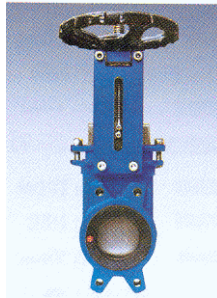


# INSTALLATION AND MAINTENANCE HANDBOOK

## KNIFE GATE VALVES



SERIE 19

### INTRODUCTION

The knife gate valve is tight on one direction. By design, always ensures a bubble-tight shut off. The valve is available with body in cast iron, carbon steel or various stainless steels. NBR, Viton, EPDM, Natural rubber, PTFE as well as metal to metal seats are available, depending on the service medium.

The valve may be supplied handwheel operated or fitted with electric or pneumatic actuators. The valve's design permits a simple and rapid change of actuator.

Advantages:

Its light weight and short face to face dimension allows easy installation and result in low piping support loads. It is a full opening, permitting easy passage of liquid of whatever viscosity. For particular or abrasive media disc scraper and deflector cones can be provided.

Is is important to ask your customer about the working temperature, pressure, medium and operation frequency to ensure that the correct valve is fitted.

### APPLICATION AND TEMPERATURE RANGE

#### EPDM-

**Advantages:** It has excellent resistance to heat, ozone and sunlight, very good flexibility at low temperature, good resistance to alkalis, acids, and oxygenated solvents and superior resistance to water and steam.

Limitations: poor resistance to oil, Gasoline and hydrocarbon based solvents.

Maximum continuous operating temperature  $-40^{\circ}\text{C}/+100^{\circ}\text{C}$

#### NBR-NITRIL

**Advantages:** very good resistance to oil, gasoline, alkalis and acids, good resistance to hydrocarbon based solvents.

**Limitations:** inferior resistance to ozone and oxygenates solvents.

Maximum continuous operating temperature  $-30^{\circ}\text{C}/+90^{\circ}\text{C}$

#### GUM RUBBER

This category includes all natural gum elastomers, both filled and unfilled and synthetic. It has high tensile strength, superior resistance to tear and abrasion and good flexibility at low temperatures. Maximum continuous operating temperature  $+75^{\circ}\text{C}$

#### VITON

**Advantages:** very good resistance to ozone and sunlight, very good flexibility at low temperature, good resistance to alkalis and acids and very good resistance to hot water. Maximum continuous operating temperature  $-40^{\circ}\text{C}/+230^{\circ}\text{C}$

TP: Test pressure in Kg/cm<sup>2</sup>  
Test fluid: H<sub>2</sub>O

DN	50	65	80	100	125	150	200	250	300	350	400	450	500	600
T.P.	16	16	16	16	16	16	14	14	10	10	8	7	6	6
W.P.	10	10	10	10	10	10	8	8	6	6	5	5	4	4

## INSTALLATION

1-Prepare two gaskets of material suitable for the service medium and the facing of the mating flanges, and place it between the flanges and the faces of the valve at the place where they were going to be installed and tight very strongly the screws to avoid leakages. (PAY ATTENTION to the transcription SEAT SIDE before assembling the valve as this type of valve is one direction tight and the pressure should be made against the seat).

2-Valves fitted with pneumatic actuator have BSP threaded air input and output ports. Tight shut off of the valve will be ensured by having, at least, 6 bar air supply at the actuator.

To open or close the valve, feed alternatively the chamber of single acting actuator with air pressure not smaller than 6Kg/cm<sup>2</sup>.

The air supplied to the actuator must previously filtered, dried and lubricated.

Feeding the posterior connection and unloading the anterior, the stem gets out of the actuator and close the valve, changing the feed with the unload the valve opens.

With lack of air the spring pneumatic actuator carries a brake display that starts on both sides short before the stroke finish and prevents the piston from hitting against the bottom.

Usually the working of the single acting actuators is made by solenoid valves.

3 ways/2 positions, commanded by a coil 220v-50hz and return by spring.

ALL THE PNEUMATIC ACTUATORS SINGLE OR DOUBLE ACTING, BIGGER THAN  $\phi$ 250 MUST BE SUPPORTED EXTERNALLY DUE TO THE HEAVY WEIGHT.

## CYLINDER CAPACITY IN LITERS OF AIR AT 1 BAR OF PRESSURE

DN	$\phi$ PNEUMATIC ACT.	CAPACITY
50	80	0.35
65	80	0.43
80	100	0.72
100	100	0.97
125	125	1.87
150	160	3.48
200	190	6.44
250	190	7.85
300	190	9.25
350	250	18.61
400	250	21.25
450	300	34.07
500	300	37.68
600	300	44.75

**AIR PRESSURE –Minimum 6 bar  
Maximum 10 bar**

3-When the valve is first put into service **it is prudent to check the packing mechanism at the upper part of the body.** The packing bolts are set to an average tightness at the works

**4-Those valves operated by electric actuator (specially with modulating actuators) must be controlled and lubricated every week. Further, the grease nipple at the actuators and the threaded spindle from the valve should be checked and lubricated periodically. The operation and maintenance instructions of the electric engine manufacturing firm should be followed by the customers.**

**If these advices are not taking seriously we can not guarantee the good performance of the valves.**

## MAINTENANCE

When the body material and seat elastomer used in the service medium are according to the manufacturer's recommendations, the valve has a little maintenance only for the elastomer seat and the packing material, always taking into consideration the number of operations and the natural wearing of the elastomer but when routine inspection of the process piping is scheduled, it would be prudent **to inspect the packing material and re-tight the packing gland or to change the packing material if it was necessary.**

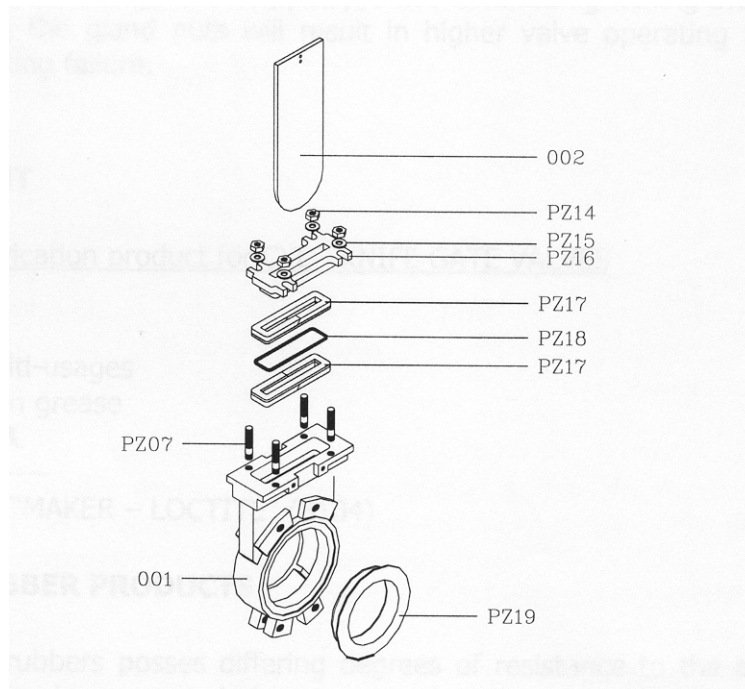
Should a decision be made to change the packing material, proceed as follows:

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### WARNING

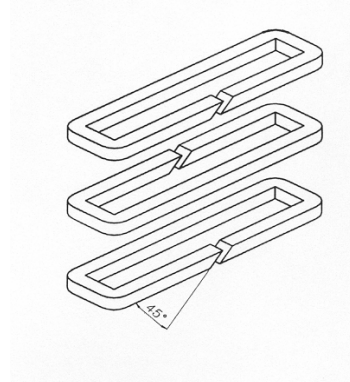
RELIEVE PIPELINE PRESSURE PRIOR TO LOOSENING GLAND NUTS OR FLANGE BOLTS. FAILURE TO RELIEVE PIPELINE PRESSURE COULD RESULT IN PERSONAL INJURY AND/OR EQUIPMENT DAMAGE.

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- 1-Relieve pipeline pressure
- 2-Close the valve
- 3-Disconnect the stem from the gate by removing the 2 screws and nuts (PZ03-005)
- 4-Remove the gland nuts, washer and packing gland. (PZ13, PZ15, PZ16)
- 5-Remove the packing from the packing chamber (PZ17,PZ18)
- 6-Install the new packing one ring at time, in sequence show in at the above drawing. Note the following considerations when installing the packing.
- 7-Stagger the packing rings so the joints do not line up.

- 8-Tap each packing ring firmly and evenly down into the packing chamber before installing the next ring.
- 9-The ends of each ring should meet but not overlap. (Alternate the joints like the picture).



- 10- Install the packing gland, washers and gland nuts.
  - 11-Tighten the gland nuts finger tight plus ½ turn
  - 12-Connect the stem to the gate with the two screws and nuts.
  - 13-If packing leakage occurs after the pipeline is pressurized, tighten the gland nuts uniformly just until the leakage stops.
- IMPORTANT: Once leakage has stopped, do not continue tightening the gland nuts. Over-tightening the gland nuts will result in higher valve operating torque and premature packing failure.

### VERY IMPORTANT

#### RECOMMENDED LUBRICATION PRODUCT

Graisse AL/SI 3653  
Graisse silicone multi-usages  
Multi-purpose silicon grease  
Maker-MOLYDAL, SA  
SILICONE GREASE "MAKER-LOCTITE 8104

### STORAGE OF RUBBER PRODUCTS

While the various rubbers possess differing degrees of resistance to the deteriorating influences which may be present during storage, the same general recommendations apply to all-Vulcanized rubber should be stored in a cool, dry, dark place away from steam pipes, sunlight etc.

### COATING

Binder system: Resistant polyester coating  
Colour: RAL 5017 (BLUE)  
Film thickness: 80-150 microns

**APPROXIMATE N° OF TURNS TO OPEN /CLOSE MANUALLY OPERATED VALVES**

DN	MU
50	16
65	19
80	23
100	28
125	34
150	33
200	43
250	53
300	63
350	73
400	83
450	67
500	74
600	88