

## Variable Speed Packaged Pumping System

(Closed System)

Model PPS-VC

The Model PPS-VC, Packaged Pumping System is a UL-Listed factory assembled and tested system used for fluid handling systems which are configured in closed circuits. The PPS-VC provides significant *power savings* by automatically controlling the speed of the pump(s) based on the actual system demand. Transmitters signal to the PPS-VC System Controller which controls a *Variable Frequency Drive* for each pump to the appropriate speed. The PPS-VC can be configured for pumping of a variety of fluids at a controlled flow rate in any industrial or commercial application. Process fluid enters a common system header and by use of centrifugal pumps is pumped at a controlled flow rate to a common discharge header. The *Variable Frequency Drive* may incorporate Manual or Automatic bypasses. The PPS-VC also allows for system thermal expansion based on the system volume. A UL-Listed control panel with single-point power connection is pre-wired to all electrical sources. Each Unit is custom engineered and designed to meet specific system requirements. All systems are fabricated and welded per ASME Section IX Code and Standards, and are Hydrostatically tested prior to shipment. The Model PPS-VC speeds installation and start-up of fluid systems which provide significant savings to contractors, engineers, and facility owners.

### STANDARD CONSTRUCTION

- Structural Channel Base
- Carbon Steel Piping
- Operational Testing
- Pump Isolation Valves
- Hydrostatically Tested
- High Temperature Industrial Enamel Paint

### CONDITIONS OF OPERATION

Max. Allowable Pressure:	125 psig / 8.6 bar
Max. Allowable Temperature:	240 °F / 115.5 °C



### Legend:

- A. Base-mounted, End-suction Centrifugal Pumps
- B. Triple Duty Valve
- C. Variable Frequency Drive
- D. System Inlet / Outlet Thermometers
- E. Air Separator with Auto Air Vent
- F. Bladder-Type Expansion Tank
- G. Pump Differential Pressure Gauge
- H. UL-listed Electrical Control Panel

### MODEL PPS-VC SAVINGS

Pump Speed (%)	Input Power (%)	Potential Savings (\$ /yr.)
100	100	\$0
90	73	\$4,329
80	51	\$7,856
70	34	\$10,581
60	22	\$12,505
50	13	\$13,948
40	6	\$15,070
30	3	\$15,551

### NOTES:

1. Savings are based on max. potential savings at max. pump capacity on 8600 hr./yr. of continuous operation.
2. Power costs at \$0.10/kW-hr.
3. Savings assume continuous operation of one (1) 25 Hp Pump.
4. Savings based on approx. calculations.

**Model PPS-VC**  
**Packaged Pumping System Order Form**

Form 00-PPS-VC

**Specify the following parameters:**

I. System Flow Rate = \_\_\_\_\_ GPM

II. System Differential  
Pressure Required = \_\_\_\_\_ psid

III. System Inlet  
Pressure = \_\_\_\_\_ psig

IV. System Temperature ( Min / Max ) = \_\_\_\_\_ °F

V. System Fluid = \_\_\_\_\_

VI. System Electrical = \_\_\_\_\_ V \_\_\_\_\_ Hz

VII. System Volume = \_\_\_\_\_ Gal.

Note: System medium assumed to be water, unless otherwise specified.

**SYSTEM OPTIONS**

Stand-by Pump

Variable Frequency Drive  
Manual Bypass  
Automatic Bypass

Pump Suction Diffuser

Vertical In-line Pump

Split-coupled Vertical In-line Pump

Closed-coupled end-suction Centrifugal  
Pump

Auto standby pump start on lead pump  
failure

Auto Pump Alternation

Remote start connection

Panel-mounted Differential Pressure Gauges

Pump Run Time Hour Meter

Outdoor use Rating

Outdoor Cabinet

System Inlet/Outlet Isolation Valves

System Flow Switch

Differential Pressure Switch across Pump  
suction/discharge

System drain valves

Flexible Connectors

Vibration Isolation

Regardless of system size, temperature,  
pressure, fluid medium, or space requirements,  
**EnviroSep** can provide solutions to all specialized  
needs.

**EnviroSep** • Fluid & Heat Recovery Systems  
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# Typical Specifications for PPS-VC

Furnish and install one **EnviroSep** Model PPS-VC- [A] - [B] - [C] - [D] Packaged Pumping System with the system capacity to pump \_\_\_\_\_ GPM of \_\_\_\_\_ (fluid) from \_\_\_\_\_ psig to \_\_\_\_\_ psig.

## KEY:

[A] = Model # (GPM)

[B] = # of pumps (1,2,3,etc.)

[C] = Parallel (P) or Stand-by (S) pump designation

[D] = Manual (M) or Automatic (A) alternation for multiple pumps

**GENERAL** - This package shall be factory assembled with pump(s), fabricated steel frame, interconnection piping( welded per ASME Section IX certified welders), UL-listed Industrial Control Panel factory wired for single-point field connection per NEC.

**PUMPS**-Pump(s) shall be single, end-suction type with radically split, top center-line discharge, self-venting casing. Pump construction shall be cast iron, bronze fitted and shall be fitted with a long-life, product lubricated, drip tight mechanical seal, with O-ring seat retainer. Impeller shaft to be 416SS fitted with a SS shaft sleeve and be supported by two heavy duty ball bearings. The design shall allow back pull out servicing, enabling the complete rotating assembly to be removed without disturbing casing piping connections. The pump shall be mounted on a rigid, single base plate and by flexible with guard to the motor. Seal shall be rated for continuous duty at 270°F, motor shall be open drip proof, NEMA MG-1 with 1.15 service factor

**TRIPLE DUTY VALVE**- System shall include, on the discharge of each pump, a combination valve incorporating three functions in one body: tight shut-off, spring closure type silent non-slam check, and flow measured/throttling. Valve body shall be ductile iron with two ¼" NPT connections on each side of the valve seat. The valve disc shall be bronze plug disc type with high impact engineered resin seat to ensure tight shut-off and silent check valve operation. Valve stem shall be SS with flat surfaces provided for adjustment with open end wrench.

**VARIABLE FREQUENCY DRIVE** – Variable Frequency Drive shall be variable torque AC inverter enclosed in NEMA 1 or 12 enclosure. Standard features shall include circuit breaker disconnect, Hand-Off-Auto selector switch, manual potentiometer (speed pot), door-mounted keypad, run relay contacts, fault relay contacts, and top/bottom conduit entry. Drive bypass shall be provided as standard with Drive-Off-Bypass selector switch. Class 20 overloads

are included.

**AIR REMOVAL EQUIPMENT**- System shall include one tangential air separator with internal stainless steel collector tube. Connections to be flanged with a rating of 150 psig. System shall be equipped with ¾" Pressure Relief Valve, ¾" Pressure Regulating Valve, ASME Compression / Expansion Tank (sized by or provide system volume and temperature difference), and tank fitting, sight glass, and tank drain connections to tank. Bladder-type expansion tank may be substituted as alternate.

**SUCTION DIFFUSER**- System shall include, on the suction of each pump a suction diffuser with cast iron body, outlet guide vanes and removable SS strainer.

**CONTROL PANEL** - System shall include one (1) UL - Listed, NEMA 12, Industrial Control Panel with single-point power connection, pre-wired to all electrical components. Panel shall have thru-the-door fused disconnect; magnetic circuit breaker supplementary motor protector with fast-closing contacts, non-reversing 3-pole contactor, and variable setting, bi-metallic overload relay for each motor; 30 mm Foundry-duty switches; 30 mm Corrosion Resistant pilot lights; control transformer; Automatic Alternator (if required). Operation of each pump shall be Hand-Off-Auto with external connection to terminal blocks. When standby pump(s) are used, the standby pump(s) shall manually/automatically(customer specified) start on primary pump failure. All internal wiring shall be placed in conduit.

**MANUFACTURER** - Shall assume system liability, and performance guarantee and warranty all equipment on system for 12 months after initial start-up.

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