Rev. 10/ 06-06-2018

UNIDIRECTIONAL WAFER KNIFE GATE VALVE

DESCRIPTION

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

GENERAL APPLICATIONS

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

Designed for applications such as:

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

SIZES - ANSI

2" to 50"

** Others on request*

WORKING PRESSURE (ΔP)

2"-10"	150 psi
12"-14"	90 psi
18"	75 psi
20"-24"	60 psi
28"-48"	30 psi

The mentioned working pressures are just valid for the pressures applied on the direction of the arrow market on the body. As the valve is designed with gate support guides, the valves are able to support a 30% of these pressures from the opposite direction without any damage on them. In these cases, the valves are not 100% water tight. To obtain total water tightness in these conditions, it is necessary to incorporate additional supports.

STANDARD FLANGES

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

OTHER COMMON FLANGES

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

** Others on request*

SEAT MATERIALS

- EPDM
- NITRILE
- FPM
- SILICONE
- PTFE
- ...

* ***Note:*** There are several materials available for the reinforced ring and deflector (CA-15, CF8M, and Ni-hard ...)

Fig. 1

DIRECTIVES

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

QUALITY DOSSIER

All valves are tested hydrostatically 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

When a knife gate valve remains open for long periods of time and the body's internal walls are parallel a very large torque is required to close it. Model A's body is cone-shaped inside, providing greater space. This way, when the valve is closed the solids stored inside it can be easily removed.

This valve is defined as unidirectional and these valves are normally at risk of the gate bending due to counter-pressure. This cannot happen with the CMO valves because it contains internal guides that support the knife gate and allow it to work under counter-pressure of 30% of the maximum working pressure, without the knife gate bending. The stem protection hood is independent from the handwheel securing nut, this means the hood can be disassembled without the need to release the handwheel. This advantage allows regular maintenance operations to be performed, such as lubricating the stem.

The stem on the CMO valves is made of 18/8 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 GJS 500 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.

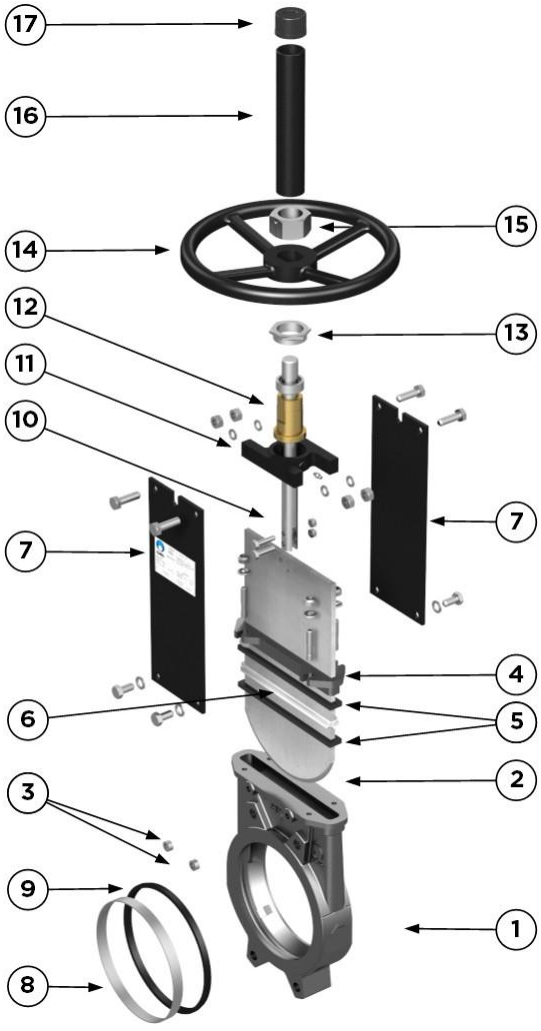


Fig.2

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). This characteristic is essential in pneumatic actuators. The pneumatic cylinder's o-ring seals are commercial products and can be purchased worldwide.

STANDARD COMPONENTS LIST

COMPONENT	CAST IRON	ST.STEEL
1 BODY	GJL-250	CF8M
2 GATE	AISI304	AISI316
3 GUIDE	RCH1000	
4 PACKING GLAND	GJS-500	CF8M
5 PACKING	SINT + PTFE	
6 O-RING SEAL	EPDM	
7 SUPPORT PLATES	S275JR	
8 RING	AISI316	
9 SEAT	EPDM	
10 STEM	AISI 304	
11 YOKE	GJS500	
12 STEM NUT	BRONZE	
13 CHECK NUT	ST44.2 +ZINC	
14 HANDWHEEL	NODULAR CAST IRON	
15 NUT	STEEL	
16 HOOD	STEEL	
17 TOP CAP	PLASTIC	

Table. 1

DESIGN CHARACTERISTICS

BODY

- Unidirectional wafer-design knife gate valve. One-piece cast body with guides to support gate and seat wedges.
- For diameters greater than DN1200 the body is machine-welded with the necessary reinforcements to resist the maximum working pressure. Full port designed to provide high flow rates with low pressure drop. Full port designed to provide high flow rates with low pressure drop.
- The standard manufacturing materials are GJL-250 cast iron and CF8M stainless steel. Other materials, such as GJS-500 nodular cast iron, A216WCB carbon steel and stainless steel alloys (AISI316Ti, Duplex, 254SMO, Uranus B6…) are available on request. (AISI316Ti, Dúplex, 254SMO, Uranus B6…) están disponibles bajo consulta.
- 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..

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, antiabrasion treatments and modifications are available to adapt the valves to the customer's requirements.

RESILIENT SEAT MATERIALS

EPDM
This is the standard resilient seat fitted on 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 90ºC*. 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 90ºC*. It provides the valve with 100% watertight integrity.

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

SILICONE
Mainly used in the food industry and for pharmaceuti- cal 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

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

SEAT: (watertight)

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

Fig. 3

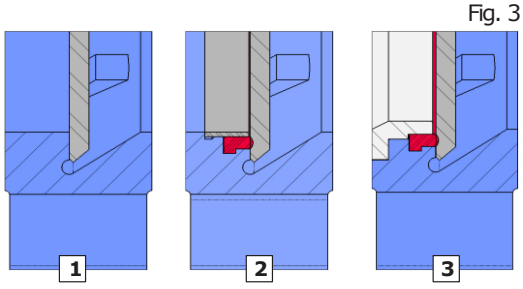
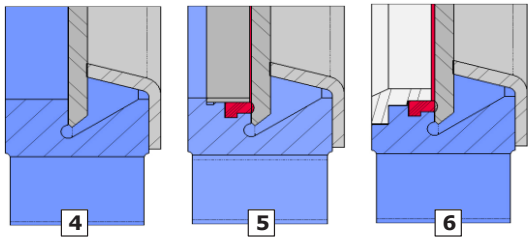


Fig. 4



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 15% of the pipe flow.

SEAT 2
Standard soft-seated valve
This type of seat includes a resilient seat which is fixed to the inside of the body via an AISI316 stainless steel retaining ring.

SEAT 3
Soft-seated valve with reinforced socket.
This type of seat includes a resilient seat which is fixed to the inside of the body via an AISI316 stainless steel retaining ring with two functions (to protect the valve from abrasion and clean the gate when working with solids that can stick to it)

SEAT 4 / 5 / 6
The same as seats 1, 2 and 3 but including a deflector.
The deflector is a cone-shaped ring located at the valve's entrance with two functions (to protect the valve from abrasion and guide the flow to the centre of the valve).

PACKING

CMO'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	**TªMAX (ºF)**	**APLICATIONS**	**MATERIAL**	**P(psi)**	**Tª. MAX**	**pH**
Steel/Steel	>482	High temp./Low watertight integ	Greased cotton	150	212	6-8
EPDM (E)	194*	Non-mineral acids and oils	Dry cotton	7.5	212	6-8
Nitrile (N)	194*	Hydrocarbons, oils and greases	Cotton +PTFE	435	248	6-8
Viton (V)	392	Hydrocarbons and solvents	Synthetic +PTFE	1450	-328+518	0-14
Silicone (S)	392	Food Products	Graphite	580	1202	0-14
PTFE (T)	482	Corrosion resistant	Ceramic Fibre	4.5	2550	0-14

Nota: *More details and other materials available on request.* Table. 2

*** > *EPDM and nitrile:*** is possible until serving temperature Max.: 248ºF under request

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.

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-500 packing glands, whilst valves with stainless steel body have CF8M packing glands.

ACTUATORS

All types of actuators can be supplied, with the advantage that thanks to the C.M.O. 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 C.M.O. valves is that all actuators are interchangeable.

MANUAL

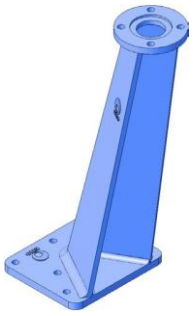
- Handwheel with rising stem
- Handwheel with non-rising stem.
- Chainwheel
- Lever.
- Gear Box
- Others (square nut,...)

AUTOMATIC

- Electric actuator
- Pneumatic cylinder
- Hydraulic cylinder

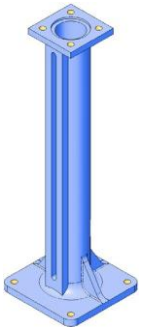
WIDE RANGE OF ACCESSORIES AVAILABLE

- Mechanical stops
- Locking devices
- Emergency manual actuators
- Solenoid valves
- Positioners.
- Limit switches
- Proximity switches
- Straight floor stands (fig. 5)
- Leaning floor stand (fig. 6)



STRAIGHT FLOOR stands.

Fig. 6



LEANING FLOOR stands.

Fig. 5

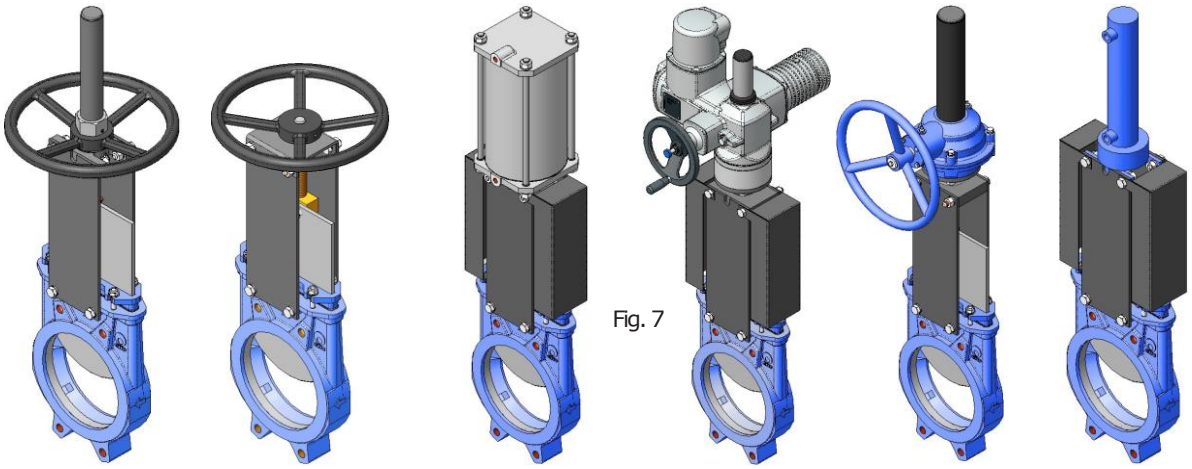


Fig. 7

HANDWHEEL RISING STEM

HANDWHEEL NON-RISING STEM

PNEUMATIC ACTUATOR

ELECTRIC-MOTOR ACTUATOR

HANDWHEEL GEAR BOX

HYDRAULIC ACTUATOR

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.

FLUSHING HOLES IN BODY (Fig. 8)
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.

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.

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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.

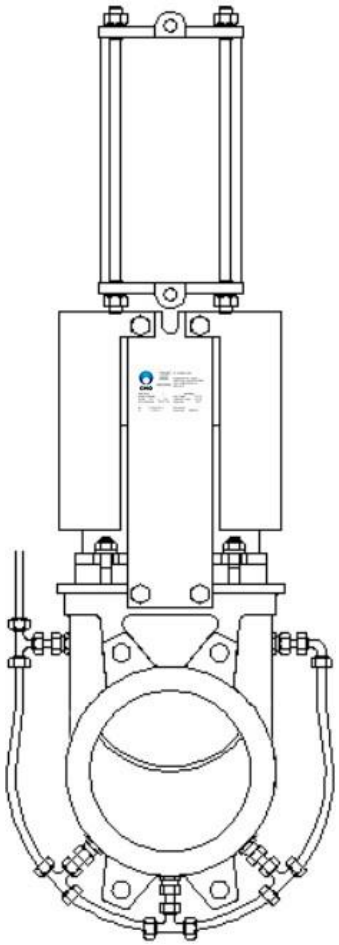

Fig. 8

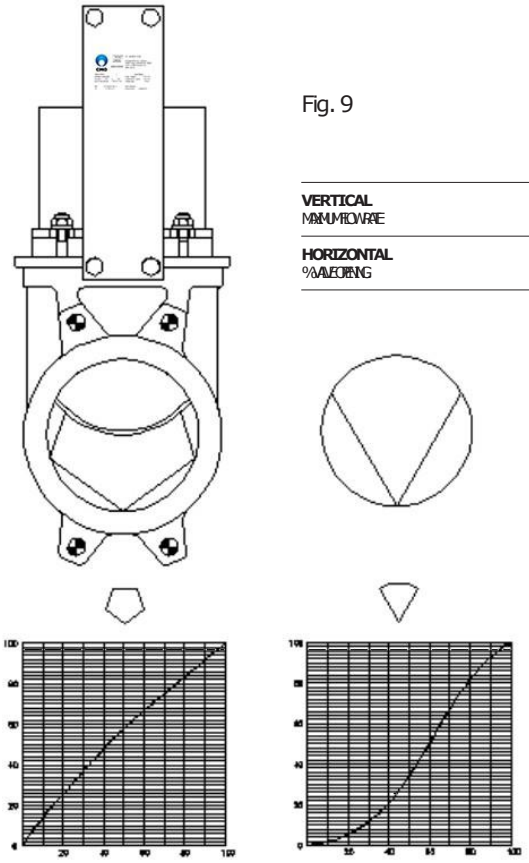

Fig. 9

TRIANGULAR (V-NOTCH) AND PENTAGONAL DIAPHRAGM WITH INDICATION RULE (Fig. 9)

Recommended for applications where regulation flow rate is necessary. Allows you to control the flow rate according to the opening percentage of the valve.

INTERCHANGEABLE ACTUATORS

The drives are easily interchangeable with each other.

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. 10)

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

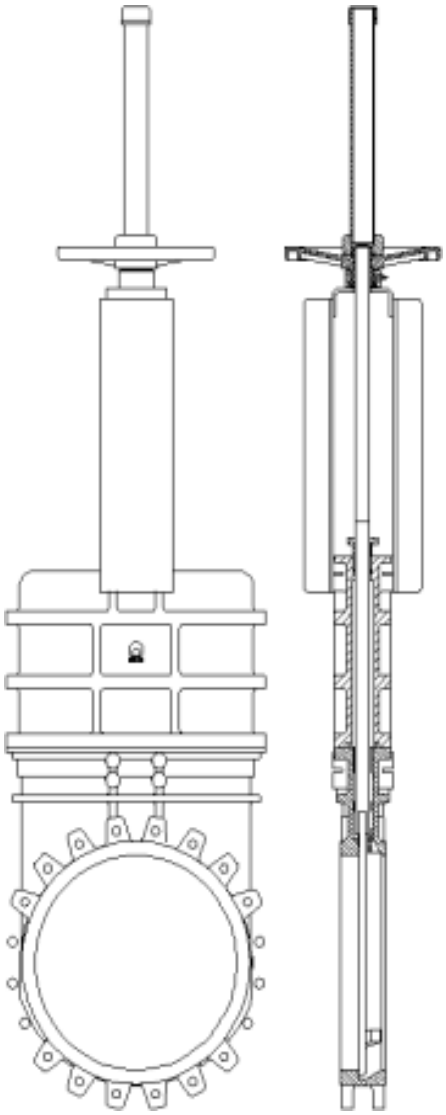

Fig. 10

TYPES OF EXTENSION

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

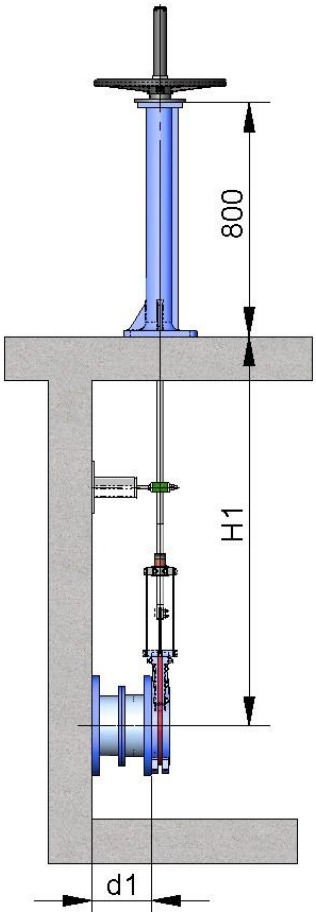

Fig. 11

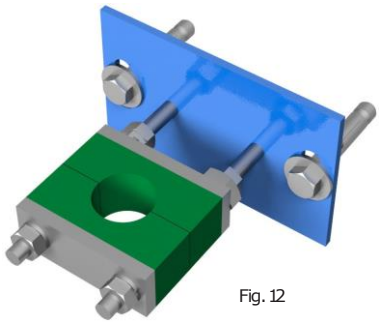

Fig. 12

EXTENSION: FLOOR STAND.

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

The definition variables are as follows:

H1: Distance from the valve's centre to the 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 actuator.

A stem support-guide (Fig. 12) is recommended every 1.5m.

The standard floor stand is 800mm high (Fig. 11). Other floor stand measurements available on request:

A position indicator can be fitted to determine the valve's percentage of opening.

Tilting stand available on request (Fig. 13).

Fig. 13

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 3

EXTENSION: PIPE (FIG. 14)

Consists of raising the actuator. The pipe will rotate in the same direction as the handwheel when the valve is operated. The valve always remains at the same height

The definition variables are as follows:
H1: Distance from the valve's centre to the base of the stand.
d1: Separation from the wall to the end of the connecting flange.

CHARACTERISTICS:

- Standard actuators: Handwheel and "Square Nut"
- A pipe support-guide is recommended every 1.5m.
- The standard materials are: EPOXY coated carbon steel and stainless
- steel.

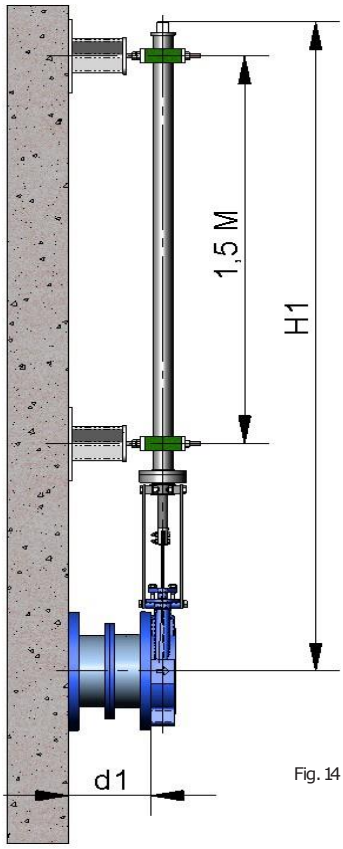

Fig. 14

EXTENDED SUPPORT PLATES (Fig. 15)

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.

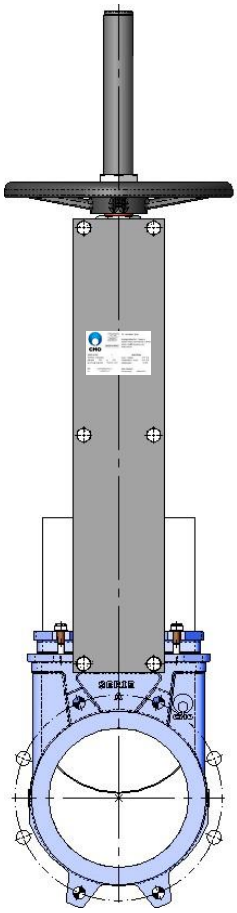

Fig. 15

UNIVERSAL JOINT (Fig. 16)

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

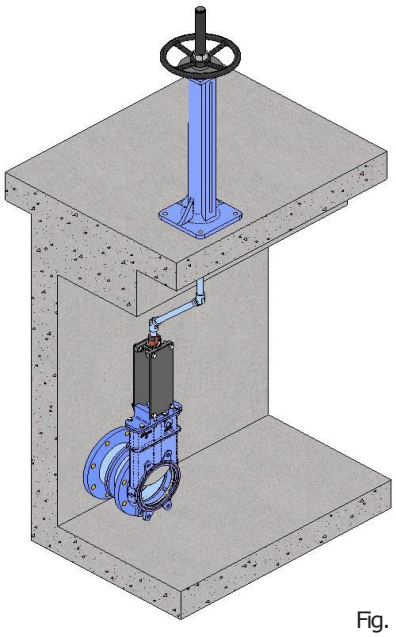

Fig. 16

HANDWHEEL with Rising StemStem

OPTIONS

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

ACTUATOR INCLUDING

- Handwheel
- Stem
- Nut
- Stem protection hood

AVALAIBLE

- Available: ND50 to ND 1200
- From ND600 the actuator is with gears.

* Other ND on request.

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

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

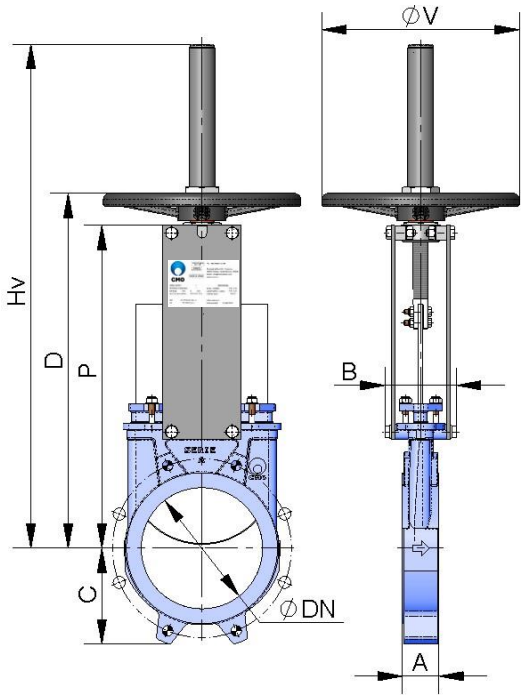

Fig. 17

ANSI	ND	ΔP (bar)	A	B	C	P	Hv	D	øV	WEIGHT (kg.)
2"	50	10	40	92	63	241	409	280	225	7
2.5"	65	10	40	92	70	268	436	307	225	8
3"	80	10	50	92	92	294	469	333	225	9
4"	100	10	50	92	105	334	502	373	225	11
5"	125	10	50	102	120	367	585	406	225	13
6"	150	10	60	102	130	419	644	458	225	17
8"	200	8	60	119	160	525	815	578	325	28
10"	250	6	70	119	198	626	1016	679	325	40
12"	300	6	70	119	234	726	1116	779	380	56
14"	350	5	96	290	256	797	1336	906	450	94
16"	400	5	100	290	292	903	1442	1012	450	116
18"	450	3	106	290	308	989	1628	1098	450	162
20"	500	3	110	290	340	1101	1738	1210	450	191
24"	600	3	110	290	400	1307	2046	1416	450	264
28"	700	2	110	320	453	1506	--	--	--	441
32"	800	2	110	320	503	1720	--	--	--	568
36"	900	2	110	320	583	1953	--	--	--	736
40"	1000	2	110	320	613	2137	--	--	--	921
48"	1200	2	150	340	728	2616	--	--	--	1350

Table 5

HANDWHEEL WITH NON-RISING STEM

Suitable when no size limitations exist

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

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

OPTIONS

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

ACTUATOR

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

AVALAIBLE

- ND50 a ND2000
- From ND600 the actuator is with gears

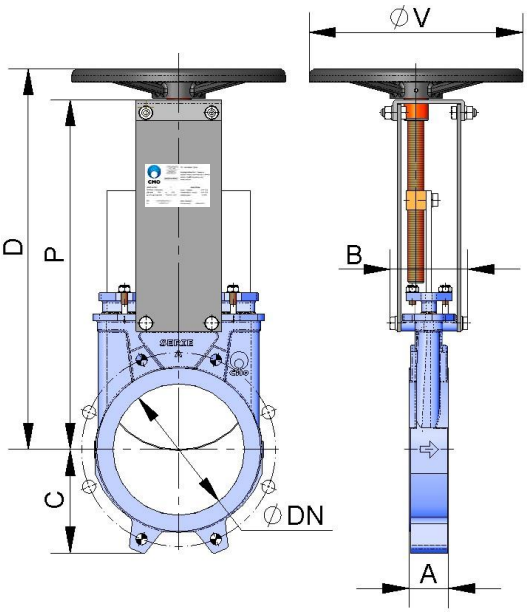

Fig. 18

ANSI	ND	ΔP (bar)	A	B	C	P	D	øV	WEIGHT (kg.)
2″	50	10	40	101	63	241	280	225	7
2.5″	65	10	40	101	70	268	308	225	8
3″	80	10	50	101	92	294	333	225	9
4″	100	10	50	101	105	334	373	225	11
5″	125	10	50	111	120	367	407	225	13
6″	150	10	60	111	130	419	458	225	17
8″	200	8	60	128	160	525	578	325	29
10″	250	6	70	128	198	626	679	325	40
12″	300	6	70	128	234	726	779	380	53
14″	350	5	96	305	256	797	906	450	93
16″	400	5	100	305	292	903	1012	450	126
18″	450	3	106	305	308	989	1098	450	160
20″	500	3	110	305	340	1101	1210	450	193
24″	600	3	110	305	400	1307	1416	450	264
28″	700	2	110	335	453	1506	--	--	435
32″	800	2	110	335	503	1720	--	--	580
36″	900	2	110	335	583	1953	--	--	740
40″	1000	2	110	335	613	2137	--	--	925
48″	1200	2	150	355	728	2616	--	--	1350

Table 6

CHAINWHEEL

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

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

OPTIONS

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

ACTUATOR INCLUDING

- Handwheel
- Stem
- Nut
- Hood

AVALAIBLE

- Available: ND50 to ND 1200
- From ND600 the actuator is with gears.

* Other ND on request.

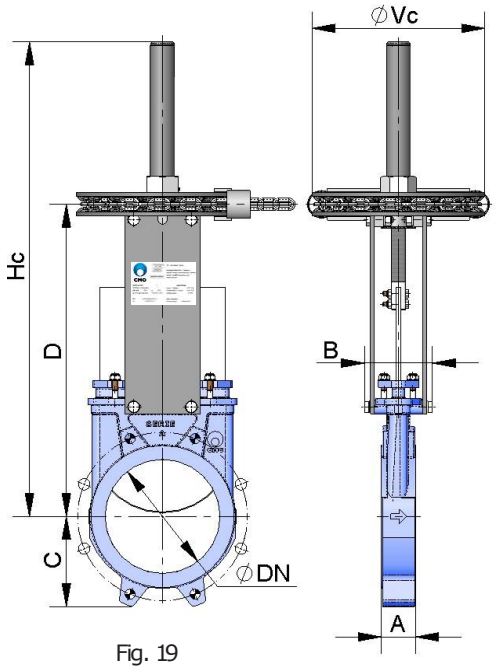

Fig. 19

ANSI	ND	ΔP (bar)	A	B	C	D	Hc	øVc	WEIGHT (kg.)
2"	50	10	40	92	63	264	409	225	7
2.5"	65	10	40	92	70	291	436	225	8
3"	80	10	50	92	92	317	469	225	9
4"	100	10	50	92	105	357	502	225	11
5"	125	10	50	102	120	390	585	225	13
6"	150	10	60	102	130	442	644	225	17
8"	200	8	60	119	160	551	815	300	29
10"	250	6	70	119	198	652	1016	300	40
12"	300	6	70	119	234	752	1116	300	53
14"	350	5	96	290	256	879	1336	402	93
16"	400	5	100	290	292	985	1442	402	126
18"	450	3	106	290	308	1071	1628	402	160
20"	500	3	110	290	340	1183	1738	402	193
24"	600	3	110	290	400	1389	2046	402	264
28"	700	2	110	320	453	1506	2406	402*	435
32"	800	2	110	320	503	1720	2790	402*	580
36"	900	2	110	320	583	1953	3130	402*	740
40"	1000	2	110	320	613	2137	3440	402*	925
48"	1200	2	150	340	728	2616	4050	402*	1350

Table 7

LEVER

- It is a fast actuator.

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

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

ACTUATOR INCLUDING

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

AVALAIBLE

- Available: ND50 to ND 300
- From ND600 the actuator is with gears.

* Other ND on request.

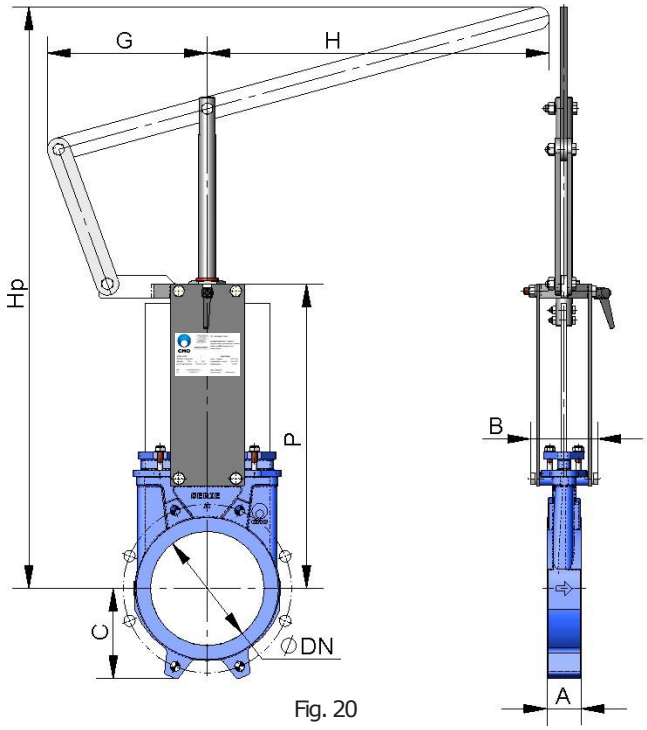

Fig. 20

ANSI	ND	ΔP (bar)	A	B	C	P	G	H	Hp	WEIGHT (kg.)
2″	50	10	40	92	63	264	155	325	504	8
2.5″	65	10	40	92	70	291	155	325	526	9
3″	80	10	50	92	92	317	155	325	549	10
4″	100	10	50	92	105	357	155	325	605	11
5″	125	10	50	102	120	390	155	425	902	14
6″	150	10	60	102	130	442	155	425	956	16
8″	200	8	60	119	160	551	290	620	1027	32
10″	250	6	70	119	198	652	290	620	1416	54
12″	300	6	70	119	234	752	290	620	1525	57

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.

AVALAIBLE

- Available: ND50 to ND2000
- From ND600 the actuator is with gears.

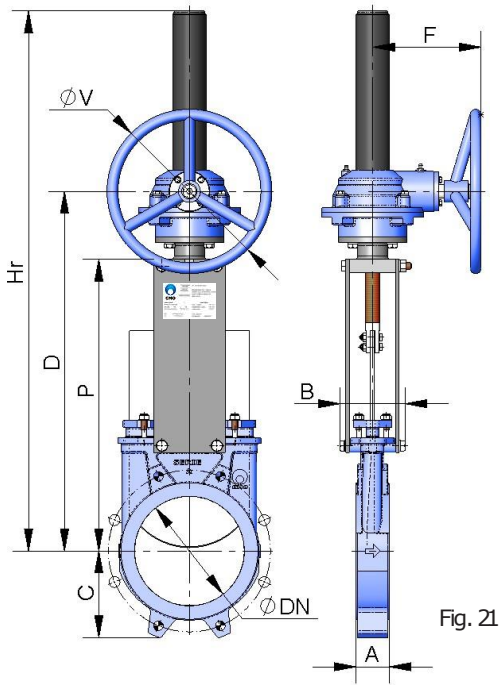

Fig. 21

* Other ND on request.

ANSI	ND	ΔP (bar)	A	B	C	P	D	F	øV	Hr	WEIGHT (kg.)
2"	50	10	40	92	63	241	366	198	300	540	17
2.5"	65	10	40	92	70	268	392	198	300	566	18
3"	80	10	50	92	92	294	418	198	300	592	19
4"	100	10	50	92	105	334	458	198	300	632	20
5"	125	10	50	102	120	367	491	198	300	665	24
6"	150	10	60	102	130	419	543	198	300	717	26
8"	200	8	60	119	160	525	648	198	300	942	50
10"	250	6	70	119	198	626	749	198	300	1043	63
12"	300	6	70	119	234	726	850	198	300	1194	77
14"	350	5	96	290	256	797	891	218	450	1335	106
16"	400	5	100	290	292	903	997	218	450	1441	134
18"	450	3	106	290	308	989	1083	218	450	1677	173
20"	500	3	110	290	340	1101	1195	218	450	1789	216
24"	600	3	110	290	400	1307	1401	218	450	2045	284
28"	700	2	110	320	453	1506	1612	260	450	2401	430
32"	800	2	110	320	503	1720	1825	288	650	2715	615
36"	900	2	110	320	583	1953	2055	288	650	3043	768
40"	1000	2	110	320	613	2137	2246	288	650	3351	972
44"	1100	2	150	340	670	2375	2515	352	850	3675	1142
48"	1200	2	150	340	728	2616	2760	352	850	4042	1298
52"	1300	2	150	390	787	2882	3022	352	850	4382	1400
56"	1400	2	150	390	837	3250	3388	352	850	4852	N.D.*

Table 9

* *Undeclared weight.*

DOUBLE-ACTING PNEUMATIC CYLINDER

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

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

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

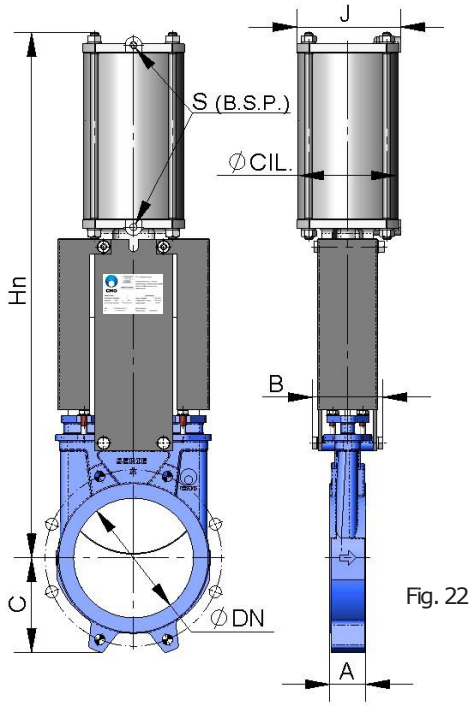

Fig. 22

AVAILABLE:

- Available: ND50 to ND1200
- Other ND on request.

ANSI	ND	ΔP (bar)	A	B	C	ØCIL.	ØVAST	J	S(B.S.P.)	Hn	WEIGHT (kg.)
2"	50	10	40	92	63	80	20	96	1/4"	415	7
2.5"	65	10	40	92	70	80	20	96	1/4"	455	8
3"	80	10	50	92	92	80	20	96	1/4"	498	9
4"	100	10	50	92	105	100	20	115	1/4"	565	12
5"	125	10	50	102	120	125	25	138	1/4"	636	18
6"	150	10	60	102	130	125	25	138	1/4"	717	22
8"	200	8	60	119	160	160	30	175	1/4"	874	37
10"	250	6	70	119	198	200	30	218	3/8"	1036	58
12"	300	6	70	119	234	200	30	218	3/8"	1182	72
14"	350	5	96	290	256	250	40	270	3/8"	1380	130
16"	400	5	100	290	292	250	40	270	3/8"	1530	155
18"	450	3	106	290	308	300	45	382	1/2"	1677	225
20"	500	3	110	290	340	300	45	382	1/2"	1839	257
24"	600	3	110	290	400	300	45	382	1/2"	2146	340
28"	700	2	110	320	453	350	45	426	1/2"	2481	556
32"	800	2	110	320	503	350	45	426	1/2"	2798	679
36"	900	2	110	320	583	400	50	508	1/2"	3167	840
40"	1000	*Query*	110	320	613	400	50	508	1/2"	3451	1053
44"	1100	*Query*	150	340	670	400	50	508	1/2"	3792	1210
48"	1200	*Query*	150	340	728	400	50	508	1/2"	4135	1366

Table 10

SINGLE-ACTING PNEUMATIC CYLINDER - 135 bar

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

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

- 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.

AVALAIBLE

- Available: ND50 to ND300
- From ND600 the actuator is with gears.

* Other ND on request.

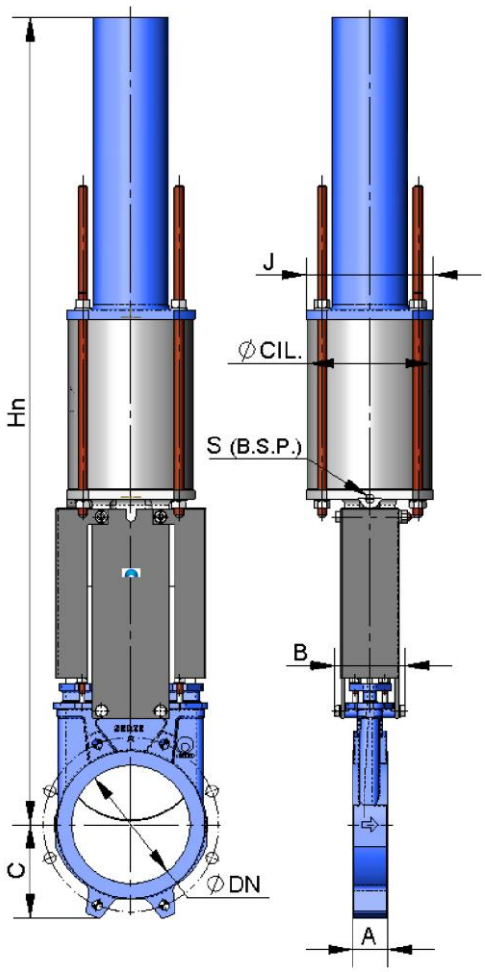

Fig. 23

ANSI	DN	ΔP (bar)	A	B	C	ØCIL.	ØVAST	J	S(B.S.P.)	Hn	WEIGH (kg.)
2″	50	10	40	92	63	125	25	138	1/4"	781	19
2.5″	65	10	40	92	70	125	25	138	1/4"	806	22
3″	80	10	50	92	92	125	25	138	1/4"	833	23
4″	100	10	50	92	105	125	25	138	1/4"	873	24
5″	125	10	50	102	120	160	30	175	1/4"	909	35
6″	150	10	60	102	130	160	30	175	1/4"	960	36
8″	200	8	60	119	160	200	30	218	3/8"	1355	66
10″	250	6	70	119	198	250	40	270	3/8"	1844	130
12″	300	6	70	119	234	250	40	270	3/8"	2005	143

Table 10

ELECTRIC ACTUATOR

This actuator is automatic and includes the following parts

- Electric motor
- Stem
- Yoke

The electric motor includes

- Emergency manual handwheel
- Limit switches
- Torque switches

OPTIONS

- Different types and brands
- Non-rising stem

AVALAIBLE

- Available: ND50 to ND 2000
- From DN500 the motor is assisted with a gear box

* Other ND on request.

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

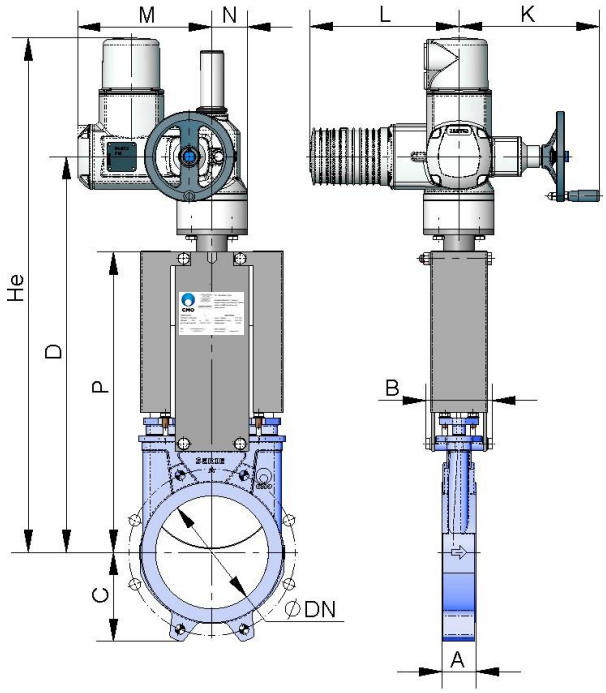

Fig. 24

ANSI	DN	ΔP (bar)	A	B	C	D	K	L	M	N	P	HE	WEIGH (kg.)
2″	50	10	40	92	63	400	249	265	238	62	241	595	24
2.5″	65	10	40	92	70	426	249	265	238	62	268	622	25
3″	80	10	50	92	92	452	249	265	238	62	294	647	26
4″	100	10	50	92	105	492	249	265	238	62	334	687	27
5″	125	10	50	102	120	525	249	265	238	62	367	720	30
6″	150	10	60	102	130	577	249	265	238	62	419	772	32
8″	200	8	60	119	160	685	249	265	238	62	525	990	42
10″	250	6	70	119	198	785	249	265	238	62	626	1090	55
12″	300	6	70	119	234	885	249	265	238	62	726	1190	72
14″	350	5	96	290	256	940	254	283	248	65	797	1305	99
16″	400	5	100	290	292	1045	254	283	248	65	903	1460	136
18″	450	3	106	290	308	1175	336	389	286	91	989	1755	166
20″	500	3	110	290	340	1290	336	389	286	91	1101	1870	245
24″	600	3	110	290	400	1495	336	389	286	91	1307	2045	362
28″	700	2	110	320	453	1661	336	389	286	91	1506	2401	432
32″	800	2	110	320	503	1875	339	389	286	91	1720	2715	630
36″	900	2	110	320	583	2108	339	389	286	91	1953	3043	764
40″	1000	2	110	320	613	2292	339	389	286	91	2137	3351	998
44″	1100	2	150	340	670	2530	339	389	286	91	2375	3675	1194
48″	1200	2	150	340	728	2760	336	389	528	125	2616	4042	1350

Table 11

HYDRAULIC ACTUATOR

ACCIONAMIENTO HIDRÁULICO

(Oil pressure: 135 bar)

The hydraulic actuator includes:

- Hydraulic cylinder
- Yoke

AVALAIBLE

- Available: ND50 to ND 300
- From ND600 the actuator is with gears.

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

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

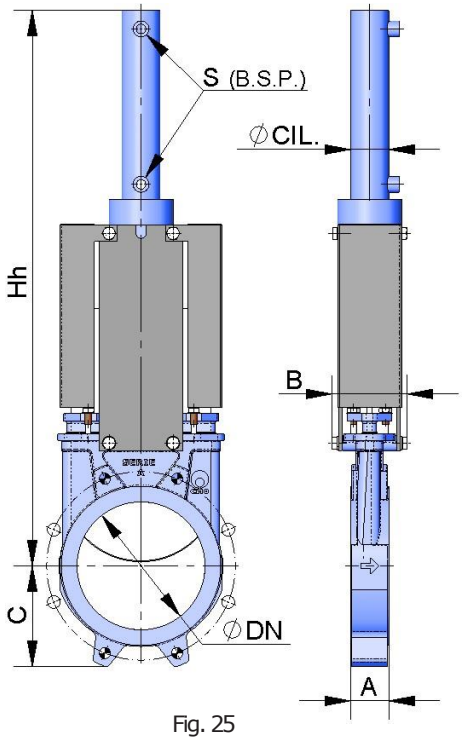

Fig. 25

ANSI	ND	ΔP (bar)	A	B	C	Hn	ø CIL	S(B.S.P.)	OIL CAP. (dm^3)	Ø ROD	WEIGH (kg.)
2"	50	10	40	92	63	460	25	3/8"	0.03	18	7
2.5"	65	10	40	92	70	500	25	3/8"	0.03	18	8
3"	80	10	50	92	92	560	25	3/8"	0.04	18	9
4"	100	10	50	92	105	620	32	3/8"	0.09	22	12
5"	125	10	50	102	120	683	32	3/8"	0.11	22	15
6"	150	10	60	102	130	755	40	3/8"	0.20	28	20
8"	200	8	60	119	160	926	50	3/8"	0.42	28	31
10"	250	6	70	119	198	1077	50	3/8"	0.52	28	44
12"	300	6	70	119	234	1245	50	3/8"	0.62	28	62
14"	350	5	96	290	256	1376	50	3/8"	0.73	28	100
16"	400	5	100	290	292	1535	63	3/8"	1.31	36	138
18"	450	3	106	290	308	1710	63	3/8"	1.47	36	161
20"	500	3	110	290	340	1870	63	3/8"	1.62	36	223
24"	600	3	110	290	400	2175	80	3/8"	3.12	45	325
28"	700	2	110	320	453	2525	80	3/8"	3.62	45	481
32"	800	2	110	320	503	2839	100	1/2"	6.44	56	678
36"	900	2	110	320	583	3172	100	1/2"	7.25	56	861
40"	1000	2	110	320	613	3496	125	1/2"	10.25	70	1103
44"	1100	2	150	340	670	3760	125	1/2"	13.56	70	1266
48"	1200	2	150	340	728	4174	125	1/2"	15.05	70	1430

Table 12

FLANGE DIMENSIONS

EN 1092-2 PN10

ND	ΔP (bar)	•	o	Metric	PROF.	ØK
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
700	2	16	8	M 27	22	840
800	2	16	8	M 30	22	950
900	2	20	8	M 30	20	1050
1000	2	20	8	M 33	20	1160
1100	2	20	12	M 33	20	1270
1200	2	20	12	M 36	22	1380

Table 13

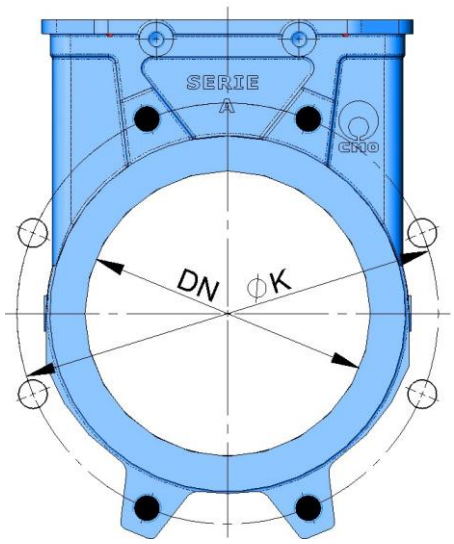

Fig. 26

o BLIND TAPPED HOLES

• *THROUGH HOLE*

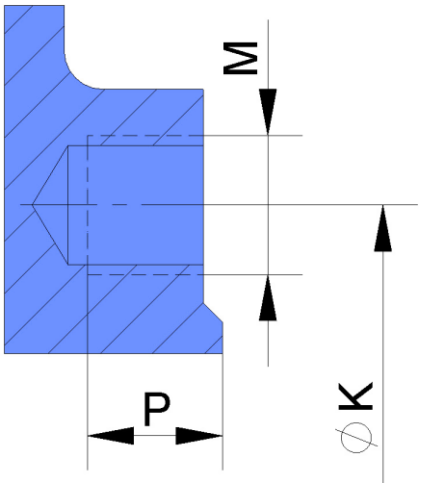

Fig. 27

ANSI B16, Class 150

ND	ΔP (bar)	•	o	RUNC	PROF.	ØK
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	8	4	1"	21	476,2
16"	5	10	6	1"	21	539,7
18"	3	10	6	1 1/8"	22	577,8
20"	3	14	6	1 1/8"	22	635
24"	3	14	6	1 1/4"	22	749,3
28"	2	20	8	1 1/4"	22	863,6
30"	2	20	8	1 1/4"	22	914,4
32"	2	20	8	1 1/2"	22	977,9
36"	2	20	12	1 1/2"	20	1085,8
40"	2	24	12	1 1/2"	20	1200,2

Table 13

CMO VALVES

CERTIFIED ISO 9001 UKAS MANAGEMENT SYSTEMS 001

CMO NORTH AMERICA
7685-A Corporate Blvd
Plain City, OH 43235

Tel.: (614) 873-8995
Fax: (614) 873-8996

info@bpcvalves.com
www.bpcvalves.com