

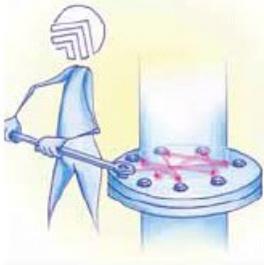
Tighten all nuts initially by hand.

To achieve even compression of the gasket, use a calibrated torque wrench or other controlled tensioning device, and make three complete passes each in a crisscross bolt pattern to the required torque as follows:

1. Torque each nut to approximately 30% of the required torque.
2. Torque each nut to approximately 60% of the required torque.
3. Torque each nut to full torque.

Continue with one final pass, torquing the bolts in a clockwise sequence until all torque is uniform.

Large-diameter flanges may require additional tightening passes.



Retightening

CAUTION: If retightening is considered necessary, this should only be done at ambient temperature and atmospheric pressure before or during the first start-up.

Never retighten compressed fiber gaskets after they have been exposed to elevated operating temperature or extended operating temperatures.

Re-torque fasteners exposed to aggressive thermal cycling once the joint is at ambient temperature.

All re-torquing should be performed at ambient temperature and atmospheric pressure.



Re-Use of Gaskets

For safety reasons, NEVER re-use a gasket.

Thermoseal is committed to technical excellence and dedication to every customer. We deliver high performance products with a passion for excellence. For assistance with selecting the correct KLINGER gasket material for your sealing application and for technical assistance, contact our technical team at 800-990-7325.

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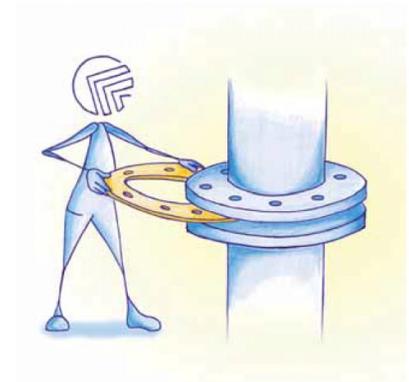
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CONNECT WITH QUALITY

Best Practices: Gasket Installation Procedures



BEFORE YOU BEGIN

The successful operation of a gasket depends upon a multiplicity of factors including the style and quality of the gasket material, but also the medium being sealed, the flange design, the amount of pressure applied to the gasket by the bolts and how the gasket is assembled onto the flanges and tightened. Very basic causes often lead to leakage in bolted joints, and in most cases, it is not just the gasket but also the human element. Users should evaluate all conditions to validate the products are suitable for the intended process.

This document provides guidance to maintenance operators, engineers and fitters to ensure successful gasket installation and assembly of bolted flange connections. However always check plant-approved installation procedures first.

Tools Needed

Specific tools are required for cleaning the flange and tensioning the bolts. Always use standard safety equipment and follow good safety practices. The following tools are required for removal of the old gasket and installation of the new gasket:

- » Calibrated torque wrench or hydraulic tensioner
- » Brass wire brush
- » Personal safety equipment
- » Lubricants for the bolts (if specified)
- » Other plant-specified equipment

Clean and Examine

Clean and examine flange surfaces. Remove all foreign materials and debris from flange surfaces, fasteners

(bolts or studs), nuts and washers. Use a brass wire brush in the direction of the grooves to clean the flange surfaces.



Examine the flange surfaces, fasteners (bolts or studs), nuts and washers to ensure they do not have any serious defects. Replace any components if found to be defective. If in doubt, seek advice from a qualified expert.

GASKET DIMENSIONS

Ensure the gasket is the correct size.

The inner diameter of the gasket should not be smaller than the inner diameter of the flange.

Do not use a thicker gasket material or “stacked gaskets” to solve a gasket problem without first consulting the manufacturer.

Cut the bolt holes slightly larger than the bolts to simplify the centralization of the gasket.



Storage and Handling

The gasket should be stored horizontally to avoid tensions and warping. Ideal storage conditions are in a clean area (ideally in a plastic bag) at <75°F, 50-60% humidity, and out of direct light.

All types of gaskets should be handled with care. Carry gaskets carefully, ideally in some form of protective cover.

Protect the surfaces and never bend or write on the gasket.

BOLTS, NUTS AND WASHERS

Be sure to install the bolts that are designed for the flange and suitable for the given operating temperatures. Ensure that there is no corrosion on the bolts as this can effect the function of the bolt. Never re-use bolts.

Use a nut which has a specified proof load 20% greater than the ultimate strength of the fastener. Use standard threads, rather than fine, and use the correct lubricant.

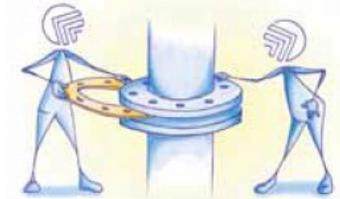
Use the same material for the washers and the nuts. Use washers to bridge slotted or oversized holes, even interface forces between joint components and/or reduce problems of fatigue by spreading the load placed by the fastener on the joint.

GASKET INSTALLATION

Align the flange faces and bolt holes and report all irregularities.

Assure the gasket is the specified size and material and ensure that it is free of defects. Carefully insert the gasket between the dry flange. Make sure the gasket is centered between the flange.

Do not use joint compounds or release agents on the gasket or seating surfaces unless specified by the gasket manufacture as this can lead to reduced surface friction and higher relaxation.



Bring the flanges together ensuring the gasket is not pinched or damaged.

Lubrication of Bolts

Uniformly apply lubricant to the bolt and the nut threads as well as to the face of the nut to reduce friction during tightening.

DO NOT contaminate the gasket or flange surfaces with lubricant.

Be sure that the recommended service temperature of the lubricant is within the process service temperature limits.

Bolt Tightening

The maximum and minimum sealing stress and required torque values can be calculated with **KLINGERexpert**[®], our free program that helps users design joints, select materials and calculate installation values.

Gaskets installed with high seating stresses exhibit a longer service life than gaskets installed with lower compressive stresses.