reported in terms of parts per million (PPM). Twenty different wear metals and additives are analyzed to help determine the condition of the fluid. The spectrometric test is limited to identifying particles below 5-7 micron in size. Base line (new) fluid samples should be sent in for each different fluid to be analyzed. This will be used to determine the status.

Low Range DIGI Water Kit

The DIGI Test Cell provides simple, accurate results for water in oil/fuel (including diesel and biodiesel)



With an easy to read digital display providing instructions and results, a five year (10,000 tests) battery life and built in memory for recording previous test results, the DIGI Cell has become a favored test method world-wide for on-site and on-board testing.

Specifications

Ranges	200-3000 ppm .02 - 1% 0 - 10%
Test Time	3 Minutes
Battery Life	Five years (10,000 tests)

Reagents, Spares and Consumables

Test kits for individual parameters contain reagents, consumables and full instructions for multiple tests.

- Replacement reagents can be ordered at short notice.
- Kits contain all necessary equipment for instant test results in the field.
- Reagents are packed in accordance with IATA/IMDG/IRD Air/Marine/Road Transportation codes and can be delivered to major ports world-wide.

Water in Oil/Fuel

Maintain and protect your equipment, while eliminating damage caused by water in oil/fuel.

- Prevent corrosion, cavitation or failure of your machinery by detecting water in oil/fuel, before any damage occurs.
- Minimize instability of additive packages and damaging microbe growth by monitoring your oil/fuel.
- Fully portable for use on-board or in the field, test cells are extremely robust, durable and easy to use.

Electronic display gives step by step test instructions

Latest transducer technology for improved accuracy and ease of cleaning

Simple to use keypad for ease of use

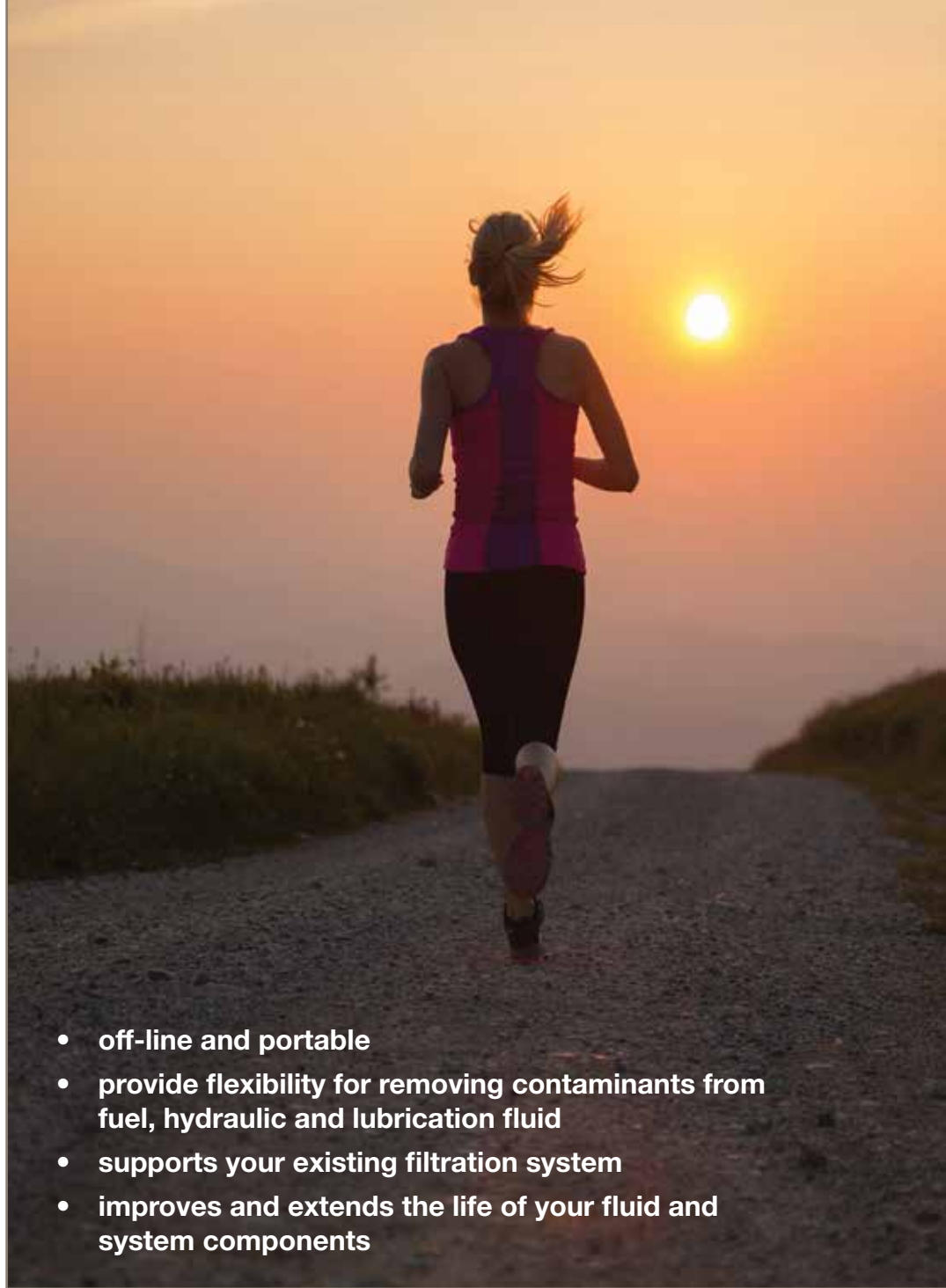
Lightweight glass reinforced plastic body

Nonslip twist grips



Ordering Information

Part Number	Description
FGK17032PA	Low Range DIGI Water Kit
FGK2101PA	Water in Oil/Fuel Reagent Pack (50)



- off-line and portable
- provide flexibility for removing contaminants from fuel, hydraulic and lubrication fluid
- supports your existing filtration system
- improves and extends the life of your fluid and system components

Therapeutic

Supports, Improves, Fortifies



Guardian®

Portable Filtration System



The Guardian portable filtration system is a unique pump/motor/filter combination designed for conditioning and transferring petroleum-based and water emulsion fluids. It protects your system from contamination added with new fluid because new fluid is not necessarily clean fluid. Most new fluids right out of the drum are unfit for use due to high initial concentrations of contaminants. Contamination may be added to a new fluid during processing, mixing, handling, and storage.

The Guardian also circulates and “polishes” fluid in your existing systems to reduce the contamination to an acceptable level. There are hundreds of applications that the Guardian is suited for, with more being discovered each day. If your system is sensitive to the harmful effects of contamination, then the Guardian may be ideal for you.

Features	Advantages	Benefits
Lightweight, hand held, compact design	Easy to carry and fits easily on top of 55 gallon drums.	One person operation, capable of getting to hard to reach areas.
Flow rate to 4 gpm (18 lpm).	Filters and transfers simultaneously.	One step operation.
Pump/motor combination with Carboxylated Nitrile seals standard.	Handles fluids up to 16,000 SUS viscosity (11,000 SUS -24 VDC).	Reliable performance in a wide variety of operating conditions.
Built-in relief valve with no downstream fluid bypass.	Only filtered fluid reaches downstream components.	100% filtration ensured, even when unattended.
Wide variety of filter elements available.	High capacity 2 micron absolute disposable microglass to 74 micron cleanable wire and water removal.	Maximizes element life between changes.
Clear, wire-reinforced 5' hose assemblies with wand attachments.	No additional hardware required.	Ready to use and easy to maneuver.
Optional quick disconnect hose connections.	Fast, easy setup and tear-down.	Eliminates messy drips.
Heavy-duty ¼ HP, 115 VAC (230 VAC, 24 VDC- optional) motor with thermal overload protection.	UL recognized and CSA listed, with replaceable brushes.	Safe, reliable performance; field serviceable.
Geroter pump with visible serviceable inlet strainer.	Dirt tolerant design with added protection.	Pump reliability in highly contaminated fluids.
Quiet operation.	Less than 70dB noise level @ 3 feet.	Can be used most anywhere with minimal disturbance.
Convenient inlet-to-outlet hose connection.	Contains fluids when transporting.	Clean and safe operation.
Low center of gravity.	Guardian stability.	Unattended reliability.
Dual motor seals.	Added motor protection.	Longer motor life.
Auxiliary inlet/outlet ports.	Used in place of, or in addition to, standard ports. The outlet can also be used as a sampling port.	Flexibility.

Guardian[®]

Specifications and Installation

Maximum Allowable Operating Pressure (MAOP)

50 psi (3.4 bar)

Flow Capacity

Up to 4 gpm (15 lpm)

Maximum Recommended Fluid Viscosity

(.85 specific gravity)
110-120 VAC and 220-240 VAC -
16,000 SUS
24VDC - 11,000 SUS

Warning

Explosion hazard. Do not pump flammable liquids such as gasoline, alcohol, solvents, etc.

Operating Temperatures

Unit -15°F to 180°F (-26°C to 82°C)
Wand/Hose 25°F to 120°F (-4°C to 49°C)

Visual Indicator

Differential pressure type, set at 25 psid (1.7 bar)

Recommended Fluids

Petroleum based oils, water emulsions, and diesel fuels

Integral Relief Valve

Set at 50 psi (3.4 bar) for motor protection.

Noise Level

<70db at 3 ft.

Electrical Motor

¼ hp@2500 rpm.
24 VDC; 10A max.
110-120 VAC; 50/60 Hz; 3A max.
220-240 VAC; 50/60 Hz; 1.5A max.
Thermal overload protected.
Replaceable brushes (500 hours).

Weight

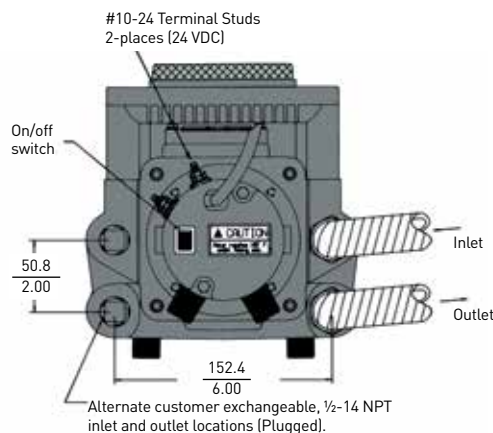
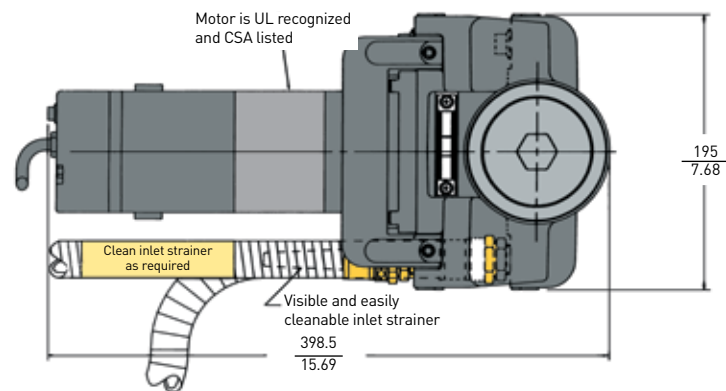
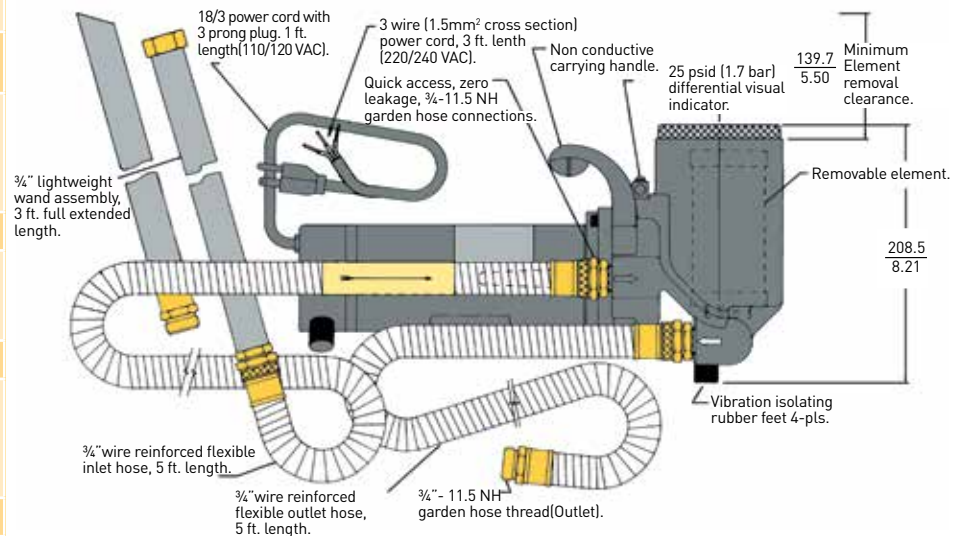
Approximately 24 lbs (10.8 kg)

Materials

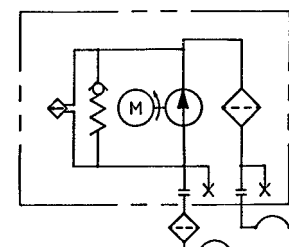
Housing - cast aluminum
Cover - die cast aluminum
Handle and Indicator - nylon
Wands and Hose - PVC
Fittings - brass
Seals - fluorocarbon/carboxylated nitrile

Dimensions

mm
in



Guardian Schematic



Guardian®

Element Performance

Media Code	Filter Media	Time Averaged Beta x/y/z =2/20/75 Where x/y/z is:	Dirt Capacity (Grams)	Beta Rating	Efficiency at x Particle Size
74W	Woven Wire	74 micron ¹	*	B _x = 2	50.0%
40W	Woven Wire	40 micron ¹	*	B _x = 20	95.0%
25W	Woven Wire	25 micron ¹	*	B _x = 75	98.7%
20C	Cellulose	20 micron ¹	*	B _x = 200	99.5%
10C	Cellulose	5/8/16	4	B _x = 1000	99.9%
20Q	Microglass III	7.1/13.7/17.3	16.2		
10Q	Microglass III	2.7/7.3/10.3	14.4		
05Q	Microglass III	<2/2.1/4.0	14.9		
02Q	Microglass III	<2/<2/<2	14.3		

Multipass test run at 4 gpm (15 lpm) to 35 psid (2.4 bar)

¹Reference ratings only. Not multipass tested due to coarseness.

* Not applicable

Estimated Guardian Element Life and Cleanliness Levels

The following chart shows typical element life (in gallons of oil passed) and cleanliness levels achieved by standard Parker elements available with the Guardian. Some assumptions have been made.*

Media Code	New Oil ISO	ISO Achieved	Element Life	Elements Used per 250 gallons
10C	22/20/16	21/19/15	120 gallons	2.08
20Q	22/20/16	21/19/15	486 gallons	.51
10Q	22/20/16	19/16/14	407 gallons	.61
05Q	22/20/16	17/15/12	330 gallons	.75
02Q	22/20/16	15/13/10	316 gallons	.79

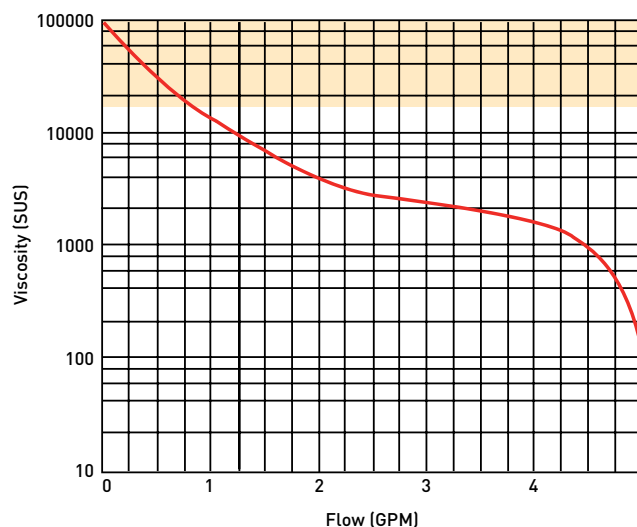
* 1. New oil is at ISO 22/20/16.

2. No environment or work ingestion.

3. Single pass oil transfer.

NOTE: Data for fluid transfer only. For continuous fluid polishing, lower ISO cleanliness levels will be achieved.

Guardian Flow vs. Viscosity Performance

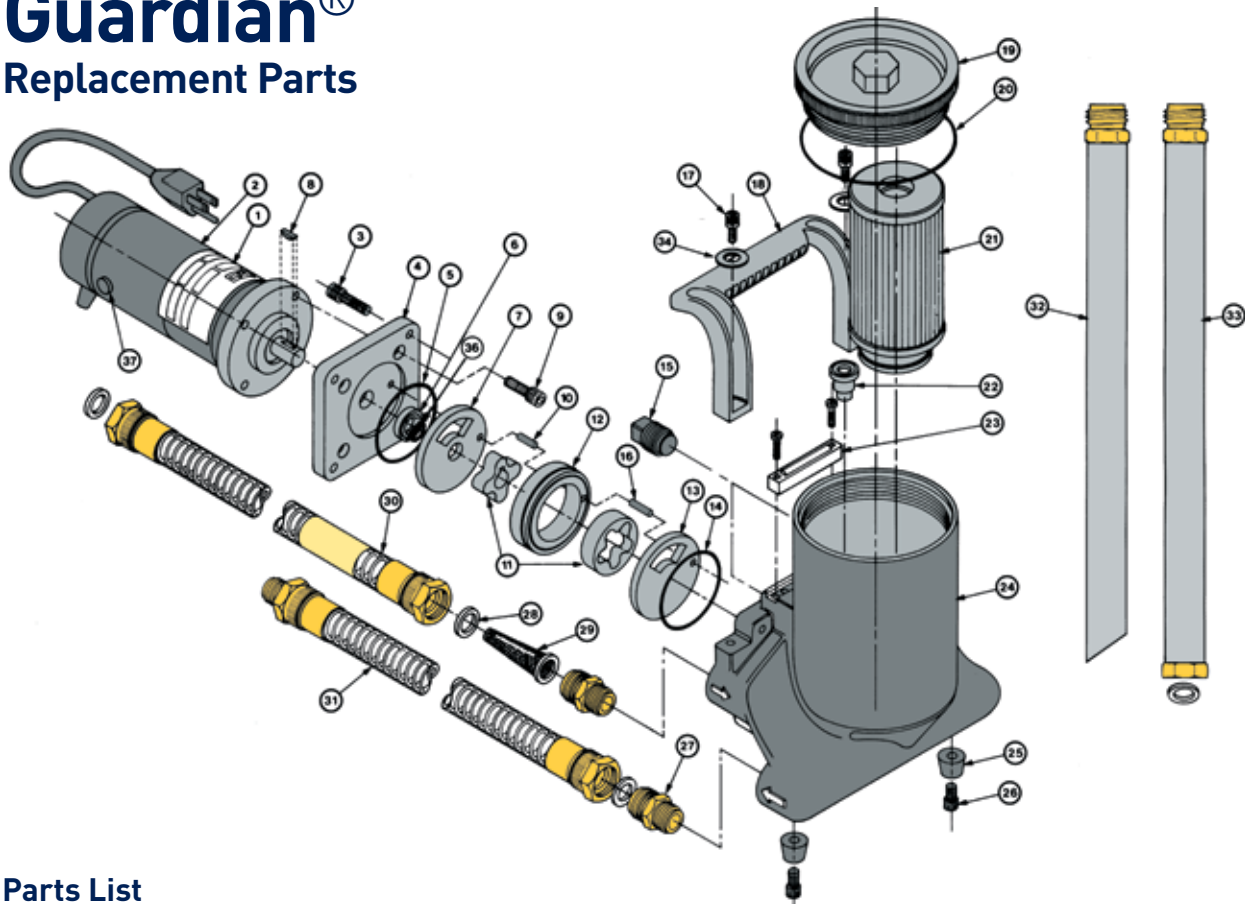


Note 1: Guardian not recommended for fluid viscosities greater than 16,000 SUS (11,000 SUS;24VDC)

Note 2: Flows based on Guardian with no element installed

Guardian®

Replacement Parts



Parts List

#	Part Number	Description
1	CF	LABEL
2	931913 932381 932759	MOTOR (110-120 VAC) MOTOR (220-440 VAC) MOTOR (24 VDC)
3	902734	SOCKET HEAD CAP SCREW (4), 1/4-20X1
4	931890	ADAPTER PLATE
5	V72041	HOUSING O-RING
6	931921	POLYPAK SEAL
7	931899	SHADOW PLATE
8	931877	WOODRUFF KEY 1/8 X 3/8
9	902679	SOCKET HEAD CAP SCREW (4), 1/4-20 X 3/4
10	903630	ROLL PIN 1/8 X 3/4
11	931873	GEROTER SET
12	931903	GEROTER RING
13	931900	OUTLET PLATE
14	V72135	GEROTER O-RING
15	931920	BRASS PIPE PLUG (2) 1/2-14
16	903426	Roll Pin 1/8 x 5/8
17	931889	SOCKET HEAD CAP SCREW (2), 1/4-20 x 5/8
18	931897	HANDLE
19	931892	COVER
20	V72237	COVER O-RING

#	Part Number	Description
21	SEE 44	ELEMENT
22	928981	RELIEF VALVE
23	927422	INDICATOR KIT
24	931838	HOUSING
25	931888	RUBBER BUMPERS (2)
26	902907	SOCKET HEAD CAP SCREW (2), 1/4-20 x 1/2
27	931928	BRASS FITTING (2)
28	931956	GASKET (4)
29	931927	INLET SCREEN
30	931936	INLET HOSE ASSEMBLY
31	931937	OUTLET HOSE ASSEMBLY
32	931965	WAND CREVICE ASSEMBLY
33	931966	WAND ADAPTER ASSEMBLY
34	926106	WASHER (2)
35	932097	QUICK DISCONNECT KIT (NOT SHOWN)
36	932085	WASHER
37	934329	BRUSH KIT (110/120 VAC)
	934327	BRUSH KIT (220/240 VAC)
	932761	BRUSH KIT (24 VDC)
	932263	SEAL KIT
	932081	BOWL EXTENSION KIT

CF - Consult Factory

Guardian®

Portable Filtration System

How to Order

Select the desired symbol (in the correct position) to construct a model code. Example:

BOX 1	BOX 2	BOX 3	BOX 4
	GT4	10C	1

BOX 1: Seals	
Symbol	Description
None	Carboxylated Nitrile

Note: Consult factory for fluids not compatible with fluorocarbon.

BOX 2: Model	
Symbol	Description
GT4	110/120VAC
GT4D	24VDC
GT4E	220/240 VAC

BOX 3: Media	
Symbol	Description
74W	Wire Mesh
40W	Wire Mesh
25W	Wire Mesh
10C	Cellulose
20Q	Microglass
10Q	Microglass
05Q	Microglass
02Q	Microglass
WR	Water Removal

BOX 4: Options	
Symbol	Description
1	None
6	Quick disconnect hose connections

Please note the bolded options reflect standard options with reduced lead-time.

Replacement Elements

Media	Part No.	Box Qty.	Media	Part No.	Box Qty.
02Q	933467Q	2	20C	932020	2
05Q	932018Q	2	25W	922627	1
10Q	932017Q	2	40W	922628	1
20Q	933468Q	2	74W	922626	1
10C	932016	2	WR	932019	2

DFC

Portable Diesel Fuel Filtration Cart

Practical and economical maintenance tool.

Parker's comprehensive asset health management approach extends well beyond traditional methods and brings focus to long term fuel system performance and reliability. Pre-filtration and transfer of diesel and biodiesel fuels is critical in maintaining today's fuel injection systems and extending system component life.

Tight tolerances and higher system pressures require significant improvement in fuel cleanliness and quality. The Parker Diesel Fuel Cart delivers on the promise of high efficiency removal of harmful contaminants that impact injector life and compromise engine performance. Like most fuels, diesel requires filtration prior to use and after long periods of storage.

The use of the Parker Diesel Fuel Cart is a practical and economical maintenance tool that contributes to optimum engine performance, regardless of application.



Designed for Diesel and Biodiesel blended fuels only. Do not use with Gasoline.

Features	Advantages	Benefits
Wide variety of elements available	Meets cleanliness standards	Extends component life and improves system performance
Heavy duty frame	Rugged and durable	Built to last
Lightweight and portable	Easy to move from place-to-place	One operator
Eleven-foot hose and wand assemblies included	Additional hardware not necessary	Ready to use as received
Parker's E-Z FORM™ MP Series 7219 kink-resistant nitrile hose	Low pressure suction/return hose and vehicle fuel fill connector line	Specifically made for diesel
Visual Indicator		Tells you when to change element
FBO-14 fuel filter	Does not require any tools for filter change outs	Polishes Fuel
110V/220V AC motor		
Parker H Series Gear pump	Fixed displacement loaded gear pump which has a high tolerance to system contamination	Long Life
Drip tray		Helps keep the work area safe and clean
Convenient inlet-to-outlet hose connection.	Contains fluids when transporting.	Clean and safe operation.
Low center of gravity.	Guardian stability.	Unattended reliability.
Dual motor seals.	Added motor protection.	Longer motor life.
Auxiliary inlet/outlet ports.	Used in place of, or in addition to, standard ports. The outlet can also be used as a sampling port.	Flexibility.

DFC

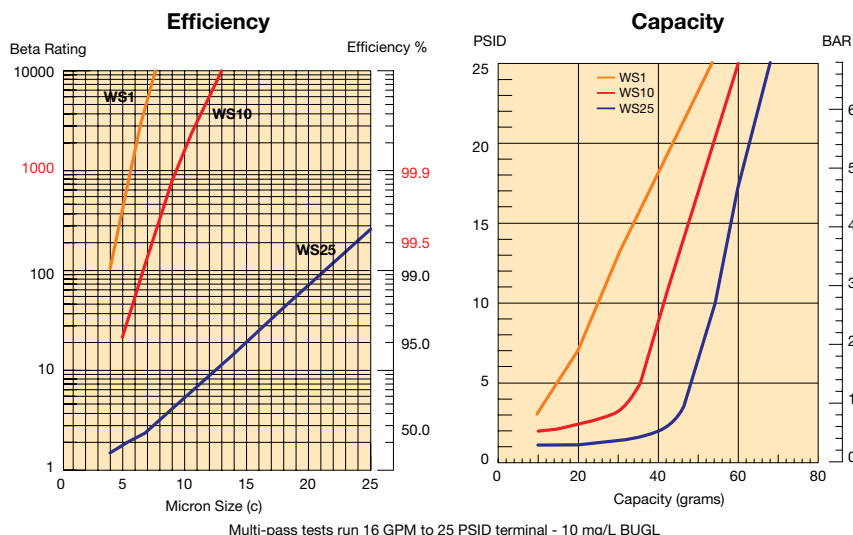
Specifications

Maximum Recommended Fluid Viscosity	Diesel – 200 SUS (44 cSt); 0.85 specific gravity
Flow Rate	16 gpm (60.5 lpm)
Visual Indicator	15 psid (1.03 bar) visual differential
Operating Temperature	17.5°F to +150°F (-8.1°C to +66°C)
Electrical Service Required	110/220 volts, 60/50 Hz, single phase, 9.6/4.8 amp
Electrical Motor	¾ hp @ 3450 rpm, TEFC
Recommended Fluids	Diesel fuels
Construction	Cart frame – Steel Filter head – Die Cast Filter bowl – Steel Hoses – Nitrile Wands - PVC
Weight	107 lbs. (48.5 kg)
Dimensions	Height: 40.7 in (1034 mm) Width: 25.5 in (648 mm) Depth: 19.8 in (503 mm)

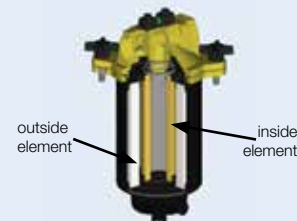
Element Performance

New Tier 4 Diesel Engines require finer filtration and better performance

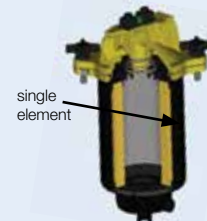
Typical engine fuel contamination levels, established in 1998 by Worldwide Fuel Charter Committee, required cleanliness of 18/16/13 per ISO 4406. Due to technology advances in High Pressure Common Rail injection systems, the new engines manufactured today require cleanliness levels as low as **12/9/6 or better**. Injector pressures are exceeding 30,000 psi (2,068 bar) and smaller nozzle openings are driving the requirements.



Element Choices



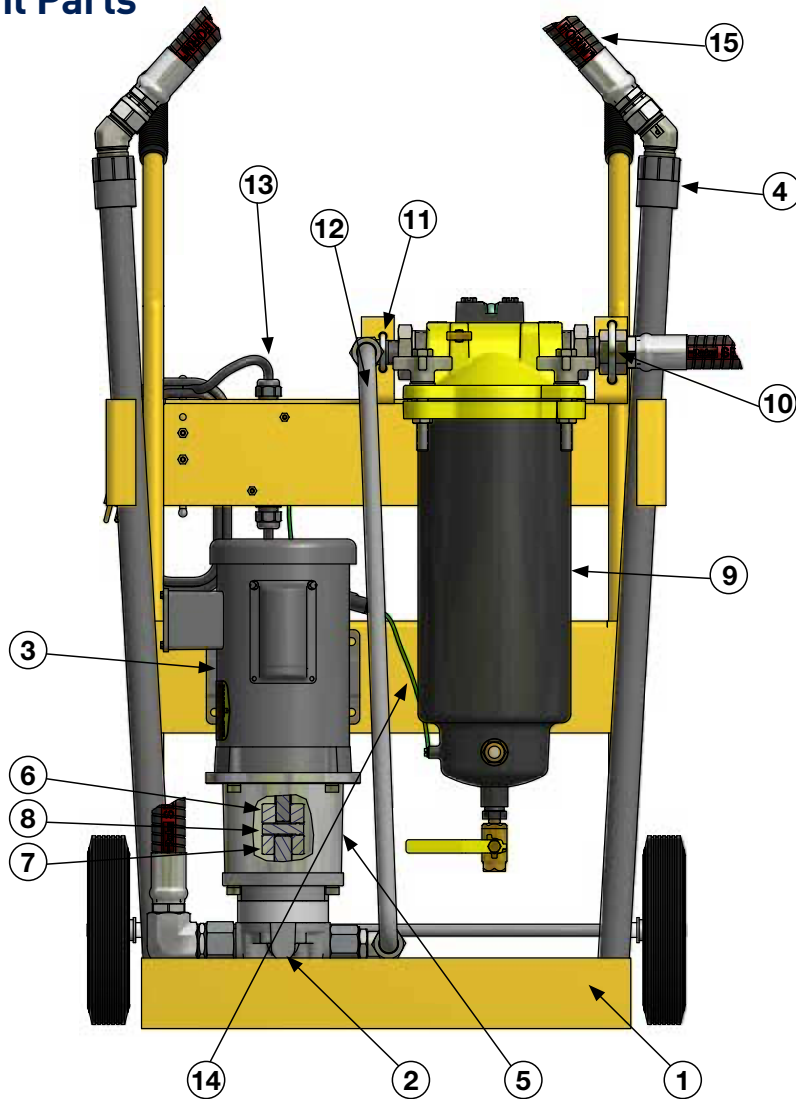
WS - Water separator elements are critical when there is a need to remove both particulate and water contamination from fuels. Testing has shown the WS 25 micron element is capable of achieving >99.5% single pass particulate removal efficiency.



ST - Silicone treated elements are ideal for removing particulate contaminants like dust, dirt, rust, sand, scale etc. from fuels. Testing has shown the ST 25 micron elements are capable of achieving >98.8% single pass particulate removal efficiency.

DFC

Replacement Parts



Parts List

#	Part Number	Description	Qty.	#	Part Number	Description	Qty.
1	945602	DFC Cart Frame Assembly	1	9	945513	Filter Housing FBO-14	1
2	943389	H49 Gear Pump H49AAIAV	1	10	945512	U Bolt SS 5/16-18 thread 2-11/16"	1
3	945579	3/4 HP Motor 3600 RPM 60 hz C-Face	1	11	945511	U Bolt SS 1/4-20 thread 2" long	1
4	928784	PVC Wand - 3 ft	2	12	945508	Tube Assembly 3/4 OD 25.11" long	1
5	943042	Pump Adapter	1		928616	Heater Element (not shown)	1
6	943087	Coupling Lovejoy L075.625	1	13	928617	Manual Motor Starter (on back)	1
7	943088	Coupling Lovejoy L075.750	1	14	CF	Deutsch Connector Assembly Ground Wire	1
8	943133	Spider Nitrile L075	1	15	945582B	Hose Assembly E-Z Form Series 7219 - 8 ft	2

CF - Consult Factory

DFC

Portable Diesel Fuel Filtration Cart

How to Order

Select the desired symbol (in the correct position) to construct a model code. Example:

BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	BOX 6	BOX 7	BOX 8
DFC	14	WS	10	V	V	X	1

BOX 1: Filter Series	
Symbol	Description
DFC	Standard Cart

BOX 2: Model Length	
Symbol	Description
14	Double

BOX 3: Media Code	
Symbol	Description
WS	Water Separator
ST	Silicone Treated Particulate

BOX 4: Degree of Filtration	
Symbol	Description
01	1 micron
10	10 micron
25	25 micron

BOX 5: Seals	
Symbol	Description
V*	Fluorocarbon (FKM)

* E-Z Form™ MP 7219 Nitrile Hose

BOX 6: Indicator	
Symbol	Description
V	Differential Visual

BOX 7: Bypass	
Symbol	Description
X	No Bypass

BOX 8: Options	
Symbol	Description
1	None

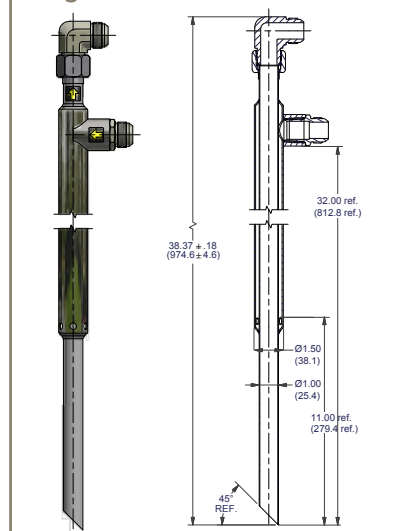
Replacement Elements

Element	Micron Rating	Coalescer/ Separator	Particulate
FBO-14	1	945515	945519
	10	945517	945521
	25	945518	945522

Accessories

Part Number	Description
945292	Concentric Wand

Single Point Suction & Return



945292

- 1" diameter suction tube
- Fits in openings 1.5 inches and larger
- 32" suction depth
- In-tank filtering
- One port access to the tank
- All steel construction
- Patent pending

Diesel Filtration Skid

DFS™ Series

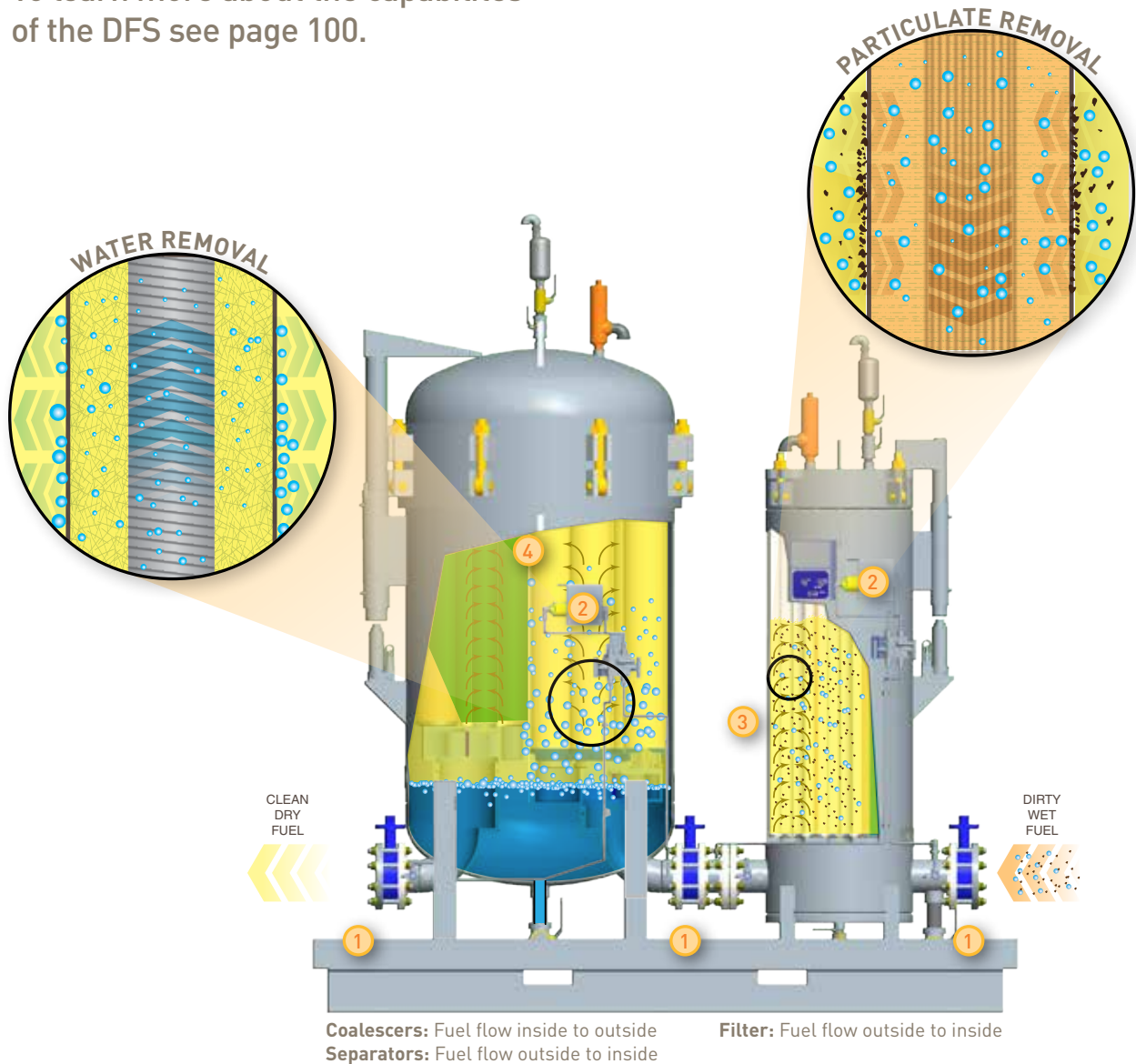
System for Fuel Condition Monitoring

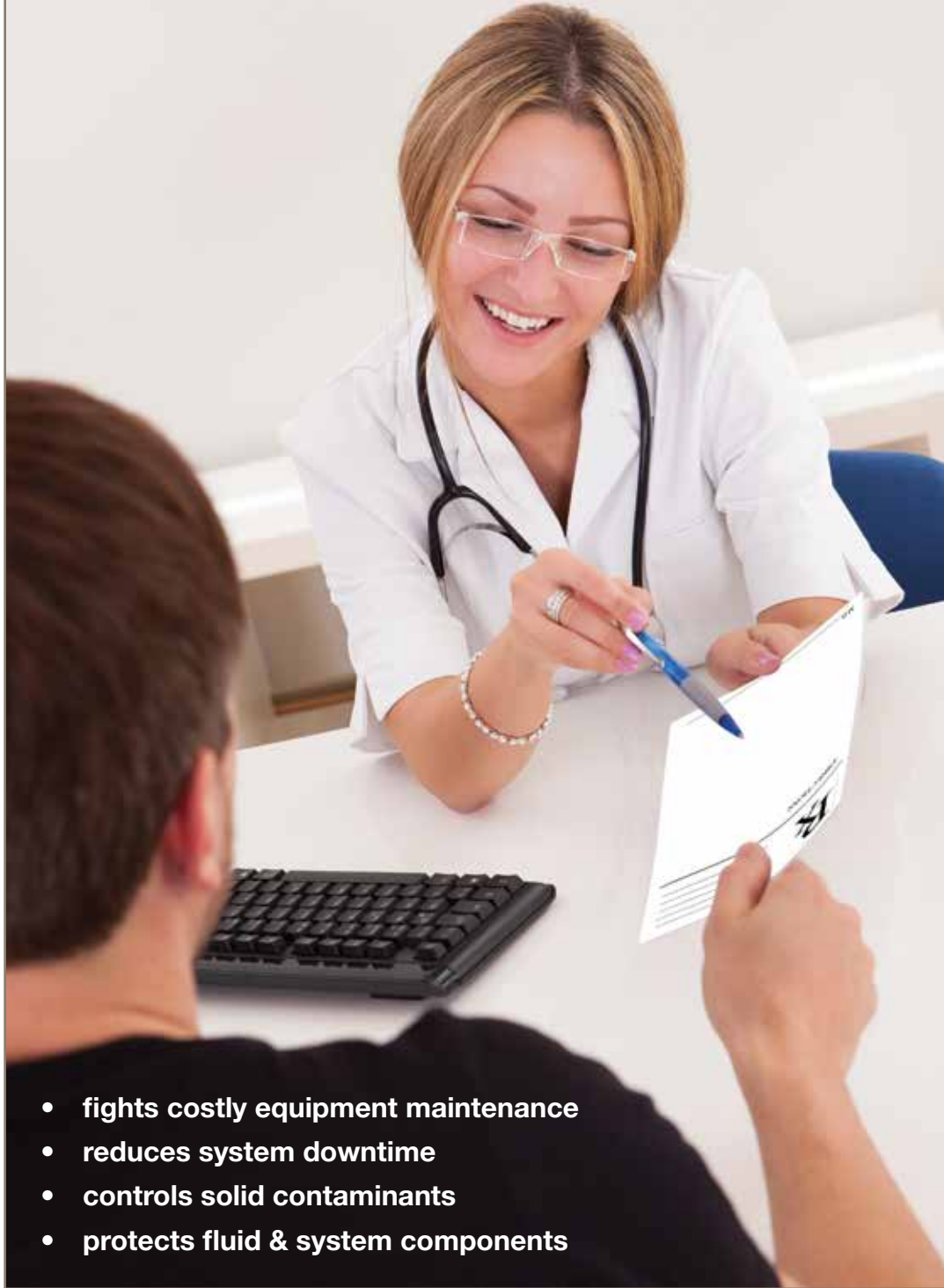
The Diesel Filtration Skid (DFS) plays an important role in a comprehensive fuel contaminant control program as it provides fuel conditioning to assure the consistent removal of abrasive particles and damaging water.

The DFS offers a complete fuel filtration solutions which incorporates both particulate and water contaminant removal technologies mounted on a skid base that can be quickly installed and put into operation.



To learn more about the capabilities of the DFS see page 100.

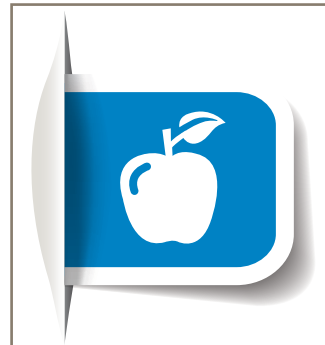




- fights costly equipment maintenance
- reduces system downtime
- controls solid contaminants
- protects fluid & system components

Preventive

Long Term Defense & Value
Reduced Cost of Ownership



Diesel Conditioner Plus

Premium Multifunctional Diesel Conditioner

Degradation, engine heat and oxidation are typical reasons diesel fuel negatively effects your engines performance. The inherent instability of diesel fuels sparked Parker Hannifin into offering a solution for keeping your diesel engine running smoothly.

Designed as an all season multifunctional additive, Parker's Diesel Conditioner Plus provides enhanced power delivery and start-up by stabilizing your diesel fuel. Formulated for regular use in diesel fuel systems, Diesel Conditioner Plus promotes long-term savings by avoiding costly repairs and down-time due to system breakdown.



Product Features

- Prevents power loss due to fouled injectors
- Works in modern common rail & legacy fuel systems
- Reduces nozzle coking and IDID (Internal Diesel Injector Deposits)
- Cetane improver for added engine performance
- Reduces fuel consumption and emissions
- Lubricity Improver protects against friction and wear
- Corrosion protection
- Biodiesel Compatible

Applications

- Agriculture
- Construction
- Generators
- Marine
- On Road/Off Road Trucks
- Railroad
- Transportation



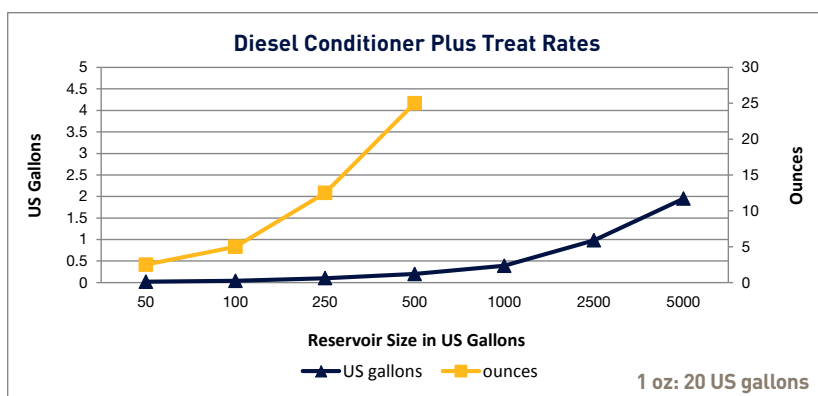
Diesel Conditioner Plus

Specifications

Appearance / Color	Dark Amber
Odor	Pungent
Density @ 60°F (15.5°C)	7.93 lb/USG
Flash Point	174.2°F (79°C)
Pour Point	<-59°F (<-50.5°C)
Viscosity @ 68°F (20°C)	6 cSt
Specific Gravity @ 60°F (15.6°C)	0.950

Directions for use:

For best results, use as directed. Add 1 ounce of Diesel Conditioner Plus per 20 gallons of fuel to maintain fuel systems and prevent deposits. Always add Diesel Conditioner Plus to the fuel tank before adding new fuel. Adding prior to fueling allows for the most effective mixing.



Reservoir Size in US Gallons	50	100	250	500	1000	2500	5000
ounces	2.5	5	12.5	25	50	125	250
US gallons	0.02	0.04	0.10	0.20	0.39	0.98	1.95

How to Order

Part Number	Description
ADT01116	16 oz (0.47 L)
ADT01201	1 US gal (3.79 L)
CF	5 US gal (18.92 L)
CF	55 US gal (208.19 L)

CF = Consult Factory



For health and safety guidance, please scan the QR code for the SDS (Safety Data Sheet) or visit www.parker.com/hydraulicfilter.



WARNING - COMBUSTIBLE LIQUID. HARMFUL IF SWALLOWED OR INHALED. HARMFUL IN CONTACT WITH SKIN. CAUSES MILD SKIN IRRITATION. TOXIC TO AQUATIC LIFE. TOXIC TO AQUATIC LIFE WITH LONG LASTING EFFECTS. RISK OF EXPLOSION IF HEATED UNDER CONFINEMENT. Avoid breathing dust / fume / gas / mist / vapors / spray. Use only outdoors or in a well-ventilated area. Wear protective gloves / eye protection / face protection. Wash thoroughly after handling. Avoid release to the environment. If skin irritation occurs: Get medical attention. All disposal practices must be in accordance with local, national and international regulations. Collect spillage.

FIRST AID: Eye contact: Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention if irritation occurs. Skin Contact: Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Get medical attention if adverse health effects persist or are severe. If necessary, call a poison center or physician. Wash clothing before reuse. Clean shoes thoroughly before reuse. Inhalation: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If breathing is labored, administer oxygen. If breathing has stopped, apply artificial respiration. Call a poison center or physician. Ingestion: Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention. If necessary, call a poison center or physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Parker Hannifin Corporation Emergency Response Company INFOTRAC 24-Hour Number: US and Canada 1-800-535-5053; International + 1-352-323-3500

Diesel Winter Conditioner Plus

Premium Diesel Fuel Winterizer

As the temperature begins to fall, wax crystals can start to form in Diesel Fuel. Parker Hannifin's Diesel Winter Conditioner Plus will reduce the likelihood of diesel fuel "gelling," preventing production freeze ups that can occur in cold temperatures. Keep your engines running at peak performance in all weather conditions.

Diesel Winter Conditioner Plus is added to petroleum distillates such as No. 2 heating oil or diesel fuel to improve low temperature operation and fuel reliability. Diesel Winter Conditioner Plus works around the clock to prevent the plugging of lines, filter screens, valves and critical fuel system components.



Product Features

- Cold Flow Improver to prevent fuel from gelling
- Deicer to reduce risk of fuel line freeze-up
- Works in modern common rail & legacy fuel systems
- Reduces nozzle coking and IDID (Internal Diesel Injector Deposits)
- Cetane Booster for easier start-ups
- Reduces fuel consumption and emissions
- Lubricity Improver protects against friction and wear
- Corrosion protection
- Biodiesel Compatible

Applications

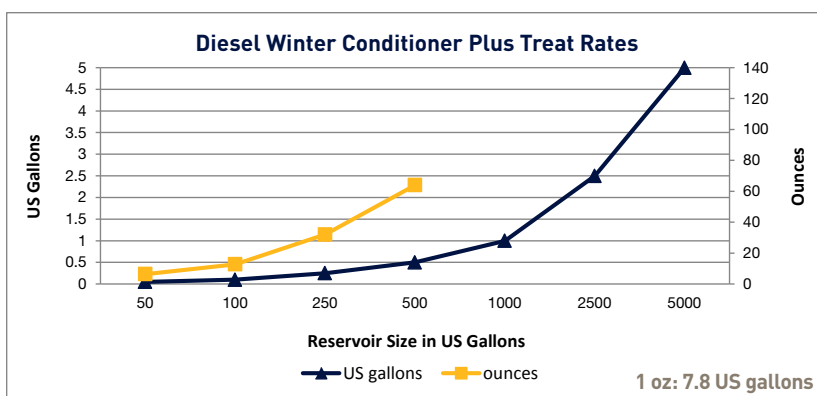
- Agriculture
- Construction
- Generators
- Marine
- On Road/Off Road Trucks
- Railroad
- Transportation



Diesel Winter Conditioner Plus

Specifications

Appearance / Color	Light Straw, Viscous Liquid
Odor	Hydrocarbon
Density @ 60°F (15.5°C)	7.71 lb/USG
Flash Point	147°F (64°C)
Pour Point	27°F (-3°C)
Viscosity @ 68°F (20°C)	121 cSt
Viscosity @ 107°F (40°C)	43 cSt
Coefficient of Thermal Expansion	0.00087



Reservoir Size in US Gallons	50	100	250	500	1000	2500	5000
ounces	6.4	12.8	32	64	128	320	640
US gallons	0.05	0.1	0.25	0.5	1	2.5	5



WARNING - COMBUSTIBLE LIQUID. HARMFUL IF SWALLOWED OR INHALED. HARMFUL IN CONTACT WITH SKIN. CAUSES MILD SKIN IRRITATION. TOXIC TO AQUATIC LIFE WITH LONG LASTING EFFECTS. RISK OF EXPLOSION IF HEATED UNDER CONFINEMENT. Wear protective gloves. Wear eye or face protection. Wear protective clothing. Keep away from flames and hot surfaces. - No smoking. Use only outdoors or in a well ventilated area. Avoid breathing vapor. Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling. Dispose of contents and container in accordance with all local, regional, national and international regulations.

FIRST AID: Eye contact: Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention if irritation occurs. Skin Contact: Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Get medical attention if adverse health effects persist or are severe. If necessary, call a poison center or physician. Wash clothing before reuse. Clean shoes thoroughly before reuse. Inhalation: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If breathing is labored, administer oxygen. If breathing has stopped, apply artificial respiration. Call a poison center or physician. Ingestion: Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention. If necessary, call a poison center or physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Parker Hannifin Corporation Emergency Response Company INFOTRAC 24-Hour Number: US and Canada 1-800-535-5053; International + 1-352-323-3500

Directions for use:

For best results, use as directed. Add 1 ounce of Diesel Winter Conditioner Plus per 7.8 gallons of fuel to protect most fuels down to -10°F / -23°C. (See chart for additional treat rates.) To protect in a severe climate, double this treat rate when temperatures are expected to drop below -10°F / -23°C (add 2 ounces of Diesel Winter Conditioner Plus per 15.6 gallons of fuel). For optimum performance, add Diesel Conditioner Winter Plus to #2 diesel fuel before the fuel temperature drops below +25°F / -4°C. Diesel Conditioner Winter Plus contains anti-gel chemistry and should be stored at or above +20°F / -7°C to prevent thickening. Always add Diesel Conditioner Winter Plus to the fuel tank before adding new fuel. Adding prior to fueling allows for the most effective mixing.

How to Order

Part Number	Description
ADT04116	16 oz (0.47 L)
ADT04201	1 US gal (3.79 L)
CF	5 US gal (18.92 L)
CF	55 US gal (208.19 L)

CF = Consult Factory

For health and safety guidance, please scan the QR code for the SDS (Safety Data Sheet) or visit www.parker.com/hydraulicfilter.



DFO Series

Particulate Filtration

High Quality Filtration for Diesel and Biodiesel Applications

Diesel fuel is stored and transferred multiple times from refining to dispensing. Preventive action does not always eliminate contamination. Common contaminants introduced during transportation include both extremely fine and abrasive silica as well as pipe scale. These contaminants can quickly deteriorate fuel quality below engine manufacturer standards, reducing the durability and performance of the engine.



Parker DFO filters transform contaminated fuels to meet stringent downstream ISO 4406 cleanliness standards for the demanding limits placed on diesel and biodiesel fuels. The DFO design balances high surface area and depth filtration to maximize filter life which reduces filtration costs.

Tiered Ratings

To meet industry fuel quality standards, Parker HFFD developed pleated media filters for diesel and biodiesel fuels. In accordance with ISO standards, the DFO filters were designed with tiered media classification using absolute rated media. Each media tier provides a unique solution from managing fuel contamination to final fuel conditioning.

- DFO filters with ratings of 2 and 5 micron are the ultimate solution to condition fuel for dispensing while assuring ISO 4406 Cleanliness Standards are consistently met. Each progressively tighter DFO filter rating delivers additional particle removal and fuel cleanliness; therefore progressively lower ISO 4406 particle counts.

- The mid-range DFO filters of 10 micron extend filter life following secondary conditioning by removing particulate contaminants and allowing Parker's downstream coalescing products to focus on water removal rather than particle removal.
- The DFO filters rated at 25 micron are the ideal solution to manage contaminated fuel entering and leaving terminal storage tanks throughout the fuel transferring process.

Benefits

- Reduced operating costs by removing particulates that can cause engine damage
- Reliable fuel injector performance when particulate contaminants are removed to meet ISO 4406 Cleanliness Standards
- Improved equipment uptime, reduces equipment failures, repairs, and/or replacements

DFO Series

Specifications

- Multi-layer pleated filtration layers using engineered fiber blends for optimum filter life and efficiency.
- All filter components compatible with diesel and biodiesel blends
- Inside diameter
 - 3.5 in (88.9 mm)
- Outside diameter
 - 6 in (152.4 mm)
- Recommended change out pressure: 25 psid (1.7 bar)
- Nitrile sealing materials are standard
- Maximum Operating Temperature: 225°F (107°C)
- End cap configuration options
 - Double open end
 - Threaded base (TB)
- Collapse pressure
 - 75 psi (5.2 bar)
- pH range (continuous operation)
 - 5-9

Element Part Numbers

Part Number	Length (inch)	Micron Rating (µm)	End Cap Configuration
DFO-512PLF2	12	2	Double Open End
DFO-512PLF5	12	5	Double Open End
DFO-512PLF10	12	10	Double Open End
DFO-512PLF25	12	25	Double Open End
DFO-524PLF2	24	2	Double Open End
DFO-524PLF5	24	5	Double Open End
DFO-524PLF10	24	10	Double Open End
DFO-524PLF25	24	25	Double Open End
DFO-614PLF2	14	2	Double Open End
DFO-614PLF5	14	5	Double Open End
DFO-614PLF10	14	10	Double Open End
DFO-614PLF25	14	25	Double Open End
DFO-629PLF2	29	2	Double Open End
DFO-629PLF2TB	29	2	Threaded Base
DFO-629PLF5	29	5	Double Open End
DFO-629PLF5TB	29	5	Threaded Base

Part Number	Length (inch)	Micron Rating (µm)	End Cap Configuration
DFO-629PLF10	29	10	Double Open End
DFO-629PLF10TB	29	10	Threaded Base
DFO-629PLF25	29	25	Double Open End
DFO-629PLF25TB	29	25	Threaded Base
DFO-644PLF2	44	2	Double Open End
DFO-644PLF2TB	44	2	Threaded Base
DFO-644PLF5	44	5	Double Open End
DFO-644PLF5TB	44	5	Threaded Base
DFO-644PLF10	44	10	Double Open End
DFO-644PLF10TB	44	10	Threaded Base
DFO-644PLF25	44	25	Double Open End
DFO-644PLF25TB	44	25	Threaded Base
DFO-656PLF2TB	56	2	Threaded Base
DFO-656PLF5TB	56	5	Threaded Base
DFO-656PLF10TB	56	10	Threaded Base
DFO-656PLF25TB	56	25	Threaded Base

Aquacon[®] - AD Series

Particulate Filtration & Water Removal

Diesel and Biodiesel (FAME) Protection from Particulate and Water Contaminants



Even when the utmost care is taken, contaminants will be introduced as fuel is transported from the refinery to its point-of-use. Common contaminants, including pipe scale, silica, metal debris and water, can quickly deteriorate fuel cleanliness far beyond engine manufacturer's minimum requirements for fuel cleanliness.

Parker's Aquacon Diesel (AD) filters can remove both particulate and water contaminants in fuels to meet stringent downstream ISO 4406 and ASTM D975 cleanliness standards for both diesel or biodiesel fuels. The AD design incorporates multiple layers of both high efficiency long-life particulate retention and water absorbing media.

Water Absorbance Versus Water Coalescing

AD filters are designed to remove both water and particulates from either diesel or biodiesel fuels. AD filters are ideal for use in biodiesel and blended fuels where high levels of surfactants (glycerin) could disrupt water coalescing. When continual removal of water from petroleum based fuel is required, the application of coalescing technology is optimal or preferred.

Tiered Ratings

- Velcon's 2 or 5 micron rated AD filters are excellent solutions for delivering fuel ready for dispensing while assuring both ISO 4406 and ASTM D975 cleanliness levels are consistently met. Each progressively tighter AD filter rating adds additional particle removal capability and lowers ISO 4406 particle counts
- The 10 and 25 micron rated filters are ideal for managing fuel contamination entering and leaving terminal storage tanks throughout the fuel transfer process

Benefits

- More reliable fuel injector performance by reducing particulate which can cause cascading damages
- Reduced operating costs due to repair of equipment damaged by particulate and water contaminants
- Reduced engine maintenance due to fewer components being damaged by contaminants
- More efficient fuel consumption due to fewer inhibiting particulate and water contaminants
- Removes free aqueous contaminants from fuel
- Aquacon - AD series elements are recommended for Biodiesel blends over 5% (B5)

Aquacon® - AD Series

Specifications

- All filter components compatible with diesel and biodiesel blends
- Recommended change out pressure: 25 psid (1.7 bar)
- Water absorbance and particulate retention will increase differential pressure to the change out pressure
- Nitrile sealing materials are standard
- All AD products will remove free and emulsified water from both diesel and biodiesel fuels to levels below 50 ppm
- The water absorbing technology used in AD filters is not effective in the presence of fuels containing high concentrations of alcohol
- Nitrile sealing materials are standard
- Maximum Operating Temperature: 150°F (65°C)
- End cap configuration options
 - Double open end
 - Threaded base
- Maximum burst pressure
 - 75 psi (5.2 bar)
- pH range (continuous operation)
 - 5-9

Element Part Numbers

Part Number	Inside Diam (inch)	Outside Diam (inch)	Length (inch)	Micron Rating (µm)	End Cap Configuration
AD-5122	3	5.625	12.25	2	Open End
AD-5125	3	5.625	12.25	5	Open End
AD-51210	3	5.625	12.25	10	Open End
AD-51225	3	5.625	12.25	25	Open End
AD-5242	3	5.625	24.5	2	Open End
AD-5245	3	5.625	24.5	5	Open End
AD-52410	3	5.625	24.5	10	Open End
AD-52425	3	5.625	24.5	25	Open End
AD-6142	3.5	6	14.5	2	Open End
AD-6145	3.5	6	14.5	5	Open End
AD-61410	3.5	6	14.5	10	Open End
AD-61425	3.5	6	14.5	25	Open End
AD-6292	3.5	6	29	2	Open End
AD-6292TB	3.5	6	29	2	Threaded Base
AD-6295	3.5	6	29	5	Open End
AD-6295TB	3.5	6	29	5	Threaded Base

Part Number	Inside Diam (inch)	Outside Diam (inch)	Length (inch)	Micron Rating (µm)	End Cap Configuration
AD-62910	3.5	6	29	10	Open End
AD-62910TB	3.5	6	29	10	Threaded Base
AD-62925	3.5	6	29	25	Open End
AD-62925TB	3.5	6	29	25	Threaded Base
AD-6442	3.5	6	44	2	Open End
AD-6442TB	3.5	6	44	2	Threaded Base
AD-6445	3.5	6	44	5	Open End
AD-6445TB	3.5	6	44	5	Threaded Base
AD-64410	3.5	6	44	10	Open End
AD-64410TB	3.5	6	44	10	Threaded Base
AD-64425	3.5	6	44	25	Open End
AD-64425TB	3.5	6	44	25	Threaded Base
AD-6562TB	3.5	6	56	2	Threaded Base
AD-6565TB	3.5	6	56	5	Threaded Base
AD-65610TB	3.5	6	56	10	Threaded Base
AD-65625TB	3.5	6	56	25	Threaded Base

DI/DO & DSO Series

Particulate Filtration

Particulate and Water Removal from Diesel Fuel

As fuel is transported from the refinery to its point-of-use, it can quickly become contaminated from silica, pipe scale, and water condensate. These contaminants rapidly deteriorate fuel cleanliness far below engine manufacturers minimum for fuel cleanliness.



Parker's DI coalescers in combination with DSO separators, contaminated fuels are cleaned to a level that meets stringent downstream fuel cleanliness standards for petroleum based diesel fuels.

The first stage in the DI coalescer removes particles through an inside-out flow and coalesces emulsified water into large droplets, which then fall to the housing sump. In the second stage, an outside-in process, the DSO separator creates a hydrophobic barrier to block the coalesced water droplets from flowing downstream of the housing. This multi-stage design assures the fuel is conditioned to a clean and dry state, ready for use.

Surfactants

- Water coalescing is not effective in the presence of fuels containing high levels of surfactants/alcohols or unrefined biofuels
- Detergents and additives inhibits the ability of coalescers to effectively remove water by reducing Interfacial Tension (IFT) and can eventually disarm coalescers
- Contact Parker Laboratories for further analysis of your fuel for presence of surfactants
- Coalescing not recommended for Biodiesel blends over 5% (B5)

Tiered Ratings

- Parker's 5 micron coalescer combines leading-edge particle removal with world-class coalescing technology to provide optimal fuel cleanliness
- The 10 and 25 micron rated filter coalescer provides effective particle removal with industry proven coalescing technology.

Benefits

- Extended equipment uptime
- Reduced operating costs
- Reliable fuel injector performance
- Improved equipment uptime
- Reduced fuel system maintenance

DI/DO & DSO Series

Specifications

- Multi-layer pleated filtration layers using engineered fiber blends for solids retention. Sequenced coalescing materials to grow large water droplets from emulsified water.
- All filter components compatible with diesel and biodiesel blends
- Inside diameter
 - 3.5 in (88.9 mm)
- Outside diameter
 - 6 in (152.4 mm)
- DI - coalescer flow direction - inside to outside
- DO - coalescer flow direction - outside to inside (DVX Series)
- DSO - separator flow direction - outside to inside
- Recommended change out pressure: 25 psid (1.7 bar)
- Downstream free-water level typically below 50 ppm
- Nitrile sealing materials are standard
- Maximum Operating Temperature: 150°F (65°C)
- End cap configuration options
 - Double open end
 - Threaded base
- Maximum burst pressure
 - 75 psi (5.2 bar)
- pH range (continuous operation)
 - 5-9

Element Part Numbers

Part Number	Length (inch)	Micron Rating (µm)	End Cap Configuration
DI-622D5TB	22	5	Threaded Base
DI-622D10TB	22	10	Threaded Base
DI-622D25TB	22	25	Threaded Base
DI-633D5TB	33	5	Threaded Base
DI-633D10TB	33	10	Threaded Base
DI-633D25TB	33	25	Threaded Base
DI-638D5TB	38	5	Threaded Base
DI-638D10TB	38	10	Threaded Base
DI-638D25TB	38	25	Threaded Base
DI-644D5TB	44	5	Threaded Base
DI-644D10TB	44	10	Threaded Base
DI-644D25TB	44	25	Threaded Base
DI-656D5TB	56	5	Threaded Base
DI-656D10TB	56	10	Threaded Base
DI-656D25TB	56	25	Threaded Base
DO-815D5	15	5	Open End
DO-815D10	15	10	Open End
DO-815D25	15	25	Open End
DO-830D5	30	5	Open End
DO-830D10	30	10	Open End
DO-830D25	30	25	Open End
DO-844D5	44	5	Open End
DO-844D10	44	10	Open End
DO-844D25	44	25	Open End

Part Number	Length (inch)	Media	End Cap Configuration
DSO-415PL	15	Cellulose	Open End
DSO-430PL	30	Cellulose	Open End
DSO-444PL	44	Cellulose	Open End
DSO-622C	22	Screen	Open End
DSO-622PLF3	22	Cellulose	Open End
DSO-629C	29	Screen	Open End
DSO-629PLF3	29	Cellulose	Open End
DSO-633C	33	Screen	Open End
DSO-633PLF3	33	Cellulose	Open End
DSO-644C	44	Screen	Open End
DSO-644PLF3	44	Cellulose	Open End

Par<>Fit DFI Series

Particulate Filtration

High Flow Particulate Filter for Diesel Fuel

Parker's DFI filters are high quality affordable replacements for Pall® Ultipleat® HFU filter applications. Diesel fuel is stored and transferred multiple times from refining to dispensing. Common contaminants introduced during transportation include both extremely fine and abrasive silica as well as pipe scale. These contaminants can quickly deteriorate fuel quality below engine manufacturer standards, reducing the durability and performance of the engine. Parker has over 60 years of experience in high flow fuel filtration. This experience shows in the design and performance of the DFI series. Parker's DFI filters transform contaminated fuels to meet stringent downstream ISO 4406 cleanliness standards for the demanding limits placed on diesel. The DFI design includes special pleat geometry for high surface area and depth filtration media to maximize filter life and reduce filtration cost.



Tiered Ratings

To meet industry fuel quality standards, Parker developed pleated media filters for diesel and biodiesel fuels. In accordance with ISO standards, the DFI filters were designed with tiered media classification. Each media tier provides a unique solution from managing fuel contamination to final fuel conditioning.

- DFI filters with ratings of 2 and 4 micron are the ultimate solution to condition fuel for dispensing while assuring ISO 4406 Cleanliness Standards are consistently met. Each progressively tighter DFO filter rating delivers additional particle removal and fuel cleanliness; therefore progressively lower ISO 4406 particle counts.

- The mid-range DFI filters of 6 and 10 micron extend filter life following secondary conditioning by removing particulate contaminants and allowing Velcon's downstream coalescing products to focus on water removal rather than particle removal.
- The DFI filters rated at 20 and 40 micron are the ideal solution as pre-filtration for 2-10 micron or to manage contaminated fuel entering and leaving terminal storage tanks throughout the fuel transferring process.

Benefits

- Reduced operating costs by removing particulates that can cause engine damage
- Reliable fuel injector performance when particulate contaminants are removed to meet ISO 4406 Cleanliness Standards
- Improved equipment uptime, reduces equipment failures, repairs, and/or replacements

DFI Series

Specifications

- All filter components compatible with diesel and biodiesel blends
- Outside diameter
 - 6 in (152.4 mm)
- Maximum allowable differential pressure at 50 psid (3.4 bar)
- Recommended change out pressure: 25 psid (1.7 bar)
- Nitrile sealing materials are standard
- Maximum Operating Temperature: 225°F (107°C)
- End cap configuration
 - High Flow
- Maximum burst pressure
 - 75 psi (5.2 bar)
- pH range (continuous operation)
 - 5-9

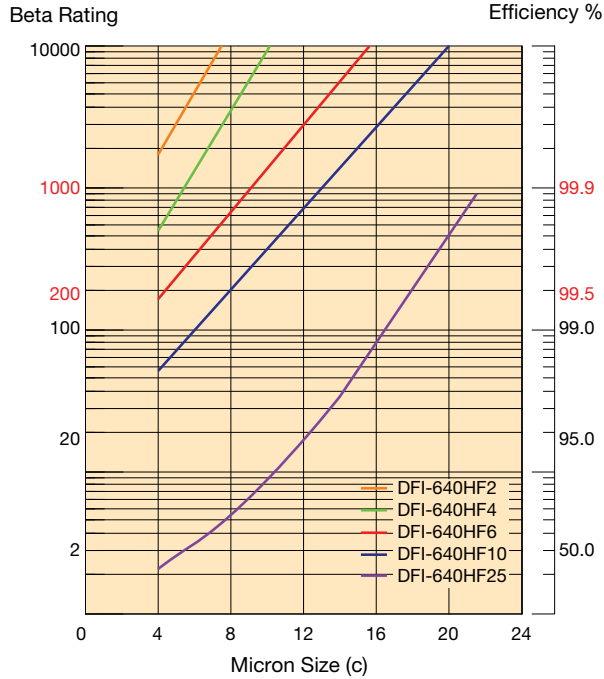
Element Part Numbers

Part Number	Outside Diam (inch)	Length (inch)	Micron Rating (µm)
DFI-640PLF2HF	6	40	2
DFI-640PLF4HF	6	40	4
DFI-640PLF6HF	6	40	6
DFI-640PLF10HF	6	40	10
DFI-640PLF25HF	6	40	25
DFI-660PLF2HF	6	60	2
DFI-660PLF4HF	6	60	4
DFI-660PLF6HF	6	60	6
DFI-660PLF10HF	6	60	10
DFI-660PLF25HF	6	60	25

DFI Series

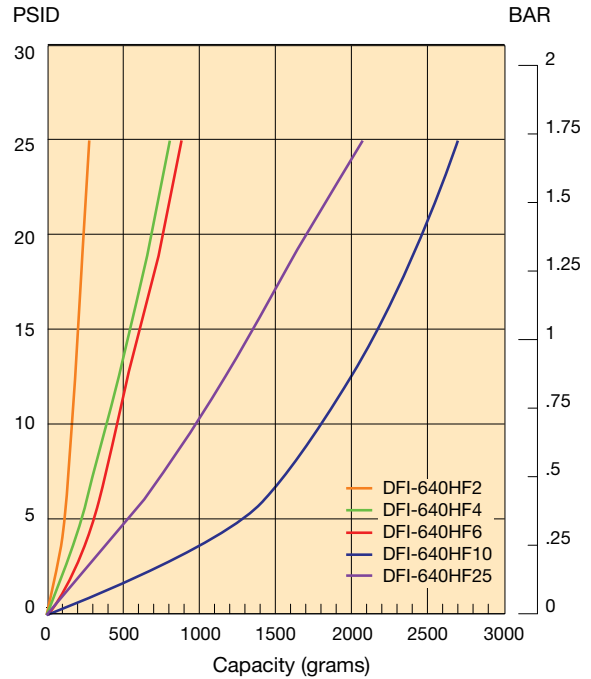
Element Performance

DFI-640... Efficiency



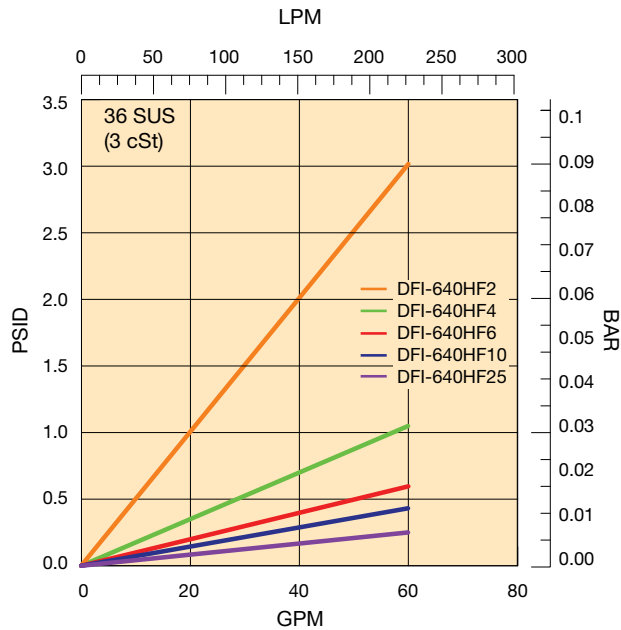
Single-pass tests run per SAE J1985
@ 90 GPM - 5 mg/L BUGL

DFI-640... Capacity



Multi-pass tests run per SAE J905
@ 90 GPM to 25 PSID terminal - 20 mg/L BUGL

DFI-640... Flow vs Pressure Loss

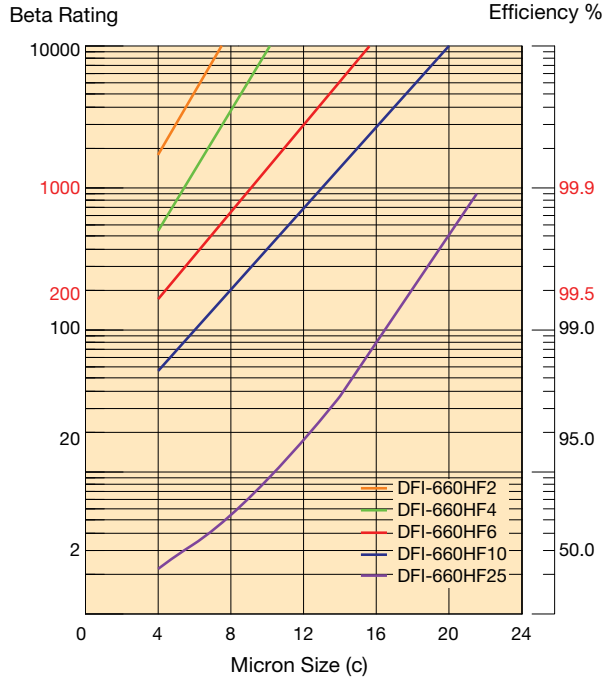


ISO 3968

DFI Series

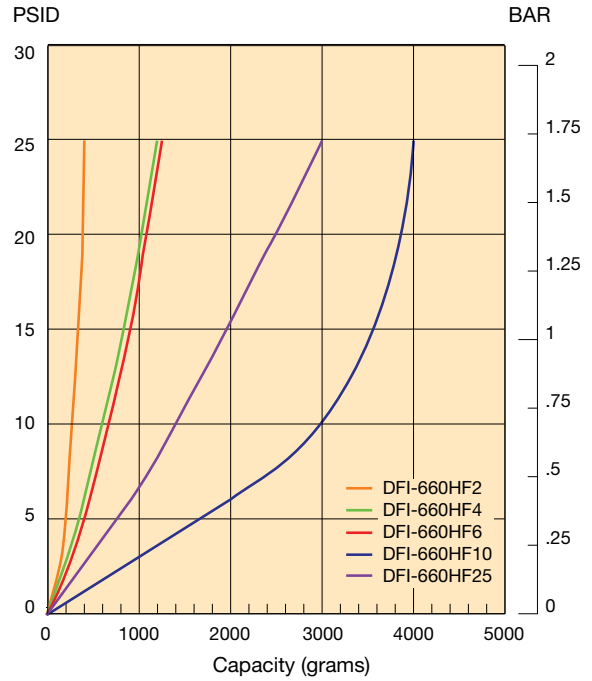
Element Performance

DFI-660... Efficiency



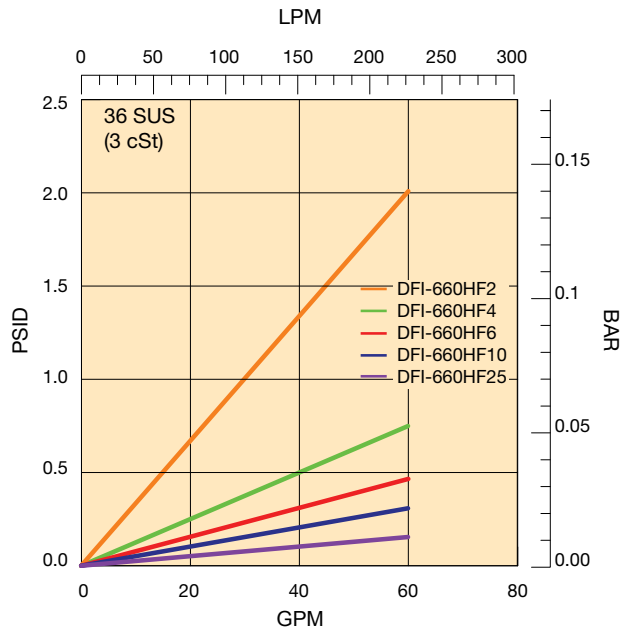
Single-pass tests run per SAE J1985
@ 55 GPM - 5 mg/L BUGL

DFI-660... Capacity



Multi-pass tests run per SAE J905
@ 55 GPM to 25 PSID terminal - 75 mg/L BUGL

DFI-660... Flow vs Pressure Loss



ISO 3968

System Sizing

Parker's SizeRight™ Filter System Selector



Element life is directly related to flow rates

SizeRight™ looks at more than just the cost of the filtration system and your flow rate needs. Factors we take into account when selecting the “right” system includes:

- incoming and outgoing fuel conditions
- frequency of change outs
- operating flow rates

In addition, we also consider incidental costs that our customers can incur when implement the filtration system:

- labor costs
- mean time between change outs
- miscellaneous costs during each change out

From these factors we can begin discussing the appropriate filtration solutions that customers should consider to truly determine the right system for their filtration needs.

Parker HFFD’s extensive bulk fuel handling experience and our state-of-the-art fuel testing laboratory have quantitatively proven that increased system/housing will allow for lower flow rates per filter while dramatically extending the service life of the elements. Systems “sized for life” commonly see a full repayment of the additional system cost through operating savings.

The faster you flow fuel through the particulate filter, the faster dirt will load your filter and the faster you will reach industry standard changeout differential pressure of 25 psid (1.7 bar). This also means more change outs will need to be done and each changeout incurs element costs, labor costs, opportunity/downtime costs and other miscellaneous costs.

Total cost of ownership should be considered when selecting your filtration system. Fuel condition and flow rate requirements only provide half of the equation. When cost is of concern, operating costs should be taken into effect as they make up a significant amount in the overall cost of acquisition and ultimately determining which filtration systems you really need.

Application Guide

Filtration	Filter Series	Maximum Flow Rate gpm (lpm)							
		50(190)	150(568)	300(1136)	600(2271)	1200(2542)	2400(9095)	4800(18170)	9600(36340)
Particulate	DVF61/62	70 (265)							
	DVF8	176 (665)							
	DVF16	704 (2665)							
	DVF20/28	2688 (10174)							
	DVF36	4032 (15261)							
	DVF42/48	7392 (27979)							
	DVX1	55 (208)							
	DVX2	115 (435)							
	DVX3	175 (662)							
Coalescer/Separator	DV22	330 (1250)							
	DV28	660 (2498)							
	DV36	1540 (5828)							
	DV42	2100 (7949)							
	DVX1	30 (114)							
	DVX2	65 (246)							
	DVX3	100 (379)							
System	DFS1	300 (1240)							
	DFS2	520 (1960)							
	DFS3	2040 (7740)							

DVF61/62 Series

Vertical Filter Housings

For Use with AD-5 & DFO-5 Elements

These versatile housings are designed to meet various requirements: a fuel particulate filter, water absorption filter or a fuel polisher. Ideal for fuel dispensing applications.

The DVF61/62 filter assemblies are designed to meet the toughest hydrocarbon refueling conditions and are designed for easy element changeouts. Assemblies can be used on mobile refuelers or installed in refueling cabinets. These units can also be used for diesel fuel dispensing pumps, primary fuel filter/water absorber for large diesel engines, or as bulk fuel handling, fuel transfer, and other higher flow applications.

Specifically designed to meet the filtration requirements of today's high pressure common-rail diesel injection systems, the DVF61/62 filter is used for fuel dispensing pumps or as a primary fuel filter/water absorber on large diesel engine applications.

DVF61/62 series filter assemblies were designed to meet the toughest conditions and offer ease of filter change outs. Featuring a band close closure, the DVF61 is ideal for limited space. The 4 swing bolt design of the DVF62 secures the head to the bowl.



DVF-61

DVF-62

Filter Assemblies

Part Number	Description
DVF61	Filter housing using 12" element length
DVF62	Filter housing using 24" element length

Replacement Elements

Type / Media		
Particulate	DVF-61	DVF-62
2 micron	DFO-512PLF2	DFO-524PLF2
5 micron	DFO-512PLF5	DFO-524PLF5
10 micron	DFO-512PLF10	DFO-524PLF10
25 micron	DFO-512PLF25	DFO-524PLF25
Water Removal - Absorbing	DVF-61	DVF-62
2 micron	AD-5122	AD-5242
5 micron	AD-5125	AD-5245
10 micron	AD-51210	AD-52410
25 micron	AD-51225	AD-52425

Accessories

Part Number	Description
554Y020	Ball Valve, 1/2" NPT, Carbon Steel
CK-1488	Quick Release Hand Bolts (DVF62 only)
10678	Differential Pressure Gauge
G-0986	Cover Gasket, Nitrile
G-0986A	Cover Gasket, Fluorocarbon



DVF61/62 Series

Specifications

- Flow Rates:
 - DVF-61 w/ Aquacon AD: 35 gpm (132 lpm), 20 gpm (75 lpm) recommended
 - DVF-62 w/ Aquacon AD: 70 gpm (265 lpm), 40 gpm (151 lpm) recommended
- Max. Operating Pressure: 150 psi
- Inlet/Outlet connection: 1-1/2" NPT
- Closure Seal: Nitrile O-ring
- 1/8" brass petcock vent valve and 1/2" drain valve
- Material: Die cast aluminum head and closure clamp assembly; carbon steel shell with epoxy coated exterior and interior
- Weight:
 - DVF-61: 10 lbs (4.54 kg)
 - DVF-62: 16 lbs (7.26 kg)

Optional Accessories

- Carbon Steel 1/2" NPT Ball Valve, with Mounting Nipple
- Quick release hand bolts (set of 4) to replace closure bolts (VF-62 only)
- Differential Pressure Gauge Assembly



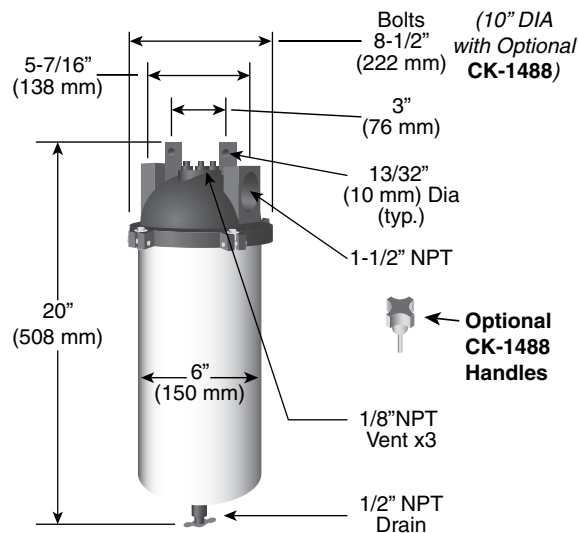
Color Indicates Pressure Drop

Green: Clean
0 - 15 psi

Red: Change
16 - 25 psi

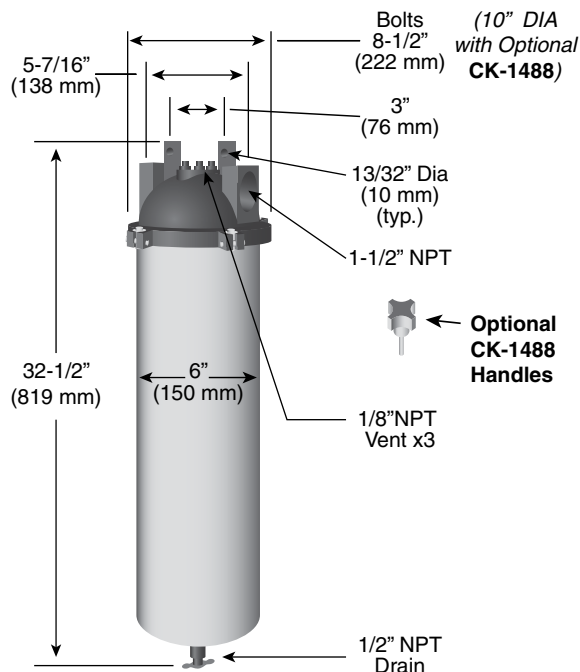
DVF-61

For use with AD-512 and DFO-512 Elements



DVF-62

For use with AD-524 and DFO-524 Elements



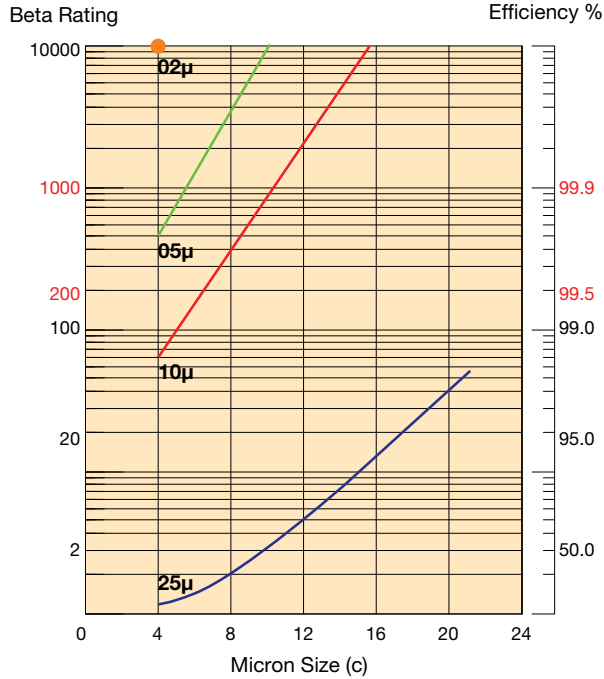
VF-62 has a longer body for areas and applications that require higher flow rate.

Drawings are not to scale. Dimensions are shown for estimating purposes only. Allow 6 inches (15.2 cm) below the vessel to safely remove the vessel to gain access to the element.

DVF61

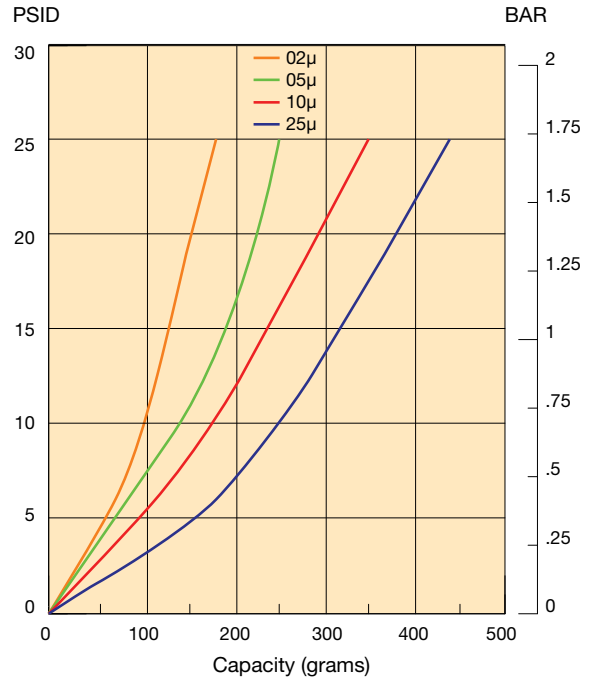
Element Performance

DFO-512... Efficiency



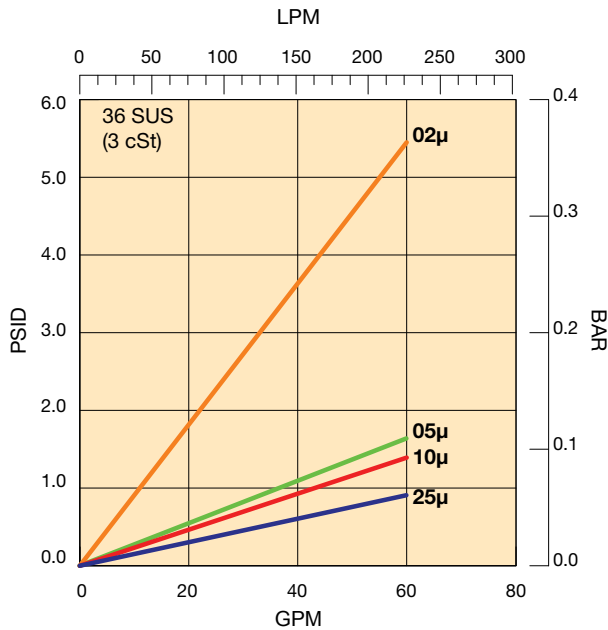
Single-pass tests run per SAE J1985
@ 25 GPM - 5 mg/L BUGL

DFO-512... Capacity



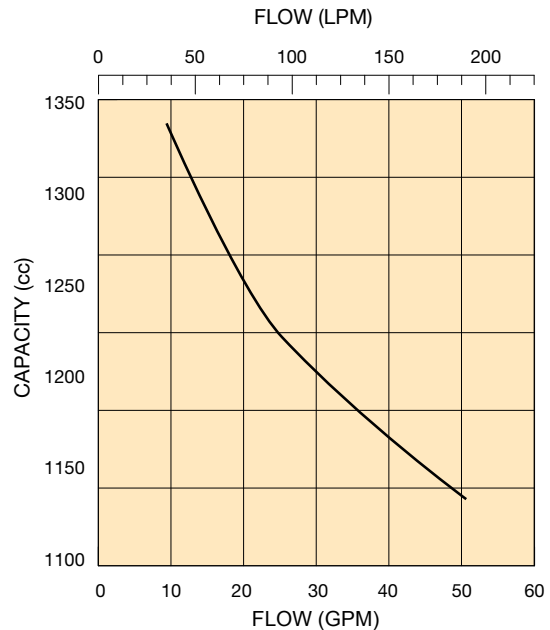
Multi-pass tests run per SAE J905
@ 25 GPM to 25 PSID terminal - 20 mg/L BUGL

DFO-512... Flow vs Pressure Loss



ISO 3968

AD-51... Water Capacity

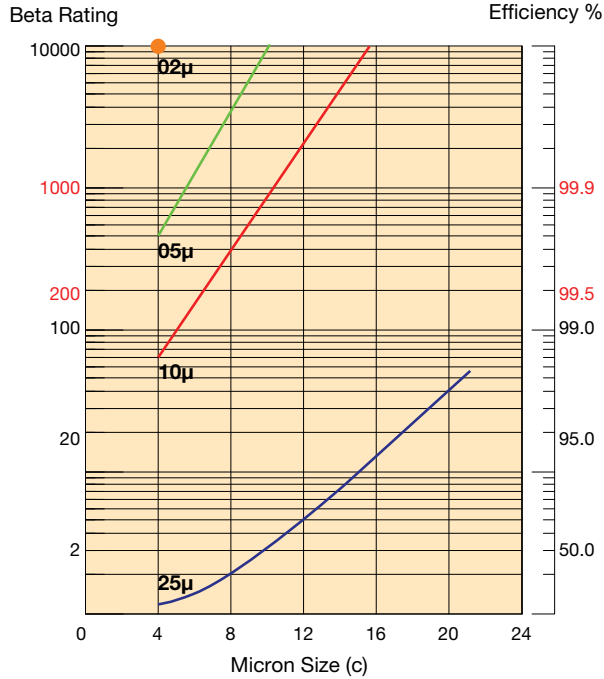


Internal test @ 25 GPM to
25 PSID terminal - 100 ppm H₂O

DVF62

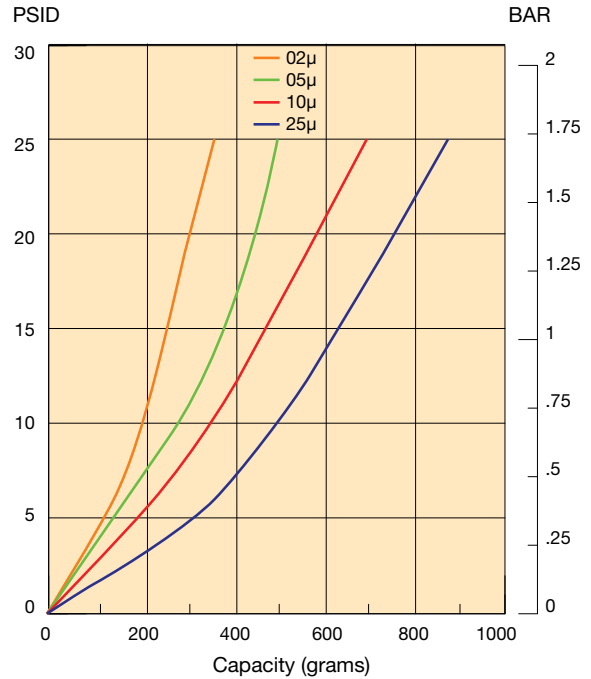
Element Performance

DFO-524... Efficiency



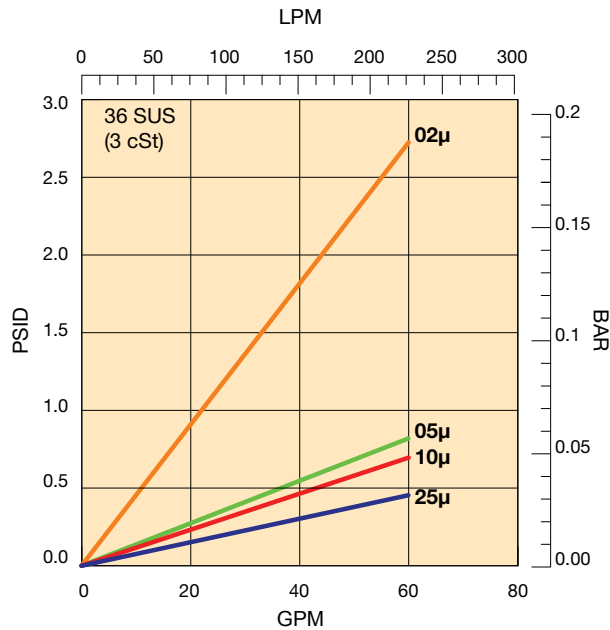
Single-pass tests run per SAE J1985
@ 45 GPM - 5 mg/L BUGL

DFO-524... Capacity



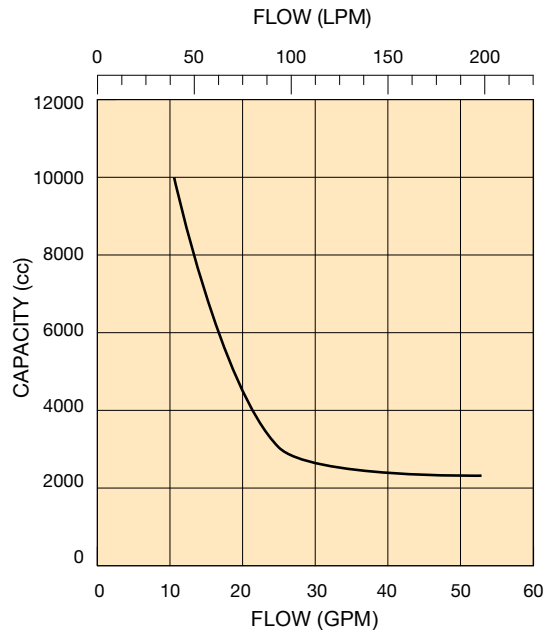
Multi-pass tests run per SAE J905
@ 45 GPM to 25 PSID terminal - 20 mg/L BUGL

DFO-524... Flow vs Pressure Loss



ISO 3968

AD-52... Water Capacity



Internal test @ 45 GPM to
25 PSID terminal - 100 ppm H₂O

DVX Series

Housings for Diesel Fuel Filtration

For use with AD-6, DF0-6, D0-8/DS0-4 Elements

The Parker DVX Series is designed to be configured either in a particulate, water removal (absorption) or water removal (coalescing) arrangement. The DVX Series is also available in three different sizes to accommodate varying applications and flow requirements. This versatility makes the DVX Series applicable in many different market segments for superior fuel cleanliness. The DVX Series can be used in parallel to function in higher fuel requirements or where duplex arrangements are desired or required.

Typical Applications

The DVX series offer many options which makes the unit perfect for many markets and applications. In the Natural Resources market, the DVX can be utilized in mining equipment, fuel transfer, fuel polishing, fuel delivery and on-engine filtration for larger engines. The Power Generation market offers several potential applications. From on-engine filtration for large engines to fuel transfer and polishing between day and bulk storage tanks, the DVX can provide superior clean dry fuel. The Transportation market also provides many different opportunities. Larger commercial marine vessels and Railroad engines all require superior fuel quality. The DVX series can be used to meet the fuel cleanliness requirement set by the engine manufacturers. Clean dry fuel allows the engines to operate at maximum efficiencies and maintain emission requirements.



DVX Series

Features

Standard Design Features

- 1 ASME code powder coated carbon steel vessel (stamp on request)
- 2 250 psi (17.23 bar) design pressure
- 3 Swing bolt closure with nitrile seal
- 4 Leg Assembly
- 5 Differential pressure gauge assembly

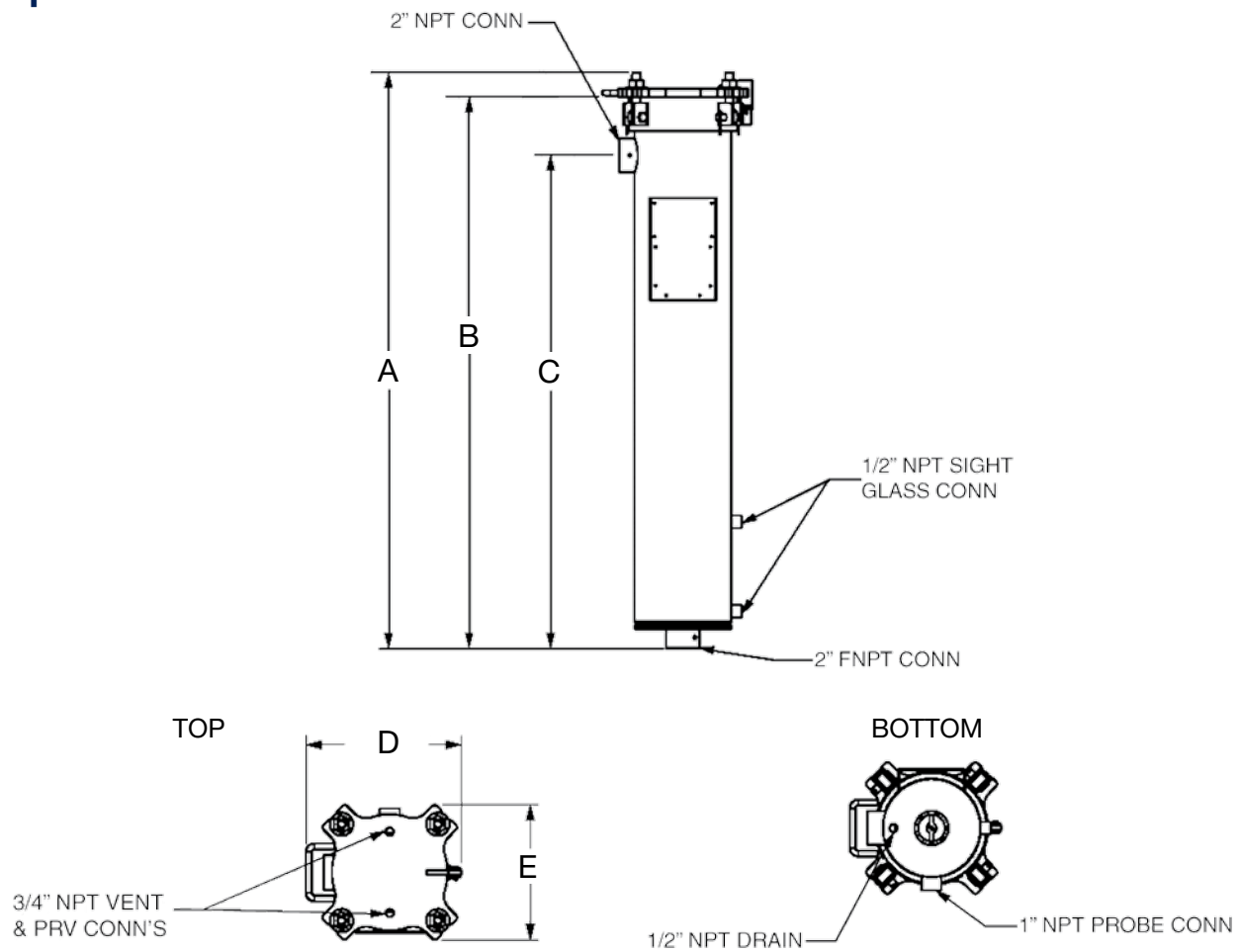
Options

- 6 Air eliminator
- 7 Drain valve
- 8 Pressure relief valve
- 9 Water probe
- 10 Water sight glass
- 11 CE Mark



DVX Series

Specifications



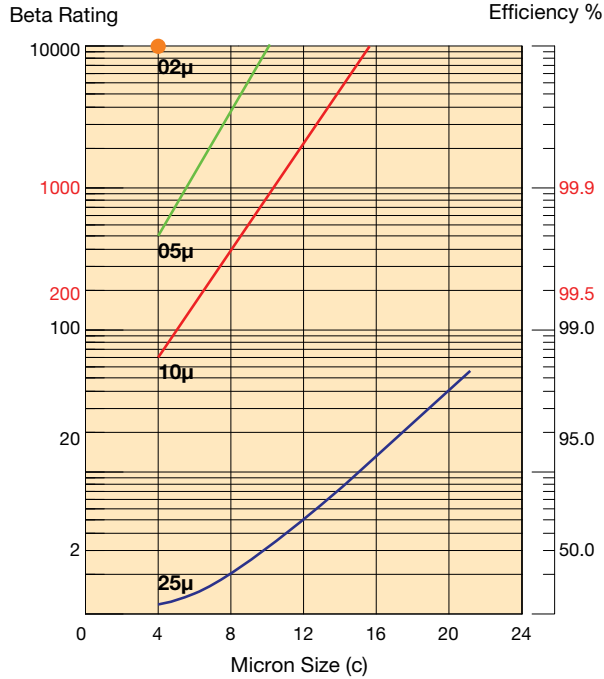
Model	Element	Flow Rates gpm (lpm)			Dimensions in (mm)					Dry Weight lbs (kgs)
		Max	Target	Fuel Processed Per Filter Change (US Gallons)	A	B	C	D	E	lbs.
DVX-1	DO-815/DSO-415	30 (114)	20 (76)	25000	36 (914)	34 1/4 (870)	29 1/8	13 7/16 (341)	11 5/8 (295)	110 (50)
	DFO-614 AD-614	55 (208)	30 (114)							
DVX-2	DO-830/DSO-430	65 (246)	40 (151)	50000	51 (1295)	49 (1244)	43 (1092)	13 7/16 (341)	11 5/8 (295)	125 (57)
	DFO-629 AD-629	115 (435)	65 (246)							
DVX-3	DO-844/DSO-444	100 (379)	60 (227)	76000	66 (1676)	64 1/4	59 1/16	13 7/16 (341)	11 5/8 (295)	150 (68)
	DFO-644 AD-644	175 (662)	100 (379)							

Dimensions shown are for estimating purposes only. For exact dimensional detail, obtain certified copy of vessel drawing.

DVX Series

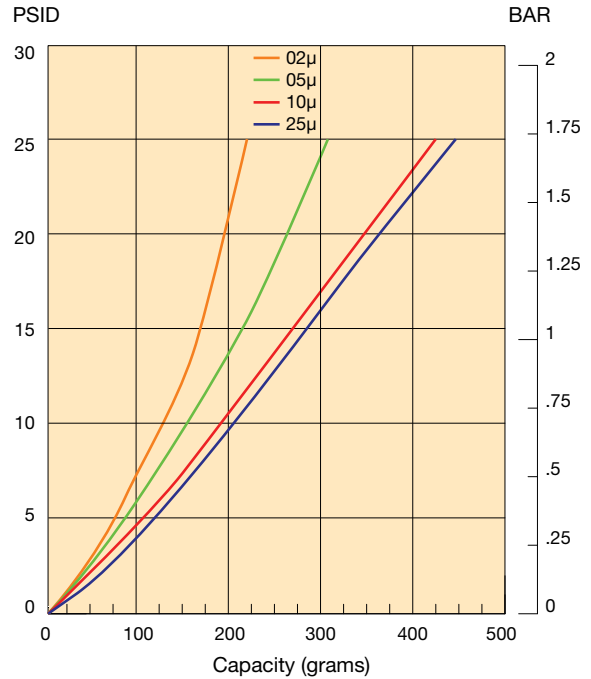
Element Performance

DFO-614... Efficiency



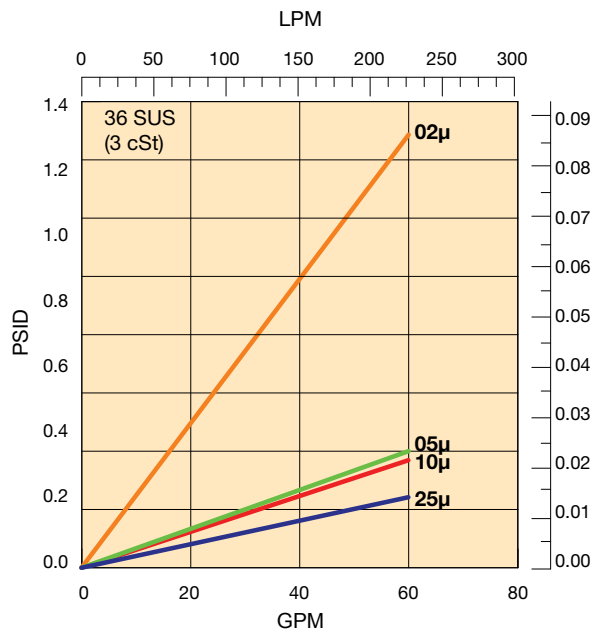
Single-pass tests run per SAE J1985
@ 30 GPM - 5 mg/L BUGL

DFO-614... Capacity



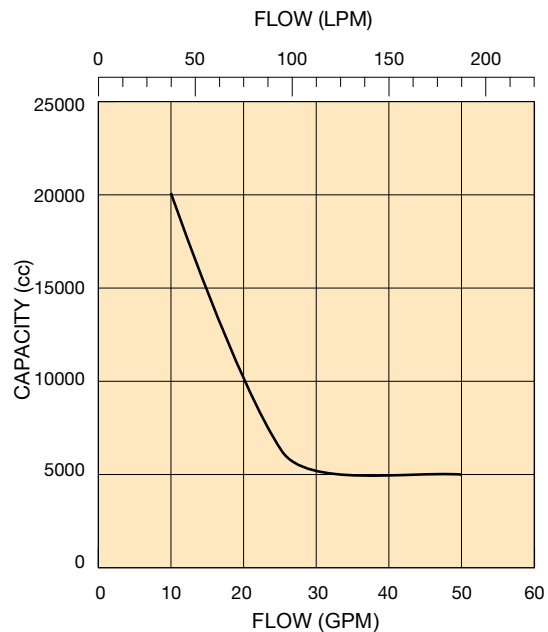
Multi-pass tests run per SAE J905
@ 30 GPM to 25 PSID terminal - 20 mg/L BUGL

DFO-614... Flow vs Pressure Loss



ISO 3968

AD-61... Water Capacity

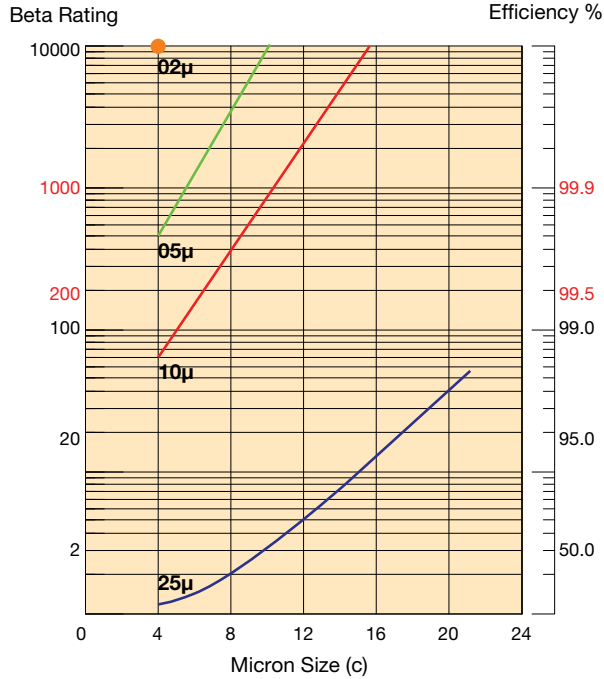


Internal test @ 30 GPM to
25 PSID terminal - 100 ppm H₂O

DVX Series

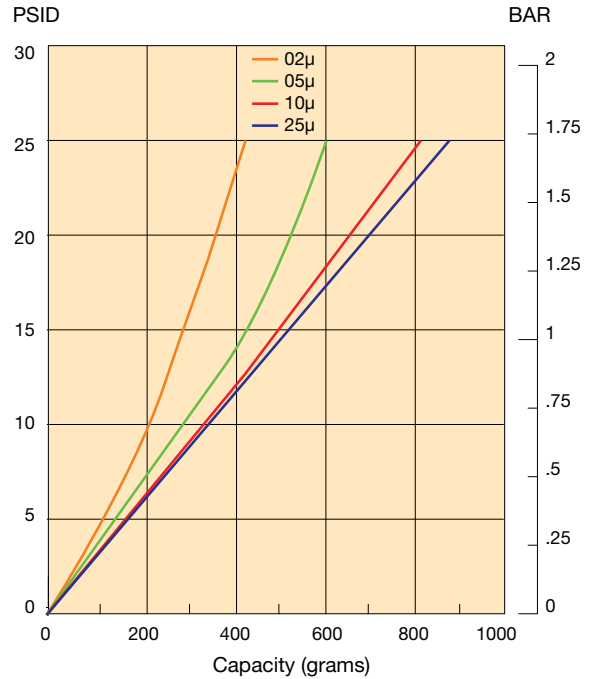
Element Performance

DFO-629... Efficiency



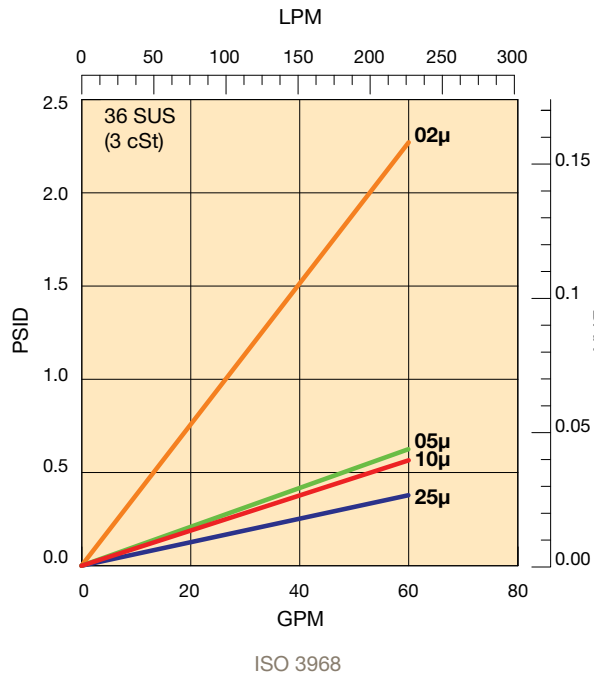
Single-pass tests run per SAE J1985
@ 60 GPM - 5 mg/L BUGL

DFO-629... Capacity



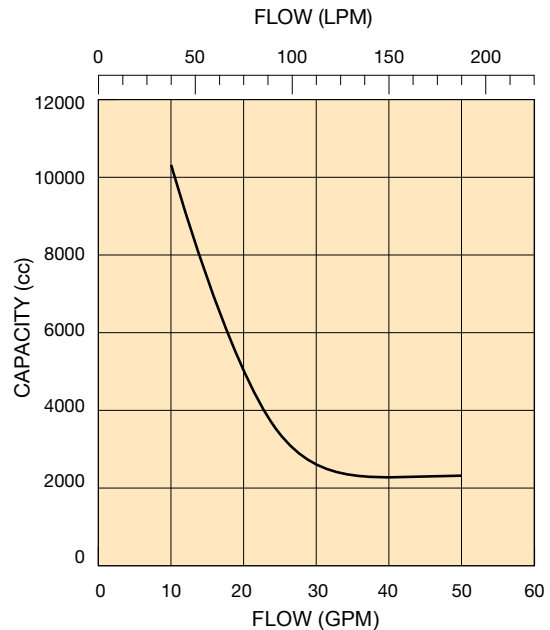
Multi-pass tests run per SAE J905
@ 60 GPM to 25 PSID terminal - 20 mg/L BUGL

DFO-629... Flow vs Pressure Loss



ISO 3968

AD-62... Water Capacity

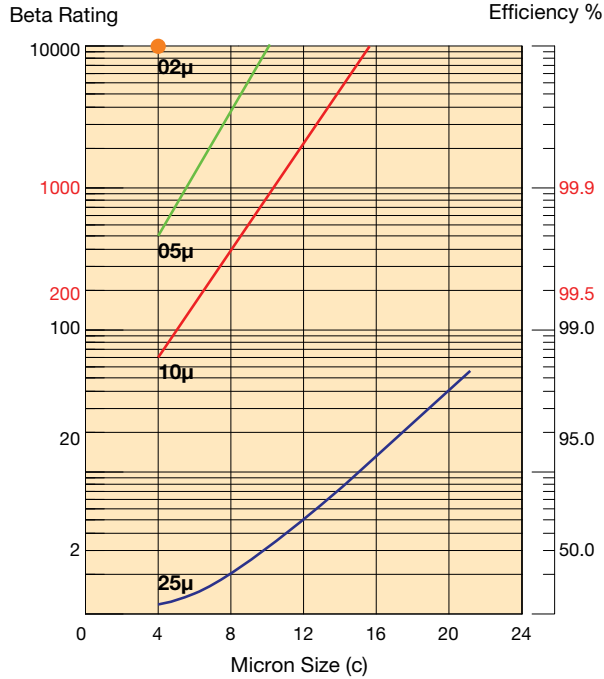


Internal test @ 60 GPM to
25 PSID terminal - 100 ppm H₂O

DVX Series

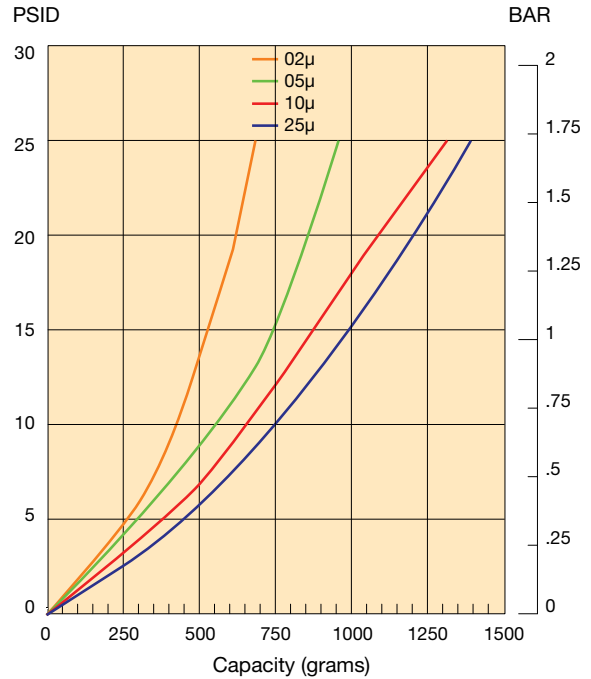
Element Performance

DFO-644... Efficiency



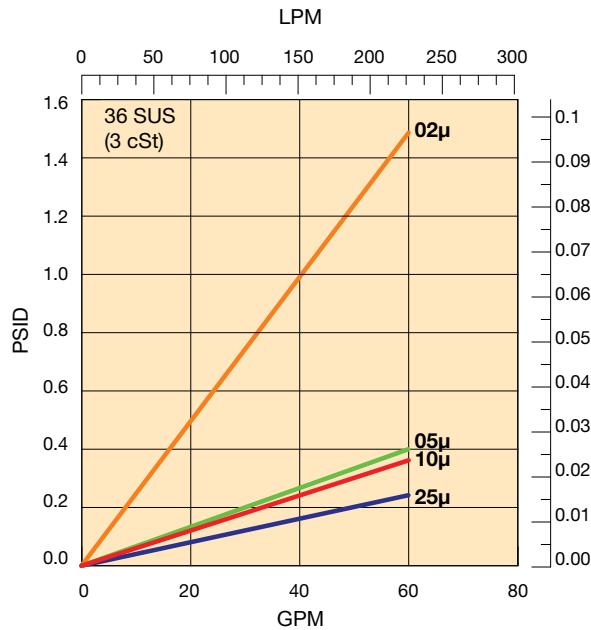
Single-pass tests run per SAE J1985
@ 90 GPM - 5 mg/L BUGL

DFO-644... Capacity



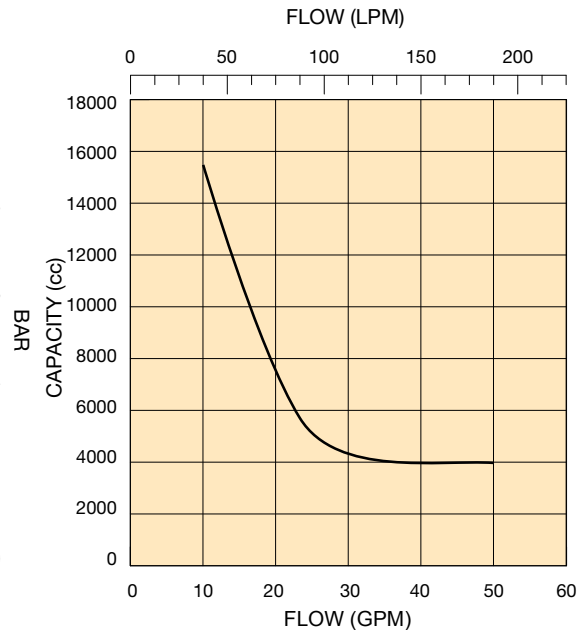
Multi-pass tests run per SAE J905
@ 90 GPM to 25 PSID terminal - 20 mg/L BUGL

DFO-644... Flow vs Pressure Loss



ISO 3968

AD-64... Water Capacity



Internal test @ 90 GPM to
25 PSID terminal - 100 ppm H₂O

DVX Series

Vertical Filter Housings for Diesel Fuel Filtration

for Flows up to 175 gpm (662 lpm)

How to Order

Select the desired symbol (in the correct position) to construct a model code. Example:

BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	BOX 6	BOX 7	BOX 8
DVX	1	CS	X	B	DP	N32	1

BOX 1: Filter Series	
Symbol	Description
DVX	Diesel Vertical Filter up to 175 gpm/662 lpm

BOX 2: Element Length	
Symbol	Description
1	14 in (355 mm)
2	29 in (737 mm)
3	44 in (1118 mm)

BOX 3: Filtration Type ¹	
Symbol	Description
P	Particulate
A	Water Absorption
CS	Coalescer/Separator

BOX 4: Media Code ²	
Symbol	Description
X	No Element Installed (1 required)

BOX 5: Seals	
Symbol	Description
B	Nitrile
V	Fluorocarbon

BOX 6: Indicator	
Symbol	Description
P	Port Plugged
DP	Differential Pressure
M2	Visual Automatic Reset

BOX 7: Ports	
Symbol	Description
N32	2" NPT
A2	2" 150# RF ANSI

BOX 8: Options ³	
Symbol	Description
1	None
AE	Air Eliminator
DV	Drain Valve
NL	No Legs
PR	Pressure Relief Valve 250#
SG	Site Gauge

Please note the bolded options reflect standard options with reduced lead-time.

Notes:

1. If choosing "CS", "5", "10" and "25" are the only available filtration rating options.
2. Use the chosen codes from Box 2 and Box 3, along with the desired filtration type/rating and separator material to select the correct element from the tables below. **Example:** For model DVX1PXBPN321 with 10 micron particulate, element DFO-614PLF10 would be required.
3. Select one or more options, as desired.

Replacement Elements

Type / Media	Element Length 1	Element Length 2	Element Length 3
Particulate			
2 micron	DFO-614PLF2	DFO-629PLF2	DFO-644PLF2
5 micron	DFO-614PLF5	DFO-629PLF5	DFO-644PLF5
10 micron	DFO-614PLF10	DFO-629PLF10	DFO-644PLF10
25 micron	DFO-614PLF25	DFO-629PLF25	DFO-644PLF25

Water Absorption			
2 micron	AD-6142	AD-6292	AD-6442
5 micron	AD-6145	AD-6295	AD-6445
10 micron	AD-61410	AD-62910	AD-64410
25 micron	AD-61425	AD-62925	AD-64425

Coalescer	Separator						
5 micron	Pleated Cellulose	DO-815D5	DSO-415PL	DO-830D5	DSO-430PL	DO-844D5	DSO-444PL
10 micron		DO-815D10		DO-830D10		DO-844D10	
25 micron		DO-815D25		DO-830D25		DO-844D25	

Element Mounting Kits	DVX-1	DVX-2	DVX-3
For A or P (Box 3)	VX1-AVKIT	VX2-AVKIT	VX3-AVKIT
For CS (Box 3)	VX1-FSKIT	VX2-FSKIT	VX3-FSKIT

DVF Series

Vertical Filter Housings

For Use with AD-6 & DFO-6 Elements

Clean fuel is more important than ever with HPCR (High Pressure Common Rail) systems becoming the standard in diesel engines. Contaminants as small as 2 microns can lead to a loss of fuel economy, a less efficient engine, down time, component failure, catastrophic engine failure and potentially the rejection of a warranty claim from the engine manufacturer. Currently, the ISO code of 18/16/13 by some engine manufacturers require fuel to be cleaner than some Aviation Military fuel standards. The standard DVF series offers several options in element micron ratings, including water absorption and a range of single vessel flows from 176 gallons per minute to 7,392 gallons per minute. Parker's DVF series of vessels are design to meet today's engine manufacturers requirements for clean fuel while allowing older engines to operate at maximum efficiencies. The DVF series filters all types of diesel fuels from standard diesel to 100% biodiesel.



Typical Applications

The DVF series offers many options which makes it perfect for many markets and applications. In the Natural Resources market, the DVF can be utilized in mining equipment, fuel transfer, fuel polishing and fuel delivery. Opportunities exist for small and large fuel terminals. The Power Generation market offers several potential applications. Fuel transfers from terminals and polishing of bulk storage tanks, the DVF will provide superior clean fuel. The Transportation market also provides many different opportunities. Larger commercial marine vessels can filter fuel as it is offloaded from land or sea suppliers. Railroad terminals can filter fuel as it is transferred to maintain superior fuel quality. The DVF series can be used to meet the fuel cleanliness requirement set by the engine manufactures. Clean fuel allows the engines to operate at maximum efficiencies and maintain emission requirements.



DVF Series

Features

Standard Design Features

- 1 150 psi (10.34 bar) welded steel ASME Code construction. (stamp on request)
- 2 Epoxy coated interior, primed exterior.
- 3 Swing bolt closure with nitrile cover seals.
- 4 Inlet/Outlet sample ports
- 5 Hydraulic lifting davit¹

Options

- 6 Automatic air eliminator
- 7 Pressure relief valve
- 8 Differential pressure gauge
- 9 Drain Valve(s)
- 10 Choice of micron rating from 2 to 25 microns.
- 11 Choice of pleated or depth type media.

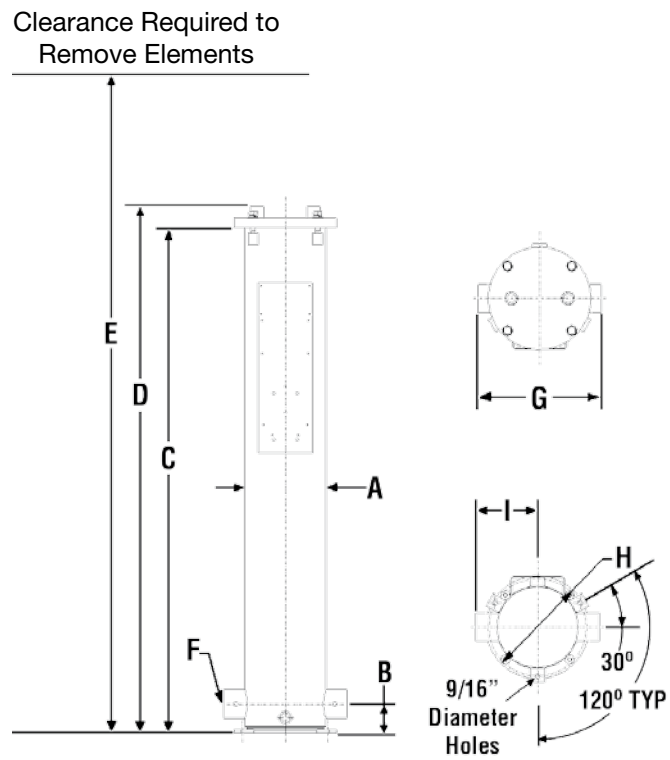


1. DVF16 and DVF20 Series vessels have flat covers. DVF16 Series vessels do not have hydraulic lift jacks.

DVF Series

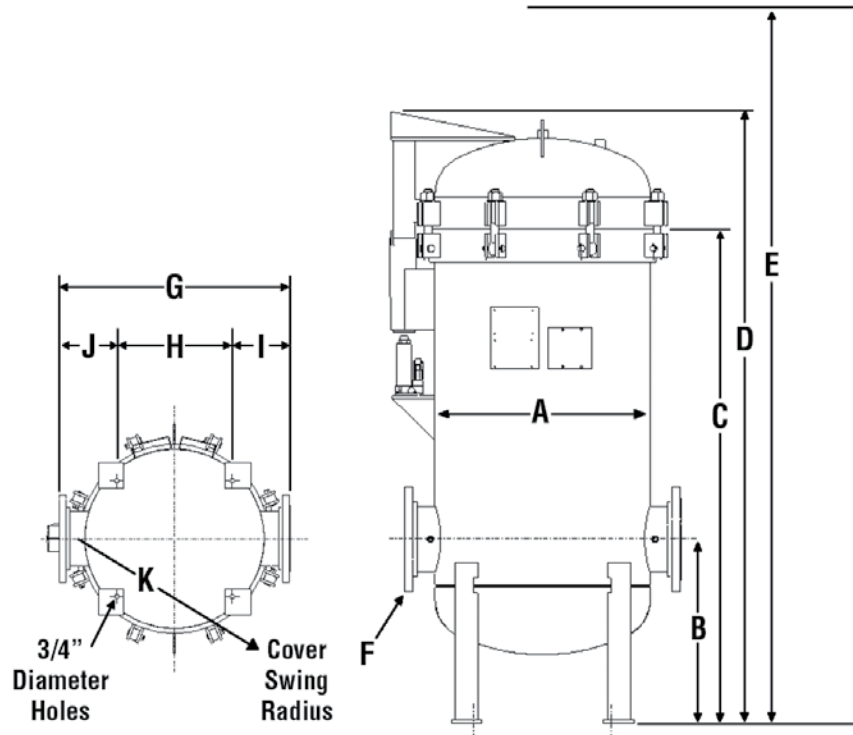
Specifications

Figure 1



Clearance Required to Remove Elements

Figure 2



DVF Series

Specifications

Model	Flow Rate Range gpm (lpm)			Length in (mm)	Qty of Elements	Fig. No.	Dimensions in (mm)		
	Max	Target	Fuel Processed Per Filter Change (US Gallons)				A	B	C
DVF829	116 (439)	65 (247)	50000	29 (737)	1	1	8.63 (219)	3 (76)	57.06 (991)
DVF844	176 (665)	99 (375)	75000	44 (1118)	1	1	8.63 (219)	3 (76)	57.06 (1449)
DVF1629	464 (1756)	261 (988)	200000	29 (737)	4	1	16 (406)	15 (381)	52.81 (1341)
DVF1644	704 (2665)	396 (1499)	300000	44 (1118)	4	1	16 (406)	15 (381)	66.75 (1695)
DVF2044	1056 (3997)	594 (2248)	450000	44 (1118)	6	1	20 (508)	19.5 (495)	74.63 (1895)
DVF2444	1408 (5329)	792 (2998)	600000	44 (1118)	8	2	24 (610)	21 (533)	65 (1651)
DVF2456	1792 (6783)	1008 (3815)	770000	56 (1422)	8	2	24 (610)	21 (533)	77 (1956)
DVF2844	2112 (7994)	1188 (4497)	900000	44 (1118)	12	2	28 (711)	24 (610)	64.38 (1635)
DVF2856	2688 (10174)	1512 (5723)	1110000	56 (1422)	12	2	28 (711)	24 (610)	76.38 (1940)
DVF3644	3168 (11991)	1782 (6745)	1400000	44 (1118)	18	2	36.63 (930)	26 (660)	64.38 (1635)
DVF3656	4032 (15261)	2268 (8584)	1700000	56 (1422)	18	2	36.63 (930)	26 (660)	76.38 (1940)
DVF4244	4752 (17986)	2673 (10117)	2000000	44 (1118)	27	2	42.75 (1086)	28 (711)	66 (1676)
DVF4256	6048 (22892)	3402 (12877)	2600000	56 (1422)	27	2	42.75 (1086)	28 (711)	78 (1981)
DVF4856	7392 (27979)	4158 (15738)	3100000	56 (1422)	33	2	48 (1219)	29 (737)	80 (2032)

Model	Dimensions in (mm)								Wt. w/Skid lbs (kgs)	Volume US gal (ltr.)
	D	E	F	G	H	I	J	K		
DVF829	41.13 (1045)	68 (1727)	2 (51)	13 (330)	10.38 (264)	6.5 (165)			265 (120)	8 (30)
DVF844	59.44 (1510)	101 (2565)	2 (51)	13 (330)	10.38 (264)	6.5 (165)			305 (138)	11 (42)
DVF1629	55.81 (1418)	82 (2083)	4 (102)	24.25 (616)	9 (229)	7.63 (194)	7.63 (194)	18.44 (468)	560 (254)	35 (132)
DVF1644	69.75 (1772)	110 (2794)	4 (102)	24.25 (616)	9 (229)	7.63 (194)	7.63 (194)	18.44 (468)	620 (281)	50 (189)
DVF2044	80.44 (2043)	118 (2997)	6 (152)	28 (711)	13 (330)	7.5 (191)	7.5 (191)	26 (660)	1100 (499)	90 (341)
DVF2444	72 (1829)	112 (2845)	6 (152)	32 (813)	15 (381)	8 (203)	8 (203)	32 (813)	1300 (590)	120 (454)
DVF2456	84 (2134)	122 (3099)	6 (152)	32 (813)	15 (381)	8 (203)	8 (203)	32 (813)	1350 (612)	150 (568)
DVF2844	79.75 (2026)	108 (2743)	8 (203)	36 (914)	18 (457)	9 (229)	9 (229)	35 (889)	1600 (726)	165 (625)
DVF2856	91.75 (2330)	120 (3048)	8 (203)	36 (914)	18 (457)	9 (229)	9 (229)	35 (889)	1750 (794)	200 (757)
DVF3644	84 (2134)	109 (2769)	10 (254)	48 (1219)	23 (584)	12.5 (318)	12.5 (318)	44 (1118)	2250 (1021)	290 (1098)
DVF3656	96 (2438)	121 (3073)	10 (254)	48 (1219)	23 (584)	12.5 (318)	12.5 (318)	44 (1118)	2400 (1089)	350 (1325)
DVF4244	87.38 (2219)	110 (2794)	12 (305)	54 (1372)	28 (711)	13 (330)	13 (330)	52.25 (1327)	3800 (1724)	400 (1514)
DVF4256	98.38 (2499)	122 (3099)	12 (305)	54 (1372)	28 (711)	13 (330)	13 (330)	52.25 (1327)	4000 (1814)	475 (1798)
DVF4856	108 (2743)	165 (4191)	14 (356)	66 (1676)	36.5 (927)	14.75 (375)	14.75 (375)	65 (1651)	4400 (1996)	630 (2385)

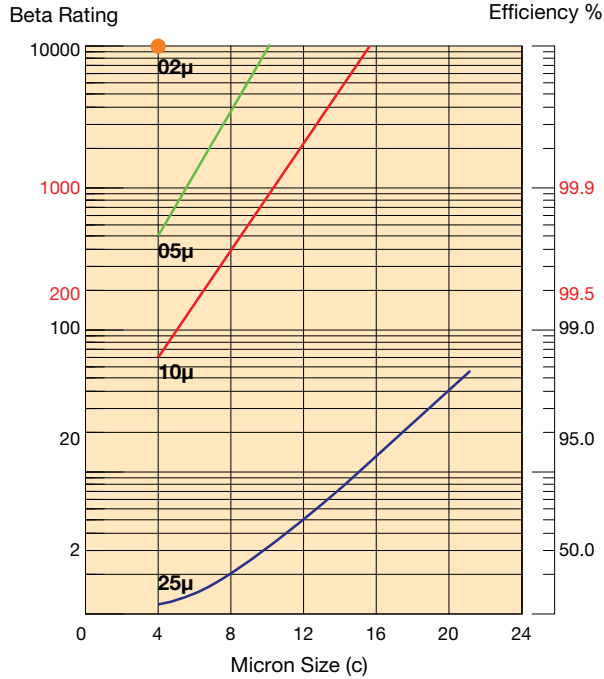
- For higher viscosity fluids or operating in highly variable temperature conditions, consult your Parker Representative.
- DVF Series are designed to accommodate our standard 6 in. O.D., 3½ in. I.D. Elements including Parker's DFO, DI, DSO, and Aquacon AD.
- DVF16 and DVF20 Series vessels have flat covers. DVF16 Series vessels do not have hydraulic lift jacks.
- In applications where increased dirt contamination is present, it may be desirable to oversize filtration equipment. Contact Parker for oversizing recommendations.
- Actual flow rates may vary based on field conditions.
- Fuel processed is based on target flow rate and 21/18/16 ISO 4406 or 5 mg/liter incoming contamination levels. Field conditions will vary and actual results may be different than these estimates.

Dimensions shown are for estimating purposes only. For exact dimensional detail, obtain certified copy of vessel drawing.

DVF Series

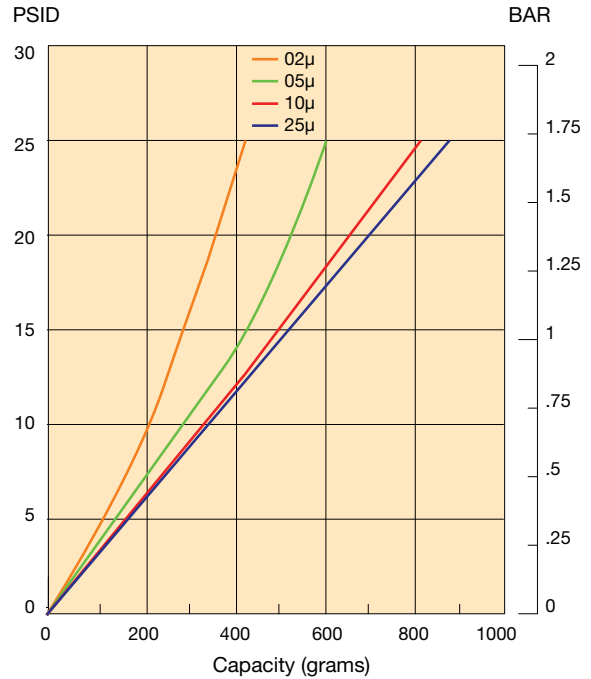
Element Performance

DFO-629... Efficiency



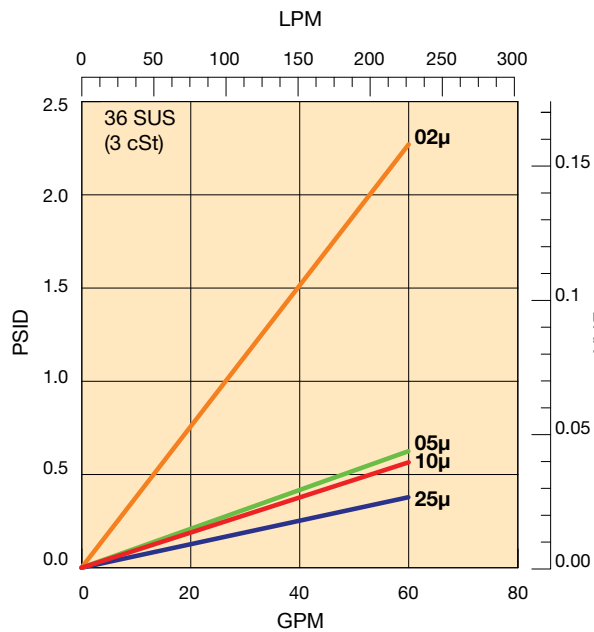
Single-pass tests run per SAE J1985
@ 60 GPM - 5 mg/L BUGL

DFO-629... Capacity



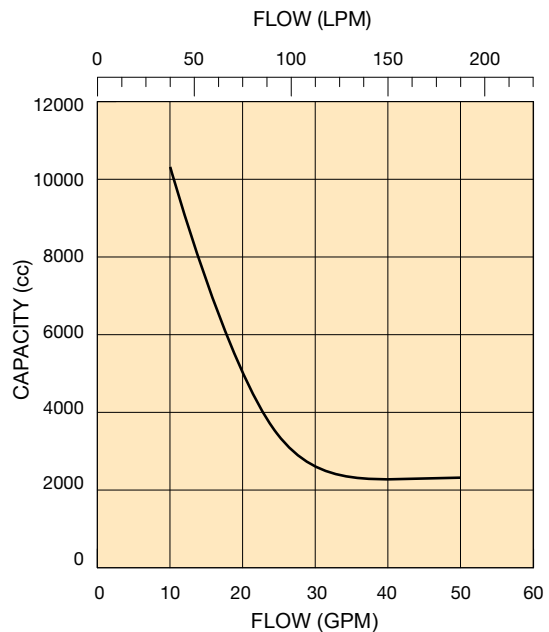
Multi-pass tests run per SAE J905
@ 60 GPM to 25 PSID terminal - 20 mg/L BUGL

DFO-629... Flow vs Pressure Loss



ISO 3968

AD-62... Water Capacity

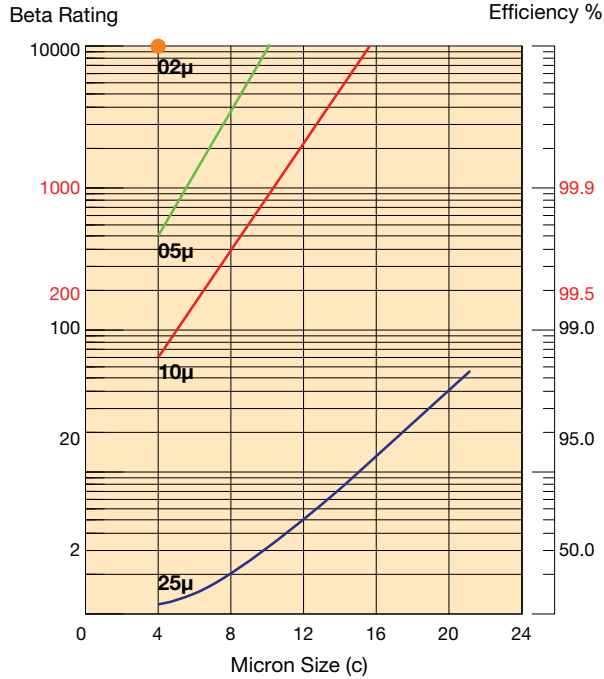


Internal test @ 60 GPM to
25 PSID terminal - 100 ppm H₂O

DVF Series

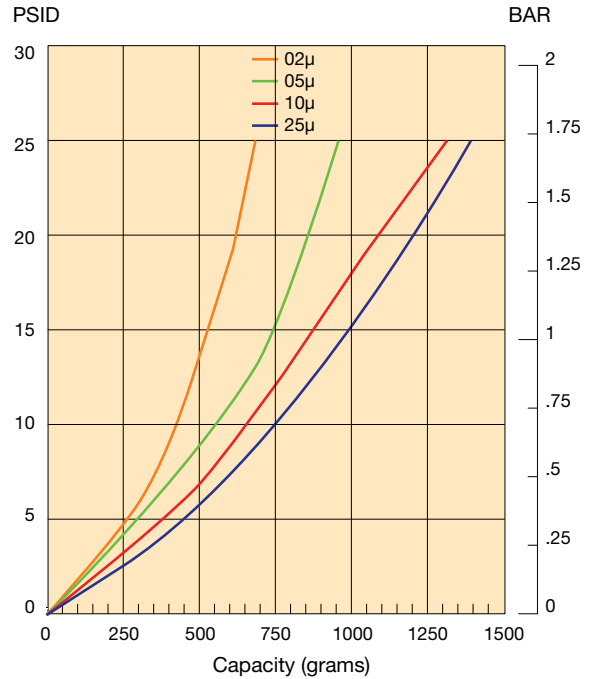
Element Performance

DFO-644... Efficiency



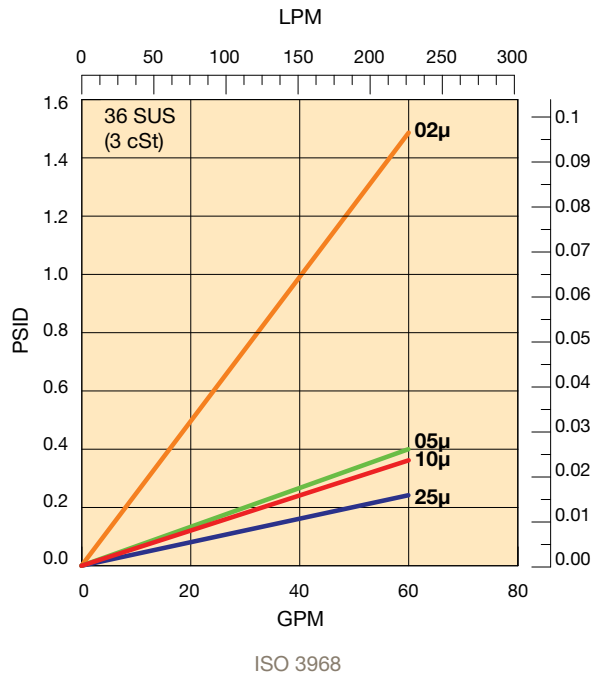
Single-pass tests run per SAE J1985
@ 90 GPM - 5 mg/L BUGL

DFO-644... Capacity



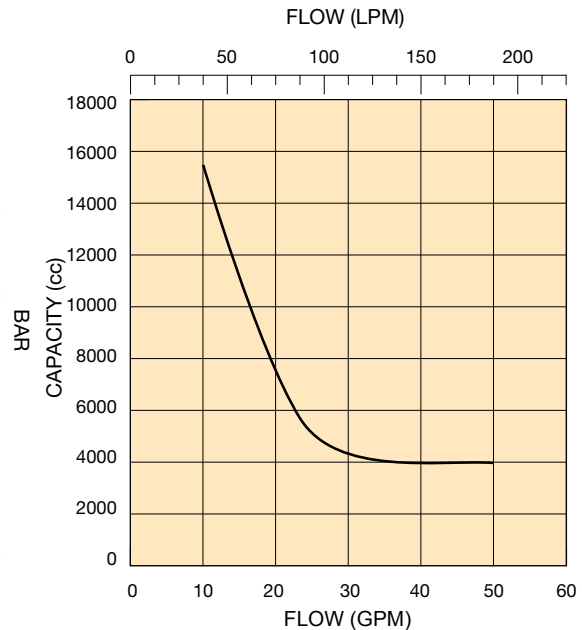
Multi-pass tests run per SAE J905
@ 90 GPM to 25 PSID terminal - 20 mg/L BUGL

DFO-644... Flow vs Pressure Loss



ISO 3968

AD-64... Water Capacity

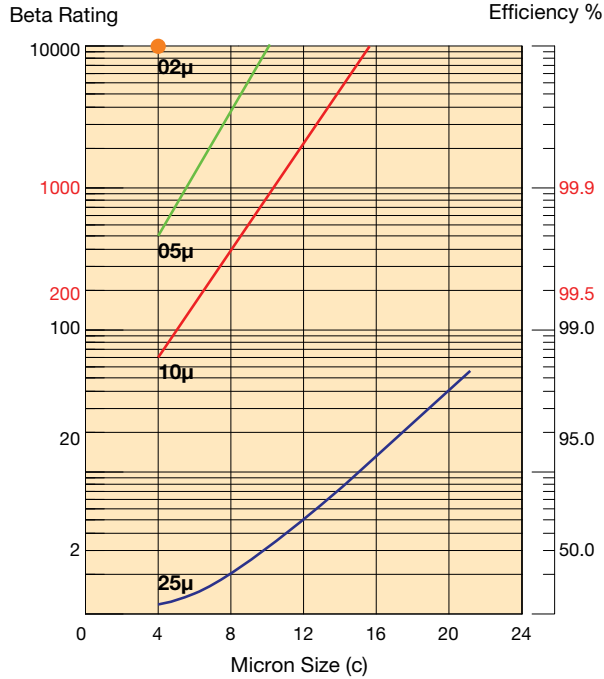


Internal test @ 90 GPM to
25 PSID terminal - 100 ppm H₂O

DVF Series

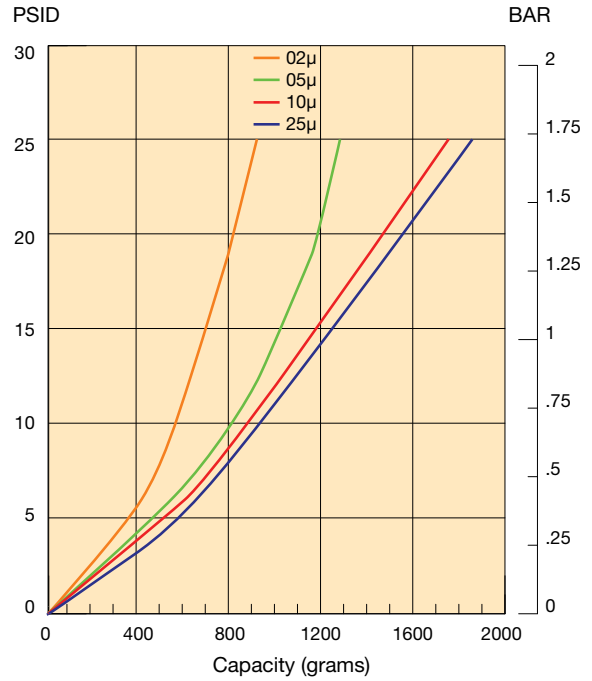
Element Performance

DFO-656... Efficiency



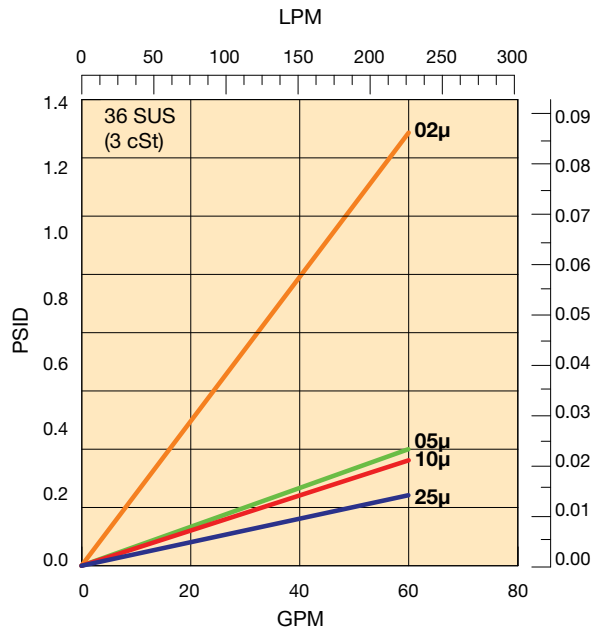
Single-pass tests run per SAE J1985
@ 115 GPM - 5 mg/L BUGL

DFO-656... Capacity



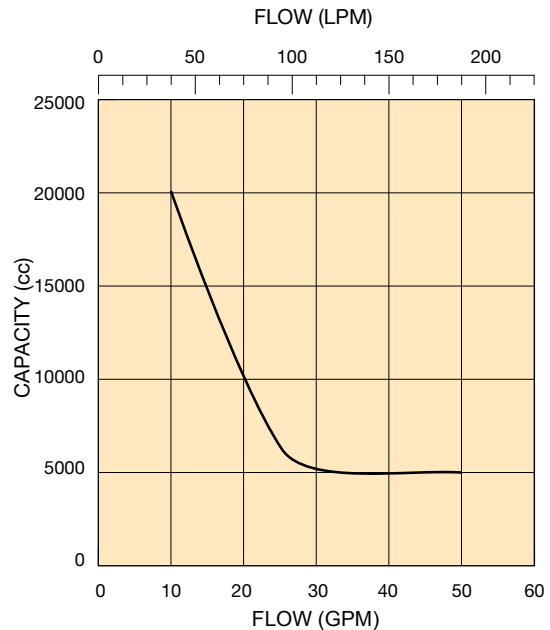
Multi-pass tests run per SAE J905
@ 115 GPM to 25 PSID terminal - 20 mg/L BUGL

DFO-656... Flow vs Pressure Loss



ISO 3968

AD-65... Water Capacity



Internal test @ 115 GPM to
25 PSID terminal - 100 ppm H₂O

DVF8 Series

Vertical Filter Housings for use with DFO-6 and AD-6 Elements for Flows up to 176 gpm (665 lpm)

How to Order

Select the desired symbol (in the correct position) to construct a model code. Example:

BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	BOX 6	BOX 7	BOX 8
DVF8	29	P	X	B	DP	A2	1

BOX 1: Filter Series	
Symbol	Description
DVF8	Diesel Vertical Filter up to 176 gpm/750 lpm

BOX 4: Media Code	
Symbol	Description
X	No Element Installed (1 required) ¹

BOX 7: Ports	
Symbol	Description
A2	2" 150# RF ANSI

BOX 2: Element Length	
Symbol	Description
29	29 in (727 mm)
44	44 in (1118 mm)

BOX 5: Seals	
Symbol	Description
B	Nitrile
V	Fluorocarbon

BOX 8: Options ²	
Symbol	Description
1	None
AE	Air Eliminator
DV	Drain Valve
PR	Pressure Relief Valve 150#

BOX 3: Filtration Type	
Symbol	Description
P	Particulate
A	Water Absorption

BOX 6: Pressure Gauge	
Symbol	Description
P	Port Plugged
DP	Differential Pressure
M2	Visual Automatic Reset

Please note the bolded options reflect standard options with reduced lead-time.

Notes:

- Use the chosen codes from Box 2 and Box 3, along with the desired filtration rating to select the correct element from the tables below. **Example:** For model DVF8**29P**XBPA21, element DFO-629PLF10TB would be required.
- Select one or more options, as desired.

Replacement Elements

Type / Media			
Particulate	29 in (737 mm)	44 in (1118 mm)	
	2 micron	DFO-629PLF2TB	DFO-644PLF2TB
	5 micron	DFO-629PLF5TB	DFO-644PLF5TB
	10 micron	DFO-629PLF10TB	DFO-644PLF10TB
	25 micron	DFO-629PLF25TB	DFO-644PLF25TB
Water Absorption	29 in (737 mm)	44 in (1118 mm)	
	2 micron	AD-6292TB	AD-6442TB
	5 micron	AD-6295TB	AD-6445TB
	10 micron	AD-62910TB	AD-64410TB
	25 micron	AD-62925TB	AD-64425TB

Accessories

Part Number	Description
101-G	Air Eliminator
115-C	Drain Valve
130-BT	Pressure Relief Valve 150#

Part Number	Description
120-Q	Differential Pressure Gauge
G-2105	Cover Gasket

DVF16 Series

Vertical Filter Housings for use with DFO-6 and AD-6 Elements
for Flows up to 704 gpm (2665 lpm)

How to Order

Select the desired symbol (in the correct position) to construct a model code. Example:

BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	BOX 6	BOX 7	BOX 8
DVF16	29	P	X	B	DP	A4	1

BOX 1: Filter Series	
Symbol	Description
DVF16	Diesel Vertical Filter up to 704 gpm/2665 lpm

BOX 4: Media Code	
Symbol	Description
X	No Element Installed (1 required) ¹

BOX 7: Ports	
Symbol	Description
A4	4" 150# RF ANSI

BOX 2: Element Length	
Symbol	Description
29	29 in (727 mm)
44	44 in (1118 mm)

BOX 5: Seals	
Symbol	Description
B	Nitrile
V	Fluorocarbon

BOX 8: Options ²	
Symbol	Description
1	None
AE	Air Eliminator
CL	Custom Leg Height ³
DV	Drain Valve
PR	Pressure Relief Valve 150#

BOX 3: Filtration Type	
Symbol	Description
P	Particulate
A	Water Absorption

BOX 6: Pressure Gauge	
Symbol	Description
P	Port Plugged
DP	Differential Pressure
M2	Visual Automatic Reset

Please note the bolded options reflect standard options with reduced lead-time.

Notes:

- Use the chosen codes from Box 2 and Box 3, along with the desired filtration rating to select the correct element from the tables below. **Example:** For model DVF16**29P**XBPA41, element DFO-629PLF10TB would be required.
- Select one or more options, as desired.
- Customer must supply the length for Dimension B referenced in Figure 2 on page 71.

Replacement Elements

Type / Media		
Particulate	29 in (737 mm)	44 in (1118 mm)
2 micron	DFO-629PLF2TB	DFO-644PLF2TB
5 micron	DFO-629PLF5TB	DFO-644PLF5TB
10 micron	DFO-629PLF10TB	DFO-644PLF10TB
25 micron	DFO-629PLF25TB	DFO-644PLF25TB
Water Absorption	29 in (737 mm)	44 in (1118 mm)
2 micron	AD-6292TB	AD-6442TB
5 micron	AD-6295TB	AD-6445TB
10 micron	AD-62910TB	AD-64410TB
25 micron	AD-62925TB	AD-64425TB

Accessories

Part Number	Description
101-G	Air Eliminator
115-C	Drain Valve
130-BT	Pressure Relief Valve 150#

Part Number	Description
120-Q	Differential Pressure Gauge
G-2033	Cover Gasket

DVF20/24/28 Series

Vertical Filter Housings for use with DFO-6 and AD-6 Elements

for Flows up to 2866 gpm (10174 lpm)

How to Order

Select the desired symbol (in the correct position) to construct a model code. Example:

BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	BOX 6	BOX 7	BOX 8
DVF20	44	P	X	B	DP	A6	1

BOX 1: Filter Series ¹	
Symbol	Description
DVF20	Diesel Vertical Filter up to 1056 gpm/3997 lpm
DVF24	Diesel Vertical Filter up to 1792 gpm/6783 lpm
DVF28	Diesel Vertical Filter up to 2866 gpm/10174 lpm

BOX 2: Element Length	
Symbol	Description
44	44 in (1118 mm)
56	56 in (1422 mm)

BOX 3: Filtration Type	
Symbol	Description
P	Particulate
A	Water Absorption

BOX 4: Media Code	
Symbol	Description
X	No Element Installed ^{2,3}

BOX 5: Seals	
Symbol	Description
B	Nitrile
V	Fluorocarbon

BOX 6: Indicator	
Symbol	Description
P	Port Plugged
DP	Differential Pressure
M2	Visual Automatic Reset

BOX 7: Ports	
Symbol	Description
A2	2" 150# RF ANSI
A3	3" 150# RF ANSI
A4	4" 150# RF ANSI
A6	6" 150# RF ANSI
A8	8" 150# RF ANSI

BOX 8: Options ⁴	
Symbol	Description
1	None
AE	Air Eliminator
CL	Custom Leg Height ⁵
DV	Drain Valve
PR	Pressure Relief Valve 150#

Please note the bolded options reflect standard options with reduced lead-time.

Notes:

- When DVF20 is selected in Box 1, select "44" in Box 2.
- Use the chosen codes from Box 2 and Box 3, along with the desired filtration rating to select the correct element from the tables below. **Example:** For model DVF20**44P**XBPA61, element DFO-644PLF10TB would be required.
- Element qty required: DVF20 (6), DVF24 (8), DVF28 (12)
- Select one or more options, as desired.
- Customer must supply the length for Dimension B referenced in Figure 2 on page 71.

Replacement Elements

Type / Media			
Particulate	44 in (1118 mm)	56 in (1422 mm)	
	2 micron	DFO-644PLF2TB	DFO-656PLF2TB
	5 micron	DFO-644PLF5TB	DFO-656PLF5TB
	10 micron	DFO-644PLF10TB	DFO-656PLF10TB
	25 micron	DFO-644PLF25TB	DFO-656PLF25TB
Water Absorption	44 in (1118 mm)	56 in (1422 mm)	
	2 micron	AD-6442TB	AD-6562TB
	5 micron	AD-6445TB	AD-6565TB
	10 micron	AD-64410TB	AD-65610TB
	25 micron	AD-64425TB	AD-65625TB

Accessories

Part Number	Description
101-G	Air Eliminator
115-C	Drain Valve
130-BT	Pressure Relief Valve 150#

Part Number	Description
120-Q	Differential Pressure Gauge
G-2027 (DVF20) G-2042 (DVF24) G-0769 (DVF28)	Cover Gasket

DVF36 Series

Vertical Filter Housings for use with DFO-6 and AD-6 Elements for Flows up to 4032 gpm (15261 lpm)

How to Order

Select the desired symbol (in the correct position) to construct a model code. Example:

BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	BOX 6	BOX 7	BOX 8
DVF36	44	P	X	B	DP	A10	1

BOX 1: Filter Series	
Symbol	Description
DVF36	Diesel Vertical Filter up to 4032 gpm/15261 lpm

BOX 4: Media Code	
Symbol	Description
X	No Element Installed (18 required)¹

BOX 7: Ports	
Symbol	Description
A6	6" 150# RF ANSI
A8	8" 150# RF ANSI
A10	10" 150# RF ANSI
A12	12" 150# RF ANSI

BOX 2: Element Length	
Symbol	Description
44	44 in (1118 mm)
56	56 in (1422 mm)

BOX 5: Seals	
Symbol	Description
B	Nitrile
V	Fluorocarbon

BOX 8: Options ²	
Symbol	Description
1	None
AE	Air Eliminator
CL	Custom Leg Height ³
DV	Drain Valve
PR	Pressure Relief Valve 150#

BOX 3: Filtration Type	
Symbol	Description
P	Particulate
A	Water Absorption

BOX 6: Indicator	
Symbol	Description
P	Port Plugged
DP	Differential Pressure
M2	Visual Automatic Reset

Please note the bolded options reflect standard options with reduced lead-time.

Notes:

1. Use the chosen codes from Box 2 and Box 3, along with the desired filtration rating to select the correct element from the tables below. **Example:** For model DVF36**44P**XBPA101, element DFO-644PLF10TB would be required.
2. Select one or more options, as desired.
3. Customer must supply the length for Dimension B referenced in Figure 2 on page 71.

Replacement Elements

Type / Media		
Particulate	44 in (1118 mm)	56 in (1422 mm)
2 micron	DFO-644PLF2TB	DFO-656PLF2TB
5 micron	DFO-644PLF5TB	DFO-656PLF5TB
10 micron	DFO-644PLF10TB	DFO-656PLF10TB
25 micron	DFO-644PLF25TB	DFO-656PLF25TB
Water Absorption	44 in (1118 mm)	56 in (1422 mm)
2 micron	AD-6442TB	AD-6562TB
5 micron	AD-6445TB	AD-6565TB
10 micron	AD-64410TB	AD-65610TB
25 micron	AD-64425TB	AD-65625TB

Accessories

Part Number	Description
101-G	Air Eliminator
115-C	Drain Valve
130-BT	Pressure Relief Valve 150#

Part Number	Description
120-Q	Differential Pressure Gauge
G-511A	Cover Gasket

DVF42/48 Series

Vertical Filter Housings for use with DFO-6 and AD-6 Elements

for Flows up to 7392 gpm (27979 lpm)

How to Order

Select the desired symbol (in the correct position) to construct a model code. Example:

BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	BOX 6	BOX 7	BOX 8
DVF42	44	P	X	B	DP	A10	1

BOX 1: Filter Series	
Symbol	Description
DVF42	Diesel Vertical Filter up to 6048 gpm/22892 lpm
DVF48	Diesel Vertical Filter up to 7392 gpm/27979 lpm

BOX 2: Element Length	
Symbol	Description
44	44 in (1118 mm)
56	56 in (1422 mm)

BOX 3: Filtration Type	
Symbol	Description
P	Particulate
A	Water Absorption

BOX 4: Media Code	
Symbol	Description
X	No Element Installed^{2,3}

BOX 5: Seals	
Symbol	Description
B	Nitrile
V	Fluorocarbon

BOX 6: Indicator	
Symbol	Description
P	Port Plugged
DP	Differential Pressure
M2	Visual Automatic Reset

BOX 7: Ports	
Symbol	Description
A6	6" 150# RF ANSI
A8	8" 150# RF ANSI
A10	10" 150# RF ANSI
A12	12" 150# RF ANSI

BOX 8: Options ¹	
Symbol	Description
1	None
AE	Air Eliminator
CL	Custom Leg Height
DV	Drain Valve
PR	Pressure Relief Valve 150#

Please note the bolded options reflect standard options with reduced lead-time.

Notes:

- When DVF48 is selected in Box 1, select "56" in Box 2.
- Use the chosen codes from Box 2 and Box 3, along with the desired filtration rating to select the correct element from the tables below. **Example:** For model DVF42**44P**XBPA101, element DFO-644PLF10TB would be required.
- Element qty required: DVF42 (27), DVF48 (33)
- Select one or more options, as desired.
- Customer must supply the length for Dimension B referenced in Figure 2 on page 71.

Replacement Elements

Type / Media		
Particulate	44 in (1118 mm)	56 in (1422 mm)
2 micron	DFO-644PLF2TB	DFO-656PLF2TB
5 micron	DFO-644PLF5TB	DFO-656PLF5TB
10 micron	DFO-644PLF10TB	DFO-656PLF10TB
25 micron	DFO-644PLF25TB	DFO-656PLF25TB
Water Absorption	44 in (1118 mm)	56 in (1422 mm)
2 micron	AD-6442TB	AD-6562TB
5 micron	AD-6445TB	AD-6565TB
10 micron	AD-64410TB	AD-65610TB
25 micron	AD-64425TB	AD-65625TB

Accessories

Part Number	Description
101-G	Air Eliminator
115-C	Drain Valve
130-BT	Pressure Relief Valve 150#

Part Number	Description
120-Q	Differential Pressure Gauge
G-0050E (DVF42) N/A (DVF48)	Cover Gasket

DV Series

Vertical Filter-Coalescer/Separator Housings for use with DI-6 and DS0-6 Elements

Dry fuel is more important than ever with HPCR (High Pressure Common Rail) systems becoming the standard in diesel engines. Water can displace fuel in the injectors and high pressure fuel pumps causing a lack of lubricity, thus resulting in premature wear. This wear can cause a loss of fuel economy, a less efficient engine, down time, component failure, catastrophic engine failure and potentially the rejection of a warranty claim from engine manufacture. Engine manufactures are requiring standard diesel, D975, to be less than 100 parts per million water. Current requirements for water per D975 is less than 500 parts per million water. All bulk fuel could potentially not meet OEM requirements while still meeting D975 specifications. The DV series can coalesce water from diesel fuel in flows from 330 gallons per minute to 2,100 gallons per minute in a standard single vessel. The DV series from Parker can easily achieve OEM requirements for water in parts per million.

Typical Applications

The DV series offer many options which makes the product perfect for many markets and applications. In the Natural Resources market, the DV can be utilized in mining equipment, fuel transfer, fuel polishing and fuel delivery for coalescing water. Opportunities exist for small and large fuel terminals. The Power Generation market offers several potential applications. Fuel transfers from terminals and polishing of bulk storage tanks, the DV can provide superior dry fuel. The Transportation market also provides many different opportunities. Larger commercial marine vessels can coalesce water as it is offloaded from land or sea suppliers. Railroad terminals can coalesce water from fuel as it is transferred to maintain superior fuel quality. The DV series can be used to meet the water specifications in parts per million as required by the engine manufactures. Clean Dry fuel allows the engines to operate at maximum efficiencies and maintain emission requirements.



DV Series

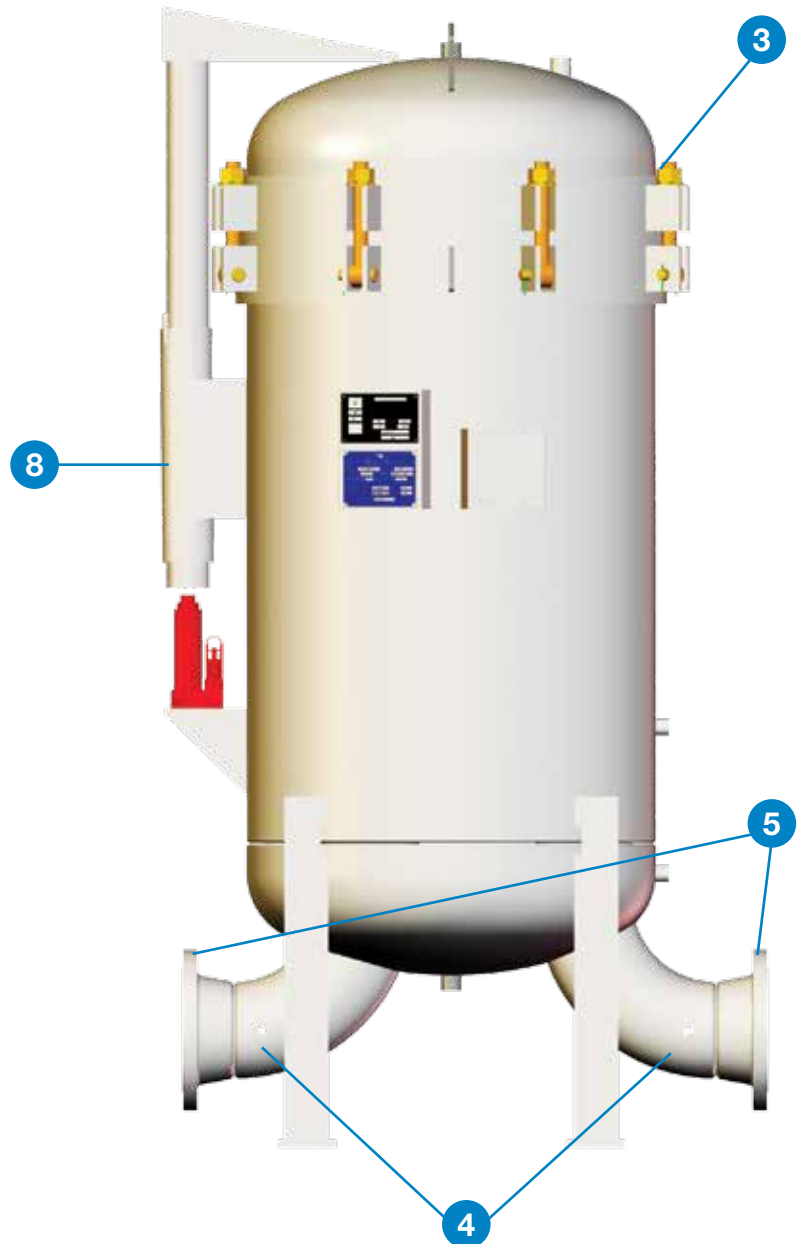
Features

Standard Design Features

- 1 150 psi welded steel ASME Code construction. (stamp on request)
- 2 Epoxy-coated interior, primed exterior
- 3 Swing bolt closure with O-ring seal
- 4 Inlet/Outlet sample ports
- 5 RF flanged connections
- 6 Threaded base coalescer
- 7 Carbon steel construct
- 8 Hydraulic lifting davit

Options

- 9 Automatic air vent
- 10 Pressure relief valve
- 11 Differential pressure gauge
- 12 Water interface control
- 13 Water sight glass
- 14 Sampling probes
- 15 Manual drain valve
- 16 Water slug valve
- 17 Sump heater
- 18 Choice of micron rating from 5 to 25 microns.
- 19 Choice of pleated or depth type media.



DV Series

Specifications

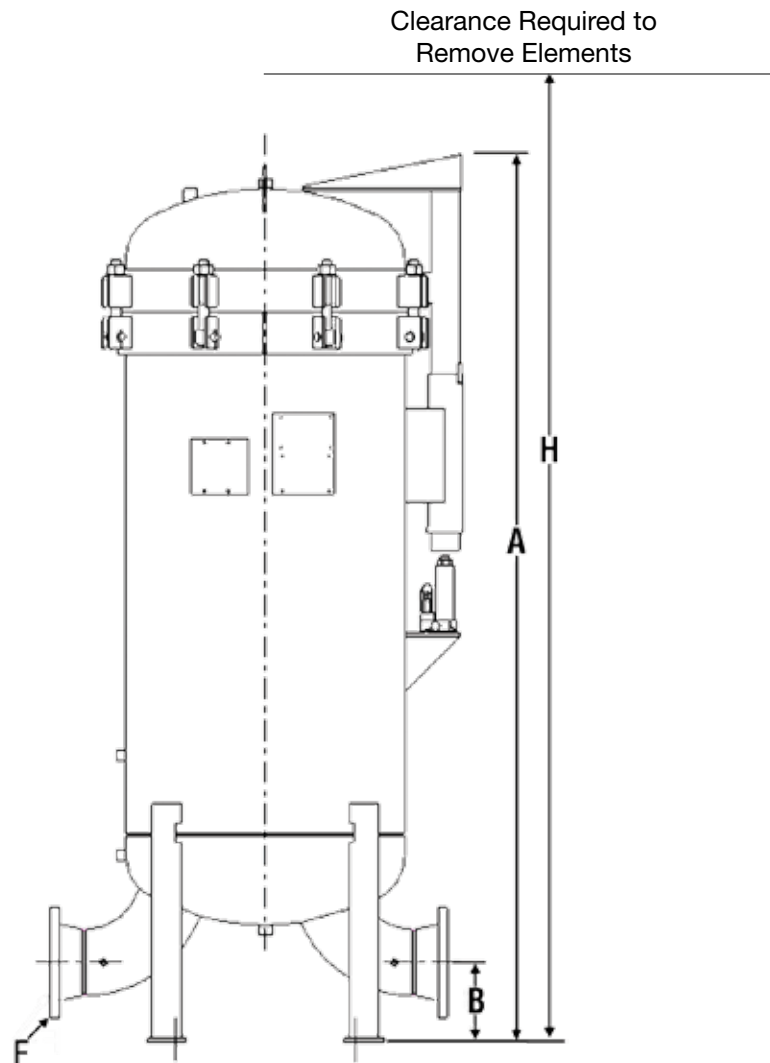


Figure 1

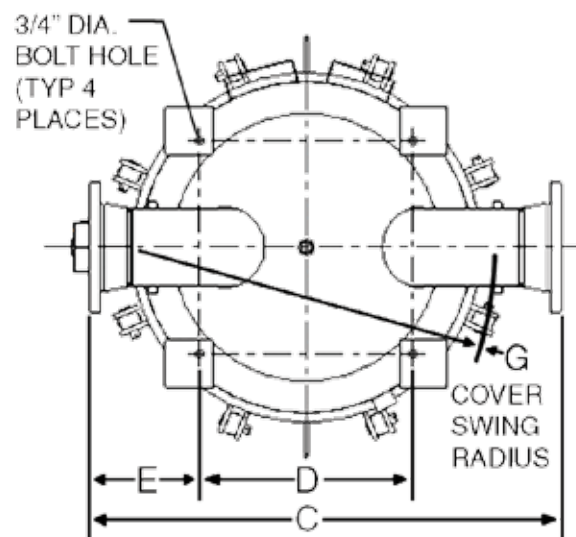


Figure 2

DV Series

Specifications

Model Number	Flow Rate Range gpm (lpm)		Elements		Dimensions in (mm)		
	Max	Target	DI DSO	Qty of Elements	A	B	C
DV2222	220 (835)	130 (500)	DI-622 DSO-622	4 3	62 (131)	8 (203)	27.13 (203)
DV2233	330 (1250)	200 (750)	DI-633 DSO-629	4 3	69 (198)	8 (203)	27.13 (203)
DV2833	495 (1875)	300 (1125)	DI-633 DSO-629	6 5	83 (522)	8 (203)	40 (203)
DV2844	660 (2500)	400 (1500)	DI-644 DSO-633	6 5	89 (792)	8 (203)	40 (203)
DV3638	1045 (3955)	630 (2380)	DI-638 DSO-629	11 9	91.56 (1188)	8 (203)	63.25 (203)
DV3644	1210 (4580)	730 (2750)	DI-644 DSO-633	11 9	96.38 (1584)	9 (229)	52.13 (229)
DV3656	1540 (5830)	930 (3500)	DI-656 DSO-644	11 9	109.69 (2016)	9 (229)	52.13 (229)
DV4244	1650 (6245)	995 (3750)	DI-644 DSO-633	15 12	103.38 (2379)	9 (229)	55.31 (229)
DV4256	2100 (7950)	1260 (4770)	DI-656 DSO-644	15 12	119.13 (2379)	9 (229)	55.31 (229)

Model Number	Dimensions in (mm)					Wt. w/ Skid lbs (kgs)	Volume US gal (L)
	D	E	F	G	H		
DV2222	15.5 (394)	6.25 (159)	4 (102)	30 (762)	86 (2184)	1110 (503)	64 (242)
DV2233	15.5 (394)	6.25 (159)	4 (102)	30 (762)	102 (2591)	1130 (513)	72 (273)
DV2833	18 (457)	12.63 (321)	6 (152)	35 (889)	118 (2997)	1650 (748)	170 (644)
DV2844	18 (457)	12.63 (321)	6 (152)	35 (889)	133 (3378)	1690 (767)	185 (700)
DV3638	23 (584)	20.13 (511)	6 (152)	44 (1118)	129 (3277)	2080 (943)	280 (1060)
DV3644	23 (584)	14.63 (371)	8 (203)	44 (1118)	140 (3556)	2150 (975)	305 (1155)
DV3656	23 (584)	14.63 (371)	8 (203)	44 (1118)	160 (4064)	2300 (1043)	355 (1344)
DV4244	28 (711)	15 (381)	8 (203)	50 (1270)	150 (3810)	3350 (1520)	450 (1703)
DV4256	28 (711)	15 (381)	8 (203)	50 (1270)	165 (4191)	3500 (1588)	520 (1968)

Element Coalescing Performance

>99% efficient at rated flows

*Dimensions shown are for estimating purposes only. For exact dimensional detail, obtain certified copy of vessel drawing.
Flow rates provided are for illustrative purposes. Actual flow rates may vary based on field conditions.

DV22 Series

Vertical Filter-Coalescer/Separator Housings

for use with DI-6 and DSO-6 Elements

for Flows up to 330 gpm (1250 lpm)

How to Order

Select the desired symbol (in the correct position) to construct a model code. Example:

BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	BOX 6	BOX 7	BOX 8
DV22	22	CS	X	B	DP	A4	1

BOX 1: Filter Series	
Symbol	Description
DV22	Diesel Vertical Filter Coalescer/Separator up to 330 gpm/1250 lpm

BOX 2: Element Length	
Symbol	Description
22	22 in (559 mm)
33	33 in (838 mm)

BOX 3: Filtration Type	
Symbol	Description
CS	Coalescer/Separator

BOX 4: Media Code	
Symbol	Description
X	No Element Installed^{1,2}

BOX 5: Seals	
Symbol	Description
B	Nitrile
V	Fluorocarbon

BOX 6: Indicator	
Symbol	Description
P	Port Plugged
DP	Differential Pressure

BOX 7: Ports	
Symbol	Description
A2	2" 150# RF ANSI
A3	3" 150# RF ANSI
A4	4" 150# RF ANSI

BOX 8: Options ³	
Symbol	Description
1	None
AE	Air Eliminator
CL	Custom Leg Height ⁴
DV	Drain Valve
PR	Pressure Relief Valve 150#
SG	Sight Glass

Please note the bolded options reflect standard options with reduced lead-time.

Notes:

- Use the code chosen from Box 2 along with the desired filtration rating and separator material to select the correct element from the table below. **Example:** For model DV22**22**CSXBPA41 with 10 micron coalescer and cellulose separator, DI-622D10TB and element DSO-622PLF3 would be required.
- Element qty required: (4) Coalescer, (3) Separator
- Select one or more options, as desired.
- Customer must supply the length for Dimension B referenced in Figure 1 on page 83.

Replacement Elements

Type / Media		22 in (559 mm)	22 in (559 mm)	33 in (838 mm)	29 in (737 mm)
Coalescer	Separator				
5 micron	Cellulose (PL) Screen (C)	DI-622D5TB	DSO-622PLF3 DSO-622C	DI-633D5TB	DSO-629PLF3 DSO-629C
10 micron		DI-622D10TB		DI-633D10TB	
25 micron		DI-622D25TB		DI-633D25TB	

Accessories

Part Number	Description
101-G	Air Eliminator
115-C	Drain Valve
130-BT	Pressure Relief Valve 150#

Part Number	Description
120-Q	Differential Pressure Gauge
138-P	Sight Glass
G-2042	Cover Gasket

DV28 Series

Vertical Filter-Coalescer/Separator Housings

for use with DI-6 and DSO-6 Elements

for Flows up to 660 gpm (2500 lpm)

How to Order

Select the desired symbol (in the correct position) to construct a model code. Example:

BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	BOX 6	BOX 7	BOX 8
DV28	33	CS	X	B	DP	A6	1

BOX 1: Filter Series	
Symbol	Description
DV28	Diesel Vertical Filter Coalescer/Separator up to 660 gpm/2500 lpm

BOX 2: Element Length	
Symbol	Description
33	33 in (838 mm)
44	44 in (1118 mm)

BOX 3: Filtration Type	
Symbol	Description
CS	Coalescer/Separator

BOX 4: Media Code	
Symbol	Description
X	No Element Installed^{1,2}

BOX 5: Seals	
Symbol	Description
B	Nitrile
V	Fluorocarbon

BOX 6: Indicator	
Symbol	Description
P	Port Plugged
DP	Differential Pressure

BOX 7: Ports	
Symbol	Description
A3	3" 150# RF ANSI
A4	4" 150# RF ANSI
A6	6" 150# RF ANSI

BOX 8: Options ³	
Symbol	Description
1	None
AE	Air Eliminator
CL	Custom Leg Height ⁴
DV	Drain Valve
PR	Pressure Relief Valve 150#
SG	Sight Glass

Please note the bolded options reflect standard options with reduced lead-time.

Notes:

- Use the code chosen from Box 2 along with the desired filtration rating and separator material to select the correct element from the table below. **Example:** For model DV28**33**CSXBPA61 with 10 micron coalescer and cellulose separator, DI-633D10TB and element DSO-629PLF3 would be required.
- Element qty required: (6) Coalescer, (5) Sparator
- Select one or more options, as desired.
- Customer must supply the length for Dimension B referenced in Figure 1 on page 83.

Replacement Elements

Type / Media					
Coalescer	Separator	33 in (838 mm)	29 in (737 mm)	44 in (1118 mm)	33 in (838 mm)
5 micron	Cellulose (PL) Screen (C)	DI-633D5TB	DSO-629PLF3 DSO-629C	DI-644D5TB	DSO-633PLF3 DSO-633C
10 micron		DI-633D10TB		DI-644D10TB	
25 micron		DI-633D25TB		DI-644D25TB	

Accessories

Part Number	Description
101-G	Air Eliminator
115-C	Drain Valve
130-BT	Pressure Relief Valve 150#

Part Number	Description
120-Q	Differential Pressure Gauge
138-P	Sight Glass
G-0769	Cover Gasket

DV36 Series

Vertical Filter-Coalescer/Separator Housings

for use with DI-6 and DSO-6 Elements

for Flows up to 1540 gpm (5830 lpm)

How to Order

Select the desired symbol (in the correct position) to construct a model code. Example:

BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	BOX 6	BOX 7	BOX 8
DV36	38	CS	X	B	DP	A8	1

BOX 1: Filter Series	
Symbol	Description
DV36	Diesel Vertical Filter Coalescer/Separator up to 1540 gpm/5830 lpm

BOX 2: Element Length	
Symbol	Description
38	38 in (965 mm)
44	44 in (1118 mm)
56	56 in (1422 mm)

BOX 3: Filtration Type	
Symbol	Description
CS	Coalescer/Separator

BOX 4: Media Code	
Symbol	Description
X	No Element Installed^{1,2}

BOX 5: Seals	
Symbol	Description
B	Nitrile
V	Fluorocarbon

BOX 6: Indicator	
Symbol	Description
P	Port Plugged
DP	Differential Pressure

BOX 7: Ports	
Symbol	Description
A4	4" 150# RF ANSI
A6	6" 150# RF ANSI
A8	8" 150# RF ANSI

BOX 8: Options ³	
Symbol	Description
N	None
AE	Air Eliminator
CL	Custom Leg Height ⁴
DV	Drain Valve
PR	Pressure Relief Valve 150#
SG	Sight Glass

Please note the bolded options reflect standard options with reduced lead-time.

Notes:

- Use the code chosen from Box 2 along with the desired filtration rating and separator material to select the correct element from the table below. **Example:** For model DV36**44**CSXBPA81 with 10 micron coalescer and cellulose separator, DI-644D10TB and element DSO-633PLF3 would be required.
- Element qty required: (11) Coalescer, (9) Separator
- Select one or more options, as desired.
- Customer must supply the length for Dimension B referenced in Figure 1 on page 83.

Replacement Elements

Type / Media		38in (965 mm)		29 in (737 mm)		44 in (1118 mm)		33 in (838 mm)		56 in (1422 mm)		44 in (1118 mm)			
Coalescer	Separator														
5 micron	Cellulose (PL) Screen (C)	DI-638D5TB	DSO-629PLF3 DSO-629C	DI-644D5TB	DSO-633PLF3 DSO-633C	DI-656D5TB	DSO-644PLF3 DSO-644C	DI-638D10TB	DI-644D10TB	DI-656D10TB	DI-638D25TB	DI-644D25TB	DI-656D25TB		
10 micron															
25 micron															

Accessories

Part Number	Description
101-G	Air Eliminator
115-C	Drain Valve
130-BT	Pressure Relief Valve 150#

Part Number	Description
120-Q	Differential Pressure Gauge
138-P	Sight Glass
G-0511A	Cover Gasket

DV42 Series

Vertical Filter-Coalescer/Separator Housings

for use with DI-6 and DSO-6 Elements

for Flows up to 2100 gpm (7950 lpm)

How to Order

Select the desired symbol (in the correct position) to construct a model code. Example:

BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	BOX 6	BOX 7	BOX 8
DV42	44	CS	X	B	DP	A8	1

BOX 1: Filter Series	
Symbol	Description
DV42	Diesel Vertical Filter Coalescer/Separator up to 2100 gpm/7950 lpm

BOX 2: Element Length	
Symbol	Description
44	44 in (1118 mm)
56	56 in (1422 mm)

BOX 3: Filtration Type	
Symbol	Description
CS	Coalescer/Separator

BOX 4: Media Code	
Symbol	Description
X	No Element Installed^{1,2}

BOX 5: Seals	
Symbol	Description
B	Nitrile
V	Fluorocarbon

BOX 6: Indicator	
Symbol	Description
P	Port Plugged
DP	Differential Pressure

BOX 7: Ports	
Symbol	Description
A6	6" 150# RF ANSI
A8	8" 150# RF ANSI
A10	10" 150# RF ANSI

BOX 8: Options ³	
Symbol	Description
1	None
AE	Air Eliminator
CL	Custom Leg Height ⁴
DV	Drain Valve
PR	Pressure Relief Valve 150#
SG	Sight Glass

Please note the bolded options reflect standard options with reduced lead-time.

Notes:

- Use the code chosen from Box 2 along with the desired filtration rating and separator material to select the correct element from the table below. **Example:** For model DV42**44**CSXBPA81 with 10 micron coalescer and cellulose separator, DI-644D10TB and element DSO-633PLF3 would be required.
- Element qty required: (15) Coalescer, (12) Separator
- Select one or more options, as desired.
- Customer must supply the length for Dimension B referenced in Figure 1 on page 83.

Replacement Elements

Type / Media		44 in (1118 mm)	33 in (838 mm)	56 in (1422 mm)	44 in (1118 mm)
Coalescer	Separator				
5 micron	Cellulose (PL) Screen (C)	DI-644D5TB	DSO-633PLF3 DSO-633C	DI-656D5TB	DSO-644PLF3 DSO-644C
10 micron		DI-644D10TB		DI-656D10TB	
25 micron		DI-644D25TB		DI-656D25TB	

Accessories

Part Number	Description
101-G	Air Eliminator
115-C	Drain Valve
130-BT	Pressure Relief Valve 150#

Part Number	Description
120-Q	Differential Pressure Gauge
138-P	Sight Glass
G-0050E	Cover Gasket

Diesel Filtration Skid

DFS™ Series - System for Removal of Particulates and Protection from Water Contaminants

Providing high quality fuel to the modern high pressure common rail fuel injection systems is imperative to avoid costly downtime and engine repair.

The Parker Diesel Filtration Skid (DFS) plays an important role in a comprehensive fuel contaminant control program as it provides fuel conditioning to assure the consistent removal of abrasive particles and damaging water.

The DFS offers a complete fuel filtration solutions which incorporates both particulate and water contaminant removal technologies mounted on a skid base that can be quickly installed and put into operation.

Key components of the DFS includes a particulate housing (DVF) and coalescing (DV) housings which have proven to withstand years of service in the most challenging environments. Parker DFO particulate filters and DI and DSO coalescer and separator elements are used for conditioning contaminated fuels to meet the most stringent ISO 4406 and ASTM D975 standards for emulsified and free water as well as abrasive particulate. All filtration elements are available with threaded base endcap option for quick filter removal and ease of installation.



Diesel Filtration Skid

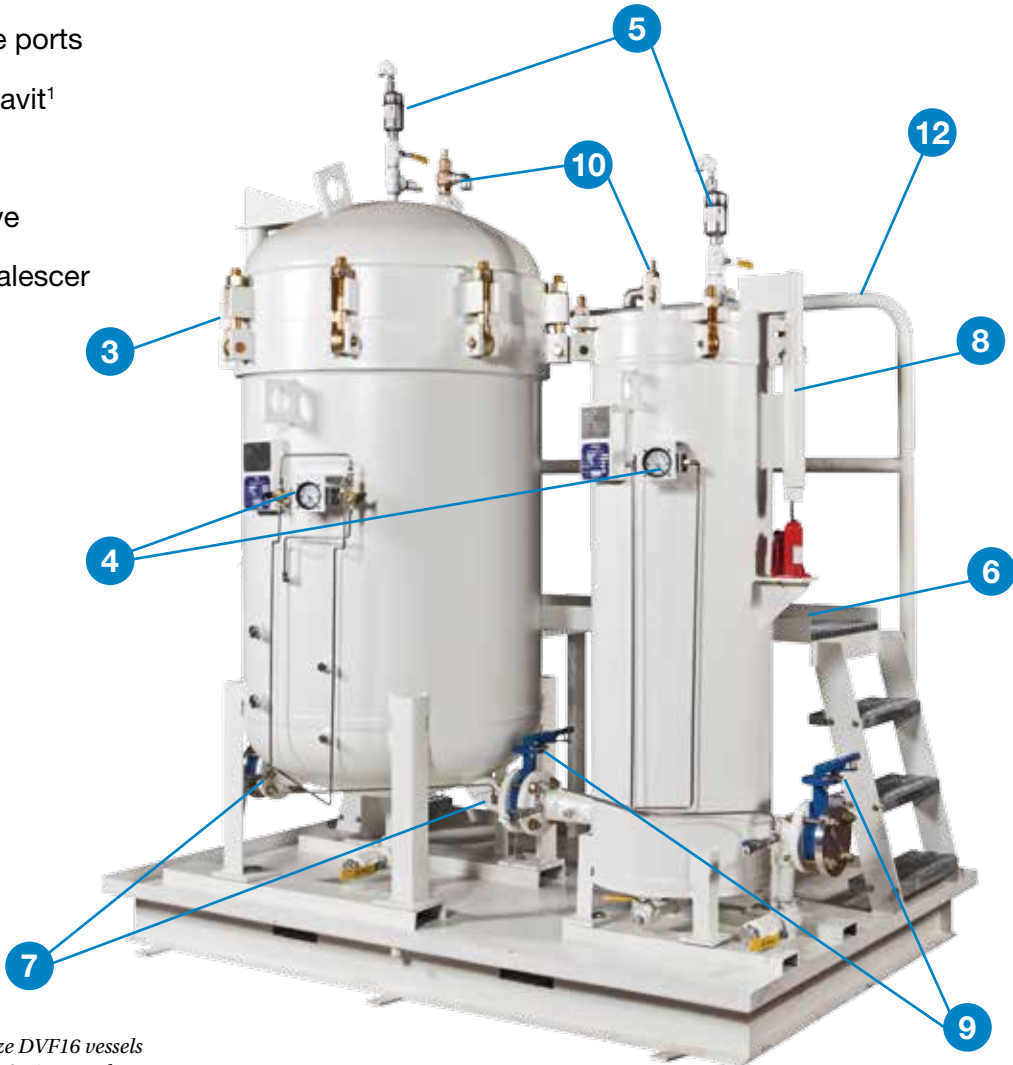
Features

Standard Design Features

- 1 ASME code epoxy painted carbon steel vessels (stamp on request)
- 2 Epoxy-coated interior
- 3 Swing bolt closure with nitrile cover seals
- 4 Independent differential pressure gauges
- 5 Air eliminators
- 6 Walkway
- 7 Inlet/Outlet sample ports
- 8 Hydraulic Lifting Davit¹
- 9 Isolation valves
- 10 Pressure relief valve
- 11 Threaded base coalescer
- 12 Support hand rail
- 13 Water sight glass

Options

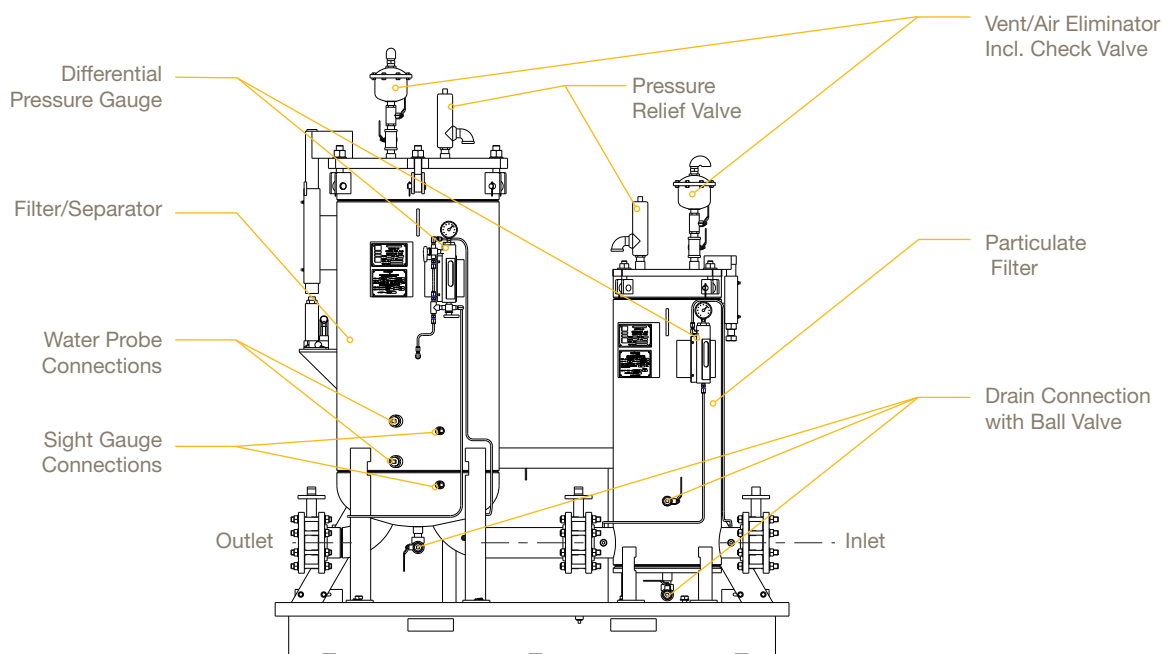
- 14 Electronic water sensing
- 15 Fuel Condition Monitoring



1. DFS1 and DFS2 system utilize DVF16 vessels that have flat covers. DVF16 Series vessels do not have hydraulic lift jacks.

Diesel Filtration Skid

Features & Specifications



Specifications

Parker recommends use of threaded base endcaps for ease of installation and to minimize components.

Series	Flow Rate*		Filter Housing	Elements		Coalescer Housing	Coalescers		Separators		Approximate Footprint mm (in)	Approx. DryWeight (w/o Elements, Tie Rods, Spider Plate) lb (kg)	I/O Flange in (mm)
	Maximum gpm (lpm)	Target gpm (lpm)		Qty of Elements	Element Part Number		Qty of Elements	Element Part Number	Qty of Elements	Element Part Number			
DFS1	330 (1250)	200 (750)	DVF1629	4	DFO-629	DV2233	4	DI-633	3	DSO-629	70 x 60 (1778 x 1524)	1985 (900)	4 (102)
DFS2	570 (2160)	345 (1300)	DVF1644	4	DFO-644	DV2838	6	DI-638	5	DSO-629	80 x 60 (2032 x 1524)	2250 (1021)	4 (102)
DFS3	1045 (3955)	630 (2380)	DVF2044	6	DFO-644	DV3638	11	DI-638	9	DSO-629	110 x 80 (2794 x 2032)	3400 (1542)	6 (152)

Dimensions shown are for estimating purposes only. For exact dimensional detail, obtain certified copy of vessel drawing.
 *Flow rates provided are for illustrative purposes. Actual flow rates may vary based on field conditions.

Diesel Filtration Skid

DFS™ Series - System for Removal of Particulates and Protection from Water Contaminants

How to Order

Select the desired symbol (in the correct position) to construct a model code. Example:

BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	BOX 6	BOX 7	BOX 8
DFS	1	PCS	X	B	DP	A4	1

BOX 1: Filter Series	
Symbol	Description
DFS	Diesel Fuel Skid System

BOX 2: Size ^{1,2}	
Symbol	Description
1	Max 330 gpm (1250 lpm)
2	Max 570 gpm (2160 lpm)
3	Max 1045 gpm (3955 lpm)

BOX 3: Particulate Media Code	
Symbol	Description
PCS	Particulate/Coalescer/Separator

BOX 4: Coalescer Media Code	
Symbol	Description
X	No Element Installed³

*Note: Always choose equal to or greater than particulate media code

BOX 5: Seals	
Symbol	Description
B	Nitrile
V	Fluorocarbon

BOX 6: Indicator	
Symbol	Description
DP	Differential Pressure

BOX 7: Ports	
Symbol	Description
A4	4" 150# RF ANSI Flange
A6	6" 150# RF ANSI Flange

BOX 8: Options ⁴	
Symbol	Description
1	None
EWS	Electronic Water Sensing
IPM	Integrated Particulate Monitor (IPM-210)

Please note the bolded options reflect standard options with reduced lead-time.

Notes:

- If choosing "1" or "2" in Box 2, select "B4" in Box 7.
- If choosing "3" in Box 2, select "B6" in Box 7.
- Use the chosen codes from Box 2 and Box 3, select the element numbers that match the desired filtration rating and the desired separator material. **Example:** For model DFS1**PCS**XBDPA61 with 10 micron particulate and coalescer, cellulose separator, DFO-629PLF10TB, DI-633D10TB and DSO-629PLF3 would be required.
- Select one or more options, as desired.

Replacement Elements

Type / Media		DFS1		DFS2		DFS3	
Particulate							
2 micron		DFO-629PLF2TB		DFO-644PLF2TB		DFO-644PLF2TB	
5 micron		DFO-629PLF5TB		DFO-644PLF5TB		DFO-644PLF5TB	
10 micron		DFO-629PLF10TB		DFO-644PLF10TB		DFO-644PLF10TB	
25 micron		DFO-629PLF25TB		DFO-644PLF25TB		DFO-644PLF25TB	
Coalescer	Separator	DFS1		DFS2		DFS3	
5 micron	Cellulose (PL)	DI-633D5TB	DSO-629PLF3	DI-638D5TB	DSO-629PLF3	DI-638D5TB	DSO-629PLF3
10 micron		DI-633D10TB		DI-638D10TB		DI-638D10TB	
25 micron	Screen (C)	DI-633D25TB	DSO-629C	DI-638D25TB	DSO-629C	DI-638D25TB	DSO-629C

Accessories

Description	Part Number		
	DFS1	DFS2	DFS3
Differential Pressure Gauge	120-Q	120-Q	120-Q
Coalescer/Separator Cover Gasket	G-2042	G-0769	G-0511A
Particulate Cover Gasket	G-2033	G-2033	G-2027

Appendix

Laboratory

Analytical Laboratory

The HFFD Analytical Laboratory houses a wide range of capabilities to support the development of filtration products. These capabilities include the testing of filters, in-house quality control testing, and the analysis of customer-provided samples. Using our broad range of cutting edge technology and diagnostic equipment for conducting both quantitative and qualitative testing, Velcon is committed to providing quality solutions and industry leading technology. All equipment and testing are performed within the guidelines of ASTM, ISO, SAE, and ANSI standards.

Testing Capabilities

Fuel

Ultra Low Sulfur Diesel (ULSD) red dyed; All tests can be performed with various blend concentrations of biodiesel

Resistance-to-flow Test

Flow rates up to 60 US gpm.

Typical product testing from 20% to 120% of rated flow

Retention Test

ISO codes - through influent and effluent particle counts
Efficiency (single pass); Beta ratios

Solids Capacity Test

Contamination loading conducted to maximum rated differential pressure

Laboratory Services

- Custom product testing available for specialty application needs
- Fluid filtration analysis to determine optimal product application

- 30 keV SEM Scanning Electron Microscope (SEM) with Energy Dispersive X-Ray Spectroscopy (EDS)
- Fourier Transform Infrared (FT-IR) Spectrometer
- Porometer
- Particle Counter and Automatic Bottle Sampler
- Karl Fischer Titration
- Interfacial Tensiometer (IFT)
- Micro-Separometer
- Ultraviolet (UV) Spectrophotometer
- Microscope Station
- Viscosity & pH Balance Station
- Analytical Balances

Collapse Test

Maximum product differential pressure to component and product failure; Assures structural integrity beyond element solids capacity

Media Migration Test

Effluent filtration media migration test to assure product cleanliness

Solids and Water Test - Environmental Conditions

Retention testing in single pass mode with a slurry combination of both solids and water; Element capacity is measured at terminal pressure

- Post use contamination analysis to determine level and composition of contaminants
- Customized laboratory reports for informed decision making

Diesel Fuel Laboratory

Parker HFFD is committed to supplying the highest quality filtration technology available. Our state-of-the-art Diesel Fuel Laboratory is uniquely capable of performing full-flow single-pass efficiency testing similar to real world conditions. We also structurally challenge our products to assure consistent performance in the most extreme conditions. At Parker HFFD, we stand behind our products, as we continue to seek solutions to ensure quality fuel whenever and wherever needed.

Spin-on Seal Test

Maximum product seal pressure
Emulsified Water Coalescing Test
Water injected before system pump; Testing to assure a product affectivity to remove emulsified water from diesel fluids

Coarse Water Coalescing Test

Water injected after system pump
Testing to assure a product affectivity to remove bulk water from diesel fluids

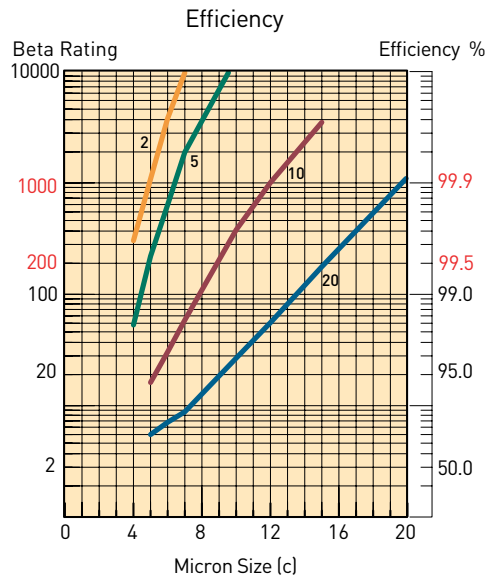


Appendix

Interpreting Data

Element Efficiency

For each configuration Parker reports on a log micron chart the actual test results for each Microglass III media grade available. The information that can be obtained from reporting in this manner far exceeds previous methods. To read the charts simply follow a few quick steps as shown below.



To determine efficiency/beta rating at a particular micron size:

1. Choose micron size from horizontal axis.
2. Follow line upward until it intersects the media grade of interest.
3. For the beta rating move left perpendicular until you intersect the vertical beta rating axis and record number.
4. For the efficiency rating just follow line across to the right until it intersects the efficiency axis and record number.

To determine which media can provide a particular beta rating:

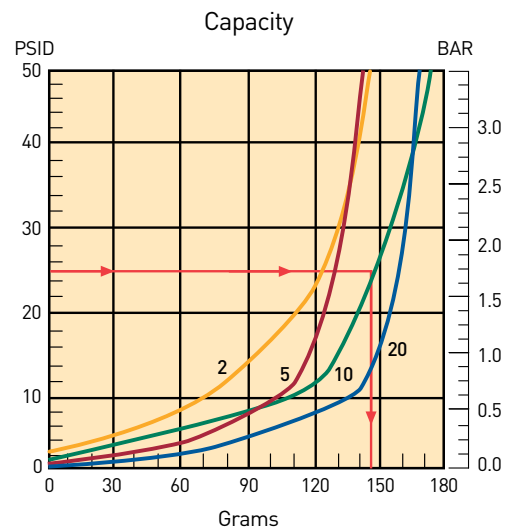
1. Choose beta rating desired on left vertical axis.
2. Follow line horizontally across until it intersects media grade.
3. Move downward perpendicular until you intersect the horizontal "Micron Size" axis and record value. If micron value is too low repeat steps until a desired value is achieved.

Element Capacity

Typically element capacities have been plotted on a differential vs grams chart to allow for best comparisons between different indicator/bypass settings and also other manufacturers. Although the construction of a given element remains constant, the actual capacity obtained in a application depends on several variables:

- Viscosity
- Flow rate
- Contaminant Type
- Changeout pressure

Since it is not possible to test every possible combination, Parker tests per ISO4572 and ISO16889 which specifies fluid type, contaminant type and flow rate. Therefore the only variable that can be accounted for by the specifier would be changeout pressure. To accomplish this simply determine what indicator setting will be used to signal service is required. If no indicator will be used then use the bypass value for the specified filter.



To determine element capacity

1. Starting along the vertical differential pressure axis choose changeout setting.
2. Move horizontally across until line intersects the media grade desired.
3. Move perpendicular downward until line intersects horizontal axis "Grams" and record value.

Appendix

Definitions

Aerosol	Submicronic particles suspended in air, gas or vapor. A fog, fume, or smoke.
Bulk Density	Ratio of total mass or weight of the material divided by the volume of the material (includes void volume in the case of solids).
Coalesce	To unite small droplets of one liquid preparatory to its being separated from another liquid. Filter/coalescer elements coalesce small water droplets present in water contaminated fuel and certain oils into larger drops which are then separated by gravity.
Continuous Phase	The basic product flowing through a filter or filter/separator which continues on through a system after being subjected to solids and/or water removal.
Delta P	See “Pressure Drop” below.
Discontinuous Phase	The phase dispersed in the continuous phase; water is a discontinuous phase to be separated from a hydrocarbon liquid or from air or gas.
Drop	The quantity of liquid which makes up one spherical mass; a liquid globule.
Droplet	A small drop which may coalesce to form larger drops.
Effluent	Stream of fluid at the outlet of a filter or filter/separator. Opposite of influent.
Emulsion	A dispersion of fine droplets in the continuous phase.
Fiber Migration	Carry-over of fibers from filter or separator media material into the effluent. Fiber migration is a qualitative part of total media migration.
Filtrate	The fluid which has passed through filtering media. Also referred to as effluent from filters.
Gravity Separation	Separation of immiscible phases resulting from a difference in specific gravity.
Hydrophilic	Water accepting or water wettable. Opposite of hydrophobic.
Hydrophobic	Water repelling. Lacking affinity for water. Opposite of hydrophilic.
Immiscible	Liquids which are mutually insoluble; opposite of miscible.

Appendix

Definitions

Influent	Stream of fluid at the inlet of a filter or filter/separator. Opposite of effluent.
Media Migration	Carry-over of fibers and particles from filter or separator media material into the effluent. Includes fiber migration, expressed as milligrams per liter.
Miscible	Liquids which are mutually soluble. Opposite of immiscible.
Pressure Drop (Delta P: ΔP)	The difference in pressure between two points, generally at the inlet and outlet of a filter or a filter/separator. Measured in pounds per square inch, inches of mercury, kilograms per square centimeter, kilopascals (kPa) or bars (1 bar = 14.5 psi). (Also commonly referred to as Delta P or differential pressure.)
Specific Gravity	The ratio of weight of a fluid to the weight of an equal volume of standard substance; i.e. water for solids and liquids, and air or hydrogen for gases.
Static Generation	Unbalanced or net electrical charge produced in a flowing hydrocarbon liquid.
Surfactants	Surface-active agents, which are also called detergents, emulsifiers, or wetting agents. Polar compounds. (Most surfactants in jet fuel can be removed by clay treatment.)
Three-Stage	A filter/separator vessel containing coalescers, separators and 3rd stage monitor elements.
Two-Stage	A filter/separator containing two kinds or types of elements (coalescers and separators).
Velocity	The time rate of motion or speed in a given direction.
Viscosity	A molecular property of fluids: the friction of molecular motion. A more viscous fluid has a higher pressure drop at a given rate of flow, as compared to a less viscous fluid.

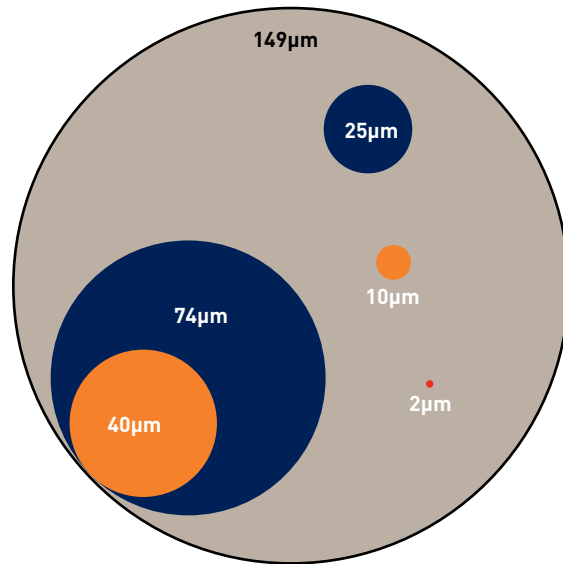
Appendix

Micrometer Conversions

US & ASTM Std Sieve Number	Actual Opening (in)	(μm)
10	0.0787	2000
12	0.0661	1680
14	0.0555	1410
16	0.0469	1190
18	0.0394	1000
20	0.0331	840
25	0.0280	710
30	0.0232	590
35	0.0197	500
40	0.0165	420
45	0.0138	350
50	0.0117	297
60	0.0098	250
70	0.0083	210
80	0.0070	177
100	0.0059	149
120	0.0049	125
140	0.0041	105
170	0.0035	88
200	0.0029	74
230	0.0024	62
270	0.0021	53
325	0.0017	44
400	0.00142	36
550	0.00099	25
625	0.00079	20
1,250	0.000394	10
1,750	0.000315	8
2,500	0.00097	5
5,000	0.000099	2.5
12,000	0.0000394	1

Relative Size of Particles

Magnification 500x



Micrometer Comparisons

Substance	(μm)
Table Salt	100
Human Hair (average diameter)	50-70
White Blood Cell	25
Talcum Powder	10
Cocoa	8-10
Red Blood Cell	8
Bacteria (cocci)	2

Note: Lower limit of visibility (naked eye)—40 μm

Formulas

$$\text{Velocity (ft per sec)} = \frac{0.4085 \times \text{gpm}}{d^2 \text{ (ID in)}}$$

Metric Conversion Formulas

mm	=	inches x 25.4
m	=	feet x 0.3048
cm ³	=	cu in x 16.39
m ³	=	cu ft x 0.028
kg	=	pounds x 0.454
kPa	=	psi x 6.895
lpm	=	gpm x 3.785
°C	=	5/9 (°F-32)

Conversion Rates

1 cu ft	=	7.48 gal
1 gal	=	231 cu in
2 cu ft water	=	62.42 lb
1 gal water	=	8.34 lb
1 US gal	=	0.833 Imp gal
1 lb/in ²	=	2.31 ft of water = 2.036 in Hg
°F	=	9/5°C+32

Linear Equivalents

1 in	=	25.4 mm	=	25,400 μm
1 mm	=	0.0394 in	=	1,000 μm
1 μm	=	1/25,400 in	=	0.001 mm
1 μm	=	3.94 x 10 ⁻⁵ in	=	0.000039 in

Appendix

Measurement Conversion Tables

To Convert	Multiply by	To Obtain
A		
atmospheres	33.9	ft of water (at 4×C)
atmospheres	29.92	in mercury (at 0×C)
B		
barrels (US liquid)	31.5	gallons
barrels (oil)	42	gallons (oil)
bars	0.9869	atmospheres
bars	14.5	pounds/sq in
C		
centimeters	0.03281	feet
centimeters	0.3937	inches
centimeters	0.00001	kilometers
centimeters	0.01	meters
centimeters	0.01094	yards
centimeters	10,000	microns
cubic centimeters	0.00003531	cubic feet
cubic centimeters	0.06102	cubic inches
cubic centimeters	0.000001	cubic meters
cubic centimeters	0.001	liters
cubic centimeters	0.002113	pints (US liquid)
cubic centimeters	0.001057	quarts (US liquid)
cubic feet	28,320	cubic centimeters
cubic feet	1,728	cubic inches
cubic feet	0.02832	cubic meters
cubic feet	0.03704	cubic yards
cubic feet	7.48052	gallons (US liquid)
cubic feet	28.32	liters
cubic feet	59.84	pints (US liquid)
cubic feet	29.92	quarts (US liquid)
cubic feet/min	62.43	pounds water/min
cubic feet/min	1.698	cubic meters/hr
cubic feet/sec	448.831	gallons/min
cubic inches	16.39	cubic centimeters
cubic inches	0.0005787	cubic feet
cubic inches	0.00001639	cubic meters
cubic inches	0.00002143	cubic yards
cubic inches	0.004329	gallons
cubic inches	0.01639	liters
cubic meters	35.31	cubic feet
cubic meters	61,023	cubic inches
cubic meters	264.2	gallons (US liquid)
cubic meters	1000	liters
cubic meters/hour	4.4	gallons (US)/min
cubic meters/hour	0.588	cubic feet/min

To Convert	Multiply by	To Obtain
F		
feet	30.48	centimeters
feet	0.0003048	kilometers
feet	0.3048	meters
feet	304.8	millimeters
feet of water	0.0295	atmospheres
feet of water	0.8826	inches of mercury
feet of water	62.43	pounds/sq ft
feet of water	0.4335	pounds/sq in
feet/minute	0.01667	feet/second
G		
gallons	3,785	cubic centimeters
gallons	0.1337	cubic feet
gallons	231	cubic inches
gallons	3.785	liters
gallons (liq br imp)	1.20095	gallons (US liquid)
gallons (US)	0.83267	gallons (Imp)
gallons of water	8.337	pounds of water
gallons/min	0.002228	cubic feet/sec
gallons/min	0.06308	liters/sec
gallons/min	8.0208	cubic feet/hr
grams	0.001	kilograms
grams	0.002205	pounds
grams/cm	0.0056	pounds/in
grams/sq in	45.71	ounces/sq yd
I		
inches	2.540	centimeters
inches	0.02540	meters
inches	25.4	millimeters
inches of mercury	0.03342	atmospheres
inches of mercury	1.133	feet of water
K		
kilograms	2.2046	pounds
kilograms	0.009842	tons (long)
kilograms	0.001102	tons (short)
kilograms/sq cm	2,048	pounds/sq ft
kilograms/sq cm	14.22	pounds/sq in
kilograms/sq meter	0.00009678	atmospheres
kilograms/sq meter	0.00009807	bars
kilograms/sq meter	0.003281	feet of water
kilograms/sq meter	0.002896	inches of mercury
kilograms/sq meter	0.2048	pounds/sq ft
kilograms/sq meter	0.001422	pounds/sq in

Appendix

Measurement Conversion Tables

To Convert	Multiply by	To Obtain
L		
liters	0.2642	gallons (US liquid)
liters	2.113	pints (US liquid)
liters	1.057	quarts (US liquid)
liters/min	0.0005886	cubic ft/sec
liters/min	0.004403	gallons/sec
liters/hour	0.004403	gallons (US)/min

To Convert	Multiply by	To Obtain
M		
meters	3.281	feet
meters	39.37	inches
meters	0.001	kilometers
meters/min	3.281	feet/min
meters/min	0.05468	feet/sec
microns	0.000001	meters
mils	0.00254	centimeters
mils	0.0000833333	feet
mils	0.001	inches
mils	0.000000254	kilometers

To Convert	Multiply by	To Obtain
O		
ounces	28.349	grams
ounces	0.0625	pounds
ounces (fluid)	1.805	cubic inches
ounces (fluid)	0.02957	liters
ounces/sq in	0.0625	pounds/sq in
ounces/sq yard	20.83	pounds/3000 sq ft

To Convert	Multiply by	To Obtain
P		
pints (liquid)	0.125	gallons
pints (liquid)	0.4732	liters
pints (liquid)	0.5	quarts (liquid)
pounds	453.59	grams
pounds	16	ounces
pounds/sq ft	0.0004725	atmospheres
pounds/sq ft	0.01602	feet of water
pounds/sq ft	0.01414	inches of mercury
pounds/sq in	0.06804	atmospheres
pounds/sq in	2.307	feet of water
pounds/sq in	2.036	inches of mercury
pounds/sq in	0.0145	kilo pascals (kPa)
pounds/sq in	27.684	inches water column
pounds/3000 sq in	0.048	ounces/sq yard

To Convert	Multiply by	To Obtain
Q		
quarts (liquid)	0.03342	cubic feet
quarts (liquid)	57.75	cubic inches
quarts (liquid)	0.0009464	cubic meters
quarts (liquid)	0.25	gallons
quarts (liquid)	0.9463	liters

To Convert	Multiply by	To Obtain
S		
square centimeters	0.001076	square feet
square centimeters	0.1550	square inches
square centimeters	0.0001	square meters
square feet	144	square inches
square feet	0.0929	square meters
square inches	0.006944	square feet
square inches	0.0007716	square yards
square meters	10.76	square feet
square meters	155	square inches
square meters	1.196	square yards
square yards	9	square feet
square yards	1,296	square inches
square yards	0.8361	square meters

Appendix

ISO 4406 Codes

Specifying proper filtration has become more difficult since the days of “nominal” rated filters. Rather than guessing on nominal, absolute, or Beta ratings, it makes more sense instead to specify how clean you want the fuel to be and let the filter manufacturer provide the proper element to attain that cleanliness. The International Standards Organization (ISO) has developed a method of describing fluid cleanliness called ISO 4406 Solid Contamination Level Code, commonly referred to as the ISO Cleanliness Code. This method is based on particle counting and is expressed by a set of 3 code numbers, each ranging from 1 to 28. Each code number represents particle counts from .01 particles per milliliter of fluid to 2,500,000

particles per milliliter. The three code numbers are separated by a slash and are written as shown in the following example:

14/11/8. The first code number represents the particle count range of all particles greater than 4 microns in size, the second number represents the count range of particles greater than 6 microns, and the third number represents that of all particles greater than 14 microns. The table below shows the ISO 4406 code levels.

Prior to 1999, ISO Codes were expressed as only two numbers, such as “14/11”, which represented the number of particles greater than 5 microns and greater than 15 microns. Due to differences in test

methods and test contaminants, the 6 and 14 micron sizes of the new revision correspond to the 5 and 15 micron sizes of the original standard.

Equipment manufacturers can provide the level of fluid cleanliness required for proper operation of their equipment. More and more, diesel engine manufacturers are beginning to specify the level of fuel cleanliness required for modern diesel engines.

Once the application conditions such as fuel type, flow rate, operating temperature, reservoir size, etc. are provided, the proper filter housing and element can be selected to meet a desired fluid cleanliness requirement.

ISO 4406:1999 Code Chart		
Range Code	Particles per milliliter	
	More Than	Up To/Including
24	80,000	160,000
23	40,000	80,000
22	20,000	40,000
21	10,000	20,000
20	5,000	10,000
19	2,500	5,000
18	1,300	2,500
17	640	1,300
16	320	640
15	160	320
14	80	160
13	40	80
12	20	40
11	10	20
10	5	10
9	2.5	5
8	1.3	2.5
7	0.64	1.3
6	0.32	0.64

Particle Size μm	Particle per mL	ISO Code 4406 Range	ISO Code
4	151700	80000 - 160000	24
6	57233	40000 - 80000	23
14	27562	20000 - 40000	22
30	2965	2500 - 5000	19

Particle Size μm	Particle per mL	ISO Code 4406 Range	ISO Code
4	520	320 - 640	16
6	173	160 - 320	15
14	37	20 - 40	12
30	11	10 - 20	11

Appendix

Maintenance and Safety Recommendations

Maintenance

Everytime you receive fuel:

Test a sample using Parker Condition Monitoring products.

Every day:

- **Drain the sump of each filter vessel and storage tank. Inspect samples for contamination particles and discolored water. Be sure all accumulated water is drained off.**
- **Check and record the pressure differential across each filter housing under normal flow conditions.**

Once a year:

- **Inspect your storage tanks and clean them if needed.**
- **Change your coalescer elements and any pleated cellulose separator elements. Your Parker representative can help you get the right element sets.**
- **Clean, inspect, and test any Teflon™ coated screen separators.**

Safety

A sudden decrease in pressure differential across a filter housing may mean trouble. The vessel should be opened immediately and inspected for ruptured elements, seals or mounting hardware. It's also possible to get a decrease in pressure differential without any of these failures. It can happen if elements that have been separating water from the fuel now are exposed to dry fuel. The water is slowly pushed out of the coalescer, resulting in decreased differential pressure.

Fires start from sparks caused by electrostatic buildup. Here's how you can prevent them. Follow these simple steps and you won't start a fire when you fill a filter vessel:

1. **Close the outlet valve and the drain valves.**
2. **Crack open the inlet valve slightly so that the vessel will fill slowly to prevent charge buildup.**
3. **Start the pump.**
4. **If you have a manual air eliminator, open it completely.**
5. **Allow about 10 minutes to fill the vessel. If it fills faster than that, you're taking a chance.**
6. **Remember to close the air eliminator when the vessel is full.**
7. **If the vessel has an automatic air eliminator with a check valve, you had to remove the check valve before you could drain. Remember to put it back.**

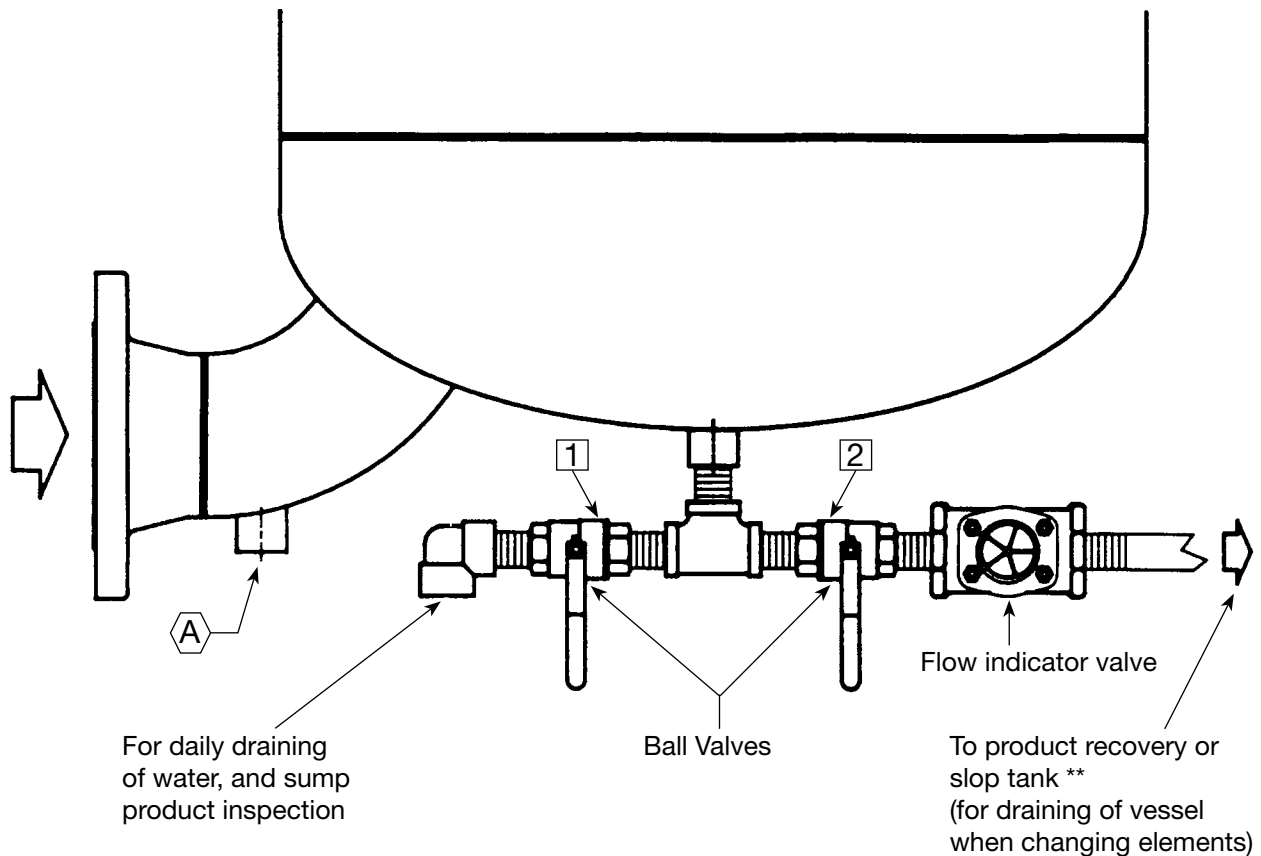
Some simple ways to stay out of trouble when you change elements..

- **Drain the filter housing completely. Otherwise, the dirt can fall out of the element and contaminate the fuel. If you open the air eliminator, the vessel drains faster. Remove the used elements.**
- **Don't touch the new coalescer and separator elements. Leave the polybags on the elements as you install them. And before you close the vessel, take the bags off slowly to avoid building up an electrostatic charge. If you have to handle the elements, wear clean cotton or rubber gloves. Don't touch the separator's Teflon™ screen. Handle it by the endcaps.**
- **Always use a torque wrench for installing elements. Read the manufacturer's specified torque value in the installation instructions.**
- **When you clean the inside of a filter vessel, use the product being filtered or diluted bleach. Do not use soap or another type of fuel.**
- **Close all the drain valves before you refill. Obvious, but easy to forget!**

Appendix

Recommended Manual Drain Hookup

Particulate/Separator Vessels



****When draining vessel to change elements:**

1. Drain vessel completely through ball valve #2 above.
2. Drain a few gallons out of manual drain valve "A" (or plug) located at the bottom of the inlet elbow. This insures no fuel remains trapped inside coalescers. (Otherwise unfiltered fuel from inside the coalescers could make clean-up of the sump more tedious.)

NOTE:

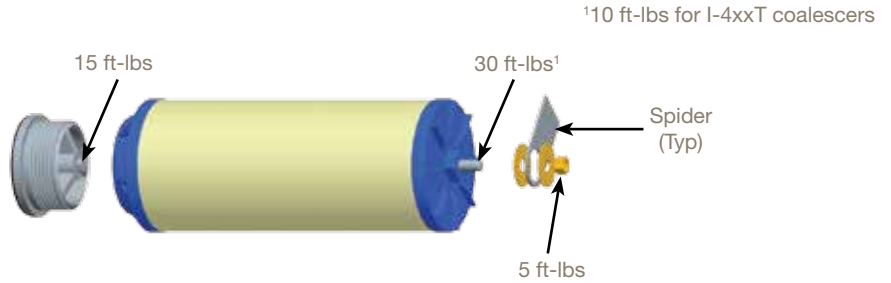
A flow indicator valve (not provided by Parker) is recommended so that operator will remember to close valve #2 when filling the vessel. It also shows operator when the vessel is completely drained.

Appendix

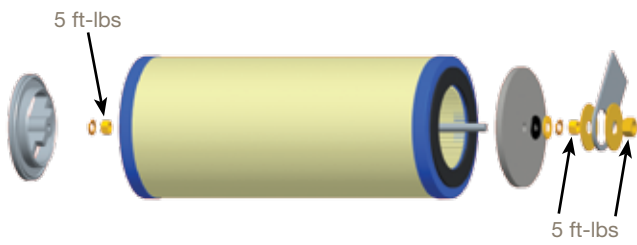
Assembly Torque Recommendations

COALESCER ELEMENTS

DI-6xxTB
Threaded Base Element

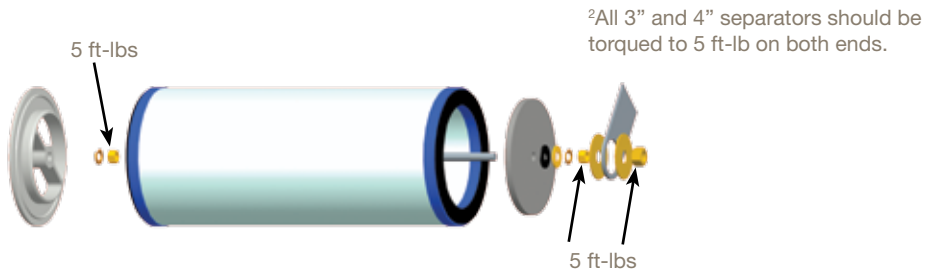


DI-6xx
Open Ended Element



SEPARATOR ELEMENTS²

DSO-6xxC/PL



DSO-6xxTB
Threaded Base Element



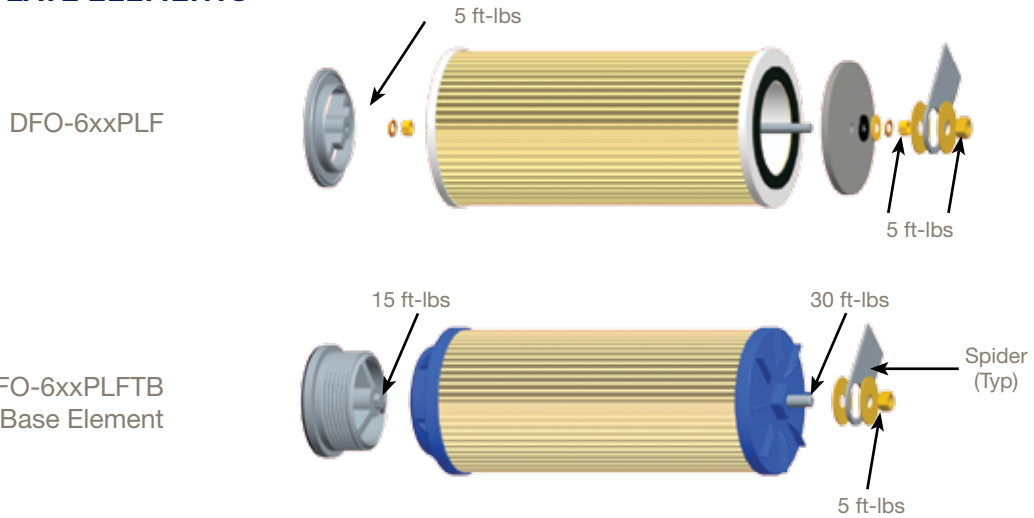
TORQUE CONVERSION TABLE

ft-lbs	inch-lbs	kg-m	N-m
5	60	0.69	6.78
10	120	1.38	13.56
15	180	2.07	20.34
20	240	2.77	27.12
30	360	4.15	40.67

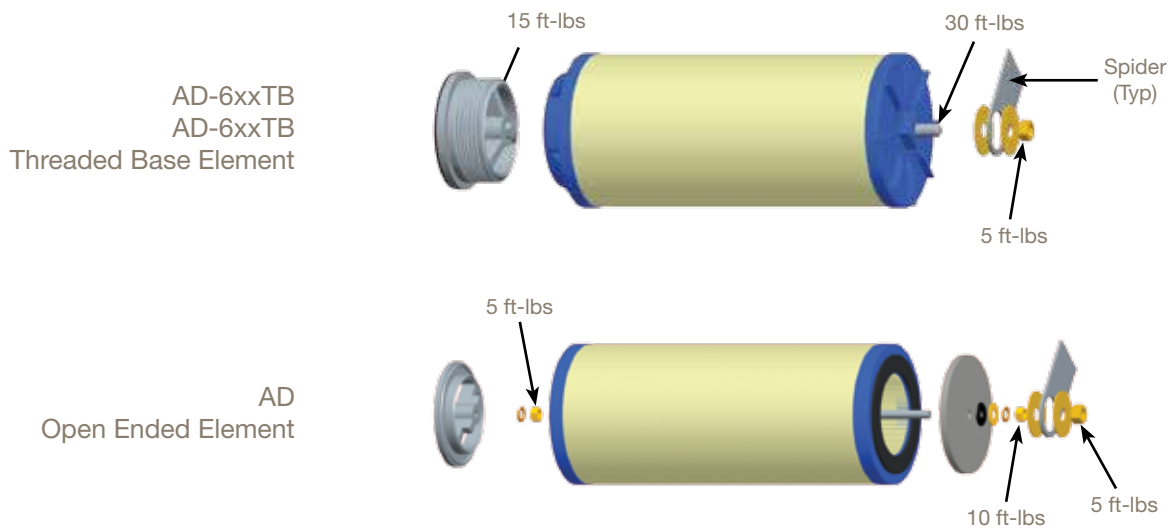
Appendix

Assembly Torque Recommendations

PARTICULATE ELEMENTS



Aquacon ELEMENTS



TORQUE CONVERSION TABLE

ft-lbs	inch-lbs	kg-m	N-m
5	60	0.69	6.78
10	120	1.38	13.56
15	180	2.07	20.34
20	240	2.77	27.12
30	360	4.15	40.67



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20. Compliance with Laws. Buyer agrees to comply with all applicable laws, regulations, and industry and professional standards of care, including those of the United Kingdom, the United States of America, and the country or countries in which Buyer may operate, including without limitation the U. K. Bribery Act, the U.S. Foreign Corrupt Practices Act ("FCPA"), the U.S. Anti-Kickback Act ("Anti-Kickback Act") and the U.S. Food Drug and Cosmetic Act ("FDCA"), each as currently amended, and the rules and regulations promulgated by the U.S. Food and Drug Administration ("FDA"), and agrees to indemnify and hold harmless Seller from the consequences of any violation of such provisions by Buyer, its employees or agents. Buyer acknowledges that it is familiar with the provisions of the U. K. Bribery Act, the FCPA, the FDA, and the Anti-Kickback Act, and certifies that Buyer will adhere to the requirements thereof. In particular, Buyer represents and agrees that Buyer will not make any payment or give anything of value, directly or indirectly to any governmental official, any foreign political party or official thereof, any candidate for foreign political office, or any commercial entity or person, for the purpose of influencing such person to purchase Products or otherwise benefit the business of Seller.



Non-Standard Configuration Form

Date: _____
To: 419 644 6205 Fax / hfdinsidesales@parker.com
 Parker Hannifin Corporation
 Hydraulic & Fuel Filtration Division
ATTN: Inside Sales

From
Name: _____
Company: _____
Fax No.: _____
Phone No.: _____
Email : _____

Please send all written customers specifications.
Fill out and send this sheet whenever written specifications are lacking or incomplete.

Customer: _____ **Destination:** _____

Equipment Required:

Filter/Separator Particulate filter **Aquacon**[®] Element Housing

Micron Rating for Microfilter or Aquacon[®] Element: _____

Product (Fuel): _____ **Biodiesel Type:** _____ %

Qty. Required: _____ **Flow Rate:** _____ US gpm **Design Pressure:** 150 psi **Other:** _____

Vertical **Horizontal** **Fixed** **Mobile**

Corrosion Allowance Specify if applicable _____

Temperature: 20 -200F Standard Specify if different _____

Primer Exterior Specify if different _____

Epoxy Interior Standard

Oil coat interior. If not epoxy, specify other: _____

ACCESSORIES

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- Auto. Air Eliminator** St. Steel
- Auto. Air Check Valve** St. Steel
- Pressure Relief Valve** Steel
- Pressure Gauge** 0-30 Alum
- Float Control** Alum. (Separator Only)
- Slug Valve** Ductile Iron (Separator Only)
- Manual Drain** Steel
- Water Probe** Single Stage
- Sample Probes** GTP Kit #5
- Heater** 240V
- Sight Glass** St. Steel

ASME Code Cert. & Stamp

Export Packing

Budget Quote **Firm Requirement** **Date Quote is Required:** _____

Probability of Converting: _____ % **Est. Win Date:** _____

Other Requirements: _____

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www.parker.com/hfde

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03

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Adding value to your drilling process.

From water intake to drilling.

Our Oil and Gas division is known for its filtration expertise within the oil and gas industry. We supply complete skid mounted systems as well as consumables to over 80 countries around the globe. We have an international team of specialists and are committed to provide first class technical support. We understand the specific needs within the onshore and offshore applications and therefore offer a complete rental fleet next to our standard delivery program.

INTRODUCTION

Drilling a well takes millions of gallons of water. Water is the 'hydraulic' within the fracturing process, used to release oil and gas deposits. To protect the formation from contamination the used water needs to be clean. Also disposal of waste water is a costly challenge for drillers. To protect the environment the discharged water needs to be clean. Parker Hannifin (Twin Filter) offers equipment and consumables for water treatment specially designed to meet the high demands within the oil and gas service industry.

COMPLETION FLUIDS

Clean completion fluids are essential to maximise the productivity of the producing reservoir. Dirt particles in completion fluids have major effects on the permeability of the reservoir which results in a significant reduction of the oil production and the lifetime of the producing well. Clean completion fluids can only be obtained by using the correct selection of filtration equipment and consumables. The most effective way for oilfield brines filtration is Diatomaceous Earth (DE) filtration. Both our Vertical Pressure Leaf filter unit and our Filter Press in combination with a Dual Vessel Cartridge Filter have proven to be the ideal solution.

WELL CONTROL

Well Control is a discipline needed both during construction of an oil and gas well and during subsequent operation of the well. Well Control protects downstream equipment from uncontrolled releases of hydrocarbons during oil and gas well operations. Parker Hannifin (Twin Filter) provides a Well Head Sand Filter, designed to remove hydrocarbons, sand and other solid particles from well effluent.

The Well Head Sand Filter can be offered as a skid mounted unit, including frame, platform, lifting device (davit), valves, instruments and interconnecting piping with by-pass and drain.

FRAC FLUIDS

Hydraulic fracturing is a well-stimulation technique in which rock is fractured by a pressurized liquid. The process involves the high-pressure injection of 'fracking fluid' into a wellbore to create cracks in the deep-rock formations through which natural gas, petroleum, and brine will flow more freely. When the hydraulic pressure is removed from the well, small grains of hydraulic fracturing proppants (either sand or aluminium oxide) hold the fractures open. The Flow back water (water that flows back from the fracturing process) is a mixture of fracking fluid and formation water. To re-use the flow back water to frac additional wells, it should be free of chemicals and rock debris. Parker Hannifin (Twin Filter) has a complete delivery program to filter the water before and after the fracking process.

WASTE WATER

The right type of filtration equipment and consumables will lead to better handle your waste water and improve re-usability. Some types of waste water are more difficult to separate than others, for example emulsified water. Parker Hannifin (Twin Filter) has developed a new (field tested) technology that treats (chemically) emulsified water; **TwinZapp**. The mobility of the system allows use on specific work-over projects (foam jobs) or platforms and production sites with most types of troublesome production water. The small footprint makes it perfectly suitable for check operations on offshore rigs or FPSO's.

Completion Fluids / Workover Fluids / Gravel Pack

Clean completion fluids and brines are required for effective completion and maximum oil and gas production. They contribute to overall productivity.

Our solutions:

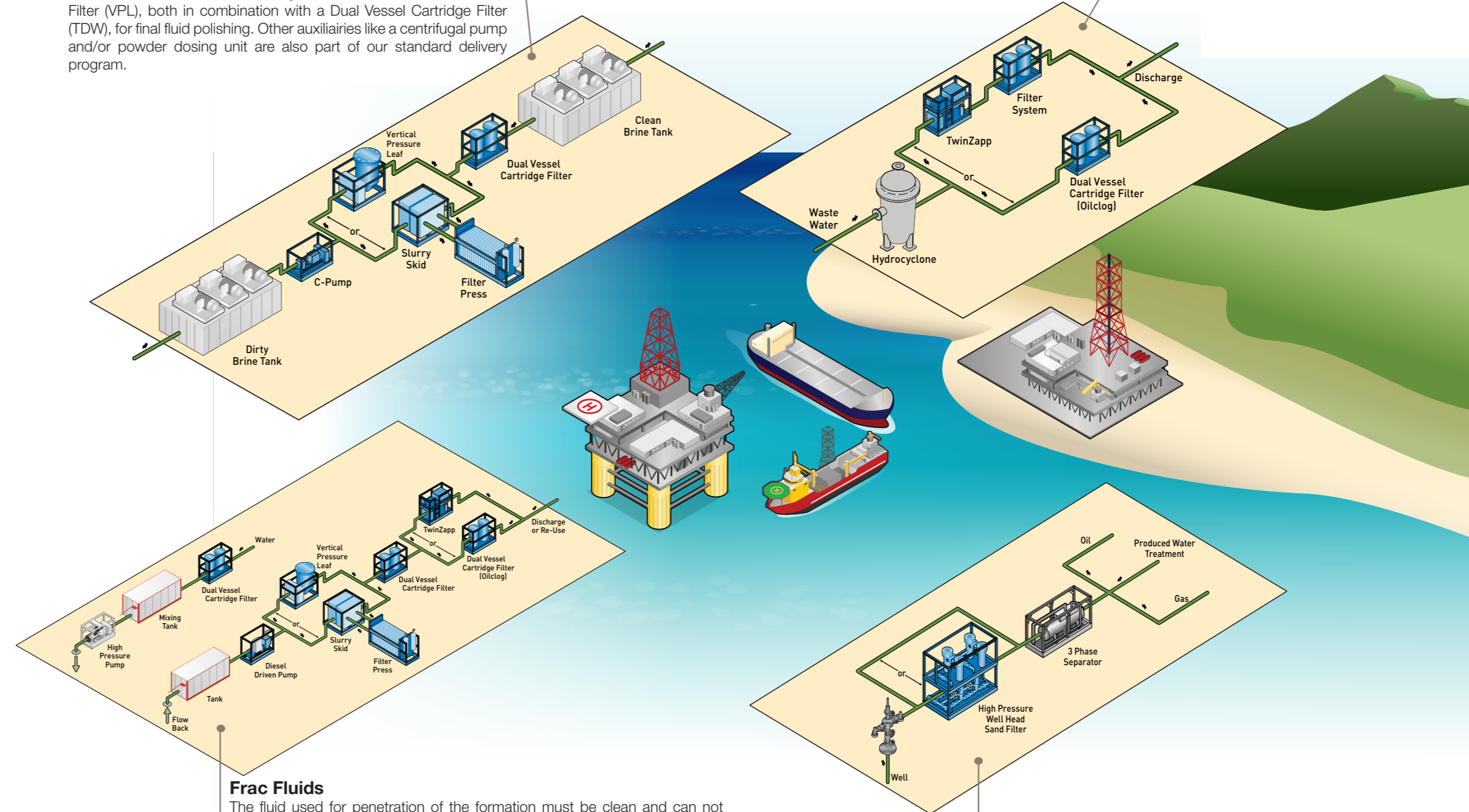
Filter Press combined with a Slurry Skid or a Vertical Pressure Leaf Filter (VPL), both in combination with a Dual Vessel Cartridge Filter (TDW), for final fluid polishing. Other auxiliaries like a centrifugal pump and/or powder dosing unit are also part of our standard delivery program.

Waste Water

Waste Water treatment is necessary to make industrial waste water safe for re-use or release into the environment. Oil, grease, heavy metal, gasoline and other petroleum by-products are the most common contaminants. We have several solutions offering low discharge levels.

Our solutions:

TwinZapp (treats chemically emulsified water) or a Dual Vessel Cartridge Filter (TDW), used for final fluid polishing.



Frac Fluids

The fluid used for penetration of the formation must be clean and can not contain sand or other organics that can harm the process or the environment. To treat the used frac fluids (flow back) Parker Hannifin (Twin Filter) provides several solutions.

Our solutions:

A Dual Vessel Cartridge Filter (TDW) or a Filter Press combined with Slurry Skid or Vertical Pressure Leaf Filter (VPL) and a TwinZapp. Other auxiliaries like a diesel driven pump and/or powder dosing unit are on request.

Well Control

The purpose of Well Control on development wells is to clean up and commission the well prior to its connection to the permanent production facility.

Our solutions:

High Pressure Well Head Sand Filter (sand catcher).



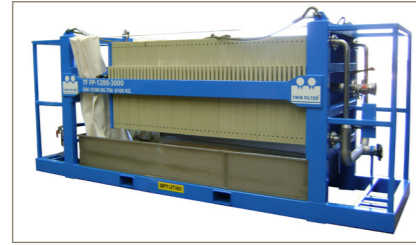
Products

Equipment



Dual Vessel Cartridge Filter - Cartridge and/or bag filter unit (TDW).

- Offshore proof, skid-mounted filter unit that offers a cost effective way to clean most common oilfield fluids and fluid waste streams.
- Available as cartridge, bag and combination unit.
- Easy to operate lever and swingaway vessel lid.
- Different specs (high pressure, high flow etc.) on request.



Filter Press - Heavy Duty DE filtration unit.

- Specially designed for completion, work over and auxiliaries.
- Pneumatic operated hydraulic system.
- Stainless steel cabinet and sluice pan.
- Low maintenance and easy to operate.



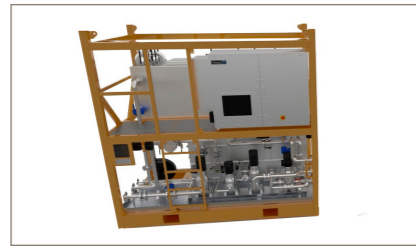
Vertical Pressure Leaf - DE filtration unit.

- Self contained and equipped with all necessary gravel pack auxiliaries.
- Efficient, quick, clean and environmental friendly cake discharge through closed system.
- Long filtration cycle and provides lowest possible NTU output.



Slurry Skid - Necessary for operating a Filter Press.

- Available as single and double unit.
- Double unit: compartments operate separately.
- Double unit: possibility to operate two Filter Presses.
- Single unit: economical and easy operation.



TwinZapp - Separating (chemical) emulsions.

- Breaks emulsions through electro oxidation.
- Mobile system that allows work on platforms and work-over projects.
- 40-50% reduction of dissolved fraction (BTEX).



TwinOmatic - Automatic self cleaning filter unit.

- Electrically driven and controlled.
- Uninterrupted flow and continuous filtration during cleaning.
- Effective cleaning of total filtration area with minimal flush (less than 5% of total flow).
- Automatically initiated self cleaning process.

Consumables



Pleatflow - Absolute rated liquid filter cartridge (TH).

- Fully thermally welded, no glue or adhesives.
- Three layer construction, glass fibre support drain between polyester filter layers.
- High flow rate and low pressure loss.
- Filtration rating 0.5 - 50 micron.



Texflow - Nominal rated filter cartridge.

- High dirt holding capacity.
- High flow rate and low pressure loss.
- Wide chemical compatibility.
- Especially designed for the high demanding offshore industry.
- Filtration rating 2 - 50 micron.



Oilblock - Free and emulsified oil removal.

- Absorbs and chemically binds hydrocarbon molecules into its interior matrix.
- 99% removal of oil in a single pass.
- Cartridge blocks after saturation and no hydrocarbons bypass possible.



Parmax-R - High flow absolute depth filter cartridge.

- Low pressure loss and high dirt holding capacity.
- Pleat geometry specifically designed for in-to-out flow direction.
- Horizontal and vertical set-up possibility.
- Large filter area - reduced cartridge consumption.
- Connection available as type
- Filtration rating 0.5 - 50 micron.



Maxguard - Absolute rated high flow filter cartridge.

- Fully thermally welded, no glue or adhesives.
- High flow rates per cartridge.
- Pleat geometry specifically designed for out-to-in flow direction.
- Large filter area - reduced cartridge consumption.
- Connection available as type 338 and bayonet.
- Filtration rating 0.5 - 50 micron.



Oilclog - Oil removal cartridge.

- Maximum contact time due to top - bottom flow path.
- 99% removal of oils in a single pass.
- Removal of dissolved hydrocarbons.
- High absorption capacity, low waste volume.

Parker Hannifin

Parker Hannifin B.V. / Parker Hannifin Manufacturing Netherlands (Process Filtration) B.V.

Zuidwijk 398
1505 HE Zaandam
The Netherlands

phone +31 756 555 000
fax +31 756 555 015

twinfilter.info@parker.com
www.parker.com/processfiltration
www.twinfilter.com



Parker Hannifin representatives of
Twin Filter products:

Europe, Middle East, Africa

AT- Austria, Wiener Neustadt

Tel: +43 (0)2622 23501-0
parker.austria@parker.com

BE/LU- Belgium, Nivelles

Tel: +32 (0)67 280 900
parker.belgium@parker.com

DE- Germany, Kaarst

Tel: +49 (0)2131 40160
parker.germany@parker.com

DK- Denmark, Ballerup

Tel: +45 (0)43 56 04 00
parker.denmark@parker.com

ES- Spain, Madrid

Tel: +34 902 330 001
parker.spain@parker.com

FL- Finland, Vantaa

Tel: +358 (0)20 753 2500
parker.finland@parker.com

FR- France, Contamine s/Arve

Tel: +33 (0)4 50 25 80 25
parker.france@parker.com

IE- Ireland, Dublin

Tel: +353 (0)1 466 6370
parker.ireland@parker.com

IT- Italy, Corsico (MI)

Tel: +39 02 45 19 21
parker.italy@parker.com

NL- Netherlands, Oldenzaal

Tel: +31 (0)541 585 000
parker.nl@parker.com

NO-Norway, Asker

Tel: +47 66 75 34 00
parker.norway@parker.com

RO- Romania, Bucharest

Tel: +40 21 252 1382
parker.romania@parker.com

RU- Russia, Moscow

Tel: +7 495 645 2156
parker.russia@parker.com

SE- Sweden, Spanga

Tel: +46 (0)8 59 79 50 00
parker.sweden@parker.com

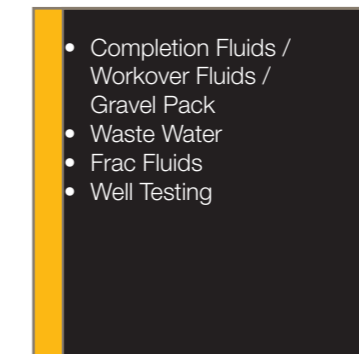
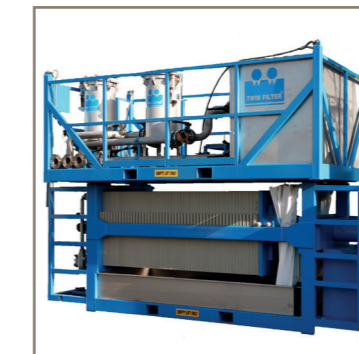
UK- United Kingdom, Warwick

Tel: +44 (0)1926 317 878
parker.uk@parker.com



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OG_BS_Drilling_Rev3



OIL AND GAS DRILLING

Service Company Guide



ENGINEERING YOUR SUCCESS.

04

Merek : **“Purolator”**

Porous metal filtration media, elements and systems


Purolator[®]
ADVANCED FILTRATION
a CLARCOR company



Your partner in specialized filtration systems

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04	High-performance polymer filtration
06	High-performance gas filtration
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15	Tailor-made solutions for unsurpassed performance



Imagine what we could do together.

Purolator provides solutions for the most demanding filtration applications.

Purolator is your specialized partner in the design and manufacture of metallic filter elements and filtration systems. We guarantee superior knowledge and expertise in all aspects of filtration technology.

Purolator offers you both standard and custom-made equipment to match your quality, productivity, handling and maintenance requirements.

We want to be a valuable partner in providing products and solutions tailored to your needs, and are eager to understand your situation and processes. In fact, we see this as a pre-condition for building close partnerships that result in solutions that work for your company.

Your requirements fuel our passion to innovate. Our specialists and researchers think along with you to come up with new products and applications.

Working in partnership with you to find solutions, we provide a diverse range of high-tech products, systems and services to give you high added value. Our long-term partnerships and cooperative relationships constantly yield new products to renew and extend our product portfolio.

High-performance polymer filtration



Benefit from more than 30 years of expertise in the design and manufacture of filter elements and systems. Discover for yourself why Purolator is the leader in filtration for the polymer industry, offering the most complete range of products from polymerization to spinning.

Applications

- Synthetic fibers (PET, PA, PP, carbon, & more)
- Film (PP, PET, PC, PS, PVBH, PE, & more)
- Non-woven (PP, PET, & more)
- PET bottle
- Engineered polymers
- Rubbers and silicones

Filter elements

Both candles (flat or pleated) and leaf discs can be used in our systems.



Filter systems

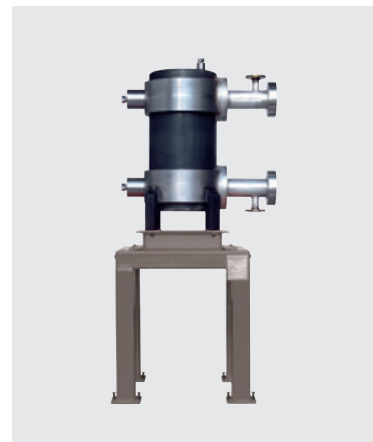
Purolator offers you both standard and custom-made equipment to perfectly match your quality, productivity, handling and maintenance requirements. The best filter media and the most appropriate filter elements will be used in our monomer, pre-polymer or polymer filter systems. Challenge us and we will find the unique solution for your specific application.



Duplex system for a continuous filtration.



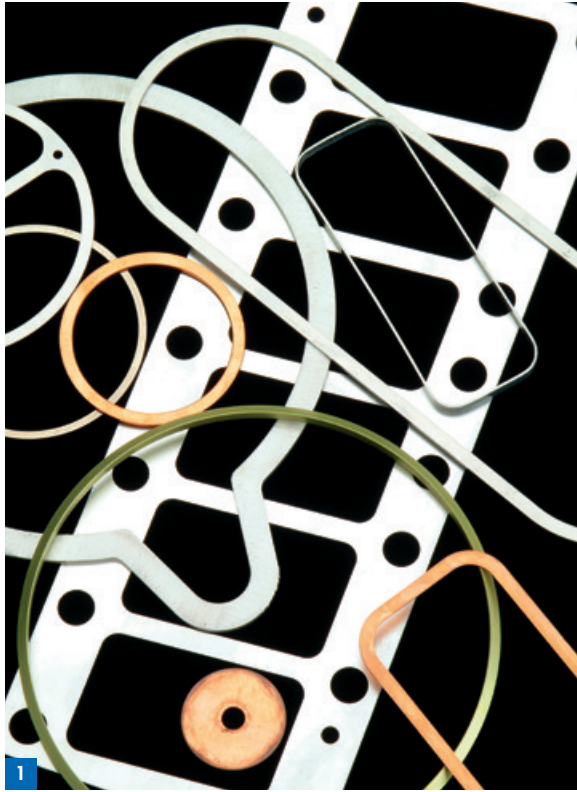
OFS horizontal system (50-1000 kg/h).



Simplex system.

Spinpack filters and gaskets

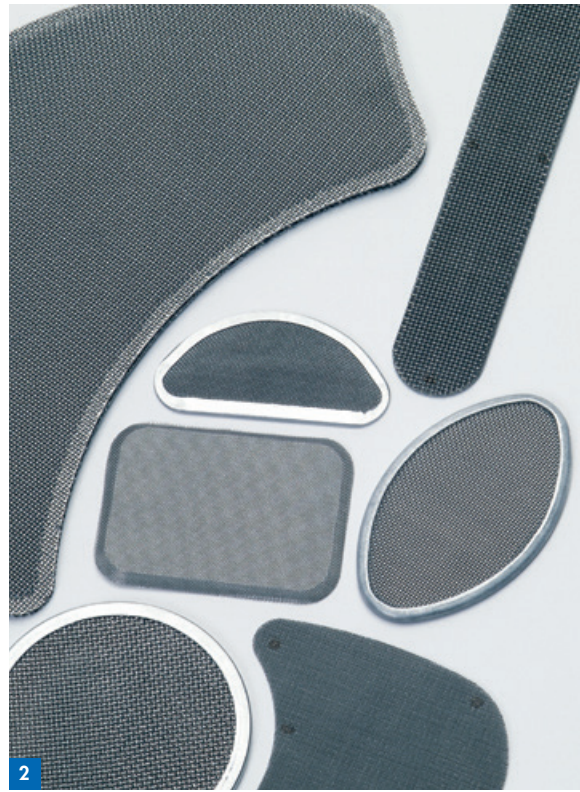
Purolator can provide you with the complete set of elements used in spinpack filtration. This step is critical in the production of synthetic fibers (spinning), and we can improve and innovate on your traditional filtration process.



Gaskets [1]

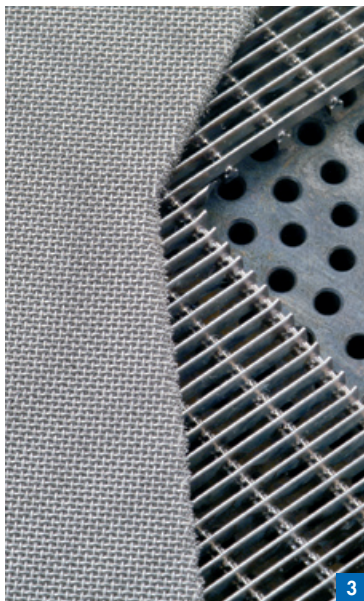
You can benefit from our metal-to-metal gaskets used in the polymer industry by the diversity of means of production and the quality of our toolings.

Alloys available: aluminium, copper, nickel-plated copper, stainless steel, Inconel®, and more.



Screens [2]

- Any shape or dimensions
- Assembly by spotwelding or frame
- Pleated media available
- Different alloys available
- Also used in extrusion (film, profiles)



Purolator Optisupport® [3]

This solution allows a reduced consumption of filters and an improved quality of filtered polymer. This product is available for most kinds of spinpacks and for all major screenchangers brands.

Filling sands [4]

We can offer a wide range of material to be used as filling sands in the spinpacks: stainless steel (offering the best shearing), Inconel®, silica, aluminium, glass, ceramic, and more.



High-performance gas filtration



Purolator specializes in the development and manufacture of porous metal filtration solutions. We offer filter media, elements and systems for industrial gas filtration, based on the unique advantages of metal fiber media.

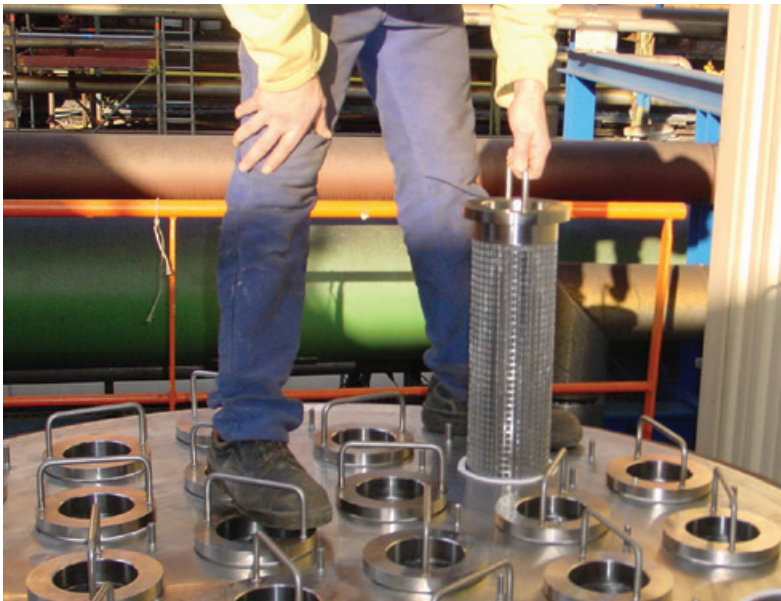
Use our filter systems in your high-temperature or corrosive chemical and petrochemical processes for filtration of process and exhaust gases. Our systems offer an alternative in situations where high mechanical stability, long lifetime, low pressure drop, easy cleaning and chemical and heat resistance are required. Filter materials are available with temperature resistance up to 1,000°C.

Our primary application areas

Depth filter applications

Depth filtration is used primarily in applications where small dust loads must be separated from a gas stream. The contaminants or particles are captured within the multiple layer structure of the filter medium.

Profit from our depth filter systems that combine high temperature and corrosion resistance with high dirt-holding capacity and excellent off-line cleaning possibilities—the perfect solution for your applications.



Benefits

- High permeability: low pressure drop
- High dirt holding capacity: long on-stream lifetime
- Easy to clean (water, chemicals): reusable
- Compact construction: high porosity and pleatable
- Not brittle
- Fully sintered and welded, contains no glues or binders
- Suitable for high temperatures and high-pressure applications

Applications

- Purification of process gases to protect downstream equipments
- Protection of catalysts
- Ammonia and mixed gas filtration in nitric acid production
- Purification of technical gases, such as hydrogen, nitrogen and oxygen
- Filtration of steam in pharmaceutical and food and beverage industry



Backpulse filter applications

Backpulse surface filtration is the solution for applications where large dust concentrations must be separated from a gas stream. We offer you the finest metal filter media available on today's market. Our backpulse filter systems build a dust cake at the filter surface. The cake is removed at regular intervals using a venturi backpulse or reverse flow process, which allows you to clean the filters while the systems is still online.

Benefits

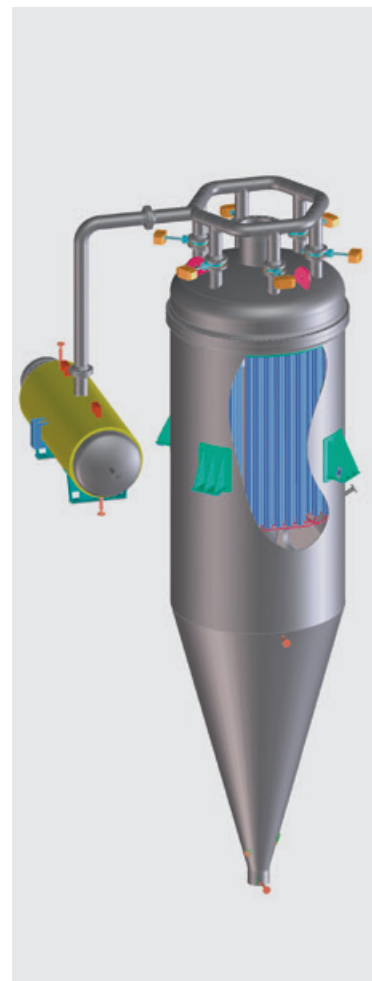
- Very reliable filter material
- Automatic self-cleaning system
- Long on-stream lifetime: no clogging
- No hazardous maintenance
- Extremely high efficiencies; extremely low emission
- Suitable for high temperatures (up to 1.000°C)

Applications

- Catalyst or product recovery in gas processes
- Protection of downstream equipments
- Venting protection for pneumatic product or catalyst transport
- Filtration of exhaust gases
- Processes where cleaning-in-place (CIP) is applied



Installation of filter elements.



Example of backpulse surface filtration applications: hot gas filtration during the production of Magnesium Oxide.

High-performance liquid filtration



Purolator is your specialized partner in the development and manufacture of porous metal filtration solutions. We offer filter media, elements and systems for industrial liquid processing applications. Enjoy the unique advantages of sintered porous metal.

Primary application areas Chemical and Petrochemical

- Polishing of corrosive liquids
- Pre-coat filtration
- Catalyst recovery, slurry phase reactors
- High-temperature liquids
- Cryogenic fluids
- Solvents, ketones, esters, liquid hydrocarbons
- Feed water and make-up water
- Ethylene glycol
- High-efficiency solids recovery or liquid recycling

Food and Beverage

- Process steam filtration
- Catalyst recovery from hydrogenation reactors
- Polishing of syrups, liquors, and other liquids
- Catalyst removal from flavor ingredients and other food specialties
- Activated carbon removal and decolorization

Pharmaceutical

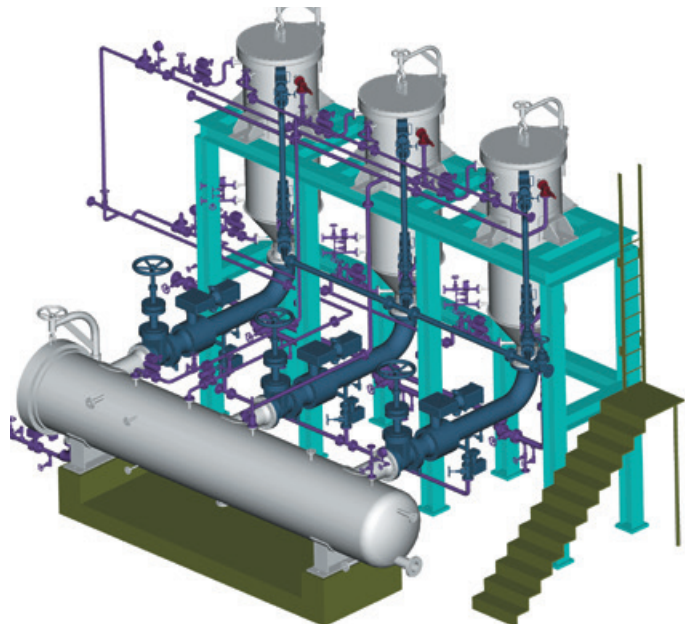
Pharmaceutical companies can maximize their productivity, as the Purolator filter system can be used in decolorization and catalyst recovery.

Refinery

Purolator filter systems can be designed to handle high flow rates in continuous operations typical in

refinery applications.

Hot hydrocarbon streams such as FCCU slurry oil often require removal of catalysts and other particulate. Removal of catalyst fines and other particulates not only improves the oil product, it also improves the downstream operating equipment by preventing fouling and reducing maintenance.

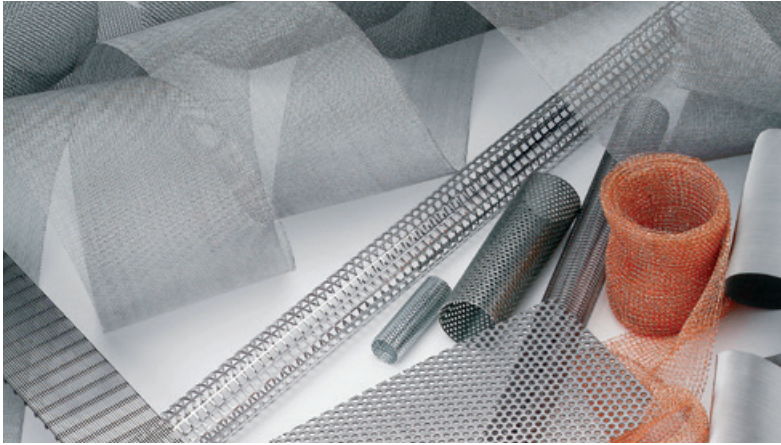


Our filter elements and systems offer you the following advantages

- **Resistance to high temperatures and corrosion**
All our elements are resistant to high temperatures and corrosive environments, making them suitable for a wide range of applications.
- **High-strength filter elements**
We use sintering porous filter media at the molecular level, resulting in high mechanical resistance in compression and stress.
- **Totally enclosed**
Backwashing filter elements reduce your operators' exposure to hazardous chemicals.
- **Ease of cleaning**
You can easily free porous metal filters of particulate by using backwash cleaning methods without scraping, scrubbing, or rotating filter elements. You can also remove contaminants with water, steam, air, solvents, caustic or acid washing, or with ultrasonic cleaning.
- **Minimal maintenance**
Porous metal filters have no moving parts, so your maintenance procedures are simpler and less frequent.
- **Reduced spare parts expense**
You seldom need to replace porous metal filter elements.
- **Waste minimization**
Cleanable filter elements eliminate the incineration or landfill costs that you have with disposable filters.
- **Single-stage filtration**
You can often replace an entire series of process filtration steps with a single filter system.
- **Wide selection of filter media**
We offer porous metal filter elements with the widest selection of filter media, in sintered powder or sintered fibers, ranging from standard 316L stainless steel to corrosion-resistant nickel and Hastelloy.



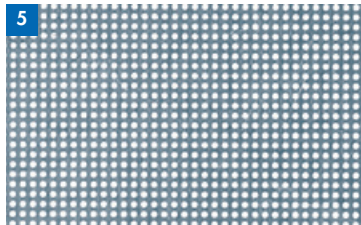
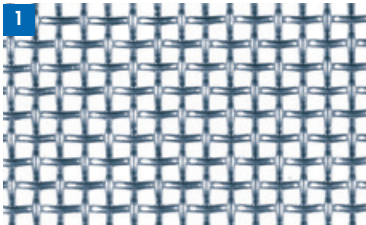
Metallic filter media



Benefit from our complete variety of metallic filter media that can be cleaned and re-used. They resist chemicals and mechanical wear, and have a maximum lifespan.

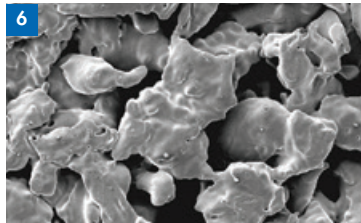
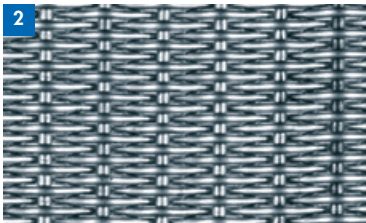
Supported by our Optilayer simulation software, our team selects the filtering structure best suited to your product and application in order to:

- facilitate the flow through the medium.
- provide a lengthy lifespan.
- offer ease in cleaning.



Classical square weave [1]

5 mm to 25 μm abs.

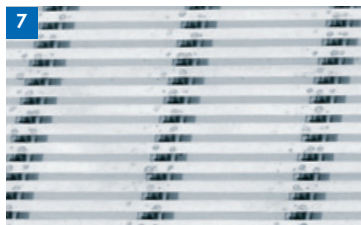
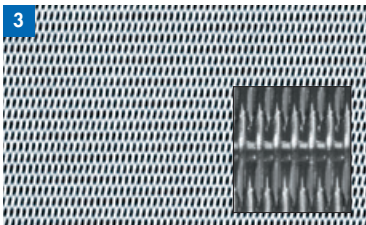


Dutch weave [2]

300 to 6 μm .

Multipor [3]

Surface filtration with high porosity (45%) (90 to 15 μm abs.)



Porofelt® sintered metal fibers [4]

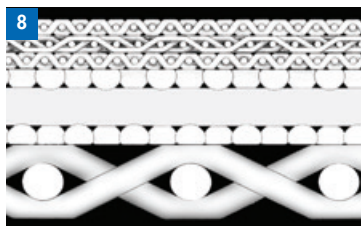
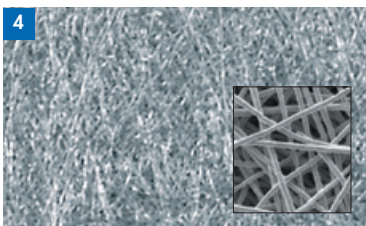
Available from 100 μm down to 1 μm abs.

Perforated and micro-perforated sheets [5]

To 20 μm abs.

Sintered metal powders [6]

100 to 0.2 μm



Wedge wire media [7]

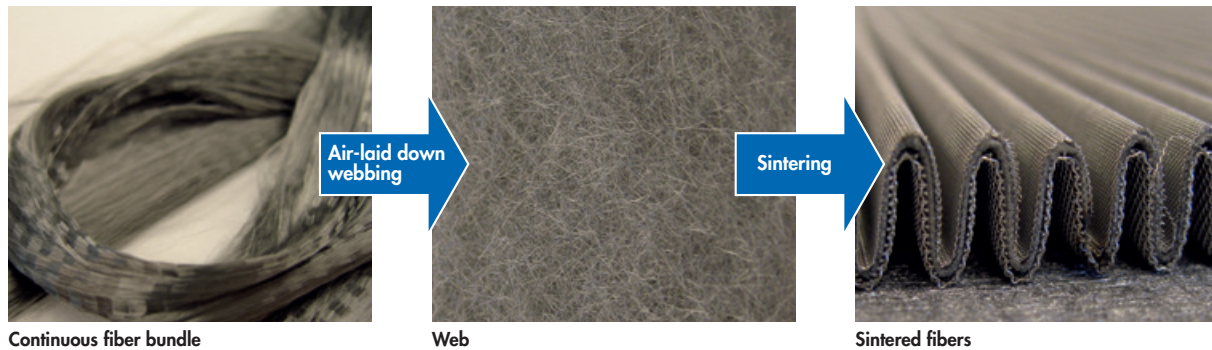
Available in different constructions and with openings as small as 20 μm .

Poroplate® Sintered Mesh [8]

Laminate of several wire clothes. (2 layers and more)

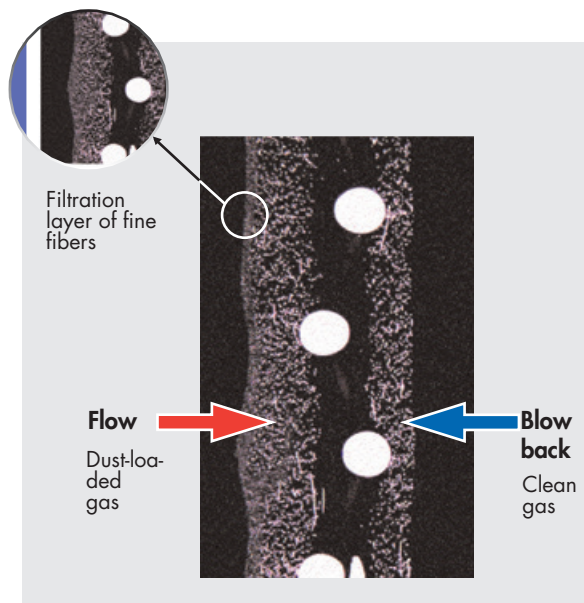
From fiber to porous metal fiber media

Purolator Porofelt®: flexible and multi-functional



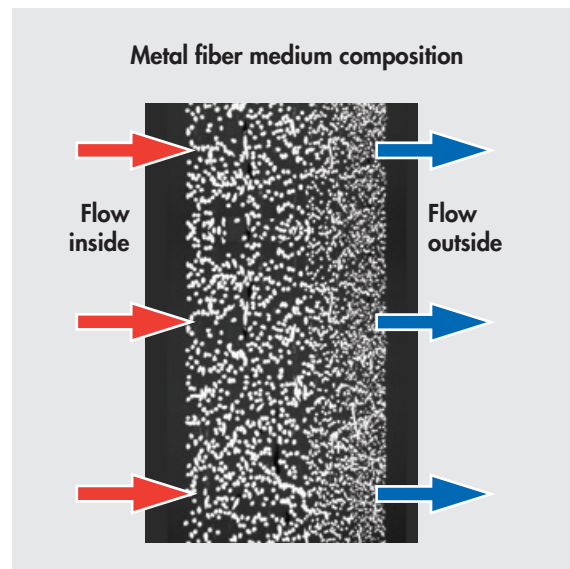
- A web is a composition of metal fibers, uniformly laid, to form a 3-dimensional non-woven porous web structure.
- Sintered fibers are a family of uniquely designed metal fiber media, produced by sintering of webs.
- This extremely porous, non-woven fiber matrix is available as a single- or multi-layer structure.
- This metal fiber media is also available with woven screen mesh sintered to either one or both sides. Adding wire meshes increases the strength, protects the fibers, and allows cross-drainage between the medium and the perforated core structure. Beyond standard compositions, we can also develop special compositions to meet your filtration requirements. Purolator sintered fiber media can be used in liquid, gas and polymer filtration applications, for a wide range of filter ratings.

Surface filtration



The filtration will go from the fine fibers side to the coarser fibers side. This will allow for easier blowback of the cake created on the surface.

Depth filtration



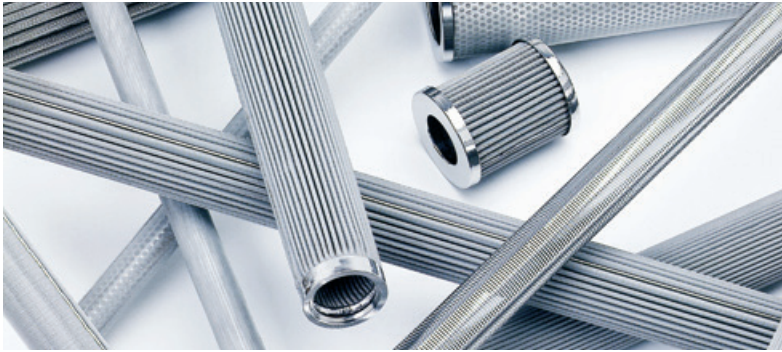
The filtration will go from the coarse fibers side to the fine fibers side. This media have very high porosity (up to 90%) and high dirt holding capacity (D.H.C.).

Wide choice of materials

In addition to 316L stainless steel, other metals and alloys are available to meet your special requirements, such as greater temperature and corrosion resistance.

Stainless Steel: 316L, 304L, 310, 347, 430 - Hastelloy® C-276, C-22, X, N, B, B2 - Inconel® 600, 625, 690 - Nickel 200 and Monel® 400 (70Ni - 30Cu) - Titanium - Alloy 20 and many others.

Metallic filter elements



Our metallic filter elements can be cleaned and reused, saving you time and money. Our elements are used in most industries and with a wide variety of applications.



Filter candles [1]

Key features:

- Assembly by welding
- Crimping or bonding
- Pleated or non-pleated media
- Maximum length without intermediary jointing
- Different dimensions available



Leaf discs [2]

You may profitably replace a set of candles with a stack of filter discs for applications where fine filtration is linked to high operating pressures. Most of these elements are using sintered metal fibers or sintered metal powder, but other media such as Purolator Multipor® can also be used.

Different sizes and hub configurations are available to meet your requirements.

Purolator Removable Mesh Pack® [3]

This is an original patented design for a filter candle that can be dismantled. The sealing between the different parts is ensured by means of a metal sealing that provides 100% guarantee down to 20 µm.

You will realize big savings because you only need to replace the Mesh Pack (the filtering part of the candle) when the element can no longer be cleaned.



3



4

Filter baskets [4]

Ideal for low-pressure filtration with the flow from the inside to outside. These can also be pleated to increase the filtration area.



5

Others [5]

Many other configurations (conical, cylindrical, etc.) and dimensions are also available. Ask us about your individual application and we will find the best solution for your situation.

Purolator is always close to you

Being close to you is our goal. With multiple manufacturing sites in the U.S., Europe and Asia, and sales offices throughout the world, we are strategically positioned to offer round-the-clock sales and manufacturing support.

EUROPE,
MIDDLE EAST AND AFRICA

Purolator® Advanced Filtration SA

rue de Cornemont 9-11
BE-4141 Sprimont
Belgium
T +32 4 360 94 65
F +32 4 360 94 77

THE AMERICAS

Purolator® Advanced Filtration

1022 Industry Drive
Shelby, NC 28152
USA
T +1 704 482 7381
F +1 704 481 8253

Purolator® Advanced Filtration

P.O. Box 630145
Houston, TX 77263
T +1 713 977 0610
T +1 800 977 9473

ASIA AND SOUTHEAST ASIA

Purolator® Advanced Filtration

No. 2 Xiafei Middle Road Quzhou
City Zhejiang, China 324022
T +86 570 807 5888

PT Purolator® Advanced Filtration

Jl. Surya Madya Kav. I-29K
Suryacipta City of Industry
Desa Kutangara
Kecamatan Ciampel
ID - West Java - Karawang 41361
Indonesia
T +62 267 861 0204
F +62 267 861 0205

Tailor-made solutions for unsurpassed performance



Engineering and R&D capabilities.

Maximum precision in lab development

Filter system design often begins at the Purolator laboratories, where the results of small-scale runs are analyzed.

The next step is a pilot-scale filter test at your site to ensure compatibility with actual process conditions.

Run the calculation

From basic to detailed engineering, the filter system will be designed to reach your process expectations.

Meet the needs completely

Once final operating conditions are determined, the full-scale production of the final system is shipped and installed. Then we audit and optimize the performance on the line.



Detailed inspection of the filter.



Co-development is the key to our success.

How can your company benefit from Purolator metal filter elements and systems?

This brochure explains how Purolator metal filter elements and systems can help you to improve your filter performance and reduce your total costs. If you want to find out how these high quality fibers, elements and systems can work for you, we are happy to advise.

Please contact your local Purolator specialist. Details are inside.

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Merek : “Sea Recovery dan Philp Marine Technology (VMT)”



Process Water Treatment Solutions

for Industrial and Power Generation Applications



ENGINEERING YOUR SUCCESS.

WE ENGINEER WATER QUALITY: How, when, where and the way you need it.

Our membrane and filtration solutions will optimize operations. Safely. Sustainably. Economically. Efficiently.

Looking for innovative ways to filter, purify, discharge, recapture, recondition or reuse industrial and process water? Whether you need to address difficult-to-treat produced and process waters, meet regulations, or maximize recovery due to scarcity of source water, Parker delivers. Our proven industrial and customized membrane and filtration systems blend superior performance with full compliance to deliver optimum reliability in pretested, packaged skids or turnkey containerized industrial grade solutions.

Vertically integrated for lower total cost of ownership

Forty years of membrane desalination technology leadership has taught us the value of vertical integration. By utilizing Parker components and controlling every step in the manufacturing process – from mandating the quality of raw materials to construction and performance testing – we can meet your exact water quality requirements, delivering the level of expertise and control needed to optimize applications for lower total cost of ownership.

Global and local

No matter where your plants are, Parker is there. With approximately 60,000 employees in almost 58 countries, 13,000 distribution and maintenance/repair outlets, and over 1,500 ParkerStores, we offer the global connections and local support you need.



Unparalleled engineering and manufacturing capabilities

Parker Water Purification is equipped to design, build, test, and certify water purification systems robust enough to carry the Parker name. We offer:

- 130,000 square feet of manufacturing space
- 15 design engineers
- 5 CAD designers
- 3 quality engineers
- 2 manufacturing engineers
- 32 CNC machining centers
- Membrane rolling machine
- Membrane test station
- Fiberglass vessel assembly cell
- Steel vessel weld/assembly shop
- Electrical panel shop
- Tool and fixture shop
- Steel weld shop
- Pump assembly shop
- AquaPro® pump test station
- 7 system assembly flow lines
- 3 system wet test facilities
- Air/structure/fluid borne noise measuring equipment
- Engineering test lab
- Full wet-test area, each system is tested prior to shipment

Proven tough and dependable by the Navy and Coast Guard

We've been the leading supplier of MiL-SPEC RO desalination and purification equipment to the US Navy and Coast Guard for 35+ years.



Courtesy of the US NAVY and the US Coast Guard

Value-added right from the start

As the global leader in motion and control technologies, you can rely on Parker Hannifin's engineering expertise for total water solutions that work together seamlessly worldwide to minimize life cycle costs and your environmental footprint. Our team of professional application engineers has extensive membrane purification and filtration experience and understands your water quality issues. Working together, we collaborate to increase your productivity and profitability with:

- Process design, engineering expertise and installation
- Testing and certification
- Around-the-clock technical and field service and support
- Audit and consultative services, training, and field support
- Continuous monitoring to ensure performance to your specifications
- Preventive diagnostics
- Validation services
- Laboratory services



Process Water Expertise

Parker offers significant advantages for process water filtration. From intake to outflow, we have your water quality needs covered. Talk to us about our expertise:

- Pre-RO condensate filtration
- Intake water filtration
- Reverse osmosis systems and ultrafiltration for cooling tower
- Blowdown, boiler makeup and feedwater filtration
- High-purity water treatment for NO_x reduction and turbine injection
- High-purity turbine wash water
- EDI pre-treatment
- Zero Liquid Discharge management
- High turbidity surface waters with fine silt and clay material
- Tertiary treatment of biologically treated water
- Seawater pretreatment for red tide and algae blooms
- Locations with strict wastewater TDS restrictions
- Replacement of caustic chemical injection systems

Our Commitment to Environmentally Sustainable Solutions

Still using DI trailers?

Parker offers an alternative solution to DI trailers. Our RO-EDI System eliminates the need for toxic chemicals and the high maintenance costs associated with DI trailers.



Optimize Your Operations

email us at waterpurification@parker.com



INDUSTRIAL AND POWER GENERATION APPLICATIONS

PRETREATMENT

- AUTO Filtration System (10 microns)
- High Turbidity Automated Pre-filtration (20 microns and 20,000 mg/L TSS): AUTO filter replaces conventional clarifiers.
- Ultrafiltration (UF) Membrane Treatment
- Bag Filtration
- Large Diameter Cartridge Filters and Multi-Cartridge Vessels
- Media Filtration
 - Multi-media high rate filtration
 - Activated carbon filters
 - Iron media filtration
 - Ion exchange softening and specialty resin filters
- Hydrocyclones
- Chemical Injection and Mixing Systems: chlorine, coagulant, biocide, anti-scalant and acid

MEMBRANE DEMINERALIZATION & DEGASIFICATION

- Brackish Water Reverse Osmosis (BWRO)
- Sea Water Reverse Osmosis (SWRO)
- Electrodionization (EDI)
- RO-EDI System
- Nanofiltration (NF)
- Membrane Contactors (MC) aka Gas Transfer Membrane (GTM): for CO₂ and oxygen removal

Combined Cycle Power

WATER SOURCE

- Natural lake / river water intake
- Seawater beach well / open sea
- Brackish ground water well



WATER REUSE & RECLAMATION

- Multi-barrier packaged filtration and demineralization system
- High suspended solids treatment filtration system
- Ultra High Recovery (UHR) Concentrate Elimination System (CES): Membrane-based



Optimize Your Operations

email us at waterpurification@parker.com

Water Generating Station



PARKER OFFERS:

- Turnkey solutions arrive fully operational after a thorough 100% factory performance test
- Parker manufactured membranes optimized for specific applications
- Parker automation packages with Parker variable frequency drives for high efficiency and low OPEX
- Parker membrane treatment solutions incorporating Parker engineered quality components

GLOBAL CERTIFICATION

Parker systems and components certified to:

ISO 14001:2004	ATEX
ISO 9001:2008	NORSOK
CE	IEEE
UL	NEC
IEC	

SERVICES

- Maintenance contracts
- Remote Monitoring and Control
- Mobile Membrane Water Treatment Containers: rental program
- Spare and replacement parts
 - RO Membrane Cartridges
 - Melt-Blown Polypropylene Cartridge Filters
 - High Capacity Pleated Cartridge Filters
 - String Wound Depth Cartridge Filters

ANCILLARY EQUIPMENT

- Permeate Booster Pumping Systems with automated control
- Clean-In-Place Membrane Cleaning System
- Storage tanks
- Automation packages with VFD control

ENGINEERING YOUR WATER QUALITY

Providing water in some of the world's most challenging environments is a task that requires specialized experience and technology. Parker Water Filtration Systems excels in this area, bringing integrated solutions to our customers around the globe.

PRETREATMENT

UHF Series Ultrafiltration (UF) Systems

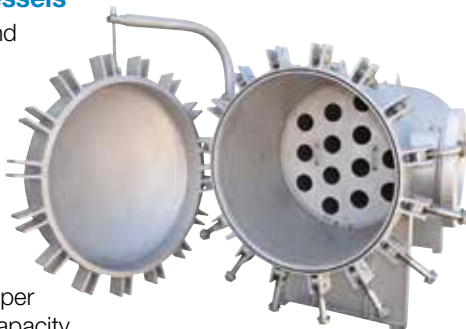
Parker Water Purification is specialized in providing ultrafiltration (UF) pretreatment and drinking water UF systems using a variety of natural source waters. UF hollow fiber membranes are provided in two configurations, outside-in (O/I) PVDF or inside-out (I/O) multi-bore MPES configurations. Both types of UF membranes are proven to be durable and reliable with high membrane integrity.



- 220 GPM (50 m³/hr) capacity skids (can be combined in parallel for larger flows)
- Low-fouling UF membrane technology
- Filtration to 0.02 microns
- High removal efficiency of bacteria and viruses
- Automated membrane backwashing and chemical cleaning

domnick hunter ParMax™ Large Diameter Multi-Cartridge Filter Vessels

The best of large diameter and pleated technologies are combined in Parker's ParMax™ Large Diameter Filter Vessels in stainless steel or carbon steel construction. Designed to work with ParMax Filter Cartridges that handle flows up to 500 GPM (1,892 LPM) per 60" length, these high-flow capacity vessels offer significant size and capital cost reduction compared with vessels containing conventional size filter cartridges. ParMax vessels hold up to 19 cartridges with flow rates up to 9,500 GPM (2,159 m³/hr). Plus, our standard ASME code horizontal vessel design and coreless cartridge configuration make change-out fast and easy.



- Vessels hold up to nineteen 60" cartridges – 9,500 GPM (2,159 m³/hr)
- 316L SS, 304L SS, carbon steel options

domnick hunter ParMax™ Select Large Diameter Filter Cartridges

ParMax™ Select Filter Cartridges outperform in high flow, critical process applications like pre-condensate filtration. Unique layered construction together with staged pleating provide an additional 25% surface area and up to 40% more life across a wide range of flux rates. Inside/out flow pattern design ensures positive capture of contaminants.



Available in polypropylene depth media and micro-fiberglass media in absolute (99.98%) ratings from 1 to 90 microns. One six-inch diameter cartridge can handle up to 500 GPM (1,892 LPM) per 60" length.

Fulflo® Filter Bags Provide High Quality, Consistent Filtration Performance

Fulflo® filter bags are ideal for virtually any process filtration application requiring the removal of solids.



Parker's Fulflo filter bags are manufactured and tested under the strictest quality control standards to assure consistent performance. Parker's Fulflo filter bags perform at high flow rates and viscosities to 10,000 cps or higher.

- Each bag is incinerable (with Quik-Seal™ option or polypropylene ring), reducing filter disposal costs
- XLH high efficiency filter bags perform at efficiencies similar to depth cartridges. XLH bags are available in 0.5 μm, 1 μm, 2.5 μm, 10 μm and 25 μm particle retention ratings.
- Standard Fulflo filter bags are available in 1 μm to 800 μm particle retention ratings.



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email us at waterpurification@parker.com

Fulflo® GB Bag Filter Vessels

Designed to handle flow rates of up to 4,200 GPM (15,900 LPM), the Fulflo® GB Series bag and strainer filter vessels provide excellent filtration in a wide range of industrial and chemical applications. All details of design, materials, construction and workmanship of the GB Vessel Series conform to ASME code. Available in carbon steel, 304L and 316L stainless steel.



Multi-Media Filtration Systems

Parker Water Purification Multi-media Filtration Systems offer high performance and are specifically engineered with media layers that are optimized to remove particulate matter from the feed stream ahead of the cartridge filtration system. A proprietary mix of media targets particulate matter such as turbidity and suspended solids that will otherwise overload the micron filtration array of an RO system. In addition, the advanced media design reduces iron, manganese and organics in the feed stream.



Activated Carbon Filters

Parker Water Purification granular activated carbon (GAC) filters are effective in a wide range of applications. GAC filters are used to reduce chlorine and byproducts such as THMs, organics, color, tannin, tastes and odor, DBP, VOC and TOCs from municipal and industrial water supplies. Systems are available in single and multi-vessel configurations for 24/7 operation and include automatic backwash to remove trapped contaminants within the filter bed.



Greensand Media Filters

Parker Water Purification greensand filters effectively reduce soluble iron, manganese, hydrogen sulfide, arsenic and radium from water through oxidation and filtration utilizing a Manganese Greensand media. The Manganese Greensand bed is automatically regenerated on a continuous basis with an oxidation solution. Systems are available in single or multi-vessel configurations for 24/7 operation and include automatic backwash to remove trapped contaminants within the filter bed.

Ion Exchange Softening and Specialty Resin

Parker Water Purification durable high volume water softeners utilize industrial quality cation resin for reduction of hardness in RO pretreatment, cooling tower make-up and boiler feed water to increase thermal efficiency and reduce maintenance costs. Systems include automatic regeneration and backwash to ensure optimal water softening performance. Systems are available in single or multi-vessel configurations for 24/7 operation.

Specialty ion exchange systems are also available which utilize resins that have a specific affinity for various contaminants. Some examples of specific contaminant removal are: nitrates, perchlorate, arsenic, fluoride, lead and boron.



Chemical Injection Systems

A complete range of skid mounted chemical dosing systems are available from Parker Water Purification. These systems include dosing pump, tank and skid and are electrically and mechanically assembled and ready to connect to your process. Chemicals are dosed into membrane treatment systems at the optimum and most efficient rate to achieve long-term system performance.



Common dosing applications and chemicals used:

- Disinfection: chlorine
- pH adjustment: acid and caustic
- De-chlorination: sodium bisulfite
- Scale/fouling control: antiscalant
- Filtration aid: coagulant
- Microorganism control: biocide

Monitoring Condition of System

Utilizing Parker state-of-the-art instrumentation and electronic communications technology, customized monitoring systems are developed to provide 24/7/365 system monitoring, operational analysis and alarm notification.

Remote monitoring can also allow for trending and preventative maintenance. In the event a problem does occur the system provides immediate operator notification and response and documentation of the trouble event. Systems can also provide customized reporting and data logging/analysis.

ENGINEERING YOUR WATER QUALITY

MEMBRANE DEMINERALIZATION & DEGASIFICATION

BW Series Brackish Water Reverse Osmosis (BWRO) Systems

Parker Water Purification BWRO systems incorporate the latest RO technology to purify water and remove salts and other impurities from brackish water. Standard packaged units have a capacity range from 20 to 250 GPM (3 - 60 m³/hr) which can be combined in parallel for larger flows. Our design can treat brackish water up to 3,000 mS/cm conductivity (EC) and a maximum of 10,000 EC. The BW series RO desalination systems are pre-engineered, pre-assembled and ISO factory tested in the USA to minimize installation and start-up time. Custom engineered BWRO solutions are also available for higher TDS source waters or for larger flow capacities.



Water Purification SR Series – Seawater Reverse Osmosis (SWRO) Desalination System

Parker Water Purification SWRO desalination systems are engineered utilizing the latest technology for low pressure operation. Each system is designed for high salt rejection with integrated energy recovery. Systems designed with energy recovery have a nominal capacity of 40 GPM to 150 GPM (9 - 35 m³/hr). Multiple skids/units can be combined in parallel for larger capacity systems and for reliability. Systems include 500 gallon CIP and permeate flush.



RO-EDI Ultrapure Demineralized Water System

Parker Water Purification DM series reverse osmosis electrodeionization systems provide ultrapure demineralized water from brackish water sources. Combining the benefits of reverse osmosis and electrodeionization polishing the DM Series provides the latest technology for producing up to 18 megohm ultrapure water. This makes the DM series the ideal solution to replace high-maintenance DI beds.

Standard packaged units offer a capacity range from 25 - 140 GPM, (6 - 32 m³/hr) utilizing 1 to 6 membranes.



Electrodeionization (EDI) Treatment

Parker Water Purification EDI systems remove trace ionic salts and silica from the RO permeate resulting in ultrapure water. EDI systems are designed for continuous operation to produce greater than 10 megohm resistivity with a high rejection of soluble ionic load up to 98%. Our continuous and chemical-free design provides an economical treatment solution that can eliminate the expensive and hazardous chemicals used in traditional ion exchange resin regeneration. Flow rates up to 140 GPM (32 m³/hr) for packaged systems and 1,000 GPM (225 m³/hr) for custom engineered solutions. Water recovery up to 99%.

- Continuous and chemical-free process
- Water recovery up to 99%
- High rejection of soluble ionic load up to 98%



Water Purification Nano Series – Nanofiltration (NF) Membrane Water Treatment Systems

Parker Water Purification utilizes nanofiltration (NF) membrane water treatment for desalination of brackish sourced waters. Nanofiltration membranes are manufactured by Parker to provide ultra-low pressure while rejecting high levels of dissolved contaminants such as silica, organics, TDS, calcium and nitrates. Systems have a nominal capacity of 40 GPM to 150 GPM (9 - 35 m³/hr). Multiple skids/units can be combined in parallel for larger capacity systems and for reliability.



Membrane Contactors / Gas Transfer Membrane for Degasification

Membrane Contactors (MC) are used around the world to remove dissolved gases from water. They are capable of achieving <1 ppb of O₂ and <1 ppm CO₂. Removing the oxygen and carbon dioxide can reduce deterioration of boilers and piping due to corrosion. Chemical usage may also be reduced which can decrease the blowdown frequency due to scaling from chemical deposits. Carbon dioxide removal can improve efficiency and reduces chemical consumption in mixed bed or EDI technologies. Deoxygenating HRSG feed water during layup and start-up can prevent costly maintenance and downtime.



WATER REUSE & RECLAMATION

Ultra-High Recovery (UHR) Systems for ZLD

Parker Water Purification provides Ultra-High Recovery (UHR) membrane water treatment systems that are simple, compact, and reliable. Our zero liquid discharge (ZLD) membrane treatment solutions are designed to operate with recoveries up to 95% versus conventional BWRO systems operating at 70-75% recovery or less. Parker UHR systems economically provide reduced liquid waste-to-drain with simple system operation. Our membrane-based systems provide treatment of RO concentrate from conventional BWRO systems. Membrane technology is utilized in ZLD systems for reduced CAPEX and OPEX relative to expensive thermal alternatives.



COMPLETE RANGE OF SPARE PARTS & CONSUMABLES

Parker offers a complete line of replacement and spare parts including melt-blown, pleated and string wound cartridge filters, pumps/motors, seals, pipes, valves, etc.

AquaPro® Reverse Osmosis Membranes

Parker Water Purification AquaPro® RO, seawater and nanofiltration membranes, 3", 6", and 8", and membrane housings.



Media

Resin, GAC carbon, multi-media and greensand

domnick hunter Fulflo® Honeycomb HFT String Wound Depth Filter Cartridges

Wound cartridges provide true depth filtration by utilizing hundreds of tapered filtering passages of controlled size and shape. Their irregular outer layer reduces surface blinding, assuring both longer cartridge life and full utilization. Parker's Fulflo® Honeycomb Cartridges demonstrate effective removal ratings at nominal 90% efficiency from 0.5 µm to 150 µm.



Parker Twin Filter TH Series Absolute Rated Filter Cartridges (0.5, 1, 2, 5, 10, 20, 25, 30 and 40 micron)

Parker Twin Filter TH Series Absolute Rated Cartridges utilize a fully thermal welded construction to ensure usage in filtration applications with high temperature fluids, acids, and oily water. The three-layer, 2.5" (63.5 mm) O.D. pleated design incorporates glass fiber between polyester filter layers, including a firm outer-guard, for maximum removal performance, strength, and stability.

- All TH pleated cartridges are Beta 5000 rated (efficiency 99.98%)
- Cartridge lengths: 10", 20", 30", and 40"



Avasan™ High Purity Melt-Blown Depth Filter Cartridges

Avasan™ (AVS) cartridges are an excellent choice for pre-filtration on reverse osmosis systems, and are produced with a proprietary melt blown manufacturing process using a specially formulated polypropylene polymer. This formulation provides a uniquely graded density filter cartridge designed for high purity applications. The fiber matrix of the cartridge has been engineered to provide structural integrity throughout the long service life of the cartridge and the finish-free construction provides optimum fluid purity and eliminates foaming.



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ENGINEERING YOUR WATER QUALITY

SERVICES & MAINTENANCE

With our network of 500+ distributors and service providers, Parker Water Filtration and Purification Systems offers a full range of partnering options to ensure a lifetime of value for your Parker equipment.

Our services include:

- Installation and start-up
- Preventative maintenance contracts
- Remote monitoring and supervision
- Transportation / logistics
- Mobile membrane water treatment containers – rental and purchase
- Retrofits and upgrades
- On-site training and technical support
- On-site repair
- Design and consultancy
- Workshop repair

ANCILLARY EQUIPMENT

Clean-In-Place Membrane Cleaning System

Membranes in UF and RO systems can become fouled by suspended solids, microorganisms, and mineral scale. These deposits build up during operation and cause loss in water output, salt rejection, or both. Regular cleaning of the membrane elements minimizes the loss of performance and extends membrane life.

Parker Water Purification Membrane cleaning systems are designed to be used in place without the need to remove membranes from the system. Systems are provided with full drain CIP tank, pumping, automatic heater, hoses and quick disconnect fittings to allow easy connection to the membrane system.



Low Voltage Variable Frequency Drives

Parker designed the new AC10 to be a simple, cost-effective variable speed drive for basic open loop v/F or sensorless vector control for induction and PMAC motors.



InteractX HMI

Ideal for steam pressure control, HRSG/boiler control parameters The unique interaction between Parker's InteractX Software and InteractX PowerStations reduces the time, effort, and cost of SCADA application development.



CUSTOM ENGINEERED SOLUTIONS

Parker's advanced water systems can be customized to the special needs of individual customers. We work closely with you to meet all requirements, whether it's for customized parts, specific production capacities, or a complete system redesign. Systems can be delivered and commissions anywhere in the world.

Designed and built to the highest standards.

Parker Water Purification's experienced engineers collaborate with customers to design a water system that meets performance objectives. We then build your system using quality, proven materials and components, incorporating advanced electronics and modern user interfaces that allow ease of operation and maintenance. Parker's development process also includes extensive testing to ensure flawless operation and adherence to safety standards.

Delivered, commissioned and supported globally.

Our network of local sales representatives work closely with customers to ensure their system is delivered and commissioned promptly and properly. With service specialists located in every part of the world, Parker support is exactly where you need it to be.

Custom system types include:

Specialty ultrafiltration (UF) and (RO) wastewater treatment and recovery

- Ultra High Recovery (UHF) Concentrate Reduction System: Membrane-based
- Multi-barrier packaged filtration and demineralized system
- High suspended solids treatment filtration system
- Chemical precipitation systems
- Multi-stage pH neutralization systems

CONTAINERIZED WATER TREATMENT SOLUTIONS FOR RENT OR PURCHASE - READY TO DEPLOY

Parker Mobile Containerized Membrane Water Treatment Solutions

Parker Water Purification specializes in manufacturing a variety of reliable ISO containerized systems for almost any mobile water treatment application. They are pre-tested and ready to deploy, for rent or purchase.

Seawater or brackish water RO equipment is provided in combination with all needed building blocks to make a complete water treatment package. Including; pre-filtration, chemical feed tanks, booster pumps, automated backwashing and distribution pumps. RO permeate can be further polished with EDI to provide ultrapure quality.

ISO 20 and 40 foot high-cube containers include many fine details such as heavy duty internal and external painting, insulated walls with water resistant sheathing, heat, air conditioning, corrosion resistant flooring, interconnecting piping, wiring, internal lighting and receptacles.

Applications:

- Ultrapure demineralized water
- High pressure boiler feed
- Power augmentation
- NO_x emissions reduction
- Cooling tower make-up water
- Emergency relief
- Oil platforms and drilling
- Military
- Remote work camp sites
- Food and beverage production
- Agriculture



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email us at waterpurification@parker.com



Parker Hannifin Corporation
Water Purification Division
2630 East El Presidio Street
Carson, CA 90810
phone 310 608 5600
fax 310 608 5692
waterpurification@parker.com

Parker Hannifin Corporation
domnick hunter Process Filtration
2340 Eastman Avenue
Oxnard, CA 93030
phone 805 604 3400