

Instruction Manual

Insert Bearing Units

(Adapter locking type)

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Attachment: Recommendation value for tightening torque of an adapter and tightening angle of an adapter nut

1. Scope of application

This instruction manual applies to the insert bearing units shown in Tables 1.1 to 1.6.

- Remarks:**
1. This instruction manual also applies to the insert bearing units marked with auxiliary marks (Note 1) and aggregation marks (Note 2) in addition to the standard products shown in Table 1.1 to 1.6.
 2. Although UK-type insert bearing units are provided as a set with adapters as a rule, “+H” is deleted in this table.

- (Note)
1. Special and change marks showing accuracy, shape, additional processing, etc. for bearings, housings and main parts.
 2. Abbreviated marks for special parts whose nominal number consists of many characters and is complicated.

Table 1.1

Pillow block unit				Square flange unit	Round flange unit with spigot joint	Rhombic flange unit			Take-up unit	Cartridge unit
UKP205	–	UKPH205	UKPA205	UKF205	UKFC205	UKFL205	UKFK205	UKFA205	UKT205	UKC205
UKP206	–	UKPH206	UKPA206	UKF206	UKFC206	UKFL206	UKFK206	UKFA206	UKT206	UKC206
UKP207	–	UKPH207	UKPA207	UKF207	UKFC207	UKFL207	UKFK207	UKFA207	UKT207	UKC207
UKP208	UKIP208	UKPH208	UKPA208	UKF208	UKFC208	UKFL208	UKFK208	UKFA208	UKT208	UKC208
UKP209	UKIP209	UKPH209	UKPA209	UKF209	UKFC209	UKFL209	UKFK209	UKFA209	UKT209	UKC209
UKP210	UKIP210	UKPH210	UKPA210	UKF210	UKFC210	UKFL210	UKFK210	UKFA210	UKT210	UKC210
UKP211	UKIP211	–	–	UKF211	UKFC211	UKFL211	–	UKFA211	UKT211	UKC211
UKP212	UKIP212	–	–	UKF212	UKFC212	UKFL212	–	–	UKT212	UKC212
UKP213	UKIP213	–	–	UKF213	UKFC213	UKFL213	–	–	UKT213	UKC213
UKP215	–	–	–	UKF215	UKFC215	UKFL215	–	–	UKT215	–
UKP216	–	–	–	UKF216	UKFC216	UKFL216	–	–	UKT216	–
UKP217	–	–	–	UKF217	UKFC217	UKFL217	–	–	UKT217	–
UKP218	–	–	–	UKF218	UKFC218	UKFL218	–	–	–	–

Table 1.2

Pillow block unit	Square flange unit	Round flange unit with spigot joint	Two-bolt flange unit	Take-up unit
UKPX05	UKFX05	UKFCX05	UKFLX05	UKTX05
UKPX06	UKFX06	UKFCX06	UKFLX06	UKTX06
UKPX07	UKFX07	UKFCX07	UKFLX07	UKTX07
UKPX08	UKFX08	UKFCX08	UKFLX08	UKTX08
UKPX09	UKFX09	UKFCX09	UKFLX09	UKTX09
UKPX10	UKFX10	UKFCX10	UKFLX10	UKTX10
UKPX11	UKFX11	UKFCX11	–	UKTX11
UKPX12	UKFX12	UKFCX12	–	UKTX12
UKPX13	UKFX13	UKFCX13	–	UKTX13
UKPX15	UKFX15	UKFCX15	–	UKTX15
UKPX16	UKFX16	UKFCX16	–	UKTX16
UKPX17	UKFX17	UKFCX17	–	UKTX17
UKPX18	UKFX18	UKFCX18	–	–
UKPX20	UKFX20	UKFCX20	–	–

Table 1.3

Pillow block unit		Square flange unit	Round flange unit with spigot joint	Two-bolt flange unit	Take-up unit	Cartridge unit
UKP305	–	UKF305	UKFS305	UKFL305	UKT305	UKC305
UKP306	–	UKF306	UKFS306	UKFL306	UKT306	UKC306
UKP307	–	UKF307	UKFS307	UKFL307	UKT307	UKC307
UKP308	–	UKF308	UKFS308	UKFL308	UKT308	UKC308
UKP309	–	UKF309	UKFS309	UKFL309	UKT309	UKC309
UKP310	–	UKF310	UKFS310	UKFL310	UKT310	UKC310
UKP311	–	UKF311	UKFS311	UKFL311	UKT311	UKC311
UKP312	–	UKF312	UKFS312	UKFL312	UKT312	UKC312
UKP313	UKIP313	UKF313	UKFS313	UKFL313	UKT313	UKC313
UKP315	UKIP315	UKF315	UKFS315	UKFL315	UKT315	UKC315
UKP316	UKIP316	UKF316	UKFS316	UKFL316	UKT316	UKC316
UKP317	UKIP317	UKF317	UKFS317	UKFL317	UKT317	UKC317
UKP318	UKIP318	UKF318	UKFS318	UKFL318	UKT318	UKC318
UKP319	UKIP319	UKF319	UKFS319	UKFL319	UKT319	UKC319
UKP320	UKIP320	UKF320	UKFS320	UKFL320	UKT320	UKC320
UKP322	UKIP322	UKF322	UKFS322	UKFL322	UKT322	UKC322
UKP324	UKIP324	UKF324	UKFS324	UKFL324	UKT324	UKC324
UKP326	UKIP326	UKF326	UKFS326	UKFL326	UKT326	UKC326
UKP328	UKIP328	UKF328	UKFS328	UKFL328	UKT328	UKC328

Table 1.4: Units with cast-iron covers

Pillow block unit		Square flange unit	Round flange unit with spigot joint	Two-bolt flange unit	Take-up unit
CUKP205C(CE)	–	CUKF205C(CE)	CUKFC205C(CE)	CUKFL205C(CE)	CUKT205C(CE)
CUKP206C(CE)	–	CUKF206C(CE)	CUKFC206C(CE)	CUKFL206C(CE)	CUKT206C(CE)
CUKP207C(CE)	–	CUKF207C(CE)	CUKFC207C(CE)	CUKFL207C(CE)	CUKT207C(CE)
CUKP208C(CE)	CUKIP208C(CE)	CUKF208C(CE)	CUKFC208C(CE)	CUKFL208C(CE)	CUKT208C(CE)
CUKP209C(CE)	CUKIP209C(CE)	CUKF209C(CE)	CUKFC209C(CE)	CUKFL209C(CE)	CUKT209C(CE)
CUKP210C(CE)	CUKIP210C(CE)	CUKF210C(CE)	CUKFC210C(CE)	CUKFL210C(CE)	CUKT210C(CE)
CUKP211C(CE)	CUKIP211C(CE)	CUKF211C(CE)	CUKFC211C(CE)	CUKFL211C(CE)	CUKT211C(CE)
CUKP212C(CE)	CUKIP212C(CE)	CUKF212C(CE)	CUKFC212C(CE)	CUKFL212C(CE)	CUKT212C(CE)
CUKP213C(CE)	CUKIP213C(CE)	CUKF213C(CE)	CUKFC213C(CE)	CUKFL213C(CE)	CUKT213C(CE)
CUKP215C(CE)	–	CUKF215C(CE)	CUKFC215C(CE)	CUKFL215C(CE)	CUKT215C(CE)
CUKP216C(CE)	–	CUKF216C(CE)	CUKFC216C(CE)	CUKFL216C(CE)	CUKT216C(CE)
CUKP217C(CE)	–	CUKF217C(CE)	CUKFC217C(CE)	CUKFL217C(CE)	CUKT217C(CE)
CUKP218C(CE)	–	CUKF218C(CE)	CUKFC218C(CE)	CUKFL218C(CE)	–

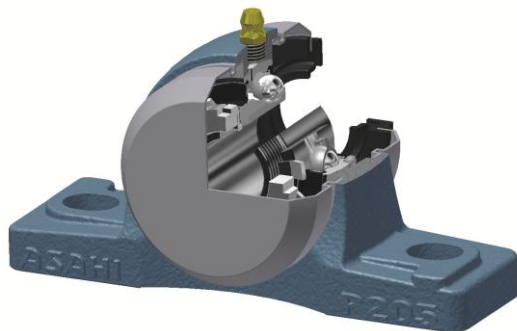
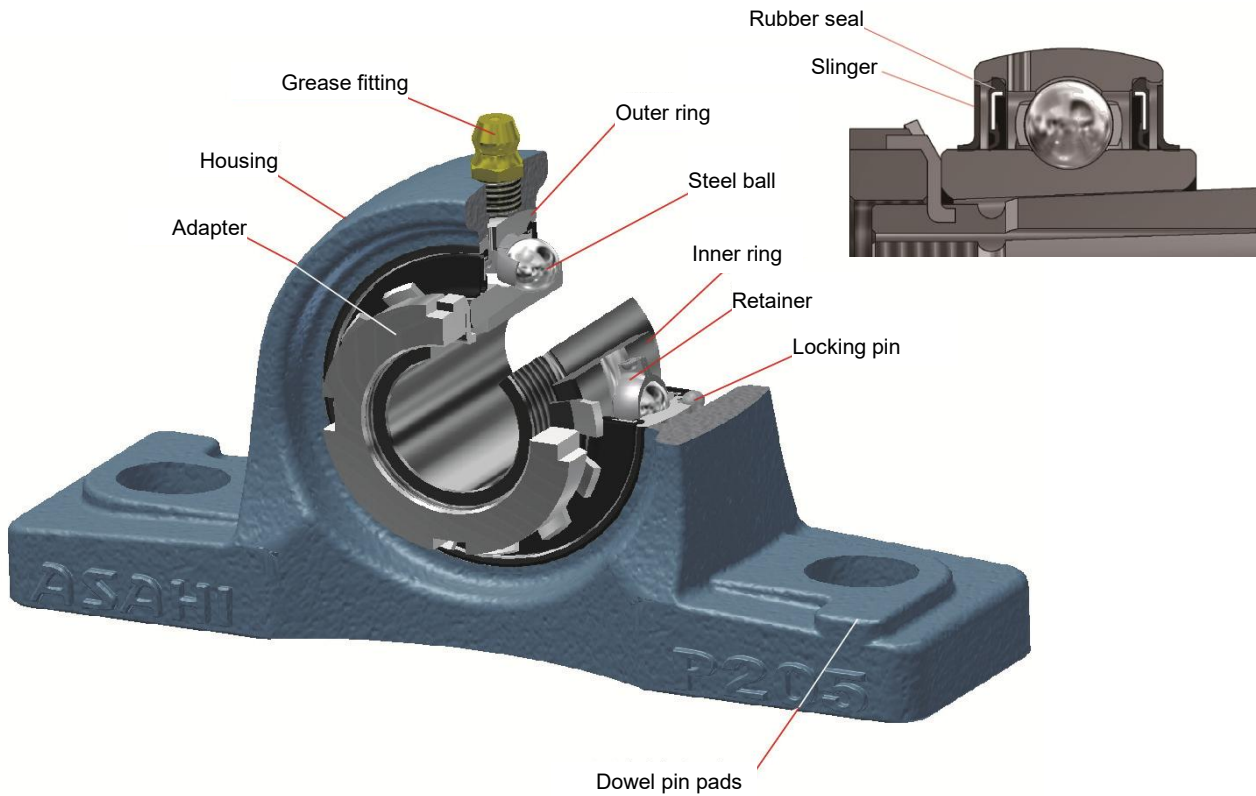
Table 1.5: Units with cast-iron covers

Pillow block unit		Square flange unit	Round flange unit with spigot joint	Two-bolt flange unit	Take-up unit
CUKP305C(CE)	-	CUKF305C(CE)	CUKFS305C(CE)	CUKFL305C(CE)	CUKT305C(CE)
CUKP306C(CE)	-	CUKF306C(CE)	CUKFS306C(CE)	CUKFL306C(CE)	CUKT306C(CE)
CUKP307C(CE)	-	CUKF307C(CE)	CUKFS307C(CE)	CUKFL307C(CE)	CUKT307C(CE)
CUKP308C(CE)	-	CUKF308C(CE)	CUKFS308C(CE)	CUKFL308C(CE)	CUKT308C(CE)
CUKP309C(CE)	-	CUKF309C(CE)	CUKFS309C(CE)	CUKFL309C(CE)	CUKT309C(CE)
CUKP310C(CE)	-	CUKF310C(CE)	CUKFS310C(CE)	CUKFL310C(CE)	CUKT310C(CE)
CUKP311C(CE)	-	CUKF311C(CE)	CUKFS311C(CE)	CUKFL311C(CE)	CUKT311C(CE)
CUKP312C(CE)	-	CUKF312C(CE)	CUKFS312C(CE)	CUKFL312C(CE)	CUKT312C(CE)
CUKP313C(CE)	CUKIP313C(CE)	CUKF313C(CE)	CUKFS313C(CE)	CUKFL313C(CE)	CUKT313C(CE)
CUKP315C(CE)	CUKIP315C(CE)	CUKF315C(CE)	CUKFS315C(CE)	CUKFL315C(CE)	CUKT315C(CE)
CUKP316C(CE)	CUKIP316C(CE)	CUKF316C(CE)	CUKFS316C(CE)	CUKFL316C(CE)	CUKT316C(CE)
CUKP317C(CE)	CUKIP317C(CE)	CUKF317C(CE)	CUKFS317C(CE)	CUKFL317C(CE)	CUKT317C(CE)
CUKP318C(CE)	CUKIP318C(CE)	CUKF318C(CE)	CUKFS318C(CE)	CUKFL318C(CE)	CUKT318C(CE)
CUKP319C(CE)	CUKIP319C(CE)	CUKF319C(CE)	CUKFS319C(CE)	CUKFL319C(CE)	CUKT319C(CE)
CUKP320C(CE)	CUKIP320C(CE)	CUKF320C(CE)	CUKFS320C(CE)	CUKFL320C(CE)	CUKT320C(CE)
CUKP322C(CE)	CUKIP322C(CE)	CUKF322C(CE)	CUKFS322C(CE)	CUKFL322C(CE)	CUKT322C(CE)
CUKP324C(CE)	CUKIP324C(CE)	CUKF324C(CE)	CUKFS324C(CE)	CUKFL324C(CE)	CUKT324C(CE)
CUKP326C(CE)	CUKIP326C(CE)	CUKF326C(CE)	CUKFS326C(CE)	CUKFL326C(CE)	CUKT326C(CE)
CUKP328C(CE)	CUKIP328C(CE)	CUKF328C(CE)	CUKFS328C(CE)	CUKFL328C(CE)	CUKT328C(CE)

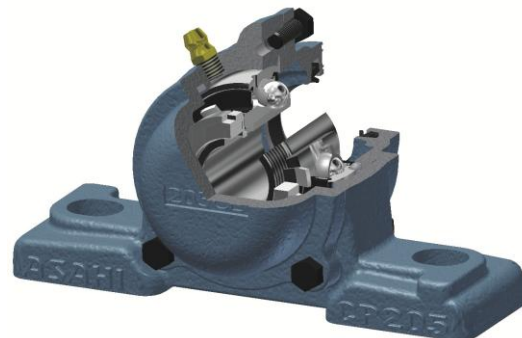
Table 1.6: Units with pressed steel covers

Pillow block unit		Square flange unit	Round flange unit with spigot joint	Two-bolt flange unit	Take-up unit
UKP205C(E)	-	UKF205C(E)	UKFC205C(E)	UKFL205C(E)	UKT205C(E)
UKP206C(E)	-	UKF206C(E)	UKFC206C(E)	UKFL206C(E)	UKT206C(E)
UKP207C(E)	-	UKF207C(E)	UKFC207C(E)	UKFL207C(E)	UKT207C(E)
UKP208C(E)	UKIP208C(E)	UKF208C(E)	UKFC208C(E)	UKFL208C(E)	UKT208C(E)
UKP209C(E)	UKIP209C(E)	UKF209C(E)	UKFC209C(E)	UKFL209C(E)	UKT209C(E)
UKP210C(E)	UKIP210C(E)	UKF210C(E)	UKFC210C(E)	UKFL210C(E)	UKT210C(E)
UKP211C(E)	UKIP211C(E)	UKF211C(E)	UKFC211C(E)	UKFL211C(E)	UKT211C(E)
UKP212C(E)	UKIP212C(E)	UKF212C(E)	UKFC212C(E)	UKFL212C(E)	UKT212C(E)
UKP213C(E)	UKIP213C(E)	UKF213C(E)	UKFC213C(E)	UKFL213C(E)	UKT213C(E)

2. Name of parts and functions



Insert bearing unit with pressed steel covers



Insert bearing unit with cast-iron covers

Name of parts	Functions
Grease fitting	A part to supply lubrication grease to enable the service lives of bearings to be extended by supplying grease at an interval suitable for the use environment.
Adapter	Secures the insert bearing and shaft. The adapter is composed of an adapter sleeve, nut and washer.
Dowel pin pads	Providing a pin hole at this position makes it easy to position the insert bearing unit when replacing bearings and is convenient for reinforcing the mounting bolts.
Locking pin	Prevents the outer ring from drag turning and the section between the bearing and housing from being worn.
Rubber seal	Prevents dust and moisture from intruding because it is secured to the outer ring and the lip part comes in contact with the inner ring.
Slinger	Prevents dust from intruding by centrifugal force because it is secured to the inner ring and rotates together with the inner ring.

3. Selection of shafts

In case of taper hole type bearings (with adapters), the bearings are mounted using adapters; therefore, even if the shaft dimensional tolerance is larger, those bearings may be used without any problem and the values shown in Table 3.1 are considered appropriate.

Table 3.1: Shaft dimensional tolerance

Shaft diameter (mm)		Shaft dimensional tolerance (μm)
Over	Or less	h9
18	30	0 to -52
30	50	0 to -62
50	80	0 to -74
80	120	0 to -87
120	180	0 to -100

4. Attaching method

A video of mounting procedures is available on our homepage.
Please refer to it. Technical video "Insert bearing unit UK type mounting method"
(<https://www.asahiseiko.co.jp/product/technical/movie.html>)



Photo 4.1: Adapter
(Adapter sleeve, washer and nut from the left)

- 1) Slide the adapter sleeve onto the shaft and bring it to the designated position.

In this case, inserting the tip of a screwdriver or a similar object in the break of the adapter sleeve to expand it enables you to slide the adapter onto the shaft easily. (Fig. 4.1)

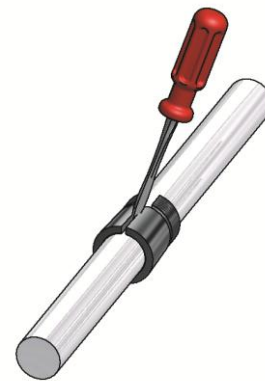


Fig. 4.1

- 2) Slide the insert bearing unit onto the shaft and press-fit them with each other so that the bearing inside diameter surface comes in close contact with the tapered outer surface of the adapter sleeve. (Fig. 4.2)

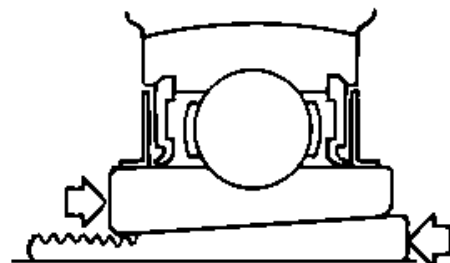


Fig. 4.2

- 3) Put the washer in the adapter sleeve and then tighten the nut by hand.
- 4) Mount the insert bearing unit on the machine base temporarily. (Photo. 4.2)

At this time, for flange type insert bearing units or take-up type insert bearing units, to prevent abnormal axial loads from being applied when mounting the insert bearing unit on the machine base, position the bearing correctly before mounting. (Tighten permanently.)

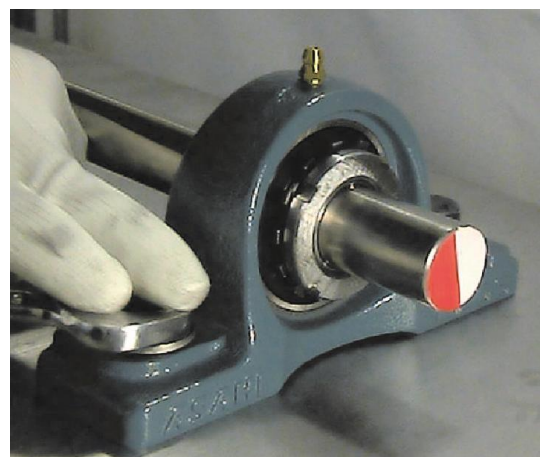


Photo 4.2

- 5) Slightly tap the side of the sleeve diameter at the large end to increase the contact degree of sleeve and inner ring. (Fig. 4.3)

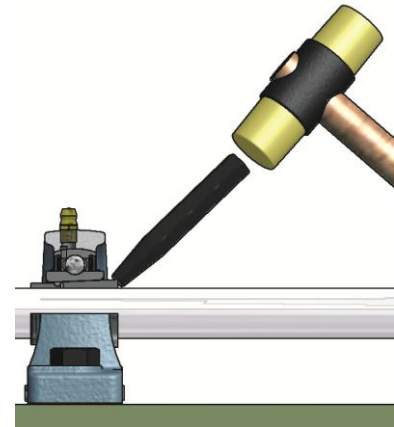


Fig. 4.3

- 6) Tighten the nut by using a hook spanner torque wrench with tightening torque indicated in the appendix 1 and 2. The following Photos 4.4 and 4.5 show a hook spanner torque wrench and visual instruction when tightening, respectively.

A hook spanner torque wrench cannot be procured depending on some sizes of bearings. In such cases, a nut should be tightened with a help of tightening angle as a guide for proper mounting (recommended tightening angles are described in the appendix 3). When hitting a jig or screwdriver to tighten the nut by using a hammer or the like, do it little by little and keep the nut free from excessive loads to avoid damage or breakage of the nut.

In addition, tightening the nut excessively may cause the clearance of the bearing inside to be reduced, resulting in heat generation and seizing. On the contrary, insufficient tightening may cause slippage between the shaft and sleeve or between the sleeve and inner ring, resulting in wear, heat generation and seizing of slippage surface. Therefore, use extra caution with regard to the above-mentioned points.



Photo 4.4

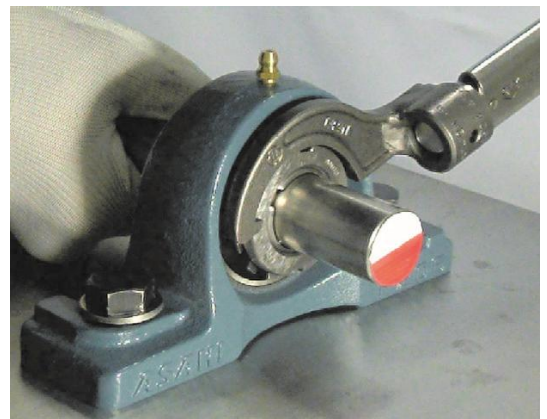


Photo 4.5

- 7) Prevent the nut from being loosened with a washer. Bend the tooth of the washer matching the notched part of the nut toward the notched side. If the notched part of nut does not match with a washer tooth, turn the nut clockwise to match. (Photo 4.6)

- 8) For pillow block insert bearing units, after loosening the mounting bolt to release the axial pre-load of bearing, tighten it permanently.

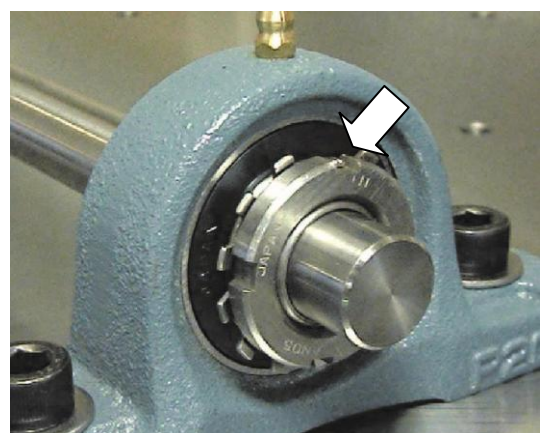


Photo 4.6

- Remarks:** 1. For the shaft on which the insert bearing unit is mounted, use one that is not bent and does not have burrs.
2. The machine base on which the insert bearing unit is mounted must have high rigidity and high flatness to prevent the housing from being deformed.
(Excluding cartridge type and take-up type models)

Inside diameter number	Flatness
13 or less (shaft diameter: $\Phi 60$ or less)	0.1mm or less
15 or higher (shaft diameter: $\Phi 65$ or more)	0.15mm or less

3. **If strong impact is applied to the insert bearing unit, it is possible that the slingers on both sides may move and come in contact with the seal. In this case, the rotation torque becomes larger, which may cause abnormal heating and noise to be generated if the insert bearing unit is used in such condition. After mounting the insert bearing unit, applying strong impact when mounting transmission system parts such as pulleys, sprockets, etc. on the shaft may cause the same phenomenon, so extra caution should be taken to prevent strong impact from being applied to the insert bearing unit.**
4. The values shown in Table 4.1 are considered appropriate for the tightening torque of housing mounting bolts.
5. Use washers to prevent the housing from being damaged when fixing the bearing unit on the mounting base with bolts.

Table 4.1: Tightening torque of housing mounting bolts (reference values)

Bolt nominal number	Torque (N·m)	Bolt nominal number	Torque (N·m)	Bolt nominal number	Torque (N·m)
M5	1.7 to 2.7	M14	38 to 61	M24	196 to 319
M6	2.8 to 4.5	M16	59 to 95	M27	294 to 466
M8	6.9 to 11	M18	81 to 130	M30	397 to 632
M10	14 to 22	M20	118 to 186	M33	539 to 862
M12	24 to 38	M22	157 to 250	M36	691 to 1107

5. Installation the covers

- 1) Attach the covers after finishing mounting the insert bearing unit.
- 2) Apply an amount of grease corresponding to 1/3 to 1/2 of the volume of the space inside the covers to that space as shown in Figs. 5.1 and 5.2.

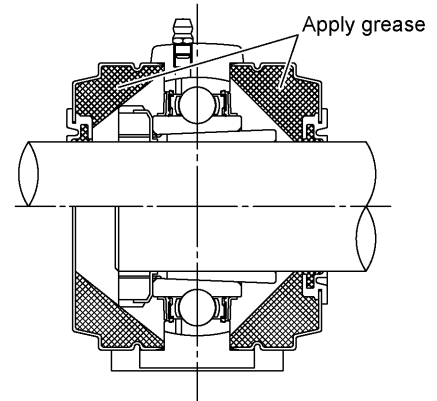


Fig. 5.1: For pressed steel covers

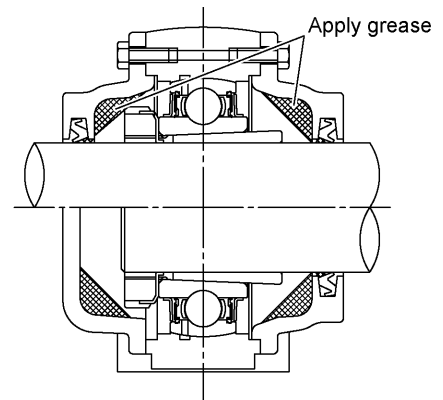


Fig. 5.2: For cast-iron covers

- 3) Press-fit the spigot joint of the covers into the spigot joint of the housing.
- 4) For cast-iron covers, secure it with hexagon bolts.
- 5) For pressed steel covers, attach it by tapping the side of the circumference with a wood hammer or plastic hammer as shown in Fig. 5.3.

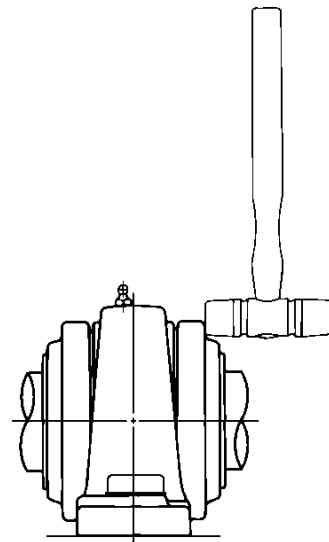


Fig. 5.3: Attaching pressed steel covers

- Remarks:**
1. For a rubber-sealed covers to be located inside, slide it onto the shaft before mounting it on the insert bearing unit main body.
 2. To maximize dust resistance and humidity resistance, also apply grease to the spigot joint of the housing and the shaft surface where the lip part of the rubber seal comes in contact.

6. Inspection

After finishing mounting the insert bearing unit, inspect whether the mounting conditions are appropriate or not.

First, turn the shaft by hand to check that the insert bearing unit rotates smoothly. If no problem is observed, rotate it by electric power to inspect for noise or temperature increases. **If the shaft does not rotate smoothly by hand (generation of excessive torque), incorrect insert bearing unit mounting procedures may have been performed, causing the adapter to be tightened excessively and abnormal axial loads to be applied. In such case, the insert bearing unit should be mounted again.**

6.1 Noise

Touch the housing with a listening rod or screwdriver and listen for noises during operation to check for abnormalities. (Photo 6.1)

For normal operation conditions, a smooth rotation noise is generated, but if there is an abnormality in mounting, an abnormal noise may be generated.



Photo 6.1: Checking the rotation noise with a listening rod

6.2 Rise of temperature

Measure the temperature on the outer circumferences of the bearing outer ring and housing. (Photos 6.2 and 6.3)

The rise of temperature reaches saturation 2 to 3 hours after start of operation and the insert bearing unit reaches to the regular conditions in general; however, if there are abnormalities in mounting, etc., the temperature will increase excessively, which will prevent the insert bearing unit from reaching the regular conditions. (For temperature measurement of cartridge type bearings, measure at the side of housing.)



Photo 6.2: Temperature measurement (contact type)

Inspect the above items during commissioning and start operating the insert bearing unit fully after checking that there is no abnormality.

Further, it is recommended that inspections also be performed periodically at the predetermined interval during operation to detect failures in the bearings at an early stage.

In addition, monitoring to check that there are no changes in noise or increases in temperature by comparing the differences between the results of periodic inspections and other inspections is an effective measure for preventing accidents and damage to machinery.

For the bearing failure and its preventive measures during the test run and the periodical inspection of the insert bearing units, please refer to our General Catalogue and/or access ASAHI WEBSITE to 'Inspection and Failure'.



Photo 6.3: Temperature measurement (non-contact type)

7. Lubrication

7.1 Lubrication grease

This insert bearing has been factory-lubricated with the grease shown in Table 7.1. Therefore, it is recommended that the same grease as the factory-lubricated grease be used for replenishment.

However, since "Alvania Grease S3" has been discontinued in general market, it is recommended to use the successor product, "Shell Gadus S2 V125J 3(S)" for grease replenishment.

Table 7.1: Properties of standard factory-lubricated grease

Type	Auxiliary mark	Product name	Manufacturer name	NLGI No.	Soap-based grease	Drop point (°C)	Usable temperature point (°C)	Remarks
For general use	—	Alvania Grease S Shell Gadus S2 V125J3(S)	Shell Lubricants Japan	3	Li	182	-20 to +135	—
For heat-resistant use	HR4 HR5	Super Lube	Yuken Kogyo	3	Ca-mixed	300 or more	-20 to +200	—
For low-temperature-resistant use	CR2A	AeroShell Grease 7	Shell Lubricants Japan	—	(Microgel)	Approx. 250	-70 to +150	Equivalent with the level between NLGI No. 1 and 2
For food machines use	FD HR20	CLARION® FOOD MACHINERYHTEP GREASE, NO.2	CITGO Petroleum Corporation	2	Al-mixed	260	-12 to +163	—

- Remarks:**
1. The usable temperature ranges in the above table are the ranges for the grease. The usable temperature ranges for the insert bearing unit are as follows:
 2. For heat-resistant specifications, the bearing radial inside clearance has been designed to be larger originally; therefore, clearance marks such as CT3, CT4, etc. are added as auxiliary marks.

Type	Auxiliary mark	Range of operating temperature point (°C)
For general use	—	-15 to +100
For heat-resistant use	HR4	Normal temperature to +120
	HR5	Normal temperature to +200
	HR23	Normal temperature to +230
For low-temperature-resistant use	CR2A	-40 to +100
For food machines use	FD	-10 to +100
	HR20 (heat-resistant)	-10 to +150

* HR23 specifications

For HR23 specifications, the insert bearing chamber has been filled with fluorinated high-quality heat-resistant grease and lubrication-free insert bearing units are provided as standard.

The lubrication-free type shows all insert bearing units having specifications not equipped with a grease filling mechanism, such as specifications using completely-lubrication-free type housings whose housing nominal number includes an auxiliary mark "G00", specifications whose housing grease fitting hole is blocked with "KU" and "KA" steel plugs, etc. (Figs. 7.1 to 7.3)

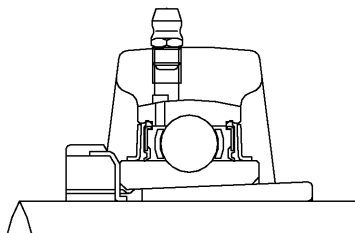


Fig. 7.1: Lubrication type insert bearing unit
Example of nominal number: UKP205

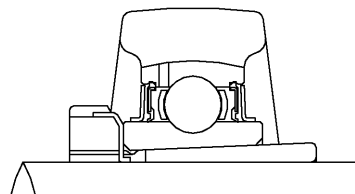


Fig. 7.2: Lubrication-free type insert bearing unit (G00 specifications)
Example of nominal number: UKP205G00

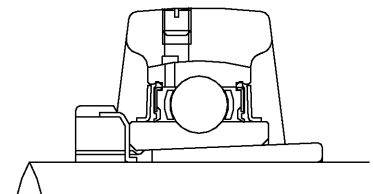


Fig. 7.3: Lubrication-free type insert bearing unit (Steel-plug filled specifications)
Example of nominal number: UKP205/KU

7.2 Grease replenishing method

Replenish grease using a grease gun (Photo 7.1) from the grease fitting mounted on the housing. Be careful to prevent dust or other foreign materials from getting into the grease to be replenished. If the grease fitting is contaminated, wipe it off before replenishing.



Photo 7.1: Grease gun

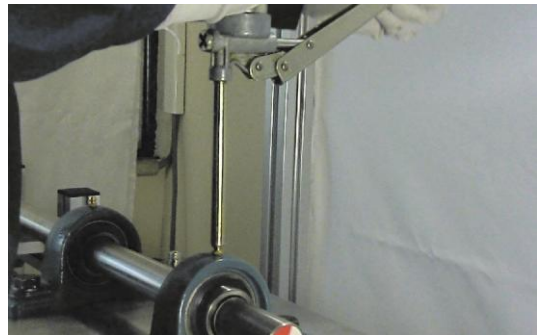


Photo 7.2: Example of filling with a grease gun

Grease is injected into the inside of the bearing from the grease hole of the outer ring through the grease groove provided on the circumference of the spherical bearing seat from the grease fitting replenishing port. Injected grease is stirred by the rotation of the bearing and mixed with previously-injected grease in the bearing and excess grease is discharged from the section between the slinger and outer ring through the rubber seal lip part. (Photo 7.3, Fig. 7.4)

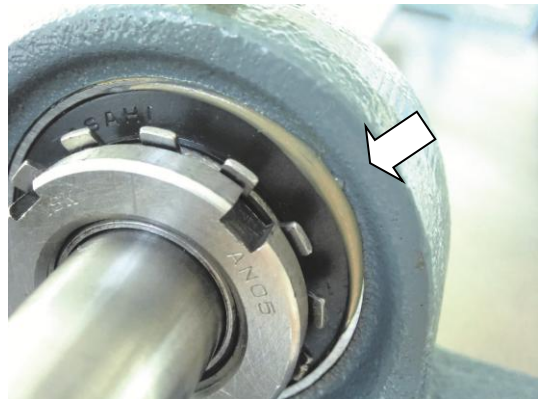


Photo 7.3: Normal grease discharging conditions from inside the bearing

Re-lubrication should be performed during operation to cause the grease to be spread into every corner of the inside of the bearing. However, if it is difficult to replenish grease during operation because replenishment during operation at high speed may cause dangerous accidents, after replenishing the grease while operation is stopped, continue to replenish while performing intermittent operation to cause the grease to be mixed by manual operation or regular operation. **Replenishing with a large amount of grease at one time while operation is stopped may cause the rubber seal to be peeled by internal pressure acting on the rubber seals on both sides from the grease and the seals may come in contact with the slinger. In this case, the rotation torque will increase, which may cause abnormal heating conditions to be generated if the insert bearing unit is operated without correcting the situation.**

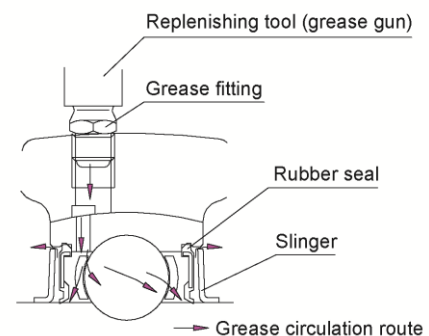


Fig. 7.4: Grease circulation route

*** Low torque specifications (auxiliary: TAA)**

Low-torque specifications are exhibited as “TAA” in which non-contact type rubber seals (Fig. 7.5) are used, Alvania Grease S1 (NLGI No. 1) is used as the factory-lubricated grease. The pre-lubricated grease amount is designed to be 1/3 of standard amount; note that if grease is replenished, the amount of inside grease increases.

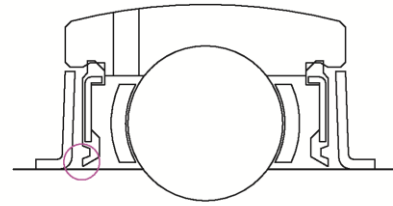


Fig. 7.5: Non-contact seal

7.3 Grease replenishment amount

The values shown in Table 7.2 are considered appropriate for grease replenishment amounts. If it is difficult to replenish grease quantitatively, replenish grease until deteriorated grease comes out from the clearance between the outer ring and slinger as a reference of the replenishment amount. (Photo 7.3)

Table 7.2: Grease replenishment amount

Unit: g

Bearing nominal number	Grease replenishment amount	Bearing nominal number	Grease replenishment amount	Bearing nominal number	Grease replenishment amount
UK205	1.4	UKX05	2.2	UK305	3
UK206	2.2	UKX06	3.2	UK306	3.8
UK207	3.2	UKX07	3.9	UK307	5.7
UK208	3.9	UKX08	5	UK308	7.8
UK209	5	UKX09	5.4	UK309	9.4
UK210	5.4	UKX10	7.4	UK310	12.8
UK211	7.4	UKX11	10	UK311	16.4
UK212	10	UKX12	11.8	UK312	21
UK213	11.8	UKX13	13.6	UK313	26
UK215	15.2	UKX15	18.8	UK315	38
UK216	18.8	UKX16	23	UK316	41
UK217	23	UKX17	28	UK317	52
UK218	28	UKX18	33.5	UK318	62
—	—	—	—	UK319	73
—	—	UKX20	46.5	UK320	92
—	—	—	—	UK322	133
—	—	—	—	UK324	158
—	—	—	—	UK326	194
—	—	—	—	UK328	246

(Note) The replenishment amount shows the amount per one shot.

* For insert bearing units with a cover, the grease amount in the covers increases by replenishment of grease, but this does not interfere with operation. It is recommended that the covers be removed during overhaul (once or twice per year when used at normal temperature), the grease in the covers be removed, and then replenishment with new grease be performed.

7.4 Grease replenishment interval

The recommended grease replenishment interval is shown in Table 7.3.

Table 7.3: Grease replenishment interval

Bearing operation temperature (°C)	Environment conditions		
	Very clean	Very dirty	Very dirty, very humid, much splashing
50 or less	3 years	6 months	3 months
70	1 year	2 months	1 month
100	2.5 months	2 weeks	1 week
120	1.5 months	1 week	3 days
150	2 weeks	3 days	Every day

8. Replacement of bearing

When replacing the insert bearing unit with a new one, if either the bearing or housing is slightly damaged, replacement of either one is possible instead of replacing both ones.

When assembling the bearing into the housing, position the bearing outer ring at right angles to the bearing seat, and press-fit it into the notched part of housing, and then turn the bearing.

(Photo 8.1)

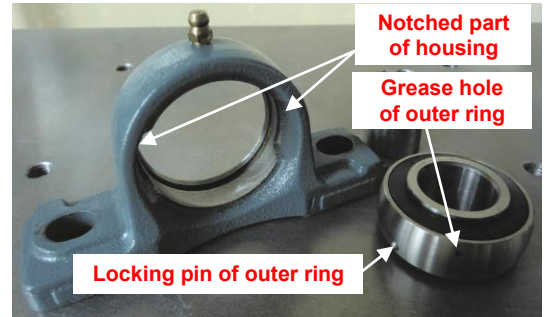


Photo 8.1

At this time, ensure that the outer ring locking pin is inserted into the notched part of housing. **Note that forcibly pressing the locking pin in the bearing seat other than at the notched part may cause outer ring cranking.** (Photo 8.2)

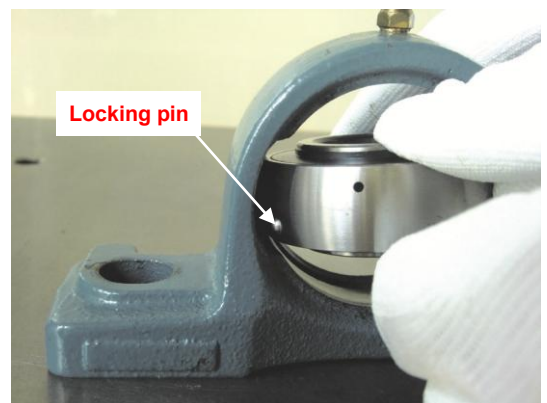


Photo 8.2

Further, when replenishing grease, in order to help the grease spread into every corner of the inside of the bearing, it is recommended to assemble the bearing so that the grease hole of outer ring is located near the grease fitting of housing. (Photo 8.3)

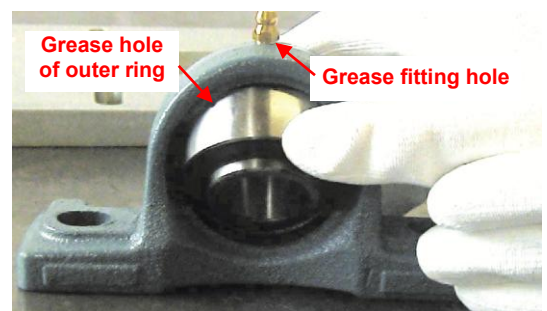


Photo 8.3

Attachment : Recommended torque value for adapter

- Remarks:**
1. If the temperature of the bearing increases to over 50°C and conditions associated with a variety of abnormalities such as vibration or impact occur, it is necessary to set the tightening torque to values near the maximum.
 2. If the bearing radial clearance becomes negative by tightening the nut, bearings with appropriate initial clearance must be selected.
 3. Value indicated below are the value in condition of a bearing with no any load.

1) UK200+H2300X

Bearing nominal number	For radial load Cr / 4			For radial load Cr / 13			Bearing dynamic rated loads Cr (kN)
	Tightening torque (N·m)		Reduced amount in radial clearance (µm)	Tightening torque (N·m)		Reduced amount in radial clearance (µm)	
	Min	Max		Min	Max		
UK205+H2305X	20	40	5 to 10	15	30	4 to 8	14
UK206+H2306X	30	60	7 to 14	20	40	4 to 8	19.6
UK207+H2307X	50	100	8 to 16	30	60	5 to 10	25.9
UK208+H2308X	60	120	8 to 16	40	80	6 to 12	29.3
UK209+H2309X	60	120	9 to 18	40	80	6 to 12	33
UK210+H2310X	75	150	10 to 20	50	100	7 to 14	35.5
UK211+H2311X	105	210	11 to 22	70	140	7 to 14	43
UK212+H2312X	145	290	12 to 24	100	200	8 to 16	52.5
UK213+H2313X	165	330	13 to 26	110	220	9 to 18	57.5
UK215+H2315X	185	370	15 to 30	130	260	10 to 20	66
UK216+H2316X	235	470	15 to 30	160	320	10 to 20	72.5
UK217+H2317X	300	600	16 to 32	205	410	11 to 22	83.5
UK218+H2318X	360	720	17 to 34	245	490	12 to 24	95.5

2) UKX00+H2300X

Bearing nominal number	For radial load Cr / 4			For radial load Cr / 13			Bearing dynamic rated loads Cr (kN)
	Tightening torque (N·m)		Reduced amount in radial clearance (µm)	Tightening torque (N·m)		Reduced amount in radial clearance (µm)	
	Min	Max		Min	Max		
UKX05+H2305X	35	70	6 to 12	20	40	4 to 8	19.6
UKX06+H2306X	50	100	7 to 14	35	70	5 to 10	25.9
UKX07+H2307X	60	120	8 to 16	40	80	5 to 10	29.3
UKX08+H2308X	75	150	9 to 18	50	100	6 to 12	33
UKX09+H2309X	90	180	10 to 20	60	120	6 to 12	35.5
UKX10+H2310X	120	240	11 to 22	80	160	7 to 14	43
UKX11+H2311X	155	310	12 to 24	105	210	8 to 16	52.5
UKX12+H2312X	180	360	13 to 26	120	240	8 to 16	57.5
UKX13+H2313X	240	480	14 to 28	165	330	9 to 18	62
UKX15+H2315X	280	560	15 to 30	195	390	10 to 20	72.5
UKX16+H2316X	340	670	16 to 32	230	460	11 to 22	83.5
UKX17+H2317X	420	840	17 to 34	280	560	11 to 22	95.5
UKX18+H2318X	480	960	18 to 36	320	650	12 to 24	109
UKX20+H2320X	680	1350	20 to 40	460	910	13 to 26	134

3) UK300+H2300X

Bearing nominal number	For radial load Cr / 4			For radial load Cr / 13			Bearing dynamic rated loads Cr (kN)
	Tightening torque (N•m)		Reduced amount in radial clearance (µm)	Tightening torque (N•m)		Reduced amount in radial clearance (µm)	
	Min	Max		Min	Max		
UK305+H2305X	30	60	6 to 12	20	40	4 to 8	21.3
UK306+H2306X	45	90	7 to 14	30	60	5 to 10	26.8
UK307+H2307X	60	120	8 to 16	40	80	5 to 10	33.5
UK308+H2308X	80	160	9 to 18	55	110	6 to 12	40.5
UK309+H2309X	110	220	10 to 20	75	150	7 to 14	51.5
UK310+H2310X	155	300	11 to 22	100	200	7 to 14	61.5
UK311+H2311X	190	370	12 to 24	125	250	8 to 16	71.5
UK312+H2312X	230	450	13 to 26	155	310	9 to 18	81.5
UK313+H2313X	270	530	14 to 28	180	360	10 to 20	92.5
UK315+H2315X	380	740	16 to 32	255	510	11 to 22	114
UK316+H2316X	450	880	17 to 34	300	600	11 to 22	123
UK317+H2317X	530	1000	18 to 36	360	710	12 to 24	132
UK318+H2318X	620	1200	18 to 36	410	820	12 to 24	143
UK319+H2319X	720	1400	19 to 38	480	960	13 to 26	153
UK320+H2320X	880	1700	20 to 40	590	1200	14 to 28	173
UK322+H2322X	1200	2400	22 to 44	820	1650	15 to 30	205
UK324+H2324X	1450	2850	22 to 44	1000	2000	15 to 30	207
UK326+H2326X	1800	3550	24 to 48	1250	2450	16 to 32	229
UK328+H2328X	2150	4200	25 to 50	1450	2950	17 to 34	255

Tightening angle for an adapter nut

Bearing nominal number	Tightening angle for an adapter nut	Bearing nominal number	Tightening angle for an adapter nut	
UK205	60° ~90°	UK305	60° ~90°	
UK206		UK306		
UK207		UK307		
UK208		UK308		
UK209		UK309		
UK210		UK310		
UK211		90° ~120°		UK311
UK212				UK312
UK213				UK313
UK215				UK315
UK216	90° ~120°	UK316	120° ~150°	
UK217		UK317		
UK218		UK318		
		UK319		
		UK320		
		UK322		
		UK324		
	UK326			
	UK328			

- Remarks:**
1. In time of radial clearance value of a bearing becoming negative by nut tightening, a bearing having suitable initial clearance must be selected.
 2. A Starting point for rotation angle of a nut is the position where a nut is firmly tightened by hand after sleeve and inner ring closely contacted (details are described in the "5)" of the chapter "4. Attaching method").
 3. Value indicated above are the value in condition of a bearing with no any load.

ASAHI

Dec.2025