

INSTALLATION INSTRUCTIONS FOR PACKING RINGS

For highly-qualitative, permanently tight gland seals the following listed packing systems on the base of graphite have proven to be perfectly reliable. In order that the excellent properties act appropriately some basic things have to be considered when making the choice and during the assembling. This applies especially when next to the tightness, the amount of friction must be reduced, to ensure the proper operation of control valves.

1. Approved packing systems with five packing rings for example

**K80S . K80TA . K80TA . K80TA . K80S
K80S . K80C . K80C . K80C . K80S
K80S . K80 . K80 . K80 . K80S
K100 . K95 . K95 . K95 . K100**

2. Specifics when compressing gland packings

Gland lid studs in contrast to gland box screwcaps generally allow a much better and precise adjustment of the applied screw forces with the use of a torque spanner. In some cases, due to constructional difficulties, the controlled tightening is only possible when using special spanners which leads to inaccurate result. The instructions given under point 5 account for this.

3. Preparation of the gland room

The gland room must be free from old packings or remains of packings.

The dimensional accuracy of the packing space as well as the execution with the required surface finish have to be checked. The same applies for the state of the shaft or pole.

The tolerance range h9 applies for the stem or shaft. The surface roughness should be Rz 3,2 µm. For the gland room the tolerance range D10 applies. The surface roughness should be Rz 6,3 µm.

The packing or the gland room should generally not be greased, lubricated or dampened at any time.

The threads and the contact surface of the nuts have to be greased well in order to ensure a low friction coefficient. This has to be done especially thoroughly with fittings which have been in use for a longer time.

4. The correct amount of the gland lid force

The correct, ideal amount of the gland lid force is the result of a compromise. On the one hand the force should be high on the other hand the stem should be easily movable which is only possible by means of finite rifts. Please ask at the KLINGER-Kempchen-calculation service for a calculation of the correct gland lid force under consideration of the pressure temperature, material properties of the applied packing as well as the geometry. The amount of the screw force is determined by the number of screws and the required tightening torque is determined by the screw size and the state of greasing.

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5. Assembling of the packing system

It is recommended to insert each ring of the packing system individually and brace individually with the recommended pressure. If this is not possible, because a torque spanner can not be used, a proximity should be tried by estimating the lever arm and the hand force.

If suitable spacer rings are missing or the existing gland lid screws are not long enough, two packing rings can be uptightened. Generally applies:

- » The higher the application of force, the quicker and more ideal the shaping of the packing ring in the gland room is reached.
 - » After each tightening process a few minutes have to pass, so that the packing rings have some time to adopt themselves to the stem or shaft and the gland room.
 - » After completion of the assembling process the packing system has to be partly relieved from the gland lid force. The stem or shaft has to be operated/moved several times in order to reach a better stress distribution in the whole packing system, even if this requires higher forces than needed for operation. After that you have to brace with the correct calculated force.
 - » If after the completed assembling the stem friction is too high – or at control valves the hysteresis value is inappropriate- the force has to be firstly reduced by loosening the gland lid screws and then again braced on a lower level.
- » This process has to be repeated until a satisfying hysteresis value is reached. In order to reach an optimal tightness, the maximum permissible hysteresis value has to be the target.
 - » In order to reach a good tightness even with a low hysteresis value, after each bracing correction at the gland lid screws the stem has to be moved over the whole stroke length. This improves the friction values and the tightness.

The application of the correct screw force requires a cautious proceeding and should not be done under time pressure. As mentioned above, packing system of expanded graphite needs some time to adopt itself to the gland room and stem / shaft after each change of tension.

Security advice

The bracing of the packing has to be done on a pressureless plant at room temperature. A retightening under pressure and temperature load is to be avoided.