RAPHAEL

RAVE Series

Double Chamber Hydraulic valve 2”-10”

WATERWORKS PRODUCT BROCHURE

RAPHAEL VALVES INDUSTRIES

RAPHAEL VALVES INDUSTRIES (1975) LTD.

Founded in 1949, Raphael Valves Industries Ltd., is a manufacturer of high-quality control valves. With an extensive and pioneering product lineup, Raphael leads the global market in valve technology.

Our product range includes hydraulic control valves, butterfly valves, gate valves, check valves and more, specifically designed to meet the needs of the Irrigation, Waterworks, and Fire Protection sectors. Each valve undergoes thorough quality control testing and manufacturing procedures, holding prestigious certifications such as ISO 9001, UL and FM approval.
Motivated by our passion for innovation, we have invested significant resources to Smart Solutions, aimed at improving the management of water networks and facilitating access to real-time data for technical and logistical operations around the world. As part of this effort, Raphael experts have introduced the revolutionary "ULTRAF PRO" Ultrasonic Hydrometer, a revolutionary integration of ultrasonic flow measurement and hydraulic valve technology, setting new benchmarks in the industry.

In the field of Fire Protection, Raphael offers a wide range of elastomeric diaphragm-type valves in streamlined globe and angle patterns. These valves are essential components in fixed fire extinguishing systems using water, foam, or seawater media. Our Fire Protection range includes Deluge and Preaction systems, Pressure control valves, Monitors and Hydrants, suitable for various environments such as Petrochemical, Oil & Gas, Offshore, and Marine applications.

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RAVE SERIES

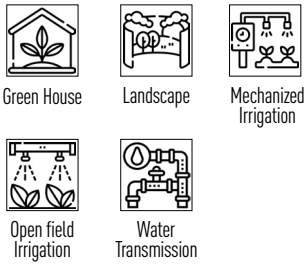
Hydraulic double-chamber valve with diaphragm drive DN 40-300 PN16

RAVE Series - Diaphragm Actuated Hydraulic Double-Chamber Control Valve for use in water distribution for pressure reducing, pressure sustaining, pressure relief, flow control, surge anticipation, level control and other control applications.

The valve structure, which includes a unique V-shaped gasket closure, allows optimal pressure regulation in a wide variety of flows, at variable pressures and at an optimal level of accuracy.

Good resistance to cavitation at both high and low flow rates.

MARKETS



TECHNICAL DATA

FLUID:

Raw water or filtered water

NOMINAL DIAMETER (DN):

40mm to 300mm (1½'' to 12")

AVAILABLE CONNECTIONS ENDS:

Flange,Groove, Thread

PRESSURE NOMINAL (PN):

10 & 16 bar, PN25 on request

Operational Temperature:

-29 °C to +80°C

Body &internal material:

Stainless Steel

Coating:

fusion-bonded epoxy coating or a coating of vitreous enamel.

Standard Controls:

ISO, DIN, EN, GOST-R

ADVANTAGES

CORROSION RESISTANT

Internal components are made of corrosion resistant stainless steel. Fusion-bonded epoxy coating or a coating of vitreous enamel.

LONG LIFE

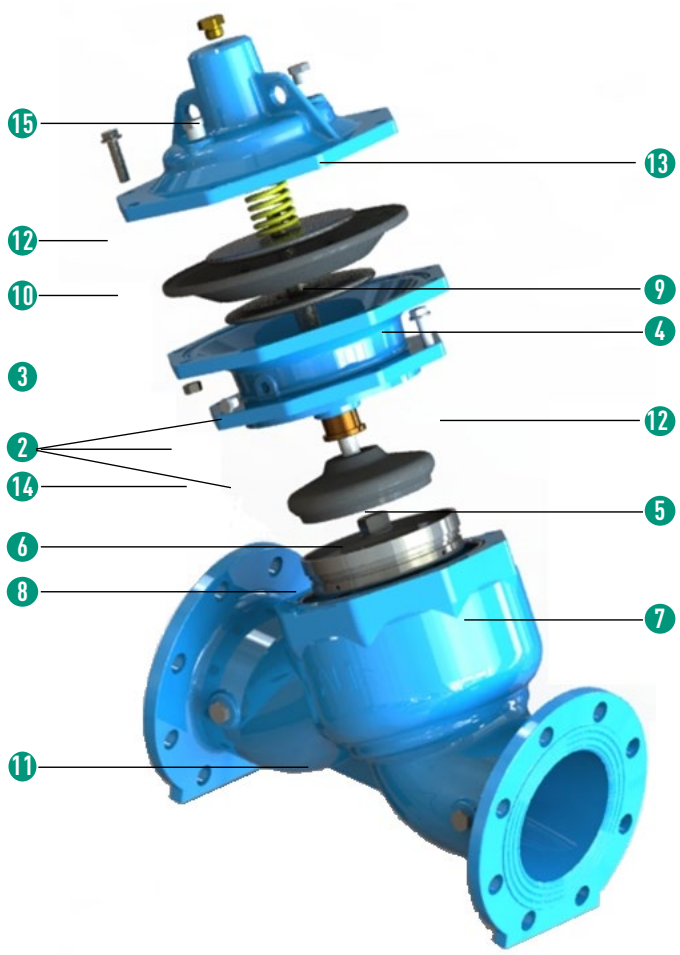
The desing of the valve guarantees uniform pressure distribution on the control diaphragm and ensures a long service life.

TYPICAL APPLICATIONS

- Water supply network: operate at wide flow range and varying operating conditions.
- Pumping stations, water treatment stations, reservoirs.
- Firefighting systems

The hydraulic control valve is the most effective device for automating industrial and municipal water supply sytems or any other system that requires control of changing operating conditions. The hydraulic valve is actuated by pipeline pressure and does not require any external power supply.

PART LIST OF MAIN VALVE STANDARD FEATURE:



Ref	Name	Material
1	Body	Ductile Iron Rilsan coating
2	Lower cover	Ductile Iron Rilsan coating
3	Disc	ST 37 Rilsan coating
4	Diaphragm	EPDM
5	Bushing	Bronze
6	Shaft	ST.ST. 316
7	Seat	ST.ST. 316
8	Sealing Plug	EPDM + Ductile Iron
9	Spring	ST.ST. 302
10	Upper Cover	Ductile Iron Rilsan coating
11	O-Ring	Natural rubber
12	Bolt	Steel 8.8 Plated
13	Washer	Steel 8.8 plated
14	Nut	Steel 8.8 Plated
15	Plug	Brass

OPTIONAL MATERIALS

Body:
- Ductile Iron
- Bronze
- Stainless Steel

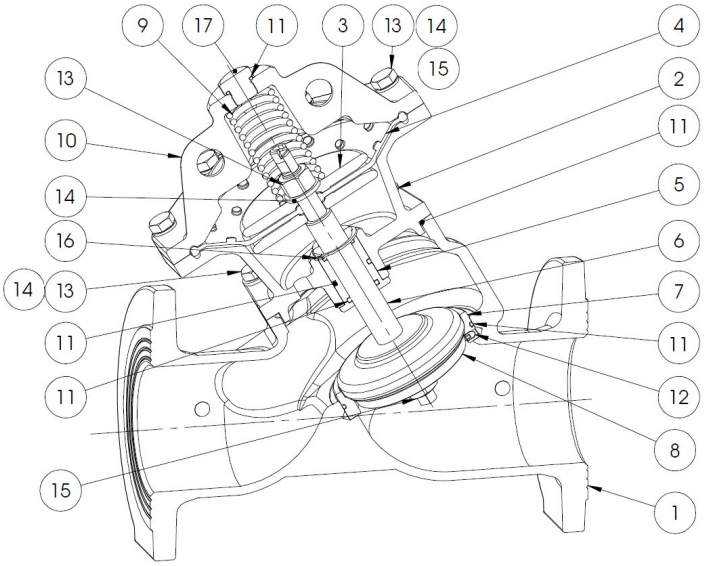
Cover:
- Ductile Iron
- Bronze
- Stainless Steel

Diaphragm zinc:
- EPDM
- Nitrile

Nuts, Washer, bolts:
Stainless Steel

Coating:
Epoxy Powder Internal - Enamel

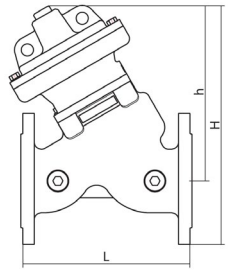
Ref	Name	Material
1	Body	Ductile Iron Rilsan coating
2	Lower Cover	Ductile Iron Rilsan coating
3	Disc	St.37 RILSAN Coated
4	Diaphragm	EPDM
5	Bushing	Bronze
6	Shaft	S.S. 316
7	Seat	S.S. 304
8	Sealing Plug	EPDM+ Ductile Iron
9	Spring	S.S. 302
10	Upper Cover	Ductile Iron Rilsan coating
11	O-Ring	Natural rubber
12	Screw	A2
13	Bolt	A2
14	Washer	A2
15	Nut	A2
16	Circlip	A2
17	Plug	Brass



RAVE HIGH-FLOW IN LINE

OVERALL DIMENSIONS & HYDRAULIC DATA

DIMENSIONS (METRIC)



Flange (#NP or #0)

Diam (mm)	Diam. (inch)	L (mm)	H (mm)	h (mm)	Weight (kg)	Kv
40	1.5	250	260	223	10	
50	2	230	299	224	14	60
80	3	310	375	275	23	140
100	4	350	389.5	284.5	32	200
150	6	480	539	404	70	570
200	8	600	647	482	126	840
250	10	730	736	539	214	1050
300	12	850	908	668	301	1350

HYDRAULIC DATA

Nominal Diameter		Kv factor Fullv opened Valve	Control Chamber Volume
mm	inch		Liter
40	1.5		
50	2	60	0.17
80	3	140	0.4
100	4	200	0.7
150	6	570	3.3
200	8	840	4.7
250	10	1050	
300	12	1350	

$$Q = Kv.\sqrt{\Delta P}$$

ΔP = (Pupstream – Pdownstream) in kg/cm2
Q – Flow in m3/hour
Kv – Flow rate in m3/hour specified for PN10/16 locks
RD – Relative Density, (water = 1)

FEATURES & BENEFITS

Maintenance Free Valve by having no spring inside and a simple and reliable three parts valve: cover, patented diaphragm and body.
Stability and accurate regulation even at low flow rate based on the patented diaphragm integrated ribs to replace spring. This allow gradual opening and closing with no risk of noise, vibration or water hammer.

OPTIONAL FEATURES:

- #S: mains valve body and cover in stainless steel
- #D: diaphragm in EPDM (potable water approved)
- #F: Fixing elements in stainless steel
- #I: Visual indicator
- #E: Electric Limit Switch

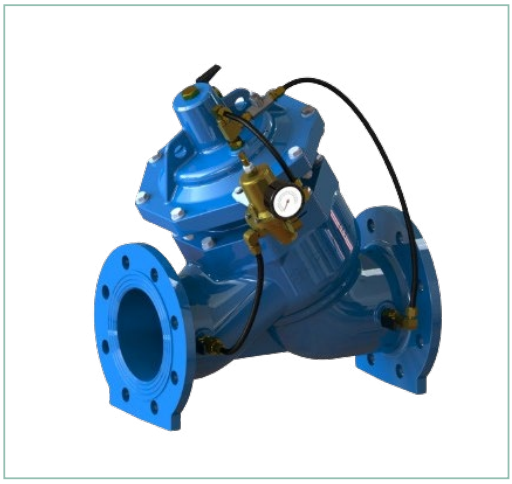
RAVE 60

PRESSURE REDUCING CONTROL VALVE 2-W METAL PILOT

The main valve is controlled by an adjusting pilot valve preset to the required downstream set pressure.

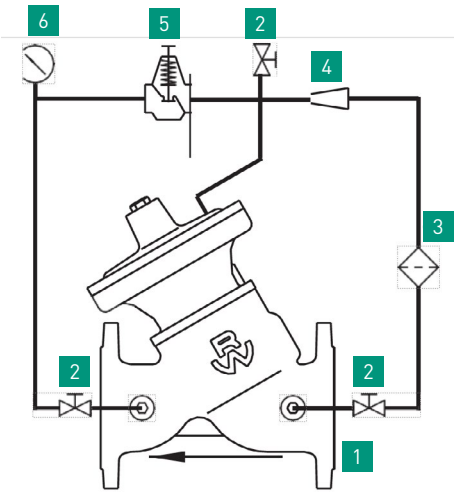
The main valve maintains constant downstream pressure at varying pipeline inlet pressure or downstream flow demand.

The operation of the valve does not require additional power source; it is actuated by pipeline pressure.



PRINCIPLE OF OPERATION

When the outlet pressure falls below the value set by the pilot spring (6), the pilot is activated and releases pressure from the main valve control chamber.
The main valve opens, thus increasing the outlet pressure.
When the outlet pressure becomes higher than the pilot spring´s preset value (6), the pilot is activated, which causes higher pressure in the main valve's control chamber. The main valve closes, thus decreasing the outlet pressure back to set pressure.



RAVE-60 Pressure Reducing Control Valve

Ref	Name
1	Main valve
2	Isolating Valves
3	Filter
4	Needle valve
5	Reducing pilot
6	Monometer

TYPICAL APPLICATIONS

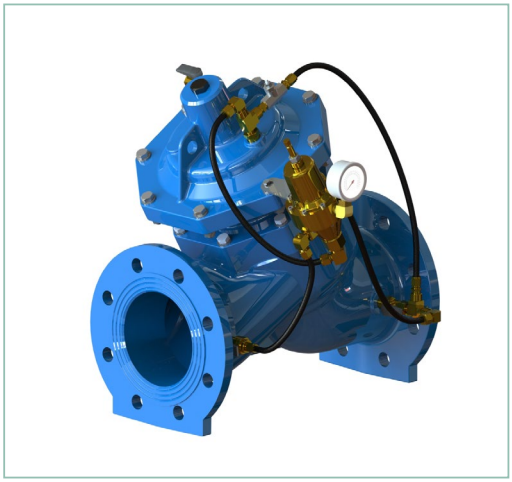
The RAVE 60 pressure reducing valve is used for controlling pressure in pipelines, municipal and main water supply lines.

RAVE 80

PRESSURE SUSTAINING RELIEF CONTROL VALVE - 2-W METAL PILOT

The RAVE 80/82 pressure Sustaining/Relief valve is used for controlling upstream pressure.

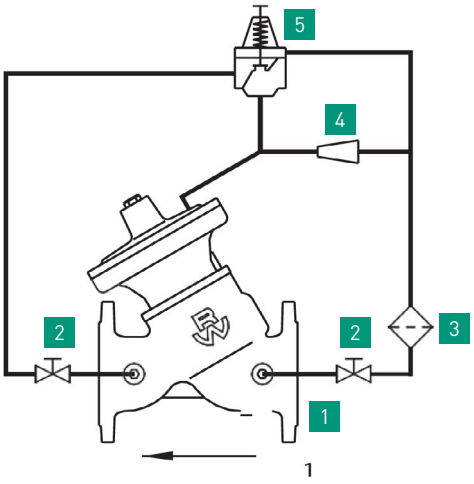
The valve maintains constant upstream pressure regardless of flow demand or varying outlet pressure.



PRINCIPLE OF OPERATION

When the intlet pressure becomes higher than the preset value by the spring of the pilot (5), the pilot is activated to open and releases the pressure from the main valve's control chamber. The main valve opens, thus reducing the inlet pressure.

When the intlet pressure falls below the value preset by the pilot spring (5), the pilot is activated to close, which causes higher pressure in the main valve's control chamber. The main valve closes, thus increasing the intlet pressure.



RAVE-80 2-W Pressure Sustaining Relief Control Valve

Ref	Name
1	Main valve
2	Isolating Valves
3	Filter
4	Needle Valve
5	Control Pilot

TYPICAL APPLICATIONS

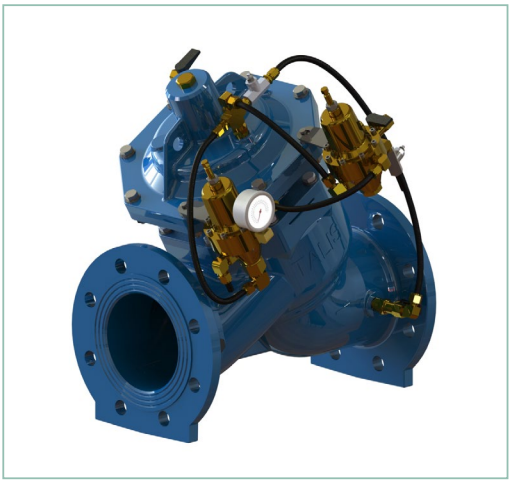
The RAVE 80/82 pressure Sustaining/Relief control valve is used for pressure control in pipelines, municipal and main water supply lines, and heating main lines, as well as for protection of pumping equipment and pipelines agains over pressure.

RAVE 88

SURGE ANTICIPATING CONTROL VALVE, 3-W METAL PILOT

The RAVE 88 is intended for protecting the pipeline from waterhammer. Hydraulic shock can be caused by emergency shutdown of the pump due to power outage or by abrupt closure of a stop valve along the main line. Thereby, a rapid pressure drop front is followed by a reverse wave with extremely high pressure. The low and high pressure waves alternate within a short time interval. The RAVE 88 is controlled by two pilots for high and low pressure.

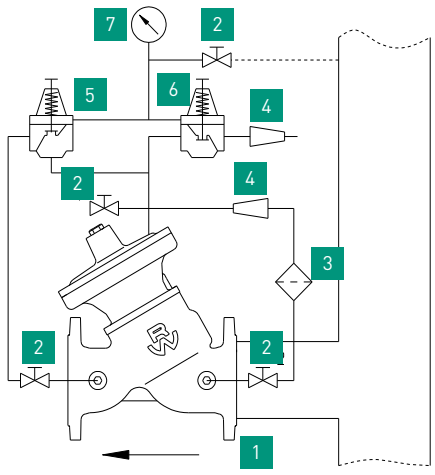
Under normal conditions the RAVE 88 is closed. When the pressure in the line increases or drops outside of the preset limits, the valve opens as a quick pressure relief to discharge into atmosphere.



PRINCIPLE OF OPERATION

When line pressure rises above the preset value, the pilot (5) is activated and releases extra pressure from the main valve control chamber. The main valve opens, thus eliminating the over pressure.

If hydraulic shock wave develops, the pressure in the pipeline falls sharply. The low pressure pilot (6) is activated, releaseing pressure from the main valve's control chamber. The main valve opens in anticipation of the high surge to follow. The high surge will find a fully open valve capable of discharging the full flow into atmosphere and prevent the high surge development. As the pressure drops back to normal, both pilots close and the main valve closes as a result.



RAVE-88 Surge Anticipating Control Valve

Ref	Name
1	Main valve
2	Isolating Valves
3	Filter
4	Needle valve
5	High pressure control pilot
6	Low pressure control pilot
7	Manometer

TYPICAL APPLICATIONS

The RAVE 88 hydraulic Surge Anticipating valve is used for protecting pipelines, municipal and main water supply lines, as well as protecting pumping equipment from possible damage when hydraulic shock occurs.

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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