Portable Purification Systems

Models PVS 185, 600, 1200, 1800, 2700

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 where the oil is heated to an optimum temperature of 150° F (66°C).

The oil then enters the distillation column where it is exposed to the vacuum through the use of special dispersal elements. This increases the exposed surface area of the oil and converts the water to vapor form, which is then drawn through the condenser by the vacuum pump.

The water-free oil falls to the bottom of the column and is removed by a heavy duty lube oil pump. This pump forces the dry oil through a final particulate removal filter. Clean oil passes out of the unit, back to the reservoir — and into the system.

Effects of Water Contamination

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

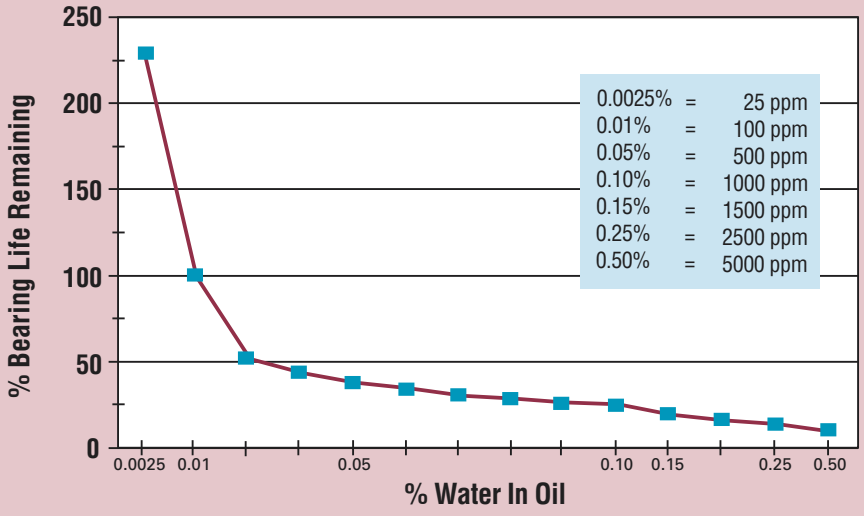
- Corrosion by etching metal
- Fluid breakdown, reduction of lubricating properties, additive precipitation, and oil oxidation
- Reduced dielectric strength
- Abrasive wear in hydraulic components

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.

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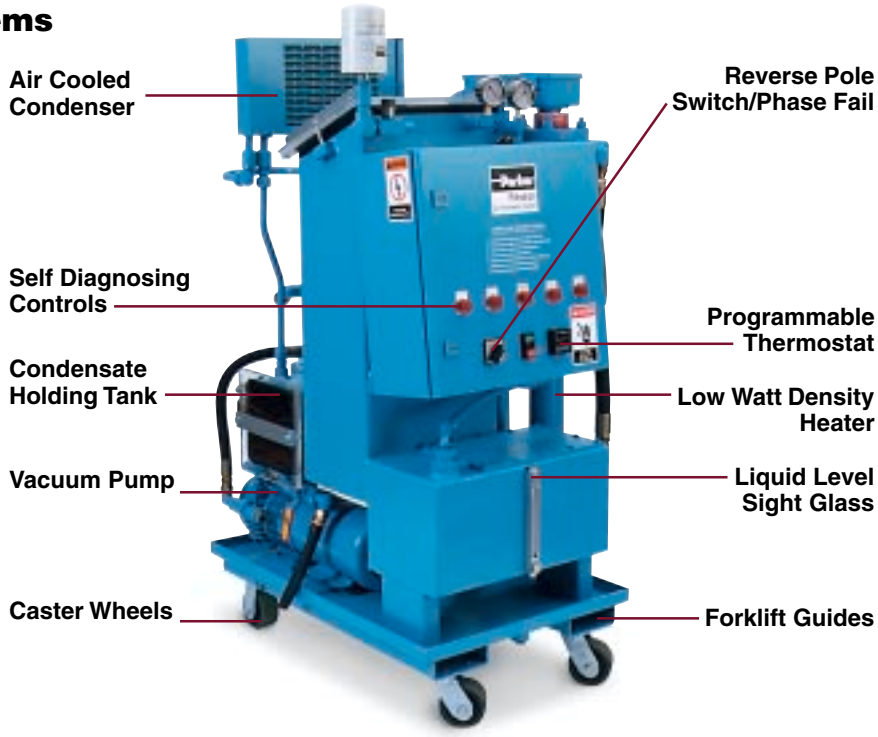
Applications for PVS Portable Purification Systems

- 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
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	Provides safe and secure method to lift unit	Employee safety Easily transported
Programmable thermostat	Maintains oil within 1° F Prevents overheating oil	Unattended operation Increases oil life
Automatic operation	Unattended use	Reduced labor 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 250°F	Prevents system damage Worker safety
Circuit breakers utilized in electrical panel	No fuses to replace Simple diagnostics	Fewer spare parts, increased uptime Reduced maintenance costs
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

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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 utilizing 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.

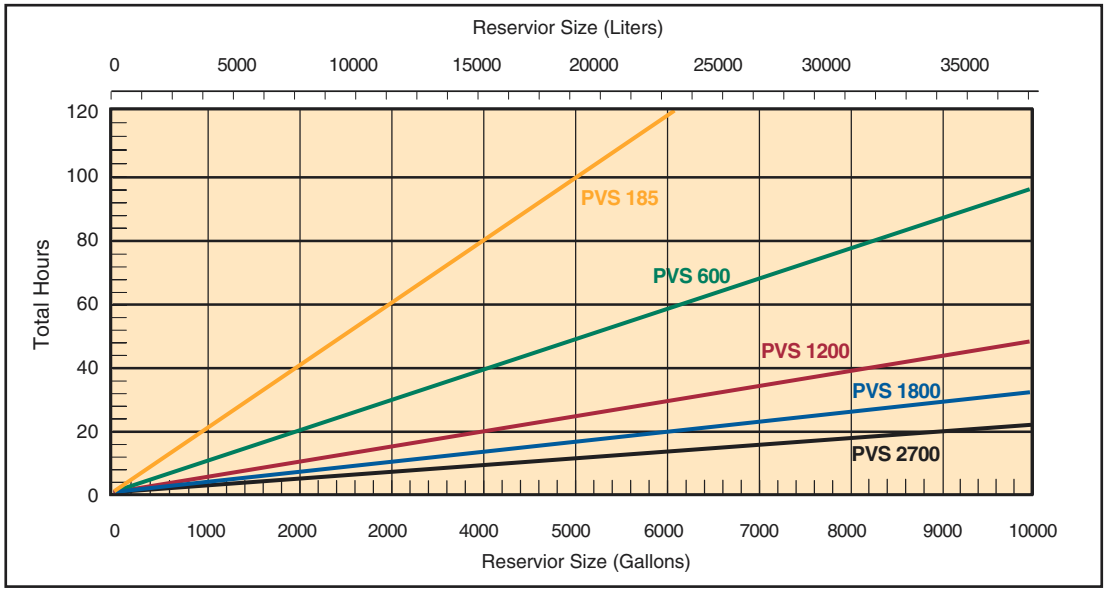
Coalescer units– Removes free water only; has difficulty breaking stable emulsions; does not work well in viscous fluids (>100 sus); much larger in size compared to PVS.

Typical Performance

Tank Size	60 Gallons (227 liters)
Run Time	62 Minutes
Parker Model	PVS 600
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%)



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PVS 185

S P E C I F I C A T I O N S

Flow rate	5 gpm (18.9 lpm)
Height	60" (1524 mm)
Width	25" (635 mm)
Length	36" (914 mm)
Weight	500 lbs. (227.3 kg)
Seal material	Fluorocarbon (EPR opt.)
Condensate tank	4.1 gal (15.5 ltrs)
Dispersal elements	1
Minimum operating capacity	5 gal (18.9 ltrs)
Vacuum (max)	25 In/Hg
Viscosity (max)	500 sus (108 cSt)-Disposable 2150 sus (460 cSt)-Packed Tower
Outlet pressure (max)	60 psi (4.1 bar)
Ports	3/4" JIC (male) inlet 3/4" JIC (male) outlet
FLA (full load amps)	15-30 amps (Depending on voltage used)

REPLACEMENT ELEMENTS

PARTICULATE

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

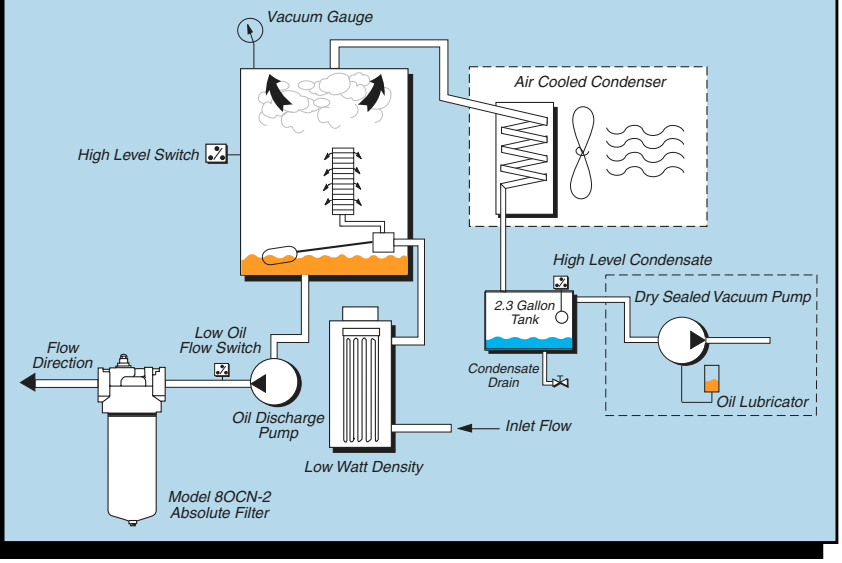
DISPERSAL

Disposable (Coalescing)	933180
Packed tower (Cleanable)	933553

CORELESS

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

PVS 185 Flow Diagram



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PVS 600

S P E C I F I C A T I O N S

Flow rate	10 gpm (37.9 lpm)
Height	60" (1524 mm)
Width	25" (635 mm)
Length	36" (914 mm)
Weight	750 lbs. (341 kg)
Seal material	Fluorocarbon (EPR opt.)
Condensate tank	4.1 gal (15.5 ltrs)
Dispersal elements	2
Minimum operating capacity	6 gal (22.7 ltrs)
Vacuum (max)	25 In/Hg
Viscosity (max)	500 sus (108 cSt) - Disposable 2150 sus (460 cSt) - Packed Tower
Outlet pressure (max)	60 psi (4.1 bar)
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

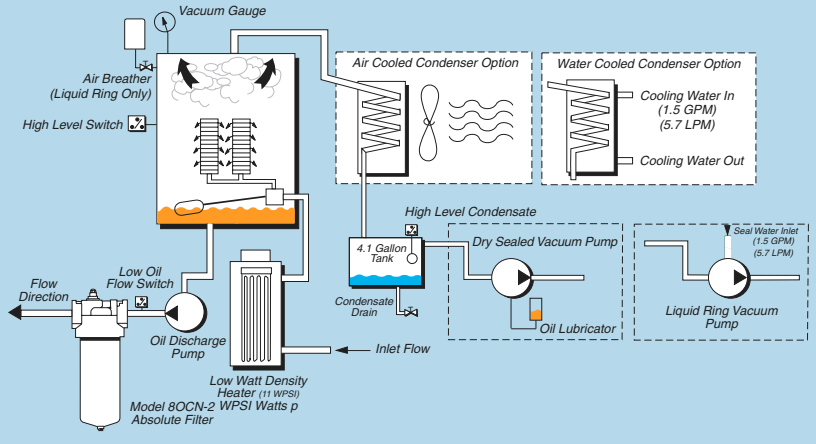
DISPERSAL

Disposable (Coalescing)	933180
Packed tower (Cleanable)	933553

CORELESS

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

PVS 600 Flow Diagram



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PVS 1200

SPECIFICATIONS

Flow rate	20 gpm (75.7 lpm)
Height	65" (1651 mm)
Width	32" (813 mm)
Length	48" (1219 mm)
Weight	1400lbs. (636 kg)
Seal material	Fluorocarbon (EPR opt.)
Condensate tank	8.3 gal (31.4 ltrs)
Dispersal elements	4
Minimum operating capacity	11 gal (41.6 ltrs)
Vacuum (max)	25 In/Hg
Viscosity (max)	500 sus (108 cSt) - Disposable 2150 sus (460 cSt) - Packed Tower
Outlet pressure (max)	60 psi (4.1 bar)
Ports	1½" NPTF inlet 1" JIC (male) outlet
FLA (full load amps)	30-48 amps (Depending on options & voltages)

REPLACEMENT ELEMENTS

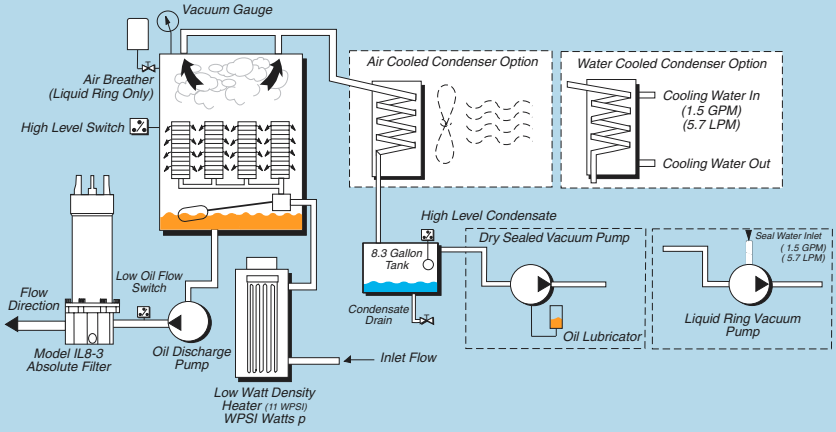
DISPERSAL

Disposable (Coalescing)	933180
Packed tower (Cleanable)	933553

CORELESS

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

PVS 1200 Flow Diagram



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PVS 1800

SPECIFICATIONS

Flow rate	30 gpm (113.6 lpm)
Height	65” (1651 mm)
Width	40” (1016 mm)
Length	72” (1829 mm)
Weight	1700 lbs. (772 kg)
Seal material	Fluorocarbon (EPR opt.)
Condensate tank	8.3 gal (31.4 ltrs)
Dispersal elements	8
Minimum operating capacity	18 gal (68.1 ltrs)
Vacuum (max)	25 in/hg
Viscosity (max)	500 sus (108 cSt) - Disposable 2150 sus (460 cSt) - Packed
Outlet pressure (max)	60 psi (4.1 bar)
Ports	2” NPTF- inlet 1.5” JIC – 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 2700

SPECIFICATIONS

Flow rate	45 gpm (170.3 lpm)
Height	70” (1778 mm)
Width	60” (1524 mm)
Length	72” (1829 mm)
Weight	1800 lbs. (817 kg)
Seal material	Fluorocarbon (EPR opt.)
Condensate tank	8.3 gal (31.4 ltrs)
Dispersal elements	8
Minimum operating capacity	18 gal (68.1 ltrs)
Vacuum (max)	25 in/hg
Viscosity (max)	500 sus (108 cSt)- Disposable 2150 sus (460 cSt) – Packed
Outlet pressure (max)	60 psi (4.1 bar)
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

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HOW TO ORDER:

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

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

BOX 1: SEALS

Symbol	Description
None	***Fluorocarbon***
E8	EPR

BOX 2: BASIC ASSEMBLY

Symbol	Description
PVS	***Portable Purification System***

BOX 3: FLOW RATE

Symbol	Description
185	***5 GPM (18.9 lpm)***
600	***10 GPM (37.9 lpm)***
1200	***20 GPM (75.7 lpm)***
1800	30 GPM (113.6 lpm)
2700	45 GPM (170.3 lpm)

BOX 4: POWER SUPPLY

Model	Symbol	Description
185	220	220VAC, 1P, 60HZ
	230	230VAC, 3P, 60HZ
	380	380VAC, 3P, 50HZ
	460	460VAC, 3P, 60HZ
	550	575VAC, 3P, 60HZ
600	230	230VAC, 3P, 60HZ
	380	380VAC, 3P, 50HZ
	460	460VAC, 3P, 60HZ
	550	550VAC, 3P, 60HZ
1200	380	380VAC, 3P, 50HZ
	460	460VAC, 3P, 60HZ
	550	550VAC, 3P, 60HZ
1800	380	380VAC, 3P, 50HZ
	460	460VAC, 3P, 60HZ
	550	550VAC, 3P, 60HZ
2700	380	380VAC, 3P, 50HZ
	460	460VAC, 3P, 60HZ
	550	550VAC, 3P, 60HZ

Please note the bolded options reflect standard options with a reduced lead-time. Consult factory on all other lead-time options.

BOX 5: VACUUM PUMP

Symbol	Pressure Setting
DS	***Dry sealed***
LR	***Liquid ring***

BOX 6: DISPERSAL ELEMENT

Symbol	Description
D	***Disposable (Coalescing)***
P	***Packed tower (cleanable-for use with viscious or highly contaminated fluids)***

BOX 7: PARTICULATE ELEMENT

Symbol	Description
2Q	***2 Micron Microglass III***
5Q	***5 Micron Microglass III***
10Q	***10 Micron Microglass III***
20Q	***20 Micron Microglass III***

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

BOX 8: FILTER HOUSING

Symbol	Description
None	80CN-2
E	IL8 (39") Coreless Upgrade

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

BOX 9: HEATER

Model	Symbol	Description
185	***3***	***3 KW (1 phase)***
	10	***10 KW (3 phase)***
600	***12***	***12 KW***
	24	24 KW
1200	***24***	***24 KW***
1800	36	36 KW
2700	48	48 KW

BOX 10: CONDENSER

Symbol	Description
AC	Air cooled
LC	Liquid cooled

BOX 11: OPTIONS

Symbol	Description
PW	Pneumatic Wheels
ACD	Auto Condensate Drain
DFL	Dirty Filter Light
RHM	Resetable Hour Meter
SFI	Sight Flow Indicator
VFC	Variable Flow Circuit
ICV	Inlet Control Valve
CE	CE
CSA	CSA
EXP	Explosion Proof