VDR* HYDRAULICALLY ACTUATED AUTOMATIC CONTROL VALVES

Hydro valve shutoff, control, adjustment, pressure and flow to the membrane (VDRM version) or piston (VDRP version), suitable for field waterworks.

These functions may be combined in a single valve:

- Automatic ON-OFF control
- Pressure regulation
- Pressure relief sustaining
- Level control
- Flow control
- Shut-off for excess flow

DESCRIPTION

The diaphragm or piston-type, regulation valve operates as a continuous flow valve with a variable section. The flow is opened, shut-off and regulated by the means of the membrane supported and guided by the stem-bonnet-spring unit (version VDRM), or by the piston - V-port unit (series VDRP). Suitable pilot circuits, installed on the body of the valve, allow all kinds of regulation. Due to its natural variation, it is possible to control the pressure upstream as well as downstream, and to regulate the flow, by monitoring the upstream and downstream pressure.

Operating limits:

- Install in a horizontal position (indicate if the valve has to be installed in a vertical position)
- Maximum fluid speed (continuous working) < 3.5 m/s
- Maximum fluid speed (peak service) < 5 m/s
- Minimum differential pressure for valves ON-OFF > 0.3 bar (3m H2O)
- Minimum differential pressure for regulating valves > 0.5 bar (5m H2O)
- Minimal inlet pressure > 0.5 bar (5m H2O)
- Pressure difference exceeding the ratio 3:1 between upstream and downstream value. Refer to the cavitation chart.
- Pilot circuit spring shall match operating conditions. Respect allowed regulation range.

TECHNICAL SPECIFICATIONS

Working temperature: +2…70°C

Working pressure:

VDRM10	VDRM25	VDRP40
16 bar	25 bar	40 bar
membrane		piston

Fluids: drinking water or filtered water (filtration 2mm or less)

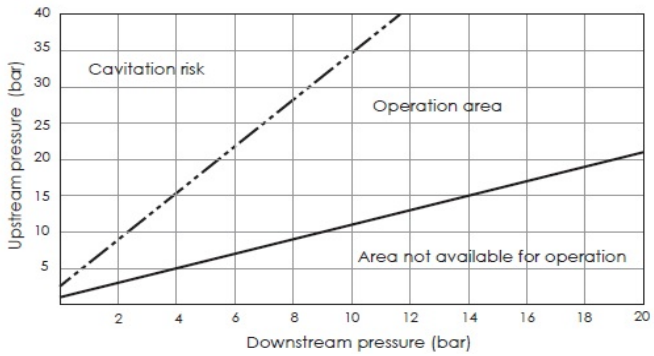
Face-toface: EN 558-1/1

Flanges: EN1092

Color: RAL 5005

Testing: EN12266 (ISO 5208)

Working range:



In the non-available working area, the area upstream / downstream pressure difference will not allow the valve to operate properly. A difference that exceeds the ratio 3:1 between the upstream and downstream pressures will cause cavitation, and consequently cause premature wear of the components. Avoid operating the valve when there is a permanent risk of cavitation. The valve might work for short periods under conditions of slight cavitation.

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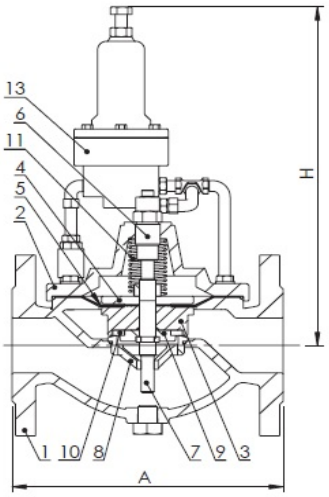
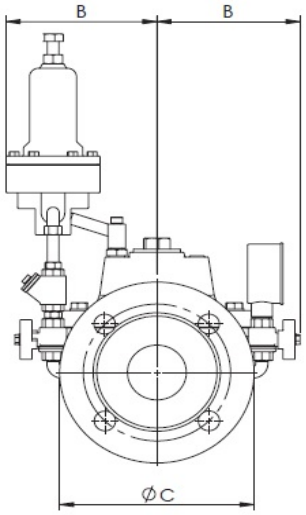
VDR * DIMENSIONS

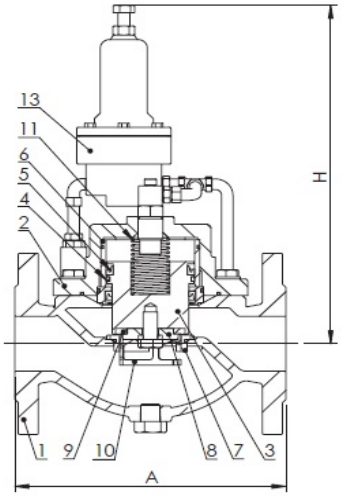
Versione a membrana VDRM

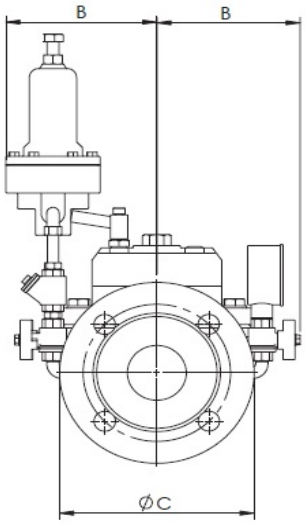




1 Body and 2 Bonnet:
- EN GJS 400-12 / Carbon steel
3 Shutter and 4 Membrane support:
- Epoxy coated carbon steel
5 Membrane: Nylon reinfor. Neoprene
6 Bushing: Bronze
7 Stem: AISI 303
8 Body seat: AISI 316
9 Retaining ring: AISI 304
10 Seal: NBR
11 Spring: AISI 302
12 Bolts and nuts: AISI 304
13 Pilot circuit:
- Pilot: Nickel plated bronze
- Valves,filters,fittings: Nickel pl. brass
- Hoses: stainless steel

Versione a pistone VDRP





1 Body and 2 Bonnet:
- EN GJS 400-12 / Carbon steel
3 Shutter: AISI304
4 Sliding ring PTFE
5 Lip seal NBR
6 Bushing Bronze
7 Body seat AISI 316
8 Retaining ring AISI 304
9 Seal NBR
10V-port AISI 304
11 Spring AISI 302
12 Bolt and nuts AISI 304
13 Pilot circuit
- Pilot: plated bronze
- Valves, filter,fittings: brass plated
- Hoses: stainless steel

	A mm	H mm	B mm	C EN1092 mm			
DN	EN558-1/1	with pilot circuit		PN16	PN25	PN40	Weight Kg.
50	230	220	170	165	165	165	20
65	260	250	180	185	185	185	24
80	310	280	200	200	200	200	30
100	350	310	210	220	235	235	43
125	350	380	230	250	270	270	48
150	480	420	250	285	300	300	90
200	620	520	280	340	360	-	142
250	730	600	300	405	425	-	230
300	850	740	340	460	485	-	380
400	1100	810	390	580	620	-	550
500	1250	890	460	715	730	-	860
600	1450	970	540	840	845	-	1100
700	1650	1020	590	910	960	-	1450
800	1850	1070	640	1025	1085	-	1900

*VDR * FLOWS*

DN	Low headloss	Advised	Irrigation /firefighting	Minimum allowed	Maximum allowed
	l/s				
50	4.5	6.7	8.8	1	9.8
65	7.6	11.3	14.9	1.7	16.6
80	11.6	17.1	22.6	2.5	25.1
100	18.1	26.7	35.3	3.9	39.3
125	28.2	41.7	55.2	6.1	61.4
150	40.6	60.1	79.5	8.8	88.4
200	72.3	106.8	141.4	15.7	157.1
250	112.9	166.9	220.9	24.5	245.4
300	162.6	240.3	318.1	35.3	353.4
400	289	427.3	565.5	62.8	628.3
500	451.6	667.6	883.6	98.2	981.7
600	650.3	961.3	1272.3	141.4	1413.7
700	885.1	1308.5	1731.8	192.4	1924.2
800	1156.1	1709	2261.9	251.3	2513.3

DN	Low headloss	Advised	Irrigation /firefighting	Minimum allowed	Maximum allowed
	m3/h				
50	16	24	32	3.6	35
65	27	41	54	6.1	60
80	42	62	81	9	90
100	66	96	127	14	141
125	102	150	199	22	221
150	146	216	286	32	318
200	260	384	509	57	566
250	406	601	795	88	883
300	585	865	1145	127	1272
400	1040	1538	2036	226	2262
500	1626	2403	3181	354	3534
600	2341	3461	4580	509	5089
700	3186	4711	6234	693	6927
800	4162	6152	8143	905	9048

v (m/s	2.3	3.4	4.5	0.5	5

Spring colour	Regulation range bar	
	Pressure sustaining pilot	Pressure reducing pilot
White	0.5 - 2	0.5 - 3
Green	0.5 - 4	0.5 - 6
Red	1 - 5	1 - 10
Black	1.5 - 8	1.5 - 12
Black+White	2 - 11	2 - 15
Yellow	4 - 17	5 - 20

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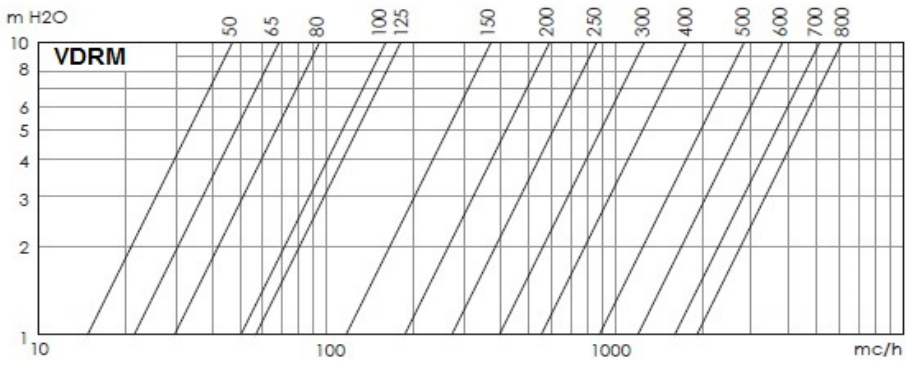
VDR * HEAD LOSS

VDRM - DIAPHRAGM VERSION

Head loss. Fluid: water (1m H2O = 0.098bar)

Head loss with completely opened shutter

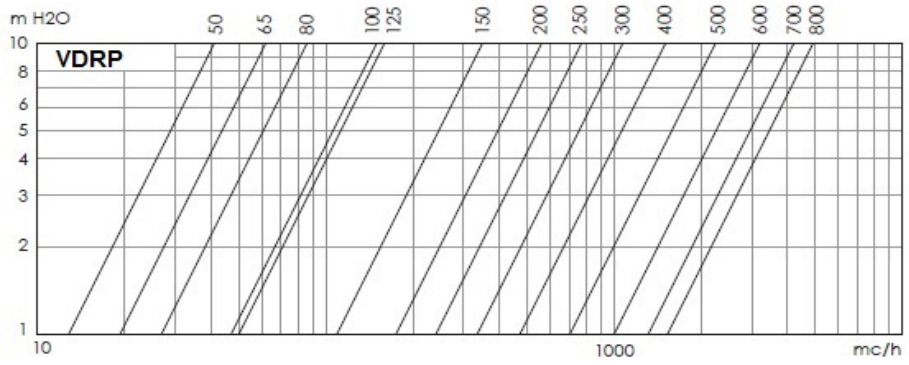


	Kv m3/h
50	47
65	68
80	94
100	160
125	180
150	370
200	590
250	860
300	1260
400	1760
500	2800
600	3800
700	5100
800	6100

VDRP - PISTON VERSION

Head loss. Fluid: water (1m H2O = 0.098bar)

Head loss with completely opened shutter



	Kv m3/h
50	41
65	62
80	86
100	150
125	160
150	350
200	560
250	770
300	1070
400	1510
500	2250
600	3200
700	4200
800	4900

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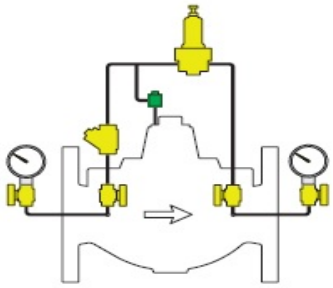


VDR*100

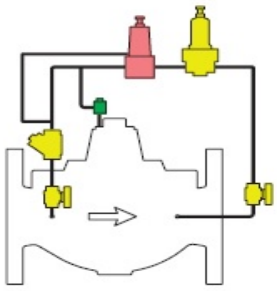
VDR*100

Pressure reducing valves

These reduce the pressure to a preset value, regardless of any flow rate and upstream pressure variation.

Indications to be made when ordering:

- Upstream pressure value (min and max)
- Downstream pressure value
- Min/max flow requested



VDR*120

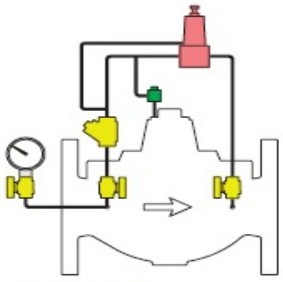
VDR*120

Pressure reducing and sustaining valves

These reduce and stabilize the pressure at a preset value, independently of the variation of the flow and the variation of the upstream pressure. They keep the upstream pressure value constant, at the preset value.

Indications to be made when ordering:

- Upstream pressure value (min and max)
- Downstream pressure value
- Min/max flow requested



VDR*200

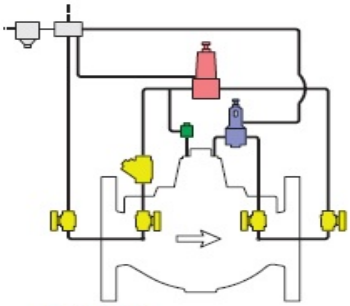
VDR*200

Pressure sustaining/relief valves

These keep the upstream pressure value at a preset value, and drain the excess pressure downstream.

Indications to be made when ordering:

- Pressure setting value (relief valve function)
- Upstream pressure to be maintained (maintenance of the upstream pressure)



VDR*219

VDR*219

Surge anticipator/pressure relief valves

These protect pumping systems against excess pressure caused an abnormal and sudden interruption of the pumping (e.g. unforeseen power supply interruption).

Indications to be made when ordering:

- Hydraulic characteristics of the pump (Q, P, NPs/1)
- Static pressure
- DN, material, thickness, length of supply pipe up to the reservoir/tank
- Carried liquid

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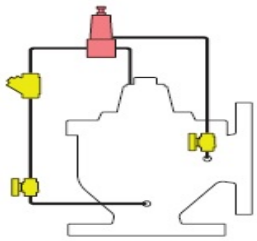


VDRM300-DN50

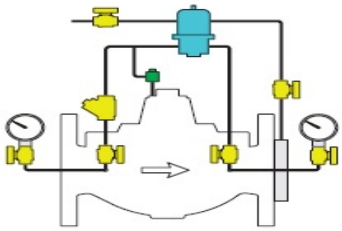
VDRM300 DN50

Pressure relief angle valve

This version allows maintaining the preset upstream pressure value, while draining the excess pressure downstream.

Indications to be made when ordering:

- Maximum upstream pressure
- Min/max pressure to be regulated



VDR*400

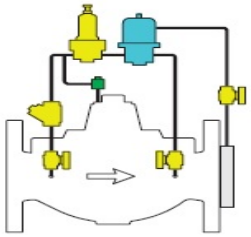
VDR*400

Flow rate control valves

These automatically maintain a preset maximum flow rate, independently of the upstream or downstream pressure variations. The nominal value is determined by the calibrated aperture; this value can be increased or decreased by 30%, by turning the pilot setting screw.

Indications to be made when ordering:

- Maximum value of the flow to be limited



VDR*410

VDR*410

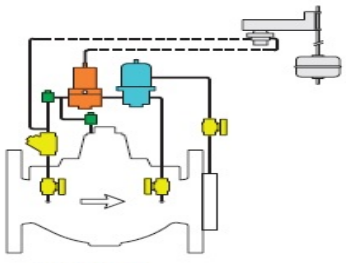
Flow rate control and pressure reducing valves

These automatically maintain a preset flow rate, independently of the upstream or downstream pressure variations. The nominal value is determined by the calibratedaperture; this value can be increased or decreased by 30%, by turning the pilot screw.

These reduce and stabilize the downstream pressure, in line with the preset value, independently of the flow rate and the pressure variation upstream.

Indications to be made when ordering:

- Maximum upstream pressure
- Min/max pressure to be regulated
- Value of maximum flow to be limited



VDR*460

VDR*460

Flow limiting valve & min-max level control valves with floating device

These keep the level in a tank between a minimum and a maximum value, and automatically maintain a preset maximum flow rate value, independently of the upstream or downstream pressure variations. The nominal value is determined by the calibrated aperture; this value can be increased or decreased by turning the pilot screw.

NB: the maximum distance between the level control pilot and the valve must not exceed 50 m.

Indications to be made when ordering:

- Maximum flow value to be limited
- Maximum upstream pressure

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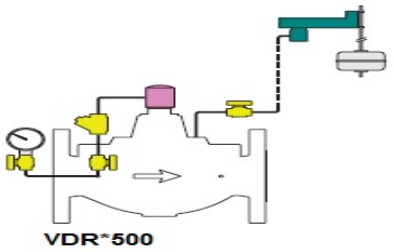


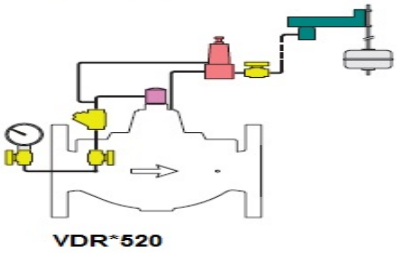
VDR*500

Float-controlled modulating valves (constant tank level)

These keep the tank level constant, by regulating the incoming and outgoing flows. Level regulation is variable for 150 mm. The valve can be installed at the bottom of the tank. The pilot must be installed inside the tank, or on the edge of the basin.

Indications to be made when ordering:

- Minimum and maximum pressure values



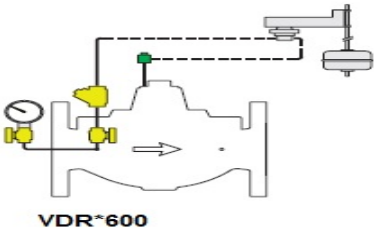
VDR*520

Float-controlled modulating valves (constant tank level) that keeps the upstream pressure constant

These keep the tank level constant, by regulating the incoming and outgoing flows. Level regulation is variable for 150 mm. The valve can be installed at the bottom of the tank. The pilot must be installed inside the tank, or on the edge of the basin. This maintains the preset value of the upstream pressure.

Indications to be made when ordering:

- Minimum and maximum pressure values



VDR*600

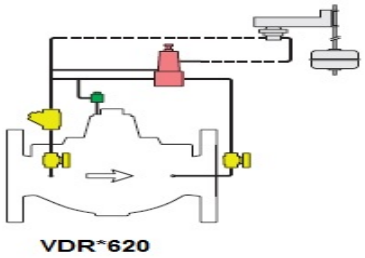
Min-max level control valves with floating device

When the maximum level is reached, the valve closes, and then reopens when the minimum level is reached. Standard level range, from 100 mm to 700 mm. Other ranges on request. The valve can be installed at the bottom of the tank. The pilot must be installed inside of the tank or on the edge of the basin.

NB: the maximum distance between the level control pilot and the valve is 50 m.

Indications to be made when ordering:

- Minimum and maximum pressure values



VDR*620

Min-max level control with floating device and upstream pressure sustaining valves

When the maximum level is reached, the valve closes, and then reopens when the minimum level is reached. The valve can be installed at the bottom of the tank. The pilot must be installed inside the tank or on the edge of the basin. This valve maintains and a preset value upstream, allowing the incoming flow to the tank to be controlled, in order to prevent excessive flow, as a result of a drastic fall in Pressure in the piping.

NB: the maximum distance between the level control pilot and the valve is 50 m.

Indications to be made when ordering:

- Maximum working temperature
- Minimum and maximum pressure values
- Regulation range

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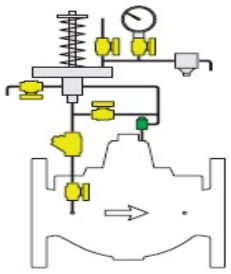


VDR*800

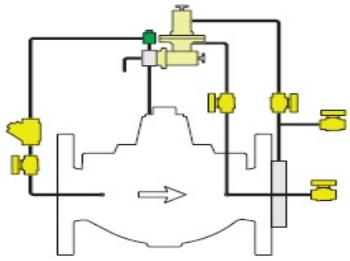
VDR*800

Level control valves with altitude pilot

These maintain the tank or reservoir level between minimum and maximum values. The valve and the altitude pilot are located at the bottom of the tank. The valve is opened and closed using the static head between the valve and the reservoir/tank.

Indications to be made when ordering:

- Height of the tank
- Pressure
- Flow rate



VDR*900

VDR*900

Excess flow valves

These allow sectioning the piping, in the event of the flow speed being exceeded. The valve is designed with the purpose of shutting off the pipeline in the event of failure. It limits the damage caused by water, following a pipe fracture due to earthquakes or landslides, etc.

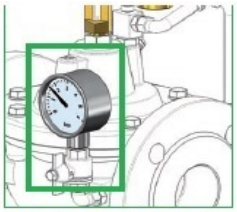
Indications to be made when ordering:

- Pressure
- Flow rate

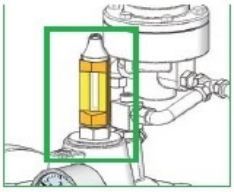
LEGEND of the symbols used in the sketches

Pressure reducing pilot	Low pressure pilot (anticipates water hammers)	Hydraulic synchronizer
Pressure sustaining pilot	Excess flow pilot	Blead cock
Flow limit pilot	Filter	Pressure gauge
Auxiliary pilot	Ball valve	Float + min/max level regulating pilot
Piezometric level control pilot	Flow rate regulator	Float + constant level regulating pilot

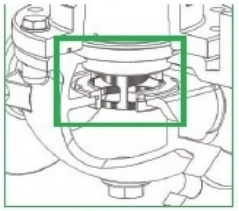
ACCESSORIES



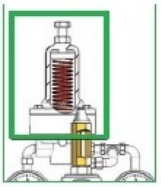
PRESSURE GAUGE



POSITION INDICATOR AND RELIEF VALVE



V-PORT



SPRINGS

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