

Neles™ bidirectional wafer knife gate valve Series KAB

Neles™ wafer-design knife gate valve with bi-directional sealing is suitable for various process applications.

Stainless steel gate and removable rubber sleeves are part of robust design. High flow capacity and tight shutoff provide optimal performance for different applications in pulp and paper, for liquids that contain a maximum of 4 % suspended solids.

The valve has a one-piece machined cast body with wedges on both sides that offers the ability to work with fluids in both directions with the same pressure.

The sealing joint has a stainless steel wire that ensures that the inside of the body is kept clean and prevents the joint from coming loose. This design provides a completely flat seat with no internal cavities and avoids any build up of solids in the seat area.

Features

- Bidirectional wafer-design knife gate valve.
- One-piece body.
- Provides high flow rates with low pressure drop.
- Various seat and packing materials available.
- Face-to-face dimension in accordance with manufacturer's standard.

General applications

- This knife gate valve is suitable for liquids that contain a maximum of 4 % suspended solids. Designed for applications such as:
 - Pulp and paper
 - Sewage treatment
 - Chemical plants
 - Pumping
 - Food industry
- In all these applications, the valve should be installed once the fluid has been filtered, to eliminate solids or large particles it contains.

Sizes

- DN50 to DN600.

Working (ΔP)

See tables on pages 7 - 10.



Process connections

- DIN PN10 and ANSI B16.5 (Class 150)

Optional flanges

- DIN PN 6, 16 & 25
- BS "D" and "E"
- ANSI 150.
- Others on request.

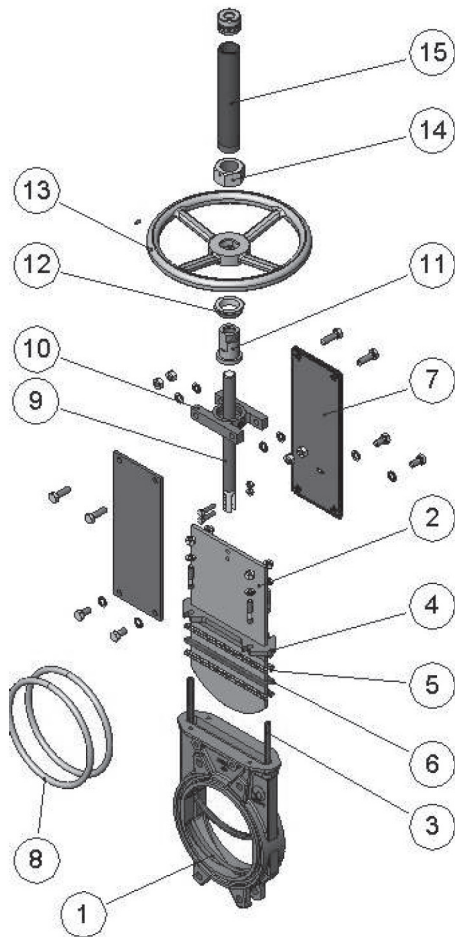
Directives

- Machinery Directive:
- Pressure Equipment Directive: (PED) ART.3, / CAT.1
- Potential Explosive Atmospheres Directive: (ATEX) CAT.3 ZONE 2 and 22 GD
- For further information on categories and zones please contact Valmet

Quality dossier

- All valves are tested hydrostatically and material and test certificates can be provided.
- Body test = working pressure x 1.5.
- Seat test = working pressure x 1.1.

Standard components list



PART No.	COMPONENT	MATERIAL
1	Body	CF8M
2	Gate	AISI316
3	Seat	EPDM
4	Packing gland	CF8M
5	Packing	SYNT + PTFE
6	O-ring seal	EPDM
7	Support plates	S275JR
8	O-ring	NITRILE
9	Stem	AISI303
10	Yoke	STEEL
11	Stem nut	BRONZE
12	Check nut	ST44.2 + ZINC
13	Handwheel	NODULAR CAST IRON
14	Nut	STEEL
15	Hood	STEEL

Design characteristics

Body

Bidirectional wafer-design knife gate valve. One-piece CF8M stainless steel body. Full port designed to provide high flow rates with low pressure drop.

The body's internal design prevents any build up of solids in the seat area.

The standard manufacturing material is CF8M stainless steel. Other materials, please contact Valmet.

Gate

The standard gate manufacturing material in valves having CF8M body is AISI316 stainless steel. Other materials or combinations can be supplied on request.

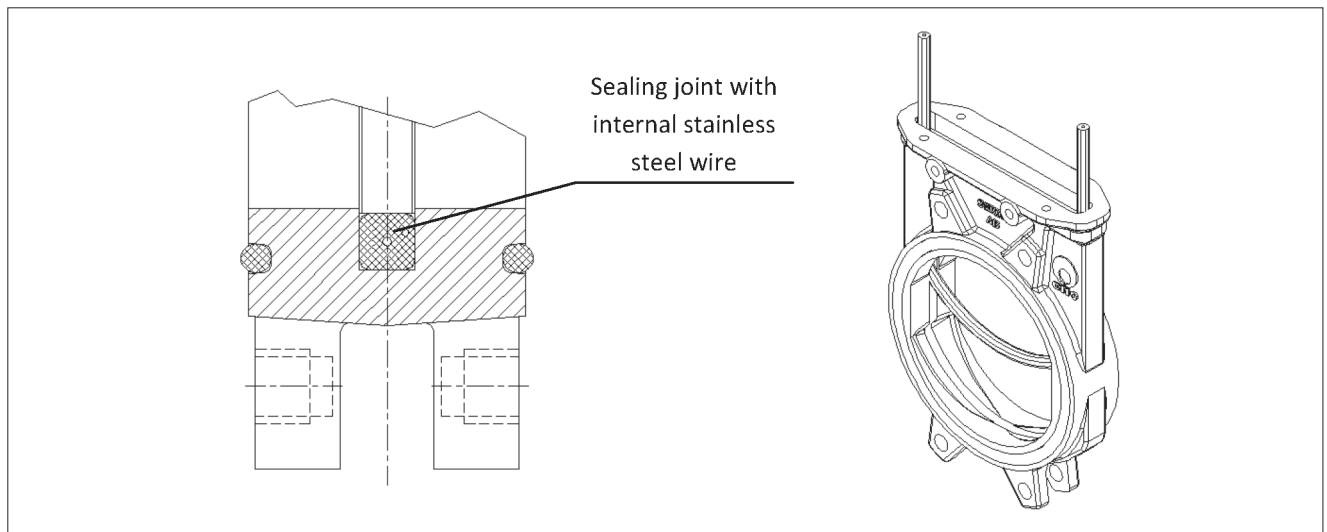
The gate is polished on both sides to provide a smooth contact surface with the resilient seat. At the same time, the gate is rounded to prevent the seat from being cut. Different degrees of polishing, anti-abrasion treatments and modifications are available to adapt the valves to the customer's requirements.

Seat (watertight)

There is only one seat design available on the KAB valve and it must always be soft seated.

See below the detail of the seat:

The KAB valve seat is a square rubber joint with an internal stainless steel wire.



This rubber joint is inserted inside the body in such a way that it starts on one side, level with the packing, and continues around the body to reach the other end of the packing area.

This means that the sealing joint is not installed around the whole perimeter of the valve's flow passing hole, but rather, it is installed in a U shape, to cover the gate's perimeter.

The internal stainless steel wire helps to keep the U shape and ensures that the joint does not come out of the body because of the flow as it passes through the valve.

This design provides a completely flat seal with no cavities and avoids any solids being stored in the seal area.

Resilient seat materials

EPDM

This is the standard resilient seat fitted on Neles branded valves. It can be used in many applications, however, it is generally used for water and products diluted in water at temperatures no higher than 90 °C*. It can also be used with abrasive products and it provides the valve with 100 % watertight integrity.

NITRILE

It is used in fluids containing fats or oils at temperatures no higher than 90°C*. It provides the valve with 100 % watertight integrity.

VITON

Suitable for corrosive applications and continuous high temperatures of up to 190 °C and peaks of 210 °C. It provides the valve with 100 % watertight integrity.

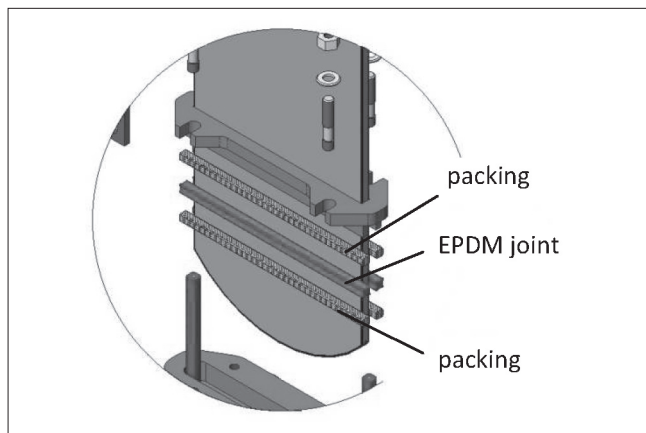
SILICONE

Mainly used in the food industry and for pharmaceutical products with temperatures no higher than 200 °C. It provides the valve with 100 % watertight integrity.

Note: In some applications other types of resilient materials are used, such as hypalon, butile or natural rubber. Please contact us if you require one of these materials.

Packing

Standard packing is composed of three lines with a specially designed EPDM O-ring in the middle which provides watertight integrity between the body and the gate, preventing any type of leakage to the atmosphere. It is located in an easily accessible place and can be replaced without dismantling the valve from the pipeline. Below we indicate various types of packing available according to the application in which the valve is located:



SYNTHETIC + PTFE:

This packing is composed of braided synthetic fibres soaked in PTFE both inside and out. It is for general use in hydraulic applications in both pumps and valves and in all types of fluids, especially corrosive ones, including concentrated and oxidising oils. It is also used in liquids with solid particles in suspension.

GRAPHITE:

This packing is composed of high-purity graphite fibres. A diagonal braiding system is used and it is impregnated with graphite and lubricant which helps to reduce porosity and improve operation. It has a wide range of applications as graphite is resistant to steam, water, oils, solvents, alkali and most acids.

CERAMIC FIBRE:

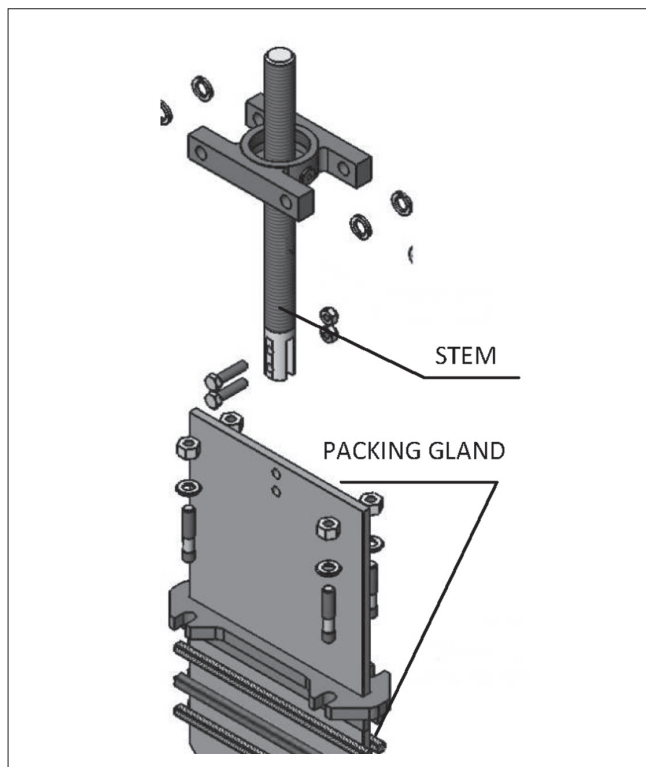
This packing is composed of ceramic material fibres. Its main applications are with air or gas at high temperatures and low pressures.

SEAT/SEALS		
Material	Temp. max	Applications
Steel/Steel	>250 °C	High temp./Low watertight integ
EPDM (E)	90 °C*	Non-mineral acids and oils
Viton (V)	200 °C	Hydrocarbons and solvents

NOTE: More details and other materials available on request.

* EPDM and nitrile: is possible until serving temperature Max.: 120 °C under request.

PACKING		
Material	Temp. max	pH
Synthetic+PTFE / EPDM	-20 to +90 °C	
Synthetic+PTFE / VITON	-20 to +200 °C	
Graphite	650 °C	0-14
Ceramic fibre	1400 °C	0-14



Stem

The stem on the valve is made of 18/8 stainless steel. This characteristic provides high resistance and excellent corrosion-resistant properties.

The valve design can be rising stem or non-rising stem. When rising stem is required a stem hood is supplied to protect the stem from contact with dust and dirt, as well as keeping it lubricated.

Packing gland

The packing gland allows uniform force and pressure to be applied to the packing to ensure watertight integrity.

Actuators

All types of actuators can be supplied, with the advantage that the design is fully interchangeable. It is not possible to change the levers action.

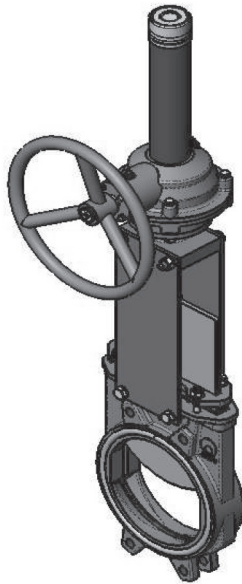
This design allows the customer to change the actuators themselves and normally no extra assembly accessories are required. In the event any accessory is required, Valmet will supply it.

Manual:	Automatic:
Handwheel with rising stem	Pneumatic cylinder
Handwheel with non-rising stem	Electric actuator (on request)
Gear box	

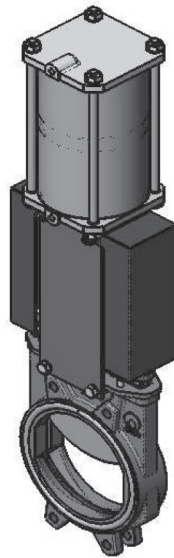
The chainwheel and gear box actuators are also available with non-rising stem. Graphical representation of some actuators on the next page.

Accessories and options

KAB SERIES



Handwheel
gear box



Pneumatic
actuator

Mechanical limit switches, inductive switches and positioners

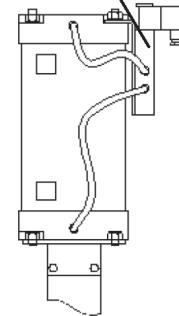
Indicates the valve's specific or continuous position.

Solenoid valves For air distribution to pneumatic actuators.

Locking device



Solenoid valve



Connection boxes, wiring and pneumatic piping

Fully assembled units can be supplied with all the necessary accessories.

Stroke limiting mechanical stops

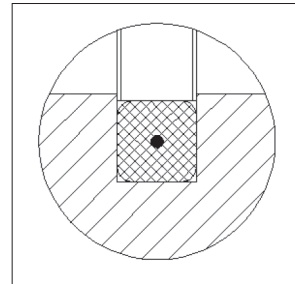
Mechanical locking device

Allows the valve to be mechanically locked in a set position for long periods of time.

Emergency manual actuator (Hand wheel /Gear box)

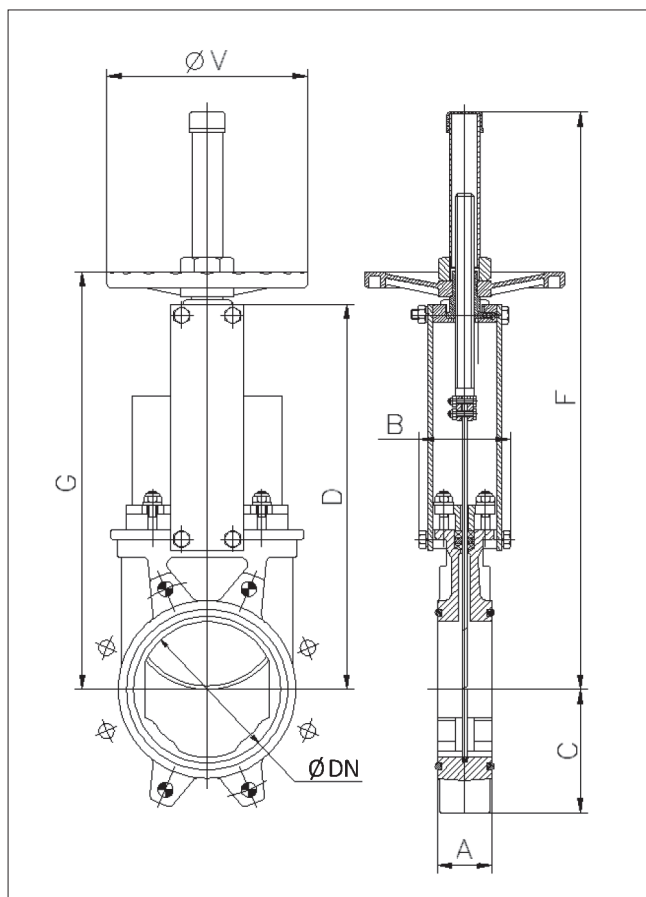
Allows manual operation of the valve in the event of power or air failure.

Types of seal



Watertight seal: The joint is fitted into the body, inserted in the seat and in contact with the whole perimeter of the gate which is in contact with the body, this ensures perfect watertight integrity and circulation in both directions, it also prevents build up of solids on the seat making it difficult to seal. The joint contains an internal wire, as can be seen in Figure.

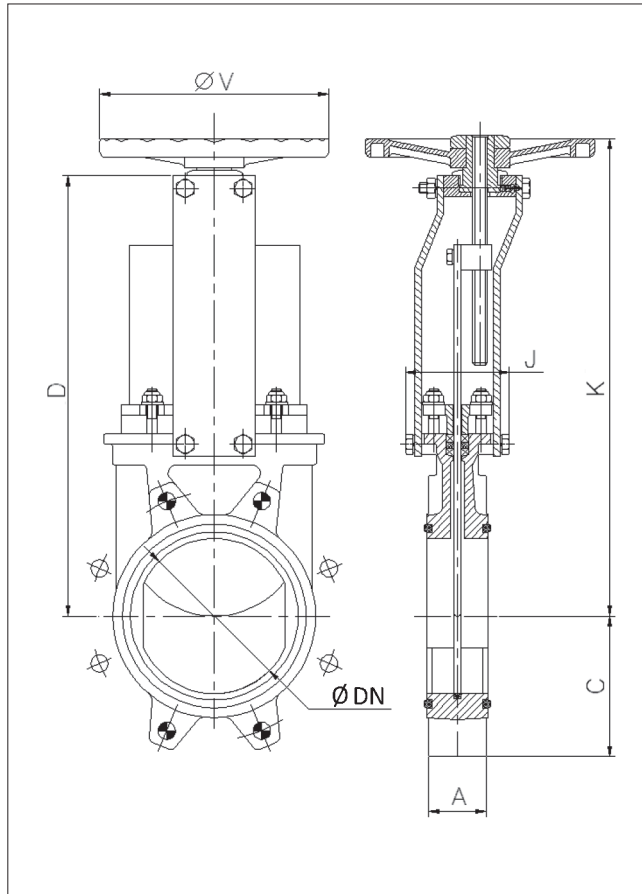
Handwheel with rising stem



- **B = Max. width** of the valve (without actuator)
- **D = Max. height** of the valve (without actuator)
- Options:
 - Locking devices
 - Extensions: stand, pipe, plates...
 - ND higher than those give in the table
- Actuator including:
 - Handwheel
 - Stem
 - Nut
 - Stem protection hood
- Available: DN 50 to DN 600.

DN	ΔP (bar)	DRAW (Nw)	TORQ. (Nm)	A	B	C	D	F	G	ØV	Weight (kg)
50	10	1143	2.64	40	91	61	241	410	280	225	7
65	10	1952	4.45	40	91	68	268	437	308	225	8
80	10	2957	6.76	50	91	91	294	463	333	225	9
100	10	4617	10.5	50	91	104	334	503	373	225	11
125	10	7213	16.5	50	101	118	367	586	407	225	13
150	10	7290	16.6	60	101	130	419	638	458	225	17
200	10	12975	37.1	60	118	159	525	816	578	325	28
250	6	14522	41.4	70	118	196	626	1017	679	325	40
300	6	20942	59.8	70	118	230	726	1117	779	380	56
350	6	22810	88.5	96	290	254	797	1337	906	450	94
400	5	29879	115.9	100	290	287	903	1443	1012	450	116
450	4	28461	110.3	106	290	304	989	1629	1098	450	162
500	4	35333	137.1	110	290	340	1101	1741	1210	450	187
600	3	51235	198.6	110	290	398	1307	2047	1416	450	260

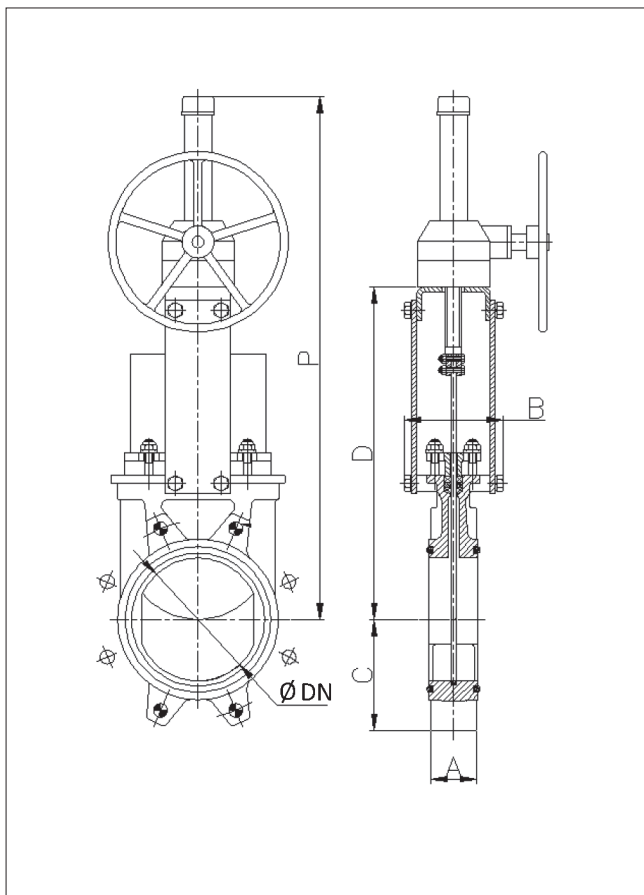
Handwheel with non-rising stem



- Suitable when no size limitations exist.
- **J = Max. width** of the valve (without actuator)
- **D = Max. height** of the valve (without actuator)
- Options:
 - Square nut
 - Locking devices
 - Extensions: stand, pipe, plates...
 - ND higher than those give in the table
- Actuator including:
 - Handwheel
 - Stem
 - Guide bearings on the yoke.
 - Nut
- Available: DN50 to DN600.

DN	ΔP (bar)	DRAW (Nw)	TORQ. (Nm)	A	C	D	J	K	ØV	Weight (kg)
50	10	1143	2.64	40	61	241	101	280	225	7
65	10	1952	4.45	40	68	268	101	308	225	8
80	10	2957	6.76	50	91	294	101	333	225	9
100	10	4617	10.5	50	104	334	101	373	225	11
125	10	7213	16.5	50	118	367	111	407	225	13
150	10	7290	16.6	60	130	419	111	458	225	17
200	10	12975	37.1	60	159	525	128	578	325	28
250	6	14522	41.4	70	196	626	128	679	325	40
300	6	20942	59.8	70	230	726	128	779	380	56
350	6	22810	88.5	96	254	797	305	906	450	94
400	5	29879	115.9	100	287	903	305	1012	450	116
450	4	28461	110.3	106	304	989	305	1098	450	162
500	4	35333	137.1	110	340	1101	305	1210	450	187
600	3	51235	198.6	110	398	1307	305	1416	450	260

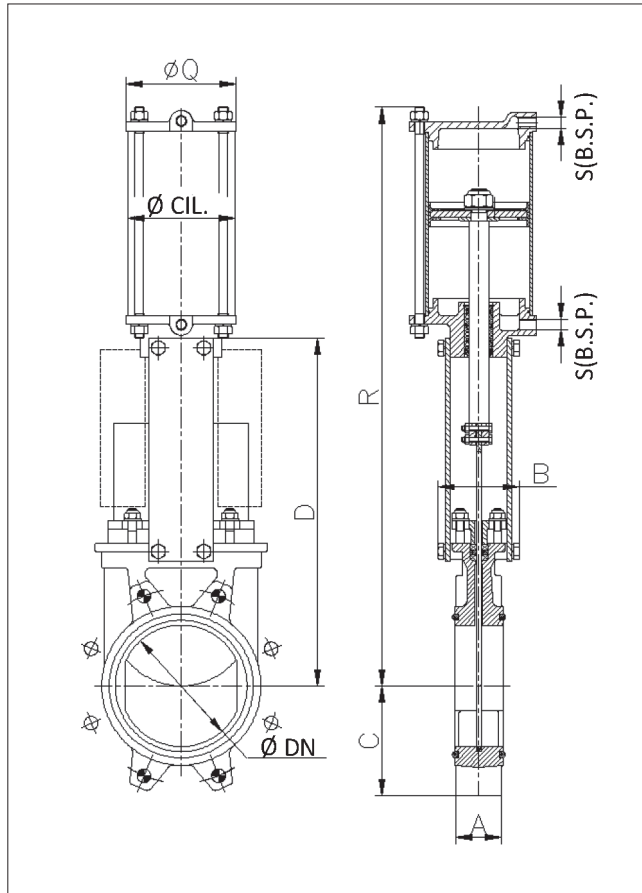
Gear box



- **B = Max. width** of the valve (without actuator)
- **D = Max. height** of the valve (without actuator)
- Options:
 - Chainwheel - Extensions: stand, pipe, plates...
 - Locking devices - Non-rising stem
- Actuator including:
 - Stem - Yoke
 - Cone-shaped gear box - Handwheel
- Standard ratio = 4 to 1 .
- Available: DN 50 to DN 600.

DN	ΔP (bar)	DRAW (Nw)	TORQ. (Nm)	A	B	C	D	P	Weight (kg)
50	10	1143	2.64	40	91	61	241	540	20
65	10	1952	4.45	40	91	68	268	566	21
80	10	2957	6.76	50	91	91	294	592	22
100	10	4617	10.5	50	91	104	334	632	24
125	10	7213	16.5	50	101	118	367	665	26
150	10	7290	16.6	60	101	130	419	717	30
200	10	12975	37.1	60	118	159	525	942	41
250	6	14522	41.4	70	118	196	626	1033	53
300	6	20942	59.8	70	118	230	726	1121	69
350	6	22810	88.5	96	290	254	797	1305	107
400	5	29879	115.9	100	290	287	903	1403	130
450	4	28461	110.3	106	290	304	989	1677	183
500	4	35333	137.1	110	290	340	1101	1789	204
600	3	51235	198.6	110	290	398	1307	1995	288

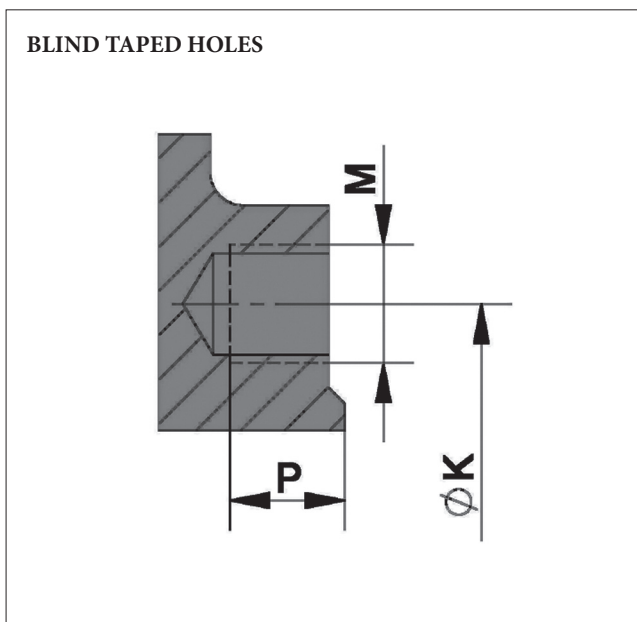
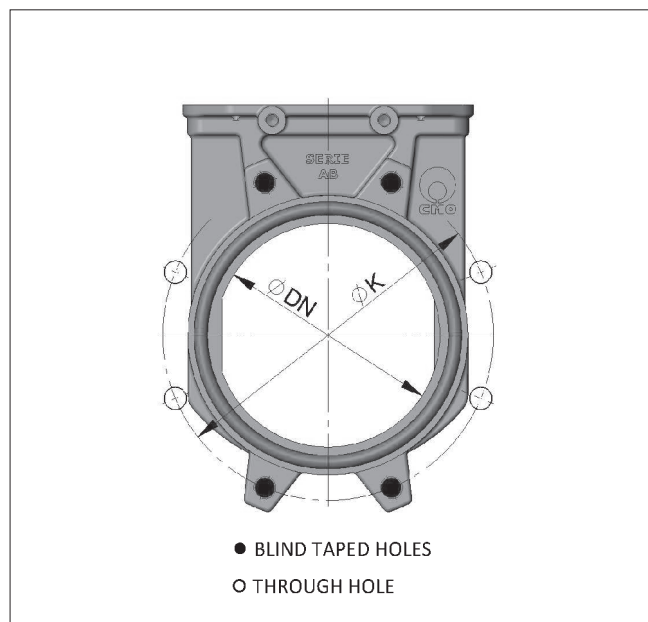
Double-acting pneumatic cylinder



- Double-acting pneumatic actuators are designed to work at a pressure between 6 and 10 bar.
- 10 bar is the maximum admissible air pressure. For air pressures below 6 bar please consult manufacturer.
- For DN50 to DN200 valves, the cylinder's jacket and covers are made of aluminium, the rod of AISI304, the piston of rubber-coated steel and the O-ring seals are made of nitrile.
- For valves larger than DN200 the covers are made of nodular cast iron or carbon steel.
- On request, we can also supply the actuator made entirely of stainless steel, especially for installation in corrosive atmospheres.
- **B = Max. width** of the valve (without actuator)
- **D = Max. height** of the valve (without actuator)
- Available: DN50 to DN600.

DN	ΔP (bar)	DRAW (Nw)	A	B	C	D	R	Ø CIL.	Ø ROD	ØQ	S (B.S.P.)	Weight (kg)
50	10	1143	40	91	61	241	400	80	20	90	1/4"	7
65	10	1952	40	91	68	268	442	80	20	90	1/4"	8
80	10	2957	50	91	91	294	483	80	20	110	1/4"	9
100	10	4617	50	91	104	334	546	100	20	135	1/4"	12
125	8	7213	50	101	118	367	630	125	25	170	1/4"	18
150	8	7290	60	101	130	419	692	125	25	170	1/4"	22
200	8	12975	60	118	159	525	869	160	30	215	1/4"	37
250	6	14522	70	118	196	626	1032	200	30	270	3/8"	58
300	6	20942	70	118	230	726	1182	200	30	270	3/8"	72
350	6	22810	96	290	254	797	1379	250	40	382	3/8"	130
400	5	29879	100	290	287	903	1535	250	40	382	3/8"	148
450	4	28461	106	290	304	989	1677	300	45	382	1/2"	235
500	4	35333	110	290	340	1101	1839	300	45	444	1/2"	260
600	3	51235	110	290	398	1307	2145	300	45	508	1/2"	334

Dimensions for process connections



EN 1092-2 PN10

DN	●	O	Métrie	P	ØK
50	4	-	M 16	8	125
65	4	-	M 16	8	145
80	4	4	M 16	9	160
100	4	4	M 16	9	180
125	4	4	M 16	9	210
150	4	4	M 20	10	240
200	4	4	M 20	10	295
250	6	6	M 20	12	350
300	6	6	M 20	12	400
350	12	4	M 20	21	460
400	12	4	M 24	21	515
450	16	4	M 24	22	565
500	16	4	M 24	22	620
600	16	4	M 27	22	725

ANSI B16, Class 150

DN	●	O	R UNC	P	ØK
2"	4	-	5/8"	8	120,6
2 ½"	4	-	5/8"	8	139,7
3"	4	-	5/8"	9	152,4
4"	4	4	5/8"	9	190,5
5"	4	4	3/4"	9	215,9
6"	4	4	3/4"	10	241,3
8"	4	4	3/4"	10	298,4
10"	6	6	7/8"	12	361,9
12"	6	6	7/8"	12	431,8
14"	8	4	1"	21	476,2
16"	12	4	1"	21	539,7
18"	12	4	1 ½"	22	577,8
20"	16	4	1 ½"	22	635
24"	16	4	1 ¼"	22	749,3

How to order

1.	2.	3.	4.	5.	6.	7.	8.
KAB	W	J	050	A	B	P	D

1.	VALVE SERIES
KAB	Knife gate valve, wafer type, bi-directional

5.	BODY MATERIAL
A	CF8M

2.	END CONNECTION
W	Wafer

6.	KNIFE, PACKING GLAND, PACKING & SEAT MATERIALS
B	Knife: AISI 316 Packing gland: CF8M Packing: EPDM/Synthetic+PTFE Seat: EPDM

3.	PRESSURE RATING
J	PN10
C	ASME Class 150

7.	ACTUATOR TYPE
P	Pneumatic
M	Manual
E	Electric

4.	BODY SIZE		
050	DN 50	02	2"
065	DN 65	2H	2.5"
080	DN 80	03	3"
100	DN 100	04	4"
125	DN 125	05	5"
150	DN 150	06	6"
200	DN 200	08	8"
250	DN 250	10	10"
300	DN 300	12	12"
350	DN 350	14	14"
400	DN 400	16	16"
450	DN 450	18	18"
500	DN 500	20	20"
600	DN 600	24	24"

8.	ACTUATOR SPECIFICATION
D	Double acting

9.	INSTRUMENTATION CONNECTION BOX
-	No connection box
C	Connection box

Solenoid valve typecode

1.	2.	3.
MW	A	0242

1.	MANUFACTURER
MW	Metalwork

2.	MODEL
A	SOV35SOSOO

3.	COIL
0242	W0215000101

Other solenoid valves options on request, please consult Valmet.

Limit switches typecode

1.	2.	3.	4.
M	TM	V	2

1.	TYPE
M	Mechanical
I	Inductive

2.	MANUFACTURER
TM	Telemecanique
PF	Pepperl-Fuchs

3.	Model
V	XCK-M115 (Only for Telemecanique)
A	NBB8-18GM60-US (Only for Pepperl-Fuchs)

4.	NUMBER OF SWITCHES
2	2 Pieces

Valmet Flow Control Oy

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www.valmet.com/flowcontrol

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