VariableSpeed DriveWaterBooster Systems

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With Varillo^m

Technology



IMAGINE

This is Variflo... With more features than any other, such as:

Minimum Speed Algorithm

The pump minimum speed will increase as the suction pressure decreases and vice versa.

• Hi-Speed Switching

Possibility of using frequency drive to start the lag pump by locking the lead pump with an across-the-line starter.

• Exclusive Varitimer

Use of timers that vary with differential pressure fluctuation to provide a dynamic response to a sudden system pressure change.

• Maximum Speed Setting

Based on accurate flow, this algorithm will decrease pump speed when the pump is working over its design characteristics.

Back-Up Mode

The pump system will automatically operate at fixed speed, in case of frequency drive fault, by using an across-the-line by-pass contactor.

• Dual PID

Adjustable dual PID controller based on low and hi-flow settings.



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.



PLAD Variflo

• 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.

EASY TO SET USER FRIENDLY FACTORY TESTED ENERGY EFFICIENT



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...



Variplus 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.



PLAD fulfills its role as an Original Equipment Manufacturer (O.E.M.) by manufacturing all steel components, control panels, assembling and testing the final product, setting the standards for pre-fabricated variable speed drive water booster systems.

ISO 9002 PLAD Excellence CSA & UL

The benefits of Variflo variable speed drive water boosters exceed those of fixedspeed 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



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 arrestor
- 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.



Varillo

a new installation or retrofitting an existing system, PLAD can fill your needs.

Whether you are planning

Optional Features

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



Standard 20 HP, Variflo Nema 1 control panel.

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



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 value 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 informations to start/stop pumps.





OPERATOR INTERFACE

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

- 01 Manual mode
- 02 Operation mode
- 03 System curve
- 04 Pressure setting
- 05 Flow setting
- 06 Timers
- 07 Varitime
- 08 Alarms setting
- 09 Timers/Alarms
- 10 Low flow PID
- 11 Hi flow PID
- 12 % VSD conditions
- 13 Minimum speed
- 14 Min/Max setting
- 15 Maximum speed
- 16 Flow by-pass
- 17 Anti-cycling
- 18 Alternation modes
- 19 Back-up mode
- 20 Reset values
- 21 Pressure scaling
- 22 Flow scaling
- 23 Hour meters
- 24 Number of starts
- 25 Daily flow
- 26 Total flow to date
- 27 Alarm log
- 28 Password
- 29 Time and date
- 30 Language/Unit of measure



All Variflo VSD pumping systems are equipped

The above 2-line Variflo basic operator interface is a standard component for all variable speed drive booster systems manufactured by PLAD.

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Other types of operator interfaces including 4 or 8-line configuration, touch-screen, graphics and full color screen.

Pump/Motor Status Display

ON: Run (on duty)

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- Out of sequence OS :
- Stand-by (ready)
- Overload OL:
- FT: Fault

Variflo Interface for **Monitoring**, Control & Diagnostic Display

SHIFT

ENTER

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

Variflo Datapanels by PLAD



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VARIPLUS 8- line interface and Variflo touch-screen operator interface are used for more sophisticated state-of-the-art VSD boosters.

SB :

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.



Wasted energy on fixed speed pumping systems.



Energy saving using VSD pumping systems.

Variflo = Energy **Savings**

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



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.



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

Type of pumps available for Variflo

- LC Close-coupled end-suction
- LF Frame mounted end-suction
- VL Vertical in line
- VM Vertical multi-stage in line
- VLS Vertical split-coupling in line
- KPH Horizontal double suction split case
- **KPV** Vertical double suction split case
- VTP Vertical multi-stage turbine
- **VTC** Vertical turbine in a can
- STP Submersible multi-stage turbine



Energy savings for VSD vs fixed-speed pumping system.



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.

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