

GH



BIDIRECTIONAL WAFER - KNIFE GATE VALVE

DESCRIPTION

- Bidirectional knife gate valve.
- Appropriate valve to be used as end of line.
- Monoblock" one-piece 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 APPLICATIONS

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 waster water

Designed for the following applications:

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

SIZES

From ND80-3" to ND900-36"
Other sizes on request.

MAXIMUM WORKING (ΔP)

ASA 150	ND500 A ND600	21 bar
PN25	ND50 A ND600	25 bar
SAS 300 / PN40	ND50 A ND600	40 bar

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

FLANGE DRILL HOLE

DIN PN25, DIN PN40 y ANSI B16.5 (300 LB)

Other Common Flanges:

JIS standard, Australian standard, British standard

SERIE - GH



Fig. 1

DIRECTIVES

Pressure Equipment Directive:

(PED) ART 4.3 /CAT.1.

Potential Explosive Atmospheres Directive:

(ATEX)CAT.3 ZONA 2 y 22 GD

* For further information on categories and zones please contact the 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.

ADVANTAGES

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. Appropriate valve to be used as end of line. The GH 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, etc. The stem on the 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-400 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	WATERPROOF VERSION
1 BODY	GJS-500
2 GATE	AISI 304 / DUPLEX / AISI 630
3 SLEEVE	STEEL+NATURAL RUBBER
4 PACKING SEAL	NATURAL RUBBER
5 PACKING	GREASED PACKING
6 PACKING GLAND	STEEL
7 SUPPORT PLATES	STEEL
8 YOKE	STEEL
9 STEM	AISI 303
10 GEAR BOX	---
11 HOOD	STEEL
12 LOWER COVER	STEEL
13 STEM STOPPER	AISI 316
14 PROTECTION CAP	PLASTIC
15 GREASER	STEEL

Table 1

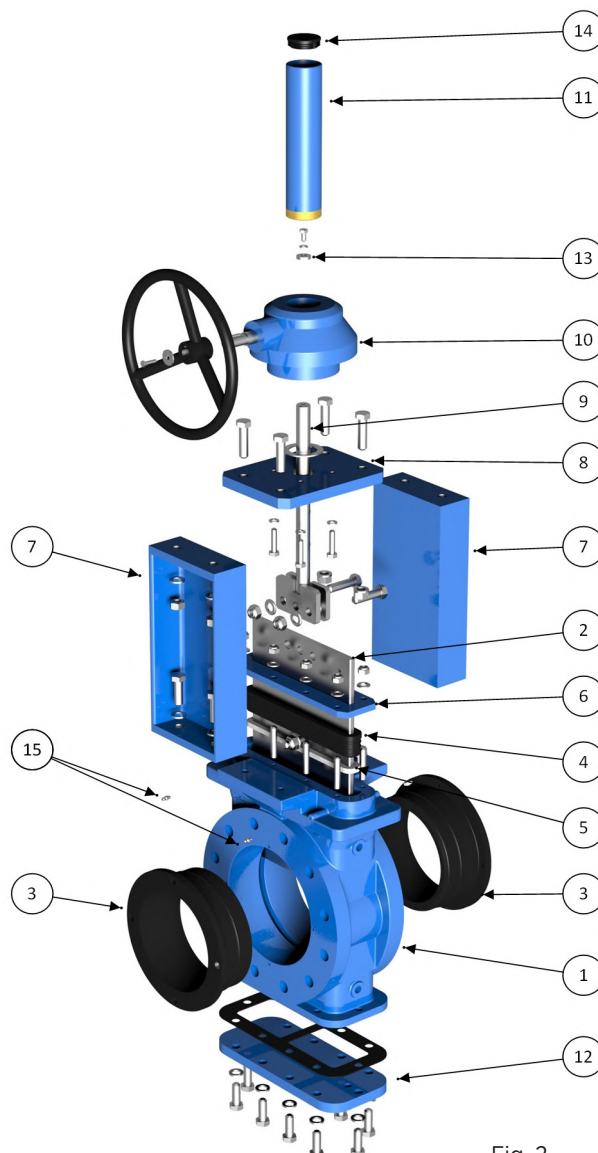


Fig. 2

Note: The numbers of the images 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. 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 material is GJS-500. Other materials such as: A216WCB carbon steel and stainless steel alloys (AISI 316Ti, 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 150 microns of EPOXY (colour RAL 5015). Other types of anti-corrosive protections are available on request.

2. GATE

The standard manufacturing materials for the gate are AISI 304, SAF 2205 and AISI 630. 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 **GH** valve is composed of two rubber sleeves, located on either side of the body symmetrically, which are subject by sleeve retainers.

The sleeves and the sleeve retainers 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 **GH** 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 .

Resilient seat materials

NATURAL RUBBER

This is the standard resilient seat fitted on **CMO Valves GH** 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.

POLYURETHANE

It can be used in multiple applications at temperatures not exceeding 90 ° C, with abrasive products. It provides the valve with 100% tightness. Application: fluids in general.

EPDM

Recommended for temperatures below 90°C*. Provides the valve with 100% sealtight integrity. Application: water and acids.

NITRILE

Used in fluids containing fats or oils at temperatures no higher than 90°C*. Provides the valve with 100% sealtight integrity

FPM

Suitable for corrosive applications and high temperatures of up to 190°C and peaks of 210°C. Provides the valve with 100% sealtight integrity.

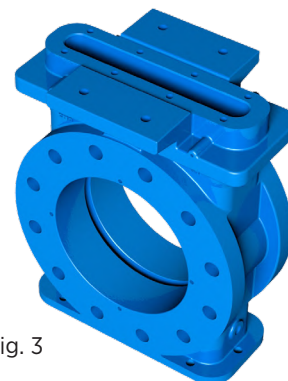


Fig. 3

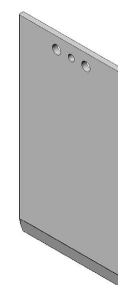


Fig. 4

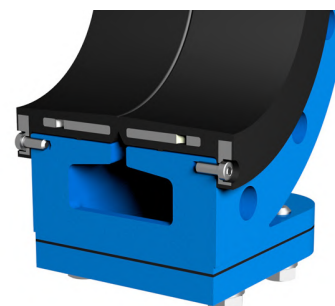


Fig. 5

Table 2

SEAT/SEALS		
MATERIAL	Tª MÁX (°C)	APLICACIONES
Natural Rubber	90	General
Polyurethane	90	General
EPDM (E)	90 *	Water, non-mineral acids and oils
Nitrile (N)	90 *	Hydrocarbons, oils and greases
FPM	200	Hydrocarbons and solvents

NOTE: More details and other materials available on request.

* ⇄ **EPDM and Nitrile:** possible until serving temp. Max.: 120°C under request.

4. GASKET

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

5. STEM

The valve stem 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 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 gasket to ensure sealtight integrity. As standard, valves with steel body include steel packing glands, whilst valves with stainless steel body have stainless steel packing glands.

7. ACTUATORS

It is possible to supply all types of actuators, with the advantage that the **CMO Valves** design is completely interchangeable. This design means customers can change the actuator themselves without any additional assembly accessories. A design characteristic of **CMO valves** is that all actuators are interchangeable.

Manual Actuators

Handwheel with rising stem / Non-rising stem

Chainwheel / Lever

Gearbox / Others (square stem, etc)

Wide range of accessories available

Mechanical stoppers

Locking devices

Emergency manual actuators

Electrovalves

Positioners

Limit switches

Proximity detectors

Straight floor stand (fig. 7)

Leaning floor stand (fig. 8)

Automatic Actuators

Electric actuator

Pneumatic cylinder

Hydraulic cylinder

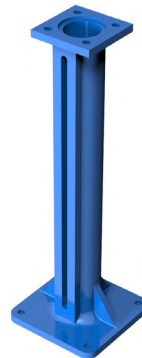
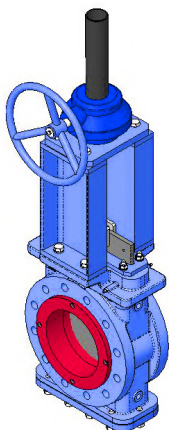


Fig. 7

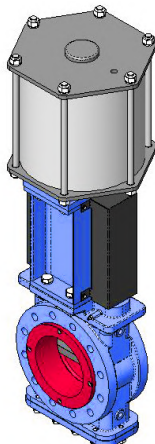


Fig. 8

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



Gear box



Pneumatic actuator

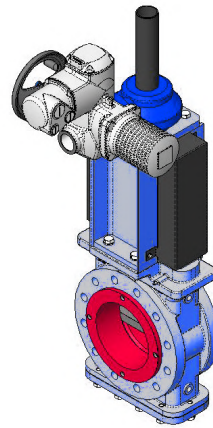
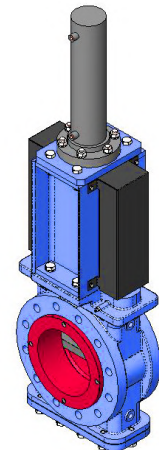


Fig. 6

Electric-motor actuator



Hydraulic actuator

ACCESSORIES AND OPTIONS

Different accessories are available to adapt the valve to specific working conditions such as:

MIRROR POLISHED THROUGH-CONDUIT GATE

The mirror polished through-conduit 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 COATED THROUGH-CONDUIT GATE

As with the mirror polished through-conduit gate, this improves the valve's resistance to products which can stick to the gate.

STELLITED THROUGH-CONDUIT GATE

Stellite is added to the inner circle of the through-conduit gate to protect it from abrasion.

SCRAPER IN THE GASKET

Its function is to clean the gate during the opening movement and prevent possible damage to the gasket.

FLUSHING HOLES IN THE 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.

CASED BODY

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

ELECTROVALVES

For air distribution to pneumatic actuators.

JUNCTION BOXES, WIRING AND PNEUMATIC PIPING

Units supplied fully assembled with all the necessary accessories

MECHANICAL LIMIT SWITCHES, INDUCTIVE SENSORS AND POSITIONERS

Limit switches or sensors are installed to indicate precise valve position, as well as positioners to indicate continuous position (fig. 7).

MECHANICAL LOCKING DEVICE

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

STROKE LIMITING MECHANICAL STOPS

Allow the stroke to be mechanically adjusted, limiting the valve run.

EMERGENCY MANUAL ACTUATOR (HAND WHEEL/GEARBOX)

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

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.

EPOXY COATING

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

THROUGH-CONDUIT GATE SAFETY GUARD

In accordance with European Safety Standards ("EC" marking), **CMO Valves** automatic valves are fitted with metal guards in the gate run in order to prevent objects from being accidentally caught or dragged along.



Fig. 9

TYPES OF EXTENSION

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

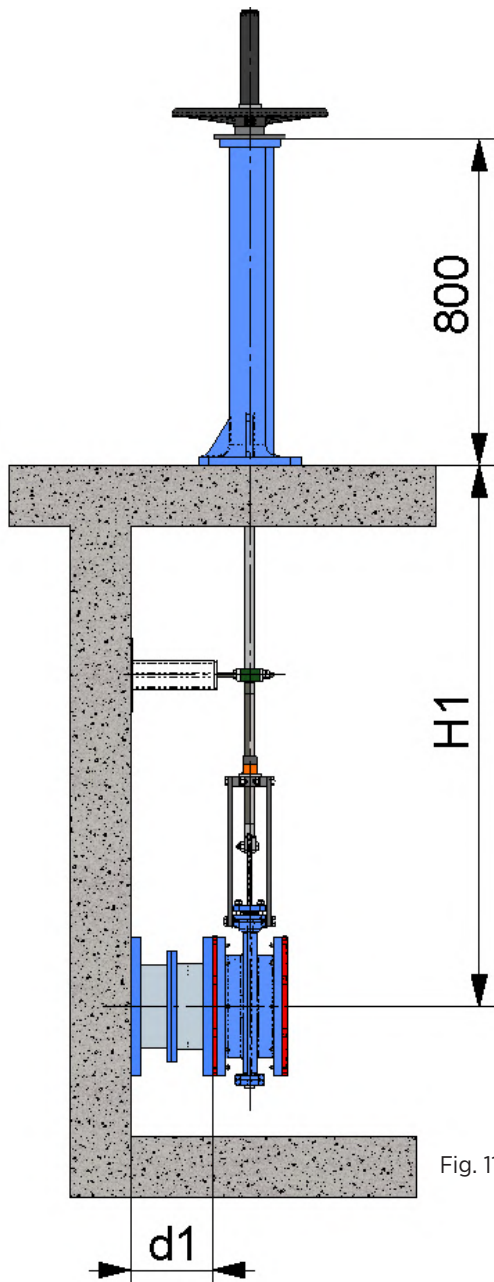


Fig. 11

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

The definition variables are as follows:

Las variables de definición son:

H1: Distance from the valve shaft to the base of the stand.

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

CHARACTERISTICS:

Can be coupled to any type of actuator.

A stem support-guide is recommended (fig. 8) every 1.5 m.

The standard floor stand is 800 mm high (fig. 9). Other floor stand measurements available to order.

Option of fitting an indicator rule in order to determine the degree of opening of the valve.

Option of leaning floor stand (fig. 10).

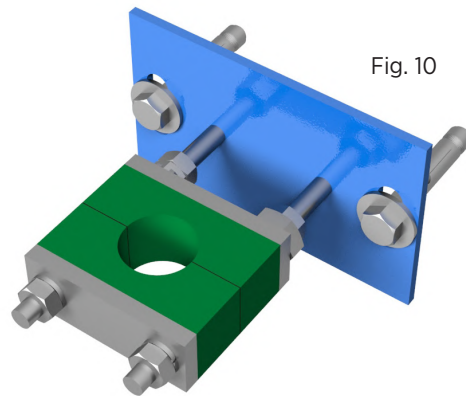


Fig. 10



Fig. 12

COMPONENTS LIST

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

Table 3

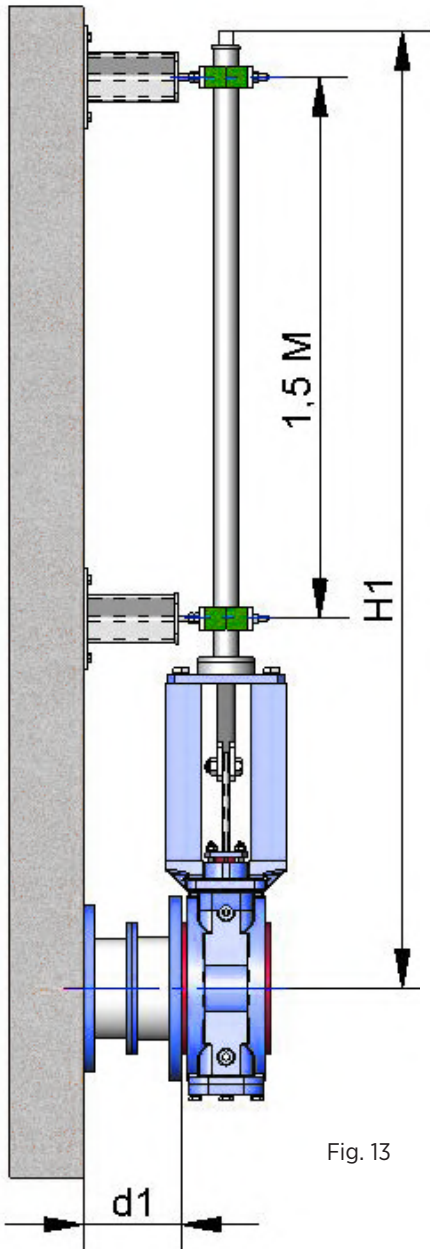


Fig. 13

2.- EXTENSION: PIPE (Fig 13)

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

The definition variables are as follows:

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

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

CHARACTERISTICS

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

3.-EXTENDED SUPPORT PLATES (Fig 11)

When a large extension is required, it can be achieved by extending the support plates. An intermediate yoke can be fitted to reinforce the support plates structure..

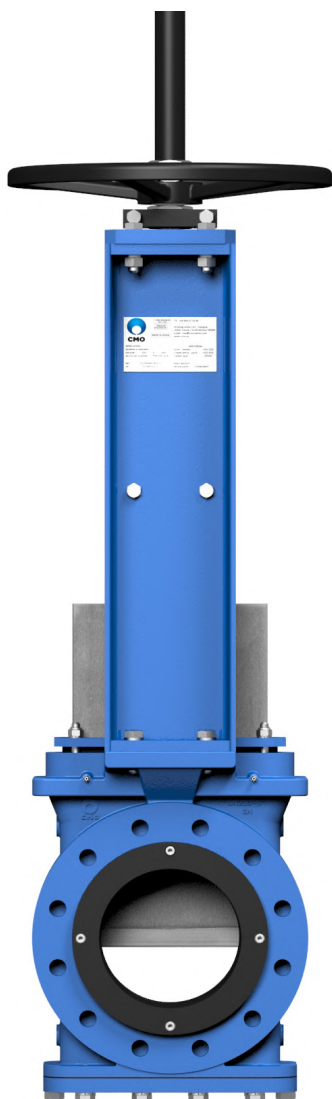


Fig. 14

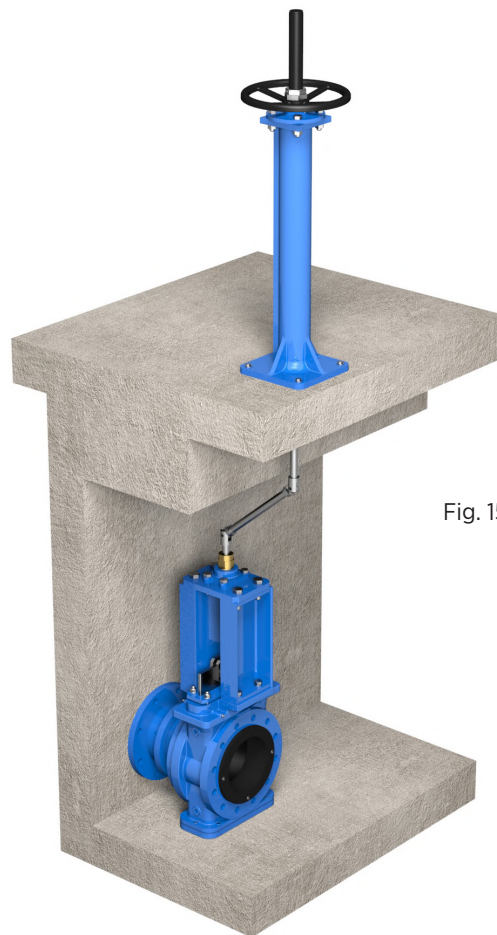


Fig. 15

4.-UNIVERSAL JOINT (Fig. 15)

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

HANDWHEEL

The definition variables are as follows:

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

OPTIONS:

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

ACTUATOR COMPRISING:

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

AVAILABLE:

- Standard ND80 a ND900
- Other ND to order.

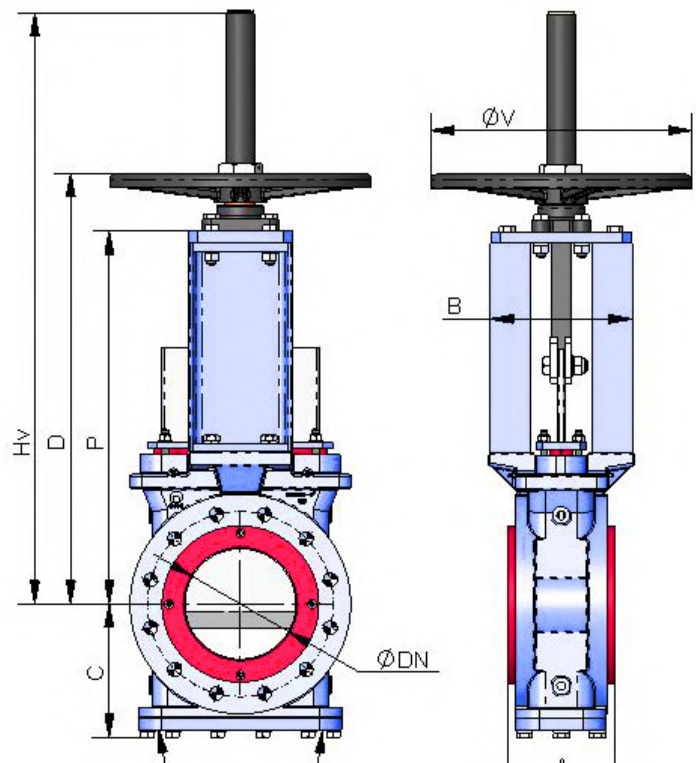


Fig. 16

- From ND350 (include) the drive is with a Gear-box.
- Other pressures on request

ND	A	B	C	P	D	Hv	øV	r (B.S.P.)
80	175	110	125	364	401	529	225	1/4"
100	175	110	155	420	457	635	225	1/4"
150	178	126	198	529	582	823	325	1/4"
200	185	250	223	645	729	1024	--	3/8"
250	226	260	279	733	817	1142	--	1/2"
300	258	275	296	832	916	1361	--	1/2"
350	258	290	347	934	1036	1435	--	1/2"
400	279	320	376	1087	1189	1688	--	3/4"
450	321	350	401	1220	1456	1919	--	3/4"
500	367	350	436	1326	1562	2100	--	3/4"
600	371	350	515	1507	1817	2426	--	1"
750	413	375	625	1779	--	--	--	1"
900	472	400	710	2050	--	--	--	1"

Table 4

GEAR-BOX

The definition variables are as follows:

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

OPTIONS:

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

ACTUATOR COMPRISING:

- Stem
- Yoke.
- Bevel gearbox
- Handwheel.

AVAILABLE:

- ND80 to ND900
- Other ND on request..

It is recommendable for DN greater than 200.

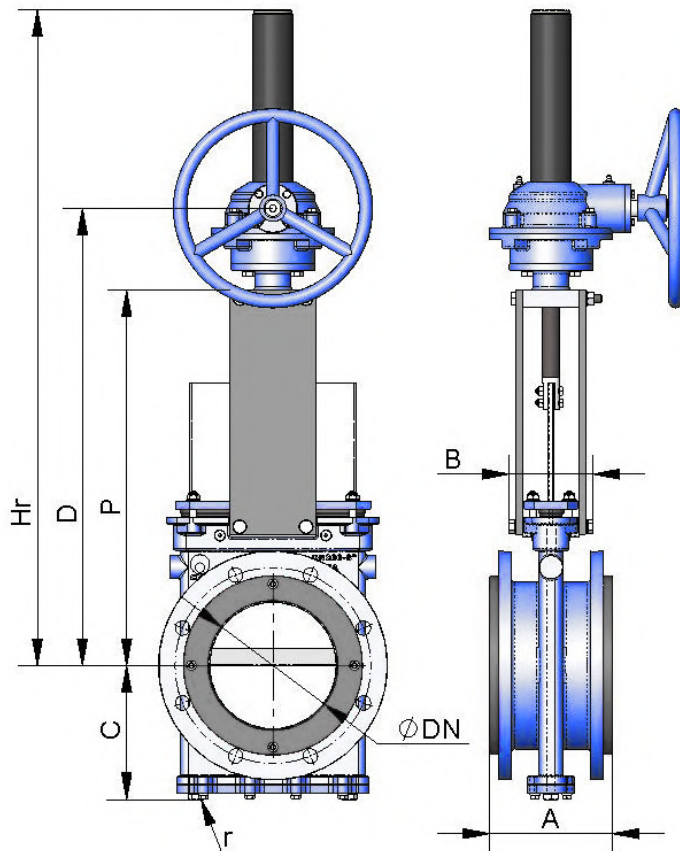


Fig. 17

DN	A	B	C	P	D	Hr	F	øV	r (B.S.P.)
80	175	110	125	364	484	634	198	300	1/4"
100	175	110	155	420	540	690	198	300	1/4"
150	178	126	198	529	653	878	198	300	1/4"
200	185	250	223	645	729	1024	198	300	3/8"
250	226	260	279	733	817	1142	198	300	1/2"
300	258	275	296	832	916	1361	218	450	1/2"
350	258	290	347	934	1036	1435	288	650	1/2"
400	279	320	376	1087	1189	1688	313	850	3/4"
450	321	350	401	1220	1456	1919	392	450	3/4"
500	367	350	436	1326	1562	2100	392	450	3/4"
600	371	350	515	1507	1817	2426	442	650	1"
750	413	375	625	1779	--	--	--	--	1"
900	472	400	710	2050	--	--	--	--	1"

Table 5

DOUBLE-ACTING PNEUMATIC CYLINDER

The definition variables are as follows:

- B = Maximum width of the valve** (without actuator).
- P = Maximum height of the valve** (without actuator).

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..

If the air pressure is less than 6 bar, consult **CMO Valves**

For DN80 to DN100 valves, the cylinder's jacket and covers are made of aluminum, 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.

AVAILABLE:

- ND80 to ND450
- Other ND on request.

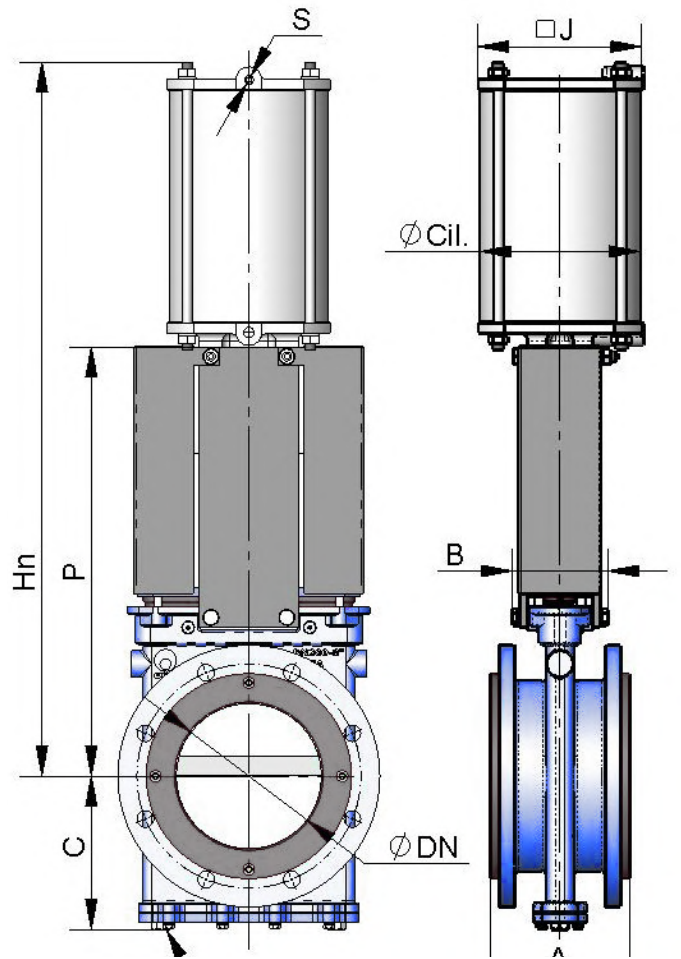


Fig. 18

ND	A	B	C	Hn	r (B.S.P.)
80	175	110	125	594	1/4"
100	175	110	155	682	1/4"
150	178	126	198	920	1/4"
200	185	250	223	1095	3/8"
250	226	260	279	1276	1/2"
300	258	275	296	1429	1/2"
350	258	290	347	1572	1/2"
400	279	320	376	1802	3/4"
450	321	350	401	2032	3/4"
450	321	350	355	1805	3/4"

Table 6

(*) -> For lower working pressures see cylinder Ø.

ELECTRIC ACTUATOR

The definition variables are as follows:

- B = Maximum width of the valve** (without actuator).
- P = Maximum height of the valve** (without actuator).

This actuator is automatic and includes the following parts:

- Electric motor.
- Stem.
- Yoke.

OPTIONS:

- Different types and brands
- ISO 5210 / DIN 3338 Flanges

AVAILABLE:

- ND80 to ND900
- Other DN on request..
- From DN200 (inclusive) the motor is assisted with a gear box

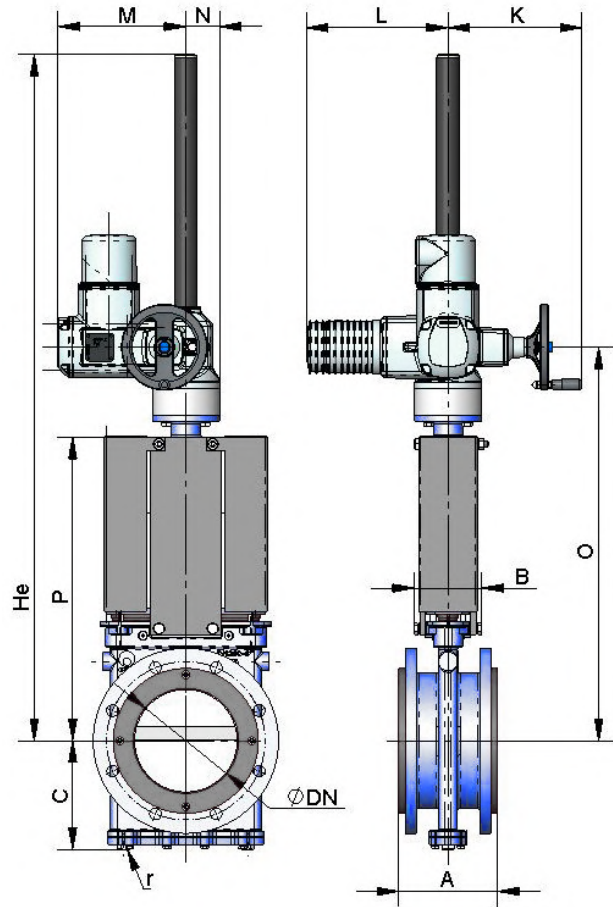


Fig. 19

ND	A	B	C	P	K	L	M	O	He	r (B.S.P.)
80	175	110	125	364	249	264	238	528	738	1/4"
100	175	110	155	420	249	264	238	584	794	1/4"
150	178	126	198	529	249	264	238	697	907	1/4"
200	185	250	223	645	249	264	424	769	1024	3/8"
250	226	260	279	733	254	282	424	867	1142	1/2"
300	258	275	296	832	254	282	424	966	1361	1/2"
350	258	290	347	934	336	388	479	1103	1435	1/2"
400	279	320	376	1087	336	388	479	1256	1688	3/4"
450	321	350	401	1220	254	282	600	1456	1919	3/4"
500	367	350	436	1326	254	282	600	1512	2100	3/4"
600	371	350	515	1507	336	388	656	1714	2426	1"
750	413	375	625	1779	336	388	663	2156	2712	1"
900	472	400	710	2050	339	388	731	2409	3155	1"

Table 7

HYDRAULIC ACTUATOR (Oil pressure: 135 bar)

The definition variables are as follows:

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

The hydraulic actuator includes:

- Hydraulic cylinder.
- Yoke

AVAILABLE:

- From ND 80 to ND 900
- Other DN on request
- Different types and brands available according to customer's requirements.

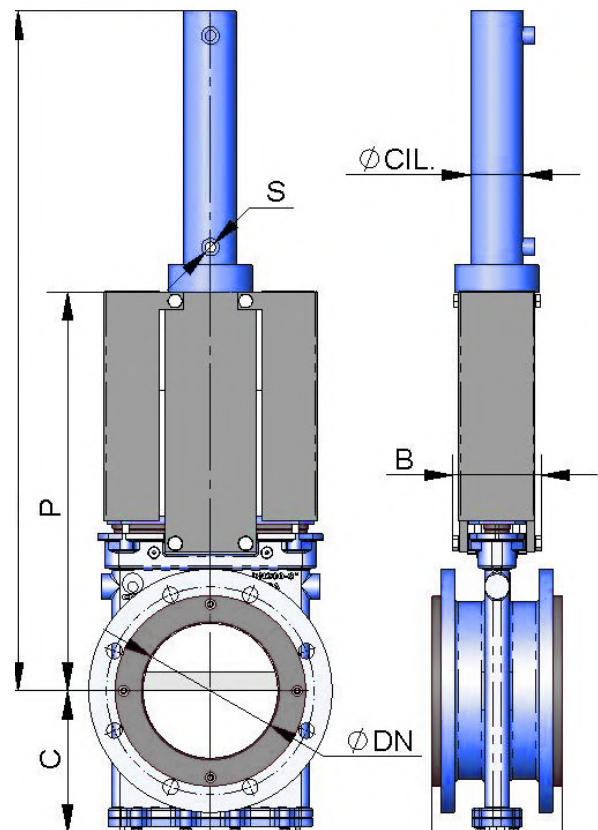


Fig. 20

ND	A	B	C	P	Hh	r (B.S.P.)
80	175	110	125	364	604	1/4"
100	175	110	155	420	642	1/4"
150	178	126	198	529	870	1/4"
200	185	250	223	645	1060	3/8"
250	226	260	279	733	1168	1/2"
300	258	275	296	832	1384	1/2"
350	258	290	347	934	1551	1/2"
400	279	320	376	1087	1710	3/4"
450	321	350	401	1220	1890	3/4"
500	367	350	436	1326	2219	3/4"
600	371	350	515	1507	2510	1"
750	413	375	625	1779	2892	1"
900	472	400	710	2050	3343	1"
750	395	400	559	1637	2576	1"
800	411	400	584	1733	2742	1"
900	470	400	649	1954	3053	1"

Table 8

INFORMATION ON FLANGE DIMENSIONS

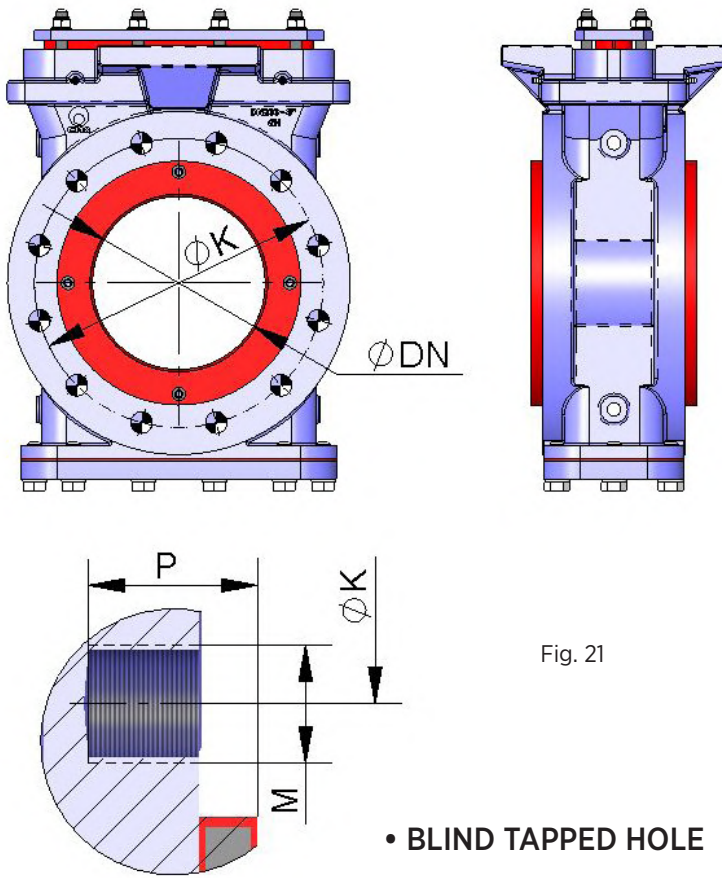


Fig. 21

EN 1092-2 PN25					
ND	ΔP (bar)	•	Metric	P	ØK
80	25	8	M 16	29	160
100	25	8	M 20	32	190
150	25	8	M 24	36	250
200	25	12	M 24	36	310
250	25	12	M 27	38	370
300	25	16	M 27	38	430
350	25	16	M 30	40	490
400	25	16	M 33	44	550
450	25	20	M 33	50	600
500	25	20	M 33	50	660
600	25	20	M 36	50	770
750	25	--	--	--	--
900	25	28	M 45	63	1090

Table 9

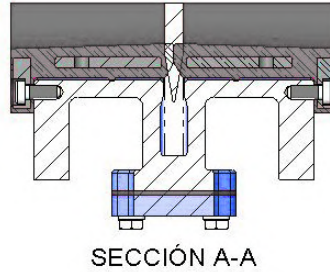
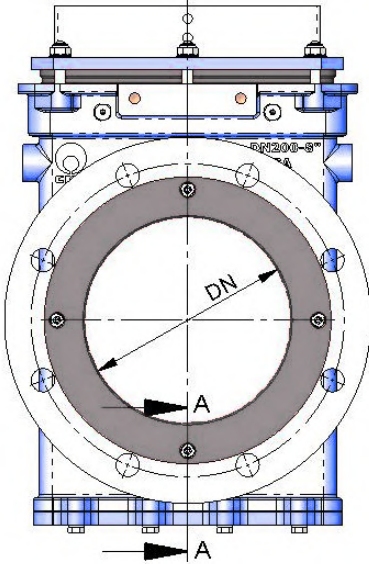
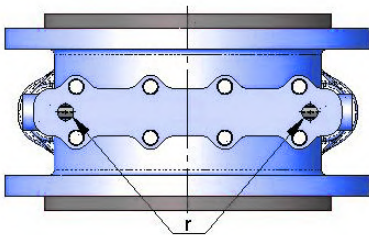
EN 1092-2 PN40					
ND	ΔP (bar)	•	Metric	P	ØK
80	25	8	M 16	29	160
100	25	8	M 20	32	190
150	25	8	M 24	36	250
200	25	12	M 27	36	320
250	25	12	M 30	38	385
300	25	16	M 30	38	450
350	25	16	M 33	40	510
400	25	16	M 36	44	585
450	25	20	M 36	50	610
500	25	20	M 39	50	670
600	25	20	M 45	50	795
750	25	--	--	--	--
900	25	--	--	--	--

Table 10

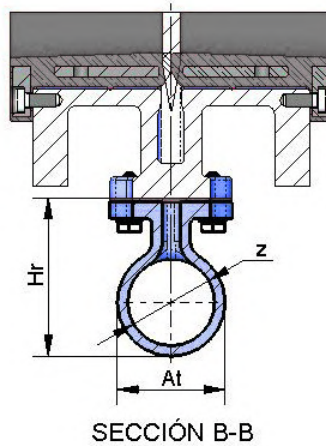
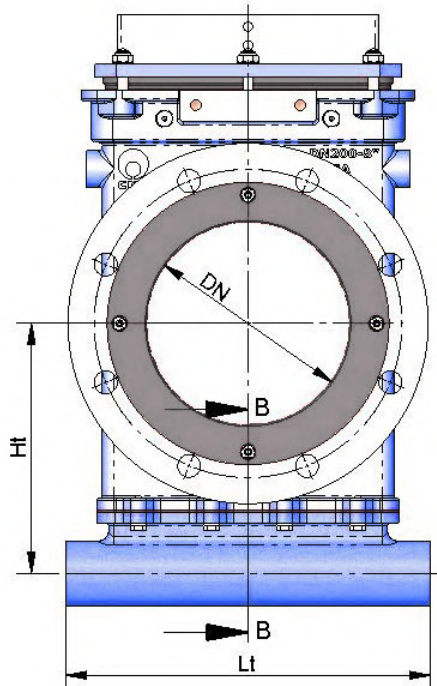
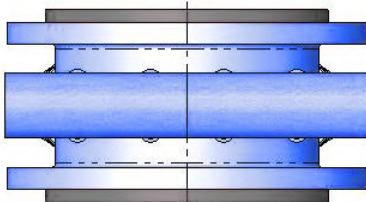
ANSI B16.5, class 300					
ND	ΔP (psi)	•	Metric	P	ØK
3"	300	8	3/4"	1,14"	6,63"
4"	300	8	3/4"	1,26"	7,87"
6"	300	12	3/4"	1,42"	10,63"
8"	300	12	7/8"	1,42"	13"
10"	300	16	1"	1,5"	15,25"
12"	300	16	1 1/8"	1,5"	17,75"
14"	300	20	1 1/8"	1,57"	20,25"
16"	300	20	1 1/4"	1,73"	22,5"
18"	300	24	1 1/4"	1,97"	24,75"
20"	300	24	1 1/4"	1,97"	27"
24"	300	24	1 1/2"	1,97"	32"
30"	300	28	1 3/4"	2,24"	39,25"
36"	300	32	2"	2,48"	46"

Table 11

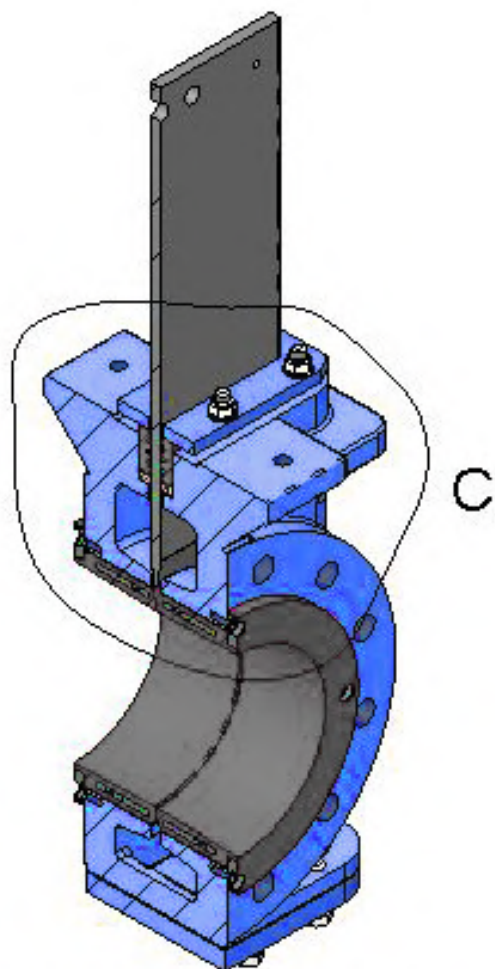
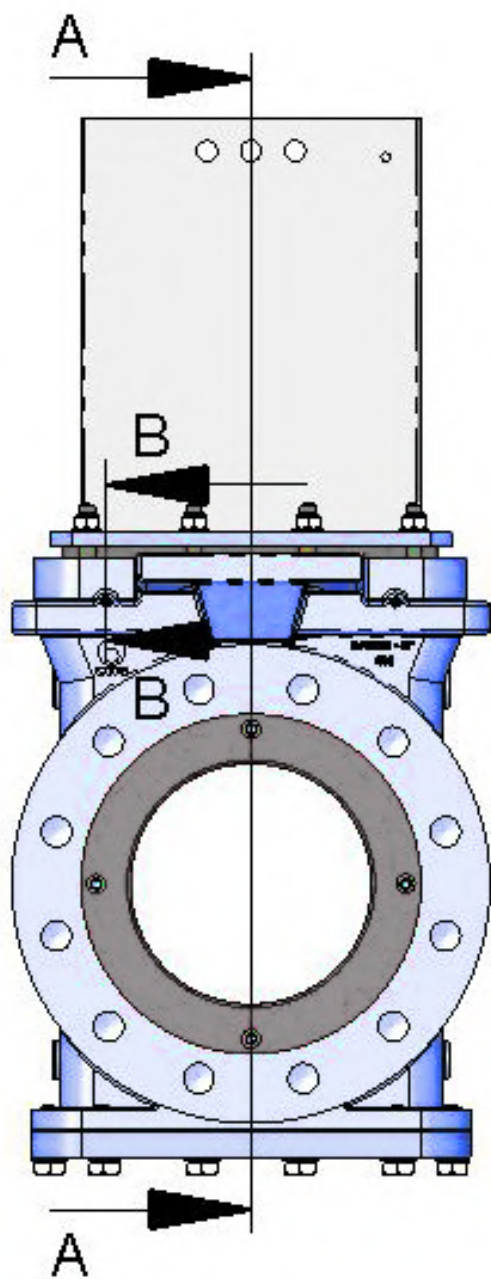
ESTANDAR VERSION



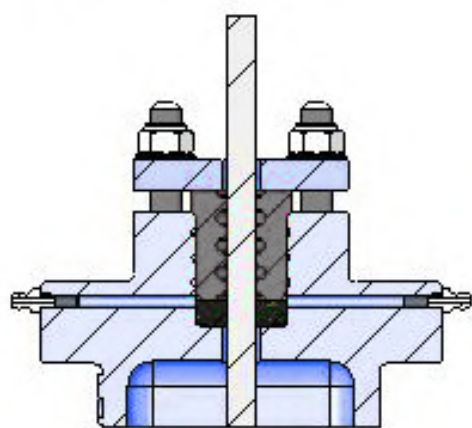
ND	r (B.S.P.)
50	1/4"
65	1/4"
80	1/4"
100	1/4"
125	1/4"
150	1/4"
200	3/8"
250	1/2"
300	1/2"
350	1/2"
400	3/4"
450	3/4"
500	3/4"
600	1"



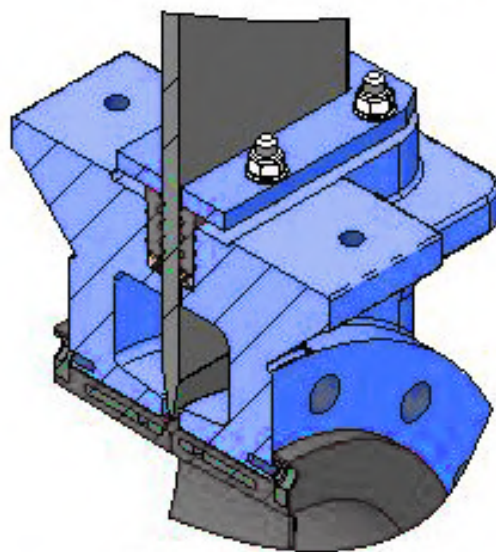
ND	Ht	Lt	At	Hr	z (B.S.P.)
50	158	185	42	68	1"
65	168	200	42	68	1"
80	174	220	42	68	1"
100	188	240	42	68	1"
125	208	265	42	73	1"
150	223	290	42	73	1"
200	272	350	62	93	1 3/4"
250	310	400	62	98	1 3/4"
300	348	450	62	98	1 3/4"
350	373	520	62	98	1 3/4"
400	403	560	62	98	1 3/4"
450	428	610	62	98	1 3/4"
500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



SECCIÓN A-A



SECCIÓN B-B



DETALLE C