MODEL 300 KNIFE GATE VALVES

INSTALLATION & MAINTENANCE MANUAL

ZUBI

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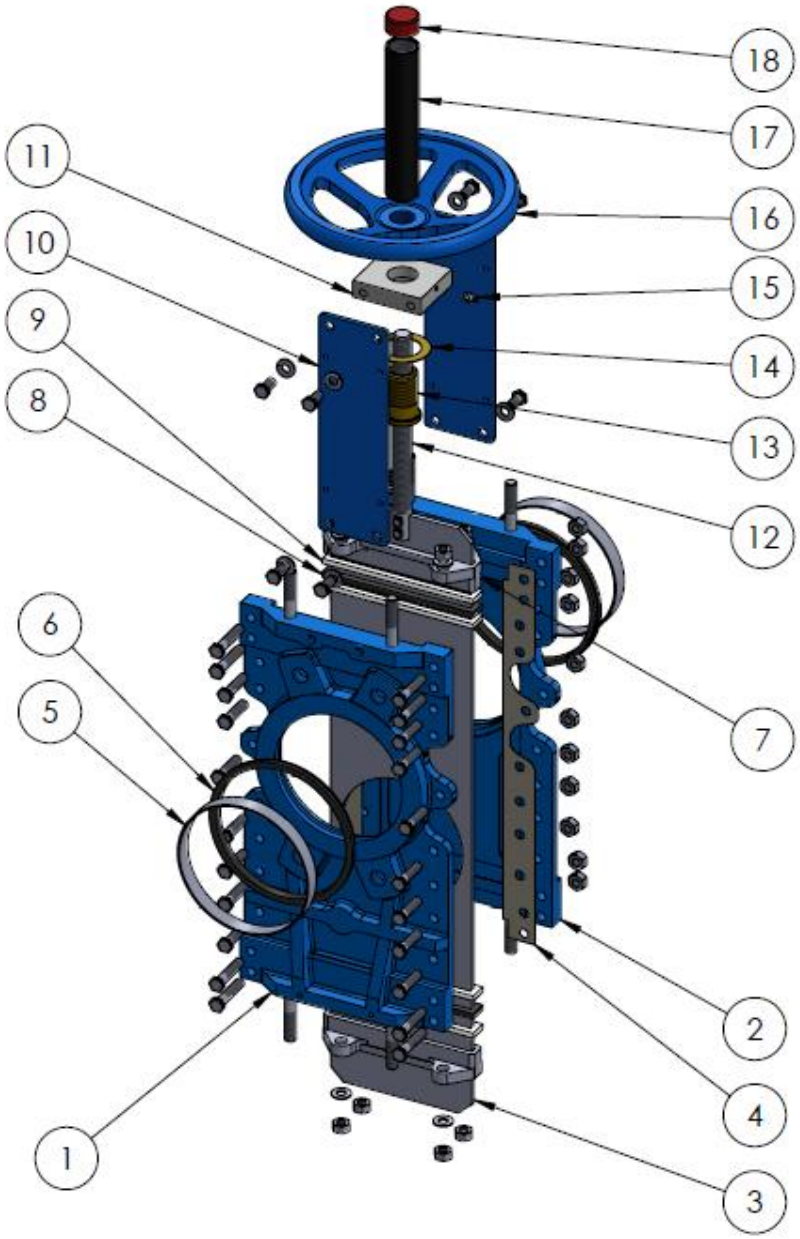
1. List of components / General arrangement



1.Body	10.Support plates
2.Counterbody	11.Suppot bridge
3.Gate	12.Stem
4.Gasket	13.Bronze drive bush
5.Seat retaining ring	14.Brass washer
6.Seat	15.Grease nipple
7.Glando follower	16.Handwheel
8.Toric joint	17.Stem protection tube
9.Packing gland	18.Protection cap

2. Description

The Model 300 knife gate is a through conduit wafer valve designed mainly used with high consistency fluids. The double seat design assures a non-clogging shut off on either normal or reverse flow. The valve is used in a wide range of demanding applications in industries such as paper pulp, waste water, chemical, general industry…etc

The Model 300 complies with the following European directives:

- 2006/42/CE (Machinery Directive)
- 2014/68/EU (PED)

3. Handling

It is important to pay attention to the following points when handling the valve.

Do not lift the valve by the actuator or by the guards as they are not designed for it, you should use eyebolts threaded into threaded holes in the body. It is also not advised to hold the valve through the bore of the valve as this could damage or dislodge the seat.

It is advisable to use slings for lifting and handling valves where the weight exceeds that stated as acceptable in the Health & Safety Manual Handling Codes.

4. Installation

For proper installation of the Model 300 valves it is important to consider the following:

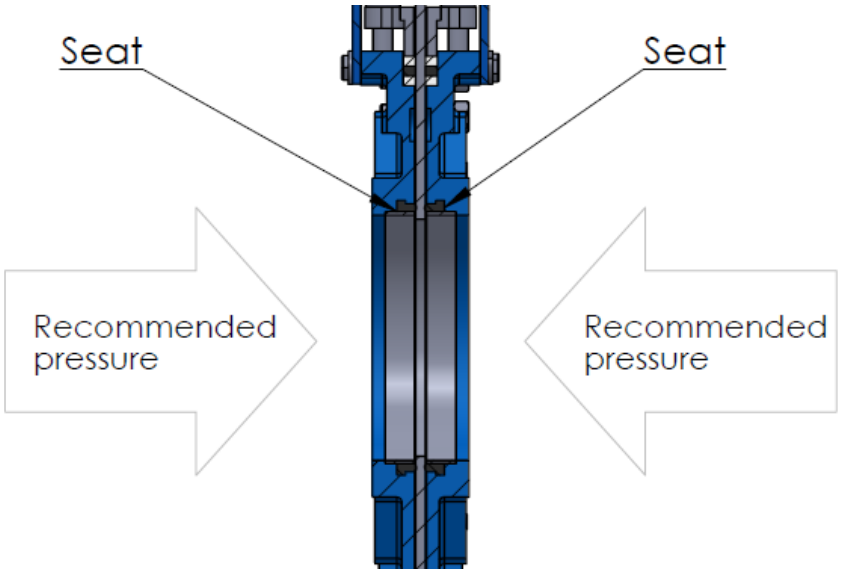
Personnel handling and installing the valves must be trained and must comply with all necessary safety regulations.

Prior to installation of the valve is important to inspect and verify that it has not suffered any damage or harm during shipping and/or storage.

Make sure that the internal bore of the valve is clean and free from debris, also that the adjoining areas where it will be installed are free from dirt, weld deposits and that the flange facings are clean – suitable gaskets are too used.

The distance between the connection flanges must be correctly aligned and parallel as any defects will cause difficulties in the operation.

Being a bidirectional valve, it can be installed in any position. Only when deflecting cones are used should the fluid direction be considered.



**Note that the direction of fluid need not always be equal to the direction of pressure.*

The Valves can be installed in any position but when installed in horizontal/inclined position, the big/heavy Valves & actuators should be supported to avoid bending of the components and improved function of the valve

Once the valve has been installed and the flanges are tight, operate the valve under pressure and check the seal under load. It is important to note that during transportation or storage of the valve the gland material might have settled so that in the event of leak, tighten the gland nuts gradually and in a crosswise pattern. Only tighten just enough to prevent any leakage, if the gland is overtightened, this will reduce the life of the gland and increase the force required to operate the valve, possibly causing damage.

5. Actuators / Operation

Hand Wheel

To open the valve turn the hand wheel counter-clockwise, to shut valve turn the hand wheel clockwise.

Lever

To operate the valve first loosen the quick release locking screw and then operate the lever in the direction of opening or closing. To secure the position tighten the quick release locking lever.

Cylinder

For pneumatically operated valves, there are option for double-acting and single-acting, in both cases the recommended air pressure is 5 to 6 bar.

We recommend that the compressed air is dry, filtered and lubricated for proper operation and longevity of the cylinder.

Hydraulic

Where valves are operated with hydraulic cylinders is important to use clean hydraulic and to maintain the cylinders on a regular basis. It is recommended specifying low temperature oils in areas where the valves are constantly exposed to cold temperatures.

Gear-box

The operation with a gearbox is similar to the drive wheel. For best performance it is recommended to lubricate the gear every six months. Where valves are in storage it is recommended to operate every 4 months.

Electric

Recommended electric actuator rpm for Zubi T200 valve is 45rpm, higher speed rpm under end user responsibility.

6. Maintenance

In Model 300, the seat and packing maintenance is recommended 1 per year for correct maintenance. Continuous & correct maintenance will help to increase the life of the valve. With Metal/Metal seat design only packing maintenance is recommended.

To maintain easy operation it is recommended that the threaded valve stem be cleaned and greased through the bronze drive bush housed in the bridge.

a) Changing the packing

It is important to change the packing, either on a regular basis (depending on the number of operations and on the circulating fluid) or due to the deterioration thereof. The packing change must be made as follows:

* We should note that this process will release the valve drive so it would be interesting using a crane if deemed necessary.

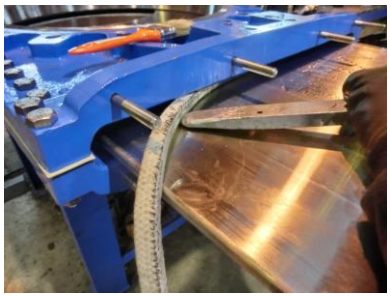
1. Firstly, without removing the body from pipe, circuit pressure will be eliminated and knife will be placed in close position. In pneumatic & electric actuated Valves protection plates will be also removed

2. Next, low support plate nuts will be loosened

3. Likewise, shaft & knife nuts will be loosened, removing the complete actuator.

4. After, the gland nuts will be loosened and this part will be retracted.

5. New packing will be installed after flushing and cleaning the packing cavity, removing possible impurities.

6. The gland will be installed again tightening the nuts.
7. Shaft & knife and support plate nuts will be tightened up after.
8. Finally and as last step some open/close cycles of the gate are recommend, to check for any possible gland leakage.

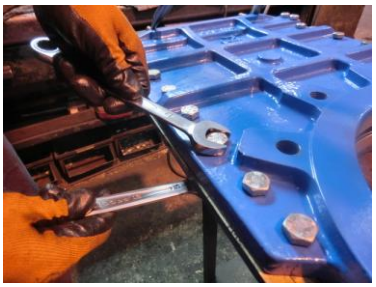
b) Replacing the seat

It is important to do periodical seat maintenance to increase the life of the valve. Once per year is recommended but depending on the service & working conditions this could be done with higher frequency. Please follow the following instructions for correct seat maintenance

1. Firstly valve will be removed from pipeline.
2. The knife will be placed in open & close and support plates and shaft & knife nuts will be loosened to remove the actuator. Also protection plates if were supplied.

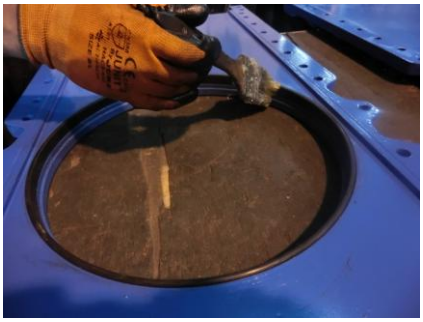

3. Loosen the gland nuts and remove the packing gland follower.

4. Next, the body will be Split loosening the nuts. Also the knife will be removed.

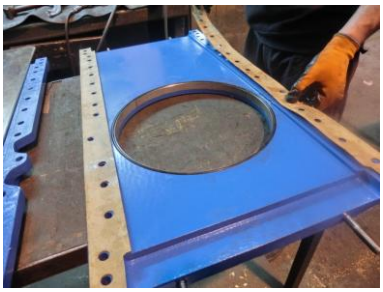



5. Once the body is split 2 parts, the sealing ring will be removed and new seat will be installed. It is important to hit the sealing ring softly but uniformly to avoid damaging it


6. After the new seat is installed, the old or new sealing ring will be replaced. Grease (non hydrocarbon based) will help in this process. Please hammer the ring with care.




7. We will also change if necessary the 2 body carboard gaskets



8. Place the knife in its position

9. Finally re-assemble the 2 bodies, tightening the body nuts up

**To replace a Teflon (PTFE) seat it is recommended to preheat at 50º to soften and ease of replacement.*

c) Maintenance of pneumatic cylinders

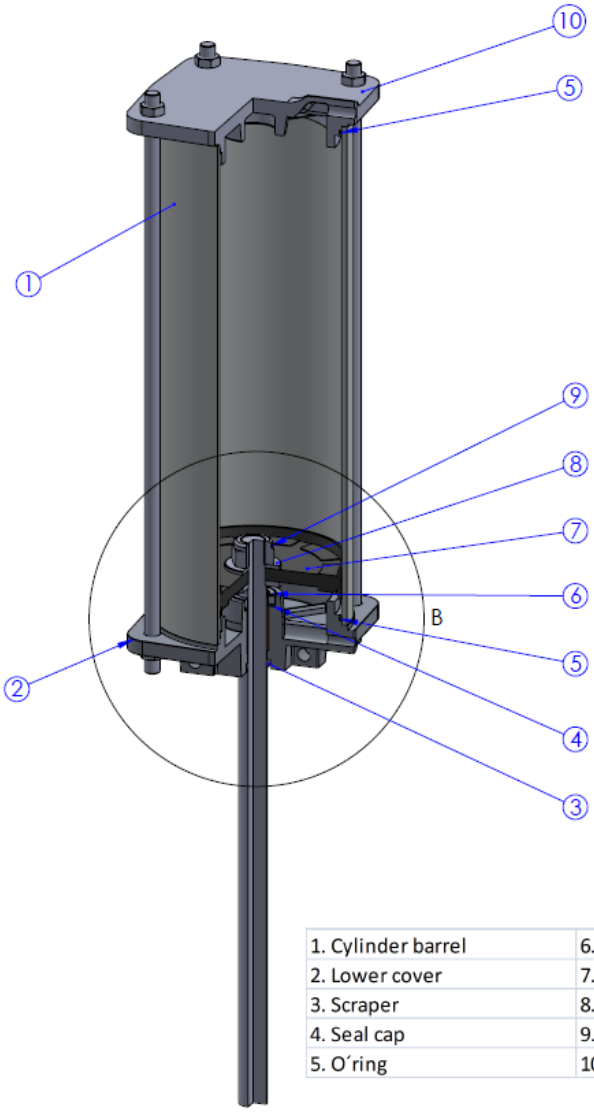
The actuators seals must be replaced if leaking is detected between the two cylinder chambers. This leak is due to the deterioration of the seals or cylinder liner.

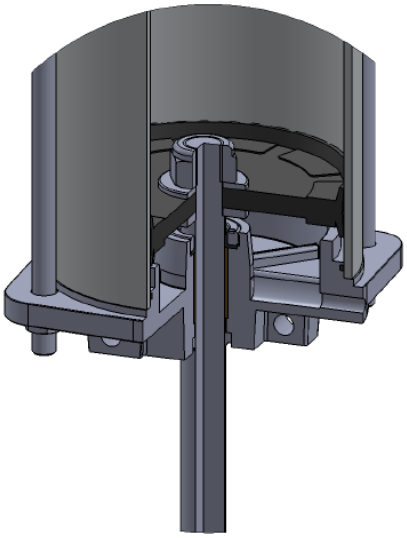
Complete replacement of the cylinder must be made as follows:

1. Disconnect the cylinder from the air supply with the valve in the closed position; make sure all the air is drained out of the cylinder.
2. Loosen and remove the lower bolts on the support plates.
3. Disconnect the shaft from the gate.
4. Next, install the new drive, reconnecting the shaft to the gate.
5. Replace the support plates and tighten the bolts.
6. Operate the valve several times before placing back in line, pressurise with air not exceeding 7 bar or less than 5, thus proving the proper functioning of the cylinder.

When replacing the cylinder components, you must follow the guidelines above as 1-2-3 then as follows:

- To renew the o-rings on the covers, undo the tie rod nuts; carefully remove cover tapping gently upwards trying not to damage the barrel or cap. Remove old o-ring clean cap, insert new o-ring and replace cap. Tighten the nuts on the tie rods diagonally.
- To replace the piston remove the upper cover and the cylinder barrel leaving the piston exposed inside. Subsequently undo the nylok nut and washer holding the piston to the piston rod, removed the damaged piston, clean thread and replace with new piston washer and new nylok nut.
- To replace the seal cap, bottom cover came loose and scraper, leaving open the damaged board.





1. Cylinder barrel	6. Sealing gland
2. Lower cover	7. Piston rod
3. Scraper	8. Washer
4. Seal cap	9. Nyloc nut
5. O´ring	10 Upper cover

7. Recommendations

For proper maintenance of the valves, we recommend periodic changes as mentioned the valve components. Its duration will depend on the working conditions, temperature and chemical corrosion to which they are subjected to.

8. Storage

- Valves should be stored in a well ventilated place at a temperature not exceeding 30ºC, especially in long-term storage because seats & gaskets may deteriorate.
- It is recommended to store the valves under cover but if this is not possible and they have to be stored outside, it is advisable to leave in the plastic covered crates the valves are delivered in and cover the crates with suitable tarpaulins.
- Areas of valve movement, especially the shaft must remain greased for it is important to conduct periodic inspections and grease as needed. Valves will need to be operated to make greasing effective.