



## **Series AW Knife Gate Valve**

## Unidirectional Wafer Knife Gate Valve

- Unidirectional wafer-design knife gate valve.
- One-piece cast body with guides to support gate and seat wedges.
- Provides high flow rates with low pressure drop.
- Various seat and packing materials available.
- Face-to-face dimension in accordance with Arnett standard.
- An arrow is marked on the body indicating the flow direction.

### General Applications:

knife gate valve is suitable for liquids that contain a maximum of 5% suspended solids. If it is used for dry solids in gravity feed applications it should be installed with the arrow on the body pointing in the opposite

direction to the flow. Designed for applications such as:

- Paper industry
- Mining
- Silo emptying
- Chemical plants
- Pumping
- Food industry
- Sewage treatment

**Sizes:** ND50 to ND2000 (larger sizes on request).

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

	Maximum PN
DN50 to DN300	10kg/cm <sup>2</sup>
DN200	8kg/cm <sup>2</sup>
DN250 to DN300	6kg/cm <sup>2</sup>
DN350 to DN400	5kg/cm <sup>2</sup>
DN450 to DN600	3kg/cm <sup>2</sup>
DN700 to DN1400	2kg/cm <sup>2</sup>

The mentioned working pressures are just valid for the pressures applied on the direction of the arrow marked on the body. As the valve is designed with gate support guides, the valves are able to support a 30% of these pressures from the opposite direction without any damage on them. In these cases, the valves are not 100% water tight. To obtain total water tightness in these conditions, it is necessary to incorporate additional supports.

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

**Other Common Flanges:**



This

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 our Series AW Valve

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 required to close it. Model AW's body is cone-shaped inside, providing greater space. This way, when the valve is closed the solids stored inside it can be easily removed.

This valve is defined as unidirectional and these valves are normally at risk of the gate bending due to counter-pressure. This cannot happen with the Arnett valve because it contains internal guides that support the knife gate and allow it to work under counter-pressure of 30% of the maximum working pressure, without the knife gate bending.

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 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.

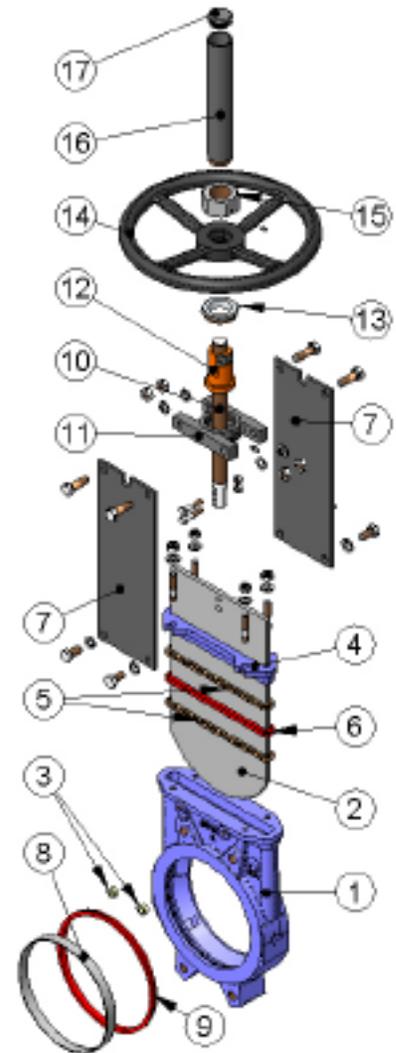
The handwheel is made of GJS-500 nodular cast iron. Some manufacturers produce them in normal cast iron which can lead to breakages in the event of very high operating torque or knocks.

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



The pneumatic actuator's upper and lower covers are made of GJS-400 nodular cast iron, making them highly shock resistant. This characteristic is essential in pneumatic actuators. The pneumatic cylinder's o-ring seals are commercial products and can be purchased worldwide. This means it is not necessary to contact Arnett every time a seal is required.

Standard Components List		
Component	Cast Iron Version	Stainless Steel Version
1. Body	GJL-250	CF8M
2. Gate	AISI304	AISI316
3. Guide	RCH1000	RCH1000
4. Packing gland	GJS-500	CF8M
5. Packing	SYNT + PTFE	SYNT + PTFE
6. O-ring seal	EPDM	EPDM
7. Support plates	S275JR	S275JR
8. Ring	AISI316	AISI316
9. Seat	EPDM	EPDM
10. Stem	AISI303	AISI303
11. Yoke	STEEL	STEEL
12. Stem nut	BRONZE	BRONZE
13. Check nut	ST44.2 + ZINC	ST44.2 + ZINC
14. Handwheel	NODULAR CAST IRON	NODULAR CAST IRON
15. Nut	STEEL	STEEL
16. Hood	STEEL	STEEL
17. Top cap	PLASTIC	PLASTIC



# 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 ND1200 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 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)

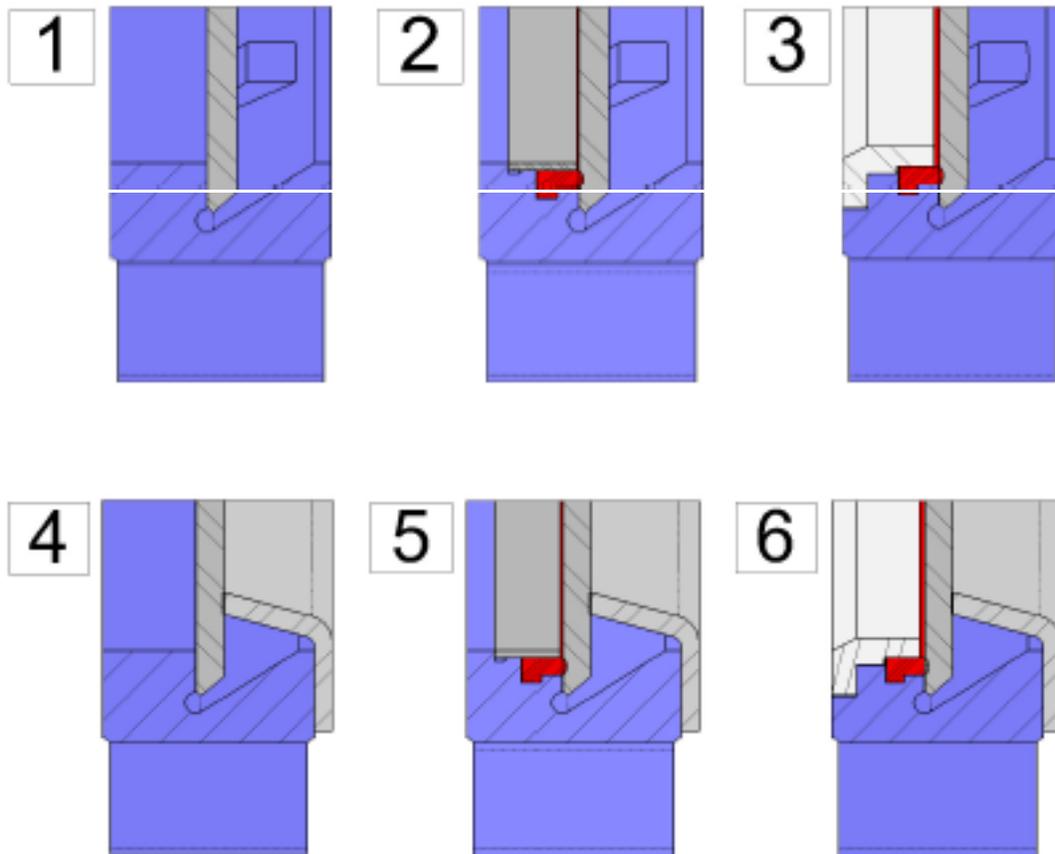
Six types of seats are available according to the working application:

**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. This type of seat includes a resilient seat which is fixed to the inside of the body via an AISI316 stainless steel retaining ring with two functions (to protect the valve from abrasion and clean the gate when working with solids that can stick to it).

**Seats 4, 5 and 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).



### Resilient seat materials

**EPDM** - This is the standard resilient seat 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 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.

**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.

#### 4. PACKING

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

**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.

#### 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.

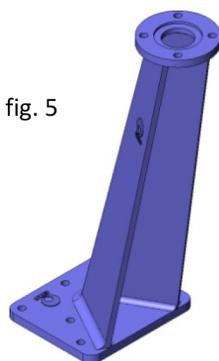
## 6. PACKING GLAND

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

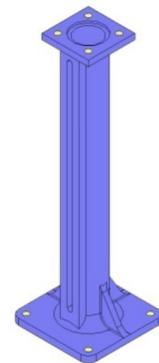
All types of actuators can be supplied, with the advantage that thanks to the ARNETT design they are fully interchangeable. This design allows the customer to change the actuators themselves and no extra assembly accessories are required. A design characteristic of ARNETT valves is that all actuators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

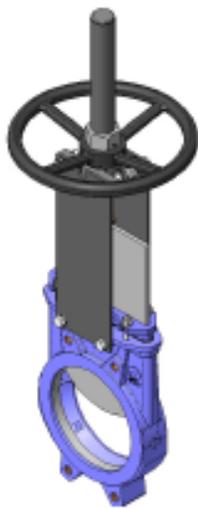


### Wide range of accessories available:

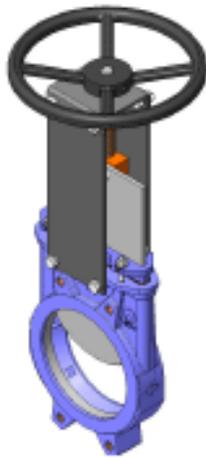
- Mechanical stoppers
- Locking devices
- Emergency manual actuators
- Electrovalves
- Positioners
- Limit switches
- Proximity detectors
- Straight floor stand (fig. 6)
- Leaning floor stand (fig. 5)



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



Handwheel  
rising stem



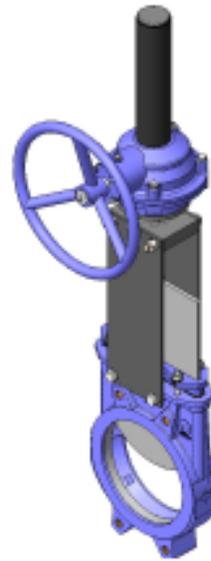
Handwheel  
NON-rising stem



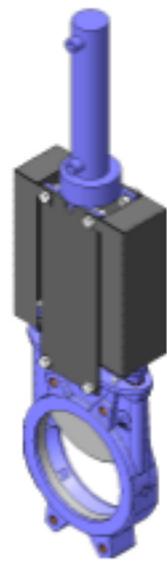
Pneumatic  
actuator



Electric-motor  
actuator



Handwheel  
gear box



Hydraulic  
actuator

## Accessories & 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.

### Flushing Holes in Body (fig. 8)

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.

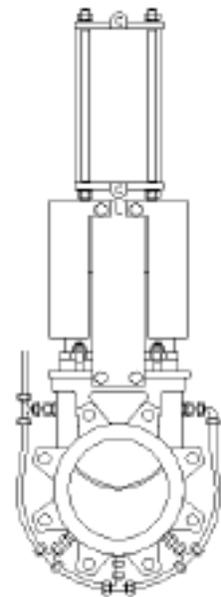


Fig 8

## 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.

## Stroke Limiting Mechanical Stops

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

## 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.

## 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.

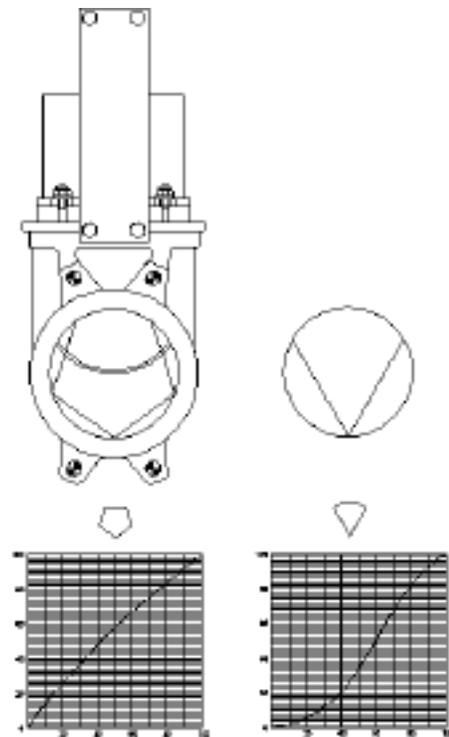


Fig 9

## Epoxy Coating

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

## Gate Safety Protection

In accordance with European Safety Standards ("EC" marking), Arnett 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.

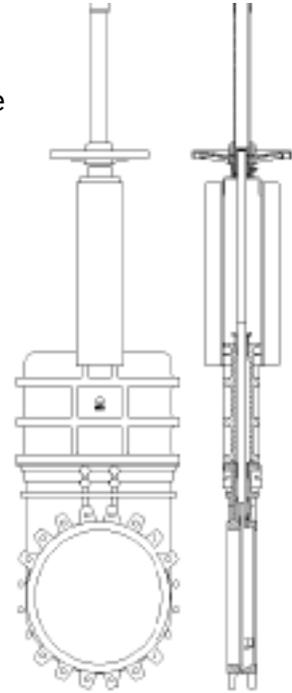


Fig 10

# Global Manufacturing, Sales, & Distribution

---

## US

### Alabama

#### Birmingham

Downtown Wells Fargo Tower,  
420 North 20th Street, Suite 2200,  
Birmingham, 35203

### Arizona

#### Tucson

One South Church Avenue, Suite 1200,  
Tucson, 85701

### Georgia

#### Peachtree

401 Westpark Court, Suite 200,  
Peachtree, GA 30269

### Utah

#### Salt Lake City

2150 South 1300 East, Suite 500,  
Salt Lake City, UT 84106

---

## Canada

### Alberta

#### Calgary

TD Canada Trust Tower,  
421 7th Avenue SW, 30th Floor,  
Calgary, T2P 4K9, Canada

### Quebec

#### Montreal

2000 McGill College Avenue, 6th Floor,  
Montreal, Quebec, H3A 3H3

---

## South America

### Peru

#### Lima

Calle Dean Valdivia 148,  
Edif. Platinum Plaza I,  
piso 11 San Isidro, Lima, 27

### Chile

#### Santiago

Santiago Millenium,  
2939 Vitacura Avenue, 10th Floor,  
Las Condes, Santiago, C.P. 7550011, Chile

---

## Africa & Europe

### South Africa

#### Johannesburg

1ST Floor, Block B & Block C,  
Metropolitan Park, 8 Hillside Road,  
Parktown, Johannesburg, 2196

### Spain

#### Bilbao

Bilbao, Gran Via, 2nd & 3rd Floor,  
Gran Via 19-21,  
Bilbao, 48008, Spain

 [arnett.com](http://arnett.com)

 [support@arnett.com](mailto:support@arnett.com)

 844.785.7585

