

# bidirectional knife gate valve series AB

- Bidirectional wafer-design knife gate valve.
- One-piece cast body.
- Provides high flow rates with low pressure drop.
- Various seat and packing materials available.
- Face-to-face dimension in accordance with CMO standard.

## General Applications:

- This knife gate valve is suitable for liquids that contain a maximum of 4% suspended solids. Designed for applications such as:
  - Chemical plants
  - Pumping
  - Food Industry
- Sewage treatment
- In all these applications, the valve should be installed once the fluid has been filtered, to eliminate solids or large particles it contains.

**Sizes:** ND50 to ND600.

**Working Pressure:**

- ND50 to ND150: 10kg/cm<sup>2</sup>
- ND200: 8kg/cm<sup>2</sup>
- ND250 to ND300: 6kg/cm<sup>2</sup>
- ND350 to ND400: 5kg/cm<sup>2</sup>
- ND450 to ND600: 3kg/cm<sup>2</sup>

**Standard Flanges:** DIN PN10 and ANSI B16.5 (class 150)

**Other Common Flanges:**

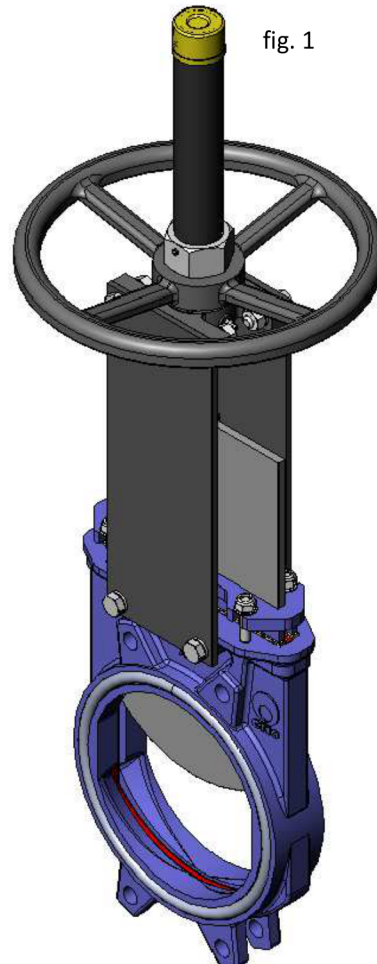
|                |           |                    |
|----------------|-----------|--------------------|
| DIN PN 6       | DIN PN 16 | DIN PN25           |
| BS "D" and "E" | ANSI 150  | Others on request: |

## Directives:

- Machinery Directive: **DIR 2006/42/EC (MACHINERY)**
- Pressure Equipment Directive: **DIR 97/23/EC (PED) ART.3, P.3**
- Potential Explosive Atmospheres Directive: **DIR 94/9/EC (ATEX) CAT.3 ZONE 2 and 22 GD**

## Quality Dossier:

- All valves are tested hydrostatically and material and test certificates can be provided.
- Body test = working pressure x 1.5.
- Seat test = working pressure x 1.1.



## Advantages of "Model AB" compared to similar products

This valve's main characteristic is the body design. It is a one-piece machined cast body with wedges on both sides that offers the ability to work with fluids in both directions with the same pressure.

The sealing joint has a stainless steel ring that ensures that the inside of the body is kept clean and prevents the joint from coming loose. This design provides a completely flat seat with no internal cavities and avoids any build up of solids in the seat area.

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 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.

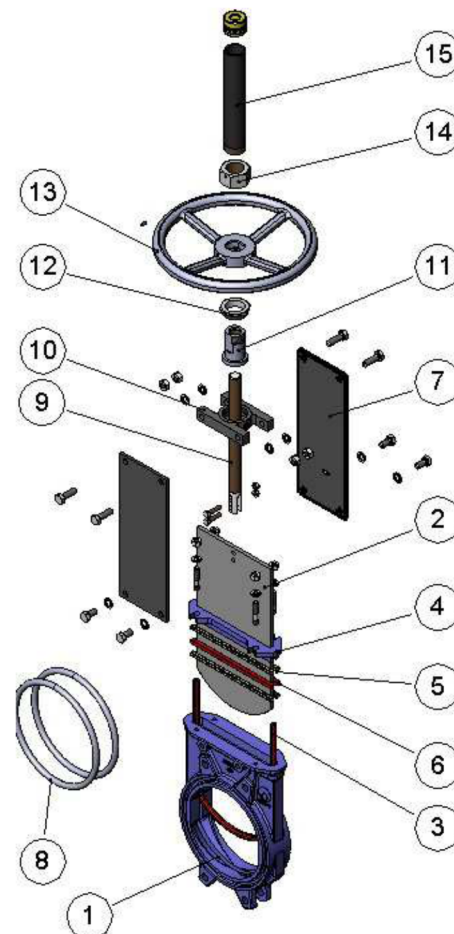


fig. 2

### STANDARD COMPONENTS LIST

| COMPONENT         | CAST IRON VERSION | STAINLESS STEEL VERSION |
|-------------------|-------------------|-------------------------|
| 1- Body           | GJL-250           | CF8M                    |
| 2- Gate           | AISI304           | AISI316                 |
| 3- Seat           | EPDM              | EPDM                    |
| 4- Packing gland  | GJS-500           | CF8M                    |
| 5- Packing        | SYNT + PTFE       | SYNT + PTFE             |
| 6- O-ring seal    | EPDM              | EPDM                    |
| 7- Support plates | S275JR            | S275JR                  |
| 8- O-ring         | NITRILE           | NITRILE                 |
| 9- Stem           | AISI303           | AISI303                 |
| 10- Yoke          | STEEL             | STEEL                   |
| 11- Stem nut      | BRONZE            | BRONZE                  |
| 12- Check nut     | ST44.2 + ZINC     | ST44.2 + ZINC           |
| 13- Handwheel     | NODULAR CAST IRON | NODULAR CAST IRON       |
| 14- Nut           | STEEL             | STEEL                   |
| 15- Hood          | STEEL             | STEEL                   |

table 1

## DESIGN CHARACTERISTICS

### 1- BODY

Bidirectional wafer-design knife gate valve. One-piece cast iron body.

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 GJL-250 cast iron and CF8M stainless steel. Other materials, such as GJS-500 nodular cast iron, A216WCB carbon steel and stainless steel alloys (AISI316Ti, Duplex, 254SMO, Uranus B6...) are available on request. 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.

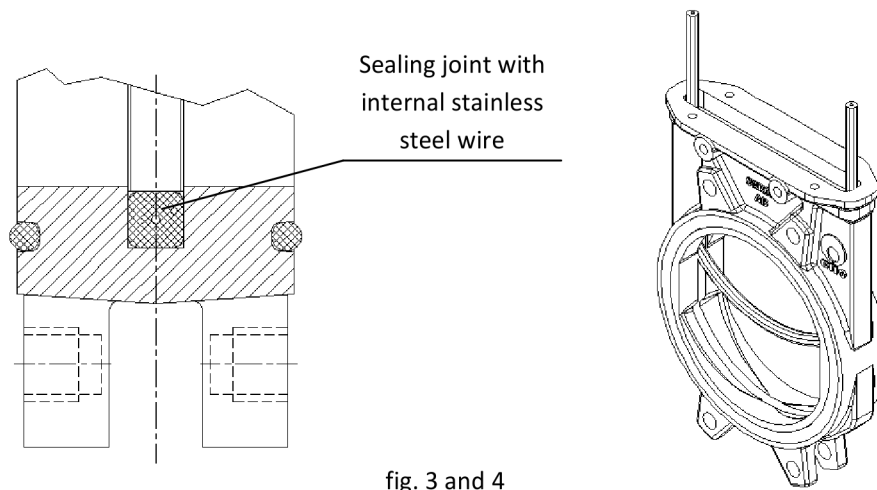
The gate is polished on both sides to provide a smooth contact surface with the resilient seat. At the same time, the gate is rounded to prevent the seat from being cut. Different degrees of polishing, anti-abrasion treatments and modifications are available to adapt the valves to the customer's requirements.

### 3- SEAT: (watertight)

There is only one seat design available on the AB valve and it must always be soft seated. It can never have a metal or PTFE sealing joint.

Below we show the detail of the seat:

The AB valve seat is a square rubber joint with an internal stainless steel wire.



This rubber joint is inserted inside the body in such a way that it starts on one side, level with the packing, and continues around the body to reach the other end of the packing area.

This means that the sealing joint is not installed around the whole perimeter of the valve's flow passing hole, but rather, it is installed in a U shape, to cover the gate's perimeter.

The internal stainless steel wire helps to keep the U shape and ensures that the joint does not come out of the body because of the flow as it passes through the valve.

This design provides a completely flat seal with no cavities and avoids any solids being stored in the seal area.

## Resilient seat materials

### **EPDM**

This is the standard resilient seat fitted on CMO valves. It can be used in many applications, however, it is generally used for water and products diluted in water at temperatures no higher than 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.

### **VITON**

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.

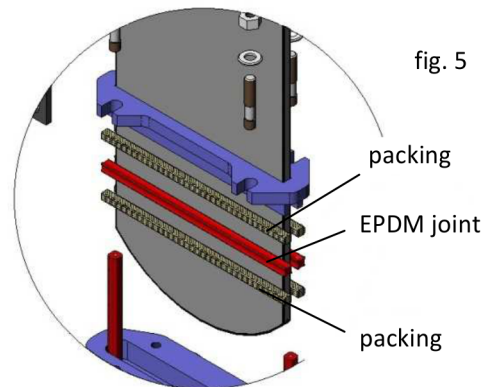
### **SILICONE**

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.

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

## **4- PACKING**

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:



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

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

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

**SYNTHETIC + PTFE:** This packing is composed of braided synthetic fibres soaked in PTFE both inside and out. It is for general use in hydraulic applications in both pumps and valves and in all types of fluids,



especially corrosive ones, including concentrated and oxidising oils. It is also used in liquids with solid particles in suspension.

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

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

Table 2

| SEAT/SEALS                                                   |              |                                | PACKING          |         |              |      |
|--------------------------------------------------------------|--------------|--------------------------------|------------------|---------|--------------|------|
| Material                                                     | Max. T. (°C) | Applications                   | Material         | P (bar) | Max. T. (°C) | pH   |
| EPDM (E)                                                     | 90 *         | Mineral acids and oils         | Greased cotton   | 10      | 100          | 6-8  |
| Nitrile (N)                                                  | 90 *         | Hydrocarbons, oils and greases | Dry cotton (AS)  | 0.5     | 100          | 6-8  |
| Viton (V)                                                    | 200          | Hydrocarbons and solvents      | Synthetic + PTFE | 100     | -200+270     | 0-14 |
| Silicone (S)                                                 | 200          | Food Products                  | Graphite         | 40      | 650          | 0-14 |
| NOTE: More details and other materials available on request. |              |                                | Ceramic Fibre    | 0.3     | 1400         | 0-14 |

\* → EPDM and nitrile: is possible until serving temperature Max.: 120°C under request.

## 5- STEM

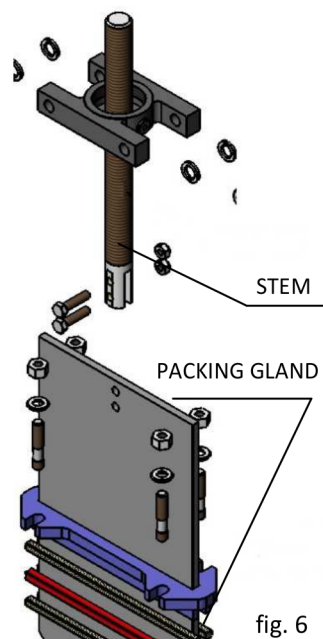
The stem on the valve is made of 18/8 stainless steel. This characteristic provides high resistance and excellent corrosion-resistant properties.

The valve design can be rising stem or non-rising stem. When rising stem is required a stem hood is supplied to protect the stem from contact with dust and dirt, as well as keeping it lubricated.

## 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 GJS-500 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 the design is fully interchangeable. It is not possible to change the levers action.

This design allows the customer to change the actuators themselves and normally no extra assembly accessories are required.

### Manual:

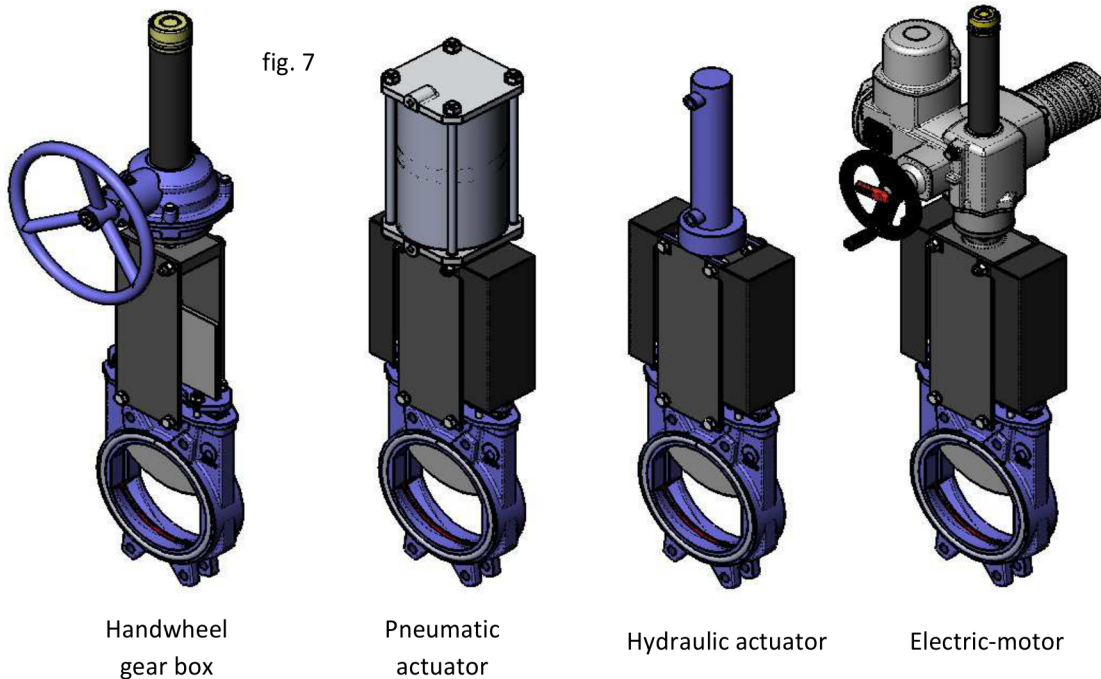
- Handwheel with rising stem
- Handwheel with non-rising stem
- Chainwheel
- Lever
- Gear Box
- Others (square nut...)

### Automatic:

- Electric actuator
- Pneumatic cylinder
- Hydraulic cylinder

The chainwheel and gear box actuators are also available with non-rising stem.

Graphical representation of some actuators on the next page (Fig. 7).



## ACCESSORIES AND OPTIONS

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

### **Mirror Polished Gate**

Recommended for the food industry, its function is to prevent solids from sticking to the gate. They slide off the gate and do not stick to it.

### **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**

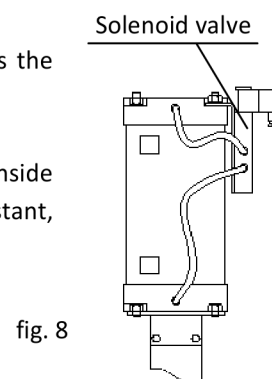
Recommended in applications in which the fluid can harden and solidify inside the valve's body. An external jacket keeps the body temperature constant, preventing the fluid from solidifying.

### **Mechanical Limit Switches, Inductive Switches and Positioners**

Indicates the valve's specific or continuous position.

### **Solenoid valves (Fig. 8)**

For air distribution to pneumatic actuators.



## Connection Boxes, Wiring and Pneumatic Piping

Fully assembled units can be supplied with all the necessary accessories.

## Stroke Limiting Mechanical Stops

### Mechanical Locking Device

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

### Emergency Manual Actuator (Hand Wheel /Gear Box)

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

### Triangular (V-Notch) and Pentagonal Diaphragm with Indication Rule (fig. 9)

Recommended for applications in which flow regulation is required.

Allows flow control according to the valve's opening percentage.

### Interchangeable Actuators

All actuators are easily interchangeable, except the lever.

### 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.

### Epoxy Coating

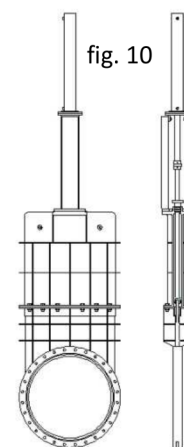
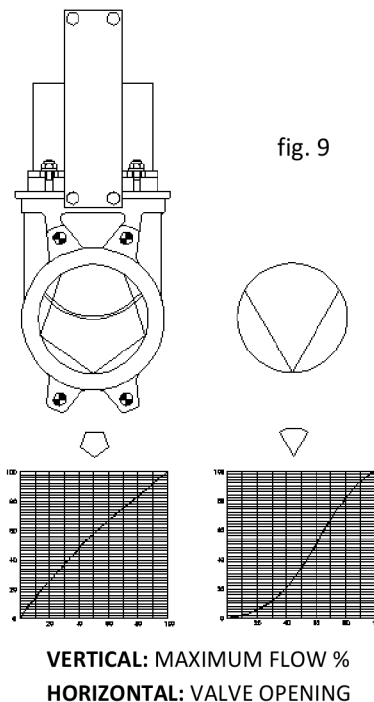
All cast iron and carbon steel bodies and components on valves are EPOXY coated, giving the valves great resistance to corrosion and an excellent finish. standard colour is blue, RAL-5015.

### 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.

### Bonnet (fig. 10)

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



## TYPES OF SEAL

**Watertight seal:** The joint is fitted into the body, inserted in the seat and in contact with the whole perimeter of the gate which is in contact with the body, this ensures perfect watertight integrity and circulation in both directions, it also prevents build up of solids on the seat making it difficult to seal. The joint contains an internal wire, as can be seen in Figure 11.

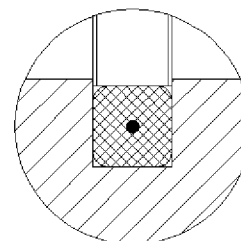
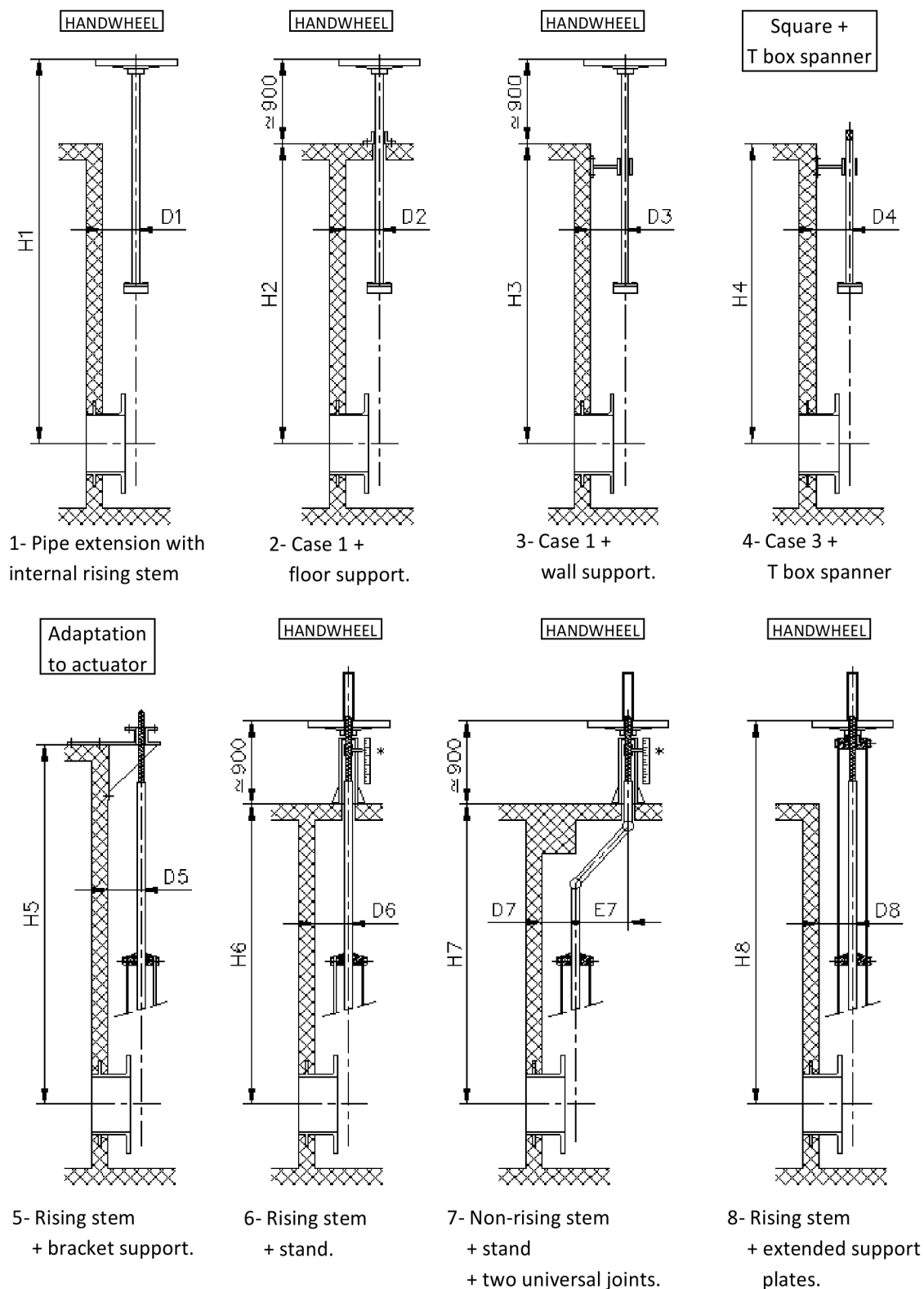


fig. 11

## TYPES OF EXTENSION



\*OPTIONAL: position indicator on the floor stand.

fig. 12

## HANDWHEEL with Rising Stem

- **B = Max. width** of the valve (without actuator)
- **D = Max. height** of the valve (without actuator)

- Options:

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

- Actuator including:

- Handwheel
- Stem
- Nut
- Stem protection hood

- Available: ND 50 to ND 600.

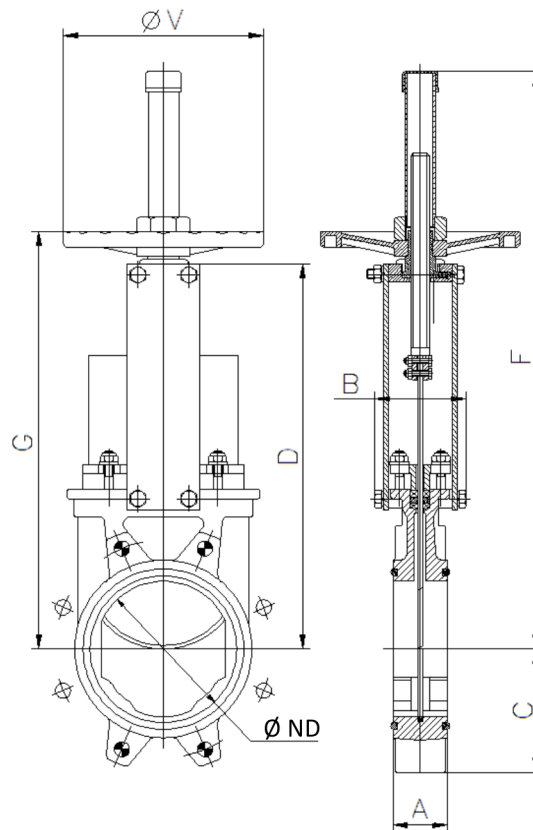


fig. 13

| ND  | $\Delta P$<br>(Kg/cm <sup>2</sup> ) | DRAW<br>(Nw) | TORQ.<br>(Nm) | A   | B   | C   | D    | F    | G    | ØV  | Weight<br>(kg.) |
|-----|-------------------------------------|--------------|---------------|-----|-----|-----|------|------|------|-----|-----------------|
| 50  | 10                                  | 1143         | 2.64          | 40  | 91  | 61  | 241  | 410  | 280  | 225 | 7               |
| 65  | 10                                  | 1952         | 4.45          | 40  | 91  | 68  | 268  | 437  | 308  | 225 | 8               |
| 80  | 10                                  | 2957         | 6.76          | 50  | 91  | 91  | 294  | 463  | 333  | 225 | 9               |
| 100 | 10                                  | 4617         | 10.5          | 50  | 91  | 104 | 334  | 503  | 373  | 225 | 11              |
| 125 | 10                                  | 7213         | 16.5          | 50  | 101 | 118 | 367  | 586  | 407  | 225 | 13              |
| 150 | 10                                  | 7290         | 16.6          | 60  | 101 | 130 | 419  | 638  | 458  | 225 | 17              |
| 200 | 8                                   | 12975        | 37.1          | 60  | 118 | 159 | 525  | 816  | 578  | 325 | 28              |
| 250 | 6                                   | 14522        | 41.4          | 70  | 118 | 196 | 626  | 1017 | 679  | 325 | 40              |
| 300 | 6                                   | 20942        | 59.8          | 70  | 118 | 230 | 726  | 1117 | 779  | 380 | 56              |
| 350 | 5                                   | 22810        | 88.5          | 96  | 290 | 254 | 797  | 1337 | 906  | 450 | 94              |
| 400 | 5                                   | 29879        | 115.9         | 100 | 290 | 287 | 903  | 1443 | 1012 | 450 | 116             |
| 450 | 3                                   | 28461        | 110.3         | 106 | 290 | 304 | 989  | 1629 | 1098 | 450 | 162             |
| 500 | 3                                   | 35333        | 137.1         | 110 | 290 | 340 | 1101 | 1741 | 1210 | 450 | 187             |
| 600 | 3                                   | 51235        | 198.6         | 110 | 290 | 398 | 1307 | 2047 | 1416 | 450 | 260             |

Table 3



## HANDWHEEL with Non-Rising Stem

- Suitable when no size limitations exist.
- **J = Max. width** of the valve (without actuator)  
**D = Max. height** of the valve (without actuator)
- Options:
  - Square nut
  - Locking devices
  - Extensions: stand, pipe, plates...
  - ND higher than those give in the table
- Actuator including:
  - Handwheel
  - Stem
  - Guide bearings on the yoke.
  - Nut
- Available: ND50 to ND600.

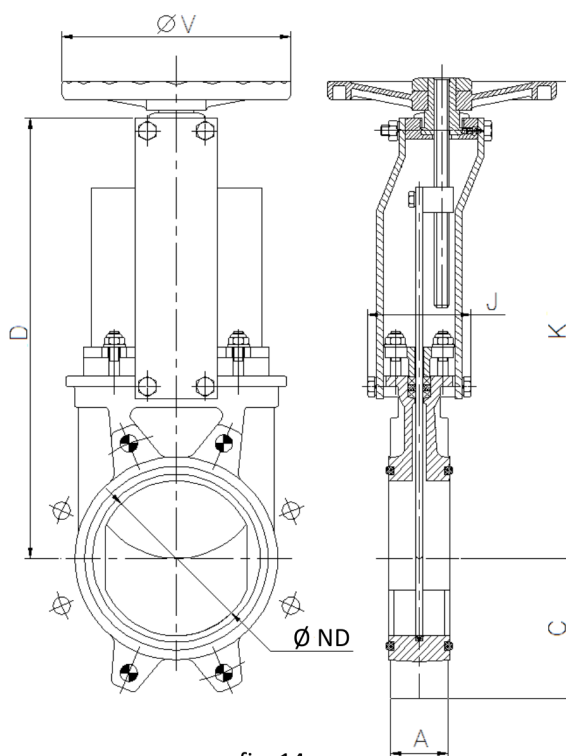


fig. 14

| ND  | $\Delta P$<br>(Kg/cm <sup>2</sup> ) | DRAW<br>(Nw) | TORQ.<br>(Nm) | A   | C   | D    | J   | K    | ØV  | Weight<br>(kg.) |
|-----|-------------------------------------|--------------|---------------|-----|-----|------|-----|------|-----|-----------------|
| 50  | 10                                  | 1143         | 2.64          | 40  | 61  | 241  | 101 | 280  | 225 | 7               |
| 65  | 10                                  | 1952         | 4.45          | 40  | 68  | 268  | 101 | 308  | 225 | 8               |
| 80  | 10                                  | 2957         | 6.76          | 50  | 91  | 294  | 101 | 333  | 225 | 9               |
| 100 | 10                                  | 4617         | 10.5          | 50  | 104 | 334  | 101 | 373  | 225 | 11              |
| 125 | 10                                  | 7213         | 16.5          | 50  | 118 | 367  | 111 | 407  | 225 | 13              |
| 150 | 10                                  | 7290         | 16.6          | 60  | 130 | 419  | 111 | 458  | 225 | 17              |
| 200 | 8                                   | 12975        | 37.1          | 60  | 159 | 525  | 128 | 578  | 325 | 28              |
| 250 | 6                                   | 14522        | 41.4          | 70  | 196 | 626  | 128 | 679  | 325 | 40              |
| 300 | 6                                   | 20942        | 59.8          | 70  | 230 | 726  | 128 | 779  | 380 | 56              |
| 350 | 5                                   | 22810        | 88.5          | 96  | 254 | 797  | 305 | 906  | 450 | 94              |
| 400 | 5                                   | 29879        | 115.9         | 100 | 287 | 903  | 305 | 1012 | 450 | 116             |
| 450 | 3                                   | 28461        | 110.3         | 106 | 304 | 989  | 305 | 1098 | 450 | 162             |
| 500 | 3                                   | 35333        | 137.1         | 110 | 340 | 1101 | 305 | 1210 | 450 | 187             |
| 600 | 3                                   | 51235        | 198.6         | 110 | 398 | 1307 | 305 | 1416 | 450 | 260             |

Table 4

## CHAINWHEEL

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

- **B = Max. width** of the valve (without actuator)
- **D = Max. height** of the valve (without actuator)

- Options:

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

- Including:

- Handwheel
- Stem
- Nut
- Hood
- Chain

- Available: ND 50 to ND 600.

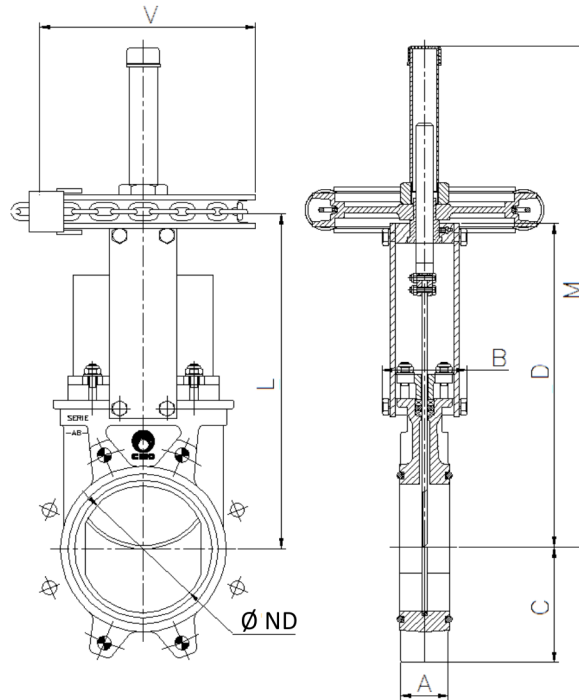


fig. 15

| ND  | $\Delta P$<br>(Kg/cm <sup>2</sup> ) | DRAW<br>(Nw) | TORQ.<br>(Nm) | A   | B   | C   | D    | L    | M    | ØV  | Weight<br>(kg.) |
|-----|-------------------------------------|--------------|---------------|-----|-----|-----|------|------|------|-----|-----------------|
| 50  | 10                                  | 1143         | 2.64          | 40  | 91  | 61  | 241  | 280  | 410  | 225 | 7               |
| 65  | 10                                  | 1952         | 4.45          | 40  | 91  | 68  | 268  | 308  | 437  | 225 | 8               |
| 80  | 10                                  | 2957         | 6.76          | 50  | 91  | 91  | 294  | 333  | 463  | 225 | 9               |
| 100 | 10                                  | 4617         | 10.5          | 50  | 91  | 104 | 334  | 373  | 503  | 225 | 11              |
| 125 | 10                                  | 7213         | 16.5          | 50  | 101 | 118 | 367  | 407  | 586  | 225 | 13              |
| 150 | 10                                  | 7290         | 16.6          | 60  | 101 | 130 | 419  | 458  | 638  | 225 | 17              |
| 200 | 8                                   | 12975        | 37.1          | 60  | 118 | 159 | 525  | 578  | 816  | 300 | 28              |
| 250 | 6                                   | 14522        | 41.4          | 70  | 118 | 196 | 626  | 679  | 1017 | 300 | 40              |
| 300 | 6                                   | 20942        | 59.8          | 70  | 118 | 230 | 726  | 779  | 1117 | 300 | 56              |
| 350 | 5                                   | 22810        | 88.5          | 96  | 290 | 254 | 797  | 906  | 1337 | 402 | 94              |
| 400 | 5                                   | 29879        | 115.9         | 100 | 290 | 287 | 903  | 1012 | 1443 | 402 | 116             |
| 450 | 3                                   | 28461        | 110.3         | 106 | 290 | 304 | 989  | 1098 | 1629 | 402 | 162             |
| 500 | 3                                   | 35333        | 137.1         | 110 | 290 | 340 | 1101 | 1210 | 1741 | 402 | 187             |
| 600 | 3                                   | 51235        | 198.6         | 110 | 290 | 398 | 1307 | 1416 | 2047 | 402 | 260             |

Table 5

## LEVER

- It is a fast actuator
- **B = Max. width** of the valve (without actuator)  
**D = Max. height** of the valve (without actuator)
- The actuator includes:
  - Lever
  - Rod
  - Guide bearing
  - External limiting switches to maintain the position
- Available: ND 50 to ND 200, other ND on request.

\* Drive designed to maneuver to 2 Kg/cm<sup>2</sup> of differential pressure ( $\Delta P$ ).

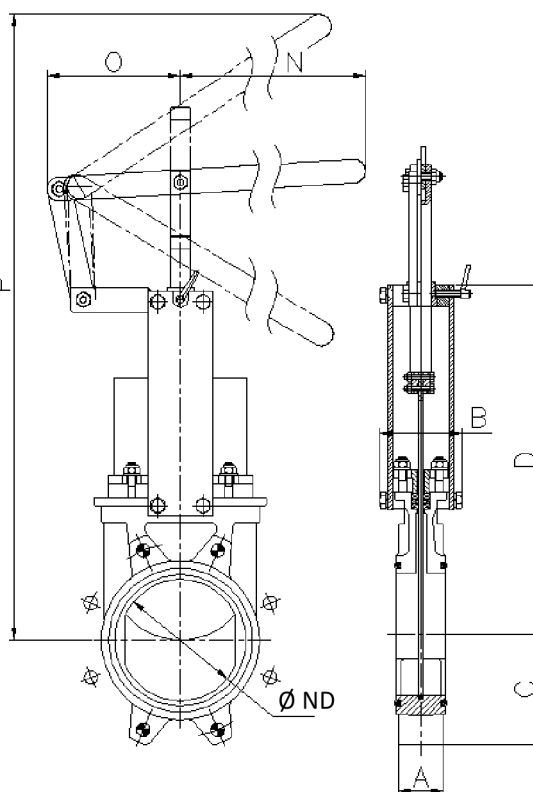


fig. 16

| ND  | $\Delta P$<br>(Kg/cm <sup>2</sup> ) | DRAW<br>(Nw) | A  | B   | C   | D   | N   | O   | P    | Weight<br>(kg.) |
|-----|-------------------------------------|--------------|----|-----|-----|-----|-----|-----|------|-----------------|
| 50  | 10*                                 | 241*         | 40 | 91  | 61  | 241 | 325 | 155 | 504  | 9               |
| 65  | 10*                                 | 406*         | 40 | 91  | 68  | 268 | 325 | 155 | 526  | 10              |
| 80  | 10*                                 | 613*         | 50 | 91  | 91  | 294 | 325 | 155 | 549  | 11              |
| 100 | 10*                                 | 954*         | 50 | 91  | 104 | 334 | 325 | 155 | 605  | 13              |
| 125 | 10*                                 | 1494*        | 50 | 101 | 118 | 367 | 425 | 155 | 902  | 16              |
| 150 | 10*                                 | 2151*        | 60 | 101 | 130 | 419 | 425 | 155 | 956  | 20              |
| 200 | 8*                                  | 3832*        | 60 | 118 | 159 | 525 | 620 | 290 | 1027 | 32              |

Table 6

## GEAR BOX

- **B = Max. width** of the valve (without actuator)
- **D = Max. height** of the valve (without actuator)
- Options:
  - Chainwheel
  - Extensions: stand, pipe, plates...
  - Locking devices
  - **Non-rising stem**
- Actuator including:
  - Stem
  - Yoke
  - Cone-shaped gear box
  - Handwheel
- Standard ratio = 4 to 1 .
- Available: ND 50 to ND 600.

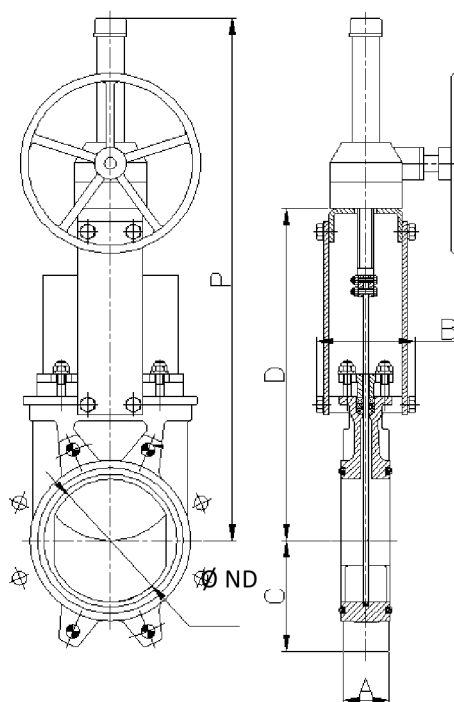


fig. 17

| ND  | $\Delta P$<br>(Kg/cm <sup>2</sup> ) | DRAW<br>(Nw) | TORQ.<br>(Nm) | A   | B   | C   | D    | P    | Weight<br>(kg.) |
|-----|-------------------------------------|--------------|---------------|-----|-----|-----|------|------|-----------------|
| 50  | 10                                  | 1143         | 2.64          | 40  | 91  | 61  | 241  | 540  | 20              |
| 65  | 10                                  | 1952         | 4.45          | 40  | 91  | 68  | 268  | 566  | 21              |
| 80  | 10                                  | 2957         | 6.76          | 50  | 91  | 91  | 294  | 592  | 22              |
| 100 | 10                                  | 4617         | 10.5          | 50  | 91  | 104 | 334  | 632  | 24              |
| 125 | 10                                  | 7213         | 16.5          | 50  | 101 | 118 | 367  | 665  | 26              |
| 150 | 10                                  | 7290         | 16.6          | 60  | 101 | 130 | 419  | 717  | 30              |
| 200 | 8                                   | 12975        | 37.1          | 60  | 118 | 159 | 525  | 942  | 41              |
| 250 | 6                                   | 14522        | 41.4          | 70  | 118 | 196 | 626  | 1033 | 53              |
| 300 | 6                                   | 20942        | 59.8          | 70  | 118 | 230 | 726  | 1121 | 69              |
| 350 | 5                                   | 22810        | 88.5          | 96  | 290 | 254 | 797  | 1305 | 107             |
| 400 | 5                                   | 29879        | 115.9         | 100 | 290 | 287 | 903  | 1403 | 130             |
| 450 | 3                                   | 28461        | 110.3         | 106 | 290 | 304 | 989  | 1677 | 183             |
| 500 | 3                                   | 35333        | 137.1         | 110 | 290 | 340 | 1101 | 1789 | 204             |
| 600 | 3                                   | 51235        | 198.6         | 110 | 290 | 398 | 1307 | 1995 | 288             |

Table 7

## DOUBLE-ACTING PNEUMATIC CYLINDER

- double-acting pneumatic actuators are designed to work at a pressure between 6 and 10 kg/cm<sup>2</sup>.
- 10 Kg/cm<sup>2</sup> is the maximum admissible air pressure. For air pressures below 6 Kg/cm<sup>2</sup> please consult manufacturer.
- For ND50 to ND200 valves, the cylinder's jacket and covers are made of aluminium, the rod of AISI304, the piston of rubber-coated steel and the O-ring seals are made of nitrile.
- For valves larger than ND200 the covers are made of nodular cast iron or carbon steel.
- On request, we can also supply the actuator made entirely of stainless steel, especially for installation in corrosive atmospheres.
- **B = Max. width** of the valve (without actuator)  
**D = Max. height** of the valve (without actuator)
- Available: ND50 to ND600.

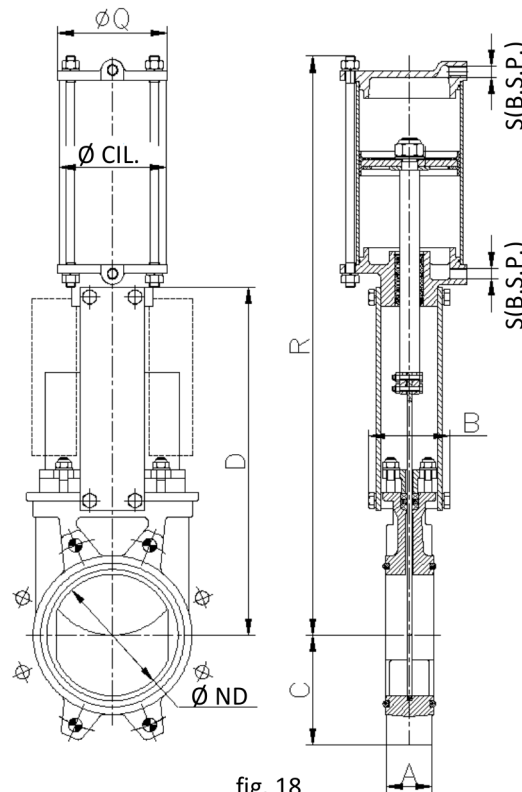


fig. 18

| ND  | ΔP<br>(Kg/cm <sup>2</sup> ) | DRAW<br>(Nw) | A   | B   | C   | D    | R    | Ø<br>CIL. | Ø<br>ROD | ØQ  | S<br>(B.S.P.) | Weight<br>(kg.) |
|-----|-----------------------------|--------------|-----|-----|-----|------|------|-----------|----------|-----|---------------|-----------------|
| 50  | 10                          | 1143         | 40  | 91  | 61  | 241  | 400  | 80        | 20       | 90  | 1/4"          | 7               |
| 65  | 10                          | 1952         | 40  | 91  | 68  | 268  | 442  | 80        | 20       | 90  | 1/4"          | 8               |
| 80  | 10                          | 2957         | 50  | 91  | 91  | 294  | 483  | 80        | 20       | 110 | 1/4"          | 9               |
| 100 | 10                          | 4617         | 50  | 91  | 104 | 334  | 546  | 100       | 20       | 135 | 1/4"          | 12              |
| 125 | 10                          | 7213         | 50  | 101 | 118 | 367  | 630  | 125       | 25       | 170 | 1/4"          | 18              |
| 150 | 10                          | 7290         | 60  | 101 | 130 | 419  | 692  | 125       | 25       | 170 | 1/4"          | 22              |
| 200 | 8                           | 12975        | 60  | 118 | 159 | 525  | 869  | 160       | 30       | 215 | 1/4"          | 37              |
| 250 | 6                           | 14522        | 70  | 118 | 196 | 626  | 1032 | 200       | 30       | 270 | 3/8"          | 58              |
| 300 | 6                           | 20942        | 70  | 118 | 230 | 726  | 1182 | 200       | 30       | 270 | 3/8"          | 72              |
| 350 | 5                           | 22810        | 96  | 290 | 254 | 797  | 1379 | 250       | 40       | 382 | 3/8"          | 130             |
| 400 | 5                           | 29879        | 100 | 290 | 287 | 903  | 1535 | 250       | 40       | 382 | 3/8"          | 148             |
| 450 | 3                           | 28461        | 106 | 290 | 304 | 989  | 1677 | 300       | 45       | 382 | 1/2"          | 235             |
| 500 | 3                           | 35333        | 110 | 290 | 340 | 1101 | 1839 | 300       | 45       | 444 | 1/2"          | 260             |
| 600 | 3                           | 51235        | 110 | 290 | 398 | 1307 | 2145 | 300       | 45       | 508 | 1/2"          | 334             |

Table 8



## SINGLE-ACTING PNEUMATIC CYLINDER

- single-acting pneumatic actuators are designed to work at a pressure between 6 and 10 kg/cm<sup>2</sup>.
- 10 Kg/cm<sup>2</sup> is the maximum admissible air pressure. For air pressures below 6 Kg/cm<sup>2</sup> please consult manufacturer.
- Available (spring closes or spring opens).
- 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 and the O-ring seals of nitrile.
- 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 fault.
- **B = Max. width** of the valve (without actuator)  
**D = Max. height** of the valve (without actuator)

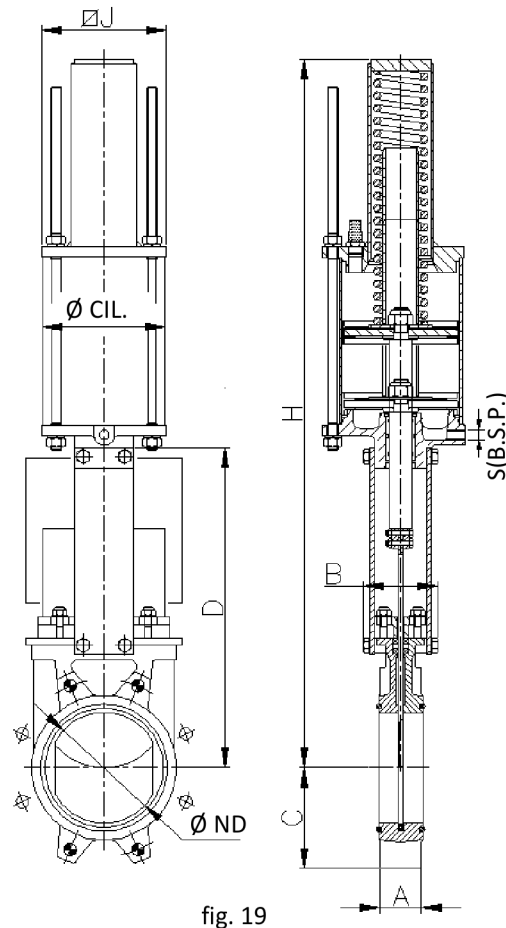


fig. 19

| ND  | ΔP<br>(Kg/cm <sup>2</sup> ) | DRAW<br>(Nw) | TORQ.<br>(Nm) | A  | B   | C   | D   | H    | ØJ  | Ø<br>CIL. | Ø<br>ROD | S<br>(B.S.P.) | Weight<br>(kg.) |
|-----|-----------------------------|--------------|---------------|----|-----|-----|-----|------|-----|-----------|----------|---------------|-----------------|
| 50  | 10                          | 1143         | 2.64          | 40 | 91  | 61  | 241 | 781  | 135 | 125       | 25       | 1/4"          | 19              |
| 65  | 10                          | 1952         | 4.45          | 40 | 91  | 68  | 268 | 806  | 135 | 125       | 25       | 1/4"          | 22              |
| 80  | 10                          | 2957         | 6.76          | 50 | 91  | 91  | 294 | 833  | 135 | 125       | 25       | 1/4"          | 23              |
| 100 | 10                          | 4617         | 10.5          | 50 | 91  | 104 | 334 | 873  | 135 | 125       | 25       | 1/4"          | 24              |
| 125 | 10                          | 7213         | 16.5          | 50 | 101 | 118 | 367 | 909  | 135 | 160       | 30       | 1/4"          | 35              |
| 150 | 10                          | 7290         | 16.6          | 60 | 101 | 130 | 419 | 960  | 135 | 160       | 30       | 1/4"          | 36              |
| 200 | 8                           | 12975        | 37.1          | 60 | 118 | 159 | 525 | 1355 | 170 | 200       | 30       | 3/8"          | 66              |

Table 9

## ELECTRIC ACTUATOR

- This actuator is automatic and includes the following parts:

- Electric motor                      - Stem                      - Yoke

- The electric motor includes:

- Emergency manual handwheel  
- Limit switches  
- Torque switches

- Options:

- Different types and brands  
- Non-rising stem

- ISO 5210 / DIN 3338 Flanges

- Available: ND 50 to ND 600.

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

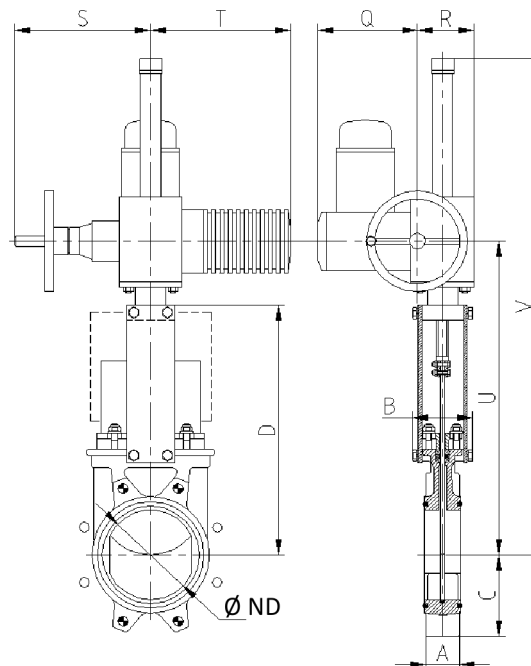


fig. 20

| ND  | $\Delta P$<br>(Kg/cm <sup>2</sup> ) | DRAW<br>(Nw) | TORQ.<br>(Nm) | A   | B   | C   | D    | Q   | R   | S   | T   | U    | V    | Peso<br>(kg.) |
|-----|-------------------------------------|--------------|---------------|-----|-----|-----|------|-----|-----|-----|-----|------|------|---------------|
| 50  | 10                                  | 1143         | 2.64          | 40  | 91  | 61  | 241  | 197 | 102 | 234 | 265 | 347  | 587  | 24            |
| 65  | 10                                  | 1952         | 4.45          | 40  | 91  | 68  | 268  | 197 | 102 | 234 | 265 | 374  | 614  | 25            |
| 80  | 10                                  | 2957         | 6.76          | 50  | 91  | 91  | 294  | 197 | 102 | 234 | 265 | 400  | 640  | 26            |
| 100 | 10                                  | 4617         | 10.5          | 50  | 91  | 104 | 334  | 197 | 102 | 234 | 265 | 440  | 680  | 27            |
| 125 | 10                                  | 7213         | 16.5          | 50  | 101 | 118 | 367  | 197 | 102 | 234 | 265 | 473  | 713  | 30            |
| 150 | 10                                  | 7290         | 16.6          | 60  | 101 | 130 | 419  | 197 | 102 | 234 | 265 | 525  | 765  | 32            |
| 200 | 8                                   | 12975        | 37.1          | 60  | 118 | 159 | 525  | 197 | 102 | 234 | 265 | 640  | 880  | 42            |
| 250 | 6                                   | 14522        | 41.4          | 70  | 118 | 196 | 626  | 197 | 102 | 234 | 265 | 741  | 981  | 55            |
| 300 | 6                                   | 20942        | 59.8          | 70  | 118 | 230 | 726  | 197 | 102 | 234 | 265 | 841  | 1141 | 72            |
| 350 | 5                                   | 22810        | 88.5          | 96  | 290 | 254 | 797  | 197 | 115 | 256 | 282 | 944  | 1347 | 99            |
| 400 | 5                                   | 29879        | 115.9         | 100 | 290 | 287 | 903  | 197 | 115 | 256 | 282 | 1050 | 1550 | 136           |
| 450 | 3                                   | 28461        | 110.3         | 106 | 290 | 304 | 989  | 222 | 153 | 325 | 385 | 1147 | 1847 | 166           |
| 500 | 3                                   | 35333        | 137.1         | 110 | 290 | 340 | 1101 | 222 | 153 | 325 | 385 | 1259 | 1959 | 245           |
| 600 | 3                                   | 51235        | 198.6         | 110 | 290 | 398 | 1307 | 222 | 153 | 325 | 385 | 1465 | 2165 | 362           |

Table 10

## HYDRAULIC ACTUATOR (Oil pressure: 135 Kg/cm<sup>2</sup>)

- **B = Max. width** of the valve (without actuator)  
**D = Max. height** of the valve (without actuator)
- The hydraulic actuator includes:
  - Hydraulic cylinder
  - Yoke
- Available: ND 50 to ND 600
- Different types and brands available according to customer's requirements.

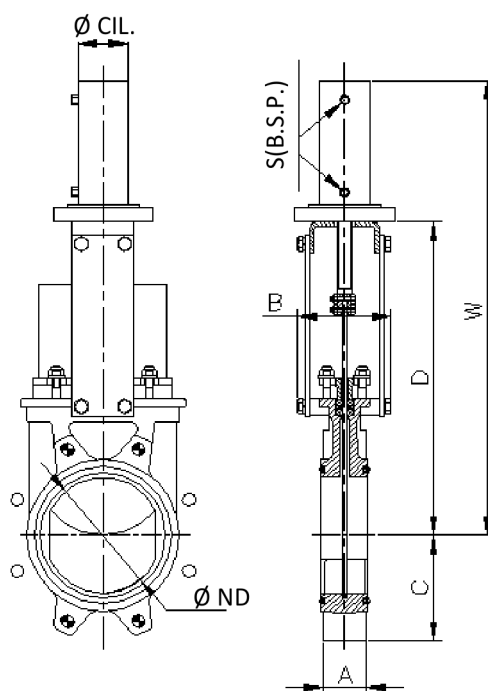


fig. 21

| ND  | ΔP<br>(Kg/cm <sup>2</sup> ) | DRAW<br>(Nw) | A   | B   | C   | D    | W    | Ø<br>CIL. | Ø<br>ROD | S<br>(B.S.P.) | Oil Cap.<br>(dm <sup>3</sup> ) | Weight<br>(kg.) |
|-----|-----------------------------|--------------|-----|-----|-----|------|------|-----------|----------|---------------|--------------------------------|-----------------|
| 50  | 10                          | 1143         | 40  | 91  | 61  | 241  | 457  | 25        | 18       | 3/8"          | 0.03                           | 7               |
| 65  | 10                          | 1952         | 40  | 91  | 68  | 268  | 500  | 25        | 18       | 3/8"          | 0.04                           | 8               |
| 80  | 10                          | 2957         | 50  | 91  | 91  | 294  | 560  | 32        | 22       | 3/8"          | 0.08                           | 9               |
| 100 | 10                          | 4617         | 50  | 91  | 104 | 334  | 620  | 32        | 22       | 3/8"          | 0.09                           | 12              |
| 125 | 10                          | 7213         | 50  | 101 | 118 | 367  | 683  | 40        | 28       | 3/8"          | 0.18                           | 15              |
| 150 | 10                          | 7290         | 60  | 101 | 130 | 419  | 755  | 50        | 28       | 3/8"          | 0.32                           | 20              |
| 200 | 8                           | 12975        | 60  | 118 | 159 | 525  | 926  | 50        | 28       | 3/8"          | 0.42                           | 31              |
| 250 | 6                           | 14522        | 70  | 118 | 196 | 626  | 1077 | 50        | 28       | 3/8"          | 0.52                           | 44              |
| 300 | 6                           | 20942        | 70  | 118 | 230 | 726  | 1246 | 63        | 36       | 3/8"          | 0.98                           | 62              |
| 350 | 5                           | 22810        | 96  | 290 | 254 | 797  | 1376 | 63        | 36       | 3/8"          | 1.14                           | 100             |
| 400 | 5                           | 29879        | 100 | 290 | 287 | 903  | 1532 | 80        | 45       | 3/8"          | 2.11                           | 138             |
| 450 | 3                           | 28461        | 106 | 290 | 304 | 989  | 1707 | 80        | 45       | 3/8"          | 2.36                           | 161             |
| 500 | 3                           | 35333        | 110 | 290 | 340 | 1101 | 1869 | 80        | 45       | 3/8"          | 2.61                           | 223             |
| 600 | 3                           | 51235        | 110 | 290 | 398 | 1307 | 2176 | 100       | 56       | 1/2"          | 4.87                           | 325             |

Table 11