

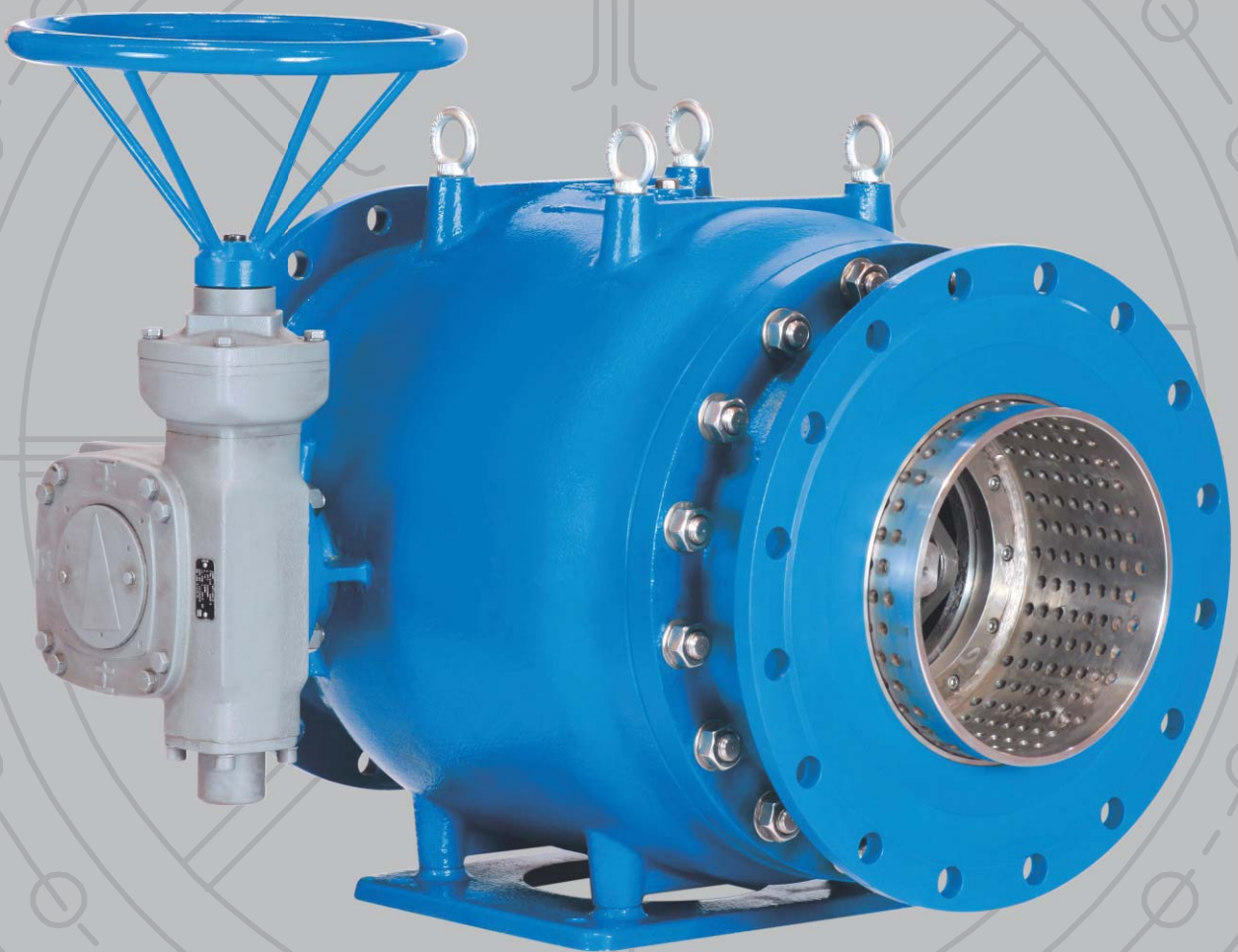


®

MIRAB CO.

Manufacturer of Industrial Valves
and Relevant Equipment

Needle Valves



Needle Valves

Size: DN 200- 1800 mm

Pressure: PN 10- 40 bar

Flanges: DIN EN 1092-2 (DIN 2501)

Application:

The Needle valves may be used for pressure control and flow adjustment in pumping lines and main supply lines. Flow media is water, air (other media on request),

Product Features:

The annular flow cross section prevents vibration and allows a linear ratio of flow variation to the valve opening percentage. Linear movement of the plunger in forward direction causes reduction of flow rate and at the end position closes the valve with complete tightness by positioning the piston profile sealing ring on the seat ring.

Body: An oval shaped body, in one piece in the small sizes and in few pieces in the larger sizes.

Piston Guide: The long piston guide ensures smooth piston movement in each direction without vibration.

Seat ring: Different application of needle valves is determined by different replaceable types of seat rings.

Gearbox: The valves can be operated by worm screw gearbox, hand wheel or by electric and hydraulic actuators.

Corrosion protection:

Inner & outer of body is fully coated with blue electrostatic powder coating with minimum 250 micronthickness.

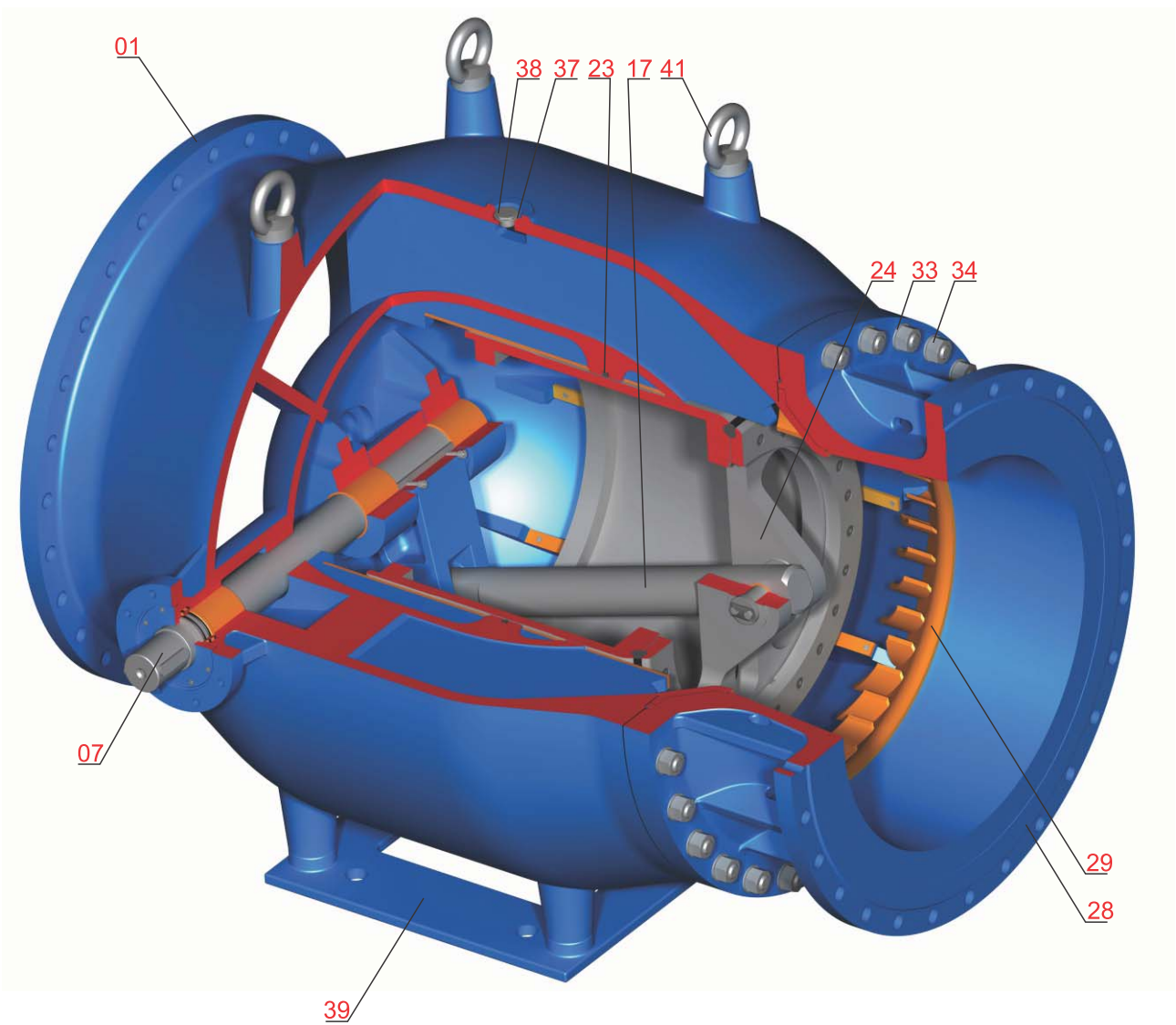
Hydrostatic test Pressure (bar) according to DIN EN 12266-1

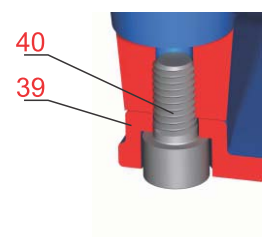
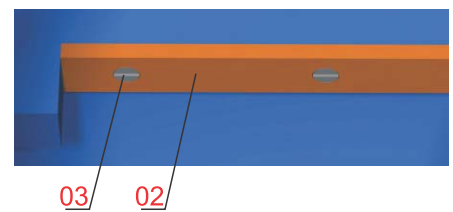
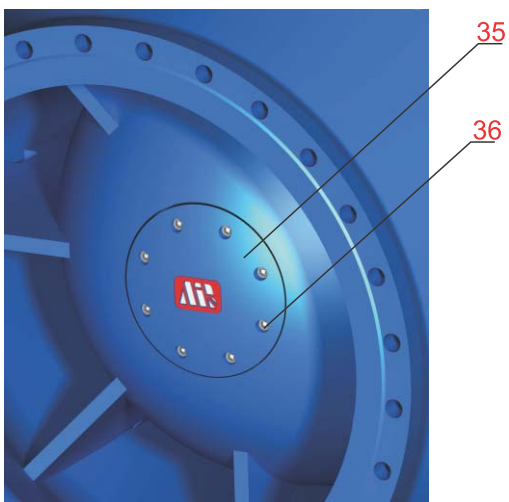
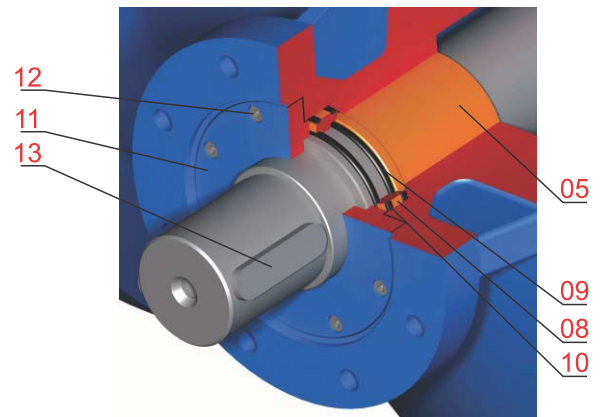
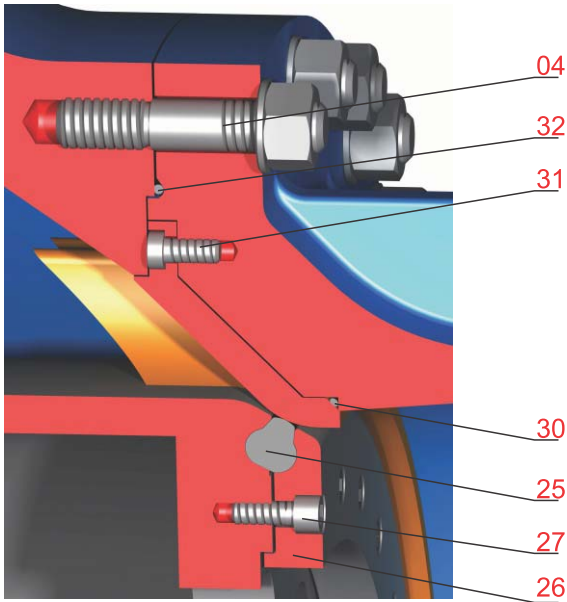
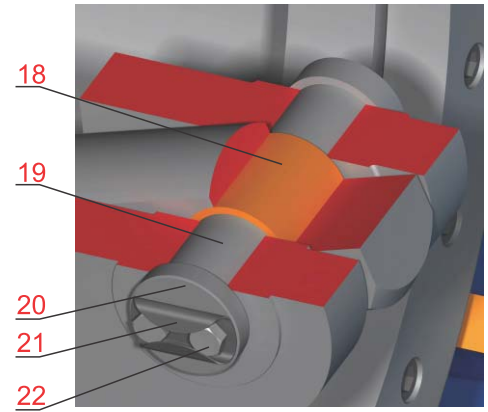
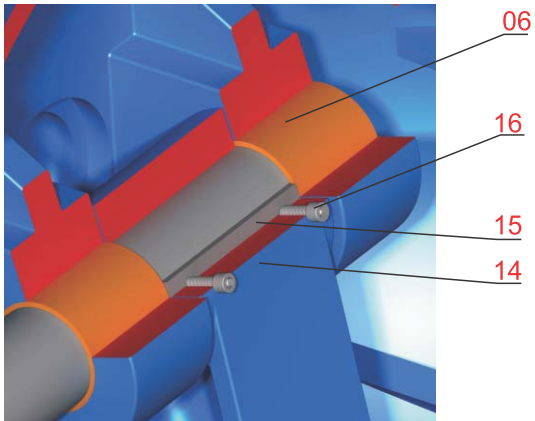
Nominal Pressure PN (bar)	Test Pressure, with water	
	Shell Test	Closure Test
10	17	11
16	25	18
25	38	28
40	60	44





Part List





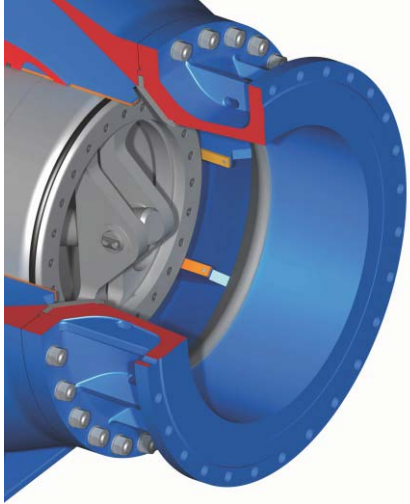


Part No.	Parts Name	Parts Material	1	2
01	Body	*EN 1563/EN-GJS-400-15		
02	Guide	ASTM B148 UNS 95200	•	•
03	Cylinder head screw	ASTM B148 UNS 95200	•	
04	Stud	DIN EN 10088-3/ 1.4301		
05	Bearing bush	ASTM B148 UNS 95200		
06	Bearing bush	ASTM B148 UNS 95200		
07	Crank shaft	DIN EN 10088-3/ 1.4021		
08	Shaft Sealing	DIN EN 10088-3/ 1.4301 / Brass		
09	O-ring	NBR (EPDM on Request)	•	•
10	O-ring	NBR (EPDM on Request)	•	•
11	Driving Shaft Seal Retainer	EN 1563/ EN-GJS-400-15		
12	Socket Screw	ISO 3506-1, Gr. A2, Property Class 70		
13	Key	DIN EN 10088-3/ 1.4021		
14	Crank	DIN EN 10088-3/ 1.4308		
15	Key	St-60		
16	Socket Screw	ISO 3506-1, Gr. A2, Property Class 70		
17	Connecting rod	DIN EN 10088-3/ 1.4021		
18	Bush	ASTM B148 UNS 95200		
19	Crank pin	DIN EN 10088-3/ 1.4301		
20	Washer	DIN EN 10088-3/ 1.4301		
21	Washer	DIN EN 10088-3/ 1.4301	•	
22	Hexagonal Bolt	ISO 3506-1, Gr. A2, Property Class 70	•	
23	O-ring	NBR (EPDM on Request)	•	•
24	Piston	DIN EN 10088-3/ 1.4308		
25	Profile seal	EPDM (NBR on Request)	•	•
26	Retainer	DIN EN 10088-3/ 1.4308		
27	Socket Screw	ISO 3506-1, Gr. A2, Property Class 70	•	
28	Diffuser	*EN 1563/ EN-GJS-400-15		
29	Seat ring	ASTM B148 UNS 95200		
30	O-ring	NBR (EPDM on Request)	•	•
31	Flat washer	ISO 3506-1, Gr. A2, Property Class 70	•	
32	O-ring	NBR (EPDM on Request)	•	•
33	Washer	DIN ISO 898-2, Property Class 8, Zinc Plated		
34	Nut	DIN ISO 898-2, Property Class 8, Zinc Plated		
35	Cover	EN 1563/ EN-GJS-400-15		
36	Socket Screw	ISO 3506-1, Gr. A2, Property Class 70		
37	Plug Screw	ISO 3506-1, Gr. A2, Property Class 70	•	
38	Washer	Cu	•	•
39	Base plate	EN 1563/ EN-GJS-400-15		
40	Socket Screw	DIN ISO 898-1, Property Class 8.8, Zinc Plated		
41	Eye bolt	DIN ISO 898-1, Property Class 8.8, Zinc Plated		

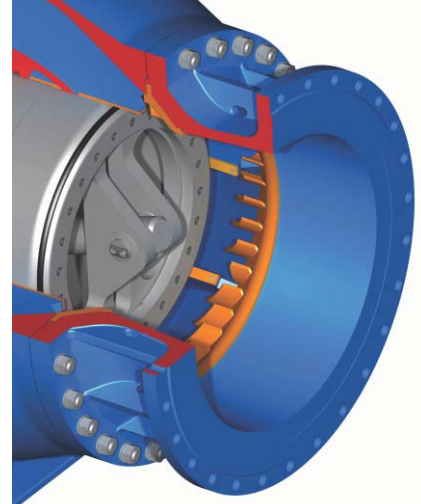
(1)Recommended Spare Parts

(2)Parts Subjected to Wear

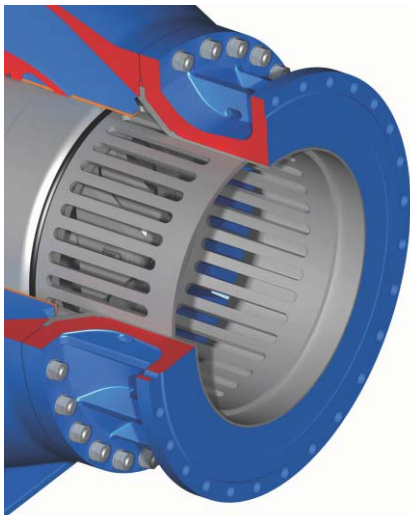
*EN-GJS-500-7 available on request.

Types of Needle Valves Seating

1- Standard type:

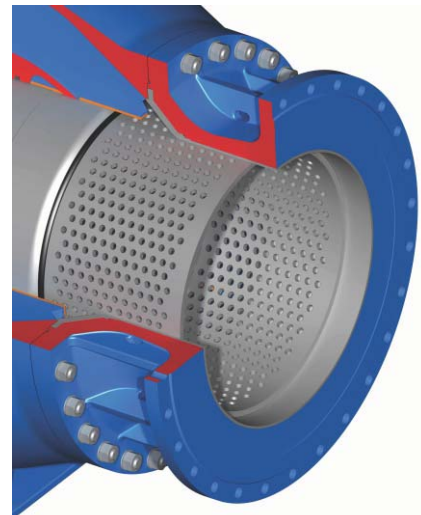
As a shut-off and flow regulating valve under high pressure differences and sufficient downstream pressure.


2- Vane ring type:

This type of needle valve may be used as flow regulating valve under high pressure differences and stream sufficient downstream pressure.


3- Slotted cylinder type:

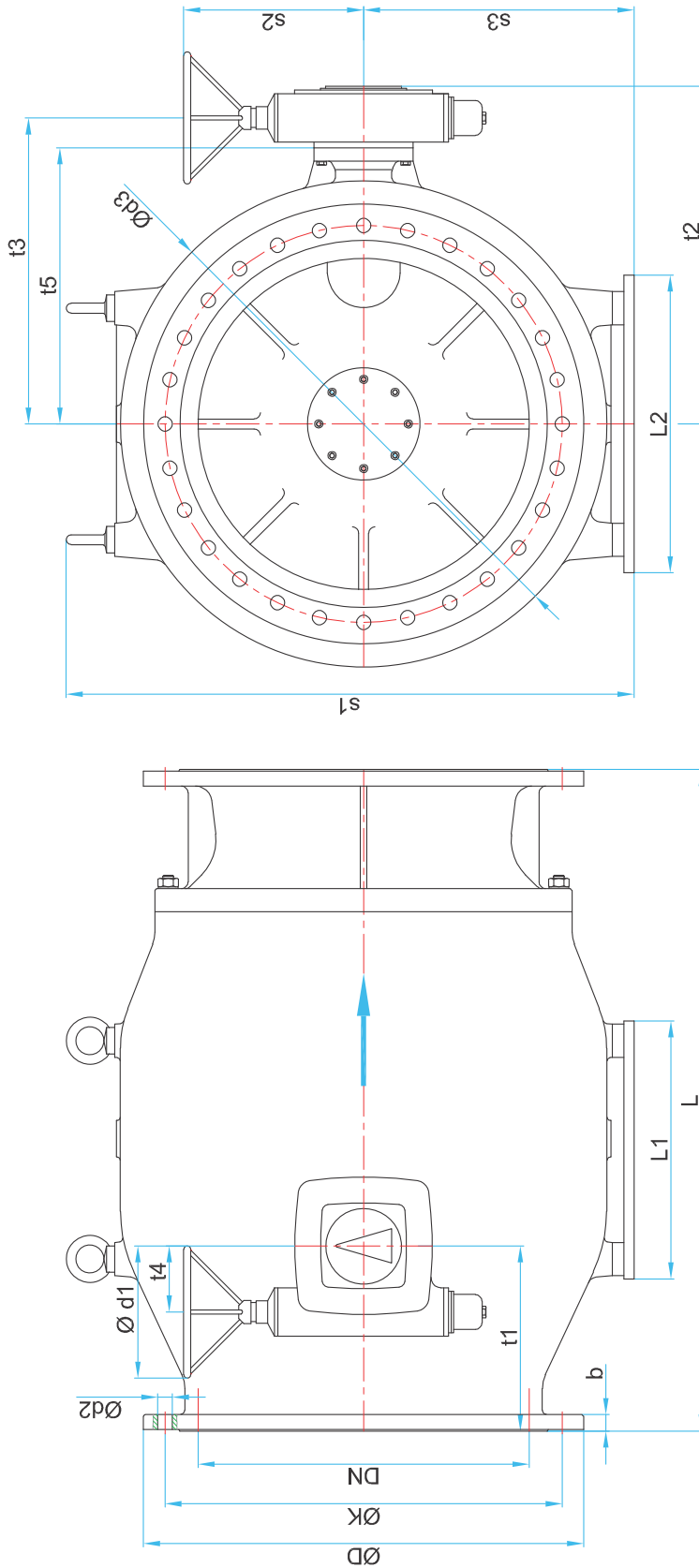
- As flow and pressure regulating valve under high pressure differences and low downstream pressure like in tanks.
- For optimization of pump function


4- Multiple orifice cylinder type:

- As flow and pressure regulating as flow and low downstream pressure high difference and low downstream pressure like in tanks.
- Anti cavitation valve.



Dimensions and weight



For correct size and type selection please contact Mirab Valves company.



• DIN EN 1092-2 (DIN 2501)

DN	L	ØD	ØK	Ød2	n	b	Ød1	Ød3	t1	t2	t3	t4	t5	s1	s2	s3	L1	L2	Weight
mm	mm	mm	mm	mm		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg
PN 10																			
200	400	340	295	23	8	20	250	340	110	313	255	63	210	423	255	205	-	-	106
250	500	395	350	23	12	22	250	376	150	333	275	63	230	483	255	235	-	-	150
300	600	445	400	23	12	24.5	250	448	160	398	337	80	280	542	263	260	-	-	242
350	700	505	460	23	16	24.5	250	522	200	472	405	100	330	622	303	300	-	-	397
400	800	565	515	28	16	24.5	250	588	215	507	440	100	365	710	303	363	340	420	516
450	900	615	565	28	20	25.5	250	640	248	527	460	100	385	751	303	365	340	500	661
500	1000	670	620	28	20	26.5	400	732	280	582	515	100	440	863	393	442	400	530	932
600	1200	780	725	31	20	30	400	876	318	645	575	125	500	1043	398	530	460	600	1473
700	1400	895	840	31	24	32.5	400	1020	355	720	650	125	575	1212	398	610	540	800	2077
800	1600	1015	950	34	24	35	400	1165	420	805	735	125	660	1370	398	690	590	900	2936
900	1800	1115	1050	34	28	37.5	400	1360	485	899	825	160	750	1600	478	770	770	900	3845
1000	2000	1230	1160	37	28	40	400	1470	560	984	958	160	835	1716	478	817	780	900	5582
1200	2400	1455	1380	41	32	45	400	1810	660	1175	1080	200	990	2148	544	1040	1000	1400	9010
1400	2800	1675	1590	44	36	46	400	2185	866	1444	1330	250	1200	2428	604	1180	1200	1500	14600
1600	2800	1915	1820	50	40	49	400	2185	866	1444	1330	250	1200	2428	604	1180	1200	1500	14900
1800	2900	2115	2020	50	44	52	500	2600	790	1805	1645	315	1500	3020	684	1480	1730	1580	20100
PN 16																			
200	400	340	295	23	12	20	250	340	110	313	255	63	210	423	255	205	-	-	106
250	500	400	355	28	12	22	250	376	150	333	275	63	230	483	255	235	-	-	152
300	600	450	410	28	12	24.5	250	448	160	398	337	80	280	542	263	260	-	-	250
350	700	520	470	28	16	26.5	250	522	200	472	405	100	330	622	303	300	-	-	412
400	800	580	525	31	16	28	400	588	215	507	440	100	365	710	393	363	340	420	537
450	900	640	585	31	20	30	400	640	248	527	460	100	385	751	393	365	340	500	702
500	1000	715	650	34	20	31.5	400	732	280	582	515	100	440	863	393	442	400	530	1000
600	1200	840	770	37	20	36	400	876	318	645	575	125	500	1043	398	530	460	600	1594
700	1400	910	840	37	24	39.5	400	1020	355	720	650	160	575	1212	478	610	540	800	2170
800	1600	1025	950	41	24	43	400	1165	420	809	735	160	660	1370	478	690	590	900	3031
900	1800	1125	1050	41	28	46.5	400	1360	485	935	840	200	750	1600	544	770	770	900	3905
1000	2000	1255	1170	44	28	50	500	1470	560	1054	958	200	835	1716	593	817	780	900	5690
1200	2400	1485	1390	50	32	57	400	1810	660	1175	1080	200	990	2148	544	1040	1000	1400	9193
1400	2800	1685	1590	50	36	60	500	2185	866	1505	1344	315	1200	2428	684	1180	1200	1500	15000
1600	2800	1930	1820	57	40	65	500	2185	866	1505	1344	315	1200	2428	684	1180	1200	1500	15400
1800	2900	2130	2020	57	44	70	500	2600	790	1805	1645	315	1500	3020	684	1480	1730	1580	20100
PN 25																			
200	400	360	310	28	12	22	250	340	110	313	255	63	210	423	255	205	-	-	118
250	500	425	370	31	12	24.5	250	376	150	333	275	63	230	483	255	235	-	-	167
300	600	485	430	31	16	27.5	400	448	160	398	337	80	280	542	333	260	-	-	269
350	700	555	490	34	16	30	400	522	200	472	405	100	330	622	393	300	-	-	451
400	800	620	550	37	16	32	400	588	215	507	440	100	365	710	393	363	340	420	583
450	900	670	600	37	20	34.5	400	640	248	527	460	125	385	751	398	365	340	500	753
500	1000	730	660	37	20	36.5	400	732	280	585	515	125	440	863	398	442	400	530	1056
600	1200	845	770	41	20	42	400	876	318	690	611	160	536	1043	478	530	460	600	1685
700	1400	960	875	44	24	46.5	500	1020	355	724	650	160	575	1212	527	610	540	800	2281
800	1600	1085	990	50	24	51	500	1165	420	809	735	160	660	1370	527	690	590	900	3196
900	1800	1185	1090	50	28	55.5	400	1360	485	935	840	200	750	1600	544	770	770	900	4121
1000	2000	1320	1210	57	28	60	500	1470	560	1054	958	200	835	1716	593	817	780	900	5972
1200	2400	1530	1420	57	32	69	400	1810	660	1175	1080	200	990	2148	604	1040	1000	1400	9250
1400	2800	1755	1640	62	36	74	500	2185	866	1505	1344	315	1200	2428	684	1180	1200	1500	15300
1600	2800	1975	1860	62	40	81	500	2185	866	1505	1344	315	1200	2428	684	1180	1200	1500	15700

Table of Kv values, pressure loss efficient and pressure loss calculation

Knowing pressure loss factor the following can be calculated

Pressure loss Δp :

$$\Delta p = [\text{mWS}]$$

$$v = [\text{m/s}]$$

ζ = according to table

$$g = 9.81 \frac{\text{m}}{\text{s}^2}$$

$$\Delta p = \frac{\zeta \cdot v^2}{2 \cdot g}$$

Coefficient Kv:

$$Kv = [\text{m}^3/\text{h}]$$

$$DN = [\text{mm}]$$

ζ = according to table

$$kv = 0.0396 \times \frac{DN^2}{\sqrt{\zeta}}$$

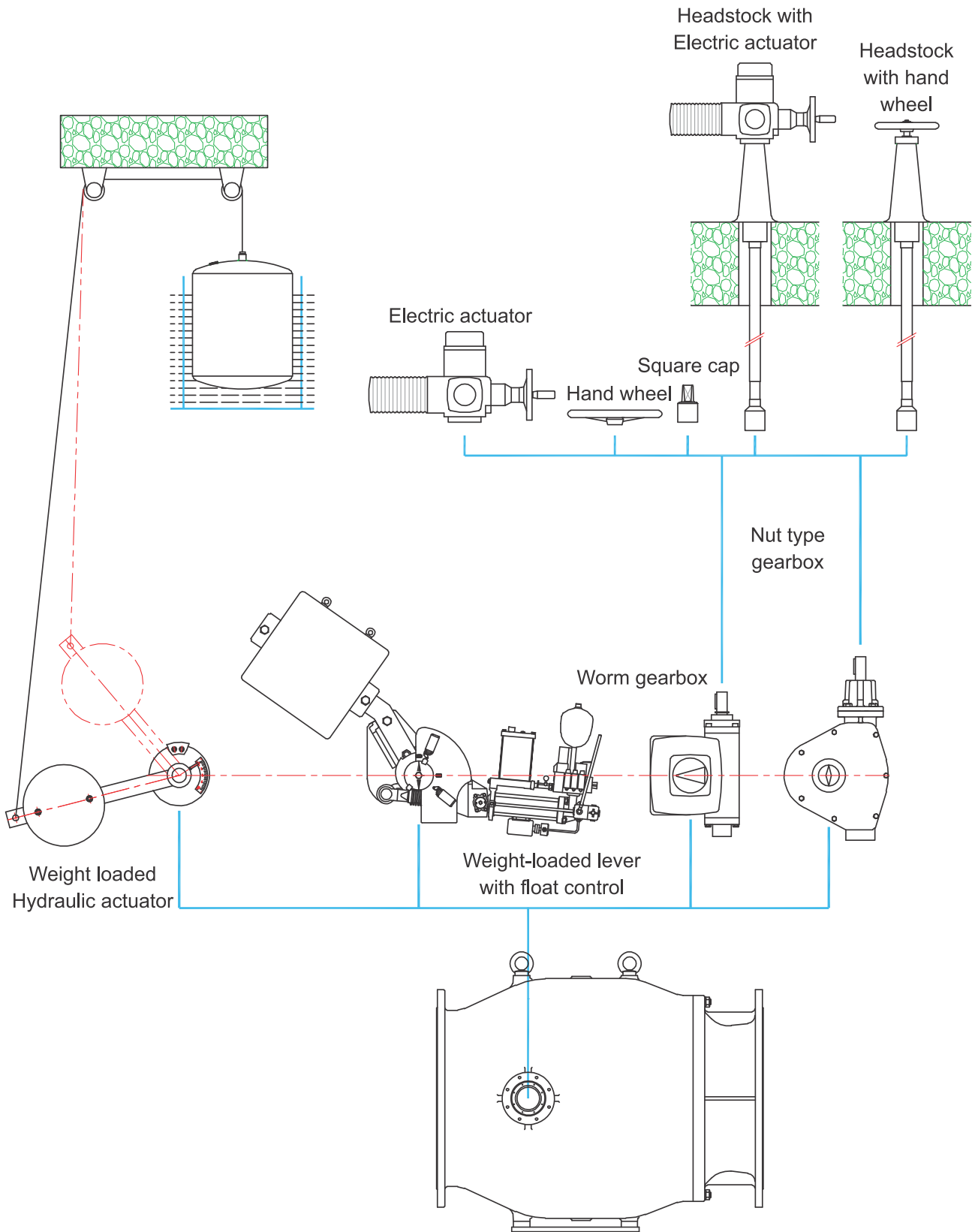
Pressure drop coefficient in open position (ζ)				
DN	Seat type			
mm	Standard	Vaned	Slotted	Multiple orifice
200	0.82	1.6	7.6	11.2
250	0.82	2.5	8.5	11.2
300	0.82	1.9	7.6	11.2
350	0.82	1.5	6.5	11.2
400	0.82	1.5	6.5	11.2
450	0.82	1.5	6.5	11.2
500	0.82	1.5	6.5	11.2
600	0.82	1.5	6.5	11.2
700	0.82	1.5	6.5	11.2
800	0.82	1.4	6.5	11.2
900	0.82	1.4	6.5	11.2
1000	0.82	1.3	6.5	11.2
1200	0.82	1.1	6.5	11.2
1400	—	1.1	6.5	—
1600	—	1.0	6.5	—
1800	—	1.0	6.5	—

Definition of Kv:

The amount of flow in m³ that passes through the valve in one hour in ambient temperature of 20°C, causing a pressure loss of 1 bar when the valve is fully open

Kv (m ³ /h)				
DN	Seat type			
mm	Standard	Vaned	Slotted	Multiple orifice
200	1749.2	1120.1	636.1	—
250	2733.2	1707.9	816.0	—
300	3935.8	2402.8	1356.8	1064.9
350	5357.0	3960.8	1902.7	1449.5
400	6996.9	5173.3	2485.2	1893.2
450	8855.5	6547.5	3145.3	2396.1
500	10932.7	8083.3	3883.1	2958.2
600	15743.1	11640.0	5591.7	4259.8
700	21428.1	15843.3	7610.9	5798.1
800	27987.8	21419.6	9940.7	7573.0
900	35722.0	27109.2	12581.2	9584.5
1000	43730.0	34731.5	15532.4	11832.8
1200	62972.5	54370.3	22366.7	17039.2
1400	86777	74004	30467	23275.5
1600	—	102300	—	30400.5
1800	—	129500	—	—

Operating of Needle Valve



MIRAB Co' PRODUCTS

Butterfly Valves Family: Double Flanged Type, Butt-weld End, Wafer Type, Lug Type, Hydraulic Actuated, Pneumatic Actuated.

Gate Valves Family: Soft-Sealing Gate Valve, Metal Seat Gate Valve, Knife Gate Valve, Sluice Gate Valve.

Non Return Valves Family: Tilting Disc with Counter Weight, Tilting Disk with Counter Weight and Hydraulic Damper, Swing Check Valve, Silent Check Valve, Foot Valve, Nozzle Check Valve, Wafer Pattern Check Valve, Flap Valve.

Air Vent Family: Single Chamber - Double Orifices , Double Chambers - Double Orifices, Sewage Air Valves, Large - Orifice Air Valve.

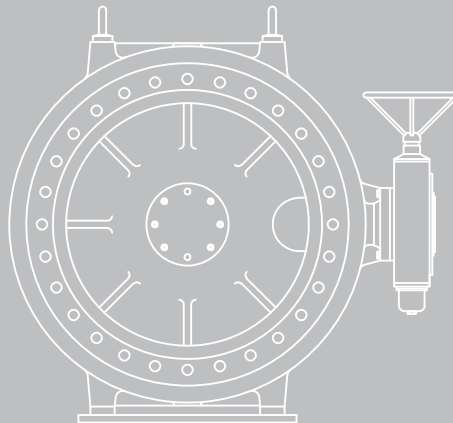
Control Valves Family: Automatic Control Valves, Needle Valve, Globe Valve, Fixed Cone Free Discharge Valve, Hollow Jet Valve, Sleeve Valve.

Hydrant Valves Family: Standing Type, Pit Type, Wet Barrel Fire Fighting Valve, Post Indicator Valve.

Strainers Family: Y Type, T Type, One Side Flanged Type.

Fittings Family: Dismantling Joint F1&F2, Pipe Coupling, Flange.

Actuators: Electrical, Hydraulic, Pneumatic, Portable Electrical.



Head office: #9, 14th Alley,
N. Gol Afshan St., Dadman Blvd.,
Shahrak-e-Qods,
Tehran, 14697-85171, Iran
Tel: +98 (0)21 88372220
Fax: +98 (0)21 88577508

Plant #1: 28th St.,
Km 10 of Karaj Special Rd.,
Tehran, 13897-15851,
Iran
Tel: +98 (0)21 44545650
Fax: +98 (0)21 44545658

Plant #2: Sarvestan Blvd.,
Shams-Abad Industrial zone,
Km 40 of Tehran-Qom Highway,
Tehran, 18341-86581,
Iran
Tel: +98 (0)21 56804700-10

P.O.Box: 18335-365

info@mirab-valves.com