VALVE USAGE & MAINTENANCE PAMPHLET

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SERIES IHO-10

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1 DESIGN DESCRIPTION

The design is that of a "pressure seal valves" valve having an upper spindle that is spring loaded against the packing. When the valve is in service, system pressure serves to assist this spring load in creating a seal against leakage around the spindle. The spring can be detected if the hand wheel pivots on the spring by wiggling. In addition the design has "O" rings around the spindle as secondary seal and help in making valve leak proof around the spindle.

The hand wheel is non rising and always in the same position regardless of whether the valve is in the open or closed position. Further the threads are located on the lower spindle and are in the wetted gas stream and the upper spindle is free floating without the spring.

These valves can be used in a wide range of pressure and gas applications where hand wheel operations and non-rising spindle are desired with extreme reliability, and are user friendly for non-corrosive and high purity products. However the design is inappropriate for corrosives and ultra-high purity gases.

In addition and to better understand the contents of this pamphlet refer and/or request detailed drawings and gas service chart.

2 SALIENT FEATURES

- Valves meet all design and test requirements of EN ISO 10297:2006 for WP 300 Bar, TP 360 Bar.
- Hand wheel is spring loaded, with provision of a friction washer, to avoid loosening during transportation and to facilitate external tightness by pressing the thrust washer against the face of the top spindle and bottom face of the gland nut.
- Double –o rings around the top spindle (Piston seal) assist in preventing gland leakage at low pressures. Back up split ring prevents extrusion of "O" rings under high pressure.
- Metal to metal sealing below gland nut threads ensures permanent sealing not requiring retightening of gland nut and prevents pressure accumulation at the top of the valve body.
- Spindle construction is two pieces with a robust square drive arrangement, and precision machined on Vertical machining centre for perfect alignment and very low operating torque.
- Valve spindles made from Naval Brass for extra toughness and wear resistance.
- High quality precision machining resulting in low torque sealing and long cycle life.
- Bottom spindle, thrust washer and O-rings is lubricated by oxygen compatible Gleitmo 599 (for 300 Bar application for highly oxidizing gas service) to minimize seizing and galling under high-pressure operation.
- Inlet and outlet threads provided in all national and international outlet threads.
- Valves can be provided with PRD as per customer's requirement and in compliance to international standard.
- Valves can be used without protective cap up if weight of package mass does not exceed 55.5 kgs.
- Optional : Provision of dip tube fitment (Maximum thread size – ¼" NGT)
- Valve maximum dimensions allow fitment of valve protection cap as per ISO 11117.

3 VALVE FITMENT AND REMOVAL FROM CYLINDERS

We recommend use of PTFE thread sealant to tighten valve inlet on the cylinder coupling. The recommended valve tightening torque as per ISO 13341 on valves having inlet 25E to EN629-1 should be between is 200-300 Nm for fitting in Seamless steel cylinders. It is advisable to clean/tap cylinder coupling before valve fitment to avoid damage to the valve inlet and to facilitate sealing between the threads.

Valve fitment and removal can be accomplished with either a manual, electric or hydraulic wrench. Remove valves from cylinders ensuring that the jaws gripping the valve fit properly over the wrenching flats on the valve without contacting the outlet, inlet or relief device on the valve. The valves should be removed slowly to prevent damage to engaged threads. Before removing the valves, it is important that the container is completely empty of gas, preferably vacuumized and secure to prevent toppling during valve removal.

Valve inspection & reconditioning should be carried out by trained personnel familiar with valve design and performance requirements and with proper tools, gauges and gadgets.

DISCLAIMER : The pamphlet shall be used as reference for the users of Tekno Valves design IHO-10. The procedure is not meant to substitute existing plant usage guidelines. Tekno Valves do not take any responsibility for incorrect reconditioning and repair of valves and any mishap as a result of the same.

Contact:Tekno Valves, Natun Rasta, Bilkanda, 24 Parganas (N), Kolkata - 700 113, WB, India
Phone:+91-33-2595 6767-74 Fax : +91-33-2595 6779 E-mail : post@teknovalves.com

4 VALVE DISASSEMBLY, INSPECTION AND RECONDITIONING

- Use 1" Hex A/F spanner to open Gland nut and disassemble the operating mechanism.
- Inspect individual components for structural cracks, gross corrosion & other significant damage.
- Valve body and components should be cleaned with dry clean cloth to remove impurities and sediments and inspected for deformation, cracks & unacceptable wear. All components should meet the dimensional specifications of the drawings except inlet thread which are deformed during valve installation, & cannot be regauged.
- Rethreading dies can be used for outlet and packing nut threads to remove material buildup and re-died threads should be subsequently checked by Thread ring "Go" and gauges "Go" and "No Go"
- The valve outlet sealing face should be checked for nicks and crack and refaced if required. Repeated resurfacing will reduce the number of effective threads and may weaken the body.
- Inlet threads on used valves should be inspected visually & soft wire brushed to remove burrs & polish threads.
- The internal bores and threads should be inspected for thread deformation, wear and material loss. Inspection gauges should be used to check internal M 16 x 1.5 thread.
- Check nylon 66 thrust washer, nylon 66 tip and O-rings for wear. Replace if necessary. Do not attempt replacement of nylon 66 valve seat tip. If tip is worn out, replace entire bottom spindle.
- Clean/ Degrease components by suitable solvent before assembly. Ensure valve body and components for Oxygen service and gases having oxidizing potential greater than air are free from foreign particles, impurities and any trace of oil etc by checking in bright white light and also preferably under black light. (Ultraviolet light).

5 REASSEMBLY AND TESTING

1. Lubricate the ridge of the upper stem and place thrust washer on the ridge. Use suitable fixture to fit O-rings on the groove of the top spindle. Fit back up ring in the same groove on top of the O-ring. Lubricate external surface of the O-rings by spatula, brush or clean gloved hands.
2. Insert top spindle assembly inside gland nut carefully so that there is no damage to the O-rings till the face of the gland nut having internal groove rests on the packing/thrust washer.
3. Lubricate bottom spindle threads and insert into the valve body. Slide top spindle square inside the bottom spindle square and screw gland nut to the valve body internal threads. Use hand wheel to lower the bottom spindle and keep top spindle in closed position.
4. Clamp Valve body in bench vice with nylon clamp pads and ensuring no damage to the valve body tighten gland/packing nut at 70-80 Nm.
5. Place friction washer on top of the gland nut followed by square plate to rest on top of the friction washer. Rotate valve to fully open position before fitting hand wheel. Place hand wheel/knob on top of brass plate resting the wheel groove to match the brass plate. Encase spring around the threads of the top spindle and press spring with brass nut to engage the nut threads and tighten between 4-5 compete turns by holding the hand wheel.
6. Pressure test each reconditioned valve after assembly for external and internal tightness at pressure sequence 0.5 Bar, 10 Bar and 1.2 times the maximum working pressure of the valve by dry compressed air or Nitrogen using Teepol HB7 or equivalent soap solution by bubble method..

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