

B



BIDIRECTIONAL KNIFE GATE VALVE

DESCRIPTION

Wafer style, bidirectional knife gate valve. Cast body, composed by two bolted parts, with inside sliding guides to provide a smooth operation. High flow rates with low pressure drops. Several seat and packing materials available. Face to face dimension according **CMO Valves** standard.

GENERAL APPLICATIONS

This knife gate valve is appropriate for liquids with a solids concentration of maximum 8%.

Designed for a wide range of applications such as:

- Pulp and Paper.
- Mining.
- Effluent handling plants.
- Chemical plants.
- Food and beverage.
- Bulk conveying.
- Sewage applications.
- Chemical plants.

SIZES

From ND50 up to ND600 (bigger sizes under request)

The pressures indicated in the table can be used in both directions of the valve.

FLANGE CONNECTION DRILLINGS

The standard flange connection is according to **DIN PN10**. Other flange connections such as, **ANSI 150, DIN PN6 – PN16 – PN25, British Standard, Australian Standard, JIS Standard**, are available under request.

WORKING PRESSURE (ΔP)

ND50 a ND125	10 bar
ND150	8 bar
ND200	7 bar
ND250 a ND300	5 bar
ND350 a ND400	4 bar
ND450 a ND600	3 bar
ND700 a ND1200	2 bar

* Other pressures, upon request

SERIE - B



Fig. 1

DIRECTIVES

Pressure Equipment Directive:
(PED) ART 4.3 /CAT.1.

Potential Explosive Atmospheres Directive:
(ATEX) CAT.3 ZONA 2 y 22 GD.

* For further information on categories and zones please contact the **CMO VALVES** Technical-Commercial Dept **CMO VALVES**.



QUALITY DOSSIER

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

CARACTERÍSTICAS

The main characteristic of this knife gate valve is that it has full and continuous bore. This means that in open position it has no cavity, therefore there are no turbulences in the fluid. The type B is constructed with two body half design. The inside surface of the two bodies is machined and they are assembled with bolts creating a solid block. The valve gate slides inside of the two body parts thanks to several RCH 1000 nylon sliding guides installed inside of the bodies.

The stem protection hood is independent from the hand wheel fixing system, so the hood can be removed without removing the hand wheel. This point allows normal maintenance operations like greasing of the spindle, etc. The spindle (stem) of the **CMO valves** is made of stainless steel 18/8. This point is very important because there are manufacturers that manufacture it with 13% CR and it gets rusty in a very short time.

The hand wheel of the manual actuator is made of nodular iron GGG-50. Some manufacturers manufacture it on normal cast iron and they can break easily when receiving any big torque or knock. The bridge of the **CMO Valves** manual actuator is manufactured in a compact way, with the bronze nut protected in a greased and closed box. This point gives the possibility to move it with a key even without the hand wheel (in other manufacturer valves this is not possible).

The pneumatic actuator upper and lower caps are made of nodular iron GGG-50, therefore their resistance to the knocks is very high. This characteristic is essential in this type of pneumatic cylinder. Special care must be taken with cylinders with covers in aluminium or cast iron.

The sealing o-rings of the pneumatic cylinders are commercial and they can be bought all over the world, it is not needed, therefore, to contact **CMO Valves** every time a seal is required.

LISTA DE COMPONENTES ESTANDAR			
	COMPONENT	CAST IRON VERSION	STAINLESS STEEL VERSION
1	BODY	GJS500	CF8M
2	GATE	AISI304	AISI316
3	BODY SEAL	CARDBOARD	
4	PACKING GLAND	GJS500	CF8M
5	PACKING	SYNT. + PTFE	
6	SEAL	EPDM	
7	SUPPORT PLATES	S275JR	
8	RING	AISI316	
9	SEAT	EPDM	
10	JOINT	EPDM	
11	CAP	S275JR	AISI316
12	SPINDLE	AISI303	
13	BRIDGE	STELL	
14	STEM NUT	BRONZE	
15	CHECK NUT	ST44.2 + ZINC	
16	HANDWHEEL	NODULAR CAST IRON	
17	NUT	STELL	
18	HOOD	STELL	
19	TOP CAP	PLASTIC	

Table. 1

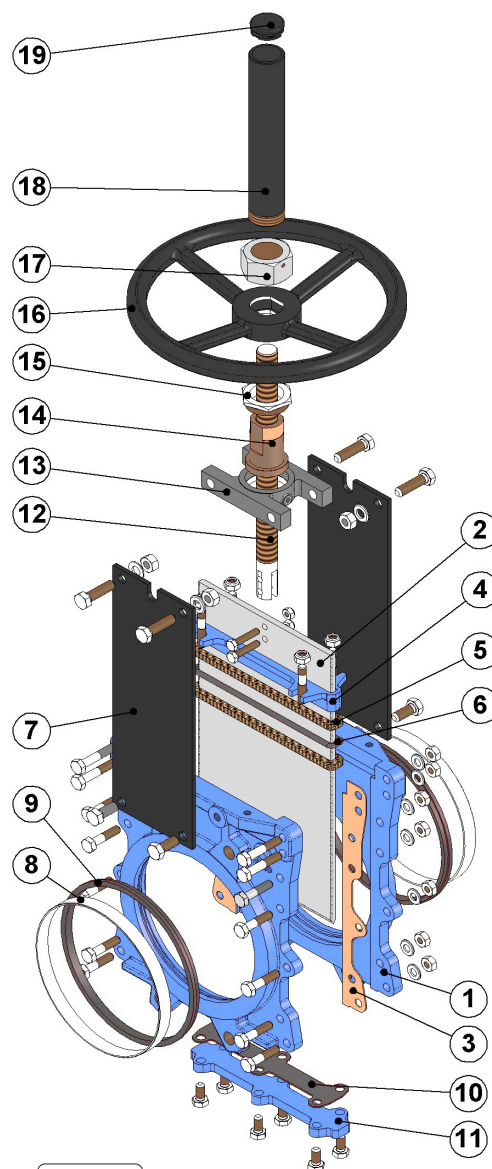


Fig. 2



Note: The stainless steel valves have slides on each side of the body to avoid friction and possible seizure of the valve, these slides are made of RCH1000.

DESIGN

1. BODY

Wafer style cast body with reinforcing ribs, composed by two bolted parts, with inside RCH1000 nylon sliding guides to provide a smooth operation. The inside surface of the two bodies is machined and they are assembled with bolts creating a solid block. It has full and continuous bore and in open position it has no cavity, therefore there are no turbulences in the fluid, it provides high flow rates and the pressure drop is minimal.

For sizes bigger than DN600 the construction of the body is fabricated in carbon steel with reinforcement ribs to withstand the maximum rated pressure. The standard manufacturing materials are GG25 cast iron and CF8M stainless steel. Other materials like GGG50 nodular cast iron, A216WCB carbon steel and stainless steel alloys (AISI316Ti, Duplex, 254SMO, Uranus B6) under request. Cast iron or steel valves are painted as standard with 80 microns anticorrosive protection of EPOXY (colour RAL 5015). Other anticorrosive protections available under 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.

3. SEAT:

Three different seat constructions are available according to the application in which the knife gate valve will work as follows:

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 seat construction includes a resilient joint that is held on the valve body by an AISI316 stainless steel retaining ring. Considering that the valve is bidirectional it has two joints.

Seat 3: Soft seated valve with reinforced socket. This seat construction includes a resilient joint that is held on the valve body by a reinforced socket with two functions (protect the valve body from abrasion and clean the gate when the valve is working with particles that stick on the gate). Considering that the valve is bidirectional it has two joints and two reinforced sockets.

Seat 4,5, Y 6 : Equal to seats 1, 2 and 3 but including a deflector. The deflector is a conical shaped ring located on the valve inlet with two functions (protect the valve body from abrasion guide the flow to the centre of the valve). There are three materials available for the reinforced ring and deflector (CA-15, CF8M and Ni-hard steel).

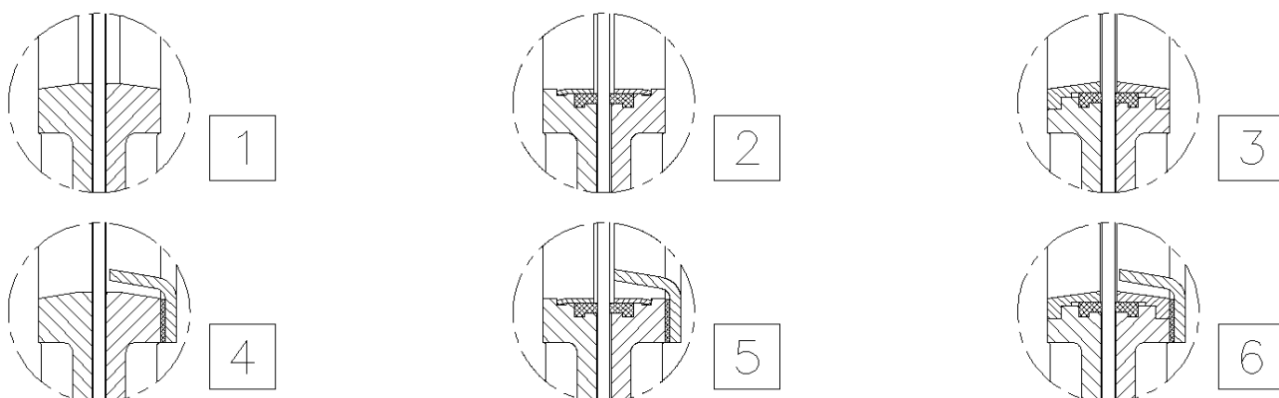


Fig. 3

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.

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.



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.

4. PACKING

As standard the packing of **CMO valves** is composed by three lines with an EPDM o-ring in the middle. It provides the tightness between the body and the gate and avoids any kind of leakage to the atmosphere. The packing is located in an easily accessible place and can be changed without dismantling the valve from the pipeline. Several types of packing can be supplied according to the different applications in which the valve can be located as follows:

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 in both pumps and valves.

P(bar) = 10 / T = 100°C PH = 6-8

DRY COTTON

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

P(bar) = 0.5 / T = 100°C PH = 6-8

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.

P(bar) = 30 / T = 120°C PH = 6-8

CERAMIC FIBRE

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

P(bar) = 0.3 / T = 100°C PH = 0-14

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

SILICONE

The silicone is used mainly into the food industry and pharmaceutical products with temperatures not higher than 200°C. It provides 100% tightness.

PTFE

It is used for corrosive products and PH from 2 to 12. This sealing material does not provide 100% tightness. The estimated leakage is 0.5% of the total flow.

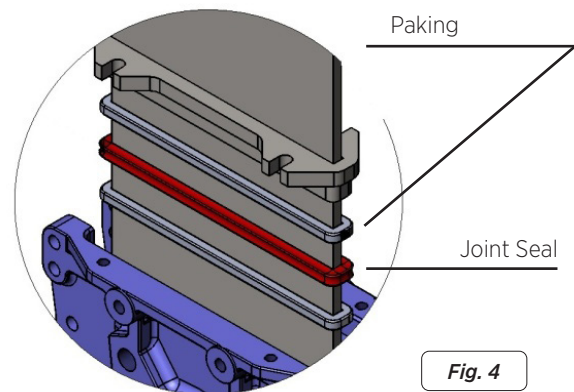


Fig. 4

PTFE LUBRICATED

It is made of PTFE filament threads which are impregnated using vacuum with a dispersion of PTFE and a special lubricant which helps the work at high speed. It is braided by the diagonal system. Suitable for valves and pumps working with nearly all the fluids, specially the more corrosives, including concentrated oils and oxidants. It is also suitable for fluids with solid contents.

P(bar) = 100 / T = 200°+270°C PH = 0-14

GRAPHITE

This packing is composed of high-purity graphite fibres. A diagonal braiding system is used and it's 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.

P(bar) = 40 / T = 650°C PH = 0-14

SEAT/SEALS			PACKING			
MATERIAL	T ^º MÁX (°C)	APPLICATIONS	MATERIAL	P (bar)	T ^º MÁX (°C)	pH
EPDM (E)	90° *	Mineral acids and oils	Greased cotton	10	100°	6-8
Nitrile (N)	90° *	Hydrocarbons, oils and greases	Dry cotton (AS)	0,5	100°	6-8
Vitón (V)	200°	Hydrocarbons and solvents	Synthetic + PTFE	100	-200°+270°	0-14
Silicone (S)	200°	Food Products	Graphite	40	650°	0-14
* ⇄ EPDM and Nitrile: possible up to Max. Temperature: 120°C on request.			Ceramic Fibre	0,3	1400°	0-14



Note: More details and other mate-

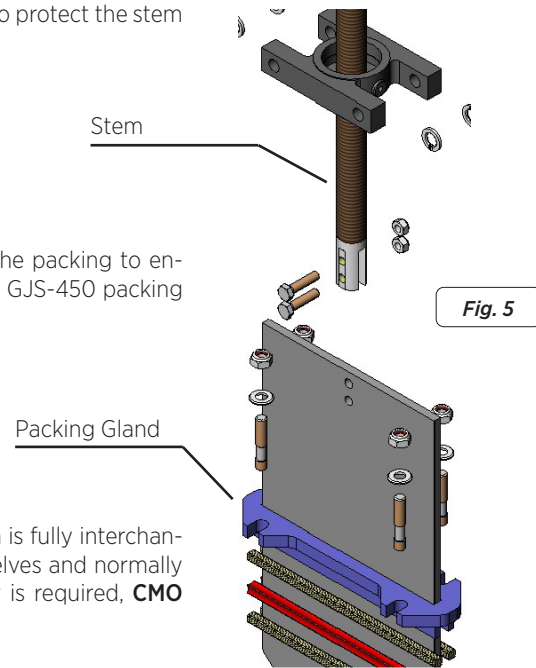
Table. 2

5. STEM

The stem on the CMO 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

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 GJS-450 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 the design is fully interchangeable. 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, **CMO Valves** will supply it.

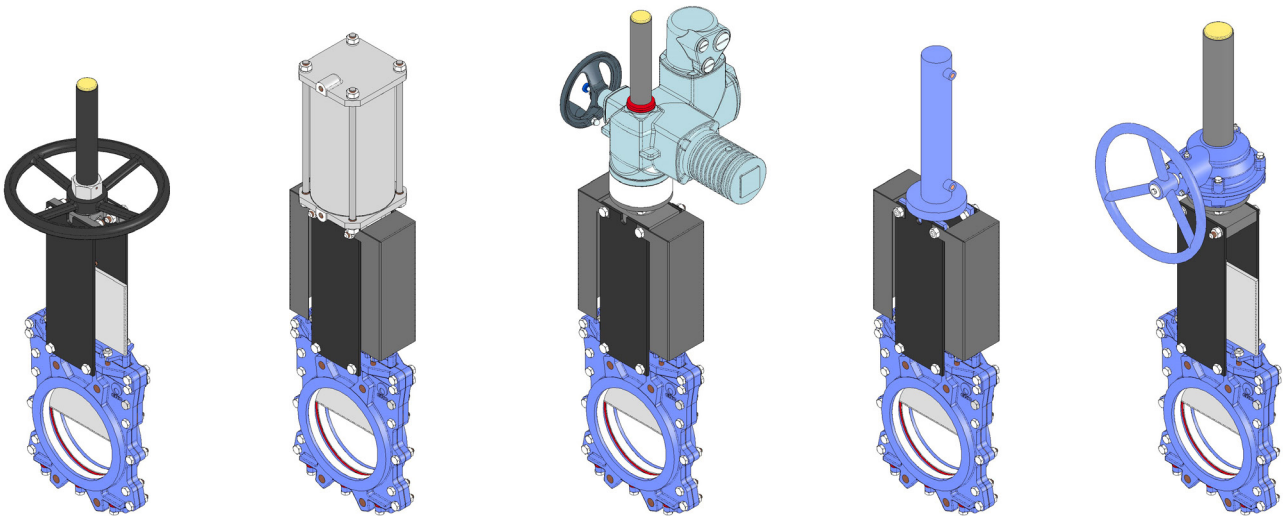


Fig. 6

Handwheel with rising stem

Cilindro neumático

Actuator eléctrico

Cilindro hidráulico

Reductor

The chainwheel and gear box actuators are also available with non-rising stem. The pneumatic actuators can be single or double acting, and the single acting ones can in turn be open spring or close spring.

Manual Actuators

Handwheel with rising stem

Gear Box

Others, (square nut)

Automatic Actuators

Electric actuator

Pneumatic cylinder

Hydraulic cylinder

Table. 3

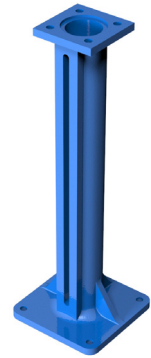


STRAIGHT FLOOR STAND

Fig. 7

ACCESORIES

- Mechanical stops
- Locking devices
- Emergency manual actuators
- Solenoid valves
- Positioners
- Limit switches
- Proximity switches
- Straight floor stand (Fig. 7)
- Leaning floor stand (Fig. 8)



LEANING FLOOR STAND

Fig. 8

Stem extensions have also been developed, allowing the actuator to be located far away from the valve, to suit all needs. Please consult our technicians beforehand.

ACCESSORIES AND OPTIONS

Different 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

Aporte de estellite en el perímetro inferior de la tajadera para protegerla de la abrasión.

SCRAPER IN THE PACKING

Su función es limpiar la tajadera durante el movimiento de apertura y evitar posibles daños en la empaquetadura.

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.

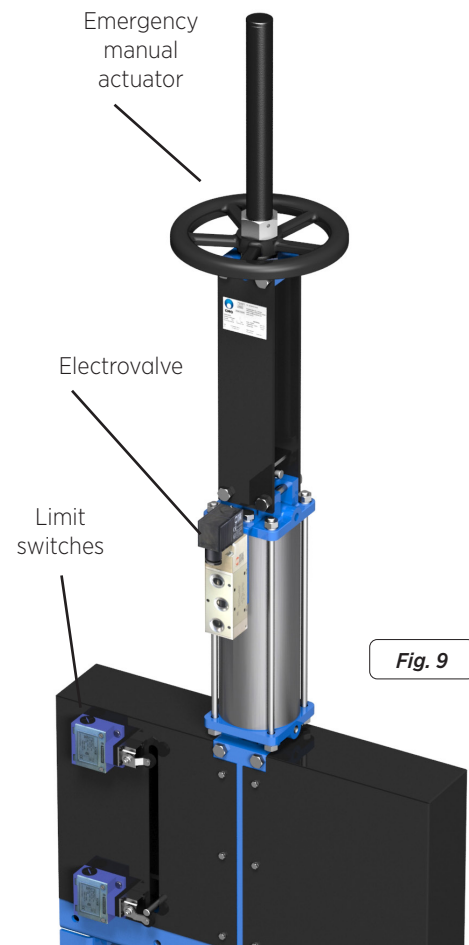


Fig. 9

ACTUATOR OR YOKE SUPPORT

Made of EPOXY-coated steel (or stainless steel on request), its robust design gives it great rigidity in order to resist 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 - 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.

TRIANGULAR (V-NOTCH) AND PENTAGONAL DIAPHRAGM WITH INDICATION RULE (FIG. 7)

Recommended for application in which it is necessary to regulate the flow, it allows flow control according to the valve's opening percentage.

INTERCHANGEABLE ACTUATORS

All actuators are easily interchangeable.

EPOXY COATING

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's standard colour is blue, RAL-5015.

GATE SAFETY PROTECTION

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

BONNET (FIG. 8)

The bonnet provides total watertight integrity to the outside, reducing the packing maintenance required.

TYPES OF EXTENSION

When the valve needs to be operated from a distance, the following different types of actuators can be fitted:

1.- EXTENSION: FLOOR STAND

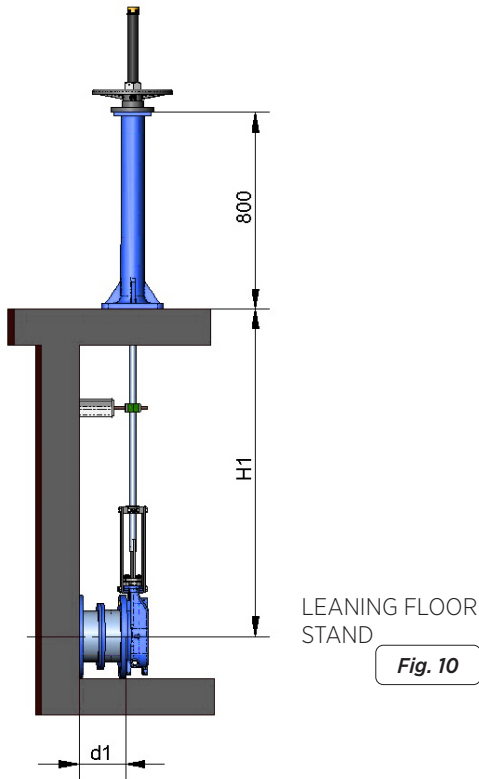
This extension is done by coupling a rod to the stem. The desired extension is achieved by defining the length of the rod. A floor stand is normally installed to support the actuator. (Fig.10)

The definition variables are as follows:

- **H1:** Distance from the valve shaft to the base of the stand.
- **d1:** Separation from the wall to the end of the connecting flange.

CHARACTERISTICS:

- Can be coupled to any type of actuator.
- A stem support-guide is recommended (fig. 11) every 1.5 m.
- The standard floor stand is 800 mm high (fig. 9). Other floor stand measurements available to order.
- Option of fitting an indicator rule in order to determine the degree of opening of the valve.
- Option of leaning floor stand.



LEANING FLOOR STAND

Fig. 10

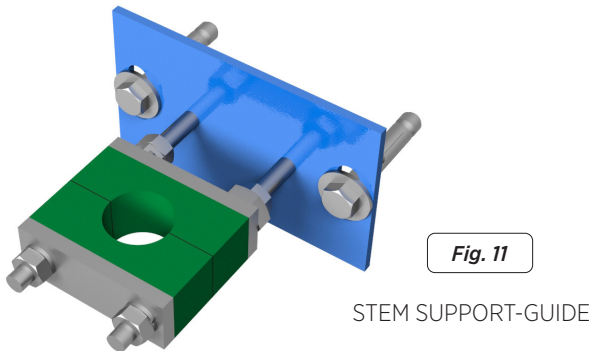


Fig. 11

STEM SUPPORT-GUIDE

COMPONENT LIST

COMPONENT	STANDARD VERSION
Stem	AISI 303
Rod	AISI 304
Support-Guide	Carbon steel with EPOXY coating
Guide	Nylon
Stand	GJS-500 with EPOXY coating

Table. 4



Fig. 12

STRAIGHT FLOOR STAND

 **Note:** A position indicator can be attached to the floor stand.

2.- PIPE

This consists of raising the actuator. The pipe will rotate with the wheel or key when the valve is operated, although this will always remain at the same height.

The definition variables are as follows:

H1 = Distance from the valve shaft to the required height of the actuator.

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

CHARACTERISTICS:

- Standard actuators: handwheel and square stem.
- A pipe support-guide is recommended every 1.5 m.
- The standard materials are: Stainless steel or EPOXY coated carbon steel.

3.- EXTENDED SUPPORT PLATES

When a large 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. 13)

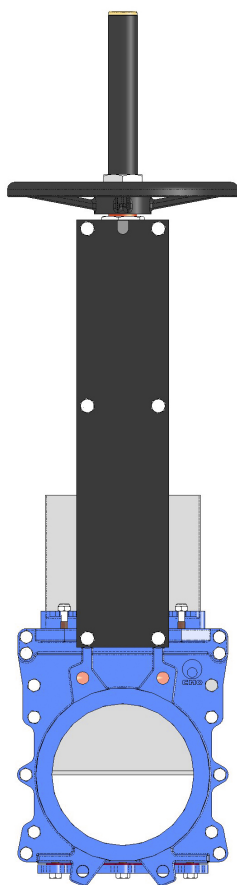


Fig. 13

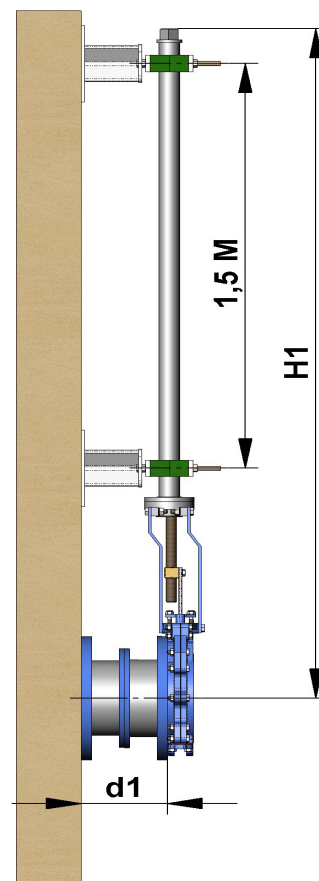
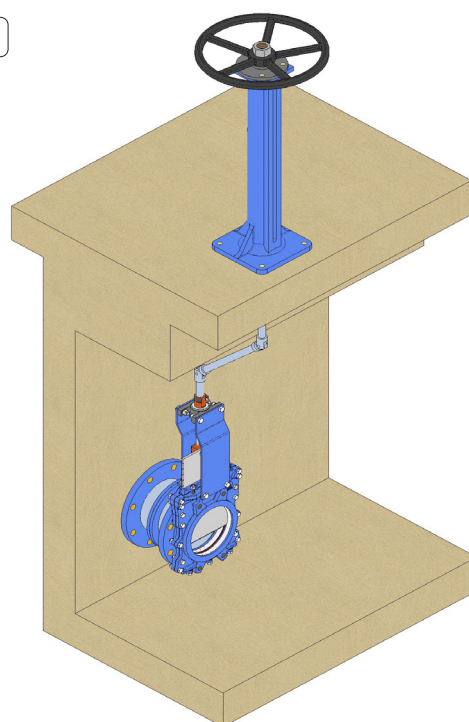


Fig. 14

4.-UNIVERSAL JOINT

If the valve and the actuator are not in correct alignment, the problem can be resolved by fitting a universal joint. (Fig. 15)

Fig. 15



HANDWHEEL WITH RISING STEM

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

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

The definition variables are as follow:

OPTIONS

- Locking devices.
- Extensions: stand, pipe, plates, etc.
- DN higher than those shown in the table.

ACTUATOR COMPRISING

- Handwheel.
- Stem.
- Nut.
- Stem protection hood.

AVAILABLE

- Standard ND50 a ND600
- Other ND to order.

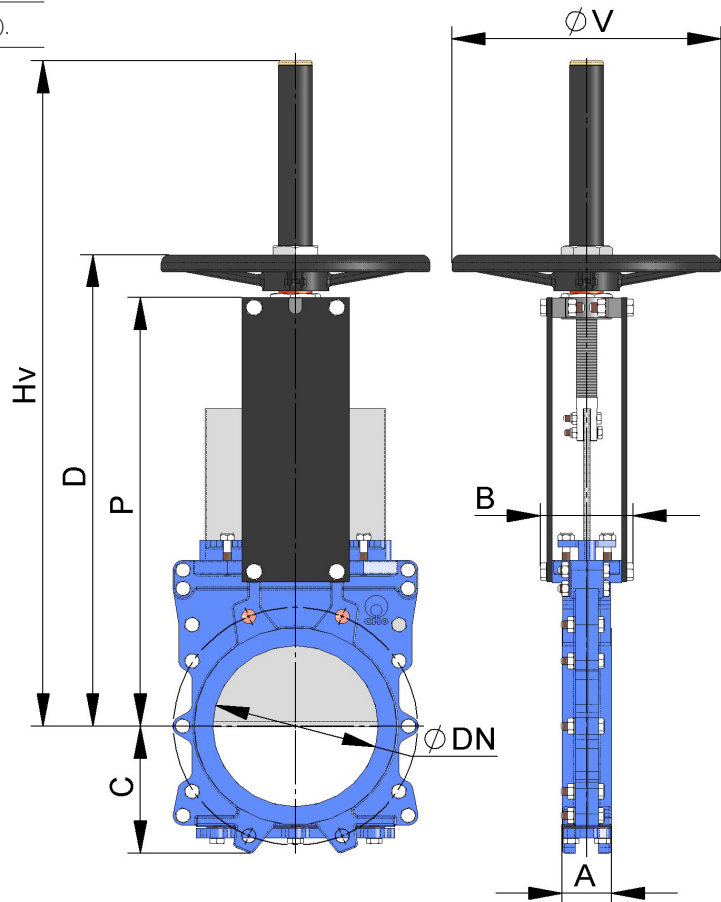


Fig. 16

DN	ΔP(bar)	A	B	C	P	Hv	D	øV
50	10	40	92	63	241	409	280	225
65	10	40	92	70	268	436	307	225
80	10	50	92	92	294	469	333	225
100	10	50	92	105	334	502	373	225
125	10	50	102	120	367	585	406	225
150	10	60	102	130	419	644	458	225
200	8	60	119	160	525	815	578	325
250	6	70	119	198	626	1016	679	325
300	6	70	119	234	726	1116	779	380
350	5	96	290	256	797	1336	906	450
400	5	100	290	292	903	1442	1012	450
450	3	106	290	308	989	1628	1098	450
500	3	110	290	340	1101	1738	1210	450
600	3	110	290	400	1307	2046	1416	450

Table. 5

HANDWHEEL WITH NON-RISING STEM

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

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

Suitable when no size limitations exist.

The definition variables are as follow:

OPTIONS

- Locking devices.
- Extensions: stand, pipe, plates, etc.
- DN higher than those shown in the table.

ACTUATOR COMPRISING:

- Handwheel.
- Stem.
- Nut.
- Stem protection hood.

AVAILABLE

- Standard ND50 a ND600
- Other ND to order.

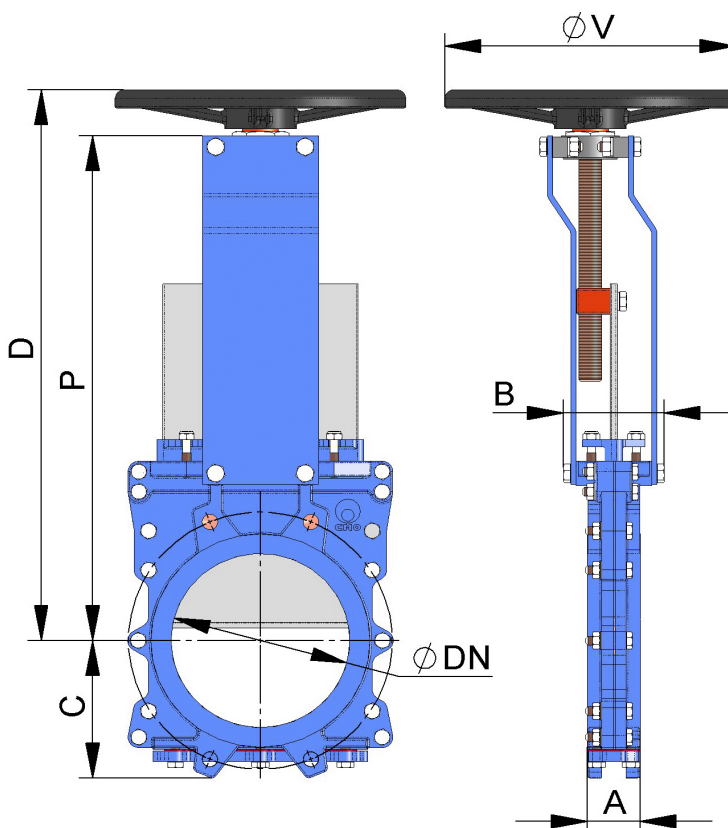


Fig. 17

DN	$\Delta P(\text{bar})$	A	B	C	P	D	ϕV
50	10	40	101	63	241	280	225
65	10	40	101	70	268	308	225
80	10	50	101	92	294	333	225
100	10	50	101	105	334	373	225
125	10	50	111	120	367	407	225
150	10	60	111	130	419	458	225
200	8	60	128	160	525	578	325
250	6	70	128	198	626	679	325
300	6	70	128	234	726	779	380
350	5	96	305	256	797	906	450
400	5	100	305	292	903	1012	450
450	3	106	305	308	989	1098	450
500	3	110	305	340	1101	1210	450
600	3	110	305	400	1307	1416	450

Table. 6

CHAINWHEEL

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

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

Muy utilizado en instalaciones elevadas de accesos difíciles, el volante se coloca en posición vertical

OPTIONS

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

ACTUATOR COMPRISING

- Handwheel
- Stem
- Nut
- Hood
- Chain

AVAILABLE

- Standard DN50 a DN400

*Other ND on request.

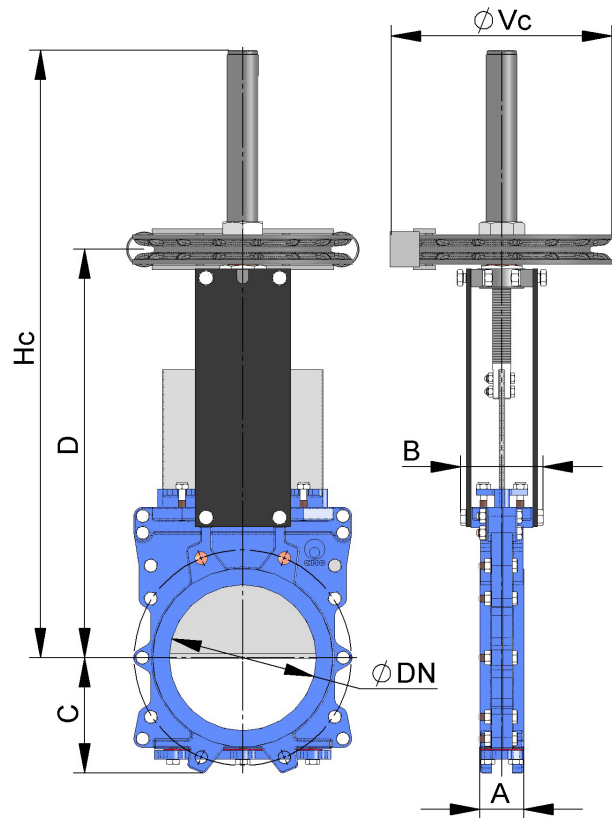


Fig. 18

DN	ΔP bar	A	B	C	D	Hc	G	ϕVc
50	10	40	92	63	264	409	225	225
65	10	40	92	70	291	436	225	225
80	10	50	92	92	317	469	225	225
100	10	50	92	105	357	502	225	225
125	10	50	102	120	390	585	225	225
150	10	60	102	130	442	644	225	225
200	8	60	119	160	551	815	300	300
250	6	70	119	198	652	1016	300	300
300	6	70	119	234	752	1116	300	300
350	5	96	290	256	879	1336	402	402
400	5	100	290	292	985	1442	402	402

Table. 7

LEVER

It is a fast actuator.

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

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

ACTUATOR COMPRISING

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

AVAILABLE

- Standard DN50 a DN300

* Other ND on request.

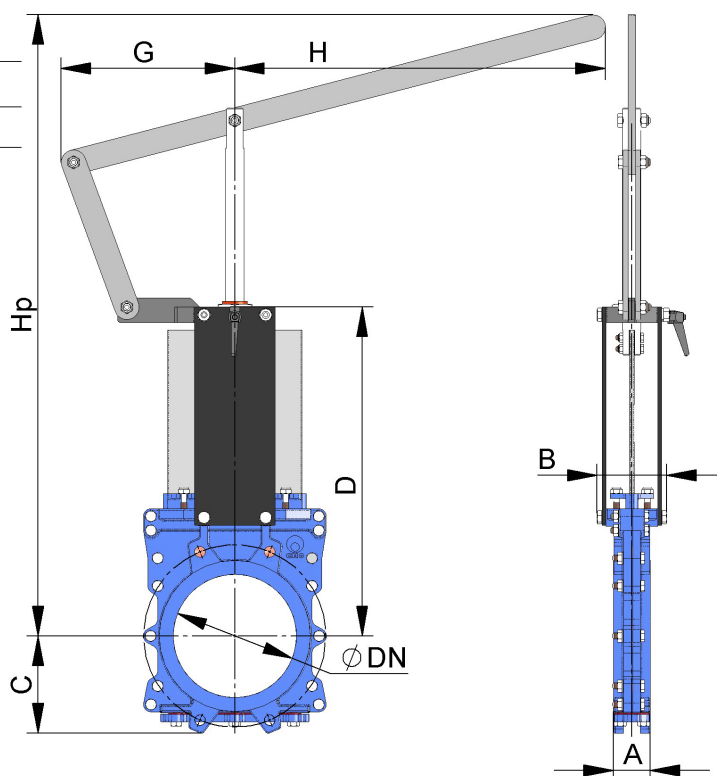


Fig. 19

DN	ΔP bar	A	B	C	D	P	G	H	Hp
50	10	40	92	63	264	155	325	504	1/4"
65	10	40	92	70	291	155	325	526	1/4"
80	10	50	92	92	317	155	325	549	1/4"
100	10	50	92	105	357	155	325	605	1/4"
125	10	50	102	120	390	155	425	902	3/8"
150	10	60	102	130	442	155	425	956	3/8"
200	8	60	119	160	551	290	620	1027	3/8"
250	6	70	119	198	652	290	620	1416	1/2"
300	6	70	119	234	752	290	620	1525	1/2"

Table. 8

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

- Standard DN50 a DN600

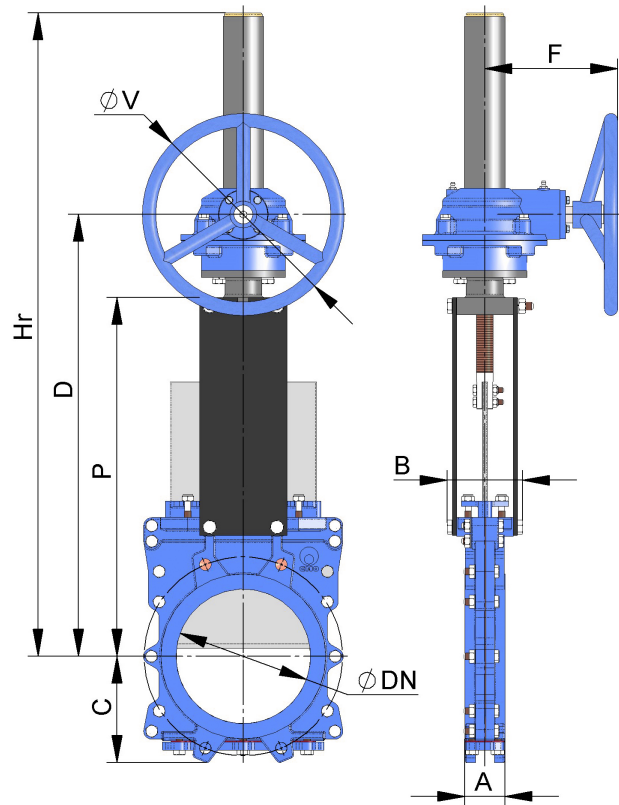


Fig. 20

DN	ΔP bar	A	B	C	P	D	F	ØV	r (B.S.P.)
50	10	40	92	63	241	366	198	300	540
65	10	40	92	70	268	392	198	300	566
80	10	50	92	92	294	418	198	300	592
100	10	50	92	105	334	458	198	300	632
125	10	50	102	120	367	491	198	300	665
150	10	60	102	130	419	543	198	300	717
200	8	60	119	160	525	648	198	300	942
250	6	70	119	198	626	749	198	300	1043
300	6	70	119	234	726	850	198	300	1194
350	5	96	290	256	797	891	218	450	1335
400	5	100	290	292	903	997	218	450	1441
450	3	106	290	308	989	1083	218	450	1677
500	3	110	290	340	1101	1195	218	450	1789
600	3	110	290	400	1307	1401	218	450	2045

Table. 9

DOUBLE-ACTING PNEUMATIC CYLINDER

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

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.

10 bar is the maximum admissible air pressure. For air pressures below 6 bar please consult to **CMO Valves**

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

- Estandar DN50 a DN600

* *Otros DN bajo consulta.*

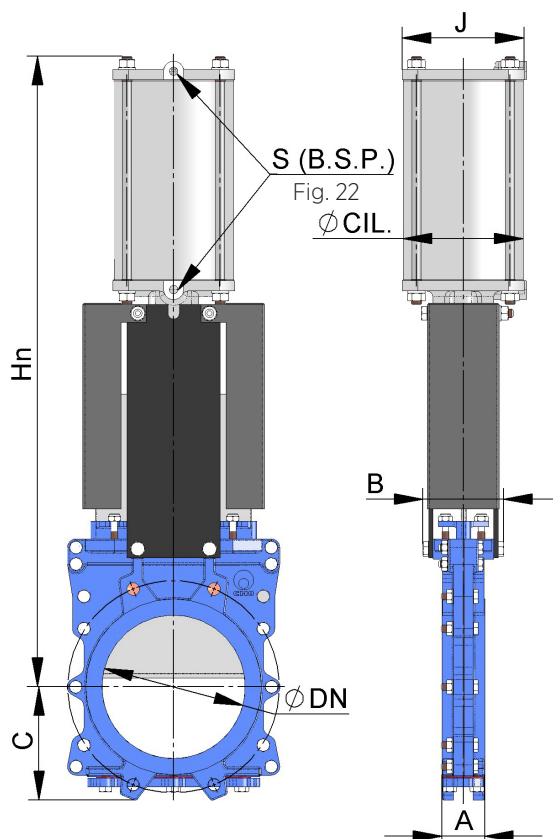


Fig. 21

DN	ΔP bar	A	B	C	ØCIL	ØV	J	r (B.S.P.)	Hn
50	10	40	92	63	80	20	96	1/4"	415
65	10	40	92	70	80	20	96	1/4"	455
80	10	50	92	92	80	20	96	1/4"	498
100	10	50	92	105	100	20	115	1/4"	565
125	10	50	102	120	125	25	138	1/4"	636
150	10	60	102	130	125	25	138	1/4"	717
200	8	60	119	160	160	30	175	1/4"	874
250	6	70	119	198	200	30	218	3/8"	1036
300	6	70	119	234	200	30	218	3/8"	1182
350	5	96	290	256	250	40	270	3/8"	1380
400	5	100	290	292	250	40	270	3/8"	1530
450	3	106	290	308	300	45	382	1/2"	1677
500	3	110	290	340	300	45	382	1/2"	1839
600	3	110	290	400	300	45	382	1/2"	2146

Table. 10

SINGLE-ACTING PNEUMATIC CYLINDER

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

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.

10 bar is the maximum admissible air pressure. For air pressures below 6 bar please consult to C.M.O.

Available for opening or closing in case of failure (spring opening or closing).

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, the O-ring seals of nitrile and the spring is made of steel.

The actuator design is spring activated for valves with diameters up to ND300. 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.

AVAILABLE

- Standar DN50 a DN300

* Other ND on request.

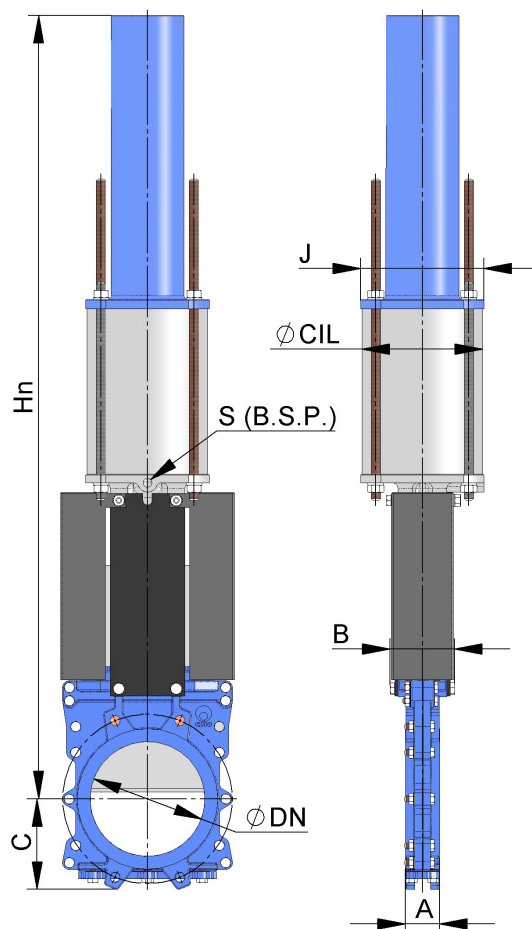


Fig. 22

DN	ΔP bar	A	B	C	Ø CIL	Ø VAST.	J	S (B.S.P.)	Hn
50	10	40	92	63	125	25	138	1/4"	781
65	10	40	92	70	125	25	138	1/4"	806
80	10	50	92	92	125	25	138	1/4"	833
100	10	50	92	105	125	25	138	1/4"	873
125	10	50	102	120	160	30	175	1/4"	909
150	10	60	102	130	160	30	175	1/4"	960
200	8	60	119	160	200	30	218	3/8"	1355
250	6	70	119	198	250	40	270	3/8"	1844
300	6	70	119	234	250	40	270	3/8"	2005

Table. 11

ELECTRIC ACTUATOR

OPTIONS

This actuator is automatic and includes the following parts:

- Electric motor
- Stem
- Yoke

The electric motor includes:

- Emergency manual handwheel
- Limit switches
- Torque switches

Optional:

- Different types and brands
- Non-rising stem

AVAILABLE

- Standard DN50 a DN600
- From DN600 the motor is assisted with a gear box

*Other ND on request.

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

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

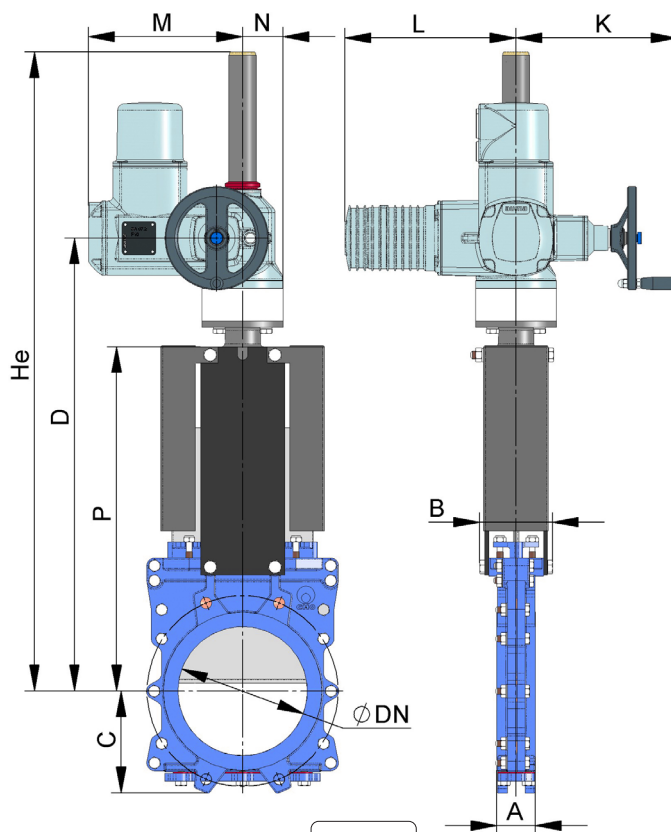


Fig. 23

DN	ΔP bar	A	B	C	D	K	L	M	N	P	He
50	10	40	92	63	400	249	265	238	62	241	595
65	10	40	92	70	426	249	265	238	62	268	622
80	10	50	92	92	452	249	265	238	62	294	647
100	10	50	92	105	492	249	265	238	62	334	687
125	10	50	102	120	525	249	265	238	62	367	720
150	10	60	102	130	577	249	265	238	62	419	772
200	8	60	119	160	685	249	265	238	62	525	990
250	6	70	119	198	785	249	265	238	62	626	1090
300	6	70	119	234	885	249	265	238	62	726	1190
350	5	96	290	256	940	254	283	248	65	797	1305
400	5	100	290	292	1045	254	283	248	65	903	1460
450	3	106	290	308	1175	336	389	286	91	989	1755
500	3	110	290	340	1290	336	389	286	91	1101	1870
600	3	110	290	400	1495	336	389	286	91	1307	2045

Table. 12

HYDRAULIC ACTUATOR

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

ACTUATOR

- Hydraulic cylinder
- Yoke

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

AVAILABLE

- Standard DN50 a DN600

* Other ND on request.

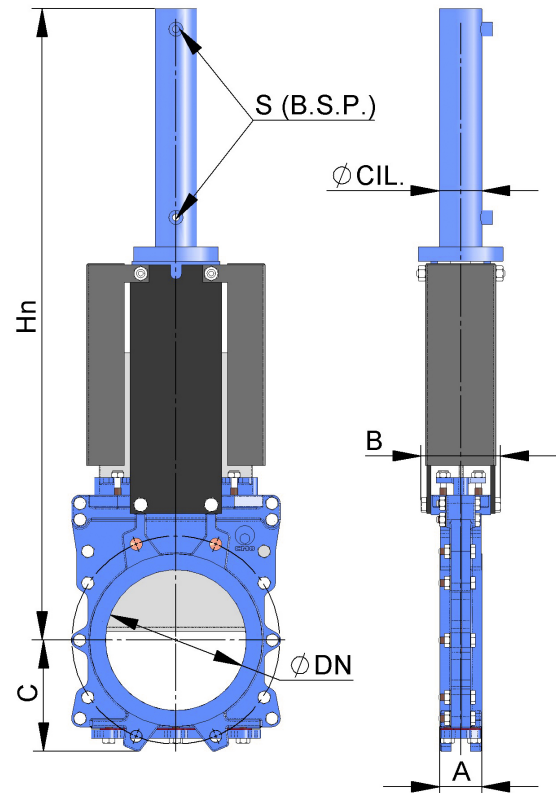


Fig. 24

DN	ΔP bar	A	B	C	Hn	Ø CIL	S (B.S.P.)	Cap. Oil (dm ³)	Ø Vast
50	10	40	92	63	460	25	3/8"	0.03	18
65	10	40	92	70	500	25	3/8"	0.03	18
80	10	50	92	92	560	25	3/8"	0.04	18
100	10	50	92	105	620	32	3/8"	0.09	22
125	10	50	102	120	683	32	3/8"	0.11	22
150	10	60	102	130	755	40	3/8"	0.20	28
200	8	60	119	160	926	50	3/8"	0.42	28
250	6	70	119	198	1077	50	3/8"	0.52	28
300	6	70	119	234	1245	50	3/8"	0.62	28
350	5	96	290	256	1376	50	3/8"	0.73	28
400	5	100	290	292	1535	63	3/8"	1.31	36
450	3	106	290	308	1710	63	3/8"	1.47	36
500	3	110	290	340	1870	63	3/8"	1.62	36
600	3	110	290	400	2175	80	3/8"	3.12	45

Table. 13

INFORMATION ON FLANGE DIMENSIONS

EN 1092-2 PN10

DN	ΔP bar	•	o	Metric	Prof.	$\varnothing K$
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	10	6	M 20	21	460
400	5	10	6	M 24	21	515
450	3	14	6	M 24	22	565
500	3	14	6	M 24	22	620
600	3	14	6	M 27	22	725

Table. 14

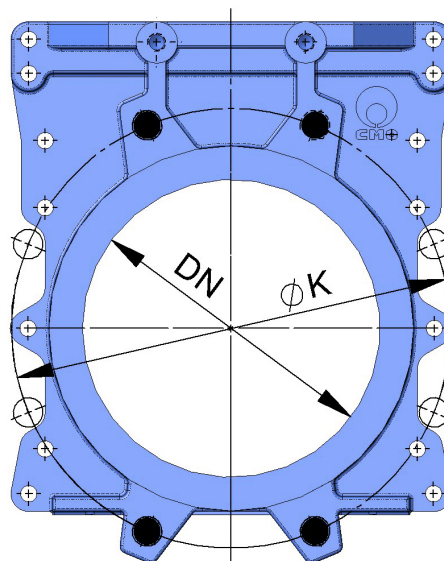


Fig. 25

ANSI B16, class 150

ND	ΔP bar	o	M UNC	PROF.	$\varnothing K$
2"	4	-	5/8"	8	120,6
2 1/2"	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"	10	6	1"	21	539,7
18"	10	6	1 1/8"	22	577,8
20"	14	6	1 1/8"	22	635
24"	14	6	1 1/4"	22	749,3

Table. 15

- BLIND TAPPED HOLES
- o THROUGH HOLE

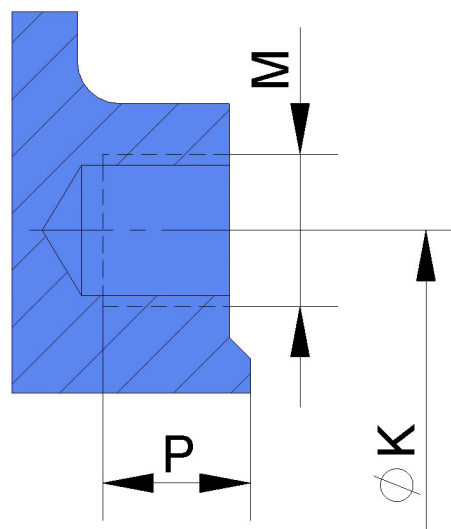


Fig. 26



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