TORO Ag

Installation Operation Maintenance (IOM)
900 Series Electric Pressure Sustaining Valve

Description

The pressure-sustaining valve installed in-line sustains minimum back pressure, protects the pump from overloading during line filling, maintains back pressure during filter flushing, and may be controlled by a 3-way pilot. The spring-loaded membrane of the pilot is sensitive to upstream pressure and opens the valve when the inlet pressure exceeds the pilot set pressure. The valve modulates in response to the electric signal.

Installation

1) The valve can be installed both horizontally or vertically.
2) Ensure enough space nearby for installation and adjustment.
3) Flush the pipeline before installing the valve, to ensure clean water flow.
4) The line flow direction should match the arrow on the valve.
5) Inspect the valve post installation for any loose or damaged fittings.
6) Install a pressure gauge upstream or use a pressure checkpoint on the valve to set the desired pr
7) For maintenance, installation of isolation valves upstream and downstream is recommended.
8) Cross-check solenoid specifications with design requirements and solenoid/coil labels.

Initial Startup and Adjustment

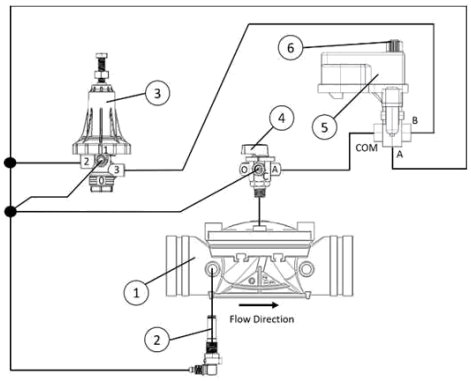
1) At the system's initial start, ensure the upstream and downstream isolation valves are fully closed (if installed).
2) Allow the valve to open by using the solenoid manual override or by energizing the solenoid (for a normally closed valve) or de-energizing (for a normally open valve) and pulse signal for a latching solenoid.
3) Fully open the upstream isolation valve or start the pump and check for any leakage through valve connections and fittings.
4) The valve is factory set at 3 bars (or as per design definitions).
5) If the set pressure is either different from the design or the requirements have been changed, follow the steps described below.
    a) Unscrew the lock nut fully and turn the adjusting screw of pilot in a clockwise direction until the lock nut and screw head touch the pilot's bonnet.
    b) Slowly open the downstream isolation valve to allow little flow downstream (make sure there is moderate flow demand).
    c) Now rotate the adjusting screw anti-clockwise and allow the valve to respond until the upstream pressure reaches the required set pressure and water starts to flow through the pipeline. Tighten the lock nut on the pilot.
6) Now gradually open the downstream isolation valve until it is fully opened (or increase flow demand to the nominal flow intended) .
7) Ensure the upstream set pressure is met and maintained automatically with the valve. Re-adjust if necessary. 8). For manual operation, turn the 3-way manual selector to:
    a) "CLOSE" for closing the valve shut.
    b) "OPEN" for opening the valve fully open.
    c) "AUTO" for regulating mode

Maintenance

1). Periodic inspection of the valve should be done regularly to check for any damage or leakage through valve connection and fittings.
2). Inspect and clean the in-line finger filter as water quality dictates. This should be done once every few months.
3). Keep a check on valve performance by checking the upstream pressure gauge periodically adjust if required.

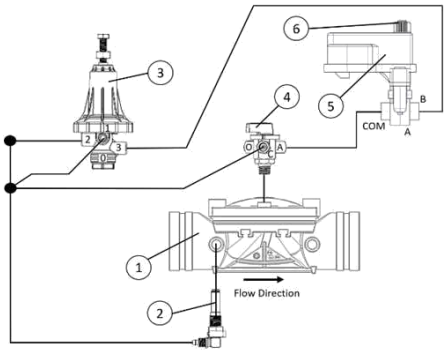
900 Series Electric Pressure Sustaining Valve

Control Loop



Normally Closed

Number	Description
1	Main Valve
2	Inline Finger Filter
3	3-Way Multi-Purpose Pilot
4	3-Way Manual Selector
5	3-Way Solenoid Valve with Base
6	Solenoid Base Manual Override



Normally Open

Troubleshooting

Problem	Cause	Check	Solution
Valve does not open.	The 3-way selector ("4") is set to close.	Verify knob position.	Turn the selector to "Auto".
	Inlet pressure is too low.	Check the inlet pressure.	Increase inlet pressure.
	The Pilot's adjusting screw is completely closed.	Check the screw position.	Rotate anti-clockwise to allow the valve to respond. Continue until the required pressure is reached.
	No current.	Damaged wires.	Repair or replace the wires.
	Faulty Solenoid	Voltage ok, but no click.	Change solenoid.
	Blocked Solenoid.	Check port blockage.	Dismantle and clean. Replace solenoid if problem not solved.
	Blocked pilot.	No water is coming out of pilot port #0.	Dismantle and clean pilot ports. Replace the pilot if the problem not solved.
Valve does not close.	The 3-way selector is in the "Open" position.	Verify knob position.	Turn the selector to the "Auto" or "Close" position.
	Solenoid base “Manual Override” not pointing towards port ‘AUTO’.	Check the “Manual Override” position.	Turn “Manual Override” of the solenoid base towards port ‘AUTO’.
	Power is still “ON”.	Check the power source.	Make sure the power is “OFF” when the valve is commanded to close.
	No pulse (Latch Solenoid)	Damaged wires or bad batteries.	Repair or replace the wires (or replace batteries).
	Blocked Solenoid.	Check port blockage.	Dismantle and clean. Replace solenoid if problem not solved.
	Faulty Solenoid	Voltage ok, but no click.	Change solenoid.
	Blocked inline finger filter (2).	Disconnect upstream tube. No firm water stream.	Clean or replace the filter.
	Debris on the sealing seat.	The valve is constantly discharging a small amount of water.	Turn the 3-way selector (4) to "Open" for a few minutes and then to "Close". If the problem persists, dismantle, clean, and check that parts are not damaged.
	Damaged diaphragm.	Continuous water discharge.	Replace the diaphragm.
Unstable upstream pressure	Blocked or damaged pilot.	Unstable pressure upstream of the valve.	Dismantle and clean. Replace the pilot if the problem persists.
Incorrect but stable upstream pressure.	Wrong set pressure.		Readjust the downstream pressure as described.

Toro Ag
1588 N. Marshall Avenue,
El Cajón, CA 92020-1523, USA
Tel.: + 1 (877) 373-0087 + 1 (619) 596-2495
Fax: + 1 (800) 892-1822 + 1 (619) 258-9973
toro.com

ALT373
0424

TORO Count on it.