PVS 185, 600, 1200, 1800, 2700 Series

Portable Purification Systems

FEATURING ECOGLASS III

Global Filtration Technology

PRINCIPLES OF OPERATION

Contaminated oil is drawn into the Parker Portable Purification System by a vacuum of 846.5 millibars (25 In/Hg). The oil passes through the in-line low watt density heater 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 special dispersal elements. This increases the exposed surface area of the oil and converts the water to vapour 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 though a final particulate removal filter. Clean oil passes out of the unit, back to the reservoir – and into the system.

Effects of Water Contamination

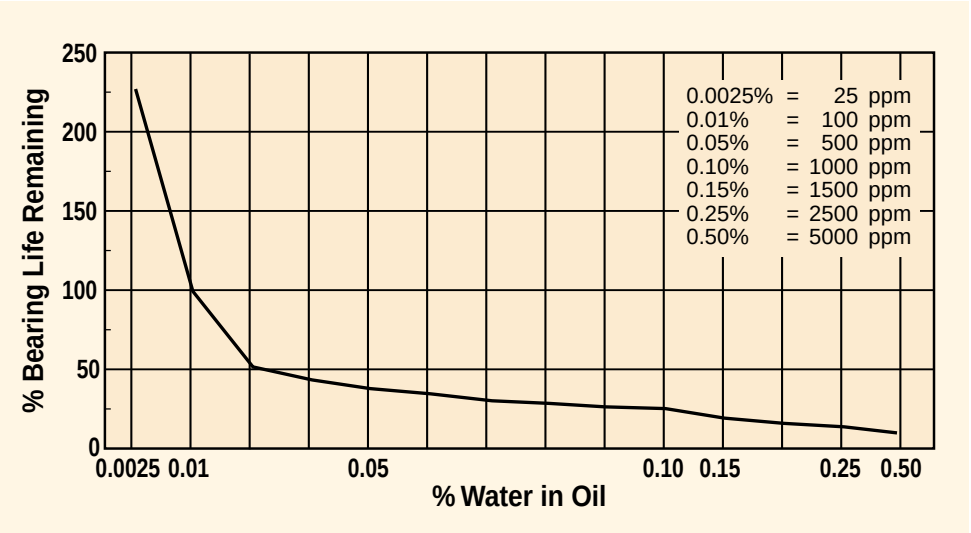
Water is one of the most common contaminants in a fluid system and one of the most damaging. When water contaminates a system, it can cause serious problems such as:

- 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).

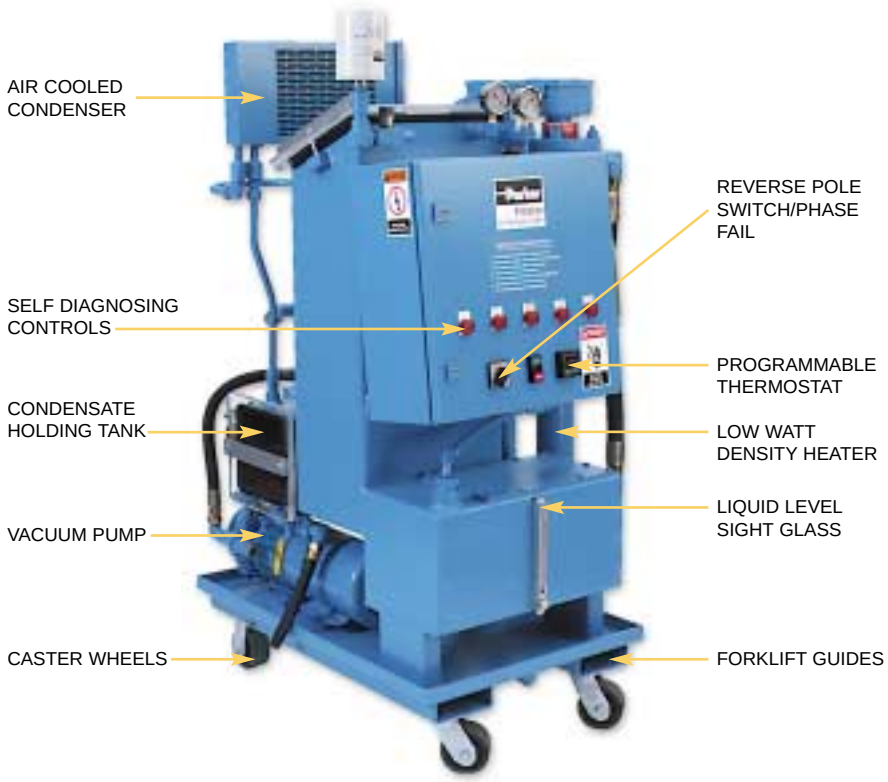
Effect Of Water In Oil On Bearing Life



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
- Calendars
- **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 0.5°C (0.9°F) 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 contactors fail Oil can never exceed 121°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 costs
Available with EPR seals and Stainless Steel	Phosphate ester compatible	Specifically designed for application
Solid state heater contactor	Longer more reliable service life	Reduced downtime

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.

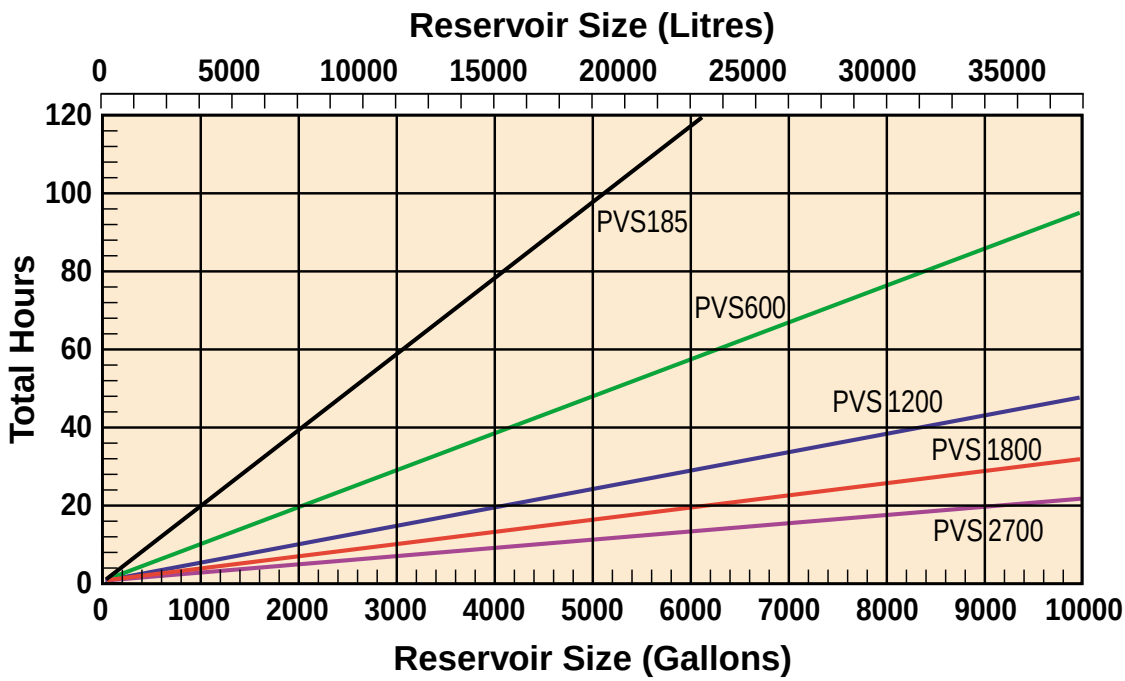
Coalescer units – Removes free water only; has difficulty breaking stable emulsions; does not work well in viscous fluids (>23cSt); much larger in size compared to PVS.

TYPICAL PERFORMANCE

Tank Size	**227 Litres (60 USG)**
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%)



SPECIFICATION

Flow Rate:
19 l/min (5 USGM)

Height:
1524mm (60”)

Width:
635mm (25”)

Length:
914mm (36”)

Weight:
227.3 Kg (500 lbs)

Seal Material:
Fluorocarbon (EPR opt.)

Condensate Tank:
15.5 ltrs (4.1 gal)

Dispersal Elements:
1

Minimum Operating Capacity:
19 ltrs (5 USG)

Vacuum (max):
846 millibar (25 In/Hg)

Viscosity (max):
105 cSt (500sus) – Disposable
460 cSt (2150 sus) – Packed Tower

Outlet Pressure (max):
4.1 bar (60 psi)

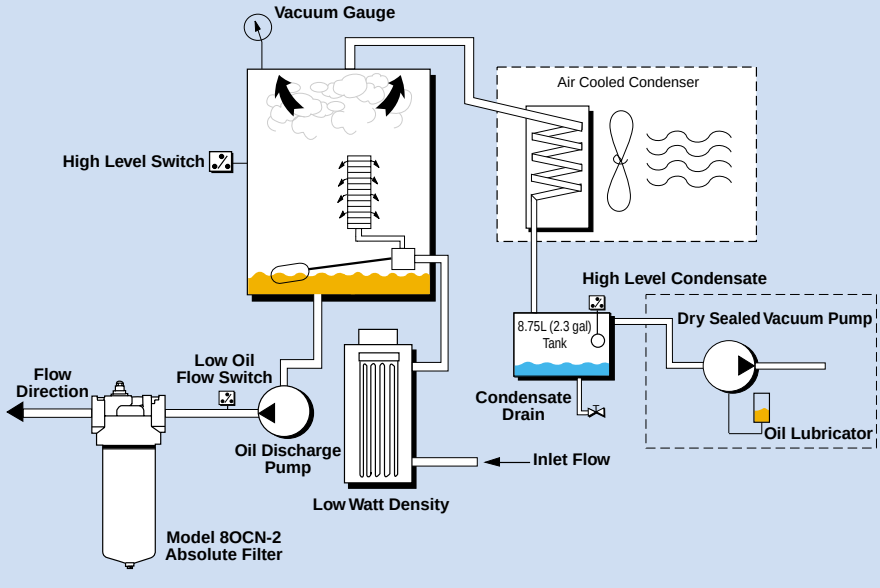
Ports:
3/4” JIC (male) inlet
3/4” JIC (male) outlet

FLA (Full Load Amps):
15-30 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
ECOGLASS III		
02QE		932665Q
05QE		932666Q
10QE		932667Q
20QE		929927Q

PVS 185 Flow Diagram



Portable Purification Systems

PVS 600

SPECIFICATION

Flow Rate:
37.9 l/min (10 USGM)

Height:
1524mm (60”)

Width:
635mm (25”)

Length:
914mm (36”)

Weight:
341 Kg (750 lbs)

Seal Material:
Fluorocarbon (EPR opt.)

Condensate Tank:
15.5 ltrs (4.1 USG)

Dispersal Elements:
2

Minimum Operating Capacity:
22.7 ltrs (6 USG)

Vacuum (max):
846 millibar (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

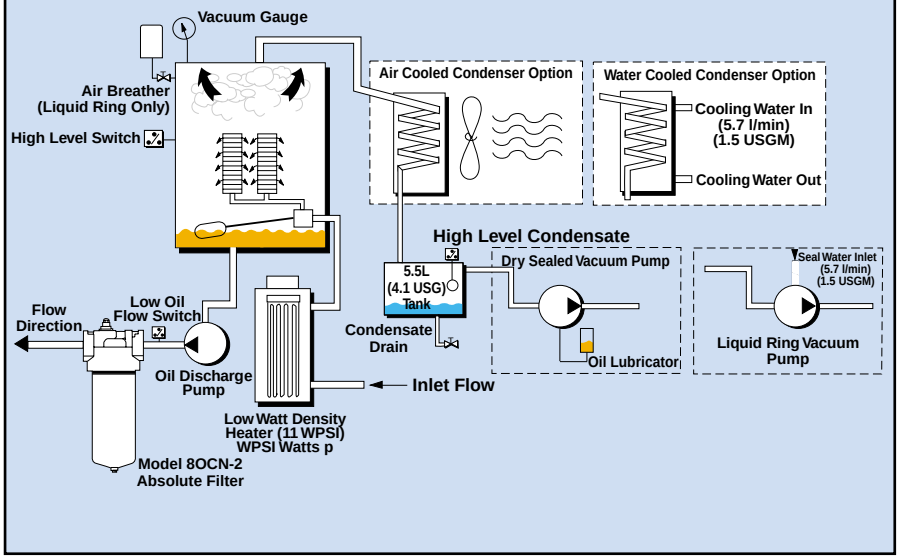
DISPERSAL

Disposable (Coalescing)	933180
Packed Tower (Cleanable)	933553

ECOGLASS III

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

PVS 600 Flow Diagram



SPECIFICATION

Flow Rate:
75.7 l/min (20 USGM)

Height:
1651mm (65”)

Width:
813mm (32”)

Length:
1219mm (48”)

Weight:
636 Kg (1400 lbs)

Seal Material:
Fluorocarbon (EPR opt.)

Condensate Tank:
31.4 ltrs (8.3 USG)

Dispersal Elements:
4

Minimum Operating Capacity:
41.6 ltrs (11 USG)

Vacuum (max):
846 millibar (25 In/Hg)

Viscosity (max):
108 cSt (500sus) – Disposable
460 cSt (2150 sus) – Packed Tower

Outlet Pressure (max):
4.1 bar (60 psi)

Ports:
1½” NPTF inlet
1” JIC (male) outlet

FLA (Full Load Amps):
30-48 amps
(Depending on options & voltages)

Replacement Elements

PARTICULATE

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

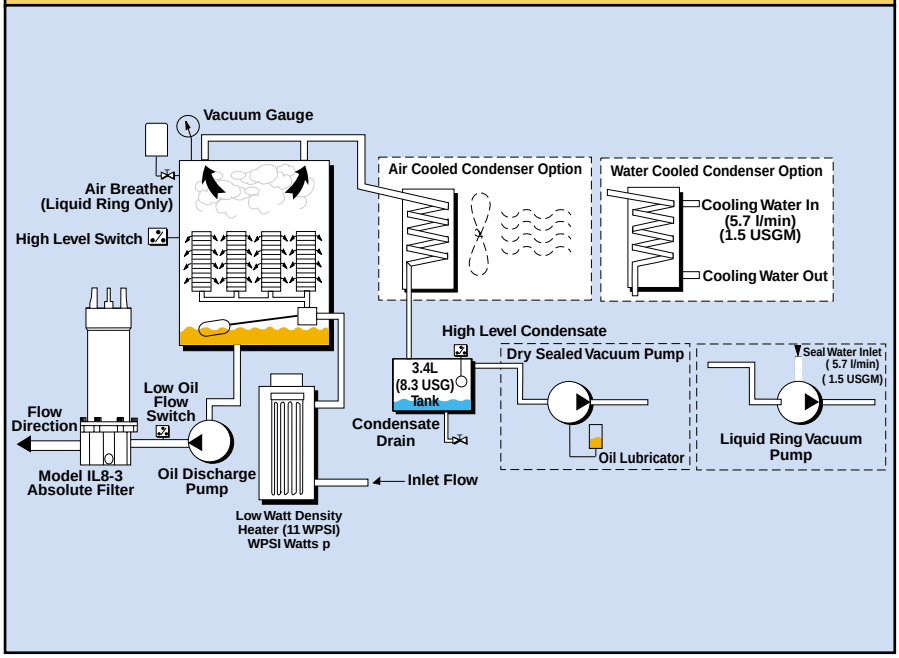
DISPERSAL

Disposable (Coalescing)	933180
Packed Tower (Cleanable)	933553

ECOGLASS III

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

PVS 1200 Flow Diagram



Portable Purification Systems

PVS 1800

SPECIFICATION

Flow Rate:
113.6 l/min (30 USGM)

Height:
1651mm (65”)

Width:
1016mm (40”)

Length:
1829mm (72”)

Weight:
772 Kg (1700 lbs)

Seal Material:
Fluorocarbon (EPR opt.)

Condensate Tank:
31.4 ltrs (8.3 USGM)

Dispersal Elements:
8

Minimum Operating Capacity:
68.1 ltrs (18 USG)

Vacuum (max):
846 millibar (25 In/Hg)

Viscosity (max):
108 cSt (500sus) – Disposable
460 cSt (2150 sus) – Packed

Outlet Pressure (max):
4.1 bar (60 psi)

Ports:
2” NPTF inlet
1½” JIC outlet

FLA (Full Load Amps):
40-65 amps @ 460 V/60hz

Replacement Elements		
PARTICULATE		
2Q	(2 micron)	932872Q
5Q	(5 micron)	932873Q
10Q	(10 micron)	932874Q
20Q	(20 micron)	929875Q
DISPERSAL		
Disposable (Coalescing)		933180
Packed Tower (Cleanable)		933553
ECOGLASS III		
02QE		933734Q
05QE		933612Q
10QE		933735Q
20QE		933736Q

SPECIFICATION

Flow Rate:
170.3 l/min (45 USG)

Height:
1778mm (70”)

Width:
1524mm (60”)

Length:
1829mm (72”)

Weight:
817 Kg (1800 lbs)

Seal Material:
Fluorocarbon (EPR opt.)

Condensate Tank:
31.4 ltrs (8.3 USG)

Dispersal Elements:
8

Minimum Operating Capacity:
68.1 ltrs (18 USG)

Vacuum (max):
846 millibar (25 In/Hg)

Viscosity (max):
108 cSt (500sus) – Disposable
460 cSt (2150 sus) – Packed

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

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

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

ORDERING INFORMATION

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	SYMBOL
Fluorocarbon	*None*
EPR	E8

Box 2

Basic Assembly

Description	SYMBOL
Portable Purification System	*PVS*

Box 3

Capacity

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

Box 4

Power Supply

Model	Description	SYMBOL
185	220VAC, 1P, 60HZ	220
	230VAC, 3P, 60HZ	230
	380VAC, 3P, 50HZ	380
	460VAC, 3P, 60HZ	460
	575VAC, 3P, 60HZ	550
600	230VAC, 3P, 60HZ	230
	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	SYMBOL
Dry Sealed	*DS*
Liquid Ring	*LR*

Box 6

Dispersal Element

Description	SYMBOL
Disposable (Coalescing)	*D*
Packed Tower (Cleanable – for use with viscious or highly contaminated fluids)	*P*

Box 7

Degree of Filtration/Particulate Element

Average filtration ratio ß (ISO 16889) / particle size µm(c)						CODE
2	10	75	100	200	1000	
N/A	N/A	N/A	N/A	N/A	4.5	2Q
N/A	N/A	4.5	5	6	7	5Q
N/A	6	8.5	9	10	12	10Q
6	11	17	18	20	22	20Q

Box 8

Filter Housing

Description	SYMBOL
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	SYMBOL
185	*3 KW (1 phase)*	*3*
	10 KW (3 phase)	*10*
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
Variable Flow Circuit	VFC
Inlet Control Valve	ICV
CE	CE
CSA	CSA
Explosion Proof	EXP