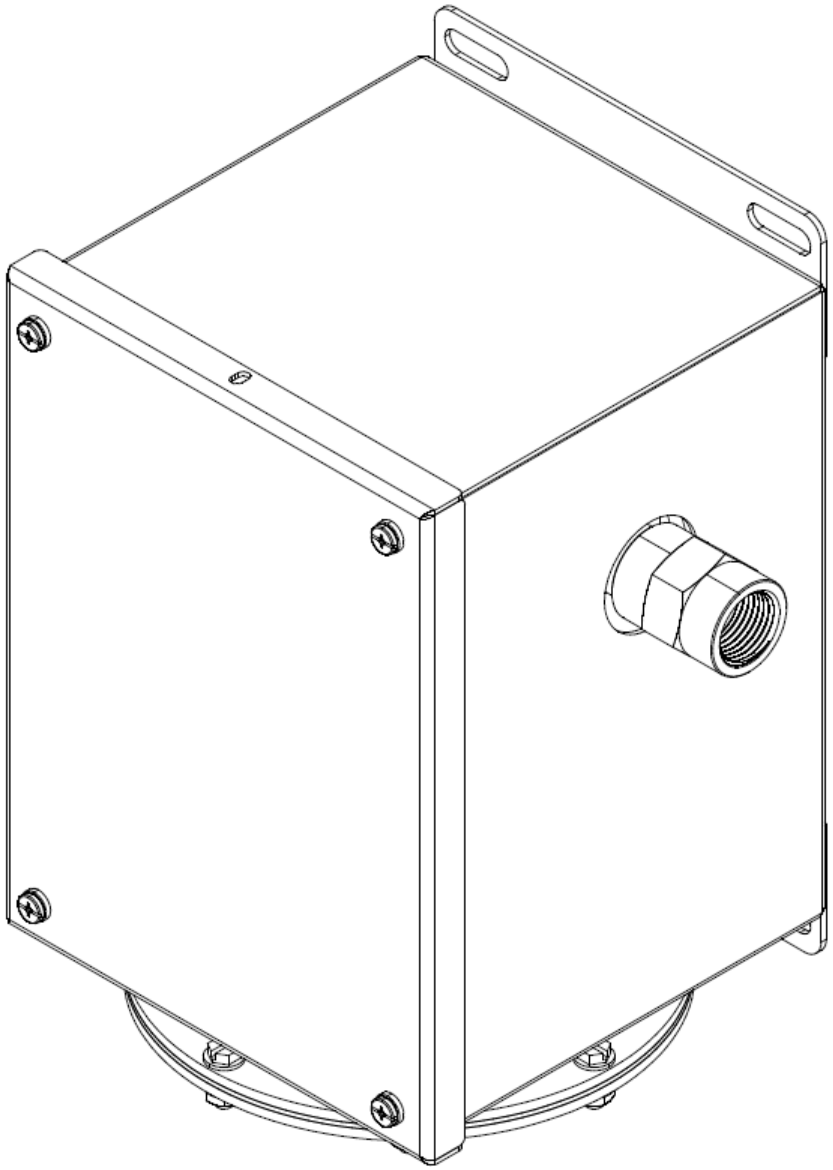
H&P Technologies, Inc.

HSI1010RP
INSTRUCTIONS



H&P Technologies, Inc.
23751 Amber Avenue
Warren, Michigan 48089
(586) 758-0100

HSI1010RP LEVEL CONTROL VALVE

INSTALLATION AND OPERATING INSTRUCTIONS

WARNINGS

The following are hazards or unsafe practices which could result in severe personal injury, death or substantial property damage. Heed the following:

USE SAFEGUARDS. Ensure that provisions must be made to prevent the valve from being accidentally operated (actuated).

HAZARDOUS AIR PRESSURE. Shut off, disconnect and relieve any trapped air pressure from the system before performing service or maintenance.

- Do not use the valve as a safety device or to operate or control the operation of full revolution clutch systems or brake systems on power presses or similar equipment.

- Do not subject the valve to any condition that exceeds the limits set forth in the specifications.

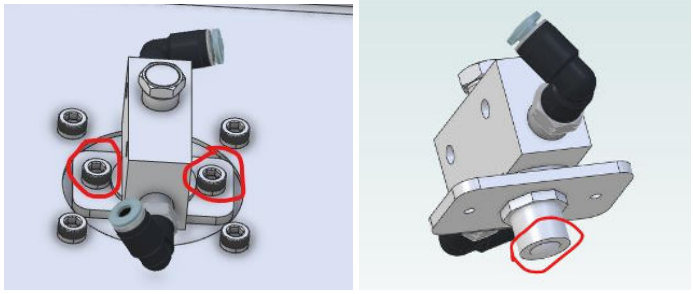
- Any air hoses, electrical wiring or connections not in good working condition and could cause accidental valve operation (actuation).

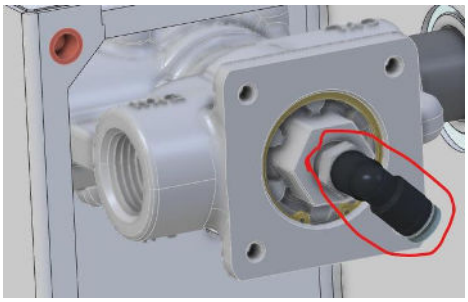
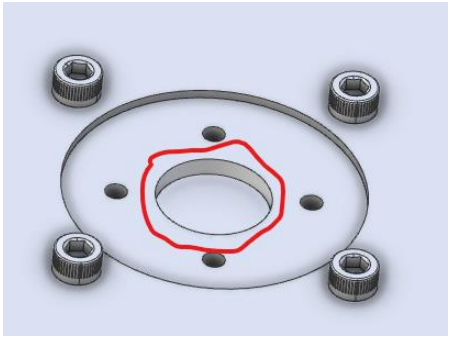
- Only allow qualified technicians to install or maintain the valve system. It is necessary to have a thorough understanding of the operation and application of all valves being used in a system and how they interact with the other components of the system.

HSI1010RP LEVEL CONTROL VALVE

INSTALLATION	
Location	Choose a location close to, and slightly above the pump suction. In operation, the pump will take suction from below the bottom of the 4" by 23” Sensing Tube and prevent clogging of the tube by debris. The HSI1010RP Valve is not affected by turbulence, no quieting well or baffle is necessary.
Mounting	Note the "OPEN' and "CLOSE" markings on the side of the Sensing Tube. When water rises on the tube to the 'OPEN' mark, the HSI1010RP Valve will open and start the pump. When water falls to the "CLOSE" marking the valve will close and stop the pump. Using these marks as a guide bolt the mounting bracket supplied to the side of the sump or tank so that the open mark is at the desired maximum liquid level.
Air Supply	Run Filtered-Regulated-Lubricated air supply to 1/2" NPTF air inlet port on the Valve. Lubrication is desirable, but not essential. Minimum recommended air pressure is 50 PSI. Install a Manual Operation Bypass Valve to allow for manual operation of the pump. Run air line from air outlet of HSI1010RP Valve to air inlet port on the pump. Connect valve diaphragm to remote sensing tube using 3/8" OD Nylon tubing supplied. The connection between the sensing tube and Valve Head must be made leak tight before the sensing tube is immersed in liquid.
OPERATION	
Start-up	Check to see that the pump starts and stops at points indicated. Actuation levels may vary slightly from the marks due to variations in air pressure and the speed with which the liquid level changes occur. The 3-way main valve will exhaust the air between the control and pump air inlet when the valve shuts off. The valve may chatter if opened without being connected to the pump, this is normal. Chattering should not occur when the HSI1010RP is connected to the pump.
MAINTENANCE	
Maintenance Schedule	Periodic maintenance is generally not required when used with a filtered and lubricated air supply. It may be necessary to periodically clear the area around the bottom of the sensing tube. If the tube has been installed above the pump suction this should not be necessary.

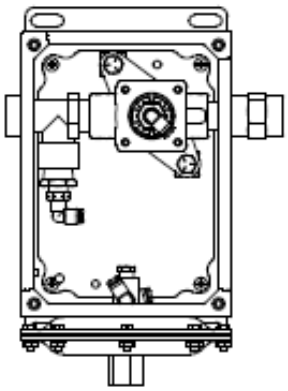
HSI1010RP LEVEL CONTROL VALVE

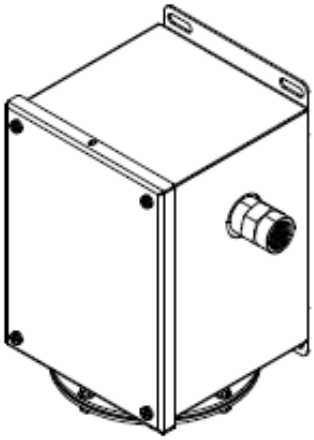
TROUBLE SHOOTING	
Level Change	If, after several months of operation, the liquid level in the sump has moved higher, air has probably escaped from the sensing tube. To recharge the unit with air: Pump the sump down to below the sensing tube exposing the open end or unbolt the sensing tube and lift it out of the water exposing the open end and the replace the sensing tube. After recharging, the valve should open and close at approximately the points marked on the sense tube.
Pump Will Not Turn On and Off	- Verify that the sensing tube is charge, see Level Change above. - Check the Air Supply to the Valve. - Check that the pump will operate by opening the Manual Operation Bypass Valve. - If Manual Operation works continue troubleshooting.
Overall Valve Operation.	In Normal Operation the diaphragm in the Diaphragm Assembly pushes on the Roller Ball actuator of the Pilot Valve. The Pilot Valve then opens to send an air pilot signal to the Pilot Port of the Main Valve. The main Valve the opens to send air to the pump.
Pilot Valve	The Pilot Valve function can be checked by manually operating the Roller Ball Actuator of the valve. To check the operation of the pilot valve - Shutoff the air supply to the Level Control Valve. - Remove the (2) two pilot valve mounting screws to expose the Roller Ball Actuator.  - Reconnect any pilot valve air lines that may have been disconnected. - Turn on the Air Supply. - Manually depress the Roller Ball Actuator, the pump should turn on. - Release the Actuator and the pump should turn off. - If the pump functions the problem may be the Diaphragm Assembly or Sensing Tube Connection. - If the pump does not function connect a pressure gauge to the outlet (Port 2) of the Pilot Valve and Check for Air Flow. - Replace the Pilot Valve if it does not function correctly.

TROUBLE SHOOTING (continued)	
Main Valve	If the Pilot Valve is functioning correctly verify operation of the Main Valve. - Shutoff the air supply to the Level Control Valve. - Connect a gauge to the Outlet (Port CYL) of the Main Valve. - Connect the Pilot Valve or a similar valve to the Pilot Port (Port PIL) of the Main Valve.  - Turn on the air supply. - Operate the pilot valve to send a 50 – 125 PSI air signal to the Main Valve. - The gauge on the Main Valve outlet port should be the same as the air supply pressure when there is a pilot signal, or 0 PSI with no pilot signal. - If the Main Valve does not function correctly, replace the Main Valve.
Diaphragm	The Diaphragm can be checked with the Pilot Valve removed, see pilot valve troubleshooting above. - Use a wooden dowel or similar blunt rod to check for resistance of the diaphragm. Slip the dowel thru the opening in the top diaphragm plate. Normally the pilot valve actuator goes in this opening.  - The diaphragm should move downward when a moderate force is applied. The resistance of the diaphragm will be greatest when the fluid level at the sense tube is highest and lowest when the fluid level goes down. - If there is no movement and/or change in resistance repair the diaphragm, of any leaks in the sense tube or sensing line.

HSI1010RP
GENERAL LAYOUT AND CONNECTIONS

VIEW WITH COVER REMOVED



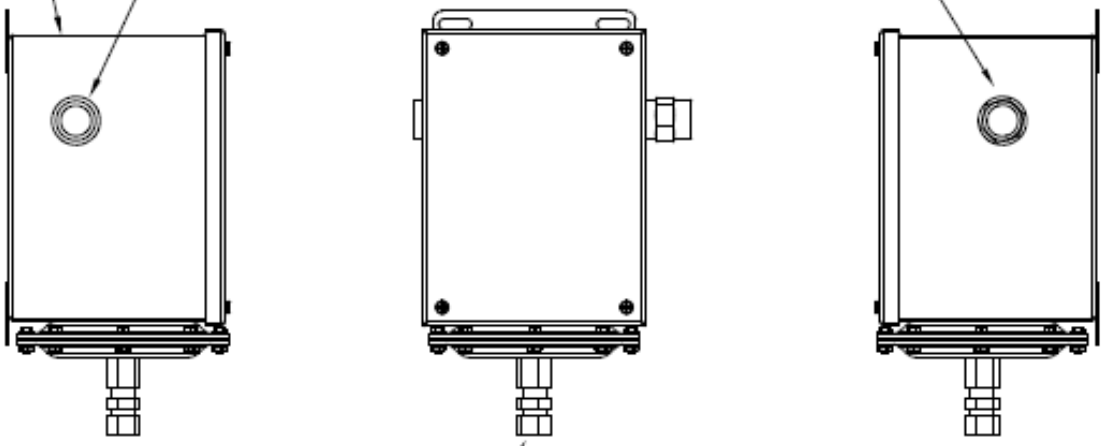


TO PUMP
(CONNECTION TO PUMP)
1/2" NPT

AIR IN
(AIR SUPPLY CONNECTION)
1/2" NPT

(O)

VIEW WITH COVER



SENSE PORT
(SENSE TUBE CONNECTION)
3/8" TUBE FITTING

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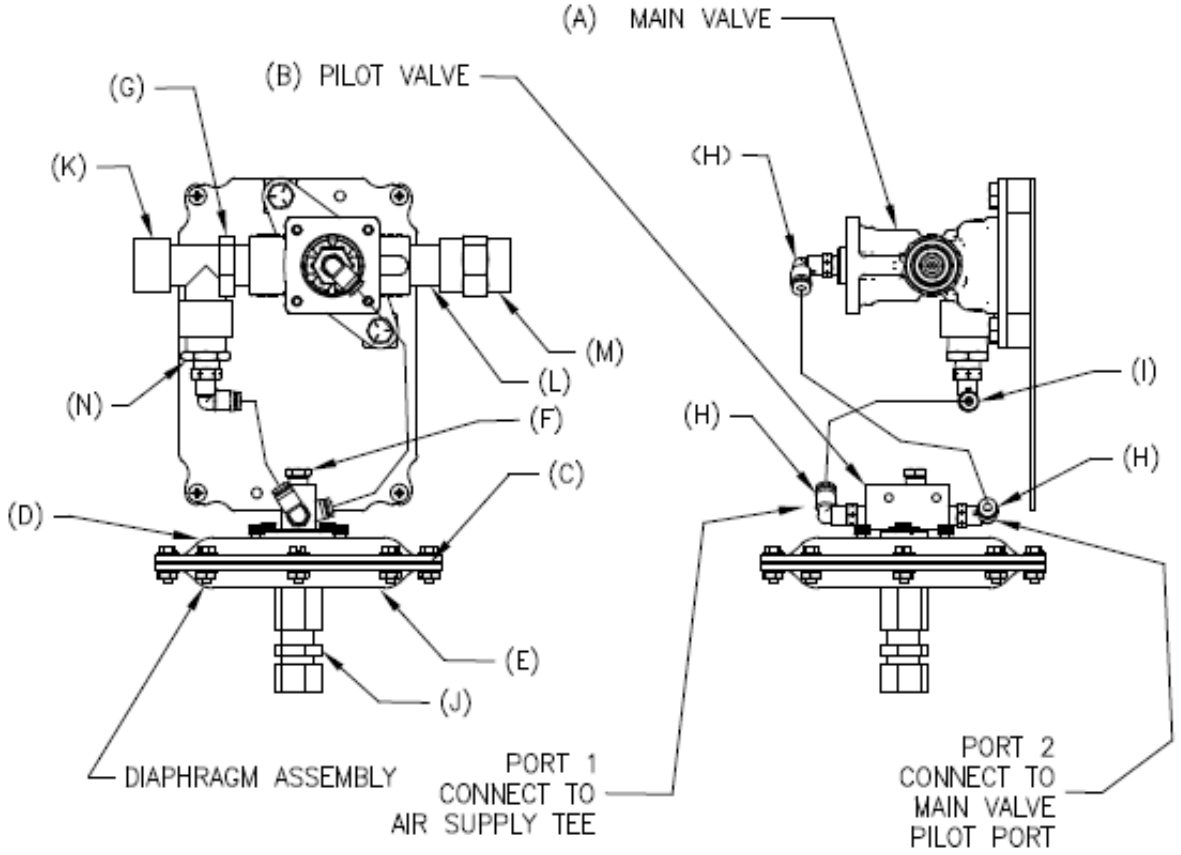
COMPONENT IDENTIFICATION



DETAIL	QTY	DESCRIPTION	PART NUMBER
A	1	MAIN VALVE, AIR PILOTED	HSI1010-01
B	1	PILOT VALVE, BALL ROLLER ACTUATED	HSI1010-02
C	1	DIAPHRAGM WITH DISK	HSI1010-03
D	1	DIAPHRAGM TOP PLATE	HSI1010-04
E	1	DIAPHRAGM BOTTOM PLATE	HSI1010-05
F	1	BREATHER VENT 1/8"	HSI1010-06
G	1	BREATHER VENT 1/2"	HSI1010-07
H	3	TUBE FITTING 1/8" NPT	HSI1010-08
I	1	TUBE FITTING 1/4" NPT	HSI1010-09
J	2	TUBE FITTING 3/8" NPT	HSI1010-10
K	1	1/2" TEE	HSI1010-11
L	1	1/2" NIPPLE	HSI1010-12
M	1	1/2" COUPLING	HSI1010-13
N	1	HEX BUSHING	HSI1010-14
O	1	ENCLOSURE	HSI1010-18
NOT SHOWN	1	PVC SENSE TUBE ASSEMBLY W/FITTING	HSI1010-15
NOT SHOWN	1	MOUNTING BRACKET FOR SENSE TUBE	HSI1010-16
NOT SHOWN	1	20 FT OF 3/8" POLYETHYLENE TUBE	HSI1010-17

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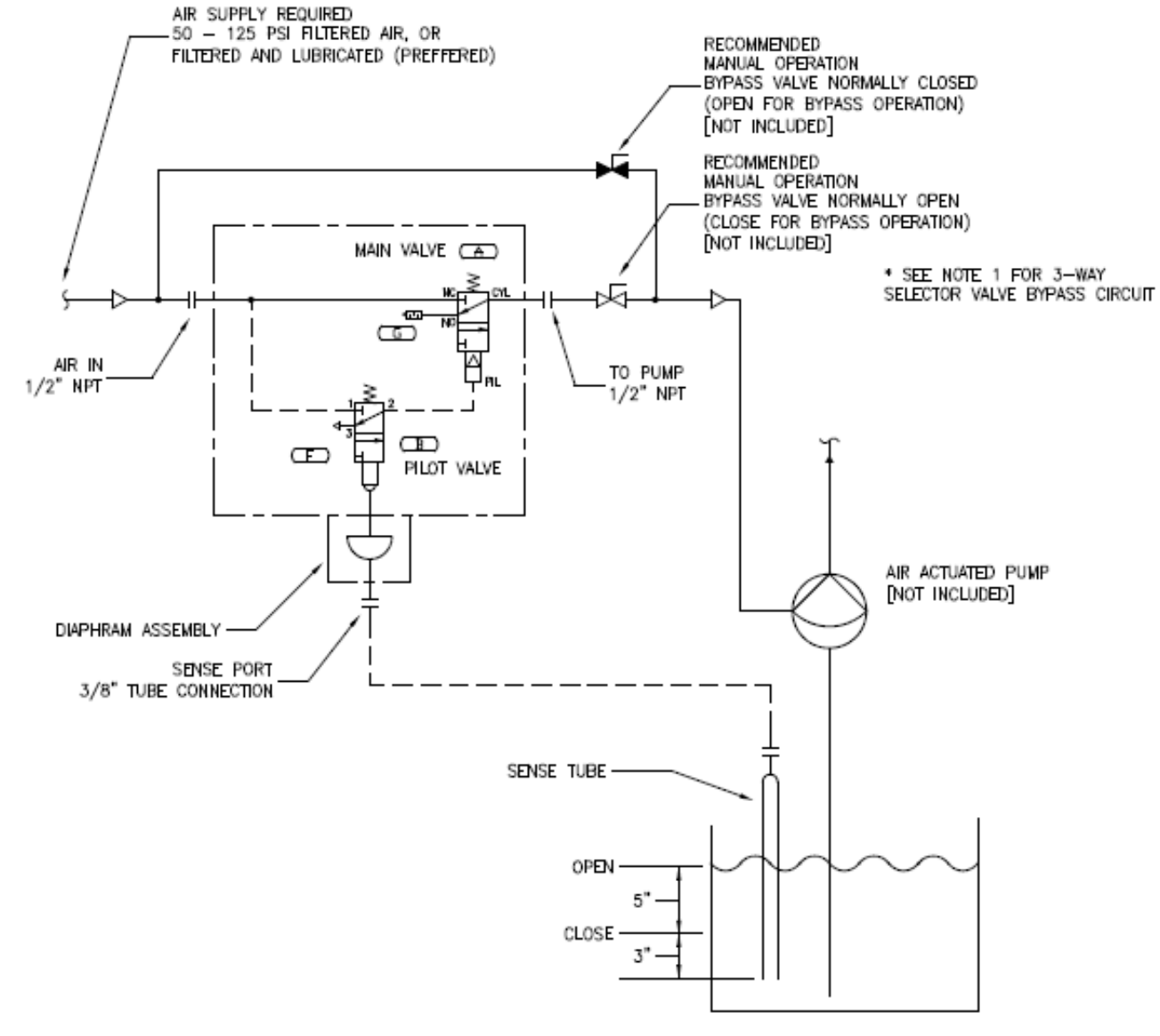
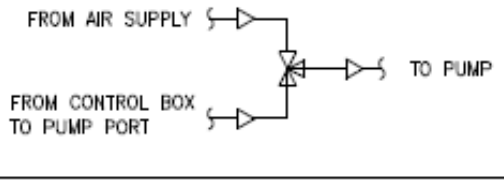
HSI1010RP
CIRCUIT DIAGRAM



NOTE 1: BYPASS CAN ALSO BE DONE
WITH A 3–WAY SELECTOR VALVE



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