

## Installation and removal instructions Locking Assemblies

The Hakon-locking assemblies are supplied as ready for installation units in different designs. Installation steps 1 through 5 apply accordingly to all internally locking elements and series WK160 and ESN22, if not specified otherwise.

### Installation

Prior to installation, the clearances and the surface quality of the connected structure are to be checked. The locking assembly is delivered lightly oiled in a ready-for-installation condition. After prolonged storage or in the case of a reinstallation, all contact surfaces (Fig. 1), the threads and the screw head contact surfaces must be covered by a thin oil film.

**Step 1:** Thoroughly clean the shaft and hub fit and, if necessary, the locking assembly, too, as described above and oil the components slightly.



Do not use any products containing molybdenum disulfide or oils with high-pressure additives. We recommend the use of a standard commercial machine oil.

**Step 2:** Align the locking assembly, the shaft and hub to each other. In most cases the locking assembly is inserted in the hub when it is released, then it is pushed on the shaft seat.

**Step 3:** Tighten locking screws (Fig. 1, Item 1) slightly until they are in contact with the contact surfaces of the shaft and the hub. While doing this, the hub must be aligned accordingly.

**Step 4:** Pretension the locking screws evenly crosswise using a torque wrench (in several steps) until the required tightening torque ( $M_a$ ) is reached. Tightening torque according to data sheet.



Do not start with the screws near the slot of the internal ring.

It is recommended that you set the torque wrench to 50% of the tightening torque first and apply the full torque in a second step. In the case of large locking assemblies it is recommended that you monitor the tightening of the screws by means of dial gauges for cyclic running.

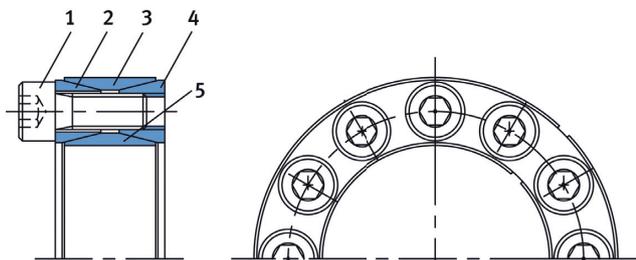


Fig. 1

**Step 5:** Perform the control of the tightening torque of the screws clock-wise. Installation / tightening of the screws is complete if the screws cannot be re-tightened anymore.

### Installation deviations:

#### Series 106

Series 106 is composed of two conical rings and is tensioned via a separate pressure ring on the hub side or the shaft side (see Fig. 2).

Deviation from step 2: installation of individual parts

- Push hub (Item 2) on shaft fit (Item 1)
- Insert distance bushing (Item 3), if required
- Insert locking assemblies (Item 4, max. 4 pcs.)
- Mount locking flange with collar (Item 5) or with separate distance bushing (Item 3)
- Tension shaft-hub connection according to Items 3 through 5; do not mount locking screws in a dry state

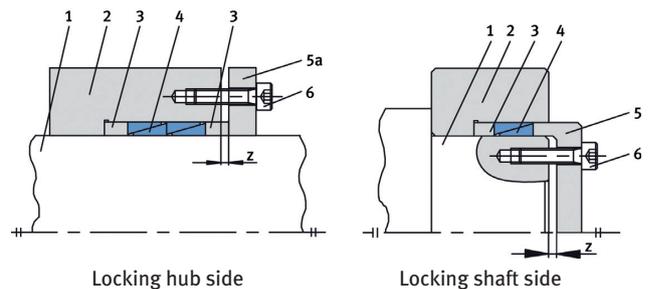


Fig. 2

- Check distance "z". The dimension of the gap should be the same across the whole circumference, if possible, and must not be smaller than the value indicated in the data sheet.

#### Series 150 and 151

These series are not pre-tensioned by means of individual locking screws, but by means of a lock nut (slotted or hexagon nut). After the installation, the connection is to be secured by means of the locking washer.

#### Series WK160

The rigid shaft coupling is mounted according to step 1 through 5. A hub part is not required with this design. It must be made sure that the coupling and the shaft ends to be connected are aligned accordingly.

#### Series ESN22

This is a weld-in bush, thus locking is only effected on the shaft side. The hub part is a welded construction.

Deviation from step 2: Mounting individual parts

- Pretension weld-in bush according to step 1 through 5
- Insert assembly in the connected structure (conveyor drum, etc.) and align

- Tack-weld, fix the parts to be connected by weld points or short weld seams
- Welding

## Removal

The removal steps may be different depending on the series. Self-locking assemblies are provided with integrated forcing threads (see Fig. 3, Item 4). For the removal of large locking assemblies, auxiliary provisions are recommended. Removal steps 1 through 4 apply to all internally locking elements as well as the series WK160 and ESN22, if not specified otherwise.

**Step 1:** Release all locking screws (Item 1) evenly crosswise in several steps.

**Step 2:** Turn out the screws by some turns so that the element can relax as described below.

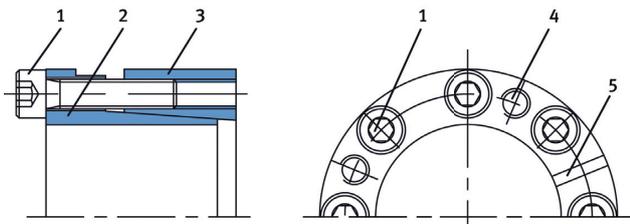


Fig. 3

Locking assemblies of the **series 106, 112, 150 and WK160** will normally relax themselves so that the connection can be disassembled (see additional information).

Locking devices of the **series 100, 102, 110, 131, 132, 133, 136, 145 and ESN22** are provided with self-locking tapers and threaded holes (push-off threads, Item 4) for inserting forcing screws.

**Step 3:** Turn out the corresponding number of screws completely and transfer it into the push-off threads of the locking assembly. Tighten the forcing screws crosswise in several steps until the rear cone ring (outer part, Item 3) is loosened.



Do not start with the forcing screws near the slot (Item 5) of the internal ring (Item 2).

**Step 4:** Take off locking elements and hub from the shaft.

Before re-use, undamaged locking assemblies must be disassembled and cleaned. Re-used is to be effected according to our installation instructions.

## Additional information:

### Series 106

Gentle, radial blows distributed across the circumference support the loosening.

### Series 112

If the rear pressure ring does not relax itself some gentle blows on the screw heads will help in most cases.

- To loosen an element which is deep in the hub hole or to loosen a jammed front pressure ring, the galvanized screws must be removed.
- Insert larger screws (next size) in the front pressure ring and pull out the cone by the screws which act like a lever.

### Series 145

- Push-off and take out the front taper ring according to removal step 3
- Turn out forcing screws and transfer them into the push-off threads of the intermediate ring
- Tighten the screws crosswise in several steps until the rear conical ring is loosened

### Series 150 and 151

- Loosen locking washer
- Loosen and turn back slotted or hexagon nut
- Pull back locking washer
- In case the locking assembly gets jammed, loosen it by gentle blows across the circumference of the hub

### Series ESN22

Removal is effected as described in Steps 1 through 4. However the connection designed as a welded construction allows mechanical dismantling of the internal part of the weld-in bush only.

## Installation and removal instructions Shrink Disc Connections

Hakon-shrink disc connections are delivered in different designs. The following installation steps apply accordingly to all externally locking elements, if not specified otherwise.

### Series KN22 und KNV22

The installation and removal of the locking hub be carried out analogously to the following instructions.

### Series WK160 and ESN22

For series WK160 and ESN22, the installation and removal instructions for locking assemblies apply (see page 1 and 2).

### Installation

Prior to installation, the clearances and the surface quality of the shaft (Item 1) and the hub (Items 5 and 6) are to be checked. The locking device is supplied ready for installation and should be disassembled and cleaned only in the case of reinstallation.



After cleaning all conical surfaces (Item 7) of the shrink disc, the screw head contact surfaces and the threads must be lubricated with a grease containing molybdenum disulphide.

#### Step 1: Eliminating the tolerance

Before installation, tighten the locking screws until the tolerance between the external ring (Item 2) and the internal ring (Item 3) is eliminated.

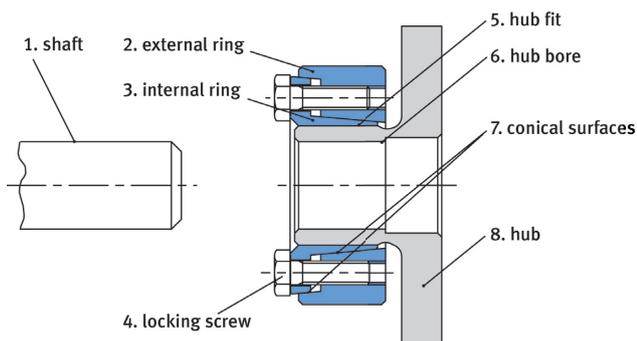


Fig. 4: Design of a shrink disc connection

#### Step 2: Cleaning

Thoroughly clean and degrease the shaft and the hub hole (Items 1 and 6), then oil the components slightly. Oiled fits reduce the transmission values, but facilitate the installation and avoid the formation of fit corrosion.



In this case, do not use any products containing molybdenum disulphide or oils with high-pressure additives. We recommend the use of a standard commercial machine oil.

#### Step 3: Installation of the shrink disc

Install the shrink disc (in released state) on the hub. In the fit area (Item 5), the hub can be greased or oiled slightly. Never tighten the locking screws before the shaft is assembled.

#### Step 4: Installation of the shaft

In most cases the unit (hub / shrink disc) is pushed and positioned on the shaft fit.

#### Step 5: Alignment

Slightly tighten the locking screws (Item 4) evenly, the components must be aligned accordingly. The locking collars of series 271 are aligned automatically.

#### Step 6: Locking

Pretension the screws evenly clockwise using a torque wrench (in several steps) until the required tightening torque ( $M_a$ ) is reached. Tightening torque according to data sheet. Check the tightening torque of the screws.

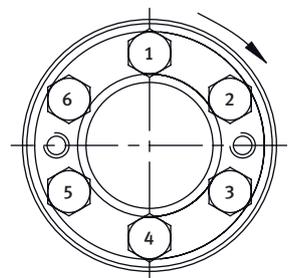


Fig. 5: Tightening of locking screws

### Removal

#### Step 1: Loosening the locking screws

Loosen all screws (Item 4) evenly (clockwise and in several steps) by  $1/4$  turn.



Never turn out the locking screws one after the other completely. The tensioning force must be reduced evenly via all screws.

#### Step 2: Loosen the shrink disc connection

Normally series 271 will loosen itself.

If the external ring of series 222 and KNV22 does not relax itself, it is loosened using the forcing threads (push-off threads). Turn out the corresponding number of screws completely (evenly distributed) and insert them into the push-off threads until the external ring relaxes.

#### Step 3: Removal of the shaft

Remove any dirt from the shaft. Pull the hub off the shaft and take the shrink disc off the hub.

Undamaged shrink discs must be treated according to our installation instructions before re-use.