



## General assembly instruction for dynamic packing - DIMERPACK

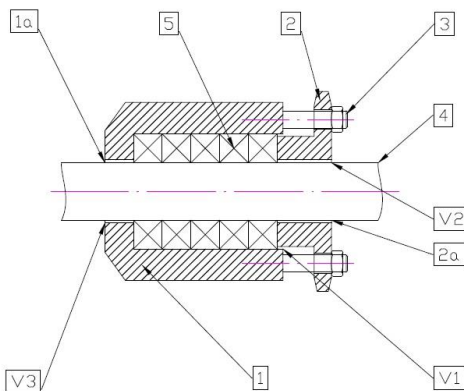
### STUFFING CHAMBER:

#### 1. Inspection:

**Inspect** the shaft, shank, piston rod for damage or wear. Measure the wobbling of the shaft. If it exceeds the value of  $0.001 \cdot d$  ( $\varnothing$  of the shank, or shaft) we recommend repairing or replacing it.

2. Remove the old packing from the chamber with the help of an extractor, leaving no remnants. In the course of this operation make sure that the shaft (shank) is not damaged. Thoroughly clean the chamber and the shaft.

#### 3. Standard stuffing box of pumps



1-stuffing box

1a-throat pressure of fluid

2-gland cover

2a-reduced leakage / tolerable level

3-gland stud bolts and nuts

4-shaft

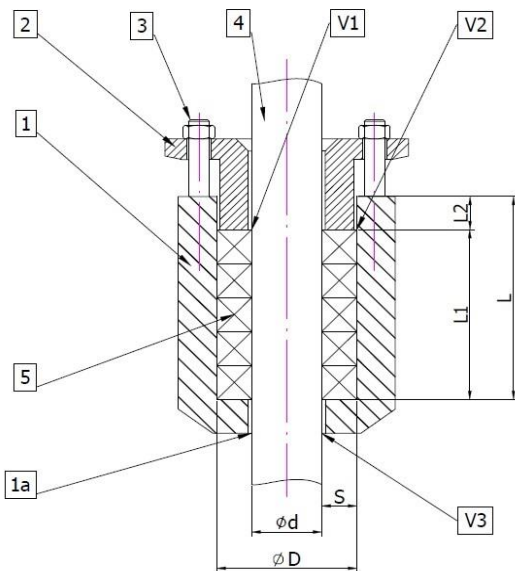
5-packing of **DIMERPACK**

V1-clearance of stuffing box / gland cover

V2-clearance of shaft / gland cover

V3-clearance of shaft / stuffing box

#### 4. Standard stuffing box of valves



1-stuffing box

1a-throat pressure of fluid

2- gland cover

3-gland stud bolts and nuts

4-spindel

5-packing of **DIMERPACK**

V1-clearance of spindle / gland cover (recommended value 0,6mm / diam.)

V2-clearance of gland cover / stuffing box (recommended value 0,4mm / diam.)

V3-clearance of spindle / stuffing box (recommended value 0,6mm / diam.)

$\varnothing d$ -diam. of spindle

$\varnothing D$ -diam. of stuffing box

$s$ -size of packing  $(D-d)/2$

$L$ -depth of packing space

$L1$ -total depth of packing

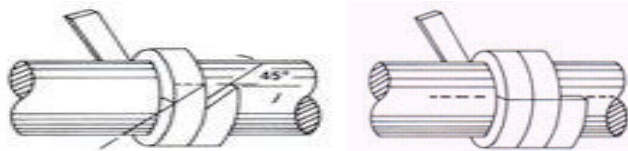
$L2$ -recommended depth of guide gland cover ( $L2=0,5 \cdot s$ )



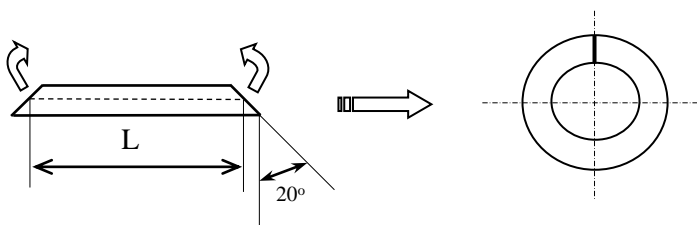
- If the area of the pump or valve design hold on specified tolerances. If the area does not comply of tolerances, select a suitable alternative: metal rings, sealing rings etc .

**Packing:**

- Suitable selected using the cutter of **DIMERPACK CUT** to the correct length depending on the diameter of the shaft or spindle. Never wound up the packing, must be used in form of individual rings and are rotated at least 90 ° to each other. Storage packing must comply with the recommended storage period, and it can be different the type of packings.
- Several ways exist of correctly trimming the packing string. Each one has its advantages as well as disadvantages. Therefore choose the way that you find the most suitable for your needs.
  - Cutting of packing rings on a pin (of the same diameter as the shaft) is very easy and often used. Make sure that the incision is made so as to maintain the medium length of the packing L. See point b. While the execution of a 45° incision is more demanding, the insertion of a ring thus prepared in the packing chamber is easier. For certain high-speed applications we recommend a vertical incision.



b. cutting acc. to formula:  $L = \frac{D+d}{2} * k * \pi$



coefficient k

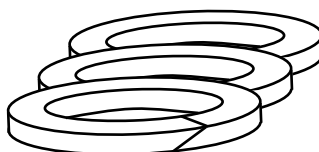
diam. d (mm)	coefficient k
up to 60	1.1
61 – 100	1.07
more than 100	1.04

The optimal medium length of the packing should be a little longer than the length that we attained by this type of incision, because some packing strings contract to some extent after a certain period of operation. (Particularly graphite and PTFE fibers shrink slightly after operating temperatures are reached).

Please keep in mind that the circumference of the outer circle is bigger than the circumference of the inner one, so that in performing the incision an angle of about 20° is required to prevent the formation of a gap on the outer side of the circle. The length must be chosen in such a way that the ring should fit tightly around the shank and that the diagonal ends of the packing should be in close contact. An incorrect length causes a lack of tightness in the packing. It is recommended to check the length by wrapping the packing around the shank or by using a preparatory packing of the same diameter.

Coefficient k takes into account the contraction (shrinkage) of the packing fibers after a certain period of operation.

- Application preformed rings is very simple, efficient and fast. However, not all kinds of packings are suitable for precompression. For further information contact our technical department.



## ASSEMBLY:

8. Carefully compact each ring into the packing chamber before adding further rings and make sure that the connections of the following circles are alternately arranged at 180° intervals (if only 2 rings are installed), at 120° intervals (for 3 rings) and at 90° intervals (if the set comprises 4 or more rings).  
For pressures in excess of 100 bar it is recommended that pre-pressed rings be used, made out of a woven packing material.
9. **Tightening and initial run of pump:** After the installation of all rings into the pump packing, please tighten the nuts on the bolts of the packing lid manually or only with the application of only a very slight force on the bolts. Start up the pump and then continue to tighten the nuts evenly on the packing lid until the permeability is reduced to an acceptable level. Never try to stop the permeability completely, otherwise excess heat will result, which will reduce the service life of the packing and increase the wear on the shaft. As you watch the packing in operation, always tighten all of the nuts to the same degree and wait 10 - 15 minutes for the packing to settle down prior to performing the next adjustment.
10. **Tightening and initial run of the valve:** After installing all rings, insert the packing lid and manually tighten the tightening bolts. Then, using a torque wrench, successively tighten each bolt in turn in four stages, 25, 50, 75 a 100% of the tightening torque. After each stage of tightening, open and close the valve by turning the shank. The tightening torque must be chosen such that the packing should be tight and the valve should be operable.
11. The tightening bolts must be in flawless condition (undamaged, clean and uncorroded) and lubricated with a suitable lubricant whose heat stability is higher than the operating temperature. Once the bolts have been tightened, we recommend opening and closing the valve several times, checking the tightening torque and in case of need, further tighten the bolts. It is also appropriate after 24 hours of operation, to tighten the bolts even in the case that no leakages of the medium area detected—this is to compensate the compression of the packing. To ensure permanent tightening tension it is advisable to use disk-shaped spring washers providing permanently optimal tightening tension. In this case it is not necessary to further tighten the packing in the course of operation.
12. **RECOMMENDED TIGHTENING PRESSURE OF THE PACKING FOR VALVE:**
- |           |   |
|-----------|---|
| a/ liquid | ≤ 40 bar = 2 x working pressure (min 5 MPa)   |
|           | ≥ 40 bar = 1,5 x working pressure             |
| b/ gases  | ≤ 40 bar = 5 x working pressure (min 10 MPa)  |
|           | od 40 do 200 bar = 2,5 - 5 x working pressure |
|           | ≥ 200 bar = 1,5 x working pressure            |
13. **RECOMMENDED TIGHTENING PRESSURE OF THE PACKING FOR PUMP:**
- |                  |                            |
|------------------|----------------------------|
| a/ rotary-liquid | 1,5 – 2 x working pressure |
| b/ piston-liquid | 2 - 3 x working pressure   |