

GD



BIDIRECCIONAL - KNIFE GATE VALVE

DESCRIPTION

- Bidirectional wafer-design knife gate valve.
- “Monoblock” onepiece cast iron body.
- Stainless steel gate. Two rubber sleeves.
- Provides high flow rates with low pressure drop.
- Various seat materials available.
- Face-to-face dimension in accordance with **CMO Valves** standard.

GENERAL APLICATIONS

This knife gate valve is suitable for working in the mining industry, in loaded fluid transport lines, such as: water with stones, sludge, etc. and in general it is used for abrasive fluids in the chemical industry and waste water. Designed for the following applications:

Designed for the following applications :

- Thermal power stations
- Energy Sector
- Chemical plants
- Mining
- Sewage treatment

SIZES

DN50 a DN1500 (larger sizes on request).

WORKING PRESSURE (ΔP)

DN50 a DN600	10 bar
DN700 a DN900	6 bar
DN1000 a DN1500	4 bar

* Other pressures on request.

The pressures indicated in the table, can be used in either of the valve's two directions.

FLANGE DRILL HOLE

DIN PN10 & ANSI B16.5 (150 LB)

OTHER COMMON FLANGES

DIN PN 6 Australian standard.
DIN PN 16 JIS standard.
DIN PN 25 British standard.

SERIE - GD

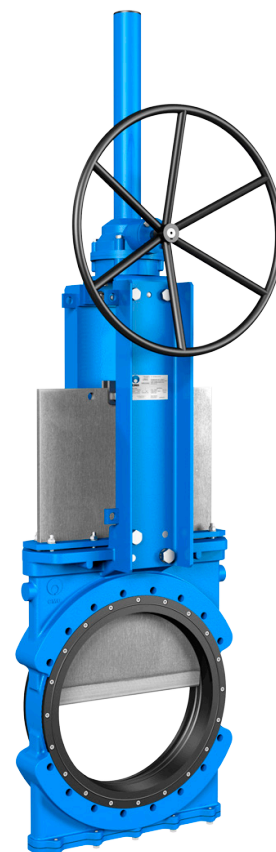


Fig. 1

DIRECTIVES

- Pressure Equipment Directive:
(PED) ART 4.3 /CAT.1.
- De atmósferas explosivas:
Potential Explosive Atmospheres Directive

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



QUALITY DOSSIER

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

- Body test = working pressure x 1,5
- Seat test = working pressure x 1,1

ADVANTAGE OF MODEL GD

This knife gate valve's main characteristic is that it provides a full continuous flow. This means that in open position it produces no cavities and there are no turbulences in the fluid. The **GL** valve's body is composed of one single "monoblock" piece.

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** valve 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.

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

The pneumatic actuator's upper and lower covers are made of GJS-500 nodular cast iron, making them highly shock resistant. This characteristic is essential in pneumatic actuators.

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

STANDARD COMPONENTS LIST

COMPONENT	VERSION H° F°	STAINLESS STEEL
1 BODY	GJS-500	CF8M
2 GATE	AISI304	AISI316
3 PACKING GLAND	STEEL	AISI316
4 PACKING SEAL.	NATURAL RUBBER	
5 PACKING	GREASED PACK	
6 LOWER COVER	STEEL	AISI316
7 SLEEVE	NATURAL RUBBER	
8 SUPPORT PLATES	STEEL	STEEL
9 STEM	AISI303	AISI303
10 YOK	GJS-500	GJS-500
11 STEM NUT	BRONZE	BRONZE
12 HANDWHEEL	GJS-500	GJS-500
13 STOP NUT	STEEL	STEEL
14 HOOD NUT	5.6 ZINC	5.6 ZINC
15 HOOD	STEEL	STEEL
16 PROTEC. CAP	PLASTIC	PLASTIC
17 GREASER (OPTIONAL)	STEEL	STEEL

Table. 1

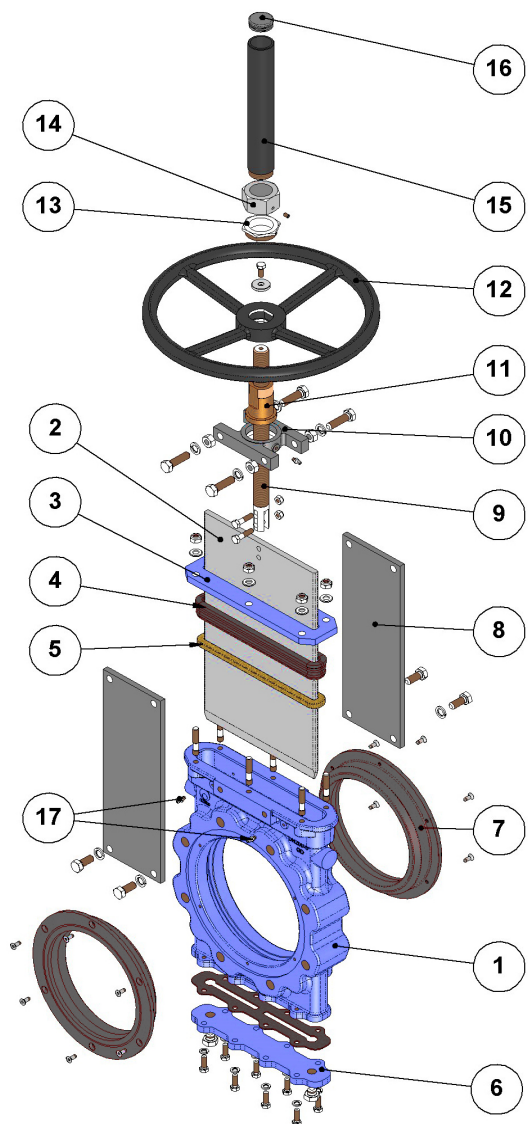



Fig. 2

 **Note:** The image numbers refer to the list of components in the table.

DESIGN CHARACTERISTICS

1. BODY

One piece reinforced cast iron body. The body provides a full continuous flow. This means that in open position it produces no cavities and, therefore, there are no turbulences in the fluid and the load loss is minimal. For diameters greater than DN600 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. The body's internal design prevents any build up of solids in the seat area. The standard manufacturing materials are GJS-500 and CF8M stainless steel. Other materials such as: A216WCB carbon steel and stainless steel alloys (AISI316Ti, Duplex, 254SMO, Uranus B6, Ni-Resist, Ductile Ni-Resist, ...) are available on request. As standard, iron or carbon steel valves are painted with an anti-corrosive protection of 80 microns of EPOXY (colour RAL 5015). Other types of anti-corrosive protections are available on request

2. GATE

The standard manufacturing materials are AISI304 stainless steel in valves with GJS-500 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 sharp edges on the gate are rounded to prevent the seal from being cut. There are different degrees of polishing, anti-abrasion treatments and various options to adapt the valves to the customer's requirements.

3. SEAT (watertight)

The seat on the **GD** valve is composed of two rubber sleeves, located on either side of the body symmetrically.

The sleeves are made of natural rubber with a metal core which helps to keep their shape and at the same time prevents deformations. Whilst the valve is in open position, the sleeves' elasticity ensures they are joined together permanently, preventing the accumulation of solids between the two parts of the body.

The **GL** valve is designed for abrasive fluids, and therefore, the sleeves protect the entire surface of the body which would be exposed to the abrasive flow. Regarding the sleeves' maintenance, these can be replaced from outside of the valve, making operation easier. It is a seat with two symmetrical parts, below we show a diagram of the seat

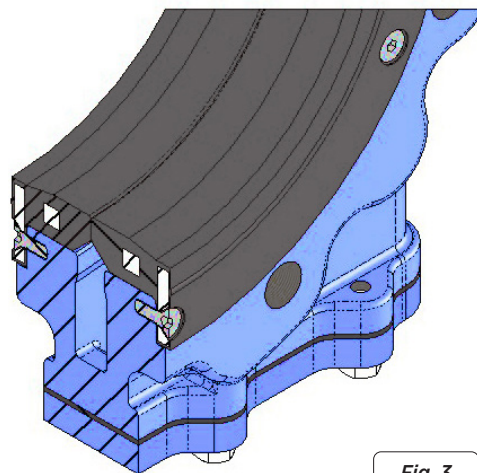


Fig. 3

RESILIENT SEAT MATERIALS

NATURAL RUBBER

This is the standard resilient seat fitted on **CMO Valves GL model** valves. It can be used in multiple applications at temperatures no higher than 90°C with abrasive products and it provides the valve with 100% watertight integrity. Application: fluids in general.

EPDM

Recommended for temperatures no higher than 90°C*, it provides the valve with 100% watertight integrity. Application: water and acids.

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

ASIENTOS/JUNTAS

MATERIAL	Tª MÁX (°C)	APLICACIONES
Natural rubber	90	General
EPDM (E)	90*	Water, non mineral acids and oils
Nitrilo (N)	90*	Hydrocarbons, oils and greases
FPM (V)	200	Hydrocarbons and solvents

* ⇔ EPDM and Nitrile: possible up to Max. Temp. 120 ° C on request.

Table. 2

4. PACKING

Standard packing is composed of a specially designed EPDM O-ring which provides watertight integrity between the body and the gate, preventing any type of leakage to the atmosphere. It also has a greased packing strip to help the valve's operation during the opening and closing functions. They are located in an easily accessible place and can be replaced without dismantling the valve from the pipeline.

5. STEM

The stem on the **CMO Valves** 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 a rising stem is required for the valve a stem hood is supplied to protect the stem from contact with dust and dirt, besides 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 steel body include steel packing glands, whilst valves with stainless steel body have stainless steel packing glands.

7. ACTUATORS

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

Manual Actuators

- Handwheel with rising stem / non-rising
- Lever / Chainwheel
- Gearbox / Others (square nut)

Accessories Available

- Mechanical stops
- Locking devices
- Emergency manual actuators
- Solenoid valves
- Positioners
- Limit switches
- Proximity switches
- Straight floor stand (Fig. 5)
- Leaning floor stand (Fig. 4)

Automatic

- Electric actuator
- Pneumatic cylinder
- Hydraulic cylinder

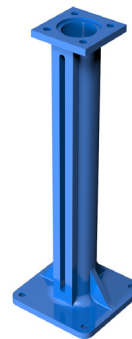
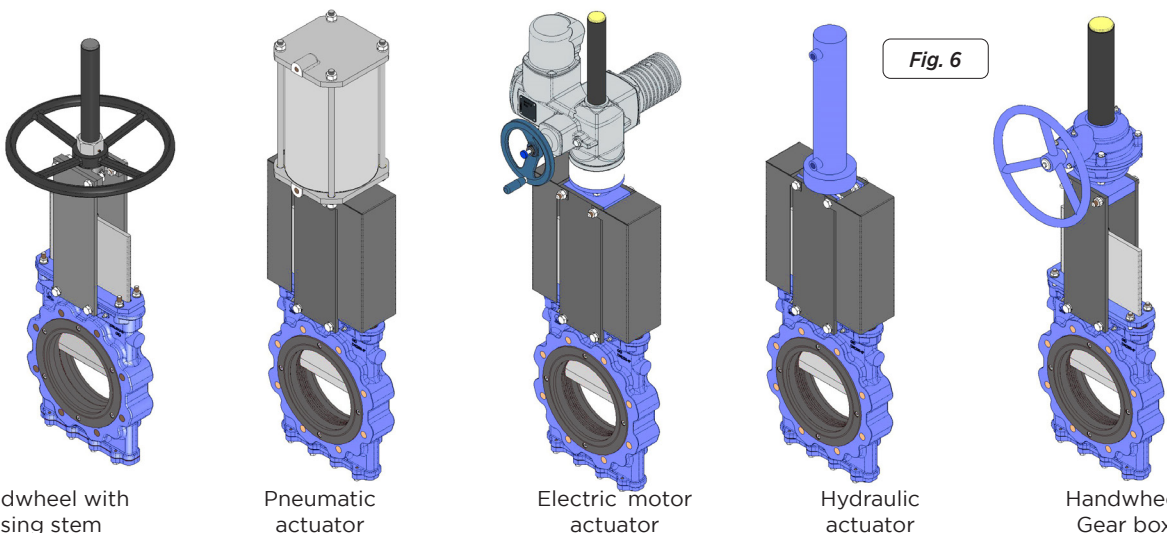


Fig. 4



Fig. 5



Handwheel with rising stem

Pneumatic actuator

Electric motor actuator

Hydraulic actuator

Handwheel Gear box

Fig. 6

OPTIONS AND ACCESSORIES

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

Stellite is added to the gate's internal circle 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.

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

Several holes are drilled in the body to flush air, steam or other fluids out with the aim of cleaning the valve seat before sealing.

SOLENOID VALVES

Para distribución del aire a los accionamientos neumáticos.

CONNECTION BOXES, WIRING AND PNEUMATIC PIPING

Units supplied fully assembled with all the necessary accessories.

MECHANICAL LIMIT SWITCHES, INDUCTIVE SWITCHES AND POSITIONERS

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

STROKE LIMITING MECHANICAL STOPS

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

EMERGENCY MANUAL ACTUATOR (HAND WHEEL /GEAR BOX)

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

INTERCHANGEABLE ACTUATORS

All actuators are easily interchangeable.

ACTUATOR OR YOKE SUPPORT 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.

EPOXI COATING

All cast iron and carbon steel bodies and components are EPOXY coated, giving the valves great resistance to corrosion and an excellent finish.

CMO Valves standard colour is blue, RAL-5015.

GATE SAFETY PROTECTION

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

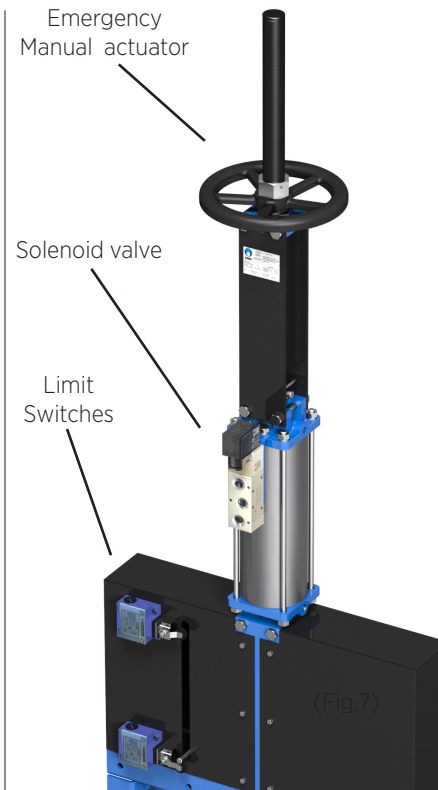
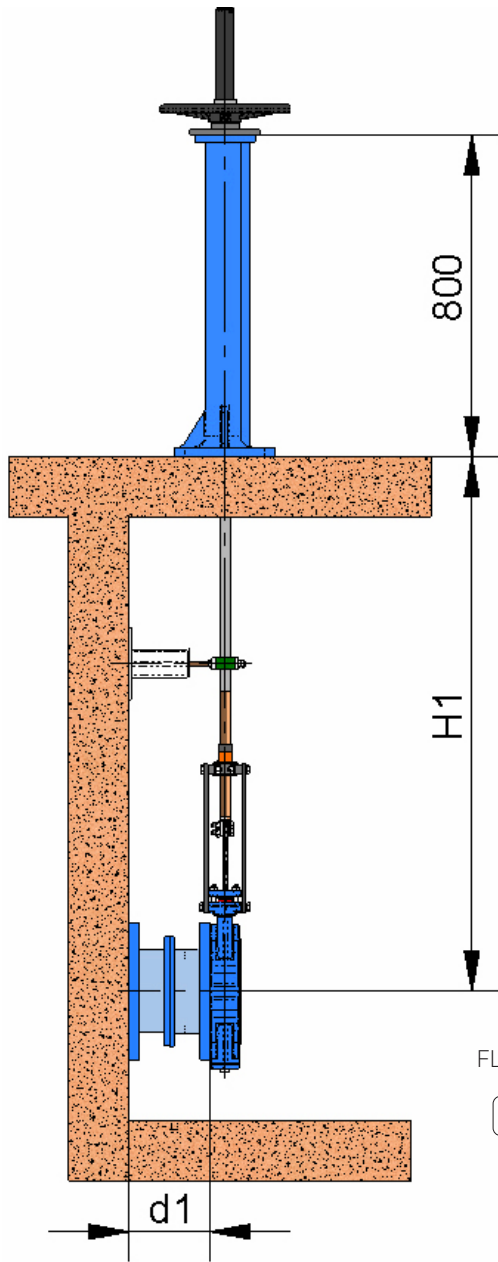


Fig. 7



TYPES OF EXTENSION

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



FLOOR STAND

Fig. 9

1.- EXTENSION: FLOOR STAND This extension is performed by coupling a rod to the stem. By defining the length of the rod, the desired extension is achieved. A floor stand is normally installed to support the actuator.

The definition variables are as follows:

H1: Distance from the valve's shaft 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. 8) is recommended every 1.5m.
- The standard floor stand is 800mm high (Fig. 9). Other floor stand measurements available on request.
- A position indicator can be fitted to determine the valve's percentage of opening.
- Possibility of leaning floor stand (Fig. 10).

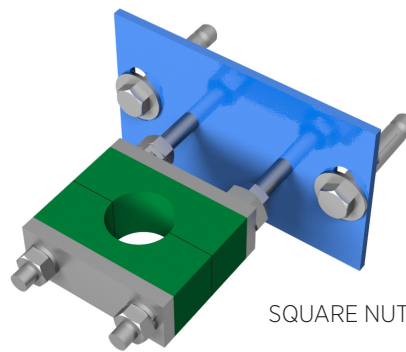


Fig. 8

SQUARE NUT SUPPORT



STRAIGHT FLOOR STAND

Fig. 10

COMPONENTS LIST

COMPONENT	STANDARD VERSION
Steam	AISI 304
Rod	AISI 304
Support-Guide	EPOXI coated carbon steel
Gate / Guide	Nylon
Stand	EPOXI coated GJS-500

Table. 3

 **Note:** There is the possibility of placing a position indicator on the maneuvering column.

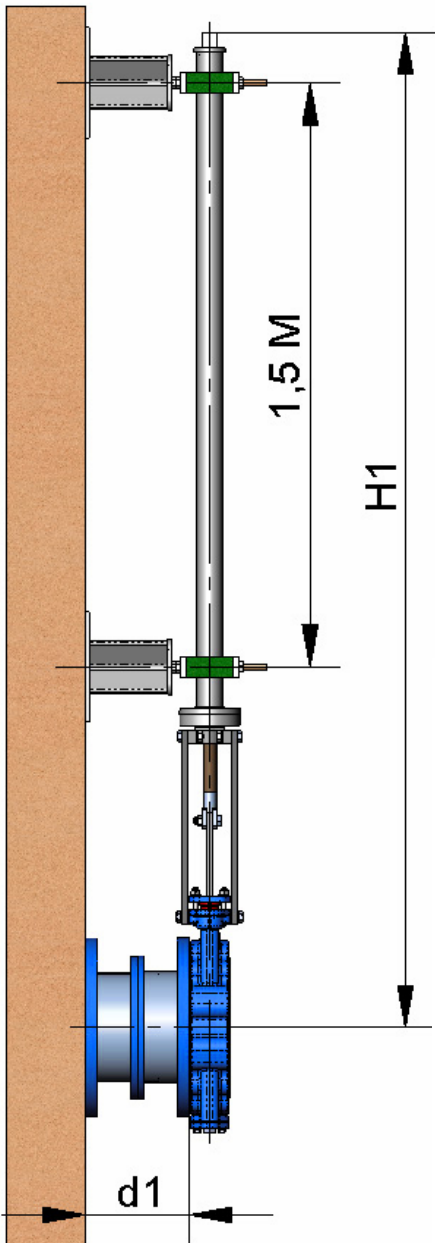


Fig. 11

3.-EXTENSION:

EXTENDED SUPPORT PLATES (Fig 12)

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.

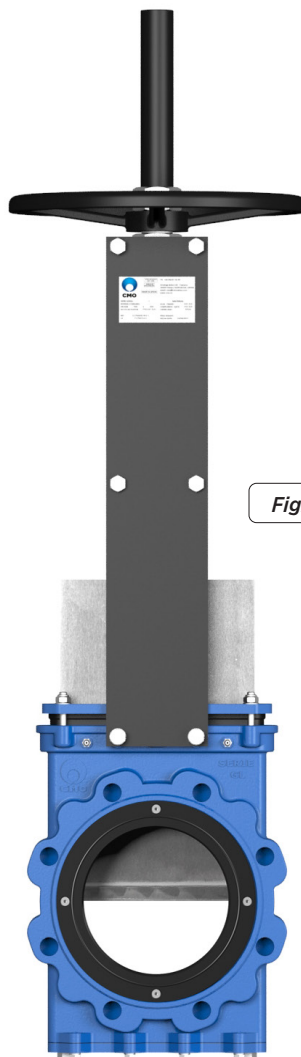


Fig. 12

2.- EXTENSION: PIPE (Fig 11)

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

The definition variables are as follows:

H1: Distance from the valve's shaft 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 or stainless steel.

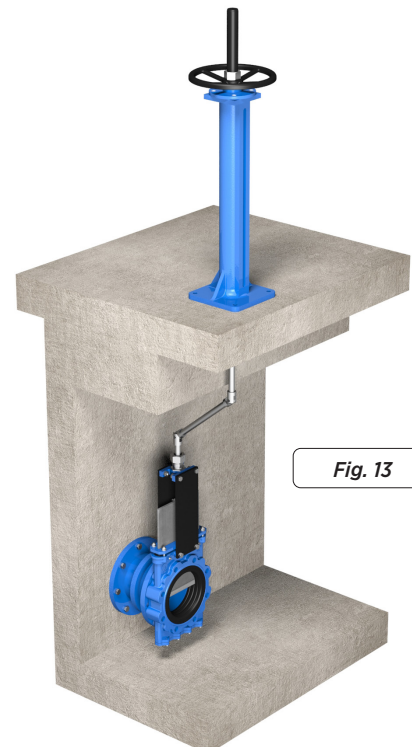


Fig. 13

4.-EXTENSIÓN:

UNIVERSAL JOINT (Fig 13)

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

HANDWHEEL WITH RISING STEM

The definition variables are as follows:

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

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

OPTIONS:

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

ACTUATOR INCLUDING:

- Handwheel
- Steam
- Nut
- Stem protection hood

AVAILABLE:

- Santdard ND50 a ND1000.
- Other ND on request.
- From ND350 (included) the actuator is with geared motor.
- Other pressures on request (ΔP)

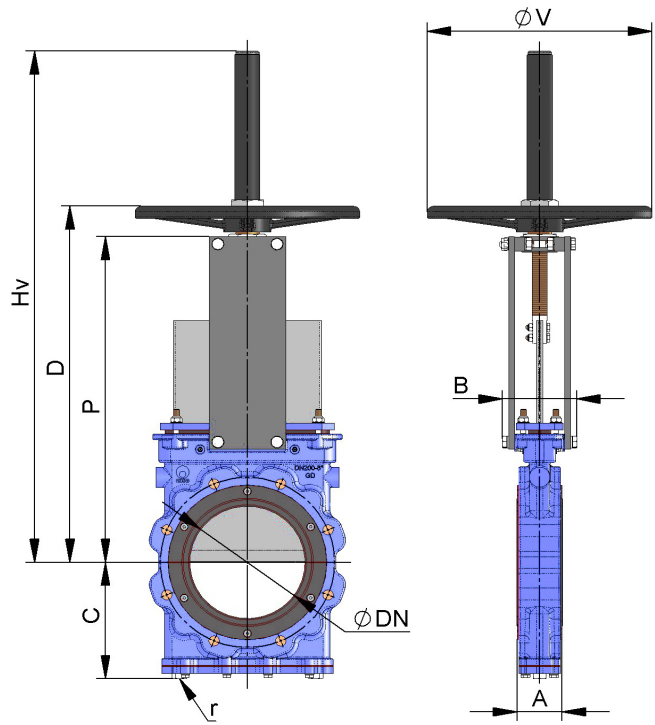


Fig. 14

DN	ΔP (bar)	A	B	C	D	F	G	ϕV	Weight (kg.)
50	10	40	91	225	243	412	282	225	12
65	10	40	91	265	269	437	308	225	13
80	10	50	91	310	293	462	332	225	17
100	10	50	91	370	334	503	373	225	19
125	10	50	101	430	367	586	407	225	28
150	10	60	101	495	419	638	458	225	38
200	8	60	118	630	525	816	578	325	54
250	6	70	118	770	620	1017	679	325	88
300	6	70	118	895	704	1117	779	380	112
350	5	96	290	1050	780	1337	906	450	163
400	5	100	290	1185	855	1443	1012	450	235
450	3	106	290	1320	975	1629	1098	450	368
500	3	110	290	1455	1064	1741	1210	450	471
600	3	110	290	1720	1244	2047	1416	450	532
700	2	110	320	1995	1425	--	--	--	936
800	2	110	320	2230	1615	--	--	--	N.D.
900	2	110	320	2465	1823	--	--	--	N.D.
1000	2	110	320	2620	1992	--	--	--	N.D.

N.D.: Weight not declared

Table. 4

HANDWHEEL WITH NON-RISING STEM

Suitable when no size limitations exist,

The definition variables are as follows:

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

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

OPTIONS:

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

ACTUATOR INCLUDING:

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

AVAILABLE:

- ND50 to ND1000, other ND on request.
- From ND350 (included) the actuator is with geared motor
- Other pressures on request (ΔP)

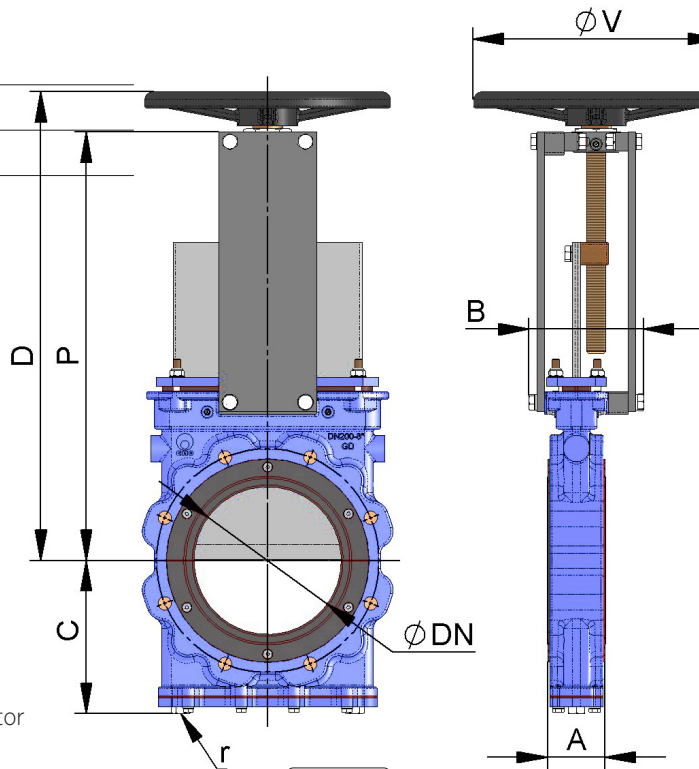


Fig. 15

DN	ΔP (bar)	A	C	D	J	K	ϕV	Weight (kg.)
50	10	40	225	243	101	277	225	12
65	10	40	265	269	101	304	225	13
80	10	50	310	293	101	330	225	17
100	10	50	370	334	101	370	225	19
125	10	50	430	367	111	402	225	28
150	10	60	495	419	111	454	225	38
200	8	60	630	525	128	578	325	54
250	6	70	770	620	128	679	325	88
300	6	70	895	704	128	779	380	112
350	5	96	1050	780	305	860	450	163
400	5	100	1185	855	305	981	450	235
450	3	106	1320	975	305	1067	450	368
500	3	110	1455	1064	305	1179	450	471
600	3	110	1720	1244	305	1386	450	532
700	2	110	1995	1425	335	--	--	936
800	2	110	2230	1615	335	--	--	N.D.
900	2	110	2465	1823	335	--	--	N.D.
1000	2	110	2620	1992	335	--	--	N.D.

N.D.: Weight not declared

Table. 5

CHAINWHEEL

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

The definition variables are as follows:

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

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

OPTIONS:

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

INCLUDING:

- Handwheel
- Stem
- Nut
- Hood

AVAILABLE:

- Santdard ND50 a ND1000.
- Other ND on request.
- From DD350 (included) the actuator is with geared motor.
- Other pressures on request (ΔP)

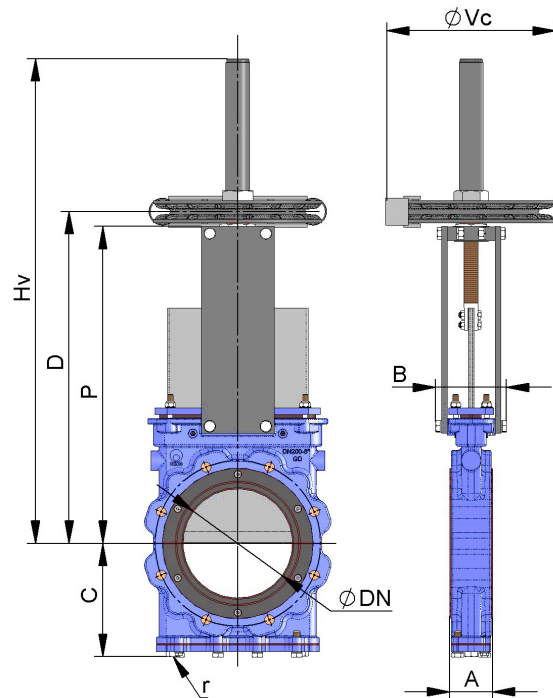


Fig. 16

DN	ΔP (bar)	A	B	C	D	L	M	ϕV	Weight (kg.)
50	10	40	91	225	243	294	437	225	12
65	10	40	91	265	269	319	464	225	13
80	10	50	91	310	293	346	490	225	17
100	10	50	91	370	334	386	530	225	19
125	10	50	101	430	367	420	613	225	28
150	10	60	101	495	419	471	665	225	38
200	8	60	118	630	525	602	849	300	54
250	6	70	118	770	620	697	1050	300	88
300	6	70	118	895	704	797	1150	300	112
350	5	96	290	1050	780	918	1398	402	163
400	5	100	290	1185	855	998	1504	402	235
450	3	106	290	1320	975	1078	1690	402	368
500	3	110	290	1455	1064	1201	1802	402	471
600	3	110	290	1720	1244	1329	2108	402	532
700	2	110	320	1995	1425	1606	2406	402*	936
800	2	110	320	2230	1615	1820	2720	402*	N.D.
900	2	110	320	2465	1823	2053	3053	402*	N.D.
1000	2	110	320	2620	1992	2257	3337	402*	N.D.

N.D.: Weight not declared

Table. 6

LEVER

It is a fast actuator.

The definition variables are as follows:

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

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

ACTUATOR INCLUDING:

- Level
- Rod
- Guide Bearing
- External limiting switches to maintain the position

AVAILABLE:

- ND50 a ND200
 - Other ND on request.
 - Other pressures on request
- * Drive designed to maneuver to 2 bar of differential pressure (ΔP)

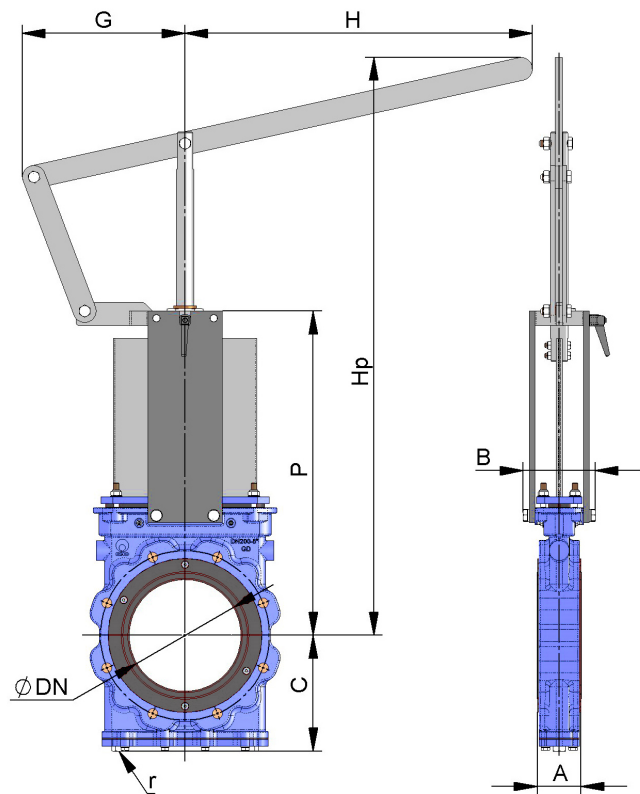


Fig. 17

DN	ΔP (bar)	A	B	C	D	N	O	P	Weight (kg.)
50	10	40	91	225	243	325	155	504	13
65	10	40	91	265	269	325	155	526	14
80	10	50	91	310	293	325	155	549	18
100	10	50	91	370	334	325	155	605	20
125	10	50	101	430	367	425	155	902	29
150	10	60	101	495	419	425	155	956	39
200	8	60	118	630	525	620	290	1027	55
250	6	70	118	770	620	620	290	1416	89
300	6	70	118	895	704	620	290	1525	113

Table. 7

GEAR BOX

It is recommendable for DN greater than 350

The definition variables are as follows:

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
- Handwhell
- Cone-shaped gear box

Standard ratio = 4 to 1

AVAILABLE:

- ND50 a ND1500, otros ND bajo consulta.
- other ND on request.
- Other pressures on request

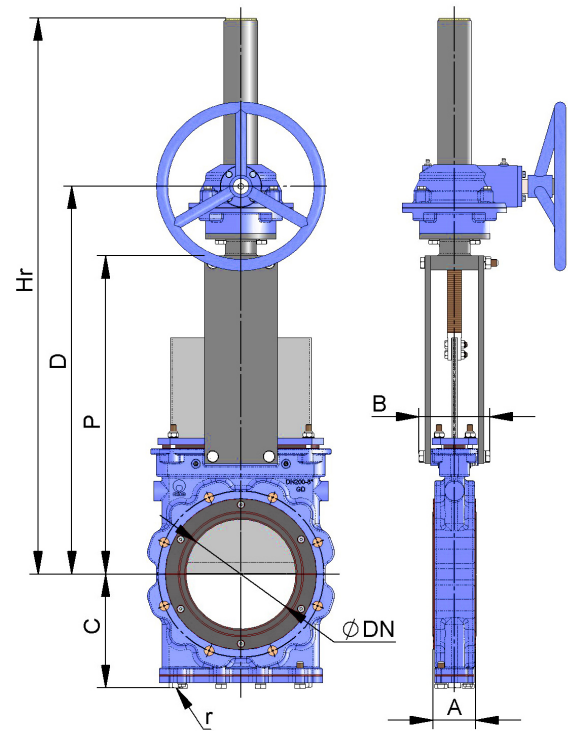


Fig. 18

DN	ΔP (bar)	A	B	C	P	D	Weight (kg.)
50	10	40	91	225	540	243	22
65	10	40	91	265	566	269	23
80	10	50	91	310	591	293	27
100	10	50	91	370	631	334	28
125	10	50	101	430	665	367	37
150	10	60	101	495	717	419	47
200	8	60	118	630	943	525	76
250	6	70	118	770	1037	620	111
300	6	70	118	895	1171	726	133
350	5	96	290	1050	1318	780	163
400	5	100	290	1185	1393	855	247
450	3	106	290	1320	1662	975	386
500	3	110	290	1455	1752	1064	495
600	3	110	290	1720	1981	1244	552
700	2	110	320	1995	2320	1425	956
800	2	110	320	2230	2610	1615	N.D.
900	2	110	320	2465	2913	1823	N.D.
1000	2	110	320	2620	3206	1992	N.D.
1100	2	150	340	3030	3777	2217	N.D.
1200	2	150	340	3250	4042	2351	N.D.
1300	2	150	390	3430	4382	2882	N.D.
1400	2	150	390	3680	4852	3250	N.D.
1500	2	170	426	3930	5217	3517	N.D.

N.D.: Weight not declared

Table. 8

DOUBLE-ACTING PNEUMATIC CYLINDER

The definition variables are as follows:

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

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

AVAILABLE:

- ND50 a ND700, otros ND bajo consulta.
- Other ND on request.

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

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 pneumatic cylinders larger than Ø200 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.

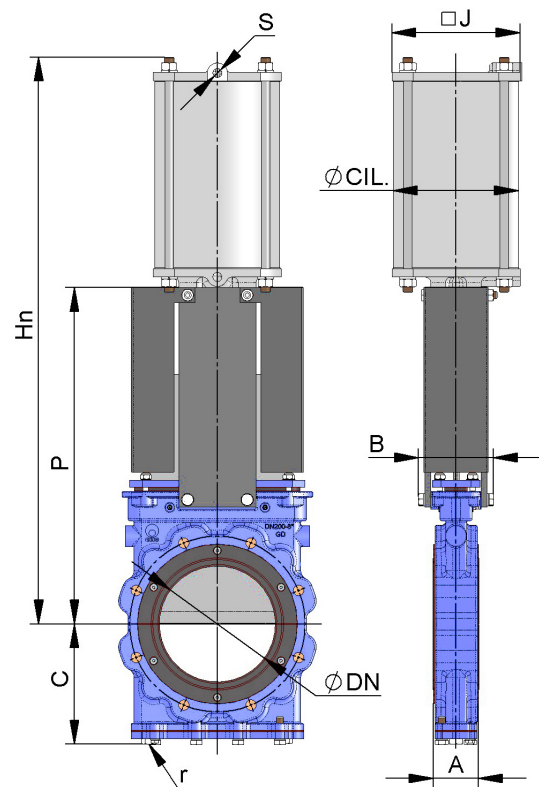


Fig. 19

DN	ΔP (bar)	A	B	C	D	R	Ø CIL	Ø Vast.	Ø Q	S (B.S.P)	Peso (kg.)
50	10	40	91	225	243	416	80	20	90	1/4"	12
65	10	40	91	265	269	456	80	20	90	1/4"	13
80	10	50	91	310	293	497	80	20	90	1/4"	19
100	10	50	91	370	334	561	100	20	110	1/4"	19
125	10	50	101	430	367	636	125	25	135	1/4"	33
150	10	60	101	495	419	717	125	25	135	1/4"	43
200	8	60	118	630	525	874	160	30	170	1/4"	65
250	6	70	118	770	620	1030	200	30	215	3/8"	104
300	6	70	118	895	704	1160	200	30	215	3/8"	126
350	5	96	290	1050	780	1364	250	40	270	3/8"	200
400	5	100	290	1185	855	1482	250	40	270	3/8"	281
450	3	106	290	1320	975	1662	300	45	382	1/2"	427
500	3	110	290	1455	1064	1802	300	45	382	1/2"	540
600	3	110	290	1720	1244	2081	300	45	444	1/2"	609
700	2	110	320	1995	1425	2400	350	45	444	1/2"	1054

* ⇔ Consultar N.D.: Weight not declared

Table. 9

SINGLE-ACTING PNEUMATIC CYLINDER

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

Available for opening or closing in case of air supply 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 ND200**. For larger diameters the actuator contains a double-acting cylinder and an air tank which stores the volume of air necessary to perform the last movement in the event of a air supply failure.

The definition variables are as follows:

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

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

AVAILAIBLE:

- Standard to DN300
- Other ND on reques

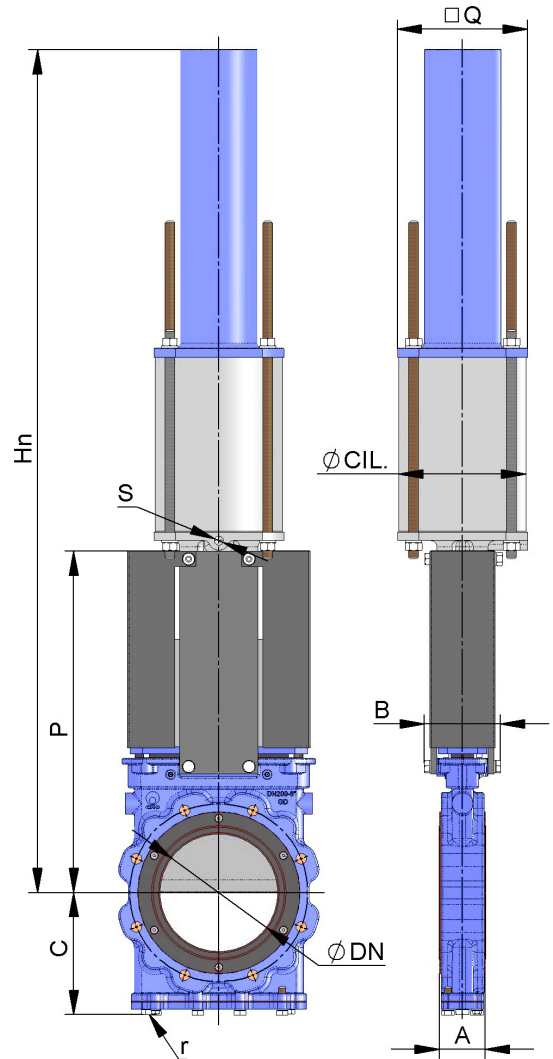


Fig. 20

DN	ΔP (bar)	A	B	C	D	H	ϕJ	ϕCIL	$\phi VAST$	S (B.S.P)	Weight (kg.)
50	10	40	91	225	243	781	135	125	25	1/4"	12
65	10	40	91	265	269	806	135	125	25	1/4"	13
80	10	50	91	310	293	833	135	125	25	1/4"	19
100	10	50	91	370	334	873	170	125	25	1/4"	19
125	10	50	101	430	367	909	215	160	30	1/4"	33
150	10	60	101	495	419	960	215	160	30	1/4"	43
200	8	60	118	630	525	1355	270	200	30	3/8"	65
250	6	70	118	770	620	1844	382	250	40	3/8"	104
300	6	70	118	895	704	2005	382	250	40	3/8"	126

Table. 10

ELECTRIC ACTUATOR

The definition variables are as follows:

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

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

This actuator is automatic and includes the following parts:

- Electric motor.
- Stem
- Yoke

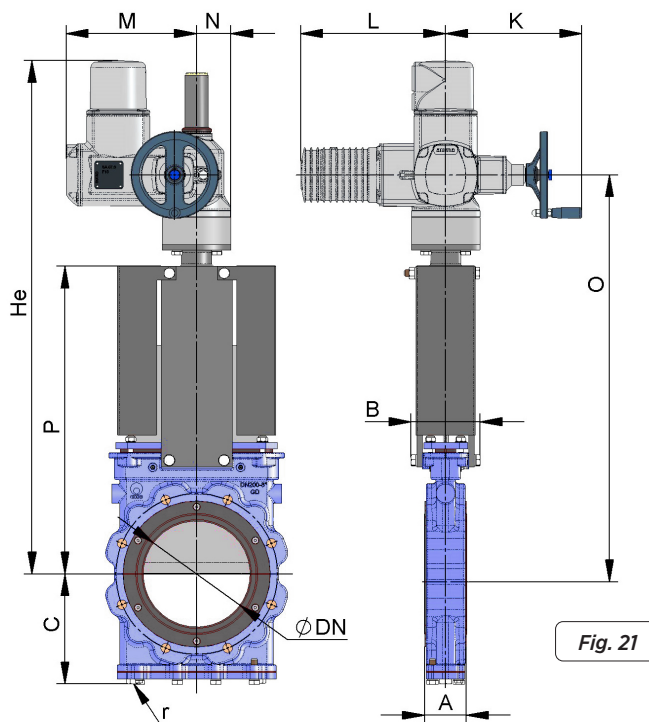
OPTIONS:

- Non-rising stem.
- ISO 5210 / DIN 3338 Flanges

AVAILABLE:

- ND50 to ND1400
- From ND350 the motor is assisted with a gear box.
- O other ND on request.

- Other pressures on request (ΔP).



DN	ΔP (bar)	A	B	C	D	Q	R	S	T	U	V	Weight (kg.)
50	10	40	91	225	243	197	102	234	265	347	587	32
65	10	40	91	265	269	197	102	234	265	374	614	33
80	10	50	91	310	293	197	102	234	265	400	640	37
100	10	50	91	370	334	197	102	234	265	440	680	39
125	10	50	101	430	367	197	102	234	265	473	713	48
150	10	60	101	495	419	197	102	234	265	525	765	58
200	8	60	118	630	525	197	102	234	265	640	880	74
250	6	70	118	770	620	197	102	234	265	741	981	108
300	6	70	118	895	726	197	102	234	265	841	1141	132
350	5	96	290	1050	780	197	115	256	282	944	1347	189
400	5	100	290	1185	855	197	115	256	282	1050	1550	261
450	3	106	290	1320	975	222	153	325	385	1147	1847	368
500	3	110	290	1455	1064	222	153	325	385	1259	1959	497
600	3	110	290	1720	1244	222	153	325	385	1465	2165	584
700	2	110	320	1995	1425	222	153	325	385	1651	2451	988
800	2	110	320	2230	1615	222	153	332	385	1865	2665	N.D.
900	2	110	320	2465	1823	222	153	332	385	2098	2998	N.D.
1000	2	110	320	2620	1992	222	153	332	385	2288	3178	N.D.
1100	2	150	340	3030	2217	227	195	355	510	2575	3675	N.D.
1200	2	150	340	3250	2351	227	195	355	510	2866	4042	N.D.
1300	2	150	390	3430	2882	227	195	355	510	3082	4382	N.D.
1400	2	150	390	3680	3250	222	153	332	385	3395	4852	N.D.
1500	2	170	426	3930	3517	222	153	332	385	3662	5217	N.D.

N.D.: Weight not declared

Table. 11

HYDRAULIC ACTUATOR (Oil pressure: 135 Bar)

The definition variables are as follows:

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

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

The hydraulic actuator includes:

- Hydraulic cylinder
- Yoke

AVAILABLE:

- ND 50 a ND 1400
- Different types and brands available according to customer's requirements.
- Other pressures on request (ΔP).

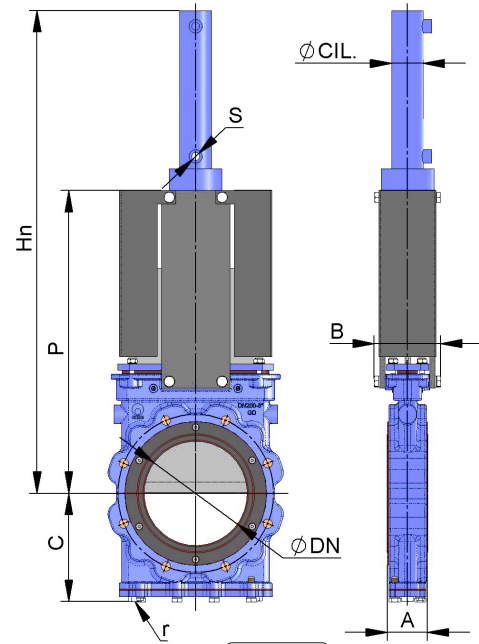


Fig. 22

DN	ΔP (bar)	A	B	C	D	W	\varnothing CIL	\varnothing VAST	S (B.S.P)	Oil (dm3)	Weight (kg.)
50	10	40	91	225	243	459	25	18	3/8"	0.03	17
65	10	40	91	265	269	500	25	18	3/8"	0.03	18
80	10	50	91	310	293	559	25	18	3/8"	0.04	22
100	10	50	91	370	334	620	32	22	3/8"	0.09	24
125	10	50	101	430	367	683	32	22	3/8"	0.11	33
150	10	60	101	495	419	755	40	28	3/8"	0.20	43
200	8	60	118	630	525	927	50	28	3/8"	0.42	61
250	6	70	118	770	620	1071	50	28	3/8"	0.52	99
300	6	70	118	895	726	1223	50	28	3/8"	0.62	131
350	5	96	290	1050	780	1360	50	28	3/8"	0.73	182
400	5	100	290	1185	855	1484	63	36	3/8"	1.31	254
450	3	106	290	1320	975	1693	63	36	3/8"	1.47	387
500	3	110	290	1455	1064	1832	63	36	3/8"	1.62	498
600	3	110	290	1720	1244	2111	80	45	3/8"	3.12	559
700	2	110	320	1995	1425	2444	80	45	3/8"	3.62	983
800	2	110	320	2230	1615	2734	100	56	1/2"	6.44	N.D.
900	2	110	320	2465	1823	3042	100	56	1/2"	7.25	N.D.
1000	2	110	320	2620	1992	3351	125	70	1/2"	10.25	N.D.
1100	2	150	340	3030	2217	3560	125	70	1/2"	13.56	N.D.
1200	2	150	340	3250	2351	3910	125	70	1/2"	15.05	N.D.
1300	2	150	390	3430	2882	4477	160	70	1/2"	26.3	N.D.
1400	2	150	390	3680	3250	4945	160	70	1/2"	28.65	N.D.

N.D.: Weight not declared

Table. 12

INFORMATION ON FLANGE DIMENSIONS

DN	•	Metric (M)	P	ØK
50	4	M 16	14	125
65	4	M 16	14	145
80	8	M 16	14	160
100	8	M 16	14	180
125	8	M 16	15	210
150	8	M 20	15	240
200	8	M 20	17	295
250	12	M 20	17	350
300	12	M 20	20	400
350	16	M 20	21	460
400	16	M 24	23	515
450	20	M 24	24	565
500	20	M 24	25	620
600	20	M 27	26	725
700	24	M 27	26	840
750	24	M 30	26	900
800	24	M 30	26	950
900	28	M 30	26	1050
1000	28	M 33	27	1160
1100	32	M 33	27	1270
1200	32	M 36	29	1380
1300	32	M 36	29	1490
1400	36	M 39	30	1590
1500	36	M 39	30	1700

Table. 13

ANSI B16, class 150

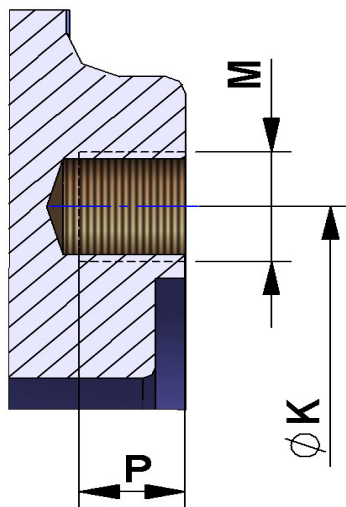


Fig. 24

THREADED DRILL DEPTH

EN 1092-2 PN10

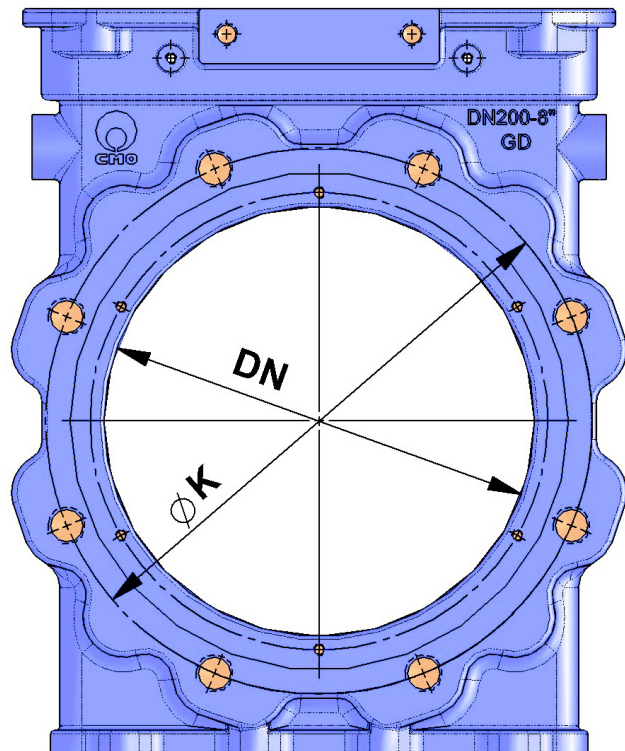


Fig. 23

DN	•	R UNC	P	ØK
2"	4	5/8"	0,55"	4,75"
2 1/2"	4	5/8"	0,55"	5,5"
3"	4	5/8"	0,55"	6"
4"	8	5/8"	0,55"	7,5"
5"	8	3/4"	0,59"	8,5"
6"	8	3/4"	0,59"	9,5"
8"	8	3/4"	0,67"	11,75"
10"	12	7/8"	0,67"	14,25"
12"	12	7/8"	0,79"	17"
14"	12	1"	0,83"	18,75"
16"	16	1"	0,91"	21,25"
18"	16	1 1/8"	0,95"	22,75"
20"	20	1 1/8"	1"	25"
24"	20	1 1/4"	1,02"	29,5"
28"	28	1 1/4"	1,02"	34"
30"	28	1 1/4"	1,02"	36"
32"	28	1 1/2"	1,02"	38,5"
36"	32	1 1/2"	1,02"	42,75"
40"	36	1 1/2"	1,06"	47,25"

Table. 14

DN	•	Metric (M)	P	øK
50	4	M 16	14	125
65	4	M 16	14	145
80	8	M 16	14	160
100	8	M 16	14	180
125	8	M 16	15	210
150	8	M 20	15	240
200	12	M 20	17	295
250	12	M 24	17	355
300	12	M 24	20	410
350	16	M 24	21	470
400	16	M 27	23	525
450	20	M 27	24	585
500	20	M 30	25	650
600	20	M 33	26	770
700	24	M 33	26	840
800	24	M 36	26	950
900	28	M 36	26	1050
1000	28	M 39	26	1170
1100	32	M 42	27	1370
1200	32	M 45	27	1390
1300	36	M 45	29	1490
1400	36	M 45	29	1590
1500	40	M 52	30	1710

Table. 15

EN 1092-2 PN16

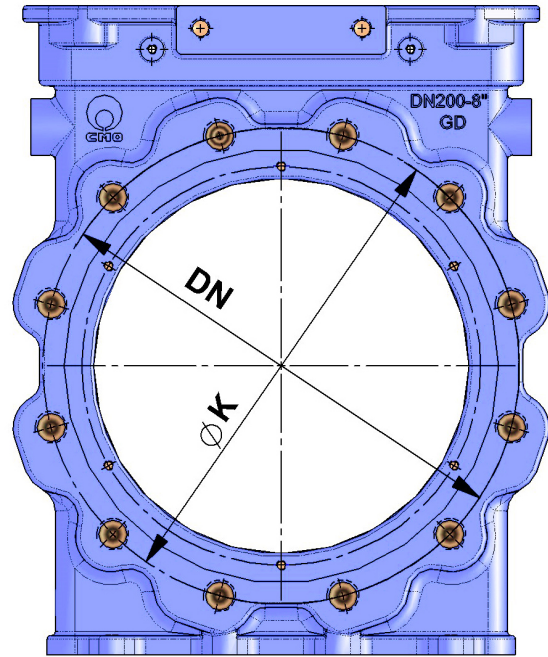


Fig. 25

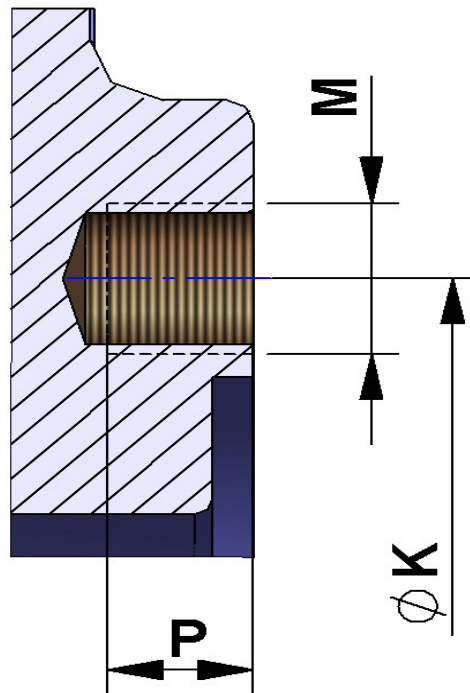
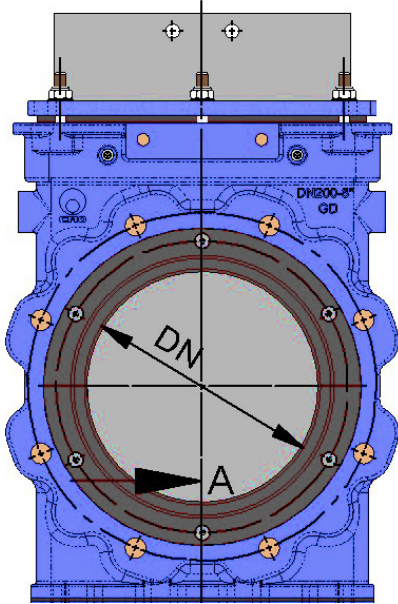
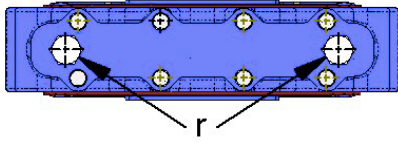
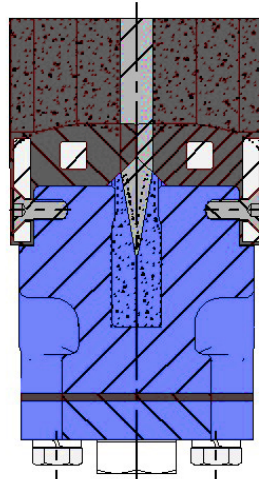


Fig. 26

THREADED DRILL DEPTH



Estándar VERSION



SECTION A-A

DN	r (B.P.S)
50	1/4"
65	1/4"
80	1/4"
100	1/4"
125	1/4"
150	1/4"
200	3/8"
250	1/2"
300	1/2"
350	1/2"
400	3/4"
450	3/4"
500	3/4"
600	1"

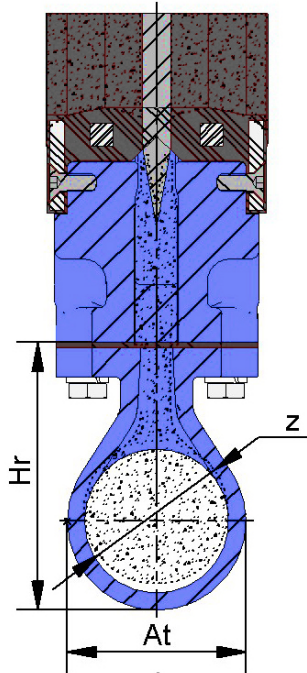
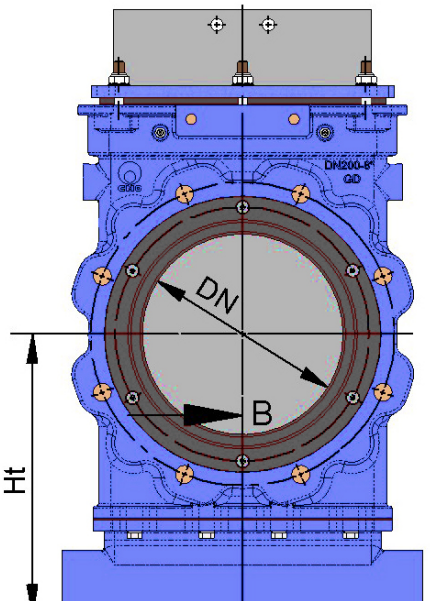
Fig. 27

Table. 16



OPTION 1

DN	Ht	Lt	At	Ht	z (B.S.P.)
50	158	185	42	68	1"
65	168	200	42	68	1"
80	174	220	42	68	1"
100	188	240	42	68	1"
125	208	265	42	73	1"
150	223	290	42	73	1"
200	272	350	42	93	1 3/4"
250	310	400	62	98	1 3/4"
300	348	450	62	98	1 3/4"
350	373	520	62	98	1 3/4"
400	403	560	62	98	1 3/4"
450	428	610	62	98	1 3/4"
500	472	690	70	107	2"
600	542	790	70	107	2"



SECTION B-B

Fig. 28

Table. 17

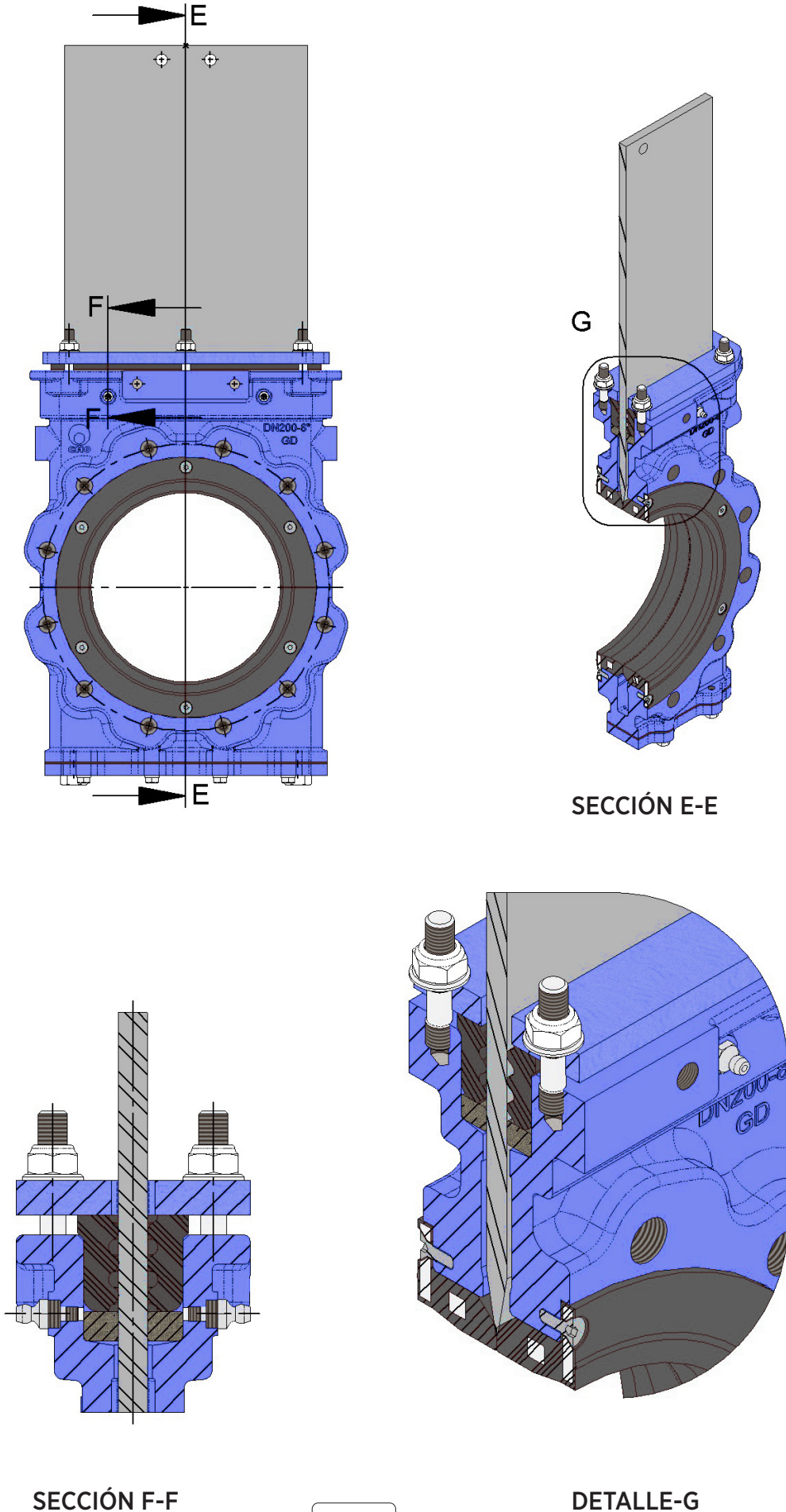


Fig. 29



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