



BSPDDRIVE

Goulds Pumps

Aquavar SPD
(Single Pump Drive)

Simplex Variable Speed Pump Controller



Engineered for life

Goulds Pumps

Aquavar SPD™

Simplex Variable Speed Pump Controller

Do you want to Simplify your Commercial Pumping System? Goulds Pumps “SPD” variable speed, constant pressure pump controller is designed for the professional pump installer.

With application specific features and Goulds Pumps designed software, the SPD was developed specifically for commercial water booster systems.

This variable speed controller goes beyond a “standard” drive, giving the pump professional a rugged design that is built for demanding conditions.

Key Features and Benefits

- **Energy Saving** → The Aquavar SPD (Single Pump Drive) is a true variable frequency controller which adjusts motor speed to match the hydraulic needs of the system to maintain pressure. Unlike valve controlled systems, the energy draw is substantially reduced during lower flow while keeping the pump close to its best efficiency. Up to 70% energy savings over fixed speed pumps are common. If you have flow rates that vary, there is opportunity to save energy versus a constant speed controlled pump!
- **Easy Set-up** → Pre-set for surface motor characteristics. Pre-wired and tested transducer. Touch button pressure setting. No complicated menus or electrical jargon to cope with. Total set up time including wiring is less than 30 minutes.
- **NEMA 3R** → Outdoor rated enclosure eliminates the need for separate cover panels required by competitive standard NEMA 1 enclosures. Rated for extreme temperatures (-22F to 122F)!
- **Dual Phase Input** → The same drive can be used for either three phase or single phase input (de-rated). Both configurations are UL/CUL approved for flexibility.
- **Transducer** → As with all Goulds drives, the pressure transducer is included with the drive so there is no need for separate sourcing and compatibility checks. The transducer is pre-wired and tested.
- **Full Diagnostics** → In addition to typical electrical protection and diagnostics, the Aquavar SPD has a full range of pump protection features such as bound pump or motor shut down, low water or loss of prime shut down. These added features require no added input devices.
- **Program Security** → The flashing LED status indicator will not fade in outdoor use the way competitor LCD screens do, and the internal single push button discourages tampering by untrained operating or maintenance personnel.
- **Remote on/off** → Permits external control by timers (irrigation), float or pressure switches (tank draining) or manual control. Reduces the need for separate patch panels.
- **Hand/Auto Option** → Allows the drive to be run full speed for longer periods of time as in the case of new well development or system start up. Turning the control back to auto resumes the automatic pressure tracking and control.



Goulds Pumps

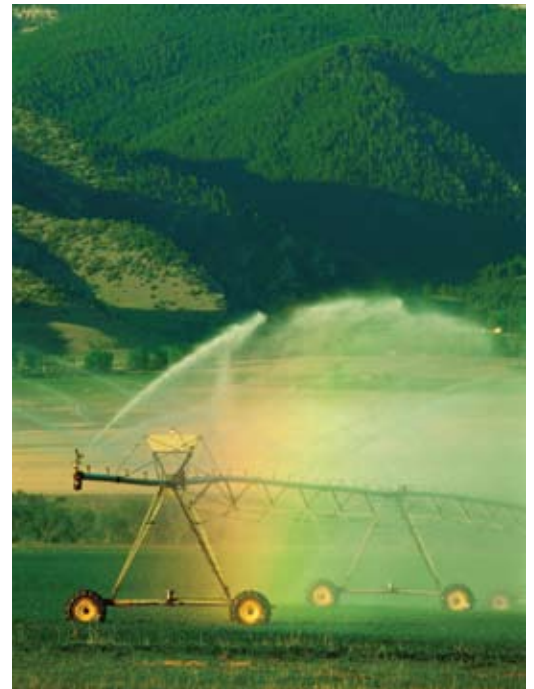
Aquavar SPD™

Simplex Variable Speed Pump Controller

- **Remote Monitoring** → External monitors may be connected by the user, to the drive for pump running speed (Hz), pump RUN, and system FAULT. The fault indicator can also be connected to devices like an auto-dialer. This enables control of pumps and drives in un-manned locations.
- **Pressure Drop** → The reaction time of the drive to pressure drops can be adjusted from the typical 3-5 PSI drop to 20 PSI. This allows for smoother transitions and fewer starts when using a supply tank.
- **Dual Set Point** → The Aquavar SPD has the capability to be programmed with two pressure set points. An external contact such as a timer can be used to change between them, so that a booster pump serving both a building and an irrigation system can do both jobs without manual resets.
- **Auto Reset** → The Aquavar SPD provides automatic reset of most faults, including over/under voltage and loss of prime conditions.

Typical Applications

- **Irrigation** → Irrigation applications use both submersible and surface pumps about equally. The Aquavar SPD can control surface centrifugal pumps up to 30 HP.
- **Rural Water** → Rural water districts often pump ground water from community wells with single pumps of less than 50 HP. Many have a single water tower, which limits system pressure during peak periods or at remote ends of the distribution system. The Aquavar SPD can automatically compensate for demand variations with surface boosters.
- **Building Booster** → Commercial buildings of less than ten stories may require supplemental pressure to offset what is provided by the municipal system either on a permanent basis, or during periods of peak demand.
- **Municipal WTP** → Water treatment plants use booster pumps for tank storage boosting, or chemical injection applications. The “SPD” provides a 4-20mA current signal based on speed control 0 – 60 Hz of the main booster.

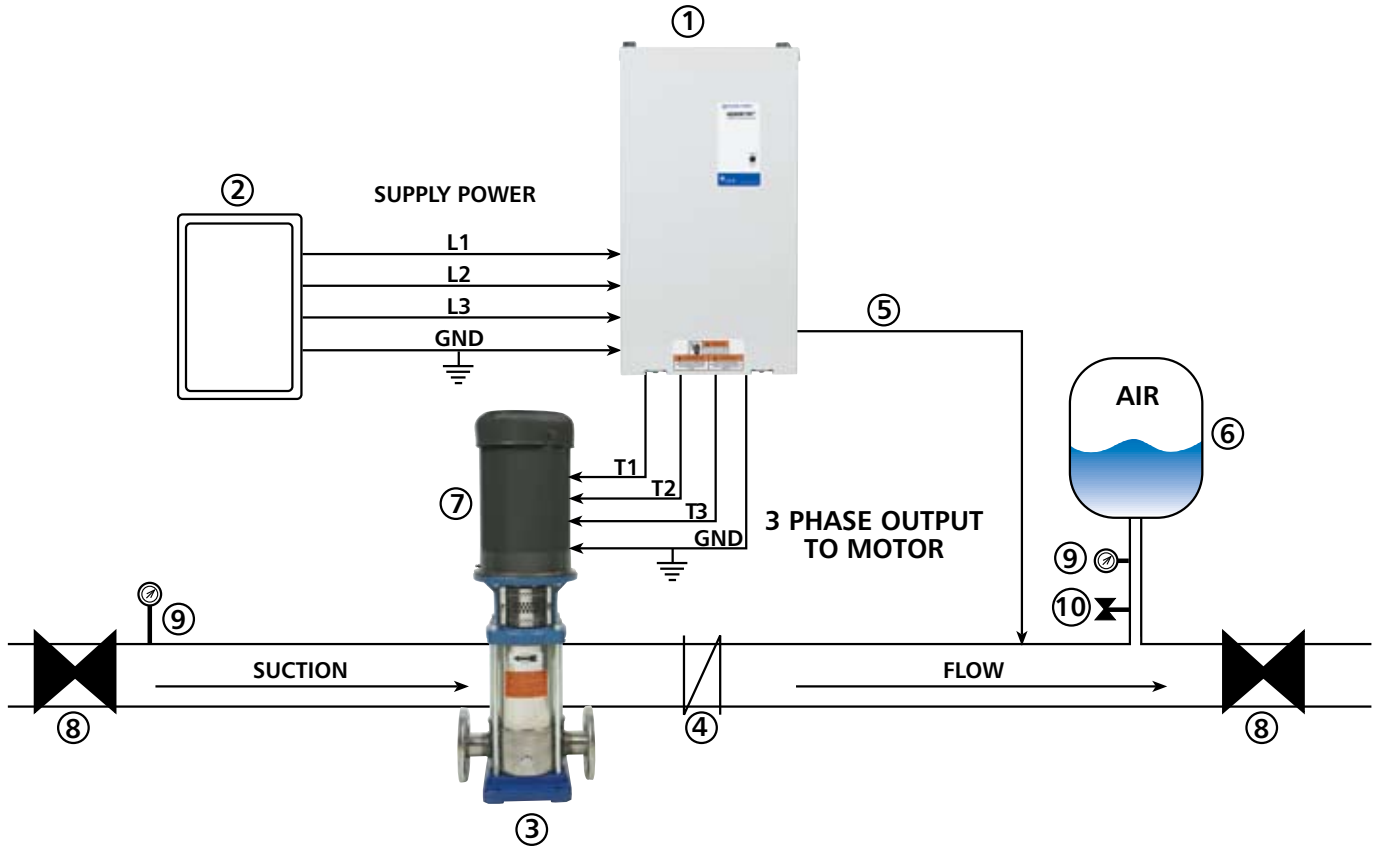


Goolds Pumps

Aquavar SPD™

Simplex Variable Speed Pump Controller

RECOMMENDED INSTALLATION LAYOUT



- | | |
|--|---------------------------|
| ① SPD CONTROLLER | ⑥ AIR DIAPHRAGM TANK |
| ② FUSIBLE DISCONNECT | ⑦ 3 PHASE MOTOR |
| ③ CENTRIFUGAL PUMP | ⑧ GATE VALVE (BALL VALVE) |
| ④ CHECK VALVE | ⑨ PRESSURE GAUGE |
| ⑤ PRESSURE TRANSDUCER (CABLE ASSEMBLY) | ⑩ PRESSURE RELIEF VALVE |

NOTES: For single phase input power, use L1 and L3 terminals and adjust motor overload switches to 50% of controller rating or lower.

Goulds Pumps

Aquavar SPD™

Simplex Variable Speed Pump Controller

Specifications

Input Power 208-230V single or three phase 50/60 Hz
380-460V three phase 50/60 Hz

Output Power 208-230V 60Hz three phase 5-30HP (2-15HP with 1 phase input)
380-460V 60Hz three phase 5-30HP

Supply Voltage	Frame (Enclosure) Size	Part Numbers	Output Full Load Amps		Normal Duty Horsepower (For Reference Only)	
			1 Phase Input	3 Phase Input	1 Phase Input	3 Phase Input
208-230	1	SPD20050	8.1	17.8	2.0	5
	2	SPD20075	10.9	26.4	3.0	7.5
		SPD20100	17.8	37.0	5.0	10.0
	3	SPD20150	26.4	47.4	7.5	15.0
		SPD20200	33.0	60.6	10.0	20.0
	4 ①	SPD20250	40.2	76.0	12.0	25.0
SPD20300		47.4	94.0	15.0	30.0	
380-460	1	SPD40050		8.9		5.0
		SPD40075		13.2		7.5
	2	SPD40100		18.5		10.0
		SPD40150		23.7		15.0
		SPD40200		30.3		20.0
	3	SPD40250		37.5		25.0
		SPD40300		47.0		30.0

NOTE: Low input voltage may cause reduced pump performance.

① Scheduled for July, 2009 release – call for availability.

Motor Overload/Ramp Switches

SWITCH SETTINGS			
BANK1		BANK2	
1	2	3	4
1	2	3	4
U = Up		D = Down	
MOTOR OVERLOAD SETTINGS		ACCEL/DECCEL RAMP SETTINGS	
BANK1	% OF RATING	BANK1&2	RAMP SETTING
1 2 3		4 1 2	
U U U	100%	U U U	0.5 SEC
U U D	95%	U U D	1 SEC
U D U	90%	U D U	2 SEC
U D D	85%	U D D	3 SEC
D U U	80%	D U U	4 SEC
D U D	70%	D U D	5 SEC
D D U	50%	D D U	6 SEC
D D D	40%	D D D	7 SEC
NO WATER RESTART TIME		BANK3	MIN FREQ
BANK2	RESTART TIME	1	
3 4		U	30Hz
		D	15Hz
U U	10 MIN	BANK3	CARRIER FREQ
U D	30 MIN	2	
D U	1 HOUR	U	2KHz
D D	2 HOURS	D	8KHz

Two point pressure setting: Digital input to select between two programmed pressure settings.

Pressure drop: Digital input to set the pressure drop allowed before the pump/motor is turned on.

Pressure setting: Up and down buttons to set required pressure.

Motor overload setting: May be set from 70-100% in 2% increments.

Ramp and minimum speed: Accelerate and decelerate ramp times and 30 Hz min. speed.

Carrier frequency: 2 KHz to 8 KHz

Hand mode: Enables the controller to run with or without pressure sensor feedback.

Run enable: Start and stop switch contact.

Digital Input Controls/Relays

CONTROL TERMINALS		
POSITION	FUNCTION	DESCRIPTION
1	COM	SIGNAL COMMON
2	RUN/STOP	CLOSED = RUN OPEN = STOP
3	COM	SIGNAL COMMON
4	HAND/AUTO	CLOSED = HAND OPEN = AUTO
5	COM	SIGNAL COMMON
6	INPUT	TRANSDUCER INPUT
7	+24V	24VDC SUPPLY
8	+5V	5VDC SUPPLY
9	COM	SIGNAL COMMON
10	ANALOG OUTPUT	4-20mA OUTPUT
11	SP2/SP1	CLOSED = SETPOINT2 OPEN = SETPOINT1
12	PRESSURE DROP	CLOSED = 20PSI OPEN = 5PSI
13	RELAY1 - NO	MOTOR RUN
14	RELAY1 - NC	STOP: NC = COM
15	RELAY1 - COM	RUN: NO = COM
16	RELAY2 - NO	SYSTEM FAULT
17	RELAY2 - NC	OK: NC = COM
18	RELAY2 - COM	FAULT: NO = COM

Goulds Pumps

Aquavar SPD™

Simplex Variable Speed Pump Controller

Outputs

Analog out: 4-20mA output for motor speed or pressure.

Pump run: Relay to indicate pump operation or shut down.

Fault: Relay to indicate pump, motor or controller fault. May be connected to outside warning device or auto-dialer.

LED Lights: **Green** – standby or pump running

Orange – Under voltage

Red – Number of blinks determine: replace controller, no water/loss of prime, sensor fault, pump or motor bound, short circuit/ground fault, input phase loss, temperature, over-voltage, or motor overload.

Electrical Efficiency Over 95%

No water restart time Adjustable restart time for “dry well” function from 10 min. to 2 hours.

Protection Against Short circuit, under voltage, overload, motor temperature, dead heading, run out, suction loss, sensor fault, bound pump, overvoltage, static discharge, dry well.

Ambient Temp. -22° F to 122° F

Max. Humidity 95% at 104F non-condensing

Air Pollution Avoid mounting in areas with excessive dust, acids, corrosives and salts.

Approvals UL, CE

Enclosure NEMA 3R, IP43, (rain tight)

Mounting Wall mount with mounting hardware

Cooling Attached heat sink and fan.

Transducer 4-20 mA rated to 300 PSI with 80-inch, 3 core shielded cable.

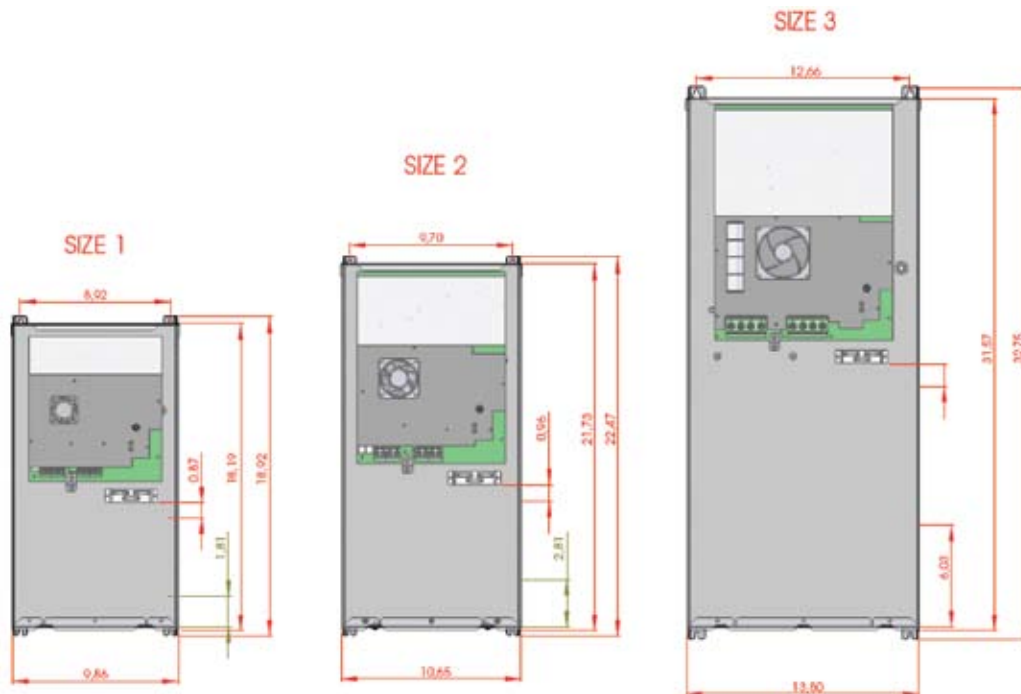
Weights and Dimensions (NOTE: Motor filter not included with “SPD” version)

Size 1 = 17 lbs.

Size 2 = 22 lbs.

Size 3 = 41 lbs.

Size 4 = 84 lbs.



Goulds Pumps

Aquavar SPD™

Simplex Variable Speed Pump Controller






**FOR ALL OF YOUR PUMP AND CONTROL NEEDS,
CONTACT YOUR GOULDS PUMPS PROFESSIONAL.**

ITT
2881 East Bayard Street
Seneca Falls, NY 13148
Phone: (315) 568-7123
Fax: (315) 568-7973
www.goulds.com

Copyright (c) 2009 ITT Corporation BSPDDRIVE February, 2009
SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE.

Printed in U.S.A.

 **ITT**
Engineered for life