Mounting bearing units

3

General

SKF bearing units are ready-to-mount and ready-to-use units. These units generally consist of an insert ball or roller bearing and a housing manufactured from grey cast iron, sheet steel or composite material. To help achieve maximum service life, they must be installed properly. Use of incorrect procedures or unsuitable tools can reduce service life and damage the bearing units. As precision components, they should be handled carefully when mounting.

For additional information about SKF maintenance and lubrication products and tools, visit www.skf.com and www.mapro.skf.com.

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

What to remember

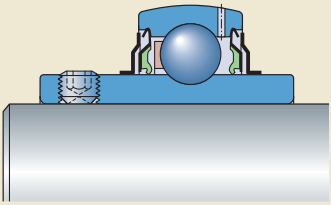
SKF bearing units are available in three different housing styles and, depending on the bearing type and unit size, there is a choice of methods to locate the unit on the shaft. The most common methods are (→ **fig. 1**):

- 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**)

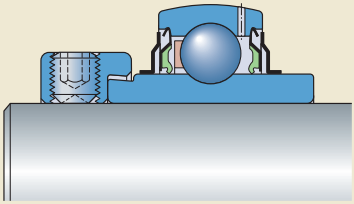
When selecting a replacement unit, match the following elements of the original ball or roller bearing:

- the shaft locking method (→ **fig. 1** and **table 1** on **page 96**)
- the housing style (→ **figs. 2a** to **2t**, starting on **page 95** and **table 2** on **page 100**)
- the sealing method (→ **table 1** on **page 96**)
- the inner ring that can be extended on either one or both sides (ball bearing units)
- the locating or non-locating position (roller bearing units)

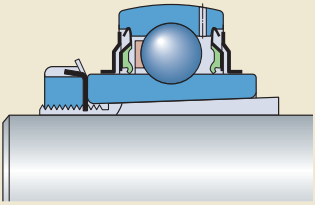
Fig. 1



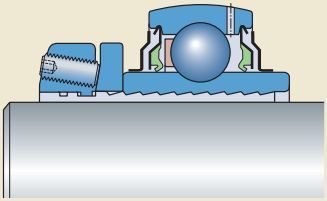
a) Grub (set) screw locking



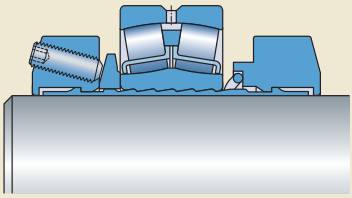
b) Single grub (set) screw eccentric locking collar



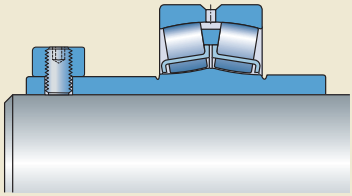
c) Adapter sleeve locking



d) SKF ConCentra locking, ball bearing units



e) SKF ConCentra locking, roller bearing units



f) Double grub (set) screw cylindrical collar locking

Table 1

Shaft locking devices, arrangements and seals

Designation suffix	Figure[1)]	Description	Complete bearing unit designation (example)
		Locking device	
–	1f	Double grub (set) screw cylindrical locking collar	SYR 2.7/16
FM	1b	Single grub (set) screw eccentric locking collar	TU 35 FM
KF	1c	Adapter sleeve	SYJ 65 KF
N	1e	SKF ConCentra locking mechanism	FSYE 3.15/16 N
NTH	1a	Two grub (set) screws in the inner ring	FYTBKC 20 NTH
NTR	1a	Two grub (set) screws in the inner ring	FYKC 30 NTR
PF	1d	SKF ConCentra locking mechanism	SY 45 PF
RM	1a	Two grub (set) screws in the inner ring	SYH 1.15/16 RM
TF	1a	Two grub (set) screws in the inner ring	SYFJ 45 TF
THR	1a	Two grub (set) screws in the inner ring	FYL 25 THR
TR	1a	Two grub (set) screws in the inner ring	SYK 20 TR
WF	1b	Single grub (set) screw eccentric locking collar	FY 60 WF
		Arrangement and seals	
–		Non-locating collar mount roller bearing unit	SYR 2.7/16
–		Double-lip seals (standard)	SYR 2.7/16
AH		Ball bearing units for air-handling arrangements	SY 2 TF/AH
F		Locating roller bearing unit for metric shafts	SYT 45 F
H		Locating roller bearing unit for inch shafts	FSYE 3.15/16 NH
L		Non-locating roller bearing unit for metric shafts	SYNT 50 L
TS		Labyrinth seals	SYNT 50 LTS
TF		Radial shaft seals	SYNT 45 FTF
W		Without relubrication features	SYNT 100 FW
-118		Labyrinth seals	SYR 2.7/16 N-118
-3		Radial shaft seals	SYR 2.7/16-3
-18		Labyrinth seals	SYR 2.7/16-18

1) On **page 95**

Fig. 2a

Plummer (pillow) block housings
SY, SYH, SYJ, SYM

Fig. 2b

Plummer (pillow) block housings
SYK, SYKC, SYL

Fig. 2c

Plummer (pillow) block housings
SYF, SYFJ

Fig. 2f

Plummer (pillow) block housings
SYNT

Fig. 2d

Plummer (pillow) block housings
SYFL

Fig. 2g

Plummer (pillow) block housings
SYR, SYE

Fig. 2e

Plummer (pillow) block housings
P, S

Fig. 2h

Flanged housings
FY, FYJ, FYM

Fig. 2i

Flanged housings
FYK, FYKC, FYL

Fig. 2l

Flanged housings
FYC

Fig. 2j

Flanged housings
FYT, FYTB, FYTJ, FYTM

Fig. 2m

Flanged housings
F, PF

Fig. 2k

Flanged housings
FYTBK, FYTBKC, FYTL

Fig. 2n

Flanged housings
FT, PFT

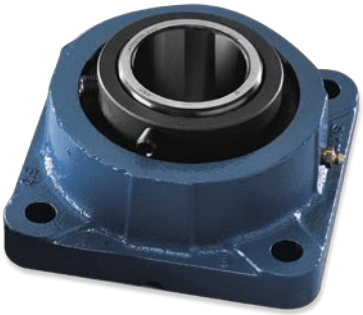
Fig. 2o

Flanged housings
PFD

Fig. 2r

Take-up housings
TU, TUJ, TUM

Fig. 2p



Flanged housings
FYE

Fig. 2s

Take-up housings
TUL

Fig. 2q

Flanged housings
FYR

Fig. 2t

Take-up housings
TBR

Table 2

Housing styles of SKF ball and roller bearing units[1)]

Housing style	Description
F	Flanged ball bearing unit with a round pressed steel housing
FSYE	Roller bearing plummer (pillow) block unit with a cast housing and four bolt base
FSYR	Roller bearing plummer (pillow) block unit with a cast housing and four bolt base
FT	Ball bearing flanged unit with an oval pressed steel housing
FY	Ball bearing flanged unit with a square flange cast housing
FYC	Ball bearing flanged unit with a round flange cast housing
FYE	Roller bearing flanged unit with a square flange cast housing
FYJ	Ball bearing flanged unit with a square flange cast housing
FYK	Ball bearing flanged unit with a square flange reinforced polyamide housing
FYKC	Ball bearing flanged unit with a square flange reinforced polyamide housing
FYL	Ball bearing flanged unit with a square flange reinforced polyamide housing
FYM	Ball bearing flanged unit with a square flange cast housing
FYNT	Ball bearing flanged unit with a square flange cast housing
FYR	Roller bearing flanged unit with a round flange cast housing
FYRP	Roller bearing flanged unit with a round flange cast housing and machined extension
FYT	Ball bearing flanged unit with an oval flange cast housing
FYTB	Ball bearing flanged unit with an oval flange cast housing
FYTBK	Ball bearing flanged unit with an oval flange reinforced polyamide housing
FYTBKC	Ball bearing flanged unit with an oval flange reinforced polyamide housing
FYTJ	Ball bearing flanged unit with an oval flange cast housing
FYTL	Ball bearing flanged unit with an oval flange reinforced polyamide housing
FYTM	Ball bearing flanged unit with an oval flange cast housing
P	Ball bearing plummer (pillow) block unit with a pressed steel housing
PF	Ball bearing flanged unit with a round flange pressed steel housing
PFD	Ball bearing flanged unit with a triangular flange pressed steel housing
PFT	Ball bearing flanged unit with an oval flange pressed steel housing
S	Ball bearing plummer (pillow) block unit with a pressed steel housing
SY	Ball bearing plummer (pillow) block unit with a cast housing
SYE	Roller bearing plummer (pillow) block unit with a cast housing
SYF	Ball bearing plummer (pillow) block unit with a shortened base cast housing
SYFJ	Ball bearing plummer (pillow) block unit with a shortened base cast housing
SYFL	Ball bearing plummer (pillow) block unit with a shortened base polyester housing
SYH	Ball bearing plummer (pillow) block unit with a cast housing
SYJ	Ball bearing plummer (pillow) block unit with a cast housing
SYK	Ball bearing plummer (pillow) block unit with a reinforced polyamide housing
SYKC	Ball bearing plummer (pillow) block unit with a reinforced polyamide housing
SYL	Ball bearing plummer (pillow) block unit with a polyester housing
SYM	Ball bearing plummer (pillow) block unit with a cast housing
SYNT	Roller bearing plummer (pillow) block unit with a cast housing
SYR	Roller bearing plummer (pillow) block unit with a cast housing
TU	Ball bearing take-up unit with a cast housing
TUJ	Ball bearing take-up unit with a cast housing
TUL	Ball bearing take-up unit with a polyester housing
TUM	Ball bearing take-up unit with a cast housing

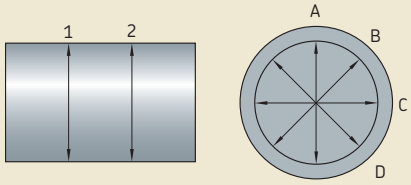
[1)] Refer also to **figs. 2a** to **2t**, starting on **page 96**.

Preparations prior to mounting

Prior to mounting a bearing unit, do the following:

- Make sure that the shaft is clean and free of any burrs. If not, remove the burrs and chamfer the shaft end with an emery cloth or a fine file. Wipe the shaft clean.
- Check that the shaft bearing seat is within tolerance, preferably at two cross-sections and in four directions (→ **fig. 3**).
- For bearing units that use grub (set) screws, an eccentric locking collar or a cylindrical locking collar, apply a thin coat of light oil to the shaft.
- For bearing units that use an adapter sleeve or SKF ConCentra locking method, use a clean cloth to make sure that the bearing seat on the shaft is dry and free of grease.
- Clean the support surface for the unit and check that the recommended flatness is within IT7 tolerance grade.
- If the unit is used again after removal, make sure that the bearing bore and housing base are clean.
- If shims are needed to elevate the centre height of the unit, make sure that the shim covers the complete contact surface between the unit base and the support surface.
- SKF recommends using 8.8 class bolts or studs and a washer in accordance with ISO 7089:2000 or 7090:2000 and a spring washer, to attach ball and roller bearing units to the base. Hexagonal head bolts in accordance with ISO 4014:1999 are appropriate. Alternatively, hexagonal socket head cap screws in accordance with ISO 4762:1988 can be used.
- Bearing units should not be removed from their original packaging until immediately before they are mounted; this protects the units from contaminants, especially in harsh environments.

Fig. 3



Appropriate tools

To mount SKF ball and roller bearing units, the only tools required are:

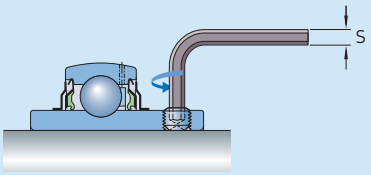
- a hexagonal key or torque key to tighten the grub (set) screws in the inner ring or the locking collar as specified in **table 3**
- a hook spanner to tighten adapter sleeve lock nuts as specified in **table 4**
- a torque wrench or hexagonal key to tighten the attachment screws, bolts or nuts

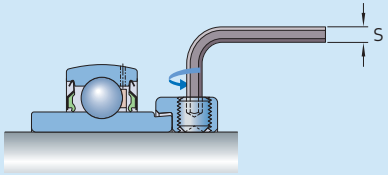
A 3L key in accordance with ISO 2936:2001 is supplied with each SKF ConCentra ball or roller bearing unit, together with a torque indicator (→ **fig. 21** on **page 113**).

Hook spanners are part of the comprehensive assortment of SKF mounting tools and products (→ **Appendix J**, starting on **page 416**).

Table 3

Hexagonal keys and recommended tightening torque values for ball bearing units with grub (set) screw locking or collar locking



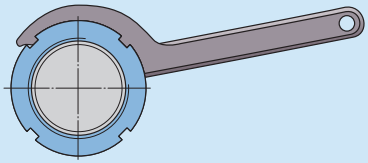


Shaft diameter d over	incl.	Hexagonal key size S	Tightening torque
mm/inch		mm/inch	Nm (*in.lbf*)
Ball bearing units grub (set) screw locking Units with the designation suffixes TF and TR (excluding those series listed below)			
–	**35**	3	4 (*35*)
35	**45**	4	6,5 (*58*)
45	**65**	5	16,5 (*146*)
65	**100**	6	28,5 (*252*)
–	**5/8**	3/32	4 (*35*)
5/8	**1 3/16**	1/8	4 (*35*)
1 3/16	**1 3/4**	5/32	6,5 (*58*)
1 3/4	**2 11/16**	3/16	16,5 (*146*)
2 11/16	**2 15/16**	7/32	28,5 (*252*)
Units in the SYM .. TF, FYM .. TF and TUM .. TF series			
–	**1**	1/8	4 (*35*)
1	**1 1/2**	5/32	6,5 (*58*)
1 1/2	**2 3/16**	3/16	16,5 (*146*)
2 3/16	**3**	7/32	28,5 (*252*)
Units with the designation suffix RM			
–	**45**	3	4 (*35*)
45	**50**	4	6,5 (*58*)
–	**5/8**	3/32	4 (*35*)
5/8	**1 3/16**	1/8	4 (*35*)
1 3/16	**1 3/4**	5/32	6,5 (*58*)
1 3/4	**2 11/16**	3/16	16,5 (*146*)
2 11/16	**2 15/16**	7/32	28,5 (*252*)

Shaft diameter d over	incl.	Hexagonal key size S	Tightening torque
mm/inch		mm/inch	Nm (*in.lbf*)
Ball bearing units with an eccentric locking collar Units with the designation suffixes FM and WF			
–	**25**	3	4 (*35*)
25	**30**	4	6,5 (*58*)
30	**65**	5	16,5 (*146*)
–	**5/8**	3/32	4 (*35*)
5/8	**1**	1/8	4 (*35*)
1	**1 15/16**	5/32	6,5 (*58*)
1 15/16	**3**	3/16	16,5 (*146*)
Roller bearing units with cylindrical collar locking			
1 3/16	**2 3/16**	3/8	28,5 (*252*)
2 3/16	**3 1/2**	1/2	70 (*620*)
3 1/2	**4**	5/8	149,7 (*1 325*)
4	**4 15/16**	5/8	149,7 (*1 325*)

Table 4

Hook spanners and tightening torque values for ball bearing units in the SYJ .. KF, FYJ .. KF and FYTJ .. KF series, mounted with an adapter sleeve



Shaft diameter d		Bearing unit Bore diameter	Appropriate adapter sleeve Designation	Appropriate hook spanner Designation	Tightening torque			
					min	max	min	max
mm	inch	mm	–	–	Nm		in.lbf	
19,050	3/4	**25**	**HE 2305**	HN 5–6	13	17	115	150
20	–	**25**	**H 2305**	HN 5–6	13	17	115	150
23,812	15/16	**30**	**HA 2306**	HN 5–6	22	28	195	248
25	–	**30**	**H 2306**	HN 5–6	22	28	195	248
25,400	1	**30**	**HE 2306**	HN 5–6	22	28	195	248
30	–	**35**	**H 2307**	HN 7	27	33	239	292
30,162	1 3/16	**35**	**HA 2307**	HN 7	27	33	239	292
31,750	1 1/4	**40**	**HE 2308**	HN 8–9	35	45	310	398
35	–	**40**	**H 2308**	HN 8–9	35	45	310	398
36,512	1 7/16	**45**	**HA 2309**	HN 8–9	45	55	398	487
38,100	1 1/2	**45**	**HE 2309**	HN 8–9	45	55	398	487
40	–	**45**	**H 2309**	HN 8–9	45	55	398	487
41,275	1 5/8	**50**	**HS 2310**	HN 10–11	55	65	487	575
42,862	1 11/16	**50**	**HA 2310**	HN 10–11	55	65	487	575
44,450	1 3/4	**50**	**HE 2310**	HN 10–11	55	65	487	575
45	–	**50**	**H 2310**	HN 10–11	55	65	487	575
49,212	1 15/16	**55**	**HA 2311 B**	HN 10–11	65	85	575	752
50	–	**55**	**H 2311**	HN 10–11	65	85	575	752
50,800	2	**55**	**HE 2311**	HN 10–11	65	85	575	752
53,975	2 1/8	**60**	**HS 2312**	HN 12–13	85	115	752	1 018
55	–	**60**	**H 2312**	HN 12–13	85	115	752	1 018
55,562	2 3/16	**65**	**HA 2313**	HN 12–13	110	150	974	1 328
57,150	2 1/4	**65**	**HE 2313**	HN 12–13	110	150	974	1 328
60	–	**65**	**H 2313**	HN 12–13	110	150	974	1 328
60,325	2 3/8	**65**	**HS 2313**	HN 12–13	110	150	974	1 328

Mounting ball bearing units with grub (set) screw locking

Ball bearing units with a cast iron or composite housing

When mounting ball bearing units with a cast iron or composite housing (→ **figs. 2a**, **2b**, **2c**, **2d**, **2h**, **2i**, **2j**, **2k**, **2l**, **2r** and **2s** on **pages 96** to **99**) that have grub (set) screw locking (→ **fig. 1a**, **page 95**), carefully follow the guidelines provided under *Preparations prior to mounting* on **page 101** as well as the additional guidelines below:

1 Mount any components located between the two bearing units onto the shaft.
2 **a**) Plummer (pillow) block units: Slide a unit onto each shaft end with the locking device facing outward. Carefully align both units and tighten the attachment bolts using the recommended torque values listed in **table 5**.
b) Flanged units: Support the shaft in the mounting position between the machine walls. Slide a unit onto each shaft end with the locking device facing outward. If not provided with a shoulder, carefully align both units and tighten the attachment bolts using the recommended torque values listed in **table 5**.
c) Take-up units: Slide a unit onto each shaft end with the locking device facing outward. Install the shaft/units assembly into the take-up frames and connect the adjustment screws via the cast hole in the units. Carefully align both units.

NOTE: When relubrication of the unit is required, the maximum permissible misalignment of the shaft relative to the unit is 2°. Otherwise, misalignment of up to 5° can be accommodated.

3 Align the shaft in the bearing arrangement axially (→ **fig. 4**).
4 Tighten the grub (set) screws in the inner ring (→ **fig. 5**) of both units to the tightening torque values listed in **table 3** on **page 102**.
5 If possible, check that the bearing arrangement can freely rotate by turning the shaft a few times.
6 If applicable, snap the end cover(s) into place.

Fig. 4

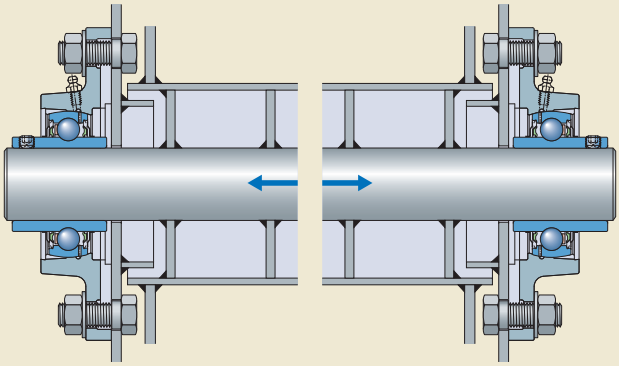
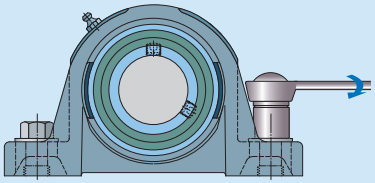


Table 5

Recommended tightening torque values for attachment bolts or nuts



Bolt size	Tightening torque	
mm/inch	Nm	ft.lbf
6	9	7
8	22	16
10	45	34
12	80	60
16	200	150
20	385	285
24	665	485
3/8	28	21
1/2	95	70
5/8	185	135
3/4	320	235
7/8	515	380
1	770	570

Ball bearing units with a pressed steel housing

When mounting ball bearing units with a pressed steel housing (→ **figs. 2e**, **2m**, **2n** and **2o** on **pages 97** to **99**) that have grub (set) screw locking (→ **fig. 1a**, **page 95**), carefully follow the guidelines provided under *Preparations prior to mounting* on **page 101** as well as the additional guidelines below:

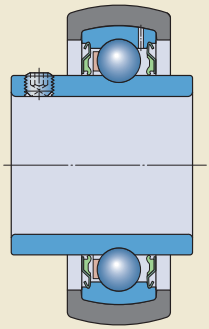
1 Mount any components located between the two bearing units onto the shaft.
2 **a**) Plummer (pillow) block units: Place the bases of the housings on their support surfaces. Slide a bearing with the locking device facing outward onto each shaft end and lay the shaft with the bearings on the housing bases.

NOTE: If the unit has a rubber seating ring (cartridge), first install this ring on the bearing outside diameter (→ **fig. 6**).

b) Flanged units: Place one housing half into position on the machine walls, support the shaft in the mounting position between the machine walls and slide a bearing with the locking device facing outward onto each shaft end.
3 Place a housing cap or the second housing half over each bearing (→ **fig. 7**, **page 106**) and fit the attachment bolts or nuts, but do not tighten them.

Fig. 5

Fig. 6



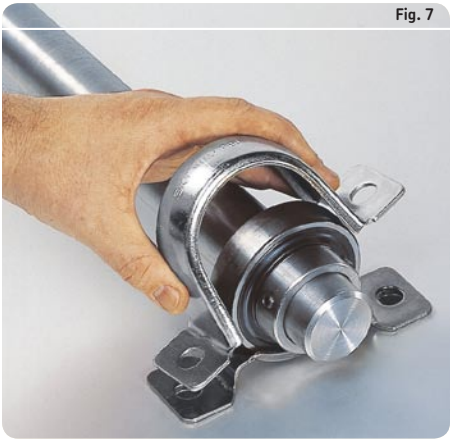
4 Carefully align both housings using the shaft and tighten the attachment bolts using the recommended torque values listed in **table 5** on **page 105**.

NOTE: When relubrication of the unit is required, the maximum permissible misalignment of the shaft relative to the unit is 2°. Otherwise, misalignment of up to 5° can be accommodated.

CAUTION: Units with a pressed steel housing cannot compensate for misalignment once the attachment bolts or nuts have been fully tightened, unless the plummer (pillow) block units are equipped with a rubber seating ring (cartridge).

5 If possible, align the shaft in the bearing arrangement axially (→ **fig. 4** on **page 104**) and turn it a few times.
6 Tighten the grub (set) screws in the inner ring of both units to the tightening torque values listed in **table 3** on **page 102**.
7 If possible, check that the bearing arrangement can freely rotate by turning the shaft a few times.

Fig. 7



Mounting ball bearing units with an eccentric locking collar

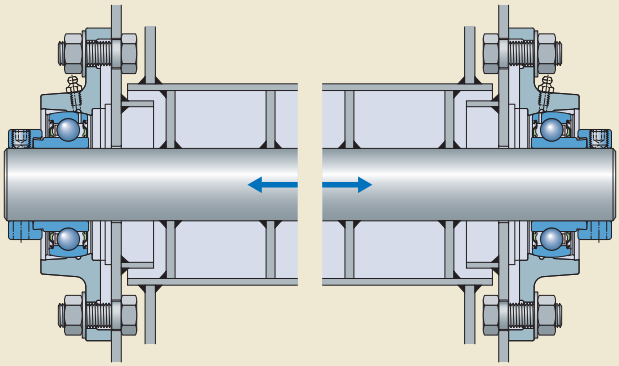
Ball bearing units with a cast iron or composite housing

When mounting ball bearing units with a cast iron or composite housing (→ **figs. 2a**, **2c**, **2h**, **2j**, **2l** and **2r** on **pages 96** to **99**) and an eccentric locking collar (→ **fig. 1b**, **page 95**), carefully follow the guidelines provided under *Preparations prior to mounting* on **page 101** as well as the additional guidelines below:

1 Mount any components located between the two bearing units onto the shaft.
2 Remove the eccentric locking collars.
3 **a**) Plummer (pillow) block units: Slide a unit onto each shaft end with the locking device facing outward. Carefully align both units and tighten the attachment bolts in both units using the recommended torque values listed in **table 5** on **page 105**.
b) Flanged units: Position the shaft between the machine walls. Slide a unit onto each shaft end with the locking device facing outward. If not provided with a shoulder, carefully align both units and tighten the attachment bolts using the recommended torque values listed in **table 5** on **page 105**.
c) Take-up units: Slide a unit onto each shaft end with the locking device facing outward. Install the shaft/units assembly into take-up frames and connect the adjustment screws via the cast hole in the units. Carefully align both units.

NOTE: When relubrication of the unit is required, the maximum permissible misalignment of the shaft relative to the units is 2°. Otherwise, misalignment of up to 5° can be accommodated.

Fig. 8



4 Align the shaft in the bearing arrangement axially (→ **fig. 8**).
5 Place an eccentric locking collar on the inner ring extension of each unit and get it finger tight in the main direction of rotation (→ **fig. 9**). Then tighten the locking collar using either a hook spanner with a stud engaging the hole in the circumference of the collar (→ **fig. 10**) or a hammer and drift punch. Tighten the grub (set) screws in the locking collar of each unit to the tightening torque values listed in **table 3** on **page 102**.
6 If possible, check that the bearing arrangement can freely rotate by turning the shaft a few times.
7 If applicable, snap the end cover(s) into place.

Fig. 9

Fig. 10

Ball bearing units with a pressed steel housing

When mounting ball bearing units with a pressed steel housing (→ **figs. 2e**, **2m**, **2n** and **2o** on **pages 97** to **99**) and an eccentric locking collar (→ **fig. 1b**, **page 95**), carefully follow the guidelines provided under *Preparations prior to mounting* on **page 101** as well as the additional guidelines below:

1 Mount any components located between the two bearing units onto the shaft.
2 Remove the locking collars.
3 **a**) Plummer (pillow) block units: Place the bases of the housings on their support surfaces. Slide a bearing with the locking device facing outward onto each shaft end and place the bearings into the lower half of the units.

NOTE: If the unit has a rubber seating ring (cartridge), first install this ring on the bearing outside diameter (→ **fig. 11**).

b) Flanged units: Position the shaft between the machine walls. Slide a unit onto each shaft end with the locking device facing outward.
4 Place a housing cap or the second housing half over each bearing (→ **fig. 12**) and fit the attachment bolts or nuts, but do not tighten them.
5 Carefully align both housings, e.g. using the shaft, and tighten the attachment bolts using the recommended torque values listed in **table 5** on **page 105**.

NOTE: When relubrication of the unit is required, the maximum permissible misalignment of the shaft relative to the unit is 2°. Otherwise, misalignment of up to 5° can be accommodated.

CAUTION: Units with a pressed steel housing cannot compensate for misalignment once the attachment bolts or nuts have been fully tightened, unless the plummer (pillow) block units are equipped with a rubber seating ring (cartridge).

6 If possible, align the shaft in the bearing arrangement axially (→ **fig. 8** on **page 107**) and turn it a few times.

Fig. 11

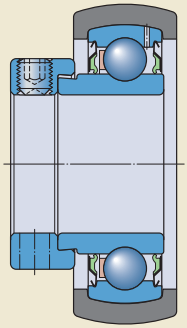


Fig. 12

7 Place an eccentric locking collar on the inner ring extension of each unit and snug tightening them in the main direction of rotation. Tighten the locking collar to its final position using either a hook spanner with a stud engaging the hole in the circumference of the collar or a hammer and drift punch. Tighten the grub (set) screw in the locking collar of each unit to the tightening torque values listed in **table 3** on **page 102**.
8 If applicable, check that the bearing arrangement can freely rotate by turning the shaft a few times.

Mounting ball bearing units with an adapter sleeve

When mounting ball bearing plummer (pillow) block units with an adapter sleeve (→ **fig. 1c**, **page 95**), carefully follow the guidelines provided under *Preparations prior to mounting* on **page 101** as well as the additional guidelines below:

1 Mount any components located between the two bearing units onto the shaft.
2 Determine the position of the adapter sleeves on the shaft (→ **fig. 13**).

NOTE: Take into consideration that during assembly, the unit will be displaced axially on the adapter sleeve along the shaft. In case of a stepped shaft, the position of the unit on the shaft is determined by the abutment, which considerably simplifies mounting.

3 Remove the nut and the lock washer from the adapter sleeves.
4 Expand each adapter sleeve slightly by inserting a screwdriver in the slot of the sleeve (→ **fig. 14**). Then, slide them with the thread facing outward, along the shaft, into position.
5 Position the first bearing unit at its location on the adapter sleeve.
6 Place the lock washer in position and tighten the lock nut until the inner ring, sleeve and shaft make proper contact.
7 Further tighten the lock nut either with a hook spanner to a tightening angle of about 70° (→ **fig. 15**) or with a torque wrench to the recommended tightening torque values (→ **table 4** on **page 103**). Make sure that while tightening the nut, the sleeve does not rotate on the shaft. While tightening, the shaft will move axially according to the axial displacement of the unit on its tapered sleeve seat.

Fig. 13

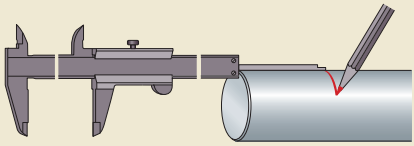


Fig. 14

Fig. 15

8 Locate the unit on the sleeve by bending a tab on the lock washer in one of the slots provided around the circumference of the nut (→ **fig. 16**).
9 Fit the attachment bolts or nuts, but do not tighten them.
10 Position the bearing unit at the other end of the shaft at its location on the sleeve.
11 Repeat **steps 6** through **9**. When doing this, the unit should be able to move on the adapter sleeve along the shaft according to its axial displacement on the tapered sleeve seat.
12 Carefully align both units.

NOTE: When relubrication of the unit is required, the maximum permissible misalignment of the shaft relative to the units is 2°. Otherwise, misalignment of up to 5° can be accommodated.

13 Tighten the attachment bolts or nuts using the recommended torque values listed in **table 5** on **page 105**.
14 If applicable, check that the bearing arrangement can freely rotate by turning the shaft a few times.
15 If applicable, snap the end cover(s) into place.

To mount ball bearing flanged housing units with an adapter sleeve, contact the SKF application engineering service.


Fig. 16

Mounting SKF ConCentra ball bearing units

CAUTION: Never try to disassemble the unit. Furthermore, never tighten the grub (set) screws in the mounting collar unless the unit is mounted on a shaft. Doing so will damage the SKF ConCentra stepped sleeve.

SKF ConCentra ball bearing plummer (pillow) block units

When mounting SKF ConCentra ball bearing plummer (pillow) block units (→ **fig. 1d**, **page 95**), carefully follow the guidelines provided under *Preparations prior to mounting* on **page 101** as well as the additional guidelines below:

1. Mount any components located between the two bearing units onto the shaft.
2. With the mounting collar facing outward, slide a unit onto each shaft end (→ **fig. 17**).
3. Position the first bearing unit at its correct location and fit the attachment bolts, but do not tighten them.

   NOTE: Take into consideration that during assembly, the unit will be displaced axially on the SKF ConCentra stepped sleeve along the shaft (→ **fig. 18**).

4. Position the mounting collar so that there is no grub (set) screw facing the split in the sleeve.

Fig. 17

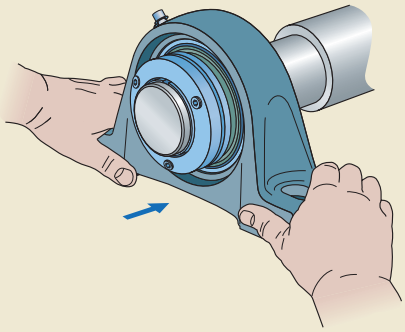
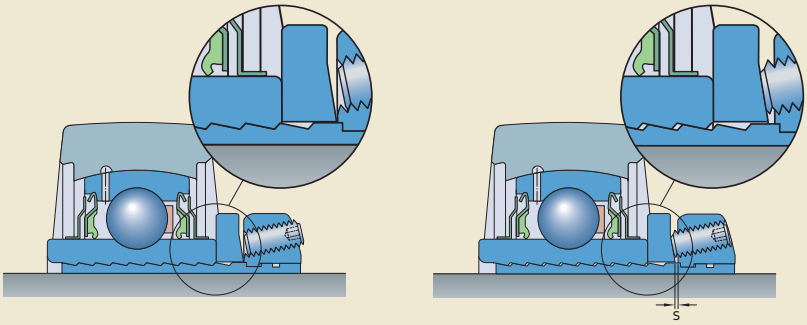


Fig. 18



5 Use the short end of the supplied hexagonal key and tighten the grub (set) screws finger tight (→ **fig. 19**).
6 Use the long end of the hexagonal key for tightening the screws a total of 1/2 turn by alternating in two increments (1/4 turn and 1/4 turn) according to the mounting pattern (→ **fig. 20**), starting with the screw opposite the split in the sleeve.
7 Mount the supplied red torque indicator on the short end of the hexagonal key (→ **fig. 21**) and tighten the screws until the hexagonal key comes in contact with the torque indicator (→ **fig. 22**). If a torque wrench is used, apply the recommended tightening torque value of 7,4 Nm (*5.5 ft.lbf*).
8 Align the unit and tighten the attachment bolts or nuts using the recommended torque values listed in **table 5** on **page 105**.
9 Position the bearing unit at the other end of the shaft. Fit the attachment bolts or nuts, but do not tighten them.
10 Repeat **steps 4** through **7**. When doing this, the unit must be able to move axially along the shaft, according to its axial displacement "s" on the SKF ConCentra sleeve (→ **fig. 18** on **page 111**).
11 Carefully align the shaft.

NOTE: When relubrication of the unit is required, the maximum permissible misalignment of the shaft relative to the units is 2°. Otherwise, misalignment of up to 5° can be accommodated.

12 Tighten the attachment bolts or nuts using the recommended torque values listed in **table 5** on **page 105**.
13 If possible, check that the bearing arrangement can freely rotate by turning the shaft a few times.

Fig. 19

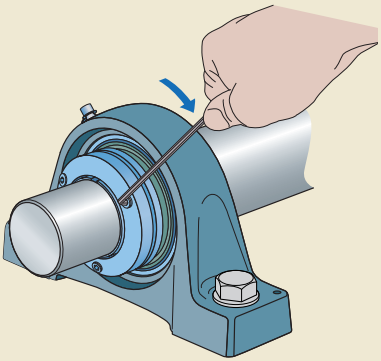


Fig. 20

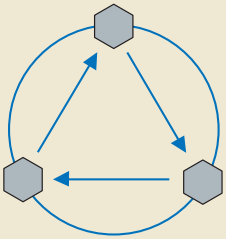
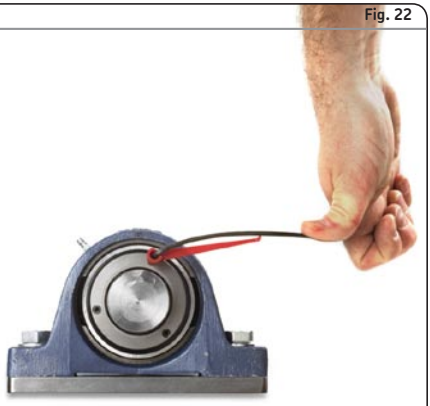


Fig. 21

Fig. 22



SKF ConCentra ball bearing flanged units

When mounting SKF ConCentra ball bearing flanged units (→ **fig. 1d**, **page 95**), carefully follow the guidelines provided under *Preparations prior to mounting* on **page 101** as well as the additional guidelines below:

1. Mount any components located between the two bearing units onto the shaft.
2. Support the shaft in mounting position between the machine walls.
3. With the mounting collar facing outward, slide a unit onto each shaft end.

   NOTE: Take into consideration that during assembly, the unit will be displaced axially on the SKF ConCentra stepped sleeve along the shaft (→ **fig. 18**, **page 111**).

4. Place the first bearing unit at its correct location and tighten the attachment bolts or nuts using the recommended torque values listed in **table 5** on **page 105**.
5. Position the mounting collar so that there is no grub (set) screw facing the split in the sleeve.
6. Use the short end of the supplied hexagonal key and tighten the grub (set) screws to finger tightness.
7. Use the long end of the hexagonal key for tightening the screws a total of 1/2 turn by alternating in two increments (1/4 turn and 1/4 turn) according to the mounting pattern (→ **fig. 20**) starting with the screw opposite the split in the sleeve.
8. Mount the supplied red torque indicator on the short end of the hexagonal key (→ **fig. 21**) and tighten the screws until the hexagonal key comes in contact with the torque indicator. If a torque wrench is used, apply the recommended tightening torque value of 7,4 Nm (*5.5 ft.lbf*).
9. Place the bearing unit at the other end of the shaft at its correct location. Fit the attachment bolts or nuts, but do not tighten them.

10 Repeat **steps 5** through **8**. When doing this, the unit must be able to move axially along the shaft (→ **fig. 23**) according to its axial displacement "s" on the SKF ConCentra sleeve (→ **fig. 18** on **page 111**).
11 Carefully align the shaft.

NOTE: When relubrication of the unit is required, the maximum permissible misalignment of the shaft relative to the units is 2°. Otherwise, misalignment of up to 5° can be accommodated.

12 Tighten the attachment bolts or nuts using the recommended torque values listed in **table 5** on **page 105**.
13 If possible, check that the bearing arrangement can freely rotate by turning the shaft a few times.

Mounting SKF ConCentra roller bearing units

CAUTION: Never try to disassemble the unit. Furthermore, never tighten the grub (set) screws in the mounting collar unless the unit is mounted on a shaft. Doing so will damage the SKF ConCentra stepped sleeve.

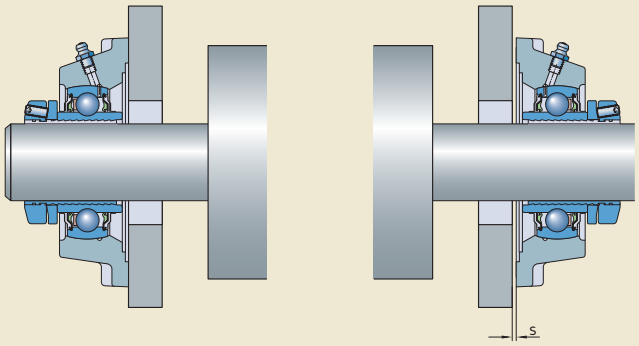
SKF ConCentra roller bearing plummer (pillow) block units

When mounting SKF ConCentra roller bearing plummer (pillow) block units (→ **fig. 1e**, **page 95**), carefully follow the guidelines provided under *Preparations prior to mounting* on **page 101** as well as the additional guidelines below:

1 Mount any components located between the two bearing units onto the shaft.
2 Determine the position of the locating and non-locating unit on the shaft. The locating unit should always be on the drive side.
3 With the mounting collar facing outward, slide a unit onto each shaft end (→ **fig. 24**).

NOTE: Take into consideration that during assembly, the unit will be displaced axially on the SKF ConCentra stepped sleeve along the shaft (→ **fig. 25**).

Fig. 23



4 Fit the attachment bolts or nuts, but do not tighten them.
5 Position the locating bearing unit axially on the shaft and align the bearing unit on the support surface. SYNT units have vertical markings at the ends of the housing base to facilitate this (→ **fig. 26**).
6 Lock the locating bearing unit on the shaft.

Fig. 24

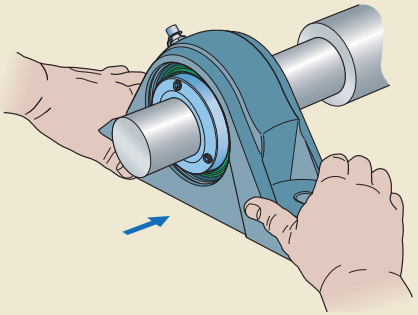
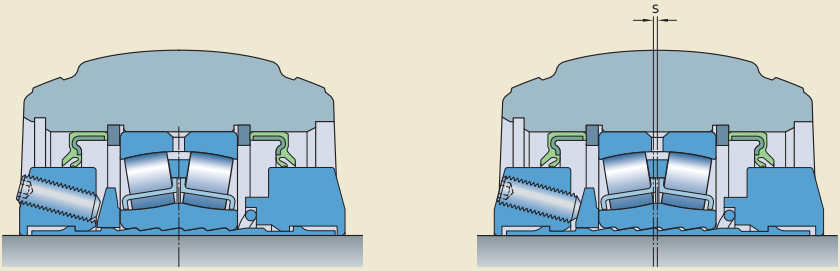


Fig. 26

Fig. 25



7 Position the mounting collar so that there is no grub (set) screw facing the split in the sleeve. Use the short end of the supplied hexagonal key and tighten each screw to finger tightness. Follow the mounting pattern (→ **fig. 27**), starting with the screw opposite the split in the sleeve. Mount the supplied red torque indicator on the short end of the hexagonal key (→ **fig. 21** on **page 113**) and tighten the screw until the hexagonal key comes in contact with the torque indicator (→ **fig. 28**). When applying a torque wrench to tighten the grub (set) screws (→ **fig. 29**), use a 3 mm bit. Following the mounting pattern, first tighten the screws to finger tightness. Then continue to tighten each screw once again to the recommended tightening torque value of 7,4 Nm *(5.5 ft.lbf)*.

8 Check once again the alignment of the locating unit. The maximum permissible misalignment of the shaft relative to the units is 1,5°.

9 Find the middle of the bearing seat in the non-locating unit. Support the shaft. Grip the collars at both ends of the unloaded insert bearing and move it from one end position in the housing to the other while the housing is fixed. If only thermal elongation of the shaft is expected, SKF recommends that the end position of the bearing is placed toward the locating bearing (→ **fig. 30**).

NOTE: Take into consideration that during assembly, the unit will be displaced axially on the SKF ConCentra stepped sleeve along the shaft (→ **fig. 25** on **page 115**).

10 Lock the non-locating bearing on the shaft as in **step 7**.

11 Carefully align the unit. Tighten the attachment bolts using the recommended torque values listed in **table 5** on **page 105**.

12 If possible, check that the bearing arrangement can freely rotate by turning the shaft a few times.

13 If applicable, snap the end cover into place.

Fig. 27

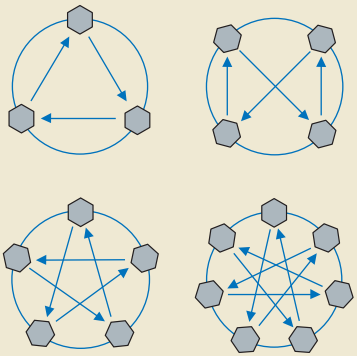


Fig. 28

Fig. 29

SKF ConCentra roller bearing flanged units

When mounting SKF ConCentra roller bearing flanged units (→ **fig. 1e**, **page 95**), carefully read the guidelines provided under *Preparations prior to mounting* on **page 101** as well as the additional guidelines below:

1. Mount any components located between the two bearing units onto the shaft.
2. Determine the position of the locating and non-locating unit on the shaft. The locating unit should always be on the drive side.
3. Support the shaft in mounting position between the machine walls.
4. With the mounting collar facing outward, slide a unit into position onto each shaft end.

   NOTE: Take into consideration that during assembly, the unit will be displaced axially on the SKF ConCentra stepped sleeve along the shaft.

5. Fit the attachment bolts or nuts, but do not tighten them (→ **fig. 31**).

Fig. 31

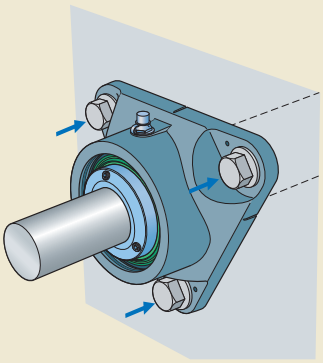
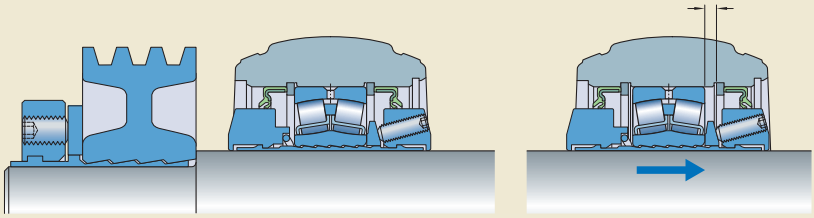


Fig. 30



6 Lock the locating bearing on the shaft. Position the mounting collar so that there is no grub (set) screw facing the split in the sleeve. Use the short end of the supplied hexagonal key and tighten the grub (set) screws to finger tightness. Use the long end of the hexagonal key for tightening the screws a total of 1/2 turn by alternating in two increments (1/4 turn and 1/4 turn) according to the mounting pattern (→ **fig. 27** on **page 116**), starting with the screw opposite the split in the sleeve. Mount the supplied red torque indicator on the short end of the hexagonal key and tighten the screws until the hexagonal key comes in contact with the torque indicator (→ **fig. 32**). If a torque wrench is used (→ **fig. 33**), apply the recommended tightening torque value of 7,4 Nm (*5.5 ft.lbf*).

7 Check once again the alignment of the locating unit. The maximum permissible misalignment of the shaft relative to the units is 1,5°.

8 Find the middle of the bearing seat in the non-locating unit. Support the shaft. Grip a collar of the unloaded insert bearing and move it from one end position in the housing to the other while the housing is fixed. If only thermal elongation of the shaft is expected, SKF recommends that the end position of the bearing is placed toward the locating bearing.

NOTE: Take into consideration that during assembly, the unit will be displaced axially on the SKF ConCentra stepped sleeve along the shaft.

9 Lock the non-locating bearing on the shaft as in **step 6**.

10 Carefully align the unit. Tighten the attachment bolts using the recommended torque values listed in **table 5** on **page 105**.

11 If possible, check that the bearing arrangement can freely rotate by turning the shaft a few times.

12 If applicable, snap the end cover into the housing bore recess.

Fig. 32

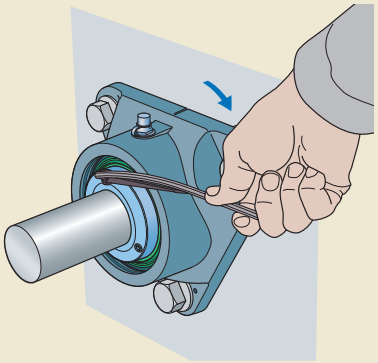
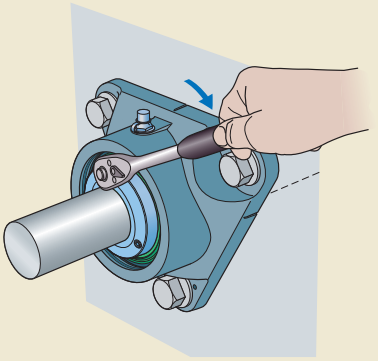


Fig. 33

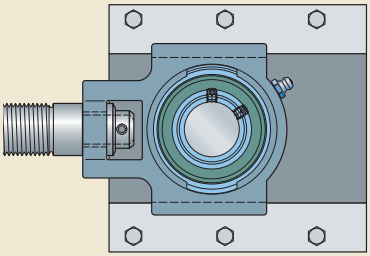


Mounting roller bearing units with a cylindrical locking collar

When mounting roller bearing units with a cylindrical locking collar (→ **fig. 1f**, **page 95**), carefully follow the guidelines provided under *Preparations prior to mounting* on **page 101** as well as the additional guidelines below:

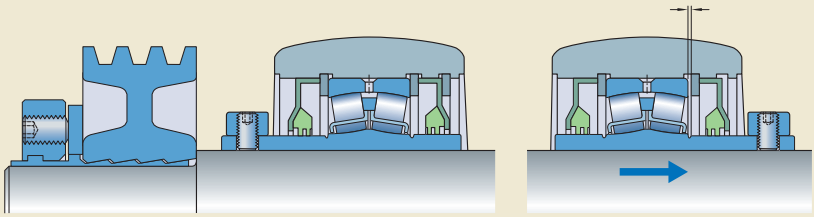
1. Determine the position of the locating and non-locating unit on the shaft. The locating unit should always be on the drive side.
2. Mount any components located between the two bearing units onto the shaft.
3. **a**) Plummer (pillow) block units: Slide a unit onto each shaft end with the locking device facing outward. Carefully align both units. Fit the attachment bolts and tighten them using the recommended torque values listed in **table 5** on **page 105**. The maximum permissible misalignment of the shaft relative to the units is 1,5°.
   b) Flanged units: Support the shaft in mounting position between the machine walls. Slide a unit onto each shaft end. If not provided with a shoulder, carefully align both units. Fit the attachment bolts and tighten them using the recommended torque values listed in **table 5** on **page 105**. The maximum permissible misalignment of the shaft relative to the units is 1,5°.
   c) Take-up units: Slide a unit onto each shaft end with the locking device facing outward. Install the shaft/units assembly into take-up frames and connect the adjustment screws via the cast hole in the units (→ **fig. 34**). Carefully align both units. The maximum permissible misalignment of the shaft relative to the units is 1,5°.
4. Align the shaft in the bearing arrangement axially.
5. Tighten both grub (set) screws in the cylindrical locking collar that grip the shaft through drilled holes in the inner ring of the locating unit to the tightening torque values listed in **table 3** on **page 102**.

Fig. 34



6 Find the middle of the bearing seat in the non-locating unit by supporting the shaft and by moving the unloaded insert bearing from one end position in the housing to the other. If only thermal elongation of the shaft is expected, SKF recommends that the end position of the bearing is placed toward the locating bearing (→ **fig. 35**).
7 Lock the non-locating bearing on the shaft as in **step 3**.
8 If applicable, check that the bearing arrangement can freely rotate by turning the shaft a few times.

Fig. 35



Assembling ball bearing units

Where Y-bearings and Y-housings made of grey cast iron or composite material are not supplied as units, it is necessary to first assemble them. To do so, the bearing should be inserted into the filling slot in the housing bore (→ **fig. 36**) – for ball bearings with an eccentric locking collar, first remove the locking collar. A round piece of wood or a piece of pipe, etc. can be used to swivel the bearing into its position with the locking device facing the same direction as the filling slots (→ **fig. 37**).

CAUTION: When inserting the bearing, make sure that the lubrication hole at the side of the locking device and the filling slots in the housing do not coincide (→ **fig. 38**).

Fig. 36

Fig. 37

Fig. 38