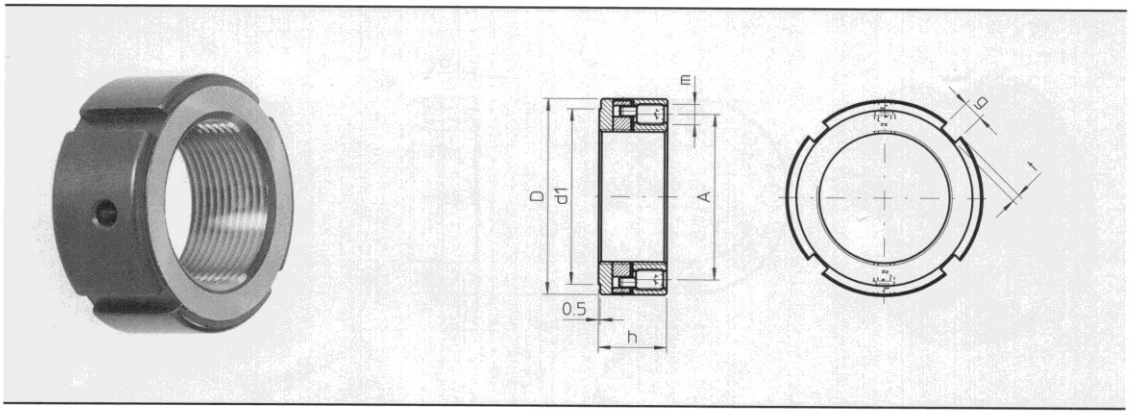
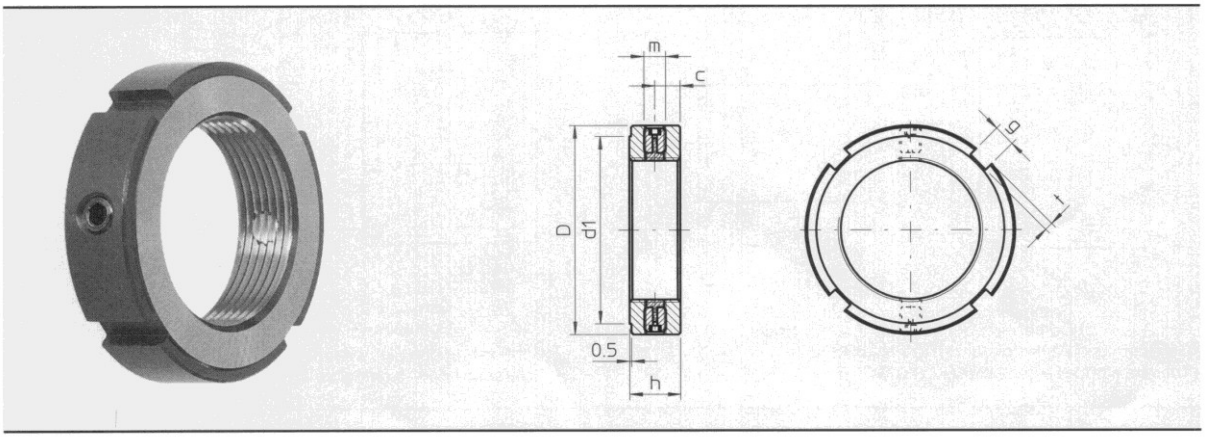
HIR - axiální upevnění pojistných matic

HIA-Nutmuttern axiale Klemmung



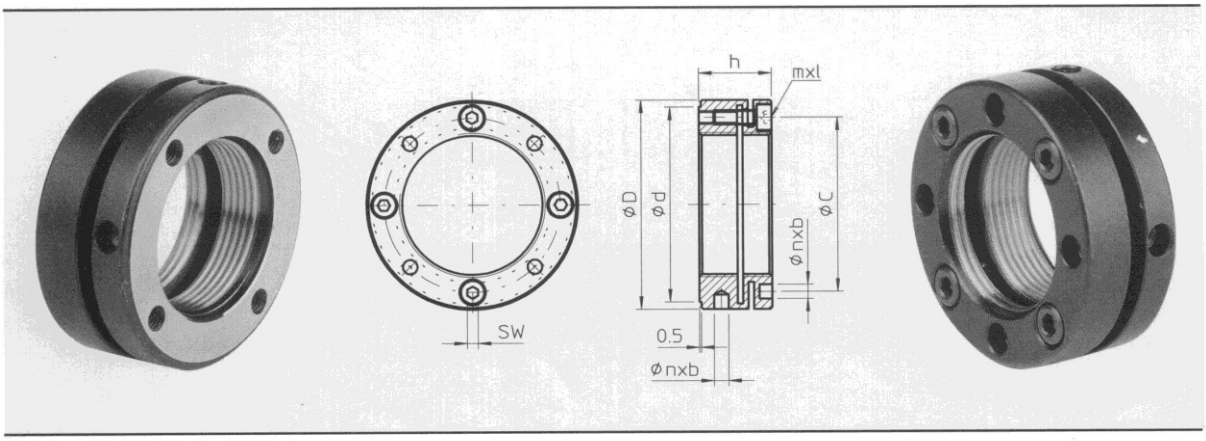
HIR-Nutmuttern radiale Klemmung

HIR - radiální upevnění pojistných matic



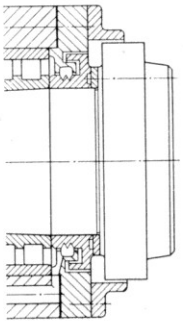
Nutmuttern mit Gewindeklemmung

Pojistné matice se svěrným upevněním



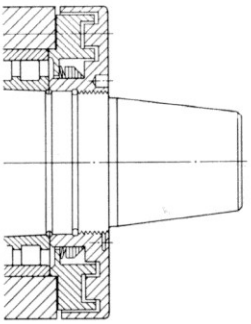
Oil, small quantities

Labyrinth seals incorporating oil drainage grooves
This type of seal is suitable for most types of spindle. It can be reinforced with an external flinger ring or collar if the spindle is exposed to swarf or coolant.



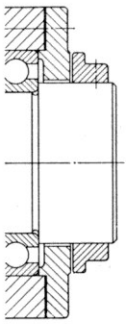
Grease

Reinforced labyrinth seals
Under difficult working conditions the labyrinth seal should be reinforced with a rubbing sealing collar of oil resistant material. The collar must only be in light contact with the spindle so that friction is small. This seal is suitable for slow and medium speed spindles where coolant or cutting fluid may spill over the housings.



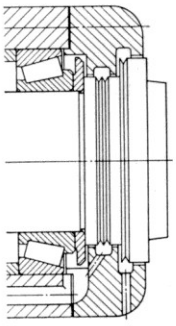
Grease
Oil mist

Gap seals
This type of seal is used for simple spindle arrangements where conditions are favourable, there being no hazard from swarf or coolant. Sealing against the ingress of foreign matter can be improved by using an external flinger.



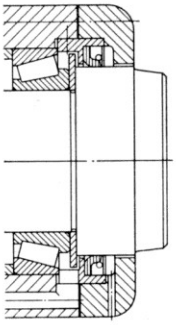
Liberal oil circulation

Gap seals with oil flinger
This type of seal is suitable when, because of the high speeds involved, the bearings have to be cooled by a liberal flow of oil. It has good sealing against the ingress of foreign matter and is used with an internal oil flinger; a drainage groove returns escaped oil. When coolant is used during machining the seal should be supplemented with an exterior flinger ring or collar.



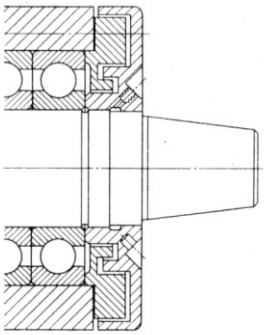
Oil
Grease

Rubbing seals
This type of seal is used where cutting fluid spills over the spindle nose as with automatic lathes, for example. The sealing collar, which is shielded by a swarf guard, is mounted so that it gives maximum protection to the bearing. The spindle speed must not exceed the permissible peripheral speed for this type of seal.



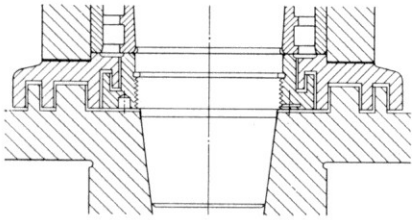
Grease
Oil mist

Labyrinth seals
This type of seal is frictionless and suitable for high speed spindles. The sealing collar should be located on the shaft and dynamically balanced.



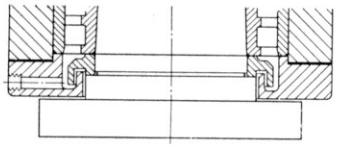
Grease

Labyrinth seals
This type of seal is used where conditions are onerous and where it is essential to prevent the ingress of foreign matter as with vertical spindles on face grinding machines, for example. The main task of the inner labyrinths of the seal is to retain grease in the bearing housing. The external labyrinths can be incorporated in the grinding wheel flange or in the chuck to save space.



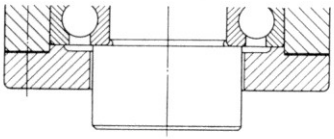
Oil

Labyrinths with oil flingers
This type of seal incorporates an oil flinger to throw off the oil which has passed through the bearing. The oil is collected in the housing and led away.



Grease

Gap seals
This type of seal is generally used on smaller sizes of drilling spindle.



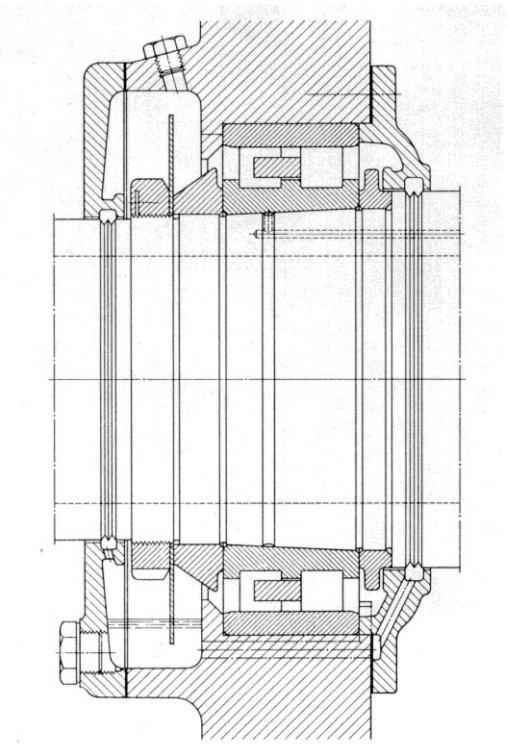


Fig. 81 Spindle bearing arrangement having oil bath lubrication

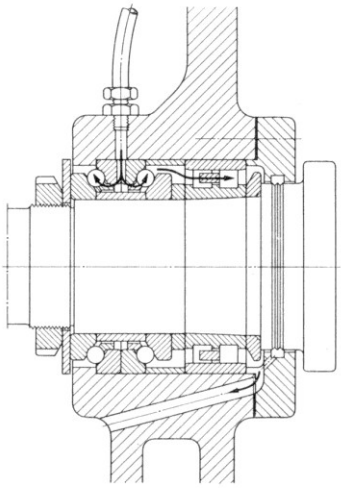


Fig. 82 Circulating oil system for a spindle bear arrangement incorporating one angular contact thr ball bearing and one double row cylindrical roller bear

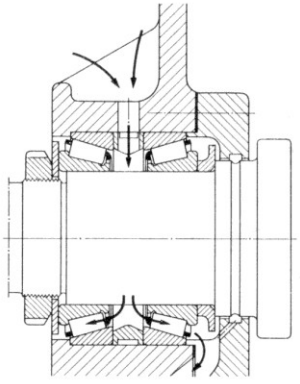


Fig. 83 Circulating oil system for a spindle bear arrangement incorporating two taper roller bearings

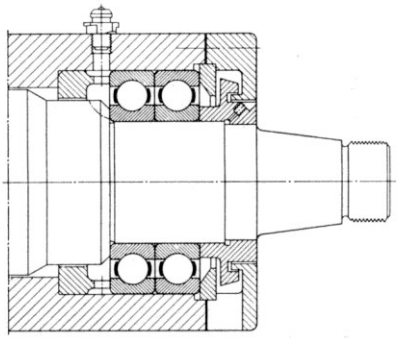


Fig. 100 Grease escape valve for high-speed grinding spindle bearing arrangement

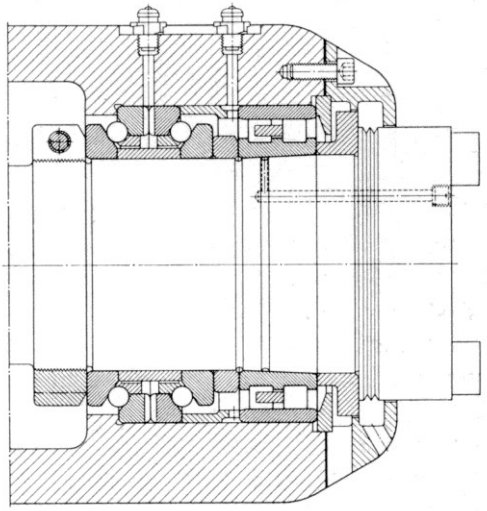


Fig. 101 Grease escape valve for lathe or milling machine spindle

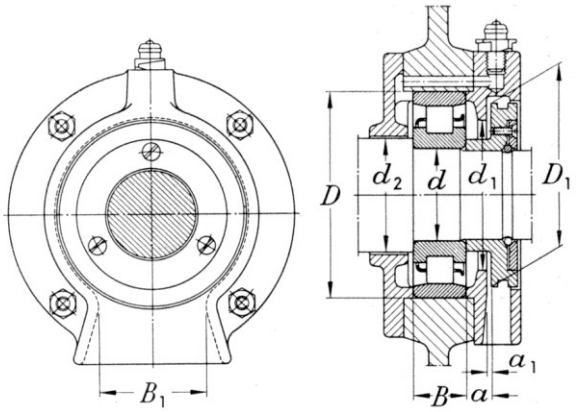


Fig. 102 Principal dimensions of grease escape valve

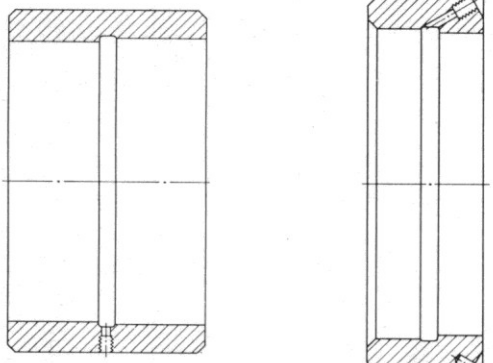
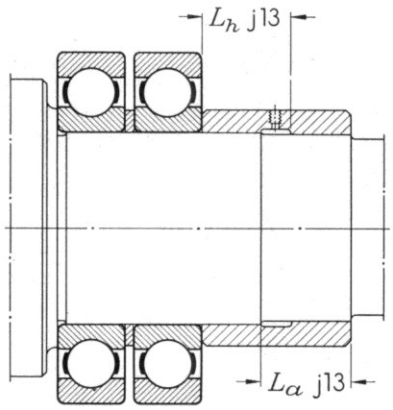


Fig. 219 Stepped sleeve

Fig. 220 Stepped collar



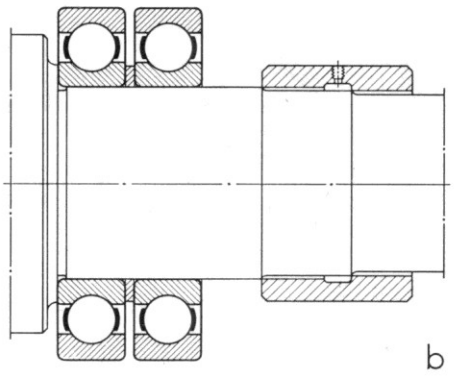


Fig. 221 Stepped sleeve, (a) mounted and (b) free

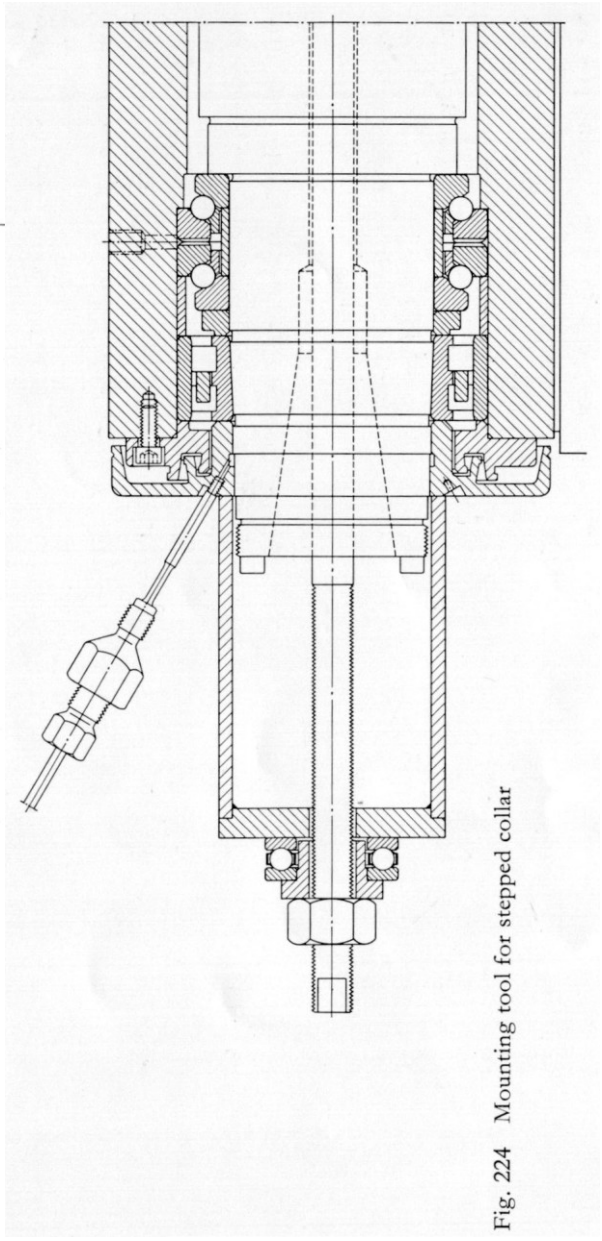


Fig. 224 Mounting tool for stepped collar