

No. 9882

Needle Valves

DN 200 – 1800, PN 10 | PN 40





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- Needle Valves
- Combined Check Needle Valves

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Why Needle Valves?

Needle Valves are valves designed for flow control and regulation applications. Some shut-off valves such as Butterfly Valve, Gate Valve are also used for adjustment purposes, but these valves are not suitable for continuous adjustment. The working life of Gate Valves and Butterfly Valves used continuously at high pressure differences and for adjustment purposes will be shortened and damage will occur in a short time. Another feature of regulating valves is the control characteristic. Gate Valves and Butterfly Valves have non-linear control characteristics due to the changing transition geometry during the closing stroke.

At the inlet of the Needle Valve, the flow is diverted to the internal structure of the body, which narrows smoothly in the ring cross-section and from the inlet to the outlet. The ring cross-section of Needle Valves is maintained throughout the entire closing movement of the piston, which makes Needle Valves ideal control valves. The axial movement of the plunger controls the outlet port of the valve in a linear characteristic.

An important factor in control applications is the risk of cavitation. In harsh operating conditions, control valves are exposed to high pressure differences. The flow velocity increases along the flow path in the valve and the pressure decreases parallel to this increase in velocity. If the fluid pressure drops below the vaporisation pressure, vapour bubbles develop in the flow. At the outlet of the valve, the fluid pressure rises again and the vapour bubbles burst, creating micro jets and shock waves. Cavitation damage occurs when these shock waves and micro jets hit the surfaces.

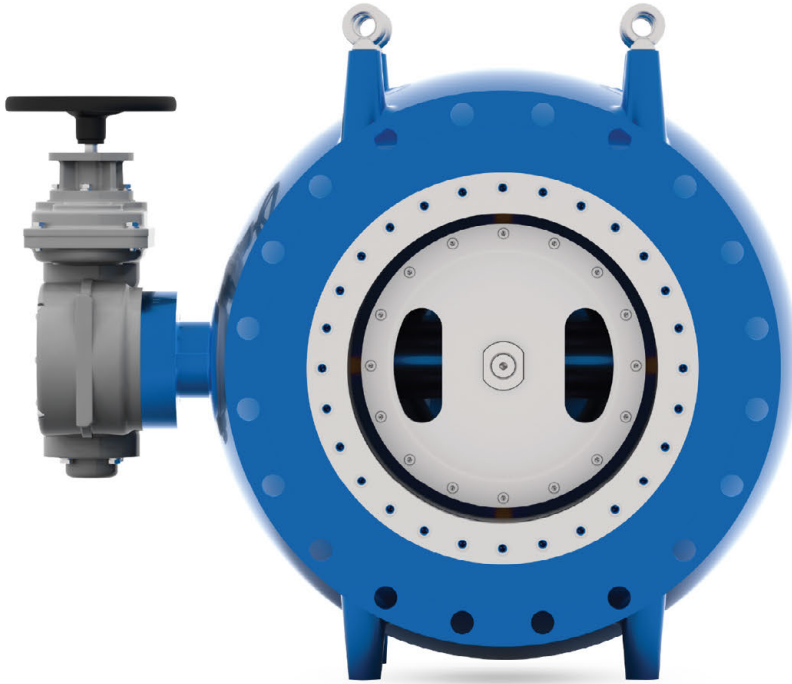
Needle Valves are designed to direct the vapour bubbles towards the centre. This design feature prevents the bubbles that cause cavitation damage from coming into contact with the valve wall and other parts. Bubbles carried to the centre of the valve are destroyed under the pressure rising with the collision of water jets without causing any damage.

Areas of Use

- Discharge/drainage applications.
- Tank inlets.
- Flow control applications.
- Over speed/Pipe burst control valves.
- Treatment plant inlet valve.
- Pressure regulating valves.
- Turbine by-pass valves.



Design Features



The piston is axially mounted in the inner casing and the linear movement of the piston changes the flow cross-section. The piston is controlled by the crank-connector mechanism, which converts the rotational motion of the gearbox and similar drive systems into linear motion.

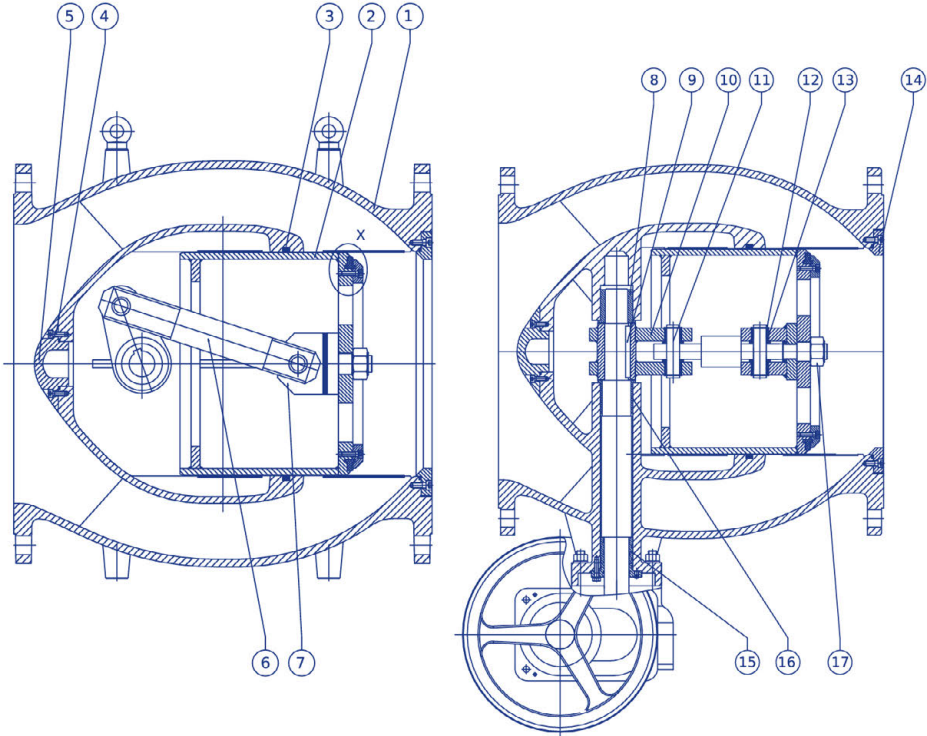
The piston and crank mechanism are located in a droplet-shaped inner body.

- Optimised body for better flow guidance, minimum loss in the fully open position.
- One-piece cast body.
- Sealing ring outside the cavitation zone, long life.
- Double-sided bearing drive shaft with maintenance-free, lubrication-free bushings.
- Stainless steel internal parts.
- Wear and corrosion resistant bronze piston guides.
- Double O-ring sealing system.
- Optional energy breaking parts for cavitation-free control/adjustment requirements.
- Field replaceable sealing ring without special tooling requirements.
- Electrostatic powder coating.

Offer / Order Info

- | | |
|--|--|
| ■ Fluid. | ■ Output pressure values corresponding to flow rates Q_{max} and Q_{min} . |
| ■ Application, desired function. | ■ Actuator requirement. |
| ■ Mode of operation (continuous, short-term) | ■ Special material requirement. |
| ■ Flow rate values: Q_{max} and Q_{min} | |

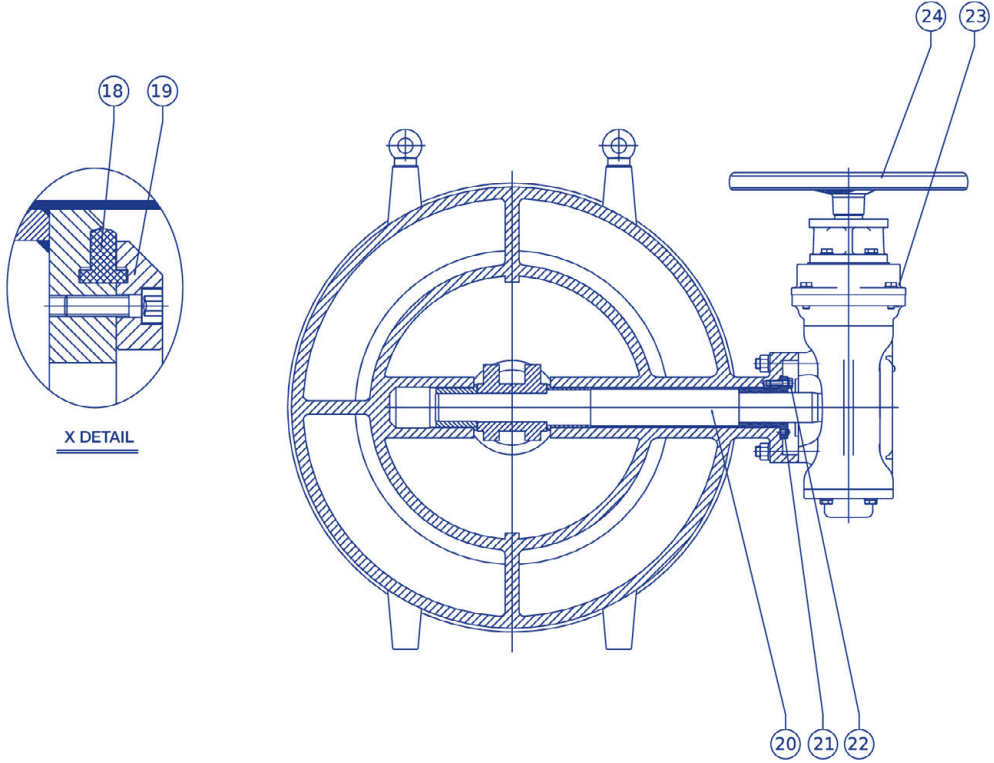
Material Features



Part No	Part Name	Material
1	Body	Ductile Iron Casting EN-GJS-400-15
2	Piston	Stainless steel 1.4301
3	Sealing Ring	Rubber NBR
4	Hex. Screw	Stainless Steel A2
5	Cover	Ductile Iron Casting EN-GJS-400-15
6	Connection Rod	Stainless Steel 1.4021
7	Piston Hub	Stainless Steel 1.4021
8	Bush	Bronze G-Cu Sn12
9	Key	Stainless Steel 1.4021
10	Crank	Ductile Iron Casting EN-GJS-400-15
11	Crank Pin	Stainless Steel 1.4021
12	Circlip	Stainless Steel 1.4301

*Please contact us for other material requests.

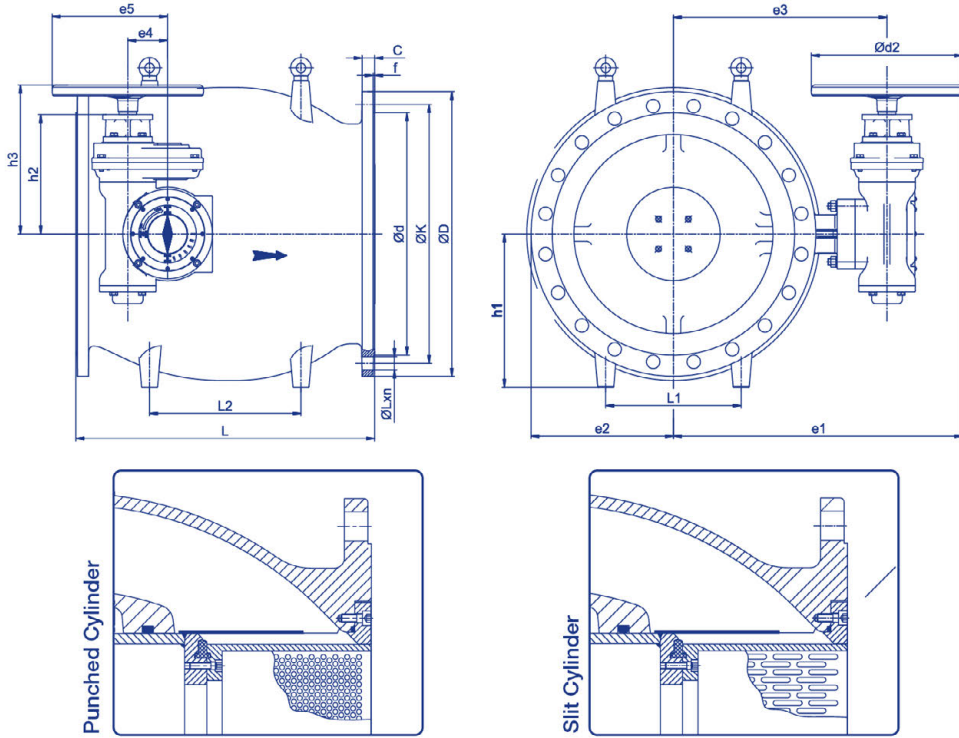
Material Features



Part No	Part Name	Material
13	Bush	Bronze G-Cu Sn12
14	Seat Ring	Stainless Steel 1.4301
15	Spindle Bush	Bronze G-Cu Sn12
16	Bush	Bronze G-Cu sn12
17	Nut	Stainless Steel 1.4301
18	Sealing Ring	Rubber EPDM
19	Retaining Ring	Stainless Steel 1.14301
20	Shaft	Stainless Steel 1.4021
21	Bearing Cover	Ductile Iron Casting EN-GJS-400-15
22	Hex. Head Bolt	Stainless Steel A2
23	Gearbox	-
24	Handwheel	-

*Please contact us for other material requests.

Technical Information



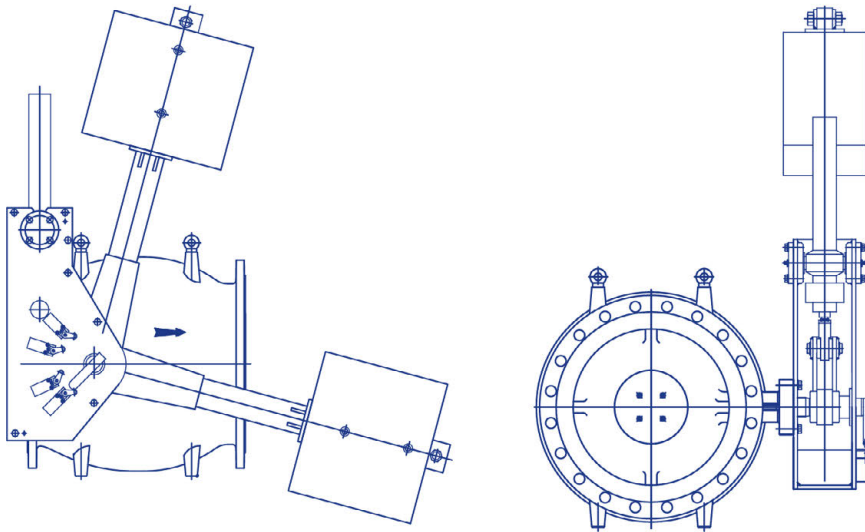
DN	L	L1	L2	e1	e2	e3	e4	e5	Ød2	h1	h2	h3	Gearbox
200	400	140	200	405	170	280	63	126	245	195	140	210	NGG11
250	450	170	230	440	200	315	63	126	245	235	140	210	NGG11
300	500	200	250	477	230	352	63	126	245	268	140	210	NGG11
350	550	240	280	537	260	392	63	126	245	300	140	210	NGG11
400	600	270	300	640	296	450	103	293	370	340	300	375	NGG20+RD4
450	650	300	330	685	330	495	103	293	370	353	300	375	NGG20+RD4
500	750	340	380	726	370	536	103	293	370	388	300	375	NGG20+RD4
600	900	400	450	800	440	610	103	293	370	455	300	375	NGG21+RD4
700	1050	470	530	895	510	705	160	285	370	520	405	480	NGG30+RD6
800	1200	540	600	965	580	775	160	285	370	590	405	480	NGG30+RD6
900	1350	600	680	1035	655	845	160	285	370	670	405	480	NGG30+RD6
1000	1500	670	750	1110	730	920	160	285	370	750	405	480	NGG31+RD6
1200	1800	800	900	265	865	1075	160	285	370	880	405	480	NGG31+RD6
1400	2100	940	1050	1405	1015	1215	160	285	370	1030	405	480	NGG31+RD6
1600	2400	1070	1200	1610	1153	1420	190	225	485	1180	565	640	NGG41+RD7

*Please contact us for other diameters and pressure values.

Combined Check Needle Valves

Hydraulically operated check needle valves are project-specific valves developed for use in high flow and pressure pump applications and turbine by-pass systems, preventing damage to the equipment during pump start-up and sudden stops, and can react quickly when necessary.

Counterweight Hydraulic Actuation System



These valves also have a fast opening and closing feature. The hydraulic actuation system is designed according to the application conditions in the pipelines for the most efficient operation of the valve.

