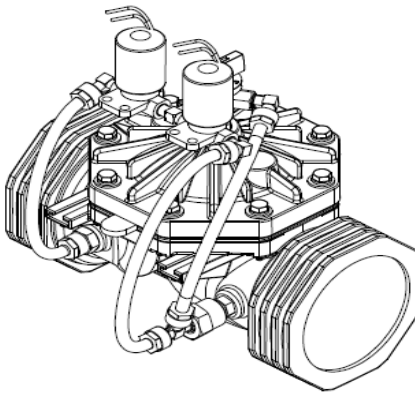


IOM RAF-P U

Universal Control Valve Latch operated
1.5”-4”

RAPHAEL VALVES INDUSTRIES

Sep-24

DESCRIPTION

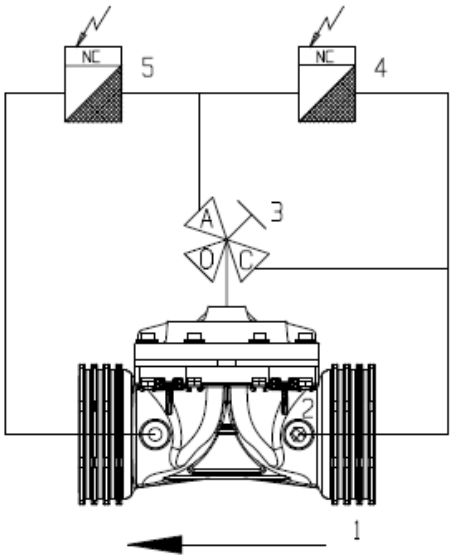
This valve is a universal hydraulic control valve that can be operated manually or by electric remote control based on any parameter of choice based on controller logic. The valve is supplied with “normally closed” (NC) latch solenoids meaning the passage ways through the solenoids are in closed position on supply. “Normally” means the state of the valve when the solenoid is de-energized.

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.
- Make sure that the solenoid has the right specifications and connect it to the energy source via controller.
- It is recommended to install isolation valves upstream and downstream the control valve for maintenance purpose. Primary/Secondary filtered irrigation water is preferred.
- Check for leaks, tighten bolts & fittings if necessary.

PARTS LIST

1. Body
2. Self Flushing “Finger” Filter
3. 3-way selector with **A**uto, **C**lose and **O**pen options
4. 2-way latch solenoid for closing main valve
5. 2-way latch solenoid for opening main valve



OPERATING INSTRUCTIONS

1. Turn open the inlet isolation valve upstream to expose the valve upstream to inlet pressure.
2. Turn open the outlet isolation valve downstream.
3. Electrical Operation

a. Turn 3-way selector (3) arrow mark to the point at "**A**uto" position.
b. Give a pulse command to solenoid 4 to close the main valve using inlet pressure.
c. Give a pulse command to solenoid 4 to lock the control chamber circuit.
d. Give a pulse command to solenoid 5 to open the main valve.
e. By varying timing of pulses and based on logic inbuilt in circuit, it is possible to put main valve diaphragm in intermediate position as per requirement.

4. Manual Operation

- To open the main valve, turn the 3-way selector (3) arrow mark to point to "**O**pen" position.
- To close the main valve, turn the 3-way selector (3) arrow mark to point to "**C**lose" position.

PRECAUTIONS

- Ensure that the minimum inlet pressure as per catalogue is available for operating the valve on site.
- Ensure that the choice of diaphragm is suited for hydraulic conditions on site.
- This main valve is not allowed to be kept in open condition continuous for more than 10 hours without any intermediate closing operation.
- Valve will not function as expected in case, the valve is completely open to atmosphere or made to operate against no flow condition.

MAINTENANCE

- No maintenance is required. However, from time to time it is recommended to rotate the 3-way selector 360° to prevent sticking by sediments.
- During the off season, energize the solenoid from time to time for the same reason. If the valve is in closed position during the off season, there are no problems.
- After long off season, it is preferred to condition the valve by giving series of open and close commands before the diaphragm retains its normal action.
- It is recommended that the valve be easily accessible as well as clearly marked to prevent accidental damage.
- In freezing climates, the valve should be dismantled, and water drained during the winter months.

PROGRAM OPERATING RAF U

This program commands the valve operation. The program must be loaded to the controller prior to operation. Refer to M90 operation manual or annexed instructions for program downloading.

PROBLEM	CAUSE	CHECK	SOLUTION
The valve does not open.	1. The 3-Way selector (3) is in the "Close" position or is clogged or damaged.	1. Check state of selector.	1. Turn selector to the "Open" or "Auto" position. If no water is drained through these ports, turn off water supply to the valve, dismantle and clean vents. Replace selector if needed. Re-assemble and activate.
	2. The solenoid (5) is operated to open but no pulse	2. Check for loose wires or improper power supply.	2. Wire properly and activate.
	3. The solenoid (5) is operated to open and pulse command has gone, but the main valve does not open.	3. Check coil by touching it with a small screwdriver. It should be magnetized when solenoid is energized. Also check if solenoid (4) passageway is in open condition.	3. Replace coil if needed or turn off water supply to the valve. Dismantle and clean solenoid's vents. Reassemble and activate. Ensure that solenoid (4) is closed by giving a pulse command.
The valve does not close.	1. The 3-Way selector (3) is in the "0pen" position.	1. Check state of selector.	1. Turn selector to the "Auto" or "Close" position.
	2. The solenoid 4 is operated to open but no pulse.	2. Check electrical supply to the solenoid 4 and ensure that solenoid 5 is in close position by removing tubing and seeing water coming out.	2. Wire properly and activate.
	3. Solenoids 4 is operated to open and pulse command has gone, but the main valve does not close due to blocked or stuck solenoid.	3. Check by manually closing the valve by 3-way selector to CLOSE.	3. Turn off water supply to the valve. Dismantle and clean the solenoid's vents. Reassemble and activate.

	4. Foreign objects on sealing seat inside valve. 5. Damaged diaphragm (3). 6. Blocked self-flushing filter (4).	4. Water flow downstream. 5. Water is constantly vented from both solenoids even after close command. 6. No response to manually closing the valve.	4. & 5. Turn off water supply to the valve by closing isolation valves. Dismantle bonnet of valve and diaphragm. Remove foreign object. Check that diaphragm, body and cover are not damaged. Replace if required. 6. Turn off water supply to valve. Disassemble filter, clean or replace it. Re-assemble 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.

RAPHAEL

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