

E



UNIDIRECTIONAL KNIFE GATE VALVE

DESCRIPTION

- Unidirectional knife gate valve with wafer design. With round input and square output.
- Body made up of two screwed-down halves, with slides to provide smooth operation.
- Provides high flow rates with low pressure drop.
- Various seal and packing materials available.
- Face-to-face distance in accordance with **CMO Valves** standard
-

GENERAL APPLICATIONS

The knife gate valve is suitable for working in very difficult conditions with fluids which contain a large amount of solids.

It is very suitable for paper recycling pulp facilities and, in general, sites which work with hard particles such as metal pieces (staples, clips, etc) and stones.

It is best placed horizontally. The output (square) is larger than the input (round), thus avoiding the accumulation of solids in the valve and preventing any interference when shutting the gate

SIZES

DN50 a DN1200

* Others DN on request.

WORKING PRESSURE (ΔP)

DN50-450	7 bar
DN500-1200	4 bar

FLANGES

- EN1092 PN10.
- ASME B16.5 (clase 150).
- PN6.
- PN16.
- PN25.
- BS "D" y "E".
- JIS10K.

* Others on request



Fig. 1

DIRECTIVES

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

* For information on categories and zones please contact **CMO VALVES**. Technical-Sales Department.

QUALITY DOSSIER

All valves are tested hydrostatically and material and test certificates can be provided.

- Body test = working pressure x 1.5.
- Seal test = working pressure x 1.1.

ADVANTAGES

The **E** valve body comprises two half-bodies; the inside of these two parts is machined and joined with screws to form a solid block. The gate slides smoothly thanks to the RCH 1000 nylon slides inserted inside both parts of the body; these guides can optionally be made of PTFE or bronze. Other manufacturers produce similar valves with interiors completely of PTFE, but this results in the metal pieces or other solids becoming attached to the PTFE and the gate ends up blocked.

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, etc. The **CMO Valves** valve spindle is made of stainless steel 18/8. This is another added advantage, as some manufacturers supply it with 13% chromium, resulting in quick oxidation.

The operating wheel is manufactured in nodular cast GJS-500. Some manufacturers supply it in common cast-iron, which can lead to breakage in the event of very high operation torque or a bang.

The yoke 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 upper and lower pneumatic actuator covers are manufactured in aluminium, and GJS-400 nodular cast iron for Ø cylinder > 250 mm, meaning shock resistance is high. This characteristic is essential in pneumatic actuators.

The pneumatic cylinder's 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.

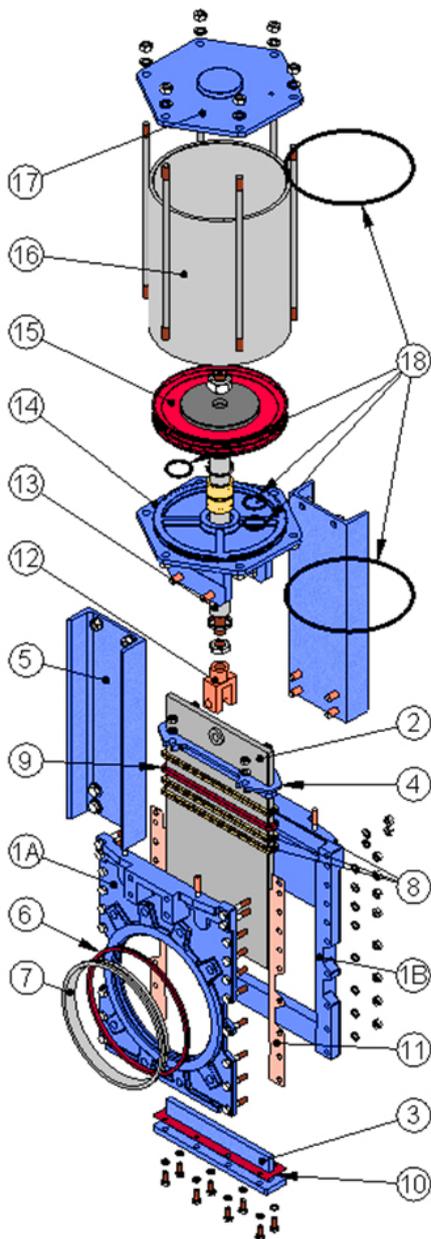


Fig. 2

STANDARD COMPONENTS LIST			
COMPONENTS	STEEL VERSION	STAINLESS STEEL	
1A	INPUT BODY	GJL-250	CF8M
1B	OUTPUT BODY	GJL-250	CF8M
2	GATE	AISI304	AISI316
3	BOTTOM COVER	S275JR	AISI316
4	PACKING GLAND	GJS-450	CF8M
5	SUPPORT PLATES	S275JR	
6	SEAL	EPDM	
7	RING	AISI316	
8	PACKING	SYNTH+PTFE	
9	PACKING GLAND SEAL	EPDM	
10	BOTTOM SEAL	EPDM	
11	BODY SEAL	CARDBOARD	
12	FORK	STEEL	
13	STEM	AISI304	
14	SUPPORT COVER	ALUMINIUM/GJS-400	
15	PISTON	S275JR+EPDM	
16	CASING	ALUMINIUM	
17	UPPER COVER	ALUMINIUM/GJS-400	
18	O-RING SEALS	NITRILE	

Table. 1

DESIGN CHARACTERISTICS

BODY

The **E** valve body consists of two cast half-bodies with reinforcements. The interior of these two parts is machined and joined by screws with a paper seal in between, creating a solid block. The square part of the body (output) is larger than the round input, ensuring solids do not become accumulated on the seat, whilst its design guarantees high flow loads and minimum pressure drops. For larger diameters, the body is mechanically welded with the reinforcements necessary to withstand the maximum working pressure. The body has a cover on the lower section which can be opened for cleaning. Blowers can also be installed for minor cleaning tasks without having to dismount any parts. The steel and stainless steel bodies will be fitted with slides.

Standard manufacturing materials are GJL-250 and CF8M stainless steel. Other materials such as GJS-500, A216WCB carbon steel and stainless steel alloys (AISI316Ti, Duplex, 254SMO, Uranus B6, etc) are available on request. As standard, carbon steel or iron valves are painted with an anti-corrosive protection of 80 microns of EPOXY (colour RAL 5015). Other types of anti-corrosive protections are available to order. The inside of the body has a series of recesses to house the slides, thus making it easier for the gate to slide. Standard slides are RCH 1000, but they can also be made of PTFE or bronze.

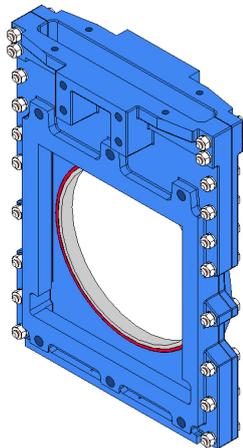


Fig. 3

GATE

Due to the harsh working conditions in which E valves are often installed, the gate usually has extra thickness. The standard manufacturing materials are AISI304 stainless steel in valves with carbon steel body and AISI316 stainless steel in valves with CF8M body. Other materials or combinations can be supplied to order.

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

SEAT

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

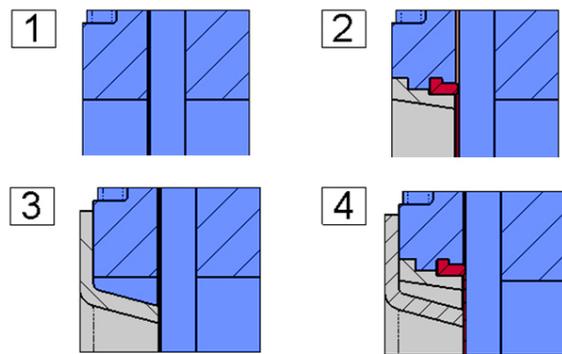


Fig. 4

SEAT 1

Seat metal / metal.

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

SEAT 2

Seat Metal / rubber seat with reinforced ring.

This type of seat includes a resilient seal which is fixed to the inside of the body by way of a reinforced ring with two functions (to protect the valve from abrasion and to clean the gate when working with solids that can stick to the gate).

SEAT 3 and 4

As seats 1 and 2 but including a deflector. The deflector is an O-ring located at the valve input with two functions: firstly to protect the valve from abrasion and secondly to guide the flow to the centre of the valve).

***Note:** Three materials are available for the reinforced ring and the deflector: Steel CA-15, CF8M and Ni-hard.

RESILIENT SEAT MATERIALS

EPDM

This is the standard resilient seat fitted on **E Series**. 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.

DRY COTTON

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

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.

CERAMIC FIBRE

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

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.

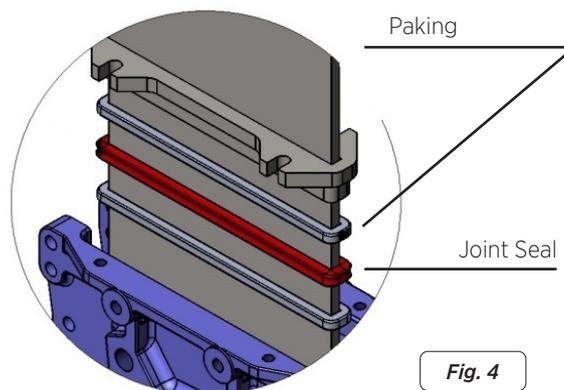


Fig. 4

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.

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.

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 materials on request.

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.

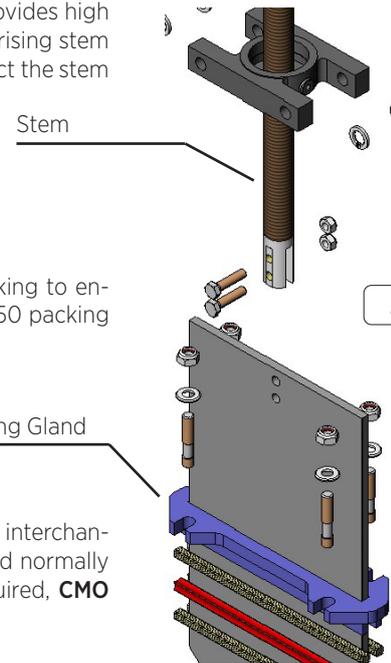


Fig. 5

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.

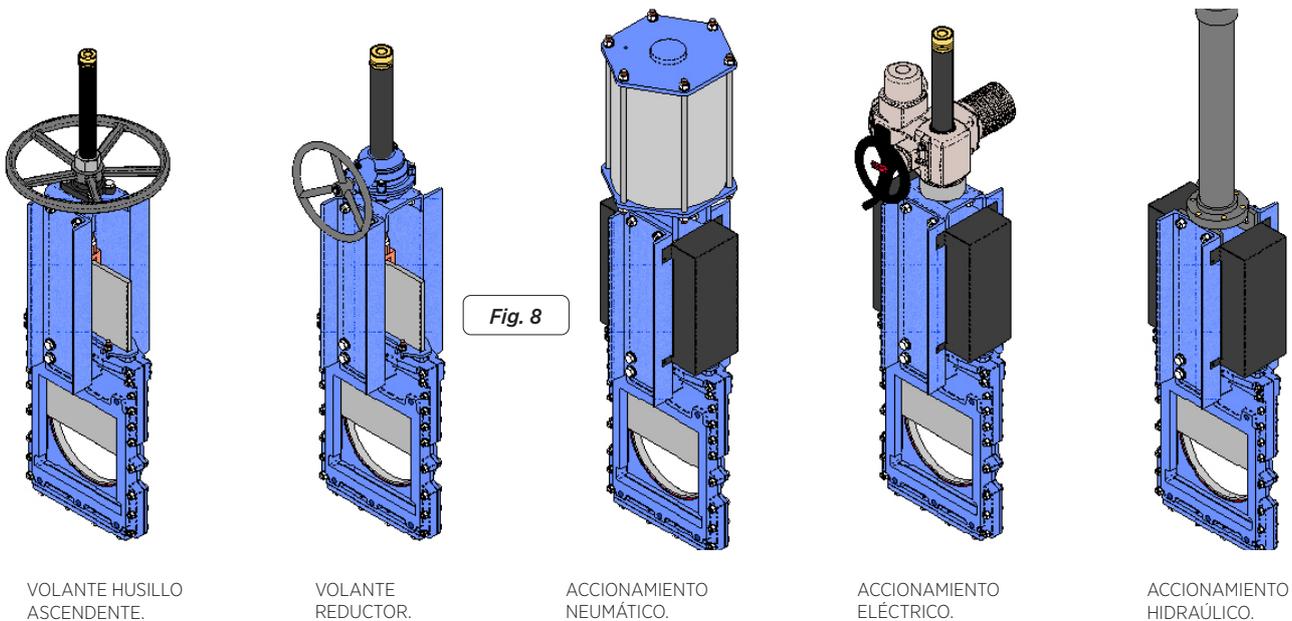


Fig. 8

Manual Actuators
Handwheel with rising stem
Handwheel with non-rising stem.
Chainwheel
Lever.
Gear Box
Others (square nut,...)

Automatic Actuators
Electric actuator
Pneumatic cylinder
Hydraulic cylinder

Table. 3

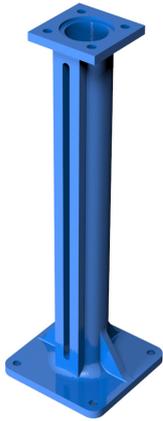


Fig. 7

LEANING FLOOR STAND.

ACCESORIES

- Mechanical stops
- Locking devices
- Emergency manual actuators
- Electrovalves
- Positioners
- Limit switches
- Proximity switches
- Straight floor stands (fig. 6)
- Leaning floor stand (fig. 7)



Fig. 6

STRAIGHT FLOOR STANDS .

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.

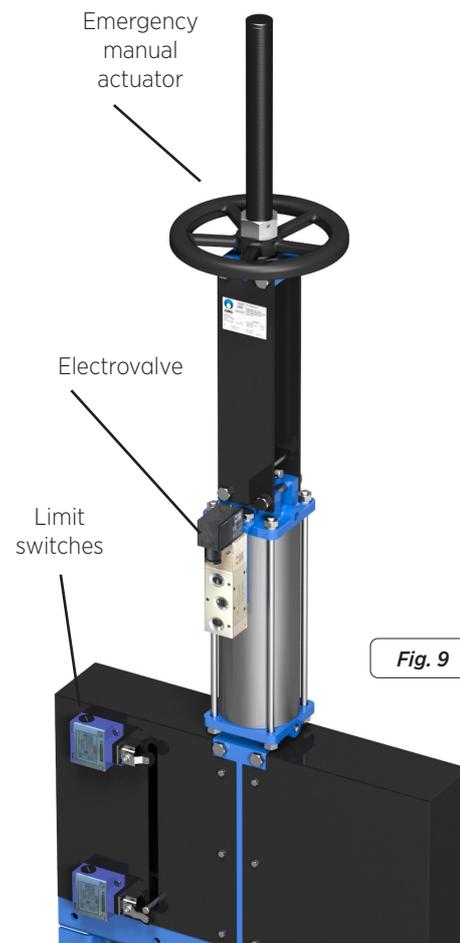


Fig. 9

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

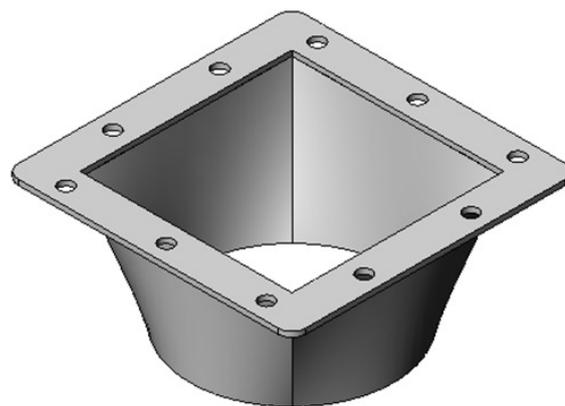
All cast iron and carbon steel bodies and components on **CMO valves** are EPOXY coated, giving the valves great resistance to corrosion and an excellent finish. Standard colour is blue, RAL-5015.

GATE SAFETY PROTECTION

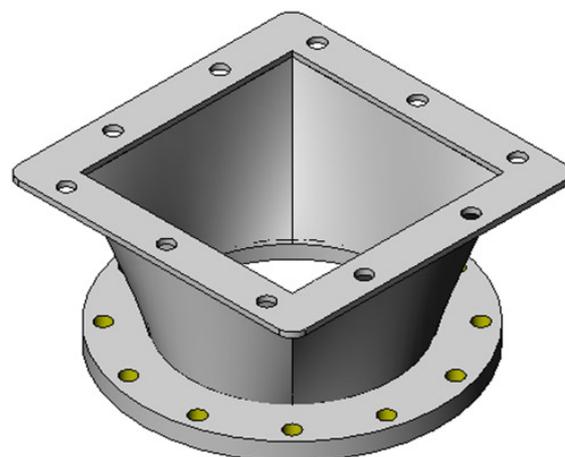
In accordance with European Safety Standards ("EC" marking), CMO automated valves are equipped with gate guards, to prevent any objects from being accidentally caught in the gate.

TRANSITION

Optionally, the **E** valve can be supplied with a square to round transition piece, to connect the square output of the valve to a round pipe. The connection to the round pipe can use flanges or by directly welding to the pipe. Check with **CMO Valves** technical commercial department to define the dimensions of these transitions.



Transición para soldar



Transición para atornillar mediante brida

Fig. 10

TYPES OF EXTENSION

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

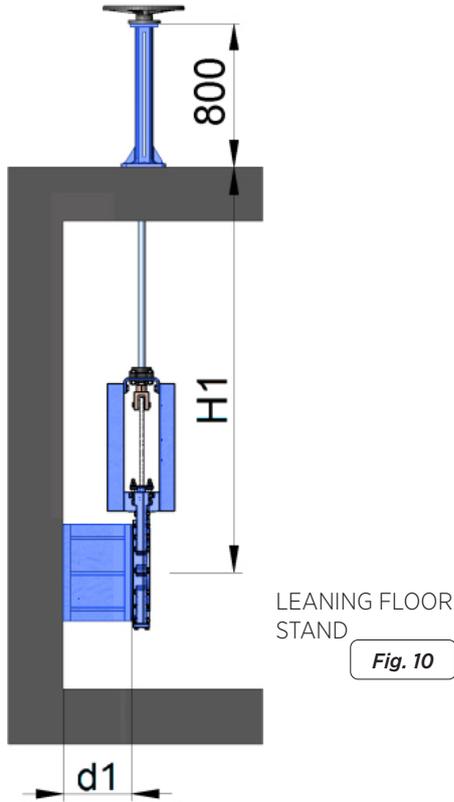


Fig. 10

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.

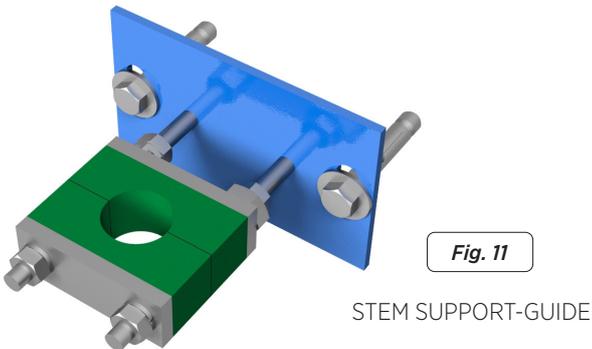


Fig. 11



Fig. 12

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

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)

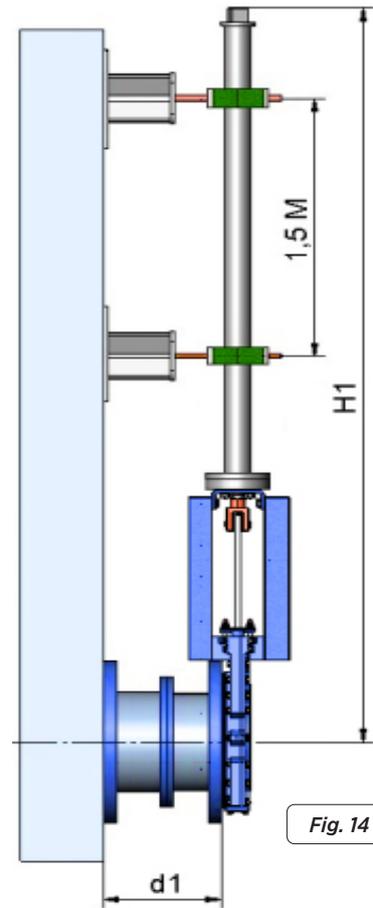
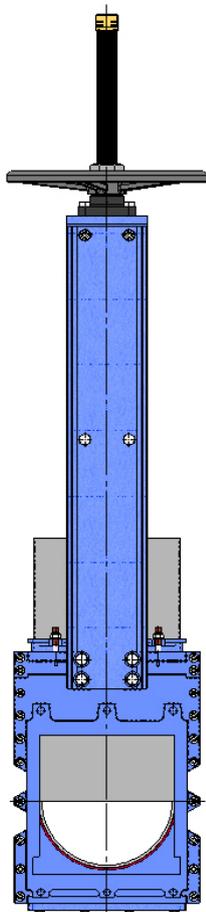


Fig. 14

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)

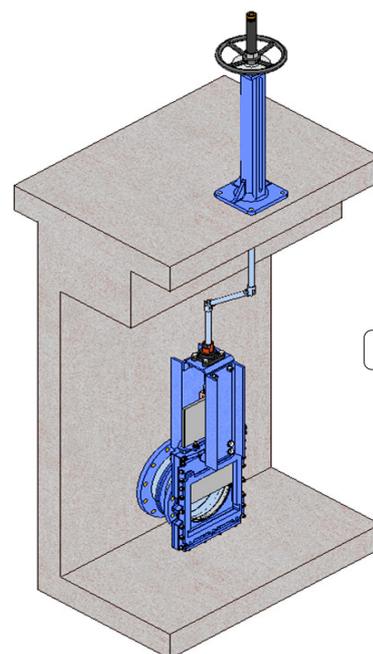


Fig. 16

HANDWHEEL WITH RISING STEM

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

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

OPTIONS

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

ACTUATOR

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

AVAILABLE

- Standard ND50 a ND600
- From DN350 the actuator is with geared motor.

* Other DN to order..

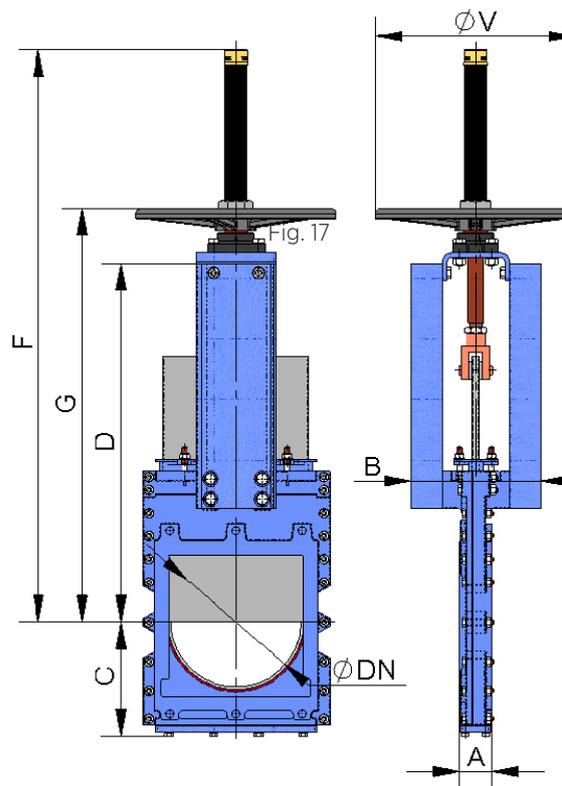


Fig. 17

DN	ΔP (bar)	A	B	C	D	F	G	ϕV
50	7	40	91	86	243	410	280	225
65	7	40	91	95	269	437	308	225
80	7	50	91	114	292	463	333	225
100	7	50	91	135	334	503	373	225
125	7	50	102	145	392	586	407	225
150	7	60	119	155	425	638	458	225
200	7	60	119	185	525	816	578	325
250	7	70	290	235	620	1007	669	325
300	7	70	290	265	715	1095	757	380
350	7	96	290	290	781	1307	876	450
400	7	100	290	325	861	--	--	--
450	7	106	290	350	985	--	--	--
500	4	110	320	380	1064	--	--	--
600	4	110	320	470	1224	--	--	--
700	4	110	350	525	1425	--	--	--
800	4	110	350	575	1615	--	--	--
900	4	110	350	650	1823	--	--	--
1000	4	110	400	725	1992	--	--	--
1100	4	150	400	800	2234	--	--	--
1200	4	150	400	870	2351	--	--	--

Table. 4

HANDWHEEL WITH NON-RISING STEM

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

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

Suitable when no size limitations exist.

OPTIONS

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

ACTUATOR

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

AVAILABLE

- Standard ND50 a ND600
- From DN350 the actuator is with geared motor.

* Other DN to order..

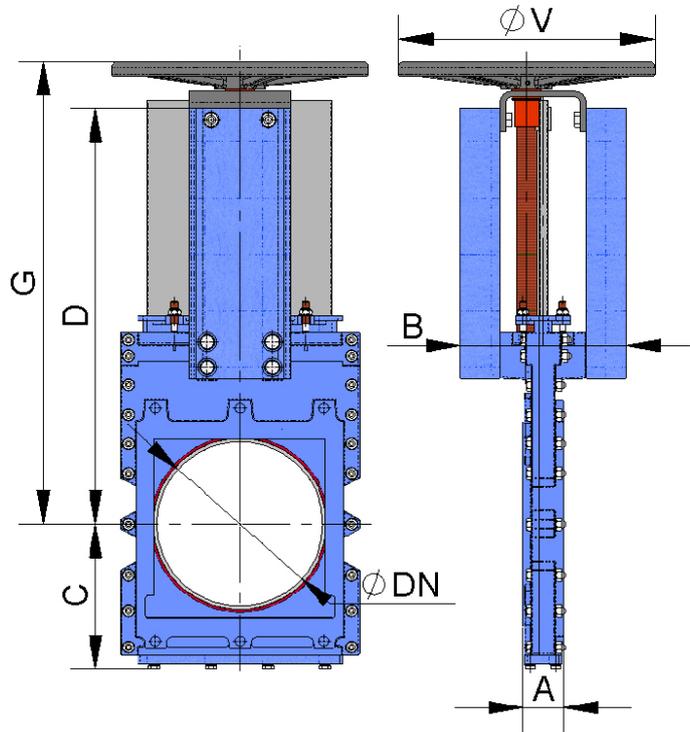


Fig. 18

DN	ΔP (bar)	A	B	C	D	G	ϕV
50	7	40	91	86	243	280	225
65	7	40	91	95	269	308	225
80	7	50	91	114	292	333	225
100	7	50	91	135	334	373	225
125	7	50	102	145	392	407	225
150	7	60	119	155	425	458	225
200	7	60	119	185	525	578	325
250	7	70	290	235	620	679	325
300	7	70	290	265	715	779	380
350	7	96	290	290	781	906	450
400	7	100	290	325	861	--	--
450	7	106	290	350	985	--	--
500	4	110	320	380	1064	--	--
600	4	110	320	470	1224	--	--
700	4	110	350	525	1425	--	--
800	4	110	350	575	1615	--	--
900	4	110	350	650	1823	--	--
1000	4	110	400	725	1992	--	--
1100	4	150	400	800	2234	--	--
1200	4	150	400	870	2351	--	--

Table. 5

CHAINWHEEL

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

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

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

OPCIONES

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

ACTUATOR

- Handwheel
- Stem
- Nut
- Hood
- Chain

AVAILABLE

- Standard DN50 a DN400
- From DN600 the motor is assisted with a gear box.

* Other ND on request.

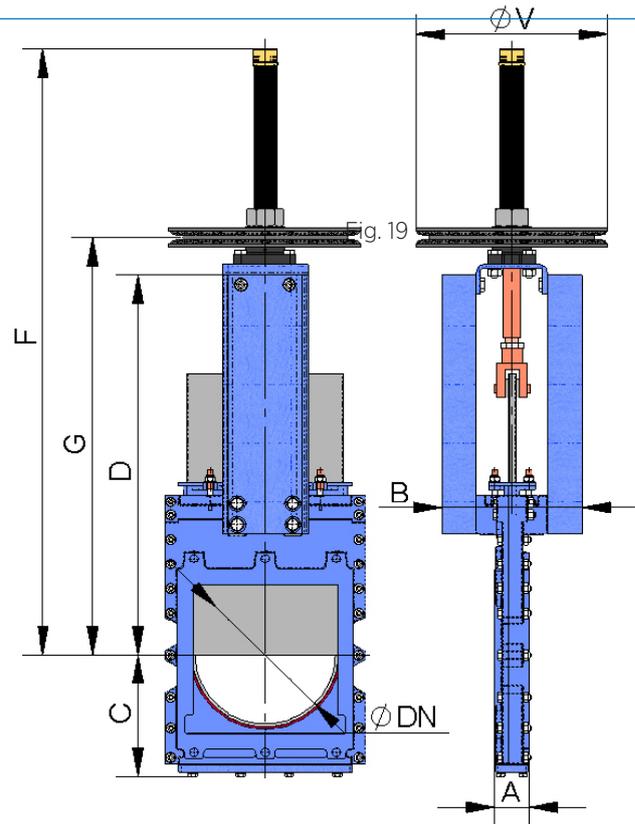


Fig. 19

DN	ΔP (bar)	A	B	C	D	F	G	øV
50	7	40	91	86	243	410	280	225
65	7	40	91	95	269	437	308	225
80	7	50	91	114	292	463	333	225
100	7	50	91	135	334	503	373	225
125	7	50	102	145	392	586	407	225
150	7	60	119	155	425	638	458	225
200	7	60	119	185	525	816	578	300
250	7	70	290	235	620	1007	669	300
300	7	70	290	265	715	1095	757	300
350	7	96	290	290	781	1307	876	402
400	7	100	290	325	861	1441	997	402*
450	7	106	290	350	985	1677	1083	402*
500	4	110	320	380	1064	1789	1195	402*
600	4	110	320	470	1224	2108	1420	402*
700	4	110	350	525	1425	2406	1658	402*
800	4	110	350	575	1615	2790	1905	402*
900	4	110	350	650	1823	3130	2115	402*
1000	4	110	400	725	1992	3440	2310	402*
1100	4	150	400	800	2234	3765	2565	402*
1200	4	150	400	870	2351	4050	2815	402*

Table. 6

GEAR BOX

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

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

OPCIONES

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

ACCIONAMIENTO

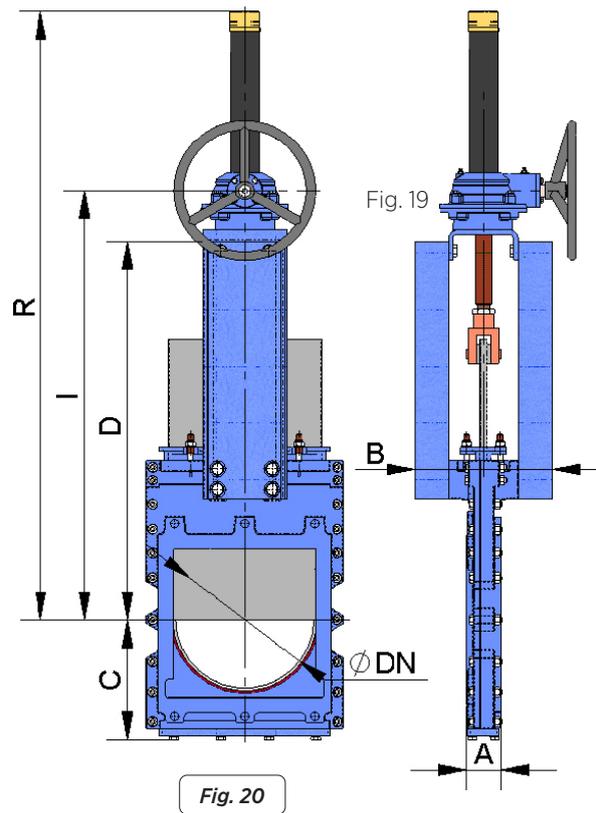
- Stem
- Yoke
- Cone-shaped gear box
- Handwheel

- Standard ratio = 4 to 1.

DISPONIBLE

- Standard DN50 a DN1200

* Other ND on request.



DN	ΔP (bar)	A	B	C	D	I	R
50	7	40	91	86	243	366	540
65	7	40	91	95	269	392	566
80	7	50	91	114	292	418	592
100	7	50	91	135	334	458	632
125	7	50	102	145	392	491	665
150	7	60	119	155	425	543	717
200	7	60	119	185	525	648	942
250	7	70	290	235	620	749	1043
300	7	70	290	265	715	849	1193
350	7	96	290	290	781	891	1335
400	7	100	290	325	861	997	1441
450	7	106	290	350	985	1083	1677
500	4	110	320	380	1064	1195	1789
600	4	110	320	470	1224	1420	2108
700	4	110	350	525	1425	1658	2406
800	4	110	350	575	1615	1905	2790
900	4	110	350	650	1823	2115	3130
1000	4	110	400	725	1992	2310	3440
1100	4	150	400	800	2234	2565	3765
1200	4	150	400	870	2351	2815	4050

Table. 7

DOUBLE-ACTING PNEUMATIC CYLINDER

B = anchura máx. de la válvula (sin accionamiento).

D = altura máx. de la válvula (sin accionamiento).

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

- Standard DN50 a DN1200

*Other ND on request.

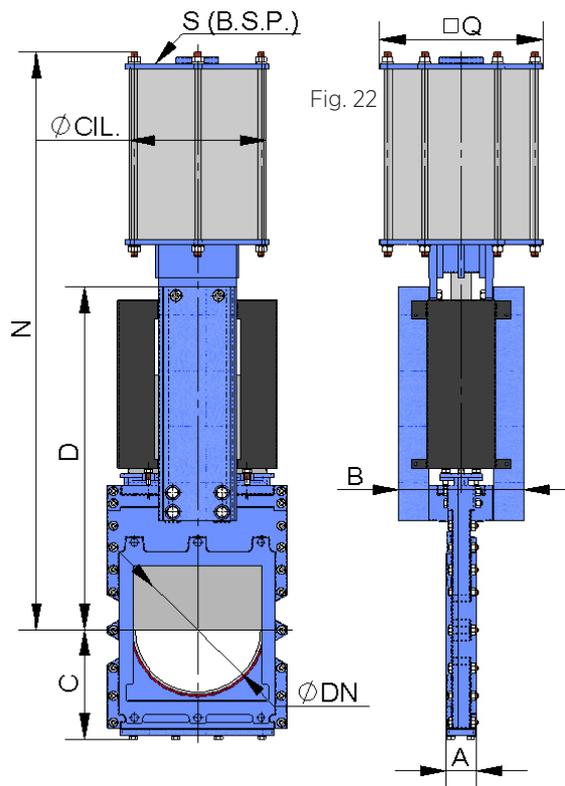


Fig. 21

DN	ΔP (bar)	A	B	C	D	N	Q	ø CIL	ø VAST.	S (B.S.P.)
50	7	40	91	86	243	425	90	80	20	1/4"
65	7	40	91	95	269	470	90	80	20	1/4"
80	7	50	91	114	292	510	110	100	20	1/4"
100	7	50	91	135	334	557	110	100	20	1/4"
125	7	50	102	145	392	665	135	125	25	1/4"
150	7	60	119	155	425	814	170	160	30	1/4"
200	7	60	119	185	525	940	215	200	30	3/8"
250	7	70	290	235	620	1070	270	250	40	3/8"
300	7	70	290	265	715	1220	270	250	40	3/8"
350	7	96	290	290	781	1440	382	300	45	1/2"
400	7	100	290	325	861	1480	382	300	45	1/2"
450	7	106	290	350	985	1780	444	350	45	1/2"
500	4	110	320	380	1064	1875	444	350	45	1/2"
600	4	110	320	470	1224	2095	444	350	45	1/2"
700	4	110	350	525	1425	2540	508	400	50	1/2"
800	4	110	350	575	1615	2720	508	400	50	1/2"
900	4	110	350	650	1823	3060	508	400	50	1/2"
1000	4	110	400	725	1992	3470	508	400	50	1/2"
1100	4	150	400	800	2234	3820	508	400	50	1/2"
1200	4	150	400	870	2351	4220	508	400	50	1/2"

Table. 8

HYDRAULIC ACTUATOR

B = anchura máx. de la válvula (sin accionamiento).

D = altura máx. de la válvula (sin accionamiento).

ACTUATOR

- Hydraulic cylinder
- Yoke

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

AVAILABLE

- Standard DN50 a DN600

* Other ND on request

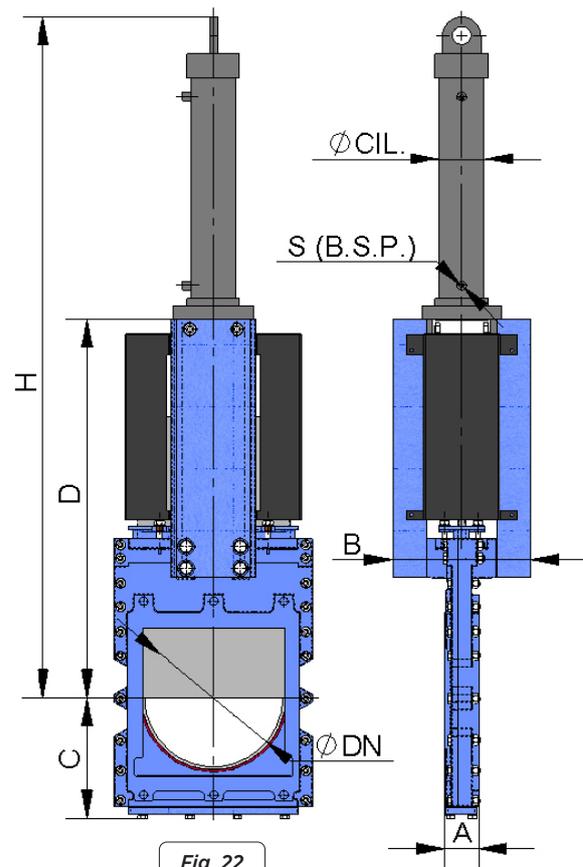


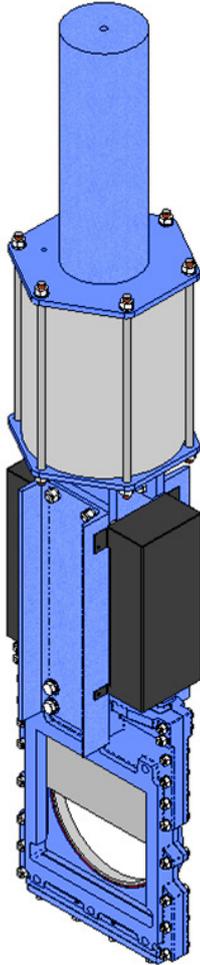
Fig. 22

DN	ΔP (bar)	A	B	C	D	H	\varnothing CIL	\varnothing VAST.	S (B.S.P.)	Cap. Aceite (dm ³)
50	7	40	91	86	243	457	25	18	3/8"	0,03
65	7	40	91	95	269	500	25	18	3/8"	0,04
80	7	50	91	114	292	560	25	18	3/8"	0,04
100	7	50	91	135	334	620	32	22	3/8"	0,09
125	7	50	102	145	392	683	32	22	3/8"	0,11
150	7	60	119	155	425	683	40	28	3/8"	0,2
200	7	60	119	185	525	755	50	28	3/8"	0,42
250	7	70	290	235	620	926	50	28	3/8"	0,52
300	7	70	290	265	715	1077	63	36	3/8"	0,98
350	7	96	290	290	781	1246	80	45	3/8"	1,88
400	7	100	290	325	861	1376	80	45	3/8"	2,14
450	7	106	290	350	985	1532	100	56	1/2"	3,73
500	4	110	320	380	1064	1707	80	45	3/8"	2,64
600	4	110	320	470	1224	1869	100	56	1/2"	4,91
700	4	110	350	525	1425	2202	125	56	1/2"	8,9
800	4	110	350	575	1615	2839	125	56	1/2"	10,12
900	4	110	350	650	1823	3193	160	70	1/2"	18,6
1000	4	110	400	725	1992	3437	160	70	1/2"	20,7
1100	4	150	400	800	2234	3775	160	70	1/2"	22,8
1200	4	150	400	870	2351	4161	200	90	1/2"	38,6

Table. 9

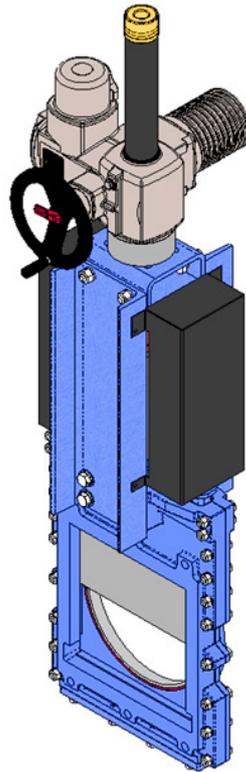
OTHER POSSIBLE ACTUATORS

The most common actuators are detailed in the tables in the pages above, with their respective dimensions, although there is also the possibility of supplying them with other actuators, for example those indicated below. If the valve is to be used with any of these actuators, ask **CMO valves** technical commercial department for information on sizes and characteristics.



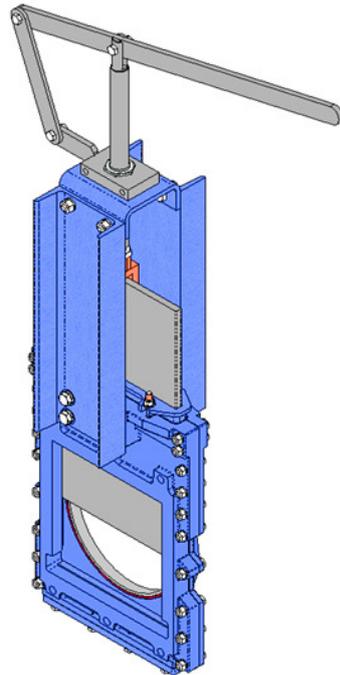
SINGLE ACTING
PNEUMATIC ACTUATOR

Fig. 23



ELECTRIC
MOTOR ACTUATOR

Fig. 24



LEVER
ACTUATOR

Fig. 25

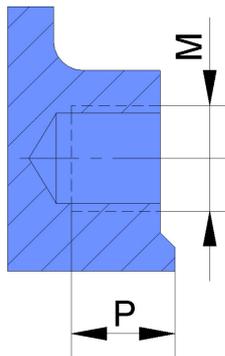


Fig. 26

FLANGE DIMENSIONS

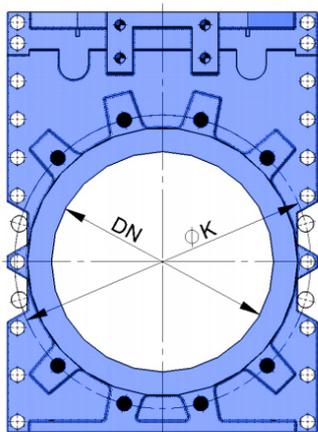
EN 1092-2 PN10

DN	ΔP (bar)	ROUND FLANGE			SQUARE FLANGE							METRIC	P			
		•	o	ØK	N	T	U	W	•	o	ØK					
50	7	4	-	125	= ROUND FLANGE							4	-	125	M 16	8
65	7	4	-	145	= ROUND FLANGE							4	-	145	M 16	8
80	7	4	4	160	= ROUND FLANGE							4	4	160	M 16	9
100	7	4	4	180	= ROUND FLANGE							4	4	180	M 16	9
125	7	4	4	210	= ROUND FLANGE							4	4	210	M 16	9
150	7	4	4	240	= ROUND FLANGE							4	4	240	M 20	10
200	7	4	4	295	= ROUND FLANGE							4	4	295	M 20	10
250	7	8	4	350	= ROUND FLANGE							4	4	350	M 20	12
300	7	8	4	400	2x148	---	400	---	6	4	400	M 20	12			
350	7	12	4	460	3x100	300	460	460	12	4	460	M 20	21			
400	7	12	4	515	3x110	330	515	515	12	4	515	M 24	21			
450	7	16	4	565	4x116	344	565	565	14	4	565	M 24	22			
500	4	16	4	620	4x130	360	620	620	14	4	620	M 24	22			
600	4	16	4	725	4x155	415	725	725	14	4	725	M 27	22			
700	4	20	4	840	6x120	115+305+115	832	832	22	4	840	M 27	22			
800	4	20	4	950	6x137	145+360+145	940	940	22	4	950	M 30	22			
900	4	24	4	1050	6x155	160+410+160	1042	1042	22	4	1050	M 30	20			
1000	4	24	4	1160	162+(5x164)+162	(2x170)+465+(2x170)	1144	1145	24	4	1160	M 33	20			

Table. 10

ROUND FLANGE

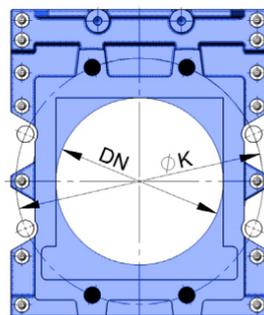
SQUARE FLANGE



DN50 → 1000

Fig. 27

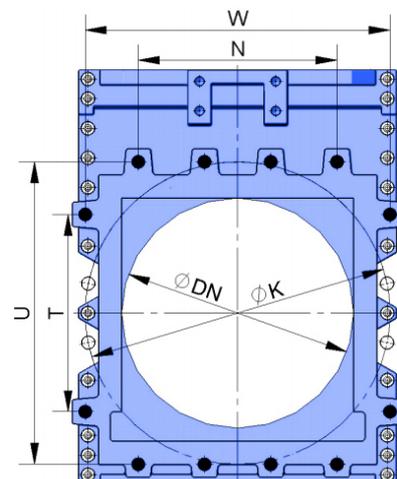
Fig. 27



DN50 → 250

fig. 26

Fig. 28



DN300 → 1000

Fig. 29

- BLIND TAPPED HOLES
- THROUGH HOLE

ANSI B16, class 150

ND	ΔP (bar)	ROUND FLANGE			SQUARE FLANGE							R UNC	P			
		•	o	ØK	N	T	U	W	•	o	ØK					
2"	7	4	-	120,6	= ROUND FLANGE							4	-	120,6	5/8"	8
2 1/2"	7	4	-	139,7	= ROUND FLANGE							4	-	139,7	5/8"	8
3"	7	4	4	152,4	= ROUND FLANGE							4	-	152,4	5/8"	9
4"	7	4	4	190,5	= ROUND FLANGE							4	4	190,5	5/8"	9
5"	7	4	4	215,9	= ROUND FLANGE							4	4	215,9	3/4"	9
6"	7	4	4	241,3	= ROUND FLANGE							4	4	241,3	3/4"	10
8"	7	4	4	298,4	= ROUND FLANGE							4	4	298,4	3/4"	10
10"	7	8	4	361,9	= ROUND FLANGE							4	4	361,9	7/8"	12
12"	7	8	4	431,8	2x148	---	400	---	6	4	431,8	7/8"	12			
14"	7	8	4	476,2	3x100	300	460	460	12	4	476,2	1"	21			
16"	7	12	4	539,7	3x110	330	515	515	12	4	539,7	1"	21			
18"	7	12	4	577,8	4x116	344	565	565	14	4	577,8	1 1/8"	22			
20"	4	16	4	635	4x130	360	620	620	14	4	635	1 1/8"	22			
24"	4	16	4	749,3	4x155	415	725	725	14	4	749,3	1 1/4"	22			
28"	4	24	4	863,6	6x120	115+305+115	832	832	22	4	863,6	1 1/4"	22			
32"	4	24	4	977,9	6x137	145+360+145	940	940	22	4	977,9	1 1/2"	22			
36"	4	28	4	1085,9	6x155	160+410+160	1042	1042	22	4	1085,9	1 1/2"	20			
40"	4	32	4	1200,2	162+(5x164)+162	(2x170)+465+(2x170)	1144	1145	24	4	1200,2	1 1/2"	20			



www.cmovalves.com



CMO VALVES



**CMO HEADQUARTERS
MAIN OFFICES & FACTORY**

Amategi Aldea, 142
20400 Tolosa
Guipuzcoa (Spain)

Tel.: (+34) 943 67 33 99
Fax: (+34) 943 67 24 40

cmo@cmovalves.com
www.cmovalves.com

CMO MADRID

C/ Rumania, 5 - D5 (P.E. Inbisa)
28802 Alcalá de Henares
Madrid (Spain)

Tel.: (+34) 91 877 11 80
Fax: (+34) 91 879 79 94

cmomadrid@cmovalves.com
www.cmovalves.com