Dismounting of rolling bearings
Hydraulic dismounting

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Dismounting methods

In order to prevent damage during the dismounting of bearings, various dismounting methods are used depending on the bearing size and type of application that facilitate the reuse of components. In general, a distinction is made in the dismounting of bearings between mechanical, thermal and hydraulic methods. Before dismounting is actually carried out, the mounting drawings and any instructions for mounting and dismounting must be carefully checked. In case of doubt, the Schaeffler expert team is available to provide advice and assistance.

Hydraulic dismounting

In the oil pressure method, oil is pressed between the fit surfaces. The oil film substantially neutralises the contact between the fit parts, so they can be displaced relative to each other with the application of little force and without the risk of surface damage.

The oil pressure method is suitable for dismounting in the case of both tapered and cylindrical seats. In both cases, oil grooves and feed ducts as well as threaded connectors for the pressure generation devices must be provided. Large adapter and withdrawal sleeves have appropriate grooves and holes.

For the dismounting of bearings with a tapered bore that are located directly on the shaft, injectors are sufficient as pressure generation devices. For bearings with cylindrical bores and where adapter and withdrawal sleeves are present, a pump must be used.

For dismounting, the same oils are used as for mounting, which means oils with a viscosity of approx. 75 mm^2/s at +20 °C (nominal viscosity 32 mm^2/s at +40 °C). Fretting corrosion can be dissolved by rust-dissolving additives in the oil.

Dismounting of cylindrical bearing bore

In the dismounting of bearings with a cylindrical bore, the oil pressure method is normally only used in a supporting function for mechanical tools. The specific extraction device is first placed on the ring with fit and oil under pressure is then pumped into the oil grooves, *Figure 1*.

This neutralises the fit and the bearing can be removed, for example by means of a mechanical extractor.

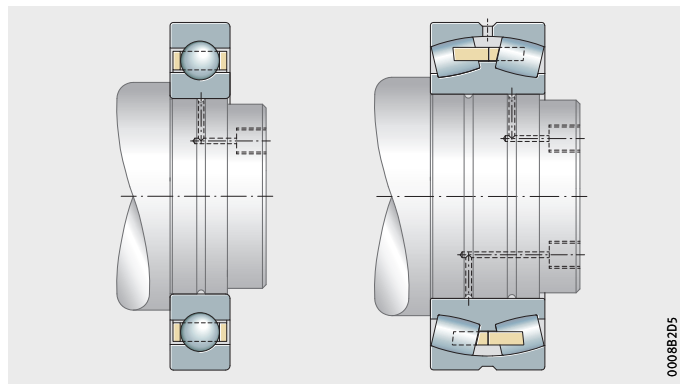


Figure 1
Hydraulic dismounting of cylindrical seat

If there are no grooves and ducts in the shaft, for example for reasons of strength, the oil can be pressed between the fit surfaces from the end face of the inner ring. A sealed contact ring is located at the front end of the interference fit, through which the oil is pressed into the fit joint. A container fixed to the end of the shaft makes it possible to press oil between the fit surfaces until the end of the extraction process. If it is not possible to fit such a container, a very stiff oil with a viscosity of 320 mm^2/s (cSt) at +40 °C must be used. With an oil of such stiffness, the oil film remains in the fit joint for up to 5 minutes. This time is sufficient for extraction of the bearing.

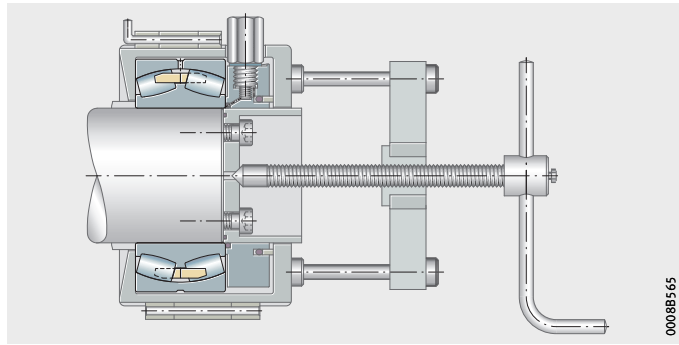


Figure 2
Special device for extraction from a shaft without oil grooves

Dismounting of tapered bore

In the extraction of bearings located on a tapered shaft journal, a withdrawal sleeve or an adapter sleeve, it is only necessary to press oil between the fit surfaces.

The interference fit becomes loose abruptly. Due to the risk of accidents, axial movement of the rolling bearing or withdrawal sleeve during dismounting must be restricted by a shaft nut, adapter sleeve nut or a stop, *Figure 3*.

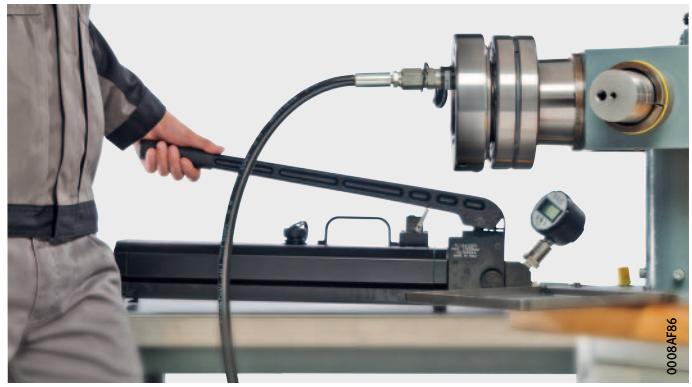
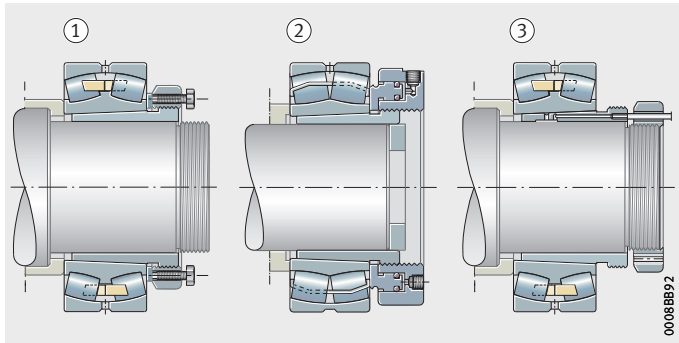


Figure 3
Hydraulic dismounting of tapered seat

Dismounting of rolling bearings

Dismounting is sometimes made more difficult by fretting corrosion. The use of a rust-dissolving hydraulic fluid is recommended, especially in the case of bearings that are dismounted after a long period of operation. In difficult cases, removal of the withdrawal sleeve can be supported by the extraction nut, *Figure 4*. If pressure screws are present in the withdrawal sleeve nut, an intermediate ring must be inserted in order that the extraction forces do not act directly on the rib of the rolling bearing ring.



Dismounting of a withdrawal sleeve:
① Using a nut and pressure screws
② Using a hydraulic nut

Dismounting of a spherical roller bearing from the withdrawal sleeve:
③ Using the hydraulic method

Figure 4
Dismounting of a withdrawal sleeve and spherical roller bearing

Further information

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