

# KWO® MultiTex® Tape – Glass-lined Flanges



## 1. Selection of size

### 1.1 Gasket width

Select the gasket width that ensures full coverage of the enamelled surface. Excess material may exceed the outer diameter.

Ø flange	≤ Ø 400 mm	≤ Ø 600 mm	≤ Ø 900 mm
Gasket width	up to 30 mm	up to 45 mm	up to 65 mm

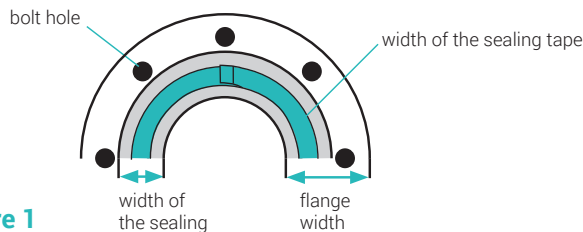


Figure 1

### 1.2 Gasket Thickness

For flanges up to Ø 800 mm use KWO® MultiTex® tape with a thickness of 6 mm, for bigger flanges use a tape with 9 mm thickness. If the surface has deviations of more than 1 mm, a tape with a thickness of 9 mm should always be used, regardless of the flange diameter.

### 1.3 Shimming

For flanges with deviations shimming material should be used to ensure effective sealing (refer to 2.b & 2.f).

Diameter	Deviation (d)	Tape thickness
< 800 mm	< 1 mm	6 mm
	1 mm < d < 2 mm	9 mm
> 800 mm	< 1 mm	9 mm
	1 mm < d < 2 mm	9 mm + 1 x 3 mm
	1 mm < d < 3 mm	9 mm + 2 x 3 mm
	1 mm < d < 4 mm	9 mm + 3 x 3 mm

## 2. Installation

### a. Preparing the flange

- Open the flange connection by a minimum of 15 cm.
- Sealing surface should be cleaned of old sealing materials and checked for damage.

### b. Measure Flange Irregularities

- Place a separator between the enamelled surfaces of the flanges. This could be a fiber sheet or a plywood board.
- Close the flanges and measure the deviations by a thickness gauge.
- Mark all irregularities and their position on the flange for later flange alignment.
- For the shimming process, please refer to 2.e.

### c. Skive cut at the beginning

Unwind around 0.5 m of the sealing tape and cut the end with a sharp knife by using the skive cut technique → length of the skive cut ( $l_s$ ) = approx. 25 mm, angle  $\alpha < 15^\circ$  (figure 2).

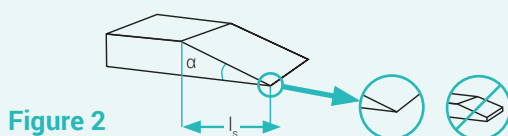


Figure 2

### d. Applying the sealing tape (in case of deviations – Applying the main seal)

- Remove the masking tape a little at a time to prevent the adhesive strip from picking up dirt. A dirty or damaged adhesive surface could cause a misplacement of the sealing tape during assembly.
- Position the skived start of the sealant tape close to a bolt hole (in case of deviations position at a bolt hole where no shimming is needed; figure 3).



Figure 3

### e. Closing skive cut

- Complete the installation by placing the sealing tape over the skived end and overlap approx. 14 mm of the sealing tape (figure 4).
- For the second skive cut identify and mark the start and end points (figure 4).
- Cut away excess material with an angle of 15 degrees. The interface should be 20 % thicker than the original sealing tape (figure 5).

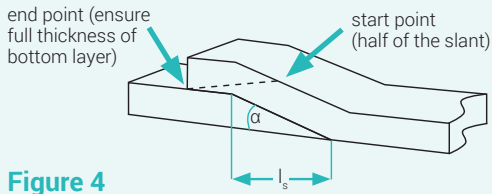


Figure 4

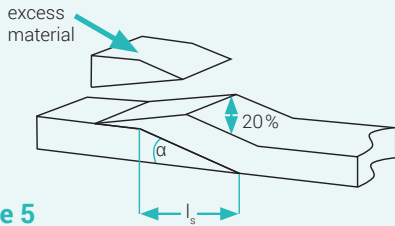


Figure 5

**f. Shim flange deviations**

- Measure the length of the irregularity and cut the gasket tape approx. 5 cm longer than the measurement.
- Cut both ends of the gasket tape using the skiving technique described in step 2.c.
- Place the gasket tape shim on the previous layer where a deviation has to be compensated (the adhesive strip keeps the seal in position).

- Repeat this procedure until a corresponding compensation has been created. For every millimetre more irregularity, a layer of 3 mm KWO® MultiTex® tape should be used for shimming (figure 6). Make sure that always the same seal width is used as for the main seal.

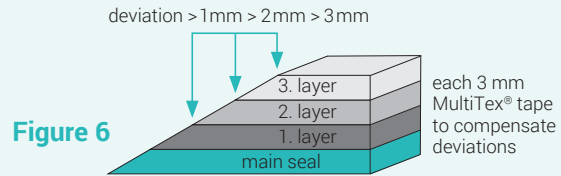


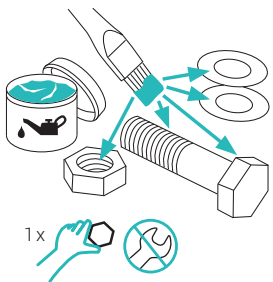
Figure 6

**g. Closing the flange connection**

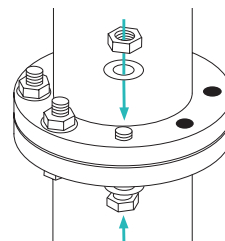
- Using the marking noted in step 2.b, align the flange faces accordingly and join them together to form a contact. If many shim layers are causing uneven contact, precompress the shimmed layers by slightly tightening the clamps directly near the thick gasket spot.

**Note:** For large flanges, you can use multiple skive cut connections. You should make sure that this is done at a screw hole and as far distance as possible.  
2 connections: distance ~ 180°  
3 connections: distance ~ 120°

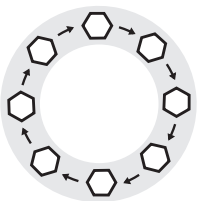
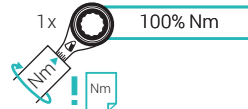
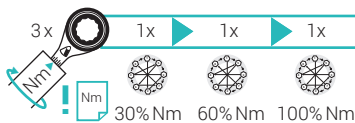
**3. Torquing**



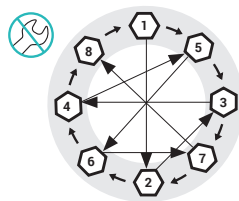
1. Lubricate all connecting and fastening elements (screws, nuts and washers).



2. Install screws, nuts and washers on the flange.

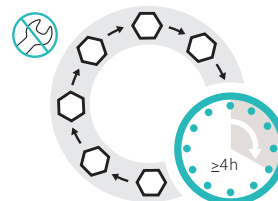


3. The screws are initially hand tightened in a sequential circular pattern.

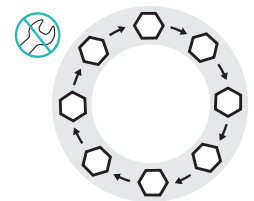


4. Tighten the screws crosswise in three phases by using a calibrated torque:

- 1st pass: 30% of target torque
- 2nd pass: 60% of target torque
- 3rd pass: 100% of target torque



5. Tighten the screws crosswise with 100% of the torque and wait for 4 hours.



6. For final installation retighten the screws crosswise until the required torque is reached.

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.

**Note:** The bolt force must be checked after the first temperature cycle. If necessary, tighten the screws with the initial torque at room temperature.



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