

AD



UNIDIRECTIONAL FLANGED KNIFE GATE VALVE

DESCRIPTION

- One-piece cast body with guides to support gate and seat wedges.
- Provides high flow rates with low pressure drops.
- Various seal and stuffing materials available.
- Across flats in accordance with **CMO Valves** 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 discharge
- Chemical plants
- Pumping
- Food industry
- Sewage treatment

In all these applications it is recommended to install the valve once the fluid has been filtered, to remove the solids or large particles that it contains.

SIZES

ND50 to ND2000

* Large size to order

WORKING (ΔP)

ND50-150	10 bar	ND350-400	5 bar
ND200	8 bar	ND450-600	3 bar
ND250-300	6 bar	ND700-1400	3 bar

The indicated work pressures will only be valid following the direction of the arrow marked on the valve. Due to the valve's design with gate support guides, 30% of these pressures can be applied in the opposite direction to the arrow without causing any damage to it. In these circumstances the valve is not watertight. An additional series of supports is necessary in order to achieve watertight integrity in these conditions.

FLANGE BORING

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

OTHER COMMONLY USED

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

* Others to order

DIRECTIVES

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

Fig. 1

* For category and zone information, contact with **CMO VALVES** technical-commercial department .

QUALITY DOSSIER

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

- Body test = working pressure x 1.5
- Seal 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. The inside of the **AD** model's body is conically shaped, 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 **AD** valve 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 cap is independent from the wheel securing nut, this means the bonnet can be disassembled without the need to release the wheel. This advantage allows regular maintenance operations to be performed, such as lubricating the stem.

The stem of the **AD** valve is made from stainless steel 18/8. This is another additional benefit, since some manufacturers supply it with 13% chrome, which quickly rusts. The operating wheel is manufactured in nodular cast GJS-500 or steel. 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 is has a compact design with the bronze actuator nut protected in a sealed, lubricated box. This makes it possible to move the valve with a key, even without the wheel (in other manufacturers' products this is not possible).

The yoke is has a compact design with the bronze actuator nut protected in a sealed, lubricated box. This makes it possible to move the valve with a key, even without the wheel (in other manufacturers' products this is not possible). The pneumatic actuator's top and bottom covers are made of GJS-400 nodular cast iron, making them highly shock resistant. This characteristic is essential in pneumatic actuators.

The pneumatic cylinder sealing joints are commercial products and can be purchased worldwide. It is therefore necessary to contact **CMO Valves** every time joints are required.

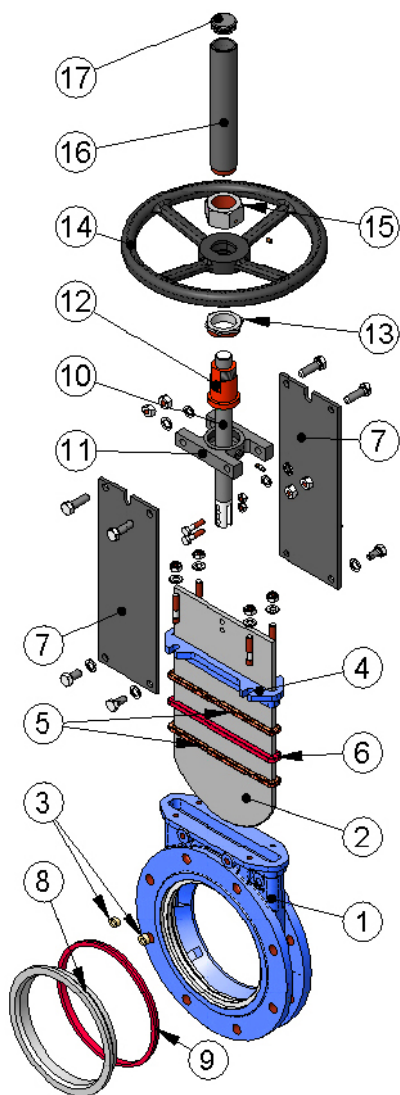


Fig. 2

STANDARD COMPONENTS LIST

COMPONENT	CAST IRON VERSION	STAINLESS STEEL VERSION
1 BODY	GJL-250	CF8M
2 GATE	AISI304	AISI316
3 SLIDE	RCH1000	
4 STUFFING	GJS-500	CF8M
5 PACKING	SYNT + PTFE	
6 O-RING SEAL	EPDM	
7 SUPPORT PLATES	S275JR	
8 RING	AISI316	
9 SEAL	EPDM	
10 STEM	AISI303	
11 YOKE	STEEL	
12 STEM NUT	BRONZE	
13 COUNTERNUT	ST44.2 + ZINC	
14 WHEEL	NODULAR CAST IRON	
15 NUT	STEEL	
16 BONNET	STEEL	
17 TOP CAP	PLASTIC	

Table. 1

DESIGN CHARACTERISTICS

BODY

- Unidirectional 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 withstand the maximum working pressure.
- Designed with full passage to provide large flows with small losses of load.
- The body's internal design prevents any build-up of solids in the seat area.
- 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 to order. 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 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 sealing joint from being cut. Different degrees of polishing, anti-abrasion treatments and modifications are available to adapt the valves to the customer's requirements.

WATERTIGHT MATERIALS

EPDM

This is the standard resilient seal fitted on **AD** 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 provides the valve with 100% watertight integrity.

NITRILE

It is used in fluids containing fats or oils at temperatures no higher than 90°C*. It provides the valve with 100% watertight integrity.

FPM

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

SILICONE

Used mainly in the food industry and for pharmaceutical products with temperatures no higher than 200°C. It provides the valve with 100% watertight integrity.

PTFE

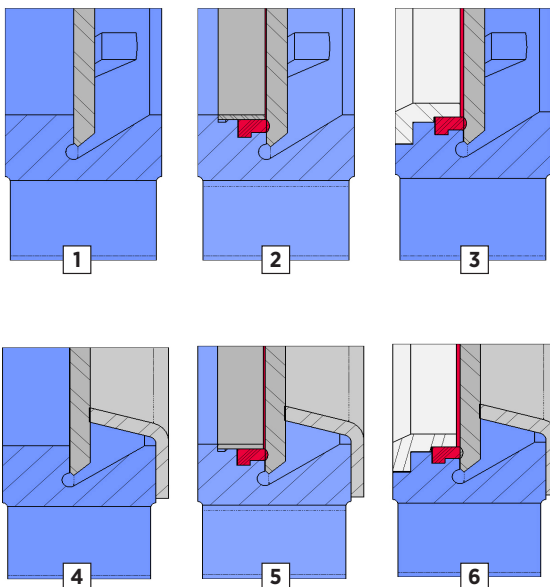
Suitable for corrosive applications and pH between 2 and 12. It does not provide the valve with 100% watertight integrity. Estimated leakage: 0.5% of the pipe flow.

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

Please contact us if you have such requirements.

SEAT (Watertight)

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



SEAT 1

Metal/Metal seal

This type of seal 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

Standard metal/rubber seal

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

SEAT 3

Metal/rubber seal with reinforced ring

This type of seal 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 clean the gate when working with solids that can stick to the gate).

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

The **CMO Valves** standard packing comprises three lines with a specially designed EPDM seal 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:

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.

DRY COTTON

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

DRY 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.

SYNTHETIC + PTFE

This packing is composed of braided synthetic fibres soaked in PTFE both inside and out. It is for general use in hydraulic applications in both pumps and valves and in all types of fluids, especially corrosive ones, including concentrated and oxidising oils. It is also used in liquids with solid particles in suspension.

GRAPHITE

This packing is composed of high-purity graphite fibres. A diagonal braiding system is used and it is impregnated with graphite and lubricant which helps to reduce porosity and improve operation. It has a wide range of applications as graphite is resistant to steam, water, oils, solvents, alkali and most acids.

CERAMIC FIBRE

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

SEAT/SEALS			PACKING			
MATERIAL	Tª MÁX (°C)	APPLICATIONS	MATERIAL	P(Bar)	Tª. MÁX	pH
Metal/Metal	>250	High temp./Low watertight integ.	Greased cotton	10	100	6-8
EPDM (E)	90 *	Non-mineral acids and oils	Dry cotton (AS)	0,5	100	6-8
Nitrile (N)	90 *	Hydrocarbons, oils and greases	Cotton + PTFE	30	120	6-8
FPM (V)	200	Hydrocarbons, oils and greases	Synthetic + PTFE	100	-200+270	0-14
Silicona (S)	200	Food Products	Graphite	40	650	0-14
PTFE (T)	250	Corrosion resistant	Ceramic fibre	0,3	1400	0-14
NOTE: More details and other materials available to order.			* ⇔ EPDM and Nitrile: possible up to max temp.: 120°C to order			

Table. 2

STEM

The stem of **CMO Valves** is made from stainless steel 18/8. This characteristic makes it highly resistant and provides excellent properties against corrosion. The valve design can be rising stem or non-rising stem. When a rising stem is required, a bonnet is supplied to protect the stem from contact with dust and dirt, besides keeping it greased.

STUFFING

The stuffing 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 stuffing, whilst valves with stainless steel body have CF8M stuffing.

ACTUATORS

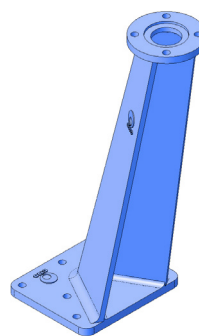
All types of actuators can be supplied, with the advantage that thanks to the **CMO Valves** design they are interchangeable. This design allows customers to change the actuators themselves and no extra assembly accessories are required. A characteristic of the design of valves is that all the actuators are interchangeable.

MANUAL

- Handwheel with non-rising stem
- Handwheel with rising stem
- Chainwheel
- Lever
- Gears
- Others (square stem, etc)

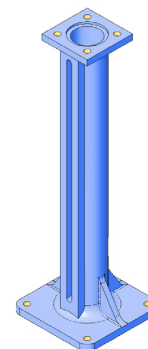
AUTOMÁTIC

- Electric actuator
- Pneumatic cylinder
- Hydraulic cylinder



Leaning floor stand.

Fig. 6



Straight floor stands .

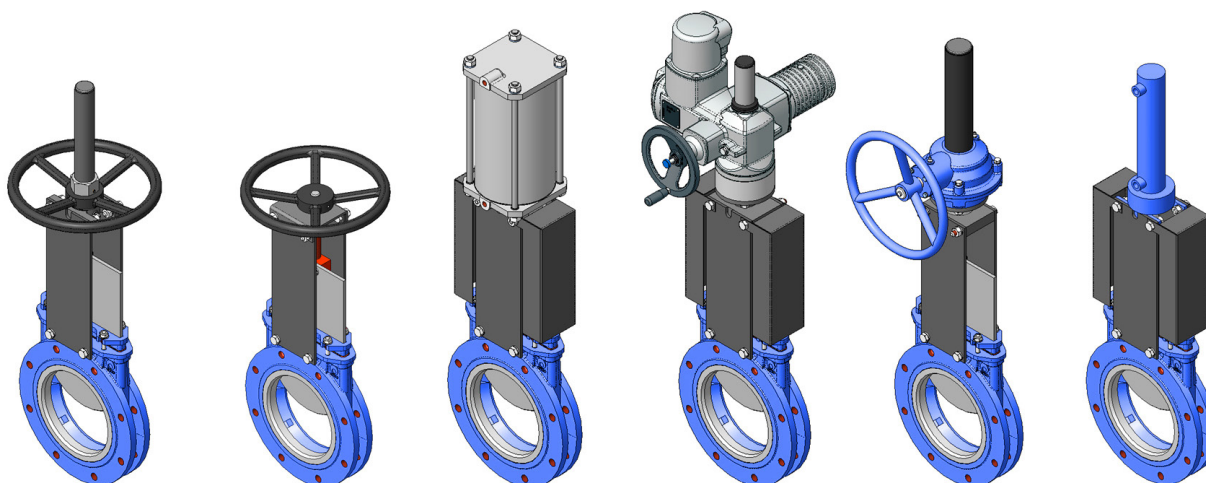
Fig. 7

ACCESSORIES AND OPTIONS

Wide range of accessories available:

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

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.



WHEEL WITH RISING STEM

WHEEL WITH NO RISING STEM

HYDRAULIC ACTUATOR

ELECTRIC-MOTOR ACTUATOR

GEARED WHEEL

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.

PTFE LINED GATE

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

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

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

CASED BODY

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

ACTUATOR OR YOKE SUPPORT

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

MECHANICAL LIMIT SWITCHES, INDUCTIVE SWITCHES AND POSITIONERS

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

ELECTROVALVES

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 run.

MECHANICAL LOCKING SYSTEM

Allows the valve to be mechanically locked in a set position for long periods of time.

EMERGENCY MANUAL ACTUATOR (WHEEL/GEARS)

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

FLUSHING HOLES IN THE 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.

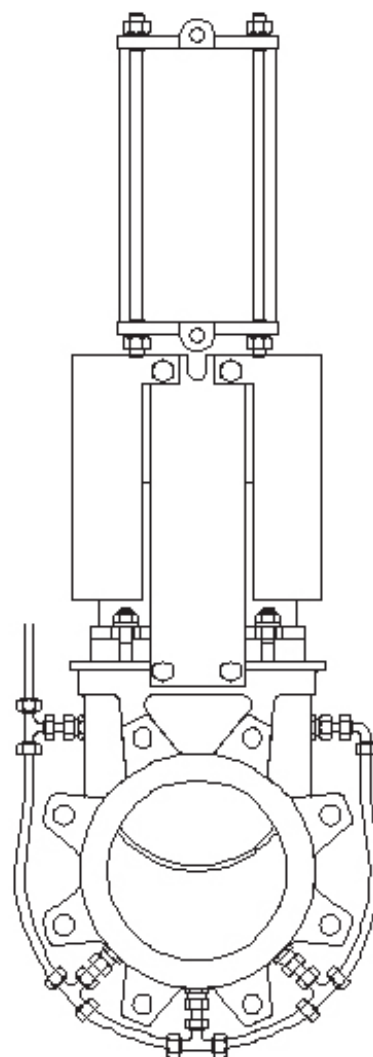
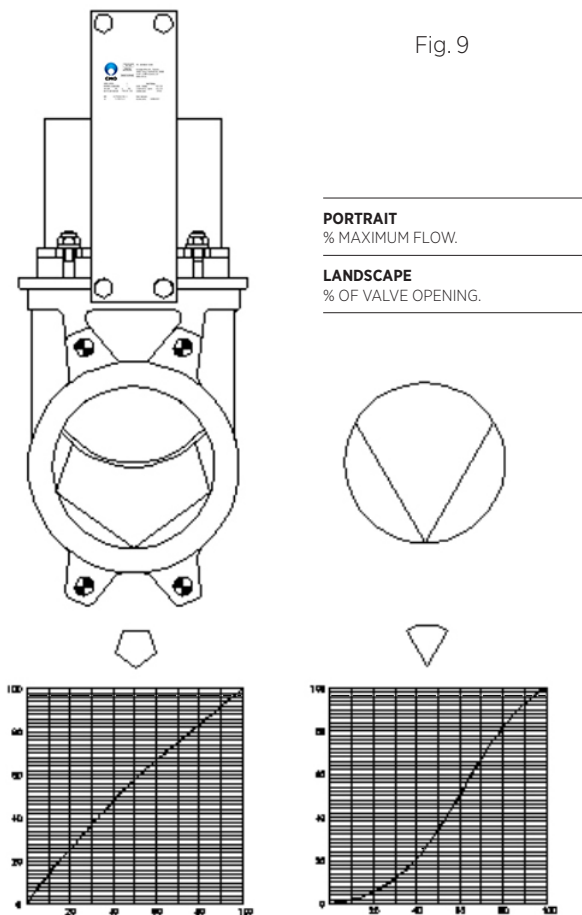


Fig. 8

Fig. 9



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

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

INTERCHANGEABLE ACTUATORS

The actuators are easily interchangeable.

EPOXY COATING

All the carbon steel and iron bodies and components of valves are coated with a layer of EPOXY, which makes them resistant to corrosion and gives an excellent surface finish.

CMO Valves standard colour is blue RAL-5015

GATE SAFETY PROTECTION

In accordance with European safety regulations ("EC" marking), **CMO Valves** automatic valves are fitted with metal protection elements in the knife gate travel, in order to ensure no body or object can be accidentally trapped or dragged along.

BONNET

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

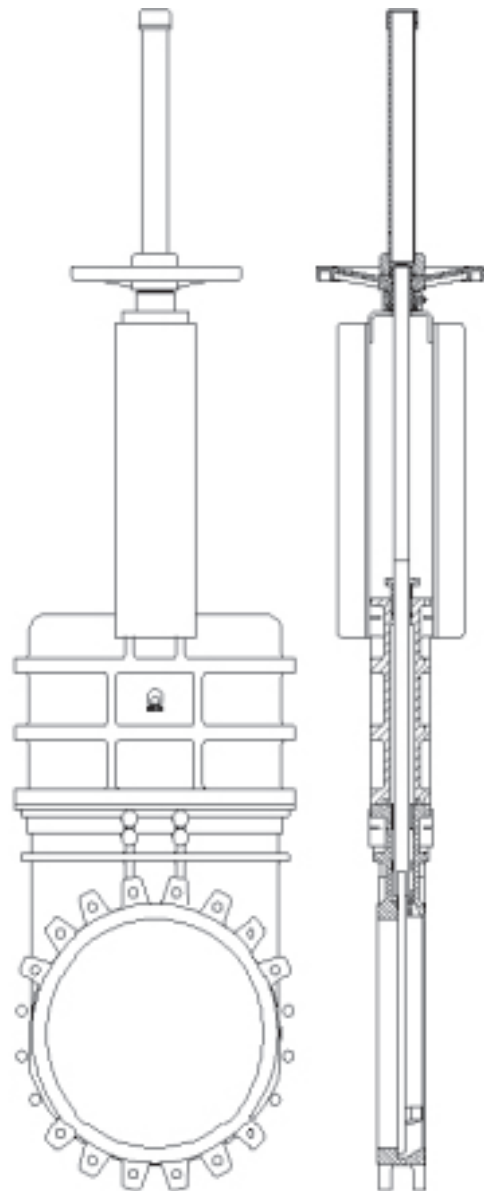


Fig. 10

EXTENSIONS TYPES

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

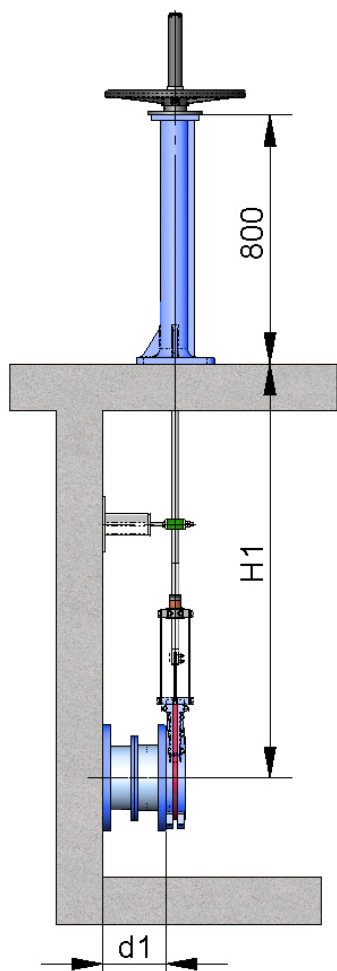


Fig. 11
STRAIGHT FLOOR STAND

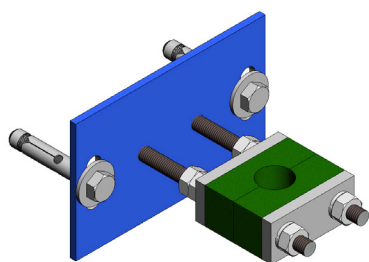


Fig. 12
STEM GUIDE-SUPPORT

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.

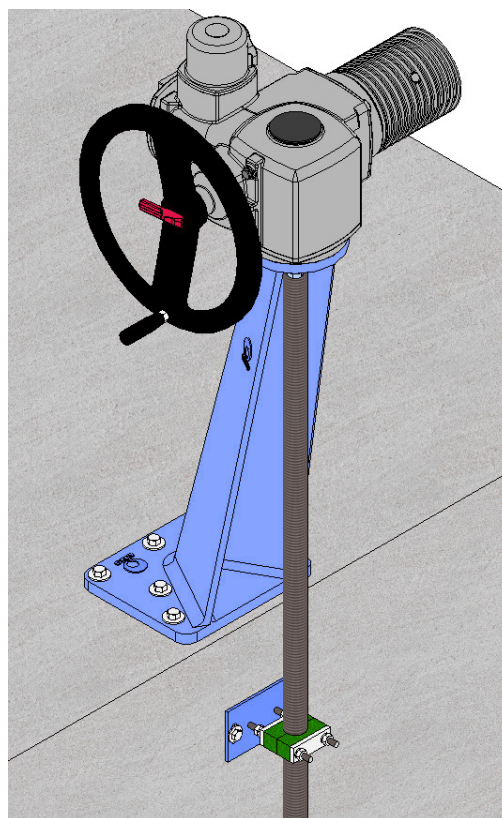
The definition variables are as follows:

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 guide-support is recommended (Fig. 12) every 1.5 m.
- The standard floor stand is 800 mm high (Fig. 11). Other floor stand measurements available to order.
- A position indicator can be fitted to determine the valve's percentage of opening.
- Leaning stand available to order (Fig. 13).



Leaning floor stand

Fig. 13

COMPONENTS LIST

COMPONENT	STANDARD VERSION
Stem	AISI 303
Spindle	AISI 304
Guide-support	Carbon steel with EPOXI coating
Slide	Nylon
Floor Stand	GJS-500 with EPOXY coating

Table. 3

EXTENSION: PIPE (FIG. 14)

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

The definition variables are as follows:

H1: Distance from 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: Wheel and square stem
- A pipe support-guide is recommended every 1.5m.
- The standard materials are: EPOXY coated carbon steel and stainless steel.

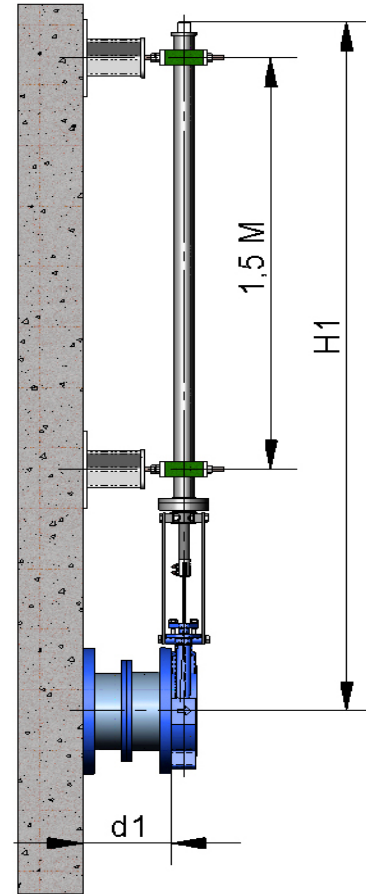


Fig. 14

EXTENSION: 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.

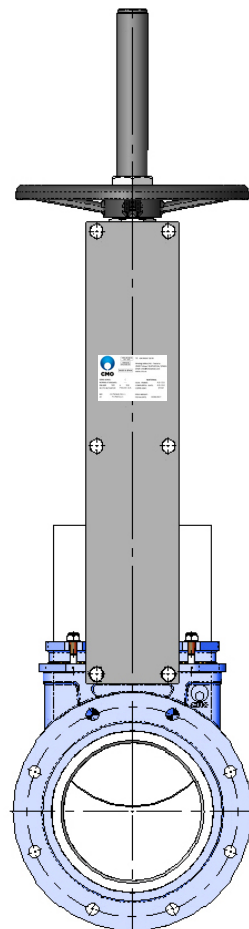


Fig. 15

CARDAN (FIG. 16)

If we find a misalignment between the valve and the drive, we can solve our problem by placing a cardan joint.

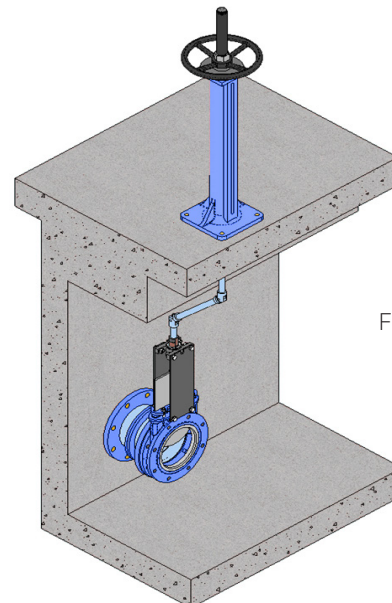


Fig. 16

WHEEL WITH RISING STEM

OPTIONS

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

ACTUATOR COMPRISING

- Wheel
- Stem
- Nut
- Stem protection cap

AVAILABLE

- ND50 a ND1200
- From ND600 the actuator is geared.

* other ND to order

B = max width of the valve (no actuator)

P = max height of the valve (no actuator)

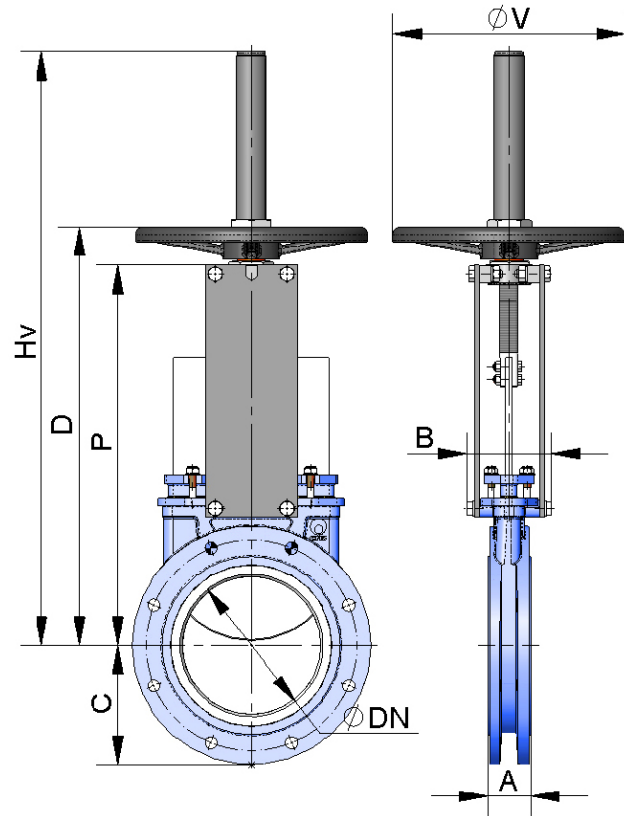


Fig. 17

ND	ΔP (bar)	A	B	C	P	D	ϕV	Weight (Kg)
50	10	40	92	63	241	280	225	7
65	10	40	92	70	268	307	225	8
80	10	50	92	92	294	333	225	9
100	10	50	92	105	334	373	225	11
125	10	50	102	120	367	406	225	13
150	10	60	102	130	419	458	225	17
200	8	60	119	160	525	578	325	28
250	6	70	119	198	626	679	325	40
300	6	70	119	234	726	779	380	56
350	5	96	290	256	797	906	450	94
400	5	100	290	292	903	1012	450	116
450	3	106	290	308	989	1098	450	162
500	3	110	290	340	1101	1210	450	191
600	3	110	290	400	1307	1416	450	264

Table 4

WHEEL WITH NO-RISING STEM

Suitable when no size limitations exist.

B = max width of the valve (no actuator)

P = max height of the valve (no actuator)

OPTIONS

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

ACTUATOR COMPRISING

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

AVAILABLE

- ND50 a ND1200
- From ND600 the actuator is geared.

* other ND to order

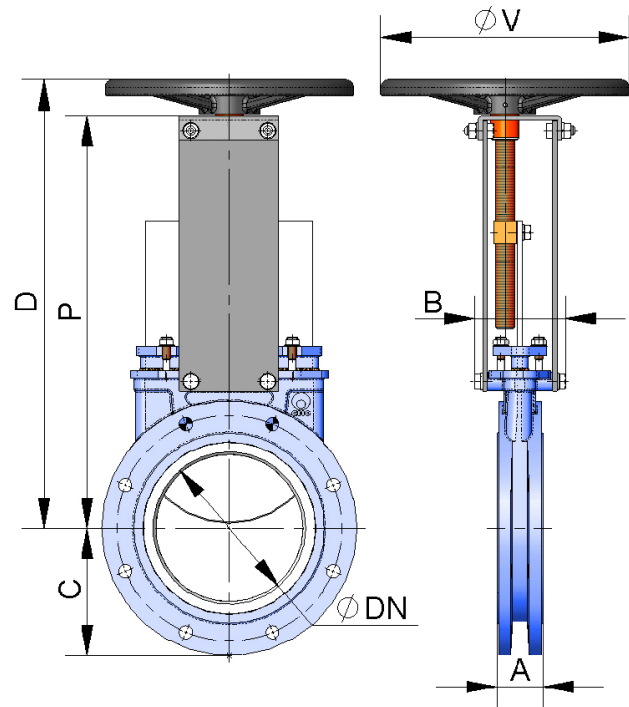


Fig. 18

ND	$\Delta P(\text{bar})$	A	B	C	P	D	$\varnothing V$	Weight (Kg)
50	10	40	101	63	241	280	225	7
65	10	40	101	70	268	308	225	8
80	10	50	101	92	294	333	225	9
100	10	50	101	105	334	373	225	11
125	10	50	111	120	367	407	225	13
150	10	60	111	130	419	458	225	17
200	8	60	128	160	525	578	325	29
250	6	70	128	198	626	679	325	40
300	6	70	128	234	726	779	380	53
350	5	96	305	256	797	906	450	93
400	5	100	305	292	903	1012	450	126
450	3	106	305	308	989	1098	450	160
500	3	110	305	340	1101	1210	450	193

Table. 5

WHEEL CHAIN

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

OPTIONS

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

ACTUATOR COMPRISING

- Wheel
- Stem
- Nut
- Bonnet

AVAILABLE

- ND50 a ND1200
- From ND600 the actuator is geared.

* other ND to order

B = max width of the valve (no actuator)

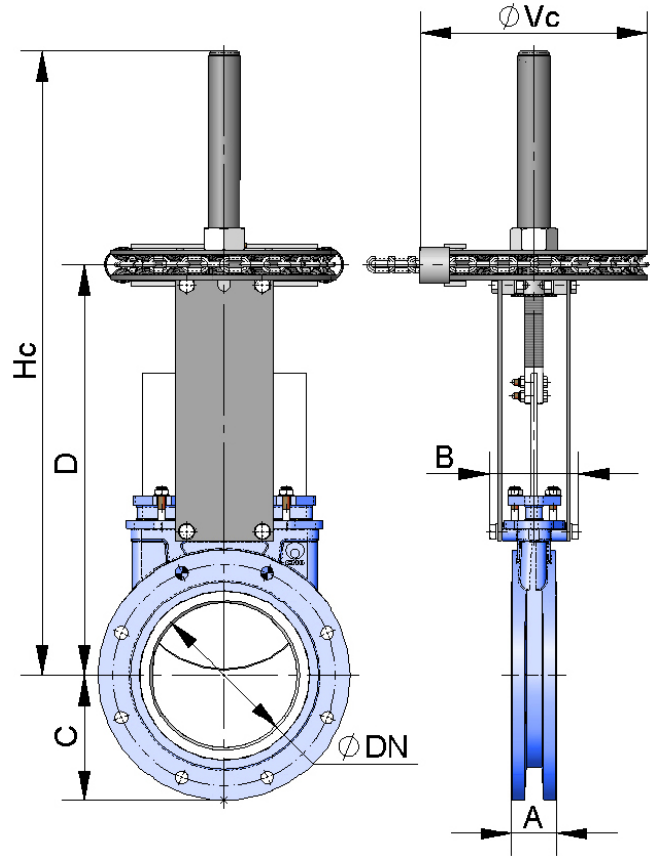


Fig. 19

ND	ΔP (bar)	A	B	C	D	Hc	ϕVc	Weight (kg)
50	10	40	92	63	264	409	225	7
65	10	40	92	70	291	436	225	8
80	10	50	92	92	317	469	225	9
100	10	50	92	105	357	502	225	11
125	10	50	102	120	390	585	225	13
150	10	60	102	130	442	644	225	17
200	8	60	119	160	551	815	300	29
250	6	70	119	198	652	1016	300	40
300	6	70	119	234	752	1116	300	53
350	5	96	290	256	879	1336	402	93
400	5	100	290	292	985	1442	402	126
450	3	106	290	308	1071	1628	402	160
500	3	110	290	340	1183	1738	402	193
600	3	110	290	400	1389	2046	402	264

Table. 6

LEVER

B = max width of the valve (no actuator)

This is a fast actuator

OPTIONS

- Locking devices
- Extensions: stand, pipe, plates, etc.

ACTUATOR

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

AVAILABLE

- DN 50 to DN 300, other DN to order.

* other ND to order

* Actuator designed to maneuver at 2 bar of differential pressure (ΔP).

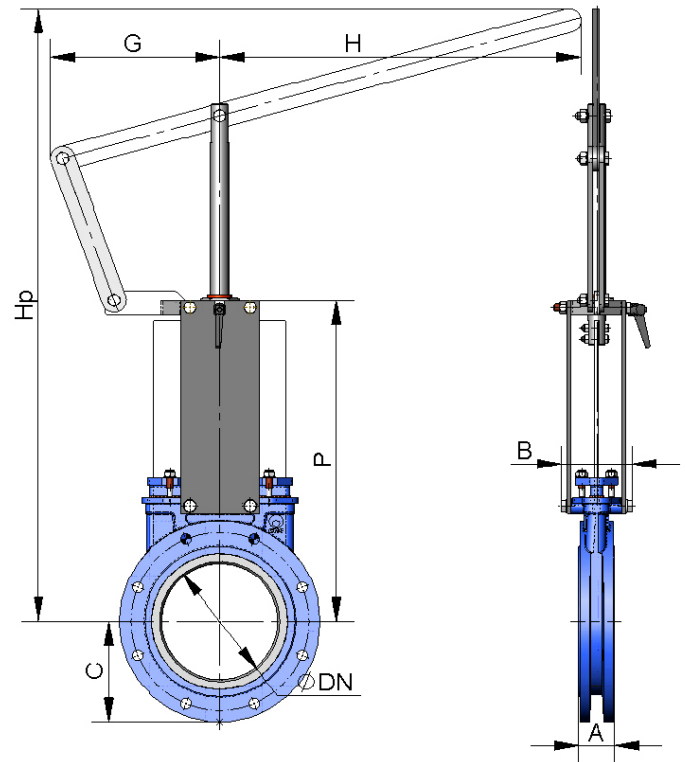


Fig. 20

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

Table. 7

GEARBOX

OPTIONS

- Wheel with chain
- Locking devices
- Extensions: stand, pipe, plates, etc.
- Non-rising stem

ACTUATOR

- Stem
- Yoke
- Cone-shaped gearbox
- Wheel

Standard reduction ratio = 4 to 1.

AVAILABLE

- ND 50 to ND 2000

* Other ND to order

B = max width of the valve (no actuator)

P = max height of the valve (no actuator)

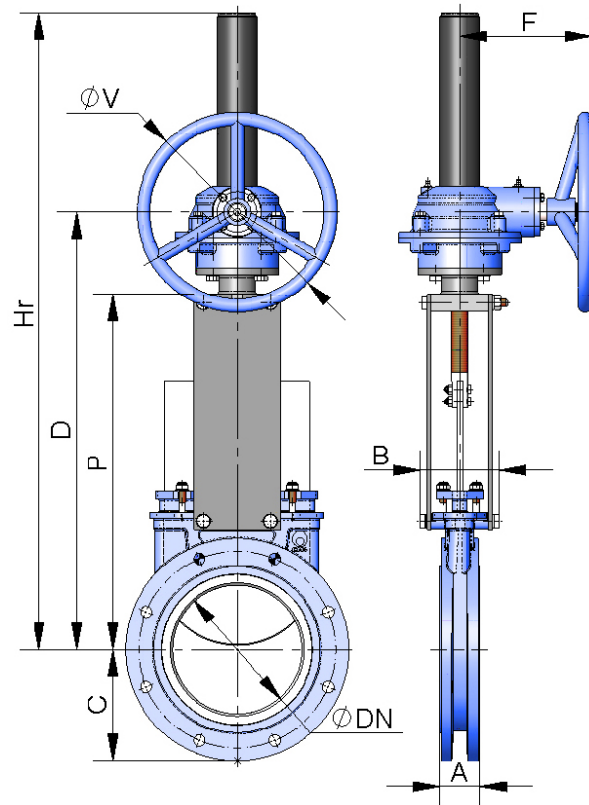


Fig. 21

ND	ΔP (bar)	A	B	C	P	D	F	$\varnothing V$	Hr	Weight (kg)
50	10	40	92	63	241	366	198	300	540	17
65	10	40	92	70	268	392	198	300	566	18
80	10	50	92	92	294	418	198	300	592	19
100	10	50	92	105	334	458	198	300	632	20
125	10	50	102	120	367	491	198	300	665	24
150	10	60	102	130	419	543	198	300	717	26
200	8	60	119	160	525	648	198	300	942	50
250	6	70	119	198	626	749	198	300	1043	63
300	6	70	119	234	726	850	198	300	1194	77
350	5	96	290	256	797	891	218	450	1335	106
400	5	100	290	292	903	997	218	450	1441	134
450	3	106	290	308	989	1083	218	450	1677	173
500	3	110	290	340	1101	1195	218	450	1789	216
600	3	110	290	400	1307	1401	218	450	2045	284

Table. 8

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.

10 bar is the maximum admissible air pressure. For air pressures below 6 bar, please check with **CMO Valves**

For ND50 to ND200 valves, the cylinder's casing 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 DN200 the covers are made of nodular cast iron or carbon steel.

To order, the actuator can also be made from stainless steel, specifically for installation in corrosive environments.

AVAILABLE

- DN50 a DN1200

* Other ND to order

B = max width of the valve (no actuator)

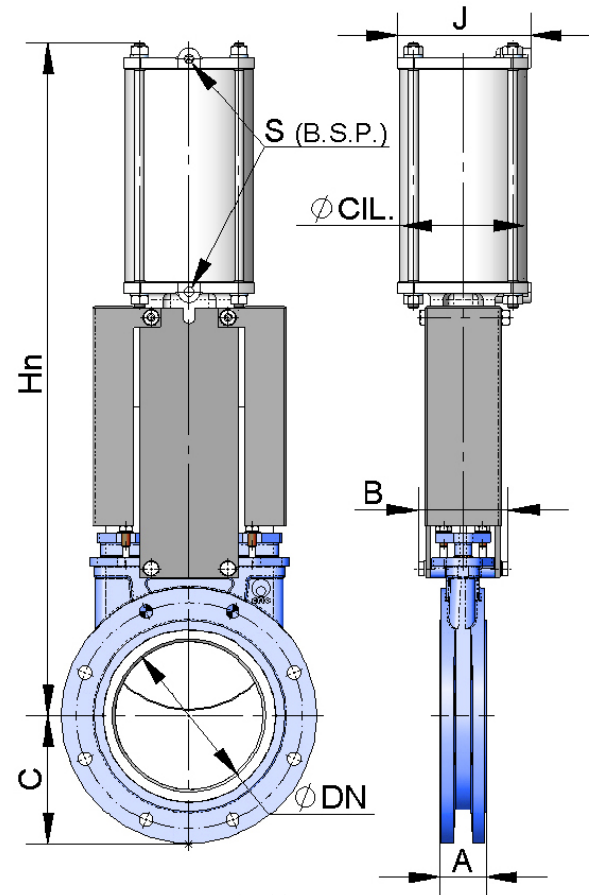


Fig. 22

ND	$\Delta P(\text{bar})$	A	B	C	\varnothing CIL.	\varnothing VAST	J	S (B.S.P.)	Hn	Weight (kg)
50	10	40	92	63	80	20	96	1/4"	415	7
65	10	40	92	70	80	20	96	1/4"	455	8
80	10	50	92	92	80	20	96	1/4"	498	9
100	10	50	92	105	100	20	115	1/4"	565	12
125	10	50	102	120	125	25	138	1/4"	636	18
150	10	60	102	130	125	25	138	1/4"	717	22
200	8	60	119	160	160	30	175	1/4"	874	37
250	6	70	119	198	200	30	218	3/8"	1036	58
300	6	70	119	234	200	30	218	3/8"	1182	72
350	5	96	290	256	250	40	270	3/8"	1380	130
400	5	100	290	292	250	40	270	3/8"	1530	155
450	3	106	290	308	300	45	382	1/2"	1677	225
500	3	110	290	340	300	45	382	1/2"	1839	257
600	3	110	290	400	300	45	382	1/2"	2146	340

Table. 9

SINGLE-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.
- 10 bar is the maximum admissible air pressure. For air pressures below 6 bar, please check with **CMO Valves**.
- 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 DN300**. 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.

DISPONIBLE

AVAILABLE

- ND 50 to ND 300

* Other ND to order

B = max width of the valve (no actuator)

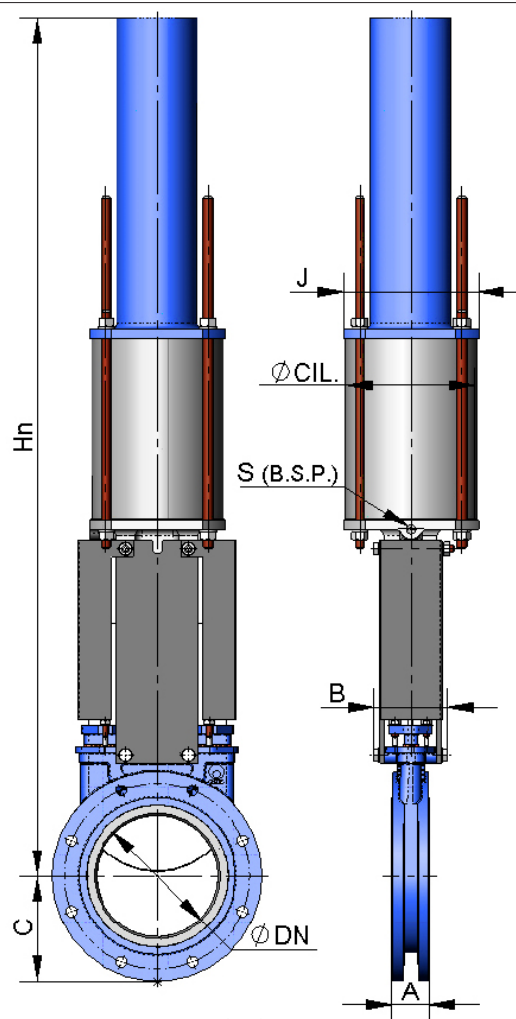


Fig. 23

ND	ΔP (bar)	A	B	C	Ø CIL.	Ø SPINDLE	J	S (B.S.P.)	Hn	Weight (kg)
50	10	40	92	63	125	25	138	1/4"	781	19
65	10	40	92	70	125	25	138	1/4"	806	22
80	10	50	92	92	125	25	138	1/4"	833	23
100	10	50	92	105	125	25	138	1/4"	873	24
125	10	50	102	120	160	30	175	1/4"	909	35
150	10	60	102	130	160	30	175	1/4"	960	36
200	8	60	119	160	200	30	218	3/8"	1355	66
250	6	70	119	198	250	40	270	3/8"	1844	130
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

This actuator is automatic and includes the following parts:

- Emergency manual wheel
- Limit switches
- Torque switches

Options:

- Different types and brands
- Non-rising stem

FLANGES

- ISO 5210 / DIN 3338.

AVAILABLE

- ND 50 a ND 2000
- From DN500 the motor is assisted with a gear box.

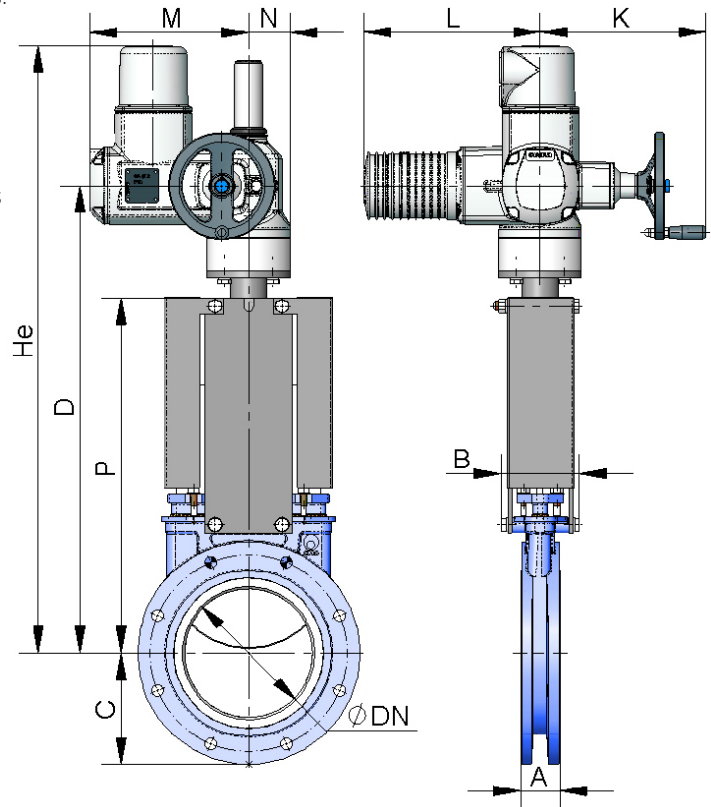


Fig. 24

ND	ΔP (bar)	A	B	C	D	Q	R	S	T	U	V	Weight (kg)
50	10	40	92	63	400	249	265	238	62	241	595	24
65	10	40	92	70	426	249	265	238	62	268	622	25
80	10	50	92	92	452	249	265	238	62	294	647	26
100	10	50	92	105	492	249	265	238	62	334	687	27
125	10	50	102	120	525	249	265	238	62	367	720	30
150	10	60	102	130	577	249	265	238	62	419	772	32
200	8	60	119	160	685	249	265	238	62	525	990	42
250	6	70	119	198	785	249	265	238	62	626	1090	55
300	6	70	119	234	885	249	265	238	62	726	1190	72
350	5	96	290	256	940	254	283	248	65	797	1305	99
400	5	100	290	292	1045	254	283	248	65	903	1460	136
450	3	106	290	308	1175	336	389	286	91	989	1755	166
500	3	110	290	340	1290	336	389	286	91	1101	1870	245
600	3	110	290	400	1495	336	389	286	91	1307	2045	362

Table. 11

HYDRAULIC ACTUATOR (Oil pressure: 135 bar)

The hydraulic actuator includes:

- Electric motor
- Stem
- Yoke

AVAILABLE

- DN50 a DN2000
- Different types and makes available according to customer's requirements

B = max width of the valve (no actuator)

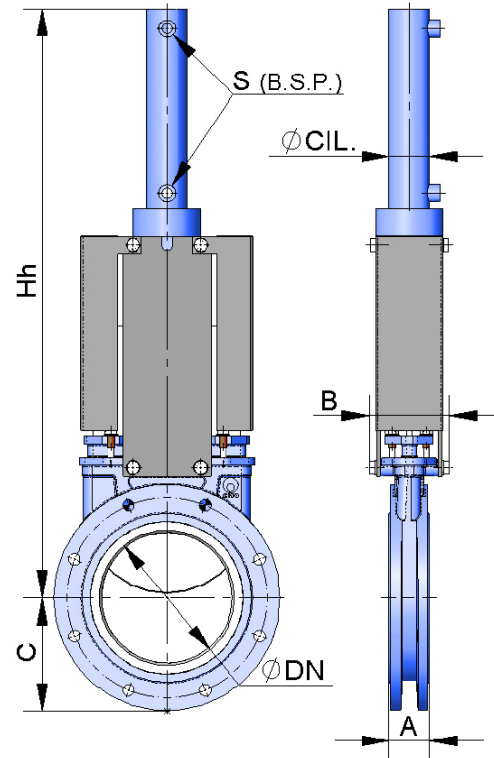


Fig. 25

ND	ΔP (bar)	A	B	C	Hh	Ø CIL	S (B.S.P.)	OIL.CAP _(dm³)	Ø SPINDLE	Weight (kg)
50	10	40	92	63	460	25	3/8"	0.03	18	7
65	10	40	92	70	500	25	3/8"	0.03	18	8
80	10	50	92	92	560	25	3/8"	0.04	18	9
100	10	50	92	105	620	32	3/8"	0.09	22	12
125	10	50	102	120	683	32	3/8"	0.11	22	15
150	10	60	102	130	755	40	3/8"	0.20	28	20
200	8	60	119	160	926	50	3/8"	0.42	28	31
250	6	70	119	198	1077	50	3/8"	0.52	28	44
300	6	70	119	234	1245	50	3/8"	0.62	28	62
350	5	96	290	256	1376	50	3/8"	0.73	28	100
400	5	100	290	292	1535	63	3/8"	1.31	36	138
450	3	106	290	308	1710	63	3/8"	1.47	36	161
500	3	110	290	340	1870	63	3/8"	1.62	36	223
600	3	110	290	400	2175	80	3/8"	3.12	45	325

Table. 12

INFORMATION ON FLANGE DIMENSIONS

EN 1092-2 PN10

ND	●	Metric (M)	Depth (P)	ØK
50	4	M 16	8	125
65	4	M 16	8	145
80	8	M 16	9	160
100	8	M 16	9	180
125	8	M 16	9	210
150	8	M 20	10	240
200	8	M 20	10	295
250	12	M 20	12	350
300	12	M 20	12	400
350	16	M 20	21	460
400	16	M 24	21	515
450	20	M 24	22	565
500	20	M 24	22	620
600	20	M 27	22	725
700	24	M 27	22	840
800	24	M 30	22	950
900	28	M 30	20	1050
1000	34	M 33	20	1160
1100	32	M 33	20	1270
1200	32	M 36	22	1380
1300	32	M 36	26	1490
1400	36	M 39	26	1590
1500	36	M 39	35	1700
1600	40	M 45	40	1820
1700	44	M 45	40	1920
1800	44	M 45	40	2020
1900	48	M 45	45	2120
2000	48	M 45	45	2230

Tabla. 13

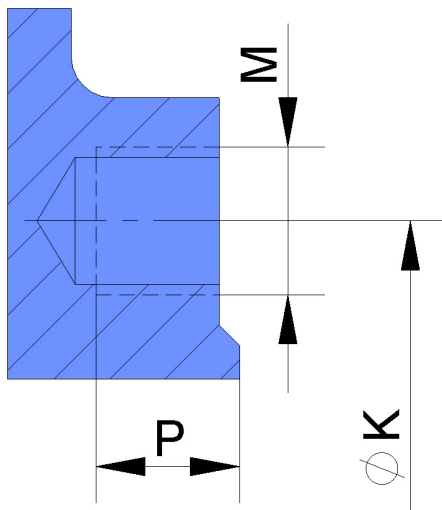


Fig. 27

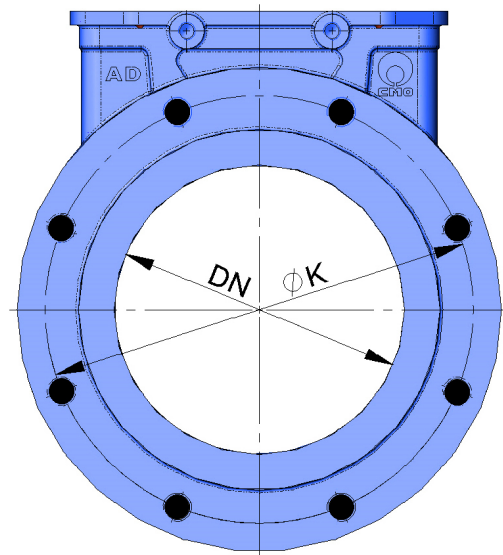


Fig. 26

- THREADED DRILL
- DRILLING SMALL DRILL

ANSI B16, Clase 150

ND	●	Thread UNC (M)	Depth (P)	ØK
2"	4	5/8"	8	120,6
2 1/2"	4	5/8"	8	139,7
3"	4	5/8"	9	152,4
4"	8	5/8"	9	190,5
5"	8	3/4"	9	215,9
6"	8	3/4"	10	241,3
8"	8	3/4"	10	298,4
10"	12	7/8"	12	361,9
12"	12	7/8"	12	431,8
14"	12	1"	21	476,2
16"	16	1"	21	539,7
18"	16	1 1/8"	22	577,8
20"	20	1 1/8"	22	635
24"	20	1 1/4"	22	749,3
28"	28	1 1/4"	22	863,6
30"	28	1 1/4"	22	914,4
32"	28	1 1/2"	22	977,9
36"	32	1 1/2"	20	1085,8
40"	36	1 1/2"	20	1200,2

Table. 14



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