

## Globe Valve DN80

### Installation, Operation and Maintenance Manual

Reference Number:	IOM 13	Date:	18 November 2021	Issue:	B
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## Globe Valve DN80

Reference Number:	IOM 13	Date:	26 February 2013	Issue:	A
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### **WARNING!**

**BEFORE ANY INSTALLATION AND MAINTENANCE WORK CAN COMMENCE ENSURE THE VALVE AND SURROUNDING SYSTEM IS DRAINED OF PRESSURE AND ISOLATED.**

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### Disclaimer

#### PLEASE NOTE:

If the valves produced by Parker Hannifin Bestobell Valves/LNG are refurbished by a third party organisation that is not approved by Parker Hannifin Bestobell Valves/LNG, then the safety and performance will not be guaranteed and the warranty may be invalid.

If unsure about the installation and operation procedures for this valve, please contact Parker Hannifin Bestobell Valves/LNG.


Parker Hannifin Bestobell Valves has produced this manual in order to provide engineering personnel with sufficient general information to enable the operation, installation and effective maintenance of the valve manufactured by Parker Hannifin Bestobell Valves.

In the interest of product development, the designs and specifications for our products are constantly under review and we therefore reserve the right to make changes and improvements without notice.

This manual and the copyright therein are the property of Parker Hannifin and all information that it contains is confidential.

This manual must not be reproduced or disclosed nor must any information taken there from be disclosed, without prior consent in writing of Parker Hannifin.

This document has been authorised for use by:

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Date:	19/11/2021

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### Introduction

#### Outline

This manual is broken down into separate sections:

- **Introduction**

This section provides information about important safety requirements as well as highlighting the precautions taken at Parker Hannifin Bestobell Valves to ensure the cleanliness of our products. Details regarding servicing are also introduced.

- **Installation**

This details the method of installing the valve on site, and includes information on storage, unpacking and inspection. Preparation of the valve and site is also discussed to allow ease of installation and operation.

- **Hardware Description**

Introduces the product as well as providing a more detailed description including operating conditions and suitable media. Any further requirements for the effective operation of the valve are also discussed.

- **Maintenance**

Provides information relating to the on-site maintenance of the supplied valve, as well as discussing common problems and solutions.

#### Safety

**Read and understand these instructions before installing the valve. Improper installation, operation or maintenance by the owner or operator of this valve can result in personal injury.**

Only use genuine Parker Hannifin Bestobell Valves spares to ensure safe and optimum performance.

Prior to the installation of the valve into the system and any maintenance work, ensure the system is de-pressurised and isolated for the duration of the installation and during any subsequent maintenance.

The valve must be installed within a system that has adequate draining and venting provisions.

In cryogenic applications the area of pipe-work to receive the valve must be allowed to reach ambient temperature.

It is essential that the installers and operators are conversant with all of the safety issues relating to the medium within the system, and are fully trained to an adequate standard.

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Wear safety glasses and gloves during any installation or operation of the valve.

Valves must only be used in a circuit protected by suitable equipment.

The valve should be inspected for wear as part of a regular system maintenance programme.

Cryogenic burns can occur if the valve is handled during or after the valve has operated.

Minor leaks from the outlet side of the valve, if allowed to build up in a confined area, can be hazardous. This can be avoided by dissipating into the atmosphere or a well ventilated area.

If valve is to be installed in hazardous climatic conditions or seismic areas, please inform Parker Hannifin Bestobell Valves.

Identify the intended flow direction and match the valve orientation with its flow direction arrow.

Ensure that all end connections to the valve are in line and that the pipe work is supported to reduce unwanted stresses, loading and vibration on the valve and system pipe work.

Ensure that all joining materials / components used during the installation of the valve are compatible, and will not cause any deterioration to the valve structure.

When using on CO<sub>2</sub>, the internal atmosphere must be dry and moisture free as any bronze components could be affected by carbonic acid.

**DO NOT** check leaks with hands.

### ***Cleanliness***

Immediately after assembly in a controlled clean room, the valve is sealed in an airtight plastic bag to maintain cleanliness. As such, it is essential to maintain this cleanliness throughout all stages of installation. Particular care should be taken not to contaminate the internals of the valve with grease, moisture, grinding dust, weld/brazing spatter etc.

Clean practices will save time later with reduced 'flushing' and maintenance.



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### Service Intervals

Parker Hannifin Bestobell Valves recommends that a major service is carried out on its valves in line with the procedures contained in this manual every 2 years.

In addition to this, a regular inspection should take place to ensure correct operational condition.

Regular inspections are suggested on a monthly basis and maintenance work should be carried out in line with this service manual.

It is recommended that the Service Record Sheet enclosed be fully completed at every service interval.

### Installation

Personnel carrying out Assembly / Joining / Welding / Inspection must be adequately trained and hold the necessary approvals.

Ensure that environmental conditions (atmospheric pollution) are compatible with the valve materials.

(NOTE: Ensure there is enough space around the valves installed position to allow the removal and refit of the headwork / valve)

### Installation Overview

The quality of performance in service is a function of the care taken to ensure good installation. A careful study of these instructions is therefore recommended, as properly installed equipment will normally operate for long periods without problems.

The most critical point in the lifetime of a valve is the time of installation, therefore, proper care at this stage and during any maintenance will increase the probability of trouble free valve service.

It is important to maintain cleanliness throughout all stages of the installation, with particular care being taken not to contaminate the internals of the valve with grease, moisture, grinding dust, weld / brazing spatter or other foreign matter.

Clean practices will save time later with reduced 'flushing' and maintenance.

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### STORAGE:

The equipment packing cases are **NOT** waterproof and should be stored in a weatherproof location before use.

### UNPACKING:

It is recommended that before any item is unpacked, it should be moved as close as possible to its installed position. This will minimise the possibility of damage during handling.

Before unpacking, items should be checked to ensure their part number is in line with requirements and/or the purchase order.

The valve should be inspected for damage upon receipt - any problems are to be immediately reported to Parker Hannifin Bestobell. This should be done within 48 hours of receipt of goods otherwise a warranty claim may be rejected.

It is further recommended that each item should only be unpacked immediately before it is required.

Before installation the engineer should check for:

- Damaged Packaging
- Bent or Distorted Items
- Scratches, Dents or Damage

Particular attention should be paid to the sealing faces on the end connection flanges.

### TOOLS REQUIRED:

No special tooling is required for the installation of this valve.



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### Preparation

#### **WARNING!**

**BEFORE ANY INSTALLATION AND MAINTENANCE WORK CAN COMMENCE ENSURE THE VALVE AND SURROUNDING SYSTEM IS DRAINED OF PRESSURE AND ISOLATED.**

Remove the headwork before installation and cover the top of the body to protect the internals of the valve from particulate contamination.

Also ensure that enough room is left above / around the valve for the headwork once this is replaced after installation.

Identify the intended flow direction and match the valve orientation with its flow direction arrow.

Ensure that all end connections to the valve are in line and that the pipe work is supported to reduce unwanted stresses, loading and vibration on the valve and system pipe work.

Ensure that all joining materials / components used during the installation of the valve are compatible, and will not cause any deterioration to the valve structure.



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### Hardware Description

All materials used are selected for their suitability to function at cryogenic temperatures. All valves are degreased for oxygen duty, assembled in clean room conditions, and sealed in robust polythene bags prior to despatch.

Maximum Working Pressure: (extended stem) 50Bar (725psi).  
Temperature Range: +65°C to -196°C or + 150°F to -320°F

Only suitable for operation with media: - O<sub>2</sub>, N<sub>2</sub>, Ar, CO<sub>2</sub>, CH<sub>4</sub>, CHF<sub>3</sub>, C<sub>2</sub>, H<sub>4</sub>, Kr, Ne, He, H<sub>2</sub>, N<sub>2</sub>O, SF<sub>6</sub> service.

When using on CO<sub>2</sub>, the internal atmosphere must be dry and moisture free as bronze could be affected by carbonic acid.

### Valve Description

Stainless Steel extended stem globe valve with bolted bonnet, integral seat and renewable PTFE disc, complete with bronze internals. Supplied as standard with butt weld ends, the valve is of the cone seat design for drop tight shut off. The bolted bonnet allows easy maintenance, even in confined spaces with lower bolting torques required than for an equivalent size union bonnet valve. All valves are degreased for oxygen duty, assembled in clean room conditions and pressure tested prior to despatch.

Valves with full stainless steel internal components are available on request.

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### Features

- Unique Bestobell loose flange bolted bonnet design allows for thermal expansion and contraction and eliminates leakage at the bonnet gasket.
- Precision investment cast body – smooth surface finish
- PTFE seat to ensure tight shut off at all times
- Lightweight therefore excellent thermal characteristics and increased payload on mobile tanker application
- Designed and engineered specifically for cryogenic service
- Anti-blow out spindle and one piece high strength for operator safety
- Long life, low torque spindle thread
- Screwed and welded high strength extension tube/bonnet joints
- Revolving disc ensures non-rotating seat contact for extended leak-free seat life
- Full bore
- Fast/easy maintenance of PTFE components

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### Installation and Maintenance

#### *Spares Kit*

CNTRA04CND

#### *Torque Table – Bolted Bonnet*

	<b>Torque</b>
<b>Gland Nut</b>	32NM (24lb/ft)
<b>M16 Capscrews</b>	120NM (90lb/ft)

- Apply torques progressively and in sequence.
- Only use PTFE based lubricants.
- Torque specified is for lubricated Stainless Steel fasteners.
- On Cryogenic applications, ONLY use specified Stainless Steel fasteners.
- Torques specified for valves with PTFE body / bonnet gaskets.

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### Installation Method

#### **STEP 1 (Welded End Connections):**

Turn the handwheel to ensure the valve is in the open position.

Progressively slacken the bonnet bolts in sequence to preserve conditions of internal gasket.

Remove the headwork before installation and cover the top of the body to protect the internals of the valve from particulate contamination. Fully open the valve before removing the headwork and remember to keep clean i.e. place in original bag and protect the exposed PTFE face.

Identify the intended flow direction and note the valves flow direction, indicated by the flow direction arrow on the valve body.

Ensure all end connections to the valve are in line and that pipe work is supported to reduce unwanted stresses / loading and vibration on the valve and system pipe work.

Ensure that all joining materials / components used during the installation of the valve are compatible and will not cause any deterioration to the valve structure.

#### **STEP 2:**

After completing and checking the welded end connections, ensure the internal seat surfaces are clean and system pipe work is thoroughly flushed in preparation for re-fitting the headwork.

Ensure the disc is still in the open position.

Ensure the body/cover gasket is in the body recess then gently lower the headwork into the body.

#### **STEP 3:**

Sequentially tighten the headwork capscrews as stated in Refit/Refurbishment step 30.



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### Installation Method

#### **STEP 4 (Testing):**

Before introducing pressure to the valve, carry out a thorough inspection of all connections: welded and/or threaded. Once pressure is introduced to the valve, a method appropriate to the medium being carried by the system should be employed to test for leaks.

**Never use hands to test for leaks!**

**Note: If unsure about the installation and operation of this valve please contact Parker Hannifin Bestobell Valves before you continue.**

#### **Step 5 (Operation):**

Check that the valve fully opens (anti-clockwise) and closes (clockwise) smoothly by hand. If difficulty is experienced, refer to the troubleshooting section of this manual.

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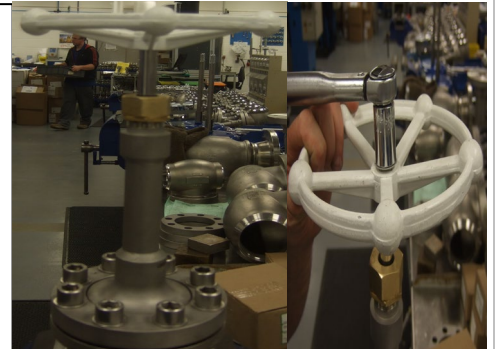
### Refit / Refurbishment Method

**STEP 1:**

Before any refit or refurbishment is carried out, ensure the pipeline is depressurised.

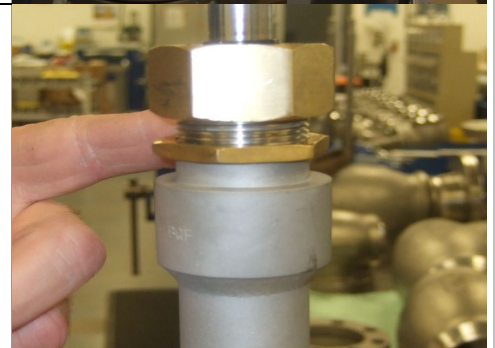
Turn the handwheel anti-clockwise to open the valve.

Remove the handwheel.

**STEP 2:**

Prior to removing the cover capscrews, unlock the gland lock (clockwise) and unlock the gland nut (anti-clockwise).

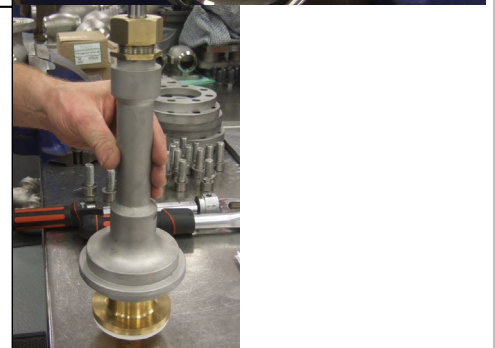
Do not remove these nuts yet - leave loose.

**STEP 3:**

Remove the 8 capscrews from the cover

**STEP 4:**

Remove cover and plate from body.



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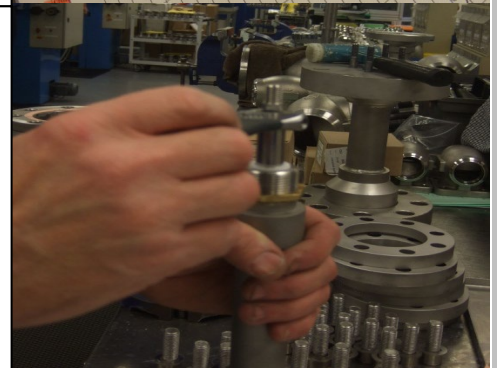
**STEP 5:**  
Remove the Gland Nut



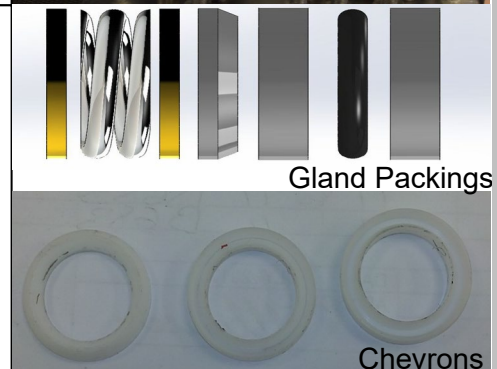
**STEP 6:**  
Remove the wiper seal and follower.



**STEP 7:**  
Unwind the stem clockwise with a suitable spanner to remove the stem/disc assembly from the headwork.



**STEP 8:**  
Remove the gland packings in the order as shown.



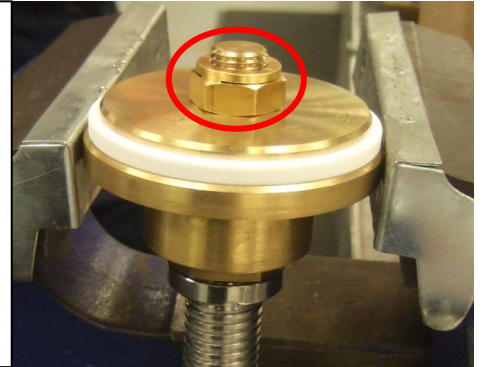


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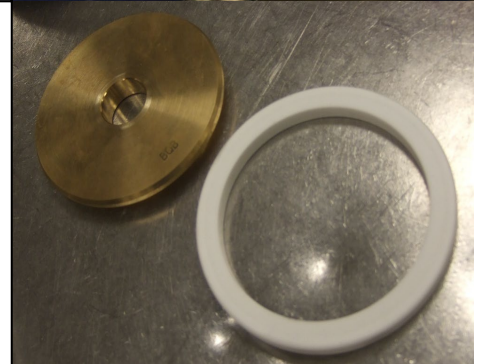
**STEP 9:**

Place the disc separate seal in a vice and remove the bent beam nut using a 24mm socket wrench.

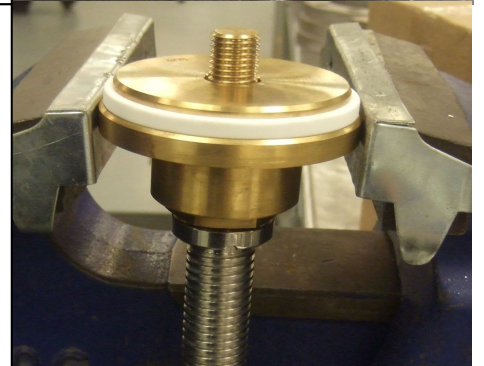
**STEP 10:**

Remove the seal and retainer and separate the seal from the retainer.

Take new flat seal and gently push onto the retainer.

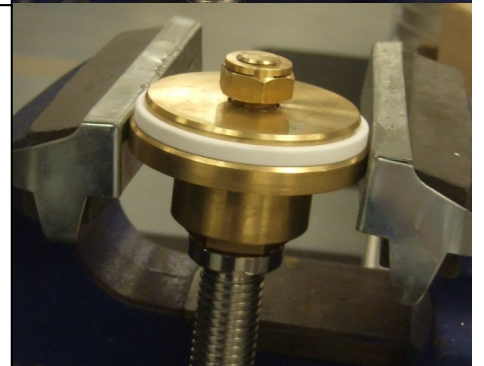
**STEP 11:**

Place the retainer/seal back onto the disc separate seal.

**STEP 12:**

Place the bent beam nut on top of the disc separate seal and torque to 73NM.

Remove from vice and ensure the new seal is not damaged during handling.



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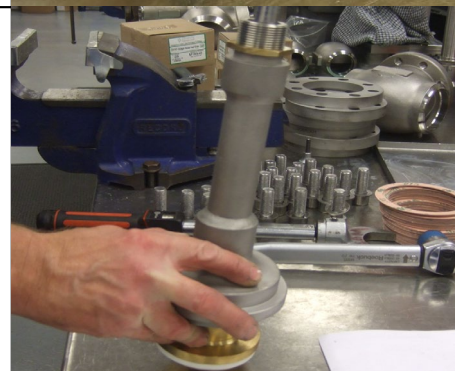
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**STEP 13:**

Before replacing the cover, coat the thread and stem in fomblim fluid.

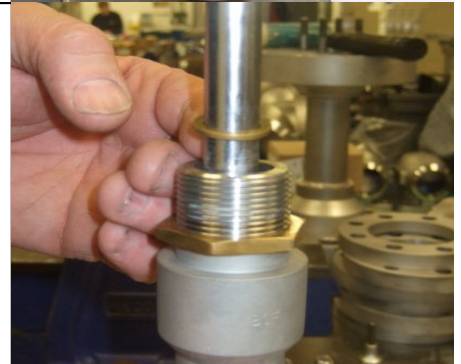
**STEP 14:**

Place the stem into the cover and wind the stem up halfway.

**STEP 15:**

Replace the gland packings in the following order:

Brass Washer

**STEP 16:**

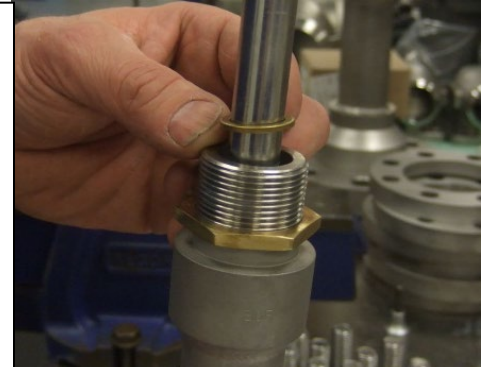
Spring



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**STEP 17:**  
Brass Washer



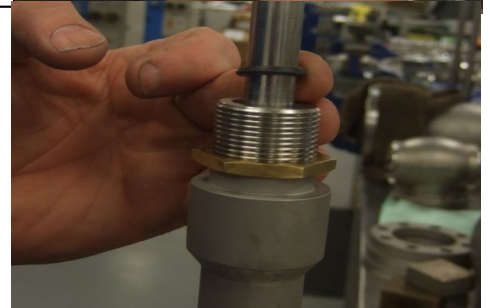
**STEP 18:**  
Solid Bottom Chevron



**STEP 19:**  
Hollow Top Chevron



**STEP 20:**  
O-Seal



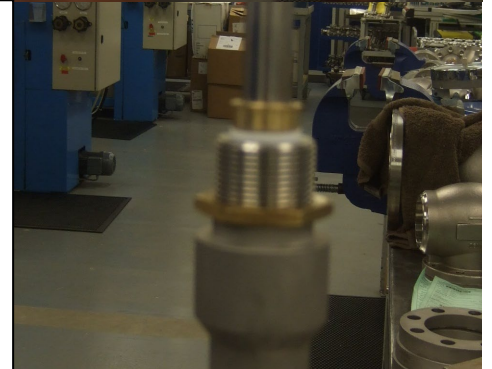
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**STEP 21:**  
Hollow Top Chevron



**STEP 22:**  
Gland Follower



**STEP 23:**  
Wiper Seal (apply fomblim before fitting)



**STEP 24:**  
Apply Fomblim fluid to the gland nut and re-fit.





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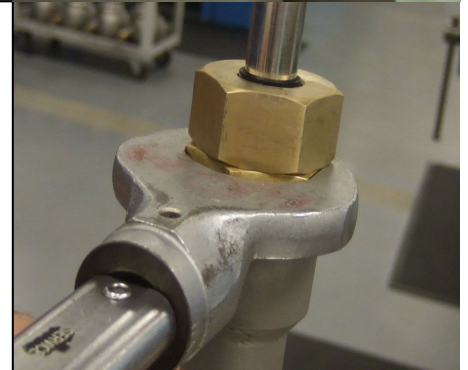
**STEP 25:**

Torque the Gland Nut to 32NM (clockwise)

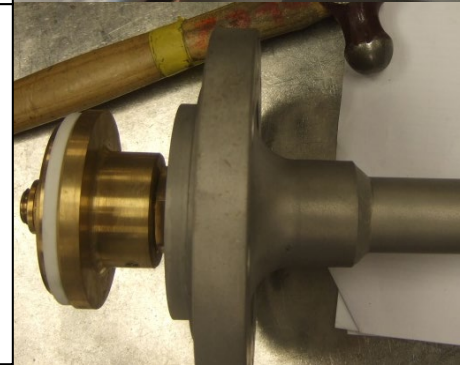
**STEP 26:**

Screw locknut anti-clockwise up to the gland nut.

Lock in place, torque to 32NM.

**STEP 27:**

Ensure that the disc is in the open position before the headwork is replaced.



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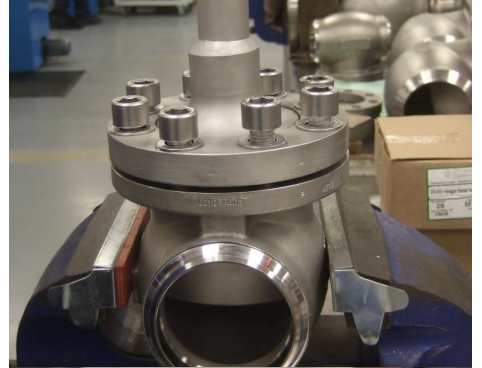
**STEP 28:**

Place cover back into body.

Use fomblim fluid on capscrews before replacing.

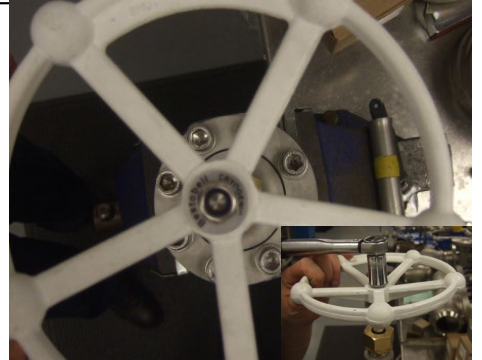
**STEP 29:**

Torque capscrews to 120NM

**STEP 30:**

Replace the Handwheel, using washer and label.

Torque M10 locknut (clockwise) to 16 NM using 17mm socket.

**STEP 31:**

Maintenance is complete.

Ensure valve operates in a correct manner.





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### Troubleshooting

Symptom:	Fault:	Solution:



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### Contact Details

For further maintenance instructions and spares contact:

United Kingdom Enquiries:

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