



# IOM RAF 70

Flow Rate Control Valve 2-Way

 **RAPHAEL**

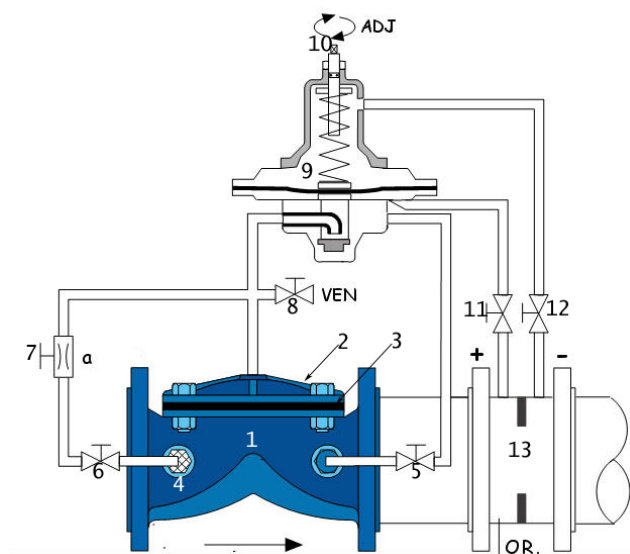
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## INSTALLATION

- 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. Place the orifice plate 13 as indicated by the flow arrow, making sure the (-) port is facing the downstream and connect both tubs from the pilot 9 respectively.  
**Note: In some application the (+) port is pre- assembled in Raphael as part of the valve trim.**
- It is recommended to install isolation valves (butterfly valves type B7G) upstream and downstream the control valve.
- Close 2-way valves # 5 and # 8. Open 2-way valve # 6 and turn on the water supply to the 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. Needle valve
8. Two-way valve
9. 2-way brass flow rate pilot P-100
10. Pressure adjusting screw
11. Two-way valve
12. Two-way valve
13. Orifice plate w/high- & low-pressure ports



## DESCRIPTION

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This flow rate control valve is an automatic control valve designed to regulate a higher upstream flow and pressure into a preset downstream flow, and to maintain this flow constantly regardless of flow demand or pressure fluctuations downstream.

## OPERATING INSTRUCTIONS

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1. Make sure that there is a downstream flow demand.
2. Close needle valve # 7 all the way and then reopen it for 1-2 turns. The needle valve # 7 adjusts the hydraulic reaction speed. The more the needle valve # 7 is opened the quicker the reaction is. While adjusting the needle valve, please keep in mind that by opening the valve too much one may impair the RAF ability to open at flow demand.
3. Loosen security nut and turn adjusting screw # 10 counterclockwise, so that there is almost no pressure on the pilot's spring.
4. Open 2-way valve # 5.
5. Turn adjusting screw # 10 clockwise, until desired flow rate is achieved downstream.
6. To increase downstream flow, continue to turn adjusting screw # 10 clockwise half (1/2) turn at a time, allowing some time between turns for the valve to respond. Check downstream flow until required flow rate is achieved. Tighten security nut on the adjusting screw # 10.
7. To decrease downstream flow, turn adjusting screw # 10 counterclockwise half (1/2) turn at a time, allowing some time between turns for the valve to respond. Check downstream flow until required flow rate is achieved. Tighten security nut on the adjusting screw # 10.
8. The orifice plate is pre calibrated at Raphael for the desired flow at 5 m headless. The flow rate is adjustable by approximately 20% higher.

**To open the valve completely, close the 2-way valves # 5 and # 6 and open 2-way valve # 8. Please note that by so doing the pressure downstream will be as high as the pressure upstream.**

**To close the valve, close 2-way valves # 6 and # 8, and open 2-way valve # 5.**

**To maintain preset flow rate, open 2-way valves # 5 and # 6 and close 2-way valve # 8.**

## MAINTENANCE

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- No maintenance is required.
- Check flow. 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.

## TROUBLESHOOTING RAF 70

PROBLEM	CAUSE	CHECK	SOLUTION
The valve does not open.	1. Valve 5 is turned off. 2. Blocked water connections.	1. Check state of valve. 2. Open valve 8. <b>WARNING: Maximum high pressure/flow will pass through the valve.</b>	1. Open valve 5. 2. Turn off water supply to the valve. Dismantle and clean connections in the valve & orifice. Reassemble and activate.
Unstable flow / The valve do not close.	1. Valve 6 is turned off. 2. Valve 8 is open. 3. Clogged or stuck needle valve. 4. Blocked self-flushing filter. 5. Foreign object on seal. 6. Needle valve is improperly adjusted. 7. Blocked or damaged pilot. 8. Blocked water connections.	1. Check state of valve. 2. Check state of valve. 3. Check state of valve. 5. Poor downstream water flow. 6. Irregular downstream pressure. 7. Irregular downstream flow. 8. Irregular downstream flow.	1. Open valve 6. 2. Turn off valve 8. 3. Repeat adjustment and operating instructions from 1 to 2. 4. Turn off water supply to the valve. Remove filter and clean or replace it if needed. Reassemble and activate. 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. 6. Repeat adjustment and operation instructions from 1 to 6. 7. Turn off water supply to the valve. Dismantle and clean drain connections in pilot. Check that membrane and lower seal are not damaged. Reassemble and activate. 3. Turn off water supply to the valve. Dismantle and clean connections. Reassemble and activate.