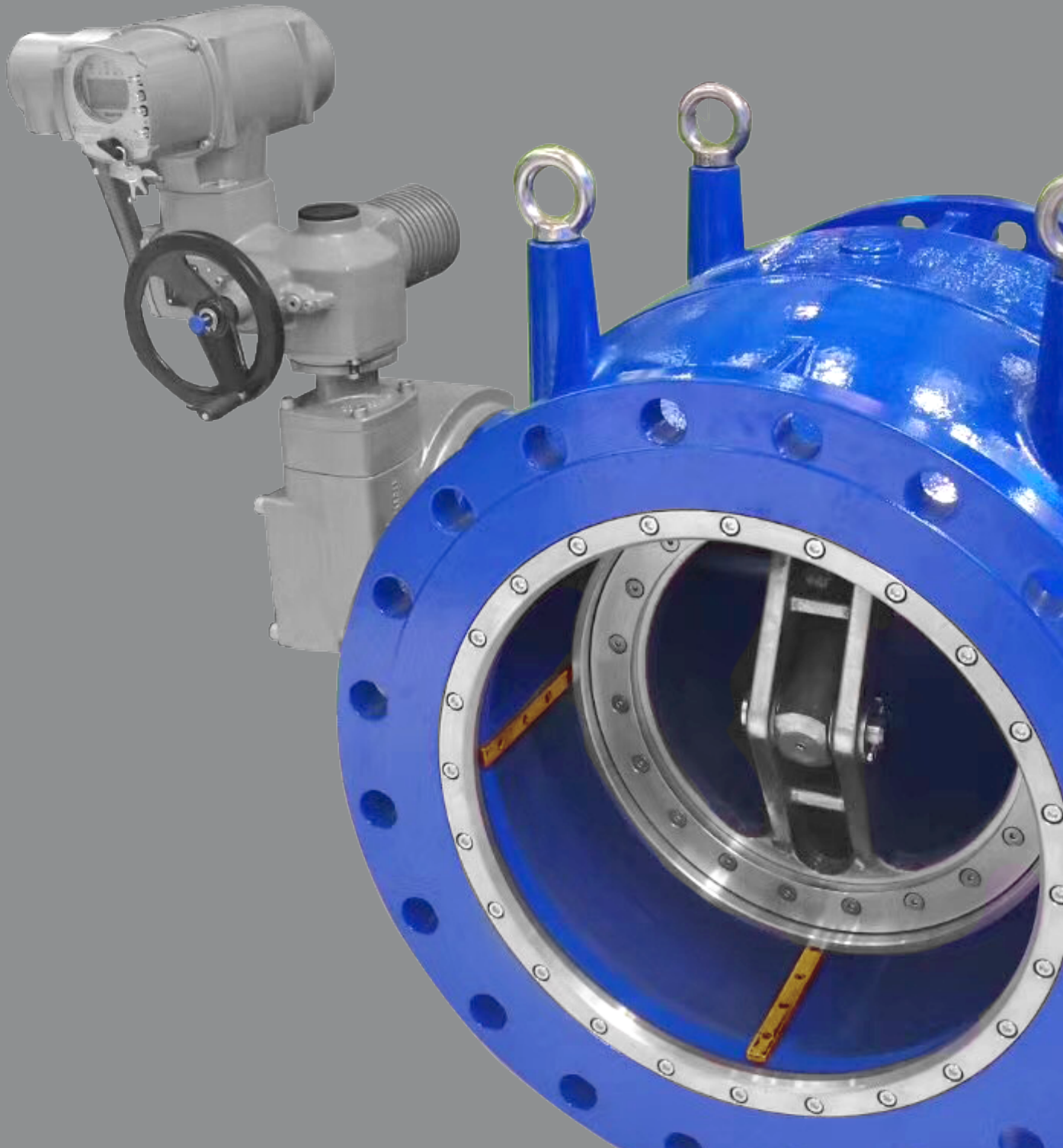


**AVK** PLUNGER VALVE



**SERIES 870  
PLUNGER VALVES**

Expect... **AVR**





# ABOUT AVK



The AVK Group is one of the leading manufacturers of valves and fittings within the water, gas, waste water, industrial and fire protection industries worldwide and has 100 companies globally.

The development and production of valves, hydrants and accessories are our core business activities. Our products are part of vital infrastructures providing clean drinking water, safe gas distribution, effective handling of wastewater from housekeeping and industry and not at least fire protection. During the last couple of years we have also entered the market for industrial wastewater.

The AVK Group is a family owned business and our headquarters is located in Galten, Denmark. AVK is a global company with more than 4,500 employees in more than 100 production and sales companies, AVK is an important player in the business. Close relations to our customers and continuous delivery of quality solutions form the basis of our goal of being the customers' preferred choice.



# SERIES 870 PLUNGER VALVE



Plunger valves are often used for flow control and pressure reducing applications.

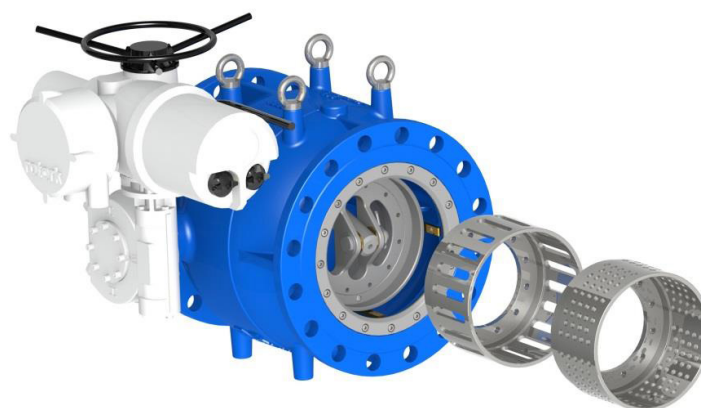


AVK series 870 is a plunger valve which in some areas is referred to as needle valve in the industry for inline applications of regulation.

Unlike butterfly or gate valves assuming only fully open or shut off functions, plunger valves are designed to regulate and control flow and pressure in water supply systems. The design holds a single-piece body of fusion bonded epoxy coated ductile iron (above DN150) or stainless steel (up to DN150).

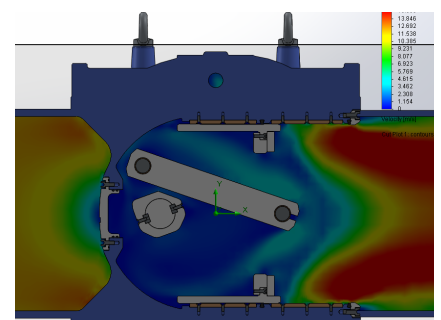
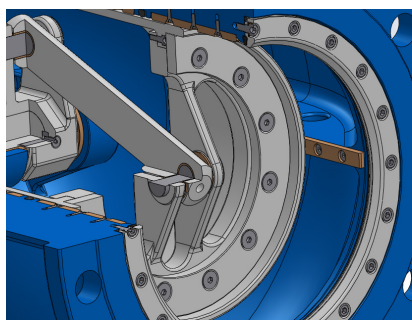
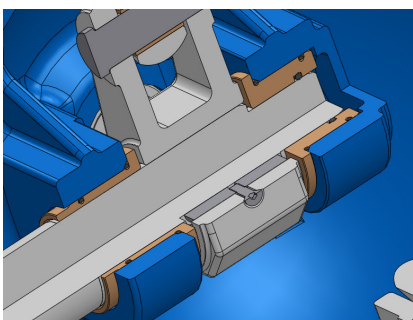
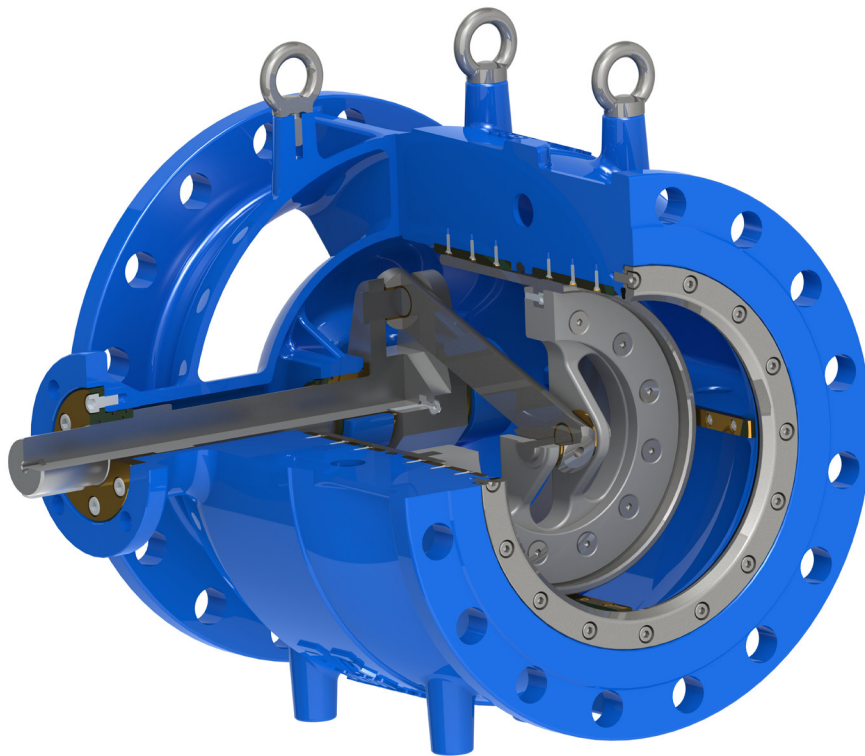
All internal components are made in either stainless steel or bronze; materials that guarantee good anti-corrosion properties and a long life time.

Available in pressure ratings up to 25 Bar, flanged to suit EN 1092-2 PN10/16/25 and sizes DN80-600, Tested acc. to EN1074-1&5 / EN12266. Designed acc. to EN1074-1&5 / EN1349. Face-to-face acc. to EN558 Table 2 Basic Series 15. The valve is equipped with an ISO actuator flange to which can be fitted an electrical actuator or a gearbox with a handwheel. We offer sizing, engineering and technical expertise from supply of the correct plunger valve to the on-site installation.



# DESIGN FEATURES AND BENEFITS

- One-piece body construction
- Low operating torque due to pressure equilibrium between internal chamber and piston
- Angular shaft rotation from fully open to close → 90 degrees
- Low head loss coefficient in fully open position due to optimized internal body
- 4 bronze guide rails keep vibration at a minimum and ensure accurate alignment throughout the full valve stroke.
- Guide rails, downstream retaining ring and upstream cover are all installed with bolts to make for easy dismantling for maintenance
- DN80-150 have uncoated stainless steel bodies
- DN200-600 are coated with blue RAL 5017 fusion bonded epoxy in a GSK approved process according to DIN3476
- “T” shape main seal located in safety flow area ensuring minimal wear and long life time
- Double O-ring sealed drive shaft
- All other shafts and bearings protected against corrosion with O-ring seals
- All internal parts in stainless steel or bronze



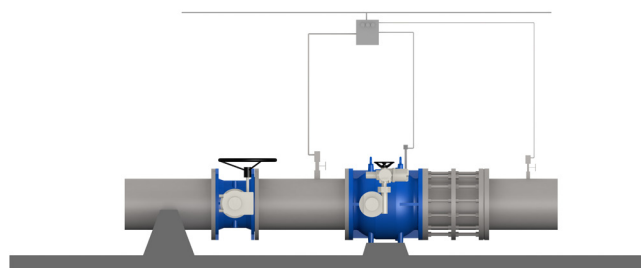
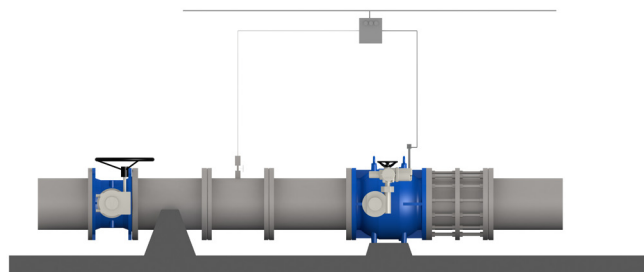
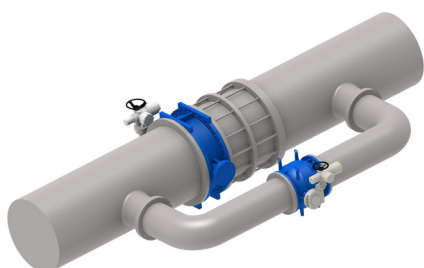
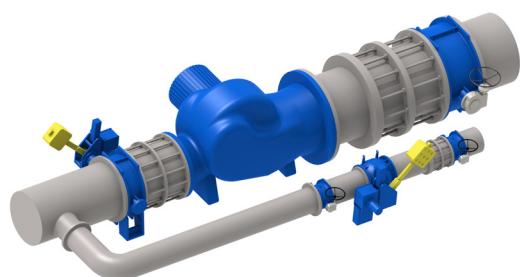
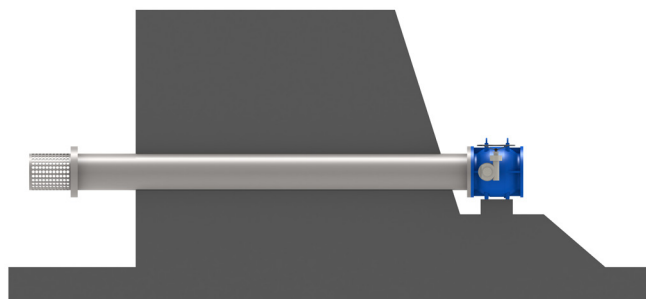
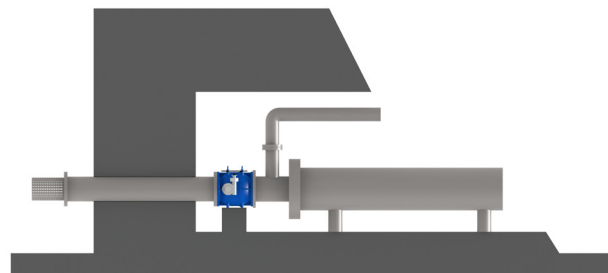
# APPLICATION INFORMATION

## Applications: Drinking water/ Irrigation/ Industry

- Standard application: flow & pressure control valve
- Hydropower application: by-pass valve, turbine by-pass
- By-pass for large pipelines
- Dissipation of high hydrostatic pressure

## Possible definitions on the market:

- Needle valve
- Plunger valve
- Flow control valve
- Pressure control /regulation /reducing valve
- Flow and pressure control valve
- Discharge valve
- Bypass valve
- Turbine bypass valve
- Pump starting valve



# ESSENTIAL INSTALLATION INFORMATION

Take into consideration during the design phase, where the valve will be installed to ensure access for operation, adjustment, maintenance and repair.

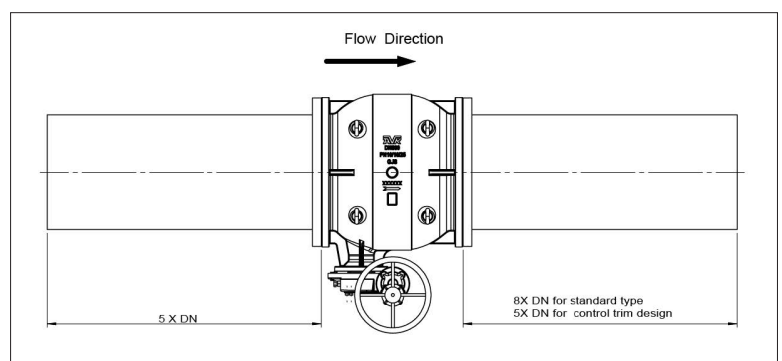
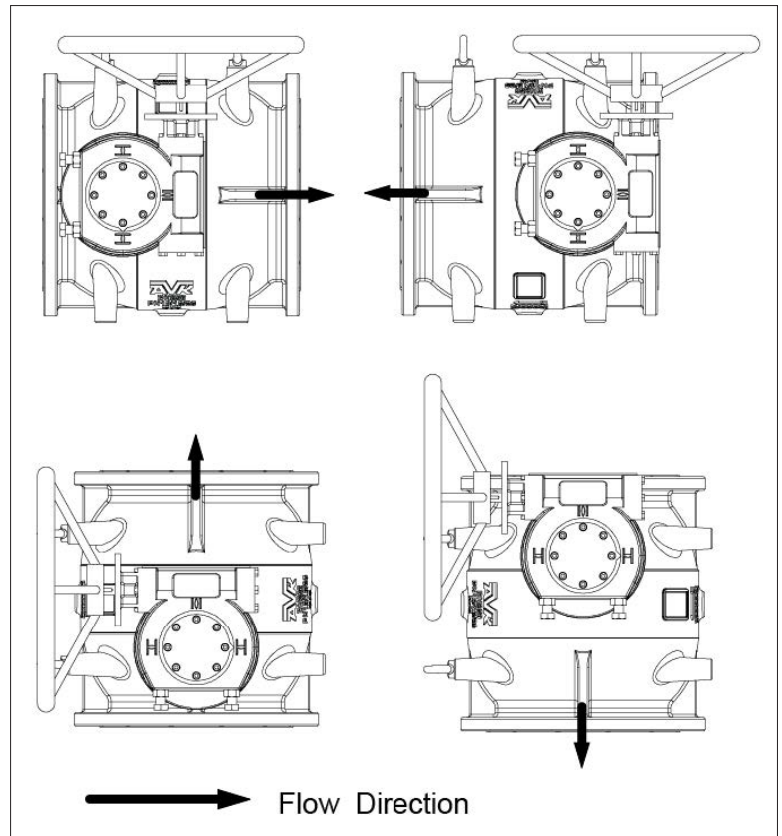
The valve shall be installed in piping systems designed with compensators according to standard practice and norms designed to absorb axial movements due to temperature expansion or contraction.

A heavy valve may need independent support or anchorage.

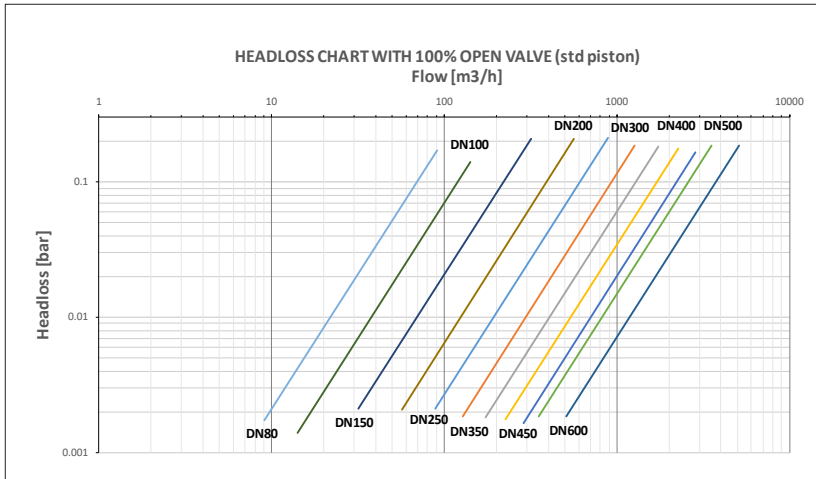
If the valve is installed in rock or sharp-edged stone, there shall be a bed of earth, sand or other suitable material with a minimum depth of 150 mm beneath the valve. Fine-grade (< 5 mm) material free from sharp-edged stones shall be filled and compacted carefully around the side of the valve and to a minimum consolidated height of 150 mm above the valve.

### Preferred installation position:

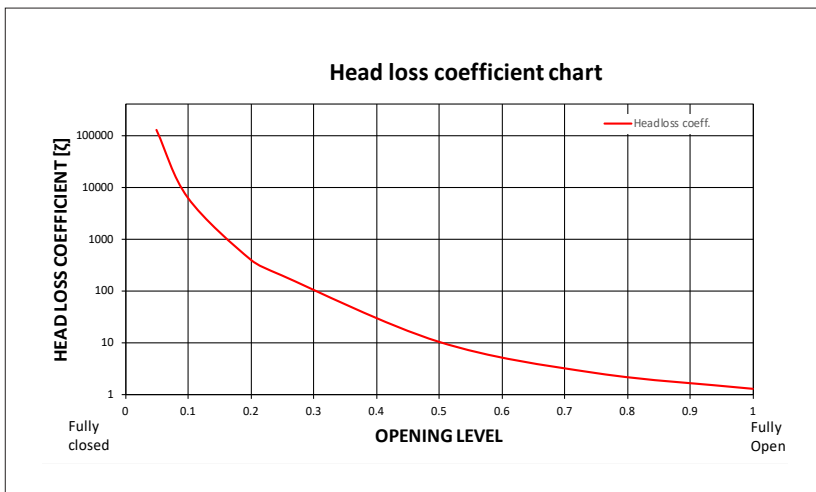
To ensure proper function and long service life of the valve, do not install closer than 5 times pipe diameters downstream of tees or elbows or other irregularities as this can cause violent turbulence and cavitation inside the valve that reduces its.



# FLOW CHARTS

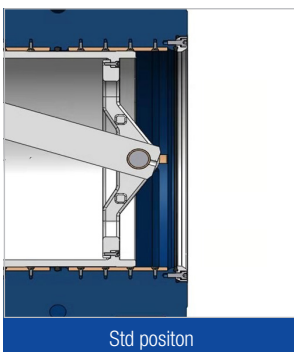


Sizing of the plunger valve is dependent on the pressure conditions and minimum / maximum flow rates. Depending on condition, completely different valve diameters compared with pipeline size are required. When using plunger valves for control applications, cavitation can occur. Cavitation depends on a number of aspects, the inlet pressure, opening level, required pressure losses and temperature of water and can cause considerable damage to the valve and downstream pipeline. It is important that cavitation are considered when sizing and selecting plunger valves.

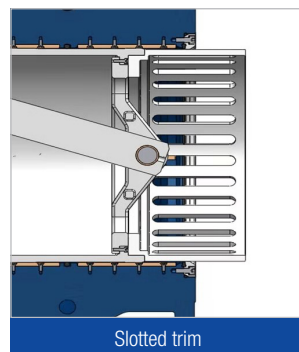


**Kvs 100% open [m³/hr/bar]**

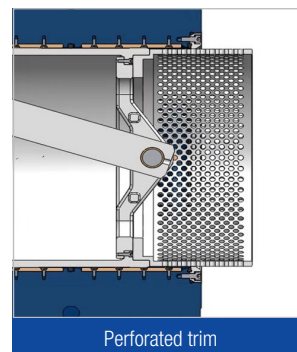
DN	std. piston	slotted trim	perforated trim	double perforated trim
80	218	89.5	61.5	34
100	378	140	96	57
150	695	314	216	128
200	1242	559	385	272
250	1914	873	601	425
300	2955	1257	865	612
350	4051	1711	1177	834
400	5380	2234	1538	1089
450	7023	2828	1947	1378
500	8233	3491	2404	1702
600	11852	5028	3461	2451



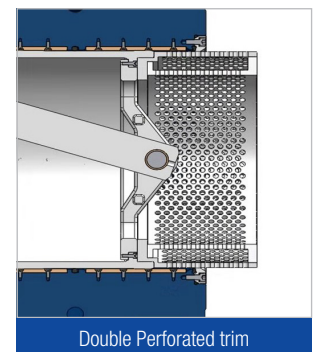
- Recommended for throttling
- For small differential pressure



- Recommended as control valve
- For medium differential pressure
- Optimal set up according to working conditions
- To prevent cavitation



- Recommended as control valve
- For large differential pressure
- Optimal set up according to working conditions
- 4. To prevent cavitation



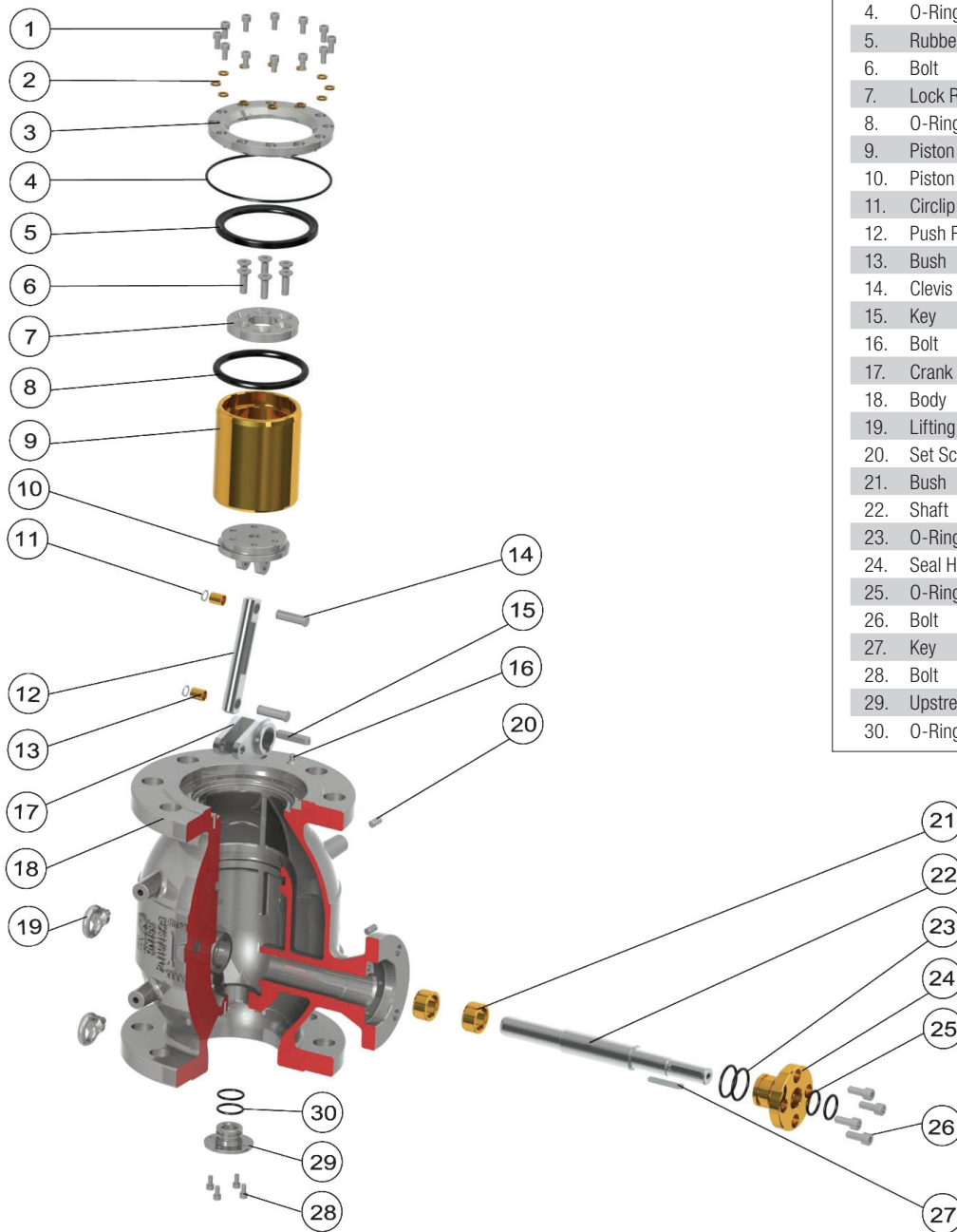
- Recommended as control valve
- For largest differential pressure
- Optimal set up according to working conditions
- To prevent cavitation



DN 80-150

# TECHNICAL DATA

## DN80-150 plunger valve part list



1.	Bolt	Stainless Steel
2.	Washer	Bronze
3.	Retaining Ring	Stainless Steel
4.	O-Ring	EPDM
5.	Rubber Seal	EPDM
6.	Bolt	Stainless Steel
7.	Lock Ring	Stainless Steel
8.	O-Ring	EPDM
9.	Piston	Brass
10.	Piston Flange	Stainless Steel
11.	Circlip	Stainless Steel
12.	Push Rod	Stainless Steel
13.	Bush	Bronze
14.	Clevis Pin	Stainless Steel
15.	Key	Stainless Steel
16.	Bolt	Stainless Steel
17.	Crank	Stainless Steel
18.	Body	Stainless Steel
19.	Lifting Eyebolt	Stainless Steel
20.	Set Screw	Stainless Steel
21.	Bush	Bronze
22.	Shaft	Stainless Steel
23.	O-Ring	EPDM
24.	Seal Housing	Bronze
25.	O-Ring	EPDM
26.	Bolt	Stainless Steel
27.	Key	Stainless Steel
28.	Bolt	Stainless Steel
29.	Upstream Cover	Stainless Steel
30.	O-Ring	EPDM

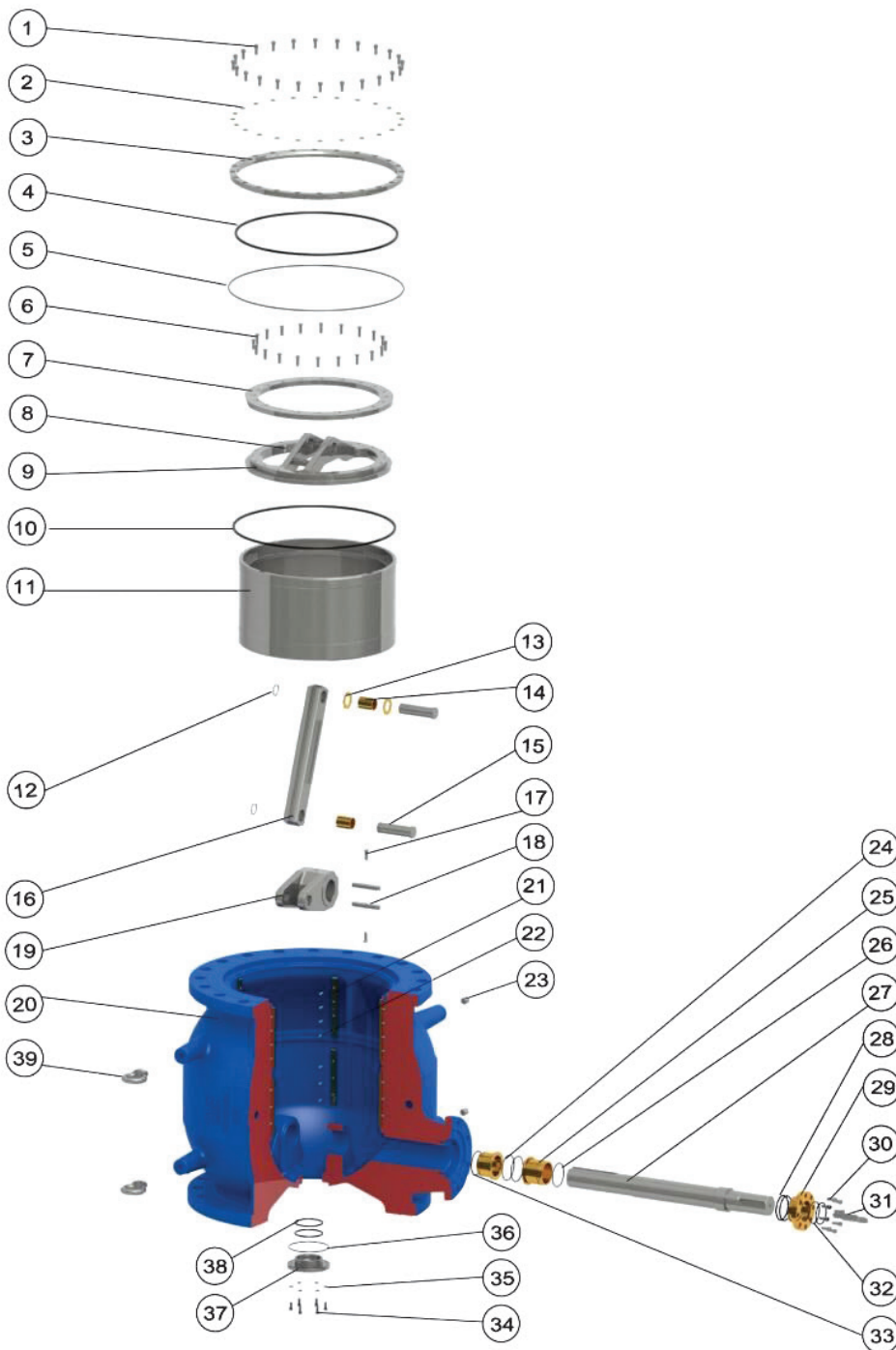


# TECHNICAL DATA

DN 200-600

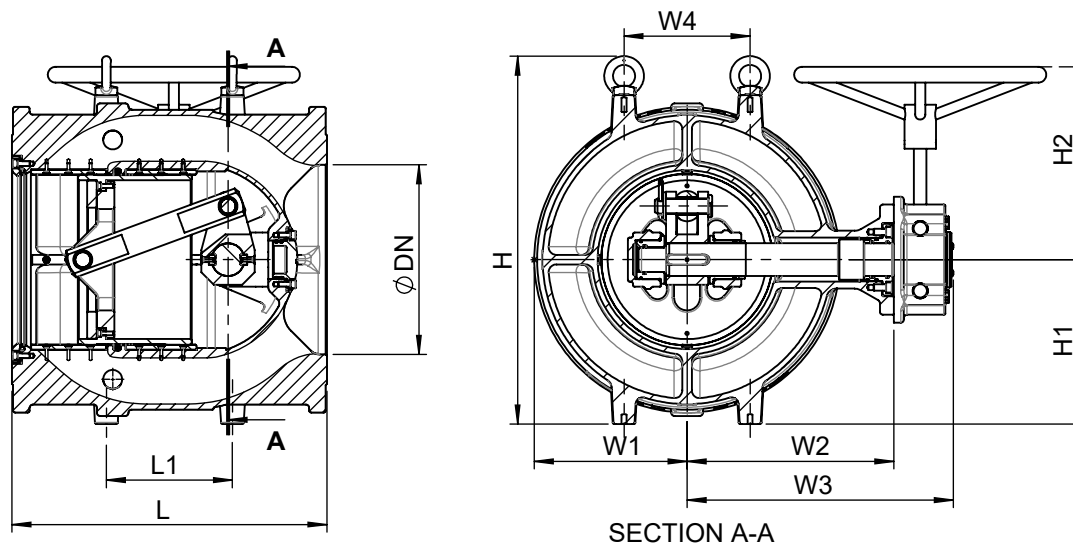


DN200-600 plunger valve part list



1.	Bolt	Stainless Steel
2.	Washer	Bronze
3.	Retaining Ring	Stainless Steel
4.	Rubber Seal	EPDM
5.	O-Ring	EPDM
6.	Bolt	Stainless Steel
7.	Lock Ring	Stainless Steel
8.	Bolt	Stainless Steel
9.	Piston Flange	Stainless Steel
10.	O-Ring	EPDM
11.	Piston	Stainless Steel
12.	Circlip	Stainless Steel
13.	Washer	Bronze
14.	Bush	Bronze
15.	Clevis Pin	Stainless Steel
16.	Push Rod	Stainless Steel
17.	Bolt	Stainless Steel
18.	Key	Stainless Steel
19.	Crank	Stainless Steel
20.	Body	Ductile Iron
21.	Piston Rail	Bronze
22.	Bolt	Stainless Steel
23.	Set Screw	Stainless Steel
24.	O-Ring	EPDM
25.	Bush	Bronze
26.	O-Ring	EPDM
27.	Shaft	Stainless Steel
28.	O-Ring	EPDM
29.	Seal Housing	Bronze
30.	Bolt	Stainless Steel
31.	Key	Stainless Steel
32.	O-Ring	EPDM
33.	O-Ring	EPDM
34.	Bolt	Stainless Steel
35.	Washer	Bronze
36.	O-Ring	EPDM
37.	Upstream Cover	Stainless Steel
38.	O-Ring	EPDM
39.	Lifting Eyebolt	Stainless Steel

# TECHNICAL DATA



AVK ref. no.	DN mm	Flange drilling	L mm	L1 mm	H mm	H1 mm	H2 mm	W1 mm	W2 mm	W3 mm	W4 mm	Theoretical weight / kg
870-0080-20-140001001	80	PN16	280	110	246	95	269	99	152	240	90	38
870-0080-20-740001001	80	PN25	280	110	246	95	269	99	152	240	90	38
870-0100-20-140001001	100	PN16	300	120	276	108	269	117	165	253	100	45
870-0100-20-740001001	100	PN25	300	120	276	108	269	117	165	253	100	45
870-0150-20-140001001	150	PN16	350	160	373	148	269	150	210	298	160	81
870-0150-20-740001001	150	PN25	350	160	373	148	269	150	210	298	160	81
870-0200-00-046401	200	PN10	400	140	433	190	270	180	225	328	140	95
870-0200-00-146401	200	PN16	400	140	433	190	270	180	225	328	140	95
870-0200-00-746401	200	PN25	400	140	433	190	270	180	225	328	140	95
870-0250-00-046401	250	PN10	450	230	503	225	270	213	300	413	230	157
870-0250-00-146401	250	PN16	450	230	503	225	270	213	300	413	230	157
870-0250-00-746401	250	PN25	450	230	503	225	270	213	300	413	230	157
870-0300-00-046401	300	PN10	500	200	584	261	306	243	328	435	200	211
870-0300-00-146401	300	PN16	500	200	584	261	306	243	328	435	200	211
870-0300-00-746401	300	PN25	500	200	584	261	306	243	328	435	200	211
870-0350-00-046401	350	PN10	550	200	664	301	306	278	370	462	240	269
870-0350-00-146401	350	PN16	550	200	664	301	306	278	370	462	240	269
870-0350-00-746401	350	PN25	550	200	664	301	306	278	370	462	240	269
870-0400-00-046401	400	PN10	600	240	755	342	356	323	430	530	300	380
870-0400-00-146401	400	PN16	600	240	755	342	356	323	430	530	300	380
870-0400-00-746401	400	PN25	600	240	755	342	356	323	430	530	300	380
870-0450-00-046401	450	PN10	650	340	811	370	356	349	460	560	340	508
870-0450-00-146401	450	PN16	650	340	811	370	356	349	460	560	340	508
870-0450-00-746401	450	PN25	650	340	811	370	356	349	460	560	340	508
870-0500-00-046401	500	PN10	700	340	884	397	356	379	490	610	340	625
870-0500-00-146401	500	PN16	700	340	884	397	356	379	490	610	340	625
870-0500-00-746401	500	PN25	700	340	884	397	356	379	490	610	340	625
870-0600-00-046401	600	PN10	800	400	1050	480	356	441	560	680	500	1006
870-0600-00-146401	600	PN16	800	400	1050	480	356	441	560	680	500	1006
870-0600-00-746401	600	PN25	800	400	1050	480	410	441	560	690	500	1006

# SERIES 870 PLUNGER VALVE SPECIFICATION



Size (DN)		LNS No (If known)	
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Flange Drilling (EN 1092-2)	PN10	PN16	PN25
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Media	Water
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Sealing(Circle)	EPDM
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Valve to be Operated by (Circle)		
Bare Shaft	Gearbox+Handwheel	Gearbox+Electric Motor
Actuator (Please complete actuation specification sheet)		

Min Dynamic Upstream Pressure (Bar)	Max Dynamic Upstream Pressure (Bar)	Min Dynamic Downstream Pressure (Bar)	Min Dynamic Downstream Pressure (Bar)

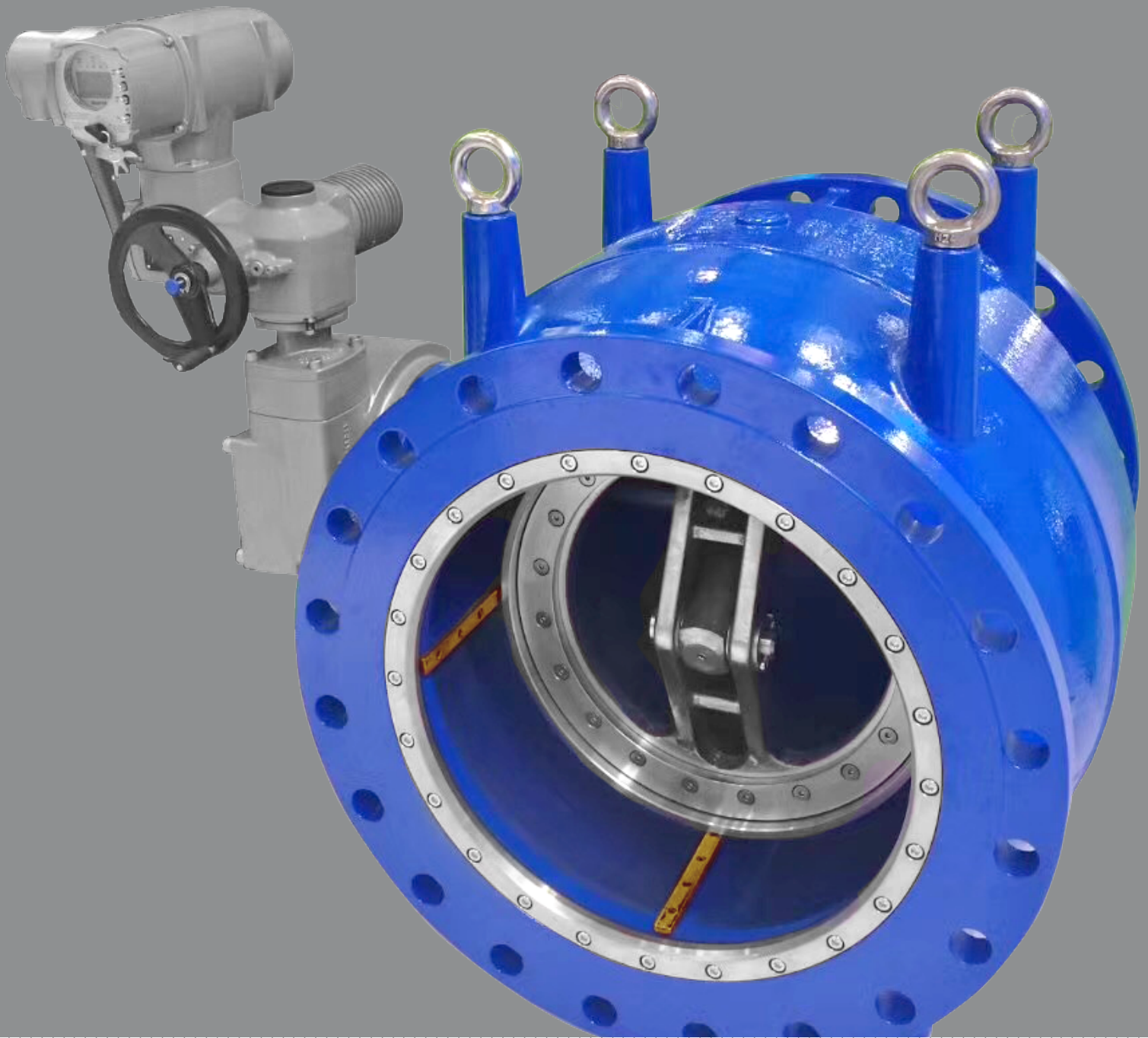
Min Upsteam Flow [I/S]	Max Upsteam Flow [I/S]
------------------------	------------------------

Nominal Flow [I/S]	Dismantling Joints Req	
	Yes	NO

Number of open/close cycles	Day	Week	Month	Year

Other Requirements - Additional Options

Documentation (Special O&M's, Drawing, Test Certification, BIM files available at additional cost)



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