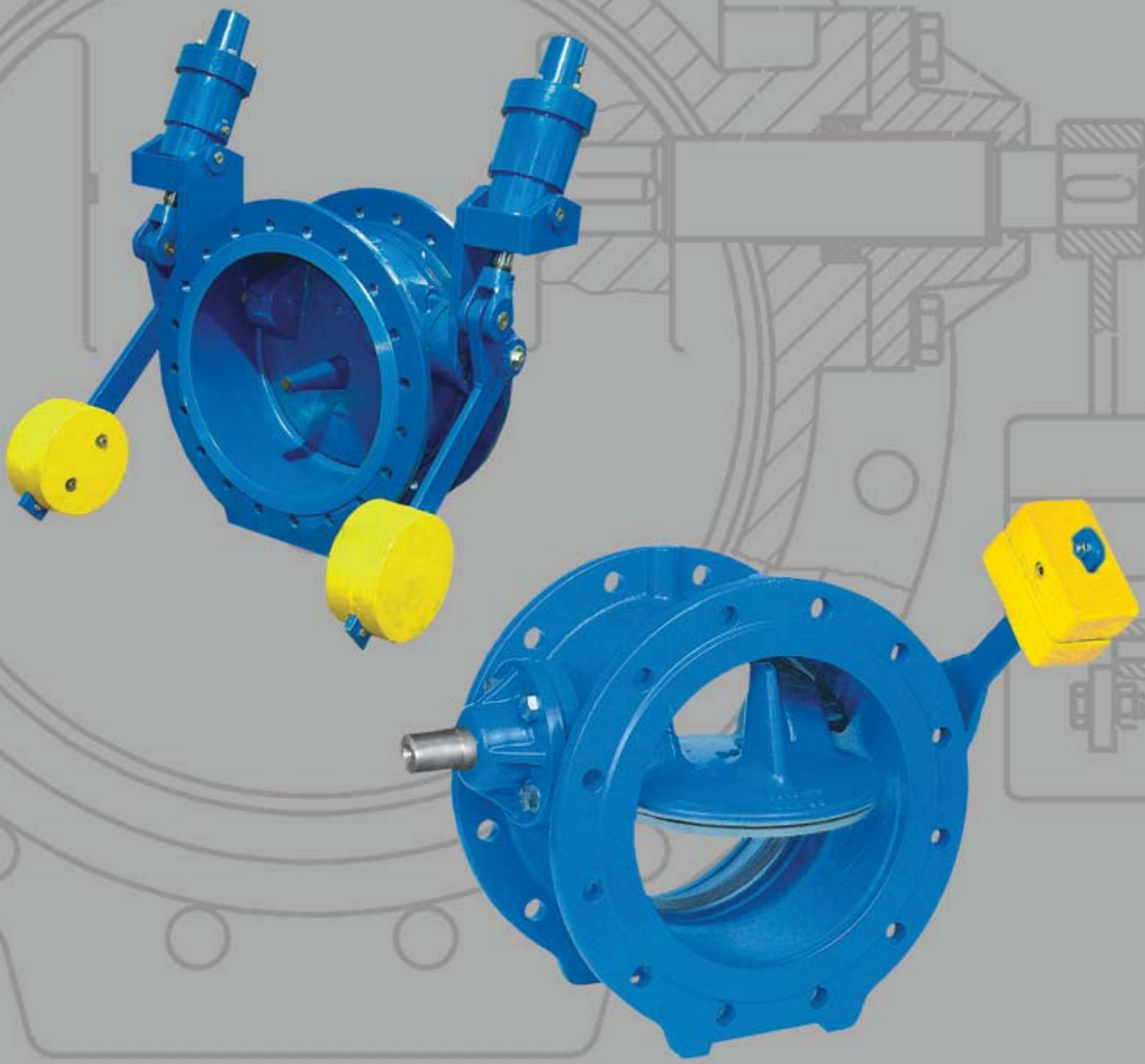
AB VALVES GmbH

Manufacturer of Industrial Valves and Relevant Equipments

Tilting Disk Check Valves with Counter Weight (NVT)



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Tilting Disc Check Valves with Counter Weight (NVTW)

Size: DN 150 - 1000 mm
Pressure: PN 10- 40 bar

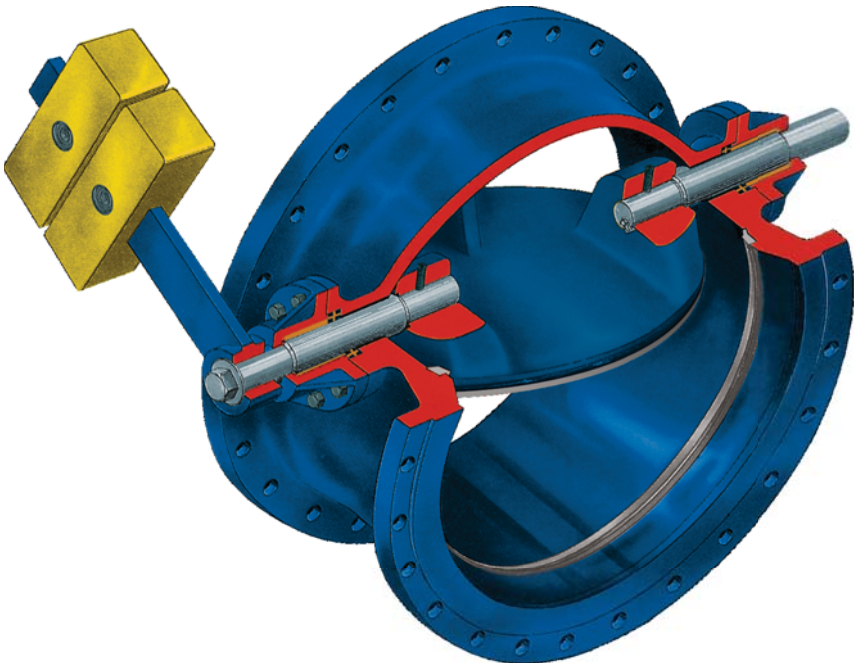
Face to face: DIN EN 558-1 series 14/ISO 5752-14 (DIN3202-F4)
Flanges: DIN EN 1092-2 (DIN 2501)

Product features:
Eccentric disc operation , Body seat ring made of corrosion resistant steel , Disc seat ring is corrosion resistant steel with seal for reliable sealing , Possibility for installation of weight and lever on both sides. Low weight for short length of the valves , Maintenance free , Rugged body with disc suitable for fluid flow Disc and shaft are connected by key , Seat ring rolled into the body.

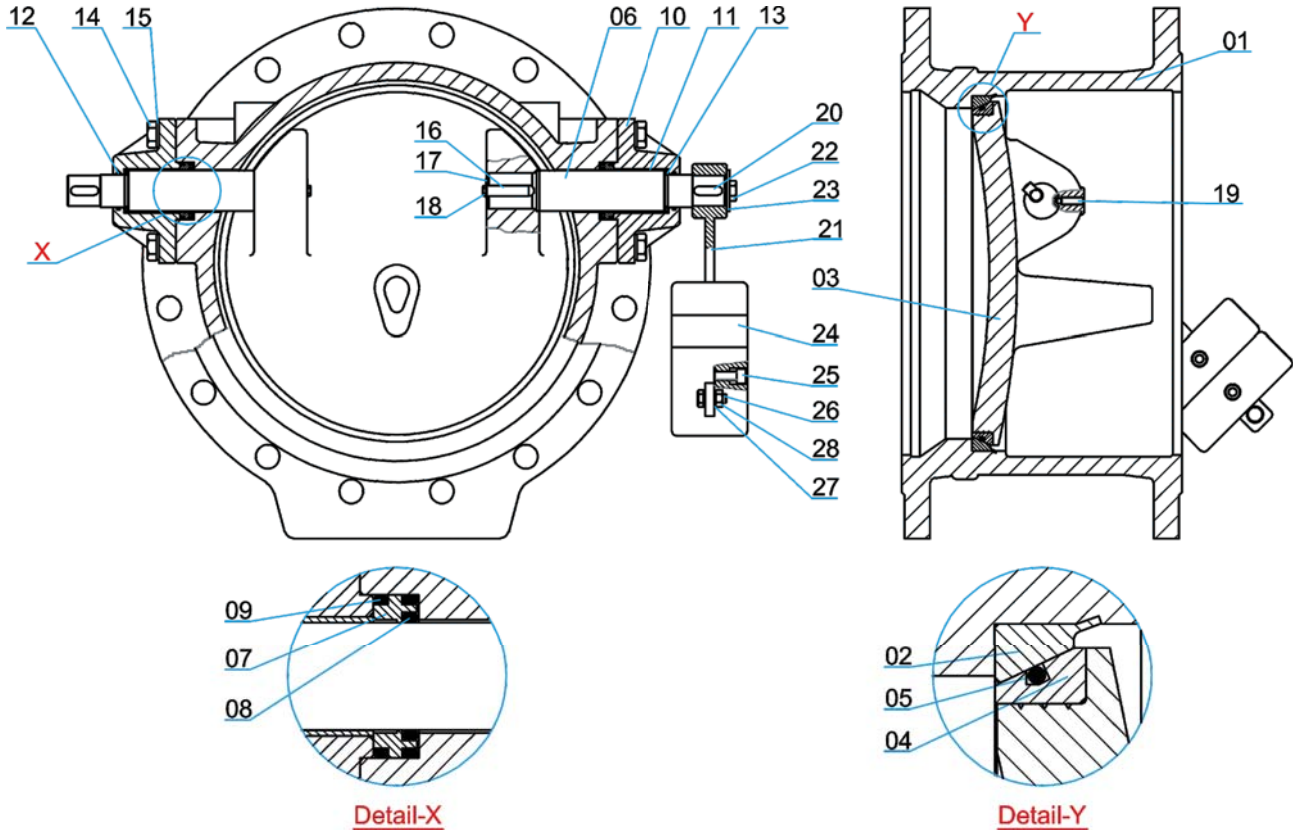
Application:
These types of valves are used in water supply installations to stop the fluid flow in the opposite direction. The valve closing speed can be adjusted by changing the weight position along the lever. All of the seals of the valve bearing can easily be replaced. The standard seal material is NBR for up to 70°C (for gas up to100°C). For higher temperature and other fluids suitable seal material is available on request.

Corrosion protection:
Body and disc are fully coated with blue electrostatic powder coating with minimum 250 micron thickness.

Hydrostatic test Pressure (bar) according to DIN EN 12266-1		
Nominal Pressure PN (bar)	Test Pressure	
	Body	Seat
10	17	11
16	25	17.6
25	37.5	27.5



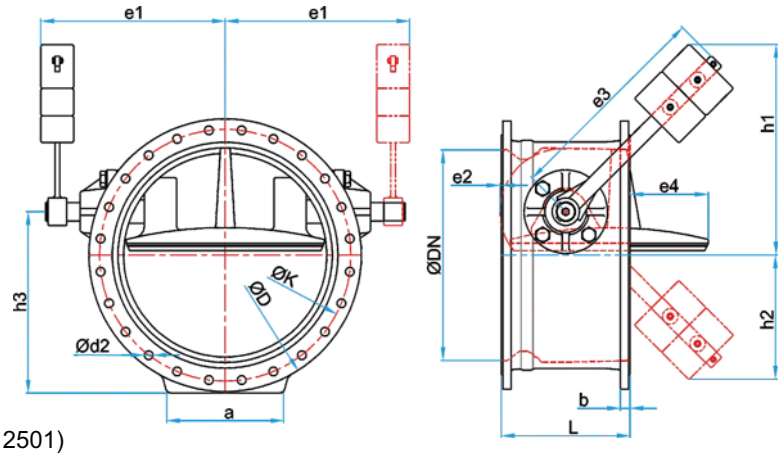
Part list:



Part	Description	Material	Spare Part	Part	Description	Material	Spare Part
1	Body	EN-GJS-400-15 (1)		15	Washer	A2 / Galvanized	
2	Seat	1.4301		16	Key	1.4021	
3	Disk	EN-GJS-400-15 (1)		17	Key Retainer	1.4301	●
4	Seat	1.4301		18	Hexagonal Head Screw	A2	●
5	O-ring	EPDM / NBR	●	19	Threaded pin	A2	
6	Shaft	1.4021		20	Key	ST-60	
7	Shaft Sealing	BRASS		21	Lever	ST-37	
8	O-ring	EPDM / NBR	●	22	Hexagonal Head Screw	A2 / Galvanized	
9	O-ring	EPDM / NBR	●	23	Washer	A2 / Galvanized	
10	Bearing Case	EN-GJS-400-15 (1)	●	24	Counter weight	EN-GJS-400-15	
11	Bush	BRASS	●	25	Plug Socket Screw	A2 / Galvanized	
12	O-ring	EPDM / NBR	●	26	Hexagonal Head Screw	A2 / Galvanized	
13	Spacer Ring	BRASS		27	Washer	A2 / Galvanized	
14	Hexagonal Head Screw	A2 / Galvanized		28	Nut	A2 / Galvanized	

(1) EN-GJS-500-7 can be product as requested.

Dimensions



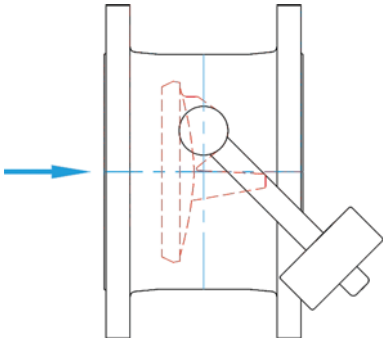
- DIN EN 1092 - 2 (DIN 2501)
- DIN EN 558 - 1 series 14 (DIN 3202 - F4)

	DN mm	L mm	ØD mm	b mm	ØK mm	Ød2 mm	n	e1 mm	e2 mm	e3 mm	e4 mm	h1 mm	h2 mm	h3 mm	a mm	Wgt. Kg
PN 10	150	210	285	19	240	23	8	205	-	230	-	212	145	145	150	34.5
	200	230	340	20	295	23	8	244	-	230	19.4	225	141	175	160	55
	250	250	400	22	350	23	12	297	-	250	44	252	147	205	180	80
	300	270	455	24.5	400	23	12	335	-	300	70	245	175	235	200	105
	350	290	505	24.5	460	23	16	365	-	350	94	352	203	262	225	140
	400	310	565	24.5	515	28	16	390	-	350	115	358	200	305	250	180
	450	330	615	25.5	565	28	20	437	-	450	142	457	267	407	275	249
	500	350	670	26.5	620	28	20	467	-	500	165	500	293	340	300	270
	600	390	780	30	725	31	20	534	-	600	225	583	346	425	330	380
	700	430	895	32.5	840	31	24	616	2.5	700	225	700	404	460	390	560
	800	470	1015	35	950	34	24	698	13	800	315	760	424	515	450	720
	900	510	1115	37.5	1050	34	28	744	25	800	380	760	424	562	550	950
	1000	550	1230	40	1160	37	28	794	34	800	423	760	424	620	600	1200
	1200	630	1455	45	1380	41	32	955	50	1000	515	1055	545	1050	700	2000
	1400	710	1675	46	1590	44	36	1100	70	1000	615	1095	505	1180	800	2700
	1600	790	1915	49	1820	50	40	1230	90	1000	705	1135	465	1350	900	3800
	1800	870	2115	52	2020	5	44	1470	105	1560	810	1575	780	1477	1000	5500
PN 16	150	210	285	19	240	23	8	205	-	230	-	212	145	145	150	45
	200	230	340	20	295	23	12	244	-	230	19.4	225	141	175	160	70
	250	250	400	22	355	28	12	297	-	250	44	252	147	205	180	90
	300	270	455	24.5	410	28	12	335	-	300	70	245	175	235	200	120
	350	290	520	26.5	470	28	16	365	-	350	94	352	203	262	225	160
	400	310	580	28	525	31	16	390	-	350	115	358	200	305	250	195
	450	330	640	30	585	31	20	437	-	450	142	457	267	407	275	254
	500	350	715	31.5	650	34	20	467	-	500	165	500	293	340	300	330
	600	390	840	36	770	37	20	534	-	600	225	583	346	425	330	420
	700	430	910	39.5	840	37	24	616	2.5	700	225	700	404	460	390	520
	800	470	1025	43	950	41	24	698	13	800	315	760	424	515	450	755
	900	510	1125	46.5	1050	41	28	744	25	800	380	760	424	562	550	880
	1000	550	1255	50	1170	44	28	794	34	800	423	760	424	620	600	1260
	1200	630	1485	57	1390	50	32	955	50	1000	515	1055	545	1050	700	2150
	1400	710	1685	60	1590	50	36	1100	70	1000	615	1095	505	1180	800	2900
	1600	790	1930	65	1820	57	40	1230	90	1000	705	1135	465	1350	900	4450
	1800	870	2130	70	2020	57	44	1470	105	1560	810	1575	780	1477	1000	6100
PN 25	150	210	300	20	250	28	8	205	-	230	-	212	145	145	150	46.5
	200	230	360	22	310	28	12	244	-	230	19.4	225	141	175	160	72
	250	250	425	24.5	370	31	12	297	-	250	44	252	147	205	180	96
	300	270	485	27.5	430	31	16	335	-	300	70	245	175	235	200	151
	350	290	555	30	490	34	16	365	-	350	94	352	203	262	225	174
	400	310	620	32	550	37	16	390	-	350	115	358	200	305	250	207
	450	330	670	34.5	600	37	20	437	-	450	142	457	267	437	275	273
	500	350	730	36.5	660	37	20	467	-	500	165	500	293	340	300	338
	600	390	845	42	770	41	20	534	-	600	225	583	346	425	330	450
	700	430	960	46.5	875	44	24	616	2.5	700	225	700	404	460	390	550
	800	470	1085	51	990	50	24	698	13	800	315	760	424	515	450	875
	900	510	1185	55.5	1090	50	28	744	25	800	380	760	424	562	550	1000
	1000	550	1320	60	1210	57	28	794	34	800	423	760	424	620	600	1380
	1200	630	1530	69	1420	57	32	955	50	1000	515	1055	545	1050	700	2300
	1400	710	1755	74	1640	62	36	1100	70	1000	615	1095	505	1180	800	3100
	1600	790	1975	81	1860	62	40	1230	90	1000	705	1135	465	1350	900	4950
	1800	870	2195	88	2070	70	44	1470	105	1560	810	1575	780	1477	1000	6760

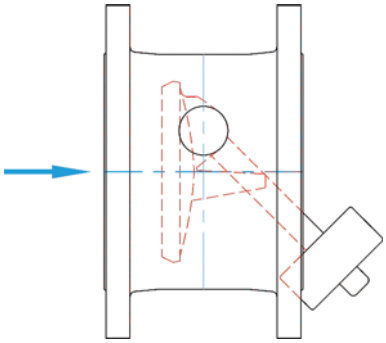
Dimensions for working pressure 40 bars and higher as per request.

Installation of Non-return valves with counter weight.

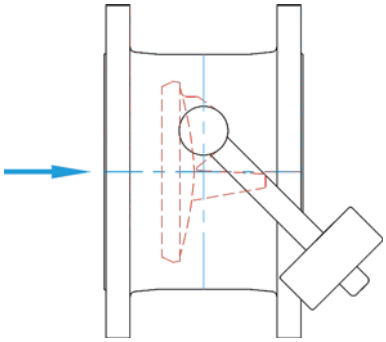
Horizontal pipeline:



Pos. 1
Counter weight and lever on the right hand side of the valve in flow direction.

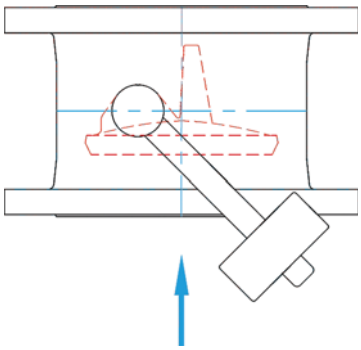


Pos. 2
Counter weight and lever on the left hand side of the valve in flow direction.

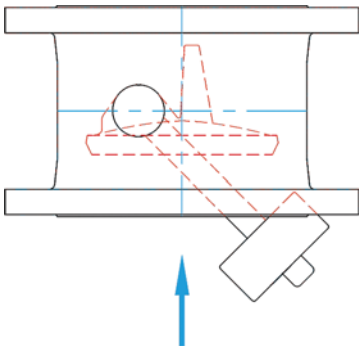


Pos. 3
Counter weight and lever on both sides of the valve in flow direction.

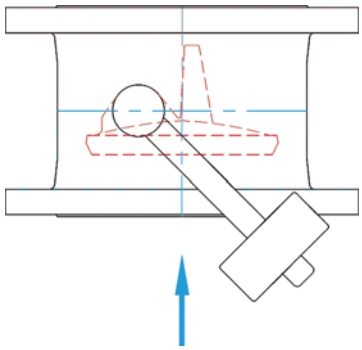
Vertical pipeline with flow direction upward:



Pos. 4

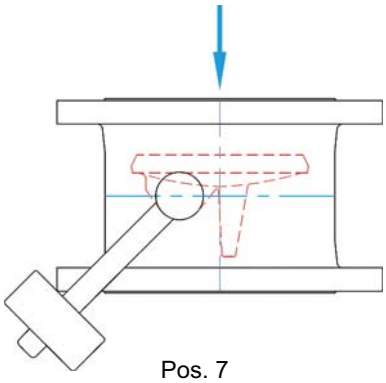


Pos. 5

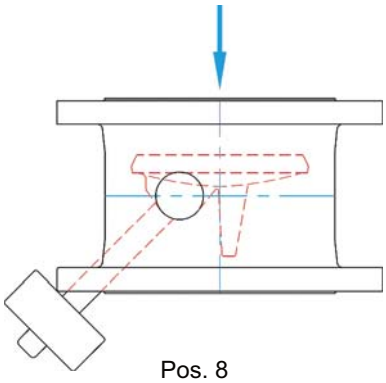


Pos. 6
Counter weight and lever on bothsides of the valve in flow direction.

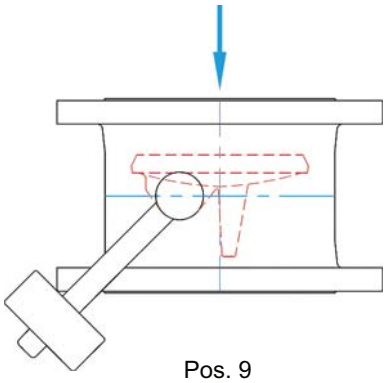
Vertical pipeline with flow direction downward:



Pos. 7



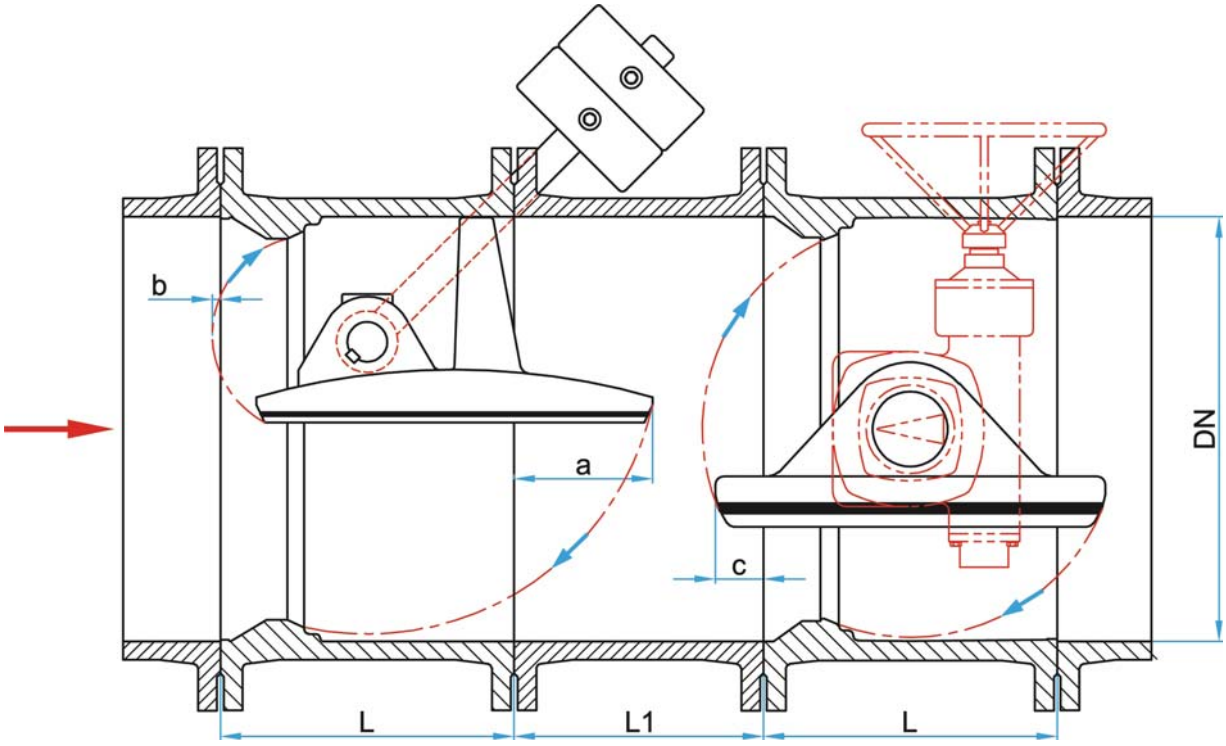
Pos. 8



Pos. 9
Counter weight and lever on both sides of the valve in flow direction.

Note:
Normally the lever and counter weight of all non-return valves with counter weight are assembled as shown in Pos.2.(Horizontal line)
For other valve positions, the lever should be assembled according to the valve positions as shown in the above figures.

Conditions for installation of flanged type Butterfly valve next to Non-return valve with counter weight and lever:



Tilting disc Non-return valve With counter weight | spacer pipe | Flanged type Butterfly valve

For installation of non-return valve adjacent to a butterfly valve, the weight lever of the non-return valve must be on the left hand side in flow direction and the gearbox of the butterfly valve on the right hand side toprevent collision of the weight lever with the gearbox of the butterfly valve.

DN	L mm	L 1 mm	a mm	b mm	c mm
150	210	—	—	—	—
200	230	150	23	—	—
250	250	150	44	—	—
300	270	150	69	—	2
350	290	200	94	—	25
400	310	225	115	—	40
500	350	300	165	—	65
600	390	400	225	—	95
700	430	500	272	25	120
800	470	600	315	13	150
900	510	650	380	25	180
1000	550	750	423	34	210

Non-return valves with hydraulic damping system (NVTD)

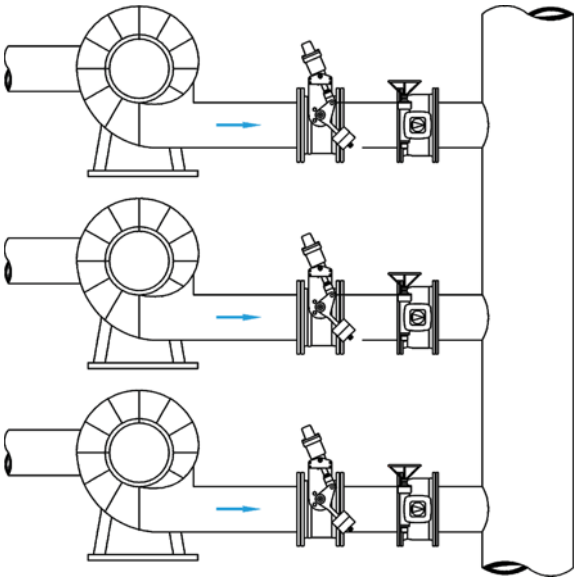
AB non-return valves with counter weight can be equipped with hydraulic damping system for adjusting the closing time. With the damping system the opening and closing time can be reduced, and the water hammer effect can be prevented by reducing the damping time.

Application: To provide non-slam performance in places where water return through the valve is permitted. A flow control valve can adjust the opening and closing speed of non-return valve disc.

Application examples:

- Water supply line with pumps installed in parallel

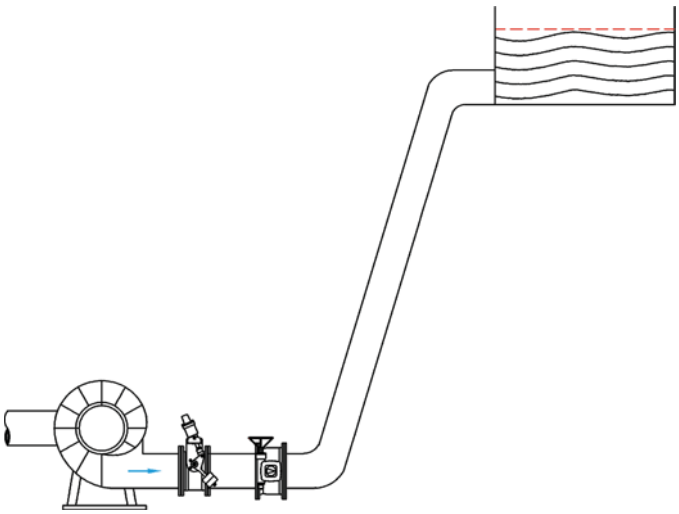
When the pump is turned off and the flow direction reversed, the valve closes, and if the valve does not have a damping mechanism, the resultant force could damage the system.In this case,the reverse pressure would be equal to the pump pressure.



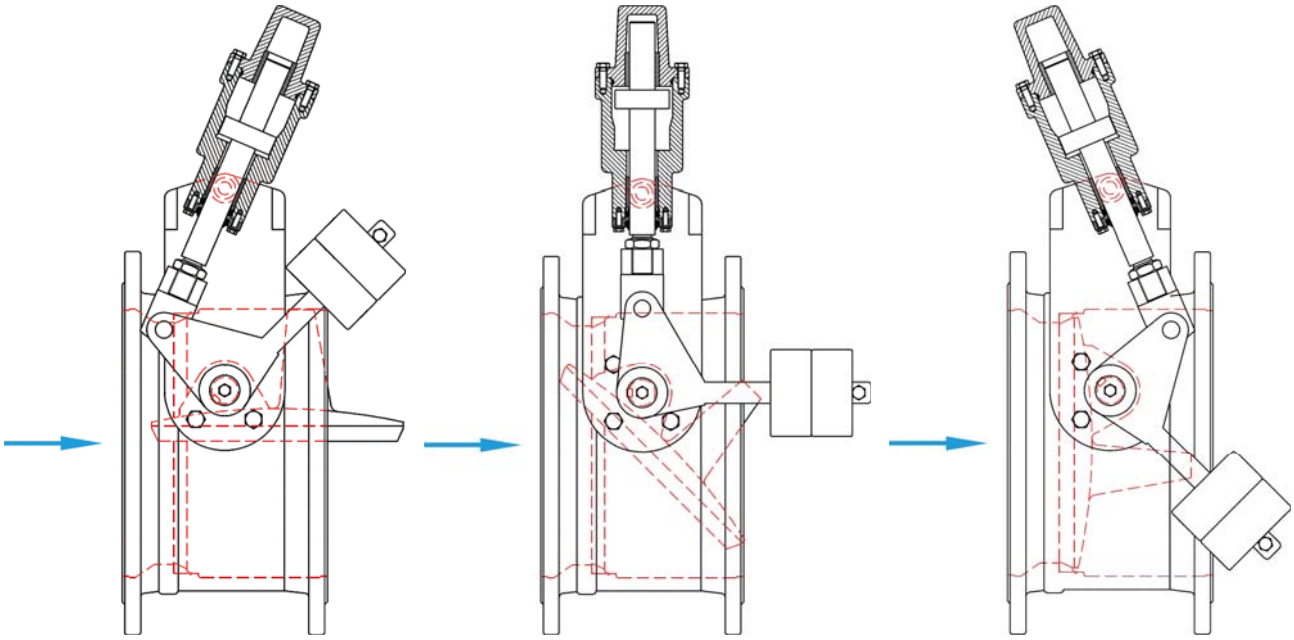
- Water supply line with long pipe and high elevation

Pumping to high elevation.

Quick change in flow direction which results in extensive force. In this situation the amount of reverse pressure on the closed disk is caused by the amount of water column.



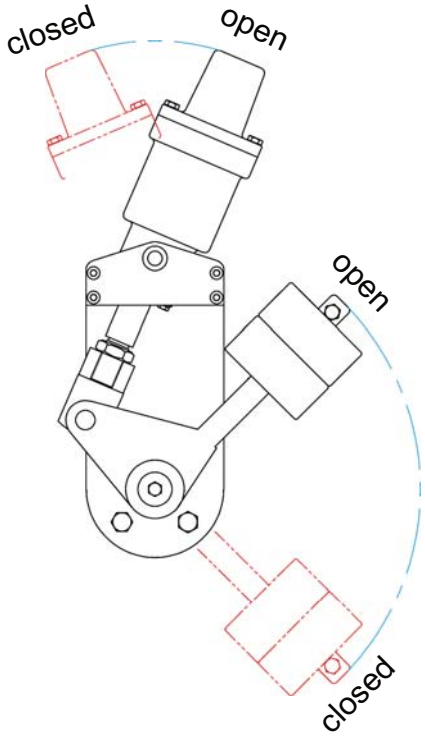
Mechanism and operation of Non-return valve with Hydraulic Damping cylinder.

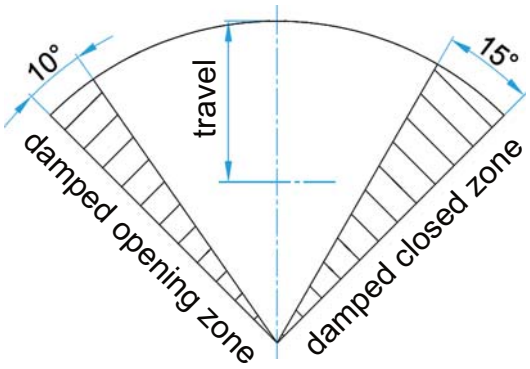


Non-Return valve in damped open position

Non-Return valve in 50% open position

Non-Return valve in damped closed position





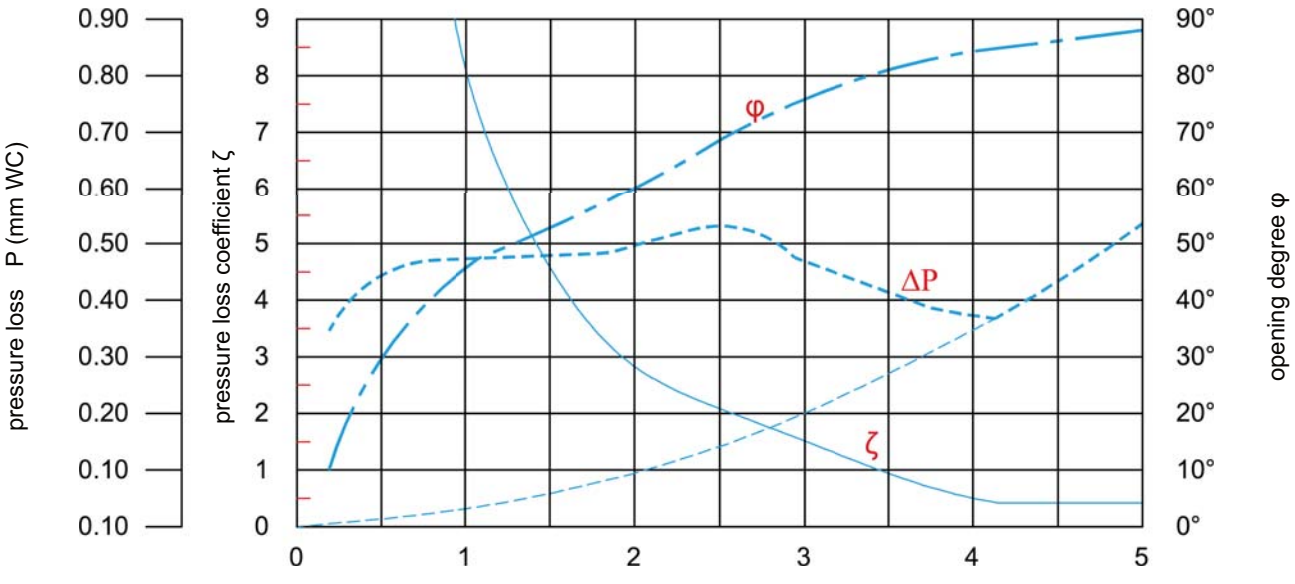
Closing time can be adjusted to 30-seconds max. as standard, by a flow control valve.

Order for non-return valve with damping system should contain return (or differential) pressure and closing time. The following table shows information on the size, return pressure, type and number of cylinders.

DN	PN	Cylinder		PN	Cylinder	
mm	bar	Diameter (mm)	Quantity	bar	Diameter (mm)	Quantity
200	14.5	63	1	25	63	1
250	12.5	63	1	25	63	1
300	8.5	63	1	20	63	1
350	5.4	90	1	16	90	1
400	3.6	90	1	12	90	1
450	4.5	90	1	12	90	2
500	3.3	90	1	10	90	2
600	3.2	125	1	10	125	2
700	3.1	125	1	10	125	2
800	2.9	125	1	10	125	2
900	2.9	125	1	10	125	2
1000	2.9	125	1	10	140	2
1200	2.6	125	2	5	140	2
1400	2.2	125	2	4	140	2

Other pressure differentials as per request.

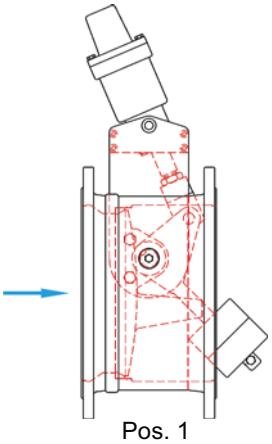
Illustration of tilting disc with counter weight of DN 400 and PN 10 installed in horizontal position.
Due to geometrical similarity, this graph could also be used for other valve sizes.



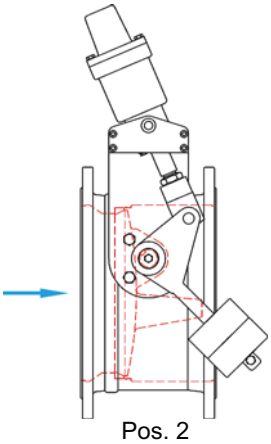
--- pressure loss when the valve is fully open

Positions of hydraulic cylinder on Non-return valve

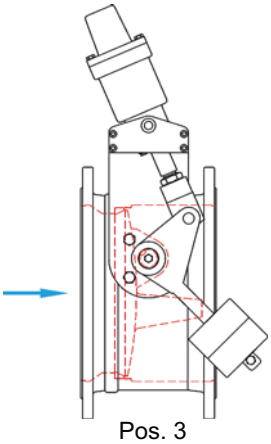
Horizontal pipeline:



Pos. 1
Weight and damping on the left side of the valve in flow direction

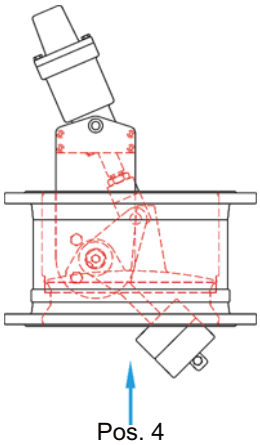


Pos. 2
Weight and damping on the right side of the valve in flow direction

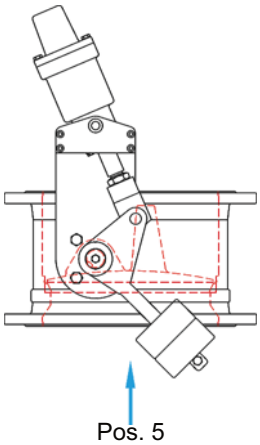


Pos. 3
Weight and damping on both sides of the valve

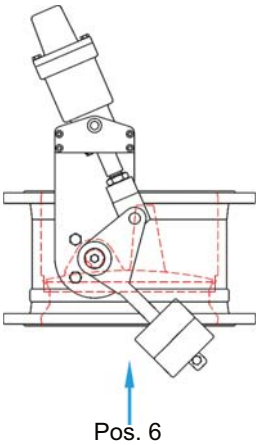
Vertical pipeline with flow direction upward:



Pos. 4

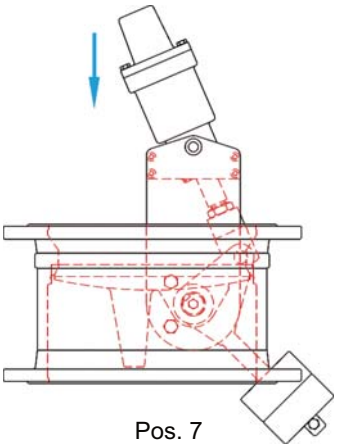


Pos. 5

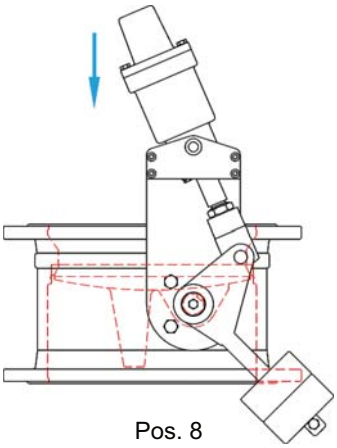


Pos. 6
Weight and damping on both side of the valve

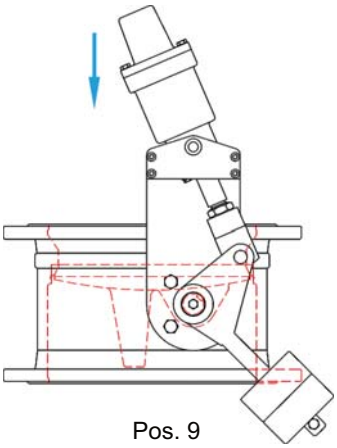
Vertical pipeline with flow direction downward:



Pos. 7



Pos. 8



Pos. 9
Weight and damping on both sides of the valve

Please indicate position of damping system in your order.
Note: Normally ,Mirab products are made according to the horizontal lines

AB VALVES' PRODUCTS

- Butterfly Valves Flange Type (BVF)
- Butterfly Valves Wafer Type (BVW)
- Butterfly Valves Wafer Type for Sea Water (BVS)
- Gate Valves (GV)
- Valves for Special Applications
- Air Valves (AV)
- Hydrants (HT)
- Automatic Control Valves (RV)
- Non-Return Valves (NV)
- Strainers (STR)
- Accessories
- Actuators

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