

# Neles™ unidirectional wafer knife gate valve Series KA

When a knife gate valve remains open for long periods of time and the body's internal walls are parallel a very large torque is required to close it. Model KA's body is cone-shaped inside, providing greater space. This way, when the valve is closed the solids stored inside it can be easily removed. This valve is defined as unidirectional and these valves are normally at risk of the gate bending due to counter-pressure. This cannot happen with the Neles™ valves because it contains internal guides that support the knife gate and allow it to work under counter-pressure of 30% of the maximum working pressure, without the knife gate bending. The stem protection hood is independent from the handwheel securing nut, this means the hood can be disassembled without the need to release the handwheel. This advantage allows regular maintenance operations to be performed, such as lubricating the stem.

## Description

- One piece body with guides to support gate and seat wedges.
- Provides high flow rates with low pressure drop.
- Various seat and packing materials available.
- Face to face dimension in accordance with manufacturer standard.
- An arrow is marked on the body indicating the flow direction.

## General applications

This knife gate valve is suitable for liquids that contain a maximum of 5% suspended solids. If it is used for dry solids in gravity feed applications it should be installed with the arrow on the body pointing in the opposite direction to the flow.

Designed for applications such as:

- Pulp and paper industry
- Silo emptying
- Chemical plants
- Pumping
- Sewage treatment

## Sizes

DN50 to DN2000.

\*Other DN on request



## Working pressure ( $\Delta P$ )

See tables on pages 7 - 10.

## Process connections

- EN1092 PN10.
- ASME B16.5 (Class 150).

## Optional flanges

- PN6.
- PN16.
- PN25.
- BS "D" y "E".
- JIS10K.

\*Others on request

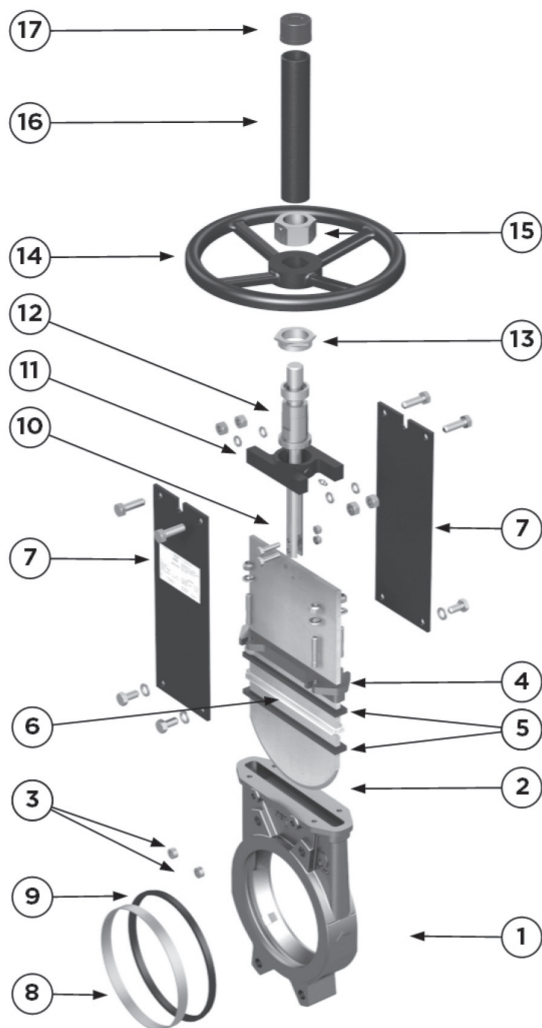
## Directives

- Pressure Equipment Directive: (PED) ART 4.3 /CAT.1.
- Potential Explosive Atmospheres Directive: (ATEX) CAT.3 ZONA 2 y 22 GD.

## 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	GUIDE	RCH1000
4	PACKING GLAND	CF8M
5	PACKING	SINT + PTFE
6	O-RING SEAL	EPDM
7	SUPPORT PLATES	S275JR
8	RING	AISI316
9	SEAT	EPDM
10	STEM	AISI 304
11	YOKE	GJS500
12	STEM NUT	BRONZE
13	CHECK NUT	ST44.2 + ZINC
14	HANDWHEEL	NODULAR CAST IRON
15	NUT	STEEL
16	HOOD	STEEL
17	TOP CAP	PLASTIC

## Design characteristics

### Body

- Unidirectional wafer-design knife gate valve. One-piece CF8M stainless steel body with guides to support gate and seat wedges.
- For diameters greater than DN1200 the body is machine-welded with the necessary reinforcements to resist the maximum working pressure. Full port designed to provide high flow rates with low pressure drop. Full port designed to provide high flow rates with low pressure drop.
- 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, antiabrasion treatments and modifications are available to adapt the valves to the customer's requirements.

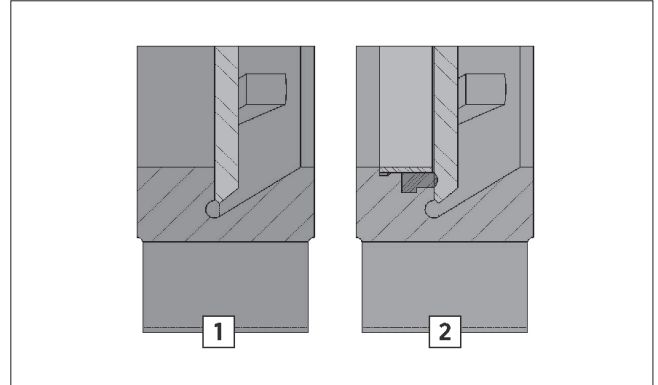
### Resilient seat materials

- EPDM** This is the standard resilient seat fitted on 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.
- 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.
- PTFE** Suitable for corrosive applications and pH between 2 and 12. Does not provide the valve with 100% watertight integrity. Estimated leakage: 0.5% of the tube flow

**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.

### Seat: (water tight)

Six types of seats are available according to the working application.



#### Seat 1

##### Metal / metal seat.

This type of seat does not include any kind of resilient seat and the estimated leakage (considering water as the test fluid) is 1.5% of the pipe flow.

#### Seat 2

##### Standard soft-seated valve

This type of seat includes a resilient seat which is fixed to the inside of the body via an AISI316 stainless steel retaining ring.

## 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, alkaline 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.

SEATS / SEALS			PACKING		
MATERIAL	Temp. max	APPLICATIONS	MATERIAL	Temp. max	pH
Steel/Steel	>250 °C	High temp./Low watertight integ	Synthetic+PTFE / EPDM	-20 to +90 °C	
EPDM (E)	90 °C*	Non-mineral acids and oils	Synthetic+PTFE / VITON	-20 to +200 °C	
Viton (V)	200 °C	Hydrocarbons and solvents	Graphite	650 °C	0-14
PTFE (T)	250 °C	Corrosion resistant	Ceramic fibre	1400 °C	0-14

**Nota:** More details and other materials available on request.

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

## 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 thanks to the design they are fully interchangeable. This design allows the customer to change the actuators themselves and no extra assembly accessories are required. A design characteristic of valves is that all actuators are interchangeable.

### Manual

- Handwheel with rising stem
- Handwheel with non-rising stem.
- Gear box

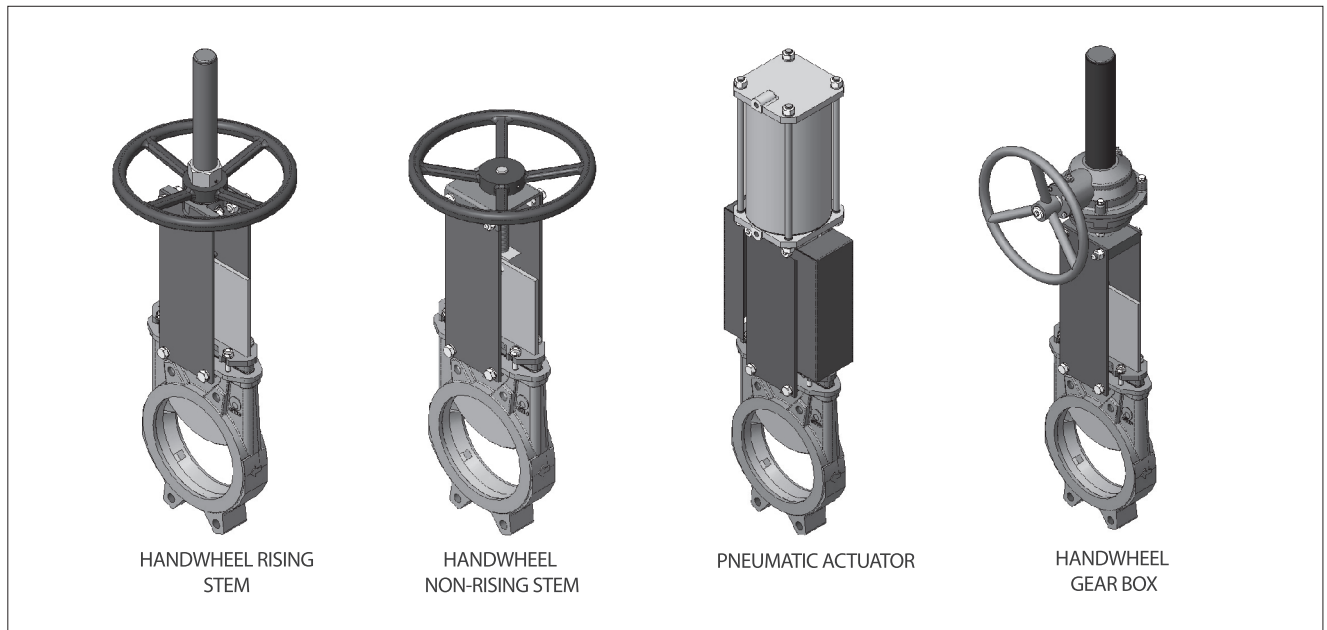
### Automatic

- Electric actuator
- Pneumatic cylinder

### Wide range of accessories available

- Mechanical stops
- Locking devices
- Emergency manual actuators
- Solenoid valves
- Positioners.
- Limit switches
- Proximity switches

## Accessories and options



### Mechanical limit switches, inductive switches and positioners

Limit switches or inductive switches are installed to indicate precise valve position, as well as positioners to indicate continuous position.

### Solenoid valves

For air distribution to pneumatic actuators.

### Connection boxes, wiring and pneumatic piping

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

### Stroke limiting mechanical stops

They allow the stroke to be mechanically adjusted, limiting the desired stroke of valves.

### Emergency manual actuator (hand wheel /gear box)

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

### Locking device



## Handwheel with rising stem

**B** = Max. width of the valve (without actuator)

**P** = Max. height of the valve (without actuator)

### Options

- Locking devices
- Extensions: stand, pipe, plates....
- ND higher than those give in the table

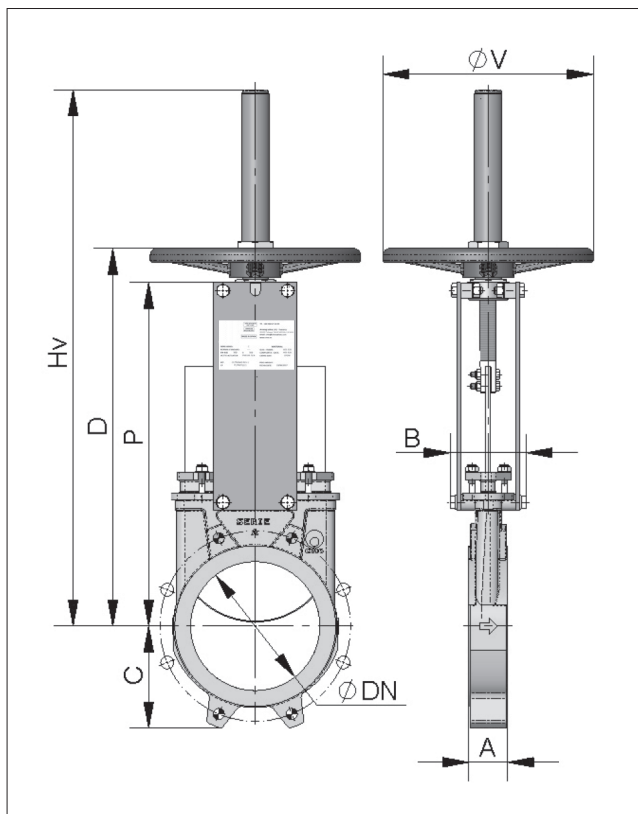
### Actuator including

- Handwheel
- Stem
- Nut
- Stem protection hood

### Available

- Available: DN50 to DN1200
- From DN600 the actuator is with gears.

\*Other DN on request.



DN	$\Delta P$ (bar)	A	B	C	P	Hv	D	$\phi V$	WEIGHT (kg.)
50	10	40	92	63	241	409	280	225	7
65	10	40	92	70	268	436	307	225	8
80	10	50	92	92	294	469	333	225	9
100	10	50	92	105	334	502	373	225	11
125	10	50	102	120	367	585	406	225	13
150	10	60	102	130	419	644	458	225	17
200	10	60	119	160	525	815	578	325	28
250	10	70	119	198	626	1016	679	325	40
300	6	70	119	234	726	1116	779	380	56
350	6	96	290	256	797	1336	906	450	94
400	6	100	290	292	903	1442	1012	450	116
450	5	106	290	308	989	1628	1098	450	162
500	3	110	290	340	1101	1738	1210	450	191
600	4	110	290	400	1307	2046	1416	450	264
700	3	110	320	453	1506	--	--	--	441
800	2	110	320	503	1720	--	--	--	568
900	3	110	320	583	1953	--	--	--	736
1000	3	110	320	613	2137	--	--	--	921
1200	3	150	340	728	2616	--	--	--	1350

## Handwheel with non-rising stem

Suitable when no size limitations exist

**B = Max. width** of the valve (without actuator)

**P = Max. height** of the valve (without actuator)

### Options

- Square nut
- Locking devices
- Extensions: stand, pipe, plates...
- ND higher than those give in the table

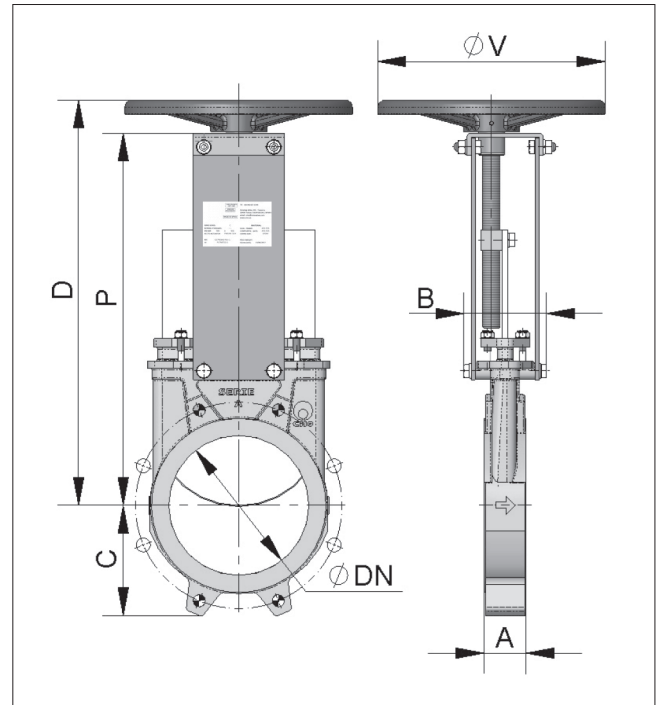
### Actuator

- Handwheel
- Stem
- Guide bearings on the yoke.
- Nut

### Available

- DN50 to DN2000
- From DN600 the actuator is with gears

\*Other DN on request.



DN	$\Delta P$ (bar)	A	B	C	P	D	$\phi V$	WEIGHT (kg.)
50	10	40	101	63	241	280	225	7
65	10	40	101	70	268	308	225	8
80	10	50	101	92	294	333	225	9
100	10	50	101	105	334	373	225	11
125	10	50	111	120	367	407	225	13
150	10	60	111	130	419	458	225	17
200	10	60	128	160	525	578	325	29
250	10	70	128	198	626	679	325	40
300	6	70	128	234	726	779	380	53
350	6	96	305	256	797	906	450	93
400	6	100	305	292	903	1012	450	126
450	5	106	305	308	989	1098	450	160
500	4	110	305	340	1101	1210	450	193
600	4	110	305	400	1307	1416	450	264
700	3	110	335	453	1506	--	--	435
800	3	110	335	503	1720	--	--	580
900	3	110	335	583	1953	--	--	740
1000	3	110	335	613	2137	--	--	925
1200	3	150	355	728	2616	--	--	1350

## Gear box

Widely used in raised installations with difficult access, the handwheel is fitted in vertical position.

**B = Max. width** of the valve (without actuator)

**P = Max. height** of the valve (without actuator)

### Options

- Chainwheel
- Locking devices
- Extensions: stand, pipe, plates...
- Non-rising stem

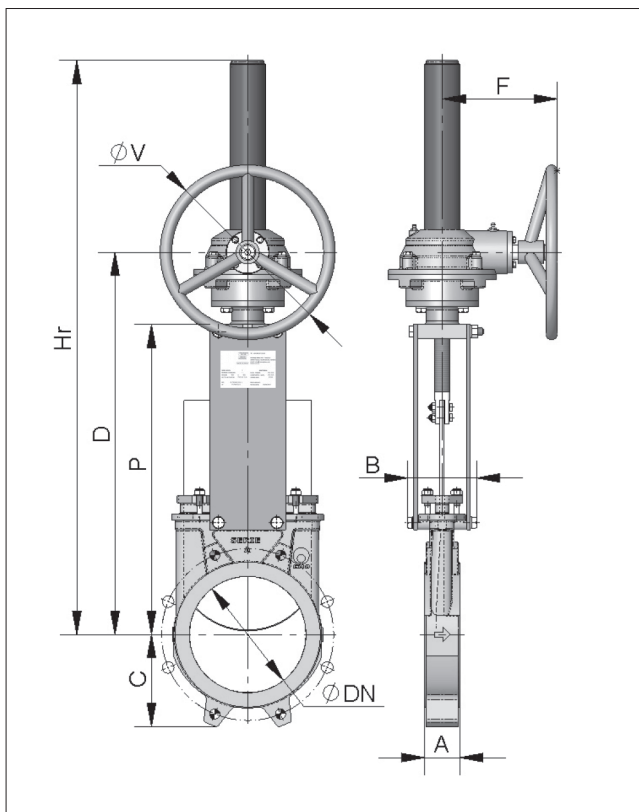
### Actuator including

- Stem
- Yoke
- Cone-shaped gear box
- Handwheel
- Standard ratio = 4 to 1.

### Available

- Available: DN50 to DN2000
- From DN600 the actuator is with gears.

\*Other DN on request.



DN	ΔP (bar)	A	B	C	P	D	F	øV	Hr	WEIGHT (kg.)
50	10	40	92	63	241	366	198	300	540	17
65	10	40	92	70	268	392	198	300	566	18
80	10	50	92	92	294	418	198	300	592	19
100	10	50	92	105	334	458	198	300	632	20
125	10	50	102	120	367	491	198	300	665	24
150	10	60	102	130	419	543	198	300	717	26
200	10	60	119	160	525	648	198	300	942	50
250	10	70	119	198	626	749	198	300	1043	63
300	6	70	119	234	726	850	198	300	1194	77
350	5	96	290	256	797	891	218	450	1335	106
400	6	100	290	292	903	997	218	450	1441	134
450	5	106	290	308	989	1083	218	450	1677	173
500	4	110	290	340	1101	1195	218	450	1789	216
600	4	110	290	400	1307	1401	218	450	2045	284
700	3	110	320	453	1506	1612	260	450	2401	430
800	3	110	320	503	1720	1825	288	650	2715	615
900	3	110	320	583	1953	2055	288	650	3043	768
1000	3	110	320	613	2137	2246	288	650	3351	972
1100	3	150	340	670	2375	2515	352	850	3675	1142
1200	3	150	340	728	2616	2760	352	850	4042	1298
1300	2	150	390	787	2882	3022	352	850	4382	1400



## Double-acting pneumatic cylinder

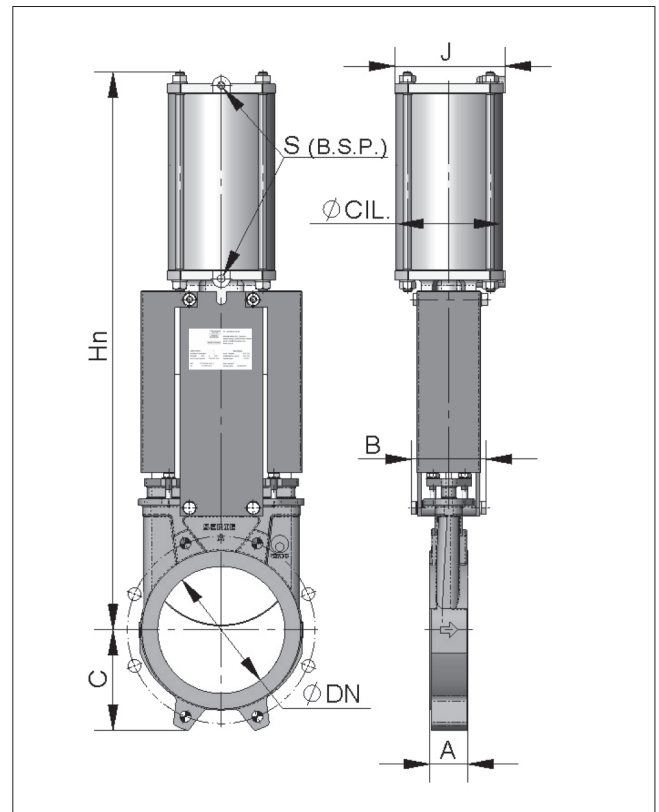
The air supply pressure to the pneumatic cylinder is a minimum of 6 bar and a maximum of 10 bar, the air must be dry and lubricated.

**B = Max. width** of the valve (without actuator)

- 10 bar is the maximum admissible air pressure. For air pressures below 6 bar please consult factory.
- For DN50 to DN300 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 DN300 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.

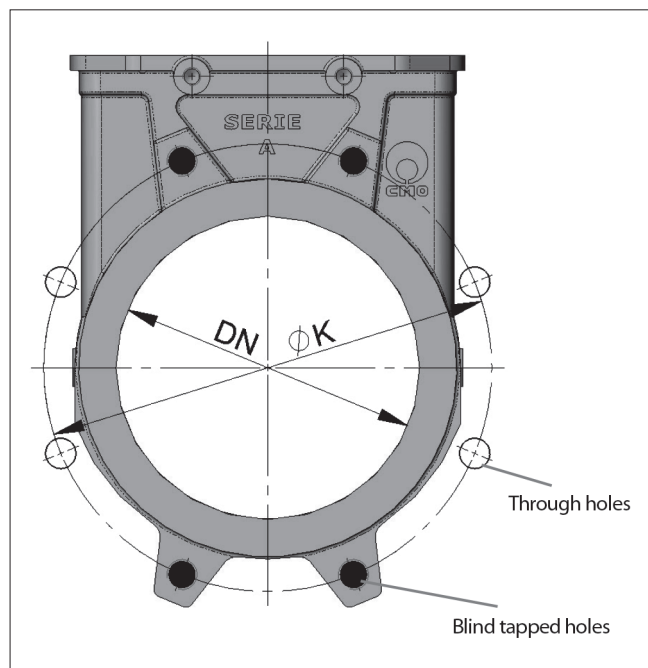
### Available

- Available: DN50 to DN1200
- Other DN on request.

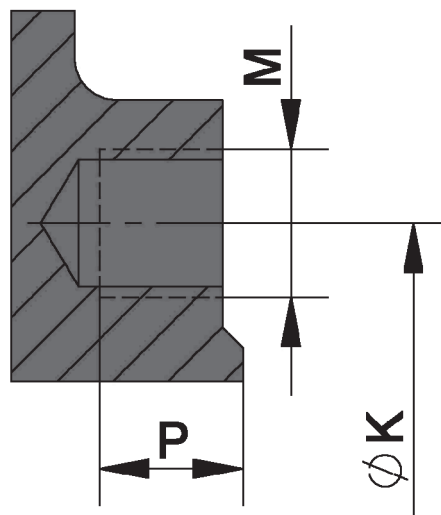


DN	$\Delta P$ (bar)	A	B	C	Ø CIL.	Ø VAST	J	S (B.S.P.)	Hn	WEIGHT (kg.)
50	10	40	92	63	80	20	96	1/4"	415	7
65	10	40	92	70	80	20	96	1/4"	455	8
80	10	50	92	92	80	20	96	1/4"	498	9
100	10	50	92	105	100	20	115	1/4"	565	12
125	10	50	102	120	125	25	138	1/4"	636	18
150	8	60	102	130	125	25	138	1/4"	717	22
200	8	60	119	160	160	30	175	1/4"	874	37
250	8	70	119	198	200	30	218	3/8"	1036	58
300	6	70	119	234	200	30	218	3/8"	1182	72
350	6	96	290	256	250	40	270	3/8"	1380	130
400	6	100	290	292	250	40	270	3/8"	1530	155
450	5	106	290	308	300	45	382	1/2"	1677	225
500	4	110	290	340	300	45	382	1/2"	1839	257
600	4	110	290	400	300	45	382	1/2"	2146	340
700	3	110	320	453	350	45	426	1/2"	2481	556
800	3	110	320	503	350	45	426	1/2"	2798	679
900	3	110	320	583	400	50	508	1/2"	3167	840
1000	3	110	320	613	400	50	508	1/2"	3451	1053
1100	3	150	340	670	400	50	508	1/2"	3792	1210
1200	3	150	340	728	400	50	508	1/2"	4135	1366

## Dimensions for process connections



### BLIND TAPED HOLES



### EN 1092-2 PN10

DN	w	o	Metric	PROF.	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	10	6	M 20	21	460
400	10	6	M 24	21	515
450	14	6	M 24	22	565
500	14	6	M 24	22	620
600	14	6	M 27	22	725
700	16	8	M 27	22	840
800	16	8	M 30	22	950
900	20	8	M 30	20	1050
1000	20	8	M 33	20	1160
1100	20	12	M 33	20	1270
1200	20	12	M 36	22	1380

### ANSI B16, Class 150

DN	w	o	R UNC	PROF.	ØK
2"	4	-	5/8"	8	120,6
2 1/2"	4	-	5/8"	8	139,7
3"	4	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"	10	6	1"	21	476,2
16"	10	6	1"	21	539,7
18"	14	6	1 1/8"	22	577,8
20"	14	6	1 1/8"	22	635
24"	14	6	1 1/4"	22	749,3
28"	16	8	1 1/4"	22	863,6
30"	16	8	1 1/4"	22	914,4
32"	20	8	1 1/2"	20	977,9
36"	20	8	1 1/2"	20	1085,8
40"	20	12	1 1/2"	20	1200,2

## How to order

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

1.	VALVE SERIES
KA	Knife gate valve, wafer type, unidirectional

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

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[www.valmet.com/flowcontrol](http://www.valmet.com/flowcontrol)

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