

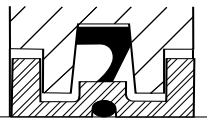
Split Pillow Block Housing Assembly Instructions for SAF and SAFS housings

WARNING: Read these instructions before starting work. Failure to follow these instructions could result in injury or damage such as catastrophic premature bearing failure. Be careful with heavy weight and tools and other devices, and with high pressure oil when using the hydraulic assist method. Be familiar with the MSDS or other safety instructions for any grease or oil used and keep them nearby.

Step 1: Check shaft tolerance. See chart F.

Step 2: Install inboard seal.

PosiTrac (LOR) and PosiTrac Plus seal

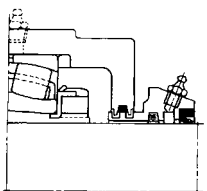


Slide the seal onto the shaft. The resistance should only require slight hand pressure to overcome. The O-ring

can be lubricated with grease or oil to ease assembly. Locate the seal to match the labyrinths in the housing. The old style LER labyrinth seal still used for small shaft diameters is installed in the same manner. The picture shows the PosiTrac Plus seal, which requires greasing the seal lip at assembly. See PosiTrac Plus Assembly Instructions for more information (Publication 655-810), which is included with the B-10724 contact element.

SKF's next generation M5 style SAF housings have the external labyrinth painted for improved corrosion resistance. Removal of this paint is not recommended.

Taconite (TER) seal



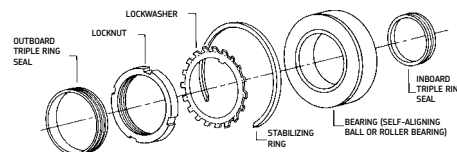
Coat the shaft with oil. Smear grease in the bore of the seal cartridge, filling the cavity between seals, and lubricating the bore of the

felt seal and the lip of the contact seal. Fill the TER seal cavity with grease. If the end of the shaft does not have a lead-in bevel, smooth the bore of the felt seal with a flat instrument to aid in starting the felt over the end of the shaft. Carefully slide the seal cartridge assembly on the shaft to approximate assembly position. *NOTE: Make sure the lobes of the rubber extrusion on the outside diameter of the taconite seal are not located at the split of the housing; to ensure this occurs, the grease fitting should be at 12 or 6 o'clock. For seal misalignment capabilities, see chart G.*

Step 3: Mount bearing on shaft.

Note: Other mounting methods exist. Please consult SKF for alternative instructions or reference www.skf.com/mount.

Cylindrical Bore Mounting



i. To press small bearings onto the shaft, fit a clean pipe over the shaft and rest it on the inner ring. Before pressure is applied to the bearing, apply a coat of light oil or micronized graphite to the shaft and bearing bore. Be sure bearing is square on the shaft and then apply pressure using a hammer or arbor press. To mount larger bearings that are not easily pressed onto a shaft, heat the bearing to a maximum temperature of (250°F). The bearing may be heated in clean oil or in a 10% – 15% emulsion of soluble oil for 30 minutes to 1 hour depending on bearing size. Be sure to place supports under the bearing to isolate it from the bottom of the container to prevent overheating the bearing. Alternately, a temperature controlled oven or

induction heater may be used to heat the bearing, but only long enough to enlarge the bearing bore for mounting, and in no case for more than four hours. A hot plate may be used to heat the oil bath. In no case should the bearing be heated with an open flame. Mount the bearing on the shaft firmly against the shaft shoulder. Quickly follow through with Steps ii and iii to prevent the bearing drawing away from its proper position against the shaft shoulder.

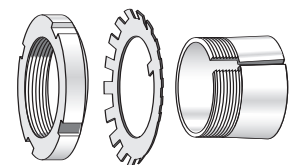
ii. Mount lockwasher over threads on shaft with inner prong of lockwasher toward the face of the bearing and locate it in the slot in the shaft.

iii. Apply the locknut with the chamfered face toward the bearing. Tighten with a spanner wrench and hammer until the bearing is firmly seated against the shaft shoulder. Bend one of the lockwasher tangs into a slot in the nut. It may be necessary to further tighten the nut in order to engage the lockwasher tang. A very slight movement of the nut will align a slot with the tang.

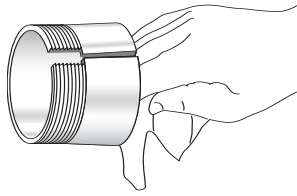
Adapter Mounting for Spherical Roller Bearing, and Self Aligning Ball Bearing.

Note: Do not remove preservative from bearing as it will mix with any petroleum grease or oil. The bore surface only should be wiped clean.

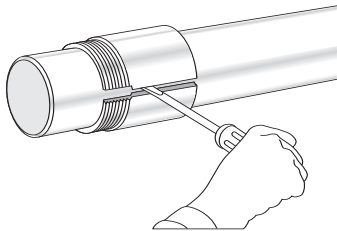
i. Screw off the nut and remove the lockwasher.



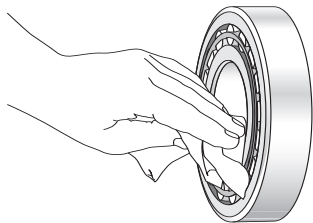
ii. Wipe the preservative from the surfaces of the sleeve and apply light oil to the sleeves outside diameter surface for easier bearing mounting and dismounting.



iii. Open up the sleeve by inserting a screwdriver in the slot; then position the adapter sleeve on the shaft, thread outward as indicated, to approximate location with respect to the required bearing centerline.

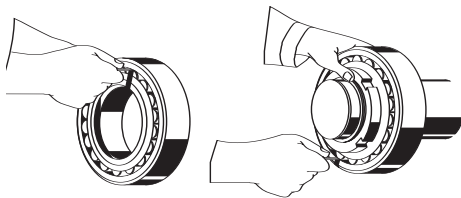


iv. Wipe the preservative from the bore of the bearing and then oil the surface lightly. Use a thin mineral oil.

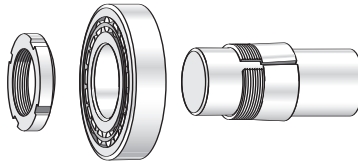


v. For Spherical Roller Bearing Only

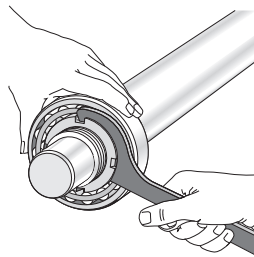
Measure the unmounted internal radial clearance in the bearing by inserting progressively larger feeler blades the full length of the roller between the most vertical unloaded roller and the outer sphere. See Chart B.



vi. Place the bearing on the sleeve. Screw the nut with its chamfered face toward the bearing, but do not mount the lockwasher. Do not push the inner ring up the taper of the sleeve.

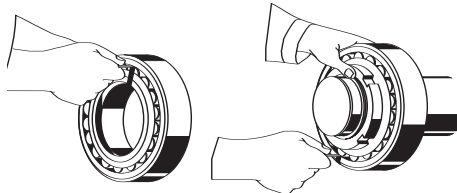


vii. Turn the nut sufficiently to ensure that the shaft makes proper contact (self-locking) with the sleeve, continuing to drive the bearing up the sleeve.



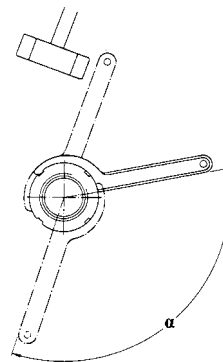
viii a. For Spherical Roller Bearing Only

Check the mounted internal clearance until the required bearing internal clearance has been achieved. See Chart C.



viii b. For Self-Aligning Ball Bearings Only

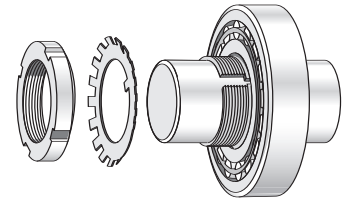
Then with a hammer, drive the spanner wrench until the lock-nut has been turned to the specified turning angle indicated in chart D.



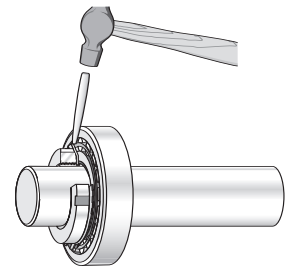
viii c. For CARB®

Consult SKF for the axial Drive-up method or refer to www.skf.com/mount.

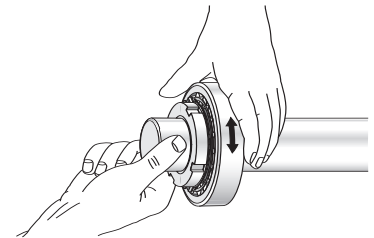
ix. Unscrew the nut, place the locking washer in position, and tighten the nut firmly again. Make sure that the bearing is not driven up the sleeve any further.



x. Lock the nut by bending one of the locking washer tabs down (using a hammer and a drift) into one of the slots in the nut. Do not bend it to the bottom of the slot.



xi. Check that the shaft or outer ring can be rotated easily by hand.



Step 4: Install outboard seal (same as step 2).

Step 5: Lower half housing (base).

Set lower halves of housings on base and lightly oil the bearing seats. SKF's M5 style SAF housings have painted baseplanes. Removal of this paint is not required prior to installation.

If grease is used as a lubricant, it should be applied before the upper half is secured. Smear grease between the rolling elements of the bearing and work in until 100% full. The lower half of the housing should be packed 1/3 to 1/2 full. See chart E. For M5 style SAF housings, there is a cast line in the housing base which can be used as a grease fill line (fill to the bottom of the line). See fig. 1.

Place the shaft with bearings into lower half of the housing, carefully guiding seals into the seal grooves. Be certain that the bear-

ings' outer rings sit squarely in the pillow block bearing seats.

Bolt the "held" housing securely in place (see step 6). The "free" bearing housing will be located and bolted to its mounting surface after properly positioning the bearing in the "free" housing to ensure correct float. Note: If shimming is required, shims must cover the full mounting surface of the pillow block.

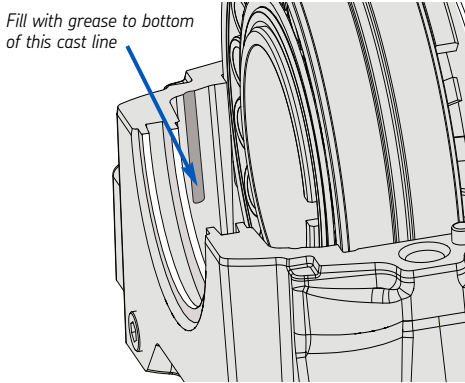


Fig. 1: Grease fill line

Step 6: Stabilizing rings.

A stabilizing ring should be used if a spherical roller or self-aligning ball bearing is to be "Held" or "Fixed" (i.e. locating the shaft). The stabilizing ring should also be used for all

toroidal roller bearing (CARB®) units. In cases when only one locating ring is used, move the shaft axially so that the stabilizing ring can be inserted between the bearing outer ring and housing shoulder on the locknut side of bearing, where practical. For bearings that will be free to float in the housing, generally center the bearings in the housing seat.

NOTE: There must be only one "held" bearing per shaft. One bearing should be "free" to permit shaft expansion. Some pillow blocks require two stabilizing rings, which must be inserted to obtain a "held" assembly with the bearing centered in the housing. Stabilizing rings enclosed in standard housings are intended for Spherical Roller Bearings or CARB®. A different stabilizing ring is required for Self Aligning Ball Bearings (purchased separately).

Step 7: Upper half housing (cap).

The bearing seat in the upper half of the housing (cap) should be thoroughly cleaned, lightly oiled and placed over the bearing. With oil lubrication, use a sealing compound such as Permatex 2 or equivalent at the split surfaces; apply sparingly. Wipe a thin film near the outer edges. Excessive amounts will be

forced out and also between the housing bore and bearing outside diameter. This can pinch an outer ring or make a "free" bearing actually "held". The two dowel pins will align the upper half of the housing to its mating base.

NOTE: Caps and bases of pillow blocks are not interchangeable. Each cap and base must be assembled with its original mating part. All SKF SAF and SAFS split pillow block housings are match marked with serialized identification on the cap and base to assist in assembling of mating parts.

Lockwashers and cap bolts are then applied and tightened to complete the assembly to the proper tightening torque for the specific cap bolts. See charts A1 and A2, and fig. 2.

The rubber plug and plastic fitting in the cap holes of M5 style SAF housings should be removed and discarded. Replace with appropriate metallic plugs/fitings that are supplied with each SKF M5 style SAF housing.

Chart A1 - Tightening Torque for SAF "A" style and SAFS "N" style cap bolts (see fig 2)

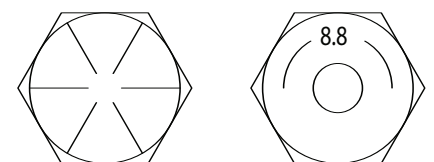
SAF (Cast Iron)				SAFS (Cast Steel)		Torque (ft-lbs)
			509 510			70
		308 309 310 311 312	511 513 515 515	609 610 611	215 218	515 518 110
	216 217 218	313 314 315	516 517 518	613 615	216 217 220 222	516 517 520 522 220
024 026	220 222 230 232 234 236	316 317 318 324 326 328 330	520 522 530 532 534 536 630	616 617 618 624 626 628 630	226	526 380
044 048	238 240	332 334	538 540	632 634	228 230 532	528 530 532 600
056		340		640		870
028 030 032 034 052	224 226 228 244	320 322 338	524 526 528 544	620 622 638	234	534 900
					238	538 1280
					240	540 1820
					236 244	536 544 2380

Chart A2 - Tightening torque for SAF M5 cap bolts. (see fig 2)

SAF M5	FSAF M5	SAF M5	FSAF M5	Cap bolt (no.) size	Torque ft-lbs
		507		(2) 3/8-16	30
		509		(2) 7/16-14	45
		510		(2) 7/16-14	45
		511		(2) 1/2-13	60
213		513		(2) 1/2-13	60
215		515	515	(2) 1/2-13	60
216	216	516	516	(2) 5/8-11	110
217	217	517	517	(2) 5/8-11	110
218	218	518	518	(2) 5/8-11	110
220	220	520	520	(2) 3/4-10	150
*222		*522		(2) 3/4-10	150
*224		*524		(2) 1-8	295
*226		*526		(2) 1-8	295
*228		*528		(2) 1-8	295

*4 BOLT BASE ONLY

Fig. 2 - Identification of Cap Bolt Grade



SKF 'A' STYLE SAF (IRON)
SKF SAFS (STEEL)
SAE J429 GRADE 8
CAP BOLTS ARE BLACK IN COLOR
(USE CHART A1 VALUES)

SKF 'M5' STYLE SAF (IRON)
ISO R898 CLASS 8.8
CAP BOLTS ARE PAINTED BLUE
(USE CHART A2 VALUES)

Chart B - Unmounted radial internal clearance of SKF tapered bore spherical roller bearings

Bore Dia. d (mm)		Normal (in.)		C3 (in.)		C4 (in.)	
Over	Incl.	Min.	Max.	Min.	Max.	Min.	Max.
24	30	0.0012	0.0016	0.0016	0.0022	0.0022	0.0030
30	40	0.0014	0.0020	0.0020	0.0026	0.0026	0.0033
40	50	0.0018	0.0024	0.0024	0.0031	0.0031	0.0039
50	65	0.0022	0.0030	0.0030	0.0037	0.0037	0.0047
65	80	0.0028	0.0037	0.0037	0.0047	0.0047	0.0059
80	100	0.0031	0.0043	0.0043	0.0055	0.0055	0.0071
100	120	0.0039	0.0053	0.0053	0.0067	0.0067	0.0087
120	140	0.0047	0.0063	0.0063	0.0079	0.0079	0.0102
140	160	0.0051	0.0071	0.0071	0.0091	0.0091	0.0118
160	180	0.0055	0.0079	0.0079	0.0102	0.0102	0.0134
180	200	0.0063	0.0087	0.0087	0.0114	0.0114	0.0146
200	225	0.0071	0.0098	0.0098	0.0126	0.0126	0.0161
225	250	0.0079	0.0106	0.0106	0.0138	0.0138	0.0177
250	280	0.0087	0.0118	0.0118	0.0154	0.0154	0.0193
280	315	0.0094	0.0130	0.0130	0.0169	0.0169	0.0213
315	355	0.0106	0.0142	0.0142	0.0185	0.0185	0.0232
355	400	0.0118	0.0157	0.0157	0.0205	0.0205	0.0256
400	450	0.0130	0.0173	0.0173	0.0224	0.0224	0.0283
450	500	0.0146	0.0193	0.0193	0.0248	0.0248	0.0311
500	560	0.0161	0.0213	0.0213	0.0268	0.0268	0.0343
560	630	0.0181	0.0236	0.0236	0.0299	0.0299	0.0386
630	710	0.0201	0.0264	0.0264	0.0335	0.0335	0.0429
710	800	0.0224	0.0295	0.0295	0.0378	0.0378	0.0480
800	900	0.0252	0.0331	0.0331	0.0421	0.0421	0.0539
900	1000	0.0280	0.0366	0.0366	0.0469	0.0469	0.0598
1000	1120	0.0303	0.0406	0.0406	0.0512	0.0512	0.0657
1120	1250	0.0327	0.0441	0.0441	0.0559	0.0559	0.0720

Chart E - Initial grease charge for SAF pillow block assemblies

(see also step 5 for more information)

SAF	SAF	SAF	SAF	SAF	Initial Charge (oz)	Initial Charge (lbs)
		507			2.5	
		509			3.0	
		510			4.0	
	308				4.5	
	309		609		5.0	
		511			5.0	
	310		610		6.5	
		513			7.5	
	311		611		8.0	
		515			9.0	
	312				10.0	
216	313	516	613		13.0	
217		517			13.0	
	314				14.0	
218	315	518	615		14.0	
	316		616		16.0	
	317		617		20.0	
220		520		024	21.0	
	318		618		22.0	
222		522		026	28.0	
224	320	524	620	028	40.0	
226	322	526	622	030		3%
				032		3%
228		528		034		3%
230	324	530	624			3%
232	326	532	626	036		4%
				038		4%
234	328	534	628	040		5%
236	330	536	630			6%
238	332	538	632	044		7%
240	334	540	634	048		8%
244	338	544	638	052		11½%
	340		640	056		15½%

Chart C - Recommended clearance reduction values for SKF tapered bore spherical roller bearings

Bore Diameter d(mm)		Reduction in Radial Internal Clearance (in.)		Bore Diameter d(mm)		Reduction in Radial Internal Clearance (in.)	
Over	Incl.	Min.	Max.(1)	Over	Incl.	Min.	Max.*
24	30	0.0006	0.0008	315	355	0.0060	0.0085
30	40	0.0008	0.0010	355	400	0.0065	0.0090
40	50	0.0010	0.0012	400	450	0.0080	0.0105
50	65	0.0012	0.0015	450	500	0.0085	0.0110
65	80	0.0015	0.0020	500	560	0.0095	0.0125
80	100	0.0018	0.0025	560	630	0.0100	0.0135
100	120	0.0020	0.0028	630	710	0.0120	0.0155
120	140	0.0025	0.0035	710	800	0.0135	0.0175
140	160	0.0030	0.0040	800	900	0.0145	0.0195
160	180	0.0030	0.0045	900	1000	0.0160	0.0215
180	200	0.0035	0.0050	1000	1120	0.0175	0.0235
200	225	0.0040	0.0055	1120	1250	0.0190	0.0255
225	250	0.0045	0.0060				
250	280	0.0045	0.0065				
280	315	0.0050	0.0075				

*Caution: Do not use the maximum reduction of radial internal clearance when the initial unmounted radial internal clearance is in the lower half of the tolerance range or where large temperature differentials between the bearing rings can occur in operation (see chart B).

Chart D - Angular drive-up for self-aligning ball bearings

Bearing Designation	Bore d (mm)	Inch Nut Designation	Turning Angle a (degrees)	Bearing Designation	Bore d (mm)	Inch Nut Designation	Turning Angle a (degrees)
1205 K	25	N 05	100	2205 K	25	N 05	100
1206 K	30	N 06	55	2206 K	30	N 06	55
1207 K	35	N 07	75	2207 K	35	N 07	75
1208 K	40	N 08	75	2208 K	40	N 08	75
1209 K	45	N 09	80	2209 K	45	N 09	80
1210 K	50	N 10	80	2210 K	50	N 10	80
1211 K	55	N 11	100	2211 K	55	N 11	80
1212 K	60	N 12	100	2212 K	60	N 12	100
1213 K	65	N 13	100	2213 K	65	N 13	100
1214 K	70	N 14	100	2214 K	70	N 14	110
1215 K	75	AN 15	75	2215 K	75	AN 15	75
1216 K	80	AN 16	75	2216 K	80	AN 16	75
1217 K	85	AN 17	100	2217 K	85	AN 17	90
1218 K	90	AN 18	100	2218 K	90	AN 18	90
1219 K	95	AN 19	100	2219 K	95	AN 19	90
1220 K	100	AN 20	100	2220 K	100	AN 20	90
1221 K	105	AN 21	115	2221 K	105	AN 21	110
1222 K	110	AN 22	115	2222 K	110	AN 22	110
1224 K	120	AN 24	115				

Chart F - Dia. tol. for adapter & cylindrical bore mounted shaft extensions

Nominal Dia. Inches		Dia. Tolerance Limits Inches	
Over	Including	S-1	S-2 & S-3
		0.000	0.000
1	2	-0.003	-0.003
		0.000	0.000
2	4	-0.004	-0.003
		0.000	0.000
4	6	-0.005	-0.003
		0.000	0.000
6	10	-0.006	-0.004
		0.000	0.000
10	15	-0.006	-0.005
		0.000	0.000
15		-0.006	-0.006

Note: S1 refers to the shaft tolerance for an adapter mounted bearing. S2 and S3 refer to the shaft tolerance under the seal for a cylindrical mounted bearing, not the bearing seat diameter

Chart G - SKF seal misalignment capabilities

Designation	Description	Allowable misalignment (deg.) ¹⁾
LER	Labyrinth seal (SAF 507-513)	0.3
B-9784	Contact seal (SAF 507-513)	0.1 ²⁾
LOR	PosiTrac labyrinth seal	0.3
LOR + B 10724-xx	PosiTrac Plus seal	0.3
TER	Taconite seal w/contact seal	0.1 ²⁾
TER-xx V	Taconite seal w/V-ring	0.5

¹⁾ Values are approximate to cover a family of parts. For specific sizes, consult SKF application engineering

²⁾ Optimum contact seal performance is obtained when shaft misalignment and run-out are kept to a minimum