IOM RAF 88

2-Way Surge Anticipating Control Valve

2”- 12”

RAPHAEL VALVES INDUSTRIES

Sep-24

DESCRIPTION

This automatic surge anticipating control valve is designed to relive hazardous pressure surge typical of water hammer condition. Under normal conditions the valve is closed. When the line pressure drops below the pre-set point, it opens. When the high surge arrives, it is relived through the already open valve.

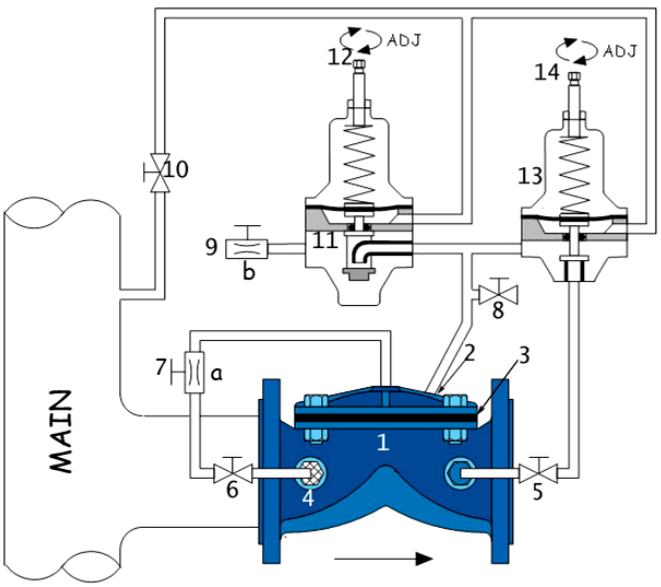
As the surge subsides it re-closes. The valve is installed on a "Branch" and the excess pressure is relieved to the atmosphere.

INSTALLATION

- Before installing the RAF, flush the pipeline to remove scale, dirt and other particles that might affect the valve's performance.
- Install the RAF as indicated by the arrow on the valve's cover, showing flow direction.
- It is recommended to install an isolation valve (gate valve type TRS) upstream of the RAF.
- Connect the sensor port of the main line 10 at approximately 2 meter distance downstream of the RAF as illustrated.
- Close 2-way valves 5 & 8. Open 2-way valve 10 & 6 and turn on the water supply to the RAF.
- Check for leaks; tighten bolts & fittings if necessary. Turn off the water supply to the RAF.
- MAKE SURE THAT THERE IS NO AIR IN THE MAIN LINE AND IT IS FULL OF WATER. It must be noted that an empty system may require several days to be vented properly.

PARTS LIST

1. Body
2. Cover
3. Diaphragm
4. Self-flushing "finger" filter
5. 2-W valve
6. 2-W valve
7. Needle valve
8. 2-W valve
9. Needle valve
10. 2-W valve
11. 2-W pilot P 161B
12. Pressure adjusting screw
13. 2-W pilot P 181
14. Pressure adjusting screw



OPERATING INSTRUCTIONS

1. Open valves 6, 5, and 10. Close valve 8.
2. Loosen the locking nuts on pilots 11 and 13. Turn the set screw 12 counterclockwise until the screw is under no spring tension.
3. Without starting the pump, open the isolation valve, SLOWLY, 1-2 turns. Make sure the line is pressurized to the nominal static pressure.
4. Slowly, turn the set screw 14 clockwise, until the RAF begins to close. Wait until it is completely closed
5. Slowly, turn the set screw 12 clockwise, until the valve begins to open. Then turn the set screw 12 counterclockwise by 1/4 turn steps, giving the RAF time to react, until the RAF begins closing. Once closed, add 1/4 turn counterclockwise and lock the pilot 11 locking nut.
6. Open the Isolation valve completely.
7. Start the pump. Open the RAF by slowly turning set screw 14 counterclockwise and then re-close the RAF by 1/4 turn clockwise at a time, allowing time for the RAF to react. Once closed, add 1/4 turn clockwise and lock pilot 13 locking nut.
8. Stop the pump. The RAF will now relive the access pressure from the system as intended. Adjust the RAF opening speed by needle valve 9b and closing speed by needle valve 7a. Loosen their locking nuts and re-tighten as necessary. Note: minimum opening is 1 1/4 turns.
9. Start and stop the pump several times to verify that the RAF works properly.

MAINTENANCE

- No maintenance is required.
- Check upstream pressure. Adjust if 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

TROUBLSHOOTING RAF 2080

PROBLEM	CAUSE	CHECK	SOLUTION
The RAF does not open.	1. Valve 5 or 10 are turned off.	1. Check state of valves.	1. Open valves 5 & 10.
	2. Blocked water connections.	2. Open valve 8. **WARNING: Maximum high pressure will pass through the valve.** If the valve opens:	2. Turn off water supply to the valve. Dismantle and clean all valve and main pipe connections. Reassemble and activate.
	3. Needle valve 9 is blocked	3. Open it 3 turns and start/stop the pump. Water should flow freely.	3. Repeat step 8 in Operating Instructions
	4. Pilots 11 & 13 are out of adjustment	4. start/stop the pump. Water should flow freely at surge event.	4. Repeat steps 1-9 in Operating Instructions
The RAF does not close.	1. Valve 6 or 10 are turned off.	1. Check state of valves.	1. Open valve 6 & 10.
	2. Valve 8 is open.	2. Check state of valve.	2. Turn off valve 8.
	3. Blocked or stuck needle valve 7.	3. Check state of valve.	3. Close it completely then open 1 1/2-2 turns.
	4. Blocked self-flushing filter 4.		4. Turn off water supply to the valve. Remove filter and clean or replace it if needed. Reassemble and activate.
	5. Foreign object on the sealing seat.	5. Constant small water flow downstream.	5. Turn off water supply to valve. Remove cover and take away foreign object. Check that diaphragm body and cover are not damaged. Reassemble and activate.
Risk of surge in main line.	1. Needle valves 7 & 9 are improperly adjusted.		1. Repeat steps 1-9 in Operating Instructions
	2. Blocked or damaged pilots.	2. Irregular main line pressure.	2. Turn off water supply to the valve. Dismantle and clean drain connections in pilots. Check that membranes, lower seals and O rings are not damaged. Reassemble and activate. Repeat steps 1-9 in Operating Instructions
	3. Blocked water connections.	3. Irregular main line pressure.	3. Turn off water supply to the valve. Dismantle and clean all valve and main pipe connections. Reassemble and activate.

RAPHAEL, founded in 1949, is the first Israeli manufacturer of water control valves. RAPHAEL´s research department constantly strives to introduce new and innovative products and solutions for water control systems including water works, fire-protection and irrigation systems.

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