TECHNICAL DATA
F SERIES

ARNETT
ENGINEERED SOLUTIONS

ARNETT ENGINEERED SOLUTIONS
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Rev.02 / 11-07-2024

UNIDIRECTIONAL KNIFE GATE VALVE - WAFER DESIGN

DESCRIPTION

- Unidirectional wafer knife gate valve with wafer design.
- One-piece cast body with guides to support gate and seat wedges.
- Provides high fl ow rates with low pressure drop.
- Various seat and packing materials available.
- Face-to-face dimension in accordance with **CMO Valves** standard.
- It has an arrow on the body indicating the flow direction

GENERAL APPLICATIONS

This knife gate valve is suitable for working with dry products like powder and grain. It is generally used for gravity discharge of dry solids.

- Mining
- Silo emptying
- Electrical power stations
- Chemical plants
- Food Industry

SIZES

DN50 to DN1200

** Others larger sizes on request*

WORKING PRESSURE (ΔP)

DN50 - DN250	10 bar
DN300 - DN400	6 bar
DN450	5 bar
DN500 - DN600	4 bar
DN700 - DN1200	3 bar

- This valve is usually mounted under a hopper, to prevent any kind of solids accumulating on the seat, the valve has a special body design and it is assembled with the body arrow in the same direction as the fluid.

- The design of the **F** valve seat is the same as for the A valve, but the pressures vary to those working the **F** valves.

STANDARD FLANGES

- ENI092 PN10.
- ASME B16.5 (class 150).

OTHER COMMON FLANGES

- PN6.
- PN16.
- PN25.
- BS “D” & “E”.
- JIS10K.

** Others on request.*

Fig.1

APPLICATION OF EUROPEAN DIRECTIVES

See document of European Directives applicable to **CMO Valves.**

** For category and zone information, contact technical-commercial department at **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

Installation and Maintenance Manual available at **www.cmovalves.com.**

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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 usually required to close it. However, the inside of the body of **model F** is cone-shaped, which provides greater space and, this way, when the valve is closed the solids stored inside it can be easily removed.

The **F valve** is unidirectional and an arrow is marked on the body indicating the flow direction.
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 **CMO Valves** is made of AISI304 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 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 upper and lower pneumatic actuator covers are manufactured in aluminium, and nodular cast iron for Øcylinder > 250 mm, meaning shock resistance is high. 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.

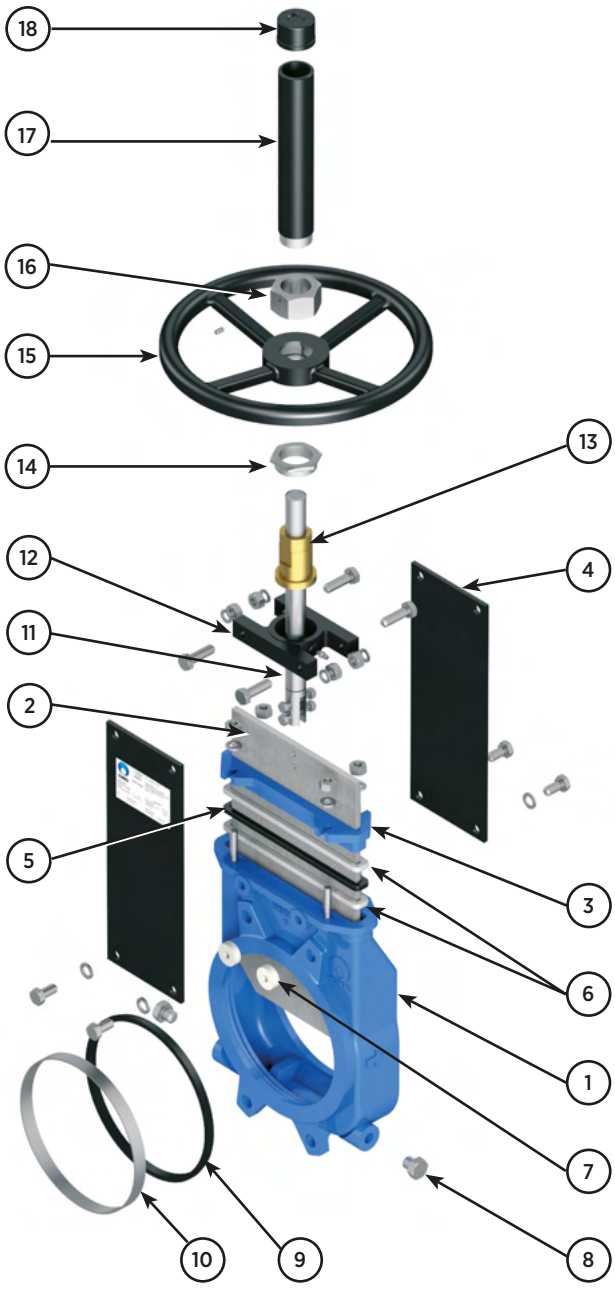

Fig.2

STANDARD COMPONENTS LIST

	COMPONENT	NODULAR IRON	ST.STEEL
1	BODY	GJS500-7	CF8M
2	GATE	AISI304	AISI316
3	PACKING GLAND	GJS500-7	CF8M
4	SUPPORT PLATES	S275JR	
5	PACKING SEAL	EPDM	
6	PACKING	SYNT + PTFE	
7	GUIDE	PA6	
8	THREADED CAP (OPTIONAL)	A-2	A-4
9	O-RING SEAL	EPDM	
10	RING	AISI316	
11	STEM	AISI304	
12	YOKE	STEEL	
13	STEM NUT	BRONZE	
14	CHECK NUT	ST44.2 + ZINC	
15	HANDWHEEL	STEEL	
16	NUT	STEEL	
17	HOOD	STEEL	
18	TOP CAP	PLASTIC	

Table. 1

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DESIGN CHARACTERISTICS

1. BODY

- Unidirectional wafer design knife gate valve. One-piece cast body with guides to support gate and seat wedges.
- For diameters greater than DN1200 the body is machine-welded with the necessary reinforcements to resist the maximum working pressure.
- Full port designed to provide high flow rates with low pressure drop.
- The body's internal design prevents any build up of solids in the seat area.
- The standard manufacturing materials are GJS500-7 castiron and CF8M stainless steel.
- Other materials, suchas GJS500-7 nodular cast iron, A216WCB carbon steel and stainless steel alloys (AISI316Ti, Duplex, 254SMO, Uranus B6...) 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 iron body and AISI316 stainless steel in valves with CF8M body. Other materials or combinations can be supplied on request.
The gate is polished on both sides to provide a smooth contact surface with the resilient seat. At the same time, the gate is rounded to prevent the seat from being cut.
Different degrees of polishing, anti-abrasion treatments and modifi cations are available to adapt the valves to the customer's requirements.

STEM NUT

EPDM
This is the standard resilient seat fitted on **CMO valves**. It can be used in many applications, however, it is generally used for water and products diluted in water at temperatures no higher than 90°C*. It can also be used with abrasive products and it provides the valve with 100% watertight integrity.

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

FKM
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.

SILICONE
Mainly used 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. Does not provide the valve with 100% watertight integrity. Estimated leakage: 0.5% of the tube flow.

3. SEAT

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

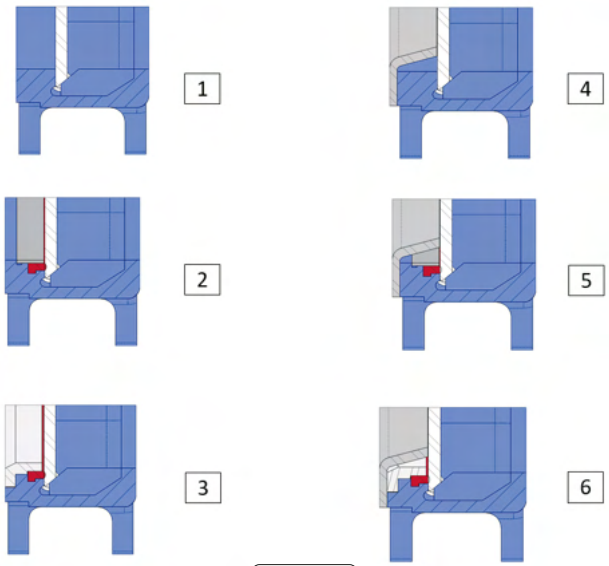

Fig.3

SEAT 1
Metal / metal seat.
This type of seat does not include any kind of resilient seat and the estimated leakage (considering water as the test fluid) is 1.5% of the pipe flow.

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

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

SEAT 4, 5 Y 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).

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

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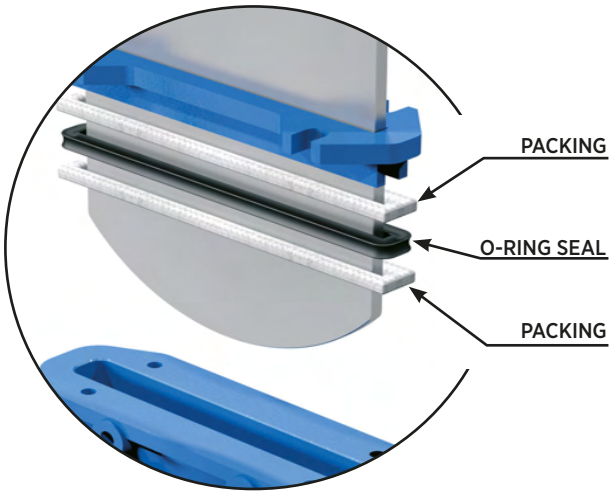
4. PACKING

CMO Valves's standard packing is composed of three lines with a specially designed EPDM O-ring in the middle which provides watertight integrity between the body and the gate, preventing any type of leakage to the atmosphere. It is located in an easily accessible place and can be replaced without dismantling the valve from the pipeline. Below we indicate various types of packing available according to the application in which the valve is located:



1. **GREASED COTTON (Recommended for hydraulic services)**
   This packing is composed of braided cotton fibres soaked in grease both inside and out. It is for general use in hydraulic applications in both pumps and valves.

2. **DRY COTTON**
   This packing is composed of cotton fibres. It is for general use in hydraulic applications with solids.

3. **COTTON + PTFE**
   This packing is composed of braided cotton fibres soaked in PTFE both inside and out. It is for general use in hydraulic applications in both pumps and valves.

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

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

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

SEATS / SEALS			PACKING			
MATERIAL	**T° MÁX (ºC)**	**APLICATIONS**	**MATERIAL**	**P(Bar)**	**T°. MÁX**	**pH**
Steel/Steel	>250°C	High temp./Low watertight integ	Greased cotton	10	100°C	6-8
EPDM (E)	90 *°C	Non-mineral acids and oils	Dry cotton	0,5	100°C	6-8
Nitrile (N)	90 *°C	Hydrocarbons, oils and greases	Cotton + PTFE	30	120°C	6-8
FKM (V)	200°C	Hydrocarbons and solvents	Synthetic + PTFE	100	-200+270°C	0-14
Silicone (S)	200°C	Food Products	Graphite	40	650°C	0-14
PTFE (T)	250°C	Corrosion resistant	Ceramic Fibre	0,3	1400°C	0-14

Note: More details and other materials on request

*** EPDM and Nitrile:** it is possible up to Tª Max: 120°C on request

Table. 2

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5. STEM

The stem on the **CMO Valves** valve is made of AISI 304 stainless steel. This characteristic provides high resistance and excellent corrosion-resistant properties. The valve design can be rising stem or non-rising stem. When rising stem is required a stem hood is supplied to protect the stem from contact with dust and dirt, as well as keeping it lubricated.

6. PACKING GLAND

The packing gland allows uniform force and pressure to be applied to the packing to ensure watertight integrity. As standard, valves with cast iron body include GJS500-7 packing glands, whilst valves with stainless steel body have CF8M packing glands.

7. ACTUATORS

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

Manual Drives
Handwheel **(*)**
Chain handwheel **(*)**
Lever
Geared motor **(*)**
Others (square stem)

Availability of Accessories
Mechanical stoppers
Locking devices
Emergency manual drives
Electrovalves
Positioners
Limit switches
Proximity detectors
Straight floor stand (Fig. 4)
Leaning floor stand (Fig. 5)

Automatic Drives
Electric actuator **(*)**
D/E & S/E pneumatic cylinder
Hydraulic cylinder

(*) Available in rising and non-rising stem versions.

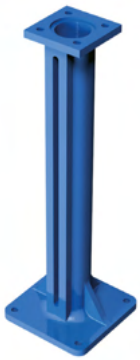

Fig.4

LEANING FLOOR STANDS.

Fig.5

STRAIGHT FLOOR STANDS.

Stem extensions have also been developed, allowing the drive to be located far away from the valve, to suit all needs. Please ask our engineers beforehand.

H/A = RISING STEM
H/NA = NON-RISING STEM.

LEVER **H/A**

CHAIN HANDWHEEL **H/A H/NA**

HANDWHEEL NON-RISING STEM **H/NA**

HANDWHEEL RISING STEM **H/A**

HANDWHEEL GEAR-BOX **H/A H/NA**

ELECTRIC-MOTOR ACTUSTOR **H/A H/NA**

HYDRAULIC ACTUATOR **H/A**

PNEUMATIC ACTUATOR **H/A**

SINGLE-ACTING PNEUMATIC ACTUATOR **H/A**

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ACCESSORIES AND OPTIONS

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

MIRROR POLISHED GATE
The mirror polished gate is especially recommended in the food industry and, as standard, in applications in which solids can stick to the gate. It is an alternative to ensure the solids slide off and do not stick to the gate.

PTFE LINED GATE
As with the mirror polished gate, it improves the valve's resistance to products that can stick to the gate.

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

SCRAPER IN THE PACKING
Its function is to clean the gate during the opening movement and prevent possible damage to the packing.

AIR INJECTION IN THE PACKING GLAND
By injecting air in the packing, an air chamber is created which improves the watertight integrity.

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

DRIVE 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.

SOLENOID VALVES
For air distribution to pneumatic actuators.

CONNECTION BOXES, WIRING AND PNEUMATIC PIPING
Fully assembled units can be supplied with all the necessary accessories.

MECHANICAL STROKE LIMITING STOP (MECHANICAL STOPPERS)
These allow the stroke to be mechanically adjusted, limiting the valve run.

MECHANICAL LOCKING DEVICE
Allows the valve to be mechanically locked in a fixed position.

EMERGENCY MANUAL ACTUATOR (HAND WHEEL /GEAR BOX)
Allows manual operation of the valve in the event of power or air failure.

FLUSHING HOLES IN BODY
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.

TRIANGULAR (V-NOTCH) AND PENTAGONAL DIAPHRAGM WITH INDICATION RULE
Recommended for applications in which fl ow regulation is required. Allows fl ow control according to the valve's opening percentage.

INTERCHANGEABLE ACTUATORS
All actuators are easily interchangeable, except the lever.

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

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

BONNET
Provides total seal-tightness to the outside, reducing the packing maintenance required.

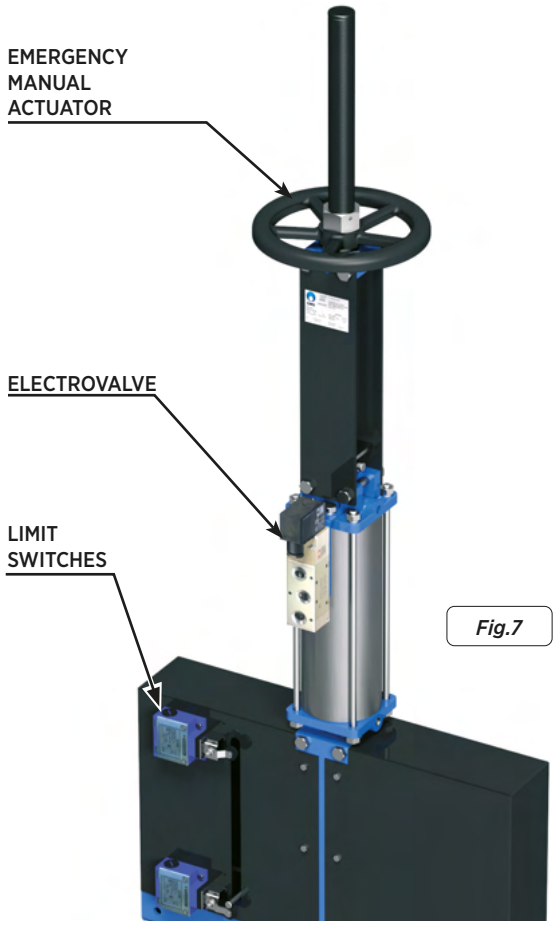

Fig.7

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TYPES OF EXTENSIONS

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

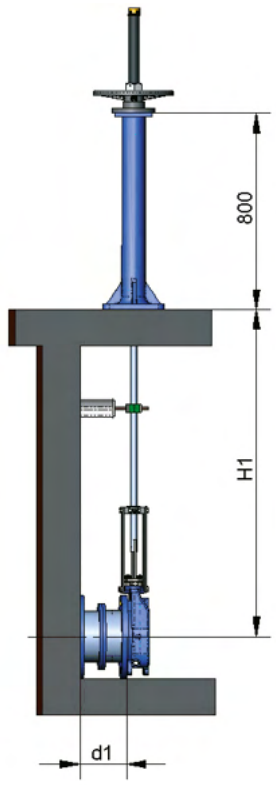

Fig.8

STANDARD OPERATION STAND.

1- FLOOR STAND

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

The definition variables are as follows:

H1 = Distance from valve centre to 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 drive.
- We recommend a stem guide bracket every 1.5 m
- The standard floor stand is 800 mm high.
- Option to use a position indicator to determine the valve's percentage of opening.
- Leaning stand available to order
- Other floor stand measurements available on request.

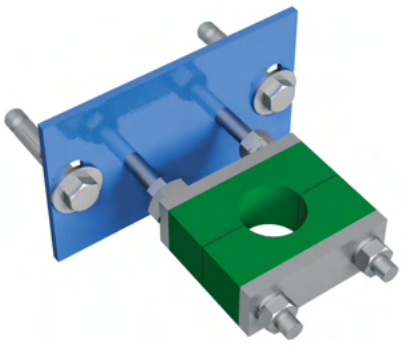

Fig.9

STEM GUIDE BRACKET

COMPONENT LIST

COMPONENT	STANDARD VERSION
Stem	AISI 304
Rod	AISI 304
Support-Guide	Carbon steel with EPOXY coating
Guide	PA6
Stand	GJS500-7 with EPOXY coating

Table. 3

LEANING STAND.

Fig.10

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2.- PIPE

This consists of raising the drive. 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 valve centre to base of the stand

d1 = Separation from the wall to the end of the connecting flange

CHARACTERISTICS:

- Standard drives: handwheel and top square.
- A pipe guide bracket is recommended every 1.5 m.
- The standard materials are: EPOXY-coated carbon steel and stainless steel.

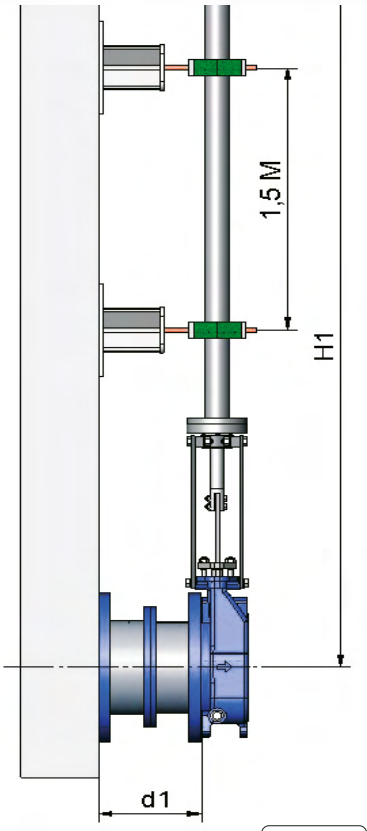
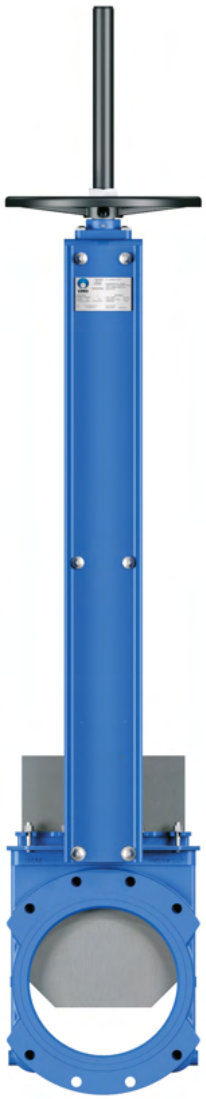


Fig.11

3.- ELONGATED SUPPORT PLATES

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



4.- CARDAN JOINT

If the valve and the drive are not in correct alignment, the problem can be resolved by fitting a universal cardan joint. This option is only valid for non-rising stem drives.

Fig.13

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HANDWHEEL WITH RISING STEM

The definition variables are as follows:

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

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

OPTIONS:

- Locking devices.
- Extensions: stand, pipe, plates.
- DN above those given in the table

ACTUATOR:

- Handwheel
- Stem
- Nut
- Stem protection hood.

AVALAIBLE:

- NDN50 to DN1200
- From ND600 the actuator is with geared motor.

** Other ND on request.*

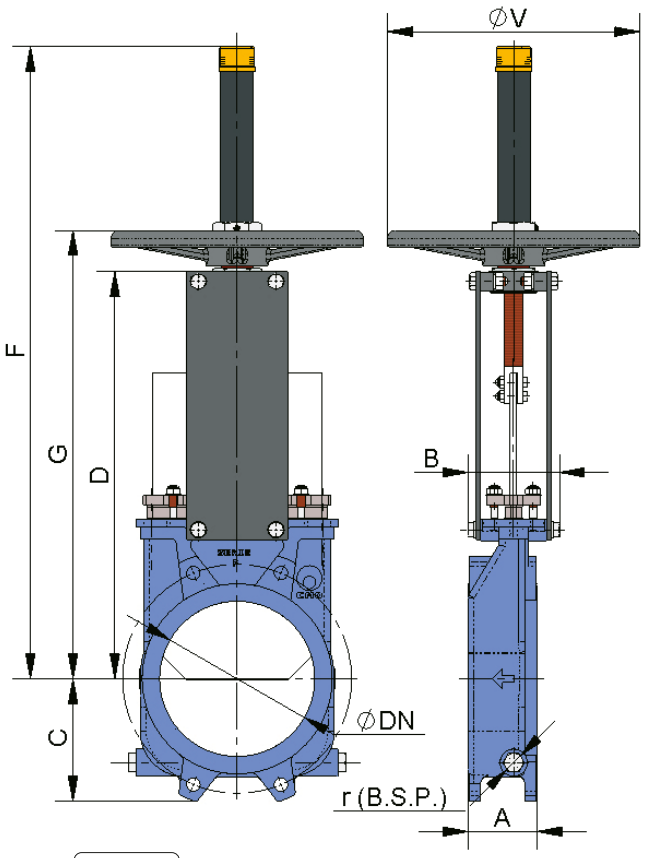

Fig.14

DN	ΔP(bar)	A	B	C	D	F	G	øV	r (B.S.P.)
50	10	60	91	61	241	410	280	225	1/4"
65	10	60	91	68	268	437	308	225	1/4"
80	10	64	91	91	294	463	333	225	1/4"
100	10	64	91	104	334	503	373	225	1/4"
125	10	70	101	118	367	586	407	225	3/8"
150	10	76	101	130	419	638	458	225	3/8"
200	10	89	118	158	525	816	578	325	3/8"
250	10	114	118	196	616	1007	669	325	1/2"
300	6	114	118	230	704	1095	757	380	1/2"
350	6	127	290	247	767	1307	876	450	1/2"
400	6	140	290	290	865	1405	974	450	1/2"
450	5	152	290	304	989	1629	1098	450	1/2"
500	4	152	290	340	1101	1741	1210	450	1/2"
600	4	178	290	398	1307	2047	1416	450	1/2"
700	3	178	320	453	1506	2401	1656	--	1/2"
800	3	178	320	503	1720	2715	1870	--	1/2"
900	3	178	320	583	1953	3043	2103	--	1/2"
1000	3	178	320	613	2137	3351	2287	--	1/2"
1200	3	203	340	728	2616	4042	2766	--	1/2"

Table. 4

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HANDWHEEL WITH NON-RISING STEM

Appropriate when the valve is installed at height.

The definition variables are as follows:

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

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

OPTIONS:

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

ACTUATOR:

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

AVALAIBLE:

- ND50 to ND1200.
- From ND600 the actuator is with gears

** Other ND on request.*

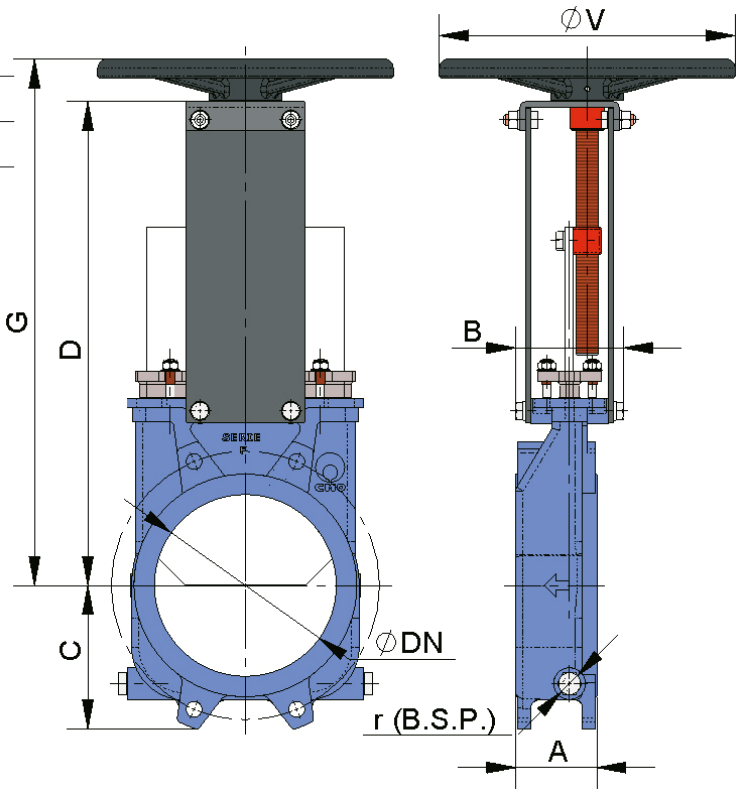

Fig.15

DN	ΔP bar	A	B	C	D	G	øV	r (B.S.P.)
50	10	60	91	61	241	280	225	1/4"
65	10	60	91	68	268	308	225	1/4"
80	10	64	91	91	294	333	225	1/4"
100	10	64	91	104	334	373	225	1/4"
125	10	70	101	118	367	407	225	3/8"
150	10	76	101	130	419	458	225	3/8"
200	10	89	118	158	525	578	325	3/8"
250	10	114	118	196	616	669	325	1/2"
300	6	114	118	230	704	757	380	1/2"
350	6	127	290	247	767	876	450	1/2"
400	6	140	290	290	865	974	450	1/2"
450	5	152	290	304	989	1098	450	1/2"
500	4	152	290	340	1101	1210	450	1/2"
600	4	178	290	398	1307	1416	450	1/2"
700	3	178	320	453	1506	1656	--	1/2"
800	3	178	320	503	1720	1870	--	1/2"
900	3	178	320	583	1953	2103	--	1/2"
1000	3	178	320	613	2137	2287	--	1/2"
1200	3	203	340	728	2616	2766	--	1/2"

Table. 5

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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 drive).

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

OPTIONS:

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

ACTUATOR:

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

AVALAIBLE:

- ND50 to ND1200.
- From ND600 the actuator is with gears

** Other ND on request.*

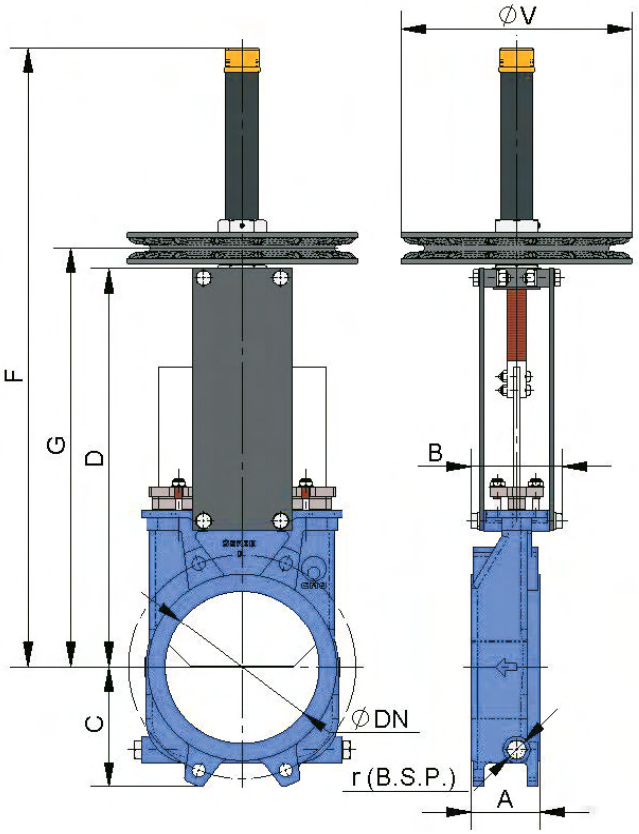

Fig.16

DN	ΔP bar	A	B	C	D	G	F	ØV	r (B.S.P.)
50	10	60	91	61	241	280	410	225	1/4"
65	10	60	91	68	268	308	437	225	1/4"
80	10	64	91	91	294	333	463	225	1/4"
100	10	64	91	104	334	373	503	225	1/4"
125	10	70	101	118	367	407	586	225	3/8"
150	10	76	101	130	419	458	638	225	3/8"
200	10	89	118	158	525	578	816	300	3/8"
250	10	114	118	196	616	669	1007	300	1/2"
300	6	114	118	230	704	757	1095	300	1/2"
350	6	127	290	247	767	876	1307	402	1/2"
400	6	140	290	290	865	974	1405	402	1/2"
450	5	152	290	304	989	1098	1629	402	1/2"
500	4	152	290	340	1101	1210	1741	402	1/2"
600	4	178	290	398	1307	1416	2047	402	1/2"
700	3	178	320	453	1506	1656	2401	402*	1/2"
800	3	178	320	503	1720	1870	2715	402*	1/2"
900	3	178	320	583	1953	2103	3043	402*	1/2"
1000	3	178	320	613	2137	2287	3351	402*	1/2"
1200	3	203	340	728	2616	2766	4042	402*	1/2"

Table. 6

Rev.02 / 11-07-2024

LEVER

It is a fast maneuvering drive.

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

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

ACTUATOR:

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

AVALAIBLE:

- ND50 to DN300

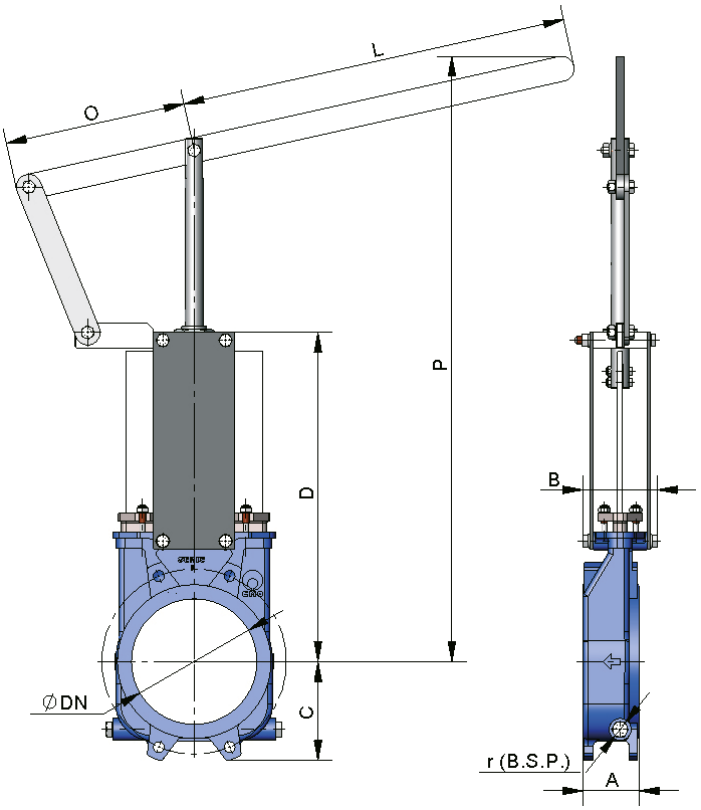

Fig.17

DN	ΔP bar	A	B	C	D	L	O	P	r (B.S.P.)
50	10	60	91	61	241	325	155	509	1/4"
65	10	60	91	68	268	325	155	536	1/4"
80	10	64	91	91	294	325	155	562	1/4"
100	10	64	91	104	334	325	155	602	1/4"
125	10	70	101	118	367	425	155	896	3/8"
150	10	76	101	130	419	425	155	948	3/8"
200	10	89	118	158	525	620	290	1040	3/8"
250	10	114	118	196	616	620	290	1426	1/2"
300	6	114	118	230	704	620	290	1514	1/2"

Table. 7

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GEAR BOX

This is recommendable for DNs greater than 600.

The definition variables are as follows:

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

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

OPTIONS:

- Chain handwheel.
- Locking devices.
- Extensions: stand, pipe, plates, etc.
- Non-rising stem.

ACTUATOR:

- Stem
- Yoke
- Cone-shaped gear box
- Handwheel
- Standard ratio = 4 to 1.

AVALAIBLE:

- ND50 to DN1200.

** Other ND on request.*

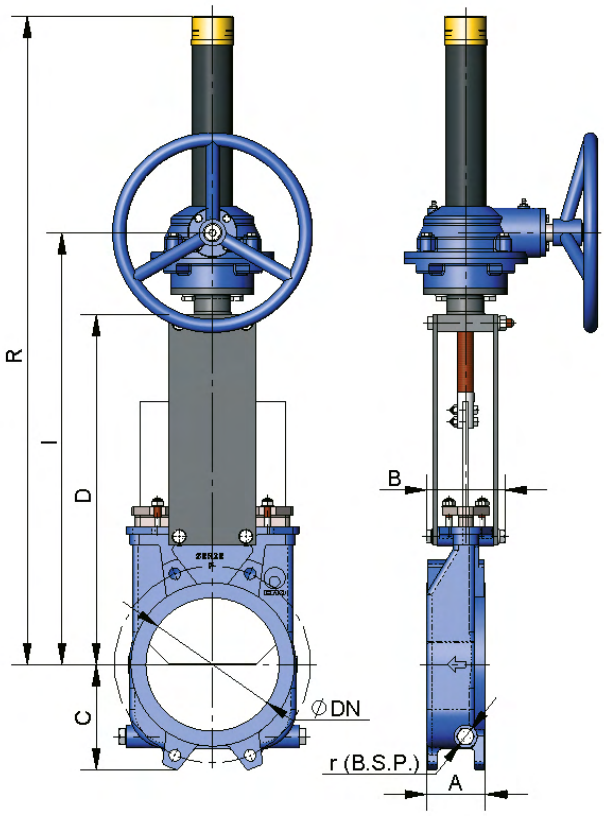

Fig.18

DN	ΔP bar	A	B	C	D	I	R	r (B.S.P.)
50	10	60	91	61	241	365	537	1/4"
65	10	60	91	68	268	392	564	1/4"
80	10	64	91	91	294	418	590	1/4"
100	10	64	91	104	334	458	630	1/4"
125	10	70	101	118	367	491	663	3/8"
150	10	76	101	130	419	543	715	3/8"
200	10	89	118	158	525	649	943	3/8"
250	10	114	118	196	616	740	1033	1/2"
300	6	114	118	230	704	828	1121	1/2"
350	6	127	290	247	767	891	1305	1/2"
400	6	140	290	290	865	989	1403	1/2"
450	5	152	290	304	989	1113	1677	1/2"
500	4	152	290	340	1101	1225	1788	1/2"
600	4	178	290	398	1307	1428	1995	1/2"
700	3	178	320	453	1506	1658	2401	1/2"
800	3	178	320	503	1720	1872	2715	1/2"
900	3	178	320	583	1953	2105	3043	1/2"
1000	3	178	320	613	2137	2290	3351	1/2"
1200	3	203	340	728	2616	2802	4042	1/2"

Table. 8

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DOUBLE-ACTING PNEUMATIC CYLINDER

The definition variables are as follows:

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

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

- 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 DN50 to DN300 valves, the cylinder's jacket and covers are made of aluminium, the spindle of AISI304, the piston of rubber-coated steel and the O-ring seals are made of nitrile.
- For valves larger than DN300 the covers are made of nodular cast iron or carbon steel.
- To order, we can also supply the actuator made entirely of stainless steel, especially for installation in corrosive atmospheres.

AVALAIBLE:

- ND50 to DN1200.

** Other ND on request*

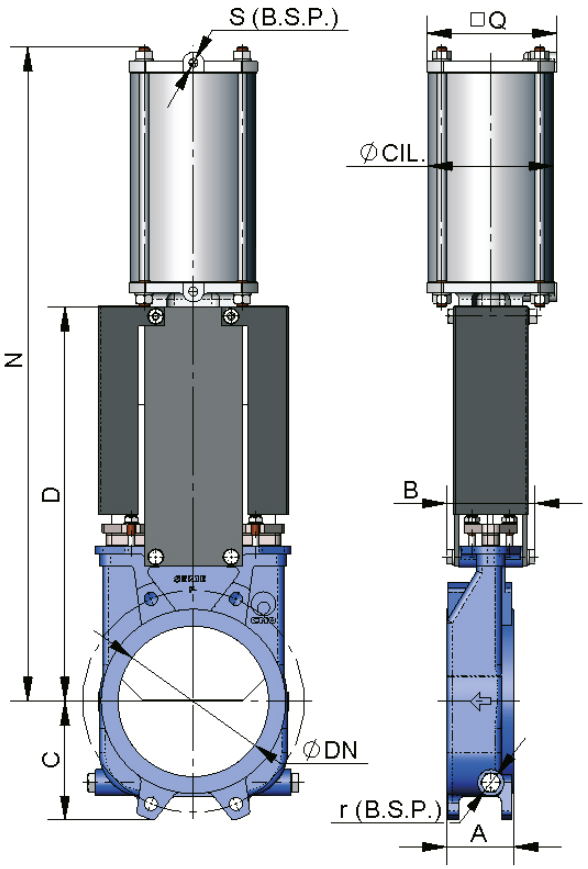

Fig. 19

DN	ΔP bar	A	B	C	D	N	Q	ø CIL	Ø VAST.	S (B.S.P.)	r (B.S.P.)
50	10	60	91	61	241	416	90	80	20	1/4"	1/4"
65	10	60	91	68	268	456	90	80	20	1/4"	1/4"
80	10	64	91	91	294	498	90	80	20	1/4"	1/4"
100	10	64	91	104	334	562	110	100	20	1/4"	1/4"
125	10	70	101	118	367	636	135	125	25	1/4"	3/8"
150	10	76	101	130	419	717	135	125	25	1/4"	3/8"
200	10	89	118	158	525	874	170	160	30	1/4"	3/8"
250	10	114	118	196	616	1036	215	200	30	3/8"	1/2"
300	6	114	118	230	704	1182	215	200	30	3/8"	1/2"
350	6	127	290	247	767	1381	270	250	40	3/8"	1/2"
400	6	140	290	290	865	1530	270	250	40	3/8"	1/2"
450	5	152	290	304	989	1676	382	300	45	1/2"	1/2"
500	4	152	290	340	1101	1839	382	300	45	1/2"	1/2"
600	4	178	290	398	1307	2145	382	300	45	1/2"	1/2"
700	3	178	320	453	1506	2481	444	350	45	1/2"	1/2"
800	3	178	320	503	1720	2798	444	350	45	1/2"	1/2"
900	3	178	320	583	1953	3167	508	400	50	1/2"	1/2"
1000	3	178	320	613	2137	3451	508	400	50	1/2"	1/2"
1200	3	203	340	728	2616	4133	508	400	50	1/2"	1/2"

Table. 9

Rev.02 / 11-07-2024

SINGLE-ACTING PNEUMATIC CYLINDER

The definition variables are as follows:

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

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

- The air supply pressure to the pneumatic cylinder is a minimum of 6 bar and a maximum of 10 bar, the air must be dry and lubricated.
- 10 bar is the maximum admissible air pressure. For air pressures below 6 bar please consult manufacturer.
- 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 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 air supply failure.

AVALAIBLE:

- Standard fron ND50 to DN300.

** Other ND on request*

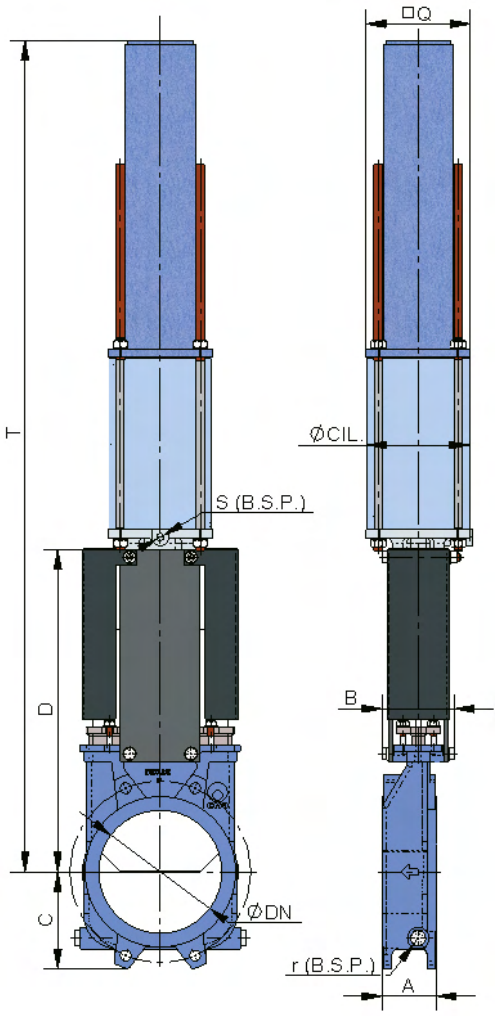

Fig.20

DN	ΔP bar	A	B	C	D	Q	T	ø CIL	Ø VAST.	S (B.S.P.)	r (B.S.P.)
50	10	60	91	61	241	135	781	125	25	1/4"	1/4"
65	10	60	91	68	268	135	806	125	25	1/4"	1/4"
80	10	64	91	91	294	135	833	125	25	1/4"	1/4"
100	10	64	91	104	334	135	873	125	25	1/4"	1/4"
125	10	70	101	118	367	170	909	160	30	1/4"	3/8"
150	10	76	101	130	419	170	961	160	30	1/4"	3/8"
200	10	89	118	158	525	215	1357	200	30	3/8"	3/8"
250	10	114	290	196	616	270	1844	250	40	3/8"	1/2"
300	6	114	290	230	704	270	2005	250	40	3/8"	1/2"

Table. 10

Rev.02 / 11-07-2024

ELECTRIC ACTUATOR

The definition variables are as follows:

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

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

This actuator is automatic and includes the following parts:

- Electric motor.
- Stem.
- Yoke.

THE ELECTRIC MOTOR INCLUDE:

- Emergency manual handwheel
- Limit switches
- Torque switches

OPTIONS:

- Different types and brands
- Non-rising stem
- ISO 5210 / DIN 3338 flanges

AVALAIBLE:

- Standard fron DN50 to DN1200
- From DN450 the motor is assisted with a gear box.

** Other ND on request*

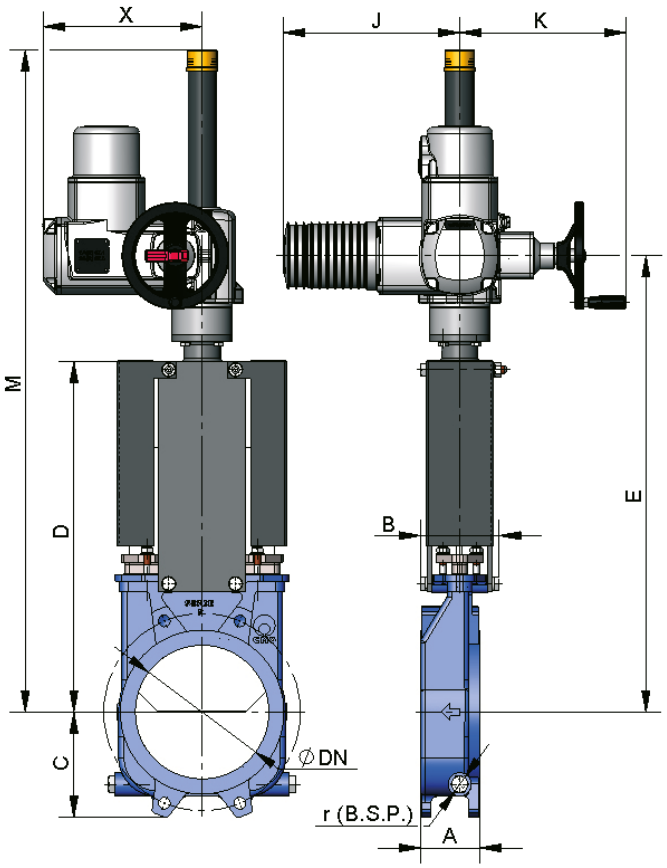

Fig.21

DN	ΔP bar	A	B	C	D	E	J	K	M	X	r (B.S.P.)
50	10	60	91	61	241	400	265	250	581	237	1/4”
65	10	60	91	68	268	426	265	250	607	237	1/4”
80	10	64	91	91	294	452	265	250	632	237	1/4”
100	10	64	91	104	334	492	265	250	672	237	1/4”
125	10	70	101	118	367	525	265	250	705	237	3/8”
150	10	76	101	130	419	577	265	250	757	237	3/8”
200	10	89	118	158	525	683	265	250	988	237	3/8”
250	10	114	118	196	616	774	265	250	1089	237	1/2”
300	6	114	118	230	704	862	265	250	1190	237	1/2”
350	6	127	290	247	767	937	282	250	1302	247	1/2”
400	6	140	290	290	865	1035	282	250	1458	247	1/2”
450	5	152	290	304	989	1153	265	250	1754	382	1/2”
500	4	152	290	340	1101	1265	265	250	1866	382	1/2”
600	4	178	290	398	1307	1471	265	250	2073	382	1/2”
700	3	178	320	453	1506	1698	282	256	2391	413	1/2”
800	3	178	320	503	1720	1912	282	256	2705	413	1/2”
900	3	178	320	583	1953	2145	282	256	3033	413	1/2”
1000	3	178	320	613	2137	2329	282	256	3328	413	1/2”
1100	3	203	340	728	2616	2852	282	256	3797	413	1/2”
1200	4	150	400	870	2351	4220	508	400	4047	462	1/2”

Table. 11

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HYDRAULIC ACTUATOR

The definition variables are as follows:

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

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

THE HYDRAULIC ACTUATOR INCLUDES:

- Hydraulic cylinder
- Yoke

SUPPLY PRESSURE STANDARD:

- 150 bar.

OPTIONS:

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

AVALAIBLE:

- ND50 to DN1200.

** Other ND on request.*

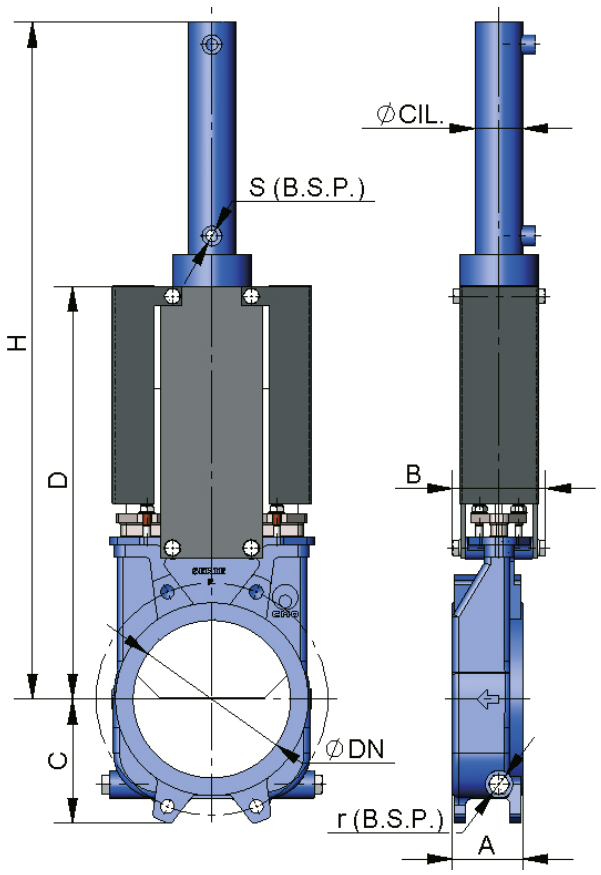

Fig.22

DN	ΔP bar	A	B	C	D	H	Ø CIL	Ø VAST	S (B.S.P.)	OIL CAP. (dm³)	r (B.S.P.)
50	10	60	91	61	241	457	25	18	3/8"	0.03	1/4"
65	10	60	91	68	268	500	25	18	3/8"	0.03	1/4"
80	10	64	91	91	294	560	25	18	3/8"	0.04	1/4"
100	10	64	91	104	334	620	32	22	3/8"	0.09	1/4"
125	10	70	101	118	367	683	32	22	3/8"	0.11	3/8"
150	10	76	101	130	419	755	40	28	3/8"	0.20	3/8"
200	10	89	118	158	525	926	50	28	3/8"	0.42	3/8"
250	10	114	118	196	616	1077	50	28	3/8"	0.52	1/2"
300	6	114	118	230	704	1246	50	28	3/8"	0.62	1/2"
350	6	127	290	247	767	1376	50	28	3/8"	0.73	1/2"
400	6	140	290	290	865	1532	63	36	3/8"	1.31	1/2"
450	5	152	290	304	989	1707	63	36	3/8"	1.47	1/2"
500	4	152	290	340	1101	1869	63	36	3/8"	1.62	1/2"
600	4	178	290	398	1307	2176	80	45	3/8"	3.12	1/2"
700	3	178	320	453	1506	2525	80	45	3/8"	3.62	1/2"
800	3	178	320	503	1720	2839	100	56	1/2"	6.44	1/2"
900	3	178	320	583	1953	3172	100	56	1/2"	7.25	1/2"
1000	3	178	320	613	2137	3496	125	70	1/2"	10.25	1/2"
1100	3	203	340	728	2616	4175	125	70	1/2"	12.5	1/2"
1200	4	150	400	870	2351	4220	508	400	1/2"	15.1	1/2"

Table. 12

Rev.02 / 11-07-2024

FLANGE DIMENSIONS

EN 1092-2 PN10

DN	●	o	M (Metric)	P	ØK
50	4	-	M 16	8	125
65	4	-	M 16	8	145
80	4	4	M 16	9	160
100	4	4	M 16	9	180
125	4	4	M 16	9	210
150	4	4	M 20	10	240
200	4	4	M 20	10	295
250	8	4	M 20	12	350
300	8	4	M 20	12	400
350	12	4	M 20	21	460
400	12	4	M 24	21	515
450	16	4	M 24	22	565
500	16	4	M 24	22	620
600	16	4	M 27	22	725
700	20	4	M 27	22	840
800	20	4	M 30	22	950
900	24	4	M 30	20	1050
1000	24	4	M 33	20	1160
1200	28	4	M 36	22	1380

Table. 13

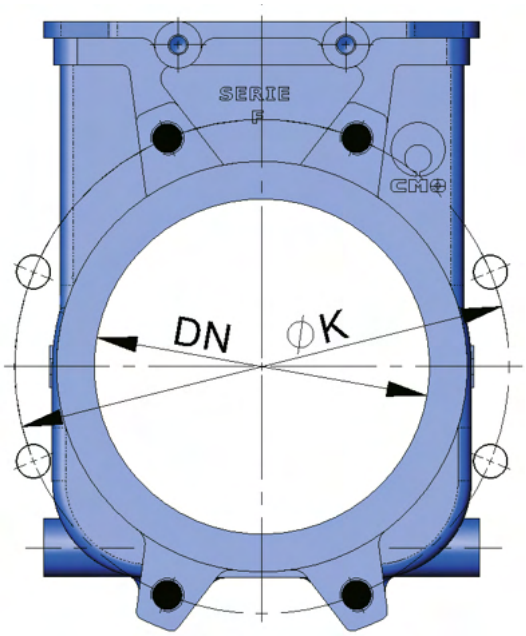

Fig.23

● TAPPED HOLES
o THROUGH HOLE

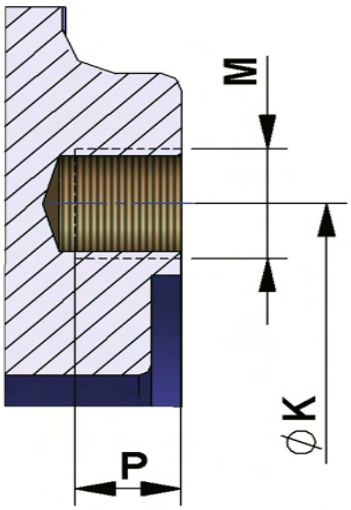

Fig.24

ANSI B16, Class 150

DN	●	o	M (UNC)	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"	4	4	5/8"	9	190,5
5"	4	4	3/4"	9	215,9
6"	4	4	3/4"	10	241,3
8"	4	4	3/4"	10	298,4
10"	8	4	7/8"	12	361,9
12"	8	4	7/8"	12	431,8
14"	8	4	1"	21	476,2
16"	12	4	1"	21	539,7
18"	12	4	1 1/8"	22	577,8
20"	16	4	1 1/8"	22	635
24"	16	4	1 1/4"	22	749,3
28"	24	4	1 1/4"	22	863,6
32"	24	4	1 1/2"	22	977,9
36"	28	4	1 1/2"	20	1085,9
40"	32	4	1 1/2"	20	1200,2

Table. 14

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