

SIGRAFLEX®

Handling and assembly instructions for gasket material

Safety

Safety is our number 1 priority. Professional health and safety standards must be observed at all times and by all. Additionally, environmental and property protection concerns like fugitive emissions and fire safety are essential to ensure safe, reliable and long term plant operations. Selecting suitable and properly matched components is vital to ensuring the reliable long-term performance of a sealed joint. The correct design needs to provide the right torque values and it is important to avoid any component being overstressed e.g. considering that bolts work best when tightened at between 50 % and 100 % of their elastic limit. Media compatibility, maximum service temperature combined with a limitation in service life etc. must be considered. For additional information please also read our technical documents that are available on our website or ask for advice.

Another aspect of equal importance for reliable plant operation and low leakage rates is the proper and correct assembly of the gasket. The following notes are intended to supplement the existing assembly instructions which are specific to individual plants, and recommendations of the European Sealing Association or Fluid Sealing Association, and also existing standards such as ASME PCC-1 or EN1591-4.

Precaution

When starting work on a bolted flange connection, it should always be borne in mind that residual amounts of potentially physical or environmentally harmful service media may be present. Therefore, the bolt to be released first should be the one located furthest away from the operator. During this operation attention should be paid to the wind direction. Any service media escaping from the joint should be collected in suitable containers.

Care should always be taken to ensure that only specified equipment is used, that any joints with clear evidence of leakage are identified and that the respective pipe work is secured properly. Take care when removing the gasket as there may be sharp metal edges of the reinforcement protruding, use a suitable tool to avoid any injury.

Assembly of SIGRAFLEX gaskets

- Make sure that the sealing faces are clean, dry and free from grease. Remove any rust or other deposits on the sealing faces by carefully brushing or scraping the surfaces in a circumferential direction. Also give the bolts, nuts and washers a clean.
- Check the sealing faces for radial scratches, corrosion damage, warping or any other damage likely to prevent reliable sealing of the joint.
- Check the bolts, nuts and washers for any damage, burrs or cracks, and replace any damaged components.
- Make sure that gasket size, thickness and material grade comply with specifications. Ensure that the gasket is marked with the original SIGRAFLEX branding.
- For assembly use dry gaskets only. Wet graphite gaskets must not be fitted unless first dried completely [e.g. in a drying chamber at 100 °C for three hours].
- Use undamaged gaskets only. Never re-use any gasket at any point! Graphite gaskets do not age, therefore there is no limitation for shelf life if stored in reasonable conditions. Old adhesive bonded material might fall apart, if so the gasket should be scrapped.
- Position the gasket centrally and avoid mechanical stresses during assembly. Use an assembly aid if necessary.
- Never use release agents or grease on the gasket or sealing faces! To facilitate assembly in difficult positions, the gasket may be held in place with a chloride-free adhesive. However, the adhesive should be applied sparingly at a few points only.

- Make sure that the bolts and the corresponding nut supporting faces are lubricated with the correct or specified lubricant and turn freely. Use only specified and approved lubricants to lubricate threads, nuts and the force-transmitting faces of the washers.
- Use a calibrated torque wrench or an even more precise tool to ensure controlled tightening during assembly.
- Flanges should be positioned in line and parallel to each other, or at least to an acceptable level: if in doubt, check alignment by assembling the flange connection without using the gasket applying only 10% of the recommended torque. If the flanges then align perfectly, everything is fine. If not, pipework needs to be adjusted.
- Bolts should be placed in a way that allows proper insertion and seating of the gasket. In many cases the use of an alignment bolt is beneficial.
- Particularly tongue and groove flange connections are challenging when inserting gaskets. Use a flash light and a tape measure to assure the gasket is in the seat and the flanges are parallel.
- Once the flanges are aligned, bolts are inserted and the gasket is in the correct position hand tighten the bolts. Then tighten the bolts in crosswise order (or according to a special procedure for large flanges) to about 30% of the maximum torque value, in the second stage to about 60% and to the full value in the third stage but not before.
- All bolts must be tightened to the specified bolt load, so check the torque repeatedly. Carry out a final visual inspection of the flanged joint to confirm its proper assembly. Make sure that the gasket is fitted correctly, i. e. that no gasket sections are squeezed out. During assembly, SIGRAFLEX gaskets can be compressed to about 50 to 70% of their initial thickness, depending on the material grade and the design of the flange connection.
- Once assembled, SIGRAFLEX gaskets usually do not need retightening. Sometimes retightening can even cause major failures. Recommendations on bolt retightening procedures should be requested either from the user's own technical division, from the gasket manufacturer or from our own technical service.



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