



IOM RAF 20

Manual Control Valve
Booster Pump Control Valve
2"-12"



Jan-24

DESCRIPTION

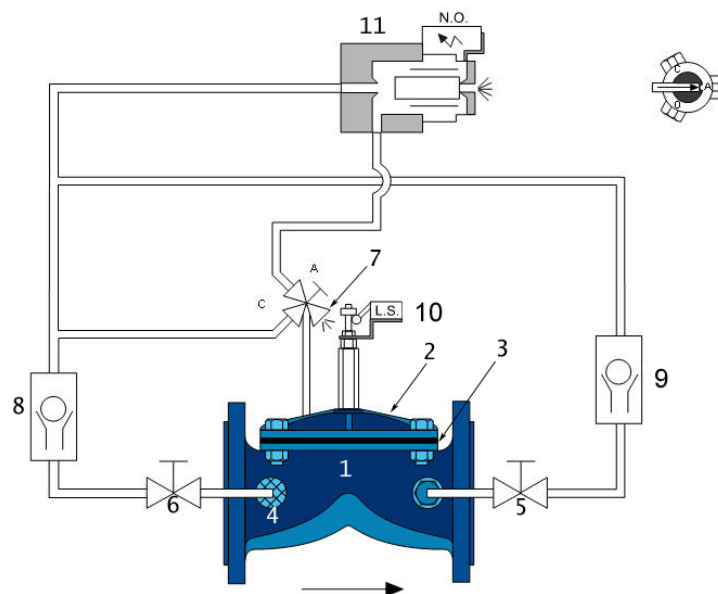
This electric booster pump control valve is an automatic control valve designed to protect pump wear at startup and shut down while preventing pipeline surges. It also serves as a hydraulic check valve preventing back flow through the pump.

INSTALLATION

- Before installing the valve, flush the pipeline to remove scale, dirt and other particles that might affect the valve's performance.
- Install the valve as indicated by the arrow on the valve's cover, showing flow direction.
- It is recommended to install isolation valves (butterfly valves type B7G) upstream and downstream the control valve.
- Check for leaks; tighten bolts & fittings if necessary.

PARTS LIST

1. Body
2. Cover
3. Diaphragm
4. Self-Flushing "Finger" Filter
5. Two-way valve
6. Two-way valve
7. Three-way selector
8. Non return valve
9. Non return valve
10. Limit switch indicator
11. Three-way N.O Solenoid



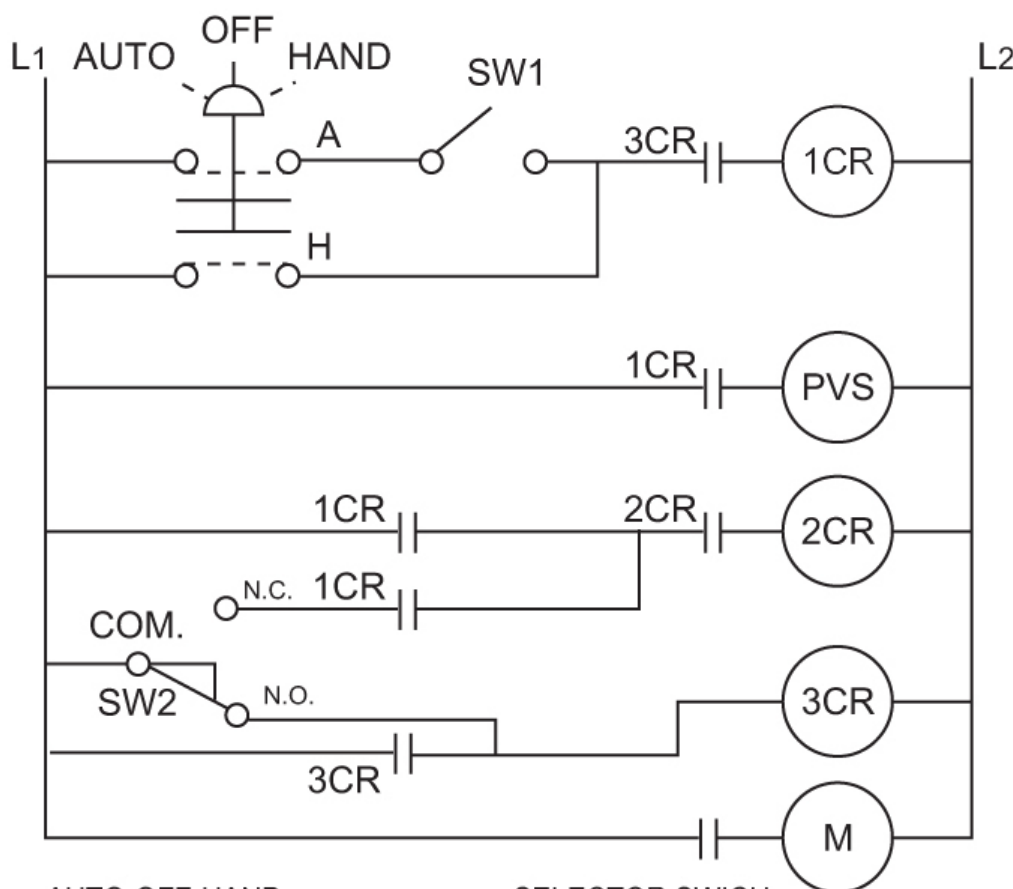
OPERATING INSTRUCTIONS

1. **Connecting electricity:** Please make sure you are using the proper voltage to the solenoid as ordered. Use the electric scheme in the back page to wire the valve in accordance with local codes and as recommended.
2. Set the 3- way selector 7 to "A" (automatic) position. Make sure valves 5 & 5 are open. Energize the pump.
3. As the pump starts up the solenoid valve 11 will be energized and the RAF will start to gradually open. Once fully open, the solenoid remains energized, and the pump is running.
4. At the pump shut off, first the solenoid valve 11 is de-energized and causing the RAF to close hydraulically.
5. Only after the RAF is reaching closing position, the limit switch indicator 10 will signal the pump to stop.
6. If there is a power failure, the solenoid will lose power to re-open as the pump stops. The water pressure upstream of the RAF will be directed into the RAF's control chamber to close it tight.
 - **To manually open the valve completely, turn the 3-way selector 7 to the "Open" position.**
 - **To manually close the valve, turn the 3-way selector # 7 to the "Close" position.**
 - **To operate the valve in automatic mode, turn the 3-way selector to the "Auto" position.**

MAINTENANCE

- No maintenance is required.
- It is recommended that the valve be easily accessible as well as clearly marked to prevent damage.
- In freezing climates, the valve should be dismantled, and water drained during the winter months or heat protected properly.

ELECTRIC SCHEME RAF 20



AUTO-OFF-HAND

1CR

2CR

3CR

SW1

SW2

PVS

M

- SELECTOR SWICH
- RELAY, DPST NORMALLY OPEN
- RELAY, DPST NORMALLY OPEN
- RELAY, DPST NORMALLY OPEN
- SWITCH, REMOTE START, AUTOMATIC
- SWITCH, SPDT VALVE LIMIT SWITCH
(CONNECT TO N.C. TERMINAL)
- PILOT VALVE SOLENOID
HOOKED IN PARLLEL
- PUMP MOTOR STARTER

NOTE: SW2, and PVS supplied by RAPHAEL.
All other electrical items supplied by customer

TROUBLESHOOTING RAF-20

PROBLEM	CAUSE	CHECK	SOLUTION
RAF does not open.	<ol style="list-style-type: none"> The 3-Way selector 7 is in the "Close" position, or valve 5 is turned off. The solenoid 11 is not energized at pump startup. The solenoid 7 is energized, but the RAF does not open. 	<ol style="list-style-type: none"> Check state of selector 7 and isolation valve 5. Check for loose wires or improper power supply. Check coil by touching it with a small screwdriver. It should be magnetized when solenoid is energized. 	<ol style="list-style-type: none"> Turn selector to the "Auto" position. Open valve 5. Wire properly and activate. Replace coil if needed or turn off water supply to the valve. Dismantle and clean solenoid's vents. Reassemble and activate.
RAF does not close, or the pump will remain ON at shutdown.	<ol style="list-style-type: none"> The 3-Way selector 7 is in the "Open" position or valve 6 is turned off. Power supply is still on. Power supply is off, but the RAF does not close due to blocked or stuck solenoid 11. Foreign object on sealing seat. Damaged diaphragm 3. The Limit Switch 10 will not signal the pump to stop. Blocked self-flushing finger filter (4). 	<ol style="list-style-type: none"> Check state of selector & valve 6. Check electrical supply to the solenoid. While pump is running, check by manually closing the valve with the 3-way selector 7 (attention: do not "deadhead" the pump). Small water back flow towards the pump. Water is constantly vented from solenoid. Check that the Raf came to a complete close. No response to manually closing the valve. 	<ol style="list-style-type: none"> Turn selector to the "Auto" position. Open valve 6. Make sure it is being disconnected as the pump starts the shut down process. Turn off water supply to the RAF. Dismantle and clean the solenoid's vents. Replace if necessary. Reassemble and activate. Turn off water supply to the valve. Dismantle cover 2 and diaphragm 3. Remove foreign object. Check that diaphragm, body and cover are not damaged. Check the integrity of both non return valves 7 & 8. Replace if required. Make sure all trim ports are open and free of rust deposits. Turn off water supply to the RAF. Check the integrity of the limit switch 10 & wires. Replace as necessary. Reassemble and activate. Turn off water supply to the RAF. Disassemble filter, clean, or replace it. Reassemble and activate.