



**Series CB Knife Gate Valve**

## Bidirectional Wafer Knife Gate Valve

- Bidirectional knife gate valve with "wafer" design.
- Two-piece cast body, joined by screws, with internal guides for smooth movement of the blade during operation.
- Provides high flow rates with low pressure drop.
- Various seals and gasket materials available.
- Distance between faces up to DN600 in accordance with Standard UNE-EN
- 558 Basic Series 20. The rest in accordance with ARNETT standard.

### General Applications:

This knife gate valve is suitable for working with clean liquids or liquids with a concentration of bland solids:

- Drying plants
- Paper Industry
- Sewage treatment
- Chemical plants
- Food industry
- Mining
- Oil extraction
- Sludge



Fig. 1

**Sizes:** DN50 to DN2000 (other dimensions to order).

#### Working ( $\Delta P$ ):

|                 | Maximum PN                 |
|-----------------|----------------------------|
| DN50 a DN200    | 10kg/cm <sup>2</sup>       |
| DN250 y DN300   | 7/10kg/cm <sup>2</sup>     |
| DN350 y DN400   | 6/10Kg/cm <sup>2</sup>     |
| DN450 y DN600   | 4/10kg/cm <sup>2</sup>     |
| DN700 a DN1400  | 2/4/6/10kg/cm <sup>2</sup> |
| DN1600 a DN2000 | 2/4/6kg/cm <sup>2</sup>    |

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

**Other Common Flanges:** DIN PN 16. JIS Standard.  
DIN PN6. Australian Standard

DIN PN25. British Standard.

### Directives:

- Machinery Directive: **DIR 2006/42/EC (MACHINERY)**.
- Pressure Equipment Directive: **DIR 97/23/EC (PED) ART.3, P.3.**
- Potentially Explosive Atmospheres Directive (optional): **DIR 94/9/EC (ATEX) CAT.3 ZONE 2 and 22 GD**, for information on categories and zones please contact Arnett Technical-Sales Department.

**Quality dossier** - All valves are tested hydrostatically and material and test certificates can be provided.

- Body test = working pressure x 1.5.
- Seal test = working pressure x 1.1.

## Advantages of our Series CB Valve

The main characteristic of this valve is the body design. This is a body formed by two screwed parts which have been machined on the inside, providing the valve with capacity to work with fluids in both directions and with the same pressure.

The seal is located between the two parts of the body, and this seal is secured with the screws used to attach the two parts of the body. In valves DN50 to DN600 the seal has a metal core inserted in order to withstand the fluid pressure and allow the valve to shut off correctly. In valves over DN600 the two parts of the body have an outer rim to ensure the seal remains in position.

This seal design provides a completely flat seat with no internal cavities and avoids any build-up of solids in the seat area.

The stem on the ARNETT 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.

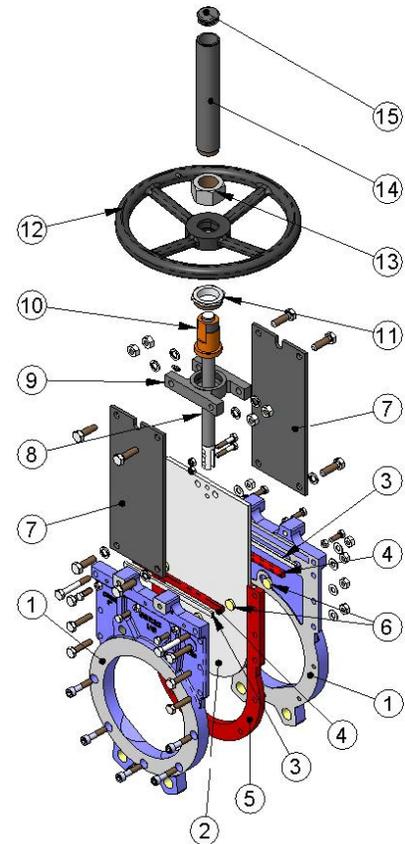
The handwheel is made of GJS-500 nodular cast iron. Some manufacturers produce them in normal cast iron which can lead to breakages in the event of very high operating torque or knocks. The yoke has a compact design with the bronze actuator nut protected in a sealed and lubricated box. This makes it 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 sealing joints are commercial products and can be purchased worldwide. This means it is not necessary to contact ARNETT every time a sealing joint is required.

| Standard Components List |                   |                         |
|--------------------------|-------------------|-------------------------|
| Component                | Cast Iron Version | Stainless Steel Version |
| 1. Body                  | GJL-500           | CF8M                    |
| 2. Through Conduit       | AISI304/DUPLEX    | AISI316/DUPLEX          |
| 3. Seal Rim              | AISI304           | AISI306                 |
| 4. Stuffing box seal     | EPDM              | EPDM                    |
| 5. Seal                  | EPDM+ACERO        | EPDM+ACERO              |
| 6. Sear                  | ---               | RCH 1000                |
| 7. Support               | S275JR            | S275JR                  |
| 8. Stem                  | AISI303           | AISI303                 |
| 9. Yoke                  | GJS-500           | GJS-500                 |
| 10. Stem nut             | BRONZE            | BRONZE                  |
| 11. Check nut            | STEEL             | STEEL                   |
| 12. Handwheel            | GJS-500           | GJS-500                 |
| 13. Nut                  | 5.6 ZINC          | 5.6 ZINC                |
| 14. Hood                 | STEEL             | STEEL                   |
| 15. Top Cap              | PLASTIC           | PLASTIC                 |



## Design Characteristics

### 1. BODY

Wafer design reinforced cast body, comprising two screwed parts. The stainless steel

version has RCH1000 interior nylon slides which provide smooth movement of the through conduit; on the other hand, the GJS-500 versions do not require slides.

The internal surface of both parts is fully machined and assembled with screws to form a solid block. Designed with total passage, with the shape of the inside of the body preventing the build-up of solids in the seal area; this means that there is no cavitation in open position and, in consequence, there is no turbulence in the fluid and the loss of load is minimum, thus providing large flows.

The standard manufacturing materials are CF8M stainless steel and GJS-500 nodular cast iron. Other materials such as A216WCB carbon steel and stainless steel alloys (AISI316Ti, Duplex, 254SMO, Uranus B6, etc.) are available to order. As standard, the carbon steel or nodular cast iron valves are painted with EPOXY anti-corrosive protection.

Other types of anti-corrosive protections are available to order.

## **2. BLADE**

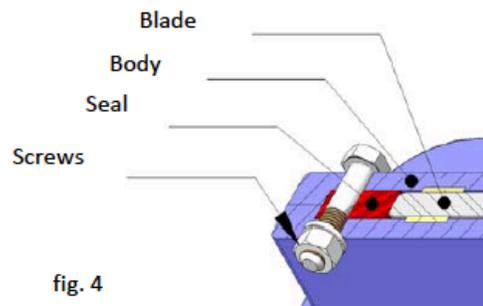
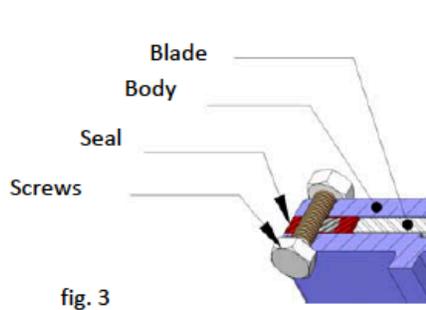
The standard manufacturing materials are AISI304 stainless steel in valves with iron body and AISI316 stainless steel in valves with CF8M body. In both cases, whenever the high pressures to withstand so require, we also make use of DUPLEX material.

Other materials or combinations can be supplied to order.

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

## **3. SEAT: (watertight)**

This type of valve has an elastic seat which is made up of a rubber seal located between the two parts of the body, secured with the screws used to join the two parts of the body. In valves DN50 to DN600 the seal has a metal core inserted in order to withstand the fluid pressure and allow the valve to shut off correctly (fig. 3).



### Resilient seat materials

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

**NITRILE** - Used in fluids containing fats or oils at temperatures no higher than 90°C\*. Provides the valve with 100% sealtightness.

**VITON** - Suitable for corrosive applications and high temperatures up to 190°C continuously and peaks of 210°C. Provides the valve with 100% sealtightness.

**SILICONE** - Mainly used in the food industry and for pharmaceutical products with temperatures no higher than 200°C. Provides the valve with sealtightness of 100%.

**PTFE** - Suitable for corrosive applications and pH between 2 and 12. Does not provide the valve with 100% sealtightness. Estimated leakage: 0.5% of the pipe flow.

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

## 4. GASKET

Valves DN50 to DN600 not have the traditional gasket system, but rather a rubber strip inserted in the top of each body half. This system avoids the need to regularly replace the gasket and also offers the possibility of regulating the body from the

outside by way of screws (fig. 5).

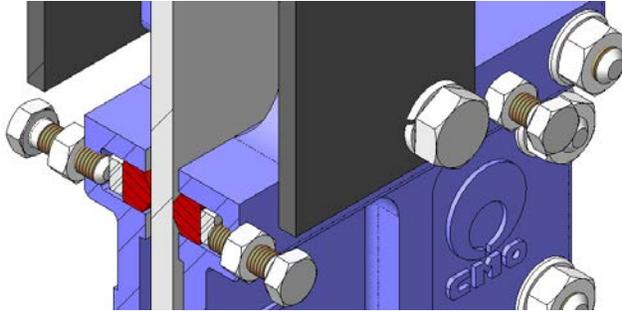


Fig. 5

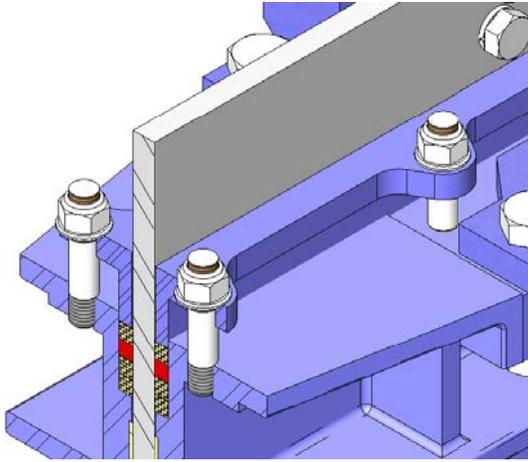


Fig. 6

Valves over DN600 do have the traditional system and the standard ARNETT gasket comprises several lines (from 4 to 6 lines) of seal, providing the required sealtightness between the body and the through conduit and preventing any type of leakage. It is located in an easily accessible place and can be replaced without dismantling the valve from the pipeline (Fig 6).

Below we indicate various types of gasket available according to the use to be given to the valve:

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

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

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

**SYNTHETIC + PTFE:** This gasket is composed of braided synthetic fibers 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 oxidizing oils. It is also used in liquids with solid particles in suspension.

**LUBRICATED PTFE :** It is made with PTFE filaments and designed to work at great speed. It is braided with a diagonal system. Suitable for valves and pumps which work with almost all types of fluids, particularly with the most corrosive, such as oxidant and

concentrated oils. It is also used in liquids with solid content.

**GRAPHITE:** This gasket is composed of high-purity graphite fibers. 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 FIBER:** This gasket is composed of ceramic material fibers. Its main applications are with air or gas at high temperatures and low pressures.

## 5. STEM

The stem on the Arnett 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 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

As mentioned above, valves DN50 to DN600 do not have the traditional packing system, but rather a stuffing box seal built into the body. Nevertheless, the common packing system is still used in sizes over DN600; this allows uniform pressure and force to be applied to the gasket, thus ensuring sealtightness.

As standard, valves with steel body include a steel packing gland flange, while for valves with stainless steel body this is made of stainless steel.

## 7. ACTUATORS

All types of actuators can be supplied, with the advantage that thanks to the Arnett 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 Arnett valves is that all actuators are interchangeable.

| Manual                         | Automatic          |
|--------------------------------|--------------------|
| Handwheel with rising stem     | Electric actuator  |
| Handwheel with non-rising stem | Pneumatic actuator |
| Chainwheel                     | Hydraulic cylinder |
| Lever                          |                    |
| Gearbox                        |                    |
| Others (square stem, etc.)     |                    |

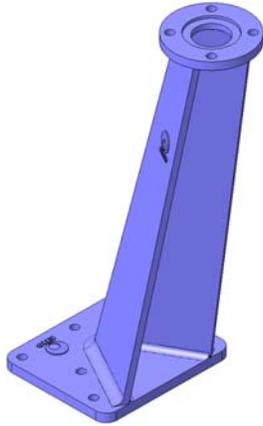


fig. 7

**Wide range of accessories available:**

- Mechanical stoppers
- Locking devices
- Emergency manual actuators
- Electrovalves
- Positioners
- Limit switches
- Proximity switches
- Leaning floor stand (Fig. 7)
- Straight floor stands (fig. 8)

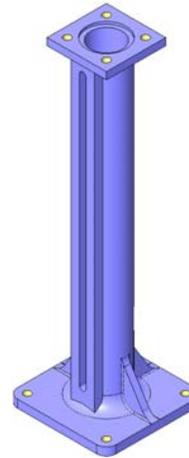


fig. 8

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

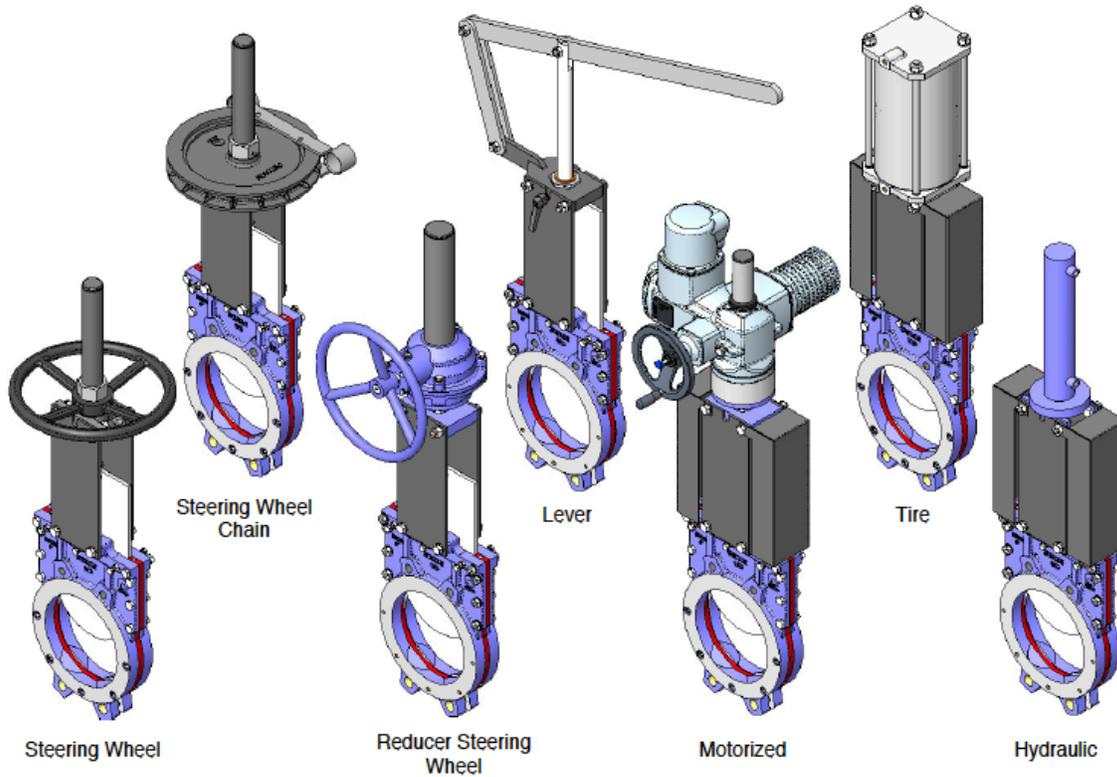


fig. 9

## Accessories & Options

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

### **Mirror polished through conduit**

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

### **PTFE lined through conduit**

As with the mirror polished through conduit, it improves the valve's resistance to products that can stick to the through conduit.

### **Stellited through conduit**

Stellite is added to the through conduit's lower perimeter to protect it from abrasion.

### **Scraper in the gasket**

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

### **Air injections in the gasket**

By injecting air in the gasket, an air chamber is created which improves seal tightness.

### **Cased body**

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.

### **Electrovalves (fig. 10)**

For air distribution to pneumatic actuators.

### **Connection boxes, wiring and pneumatic piping**

Units supplied fully assembled with all the necessary accessories.

### **Mechanical limit switches, inductive sensors and positioners**

Installation of limit switches (Fig. 10) or detectors for indication position of the valve and positioners for indication of continuous position.

### **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 / gear box)**

Allows manual operation of the valve in the event of power or air failure (Fig 10).

### **V-notch and pentagonal diaphragm with indication rule**

Recommended for applications in which it is necessary to regulate the flow, it allows flow control according to the valve's opening percentage.

### **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 resist the most adverse operation conditions.

### **Epoxy coating**

All carbon steel or nodular cast-iron components and bodies of the Arnett valves are EPOXY

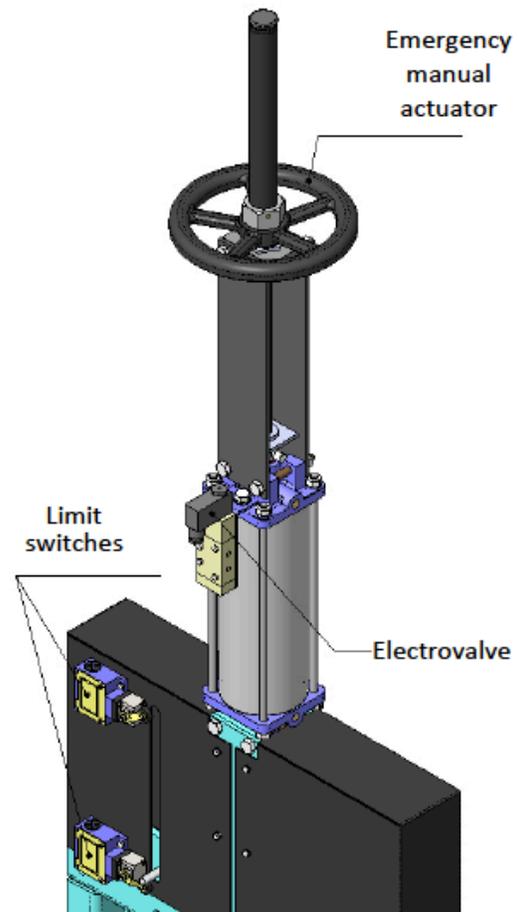


fig. 10

coated, giving the valves great resistance to corrosion and an excellent surface finish.



# Global Manufacturing, Sales, & Distribution

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