

RAPHAEL

Product brochure

RAVE Series

Hydraulic Double Chamber Control Valve



HYDRAULIC DOUBLE-CHAMBER CONTROL VALVE

RAVE

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

RAVE Type - 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



Green house



Landscape



Mechanised Irrigation



Open field Irrigation



Water Transmission

ADVANTAGES

UNIQUE NON METAL WETTED PARTS VALVE

No corrosion is possible

MAINTENANCE FREE

By having no spring inside and a simple and reliable three part valve: cover, patented diaphragm and body

LONG LIFE

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

TECHNICAL DATA

Fluid: raw water or filtered water

Nominal Diameter (DN):
from 40 to 300 mm (2" to 12")

Available connections: Flanged, Threaded or Grooved

Nominal Pressure (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

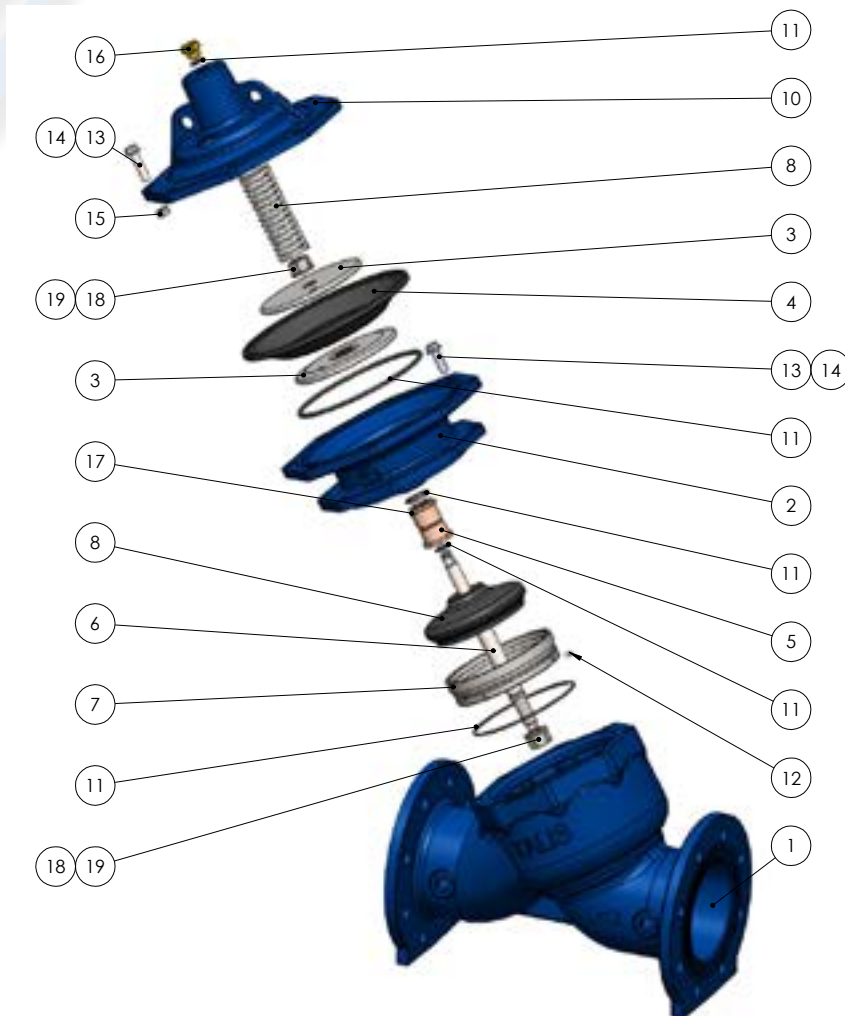
TYPICAL APPLICATIONS

- └ 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.

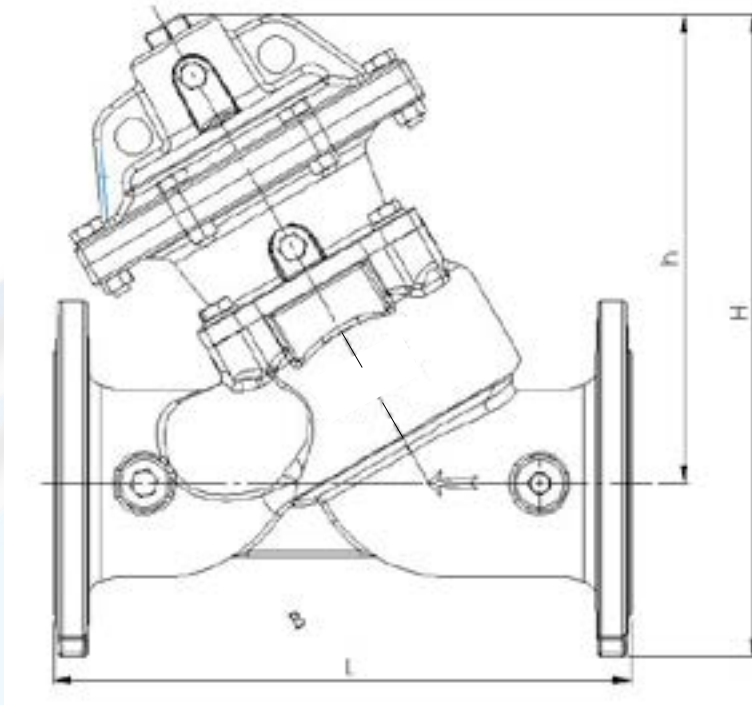
PART LIST OF MAIN VALVE STANDARD FEATURE:



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	Screw	ST.ST. 304
13	Bolt	Steel 8.8 Plated
14	Washer	Steel 8.8 plated
15	Nut	Steel 8.8 Plated
16	Plug	Brass
17	Circlip	ST. ST. 304
18	Nut	ST. ST. 304
19	Waher	ST. ST. 304

HYDRAULIC DOUBLE-CHAMBER CONTROL VALVE

OVERALL DIMENSIONS & HYDRAULIC DATA



Diam (mm)	Diam. (inch)	L (mm)	H (mm)	B (mm)	h (mm)	Weight (kg)	Kv
50	2	230	299	165	224	14	60
80	3	310	375	200	275	23	140
100	4	350	389.5	241	284.5	32	200
150	6	480	539	310	404	70	270
200	8	600	647	400	482	126	840
250	10	730	736	450	539	214	1050
300	12	850	908	561	668	301	1350

$$Q = Kv \sqrt{\Delta P / RD}$$

ΔP = (Pumpstream - 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)

RAVE 60

Pressure Reducing Control Valve

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.

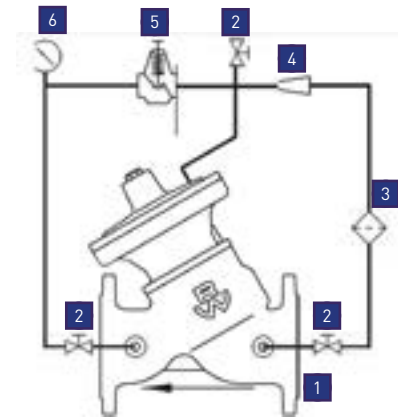
PRINCIPLE OF OPERATION

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.

APPLICATIONS

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



RAVE 60 Pressure Reducing Valve

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

RAVE 80

Pressure Sustaining/Relief Control Valve

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.

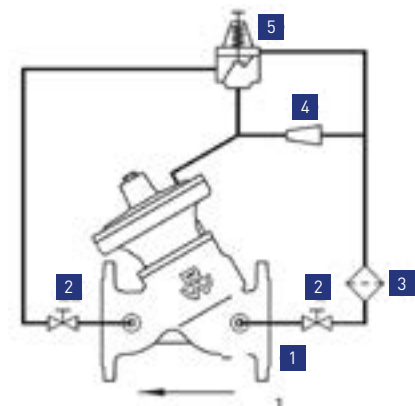
PRINCIPLE OF OPERATION

When the inlet 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 inlet 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 inlet pressure.

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 against over pressure.



RAVE 80 Pressure Sustaining/Relief Valve

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

HYDRAULIC DOUBLE-CHAMBER CONTROL VALVE

RAVE 88

Surge Anticipating Control Valve

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.

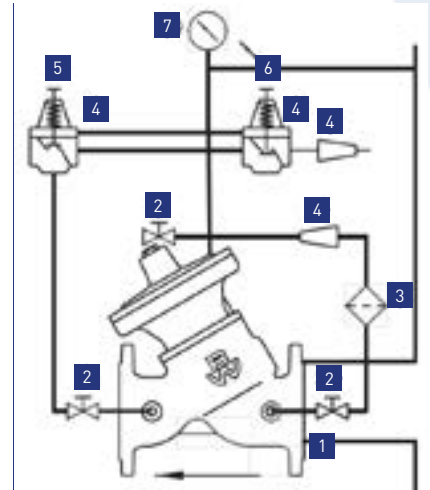
PRINCIPLE OF OPERATION

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, releasing 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.

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.



RAVE 88 Hydraulic Surge Anticipating 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

UCV

Universal Control Valve

Each of the Raphael hydraulic control valves is governed by an electronic controller.

This system is universal control valve, UCV and can be used as a multi-functions valve communication with an automated control system such as SCADA or «stand alone».

UCV is a perfect solution for modern systems operating in automatic control mode within water supply monitoring objects.

UCV has been developed for any water - control task.

The process parameters can be easily changed, on demand, via direct access to the UCV controller interface or remotely via SCADA control system.

PRINCIPLE OF OPERATION

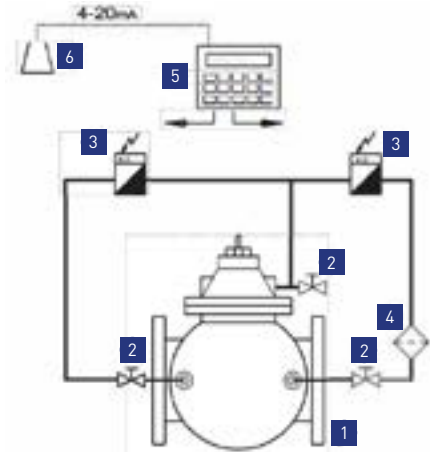
The UCV controller energizes 2 main solenoid valves.

One to add water pressure into the control chamber, and the second to drain it. Thus the optimal amount of water will be kept throttling the main valve and maintain set pressure, flow, water level, etc.

The set programming parameter can be governed by a PC computer main controller connected to the controller via telecommunication system or directly through the controller interface.

APPLICATIONS

The universal control valve is used in municipal and main water supply lines grid for automating and optimizing water supply systems.



RAVE 80 Pressure Sustaining/Relief Valve

Ref	Name
1	Main valve
2	Isolating Valves
3	2 way solenoid valve
4	Filter
5	UCV controller
6	4-0 mA input



RAPHAEL VALVES INDUSTRIES (1975) LTD, 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 and other fields.

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