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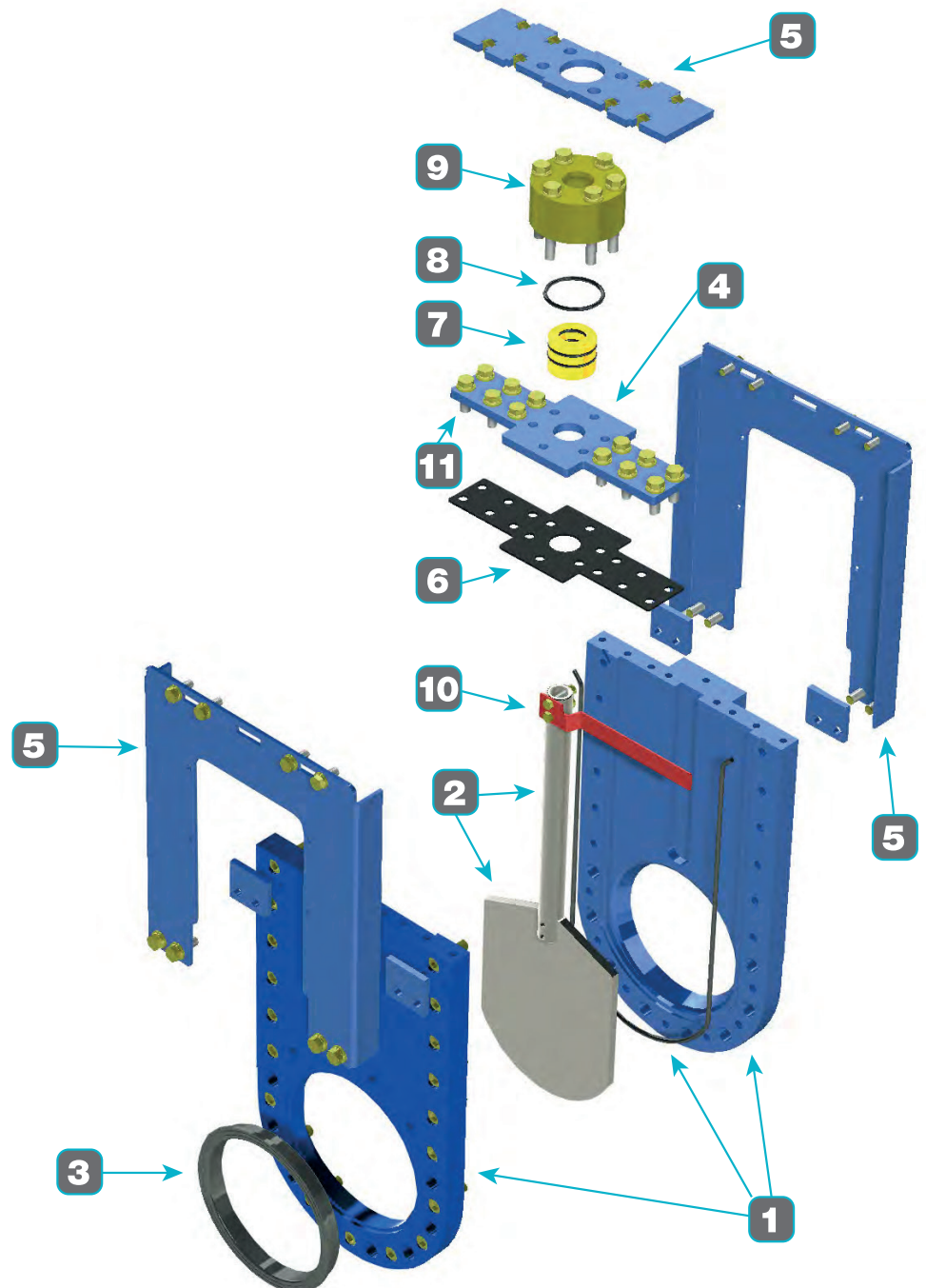
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1. Construction and Terminology

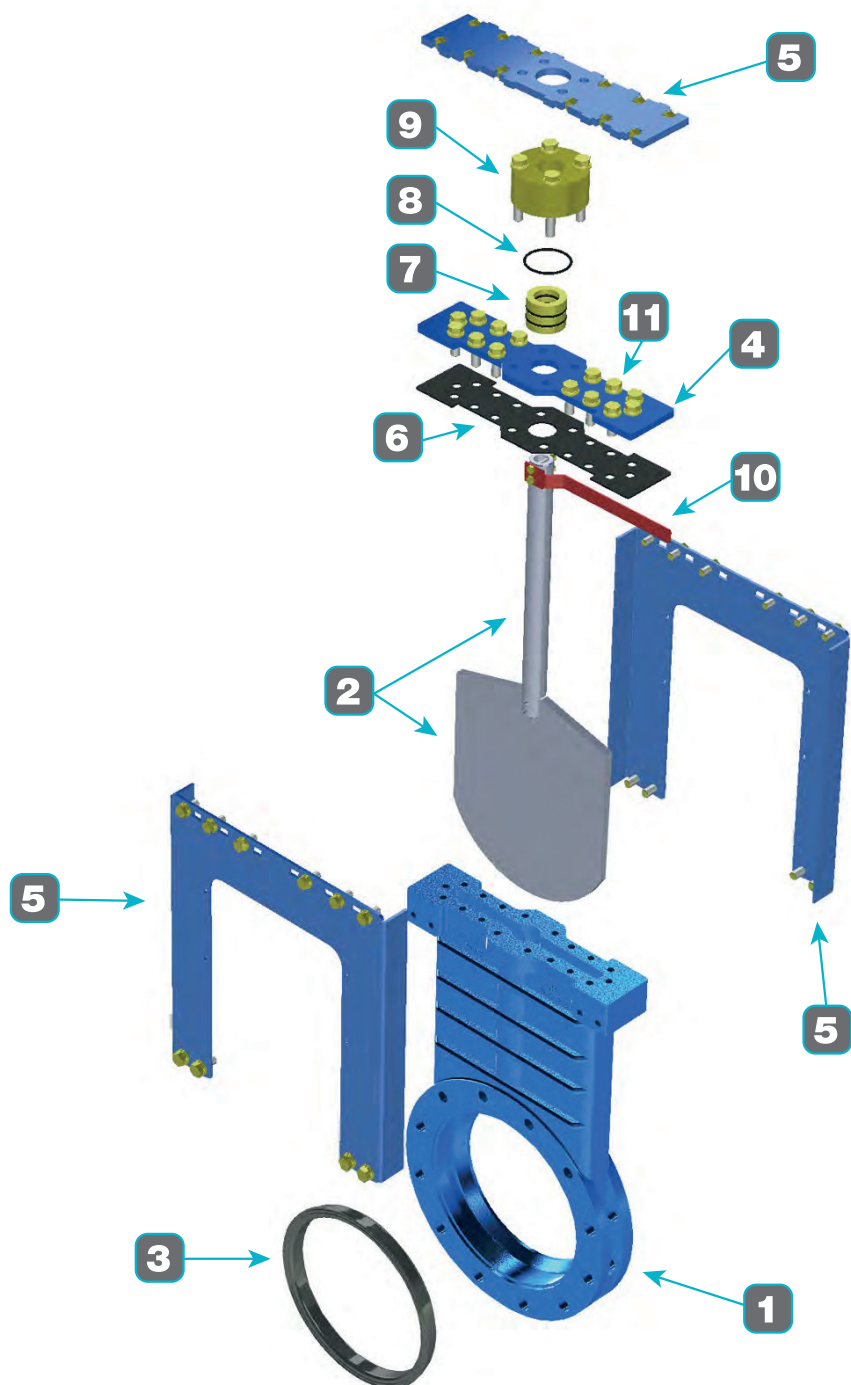
1.1. Description and Materials: Two Half Body (FH600/650, Series M)

Nr.	PART	CARBON STEEL	316/316L
1	Body (Body seal)	Zinc + Epoxy coated S355J2 (NBR, Viton)	316/316L (NBR, Viton)
2	Gate - Shaft	304/304L	316/316L
3	Seat	Butyl, NBR, EPDM, PTFE, Metal etc.	
4	Body cover	Zinc + Epoxy coated, Carbon Steel	316/316L
5	Support case	Zinc + Epoxy coated, Carbon Steel, 316/316L	
6	Body cover seal	NBR, Viton	
7	Bushing	Brass, Bronze	
8	O-ring	NBR, Viton	
9	Bushing	Bichromate Steel, 316/316L	
10	Indicator plate	304/304L	
11	Screw	Bichromate Steel, Stainless Steel	



1.2. Description and Materials: One-Piece Body (FH600/650, Series F)

Nr.	PART	CARBON STEEL	CF8M
1	Body (Body seal)	Epoxy coated A216 WCB	CF8M
2	Gate - Shaft	304/304L	316/316L
3	Seat	Butyl, NBR, EPDM, PTFE, Metal etc.	
4	Body cover	Zinc + Epoxy coated, Carbon Steel	316/316L
5	Support case	Zinc + Epoxy coated, Carbon Steel, 316/316L	
6	Body cover seal	NBR, Viton	
7	Bushing	Brass, Bronze	
8	O-ring	NBR, Viton	
9	Bushing	Bichromate Steel, 316/316L	
10	Indicator plate	304/304L	
11	Screw	Bichromate Steel, Stainless Steel	



1.3. Main components

1.3.1. Body (Body seal)

The body of the knife gate valve FH600/650 series M consists of two half bodies joined together by screws. The material can be carbon steel with an electrozinc treatment that is epoxy-coated RAL 5017, or 316/316L stainless steel. In FH600/650 series M, the sealing of the body is carried out by means of an o-ring between the two half bodies.

The FH600/650 series F valve body is one-piece cast carbon steel A216 WCB with epoxy protection RAL 5017, or CF8M. It can be supplied in other materials on request.

1.3.2. Gate-Shaft

Standard manufacturing materials are stainless steel 304/304L in valves with carbon steel body, and 316/316L stainless steel in valves with stainless steel body 316/316L or CF8M. For other materials or combinations, please check.

The gate is polished on both sides to provide a smooth, even contact surface with the sealing gasket. There are different degrees of polishing available, as well as a range of anti-abrasion treatments and modifications to adapt to the specific requirements of special facilities.

1.3.3. Seat

This part ensures the valve is 100% sealed.

The standard seal is made using a metal ring that is vulcanised with different types of elastomers, depending on its application.

COMPARISON TABLE OF RUBBER TEMPERATURES:

ELASTOMERS	MIN. TEMP.	MAX. TEMP.
Butyl	-15°C	130°C
NBR	-20°C	100°C
EPDM	-25°C	100°C
Viton	-5°C	220°C
Silicone	-40°C	250°C

BUTYL

This is the standard seat. It can be used in a wide range of applications.

NBR

Suitable for fluids containing grease or oil at temperatures no higher than 100°C.

EPDM

Generally used for water and water-diluted products at temperatures no higher than 100°C. It can also be used with abrasive products.

VITON

Suitable for corrosive applications and for high temperatures up to 190°C continually and for peaks up to 220°C.

SILICONE

Mainly used in the food industry and for pharmaceutical products with temperatures no higher than 250°C.

PTFE

It is not constructed with the inner metal ring. Suitable for corrosive applications and also for the food industry.

OTHER

The seat can be supplied in different types of elastomers on request.

1.3.4. Body cover

Standard manufacturing materials are zinc+epoxy-coated carbon steel in valves with carbon steel body, and 316/316L stainless steel in valves with stainless steel body 316/316L or CF8M.

1.3.5. Support case

Designed in a U shape for greater resistance and manufactured in an electrozinc treatment that is epoxy-coated RAL 5017. The support case can also be supplied entirely manufactured in stainless steel on request.

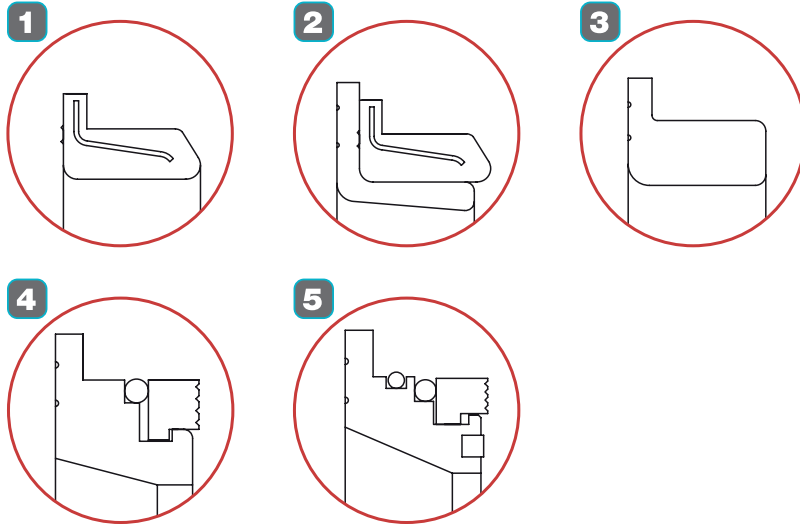
1.3.6. Body cover seal

Housed in the body cover, this seal provides the sealing in the upper part of the body in both the M-series and the F-series.

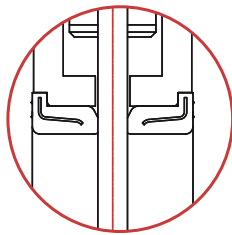
1.4. Types of closure

1	Seat
2	Seat + Scraper Deflector / Ref. 2310
3	M/M Metal/Metal Deflector / Ref. 2313
4	PTFE Deflector / Ref. 2317
5	S.L.R. Deflector / Ref. 2316

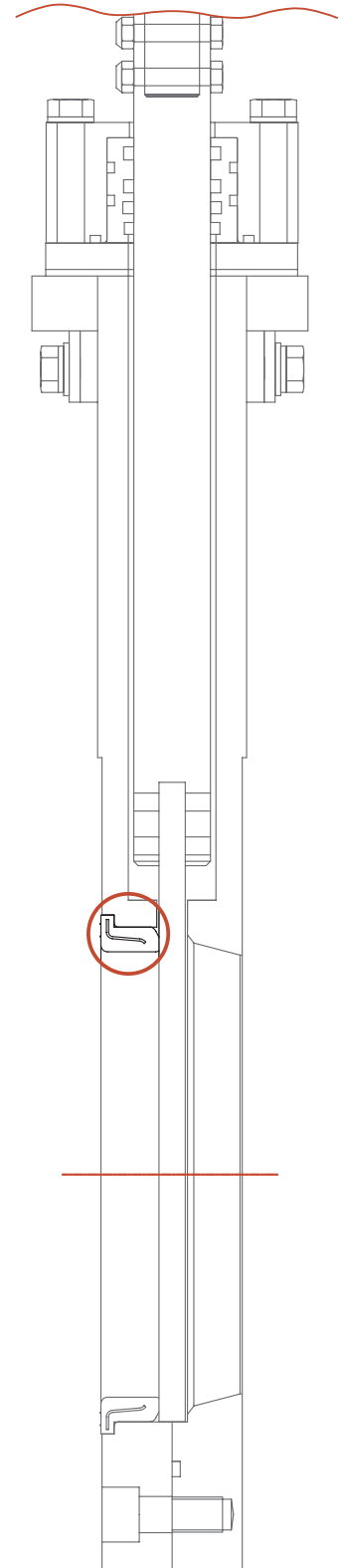
TYPE FH600: UNIDIRECTIONAL TIGHTNESS



TYPE FH650: BIDIRECTIONAL TIGHTNESS (WITH ANY TYPE OF SEAT)



Sample of bidirectional tightness with two seats.



1.5. Options and accessories

Flushing holes

Locking devices

They lock the valve to prevent it from being unduly operated.

Manual emergency drives (handwheel, lever)

They enable the pneumatic valves to be manually handled in the event of failure or loss of pressure in the air system.

Columns and extensions

They make it easier to operate the valve in situations with complicated access.

Mechanical travel stops

Allow mechanical regulation of pneumatic cylinder.

Travel stop supports

They enable different types of detectors and positioners to be put into place.

Mechanical limits switches, inductive sensors and positioners

To indicate the precise or continual position of the valve.

Pneumatic distributors or electro-distributors

To distribute air to the pneumatic drives.

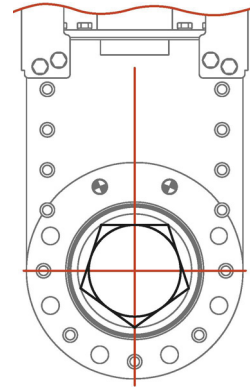
Mirror-polished gate

Particularly recommended for the food industry and, in general, for applications where the solids need to slide off and not get stuck to the gate.

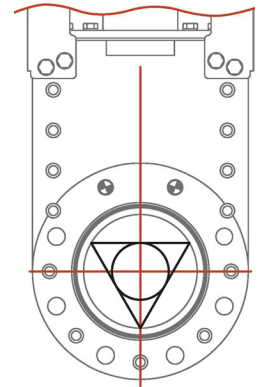
Hard chrome gate

Provides increased hardness and greater resistance to abrasion

Flow Controllers

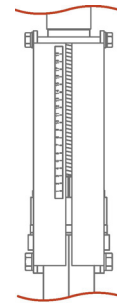
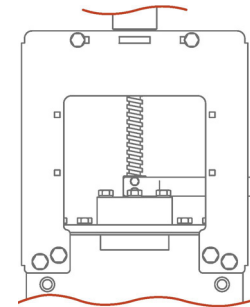


Pentagonal diaphragm



Triangular diaphragm

Graduated Position Indicator



1.6. Pressure drops

DN	Kv	Cv
50	167	160
65	290	275
80	380	365
100	650	620
125	1165	1115
150	1520	1450
200	2835	2710
250	4485	4285
300	5675	5420
350	7130	6810
400	9220	8805
450	11465	10950
500	14940	14270
600	21875	20895

DN: nominal diameter in mm

$$Kv = Q \sqrt{\frac{d'}{\Delta P}}$$

$$\Delta P = \left(\frac{Q}{Kv} \right)^2 d$$

Kv: flow coefficient. Flow of water in m³/h passing through the valve and generating a pressure drop of 1 bar.

Q: flow in m³/h

ΔP: pressure drop in bar

d: relative density of the fluid (1 in the case of water at 4°C)

$$Cv = Q \sqrt{\frac{d}{\Delta P}}$$

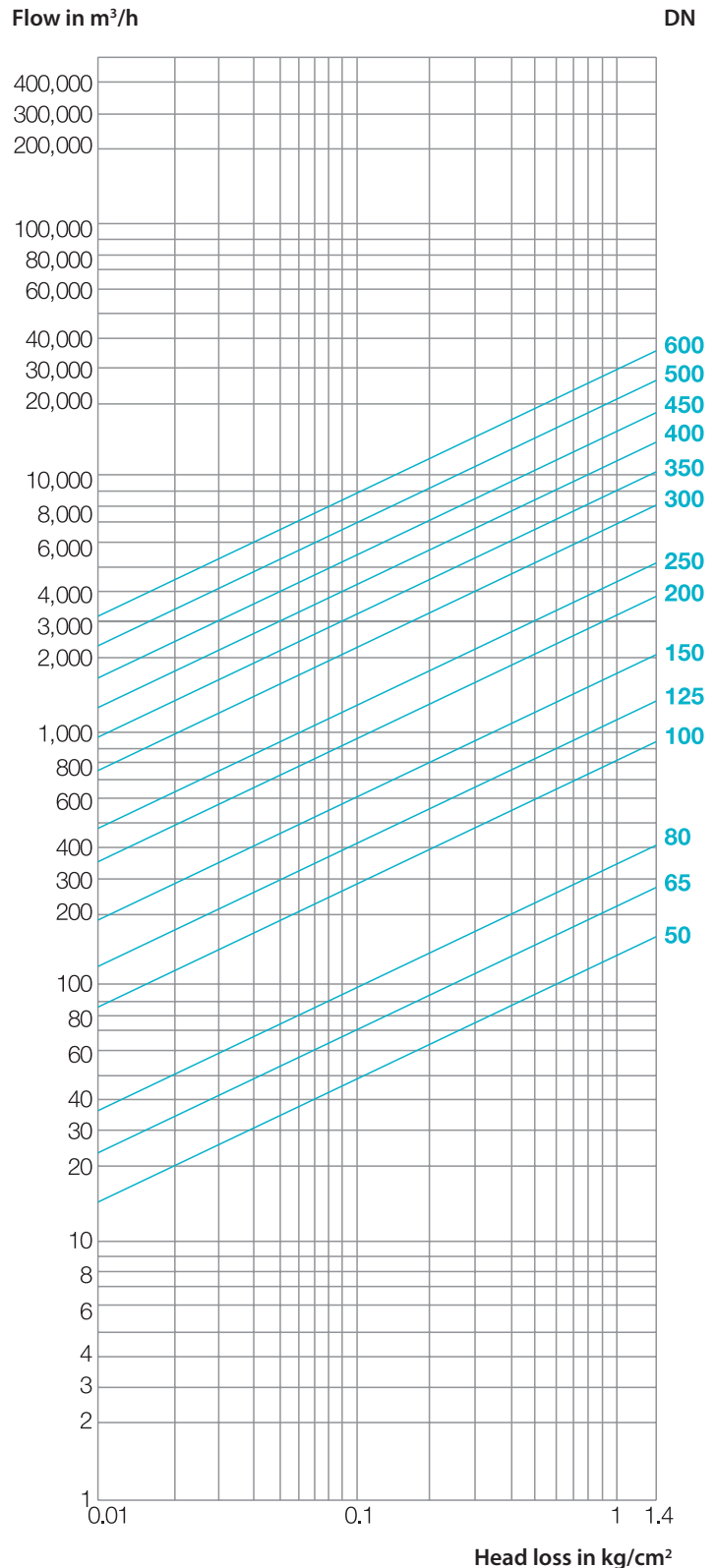
$$\Delta P = \left(\frac{Q}{Cv} \right)^2 d$$

Cv: gallons per minute that pass through the valve for the pressure drop to be 1 psi.

Q: flow in gallons/min

ΔP: pressure drop in psi

d: relative density of the fluid (1 in the case of water at 60°F)



2. Drives

The knife gate valves FH600/650 can be activated with different types of drives, both manual and automatic. A correct choice of the type of drive will enable a more efficient use of the valve.

Please check with our Technical Department to select the most appropriate drive for your needs.

MANUAL DRIVES

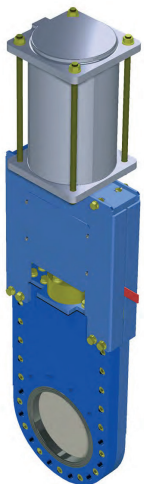


Handwheel
with rising stem



Gear
operator

AUTOMATIC DRIVES



Double acting
pneumatic cylinder



Single effect
pneumatic cylinder



Electric
actuator



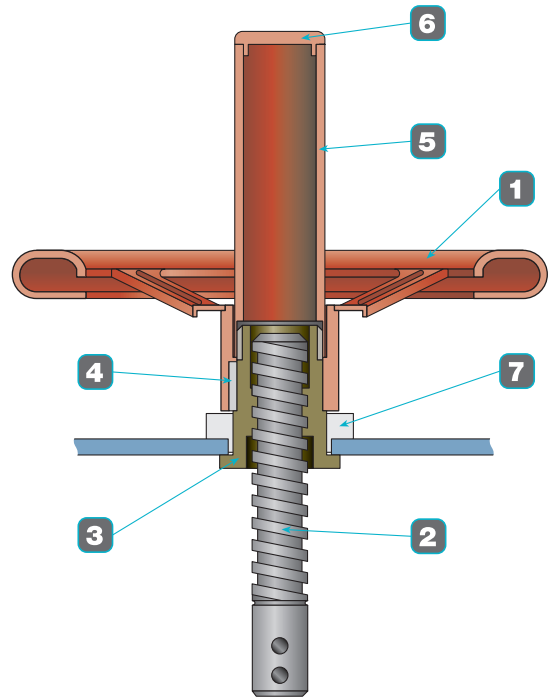
Hydraulic
cylinder

2.1. Handwheel with rising stem

Manufactured from DN50 up to DN600.
For any other sizes, please check with our Technical Department.

Nr.	PART	MATERIAL	UNITS
1	Handwheel	Steel	1
2	Stem	AISI 303	1
3	Nut	Brass	1
4	Cotter	Steel	1
5	Protection	Steel	1
6	Plug	Plastic	1
7	Bearing	Nylon	1

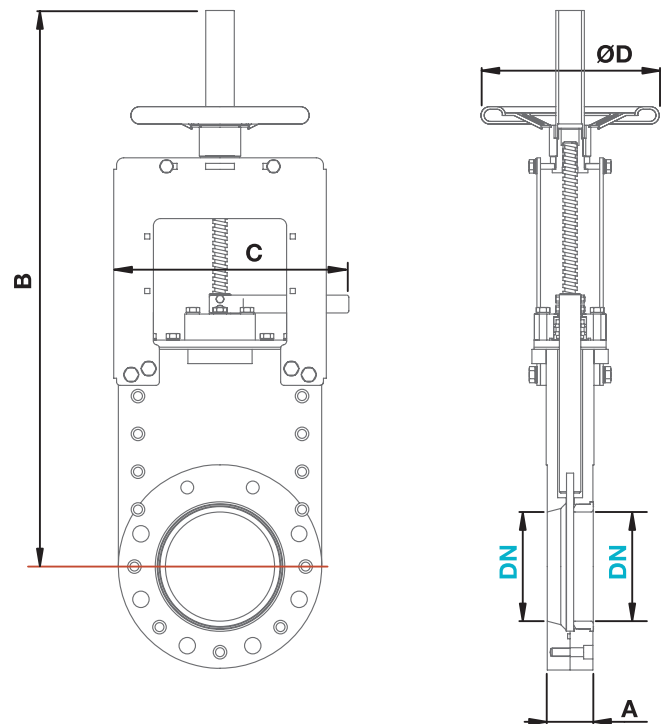
*Other materials available on request.



MEASUREMENTS [mm]

DN	A	B	C	ØD
50	40	413	186,5	200
65	40	446	187,5	200
80	50	511,5	242	200
100	51	599	237,5	200
125	53	680,5	307	250
150	64	779,5	330	250
200	64	1044,5	418	300
250	80	1208	485,5	350
300	82	1388,5	506	350
350	108	1547	571	500
400	109	1750,5	620	500
450	119	1984,5	698	500
500	123	2091	727	500
600	151	2611	859	500

Assembly between flanges PN10

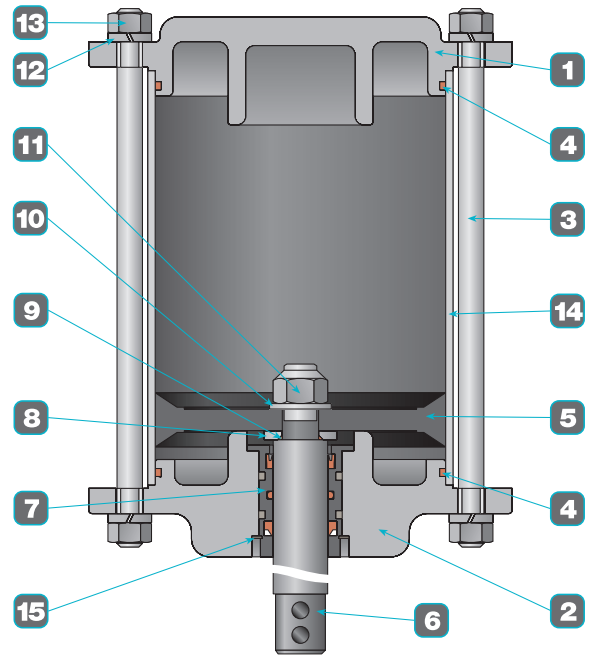


2.2. Double acting pneumatic cylinder

Manufactured from DN50 up to DN600.
For any other sizes, please check with our Technical Department.

Nr.	PART	MATERIAL	UNITS
1	Top cover	Aluminium	1
2	Bottom cover	Aluminium	1
3	Tie rods	Bichromate steel	4
4	O-ring	NBR	2
5	Piston	NBR	1
6	Shaft	Chromate steel	1
7	Bushing	Delrin	1
	Collar	NBR	1
	Inner ring	NBR	1
	Outer ring	NBR	2
	Scraper	Polyurethane	1
8	Bearing	Bichromate steel	1
9	O-ring	NBR	1
10	Bearing DIN125	Bichromate steel	1
11	Self-locking nut DIN127	Bichromate steel	1
12	Grower bearing DIN127	Bichromate steel	8
13	Nut DIN934	Bichromate steel	8
14	Jacket	Aluminium	1
15	Safety ring DIN471	Bichromate steel	1

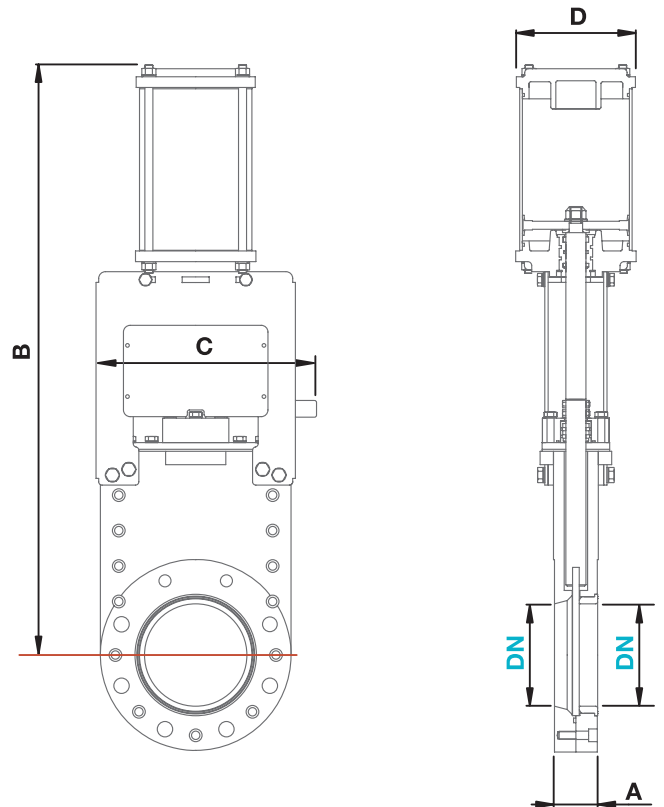
*Other materials available on request.



MEASUREMENTS [mm]

DN	A	B	C	D
50	40	512	186,5	118
65	40	551,5	187,5	118
80	50	621	242	144
100	51	700	237,5	144
125	53	780,5	307	180
150	64	882	330	180
200	64	1154,5	480	180
250	80	1324,5	485,5	220
300	82	1514	506	280
350	108	1677,5	571	280
400	109	1883	620	280
450	119	2127	698	280
500	123	2227,5	727	280
600	151	2811,5	859	435

Assembly between flanges PN10



2.3. Single acting pneumatic cylinder

Manufactured from DN50 up to DN300 using a spring system.

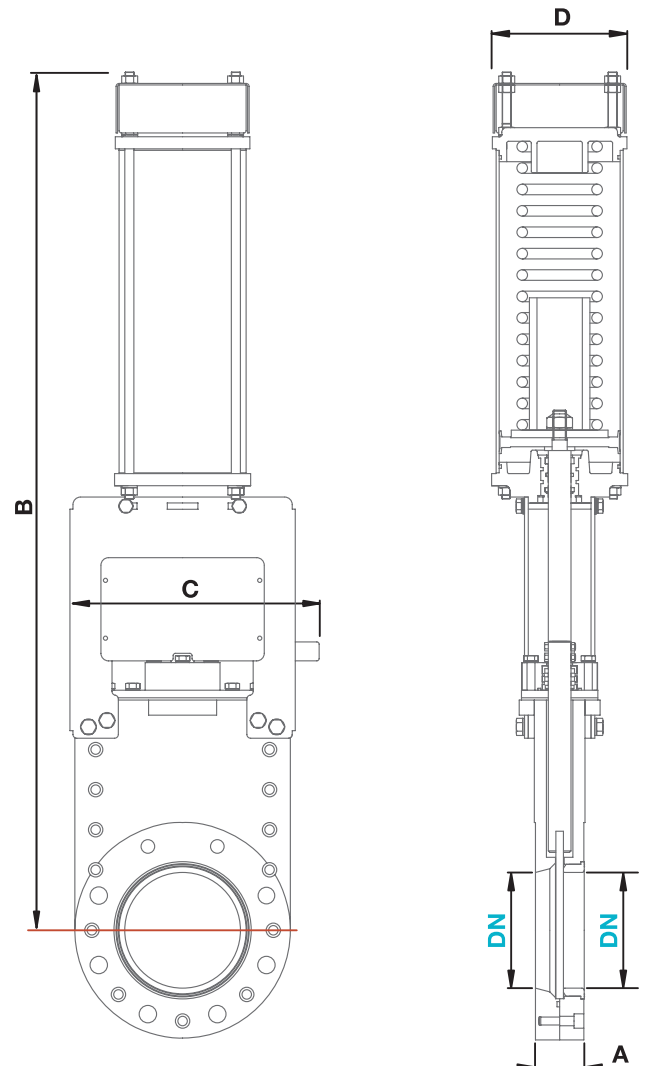
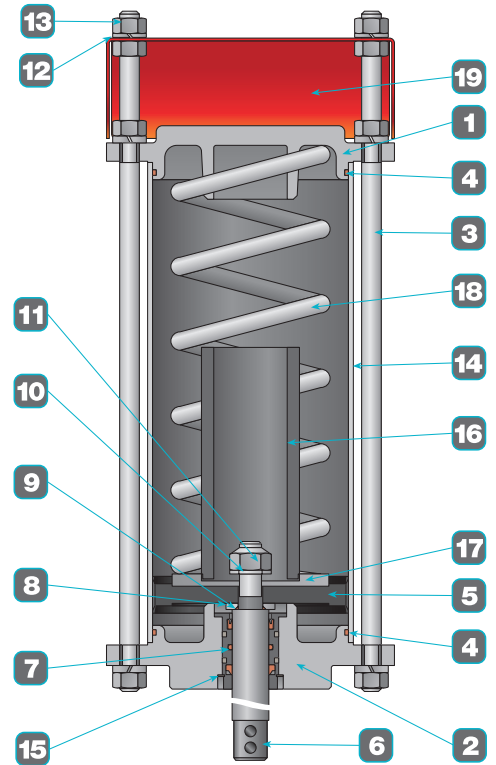
Nr.	PART	MATERIAL	UNITS
1	Top cover	Aluminium	1
2	Bottom cover	Aluminium	1
3	Tie rods	Bichromate steel	4
4	O-ring	NBR	2
5	Piston	NBR	1
6	Shaft	Chromate steel	1
7	Bushing	Delrin	1
	Collar	NBR	1
	Inner ring	NBR	1
	Outer ring	NBR	2
	Scraper	Polyurethane	1
8	Bearing	Bichromate steel	1
9	O-ring	NBR	1
10	Bearing DIN125	Bichromate steel	1
11	Nut DIN985	Bichromate steel	1
12	Bearing DIN125	Bichromate steel	12
13	Nut DIN 934	Bichromate steel	16
14	Jacket	Aluminium	1
15	Safety ring DIN471	Bichromate steel	1
16	Stop tube	Steel	1
17	Tube washer	Steel	1
18	Spring	Steel	1
19	Protective shield	Steel	1

*Other materials available on request.

MEASUREMENTS [mm]

DN	A	B	C	D
50	40	664	186,5	118
65	40	700,5	187,5	118
80	50	794,5	242	144
100	51	926	237,5	144
125	53	1015,5	307	180
150	64	1135	330	180
200	64	1481,5	418	180
250	80	1623,5	485,5	220
300	82	1841	506	280

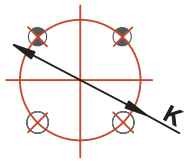
Assembly between flanges PN10



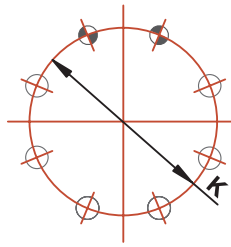
3. Flange dimensions DIN PN10

For other flanged connections (PN16, PN25, PN40, PN63, PN100, ASME 150lbs, ASME 300lbs) please contact our Technical Department.

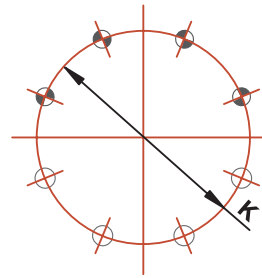
DN50



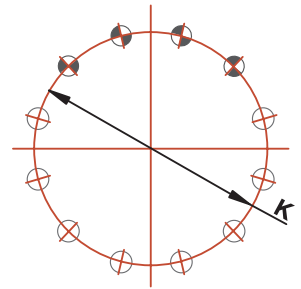
DN65-D150



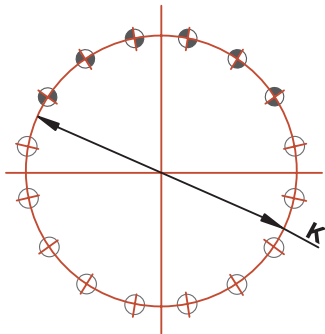
DN200



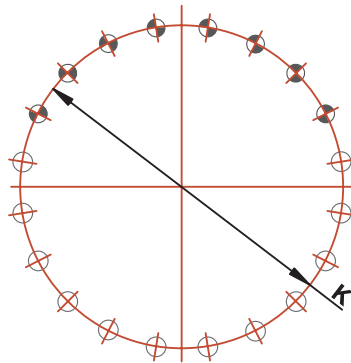
DN250-300





DN350-400



DN450-500-600



- K** Diameter
- Z** No. of bore holes, flange PN10
-  Threaded blind bore holes
-  Through bolts
- T** Thread
- D** Depth

DN	K	Z			T	D
50	125	4	2	2	M16	8
65	145	8	2	6	M16	11
80	160	8	2	6	M16	11
100	180	8	2	6	M16	11
125	210	8	2	6	M16	11
150	240	8	2	6	M20	12
200	295	8	4	4	M20	12
250	350	12	4	8	M20	15
300	400	12	4	8	M20	16
350	460	16	6	10	M20	21
400	515	16	6	10	M24	24
450	565	20	8	12	M24	28
500	620	20	8	12	M24	28
600	725	20	8	12	M27	28

