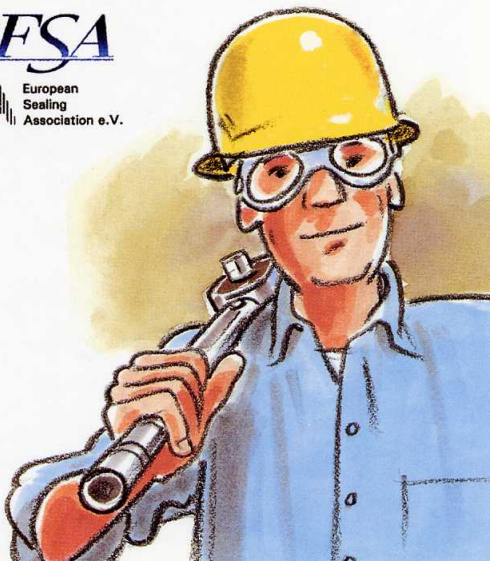


# Gasket Installation Procedures

*Assuring Joint Integrity and Maximum Safety*

*FLUID SEALING  
ASSOCIATION* **FSA**

**ESA** European  
Sealing  
Association e.V.



# **A Guide to Successful Gasket Installation**

Successfully sealing a flanged connection is dependent upon all components of a well-designed flange system working well together. This document provides guidance to maintenance operators, engineers, and fitters to ensure successful gasket installation and assembly of bolted flange connections. It is intended to complement other plant-approved installation procedures.

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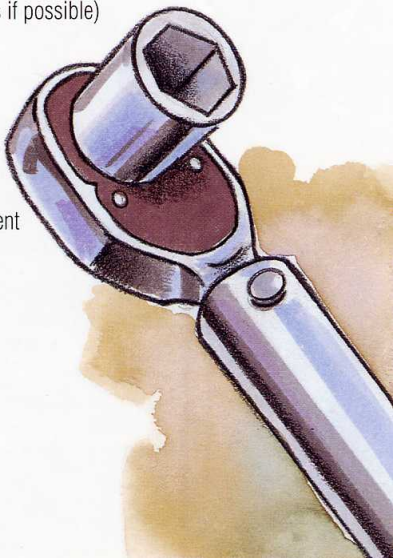
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## Tools Required

Specific tools are required for cleaning and tensioning the fasteners. Additionally, always use standard safety equipment and follow good safety practices. Acquire the following equipment prior to installation:

- Calibrated torque wrench, hydraulic or other tensioner
- Wire brush (brass if possible)
- Helmet
- Safety goggles
- Lubricant
- Other plant-specified equipment



# 1 Clean and examine

**Remove all foreign material and debris** from the seating surfaces, fasteners (bolts or studs), nuts, and washers. Use plant-specified dust control procedures.

**Examine fasteners (bolts or studs), nuts, and washers** for defects such as burrs or cracks.

**Examine flange surfaces** for warping, radial scores, heavy tool marks, or anything prohibiting proper gasket seating.

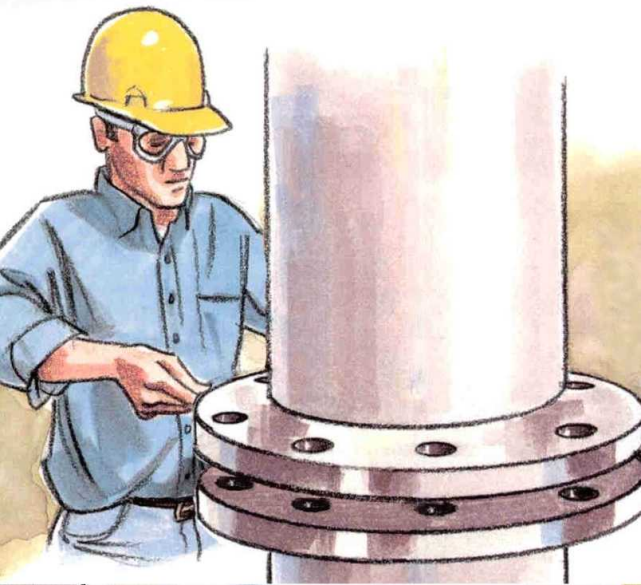
**Replace components** if found to be defective.  
If in doubt, seek advice.



# 2 Align flanges

**Align flange faces and bolt holes** without using excessive force.

**Report** any misalignment.



# 3 Install gasket

**Assure gasket is the specified size and material.**

**Examine the gasket** to ensure it is free of defects.

**Carefully insert gasket** between flanges.

**Make sure the gasket is centered** between the flanges.

**Do not use jointing compounds** or release agents on the gasket or seating surfaces unless specified by the gasket manufacturer.

**Bring flanges together**, ensuring the gasket isn't pinched or damaged.





# 4 Lubricate load-bearing surfaces

*Use only specified or approved lubricants.*

*Liberal*ly apply lubricant uniformly to all thread, nut, and washer load-bearing surfaces.

*Ensure lubricant doesn't contaminate* either flange or gasket face.



# 5 Install and tighten bolts

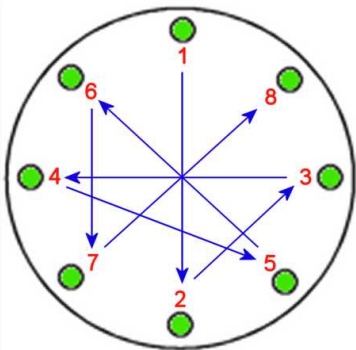
**Always use proper tools:** calibrated torque wrench or other controlled tensioning device.





**Consult your gasket manufacturer** for guidance on torque specifications.

**Always torque nuts in a cross bolt tightening pattern:**



**Tighten the nuts in multiple steps:**

**Step 1** – Tighten all nuts initially by hand. (Larger bolts may require a small hand wrench.)

**Step 2** – Torque each nut to approximately 30% of full torque.

**Step 3** – Torque the nuts to approximately 60% of full torque.

**Step 4** – Torque each nut to full torque, again using the cross bolt tightening pattern. (Large-diameter flanges may require additional tightening passes.)

**Step 5** – Apply at least one final full torque to all nuts in a clockwise direction until all torque is uniform. (Large-diameter flanges may require additional tightening passes.)

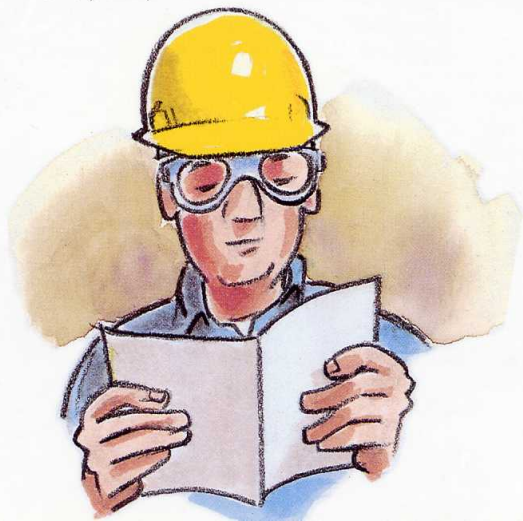
# 6 Retightening

**Caution:** Consult your gasket manufacturer for guidance and recommendations on retightening.

Do not retorque elastomer-based, asbestos-free gaskets after they have been exposed to elevated temperatures unless otherwise specified.

Retorque fasteners exposed to aggressive thermal cycling.

All retorquing should be performed at ambient temperature and atmospheric pressure.



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*For further details on gasket installation, please refer to the  
ESA / FSA Guidelines for safe seal usage — Flanges and  
Gaskets, available from the Fluid Sealing Association and  
the European Sealing Association.*