

Intellipump

Constant Speed Booster Pump Controller

OPERATION MANUAL

Dated: 8/12/03

Supersedes: None

Document No.: IPB-OM-01

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Panel Operation

Turn HOA switch to the hand position. The corresponding pump will start and the run light will light. The only system protective device available in this mode is the motor starter protector, which, when tripped, will shut down that pump.

Normal Automatic System Operation

For normal operation, the motor starter protector connection must be set to ON or must be bypassed with a wire jumper. The pump Thermal connections must also be connected or bypassed with a wire jumper. The HOA switches (front panel or board mounted) must be set to the Auto position for the booster logic to function. Also, the suction pressure switch must be open for 5 seconds to allow automatic pump operation and to reset alarm.

Function of System Components

Upon application of power, the lead pump start should be delayed by 3 seconds.

If lead pump pressure switch is made, (closed upon drop in pressure) a single pump will be called for after a 1 second delay. If this condition is repeated, the controller will cycle one pump at a time, alternating between the two pumps.

If lag pump pressure switch is made, or the adjustable lag pump start delay is exceeded after the lead pump has started, both pumps will be called for.

The lag pump start delay should be the sum of the one-second minimum delay and the BCD inputs from SW1, (per table)

1.	000	=	1	seconds
2.	100	=	2 + 1 = 3	
3.	010	=	4 + 1 = 5	
4.	110	=	6 + 1 = 7	
5.	001	=	8 + 1 = 9	
6.	101	=	2 + 8 + 1 = 11	
7.	011	=	15	
8.	111	=	30	

The lag pump should stop if the lag, lead, or system low-pressure switches have not closed for a time period equal to the lag over run time delay.

The lead pump should stop if the lag pump is not running and then, if the lead, lag, or system low pressure switches have not closed for a time period equal to the lead pump off delay.

The lag pump stop delay should be a default delay of 5 minutes, or 20 minutes if SW1 is on.

The lead pump stop delay should be a default delay of 10 minutes, or 30 minutes if SW1 is on.

The lead and lag pumps should alternate prior to every lead pump start. If the lag pump is operating and is caused to stop, the pump that was started as the lead pump should stop first and the pump started as the lag pump should become the lead pump. If the lead pump operates continuously, alone, for 24 hours, the lag pump should start, the two pumps should operate together for a fixed 5-second period and then the pump that was lead should stop.

If the auto input is not present, the other pump should be designated as the lead pump.

Operation of Low Suction Condition

When the low-pressure switch (pressure switch 3) is closed for 30 seconds, consecutively, it should disable the pumps immediately in automatic, and should cause an alarm condition. This condition should inhibit the low system pressure alarm. When the suction pressure switch closed, for any length of time, it resets the timer and it begins again from zero when open.

If pressure switch 3 is made, indicating low suction pressure the low suction light will flash, and the buzzer will sound. To silence the buzzer, press the silence switch, which is located on the front of the panel or the controller.

Once the pump is disabled by the low-pressure switch, restart of the pumps can happen without delay, once the low suction pressure switch has returned to the open position.

Operation of System Low Pressure Condition

System low pressure switch, closed consecutively for 30 seconds, should override the lead pump required pressure switch to start the lead pump, override the lag pump start pressure switch 15 seconds after the lead pump is started, and should cause an alarm condition.

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Operation of System High Temp Condition

The feed back inputs are used as indication of high pump temperature. The inputs are on when the dump to drain thermostats are closed. When the dump to drain thermostats are closed, the dump solenoids are energized and hot water from the pump case wastes to drain, and cold water enters the pump suction side. When the thermostat opens, the dump solenoid closes and the feedback input is off.

If either of the dump to drain thermostats are closed for more than 120 seconds, the respective pump should be locked out until manually reset by any operation of the HOA selector switch or operation of the reset push button. The alarm should be invoked and the appropriate blinker signal activated.

Fail and Fault Operations and Alarm Codes

The Intellipump can be configured to signal a Pump Fail condition. A Fail condition can occur if the overload, pump thermal, or auxiliary connection opens. If a pump is called for, but a Pump Fail condition occurs, the controller will automatically call for the other pump. The Pump Fail Alarm is a time-delayed operation; this is done to allow the controller to verify pump operation via a check valve limit switch or auxiliary starter contact. A Pump Fail condition is indicated by an LED on the controller, an optional front panel light, and also activates a set of Normally Open contacts.

If one or more pumps are out of sequence the intellipump will compensate for the missing pump and produce an alarm condition indicating which pump is not operating. Likewise, if both pumps fail, intellipump will continue to call for them, plus produce a flashing alarm light and buzzer. If a low suction condition occurs before a pump is called for, intellipump will flash the alarm code and neither pump will start. If low suction condition occurs while system is pumping, intellipump will sound the alarms and shut down the pumps. These codes will continue until has been reset to a normal sequence of operations. The alarm codes are noted on the controller board front label. The LED alarm blinker codes are as follows:

- 1 = Pump #1 Fault
- 2 = Pump #2 Fault
- 3 = Pump #1 & 2 Fault
- 4 = Low Suction Pressure

5 = Low System Pressure

6 = Lag Pressure Before Lead Pressure Fault

Alarm blinker should continue blinking alarm code for about 5 minutes after the alarm condition is restored to allow operator to read the code of an automatically reset alarm.

If the lag pressure switch is made before the lead pressure switch is made, Intellipump will run the lag pump and produce a flashing alarm light and buzzer. The control board will flash a light to indicate the fault.

In the event that multiple alarms occur, at the event of a subsequent alarm, the alarm output blinks for 1/2 second to unlatch the silence relay. (except for low suction pressure condition)

Low suction pressure alarm suppresses other pressure alarms; as shut down makes a low system pressure condition.

Summary of Alarm Conditions and Restoration

1. Low suction pressure, suction pressure switch closed for 30 seconds / Restores to normal when acceptable pressure has opened the suction pressure switch for 5 seconds.
2. Low system pressure, system pressure switch closed for 30 seconds / Restores when system has sufficient pressure to open system pressure switch.
3. Pump #1 drain thermostat, closed for more than 120 seconds, pump will be locked out. And Intellipump will latch a pump alarm / Restores when cold water enters the suction side of pump, opens thermostat, and closes solenoid.
4. Pump #2 drain thermostat, closed for more than 120 seconds, pump will be locked out. And Intellipump will latch a pump alarm / Restores when cold water enters the suction side of pump, opens thermostat, and closes solenoid.
5. Changing the faulted pumps HOA switch position can temporarily silence the thermostat alarm condition.

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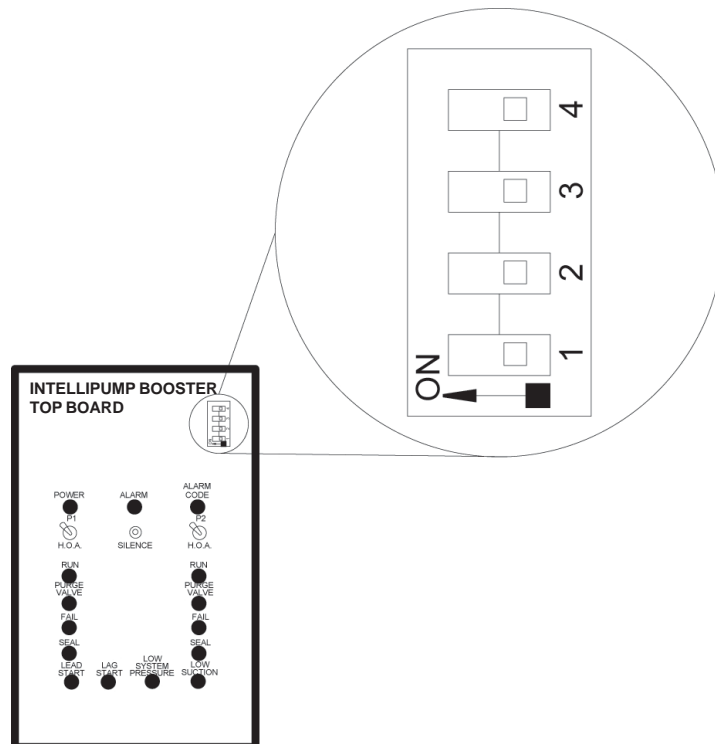
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Delay Timer Switch Setting Specifications Intelliboost Processor Board

The Delay Timer Switch (SW1) is located on upper right hand side of the top board of the Intelliboost. This switch is used to adjust the Lag pump start delay, and the Lead/Lag stop delays. The Lead pump start delay is fixed.

Lag Pump Start Delay				Lead/Lag Pump Stop Delay	
Time Delay (seconds)	SW1:1	SW1:2	SW1:3	SW1:4	
1 →	ON	ON	ON	OFF*	Lag Pump Delay = 5 minutes
3* →	ON	ON	-		Lead Pump Delay = 10 minutes
5 →	ON	-	ON		
7 →	ON	-	-	ON	Lag Pump Delay = 10 minutes
9 →	-	ON	ON		Lead Pump Delay = 20 minutes
11 →	-	ON	-		
15 →	-	-	ON		
30 →	-	-	-		

Keep in mind any change to SW1:4 will affect BOTH lead and lag pump stop Delay's.



* Default Factory Setting

SW1:1	SW1:2	SW1:3	SW1:4
ON	ON	-	-