

OTISAS

Elastomer Based Knife Gate valve



**Elastomer
Based Zero Leakage
Knife Gate Valve**

**Absolute Zero
Leakage Valve!**



The Valves Division handles Design, Manufacturing, Quality Assurance, Installation, Commissioning and After Sales Services of Packing-less, Zero Leakage Elastomer-Based Knife Gate Valves. OTISAS is the sole manufacturer of this generation & technology of Valves in India and one amongst just two companies in the world.

This heavy duty range of knife gate valves is available in pressure ratings of up to 400 psi and sizes through till 48". The valves are designed to take the abuse typical of long distance slurry transport lines, have no complex operating mechanisms, and have a very low replacement cost of whole or part of the systems. The valves are virtually maintenance free and are extremely effective at duties where knife gate valves of other makes have proven inadequate. The range offers unbelievable protection against abrasion, erosion or combined effects and is being successfully used at duties involving various abrasive slurries, powders, liquids and applications, which includes varied materials ranging from sand to ash slurries to liquids such as alumina liquor & phosphoric acid.

The following unique features of OTISAS's world-class OTISAS Series Elastomer-Based Knife Gate Valves not only overcome the deficiencies of conventional valves but also offer the following additional features:

- Heavy duty full port Elastomer lining.
- 100 % isolation bubble tight shut-off results in absolutely zero leakage.
- Double seated design provides bi-directional shut-off, permits flow in either direction.
- No stem packing eliminates packing leakage and maintenance.
- No seat cavity where solids can collect and prevent full gate closure.
- No metal parts (Valve body, Slide plate) in contact with the flow.
- Slide gate / Elastomer sleeves are easily replaceable.
- Long wear life in higher cyclic operations (4 to 5 times that of conventional valves).

User Industries:

- Aluminum
- Chemical & Fertilisers
- Environment & Public Health Projects
- Mining & Mineral Processing
- Pulp & Paper
- Power Generation
- Sand & Gravel
- & many more

Description:

The OTISAS is a packing less knife gate valve. All the sealing is done by the elastomeric sleeves installed in the valve housing. These sleeves also form the replaceable wear section for the valve. Actuation of the valve slides a stainless steel gate between the elastomeric sleeves to shut of the flow.

It is normal for the OTISAS valve to discharge media during opening and closing cycles. The benefit is that it prevents any solids from building up between the sleeves that would prevents a tight seal when the valve is fully open or closed. With the optional drain plate mounted on the valve, the valve's internal chamber is more than adequate to receive the discharge which can then be drained or flushed into a sump or launder through an attached drain pipe or hose. The auto lubricator prevents any discharge at the actuator end of the valve.

The stainless steel knife gate valve is removable for inspection or replacement without removing the valve from service.

Installation:

The OTISAS is installed with one elastomer sleeve inserted into each of the two housing that make up the valve housing assembly.. The OTISAS valve accepts both flat - face and raised - face style pipe flanges.

Maintenance:

The OTISAS valves have no grease fittings. The auto lubricator is filled with silicon grease. Every time the knife gate cycles through the valve a small amount of grease is released on the plate & hence it is lubricated. The auto lubricator should be refilled with silicon grease after 50-60 actuations. This should be done every 100 cycles on 10" and smaller, every 50 cycles on 12" and larger.

Storage:

During storage, the gate should always be in the open position. Storage should be in area out of direct sunlight, away from heat, ozone and extreme weather conditions. Freezing is not considered bad so long as the valve is kept dry. High voltage rectifiers and other ozone generating equipment bad sources should not be near the storage area.

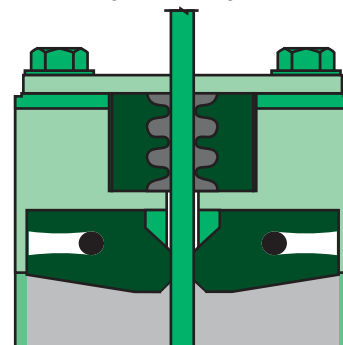
If outdoor storage is required, the equipment should be totally covered with a heavy, light colored , plastic covering. It is essential that the plastic be opaque to eliminate sunlight, and light colored to minimize heat build -up. The covering should be spread in a manner that allows underside ventilation. To insure proper ventilation the equipment should be elevated 2"-4" above the ground. Where auxiliary equipment is included, care must be taken to avoid moisture and condensation conditions on this equipment.

Assembly and Disassembly Instructions

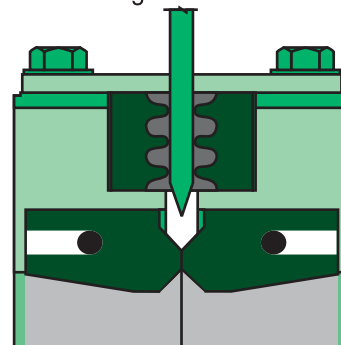
A. Valve Disassembly

1. To remove the OTISAS valve from the pipeline, disconnect all hydraulic, pneumatic and electrical connections to the valve. Remove all flanges bolts and studs, remove valve.
2. Remove the clevis and cotter pins from the bevel gear shaft.
3. Remove the two frame mounting hex nuts, lock washers and frame mounting hex bolts.
4. Lift and remove the frame complete with actuator from the housing assembly.
5. Remove the top plate mounting hex screws.
6. Remove the two housing hex bolts and separate the housing assembly in two.
7. Remove the two elastomer sleeves by simply pulling each sleeve out of the housing assembly.
8. If required, remove the actuator from the frame assembly by removing all actuator fasteners.

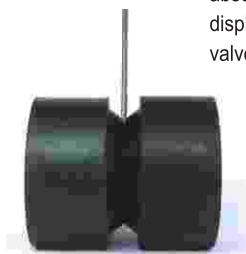
Elastomers sealed against the gate



Elastomers tightly sealed against each other



Compression holes molded into sleeve absorb elastomer displaced by sliding valve gate.



B. Visual inspection of parts Prior to Re-Assembly

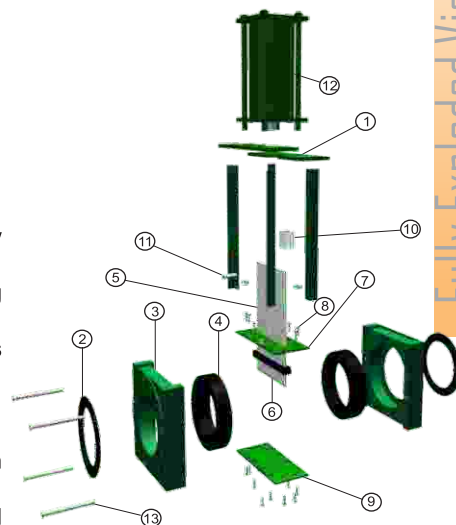
1. Check and ensure that all internal activities are free and clear of hardened slurry or other obstructions.
2. Ensure that all mating surfaces are clean and free from slurry build-up or severe corrosion.
3. Check and ensure that the elastomer sleeves are free from deep cuts, chunking, severe abrasion and chemical attack. (Such as softening). Replaced elastomer sleeves with new ones if in doubt. The elastomer sleeves must be replaced as a set.
4. Inspect the 2 frames for sign of corrosion.

C. Valve Assembly

1. Carefully insert 2 new body gaskets between the housings and join together using hex bolts. Body gaskets may be held in place with a small amount of silicone lubricant placed between gasket and 1 housings.
2. Replace the yoke and jam nut into the actuator rod end and do not tighten the jam nut (if removed during assembly).
3. Assemble the actuator and the 2 frames to make 1 assembly by replacing the actuator mounting nuts as applicable. (Do not fully tighten these nuts yet).
4. Replace the auto lubricant seal if required.
5. Insert the 2 elastomer sleeves.

NOTE: prior to installing the 2 elastomer sleeves, lubricate the sealing surfaces and the outside diameter of both sleeves. Use Dow II silicon grease or approved equal.

6. Holding the completely assembled valve by the lifting lug attached to the top of the actuator, fully tighten all fasteners. For manual bevel gear and manual handwheel valves, a 3" NPTM or 1.5" NPTM pipe section can be fitted to the top of the bolt through the end opposite the actuator may be used as a lift point.

**Pneumatically Operated OTISAS Valve**

Parts List	
ITEM	DESCRIPTION
1	FRAME
2	SELF GASKET
3	VALVE BODY
4	ELASTOMER
5	SLIDE PLATE
6	SECONDARY SEAL
7	TOP PLATE
8	BOLT
9	BOTTOM PLATE
10	ROD END CLEVIS
11	CLEVIS PIN
12	AIR CYLINDER
13	BOLT

NOTE : After the recommended life, it is necessary to change the elastomer to give continuous 100% bubble tight shut-off. The old elastomer can be kept as preventive-maintenance stock for future use.

Field Replacement of the Auto lubricator

The OTISAS auto lubricator is a one-piece molded elastomer seal designed, to lubricate the knife gate as it is actuated every time & also to eliminate any splash from the top of the valve housing during actuation of the valve.

Replacement of the secondary seal is simple and easily accomplished without having to remove the valve from service. However, if it is suspected that the primary seals (Elastomer sleeves) have failed and the slurry may injure personnel because of temperature or other reasons, the valve should be removed attempting the following procedures.

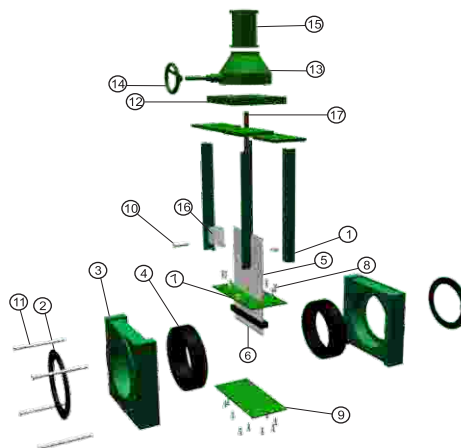
A. Auto Lubricate Removal

1. With valve in fully open position, remove the actuator shaft bolt
2. Loosen of the frame mounting bolts and completely remove the other one.
3. Swing the frame out of the way using the loosened frame bolts as a hinge, or lift off completely.
4. Remove all fasteners and lock washers that retain the auto lubricator retainer plate in position.
5. Remove the auto lubricator retainer plate by lifting it up the length of the gate.
6. Remove the auto lubricator by inserting a flat blade screwdriver midway along the outside of the lubricator between the seal and the valve housing. Try the seal up and remove.

NOTE: Before replacing either the auto lubricator or both primary seals (Elastomer sleeves) check the knife-gate for Flatness as follows:

Place a straight edge across one face of the knife-gate. If there is a gap between the straight edge and the surface of the gate greater than 0.090", the gate should be straightened before reinstallation.

The knife-gate can be straightened by supporting the outside edges of the gate and with the "dished face" of the gate pointing up, apply sufficient force to the center of the knife-gate using a hydraulic press.

**Manual Operated OTISAS Valve**

Parts List	
ITEM	DESCRIPTION
1	FRAME
2	SELF GASKET
3	VALVE BODY
4	ELASTOMER
5	SLIDE PLATE
6	SECONDARY SEAL
7	TOP PLATE
8	BOLT
9	BOTTOM PLATE
10	CLEVIS PIN
11	BOLT
12	GEAR MOUNTING PLATE
13	GEAR BOX
14	HAND WHEEL
15	SPINDLE COVER
16	ROD END CLEVIS
17	SPINDLE

**"World Best Our Elastomer based OTISAS valve is an
"ON/OFF" valve and it should not be used in "REGULATING OPERATION".**

Valve Selection Chart

Basic Models

- OTI-Seal for Wet Applications.....
- OTI-Seal for Wet Applications in Slim Model.....
- Endivac Model for Dry Solid / Pneumatic Appl.....
- Endivac Model for Dry Solid / Pneumatic Appl in Slim Model.....
- Pneuxtra Model for Material Extraction.....

Codes

OTISAS
SEFA
DFA

SDFA
PDFA

Bore Size

- 2" to 48"

Pressure Range

- -0.76 kg/sq.cm to 30 kg/sq.cm

Actuator Range

- Handwheel Type.....
- Right Angle Bevel Gear.....
- Air Cylinder.....
- Hydraulic Cylinder.....
- Electro Mechanical.....

HW
BG
AC
HC
EM

Elastomer Sleeve / Secondary Seal

- Gum Rubber.....
- EPDM.....
- Urethane.....
- Silicon Rubber.....
- Neoprene.....
- Butyl.....
- Hypalon.....

GR
EP
UR
SI
NE
BU
HY

Temperatures

- Freezing Temperatures to 400 Deg C

Body Options

- Cast Iron FG 260 Grade.....
- Cast Steel.....
- Stainless Steel 304 / 316.....
- Ductile Iron.....

CI
CS
SS
DI

Gate Options

- Stainless Steel 304/316.....
- Stainless Steel 410 hardened.....
- Mild Steel Chrome Plated.....
- Hast Alloy.....

SS
SSH
MS
HA

Bottom Port Options

- Cast Iron FG 260 Grade.....
- Cast Steel.....
- Stainless Steel 304 / 316.....
- Ductile Iron.....

CI
CS
SS
DI

Instrumentation

- Solenoid Valves.....
- Limit Switches.....
- Proximity Switches.....

SV
LS
PS

Painting Options

- Polyester Paint.....
- Epoxy Paint.....
- Powder Coating.....

PP
EP
PC

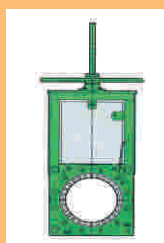
Model Selection Guide / Model Numbering System

Step	Action	Example
1	Select a Model	OTISAS
2	Bore Size	20
3	Pressure Range	10
4	Actuator Range	AC
5	Elastomer	GR
6	Temperatures	75
7	Body Options	DI
8	Gate Options	SS
9	Bottom Port Options	DI
10.	Instrumentation	PS
11	Painting Options	PC

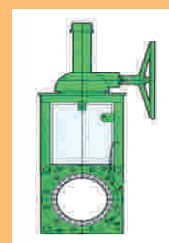
The Selected Option:

OTISAS-20-10-AC-GR-75-DI-SS-DI-PS-PC

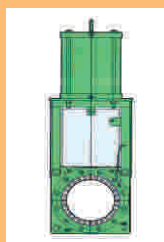
OTISAS-MH
HANDWHEEL VALVES



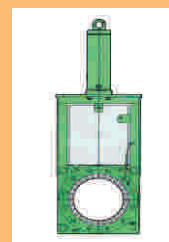
OTISAS-MG RIGHT ANGLE
BEVEL GEAR VALVES



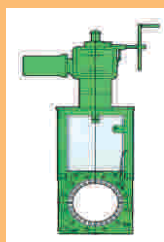
OTISAS-AC AIR
CYLINDER VALVES



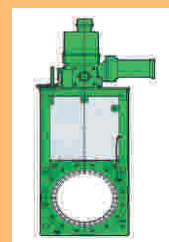
OTISAS-HC HYDRAULIC
CYLINDER VALVES



OTISAS-EMX ELECTRO
MECHANICAL VALVES



OTISAS-EM ELECTRO
MECHANICAL VALVES



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