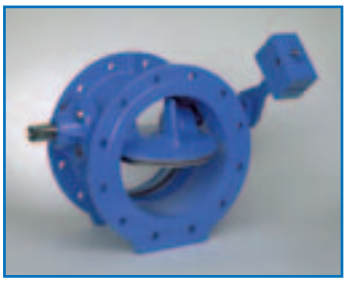
ERHARD VALVES

Tilting-disc Check Valves
Short Body

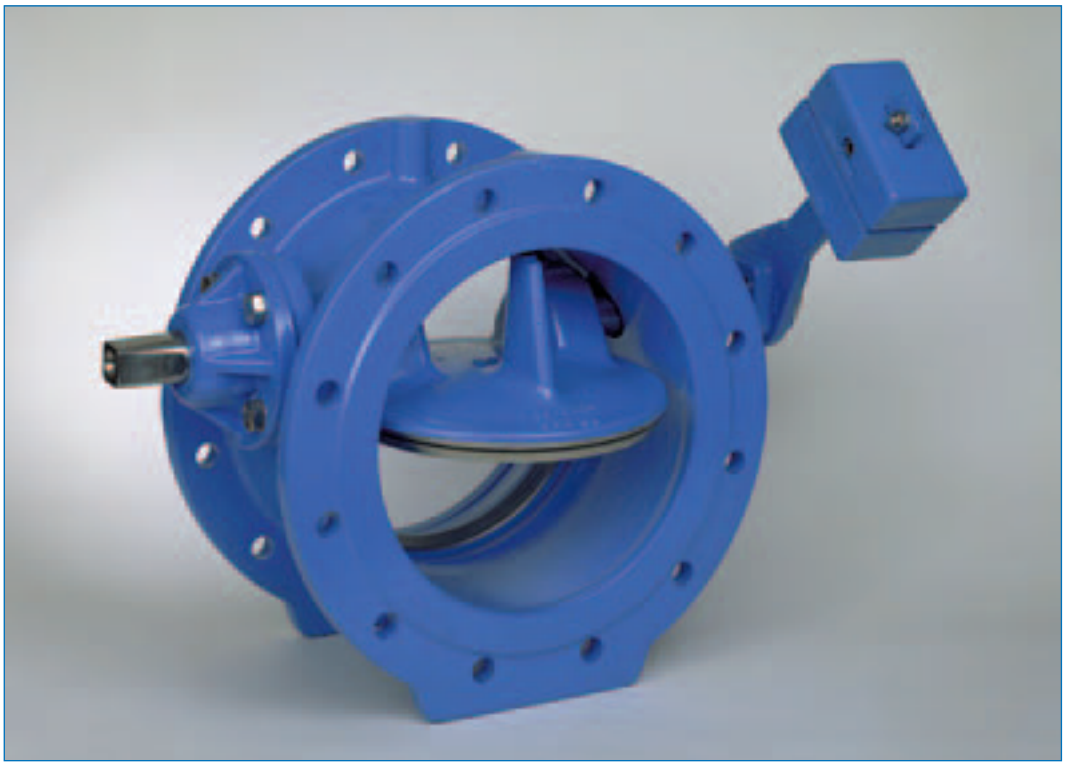


tyco / Flow Control / Tyco Waterworks

Tilting-disc Check Valves, Short Body to DIN 3202 Series F4 for liquids and gases, PN 10 - PN 40, DN 150 - DN 2000

Short Body Tilting-disc Check Valves – More than 40 years' experience – Thousands of applications

- field-approved design
- double-offset free-swinging disc
- stainless-steel disc facing with resilient-rubber precision sealing
- stainless-steel body seat
- lever connection facilities provided on both sides
- low weight due to short face-to-face dimension
- maintenance-free
- economical
- standard design available from stock



Scope of Supply

Sizes

DN 150 - DN 2000

Pressure ratings

PN 10 - PN 40

W orking temperatures

- 20°C up to + 60°C
  for liquids

Connection

With flanges to DIN

With flanges to international standards

Materials

Body and valve disc

Ductile cast iron GGG

Cast iron GG

High-grade cast steel

W elded steel, stainless steel

Seals

NBR, EPDM or Viton

Protection against Corrosion

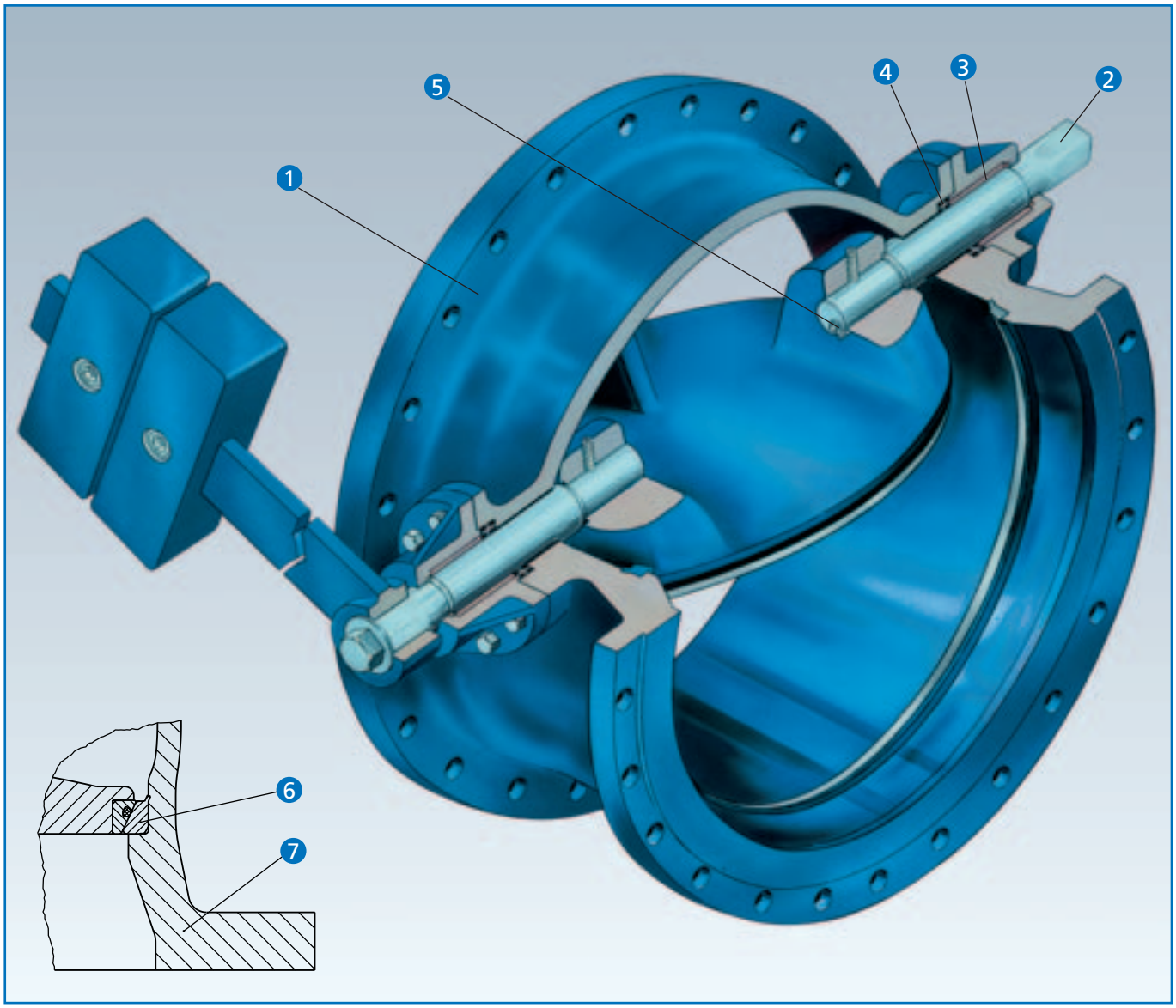
EKB epox coating

Coating according to customers' request

Internal rubber lining, hard or soft

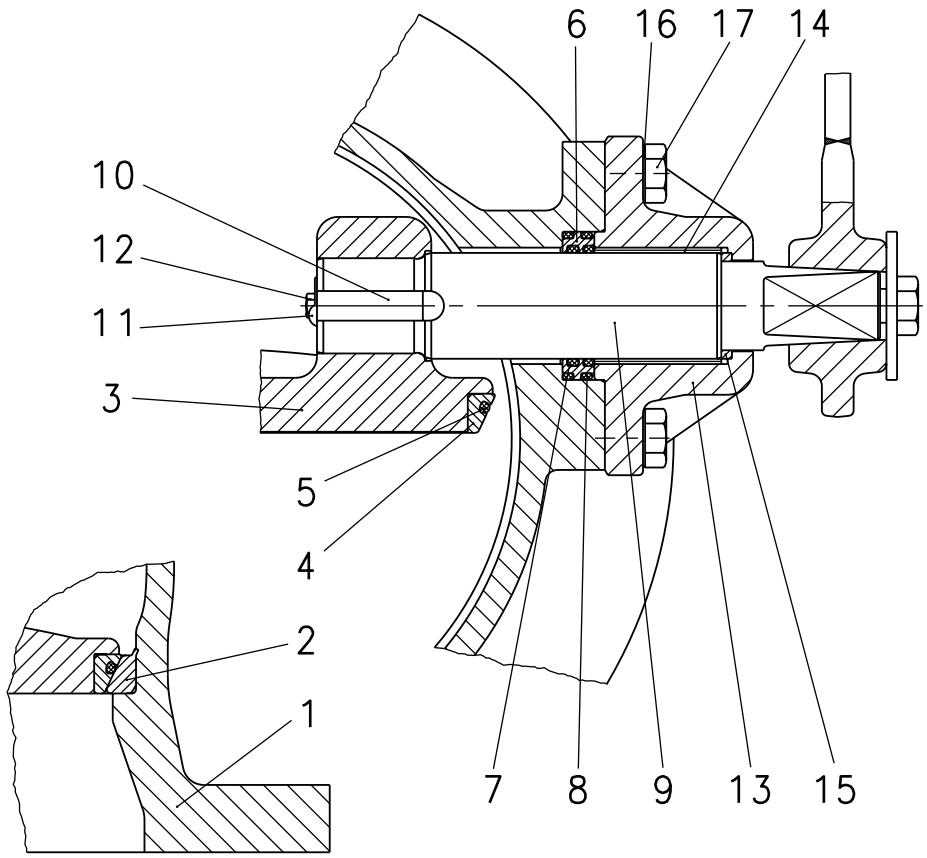
In order to avoid any risk of injury, in accordance with the national safety regulations it is necessary to restrict access to the area in which the weight-loaded lever can move. Appropriate safety devices have to be provided by the user. On request, we can supply suitable protective guards.

Self-evident Advantages



1. Robust body and streamlined disc.
2. Shafts protruding on both sides facilitating individual mounting of the weight-loaded lever.
3. Maintenance-free, self-lubricating shaft bearings (long shaft supports).
4. Maintenance-free shaft-sealing.
5. Robust disc-to-shaft key connection with special key securing device.
6. Solid, rolled-in body seat ring of stainless steel.
7. Disc facing ring of stainless steel plus resilient precision seal.

Tilting-disc Check Valves – Details

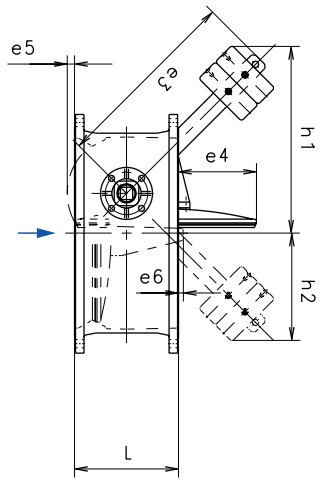


Standard design with weight-loaded lever

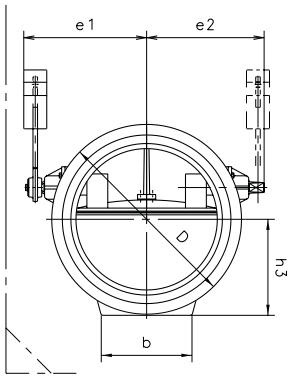
Product No.
PN 10: 5503 9560
PN 16: 5504 9560
PN 25: 5505 9560

Item	Description	Materials	Coating
1	Body	Ductile cast iron GGG	EKB epoxy
2	Seat ring	Austenitic CrNi steel	
3	Valve disc 1)	Ductile cast iron GGG	EKB epoxy
4	Disc facing ring	Austenitic CrNi steel	
5	O-ring	Elastomer (NBR)	
6	Spacer	Austenitic CrNi steel	
7	O-ring	Elastomer (NBR)	
8	O-ring	Elastomer (NBR)	
9	Shaft	Ferritic chrome steel	
10	Key	Ferritic chrome steel	
11	Locking plate	Austenitic CrNi steel	
12	Hexagon bolt	Stainless steel A4	
13	Flanged bearing	Ductile cast iron GGG	EKB epoxy
14	Bush	Steel-tin-PTFE	
15	Fitting ring	Brass	
16	Washer	Austenitic CrNi steel	
17	Hexagon bolt	Stainless steel A2	
18	Lever	Steel	EKB epoxy

[1] DN 150: austenitic CrNi steel



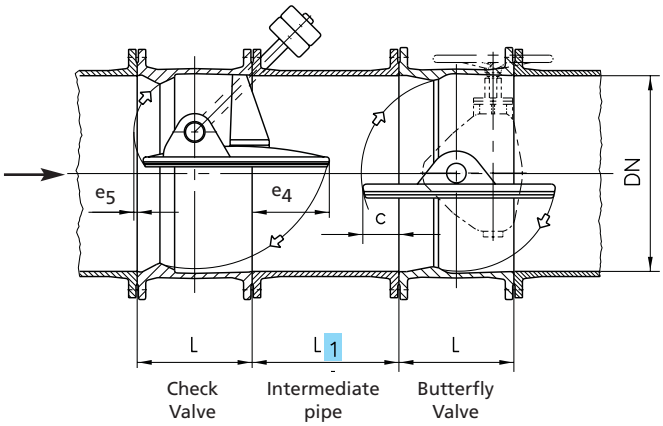
For DN 700 and larger, the valve disc protrudes – during its travel – from the body on the inlet side.



Protective guard to be mounted by user

Nominal size	Face-to-face dimension	Flange dia.	Flange dia.	Space requirement								Feet dimensions			Weight		Volume
		PN 10	PN 16												PN 10	PN 16	
DN	L	D	D	e_1	e_2	e_3	e_4	e_5	e_6	h_1	h_2	b	h_3	h_3	abt.	abt.	m^3
mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg	kg	
150	210	-	285	230	210	230	-	-	-	210	150	150	-	145	-	45	0,03
200	230	340	340	270	245	250	20			240	155	160	175	175	55	65	0,05
250	250	400	400	300	280	250	45	-	-	250	145	180	205	205	80	90	0,08
300	270	455	455	350	325	300	70	-	-	300	180	200	230	230	105	115	0,12
350	290	505	520	375	350	350	95	-	-	350	200	225	260	270	140	160	0,18
400	310	565	580	400	375	400	118	-	-	390	230	250	290	295	170	195	0,23
450	330	615	640	450	410	450	142	-	-	450	260	250	315	325	210	240	0,32
500	350	670	715	480	445	500	165	-	-	500	290	300	340	360	270	330	0,41
600	390	780	840	560	515	600	215	-	-	600	350	330	395	425	380	430	0,71
700	430	895	910	640	600	700	263	10	-	680	400	400	455	460	520	570	0,99
800	470	1015	1025	690	655	800	315	15	5	800	460	450	515	520	720	765	1,42
900	510	1115	1125	750	725	900	364	30	20	890	510	550	562	570	950	1020	1,95
1000	550	1230	1255	820	780	1000	410	40	30	990	570	60	630	635	1200	1290	2,58
1100	590	1340	1355	895	860	1000	455	55	45	1030	570	650	680	690	1380	1500	2,88
1200	630	1455	1485	975	935	1000	515	62	35	990	490	700	730	750	1880	2020	3,43
1400	710	1675	1685	1070	1070	1000	615	80	80	1070	480	800	845	850	2970	3120	4,55

Suggestion for Installation of Check Valve and Butterfly Valve



Attention! Installation must be effected in such a way that the weight-loaded lever of the Check Valve is on the left seen in flow direction and that the gearbox of the Butterfly Valve is on the right, seen in flow direction. Thus, there will be no collision between weight-loaded lever and gearbox.

DN	L	L_1	e_4	e_5	c
mm	mm	mm	mm	mm	mm
150	210	-	-	-	-
200	230	150	20	-	-
250	250	150	45	-	-
300	270	150	70	-	2
350	290	200	95	-	25
400	310	225	118	-	40
450	330	250	142	-	55
500	350	300	165	-	65
600	390	400	215	-	95
700	430	500	263	10	120
800	470	600	315	15	150
900	510	650	364	30	180
1000	550	750	410	40	210
1100	590	800	455	55	225
1200	630	900	515	62	270
1400	710	1100	615	80	320

Tilting-disc Check Valves with Hydraulic Damping Device Soe

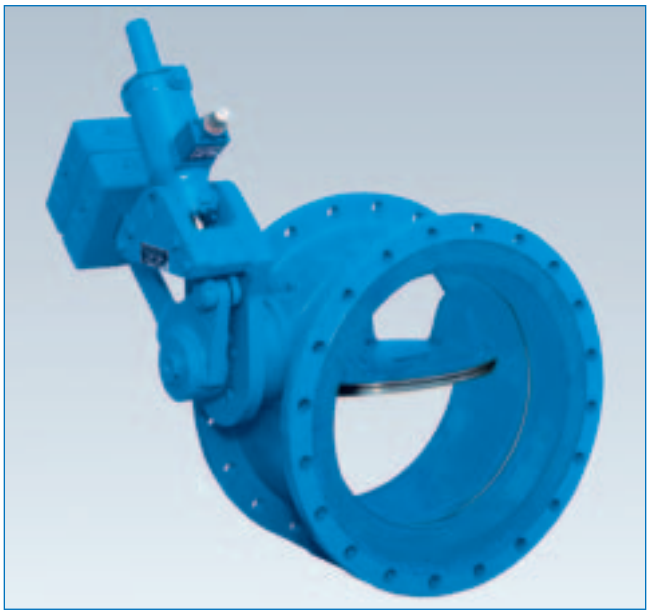
Tilting-disc Check Valves with Hydraulic Damping Device are used in the following cases:

- If reverse flow is permitted and the valve has to close in a retarded way. The requested closing time can be set exactly by means of a flow control valve relatively irrespective of pressure and viscosity.

Soft, damped closing. Minimizing water hammer phenomena.

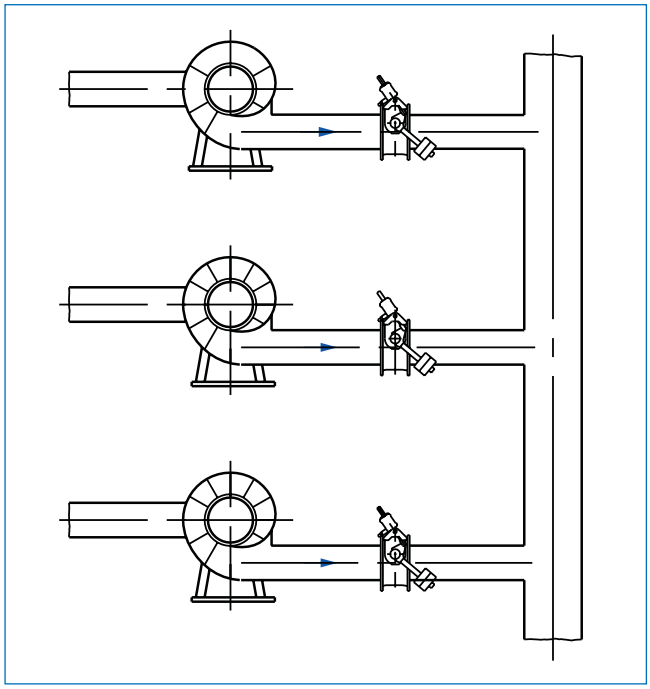
- If effective non-slam performance is required. The hydraulic damping device acts in both limit positions keeping the disc from chattering over the whole travel.

Minimizing possible disc slams, safe operation.



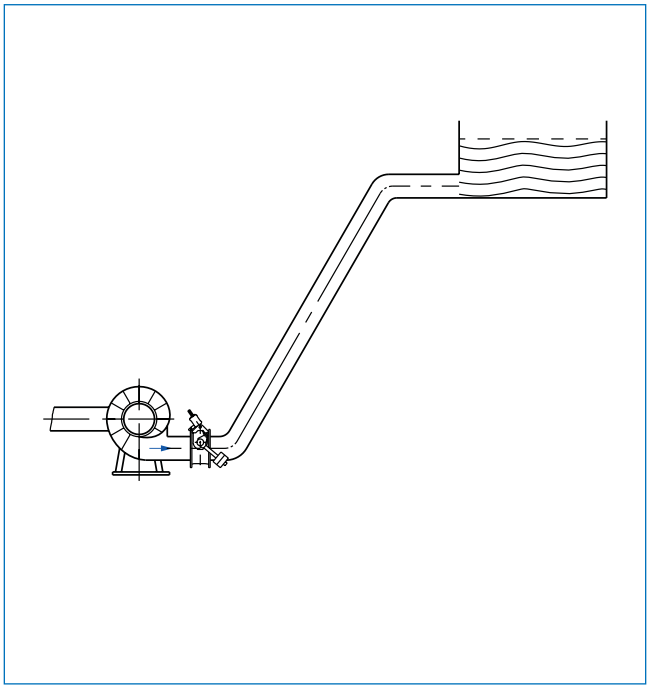
Typical Applications for Tilting-disc Check Valves with Hydraulic Damping Device

Collecting pipe with parallel pumps



- Short pipeline.
- In case of failure of a pump with small flywheel, there will be abrupt flow reversal and acceleration of the closing movement. **Without** hydraulic damping device, this would lead to slams and considerable water hammer phenomena.
- The back pressure acting upon the closing valve disc is the pump pressure.

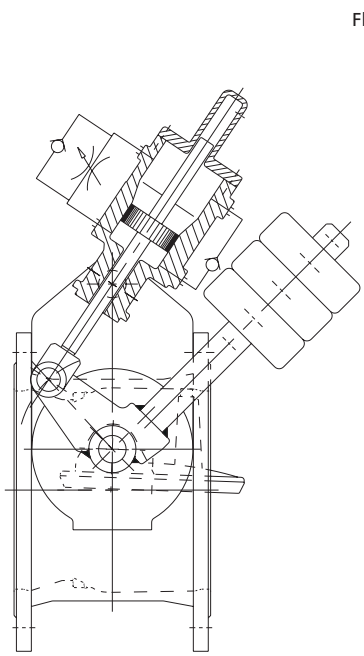
Rising mains



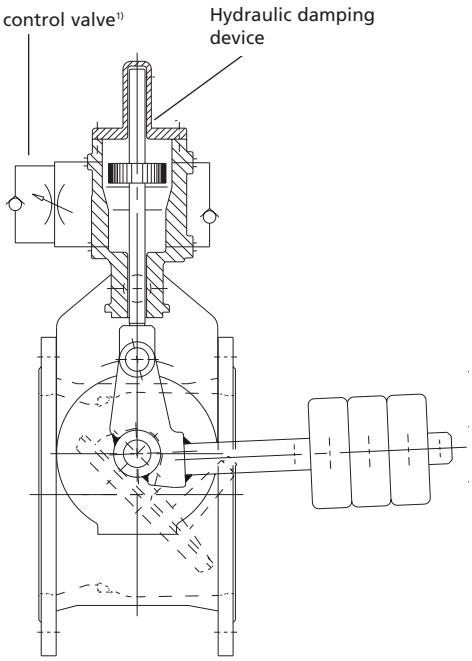
- Long, steep pipeline, considerable flow retardation.
- Increased delivery head.
- Quick flow reversal leading to slams and water hammer phenomena.
- The back pressure acting upon the closing valve disc is the delivery head.

Functional and Control Diagram of a Hydraulic Damping Device Soe

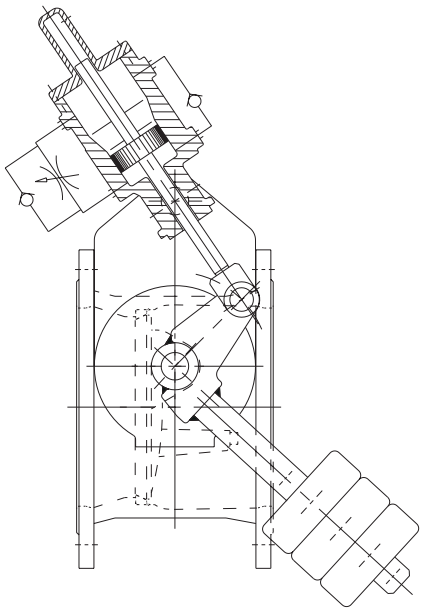
ERHARD Hydraulic Damping Devices are double-acting, i.e., damping is effective in Opening direction and in Closing direction. Appropriate kinematics and shape of the damping cylinder brings about the damping zones shown in the below diagram. The hydraulic damping device is of very compact design and well approved in terms of ease of maintenance, adjustability, and functionality thanks to its being installed externally.



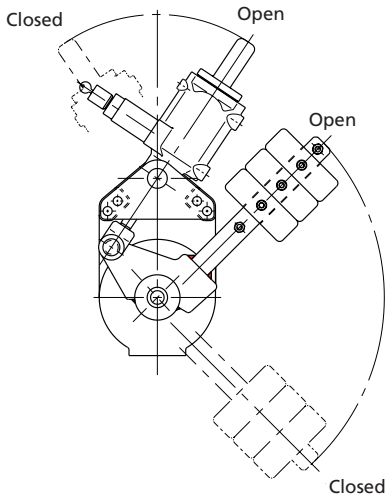
Check Valve
damped in OPEN position

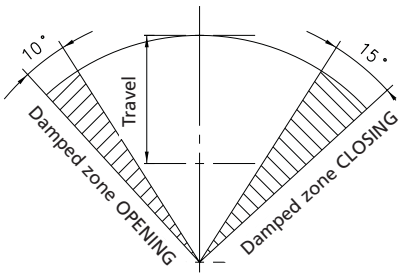


Check Valve in CENTRAL position,
50 % open



Check Valve damped
in CLOSED position





[1)] With the standard design, the damping time can be set at the flow control valve up to max. 30 s. Longer closing times upon request.

If the standard types are equipped with hydraulic damping cylinder, due to shaft dimensioning and material, the admissible back pressure is limited as follows:

DN	150	200	250	300	350	400	450	500	600	700	800	900	1000
Max. admiss. back press. in bars	12,5	14,5	7,1	8,5	5,4	3,6	4,5	3,3	3,2	3,1	2,9	2,9	2,9

Types for higher back pressure upon request.

Lever arrangement

For horizontal pipes

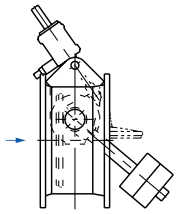


Fig. 1
Counterweight with damping device on the left, seen in flow direction

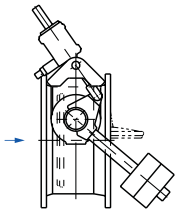


Fig. 2
Counterweight with damping device on the right, seen in flow direction

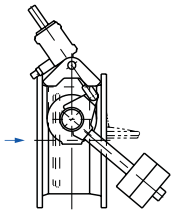


Fig. 3
Counterweight with damping device on both sides

For vertical pipes, upward flow

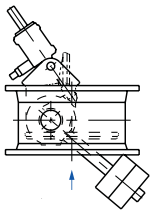


Fig. 4

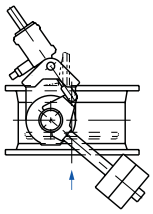


Fig. 5

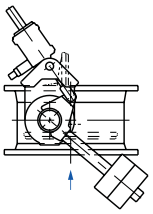


Fig. 6
Counterweight with damping device on both sides

For vertical pipes, downward flow

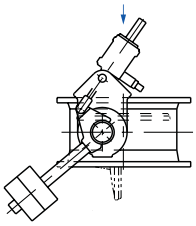


Fig. 7

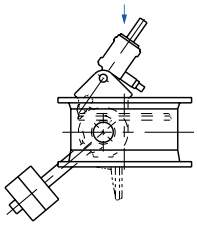


Fig. 8

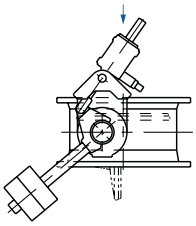


Fig. 9
Counterweight with damping device on both sides

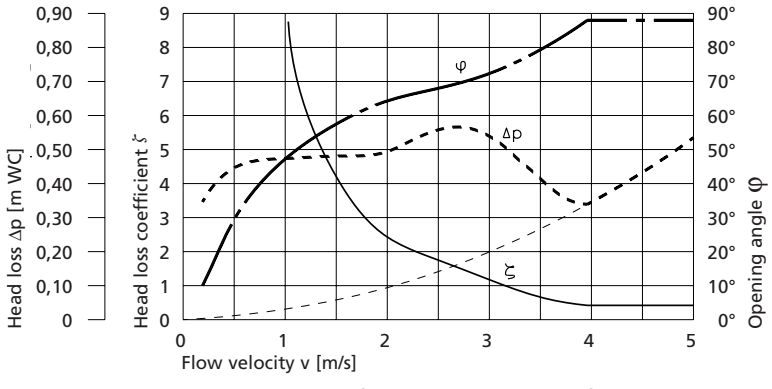
When placing the order, please specify the fig. No. of the lever arrangement.

Special design

ERHARD Tilting-disc Check Valve with pneumatic full-opening device, ensuring:

- low head loss irrespective of the opening degree
- very economical operation

Characteristic Curves



--- Head loss under fully open condition with full-opening device

Measured curve of an **ERHARD** Tilting-disc Check Valve DN 500, PN 10, with weight-loaded lever for installation into a horizontal water pipeline.

Thanks to geometric similarity, the values can be applied to other nominal sizes for approximate calculation.

Please, contact us for exact values, data, and calculation.

ERHARD VALVES

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