

AB



BIDIRECTIONAL KNIFE GATE VALVE - WAFER DESIGN

DESCRIPTION

- One-piece cast body.
- Provides high flow rates with low pressure drop.
- Various seat and packing materials available.
- Face-to-face dimension in accordance with **CMO Valves** standard.

GENERAL APPLICATIONS

This knife gate valve is suitable for liquids that contain a maximum of 4% suspended solids.

Diseñada para aplicaciones tales como:

- Paper Industry
- Mining
- Chemical plants
- Pumping
- Food Industry
- Sewage treatment

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.

* Others **ND** on request.

WORKING PRESSURE (ΔP)

DN50-DN200	10 bar
DN250-DN400	6 bar
DN450	5 bar
DN500	4 bar
DN600	3 bar

* Other pressures, consult.

The indicated working pressures are valid both ways.

STANDARD FLANGES

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

OTHER COMMON FLANGES

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

* Others on request



Fig. 1

APPLICATION OF EUROPEAN DIRECTIVES

See document of European Directives applicable to **CMO Valves**.

* For category and zone information, contact technical-commercial department at **CMO Valves**.

QUALITY DOSSIER

All valves are tested hydrostatically at **CMO Valves** and material and test certificates can be provided.

- Body test = working pressure x 1.5
- Seat test = working pressure x 1.1

ADVANTAGES

This valve's main characteristic is the body design. It is 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 ring 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.

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...

The stem on the valve is made of AISI304 stainless steel. This is another added advantage, as some manufacturers produce it with 13% chrome and it gets rusty very quickly. The handwheel is made of nodular cast iron. Some manufacturers produce them in normal cast iron which can lead to breakages in the event of very high operating torque or knocks.

The yoke is has a compact design with the bronze actuator nut protected in a sealed and lubricated box. This makes it possible to move the valve with a key, even without the handwheel (in other manufacturers' products this is not possible).

The pneumatic actuator's upper and lower covers are made of nodular cast iron, making them highly shock resistant. This characteristic is essential in pneumatic actuators.

The pneumatic cylinder's o-ring seals are commercial products and can be purchased worldwide. This means it is not necessary to contact **CMO Valves** every time a seal is required.

STANDARD COMPONENTS LIST

COMPONENT	NODULAR IRON	ST. STEEL
1 BODY	GJS500-7	CF8M
2 GATE	AISI304	AISI316
3 SEAT	EPDM	
4 PACKING GLAND	GJS500-7	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	FUN. NODULAR	
14 NUT	STEEL	
15 HOOD	STEEL	

Table. 1

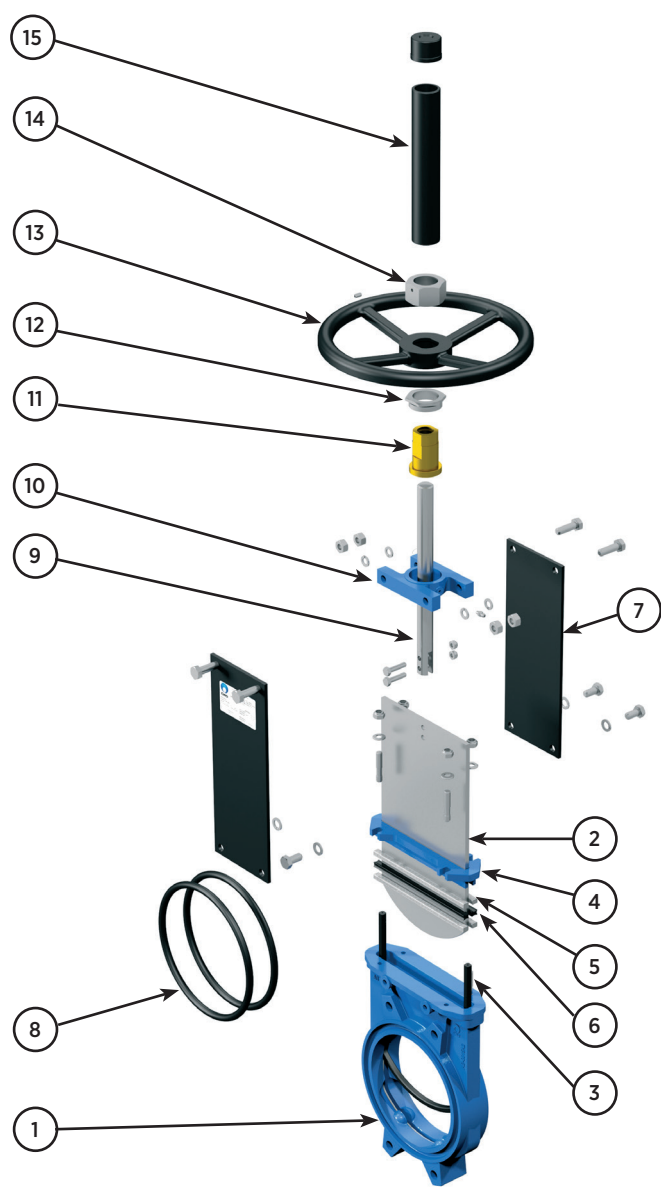


Fig. 2



DESIGN CHARACTERISTICS

1. BODY

- Bidirectional wafer-design knife gate valve. One-piece cast iron 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 materials are GJS500-7 cast iron and CF8M stainless steel.
- Other materials, such as GJS500-7 nodular cast iron, A216WCB carbon steel and stainless steel alloys (AISI316Ti, Duplex, 254SMO, Uranus B6...) are available on request.
- As standard, iron or carbon steel valves are painted with an anti-corrosive protection of 80 microns of EPOXY (colour RAL 5015). Other types of anti-corrosive protections are available on request.

2. GATE

The standard manufacturing materials are AISI304 stainless steel in valves with iron body and AISI316 stainless steel in valves with CF8M body. 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.

RESILIENT SEAT MATERIALS

EPDM

This is the standard resilient seat fitted on **CMO 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.

FKM

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.

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.

3. SEAT

There is only one seat design available on the AB valve and it must always be soft seated. **It can never have a metal or PTFE sealing joint.**

Below we show the detail of the seat:

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

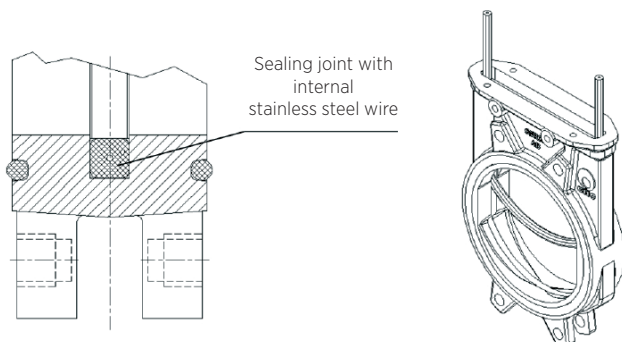


Fig. 3 - 4

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.

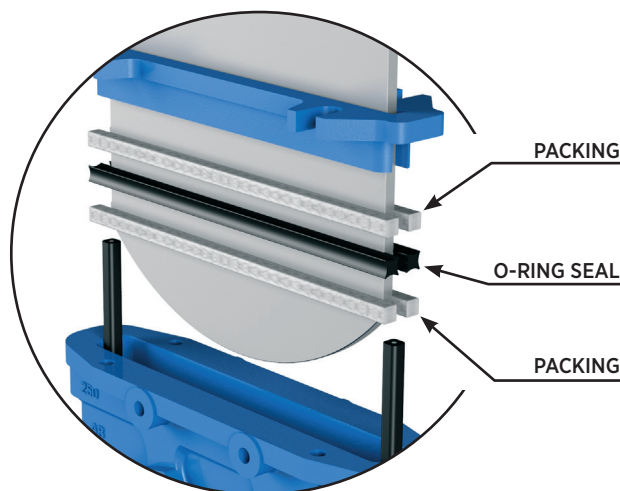
The internal stainless steel wire helps to keep the U shape and ensures that the joint does not come out of the body because of the flow as it passes through the valve.

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

Note: In some applications other types of resilient materials are used, such as hypalon, butile or natural rubber.

4. PACKING

CMO Valves's 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:



1. GREASED COTTON (Recommended for hydraulic services):

This packing is composed of braided cotton fibres soaked in grease both inside and out. It is for general use in hydraulic applications in both pumps and valves.

2. DRY COTTON

This packing is composed of cotton fibres. It is for general use in hydraulic applications with solids.

3. COTTON + PTFE

This packing is composed of braided cotton fibres soaked in PTFE both inside and out. It is for general use in hydraulic applications in both pumps and valves.

4. 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.

5. 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.

6. 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	T ³ MÁX (°C)	APLICACIONES	MATERIAL	P(Bar)	T ³ . MÁX	pH
EPDM (E)	90 *	Mineral acids and oils	Greased cotton	10	100	6-8
Nitril (N)	90 *	Hydrocarbons, oils and greases	Dry cotton (AS)	0,5	100	6-8
FKM (V)	200	Hydrocarbons and solvents	Synthetic + PTFE	100	-200 +270	0-14
Silicon (S)	200	Food Products	Graphite	40	650	0-14
Note: More details and other materials available on request			Ceramic Fibre	0,3	1400	0-14

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

Table. 2

5. STEM

The stem on the **CMO Valves** valve is made of AISI 304 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.

6. PACKING GLAND

The packing gland allows uniform force and pressure to be applied to the packing to ensure watertight integrity. As standard, valves with cast iron body include GJS500-7 packing glands, whilst valves with stainless steel body have CF8M packing glands.

7. ACTUATORS

All types of actuators can be supplied, with the advantage that thanks to the **CMO Valves** 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 **CMO Valves** is that all actuators are interchangeable.

Manual Drives

- Handwheel (*)

- Chain handwheel (*)

- Lever

- Geared motor (*)

- Others (square stem)

Availability of Accessories

- Mechanical stoppers

- Locking devices

- Emergency manual drives

- Electrovalves

- Positioners

- Limit switches

- Proximity detectors

- Straight floor stand (Fig. 5)

- Leaning floor stand (Fig. 6)

Automatic Drives

- Electric actuator (*)

- D/E & S/E pneumatic cylinder

- Hydraulic cylinder

(*) Available in rising and non-rising stem versions.

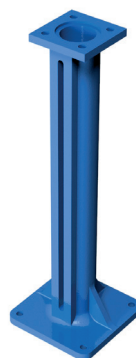


Fig. 5

LEANING FLOOR STANDS.

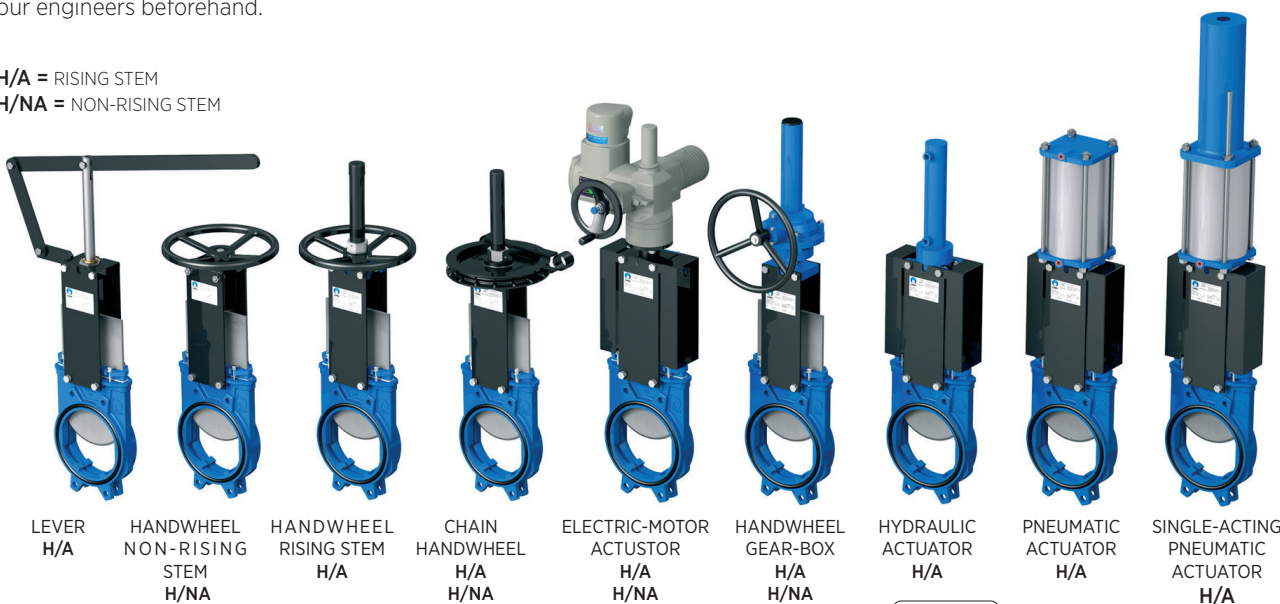


Fig. 6

STRAIGHT FLOOR STANDS.

Stem extensions have also been developed, allowing the drive to be located far away from the valve, to suit all needs. Please ask our engineers beforehand.

H/A = RISING STEM
H/NA = NON-RISING STEM



LEVER
H/A

HANDWHEEL
NON-RISING
STEM
H/NA

HANDWHEEL
RISING STEM
H/A

CHAIN
HANDWHEEL
H/A
H/NA

ELECTRIC-MOTOR
ACTUATOR
H/A
H/NA

HANDWHEEL
GEAR-BOX
H/A
H/NA

HYDRAULIC
ACTUATOR
H/A

PNEUMATIC
ACTUATOR
H/A

SINGLE-ACTING
PNEUMATIC
ACTUATOR
H/A

Fig. 7

ACCESSORIES AND OPTIONS

Different types of accessories are available to adapt the valve to specific working conditions such as:

MIRROR POLISHED GATE

The mirror polished gate is especially recommended in the food industry and, as standard, in applications in which solids can stick to the gate. It is an alternative to ensure the solids slide off and do not stick to the gate.

PTFE LINED GATE

As with the mirror polished gate, it improves the valve's resistance to products that can stick to the gate.

STELLITED GATE

Stellite is added to the gate's lower edge to protect it from abrasion.

SCRAPER IN THE PACKING

Its function is to clean the gate during the opening movement and prevent possible damage to the packing.

AIR INJECTION IN THE PACKING GLAND

By injecting air in the packing, an air chamber is created which improves the watertight integrity.

HEATING JACKET

Recommended in applications in which the fluid can harden and solidify inside the valve's body. An external jacket keeps the body temperature constant, preventing the fluid from solidifying.

DRIVE OR YOKE SUPPORT

Made of EPOXY-coated steel (or stainless steel to order), its robust design gives it great rigidity in order to withstand the most adverse operation conditions.

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 valve's desired run.

STROKE LIMITING MECHANICAL STOPS

They allow the stroke to be mechanically adjusted, limiting the valve's desired run.

EMERGENCY MANUAL ACTUATOR (HAND WHEEL /GEAR BOX)

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

FLUSHING HOLES IN BODY

Several holes can be drilled in the body to flush air, steam or other fluids out in order to clean the valve seat before sealing.

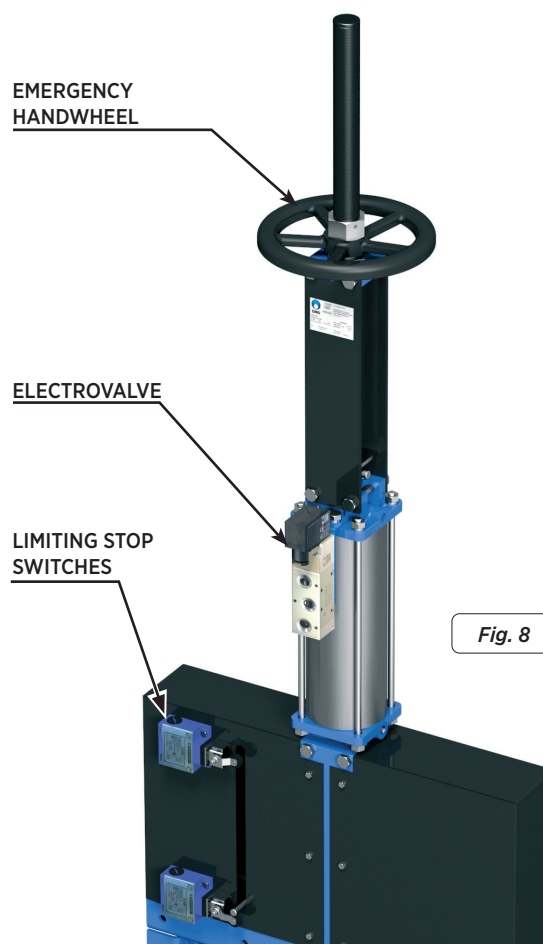


Fig. 8

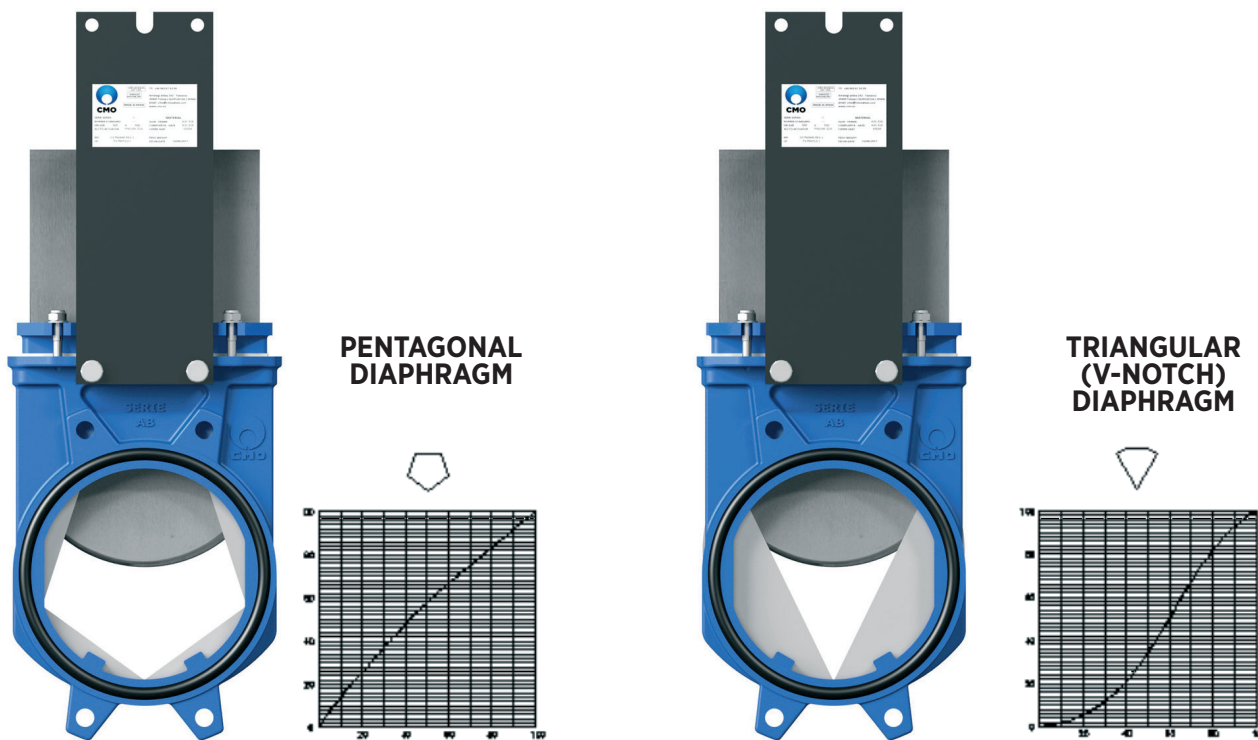


Fig. 9

VERTICAL
% MAXIMUM FLOW

HORIZONTAL
% VALVE OPENING

TRIANGULAR (V-NOTCH) AND PENTAGONAL DIAPHRAGM WITH INDICATION RULE

Recommended for applications in which flow regulation is required. Allows flow control according to the valve's opening percentage

INTERCHANGEABLE ACTUATORS

All actuators are easily interchangeable, except the lever.

RECUBRIMIENTO DE EPOXI

All cast iron and carbon steel bodies and components on **CMO Valves** are EPOXY coated, giving the valves great resistance to corrosion and an excellent finish. **CMO Valves**'s standard colour is blue, RAL-5015.

GATE SAFETY PROTECTION

In accordance with European Safety Standards ("EC" marking), **CMO Valves** automated valves are equipped with gate guards, to prevent any objects from being accidentally caught in the gate.

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 Fig 10.

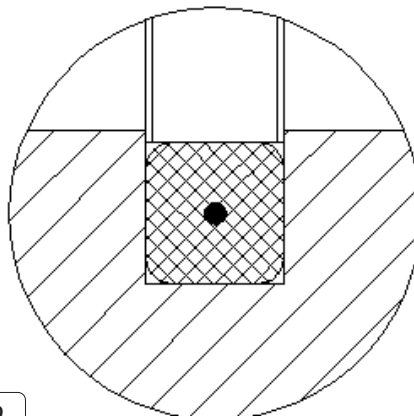


Fig. 10

TYPES OF EXTENSIONS

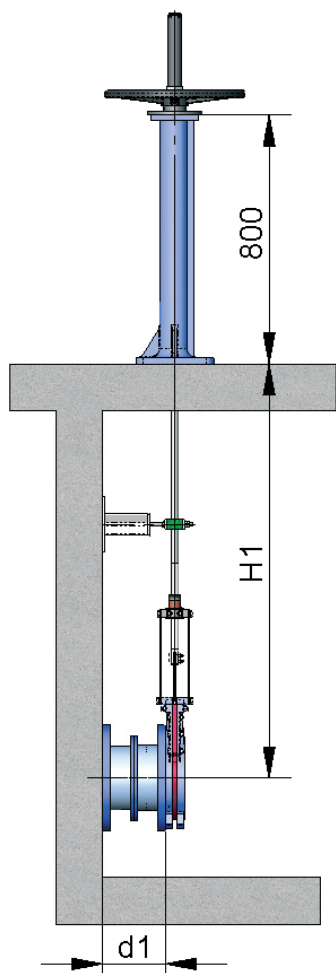


Fig. 11

STANDARD OPERATION STAND.

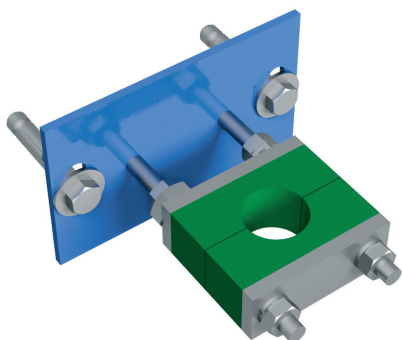


Fig. 12

STEM GUIDE BRACKET

COMPONENT LIST

COMPONENT	STANDARD VERSION
Stem	AISI 304
Rod	AISI 304
Support-Guide	Carbon steel with EPOXY coating
Guide	PA6
Stand	GJS500-7 with EPOXY coating

Table. 3

1- FLOOR STAND

This extension is done by coupling a spindle to the stem. The desired extension is achieved by defining the length of the spindle. A floor stand is normally installed to support the drive.

The definition variables are as follows:

H1 = Distance from valve centre to base of the stand

d1 = Separation from the wall to the end of the connecting flange

CHARACTERISTICS:

- It can be coupled to any type of drive.
- We recommend a stem guide bracket every 1.5 m
- The standard floor stand is 800 mm high.
- Option to use a position indicator to determine the valve's percentage of opening.
- Leaning stand available to order
- Other floor stand measurements available on request.



LEANING STAND.

Fig. 13

2.- PIPE

This consists of raising the drive. The pipe will rotate in the same direction as the wheel when the valve is operated. The valve always remains at the same height.

The definition variables are as follows:

H1 = Distance from valve centre to base of the stand

d1 = Separation from the wall to the end of the connecting flange

CHARACTERISTICS:

- Standard drives: handwheel and top square.
- A pipe guide bracket is recommended every 1.5 m.
- The standard materials are: EPOXY-coated carbon steel and stainless steel.

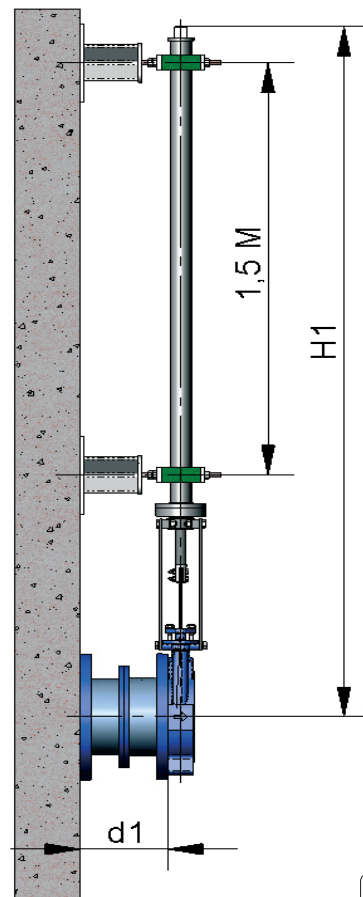


Fig. 14

3.- ELONGATED SUPPORT PLATES

When a short extension is required, it can be achieved by extending the support plates. An intermediate yoke can be fitted to reinforce the support plates structure.



Fig. 15

4.- UNIVERSAL CARDAN JOINT

If the valve and the drive are not in correct alignment, the problem can be resolved by fitting a universal cardan joint. This option is only valid for non-rising stem drives.



Fig. 16

RISING-STEM HANDWHEEL

The definition variables are as follows:

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

D= Max. height of the valve (without actuator).

OPTIONS:

- Locking devices.
- Extensions: stand, pipe, plates.
- DN above those given in the table

ACTUATOR:

- Handwheel
- Stem
- Nut
- Stem protection bonnet

AVAILABLE:

- Standard ND50 to DN600.
- From ND600 the actuator is with gears.

* Other ND on request.

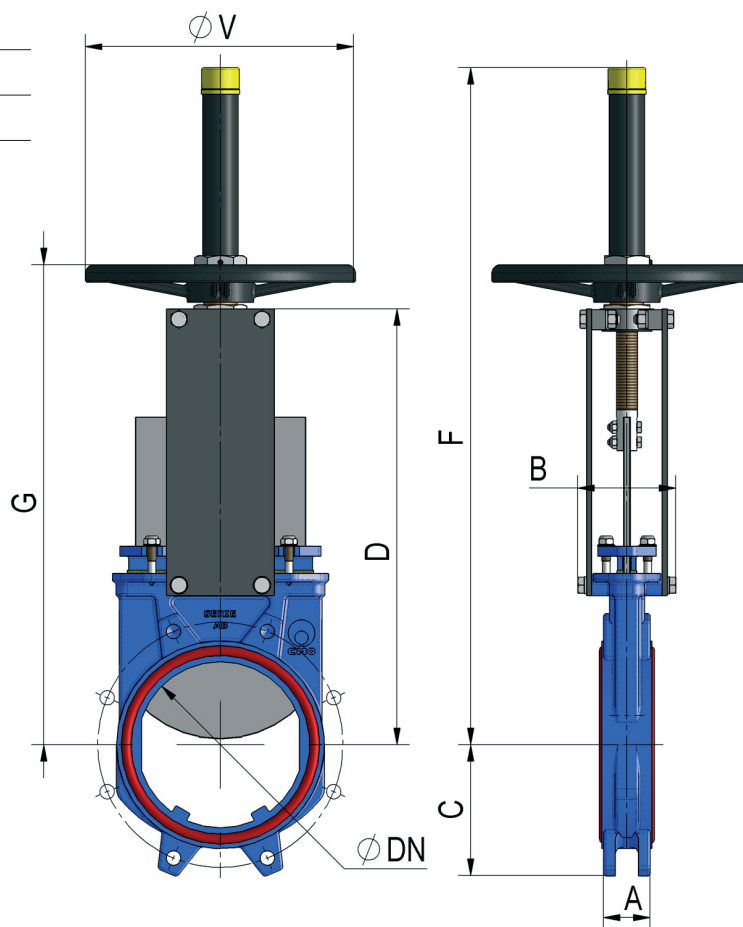


Fig. 17

ND	ΔP (bar)	A	B	C	D	F	G	øV	WEIGHT (kg.)
50	10	40	91	61	241	410	280	225	7
65	10	40	91	68	268	437	308	225	8
80	10	50	91	91	294	463	333	225	9
100	10	50	91	104	334	503	373	225	11
125	10	50	101	118	367	586	407	225	13
150	10	60	101	130	419	638	458	225	17
200	8	60	118	159	525	816	578	325	28
250	6	70	118	196	626	1017	679	325	40
300	6	70	118	230	726	1117	779	380	56
350	5	96	290	254	797	1337	906	450	94
400	5	100	290	287	903	1443	1012	450	116
450	3	106	290	304	989	1629	1098	450	162
500	3	110	290	340	1101	1741	1210	450	187
600	3	110	290	398	1307	2047	1416	450	260

Table. 4

HANDWHEEL WITH NON-RISING STEM

Suitable when no size limitations exist.

The definition variables are as follows:

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

J = Max. height of the valve (without actuator)

OPTIONS:

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

ACTUATOR:

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

AVAILABLE:

- ND50 to DN600.
- From ND600 the actuator is with gears

* Other ND on request.

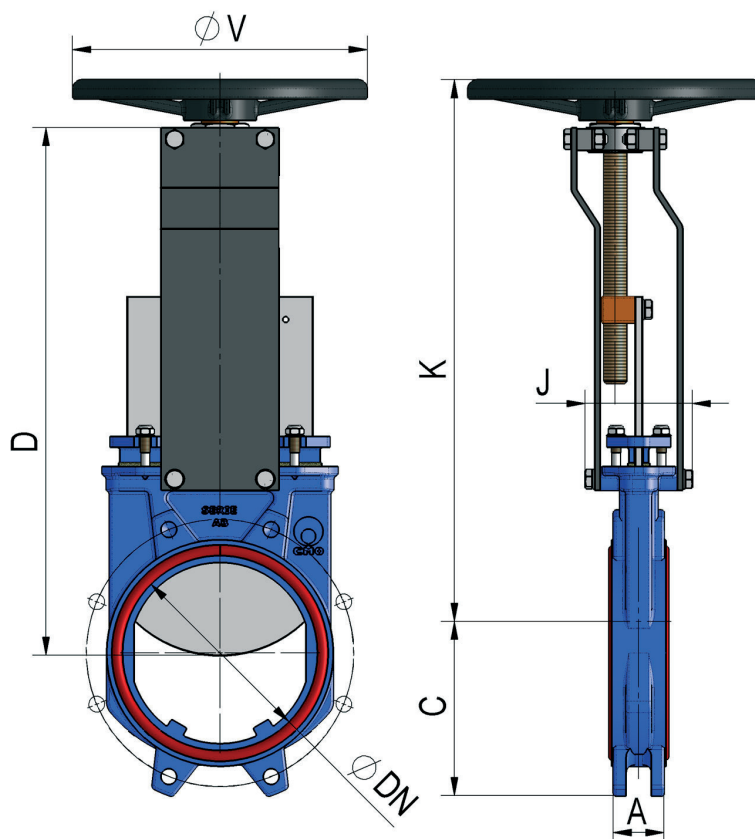


Fig. 18

ND	ΔP (bar)	A	C	D	J	K	øV	WEIGHT (kg.)
50	10	40	61	241	101	280	225	7
65	10	40	68	268	101	308	225	8
80	10	50	91	294	101	333	225	9
100	10	50	104	334	101	373	225	11
125	10	50	118	367	111	407	225	13
150	10	60	130	419	111	458	225	17
200	8	60	159	525	128	578	325	28
250	6	70	196	626	128	679	325	40
300	6	70	230	726	128	779	450	56
350	5	96	254	797	305	906	450	94
400	5	100	287	903	305	1012	450	116
450	3	106	304	989	305	1098	450	162
500	3	110	340	1101	305	1210	450	187
600	3	110	398	1307	305	1416	450	260

Table. 5

CHAIN HANDWHEEL

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

The definition variables are as follows:

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

D = Max. height of the valve (without actuator)

OPTIONS:

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

ACTUATOR:

- Handwheel
- Stem
- Nut
- Hood
- Chain

AVAILABLE:

- ND50 to DN600.
- From ND600 the actuator is with gears.

* Other ND on request.

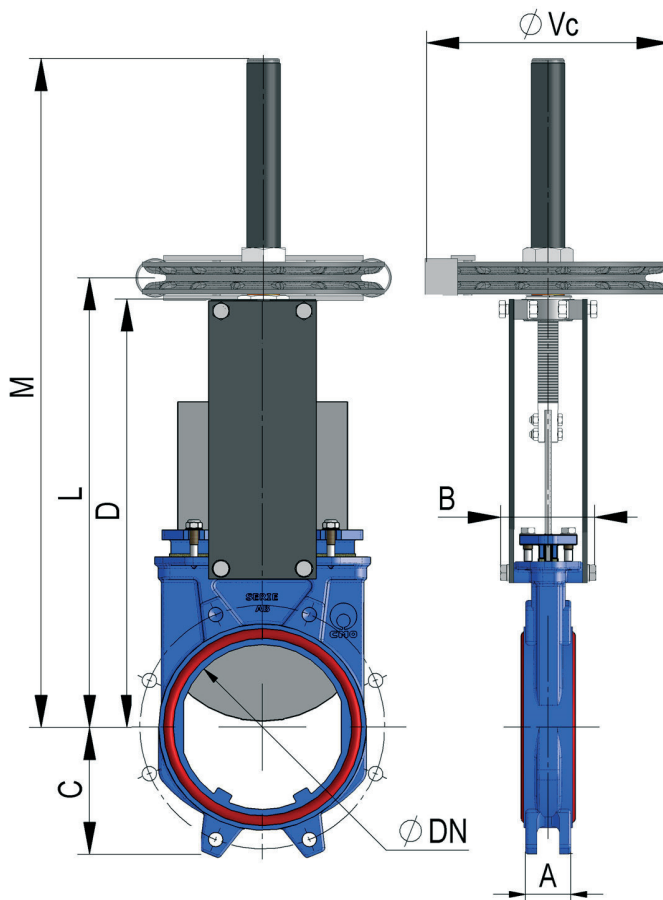


Fig. 19

ND	ΔP (bar)	A	B	C	D	L	M	øVc	WEIGHT (kg.)
50	10	40	91	61	241	264	410	225	7
65	10	40	91	68	268	291	437	225	8
80	10	50	91	91	294	317	463	225	9
100	10	50	91	104	334	357	503	225	11
125	10	50	101	118	367	390	586	225	13
150	10	60	101	130	419	442	638	225	17
200	8	60	118	159	525	551	816	300	28
250	6	70	118	196	626	652	1017	300	40
300	6	70	118	230	726	752	1117	300	56
350	5	96	290	254	797	879	1337	402	94
400	5	100	290	287	903	985	1443	402	116
450	3	106	290	304	989	1071	1629	402	162
500	3	110	290	340	1101	1183	1741	402	187
600	3	110	290	398	1307	1389	2047	402	260

Table. 6

LEVER

It is a fast actuator.

The definition variables are as follows:

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

D = Max. height of the valve (without actuator)

OPTIONS:

- Locking devices
- Extensions: elongated plates...

ACTUATOR:

- Lever
- Rod
- Guide bearing
- External limiting switches to maintain the position

AVAILABLE:

- ND50 to DN200.
- Other pressures on request

* Others ND on request.

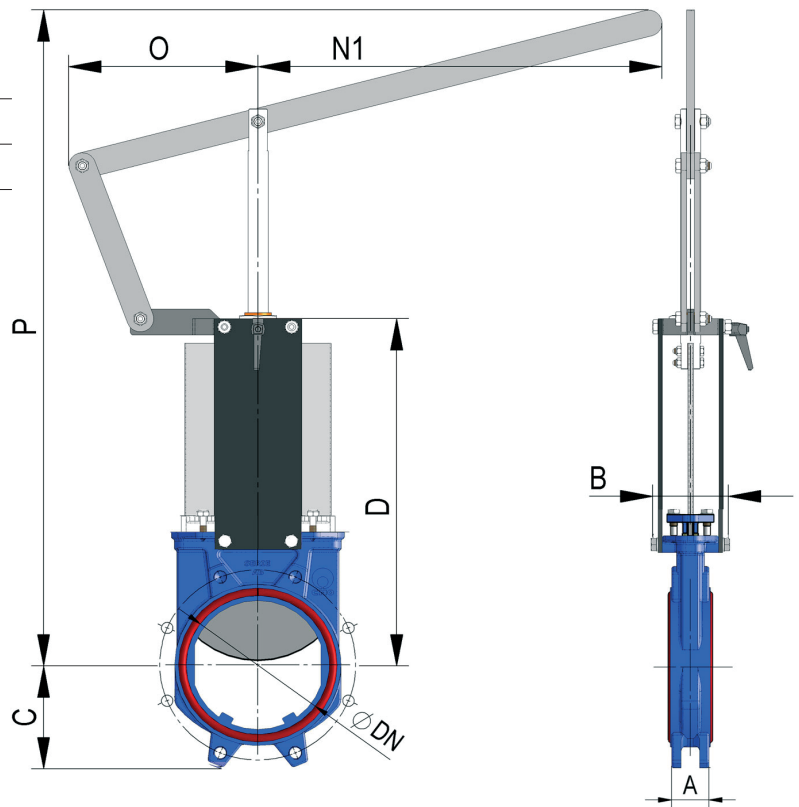


Fig. 20

ND	ΔP (bar)	A	B	C	D	N1	O	P	WEIGHT (kg.)
50	10*	40	91	61	241	325	155	504	8
65	10*	40	91	68	268	325	155	526	9
80	10*	50	91	91	294	325	155	549	10
100	10*	50	91	104	334	325	155	605	11
125	10*	50	101	118	367	425	155	902	14
150	10*	60	101	130	419	425	155	956	16
200	8*	60	118	159	525	620	290	1027	32

Table. 7

GEAR BOX

The definition variables are as follows:

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

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

OPTIONS:

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

ACTUATOR:

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

AVAILABLE:

- ND50 to DN600.

* Other ND on request.

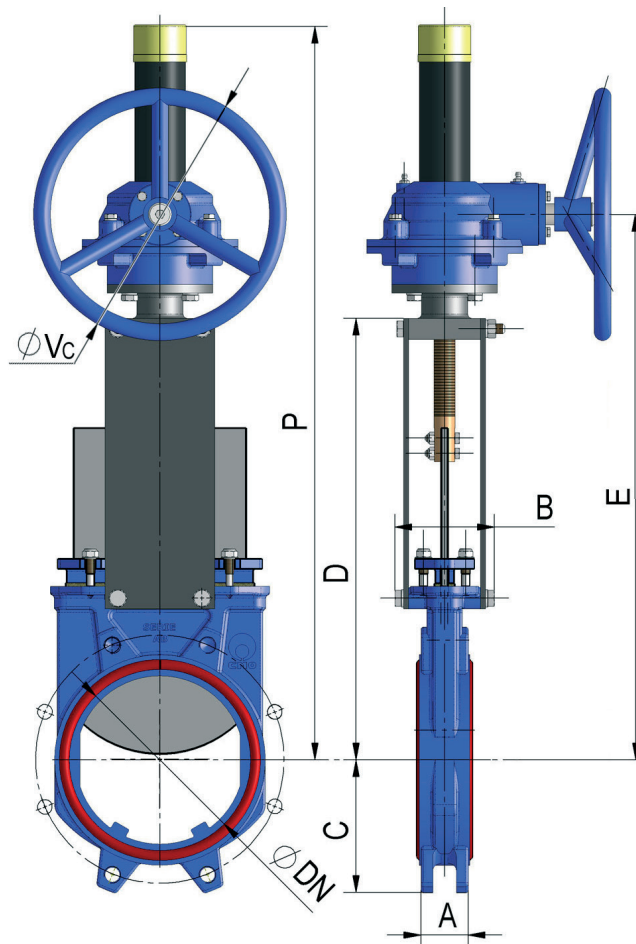


Fig. 21

ND	ΔP (bar)	A	B	C	D	E	P	øVc	WEIGHT (kg.)
50	10	40	91	61	241	366	540	300	20
65	10	40	91	68	268	392	566	300	21
80	10	50	91	91	294	418	592	300	22
100	10	50	91	104	334	458	632	300	24
125	10	50	101	118	367	491	665	300	26
150	10	60	101	130	419	543	717	300	30
200	8	60	118	159	525	648	942	300	41
250	6	70	118	196	626	749	1033	300	53
300	6	70	118	230	726	850	1121	300	69
350	5	96	290	254	797	891	1305	450	107
400	5	100	290	287	903	997	1403	450	130
450	3	106	290	304	989	1083	1677	450	183
500	3	110	290	340	1101	1195	1789	450	204
600	3	110	290	398	1307	1401	1995	450	288

Table. 8

DOUBLE-ACTING PNEUMATIC CYLINDER

Las variables de definición son:

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

D = Max. height of the valve (without actuator)

CMO Valves 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 ND50 to ND200 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 ND200 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:

- ND50 to DN600.

* Other ND on request.

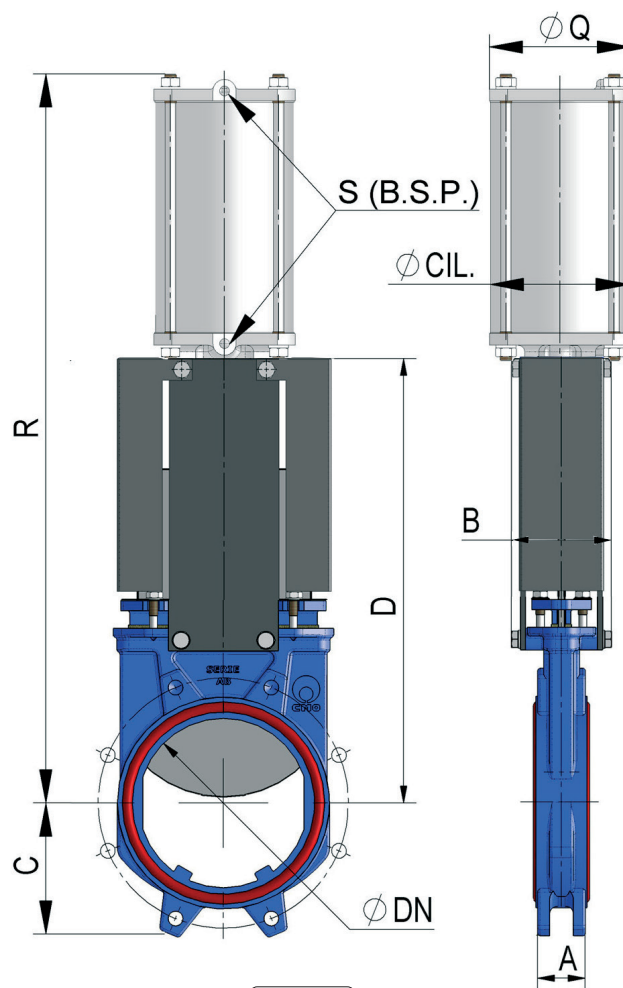


Fig. 22

ND	ΔP (bar)	A	B	C	D	R	Ø CIL.	Ø VAST	Ø Q	S (B.S.P.)	WEIGHT (kg.)
50	10	40	91	61	241	415	80	20	96	1/4"	7
65	10	40	91	68	268	455	80	20	96	1/4"	8
80	10	50	91	91	294	498	80	20	96	1/4"	9
100	10	50	91	104	334	565	100	20	115	1/4"	12
125	10	50	101	118	367	636	125	25	138	1/4"	18
150	10	60	101	130	419	717	125	25	138	1/4"	22
200	8	60	118	159	525	874	160	30	175	1/4"	37
250	6	70	118	196	626	1036	200	30	218	3/8"	58
300	6	70	118	230	726	1182	200	30	218	3/8"	72
350	5	96	290	254	797	1380	250	40	270	3/8"	130
400	5	100	290	287	903	1535	250	40	270	3/8"	148
450	3	106	290	304	989	1677	300	45	382	1/2"	235
500	3	110	290	340	1101	1839	300	45	382	1/2"	260
600	3	110	290	398	1307	2146	300	45	382	1/2"	334

Table. 9

SINGLE-ACTING PNEUMATIC CYLINDER

CMO Valves single-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.

Available (spring closes or spring opens).

The jacket is made of aluminium, the covers of nodular cast iron or carbon steel, the rod of AISI304, the piston of rubber-coated steel and the O-ring seals of nitrile.

The actuator design is spring activated for valves with diameters up to ND200. For larger diameters the actuator contains a double-acting cylinder and an air tank which stores the volume of air necessary to perform the last movement in the event of a fault.

Note: Please see the “**CMO Valves** Pneumatic Actuators” catalogue if you require further information.

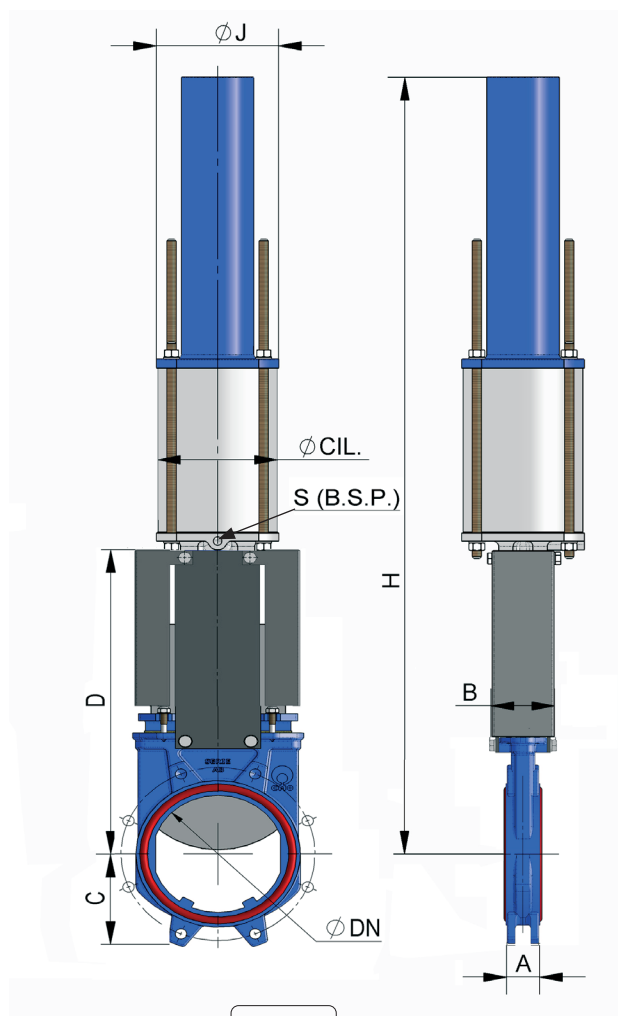


Fig. 23

DN	ΔP (bar)	A	B	C	D	H	ØJ	Ø CIL.	Ø VAST	S (B.S.P.)	WEIGHT (kg.)
50	10	40	91	61	248	785	138	125	25	1/4"	19
65	10	40	91	68	274	810	138	125	25	1/4"	22
80	10	50	91	91	302	840	138	125	25	1/4"	23
100	10	50	91	104	340	880	138	125	25	1/4"	24
125	10	50	101	118	380	920	138	160	30	1/4"	35
150	10	60	101	130	425	995	138	160	30	1/4"	36
200	8	60	118	159	533	1340	175	200	30	3/8"	66

Table. 10

ELECTRIC ACTUATOR

AUTOMATIC DRIVE:

- Electric motor
- Stem
- Yoke

THE ELECTRIC MOTOR INCLUDES:

- Emergency manual handwheel
- Limit switches
- Torque switches

OPTIONS:

- Different types and brands
- Non-rising stem
- ISO 5210 / DIN 3338 flanges

AVAILABLE:

- ND 50 to DN 600.
- From DN500 the motor is assisted with a gear box.

* Other ND on request.

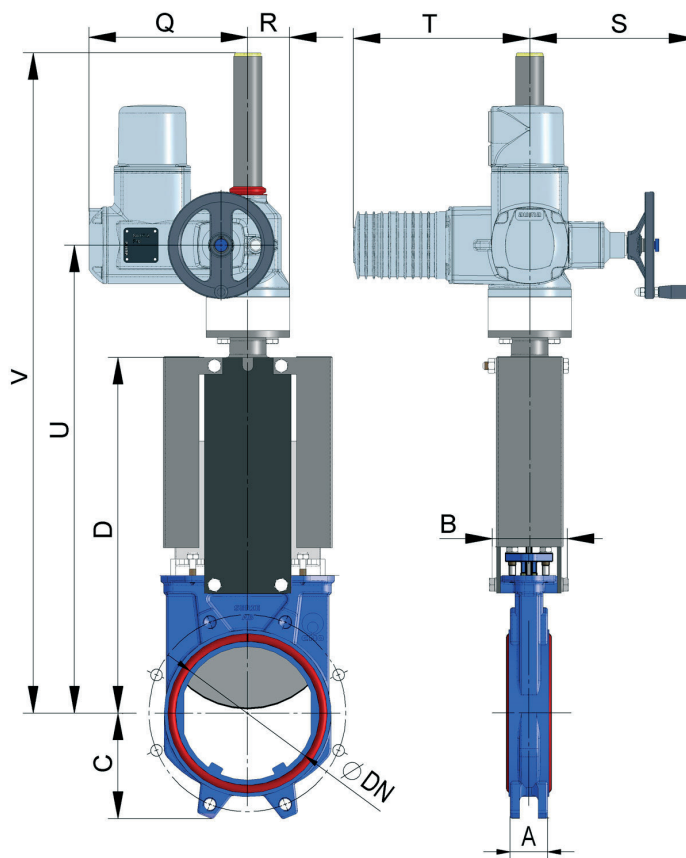


Fig. 24

DN	ΔP (bar)	A	B	C	D	Q	R	S	T	U	V	WEIGHT (kg.)
50	10	40	91	61	241	238	62	249	265	400	595	24
65	10	40	91	68	268	238	62	249	265	426	622	25
80	10	50	91	91	294	238	62	249	265	452	647	26
100	10	50	91	104	334	238	62	249	265	492	687	27
125	10	50	101	118	367	238	62	249	265	525	720	30
150	10	60	101	130	419	238	62	249	265	577	772	32
200	8	60	118	159	525	238	62	249	265	685	990	42
250	6	70	118	196	626	238	62	249	265	785	1090	55
300	6	70	118	230	726	238	62	249	265	885	1190	72
350	5	96	290	254	797	248	65	254	283	940	1305	99
400	5	100	290	287	903	248	65	254	283	1045	1460	136
450	3	106	290	304	989	248	65	254	283	1175	1755	166
500	3	110	290	340	1101	248	65	254	283	1290	1870	245
600	3	110	290	398	1307	286	90	336	389	1495	2075	362

Table. 11

HYDRAULIC ACTUATOR

The definition variables are as follows:

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

D= Max. height of the valve (without actuator)

THE HYDRAULIC ACTUATOR INCLUDES:

- Hydraulic cylinder
- Yoke

AVAILABLE:

- ND50 to DN600

Different types and brands available according to customer's requirements.

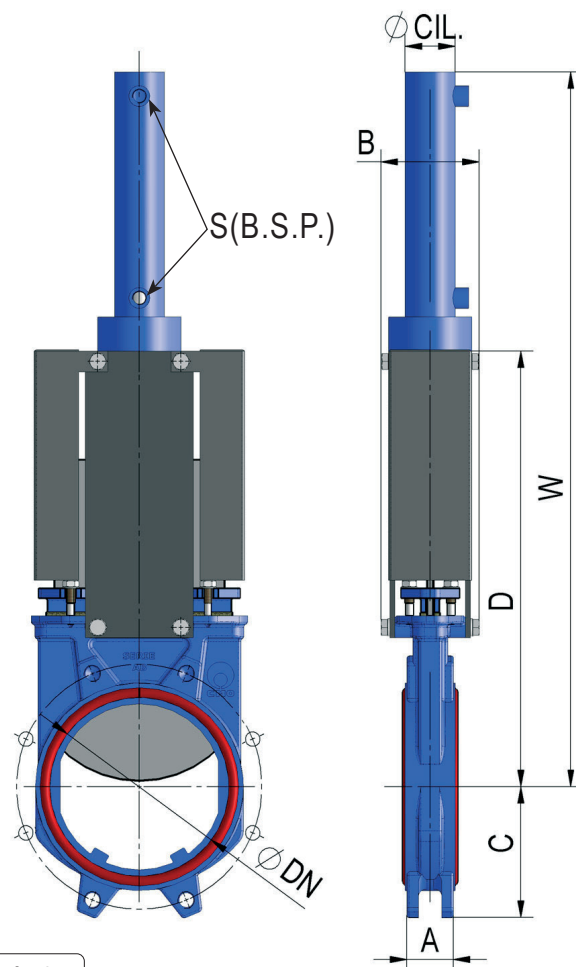


Fig. 25

ND	ΔP (bar)	A	B	C	D	W	\varnothing CIL	\varnothing VAST	S (B.S.P.)	OIL CAP. (dm ³)	WEIGHT (kg.)
50	10	40	91	61	241	457	25	18	3/8"	0.03	7
65	10	40	91	68	268	500	25	18	3/8"	0.04	8
80	10	50	91	91	294	560	25	18	3/8"	0.06	9
100	10	50	91	104	334	620	32	22	3/8"	0.09	12
125	10	50	101	118	367	683	32	22	3/8"	0.13	15
150	10	60	101	130	419	755	40	28	3/8"	0.25	20
200	8	60	118	159	525	926	50	28	3/8"	0.42	31
250	6	70	118	196	626	1077	50	28	3/8"	0.52	44
300	6	70	118	230	726	1246	50	28	3/8"	0.6	62
350	5	96	290	254	797	1376	50	28	3/8"	0.8	100
400	5	100	290	287	903	1532	63	36	3/8"	1.3	138
450	3	106	290	304	989	1707	63	36	3/8"	1.5	161
500	3	110	290	340	1101	1869	63	36	3/8"	1.7	223
600	3	110	290	398	1307	2176	80	36	3/8"	3.12	325

Table. 12

FLANGE DIMENSIONS

EN 1092-2 PN10

ND	ΔP (bar)	●	○	M (Metric)	P.	$\varnothing K$
50	10	4	-	M 16	8	125
65	10	4	-	M 16	8	145
80	10	4	4	M 16	9	160
100	10	4	4	M 16	9	180
125	10	4	4	M 16	9	210
150	10	4	4	M 20	10	240
200	8	4	4	M 20	10	295
250	6	6	6	M 20	12	350
300	6	6	6	M 20	12	400
350	5	12	4	M 20	21	460
400	5	12	4	M 24	21	515
450	3	12	4	M 24	22	565
500	3	16	4	M 24	22	620
600	3	16	4	M 27	22	725

Table. 13

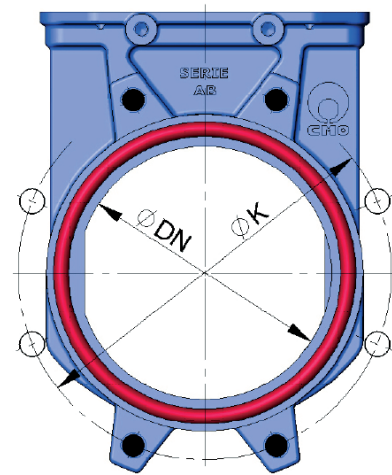


Fig. 26

- BLIND TAPED HOLES
- THROUGH HOLE

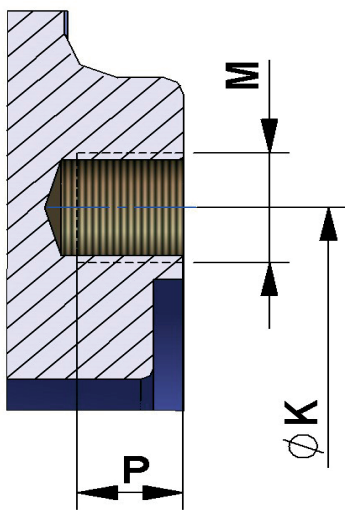


Fig. 27

ANSI B16, Class 150

ND	ΔP (bar)	●	○	M (UNC)	P	$\varnothing K$
2"	10	4	-	5/8"	8	120,6
2 1/2"	10	4	-	5/8"	8	139,7
3"	10	4	-	5/8"	9	152,4
4"	10	4	4	5/8"	9	190,5
5"	10	4	4	3/4"	9	215,9
6"	10	4	4	3/4"	10	241,3
8"	8	4	4	3/4"	10	298,4
10"	6	6	6	7/8"	12	361,9
12"	6	6	6	7/8"	12	431,8
14"	5	12	4	1"	21	476,2
16"	5	12	4	1"	21	539,7
18"	3	12	4	1 1/8"	22	577,8
20"	3	16	4	1 1/8"	22	635
24"	3	16	4	1 1/4"	22	749,3

Table. 14



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