GORE® Gasket Tape
Series 1000

INSTALLATION GUIDE

ATTENTION
When installing GORE® Gasket Tape Series 1000 in joints with multiple (2 or more) gaskets compressed with a single set of bolts or clamps, see the installation supplement "Installation on Joints with Multiple Gaskets" for additional mandatory instructions.

Preparation

Assemble required tools and materials

- Appropriate size and amount of GORE® Gasket Tape Series 1000 as determined by this guide
- GORE® Gasket Tape Series 1000 shimming tape, if needed, as determined by this guide
- Fasteners and ancillary items such as spring washers as specified by flange manufacturer
- Calibrated torque wrench(s)
- Sharp straight edge knife
- Knife sharpener
- Optional skive cutting guide tool
- For use of 6 mm base layer and possible shimming: Feeler gauges for 1.7, 3.2, 4.7 mm (0.07, 0.13, 0.19 in.) with ±0.1 mm accuracy
- For use of 9 mm base layer only: Feeler gauge for 2.5 mm (0.10 in.) with ±0.1 mm accuracy
- Fine tip permanent marker (for gasket tape)
- Large tip permanent marker (for flange)
- Glass cleaning and drying supplies
- Fastener cleaning and lubricating supplies
- PPE as required by site, including cut-resistant gloves and eye protection
- Approved flange-specific installation torque target

1.1 Obtain flange dimensions needed for gasket selection

Determine flange ID, flange OD and sealing surface width before flange rounding (Figure 1). Determine flange circumference for gasket tape length.

1.2 Measure Flange Deviations

Measure and mark flange surface deviation around full flange circumference to within ±0.1 mm, for use in selection of gasket thickness (Section 1.4) and shimming requirements (Section 1.5). Figure 6 illustrates an example of completed flange deviation markings and associated shimming.

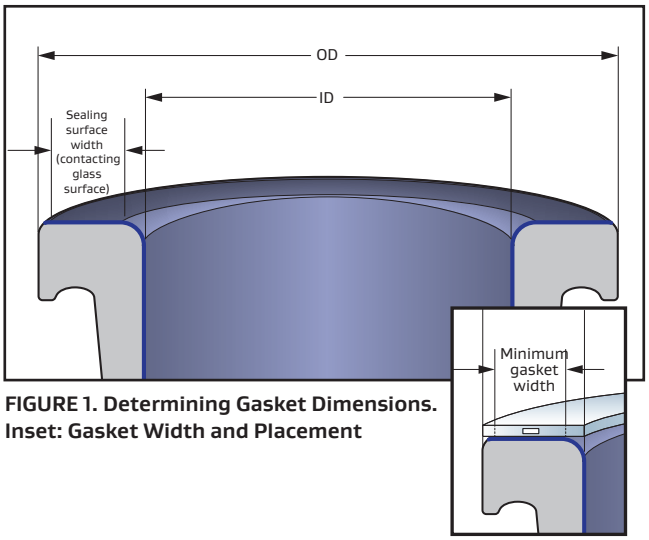

FIGURE 1. Determining Gasket Dimensions. Inset: Gasket Width and Placement

ATTENTION
Ensure that flanges are clean of all contamination and debris that could cause errors in flange deviation measurement.

Place a separator between the flanges to avoid glass-to-glass contact while measuring flange deviation. Separator material must be flat and uniform thickness, non-compressible under the weight of the top flange placement, and thin / flexible enough to conform to bottom flange deviations during measurement (example: fiber board). Close and align the flanges without compressive load beyond equipment weight. Around the entire flange circumference, use a feeler gauge to measure the deviation between the top / removable flange and the non-compressible separator, to an accuracy of ± 0.1 mm (±0.01"). It may be necessary to carefully manipulate the separator with the feeler gauge, so that all flange deviation can be measured from one side of the separator. On the stationary / bottom flange, mark all start and end points where the prescribed thickness of feeler gauge could be inserted. Refer to required tools for specific feeler gauge requirements. Refer to Table 2 and Figure 6 for additional detail, based on use of a 6mm base layer. Be sure to mark a flange reference mark on both flanges to allow for flange realignment at assembly. Remove separator.

1.3 Select Gasket Width

Minimum gasket width is full coverage of the contacting glass surfaces. Ideal gasket width extends from flange ID to OD, as shown in Figure 1 inset. Excess material should be distributed evenly beyond ID and OD to keep the barrier core roughly centered on the flange sealing surface. Excess OD must not interfere with clamp placement.

1.4 Select Gasket (Base Layer) Thickness

Most applications require a base layer of 6 mm (1/4") tape, which can accommodate deviation up to 1.7 mm (0.07") without shimming. Applications with deviation up to 2.5 mm (0.10") can utilize 9 mm (3/8") tape without shimming.

1.5 Select Shimming

To effectively seal flanges with deviations beyond the maximum for the base layer, additional shimming material is required. Use 3 mm (1/8") GORE® Series 1000 shim tape as directed in Section 2.6. Ensure the shimming material has the same width as the base layer.

Gasket Installation

2.1 Open Flanged Connection

For ease of installation, open the flanges a minimum of 15 cm (6"). Ensure the flanges are well secured for a safe working environment.

2.2 Clean and Dry Sealing Surface Thoroughly

To ensure optimal adhesion, remove all oil, graphite, and/or other residue. Flange surface must be clean and completely dry for the gasket placement adhesive to adhere on glass.

2.3 Perform Initial Skive Cut

Unwind about 0.5 m (1.5 ft) of GORE® Gasket Tape Series 1000. Cut the end with a sharp knife on a clean, firm surface using the skiving technique. It is recommended that the first skive cut be made in a convenient location but not on flange surface (Figure 2). Hint: Mark the desired straight diagonal line on the side of the gasket tape with a fine tip permanent marker.

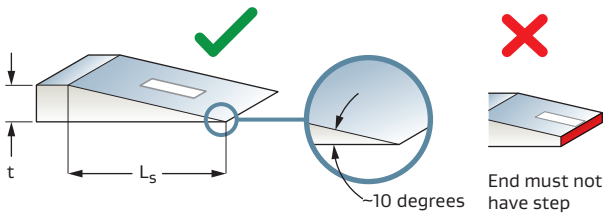

FIGURE 2. First Skive Cut

TABLE 1. Skive Dimensions

Tape thickness (t)	Skive cut length (Ls)	Thickest skive section (h), at target of ~1.3x (t)
6 mm (1/4")	30–40 mm (1 1/4")	8 mm (1/3")
9 mm (3/8")	45–60 mm (2")	12 mm (1/2")
3 mm (1/8")	15-20 mm (3/4")	N/A

The length of the skive cut (Ls), should match the dimension in Table 1. Avoid making it shorter. The resulting skive angle is approximately 10°.

ATTENTION

When using the skiving technique to cut the gasket tape, it is critical that the skive end meets the flange smoothly, avoiding any step. Refer to Figure 2.

2.4 Apply Base Layer of Gasket Tape

When positioning the skived end of the gasket tape on the flange to start the base layer, the skived end must be at a location of a clamp or bolt, and must be where no shimming is needed. Ideally the location would have minimal flange deviation, even within the allowable deviation for the base layer. Try to avoid locations where obstructions will hinder access for the second skive cut.

Remove the adhesive's backing immediately before the the gasket tape is installed, to prevent the adhesive strip from picking up dirt prior to placement. When starting to remove the backing film from the adhesive, take care not to separate the adhesive from the gasket tape.

ATTENTION

The adhesive performs best on a glass surface that is clean and at a temperature comfortable to the touch. Glass surface MUST be completely dry. If necessary, gently warm flange to remove any condensation.

Bend small increments of gasket tape to the required flange arc and apply the side with exposed adhesive to the flange, pressing out any gaps between the gasket and flange surface. Complete placement of the base layer in sections of about 25 cm (1 ft.) at a time, ensuring that each section is properly positioned and adhered to the flange before beginning installation of the next section of gasket. Apply a base layer to the full circumference of the flange in this manner. On some smaller flanges the gasket may intermittently re-lift and exhibit "waviness" near the ID of the gasket. This is acceptable and will be flattened later when the top flange is placed and torqued. However, smooth and complete gasket contact with the flange must be maintained along the OD part of the gasket as a guide for proper gasket positioning, following the same curvature as the flange.

2.5 Complete the Layer of Gasket Tape

Complete the gasket by laying the tape over the already placed skived end, extending at least ~50 mm (2") beyond the top of the skive ramp, and cutting the end square. Take care to press out any gaps between the two gasket layers at the base layer skive ramp.

To prepare for the second and final skive cut, locate and mark the start and end points. The start point for the top skive cut is located at the top of the gasket material, at a distance of 1/3 (Ls) from the point end of the bottom skive cut, see Figure 3. This will make the tallest section of the skive 1/3 thicker than the base layer gasket, indicated by (h) in Figure 4. The end point of the top skive cut is located where the two gasket material layers meet, at a distance of 1/3 (Ls) past the top of the first skive ramp. Draw a cutting guide line on the side of the gasket tape connecting the start and end points of the second skive cut with a straight line.

Cut away the gasket material along the marked line, keeping the knife blade parallel to the flange face to ensure that the skive is approximately the same length from OD to ID.

ATTENTION

The maximum thickness of the skived joint (h) must not exceed 1.5 x the base layer thickness (t).

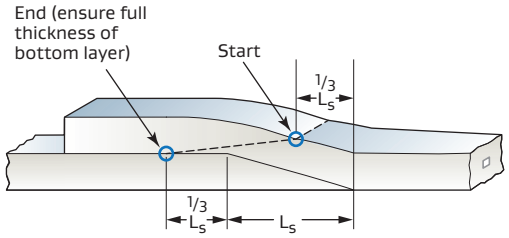

FIGURE 3. Second Skive Cut

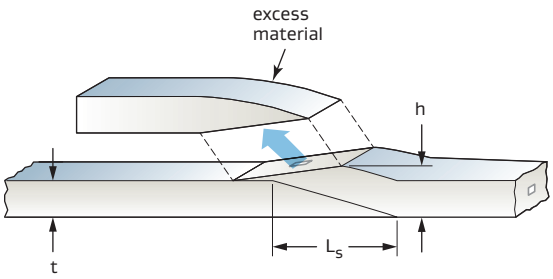

FIGURE 4. Correct Skive Joint

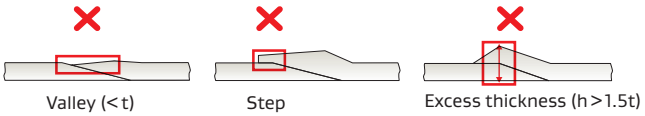

FIGURE 5. Incorrect Skive Joints

2.6 Shim Flange Irregularities

Using the markings on the flange of irregularities measured in Section 1.2, use the 3 mm (1/8") GORE® Series 1000 shim tape to perform the following shimming process. See example irregularities (I), (II) and (III) and associated flange markings in Figure 6.

a. Skive cut the loose end of the shim tape spool per Section 2.3.

b. Start the shim layer by placing the skive cut tape end on the previous layer of gasket tape, with the skive ramp centered on the beginning deviation mark on the flange. See Figure 6.

c. Place the layer of shim material on the flange deviation area, applying shim tape to the flange at least 50 mm (2") past the ending deviation mark on the flange. Cut the end free of the shim tape spool with a reasonably square cut.

d. Skive cut the second end of the already placed shim layer per Section 2.3, with the skive ramp centered on the ending deviation mark on the flange. See Figure 6. Be sure to remove the excess shim tape beyond the outside of the skive cut.

e. Repeat steps a through d until the required number of shims have been installed for the measured irregularity.

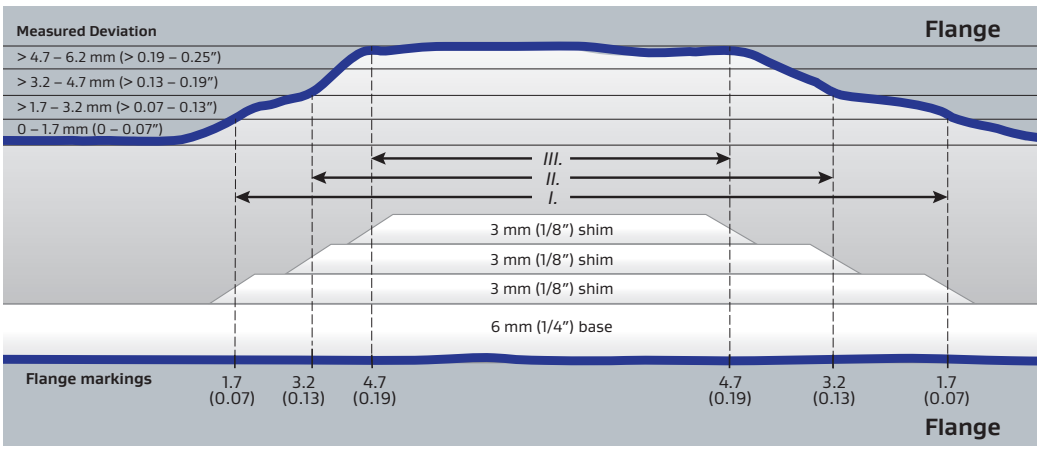

FIGURE 6. Flange deviation example with 6 mm (1/4") base tape

Note: Figure is not to scale.

TABLE 2. Shimming guidance for 6 mm (1/4") base layer

Measured Deviation	Shims	Total Thickness
0 to 1.7 mm (0 to 0.07")	(none)	6 mm (1/4")
> 1.7 to 3.2 mm (> 0.07 to 0.13")	1 x 3 mm (1/8")	9 mm (3/8")
> 3.2 to 4.7 mm (> 0.13 to 0.19")	2 x 3 mm (1/8")	12 mm (1/2")
> 4.7 to 6.2 mm (> 0.19 to 0.25")	3 x 3 mm (1/8")	15 mm (5/8")

Flange Torquing

3.1 Confirm Target Torque

The torque recommendations of the equipment manufacturer must be followed at all times. Check that this meets or exceeds the gasket stress recommended in the GORE® Gasket Tape Series 1000 datasheet.

3.2 Close the Flanged Connection

Bring the flanges in contact and align flanges as marked in Section 1.2. If many shim layers are causing uneven contact, precompress the shimmed layers by slightly tightening the bolts/clamps directly near the thick gasket spot.

3.3 Torque

Tighten bolts or clamps using a calibrated torque wrench. Utilize the star pattern for 3 incremental passes at 30%, 60% and 100%,respectively, of recommended torque from Section 3.1. Then perform 1 or maximum 2** circular passes at 100% of recommended torque. Allow at least 4 hours for flange system relaxation, and then perform 1 or maximum 2** circular passes at 100% of recommended torque. For additional detail, refer to industry standard best practices such as ESA/FSA "Gasket Installation Procedures" or ASME PCC-1.

3.4 Thermal Cycle

Thermally cycle the flange connections by bringing the equipment to maximum service temperature for a minimum of 1 hour, and then allowing the flanges to cool to approximately ambient temperature before retorquing.

3.5 Retorque

After the first temperature cycle, retorque the bolts or clamps with 1 or maximum 2** circular passes at 100% of recommended torque from Section 3.1.

ATTENTION

Retorquing must only be performed after the flanges have cooled down to near ambient temperature.

Should you have any further questions about installation, or about our gaskets in general, contact your local GORE representative.

For detailed selection criteria, technical information, installation guideline and a complete listing of local sales offices please visit **gore.com/sealants**

** For tape gasketing of glass-lined steel flanges, a maximum number of circular passes is specified. This differs from industry standard procedures that were developed primarily for steel flanges.

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