

# Dismounting

<b>Dismounting rolling bearings . . . . .</b>	<b>254</b>	<b>Dismounting bearing units . . . . .</b>	<b>270</b>
What to remember . . . . .	254	What to remember . . . . .	270
Preparations prior to dismounting . . . . .	254	Preparations prior to dismounting . . . . .	271
Appropriate dismounting methods . . . . .	255	Dismounting ball bearing units with	
Dismounting a bearing fitted on a		grub (set) screw locking . . . . .	272
cylindrical shaft seat . . . . .	256	Dismounting ball bearing units with	
Manual dismounting . . . . .	256	an eccentric locking collar . . . . .	273
Dismounting with a		Dismounting ball bearing units	
hydraulically-assisted puller . . . . .	257	fitted on an adapter sleeve . . . . .	274
Dismounting using the oil injection		Dismounting SKF ConCentra ball	
method . . . . .	258	bearing units . . . . .	275
Dismounting with a press . . . . .	258	Dismounting SKF ConCentra roller	
Dismounting with heat . . . . .	258	bearing units . . . . .	276
Dismounting a bearing fitted on a		Dismounting roller bearing units	
tapered shaft seat . . . . .	259	with a cylindrical locking collar . . . . .	276
Manual dismounting . . . . .	260		
Dismounting with		<b>Dismounting bearing housings . . . . .</b>	<b>278</b>
a hydraulically-assisted puller . . . . .	260	What to remember . . . . .	278
Dismounting using the oil injection		Preparations prior to dismounting . . . . .	278
method . . . . .	260	Dismounting split plummer (pillow)	
Dismounting a bearing fitted on		block housings . . . . .	280
an adapter sleeve . . . . .	260	Dismounting flanged housings . . . . .	282
Manual dismounting: plain shafts . . . . .	262		
Manual dismounting: stepped shafts . . . . .	262	<b>Removing seals . . . . .</b>	<b>284</b>
Dismounting with a hydraulic nut . . . . .	262	Removing non-contact seals . . . . .	284
Dismounting using the oil injection		Removing contact seals . . . . .	284
method . . . . .	264		
Dismounting a bearing fitted on a			
withdrawal sleeve . . . . .	264		
Manual dismounting . . . . .	264		
Dismounting with a hydraulic nut . . . . .	266		
Dismounting using the oil injection			
method . . . . .	266		
Dismounting a bearing from a solid			
housing . . . . .	267		
Manual dismounting . . . . .	267		
Dismounting using the oil injection			
method . . . . .	268		
Dismounting with heat . . . . .	269		
Dismounting a bearing from a shaft			
and a solid housing simultaneously . . . . .	269		

# Dismounting rolling bearings

### What to remember

When dismounting, there is always the potential to damage an otherwise good bearing. Therefore, whenever possible, do not dismount an undamaged bearing. However, if you must do so and intend to reuse the bearing after dismounting, remember the following:

- Do not hit the bearing rings or any other part directly.
- Never allow the dismounting force to be transmitted through the rolling elements.
- Do not heat the bearing with an open flame.

The tools and methods used to dismount rolling bearings often depend on the size of the bearing. Generally, bearings can be categorized as:

- small bearings: bore diameter  $d \leq 80$  mm
- medium-size bearings: bore diameter  $80 \text{ mm} < d < 200$  mm
- large bearings: bore diameter  $d \geq 200$  mm

After a bearing has been dismounted, wash it with a suitable cleaning solvent and dry it carefully. Inspect all bearing parts, especially the raceways, rolling elements and cage for wear or damage. If the bearing can be reused, protect it against corrosion by coating it thoroughly with either grease, oil or an anti-corrosive fluid, and repackage it.

Small sealed bearings and bearings that are very dirty or encrusted with oxidized lubricant are generally not worth cleaning. Normally, it is more economical to scrap the old bearing and replace it with a new one.

**NOTE:** Mark the relative position of the bearing in the housing (or on the shaft) (→ **fig. 1**) before the bearing is dismounted. When an undamaged bearing is remounted, the non-rotating ring is typically turned by  $120$  to  $180^\circ$  to enable a new part of the raceway to be in the load zone.

Dismounting tools and products are available from SKF Maintenance Products (→ **Appendix O**, starting on **page 435**). The SKF Dismounting fluid is suitable for use when dismounting with hydraulically-assisted tools and when using the oil injection method. For additional information, visit [www.mapro.skf.com](http://www.mapro.skf.com).

The SKF Reliability Maintenance Institute (RMI) offers a comprehensive range of training courses in dismounting techniques (→ *Training*, starting on **page 326**). Contact your local SKF representative for additional information, or visit [www.skf.com/services](http://www.skf.com/services).

### Preparations prior to dismounting

Taking the time to prepare can make dismounting easier. If available, review the assembly drawing(s) and study the bearing arrangement. Then, before starting any work, observe the following guidelines:

- Clean the application and the surrounding area thoroughly.
- Have suitable containers on hand to retrieve lubricant samples and collect the used lubricant.
- Have a suitable cleaning solvent available, e.g. petroleum, kerosene or a strong alkaline solution, to clean the shaft, housing, and bearing if it is to be reused.

**NOTE:** Due to environmental considerations, SKF does not recommend the use of chlorinated solvents of any kind.

### Appropriate dismounting methods

SKF recommends using any one of the following methods to dismount bearings:

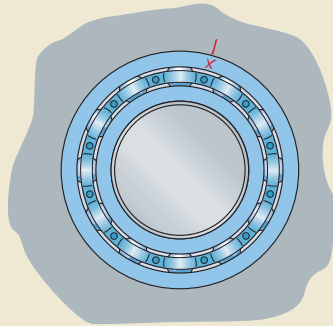
- manual dismounting
- dismounting with hydraulically-assisted tools
- dismounting using the oil injection method
- dismounting with heat

The method used depends largely on the size and type of bearing. Small bearings can be removed from their seats with mechanical tools. Larger bearings generally require greater force than a mechanical tool can provide. Therefore, SKF recommends either hydraulically-assisted tools or the oil injection method, or both.

Heating rings or special induction heaters can be used to remove inner rings of needle roller bearings or NU, NJ and NUP design cylindrical roller bearings. However, using heat to remove other bearing types should only be done as a last resort.

To use the oil injection method, it is presupposed that the necessary oil supply duct and distribution groove have been designed into the bearing arrangement (→ **Appendix G, page 405**).

Fig. 1



## Dismounting

### Dismounting a bearing fitted on a cylindrical shaft seat

#### Manual dismounting

Whenever possible, support the shaft in a suitable bench vice (→ **fig. 2**) to avoid damaging the shaft or bearing during the dismounting process.

Small bearings can be removed from the shaft with a mechanical puller. The claws must be applied to the inner ring or an adjacent component, e.g. a labyrinth (→ **fig. 3**).

If it is not possible to apply the claws to the inner ring or a suitable adjacent component, withdraw the bearing via the outer ring. To avoid damage during dismounting, SKF recommends turning the outer ring while the bearing is being dismantled (→ **fig. 4**). However, when this technique is used, SKF does not recommend reusing the bearing.

Fig. 2

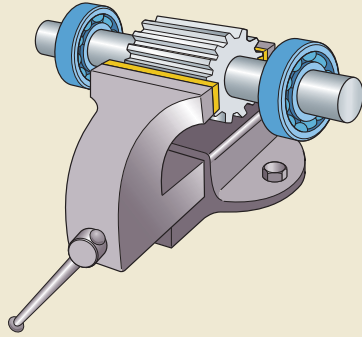


Fig. 3

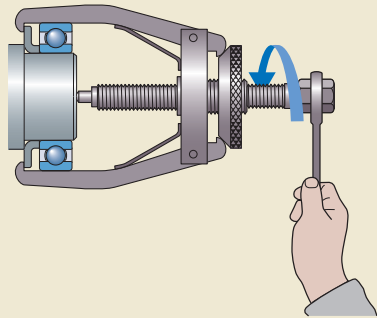
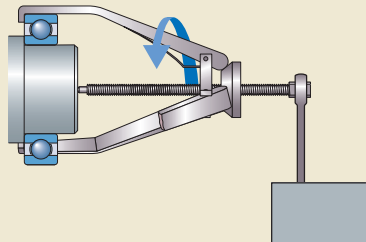


Fig. 4



If a suitable puller is not available, a hammer and a soft metal drift punch or similar tool can be used to drive the bearing from its seat. Light taps with a hammer should be applied evenly around the whole side face of the inner ring (→ **fig. 5**). Be careful when using this technique, because it is very easy to damage the shaft. Also, SKF does not recommend reusing the bearing as undetectable damage may have been done to the bearing during the dismounting process.

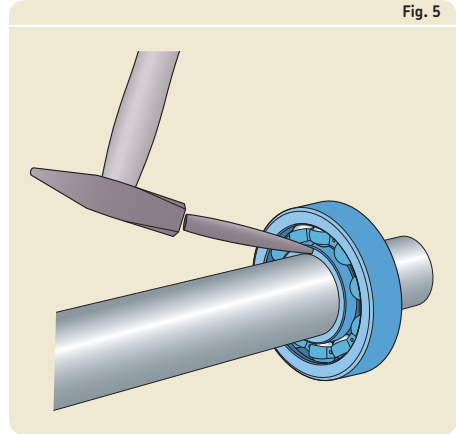


Fig. 5

### Dismounting with a hydraulically-assisted puller

The force to dismount bearings that are mounted with an interference fit on the shaft increases rapidly with the size of the bearing. Therefore, SKF recommends using a hydraulically-assisted heavy-duty puller (→ **fig. 6**) when dismounting large bearings. These pullers are typically available for bearings with an outside diameter up to 500 mm. When using these, follow the instructions supplied with the puller.

SKF also offers hydraulically assisted puller sets that can be used to dismount small and medium-size bearings.

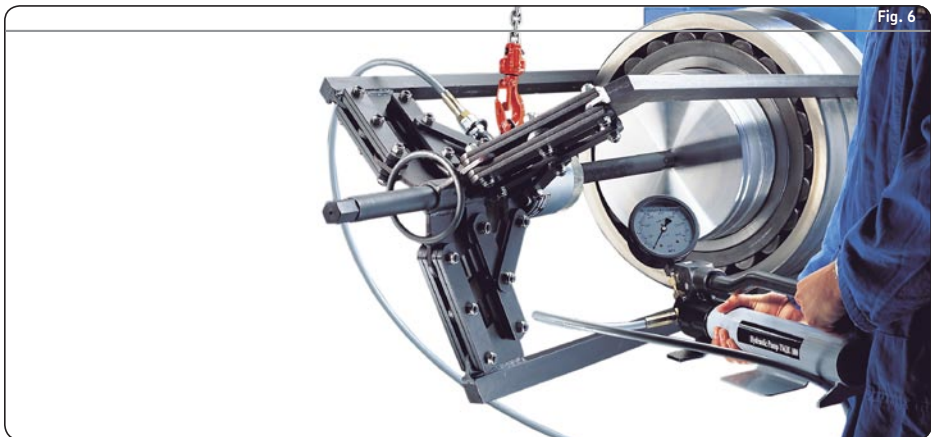


Fig. 6

## Dismounting

### Dismounting using the oil injection method

The oil injection method can be used to dismount bearings with a cylindrical bore. This method injects oil under high pressure, with a viscosity of about  $900 \text{ mm}^2/\text{s}$  at  $20^\circ\text{C}$  ( $70^\circ\text{F}$ ), between the shaft seat and the inner ring bore, until an oil film completely separates the contact surfaces (→ **fig. 7**). If the bearing is removed promptly and without interruption, a relatively small force is required for dismounting.

### Dismounting with a press

A very convenient way to remove a bearing from its shaft seat is with a press placed against the shaft end. In this case, the bearing inner ring has to be supported (→ **fig. 8**).

### Dismounting with heat

Dismounting with heat is a suitable method when removing inner rings of needle roller bearings or NU, NJ and NUP design cylindrical roller bearings. Two different tools for this purpose are common: heating rings and induction heaters.

Heating rings are typically used to mount and dismount the inner ring of small to medium-size bearings that are all the same size.

Heating rings are made of a light alloy, radially slotted and equipped with insulated handles (→ **fig. 9**). The dismounting procedure is simple. Coat the inner ring raceway of the bearing with an oxidation-resistant oil. Place the heating ring on a hot plate and heat it to approximately  $280^\circ\text{C}$  ( $540^\circ\text{F}$ ). Place the heated ring around the inner ring and press the handles together. The heat will transfer rapidly to the inner ring. As soon as the inner ring comes loose, withdraw both the tool and the inner ring. Then, remove the inner ring from the tool.

Fig. 7

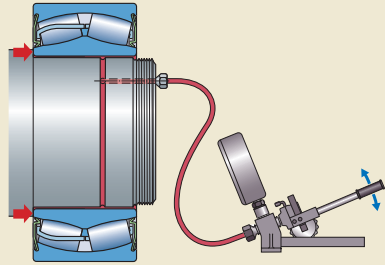


Fig. 8

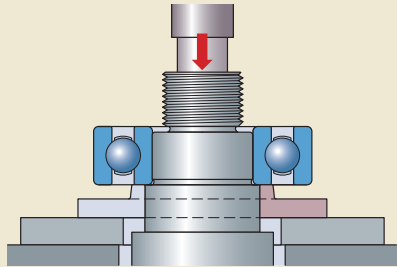


Fig. 9

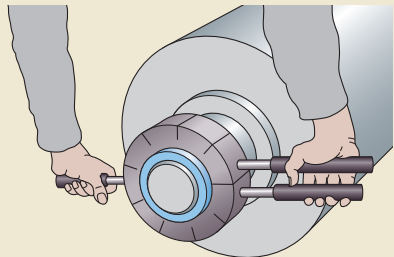
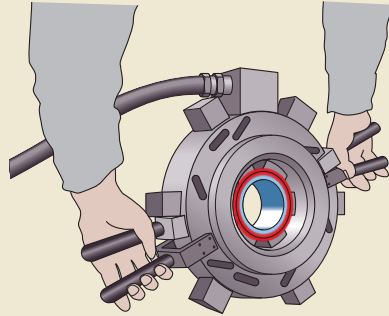


Fig. 10

If inner rings with different diameters are dismounted frequently, SKF recommends using an SKF Adjustable induction heater. These electrical induction heaters (→ **fig. 10**) heat the inner ring rapidly without heating the shaft to any degree. If the inner ring is to be reused, it should be demagnetized after dismounting.

For frequent dismounting of inner rings of medium-size and large cylindrical roller bearings, such as roll neck bearings in rolling mills, SKF recommends using an SKF Fixed induction heater.

Heating rings and induction heaters are available from SKF. For additional information, visit [www.mapro.skf.com](http://www.mapro.skf.com).



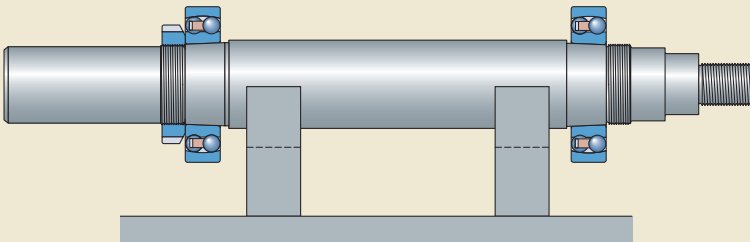
### Dismounting a bearing fitted on a tapered shaft seat

To avoid damaging the shaft or bearing during this dismounting process, properly support the shaft. To do this, use a suitable bench vice, two V-blocks (→ **fig. 11**) or lifting tackle.

#### WARNING

To avoid the risk of serious injury, attach a provision such as a lock nut to the shaft end to limit the bearing travel when it suddenly comes loose.

Fig. 11





## Dismounting

### Manual dismounting

Small bearings can be dismantled using a mechanical puller that engages the inner ring. Self-centring pullers equipped with spring-operated arms should be used to simplify the procedure and avoid damage to the bearing seat.

If it is not possible to apply the claws of the puller to the inner ring, withdraw the bearing via the outer ring or use a puller in combination with a pulling plate (→ **fig. 12**).

### Dismounting with a hydraulically-assisted puller

Larger bearings generally require considerable force and should be removed from their tapered seat with the aid of hydraulically-assisted pullers (→ **fig. 6, page 256**). These are normally available for bearings with an outside diameter up to 500 mm.

### Dismounting using the oil injection method

Dismounting medium-size and large bearings from tapered shafts is easier and much safer when the oil injection method is used. With this method, oil with a viscosity of about  $900 \text{ mm}^2/\text{s}$  at  $20^\circ\text{C}$  ( $70^\circ\text{F}$ ) is injected under high pressure between the two tapered mating surfaces, via a supply duct and a distribution groove. This significantly reduces the friction between the two surfaces and produces an axial force that separates the bearing from its seat (→ **fig. 13**).

### WARNING

To avoid the risk of serious injury, attach a provision such as a lock nut to the shaft end to limit the bearing travel when it suddenly comes loose.

### Dismounting a bearing fitted on an adapter sleeve

The method used to dismount a bearing fitted on an adapter sleeve depends on the following:

- bearing size
- type of arrangement: plain or stepped shaft (→ **fig. 14**)
- adapter sleeve design: with or without oil supply ducts and distribution grooves for oil injection (→ **fig. 15**)

In all cases, dismounting starts with the following (→ **fig. 16**):

- Remove excess lubricant and wipe down the arrangement.

Fig. 12

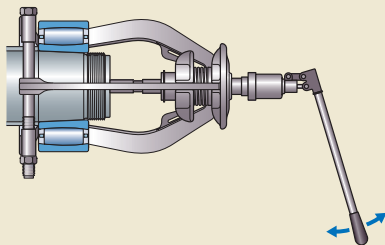


Fig. 13

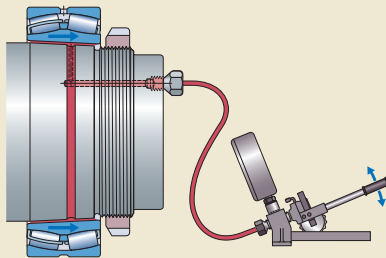


Fig. 14

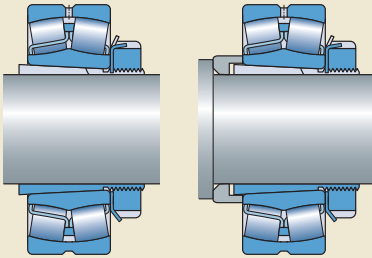
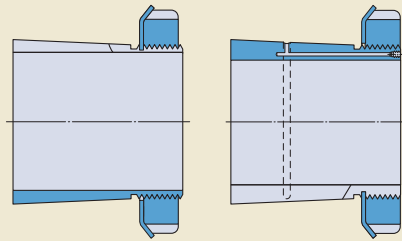
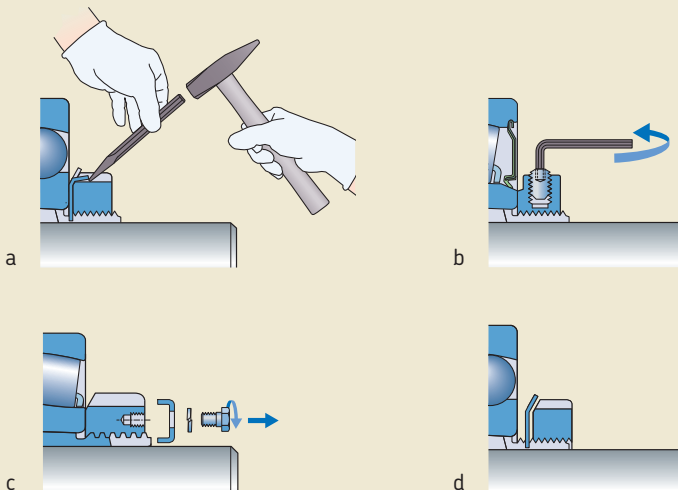


Fig. 15



- Depending on the locking device:
  - Disengage the bent tab of the lock washer from the lock nut (a).
  - Loosen the locking screw in the lock nut (b).
  - Remove the locking clip attached to the lock nut (c).
  - Loosen the lock nut a few turns (d).

Fig. 16



## Dismounting

### Manual dismounting: plain shafts

Small bearings fitted on an adapter sleeve and a plain shaft can be dismounted by tapping a small steel block with an appropriate hammer, evenly around the bearing inner ring side face (→ **fig. 17**). Before doing so, the sleeve lock nut has to be loosened a few turns. Also, to facilitate reassembly, mark the position of the sleeve on the shaft. After the bearing comes free, completely remove the lock nut, lock washer, bearing and sleeve from the shaft. To facilitate removal, expand the sleeve slightly by inserting a small plastic wedge or screwdriver in the slot of the sleeve.

**NOTE:** The steel block shown in **fig. 18** is a segment of a turned ring and can be made easily using the dimensions listed in the product tables of the *SKF Interactive Engineering Catalogue*, available online at [www.skf.com](http://www.skf.com).

### Manual dismounting: stepped shafts

Small bearings fitted on an adapter sleeve and a stepped shaft can be dismounted by a couple of sharp hammer blows applied to a mounting dolly abutting the lock nut of the adapter sleeve (→ **fig. 19**). After the bearing comes free, completely remove the lock nut, lock washer as well as the bearing and withdraw the sleeve and the abutment ring from the shaft. To facilitate removal, expand the sleeve slightly by inserting a small plastic wedge or a screwdriver in the slot of the sleeve.

**NOTE:** Use the SKF Bearing fitting tool kit for shaft diameters  $\leq 55$  mm (→ **page 72**).

### Dismounting with a hydraulic nut

Using a hydraulic nut for dismounting bearings fitted on an adapter sleeve on a stepped shaft makes bearing removal easy. To use this method however, it must be possible to mount a suitable stop for the piston of the hydraulic nut to work against (→ **fig. 20**). The stop can be a washer or a plate bolted to the shaft end or can take the form of a two-piece ring fitted into a groove in the shaft and held in place by a one-piece ring.

Place the hydraulic nut on the adapter sleeve with the piston facing outward. Be sure to leave a gap between the bearing and nut that is greater than the initial axial drive-up distance. Connect the hydraulic pump to the hydraulic nut. When pressurizing the hydraulic nut, the piston

will push the adapter sleeve underneath the abutment ring until the bearing comes free.

To empty the hydraulic nut, open the oil release valve of the hydraulic pump, and push the piston back to its original position by screwing the nut down the threaded portion of the sleeve. Then, disconnect the hydraulic pump and remove the stop. Finally, unscrew the nut from the sleeve and remove both the bearing and sleeve from the shaft.

**NOTE:** Detailed information about SKF hydraulic nuts is provided in the section *Hydraulic tools*, starting on **page 73**. Useful instructions for use can be found in the section *The oil injection method*, starting on **page 62**.

Fig. 17

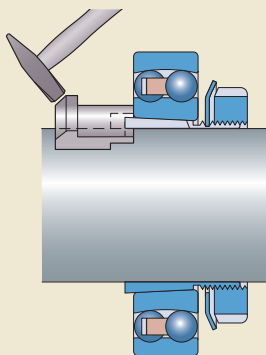


Fig. 18

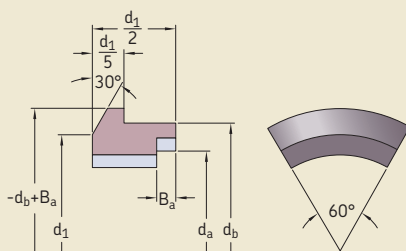


Fig. 19

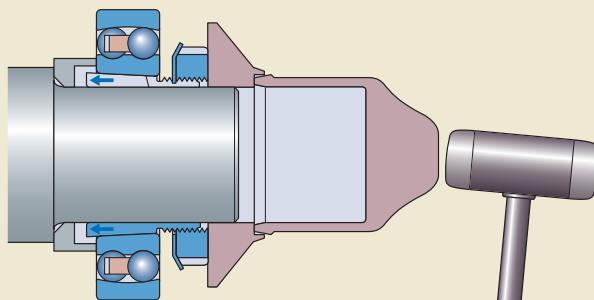
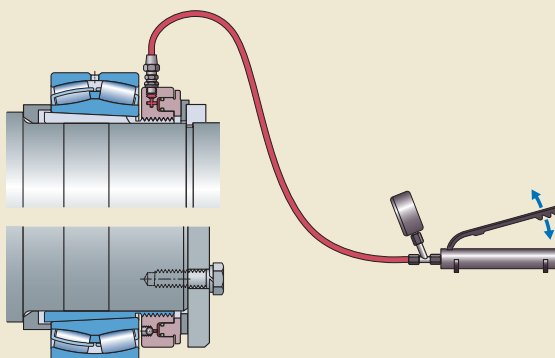


Fig. 20



## Dismounting

### Dismounting using the oil injection method

Adapter sleeves equipped with an oil supply duct and an oil distribution groove facilitate dismounting because the oil injection method can be used (→ **fig. 21**). This feature is standard for all SKF adapter sleeves with a bore diameter  $\geq 200$  mm, but can be supplied for sleeves with a bore diameter  $\geq 140$  mm.

First, disengage the locking mechanism, and loosen the locking screw a few turns. Then, clean the threaded connection hole in the side face of the sleeve. Connect the hydraulic pump via an appropriate extension pipe to the adapter sleeve. Inject oil with a viscosity of about 900 mm<sup>2</sup>/s at 20 °C (70 °F) under high pressure between the two tapered mating surfaces via the supply duct and distribution groove in the sleeve. The bearing will dismount suddenly from its seat. After the hydraulic pump and extension pipe have been disconnected, remove the lock nut, lock washer, bearing and adapter sleeve from the shaft.

#### WARNING

To avoid the risk of serious injury, attach a provision such as a lock nut to the shaft end to limit the bearing travel when it suddenly comes loose.

**NOTE:** Detailed information about the oil injection method and useful instructions for use can be found in the section *The oil injection method*, starting on **page 62**.

### Dismounting a bearing fitted on a withdrawal sleeve

The method used to dismount a bearing fitted on a withdrawal sleeve depends on the following:

- bearing size
- withdrawal sleeve design: with or without oil supply ducts and distribution grooves for oil injection (→ **fig. 22**)

In either case, dismounting starts with the following (→ **fig. 23**):

- Remove excess lubricant and wipe down the arrangement.
- Remove the locking device, e.g. a lock nut and lock washer (**a**) or an end plate (**b**).
- Support the bearing, for example with lifting tackle (**c**).

### Manual dismounting

Small and medium-size bearings fitted on a withdrawal sleeve can be dismounted with a lock nut and a hook or impact spanner (→ **fig. 24**). Before screwing the lock nut onto the sleeve thread, lubricate the thread and that part of the lock nut facing the bearing inner ring with a molybdenum disulphide paste or a similar fric-

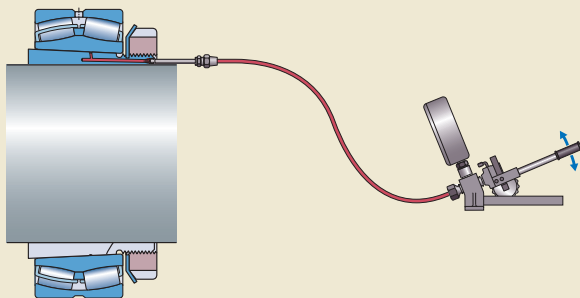


Fig. 21

tion reducing substance. Tighten the lock nut until the withdrawal sleeve comes free. Finally, with the shaft properly supported, remove the sleeve and bearing from the shaft.

**NOTE:** If the threaded section of the sleeve protrudes beyond the shaft end or shaft shoulder, a support ring with the greatest possible wall thickness should be inserted in the sleeve bore to prevent distortion and damage to the thread when the nut is tightened (→ fig. 24).

Fig. 22

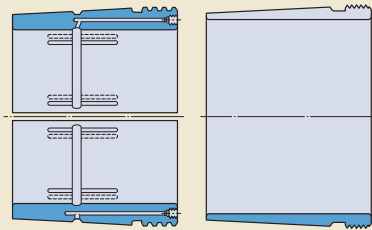


Fig. 24

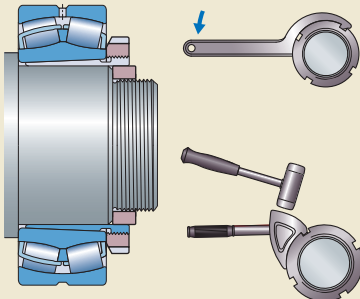
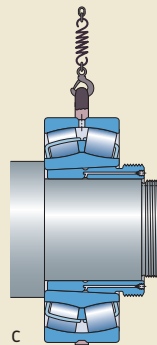
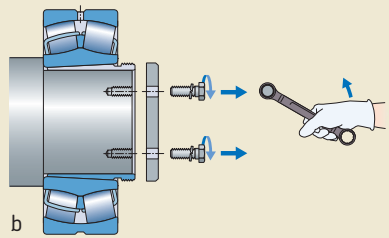
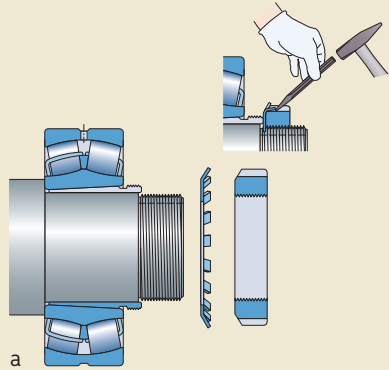


Fig. 23



## Dismounting

### Dismounting with a hydraulic nut

Medium-size and large bearings fitted on a withdrawal sleeve can be easily dismantled with a hydraulic nut.

#### WARNING

To avoid the risk of serious injury, attach a provision such as a lock nut for end plate to the shaft end (→ **fig. 25**) to limit the withdrawal sleeve travel when it suddenly comes loose.

Screw the hydraulic nut onto the thread of the withdrawal sleeve with the piston facing the bearing until the piston abuts the inner ring. Connect the hydraulic pump to the hydraulic nut and supply oil until the sleeve comes free. Once the sleeve is free, open the oil release valve of the hydraulic pump, so that the pressurized oil can leave the nut. Disconnect the hydraulic pump and remove the stop. Completely withdraw the sleeve from the shaft and remove the bearing.

**NOTE:** Detailed information about SKF hydraulic nuts is provided in the section *Hydraulic tools*, on **page 73**. Useful instructions for use can be found in the section *The oil injection method*, starting on **page 62**.

### Dismounting using the oil injection method

Withdrawal sleeves with a bore diameter  $\geq 200$  mm are provided as standard with two oil supply ducts and an oil distribution groove in both the bore and outside surface. When using the oil injection method, two hydraulic pumps and appropriate extension pipes are needed (→ **fig. 26**).

First, clean the external thread as well as the threaded connection holes in the side face of the withdrawal sleeve. Screw the lock nut into position and tighten it. Connect both hydraulic pumps via the appropriate extension pipes to the sleeve. Inject oil with a viscosity of about  $900 \text{ mm}^2/\text{s}$  at  $20^\circ\text{C}$  ( $70^\circ\text{F}$ ) under high pressure between the sleeve and the shaft through one duct and between the sleeve and bearing bore through the other one. The oil pressure between

Fig. 25

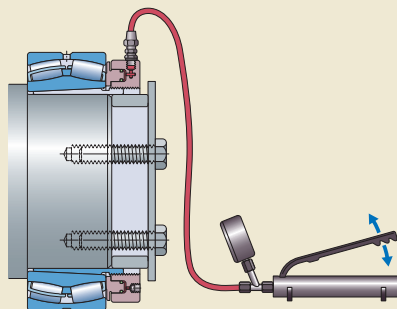
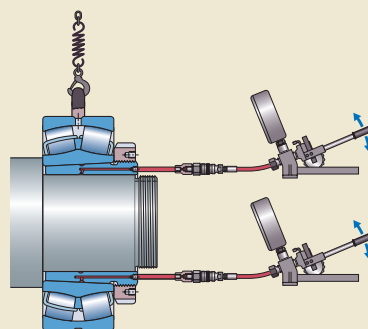


Fig. 26



the mating surfaces will increase until it drops suddenly, which indicates that the mating surfaces have separated. While tightening the lock nut, using an impact spanner for example, the sleeve will come free. Disconnect the hydraulic pumps and completely withdraw the sleeve from the shaft by means of the lock nut. Finally, remove the bearing.

**NOTE:** Detailed information about the oil injection method and appropriate equipment is provided in the section *The oil injection method*, starting on **page 62**.

### Dismounting a bearing from a solid housing

Most bearings have a loose fit in the housing and should be easy to remove. However, if the application requires a tight housing fit or if bearing damage such as fretting corrosion has occurred, the bearing may need to be removed by force.

#### Manual dismounting

Bearings with an outside diameter up to 120 mm that are mounted in a housing bore without shoulders can be removed with a mounting dolly placed against the outer ring of the bearing, and a hammer. To do this, use the SKF Bearing fitting tool kit (→ **page 72**). Larger bearings require greater force to dismount and should be removed with a press.

If an integral shoulder behind the bearing in the housing bore does not allow the use of a mounting dolly or press, use a hammer and a soft metal drift punch to drive the bearing out of the housing. Light hammer taps should be applied evenly around the whole side face of the outer ring (→ **fig. 27**). Be careful when applying this method because it is very easy to damage the bearing and the housing bore.

Housing shoulders that have threaded holes (→ **fig. 28**) or slots (→ **fig. 29**) enable the use of screws, a bearing puller or a hammer and a drift punch to drive the bearing from the housing.

Fig. 27

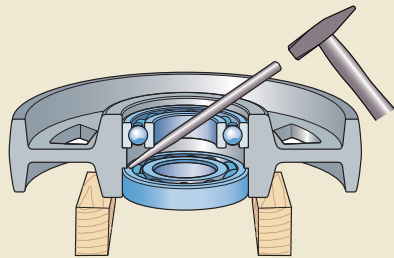


Fig. 28

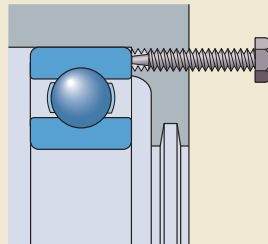
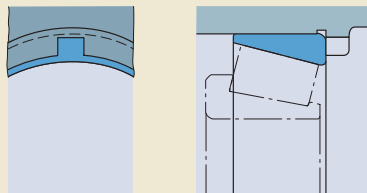


Fig. 29





## Dismounting

Small bearings with a bore diameter ranging from 7 to 60 mm that are mounted in a housing can be removed from a housing bore using an internal puller with a slide hammer, such as the SKF Internal bearing puller kit (→ **fig. 30**).

To do this, place the jaws of the appropriate extractor through the bearing bore by squeezing the spring mechanism to close the puller arms (**a**). By releasing the spring mechanism, the extractor firmly grips the inner ring shoulder (**b**). The bearing can be extracted from the housing bore by repeatedly striking the stop ring with the slide hammer (**c**).

### Dismounting using the oil injection method

If the necessary oil duct and distribution groove is designed into the housing and the bearing does not have a relubrication feature in the outer ring, the oil injection method can still be used. This method substantially reduces the amount of force required to remove larger bearings (→ **fig. 31**).

**NOTE:** Detailed information about the oil injection method can be found in the section *The oil injection method*, starting on **page 62**.

Fig. 31

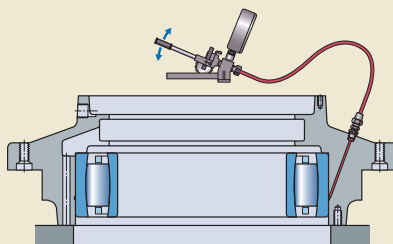
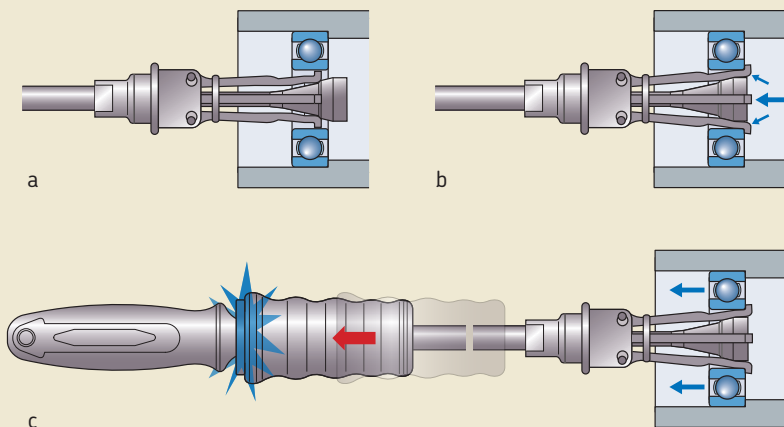


Fig. 30



## Dismounting with heat

Heating a housing to remove the bearing using, for example, a heater mat (→ **fig. 32**), is not very common and should only be done as a last resort.

**CAUTION:** Never use a torch or other flame to heat the housing.

## Dismounting a bearing from a shaft and a solid housing simultaneously

To dismount small deep groove ball bearings from a shaft and a solid housing simultaneously, special pullers (extractors) have been designed.

**Fig. 33** shows a puller designed for bearings with a bore diameter ranging from 10 to 100 mm. The puller arms are placed between the balls and grip the inner ring raceway, while being supported by the outer ring.

**Fig. 34** shows a puller designed for bearings with a bore diameter ranging from 30 to 160 mm. To apply the puller, the bearing cage needs to be removed first. The puller arms at the end are ball shaped with two flats. They are placed between the balls and grip both the inner and outer ring raceways.

For additional information about internal bearing puller kits, visit [www.mapro.skf.com](http://www.mapro.skf.com).

Fig. 32

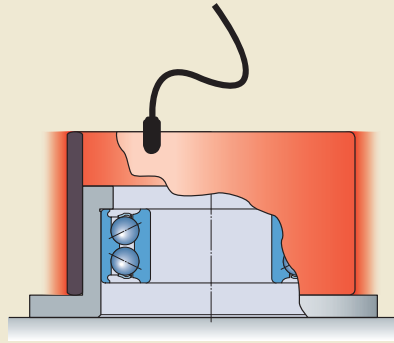


Fig. 33

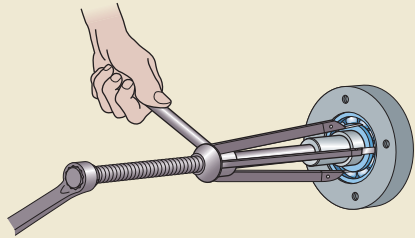
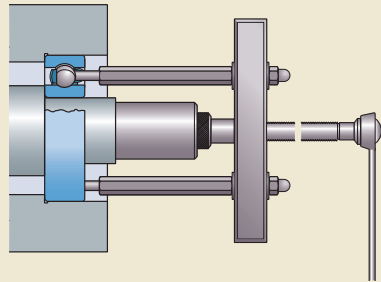


Fig. 34



# Dismounting bearing units

## What to remember

SKF bearing units (→ **fig. 35**) are available as plummer (pillow) block units, flanged units and take-up units. Depending on the size and type of bearing, they can be located on the shaft using any one of the following methods (→ **fig. 36**):

- grub (set) screw locking (**a**)
- single grub (set) screw eccentric locking collar (**b**)
- adapter sleeve locking (**c**)
- SKF ConCentra locking mechanism (**d, e**)
- double grub (set) screw cylindrical collar locking (**f**)

Therefore, the dismounting procedure and the tools appropriate for the job may differ. Appropriate tools include:

- a wrench or hexagonal key to loosen the attachment screws, bolts or nuts
- a hexagonal key to loosen the grub (set) screws in the inner ring or in the locking collar as specified in **table 3, page 102** in the chapter *Mounting bearing units*
- a hook spanner to loosen the adapter sleeve lock nut as specified in **table 4, page 103** in the chapter *Mounting bearing units*

In some cases, a dead-blow hammer may be necessary.

Hook spanners as well as dead blow hammers are part of the comprehensive range of SKF maintenance products. Detailed information can be found online at [www.mapro.skf.com](http://www.mapro.skf.com).

Once the bearing unit has been dismounted, check whether it can be reused. To do this, clean the outside surface of the unit, being careful not to damage the seals or get cleaning solvent into the bearing cavity. Turn the bearing slowly to feel for any damage. If applicable, relubricate the unit slowly via the grease fitting while rotating the inner ring. If it is determined that the unit is reusable, coat any untreated surfaces with grease, oil or anti-corrosive fluid to prevent corrosion.

**NOTE:** Small bearing units, which are very dirty, are generally not worth cleaning. Normally it is more economical to scrap the bearing and replace it with a new one.

Fig. 35

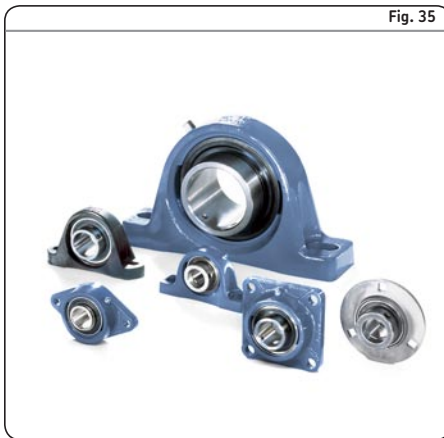
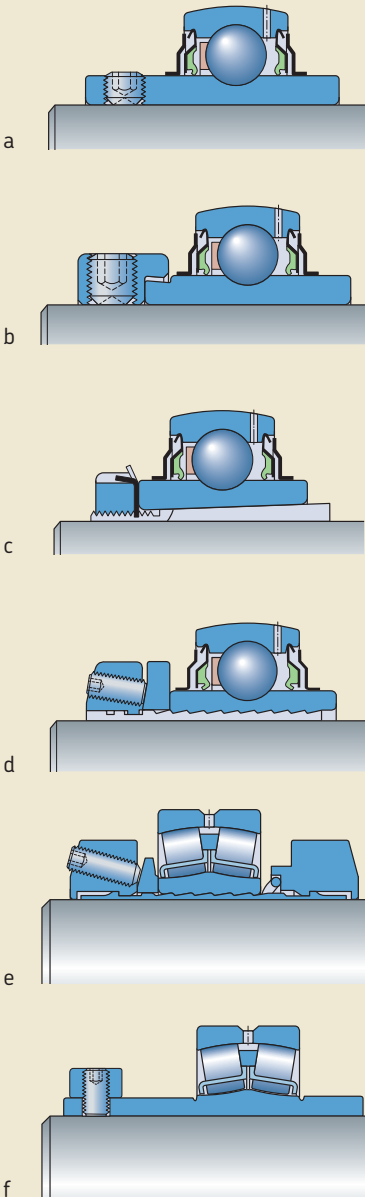


Fig. 36

**WARNING**

To minimize the chance of serious injuries, prior to starting any work, perform required lockout/tagout procedures.

**Preparations prior to dismounting**

Taking the time to prepare can make dismounting easier. If available, review the assembly drawing(s) and study the bearing unit arrangement. Then, before starting any work, do the following:

- Disconnect the power supply to the application.
- Clean the bearing unit and surrounding area thoroughly.
- Wipe the shaft clean.
- Check the locking method and choose appropriate tools for dismounting the bearing units.
- Check for and repair any damage that may prevent the unit from sliding off the shaft.
- Support the shaft to relieve any load on the bearing.

### Dismounting ball bearing units with grub (set) screw locking

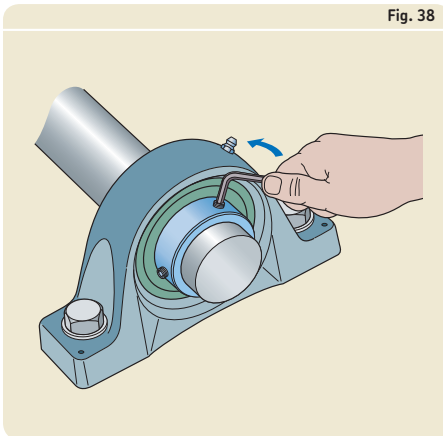
When dismantling ball bearing units with grub (set) screw locking (→ **fig. 37**), carefully read the guidelines provided under *What to remember*, starting on **page 270**, and do the following:

- 1** Loosen the grub (set) screws in the inner ring of both units, at least a full turn (→ **fig. 38**)
- 2** Unscrew and remove the attachment bolts.
  - For take-up units, disconnect the adjustment screw in the cast hole of both units.
- 3** Remove the units from the shaft.
  - For take-up units, pull the complete shaft/units assembly out of the take-up frames and remove the units from the shaft.
  - For pressed steel plummer (pillow) block units, remove the housing caps, lift out the shaft and remove the bearings from the shaft.
  - For pressed steel flanged units, remove the first housing cap and slide the bearing off the shaft. Then repeat on the other side.

Fig. 37



Fig. 38



## Dismounting ball bearing units with an eccentric locking collar

When dismounting ball bearing units with an eccentric locking collar (→ **fig. 39**), carefully read the guidelines provided under *What to remember*, starting on **page 270**, and do the following (→ **fig. 40**):

- 1 Loosen the grub (set) screw in the eccentric locking collar of both units, at least a full turn (**a**).
- 2 Loosen the locking collar in the opposite direction of rotation. To do this:
  - Place a drift punch in the blind hole in the circumference of the collar and hit it with a hammer.
  - Or use a hook spanner with a stud engaging the blind hole in the circumference of the collar (**b**).
- 3 Remove the eccentric locking collar of both units from the shaft.
- 4 Unscrew and remove the attachment bolts.
  - For take-up units, disconnect the adjustment screw in the cast hole of both units.
- 5 Remove the units from the shaft.
  - For take-up units, pull the complete shaft/units assembly out of the take-up frames and remove the units from the shaft.
  - For pressed steel plummer (pillow) block units, remove the housing caps, lift out the shaft and remove the bearings from the shaft.
  - For pressed steel flanged units, remove the first housing cap and slide the bearing off the shaft. Then repeat on the other side.



Fig. 39

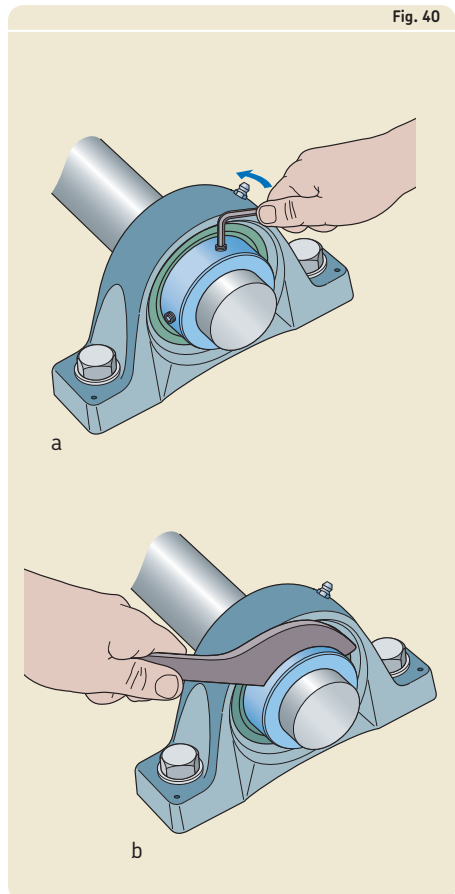


Fig. 40

## Dismounting

### Dismounting ball bearing units fitted on an adapter sleeve

When dismounting a ball bearing unit with an adapter sleeve (→ **fig. 41**), carefully read the guidelines provided under *What to remember*, starting on **page 270**, and do the following (→ **fig. 42**):

- 1 Disengage the bent tab of the lock washer from the lock nut slot (**a**) and unscrew the lock nut a few turns.
- 2 Loosen the attachment bolts or nuts a few turns.
- 3 Units with access to the opposite side of the locking device can be separated from the adapter sleeve with a steel block or drift punch and a hammer (**b**). Units without access to the opposite side of the locking device can be separated from the adapter sleeve by a couple of sharp hammer blows applied to a mounting dolly abutting the lock nut of the adapter sleeve (**c**).

**NOTE:** Use the SKF Bearing fitting tool kit for shaft diameters  $\leq 55$  mm (→ **page 72**).

- 4 Unscrew the lock nut and remove the lock washer on both units.
- 5 Remove the attachment bolts or nuts and slide the units off the sleeve along the shaft.
- 6 Remove the adapter sleeve from the shaft. To facilitate removal, expand the sleeve slightly by inserting a plastic wedge or a screwdriver in the slot of the sleeve.



Fig. 41

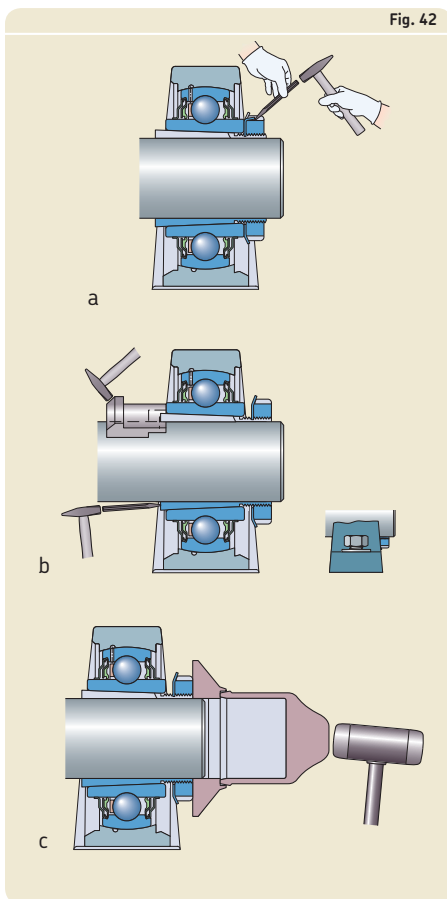


Fig. 42

## Dismounting SKF ConCentra ball bearing units

Prior to dismounting an SKF ConCentra ball bearing unit (→ **fig. 43**), carefully read the guidelines provided under *What to remember*, starting on **page 270**, and do the following (→ **fig. 44**):

- 1 Loosen the grub (set) screws in the mounting ring of both units a few turns (**a**).
- 2 Loosen the attachment bolts or nuts of both units, but do not remove them.
- 3 Displace the mounting side ring until the SKF ConCentra stepped sleeve comes free:
  - by tapping the end of the shaft with a hammer (**b**)
  - by tapping a mounting dolly placed against the mounting ring (**c**)

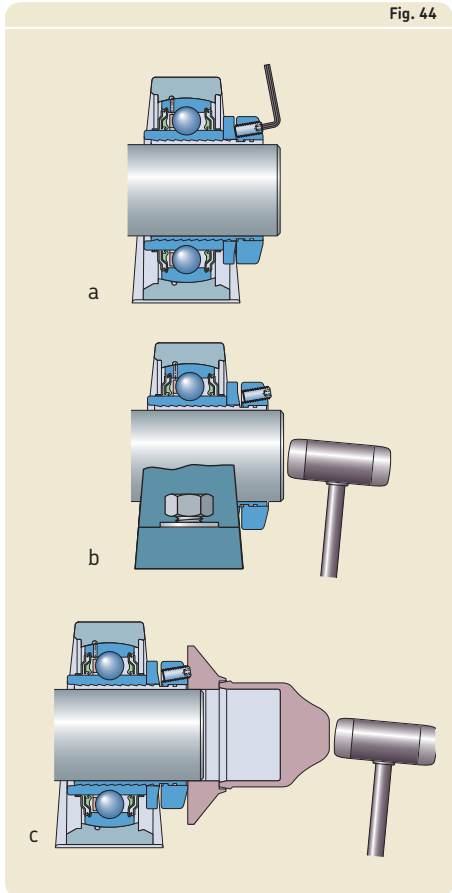
**NOTE:** Use the SKF Bearing fitting tool kit for shaft diameters  $\leq 55$  mm (→ **page 72**).

- 4 Remove the attachment bolts and remove the units from the shaft.

Fig. 43



Fig. 44





### Dismounting SKF ConCentra roller bearing units

When dismantling roller bearing units with a plummer (pillow) block housing with SKF ConCentra locking (→ **fig. 45**), carefully read the guidelines provided under *What to remember*, starting on **page 270**, and do the following (→ **fig. 46**):

- 1 Loosen the attachment bolts and remove them. If possible, lift the complete bearing arrangement, i.e. shaft, both bearing units and associated components, out first, before dismantling the bearing units (**a**).
- 2 Place a support under the shaft.
- 3 Start with the locating bearing unit.
- 4 Loosen the grub (set) screws in the mounting collar by a few turns (**b**).
- 5 Face the mounting collar and while holding the base, pull the bearing unit until it releases from the shaft (**c**). The energy from the preloaded wave spring facilitates the release from the shaft. But, if necessary, use a rubber hammer to tap the collar on the opposite side of the unit (**d**).
- 6 Withdraw the bearing unit from the shaft.
- 7 To dismount the non-locating bearing unit, repeat **steps 4 to 6**.

### Dismounting roller bearing units with a cylindrical locking collar

When dismantling a roller bearing unit with a cylindrical locking collar (→ **fig. 47**), carefully read the guidelines provided under *What to remember*, starting on **page 270**, and do the following:

- 1 Loosen the two grub (set) screws in the cylindrical locking collar of both units a few turns.
- 2 Unscrew and remove the attachment bolts.
  - For take-up units, disconnect the adjustment screw in the cast hole of both units.
- 3 Remove the units from the shaft. If needed, use a rubber hammer and lightly tap the unit until it releases from the shaft.
  - For take-up units, pull the complete shaft/unit assembly out of the take-up frame and remove the unit from the shaft.

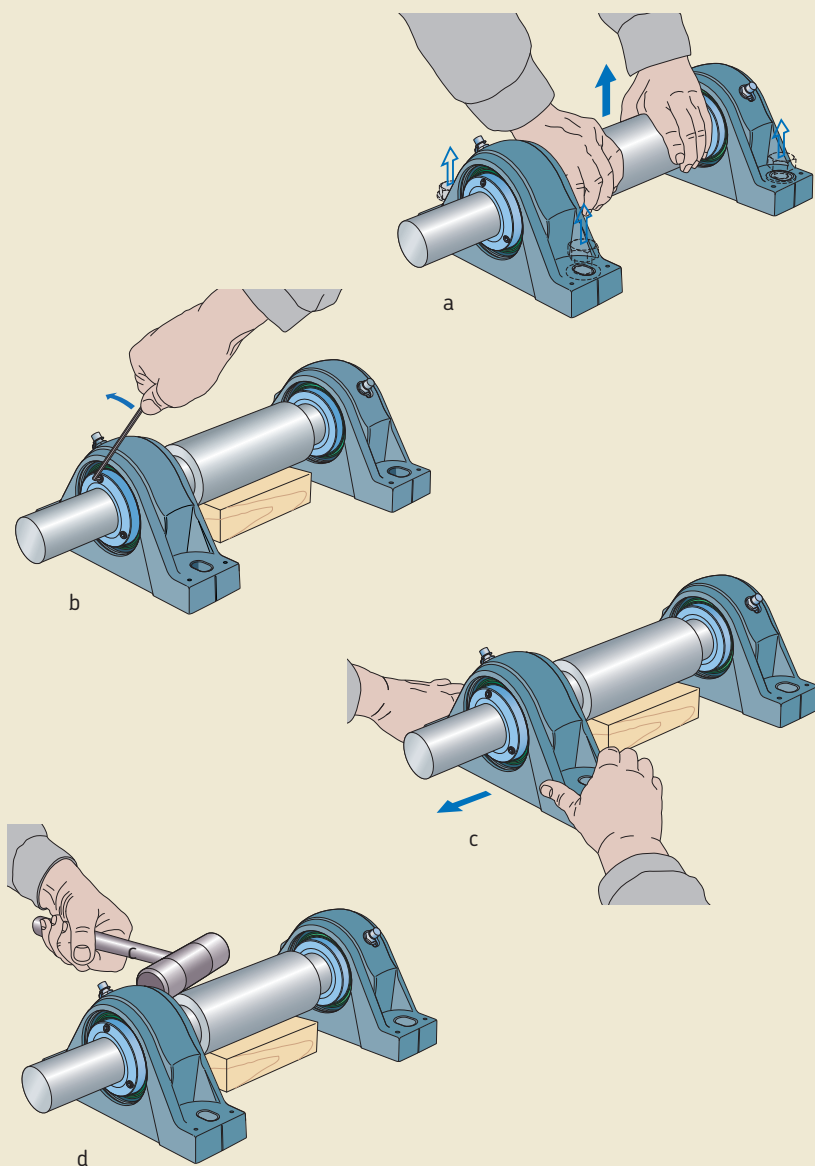
Fig. 45



Fig. 47



Fig. 46



# Dismounting bearing housings

Bearing housings, which are used in a variety of industrial applications, are available in a wide range of designs and sizes. Information about how to dismount and disassemble the most popular plummer (pillow) block housings and flanged housings (→ **fig. 48**) can be found in this section. To obtain dismounting instructions for housings not included here, contact the SKF application engineering service.

## What to remember

If a housing is to be used again, always dismount it carefully, taking the following into consideration:

- Keep the components of each housing together. The base and cap of individual housings are not interchangeable. The base and cap of SKF SNL, SONL and SAF housings are marked with a serial number.
- Handle all metal parts of solid seals carefully.
- Do not hit the housing directly with a hammer.

## WARNING

To minimize the chance of serious injuries, prior to starting any work, perform required lockout/tagout procedures.

## Preparations prior to dismounting

Taking the time to prepare can make dismounting easier. If available, review the assembly drawing(s) and study the bearing arrangement. Then, before starting any work, do the following:

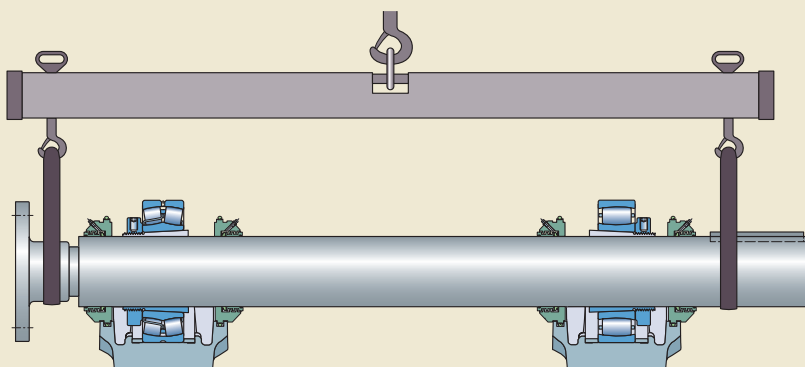
- Disconnect the power supply to the application.
- Clean the housings and surrounding area thoroughly.
- Support the shaft with something such as lifting tackle.
- For split plummer (pillow) block housings, be sure that the proper tools are available to lift the shaft out of the housing base(s) (→ **fig. 49**).
- Have suitable containers on hand to retrieve lubricant samples and collect the used lubricant.

Check the housings for cracks prior to reuse. If a housing is deemed reusable, apply a coating of grease or oil to any unpainted surfaces to protect against corrosion.

Fig. 48



Fig. 49



## Dismounting

### Dismounting split plummer (pillow) block housings

When dismounting a standard plummer (pillow) block housing (→ **fig. 50**), carefully read the guidelines provided under *What to remember* on **page 278**, and do the following (→ **fig. 51**):

- 1 Remove any auxiliary connections to the housing, e.g. lubricant feed lines or other devices.
- 2 Loosen and remove the attachment bolts or nuts on both housings.

**NOTE:** If possible, lift the complete assembly (shaft, housings and other components) to a clean, open area.

- 3 Loosen and remove the cap bolts on both housings.
- 4 Remove the housing caps (**a**).

**NOTE:** All current SKF housings are provided with notches in the base and cap to accommodate a screwdriver or a pry bar.

- 5 If applicable, remove any excess grease and split seals from the housing caps (**b**).
- 6 Lift the shaft assembly from the housing bases (**c**).
- 7 Remove the other seal halves or the end cover, and the locating (stabilizing) rings, if applicable (**d**).

**CAUTION:** Do not reuse any contact seals.

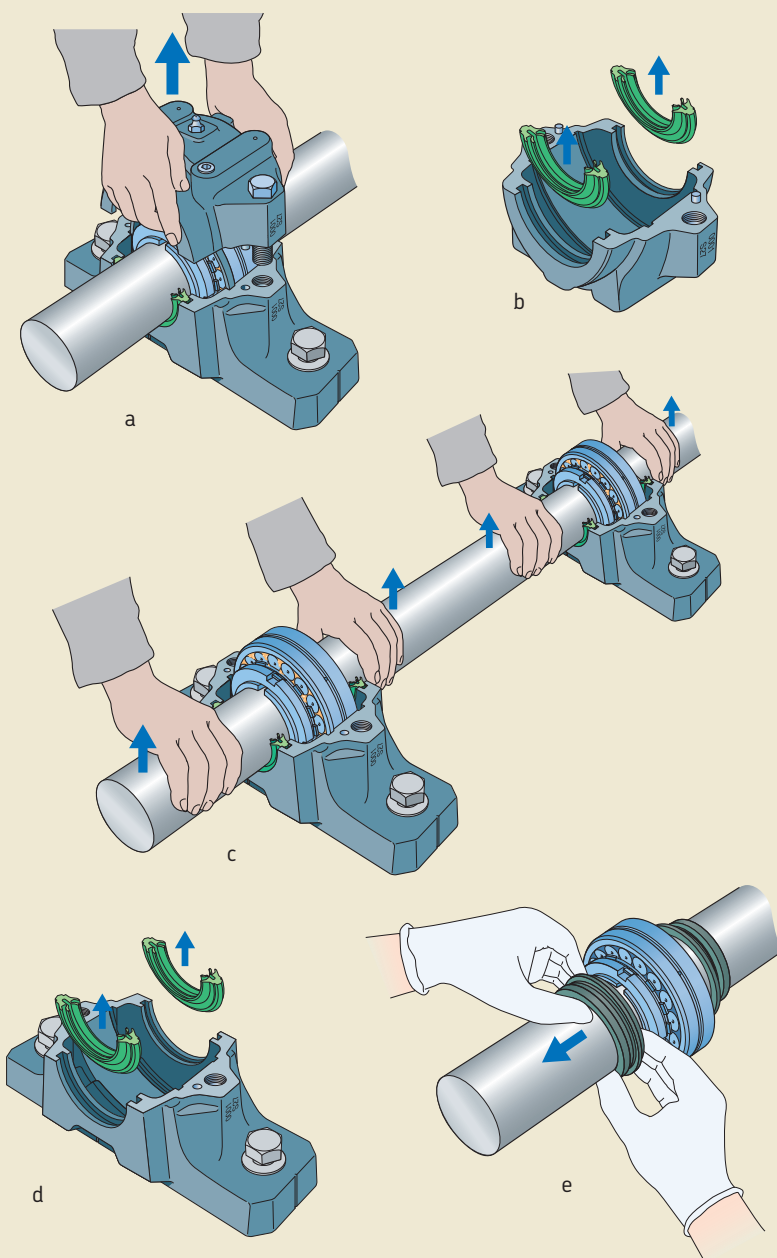
- 8 Remove any excess grease from the housing base.
- 9 Remove any solid seals from the shaft (**e**).  
V-rings can be cut.
- 10 Dismount the bearings from the shaft.
- 11 Remove the second sealing washer or ring from the shaft.

**NOTE:** Make sure all components for each housing are kept together.

Fig. 50



Fig. 51



### Dismounting flanged housings

When dismantling a standard flanged housing (→ **fig. 52**), carefully read the guidelines provided under *What to remember* on **page 278** and do the following (→ **fig. 53**):

- 1 Loosen and remove the cover bolts on both housings.
- 2 Remove the cover and the locating (stabilizing) rings, if fitted.
- 3 Remove any excess grease from the cover and housing to expose the locking device on the adapter sleeve.
- 4 Disengage the bent tab of the lock washer from the lock nut slot and unscrew the lock nut a few turns (**a**).
- 5 Loosen the attachment bolts or nuts, but do not remove them.
- 6 Separate the bearing from the adapter sleeve
  - by hitting the shaft ends with a hammer (**b**)
  - by hitting a mounting dolly abutting the lock nut (**c**)

**NOTE:** Use the SKF Bearing fitting tool kit for shaft diameters ≤ 55 mm (→ **page 72**).

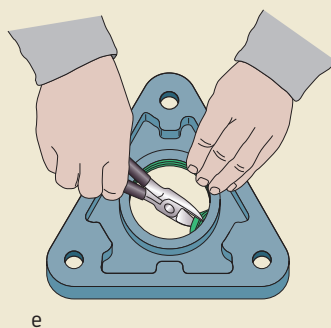
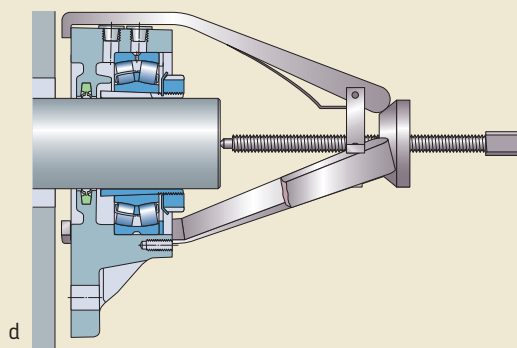
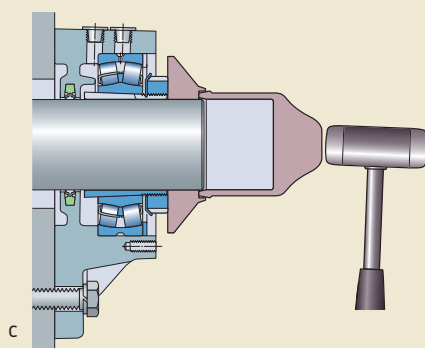
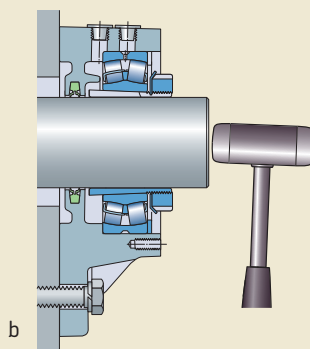
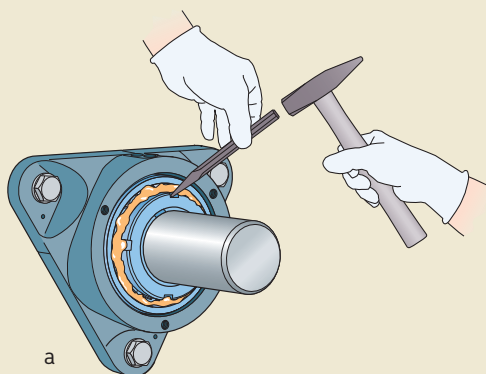
- 7 Unscrew the lock nut and remove the lock washer on both sides.
- 8 Remove the attachment bolts or nuts.
- 9 Separate the housing from its support surface and slide the housing, bearing and adapter sleeve off the shaft.
- 10 Use a puller if additional force is needed to free the bearing from the shaft (**d**).
- 11 Cut the seal from the seal groove (**e**).
- 12 Remove excess grease from the housing behind the bearing.
- 13 Dismount the bearing following the instructions listed under *Dismounting a bearing from a solid housing*, starting on **page 267**.

**NOTE:** Make sure all components for each housing are kept together.

Fig. 52



Fig. 53





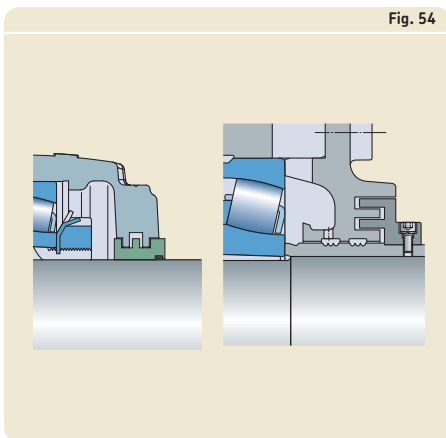
### Removing seals

Generally, there are two different types of seals protecting rolling bearing arrangements: non-contact seals and contact seals.

#### Removing non-contact seals

Non-contact seals (→ **fig. 54**) generate almost no friction, enabling them to last a very long time. In most cases, these seals are reusable. Therefore, they should be removed very carefully, with the correct tools. Never hit a non-contact seal with a hammer or use a screwdriver or sharp drift punch during the removal process.

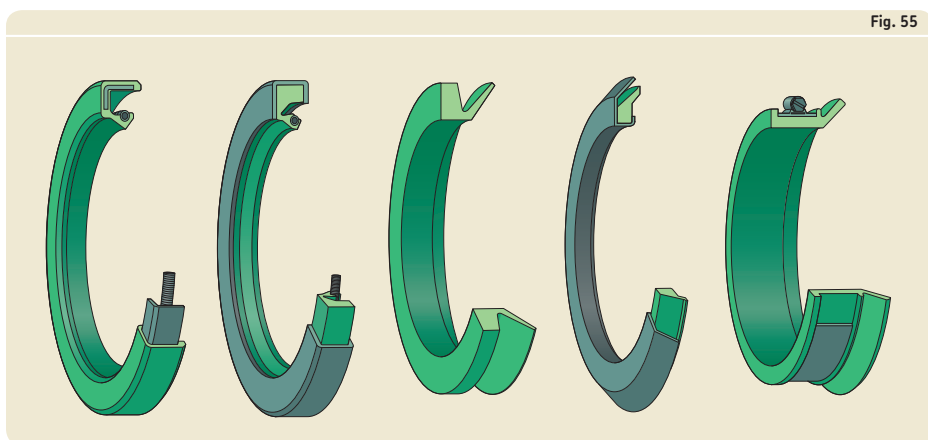
Prior to removing these seals, check for and repair any shaft damage that otherwise may damage the seal when sliding it off the shaft.



#### Removing contact seals

Contact seals (→ **fig. 55**), which are typically fixed in a housing and slide on a counterface, such as a shaft or distance ring, with a defined radial force, will wear over the time. Therefore, they should never be reused.

However if the cause of a seal failure is to be analyzed, they should be treated carefully during removal.



Radial shaft seals can be removed by:

- a hammer and a drift punch, if the housing shoulder has vent holes (→ **fig. 56**)
- a screwdriver, if the front or back face of the seal is accessible (→ **fig. 57**)
- tongs to grip the hinge or the shell of the seal (→ **fig. 58**)
- a mounting dolly, e.g. the SKF Bearing fitting tool kit (→ **fig. 59**)
- a hook to grip the shell from behind (→ **fig. 60**)

Fig. 58

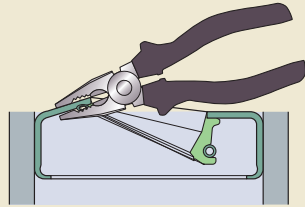


Fig. 56

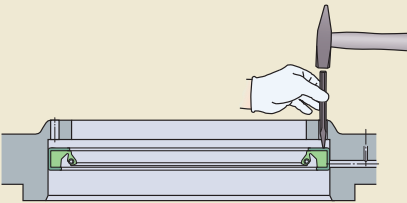


Fig. 59

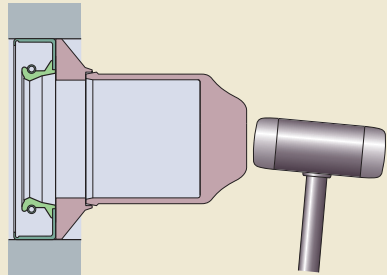


Fig. 57

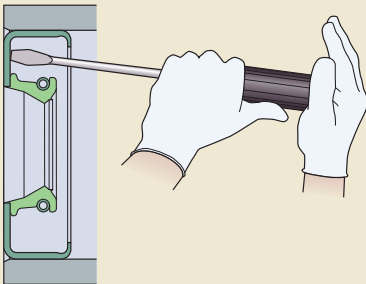
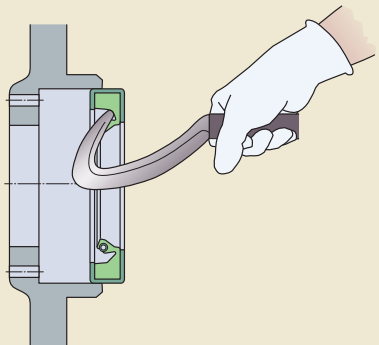


Fig. 60



## Dismounting

V-ring seals can be removed by:

- stretching them over other components (→ **fig. 61**)
- cutting them with scissors (→ **fig. 62**)

Large all-elastomer radial shaft seals can be removed by:

- stretching or cutting them with scissors (→ **fig. 63**)
- disconnecting the spring connector on split seals (→ **fig. 64**)

Fig. 62

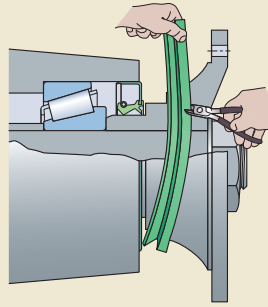


Fig. 63

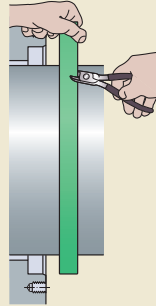


Fig. 61

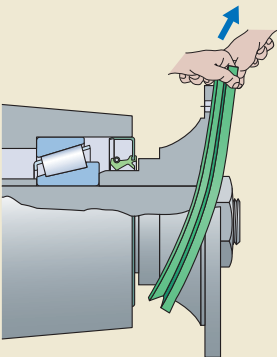


Fig. 64

