



Industrial/Utility Filtration Systems

Fixed & Portable Filtration Systems, Housings and Cartridges for Purification of Industrial Fluids



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Industrial Filtration Systems

Fixed & portable solutions for purification of industrial fluids.



APPLICATIONS:

- Oil & Gas
- Plastic Injection Molding
- Die Casting
- Steel
- General Industrial
- Power Generation
 - Turbine Oil
 - Lube Oil
- Transmission & Distribution
 - Load Tap Changer
 - Voltage Regulator
- Mining
- Off-Highway Heavy Duty Equipment
- Food Processing
- Refining
- Paper Mills
- Aircraft Ground Support



HP Series
(HP10-MK1 Model Shown)



MP5 Series
(MP5-MK2 Model Shown)



MP5E Series
(MP5E-MK3 Model Shown)



MCP5E Series
(MCP5E-MK1 Model Shown)



MXP5E Series
(MXP5E-MK1 Model Shown)

Parker manufactures a variety of portable and fixed mounted systems for filtering industrial oil, hydraulic and other fluids. Parker Velcon Industrial Filtration Systems are built with components proven to perform well under the most rigorous conditions.

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TP3 Series
(TP3-MK3 Model Shown)

TDS5 Series
(TDS5-MK1 Model Shown)



Heavy Duty Portable Handcart Filter-Pump

MP5 Series. Removes Water and Dirt from Oils and Fuels

FEATURES

- 5 gpm flow rate
- High performance filter cartridge choices:
 - **Aquacon**[®] cartridge - removes free water and dirt
 - 4500 square inch high-capacity dirt filter
- Rugged welded steel construction
- TEFC Motor

DESCRIPTION

The **Parker Velcon MP5** is a compact, portable filter system designed for use at the site of contaminated oil. It is easily wheeled to the sump or reservoir by one person.

The MP5 is completely self-contained and requires only electricity for operation. Standard features are listed on the facing page. Note that the unit incorporates a reliable gear pump with an integral pump pressure relief valve to prevent system over-pressure.

A selection of high performance filter cartridges is offered for use with the MP5. Cartridge changes can be made in only a few minutes.

APPLICATIONS

MP5s can be used with injection molding machines, mobile hydraulic equipment, small transformers, circuit breakers and various other types of equipment. Applications are as follows:

New Oil - Even new drums of oil are sometimes contaminated with dirt and water. The MP5 can remove this contaminant as it pumps the oil out of the drum.

Machine Oil Reservoirs -

Good preventative maintenance practices include the routine filtering of used oil. This recycling procedure also extends the useful life of the oil.

Spilled and Leaked Oil - The MP5 can recover and recycle contaminated oil which would normally be discarded.

TYPES OF OIL:

- Hydraulic Oil
- Lube Oil
- Insulating Oil
- Cutting Oil
- Circuit Breaker Oil
- Quench Oil
- Turbine Oil
- Diesel Fuel
- Biodiesel Fuel



MP5 Series
(MP5-MK2 Model Shown)

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SPECIFICATIONS

Standard features for all MP5 Models

- 5 gpm flow rate
- Powder coated interior and exterior
- 100 psi design pressure
- Welded steel construction
- 10" wheels
- Self-priming positive displacement pump with built-in pressure relief valve
- Static pressure gauge – indicates need for cartridge change
- ½ hp, 115V, 1-phase, 60 Hz, 10 Amp TEFC motor
- 10 ft. 3-wire power cord
- 10 ft. inlet and discharge hose, ¾" I.D.
- ¾" NPT male fittings on hose ends
- Suction Y-strainer mounted at pump inlet
- Weight: 116 lbs.
Shipping weight: 139 lbs
- Height: 39"; Width: 17";
Length: 21"

FILTER CARTRIDGES

The MP5 portable filter accepts all Parker Velcon standard 618/718 size cartridges. Contact your Parker AFD representatives for a complete listing of available cartridges and their applications.

- **Dirt Removal:**
For particulate solids, use FO-718PL Series large surface area pleated media cartridges, available in micron ratings from 0.3 to 50. For colloidal contaminants, FO-618FGA Series Fiberglass depth cartridges, available in micron ratings from 5 to 25, are recommended.
- **Dirt and Free Water Removal:**
Use Aquacon® AC-718 super absorbent cartridges to remove up to two quarts of free water and also filter particulate solids. Available in micron ratings from 0.3 to 5.

- **Dissolved Water Removal:**
Use Superdri® cartridge model SD-718 to remove dissolved water from various industrial oils. Specify Flow Control Bypass option to reduce 5 gpm flow rate to 3 gpm recommended flow rate for SD-718 cartridge.

RECOMMENDED SPARES

- Filter Cartridge, box of 6
- G-1045 Std Buna-N Gasket
- Housing Lid Gasket, 1 ea (or)
G-1045A Viton-A

CUSTOM OPTIONS

Call for quote.

AVAILABLE STANDARD MODELS (SHIPPED WITHOUT CARTRIDGES)

MP5-MK1

- Y Strainer



MP5-MK2

- Y Strainer
- Flow Control Bypass
- Filter Bypass
- DP Gauge



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Lightweight Portable Handcart Filter-Pump

MP5E Series. Removes Water and Dirt from Oils and Fuels

FEATURES

- 5 gpm flow rate
- High performance filter cartridge choices:
 - **Aquacon**® cartridge - removes free water and dirt
 - 4500 square inch high-capacity dirt filter
- Rugged welded steel construction
- TEFC Motor

DESCRIPTION

The **Parker Velcon MP5E** is a complete filtration package on wheels. All you have to do is install the filter cartridge, plug it in, and watch it meet your toughest filtration requirements.

Designed for industrial applications, the MP5E uses a large filter cartridge with up to 4500 square inches of filter media. This improves filtration efficiency and capacity, reduces change-out frequency and gives the best long term operating costs.

More than 26 types of filter cartridges are available to meet your specific filtration requirements.

APPLICATIONS

The MP5E Portable Filter can be used for:

Transfer: Remove dirt and water while pumping oils or fuel from one place to another.

Preventive Maintenance: Routine filtering of oil at the machine reservoir extends the life of machine components and the oil itself.

Reclamation: Put spilled oil into a drum, filter it to remove dirt and water, and you can reuse the oil instead of throwing it away.

THE MP5E PORTABLE FILTER EFFECTIVELY PROCESSES:

- Insulating Oil
- Quench Oil
- Hydraulic Oil
- Cutting Oil
- Lube Oil
- Transformer Oil
- Diesel Fuel
- Kerosene
- Biodiesel Fuel



MP5E Series
(MP5E-MK3 Model Shown)



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SPECIFICATIONS

Standard features for all MP5E Models

- 5 gpm flow rate
- Powder coated vessel interior and exterior
- Band clamp vessel closure
- 10 inch wheels
- Totally enclosed fan cooled (TEFC) motor 1/2 hp, 115V, 1 phase, 60 Hz, 10 amps
- Self priming positive displacement pump with built-in pressure relief valve
- Pressure gauge
- 3 wire power cord 10 feet long with 3 prong plug

- 9 feet inlet and discharge hose, 3/4" I.D.
- 3/4" NPT male fittings on hose ends
- Strainer mounted on inlet line
- Weight: 106 lbs. Shipping weight: 130 lbs.
- Height: 52" Length: 18" Width: 22"

CARTRIDGE SELECTION

The MP5E portable filter accepts all Parker Velcon standard 618/718 size cartridges. Cartridges are available for removal of free water, dirt, and acids. Contact your local Parker representative for a complete listing of available cartridges and their applications.

RECOMMENDED SPARES

- 6 cartridges
- 1 G-1016 Buna-N lid gasket

Note:

If Viton-A lid gaskets are desired, order G-1016A

CUSTOM OPTIONS

Call for quote.

AVAILABLE STANDARD MODELS (SHIPPED WITHOUT CARTRIDGES)

MP5E-MK1

- Y Strainer

MP5E-MK2

- Flow Control Bypass
- Y Strainer
- Filter Bypass
- DP Gauge
- Digital Flowmeter.

MP5E-MK3

- Flow Control Bypass
- Y Strainer
- Filter Bypass
- 4 Way Valve
- DP Gauge
- Digital Flowmeter
- Sample Tap
- High Pressure Shut-Off



Twin Housing Lightweight, Portable Handcart Filter Pumps

MCP5E Series. Removes Water, Dirt and Other Contaminants from Oils and Fuels.

FEATURES

- Two stage series
- 5 gpm standard
- Economical two-cartridge configurations
- Choice of different cartridge combinations
- Quick and easy cartridge change
- Self-contained, one person operation

DESCRIPTION

The **Parker Velcon MCP5E Series-Flow** employs two different types of filter cartridges in series. Typically, the first of the MCP5E's two housings is utilized as a prefilter. With heavy carbon or dirt contamination, this prefilter holds a cost-effective particle or colloidal removal cartridge and the second in series holds an **Aquacon**[®] super-absorbent water removing cartridge.

Other cartridge combinations have proven to be effective for filtering vacuum pump oil and other oils in corrosive environments. Use either an economical dirt cartridge or an Aquacon[®] dirt and water cartridge in the first stage and either a Fuller's Earth or an Activated Alumina cartridge in the second. The first stage removes dirt or dirt and water while the second removes acids, gums, surfactants, varnishes, soaps, color bodies, corrosive gasses, polar compounds, and oxidation products.



MCP5E Series
(MPC5E-MK1 Model Shown)



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THE MCP5E EFFECTIVELY PROCESSES:

- Hydraulic Oil
- Heat Transfer Fluids
- Gear Oil
- Cutting Oil
- Lube Oil
- Mineral Oil
- Transformer Oil
- Vacuum Pump Oils:
- Synthetic Oils
- Diesel Fuel
- Biodiesel

SPECIFICATIONS

Standard features for all MCP5E Models

- 5 gpm standard flow rate
- Powder coated vessel, both interior and exterior
- Band Clamp vessel closure – no tools required
- Operating pressure to 100 psi
- 10” wheels
- Self-priming positive displacement pump with built-in pressure relief valve
- Static Pressure Gauge on each housing – to indicate when cartridge must be changed
- 1/2 hp, 115V, 1-phase, 60 Hz, 10 Amp TEFC Motor
- 10 ft. 3-wire power cord

- 10 ft. Inlet and Discharge Hose, 3/4” I.D.
- 3/4” NPT Male Fittings on hose ends
- Suction Y-Strainer mounted at pump inlet
- Weight: 157 lbs. Shipping Weight: 202 lbs.
- Height: 52”; Width: 22”; Depth: 22”

RECOMMENDED SPARES

- Filter Cartridge, box of 6 ea
- G-1016 Std Buna-N Filter Housing Lid Gasket, 2 ea
- G-1016A Viton-A Filter Housing Lid Gasket, 2 ea

CUSTOM OPTIONS

Call for quote.

CARTRIDGE SELECTIONS

| Application | Cartridge | Filter Area, Sq. In. | Micrometer Rating, Specify: | Notes |
|----------------------------|-------------------------------|----------------------|------------------------------|---|
| Dirt Removal: Particulates | FO-718PL Series Pleated Media | 5000 | 1/3, 1/2, 1, 2, 5, 15, or 50 | Maximum particle filtration |
| Dirt Removal: Colloidals | FO-618FGA Series Depth Media | N/A | 5, 10, or 25 | Most cost effective for “slime” removal |
| Dirt and Water Removal | AC/AD-718 Series Aquacon® | 2500 | 1 or 5 | Removes dirt and 1 to 2 quarts water |
| | | 2900 | 1/2 | For circuit breaker & high-carbon oils |
| Acid Removal | LA-71801B Fuller’s Earth | | | Use 1 gpm Filter Pumps |
| | LB-71801 Activated Alumina | | | Use 1 gpm Filter Pumps |

AVAILABLE STANDARD MODELS (SHIPPED WITHOUT CARTRIDGES)

MCP5E-MK1

- Y Strainer

MCP5E-MK2

- Y Strainer
- Flow Bypass Control
- Filter Bypass
- DP Gauge
- Digital Flowmeter

MCP5E-MK3

- Y Strainer
- Flow Bypass Control
- Filter Bypass
- DP Gauge
- Digital Flowmeter
- 4-way Valve
- Sample Tap
- High Pressure Shut-Off



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Superdri® Handcart Filter Systems

MXP5E Series. Removes Dissolved Water from Transformer Oil Without Heat and Vacuum.

FEATURES

- Flow control bypass
- Filter bypass
- Digital flowmeter/totalizer
- Sample taps
- Portable handcart mounted

DESCRIPTION

The **Parker Velcon MXP5E** comes with all the features needed for proper use of Parker Velcon Superdri® Cartridges for dissolved water removal from transformer oil. Parallel flow through the two filter housings assures the proper flow rate through each SD-718 Superdri® cartridge. The unit is also valved so that series flow is possible for non-dissolved water oil handling applications, such as removal of dirt and free water. Use FO filter cartridges in the first housing to remove dirt particles. An Aquacon® cartridge in the second stage removes free water.

The flowmeter/totalizer feature allows the user to calculate the approximate lifetime of the Superdri® cartridges without an on-line moisture monitor. For dissolved water removal from transformer oil, the MXP5E is an economical alternative to more costly heat and vacuum systems.

APPLICATIONS

The MXP5E-1 Portable Filter can be used for:

- Network transformer filling
- Drying wet LTC Compartments
- Vacuum-type LTC's
- Drum transferring operations
- Dissolved water removal capability for critical oil quality requirements



MXP5E Series
(MXP5E-MK1 Model Shown)

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SPECIFICATIONS

- 5 gpm flow rate
- Powder coated vessels
- Band clamp vessel closures
- Max. operating pressure 100 psi
- 10" wheels
- Flow control bypass
- Filter bypass
- Flow meter and totalizer
- Self priming positive displacement pump with built in pressure relief valve
- Static pressure gauge, manual air vent, and manual drain valve on each housing
- ½ hp, 115V, 1-phase, 60 htz., 10 amp TEFC motor*
- 10 ft x 3 wire power cord
- 10 ft inlet and outlet hose, ¾" ID w/ ¾" male npt fittings

- Suction y-strainer
- Weight: 155 lbs.
Shipping Weight: 200 lbs.
- Height: 52"; Width: 24"
Depth: 22"

CARTRIDGE SELECTION

The MXP5E portable filter accepts all Parker Velcon standard 618/718 size cartridges. Cartridges are available for removal of free water, dirt, and acids. Contact your local Parker AFD representative for a complete listing of available cartridges and their applications.

- Parallel Operation:
Use (2) SD-718
- Series Flow:
Use (1) FO-718PL1/2 and (1) AC-71801

RECOMMENDED SPARES

- 6 cartridges
- 1 G-1016 Buna-N lid gasket

Note:

If Viton-A lid gaskets are desired, order 2 G-1016A

CUSTOM OPTIONS

Call for quote.

AVAILABLE STANDARD MODELS (SHIPPED WITHOUT CARTRIDGES)

Digital Flowmeter and Sample Tap include on all standard models

MXP5E-MK1

- Flow Control Bypass
- Y Strainer
- Filter Bypass
- Digital Flowmeter
- Sample Tap

MXP5E-MK2

- Flow Control Bypass
- Y Strainer
- Filter Bypass
- Digital Flowmeter
- Sample Tap
- Vacuum Pump

MXP5E-MK3

- Flow Control Bypass
- Y Strainer
- Filter Bypass
- Digital Flowmeter
- Sample Tap
- Vaisala Moisture Sensor

MXP5E-MK4

- Flow Control Bypass
- Y Strainer
- Filter Bypass
- Digital Flowmeter
- Sample Tap
- Vaisala Moisture Sensor
- Vacuum Pump



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Double Capacity Heavy Duty Portable Filter Pumps

HP Series. 10 and 30 GPM Flow Rates.

REMOVE WATER & DIRT FROM OILS AND FUELS

- Choice of dirt or combination dirt and free water removal cartridges
- Two cartridge – double contaminant removal
- Rugged welded steel construction
- Large pneumatic wheels for soft surfaces
- Self-contained, one person operation
- Lift ring for easy lifting

DESCRIPTION

Double capacity Parker Velcon HP Series Portable Filter Pumps are recommended for oils with higher concentrations of dirt, water and other contaminants. Two models are offered with a choice of 10 and 30 gpm flow rates.

The thirty-gallons per minute model is the preferred choice at electrical utility installations for transferring and filtering insulating oil. It has been proven to be economical, fast, and efficient for applications of this type involving larger volumes of oil.

The HP Series two-cartridge design filters and holds more than twice as much contaminant as single cartridge units. Several different types of filter cartridges are offered for specific applications. Cartridges can be changed in only a few minutes.

HP Series Filter Pumps are highly portable. Large pneumatic wheels allow the units to be moved over soft and irregular surfaces by one person. Rugged, welded steel construction makes them suitable for operation in the most difficult and demanding industrial environments. Units are completely self-contained and require only electrical power to operate.

FILTER CARTRIDGES

Dirt Removal: For dirt particles, use two FO-718PL Series large surface area pleated media cartridges. For colloidal contaminants, two FO-618FGA Series fiberglass depth cartridges are recommended.

Dirt and Water Removal: Use two Aquacon® AC-718 Series free water absorbent cartridges. Each removes 1 to 2 quarts of free water and also filters dirt particles.

Aquacon® Cartridges have a unique inner absorbent media. Absorbed water is chemically locked in. When the cartridges reach their water holding capacity, their accordion pleats swell shut. This causes an increase in the differential pressure which signals the operator to change the cartridges.



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APPLICATION:

- Hydraulic Oil
- Transformer Oil
- Cutting Oil
- Lube Oil
- Quench Oil
- Diesel Fuel
- Biodiesel Fuel

PLEASE NOTE: Use of Aquacon® or Fiberglass Depth Cartridges with the HP30 (30 gpm) unit should be limited to oils with a viscosity of 100 SSU or less. Transformer and circuit breaker oils are acceptable. This limitation does not apply when using pleated media cartridges.

SPECIFICATIONS

- Standard features for all HP Models
- Double capacity – holds two 18” length 618/718 style filter cartridges
 - Carbon steel construction
 - Powder coated vessels
 - 10” wheels
 - Totally enclosed, fan cooled motor
 - Built-in pump bypass to prevent system over-pressure
 - Pressure gauge to indicate when elements must be changed
 - Buna-N lid gasket
 - Lift ring
 - Weight: 506 lbs
 - Height: 54”; Width: 22”; Depth: 31”

RECOMMENDED SPARES

- 1 ea, G-1045 - Standard Buna-N Lid gasket (or)
- 1 ea, G-1045A - Optional Viton-A Lid gasket

AVAILABLE STANDARD MODELS (SHIPPED WITHOUT CARTRIDGES)

| | Variable Speed Drive (Replaces Flow Control Bypass) | Y Strainer | Basket Strainer | Filter Bypass | Pressure Switch | Air Eliminator | 4-Way Valve | Full Port Isolation Valves | DP Gauge | Digital Flow Meter | Voltage |
|----------|---|------------|-----------------|---------------|-----------------|----------------|-------------|----------------------------|----------|--------------------|-----------------|
| HP10-MK1 | ✘ | ✘ | | | | | | | | | 120V/60 HZ |
| HP10-MK2 | ✘ | ✘ | | ✘ | ✘ | ✘ | | | | | |
| HP10-MK3 | ✘ | | ✘ | ✘ | ✘ | ✘ | ✘ | ✘ | ✘ | ✘ | |
| HP30-MK1 | ✘ | ✘ | | | | | | | | | 230V/60HZ 1P |
| HP30-MK2 | ✘ | ✘ | | ✘ | ✘ | ✘ | | | | | |
| HP30-MK3 | ✘ | | ✘ | ✘ | ✘ | ✘ | ✘ | ✘ | ✘ | ✘ | |



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Stationary Filter Systems

TP3 Series

FEATURES

- **Automatic Shut-Off (MK2 & MK3):** Pressure switch turns the system off when filter is plugged. Relay can be wired to remote alarm or indicator light.
- **Oil Make-Up :** Oil reservoir can be topped off using 3-way valve oil make-up port.
- **Hour Meter (MK2 & MK3):** Records run time of system to assure user of consistent operation.
- **Timer (MK2):** 24-hour mechanical timer can be set for hours of daily operation.
- **Flexible Operation (MK3):** Digital electronic timer can be programmed for multiple operating sequences. Internal battery keeps program in memory during power loss.



TP3-MK3 Model Shown

DESCRIPTION

The **Parker Velcon TP3** was developed in response to the industry's desire to reduce operation and maintenance costs and increase system reliability. Station Filter Systems have proven to be an effective means of combating load tap changer and other industrial oil problems. Tap changers retrofitted with a TP3 enjoy the following:

- Consistent high oil dielectric strength
- Extended maintenance/inspection intervals
- Reduced contact wear and coking
- Extended oil life
- Reduced contact erosion via reduced restrikes during tap changing

The Parker Velcon TP3 is recommended for installation on systems that:

- Perform a high number of operations
- Exhibit consistent sludging conditions
- Have a high tap-to-tap voltage difference
- Require frequent attention

Quality components and comprehensive design features have made the TP3 an industry standard for on-line filtration. All components are fully enclosed in cabinet. Operation of the unit is unattended. A flow rate of 3 gpm keeps turbulence in the reservoir to a minimum and allows for maximum filter life.



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SPECIFICATIONS

- **Flow Rate:**
3 gallons per minute
- **Cabinet:**
Painted grey acrylic, easy-opening handle with lock and 3-point latch, with louvers and filters
- **Dimensions:** 43" x 30" x 12" (H-W-D)
- **Pump:**
Heavy-duty, self-priming, positive displacement gear pump with built-in pressure relief valve and mechanical seal.
- **Piping:**
Stainless steel tubing, JIC hydraulic fittings. External connections are 1/2" female NPT.
- **Filter Vessel:**
Parker Velcon Model VF-71E, with manual vent and static pressure gauge, is polyester powder coated internally and externally. No tools required for filter changeout.
- **Filter (not included):**
Use Parker Velcon Model FO-718PL1/2 for removal of carbon contamination.
- **Sight Glass (MK2 & MK3):**
150 psi maximum working pressure for oil flow indication.

- **Electrical Motor:**
1/2 hp, 120V, 1-phase, 1740 rpm, TEFC
- **Control box (MK2 & MK3):**
NEMA 12 with high pressure switch, latching relay, magnetic contactor, hour meter, and manual starter/disconnect with 10 amp heater overload
- **Power requirements:**
120 vac, single-phase, 10 amps

RECOMMENDED SPARES

- FO-718PL1/2
Filter Cartridge, box of 6 ea (or:)
- FO-718PLP3
Filter Cartridge, box of 6 ea (or:)
- AC-7181/2
Aquacon® Cartridge, box of 6 ea (or:)
- AC-718P3
Aquacon® Cartridge, box of 6 ea (or:)
- SD-718P3
Superdri® Cartridge, box of 6 ea
- G-1016
Filter Housing Lid Gasket, 1 ea



TP3-MK1

AVAILABLE STANDARD MODELS (SHIPPED WITHOUT CARTRIDGES)

| | Fan | Timer (Dig) | Timer (Mec) | Heater | Sight Glass | Reverse Pump |
|---------|-----|-------------|-------------|--------|-------------|--------------|
| TP3-MK1 | | | | | | |
| TP3-MK2 | | | × | 30W | Tube | |
| TP3-MK3 | × | × | | 400W | Tube | × |



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On-Line Transformer Dryout System

TDS®-5 Series

Dehydrate wet transformers without taking them out of service!

FEATURES AND BENEFITS

- Transformer remains in-service during process
- Reduce transformer dry-out costs
- Improve oil dielectric values
- Improve transformer power factor
- Operates continuously unattended
- Extend oil service life
- Extend transformer service life
- Built-in moisture sensor

DESCRIPTION

The **Parker Velcon TDS®** transformer dry-out system incorporates all the necessary features to allow a transformer to remain in-service while moisture from its insulation is effectively removed. The system is safe with several alarm features that shut the system off, isolating it from the transformer, in the event of any abnormal signal. The TDS5-MK1 unit provides a non-intrusive, cost effective and convenient method of maintaining transformers in a dry condition. In addition, once the transformer is dried, the system can be retrofitted with Activated Alumina cartridges to reduce acidity in the transformer oil. This flexibility allows increased oil processing application compared to heat and vacuum systems.

APPLICATIONS

- Dry wet transformers and insulation
- Dry transformers not braced for vacuum
- Dry transformers that cannot be taken out of service

A window is installed for visual checks of system

Top of enclosure is hinged to allow access for filter changes



SYSTEM OVERVIEW

The TDS® oil processing system is designed to allow a transformer under load to dry itself out. A quantity of four part number SD-1107 **Superdri**® cartridges can be installed in the filter vessel, through which oil is processed at a rate of 5 gpm. The filtering system removes dissolved water from oil to less than 10 ppm, and includes 1 micron nominal particle removal capabilities. The process does not affect dissolved gas in oil, and does not remove oil oxidation inhibitors. The system is complete with all components necessary to monitor the mechanical and electrical operating conditions of the unit. The system includes components to purge air during start up and after filter changes.

PROCESS OVERVIEW

The on-line dryout process is designed for safe, unattended, 24-hour operation. The system suction line is connected to the transformer bottom fill connection. The oil is then returned from the TDS® to a top connection valve. The number of cartridge changeouts required

to dry the transformer insulation to an acceptable level and cartridge change-out intervals will vary according to moisture content and moisture transfer rate from the insulation to the oil. One set of **Superdri**® cartridges will remove a minimum of 1.4 gallons of dissolved water from the oil. Periodic moisture readings, from both the inlet to and outlet from the system can be taken to determine the amount of moisture being removed and are also used to determine when cartridges should be changed.

GENERAL CONDITIONS AND GUIDELINES

The TDS5-MK1 relies on load from the energized transformer to push moisture from the insulation out to the surrounding oil. As the moisture is released into the oil, it is removed by the Superdri® cartridges which continually dry the oil to less than 10 ppm total water. Transformer top oil temperature should be kept at least 40 - 60 degree C for moisture equilibration between

insulation and oil to continue in a timely fashion. A single set of Superdri cartridges will remove approximately 1.4 gallons of water. Cartridge performance can be monitored by observing the Vaisala Moisture Sensor. The process will not release moisture back into the oil even if cartridges are fully saturated.



RESULTS OBTAINED DURING ACTUAL TRANSFORMER DRY-OUTS USING TDS5-MK1:

| CONDITION | JEFFERSON CITY, MO | | FRESNO, CA | |
|------------------------------------|--------------------|-------|----------------------------------|---------------|
| | BEFORE | AFTER | BEFORE | AFTER |
| POWER FACTOR (TEMP CORRECTED): CH | 3.31% | 1.32% | 1.18% | 0.33% |
| POWER FACTOR (TEMP CORRECTED): CL | 4.31% | 1.59% | 1.39% | 0.38% |
| POWER FACTOR (TEMP CORRECTED): CHL | 5.48% | 1.77% | 1.35% | 0.35% |
| ACID CONTENT | | | .047 MG KOH/G | .016 MG KOH/G |
| INTERFACIAL TENSION | - | - | 29 DYNES/CM | 37 DYNES/CM |
| MOISTURE CONTENT | 50 PPM | 5 PPM | 25 PPM | 5 PPM |
| OXIDATION INHIBITOR | - | - | NO CHANGE | |
| DISSOLVED GAS | - | - | NO CHANGE EXCEPT DECREASE IN CO2 | |

For guidelines to estimate process cost and duration, contact Parker HFFD



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TDS® SPECIFICATIONS

- **Power Requirements:**
120 vac, 1-ph, 60 Hz, 12 amps, comes with 25-ft power cord.
- **Control Box:**
NEMA 4 enclosure with motor starter, motor overload protection, programmable logic controller, start/stop/reset switch, run light indicator, high pressure cutoff switch and indicating light, and elapsed hour meter.
- **Electric Motor:**
1/2 hp, TEFC, 1750 RPM.
- **Fan:**
6" for enclosure ventilation, with thermostat and filtered louver.
- **Electronic Flow Meter:**
0 - 30 gpm, indicates flow rate, resettable batch totalizer, and cumulative gallons pumped, battery powered.
- **Oil Pump:**
5 gpm positive displacement gear pump with mechanical seal and internal pressure bypass.
- **Vacuum Pump:**
3 CFM displacement, close coupled motor and wired to main electrical control box for power source.
- **Coaxial Hoses with Oil Level Alarm:**
(2) 25-ft coaxial lengths of suction and discharge 3/4" hose are provided with N.C. solenoids wired to main control panel. If a leak should develop on the hose connections to the transformer, oil will collect in the bottom of the enclosure and the system will shutoff

automatically. Extra contacts are provided for remote alarm detection.

- **Self Draining:**
Oil in the vessel is safely pumped back into the transformer during cartridge changeouts.
- **Dry Contact Relay:**
A dry contact relay is provided that can be wired to the transformer's low oil level alarm to shut the system off if a low oil level is sensed.
- **Detachable Hoses:**
Disconnect fittings at the enclosure end. When disconnected, the hoses can be stored more conveniently in a separate hose storage area.

MOISTURE SENSOR

Vaisala on-line direct reading moisture sensor continuously displays oil temperature and ppm of total water in the oil (or percent saturation of the oil). The piping layout of the TDS5-MK1 system allows easy checking of both the influent and effluent moisture contents with a single sensor. A "Change Filter" alarm light is also mounted to the control panel door.

Note: Trailer not included.



DIMENSIONS

- Depth: 36"
- Width: 38"
- Height: 49" (85" with lid open)
- Shipping Weight: 1,125 lbs

ORDERING INFORMATION

| | |
|-----------------|--|
| TDS5-MK1 | Standard unit, 120 vac, 1-ph, 60 Hz power requirement |
| SD-1107 | Superdri [®] cartridge, 4 required per change-out (not included with unit) |
| LB-1107 | Activated alumina cartridge for acid removal, 4 required per changeout |

CUSTOM OPTIONS

Call for quote.



AVAILABLE STANDARD MODELS (SHIPPED WITHOUT CARTRIDGES)

TDS5-MK1

- Y Strainer
- Vaisala Moisture Sensor
- Filter By-pass
- Digital Flowmeter
- Sample Tap



ENGINEERING YOUR SUCCESS.

Six and Twelve Cartridges Filter Housings

VF166C, VF2012C

FEATURES

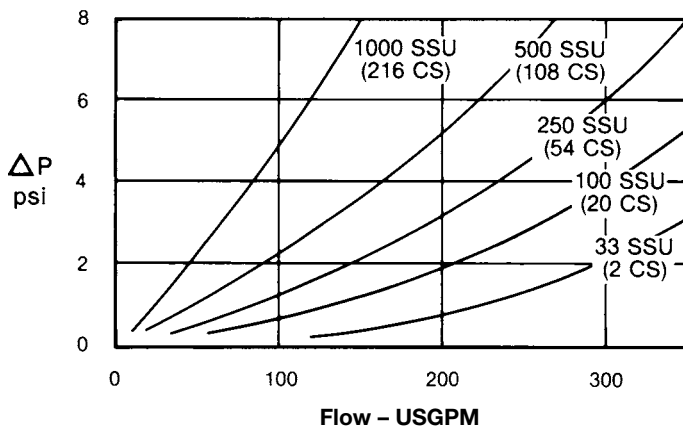
- ASME Code Design
- Carbon Steel Construction
- 150 psi operating pressure, 225 psi test
- O-Ring closure
- Primed exterior, oil coated interior
- Positive seal tie-rod cartridge mounting
- Swing bolt lid closure
- Six types of cartridge media available
- Lid lifting mechanism
- 200°F Design temperature

APPLICATIONS

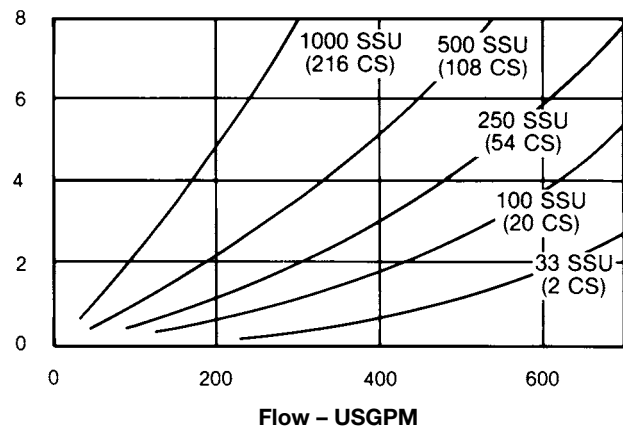
- Gasoline
- Cooling Water
- Coolants
- Solvents
- Kerosene
- Diesel Fuel
- Biodiesel Fuel
- Lube Oils
- Cutting Oils
- Gear Oil
- Hydraulic Oil
- Quench Oil
- Insulating Oil



VF2012C150



VF166C Housing with six FO-718PL05 Cartridges



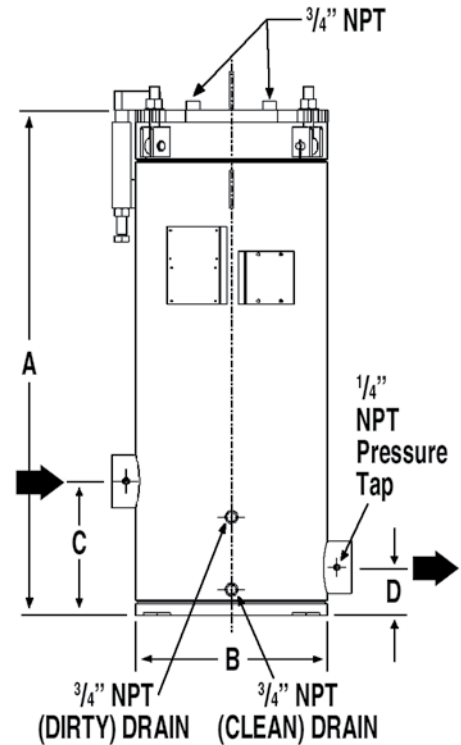
VF2012C Housing with twelve FO-718PL05 Cartridges



ENGINEERING YOUR SUCCESS.

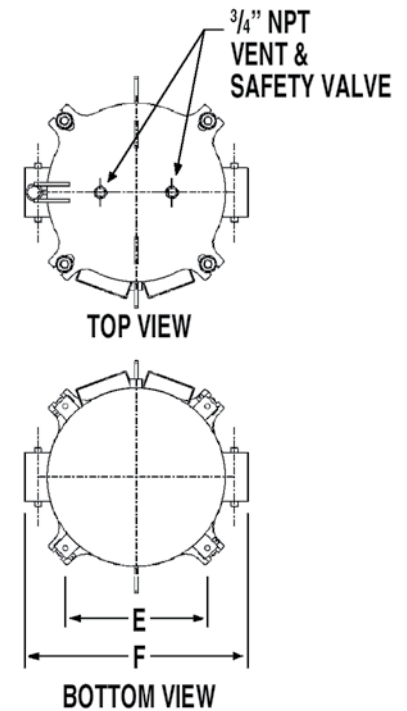
DIMENSIONS

| Housing | VF166C | VF2012C |
|-------------------------------|-----------------------------|-----------------------------|
| Inlet/Outlet | 3" NPT | 4" NPT |
| A | 47 $\frac{1}{4}$ " (120 cm) | 52 $\frac{3}{4}$ " (134 cm) |
| B | 16" (40.6 cm) | 20" (50.8 cm) |
| C | 11" (27.9 cm) | 14" (35.6 cm) |
| D | 4" (10.2cm) | 5" (12.7 cm) |
| E | 13" (33 cm) | 16" (40.6 cm) |
| F | 20" (50.8 cm) | 25" (63.5 cm) |
| Volume | 38 gal (144 L) | 65 gal (246 L) |
| Vessel Weight – empty | 355 lbs (140 kg) | 592 lbs (270 kg) |
| Shipping Weight | 405 lbs (160 kg) | 642 lbs (292 kg) |
| Number of Standard Cartridges | 6 | 12 |
| Lid Gasket – Buna-N | G-2033 | G-2027 |



ORDERING INFORMATION (SPECIFY)

| | | |
|--|--|-------------------|
| Housing | VF166C150 | |
| | VF2012C150 | |
| | ASME Code Stamp – Specify if Required | |
| Cartridge Types (not included with housing) | FO-718PL Series Pleated Media | |
| | FO-618 FGA Series Fiberglass Depth Media | |
| | FOS-618/718 Series Synthetic Media Pleated Cartridges | |
| | LA-61801B Fullers Earth Media | |
| | AC-718 Series Aquacon ® Water Absorbing Media Cartridge | |
| | SD-718 Series Superdri ® dissolved water removal cartridges | |
| Recommended Spares | 1 Set of Spare Filter Cartridges | |
| | 1 Lid Gasket | |
| Accessories | #120-H Differential Pressure Gauge | |
| | VF166CI50EPX Internal Epoxy Coating | |
| | G-2033A (VF166C150) | Viton Lid Gaskets |
| | G-2027A (VF2012C150) | |



Obtain Certified Drawing
before pouring slab

Single and Double Filter Housings

VF81SYS150, VF82SYS150 with 1 1/2" Inlet/Outlet

FEATURES

- Carbon steel construction
- 150 psi design pressure
- 195 psi hydro-test pressure
- Polyurethane almond powder coated interior & exterior
- 1 1/2" NPT female inlet/outlet
- 3/4" NPT drain couplings (qty 2)description

APPLICATIONS

50 or 100 gpm maximum flow rates for fuels. For oils, determine viscosity, then rate based on cartridge flow capacities.

- Hydraulic Oil
- Gasoline
- Insulating Oil
- Transformer Oil
- Diesel Fuel
- Coolant
- Lube Oil
- Cutting Oil
- Kerosene
- Synthetic Oil
- Gear Oil
- Quench Oil
- Biodiesel



VF81SYS150 (left) and VF82SYS150 (right) Filter Housings

ORDERING INFORMATION

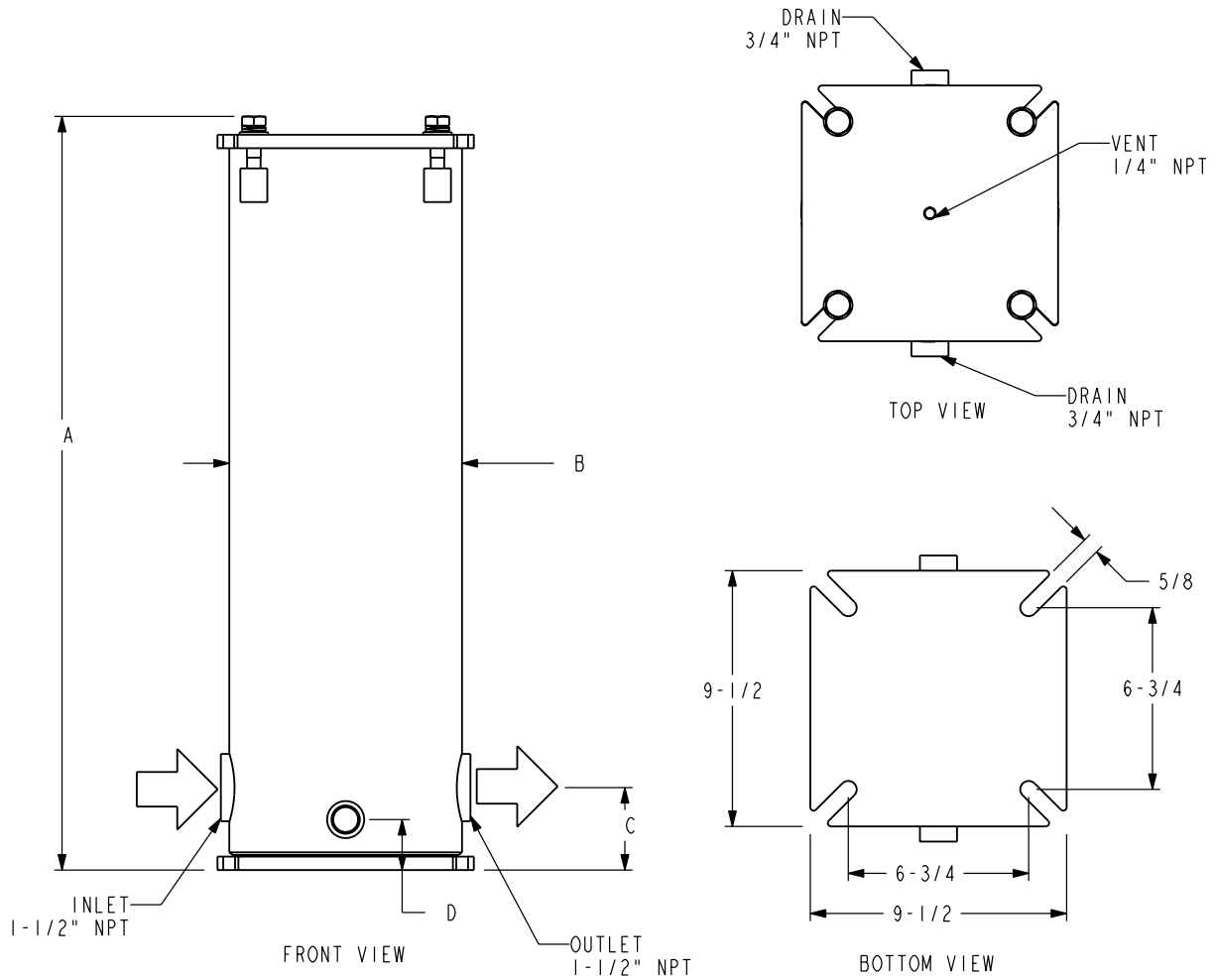
| | |
|--|--|
| Cartridge Types (not included with housings) | FO-718PL Series Pleated Media |
| | FO-618FGA Series Fiberglass Depth Media |
| | FOS-618 Series Pleated Synthetic Media |
| | LA-61801B Fuller's Earth Media |
| | AC-718 Series Aquacon ® Water Absorbing Cartridge |
| Recommended Spares | 1 Set of Spare Filter Cartridges |
| | 1 Lid Gasket |
| Accessories | G-1045A Viton Lid Gasket |



ENGINEERING YOUR SUCCESS.

SPECIFICATIONS

| Housing | VF81SYS150 | VF82SYS150 |
|-------------------------------|--|---|
| Inlet/Outlet | 1½" NPT | 1½" NPT |
| A | 27 ⁷ / ₈ " (70.8 cm) | 46 ¹ / ₈ " (117.2 cm) |
| B | 8 ⁵ / ₈ " (21.9 cm) | 8 ⁵ / ₈ " (21.9 cm) |
| C | 3" (7.6 cm) | 3" (7.6 cm) |
| D | 1¼" (3.2 cm) | 1¼" (3.2 cm) |
| Vessel Weight – Empty | 60 lbs | 90 lbs |
| Shipping Weight | 70 lbs | 110 lbs |
| Number of Standard Cartridges | 1 | 2 |
| Lid Gasket – Buna-N | G-1045 | G-1045 |
| Lid Gasket – Viton (Optional) | G-1045A | G-1045A |



Single and Double Filter Housings

VF-8 Series Filter Housings

FEATURES

- 150 psi maximum operating pressure
- Carbon steel construction
- Positive seal tie-rod cartridge mounting
- Six types of cartridge media available
- 2" NPT connections
- Painted exterior; oil-coated interior

APPLICATIONS

- Hydraulic Oil
- Kerosene
- Insulating Oil
- Gear Oil
- Diesel Fuel
- Quench Oil
- Lube Oil
- Vacuum Pump Oil
- Coolant
- Turbine Oil
- Cutting Oil
- Cooling Water
- Synthetic Oil
- Transformer Oil
- Gasoline

DESCRIPTION

- VF-81C – a single element housing designed in accordance with the ASME code
- VF-82C – a double element housing designed in accordance with the ASME code.
- VF-82B – a non-code design that holds two cartridges.

VF-8 series vessels accommodate **Aquacon**[®] super absorbent or other special purpose filter cartridges. Refer to "Cartridge Types" listed on the reverse side of this sheet.



VF-81C

VF-82B

VF-82C

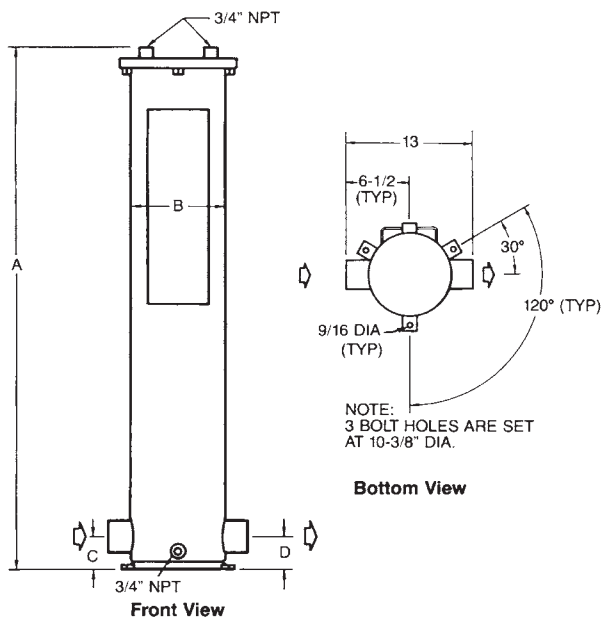


ENGINEERING YOUR SUCCESS.

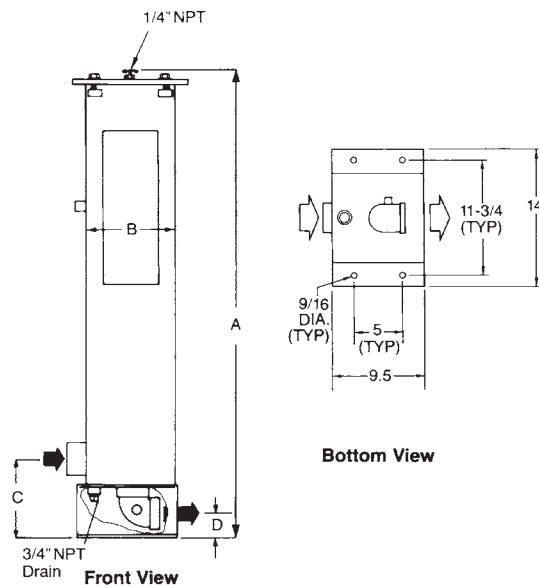
DIMENSIONS

| Housing | VF-81C | VF-82C | VF-82B |
|-------------------------------|-------------------|-------------------|-----------------|
| Inlet/Outlet | 2" NPT | 2" NPT | 2" NPT |
| A | 31.5" (80 cm) | 48.5" (123.1 cm) | 44" (111.8 cm) |
| B | 8.6" (21.9 cm) | 8.6" (21.9 cm) | 8.6" (21.9 cm) |
| C | 3" (7.6 cm) | 3" (7.6 cm) | 7.5" (19 cm) |
| D | 3" (7.6 cm) | 3" (7.6 cm) | 2.5" (6.3 cm) |
| Volume | 6 gal (22.7 l) | 10 gal (37.9 l) | 9 gal (34 l) |
| Vessel Weight – Empty | 90 lbs (40.8 kg) | 118 lbs (53.5 kg) | 86 lbs (39 kg) |
| Shipping Weight | 110 lbs (49.9 kg) | 138 lbs (62.6 kg) | 106 lbs (48 kg) |
| Number of Standard Cartridges | 1 | 2 | 2 |
| Lid Gasket – Buna-N | G-1045 | G-1045 | G-1045 |

VF81C and VF82C



VF82B



ORDERING INFORMATION (SPECIFY)

| | |
|---|---|
| Housing | VF81C150 (ASME Code Design) |
| | VF82C150 (ASME Code Design) |
| | VF82B150 (Non-ASME Code Design) |
| | ASME Code Stamp – Specify if Required |
| Cartridge Types (not included with housing) | FO-718PL Series Pleated Synthetic Media |
| | FOS-618PL Series Pleated Media |
| | FO-618FGA Series Fiberglass Depth Media |
| | LA-61801B Fuller's Earth Media |
| | AC-718 Series Aquacon Free Water-Absorbing Media |
| | SD-718 SuperDri ® Dissolved Water Removal Media |

| | |
|--------------------|---|
| Recommended Spares | 6 Spare Filter Cartridges |
| | 1 Lid Gasket |
| Accessories | #120-A Direct Reading Gammon Gauge, piston type |
| | #120-F Differential Pressure Gauge |
| | G-1045 Viton Lid Gasket |



ENGINEERING YOUR SUCCESS.

Filter Housing for Dirt, Water and Acid Removal from Oil & Fuels

VF-71E Series Filter Housing

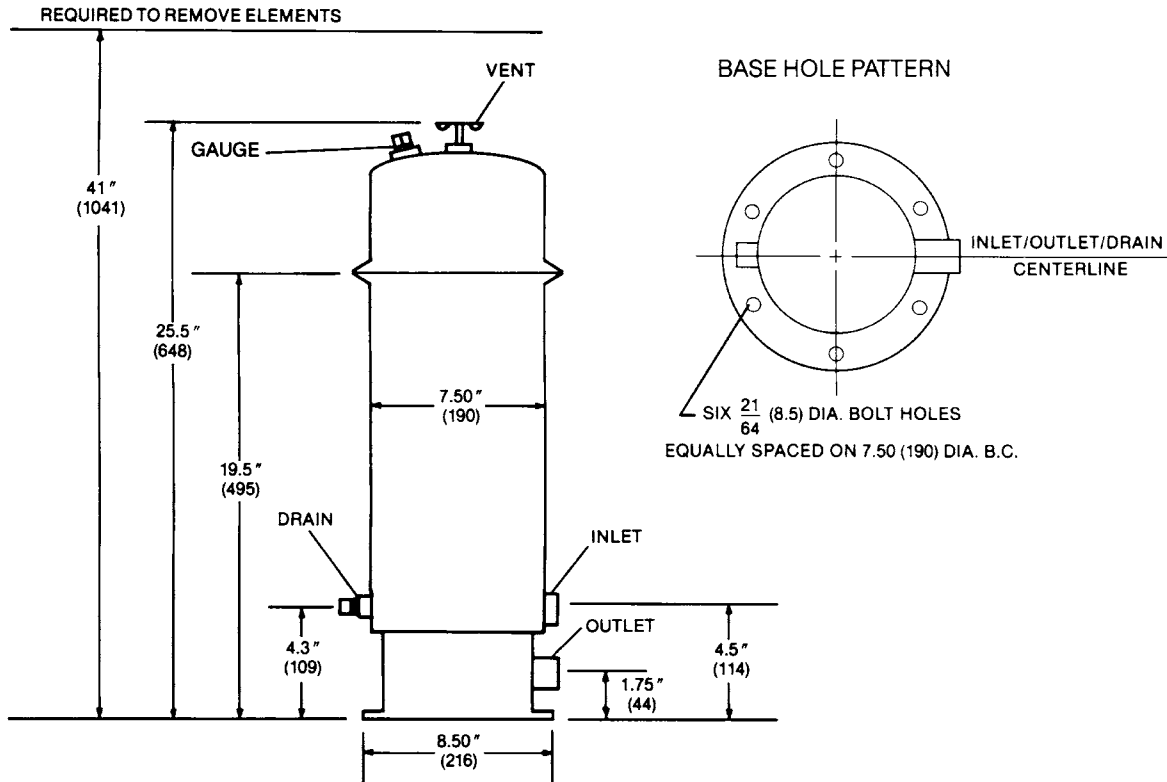
FEATURES

- No tools required for changeout
- 150 psi design pressure
- TGIC Polyester powder coated interior and exterior
- Positive O-ring closure

APPLICATIONS

- Insulating Oil
- Kerosene
- Turbine Oil
- Hydraulic Oil
- Gasoline
- Lube Oil
- Cutting Oil
- Synthetic Oil
- Water/Glycol
- Diesel Fuel
- Biodiesel
- Vacuum Pump Oil





Dimensions shown in inches (millimeters).

CARTRIDGE SELECTION

Water and Dirt Removal – AC-718 Series *Aquacon*® Cartridges remove both water and dirt from all oils and fuels. SD-718 *Superdri*® Cartridges remove dissolved water from insulating oils.

Acid Removal – LA-71801B Cartridges contain the most effective form of fuller's earth available. LB-71801 Cartridges contain activated alumina. Field proven in vacuum pump oil applications.

Solids Removal – FO-718PL Series high surface area pleated cartridges are the most cost effective for particulate contaminant removal. FOS-618/718PL Series all synthetic media cartridges are also available for particle removal. For removing amorphous, soft contaminants, FO-618FGA Series Cartridges with fiberglass depth media are often the most cost effective.

SPECIFICATIONS

- 14 GA. (2 mm) carbon steel shell
- 150 psi (1034 k Pa) max operating pressure
- 250°F (121°C) design temperature
- Buna-N O-ring lid gasket
- TGIC Polyester powder coated interior and exterior
- Holds one cartridge
- Inlet and outlet – 3/4" NPT
- Drain – 3/4" NPT
- Vent and gauge fittings – 1/4" NPT
- Dry weight without cartridge – 17 lbs. (7.7 kg)
- Volume without cartridge – 3.8
- Shipping weight – 19 lbs. (8.6 kg)
- U.S. gallons (14.4 l)

ORDERING INFORMATION

Specify Model VF-71E Filter Vessel. Unit is shipped as shown above with Buna-N Lid Gasket installed but without filter cartridge installed. Desired filter cartridges to be specified separately.

RECOMMENDED SPARES

- 6 filter cartridges
- 1 G-1016 Buna-N Lid Gasket

Note: If Viton-A lid Gasket is desired, order G-1016A Gasket and replace Buna-N gasket that is installed.



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High Efficiency Media Filter Cartridges

FOS Series

DESCRIPTION

Parker Velcon FOS Series synthetic media cartridges provide excellent filtration performance for a wide variety of industrial applications. They excel in applications where water or chemicals cause softening or degradation of conventional resin impregnated cellulose (pleated paper) filter media.

Due to the finer synthetic fibers used, FOS cartridges have a low pressure drop. Replacing an equivalent size paper filter will, in many cases, result in improved filtration efficiency, higher flow rates, longer service life, and significant cost savings.

A selection of FOS Series cartridges, suitable for a wide variety of applications, is offered:

FOS-512PL25 and FOS-718PL25 have a nominal 25 micron filtration rating. They are especially effective with cutting oils, and in some cases have had five times the life of equivalent size paper filters.

FOS-618PL05 and FOS-636PL05 have a nominal 5 micron filtration rating. They provide improved filtration for synthetic-based compressor lube oil applications.

The 0.8 micron rated FOS-618PLP8 and FOS-636PLP8 are excellent "fine particle removal" filters and frequently are installed in existing lube oil filtration systems to upgrade system cleanliness.

FOS-618PL1/2 and FOS-636PL1/2 have a nominal 0.5 micron

filtration rating. These models provide efficient removal of extremely fine particles without sacrificing cartridge life. They are used where tough ISO code oil cleanliness is needed.

FEATURES

- Superior Filtration Efficiency
- Long-Life Durability
- Low Pressure Drop
- High Flow Rates
- No New Hardware Required

APPLICATIONS

- All Hydrocarbon Fuels
- Cutting Oils
- Insulating Oils
- Glycols
- Toluol
- Naphtha
- Diesel Fuel
- Lube Oils
- Hydraulic Oils
- Water Emulsion Coolants
- Biodiesel Fuel
- Synthetic Oils
- Ethyl Alcohol
- Degreasing Fluids



FOS-636PLP8 , FOS-618PL1/2,
FOS-618PL8, FOS-512PL25



ENGINEERING YOUR SUCCESS.

GENERAL SPECIFICATION

- Collapse strength 75 psi
- Max. Operating temperature 250°F (121.1°C)
- pH operating range 3 - 9
- Recommended change-out at 25 psid differential pressure or after one year, whichever occurs first
- Buna-N gasket material
- Filter media are glass micro-fibers backed by spun-bonded polyester and metal screen. Twenty-five micron designs are spun-bonded polyester only.
- Metal components are aluminized steel.
- FOS-512PL25 end caps are aluminum.
- End cap bonding material is urethane.

CARTRIDGE SELECTION TABLE

| Cartridge Model | O.D. (in.) | I.D. (in.) | Length (in.) | Surface Area (in. ²) | Nominal ⁽¹⁾ Rating (µm) | Beta | Size ⁽²⁾ where Beta=75 | ACFTD Capacity (GMS) |
|-----------------|-------------------------------|--------------------------------|--------------------------------|----------------------------------|------------------------------------|------|-----------------------------------|----------------------|
| FOS-512PL25 | 5 ⁵ / ₈ | n.a. | 12 ¹ / ₄ | 2390 | 25 | n.a. | 60 | 210 |
| FOS-718PL25 | 6 ¹ / ₄ | 2 ⁹ / ₁₆ | 18 | 3970 | 25 | n.a. | 60 | 360 |
| FOS-618PL05 | 6 | 2 ⁹ / ₁₆ | 18 | 2000 | 5 | 3.5 | 37 | 172 |
| FOS-618PLP8 | 6 | 2 ⁹ / ₁₆ | 18 | 2000 | 0.8 | 90 | 8 | 87 |
| FOS-618PL1/2 | 6 | 2 ⁹ / ₁₆ | 18 | 2000 | 1/2 | 250 | 4 | 71 |
| FOS-636PL05 | 6 | 2 ⁹ / ₁₆ | 36 | 4160 | 5 | 3.5 | 37 | 358 |
| FOS-636PLP8 | 6 | 2 ⁹ / ₁₆ | 36 | 4160 | 0.8 | 90 | 8 | 180 |
| FOS-636PL1/2 | 6 | 2 ⁹ / ₁₆ | 36 | 4160 | 1/2 | 250 | 4 | 148 |

NOTES: (1) Nominal gravimetric filter micron rating.

(2) Particle size (microns) where Beta equals 75. Often referred to as the "absolute" rating of the cartridge.

FILTER SIZING INFORMATION

CARTRIDGE FLOW RATE (US GPM) VS. VISCOSITY DATA

FOR 2 PSI AND 5 PSI INITIAL PRESSURE DROPS

| CARTRIDGE | 33 SUS 2 CS | | 46 SUS 6 CS | | 59 SUS 10 CS | | 98 SUS 20 CS | | 142 SUS 30 CS | | 187 SUS 40 CS | | 233 SUS 50 CS | |
|--------------|----------------|-------|----------------|-------|-----------------|-------|-----------------|-------|------------------|-------|------------------|-------|------------------|-------|
| | 2 psi | 5 psi | 2 psi | 5 psi | 2 psi | 5 psi | 2 psi | 5 psi | 2 psi | 5 psi | 2 psi | 5 psi | 2 psi | 5 psi |
| FOS-718PL25 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 92 | 100 |
| FOS-614PL05 | 95 | 100 | 91 | 100 | 87 | 100 | 75 | 100 | 62 | 100 | 49 | 100 | 36 | 90 |
| FOS-618PL05 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 80 | 100 | 64 | 100 |
| FOS-618PLP8 | 100 | 100 | 100 | 100 | 100 | 100 | 52 | 100 | 34 | 85 | 26 | 65 | 20 | 51 |
| FOS-618PL1/2 | 100 | 100 | 100 | 100 | 68 | 100 | 34 | 185 | 22 | 55 | 17 | 43 | 13 | 34 |
| FOS-636PL05 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 184 | 200 | 160 | 200 |
| FOS-636PLP8 | 200 | 200 | 200 | 200 | 200 | 200 | 104 | 200 | 68 | 170 | 52 | 130 | 41 | 102 |
| FOS-636PL1/2 | 200 | 200 | 200 | 200 | 136 | 200 | 68 | 170 | 44 | 110 | 34 | 86 | 27 | 68 |



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| CARTRIDGE | 348 SUS 75 CS | | 463 SUS 100 CS | | 927 SUS 200 CS | | 1390 SUS 300 CS | | 1853 SUS 400 CS | | 2316 SUS 500 CS | | 4632 SUS 1000 CS | |
|--------------|------------------|-------|-------------------|-------|-------------------|-------|--------------------|-------|--------------------|-------|--------------------|-------|---------------------|-------|
| | 2 psi | 5 psi | 2 psi | 5 psi | 2 psi | 5 psi | 2 psi | 5 psi | 2 psi | 5 psi | 2 psi | 5 psi | 2 psi | 5 psi |
| FOS-718PL25 | 62 | 100 | 46 | 100 | 23 | 58 | 15 | 38 | 11 | 29 | 9 | 23 | 5 | 11 |
| FOS-614PL05 | 30 | 70 | 23 | 56 | 11 | 28 | 7 | 17 | 6 | 14 | 4 | 11 | 2 | 6 |
| FOS-618PL05 | 42 | 100 | 32 | 80 | 16 | 40 | 10 | 25 | 8 | 20 | 6 | 15 | 3 | 8 |
| FOS-618PLP8 | 14 | 35 | 10 | 25 | 5 | 13 | 3 | 8 | 3 | 8 | 2 | 5 | 1 | 3 |
| FOS-618PL1/2 | 9 | 23 | 7 | 18 | 3 | 8 | 2 | 5 | 2 | 5 | 1 | 3 | 1 | 2 |
| FOS-636PL05 | 84 | 200 | 64 | 160 | 32 | 80 | 21 | 53 | 16 | 40 | 12 | 30 | 6 | 15 |
| FOS-636PLP8 | 28 | 70 | 21 | 53 | 10 | 25 | 7 | 18 | 5 | 13 | 4 | 10 | 2 | 5 |
| FOS-636PL1/2 | 18 | 45 | 14 | 35 | 7 | 18 | 4 | 10 | 3 | 8 | 3 | 8 | 1 | 3 |

Notes:

1. Figures in table are flow rates (US GPM) that will cause a pressure drop of 2 or 5 psi across the cartridge.
2. These flow curves are for the cartridges only. To determine additional pressure losses caused by vessel components, see Form VEL1711

CONTAMINANT CAPACITY

Parker recommends filter cartridges be changed when they reach 25 psi differential or in accordance with your company's fuel handling procedures. The amount of contaminant a cartridge will hold before that point depends on many factors, the key one being the nature of the contaminant itself. A hard, particulate contaminant has very different filtration characteristics than a soft, gel-like contaminant.

Accurately estimating the life of a cartridge in a given application, therefore, is extremely difficult. However, when a cartridge has been sized for an initial pressure drop of 2 psi, the following rule of thumb is often employed for particulate contaminants: A 1 or 2 micrometer cartridge will hold up to 3 pounds of contaminant, and a 5 micrometer or greater cartridge will hold up to 5 pounds.

REDUCED FLOW RATE EFFECTS

The filter sizing above is based on a 2 psi initial pressure differential which is a widely accepted industry standard. However, where heavy contaminant loads are anticipated, a substantial savings in operating costs for cartridges and filter change labor can be achieved by over-sizing the filter. Reducing the flow rate per cartridge in half will increase the contaminant capacity of each cartridge by 30 to 50 percent. This means that doubling the size of the filter will increase the total throughput between cartridge changeouts by as much as three times.

Pleated Media Filter Cartridges

FO Series High Efficiency, Long Life Microfilter Cartridges

SPECIFICATIONS

- 75 psi Collapse strength
- 5 - 9 Operating pH range
- Micron ratings from 1/4 to 75
- 98%+ Nominal filtration efficiency
- 250°F (121.1°C) Maximum operating temperature
- Recommended changeout differential pressure - 25 psid
- Multi-pass (Beta Ratio) data available on request

For information about Flow Ratings with various viscosity fluids, refer to pages 5.

Please note - The outer wrap of a cartridge can be either nylon jacket, beaming paper, or PVC-coated screen wrap. Actual cartridges may not look exactly like those shown in photo.

BENEFITS

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

CARTRIDGE INFORMATION

| Model | Dim. | Nominal Micron Rating | Protective Outer Wrap |
|-------------|------------------------|-----------------------|-----------------------|
| FO-718PLP3 | 6¼" x 18" x 2 ¾" ID | 0.3 | No |
| FO-718PL1/2 | | ½ | No |
| FO-718PL01 | | 1 | Yes |
| FO-718PL02 | | 2 | Yes |
| FO-718PL05 | | 5 | Yes |
| FO-718PL10 | | 10 | Yes |
| FO-718PL15 | | 15 | Yes |
| FO-718PL25 | | 25 | Yes |
| FO-718PL50 | | 50 | Yes |
| FO-736PLP3 | | 6¼" x 36" 2 ¾" ID | 0.3 |
| FO-736PL1/2 | ½ | | No |
| FO-736PL05 | 5 | | Yes |
| FO-736PL15 | | 15 | Yes |
| FO-822PLP3 | 8" x 22 ½" x 2" ID | 0.3 | No |
| FO-822PL1/2 | | ½ | No |
| FO-822PL05 | | 5 | No |
| FO-829PL05 | 8" x 29 ½" 2" ID | 5 | No |



Fiberglass Depth Filter Cartridges

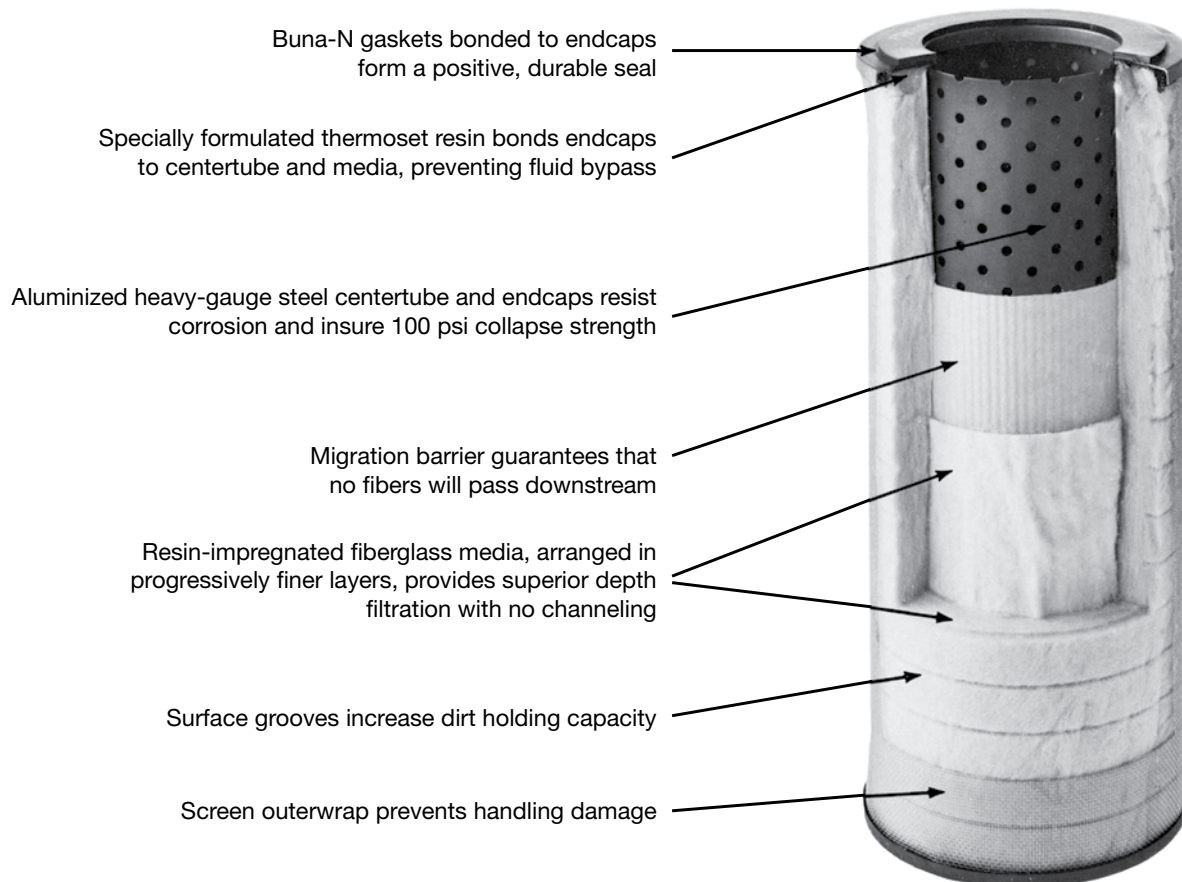
FO-xxxFGA Series. High Efficiency, Long Life Cartridges for Oils & Fuels

DESCRIPTION

Parker Velcon Fiberglass Depth Filter Cartridges have proven superior in filtering colloidal or slimy contaminants. Lube oil and EDM coolant filtration are this type of application where fiberglass elements consistently filter better with dramatically longer life than other types of media.

APPLICATIONS

- Hydraulic Oils
- Cutting Oils
- Glycols
- Degreasing Fluids
- Water Emulsion Coolants
- Naphtha
- Lube Oils
- Ethyl Alcohol
- Boiler Feed Water
- Fuels
- Synthetic Oils
- Biodiesel



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CARTRIDGE INFORMATION

| Model Number | O.D. (inches) | I.D. (inches) | Length (inches) | Micron Rating |
|--------------|------------------|--------------------------------|--------------------|---------------|
| FO-618FGA5 | 6 | 2 ⁹ / ₁₆ | 18 | 5 |
| FO-618FGA10 | 6 | 2 ⁹ / ₁₆ | 18 | 10 |
| FO-618FGA25 | 6 | 2 ⁹ / ₁₆ | 18 | 25 |

SPECIFICATIONS

- 100 psi collapse strength
- 5 - 9 operating pH range
- 98% + filtration efficiency
- 250°F (121.1°C) maximum operating temperature
- Recommended changeout : 25 psid



FILTER SIZING INFORMATION

CARTRIDGE FLOW RATE (USGPM) VS. VISCOSITY DATA FOR 2 PSI AND 5 PSI INITIAL PRESSURE DROPS

| Cartridge | 33 SUS 2 CS | | 39 SUS 4 CS | | 46 SUS 6 CS | | 59 SUS 10 CS | | 98 SUS 20 CS | | 142 SUS 30 CS | | 187 SUS 40 CS | |
|-------------|----------------|-------|----------------|-------|----------------|-------|-----------------|-------|-----------------|-------|------------------|-------|------------------|-------|
| | 2 psi | 5 psi | 2 psi | 5 psi | 2 psi | 5 psi | 2 psi | 5 psi | 2 psi | 5 psi | 2 psi | 5 psi | 2 psi | 5 psi |
| FO-718PL1/2 | 50 | 50 | 50 | 50 | 38 | 50 | 23 | 50 | 12 | 29 | 8 | 19 | 6 | 15 |
| FO-718PL01 | 50 | 50 | 50 | 50 | 38 | 50 | 23 | 50 | 12 | 29 | 8 | 19 | 6 | 15 |
| FO-718PL02 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 31 | 50 | 21 | 50 | 16 | 39 |
| FO-718PL05 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 |
| FO-718PL15 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 |
| FO-718PL50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 |
| FO-618FGA5 | 68 | 68 | 66 | 66 | 42 | 65 | 25 | 60 | 13 | 31 | 8 | 21 | 6 | 16 |
| FO-618FGA10 | 68 | 68 | 66 | 66 | 50 | 65 | 30 | 64 | 15 | 38 | 10 | 25 | 8 | 19 |
| FO-618FGA25 | 68 | 68 | 66 | 66 | 50 | 65 | 30 | 64 | 15 | 38 | 10 | 25 | 8 | 19 |

| Cartridge | 233 SUS 50 CS | | 348 SUS 75 CS | | 463 SUS 100 CS | | 927 SUS 200 CS | | 1390 SUS 300 CS | | 1853 SUS 400 CS | | 2316 SUS 500 CS | |
|-------------|------------------|-------|------------------|-------|-------------------|-------|-------------------|-------|--------------------|-------|--------------------|-------|--------------------|-------|
| | 2 psi | 5 psi | 2 psi | 5 psi | 2 psi | 5 psi | 2 psi | 5 psi | 2 psi | 5 psi | 2 psi | 5 psi | 2 psi | 5 psi |
| FO-718PL1/2 | 5 | 12 | 3 | 8 | 2 | 6 | 1 | 3 | 1 | 2 | 1 | 2 | - | 1 |
| FO-718PL01 | 5 | 12 | 3 | 8 | 2 | 6 | 1 | 3 | 1 | 2 | 1 | 2 | - | 1 |
| FO-718PL02 | 12 | 31 | 8 | 21 | 6 | 16 | 3 | 8 | 2 | 5 | 2 | 4 | 1 | 3 |
| FO-718PL05 | 41 | 50 | 27 | 50 | 20 | 50 | 10 | 25 | 7 | 17 | 5 | 13 | 4 | 10 |
| FO-718PL15 | 50 | 50 | 50 | 50 | 42 | 50 | 21 | 50 | 14 | 35 | 10 | 26 | 8 | 21 |
| FO-718PL50 | 50 | 50 | 50 | 50 | 50 | 50 | 30 | 50 | 20 | 50 | 15 | 38 | 12 | 30 |
| FO-618FGA5 | 5 | 13 | 3 | 8 | 2 | 6 | 1 | 3 | 1 | 2 | 1 | 2 | 1 | 1 |
| FO-618FGA10 | 6 | 15 | 4 | 10 | 3 | 8 | 1 | 4 | 1 | 3 | 1 | 2 | 1 | 2 |
| FO-618FGA25 | 6 | 15 | 4 | 10 | 3 | 8 | 1 | 4 | 1 | 3 | 1 | 2 | 1 | 2 |

NOTE: Figures in table are flow rates (US GPM) that will cause a pressure drop of 2 or 5 psi across the cartridge.

CONTAMINANT CAPACITY

Parker recommends filter cartridges be changed when they reach 25 psi differential or in accordance with your company's fuel handling procedures. The amount of contaminant a cartridge will hold before that point depends on many factors, the key one being the nature of the contaminant itself. A hard, particulate contaminant has very different filtration characteristics than a soft, gel-like contaminant.

Accurately estimating the life of a cartridge in a given application, therefore, is extremely difficult. However, when a cartridge has been sized for an initial pressure drop of 2 psi, the following rule of thumb is often employed for particulate contaminants: A 1 or 2 micrometer cartridge will hold up to 3 pounds of contaminant, and a 5 micrometer or greater cartridge will hold up to 5 pounds.

REDUCED FLOW RATE EFFECTS

The filter sizing above is based on a 2 psi initial pressure differential which is a widely accepted industry standard. However, where heavy contaminant loads are anticipated, a substantial savings in operating costs for cartridges and filter change labor can be achieved by over-sizing the filter. Reducing the flow rate per cartridge in half will increase the contaminant capacity of each cartridge by 30 to 50 percent. This means that doubling the size of the filter will increase the total throughput between cartridge changeouts by as much as three times.



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Aquacon[®] AC Series

AC Series for Removal of Water and Dirt from Oils and Fuels

Aquacon[®] cartridges are constructed to remove dirt and water from hydrocarbon and other oils. The outer media layer filters out silt, rust and other particulate contaminants. The inner layers absorb water and chemically bond it so that no water will release downstream.

When the Aquacon Cartridge reaches its water holding limit, the media swells shut and the differential pressure rapidly increases. This signals the operator that the cartridge must be changed.

BENEFITS

- Removes free and emulsified water to less than 2 ppm
- Differential pressure increase alerts operator to change cartridges
- Effectively filters silt and other particulates
- No media migration or “linting”
- Easy to install and remove
- Does not affect oil additives
- Fits standard filter housings

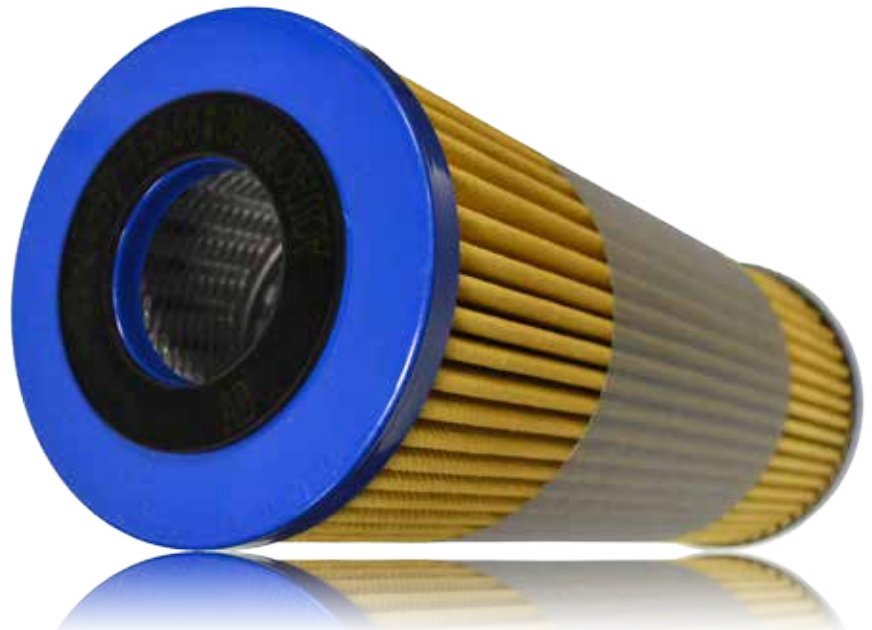
TECHNICAL INFORMATION

- Maximum operating temperature is 250°F (121.1°C).
- Aquacon Cartridges will shut off flow when loaded with water or dirt. Appropriate precautions should be taken in critical applications where oil flow must be maintained.
- With some lube and hydraulic oils all of the water may not be removed in one pass, and extra passes will be required for total removal.
- Water capacity for the AC-718 cartridges ranges from 2 to 4 quarts.

APPLICATIONS

- Gasoline
- Hydraulic Oil
- Kerosene
- Turbine Lube Oil
- Diesel Fuel
- Quench Oil
- Insulating Oil
- Synthetic Oil
- Biodiesel
- Phosphate Ester Oil

WARNING: Absorbent-type monitor cartridges will not remove water from fuel containing alcohol-blending agents (commonly called gasohol). For removal of solids, please use Velcon particle removal filters specifically made for gasohol. Consult your Parker representative



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CARTRIDGE INFORMATION

| Model Number | Micrometer Reading | | I.D. (in.) | O.D. (in.) | Length (in.) | Collapse Pressure, psi | Interchange Information |
|--------------------------|--------------------|------------------------|------------|------------|--------------|------------------------|---|
| | Normal | Beta _x = 75 | | | | | |
| AC-718P3 ⁽¹⁾ | 0.3 | 2 | 2 9/16 | 6 1/4 | 18 | 75 | Fits Parker Velcon industrial housings and portable filters, interchangeable with Parker Velcon FO-718PL and FO-736PL Series Cartridges |
| AC-718P4D | 0.4 | 2.5 | 2 9/16 | 6 1/4 | 18 | 75 | |
| AC-7181/2 ⁽¹⁾ | 0.5 | 3 | 2 9/16 | 6 1/4 | 18 | 75 | |
| AC-71801 | 1 | 6 | 2 9/16 | 6 1/4 | 18 | 75 | |
| AC-71805 | 5 | 40 | 2 9/16 | 6 1/4 | 18 | 75 | |
| AC-7361/2 ⁽¹⁾ | 0.5 | 3 | 2 9/16 | 6 1/4 | 36 | 75 | |
| AC-73601 | 1 | 6 | 2 9/16 | 6 1/4 | 36 | 75 | |
| AC-73605 | 5 | 40 | 2 9/16 | 6 1/4 | 36 | 75 | |

Notes: (1) The AC-718P3, AC-7181/2 and AC-7361/2 are increased surface area/reduced water capacity cartridges specifically designed for circuit breaker oil.

CARTRIDGE FLOW RATE (USGPM) VS. VISCOSITY DATA

FOR 2 PSI AND 5 PSI INITIAL PRESSURE DROPS

| CARTRIDGE | 33 SUS | | | 39 SUS | | 46 SUS | | 59 SUS | | 98 SUS | | 142 SUS | | 187 SUS | |
|-----------|--------|-------|-------|--------|-------|--------|-------|--------|-------|--------|-------|---------|-------|---------|-------|
| | 2 CS | | | 4 CS | | 6 CS | | 10 CS | | 20 CS | | 30 CS | | 40 CS | |
| | CAP | 2 PSI | 5 PSI | 2 PSI | 5 PSI | 2 PSI | 5 PSI | 2 PSI | 5 PSI | 2 PSI | 5 PSI | 2 PSI | 5 PSI | 2 PSI | 5 PSI |
| AC-718P3 | 670 | 50 | 50 | 33 | 50 | 22 | 50 | 13 | 32 | 7 | 17 | 4 | 10 | 3 | 8 |
| AC-7181/2 | 670 | 50 | 50 | 36 | 50 | 24 | 50 | 15 | 36 | 7 | 18 | 5 | 12 | 4 | 9 |
| AC-71801 | 1850 | 50 | 50 | 36 | 50 | 24 | 50 | 15 | 36 | 7 | 18 | 5 | 12 | 4 | 9 |
| AC-71805 | 1850 | 50 | 50 | 50 | 50 | 50 | 50 | 33 | 50 | 17 | 42 | 11 | 28 | 8 | 21 |
| AD-71825 | 1850 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 41 | 50 | 27 | 50 | 20 | 50 |

| CARTRIDGE | 233 SUS | | 348 SUS | | 463 SUS | | 927 SUS | | 1390 SUS | | 1853 SUS | | 2316 SUS | |
|-----------|---------|-------|---------|-------|---------|-------|---------|-------|----------|-------|----------|-------|----------|-------|
| | 50 CS | | 75 CS | | 100 CS | | 200 CS | | 300 CS | | 400 CS | | 500 CS | |
| | 2 PSI | 5 PSI | 2 PSI | 5 PSI | 2 PSI | 5 PSI | 2 PSI | 5 PSI | 2 PSI | 5 PSI | 2 PSI | 5 PSI | 2 PSI | 5 PSI |
| AC-718P3 | 3 | 7 | 2 | 5 | 1 | 3 | - | 1 | - | 1 | - | - | - | - |
| AC-7181/2 | 3 | 7 | 2 | 5 | 1 | 4 | 1 | 2 | - | 1 | - | 1 | - | - |
| AC-71801 | 3 | 7 | 2 | 5 | 1 | 4 | 1 | 2 | - | 1 | - | 1 | - | - |
| AC-71805 | 7 | 17 | 4 | 11 | 3 | 8 | 2 | 4 | 1 | 3 | 1 | 2 | 1 | 2 |

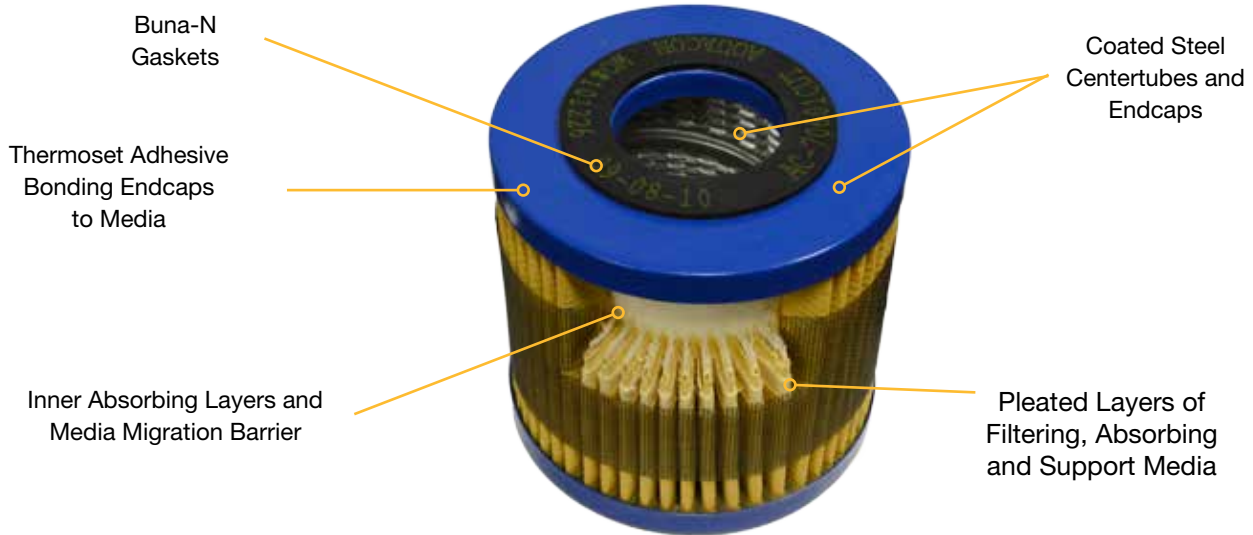
NOTES:

- Figures in table are flow rates (USGPM) that will cause a pressure drop of 2 or 5 psi across the cartridge.
- "CAP" is the water holding capacity in milliliters for 33 SUS (2 CS) fuel at the flow rates shown. These flow rates are the generally recommended maximum values for the specific cartridges.



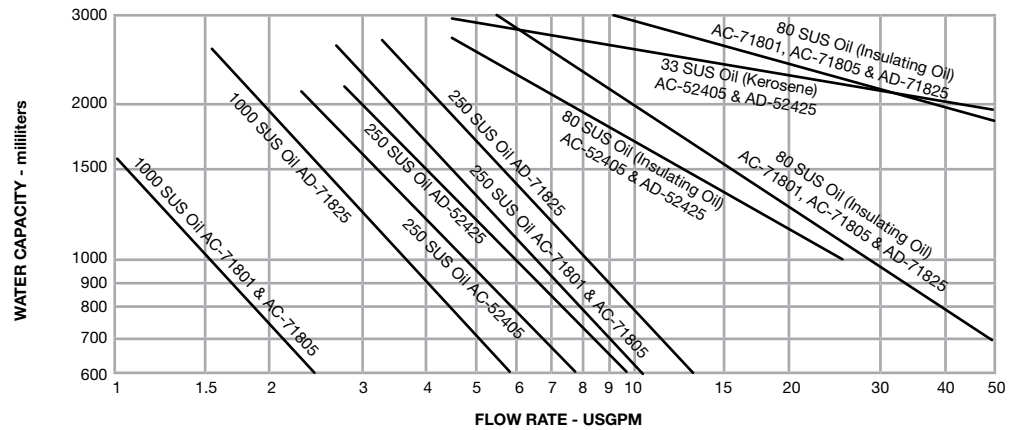
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TYPICAL AQUACON® CARTRIDGE CONSTRUCTION

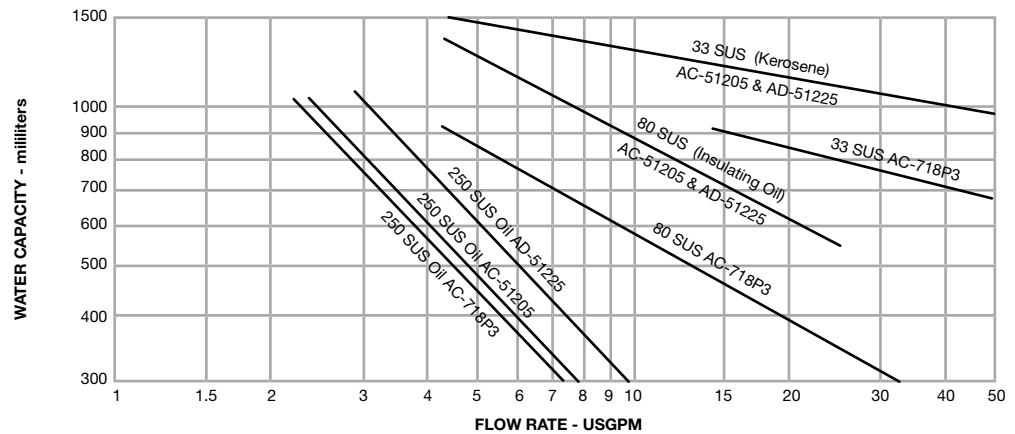


WATER HOLDING CAPACITY

Water capacity decreases when viscosity or flow rate increases. The graphs below show typical characteristics. For any specific application you must trade off between capacity (how much water the cartridge will hold before it must be changed) and flow rate (size of filter housing and initial cost). For long term operating cost benefits, it is always best to use a larger housing (reduce the flow rate per cartridge).



WATER CAPACITY AS A FUNCTION OF VISCOSITY AND FLOW RATE
AC-52405, AD-52425, AC-71801, AC-71805, and AD-71825 CARTRIDGES



WATER CAPACITY AS A FUNCTION OF VISCOSITY AND FLOW RATE
AC-51205, AD-51225, AC-718P3, and AC-7181/2 CARTRIDGES

Insulating Oil Filters

Aquacon® AC-8 Series High Performance Cartridges for Removing Carbon and Water. Bring Insulating Oil Into Specification with Major Cost Savings

FEATURES

- **35% or more savings with single Aquacon** cartridge replacement of multiple disk-type cartridges
- Positive CHANGE CARTRIDGE signal
- Choice of carbon removal efficiency
- Free and emulsified water removal
- Dissolved water removal with P4D Cartridges
- Messy disk-type element separation eliminated

DESCRIPTION

Originally developed to meet the demanding requirements of aviation fuel filtration. They remove dirt and water with very high efficiency. The AC-8 Series Aquacon® Cartridges were developed specifically for use with insulating oils. These cartridges provide the most efficient, cost effective conditioning available for insulating and other oils. They have been field proven at numerous electrical utilities.

The Aquacon® accordion pleated style design provides large surface areas of filter media in compact, small diameter cartridges. Glass microfiber filtration medias are combined with water removing super-absorbent polymers in four different configurations; 01, 1/2, P3, and P4D. These four cartridge styles fill a range of cost/performance requirements.

The four filter media styles are offered in integral 1-Hi 2-Hi, 3-Hi, and 4-Hi cartridges, shown above, to replace one, two, three, or four conventional stacked disk-type cartridges. In the center photo, three disk cartridges are shown being replaced by a single Aquacon® AC-8221/2 cartridge.

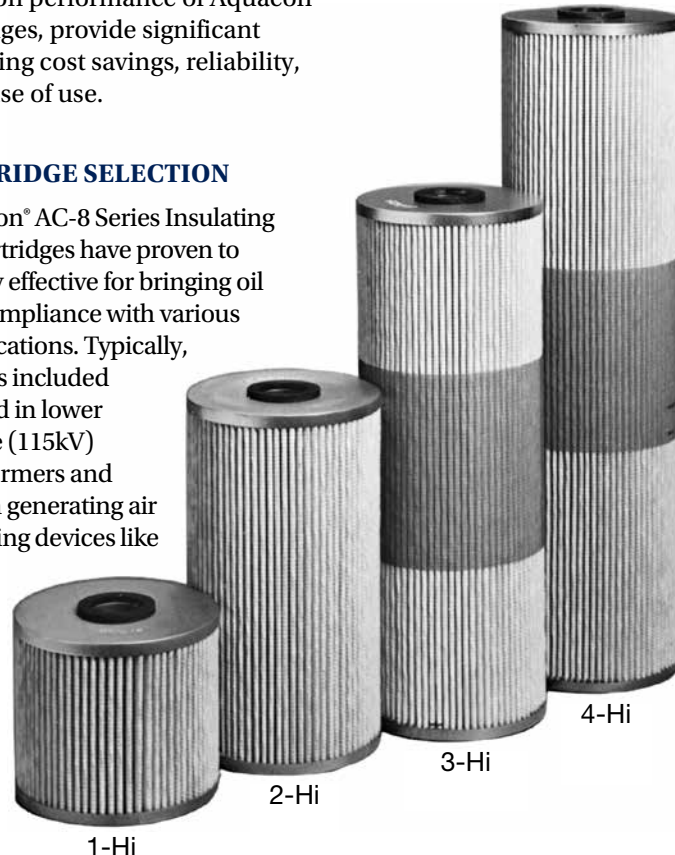
The compact, integral design makes these cartridges easier to install and replace than the disk-type. Heavy duty construction has eliminated the problems of used-element separation associated with the disk-type. These features, combined with the outstanding filtration performance of Aquacon® cartridges, provide significant operating cost savings, reliability, and ease of use.

CARTRIDGE SELECTION

Aquacon® AC-8 Series Insulating Oil Cartridges have proven to be very effective for bringing oil into compliance with various specifications. Typically, this has included oil used in lower voltage (115kV) transformers and carbon generating air breathing devices like circuit

breakers, tap changers and other switch gear. Typical dielectric voltages after one pass are 30kv and greater as measured by ASTM D-877 (flat disc electrodes). Cartridge filter media style choices include:

1/2, 0.5 Micron Cartridges are the most popular and cost effective for general field use. Carbon removal capacity and efficiency are greatly increased compared to the 1 micron design, making these a natural for circuit breakers, etc. Water capacity is reduced, but has proven adequate for most applications.



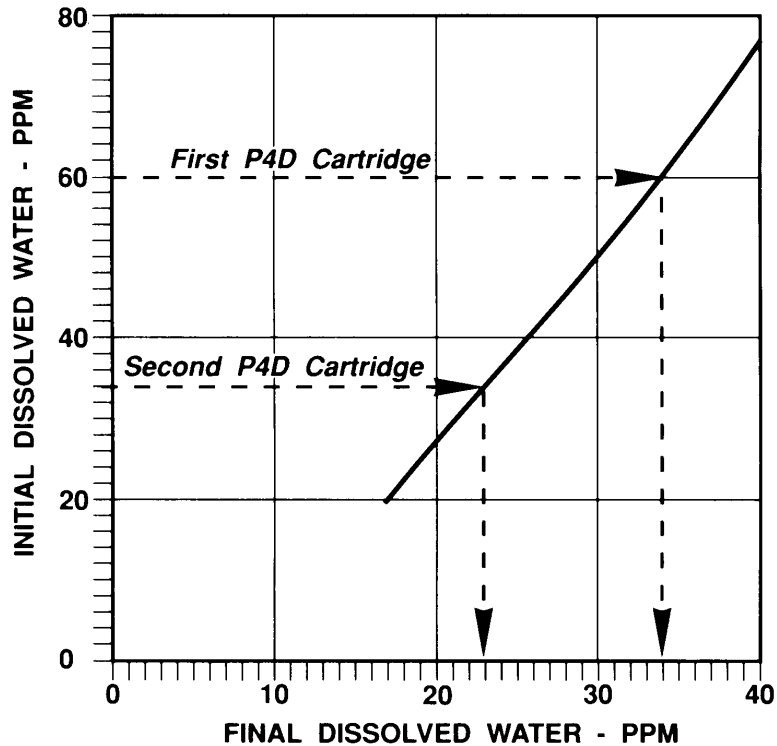
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1 Micron Cartridges have maximum water capacity combined with moderate carbon removal capability. They are used where removing free and emulsified water is the primary concern.

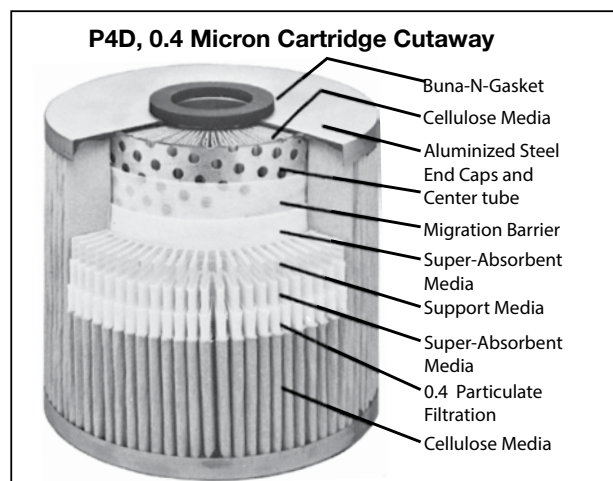
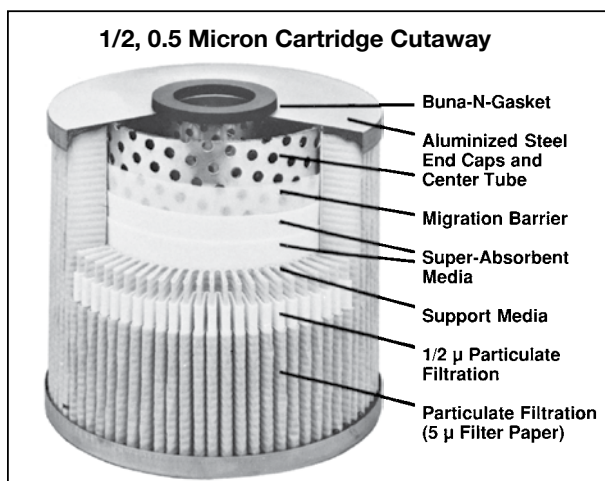
P3, 0.3 Micron Cartridges are a variation of the 1/2 micron design. They contain a thin layer of 0.3 micron rated filter media sandwiched behind the same high carbon capacity filter media used in the 1/2 micron cartridge. This combination of filter medias results in a cartridge with excellent carbon capacity, suitable for applications where extra fine filtration is required.

P4D, 0.4 Micron Cartridges add dissolved water removing capability to the performance features. This results in lower total water concentrations as measured by ASTM D-1533 (Karl Fisher), and typically further improves D-1816 breakdown voltage (spherical, or "VDE", electrodes.)

P4D Cartridges have the greatest free and emulsified water removal capacity (over 800 ml), plus dissolved water removal capabilities. Carbon removal efficiency and capacity are much greater than 1 micron rated cartridges.



Dissolved water removing capabilities of an AC-829P4D filtering 800 gallons of insulating oil. One cartridge lowers the dissolved water from 60 ppm to 34 ppm. Installing a second cartridge further reduces the concentration to 23 ppm.



AQUACON® CARTRIDGE CARBON & WATER FILTRATION COMPARISON

| Style | Micron Rating ⁽¹⁾ | Carbon | | Free & Emulsified Water | | Dissolved Water Removal |
|-------|------------------------------|-----------|------------|-------------------------|------------|-------------------------|
| | | Capacity | Efficiency | Capacity | Efficiency | |
| 01 | 1 | Fair | Fair | Very Good | Excellent | No |
| 1/2 | 0.5 | Excellent | Very Good | Good | Very Good | No |
| P3 | 0.3 | Excellent | Excellent | Good | Very Good | No |
| P4D | 0.4 | Very Good | Very Good | Excellent | Excellent | Yes |

(1) Micron ratings are nominal 98% based on gravimetric tests

APPLICATIONS

- Transformer Oil
- Circuit Breaker Oil
- Tap Changer Oil
- Switchgear Oil
- Askarel Oil
- Turbine Oil
- Hydraulic Oil
- Silicone Dielectric Oil

CARTRIDGE REPLACEMENT

Unique filter medias in the cartridges incorporate superabsorbent polymers which chemically lock-in water so it cannot be squeezed out. When a cartridge reaches its free water-holding capacity, the media swells and restricts the flow. The resulting increase in differential pressure signals the operator to change the cartridge.

When an Aquacon® cartridge is hit with a large slug of water, flow restriction can occur quickly causing a rapid increase in differential pressure. To prevent cartridge collapse, it is recommended that gear pumps have a pressure relief valve set at about 60 psi.

Cartridges should be changed (a) whenever differential pressure reaches 25 psi, (b) whenever there is a reduction in flow, or (c) after one year service, whichever occurs first. If these indicators are ignored, it is possible, under some conditions,

to overcome the cartridge's flow restricting capabilities. For critical applications, a pressure shut-off switch should be installed.

CARTRIDGE GENERAL SPECIFICATIONS

- Coated steel center tube and end cap
- 1/4 inch Buna-N gaskets bonded to end caps
- Center tube wraps to prevent media migration
- 75 psi minimum collapse pressure
- 250°F maximum operating temperature
- Contain no asbestos
- Aquacon filter cartridges are shipped in sealed plastic bags. P4D cartridges are oven dried and packaged with desiccant material inside two sealed bags.

RECOMMENDED MAXIMUM FLOW RATES

For typical mineral base insulating oils, initial pressure drop will be 5 psi or less.

| Cartridge | GPM |
|-----------|-----|
| 1-Hi | 13 |
| 2-Hi | 25 |
| 3-Hi | 39 |
| 4-Hi | 50 |

CONVERSION NOTE

For 8 and 12-inch filter housings built by Cuno, and 8-inch housing built by Alsop, the **Aquacon®** replacement cartridge fits with no adapters required. For Alsop 12-inch housings, a small spacer is required to ensure proper cartridge sealing. (See photo and table at right.) Spacers are supplied at no charge.

CONVERSION TABLE

| Cartridge | Spacer* |
|-----------|---------|
| 1-Hi | G-0131 |
| 2-Hi | G-0134 |
| 3-Hi | S08-478 |
| 4-Hi | S08-463 |

*1 required for Alsop 12-inch housings

HOUSINGS

Parker manufactured housings have welded carbon steel heavy-duty construction with swing bolt closures, Buna-N O-ring gaskets, and white polyester powder coat paint. See below for housing/cartridge table.

| Model | Cartridge | Qty |
|---------|-----------|-----|
| VF-1215 | AC-815 | 1 |
| VF-1222 | AC-822 | 1 |
| VF-1229 | AC-829 | 1 |



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CARTRIDGE TABLE

IMPORTANT- For maximum cost saving when replacing disk-type cartridges with Aquacon® cartridges – use a single 2-Hi cartridge to replace two disk-types, one 3-Hi to replace three disktypes, and one 4-Hi to replace four disk-types.

| Type | Model Number | Micron Rating | I.D. (in) | O.D. (in) | Length with Gaskets (in) | Interchange Information |
|------|--------------|---------------|-------------------------------|-------------------------------|---------------------------------|--|
| 1-Hi | AC-80701 | 1 | 2 | 8 | 7 ³ / ₈ | Replace single conventional 12” diameter disk cartridges (Alsop 12SS and 12SB Series, Cuno 45117, 45130, and 45218 Series) with one 1-Hi Aquacon cartridge |
| | AC-8071/2 | 0.5 | 2 | 8 | 7 ³ / ₈ | |
| | AC-807P3 | 0.3 | 2 | 8 | 7 ³ / ₈ | |
| | AC-807P4D | 0.4 | 2 | 8 | 7 ³ / ₈ | |
| 2-Hi | AC-81501 | 1 | 2 | 8 | 14 ³ / ₄ | Use one 2-Hi cartridge to replace two conventional 12” diameter disk cartridges |
| | AC-8151/2 | 0.5 | 2 | 8 | 14 ³ / ₄ | |
| | AC-815P3 | 0.3 | 2 | 8 | 14 ³ / ₄ | |
| | AC-815P4D | 0.4 | 2 | 8 | 14 ³ / ₄ | |
| 3-Hi | AC-82201 | 1 | 2 | 8 | 22 ¹ / ₈ | Use one 3-Hi cartridge to replace three conventional 12” diameter disk cartridges |
| | AC-8221/2 | 0.5 | 2 | 8 | 22 ¹ / ₈ | |
| | AC-822P3 | 0.3 | 2 | 8 | 22 ¹ / ₈ | |
| | AC-822P4D | 0.4 | 2 | 8 | 22 ¹ / ₈ | |
| 4-Hi | AC-82901 | 1 | 2 | 8 | 29 ¹ / ₂ | Use one 4-Hi cartridge to replace four conventional 12” diameter disk cartridges |
| | AC-8291/2 | 0.5 | 2 | 8 | 29 ¹ / ₂ | |
| | AC-829P3 | 0.3 | 2 | 8 | 29 ¹ / ₂ | |
| | AC-829P4D | 0.4 | 2 | 8 | 29 ¹ / ₂ | |
| 2-Hi | AC-7131/2CR | 0.5 | 1 ¹ / ₂ | 6 ¹ / ₄ | 12 ⁹ / ₁₆ | Replace two conventional 8” diameter disk cartridges (Alsop 8SS and Cuno 45109 Series) with one 2-Hi cartridge |
| 3-Hi | AC-71901CR | 1 | 1 ¹ / ₂ | 6 ¹ / ₄ | 18 ⁵ / ₈ | Replace three conventional 8” diameter disk cartridges with one 3-Hi cartridge |
| | AC-7191/2CR | 0.5 | 1 ¹ / ₂ | 6 ¹ / ₄ | 18 ⁵ / ₈ | |

Cartridge for Removal of Dissolved Water from Industrial Oils

SD Series. **Superdri**® Cartridges

DESCRIPTION

Dissolved water removal from industrial oils is now possible without the need for heat and vacuum oil processing systems. Originally developed for dehydrating oil to be used in transformers, Superdri® cartridges can help reduce expenses and increase efficiency when processing oil.

FEATURES

- **Unique Construction** – Specifically designed for oil dehydration.
- **High Capacity** – Process up to 5,000 gallons of oil or more with a single cartridge.
- **Efficient** – Single pass water removal to less than 10 ppm total water, or better.
- **Versatile** – Models available to fit most industry standard housings.
- **Safe** – Will not remove oxidation inhibitors.
- **Cost Effective** – Process industrial oil for less than \$0.05 per gallon.
- **Maximum Operating Temperature** - Up to 160 °F (71.1°C), 248 °F (120 °C) for SD-1107HT



Superdri is a registered Trademark of Parker Hannifin Corporation.



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SPECIAL CONSIDERATIONS

Superdri cartridges are not designed for particulate solids removal. Prefiltering through Parker Velcon 1/2 micron cartridges is recommended if particle contamination is suspected.

Superdri cartridges are not recommended for cost effective removal of free water in industrial oils. If free water is suspected, the oil should be prefiltered using Velcon **Aquacon**® cartridges.

APPLICATIONS

Superdri cartridges are designed for oil processing situations where dissolved water in industrial oil is a concern, and its removal is desirable.

Examples of use in industrial oil applications:

- New distribution and EHV transformers are typically oil-filled under vacuum. If the insulating oil has a high total water content, it is also processed through a heat and vacuum system. **Superdri** cartridges can be used instead of heat and vacuum to dry the oil.
- Repaired transformers are often oil filled under vacuum. Flowing the oil through **Superdri** cartridges eliminates the need to vacuum process the oil.
- Insulating oil in storage tanks, and tankers of oil that have accumulated a high level of dissolved water can be recirculated and dried to less than 10 ppm total water using **Superdri** cartridges.
- Use **Superdri** cartridges for processing oil in other high voltage apparatus that is sensitive to dissolved water.
- Use **Superdri** cartridges to help meet processing specifications where dissolved water sensitive dielectric breakdown voltage test ASTM D-1816 is used, or required.

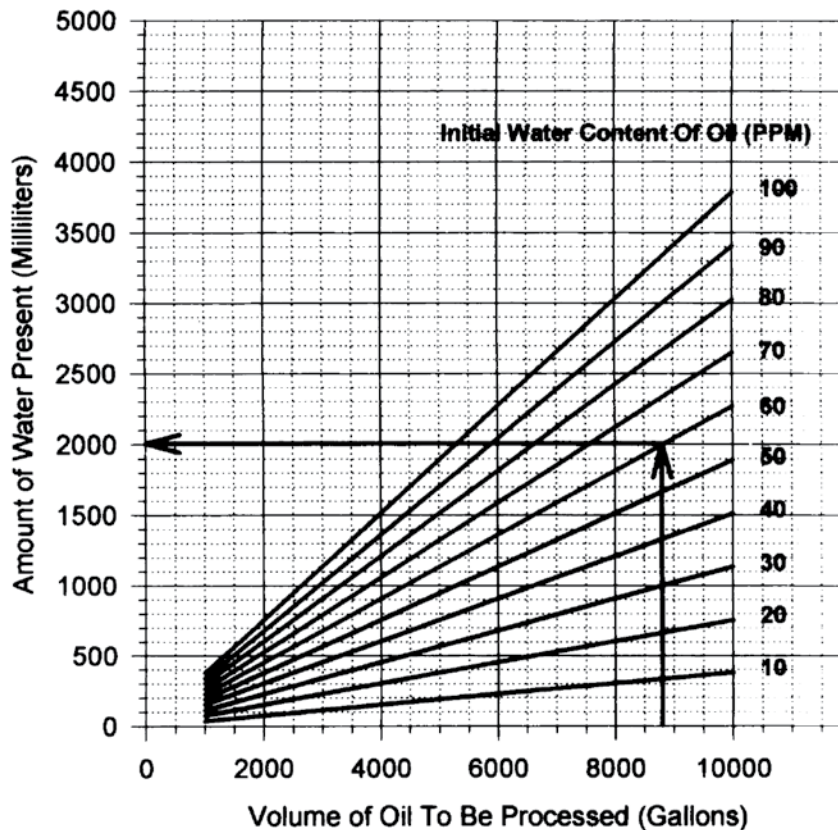


CHART A

Example: You have 8800 gallons of oil to process with an initial water content of 60 ppm. Find 8800 gallons on the horizontal scale, and follow up until you intersect the 60 ppm line. Read across to find the total amount of water on the vertical scale.



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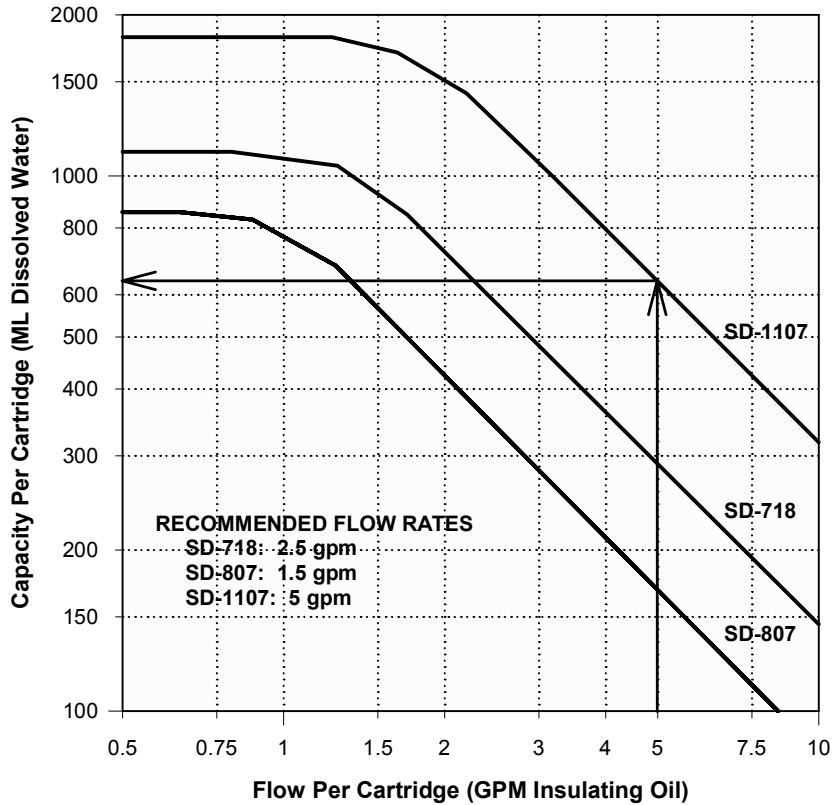


CHART B

Example: You are filling at 5 gpm per cartridge through SD-1107 cartridges. Follow up from 5 gpm on the horizontal scale until you intersect the SD-1107 line. Read across to find the amount of water one cartridge will remove.

SUPERDRI® CARTRIDGES ARE EASY TO USE:

1. Using Chart A, determine amount of water in oil.
2. Using Chart B, determine amount of water a single cartridge will remove.
3. Divide results from (1) by results from (2):

$$\frac{2000 \text{ ml to be removed}}{620 \text{ ml capacity}} = 3.2 \text{ cartridges required}$$

Unlike ordinary filters, **Superdri®** cartridges cannot be monitored for capacity or performance by differential pressure. Regular effluent samples must be taken and analyzed with a Karl Fischer titrator to monitor the cartridges' effectiveness. In-line moisture sensors can also be used to monitor cartridge performance. Without availability of this equipment, the user can estimate cartridge life from the above charts.

Superdri® cartridges will not remove dissolved gases, nor are they recommended for use on badly deteriorated or arced oil. Some reduction in CO2 may occur.

ORDERING INFORMATION

| Part Number | Fits These Housings |
|-------------|---|
| SD-718 | Velcon VF-7, VF-8 Series, Hilco 718 Style |
| SD-807 | Velcon VF-10, VF-12 Series, Cuno PT1 Style, Alsop |
| SD-1107 | Velcon VF-12 Series, Cuno PT1 Style, Alsop |
| SD-1107HT | Velcon VF-12 Series, Cuno PT1 Style, Alsop |

NOTE: Install **Superdri®** cartridges vertically



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Industrial Oil Filter Cartridge

Superdri® SD Series. SD-718P3

DESCRIPTION

Conventional oil filters are only effective in removing particulate solids contamination over the course of their service life. In a free breathing system where moisture levels of the oil are often in excess of 40 ppm total water. This moisture, combined with normal operating heat, cause oil breakdown to occur at accelerated rates. Consistent removal of dissolved water extends service life of the oil and increases the benefits of the oil filtration systems.

FEATURES

- Utilizes Superdri Dissolved Water Removal Technology along with Ultra High Efficiency Filtration Media
- Reduces Moisture Content to <15 PPM Total Water
- Increases ASTM D-1816 Dielectric to >30 KV
- 0.3 Micron Nominal Rated Filter Reduces Particulate Solids Content to <1.0 MG/L
- Max. Operating Temp: 160 °F

APPLICATIONS

- Replace standard 618/718 sized filter cartridges with SD-718P3 cartridge
- Use SD-718P3 cartridges to maintain dielectric strength of load tap changer oil in new condition
- Install SD-718P3 in new LTC filtration systems
- Retrofit existing LTC filter systems with SD-718P3 cartridges

ORDERING INFORMATION

Order Part Number
SD-718P3



Cutaway shows double wire backed microglass pleat block around inner packed Superdri media.



Superdri® is a registered trademark of Parker Hannifin.

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Adsorbent Cartridges

LA-61801B, LA-71801B, LB-71801, LB-1107B

Adsorbent Media Cartridges – Fuller’s Earth and Activated Alumina

DESCRIPTION

Velcon adsorbent media cartridges combine the highest grade sorbing materials with specially selected structural components. Field proven at major semiconductor companies, these cartridges maintain oil quality in the most corrosive environments.

Models LA-61801B and LA-71801B contain a special grade of fuller’s earth mined in Florida and Georgia. This clay is heat refined to increase sorbing capacity and water resistance.

Models LB-71801 and LB-1107B contain a granular form of activated alumina that has proven most effective for oil purification.

APPLICATIONS

Adsorbent media cartridges remove acids, gums, surfactants, varnishes, soaps, color bodies, corrosive gases, polar compounds and oxidation products from hydrocarbon and synthetic oils. They also remove moisture and filter particulates to a nominal 10 micrometer level. Routine filtering will return oil to a clear and bright condition, extending oil life and protecting machinery.

Filtering mechanical vacuum pump oil with adsorbent cartridges is a standard process in the semiconductor industry for LPCVD, Ion Implantation and Plasma Etching equipment.

VELCON ADSORBENT MEDIA CARTRIDGES EFFECTIVELY PROCESS:

- Insulating Oil
- Vacuum Pump Oils
- Quench Oil
- Hydrocarbon base
- Mineral Oil
- Perfluoropolyethers
- Heat Transfer Fluids
- Phosphate Ester Oils
- Transformer Oil
- Synthetic Oils



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CARTRIDGE SELECTION

| Model | Adsorbent Media | Media Mesh | Media Quantity | Dimensions |
|-----------|-------------------|------------|----------------|---|
| LA-61801B | Fuller's Earth | 50 - 80 | 10 lbs. | 2 ⁹ / ₁₆ " I.D. x 6 ¹ / ₄ " O.D. x 18" length |
| LA-71801B | Fuller's Earth | 50 - 80 | 13 lbs. | 2 ³ / ₁₆ " I.D. x 7" O.D. x 18" length |
| LB-71801 | Activated Alumina | 48 - 100 | 15 lbs. | 2 ³ / ₁₆ " I.D. x 7" O.D. x 18" length |
| LB-1107B | Activated Alumina | 48 - 100 | 14 lbs. | 2" I.D. x 11" O.D. x 7 ¹ / ₄ " length |

CONSTRUCTION

- Buna-N gaskets bonded to end caps
- Phosphate coated heavy gauge steel centertube and end caps
- Internal migration barrier
- Phenolic resin impregnated polyester/ rayon outer jacket
- 100 psi collapse strength
- 300°F maximum operating temperature

APPLICATION NOTES

1. Flow rates should be kept below 1 gpm per cartridge for optimum performance. Initial pressure drop is typically below 5 psi. Changeout differential pressure is 25 psi.
2. If water or solid contamination is heavy a prefilter should be installed. FO-718PL Cartridges remove solids and AC-718 Aquacon® Cartridges remove solids, water and hydrolyzed acids.
3. Activated alumina has a higher specific surface area than fuller's earth. It is also more efficient at removing Lewis acids and halogens, and has higher water resistance. It typically has 3 to 5 times the acid adsorbing capacity of fuller's earth.
4. An LB-71801 activated alumina cartridge will adsorb up to 2350 ml of reagent grade HCl.

5. Easy-to-use field test kits are available to determine when the acid level in oil is above acceptable limits. We recommend using these kits to determine when cartridges should be changed and also to compare the cost effectiveness of activated alumina vs. fuller's earth in a given application.

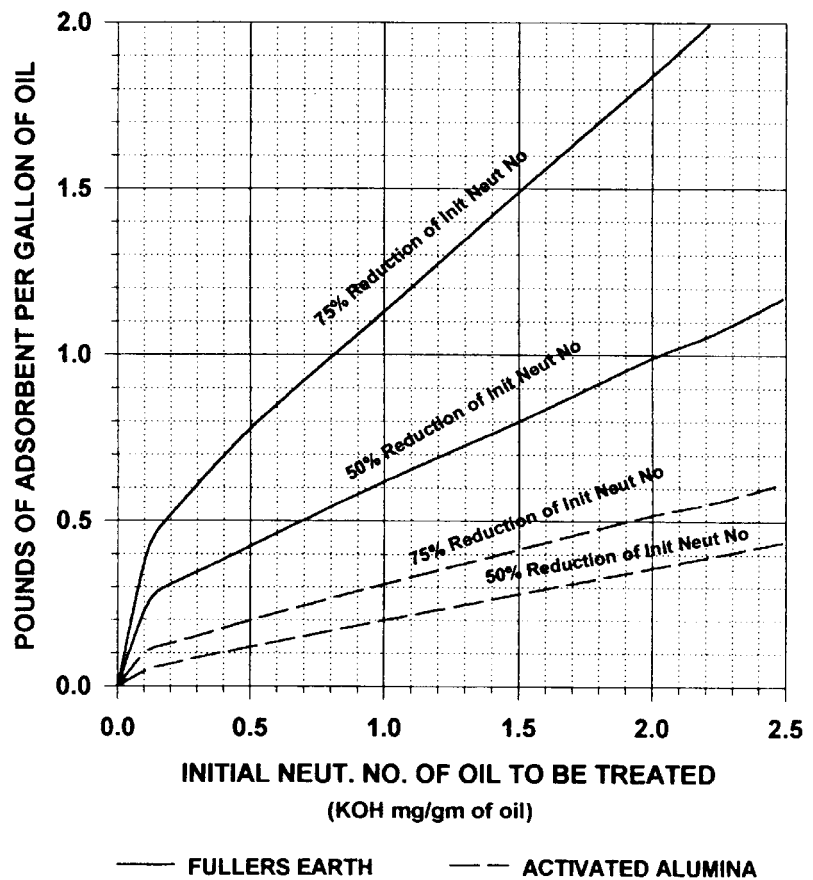
ORDERING INFORMATION

LB-1107B LA-61801B

LB-71801 LA-1107B

LA-71801B

Specify model number as shown above. LA-71801B, LB-71801 and LB-1107B are packaged two per carton. LA-61801B is packaged four per carton.



Approximate quantities of adsorbent material required for desired reduction in neutralization number of oil when using batch method of reclamation.



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