



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:

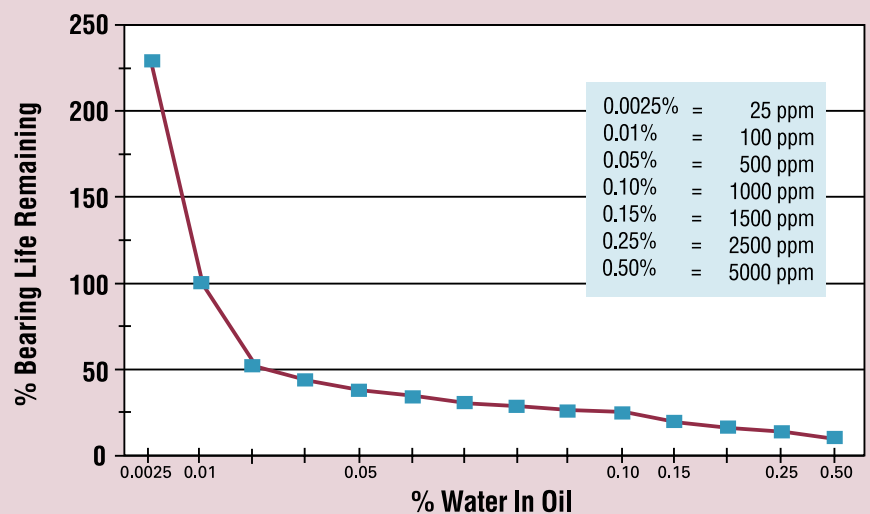
- Corrosion by etching metal
- Fluid breakdown, reduction of lubricating properties, additive precipitation, and oil oxidation
- Reduced dielectric strength
- Abrasive wear in hydraulic components

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).

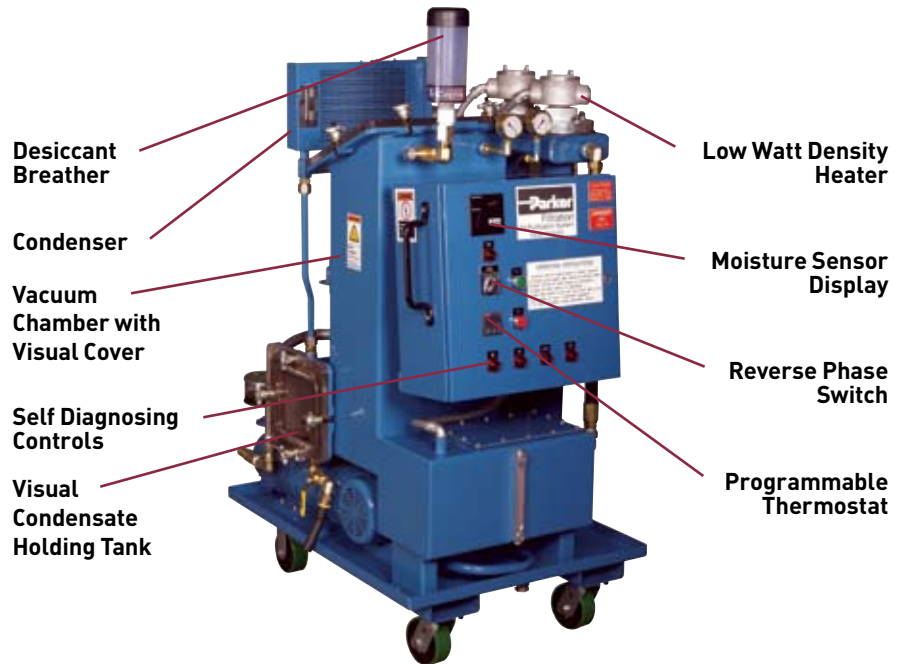
Effect Of Water In Oil On Bearing Life



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.

**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 | <ul style="list-style-type: none"> • Allows oil to heat more quickly | <ul style="list-style-type: none"> • Starts to remove water more quickly |
| Moisture sensor | <ul style="list-style-type: none"> • Real-time water content indication in % saturation | <ul style="list-style-type: none"> • At-a-glance visual confirmation |
| Automatic operation | <ul style="list-style-type: none"> • Unattended use • Designed for 24/7 operation | <ul style="list-style-type: none"> • Reduces labor costs • Increases operation time |
| Stainless steel used for all wetted surfaces | <ul style="list-style-type: none"> • No corrosion | <ul style="list-style-type: none"> • Product reliability |
| Compact size | <ul style="list-style-type: none"> • Smallest envelope in the industry • Ease of portability | <ul style="list-style-type: none"> • Fits in tight areas • Encourages use |
| Clear plexiglass covers on the condensate tank and vacuum chamber | <ul style="list-style-type: none"> • See the vacuum dehydration process work | <ul style="list-style-type: none"> • Visual verification of water removal |
| Desiccant breather | <ul style="list-style-type: none"> • Insures dry, clean intake air | <ul style="list-style-type: none"> • More efficient operation |
| Reverse phase switch | <ul style="list-style-type: none"> • Enables easy changing of motor rotation if out-of-phase | <ul style="list-style-type: none"> • Ease of maintenance • Prevents incorrect rotation |
| Condensate holding tank with optional auto drain | <ul style="list-style-type: none"> • Large volume for infrequent servicing intervals | <ul style="list-style-type: none"> • Reduces maintenance costs |
| Programmable thermostat | <ul style="list-style-type: none"> • Maintains oil within 1°F • Prevents overheating the oil | <ul style="list-style-type: none"> • Unattended operation |
| Forklift guides and lifting eyes | <ul style="list-style-type: none"> • Provides safe and secure method of lifting the unit | <ul style="list-style-type: none"> • Employee safety |
| Coalescing or packed tower oil dispersal elements | <ul style="list-style-type: none"> • Flexibility with various fluid viscosities | <ul style="list-style-type: none"> • Greater efficiency in removing moisture |

PVS

Portable Purification Systems

| 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 (10 GPM) |
| 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 |

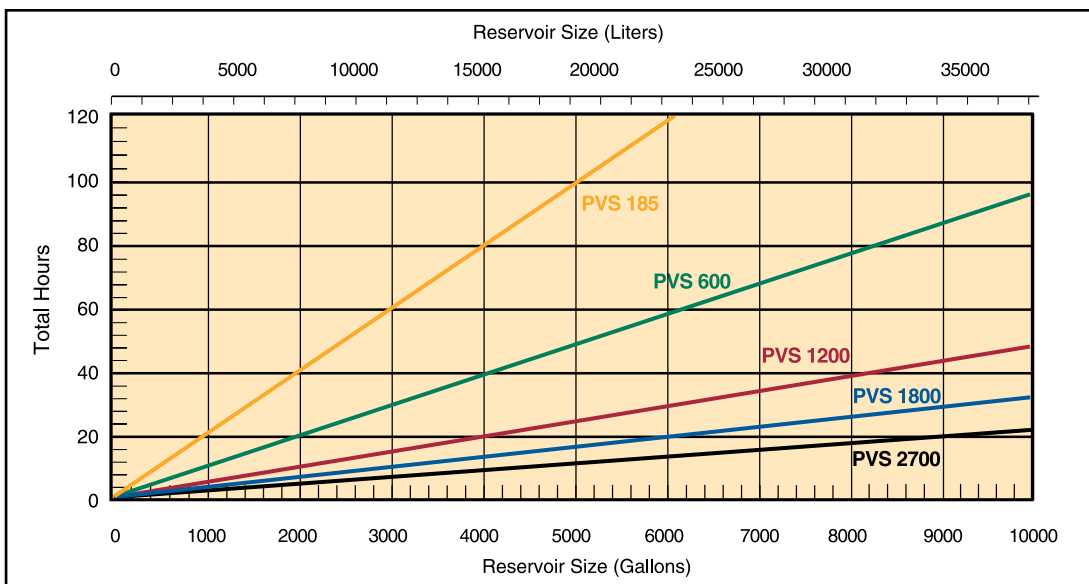


Start



Stop

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



PVS 185

SPECIFICATIONS

| | |
|----------------------------|---|
| Flow rate | 5 gpm (18.9 lpm) |
| Height | 65" (1651 mm) |
| Width | 33" (838.2 mm) |
| Length | 48" (1219.2 mm) |
| Weight | 650 lbs. (294.8 kg) |
| Seal material | Fluorocarbon (EPR optional) |
| 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) | 15-41 amps (Depending on voltage used) |



REPLACEMENT ELEMENTS

STANDARD CORELESS PARTICULATE (80CN-2)

| | |
|------------------|---------|
| 02QE (2 micron) | 936716Q |
| 05QE (5 micron) | 936717Q |
| 10QE (10 micron) | 936718Q |
| 20QE (20 micron) | 936719Q |

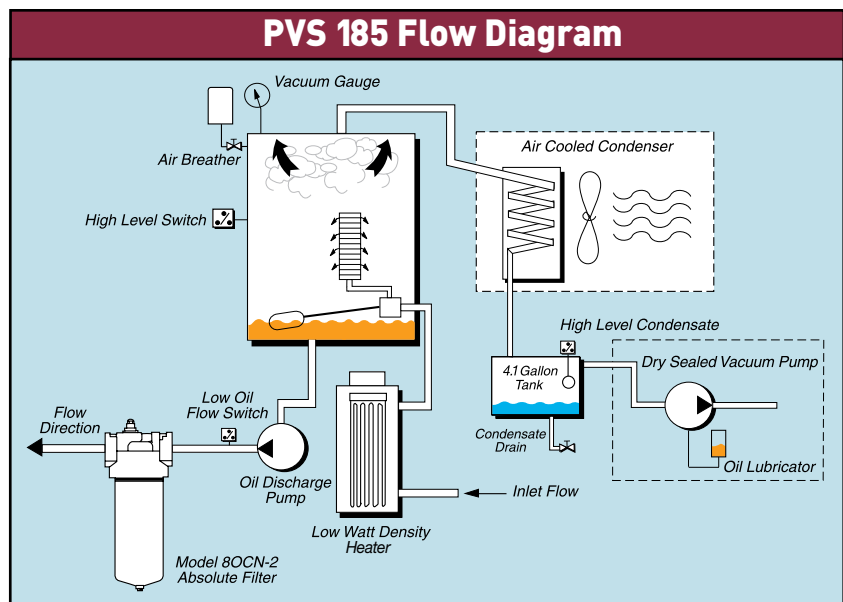
OPTIONAL CORELESS PARTICULATE (IL8-3)

| | |
|------------------|---------|
| 2QE (2 micron) | 933734Q |
| 5QE (5 micron) | 933612Q |
| 10QE (10 micron) | 933735Q |
| 20QE (20 micron) | 933736Q |

DISPERSAL

| | |
|--------------------------|--------|
| Disposable (Coalescing) | 933180 |
| Packed tower (Cleanable) | 933553 |

PVS 185 Flow Diagram



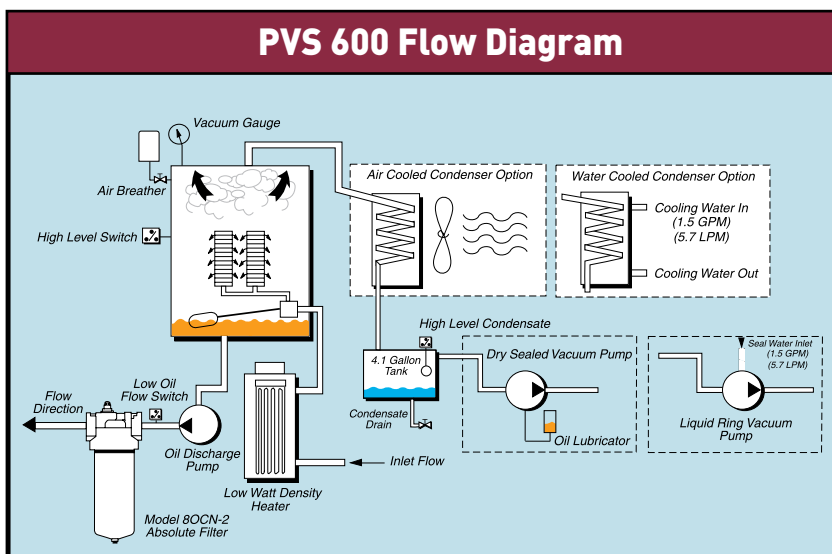
PVS 600

SPECIFICATIONS

| | |
|----------------------------|---|
| Flow rate | 10 gpm (37.9 lpm) |
| Height | 65" (1651 mm) |
| Width | 33" (838.2 mm) |
| Length | 48" (1219.2 mm) |
| Weight | 900 lbs. (408.2 kg) |
| Seal material | Fluorocarbon (EPR optional) |
| 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 | |
|--|---------|
| STANDARD CORELESS PARTICULATE (80CN-2) | |
| 02QE (2 micron) | 936716Q |
| 05QE (5 micron) | 936717Q |
| 10QE (10 micron) | 936718Q |
| 20QE (20 micron) | 936719Q |
| OPTIONAL CORELESS PARTICULATE (IL8-3) | |
| 2QE (2 micron) | 933734Q |
| 5QE (5 micron) | 933612Q |
| 10QE (10 micron) | 933735Q |
| 20QE (20 micron) | 933736Q |
| DISPERSAL | |
| Disposable (Coalescing) | 933180 |
| Packed tower (Cleanable) | 933553 |



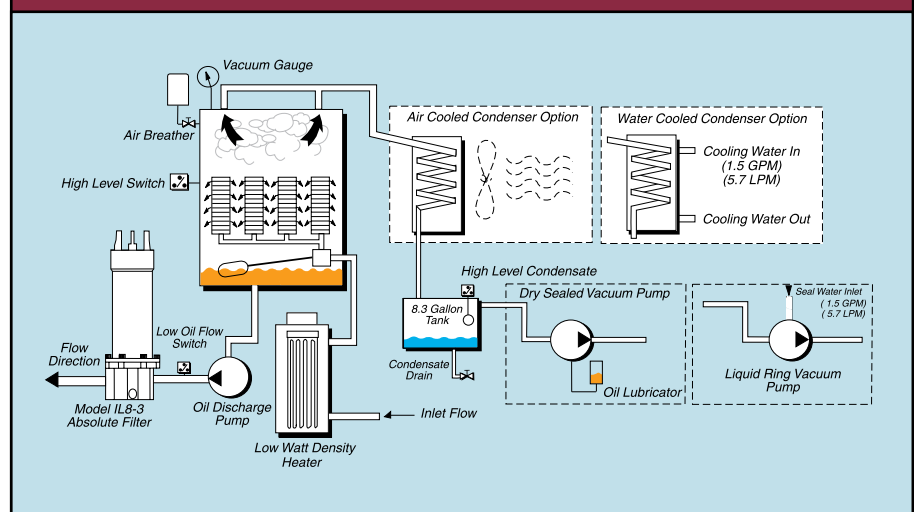
PVS 1200

SPECIFICATIONS

| | |
|----------------------------|---|
| Flow rate | 20 gpm (75.7 lpm) |
| Height | 65" (1651 mm) |
| Width | 44" (1117.6 mm) |
| Length | 61" (1549.4 mm) |
| Weight | 1550 lbs. (703.1 kg) |
| Seal material | Fluorocarbon (EPR optional) |
| 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) |



PVS 1200 Flow Diagram



REPLACEMENT ELEMENTS

DISPERSAL

| | |
|--------------------------|--------|
| Disposable (Coalescing) | 933180 |
| Packed tower (Cleanable) | 933553 |

STANDARD CORELESS PARTICULATE (IL8-3)

| | |
|------------------|---------|
| 02QE (2 micron) | 933734Q |
| 05QE (5 micron) | 933612Q |
| 10QE (10 micron) | 933735Q |
| 20QE (20 micron) | 933736Q |

PVS 1800

SPECIFICATIONS

| | |
|----------------------------|---|
| Flow rate | 30 gpm (113.6 lpm) |
| Height | 66" (1676.4 mm) |
| Width | 42" (1066.8 mm) |
| Length | 73" (1854.2 mm) |
| Weight | 2550 lbs. (1156.7 kg) |
| Seal material | Fluorocarbon (EPR optional) |
| 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 Tower |
| 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 |
| STANDARD CORELESS PARTICULATE (IL8-3) | |
| 02QE (2 micron) | 933734Q |
| 05QE (5 micron) | 933612Q |
| 10QE (10 micron) | 933735Q |
| 20QE (20 micron) | 933736Q |



PVS 2700

SPECIFICATIONS

| | |
|----------------------------|--|
| Flow rate | 45 gpm (170.3 lpm) |
| Height | 66" (1676.4 mm) |
| Width | 42" (1066.8 mm) |
| Length | 73" (1854.2 mm) |
| Weight | 2550 lbs. (1156.7 kg) |
| Seal material | Fluorocarbon (EPR optional) |
| 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 Tower |
| 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 |
| STANDARD CORELESS PARTICULATE (IL8-3) | |
| 02QE (2 micron) | 933734Q |
| 05QE (5 micron) | 933612Q |
| 10QE (10 micron) | 933735Q |
| 20QE (20 micron) | 933736Q |



PVS Specification Worksheet

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 ISO level ____ / ____ / ____
5. Water concentration: Current PPM level _____
 Desired PPM level _____
6. Suction head: Positive/Negative _____ Ft./meters _____
7. Operating distance: _____ Ft./meters _____
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
10. Water supply temperature: (liquid ring model)
 Min _____ °F/°C
 Max _____ °F/°C
 Normal _____ °F/°C
11. Operating environment above/below sea level: _____ Ft./meters
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 the application: _____
17. PVS model selected: _____

***Specification sheet must be completed before order can be entered**

HOW TO ORDER:

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

Example:

| BOX 1 | STD | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 | BOX 9 |
|-------|------------|------------|------------|-----------|----------|-------------|-------------|-----------|---------------------------|
| | PVS | 600 | 460 | DS | D | 10QE | 12KW | AC | ACD DFL CR |

| BOX 1: SEALS | |
|--------------|--------------|
| Symbol | Description |
| None | Fluorocarbon |
| E8 | EPR |

| BOX 4: VACUUM PUMP | |
|--------------------|-------------|
| Symbol | Description |
| DS | Dry sealed |
| LR | Liquid ring |

| BOX 7: HEATER | | |
|---------------|--------|---------------|
| Model | Symbol | Description |
| 185 | 12KW | 12 KW/3 phase |
| 600 | 12KW | 12 KW/3 phase |
| | 24KW | 24 KW/3 phase |
| | 36KW | 36KW/3 phase |
| 1200 | 24KW | 24 KW/3 phase |
| | 36KW | 36KW/3 phase |
| | 48KW | 48 KW/3 phase |
| 1800 | 36KW | 36 KW/3 phase |
| | 48KW | 48 KW/3 phase |
| 2700 | 48KW | 48 KW/3 phase |

| BOX 2: BASE UNIT 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 5: DISPERSAL ELEMENT | |
|--------------------------|-----------------------------|
| Symbol | Description |
| D | Coalescing (Disposable) |
| P | Packed tower (Cleanable) |

| BOX 3: POWER SUPPLY * | | |
|-----------------------|--------|------------------|
| Model | Symbol | Description |
| 185 | 230 | 230VAC, 3P, 60HZ |
| | 380 | 380VAC, 3P, 50HZ |
| | 460 | 460VAC, 3P, 60HZ |
| | 575 | 575VAC, 3P, 60HZ |
| 600 | 380 | 380VAC, 3P, 50HZ |
| | 460 | 460VAC, 3P, 60HZ |
| | 575 | 575VAC, 3P, 60HZ |
| 1200 | 380 | 380VAC, 3P, 50HZ |
| | 460 | 460VAC, 3P, 60HZ |
| | 575 | 575VAC, 3P, 60HZ |
| 1800 | 380 | 380VAC, 3P, 50HZ |
| | 460 | 460VAC, 3P, 60HZ |
| | 575 | 575VAC, 3P, 60HZ |
| 2700 | 380 | 380VAC, 3P, 50HZ |
| | 460 | 460VAC, 3P, 60HZ |
| | 575 | 575VAC, 3P, 60HZ |

| BOX 6: PARTICULATE ELEMENT | |
|---|-----------------------------------|
| Symbol | Description |
| 2QE | 2 Micron Coreless Microglass III |
| 5QE | 5 Micron Coreless Microglass III |
| 10QE | 10 Micron Coreless Microglass III |
| 20QE | 20 Micron Coreless Microglass III |
| Note: Above elements are rated for Beta 200+ (99.5% efficiency) | |

| BOX 8: CONDENSER | |
|------------------|----------------------|
| Symbol | Description |
| AC | Air cooled |
| LC | Liquid cooled |
| BC | Air and water cooled |

| BOX 9: OPTIONS | |
|----------------|---|
| Symbol | Description |
| None | Lifting eyes (4) |
| None | Moisture Sensor |
| None | Variable Flow Circuit |
| 3HP | 3HP High Viscosity Circuit |
| 5DW | 5" Diameter Wheels |
| ACD | Auto Condensate Drain |
| CDC | Condensate Drain Counter |
| CE | CE Marked |
| CF | Carbon Exhaust Filter |
| CR | Cable Reel |
| CSA | CSA Marked |
| DFL | Dirty Filter Light |
| DPG | Differential pressure gauge |
| EXP | Explosion Proof (Class I, Division II, Zone I and II) |
| ICV | Inlet Control Valve |
| IL8 | Upgrade to IL8-3 coreless filter |
| PNW | Pneumatic Wheels |
| RHM | Resetable Hour Meter |
| SFI | Sight Flow Indicator |

* Consult factory for special voltages

Notes
