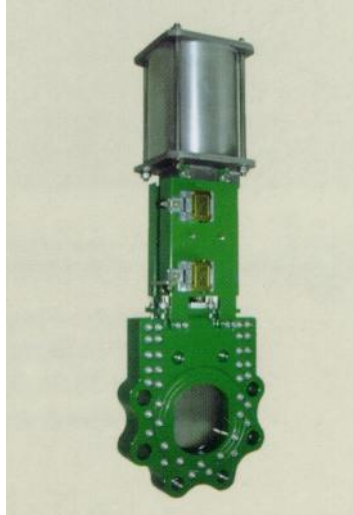


# CYL KNIFE GATE VALVES

San Sebastian – Spain



## INSTALATION, OPERATION & MAINTENANCE INSTRUCTIONS (XD HIGH PRESSURE)

### INTRODUCTION

The CYL knife gate valve is a unique, patented, low cost, bi-directional on-off valve that by design always ensures a bubble-tight shut off.

The high pressure service valve is available with bodies in carbon steel, GGG-50 and various stainless steels. Nitrile (NBR), Viton, natural rubber, EPDM and PTFE are available as seat materials, depending on the service medium. The standard material used for the gate in the CYL valve is AISI 316, unequalled by any other manufacturer and far superior in corrosion resistance and product life. All CYL carbon steel and GGG40 knife gate valve bodies are coated with a non-toxic baked acrylic finish.

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

CYL knife gate valves enjoy the following advantages:

Its relatively light weight and short face to face dimension allows easy installation and results in low piping support loads. It can be a full opening bore valve permitting easy passage of liquid of whatever viscosity. Compared to other designs, the CYL knife gate valve does not have body cavities below the disc where the pumped medium can collect.

The test and the cold working pressure of the valves are specified by the client and the valves are designed and built to withstand those pressures.

CYL soft-seated knife gate valves are limited by their soft seats and packing material to certain maximum working temperatures. **It's important to ask your customer the working temperature, pressure, medium and operation frequency to ensure that the correct valve is fitted.**

## **APPLICATION AND TEMPERATURE RANGE OF CYL K.G.V. SEALING MATERIALS**

**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°C/ +90° 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 oxygenate solvents. Maximum continuous operating temperature -30°C / +80°C.

**NATURAL 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°C. / – 30°C

**VITON** – Advantages: very good resistance to ozone and sunlight, very good flexibility at low temperature, good resistance to alkalis, acids and very good resistance to hot water and **hydrocarbon based solvents**. Maximum continuous operating temperature -40°C/+230°C.

**SIZES RANGE: 2"(50mm.) to 16" (400mm)**

**WORKING PRESSURE – PN-16 / PN-25 / PN-40 /PN-64/PN-100**

**SIZES RANGE: 2"(50mm.) to 24" (600mm)**

**WORKING PRESSURE – PN-16 / PN-25 / PN-40**

**SIZES RANGE: 2"(50mm.) to 40" (1000mm)**

**WORKING PRESSURE – PN-16 / PN-25**

**TEMPERATURE RANGE: - 40°C to + 150°C**

**FLANGE RATING: CUSTOMER'S REQUEST**

**ACTUATOR TYPE: Handwheel "rising stem"&"non rising stem"**

**Gear box and spur gear, chainwheel,  
quick closing level , square cup,  
double acting pneumatic actuator,  
single acting pneumatic actuator,  
electric actuators,  
oilhydraulic act.**

**A full range of accessories is also offered.**

## INSTALLATION

**1-** Prepare two GASKETS TO COVER THE FULL FACE OF THE FLANGE of elastomer material suitable for the service medium, pressure and the facing of the mating flanges.

**2-** The CYL valve is bi-directional, it can be inserted between the two flanges without regard to flow direction. However, if a deflector cone for abrasive media is supplied, it must be fitted at the upstream end of the valve in order to function correctly.

**3-** Valves fitted with pneumatic actuators have BSP threaded air input and output ports. Tight shut off of the valve will be ensured by having at least an 87 PSI (6 BAR) air supply at the actuator. The valve is designed to be installed with the cylinder in a vertical position resulting in proper support for the cylinder forces. If the valve must be installed in other than a vertical position sufficient support for the cylinder must be provided.

WARNING: Depending on service pressure, an actuator air supply pressure lower than 6 bar may cause the valve to open or close slowly and to shut off incompletely.

**All valves operated pneumatically have to be operated once before installation.**

**4-** Valves fitted with oil hydraulic actuators have BSP threaded oil input and oil ports. Tight shut off of the valve will be ensured by having minimum 1.015 Psi. and maximum 1.740 Psi. oil supply at the actuator.

**5-** The CYL knife gate valve maintains its bubble-tight seal by pressure of the gate against the u-shaped seat and the packing material. In higher pressure valves, the force of the gate against the seat is naturally higher requiring a higher force to operate the valve. Therefore, in valves designed for high pressure service, the valve spindle must be lubricated by a waterproof, neutral grease to reduce the operating force required. We advise as lubrication product for CYL valves Graisse AL/SI 3653, graisse silicone multi usages from MOLYDAL, SA. or SILICONE GREASE FROM LOCTITE –(8104). If a maximum operating torque is specified, CYL must be advised as a gearbox may be required.

Valves that are to be electrically actuated in the field must have the spindle lubricated as stated above. Failure to do so will make operating the valve inordinately difficult. To avoid any problems, CYL recommends that the high pressure service valves be fitted with actuators at our factory. The level of spindle lubrication must be checked periodically and maintained at an adequate level.

**6- 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. However, different service pressures require different degrees of tightness. If the service medium is seen to be weeping from the upper part of the body, tighten the gland bolts & nuts slightly.**

**7 -Once the valve is installed in the line, the technician must apply NEUTRAL GREASE to the spindle to ensure ease of operation.**

**8-Those valves operated by electric actuator (especially with modulating actuators) must be inspected 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 actuator manufacturer should be followed by the customer.**

**If this advice is not taken seriously, CYL can not guarantee the good performance of the valves.**

## **OPERATION**

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**VERY IMPORTANT-  
BEFORE STARTING WORKING PROCESS ,PLEASE RE-TIGHTEN THE PACKING GLAND  
BOLTS N° PZ- 07, N° PZ-15 , N° PZ-14 (SEE THE DRAWING BELOW).**

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- To open, turn handwheel anti-clockwise.
- To open the pneumatic cylinder actuated valve, apply air pressure to the underside of the actuator piston.
- To open the hydraulic cylinder actuated valve, apply oil pressure to the underside of the actuator .
- To close, turn the handwheel in a clockwise direction. Valve must be tightened down firmly to ensure a bubble tight seal.
- To close the pneumatic cylinder actuated valve, make sure that you have at least 87 PSI (6 BAR) at the upper cylinder head to insure sufficient force for a bubble tight seal.
- To operate motor actuated valves, follow motor manufacturers instructions.

## **IMPORTANCE NOTICE**

EU regulations require all valves to be opened and closed at least twice a year to establish that they are in proper operating condition.

## **COATING**

Coating system: Non-toxic backed acrylic finish.  
Colour –RAL 5017 (BLUE)  
Film thickness – 80 – 150 microns

## **WARNING!**

### **DEALING WITH WATER**

**The contractor shall be responsible for dealing with sewage/water/chemical solutions in the existing pipes when making connections to or working with these pipes. In addition the Contractor shall ensure that ALL AIR IS REMOVED FROM THE PIPES ONCE THE CONNECTIONS HAVE BEEN MADE.**

### **MAINTENANCE**

When the body material, seat elastomer and packing material used in the service medium are according to the manufacturer's recommendations, the CYL valve is virtually maintenance-free.

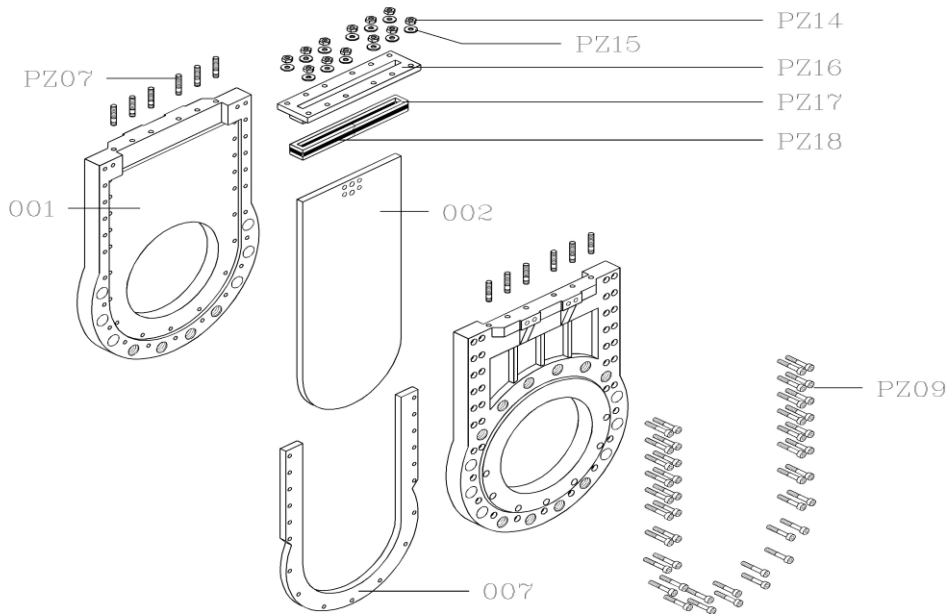
When routine inspection of the process piping is scheduled, it would be prudent to inspect the elastomer seat and packing. As all elastomers degrade to some extent when exposed to the atmosphere and sunlight, careful inspection will reveal the relative integrity of the seals and packing material.

Should a decision be made to change the packing and / or seat, proceed as follows:

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### WARNING

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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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To change U-SEAT, proceed as follows:

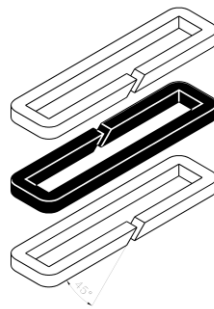
- With a wrench remove the bolts fixing the yoke-plates to the body and upper platform. Remove the bolts fixing the spindle to the disc. Set yoke-plates and upper works aside.
- Next, remove the body bolting (PZ09). Once removed, separate the body halves (001) and replace the CYL supplied spare seat (007).

To change packing material, proceed as follows:

- If the valve is in the line, make sure the line is depressurised. Remove the bolts holding one yoke plate to the body and back off gland nuts (PZ14 & PZ15) and raise the gland (PZ16). Remove the old packing and replace it following these instructions:

Fill in the packing gland's cavity following these instructions:

- Replace around the gate in the sequence shown at drawing above, a packing material strip whose ends have been chamfered (45°). The 2 ends should match properly, see detail below. Each layer should be compact mounted.
- Replace in the same way the rubber o-ring but the chamfer tips union should be placed at the opposite side of the gate to avoid both unions from the packing material and the rubber seal were at the same side of the gland, see detail below .
- Mount the next strip in the same way as above until the gland cavity is full and replace the gland, tight the bolts and nuts until they were well fitted.



**IMPORTANT:** Once leakage has stopped, do not continue tightening the gland nuts. Over-tightening the gland nuts will result in higher valve operating torques and premature packing failure.

### **STORAGE OF RUBBER PRODUCTS**

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

## **GUARANTEE**

**CYL KNIFE GATE VALVES** are guaranteed for a period of 2 years from the date of shipment, against defective workmanship and material, when properly installed, operated and serviced in accordance with CYL's recommendations. **THE SEAT AND GASKET SYSTEM WEAR AND TEAR IS NOT COVERED BY THE GUARANTEE.**

Replacement for items of CYL'S manufacture will be made free of charge if proved to be defective within such time. No claim for special or consequential damages, transportation or labour shall be allowed.

**PURCHASER SHALL BE SOLELY RESPONSIBLE FOR DETERMINING SUITABILITY FOR USE AND IN NO EVENT SHALL CYL K.G.V. BE LIABLE IN THIS RESPECT.**

The foregoing guarantee shall be null and void if, after shipment from our factory, the valve is modified in any way, including the fitting of an actuator by personnel outside the CYL works .

**CYL'S LIABILITY, UNDER NO CIRCUMSTANCES, SHALL EXCEED THE NET SALES PRICE OF THE GOODS AND /OR SERVICES FOR WHICH LIABILITY IS CLAIMED.**