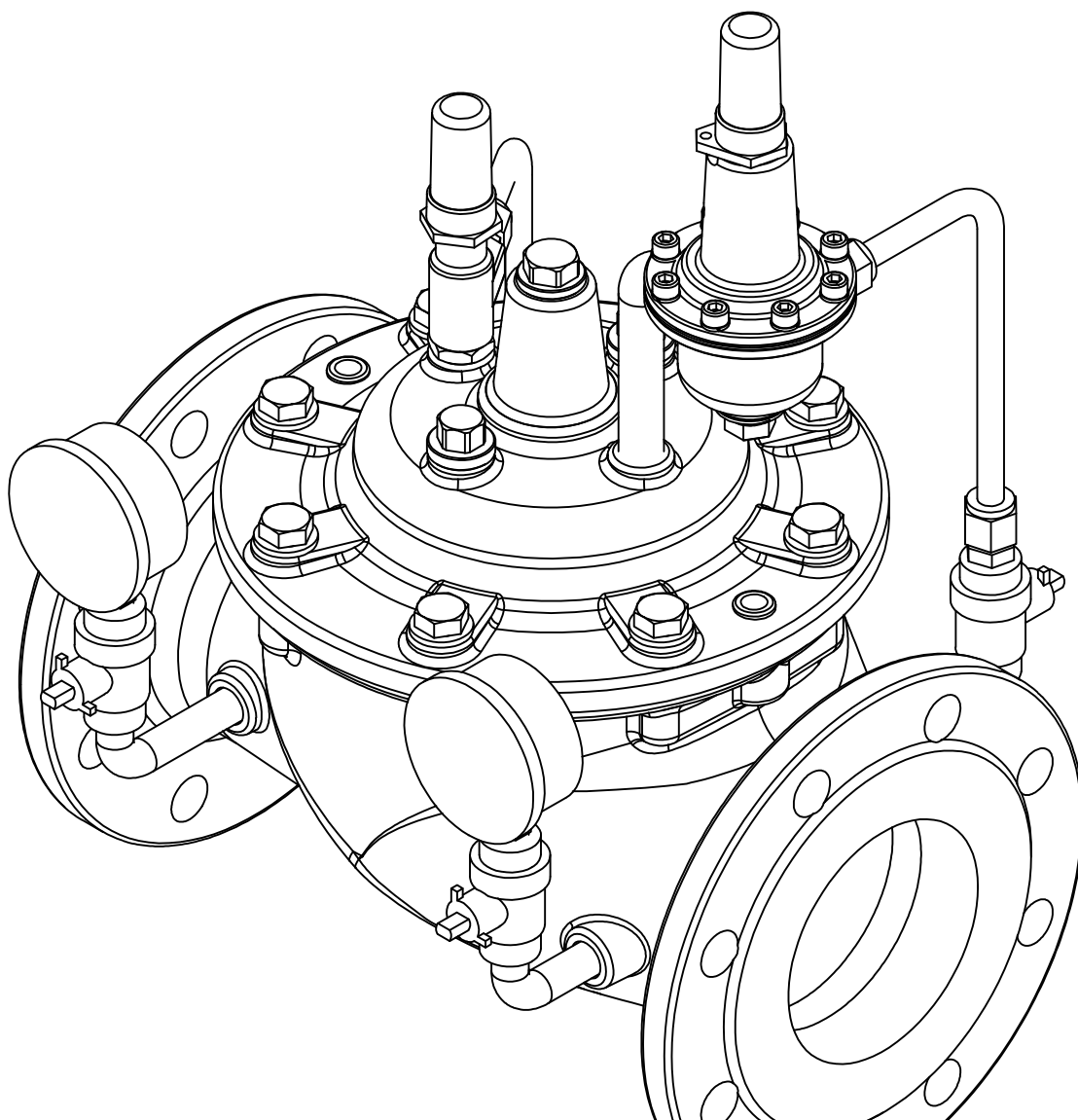


General product catalog

Automatic Control Valve



POSITION INDICATOR

Stainless steel AISI 304
with high resistance glass

* OPTIONAL

FASTERNER

Stainless steel AISI 304
Stainless steel AISI 316

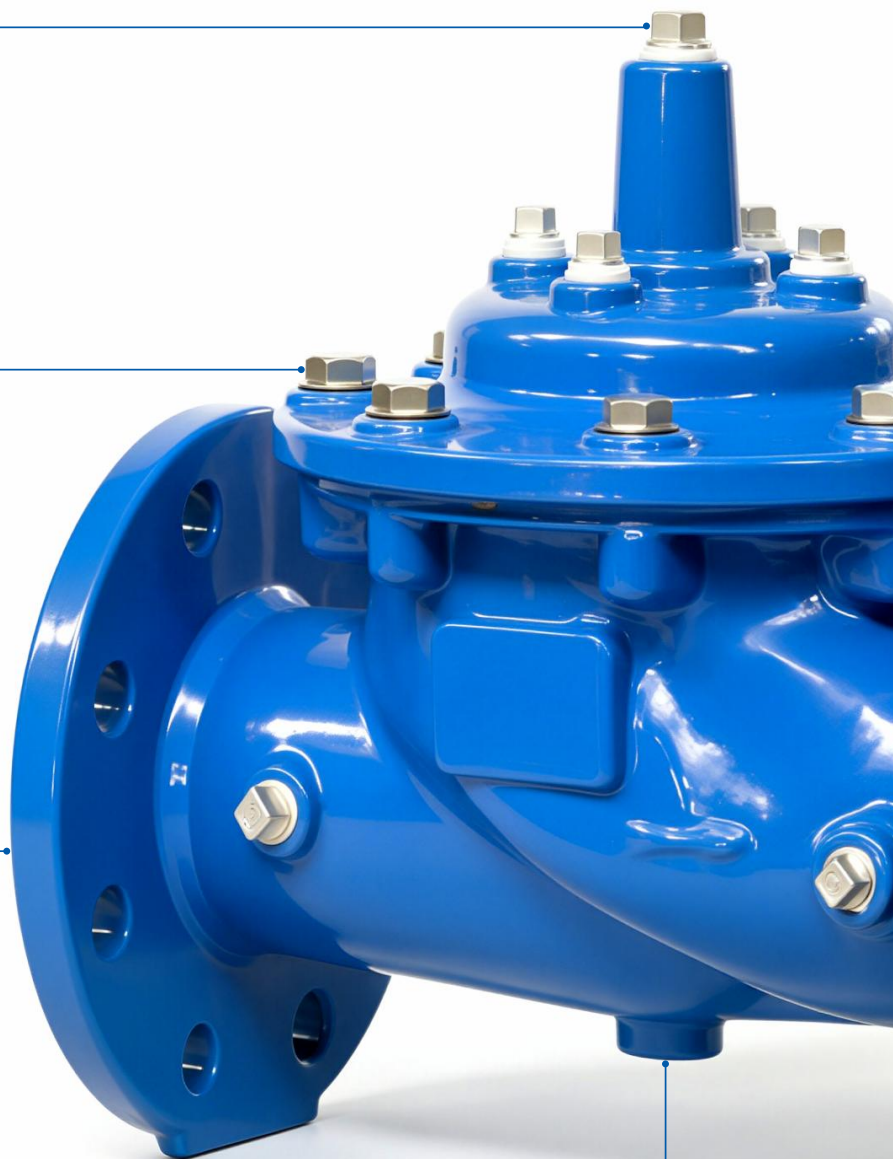
SURFACE PROTECTION

Fusion bonded epoxy coating
internally & externally
average thickness 300 micron

- WRAS approved epoxy powder

PLUG (OPTIONAL)

Stainless steel AISI 304
Stainless steel AISI 316



PRESSURE and FLOW CONTROL VALVES



Pressure Reducing Valve downstream pressure control

model: IV-ACV-1001

*position indicator as option

maintain a constant downstream pressure regardless of fluctuation in upstream pressure or downstream demand.



Pressure Reducing Valve with low pressure bypass

model: IV-ACV-1002

pressure-reducing valve with a low flow rate bypass pilot. It gives a stable fixed outlet pressure during a normal flow rate. When the flow rate is very small, the main valve will close and water will flow through the bypass pilot to avoid valve vibration.



Pressure Reducing Valve with solenoid control

model: IV-ACV-1003

allowing for remote electrical on/off control



Pressure Reducing and Sustaining Valve

model: IV-ACV-1004

with independent Pressure Sustaining and Pressure Reducing functions. It sustains minimum pre-set upstream pressure, regardless of fluctuating flow or varying downstream pressure, and it prevents downstream pressure from rising above maximum pre-set level, regardless of fluctuating flow or excessive upstream pressure.

PRESSURE and FLOW CONTROL VALVES



Pressure Sustaining Valve upstream pressure control

model: IV-ACV-1005

minimum the backpressure when installed in the main line
prioritizing pressure zones and preventing line emptying.
also used to protect pumps from overload.



Pressure Differential Valve

model: IV-ACV-1006

maintain constant pressure difference between pump inlet
and outlet, to operate the pump efficiently and to
avoid the possible cavitation.



Flow Control Valve

model: IV-ACV-1007

prevent excessive flow by limiting it to a preselcted maximum
rate; installed at the inlet and outlet of reserviors and in
networkds to prevent from excessive usage.



Pressure Reducing with Flow Control Valve

model: IV-ACV-1008

A pressure-reducing valve with flow control reduces high,
fluctuating inlet pressure to a lower, stable outlet
pressure while simultaneously limiting the maximum flow
rate to a set, desired level

LEVEL CONTROL VALVES



Float Valve (modulating)

model: IV-ACV-2001

maintain a constant level of water in ground reservoirs



Float Valve (modulating) with solenoid control

model: IV-ACV-2002

maintain a constant level of water in ground reservoirs
allowing for remote electrical on/off control



Float Valve (non-modulating)

model: IV-ACV-2003

Maintains water level between two points
(Hi and Low) in ground reservoirs.

Additional functions that can be added to this valve
include the following:

- Pressure sustaining pilot
- Flow limiting pilot



Altitude Valve

model: IV-ACV-2004

Maintains a constant level of water in elevated tanks.
It is different from float valves in that it senses
changes in pressure through a sensing line
connected to the tanks drainage pipe.

NETWORK PROTECTION VALVES



Pressure Relief Valve

model: IV-ACV-3001

Protects the pipeline from damages that can be caused by high pressure peaks by relieving excess pressure out of the system.



Surge Anticipation Valve

model: IV-ACV-3002

Surge Anticipation Valve is an automated hydraulic pilot operated valve installed on pumping system bypass lines to prevent destructive water hammer caused by sudden pump failure or power loss. It "anticipates" high-pressure surges by opening immediately upon detecting the initial low-pressure drop, then slowly closes to dissipate the subsequent high-pressure wave.



Hydraulic Check Valve

model: IV-ACV-3003

This valve prevents backflow without causing slam or water hammer by opening and closing in a controlled manner.



Pump Control Valve

model: IV-ACV-3004

Pump Control Valve is electrically operated - hydraulically actuated control valve used to control surges caused by pump starting and stopping and provide adjustable back pressure on pump while it is running. A check feature is added to automatically close the valve on electric power failure.

SOLENOID CONTROL VALVES



Single Solenoid Control

model: IV-ACV-4001

solenoid control valve with on/off function
by a single solenoid valve



Dual Solenoid Control

model: IV-ACV-4002

solenoid control valve with on/off function
by two solenoid valves.



Round-Star®

Solenoid Valve

model: IV-ACV-4003

Working medium: water, liquid, air, light oil (viscosity≤20cst)

medium temperature: -5 ~ 80°C (NBR sealing)

Working pressure: 0 ~ 8bar (details see specification)

Working voltage: AC220~240V, AC110V 50/60Hz 22VA, DC24/12V 13W. IP65, H degree

Working type: semi direct acting

body material: brass, SS316 (J mean stainless steel)

Sealing material: NBR (medium temperature -10°C~130°C)

Interface thread: G / NPT



ASCO

Solenoid Valve

model: IV-ACV-4004

STANDARD VOLTAGES

DC (≡) : 24V

AC (∼) : 115V/50Hz-120V/60Hz; 230V/50-60Hz

FEATURES

- Wide range of flow and pressure ratings
- Quick disassembly of core tube for easy maintenance of internal parts
- Standard manual operator allows an easy installation
- Compact and low weight valve

PILOTS and ACCESSORIES



model: IV-ACV-P001
PRESSURE REDUCING PILOT



model: IV-ACV-P002
PRESSURE REDUCING PILOT
WITH MIDDLE CHAMBER



model: IV-ACV-P003A
model: IV-ACV-P003B
DIRECT ACTING
PRESSURE REDUCING VALVE



model: IV-ACV-P004
DIFFERENTIAL PRESSURE PILOT



model: IV-ACV-P005
PRESSURE RELIEF/SUSTAINING PILOT



model: IV-ACV-P006
ALTITUDE CONTROL PILOT



model: IV-ACV-P007
LEVEL CONTROL PILOT



model: IV-ACV-P008
MIN-MAX LEVEL CONTROL PILOT



model: IV-ACV-P009A
model: IV-ACV-P009B
FLOW RATE CONTROL PILOT



model: IV-ACV-P010
FLOW ORIFICE PLATE



model: IV-ACV-P011
PRESSURE GAUGES



model: IV-ACV-P012
POSITION INDICATOR



model: IV-ACV-P013
T STRAINER

Automatic Control Valve

Automatic control valve is a hydraulically operated, diaphragm actuated, globe pattern valve, which consists of three major components: body, cover and diaphragm assembly. Diaphragm assembly is the only moving part. The Valve is designed all internal parts can be replaced without removing the valve from the pipeline. Drop-right



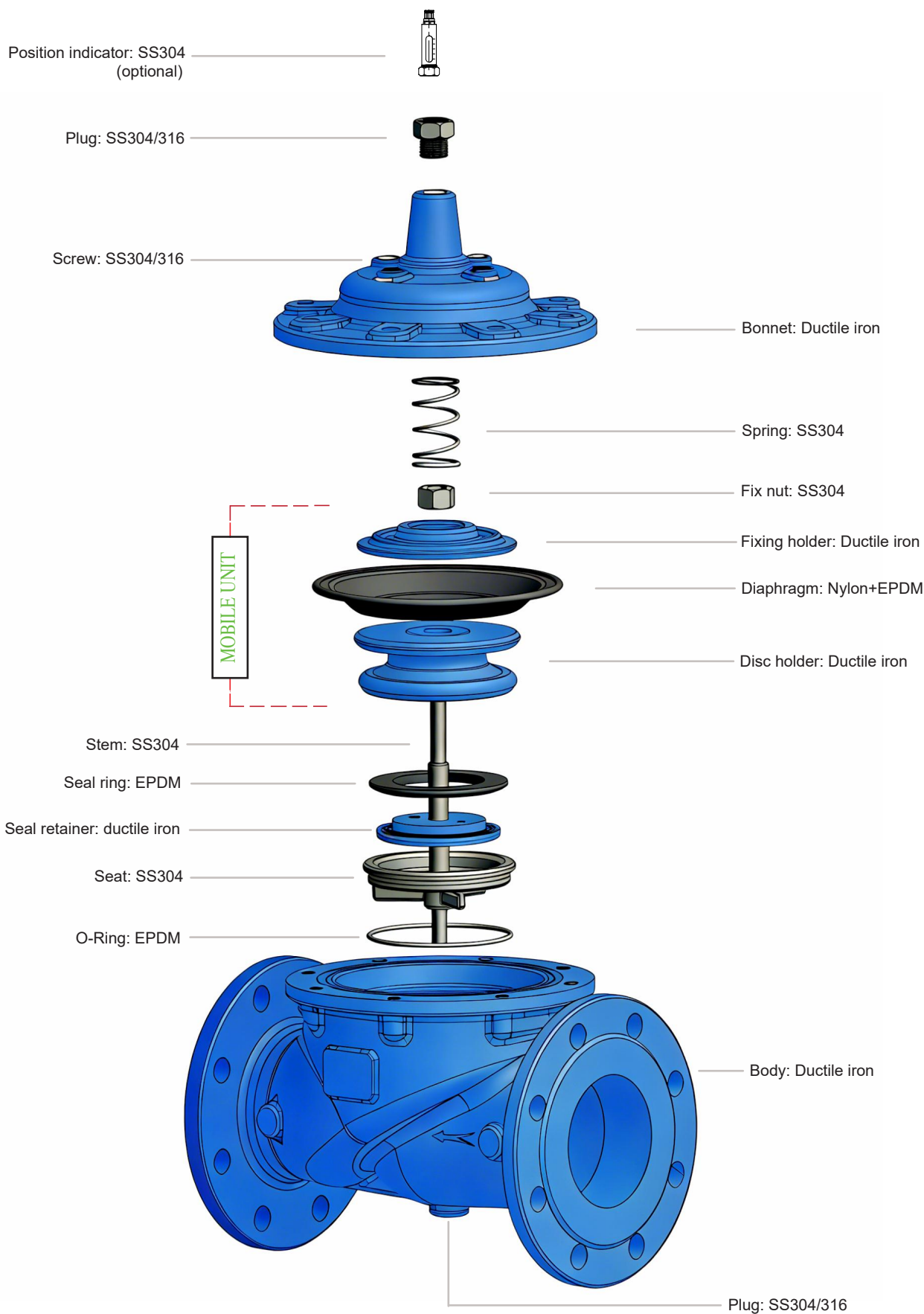
Technical features:

Type:	Globe pattern Automatic Control Valve
Design & Test	EN1074-1&5, EN1349, EN12266-1&2
Sizes:	DN50-800
Working Pressure:	10 bar / 16 bar / 25 bar
Flange Drilling:	EN1092-2 / BS4504 - PN10/16/25 / ASME B16.1/16.42
Temperature rating:	0-80 ° C
Application:	clean water, drinking water
Face To Face:	EN558 Series S1
CV Testing:	ISA 75.02 and EN 1267
Test Pressure:	Pressure Testing to EN 1074-1&5, EN 12266-1&2 Shell Test : 1.5 X PN Seat Test : 1.1 X PN
Sizing:	ISA 75.02 / EN 1267
Coating:	Fusion bonded epoxy coating min 250 microns WRAS approved
Optional Feature:	1. Anti-cavitation 2. Position Indicator

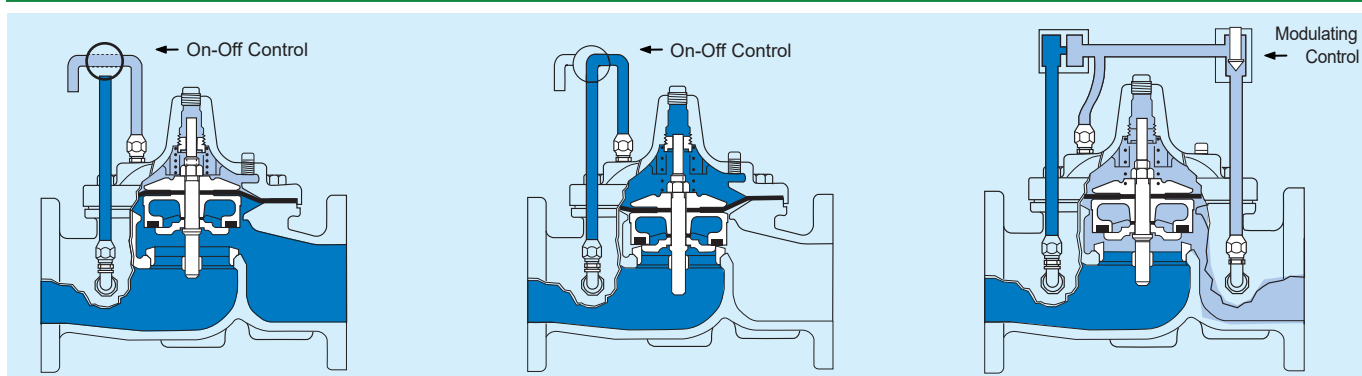
Material Specifications:

Body, Bonnet	Ductile iron EN1563 ENGJS 500-7
Disc & Diaphragm plate:	Ductile iron EN1563 ENGJS 500-7
Seat Ring	ASTM, A351 / A351M - CF8 / CF8M
Seal Ring & O-Rings:	EPDM
Diaphragm:	EPDM Rubber with Nylon Fiber
Stem:	SS304/SS316/SS316L
Spring	SS304/SS316/SS316L
Bush	Brass/Bronze
Fasteners	A4-70 / A2-70

Main Valve components



Principle of Operation

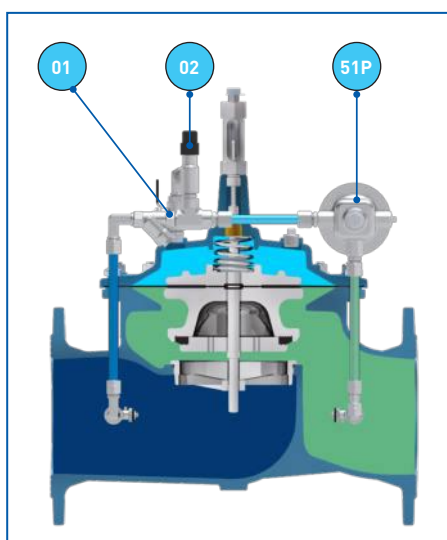


When pressure in the cover chamber is relieved to a zone of lower pressure, the line pressure at the valve inlet opens the valve, allowing full flow.

When pressure from the valve inlet is applied to the cover chamber, the valve closes drip-tight.

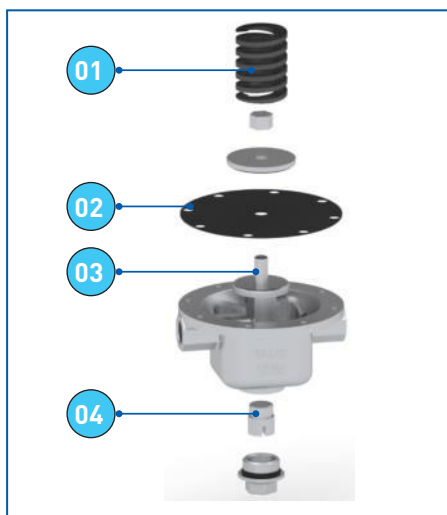
The valve holds any intermediate position when operating pressures are equal above and below the diaphragm. Pilot Control will allow the valve to automatically compensate for line pressure changes.

PILOT CIRCUIT OPERATING PRINCIPLE



OPERATION OF THE DOWNSTREAM PILOT CIRCUIT (FIG. I):

- The action of the pilot spring (51P) determines the downstream pressure setpoint and tends to open the water throughway in the pilot.
- The downstream pressure (green areas) is applied under the pilot membrane and the action of the spring. The increase in downstream pressure tends to reduce the flow of the water in the pilot (see instruction leaflet T Downstream Pilot series 51P).
- Dark blue area = upstream pressure; green area = downstream pressure; light blue area = balancing pressure variable between the diaphragm (01) and the pilot (51P).
- The opening retarder OR (02) makes it possible to control the draining of the chamber. The filling of the chamber cannot be regulated to ensure safe closing of the device and thus protect the downstream network from any risk of overpressure.



OPERATION OF THE DOWNSTREAM PILOT P51 IN DETAIL:

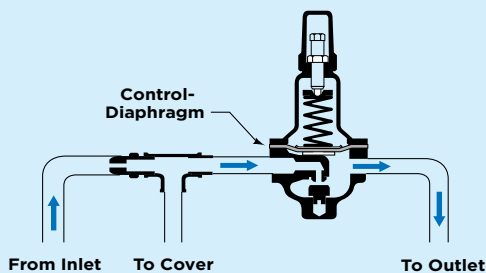
- The downstream pilot mainly comprises of (Fig. II):
 - A spring (01) to adjust the setpoint pressure.
 - A diaphragm (02) under which the pressure to be regulated is applied (downstream pressure).
 - A Disk holder (03) made from stainless steel to reverse the direction of operation of the disk.
 - A disk (04) made from EPDM.

Fig. II

Automatic controls by combining varies pilots

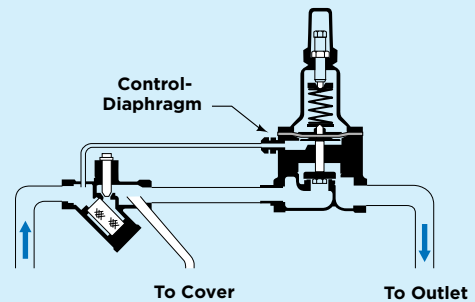
Pressure Reducing

Outlet pressure on control diaphragm causes the main valve to hold a steady outlet pressure.



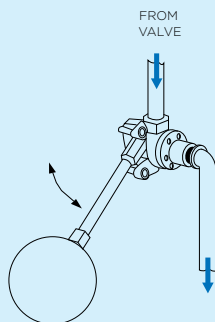
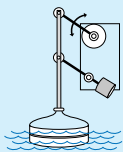
Pressure Relief/Sustaining

Inlet pressure on control diaphragm causes the main valve to hold a steady inlet pressure.



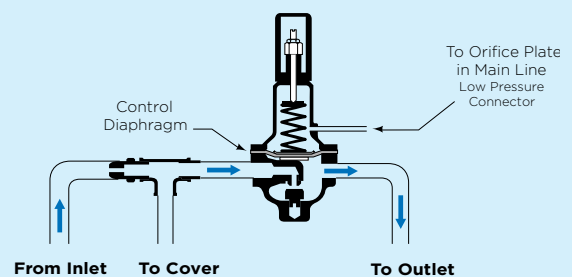
Liquid Level Controller

Slight changes in flow through the float control causes main valve to counteract changes in reservoir level so liquid level is held constant.

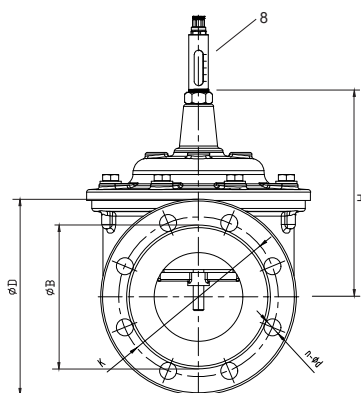
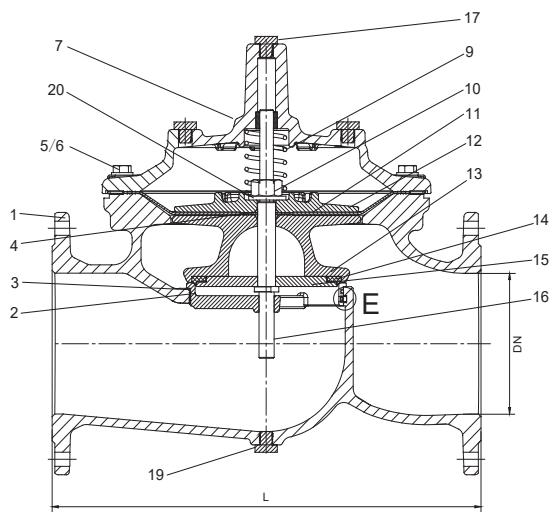


Rate of Flow Controller

Limits the maximum flow rate by changes to the main valve counteract any slight changes in differential pressure across an orifice plate located in the main line.



Main Valve DN50-300



E

DN50-150

DN200-300

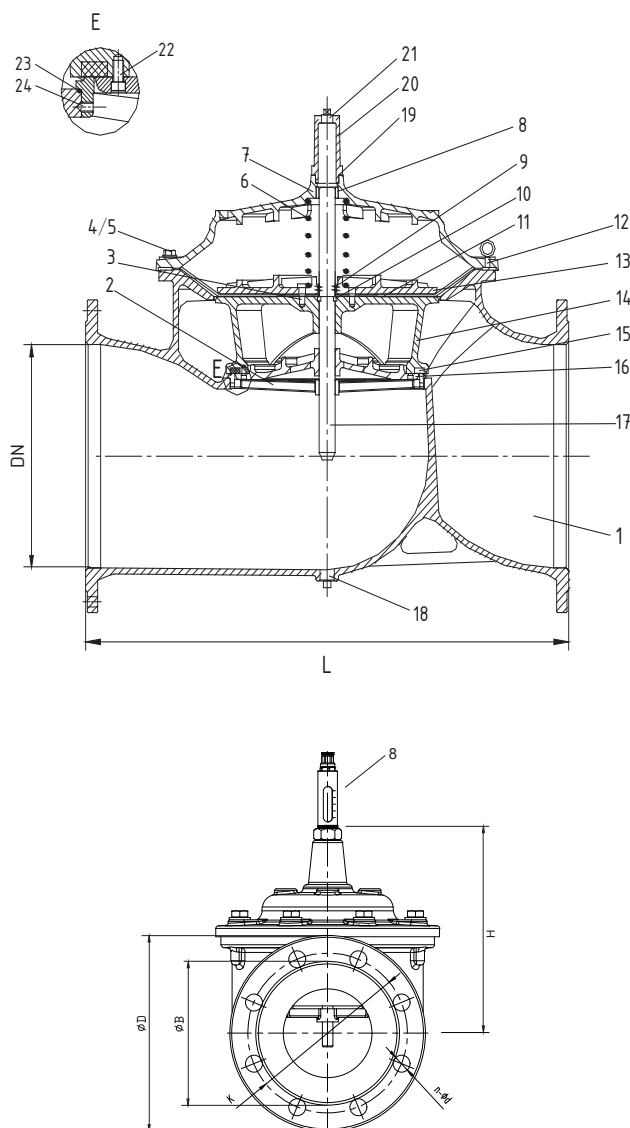


18

No.	Description	Material	Standard
1	Body	Ductile Iron	GJS 500-7
2	Seat	Stainless Steel	AISI 304/316
3	O-ring	Rubber	NBR
4	O-ring	Rubber	NBR
5	Bolt	Stainless Steel	A2/A4
6	Washer	Stainless Steel	A2/A4
7	Bonnet	Ductile Iron	GJS 500-7
8	Position indicator (optional)	Stainless Steel	C61900
9	Spring	Stainless Steel	AISI 304/316
10	Caulking Nut	Stainless Steel	A4
11	Diaphragm	Nylon Reinforced Rubber	EPDM +Nylon Fabric
12	Fixing holder	Ductile Iron	GJS 500-7
13	Disc Holder	Ductile Iron	GJS 500-7
14	Seal	Rubber	EPDM
15	Seat Retainer	Stainless Steel	AISI 304/316
16	Stem	Stainless Steel	AISI 304/316
17	Plug	Stainless Steel	AISI 304/316
18	Screw	Stainless Steel	A2/A4
19	Plug	Stainless Steel	A2/A4
20	Washer	Stainless Steel	A2/A4

DN	L	H	ØD			ØK			N-Ød			ØB		
			PN10	PN16	PN25	PN10	PN16	PN25	PN10	PN16	PN25	PN10	PN16	PN25
50	230	160	165	165	165	125	125	125	4-Ø19	4-Ø19	4-Ø19	Ø99	Ø99	Ø99
65	290	180	185	185	185	145	145	145	4-Ø19	4-Ø19	8-Ø19	Ø118	Ø118	Ø118
80	310	220	200	200	200	160	160	160	8-Ø19	8-Ø19	8-Ø19	Ø132	Ø132	Ø132
100	350	230	220	220	235	180	180	190	8-Ø19	8-Ø19	8-Ø23	Ø156	Ø156	Ø156
125	400	280	250	250	270	210	210	220	8-Ø19	8-Ø19	8-Ø28	Ø156	Ø156	Ø156
150	480	335	285	285	300	240	240	250	8-Ø23	8-Ø23	8-Ø28	Ø211	Ø211	Ø211
200	600	425	340	340	360	295	295	310	8-Ø23	12-Ø23	12-Ø28	Ø266	Ø266	Ø274
250	730	535	405	405	425	350	355	370	12-Ø23	12-Ø28	12-Ø31	Ø319	Ø319	Ø330
300	850	595	460	460	485	400	410	430	12-Ø23	12-Ø28	16-Ø31	Ø370	Ø370	Ø389

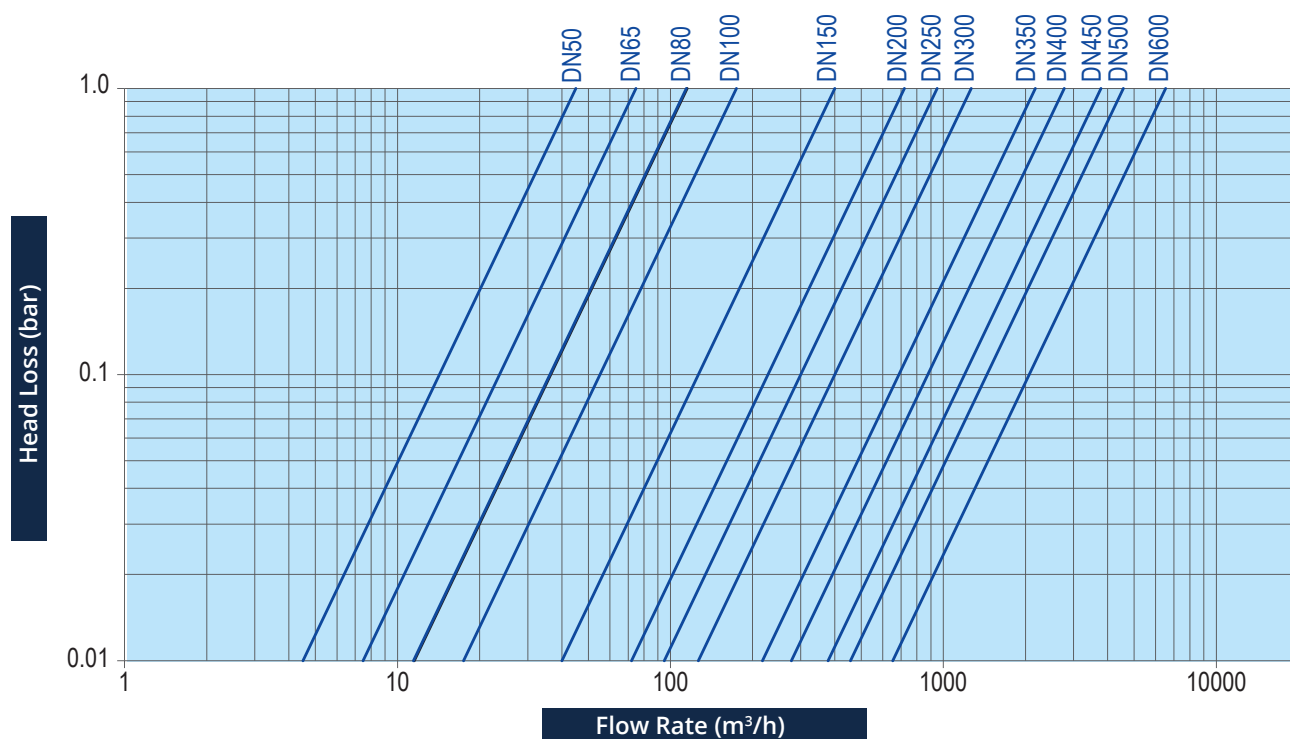
Main Valve DN350-800



No.	Description	Material
1	Body	Ductile iron GJS500-7
2	Seat	AISI 304/316
3	Screw	A2/A4
4	Screw	A2/A4
5	Screw	A2/A4
6	Spring	A2/A4
7	Bonnet	Ductile iron GJS500-7
8	Bush	Position indicator (optional)
9	O-Ring	Rubber NBR/EPDM
10	Fix Washer	Brass
11	Diaphragm	EPDM +Nylon Fabric
12	Lift bolt	A2/A4
13	Fixing holder	Ductile iron GJS500-7
14	Dsic holder	Ductile iron GJS500-7
15	Seal	Rubber NBR
16	Seal retainer	Ductile iron GJS500-7
17	Stem	AISI 304/316
18	Plug	AISI 304/316
19	O-ring	Rubber NBR
20	Cap	Ductile iron GJS500-7
21	Plug	A2/A4
22	Screw	A2/A4
23	O-ring	Rubber NBR
24	Screw	A2/A4

DN	L	H	ØD		ØK		N-Ød		ØB	
			PN10	PN16	PN10	PN16	PN10	PN16	PN10	PN16
350	980	715	520	520	460	470	16-Ø23	16-Ø28	429	429
400	1100	750	580	580	515	525	16-Ø28	16- Ø31	480	480
450	1200	805	640	640	565	585	20-Ø28	20-Ø31	530	548
500	1250	880	715	715	620	650	20-Ø28	20-Ø34	582	609
600	1450	1050	840	840	725	770	20-Ø31	20-Ø37	682	720
700	1650	1100	910	910	840	840	24-Ø31	24-Ø37	682	720
800	1850	1260	1025	1025	950	950	24-Ø34	24-Ø40	901	901

FULL OPENING HEAD LOSS DIAGRAM



HYDRAULIC SPECIFICATIONS													
DN	50	65	80	100	150	200	250	300	350	400	450	500	600
Kv [m³/h]	44	76	116	175	400	710	947	1355	2174	2734	3757	4548	6539
STROKE [mm]	16	18.5	23.2	25.2	44.5	53.8	64.3	74.9	89.2	100	113.3	125.1	150

Formulae (only for water)

K_V: Cubic meters of water, at 18° flowing through the open valve in one hour with a Δp of one bar.

Q = m³/h P = bar

$$Q = K_V \sqrt{\Delta p} \quad , \quad K_V = \frac{Q}{\sqrt{\Delta p}} \quad , \quad \Delta p = \left(\frac{Q}{K_V} \right)^2$$

HEAD LOSS

Use the formula:
$$\Delta p = \left(\frac{Q}{K_V} \right)^2$$

Referring to EN1074-5, the maximum continuous flow speed is 4 m/sec for PN16, and 3 m/sec for PN10.

Cavitation

Cavitation Guide Chart

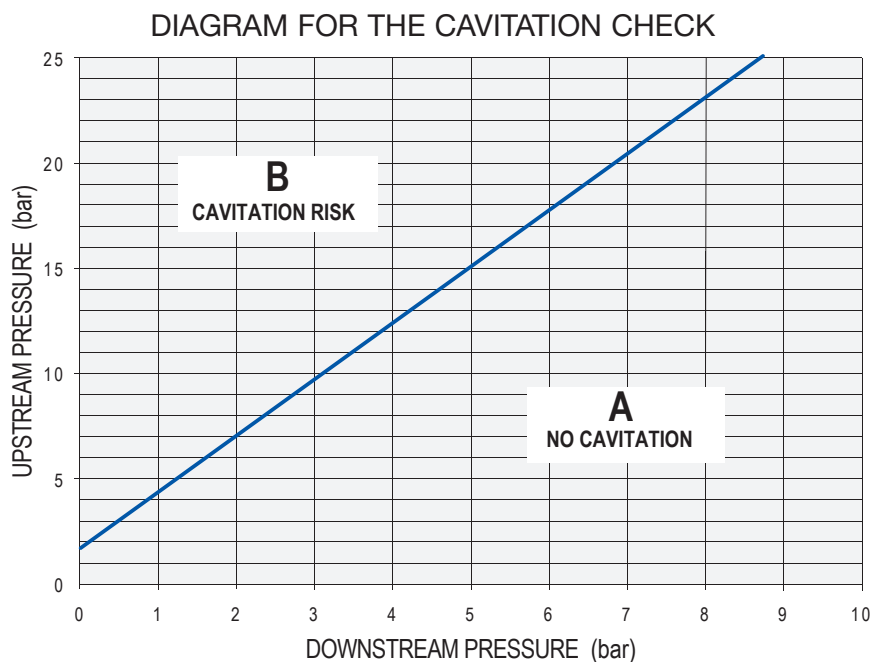
This chart guides the proper selection of the pressure drop.

When pressure drop is too big, velocity of flow across the seat will be very fast, then cavitation occurs, also with shaking and noise. The valve should be used in the area A to guarantee continue working.

area A: standard valve

area B: Cavitation risk

Continuous working conditions in the area-B can damage rapidly the internal parts. Appropriate design precautions must be adopted if the valve works in this area.



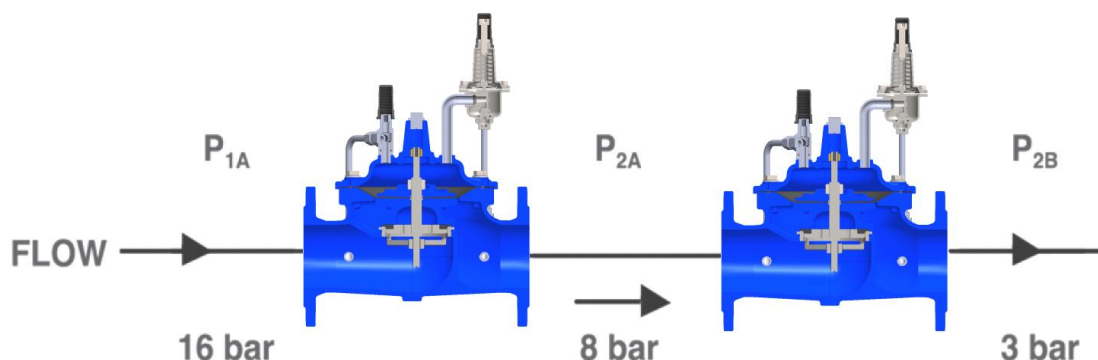
Anti-Cavitation

The anti-cavitation mold is designed for application where there is a high potential for damage from cavitation, which provides optimum internal pressure control through a unique anti-cavitation trim design. Relieving the damage of cavitation with multi-stage pressure reducing.



Valves in series

To prevent cavitation problems in applications with a high pressure difference between inlet and outlet, a series of two valves or more can be installed.



Trouble shooting

Issues	No.	Probable Cause	Solution
Main valve fails to open	1	No pressure at valve inlet	Check inlet pressure
	2	Main valve diaphragm assembly inoperative	Disassemble, clean stem, replace detective parts
	3	Pilot not opening: No spring compression	Tighten adjusting screw
	4	Ball valve in pilot system closed	Open it
	5	Spring guide not in place	Assemble properly
	6	Pilot yoke dragged	Assemble properly
Main valve fails to close	1	Foreign matter between disc and seat,worn disc. Scale on stem or worn diaphragm,	Disassemble main valve, remove matter,clean parts and replace defective parts
	2	Needle valve closed	Open it properly
	3	Pilot remain open:Spring compressed solid,Mechanical obstruction,	Disassemble and remove obstruction
	4	Worn disc	Disassemble and replace
	5	Yoke dragged	Assemble properly
	6	Worn Diaphragm	Disassemble and replace
Fails to regulate	1	Air in main valve cover and/or tubing	Loosen top cover plug or fittings and bleed air
	2	Pilot yoke dragged on inlet nozzle,	Assemble properly
	3	Pilot spring not in correct range to control	Change spring

General product catalog

Automatic Control Valve

iValve Tech.(Tongling)co.,Ltd.

No.97 Jinqiao Avenue,
Yi'an District Economic
Development Zone, Tongling City,
Anhui Province,P.R.China.
postal code: 244000

www.ivalveflow.com

