404 series – Operating and maintenance instructions

404 series – Stop Valve

General information:

The 404 Series Stop Valve is designed to effectively seal off flow in liquid and gas pressure systems.

The mechanism for closure is of the balanced stem type which reduces the load required to close/open the valve at all pressures.

Installation:

Before installing the valve, ensure the system operating requirements are matched with the valve specification details printed on the attached data label.

Immediately prior to installing the valve into a system, check that all protective caps have been removed from various ports. Ensure that no ingress of dirt or debris is allowed to enter any part of the assembly, as this will affect the general working of the valve.

It is likely, when new installations are assembled, small particles of metal etc will become dislodged. It is therefore recommended that a suitable filter (30 micron or less) be fitted immediately up-stream of the valve.

A check should be made to establish that the direction of flow marked on the valve corresponds with the direction of flow within the system.

As a necessary precaution it is also recommended that a correctly sized pressure relief valve, capable of safely exhausting full flow from the system should be fitted down-stream of the valve. Advice on flow rates can be obtained from PRESREG VALVES.

Operation:

The valve is operated by turning the control knob in an anticlockwise direction to open. The valve is closed by turning the control knob clockwise.

When all port connections have been checked for tightness, and the control knob fully turned anticlockwise, inlet pressure can be steadily introduced to the valve. During this time check that no leakage across the valve seat occurs. This will be detected by an increasing pressure reading down-stream of the valve.

PLEASE NOTE:
ONLY MODERATE HAND TORQUE SHOULD BE APPLIED TO THE HAND WHEEL IN ORDER TO AFFECT THE GAS TIGHT SEAL ACROSS THE SEATING OF THE DEVICE. EXCESSIVE FORCE MAY DAMAGE THE SOFT SEATING PAD AND CAUSE LEAKAGE.

Spares

A refurbishing facility is offered by PRESREG VALVES and customers are strongly advised to make full use of this service whenever valves need attention. However, from time to time it may not be possible or practical for valves to be returned and therefore it is recommended that customers keep suitable quantities of spare parts in order to carry out their own maintenance.

Spare kits are available from:

Presreg Valves
a trading division of
JRE Precision Limited
18 Bakewell Road
Loughborough
Leicester
LE11 5QY
UNITED KIINGDOM
Tel: 44(0) 1509 610580
e-mail: info@jreuk.com

In any correspondence, please quote valve type and serial number.

Maintenance:

Whilst in operation, the various moving components will experience wear. Any elastomer material also has a finite shelf life. It is for these reasons that it is recommended that maintenance be carried out at regular intervals.

Only certain maintenance tasks are recommended, and these are listed below. Work must be restricted to these operations only and no alteration should be made to any component part of the valve, as this may lead to poor performance and even unsafe operation.

Whenever possible, remove the complete valve from the system and carry out servicing at a bench, suitably cleaned to ensure no ingress of dirt or foreign matter into the valve.
Anyone wishing to carry out their own maintenance would be well advised to obtain an “O” ring service set of tools as these are specially made to avoid damage to the elastomers during re-assembly.

If, after maintenance has been carried out, the valve is not giving satisfactory performance, the complete unit should be returned, together with a brief outline of faults experienced, to the manufacturer for further investigation.

Recommended maintenance

Before attempting any disassembly of valve, please ensure that a copy of drawing no 404-GA is available for reference, any recommended spares kits are obtained, and a suitable clean area is set aside for working.

IT IS NOT RECOMMENDED THAT VALVES USED ON MEDICAL/OXYGEN INSTALLATIONS BE SERVICED ON SITE. Special cleaning procedures and materials are necessary *

When the valve is to be used for OXYGEN service do not use ordinary grease, ONLY USE FONBLIN RT15. Unsafe conditions may result if this is not observed.
Ensure all pressure is safely vented to zero prior to dismantling. If dangerous medias have been used the system must be purged in accordance with the system service instructions.

1) Spindle assembly replacement:

Unscrew cap head screw retaining the handwheel (item 21). Remove handwheel (item 4) weather sleeve (item 6) and vee ring seal (item 25) and place to one side.
Undo and remove 4 off M8 bolts (item 22) retaining the bonnet (item 2). Remove and discard the bonnet and place the 4 off M8 bolts to one side.
Holding the shaft (item 3) firmly, pull the spindle assembly upwards and out of the body. A gentle rocking motion will help the assembly come free. The entire spindle assembly will come out as one piece.
Discard old spindle assembly.
Take the new spindle assembly and apply a small amount of grease to O ring (item 17). Remove the handwheel, weather sleeve and vee ring seal from the new spindle assembly and place to one side.
Re-fit new spindle assembly into the valve body by the reverse process as removal, again using a gentle rocking motion to carefully slide the spindle assembly down into the body.
Replace the 4 off retained M8 bolts into the bonnet and tighten equally to 41 Nm.
Replace vee ring seal (item 25), weather sleeve (item 6) and handwheel (item 4).
Re-fit cap head screw (item 24) to retain handwheel.
To help the new spindle assembly bed in, fully open then fully close the valve 10 times.

If no other maintenance is required, the regulator can be brought back into service.

2) Spindle as spare

**It is possible to obtain a spindle as spare with buying a complete spindle assembly. This is a difficult procedure and should only be carried out by competent personnel with the correct equipment. It is highly recommended to purchase a complete spindle assembly whenever possible.

**A soft seals spares kit must be obtained and fitted at the same time as a spindle as spare.

Unscrew cap head screw retaining the handwheel (item 21). Remove handwheel (item 4) weather sleeve (item 6) and vee ring seal (item 25) and place to one side.
Undo and remove 4 off M8 bolts (item 22) retaining the bonnet (item 2). Remove bonnet and place to one side.
Remove top thrust bearing set (item 9, 10, 11) and place to one side.
Holding the shaft (item 3) firmly, pull the spindle upwards out of the body to remove the spindle assembly. A gentle rocking motion will help the assembly come free.
Unscrew the shaft from the spindle assembly (left hand thread) and place to one side.
Remove other thrust bearing set (item 9, 10, 11) and bearing load washer (item 19) and place to one side.
Slide the bush (item 5) off the spindle assembly, remove old backup and O ring (15 & 18) from the bush and discard. Replace with new O ring and backup ring – apply a small amount of grease to O ring before fitting.
Discard old spindle assembly.

Using a suitable split bush, hold the spindle (item 14) in a vice and remove the lock nut (item 27) and tab washer (item 13).

Unscrew seat retainer (item 5), the seat (item 8) will come away with the seat retainer.
Discard old spindle.
Take new spindle (item 14) and fit new O ring and backup ring (item 17) to bottom of spindle – apply a small amount of grease to O ring before fitting.
Place new seat (item 8) over the spindle, then slide O ring (item 28) over the spindle thread onto the seat.
Screw seat retainer on to spindle to secure the seat (left hand thread). Tighten to a torque of 20 lb/in.
Replace tab washer (item 13) and lock nut (item 7), peen over one of the tabs on the tabs washer to lock the locknut in place.
Fit new O ring and backup ring (item 17) to seat retainer – apply a small amount of grease to O ring before fitting.
Slide the bush (item 4) back on to spindle assembly, ensure correct orientation.
Re-position thrust bearing set (item 9,10,11) and bearing load washer (item 28) on to the bush. Ensure correct orientation of bearing and bearing load washer.
Screw shaft back on to new spindle assembly (left hand thread).
Re-fit new spindle assembly into the valve body by the reverse process, again using a gentle rocking motion to carefully slide the spindle assembly down into the body.
Re-position thrust bearing set (item 9,10,11) over the shaft.
Replace bonnet (Item 2) and the 4 off retaining bolts (item 22). Tighten equally to 41 Nm.
Replace vee ring seal (item 25), weather sleeve (item 6) and handwheel (item 4).
Re-fit cap head screw (item 21) to retain handwheel.
To help the new spindle assembly bed in, fully open then fully close the valve 10 times.

If no other maintenance is required, the regulator can be brought back into service.

3) Soft seals spares kit:

Follow the above procedure for fitting a new spindle as spare.
Replace the following items when they are removed whilst carrying out the above procedure.

17 – GT ring assembly – 2 places.
15 & 18 – O ring and BU ring
28 – O ring
12 – Seat

To help the new spindle assembly bed in, fully open then fully close the valve 10 times.
If no other maintenance is required, the regulator can be brought back into service.

4) Bearing set replacement

Unscrew cap head screw retaining the handwheel (item 21). Remove handwheel (item 4) weather sleeve (item 6) and vee ring seal (item 25) and place to one side.
Undo and remove 4 off M8 bolts (item 22) retaining the bonnet (item 2). Remove bonnet and place to one side.
Remove thrust bearing set (item 9,10,11) and discard.
Unscrew the shaft (item 3) from the spindle assembly (left hand thread) and place to one side.
Remove other thrust bearing set (item 9, 10, 11) and bearing load washer (item 28) and discard.
Re-position new thrust bearing set (item 9,10,11) and new bearing load washer (item 28) on to the bush. Ensure correct orientation of bearing and bearing load washer.
Screw shaft back on to spindle assembly (left hand thread).
Re-position new thrust bearing set (item 9,10,11) over the shaft.
Replace bonnet (Item 2) and the 4 off retaining bolts (item 22). Tighten equally to 41 Nm.
Replace vee ring seal (item 25), weather sleeve (item 6) and handwheel (item 4).
Re-fit cap head screw (item 21) to retain handwheel.

If no other maintenance is required, the regulator can be brought back into service