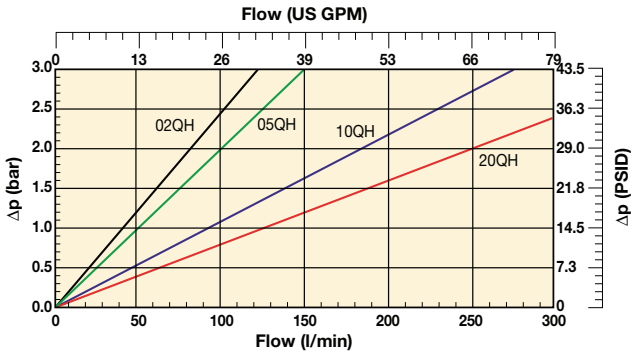
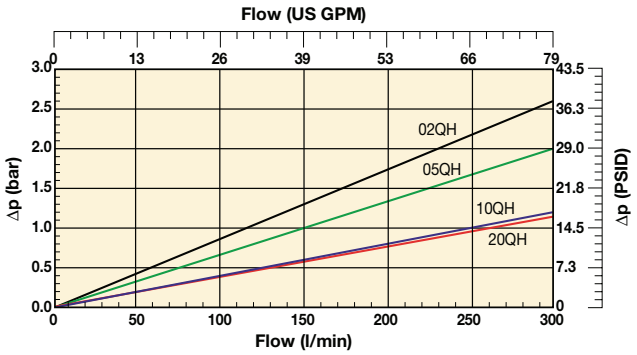
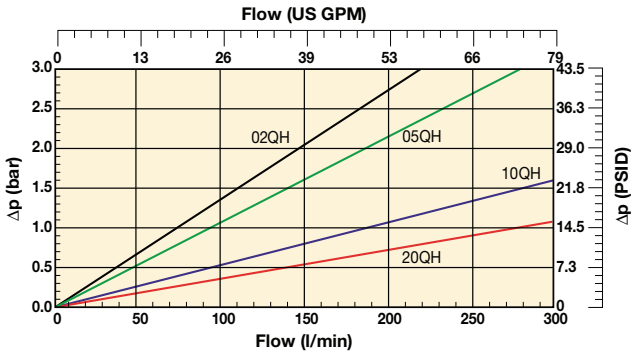
22PD-1 High Collapse Elements



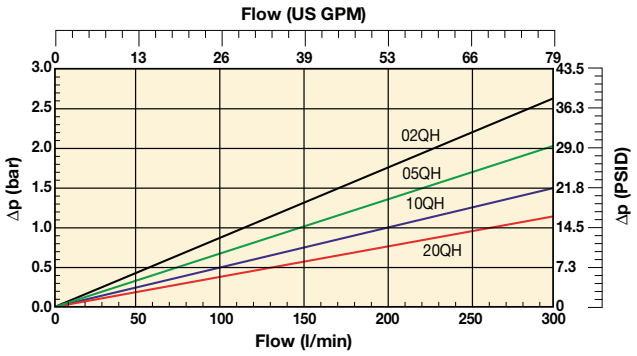
22PD-2 High Collapse Elements



32PD-1 High Collapse Elements



32PD-2 High Collapse Elements



Ordering Information

Standard products table

Part number	Supersedes	Flow (l/min)	Model number	Element length	Media rating (µ)	Seals	Indicator	Bypass settings	Ports	Replacement elements
22PD210QBM3KG161	0-22-PD-2-10Q-V-50-C-1	120	22PD	Length 2	10	Nitrile	Visual	3.5 bar	G1"	**G01315Q**
22PD210QBT1KG161	0-22-PD-2-10Q-TW3-50-C-1	120	22PD	Length 2	10	Nitrile	Electrical	3.5 bar	G1"	**G01315Q**
22PD220QBM3KG161	0-22-PD-2-20Q-V-50-C-1	140	22PD	Length 2	20	Nitrile	Visual	3.5 bar	G1"	**G01938Q**
22PD220QBT1KG161	0-22-PD-2-20Q-TW3-50-C-1	140	22PD	Length 2	20	Nitrile	Electrical	3.5 bar	G1"	**G01938Q**
32PD210QBM3KG201	0-32-PD-2-10Q-V-50-D-1	240	32PD	Length 2	10	Nitrile	Visual	3.5 bar	G1¼"	**G01098Q**
32PD210QBT1KG201	0-32-PD-2-10Q-TW3-50-D-1	240	32PD	Length 2	10	Nitrile	Electrical	3.5 bar	G1¼"	**G01098Q**
32PD220QBM3KG201	0-32-PD-2-20Q-V-50-D-1	260	32PD	Length 2	20	Nitrile	Visual	3.5 bar	G1¼"	**G01954Q**
32PD220QBT1KG201	0-32-PD-2-20Q-TW3-50-D-1	260	32PD	Length 2	20	Nitrile	Electrical	3.5 bar	G1¼"	**G01954Q**

Note: Filter assemblies ordered from the product configurator on the next page are on extended lead times. Where possible, please make your selection from the table above.

22PD/32PD Series

Ordering Information (cont.)

Product configurator

Box 1	Box 2	Box 3	Box 4	Box 5	Box 6	Box 7	Box 8
22PD	**2**	**10Q**	**B**	**M3**	**K**	**G16**	**1**

Box 1

Code	
Model	**Code**
Small high pressure duplex filter	**22PD**
Large high pressure duplex filter	**32PD**

Box 2

Filter type	
Length	**Code**
Length 1	**1**
Length 2	**2**

Box 3

Degree of filtration				
Element media	**Glass fibre**			
	Media code			
Microglass III element	02Q	05Q	**10Q**	**20Q**
High collapse element	02QH	05QH	10QH	20QH

Box 4

Seal type	
Seal material	**Code**
Nitrile	**B**
Fluoroelastomer	V

Box 5

Indicator	
	Code
Visual indicator	**M3**
Electrical indicator	**T1**
Plugged with steel plug	P
No indicator port	N
Electronic 4 LED, PNP, N.O.	F1
Electronic 4 LED, NPN, N.O.	F2
Electronic 4 LED, PNP, N.C.	F3
Electronic 4 LED, NPN, N.C.	F4

Box 6

Bypass and indicator settings			
Bypass valve	**Indicator**	**Code**	
3.5 bar	2.5 bar	**K**	
No bypass	5.0 bar	M	+ Box 8: code 2
No bypass	No indicator	X	+ Box 8: code 2

When filter includes a bypass valve but not an indicator, code denotes bypass setting.

Box 7

Filter connection	
Ports	**Code**
22PD: Thread G 1	**G16**
SAE flange 1 ¼" 3000-M	R20
32PD: Thread G 1 ¼	**G20**
SAE flange 1 ½" 3000-M	R24

Box 8

Options	
Options	**Code**
Standard	**1**
No bypass	2

Replacement elements with nitrile seals				
Media	22PD-1	22PD-2	32PD-1	32PD-2
02Q	**G01282Q**	**G01316Q**	**G01069Q**	**G01099Q**
05Q	**G02721Q**	**G02724Q**	**G02567Q**	**G02727Q**
10Q	**G01281Q**	**G01315Q**	**G01068Q**	**G01098Q**
20Q	**G01930Q**	**G01938Q**	**G01946Q**	**G01954Q**
02QH	G01442Q	G01448Q	G01454Q	G01460Q
05QH	G03737Q	G03738Q	G03739Q	G03740Q
10QH	G01441Q	G01447Q	G01453Q	G01459Q
20QH	G01932Q	G01940Q	G01948Q	G01956Q

Nominal flow (l/min) at viscosity 30 cSt				
Filter model	02Q	05Q	10Q	20Q
22PD-1	70	80	100	120
22PD-2	100	110	120	140
32PD-1	100	150	210	230
32PD-2	180	210	240	260

Seal kits		
Filter model	Nitrile	Fluoroelastomer
22PD	S04233	S04234
32PD	S02373	S02375

Replacement elements with fluoroelastomer seals				
Media	22PD-1	22PD-2	32PD-1	32PD-2
02Q	G01302Q	G01336Q	G01089Q	G01119Q
05Q	G02723Q	G02726Q	G02569Q	G02729Q
10Q	G01301Q	G01335Q	G01088Q	G01118Q
20Q	G01934Q	G01942Q	G01950Q	G01958Q
02QH	G01446Q	G01452Q	G01458Q	G01464Q
05QH	G04235Q	G04236Q	G04237Q	G04238Q
10QH	G01445Q	G01451Q	G01457Q	G01463Q
20QH	G01935Q	G01943Q	G01951Q	G01959Q

Highlights Key (Denotes part number availability)

123	Item is standard
123	Item is standard green option
123	Item is semi standard
123	Item is non standard

Note: Standard items are in stock, semi standard items are available within four weeks

Degree of filtration						Code	
Average filtration beta ratio ß (ISO 16889) / particle size µm [c]							
ßx(c)=2	**ßx(c)=10**	**ßx(c)=75**	**ßx(c)=100**	**ßx(c)=200**	**ßx(c)=1000**		
% efficiency, based on the above beta ratio (ßx)						Disposable	High collapse
50.0%	**90.0%**	**98.7%**	**99.0%**	**99.5%**	**99.9%**	Microglass III	element
N/A	N/A	N/A	N/A	N/A	4.5	**02Q**	02QH
N/A	N/A	4.5	5	6	7	**05Q**	05QH
N/A	6	8.5	9	10	12	**10Q**	10QH
6	11	17	18	20	22	**20Q**	20QH

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.
Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.

Portable Hydraulic Filtration Systems

Guardian®

MAX 15 l/min - 2 bar

Portable Hydraulic Filtration Systems

Guardian®

Features & Benefits

Features	Advantages
Portable and robust design	Guardian is designed to be used anywhere. Take it to the system or transfer new oil from the drum.
Lightweight design	Only 10.6 kg
Quick disconnect hose connections	Storage is simple. Guardian's compact design means it is easily stowed.
Visual indicator	Operational condition is constantly monitored
110VAC or 220/240VAC options	Guardian's power flexibility means it can be used anywhere.
A range of clean-up elements	A user can specify the media that will best achieve his clean up/filtering requirements.
Water removal element option	Water removal from the system is an important requirement for fluid efficiency.

Note: 15 l/min / Fluid transfer at a controlled rate

Application Example

A hydraulic system reservoir had become heavily contaminated and the hydraulic system was in danger of a catastrophic failure from particulate and water contamination. These contaminants were introduced from various points – airborne, wear and introduction of new 'dirty' fluids. The Guardian filtration system was installed into the hydraulic systems reservoir and run completely off-line for a period of time until acceptable contamination levels were achieved.

This off-line attachment allowed the hydraulic system to continue operating without costly downtimes. Additionally a Water Removal (WR) Element was also fitted to the Guardian, which radically reduced the water contamination within the entire system.

This customer will 'only now' introduce new fluids into his hydraulic application by using the Guardian filtration system and in addition utilises the Guardian off-line option to maintain and protect his system.

Contamination levels are monitored by an LCM202021 which controls the Guardians operation.

Result: reliability and complete confidence restored.

Typical Applications

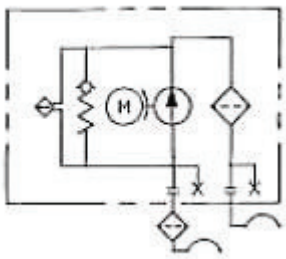
- Fluid transfer
- Offline reservoir clean-up
- Injection moulding machines
- Royal navy surface fleet systems
- Paper mills
- Industrial equipment
- Mobile equipment
- Marine system support

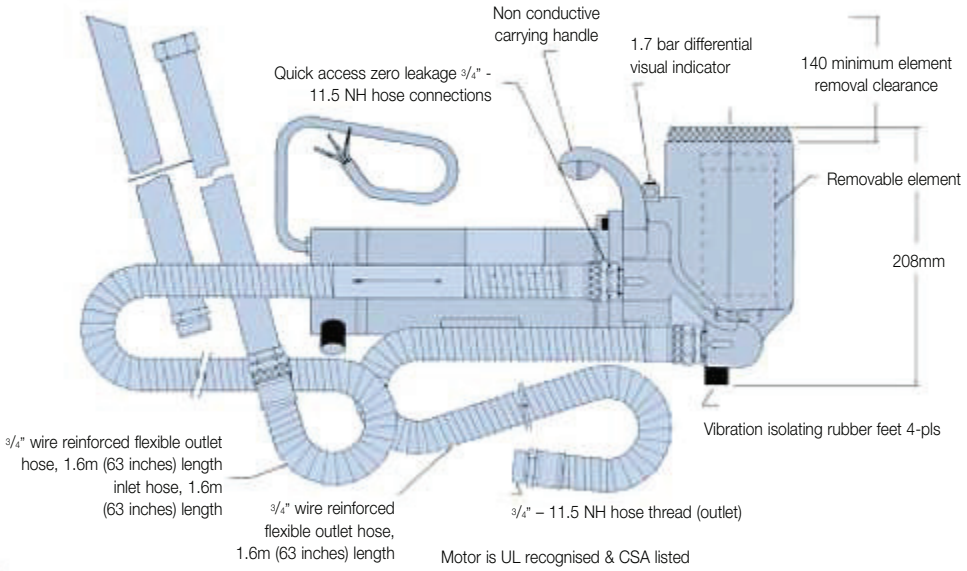
The Parker Filtration Guardian® portable filtration systems.

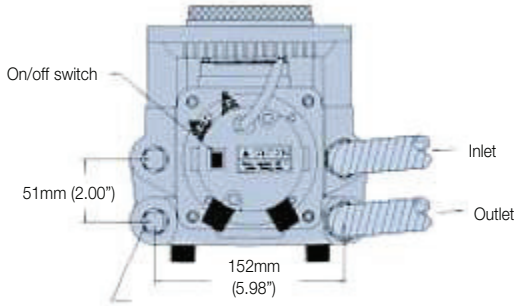
Guardian is a portable filtration system with two main functions: to ensure that new 'dirty' fluid often contaminated during handling, is delivered to the system at a specific cleanliness; and to permit periodic clean up of existing fluid to original condition.

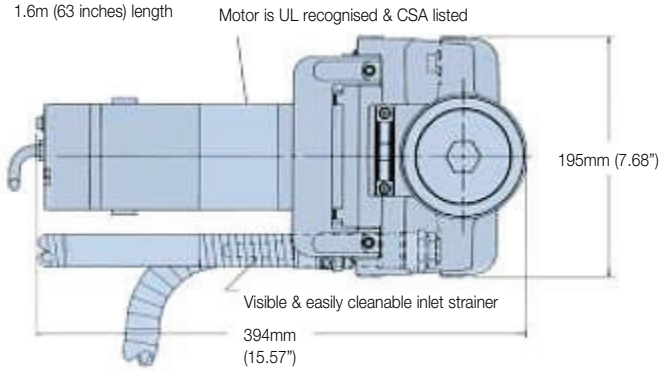
Recommended fluids: Petroleum based oils, water emulsions and diesel fuels.

Specification









Ordering Information and Product Configurator

Standard products table

Part number	Supersedes	Model (fluorocarbon)	Motor option	Element (µ)	Options	Plug type	Replacement element
GT4E110Q1UK	F3-GT4E-1-10Q-1-UK	GT4E	1	10Q	1	UK	**G04396Q**
GT4E110Q1EUR	F3-GT4E-1-10Q-1-EUR	GT4E	1	10Q	1	EUR	**G04396Q**
GT4E210Q1IND	F3-GT4E-2-10Q-1-IND	GT4E	2	10Q	1	IND	**G04396Q**

Product configurator

Model (fluorocarbon)	Motor options		Element (µ)		Options		Plug type	
GT4E	**1**	220/240 VAC	**10Q**	Microglass	**1**	None	**UK**	United Kingdom
	2	* 110 VAC	**02Q**		**6**	Quick disconnect hose connections	**EUR**	Europe
	3	~ 24 Vdc	**05Q**				**IND**	Industrial 3 pin *110 version only
			20Q				CL	~ Battery clamps (24Vdc Only)
			25W	Wire mesh				
			40W					
			74W					
			WR	Water removal				

Replacement elements

Guardian replacement elements to ISO16889		
Part number	**Micron rating**	**Media type**
G04396Q	10	Microglass III
G04394Q	4.5	Microglass III
G04395Q	6	Microglass III
G04397Q	20	Microglass III
G04400	25	Wire mesh
G04401	40	Wire mesh
G04402	74	Wire mesh
G04403	WR	Water removal

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.
Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.

Hydraulic Service Equipment

Filtration Unit

MAX 15 l/min - 6 bar

Filtration Unit

Features & Benefits

Features	Advantages	Benefits
Single phase and three phase motor options	Flexibility of power output	End user choice dependent on application
15 l/min flow	Fluid transfer at a controlled rate	Reliable fluid transfer from drum to system
Red/green visual indicator	Clear indication of condition during operation	High visibility during operation
Robust construction	Reliability designed in	Designed to be used even in the most demanding conditions
Spin-on element	Easy change element	10 micron Abs. elements
Lightweight design	Easy to locate when and where required	Take the unit to the application. It's that easy

Typical Applications

- Fluid transfer
- Small lubrication systems
- Constant flushing loops
- Maintenance flushing
- Offline filtration in circuits where pressure and flow pulses are expected

The Parker Filtration Service Equipment.

Designed to offer both permanent offline cleaning where higher levels of contamination are expected and portable additional clean-up capability as part of your preventative maintenance package.

Specification

Electric motor

Frame Size: IEC Frame 63. Foot and flange 'D' (Flange IEC.F115). Totally enclosed fan cooled.
Windings: 380/420 volt 3 ph/50 Hz, 220 Volt 1 ph/50 Hz 110 Volt 1 ph/50 Hz.
Power: 0.18 kW (1/4 hp).
Speed: 1400 rev/min.

It is recommended that the Unit is wired independently from the main system when permanently installed, to facilitate the simple changing of the filter element without interrupting the main system.

Filtration unit description

The Parker 'Filtration Unit' consists of an electric motor directly coupled to a hydraulic pump, which has a built in bypass fitted and spin on filter element. Fluid drawn in at pump inlet is circulated through the filter element and is thus cleaned before being delivered from the outlet port. A built in bypass valve safeguards the element in the event of blockage and returns oil to the pump inlet, this ensures that all fluid output from the unit is filtered, whatever the operating conditions. A visual element condition indicator is fitted to the pump. A unit is available without electric motor for customers who prefer to supply their own. See installation notes and part numbers for ordering.

Pump and bypass valve

Pump: Lobe type for quiet running.
Flow: 15 l/min.
Connections: Inlet G1/2 (1/2" BSP).
Outlet G3/8 (3/8" BSP).
Bypass Valve: Cracks at 1.5 bar approximately. Bypassed oil is recirculated within the pump. Bypassed oil is reintroduced into the inlet port and does not pass the filter. Bypass operates when the element is contaminated and needs replacing. This condition will be made clear by the visual indicator. The Bypass Valve could also open when being used with high viscosity fluids, thus effectively reducing the unit output.

Filter and condition indicator

Filter Type: Rapid replacement spin-on can with 10µ cellulose element. Ensure that end clearance (20mm) is available to permit element withdrawal. 10µ nominal. MXR8550

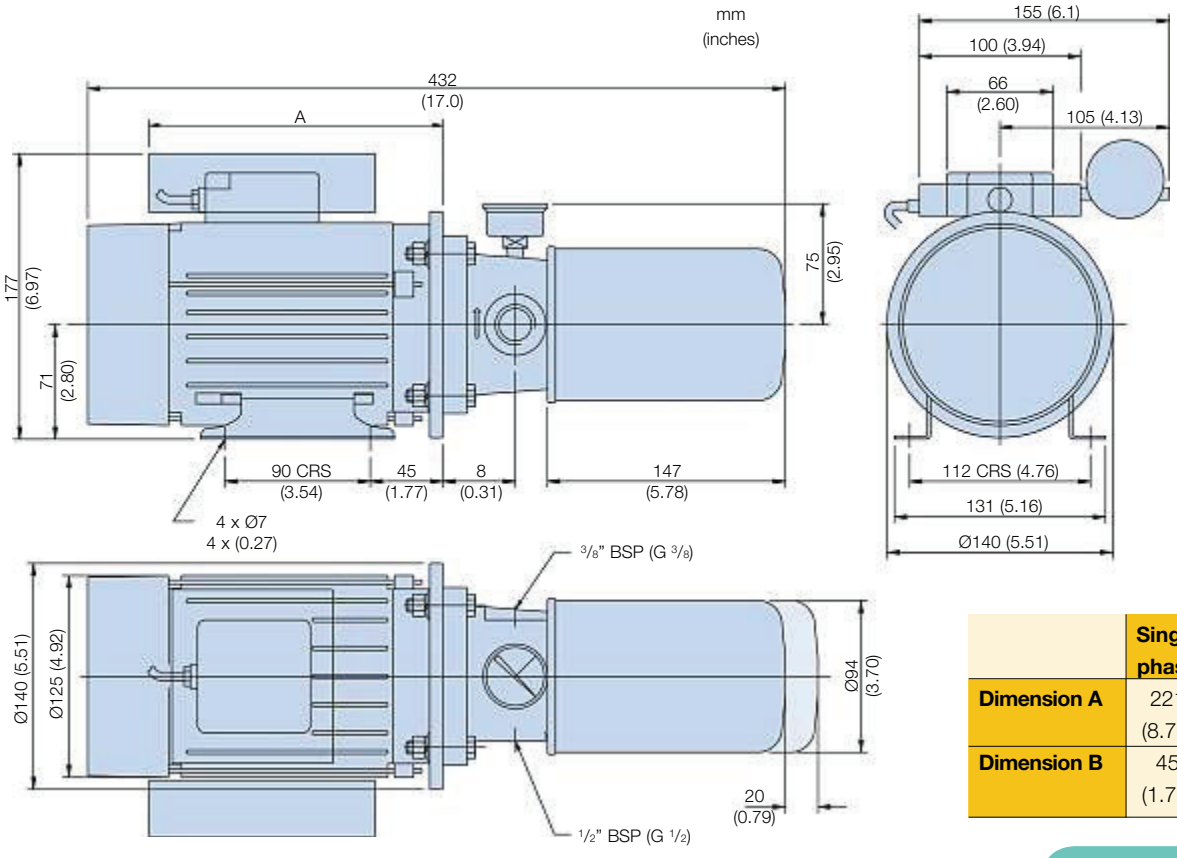
Visual indicator

Has green and red zones on the dial. Needle in the green zone indicates normal operation. When the needle enters the red zone, the bypass valve will permit a flow of oil to return to the pump inlet – The element will then need to be replaced. The bypass is fully open when the needle is at the extreme of the red sector.

Sound level

The Filtration Unit under normal conditions will operate at a sound pressure level of approximately 65 dBA.

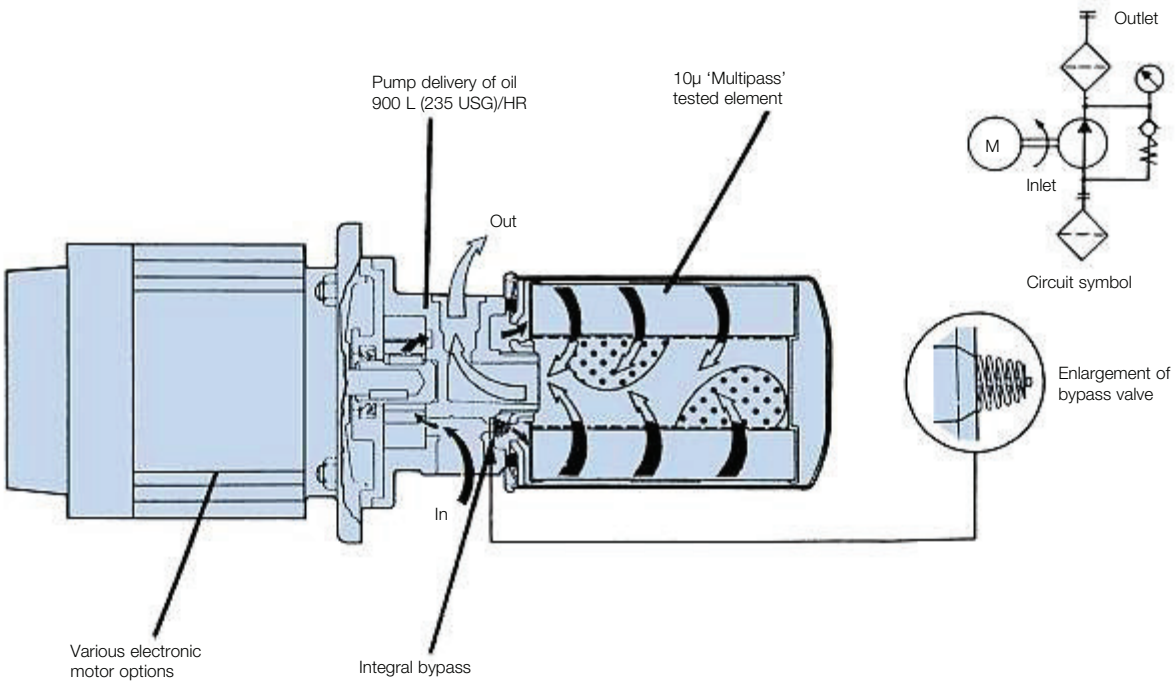
Installation Details



	Single phase	Three phase
Dimension A	221 (8.70)	184 (7.24)
Dimension B	45 (1.77)	25 (0.98)

Filtration Unit

Sectioned Detail



Installation and Operational Notes

The Filtration Unit is suitable for mineral based oils. Maximum viscosity at start up condition 850 centistokes-minimum viscosity 8 centistokes. Note that at 850 centistokes output will be reduced due to opening of bypass. Maximum operating temperature +90°C (194°F).

The inlet pipe should be as large and as short as convenient to reduce inlet depression to a minimum. It should not be less than 12mm (0.47") internal diameter.

Suction element SE75111110 is supplied with all assemblies and must be installed. Ensure that a minimum 75mm (2.95") head of oil is maintained above the suction element.

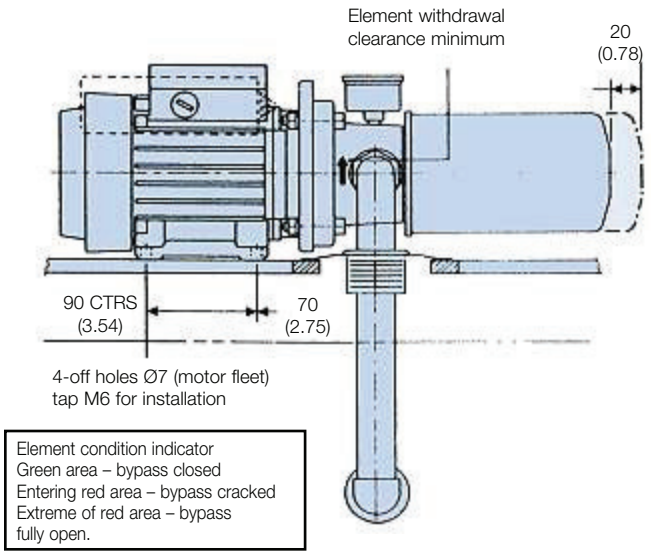
The outlet pipe should be as large as possible to reduce the possibility of delivery pressure exceeding the bypass valve setting. It should not be less than 10mm (0.39") internal diameter. The discharge end of this pipe should always be below the oil surface to minimise aeration. It is equally important, to ensure the ends of the inlet and outlet pipes are as far apart as possible. It is recommended that a baffle be positioned between the suction and return pipes, to give maximum circulation of oil.

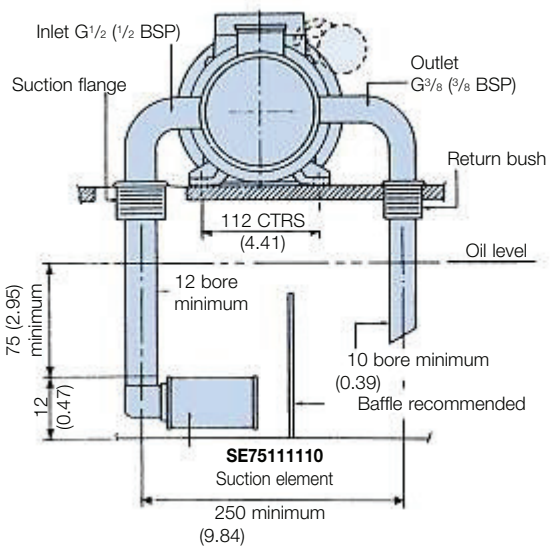
Installation details – 2742

The Filtration Unit is available without an electrical motor, any type motor may be used of identical frame, flange and shaft size to that stated in the specification. Remove the key, fitted to electric motor shaft. There are four nuts and bolts M8-1.25mm thread supplied loose, the pump housing is complete with a shaft adaptor with internal drive pin.

To fit pump to electric motor simply insert drive shaft of motor into the pump drive adaptor ensuring the drive pin engages in shaft keyway and that the locating spigot are correctly engaged. Complete the assembly by fitting the four nuts, bolts and washers.

Ideal Application





Ordering Information

Standard products table

Part number	Description	Weight	Replacement elements
2741	10µ nom filtration pump complete with 3 phase electric motor (380/420/50 Hz H.E.F.C class F) visual indicator	5.92 Kg (13.02 lbs)	**MXR8550 (10µ nominal)**
2742	10µ nom filtration pump without electric motor (supplied with 4 x nuts,bolts and washers) visual indicator	1.50 Kg (3.3 lbs)	
2743	10µ nom filtration pump complete with single phase electric motor (220/50 Hz T.E.F.C class F) visual indicator	6.20 Kg (13.64 lbs)	
2744	10µ nom filtration pump complete with single phase electric motor (110/50 Hz T.E.F.C class F) visual indicator	6.20 Kg (13.64 lbs)	

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection
Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for Availability

Notes

Portable Filtration Trolley

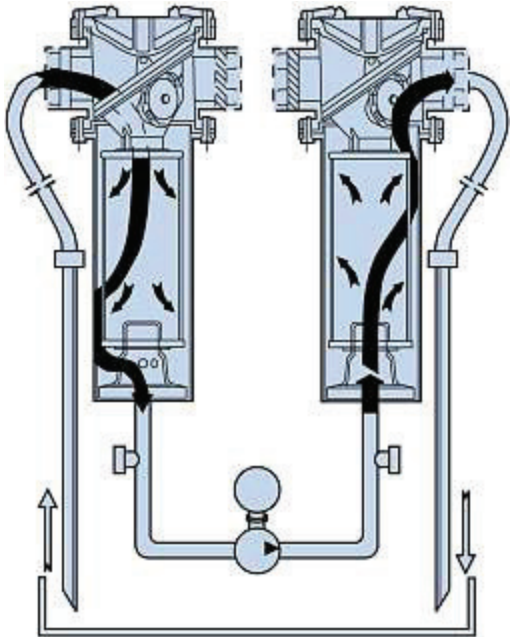
10MF Series

MAX 38 l/min

Portable Filtration Trolley

10MF Series

Features & Benefits



Fluid flow path through 10MF portable filtration system when viewed from front, electrical switch to rear

The 10MF Portable Filtration System is ideal for:

- Off-line contamination control of fluid systems
- Replenishing installations with filtered fluid
- Emptying waste fluid quickly

The 10MF Filter system is designed for on-site preventive maintenance of fluid systems. Two high capacity filters are used, with fluid passing through a primary clean-up filter and then through the final polishing filter giving highly effective and reliable contamination control.

- Two high capacity filters, complete with indicators element condition
- Filters incorporate standard Parker media.
- 38 l/min pressure balanced gear pump
- 0.75kW @ 3450rpm electric motor with themal overload protection
- Robust all welded steel trolley, complete with drip tray and rubber tyred wheels
- Complete with stowable hoses

Typical Applications

- Paper mills
- Injection and blow moulding equipment
- Industrial & mobile equipment
- Transferring fluid from drums or storage tanks to system reservoirs
- Off-line conditioning of existing fluids
- Complimenting existing system filtration

The Parker Filtration 10MF portable filtration system.

Parkers portable filtration units are designed for on-site preventative maintenance of fluid systems. An internal pump draws fluid through a primary clean-up filter and then pushes the fluid through a high quality polishing filter to remove particulate contamination down to 4µm (c) absolute.

Water can also be removed by installing Parker's Par-Gel™ water removal elements to the outlet filter. Once the water comes into contact with the Polymer element it will be removed from the fluid. An all round solution for contamination control in your critical system

Specification

Pump drive options:
0.75kW Electric motor 220/240v A.C. Single phase 50HZ 0.75kW Electric motor 110V A.C. Single phase 50HZ.

Pump:
38 l/min pressure balanced gear pump.

Filters:
Moduflow CF2.1 & RF2.1 filters.

Electrical details:
On/Off switch. 2 metre cable.

Weight:
45.4 kg.

Fluid compatibility:
Suitable for use with mineral oils. For other fluids, please consult Parker Filtration.

Max recommended fluid viscosity:
108 cSt.

Seals:
Nitrile.

Filter elements:
Inlet - synthetic, stainless steel mesh optional.
Outlet - 10Q Microglass III, other µ ratings and WR optional.

Filter bypass valve settings:
Inlet - 0.2 bar (3 psi).
Outlet - 1.7 bar (25 psi).

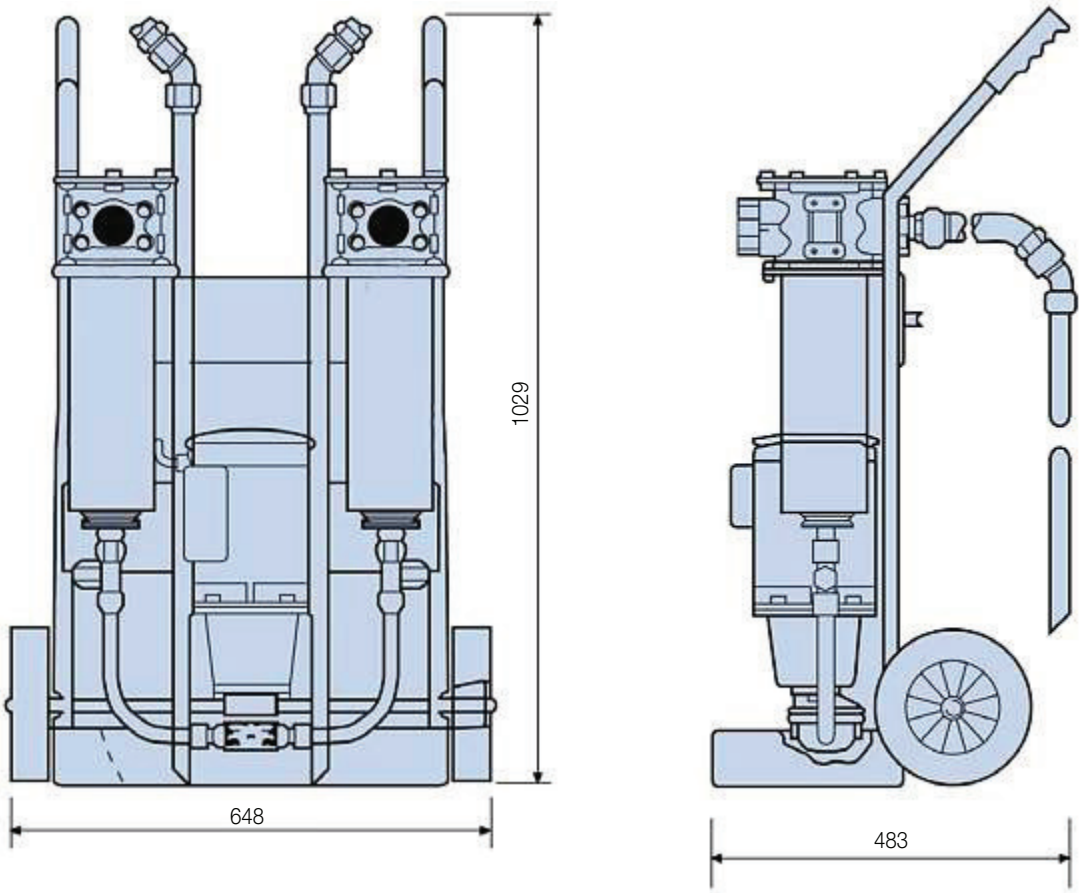
Visual indicator:
3 band visual differential (clean, change, bypass).

Construction:
Cart frame - steel, filter head - aluminium.
Filter bowl - steel, hoses - PVC standard.

Motor options:
220/240 VAC.
110 VAC.

Operating temperatures:
-40°C to 66°C Nitrile.

Installation Details



10MF Series

Ordering Information

Standard products table

Part number	Supersedes	Model (fluorocarbon)	Motor option	Inlet element (924448)	Outlet element (924453Q)	Options	Plug type	Replacement elements	
								Inlet	Outlet
10MF140SA10Q1UK	10MF-1-40SA-10Q-1-UK	10MF	1	40SA	10Q	1	UK	**924448**	**G00973Q**
10MF140SA10Q1EUR	10MF-1-40SA-10Q-1-EUR	10MF	1	40SA	10Q	1	EUR	**924448**	**G00973Q**
10MF240SA10Q1IND	10MF-2-40SA-10Q-1-IND	10MF	2	40SA	10Q	1	IND	**924448**	**G00973Q**

Product configurator

Model (fluorocarbon)	Motor options		Inlet element options (µ)		Outlet element options (µ)		Options		Plug type	
10MF	**1**	220/240 VAC	**40SA**	Synthetic	**10Q**	Microglass III	**1**	None	**UK**	Moulded 3 pin
	2	* 110 VAC	**40W**	Stainless steel mesh	**02Q**	Microglass III	3	Magnet pack	**EUR**	Moulded 2 pin
			20Q	Stainless steel mesh	**05Q**	Microglass III			**IND***	3 pin industrial
			74W	Stainless steel mesh	**20Q**	Microglass III				
					WR	Par<>Gel water removal				

Replacement elements

10MF replacement inlet elements

Nitrile seals

Part number	Micron rating µm(c)	Media type
924448	40	Synthetic
G02525Q	20	Microglass III
G00968	40	Stainless steel
G00967	74	Stainless steel

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.
Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.

10MF replacement outlet elements

Nitrile seals

Part number	Micron rating µm(c)	Media type
G00973Q	10	Microglass III
G04687Q	4.5	Microglass III
G00974Q	6	Microglass III
G02525Q	20	Microglass III
927584	WR	Water removal

PVS Series - Models 185, 600, 1200, 1800 and 2700

PVS Series

Effects of Water Contamination

Water is one of the most common and destructive contaminants in a fluid system. When water contaminates a system, it can cause serious problems such as:

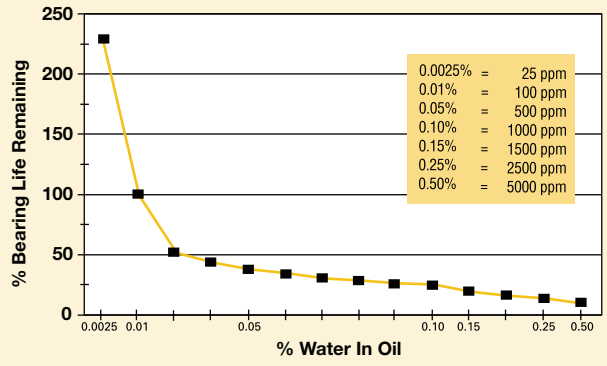
- Corrosion by etching metal
- Fluid breakdown, reduction of lubricating properties, additive precipitation, and oil oxidation
- Reduced dielectric strength
- Abrasive wear in hydraulic components

Typical saturation points

Fluid type	PPM	%
Hydraulic fluid	300	.03%
Lubrication fluid	400	.04%
Transformer fluid	50	.005%

Free water occurs when oil becomes saturated and cannot hold any more water. This water is usually seen as cloudy oil or puddles of water at the bottom of an oil reservoir. Water which is absorbed into the oil is called dissolved water. At higher temperatures, oil has the ability to hold more water in the dissolved stage due to the expansion of oil molecules. As the oil cools, this ability reverses and free water will appear where not visible before. In addition to temperature, fluid type also determines the saturation point for your system (see chart above).

Effect Of Water In Oil On Bearing Life



Effect of water in oil on bearing life (based on 100% life at .01% water in oil.)
Reference: "Machine Design" July 86, "How Dirt And Water Effect Bearing Life" by Timken Bearing Co.

Principles of Operation

Contaminated oil is drawn into the Parker portable purification system by a vacuum of 25 In/Hg. The oil passes through the in-line low watt density heater/s where the oil is heated to an optimum temperature of 66°C (150°F).

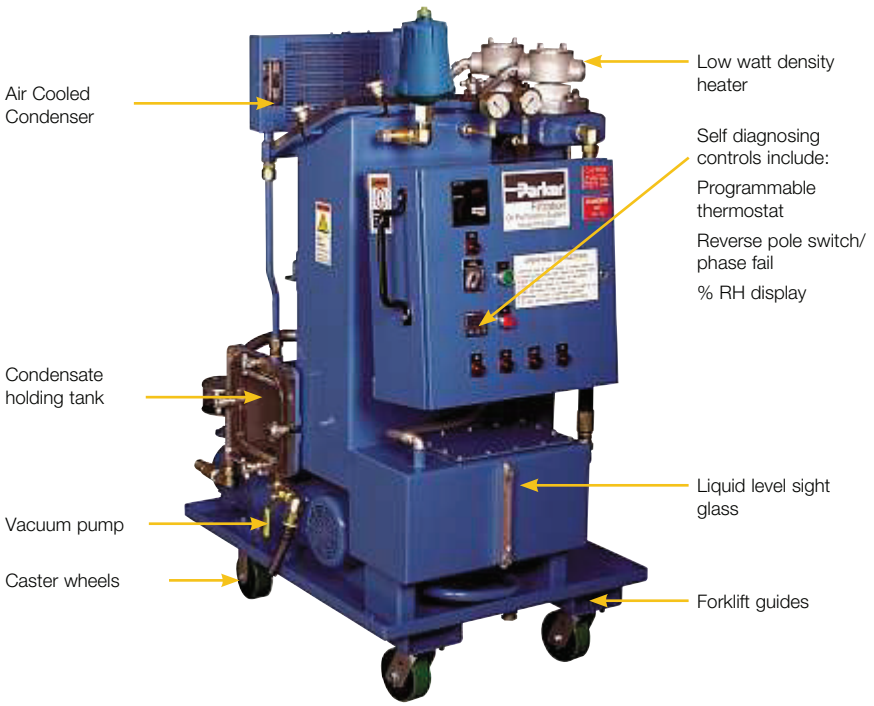
The oil then enters the distillation column where it is exposed to the vacuum through the use of dedicated dispersal elements. This increases the exposed surface area of the oil and converts the water to a vapor form, which is then drawn through the condenser by the vacuum pump. The vapour returns to water and drops into the condensate holding tank - this can then be drained off at a later stage.

The water-free oil falls to the bottom of the vacuum chamber and is passed through a final particulate removal filter by a heavy duty lube oil pump.

Clean dry oil re-enters the reservoir/system via the outlet port.

Applications for PVS Portable Purification Systems

- **Paper mills**
  - Dryer lubrication
  - Hydraulic
  - Compressor lubrication
  - Calenders
- **Steel mills**
  - Bearing lubrication
  - Continuous casters
  - Press roll lubrication
- **Power generation**
  - Turbine oil
  - Transformer oil
  - EHC systems
- **Industrial/aerospace**
  - Test stands
  - Machine tools



Features	Advantages	Benefits
Variable flow circuit	Allows oil to heat to required temperature quickly	Starts removing water quickly
Moisture sensor	Real-time water content indication	Indicates when safe water content level is obtained
Condensate holding tank	Captures removed water/solvents Large enough to provide long service interval	Eliminate potential hazard of exhausting to atmosphere Reduced maintenance costs
Compact size	Smallest envelope in the industry Ease of portability	Fits through doorways and down narrow aisles Increased use
Forklift guides Lifting eyes	Provides safe and secure method to lift unit	Employee safety Easily transported
Programmable thermostat	Maintains oil within 1°C Prevents overheating oil	Unattended operation Increases oil life
Automatic operation	Unattended use	Reduced labour costs Increased running time
Reverse pole switch/phase fail	Change motor rotation for different power source locations	Flexibility, less maintenance Prevents incorrect rotation
High temperature safety circuit	Shuts down heater if primary contacters fail Oil can never exceed 120°C (250°F)	Prevents system damage Worker safety
Circuit breakers utilised in electrical panel	No fuses to replace Simple diagnostics	Fewer spare parts, increased uptime Reduced maintenance
Available with EPR seals and stainless steel	Phosphate ester compatible	Specifically designed for application
Solid state heater contacter	Longer more reliable service life	Reduced downtime

PVS Series

Potential contaminant	PVS performance
Solid particulate	ISO cleanliness code* 14/13/10 attainable
Water	Removes 100% of free water, 80-90% of dissolved water.
Air	Removes 100% of free air, 90% of dissolved air.
Gases	Removes 100% of free gases, 90% of dissolved gases.

* When utilising 2Q media

PVS (Vacuum dehydration) compared to other technologies

Centrifuge units – Removes free water only; has difficulty breaking stable emulsions; larger envelope dimensions but lower flows; higher initial and operating costs.

Desiccant units – Have limited water removal capability due to absorbing material; only removes air ingressed particles; expensive compared to the volume of water removed.

Coalescer units – Removes free water only; has difficulty breaking stable emulsions; does not work well in viscous fluids (>23cSt); much larger in size compared to PVS.

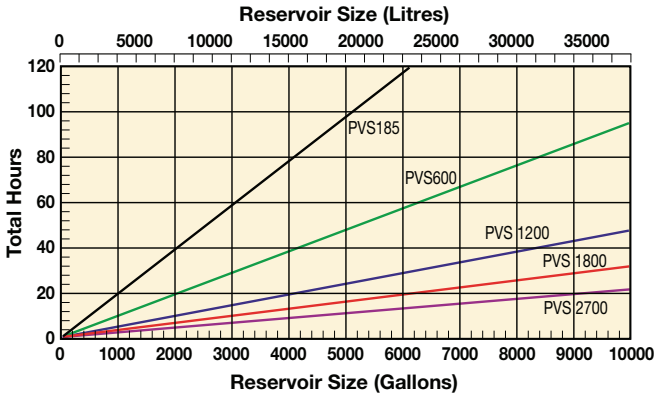
Typical Performance

Tank size	**227 litres (50 gallons)**
Run time	**62 minutes**
Parker model	**PVS 600 (37.9 l/min)**
Water content (ppm)	**Start: 10,000 PPM (1.0%)** **Stop: 50 PPM(0.005%)**
Contamination level	**Start: ISO 21/18/16** **Stop: ISO 16/14/11**

Start

Stop

Estimated Water Removal Time
5000 ppm (0.5%) to 150 ppm (0.015%)



PVS 185

Specification

Flow rate:
19 lpm (4.2 gpm).

Height:
1651mm (65”).

Width:
825.5mm (32.5”).

Length:
1206.5mm (47.5”).

Weight:
294.8 kg (650 lbs).

Seal material:
Fluorocarbon (EPR opt.).

Condensate tank:
15.5 ltrs (3.4 gals).

Dispersal elements:
1.

Minimum operating capacity:
18.9 ltrs (4.2 gals).

Vacuum (max):
25 In/Hg.

Viscosity (max):
108 cSt (500sus) – disposable.
460 cSt (2150 sus) – packed tower.

Outlet pressure (max):
4.1 bar (60 psi).

Ports:
3/4” JIC (male) inlet.
3/4” JIC (male) outlet.

FLA (full load amps):
15-41 amps.
(Depending on voltage used).

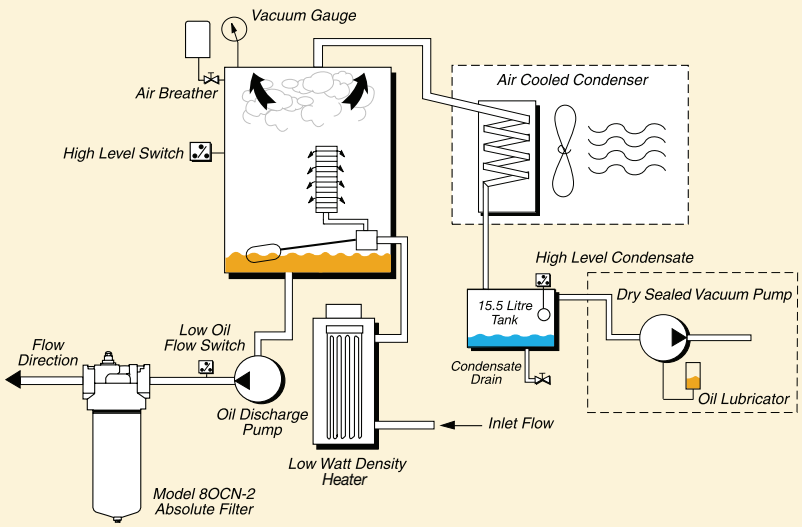
Replacement elements

Particulate		
2Q	(2 micron)	932665Q
5Q	(5 micron)	932666Q
10Q	(10 micron)	932667Q
20Q	(20 micron)	929927Q

Dispersal	
Disposable (coalescing)	933180
Packed tower (cleanable)	933553

Coreless	
02QE	933734Q
05QE	933612Q
10QE	933735Q
20QE	933736Q

PVS 185 flow diagram



Portable Purification Systems

PVS 600

Specification

Flow rate:
38 lpm (8.3 gpm).

Height:
1638.3mm (64.5”).

Width:
1117.6mm (44”).

Length:
1549.4mm (61”).

Weight:
408.2 kg (900 lbs).

Seal material:
Fluorocarbon (EPR opt.).

Condensate tank:
15.5 ltrs (3.4 gals).

Dispersal elements:
2.

Minimum operating capacity:
22.7 ltrs (5.0 gals).

Vacuum (max):
25 In/Hg.

Viscosity (max):
108 cSt (500sus) – disposable.
460 cSt (2150 sus) – packed tower.

Outlet pressure (max):
4.1 bar (60 psi).

Ports:
1” JIC (male) inlet.
1” JIC (male) outlet.

FLA (full load amps):
24-38 amps.
(Depending on options & voltages).

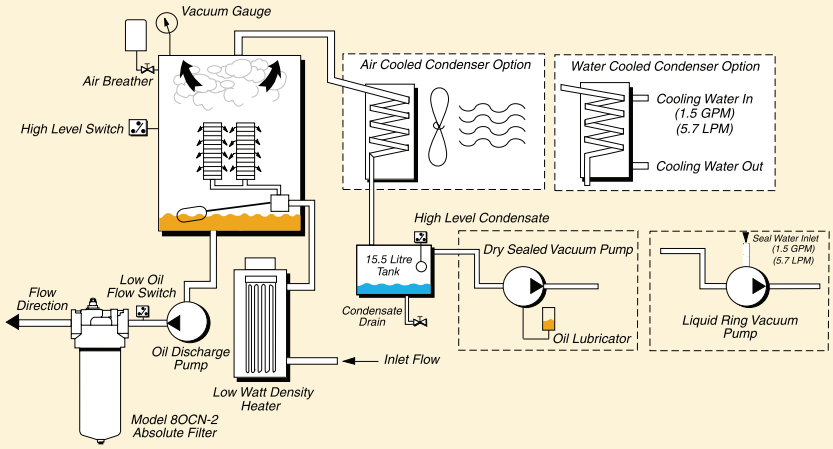
Replacement elements

Particulate		
2Q	(2 micron)	932665Q
5Q	(5 micron)	932666Q
10Q	(10 micron)	932667Q
20Q	(20 micron)	929927Q

Dispersal	
Disposable (coalescing)	933180
Packed tower (cleanable)	933553

Coreless	
02QE	933734Q
05QE	933612Q
10QE	933735Q
20QE	933736Q

PVS 600 flow diagram



PVS 1200

Specification

Flow rate:
76 lpm (16.7 gpm).

Height:
1651mm (65”).

Width:
1117.6mm (44”).

Length:
1549.4mm (61”).

Weight:
703.1 kg (1550 lbs).

Seal material:
Fluorocarbon (EPR opt.).

Condensate tank:
31.4 ltrs (6.9 gals).

Dispersal elements:
4.

Minimum operating capacity:
41.6 ltrs (9.1 gals).

Vacuum (max):
25 In/Hg.

Viscosity (max):
108 cSt (500sus) – disposable.
460 cSt (2150 sus) – packed tower.

Outlet pressure (max):
4.1 bar (60 psi).

Ports:
1 1/2” NPTF inlet.
1” JIC (male) outlet.

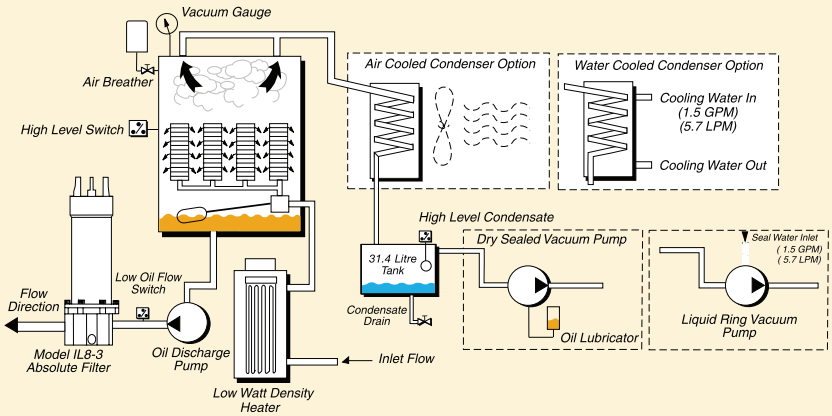
FLA (full load amps):
30-48 amps.
(Depending on options & voltages).

Replacement elements

Dispersal	
Disposable (coalescing)	933180
Packed tower (cleanable)	933553

Coreless	
02QE	933734Q
05QE	933612Q
10QE	933735Q
20QE	933736Q

PVS 1200 flow diagram



Portable Purification Systems

PVS 1800

Specification

Flow rate:
114 lpm (25 gpm).

Height:
1651mm (65”).

Width:
1066.8mm (42”).

Length:
1943.1mm (76.5”).

Weight:
1156.7 kg (2550 lbs).

Seal material:
Fluorocarbon (EPR opt.).

Condensate tank:
31.4 ltrs (6.9 gals).

Dispersal elements:
8.

Minimum operating capacity:
68.1 ltrs (14.98 gals).

Vacuum (max):
25 In/Hg.

Viscosity (max):
108 cSt (500sus) – disposable.
460 cSt (2150 sus) – packed tower.

Outlet pressure (max):
4.1 bar (60 psi).

Ports:
2” NPTF inlet.
1.5” JIC (male) outlet.

FLA (full load amps):
40-65 amps @ 460 V/60hz.

Replacement elements	
Dispersal	
Disposable (coalescing)	933180
Packed tower (cleanable)	933553
Coreless	
02QE	933734Q
05QE	933612Q
10QE	933735Q
20QE	933736Q

PVS Specification Worksheet - Section 1

Note: The following information will be required before a PVS order can be processed.

1. Application.....

2. Fluid type..... Brand.....
   Grade ..... Specific Gravity.....

3. Viscosity Min ..... SUS/cSt @..... °F/°C
   Max..... SUS/cSt @..... °F/°C
   Normal ..... SUS/cSt @..... °F/°C

4. Contamination level Current ISO level ___ /___ /___
   Desired PPM level ___ /___ /___

5. Water concentration Current ISO level.....
   Desired PPM level.....

6. Suction Head Positive/Negative ..... Ft./metres.....

7. Operating distance ..... Ft./metres .....

8. System fluid operating temperature: ..... °F/°C
   Is there a cooler?.....

9. Operating environment air temperature: (air cooled model)
   Min .....°F/°C
   Max .....°F/°C
   Normal.....°F/°C

Portable Purification Systems

PVS 2700

Specification

Flow rate:
170 lpm (37.4 gpm).

Height:
1651mm (65”).

Width:
1066.8mm (42”).

Length:
1943.1mm (76.5”).

Weight:
1156.7 kg (2550 lbs).

Seal material:
Fluorocarbon (EPR opt.).

Condensate tank:
31.4 ltrs (6.9 gals).

Dispersal elements:
8.

Minimum operating capacity:
68.1 ltrs (14.98 gals).

Vacuum (max):
25 In/Hg.

Viscosity (max):
108 cSt (500sus) – disposable.
460 cSt (2150 sus) – packed tower.

Outlet pressure (max):
4.1 bar (60 psi).

Ports:
3” NPTF inlet.
2” NPTF outlet.

FLA (full load amps):
50-70 amps @ 460 V/60hz.

Replacement elements	
Dispersal	
Disposable (coalescing)	933180
Packed tower (cleanable)	933553
Coreless	
02QE	933734Q
05QE	933612Q
10QE	933735Q
20QE	933736Q

PVS Specification Worksheet - Section 2

10. Water supply temperature: (liquid ring model)
    Min .....°F/°C
    Max .....°F/°C
    Normal.....°F/°C

11. Operating environment above/below sea level: ..... Ft./metres

12. Voltage Options: 230Vac, 3p, 60Hz (185,600)
    380Vac, 3p, 50Hz (185,600,1200,1800,2700)
    460Vac,3p,60Hz (185,600,1200,1800,2700)
    575vac, 3p 60Hz (185,600,1200,1800,2700)

13. Available amperage:.....

14. System volume: .....

15. Special requirements: .....
    .....
    .....

16. Any previous filtration problems with application:.....

17. PVS model selected: .....

Specification sheet must be completed before order can be entered

PVS

Ordering Information

Product configurator

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

Box 1	Box 2	Box 3	Box 4	Box 5	Box 6	Box 7	Box 8	Box 9	Box 10	Box 11
-	PVS	600	460	DS	D	5Q	-	12	AC	DFL

Box 1

Seals	
Description	**Code**
Fluorocarbon	**None**
EPR	E8

Box 2

Basic assembly	
Description	**Code**
Portable Purification System	**PVS**

Box 3

Flow rate	
Description	**Code**
19 lpm (4.2 gpm)	**185**
38 lpm (8.3 gpm)	**600**
76 lpm (16.7 gpm)	**1200**
114 lpm (25.0 gpm)	1800
170 lpm (37.4 gpm)	2700

Box 4

Power supply		
Model	**Description**	**Code**
185	380VAC, 3P, 50HZ	380
	460VAC, 3P, 60HZ	460
	575VAC, 3P, 60HZ	550
600	380VAC, 3P, 50HZ	380
	460VAC, 3P, 60HZ	460
	550VAC, 3P, 60HZ	550
1200	380VAC, 3P, 50HZ	380
	460VAC, 3P, 60HZ	460
	550VAC, 3P, 60HZ	550
1800	380VAC, 3P, 50HZ	380
	460VAC, 3P, 60HZ	460
	550VAC, 3P, 60HZ	550
2700	380VAC, 3P, 50HZ	380
	460VAC, 3P, 60HZ	460
	550VAC, 3P, 60HZ	550

Box 5

Vacuum pump	
Pressure setting	**Code**
Dry sealed	**DS**
Liquid ring	**LR**

Box 6

Dispersal element	
Description	**Code**
Disposable (coalescing)	**D**
Packed tower (cleanable – for use with viscious or highly contaminated fluids)	**P**

Box 7

Particulate element µm (c)	
Description	**Code**
4 micron Microglass III	**2Q**
6 micron Microglass III	**5Q**
10 micron Microglass III	**10Q**
20 micron Microglass III	**20Q**

Note: Above elements are rated for Beta 200+ (99.5% efficiency)

Box 8

Filter housing	
Description	**Code**
80CN-2	None
IL8 (39") Ecoglass III upgrade	E

Note: IL8 option is available on 600 models, and is standard on 1200 models and larger

Box 9

Heater		
Model	**Description**	**Code**
185	**12 KW (3 phase)**	**12**
600	**12 KW**	**12**
	24 KW	24
1200	**24 KW**	**24**
1800	36 KW	36
2700	48 KW	48

Box 10

Condenser	
Description	**Code**
Air cooled	AC
Liquid cooled	LC

Box 11

Options	
Description	**Code**
Pneumatic wheels	PW
Auto condensate drain	ACD
Dirty filter light	DFL
Resetable hour meter	RHM
Sight flow indicator	SFI
Inlet control valve	ICV
CE marked	CE
CSA marked	CSA
Explosion proof	EXP

(Class I, Division II, Zone I and II)

Note 1: Contact parker for part number profile availability

Water Removal Filter Elements

Par-Gel

Par-Gel

Par-Gel filter elements are an effective tool in controlling water related problems in hydraulic power and lubrication systems.

There is more to proper fluid maintenance than just removing particulate matter. You need to remove water as well. Parker has developed Par-Gel water removal elements to be used in combination with particulate filters to provide significant benefits.

- Less component wear, consequently less component generated contaminants.
- Significant reduction of costly downtime and replacement of failed components.
- Increased efficiency of the system, thereby improving machine productivity.
- Less frequent replacement and disposal of contaminated fluid.
- Reduced chance of catastrophic failure.

Water as a contaminant.

Whether you used a mineral-base or synthetic fluid, each will have a water saturation point. Above this point, the fluid cannot dissolve or hold any more water. This excessive water is referred to as 'free' or emulsified water. As little as .03% (300 ppm) by volume can saturate an hydraulic fluid.
Many mineral-base and synthetic fluids, unless specifically filtered or treated in some way, will contain levels of water above their saturation point.

Water is everywhere!

Storage and handling. Fluids are constantly exposed to water and water vapour while being handled and stored. For instance, outdoor storage of tanks and drums is common. Water settles on top of tanks and drums and infiltrates the container, or is introduced when the container is opened to add or remove fluid.
In-service. Water can get into the system via worn cylinder and actuator seals, or through reservoir openings. Water can come into contact with these entry points through water based cutting fluids or when water and/or steam are used for cleaning.

Specification

Condensation is also a prime water source. As fluid cools in a reservoir, the temperature drop condenses water vapour on interior surfaces, which in turn causes rust. Rust scale in the reservoir eventually becomes particulate contamination in the system.

Microbial growth as a contaminant.

Once water enters a system, growth of micro-organisms begins. Since water is one of the end products of the breakdown of hydrocarbon fluid, once started, the process is somewhat self-sustaining.

Slime is evidence of microbial growth, as is the apparent increase in viscosity of the fluid, obnoxious odour and discoloured fluid. The results are: short fluid life, degraded surface finish and rapid corrosion.

Water generated damage and operating problems.

- Corrosion
- Accelerated abrasive wear
- Bearing fatigue
- Additive breakdown
- Increased acid level
- Visosity variance
- Electrical conductivity
- Forms of water in fluid
- Dissolved water – below saturation point
- Free water – emulsified or in droplets*.

Water in the system creates oxides, slimes and resins. Corrosion is an obvious by-product and creates further contaminants in the system.

The effect is compounded, as you now have both particulate contaminant and water working together.

The particulate contamination can be as simple as rust flaking from reservoir walls. Anti-wear additives break down in the presence of water and form acids. The combination of water, heat and dissimilar metals encourages galvanic action. Pitted and corroded metal surfaces and finishes result.

Further complications occur as temperature drops and the fluid has less ability to hold water. As the freeze point is reached, ice crystals form, adversely affecting total system function. Operating functions may become slowed or erratic.

Electrical conductivity becomes a problem when water contamination weakens insulating properties of fluid (decreases dielectric kV strength).

Testing your fluid for water.

A simple ‘crackle test’ will tell you if there is water in your fluid. Simply take a metal dish or spoon with a small amount of fluid. Apply a flame under the container with a match. If bubbles rise and ‘crackle’ from the point of applied heat, you have free water.

ParTest™ fluid analysis. For complete analysis, Parker offers Par-Test fluid analysis. Your Parker representative can supply you with a fluid container, mailing carton and appropriate forms to identify your fluid and its use. An independent lab performs complete spectrometric analysis, particle counts, viscosity and water content.

Results are sent directly to the requester.

* Excessive free water must be removed from the system before filtering is attempted. In systems with gross amounts of water (1% to 2% by volume), settling or vacuum dehydration should be considered before using Par-Gel filter elements.

Par-Gel

Features & Benefits

Removing water.

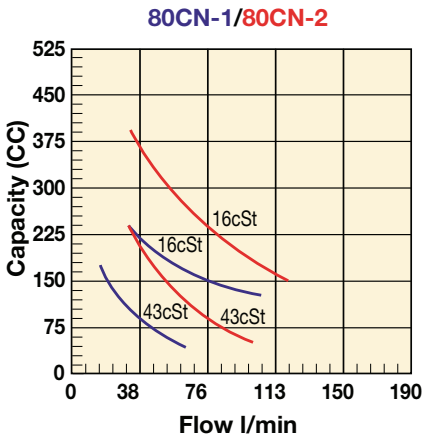
Using a Par-Gel water removal element is an effective way of removing free water contamination from your hydraulic system. It is highly effective at removing free water from mineral-base and synthetic fluids.

The Par-Gel filter media is a highly absorbent copolymer laminate with an affinity for water. However, hydraulic or lubrication fluid passes freely through it and the water is bonded to the filter media.

Photo above shows 'dry' Par-Gel filter media and the same media swollen with absorbed water.

Parker technology and expertise at your disposal.

Choosing the correct filters can save money and minimise problems caused by particulate and water contaminants in hydraulic and lubricating fluids. Parker provides hard data and advice on choosing from a wide range of filter configurations, flow patterns and flow pressure capabilities.



How many filter elements will I need?

Suppose you would like to remove water from contaminated oil stored in a 750 litre tank. The tank is found to have 1000 ppm of water (very contaminated). The circulation rate will be 40 lpm for the 40cSt fluid.

Example: How many single length Modulflow™ elements will be needed to reduce the water to normal saturation levels. To find the answer, use the conversion charts and capacity curves for the Modulflow element.

1. 1000 ppm start – 300 ppm finish = 700 ppm removed
2. 700 ppm water x 0.001 = .07%
   .07% x 750 litres = 0.53 litres water total
3. Use the capacity curve for Modulflow element P/N 927584.
   Capacity = 80cc at 40cSt & 40 lpm to pressure drop of 1.7 bar.
   (See graph below)
   $80cc \times 0.0001 \frac{lpm}{CC} = 0.076$ lpm/element
4. $\frac{0.53 \text{ litres total water}}{0.076 \text{ lpm/element}} = 7$ elements*

* The replacement value of this fluid may range from €1500.00 to €4500.00 (€0.50 to €1.25 litre). An estimated element cost of €150.00 each, the saving could be as much as €3000.00!

Using Par-Gel filter elements saves money in fluid and replacement component costs. Also, the frequency of fluid disposal and the problems associated with it are greatly reduced.

Filter capacity. There are no accepted and approved water capacity testing or reporting standards. Consequently, there is virtually no way to compare one element capacity with another. It is also difficult to simulate a specific application in testing... making it hard to predict field performance.

Why the discrepancies? Water removal media capacity is the result of the interplay of four variables: flow rate, viscosity, bypass setting and the media itself.

Here's an example: two identical elements, testing the same fluid, varying only the flow rate.

	Element A	Element A'
Flow rate:	11 lpm	38 lpm
Viscosity:	15 cSt	15 cSt
Test capacity:	425 ml	360 ml

This is a 15% reduction in capacity, due to changing only the flow rate! Now, look at what happens when the test flow rate is the same and the viscosity is changed.

	Element B	Element B'
Flow rate:	76 lpm	76 lpm
Viscosity:	40 cSt	15 cSt
Test capacity:	250 ml	550 ml

Twice the capacity can be achieved just by manipulating the test viscosity!

Naturally, having a lower bypass valve setting limits the capacity. Since the life of the element is measured in pressure drop, using higher bypass valve settings will increase apparent life (all other conditions equal).

We recommend 1.7 bar bypass valves to get adequate life from Par-Gel filter elements.

Capacity also depends on the media itself. That's why Parker spent two years researching the media used in Par-Gel filter elements. We tested all known media, and worked closely with our suppliers to achieve maximum water absorbency.