Variable Speed Drive
Water Booster Systems

With
Variflo™ Technology

PLAD
a variable speed drive water booster system equipped with a dual PID controller that automatically regulates discharge pressure to match your exact system curve requirements.

- **Field Adjustable System Curve Setting**
  *Since pressure loss varies in relation to the square of the flow in a piping network, Variflo lets you set that second order system curve by entering only three parameters.*

- **Alternation Modes**
  *Pumps can be set to alternate with timers, hour meters, lead pump selector or pump electronic alternator.*

- **Anti-cycling Timers**
  *Adjustable timers delay start signal to avoid starting pump while still rotating, preventing rapid cycling.*

- **Alarm Log**
  *Records time, date and operating conditions at time of alarm.*

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**Variflo™**

**EASY TO SET**

**USER FRIENDLY**

**FACTORY TESTED**

**ENERGY EFFICIENT**

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**PLAD Variflo**

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**Duplex 15 HP booster without flow sensor.**
PLAD will custom-design your Variflo water booster system to meet the exact requirements of your application.

Optimum Pumping Performance by PLAD

Plad will deliver the proper VSD pumping system for your application. It will provide reliability, unit responsibility, system efficiency and cost saving potential, owing to the precise pumping operation that will match the requirements of your system curve.

Ultimate Adaptability

For a variety of HVAC and water booster applications, Variflo is the answer to your pumping needs.

Variflo is a Cruise Control for your Pumping System

The variable frequency drive will adjust pump motor speed to meet the exact requirements (flow, pressure, HP) of your system.

Just as your car cruise control adjusts the engine speed to meet driving requirements, the VSD pumping system adjusts pump motor speed to meet the exact demands of your system.

More pressure and flow simply require greater motor speed. That is what Variflo delivers...

ISO 9002

PLAD Excellence CSA & UL

The benefits of Variflo variable speed drive water boosters exceed those of fixed-speed package systems by providing:

• More flow with less horsepower
• Elimination of PRVs and hydro-pneumatic tank
• Reduction of pump wear
• Reduction of water hammer
• Cost efficiency
• Flexibility and adaptability

Variflo duplex 60 HP vertical turbine package.

PLAD - GPM Variplus vertical turbine system using Variflo technology. This technology is also used on larger variable speed drive pre-fabricated packages for irrigation, municipal or industrial applications.
STANDARD FEATURES

Mechanical Features
- Duplex configuration with equal size pumps
- Individual pump isolating butterfly valves
- Wafer silent check valves
- Pressure relief valve
- Suction/discharge headers
- Air release valve assembly
- Minimum flow by-pass

Electrical Features
- Temperature and solenoid protection
- CSA or UL labeled panel
- Nema 1 or 12 enclosure
- Inverter duty premium efficiency motors
- PMW type frequency drive
- VFD by-pass contactor
- Input/output line reactors
- Surge lightning arrester
- 2-line operator interface
- Pressure/flow transducers
- Main disconnect switch
- Possibility of using VFD on both motors

Other mechanical, electrical, hardware and software optional features are available from PLAD.

Optional Features
The following optional mechanical and electrical features are available with all Variflo VSD pumping systems.

Mechanical Options
- Low H.P. jockey pump
- System flow by-pass line
- Full back-up pump
- Station isolation valves
- Pump control valves
- Filtration unit c/w automatic back-wash system
- Stainless steel headers
- Epoxy paint

Electrical Options
- Nema 3R, 4 enclosure
- Soft-start on lag pump
- Second frequency inverter
- 4/8-line operator interface
- B/W or Color touch screen
- Individual phase monitor
- Fuse-protected main disconnect
- Air conditioning system
- Remote alarm contacts
- Voltage and current sensors
- Graphical pump monitoring system for Windows 98

GPM for Windows 98
- Two-way communication
- Analog inputs
- Analog outputs

Whether you are planning a new installation or retrofitting an existing system, PLAD can fill your needs.

Standard 20 HP, Variflo Nema 1 control panel.

Graphical Pump Monitoring software and interface to communicate by phone modems to a remote PC.
Mechanical components included in all Plad Variflo variable speed drive systems are specifically selected to provide a complete package of perfectly matched drivers, pumps, controller and sensors.

- **Pumps**
  Super efficient single stage or multi-stage pumps are available to provide long term and trouble-free operation for the selected application.

- **Motors**
  Inverter duty premium efficiency motors, protected by harmonic compensated line reactors, are standard with PLAD Variflo VSD booster units.

- **Check Valves**
  Each Variflo pump is equipped with a wafer silent center guided check valve that provides smooth and hammer-free operation.

- **Suction/Discharge Headers**
  Sch 40 steel flanged headers are adequately sized to avoid high water velocity and water hammer.

- **Air Release Valve**
  An air release valve assembly is installed on the suction header to eliminate air from the pumping system.

- **Pump By-Pass Orifice**
  Each pump is equipped with a bypass orifice for minimum flow required to cool the pump while operating at shut-off.

- **Butterfly Valves**
  Heavy-duty lug type butterfly valves are provided on the suction and discharge of each pump.

- **Pressure Relief Valve**
  The relief valve is a Variflo standard used to protect your system and designed to be fully operational in the back-up mode.

- **Pressure Transducer**
  A stainless steel pressure transducer is provided for accurate pressure reading.

- **Flow Transducer**
  A flow sensor installed on a straight discharge pipe is used for system curve calculations and to provide flow condition information to start/stop pumps.

**Typical arrangement of PLAD Variflo VSD Water Booster System**

- Pumps, motors, butterfly and check valves, suction and discharge headers, pressure relief valve and sophisticated Variflo control panel.

- Heavy-duty structural steel skid

- Common discharge header

- Multi-stage in-line pumps

- Flow discharge straight piping

- Flow sensor accuracy within 1%
All Variflo VSD pumping systems are equipped with a wide variety of user-friendly and powerful operator interfaces to communicate directly with the programmable logic controller.

One-touch button for a user-friendly scroll-down accessible menu.

- The above 2-line Variflo basic operator interface is a standard component for all variable speed drive booster systems manufactured by PLAD.
- Other types of operator interfaces including 4 or 8-line configuration, touch-screen, graphics and full color screen.

Pump/Motor Status Display

Variflo Interface for Monitoring, Control & Diagnostic Display

The latest version of Variflo datapanel offers functional enhancements resulting in a user-friendly, intuitive, easy-to-use operator interface.

Variflo Datapanel by PLAD

VARIPLUS 8- line interface and Variflo touch-screen operator interface are used for more sophisticated state-of-the-art VSD boosters.
Energy savings provided by variable speed drive pumping systems are substantial, the VSD pump uses only the BHP required to meet the system demand.

**Fixed-Speed vs VSD**

Conventional fixed speed pumping systems are equipped with a pressure regulating valve and designed to run pumps at full speed to provide constant system pressure.

As well, it generates greater energy savings by operating the pumps at the exact speed required to meet the system curve. Impressive energy savings are realized by operating at a lower speed to match flow and pressure requirements.

**Variflo = Energy Savings**

Variflo eliminates the back pressure created by the conventional system pressure regulating valve.

With Variflo, the pump will follow the system curve requirement with dramatic reduction in BHP.

**Type of pumps available for Variflo**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC</td>
<td>Close-coupled end-suction</td>
</tr>
<tr>
<td>LF</td>
<td>Frame mounted end-suction</td>
</tr>
<tr>
<td>VL</td>
<td>Vertical in line</td>
</tr>
<tr>
<td>VM</td>
<td>Vertical multi-stage in line</td>
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<tr>
<td>VLS</td>
<td>Vertical split-coupling in line</td>
</tr>
<tr>
<td>KPH</td>
<td>Horizontal double suction split case</td>
</tr>
<tr>
<td>KPV</td>
<td>Vertical double suction split case</td>
</tr>
<tr>
<td>VTP</td>
<td>Vertical multi-stage turbine</td>
</tr>
<tr>
<td>VTC</td>
<td>Vertical turbine in a can</td>
</tr>
<tr>
<td>STP</td>
<td>Submersible multi-stage turbine</td>
</tr>
</tbody>
</table>
Engineered Packaged Systems for Ultimate Pumping Value

Typical Applications

• Commercial boosters
• Municipal systems
• Cooling water systems
• Irrigation in-line boosters
• Chilled water systems
• Process water systems
• Engineered applications

Quality assurance for factory assembled pre-tested Variflo variable speed drive water booster systems.

The user-friendly Variflo operator interface combined with a state-of-the-art logic controller, provides easy calibration and accurate operation settings.

All Variflo pumping systems, designed by Plad engineers, are assembled and tested before shipment to guarantee optimal system performance.

Plad Equipment Ltd
www.plad.com