



VALVE USAGE & MAINTENANCE PAMPHLET

[Revision 0 Issue Date: 02/02/09]

SERIES MYC-10C [New generation post, knob and toggle pin index valves for medical gases]

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1 DESIGN DESCRIPTION

Compact, pin index valve design is basically O-ring seal with no spring required in the operating mechanism. When the valve is in service, system pressure serves to load the top stem against the Nylon 66 packing ensuring external tightness over 50 Bar. At low pressures, O-ring seal provides external tightness between packing nut inner wall and top stem. Small bearing surface of thrust washer, direct stem drive and effective oxygen compatible lubrication results in exceptionally low torque operation under full service pressure and in general requiring little maintenance over the service period.

The top stem 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.

These valves can be used in a wide range of medical gases and available in post, knob as well as toggle variants.

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

2 SALIENT FEATURES

Product features

1. Valves meet EN ISO 10297:2006 and CGA V-9-2005 for WP – 200 Bar and maximum service pressure of 3000 psig respectively.
2. Packing nut abuts at the inner end with the valve body to make metal to metal seal. This puts the packing nut into compressive stress thereby reducing the risk of stress corrosion cracking. In addition to metallic seal below packing nut threads, an O-ring is provided in the valve body for secondary protection against leakage past the packing nut threads making the design virtually leak proof against any type of external impact or tip over of cylinders.
3. EPDM O-ring and high durometer back up ring provided on top stem groove (Piston seal) to protect against external tightness around the stems.
4. The design does not use any fluorinated polymers in gas wetted duty with toxic combustion products.
5. Non wetted parts are not chrome plated as per requirement of Clause 4.3 of EN ISO 10297:2006, including the top stem allowing far greater dimensional stability and eliminating chances of plating particles chipping off from the rotating stem compromising the O-ring seal.
6. Bottom stem threads, O-ring, back up ring and thrust washer lubricated with Oxygen compatible lubricant to prevent seizing and galling under high pressure throughout service life.
7. Also available with CG-4 capsule design PRD for Oxygen service as per CGA S.1.1-2007 using Copper gasket for permanent seal with tamper proof T-30 Star drive.
8. Valves with parallel threads provided with double O-ring configuration in the valve inlet.
9. Hytrel coated Brass toggle designed to minimize any impact on packing nut.
10. Valves available in a variety of inlet and outlet connection as per national and international standards.

3 VALVE FITMENT AND REMOVAL FROM CYLINDERS

For parallel threads use O-rings for fitment. The O-ring should be be correctly positioned in the sealing area and should not be damaged during placement. The area of cylinder neck thread adjacent to the sealing area should be clear of any debris, ragged edges, burrs, etc. With the cylinder secured against rotation, the valve shall be fitted by hand paying particular attention to prevention of damage to the 'O' ring as it is engaged into the cylinder sealing area.

Use correct and recommended size and grade of O-ring. For M18x1.5 mm thread as per EN 144-1, the suggested Parker O-ring grade and size is E0540-80, ID- 17.96 mm x 2.62 mm. Tightening torque as per ISO 13341 is 85-100 Nm for Aluminum cylinders and 100-130 Nm for steel cylinders.

For 3/4-16 UNF inlet threads, use PTFE Teflon or EPDM O-ring for oxidizing gases and Buna N O-ring for CO2 service of size 2-210 (ID- 18.64 mm, W-3.53 mm). Suggested tightening torque on Al cylinders is between 100-115 Nm.

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We recommend use of PTFE tape to tighten valve with taper inlet threads on steel cylinders. The recommended valve tightening torque as per ISO 13341 on valves having inlet 17E to ISO 11116-1 is 120-150 Nm for steel cylinders, 75-95 Nm for Al cylinder without cylinder neck reinforcement and 75-140 Nm with cylinder neck reinforcement.

Consult cylinder/valve manufacturer for tightening torque for other thread size/cylinder material combination.

Apply tightening torques after the valve has been screwed in by hand as far as possible. Before removing the valves, it is important that the cylinder is completely vented out. Remove and fit 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.

Valve inspection & reconditioning should be carried out by trained personnel using proper tools and gauges.

Always use a new 'O' ring each time a parallel thread valve is refitted into the cylinder.

4 VALVE DISASSEMBLY, INSPECTION AND RECONDITIONING

- Use 13/16" 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.
- 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 ½-20 UNF thread and M18X1 threads.
- Check nylon 66 thrust washer, nylon 66 tip and o-ring for wear. Replace if necessary.
- 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 top stem collar. Place Nylon 66 thrust washer on top of the groove followed by EPDM back up ring. Use special tool to put O-ring in the groove provided on the top stem and place back up ring over the O-ring. (In the same groove). Lubricate the O-ring assembly appropriately. Push top stem assembly fully inside packing nut till Nylon thrust washer coincides with bottom face of the packing nut.
Place valve body O-ring inside the groove provided in the valve body, just below the packing nut threads.
2. Lubricate bottom stem and place inside valve body chamber. Use top stem to drive bottom stem till its soft seat area touches the valve seat.
3. Slide top stem male square inside the bottom stem female square and screw packing nut to the valve body internal threads. Use knob or key to lower the bottom stem and keep top stem 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 50 Nm. For knob/toggle operated valves, fit knob/Toggle as shown in GA drawing.
5. PRD Assembly – Place burst disc on Copper gasket and push fit retainer plug inside cap ensuring burst pressure determining orifice face is in contact with burst disc. Put appropriate thread locker on retainer plug threads. Tighten using Torx # 30 driver inside valve body between 8-10 Nm.
6. Pressure test each reconditioned valve after assembly for external and internal tightness full service pressure but not exceeding 240 Bar, by dry compressed air or Nitrogen using Teepol HB7 or equivalent soap solution to ensure no leakage.

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