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# INSERT BEARING UNITS






# Insert Bearing Units (contents)

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<b>Insert bearings for units</b>	
<b>Parts and accessories</b>	Parts and accessories
<b>Example of application</b>	Example of application
<b>Supplementary table</b>	Supplementary table



# **INSERT BEARING UNITS**



# Publication of New **Koyo** Insert Bearing Units Catalog

In recent years, needs in industrial world for machineries and equipment highly developed in all aspects have been increased more than ever. Therefore, high technology covering from superior technical advantages including longer service life and maintenance free to higher reliability even under extraordinary conditions such as high and low temperatures and rotation at a high speed is required for insert bearing units.

This catalog completely includes results of technical examinations and abundant research and development.

In the first half of this catalog, technical descriptions referring from the selection to the handling of Koyo Insert Bearing Units are mentioned, while a lot of dimensional tables with types and dimensions are included in the last half. Varied technical information is provided at the last of this catalog. We trust this catalog will help you to select and use Koyo Insert Bearing Units appropriately.

JTEKT keeps trying to get ideas from the market, step up persistent efforts of technical research and development, and provide the best technologies, quality, and services.

JTEKT is grateful for your patronage and look forward to continuing to serve you in the future.

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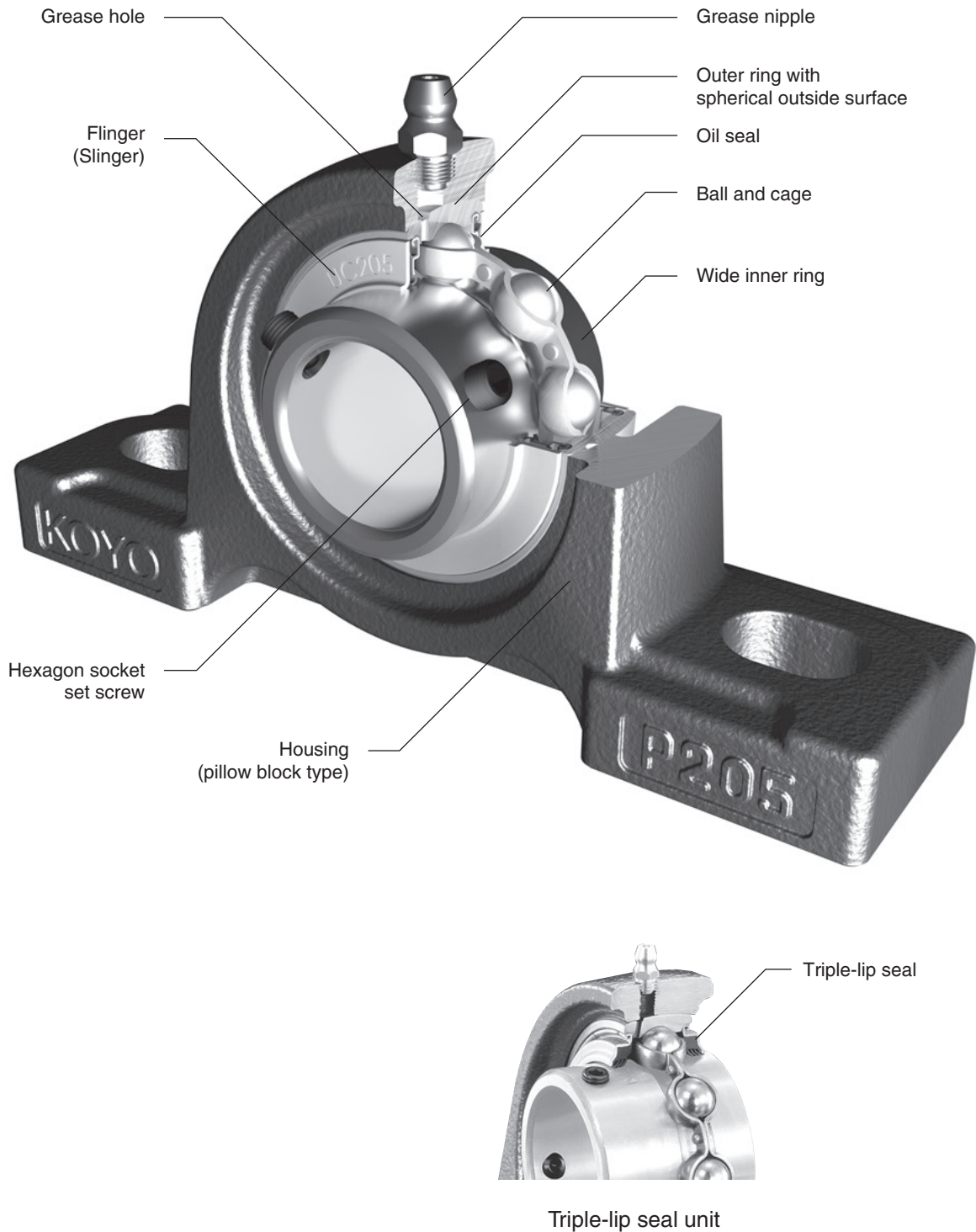


# 1 Structure and features

Koyo Insert Bearing Units are highly precise bearing units comprising grease sealed deep groove ball bearings and housings in various forms. The insert bearing units allow easy handling and installation by followings: direct installation to machines and equipment with some bolts, self-aligning, and greasing.

## 1.1 Structure

Koyo Insert Bearing Unit comprises the insert bearing for unit with spherical outside surface and the housing with spherical bearing seat (Fig. 1.1).



**Fig. 1.1 Structure of insert bearing units (representative example)**

## 1.2 Features

Koyo Insert Bearing Units, having many features, are available in various types. Select the bearing unit optimal for your purpose among the types with unique features.

### 1 Supreme load capacity and accuracy

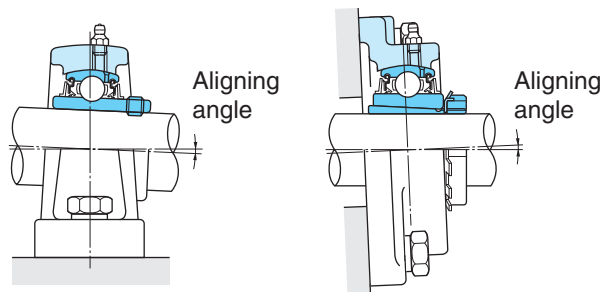
Koyo Insert Bearings for unit, featuring the internal structure identical to single row deep groove ball bearings, bear axial load in both directions, as well as great radial load. The tolerance is equal to that of a standard bearing. They feature high rotation accuracy and high speed rotation.

### 2 Rational self aligning mechanism and optimal fit

Koyo Insert Bearing Units have self aligning mechanism by the spherical outside surface bearing and the housing with and spherical bearing seat. Because of this mechanism, deviation of the shaft center caused by warp of the shaft flexion of axis (shaft) or offset is automatically adjusted to eliminate abnormal load onto the bearing, leading to guarantee of original service life of the bearing.

Since the spherical outside surface of the bearing is ground and the spherical bearing seat of the housing is machined by a boring machine with high accuracy, optimal fitting of the bearing and the housing can be obtained, as well as superior aligning performance.

The allowable aligning angle of standard insert bearing unit is 3°, while that of insert bearing unit with cover is 1°.



**Fig. 1.2 Allowable aligning angle of insert bearing unit**

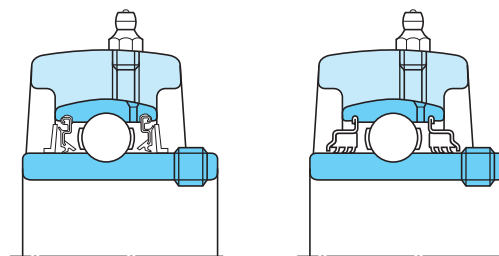
### 3 Superior sealing performance

Koyo Insert Bearing Units can prevent leak of grease in the bearing to the outside, as well as ingress of dusts and water from the outside into the inside of the bearing by the synergetic effect of the oil seal installed to the outer ring of the bearing and the flinger (slinger) installed to the inner ring of the bearing.

The oil seal is made of synthetic rubber featuring supreme oil proof. Its lip contacts with the inner ring of the bearing with optimal tension (radial load of lip).

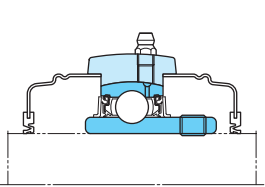
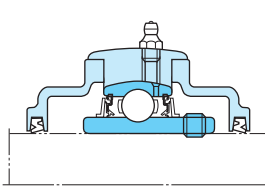
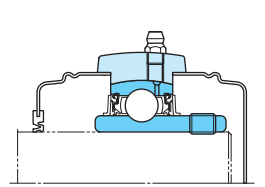
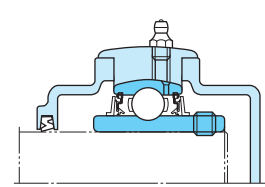
When using in environments with many dusts or high humidity, the triple-lip seal unit (supplementary code : L3) or the unit with cover (supplementary code : C, CD, FC, FD) is optimal.

The triple-lip seal unit or unit with cover strongly prevents ingress of water and dusts from the outside, and guarantees a longer service life of the bearing.



**Standard type**

**Triple-lip seal type**  
(Supplementary code : L3)

	Pressed steel cover type	Cast iron cover type
Open ends type	 (Supplementary code : C)	 (Supplementary code : C, FC)
Closed end type	 (Supplementary code : CD)	 (Supplementary code : CD, FCD)

**Unit with cover**

**Fig. 1.3 Sealing mechanism of insert bearing unit**

#### 4 Simple greasing

Because of the grease nipple on the housing of Koyo Insert Bearing Unit, fresh grease can be easily supplied to the bearing being operated. If the bearing is used in severe environments that are exposed to many dusts or high humidity or that is high temperature, supply fresh grease at a regular interval. Then, the lubrication status of the bearing is kept to the best, and the service life of the bearing can be extended.

When greasing to the bearing unit with the centralized lubricating system, use the socket for lubricating installed to the grease nipple tapped hole on the housing.

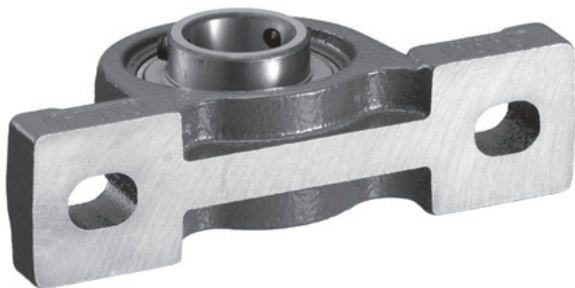
#### 5 Highly rigid and strong housing

Koyo Insert Bearing Unit housing is designed so that it is optimal for reduction of deformation due to centralization of stress and load. After the selection of good material, it is produced by highly advanced casting technique or press working technique.

Since any abnormal load onto the bearing is eliminated by the highly rigid and strong housing, the service life of the bearing can be extended. Baking finish on the surface of the housing keeps good surface status for a long time.

Koyo original solid base pillow block housings seat better and produce a more stable mounting configuration that significantly reduces vibration.

The support ribs have been eliminated to make more room for mounting bolts and washers, yet these housings are more than 30% stronger than before while also reducing housing weight. The new housing downward destruction strength means that the inserts break before the housings.



#### 6 Simple installation and handling

Koyo Insert Bearing Units of many types can be installed to any of machine or equipment with some bolts, and can be used in the status as it is. Clearance fit is used for the inner ring of bearing and the shaft, as a rule.

Therefore, Koyo Insert Bearing Unit does not need any work such as filling of lubricant or installation of sealing unit required for standard bearings. As a result, the total of manpower can be drastically reduced.

As for the fixing method of bearing to shaft, three methods, (1) set screw mounted to the cylindrical bore wide inner ring, (2) adapter installed to the tapered bore inner ring, and (3) eccentric locking collar installed to the cylindrical bore wide inner ring are available.

Fixing of bearing to shaft can be executed easily and securely by adopting any of these method.

#### 7 Various types

Koyo Insert Bearing Units are available in various types.

Reliability of machine or equipment used together with the units can be improved by selecting and using bearing units optimal for the purpose and operating conditions.

## 2 Unit number

## 2 Unit number

Nominal number of Koyo Insert Bearing Unit conform to JIS B1557, and comprise the bearing unit type number (comprising bearing type code and housing type code),

diameter series code, bore dia. number, supplementary code, and special code.

**UC P 207 J L3**

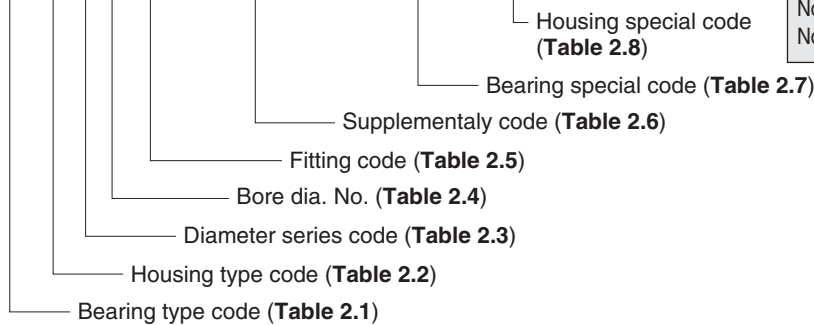
Nominal bearing number	UC207L3
Nominal housing number	P207J

**UK P 209 J CD + H309X**

Nominal bearing number	UK209+H309X
Nominal housing number	P209JE1
Nominal pressed steel cover number	(Through type) C-9x40 (Closed type) D-9

**UC F 209 J L3 FD D1K2 G6 A1**

Nominal bearing number	UC209L3D1K2G6
Nominal housing number	F209JA1E3
Nominal cast iron cover number	(Closed type) 209FD



[Remark] The above number shows an example of nominal number structure. It may depend on the bearing unit type.

**Table 2.1 Bearing type code**

Bearing type code	Details
UC	Cylindrical bore, with set screws
UC-S6	Cylindrical bore, with set screws (stainless-series)
UK	Tapered bore (for adapter)
NA	Cylindrical bore, with eccentric locking collar
SB	Cylindrical bore, with set screws (light duty type)
SU	Cylindrical bore, with set screws ("compact" series)
SA	Cylindrical bore, with eccentric locking collar (light duty type)
SU-S6	Cylindrical bore, with set screws (stainless-series)
ER	Cylindrical bore, with set screws, cylindrical outer diameter, Lubricating mechanism
RB	Cylindrical bore, with set screws, cylindrical outer diameter

**Table 2.2 Housing type code (continued)**

Housing type code	Details
SP	Pillow block type (stainless-series)
PP	Cast steel pillow block type
F	Square-flanged type
FL	Rhombic-flanged type
FA	Adjustable rhombic-flanged type
FB	Three-bolt flange type
FC	Round-flanged type with spigot joint
FS	Square-flanged type
FL	Rhombic-flanged type ("compact" series)
SF	Square-flanged type (stainless-series)
SFC	Round-flanged type with spigot joint (stainless-series)
SFL	Rhombic-flanged type (stainless-series)
PF	Pressed steel round-flanged type
PFL	Pressed steel rhombic-flanged type
PFT	Pressed steel triangle-flanged type
T	Take-up type
ST	Take-up type (stainless-series)
TH	Section steel frame take-up type
TL	Light channel steel frame take-up type
TU	Channel steel frame take-up type
PTH	Pressed steel frame take-up type
NPTH	Pressed steel frame take-up type
C	Cartridge type
HA	Hanger type
RU-M	Rubber clamping ring type

**Table 2.2 Housing type code**

Housing type code	Details
P	Pillow block type
IP	Thick section pillow block type
PA	Tapped-base pillow block type
PH	Higher centerheight pillow block type
LP	Light duty pillow block type
P	Pillow block type ("compact" series)
SP	Pillow block type (stainless-series)
SPA	Tapped-base pillow (stainless-series)

**Table 2.3 Diameter series code**

Diameter series code	Details
0	For light duty
2	For medium duty
X	For medium duty
3	For heavy duty

**Table 2.4 Bore dia. number**

Bore dia. No.	Details
8	Nominal bearing bore dia. 8 mm
00	Nominal bearing bore dia. 10 mm
01	Nominal bearing bore dia. 12 mm
02	Nominal bearing bore dia. 15 mm
03	Nominal bearing bore dia. 17 mm
04	(Bore dia. No.) × 5 = Nominal bearing bore dia. (mm)
01-8	– (bore dia. No.) /16 = nominal bearing bore dia. (inch) (in this case, 8/16 = 1/2 inch = 12.7 mm)

**Table 2.5 Fitting code**

Fitting code	Details
J	Tolerance class of spherical bore of the housing is J7 (not shown on the bearing that the spherical bore diameter exceeds 120 mm)
H	Tolerance class of spherical bore of the housing is H7 With integrated lock pin
K	Tolerance class of spherical bore of the housing is K7

**Table 2.6 Supplementary code**

Supplementary code	Details
C	Cover, open type
D	Cover, closed type
FC	Cast iron cover, open type
FD	Cast iron cover, closed type
L2 <sup>1)</sup>	Double-lip seal type
L3 <sup>1)</sup>	Triple-lip seal type

Note 1) Standard specifications of codes L2 and L3 are as shown below.

Bearing No.	Applicable seal type
UC201 to UC205, UK205 NA201 to NA205	L2 (Double-lip seal)
UC206 to UC218, UK206 to UK218 NA206 to NA215	L3 (Triple-lip seal)
UCX05 to UCX17, UKX05 to UKX17 UC307 to UC328, UK307 to UK328	

However, UC 206 - 18 to UC 206 - 20 are L2 [double-lip seal type]

[Remark] Please refer to “16 Parts and accessories” for cover details.

**Table 2.7 Bearing special code**

Item	Bearing special code	Details
Grease	None	Alvania No.2 or equivalents
	D1	SH44M
	D2	SH33M
	D9	Demnum L-200
Set Screw	None	Bullet Point
	G4	Pointed tip
	G6	With full dog point
Oil seal	None	Nitrile rubber
	K2	Silicone rubber
	K3	Non-contact type
Sealing Device	None	With oil seal and flinger (slinger) (UC, UK, NA, ER and RB types) With oil seal (SB, SA and SU types)
	P3	Without oil seal, flinger (slinger)
	P4	Without oil seal
	Others	P11 <sup>1)</sup>
Others	S3	Air handling fit, 100% noise check, the anti-rotation pin
	S5	For blower (oil seal : K3, inner clearance and bearing accuracy are specially controlled)
	S6	Stainless steel bearing
	S7	Plated bearing (for corrosion-resistance)

Note 1) Code P11 is unnecessary in the following cases.

Bearing Type	Bearing No.	Fitting code	Code
UC	313 or more	J	Not indication
UC200S6, SU000S6	All		
All	All	H	

**Table 2.8 Housing special code**

Item	Housing special code	Details
Grease Nipple Thread Bore dia.	<b>None</b>	As shown in dimensional table
	<b>A1</b>	PT1/8 tube thread
	<b>A2</b>	PF1/8 tube thread
	<b>A3</b>	PT1/4 tube thread
	<b>A4</b>	PF1/4 tube thread
Grease Nipple Thread Bore Position	<b>None</b>	As shown in dimensional table
	<b>B1</b>	Right
	<b>B2</b>	Left
	<b>B3</b>	45°
	<b>B5</b>	30°
Machining	<b>B7</b>	Both right and left
	<b>None</b>	Standard type
	<b>E1</b>	Pressed steel cover mounting groove
	<b>E3</b>	Cast iron cover mounting groove (diameter series 2, X, 3)
Material	<b>E4</b>	Non-lubricating type
	<b>None</b>	Gray iron casting (FC200) or cold-reduced carbon steel sheets and strips (SPCC) Compact type is made of zinc alloy die-cast (ZDC2) Small stainless series is made of stainless cast steel type (SCS13)
	<b>H4</b>	Ductile iron (FCD450-10)
	<b>H5</b>	Rolled steel for general purpose (SS400)
Grease Nipple	<b>None</b>	A type
	<b>N1</b>	B type (67.5°)
	<b>N2</b>	C type (90°)

### 3 Types

#### 3.1 Type list

Table 3.1 and Table 3.2 show the types of Koyo Insert Bearing Units and insert bearing for unit.

Koyo Insert Bearing Units are available in various types.

**Table 3.1 Koyo Insert Bearing Units types**

Type	Bearing bore dia. Surface (fixing to shaft)	Type code	Shaft dia.		Dimension table	
			(inch)	(mm)		
<b>1 Pillow block type</b>	(1) Standard	Cylindrical bore (with set screws)	<b>UCP</b>	$1/2 - 4$	12 - 140	P.78
		Cylindrical bore (with eccentric locking collar)	<b>NAP</b>	$1/2 - 2^{15/16}$	12 - 75	P.84
			<b>NAPK</b>	$1/2 - 2^{15/16}$	12 - 75	P.86
		Tapered bore (with adapter)	<b>UKP</b>	$3/4 - 4^{1/2}$	20 - 125	P.88
	(2) Thick section type	Cylindrical bore (with set screws)	<b>UCIP</b>	$1^{1/2} - 4$	40 - 140	P.94
		Tapered bore (with adapter)	<b>UKIP</b>	$1^{1/4} - 4^{1/2}$	35 - 125	P.96
	(3) Tapped-base type	Cylindrical bore (with set screws)	<b>UCPA</b>	$1/2 - 2$	12 - 50	P.98
	(4) Higher centerheight type	Cylindrical bore (with set screws)	<b>UCPH</b>	$1/2 - 2$	12 - 50	P.100
	(5) Light duty type	Cylindrical bore (with set screws)	<b>BLP</b>	$1/2 - 1^{9/16}$	12 - 40	P.102
		Cylindrical bore (with eccentric locking collar)	<b>ALP</b>			
(6) "Compact" series	Cylindrical bore (with set screws)	<b>UP</b>	N/A	10 - 30	P.104	
(7) Stainless-series	Cylindrical bore (with set screws)	<b>UCSP-S6</b>	N/A	12 - 65	P.106	
		<b>UCSPA-S6</b>	N/A	12 - 50	P.108	
		<b>USP-S6</b>	N/A	10 - 30	P.110	
<b>2 Square-flanged type</b>	(1) Standard	Cylindrical bore (with set screws)	<b>UCF</b>	$1/2 - 4$	12 - 140	P.112
		Cylindrical bore (with eccentric locking collar)	<b>UCF-E</b>	$1/2 - 3^{7/16}$	12 - 85	P.118
		Tapered bore (with adapter)	<b>NANF</b>	$1/2 - 2^{7/16}$	12 - 60	P.122
			<b>UKF</b>	$3/4 - 4^{1/2}$	20 - 125	P.124
	(2) With spigot joint	Cylindrical bore (with set screws)	<b>UCFS</b>	1 - 4	25 - 140	P.130
		Tapered bore (with adapter)	<b>UKFS</b>	$3/4 - 4^{1/2}$	20 - 125	P.132
(3) Stainless-series	Cylindrical bore (with set screws)	<b>UCSF-S6</b>	N/A	20 - 65	P.134	
<b>3 Rhombic-flanged type</b>	(1) Standard	Cylindrical bore (with set screws)	<b>UCFL</b>	$1/2 - 4$	12 - 120	P.136
		Cylindrical bore (with eccentric locking collar)	<b>UCFL-E</b>	$1/2 - 3^{1/4}$	12 - 85	P.142
		Tapered bore (with adapter)	<b>NANFL</b>	$1/2 - 2^{3/16}$	12 - 55	P.146
			<b>UKFL</b>	$3/4 - 4$	20 - 110	P.148
	(2) Adjustable type	Cylindrical bore (with set screws)	<b>UCFA</b>	$1/2 - 2^{3/16}$	12 - 55	P.152
	(3) Three-bolt type	Cylindrical bore (with set screws)	<b>UCFB</b>	$1/2 - 2$	12 - 50	P.154
	(4) Light duty type	Cylindrical bore (with set screws)	<b>BLF</b>	$1/2 - 1^{7/16}$	12 - 35	P.156
		Cylindrical bore (with eccentric locking collar)	<b>ALF</b>			
(5) "Compact" series	Cylindrical bore (with set screws)	<b>UFL</b>	N/A	8 - 30	P.158	
(6) Stainless-series	Cylindrical bore (with set screws)	<b>UCSFL-S6</b>	N/A	12 - 50	P.160	
		<b>USFL-S6</b>	N/A	10 - 30	P.162	
<b>4 Round-flanged type with spigot joint</b>	(1) Standard	Cylindrical bore (with set screws)	<b>UCFC</b>	$1/2 - 4$	12 - 100	P.164
		Cylindrical bore (with eccentric locking collar)	<b>UCFCX-E</b>	1 - 4	25 - 100	P.168
		Tapered bore (with adapter)	<b>UKFC</b>	$3/4 - 3^{1/2}$	20 - 90	P.170
(2) Stainless-series	Cylindrical bore (with set screws)	<b>UCSFC-S6</b>	N/A	20 - 40	P.174	
<b>5 Pressed steel housing type</b>	(1) Pillow block type	Cylindrical bore (with set screws)	<b>SBPP</b>	$1/2 - 1^{1/4}$	12 - 30	P.176
		Cylindrical bore (with eccentric locking collar)	<b>SAPP</b>			
	(2) Round-flanged type	Cylindrical bore (with set screws)	<b>SBPF</b>	$1/2 - 1^{7/16}$	12 - 35	P.178
		Cylindrical bore (with eccentric locking collar)	<b>SAPF</b>			
	(3) Rhombic-flanged type	Cylindrical bore (with set screws)	<b>SBPFL</b>	$1/2 - 1^{7/16}$	12 - 35	P.180
Cylindrical bore (with eccentric locking collar)		<b>SAPFL</b>				
(4) Triangle-flanged type	Cylindrical bore (with set screws)	<b>SBPFT</b>	N/A	12 - 35	P.182	



**Table 3.1 Koyo Insert Bearing Units types (continued)**

Type		Bearing bore dia. Surface (fixing to shaft)	Type code	Shaft dia.		Dimension table
				(inch)	(mm)	
6 Take-up type	(1) Standard	Cylindrical bore (with set screws)	<b>UCT</b>	$1/2 - 4$	12 – 140	P.184
		Tapered bore (with adapter)	<b>UCT-E</b>	$1/2 - 3 \ 7/16$	12 – 85	P.190
			<b>UKT</b>	$3/4 - 4 \ 1/2$	20 – 125	P.194
	(2) Stainless-series	Cylindrical bore (with set screws)	<b>UCST-S6</b>	N/A	20 – 50	P.198
	(3) Section steel frame type	Cylindrical bore (with set screws)	<b>UCTH</b>	$1/2 - 2 \ 1/2$	12 – 65	P.200
(4) Channel steel frame type	Cylindrical bore (with set screws)	<b>UCTL</b>	N/A	20 – 45	P.202	
		<b>UCTU</b>	N/A	40 – 90	P.204	
(5) Pressed steel frame type	Cylindrical bore (with set screws)	<b>SBPTH</b>	N/A	12 – 25	P.208	
		<b>SBNPTH</b>	N/A	12 – 25	P.210	
7 Cartridge type		Cylindrical bore (with set screws)	<b>UCC</b>	$1/2 - 4$	12 – 140	P.212
		Tapered bore (with adapter)	<b>UKC</b>	$3/4 - 4 \ 1/2$	20 – 125	P.216
8 Hanger type		Cylindrical bore (with set screws)	<b>UCHA</b>	$1/2 - 3$	12 – 75	P.218
9 Rubber clamping ring type		Cylindrical bore (with set screws)	<b>RU-M</b>	N/A	20 – 30	P.220

**Table 3.2 Types of insert bearing for Koyo Insert Bearing Unit**

Type		Bearing bore dia. Surface (fixing to shaft)	Type code	Shaft dia.		Dimension table
				(inch)	(mm)	
Insert bearing for units	(1) Standard	Cylindrical bore (with set screws)	<b>UC</b>	$1/2 - 4$	12 – 140	P.222
	(2) Standard	Tapered bore (with adapter)	<b>UK</b>	$3/4 - 4 \ 1/2$	20 – 125	P.234
	(3) Standard	Cylindrical bore (with eccentric locking collar)	<b>NA</b>	$1/2 - 3$	12 – 75	P.230
	(4) Light duty	Cylindrical bore (with set screws)	<b>SB</b>	$1/2 - 1 \ 1/2$	12 – 40	P.222
	(5) Light duty	Cylindrical bore (with eccentric locking collar)	<b>SA</b>	$1/2 - 1 \ 9/16$	12 – 40	P.230
			<b>SA-F</b>	$1/2 - 2 \ 3/16$	12 – 55	
	(6) "Compact"	Cylindrical bore (with set screws)	<b>SU</b>	N/A	8 – 30	P.222
	(7) Stainless steel	Cylindrical bore (with set screws)	<b>UC-S6</b>	N/A	12 – 65	P.228
			<b>SU-S6</b>	N/A	10 – 30	
	(8) Cylindrical outside surface (with lubricating mechanism and snap ring)	Cylindrical bore (with set screws)	<b>ER</b>	$1/2 - 2 \ 7/16$	12 – 60	P.240
(9) Cylindrical outside surface	Cylindrical bore (with set screws)	<b>RB</b>	$1/2 - 1 \ 9/16$	12 – 40	P.240	
(10) Adapter assembly		<b>H2300X</b>	$3/4 - 5$	20 – 125	P.242	

### 3.2 Types and features

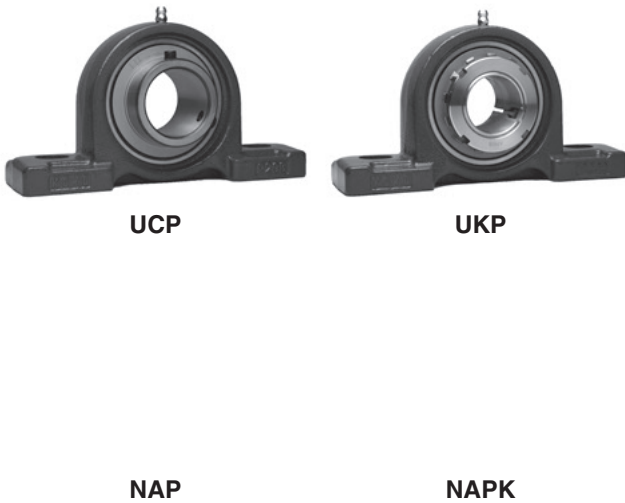
Koyo Insert Bearing Units are available in various types by combinations of bearings and housings. Types and features of the Insert Bearing Units are shown below.

Remark) Descriptions of codes for unit with cover are shown in the table below. (common to all the types)

Diameter series	Code	Descriptions
2	C, CD	Pressed steel cover type
	FC, FCD	Cast iron cover type
X	C, CD	From X05 to X17 : pressed steel cover type X18 and X20 : cast iron cover type
3	C, CD	Cast iron cover type

#### 1 Pillow block type units

##### 1 Pillow block type units



Cylindrical bore (with set screws)...Bearing **UC2 (X, 3)** series are used.

**UCP2 (X, 3)** : Standard type, **L3 (L2)** : Triple-lip seal type or Double-lip seal type  
**C, CD (FC, FCD)** : Pressed steel cover type or cast iron cover type

Cylindrical bore (with eccentric locking collar)  
...Bearing **NA2** series are used.

**NAP2, NAPK2** : Standard type, **L3 (L2)** : Triple-lip seal type or Double-lip seal type

Tapered bore (with adapter)...Bearing **UK2 (X, 3)** series are used.

**UKP2 (X, 3)** : Standard type, **L3 (L2)** : Triple-lip seal type or Double-lip seal type  
**C, CD (FC, FCD)** : Pressed steel cover type or cast iron cover type

This is the most typical type insert bearing unit. The rib at the bottom of the housing mounting section allows the highly strong structure which withstands against loads applied from all the directions.

The housing can be installed to a machine with two bolts. As for the tapered bore (UKP) type, nominal number of adapter assembly which follows the nominal number of unit should be added.

Applications : Transmission devices, general industrial equipment

##### 2 Thick section pillow block type units



Cylindrical bore (with set screws)...Bearing **UC2 (3)** series are used.

**UCIP2 (3)** : Standard type, **L3 (L2)** : Triple-lip seal type or Double-lip seal type  
**C, CD (FC, FCD)** : Pressed steel cover type or cast iron cover type

Tapered bore (with adapter)...Bearing **UK2 (3)** series are used.

**UKIP2 (3)** : Standard type, **L3 (L2)** : Triple-lip seal type or Double-lip seal type  
**C, CD (FC, FCD)** : Pressed steel cover type or cast iron cover type

This pillow block type unit is applicable for use with a great load. The thick and highly rigid housing is suitable to environment exposed to a great load, vibration, and impact. The mounting bolt holes are drilled, and the housing can be installed to the exact location with two bolts.

Applications : Crane, heavy object conveyor, quarrying plant, ships

#### (1 Pillow block type units)

##### 3 Tapped-base pillow block type unit



**UCPA**

Cylindrical bore (with set screws)... Bearing **UC2** series are used.  
**UCPA2** : Standard type, **L3 (L2)** : Triple-lip seal type or Double-lip seal type

This pillow block type unit is designed so that the mounting space is reduced. It is installed to machines with the two tapped holes on the housing mounting bottom.

Applications : Roller conveyor, purpose with small mounting space

##### 4 Higher centerheight pillow block type unit



**UCPH**

Cylindrical bore (with set screws)... Bearing **UC2** series are used.  
**UCPH2** : Standard type, **L3 (L2)** : Triple-lip seal type or Double-lip seal type

This unit, designed as the higher centerheight pillow block type unit, has high strength against impact load. It is suitable for the machine that the distance from the mounting bottom to the shaft center is long. The housing can be installed to machines with two bolts.

Applications : Printing machine, spinneret

##### 5 Light duty pillow block type unit



**BLP**

**ALP**

Cylindrical bore (with set screws)... Bearing **SB2** series are used.  
**BLP2**

Cylindrical bore (with eccentric locking collar)

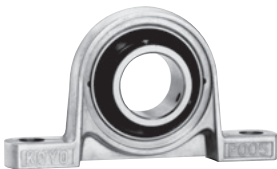
... Bearing **SA2** series are used.

**ALP2**

This pillow block type unit is designed for the aim of lightweight. The housing can be installed to machines with two bolts.

Applications : Machinery for general purposes aiming at lightweight

##### 6 "Compact" series pillow block type unit



**UP**

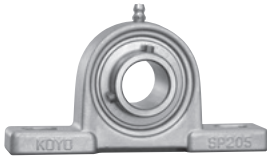
Cylindrical bore (with set screws)... Bearing **SU0** series are used.  
**UP0**

**C, CD** : Rubber coating cover type

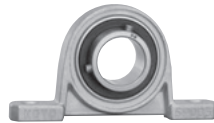
The small and lightweight pillow block type unit, comprising the insert bearing for unit for light load and the special lightweight alloy housing, needs not to be lubricated additionally.

The housing can be installed to machines with two bolts.  
 Applications : Machineries for light load

## 7 Stainless-series pillow block type units



UCSP-S6



USP-S6

Cylindrical bore (with set screws)

Standard... Bearing **UC2-S6** series are used.

**UCSP2-S6**

**C, CD** : Pressed stainless steel cover type

Tapped base... Bearing **UC2-S6** series are used.

**UCSPA-S6**

**C, CD** : Pressed stainless steel cover type

Compact... Bearing **SU0-S6** series are used.

**USP0-S6**

**C, CD** : Pressed stainless steel cover type

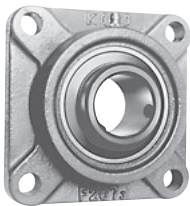
UCSPA-S6

This superior anticorrosion pillow block type unit comprises the bearing and housing made of stainless steel. The unit is thinner than standard UCP series units, leading to downsizing of machinery. The housing can be installed to machines with two bolts.

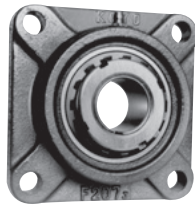
Applications : Food machinery, agricultural machinery

## 2 Square-flanged type units

### 1 Square-flanged type units



UCF, UCF-E



UKF

Cylindrical bore (with set screws)... Bearing **UC2 (X, 3)** series are used.

**UCF2 (X, 3)** : Standard type, **L3 (L2)** : Triple-lip seal type or Double-lip seal type

**C, D (FC, FD)** : Pressed steel cover type or cast iron cover type

**UCF2 (X) -E** : Standard type, **L3 (L2)** : Triple-lip seal type or Double-lip seal type

Cylindrical bore (with eccentric locking collar)

... Bearing **NA2** series are used.

**NANF2** : Standard type, **L3 (L2)** : Triple-lip seal type or Double-lip seal type

NANF

Tapered bore (with adapter)... Bearing **UK2 (X, 3)** series are used.

**UKF2 (X, 3)** : Standard type, **L3 (L2)** : Triple-lip seal type or Double-lip seal type

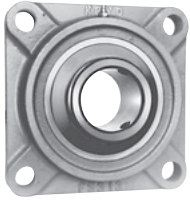
**C, D (FC, FD)** : Pressed steel cover type or cast iron cover type

This bearing unit comprises the insert bearing for unit and the housing with square flange. It is suitable to use on a vertical surface, such as the side of machinery.

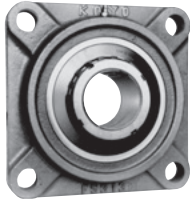
The housing can be installed to machines with four bolts.

#### (2 Square-flanged type units)

##### 2 Square-flanged types with spigot joint



UCFS



UKFS

Cylindrical bore (with set screws)... Bearing **UC3** series are used.

**UCFS3** : Standard type, **L3 (L2)** : Triple-lip seal type or Double-lip seal type

**C, D** : Cast iron cover type

Tapered bore (with adapter)... Bearing **UK3** series are used.

**UKFS3** : Standard type, **L3 (L2)** : Triple-lip seal type or Double-lip seal type

**C, D** : Cast iron cover type

This bearing unit comprises the insert bearing for unit, square flange, and the housing with spigot joint on the mounting surface. The housing can be installed to a machine by fitting the spigot joint into the mounting hole of it, and using four bolts.

The housing can be installed to the exact location by fitting the spigot joint into the mounting hole.

Applications : Rotating drum, rotating roller, purposes excellent mounting accuracy is required

##### 3 Stainless-series square-flanged type unit

Cylindrical bore (with set screws)... Bearing **UC2-S6** series are used.

**UCSF2-S6**

**C, D** : Pressed stainless steel cover type

UCSF-S6

In this superior waterproof and anticorrosion square-flanged type unit, bearing and housing are made of stainless steel. The unit is thinner than standard UCF series units, leading to downsizing of machinery. The housing can be installed to machines with four bolts.

Applications : Food machinery, agricultural machinery

### 3 Rhombic-flanged type units

#### 1 Rhombic-flanged type units



UCFL, UCFL-E



UKFL

Cylindrical bore (with set screws)...Bearing **UC2 (X, 3)** series are used.

**UCFL2 (X, 3)** : Standard type, **L3 (L2)** : Triple-lip seal type or Double-lip seal type

**C, D (FC, FD)** : Pressed steel cover type or cast iron cover type

**UCFL2 (X) -E** : Standard type, **L3 (L2)** : Triple-lip seal type or Double-lip seal type

Cylindrical bore (with eccentric locking collar)

...Bearing **NA2** series are used.

**NANFL2** : Standard type, **L3 (L2)** : Triple-lip seal type or Double-lip seal type

NANFL

Tapered bore (with adapter)...Bearing **UK2 (X, 3)** series are used.

**UKFL2 (X, 3)** : Standard type, **L3 (L2)** : Triple-lip seal type or Double-lip seal type

**C, D (FC, FD)** : Pressed steel cover type or cast iron cover type

This bearing unit comprises the insert bearing for unit and the housing with rhombic flange. It is suitable to use on a vertical surface, such as the side of machinery. Compared to the square-flanged type unit, it requires less mounting space, and the unit weight is also reduced.

Since the pitches of the center of two mounting bolt holes on the rhombic-flanged type housing are the same as those of the center of bolt holes located opposite each other on the square-flanged housing, they are compatible.

The housing can be installed to machines with two bolts.

Applications : Roller conveyor, environment the mounting dimensions are small

#### 2 Adjustable rhombic-flanged type unit



UCFA

Cylindrical bore (with set screws)...Bearing **UC2** series are used.

**UCFA2** : Standard type, **L3 (L2)** : Triple-lip seal type or Double-lip seal type

This rhombic-flanged type unit allows angle adjustment with a supporting point as the shaft center. Therefore, when the bearing unit is installed, fine adjustment of supporting location for the shaft center is enabled.

Since the pitches of the center of mounting bolt holes on the housing are the same as those of the square-flanged type unit and rhombic-flanged type unit, they are compatible.

The housing can be installed to machines with two bolts.

#### (3 Rhombic-flanged type units)

##### 3 Three-bolt flange type unit



UCFB

Cylindrical bore (with set screws)...Bearing **UC2** series are used.  
**UCFB2** : Standard type, **L3 (L2)** : Triple-lip seal type or  
 Double-lip seal type

The housing of this unit has the one-side rhombic flange, and the unit is suitable to use on a vertical surface and in a limited space, such as the side of machinery.

The housing can be installed to machines with three bolts.

##### 4 Light duty rhombic-flanged type units



BLF

ALF

Cylindrical bore (with set screws)...Bearing **SB2** series are used.  
**BLF2**

Cylindrical bore (with eccentric locking collar)

...Bearing **SA2** series are used.

**ALF2**

This rhombic-flanged type unit is designed for the aim of lightweight. The housing can be installed to machines with two bolts.

##### 5 "Compact" series rhombic-flanged type unit



UFL

Cylindrical bore (with set screws)...Bearing **SU0** series are used.  
**UFL0**

**C, D** : Rubber coating cover type

The small and lightweight rhombic-flanged type unit, comprising the insert bearing for unit for light load and the special lightweight alloy housing, needs not to be lubricated additionally.

The housing can be installed to machines with two bolts.

Applications : Machineries for light load

##### 6 Stainless-series rhombic-flanged type units



UCSFL-S6



USFL-S6

Cylindrical bore (with set screws)

Standard...Bearing **UC2X (2) -S6** series are used.

**UCSFL2X (2) -S6**

**C, D** : Pressed stainless steel cover type

Compact...Bearing **SU0-S6** series are used.

**USFL0-S6**

**C, D** : Rubber coating cover type

This superior anticorrosion rhombic-flanged type unit comprises the bearing and housing made of stainless steel. The unit is thinner than standard UCFL series units, leading to downsizing of machinery.

The housing can be installed to machines with two bolts.

Applications : Food machinery, agricultural machinery

## 4 Round-flanged types with spigot joint

### 1 Round-flanged types with spigot joint



UCFC, UCFC-E



UKFC

Cylindrical bore (with set screws)... Bearing **UC2 (X)** series are used.

**UCFC2 (X)** : Standard type, **L3 (L2)** : Triple-lip seal type or Double-lip seal type

**C, D (FC, FD)** : Pressed steel cover or cast iron cover type

**UCFCX-E** : Standard type, **L3 (L2)** : Triple-lip seal type or Double-lip seal type

Tapered bore (with adapter)... Bearing **UK2 (X)** series are used.

**UKFC2(X)** : Standard type, **L3 (L2)** : Triple-lip seal type or Double-lip seal type

**C, D (FC, FD)** : Pressed steel cover or cast iron cover type

This bearing unit comprises the insert bearing for unit, round flange, and the housing with spigot joint on the mounting surface. The housing can be installed to machines by fitting the spigot joint into the mounting hole of machinery, and using four bolts.

The housing can be installed to the exact location by fitting the spigot joint into the mounting hole.

Applications : Rotating drum, rotating roller, purposes excellent mounting accuracy is required.

### 2 Stainless-series round-flanged types with spigot joint

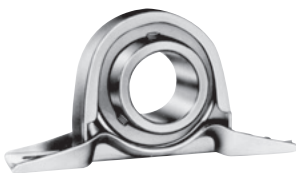
**UCSFC** is a four-Bolt Flange Cartridge Units that is made entirely out of stainless steel components for the highest level of corrosion resistance for a mounted bearing unit. It is also pre-filled with food grade grease for food processing applications.

Duty: Standard

UCSFC-S6

## 5 Pressed steel housing type units

### 1 Pressed steel pillow block type unit



SBPP

SAPP

Cylindrical bore (with set screws)... Bearing **SB2** series are used.  
**SBPP2**

Cylindrical bore (with eccentric locking collar)  
... Bearing **SA2** series are used.

**SAPP2**

This lightweight pillow block type unit for light load comprises the insert bearing for lightweight unit and the pressed steel plate housing.

The housing can be installed to machines with two bolts.

Applications : Light duty conveyor, environment exposed to light load and low speed rotation



### 3 Types

#### (5 Pressed steel housing type units)

##### 2 Pressed steel round-flanged type units



**SBPF**

**SAPF**

Cylindrical bore (with set screws)...Bearing **SB2** series are used.  
**SBPF2**

Cylindrical bore (with eccentric locking collar)  
...Bearing **SA2** series are used.

##### **SAPF2**

This lightweight round-flanged type unit for light load comprises the insert bearing for lightweight unit and the pressed steel plate housing.

The housing can be installed to machines with three bolts.  
Applications : Light duty conveyor, environment exposed to light load and low speed rotation

##### 3 Pressed steel rhombic-flanged type units



**SBPFL**

**SAPFL**

Cylindrical bore (with set screws)...Bearing **SB2** series are used.  
**SBPFL2**

Cylindrical bore (with eccentric locking collar)  
...Bearing **SA2** series are used.

##### **SAPFL2**

This lightweight rhombic-flanged type unit for light load comprises the insert bearing for lightweight unit and the pressed steel plate housing. Compared to the pressed steel round-flanged type unit, less mounting space is required.

The housing can be installed to machines with two bolts.  
Applications : Light duty conveyor, environment exposed to light load and low speed rotation

##### 4 Pressed steel triangle-flanged type units

**SBPFT**

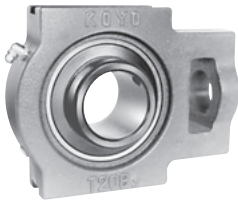
Cylindrical bore (with set screws)...Bearing **SB2** series are used.  
**SBPFT2**

This lightweight triangle-flanged type unit for light load comprises the insert bearing for lightweight unit and the pressed steel plate housing.

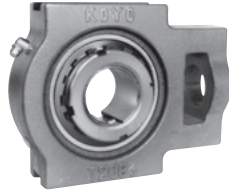
The housing can be installed to machines with three bolts.  
Applications : Light duty conveyor, environment exposed to light load and low speed rotation

## 6 Take-up type units

### 1 Take-up type units



UCT, UCT-E



UKT

Cylindrical bore (with set screws)...Bearing **UC2 (X, 3)** series are used.

**UCT2 (X, 3)** : Standard type, **L3 (L2)** : Triple-lip seal type or Double-lip seal type

**C, CD (FC, FCD)** : Pressed steel cover or cast iron cover type

**UCT2 (X) -E** : Standard type, **L3 (L2)** : Triple-lip seal type or Double-lip seal type

Tapered bore (with adapter)...Bearing **UK2 (X, 3)** series are used.

**UKT2(X, 3)** : Standard type, **L3 (L2)** : Triple-lip seal type or Double-lip seal type

**C, CD (FC, FCD)** : Pressed steel cover or cast iron cover type

The bearing unit comprises the insert bearing for unit and the housing with slide groove. This unit allows angle adjustment with a supporting point of the shaft center by moving the housing in radial direction along the slide groove.

Applications : Belt conveyor, use the supporting point of the shaft center must be adjusted

### 2 Stainless-series take-up type unit

Cylindrical bore (with set screws)...bearing **UC2-S6** series are used.

**UCT2-S6**

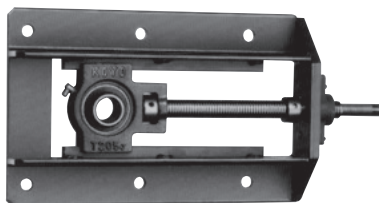
**C, CD** : Pressed stainless steel cover type

This superior anticorrosion take-up type unit comprises the bearing and the housing made of stainless steel. The unit is thinner than standard UCT series units, leading to downsizing of machinery.

Applications : Conveyor of food machinery, agricultural machinery

UCST-S6

### 3 Section steel frame take-up type unit



UCTH

Cylindrical bore (with set screws)...Bearing **UC2** series are used.

**UCTH2** : Standard type, **L3 (L2)** : Triple-lip seal type or Double-lip seal type

**C, CD (FC, FCD)** : Pressed steel or cast iron cover type

This unit comprises the take-up type unit, the section steel frame, adjuster bolt, and so on.

This unit allows adjustment of the supporting point of the shaft center by moving the housing in radial direction with the adjuster bolt on the unit.

The housing can be installed to machines with six bolts.

Applications : Belt conveyor, use the supporting point of the shaft center must be adjusted

#### (6 Take-up type units)

##### 4 Channel steel frame take-up type unit



UCTL

Cylindrical bore (with set screws)... Bearing **UC2 (3)** series are used.

**UCTL2** : Standard type, **L3 (L2)** : Triple-lip seal type or Double-lip seal type

**C, CD (FC, FCD)** : Pressed steel cover or cast iron cover type

**UCTU2 (3)** : Standard type, **L3 (L2)** : Triple-lip seal type or Double-lip seal type

**C, CD (FC, FCD)** : Pressed steel cover or cast iron cover type

This unit comprises the take-up type unit, the channel steel frame, adjuster bolt, and so on. This unit allows adjustment of the supporting point of the shaft center by moving the housing in radial direction with the adjuster bolt in the frame.

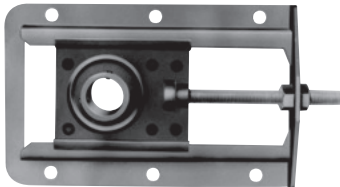
Since this unit is installed with the frame stood, the mounting space is reduced.

The TL lightweight type unit is made of light channel steel, and the TU highly rigid type unit is made of channel steel. The housing can be installed to machines with two or four bolts.

Tapered bore (with adapter) unit is also available (examples of nominal number : UKTL 207J-100, UKTU208J-500).

Applications : Belt conveyor, use the supporting point of the shaft center must be adjusted

##### 5 Pressed steel frame take-up type unit



SBPTH

Cylindrical bore (with set screws)... Bearing **SB2** series are used.

**SBPTH2**

**SBNPTH2**

This unit comprises the pressed steel take-up type unit, the pressed steel frame, adjuster bolt, and so on. This unit allows adjustment of the supporting point of the shaft center by moving the housing in radial direction with the adjuster bolt in the frame.

Since the housing and the frame are made of pressed steel, the unit is compact and lightweight. The housing can be installed to machines with four or six bolts.

Applications : Small belt conveyor for lightload, use the supporting point of the shaft center must be adjusted

## 7 Other units

### 1 Cartridge type units



UCC



UKC

Cylindrical bore (with set screws)...Bearing **UC2 (X, 3)** series are used.

**UCC2 (X, 3)** : Standard type, **L3 (L2)** : Triple-lip seal type or Double-lip seal type

Tapered bore (with adapter)...Bearing **UK2 (X, 3)** series are used.

**UKC2 (X, 3)** : Standard type, **L3 (L2)** : Triple-lip seal type or Double-lip seal type

This unit comprises the insert bearing for unit and the housing with the cylindrical outside surface. The housing, having the grounded cylindrical outer surface, can be fit to the cylindrical bore of a machine.

The cartridge type unit, moving in axial direction, is used as the bearing for free side when a shaft is expanded or contracted.

The cylindrical outside surface and the automatic aligning mechanism allow handling similar to standard automatic aligning type bearing.

### 2 Hanger type unit



UCHA

Cylindrical bore (with set screws)...Bearing **UC2** series are used.

**UCHA2** : Standard type, **L3 (L2)** : Triple-lip seal type or Double-lip seal type

The bearing unit comprises the insert bearing for unit and the housing with parallel thread for pipe on one side. The compact housing is installed to machinery with suspended with steel pipe.

Applications : Intermediate bearing of screw conveyor

## 8 Insert bearings for units

### 1 UC type bearing



UC

Cylindrical bore (with set screws)

**UC2 (X, 3)**...Standard type

**UC2 (X, 3) L3 (L2)**...Triple-lip seal type or Double-lip seal type

**UC2-S6**...Stainless steel series

This grease sealed type deep groove insert bearing incorporates the outer ring with the spherical outside surface and lubricating mechanism and wide inner ring with cylindrical bore set screw. Two types, standard type (oil seal and flinger are included) and triple-lip seal type (supplementary code : L3), are available, depending on the type of sealing device.

It can be fixed to shaft with two set screws on the inner ring. It is the most typical type in insert bearings for unit.

The UC2-S6 series are superior waterproof and anticorrosive insert bearings for unit. The bearing is made of stainless steel, and the series are used for stainless-series units.

As for the types and features of set screw for UC type bearing, see “14 Handling”.

#### (8 Insert bearings for units)

##### 2 UK type bearing



UK

Tapered bore (with adapter)

**UK2 (X, 3)**...Standard type

**UK2 (3) L3 (L2)**...Triple-lip seal type or Double-lip seal type

This grease sealed type deep groove ball bearing incorporates the outer ring with the spherical outside surface and lubricating mechanism and wide inner ring with tapered bore. Two types, standard type (oil seal and flinger are included) and triple-lip seal type (supplementary code : L3), are available, depending on the type of sealing device.

It can be fixed to shaft with the adapter. The UK type bearing (with adapter) is optimal for use of long shaft.

As for the UK type bearing, applicable adapter assembly number should be added to the bearing number.

##### 3 NA type insert bearing



NA

Cylindrical bore (with eccentric locking collar)

**NA2**

This type is based on the UC type bearing having set screw, but equipped with the eccentric locking collar. The grease sealed type deep groove ball bearing incorporates the spherical outside surface outer ring with lubricating mechanism and the cylindrical bore, wide inner ring, and eccentric locking collar with eccentric section on one side. The sealing device is equipped with the oil seal and flinger.

When fixing the bearing to shaft, fit the eccentric recessed section of the eccentric locking collar to the eccentric section of the inner ring, turn the eccentric locking collar to fix it to shaft, and tighten the set screw of the eccentric locking collar to shaft.

##### 4 SB type bearing



SB

Cylindrical bore (with set screws)

**SB2**

This is the lightweight UC type bearing. The non-lubricating type grease sealed deep groove ball bearing incorporates the spherical outside surface outer ring and the wide inner ring with cylindrical bore set screw. When fixing it to shaft, use the two set screws on the inner ring.

It is used for lightweight unit or pressed steel unit.

##### 5 SA type bearing



SA

SA-F

Cylindrical bore (with eccentric locking collar)

**SA2, SA2-F**

This type is based on the SB type bearing having set screw, but equipped with the eccentric locking collar. The non-lubricating type grease sealed type deep groove ball bearing incorporates the spherical outside surface outer ring and the cylindrical bore, wide inner ring, and eccentric locking collar with eccentric section on one side.

When fixing the bearing to shaft, fit the eccentric recessed section of the eccentric locking collar to the eccentric section of the inner ring, turn the eccentric locking collar to fix it to shaft, and tighten the set screw of the eccentric locking collar to shaft.

(SA-F type bearing has lubricating mechanism on outer ring.)

It is used for lightweight unit or pressed steel unit.

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## 6 SU type bearing (“compact” series)

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**SU**

Cylindrical bore (with set screws)

**SU0...**Standard type

**SU0-S6...**Stainless steel

The bearing series intended for light load is suitable for downsizing and weight saving.

The non-lubricating type grease sealed deep groove ball bearing incorporates the spherical outside surface outer ring and the wide inner ring with cylindrical bore set screw. When fixing it to shaft, use the two set screws on the inner ring.

The SU0-S6 type bearing for unit, made of stainless steel, is superior in corrosion resistance, and used for stainless-series units.

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## 7 ER type bearing

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**ER**

Cylindrical bore (with set screws), cylindrical outside surface, lubricating mechanism, locating snap ring and snap ring groove

**ER2**

The grease sealed type deep groove ball bearing incorporates the spherical outside surface with lubricating mechanism and set screw, the wide inner ring with cylindrical bore set screw. When fixing it to shaft, use the two set screws on the inner ring.

It features lubricating mechanism, set screw (easy to locate bearing), clearance fit of inner ring and shaft (easy to install). Therefore, it can be used for various purposes in a similar way to standard bearings.

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## 8 RB type bearing

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**RB**

Cylindrical bore (with set screws), cylindrical outside surface

**RB2**

This bearing is based on the ER type bearing, but without the lubricating mechanism and locating snap ring and snap ring groove. The grease sealed deep groove ball bearing incorporates the spherical outside surface outer ring and the wide inner ring with cylindrical bore set screw. When fixing it to shaft, use the two set screws on the inner ring.

Since clearance fit may be used for installation of the inner ring to shaft (easy to install), it can be used for various purposes in a similar way to standard bearings.

### 3.3 Unit for special use

To meet with requests for varied and special purposes, JTEKT supplies insert bearing series for special use with various features, as well as standard types. If you use insert bearing units under special environment or conditions, select optimal type among insert bearing units for special use.

JTEKT produces bearing units in various forms and specifications, other than units for special use. Contact JTEKT, if you need them.

#### 1 Triple-lip seal unit (Double-lip seal unit) (supplementary code : L3 (L2))

Triple-lip seal has the structure in which the triple-lip oil seal is glued to the pressed steel shield plate with vulcanized adhesive. The triple-lip eliminates ingress of dusts and mud water into bearing to ensure long service life of the bearing even under severe environmental conditions.

Since the triple-lip seal is fit to the outer ring of the bearing, the triple-lip seal bearing unit can be handled in the same manner as the standard types. The triple-lip seal unit does not lead to uneven contact of the shaft with seal while the bearing is aligned unlike the unit with cover, and maintains stable sealing performance for a long time.

The triple-lip seal unit is the outstanding product that defects of conventional dust and water preventive unit are improved to realize energy-saving and low cost. The triple-lip seal is applicable to the UC type bearing and the UK type bearing.

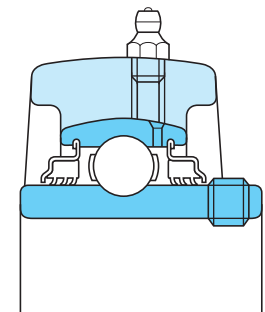


Fig. 3.1 Structure of triple-lip seal unit

#### 2 Unit with cover (supplementary code : C, D, FC, FD)

The unit with cover is equipped with the standard type housing and the pressed steel cover or cast iron cover, and features the double sealing structure of bearing and housing. The unit ensures a long service life of bearing even under severe environmental conditions such as dusts and mud water.

The unit with cover is available in two types : open ends type C type, FC type, closed end type D type, and FD type (for pillow block type unit, CD type or FCD type).

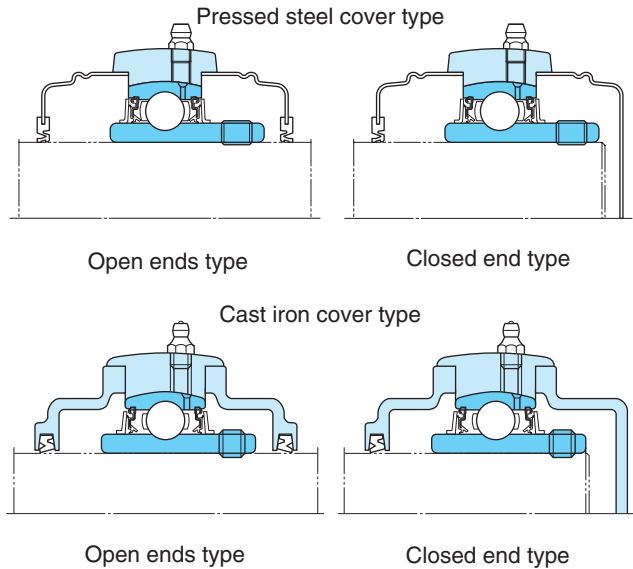


Fig. 3.2 Type and structure of unit with cover

#### 3 Heat resistant unit (special code : D1K2) and Cold resistant unit (special code : D2K2)

The operating temperature range of a insert bearing unit depends on the performance of grease and oil seal (rubber) used for the bearing. The operating temperature range of Koyo Insert Bearing Unit (standard type) ranges from -20 °C to 100 °C.

If you use bearing units in the higher or lower temperature range beyond the operating temperature range of standard type, select the heat resistant (special code : D1K2) or the cold resistant unit (special code : D2K2).

Specifications of the heat resistant unit and the cold resistant unit are shown in Table 3.3.

Table 3.3 Specifications of heat resistant unit and cold resistant unit

Category	Special code	Operating temperature range (°C)	Grease	Oil seal rubber material	Bearing internal clearance	
					UC type	UK type
Standard	(no code)	-20 to 100	Alvania No. 2 or equivalence (lithium soap)	Nitrile	CN	C3
Heat resistant	D1K2	-40 to 180	SH44M (lithium soap)	Silicone	C4	C5
Cold resistant	D2K2	-50 to 120	SH33M (lithium soap)	Silicone	CN	C3

#### 4 High speed unit (special code : K3)

The high speed unit (special code : K3) is the product that has been developed for intention of high speed and less heat. For the high speed unit bearing, the non-contact type oil seal optimal for high speed rotation and low torque is used.

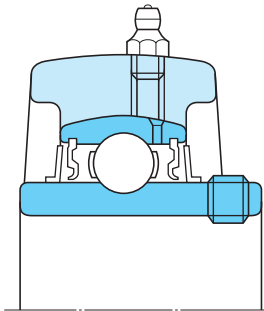
This unit is intended for the purposes high speed rotation, low torque, and less heat are required, such as textile machinery and printing machinery.

#### 5 Unit for blower (special code : S5)

The insert bearing unit for blower must meet requests for high speed rotation, less heat, less vibration, and low noise.

To meet with these requests for performance, JTEKT supplies the series of unit for blower (special code : S5) that the non-contact type oil seal is used, as well as improves the machining accuracy.

This unit is intended for the purposes high speed rotation, less heat, less vibration, low noise are required, such as a blower.



**Fig. 3.3 Structure of bearing unit for blower**

#### 6 “Compact” series unit

For downsizing of machinery in facilities, the set screw method facilitating installation of the shaft is adopted for this unit.

The unit comprises the compact bearing and the special alloy housing.

Since the cover surface is coated with rubber, it contacts close with the housing well, and features superior dustproof and waterproof performance.

Operating temperature range : Standard temperature

#### 7 Stainless-series unit (special code : S6)

The insert bearing units used for food machinery need waterproof performance.

For this purpose, JTEKT has released a series of Insert Bearing units of which bearings and housings are made of stainless steel in order to satisfy the required performance.

We can also provide bearing units packing grease applicable to use related to food certified by USDA (US Agriculture Department) H1.

Operating temperature range : From  $-20\text{ }^{\circ}\text{C}$  to  $+100\text{ }^{\circ}\text{C}$

\* If you use this unit for machines splashed with water or in the environment that the operating temperature exceeds  $50\text{ }^{\circ}\text{C}$ , it is recommended you use UC-S6 to be able to be lubricated for SU-S6.



## 4 Selection of unit

### 4.1 Outline of selection

Koyo Insert Bearing Units are available in various types and series. Therefore, to select the bearing unit optimal for design of machinery, various factors including the structure of machinery, operating conditions, performance required

for bearing unit, specifications relative to the unit, marketability, and economic efficiency, must be comprehensively taken into consideration. Service life of the bearing greatly depends on the quality of selection.

Procedures of selection of standard insert bearing units are shown in **Table 4.1**.

**Table 4.1 Procedures of selection of standard insert bearing units**

Procedures of selection	Items to be examined	Operating conditions to be considered	Reference
<b>1 Selection of type</b>	<ul style="list-style-type: none"> <li>· Pillow block type</li> <li>· Flange type</li> <li>· Take-up type</li> <li>· Cartridge type</li> <li>· Hanger type</li> </ul>	Structure of machinery, mounting space, mounting dimensions	3 Types (P.13)
<b>2 Selection of shaft dia. and dia. series</b>	<ul style="list-style-type: none"> <li>· Bearing bore dia. : From 10 to 140 mm</li> <li>· Dia. series : 0, 2, X, 3</li> </ul>	Rating life of bearings required, load applied to bearings, rotational speed	5 Life of bearing (P.33) 6 Bearing load (P.38) 7 Allowable rotational speed (P.45)
<b>3 Selection against atmosphere</b>	<ul style="list-style-type: none"> <li>· L3 (L2) type</li> <li>· Cover type</li> <li>· Stainless steel series</li> <li>· For high speed use</li> <li>· For blower</li> </ul>	Environment (dusts, mud water, high humidity, chemicals), rotational speed	3 Types (P.13) (P.28) 7 Allowable rotational speed (P.45)
<b>4 Selection against temperature</b>	<ul style="list-style-type: none"> <li>· Heat resistant type</li> <li>· Cold resistant type</li> <li>· Measures against expansion and contraction of shaft</li> <li>· Grease supply</li> </ul>	Bearing temperature	3 Types (P.13) (P.28) 8 Operating temperature and bearing specifications (P.46) 10 Design of shaft and base (P.52) 14 Handling (P.66)
<b>5 Selection of installing to shaft</b>	<ul style="list-style-type: none"> <li>· Set screw</li> <li>· Adapter</li> <li>· Eccentric locking collar</li> </ul>	Rotational speed, load conditions, handling	3 Types (P.13) 14 Handling (P.66)
<b>6 Selection of shafts</b>	<ul style="list-style-type: none"> <li>· Dimensional tolerance</li> <li>· Adoption of shouldered shaft</li> <li>· Provision of set screw for shaft</li> <li>· Measures against expansion and contraction of shaft</li> </ul>	Rotational speed, load conditions, bearing temperature	3 Types (P.13) (P.28) 7 Allowable rotational speed (P.45) 10 Design of shaft and base (P.52) 14 Handling (P.66)
<b>7 Selection of strength of housings</b>	<ul style="list-style-type: none"> <li>· Cast iron</li> <li>· Cast steel</li> <li>· Pressed steel</li> </ul>	Load conditions, load directions, presence of impact	9 Strength of housing (P.47)
<b>8 Selection of lubrication</b>	<ul style="list-style-type: none"> <li>· Lubricating type</li> <li>· Non-lubricating type</li> <li>· Centralized lubricating type</li> <li>· Greasing interval</li> </ul>	Environment, importance of machine, bearing temperature, grease life	14 Handling (P.66)
<b>9 Selection of maintenance and check</b>	<ul style="list-style-type: none"> <li>· Periodic inspection</li> <li>· Grease supply</li> </ul>	Environment, importance of machine, bearing temperature, grease life	14 Handling (P.66)

## 4.2 Selection of type and specifications

Koyo Insert Bearing Units series are available in various types and specifications applicable to your purposes. Therefore, when selecting types and specifications of

bearing unit, structure of machine, operating conditions, and environment must be fully taken into consideration for comprehensive examination.

Outline of selection of insert bearing unit types and specifications are shown in **Table 4.2**.

**Table 4.2 (1) Outline of selection of insert bearing unit types and specifications**

○ : Acceptable or Yes, × : Unacceptable or No

Category	Performance required		Bearing specifications			Applicable housing
	Operating conditions	Fixing to shaft	Sealing structure	Type code	Lubrication	
Bearing	Standard	Set screw Adapter	Oil seal and flinger	UC UK	○	C, F, FA, FB, FC, FL, FS, HA, IP, P, PA, PH, T, TH, TL, TU
		Eccentric locking collar		NA		
	Dustproof and waterproof	Set screw Adapter	Triple-lip seal	UC-L3 UK-L3	○	C, F, FA, FB, FC, FL, FS, HA, IP, P, PA, PH, T, TH, TL, TU
	Lightweight "Compact"	Set screw	Oil seal	SA, SB	×	LF, LP, PF, PFL, PP, PTH, NPTH FL0, P0
		Set screw		SU		
	Anticorrosion	Set screw	Oil seal and flinger	UC-S6	○	SFL, SP
	Anticorrosion and compact		Oil seal	SU-S6	×	SFL0, SP0
	Heat resistant Cold resistant For high speed For blower	Set screw Adapter	Oil seal and flinger	UC UK	○	C, F, FA, FB, FC, FL, FS, HA, IP, P, PA, PH, T

**Table 4.2 (2) Outline of selection of insert bearing unit types and specifications**

Category	Performance required		Housing specifications				Applicable bearing
	Type	Operating conditions	Type code	Material	Presence of cover	Lubrication	
Housing	Pillow block type	Standard	P	Cast iron	○	○	UC (-L3 or -L2), UK (-L3 or -L2)
		Thick section (highly strong)	IP	Cast iron			
		Tapped-base	PA	Cast iron	×	○	UC (-L3 or -L2)
		Higher centerheight	PH				
		Light duty	LP				
		"Compact"	P0	Special light alloy	○	○	SU
		Anticorrosion	SP	Stainless steel			
	Anticorrosion and compact	SP0	Stainless steel	×			
	Pressed steel	PP	Pressed steel	×	×	SB	
	Flange type	Square	F	Cast iron	○	○	UC (-L3 or -L2), UK (-L3 or -L2)
		With spigot joint (square (round))	FS				
			FC				
		Rhombic	FL	Cast iron	×	○	UC (-L3 or -L2)
		Shaft alignment (adjustable rhombic)	FA				
Cantilever (deformed)		FB					
Light duty (rhombic)		LF					
"Compact" (rhombic)	FL0	Special light alloy	○	×	SU		
Anticorrosion (rhombic)	SFL	Stainless steel	○	○	UC-S6		
	(round)	SFC	Stainless steel	○	○	UC-S6	
Anticorrosion and compact (rhombic)	SFL0	Stainless steel	○	×	SU-S6		

## 4 Selection of unit

**Table 4.2 (2) Outline of selection of insert bearing unit types and specifications**

Category	Performance required		Housing specifications				Applicable bearing
	Type	Operating conditions	Type code	Material	Presence of cover	Lubrication	
Housing	Flange type	Pressed steel (round)	PF	Pressed steel	×	×	SB
		(rhombic)	PFL				
		(triangle)	PFT				
	Take-up type	Standard	T	Cast iron	○	○	UC (-L3 or -L2), UK (-L3 or -L2)
		Section steel frame type	TH	Cast iron	○	○	UC (-L3 or -L2)
		Channel steel frame type	TL	Cast iron	○	○	UC (-L3 or -L2), UK (-L3 or -L2)
			TU				
Pressed steel frame type	PTH NPTH	Pressed steel	×	×	SB		
Cartridge type	Standard	C	Cast iron	×	○	UC (-L3 or -L2), UK (-L3 or -L2)	
Hanger type	Standard	HA	Cast iron	×	○	UC (-L3 or -L2)	

### 4.3 Selection from a maintenance standpoint

Koyo Insert Bearing Units need not to be maintained or checked for standard purposes during operation, because of their structures. However, they must be periodically maintained or checked if they are used for important machines or under special environment.

Thus, it is important that intervals of periodic maintenance or check during operation are extended or insert bearing units optimal for purposes or operating conditions are selected in order to reduce the manpower required for maintenance and check.

For your purposes, various factors must be fully examined. In the environment exposed to vibration or impact, increase in safety factor of service life of the bearing, and strength of the housing must be fully examined. In the environment exposed to great axial load, use of shouldered shaft, in the environment exposed to dusts or mud water, use of the triple-lip seal type or covered type, in the environment exposed to high or low temperature, material of oil seal and grease type must be fully taken into consideration.

## 5 Life of bearing

If a insert bearing unit is installed to a machine or device and operated, vibration or noise from the unit may be increased or seizure may occur, after a certain period has passed, even under appropriate conditions. The period of bearing operation until the unit cannot be used due to these causes is called the life of insert bearing unit.

Life of a insert bearing unit is caused by two reasons, fatigue of bearing material (fatigue service life) and degradation of grease leading to faulty lubrication, and inability of continuous use. Each of them can be found as the rating life of bearing and grease life.

The life of insert bearing unit depends on the shorter one, between the rating life of bearing and grease life. Since the lubricating system is adopted for the Koyo Insert Bearing Unit, the grease life can be extended to the rating life of bearing by appropriate lubrication. If the bearing unit is used without lubrication, the shorter period, the rating life of bearing or grease life, is the life of the bearing unit.

However, a insert bearing unit is actually installed to a machine or device and operated, the unit cannot be used due to causes other than the rating life of bearing or grease service life (wear, dent, crack, seizure, etc.). They can be prevented by full examination of the selection, handling, installation, and lubrication of the insert bearing unit.

### 5.1 Basic rating life and basic rating load

#### 5.1.1 Basic rating life

While a bearing is rotated under load, the raceways surfaces of the inner and outer rings of bearing and the rolling surfaces of rolling element are exposed to load continuously. Thus, damages like scales appear on the raceway surfaces or rolling surfaces due to fatigue of material (flaking or peel-off). The total number of revolution until the damages appear is called as “(Fatigue) service life” of bearing. Fatigue service life of bearing may be greatly varied even if the bearings having the same structure, dimensions, materials, and machining methods, are operated under the same operating conditions.

To solve this problem, if a group of the same bearings are operated under the same conditions, the total number of revolution of 90% of the bearings without damage due to rotating fatigue (life of 90% reliability) is called as the “**Basic rating life of bearing**”.

#### 5.1.2 Basic rating load

Basic rating load indicates the withstanding strength against rolling fatigue of a bearing, that is to say, loading capacity. It is the pure radial load of a certain level and direction (for radial bearing) or central axial load (for thrust bearing) that a million times of rotations can be obtained as the basic rating life if the inner ring of bearing is rotated while the outer ring is stopped (or the outer ring is rotated while the inner ring is stopped).

They are called as the **basic dynamic radial load rating** ( $C_r$ ) for radial bearing or the **basic dynamic axial load rating** ( $C_a$ ) for axial bearings.

In the insert bearing for insert bearing unit, it is indicated as the basic dynamic radial load rating ( $C_r$ ), and the value is shown in the dimensional table.

### 5.2 Calculation of rating life

Relation between the basic rating life, basic dynamic load rating, and the dynamic equivalent load of the insert bearing for insert bearing unit can be indicated as the **Equation (5.1)**. If the insert bearing unit is used at a fixed rotational speed, it is convenient that the life is indicated as time, as shown in the **Equation (5.2)**.

$$\text{(Total revolution)} \quad L_{10} = \left(\frac{C_r}{P_r}\right)^3 \dots\dots\dots (5.1)$$

$$\text{(Time)} \quad L_{10h} = \frac{10^6}{60n} \left(\frac{C_r}{P_r}\right)^3 \dots\dots\dots (5.2)$$

Whereas,

$L_{10}$ : Basic rating life	$10^6$ rotations
$L_{10h}$ : Basic rating life	h
$C_r$ : Basic dynamic load rating	N
$P_r$ : Dynamic equivalent load	N
(see “ <b>6 Bearing load</b> ”)	
$n$ : Rotational speed	$\text{min}^{-1}$

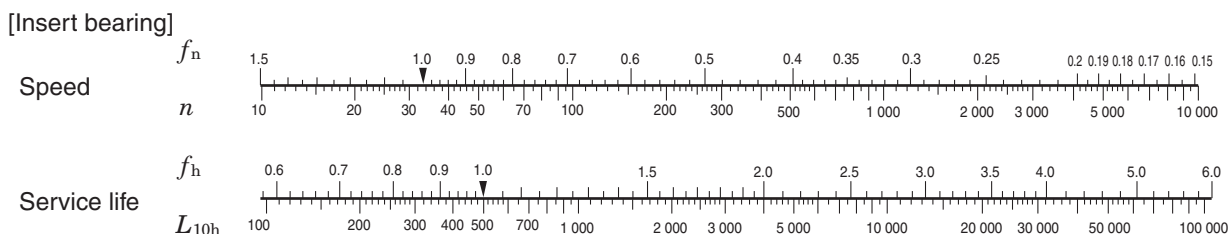
Calculation of the basic rating life with using the life factor ( $f_h$ ) and the speed factor ( $f_n$ ) in the **Equation (5.2)** are shown below.

$$L_{10h} = 500 f_h^3 \dots\dots\dots (5.3)$$

$$\text{Life factor} \quad f_h = f_n \cdot \frac{C_r}{P_r} \dots\dots\dots (5.4)$$

$$\begin{aligned} \text{Speed factor} \quad f_n &= \left(\frac{10^6}{500 \times 60n}\right)^{1/3} \\ &= (0.03n)^{-1/3} \dots\dots\dots (5.5) \end{aligned}$$

Values of  $f_n$ ,  $f_h$  and  $L_{10h}$  can be easily found by the nomogram of **Fig. 5.1**.



**Fig. 5.1** Rotational speed ( $n$ ) and its coefficients ( $f_n$ ), and service life coefficient ( $f_h$ ) and basic rating life ( $L_{10h}$ )

**5.2.1 Correction of basic rating load for high temperature use**

If a insert bearing unit is used at a high temperature, structure of bearing material is changed, leading to decreased hardness, and the basic dynamic load rating is reduced than that of the use at standard temperature. Once the structure of bearing material is changed, it will not be restored even if the temperature returns to standard level.

Therefore, when using a insert bearing unit at 150 °C or more, the basic rating load must be corrected by multiplying the basic dynamic load rating shown in dimensional table by the temperature factor shown in **Table 5.1**.

If the insert bearing unit has been used for a long period at 120 °C or more, fluctuations in dimensions of the bearing may be increased. If you use it under such conditions, contact JTEKT.

**Table 5.1 Temperature factor**

Bearing temperature, °C	125	150	175	200	250
Temperature factor	1	1	0.95	0.90	0.75

**5.2.2 Modified rating life  $L_{nm}$**

The life of rolling bearings was standardized as a basic rating life in the 1960s, but in actual applications, sometimes the actual life and the basic rating life have been quite different due to the lubrication status and the influence of the usage environment. To make the calculated life closer to the actual life, a corrected rating life has been considered since the 1980s. In this corrected rating life, bearing characteristic factor  $a_2$  (a correction factor for the case in which the characteristics related to the life are changed due to the bearing materials, manufacturing process, and design) and usage condition factor  $a_3$  (a correction factor that takes into account usage conditions that have a direct influence on the bearing life, such as the lubrication) or factor  $a_{23}$  formed from the interdependence of these two factors, are considered with the basic rating life. These factors were handled differently by each bearing manufacturer, but they have been standardized as a modified rating life in **ISO 281** in 2007. In 2013, **JIS B 1518** (dynamic load ratings and rating life) was amended to conform to the **ISO**.

The basic rating life ( $L_{10}$ ) shown in **Equation (5.1)** is the (fatigue) life with a dependability of 90 % under normal usage conditions for rolling bearings that have standard factors such as internal design, materials, and manufacturing quality. **JIS B 1518:2013** specifies a calculation method based on **ISO 281:2007**. To calculate accurate bearing life under a variety of operating conditions, it is necessary to consider elements such as the effect of changes in factors that can be anticipated when using different reliabilities and system approaches, and interactions between factors. Therefore, the specified calculation method considers additional stress due to the lubrication status, lubricant contamination, and fatigue load limit  $C_u$  (refer to P.36) on the inside of the bearing. The life that uses this life modification factor  $a_{ISO}$ , which considers the above factors, is called modified rating life  $L_{nm}$  and is calculated with the following **Equation (5.6)**.

$$L_{nm} = a_1 a_{ISO} L_{10} \dots\dots\dots (5.6)$$

In this equation,

$L_{nm}$  : Modified rating life 10<sup>6</sup> rotations  
 (This rating life has been modified for one of or a combination of the following: reliability of 90 % or higher, fatigue load limit, special bearing characteristics, lubrication contamination, and special operating conditions.)

$L_{10}$  : Basic rating life 10<sup>6</sup> rotations  
 (reliability: 90 %)

$a_1$  : Life modification factor for reliability  
 ..... refer to section (1)

$a_{ISO}$  : Life modification factor  
 ..... refer to section (2)

[Remark] When bearing dimensions are to be selected given  $L_{nm}$  greater than 90 % in reliability, the strength of shaft and housing must be considered.

**(1) Life modification factor for reliability  $a_1$**

The term “reliability” is defined as “for a group of apparently identical rolling bearings, operating under the same conditions, the percentage of the group that is expected to attain or exceed a specified life” in **ISO 281:2007**. Values of  $a_1$  used to calculate a modified rating life with a reliability of 90 % or higher (a failure probability of 10 % or less) are shown in **Table 5.2**.

**Table 5.2 Life modification factor for reliability  $a_1$**

Reliability, %	$L_{nm}$	$a_1$
90	$L_{10m}$	1
95	$L_{5m}$	0.64
96	$L_{4m}$	0.55
97	$L_{3m}$	0.47
98	$L_{2m}$	0.37
99	$L_{1m}$	0.25
99.2	$L_{0.8m}$	0.22
99.4	$L_{0.6m}$	0.19
99.6	$L_{0.4m}$	0.16
99.8	$L_{0.2m}$	0.12
99.9	$L_{0.1m}$	0.093
99.92	$L_{0.08m}$	0.087
99.94	$L_{0.06m}$	0.080
99.95	$L_{0.05m}$	0.077

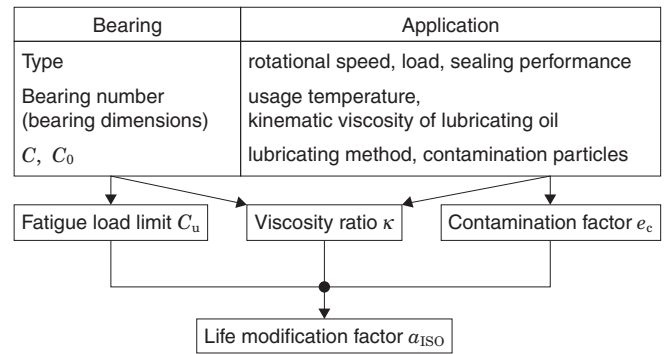
(Citation from **JIS B 1518:2013**)

**(2) Life modification factor  $a_{ISO}$**

**a) System approach**

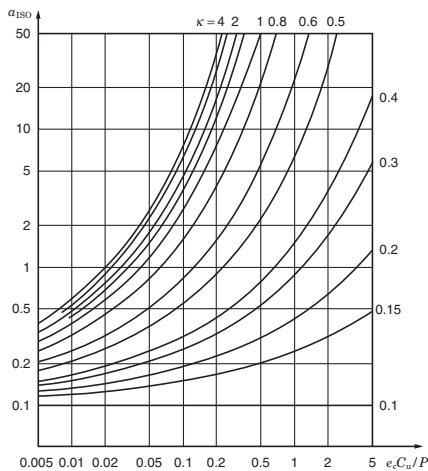
The various influences on bearing life are dependent on each other. The system approach of calculating the modified life has been evaluated as a practical method for determining life modification factor  $a_{ISO}$  (ref. Fig. 5.2). Life modification factor  $a_{ISO}$  is calculated with the following equation. A diagram is available for each bearing type (radial ball bearings, radial roller bearings, thrust ball bearings, and thrust roller bearings). (Each diagram (Figs. 5.3 to 5.6) is a citation from JIS B 1518:2013.)

Note that in practical use, this is set so that life modification factor  $a_{ISO} \geq 50$ .

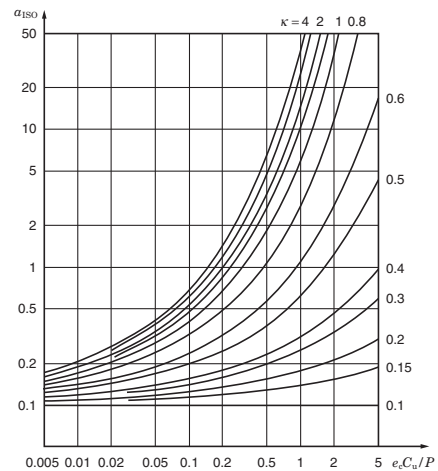


**Fig. 5.2 System approach**

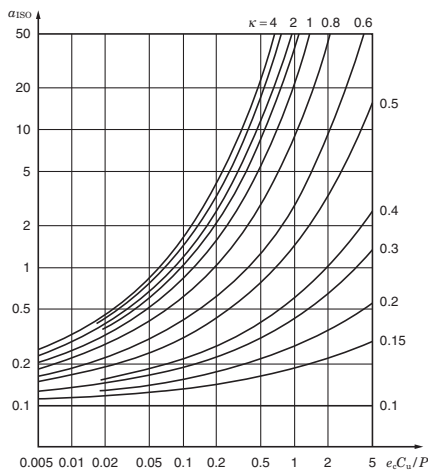
$$a_{ISO} = f\left(\frac{e_c C_u}{P}, \kappa\right) \dots\dots\dots (5.7)$$



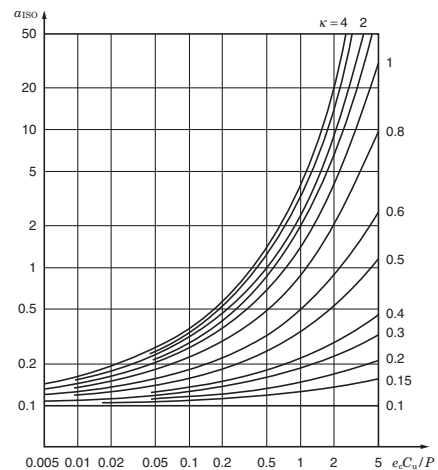
**Fig. 5.3 Life modification factor  $a_{ISO}$  (Radial ball bearings)**



**Fig. 5.4 Life modification factor  $a_{ISO}$  (Radial ball bearings)**



**Fig. 5.5 Life modification factor  $a_{ISO}$  (Thrust ball bearings)**



**Fig. 5.6 Life modification factor  $a_{ISO}$  (Thrust ball bearings)**

(Figs. 5.3 to 5.6 Citation from JIS B 1518:2013)

## 5 Life of bearing

### b) Fatigue load limit $C_u$

For regulated steel materials or alloy steel that has equivalent quality, the fatigue life is unlimited so long as the load condition does not exceed a certain value and so long as the lubrication conditions, lubrication cleanliness class, and other operating conditions are favorable. For general high-quality materials and bearings with high manufacturing quality, the fatigue stress limit is reached at a contact stress of approximately 1.5 GPa between the raceway and rolling elements. If one or both of the material quality and manufacturing quality are low, the fatigue stress limit will also be low.

The term "fatigue load limit"  $C_u$  is defined as "bearing load under which the fatigue stress limit is just reached in the most heavily loaded raceway contact" in ISO 281: 2007, and is affected by factors such as the bearing type, size, and material.

For details on the fatigue load limits of special bearings and other bearings not listed in this catalog, contact JTEKT.

### c) Contamination factor $e_c$

If solid particles in the contaminated lubricant are caught between the raceway and the rolling elements, indentations may form on one or both of the raceway and the rolling elements. These indentations will lead to localized increases in stress, which will decrease the life. This decrease in life attributable to the contamination of the lubricant can be calculated from the contamination level as contamination factor  $e_c$ .

$D_{pw}$  shown in this table is the pitch diameter of ball/roller set, which is expressed simply as  $D_{pw} = (D + d)/2$ . ( $D$ : Outside diameter,  $d$ : Bore diameter)

For information such as details on special lubricating conditions or detailed investigations, contact JTEKT.

### d) Viscosity ratio $\kappa$

The lubricant forms an oil film on the roller contact surface, which separates the raceway and the rolling elements. The status of the lubricant oil film is expressed by viscosity ratio  $\kappa$ , the actual kinematic viscosity at the operating temperature  $\nu$  divided by the reference kinematic viscosity  $\nu_1$  as shown in the following equation.

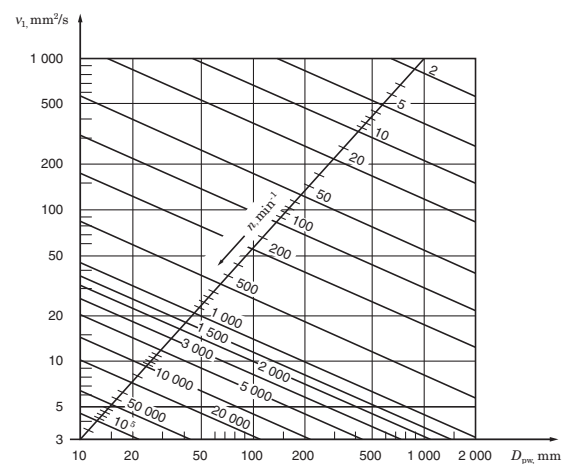
A  $\kappa$  greater than 4, equal to 4, or less than 0.1 is not applicable.

For details on lubricants such as grease and lubricants with extreme pressure additives, contact JTEKT.

$$\kappa = \frac{\nu}{\nu_1} \dots\dots\dots (5.8)$$

$\nu$ : Actual kinematic viscosity at the operating temperature; the viscosity of the lubricant at the operating temperature

$\nu_1$ : Reference kinematic viscosity; determined according to the speed and pitch diameter of ball/roller set  $D_{pw}$  of the bearing (ref. Fig. 5.7)



(Fig. 5.7 Citation from JIS B 1518:2013)

Fig. 5.7 Reference kinematic viscosity  $\nu_1$

### 5.2.3 Service life of bearing system comprising two or more bearings

Even for systems which comprise two or more bearings, if one bearing is damaged, the entire system malfunctions.

Where all bearings used in an application are regarded as one system, the service life of the bearing system can be calculated using the following equation,

Table 5.3 Values of contamination factor  $e_c$

Contamination level	$e_c$	
	$D_{pw} < 100$ mm	$D_{pw} \geq 100$ mm
Extremely high cleanliness: The size of the particles is approximately equal to the thickness of the lubricant oil film, this is found in laboratory-level environments.	1	1
High cleanliness: The oil has been filtered by an extremely fine filter, this is found with standard grease-packed bearings and sealed bearings.	0.8 to 0.6	0.9 to 0.8
Standard cleanliness: The oil has been filtered by a fine filter, this is found with standard grease-packed bearings and shielded bearings.	0.6 to 0.5	0.8 to 0.6
Minimal contamination: The lubricant is slightly contaminated.	0.5 to 0.3	0.6 to 0.4
Normal contamination: This is found when no seal is used and a coarse filter is used in an environment in which wear debris and particles from the surrounding area penetrate into the lubricant.	0.3 to 0.1	0.4 to 0.2
High contamination: This is found when the surrounding environment is considerably contaminated and the bearing sealing is insufficient.	0.1 to 0	0.1 to 0
Extremely high contamination	0	0

(Table 5.3 Citation from JIS B 1518:2013)

$$\frac{1}{L^e} = \frac{1}{L_1^e} + \frac{1}{L_2^e} + \frac{1}{L_3^e} + \dots \quad (5.9)$$

where :

$L$  : rating life of system

$L_1, L_2, L_3 \dots$  : rating life of each bearing

$e$  : constant

$\left( \begin{array}{l} e = 10/9 \dots \text{ball bearing} \\ e = 9/8 \dots \text{roller bearing} \\ \text{The mean value is for a system using} \\ \text{both ball and roller bearings.} \end{array} \right)$

[Example]

When a shaft is supported by two roller bearings whose service lives are 50 000 hours and 30 000 hours respectively, the rating life of the bearing system supporting this shaft is calculated as follows, using **Equation (5.9)** :

$$\frac{1}{L^{9/8}} = \frac{1}{50\,000^{9/8}} + \frac{1}{30\,000^{9/8}}$$

$$L \doteq 20\,000 \text{ h}$$

The equation suggests that the rating life of these bearings as a system becomes shorter than that of the bearing with the shorter life.

This fact is very important in estimating bearing service life for applications using two or more bearings.

### 5.2.4 Recommended service life of bearing

Excessively long life of insert bearing unit does not lead to economic operation. Setup of the recommended service life of bearing unit depending on the type of machine the insert bearing unit is used together and operating conditions is required.

Recommended service life of insert bearing unit empirically adopted is shown in **Table 5.4**.

**Table 5.4 Recommended service life of insert bearing unit (reference)**

Operating conditions	Application	Recommended service life, h
Operated in short period or intermittently	Home electric appliances, electric tool, agricultural machinery, hoist, etc.	4 000 – 8 000
Discontinuously but for a long period	Factory motor, general gear, etc.	12 000 – 20 000
Always operated for 8 hours or longer a day or operated continuously for a long period	General machinery, blower, etc.	20 000 – 30 000
Operated continuously for 24 hours, no fault is allowed	Electric power plant facility, mine drainage facility, etc.	100 000 – 200 000

### 5.3 Grease life

Grease life of a insert bearing for insert bearing unit is influenced by the level of load, rotational speed of bearing, and operating temperature.

Grease life of a insert bearing for unit used under appropriate operating conditions can be found by the equation shown below.

$$\log L = 6.10 - 4.40 \times 10^{-6} d_m n - 2.50 \left( \frac{P_r}{C_r} - 0.05 \right) - (0.021 - 1.80 \times 10^{-8} d_m n) T \quad (5.10)$$

Whereas,

$L$  : Grease life h

$d_m$  : Pitch dia. of ball set mm

$$d_m = \frac{(D + d)}{2}$$

$\left( \begin{array}{l} D : \text{Nominal bearing outer dia.,} \\ d : \text{Nominal bearing bore dia.} \end{array} \right)$

$n$  : Rotational speed of bearing min<sup>-1</sup>

$P_r$  : Dynamic equivalent radial load N  
(see “6 Bearing load”)

$C_r$  : Basic dynamic radial load rating of bearing N

$T$  : Operating temperature of bearing °C

Applicable conditions for the **Equation (5.10)** are shown below.

1) Operating temperature of bearing :  $T$  °C

To be applied if the following condition is satisfied :  
 $T \leq 100$

$\left( \begin{array}{l} \text{If } T \text{ is smaller than } 50 (T < 50), \\ \text{following condition should be applied : } T = 50. \end{array} \right)$

If  $T$  is larger than 100 ( $T > 100$ ), contact JTEKT.

2) Rotational speed of bearing :  $d_m n$

To be applied if the following condition is satisfied :  
 $d_m n \leq 30 \times 10^4$

$\left( \begin{array}{l} \text{If } d_m n \text{ is smaller than } 12.5 \times 10^4 (d_m n < 12.5 \times 10^4), \\ \text{following condition should be applied :} \\ d_m n = 12.5 \times 10^4 \end{array} \right)$

If  $d_m n$  is larger than  $30 \times 10^4 (d_m n > 30 \times 10^4)$ , contact JTEKT.

3) Load condition of bearing :  $\frac{P_r}{C_r}$

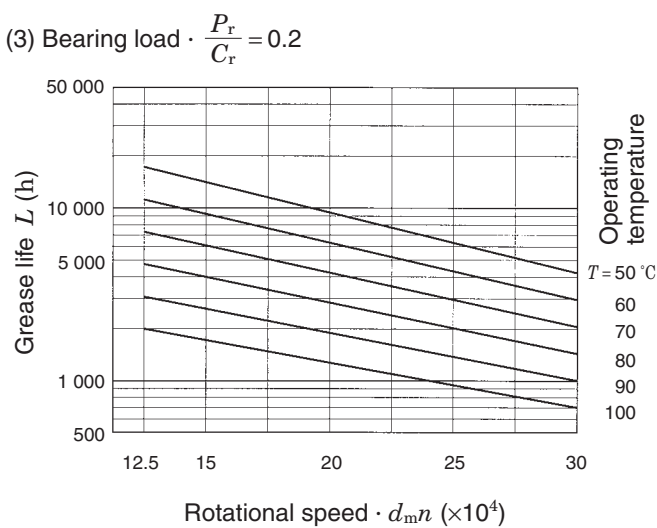
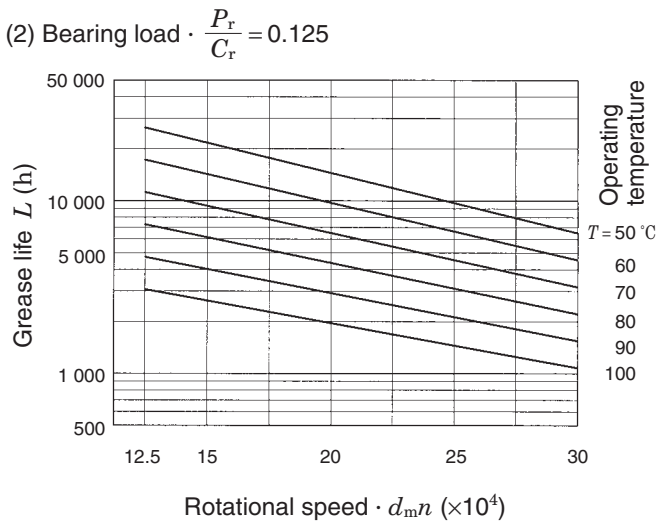
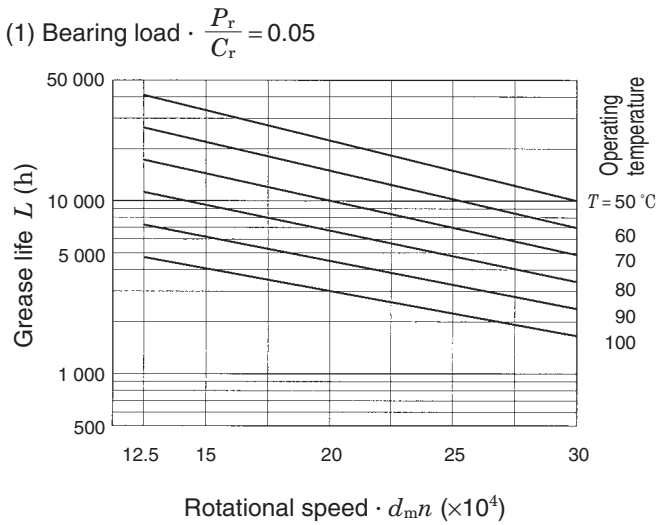
To be applied if the following condition is satisfied :  
 $\frac{P_r}{C_r} \leq 0.2$

$\left( \begin{array}{l} \text{If } \frac{P_r}{C_r} \text{ is smaller than } 0.05 (\frac{P_r}{C_r} < 0.05), \\ \text{following condition should be applied : } \frac{P_r}{C_r} = 0.05 \end{array} \right)$

If  $\frac{P_r}{C_r}$  is larger than 0.2 ( $\frac{P_r}{C_r} > 0.2$ ), contact JTEKT.

Reference figure of grease life obtained by the **Equation (5.10)** is shown in **Fig. 5.8**.





**Fig. 5.8** Relation of grease life to bearing load, rotational speed, and operating temperature (reference)

## 6 Bearing load

As for the loads applied to a bearing, load caused by weight of object supported by the bearing, transmitting force of gears and belts, load generated in the machine operated are included. In many cases, these loads cannot be found out by simple calculation.

Because the loads are not fixed but fluctuated, and it is difficult to fix the level and direction of the fluctuations.

Therefore, in general, to find the loads applied to a bearing, the following steps are adopted : multiply the load to be able to be found theoretically by various factors obtained empirically.

### 6.1 Loads applied to bearing

#### 6.1.1 Load factor

Even if radial load and axial load to be applied to a bearing can be found by standard dynamical calculation, loads actually applied to the bearing are greater than the calculated values because of vibration and impact generated while machine is being operated.

To find the loads actually applied to a bearing, multiply the theoretically found values by load factor.

$$F = f_w \cdot F_c \dots\dots\dots (6.1)$$

Whereas,

$F$  : Load actually applied to bearing N

$F_c$  : Theoretically calculated load N

$f_w$  : Load factor (see **Table 6.1**)

**Table 6.1** Load factor  $f_w$

Operating conditions	Applications	$f_w$
Virtually no vibration or impact	Electric machines and instruments	1 – 1.2
Standard operation (weak impact)	Agricultural machines and blower	1.2 – 2
Great vibration and impact	Constructive machines and grinder	2 – 3

#### 6.1.2 Loads in case of belt or chain transmission

As for belt transmission, theoretical load applied to the pulley shaft can be found by effective transmission force of belt. Actually, the effective transmission force must be multiplied by load factor ( $f_w$ ) obtained with taking vibration and impact generated while machine is being operated into consideration and belt factor ( $f_b$ ) with taking belt tension into consideration.

As for chain transmission, factor equivalent to the belt factor for belt transmission must be multiplied.

$$F_b = \frac{2M}{D_p} \cdot f_w \cdot f_b$$

$$= \frac{19.1 \times 10^6 W}{D_p \cdot n} \cdot f_w \cdot f_b \dots\dots\dots (6.2)$$

Whereas,

- $F_b$  : Load actually applied to pulley shaft or sprocket shaft N
- $M$  : Torque applied to pulley or sprocket mN · m
- $W$  : Transmitted power kW
- $D_p$  : Pitch circle dia. of pulley or sprocket mm
- $n$  : Rotational speed min<sup>-1</sup>
- $f_w$  : Load factor (see **Table 6.1**)
- $f_b$  : Belt factor (see **Table 6.2**)

**Table 6.2 Belt factor  $f_b$**

Belt type	$f_b$
Toothed belt	1.3 – 2
V belt	2 – 2.5
Flat belt (with tension pulley)	2.5 – 3
Flat belt	4 – 5
Chain	1.2 – 1.5

### 6.1.3 Load in case of gear transmission

As for gear transmission, load in tangential direction ( $K_t$ ), load in radial direction ( $K_r$ ), and axial load ( $K_a$ ) are included as the theoretical loads applied to a gear. They can be dynamically found by transmission force and gear type.

The followings show the example of standard flat gear (as for flat gear, no axial load applied is expected.).

- (1) Load applied to gear in tangential direction (tangential line force)

$$K_t = \frac{2M}{D_p} = \frac{19.1 \times 10^6 W}{D_p n} \dots\dots\dots (6.3)$$

- (2) Load applied to gear in radial direction (separating force)

$$K_r = K_t \tan \alpha \dots\dots\dots (6.4)$$

- (3) Synthetic load applied to gear

$$K_g = \sqrt{K_t^2 + K_r^2} = K_t \sec \alpha \dots\dots\dots (6.5)$$

Whereas,

- $K_t$  : Load applied to gear in tangential direction (tangential line force) N
- $K_r$  : Load applied to gear in radial direction (separating force) N
- $K_g$  : Synthetic load applied to gear N
- $M$  : Torque applied to gear mN · m
- $D_p$  : Pitch circle dia. of gear mm
- $W$  : Transmission power kW
- $n$  : Rotational speed min<sup>-1</sup>
- $\alpha$  : Pressure angle of gear deg

Note that the actual gear load must be found by multiplying the theoretical load by load factor ( $f_w$ ) obtained with taking vibration and impact generated while machine is being operated into consideration and gear factor ( $f_g$ ) with taking accuracy and finish of gear into consideration.

$$F_g = f_w \cdot f_g \cdot K_g \dots\dots\dots (6.6)$$

Whereas,

- $F_g$  : Load actually applied to gear N
- $K_g$  : Theoretically synthetic load applied to gear N
- $f_w$  : Load factor (see **Table 6.1**)
- $f_g$  : Gear factor (see **Table 6.3**)

**Table 6.3 Gear factor  $f_g$**

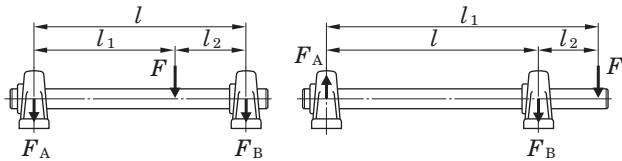
Gear type	$f_g$
Precision gear (both pitch error and tooth profile error should be 0.02 mm or less)	1 – 1.1
Standard gear (both pitch error and tooth profile error should be 0.1 mm or less)	1.1 – 1.3

## 6 Bearing load

### 6.2 Distribution of load to bearing

To distribute the load applied to the shaft system into the bearing which supports the shaft, find the radial component force of each load, and calculate the vector sum in accordance with the direction of load. **Fig. 6.1** shows the example of distribution of radial load.

In many cases, a bearing bears radial load as well as axial load, leading to synthetic loads. In such a case, convert it into dynamic equivalent load, and consider it as the bearing load.



$$F_A = \frac{l_2}{l} \cdot F \quad \dots\dots\dots (6.7)$$

$$F_B = \frac{l_1}{l} \cdot F \quad \dots\dots\dots (6.8)$$

**Fig. 6.1** Distribution of load to bearing

### 6.3 Dynamic equivalent load

In many cases, a bearing is exposed to the synthetic load of radial load and axial load, and it is used under various conditions, including fluctuated load thus, the load actually applied to the bearing cannot be directly compared to the basic dynamic load rating.

In such a case, find the load running the bearing center in a fixed level and direction that allows the same bearing life as the actual bearing load and rotational speed. Then, compare it with the basic dynamic load rating.

The converted virtual load is called dynamic equivalent load ( $P$ ).

#### 6.3.1 Calculation of dynamic equivalent load

The dynamic equivalent radial load ( $P_r$ ) of a radial bearing (insert bearing for unit is included) that bears the synthetic load in a fixed level and direction can be found by the equation shown below.

$$P_r = XF_r + YF_a \quad \dots\dots\dots (6.9)$$

Whereas,

- $P_r$  : Dynamic equivalent radial load                      N
- $F_r$  : Radial load    N
- $F_a$  : Axial load    N
- $X$  : Radial load factor (see **Table 6.4**)
- $Y$  : Axial load factor (see **Table 6.4**)

**Table 6.4** Radial load factor ( $X$ ) and axial load factor ( $Y$ )

$\frac{f_0 F_a}{C_{0r}}$	$e$	$F_a / F_r \leq e$		$F_a / F_r > e$	
		$X$	$Y$	$X$	$Y$
0.172	0.19	1	0	0.56	2.30
0.345	0.22				1.99
0.689	0.26				1.71
1.03	0.28				1.55
1.38	0.30				1.45
2.07	0.34				1.31
3.45	0.38				1.15
5.17	0.42				1.04
6.89	0.44				1.00

- [Remarks] 1.  $C_{0r}$  (basic static radial load rating) and  $f_0$  (factor) are shown in the dimensional tables.  
 2. If  $f_0 F_a / C_{0r}$  does not conform to the table above, find by interpolation.

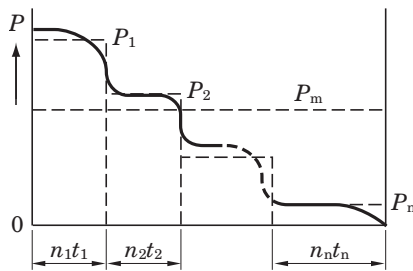
### 6.3.2 Mean dynamic equivalent load in case of fluctuated load

If level or direction of the load applied to a bearing is fluctuated, it is necessary to find the mean dynamic equivalent load to allow the same bearing life as that under actual fluctuated conditions.

Table 6.5 shows the method of finding the mean dynamic equivalent load under various fluctuated conditions.

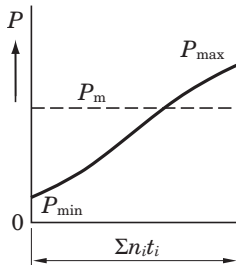
**Table 6.5 Calculation of mean dynamic equivalent load in case of fluctuated load**

#### (1) Staged fluctuation



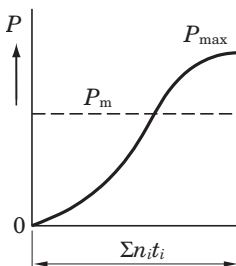
$$P_m = \sqrt[p]{\frac{P_1^p n_1 t_1 + P_2^p n_2 t_2 + \dots + P_n^p n_n t_n}{n_1 t_1 + n_2 t_2 + \dots + n_n t_n}} \quad \dots \dots \dots (6.10)$$

#### (2) Stageless fluctuation



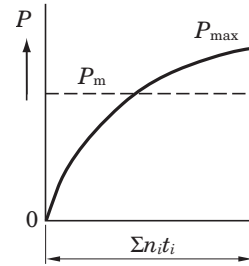
$$P_m = \frac{P_{\min} + 2 P_{\max}}{3} \quad \dots \dots \dots (6.11)$$

#### (3) Sine curve fluctuation



$$P_m = 0.68 P_{\max} \quad \dots \dots \dots (6.12)$$

#### (4) Sine curve fluctuation (upper half of sine curve)



$$P_m = 0.75 P_{\max} \quad \dots \dots \dots (6.13)$$

Whereas,

- $P_m$  : Mean dynamic equivalent load N
- $P_1$  : Dynamic equivalent load actuating for  $t_1$  hours at rotational speed of  $n_1$  N
- $P_2$  : Dynamic equivalent load actuating for  $t_2$  hours at rotational speed of  $n_2$  N
- 
- 
- 
- $P_n$  : Dynamic equivalent load actuating for  $t_n$  hours at rotational speed of  $n_n$  N
- $P_{\min}$  : Minimum dynamic equivalent load N
- $P_{\max}$  : Maximum dynamic equivalent load N
- $\Sigma n_i t_i$  : Total rotating frequency for  $t_1$  to  $t_i$  hours

## 6.4 Basic static load rating and static equivalent load

### 6.4.1 Basic static load rating

If a bearing is exposed to excessive static load or impact load even under extra low rotational speed, partial permanent deformation occurs to the contact surface of the raceway of bearing with the rolling element. The permanent deformation increases with the increase of load, and when it exceeds a fixed level, smooth rotation of the bearing is interfered.

Basic static load rating of a bearing is the static load to generate the calculated contact stress shown below at the center of contact surface of the raceway the maximum load is applied and the rolling element.

- (1) Self-aligning ball bearing ..... 4 600 MPa
- (2) Other ball bearings  
(insert bearing for unit is included) .... 4 200 MPa
- (3) Roller bearing ..... 4 000 MPa

The total permanent deformation of bearing raceway and rolling element to be generated under these contact stresses are 0.000 1 times of the diameter of rolling element.

In the insert bearing for unit, it is indicated as the **basic static radial load rating** ( $C_{0r}$ ), and the values are shown in the dimensional tables.

## 6 Bearing load

### 6.4.2 Static equivalent load

Static equivalent load is the virtual load converted into the level that allows the generation of the same contact stress at the contact face of the raceway of bearing and rolling element that are exposed to the maximum stress as the contact stress under the actual load conditions, when a bearing is stopped or rotated at extra low speed.

Static equivalent radial load ( $P_{0r}$ ) of the insert bearing for unit can be calculated by the equation below (use greater value).

$$P_{0r} = 0.6F_r + 0.5F_a \quad \text{..... (6.14)}$$

$$P_{0r} = F_r \quad \text{..... (6.15)}$$

Whereas,

$P_{0r}$  : Static equivalent radial load N

$F_r$  : Radial load N

$F_a$  : Axial load N

### 6.4.3 Safety factor

The static equivalent load allowed by a bearing depends on the basic static load rating of the bearing, and the limitation of use of bearing by the permanent deformation (partial dent) of the bearing depends on the performance required for the bearing or operating conditions.

Therefore, in order to examine the safety of the basic static load rating of the bearing, safety factor is defined taking conventional experiences into consideration.

$$f_s = \frac{C_{0r}}{P_{0r}} \quad \text{..... (6.16)}$$

Whereas,

$f_s$  : Safety factor (see **Table 6.6**)

$C_{0r}$  : Basic static radial load rating N

$P_{0r}$  : Static equivalent radial load N

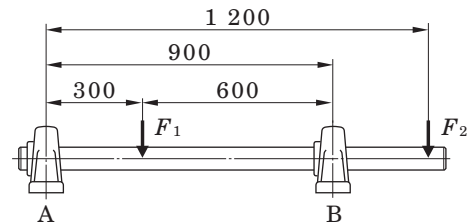
**Table 6.6 Safety factor  $f_s$  (recommended)**

Operating conditions		$f_s$ (Min.)
Being rotated	High rotating accuracy is required	2
	Standard operating conditions	1
	Impact	1.5
Not always being rotated (sometimes oscillated)	Standard operating conditions	0.5
	Impact, unevenly distributed load	1

## 6.5 Example of applied calculation

### Example 1 Distributing load

Find the load applied to the bearing A and bearing B, if the radial load  $F_1$  ( $F_1 = 1.5$  kN) and  $F_2$  ( $F_2 = 4.5$  kN) are applied.



- (1) Find the radial load  $F_{1A}$  applied to the bearing A by  $F_1$ , with **Equations (6.7)** and **(6.8)**.

$$F_{1A} = \frac{600}{900} \times 1.5 = 1.0 \text{ (kN)}$$

In a similar manner, find the radial load  $F_{2A}$  applied to the bearing A by  $F_2$ .

$$F_{2A} = -\frac{1200 - 900}{900} \times 4.5 = -1.5 \text{ (kN)}$$

[Remark] Negative load is the upward load.

Radial load  $F_A$  applied to the bearing A :

$$F_A = F_{1A} + F_{2A} = 1.0 + (-1.5) = -0.5 \text{ (kN)}$$

- (2) In a similar manner to (1), find the radial load  $F_B$  applied to the bearing B.

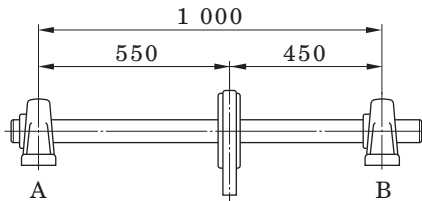
$$F_{1B} = \frac{300}{900} \times 1.5 = 0.5 \text{ (kN)}$$

$$F_{2B} = \frac{1200}{900} \times 4.5 = 6.0 \text{ (kN)}$$

$$F_B = F_{1B} + F_{2B} = 0.5 + 6.0 = 6.5 \text{ (kN)}$$

## Example 2 Calculating load by V-belt transmission

Find the load applied to the bearing A and bearing B when the shaft is driven by the V-belt, transmission power  $W$  is 7.5 kW ( $W = 7.5$  kW), rotational speed  $n$  is 300 min<sup>-1</sup> ( $n = 300$  min<sup>-1</sup>), effective diameter of pulley  $D_p$  is 300 mm ( $D_p = 300$  mm).



- (1) Find the load actually applied to the pulley shaft  $F_b$  with **Equation (6.2)**.

From **Table 6.1**, load factor  $f_w$  is 1.2 ( $f_w = 1.2$ ), and the belt factor  $f_b$  is 2.5 ( $f_b = 2.5$ ), from **Table 6.2**.

$$F_b = \frac{19.1 \times 10^6 W}{D_p \cdot n} \cdot f_w \cdot f_b$$

$$= \frac{19.1 \times 10^6 \times 7.5}{300 \times 300} \times 1.2 \times 2.5 = 4.78 \text{ (kN)}$$

- (2) Find the load actually applied to the bearing A and bearing B ( $F_A$  and  $F_B$ ) with **Equations (6.7)** and **(6.8)**.

$$F_A = \frac{450}{1000} \times 4.78 = 2.15 \text{ (kN)}$$

$$F_B = \frac{550}{1000} \times 4.78 = 2.63 \text{ (kN)}$$

## Example 3 Calculating dynamic equivalent radial load

Find the dynamic equivalent radial load  $P_r$  when the radial load  $F_r$ , 1.5 kN ( $F_r = 1.5$  kN), and the axial load  $F_a$ , 0.85 kN, ( $F_a = 0.85$  kN) are applied to the pillow block type unit UCP306J (bearing UC306).

- (1) Find the radial load factor ( $X$ ) and the axial load factor ( $Y$ ) with using the static radial load rating  $C_{0r}$  of UCP306J (bearing UC306), 15.0 kN ( $C_{0r} = 15.0$  kN), and **Table 6.4**.

$$\frac{f_0 F_a}{C_{0r}} = \frac{13.3 \times 0.85}{15.0} = 0.754, e = 0.264$$

$$\frac{F_a}{F_r} = \frac{0.85}{1.5} = 0.567 > e \text{ (0.264)}$$

Therefore,  $X = 0.56$ ,  $Y = 1.68$

- (2) Find the dynamic equivalent radial load  $P_r$  with **Equation (6.9)**.

$$P_r = XF_r + YF_a = 0.56 \times 1.5 + 1.68 \times 0.85$$

$$= 2.27 \text{ (kN)}$$

## Example 4 Calculating bearing life

Under the conditions shown in the **Example 3**, find the bearing life  $L_{10h}$  when a bearing is used for a blower of the rotational speed  $n$ , 1 000 min<sup>-1</sup>.

- (1) Select the load factor  $f_w$  is 1.2 ( $f_w = 1.2$ ) from **Table 6.1**, and find the bearing load  $P_r$ .

$$P_r = f_w \cdot F = 1.2 \times 2.27 = 2.72 \text{ (kN)}$$

- (2) The dynamic radial load rating of UCP306J (bearing UC306),  $C_r$ , is 26.7 kN ( $C_r = 26.7$  kN), and calculate the bearing life  $L_{10h}$  with the **Equation (5.2)**.

$$L_{10h} = \frac{10^6}{60n} \cdot \left(\frac{C_r}{P_r}\right)^3 = \frac{10^6}{60 \times 1000} \times \left(\frac{26.7}{2.72}\right)^3$$

$$\doteq 15\,800 \text{ (h)}$$

- (3) Calculate bearing life  $L_{10h}$  with the nomogram shown in **Fig. 5.1**.

When the rotational speed  $n$  is 1 000 min<sup>-1</sup> ( $n = 1\,000$  min<sup>-1</sup>), rotational factor  $f_n$  is 0.32 ( $f_n = 0.32$ ). next, find the life factor  $f_h$  by speed factor  $f_n$ , dynamic radial load rating of bearing  $C_r$ , and the bearing load  $P_r$ .

$$\text{Life factor } f_h = f_n \cdot \frac{C_r}{P_r} = 0.32 \times \frac{26.7}{2.72}$$

$$= 3.14$$

From life factor  $f_h$ , bearing life  $L_{10h} \doteq 16\,000$  hours.

## Example 5 Selecting insert bearing unit

If a bearing is operated under the following conditions, select the flange type unit (UCF) with at least two years (5 000 hours) or longer service life : rotational speed of shaft  $n$  is 1 500 min<sup>-1</sup> ( $n = 1\,500$  min<sup>-1</sup>), and radial load  $F_r$  is 5 kN ( $F_r = 5$  kN). The radial load  $F_r$  includes the load factor and gear factor.

- (1) From the nomogram shown in **Fig. 5.1**, when life time  $L_h$  is 5 000 h ( $L_h = 5\,000$  h), life factor  $f_h$  can be found as 2.16 ( $f_h \doteq 2.16$ ), and speed factor  $f_n$  can be found as 0.28 ( $f_n \doteq 0.28$ ) when the rotational speed  $n$  is 1 500 min<sup>-1</sup> ( $n = 1\,500$  min<sup>-1</sup>).

$$\text{Dynamic radial load rating } C_r = F_r \cdot \frac{f_h}{f_n} = 5 \times \frac{2.16}{0.28}$$

$$\doteq 38.6 \text{ (kN)}$$

- (2) Find the flange type unit that meets the following condition : dynamic radial load rating  $C_r$  is 38.6 kN ( $C_r = 38.6$  kN). As for the diameter series 2, UCF211J (dynamic radial load rating  $C_r$  is 43.4 kN ( $C_r = 43.4$  kN)) can be selected.

### Example 6 Selecting pillow block type unit for low speed

If a bearing is used for a dolly under the following conditions, select the pillow block type unit (UCP) with 10 000 hours service life : radial load  $F_r$  is 12 kN ( $F_r = 12$  kN), and rotational speed is  $8 \text{ min}^{-1}$ .

- (1) Find the required dynamic radial load rating  $C_r$  with using **Equations (5.4) and (5.5)**.

$$\text{Speed factor } f_n = (0.03n)^{-1/p} = (0.03 \times 8)^{-1/3} \doteq 1.61$$

$$\text{Life factor } f_h = \left(\frac{L_{10h}}{500}\right)^{1/p} = \left(\frac{10\,000}{500}\right)^{1/3} \doteq 2.71$$

$$\begin{aligned} \text{Dynamic radial load rating } C_r &= P_r \cdot \frac{f_h}{f_n} = 12 \times \frac{2.71}{1.61} \\ &\doteq 20.2 \text{ (kN)} \end{aligned}$$

- (2) From **Table 6.6**, define safe factor  $f_s$  as 2 ( $f_s = 2$ ), and find the static radial load rating of bearing required  $C_{0r}$ .

$$C_{0r} = f_s \cdot P_r = 2 \times 12 = 24 \text{ (kN)}$$

- (3) The unit is used for a dolly, and vibration or impact may occur. Thus, select UCP308J ( $C_r = 40.7$  kN,  $C_{0r} = 24.0$  kN).

### Example 7 Calculating bearing life in case of use at high temperature

Find the bearing life if the heat resistant pillow block type unit (UCP215JD1K2) is operated under the following conditions : operating temperature is  $175 \text{ }^\circ\text{C}$ , radial load  $F_r$  is 4 kN ( $F_r = 4$  kN), and the rotational speed  $n$  is  $800 \text{ min}^{-1}$  ( $n = 800 \text{ min}^{-1}$ ). Note that the radial load  $F_r$  includes load factor and gear factor.

- (1) From **Table 5.1**, find the dynamic load rating  $C_r$  with in the case that a bearing is used at  $175 \text{ }^\circ\text{C}$ .

$$C_r = 67.4 \times 0.95 = 64.0 \text{ (kN)}$$

Find the bearing life  $L_{10h}$  with using **Equation (5.2)**.

$$\begin{aligned} L_{10h} &= \frac{10^6}{60n} \cdot \left(\frac{C_r}{P_r}\right)^3 = \frac{10^6}{60 \times 800} \times \left(\frac{64.0}{4}\right)^3 \\ &\doteq 85\,000 \text{ (h)} \end{aligned}$$

- (2) If a bearing unit is operated at  $175 \text{ }^\circ\text{C}$ , grease is degraded faster, and it cannot be used without lubrication. Supply grease at intervals specified in **Table 14.4**.
- (3) If the shaft is extended excessively, install a bearing unit on the identical shaft on the fixed side (positioning of shaft), and install another bearing unit on the free side (see “**10 Design of shaft and base**”).

### Example 8 Calculating grease life

Find the grease life in the case that pillow block type unit UCP204J (bearing UC204) under the following conditions : radial load  $F_r$  is 1 kN ( $F_r = 1$  kN), and rotational speed  $n$  is  $800 \text{ min}^{-1}$  ( $n = 800 \text{ min}^{-1}$ ). Note that the radial load  $F_r$  includes load factor and belt factor. Operating temperature of the bearing should be  $40 \text{ }^\circ\text{C}$ .

Find the grease life  $L$  with using **Equation (5.10)**.

$$\begin{aligned} \log L &= 6.10 - 4.40 \times 10^{-6} d_m n - 2.50 \left(\frac{P_r}{C_r} - 0.05\right) \\ &\quad - (0.021 - 1.80 \times 10^{-8} d_m n) T \\ &= 6.10 - 4.40 \times 10^{-6} \times 12.5 \times 10^4 \\ &\quad - 2.50 \left(\frac{1}{12.8} - 0.05\right) \\ &\quad - (0.021 - 1.80 \times 10^{-8} \times 12.5 \times 10^4) \times 50 \\ &= 4.542 \\ L &\doteq 34\,800 \text{ (h)} \end{aligned}$$

### Example 9 Calculating life of bearing unit in case of non-lubrication

Find the life of a bearing unit in the case that it is operated under the conditions shown in **Example 8**, but without lubrication.

- (1) Find the rating life of bearing  $L_{10h}$  with using **Equation (5.2)**.

$$\begin{aligned} L_{10h} &= \frac{10^6}{60n} \cdot \left(\frac{C_r}{P_r}\right)^3 = \frac{10^6}{60 \times 800} \times \left(\frac{12.8}{1}\right)^3 \\ &\doteq 43\,700 \text{ (h)} \end{aligned}$$

- (2) Compare the grease life  $L$  shown in **Example 8** to the rating life of bearings  $L_h$ . Then, grease life  $L$  is shorter than the bearing rating life. Therefore, life of a bearing unit should be the same as the grease life  $L$ , 34 800 hours ( $L = 34\,800$  hours).

## 7 Allowable rotational speed

### 7.1 Allowable rotational speed

The rotational speed of a bearing is normally affected by friction heat generated in the bearing. If the heat exceeds a certain amount, seizure or other failures occur, thus causing rotation to be discontinued.

The allowable rotational speed is the highest speed at

which a bearing can continuously operate without generating such critical heat.

Allowable rotational speed of a insert bearing unit depends on the dimensions of the bearing, type of oil seal, and fitting conditions of bearing inner ring and shaft.

**Table 7.1** shows the standard allowable rotational speeds of insert bearing units.

**Table 7.1 Allowable rotational speed of insert bearing units (standard value)**

Unit : min<sup>-1</sup>

Bore diameter No.	UC type bearing, UC-S6 type bearing, UK type bearing, NA type bearing, ER, RB type bearing										SA type bearing SB type bearing	SU type bearing SU-S6 type bearing
	Standard type, cold resistant type (D2K2)			Triple-lip sealed (L3)			Heat resistant type (D1K2)	Heat resistant type (K3), for blower (S5)				
	Diameter series			Diameter series			Diameter series	Diameter series				
	2	X	3	2	X	3	2, X, 3	2	X	3		
<b>8</b>												10 000
<b>00</b>	–			–			–	–			–	10 000
<b>01</b>	5 800			2 300			3 800	8 700			6 800	8 000
<b>02</b>	5 800			2 300			3 800	8 700			6 800	6 600
<b>03</b>	5 800			2 300			3 800	8 700			6 800	5 800
<b>04</b>	5 800	–	–	2 300	–		3 800	8 700	–	–	5 800	5 000
<b>05</b>	5 100	4 300	4 600	2 100	960		3 000	7 700	6 400	6 700	5 100	4 000
<b>06</b>	4 300	3 700	3 900	960	830	–	2 500	6 400	5 500	5 800	4 300	3 300
<b>07</b>	3 700	3 300	3 400	830	750	770	2 100	5 500	5 000	5 100	3 700	–
<b>08</b>	3 300	3 100	3 100	750	690	690	1 900	5 000	4 600	4 600	3 300	
<b>09</b>	3 100	2 800	2 700	690	640	620	1 700	4 600	4 300	4 100	3 100	
<b>10</b>	2 800	2 500	2 400	640	570	550	1 500	4 300	3 800	3 700	2 800	
<b>11</b>	2 500	2 300	2 300	570	520	510	1 400	3 800	3 500	3 400		
<b>12</b>	2 300	2 200	2 100	520	490	470	1 300	3 500	3 200	3 100		
<b>13</b>	2 200	2 100	1 900	490	460	440	1 200	3 200	3 100	2 900		
<b>14</b>	2 100	2 000	1 800	460	440	410	1 100	3 100	2 900	2 700		
<b>15</b>	2 000	1 800	1 700	440	410	380	1 000	2 900	2 700	2 600		
<b>16</b>	1 800	1 700	1 600	410	380	360	940	2 700	2 600	2 400		
<b>17</b>	1 700	1 600	1 500	380	360	340	880	2 600	2 400	2 300		
<b>18</b>	1 600	1 500	1 400	360	340	320	830	2 400	2 300	2 100		
<b>19</b>	–	–	1 400	–	–	310	790	–	–	2 000		
<b>20</b>		1 300	1 300		300	280	750		2 000	1 900		
<b>21</b>		–	1 200		–	–	710		–	1 800		
<b>22</b>			1 100			250	680			1 700		
<b>24</b>			1 100			240	630			1 600		
<b>26</b>			1 000			220	580			1 500		
<b>28</b>			910			200	540			1 400		

[Remarks] 1. Allowable rotational speed of the units with covers is 80% of the value shown in the table above.

2. If a bearing unit is used with excessively loose fitting, allowable rotational speed must be corrected by multiplying it by the fitting factor  $f_c$  shown in **Table 7.2**.



### 7.2 Correction of allowable rotational speed by fitting

For easier installation of a insert bearing unit to a shaft, clearance fit is used for a bearing inner ring and shaft, in general. Size of fitting clearance between the bearing inner ring and the shaft is related to the allowable rotational speed of the bearing unit. As the rotational speed is increased, the fitting clearance between the bearing inner ring and the shaft should be decreased.

Table 7.2 shows the fitting factors to correct the allowable rotational speed depending on the types of fitting of the bearing inner ring to the shaft.

As for the bearings with set screws, allowable rotational speed must be corrected by multiplying the allowable rotational speed (standard value) by fitting factor, depending on the tolerance class of the shaft used. For the bearings with adapter, shafts of h8 or h9 tolerance class are recommended, while shafts of h5 or j5 tolerance class are recommended for the bearings with eccentric locking collar.

**Table 7.2 Fitting factor of insert bearing unit  $f_c$  (recommended)**

Type of insert bearing unit	Fitting factor $f_c$					
	Shaft tolerance class					
	h5, j5	j6	h6	h7	h8	h9
<b>With set screw</b>						
Standard type	–	1.0	1.0	0.8	0.5	0.2
Triple-lip seal type (Supplementary code L3)	–	–	–	1.0	1.0	0.9
Heat resistant type (Special code D1K2)	–	–	–	1.0	1.0	0.7
Cold resistant type (Special code D2K2)	–	–	–	1.0	1.0	0.7
For high speed (Special code K3)	–	1.0	0.8	0.6	–	–
For blower (Special code S5)	1.0	–	0.8	0.6	–	–
<b>With adapter</b>	–	–	–	–	1.0	1.0
<b>With eccentric locking collar</b>	1.0	–	–	–	–	–

## 8 Operating temperature and bearing specifications

### 8.1 Operating temperature range

Operating temperature range of a insert bearing unit depends on the type of grease used for the bearing, oil seal rubber material, and the internal clearance of the bearing.

Koyo Insert Bearing Units are available in heat resistant unit (special code : D1K2) and cold resistant unit (special code : D2K2) series, as well as standard types, to allow selection optimal for the operating temperature (see Table 3.3).

Even though the bearing unit suitable for temperature is used, grease must be fed in accordance with the specified standards, since grease life greatly depends on temperature.

### 8.2 Operating temperature and internal clearance of bearing

If the temperature of transmission heat to the shaft is high or hot steam enters the hollow bore of the shaft, difference between the temperatures of the bearing inner and outer rings is increased and the internal clearance of the bearing is decreased, leading to breakage at early stages of the bearing service life.

Decrease in the internal clearance of the bearing depending on the difference in the temperatures of the bearing inner ring and the bearing outer ring can be found by Equation (8.1).

Under these conditions, decrease in the internal clearance must be calculated, and the internal clearance of bearing needs to be selected properly.

$$S_{t1} = \alpha \cdot D_e \cdot \Delta t \dots\dots\dots (8.1)$$

Whereas,

$S_{t1}$  : Decrease in the internal clearance of bearing depending on the difference in the temperatures of the bearing inner ring and the bearing outer ring mm

$\alpha$  : Line expansion factor of bearing steel  $12.5 \times 10^{-6}$

$D_e$  : Raceway dia. of bearing outer ring mm  
 Diameter series 2, X.....  $D_e \doteq 0.92 D$   
 Diameter series 3.....  $D_e \doteq 0.9 D$

$D$  : Nominal bearing outer dia. mm

$\Delta t$  : Difference in temperatures of bearing inner ring and outer ring °C

If a insert bearing unit is used at a high temperature, abnormal axial load may be applied to the bearing due to axial extension of the shaft caused by high temperature, leading to breakage at early stages of the bearing service life. This fact must be taken into consideration, as well as the internal clearance of the bearing for use of the bearing at a high temperature.

The shaft of free side unit or the unit needs to be able to be moved axially, as the countermeasure against this problem.

(See “10 Design of shaft and base”)

## 9 Strength of housing

The housing for Koyo Insert Bearing Unit reliably withstands use under standard operating conditions, because of selection of good material and the highly tough design suitable to the load capacity of the bearing. However, if a great or impact loads occurs at a low rotational speed, strength of the bearing must be examined in advance, for the purpose safety is especially required.

Although the form of the housing is designed so that it is applicable to various purposes, destruction strength varies depending on the direction of load. Therefore, mounting direction of the bearing unit must be fully examined, as well as the strength of the housing.

At this time, setting of fixing device to support the housing is required depending on the direction or level of load.

Rigidity of the base and flatness of the mounting surface give influence on the strength of the housing. Note that the load applied to the insert bearing unit is recommended to be basically examined by the calculation result of bearing life even if the strength of the housing is satisfied.

### 9.1 Strength of cast iron housing

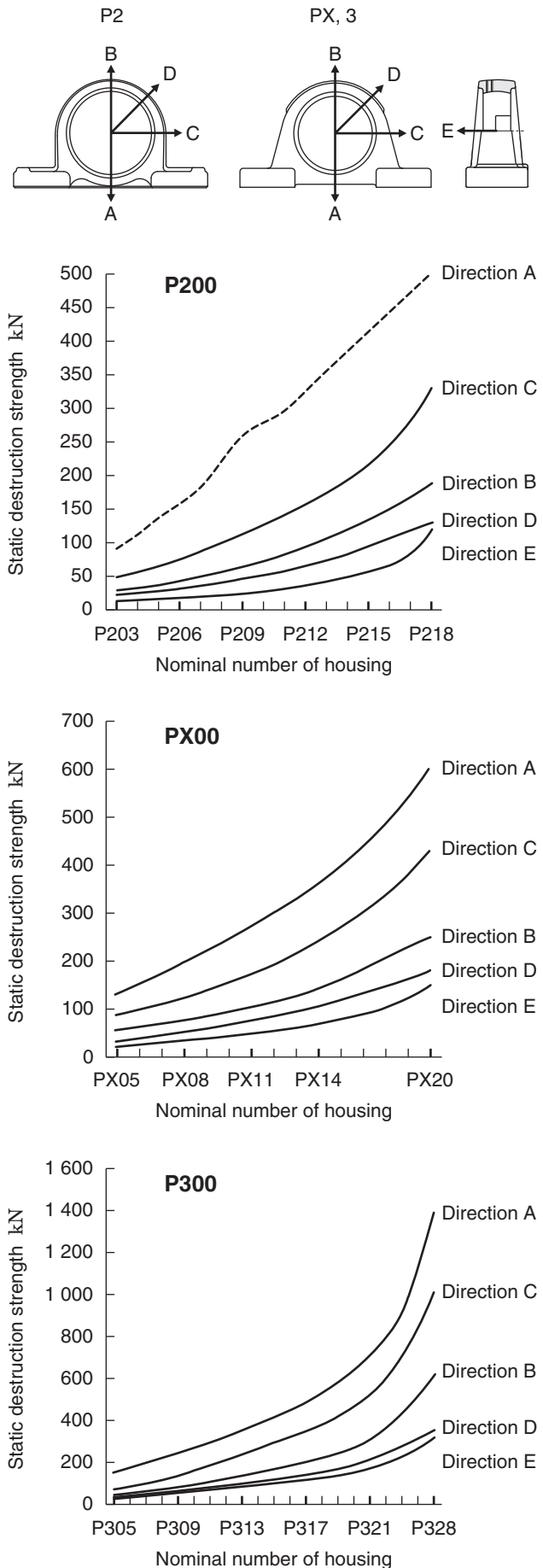
Though gray cast iron has many superior features as machine parts material, it is fragile against impact load. Therefore, prior to use of it, level, direction, and property of load applied to it must be fully examined.

Allowable load of gray cast iron housing can be found by using static destruction strength of the housing, taking safety factor into consideration.

Table 9.1 shows the safety factor of gray cast iron products against load, and Fig. 9.1 to Fig. 9.7 show the outline values of static destruction strength of pillow block type, flange type and take-up type housings.

**Table 9.1 Safety factor of gray cast iron products (recommended)**

Property of load	Safety factor of gray cast iron
Static load	4
With vibration	10
With impact	15



**Fig. 9.1 Static destruction strength of pillow block type housing (P)**

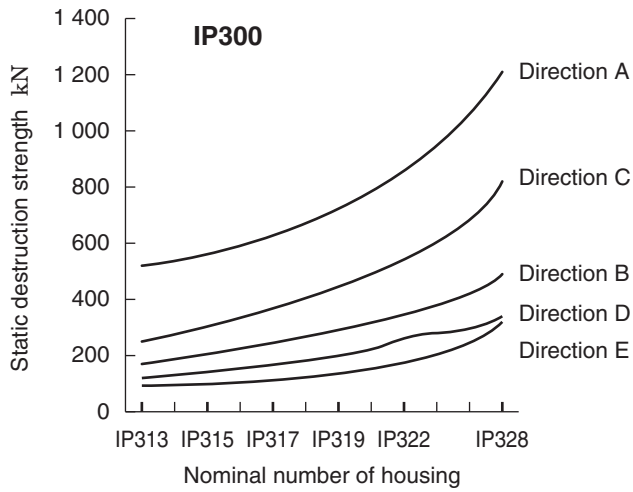
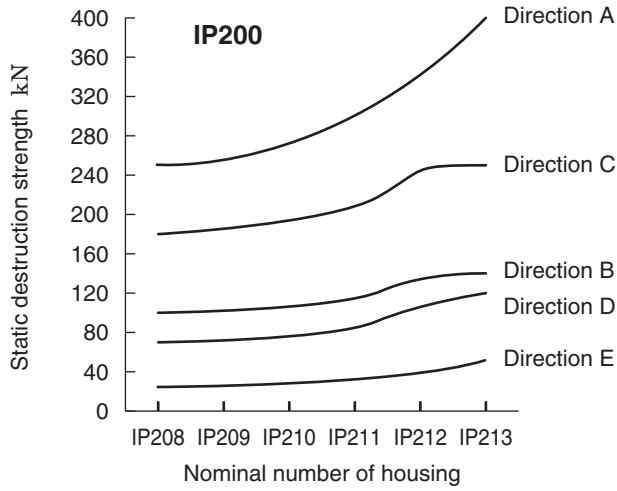
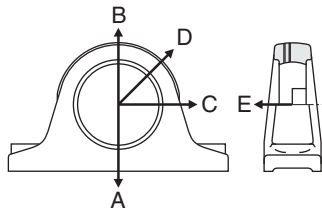


Fig. 9.2 Static destruction strength of thick section pillow block type housing (IP)

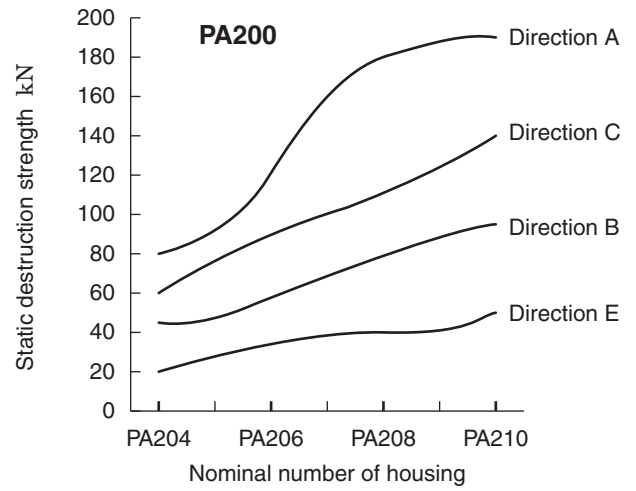
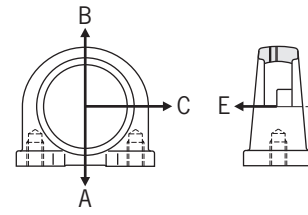
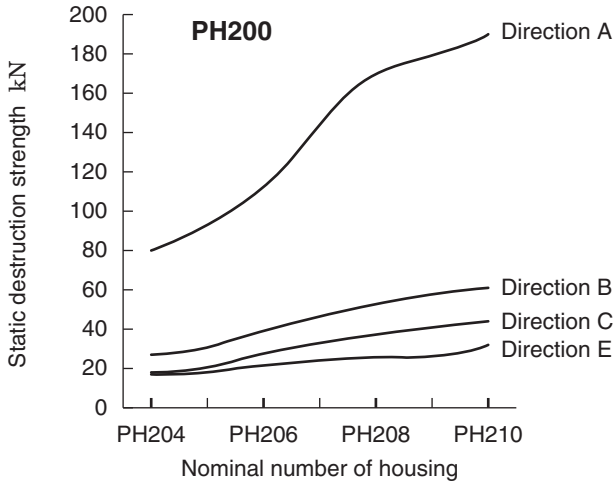
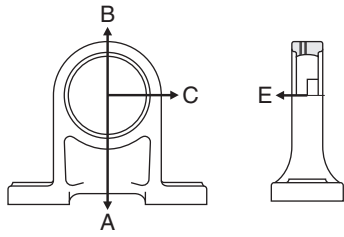
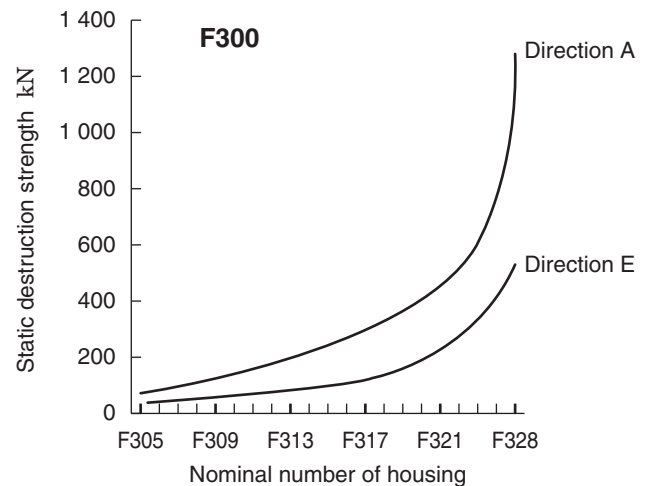
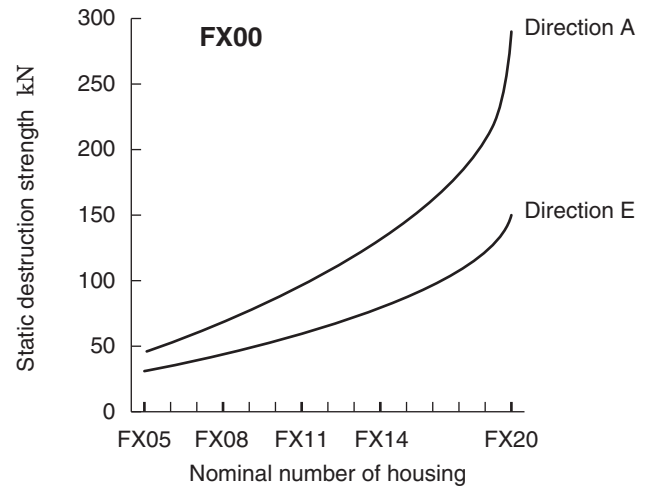
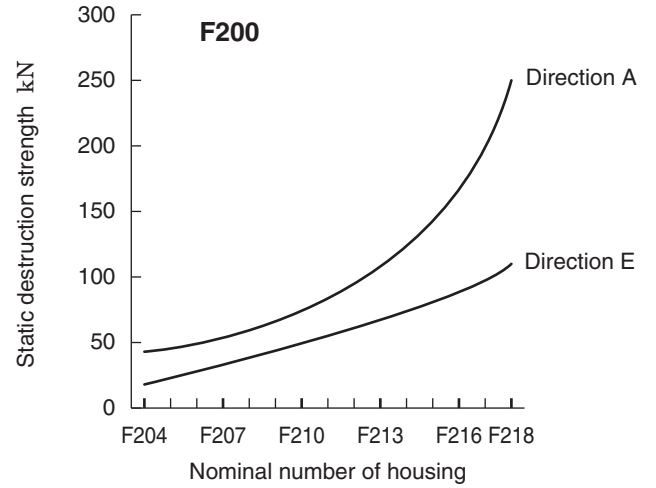
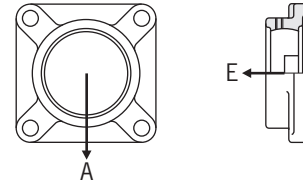


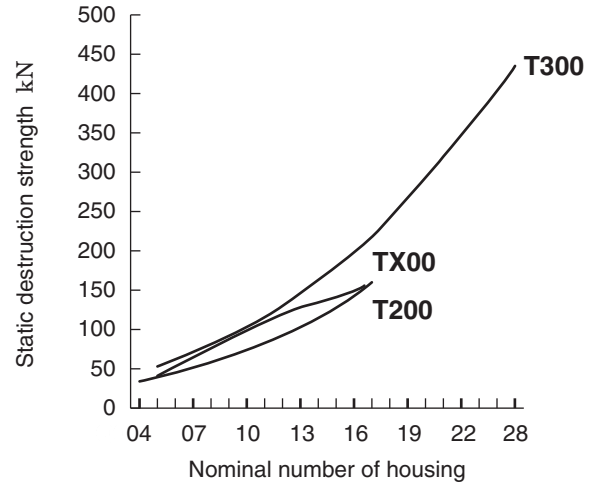
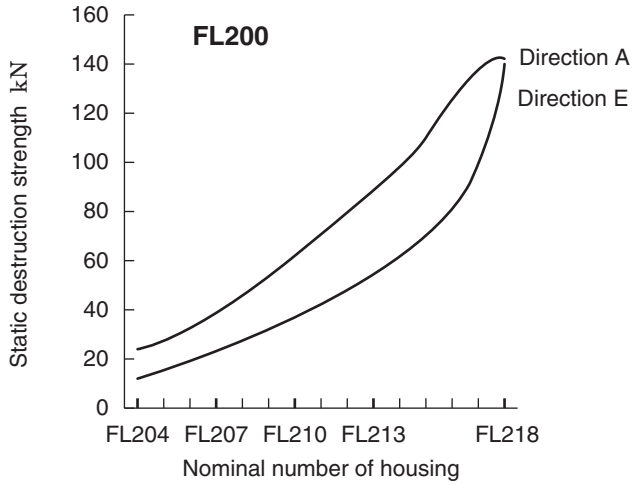
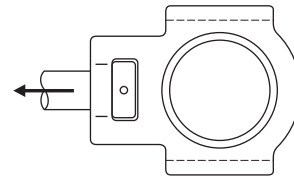
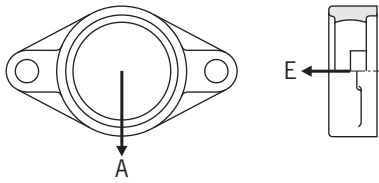
Fig. 9.3 Static destruction strength of tapped-base pillow block type housing (PA)



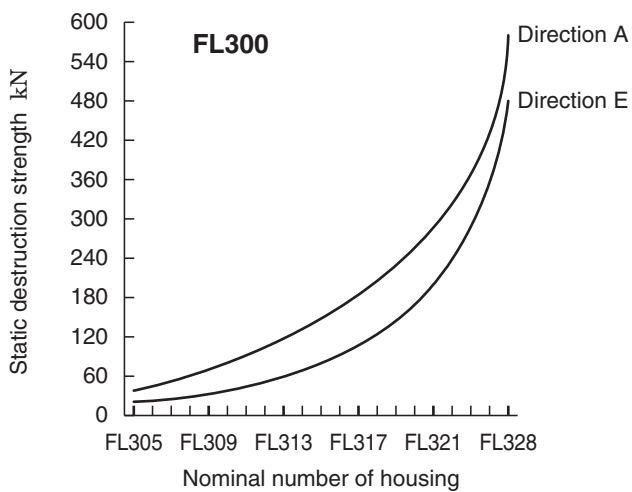
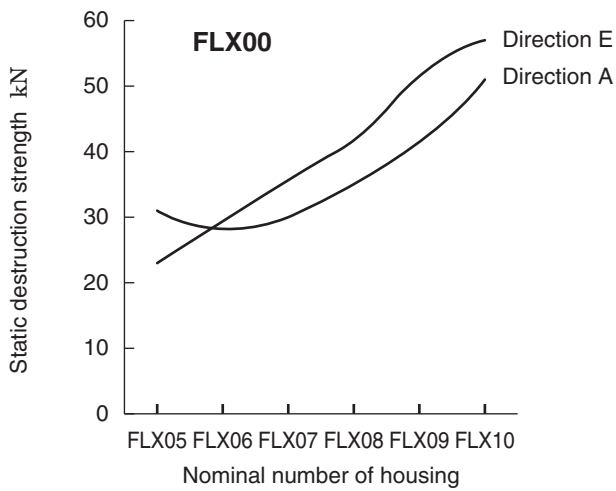
**Fig. 9.4** Static destruction strength of higher centerheight pillow block type housing (PH)



**Fig. 9.5** Static destruction strength of square-flanged type housing (F)



**Fig. 9.7** Static destruction strength of take-up type housing (T)



**Fig. 9.6** Static destruction strength of rhombic-flanged type housing (FL)

## 9.2 Strength of steel housing

The precisely pressed steel housing is highly rigid, but great deformation occurs when load is applied until it is broken. Thus, allowable load of the pressed steel housing must be the value deformation of the housing caused by load does not influence on actual use.

**Table 9.2** shows the allowable load of the pressed steel housing.

**Table 9.2 Allowable load of pressed steel housing (recommended)**

Load direction	Allowable load of pressed steel housing
Radial	Approx. 1/6 of basic dynamic radial load rating of bearing ( $C_r$ )
Axial	Approx. 1/18 of basic dynamic radial load rating of bearing ( $C_r$ )

## 9.3 Strength of stainless steel housing

To find the allowable load of a stainless steel housing, use the static destruction strength of a housing, taking safety factor into consideration.

**Table 9.3** shows the safety factors for stainless steel products. As for the basic values of the static destruction strength of SP200, SPA200, SF200, SFL200, ST200 type housings, apply P200 of **Fig. 9.1**, PA200 of **Fig. 9.3**, F200 of **Fig. 9.5**, FL200 of **Fig. 9.6** and T200 of **Fig. 9.7**. For the basic values of the static destruction strength of the SP000 and SFL000 type housings, see P000 of **Fig. 9.8** and FL000 of **Fig. 9.9** and multiply them by 1.5 respectively.

**Table 9.3 Safety factor of stainless steel products**

Property of load	Safety factor of stainless steel products
Static load	3
With vibration	5
With impact	10

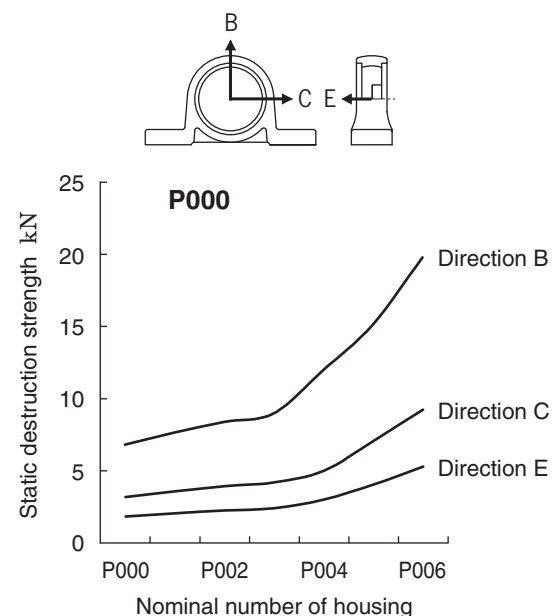
## 9.4 Strength of “compact” series housing

The “compact” series housing is made of zinc alloy die-cast, but great deformation occurs when load is applied until it is broken.

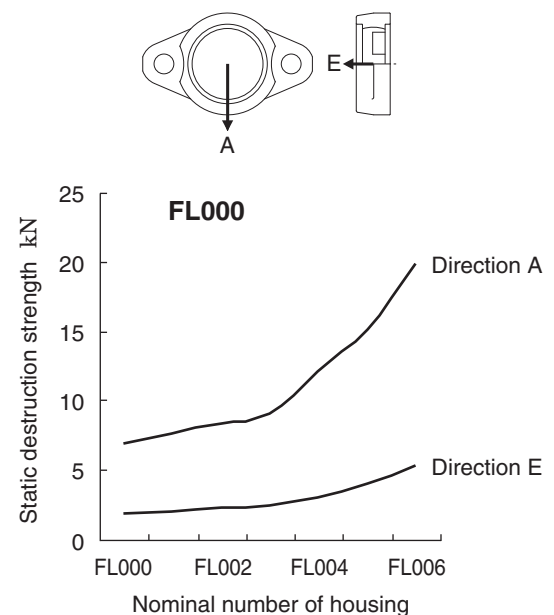
**Table 9.4** shows safety factor for zinc alloy die-cast, and **Fig. 9.8** and **9.9** show the outline values of the static destruction strength of the zinc alloy die-cast housing.

**Table 9.4 Safety factor of zinc alloy die-cast products**

Property of load	Safety factor of die-cast products
Static load	8
With vibration	15
With impact	20



**Fig. 9.8 Static destruction strength of “compact” housing (P)**



**Fig. 9.9 Static destruction strength of “compact” housing (FL)**

## 10 Design of shaft and base

### 10.1 Design of shaft

For intrinsic performance of a insert bearing unit and maintenance of it for a long time, selection of the shaft optimal for operating conditions is important. Use the shaft with enough rigidity but free from bend, scratch, or burr.

#### 10.1.1 Tolerance of shaft

##### (1) Tolerance of shaft used for cylindrical bore bearing with set screws

For the cylindrical bore bearing with set screws, use the shaft of the tolerance class leading to relatively loose fitting to simplify the mounting procedures. The fitting clearance between the bearing inner ring and the shaft should be decreased as the rotational speed of the shaft

is increased.

**Table 10.1** shows the guideline for the tolerance class of the rotational speed of the cylindrical bore bearing with set screws and the shaft used.

If the cylindrical bore bearing with set screws is exposed to heavy load ( $P_r/C_r > 0.12$ ), vibration, or impact, use shaft of the tolerance class leading to relatively tight fitting to prevent creep or fretting to be occurred to the fitting surface of the bearing inner ring and the shaft.

To use tight fitting of the cylindrical bore bearing with set screws, see **Table 10.2** showing the guideline for the tolerance class of the shaft used.

**Table 10.3** shows the recommended deviation from circular and cylindrical forms of the shaft used.

**Table 10.1 Tolerance of shaft used for cylindrical bore bearing with set screws (recommended) (clearance fitting or transition fitting)**

Unit :  $\mu\text{m}$

Shaft diameter (mm)		Tolerance of shaft							
		j6		h6		h7		h8	
over	up to	upper	lower	upper	lower	upper	lower	upper	lower
6	10	+ 7	- 2	0	- 9	0	-15	0	-22
10	18	+ 8	- 3	0	-11	0	-18	0	-27
18	30	+ 9	- 4	0	-13	0	-21	0	-33
30	50	+11	- 5	0	-16	0	-25	0	-39
50	80	+12	- 7	0	-19	0	-30	0	-46
80	120	+13	- 9	0	-22	0	-35	0	-54
120	180	+14	-11	0	-25	0	-40	0	-63
<b>Applicable rotational speed <math>dn^1</math></b>		Over 120 000		Over 100 000, up to 120 000		Over 60 000, up to 100 000		up to 60 000	

Note 1)  $dn = d$  (bearing bore, mm)  $\times n$  (rotational speed,  $\text{min}^{-1}$ )

**Table 10.2 Tolerance of shaft used for cylindrical bore bearing with set screws (recommended) (transition fitting or interference fitting)**

Unit :  $\mu\text{m}$

Shaft diameter (mm)		Tolerance of shaft					
		k6		k7		m6	
over	up to	upper	lower	upper	lower	upper	lower
6	10	+10	+1	+16	+1	+15	+ 6
10	18	+12	+1	+19	+1	+18	+ 7
18	30	+15	+2	+23	+2	+21	+ 8
30	50	+18	+2	+27	+2	+25	+ 9
50	80	+21	+2	+32	+2	+30	+11
80	120	+25	+3	+38	+3	+35	+13
120	180	+28	+3	+43	+3	+40	+15

**Table 10.3 Tolerance of shaft used for insert bearing units (recommended)**

Unit :  $\mu\text{m}$

Shaft diameter (mm)		Deviation from circular and cylindrical forms
6	10	6
10	18	8
18	30	9
30	50	11
50	80	13
80	120	15
120	180	18

**(2) Tolerance of shaft used for bearing for blower (cylindrical bore with set screws)**

In the bearing for blower (special code S5), smaller internal clearance of bearing (C2) and once-class-higher bearing tolerance reduce vibration and noise during high-speed rotation.

Therefore, use of the shaft in the tolerance class shown in **Table 10.4** as the bearing for blower (cylindrical bore with set screws) used is recommended.

**Table 10.4 Tolerance of shaft used for bearing for blower (cylindrical bore with set screws) (recommended)**

Unit :  $\mu\text{m}$

Shaft diameter (mm)		Tolerance of shaft			
		h5		j5	
over	up to	upper	lower	upper	lower
10	18	0	- 8	+5	- 3
18	30	0	- 9	+5	- 4
30	50	0	-11	+6	- 5
50	80	0	-13	+6	- 7
80	120	0	-15	+6	- 9
120	180	0	-18	+7	-11

**(3) Tolerance of shaft used for tapered bore bearing (with adapter)**

Since the tapered bore bearing is fixed to a shaft with the adapter, the shaft in the tolerance class allowing relatively loose fitting should be selected, for easier mounting.

**Table 10.5** shows the tolerance of shaft used for the tapered bore bearing (with adapter).

**Table 10.5 Tolerance of shaft used for tapered bore bearing (with adapter) (recommended)**

Unit :  $\mu\text{m}$

Shaft diameter (mm)		Tolerance of shaft			
		h8		h9	
over	up to	upper	lower	upper	lower
18	30	0	-33	0	- 52
30	50	0	-39	0	- 62
50	80	0	-46	0	- 74
80	120	0	-54	0	- 87
120	180	0	-63	0	-100

**(4) Tolerance of shaft used for cylindrical bore bearing with eccentric locking collar**

As for the cylindrical bore bearing with eccentric locking collar, if the fitting clearance between the bearing inner ring and the shaft is great, the shaft may be installed with being tilted because of its structure.

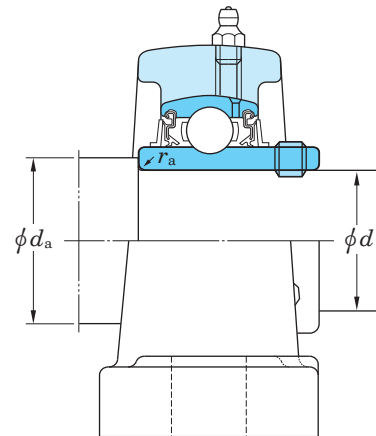
Therefore, for cylindrical bore bearing with eccentric locking collar, use of the shaft in the same tolerance class (h5 or j5) as that used with the bearing for blower (special code S5) is recommended (see **Table 10.4**).

**10.1.2 Dimensions of shouldered shaft**

When using the cylindrical bore bearing in the environment exposed to a great axial load, excessive vibration, or impact, adopt the shouldered shaft, and tighten the bearing inner ring with the nut.

**Table 10.6** shows the shoulder diameter and the fillet radius of the shouldered shaft.

**Table 10.6 Shoulder diameter and fillet radius of shouldered shaft (recommended)**



Unit : mm

Bore dia. No.	Nominal bearing bore dia. $d$	UC200, UCX00		UC300	
		Shoulder dia. $d_a$	Fillet radius $r_a$ (max.)	Shoulder dia. $d_a$	Fillet radius $r_a$ (max.)
01	12	17	0.6		
02	15	20	0.6		
03	17	22	0.6		
04	20	30	1	-	-
05	25	35	1	35	1
06	30	40	1	40	1
07	35	45	1	45	1.5
08	40	50	1	50	1.5
09	45	55	1	55	1.5
10	50	60	1	60	2
11	55	65	1.5	65	2
12	60	70	1.5	75	2
13	65	75	1.5	80	2
14	70	80	1.5	85	2
15	75	85	1.5	90	2
16	80	90	2	95	2
17	85	95	2	100	2.5
18	90	100	2	105	2.5
19	95	-	-	110	2.5
20	100	115	2	115	2.5
21	105	-	-	120	2.5
22	110			125	2.5
24	120			135	2.5
26	130			150	3
28	140			160	3



10.1.3 Countermeasures against heat

In general, two or more insert bearing units are used for a shaft. If installation distance for the insert bearings is small or expansion and contraction of the shaft due to temperature are a little, install each of the bearing unit to the fixed side.

However, if installation distance is great and the shaft is exposed to heat, the shaft to be installed should be positioned with a bearing unit to be on the fixed side, and another bearing unit should be installed with it to be on the free side.

Because, if the shaft is exposed to heat, it is expanded in the axial direction, leading to a great axial load to the bearing, and it causes premature breakage of the bearing. Therefore, expansion of the shaft is absorbed by the bearing unit on the free side.

Equation (10.1) shows the relation of temperature increase to expansion of the shaft.

$$\Delta l = \alpha \cdot \Delta t \cdot l \dots\dots\dots (10.1)$$

Whereas,

- $\Delta l$  : Expansion of shaft mm
- $\alpha$  : Linear expansion coefficient of shaft  
in the case of standard steel  $11\sim 12 \times 10^{-6}$
- $\Delta t$  : Temperature increase °C
- $l$  : Installation distance of unit mm

Countermeasures against great expansion of shaft as a result of exposure to heat are shown below.

(1) Installation with full dog point set screw on the free side

If the shaft is exposed to heat and expanded in axial direction, the bearing unit must be installed so that it or the shaft can freely move in axial direction.

If the rotational speed is relatively slow, provide the shaft with key groove, attach the full dog point set screw (special code G6) to the bearing, and use it as the free side unit. Fit the tip on the dog point of the set screw to the key groove on the shaft to guide the move of the shaft in axial direction.

Fig. 10.1 shows the structure example of bearing unit with key groove on shaft and full dog point set screw and use as free side unit. Table 10.7 shows the dimensions of key groove for the full dog point set screw.

If a bearing unit is used as the free side bearing unit by adopting this method, h7 is recommended as the tolerance class of the shaft to be used.

If temperature of the shaft is higher than that in the bearing, the shaft in the tolerance class allowing a greater fitting clearance must be used.

If a bearing unit is used as the free side unit by adopting the above method, fretting corrosion may occur to the fitting surface between the bearing inner ring and the shaft. In order to prevent fretting corrosion, application of grease onto the bore surface of the bearing when the bearing unit is installed.

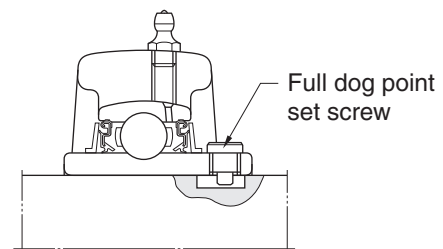
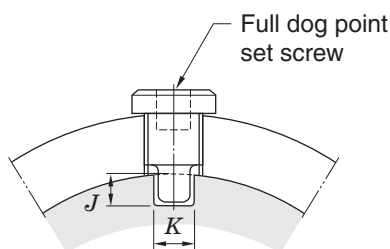


Fig. 10.1 Use on free side with full dog point set screw

Table 10.7 Dimensions of key groove for full dog point set screw (use on free side)



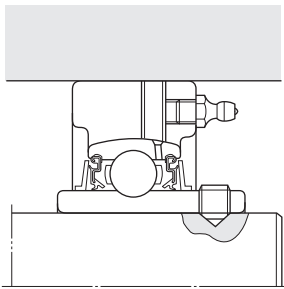
Nominal size of set screw	Dimensions of key groove (mm)		Applicable nominal bearing number		
	J	K (Min.)	UC200	UCX00	UC300
M6 × 0.75	5	4	201-206	X05	305, 306
M8 × 1	6	6	207-209	X06-X08	307
M10 × 1.25	6.5	7	210-212	X09-X11	308, 309
M12 × 1.5	7	9	213-218	X12-X17	310-314
M14 × 1.5	7	10		X18	315, 316
M16 × 1.5	8	12		X20	317-319
M18 × 1.5	8	13			320-324
M20 × 1.5	8	15			326, 328

Allowable tolerance of key groove dimension "K" (Recommended value : 0~+0.2)

**(2) Use of cartridge type unit on free side**

In the environment the rotational speed is relatively high or the bearing unit is exposed to vibration, use of the cartridge type unit as the free side unit and move of the bearing unit between the mounting bore on a machine and the outside surface of the housing in axial direction are recommended.

Fig. 10.2 shows the example of structure of the cartridge type unit as the free side unit.



**Fig. 10.2 Use of cartridge type unit on free side**

If a insert bearing unit is exposed to heat, countermeasures against expansion of the shaft in axial direction as well as calculation of decrease in the internal clearance of the bearing to select the internal clearance of the bearing appropriately (see “8 Operating temperature and bearing specifications”).

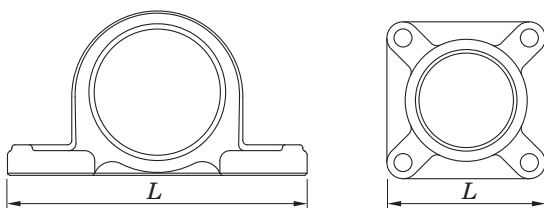
**10.2 Design of base**

**10.2.1 Rigidity of base and flatness of mounting surface**

If rigidity of the base that a insert bearing unit is to be installed is low or the flatness of the mounting surface is poor, vibration or abnormal noise may occur to the bearing unit during operation, leading to premature breakage or lower strength of the housing.

Therefore, the base that the insert bearing unit is to be installed must have enough rigidity, and the mounting surface must be finished with accuracy allowing elimination of deformation on the bearing or housing.

Fig. 10.3 shows the recommended values for flatness of the mounting surface of the base that the insert bearing unit is to be installed.



Max. :  $L / 1\,000$  mm

**Fig. 10.3 Flatness of mounting surface of base (recommended)**

**10.2.2 Mounting bore of cartridge type unit**

The cartridge type unit is directly fit to the cylindrical bore of the base.

Under the standard operating conditions, select H7 as the tolerance class of cylindrical hole on the base that the cartridge type unit is to be installed. For such purposes that the shaft and the bearing inner ring are hot, select G7 as the tolerance class of cylindrical bore on the base.

In the environment the bearing unit is exposed to vibration or impact, selection of the tolerance class allowing smaller fitting clearance between the cylindrical bore of the base and the bearing unit is recommended.

Table 10.8 shows the tolerance of cylindrical bore of the base that the cartridge type unit is to be installed.

**Table 10.8 Tolerance of cylindrical bore for mounting cartridge type unit (recommended)**

Unit :  $\mu\text{m}$

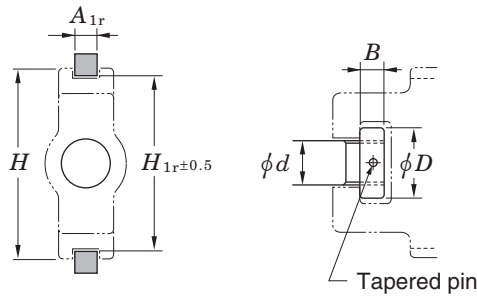
Nominal bore dia. of cylindrical bore (mm)		Tolerance of cylindrical bore			
		H7		G7	
over	up to	upper	lower	upper	lower
50	80	+30	0	+40	+10
80	120	+35	0	+47	+12
120	180	+40	0	+54	+14
180	250	+46	0	+61	+15
250	315	+52	0	+69	+17
315	400	+57	0	+75	+18

**10.2.3 Dimensions relative to installation of take-up type unit**

The take-up type unit is incorporated between the two guide rails on the base side, and enables adjustment of the support position with the shaft center by the adjuster bolt.

Table 10.9 shows the dimensions of the guide rail, adjuster bolt, and round nut to install the take-up type unit to the base.

Table 10.9 Dimensions relative to installation of take-up type unit (recommended)



Unit : mm

Nominal housing No.	Dimensions of guide rail			Dimensions of adjuster bolt and round nut		
	$A_{1r}$	$H_{1r}$	$H$ (Reference)	$d$	$D$	$B$
T204 T205	11	77	89	16	28	14
T206 T207	11	90	102	18	32	14
T208	15	103	114	24	42	16
T209 T210	15	103	117	24	42	16
T211 T212	20	131	146	30	55	20 27
T213 T214 T215	24	152	167	36	60	27
T216	24	166	184	36	60	27
T217	28	174	198	42	60	30
TX05 TX06	11	90	102	18	32	14
TX07	15	103	114	24	42	16
TX08 TX09	15	103	117	24	42	16
TX10 TX11	20	131	146	30	55	20 27
TX12 TX13 TX14	24	152	167	36	60	27
TX15	26	166	184	36	60	27
TX16 TX17	26	174	198	42	60	30

Unit : mm

Nominal housing No.	Dimensions of guide rail			Dimensions of adjuster bolt and round nut		
	$A_{1r}$	$H_{1r}$	$H$ (Reference)	$d$	$D$	$B$
T305	11	81	89	22	32	12
T306 T307	15	91 101	100 111	24 26	36 40	14
T308 T309	16	113 126	124 138	28 30	45 50	16 18
T310	18	141	151	32	55	20
T311 T312	20	151 161	163 178	34 36	60 65	22 24
T313 T314 T315	24	171 181 193	190 202 216	38 40 40	65 80 80	26 28 28
T316	28	205	230	46	90	34
T317 T318	30	216 230	240 255	46 50	90 95	34 38
T319	32	242	270	50	95	38
T320 T321	32	262	290	52	100	40
T322	36	287	320	55	110	44
T324	42	322	355	60	120	50
T326 T328	47	352 382	385 415	65 70	130 140	55 60

### 10.3 Machining dimensions of holes for housing dowel pins

The pillow block type, square-flanged type, and rhombic-flanged type housing have the dowel pin seat. If accurate positioning of the housing is required, install it with the dowel pin.

As for the position of the pin for fixing the housing and pin diameter, see the **Supplementary 5** at the end of this catalogue.

## 11 Tolerances and internal clearance

Tolerances of a insert bearing unit is specified in JIS B 1558 (Rolling bearings - Insert bearings and eccentric locking collars) and JIS B 1559 (Rolling bearings - Cast and pressed housings for insert bearings). JTEKT produces products conforming to these standards.

### 11.1 Tolerances of bearing

Table 11.1 to Table 11.4 show the tolerance of a insert bearing for insert bearing unit.

Insert bearings for blower unit (special code S5) are produced with higher accuracy than standard types (see Table 11.3).

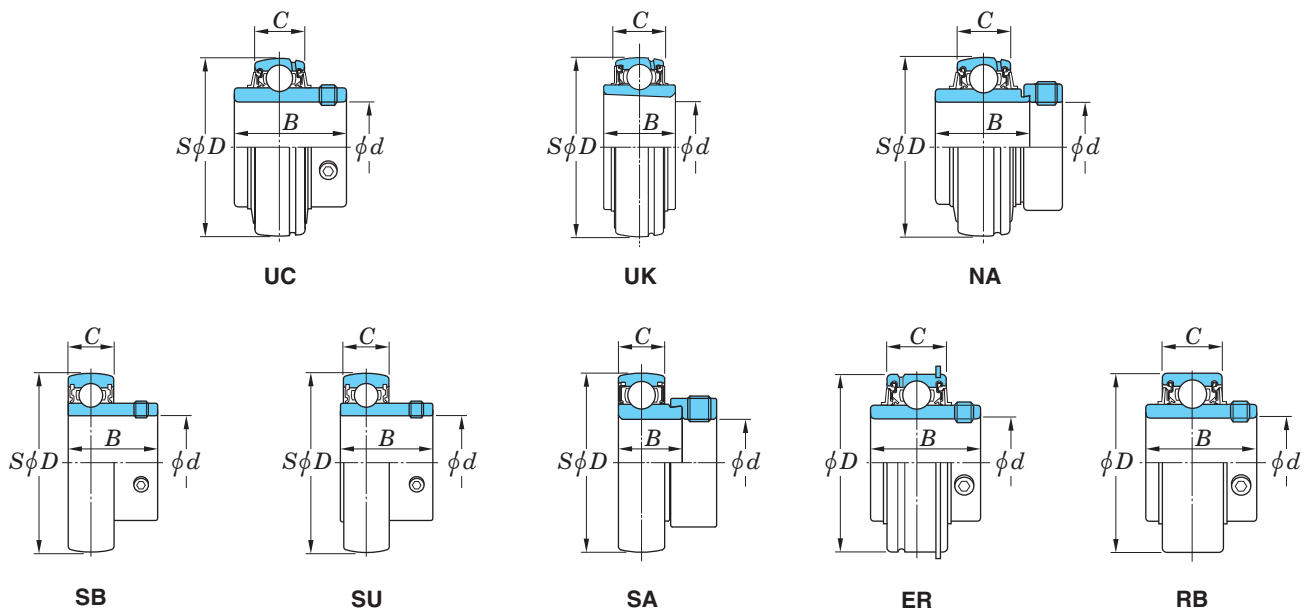
Table 11.5 shows the permissible values for chamfer dimensions of cylindrical bore bearing inner ring.

**Table 11.2 Tolerances and permissible values of outer ring of insert bearing for insert bearing unit**

Unit :  $\mu\text{m}$

Nominal bearing outer dia. $D$ (mm)		Mean outside diameter deviation $\Delta D_m$		Radial runout of assembled bearing outer ring $K_{ea}$
over	up to	upper	lower	max.
<b>18</b>	<b>30</b>	0	-9	15
<b>30</b>	<b>50</b>	0	-11	20
<b>50</b>	<b>80</b>	0	-13	25
<b>80</b>	<b>120</b>	0	-15	35
<b>120</b>	<b>150</b>	0	-18	40
<b>150</b>	<b>180</b>	0	-25	45
<b>180</b>	<b>250</b>	0	-30	50
<b>250</b>	<b>315</b>	0	-35	60

[Remark] Values in Italics are prescribed in JTEKT standards.



**Table 11.1 Tolerances and permissible values of inner rings of insert bearings for insert bearing units**

Unit :  $\mu\text{m}$

Nominal bearing bore dia. $d$ (mm)		Single plane mean bore diameter deviation $\Delta d_{mp}$		Single plane bore diameter variation $V_{dsp}$	Eccentricity deviation of eccentric surface of inner ring and eccentric locking collar $\Delta H_s$		Single inner (outer) ring width deviation $\Delta B_s (\Delta C_s)$		Radial runout of assembled bearing inner ring $K_{ia}$
over	up to	upper	lower	max.	upper	lower	upper	lower	max.
-	<b>10</b>	+15	0	10	+100	-100	0	-120	10
<b>10</b>	<b>18</b>	+15	0	10	+100	-100	0	-120	15
<b>18</b>	<b>31.75</b>	+18	0	12	+100	-100	0	-120	18
<b>31.75</b>	<b>50.8</b>	+21	0	14	+100	-100	0	-120	20
<b>50.8</b>	<b>80</b>	+24	0	16	+100	-100	0	-150	25
<b>80</b>	<b>120</b>	+28	0	19	+100	-100	0	-200	30
<b>120</b>	<b>180</b>	+33	0	22	+100	-100	0	-250	35

[Remark] Values in Italics are prescribed in JTEKT standards.

# 11 Tolerances and internal clearance

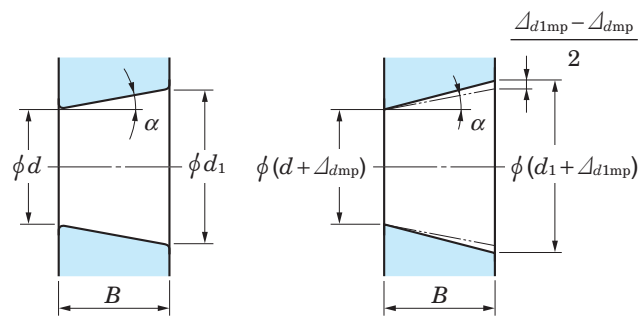
**Table 11.3 Tolerances and permissible values of inner ring of insert bearing for blower unit (S5)**

Unit :  $\mu\text{m}$

Nominal bearing bore dia. $d$ (mm)		Single plane mean bore diameter deviation $\Delta d_{mp}$		Single plane bore diameter variation $V_{dsp}$	Radial runout of assembled bearing inner ring $K_{ia}$
over	up to	upper	lower	max.	max.
10 <sup>1)</sup>	18	+13	0	6	7
18	31.75	+13	0	6	8
31.75	50.8	+13	0	10	10
50.8	80	+15	0	10	10
80	120	+18	0	14	13
120	180	+23	0	14	18

Note 1) 10 mm should be included in this category.

**Table 11.4 Tolerances and permissible values for tapered bore of bearing**



Theoretical tapered bore

Tapered bore with single plane mean bore diameter deviation

Unit :  $\mu\text{m}$

Nominal bearing bore dia. $d$ , mm		$\Delta d_{mp}$		$\Delta d_{1mp} - \Delta d_{mp}$		$V_{dsp}^{1)}$
over	up to	upper	lower	upper	lower	max.
18	30	+33	0	+21	0	13
30	50	+39	0	+25	0	16
50	80	+46	0	+30	0	19
80	120	+54	0	+35	0	22
120	180	+63	0	+40	0	40

Note 1) To be applied to all the radial planes of tapered bore

[Remarks] 1. Applicable range

Applicable to tapered bore of inner ring of tapered bore radial bearing that standard value of taper ratio is 1/12

2. Amount code

$d_1$  : Standard diameter at theoretical large end of tapered bore  $d_1 = d + \frac{1}{12} B$

$\Delta d_{mp}$  : Single plane mean bore diameter deviation at theoretical small end of tapered bore

$\Delta d_{1mp}$  : Single plane mean bore diameter deviation at theoretical large end of tapered bore

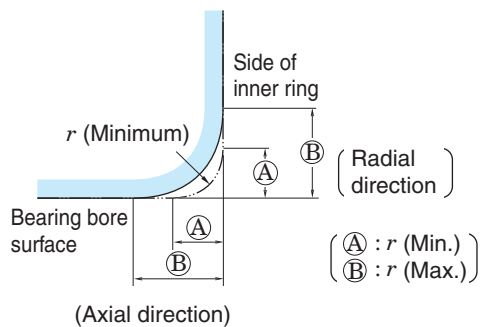
$V_{dsp}$  : Single plane bore diameter variation (a tolerance for the diameter variation given by a maximum value applying in any radial plane of the bore)

$B$  : Nominal inner ring width

$\alpha$  : 1/2 of nominal tapered angle of tapered bore

$$\begin{aligned} \alpha &= 2^\circ 23' 9.4'' \\ &= 2.385 94^\circ \\ &= 0.041 643 \text{ rad} \end{aligned}$$

**Table 11.5 Permissible values for chamfer dimensions of inner ring of bearing with cylindrical bore**



Unit : mm

r (Min.)	r (Max.)	
	Radial direction	Axial direction
0.6	1	2
1	1.5	3
1.1	2	3.5
1.5	2.3	4
2	3	4.5
2.1	4	6.5
2.5	3.8	6
3	5	8
4	6.5	9

[Remark] There shall be no specification for the accuracy of the shape of the chamfer surface, but its outline in the axial plane shall not be situated outside of the imaginary circle arc with a radius of  $r_{\min}$  or  $r_{1\min}$  which contacts the inner ring side face and bore, or the outer ring side face and outside surface.

## 11.2 Tolerances of housing

As the tolerance of the housing for a insert bearing unit, tolerance of the diameter of spherical bearing seat fit to the bearing, and tolerance and permissible value of dimensions relative to installation of the housing are specified.

Table 11.6 shows the tolerance of diameter of the spherical bearing seat of housing. Usually, select tolerance class J7 that allows transition fitting of the housing and the bearing.

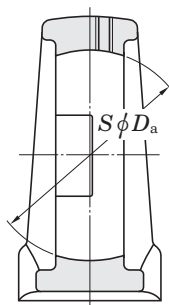
If priority should be given to operability in installation to a machine, select tolerance class H7 allowing clearance fitting. The unit conforming JIS of tolerance class H7 is equipped with the detent to the outer ring to prevent turning of the outer ring.

If rotating outer ring load occurs or the bearing is rotated while the shaft is stopped, select the tolerance K7 allowing interference fit.

Fig. 11.1 shows the representative example of dimensions relative to installation of the housing with tolerance and permissible value. Respective dimensional tables show the tolerance and permissible values of dimensions relative to installation of the housing.

**Table 11.6 Tolerances of spherical bearing seat diameter of housing**

Unit :  $\mu\text{m}$



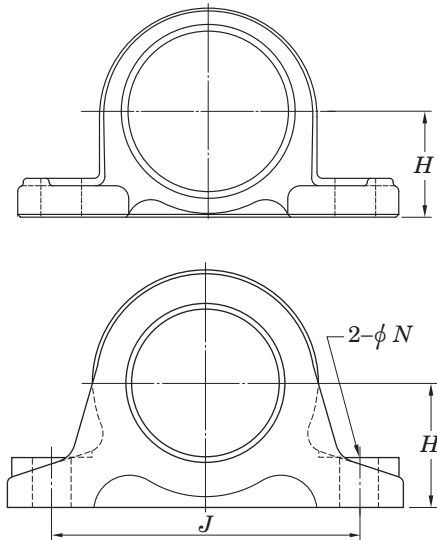
Nominal dia. of spherical bearing seat $D_a$ (mm)		Tolerance class H7		Tolerance class J7		Tolerance class K7	
		Deviation of spherical bearing seat dia. $\Delta_{D_{am}}$		Deviation of spherical bearing seat dia. $\Delta_{D_{am}}$		Deviation of spherical bearing seat dia. $\Delta_{D_{am}}$	
over	up to	upper	lower	upper	lower	upper	lower
18	30	+21	0	+12	-9	+6	-15
30	50	+25	0	+14	-11	+7	-18
50	80	+30	0	+18	-12	+9	-21
80	120	+35	0	+22	-13	+10	-25
120	180	+40	0	+26	-14	+12	-28
180	250	+46	0	+30	-16	+13	-33
250	315	+52	0	+36	-16	+16	-36

[Remark] JTEKT generally applies class J to housing designs.

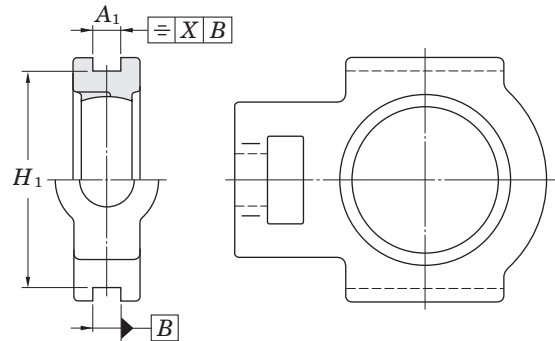
Class H and class K can also be applied depending on the application.

Fig. 11.1 Dimensions relative to installation of housing with tolerance and permissible value (representative example)

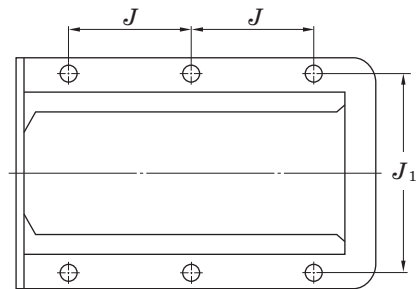
Pillow block type housing



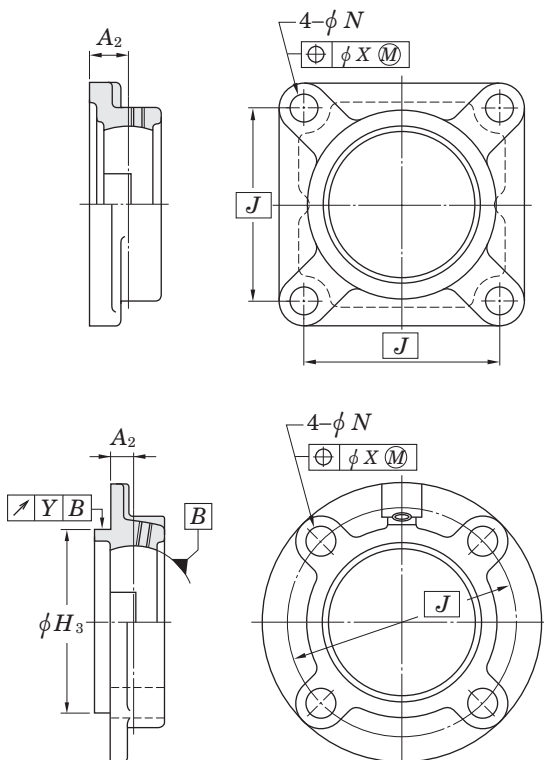
Take-up type housing



Frame for take-up type unit



Flange type housing



Cartridge type housing

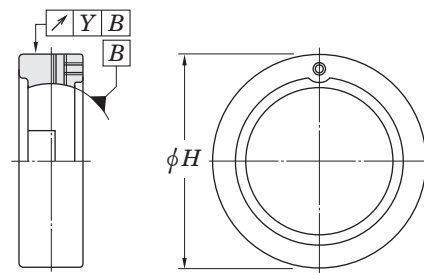


Table 11.7 shows standard tolerance of cut or cast portions not specified in this catalogue.

Table 11.7 Standard tolerance not specified respectively

Item	Standard No.	Class
Cutting	JIS B 0405	Medium
Casting of cast iron	JIS B 0403	Standard
Casting of cast steel	JIS B 0403	Standard

[Remark] Respective tolerances and permissible values for housing are shown in dimensional tables.

### 11.3 Bearing internal clearance

Insert bearing internal clearance for insert bearing unit is specified by the move at the time the inner ring or outer ring is moved in the radial direction (radial internal clearance). Value of internal clearance during operation (to be called operation clearance) gives a great influence on rolling fatigue life of the bearing, heat, noise, and vibration.

If the bearing inner ring is installed to the shaft with interference, the internal clearance of bearing must be fixed taking expansion of the bearing inner ring into consideration. If transmission heat to the shaft is high or hot steam runs through the hollow of the shaft, calculate the decrease of internal clearance, and appropriately select the internal clearance of bearing (see “8 Operating temperature and bearing specifications”).

Table 11.8 shows the internal clearance applicable to specifications of insert bearing for Koyo Insert Bearing Unit, and Table 11.9 shows the standard values of bearing internal clearance.

**Table 11.8 Internal clearance applicable to types of insert bearing for insert bearing unit**

Type	Applicable internal clearance	
	Bearing with cylindrical bore	Bearing with tapered bore
Standard type	CN	C3
Stainless steel type	C3	–
Heat resistant type (special code : D1K2)	C4	C5
Cold resistant type (special code : D2K2)	CN	C3
High speed type (special code : K3)	CN	C3
For blower (special code : S5)	C2	C3

[Remark] For the bearings that the internal clearance in this table is applied, no clearance code is indicated.

**Table 11.9 Standard values for internal clearance of insert bearing for insert bearing unit**

Unit :  $\mu\text{m}$

Nominal bearing bore dia. $d$ (mm)		Internal clearance											
		C2		CN		GN		C3		C4		C5	
over	up to	lower	upper	lower	upper	lower	upper	lower	upper	lower	upper	lower	upper
6	10	0	7	2	13	–	–	8	23	14	29	20	37
10	18	0	9	3	18	10	25	11	25	18	33	25	45
18	24	0	10	5	20	12	28	13	28	20	36	28	48
24	30	1	11	5	20	12	28	13	28	23	41	30	53
30	40	1	11	6	20	13	33	15	33	28	46	40	64
40	50	1	11	6	23	14	36	18	36	30	51	45	73
50	65	1	15	8	28	18	43	23	43	38	61	55	90
65	80	1	15	10	30	20	51	25	51	46	71	65	105
80	100	1	18	12	36	24	58	30	58	53	84	75	120
100	120	2	20	15	41	28	66	36	66	61	97	90	140
120	140	2	23	18	48	33	81	41	81	71	114	105	160

[Remarks] 1. Radial internal clearance in this table conforms to JIS B 1558 (Rolling bearings - Insert bearings and eccentric locking collars).

2. Increase in radial internal clearance generated by measured load conforms to the table below. Smaller correction of C2 clearance is applicable to the lower clearance, while larger correction is applicable to the upper clearance.

Unit :  $\mu\text{m}$

Nominal bearing bore dia. $d$ (mm)		Measured load	Correction of clearance					
over	up to		N	C2	CN	GN, C3	C4	C5
2.5	18	24.5	3 – 4	4			4	
18	50	49	4 – 5	5			6	
50	280	147	6 – 8	8			9	



## 12 Materials

### 12.1 Materials of bearing

Insert bearings for insert bearing unit are made of the following materials : bearing rings (outer and inner rings) and rolling elements (balls) are made of steel, and cages are made of pressed steel.

These bearing materials need the features shown below.

- (1) Higher elastic limit is required, since high contact stress occurs partially.
- (2) Higher rolling fatigue strength is required, since great contact load occurs repeatedly.
- (3) Superior hardness
- (4) Superior wear resistance
- (5) Superior toughness against impact load
- (6) Superior stability of dimensions

As the material of bearing rings (outer and inner rings) and rolling elements (balls) of the insert bearing for Koyo Insert Bearing Unit, high carbon chromium bearing steel specified in JIS is used.

For more reliability of bearing, vacuum degassing is executed against high carbon chromium bearing steel to reduce non-metallic inclusion and included oxygen. After the materials of bearing are made into the specified form, quench-and-temper is executed until its hardness is 60HRC.

**Table 12.1** shows the chemical components of high carbon chromium bearing steel. As the material of bearing rings and rolling elements of the insert bearings for stainless-series unit (special code : S6), stainless steel with superior corrosion resistance is used. Cages are made of cold-reduced carbon steel sheets and strips specified in JIS.

**Table 12.2** shows the chemical compositions of cold-reduced carbon steel sheets and strips specified in JIS.

**Table 12.1 Chemical compositions of high carbon chromium bearing steel (JIS G 4805)**

Code	Chemical components (%)						
	C	Si	Mn	P	S	Cr	Mo
SUJ 2	0.95– 1.10	0.15– 0.35	0.50 or less	0.025 or less	0.025 or less	1.30– 1.60	0.08 or less
SUJ 3	0.95– 1.10	0.40– 0.70	0.90– 1.15	0.025 or less	0.025 or less	0.90– 1.20	0.08 or less

**Table 12.2 Chemical compositions of cold-reduced carbon steel sheets and strips (SPCC) (JIS G 3141)**

Code	Chemical components (%)						
	C	Si	Mn	P	S	Ni	Cr
SPCC	0.15 or less	–	0.60 or less	0.100 or less	0.035 or less	–	–
SPCD	0.10 or less	–	0.50 or less	0.040 or less	0.035 or less	–	–

**Table 12.3 Mechanical properties of gray iron casting (FC200) (JIS G 5501)**

Type code	Tensile strength N/mm <sup>2</sup>	Hardness HB
FC200	200 or more	223 or less

### 12.2 Materials of housing

A housing for insert bearing unit is mainly made of gray iron casting products, carbon steel casting products, structural steel, cold-reduced carbon steel sheets and strips.

Gray iron casting is the most popular as the material of housing for insert bearing unit, featuring absorption of vibration, damping superior to other materials, easy and varied forming by casting, appropriate strength, and excellent heat property.

**Table 12.3** shows the mechanical properties of gray iron casting.

If superior strength is required for the housing for insert bearing unit, select carbon steel casting products with higher rupture strength, carbon steel casting, or general structural rolled steel with higher strength against impact.

For the material of housings of the “compact” series unit, zinc alloy die-cast is used, and corrosion-resistant cast steel products are used for housings of the stainless series unit. Cold-reduced carbon steel sheets and strips are used as the material of housings for the pressed steel unit.

**Table 12.4 to 12.8** show the mechanical properties of these housing materials.

Spheroidal graphite iron casting (FCD450-10 of JIS G 5502) may be used, as well as these materials.

**Table 12.4 Mechanical properties of general structural rolled steel (SS400) (JIS G 3101)**

Type code	Yielding point or bearing force N/mm <sup>2</sup>			Tensile strength MPa	Thickness of steel mm	Tensile test piece	Elongation %	Bendability		
	Thickness of steel mm							Bending angle	Inside dia.	Test piece
	incl. 16	Over 16 incl. 40	Over 40							
SS400	245 or more	235 or more	215 or more	400– 510	Over 5, 16 max.	No.1A	17 or more	180°	1.5 times of thickness	No.1
					Over 16, 40 max.	No.1A	21 or more			
					Over 40	No.4	23 or more			

**Table 12.5 Mechanical properties of zinc alloy die-cast (ZDC02) (JIS H 5301) (Reference)**

Code	Tensile strength MPa	Elongation %	Impact MJ/m <sup>2</sup>	Hardness HB
ZDC2	285	10	1.4	82

**Table 12.6 Mechanical properties of corrosion-resistant cast steel (SCS14) (JIS G 5121)**

Type code	Bearing force MPa	Tensile strength MPa	Elongation %	Hardness HB
SCS14	185 or more	440 or more	28 or more	183 or less

**Table 12.7 Mechanical properties of cold-reduced carbon steel sheets and strips (SPCC) (JIS G 3141)**

Type code	Tensile strength MPa	Elongation %
SPCC	270 or more	34 or more
SPCD	270 or more	36 or more

**Table 12.8 Mechanical properties of ductile cast iron (FCD450-10) (JIS G 5502)**

Type code	Tensile strength N/mm <sup>2</sup>	Elongation %
FCD	450 or more	10 or more

## 12.3 Materials of parts and accessories

Table 12.9 shows materials of parts and accessories of a insert bearing unit.

**Table 12.9 Materials of parts and accessories of insert bearing units**

Designations	Materials	Code	Standard code
Oil seal (standard type)	Nitrile rubber	NBR	–
Oil seal (heat resistant, cold resistant)	Silicone rubber	VMQ	–
Flinger (slinger)	Cold-reduced carbon steel sheets and strips	SPCC	JIS G 3141
Stainless steel Flinger (slinger)	Cold rolled stainless steel plate and steel strip	SUS304-CP, SUS304-CS	JIS G 4305
Pressed steel cover	Cold-reduced carbon steel sheets and strips	SPCD	JIS G 3141
Pressed stainless steel cover	Cold rolled stainless steel plate and steel strip	SUS304-CP, SUS304-CS	JIS G 4305
Cast iron cover	Gray casting iron products	FC200	JIS G 5501
Hexagon socket set screw	Chrome molybdenum steel	SCM435	JIS G 4053
Stainless steel hexagon socket set screw	Stainless bar steel	SUS304	JIS G 4303
Adapter sleeve for bearing	Mechanical structural carbon steel	S17C	JIS G 4051
Lock nut for bearing	Mechanical structural carbon steel	S17C	JIS G 4051
Washer for bearing	Cold-reduced carbon steel sheets and strips	SPCC	JIS G 3141
Eccentric locking collar	Mechanical structural carbon steel	S17C	JIS G 4051
Grease nipple	Free-cutting steel	SUM24L	JIS G 4804

## 13 Performance

### 13.1 Friction torque of bearing

Friction torque of a insert bearing for insert bearing unit is the synthesis of rolling friction between the rolling elements (balls) and the bearing rings (outer and inner rings), sliding friction between the rolling elements and the cages, agitating resistance of lubricants, and friction resistance of oil seal.

Greatness of friction torque is influenced by the type, dimensions, load, and rotational speed of bearing, and lubricating conditions.

For the insert bearing unit, oil seals with especially superior dustproof performance are adopted to improve sealing performance of the bearing. Thus, friction resistance of the oil seal greatly depends on the friction torque of the bearing.

Friction torque of the insert bearing for insert bearing unit can be found by the Equations below.

$$M = M_p + M_k \quad \dots\dots\dots (13.1)$$

$$M_p = \mu \cdot P \cdot \frac{d}{2} \quad \dots\dots\dots (13.2)$$

Whereas,

- $M$  : Friction torque of bearing mN · m
- $M_p$  : Friction torque of sections changed by load mN · m
- $M_k$  : Friction torque of sections changed by rotational speed mN · m
- $\mu$  : Friction coefficient (0.001 5 to 0.002)
- $P$  : Load applied to bearing N
- $d$  : Nominal bearing bore dia. mm

Note that the agitating resistance of lubricants and the friction resistance of oil seal are difficult to be calculated, since they are fluctuated by rotational speed.

Fig. 13.1 shows the result of measurement of friction torque of the typical insert bearing unit.

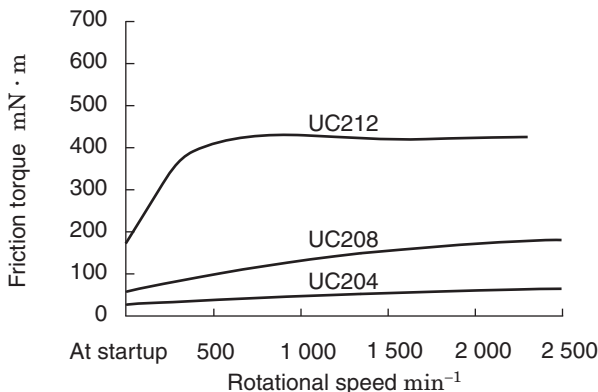


Fig. 13.1 Example of measurement result of insert bearing unit

### 13.2 Increase in temperature of bearing

Increase in temperature of the insert bearing for insert bearing unit is indicated as heat energy converted from the friction torque in the bearing during operation. Temperature of the bearing during operation increases in proportion to the greatness of friction torque and rotational speed (friction torque increases in proportion to the greatness of load).

Increase in temperature of the insert bearing for insert bearing unit depends on the heating value generated by friction in the bearing and that discharged outside from the surface of the bearing and housing. Therefore, increase in temperature of the insert bearing for insert bearing unit is influenced by the environmental conditions of the location that the insert bearing unit is installed (quality of heat radiation environment).

Temperature of the insert bearing unit is increased gradually after the startup of operation, and reaches the maximum level after one or two hours, if no abnormality occurs. Then, it is decreased a little, and enters the steady-state (see Fig. 13.2).

In this manner, if the operating conditions are not changed, bearing temperature is virtually constant, and therefore, measurement of temperature and assumption of the status of bearing are enabled.

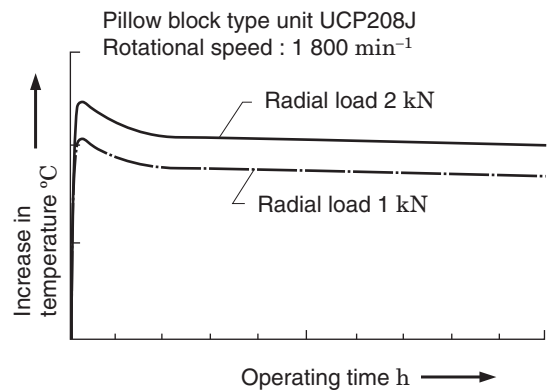


Fig. 13.2 Example of temperature measurement during operation of pillow block type unit

Increase in temperature during operation of the insert bearing unit depends on the type of oil seal used for the bearing as well as friction torque.

Increase in temperature of the triple-lip seal type (supplementary code L3) is greater than the standard type, and that of the non-contact seal type (special code K3, S5) is smaller than the standard type.

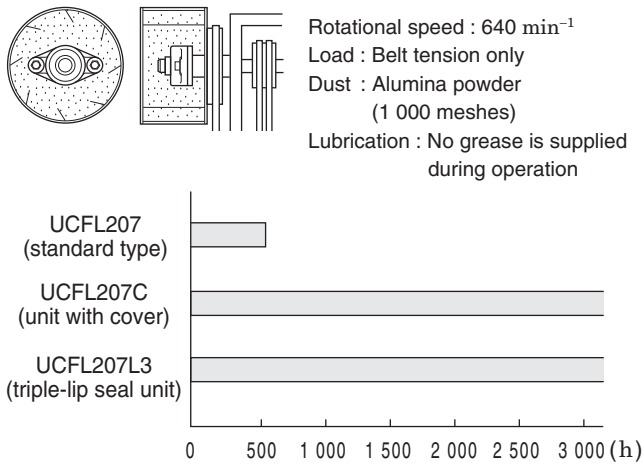
The bearing units for high speed and blower are equipped with the non-contact type oil seals for high speed use and reduction of heat, vibration, and noise.

### 13.3 Dustproof and waterproof performance

JTEKT executes various tests to check dustproof and waterproof performance of the insert bearing unit. Representative test results are shown below.

#### 13.3.1 Dust sprinkle rotating test (dust preventive performance)

Use the drum type dust sprinkle rotating test machine for this test. Directly sprinkle dusts onto the insert bearing unit while it is being operated, and then, judge the dust preventive performance of the product.



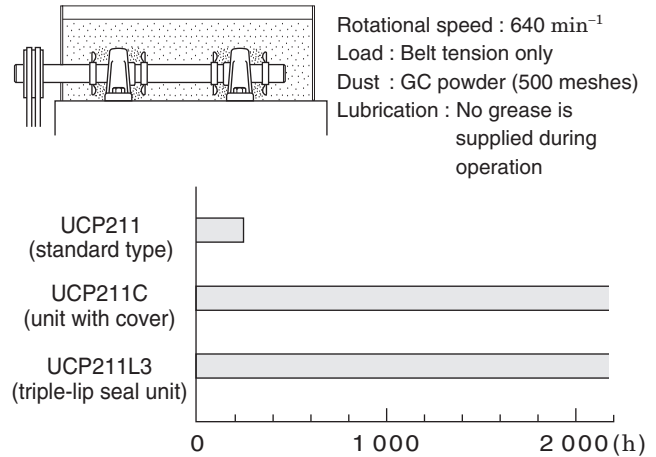
**Fig. 13.3 Example of result of dust sprinkle rotating test (dust preventive performance)**

In the case of the standard type, abnormal noise occurred about 500 hours after operation was started, and ingress of dusts was recognized.

On the other hand, no abnormality was found in the triple-lip seal type (supplementary code L3) and the covered type (supplementary code C) even after about 3 000 hours after operation was started, and superior dust proof performance was recognized.

#### 13.3.2 Dust bury rotating test (dust preventive performance)

Bury the insert bearing unit into dusts, and run it with the impeller installed to the shaft while stirring dusts, and judge the dust preventive performance of the product. This test is executed under the severest conditions among the operating conditions of the insert bearing unit.



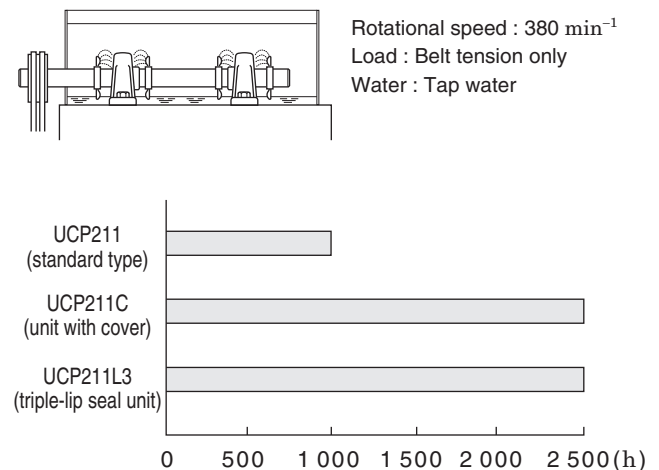
**Fig. 13.4 Example of result of dust bury rotating test (dust preventive performance)**

In the case of the standard type, abnormal noise occurred about 200 hours after operation was started, and ingress of dusts was recognized.

On the other hand, no abnormality was found in the triple-lip seal type (supplementary code L3) and the covered type (supplementary code C) even after about 2 000 hours after operation was started, and superior dust preventive performance was recognized.

#### 13.3.3 Waterproof performance test

In this test, water is splashed directly impellers installed on the shaft.



**Fig. 13.5 Example result of waterproof performance test**

In the case of the standard type, rust was found on the balls and raceway surface (outer and inner rings) about 1 000 hours after operation was started.

On the other hand, rust of equal level to the standard type was found in the triple-lip seal type (supplementary code L3) and the covered type (supplementary code C) after about 2 500 hours after operation was started.

## 14 Handling

The most significant feature of the insert bearing unit is simplicity of handling and installation. However, if handling or installation is wrong, premature breakage may occur to the insert bearing unit.

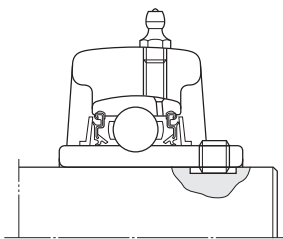
Therefore, handle and install it appropriately for genuine performance of the insert bearing unit.

### 14.1 Installation

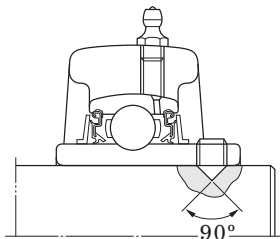
#### 14.1.1 Installation of unit with set screws

When installing the unit to the shaft with the set screws, it is enough to tighten the two set screws of the bearing inner ring with the specified torque.

However, if the environment is exposed to impact or vibration, the shaft is rotated in normal and reverse directions, or the machine is started and stopped frequently and repeatedly, grind the surface of the shaft where the set screw contacts with a file so that the flat seat (**Fig. 14.1**) or drilled seat (**Fig. 14.2**) is provided. It improves the tightening effect of the set screw substantially.



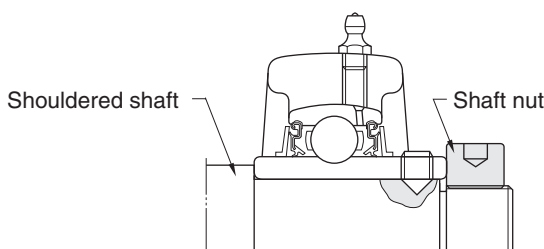
**Fig. 14.1 Flat seat provided for shaft**  
(for improvement in set screw tightening effect)



**Fig. 14.2 Drilled seat provided for shaft**  
(for improvement in set screw tightening effect)

If the environment is exposed to a great axial load or excessive vibration, use the shouldered shaft, and tighten the bearing inner ring with the nut (**Fig. 14.3**).




As for the dimensions of the shouldered shaft, see “10 Design of shaft and base”.



**Fig. 14.3 Example of installation with using shouldered shaft and nut**

The standard Koyo Insert Bearing Unit is equipped with the Bullet Point set screw featuring secure tightening to shaft. Other set screws are also available depending on your purposes and operating conditions (see **Table 14.1**).

**Table 14.1 Set screw of insert bearing for unit**

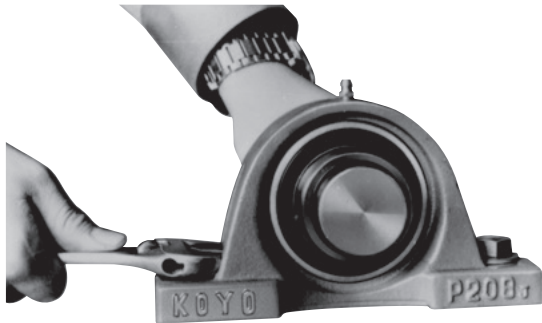
Designations (code)	Details
Bullet Point (no indication)	 <p>The tip of the Bullet Point set screw has a ball shape, and it is designed to firmly grip the shaft by expanding its threads outward against the threads of the inner ring of the bearing as it is tightened.</p> <p>When shock or vibration are problems, the Bullet Point set screw can remain affixed to the shaft longer than other set screw styles including double point, ball point, or others.</p>
Pointed (G4)	 <p>The cone point set screw has a 90° angle and fits a drilled cone seat in the shaft. It allows correct positioning on the shaft and prevents shaft movement in an axial direction.</p>
Full dog point cap (G6)	 <p>The full dog point set screw fits into the key groove in the shaft and allows for expansion and contraction of the shaft.</p>

Procedures for installation of the insert bearing unit with set screw are shown below.

- (1) Inspect the unit to ensure that the rigidity of the base, flatness of the mounting surface, variation of tolerance of the shaft meet the standards. Check for bend, flaw, or burr on the shaft.
- (2) Make sure that the tip of the set screw does not exceed the bearing bore diameter surface.
- (3) Fit the bearing unit to the shaft, and place it to the specified position. To fit it to the shaft with tight fitting, press-fit the bearing unit to the shaft with a press, cold-fit by cooling the shaft, or shrink-fit the bearing unit by warming it with air bath (100 °C or less).
- (4) Place the bearing unit to the specified position on the base, and fix it with bolts (**Fig. 14.4**).

Tighten the mounting bolt of the housing with the specified torque by a torque wrench. As for the tighten-

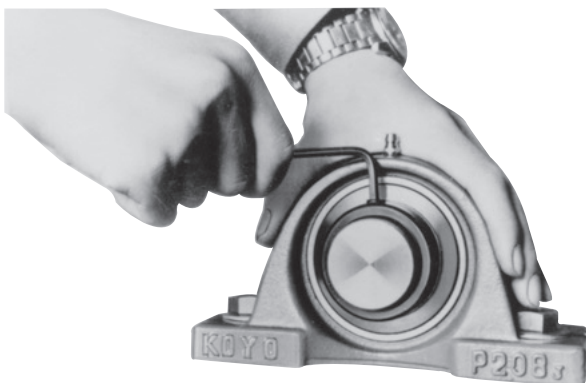
ing torque of the mounting bolt, see the **Supplementary table 2** at the end of this catalogue.



**Fig. 14.4** Fixing insert bearing unit to base

(5) Tighten the set screws (two) of a bearing inner ring with the specified tightening torque evenly (**Fig. 14.5**).

As for the tightening torque of the set screw, see the **Supplementary table 3** at the end of this catalogue.



**Fig. 14.5** Tightening of set screw

(6) Turn the shaft with your hands, and tighten the set screws (two) of another bearing inner ring with the specified torque.

(7) At last, turn the shaft with your hands, and check for abnormality in turning status of the bearing.

### 14.1.2 Installation of unit with adapter

To install the bearing with tapered bore to the shaft, set the adapter assembly (sleeve, locknut and washer) between the bearing bore diameter and the shaft. The bearing can be securely fixed even in the environment exposed to excessive vibration or impact.

If tightening of the locknut is loose, fitting to the shaft may be loosened during operation, and slippage occurs to the fitting surface, leading to wear on the shaft or parts. On the contrary, if tightening of the locknut is excessive, the bearing inner ring is expanded, and internal clearance of the bearing is too small, causing abnormal heat or premature breakage. Therefore, pay close attention to installation of the bearing with adapter.

Procedures for installation of the insert bearing unit with adapter assembly are shown below.

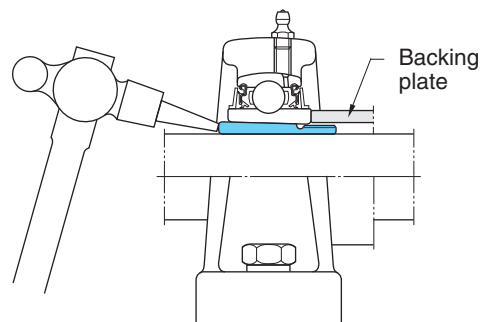
(1) Inspect the unit to ensure that the rigidity of the base, flatness of the installing surface, and variation of tolerance of the shaft meet the standards. Check for bend, flaw, or burr on the shaft.

(2) Fit the adapter sleeve to the shaft, and move the adapter sleeve to the installing position of the bearing unit.

If the fitting is too tight to insert the adapter sleeve, put a screwdriver into the cutout of the adapter sleeve, and expand the cutout for easier fitting.

(3) Fit the bearing unit to the shaft.

Then, place the cylindrical backing plate to the whole side of the bearing inner ring that the locknut is to be attached, and tap all around the large diameter side end face to fit the bore diameter surface of the bearing inner ring to the tapered surface of the adapter sleeve closely (**Fig. 14.6**).



**Fig. 14.6** Fitting adapter sleeve to bearing with tapered bore

(4) Fit the washer and locknut to the adapter sleeve, and tighten the locknut with your hands.

(5) Place the bearing unit to the specified position of the base, and fix it with the bolts.

Tighten the mounting bolt of the housing with the specified torque by a torque wrench.

As for the tightening torque of the set screw, see the **Supplementary table 2** at the end of this catalogue.

(6) Tighten the locknut of the adapter.

When tightening the locknut, tighten it with a wrench for tightening, or place a jig onto the cutout of the locknut outer surface, and tap the jig with a hammer and turn the locknut by 1/4 to 1/3 turn (**Fig. 14.7**).

As for the tightening torque of the locknut, see the **Supplementary table 4** at the end of this catalogue.



**Fig. 14.7 Tightening locknut**

- (7A) For the pillow block type unit, loosen the mounting bolts on a housing, adjust the position of the bearing unit in the axial direction while turning the shaft by your hands, and then, tighten the mounting bolt on the housing with the specified torque again.
- (7B) For the flange type unit, positions of the bearing and housing in the axial direction must be fit completely. Therefore, pay close attention and tighten the locknut to prevent any error of the position of bearing inner ring.
- (8) Bend the outer tab on a washer that fits to the position of cutout on the outer surface of the locknut, and lock the locknut (**Fig. 14.8**).



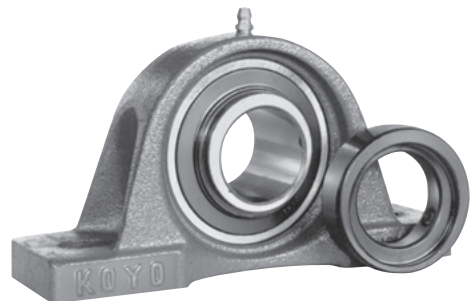
**Fig. 14.8 Bending outer tab of washer**  
(Locking locknut)

- (9) At last, turn the shaft with your hands, and check for abnormality in the rotating status of the bearing.

**14.1.3 Installing unit with eccentric locking collar**

When installing the bearing to the shaft with the eccentric ring, fit the eccentric section of the end outside surface of the bearing inner ring to the eccentric recessed section provided on the eccentric locking collar, turn the eccentric locking collar, and tighten the set screw of the eccentric locking collar to fix the bearing to the shaft.

Since the rotating force of the shaft increases the tightening force of the eccentric ring to the shaft, the unit with eccentric locking collar allows secure fixing of the bearing (**Fig. 14.9**).



**Fig. 14.9 Insert bearing unit with eccentric locking collar**

Procedures for installation of the insert bearing unit with eccentric locking collar are shown below.

- (1) Inspect the unit to ensure that the rigidity of the base, flatness of the mounting surface, and variation of tolerance of the shaft meet the standards. Check for bend, flaw, or burr on the shaft.
- (2) Fit the bearing unit to the shaft, and place it on the specified position.
- (3) Install the bearing unit to the specified position of the base, and fix it with the bolts.  
Tighten the mounting bolts for the housing with the specified torque with a torque wrench.  
For the tightening torque of the mounting bolt, see the **Supplementary table 2** at the end of this catalogue.
- (4) Fit the eccentric section of the bearing inner ring to the eccentric recessed section provided on the eccentric locking collar, turn the eccentric locking collar in the shaft turning direction, and tighten the set screw of the eccentric locking collar with the specified torque (**Fig. 14.10**).

For the tightening torque of the set screw, see the **Supplementary table 3** at the end of this catalogue.



**Fig. 14.10 Installing eccentric locking collar**

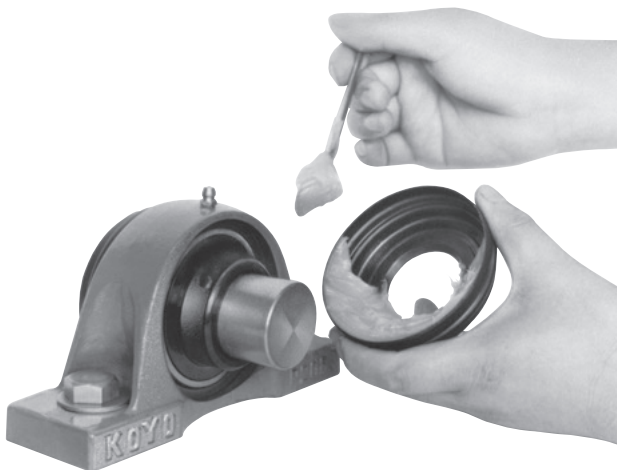
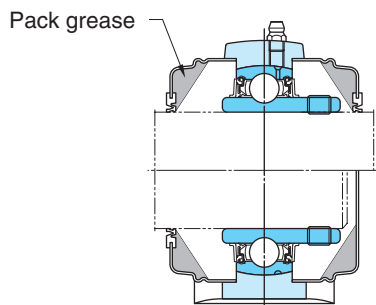
- (5) Turn the shaft with your hands. Then, fix the eccentric locking collar of another bearing unit to the bearing inner ring, and tighten the set screw of the eccentric locking collar with the specified torque.
- (6) At last, turn the shaft with your hands, and check for abnormality in the rotating status of the bearing.

#### 14.1.4 Installing unit with cover

Covers for insert bearing unit are available in four types, pressed steel, cast iron, stainless and rubber coated. Install both the covers at last after installation of the bearing and housing is complete.

Procedures for installation of the insert bearing unit with cover are shown below.

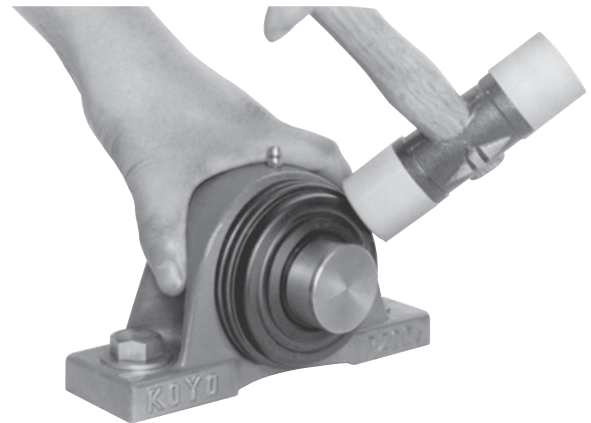
- (1) Apply grease all around the seal lip of the cover, and pack the internal space of the cover with grease (approximately 1/3 to 1/2 of the space capacity) (Fig. 14.11).



**Fig. 14.11 Packing grease in internal space and seal lip of cover**

- (2) Put a cover through the shaft, and then, fit the bearing unit to the shaft.
- (3) Fit the cover through the shaft to the cover groove on the housing, and fix it.
- (4A) For the pressed steel cover, tap all around the cover evenly with a synthetic resin hammer to prevent deformation, and install it to the housing (Fig. 14.12).

To remove the pressed steel cover, put a screwdriver into the groove on the periphery of the cover, and slightly pry it.



**Fig. 14.12 Installing steel plate cover**

- (4B) When installing the cast iron cover, fit the cover to the cover groove of the housing, and fix it with the bolt. For the tightening torque of the cast iron cover mounting bolt, see the **Supplementary table 2** at the end of this catalogue.
- (5) Install another cover to the housing in a similar manner.
- (6) Check for abnormality of the installed cover.
- (7) At last, turn the shaft with your hands, and check for abnormality in the rotating status of the bearing.

#### 14.2 Test run inspection

After installation of the insert bearing unit is complete, execute the test run inspection to ensure that it is done appropriately.

The test run inspection should be executed by following the procedures below. Check for abnormality in the bearing unit.

- (1) Turn the shaft with your hands, and make sure that the bearing is rotated smoothly. If any jam, vibration, great rotation torque (heavy), or uneven rotation is found, the bearing is judged to be faulty.
- (2) Execute power run with no load and at a low speed, and check for abnormal noise and vibration.
- (3) Carry out power run under the specified conditions, and check for abnormal noise, vibration, and temperature increase.

**Table 14.2** shows the main faults that may occur during the test run inspection of the insert bearing unit and causes.



**Table 14.2 Main faults occurred during test run inspection and their causes**

Faults	Causes
Excessively great torque, uneven rotating torque	(1) Faulty installation, leading to preload onto bearing in axial direction (2) Inappropriate handling or installation, leading to interference of oil seal with flinger (slinger) (3) Excessive tightening of locknut (adapter), leading to too small internal clearance of bearing
Abnormal noise, abnormal vibration	(1) Insufficient tightening of set screw of bearing inner ring or mounting bolt of housing (2) Excessively large internal clearance of bearing (3) Bend on shaft, deviation of shaft center of shouldered shaft (4) Faulty accuracy of shaft (5) Insufficient rigidity or faulty flatness of base
Abnormal temperature increase	(1) Excessively small internal clearance of bearing (2) Inappropriate installation, leading to preload onto bearing in axial direction (3) Great load applied (4) Allowable rotational speed is exceeded (5) Faulty flatness of base (6) Inappropriate handling or installation, leading to interference of oil seal with flinger (slinger)

**14.3 Periodic inspection**

Koyo Insert Bearing Units do not need to be inspected, as well as standard sealed bearings. However, for especially important purposes, periodic inspection must be executed with appropriate intervals for safe operation of the bearing unit.

Since a insert bearing unit cannot be disassembled for inspection of internal status, check the appearance and operating status as shown below, and ensure that the bearing unit is free from fault or not.

- (1) Appearance
- (2) Looseness of set screw of bearing inner ring or mounting bolt of housing
- (3) Vibration, noise
- (4) Temperature
- (5) Grease supply interval, check of supplied amount

**Table 14.3** shows the main faults found during the periodic inspection of insert bearing unit and their causes.

If any fault is found in the insert bearing unit during the periodic inspection, immediately provide countermeasures against them, and carry out them. If the unit is judged to be difficult to be used, replace the bearing unit. It is important to replace the bearing unit to prevent expanding damage to other parts.

**Table 14.3 Main faults found during periodic inspection and their causes**

Faults	Causes
Excessively great torque (heavy)	(1) Degraded grease (2) Interference of oil seal with flinger (slinger) due to excessive supply of grease (3) Deformation of flinger (slinger), leading to interference with oil seal (4) Abnormal load due to expansion of shaft
Abnormal noise, abnormal vibration	(1) Insufficient tightening of set screw of bearing inner ring or mounting bolt of housing (2) Wear on fitting surface of shaft and bearing inner ring due to creep or fretting (3) Ingress of foreign matters into bearing (4) Damage to raceway surface or rolling contact surface of rolling element by rolling fatigue (5) Dent on raceway surface or rolling contact surface of rolling element by excessive load (6) Excessive warp or bend of shaft
Abnormal temperature increase	(1) Degraded grease (2) Interference of oil seal with flinger (slinger) due to excessive supply of grease (3) Deformation of flinger (slinger), leading to interference with oil seal (4) Looseness of set screw or locknut (adapter) of bearing inner ring (5) Abnormal load due to expansion of shaft (6) Damage to raceway surface or rolling contact surface of rolling element by rolling fatigue

**14.4 Supply of grease**

In Koyo Insert Bearing Unit, grease of good quality is packed with high quality oil seal. Therefore, grease life is long under standard operating conditions, and use without lubrication is enabled.

If the operating temperature is high or the unit is used in the environment exposed to dusts or high humidity, grease may be degraded faster, leading to faulty lubrication in a short period.

Since Koyo Insert Bearing Units are lubricated type bearings, fresh grease must be periodically supplied to the bearings, if they are used for such purposes that premature degradation of grease is expected.

The insert bearing units can maintain normal lubricated status and longer service life by supplying fresh grease.

### 14.4.1 Grease life and supply intervals

Grease life of a packed grease insert bearing, like a insert bearing unit, can be found by **Equation (5.10)** in page 37. It is recommended to supply grease with the intervals of 1/4 to 1/3 of grease life found by the calculation shown above to insert bearing units, taking peculiarity of lubricating method and safety of bearing unit into consideration.

If the bearing unit is used under severe environmental conditions, including much dust and high humidity, the greasing intervals must be further shortened, taking these influences into consideration.

If operating conditions of the insert bearing unit are not clear or the unit is operated under standard conditions, consider the greasing intervals shown in **Table 14.4** as the guideline.

### 14.4.2 Greasing amount

Initial greasing amount of Koyo Insert Bearing Unit is approximately 30 to 35% of the internal space capacity of the bearing. If amount of grease supplied in the bearing is excessive, agitating resistance of grease increases, leading to abnormal heat or grease leak. DO NOT exceed the initial greasing amount.

**Table 14.5** shows the recommended values of greasing amount of Koyo Insert Bearing Unit.

If the unit is used at a low speed, supply grease of double amount of that shown in **Table 14.5** is recommended to increase dust preventive performance.

- [Remarks] 1. For greasing amount of the UK type bearing, use this table, too.  
 2. For greasing amount of the triple-lip seal type, 1.5 times of the values shown in this table are recommended.  
 3. Values shown in this table are applicable to standard grease (specific gravity : 0.9 g/ml). If you use greases of other specific gravity, adopt values converted with the same volume.

**Table 14.5 Greasing amount of insert bearing unit (recommended)**

Bore dia. code	Greasing amount, g		
	Diameter Series <sup>1)</sup>		
	UC200	UCX00	UC300
01	0.7		
02	0.7		
03	0.7		
04	0.7		
05	0.8	1.3	1.8
06	1.3	1.8	2.5
07	1.8	2.3	3.4
08	2.3	2.8	4.6
09	2.8	3.2	6.3
10	3.2	4.3	8.1
11	4.3	5.5	11
12	5.5	6.8	14
13	6.8	7.7	17
14	7.7	9	21
15	9	11	25
16	11	14	29
17	14	17	34
18	17	21	40
19	–	–	47
20	–	29	61
21	–	–	69
22	–	–	84
24	–	–	98
26	–	–	126
28	–	–	151

**Table 14.4 Greasing intervals of insert bearing unit (recommended)**

Operating temperature, °C		Grease Intervals			Bearing used	Grease supplied
over	up to	Substantially clean	Much dust	Much dust and muddy water		
	50	(3 months) not necessary	(2 months) 1 year	(1 month) 4 months	(Low temperature D2K2) <sup>1)</sup>	(Lithium) Lithium
50	70	1 year	4 months	1 month	Standard bearing	
70	100	6 months	2 months	2 weeks		
100	120	2 months	2 weeks	5 days	High temperature D1K2	Lithium
120	150	2 weeks	5 days	2 days		
150	180	1 week	2 days	1 day		

Note 1) Greasing intervals in parentheses are applicable to the cold resistant type (D2K2).

[Remark] Greasing intervals shown in this table are applicable to the unit to be operated for 8 to 10 hours a day. If operating hour is out of this range, find the greasing interval proportionally by this table.

### 14.4.3 Types of grease supplied

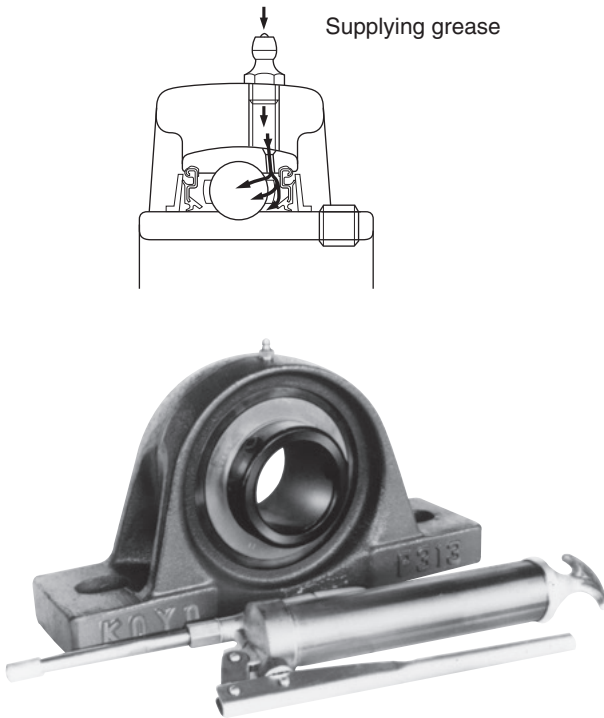
Though various types of greases used for insert bearing units are available, if dissimilar grease, especially grease of which soap base is different, is mixed, lubricating performance may be significantly degraded.

Therefore, the same grease to be supplied as the initially packed grease must be used, and avoid use of dissimilar grease.

It is recommended to supply the same grease to Koyo Insert Bearing Unit as the initially packed grease (see **Table 3.3**). If you have no choice but to use other greases, you have to use grease of the same type (thickener) as the initially packed grease, if not the worst.

### 14.4.4 Supplying grease

When supplying grease to a insert bearing unit, use the grease nipple and grease gun installed to the housing (**Fig. 14.13**).



**Fig. 14.13** Supplying grease to insert bearing unit

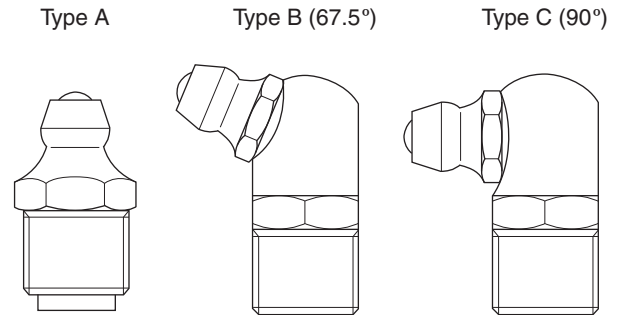
- (1) Clean the grease nipple and area around it to prevent ingress of foreign matters.
- (2) Clean the grease gun, and pack clean grease.
- (3) Supply grease.

When supplying grease to the insert bearing unit, turning of the shaft with your hands or turning of the bearing unit at a low speed is recommended.

It allows appropriate discharge of old grease and even supply of fresh grease into the bearing.

If the grease supply with the grease nipple of the standard type (type A) is difficult because of the structure of the machine, grease nipples of the type B or type C are also available. Contact JTEKT.

**Fig. 14.14** shows the types of grease nipples.



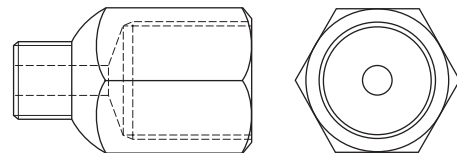
**Fig. 14.14** Types of grease nipple for insert bearing unit

When supplying many insert bearing units with the centralized lubricating device, use soft grease with consistency from about 300 to 380, and provide piping appropriately so that grease of the specified amount is supplied.

Piping to the insert bearing unit should be provided with the tapped hole of the grease nipple of the housing. However, if size of the tapped hole on the housing differs from that of thread of the piping, use the reducing socket.

**Fig. 14.15** shows the structure of the reducing socket for centralized lubricating.

When executing centralized lubricating, it is effective for the lubricating surface of the bearing to supply grease of the amount shown in **Table 14.5** by dividing into several times.



**Fig. 14.15** Reducing socket for centralized lubricating

For details of grease nipples and reducing sockets, see “**16 Parts and accessories**”.

## 14.5 Replacing bearing

Since the bearings and the housings of Koyo Insert Bearing Units are compatible, if a bearing is faulty, it can be replaced and used continuously.

Replacing procedures of the bearing of the insert bearing unit are shown below.

- (1) Remove the bearing unit from the shaft and the base.
- (2) Screw in the set screw so that the head of the set screw does not project out from the outside diameter surface of the inner ring of the bearing.  
Head of the set screw may be hooked on the housing when the bearing is tilted.
- (3) Turn the bearing by 90° with a handle of a hammer until the bearing is horizontal.
- (4) Take out the bearing from the bearing groove of the housing.

To fit a new bearing to the housing, reverse the removing procedures.



# **15 Specification tables of insert bearing units**

**1 Pillow block type**

**Pillow block type**

UCP (*d* 12 ~ 140) ..... 78  
 NAP (*d* 12 ~ 75) ..... 84  
 NAPK (*d* 12 ~ 75) ..... 86  
 UKP (*d*<sub>1</sub> 20 ~ 125) ..... 88

**Thick section pillow block type**

UCIP (*d* 40 ~ 140) ..... 94  
 UKIP (*d*<sub>1</sub> 35 ~ 125) ..... 96

**Tapped-base pillow block type**

UCPA (*d* 12 ~ 50) ..... 98

**Higher centerheight pillow block type**

UCPH (*d* 12 ~ 50) ..... 100

**Light duty pillow block type**

BLP (*d* 12 ~ 40) ..... 102  
 ALP (*d* 12 ~ 40) ..... 102

**“Compact” series pillow block type**

UP (*d* 10 ~ 30) ..... 104

**Stainless-series pillow block type**

UCSP-S6 (*d* 12 ~ 65) ..... 106  
 UCSPA-S6 (*d* 12 ~ 50) ..... 108  
 USP-S6 (*d* 10 ~ 30) ..... 110

**2 Square-flanged type**

**Square-flanged type**

UCF (*d* 12 ~ 140) ..... 112  
 UCF-E (*d* 12 ~ 85) ..... 118  
 NANF (*d* 12 ~ 60) ..... 122  
 UKF (*d*<sub>1</sub> 20 ~ 125) ..... 124

**Square-flanged type with spigot joint**

UCFS (*d* 25 ~ 140) ..... 130  
 UKFS (*d*<sub>1</sub> 20 ~ 125) ..... 132

**Stainless-series square-flanged type**

UCSF-S6 (*d* 20 ~ 65) ..... 134

**3 Rhombic flanged type**

**Rhombic-flanged type**

UCFL (*d* 12 ~ 120) ..... 136  
 UCFL-E (*d* 12 ~ 85) ..... 142  
 NANFL (*d* 12 ~ 55) ..... 146  
 UKFL (*d*<sub>1</sub> 20 ~ 110) ..... 148

**Adjustable rhombic-flanged type**

UCFA (*d* 12 ~ 55) ..... 152

**Three-bolt flange type**

UCFB (*d* 12 ~ 50) ..... 154

**Light duty rhombic-flanged type**

BLF (*d* 12 ~ 35) ..... 156  
 ALF (*d* 12 ~ 35) ..... 156

**“Compact” series rhombic-flanged type**

UFL (*d* 8 ~ 30) ..... 158

**Stainless-series rhombic-flanged type**

UCSFL-S6 (*d* 12 ~ 50) ..... 160  
 USFL-S6 (*d* 10 ~ 30) ..... 162

**4 Round-flanged type with spigot joint**

**Round-flanged type with spigot joint**

UCFC (*d* 12 ~ 100) ..... 164  
 UCFCX-E (*d* 25 ~ 100) ..... 168  
 UKFC (*d*<sub>1</sub> 20 ~ 90) ..... 170

**Stainless-series round-flanged type with spigot joint**

UCSFC-S6 (*d* 20 ~ 40) ..... 174

**5 Pressed steel housing type**

**Pressed steel pillow block type**

SBPP (*d* 12 ~ 30) ..... 176  
 SAPP (*d* 12 ~ 30) ..... 176

**Pressed steel round-flanged type**

SBPF (*d* 12 ~ 35) ..... 178  
 SAPF (*d* 12 ~ 35) ..... 178

**Pressed steel rhombic-flanged type**

SBPFL (*d* 12 ~ 35) ..... 180  
 SAPFL (*d* 12 ~ 35) ..... 180

**Pressed steel triangle-flanged type**

SBPFT (*d* 12 ~ 35) ..... 182

**6 Take-up type**

**Take-up type**

UCT (*d* 12 ~ 140) ..... 184  
 UCT-E (*d* 12 ~ 85) ..... 190  
 UKT (*d*<sub>1</sub> 20 ~ 125) ..... 194

**Stainless-series take-up type**

UCST-S6 (*d* 20 ~ 50) ..... 198

**Section steel frame take-up type**

UCTH (*d* 12 ~ 65) ..... 200

**Channel steel frame take-up type**

UCTL (*d* 20 ~ 45) ..... 202  
 UCTU (*d* 40 ~ 90) ..... 204

**Pressed steel frame take-up type**

SBPTH (*d* 12 ~ 25) ..... 208  
 SBNPTH (*d* 12 ~ 25) ..... 210

## 7 Other units

### Cartridge type

UCC ( $d$ 12 ~ 140) .....	212
UKC ( $d_1$ 20 ~ 125) .....	216

### Hanger type

UCHA ( $d$ 12 ~ 75) .....	218
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### Rubber clamping ring/ anti vibration ring type

RU-M series ( $d$ 20 ~ 30) .....	220
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## 8 Insert bearings for units

### Cylindrical bore (with set screws)

UC, SB, SU ( $d$ 8 ~ 140) .....	222
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### (Stainless-series)

### Cylindrical bore (with set screws)

UC-S6, SU-S6 ( $d$ 10 ~ 65).....	228
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### Cylindrical bore (with eccentric locking collar)

SA, SA-F, NA ( $d$ 12 ~ 75).....	230
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### Tapered bore (with adapter)

UK ( $d_1$ 20 ~ 125).....	234
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### Cylindrical bore (with set screws)

### Cylindrical outside surface

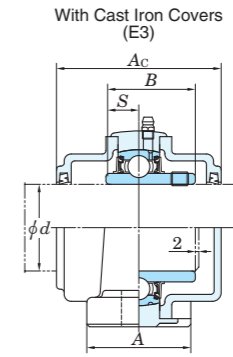
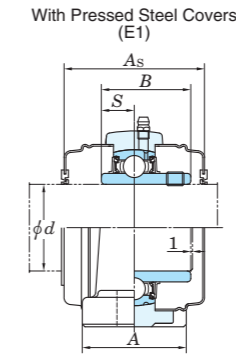
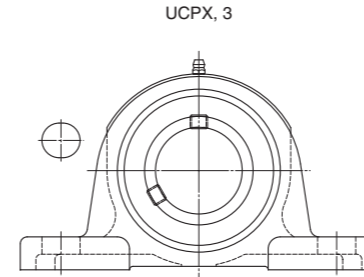
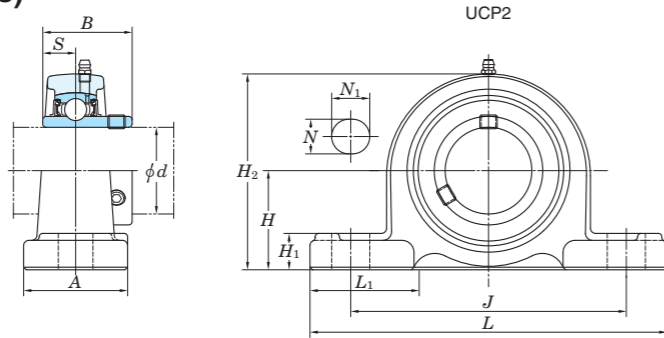
ER, RB ( $d$ 12 ~ 60) .....	240
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## 9 Adapter assemblies

H2300X ( $d_1$ 20 ~ 125).....	242
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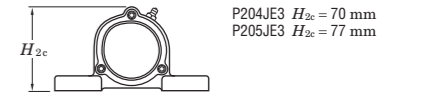
**UCP**  
Cylindrical bore (with set screws)  
*d* 12 ~ (45) mm



Variations of tolerance of distance from mounting bottom to center of spherical bore ( $\Delta H_s$ ) Unit: mm

Housing No.	$\Delta H_s$
P203-P210	±0.15
P211-P218	±0.2
PX05-PX10	±0.3
P305-P310	±0.3
PX11-PX18	±0.2
P311-P318	±0.2
PX20	±0.3
P319-P328	±0.3

Forms and dimensions of  $H_{2c}$  of P204JE3 and P205JE3 (housing with cast iron covers) are shown below.



Position of grease nipple is different from standard only for P204JE3 and P205JE3.

Shaft Dia. mm inch <i>d</i>	Dimensions inch mm												Bolt Size inch mm	Standard			Mass kg	Basic Load Ratings kN		Fatigue Load Limit kN	Factor $f_0$	With Pressed Steel Covers				With Cast Iron Covers							
	<i>H</i>	<i>L</i>	<i>A</i>	<i>J</i>	<i>N</i>	<i>N</i> <sub>1</sub>	<i>H</i> <sub>1</sub>	<i>H</i> <sub>2</sub>	<i>L</i> <sub>1</sub>	<i>B</i>	<i>S</i>	Unit No.		Housing No.	Bearing No.	Open Ends Type		Closed End Type	Dimension mm inch			Mass kg	Open Ends Type	Closed End Type	Dimension mm inch	Mass kg							
12 15 17	1/2 5/8	1 3/16	5	1 1/2	3 3/4	1/2	23/32	5/8	2 3/8	1 13/32	1.220	0.500	3/8	P203	UC201	UC201-8	0.63	12.8	6.65	0.302	13.2	UCP201C	UCP201CD	45	1 25/32	0.63	-	-	-	-			
		30.2	127	38	95	13	18	16	60	36	31	12.7	UC202		UC202-10							0.61	UCP202C	UCP202CD	45	1 25/32	0.61	-	-	-	-		
		UC203	UC203	0.60	UCP203C	UCP203CD	45	1 25/32	0.60	-	-	-	-																				
20	3/4	1 5/16	5	1 1/2	3 3/4	1/2	23/32	5/8	2 9/16	1 13/32	1.220	0.500	3/8	P204	UC204-12	UC204	0.66	12.8	6.65	0.302	13.2	UCP204C	UCP204CD	45	1 25/32	0.66	UCP204FC	UCP204FCD	62	2 7/16	0.96		
		33.3	127	38	95	13	18	16	65	36	31	12.7	UC205-14		UC205-15							0.80	UCP205C	UCP205CD	49	1 15/16	0.80	UCP205FC	UCP205FCD	66	2 19/32	1.2	
25	7/8 15/16 1	1 7/16	5 1/2	1 1/2	4 1/8	1/2	23/32	5/8	2 3/4	1 1/2	1.343	0.563	3/8	P205	UC205	UC205-16	0.80	14.0	7.85	0.357	13.9	UCP205C	UCP205CD	49	1 15/16	0.80	UCP205FC	UCP205FCD	66	2 19/32	1.2		
		36.5	140	38	105	13	18	16	70	38	34.1	14.3	UCX05		UCX05-16							1.5	UCPX05C	UCPX05CD	53	2 3/32	1.5	-	-	-	-		
		44.4	159	51	119	17	25	16	86	47	38.1	15.9	M14		PX05							UC305	UC305-16	1.7	21.2	10.9	0.495	12.6	UCP305C	UCP305CD	76	3	2.3
30	1 1/8 1 3/16 1 1/4 1 3/16 1 1/4	1 11/16	6 1/2	1 7/8	4 3/4	21/32	13/16	21/32	3 5/16	1 7/8	1.500	0.626	1/2	P206	UC206-18	UC206-19	1.3	19.5	11.3	0.514	13.9	UCP206C	UCP206CD	53	2 3/32	1.3	UCP206FC	UCP206FCD	70	2 3/4	1.8		
		42.9	165	48	121	17	21	17	84	48	38.1	15.9	M14		UCX06							UCX06-19	2.1	UCPX06C	UCPX06CD	60	2 3/8	2.1	-	-	-	-	
		1 7/8	6 7/8	2 1/4	5	21/32	31/32	21/32	3 21/32	2 5/32	1.689	0.689	1/2		PX06							UC306	UC306-16	1.7	21.2	10.9	0.495	12.6	UCP306C	UCP306CD	82	3 7/32	2.8
		45	175	45	132	17	20	16	85	55	38	15	M14		UC206-20							UC206-20	1.3	-	-	-	-	-	-	-	-	-	-
		1 31/32	7 3/32	1 31/32	5 1/2	21/32	25/32	21/32	3 3/4	2 3/32	1.693	0.669	1/2		P306							UC306	UC306	2.2	26.7	15.0	0.682	13.3	UCP306C	UCP306CD	82	3 7/32	2.8
35	1 1/4 1 5/16 1 3/8 1 7/16 1 3/8	1 7/8	6 9/16	1 7/8	5	21/32	13/16	23/32	3 3/4	1 27/32	1.689	0.689	1/2	P207	UC207-20	UC207-22	1.6	25.7	15.4	0.700	13.9	UCP207C	UCP207CD	60	2 3/8	1.6	UCP207FC	UCP207FCD	78	3 1/16	2.3		
		47.6	167	48	127	17	21	18	95	47	42.9	17.5	M14		UCX07-22							UCX07-23	2.7	UCPX07C	UCPX07CD	69	2 23/32	2.7	-	-	-	-	
		2 1/8	8	2 1/4	5 21/32	21/32	1 3/16	3/4	4 1/8	2 17/32	1.937	0.748	1/2		PX07							UCX07	UCX07-23	2.7	29.1	17.8	0.809	14.0	UCP307C	UCP307CD	88	3 15/32	3.8
		54	203	57	144	17	30	19	105	64	49.2	19	M14		UC207-23							UC207-23	1.6	-	-	-	-	-	-	-	-	-	
		2 13/64	8 9/32	2 7/32	6 5/16	21/32	31/32	3/4	4 7/32	2 9/16	1.890	0.748	1/2		P307							UC307	UC307	3.0	33.4	19.3	0.877	13.2	UCP307C	UCP307CD	88	3 15/32	3.8
40	1 1/2 1 9/16 1 1/2	1 15/16	7 1/4	2 1/8	5 13/32	21/32	13/16	23/32	3 27/32	2 3/32	1.937	0.748	1/2	P208	UC208-24	UC208-25	2.0	29.1	17.8	0.809	14.0	UCP208C	UCP208CD	69	2 23/32	2.0	UCP208FC	UCP208FCD	86	3 3/8	2.8		
		49.2	184	54	137	17	21	18	98	53	49.2	19	M14		UCX08-24							UCX08	3.5	UCPX08C	UCPX08CD	69	2 23/32	3.5	-	-	-	-	
		2 5/16	8 3/4	2 5/8	6 5/32	25/32	1 1/4	13/16	4 1/2	2 25/32	1.937	0.748	5/8		PX08							UC308-24	UC308	3.8	40.7	24.0	1.09	13.2	UCP308C	UCP308CD	96	3 25/32	4.8
45	1 1/8 1 11/16 1 3/4 1 3/4	2 23/64	8 21/32	2 3/8	6 11/16	21/32	1 1/16	3/4	4 21/32	2 9/16	2.047	0.748	1/2	P308	UC209-26	UC209-28	2.2	34.1	21.3	0.968	14.0	UCP209C	UCP209CD	69	2 23/32	2.2	UCP209FC	UCP209FCD	88	3 15/32	3.0		
		60	220	60	170	17	27	19	118	65	52	19	M14		UCX09-28							UCX09	3.7	UCPX09C	UCPX09CD	74	2 29/32	3.7	-	-	-	-	
		2 1/8	7 15/32	2 1/8	5 3/4	21/32	13/16	25/32	4 3/16	2 5/32	1.937	0.748	1/2		P209							UC209-26	UC209-26	2.2	-	-	-	-	-	-	-	-	
		54	190	54	146	17	21	20	106	55	49.2	19	M14		UC209-27							UC209-27	2.2	-	-	-	-	-	-	-	-		
		2 5/16	8 3/4	2 5/8	6 5/32	25/32	1 5/16	13/16	4 9/16	2 25/32	2.031	0.748	5/8		PX09							UC309-28	UC309	3.7	35.1	23.3	1.06	14.4	UCP309C	UCP309CD	96	3 25/32	4.8
58.7	222	67	156	20	33	21	116	71	51.6	19	M16	UCX09	UCX09	3.7	-	-	-	-	-	-	-	-											

Remarks 1. In Part No. of unit and units with covers, fitting codes follow bore diameter numbers. (See Table 2.5 in P.11.)

2. Part No. of applicable grease nipples are shown below.

A-1/4-28UNF ..... 201-210, X05-X09, 305-308

A-R1/8 ..... 211-218, X10-X20, 309-328

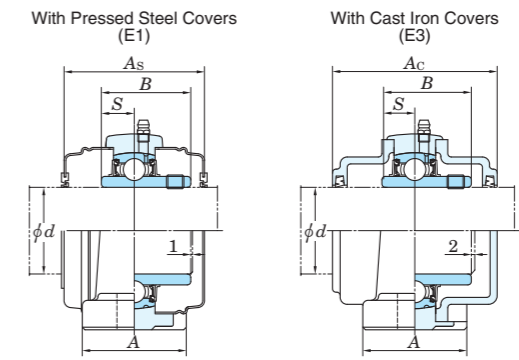
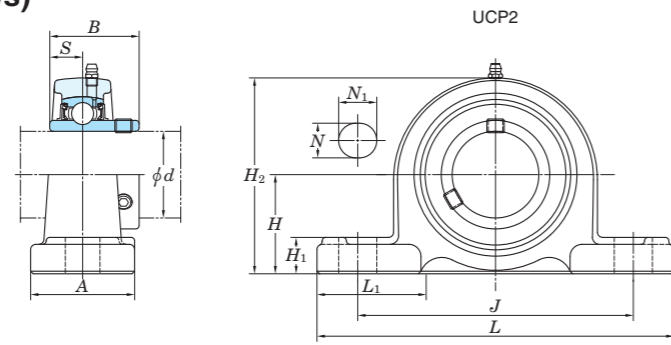
3. As for the triple-lip seal type product (from 201 to 205 are the double-lip seal type products), supplementary code L3 (or L2) follows the Part No. of unit or bearing. (Example of Part No. : UCP206JL3, UC206L3)

4. For the dimensions and forms of applicable bearings, see the dimensional tables of insert bearing for unit.

5. Representative examples of the forms of housing are indicated.

6. Housings of spheroidal graphite iron casting are also available.

**UCP**  
Cylindrical bore (with set screws)  
 $d$  (45) ~ (75) mm



Variations of tolerance of distance from mounting bottom to center of spherical bore ( $\Delta H_b$ ) Unit: mm

Housing No.			$\Delta H_b$
P203-P210	PX05-PX10	P305-P310	$\pm 0.15$
P211-P218	PX11-PX18	P311-P318	$\pm 0.2$
	PX20	P319-P328	$\pm 0.3$

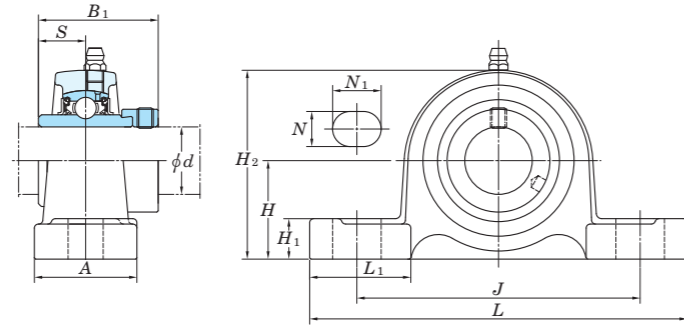
Shaft Dia. mm inch $d$	Dimensions inch mm												Bolt Size inch mm	Standard			Mass kg	Basic Load Ratings kN		Fatigue Load Limit kN $C_u$	Factor $f_0$	With Pressed Steel Covers Unit No.				With Cast Iron Covers Unit No.			
	$H$	$L$	$A$	$J$	$N$	$N_1$	$H_1$	$H_2$	$L_1$	$B$	$S$	Unit No.		Housing No.	Bearing No.	Open Ends Type		Closed End Type	Dimension mm inch			Mass kg	Open Ends Type	Closed End Type	Dimension mm inch	Mass kg			
45 1 3/4	2 41/64	9 21/32	2 5/8	7 15/32	25/32	1 3/16	13/16	5 3/16	2 15/16	2.244	0.866	5/8	UCP309-28	P309	UC309-28	—	—	1.34	13.3	—	—	—	—						
	67	245	67	190	20	30	21	132	75	57	22	M16	UCP309		UC309	—	—			UCP309C	UCP309CD	102	4 1/32	6.2					
50 1 7/8 1 15/16 2 1 15/16	2 1/4	8 1/8	2 3/8	6 1/4	25/32	7/8	13/16	4 7/16	2 3/8	2.031	0.748	5/8	UCP210-30	P210	UC210-30	—	—	—	—	—	—	—	—						
	57.2	206	60	159	20	22	21	113	60	51.6	19	M16	UCP210-31			UC210-31	—	—	—	—	—	—	—						
	2	2	2	2	2	2	2	2	2	2	2		UCP210			UC210	UCP210C	UCP210CD	74	2 29/32	2.9	UCP210FC	UCP210FCD	97	3 13/16	3.9			
	2	2 1/2	9 1/2	2 7/8	6 23/32	25/32	1 13/32	7/8	4 31/32	3	2.189	0.874	5/8	UCPX10-31	PX10	UCX10-31	—	—	—	—	—	—	—	—	—	—			
2	63.5	241	73	171	20	36	22	126	76	55.6	22.2	M16	UCPX10			UCX10	—	—	—	—	—	—	—	—					
—	2 61/64	10 13/16	2 15/16	8 11/32	25/32	1 3/8	15/16	5 13/16	3 15/32	2.402	0.866	5/8	UCP310	P310	UC310	—	—	—	—	—	—	—	—	—	—				
55 2 2 1/8 2 3/16	2 1/2	8 5/8	2 3/8	6 23/32	25/32	7/8	29/32	4 29/32	2 9/16	2.189	0.874	5/8	UCP211-32	P211	UC211-32	—	—	—	—	—	—	—	—						
	63.5	219	60	171	20	22	23	125	65	55.6	22.2	M16	UCP211-34			UC211-34	—	—	—	—	—	—	—						
	2 3/16	2 3/16	2 3/16	2 3/16	2 3/16	2 3/16	2 3/16	2 3/16	2 3/16	2 3/16	2 3/16		UCP211			UC211	UCP211C	UCP211CD	76	3	3.6	UCP211FC	UCP211FCD	99	3 29/32	4.8			
	2 3/16	2 3/4	10 1/4	3 1/8	7 1/4	31/32	1 13/32	1 3/32	5 15/32	3 9/32	2.563	1.000	3/4	UCPX11	PX11	UCX11	—	—	—	—	—	—	—	—					
2 1/4	69.8	260	79	184	25	36	28	139	83	65.1	25.4	M20	UCPX11-35			UCX11-35	—	—	—	—	—	—	—						
2	3 5/32	12 7/32	3 5/32	9 9/32	25/32	1 1/2	1 1/16	6 7/32	3 17/32	2.598	0.984	5/8	UCP311	P311	UC311-32	—	—	—	—	—	—	—	—						
—	80	310	80	236	20	38	27	158	90	66	25	M16	UCP311-32			UC311	—	—	—	—	—	—	—						
60 2 1/4 2 3/8 2 7/16	2 3/4	9 1/2	2 3/4	7 1/4	25/32	31/32	31/32	5 7/16	2 7/8	2.563	1.000	5/8	UCP212-36	P212	UC212-36	—	—	—	—	—	—	—	—						
	69.8	241	70	184	20	25	25	138	73	65.1	25.4	M16	UCP212			UC212	—	—	—	—	—	—							
	2 7/16	2 7/16	2 7/16	2 7/16	2 7/16	2 7/16	2 7/16	2 7/16	2 7/16	2 7/16	2 7/16		UCP212-38			UC212-38	UCP212C	UCP212CD	89	3 1/2	4.9	UCP212FC	UCP212FCD	114	4 1/2	6.4			
	—	3	11 1/4	3 1/4	8	31/32	1 9/16	1 3/32	5 31/32	3 15/32	2.563	1.000	3/4	UCPX12	PX12	UCX12	—	—	—	—	—	—	—	—					
2 7/16	76.2	286	83	203	25	40	28	152	88	65.1	25.4	M20	UCPX12-39			UCX12-39	—	—	—	—	—	—	—						
—	3 11/32	13	3 11/32	9 27/32	31/32	1 1/2	1 5/32	6 9/16	4 1/16	2.795	1.024	3/4	UCP312	P312	UC312	—	—	—	—	—	—	—	—						
—	85	330	85	250	25	38	29	167	103	71	26	M20	UCP312		UC312	—	—	—	—	—	—	—	—						
65 2 1/2 2 1/2 2 1/2	3	10 7/16	2 3/4	8	31/32	1 3/16	1 1/16	5 29/32	3 1/16	2.563	1.000	3/4	UCP213-40	P213	UC213-40	—	—	—	—	—	—	—	—						
	76.2	265	70	203	25	30	27	150	78	65.1	25.4	M20	UCP213			UC213	—	—	—	—	—	—							
	2 1/2	3	11 1/4	3 1/4	8	31/32	1 9/16	1 3/32	6 3/32	3 15/32	2.937	1.189	3/4	UCPX13-40	PX13	UCX13-40	—	—	—	—	—	—	—						
	76.2	286	83	203	25	40	28	155	88	74.6	30.2	M20	UCPX13			UCX13	UCP213C	UCP213CD	89	3 1/2	5.9	UCP213FC	UCP213FCD	114	4 1/2	7.6			
2 1/2	3 35/64	13 3/8	3 17/32	10 1/4	31/32	1 1/2	1 1/4	6 15/16	4 11/32	2.953	1.181	3/4	UCP313-40	P313	UC313-40	—	—	—	—	—	—	—	—						
90	340	90	260	25	38	32	176	110	75	30	M20	UCP313			UC313	—	—	—	—	—	—	—							
70 2 3/4 2 3/4 2 3/4	3 1/8	10 15/32	2 27/32	8 9/32	31/32	1 3/16	1 1/16	6 3/16	2 15/16	2.937	1.189	3/4	UCP214-44	P214	UC214-44	—	—	—	—	—	—	—	—						
	79.4	266	72	210	25	30	27	157	75	74.6	30.2	M20	UCP214			UC214	—	—	—	—	—	—							
	2 3/4	3 1/2	13	3 1/2	9	1 1/16	1 31/32	1 1/4	6 23/32	3 27/32	3.063	1.331	7/8	UCPX14-44	PX14	UCX14-44	—	—	—	—	—	—	—						
88.9	330	89	229	27	50	32	171	98	77.8	33.3	M22	UCPX14		UCX14		UCP214C	UCP214CD	99	3 29/32	6.8	UCP214FC	UCP214FCD	124	4 7/8	8.7				
2 3/4	3 47/64	14 3/16	3 17/32	11 1/32	1 1/16	1 9/16	1 3/8	7 5/16	4 11/32	3.071	1.299	7/8	UCP314-44	P314	UC314-44	—	—	—	—	—	—	—	—						
95	360	90	280	27	40	35	186	110	78	33	M22	UCP314			UC314	—	—	—	—	—	—	—							
75 2 15/16 3 2 15/16	3 1/4	10 13/16	2 29/32	8 17/32	31/32	1 3/16	1 3/32	6 3/8	3 1/16	3.063	1.311	3/4	UCP215-47	P215	UC215-47	—	—	—	—	—	—	—	—						
	82.6	275	74	217	25	30	28	162	78	77.8	33.3	M20	UCP215			UC215	—	—	—	—	—	—							
	2 15/16	3 1/2	13	3 1/2	9	1 1/16	1 31/32	1 1/4	6 7/8	3 29/32	3.252	1.311	7/8	UCPX15-47	PX15	UCX15-47	—	—	—	—	—	—	—						
88.9	330	89	229	27	50	32	175	99	82.6	33.3	M22	UCPX15		UCX15		UCP215C	UCP215CD	99	3 29/32	7.4	UCP215FC	UCP215FCD	124	4 7/8	9.3				
3	3	3	3	3	3	3	3	3	3	3	3		UCPX15-48		UCX15-48	—	—	—	—	—	—	—							

Remarks 1. In Part No. of unit and units with covers, fitting codes follow bore diameter numbers. (See Table 2.5 in P.11.)  
 2. Part No. of applicable grease nipples are shown below.  
 A-1/4-28UNF ..... 201~210, X05~X09, 305~308  
 A-R1/8 ..... 211~218, X10~X20, 309~328

3. As for the triple-lip seal type product (from 201 to 205 are the double-lip seal type products), supplementary code L3 (or L2) follows the Part No. of unit or bearing. (Example of Part No. : UCP206JL3, UC206L3)  
 4. For the dimensions and forms of applicable bearings, see the dimensional tables of insert bearing for unit.  
 5. Representative examples of the forms of housing are indicated.  
 6. Housings of spheroidal graphite iron casting are also available.



**NAP**  
**Cylindrical bore**  
**(with eccentric locking collar)**  
*d* 12 ~ 75 mm



Variations of tolerance of distance from mounting bottom to center of spherical bore ( $\Delta H_s$ )

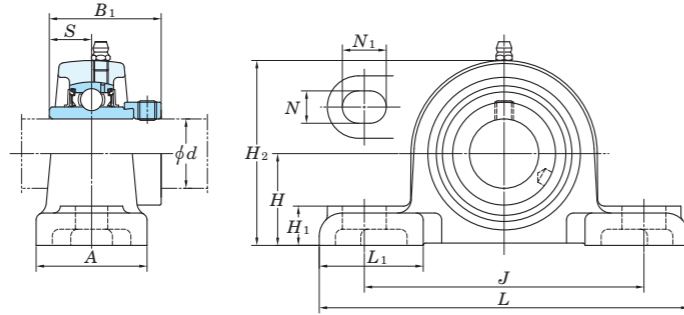
Housing No.	Unit: mm $\Delta H_s$
P203-P210	±0.15
P211-P215	±0.2

Shaft Dia. mm inch <i>d</i>	Dimensions inch mm											Bolt Size inch mm	Unit No.	Housing No.	Bearing No.	Basic Load Ratings kN		Fatigue Load Limit kN <i>C<sub>u</sub></i>	Factor <i>f<sub>0</sub></i>	Mass kg
	<i>H</i>	<i>L</i>	<i>A</i>	<i>J</i>	<i>N</i>	<i>N<sub>1</sub></i>	<i>H<sub>1</sub></i>	<i>H<sub>2</sub></i>	<i>L<sub>1</sub></i>	<i>B<sub>1</sub></i>	<i>S</i>					<i>C<sub>r</sub></i>	<i>C<sub>0r</sub></i>			
12 1/2	1 3/16	5	1 1/2	3 3/4	1/2	23/32	5/8	2 3/8	1 13/32	1.720	0.673	3/8	NAP201 NAP201-8 NAP202 NAP202-10 NAP203	P203	NA201 NA201-8 NA202 NA202-10 NA203	12.8	6.65	0.302	13.2	0.71 0.69 0.66
15 5/8	30.2	127	38	95	13	18	16	60	36	43.7	17.1	M10								
17																				
20 3/4	1 5/16	5	1 1/2	3 3/4	1/2	23/32	5/8	2 9/16	1 13/32	1.720	0.673	3/8	NAP204-12 NAP204	P204	NA204-12 NA204	12.8	6.65	0.302	13.2	0.73
25 7/8 15/16	1 7/16	5 1/2	1 1/2	4 1/8	1/2	23/32	5/8	2 3/4	1 1/2	1.748	0.689	3/8	NAP205-14 NAP205-15 NAP205 NAP205-16	P205	NA205-14 NA205-15 NA205 NA205-16	14.0	7.85	0.357	13.9	0.87
30 1 1/8	1 11/16	6 1/2	1 7/8	4 3/4	21/32	13/16	21/32	3 5/16	1 7/8	1.906	0.720	1/2	NAP206-18 NAP206 NAP206-19 NAP206-20	P206	NA206-18 NA206 NA206-19 NA206-20	19.5	11.3	0.514	13.9	1.4
35 1 1/4 1 5/16 1 3/8	1 7/8	6 9/16	1 7/8	5	21/32	13/16	23/32	3 3/4	1 27/32	2.012	0.740	1/2	NAP207-20 NAP207-21 NAP207-22 NAP207 NAP207-23	P207	NA207-20 NA207-21 NA207-22 NA207 NA207-23	25.7	15.4	0.700	13.9	1.8
40 1 1/2 1 9/16	1 15/16	7 1/4	2 1/8	5 13/32	21/32	13/16	23/32	3 27/32	2 3/32	2.217	0.843	1/2	NAP208-24 NAP208-25 NAP208	P208	NA208-24 NA208-25 NA208	29.1	17.8	0.809	14.0	2.1
45 1 5/8 1 11/16 1 3/4	2 1/8	7 15/32	2 1/8	5 3/4	21/32	13/16	25/32	4 3/16	2 5/32	2.217	0.843	1/2	NAP209-26 NAP209-27 NAP209-28 NAP209	P209	NA209-26 NA209-27 NA209-28 NA209	34.1	21.3	0.968	14.0	2.4
50 1 7/8 1 15/16 2	2 1/4	8 1/8	2 3/8	6 1/4	25/32	7/8	13/16	4 7/16	2 3/8	2.469	0.969	5/8	NAP210-30 NAP210-31 NAP210 NAP210-32	P210	NA210-30 NA210-31 NA210 NA210-32	35.1	23.3	1.06	14.4	3.1
55 2 2 1/8 2 3/16	2 1/2	8 5/8	2 3/8	6 23/32	25/32	7/8	29/32	4 29/32	2 9/16	2.811	1.094	5/8	NAP211-32 NAP211-34 NAP211 NAP211-35	P211	NA211-32 NA211-34 NA211 NA211-35	43.4	29.4	1.34	14.4	3.9
60 2 1/4 2 3/8 2 7/16	2 3/4	9 1/2	2 3/4	7 1/4	25/32	31/32	31/32	5 7/16	2 7/8	3.063	1.220	5/8	NAP212-36 NAP212 NAP212-38 NAP212-39	P212	NA212-36 NA212 NA212-38 NA212-39	52.4	36.2	1.65	14.4	5.2
65 2 1/2	3	10 7/16	2 3/4	8	31/32	1 3/16	1 1/16	5 29/32	3 1/16	3.374	1.343	3/4	NAP213-40 NAP213	P213	NA213-40 NA213	57.2	40.1	1.82	14.4	6.5
70 2 3/4	3 1/8	10 15/32	2 27/32	8 9/32	31/32	1 3/16	1 1/16	6 3/16	2 15/16	3.374	1.343	3/4	NAP214-44 NAP214	P214	NA214-44 NA214	62.2	44.1	2.01	14.5	7.7
75 2 15/16	3 1/4	10 13/16	2 29/32	8 17/32	31/32	1 3/16	1 3/32	6 3/8	3 1/16	3.626	1.469	3/4	NAP215-47 NAP215	P215	NA215-47 NA215	67.4	48.3	2.17	14.5	7.9

Remarks 1. In Part No. of unit, fitting codes follow bore diameter numbers. (See Table 2.5 in P.11.)  
 2. Part No. of applicable grease nipples are shown below.  
 A-1/4-28UNF ..... 201~210  
 A-R1/8 ..... 211~215

3. As for the triple-lip seal type product (from 201 to 205 are the double-lip seal type products), supplementary code L3 (or L2) follows the Part No. of unit or bearing. (Example of Part No. : NAP206JL3, NA206L3)  
 4. For the dimensions and forms of applicable bearings, see the dimensional tables of insert bearing for unit.  
 5. Representative examples of the forms of housing are indicated.  
 6. Housings of spheroidal graphite iron casting are also available.

**NAPK**  
Cylindrical bore  
(with eccentric locking collar)  
 $d$  12 ~ 75 mm



Variations of tolerance of distance from mounting bottom to center of spherical bore ( $\Delta H_s$ )

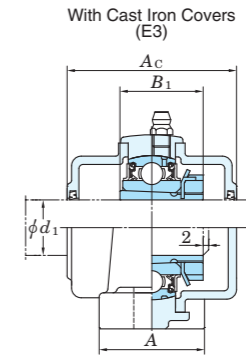
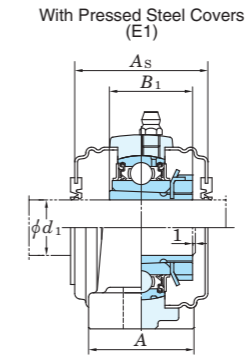
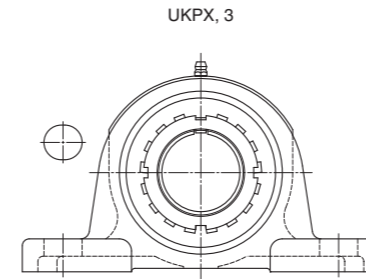
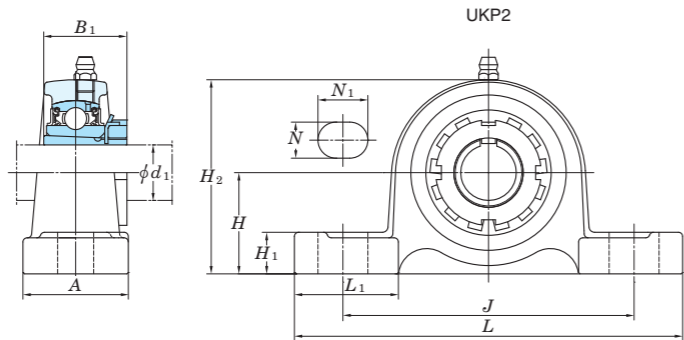
Housing No.	Unit: mm
PK204~PK210	±0.15
PK211~PK215	±0.2

Shaft Dia mm inch $d$	Dimensions inch mm											Bolt Size inch	Unit No.	Housing No.	Bearing No.	Basic Load Ratings kN		Fatigue Load Limit kN	Factor $f_0$	Mass kg	
	$H$	$L$	$A$	$J$	$N$	$N_1$	$H_1$	$H_2$	$L_1$	$B_1$	$S$					$C_r$	$C_{or}$	$C_u$			
12 1/2														NAPK201 NAPK201-8 NAPK202 NAPK202-10 NAPK203 NAPK204-12 NAPK204	PK204	NA201 NA201-8 NA202 NA202-10 NA203 NA204-12 NA204	12.8	6.65	0.302	13.2	0.82
15 5/8	1 1/4	5 1/4	1 5/8	3 27/32	7/16	9/16	9/16	2 15/32	1 25/32	1.72	0.673										
17 3/4	31.8	133	41	98	11	14	14	63	45	43.7	17.1										
20														NAPK205-14 NAPK205-15 NAPK205 NAPK205-16	PK205	NA205-14 NA205-15 NA205 NA205-16	14.0	7.85	0.357	13.9	1
25 7/8	1 5/16	5 1/2	1 23/32	4 1/8	7/16	9/16	5/8	2 11/16	1 25/32	1.748	0.689										
30 1 1/8	33.3	140	44	105	11	14	16	68	45	44.4	17.5										
35 1 1/4	1 9/16	6 5/16	1 7/8	4 3/4	9/16	3/4	21/32	3 5/32	1 25/32	1.906	0.72										
40 1 1/2	39.7	160	48	121	14	19	17	80	45	48.4	18.3										
45 1 5/8	1 13/16	6 9/16	1 7/8	5	9/16	3/4	3/4	3 5/8	1 25/32	2.012	0.74										
50 1 7/8	46	167	48	127	14	19	19	92	45	51.1	18.8										
55 2	1 15/16	7 1/8	2 1/8	5 3/8	9/16	1 1/32	3/4	3 15/16	1 31/32	2.217	0.843										
60 2 1/8	49.2	181	54	136.5	14	26.3	19	100	50	56.3	21.4										
65 2 1/4	2 1/16	7 15/32	2 1/8	5 7/8	9/16	1 1/8	25/32	4 3/16	2 1/16	2.217	0.843										
70 2 3/8	52.4	190	54	149.2	14	28.6	20	106	52	56.3	21.4										
75 2 7/8	2 3/16	8	2 1/4	6 1/4	9/16	3/4	7/8	4 13/32	2 5/32	2.469	0.969										
80 3	55.6	203	57	159	14	19	22	112	55	62.7	24.6										
85 3 1/8	2 7/16	9 1/8	2 3/8	7 1/8	23/32	15/16	31/32	4 7/8	2 19/32	2.811	1.094										
90 3 1/4	61.9	232	60	181	18	24	25	124	66	71.4	27.8										
95 3 3/8	2 11/16	9 1/2	2 17/32	7 17/32	23/32	15/16	13/32	5 11/32	2 9/16	3.063	1.22										
100 3 7/8	68.3	241	64	191	18	24	28	136	65	77.8	31										
105 4	3 5/16	11 31/32	3 7/32	9 1/2	7/8	1/4	1 1/2	6 1/2	3 7/16	3.626	1.469										
110 4 1/4	84.1	304	82	241	22	32	38	165	87	92.1	37.3										

Remarks 1. In Part No. of unit and units with covers, fitting codes follow bore diameter numbers. (See Table 2.5 in P.11.)  
2. Part No. of applicable grease nipples are shown below.  
A-1/4-28UNF ..... 201~210  
A-R1/8 ..... 211~215

3. For the dimensions and forms of applicable bearings, see the dimensional tables of insert bearing for unit.  
4. Representative examples of the forms of housing are indicated.  
5. Housings of spheroidal graphite iron casting are also available.

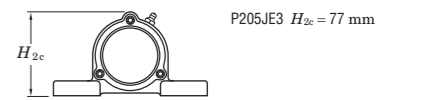
**UKP**  
Tapered bore (with adapter)  
 $d_1$  20 ~ (50) mm



Variations of tolerance of distance from mounting bottom to center of spherical bore ( $\Delta H_s$ )

Housing No.			$\Delta H_s$
P205~P210	PX05~PX10	P305~P310	$\pm 0.15$
P211~P218	PX11~PX18	P311~P318	$\pm 0.2$
	PX20	P319~P328	$\pm 0.3$

Forms and dimensions of  $H_{2c}$  of P205JE3 (housing with cast iron covers) are shown below.

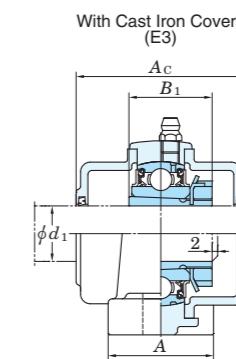
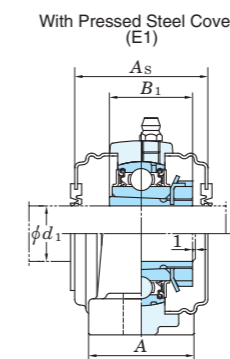
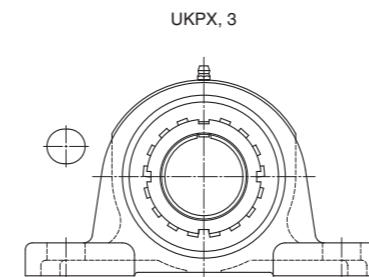
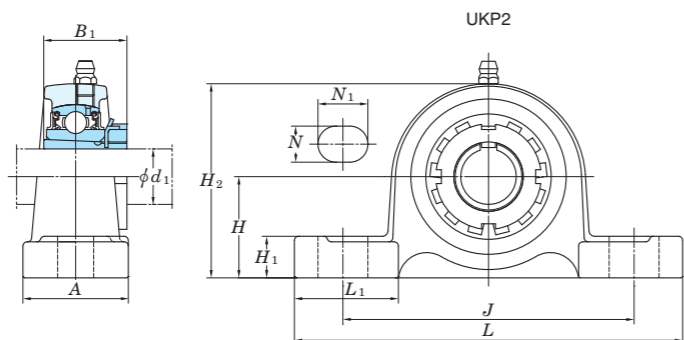


Position of grease nipple is different from standard only for P205JE3.

Shaft Dia. mm inch	Dimensions											Bolt Size inch mm	Standard			Adapter Assembly No.	Mass kg	Basic Load Ratings kN		Fatigue Load Limit kN	Factor $f_0$	With Pressed Steel Covers				With Cast Iron Covers					
	inch mm												Unit No.	Housing No.	Bearing No.			Cr	$C_{0r}$			Unit No.	Dimension mm inch	Mass kg	Unit No.	Dimension mm inch	Mass kg				
$d_1$	H	L	A	J	N	$N_1$	$H_1$	$H_2$	$L_1$	$B_1$									Open Ends Type	Closed End Type	$A_s$		Open Ends Type	Closed End Type	$A_c$						
20	3/4	1 7/16	5 1/2	1 1/2	4 1/8	1/2	23/32	5/8	2 3/4	1 1/2	1 3/8	3/8	UKP205	P205	UK205																
		36.5	140	38	105	13	18	16	70	38	35	M10																			
		1 3/4	6 1/4	2	4 11/16	21/32	31/32	5/8	3 3/8	1 27/32	1 3/8	1/2	UKPX05	PX05	UKX05	HE2305X	0.84	14.0	7.85	0.357	13.9	UKP205C	UKP205CD	49	1 15/16	0.84	UKP205FC	UKP205FCD	66	2 19/32	1.3
25	1	1 49/64	6 7/8	1 3/4	5 3/16	21/32	25/32	5/8	3 11/32	2 5/32	1 3/8	1/2	UKP305	P305	UK305	HE2305X	1.5	19.5	11.3	0.514	13.9	UKPX05C	UKPX05CD	53	2 3/32	1.5					
		45	175	45	132	17	20	16	85	55	35	M14																			
		1 11/16	6 1/2	1 7/8	4 3/4	21/32	13/16	21/32	3 5/16	1 7/8	1 1/2	1/2	UKP206	P206	UK206	H2306X	1.7	21.2	10.9	0.495	12.6										
30	1 1/8	42.9	165	48	121	17	21	17	84	48	38	M14																			
		1 7/8	6 7/8	2 1/4	5	21/32	31/32	21/32	3 21/32	2 5/32	1 1/2	1/2	UKPX06	PX06	UKX06	H2306X	1.4	19.5	11.3	0.514	13.9	UKP206C	UKP206CD	53	2 3/32	1.4	UKP206FC	UKP206FCD	70	2 3/4	1.9
		47.6	175	57	127	17	25	17	93	55	38	M14																			
35	1 1/4	1 31/32	7 3/32	1 31/32	5 1/2	21/32	25/32	21/32	3 3/4	2 3/32	1 1/2	1/2	UKP306	P306	UK306	H2306X	2.1	25.7	15.4	0.700	13.9	UKPX06C	UKPX06CD	60	2 3/8	2.1					
		50	180	50	140	17	20	17	95	53	38	M14																			
		1 7/8	6 9/16	1 7/8	5	21/32	13/16	23/32	3 3/4	1 27/32	1 11/16	1/2	UKP207	P207	UK207	HS2307X	2.3	26.7	15.0	0.682	13.3										
40	1 1/2	47.6	167	48	127	17	21	18	95	47	43	M14																			
		2 1/8	8	2 1/4	5 21/32	21/32	1 3/16	3/4	4 1/8	2 17/32	1 11/16	1/2	UKPX07	PX07	UKX07	H2307X	2.3	29.1	17.8	0.809	14.0	UKP207C	UKP207CD	60	2 3/8	1.7	UKP207FC	UKP207FCD	78	3 1/16	2.5
		54	203	57	144	17	30	19	105	64	43	M14																			
45	1 3/8	2 13/64	8 9/32	2 7/32	6 5/16	21/32	31/32	3/4	4 7/32	2 9/16	1 11/16	1/2	UKP307	P307	UK307	HS2307X	3.0	33.4	19.3	0.877	13.2										
		56	210	56	160	17	25	19	107	65	43	M14																			
		1 15/16	7 1/4	2 1/8	5 13/32	21/32	13/16	23/32	3 27/32	2 3/32	1 13/16	1/2	UKP208	P208	UK208	HE2308X	2.0	25.7	15.4	0.700	13.9	UKP207C	UKP207CD	60	2 3/8	1.7	UKP207FC	UKP207FCD	78	3 1/16	2.5
50	1 3/4	49.2	184	54	137	17	21	18	98	53	46	M14																			
		2 5/16	8 3/4	2 5/8	6 5/32	25/32	1 1/4	13/16	4 1/2	2 25/32	1 13/16	5/8	UKPX08	PX08	UKX08	HS2308X	2.0	29.1	17.8	0.809	14.0										
		58.7	222	67	156	20	32	21	114	71	46	M16																			
55	1 7/8	2 23/64	8 21/32	2 3/8	6 11/16	21/32	1 1/16	3/4	4 21/32	2 9/16	1 13/16	1/2	UKP308	P308	UK308	HE2308X	3.5	34.1	21.3	0.968	14.0										
		60	220	60	170	17	27	19	118	65	46	M14																			
		1 1/4	7 15/32	2 1/8	5 3/4	21/32	13/16	25/32	4 3/16	2 5/32	1 31/32	1/2	UKP209	P209	UK209	HE2308X	3.5	34.1	21.3	0.968	14.0	UKP208C	UKP208CD	69	2 23/32	2.0	UKP208FC	UKP208FCD	86	3 3/8	2.9
60	2	54	190	54	146	17	21	20	106	55	50	M14																			
		2 5/16	8 3/4	2 5/8	6 5/32	25/32	1 5/16	13/16	4 9/16	2 25/32	1 31/32	5/8	UKPX09	PX09	UKX09	HS2308X	3.5	40.7	24.0	1.09	13.2										
		58.7	222	67	156	20	33	21	116	71	50	M16																			
65	2 1/8	2 41/64	9 21/32	2 5/8	7 15/32	25/32	1 3/16	13/16	5 3/16	2 15/16	1 31/32	5/8	UKP309	P309	UK309	HE2309X	3.8	48.9	29.5	1.34	13.3										
		67	245	67	190	20	30	21	132	75	50	M16																			
		1 1/2	7 15/32	2 1/8	5 3/4	21/32	13/16	25/32	4 3/16	2 5/32	1 31/32	1/2	UKP209	P209	UK209	HS2309X	3.8	34.1	21.3	0.968	14.0	UKP209C	UKP209CD	69	2 23/32	2.3	UKP209FC	UKP209FCD	88	3 15/32	3.2
70	2 1/4	54	190	54	146	17	21	20	106	55	50	M14																			
		2 1/2	9 1/2	2 7/8	6 23/32	25/32	1 13/32	7/8	4 31/32	3	2 5/32	5/8	UKPX10	PX10	UKX10	H2309X	3.7	35.1	23.3	1.06	14.4	UKPX09C	UKPX09CD	74	2 29/32	3.7					
		58.7	222	67	156	20	33	21	116	71	50	M16																			
75	2 3/8	2 41/64	9 21/32	2 5/8	7 15/32	25/32	1 3/16	13/16	5 3/16	2 15/16	1 31/32	5/8	UKP310	P310	UK310	HE2309X	5.0	48.9	29.5	1.34	13.3										
		67	245	67	190	20	30	21	132	75	50	M16																			
		1 3/4	8 1/8	2 3/8	6 1/4	25/32	7/8	13/16	4 7/16	2 3/8	2 5/32	5/8	UKP210	P210	UK210	HE2310X	5.0	48.9	29.5	1.34	13.3										
80	2 1/2	57.2	206	60	159	20	22	21	113	60	55	M16																			
		2 1/2	9 1/2	2 7/8	6 23/32	25/32	1 13/32	7/8	4 31/32	3	2 5/32	5/8	UKPX10	PX10	UKX10	H2310X	4.6	43.4	29.4	1.34	14.4	UKP210C	UKP210CD	74	2 29/32	3.0	UKP210FC	UKP210FCD	97	3 13/16	4.1
		63.5	241	73	171	20	36	22	126	76	55	M16																			
85	2 3/4	2 61/64	10 13/16	2 15/16	8 11/32	25/32	1 3/8	15/16	5 13/16	3 15/32	2 5/32	5/8	UKP310	P310	UK310	HE2310X	6.7	62.0	38.3	1.74	13.2										
		75	275	75	212	20	35	24	148	88	55	M16																			
		1 1/2	7 15/32	2 1/8	5 3/4	21/32	13/16	25/32	4 3/16	2 5/32	1 31/32	1/2	UKP209	P209	UK209	HE2309X	2.3	34.1	21.3	0.968	14.0	UKP209C	UKP209CD	69	2 23/32	2.3	UKP209FC	UKP209FCD	88	3 15/32	3.2
90	2 1/2	54	190	54	146	17	21	20	106	55	50	M14																			
		2 5/16	8 3/4	2 5/8	6 5/32	25/32	1 5/16	13/16	4 9/16	2 25/32	1 31/32	5/8	UKPX09	PX09	UKX09	HE2309X	3.7	35.1	23.3	1.06	14.4	UKPX09C	UKPX09CD	74	2 29/32	3.7					
		58.7	222	67	156	20	33	21	116	71	50	M16																			
95	2 3/4	2 41/64	9 21/32	2 5/8	7 15/32	25/32	1 3/16	13/16	5 3/16	2 15/16	1 31/32	5																			

Pillow block type

**UKP**  
**Tapered bore (with adapter)**  
**d<sub>1</sub> (50) ~ (90) mm**



Variations of tolerance of distance from mounting bottom to center of spherical bore ( $\Delta H_s$ )

Housing No.	$\Delta H_s$
P205-P210	$\pm 0.15$
P211-P218	$\pm 0.2$
PX05-PX10	$\pm 0.2$
PX11-PX18	$\pm 0.2$
P305-P310	$\pm 0.15$
P311-P318	$\pm 0.2$
P319-P328	$\pm 0.3$
PX20	$\pm 0.3$

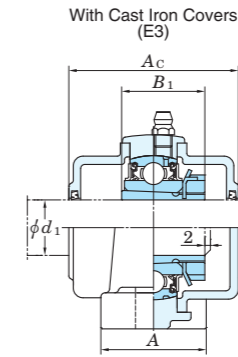
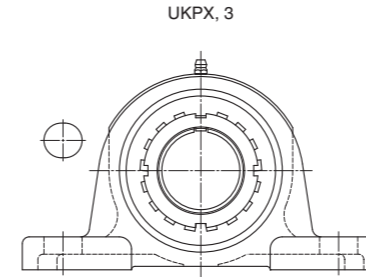
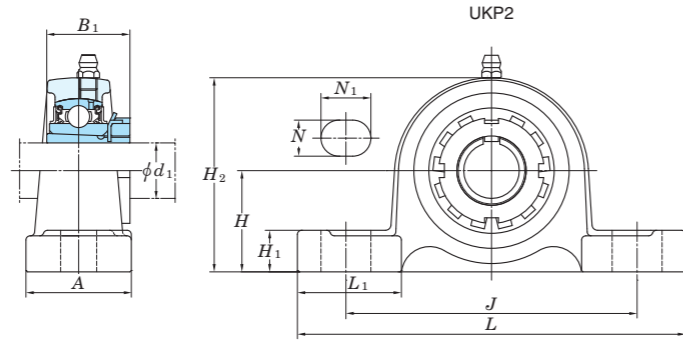
Unit: mm

Shaft Dia. mm inch	Dimensions inch mm											Bolt Size inch mm	Standard			Adapter Assembly No.	Mass kg	Basic Load Ratings kN		Fatigue Load Limit kN	Factor $f_0$	With Pressed Steel Covers Unit No.				With Cast Iron Covers Unit No.						
	$d_1$	H	L	A	J	N	$N_1$	$H_1$	$H_2$	$L_1$	$B_1$		Unit No.	Housing No.	Bearing No.			$C_r$	$C_{0r}$			$C_u$	Open Ends Type	Closed End Type	Dimension mm inch	Mass kg	Open Ends Type	Closed End Type	Dimension mm inch	Mass kg		
50 2	1 7/8	3 5/32	12 7/32	3 5/32	9 9/32	25/32	1 1/2	1 1/16	6 7/32	3 17/32	2 5/16	5/8	UKP311	P311	UK311	71.6	45.0	2.05	13.2	—	—	—	—	—	—	—	—					
	80	310	80	236	20	38	27	158	90	59	M16	HS2311X								8.1	8.1	8.1	UKP311C	UKP311CD	114	4 1/2	10.0					
	2 1/8	2 3/4	9 1/2	2 3/4	7 1/4	25/32	31/32	31/32	5 7/16	2 7/8	2 7/16	5/8								UKP212	P212	UK212	52.4	36.2	1.65	14.4	UKP212C	UKP212CD	89	3 1/2	4.8	UKP212FC
55	2 1/8	3	11 1/4	3 1/4	8	31/32	1 9/16	1 3/32	5 31/32	3 15/32	2 7/16	3/4	UKPX12	PX12	UKX12	57.2	40.1	1.82	14.4	—	—	—	—	—	—	—	—					
	76.2	286	83	203	25	40	28	152	88	62	M20	HS2312X								7.5	7.5	7.5	UKP312C	UKP312CD	89	3 1/2	7.5	—	—	—	—	
	2 1/8	3 11/32	13	3 11/32	9 27/32	31/32	1 1/2	1 5/32	6 9/16	4 1/16	2 7/16	3/4								UKP312	P312	UK312	81.9	52.2	2.37	13.2	—	—	—	—	—	—
60	2 1/4	3	10 7/16	2 3/4	8	31/32	1 3/16	1 1/16	5 29/32	3 1/16	2 9/16	3/4	UKP213	P213	UK213	57.2	40.1	1.82	14.4	—	—	—	—	—	—	—	—					
	76.2	265	70	203	25	30	27	150	78	65	M20	HE2313X								5.8	5.8	5.8	UKP213C	UKP213CD	89	3 1/2	5.8	UKP213FC	UKP213FCD	114	4 1/2	7.5
	2 1/4	3	11 1/4	3 1/4	8	31/32	1 9/16	1 3/32	6 3/32	3 15/32	2 9/16	3/4								UKPX13	PX13	UKX13	62.2	44.1	2.01	14.5	UKP313C	UKP313CD	99	3 29/32	7.8	—
65	2 1/2	3 1/4	10 13/16	2 29/32	8 17/32	31/32	1 3/16	1 3/32	6 3/8	3 1/16	2 7/8	3/4	UKP215	P215	UK215	67.4	48.3	2.17	14.5	—	—	—	—	—	—	—	—					
	82.6	275	74	217	25	30	28	162	78	73	M20	H2315X								7.5	7.5	7.5	UKP315C	UKP315CD	124	4 7/8	9.5	—	—	—	—	
	2 1/2	3 1/2	13	3 1/2	9	1 1/16	1 31/32	1 1/4	6 7/8	3 29/32	2 7/8	7/8								UKPX15	PX15	UKX15	72.7	53.0	2.30	14.6	UKP215C	UKP215CD	99	3 29/32	7.5	UKP215FC
70	2 3/4	3 1/2	11 1/2	3 1/16	9 1/8	31/32	1 3/8	1 3/16	6 27/32	3 9/32	3 1/16	3/4	UKP216	P216	UK216	72.7	53.0	2.30	14.6	—	—	—	—	—	—	—	—					
	88.9	292	78	232	25	35	30	174	83	78	M20	HE2316X								9.2	9.2	9.2	UKP216C	UKP216CD	109	4 9/32	9.2	UKP216FC	UKP216FCD	138	5 7/16	11.7
	2 3/4	4	15	4	11 1/8	1 1/16	2 9/32	1 11/32	7 11/16	4 9/16	3 1/16	7/8								UKPX16	PX16	UKX16	84.0	61.9	2.60	14.5	—	—	—	—	—	—
75	3	4 11/64	15 3/4	4 11/32	11 13/16	1 1/16	1 9/16	1 3/8	8 7/32	4 23/32	3 1/16	7/8	UKP316	P316	UK316	123	86.7	3.53	13.3	—	—	—	—	—	—	—	—					
	106	400	110	300	27	40	35	209	120	78	M22	H2316X								18.6	18.6	18.6	UKP316C	UKP316CD	138	5 7/16	21.7	—	—	—	—	
	3 3/4	12 7/32	3 9/32	9 23/32	31/32	1 3/8	1 1/4	7 9/32	3 7/16	3 7/32	3/4	UKP217								P217	UK217	84.0	61.9	2.60	14.5	UKP217C	UKP217CD	113	4 7/16	11.0	UKP217FC	UKP217FCD
80	3	4	15	4	11 1/8	1 1/16	2 3/8	1 11/32	7 7/8	4 9/16	3 7/32	7/8	UKPX17	PX17	UKX17	96.1	71.5	2.91	14.5	—	—	—	—	—	—	—	—					
	101.6	381	102	283	27	58	34	195	116	78	M22	H2317X								15.8	15.8	15.8	UKP317C	UKP317CD	123	4 27/32	15.8	—	—	—	—	
	3	4 13/32	16 17/32	4 11/32	12 19/32	1 5/16	1 25/32	1 9/16	8 21/32	4 23/32	3 7/32	1								UKP317	P317	UK317	133	96.8	3.82	13.3	—	—	—	—	—	—
85	3 1/4	4	12 7/8	3 15/32	10 5/16	1 1/16	1 9/16	1 5/16	7 25/32	3 11/16	3 3/8	7/8	UKP218	P218	UK218	96.1	71.5	2.91	14.5	—	—	—	—	—	—	—	—					
	101.6	327	88	262	27	40	33	198	94	86	M22	H2318X								13.8	13.8	13.8	UKP218C	UKP218CD	123	4 27/32	13.8	UKP218FC	UKP218FCD	152	6	18.8
	3 1/4	4	15	4 3/8	11 1/8	1 1/16	2 3/8	1 1/2	8 1/32	4 9/16	3 3/8	7/8								UKPX18	PX18	UKX18	109	81.9	3.23	14.4	—	—	—	—	—	—
90	3 1/2	4 41/64	16 15/16	4 11/32	13	1 5/16	1 25/32	1 9/16	9 7/32	4 23/32	3 3/8	1	UKP318	P318	UK318	143	107	4.11	13.3	—	—	—	—	—	—	—	—					
	118	430	110	330	33	45	40	234	120	86	M27	H2318X								22.8	22.8	22.8	UKP318C	UKP318CD	150	5 29/32	27.0	—	—	—	—	
	3 1/4	4 59/64	18 1/2	4 23/32	14 3/16	1 13/32	1 31/32	1 13/16	9 3/4	4 29/32	3 17/32	1 1/8								UKP319	P319	UK319	153	119	4.45	13.3	—	—	—	—	—	—
90	3 1/2	5	17	4 3/4	13 1/4	1 5/16	2 9/16	1 25/32	9 21/32	4 31/32	3 13/16	1	UKPX20	PX20	UKX20	133	105	3.91	14.4	—	—	—	—	—	—	—	—					
	127	432	121	337	33	65	45	245	126	97	M27	HE2320X								29.3	29.3	29.3	UKP319C	UKP319CD	162	6 3/8	34.0	—	—	—	—	
	3 1/2	5	17	4 3/4	13 1/4	1 5/16	2 9/16	1 25/32	9 21/32	4 31/32	3 13/16	1								UKP20C	PX20	UKX20	133	105	3.91	14.4	—	—	—	—	—	—

Remarks 1. In Part No. of unit and units with covers, fitting codes follow bore diameter numbers. (See Table 2.5 in P.11.)  
 2. Part No. of applicable grease nipples are shown below.  
 A-1/4-28UNF ..... 205~210, X05~X09, 305~308  
 A-R1/8 ..... 211~218, X10~X20, 309~328

3. In Part No. of unit with adapters and bearing with adapters, Part No. of applicable adapter follow the Part No. shown in the dimensional tables.  
 (Example of Part No. : UKP206J + H2306X, UK206 + H2306X)  
 4. As for the triple-lip seal type product (205 is the double-lip seal type product), supplementary code L3 (or L2) follows the Part No. of unit or bearing.  
 5. For the dimensions and forms of applicable bearings and adapters, see the dimensional tables of insert bearing for unit and adapter assemblies.  
 6. Representative examples of the forms of housing are indicated.  
 7. Housings of spheroidal graphite iron casting are also available.

**UKP**  
**Tapered bore (with adapter)**  
 $d_1$  (90) ~ 125 mm



Variations of tolerance of distance from mounting bottom to center of spherical bore ( $\Delta H_s$ ) Unit: mm

Housing No.			$\Delta H_s$
P205-P210	PX05-PX10	P305-P310	$\pm 0.15$
P211-P218	PX11-PX18	P311-P318	$\pm 0.2$
	PX20	P319-P328	$\pm 0.3$

Shaft Dia. mm inch $d_1$	Dimensions inch mm											Bolt Size inch mm	Standard			Adapter Assembly No.	Mass kg	Basic Load Ratings kN		Fatigue Load Limit kN $C_u$	Factor $f_0$	With Pressed Steel Covers			With Cast Iron Covers								
	H	L	A	J	N	$N_1$	$H_1$	$H_2$	$L_1$	$B_1$	Unit No.		Housing No.	Bearing No.	Unit No.			Dimension mm inch $A_s$	Mass kg			Open Ends Type	Closed End Type	Unit No.	Dimension mm inch $A_c$	Mass kg							
90 3 1/2	5 33/64	19 9/32	4 23/32	14 31/32	1 13/32	1 31/32	1 13/16	10 3/4	5 1/2	3 13/16	1 1/8	UKP320	P320	UK320	HE2320X H2320X	34.8 34.8	173	141	5.08	13.2	-	-	-	-	-	-	-	-	-	-	-	-	
	140	490	120	380	36	50	46	273	140	97	M30										UKP320C	UKP320CD	174	6 27/32	41.0	-	-	-	-	-	-		
100 4	5 29/32	20 15/32	5 1/2	15 3/4	1 9/16	2 5/32	1 31/32	11 21/32	5 29/32	4 1/8	1 1/4	UKP322	P322	UK322	H2322X HE2322X	43.9 43.9	205	180	6.15	13.2	-	-	-	-	-	-	-	-	-	-	-	-	
	150	520	140	400	40	55	50	296	150	105	M33										UKP322C	UKP322CD	188	7 13/32	50.8	-	-	-	-	-	-	-	-
110 -	6 19/64	22 7/16	5 1/2	17 23/32	1 9/16	2 5/32	1 31/32	12 7/16	6 5/16	4 13/32	1 1/4	UKP324	P324	UK324	H2324	55.7	207	185	6.10	13.5	-	-	-	-	-	-	-	-	-	-	-	-	-
	160	570	140	450	40	55	50	316	160	112	M33										UKP324C	UKP324CD	196	7 23/32	66.0	-	-	-	-	-	-	-	-
115 4 1/2	7 3/32	23 5/8	5 1/2	18 29/32	1 9/16	2 5/32	1 31/32	13 21/32	7 11/16	4 3/4	1 1/4	UKP326	P326	UK326	HE2326 H2326	71.9 71.9	229	214	6.79	13.6	-	-	-	-	-	-	-	-	-	-	-	-	-
	180	600	140	480	40	55	50	355	195	121	M33										UKP326C	UKP326CD	214	8 7/16	85.2	-	-	-	-	-	-	-	-
125 -	7 7/8	24 13/32	5 1/2	19 11/16	1 9/16	2 5/32	2 3/8	15 15/32	7 9/32	5 5/32	1 1/4	UKP328	P328	UK328	H2328	92.5	253	246	7.54	13.6	-	-	-	-	-	-	-	-	-	-	-	-	-
	200	620	140	500	40	55	60	393	185	131	M33										UKP328C	UKP328CD	222	8 3/4	109	-	-	-	-	-	-	-	-

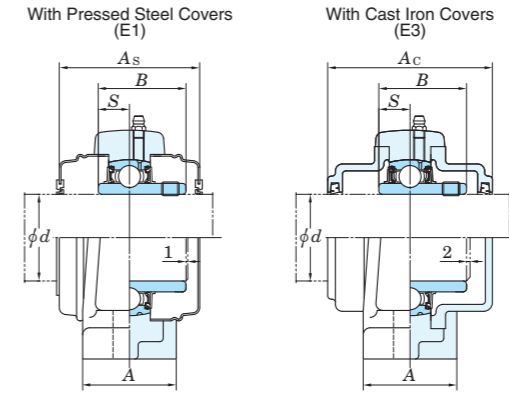
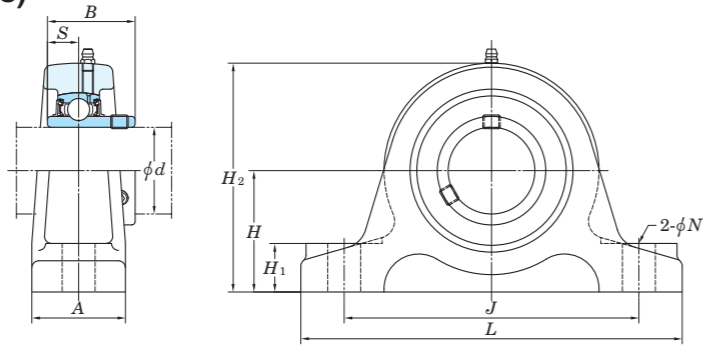
Remarks 1. In Part No. of unit and units with covers, fitting codes follow bore diameter numbers. (See Table 2.5 in P.11.)  
 2. Part No. of applicable grease nipples are shown below.  
 A-1/4-28UNF ..... 205-210, X05-X09, 305-308  
 A-R1/8 ..... 211-218, X10-X20, 309-328

3. In Part No. of unit with adapters and bearing with adapters, Part No. of applicable adapter follow the Part No. shown in the dimensional tables.  
 (Example of Part No. : UKP206J + H2306X, UK206 + H2306X)  
 4. As for the triple-lip seal type product (205 is the double-lip seal type product), supplementary code L3 (or L2) follows the Part No. of unit or bearing.  
 5. For the dimensions and forms of applicable bearings and adapters, see the dimensional tables of insert bearing for unit and adapter assemblies.  
 6. Representative examples of the forms of housing are indicated.  
 7. Housings of spheroidal graphite iron casting are also available.



Thick section pillow block type

UCIP  
Cylindrical bore (with set screws)  
d 40 ~ 140 mm



Variations of tolerance of distance from mounting bottom to center of spherical bore ( $\Delta H_b$ ), variations of tolerance of distance between centers of bolt holes ( $\Delta L_b$ ) and variations of tolerance of bolt hole diameter ( $\Delta L_{\phi}$ )

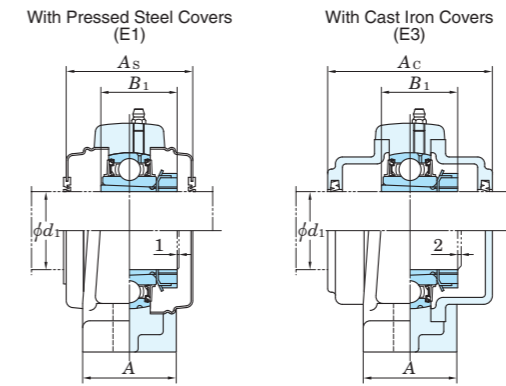
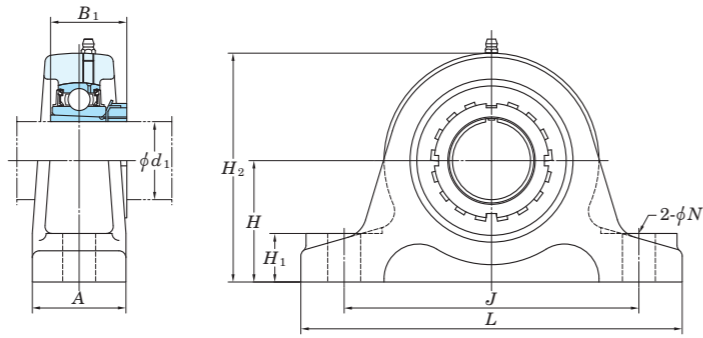
Housing No.	$\Delta H_b$	$\Delta L_b$	$\Delta L_{\phi}$
IP208-IP210	$\pm 0.15$	$\pm 0.5$	$\pm 0.2$
IP211-IP213	$\pm 0.2$	$\pm 0.7$	$\pm 0.3$
IP313-IP318	$\pm 0.2$	$\pm 0.7$	$\pm 0.3$
IP319-IP328	$\pm 0.3$	$\pm 0.7$	$\pm 0.3$

Unit: mm

Shaft Dia. mm inch $d$	Dimensions										Bolt Size inch mm	Standard Unit No.	Standard Housing No.	Standard Bearing No.	Mass kg	Basic Load Ratings kN		Fatigue Load Limit kN $C_u$	Factor $f_0$	With Pressed Steel Covers				With Cast Iron Covers																											
	$H$	$L$	$A$	$J$	$N$	$H_1$	$H_2$	$B$	$S$	$A_s$						Open Ends Type	Closed End Type			Dimension mm inch	Mass kg	Open Ends Type	Closed End Type	Dimension mm inch	Mass kg																										
40 1 1/2 1 9/16	2 23/64 60	7 7/8 200	2 3/8 60	5 29/32 150	3/4 19	3 1/32 25	4 17/32 115	1.937 49.2	0.748 19	5/8 M16	UCIP208-24 UCIP208-25 UCIP208	IP208	UC208-24 UC208-25 UC208	3.4 3.4 3.4	29.1	17.8	0.809	14.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-												
																			UCIP209-26 UCIP209-27 UCIP209-28 UCIP209	IP209	UC209-26 UC209-27 UC209-28 UC209	3.9 3.9 3.9 3.9	34.1	21.3	0.968	14.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
																			UCIP210-30 UCIP210-31 UCIP210 UCIP210-32	IP210	UC210-30 UC210-31 UC210 UC210-32	4.8 4.8 4.8 4.8	35.1	23.3	1.06	14.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
45 1 5/8 1 11/16 1 3/4	2 3/4 70	8 9/32 210	2 3/8 60	6 19/64 160	3/4 19	3 1/32 25	5 1/32 128	1.937 49.2	0.748 19	5/8 M16	UCIP209-26 UCIP209-27 UCIP209-28 UCIP209	IP209	UC209-26 UC209-27 UC209-28 UC209	3.9 3.9 3.9 3.9	34.1	21.3	0.968	14.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-												
																			UCIP211-32 UCIP211-34 UCIP211 UCIP211-35	IP211	UC211-32 UC211-34 UC211 UC211-35	5.3 5.3 5.3 5.3	43.4	29.4	1.34	14.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
																			UCIP212-36 UCIP212 UCIP212-38 UCIP212-39	IP212	UC212-36 UC212 UC212-38 UC212-39	7.2 7.2 7.2 7.2	52.4	36.2	1.65	14.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50 1 7/8 1 15/16 2	2 3/4 70	8 21/32 220	2 3/8 60	6 11/16 170	3/4 19	1 3/32 28	5 3/16 132	2.031 51.6	0.748 19	5/8 M16	UCIP210-30 UCIP210-31 UCIP210 UCIP210-32	IP210	UC210-30 UC210-31 UC210 UC210-32	4.8 4.8 4.8 4.8	35.1	23.3	1.06	14.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-												
																			UCIP211-32 UCIP211-34 UCIP211 UCIP211-35	IP211	UC211-32 UC211-34 UC211 UC211-35	5.3 5.3 5.3 5.3	43.4	29.4	1.34	14.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
																			UCIP212-36 UCIP212 UCIP212-38 UCIP212-39	IP212	UC212-36 UC212 UC212-38 UC212-39	7.2 7.2 7.2 7.2	52.4	36.2	1.65	14.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
55 2 1/8 2 3/16 2 1/4	3 5/32 80	9 1/16 230	2 3/8 60	7 3/32 180	3/4 19	1 3/32 28	5 13/16 148	2.189 55.6	0.874 22.2	5/8 M16	UCIP211-32 UCIP211-34 UCIP211 UCIP211-35	IP211	UC211-32 UC211-34 UC211 UC211-35	5.3 5.3 5.3 5.3	43.4	29.4	1.34	14.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-												
																			UCIP212-36 UCIP212 UCIP212-38 UCIP212-39	IP212	UC212-36 UC212 UC212-38 UC212-39	7.2 7.2 7.2 7.2	52.4	36.2	1.65	14.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
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60 2 3/8 2 7/16	3 5/32 80	10 1/4 260	2 3/4 70	7 7/8 200	7/8 22	1 3/16 30	6 3/32 155	2.563 65.1	1.000 25.4	3/4 M20	UCIP212-36 UCIP212 UCIP212-38 UCIP212-39	IP212	UC212-36 UC212 UC212-38 UC212-39	7.2 7.2 7.2 7.2	52.4	36.2	1.65	14.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-												
																			UCIP213-40 UCIP213 UCIP213-40 UCIP313	IP213	UC213-40 UC213 UC213-40 UC313	8.8 8.8 13.4 13.4	57.2	40.1	1.82	14.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
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65 2 1/2 2 1/2	3 35/64 90	11 1/32 280	2 3/4 70	8 21/32 220	7/8 22	1 3/16 30	6 25/32 172	2.563 65.1	1.000 25.4	3/4 M20	UCIP213-40 UCIP213 UCIP213-40 UCIP313	IP213	UC213-40 UC213 UC213-40 UC313	8.8 8.8 13.4 13.4	57.2	40.1	1.82	14.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-												
																			UCIP314-44 UCIP314	IP314	UC314-44 UC314	15.3 15.3	104	68.2	2.96	13.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
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70 2 3/4	4 21/64 110	13 310	2 15/16 75	10 5/8 270	3 1/32 25	1 3/8 35	8 15/32 215	3.071 78	1.299 33	7/8 M22	UCIP314-44 UCIP314	IP314	UC314-44 UC314	15.3 15.3	104	68.2	2.96	13.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-														
																			UCIP315-47 UCIP315 UCIP315-48	IP315	UC315-47 UC315 UC315-48	17.6 17.6 17.6	113	77.2	3.24	13.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
																			UCIP316	IP316	UC316	20.3	123	86.7	3.53	13.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
75 2 15/16 3	4 23/32 120	13 3/8 340	2 15/16 75	11 1/32 280	3 1/32 25	1 3/8 35	9 1/16 230	3.228 82	1.260 32	7/8 M22	UCIP315-47 UCIP315 UCIP315-48	IP315	UC315-47 UC315 UC315-48	17.6 17.6 17.6	113	77.2	3.24	13.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-														
																			UCIP316	IP316	UC316	20.3	123	86.7	3.53	13.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
																			UCIP317	IP317	UC317	25.9	133	96.8	3.82	13.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
80 -	4 23/32 120	13 25/32 350	3 11/32 85	11 27/64 290	3 1/32 25	1 9/16 40	9 1/4 235	3.386 86	1.339 34	7/8 M22	UCIP316	IP316	UC316	20.3	123	86.7	3.53	13.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-														
																			UCIP317	IP317	UC317	25.9	133	96.8	3.82	13.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
																			UCIP318-56 UCIP318	IP318	UC318-56 UC318	28.6 28.6	143	107	4.11	13.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
85 -	5 1/8 130	14 9/16 370	3 11/32 85	12 13/64 310	3 1/32 25	1 9/16 40	10 1/4 255	3.780 96	1.575 40	7/8 M22	UCIP317	IP317	UC317	25.9	133	96.8	3.82	13.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-															
																			UCIP318-56 UCIP318	IP318	UC318-56 UC318	28.6 28.6	143	107	4.11	13.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
																			UCIP319	IP319	UC319	31.7	153	119	4.45	13.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
90 3 1/2	5 1/8 130	15 3/4 400	3 11/32 85	13 330	1 5/32 29	1 25/32 45	10 1/4 260	3.780 96	1.575 40	1 M27	UCIP318-56 UCIP318	IP318	UC318-56 UC318	28.6 28.6	143	107	4.11	13.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-															
																			UCIP319	IP319	UC319	31.7	153	119	4.45	13.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
																			UCIP320 UCIP320-63 UCIP320-64	IP																															

Thick section pillow block type

**UKIP**  
Tapered bore (with adapter)  
 $d_1$  35 ~ 125 mm



Variations of tolerance of distance from mounting bottom to center of spherical bore ( $\Delta H_b$ ), variations of tolerance of distance between centers of bolt holes ( $\Delta L_b$ ) and variations of tolerance of bolt hole diameter ( $\Delta N_b$ )

Housing No.		$\Delta H_b$	$\Delta L_b$	$\Delta N_b$
IP208-IP210		$\pm 0.15$	$\pm 0.5$	$\pm 0.2$
IP211-IP213	IP313-IP318	$\pm 0.2$	$\pm 0.7$	$\pm 0.3$
	IP319-IP328	$\pm 0.3$	$\pm 0.7$	$\pm 0.3$

Unit: mm

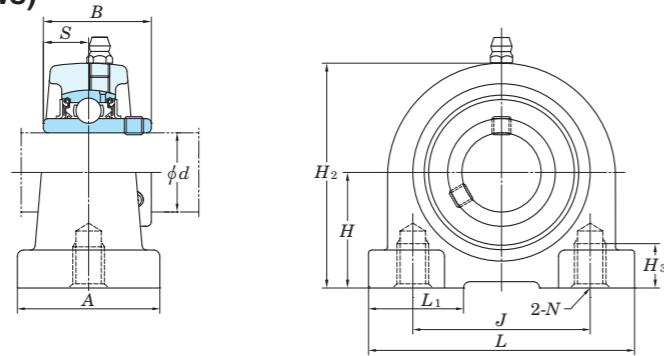
Shaft Dia. mm	inch	Dimensions									Bolt Size inch	Standard				Basic Load Ratings kN	Fatigue Load Limit kN	Factor $f_0$	With Pressed Steel Covers				With Cast Iron Covers																	
		inch										Unit No.	Housing No.	Bearing No.	Adapter Assembly No.				Unit No.	Dimension mm	Mass kg	Unit No.	Dimension mm	Mass kg																
$d_1$		H	L	A	J	N	H <sub>1</sub>	H <sub>2</sub>	B <sub>1</sub>								Open Ends Type	Closed End Type	A <sub>s</sub>		Open Ends Type	Closed End Type	A <sub>c</sub>																	
35	1 1/4	2 23/64	7 7/8	2 3/8	5 29/32	3/4	3 1/32	4 17/32	1 13/16	5/8	UKIP208	IP208	UK208	HE2308X HS2308X H2308X	3.5	29.1	17.8	0.809	14.0	-	-	-	-	-	-															
	1 3/8																			60	200	60	150	19	25	115	46	M16												
40	1 1/2	2 3/4	8 9/32	2 3/8	6 19/64	3/4	3 1/32	5 1/32	1 31/32	5/8	UKIP209	IP209	UK209	HE2309X H2309X	4.0	34.1	21.3	0.968	14.0	-	-	-	-	-	-															
																				70	210	60	160	19	25	128	50	M16												
45	1 3/4	2 3/4	8 21/32	2 3/8	6 11/16	3/4	1 3/32	5 3/16	2 5/32	5/8	UKIP210	IP210	UK210	HE2310X H2310X	4.8	35.1	23.3	1.06	14.4	-	-	-	-	-	-															
																				70	220	60	170	19	28	132	55	M16												
50	1 7/8	3 5/32	9 1/16	2 3/8	7 3/32	3/4	1 3/32	5 13/16	2 5/16	5/8	UKIP211	IP211	UK211	HS2311X H2311X HE2311X	5.3	43.4	29.4	1.34	14.4	-	-	-	-	-	-															
	2																			80	230	60	180	19	28	148	59	M16												
55	2 1/8	3 5/32	10 1/4	2 3/4	7 7/8	7/8	1 3/16	6 3/32	2 7/16	3/4	UKIP212	IP212	UK212	HS2312X H2312X	7.1	52.4	36.2	1.65	14.4	-	-	-	-	-	-															
																				80	260	70	200	22	30	155	62	M20												
60	2 1/4	3 35/64	11 1/32	2 3/4	8 21/32	7/8	1 3/16	6 25/32	2 9/16	3/4	UKIP213	IP213	UK213	HE2313X H2313X HS2313X	8.7	57.2	40.1	1.82	14.4	-	-	-	-	-	-															
	2 3/8																			90	280	70	220	22	30	172	65	M20												
	2 1/4																			4 21/64	12 7/32	2 3/4	9 27/32	7/8	1 3/16	8 3/16	2 9/16	3/4												
65	2 3/8	4 21/64	12 7/32	2 3/4	9 27/32	7/8	1 3/16	8 3/16	2 9/16	3/4	UKIP313	IP313	UK313	HE2313X H2313X HS2313X	13.5	92.7	59.9	2.68	13.2	-	-	-	-	-	-															
	2 1/4																			110	310	70	250	22	30	208	65	M20												
	2 3/8																																							
70	2 1/2	4 23/32	13 3/8	2 15/16	11 1/32	3 1/32	1 3/8	9 1/16	2 7/8	7/8	UKIP315	IP315	UK315	HE2315X H2315X	17.7	113	77.2	3.24	13.2	-	-	-	-	-	-															
																				120	340	75	280	25	35	230	73	M22												
75	2 3/4	4 23/32	13 25/32	3 11/32	11 27/64	3 1/32	1 9/16	9 1/4	3 1/16	7/8	UKIP316	IP316	UK316	HE2316X H2316X	20.4	123	86.7	3.53	13.3	-	-	-	-	-	-															
																				120	350	85	290	25	40	235	78	M22												
80	3	5 1/8	14 9/16	3 11/32	12 13/64	3 1/32	1 9/16	10 1/32	3 7/32	7/8	UKIP317	IP317	UK317	H2317X HE2317X	25.7	133	96.8	3.82	13.3	-	-	-	-	-	-															
																				130	370	85	310	25	40	255	82	M22												
85	3 1/4	5 29/32	16 5/32	3 11/32	13 25/64	1 5/32	1 25/32	11 7/32	3 17/32	1	UKIP318	IP318	UK318	H2318X	28.7	143	107	4.11	13.3	-	-	-	-	-	-															
																				130	400	85	330	29	45	260	86	M27												
90	3 1/2	5 29/32	16 15/16	3 11/32	14 11/64	1 3/32	1 25/32	11 5/8	3 13/16	1	UKIP319	IP319	UK319	HE2319X H2319X	32.0	153	119	4.45	13.3	-	-	-	-	-	-															
																				150	410	85	340	29	45	285	90	M27												
100	4	6 11/16	19 9/32	3 15/16	16 9/64	1 1/4	1 31/32	13 3/16	4 1/8	1 1/8	UKIP320	IP320	UK320	HE2320X H2320X	36.6	173	141	5.08	13.2	-	-	-	-	-	-															
																				170	490	100	410	32	50	335	105	M30												
110	4 1/2	6 11/16	20 3/32	3 15/16	16 59/64	1 1/4	1 31/32	13 19/32	4 13/32	1 1/8	UKIP321	IP321	UK321	H2321X	52.2	205	180	6.15	13.2	-	-	-	-	-	-															
																				170	510	100	430	32	50	345	112	M30												
115	4 1/2	7 7/8	21 21/32	4 11/32	18 1/2	1 1/4	1 31/32	15 11/32	4 3/4	1 1/8	UKIP322	IP322	UK322	H2322X HE2322X	52.2	205	180	6.15	13.2	-	-	-	-	-	-															
																				200	550	110	470	32	50	390	121	M30												
125	4 1/2	7 7/8	23 7/32	4 11/32	19 11/16	1 3/8	2 5/32	15 3/4	4 5/32	1 1/4	UKIP323	IP323	UK323	H2323X	59.0	207	185	6.10	13.5	-	-	-	-	-	-															
																				200	590	110	500	35	55	400	131	M33												

Remarks 1. In Part No. of unit and units with covers, fitting codes follow bore diameter numbers. (See Table 2.5 in P.11.)  
2. Part No. of applicable grease nipples are shown below.  
A-1/4-28UNF..... 208-210  
A-R1/8..... 211-213, 313-328

3. In Part No. of unit with adapters and bearing with adapters, Part No. of applicable adapter follow the Part No. shown in the dimensional tables.  
(Example of Part No. : UKIP208J + H2308X, UK208 + H2308X)  
4. As for the triple-lip seal type product, supplementary code L3 follows the Part No. of unit or bearing.  
(Example of Part No. : UKIP208JL3 + H2308X, UK208L3 + H2308X)  
5. For the dimensions and forms of applicable bearings and adapters, see the dimensional tables of insert bearing for unit and adapter assemblies.  
6. Housings of spheroidal graphite iron casting are also available.

Tapped-base pillow block type

**UCPA**  
Cylindrical bore (with set screws)  
d 12 ~ 50 mm



Variations of tolerance of distance from mounting bottom to center of spherical bore ( $\Delta H_s$ ) and variations of tolerance of distance between centers of bolt holes ( $\Delta J_s$ )

Housing No.	$\Delta H_s$	$\Delta J_s$
PA204-PA210	±0.15	±0.5

Unit: mm

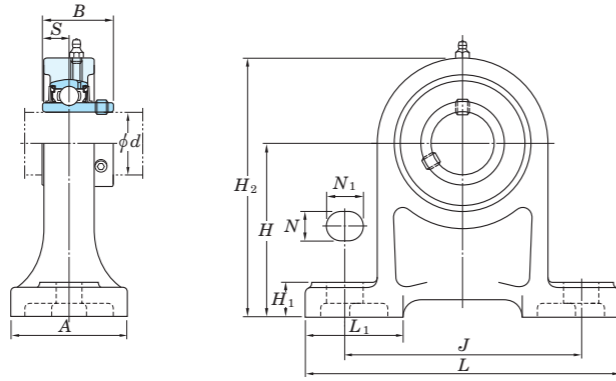
Shaft Dia. mm inch  d	Dimensions inch mm											Unit No.	Housing No.	Bearing No.	Basic Load Ratings kN		Fatigue Load Limit kN C <sub>u</sub>	Factor f <sub>0</sub>	Mass kg
	H	L	A	J	N	H <sub>2</sub>	H <sub>3</sub>	L <sub>1</sub>	B	S	C <sub>r</sub>				C <sub>0r</sub>				
12 1/2												UCPA201 UCPA201-8		UC201 UC201-8					0.64
15 5/8	1 3/16 30.2	3 76	1 9/16 40	2 3/64 52	M10×1.5	2 3/8 60	1/2 13	1 1/16 27	1.220 31	0.500 12.7		UCPA202 UCPA202-10	PA204	UC202 UC202-10	12.8	6.65	0.302	13.2	0.62
17 3/4											UCPA203 UCPA204-12		UC203 UC204-12					0.61	
20											UCPA204		UC204					0.59	
25 1 7/8 15/16	1 7/16 36.5	3 5/16 84	1 25/32 45	2 13/64 56	M10×1.5	2 25/32 71	1/2 13	1 3/16 30	1.343 34.1	0.563 14.3		UCPA205-14 UCPA205-15 UCPA205	PA205	UC205-14 UC205-15 UC205	14.0	7.85	0.357	13.9	0.83
25 1											UCPA205-16		UC205-16						
30 1 1/8	1 11/16 42.9	3 11/16 94	1 31/32 50	2 19/32 66	M14×2	3 5/16 84	23/32 18	1 13/32 36	1.500 38.1	0.626 15.9		UCPA206-18 UCPA206	PA206	UC206-18 UC206	19.5	11.3	0.514	13.9	1.2
30 1 3/16											UCPA206-19		UC206-19						
30 1 1/4											UCPA206-20		UC206-20						
35 1 1/4 1 5/16	1 7/8 47.6	4 11/32 110	2 5/32 55	3 5/32 80	M14×2	3 21/32 93	25/32 20	1 5/8 41	1.689 42.9	0.689 17.5		UCPA207-20 UCPA207-21 UCPA207-22	PA207	UC207-20 UC207-21 UC207-22	25.7	15.4	0.700	13.9	1.7
35 1 3/8											UCPA207		UC207						
35 1 7/16											UCPA207-23		UC207-23						
40 1 1/2 1 9/16	1 15/16 49.2	4 9/16 116	2 9/32 58	3 5/16 84	M14×2	3 27/32 98	25/32 20	1 5/8 41	1.937 49.2	0.748 19		UCPA208-24 UCPA208-25 UCPA208	PA208	UC208-24 UC208-25 UC208	29.1	17.8	0.809	14.0	2.0
45 1 5/8 1 11/16	2 9/64 54.2	4 23/32 120	2 3/8 60	3 35/64 90	M14×2	4 3/16 106	31/32 25	1 21/32 42	1.937 49.2	0.748 19		UCPA209-26 UCPA209-27 UCPA209-28	PA209	UC209-26 UC209-27 UC209-28	34.1	21.3	0.968	14.0	2.2
45 1 3/4											UCPA209		UC209						
50 1 7/8 1 15/16	2 1/4 57.2	5 1/8 130	2 17/32 64	3 45/64 94	M16×2	4 7/16 113	31/32 25	1 27/32 47	2.031 51.6	0.748 19		UCPA210-30 UCPA210-31 UCPA210	PA210	UC210-30 UC210-31 UC210	35.1	23.3	1.06	14.4	2.8
50 2											UCPA210-32		UC210-32						

Remarks 1. In Part No. of unit, fitting codes follow bore diameter codes. (See Table 2.5 in P.11.)  
 2. Part No. of the applicable grease nipple is A-1/4-28UNF.  
 3. As for the triple-lip seal type product (from 201 to 205 are the double-lip seal type products), supplementary code L3 (or L2) follows Part No. of unit or bearing. (Example of Part No. : UCPA206JL3, UC206L3)

4. As for the dimensions and forms of applicable bearings, see the dimensional tables of insert bearing for unit.  
 5. Tapered bore (with adapter) type products are also available. (Example of Part No. : UKPA205J + H2305X, UK205 + H2305X)  
 6. Housings of spheroidal graphite iron casting are also available.

Higher centerheight pillow block type

UCPH  
Cylindrical bore (with set screws)  
d 12 ~ 50 mm



Variations of tolerance of distance from mounting bottom to center of spherical bore ( $\Delta H_s$ )

Housing No.	$\Delta H_s$
PH204-PH210	±0.15

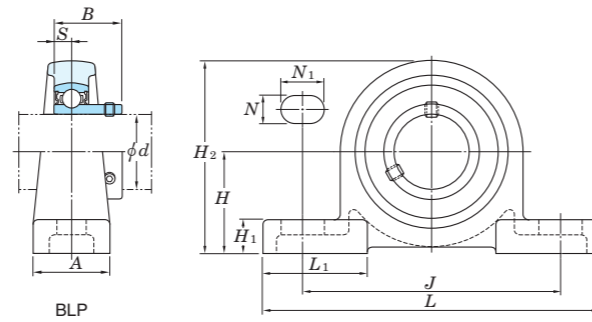
Shaft Dia. mm inch  d	Dimensions inch mm											Bolt Size inch mm	Unit No.	Housing No.	Bearing No.	Basic Load Ratings kN		Fatigue Load Limit kN $C_u$	Factor $f_0$	Mass kg
	H	L	A	J	N	N <sub>1</sub>	H <sub>1</sub>	H <sub>2</sub>	L <sub>1</sub>	B	S					C <sub>r</sub>	C <sub>0r</sub>			
12 1/2														UCPH201		UC201				
15 5/8	2 3/4	5	1 9/16	3 3/4	1/2	3/4	19/32	3 31/32	1 13/16	1.220	0.500	3/8	UCPH201-8	PH204	UC201-8	12.8	6.65	0.302	13.2	0.96
17 3/4	70	127	40	95	13	19	15	101	46	31	12.7	M10	UCPH202		UC202					
20													UCPH202-10		UC202-10					
													UCPH203		UC203					
													UCPH204-12		UC204-12					
													UCPH204		UC204					
25 1 7/8	3 5/32	5 1/2	1 31/32	4 1/8	1/2	3/4	5/8	4 1/2	1 15/16	1.343	0.563	3/8	UCPH205-14	PH205	UC205-14	14.0	7.85	0.357	13.9	0.94
	80	140	50	105	13	19	16	114	49	34.1	14.3	M10	UCPH205-15		UC205-15					
													UCPH205		UC205					
													UCPH205-16		UC205-16					
30 1 1/8	3 35/64	6 1/2	1 31/32	4 3/4	21/32	13/16	23/32	5 1/8	2 7/32	1.500	0.626	1/2	UCPH206-18	PH206	UC206-18	19.5	11.3	0.514	13.9	1.2
	90	165	50	121	17	21	18	130	56	38.1	15.9	M14	UCPH206		UC206					
													UCPH206-19		UC206-19					
													UCPH206-20		UC206-20					
35 1 1/4	3 47/64	6 9/16	2 3/8	5	21/32	13/16	23/32	5 1/2	2 1/8	1.689	0.689	1/2	UCPH207-20	PH207	UC207-20	25.7	15.4	0.700	13.9	1.6
	95	167	60	127	17	21	18	140	54	42.9	17.5	M14	UCPH207-21		UC207-21					
													UCPH207-22		UC207-22					
													UCPH207		UC207					
													UCPH207-23		UC207-23					
40 1 1/2	3 15/16	7 1/4	2 3/4	5 13/32	21/32	13/16	25/32	5 29/32	2 1/4	1.937	0.748	1/2	UCPH208-24	PH208	UC208-24	29.1	17.8	0.809	14.0	2.0
	100	184	70	137	17	21	20	150	57	49.2	19	M14	UCPH208-25		UC208-25					
													UCPH208		UC208					
45 1 5/8	4 9/64	7 15/32	2 3/4	5 3/4	21/32	13/16	25/32	6 7/32	2 9/32	1.937	0.748	1/2	UCPH209-26	PH209	UC209-26	34.1	21.3	0.968	14.0	2.7
	105	190	70	146	17	21	20	158	58	49.2	19	M14	UCPH209-27		UC209-27					
													UCPH209-28		UC209-28					
													UCPH209		UC209					
50 1 7/8	4 21/64	8 1/8	2 3/4	6 1/4	25/32	7/8	7/8	6 1/2	2 9/16	2.031	0.748	5/8	UCPH210-30	PH210	UC210-30	35.1	23.3	1.06	14.4	3.0
	110	206	70	159	20	22	22	165	65	51.6	19	M16	UCPH210-31		UC210-31					
													UCPH210		UC210					
													UCPH210-32		UC210-32					

Remarks 1. In Part No. of unit, fitting codes follow bore diameter codes. (See Table 2.5 in P.11.)  
 2. Part No. of the applicable grease nipple is A-1/4-28UNF.  
 3. As for the triple-lip seal type product (from 201 to 205 are the double-lip seal type products), supplementary code L3 (or L2) follows Part No. of unit or bearing. (Example of Part No. : UCPH206JL3, UC206L3)

4. As for the dimensions and forms of applicable bearings, see the dimensional tables of insert bearing for unit.  
 5. Tapered bore (with adapter) type products are also available. (Example of Part No. : UKPH205J + H2305X, UK205 + H2305X)

Light duty pillow block type

**BLP** Cylindrical bore (with set screws)  
**ALP** Cylindrical bore (with eccentric locking collar)  
 d 12 ~ 40 mm



Variations of tolerance of distance from mounting bottom to center of spherical bore ( $\Delta H_s$ )

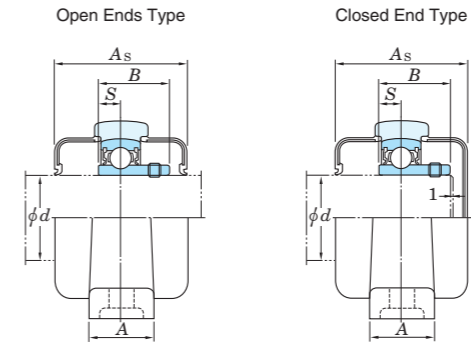
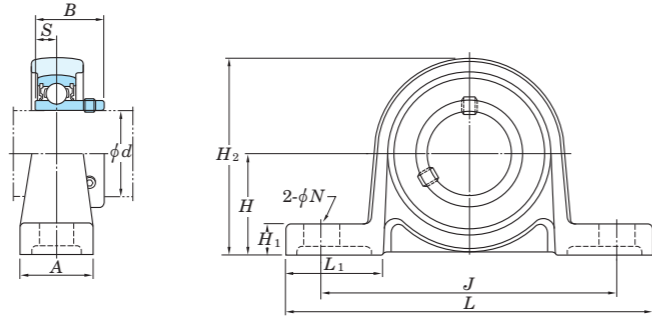
Housing No.	$\Delta H_s$
LP203-LP208	±0.15

Shaft Dia. mm inch	Dimensions inch mm											Bolt Size inch mm	Unit No.	Bearing No.	Unit No.	Bearing No.	Housing No.	Basic Load Ratings kN		Fatigue Load Limit kN	Factor $f_0$	Mass kg		
	$H$	$L$	$A$	$J$	$N$	$N_1$	$H_1$	$H_2$	$L_1$	$S$	BLP $B$							ALP $B_1$	$C_r$			$C_{0r}$	$C_u$	BLP
12 1/2	1 3/16	4 1/2	31/32	3 7/16	7/16	5/8	15/32	2 1/4	1 3/8	0.236	0.866	1.122	3/8	BLP201	SB201	ALP201	SA201							
15 5/8	30.2	114	25	87	11	16	12	57	35	6	22	28.5	M10	BLP201-8 BLP202 BLP202-10 BLP203	SB201-8 SB202 SB202-10 SB203	ALP201-8 ALP202 ALP202-10 ALP203	SA201-8 SA202 SA202-10 SA203	LP203	9.55	4.80	0.218	13.2	0.36	0.39
17																								
20 3/4	1 5/16	4 29/32	1 1/16	3 13/16	7/16	5/8	1/2	2 25/32	1 1/2	0.276	0.984	1.161	3/8	BLP204-12 BLP204	SB204-12 SB204	ALP204-12 ALP204	SA204-12 SA204	LP204	12.8	6.65	0.302	13.2	0.51	0.51
25 7/8 15/16	1 7/16	5 1/8	1 5/32	3 15/16	7/16	5/8	1/2	2 25/32	1 17/32	0.295	1.063	1.201	3/8	BLP205-14 BLP205-15 BLP205 BLP205-16	SB205-14 SB205-15 SB205 SB205-16	ALP205-14 ALP205-15 ALP205 ALP205-16	SA205-14 SA205-15 SA205 SA205-16	LP205	14.0	7.85	0.357	13.9	0.57	0.61
30 1 1/8	1 11/16	6 5/32	1 5/16	4 23/32	9/16	13/16	9/16	3 9/32	1 27/32	0.315	1.181	1.335	1/2	BLP206-18 BLP206 BLP206-19 BLP206-20 BLP207-20	SB206-18 SB206 SB206-19 SB206-20 SB207-20	ALP206-18 ALP206 ALP206-19 ALP206-20 ALP207-20	SA206-18 SA206 SA206-19 SA206-20 SA207-20	LP206	19.5	11.3	0.514	13.9	0.69	0.72
35 1 1/4 1 5/16 1 3/8	1 7/8	6 1/2	1 3/8	5	9/16	13/16	5/8	3 21/32	1 31/32	0.335	1.260	1.437	1/2	BLP207-22 BLP207 BLP207-23 BLP208-24	SB207-22 SB207 SB207-23 SB208-24	ALP207-22 ALP207-21 ALP207-22 ALP207 ALP207-23 ALP208-24	SA207-22 SA207-21 SA207-22 SA207 SA207-23 SA208-24	LP207	25.7	15.4	0.700	13.9	0.94	1.0
40 1 1/2 1 9/16	2	7 1/4	1 15/32	5 1/2	9/16	7/8	23/32	4 1/32	2 5/32	0.354	1.339	1.595	1/2	BLP208-24 BLP208	SB208-24 SB208	ALP208-24 ALP208-25 ALP208	SA208-24 SA208-25 SA208	LP208	29.1	17.8	0.809	14.0	1.8	1.9

Remarks 1. In Part No. of unit, fitting codes follow bore diameter codes. (See Table 2.5 in P.11.)  
 2. Allowable load to housing in radial direction is approximately half of basic load rating of bearing,  $C_r$  (when safety factor is 4).  
 3. For the dimensions and forms of applicable bearings, see the dimensional tables of insert bearing for unit.

“Compact” series pillow block type

**UP**  
Cylindrical bore (with set screws)  
 $d$  10 ~ 30 mm



Variations of tolerance of distance from mounting bottom to center of spherical bore ( $\Delta H_s$ ) and variations of tolerance of distance between centers of bolt holes ( $\Delta J_s$ )

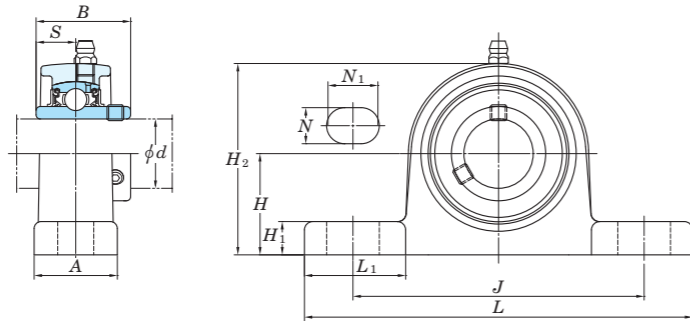
Housing No.	$\Delta H_s$	$\Delta J_s$
P000-P006	$\pm 0.15$	$\pm 0.3$

Unit: mm

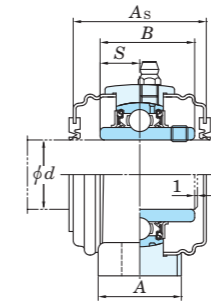
Shaft Dia. mm $d$	Dimensions inch mm										Bolt Size inch mm	Standard			Mass kg	Basic Load Ratings kN		Fatigue Load Limit kN $C_u$	Factor $f_0$	With Rubber Coated Covers Unit No.		Dimension mm inch		Mass kg
	$H$	$L$	$A$	$J$	$N$	$H_1$	$H_2$	$L_1$	$B$	$S$		Unit No.	Housing No.	Bearing No.		$C_r$	$C_{0r}$			Open Ends Type	Closed End Type	$A_s$		
10	$45/64$ 18	$2\ 5/8$ 67	$5/8$ 16	$2\ 3/32$ 53	$9/32$ 7	$1/4$ 6	$1\ 3/8$ 35	$23/32$ 18	0.591 15	0.197 5	$1/4$ M6	UP000	P000	SU000	4.55	1.95	0.089	12.3	UP000C	UP000CD	29	$1\ 5/32$	0.07	
12	$3/4$ 19	$2\ 25/32$ 71	$5/8$ 16	$2\ 13/64$ 56	$9/32$ 7	$1/4$ 6	$1\ 1/2$ 38	$3/4$ 19	0.591 15	0.197 5	$1/4$ M6	UP001	P001	SU001	5.10	2.40	0.109	13.2	UP001C	UP001CD	29	$1\ 5/32$	0.09	
15	$55/64$ 22	$3\ 5/32$ 80	$5/8$ 16	$2\ 31/64$ 63	$9/32$ 7	$9/32$ 7	$1\ 11/16$ 43	$13/16$ 21	0.650 16.5	0.217 5.5	$1/4$ M6	UP002	P002	SU002	5.60	2.85	0.130	13.9	UP002C	UP002CD	31	$1\ 7/32$	0.11	
17	$15/16$ 24	$3\ 11/32$ 85	$23/32$ 18	$2\ 41/64$ 67	$9/32$ 7	$9/32$ 7	$1\ 27/32$ 47	$13/16$ 21	0.689 17.5	0.236 6	$1/4$ M6	UP003	P003	SU003	6.00	3.25	0.148	14.4	UP003C	UP003CD	33	$1\ 5/16$	0.15	
20	$1\ 7/64$ 28	$3\ 15/16$ 100	$25/32$ 20	$3\ 5/32$ 80	$13/32$ 10	$11/32$ 9	$2\ 5/32$ 55	$31/32$ 25	0.827 21	0.276 7	$5/16$ M8	UP004	P004	SU004	9.40	5.05	0.230	13.9	UP004C	UP004CD	38	$1\ 1/2$	0.23	
25	$1\ 17/64$ 32	$4\ 13/32$ 112	$25/32$ 20	$3\ 35/64$ 90	$13/32$ 10	$13/32$ 10	$2\ 7/16$ 62	$1\ 3/32$ 28	0.866 22	0.276 7	$5/16$ M8	UP005	P005	SU005	10.1	5.85	0.266	14.5	UP005C	UP005CD	40	$1\ 9/16$	0.28	
30	$1\ 27/64$ 36	$5\ 3/16$ 132	$1\ 1/32$ 26	$4\ 11/64$ 106	$1/2$ 13	$7/16$ 11	$2\ 3/4$ 70	$1\ 11/32$ 34	0.965 24.5	0.295 7.5	$3/8$ M10	UP006	P006	SU006	13.2	8.25	0.375	14.7	UP006C	UP006CD	44	$1\ 23/32$	0.42	

Remarks 1. In Part No. of unit and units with covers, fitting codes follow bore diameter codes. (See Table 2.5 in P.11.)  
2. For the dimensions and forms of applicable bearings, see the dimensional tables of insert bearing for unit.  
3. Housing is made from special light alloy.

**UCSP-S6**  
Cylindrical bore (with set screws)  
 $d$  12 ~ 65 mm



With Pressed Stainless Steel Covers (E1)



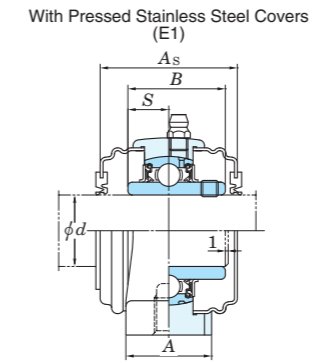
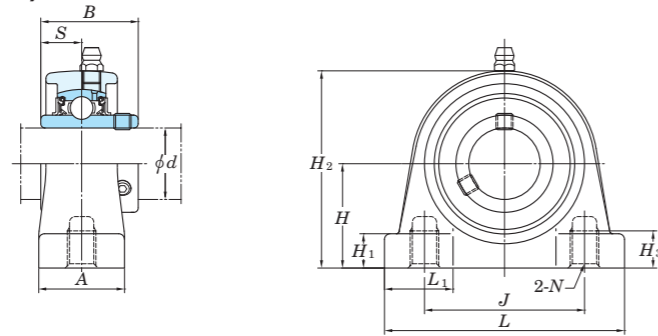
Variations of tolerance of distance from mounting bottom to center of spherical bore ( $\Delta H_s$ )

Housing No.	Unit: mm
SP203-SP210	$\pm 0.15$
SP211-SP212	$\pm 0.2$

Shaft Dia. mm $d$	Dimensions mm											Bolt Size mm	Standard			Mass kg	Basic Load Ratings kN		Fatigue Load Limit kN $C_u$	Factor $f_0$	With Pressed Stainless Steel Covers		Dimension mm $A_s$	Mass kg
	$H$	$L$	$A$	$J$	$N$	$N_1$	$H_1$	$H_2$	$L_1$	$B$	$S$		Unit No.	Housing No.	Bearing No.		$C_r$	$C_{0r}$			Open Ends Type	Closed End Type		
12	30.2	127	30	95	13	18	11	56	37.5	27.4	11.5	M10	UCSP201XS6	SP203	UC201XS6	0.47	8.15	3.85	0.175	13.2	-	-	-	0.47
15	30.2	127	30	95	13	18	11	56	37.5	27.4	11.5	M10	UCSP202XS6	SP203	UC202XS6	0.47	8.15	3.85	0.175	13.2	-	-	-	0.47
17	30.2	127	30	95	13	18	11	56	37.5	27.4	11.5	M10	UCSP203XS6	SP203	UC203XS6	0.47	8.15	3.85	0.175	13.2	-	-	-	0.47
20	33.3	127	30	95	13	18	11	63	33	31	12.7	M10	UCSP204S6	SP204	UC204S6	0.6	10.9	5.35	0.243	13.2	UCSP204CS6	UCSP204CDS6	45	0.6
25	36.5	140	30	105	13	19	12	69	36.5	34.1	14.3	M10	UCSP205S6	SP205	UC205S6	0.7	11.9	6.30	0.286	13.9	UCSP205CS6	UCSP205CDS6	49	0.7
30	42.9	165	36	121	17	21	13	81	43.5	38.1	15.9	M14	UCSP206S6	SP206	UC206S6	1.1	16.5	9.05	0.411	13.9	UCSP206CS6	UCSP206CDS6	53	1.1
35	47.6	167	38	127	17	21	14	91	39	42.9	17.5	M14	UCSP207S6	SP207	UC207S6	1.4	21.8	12.3	0.559	13.9	UCSP207CS6	UCSP207CDS6	60	1.4
40	49.2	184	40	137	17	21	14	97	43	49.2	19	M14	UCSP208S6	SP208	UC208S6	1.7	24.8	14.3	0.650	14.0	UCSP208CS6	UCSP208CDS6	69	1.7
45	54	190	40	146	17	21	15	104	44	49.2	19	M14	UCSP209S6	SP209	UC209S6	2	27.8	16.2	0.736	14.0	UCSP209CS6	UCSP209CDS6	69	2.0
50	57.2	206	45	159	20	22	16	111	48	51.6	19	M16	UCSP210S6	SP210	UC210S6	2.5	29.8	18.6	0.845	14.4	UCSP210CS6	UCSP210CDS6	74	2.5
55	63.5	219	48	171	20	22	16	125	47.5	55.6	22.2	M16	UCSP211S6	SP211	UC211S6	3.4	36.8	23.5	1.07	14.4	UCSP211CS6	UCSP211CDS6	75	3.4
60	69.8	241	55	184	20	25	17	138	51.5	65.1	25.4	M16	UCSP212S6	SP212	UC212S6	4.5	44.5	29.0	1.32	14.4	UCSP212CS6	UCSP212CDS6	88	4.5
65	76.2	265	57	203	25	29	21	150	58	65.1	25.4	M16	UCSP213S6	SP213	UC213S6	5.6	48.2	32.1	1.46	14.4	UCSP213CS6	UCSP213CDS6	89	5.6

Remarks 1. In Part No. of unit and units with covers, fitting codes follow bore diameter codes. (See Table 2.5 in P.11.)  
2. Part No. of the applicable grease nipple is A-1/4-28UNFN12.  
3. For the dimensions and forms of applicable bearings, see the dimensional tables of insert bearing for unit.

**UCSPA-S6**  
Cylindrical bore (with set screws)  
 $d$  12 ~ 50 mm



Variations of tolerance of distance from mounting bottom to center of spherical bore ( $\Delta H_s$ ) and variations of tolerance of distance between centers of bolt holes ( $\Delta J_s$ )

Housing No.	$\Delta H_s$	$\Delta J_s$
SPA203-SPA208	$\pm 0.15$	$\pm 0.5$

Unit: mm

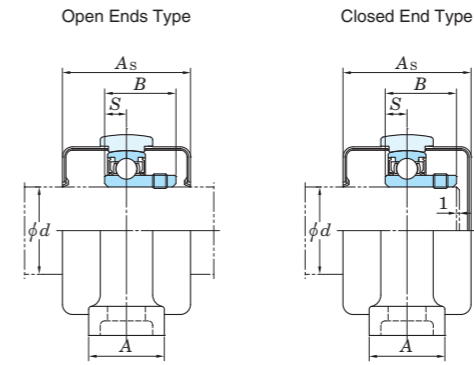
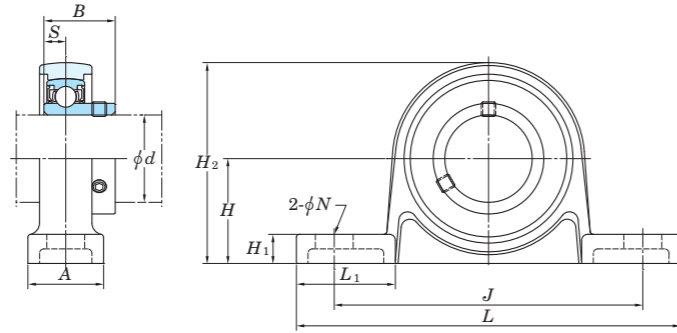
Shaft Dia. mm $d$	Dimensions mm											Standard			Mass kg	Basic Load Ratings kN			Fatigue Load Limit kN $C_u$	Factor $f_0$	With Pressed Stainless Steel Covers		Dimension mm $A_s$	Mass kg
	$H$	$L$	$A$	$J$	$N$	$H_1$	$H_2$	$H_3$	$L_1$	$B$	$S$	Unit No.	Housing No.	Bearing No.		$C_r$	$C_{0r}$	Open Ends Type			Closed End Type			
12	30.2	76	30	52	M10×1.5	10	57	13	22	27.4	11.5	UCSPA201XS6	SPA203	UC201XS6	0.43	8.15	3.85	0.175	13.2	—	—	—	0.43	
15	30.2	76	30	52	M10×1.5	10	57	13	22	27.4	11.5	UCSPA202XS6	SPA203	UC202XS6	0.43	8.15	3.85	0.175	13.2	—	—	—	0.43	
17	30.2	76	30	52	M10×1.5	10	57	13	22	27.4	11.5	UCSPA203XS6	SPA203	UC203XS6	0.43	8.15	3.85	0.175	13.2	—	—	—	0.43	
20	30.2	76	30	52	M10×1.5	10	60	13	22	31	12.7	UCSPA204S6	SPA204	UC204S6	0.47	10.9	5.35	0.243	13.2	UCSPA204CS6	UCSPA204CDS6	45	0.47	
25	36.5	84	30	56	M10×1.5	12	69	13	24	34.1	14.3	UCSPA205S6	SPA205	UC205S6	0.63	11.9	6.30	0.286	13.9	UCSPA205CS6	UCSPA205CDS6	49	0.63	
30	42.9	94	36	66	M14×2	12	81	18	28	38.1	15.9	UCSPA206S6	SPA206	UC206S6	0.91	16.5	9.05	0.411	13.9	UCSPA206CS6	UCSPA206CDS6	53	0.91	
35	47.6	110	38	80	M14×2	13	91	20	30	42.9	17.5	UCSPA207S6	SPA207	UC207S6	1.3	21.8	12.3	0.559	13.9	UCSPA207CS6	UCSPA207CDS6	60	1.3	
40	49.2	116	40	84	M14×2	13	97	20	32	49.2	19	UCSPA208S6	SPA208	UC208S6	1.5	24.8	14.3	0.650	14.0	UCSPA208CS6	UCSPA208CDS6	69	1.5	
45	54.2	120	40	90	M14×2	13	104	25	32	49.2	19	UCSPA209S6	SPA209	UC209S6	1.82	27.8	16.2	0.736	14.0	UCSPA209CS6	UCSPA209CDS6	69	1.82	
50	57.2	130	45	94	M16×2	14	111	25	36	51.6	19	UCSPA210S6	SPA210	UC210S6	2.26	29.8	18.6	0.845	14.4	UCSPA210CS6	UCSPA210CDS6	74	2.26	

Remarks 1. In Part No. of unit and units with covers, fitting codes follow bore diameter codes. (See Table 2.5 in P.11.)  
2. Part No. of the applicable grease nipple is A-1/4-28UNFN12.  
3. For the dimensions and forms of applicable bearings, see the dimensional tables of insert bearing for unit.



Stainless-series pillow block type

**USP-S6**  
Cylindrical bore (with set screws)  
 $d$  10 ~ 30 mm



Variations of tolerance of distance from mounting bottom to center of spherical bore ( $\Delta H_s$ ) and variations of tolerance of distance between centers of bolt holes ( $\Delta J_s$ )

Housing No.	$\Delta H_s$	$\Delta J_s$
SP000-SP006	$\pm 0.15$	$\pm 0.3$

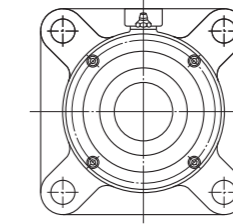
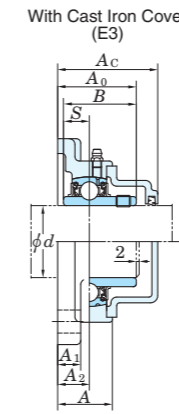
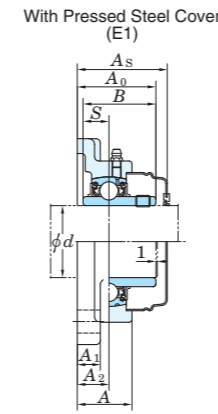
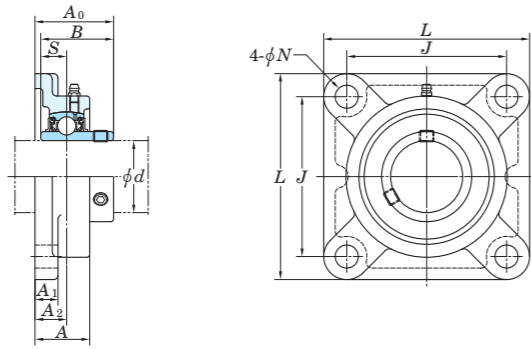
Unit: mm

Shaft Dia. mm $d$	Dimensions inch mm										Bolt Size inch mm	Standard			Mass kg	Basic Load Ratings kN		Fatigue Load Limit kN $C_u$	Factor $f_0$	With Rubber Coated Covers Unit No.		Dimension mm inch		Mass kg
	$H$	$L$	$A$	$J$	$N$	$H_1$	$H_2$	$L_1$	$B$	$S$		Unit No.	Housing No.	Bearing No.		$C_r$	$C_{0r}$			Open Ends Type	Closed End Type	$A_s$		
10	$45/64$	$2\ 5/8$	$5/8$	$2\ 3/32$	$9/32$	$3/16$	$1\ 3/8$	$23/32$	0.591	0.197	$1/4$	USP000S6	SP000	SU000S6		3.9	1.55	0.070	12.3	USP000CS6	USP000CDS6	29	$1\ 5/32$	0.08
	18	67	16	53	7	5	35	18	15	5	M6													
12	$3/4$	$2\ 25/32$	$5/8$	$2\ 7/32$	$9/32$	$3/16$	$1\ 15/32$	$23/32$	0.591	0.197	$1/4$	USP001S6	SP001	SU001S6		4.3	1.9	0.086	13.2	USP001CS6	USP001CDS6	29	$1\ 5/32$	0.08
	19	71	16	56	7	5	37	18.5	15	5	M6													
15	$55/64$	$3\ 5/32$	$5/8$	$2\ 15/32$	$9/32$	$1/4$	$1\ 11/16$	$13/16$	0.650	0.217	$1/4$	USP002S6	SP002	SU002S6		4.7	2.25	0.102	13.9	USP002CS6	USP002CDS6	31	$1\ 7/32$	0.11
	22	80	16	63	7	6	42.5	20.5	16.5	5.5	M6													
17	$15/16$	$3\ 11/32$	$23/32$	$2\ 5/8$	$9/32$	$1/4$	$1\ 13/16$	$13/16$	0.689	0.236	$1/4$	USP003S6	SP003	SU003S6		5.1	2.6	0.118	14.4	USP003CS6	USP003CDS6	33	$1\ 5/16$	0.14
	24	85	18	67	7	6	46	21	17.5	6	M6													
20	$1\ 7/64$	$3\ 15/16$	$25/32$	$3\ 5/32$	$13/32$	$5/16$	$2\ 5/32$	$31/32$	0.827	0.276	$5/16$	USP004S6	SP004	SU004S6		7.9	4	0.182	13.9	USP004CS6	USP004CDS6	38	$1\ 1/2$	0.23
	28	100	20	80	10	8	54.5	25	21	7	M8													
25	$1\ 17/64$	$4\ 13/32$	$25/32$	$3\ 17/32$	$13/32$	$11/32$	$2\ 13/32$	$1\ 3/32$	0.866	0.276	$5/16$	USP005S6	SP005	SU005S6		8.5	4.65	0.211	14.5	USP005CS6	USP005CDS6	40	$1\ 9/16$	0.28
	32	112	20	90	10	9	61	27.5	22	7	M8													
30	$1\ 27/64$	$5\ 3/16$	$1\ 1/32$	$4\ 3/16$	$1/2$	$13/32$	$2\ 23/32$	$1\ 11/32$	0.965	0.295	$3/8$	USP006S6	SP006	SU006S6		11.2	6.6	0.300	14.7	USP006CS6	USP006CDS6	44	$1\ 23/32$	0.43
	36	132	26	106	13	10	69	34	24.5	7.5	M10													

Remarks 1. In Part No. of unit and units with covers, fitting codes follow bore diameter codes. (See Table 2.5 in P.11.)  
2. For the dimensions and forms of applicable bearings, see the dimensional tables of insert bearing for unit.

Square-flanged type

**UCF**  
Cylindrical bore (with set screws)  
 $d$  12 ~ (45) mm



Cast iron cover fixing screw position (standard)

Variations of tolerance of distance from mounting surface to center of spherical bore ( $\Delta A_{2s}$ ) and tolerance of position of bolt hole (X)  
Unit: mm

Housing No.	$\Delta A_{2s}$	X
F204-F210	$\pm 0.5$	0.7
F211-F218	$\pm 0.8$	1

Variations of tolerance of bolt hole diameter ( $\Delta N_s$ )  
Unit: mm

Housing No.	$\Delta N_s$
F204-F218	$\pm 0.2$
FX05-FX18	$\pm 0.2$
F305-F315	$\pm 0.2$
FX20	$\pm 0.3$
F316-F328	$\pm 0.3$

Shaft Dia. mm inch $d$	Dimensions inch mm										Bolt Size inch mm	Standard			Mass kg	Basic Load Ratings kN		Fatigue Load Limit kN $C_u$	Factor $f_0$	With Pressed Steel Cover				With Cast Iron Cover			
	$L$	$A$	$J$	$N$	$A_1$	$A_2$	$A_0$	$B$	$S$	Unit No.		Housing No.	Bearing No.	Unit No.		Dimension mm inch $A_s$	Mass kg			Open End Type	Closed End Type	Unit No.	Dimension mm inch $A_c$	Mass kg			
12 1/2											M10	UCF201 UCF201-8 UCF202 UCF202-10 UCF203 UCF204-12 UCF204	F204	UC201 UC201-8 UC202 UC202-10 UC203 UC204-12 UC204	0.64 0.64 0.62 0.62 0.61 0.61 0.59	12.8 6.65	0.302	13.2	UCF201C UCF201D UCF202C UCF202D UCF203C UCF203D UCF204C UCF204D	37.5 37.5 37.5 37.5	1 15/32 1 15/32 1 15/32 1 15/32	0.64 0.62 0.61 0.59	UCF204FC UCF204FD	46	1 13/16	0.74	
15 5/8	3 3/8	1	2 33/64	15/32	7/16	19/32	1 5/16	1.220	0.500	3/8	UCF205-14 UCF205-15 UCF205 UCF205-16	F205	UC205-14 UC205-15 UC205 UC205-16	0.83 0.83 0.83 0.83	14.0 7.85	0.357	13.9	UCF205C UCF205D	40.5	1 19/32	0.83	UCF205FC UCF205FD	49	1 15/16	1.0		
17 3/4	86	25.5	64	12	11	15	33.3	31	12.7	M10	UCFX05 UCFX05-16	FX05	UCX05 UCX05-16	1.2 1.2	19.5 11.3	0.514	13.9	UCFX05C UCFX05D	44.5	1 3/4	1.2						
20										M14	UCF305 UCF305-16	F305	UC305 UC305-16	1.3 1.3	21.2 10.9	0.495	12.6	UCF305C UCF305D	54	2 1/8	1.6	UCF306C UCF306D	59	2 5/16	2.2		
25 7/8 15/16	3 3/4	1 1/16	2 3/4	15/32	1/2	5/8	1 13/32	1.343	0.563	3/8	UCF206-18 UCF206 UCF206-19 UCF206-20	F206	UC206-18 UC206 UC206-19 UC206-20	1.1 1.1 1.1 1.1	19.5 11.3	0.514	13.9	UCF206C UCF206D	44.5	1 3/4	1.1	UCF206FC UCF206FD	53	2 3/32	1.4		
25 1	95	27	70	12	13	16	35.8	34.1	14.3	M10	UCFX06 UCFX06-19 UCFX06-20	FX06	UCX06 UCX06-19 UCX06-20	1.6 1.6 1.6	25.7 15.4	0.700	13.9	UCFX06C UCFX06D	49	1 15/16	1.6						
25 1	108	30	83	12	13	18	40.2	38.1	15.9	M10	UCF306	F306	UC306	1.9	26.7 15.0	0.682	13.3										
25 1	110	29	80	16	13	16	39	38	15	M14	UCF207-20 UCF207-21 UCF207-22 UCF207 UCF207-23	F207	UC207-20 UC207-21 UC207-22 UC207 UC207-23	1.5 1.5 1.5 1.5 1.5	25.7 15.4	0.700	13.9	UCF207C UCF207D	49	1 15/16	1.5	UCF207FC UCF207FD	58	2 9/32	1.9		
30 1 1/8	4 1/4	1 7/32	3 17/64	15/32	1/2	45/64	1 19/32	1.500	0.626	3/8	UCFX07 UCFX07-22 UCFX07	FX07	UCX07 UCX07-22 UCX07	2.0 2.0 2.0	29.1 17.8	0.809	14.0	UCFX07C UCFX07D	55.5	2 3/16	2.0						
30 1 3/16	108	31	83	12	13	18	40.2	38.1	15.9	M10	UCF208-24 UCF208-25 UCF208	F208	UC208-24 UC208-25 UC208	1.9 1.9 1.9	29.1 17.8	0.809	14.0	UCF208C UCF208D	55.5	2 3/16	1.9	UCF208FC UCF208FD	64	2 17/32	2.3		
30 1 1/4	117	34	92	16	14	19	44.4	42.9	17.5	M14	UCFX08 UCFX08	FX08	UCX08-24 UCX08	2.4 2.4	34.1 21.3	0.968	14.0	UCFX08C UCFX08D	56.5	2 7/32	2.4						
30 1 3/16	117	34	92	14	15	19	44.4	42.9	17.5	M12	UCF308-24 UCF308	F308	UC308-24 UC308	3.1 3.1	40.7 24.0	1.09	13.2	UCF308C UCF308D	71	2 25/32	3.6						
30 1 1/4	125	32	95	16	15	18	44	43	17	M14	UCF209-26 UCF209-27 UCF209-28 UCF209	F209	UC209-26 UC209-27 UC209-28 UC209	2.2 2.2 2.2 2.2	34.1 21.3	0.968	14.0	UCF209C UCF209D	56.5	2 7/32	2.2	UCF209FC UCF209FD	66	2 19/32	2.6		
35 1 1/4	4 19/32	1 11/32	3 5/8	5/8	9/16	3/4	1 3/4	1.689	0.689	1/2	UCF209-26 UCF209-27 UCF209-28 UCF209	F209	UC209-26 UC209-27 UC209-28 UC209	2.2 2.2 2.2 2.2	34.1 21.3	0.968	14.0	UCF209C UCF209D	56.5	2 7/32	2.2	UCF209FC UCF209FD	66	2 19/32	2.6		
35 1 5/16	117	34	92	14	15	19	44.4	42.9	17.5	M12	UCFX09-28 UCFX09	FX09	UCX09-28 UCX09	2.7 2.7	35.1 23.3	1.06	14.4	UCFX09C UCFX09D	60	2 3/8	2.7						
35 1 3/8	130	38	102	16	14	21	51.2	49.2	19	M14	UCF307	F307	UC307	2.3	33.4 19.3	0.877	13.2	UCF307C UCF307D	64	2 17/32	2.7						
35 1 7/16	130	38	102	16	14	21	51.2	49.2	19	M14	UCF208-24 UCF208-25 UCF208	F208	UC208-24 UC208-25 UC208	1.9 1.9 1.9	29.1 17.8	0.809	14.0	UCF208C UCF208D	55.5	2 3/16	1.9	UCF208FC UCF208FD	64	2 17/32	2.3		
40 1 1/2	137	40	105	19	14	22	52.2	49.2	19	M16	UCF209-26 UCF209-27 UCF209-28 UCF209	F209	UC209-26 UC209-27 UC209-28 UC209	2.2 2.2 2.2 2.2	34.1 21.3	0.968	14.0	UCF209C UCF209D	56.5	2 7/32	2.2	UCF209FC UCF209FD	66	2 19/32	2.6		
40 1 1/2	150	40	112	19	17	23	56	52	19	M16	UCFX09-28 UCFX09	FX09	UCX09-28 UCX09	2.7 2.7	35.1 23.3	1.06	14.4	UCFX09C UCFX09D	60	2 3/8	2.7						
45 1 5/8										M14	UCF209-26 UCF209-27 UCF209-28 UCF209	F209	UC209-26 UC209-27 UC209-28 UC209	2.2 2.2 2.2 2.2	34.1 21.3	0.968	14.0	UCF209C UCF209D	56.5	2 7/32	2.2	UCF209FC UCF209FD	66	2 19/32	2.6		
45 1 11/16	137	38	105	16	16	22	52.2	49.2	19	M14	UCF209-26 UCF209-27 UCF209-28 UCF209	F209	UC209-26 UC209-27 UC209-28 UC209	2.2 2.2 2.2 2.2	34.1 21.3	0.968	14.0	UCF209C UCF209D	56.5	2 7/32	2.2	UCF209FC UCF209FD	66	2 19/32	2.6		
45 1 3/4	143	40	111	19	14	23	55.6	51.6	19	M16	UCFX09-28 UCFX09	FX09	UCX09-28 UCX09	2.7 2.7	35.1 23.3	1.06	14.4	UCFX09C UCFX09D	60	2 3/8	2.7						

Remarks 1. In Part No. of unit and units with covers, fitting codes follow bore diameter numbers. (See Table 2.5 in P.11.)

2. Part No. of applicable grease nipples are shown below.

A-1/4-28UNF ..... 201-210, X05-X09, 305-308

A-R1/8 ..... 211-218, X10-X20, 309-328

3. As for the triple-lip seal type product (from 201 to 205 are the double-lip seal type products), supplementary code L3 (L2) follows the Part No. of unit or bearing. (Example of Part No. : UCF206JL3, UC206L3)

4. For the dimensions and forms of applicable bearings, see the dimensional tables of insert bearing for unit.

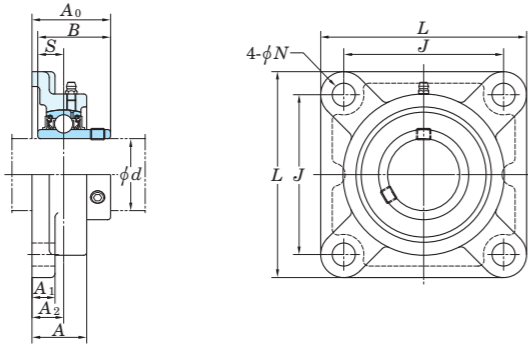
5. Housings of spheroidal graphite iron casting are also available.





Square-flanged type

UCF-E  
Cylindrical bore (with set screws)  
d 12 ~ 55 mm



Variations of tolerance of distance from mounting surface to center of spherical bore ( $\Delta_{A2s}$ ) and tolerance of position of bolt hole (X)

Housing No.		$\Delta_{A2s}$	X
F204E-F210E	FX05E-FX10E	$\pm 0.5$	0.7
F211E-F217E	FX11E-FX17E	$\pm 0.8$	1

Variations of tolerance of bolt hole diameter ( $\Delta_{Ns}$ )

Housing No.		$\Delta_{Ns}$
F204E-F217E	FX05E-FX17E	$\pm 0.2$

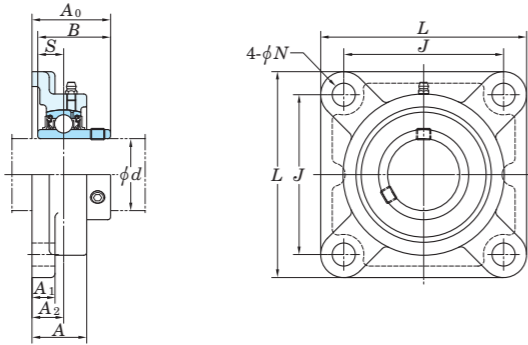
Shaft Dia. mm inch  d	Dimensions inch mm										Bolt Size inch	Unit No.	Housing No.	Bearing No.	Basic Load Ratings kN		Fatigue Load Limit kN $C_u$	Factor $f_0$	Mass kg
	L	A	J	N	A <sub>1</sub>	A <sub>2</sub>	A <sub>0</sub>	B	S	$C_r$					$C_{0r}$				
12 1/2												UCF201E UCF201-8E UCF202E UCF202-10E UCF203E UCF204-12E UCF204E	F204E	UC201 UC201-8 UC202 UC202-10 UC203 UC204-12 UC204	12.8	6.65	0.302	13.2	0.64 0.62 0.61 0.59
15 5/8	3 3/8 86	1 25.5	2 33/64 64	7/16 11	7/16 11	19/32 15	1 5/16 33.3	1.220 31	0.500 12.7										
17 3/4												UCF205-14E UCF205-15E UCF205E UCF205-16E	F205E	UC205-14 UC205-15 UC205 UC205-16	14.0	7.85	0.357	13.9	0.83
20 7/8	3 3/4 95	1 1/16 27	2 3/4 70	15/32 12	1/2 13	5/8 16	1 13/32 35.8	1.343 34.1	0.563 14.3										
25 15/16	4 1/4 108	1 3/16 30	3 17/64 83	15/32 12	1/2 13	45/64 18	1 19/32 40.2	1.500 38.1	0.626 15.9										
30 1	4 1/4 108	1 3/16 31	3 17/64 83	15/32 13	1/2 13	45/64 18	1 19/32 40.2	1.500 38.1	0.626 15.9										
30 1 1/8	4 1/4 108	1 7/32 31	3 17/64 83	33/64 13	1/2 13	45/64 18	1 19/32 40.2	1.500 38.1	0.626 15.9										
30 1 3/16	4 19/32 117	1 11/32 34	3 5/8 92	33/64 13	9/16 14	3/4 19	1 3/4 44.4	1.689 42.9	0.689 17.5										
30 1 1/4	4 19/32 117	1 11/32 34	3 5/8 92	33/64 13	9/16 14	3/4 19	1 3/4 44.4	1.689 42.9	0.689 17.5										
35 1 1/4	4 19/32 117	1 11/32 34	3 5/8 92	33/64 13	19/32 15	3/4 19	1 3/4 44.4	1.689 42.9	0.689 17.5										
35 1 5/16	5 1/8 130	1 1/2 38	4 1/64 102	33/64 13	9/16 14	53/64 21	2 1/32 51.2	1.937 49.2	0.748 19										
35 1 3/8	5 1/8 130	1 1/2 38	4 1/64 102	33/64 13	9/16 14	53/64 21	2 1/32 51.2	1.937 49.2	0.748 19										
35 1 7/16	5 1/8 130	1 1/2 38	4 1/64 102	33/64 13	9/16 14	53/64 21	2 1/32 51.2	1.937 49.2	0.748 19										
40 1 1/2	5 1/8 130	1 13/32 36	4 1/64 102	35/64 14	19/32 15	53/64 21	2 1/32 51.2	1.937 49.2	0.748 19										
40 1 9/16	5 13/32 137	1 9/16 40	4 9/64 105	19/32 15	9/16 14	55/64 22	2 1/16 52.2	1.937 49.2	0.748 19										
45 1 3/4	5 5/8 143	1 9/16 40	4 3/8 111	19/32 15	9/16 14	29/32 23	2 3/16 55.6	2.031 51.6	0.748 19										
50 1 15/16	6 3/8 162	1 23/32 44	5 1/8 130	21/32 16.5	25/32 20	1 1/32 26	2 11/32 59.4	2.189 55.6	0.874 22.2										
50 2	6 3/8 162	1 23/32 44	5 1/8 130	21/32 16.5	25/32 20	1 1/32 26	2 11/32 59.4	2.189 55.6	0.874 22.2										
55 2 1/8	6 3/8 162	1 11/16 43	5 1/8 130	43/64 17	23/32 18	63/64 25	2 5/16 58.4	2.189 55.6	0.874 22.2										
55 2 3/16	6 3/8 162	1 11/16 43	5 1/8 130	43/64 17	23/32 18	63/64 25	2 5/16 58.4	2.189 55.6	0.874 22.2										
55 2 3/16	6 7/8 175	1 15/16 49	5 5/8 143	21/32 16.5	25/32 20	1 9/64 29	2 23/32 68.7	2.563 65.1	1.000 25.4										
55 2 1/4	6 7/8 175	1 15/16 49	5 5/8 143	21/32 16.5	25/32 20	1 9/64 29	2 23/32 68.7	2.563 65.1	1.000 25.4										

Remarks 1. In Part No. of unit, fitting codes follow bore diameter numbers. (See Table 2.5 in P.11.)  
2. Part No. of applicable grease nipples are shown below.  
A-1/4-28UNF ..... 201~210, X05~X09  
A-R1/8 ..... 211~217, X10~X17

3. As for the triple-lip seal type product (from 201 to 205 are the double-lip seal type products), supplementary code L3 (L2) follows the Part No. of unit or bearing. (Example of Part No. : UCF206EJL3, UC206L3)  
4. For the dimensions and forms of applicable bearings, see the dimensional tables of insert bearing for unit.  
5. Housings of spheroidal graphite iron casting are also available.

Square-flanged type

**UCF-E**  
Cylindrical bore (with set screws)  
*d* 60 ~ 85 mm



Variations of tolerance of distance from mounting surface to center of spherical bore ( $\Delta_{A2s}$ ) and tolerance of position of bolt hole (X)

Housing No.		$\Delta_{A2s}$	X
F204E-F210E	FX05E-FX10E	$\pm 0.5$	0.7
F211E-F217E	FX11E-FX17E	$\pm 0.8$	1

Unit: mm

Variations of tolerance of bolt hole diameter ( $\Delta_{Ns}$ )

Housing No.		$\Delta_{Ns}$
F204E-F217E	FX05E-FX17E	$\pm 0.2$

Unit: mm

Shaft Dia. mm inch	Dimensions inch mm										Bolt Size inch	Unit No.	Housing No.	Bearing No.	Basic Load Ratings kN		Fatigue Load Limit kN	Factor $f_0$	Mass kg
	<i>d</i>	<i>L</i>	<i>A</i>	<i>J</i>	<i>N</i>	<i>A</i> <sub>1</sub>	<i>A</i> <sub>2</sub>	<i>A</i> <sub>0</sub>	<i>B</i>	<i>S</i>					<i>C</i> <sub>r</sub>	<i>C</i> <sub>0r</sub>			
60	2 1/4	6 7/8	1 7/8	5 5/8	43/64	23/32	1 9/64	2 23/32	2.563	1.000	5/8	UCF212-36E	F212E	UC212-36	52.4	36.2	1.65	14.4	4.2
	2 3/8	175	48	143	17	18	29	68.7	65.1	25.4		UCF212E		UC212					
	2 7/16	187	59	149	16.5	21	34	73.7	65.1	25.4	9/16	UCF212-38E	FX12E	UC212-38	57.2	40.1	1.82	14.4	5.7
	2 7/16	187	59	149	16.5	21	34	73.7	65.1	25.4	9/16	UCF212-39E		UC212-39					
65	2 1/2	7 3/8	1 31/32	5 55/64	43/64	7/8	1 3/16	2 3/4	2.563	1.000	5/8	UCF213-40E	F213E	UC213-40	57.2	40.1	1.82	14.4	5.2
	2 1/2	187	50	149	17	22	30	69.7	65.1	25.4		5/8		UCF213E					
70	2 3/4	7 3/4	2 3/8	5 63/64	25/32	7/8	1 29/64	3 7/32	3.063	1.331	11/16	UCFX13-40E	FX13E	UCX13-40	62.2	44.1	2.01	14.5	6.3
	2 3/4	197	60	152	20	22	37	81.5	77.8	33.3		11/16		UCFX13E					
75	2 15/16	7 3/4	2 11/16	5 63/64	25/32	15/16	1 9/16	3 17/32	3.252	1.311	11/16	UCFX14-44E	FX14E	UCX14-44	67.4	48.3	2.17	14.5	7.0
	3	197	68	152	20	24	40	89.3	82.6	33.3		11/16		UCFX14E					
80	3 1/8	8 3/16	2 9/32	6 1/2	3/4	7/8	1 11/32	3 9/32	3.252	1.311	11/16	UCFX15-47E	FX15E	UCX15-47	72.7	53.0	2.30	14.6	8.4
	3 1/8	208	58	165	19	22	34	83.3	82.6	33.3		11/16		UCFX15E					
	—	3 1/8	214	70	171	20	24	40	91.6	85.7	34.1	11/16	UCFX15-48E	FX16E	UCX15-48	72.7	53.0	2.30	14.6
—	3 1/8	214	70	171	20	24	40	91.6	85.7	34.1	11/16	UCFX16E	UCX16						
85	3 1/4	8 21/32	2 15/32	6 57/64	3/4	15/16	1 13/32	3 7/16	3.374	1.343	11/16	UCF216-50E	F216E	UC216-50	84.0	61.9	2.60	14.5	9.4
	3 1/4	220	63	175	19	24	36	87.6	85.7	34.1		11/16		UCF216E					
	3 7/16	214	70	171	20	24	40	96.3	96	39.7	11/16	UCFX17E	FX17E	UCX17	96.1	71.5	2.91	14.5	10.8
3 7/16	214	70	171	20	24	40	96.3	96	39.7	11/16	UCFX17-55E	UCX17-55							

Remarks 1. In Part No. of unit, fitting codes follow bore diameter numbers. (See Table 2.5 in P.11.)

2. Part No. of applicable grease nipples are shown below.

A-1/4-28UNF ..... 201~210, X05~X09

A-R1/8 ..... 211~217, X10~X17

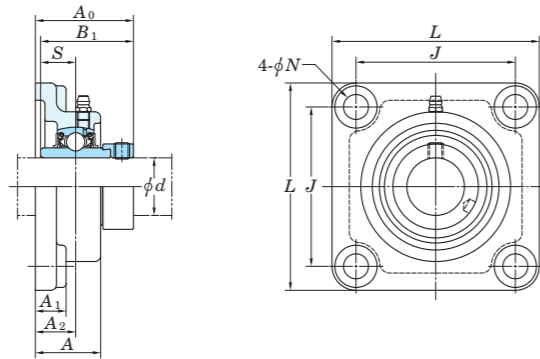
3. As for the triple-lip seal type product (from 201 to 205 are the double-lip seal type products), supplementary code L3 (L2) follows the Part No. of unit or bearing. (Example of Part No. : UCF206EJL3, UC206L3)

4. For the dimensions and forms of applicable bearings, see the dimensional tables of insert bearing for unit.

5. Housings of spheroidal graphite iron casting are also available.

Square-flanged type

**NANF**  
Cylindrical bore  
(with eccentric locking collar)  
*d* 12 ~ 60 mm



Variations of tolerance of distance from mounting surface to center of spherical bore ( $\Delta A_{2s}$ ) and tolerance of position of bolt hole (*X*)

Housing No.	$\Delta A_{2s}$	<i>X</i>
NF204-NF210	$\pm 0.5$	0.7
NF211-NF212	$\pm 0.8$	1

Variations of tolerance of bolt hole diameter ( $\Delta N_s$ )

Housing No.	$\Delta N_s$
NF204-NF212	$\pm 0.2$

Shaft Dia mm inch <i>d</i>	Dimensions inch mm										Bolt Size inch	Unit No.	Housing No.	Bearing No.	Basic Load Ratings kN		Fatigue Load Limit kN <i>C<sub>u</sub></i>	Factor <i>f<sub>0</sub></i>	Mass kg
	<i>L</i>	<i>A</i>	<i>J</i>	<i>N</i>	<i>A<sub>1</sub></i>	<i>A<sub>2</sub></i>	<i>A<sub>0</sub></i>	<i>B<sub>1</sub></i>	<i>S</i>	<i>C<sub>r</sub></i>					<i>C<sub>0r</sub></i>				
12 15 17 20	$3 \frac{3}{8}$ 86	$1 \frac{5}{32}$ 29.5	$2 \frac{33}{64}$ 64	$\frac{7}{16}$ 11	$\frac{19}{32}$ 15	$\frac{3}{4}$ 19	$1 \frac{25}{32}$ 45.6	1.720 43.7	0.673 17.1	$\frac{3}{8}$	NANF201 NANF201-8 NANF202 NANF202-10 NANF203 NANF204-12 NANF204	NF204	NA201 NA201-8 NA202 NA202-10 NA203 NA204-12 NA204	12.8	6.65	0.302	13.2	0.73	
25	$3 \frac{3}{4}$ 95	$1 \frac{7}{32}$ 31	$2 \frac{3}{4}$ 70	$\frac{15}{32}$ 12	$\frac{19}{32}$ 15	$\frac{25}{32}$ 20	$1 \frac{27}{32}$ 46.9	1.748 44.4	0.689 17.5	$\frac{7}{16}$	NANF205-14 NANF205-15 NANF205 NANF205-16	NF205	NA205-14 NA205-15 NA205 NA205-16	14.0	7.85	0.357	13.9	0.95	
30	$4 \frac{1}{4}$ 108	$1 \frac{11}{32}$ 34	$3 \frac{17}{64}$ 83	$\frac{33}{64}$ 13	$\frac{5}{8}$ 16	$\frac{53}{64}$ 21	2 51.1	1.906 48.4	0.720 18.3	$\frac{7}{16}$	NANF206-18 NANF206 NANF206-19 NANF206-20	NF206	NA206-18 NA206 NA206-19 NA206-20	19.5	11.3	0.514	13.9	1.4	
35	$4 \frac{19}{32}$ 117	$1 \frac{7}{16}$ 36.5	$3 \frac{5}{8}$ 92	$\frac{33}{64}$ 13	$\frac{21}{32}$ 17	$\frac{27}{32}$ 21.5	$2 \frac{1}{8}$ 53.8	2.012 51.1	0.740 18.8	$\frac{7}{16}$	NANF207-20 NANF207-21 NANF207-22 NANF207 NANF207-23	NF207	NA207-20 NA207-21 NA207-22 NA207 NA207-23	25.7	15.4	0.700	13.9	1.8	
40	$5 \frac{1}{8}$ 130	$1 \frac{17}{32}$ 39	$4 \frac{1}{64}$ 102	$\frac{35}{64}$ 14	$\frac{21}{32}$ 17	$\frac{15}{16}$ 24	$2 \frac{5}{16}$ 58.9	2.217 56.3	0.843 21.4	$\frac{1}{2}$	NANF208-24 NANF208-25 NANF208	NF208	NA208-24 NA208-25 NA208	29.1	17.8	0.809	14.0	2.2	
45	$5 \frac{13}{32}$ 137	$1 \frac{9}{16}$ 40	$4 \frac{9}{64}$ 105	$\frac{5}{8}$ 16	$\frac{23}{32}$ 18	$\frac{15}{16}$ 24	$2 \frac{5}{16}$ 58.9	2.217 56.3	0.843 21.4	$\frac{9}{16}$	NANF209-26 NANF209-27 NANF209-28 NANF209	NF209	NA209-26 NA209-27 NA209-28 NA209	34.1	21.3	0.968	14.0	2.6	
50	$5 \frac{5}{8}$ 143	$1 \frac{27}{32}$ 46.5	$4 \frac{3}{8}$ 111	$\frac{43}{64}$ 17	$\frac{25}{32}$ 20	$1 \frac{1}{8}$ 28.5	$2 \frac{5}{8}$ 66.6	2.469 62.7	0.969 24.6	$\frac{9}{16}$	NANF210-30 NANF210-31 NANF210 NANF210-32	NF210	NA210-30 NA210-31 NA210 NA210-32	35.1	23.3	1.06	14.4	3.0	
55	$6 \frac{3}{8}$ 162	$1 \frac{31}{32}$ 50	$5 \frac{1}{8}$ 130	$\frac{43}{64}$ 17	$\frac{13}{16}$ 21	$1 \frac{17}{64}$ 32	$2 \frac{31}{32}$ 75.6	2.811 71.4	1.094 27.8	$\frac{5}{8}$	NANF211-32 NANF211-34 NANF211 NANF211-35	NF211	NA211-32 NA211-34 NA211 NA211-35	43.4	29.4	1.34	14.4	4.1	
60	$6 \frac{7}{8}$ 175	$2 \frac{5}{32}$ 55	$5 \frac{5}{8}$ 143	$\frac{43}{64}$ 17	$\frac{13}{16}$ 21	$1 \frac{27}{64}$ 36	$3 \frac{1}{4}$ 82.8	3.063 77.8	1.220 31	$\frac{5}{8}$	NANF212-36 NANF212 NANF212-38 NANF212-39	NF212	NA212-36 NA212 NA212-38 NA212-39	52.4	36.2	1.65	14.4	4.9	

Remarks 1. In Part No. of unit and units with covers, fitting codes follow bore diameter numbers. (See Table 2.5 in P.11.)

2. Part No. of applicable grease nipples are shown below.

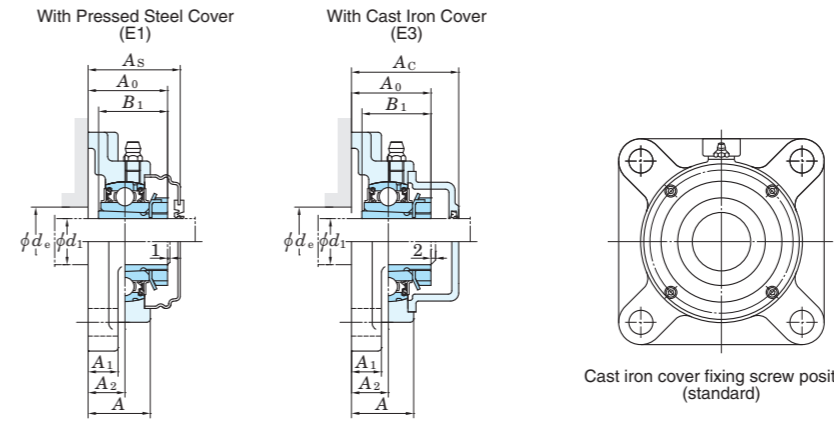
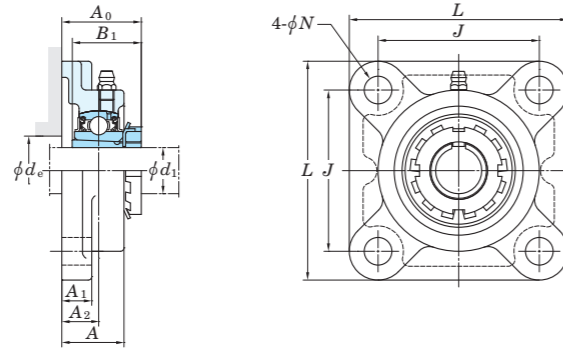
A-1/4-28UNF ..... 201~210  
A-R1/8 ..... 211~212

3. For the dimensions and forms of applicable bearings, see the dimensional tables of insert bearing for unit.

4. Housings of spheroidal graphite iron casting are also available.

Square-flanged type

UKF  
Tapered bore (with adapter)  
d<sub>1</sub> 20 ~ (50) mm



Variations of tolerance of distance from mounting surface to center of spherical bore ( $\Delta A_{2s}$ ) and tolerance of position of bolt hole (X)  
Unit: mm

Housing No.			$\Delta A_{2s}$	X
F205-F210	FX05-FX10	F305-F310	$\pm 0.5$	0.7
F211-F218	FX11-FX20	F311-F328	$\pm 0.8$	1

Variations of tolerance of bolt hole diameter ( $\Delta N_s$ )  
Unit: mm

Housing No.			$\Delta N_s$
F205-F218	FX05-FX18	F305-F315	$\pm 0.2$
	FX20	F316-F328	$\pm 0.3$

Shaft Dia. mm inch	Dimensions inch mm										Bolt Size inch mm	Standard			Adapter Assembly No.	Mass kg	Basic Load Ratings kN		Fatigue Load Limit kN	Factor f <sub>0</sub>	With Pressed Steel Cover			With Cast Iron Cover												
	d <sub>1</sub>	L	A	J	N	A <sub>1</sub>	A <sub>2</sub>	A <sub>0</sub>	B <sub>1</sub>	d <sub>e</sub> (min.)		Unit No.	Housing No.	Bearing No.			Unit No.	Dimension mm inch			Mass kg	Open End Type	Closed End Type	Unit No.	Dimension mm inch	Mass kg										
20	3/4	3 3/4	1 1/16	2 3/4	15/32	1/2	5/8	1 13/32	1 3/8	1 3/16	3/8	UKF205	F205	UK205	HE2305X H2305X	0.87 0.87	14.0	7.85	0.357	13.9	-	-	-	-	-	-	-	-	-	-	-	-	-			
	3/4	4 1/4	1 3/16	3 17/64	15/32	1/2	45/64	1 9/16	1 3/8	1 3/16	3/8	UKFX05	FX05	UKX05	HE2305X H2305X	1.2 1.2	19.5	11.3	0.514	13.9	-	-	-	-	-	-	-	-	-	-	-	-	-			
	3/4	4 11/32	1 5/32	3 5/32	5/8	1/2	5/8	1 15/32	1 3/8	-	1/2	UKF305	F305	UK305	HE2305X H2305X	1.4 1.4	21.2	10.9	0.495	12.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
25	1	4 1/4	1 7/32	3 17/64	15/32	1/2	45/64	1 9/16	1 1/2	1 13/32	3/8	UKF206	F206	UK206	H2306X HE2306X	1.3 1.3	19.5	11.3	0.514	13.9	UKF206C	UKF206D	44.5	1 3/4	1.3	UKF206FC	UKF206FD	53	2 3/32	1.6	-	-	-			
	1	4 19/32	1 11/32	3 5/8	5/8	9/16	3/4	1 21/32	1 1/2	1 13/32	1/2	UKFX06	FX06	UKX06	H2306X HE2306X	1.6 1.6	25.7	15.4	0.700	13.9	UKFX06C	UKFX06D	49	1 15/16	1.6	-	-	-	-	-	-	-	-	-		
	1	4 29/32	1 1/4	3 47/64	5/8	19/32	45/64	1 5/8	1 1/2	-	1/2	UKF306	F306	UK306	H2306X HE2306X	1.9 1.9	26.7	15.0	0.682	13.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
30	1 1/8	4 19/32	1 11/32	3 5/8	35/64	19/32	3/4	1 11/16	1 11/16	1 5/8	7/16	UKF207	F207	UK207	HS2307X H2307X	1.6 1.6	25.7	15.4	0.700	13.9	UKF207C	UKF207D	49	1 15/16	1.6	UKF207FC	UKF207FD	58	2 9/32	2.0	-	-	-			
	1 1/8	5 1/8	1 1/2	4 1/64	5/8	9/16	53/64	1 27/32	1 11/16	1 5/8	1/2	UKFX07	FX07	UKX07	HS2307X H2307X	2.0 2.0	29.1	17.8	0.809	14.0	UKFX07C	UKFX07D	55.5	2 3/16	2.0	-	-	-	-	-	-	-	-	-		
	1 1/8	5 5/16	1 13/32	3 15/16	3/4	5/8	25/32	1 25/32	1 11/16	-	5/8	UKF307	F307	UK307	HS2307X H2307X	2.3 2.3	33.4	19.3	0.877	13.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
35	1 1/4	5 1/8	1 13/32	4 1/64	5/8	19/32	53/64	1 7/8	1 13/16	1 13/16	1/2	UKF208	F208	UK208	HE2308X HS2308X H2308X	1.9 1.9 1.9	29.1	17.8	0.809	14.0	UKF208C	UKF208D	55.5	2 3/16	1.9	UKF208FC	UKF208FD	64	2 17/32	2.3	-	-	-	-	-	-
	1 1/4	5 13/32	1 9/16	4 9/64	3/4	9/16	55/64	1 31/32	1 13/16	1 13/16	5/8	UKFX08	FX08	UKX08	HE2308X HS2308X H2308X	2.3 2.3 2.3	34.1	21.3	0.968	14.0	UKFX08C	UKFX08D	56.5	2 7/32	2.3	-	-	-	-	-	-	-	-	-	-	-
	1 3/8	5 29/32	1 9/16	4 13/32	3/4	21/32	29/32	2	1 13/16	-	5/8	UKF308	F308	UK308	HE2308X HS2308X H2308X	3.1 3.1 3.1	40.7	24.0	1.09	13.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
40	1 1/2	5 13/32	1 1/2	4 9/64	5/8	5/8	55/64	2	1 31/32	2 1/16	1/2	UKF209	F209	UK209	HE2309X H2309X	2.3 2.3	34.1	21.3	0.968	14.0	UKF209C	UKF209D	56.5	2 7/32	2.3	UKF209FC	UKF209FD	66	2 19/32	2.8	-	-	-	-	-	
	1 1/2	5 5/8	1 9/16	4 3/8	3/4	9/16	29/32	2 1/16	1 31/32	2 1/16	5/8	UKFX09	FX09	UKX09	HE2309X H2309X	2.7 2.7	35.1	23.3	1.06	14.4	UKFX09C	UKFX09D	60	2 3/8	2.7	-	-	-	-	-	-	-	-	-		
	1 1/2	6 5/16	1 23/32	4 59/64	3/4	23/32	63/64	2 5/32	1 31/32	-	5/8	UKF309	F309	UK309	HE2309X H2309X	4.1 4.1	48.9	29.5	1.34	13.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
45	1 3/4	5 5/8	1 9/16	4 3/8	5/8	5/8	55/64	2 1/16	2 5/32	2 9/32	1/2	UKF210	F210	UK210	HE2310X H2310X	2.6 2.6	35.1	23.3	1.06	14.4	UKF210C	UKF210D	59	2 5/16	2.6	UKF210FC	UKF210FD	70.5	2 25/32	3.1	-	-	-	-	-	
	1 3/4	6 3/8	1 23/32	5 1/8	3/4	25/32	1 1/32	2 9/32	2 5/32	2 9/32	5/8	UKFX10	FX10	UKX10	HE2310X H2310X	3.6 3.6	43.4	29.4	1.34	14.4	UKFX10C	UKFX10D	64	2 17/32	3.6	-	-	-	-	-	-	-	-	-		
	1 3/4	6 7/8	1 7/8	5 13/64	29/32	3/4	1 7/64	2 3/8	2 5/32	-	3/4	UKF310	F310	UK310	HE2310X H2310X	5.1 5.1	62.0	38.3	1.74	13.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
50	1 7/8	6 3/8	1 11/16	5 1/8	3/4	23/32	63/64	2 1/4	2 5/16	2 17/32	5/8	UKF211	F211	UK211	HS2311X H2311X HE2311X	3.5 3.5 3.5	43.4	29.4	1.34	14.4	UKF211C	UKF211D	63	2 15/32	3.5	UKF211FC	UKF211FD	74.5	2 15/16	4.1	-	-	-	-	-	
	2	6 7/8	1 15/16	5 5/8	3/4	25/32	1 9/64	2 17/32	2 5/16	2 17/32	5/8	UKFX11	FX11	UKX11	HS2311X H2311X HE2311X	4.6 4.6 4.6	52.4	36.2	1.65	14.4	UKFX11C	UKFX11D	73.5	2 29/32	4.6	-	-	-	-	-	-	-	-	-		
	2	175	49	143	19	20	29	64.5	59	64	M16																									

Remarks 1. In Part No. of unit and units with covers, fitting codes follow bore diameter numbers. (See Table 2.5 in P.11.)

2. Part No. of applicable grease nipples are shown below.

A-1/4-28UNF..... 205-210, X05-X09, 305-308

A-R1/8..... 211-218, X10-X20, 309-328

3. In Part No. of unit with adapters and bearing with adapters, Part No. of applicable adapter follow the Part No. shown in the dimensional tables.

(Example of Part No. : UKF206J + H2306X, UK206 + H2306X)

4. As for the triple-lip seal type product (205 is the double-lip seal type product), supplementary code L3 (L2) follows the Part No. of unit or bearing.

(Example of Part No. : UKF206JL3 + H2306X, UK206L3 + H2306X)

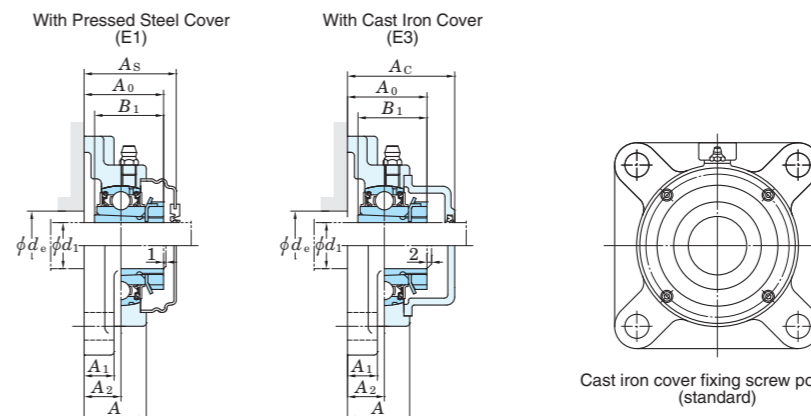
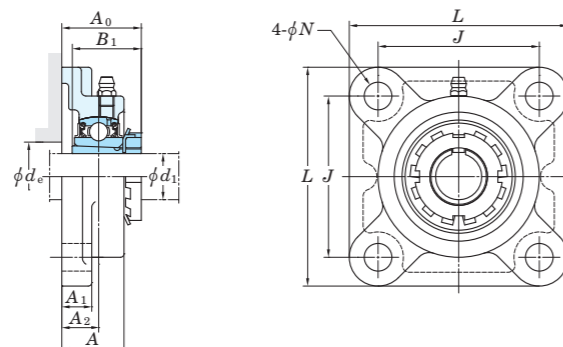
5. For the dimensions and forms of applicable bearings and adapters, see the dimensional tables of insert bearing for unit and adapter assemblies.

6. Housings of spheroidal graphite iron casting are also available.



Square-flanged type

UKF  
Tapered bore (with adapter)  
d<sub>1</sub> (50) ~ (90) mm



Variations of tolerance of distance from mounting surface to center of spherical bore ( $\Delta_{A2s}$ ) and tolerance of position of bolt hole (X)

Housing No.	$\Delta_{A2s}$	X
F205-F210	±0.5	0.7
F211-F218	±0.8	1

Variations of tolerance of bolt hole diameter ( $\Delta_{Ns}$ )

Housing No.	$\Delta_{Ns}$
F205-F218	±0.2
FX20	±0.3

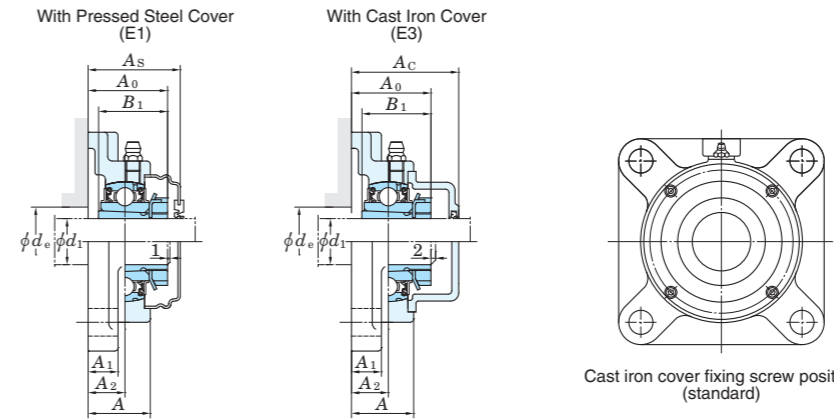
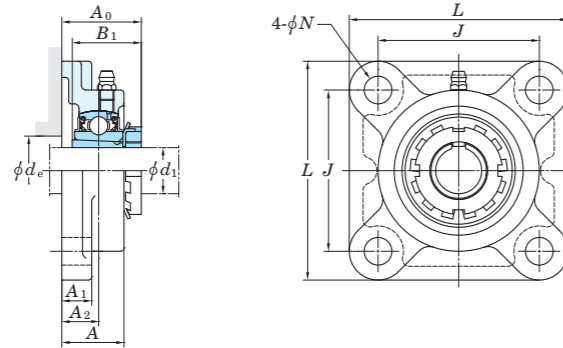
Shaft Dia. mm inch	Dimensions										Bolt Size	Standard			Adapter Assembly No.	Mass	Basic		Fatigue Load Limit	Factor	With Pressed Steel Cover				With Cast Iron Cover						
	d <sub>1</sub>	L	A	J	N	A <sub>1</sub>	A <sub>2</sub>	A <sub>0</sub>	B <sub>1</sub>	d <sub>e</sub> (min.)		inch mm	Unit No.	Housing No.			Bearing No.	Unit No.			Mass	Load Ratings kN	C <sub>r</sub>	C <sub>0r</sub>	C <sub>u</sub>	f <sub>0</sub>	Open End Type	Closed End Type	Dimension mm inch	Mass	Open End Type
50 1 7/8	2	7 9/32	2 1/16	5 33/64	29/32	25/32	1 3/16	2 17/32	2 5/16	-	3/4	UKF311	F311	UK311	HS2311X	5.9	71.6	45.0	2.05	13.2	-	-	-	-	-	-	-	-	-	-	-
	2	185	52	140	23	20	30	64	59	-	M20	UKF212	F212	UK212	H2311X	5.9	71.6	45.0	2.05	13.2	-	-	-	-	UKF311C	UKF311D	87	3 7/16	6.8		
	2	185	52	140	23	20	30	64	59	-	M20	HE2311X	5.9	71.6	45.0	2.05	13.2	-	-	-	-	-	-	-	-	-	-	-	-	-	
55 2 1/8	2	6 7/8	1 7/8	5 5/8	3/4	23/32	1 9/64	2 19/32	2 7/16	2 23/32	5/8	UKF212	F212	UK212	HS2312X	4.1	52.4	36.2	1.65	14.4	UKF212C	UKF212D	73.5	2 29/32	4.1	UKF212FC	UKF212FD	86	3 3/8	4.9	
	2	175	48	143	19	18	29	65.5	62	69	M16	UKFX12	FX12	UKX12	H2312X	4.1	52.4	36.2	1.65	14.4	UKFX12C	UKFX12D	78.5	3 3/32	5.5	-	-	-	-	-	
	2	187	59	149	19	21	34	65	62	69	M16	UKF312	F312	UK312	HS2312X	5.5	57.2	40.1	1.82	14.4	-	-	-	-	-	-	-	-	-	-	-
60 2 3/8	2	7 11/16	2 7/32	5 29/32	29/32	7/8	1 19/64	2 3/4	2 7/16	-	3/4	UKF312	F312	UK312	HS2312X	6.8	81.9	52.2	2.37	13.2	-	-	-	-	-	-	-	-	-	-	-
	2	195	56	150	23	22	33	69.5	62	-	M20	UKF213	F213	UK213	H2312X	6.8	81.9	52.2	2.37	13.2	-	-	-	-	-	-	-	-	-	-	-
	2	195	56	150	23	22	33	69.5	62	-	M20	HE2313X	5.1	57.2	40.1	1.82	14.4	UKF213C	UKF213D	74.5	2 15/16	5.1	UKF213FC	UKF213FD	87	3 7/16	6.0				
60 2 3/8	2	7 3/8	2 5/16	5 55/64	3/4	13/16	1 11/32	2 11/16	2 9/16	2 29/32	5/8	UKFX13	FX13	UKX13	HE2313X	6.0	62.2	44.1	2.01	14.5	UKFX13C	UKFX13D	83.5	3 9/32	6.0	-	-	-	-	-	
	2	187	59	149	19	21	34	68	65	74	M16	UKF313	F313	UK313	H2313X	6.0	62.2	44.1	2.01	14.5	-	-	-	-	-	-	-	-	-	-	
	2	187	59	149	19	21	34	68	65	74	M16	HS2313X	6.0	62.2	44.1	2.01	14.5	-	-	-	-	-	-	-	-	-	-	-	-		
65 2 1/2	2	8 3/16	2 9/32	6 17/32	29/32	7/8	1 19/64	2 19/16	2 9/16	-	3/4	UKF313	F313	UK313	HE2313X	7.9	92.7	59.9	2.68	13.2	-	-	-	-	-	-	-	-	-	-	-
	2	208	58	166	23	22	33	71.5	65	-	M20	UKF215	F215	UK215	H2313X	7.9	92.7	59.9	2.68	13.2	UKF215C	UKF215D	83.5	3 9/32	6.5	UKF215FC	UKF215FD	96	3 25/32	7.5	
	2	208	58	166	23	22	33	71.5	65	-	M20	UKFX15	FX15	UKX15	H2315X	6.5	67.4	48.3	2.17	14.5	UKFX15C	UKFX15D	94.5	3 23/32	8.1	-	-	-	-	-	
70 2 3/4	2	7 7/8	2 7/32	6 17/64	3/4	7/8	1 11/32	2 15/16	2 7/8	3 11/32	5/8	UKF215	F215	UK215	HE2315X	6.5	67.4	48.3	2.17	14.5	-	-	-	-	-	-	-	-	-	-	
	2	200	56	159	19	22	34	74.5	73	85	M16	UKF315	F315	UK315	H2315X	6.5	67.4	48.3	2.17	14.5	-	-	-	-	-	-	-	-	-		
	2	197	68	152	23	24	40	76	73	85	M20	UKFX15	FX15	UKX15	HE2315X	8.1	72.7	53.0	2.30	14.6	UKFX15C	UKFX15D	94.5	3 23/32	8.1	-	-	-	-	-	
75 3	2	9 9/32	2 19/32	7 1/4	63/64	31/32	1 17/32	3 7/32	2 7/8	-	7/8	UKF315	F315	UK315	H2315X	11.7	113	77.2	3.24	13.2	-	-	-	-	-	-	-	-	-	-	
	2	236	66	184	25	25	39	81.5	73	-	M22	UKF216	F216	UK216	HE2315X	11.7	113	77.2	3.24	13.2	-	-	-	-	-	-	-	-	-	-	
	2	236	66	184	25	25	39	81.5	73	-	M22	UKFX16	FX16	UKX16	H2315X	11.7	113	77.2	3.24	13.2	UKFX16C	UKFX16D	106	4 3/16	13.1	-	-	-	-	-	
75 3	2	8 3/16	2 9/32	6 1/2	29/32	7/8	1 11/32	3 3/32	3 1/16	3 17/32	3/4	UKF216	F216	UK216	HE2316X	7.6	72.7	53.0	2.30	14.6	UKF216C	UKF216D	88.5	3 15/32	7.6	UKF216FC	UKF216FD	103	4 1/16	8.9	
	2	208	58	165	23	22	34	78.5	78	90	M20	UKFX16	FX16	UKX16	H2316X	7.6	72.7	53.0	2.30	14.6	UKFX16C	UKFX16D	96.5	3 25/32	9.5	-	-	-	-	-	
	2	214	70	171	23	24	40	79	78	90	M20	UKF316	F316	UK316	HE2316X	9.5	84.0	61.9	2.60	14.5	-	-	-	-	-	-	-	-	-		
80 3	2	9 27/32	2 11/16	7 23/32	1 7/32	1 1/16	1 1/2	3 1/4	3 1/16	-	1	UKF316	F316	UK316	HE2316X	12.9	123	86.7	3.53	13.3	-	-	-	-	-	-	-	-	-		
	2	250	68	196	31	27	38	82.5	78	-	M27	UKF217	F217	UK217	H2316X	12.9	123	86.7	3.53	13.3	-	-	-	-	-	-	-	-	-		
	2	250	68	196	31	27	38	82.5	78	-	M27	UKFX17	FX17	UKX17	H2317X	12.9	123	86.7	3.53	13.3	UKFX17C	UKFX17D	107	4 7/32	14.5	-	-	-	-	-	
80 3	2	8 21/32	2 15/32	6 57/64	29/32	15/16	1 13/32	3 1/4	3 7/32	3 25/32	3/4	UKF217	F217	UK217	H2317X	9.0	84.0	61.9	2.60	14.5	UKF217C	UKF217D	92.5	3 21/32	9.0	UKF217FC	UKF217FD	107	4 7/32	10.4	
	3	220	63	175	23	24	36	82.5	82	96	M20	UKFX17	FX17	UKX17	HE2317X	9.0	84.0	61.9	2.60	14.5	UKFX17C	UKFX17D	101.5	4	10.4	-	-	-	-	-	
	3	214	70	171	23	24	40	82	82	96	M20	UKF317	F317	UK317	H2317X	10.4	96.1	71.5	2.91	14.5	-	-	-	-	-	-	-	-	-		
85 3 1/4	3	10 1/4	2 29/32	8 1/32	1 7/32	1 1/16	1 47/64	3 5/8	3 7/32	-	1	UKF317	F317	UK317	HE2317X	15.2	133	96.8	3.82	13.3	-	-	-	-	-	-	-	-	-	-	
	3	260	74	204	31	27	44	92	82	-	M27	UKF218	F218	UK218	H2317X	15.2	133	96.8	3.82	13.3	-	-	-	-	-	-	-	-	-	-	
	3	260	74	204	31	27	44	92	82	-	M27	UKFX18	FX18	UKX18	H2318X	11.4	109	81.9	3.23	14.4	UKFX18C	UKFX18D	124	4 7/8	13.3	-	-	-	-	-	
90 3 1/2	3	9 1/4	2 11/16	7 23/64	29/32	31/32	1 9/16	3 17/32	3 3/8	4 1/32	3/4	UKF218	F218	UK218	H2318X	11.4	96.1	71.5	2.91	14.5	UKF218C	UKF218D	101.5	4	11.4	UKF218FC	UKF218FD	116	4 9/16	13.0	
	3	235	68	187	23	25	40	89.5	86	102	M20	UKFX18	FX18	UKX18	H2318X	11.4	96.1	71.5	2.91	14.5	-	-	-	-	-	-	-	-	-		
	3	235	68	187	23	25	40	89.5	86	102	M20	UKF318	F318	UK318	H2318X	11.4	96.1	71.5	2.91	14.5	UKF318C	UKF318D	119	4 11/16	21.1	-	-	-	-	-	
90 3 1/2	3	11 13/32	3 11/16	8 31/32	1 3/8	1 3/16	2 21/64	4 3/8	3 17/32	-	1 1/8	UKF319	F319	UK319	HE2319X	21.9	153	119	4.45	13.3	-	-	-	-	-	-	-	-	-		
	3	290	94	228	35	30	59	111	90	-	M30	UKFX20	FX20	UKX20	H2319X	21.9	153	119	4.45	13.3	UKFX20C	UKFX20D	140	5 1/2	24.3	-	-	-	-		
90 3 1/2	3	10 9/16	3 13/16	8 5/16	1 7/32	1 3/32	2 21/64	4 3/16	3 13/16	4 13/32	1	UKF319	F319	UK319	HE2320X	18.4	133	105	3.91	14.4	-	-	-	-	-	-	-	-	-		
	3	268	97	211	31	28	59	106	97	112	M27	UKFX20	FX20	UKX20	H2320X	18.4	133	105	3.91	14.4	UKFX20C	UKFX20D	152	5 31/32	20.9	-	-	-	-		

Remarks 1. In Part No. of unit and units with covers, fitting codes follow bore diameter numbers. (See Table 2.5 in P.11.)

2. Part No. of applicable grease nipples are shown below.

Square-flanged type

**UKF**  
Tapered bore (with adapter)  
 $d_1$  (90) ~ 125 mm



Variations of tolerance of distance from mounting surface to center of spherical bore ( $\Delta A_{2s}$ ) and tolerance of position of bolt hole (X)  
Unit: mm

Housing No.			$\Delta A_{2s}$	X
F205-F210	FX05-FX10	F305-F310	$\pm 0.5$	0.7
F211-F218	FX11-FX20	F311-F328	$\pm 0.8$	1

Variations of tolerance of bolt hole diameter ( $\Delta N_s$ )  
Unit: mm

Housing No.			$\Delta N_s$
F205-F218	FX05-FX18	F305-F315	$\pm 0.2$
	FX20	F316-F328	$\pm 0.3$

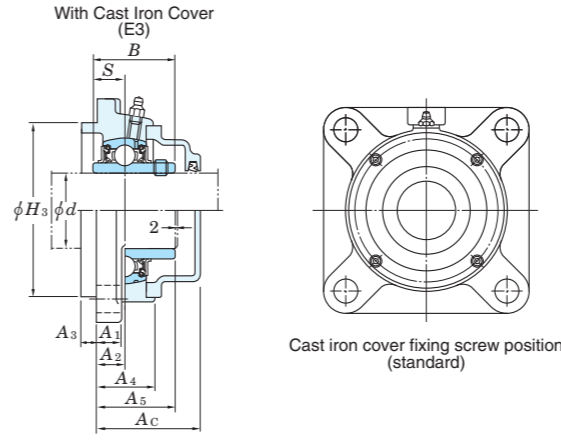
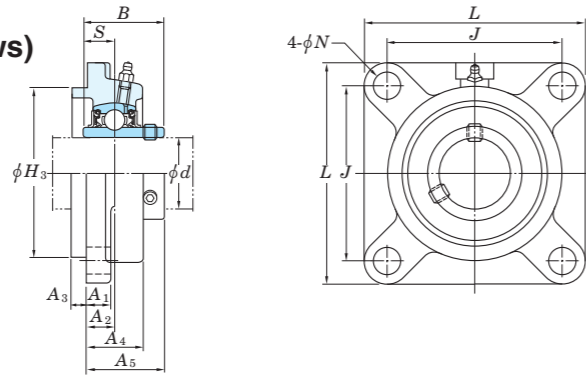
Shaft Dia. mm inch $d_1$	Dimensions inch mm										Bolt Size inch mm	Standard			Basic Load Ratings kN $C_r$ $C_{0r}$	Fatigue Load Limit kN $C_u$	Factor $f_0$	With Pressed Steel Cover			With Cast Iron Cover								
	L	A	J	N	A <sub>1</sub>	A <sub>2</sub>	A <sub>0</sub>	B <sub>1</sub>	$d_e$ (min.)	Unit No.		Housing No.	Bearing No.	Adapter Assembly No.				Mass kg	Unit No.		Dimension mm inch A <sub>s</sub>	Mass kg	Unit No.		Dimension mm inch A <sub>c</sub>	Mass kg			
																			Open End Type	Closed End Type			Open End Type	Closed End Type					
90 3 1/2	12 7/32	3 11/16	9 17/32	1 1/2	1 1/4	2 21/64	4 7/16	3 13/16	-	1 1/4	UKF320	F320	UK320	HE2320X H2320X	25.4 25.4	173	141	5.08	13.2	-	-	-	-	-	-	-	-	-	-
	310	94	242	38	32	59	113	97	-	M33										UKF320C	UKF320D	146	5 3/4	28.5					
100 4	13 3/8	3 25/32	10 15/32	1 39/64	1 3/8	2 23/64	4 23/32	4 1/8	-	1 3/8	UKF322	F322	UK322	H2322X HE2322X	35.2 35.2	205	180	6.15	13.2	-	-	-	-	-	-	-	-	-	-
	340	96	266	41	35	60	120	105	-	M36										UKF322C	UKF322D	154	6 1/16	38.7					
110 -	14 9/16	4 11/32	11 27/64	1 39/64	1 9/16	2 9/16	5 1/8	4 13/32	-	1 3/8	UKF324	F324	UK324	H2324	47.6	207	185	6.10	13.5	-	-	-	-	-	-	-	-	-	-
	370	110	290	41	40	65	130.5	112	-	M36										UKF324C	UKF324D	163	6 13/32	52.7					
115 4 1/2	16 5/32	4 17/32	12 19/32	1 39/64	1 25/32	2 9/16	5 3/16	4 3/4	-	1 3/8	UKF326	F326	UK326	HE2326 H2326	65.3 65.3	229	214	6.79	13.6	-	-	-	-	-	-	-	-	-	-
	410	115	320	41	45	65	131.5	121	-	M36										UKF326C	UKF326D	172	6 25/32	71.9					
125 -	17 23/32	4 29/32	13 25/32	1 39/64	2 5/32	2 61/64	5 13/16	5 5/32	-	1 3/8	UKF328	F328	UK328	H2328	74.9	253	246	7.54	13.6	-	-	-	-	-	-	-	-	-	-
	450	125	350	41	55	75	147.5	131	-	M36										UKF328C	UKF328D	186	7 5/16	83.5					

Remarks 1. In Part No. of unit and units with covers, fitting codes follow bore diameter numbers. (See Table 2.5 in P.11.)  
2. Part No. of applicable grease nipples are shown below.  
A-1/4-28UNF ..... 205~210, X05~X09, 305~308  
A-R1/8 ..... 211~218, X10~X20, 309~328

3. In Part No. of unit with adapters and bearing with adapters, Part No. of applicable adapter follow the Part No. shown in the dimensional tables.  
(Example of Part No. : UKF206J + H2306X, UK206 + H2306X)  
4. As for the triple-lip seal type product (205 is the double-lip seal type product), supplementary code L3 (L2) follows the Part No. of unit or bearing.  
(Example of Part No. : UKF206JL3 + H2306X, UK206L3 + H2306X)  
5. For the dimensions and forms of applicable bearings and adapters, see the dimensional tables of insert bearing for unit and adapter assemblies.  
6. Housings of spheroidal graphite iron casting are also available.

Square-flanged type with spigot joint

UCFS  
Cylindrical bore (with set screws)  
*d* 25 ~ 140 mm



Variations of tolerance of spigot joint outside diameter ( $\Delta H_{3s}$ ), variations of tolerance of distance from mounting surface to center of spherical bore ( $\Delta A_{2s}$ ), tolerance of position of bolt hole (X), and tolerance of circumferential runout of spigot joint (Y)

Housing No.	$\Delta H_{3s}$	$\Delta A_{2s}$	X	Y
FS305	0 -0.046	±0.5	0.7	0.2
FS306-FS308	0 -0.054			
FS309-FS310	0 -0.063			
FS311-FS313	0 -0.072	±0.8	1	0.3
FS314-FS319	0 -0.081			~FS318 FS319-
FS320-FS322	0 -0.089			0.4
FS324-FS328	0 -0.099			

Unit: mm

Housing No.	$\Delta N_s$
FS305-FS315	±0.2
FS316-FS328	±0.3

Unit: mm

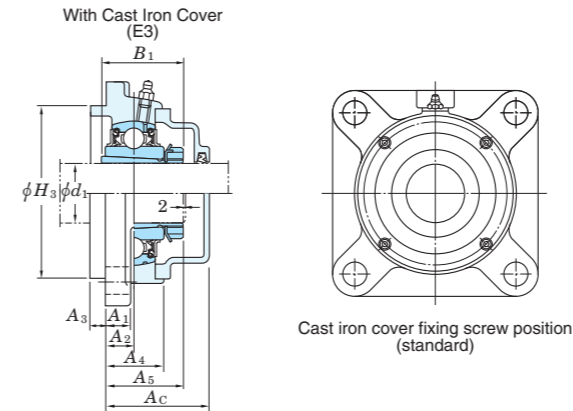
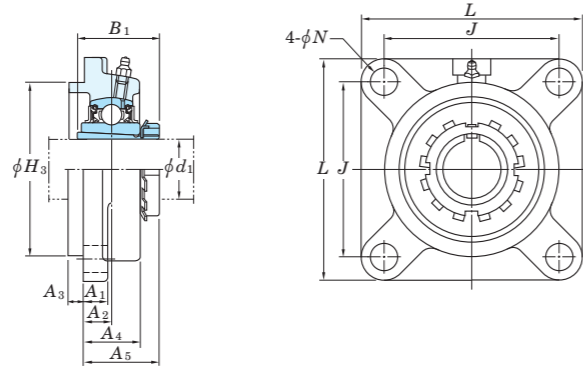
Shaft Dia. mm inch <i>d</i>	Dimensions												Bolt Size inch mm	Standard			Mass kg	Basic Load Ratings kN		Fatigue Load Limit kN <i>C<sub>u</sub></i>	Factor <i>f<sub>0</sub></i>	With Cast Iron Cover			
	<i>L</i>	<i>H<sub>3</sub></i>	<i>J</i>	<i>N</i>	<i>A<sub>1</sub></i>	<i>A<sub>2</sub></i>	<i>A<sub>3</sub></i>	<i>A<sub>4</sub></i>	<i>A<sub>5</sub></i>	<i>B</i>	<i>S</i>	Unit No.		Housing No.	Bearing No.	<i>C<sub>r</sub></i>		<i>C<sub>0r</sub></i>	Unit No.			Dimension mm inch <i>A<sub>c</sub></i>	Mass kg		
25 1	4 11/32	3.1496	3 5/32	5/8	1/2	23/64	9/32	7/8	1 1/4	1.496	0.591	1/2	UCFS305	FS305	UC305	1.4	21.2	10.9	0.495	12.6	UCFS305C	UCFS305D	47	1 27/32	1.7
	110	80	80	16	13	9	7	22	32	38	15	M14	UCFS305-16			1.4					-	-	-	-	-
30 -	4 29/32	3.5433	3 47/64	5/8	19/32	25/64	5/16	15/16	1 13/32	1.693	0.669	1/2	UCFS306	FS306	UC306	1.9	26.7	15.0	0.682	13.3	UCFS306C	UCFS306D	51	2	2.2
	125	90	95	16	15	10	8	24	36	43	17	M14													
35 -	5 5/16	3.9370	3 15/16	3/4	5/8	7/16	23/64	1 1/16	1 9/16	1.890	0.748	5/8	UCFS307	FS307	UC307	2.3	33.4	19.3	0.877	13.2	UCFS307C	UCFS307D	55	2 5/32	2.7
	135	100	100	19	16	11	9	27	40	48	19	M16													
40 1 1/2	5 29/32	4.5276	4 13/32	3/4	21/32	33/64	25/64	1 3/16	1 13/16	2.047	0.748	5/8	UCFS308-24	FS308	UC308-24	3.4	40.7	24.0	1.09	13.2	-	-	-	-	-
	150	115	112	19	17	13	10	30	46	52	19	M16	UCFS308			3.4					UCFS308C	UCFS308D	61	2 13/32	3.9
45 1 3/4	6 5/16	4.9213	4 59/64	3/4	23/32	35/64	7/16	1 5/16	1 15/16	2.244	0.866	5/8	UCFS309-28	FS309	UC309-28	4.4	48.9	29.5	1.34	13.3	-	-	-	-	-
	160	125	125	19	18	14	11	33	49	57	22	M16	UCFS309			4.4					UCFS309C	UCFS309D	65	2 9/16	5.0
50 -	6 7/8	5.5118	5 13/64	29/32	3/4	5/8	15/32	1 13/32	2 3/32	2.402	0.866	3/4	UCFS310	FS310	UC310	5.3	62.0	38.3	1.74	13.2	UCFS310C	UCFS310D	71	2 25/32	6.1
	175	140	132	23	19	16	12	36	55	61	22	M20													
55 2	7 9/32	5.9055	5 33/64	29/32	25/32	43/64	33/64	1 17/32	2 9/32	2.598	0.984	3/4	UCFS311-32	FS311	UC311-32	6.1	71.6	45.0	2.05	13.2	-	-	-	-	-
	185	150	140	23	20	17	13	39	58	66	25	M20	UCFS311			6.1					UCFS311C	UCFS311D	74	2 29/32	7.0
60 -	7 11/16	6.2992	5 29/32	29/32	7/8	3/4	35/64	1 21/32	2 17/32	2.795	1.024	3/4	UCFS312	FS312	UC312	7.4	81.9	52.2	2.37	13.2	UCFS312C	UCFS312D	81	3 3/16	8.6
	195	160	150	23	22	19	14	42	64	71	26	M20													
65 2 1/2	8 3/16	6.8898	6 17/32	29/32	7/8	19/32	45/64	1 9/16	2 3/8	2.953	1.181	3/4	UCFS313-40	FS313	UC313-40	8.8	92.7	59.9	2.68	13.2	-	-	-	-	-
	208	175	166	23	22	15	18	40	60	75	30	M20	UCFS313			8.8					UCFS313C	UCFS313D	76	3	9.9
70 2 3/4	8 29/32	7.2835	7 1/64	63/64	31/32	45/64	45/64	1 11/16	2 15/32	3.071	1.299	7/8	UCFS314-44	FS314	UC314-44	11.2	104	68.2	2.96	13.2	-	-	-	-	-
	226	185	178	25	25	18	18	43	63	78	33	M22	UCFS314			11.2					UCFS314C	UCFS314D	80	3 5/32	12.3
75 2 15/16	9 9/32	7.8740	7 1/4	63/64	31/32	53/64	45/64	1 7/8	2 25/32	3.228	1.260	7/8	UCFS315-47	FS315	UC315-47	13.7	113	77.2	3.24	13.2	-	-	-	-	-
	236	200	184	25	25	21	18	48	71	82	32	M22	UCFS315			13.7					UCFS315C	UCFS315D	88	3 15/32	15.0
80 -	9 27/32	8.2677	7 23/32	1 7/32	1 1/16	45/64	25/32	1 7/8	2 3/4	3.386	1.339	1	UCFS316	FS316	UC316	15.1	123	86.7	3.53	13.3	UCFS316C	UCFS316D	87	3 7/16	16.5
	250	210	196	31	27	18	20	48	70	86	34	M27													
85 -	10 1/4	8.6614	8 1/32	1 7/32	1 1/16	15/16	25/32	2 1/8	3 5/32	3.780	1.575	1	UCFS317	FS317	UC317	17.3	133	96.8	3.82	13.3	UCFS317C	UCFS317D	97	3 13/16	18.9
	260	220	204	31	27	24	20	54	80	96	40	M27													
90 3 1/2	11 1/32	9.4488	8 1/2	1 3/8	1 3/16	15/16	25/32	2 7/32	3 5/32	3.780	1.575	1 1/8	UCFS318-56	FS318	UC318-56	21.3	143	107	4.11	13.3	-	-	-	-	-
	280	240	216	35	30	24	20	56	80	96	40	M30	UCFS318			21.3					UCFS318C	UCFS318D	99	3 29/32	23.2
95 -	11 13/32	9.8425	8 31/32	1 3/8	1 3/16	1 17/32	25/32	2 29/32	3 31/32	4.055	1.614	1 1/8	UCFS319	FS319	UC319	24.5	153	119	4.45	13.3	UCFS319C	UCFS319D	120	4 23/32	26.7
	290	250	228	35	30	39	20	74	101	103	41	M30													
100 3 15/16	12 7/32	10.2362	9 17/32	1 1/2	1 1/4	1 17/32	25/32	2 29/32	4 1/8	4.252	1.654	1 1/4	UCFS320	FS320	UC320	29.5	173	141	5.08	13.2	UCFS320C	UCFS320D	126	4 31/32	32.3
	310	260	242	38	32	39	20	74	105	108	42	M33	UCFS320-63			29.5					-	-	-	-	-
105 -	12 7/32	10.2362	9 17/32	1 1/2	1 1/4	1 17/32	25/32	2 29/32	4 7/32	4.409	1.732	1 1/4	UCFS321	FS321	UC321	32.7	184	153	5.41	13.2	UCFS321C	UCFS321D	128	5 1/32	35.7
	310	260	242	38	32	39	20	74	107	112	44	M33													
110 -	13 3/8	11.8110	10 15/32	1 39/64	1 3/8	1 3/8	63/64	2 25/32	4 3/16	4.606	1.811	1 3/8	UCFS322	FS322	UC322	39.0	205	180	6.15	13.2	UCFS322C	UCFS322D	129	5 3/32	42.4
	340	300	266	41	35	35	25	71	106	117	46	M36													
120 -	14 9/16	12.9921	11 27/64	1 39/64	1 9/16	1 3/8	1 3/16	3 5/32	4 11/32	4.961	2.008	1 3/8	UCFS324	FS324	UC324	50.6	207	185	6.10	13.5	UCFS324C	UCFS324D	133	5 1/4	55.4
	370	330	290	41	40	35	30	80	110	126	51	M36													
130 -	16 5/32	14.1732	12 19/32	1 39/64	1 25/32	1 3/8	1 3/16	3 11/32	4 9/16	5.315	2.126	1 3/8	UCFS326	FS326	UC326	67.7	229	214	6.79	13.6	UCFS326C	UCFS326D	142	5 29/32	73.8
	410	360	320	41	45	35	30	85	116	135	54	M36													
140 -	17 23/32	15.7480	13 25/32	1 39/64	2 5/32	1 49/64	1 3/16	3 3/4	5 5/32	5.709	2.323	1 3/8	UCFS328	FS328	UC328	94.0	253	246	7.54	13.6	UCFS328C	UCFS328D	156	6 5/32	102
	450	400	350	41	55	45	30	95	131	145	59	M36													

Remarks 1. In Part No. of unit and units with covers, fitting codes follow bore diameter numbers. (See Table 2.5 in P.11.)  
2. Part No. of applicable grease nipples are shown below.  
A-1/4-28UNF ..... 305-308  
A-R1/8 ..... 309-328

3. As for the triple-lip seal type product, supplementary code L3 follows the Part No. of unit or bearing. (Example of Part No. : UCFS307JL3, UC307L3)  
4. The dimensions and forms of applicable bearings, see the dimensional tables of insert bearing for unit.  
5. Housings of spheroidal graphite iron casting are also available.

Square-flanged type with spigot joint

**UKFS**  
Tapered bore (with adapter)  
 $d_1$  20 ~ 125 mm



Variations of tolerance of spigot joint outside diameter ( $\Delta H_{3s}$ ), variations of tolerance of distance from mounting surface to center of spherical bore ( $\Delta A_{2s}$ ), tolerance of position of bolt hole (X), and tolerance of circumferential runout of spigot joint (Y)

Variations of tolerance of bolt hole diameter ( $\Delta N_s$ )

Housing No.	$\Delta H_{3s}$	$\Delta A_{2s}$	Unit: mm	
			X	Y
FS305	0 -0.046	±0.5	0.7	0.2
FS306~FS308	0 -0.054			
FS309~FS310	0 -0.063			
FS311~FS313	0 -0.072	±0.8	1	0.3 ~FS318 FS319~
FS315~FS319	0 -0.081			
FS320~FS322	0 -0.089			
FS324~FS328	0 -0.089			

Housing No.	$\Delta N_s$
FS305~FS315	±0.2
FS316~FS328	±0.3

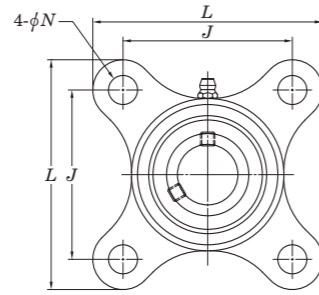
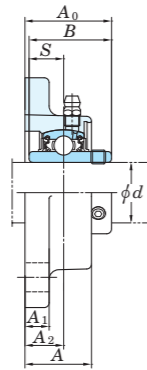
Shaft Dia. mm inch $d_1$	Dimensions inch mm											Bolt Size inch mm	Standard			Adapter Assembly No.	Mass kg	Basic Load Ratings kN		Fatigue Load Limit kN $C_u$	Factor $f_0$	With Cast Iron Cover			
	L	$H_3$	J	N	$A_1$	$A_2$	$A_3$	$A_4$	$A_5$	$B_1$	Unit No.		Housing No.	Bearing No.	Unit No.			Dimension mm inch $A_e$	Mass kg			$C_r$	$C_{0r}$	Open End Type	Closed End Type
20 $\frac{3}{4}$	4 11/32	3.1496	3 5/32	5/8	1/2	23/64	9/32	7/8	1 3/16	1 3/8	1/2	UKFS305	FS305	UK305	HE2305X H2305X	1.4 1.4	21.2	10.9	0.495	12.6	-	-	-	-	
	110	80	80	16	13	9	7	22	30.5	35	M14										UKFS305C	UKFS305D	47	1 27/32	1.7
25 1	4 29/32	3.5433	3 47/64	5/8	19/32	25/64	5/16	15/16	1 5/16	1 1/2	1/2	UKFS306	FS306	UK306	H2306X HE2306X	1.9 1.9	26.7	15.0	0.682	13.3	UKFS306C	UKFS306D	51	2	2.2
	125	90	95	16	15	10	8	24	33	38	M14										-	-	-	-	-
30 $1 \frac{1}{8}$	5 5/16	3.9370	3 15/16	3/4	5/8	7/16	23/64	1 1/16	1 7/16	1 11/16	5/8	UKFS307	FS307	UK307	HS2307X H2307X	2.4 2.4	33.4	19.3	0.877	13.2	-	-	-	-	-
	135	100	100	19	16	11	9	27	36.5	43	M16										UKFS307C	UKFS307D	55	2 5/32	2.9
35 $1 \frac{1}{4}$ $1 \frac{3}{8}$	5 29/32	4.5276	4 13/32	3/4	21/32	33/64	25/64	1 3/16	1 19/32	1 13/16	5/8	UKFS308	FS308	UK308	HE2308X HS2308X H2308X	3.4 3.4 3.4	40.7	24.0	1.09	13.2	-	-	-	-	-
	150	115	112	19	17	13	10	30	40.5	46	M16										UKFS308C	UKFS308D	61	2 13/32	3.9
40 $1 \frac{1}{2}$	6 5/16	4.9213	4 59/64	3/4	23/32	35/64	7/16	1 5/16	1 23/32	1 31/32	5/8	UKFS309	FS309	UK309	HE2309X H2309X	4.4 4.4	48.9	29.5	1.34	13.3	-	-	-	-	-
	160	125	125	19	18	14	11	33	44	50	M16										UKFS309C	UKFS309D	65	2 9/16	5.0
45 $1 \frac{3}{4}$	6 7/8	5.5118	5 13/64	29/32	3/4	5/8	15/32	1 13/32	1 7/8	2 5/32	3/4	UKFS310	FS310	UK310	HE2310X H2310X	5.3 5.3	62.0	38.3	1.74	13.2	-	-	-	-	-
	175	140	132	23	19	16	12	36	48	55	M20										UKFS310C	UKFS310D	71	2 25/32	6.1
50 $1 \frac{7}{8}$ 2	7 9/32	5.9055	5 33/64	29/32	25/32	43/64	33/64	1 17/32	2	2 5/16	3/4	UKFS311	FS311	UK311	HS2311X H2311X HE2311X	6.3 6.3 6.3	71.6	45.0	2.05	13.2	-	-	-	-	-
	185	150	140	23	20	17	13	39	51	59	M20										UKFS311C	UKFS311D	74	2 29/32	7.2
55 $2 \frac{1}{8}$	7 11/16	6.2992	5 29/32	29/32	7/8	3/4	35/64	1 21/32	2 3/16	2 7/16	3/4	UKFS312	FS312	UK312	HS2312X H2312X	7.3 7.3	81.9	52.2	2.37	13.2	-	-	-	-	-
	195	160	150	23	22	19	14	42	55.5	62	M20										UKFS312C	UKFS312D	81	3 3/16	8.5
60 $2 \frac{1}{4}$ $2 \frac{3}{8}$	8 3/16	6.8898	6 17/32	29/32	7/8	19/32	45/64	1 9/16	2 3/32	2 9/16	3/4	UKFS313	FS313	UK313	HE2313X H2313X HS2313X	8.9 8.9 8.9	92.7	59.9	2.68	13.2	-	-	-	-	-
	208	175	166	23	22	15	18	40	53.5	65	M20										UKFS313C	UKFS313D	76	3	10.0
65 $2 \frac{1}{2}$	9 9/32	7.8740	7 1/4	63/64	31/32	53/64	45/64	1 7/8	2 1/2	2 7/8	7/8	UKFS315	FS315	UK315	HE2315X H2315X	13.4 13.4	113	77.2	3.24	13.2	-	-	-	-	-
	236	200	184	25	25	21	18	48	63.5	73	M22										UKFS315C	UKFS315D	88	3 15/32	14.8
70 $2 \frac{3}{4}$	9 27/32	8.2677	7 23/32	1 7/32	1 1/16	45/64	25/32	1 7/8	2 15/32	3 1/16	1	UKFS316	FS316	UK316	HE2316X H2316X	15.1 15.1	123	86.7	3.53	13.3	-	-	-	-	-
	250	210	196	31	27	18	20	48	62.5	78	M27										UKFS316C	UKFS316D	87	3 7/16	16.7
75 3	10 1/4	8.6614	8 1/32	1 7/32	1 1/16	15/16	25/32	2 1/8	2 27/32	3 7/32	1	UKFS317	FS317	UK317	H2317X HE2317X	17.1 17.1	133	96.8	3.82	13.3	UKFS317C	UKFS317D	97	3 13/16	18.9
	260	220	204	31	27	24	20	54	72	82	M27										-	-	-	-	-
80 -	11 1/32	9.4488	8 1/2	1 3/8	1 3/16	15/16	25/32	2 7/32	2 27/32	3 3/8	1 1/8	UKFS318	FS318	UK318	H2318X	21.4	143	107	4.11	13.3	UKFS318C	UKFS318D	99	3 29/32	23.5
	280	240	216	35	30	24	20	56	72	86	M30										-	-	-	-	-
85 $3 \frac{1}{4}$	11 13/32	9.8425	8 31/32	1 3/8	1 3/16	1 17/32	25/32	2 29/32	2 19/32	3 17/32	1 1/8	UKFS319	FS319	UK319	HE2319X H2319X	24.8 24.8	153	119	4.45	13.3	-	-	-	-	-
	290	250	228	35	30	39	20	74	91	90	M30										UKFS319C	UKFS319D	120	4 23/32	26.2
90 $3 \frac{1}{2}$	12 7/32	10.2362	9 17/32	1 1/2	1 1/4	1 17/32	25/32	2 29/32	2 21/32	3 13/16	1 1/4	UKFS320	FS320	UK320	HE2320X H2320X	29.1 29.1	173	141	5.08	13.2	-	-	-	-	-
	310	260	242	38	32	39	20	74	93	97	M33										UKFS320C	UKFS320D	126	4 31/32	32.2
100 4	13 3/8	11.8110	10 15/32	1 39/64	1 3/8	1 3/8	63/64	2 25/32	2 3/4	4 1/8	1 3/8	UKFS322	FS322	UK322	H2322X HE2322X	38.6 38.6	205	180	6.15	13.2	-	-	-	-	-
	340	300	266	41	35	35	25	71	95	105	M36										UKFS322C	UKFS322D	129	5 3/32	42.1
110 -	14 9/16	12.9921	11 27/64	1 39/64	1 9/16	1 3/8	1 3/16	3 5/32	3 21/32	4 13/32	1 3/8	UKFS324	FS324	UK324	H2324	50.9	207	185	6.10	13.5	UKFS324C	UKFS324D	133	5 1/4	56.0
	370	330	290	41	40	35	30	80	100.5	112	M36										-	-	-	-	-
115 $4 \frac{1}{2}$	16 5/32	14.1732	12 19/32	1 39/64	1 25/32	1 3/8	1 3/16	3 11/32	4	4 3/4	1 3/8	UKFS326	FS326	UK326	HE2326 H2326	67.5 67.5	229	214	6.79	13.6	-	-	-	-	-
	410	360	320	41	45	35	30	85	101.5	121	M36										UKFS326C	UKFS326D	142	5 29/32	74.1
125 -	17 23/32	15.7480	13 25/32	1 39/64	2 5/32	1 49/64	1 3/16	3 3/4	4 5/8	5 5/32	1 3/8	UKFS328	FS328	UK328	H2328	94.0	253	246	7.54	13.6	UKFS328C	UKFS328D	156	6 5/32	102
450	400	350	41	55	45	30	95	117.5	131	M36	-										-	-	-	-	

Remarks 1. In Part No. of unit and units with covers, fitting codes follow bore diameter numbers. (See Table 2.5 in P.11.)  
2. Part No. of applicable grease nipples are shown below.  
A-1/4-28UNF ..... 305-308  
A-R1/8 ..... 309-328

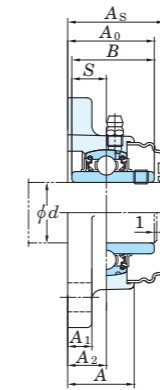
3. In Part No. of unit with adapters and bearing with adapters, Part No. of applicable adapter follow the Part No. shown in the dimensional tables. (Example of Part No. : UKFS307J + H2307X, UK307 + H2307X)  
4. As for the triple-lip seal type product, supplementary code L3 follows the Part No. of unit or bearing. (Example of Part No. : UKFS307JL3 + H2307X, UK307L3 + H2307X)  
5. For the dimensions and forms of applicable bearings and adapters, see the dimensional tables of insert bearing for unit and adapter assemblies.  
6. Housings of spheroidal graphite iron casting are also available.

Stainless-series square-flanged type

**UCSF-S6**  
Cylindrical bore (with set screws)  
 $d$  20 ~ 65 mm



With Pressed Stainless Steel Cover (E1)



Variations of tolerance of distance from mounting surface to center of spherical bore ( $\Delta A_{2s}$ ) and tolerance of position of bolt hole (X)

Housing No.	$\Delta A_{2s}$	X
SF204-SF210	$\pm 0.5$	0.7

Unit: mm

Variations of tolerance of bolt hole diameter ( $\Delta N_s$ )

Housing No.	$\Delta N_s$
SF204-SF210	$\pm 0.2$

Unit: mm

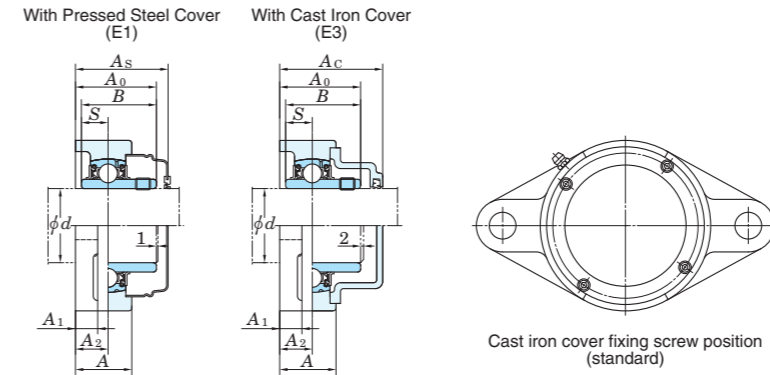
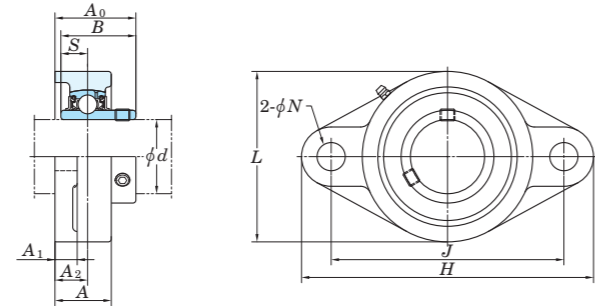
Shaft Dia. mm $d$	Dimensions mm										Bolt Size mm	Standard			Mass kg	Basic Load Ratings kN		Fatigue Load Limit kN $C_u$	Factor $f_0$	With Pressed Stainless Steel Cover		Dimension mm $A_s$	Mass kg
	L	A	J	N	A <sub>1</sub>	A <sub>2</sub>	A <sub>0</sub>	B	S	Unit No.		Housing No.	Bearing No.	$C_r$		$C_{0r}$	Open End Type			Closed End Type			
20	86	26	64	12	10	15	33.3	31	12.7	M10	UCSF204S6	SF204	UC204S6	0.53	10.9	5.35	0.243	13.2	UCSF204CS6	UCSF204DS6	38	0.53	
25	95	27.5	70	12	10	16	35.8	34.1	14.3	M10	UCSF205S6	SF205	UC205S6	0.68	11.9	6.3	0.286	13.9	UCSF205CS6	UCSF205DS6	40	0.68	
30	108	31	83	12	10	18	40.2	38.1	15.9	M10	UCSF206S6	SF206	UC206S6	1.02	16.5	9.05	0.411	13.9	UCSF206CS6	UCSF206DS6	45	1.02	
35	117	34	92	14	11	19	44.4	42.9	17.5	M12	UCSF207S6	SF207	UC207S6	1.30	21.8	12.3	0.559	13.9	UCSF207CS6	UCSF207DS6	49	1.30	
40	130	36	102	16	12	21	51.2	49.2	19	M14	UCSF208S6	SF208	UC208S6	1.63	24.8	14.3	0.650	14.0	UCSF208CS6	UCSF208DS6	56	1.63	
45	137	38	105	16	13	22	52.2	49.2	19	M14	UCSF209S6	SF209	UC209S6	1.92	27.8	16.2	0.736	14.0	UCSF209CS6	UCSF209DS6	57	1.92	
50	143	40	111	16	13	22	54.6	51.6	19	M14	UCSF210S6	SF210	UC210S6	2.18	29.8	18.6	0.845	14.4	UCSF210CS6	UCSF210DS6	59	2.18	
55	162	43	130	19	15	25	58.4	55.6	22.2	M16	UCSF211S6	SF211	UC211S6	3.01	36.8	23.5	1.07	14.4	UCSF211CS6	UCSF211DS6	63	3.01	
60	175	48	143	19	15	29	68.7	65.1	25.4	M16	UCSF212S6	SF212	UC212S6	3.82	44.5	29.0	1.32	14.4	UCSF212CS6	UCSF212DS6	73	3.82	
65	187	50	149	19	18	30	69.7	65.1	25.4	M16	UCSF213S6	SF213	UC213S6	5.02	48.2	32.1	1.46	14.4	UCSF213CS6	UCSF213DS6	75	5.02	

- Remarks 1. In Part No. of unit and units with covers, fitting codes follow bore diameter codes. (See Table 2.5 in P.11.)  
 2. Part No. of the applicable grease nipple is A-1/4-28UNFN12.  
 3. For the dimensions and forms of applicable bearings, see the dimensional tables of insert bearing for unit.



Rhombic-flanged type

UCFL  
Cylindrical bore (with set screws)  
d (45) ~ (90) mm



Variations of tolerance of distance from mounting surface to center of spherical bore ( $\Delta A_{2s}$ ) and tolerance of position of bolt hole (X)

Housing No.			$\Delta A_{2s}$	X
FL204-FL210	FLX05-FLX10	FL305-FL310	$\pm 0.5$	0.7
FL211-FL218		FL311-FL324	$\pm 0.8$	1

Unit: mm

Housing No.			$\Delta N_s$
FL204-FL218	FLX05-FLX10	FL305-FL311	$\pm 0.2$
		FL312-FL324	$\pm 0.3$

Unit: mm

Shaft Dia. mm inch	Dimensions inch mm											Bolt Size inch mm	Standard			Basic Load Ratings kN	Fatigue Load Limit kN	Factor $f_0$	With Pressed Steel Cover				With Cast Iron Cover							
	d	H	L	A	J	N	A <sub>1</sub>	A <sub>2</sub>	A <sub>0</sub>	B	S		Unit No.	Housing No.	Bearing No.				kg	C <sub>r</sub>	C <sub>0r</sub>	C <sub>u</sub>	Open End Type	Closed End Type	Dimension mm	inch	Mass kg	Open End Type	Closed End Type	Dimension mm
45	1 3/4	9 1/16	4 29/32	1 23/32	6 31/32	63/64	23/32	63/64	2 3/8	2.244	0.866	7/8	UCFL309-28	FL309	UC309-28	3.5	48.9	29.5	1.34	13.3	-	-	-	-	-	-	-	-	-	
		230	125	44	177	25	18	25	60	57	22	M22	UCFL309		UC309	3.5					UCFL309C	UCFL309D	76	3		UCFL309D	UCFL309D	76	3	4.1
50	1 7/8												UCFL210-30		UC210-30	2.2														
	1 15/16	7 3/4	4 17/32	1 9/16	6 3/16	3/4	19/32	55/64	2 5/32	2.031	0.748	5/8	UCFL210-31	FL210	UC210-31	2.2	35.1	23.3	1.06	14.4										
	2	197	115	40	157	19	15	22	54.6	51.6	19	M16	UCFL210		UC210	2.2					UCFL210C	UCFL210D	59	2 5/16	2.2	UCFL210FC	UCFL210FD	70.5	2 25/32	2.7
													UCFL210-32		UC210-32	2.2														
55	1 15/16	8 1/2	5 1/4	1 23/32	7 1/4	3/4	25/32	1 1/32	2 11/32	2.189	0.874	5/8	UCFLX10-31	FLX10	UCX10-31	3.8	43.4	29.4	1.34	14.4										
	2	216	133	44	184	19	20	26	59.4	55.6	22.2	M16	UCFLX10		UCX10	3.8					UCFLX10C	UCFLX10D	64	2 17/32	3.8					
60		9 7/16	5 1/2	1 7/8	7 23/64	63/64	3/4	1 7/64	2 5/8	2.402	0.866	7/8	UCFL310	FL310	UC310	4.4	62.0	38.3	1.74	13.2										
	2	240	140	48	187	25	19	28	67	61	22	M22																		
65	2 1/8	8 13/16	5 1/8	1 11/16	7 1/4	3/4	23/32	63/64	2 5/16	2.189	0.874	5/8	UCFL211-32		UC211-32	3.3														
	2 3/16	224	130	43	184	19	18	25	58.4	55.6	22.2	M16	UCFL211-34	FL211	UC211-34	3.3	43.4	29.4	1.34	14.4										
70	2 1/4	9 27/32	5 29/32	2 1/16	7 51/64	63/64	25/32	1 3/16	2 25/32	2.598	0.984	7/8	UCFL311-32		UC311-32	5.3														
	2 3/8	250	150	52	198	25	20	30	71	66	25	M22	UCFL311	FL311	UC311	5.3	71.6	45.0	2.05	13.2										
75	2 3/8	10 5/8	6 5/16	2 7/32	8 11/32	1 7/32	7/8	1 19/64	3 1/16	2.795	1.024	1	UCFL212-36		UC212-36	4.2														
	2 7/16	270	160	56	212	31	22	33	78	71	26	M27	UCFL212	FL212	UC212	4.2	52.4	36.2	1.65	14.4										
80	2 1/2	10 5/32	6 3/32	1 31/32	8 17/64	29/32	25/32	1 3/16	2 3/4	2.563	1.000	3/4	UCFL213-40		UC213-40	5.1														
	2 5/8	258	155	50	210	23	20	30	69.7	65.1	25.4	M20	UCFL213	FL213	UC213	5.1	57.2	40.1	1.82	14.4										
85	2 1/2	11 5/8	6 7/8	2 9/32	9 29/64	1 7/32	31/32	1 19/64	3 1/16	2.953	1.181	1	UCFL313-40		UC313-40	8.5														
	2 3/4	295	175	58	240	31	25	33	78	75	30	M27	UCFL313	FL313	UC313	8.5	92.7	59.9	2.68	13.2										
90	2 3/4	10 7/16	6 5/16	2 1/8	8 1/2	29/32	25/32	1 7/32	2 31/32	2.937	1.189	3/4	UCFL214-44		UC214-44	5.7														
	2 7/8	265	160	54	216	23	20	31	75.4	74.6	30.2	M20	UCFL214	FL214	UC214	5.7	62.2	44.1	2.01	14.5										
95	3 1/8	12 13/32	7 9/32	2 13/32	9 27/32	1 3/8	1 3/32	1 27/64	3 3/16	3.071	1.299	1 1/8	UCFL314-44		UC314-44	9.7														
	3 1/4	315	185	61	250	35	28	36	81	78	33	M30	UCFL314	FL314	UC314	9.7	104	68.2	2.96	13.2										
100	2 15/16	10 13/16	6 1/2	2 7/32	8 55/64	29/32	25/32	1 11/32	3 3/32	3.063	1.311	3/4	UCFL215-47		UC215-47	6.4														
	3	275	165	56	225	23	20	34	78.5	77.8	33.3	M20	UCFL215	FL215	UC215	6.4	67.4	48.3	2.17	14.5										
105	2 15/16	12 19/32	7 11/16	2 19/32	10 15/64	1 3/8	1 3/16	1 17/32	3 1/2	3.228	1.260	1 1/8	UCFL315-47		UC315-47	11.3														
	3	320	195	66	260	35	30	39	89	82	32	M30	UCFL315	FL315	UC315	11.3	113	77.2	3.24	13.2										
110	3 1/8	11 13/32	7 3/32	2 9/32	9 11/64	63/64	25/32	1 11/32	3 9/32	3.252	1.311	7/8	UCFL216-50		UC216-50	7.8														
	3 1/4	290	180	58	233	25	20	34	83.3	82.6	33.3	M22	UCFL216	FL216	UC216	7.8	72.7	53.0	2.30	14.6										
115		13 31/32	8 9/32	2 11/16	11 7/32	1 1/2	1 1/4	1 1/2	3 17/32	3.386	1.339	1 1/4	UCFL316		UC316	14.4														
	3 3/8	355	210	68	285	38	32	38	90	86	34	M33		FL316	UC316	14.4	123	86.7	3.53	13.3										
120	3 1/4	12	7 15/32	2 15/32	9 49/64	63/64	7/8	1 27/64	3 7/16	3.374	1.343	7/8	UCFL217-52		UC217-52	9.8														
	3 1/2	305	190	63	248	25	22	36	87.6	85.7	34.1	M22	UCFL217	FL217	UC217	9.8	84.0	61.9	2.60	14.5										
125		14 9/16	8 21/32	2 29/32	11 13/16	1 1/2	1 1/4	1 47/64	3 15/16	3.780	1.575	1 1/4	UCFL317		UC317	16.0														
	3 3/4	370	220	74	300	38	32	44	100	96	40	M33		FL317	UC317	16.0	133	96.8	3.82	13.3										
130	3 1/2	12 19/32	8 1/16	2 11/16	10 7/16	63/64	29/32	1 37/64	3 25/32	3.780	1.563	7/8	UCFL218-56		UC218-56	12.3														
	3 5/8	320	205	68	265	25	23	40	96.3	96	39.7	M22	UCFL218	FL218	UC218	12.3	96.1	71.5	2.91	14.5										

Remarks 1. In Part No. of unit and units with covers, fitting codes follow bore diameter numbers. (See Table 2.5 in P.11.)

2. Part No. of applicable grease nipples are shown below.

A-1/4-28UNF..... 201-210, X05-X09, 305-308

A-R1/8..... 211-218, X10, 309-324

3. As for the triple-lip seal type product (from 201 to 205 are the double-lip seal type products), supplementary code L3 (or L2) follows the Part No. of unit or bearing. (Example of Part No. : UCFL206JL3, UC206L3)

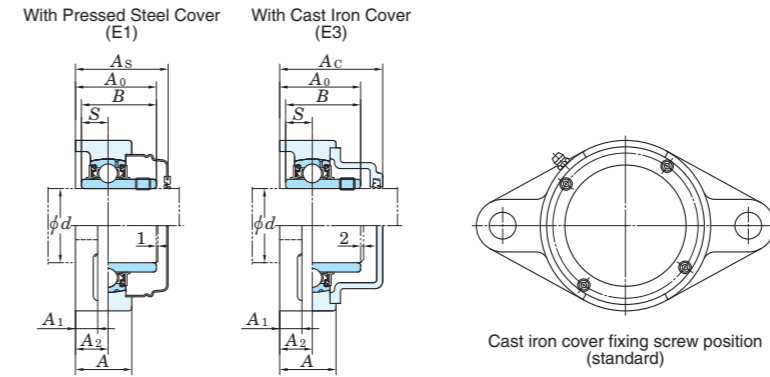
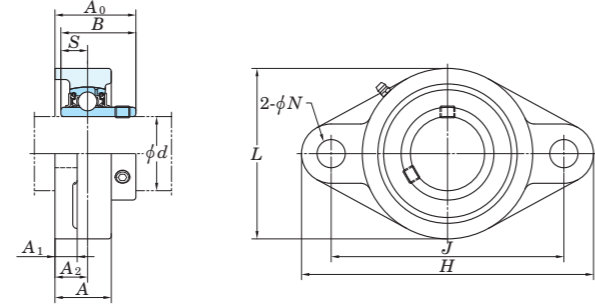
4. For the dimensions and forms of applicable bearings, see the dimensional tables of insert bearing for unit.

5. Housings of spheroidal graphite iron casting are also available.

Rhombic-flanged type

UCFL  
Cylindrical bore (with set screws)

d (90) ~ 120 mm



Variations of tolerance of distance from mounting surface to center of spherical bore ( $\Delta A_{2s}$ ) and tolerance of position of bolt hole (X)  
Unit: mm

Housing No.	$\Delta A_{2s}$	X		
FL204-FL210	FLX05-FLX10	FL305-FL310	$\pm 0.5$	0.7
FL211-FL218		FL311-FL324	$\pm 0.8$	1

Variations of tolerance of bolt hole diameter ( $\Delta N_s$ )  
Unit: mm

Housing No.	$\Delta N_s$		
FL204-FL218	FLX05-FLX10	FL305-FL311	$\pm 0.2$
		FL312-FL324	$\pm 0.3$

Shaft Dia. mm inch	Dimensions											Bolt Size inch mm	Standard			Mass kg	Basic Load Ratings kN	Fatigue Load Limit kN	Factor $f_0$	With Pressed Steel Cover			With Cast Iron Cover			
	inch mm												Unit No.	Housing No.	Bearing No.					Unit No.	Dimension mm inch	Mass kg	Unit No.	Dimension mm inch	Mass kg	
d	H	L	A	J	N	A <sub>1</sub>	A <sub>2</sub>	A <sub>0</sub>	B	S								Open End Type	Closed End Type	A <sub>s</sub>		Open End Type	Closed End Type	A <sub>c</sub>		
90 3 1/2	15 5/32	9 1/4	3	12 13/32	1 1/2	1 13/32	1 47/64	3 15/16	3.780	1.575	1 1/4	UCFL318-56	FL318	UC318-56	19.0	143	107	4.11	13.3	-	-	-	-	-	-	
	385	235	76	315	38	36	44	100	96	40	M33	UCFL318		UC318	19.0							UCFL318C	UCFL318D	119	4 11/16	20.9
95	15 15/16	9 27/32	3 11/16	13	1 39/64	1 9/16	2 21/64	4 3/4	4.055	1.614	1 3/8	UCFL319	FL319	UC319	24.6	153	119	4.45	13.3	-	-	-	-	-	-	
	405	250	94	330	41	40	59	121	103	41	M36											UCFL319C	UCFL319D	140	5 1/2	26.8
100 3 15/16 4	17 5/16	10 5/8	3 11/16	14 11/64	1 47/64	1 9/16	2 21/64	4 29/32	4.252	1.654	1 1/2	UCFL320	FL320	UC320	29.4	173	141	5.08	13.2	-	-	-	-	-	-	
	440	270	94	360	44	40	59	125	108	42	M39	UCFL320-63		UC320-63	29.4							UCFL320C	UCFL320D	146	5 3/4	32.2
												UCFL320-64		UC320-64	29.4											
110	18 1/2	11 13/16	3 25/32	15 23/64	1 47/64	1 21/32	2 23/64	5 9/32	4.606	1.811	1 1/2	UCFL322	FL322	UC322	36.2	205	180	6.15	13.2	-	-	-	-	-	-	
	470	300	96	390	44	42	60	131	117	46	M39											UCFL322C	UCFL322D	154	6 1/16	39.6
120	20 15/32	13	4 11/32	16 59/64	1 27/32	1 7/8	2 9/16	5 1/2	4.961	2.008	1 5/8	UCFL324	FL324	UC324	51.6	207	185	6.10	13.5	-	-	-	-	-	-	
	520	330	110	430	47	48	65	140	126	51	M42											UCFL324C	UCFL324D	163	6 13/32	56.4

Remarks 1. In Part No. of unit and units with covers, fitting codes follow bore diameter numbers. (See Table 2.5 in P.11.)

2. Part No. of applicable grease nipples are shown below.

A-1/4-28UNF ..... 201~210, X05~X09, 305~308

A-R1/8 ..... 211~218, X10, 309~324

3. As for the triple-lip seal type product (from 201 to 205 are the double-lip seal type products), supplementary code L3 (or L2) follows the Part No. of unit or bearing. (Example of Part No. : UCFL206JL3, UC206L3)

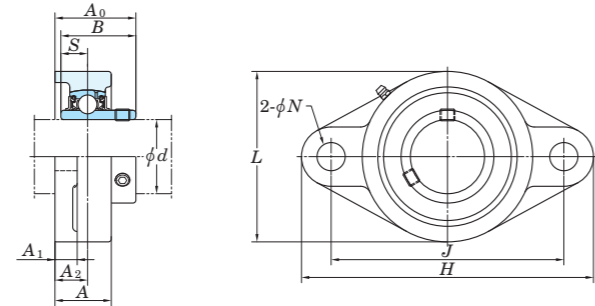
4. For the dimensions and forms of applicable bearings, see the dimensional tables of insert bearing for unit.

5. Housings of spheroidal graphite iron casting are also available.



Rhombic-flanged type

UCFL-E  
Cylindrical bore (with set screws)  
d 12 ~ 75 mm



Variations of tolerance of distance from mounting surface to center of spherical bore ( $\Delta A_{2s}$ ) and tolerance of position of bolt hole (X)

Housing No.	$\Delta A_{2s}$	X
FL203E-FL210E	±0.5	0.7
FL211E-FL217E	±0.8	1

Variations of tolerance of bolt hole diameter ( $\Delta N_s$ )

Housing No.	$\Delta N_s$
FL203E-FL217E	±0.2

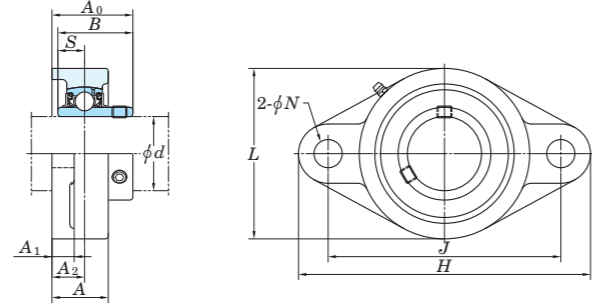
Shaft Dia. mm inch  d	Dimensions inch mm										Bolt Size inch	Unit No.	Housing No.	Bearing No.	Basic Load Ratings kN		Fatigue Load Limit kN C <sub>u</sub>	Factor f <sub>0</sub>	Mass kg
	H	L	A	J	N	A <sub>1</sub>	A <sub>2</sub>	A <sub>0</sub>	B	S					C <sub>r</sub>	C <sub>0r</sub>			
12 1/2												UCFL201E UCFL201-8E UCFL202E UCFL202-10E UCFL203E	FL203E	UC201 UC201-8 UC202 UC202-10 UC203	12.8	6.65	0.302	13.2	0.42 0.4 0.39
15 5/8	3 27/32 98	2 7/32 56	1 25.5	3 76.2	25/64 10	7/16 11	19/32 15	1 5/16 33.3	1.220 31	0.500 12.7	5/16	UCFL204-12E UCFL204E	FL204E	UC204-12 UC204	12.8	6.65	0.302	13.2	0.48
17												UCFL205-14E UCFL205-15E UCFL205E UCFL205-16E	FL205E	UC205-14 UC205-15 UC205 UC205-16	14.0	7.85	0.357	13.9	0.64
20 3/4	4 7/16 113	2 3/8 60	1 25.5	3 17/32 89.7	25/64 10	7/16 11	19/32 15	1 5/16 33.3	1.220 31	0.500 12.7	5/16	UCFL206-18E UCFL206E UCFL206-19E UCFL206-20E	FL206E	UC206-18 UC206 UC206-19 UC206-20	19.5	11.3	0.514	13.9	0.93
25 7/8 15/16 1	5 1/8 130	2 11/16 68	1 1/16 27	3 57/64 98.8	15/32 12	1/2 13	5/8 16	1 13/32 35.8	1.343 34.1	0.563 14.3	3/8	UCFL207-20E UCFL207-21E UCFL207-22E UCFL207E UCFL207-23E	FL207E	UC207-20 UC207-21 UC207-22 UC207 UC207-23	25.7	15.4	0.700	13.9	1.2
30 1 1/8 1 3/16 1 1/4	5 13/16 148	3 5/32 80	1 7/32 31	4 19/32 116.7	15/32 12	1/2 13	45/64 18	1 19/32 40.2	1.500 38.1	0.626 15.9	3/8	UCFL208-24E UCFL208-25E UCFL208E	FL208E	UC208-24 UC208-25 UC208	29.1	17.8	0.809	14.0	1.6
35 1 1/4 1 5/16 1 3/8 1 7/16	6 11/32 161	3 17/32 90	1 11/32 34	5 1/8 130.2	33/64 13	9/16 14	3/4 19	1 3/4 44.4	1.689 42.9	0.689 17.5	7/16	UCFL209-26E UCFL209-27E UCFL209-28E UCFL209E	FL209E	UC209-26 UC209-27 UC209-28 UC209	34.1	21.3	0.968	14.0	1.9
40 1 1/2 1 9/16	6 7/8 175	3 15/16 100	1 13/32 36	5 21/32 143.7	33/64 13	9/16 14	53/64 21	2 1/32 51.2	1.937 49.2	0.748 19	7/16	UCFL210-30E UCFL210-31E UCFL210E UCFL210-32E	FL210E	UC210-30 UC210-31 UC210 UC210-32	35.1	23.3	1.06	14.4	2.2
45 1 5/8 1 11/16 1 3/4	7 13/32 188	4 1/4 108	1 1/2 38	5 27/32 148.4	19/32 15	19/32 15	55/64 22	2 1/16 52.2	1.937 49.2	0.748 19	1/2	UCFL211-32E UCFL211-34E UCFL211E UCFL211-35E	FL211E	UC211-32 UC211-34 UC211 UC211-35	43.4	29.4	1.34	14.4	3.3
50 1 7/8 1 15/16 2 2	7 3/4 197	4 17/32 115	1 9/16 40	6 3/16 157	19/32 15	19/32 15	55/64 22	2 5/32 54.6	2.031 51.6	0.748 19	1/2	UCFL212-36E UCFL212E UCFL212-38E UCFL212-39E	FL212E	UC212-36 UC212 UC212-38 UC212-39	52.4	36.2	1.65	14.4	4.2
55 2 1/8 2 3/16 2 1/4	8 13/16 224	5 1/8 130	1 11/16 43	7 1/4 184	21/32 16.5	23/32 18	63/64 25	2 5/16 58.4	2.189 55.6	0.874 22.2	9/16	UCFL213-40E UCFL213E	FL213E	UC213-40 UC213	57.2	40.1	1.82	14.4	5.2
60 2 3/8 2 7/16	9 27/32 250	5 1/2 140	1 7/8 48	7 61/64 202	21/32 16.5	23/32 18	1 9/64 29	2 23/32 68.7	2.563 65.1	1.000 25.4	9/16	UCFL214-44E UCFL214E	FL214E	UC214-44 UC214	62.2	44.1	2.01	14.5	5.7
65 2 1/2	10 5/32 258	6 3/32 155	1 31/32 50	8 17/64 210	21/32 16.5	25/32 20	1 3/16 30	2 3/4 69.7	2.563 65.1	1.000 25.4	9/16	UCFL215-47E UCFL215E UCFL215-48E	FL215E	UC215-47 UC215 UC215-48	67.4	48.3	2.17	14.5	6.4
70 2 3/4	10 7/16 265	6 5/16 160	2 1/8 54	8 1/2 216	21/32 16.5	25/32 20	1 7/32 31	2 31/32 75.4	2.937 74.6	1.189 30.2	9/16								
75 2 15/16 3	10 13/16 275	6 1/2 165	2 7/32 56	8 55/64 225	3/4 19	25/32 20	1 11/32 34	3 3/32 78.5	3.063 77.8	1.311 33.3	11/16								

Remarks 1. In Part No. of unit, fitting codes follow bore diameter numbers. (See Table 2.5 in P.11.)  
2. Part No. of applicable grease nipples are shown below.  
A-1/4-28UNF ..... 201~210  
A-R1/8 ..... 211~217

3. As for the triple-lip seal type product (from 201 to 205 are the double-lip seal type products), supplementary code L3 (or L2) follows the Part No. of unit or bearing. (Example of Part No.: UCFL206EJL3, UC206L3)  
4. For the dimensions and forms of applicable bearings, see the dimensional tables of insert bearing for unit.  
5. Housings of spheroidal graphite iron casting are also available.

**UCFL-E**  
Cylindrical bore (with set screws)

$d$  80 ~ 85 mm



Variations of tolerance of distance from mounting surface to center of spherical bore ( $\Delta A_{2s}$ ) and tolerance of position of bolt hole ( $X$ )

Housing No.	$\Delta A_{2s}$	$X$
FL203E-FL210E	$\pm 0.5$	0.7
FL211E-FL217E	$\pm 0.8$	1

Unit: mm

Variations of tolerance of bolt hole diameter ( $\Delta N_s$ )

Housing No.	$\Delta N_s$
FL203E-FL217E	$\pm 0.2$

Unit: mm

Shaft Dia. mm inch	Dimensions											Bolt Size inch	Unit No.	Housing No.	Bearing No.	Basic Load Ratings		Fatigue Load Limit	Factor	Mass
	$d$	$H$	$L$	$A$	$J$	$N$	$A_1$	$A_2$	$A_0$	$B$	$S$					$C_r$	$C_{0r}$			
80 3 1/8	11 13/32	7 3/32	2 9/32	9 11/64	3/4	25/32	1 11/32	3 9/32	3.252	1.311	11/16	UCFL216-50E UCFL216E	FL216E	UC216-50 UC216	72.7	53.0	2.30	14.6	7.8	
	290	180	58	233	19	20	34	83.3	82.6	33.3										
85 3 1/4	12	7 15/32	2 15/32	9 49/64	3/4	7/8	1 27/64	3 7/16	3.374	1.343	11/16	UCFL217-52E UCFL217E	FL217E	UC217-52 UC217	84.0	61.9	2.60	14.5	9.8	
	305	190	63	248	19	22	36	87.6	85.7	34.1										

Remarks 1. In Part No. of unit, fitting codes follow bore diameter numbers. (See Table 2.5 in P.11.)

2. Part No. of applicable grease nipples are shown below.

A-1/4-28UNF ..... 201~210

A-R1/8 ..... 211~217

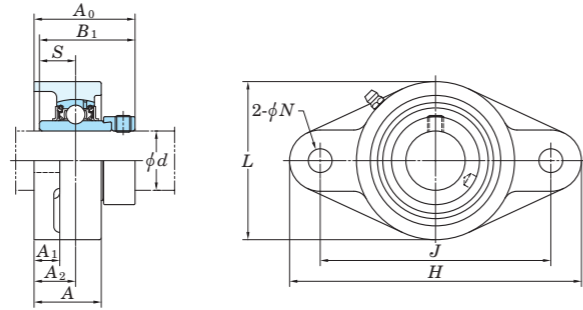
3. As for the triple-lip seal type product (from 201 to 205 are the double-lip seal type products), supplementary code L3 (or L2) follows the Part No. of unit or bearing. (Example of Part No. : UCFL206EJL3, UC206L3)

4. For the dimensions and forms of applicable bearings, see the dimensional tables of insert bearing for unit.

5. Housings of spheroidal graphite iron casting are also available.

Rhombic-flanged type

**NANFL**  
Cylindrical bore  
(with eccentric locking collar)  
*d* 12 ~ 55 mm



Variations of tolerance of distance from mounting surface to center of spherical bore ( $\Delta_{A2s}$ ) and tolerance of position of bolt hole (*X*)

Housing No.	$\Delta_{A2s}$	<i>X</i>
NFL204-NFL210	±0.5	0.7
NFL211	±0.8	1

Variations of tolerance of bolt hole diameter ( $\Delta_{Ns}$ )

Housing No.	$\Delta_{Ns}$
NFL204-NFL211	±0.2

Shaft Dia mm inch <i>d</i>	Dimensions inch mm										Bolt Size inch	Unit No.	Housing No.	Bearing No.	Basic Load Ratings kN		Fatigue Load Limit kN	Factor <i>f</i> <sub>0</sub>	Mass kg
	<i>H</i>	<i>L</i>	<i>A</i>	<i>J</i>	<i>N</i>	<i>A</i> <sub>1</sub>	<i>A</i> <sub>2</sub>	<i>A</i> <sub>0</sub>	<i>B</i> <sub>1</sub>	<i>S</i>					<i>C</i> <sub>r</sub>	<i>C</i> <sub>0r</sub>	<i>C</i> <sub>u</sub>		
12 1/2												NANFL201 NANFL201-8 NANFL202 NANFL202-10 NANFL203 NANFL204-12 NANFL204	NFL204	NA201 NA201-8 NA202 NA202-10 NA203 NA204-12 NA204	12.8	6.65	0.302	13.2	0.59
15 5/8	4 7/16	2 3/8	1 5/32	3 17/32	25/64	7/16	3/4	1 25/32	1.720	0.673	5/16								
17 3/4	113	60	29.5	89.7	10	11	19	45.6	43.7	17.1									
20												NANFL205-14 NANFL205-15 NANFL205 NANFL205-16	NFL205	NA205-14 NA205-15 NA205 NA205-16	14.0	7.85	0.357	13.9	0.9
25 7/8 15/16	5 1/8	2 11/16	1 7/32	3 57/64	15/32	1/2	25/32	1 27/32	1.748	0.689	3/8								
25	130	68	31	98.8	12	13	20	46.9	44.4	17.5									
30 1 1/8	5 13/16	3 5/32	1 11/32	4 19/32	15/32	1/2	53/64	2	1.906	0.720	3/8								
30	148	80	34	116.7	12	13	21	51.1	48.4	18.3		NANFL206-18 NANFL206 NANFL206-19 NANFL206-20	NFL206	NA206-18 NA206 NA206-19 NA206-20	19.5	11.3	0.514	13.9	1.1
35 1 1/4 1 5/16	6 11/32	3 17/32	1 7/16	5 1/8	33/64	9/16	27/32	2 1/8	2.012	0.740	7/16								
35	161	90	36.5	130.2	13	14	21.5	53.8	51.1	18.8		NANFL207-20 NANFL207-21 NANFL207-22 NANFL207 NANFL207-23	NFL207	NA207-20 NA207-21 NA207-22 NA207 NA207-23	25.7	15.4	0.700	13.9	1.6
40 1 1/2 1 9/16	6 7/8	3 15/16	1 17/32	5 21/32	33/64	9/16	15/16	2 5/16	2.217	0.843	7/16								
40	175	100	39	143.7	13	14	24	58.9	56.3	21.4		NANFL208-24 NANFL208-25 NANFL208	NFL208	NA208-24 NA208-25 NA208	29.1	17.8	0.809	14.0	2.0
45 1 5/8 1 11/16 1 3/4	7 13/32	4 1/4	1 9/16	5 27/32	19/32	9/16	15/16	2 5/16	2.217	0.843	1/2								
45	188	108	40	148.4	15	14	24	58.9	56.3	21.4		NANFL209-26 NANFL209-27 NANFL209-28 NANFL209	NFL209	NA209-26 NA209-27 NA209-28 NA209	34.1	21.3	0.968	14.0	2.3
50 1 7/8 1 15/16	7 3/4	4 17/32	1 27/32	6 3/16	19/32	9/16	1 1/8	2 5/8	2.469	0.969	1/2								
50	197	115	46.5	157	15	14	28.5	66.6	62.7	24.6		NANFL210-30 NANFL210-31 NANFL210 NANFL210-32	NFL210	NA210-30 NA210-31 NA210 NA210-32	35.1	23.3	1.06	14.4	2.7
55 2 2 1/8 2 3/16	8 13/16	5 1/8	1 31/32	7 1/4	21/32	25/32	1 17/64	2 31/32	2.811	1.094	9/16								
55	224	130	50	184	16.5	20	32	75.6	71.4	27.8		NANFL211-32 NANFL211-34 NANFL211 NANFL211-35	NFL211	NA211-32 NA211-34 NA211 NA211-35	43.4	29.4	1.34	14.4	4.1

Remarks 1. In Part No. of unit and units with covers, fitting codes follow bore diameter numbers. (See Table 2.5 in P.11.)

2. Part No. of applicable grease nipples are shown below.

A-1/4-28UNF ..... 201-210

A-R1/8 ..... 211

3. For the dimensions and forms of applicable bearings, see the dimensional tables of insert bearing for unit.

4. Housings of spheroidal graphite iron casting are also available.

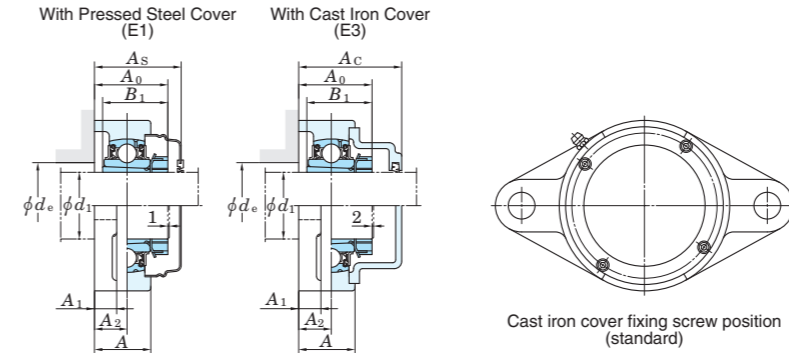
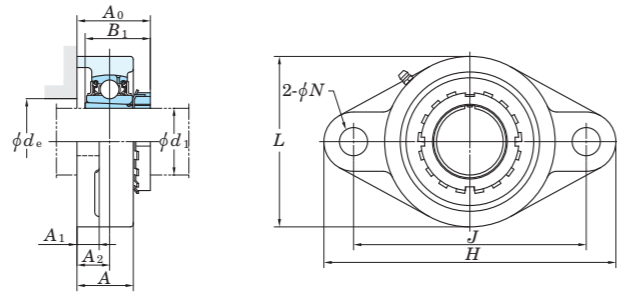


Rhombic-flanged type

UKFL

Tapered bore (with adapter)

d<sub>1</sub> 55 ~ 110 mm



Variations of tolerance of distance from mounting surface to center of spherical bore ( $\Delta A_{2s}$ ) and tolerance of position of bolt hole (X)

Housing No.			$\Delta A_{2s}$	X
FL205-FL210	FLX05-FLX10	FL305-FL310	±0.5	0.7
FL211-FL218		FL311-FL324	±0.8	1

Housing No.			$\Delta N_s$
FL205-FL218	FLX05-FLX10	FL305-FL311	±0.2
		FL312-FL324	±0.3

Shaft Dia. mm inch	Dimensions inch mm											Bolt Size inch mm	Standard			Basic Load Ratings kN	Fatigue Load Limit kN	Factor	With Pressed Steel Cover			With Cast Iron Cover														
													Unit No.	Housing No.	Bearing No.				Adapter Assembly No.	Mass kg	C <sub>r</sub>	C <sub>0r</sub>	C <sub>u</sub>	f <sub>0</sub>	Unit No.		Dimension mm inch	Mass kg	Unit No.		Dimension mm inch	Mass kg				
	d <sub>1</sub>	H	L	A	J	N	A <sub>1</sub>	A <sub>2</sub>	A <sub>0</sub>	B <sub>1</sub>	d <sub>e</sub> (min.)														Open End Type	Closed End Type			A <sub>s</sub>	Open End Type			Closed End Type	A <sub>c</sub>		
55	2 1/8	9 27/32	5 1/2	1 7/8	7 61/64	29/32	23/32	1 9/64	2 19/32	2 7/16	2 29/32	3/4	UKFL212	FL212	UK212	HS2312X H2312X	4.1 4.1	52.4 36.2	1.65	14.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2 1/8	10 5/8	6 9/16	2 7/32	8 11/32	1 7/32	7/8	1 19/64	2 3/4	2 7/16	-	1	UKFL312	FL312	UK312	HS2312X H2312X	6.9 6.9	81.9 52.2	2.37	13.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
60	2 1/4	10 5/32	6 3/32	1 31/32	8 17/64	29/32	25/32	1 3/16	2 21/32	2 9/16	2 29/32	3/4	UKFL213	FL213	UK213	HE2313X H2313X HS2313X	5.0 5.0 5.0	57.2 40.1	1.82	14.4	UKFL213C	UKFL213D	74.5	2 15/16	5.0	UKFL213FC	UKFL213FD	87	3 7/16	5.9						
	2 3/8	258	155	50	210	23	20	30	67.5	65	74	M20																								
	2 1/4	11 5/8	6 7/8	2 9/32	9 29/64	1 7/32	31/32	1 19/64	2 13/16	2 9/16	-	1	UKFL313	FL313	UK313	HE2313X H2313X HS2313X	8.6 8.6 8.6	92.7 59.9	2.68	13.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
65	2 1/2	10 13/16	6 1/2	2 7/32	8 55/64	29/32	25/32	1 11/32	2 15/16	2 7/8	3 11/32	3/4	UKFL215	FL215	UK215	HE2315X H2315X	6.6 6.6	67.4 48.3	2.17	14.5	UKFL215C	UKFL215D	83.5	3 9/32	6.6	UKFL215FC	UKFL215FD	96	3 25/32	7.6						
	2 1/2	12 19/32	7 11/16	2 19/32	10 15/64	1 3/8	1 3/16	1 17/32	2 7/32	2 7/8	-	1 1/8	UKFL315	FL315	UK315	HE2315X H2315X	11.4 11.4	113 77.2	3.24	13.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
70	2 3/4	11 13/32	7 3/32	2 9/32	9 11/64	63/64	25/32	1 11/32	3 3/32	3 1/16	3 17/32	7/8	UKFL216	FL216	UK216	HE2316X H2316X	8.1 8.1	72.7 53.0	2.30	14.6	UKFL216C	UKFL216D	88.5	3 15/32	8.1	UKFL216FC	UKFL216FD	103	4 1/16	9.4						
	2 3/4	13 31/32	8 9/32	2 11/16	11 7/32	1 1/2	1 1/4	1 1/2	3 1/4	3 1/16	-	1 1/4	UKFL316	FL316	UK316	HE2316X H2316X	13.9 13.9	123 86.7	3.53	13.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
75	3	12	7 15/32	2 15/32	9 49/64	63/64	7/8	1 27/64	3 1/4	3 7/32	3 25/32	7/8	UKFL217	FL217	UK217	H2317X HE2317X	9.9 9.9	84.0 61.9	2.60	14.5	UKFL217C	UKFL217D	92.5	3 21/32	9.9	UKFL217FC	UKFL217FD	107	4 7/32	11.3						
	3	14 9/16	8 21/32	2 29/32	11 13/16	1 1/2	1 1/4	1 47/64	3 5/8	3 7/32	-	1 1/4	UKFL317	FL317	UK317	H2317X HE2317X	15.8 15.8	133 96.8	3.82	13.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
80	-	12 19/32	8 1/16	2 11/16	10 7/16	63/64	29/32	1 37/64	3 17/32	3 3/8	4 1/32	7/8	UKFL218	FL218	UK218	H2318X	12.2	96.1 71.5	2.91	14.5	UKFL218C	UKFL218D	101.5	4	12.2	UKFL218FC	UKFL218FD	116	4 9/16	13.8						
	-	15 5/32	9 1/4	3	12 13/32	1 1/2	1 13/32	1 47/64	3 5/8	3 3/8	-	1 1/4	UKFL318	FL318	UK318	H2318X	19.1	143 107	4.11	13.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
85	3 1/4	15 15/16	9 27/32	3 11/16	13	1 39/64	1 9/16	2 21/64	4 3/8	3 17/32	-	1 3/8	UKFL319	FL319	UK319	HE2319X H2319X	24.9 24.9	153 119	4.45	13.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	3 1/2	17 5/16	10 5/8	3 11/16	14 11/64	1 47/64	1 9/16	2 21/64	4 7/16	3 13/16	-	1 1/2	UKFL320	FL320	UK320	HE2320X H2320X	29.0 29.0	173 141	5.08	13.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
100	4	18 1/2	11 13/16	3 29/32	15 23/64	1 47/64	1 21/32	2 23/64	4 23/32	4 1/8	-	1 1/2	UKFL322	FL322	UK322	H2322X HE2322X	36.1 36.1	205 180	6.15	13.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	20 15/32	13	4 11/32	16 59/64	1 27/32	1 7/8	2 9/16	5 1/8	4 13/32	-	1 5/8	UKFL324	FL324	UK324	H2324	51.9	207 185	6.10	13.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

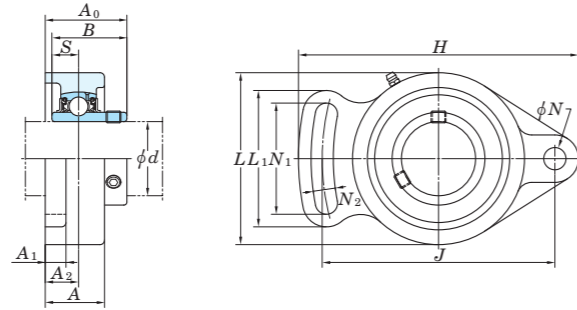
Remarks 1. In Part No. of unit and units with covers, fitting codes follow bore diameter numbers. (See Table 2.5 in P.11.)

- 2. Part No. of applicable grease nipples are shown below.  
A-1/4-28UNF ..... 205-210, X05-X09, 305-308  
A-R1/8 ..... 211-218, X10, 309-324

- 3. In Part No. of unit with adapters and bearing with adapters, Part No. of applicable adapter follow the Part No. shown in the dimensional tables. (Example of Part No. : UKFL206J + H2306X, UK206 + H2306X)
- 4. As for the triple-lip seal type product (205 is the double-lip seal type product), supplementary code L3 (or L2) follows the Part No. of unit or bearing. (Example of Part No. : UKFL206JL3 + H2306X, UK206L3 + H2306X)
- 5. For the dimensions and forms of applicable bearings and adapters, see the dimensional tables of insert bearing for unit and adapter assemblies.
- 6. Housings of spheroidal graphite iron casting are also available.

Adjustable rhombic-flanged type

**UCFA**  
Cylindrical bore (with set screws)  
d 12 ~ 55 mm



Variations of tolerance of distance from mounting surface to center of spherical bore ( $\Delta A_{2s}$ )

Housing No.	Unit: mm
FA204-FA210	$\pm 0.5$
FA211	$\pm 0.8$

Variations of tolerance of bolt hole diameter ( $\Delta N_b$ )

Housing No.	Unit: mm
FA204-FA211	$\pm 0.2$

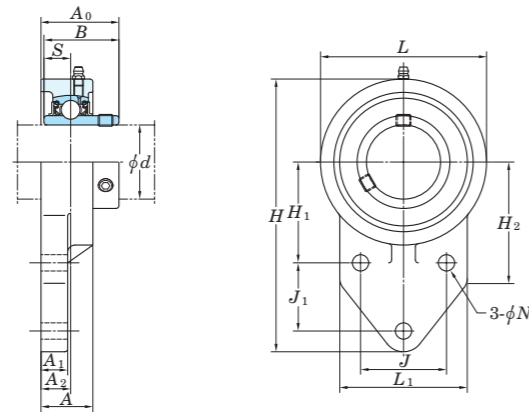
Shaft Dia. mm inch  d	Dimensions inch mm													Bolt Size  inch mm	Unit No.	Housing No.	Bearing No.	Basic Load Ratings kN		Fatigue Load Limit kN C <sub>u</sub>	Factor f <sub>0</sub>	Mass kg	
	H	L	A	J	N	N <sub>1</sub>	N <sub>2</sub>	L <sub>1</sub>	A <sub>1</sub>	A <sub>2</sub>	A <sub>0</sub>	B	S					C <sub>r</sub>	C <sub>0r</sub>				
12 1/2																UCFA201 UCFA201-8 UCFA202		UC201 UC201-8 UC202					
15 5/8	3 27/32	2 5/16	15/16	3 5/64	25/64	1 9/16	13/32	1 31/32	7/16	35/64	1 1/4	1.220	0.500	5/16	UCFA202-10 UCFA203 UCFA204-12 UCFA204	FA204	UC202-10 UC203 UC204-12 UC204	12.8	6.65	0.302	13.2	0.45	
17 3/4	98	59	24	78	10	40	10	50	11	13.8	32.1	31	12.7	M8								0.44	
20																						0.42	
25 7/8 15/16 1	4 7/8	2 3/4	1 1/16	3 55/64	7/16	1 15/16	7/16	2 17/32	1/2	5/8	1 13/32	1.343	0.563	3/8	UCFA205-14 UCFA205-15 UCFA205 UCFA205-16	FA205	UC205-14 UC205-15 UC205 UC205-16	14.0	7.85	0.357	13.9	0.68	
30 1 1/8 1 3/16 1 1/4	5 9/16	3 9/32	1 3/16	4 39/64	7/16	2 7/32	15/32	2 11/16	1/2	45/64	1 9/16	1.500	0.626	3/8	UCFA206-18 UCFA206 UCFA206-19 UCFA206-20	FA206	UC206-18 UC206 UC206-19 UC206-20	19.5	11.3	0.514	13.9	1.0	
35 1 1/4 1 5/16 1 3/8 1 7/16	6 3/32	3 25/32	1 11/32	5 1/8	33/64	2 15/32	1/2	2 15/16	9/16	47/64	1 23/32	1.689	0.689	7/16	UCFA207-20 UCFA207-21 UCFA207-22 UCFA207 UCFA207-23	FA207	UC207-20 UC207-21 UC207-22 UC207 UC207-23	25.7	15.4	0.700	13.9	1.5	
40 1 1/2 1 9/16	6 23/32	4 1/8	1 1/2	5 43/64	33/64	2 3/4	1/2	3 5/16	9/16	13/16	2	1.937	0.748	7/16	UCFA208-24 UCFA208-25 UCFA208	FA208	UC208-24 UC208-25 UC208	29.1	17.8	0.809	14	1.9	
45 1 5/8 1 11/16 1 3/4	7 1/16	4 3/8	1 9/16	5 53/64	19/32	2 27/32	19/32	3 15/32	9/16	55/64	2 1/16	1.937	0.748	1/2	UCFA209-26 UCFA209-27 UCFA209-28 UCFA209	FA209	UC209-26 UC209-27 UC209-28 UC209	34.1	21.3	0.968	14	1.7	
50 1 7/8 1 15/16 2 2	7 7/16	4 9/16	1 9/16	6 3/16	19/32	2 15/16	19/32	3 5/8	9/16	57/64	2 5/32	2.031	0.748	1/2	UCFA210-30 UCFA210-31 UCFA210 UCFA210-32	FA210	UC210-30 UC210-31 UC210 UC210-32	35.1	23.3	1.06	14.4	2.0	
55 2 1/8 2 3/16	8 1/2	5 1/4	1 23/32	7 1/4	5/8	3 3/8	5/8	4 1/32	25/32	1 1/64	2 5/16	2.189	0.874	1/2	UCFA211-32 UCFA211-34 UCFA211 UCFA211-35	FA211	UC211-32 UC211-34 UC211 UC211-35	43.4	29.4	1.34	14.4	3.6	

Remarks 1. In Part No. of unit and units with covers, fitting codes follow bore diameter numbers. (See Table 2.5 in P.11.)  
 2. Part No. of applicable grease nipples are shown below.  
 A-1/4-28UNF..... 201~210  
 A-R1/8..... 211

3. As for the triple-lip seal type product (from 201 to 205 are the double-lip seal type products), supplementary code L3 (or L2) follows Part No. of unit or bearing. (Example of Part No. : UCFA206JL3, UC206L3)  
 4. For the dimensions and forms of applicable bearings, see the dimensional tables of insert bearing for unit.  
 5. Tapered bore (with adapter) type products are also available. (Example of Part No. : UKFA205J + H2305X, UK205 + H2305X)

Three-bolt flange type

**UCFB**  
Cylindrical bore (with set screws)  
 $d$  12 ~ 50 mm



Variations of tolerance of distance from mounting surface to center of spherical bore ( $\Delta A_{2s}$ ), variations of tolerance of distance between centers of bolt holes ( $\Delta J_s, \Delta J_{1s}$ ), variations of tolerance of distance between both grooves ( $\Delta H_{1s}$ )

Housing No.	$\Delta A_{2s}$	$\Delta J_s$	$\Delta J_{1s}$	$\Delta H_{1s}$
FB204-FB210	±0.5			

Variations of tolerance of bolt hole diameter ( $\Delta N_s$ )

Housing No.	$\Delta N_s$
FB204-FB210	±0.2

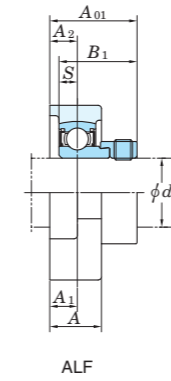
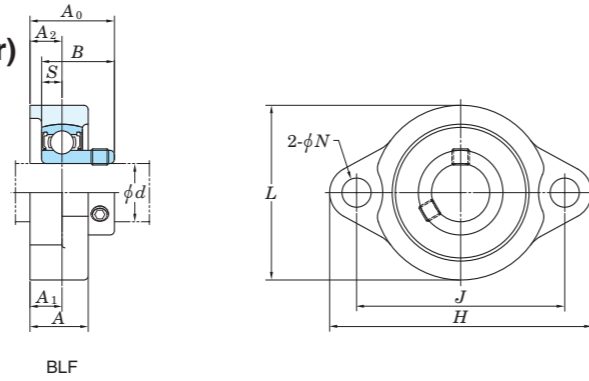
Shaft Dia. mm inch $d$	Dimensions inch mm															Bolt Size inch mm	Unit No.	Housing No.	Bearing No.	Basic Load Ratings kN		Fatigue Load Limit kN $C_u$	Factor $f_0$	Mass kg		
	$H$	$L$	$A$	$J$	$J_1$	$N$	$H_1$	$H_2$	$L_1$	$A_1$	$A_2$	$A_0$	$B$	$S$	$C_r$					$C_{0r}$						
12 1/2																5/16	UCFB201 UCFB201-8 UCFB202 UCFB202-10 UCFB203 UCFB204-12 UCFB204	FB204	UC201 UC201-8 UC202 UC202-10 UC203 UC204-12 UC204	12.8 6.65	0.302	13.2	0.64 0.62 0.61 0.59			
15 5/8	4 11/32	2 7/16	1 9/16	1 17/64	1 1/16	3/8	1 21/32	2 1/16	2 1/16	1/2	17/32	1 1/4	1.220	0.500		5/16	UCFB205-14 UCFB205-15 UCFB205 UCFB205-16	FB205	UC205-14 UC205-15 UC205 UC205-16	14.0 7.85	0.357	13.9	0.68			
17 3/4	110	62	24.5	32	27	9.5	42	52	52	13	13.5	31.8	31	12.7		M8	UCFB206-18 UCFB206 UCFB206-19 UCFB206-20	FB206	UC206-18 UC206 UC206-19 UC206-20	19.5 11.3	0.514	13.9	0.92			
20																5/16	UCFB207-20 UCFB207-21 UCFB207-22 UCFB207 UCFB207-23	FB207	UC207-20 UC207-21 UC207-22 UC207 UC207-23	25.7 15.4	0.700	13.9	1.3			
25 7/8 15/16	4 9/16	2 11/16	1 1/16	1 11/32	1 1/16	3/8	1 49/64	2 1/16	2 7/32	1/2	19/32	1 3/8	1.343	0.563		5/16	UCFB208-24 UCFB208-25 UCFB208	FB208	UC208-24 UC208-25 UC208	29.1 17.8	0.809	14.0	1.8			
25 1	116	68	27	34	27	9.5	45	52	56	13	15	34.8	34.1	14.3		M8	UCFB209-26 UCFB209-27 UCFB209-28 UCFB209	FB209	UC209-26 UC209-27 UC209-28 UC209	34.1 21.3	0.968	14.0	2.0			
30 1 1/8	5 1/8	3 1/16	1 3/16	1 37/64	1 9/64	3/8	1 31/32	2 5/32	2 9/16	1/2	43/64	1 17/32	1.500	0.626		5/16	UCFB210-30 UCFB210-31 UCFB210	FB210	UC210-30 UC210-31 UC210	35.1 23.3	1.06	14.4	2.3			
30 1 3/16	130	78	30	40	29	9.5	50	55	65	13	17	39.2	38.1	15.9		M8										
30 1 1/4																3/8										
35 1 1/4 1 5/16 1 3/8	5 21/32	3 17/32	1 5/16	1 13/16	1 17/64	3/8	2 11/64	2 7/16	2 3/4	19/32	3/4	1 3/4	1.689	0.689		5/16										
35 1 7/16	144	90	33.5	46	32	9.5	55	62	70	15	19	44.4	42.9	17.5		M8										
40 1 1/2 1 9/16	6 15/32	3 15/16	1 3/8	1 31/32	1 39/64	7/16	2 23/64	2 27/32	3 1/16	5/8	25/32	1 31/32	1.937	0.748		3/8										
40 1 9/16	164	100	35	50	41	11	60	72	78	16	20	50.2	49.2	19		M10										
45 1 5/8 1 11/16 1 3/4	6 27/32	4 3/16	1 3/8	2 1/8	1 11/16	7/16	2 9/16	3	3 5/32	23/32	25/32	1 31/32	1.937	0.748		3/8										
45 1 3/4	174	106	35.5	54	43	11	65	76	80	18	20	50.2	49.2	19		M10										
50 1 7/8 1 15/16	7 1/4	4 13/32	1 7/16	2 9/32	1 13/16	7/16	2 43/64	3 7/32	3 3/8	23/32	25/32	2 1/16	2.031	0.748		3/8										
50 2	184	112	36	58	46	11	68	82	86	18	20	52.6	51.6	19		M10										

Remarks 1. In Part No. of unit and units with covers, fitting codes follow bore diameter codes. (See Table 2.5 in P.11.)  
 2. Part No. of applicable grease nipple is A-1/4-28UNF.  
 3. As for the triple-lip seal type product (from 201 to 205 are the double-lip seal type products), supplementary code L3 (or L2) follows Part No. of unit or bearing. (Example of Part No. : UCFB206JL3, UC206L3)

4. For the dimensions and forms of applicable bearings, see the dimensional tables of insert bearing for unit.  
 5. Tapered bore (with adapter) type products are also available. (Example of Part No. : UKFB205J + H2305X, UK205 + H2305X)

Light duty rhombic-flanged type

**BLF** Cylindrical bore (with set screws)  
**ALF** Cylindrical bore (with eccentric locking collar)  
 d 12 ~ 35 mm



Variations of tolerance of distance from mounting surface to center of spherical bore ( $\Delta A_{2s}$ ) and variations of tolerance of distance between centers of bolt holes ( $\Delta J_s$ )

Housing No.	$\Delta A_{2s}$	$\Delta J_s$
LF203-LF207	$\pm 0.5$	$\pm 0.7$

Variations of tolerance of bolt hole diameter ( $\Delta N_s$ )

Housing No.	$\Delta N_s$
LF203-LF207	$\pm 0.2$

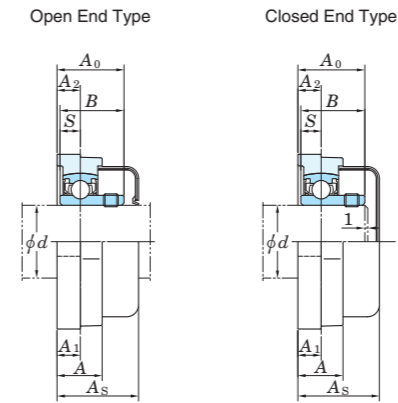
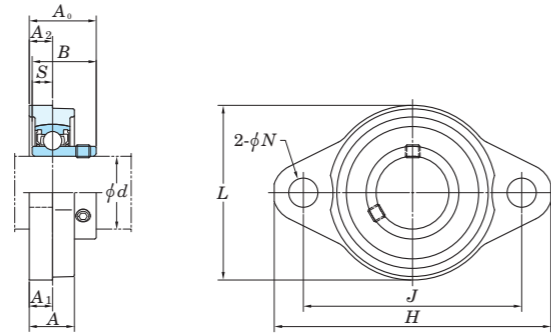
Shaft Dia. mm inch	Dimensions														Bolt Size inch mm	Unit No.	Bearing No.	Unit No.	Bearing No.	Housing No.	Basic Load Ratings		Fatigue Load Limit	Factor $f_0$	Mass	
	inch mm																				kN		kN		kg	
	$H$	$L$	$A$	$J$	$N$	$A_1$	$A_2$	$S$	BLF $A_0$ $B$		ALF $A_{01}$ $B_1$		$C_r$	$C_{0r}$							$C_u$	BLF	ALF			
12 1/2	3 3/16	2 1/16	23/32	2 1/2	5/16	3/8	3/8	0.236	1	0.866	1 1/4	1.122	1/4	BLF201	SB201	ALF201	SA201	9.55	4.80	0.218	13.2	0.25	0.28			
														BLF201-8	SB201-8		ALF201-8							SA201-8		
														BLF202	SB202		ALF202							SA202		
15 5/8	81	52	18	63.5	8	9.5	9.5	6	25.5	22	32	28.5	M6	BLF202-10	SB202-10	ALF202-10	SA202-10	12.8	6.65	0.302	13.2	0.33	0.33			
														BLF203	SB203	ALF203	SA203									
														BLF204-12	SB204-12	ALF204-12	SA204-12									
20 3/4	90	60	20	71.5	10	11	11	7	29	25	33.5	29.5	M8	BLF204	SB204	ALF204	SA204	14.0	7.85	0.357	13.9	0.38	0.42			
														BLF205-14	SB205-14	ALF205-14	SA205-14									
														BLF205-15	SB205-15	ALF205-15	SA205-15									
25 7/8	95	64	20	76	10	11	11	7.5	30.5	27	34	30.5	M8	BLF205	SB205	ALF205	SA205	19.5	11.3	0.514	13.9	0.57	0.60			
														BLF205-16	SB205-16	ALF205-16	SA205-16									
														BLF206-18	SB206-18	ALF206-18	SA206-18									
30 1 1/8	113	76	22.5	90.5	12	12	12	8	34	30	37.9	33.9	M10	BLF206	SB206	ALF206	SA206	25.7	15.4	0.700	13.9	0.77	0.85			
														BLF206-19	SB206-19	ALF206-19	SA206-19									
														BLF206-20	SB206-20	ALF206-20	SA206-20									
35 1 1/4	122	89	24	100	12	13	13	8.5	36.5	32	41	36.5	M10	BLF207-20	SB207-20	ALF207-20	SA207-20	25.7	15.4	0.700	13.9	0.77	0.85			
														BLF207-21	SB207-21	ALF207-21	SA207-21									
														BLF207-22	SB207-22	ALF207-22	SA207-22									
35 1 3/8	122	89	24	100	12	13	13	8.5	36.5	32	41	36.5	M10	BLF207	SB207	ALF207	SA207	25.7	15.4	0.700	13.9	0.77	0.85			
														BLF207-23	SB207-23	ALF207-23	SA207-23									

Remarks 1. In Part No. of unit and units with covers, fitting codes follow bore diameter codes. (See Table 2.5 in P.11.)  
 2. Allowable load to housing in radial direction is approximately half of basic load rating of bearing,  $C_r$  (when safety factor is 4).  
 3. For the dimensions and forms of applicable bearings, see the dimensional tables of insert bearing for unit.



“Compact” series rhombic-flanged type

**UFL**  
Cylindrical bore (with set screws)  
 $d \sim 8 \sim 30 \text{ mm}$



Variations of tolerance of distance from mounting surface to center of spherical bore ( $\Delta A_{2s}$ ) and variations of tolerance of distance between centers of bolt holes ( $\Delta J_s$ )

Housing No.	$\Delta A_{2s}$	$\Delta J_s$
FL08	±0.5	±0.3
FL000-FL006		

Unit: mm

Variations of tolerance of bolt hole diameter ( $\Delta N_s$ )

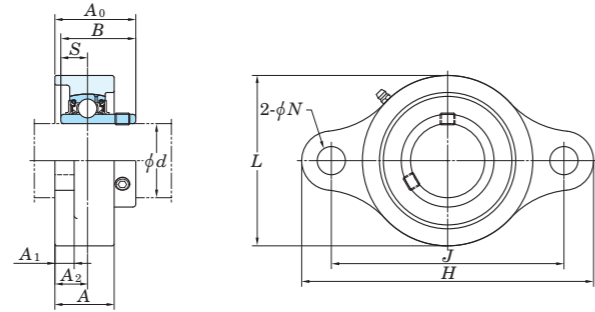
Housing No.	$\Delta N_s$
FL08	±0.2
FL000-FL006	

Unit: mm

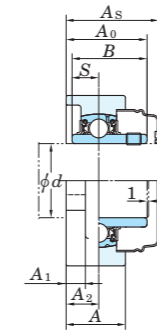
Shaft Dia. mm $d$	Dimensions										Bolt Size inch mm	Standard			Mass kg	Basic Load Ratings kN		Fatigue Load Limit kN $C_u$	Factor $f_0$	With Rubber Coated Cover		Mass kg		
	inch mm											Unit No.	Housing No.	Bearing No.		$C_r$	$C_{0r}$			Open End Type	Closed End Type		Dimension mm inch $A_s$	
8	$1 \frac{7}{8}$	$1 \frac{1}{16}$	$1 \frac{1}{32}$	$1 \frac{29}{64}$	$\frac{3}{16}$	$\frac{5}{32}$	$\frac{5}{32}$	$\frac{1}{2}$	0.472	0.1378	No.8	UFL08	FL08	SU08	0.030	3.27	1.37	0.062	12.4	-	-	-	-	
	48	27	8.5	37	4.8	4	4	12.5	12	3.5	M4													
10	$2 \frac{3}{8}$	$1 \frac{13}{32}$	$\frac{15}{32}$	$1 \frac{49}{64}$	$\frac{9}{32}$	$\frac{1}{4}$	$\frac{15}{64}$	$\frac{5}{8}$	0.591	0.197	$\frac{1}{4}$	UFL000	FL000	SU000	0.050	4.55	1.95	0.089	12.3	UFL000C	UFL000D	20.5	$\frac{13}{16}$	0.05
	60	36	12	45	7	6	6	16	15	5	M6													
12	$2 \frac{15}{32}$	$1 \frac{1}{2}$	$\frac{15}{32}$	$1 \frac{57}{64}$	$\frac{9}{32}$	$\frac{1}{4}$	$\frac{15}{64}$	$\frac{5}{8}$	0.591	0.197	$\frac{1}{4}$	UFL001	FL001	SU001	0.065	5.10	2.40	0.109	13.2	UFL001C	UFL001D	20.5	$\frac{13}{16}$	0.07
	63	38	12	48	7	6	6	16	15	5	M6													
15	$2 \frac{5}{8}$	$1 \frac{21}{32}$	$\frac{1}{2}$	$2 \frac{3}{32}$	$\frac{9}{32}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{11}{16}$	0.650	0.217	$\frac{1}{4}$	UFL002	FL002	SU002	0.085	5.60	2.85	0.130	13.9	UFL002C	UFL002D	22	$\frac{7}{8}$	0.09
	67	42	13	53	7	6.5	6.5	17.5	16.5	5.5	M6													
17	$2 \frac{25}{32}$	$1 \frac{13}{16}$	$\frac{9}{16}$	$2 \frac{13}{64}$	$\frac{9}{32}$	$\frac{5}{16}$	$\frac{5}{16}$	$\frac{23}{32}$	0.689	0.236	$\frac{1}{4}$	UFL003	FL003	SU003	0.11	6.00	3.25	0.148	14.4	UFL003C	UFL003D	23.5	$\frac{15}{16}$	0.11
	71	46	14	56	7	7	7	18.5	17.5	6	M6													
20	$3 \frac{17}{32}$	$2 \frac{3}{32}$	$\frac{5}{8}$	$2 \frac{51}{64}$	$\frac{13}{32}$	$\frac{5}{16}$	$\frac{5}{16}$	$\frac{7}{8}$	0.827	0.276	$\frac{5}{16}$	UFL004	FL004	SU004	0.18	9.40	5.05	0.230	13.9	UFL004C	UFL004D	27	$1 \frac{1}{16}$	0.18
	90	55	16	71	10	8	8	22	21	7	M8													
25	$3 \frac{3}{4}$	$2 \frac{3}{8}$	$\frac{5}{8}$	$2 \frac{61}{64}$	$\frac{13}{32}$	$\frac{5}{16}$	$\frac{5}{16}$	$\frac{29}{32}$	0.866	0.276	$\frac{5}{16}$	UFL005	FL005	SU005	0.23	10.1	5.85	0.266	14.5	UFL005C	UFL005D	28	$1 \frac{3}{32}$	0.23
	95	60	16	75	10	8	8	23	22	7	M8													
30	$4 \frac{13}{32}$	$2 \frac{3}{4}$	$\frac{23}{32}$	$3 \frac{11}{32}$	$\frac{1}{2}$	$\frac{11}{32}$	$\frac{23}{64}$	$1 \frac{1}{32}$	0.965	0.295	$\frac{3}{8}$	UFL006	FL006	SU006	0.31	13.2	8.25	0.375	14.7	UFL006C	UFL006D	31	$1 \frac{7}{32}$	0.31
	112	70	18	85	13	9	9	26	24.5	7.5	M10													

Remarks 1. In Part No. of unit and units with covers, fitting codes follow bore diameter codes. (See Table 2.5 in P.11.)  
 2. Housing is made from special light alloy.  
 3. For the dimensions and forms of applicable bearings, see the dimensional tables of insert bearing for unit.

**UCSFL-S6**  
Cylindrical bore (with set screws)  
 $d$  12 ~ 50 mm



With Pressed Stainless Steel Cover (E1)



Variations of tolerance of distance from mounting surface to center of spherical bore ( $\Delta A_{2s}$ ) and variations of tolerance of distance between centers of bolt holes ( $\Delta J_s$ )

Housing No.	$\Delta A_{2s}$	$\Delta J_s$
SFL203-SFL210	$\pm 0.5$	$\pm 0.5$

Unit: mm

Variations of tolerance of bolt hole diameter ( $\Delta N_s$ )

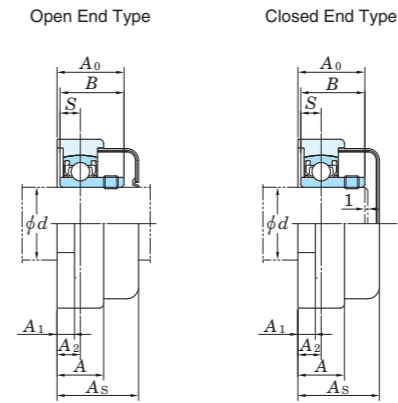
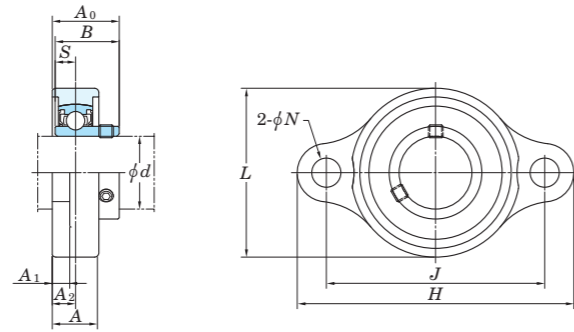
Housing No.	$\Delta N_s$
SFL203-SFL210	$\pm 0.2$

Unit: mm

Shaft Dia. mm $d$	Dimensions mm										Bolt Size mm	Standard		Bearing No.	Mass kg	Basic Load Ratings kN		Fatigue Load Limit kN $C_u$	Factor $f_0$	With Pressed Stainless Steel Cover		Dimension mm $A_s$	Mass kg
	$H$	$L$	$A$	$J$	$N$	$A_1$	$A_2$	$A_0$	$B$	$S$		Unit No.	Housing No.			$C_r$	$C_{0r}$			Open End Type	Closed End Type		
12	98	52	24	76.5	12	10	14	29.9	27.4	11.5	M10	UCSFL201XS6	SFL203	UC201XS6	0.33	8.15	3.85	0.175	13.2	-	-	-	0.33
15	98	52	24	76.5	12	10	14	29.9	27.4	11.5	M10	UCSFL202XS6	SFL203	UC202XS6	0.33	8.15	3.85	0.175	13.2	-	-	-	0.33
17	98	52	24	76.5	12	10	14	29.9	27.4	11.5	M10	UCSFL203XS6	SFL203	UC203XS6	0.33	8.15	3.85	0.175	13.2	-	-	-	0.33
20	113	60	26	90	12	10	15	33.3	31	12.7	M10	UCSFL204S6	SFL204	UC204S6	0.47	10.9	5.35	0.243	13.2	UCSFL204CS6	UCSFL204DS6	38	0.47
25	130	68	27.5	99	16	10	16	35.8	34.1	14.3	M14	UCSFL205S6	SFL205	UC205S6	0.61	11.9	6.30	0.286	13.9	UCSFL205CS6	UCSFL205DS6	40	0.61
30	148	80	31	117	16	10	18	40.2	38.1	15.9	M14	UCSFL206S6	SFL206	UC206S6	0.9	16.5	9.05	0.411	13.9	UCSFL206CS6	UCSFL206DS6	45	0.9
35	161	85	34	130	16	11	19	44.4	42.9	17.5	M14	UCSFL207S6	SFL207	UC207S6	1.1	21.8	12.3	0.559	13.9	UCSFL207CS6	UCSFL207DS6	49	1.1
40	175	94	36	144	16	12	21	51.2	49.2	19	M14	UCSFL208S6	SFL208	UC208S6	1.4	24.8	14.3	0.650	14.0	UCSFL208CS6	UCSFL208DS6	56	1.4
45	188	100	38	148	19	13	22	52.2	49.2	19	M16	UCSFL209S6	SFL209	UC209S6	1.6	27.8	16.2	0.736	14.0	UCSFL209CS6	UCSFL209DS6	57	1.6
50	197	106	40	157	19	13	22	54.6	51.6	19	M16	UCSFL210S6	SFL210	UC210S6	1.9	29.8	18.6	0.845	14.4	UCSFL210CS6	UCSFL210DS6	59	1.9

Remarks 1. In Part No. of unit and units with covers, fitting codes follow bore diameter codes. (See Table 2.5 in P.11.)  
2. Part No. of applicable grease nipple is A-1/4-28UNFN12.  
3. For the dimensions and forms of applicable bearings, see the dimensional tables of insert bearing for unit.

**USFL-S6**  
Cylindrical bore (with set screws)  
 $d$  10 ~ 30 mm



Variations of tolerance of distance from mounting surface to center of spherical bore ( $\Delta A_{2s}$ ) and variations of tolerance of distance between centers of bolt holes ( $\Delta J_s$ )

Housing No.	$\Delta A_{2s}$	$\Delta J_s$
SFL000-SFL006	$\pm 0.5$	$\pm 0.3$

Unit: mm

Variations of tolerance of bolt hole diameter ( $\Delta N_s$ )

Housing No.	$\Delta N_s$
SFL000-SFL006	$\pm 0.2$

Unit: mm

Shaft Dia. mm $d$	Dimensions										Bolt Size inch mm	Standard			Mass kg	Basic Load Ratings kN		Fatigue Load Limit kN $C_u$	Factor $f_0$	With Rubber Coated Cover			
	inch mm											Unit No.	Housing No.	Bearing No.		$C_r$	$C_{0r}$			Unit No.		Dimension mm inch $A_s$	Mass kg
	$H$	$L$	$A$	$J$	$N$	$A_1$	$A_2$	$A_0$	$B$	$S$										Open End Type	Closed End Type		
10	2 3/8 60	1 11/32 34	15/32 12	1 49/64 45	9/32 7	3/16 5	15/64 6	5/8 16	0.591 15	0.197 5	1/4 M6	USFL000S6	SFL000	SU000S6	0.076	3.9	1.55	0.070	12.3	USFL000CS6	USFL000DS6	20.5 13/16	0.08
12	2 15/32 63	1 13/32 36	15/32 12	1 57/64 48	9/32 7	3/16 5	15/64 6	5/8 16	0.591 15	0.197 5	1/4 M6	USFL001S6	SFL001	SU001S6	0.080	4.3	1.9	0.086	13.2	USFL001CS6	USFL001DS6	20.5 13/16	0.08
15	2 5/8 67	1 5/8 41	1/2 13	2 3/32 53	9/32 7	1/4 6	1/4 6.5	11/16 17.5	0.650 16.5	0.217 5.5	1/4 M6	USFL002S6	SFL002	SU002S6	0.1	4.7	2.25	0.102	13.9	USFL002CS6	USFL002DS6	22 7/8	0.1
17	2 25/32 71	1 23/32 44	9/16 14	2 13/64 56	9/32 7	1/4 6	9/32 7	23/32 18.5	0.689 17.5	0.236 6	1/4 M6	USFL003S6	SFL003	SU003S6	0.13	5.1	2.6	0.118	14.4	USFL003CS6	USFL003DS6	23.5 15/16	0.13
20	3 19/32 91	2 3/32 53	5/8 16	2 51/64 71	13/32 10	1/4 6	5/16 8	7/8 22	0.827 21	0.276 7	5/16 M8	USFL004S6	SFL004	SU004S6	0.21	7.9	4	0.182	13.9	USFL004CS6	USFL004DS6	27 1 1/16	0.21
25	3 3/4 95	2 9/32 58	5/8 16	2 51/64 75	13/32 10	1/4 6	5/16 8	29/32 23	0.866 22	0.276 7	5/16 M8	USFL005S6	SFL005	SU005S6	0.23	8.5	4.65	0.211	14.5	USFL005CS6	USFL005DS6	28 1 3/32	0.23
30	4 11/32 110	2 19/32 66	23/32 18	3 11/32 85	1/2 13	9/32 7	23/64 9	1 1/32 26	0.965 24.5	0.295 7.5	3/8 M10	USFL006S6	SFL006	SU006S6	0.33	11.2	6.6	0.300	14.7	USFL006CS6	USFL006DS6	31 1 7/32	0.33

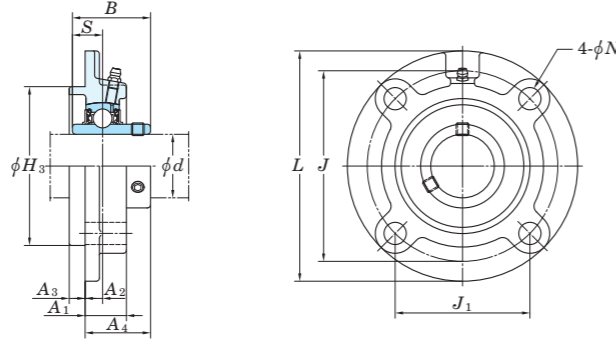
Remarks 1. In Part No. of unit and units with covers, fitting codes follow bore diameter codes. (See Table 2.5 in P.11.)  
2. For the dimensions and forms of applicable bearings, see the dimensional tables of insert bearing for unit.





Round-flanged type with spigot joint

**UCFCX-E**  
Cylindrical bore (with set screws)  
 $d$  25 ~ 100 mm



Variations of tolerance of spigot joint outside diameter ( $\Delta H_{3s}$ ), variations of tolerance of distance from mounting surface to center of spherical bore ( $\Delta A_{2s}$ ), tolerance of position of bolt hole (X), and tolerance of circumferential runout of spigot joint (Y)

Variations of tolerance of bolt hole diameter ( $\Delta N_s$ )

Housing No.	Unit: mm			
	$\Delta H_{3s}$	$\Delta A_{2s}$	X	Y
FCX05E	0 -0.046	±0.5	0.7	0.2
FCX06E-FCX10E	0 -0.054			
FCX12E-FCX15E	0 -0.063	±0.8	1	0.3
FCX16E-FCX18E	0 -0.072			
FCX20E				

Housing No.	Unit: mm
	$\Delta N_s$
FCX05E-FCX20E	±0.2

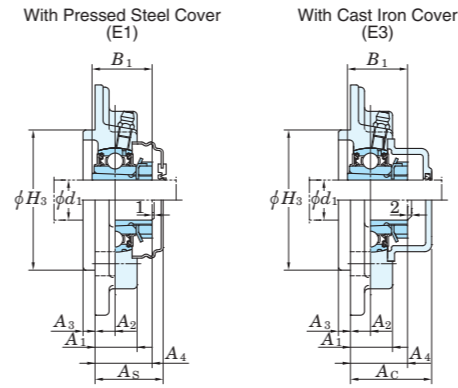
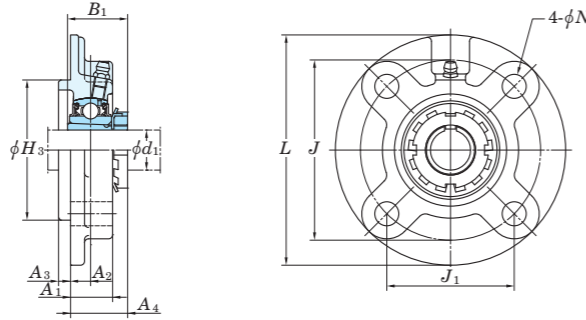
Shaft Dia. mm inch	Dimensions inch mm	Bolt Size inch mm	Unit No.	Housing No.	Bearing No.	Basic Load Ratings kN		Fatigue Load Limit kN	Factor $f_0$	Mass kg										
						$C_r$	$C_{0r}$													
25 1	$L$	$H_3$	$J$	$J_1$	$N$	$A_1$	$A_2$	$A_3$	$A_4$	$B$	$S$	M8	UCFCX05E UCFCX05-16E	FCX05E	UCX05 UCX05-16	19.5	11.3	0.514	13.9	1.2
	111	76.2	92	65	9.5	24	10	6	32.2	38.1	15.9									
30 1 3/16 1 1/4	5	3.375	4 9/64	2 59/64	15/32	7/8	5/16	3/8	1 5/16	1.689	0.689	M10	UCFCX06E UCFCX06-19E UCFCX06-20E	FCX06E	UCX06 UCX06-19 UCX06-20	25.7	15.4	0.700	13.9	1.5
	127	85.725	105	74.2	12	22.5	8	9.5	33.4	42.9	17.5									
35 1 3/8 1 7/16	5 1/4	3.625	4 3/8	3 3/32	15/32	1 1/32	23/64	7/16	1 17/32	1.937	0.748	M10	UCFCX07E UCFCX07-22E UCFCX07-23E	FCX07E	UCX07 UCX07-22 UCX07-23	29.1	17.8	0.809	14.0	1.9
	133	92.075	111	78.5	12	26	9	11	39.2	49.2	19									
40 1 1/2	5 1/4	3.625	4 3/8	3 3/32	15/32	1 1/32	23/64	7/16	1 17/32	1.937	0.748	M10	UCFCX08E UCFCX08-24E UCFCX08E	FCX08E	UCX08-24 UCX08	34.1	21.3	0.968	14.0	2.0
	133	92.075	111	78.5	12	26	9	11	39.2	49.2	19									
45 1 3/4	6 3/32	4.250	5 1/8	3 5/8	35/64	31/32	5/16	15/32	1 19/32	2.031	0.748	M12	UCFCX09E UCFCX09-28E UCFCX09E	FCX09E	UCX09-28 UCX09	35.1	23.3	1.06	14.4	2.6
	155	107.95	130	91.9	14	25	8	12	40.6	51.6	19									
50 1 15/16 2	6 3/8	4.5	5 23/64	3 25/32	35/64	31/32	9/32	5/8	1 19/32	2.189	0.874	M12	UCFCX10E UCFCX10-31E UCFCX10-32E	FCX10E	UCX10-31 UCX10 UCX10-32	43.4	29.4	1.34	14.4	3.2
	162	114.3	136	96.2	14	25	7	16	40.4	55.6	22.2									
60 2 7/16	7 5/8	5.500	6 1/2	4 19/32	5/8	1 5/16	7/16	25/32	2	2.563	1.000	M14	UCFCX12E UCFCX12-39E UCFCX12-39E	FCX12E	UCX12 UCX12-39	57.2	40.1	1.82	14.4	5.3
	194	139.7	165	116.7	16	33	11	20	50.7	65.1	25.4									
65 2 1/2	7 5/8	5.500	6 1/2	4 19/32	5/8	1 5/16	7/16	25/32	2 3/16	2.937	1.189	M14	UCFCX13E UCFCX13-40E UCFCX13E	FCX13E	UCX13-40 UCX13	62.2	44.1	2.01	14.5	5.7
	194	139.7	165	116.7	16	33	11	20	55.4	74.6	30.2									
70 2 3/4	8 3/4	6.375	7 31/64	5 9/32	3/4	1 13/32	35/64	25/32	2 5/16	3.063	1.331	M16	UCFCX14E UCFCX14-44E UCFCX14E	FCX14E	UCX14-44 UCX14	67.4	48.3	2.17	14.5	7.3
	222	161.925	190	134.3	19	36	14	20	58.5	77.8	33.3									
75 2 15/16 3	8 3/4	6.375	7 31/64	5 9/32	3/4	1 3/8	15/32	55/64	2 13/32	3.252	1.311	M16	UCFCX15E UCFCX15-47E UCFCX15-48E	FCX15E	UCX15-47 UCX15 UCX15-48	72.7	53.0	2.30	14.6	8.0
	222	161.925	190	134.3	19	35	12	22	61.3	82.6	33.3									
80 —	10 1/4	7.375	8 5/8	6 3/32	29/32	1 13/32	25/64	63/64	2 7/16	3.374	1.343	M20	UCFCX16E UCFCX16E	FCX16E	UCX16	84.0	61.9	2.60	14.5	11.3
	260	187.325	219	154.8	23	36	10	25	61.6	85.7	34.1									
85 3 7/16	10 1/4	7.375	8 5/8	6 3/32	29/32	1 13/32	25/64	63/64	2 5/8	3.780	1.563	M20	UCFCX17E UCFCX17-55E UCFCX17-55E	FCX17E	UCX17 UCX17-55	96.1	71.5	2.91	14.5	12.9
	260	187.325	219	154.8	23	36	10	25	66.3	96	39.7									
90 —	10 1/4	7.375	8 5/8	6 3/32	29/32	1 11/16	15/32	1 7/64	2 7/8	4.094	1.689	M20	UCFCX18E UCFCX18E	FCX18E	UCX18	109	81.9	3.23	14.4	13.5
	260	187.325	219	154.8	23	43	12	28	73.1	104	42.9									
100 3 15/16 4	10 7/8	8.125	9 3/8	6 5/8	29/32	2 19/32	55/64	1 7/64	3 9/16	4.626	1.937	M20	UCFCX20E UCFCX20-63E UCFCX20-64E	FCX20E	UCX20 UCX20-63 UCX20-64	133	105	3.91	14.4	18.2
	276	206.375	238	168.3	23	66	22	28	90.3	117.5	49.2									

Remarks 1. In Part No. of unit, fitting codes follow bore diameter numbers. (See Table 2.5 in P.11.)  
2. Part No. of applicable grease nipples are shown below.  
A-1/4-28UNF..... X05-X09  
A-R1/8..... X10-X20

3. As for the triple-lip seal type product, supplementary code L3 follows the Part No. of unit or bearing. (Example of Part No. : UCFCX06EL3, UCX06L3)  
4. For the dimensions and forms of applicable bearings, see the dimensional tables of insert bearing for unit.  
5. Housings of spheroidal graphite iron casting are also available.

Round-flanged type with spigot joint

**UKFC**  
**Tapered bore (with adapter)**  
 $d_1$  20 ~ 65 mm



Variations of tolerance of spigot joint outside diameter ( $\Delta H_{3s}$ ), variations of tolerance of distance from mounting surface to center of spherical bore ( $\Delta A_{2s}$ ), tolerance of position of bolt hole (X), and tolerance of circumferential runout of spigot joint (Y)

Housing No.		$\Delta H_{3s}$	$\Delta A_{2s}$	X	Y
FC205-FC206	FCX05	0 -0.046	±0.5	0.7	0.2
FC207-FC210	FCX06-FCX10	0 -0.054			
FC211-FC217	FCX11-FCX15	0 -0.063	±0.8	1	0.3
FC218	FCX16-FCX18	0			
	FCX20	-0.072			

Variations of tolerance of bolt hole diameter ( $\Delta N_s$ )

Housing No.	$\Delta N_s$
FC204-FC218   FCX05-FCX20	±0.2

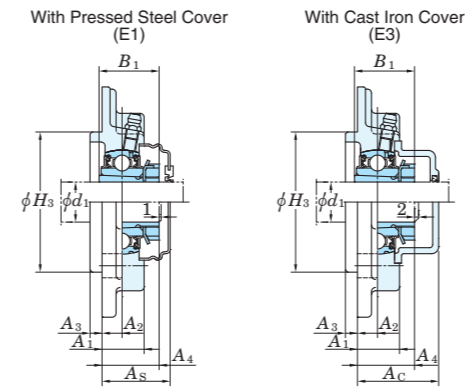
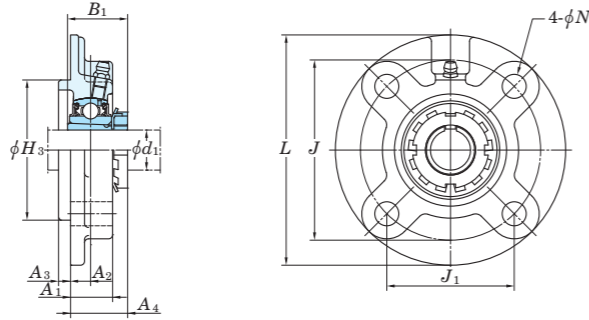
Shaft Dia. mm inch	Dimensions inch mm											Bolt Size inch mm	Standard			Adapter Assembly No.	Mass kg	Basic Load Ratings kN		Fatigue Load Limit kN $C_u$	Factor $f_0$	With Pressed Steel Cover			With Cast Iron Cover									
	$d_1$	L	$H_3$	J	$J_1$	N	$A_1$	$A_2$	$A_3$	$A_4$	$B_1$		Unit No.	Housing No.	Bearing No.			Cr	Cor			Cu	fo	Unit No.	Dimension mm inch		Mass kg	Unit No.	Dimension mm inch		Mass kg			
																									Open End Type	Closed End Type			As	kg		Open End Type	Closed End Type	Ac
20	3/4	4 17/32	2.7559	3 35/64	2 1/2	15/32	13/16	25/64	15/64	1 3/16	1 3/8	3/8	UKFC205	FC205	UK205																			
	3/4	4 3/8	2.9921	3 5/8	2 9/16	3/8	15/16	25/64	15/64	1 5/32	1 3/8	5/16	UKFCX05	FCX05	UKX05																			
25	1	4 29/32	3.1496	3 15/16	2 25/32	15/32	29/32	25/64	5/16	1 1/4	1 1/2	3/8	UKFC206	FC206	UK206																			
	1	5	3.3465	4 9/64	2 59/64	15/32	7/8	5/16	3/8	1 5/32	1 1/2	3/8	UKFCX06	FCX06	UKX06																			
30	1 1/8	5 5/16	3.5433	4 21/64	3 1/16	35/64	1 1/32	7/16	5/16	1 3/8	1 11/16	7/16	UKFC207	FC207	UK207																			
	1 1/8	5 1/4	3.6220	4 3/8	3 3/32	15/32	1 1/32	23/64	7/16	1 1/4	1 11/16	3/8	UKFCX07	FCX07	UKX07																			
35	1 1/4	5 23/32	3.9370	4 23/32	3 11/32	35/64	1 1/32	7/16	25/64	1 1/2	1 13/16	7/16	UKFC208	FC208	UK208																			
	1 3/8	5 1/4	3.6220	4 3/8	3 3/32	15/32	1 1/32	23/64	7/16	1 5/16	1 13/16	3/8	UKFCX08	FCX08	UKX08																			
40	1 1/2	6 5/16	4.1339	5 13/64	3 43/64	5/8	1 1/32	25/64	15/32	1 17/32	1 31/32	1/2	UKFC209	FC209	UK209																			
	1 1/2	6 3/32	4.2520	5 1/8	3 5/8	35/64	31/32	5/16	15/32	1 9/16	1 31/32	7/16	UKFCX09	FCX09	UKX09																			
45	1 3/4	6 1/2	4.3307	5 7/16	3 27/32	5/8	1 3/32	25/64	15/32	1 9/16	2 5/32	1/2	UKFC210	FC210	UK210																			
	1 3/4	6 3/8	4.6457	5 23/64	3 25/32	35/64	31/32	9/32	5/8	1 11/32	2 5/32	7/16	UKFCX10	FCX10	UKX10																			
50	1 7/8	7 9/32	4.9213	5 29/32	4 11/64	3/4	1 7/32	33/64	15/32	1 25/32	2 5/16	5/8	UKFC211	FC211	UK211																			
	2	7 3/32	5	5 63/64	4 15/64	5/8	1 1/32	5/32	55/64	1 5/16	2 5/16	1/2	UKFCX11	FCX11	UKX11																			
55	2 1/8	7 11/16	5.3150	6 19/64	4 29/64	3/4	1 13/32	43/64	15/32	2 3/32	2 7/16	5/8	UKFC212	FC212	UK212																			
	2 1/8	7 5/8	5.5118	6 1/2	4 19/32	5/8	1 5/16	7/16	25/32	1 21/32	2 7/16	1/2	UKFCX12	FCX12	UKX12																			
60	2 1/4	8 1/16	5.7087	6 11/16	4 47/64	3/4	1 13/32	5/8	35/64	2 3/32	2 9/16	5/8	UKFC213	FC213	UK213																			
	2 3/8	7 5/8	5.5118	6 1/2	4 19/32	5/8	1 5/16	7/16	25/32	1 25/32	2 9/16	1/2	UKFCX13	FCX13	UKX13																			
65	2 1/2	8 21/32	6.2992	7 1/4	5 1/8	3/4	1 9/16	45/64	5/8	2 5/16	2 7/8	5/8	UKFC215	FC215	UK215																			
	2 1/2	8 3/4	6.4567	7 31/64	5 9/32	3/4	1 3/8	15/32	55/64	1 7/8	2 7/8	5/8	UKFCX15	FCX15	UKX15																			

Remarks 1. In Part No. of unit and units with covers, fitting codes follow bore diameter numbers. (See Table 2.5 in P.11.)  
2. Part No. of applicable grease nipples are shown below.  
A-1/4-28UNF ..... 205-210, X05-X09  
A-R1/8 ..... 211-218, X10-X20

3. In Part No. of unit with adapters and bearing with adapters, Part No. of applicable adapter follow the Part No. shown in the dimensional tables.  
(Example of Part No. : UKFC206J + H2306X, UK206 + H2306X)  
4. As for the triple-lip seal type product (205 is the double-lip seal type product), supplementary code L3 (or L2) follows the Part No. of unit or bearing.  
(Example of Part No. : UKFC206JL3 + H2306X, UK206L3 + H2306X)  
5. For the dimensions and forms of applicable bearings and adapters, see the dimensional tables of insert bearing for unit and adapter assemblies.  
6. Housings of spheroidal graphite iron casting are also available.

Round-flanged type with spigot joint

**UKFC**  
Tapered bore (with adapter)  
 $d_1$  70 ~ 90 mm



Variations of tolerance of spigot joint outside diameter ( $\Delta H_{3s}$ ), variations of tolerance of distance from mounting surface to center of spherical bore ( $\Delta A_{2s}$ ), tolerance of position of bolt hole (X), and tolerance of circumferential runout of spigot joint (Y)

Variations of tolerance of bolt hole diameter ( $\Delta N_s$ )

Housing No.		$\Delta H_{3s}$	$\Delta A_{2s}$	X	Y
FC205-FC206	FCX05	0 -0.046	±0.5	0.7	0.2
FC207-FC210	FCX06-FCX10	0 -0.054			
FC211-FC217	FCX11-FCX15	0 -0.063	±0.8	1	0.3
FC218	FCX16-FCX18	0			
	FCX20	-0.072			

Housing No.		$\Delta N_s$
FC204-FC218	FCX05-FCX20	±0.2

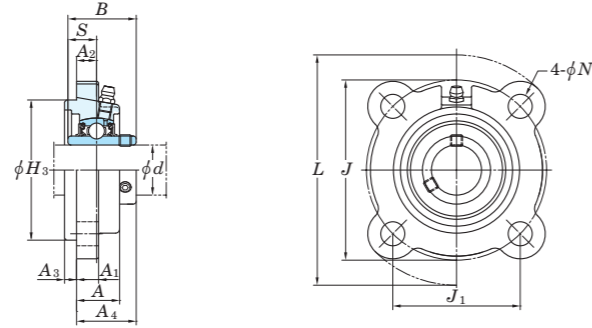
Shaft Dia. mm inch	Dimensions inch mm											Bolt Size inch mm	Standard			Adapter Assembly No.	Mass kg	Basic Load Ratings kN		Fatigue Load Limit kN $C_u$	Factor $f_0$	With Pressed Steel Cover			With Cast Iron Cover											
	$d_1$	L	$H_3$	J	$J_1$	N	$A_1$	$A_2$	$A_3$	$A_4$	$B_1$		Unit No.	Housing No.	Bearing No.			Unit No.	Dimension mm inch			Mass kg	Unit No.	Dimension mm inch	Mass kg											
70	2 3/4	9 7/16	6.6929	7 7/8	5 9/16	29/32	1 31/32	45/64	5/8	2 15/32	3 1/16	3/4	UKFC216	FC216	UK216	HE2316X	9.0	72.7	53.0	2.30	14.6	-	-	-	-	-	-	-	-	-						
		240	170	200	141.4	23	42	18	16	62.5	78	M20	UKFCX16	FCX16	UKX16	H2316X	9.0	84.0	61.9	2.60	14.5	UKFC216C	UKFC216D	72.5	2 27/32	9.0	UKFC216FC	UKFC216FD	87	3 7/16	10.3					
75	3	10 1/4	7.3228	8 5/8	6 3/32	29/32	1 13/32	25/64	63/64	1 15/16	3 1/16	3/4	UKFC217	FC217	UK217	HE2317X	11.4	84.0	61.9	2.60	14.5	UKFCX16C	UKFCX16D	66.5	2 5/8	11.4	UKFC217C	UKFC217D	74.5	2 15/16	10.4	UKFC217FC	UKFC217FD	89	3 1/2	11.8
		260	186	219	154.8	23	36	10	25	49	78	M20	UKFCX17	FCX17	UKX17	HE2317X	10.4	96.1	71.5	2.91	14.5	UKFCX17C	UKFCX17D	71.5	2 13/16	12.6	-	-	-	-	-	-	-			
80	3	10 7/16	7.4803	8 21/32	6 1/8	29/32	1 31/32	55/64	45/64	2 13/16	3 3/8	3/4	UKFC218	FC218	UK218	H2318X	12.6	96.1	71.5	2.91	14.5	UKFCX17C	UKFCX17D	71.5	2 13/16	12.6	UKFC218C	UKFC218D	83.5	3 9/32	13.3	UKFC218FC	UKFC218FD	98	3 27/32	14.9
		265	190	220	155.5	23	50	22	18	71.5	86	M20	UKFCX18	FCX18	UKX18	H2318X	13.0	109	81.9	3.23	14.4	-	-	-	-	-	UKFCX18C	UKFCX18D	92	3 5/8	15.1	-	-	-		
90	3 1/2	10 7/8	8.1102	9 3/8	6 5/8	29/32	2 19/32	55/64	1 7/64	2 23/32	3 13/16	3/4	UKFCX20	FCX20	UKX20	HE2320X	17.1	133	105	3.91	14.4	-	-	-	-	-	UKFCX20C	UKFCX20D	116	4 9/16	19.9	-	-	-		
		276	206	238	168.3	23	66	22	28	69	97	M20				H2320X	17.1																			

- Remarks 1. In Part No. of unit and units with covers, fitting codes follow bore diameter numbers. (See Table 2.5 in P.11.)  
 2. Part No. of applicable grease nipples are shown below.  
 A-1/4-28UNF ..... 205-210, X05-X09  
 A-R1/8 ..... 211-218, X10-X20

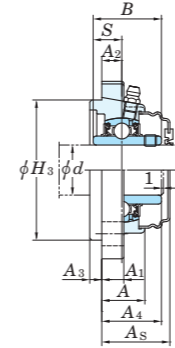
3. In Part No. of unit with adapters and bearing with adapters, Part No. of applicable adapter follow the Part No. shown in the dimensional tables.  
 (Example of Part No. : UKFC206J + H2306X, UK206 + H2306X)  
 4. As for the triple-lip seal type product (205 is the double-lip seal type product), supplementary code L3 (or L2) follows the Part No. of unit or bearing.  
 (Example of Part No. : UKFC206JL3 + H2306X, UK206L3 + H2306X)  
 5. For the dimensions and forms of applicable bearings and adapters, see the dimensional tables of insert bearing for unit and adapter assemblies.  
 6. Housings of spheroidal graphite iron casting are also available.



**UCSFC-S6**  
**Cylindrical bore (with set screws)**  
 d 20 ~ 40 mm



With Pressed Stainless Steel Covers (E1)



Variations of tolerance of spigot joint outside diameter ( $\Delta H_{3s}$ ), variations of tolerance of distance from mounting surface to center of spherical bore ( $\Delta A_{2s}$ ), tolerance of position of bolt hole (X), and tolerance of circumferential runout of spigot joint (Y)

Variations of tolerance of bolt hole diameter ( $\Delta N_s$ )

Housing No.	$\Delta H_{3s}$	$\Delta A_{2s}$	Unit: mm	
			X	Y
SFC204-SFC206	0 -0.046	±0.5	0.7	0.2
SFC207-SFC208	0 -0.054			

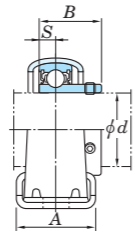
Housing No.	Unit: mm	
	$\Delta N_s$	
SFC204-SFC208	±0.2	

Shaft Dia. mm  d	Dimensions mm												Bolt Size mm	Standard		Bearing No.	Mass kg	Basic Load Ratings kN		Fatigue Load Limit kN C <sub>u</sub>	Factor f <sub>0</sub>	With Pressed Stainless Steel Covers			
	L	H <sub>3</sub>	J	J <sub>1</sub>	N	A	A <sub>1</sub>	A <sub>2</sub>	A <sub>3</sub>	A <sub>4</sub>	B	S		Unit No.	Housing No.			C <sub>r</sub>	C <sub>0r</sub>			Unit No.		Dimension mm A <sub>s</sub>	Mass kg
																						Open End Type	Closed End Type		
20	100	62	78	55.1	12	21	10	10	5	28.3	31	12.7	M10	UCSFC204S6	SFC204	UC204S6	0.54	10.9	5.35	0.243	13.2	UCSFC204CS6	UCSFC204DS6	32	0.54
25	115	70	90	63.6	12	21.5	10	10	6	29.8	34.1	14.3	M10	UCSFC205S6	SFC205	UC205S6	0.72	11.9	6.30	0.286	13.9	UCSFC205CS6	UCSFC205DS6	34	0.72
30	125	80	100	70.7	12	23	10	10	8	32.2	38.1	15.9	M10	UCSFC206S6	SFC206	UC206S6	0.92	16.5	9.05	0.411	13.9	UCSFC206CS6	UCSFC206DS6	36	0.92
35	135	90	110	77.8	14	26	12	11	8	36.4	42.9	17.5	M12	UCSFC207S6	SFC207	UC207S6	1.24	21.8	12.3	0.559	13.9	UCSFC207CS6	UCSFC207DS6	41	1.24
40	145	100	120	84.8	14	26	12	11	10	41.2	49.2	19	M12	UCSFC208S6	SFC208	UC208S6	1.56	24.8	14.3	0.650	14.0	UCSFC208CS6	UCSFC208DS6	45	1.56

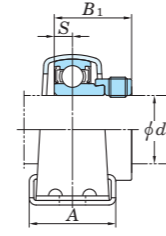
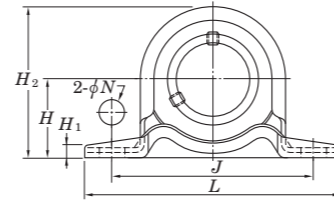
Remarks 1. In Part No. of unit and units with covers, fitting codes follow bore diameter codes. (See Table 2.5 in P.11.)  
 2. Part No. of the applicable grease nipple is B-1/4-28UNFN13.  
 3. For the dimensions and forms of applicable bearings, see the dimensional tables of insert bearing for unit.

Pressed steel pillow block type

**SBPP** Cylindrical bore (with set screws)  $d$  12 ~ 30 mm  
**SAPP** Cylindrical bore (with eccentric locking collar)



SBPP



SAPP

Variations of tolerance of distance between centers of bolt holes ( $\Delta J_s$ ) and variations of tolerance of bolt hole diameter ( $\Delta N_s$ )

Housing No.	$\Delta J_s$	$\Delta N_s$
PP203-PP206	±0.4	±0.5

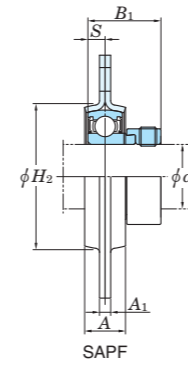
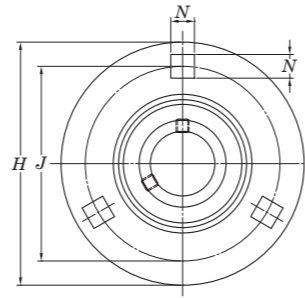
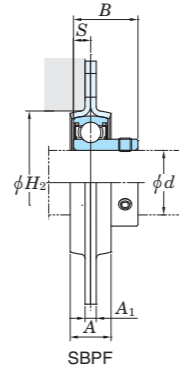
Unit: mm

Shaft Dia mm inch $d$	Dimensions inch mm										Bolt Size inch mm	Unit No.	Bearing No.	Unit No.	Bearing No.	Housing No.	Basic Load Ratings kN		Fatigue Load Limit kN	Factor $f_0$	Mass kg	
	$H$	$L$	$A$	$J$	$N$	$H_1$	$H_2$	$S$	SBPP $B$	SAPP $B_1$							$C_r$	$C_{0r}$			$C_u$	SBPP
12 1/2	7/8	3 3/8	31/32	2 43/64	3/8	1/8	1 23/32	0.236	0.866	1.122	5/16	SBPP201 SBPP201-8	SB201 SB201-8	SAPP201 SAPP201-8	SA201 SA201-8							
15 5/8	22.2	86	25	68	9.5	3.2	43.8	6	22	28.5	M8	SBPP202 SBPP202-10	SB202 SB202-10	SAPP202 SAPP202-10	SA202 SA202-10	PP203	9.55	4.80	0.218	13.2	0.16	0.19
17												SBPP203	SB203	SAPP203	SA203							
20 3/4	1	3 27/32	1 1/4	2 63/64	3/8	1/8	2	0.276	0.984	1.161	5/16	SBPP204-12 SBPP204	SB204-12 SB204	SAPP204-12 SAPP204	SA204-12 SA204	PP204	12.8	6.65	0.302	13.2	0.23	0.23
25 7/8 15/16	1 1/8	4 1/4	1 1/4	3 25/64	29/64	5/32	2 7/32	0.295	1.063	1.201	3/8	SBPP205-14 SBPP205-15	SB205-14 SB205-15	SAPP205-14 SAPP205-15	SA205-14 SA205-15	PP205	14.0	7.85	0.357	13.9	0.28	0.32
25 1	28.6	108	32	86	11.5	4	56.6	7.5	27	30.5	M10	SBPP205 SBPP205-16	SB205 SB205-16	SAPP205 SAPP205-16	SA205 SA205-16							
30 1 1/8 1 3/16 1 1/4	1 5/16	4 19/32	1 1/2	3 3/4	29/64	5/32	2 5/8	0.315	1.181	1.335	3/8	SBPP206-18 SBPP206	SB206-18 SB206	SAPP206-18 SAPP206	SA206-18 SA206	PP206	19.5	11.3	0.514	13.9	0.47	0.50
	33.3	117	38	95	11.5	4	66.3	8	30	33.9	M10	SBPP206-19 SBPP206-20	SB206-19 SB206-20	SAPP206-19 SAPP206-20	SA206-19 SA206-20							

Remark For the dimensions and forms of applicable bearings, see the dimensional tables of insert bearing for unit.

Pressed steel round-flanged type

**SBPF** Cylindrical bore (with set screws)  
**SAPF** Cylindrical bore (with eccentric locking collar)  
 d 12 ~ 35 mm



Variations of tolerance of distance between centers of bolt holes ( $\Delta J_b$ ) Unit: mm

Housing No.	$\Delta J_b$
PF203-PF207	$\pm 0.4$

Variations of tolerance of bolt hole diameter ( $\Delta N_b$ ) Unit: mm

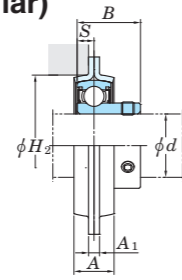
Housing No.	$\Delta N_b$
PF203-PF207	$\pm 0.25$

Shaft Dia mm inch	Dimensions inch mm								SBPF B	SAPF B <sub>1</sub>	Bolt Size inch mm	Unit No.	Bearing No.	Unit No.	Bearing No.	Housing No.	Basic Load Ratings kN		Fatigue Load Limit kN	Factor f <sub>0</sub>	Mass kg	
	d	H	A	A <sub>1</sub>	J	N	H <sub>2</sub>	S									C <sub>r</sub>	C <sub>0r</sub>			C <sub>u</sub>	SBPF
12 1/2	3 3/16	9/16	5/32	2 1/2	9/32	1 15/16	0.236	0.866	1.122	1/4	SBPF201 SBPF201-8 SBPF202 SBPF202-10 SBPF203	SB201 SB201-8 SB202 SB202-10 SB203	SAPF201 SAPF201-8 SAPF202 SAPF202-10 SAPF203	SA201 SA201-8 SA202 SA202-10 SA203	PF203	9.55	4.80	0.218	13.2	0.27	0.3	
15 5/8	3 17/32	5/8	5/32	2 13/16	23/64	2 5/32	0.276	0.984	1.161	5/16	SBPF204-12 SBPF204	SB204-12 SB204	SAPF204-12 SAPF204	SA204-12 SA204	PF204	12.8	6.65	0.302	13.2	0.33	0.33	
17	3 3/4	23/32	5/32	2 63/64	23/64	2 3/8	0.295	1.063	1.201	5/16	SBPF205-14 SBPF205-15 SBPF205 SBPF205-16	SB205-14 SB205-15 SB205 SB205-16	SAPF205-14 SAPF205-15 SAPF205 SAPF205-16	SA205-14 SA205-15 SA205 SA205-16	PF205	14.0	7.85	0.357	13.9	0.38	0.42	
20 3/4	4 7/16	3/4	13/64	3 9/16	7/16	2 25/32	0.315	1.181	1.335	3/8	SBPF206-18 SBPF206 SBPF206-19 SBPF206-20 SBPF207-20	SB206-18 SB206 SB206-19 SB206-20 SB207-20	SAPF206-18 SAPF206 SAPF206-19 SAPF206-20 SAPF207-20	SA206-18 SA206 SA206-19 SA206-20 SA207-20	PF206	19.5	11.3	0.514	13.9	0.62	0.65	
25 7/8 15/16 1	4 13/16	7/8	13/64	3 15/16	7/16	3 3/16	0.335	1.260	1.437	3/8	SBPF207-22 SBPF207 SBPF207-23	SB207-22 SB207 SB207-23	SAPF207-21 SAPF207-22 SAPF207 SAPF207-23	SA207-21 SA207-22 SA207 SA207-23	PF207	25.7	15.4	0.700	13.9	0.82	0.9	

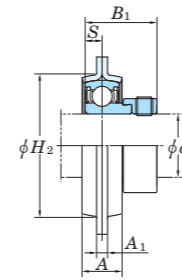
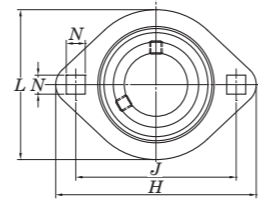
Note 1) H<sub>2</sub> is the minimum size of the mounting hole.

Remark For the dimensions and forms of applicable bearings, see the dimensional tables of insert bearing for unit.

**SBPFL**      **SAPFL**  
 Cylindrical bore    Cylindrical bore  
 (with set screws) (with eccentric locking collar)  
 d 12 ~ 35 mm



SBPFL



SAPFL

Variations of tolerance of distance between centers of bolt holes ( $\Delta J_b$ ) Unit: mm

Housing No.	$\Delta J_b$
PFL203-PFL207	$\pm 0.4$

Variations of tolerance of bolt hole diameter ( $\Delta J_{Ns}$ ) Unit: mm

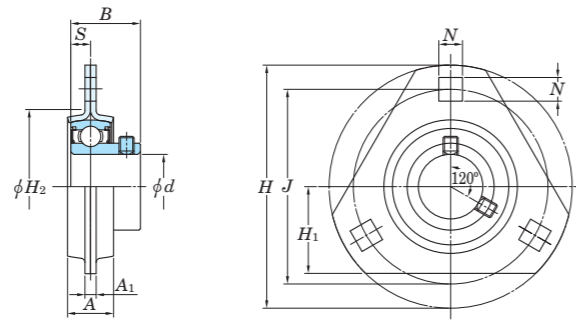
Housing No.	$\Delta J_{Ns}$
PFL203-PFL207	$\pm 0.25$

Shaft Dia mm    inch  d	Dimensions inch mm								SBPFL B	SAPFL B <sub>1</sub>	Bolt Size inch mm	Unit No.	Bearing No.	Unit No.	Bearing No.	Housing No.	Basic Load Ratings kN		Fatigue Load Limit kN C <sub>u</sub>	Factor f <sub>0</sub>	Mass kg	
	H	L	A	A <sub>1</sub>	J	N	H <sub>2</sub>	S									C <sub>r</sub>	C <sub>0r</sub>			SBPFL	SAPFL
12 1/2	3 3/16	2 5/16	9/16	5/32	2 1/2	9/32	1 15/16	0.236	0.866	1.122	1/4	SBPFL201 SBPFL201-8 SBPFL202 SBPFL202-10 SBPFL203	SB201 SB201-8 SB202 SB202-10 SB203	SAPFL201 SAPFL201-8 SAPFL202 SAPFL202-10 SAPFL203	SA201 SA201-8 SA202 SA202-10 SA203	PFL203	9.55	4.80	0.218	13.2	0.19	0.22
15 5/8	3 17/32	2 5/8	5/8	5/32	2 13/16	23/64	2 5/32	0.276	0.984	1.161	5/16	SBPFL204-12 SBPFL204	SB204-12 SB204	SAPFL204-12 SAPFL204	SA204-12 SA204	PFL204	12.8	6.65	0.302	13.2	0.24	0.24
17	3 3/4	2 25/32	23/32	5/32	2 63/64	23/64	2 3/8	0.295	1.063	1.201	5/16	SBPFL205-14 SBPFL205-15 SBPFL205 SBPFL205-16	SB205-14 SB205-15 SB205 SB205-16	SAPFL205-14 SAPFL205-15 SAPFL205 SAPFL205-16	SA205-14 SA205-15 SA205 SA205-16	PFL205	14.0	7.85	0.357	13.9	0.28	0.32
20 3/4	4 7/16	3 5/16	3/4	13/64	3 9/16	7/16	2 25/32	0.315	1.181	1.335	3/8	SBPFL206-18 SBPFL206 SBPFL206-19 SBPFL206-20 SBPFL207-20	SB206-18 SB206 SB206-19 SB206-20 SB207-20	SAPFL206-18 SAPFL206 SAPFL206-19 SAPFL206-20 SAPFL207-20	SA206-18 SA206 SA206-19 SA206-20 SA207-20	PFL206	19.5	11.3	0.514	13.9	0.38	0.41
25 7/8 15/16 1	4 13/16	3 11/16	7/8	13/64	3 15/16	7/16	3 3/16	0.335	1.260	1.437	3/8	SBPFL207-22 SBPFL207 SBPFL207-23	SB207-22 SB207 SB207-23	SAPFL207-21 SAPFL207-22 SAPFL207 SAPFL207-23	SA207-21 SA207-22 SA207 SA207-23	PFL207	25.7	15.4	0.700	13.9	0.66	0.74

Note 1) H<sub>2</sub> is the minimum size of the mounting hole.

Remark For the dimensions and forms of applicable bearings, see the dimensional tables of insert bearing for unit.

**SBPFT**  
Cylindrical bore (with set screws)  
 $d$  12 ~ 35 mm



Variations of tolerance of distance between centers of bolt holes ( $\Delta J_b$ ) Unit: mm

Housing No.	$\Delta J_b$
PTF203-PTF207	$\pm 0.4$

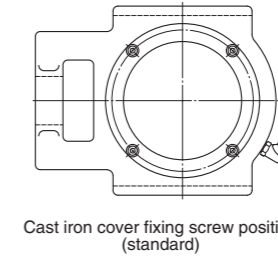
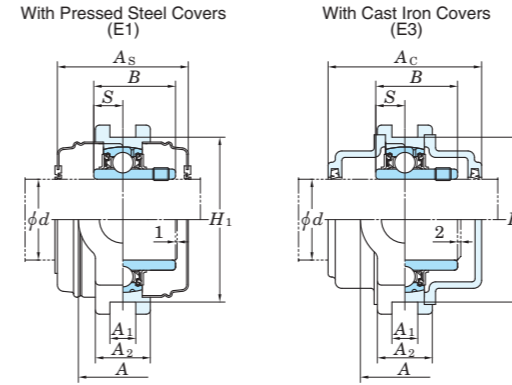
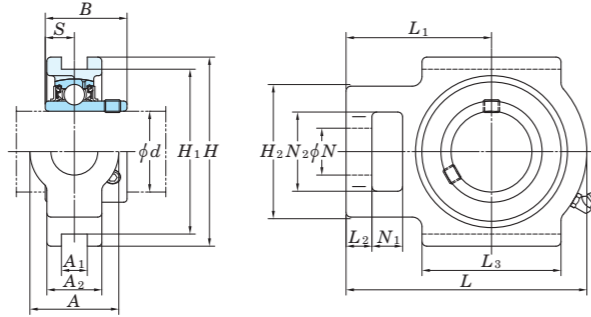
Variations of tolerance between bolt square hole side lengths ( $\Delta N_b$ ) Unit: mm

Housing No.	$\Delta N_b$
PTF203-PTF207	$\pm 0.25$

Shaft Dia. mm $d$	Dimensions mm										Bolt Size mm	Unit No.	Housing No.	Bearing No.	Basic Load Ratings kN		Fatigue Load Limit kN $C_u$	Factor $f_0$	Mass kg
	$H$	$A$	$A_1$	$J$	$N$	$H_1$	$H_2$	$S$	$B$	$C_r$					$C_{0r}$				
12	81	14	4	63.5	7.1	28	49	6	22	M6	SBPFT201	PFT203	SB201	9.55	4.80	0.218	13.2	0.22	
15	81	14	4	63.5	7.1	28	49	6	22	M6	SBPFT202	PFT203	SB202	9.55	4.80	0.218	13.2	0.22	
17	81	14	4	63.5	7.1	28	49	6	22	M6	SBPFT203	PFT203	SB203	9.55	4.80	0.218	13.2	0.21	
20	90	16	4	71.5	9	33.33	55	7	25	M8	SBPFT204	PFT204	SB204	12.8	6.65	0.302	13.2	0.27	
25	95	18	4	76	9	34	60	7.5	27	M8	SBPFT205	PFT205	SB205	14.0	7.85	0.357	13.9	0.32	
30	113	19	5.2	90.5	11	40.5	71	8	30	M10	SBPFT206	PFT206	SB206	19.5	11.3	0.514	13.9	0.54	
35	122	22	5.2	100	11	44	81	8.5	32	M10	SBPFT207	PFT207	SB207	25.7	15.4	0.700	13.9	0.71	

Remark For the dimensions and forms of applicable bearings, see the dimensional tables of insert bearing for unit.

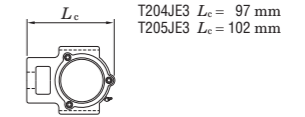
**UCT**  
Cylindrical bore (with set screws)  
d 12 ~ (45) mm



Variations of tolerance of groove width ( $\Delta_{A1s}$ ), variations of tolerance of distance between both grooves ( $\Delta_{H1s}$ ), and tolerance of symmetry of both groove sides (X)

Housing No.		$\Delta_{A1s}$	$\Delta_{H1s}$	X	
T204-T210	TX05-TX10	T305-T310	+0.2 0	0 -0.5	0.5
T211-T217	TX11-TX17	T311-T318	+0.3 0	0 -0.8	0.6 0.7 0.8

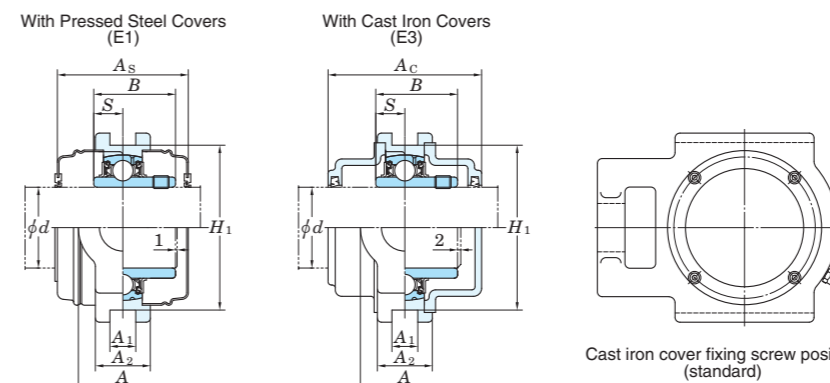
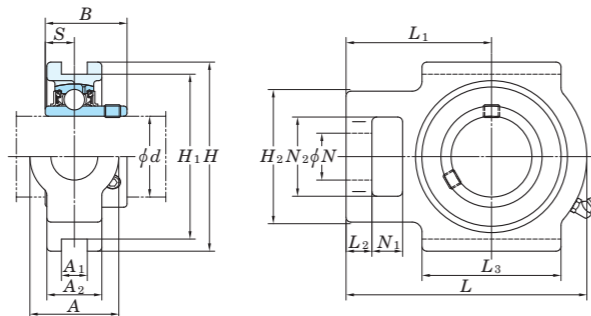
Form and dimensions of  $L_c$  of T204JE3 and T205JE3 (housing with cast iron covers) are shown below.



Shaft Dia. mm inch  d	Dimensions inch mm															Standard		Bearing No.	Mass kg	Basic Load Ratings kN		Fatigue Load Limit kN $C_u$	Factor $f_0$	With Pressed Steel Covers			With Cast Iron Covers																
	A	A <sub>1</sub>	A <sub>2</sub>	H	H <sub>1</sub>	H <sub>2</sub>	L	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	N	N <sub>1</sub>	N <sub>2</sub>	B	S	Unit No.	Housing No.			C <sub>r</sub>	C <sub>0r</sub>			Unit No.	Open Ends Type	Closed End Type	Dimension mm inch	Mass kg	Unit No.	Open Ends Type	Closed End Type	Dimension mm inch	Mass kg										
12	1/2															UCT201																											
15	5/8	1 1/4	15/32	13/16	3 1/2	2 63/64	2	3 11/16	2 13/32	13/32	2	3/4	5/8	1 1/4	1.220	0.500	UCT201-8	T204	12.8	6.65	0.302	13.2	UCT201C	UCT201CD	45	1 25/32	0.81																
17	3/4	32	12	21	89	76	51	94	61	10	51	19	16	32	31	12.7	UCT202																										
20																	UCT202-10																										
																	UCT203																										
																	UCT204-12																										
																	UCT204																										
																	UCT205-14																										
																	UCT205-15	T205																									
																	UCT205																										
																	UCT205-16																										
																	UCTX05	TX05	19.5	11.3	0.514	13.9	UCTX05C	UCTX05CD	53	2 3/32	1.4																
																	UCTX05-16																										
																	UCT305	T305	21.2	10.9	0.495	12.6																					
																	UCT305-16																										
																	UCT206-18																										
																	UCT206	T206	19.5	11.3	0.514	13.9	UCT206C	UCT206CD	53	2 3/32	1.3																
																	UCT206-19																										
																	UCT206-20																										
																	UCTX06	TX06	25.7	15.4	0.700	13.9	UCTX06C	UCTX06CD	60	2 3/8	1.7																
																	UCTX06-19																										
																	UCTX06-20																										
																	UCT306	T306	26.7	15.0	0.682	13.3																					
																	UCT207-20																										
																	UCT207-21	T207																									
																	UCT207-22																										
																	UCT207																										
																	UCT207-23																										
																	UCTX07-22	TX07	29.1	17.8	0.809	14.0	UCTX07C	UCTX07CD	69	2 23/32	2.7																
																	UCTX07																										
																	UCTX07-23																										
																	UCT307	T307	33.4	19.3	0.877	13.2																					
																	UCT208-24																										
																	UCT208-25	T208	29.1	17.8	0.809	14.0																					
																	UCT208																										
																	UCTX08-24	TX08	34.1	21.3	0.968	14.0	UCTX08C	UCTX08CD	69	2 23/32	2.6																
																	UCTX08																										
																	UCT308-24	T308	40.7	24.0	1.09	13.2																					
																	UCT308																										
																	UCT209-26																										
																	UCT209-27	T209	34.1	21.3	0.968	14.0																					
																	UCT209-28																										
																	UCT209																										
																	UCT209C	UCT209CD	69	2 23/32	2.4																						
																	UCTX09-28	TX09	35.1	23.3	1.06	14.4																					
																	UCTX09																										
																	UCTX09C	UCTX09CD	74	2 29/32	2.9																						

Take-up type

UCT  
Cylindrical bore (with set screws)  
d (45) ~ (75) mm



Variations of tolerance of groove width ( $\Delta A_{1s}$ ), variations of tolerance of distance between both grooves ( $\Delta H_{1s}$ ), and tolerance of symmetry of both groove sides (X)

Housing No.		$\Delta A_{1s}$	$\Delta H_{1s}$	X
T204-T210	TX05-TX10	+0.2 0	0 -0.5	0.5
T211-T217	TX11-TX17	+0.3 0	0 -0.8	0.6 0.7 0.8

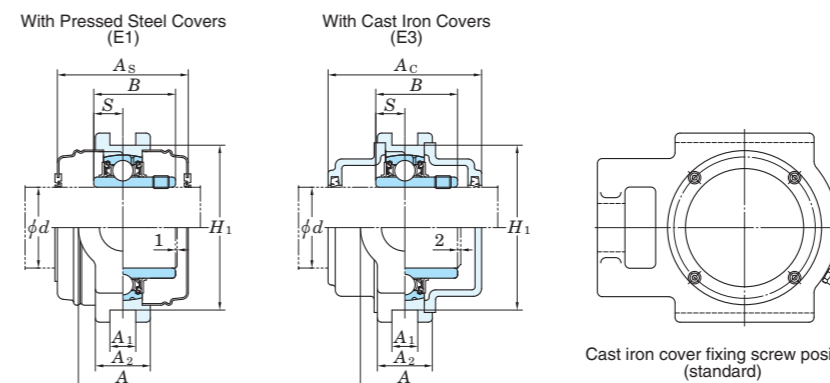
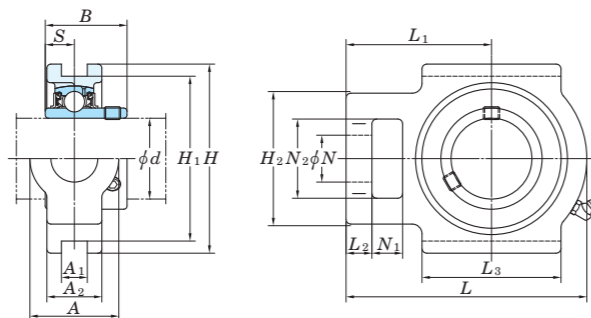
Unit: mm

Shaft Dia. mm inch	Dimensions inch mm																Standard		Bearing No.	Mass kg	Basic Load Ratings kN		Fatigue Load Limit kN $C_u$	Factor $f_0$	With Pressed Steel Covers			With Cast Iron Covers				
	d	A	A <sub>1</sub>	A <sub>2</sub>	H	H <sub>1</sub>	H <sub>2</sub>	L	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	N	N <sub>1</sub>	N <sub>2</sub>	B	S	Unit No.	Housing No.			C <sub>r</sub>	C <sub>0r</sub>			Unit No.	Dimension mm inch	Mass kg	Unit No.	Dimension mm inch	Mass kg		
45 1 3/4	2 5/32	45/64	1 1/2	5 7/16	4 59/64	3 17/32	7	4 11/32	23/32	3 13/16	1 11/32	1 5/16	2 5/32	2.244	0.866	UCT309-28	T309	48.9	29.5	UC309-28	4.1	-	-	-	-	-	UCT309C	UCT309CD	102	4 1/32	5.4	
	55	18	38	138	125	90	178	110	18	97	34	24	55	57	22	UCT309				UC309	4.1											
50 1 7/8 1 15/16 2 1 15/16	1 15/16	5/8	1 15/32	4 19/32	4 1/64	3 9/32	5 7/8	3 17/32	5/8	3 3/8	1 5/32	3/4	1 15/16	2.031	0.748	UCT210-30	T210	35.1	23.3	UC210-30	2.6	-	-	-	-	-	UCT210FC	UCT210FCD	97	3 13/16	3.6	
	49	16	37	117	102	83	149	90	16	86	29	19	49	51.6	19	UCT210-31				UC210-31	2.6											
	2															UCT210				UC210	2.6											
	1 15/16	2 17/32	55/64	1 21/32	5 3/4	5 1/8	4 1/32	6 23/32	4 3/16	3/4	3 3/4	1 3/8	31/32	2 17/32	2.189	0.874	UCT210-32				UC210-32	2.6										
55 2 3/16 2 1/4 2	2 13/32	25/32	1 9/16	5 15/16	5 33/64	3 27/32	7 17/32	4 19/32	25/32	4 3/16	1 15/32	1 1/16	2 13/32	2.402	0.866	UCTX10-31	TX10	43.4	29.4	UCX10-31	4.4	-	-	-	-	-	-	-	-	-	-	
	64	22	42	146	130	102	171	106	19	95	35	25	64	55.6	22.2	UCTX10				UCX10	4.4											
	2															UCTX10-32				UCX10-32	4.4											
	-	2 13/32	25/32	1 9/16	5 15/16	5 33/64	3 27/32	7 17/32	4 19/32	25/32	4 3/16	1 15/32	1 1/16	2 13/32	2.402	0.866	UCT310	T310	62.0	38.3	UC310	4.9	-	-	-	-	-	UCT310C	UCT310CD	110	4 11/32	6.5
60 2 1/4 2 3/8 2 7/16	2 17/32	55/64	1 1/2	5 3/4	5 1/8	4 1/32	6 23/32	4 3/16	3/4	3 3/4	1 3/8	31/32	2 17/32	2.189	0.874	UCT211-32	T211	43.4	29.4	UC211-32	4.0	-	-	-	-	-	-	-	-	-	-	
	64	22	38	146	130	102	171	106	19	95	35	25	64	55.6	22.2	UCT211-34				UC211-34	4.0											
	2 3/16															UCT211				UC211	4.0											
	-	2 17/32	55/64	1 1/2	5 3/4	5 1/8	4 1/32	6 23/32	4 3/16	3/4	3 3/4	1 3/8	31/32	2 17/32	2.189	0.874	UCT211-35				UC211-35	4.0										
65 2 1/2 2 1/2 2 1/2	2 17/32	55/64	1 23/32	5 3/4	5 1/8	4 1/32	7 5/8	4 11/16	3/4	4 1/32	1 3/8	1 1/4	2 17/32	2.563	1.000	UCTX11	TX11	52.4	36.2	UCX11	5.3	-	-	-	-	-	-	-	-	-	-	
	64	22	44	146	130	102	194	119	19	102	35	32	64	65.1	25.4	UCTX11-35				UCX11-35	5.3											
	2 3/16															UCTX11-36				UCX11-36	5.3											
	2 1/4	2 19/32	55/64	1 23/32	6 13/32	5 29/32	4 1/8	8 5/32	5 13/16	4 17/32	1 17/32	1 5/32	2 19/32	2.598	0.984	UCT311-32	T311	71.6	45.0	UC311-32	6.1	-	-	-	-	-	-	-	-	-	-	
60 2 1/4 2 3/8 2 7/16	66	22	44	163	150	105	207	127	21	115	39	29	66	66	25	UCT311				UC311	6.1											
	2 1/4	2 17/32	55/64	1 23/32	5 3/4	5 1/8	4 1/32	7 5/8	4 11/16	3/4	4 1/32	1 3/8	1 1/4	2 17/32	2.563	1.000	UCT212-36	T212	52.4	36.2	UC212-36	4.9	-	-	-	-	-	-	-	-	-	-
	2 3/8	64	22	42	146	130	102	194	119	19	102	35	32	64	65.1	25.4	UCT212				UC212	4.9										
	2 7/16	2 3/4	1 1/32	1 7/8	6 9/16	5 15/16	4 3/8	8 13/16	5 13/32	13/16	4 3/4	1 5/8	1 1/4	2 3/4	2.563	1.000	UCT212-38				UC212-38	4.9										
65 2 1/2 2 1/2 2 1/2	70	26	48	167	151	111	224	137	21	121	41	32	70	65.1	25.4	UCT212-39				UC212-39	4.9											
	2 7/16	2 3/4	1 1/32	1 7/8	6 9/16	5 15/16	4 3/8	8 13/16	5 13/32	13/16	4 3/4	1 5/8	1 1/4	2 3/4	2.563	1.000	UCTX12	TX12	57.2	40.1	UCX12	7.4	-	-	-	-	-	-	-	-	-	-
	-	2 25/32	55/64	1 13/16	7	6 19/64	4 7/16	8 21/32	5 9/16	29/32	4 27/32	1 5/8	1 7/32	2 25/32	2.795	1.024	UCTX12-39				UCX12-39	7.4										
	71	22	46	178	160	113	220	135	23	123	41	31	71	71	26	UCT312	T312	81.9	52.2	UC312	7.6	-	-	-	-	-	UCT312C	UCT312CD	124	4 7/8	9.9	
70 2 3/4 2 3/4 2 3/4	2 3/4	1 1/32	1 23/32	6 9/16	5 15/16	4 3/8	8 13/16	5 13/32	13/16	4 3/4	1 5/8	1 1/4	2 3/4	2.563	1.000	UCT213-40	T213	57.2	40.1	UC213-40	6.9	-	-	-	-	-	-	-	-	-	-	
	70	26	44	167	151	111	224	137	21	121	41	32	70	65.1	25.4	UCT213				UC213	6.9											
	2 1/2	2 3/4	1 1/32	1 7/8	6 9/16	5 15/16	4 3/8	8 13/16	5 13/32	13/16	4 3/4	1 5/8	1 1/4	2 3/4	2.937	1.189	UCTX13-40	TX13	62.2	44.1	UCX13-40	7.6	-	-	-	-	-	-	-	-	-	-
	2 1/2	70	26	48	167	151	111	224	137	21	121	41	32	70	74.6	30.2	UCTX13				UCX13	7.6										
75 2 15/16 3 2 15/16	2 1/2	3 5/32	1 1/32	1 31/32	7 15/32	6 11/16	4 9/16	9 3/8	5 3/4	31/32	5 9/32	1 11/16	1 1/4	2 3/4	2.953	1.181	UCT313-40	T313	92.7	59.9	UC313-40	9.3	-	-	-	-	-	-	-	-	-	-
	80	26	50	190	170	116	238	146	25	134	43	32	70	75	30	UCT313				UC313	9.3											
	2 3/4	2 3/4	1 1/32	1 13/16	6 9/16	5 15/16	4 3/8	8 13/16	5 13/32	13/16	4 3/4	1 5/8	1 1/4	2 3/4	2.937	1.189	UCT214-44	T214	62.2	44.1	UC214-44	7.0	-	-	-	-	-	-	-	-	-	-
	2 3/4	70	26	46	167	151	111	224	137	21	121	41	32	70	74.6	30.2	UCT214				UC214	7.0										
75 3 2 15/16	2 3/4	2 3/4	1 1/32	1 7/8	6 9/16	5 15/16	4 3/8	9 1/8	5 1/2	13/16	4 3/4	1 5/8	1 1/4	2 3/4	3.063	1.331	UCTX14-44	TX14	67.4	48.3	UCX14-44	7.9	-	-	-	-	-	-	-	-	-	-
	70	26	48	167	151	111	232	140	21	121	41	32	70	77.8	33.3	UCTX14				UCX14	7.9											
	2 3/4	3 17/32	1 1/32	2 1/16	7 15/16	7 3/32	5 1/8	9 29/32	6 3/32	31/32	5 1/2	1 13/16	1 13/32	3 11/32	3.071	1.299	UCT314-44	T314	104	68.2	UC314-44	11.1	-	-	-	-	-	-	-	-	-	-
	90	26	52	202	180	130	252	155	25	140	46	36	85	78	33	UCT314				UC314	11.1											
75 2 15/16 3 3	2 3/4	1 1/32	1 7/8	6 9/16	5 15/16	4 3/8	9 1/8	5 1/2	13/16	4 3/4	1 5/8	1 1/4	2 3/4	3.063	1.331	UCT215-47	T215	67.4	48.3	UC215-47	7.3	-	-	-	-	-	-	-	-	-	-	
	70	26	48	167	151	111	232	140	21	121	41	32	70	77.8	33.3	UCT215				UC215	7.3											
	2 15/16															UCT215-48				UC215-48	7.3											
	3	2 3/4	1 7/64	1 7/8	7 1/4	6 1/2	4 3/8	9 1/4	5 1/2	13/16	4 3/4	1 5/8	1 1/4	2 3/4	3.252	1.311	UCTX15-47	TX15	72.7	53.0	UCX15-47	8.7	-	-	-	-	-	-	-	-	-	-

Remarks 1. In Part No. of unit and units with covers, fitting codes follow bore diameter numbers. (See Table 2.5 in P.11.)  
2. Part No. of applicable grease nipples are shown below.  
B-1/4-28UNF..... 201~210, X05~X09, 305~308  
B-R1/8..... 211~217, X10~X17, 309~328

3. As for the triple-lip seal type product (from 201 to 205 are the double-lip seal type products), supplementary code L3 (L2) follows the Part No. of unit or bearing. (Example of Part No. : UCT206JL3, UC206L3)  
4. As for the dimensions and forms of applicable bearings, see the dimensional tables of insert bearing for unit.  
5. Housings of spheroidal graphite iron casting are also available.

**UCT**  
Cylindrical bore (with set screws)  
d (75) ~ 140 mm



Variations of tolerance of groove width ( $\Delta A_{1s}$ ), variations of tolerance of distance between both grooves ( $\Delta H_{1s}$ ), and tolerance of symmetry of both groove sides (X)

Housing No.		$\Delta A_{1s}$	$\Delta H_{1s}$	X
T204-T210	TX05-TX10	+0.2 0	0 -0.5	0.5
T211-T217	TX11-TX17	+0.3 0	0 -0.8	0.6 0.7 0.8

Unit: mm

Shaft Dia. mm inch  d	Dimensions inch mm																Standard		Bearing No.	Mass kg	Basic Load Ratings kN		Fatigue Load Limit kN $C_u$	Factor $f_0$	With Pressed Steel Covers			With Cast Iron Covers											
	A	A <sub>1</sub>	A <sub>2</sub>	H	H <sub>1</sub>	H <sub>2</sub>	L	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	N	N <sub>1</sub>	N <sub>2</sub>	B	S	Unit No.	Housing No.	C <sub>r</sub>			C <sub>0r</sub>	Unit No.			Dimension mm inch	Mass kg	Unit No.	Dimension mm inch	Mass kg										
75 3	3 17/32	1 1/32	2 5/32	8 1/2	7 9/16	5 3/16	10 5/16	6 5/16	3 1/32	5 29/32	1 13/16	1 13/32	3 11/32	3.228	1.260	UCT315-47 UCT315 UCT315-48	T315	113	77.2	3.24	13.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			
	90	26	55	216	192	132	262	160	25	150	46	36	85	82	32	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			
80 —	2 3/4	1 1/32	2	7 1/4	6 1/2	4 3/8	9 1/4	5 1/2	13/16	4 3/4	1 5/8	1 1/4	2 3/4	3.252	1.311	UCT216-50 UCT216	T216	72.7	53.0	2.30	14.6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
	70	26	51	184	165	111	235	140	21	121	41	32	70	82.6	33.3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			
80 —	2 7/8	1 7/64	2 1/8	7 25/32	6 13/16	4 7/8	10 1/4	6 3/8	1 3/32	6 3/16	1 7/8	1 1/2	2 7/8	3.374	1.343	UCTX16	TX16	84.0	61.9	2.60	14.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	73	28	54	198	173	124	260	162	28	157	48	38	73	85.7	34.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			
85 —	4 1/32	1 3/16	2 3/8	9 1/16	8 1/32	5 29/32	11 3/32	6 27/32	1 3/32	6 5/16	2 3/32	1 21/32	3 27/32	3.386	1.339	UCT316	T316	123	86.7	3.53	13.3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	102	30	60	230	204	150	282	174	28	160	53	42	98	86	34	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			
85 —	2 7/8	1 3/16	2 1/8	7 25/32	6 13/16	4 7/8	10 1/4	6 3/8	1 3/32	6 3/16	1 7/8	1 1/2	2 7/8	3.374	1.343	UCT217-52 UCT217	T217	84.0	61.9	2.60	14.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	73	30	54	198	173	124	260	162	29	157	48	38	73	85.7	34.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			
85 —	2 7/8	1 7/64	2 1/8	7 25/32	6 13/16	4 7/8	10 1/4	6 3/8	1 3/32	6 3/16	1 7/8	1 1/2	2 7/8	3.780	1.563	UCTX17 UCTX17-55	TX17	96.1	71.5	2.91	14.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	73	28	54	198	173	124	260	162	28	157	48	38	73	96	39.7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			
90 —	4 1/32	1 17/64	2 17/32	9 7/16	8 27/64	5 31/32	11 23/32	7 7/32	1 3/16	6 11/16	2 3/32	1 21/32	3 27/32	3.780	1.575	UCT317	T317	133	96.8	3.82	13.3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	102	32	64	240	214	152	298	183	30	170	53	42	98	96	40	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			
90 —	4 11/32	1 17/64	2 19/32	10 1/32	8 31/32	6 5/16	12 9/32	7 9/16	1 3/16	6 7/8	2 1/4	1 13/16	4 3/16	3.780	1.575	UCT318-56 UCT318	T318	143	107	4.11	13.3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	110	32	66	255	228	160	312	192	30	175	57	46	106	96	40	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			
95 —	4 11/32	1 3/8	2 27/32	10 5/8	9 29/64	6 1/2	12 11/16	7 3/4	1 7/32	7 3/32	2 1/4	1 13/16	4 3/16	4.055	1.614	UCT319	T319	153	119	4.45	13.3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	110	35	72	270	240	165	322	197	31	180	57	46	106	103	41	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			
100 —	4 23/32	1 3/8	2 15/16	11 13/32	10 15/64	6 7/8	13 19/32	8 9/32	1 1/4	7 7/8	2 5/16	1 7/8	4 17/32	4.252	1.654	UCT320 UCT320-63 UCT320-64	T320	173	141	5.08	13.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	120	35	75	290	260	175	345	210	32	200	59	48	115	108	42	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			
105 —	4 23/32	1 3/8	2 15/16	11 13/32	10 15/64	6 7/8	13 19/32	8 9/32	1 1/4	7 7/8	2 5/16	1 7/8	4 17/32	4.409	1.732	UCT321	T321	184	153	5.41	13.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	120	35	75	290	260	175	345	210	32	200	59	48	115	112	44	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			
110 —	5 1/8	1 1/2	3 5/32	12 19/32	11 7/32	7 9/32	15 5/32	9 1/4	1 1/2	8 15/32	2 9/16	2 1/16	4 29/32	4.606	1.811	UCT322	T322	205	180	6.15	13.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	130	38	80	320	285	185	385	235	38	215	65	52	125	117	46	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			
120 —	5 1/2	1 49/64	3 17/32	13 31/32	12 9/32	8 9/32	17	10 1/2	1 21/32	9 1/16	2 3/4	2 3/8	5 1/2	4.961	2.008	UCT324	T324	207	185	6.10	13.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	140	45	90	355	320	210	432	267	42	230	70	60	140	126	51	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			
130 —	5 29/32	1 31/32	3 15/16	15 5/32	13 25/32	8 21/32	18 5/16	11 7/32	1 25/32	9 7/16	2 15/16	2 9/16	5 29/32	5.315	2.126	UCT326	T326	229	214	6.79	13.6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	150	50	100	385	350	220	465	285	45	240	75	65	150	135	54	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			
140 —	6 3/32	1 31/32	3 15/16	16 11/32	14 51/64	9 1/16	20 9/32	12 13/32	1 31/32	10 1/32	3 3/32	2 3/4	6 5/16	5.709	2.323	UCT328	T328	253	246	7.54	13.6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	155	50	100	415	380	230	515	315	50	255	80	70	160	145	59	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			

Remarks 1. In Part No. of unit and units with covers, fitting codes follow bore diameter numbers. (See Table 2.5 in P.11.)  
2. Part No. of applicable grease nipples are shown below.  
B-1/4-28UNF ..... 201-210, X05-X09, 305-308  
B-R1/8 ..... 211-217, X10-X17, 309-328

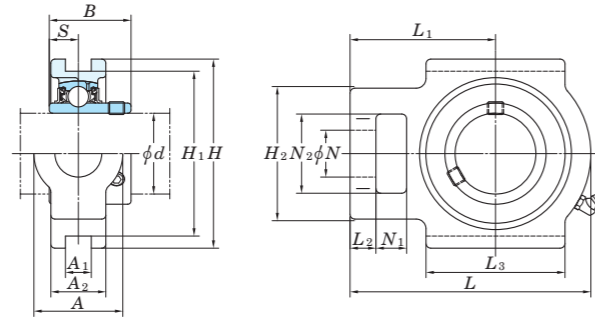
3. As for the triple-lip seal type product (from 201 to 205 are the double-lip seal type products), supplementary code L3 (L2) follows the Part No. of unit or bearing. (Example of Part No. : UCT206JL3, UC206L3)  
4. As for the dimensions and forms of applicable bearings, see the dimensional tables of insert bearing for unit.  
5. Housings of spheroidal graphite iron casting are also available.



Take-up type

UCT-E  
Cylindrical bore (with set screws)

d 12 ~ 50 mm



Variations of tolerance of groove width ( $\Delta_{A1s}$ ), variations of tolerance of distance between both grooves ( $\Delta_{H1s}$ ), and tolerance of symmetry of both groove sides (X)

Housing No.		$\Delta_{A1s}$	$\Delta_{H1s}$	X
T204E-T210E	TX05E-TX10E	+0.2 0	0 -0.5	0.5
T211E-T217E	TX11E-TX17E	+0.3 0	0 -0.8	0.6

Unit: mm

Shaft Dia. mm inch	Dimensions inch mm															Unit No.	Housing No.	Bearing No.	Basic Load Ratings kN		Fatigue Load Limit kN	Factor	Mass
	A	A <sub>1</sub>	A <sub>2</sub>	H	H <sub>1</sub>	H <sub>2</sub>	L	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	N	N <sub>1</sub>	N <sub>2</sub>	B	S				C <sub>r</sub>	C <sub>0r</sub>	C <sub>u</sub>	f <sub>0</sub>	kg
12 1/2																UCT201E UCT201-8E UCT202E UCT202-10E UCT203E UCT204-12E UCT204E	T204E	UC201 UC201-8 UC202 UC202-10 UC203 UC204-12 UC204	12.8 6.65	0.302	13.2	0.81 0.79 0.78 0.76	
15 5/8	1 1/4	17/32	13/16	3 1/2	3	2	3 11/16	2 13/32	13/32	2	3/4	5/8	1 1/4	1.220	0.500								
17 3/4	32	13.5	21	89	76.2	51	94	61	10	51	19	16	32	31	12.7								
20																UCT205-14E UCT205-15E UCT205E UCT205-16E	T205E	UC205-14 UC205-15 UC205 UC205-16	14.0 7.85	0.357	13.9	0.84	
25 7/8 15/16	1 1/4	17/32	15/16	3 1/2	3	2	3 13/16	2 7/16	13/32	2	3/4	5/8	1 1/4	1.343	0.563								
25 1	32	13.5	24	89	76.2	51	97	62	10	51	19	16	32	34.1	14.3								
30 1 1/8 1 3/16 1 1/4	1 15/32	17/32	1 3/32	4 1/32	3 1/2	2 7/32	4 7/16	2 3/4	13/32	2 1/4	7/8	5/8	1 15/32	1.500	0.626								
30 1 3/16 1 1/4	37	13.5	28	102	88.9	56	113	70	10	57	22	16	37	38.1	15.9								
35 1 1/4 1 5/16 1 3/8	1 15/32	17/32	1 3/16	4 1/32	3 1/2	2 17/32	5 3/32	3 1/16	1/2	2 17/32	7/8	5/8	1 15/32	1.689	0.689								
35 1 7/16 1 3/8 1 7/16	37	13.5	30	102	88.9	64	129	78	13	64	22	16	37	42.9	17.5								
40 1 1/2 1 9/16	1 15/16	11/16	1 13/32	4 1/2	4	3 9/32	5 21/32	3 15/32	19/32	3 9/32	1 5/32	3/4	1 15/16	1.937	0.748								
40 1 1/2	49	17.5	33	114	101.6	83	144	88	16	83	29	19	49	49.2	19								
45 1 5/8 1 11/16 1 3/4	1 15/16	11/16	1 3/8	4 19/32	4	3 9/32	5 21/32	3 7/16	5/8	3 9/32	1 5/32	3/4	1 15/16	1.937	0.748								
45 1 3/4	49	17.5	35	117	101.6	83	144	87	16	83	29	19	49	49.2	19								
50 1 7/8 1 15/16	1 15/16	11/16	1 15/32	4 19/32	4	3 9/32	5 7/8	3 17/32	5/8	3 3/8	1 5/32	3/4	1 15/16	2.031	0.748								
50 2	49	17.5	37	117	101.6	83	149	90	16	86	29	19	49	51.6	19								
50 1 15/16 2	2 17/32	1 1/16	1 21/32	5 3/4	5 1/8	4 1/64	6 23/32	4 3/16	3/4	3 3/4	1 3/8	31/32	2 17/32	2.189	0.874								
50 2	64	27	42	146	130.17	102	171	106	19	95	35	25	64	55.6	22.2								

Remarks 1. In Part No. of unit and units with covers, fitting codes follow bore diameter numbers. (See Table 2.5 in P.11.)

2. Part No. of applicable grease nipples are shown below.

B-1/4-28UNF ..... 201~210, X05~X09

B-R1/8 ..... 211~217, X10~X17

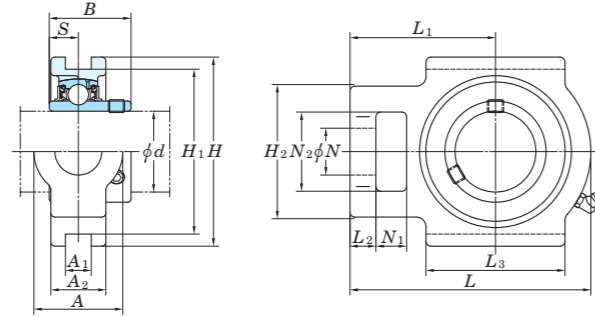
3. As for the triple-lip seal type product (from 201 to 205 are the double-lip seal type products), supplementary code L3 (L2) follows the Part No. of unit or bearing. (Example of Part No. : UCT206EL3, UC206L3)

4. As for the dimensions and forms of applicable bearings, see the dimensional tables of insert bearing for unit.

5. Housings of spheroidal graphite iron casting are also available.

Take-up type

UCT-E  
Cylindrical bore (with set screws)  
d 55 ~ 85 mm



Variations of tolerance of groove width ( $\Delta_{A1s}$ ), variations of tolerance of distance between both grooves ( $\Delta_{H1s}$ ), and tolerance of symmetry of both groove sides (X)  
Unit: mm

Housing No.	$\Delta_{A1s}$	$\Delta_{H1s}$	X
T204E-T210E	+0.2 0	0 -0.5	0.5
T211E-T217E	+0.3 0	0 -0.8	0.6

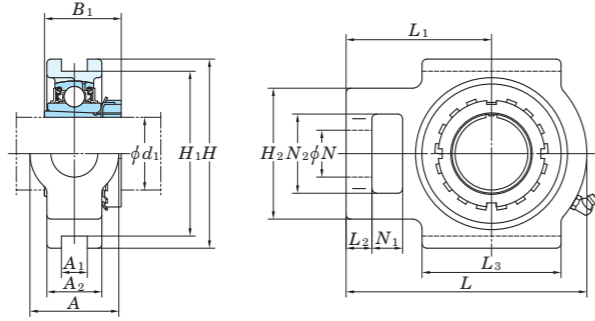
Shaft Dia. mm inch	Dimensions inch mm															Unit No.	Housing No.	Bearing No.	Basic Load Ratings kN		Fatigue Load Limit kN	Factor	Mass						
	A	A <sub>1</sub>	A <sub>2</sub>	H	H <sub>1</sub>	H <sub>2</sub>	L	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	N	N <sub>1</sub>	N <sub>2</sub>	B	S				C <sub>r</sub>	C <sub>0r</sub>	C <sub>u</sub>	f <sub>0</sub>	kg						
55 2 2 1/8 2 3/16	2 17/32	1 1/16	1 1/2	5 3/4	5 1/8	4 1/64	6 23/32	4 3/16	3/4	3 3/4	1 3/8	3 1/32	2 17/32	2.189	0.874	UCT211-32E UCT211-34E UCT211E UCT211-35E	T211E	UC211-32 UC211-34 UC211 UC211-35	43.4	29.4	1.34	14.4	4.0						
	2 3/16	1 1/16	1 23/32	5 3/4	5 1/8	4 1/64	7 5/8	4 11/16	3/4	4 1/32	1 3/8	1 1/4	2 17/32	2.563	1.000				UCTX11E UCTX11-35E UCTX11-36E	TX11E	UCX11 UCX11-35 UCX11-36	52.4	36.2	1.65	14.4	5.3			
	2 3/8	1 1/16	1 21/32	5 3/4	5 1/8	4 1/64	7 5/8	4 11/16	3/4	4 1/32	1 3/8	1 1/4	2 17/32	2.563	1.000							UCT212-36E UCT212E UCT212-38E UCT212-39E	T212E	UC212-36 UC212 UC212-38 UC212-39	52.4	36.2	1.65	14.4	4.9
	2 7/16	1 1/16	1 7/8	6 9/16	5 15/16	4 3/8	8 13/16	5 13/32	13/16	4 3/4	1 5/8	1 1/4	2 3/4	2.563	1.000										UCTX12E UCTX12-39E	TX12E	UCX12 UCX12-39	57.2	40.1
60 2 1/4 2 3/8 2 7/16	2 17/32	1 1/16	1 21/32	5 3/4	5 1/8	4 1/64	7 5/8	4 11/16	3/4	4 1/32	1 3/8	1 1/4	2 17/32	2.563	1.000	UCT213-40E UCT213E	T213E	UC213-40 UC213	57.2	40.1	1.82	14.4	6.9						
	2 1/2	1 1/16	1 7/8	6 9/16	5 15/16	4 3/8	8 13/16	5 13/32	13/16	4 3/4	1 5/8	1 1/4	2 3/4	2.937	1.189				UCTX13-40E UCTX13E	TX13E	UCX13-40 UCX13	62.2	44.1	2.01	14.5	7.6			
65 2 1/2 2 3/4 2 7/16	2 3/4	1 1/16	1 13/16	6 9/16	5 15/16	4 3/8	8 13/16	5 13/32	13/16	4 3/4	1 5/8	1 1/4	2 3/4	2.937	1.189	UCT214-44E UCT214E	T214E	UC214-44 UC214				62.2	44.1	2.01	14.5	7.0			
	2 3/4	1 1/16	1 7/8	6 9/16	5 15/16	4 3/8	9 1/8	5 1/2	13/16	4 3/4	1 5/8	1 1/4	2 3/4	3.063	1.331				UCTX14-44E UCTX14E	TX14E	UCX14-44 UCX14	67.4	48.3	2.17	14.5	7.9			
	2 7/16	1 1/16	1 7/8	6 9/16	5 15/16	4 3/8	9 1/8	5 1/2	13/16	4 3/4	1 5/8	1 1/4	2 3/4	3.063	1.331							UCT215-47E UCT215E UCT215-48E	T215E	UC215-47 UC215 UC215-48	67.4	48.3	2.17	14.5	7.3
70 2 3/4 2 7/16 3	2 3/4	1 1/16	1 7/8	6 9/16	5 15/16	4 3/8	9 1/8	5 1/2	13/16	4 3/4	1 5/8	1 1/4	2 3/4	3.063	1.331	UCTX15-47E UCTX15E UCTX15-48E	TX15E	UCX15-47 UCX15 UCX15-48	72.7	53.0	2.30				14.6	8.7			
	3	1 1/16	1 7/8	7 1/4	6 1/2	4 3/8	9 1/4	5 1/2	13/16	4 3/4	1 5/8	1 1/4	2 3/4	3.252	1.311				UCT216-50E UCT216E	T216E	UC216-50 UC216	72.7	53.0	2.30	14.6	8.2			
	2 15/16	1 1/16	1 7/8	7 1/4	6 1/2	4 3/8	9 1/4	5 1/2	13/16	4 3/4	1 5/8	1 1/4	2 3/4	3.252	1.311							UCTX16E	TX16E	UCX16	84.0	61.9	2.60	14.5	12.4
75 3 2 15/16	2 3/4	1 1/16	2	7 1/4	6 1/2	4 3/8	9 1/4	5 1/2	13/16	4 3/4	1 5/8	1 1/4	2 3/4	3.252	1.311	UCT217-52E UCT217E	T217E	UC217-52 UC217	84.0	61.9	2.60				14.5	12.1			
	3	1 1/16	2 11/16	7 25/32	6 13/16	4 7/8	10 1/4	6 3/8	1 3/32	6 3/16	1 7/8	1 1/2	2 7/8	3.374	1.343				UCTX17E UCTX17-55E	TX17E	UCX17 UCX17-55	96.1	71.5	2.91	14.5	13.3			
80 3 1/8 -	3 1/2	1 13/16	2 11/16	7 25/32	6 13/16	4 7/8	10 1/4	6 3/8	1 3/32	6 3/16	1 7/8	1 1/2	2 7/8	3.374	1.343	UCT217-52E UCT217E	T217E	UC217-52 UC217				84.0	61.9	2.60	14.5	12.1			
	3 1/2	1 13/16	2 11/16	7 25/32	6 13/16	4 7/8	10 1/4	6 3/8	1 3/32	6 3/16	1 7/8	1 1/2	2 7/8	3.780	1.563				UCTX17E UCTX17-55E	TX17E	UCX17 UCX17-55	96.1	71.5	2.91	14.5	13.3			
85 3 1/4 3 7/16	3 1/2	1 13/16	2 11/16	7 25/32	6 13/16	4 7/8	10 1/4	6 3/8	1 3/32	6 3/16	1 7/8	1 1/2	2 7/8	3.780	1.563	UCTX17E UCTX17-55E	TX17E	UCX17 UCX17-55				96.1	71.5	2.91	14.5	13.3			
	3 7/16	1 13/16	2 11/16	7 25/32	6 13/16	4 7/8	10 1/4	6 3/8	1 3/32	6 3/16	1 7/8	1 1/2	2 7/8	3.780	1.563				UCTX17E UCTX17-55E	TX17E	UCX17 UCX17-55	96.1	71.5	2.91	14.5	13.3			

Remarks 1. In Part No. of unit and units with covers, fitting codes follow bore diameter numbers. (See Table 2.5 in P.11.)  
2. Part No. of applicable grease nipples are shown below.  
B-1/4-28UNF ..... 201~210, X05~X09  
B-R1/8 ..... 211~217, X10~X17

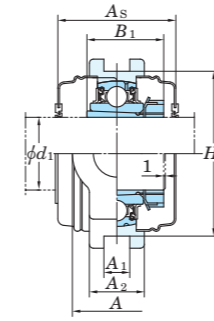
3. As for the triple-lip seal type product (from 201 to 205 are the double-lip seal type products), supplementary code L3 (L2) follows the Part No. of unit or bearing. (Example of Part No. : UCT206EL3, UC206L3)  
4. As for the dimensions and forms of applicable bearings, see the dimensional tables of insert bearing for unit.  
5. Housings of spheroidal graphite iron casting are also available.

**UKT**  
**Tapered bore (with adapter)**

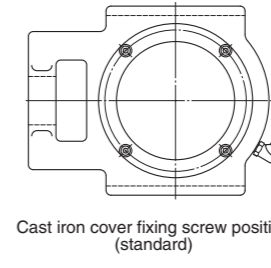
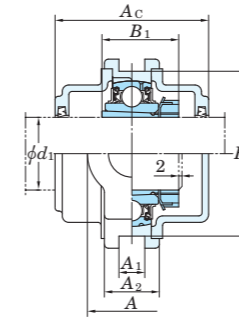
$d_1$  20 ~ 50 mm



With Pressed Steel Covers (E1)



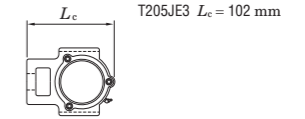
With Cast Iron Covers (E3)



Variations of tolerance of groove width ( $\Delta A_{1s}$ ), variations of tolerance of distance between both grooves ( $\Delta H_{1s}$ ), and tolerance of symmetry of both groove sides (X)

Housing No.		$\Delta A_{1s}$	$\Delta H_{1s}$	X	Unit: mm
T205-T210	TX05-TX10	T305-T310	+0.2 0	0 -0.5	0.5
T211-T217	TX11-TX17	T311-T318	+0.3 0	0 -0.8	0.6
		T319-T322			0.7
		T324-T328			0.8

Form and dimension of  $L_c$  of T205JE3 (housing with cast iron covers) are shown below.

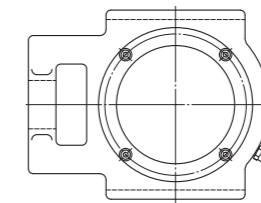
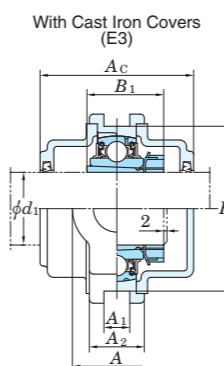
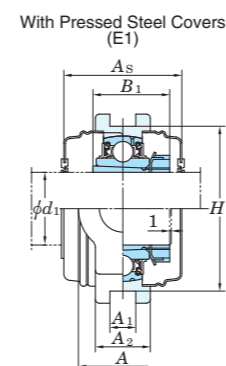
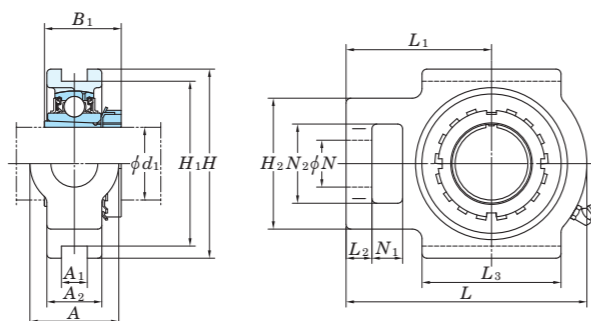


Shaft Dia. mm inch	Dimensions inch mm															Standard			Basic Load Ratings kN	Fatigue Load Limit kN	Factor	With Pressed Steel Covers			With Cast Iron Covers																	
	$d_1$	A	A <sub>1</sub>	A <sub>2</sub>	H	H <sub>1</sub>	H <sub>2</sub>	L	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	N	N <sub>1</sub>	N <sub>2</sub>	B <sub>1</sub>	Unit No.	Housing No.	Bearing No.				Adapter Assembly No.	Mass kg	C <sub>r</sub>	C <sub>0r</sub>	C <sub>u</sub>	f <sub>0</sub>	Unit No.	Dimension mm inch	Mass kg	Unit No.	Dimension mm inch	Mass kg									
20	3/4	1 1/4	15/32	15/16	3 1/2	2 63/64	2	3 13/16	2 7/16	13/32	2	3/4	5/8	1 1/4	1 3/8	UKT205	T205	UK205	HE2305X H2305X	0.88 0.88	14.0	7.85	0.357	13.9	-	-	-	-	-	-	-	-	-	-								
	3/4	1 5/32	15/32	1 3/32	4 1/32	3 1/2	2 7/32	4 7/16	2 3/4	13/32	2 1/4	7/8	5/8	1 15/32	1 3/8	UKTX05	TX05	UKX05	HE2305X H2305X	1.3 1.3	19.5	11.3	0.514	13.9	-	-	-	-	-	-	-	-	-	-	-	-	-					
	3/4	1 13/32	15/32	1 1/32	3 1/2	3 5/32	2 7/16	4 13/16	3	15/32	2 9/16	1 1/32	5/8	1 13/32	1 3/8	UKT305	T305	UK305	HE2305X H2305X	1.5 1.5	21.2	10.9	0.495	12.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
25	1	1 15/32	15/32	1 3/32	4 1/32	3 1/2	2 7/32	4 7/16	2 3/4	13/32	2 1/4	7/8	5/8	1 15/32	1 1/2	UKT206	T206	UK206	H2306X HE2306X	1.3 1.3	19.5	11.3	0.514	13.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
	1	1 15/32	15/32	1 3/16	4 1/32	3 1/2	2 17/32	5 3/32	3 1/16	1/2	2 17/32	7/8	5/8	1 15/32	1 1/2	UKTX06	TX06	UKX06	H2306X HE2306X	1.7 1.7	25.7	15.4	0.700	13.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	1	1 5/8	5/8	1 3/32	3 15/16	3 35/64	2 3/4	5 13/32	3 11/32	9/16	2 29/32	1 3/32	23/32	1 5/8	1 1/2	UKT306	T306	UK306	H2306X HE2306X	1.9 1.9	26.7	15.0	0.682	13.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
30	1 1/8	1 15/32	15/32	1 3/16	4 1/32	3 1/2	2 17/32	5 3/32	3 1/16	1/2	2 17/32	7/8	5/8	1 15/32	1 11/16	UKT207	T207	UK207	HS2307X H2307X	1.7 1.7	25.7	15.4	0.700	13.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	1 1/8	1 15/16	5/8	1 13/32	4 1/2	4 1/64	3 9/32	5 21/32	3 15/32	19/32	3 9/32	1 5/32	3/4	1 15/16	1 11/16	UKTX07	TX07	UKX07	HS2307X H2307X	2.6 2.6	29.1	17.8	0.809	14.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	1 1/8	1 25/32	5/8	1 1/4	4 3/8	3 15/16	2 15/16	5 29/32	3 11/16	19/32	3 5/32	1 3/16	25/32	1 25/32	1 11/16	UKT307	T307	UK307	HS2307X H2307X	2.4 2.4	33.4	19.3	0.877	13.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
35	1 1/4	1 15/16	5/8	1 5/16	4 1/2	4 1/64	3 9/32	5 21/32	3 15/32	5/8	3 9/32	1 5/32	3/4	1 15/16	1 13/16	UKT208	T208	UK208	HE2308X HS2308X H2308X	2.5 2.5 2.5	29.1	17.8	0.809	14.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	1 1/4	1 15/16	5/8	1 13/32	4 19/32	4 1/64	3 9/32	5 21/32	3 7/16	19/32	3 9/32	1 5/32	3/4	1 15/16	1 13/16	UKTX08	TX08	UKX08	HE2308X HS2308X H2308X	2.6 2.6 2.6	34.1	21.3	0.968	14.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1 1/4	1 31/32	45/64	1 11/32	4 7/8	4 13/32	3 9/32	6 3/8	3 15/16	21/32	3 1/2	1 1/4	7/8	1 31/32	1 13/16	UKT308	T308	UK308	HE2308X HS2308X H2308X	3.0 3.0 3.0	40.7	24.0	1.09	13.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40	1 1/2	1 15/16	5/8	1 3/8	4 19/32	4 1/64	3 9/32	5 21/32	3 7/16	5/8	3 9/32	1 5/32	3/4	1 15/16	1 31/32	UKT209	T209	UK209	HE2309X H2309X	2.5 2.5	34.1	21.3	0.968	14.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	1 1/2	1 15/16	5/8	1 1/2	4 19/32	4 1/64	3 9/32	5 7/8	3 17/32	5/8	3 3/8	1 5/32	3/4	1 15/16	1 31/32	UKTX09	TX09	UKX09	HE2309X H2309X	2.9 2.9	35.1	23.3	1.06	14.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1 1/2	2 5/32	45/64	1 1/2	5 7/16	4 59/64	3 17/32	7	4 11/32	23/32	3 13/16	1 11/32	15/16	2 5/32	1 31/32	UKT309	T309	UK309	HE2309X H2309X	4.2 4.2	48.9	29.5	1.34	13.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
45	1 3/4	1 15/16	5/8	1 15/32	4 19/32	4 1/64	3 9/32	5 7/8	3 17/32	5/8	3 3/8	1 5/32	3/4	1 15/16	2 5/32	UKT210	T210	UK210	HE2310X H2310X	2.7 2.7	35.1	23.3	1.06	14.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	1 3/4	2 17/32	55/64	1 21/32	5 3/4	5 1/8	4 1/32	6 23/32	4 3/16	3/4	3 3/4	1 3/8	31/32	2 17/32	2 5/32	UKTX10	TX10	UKX10	HE2310X H2310X	4.4 4.4	43.4	29.4	1.34	14.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1 3/4	2 13/32	25/32	1 9/16	5 15/16	5 39/64	3 27/32	4 19/32	25/32	4 3/16	1 15/32	1 1/16	2 13/32	2 5/32	UKT310	T310	UK310	HE2310X H2310X	5.0 5.0	62.0	38.3	1.74	13.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
50	1 7/8	2 17/32	55/64	1 1/2	5 3/4	5 1/8	4 1/32	6 23/32	4 3/16	3/4	3 3/4	1 3/8	31/32	2 17/32	2 5/16	UKT211	T211	UK211	HS2311X H2311X HE2311X	4.1 4.1 4.1	43.4	29.4	1.34	14.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1 7/8	2 17/32	55/64	1 23/32	5 3/4	5 1/8	4 1/32	7 5/8	4 11/16	3/4	4 1/32	1 3/8	1 1/4	2 17/32	2 5/16	UKTX11	TX11	UKX11	HS2311X H2311X HE2311X	5.1 5.1 5.1	52.4	36.2	1.65	14.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1 7/8	2 19/32	55/64	1 23/32	6 13/32	5 29/32	4 1/8	8 5/32	5	13/16	4 17/32	1 17/32	1 5/32	2 19/32	2 5/16	UKT311	T311	UK311	HS2311X H2311X HE2311X	6.4 6.4 6.4	71.6	45.0	2.05	13.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Remarks 1. In Part No. of unit and units with covers, fitting codes follow bore diameter numbers. (See Table 2.5 in P.11.)  
 2. Part No. of applicable grease nipples are shown below.  
 B-1/4-28UNF ..... 205~210, X05~X09, 305~308  
 B-R1/8 ..... 211~217, X10~X17, 309~328  
 3. In Part No. of unit with adapters and bearing with adapters, Part No. of applicable adapter follow the Part No. shown in the dimensional tables. (Example of Part No. : UKT206J + H2306X, UK206 + H2306X)  
 4. As for the triple-lip seal type product (205 is the double-lip seal type product), supplementary code L3 (or L2) follows the Part No. of unit or bearing. (Example of Part No. : UKT206JL3 + H2306X, UK206L3 + H2306X)  
 5. For the dimensions and forms of applicable bearings and adapters, see the dimensional tables of insert bearing for unit and adapter assemblies.  
 6. Housings of spheroidal graphite iron casting are also available.

# Take-up type

## UKT Tapered bore (with adapter) d<sub>1</sub> 55 ~ 125 mm



Variations of tolerance of groove width ( $\Delta_{A1s}$ ), variations of tolerance of distance between both grooves ( $\Delta_{H1s}$ ), and tolerance of symmetry of both groove sides (X)

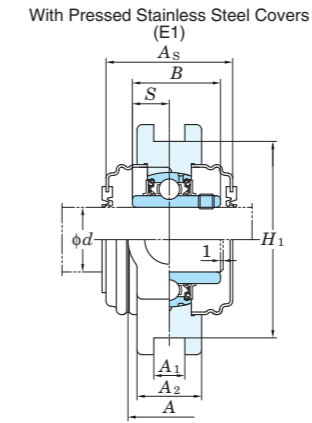
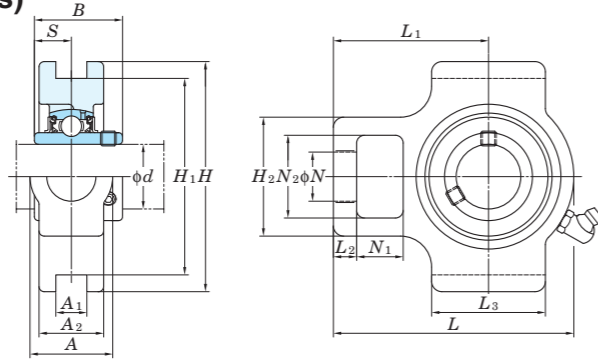
Housing No.		$\Delta_{A1s}$	$\Delta_{H1s}$	X	
T205-T210	TX05-TX10	T305-T310	+0.2 0	0 -0.5	0.5
T211-T217	TX11-TX17	T311-T318	+0.3 0	0 -0.8	0.6 0.7 0.8

Unit: mm

Shaft Dia. mm inch	Dimensions inch mm															Standard			Basic Load Ratings kN	Fatigue Load Limit kN	Factor	With Pressed Steel Covers			With Cast Iron Covers						
	d <sub>1</sub>	A	A <sub>1</sub>	A <sub>2</sub>	H	H <sub>1</sub>	H <sub>2</sub>	L	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	N	N <sub>1</sub>	N <sub>2</sub>	B <sub>1</sub>	Unit No.	Housing No.	Bearing No.				C <sub>r</sub>	C <sub>0r</sub>	C <sub>u</sub>	f <sub>0</sub>	Unit No.	Dimension mm inch	Mass kg	Unit No.	Dimension mm inch	Mass kg
55	2 1/8	2 17/32	55/64	1 21/32	5 3/4	5 1/8	4 1/32	7 5/8	4 11/16	3/4	4 1/32	1 3/8	1 1/4	2 17/32	2 7/16	UKT212	T212	UK212	52.4	36.2	1.65	14.4	-	-	-	-	-	-	-	-	-
	2 1/8	2 3/4	1 1/32	1 7/8	6 9/16	5 15/16	4 3/8	8 13/16	5 13/32	13/16	4 3/4	1 5/8	1 1/4	2 3/4	2 7/16	UKTX12	TX12	UKX12	57.2	40.1	1.82	14.4	UKT212C	UKT212CD	89 3 1/2	4.8	UKT212FC	UKT212FCD	114 4 1/2	6.3	
	2 1/8	2 25/32	55/64	1 13/16	7	6 19/64	4 7/16	8 21/32	5 5/16	29/32	4 27/32	1 5/8	1 7/32	2 25/32	2 7/16	UKT312	T312	UK312	81.9	52.2	2.37	13.2	UKT312C	UKT312CD	89 3 1/2	7.3	UKT312FC	UKT312FCD	124 4 7/8	9.9	
60	2 1/4	2 3/4	1 1/32	1 23/32	6 9/16	5 15/16	4 3/8	8 13/16	5 13/32	13/16	4 3/4	1 5/8	1 1/4	2 3/4	2 9/16	UKT213	T213	UK213	57.2	40.1	1.82	14.4	UKT213C	UKT213CD	89 3 1/2	6.8	UKT213FC	UKT213FCD	114 4 1/2	8.5	
	2 3/8	2 3/4	1 1/32	1 7/8	6 9/16	5 15/16	4 3/8	8 13/16	5 13/32	13/16	4 3/4	1 5/8	1 1/4	2 3/4	2 9/16	UKTX13	TX13	UKX13	62.2	44.1	2.01	14.5	UKT213C	UKT213CD	89 3 1/2	7.2	UKT213FC	UKT213FCD	114 4 1/2	8.5	
	2 1/4	3 5/32	1 1/32	1 31/32	7 15/32	6 11/16	4 9/16	9 3/8	5 3/4	31/32	5 9/32	1 11/16	1 1/4	2 3/4	2 9/16	UKT313	T313	UK313	92.7	59.9	2.68	13.2	UKT313C	UKT313CD	122 4 13/16	11.6	-	-	-		
65	2 1/2	2 3/4	1 1/32	1 13/16	6 9/16	5 15/16	4 3/8	8 13/16	5 13/32	13/16	4 3/4	1 5/8	1 1/4	2 3/4	2 7/8	UKT215	T215	UK215	67.4	48.3	2.17	14.5	UKT215C	UKT215CD	99 3 29/32	7.4	UKT215FC	UKT215FCD	124 4 7/8	9.4	
	2 1/2	2 3/4	1 7/64	1 7/8	7 1/4	6 1/2	4 3/8	9 1/4	5 1/2	13/16	4 3/4	1 5/8	1 1/4	2 3/4	2 7/8	UKTX15	TX15	UKX15	72.7	53.0	2.30	14.6	UKT215C	UKT215CD	109 4 9/32	8.4	UKT215FC	UKT215FCD	134 5 9/32	15.9	
	2 1/2	3 17/32	1 1/32	2 5/32	8 1/2	7 9/16	5 3/16	10 5/16	6 5/16	31/32	5 29/32	1 13/16	1 13/32	3 11/32	2 7/8	UKT315	T315	UK315	113	77.2	3.24	13.2	UKT315C	UKT315CD	134 5 9/32	15.9	-	-	-		
70	2 3/4	2 3/4	1 1/32	2	7 1/4	6 1/2	4 3/8	9 1/4	5 1/2	13/16	4 3/4	1 5/8	1 1/4	2 3/4	3 1/16	UKT216	T216	UK216	72.7	53.0	2.30	14.6	UKT216C	UKT216CD	109 4 9/32	8.5	UKT216FC	UKT216FCD	138 5 7/16	11.0	
	2 3/4	2 7/8	1 7/64	2 1/8	7 25/32	6 13/16	4 7/8	10 1/4	6 3/8	1 3/32	6 3/16	1 7/8	1 1/2	2 7/8	3 1/16	UKTX16	TX16	UKX16	84.0	61.9	2.60	14.5	UKT216C	UKT216CD	113 4 7/16	11.8	UKT216FC	UKT216FCD	138 5 7/16	11.0	
	2 3/4	4 1/32	1 3/16	2 3/8	9 1/16	8 1/32	5 29/32	11 3/32	6 27/32	1 3/32	6 5/16	2 3/32	1 21/32	3 27/32	3 1/16	UKT316	T316	UK316	123	86.7	3.53	13.3	UKT316C	UKT316CD	138 5 7/16	19.4	-	-	-		
75	3	2 7/8	1 3/16	2 1/8	7 25/32	6 13/16	4 7/8	10 1/4	6 3/8	1 5/32	6 3/16	1 7/8	1 1/2	2 7/8	3 7/32	UKT217	T217	UK217	84.0	61.9	2.60	14.5	UKT217C	UKT217CD	113 4 7/16	11.2	UKT217FC	UKT217FCD	142 5 19/32	14.0	
	3	2 7/8	1 7/64	2 1/8	7 25/32	6 13/16	4 7/8	10 1/4	6 3/8	1 3/32	6 3/16	1 7/8	1 1/2	2 7/8	3 7/32	UKTX17	TX17	UKX17	96.1	71.5	2.91	14.5	UKT217C	UKT217CD	123 4 27/32	11.4	UKT217FC	UKT217FCD	142 5 19/32	14.0	
	3	4 1/32	1 17/64	2 17/32	9 7/16	8 27/64	5 31/32	11 23/32	7 7/32	1 3/16	6 11/16	2 3/32	1 21/32	3 27/32	3 7/32	UKT317	T317	UK317	133	96.8	3.82	13.3	UKT317C	UKT317CD	146 5 3/4	22.4	-	-	-		
80	-	4 11/32	1 17/64	2 19/32	10 1/32	8 31/32	6 5/16	12 9/32	7 9/16	1 3/16	6 7/8	2 1/4	1 13/16	4 3/16	3 3/8	UKT318	T318	UK318	143	107	4.11	13.3	UKT318C	UKT318CD	150 5 29/32	25.9	-	-	-		
85	3 1/4	4 11/32	1 3/8	2 27/32	10 5/8	9 29/64	6 1/2	12 11/16	7 3/4	1 7/32	7 3/32	2 1/4	1 13/16	4 3/16	3 17/32	UKT319	T319	UK319	153	119	4.45	13.3	UKT319C	UKT319CD	162 6 3/8	29.9	-	-	-		
90	3 1/2	4 23/32	1 3/8	2 15/16	11 13/32	10 15/64	6 7/8	13 19/32	8 9/32	1 1/4	7 7/8	2 5/16	1 7/8	4 17/32	3 13/16	UKT320	T320	UK320	173	141	5.08	13.2	UKT320C	UKT320CD	174 6 27/32	36.6	-	-	-		
100	4	5 1/8	1 1/2	3 5/32	12 19/32	11 7/32	7 9/32	15 3/32	9 1/4	1 1/2	8 15/32	2 9/16	2 1/16	4 29/32	4 1/8	UKT322	T322	UK322	205	180	6.15	13.2	UKT322C	UKT322CD	188 7 13/32	46.4	-	-	-		
110	-	5 1/2	1 49/64	3 17/32	13 31/32	12 9/32	8 9/32	17	10 1/2	1 21/32	9 1/16	2 3/4	2 3/8	5 1/2	4 13/32	UKT324	T324	UK324	207	185	6.10	13.5	UKT324C	UKT324CD	196 7 23/32	65.0	-	-	-		
115	4 1/2	5 29/32	1 31/32	3 15/16	15 5/32	13 25/32	8 21/32	18 5/16	11 7/32	1 25/32	9 7/16	2 15/16	2 9/16	5 29/32	4 3/4	UKT326	T326	UK326	229	214	6.79	13.6	UKT326C	UKT326CD	214 8 7/16	82.4	-	-	-		
125	-	6 3/32	1 31/32	3 15/16	16 11/32	14 61/64	9 1/16	20 9/32	12 13/32	1 31/32	10 1/32	3 5/32	2 3/4	6 5/16	5 5/32	UKT328	T328	UK328	253	246	7.54	13.6	UKT328C	UKT328CD	222 8 3/4	102	-	-	-		

Remarks 1. In Part No. of unit and units with covers, fitting codes follow bore diameter numbers. (See Table 2.5 in P.11.)  
 2. Part No. of applicable grease nipples are shown below.  
 B-1/4-28UNF..... 205-210, X05-X09, 305-308  
 B-R1/8..... 211-217, X10-X17, 309-328  
 3. In Part No. of unit with adapters and bearing with adapters, Part No. of applicable adapter follow the Part No. shown in the dimensional tables. (Example of Part No. : UKT206J + H2306X, UK206 + H2306X)  
 4. As for the triple-lip seal type product (205 is the double-lip seal type product), supplementary code L3 (or L2) follows the Part No. of unit or bearing. (Example of Part No. : UKT206JL3 + H2306X, UK206L3 + H2306X)  
 5. For the dimensions and forms of applicable bearings and adapters, see the dimensional tables of insert bearing for unit and adapter assemblies.  
 6. Housings of spheroidal graphite iron casting are also available.

**UCST-S6**  
Cylindrical bore (with set screws)  
 $d$  20 ~ 50 mm



Variations of tolerance of groove width ( $\Delta_{A1s}$ ), variations of tolerance of distance between both grooves ( $\Delta_{H1s}$ ), and tolerance of symmetry of both groove sides (X)

Housing No.	$\Delta_{A1s}$	$\Delta_{H1s}$	X
ST204-ST210	+0.2 0	0 -0.5	0.5

Unit: mm

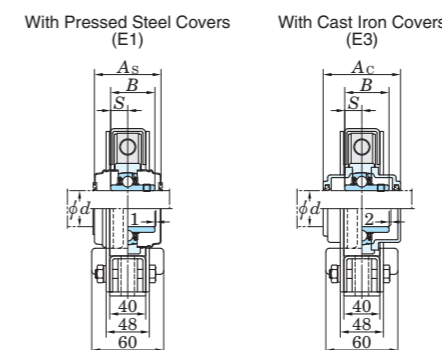
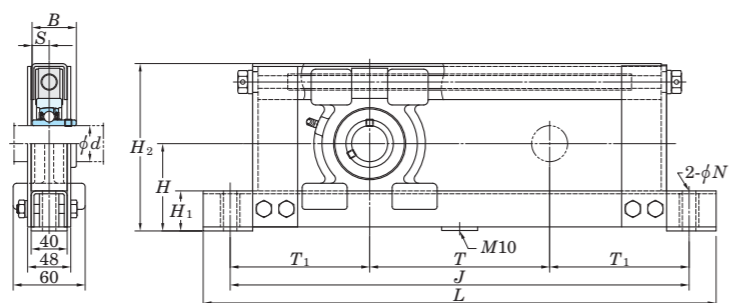
Shaft Dia. mm $d$	Dimensions mm																Unit No.	Housing No.	Bearing No.	Basic Load Ratings kN		Fatigue Load Limit kN $C_u$	Factor $f_0$	Mass kg	With Pressed Stainless Steel Covers			
	A	A <sub>1</sub>	A <sub>2</sub>	H	H <sub>1</sub>	H <sub>2</sub>	L	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	N	N <sub>1</sub>	N <sub>2</sub>	B	S	Unit No.				Dimension mm $A_s$	Mass kg							
																Open Ends Type									Closed End Type			
20	32	12	23	89	76	46	89	59	9	44	19	18	32	31	12.7	UCST204S6	ST204	UC204S6	10.9	5.35	0.243	13.2	0.73	UCST204CS6	UCST204CDS6	45	0.73	
25	32	12	25	89	76	46	93	60	9	44	19	18	32	34.1	14.3	UCST205S6	ST205	UC205S6	11.9	6.30	0.286	13.9	0.79	UCST205CS6	UCST205CDS6	49	0.79	
30	37	12	27	102	89	52	106	67	9	50	22	18	37	38.1	15.9	UCST206S6	ST206	UC206S6	16.5	9.05	0.411	13.9	1.1	UCST206CS6	UCST206CDS6	53	1.1	
35	37	12	31	102	89	56	119	75	11	56	22	18	37	42.9	17.5	UCST207S6	ST207	UC207S6	21.8	12.3	0.559	13.9	1.5	UCST207CS6	UCST207CDS6	60	1.5	
40	49	16	32	114	102	74	135	85	14	64	29	20	49	49.2	19	UCST208S6	ST208	UC208S6	24.8	14.3	0.650	14.0	2.0	UCST208CS6	UCST208CDS6	69	2.0	
45	49	16	34	117	102	74	137	85	14	66	29	20	49	49.2	19	UCST209S6	ST209	UC209S6	27.8	16.2	0.736	14.0	2.1	UCST209CS6	UCST209CDS6	69	2.1	
50	49	16	35	117	102	74	143	87	14	72	29	20	49	51.6	19	UCST210S6	ST210	UC210S6	29.8	18.6	0.845	14.4	2.3	UCST210CS6	UCST210CDS6	74	2.3	

- Remarks 1. In Part No. of unit and units with covers, fitting codes follow bore diameter codes. (See Table 2.5 in P.11.)  
 2. Part No. of the applicable grease nipple is B-1/4-28UNFN12.  
 3. For the dimensions and forms of applicable bearings, see the dimensional tables of insert bearing for unit.



Channel steel frame take-up type

**UCTL**  
Cylindrical bore (with set screws)  
d 20 ~ 45 mm



Variations of tolerance of distance from mounting bottom to center of spherical bore ( $\Delta H_s$ ) and variations of tolerance of distance between centers of bolt holes ( $\Delta J_s$ )

Nominal unit code	$\Delta H_s$	$\Delta J_s$
UCTL204-UCTL207	±2	±0.5
UCTL208, UCTL209		±0.8

Unit: mm

Shaft Dia. mm <i>d</i>	Dimensions mm											Bolt Size mm	Standard			Basic Load Ratings kN <i>C<sub>r</sub></i> <i>C<sub>0r</sub></i>	Fatigue Load Limit kN <i>C<sub>u</sub></i>	Factor <i>f<sub>0</sub></i>	With Pressed Steel Covers				With Cast Iron Covers			
	<i>H</i>	<i>H<sub>1</sub></i>	<i>H<sub>2</sub></i>	<i>L</i>	<i>J</i>	<i>N</i>	<i>T</i>	<i>T<sub>1</sub></i>	<i>B</i>	<i>S</i>	Unit No.		Bearing No.	Mass kg	Unit No.				Dimension mm	Mass kg	Unit No.	Dimension mm	Mass kg			
	<i>A<sub>s</sub></i>	<i>A<sub>c</sub></i>	Open Ends Type	Closed End Type	Open Ends Type	Closed End Type																				
20	77	44	146	430	370	15	100	135	31	12.7	M12	UCTL204-100	UC204	6.0	12.8	6.65	0.302	13.2	UCTL204C-100	UCTL204CD-100	45	6.0	-	-	-	-
	77	44	146	530	470	15	200	135	31	12.7	M12	UCTL204-200	UC204	7.0	12.8	6.65	0.302	13.2	UCTL204C-200	UCTL204CD-200	45	7.0	-	-	-	-
	77	44	146	630	570	15	300	135	31	12.7	M12	UCTL204-300	UC204	7.5	12.8	6.65	0.302	13.2	UCTL204C-300	UCTL204CD-300	45	7.5	-	-	-	-
	77	44	146	730	670	15	400	135	31	12.7	M12	UCTL204-400	UC204	8.0	12.8	6.65	0.302	13.2	UCTL204C-400	UCTL204CD-400	45	8.0	-	-	-	-
25	82	44	156	440	380	15	100	140	34.1	14.3	M12	UCTL205-100	UC205	7.0	14.0	7.85	0.357	13.9	UCTL205C-100	UCTL205CD-100	49	7.0	-	-	-	-
	82	44	156	540	480	15	200	140	34.1	14.3	M12	UCTL205-200	UC205	7.5	14.0	7.85	0.357	13.9	UCTL205C-200	UCTL205CD-200	49	7.5	-	-	-	-
	82	44	156	640	580	15	300	140	34.1	14.3	M12	UCTL205-300	UC205	8.0	14.0	7.85	0.357	13.9	UCTL205C-300	UCTL205CD-300	49	8.0	-	-	-	-
	82	44	156	740	680	15	400	140	34.1	14.3	M12	UCTL205-400	UC205	9.0	14.0	7.85	0.357	13.9	UCTL205C-400	UCTL205CD-400	49	9.0	-	-	-	-
30	87	44	166	450	390	15	100	145	38.1	15.9	M12	UCTL206-100	UC206	7.0	19.5	11.3	0.514	13.9	UCTL206C-100	UCTL206CD-100	53	7.0	UCTL206FC-100	UCTL206FCD-100	70	7.5
	87	44	166	550	490	15	200	145	38.1	15.9	M12	UCTL206-200	UC206	8.0	19.5	11.3	0.514	13.9	UCTL206C-200	UCTL206CD-200	53	8.0	UCTL206FC-200	UCTL206FCD-200	70	8.5
	87	44	166	650	590	15	300	145	38.1	15.9	M12	UCTL206-300	UC206	9.0	19.5	11.3	0.514	13.9	UCTL206C-300	UCTL206CD-300	53	9.0	UCTL206FC-300	UCTL206FCD-300	70	9.5
	87	44	166	750	690	15	400	145	38.1	15.9	M12	UCTL206-400	UC206	9.5	19.5	11.3	0.514	13.9	UCTL206C-400	UCTL206CD-400	53	9.5	UCTL206FC-400	UCTL206FCD-400	70	10
35	92	44	176	460	400	15	100	150	42.9	17.5	M12	UCTL207-100	UC207	8.0	25.7	15.4	0.700	13.9	UCTL207C-100	UCTL207CD-100	60	8.0	UCTL207FC-100	UCTL207FCD-100	78	9.0
	92	44	176	560	500	15	200	150	42.9	17.5	M12	UCTL207-200	UC207	8.5	25.7	15.4	0.700	13.9	UCTL207C-200	UCTL207CD-200	60	8.5	UCTL207FC-200	UCTL207FCD-200	78	9.5
	92	44	176	660	600	15	300	150	42.9	17.5	M12	UCTL207-300	UC207	9.0	25.7	15.4	0.700	13.9	UCTL207C-300	UCTL207CD-300	60	9.0	UCTL207FC-300	UCTL207FCD-300	78	10
	92	44	176	760	700	15	400	150	42.9	17.5	M12	UCTL207-400	UC207	10	25.7	15.4	0.700	13.9	UCTL207C-400	UCTL207CD-400	60	10	UCTL207FC-400	UCTL207FCD-400	78	11
40	97	44	186	470	410	15	100	155	49.2	19	M12	UCTL208-100	UC208	8.5	29.1	17.8	0.809	14.0	UCTL208C-100	UCTL208CD-100	69	8.5	UCTL208FC-100	UCTL208FCD-100	86	9.5
	97	44	186	570	510	15	200	155	49.2	19	M12	UCTL208-200	UC208	9.0	29.1	17.8	0.809	14.0	UCTL208C-200	UCTL208CD-200	69	9.0	UCTL208FC-200	UCTL208FCD-200	86	10
	97	44	186	670	610	15	300	155	49.2	19	M12	UCTL208-300	UC208	10	29.1	17.8	0.809	14.0	UCTL208C-300	UCTL208CD-300	69	10	UCTL208FC-300	UCTL208FCD-300	86	11
	97	44	186	770	710	15	400	155	49.2	19	M12	UCTL208-400	UC208	10.5	29.1	17.8	0.809	14.0	UCTL208C-400	UCTL208CD-400	69	10.5	UCTL208FC-400	UCTL208FCD-400	86	11.5
45	100	44	192	480	420	15	100	160	49.2	19	M12	UCTL209-100	UC209	9.0	34.1	21.3	0.968	14.0	UCTL209C-100	UCTL209CD-100	69	9.0	UCTL209FC-100	UCTL209FCD-100	88	10
	100	44	192	580	520	15	200	160	49.2	19	M12	UCTL209-200	UC209	9.5	34.1	21.3	0.968	14.0	UCTL209C-200	UCTL209CD-200	69	9.5	UCTL209FC-200	UCTL209FCD-200	88	10.5
	100	44	192	680	620	15	300	160	49.2	19	M12	UCTL209-300	UC209	10.5	34.1	21.3	0.968	14.0	UCTL209C-300	UCTL209CD-300	69	10.5	UCTL209FC-300	UCTL209FCD-300	88	11.5
	100	44	192	780	720	15	400	160	49.2	19	M12	UCTL209-400	UC209	11	34.1	21.3	0.968	14.0	UCTL209C-400	UCTL209CD-400	69	11	UCTL209FC-400	UCTL209FCD-400	88	12

Remarks 1. In Part No. of unit and units with covers, fitting codes follow bore diameter codes. (See Table 2.5 in P.11.)

2. Part No. of applicable grease nipples is C-1/4-28UNF.

3. As for the triple-lip seal type product (204 and 205 are the double-lip seal type products), supplementary code L3 (or L2) follows the Part No. of unit or bearing. (Example of Part No. : UCTL206JL3-100, UC206L3)

4. The unit should be mounted so that load is applied to the frame mounting surface vertically and downward.

5. If heavy load ( $P_r/C_r > 0.12$ ), vibration, or impact occurs, contact with JTEKT.

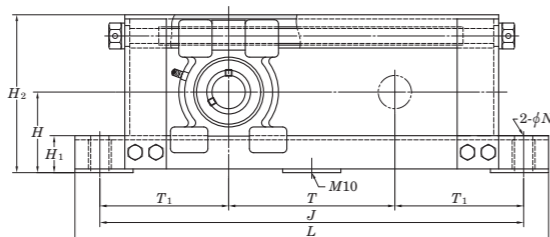
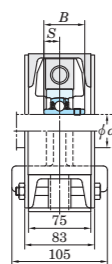
6. Tapered bore (with adapter) type bearing units are also available. (Example of Part No. : UKTL206J-100 + H2306X, UK206 + H2306X)

7. If frame parts need to be corrosion resistant, contact with JTEKT.

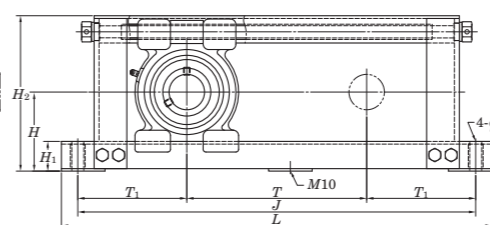
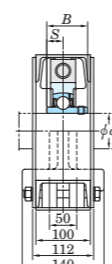
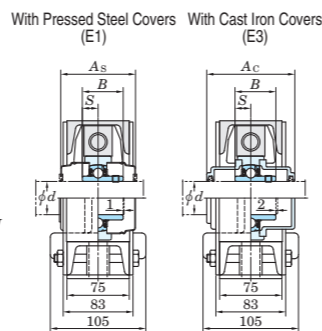
8. For the dimensions and forms of applicable bearings, see the dimensional tables of insert bearing for unit.

Channel steel frame take-up type

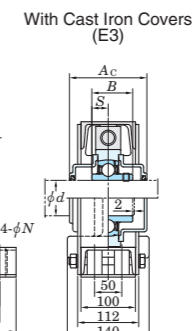
UCTU  
Cylindrical bore (with set screws)  
d 40 ~ 80 mm



UCTU200



UCTU300



Variations of tolerance of distance from mounting bottom to center of spherical bore ( $\Delta H_s$ ) and variations of tolerance of distance between centers of bolt holes ( $\Delta J_s$ )

Nominal unit code	$\Delta H_s$	$\Delta J_s$
UCTU208-UCTU212	±2	±0.8
UCTU313-UCTU315		±1.2
UCTU316-UCTU318		

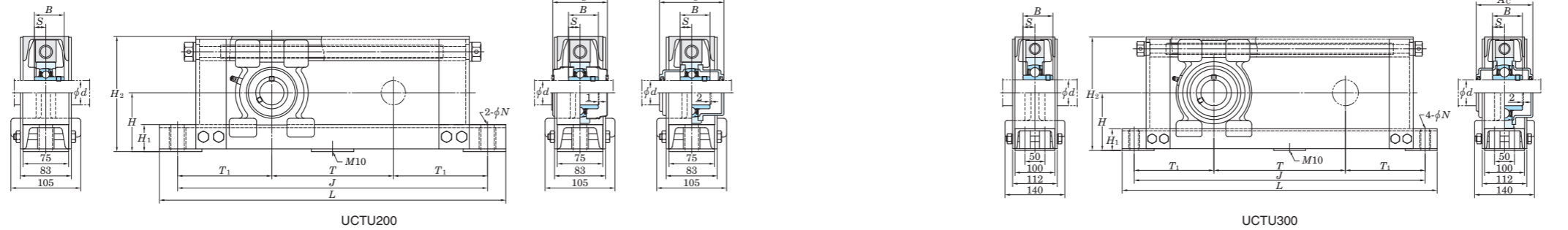
Unit: mm

Shaft Dia. mm	Dimensions mm											Bolt Size mm	Standard			Basic Load Ratings kN	Fatigue Load Limit kN	Factor	With Pressed Steel Covers				With Cast Iron Covers							
	d	H	H <sub>1</sub>	H <sub>2</sub>	L	J	N	T	T <sub>1</sub>	B	S		Unit No.	Bearing No.	Mass kg				C <sub>r</sub>	C <sub>0r</sub>	C <sub>u</sub>	f <sub>0</sub>	Unit No.		Dimension mm	Mass kg	Unit No.		Dimension mm	Mass kg
																							Open Ends Type	Closed End Type			Open Ends Type	Closed End Type		
40	97	44	190	870	810	22	500	155	49.2	19	M18	UCTU208-500	UC208	21	29.1	17.8	0.809	14.0	UCTU208C-500	UCTU208CD-500	69	21	UCTU208FC-500	UCTU208FCD-500	86	22				
	97	44	190	970	910	22	600	155	49.2	19	M18	UCTU208-600	UC208	22	29.1	17.8	0.809	14.0	UCTU208C-600	UCTU208CD-600	69	22	UCTU208FC-600	UCTU208FCD-600	86	23				
	97	44	190	1 070	1 010	22	700	155	49.2	19	M18	UCTU208-700	UC208	24	29.1	17.8	0.809	14.0	UCTU208C-700	UCTU208CD-700	69	24	UCTU208FC-700	UCTU208FCD-700	86	25				
	97	44	190	1 170	1 110	22	800	155	49.2	19	M18	UCTU208-800	UC208	26	29.1	17.8	0.809	14.0	UCTU208C-800	UCTU208CD-800	69	26	UCTU208FC-800	UCTU208FCD-800	86	27				
	97	44	190	1 270	1 210	22	900	155	49.2	19	M18	UCTU208-900	UC208	28	29.1	17.8	0.809	14.0	UCTU208C-900	UCTU208CD-900	69	28	UCTU208FC-900	UCTU208FCD-900	86	29				
45	102	44	200	880	820	22	500	160	49.2	19	M18	UCTU209-500	UC209	22	34.1	21.3	0.968	14.0	UCTU209C-500	UCTU209CD-500	69	22	UCTU209FC-500	UCTU209FCD-500	88	23				
	102	44	200	980	920	22	600	160	49.2	19	M18	UCTU209-600	UC209	24	34.1	21.3	0.968	14.0	UCTU209C-600	UCTU209CD-600	69	24	UCTU209FC-600	UCTU209FCD-600	88	25				
	102	44	200	1 080	1 020	22	700	160	49.2	19	M18	UCTU209-700	UC209	25	34.1	21.3	0.968	14.0	UCTU209C-700	UCTU209CD-700	69	25	UCTU209FC-700	UCTU209FCD-700	88	26				
	102	44	200	1 180	1 120	22	800	160	49.2	19	M18	UCTU209-800	UC209	27	34.1	21.3	0.968	14.0	UCTU209C-800	UCTU209CD-800	69	27	UCTU209FC-800	UCTU209FCD-800	88	28				
	102	44	200	1 280	1 220	22	900	160	49.2	19	M18	UCTU209-900	UC209	29	34.1	21.3	0.968	14.0	UCTU209C-900	UCTU209CD-900	69	29	UCTU209FC-900	UCTU209FCD-900	88	30				
50	107	44	210	890	830	22	500	165	51.6	19	M18	UCTU210-500	UC210	23	35.1	23.3	1.06	14.4	UCTU210C-500	UCTU210CD-500	74	23	UCTU210FC-500	UCTU210FCD-500	97	24				
	107	44	210	990	930	22	600	165	51.6	19	M18	UCTU210-600	UC210	25	35.1	23.3	1.06	14.4	UCTU210C-600	UCTU210CD-600	74	25	UCTU210FC-600	UCTU210FCD-600	97	26				
	107	44	210	1 090	1 030	22	700	165	51.6	19	M18	UCTU210-700	UC210	27	35.1	23.3	1.06	14.4	UCTU210C-700	UCTU210CD-700	74	27	UCTU210FC-700	UCTU210FCD-700	97	28				
	107	44	210	1 190	1 130	22	800	165	51.6	19	M18	UCTU210-800	UC210	28	35.1	23.3	1.06	14.4	UCTU210C-800	UCTU210CD-800	74	28	UCTU210FC-800	UCTU210FCD-800	97	29				
	107	44	210	1 290	1 230	22	900	165	51.6	19	M18	UCTU210-900	UC210	30	35.1	23.3	1.06	14.4	UCTU210C-900	UCTU210CD-900	74	30	UCTU210FC-900	UCTU210FCD-900	97	31				
55	115	44	230	910	850	22	500	175	55.6	22.2	M18	UCTU211-500	UC211	25	43.4	29.4	1.34	14.4	UCTU211C-500	UCTU211CD-500	76	25	UCTU211FC-500	UCTU211FCD-500	99	26				
	115	44	230	1 010	950	22	600	175	55.6	22.2	M18	UCTU211-600	UC211	27	43.4	29.4	1.34	14.4	UCTU211C-600	UCTU211CD-600	76	27	UCTU211FC-600	UCTU211FCD-600	99	28				
	115	44	230	1 110	1 050	22	700	175	55.6	22.2	M18	UCTU211-700	UC211	28	43.4	29.4	1.34	14.4	UCTU211C-700	UCTU211CD-700	76	28	UCTU211FC-700	UCTU211FCD-700	99	29				
	115	44	230	1 210	1 150	22	800	175	55.6	22.2	M18	UCTU211-800	UC211	30	43.4	29.4	1.34	14.4	UCTU211C-800	UCTU211CD-800	76	30	UCTU211FC-800	UCTU211FCD-800	99	31				
	115	44	230	1 310	1 250	22	900	175	55.6	22.2	M18	UCTU211-900	UC211	32	43.4	29.4	1.34	14.4	UCTU211C-900	UCTU211CD-900	76	32	UCTU211FC-900	UCTU211FCD-900	99	33				
60	120	44	240	920	860	22	500	180	65.1	25.4	M18	UCTU212-500	UC212	26	52.4	36.2	1.65	14.4	UCTU212C-500	UCTU212CD-500	89	26	UCTU212FC-500	UCTU212FCD-500	114	28				
	120	44	240	1 020	960	22	600	180	65.1	25.4	M18	UCTU212-600	UC212	28	52.4	36.2	1.65	14.4	UCTU212C-600	UCTU212CD-600	89	28	UCTU212FC-600	UCTU212FCD-600	114	30				
	120	44	240	1 120	1 060	22	700	180	65.1	25.4	M18	UCTU212-700	UC212	30	52.4	36.2	1.65	14.4	UCTU212C-700	UCTU212CD-700	89	30	UCTU212FC-700	UCTU212FCD-700	114	32				
	120	44	240	1 220	1 160	22	800	180	65.1	25.4	M18	UCTU212-800	UC212	31	52.4	36.2	1.65	14.4	UCTU212C-800	UCTU212CD-800	89	31	UCTU212FC-800	UCTU212FCD-800	114	33				
	120	44	240	1 320	1 260	22	900	180	65.1	25.4	M18	UCTU212-900	UC212	33	52.4	36.2	1.65	14.4	UCTU212C-900	UCTU212CD-900	89	33	UCTU212FC-900	UCTU212FCD-900	114	35				
65	145	55	285	940	880	22	500	190	75	30	M18	UCTU313-500	UC313	40	92.7	59.9	2.68	13.2	-	-	-	-	UCTU313C-500	UCTU313CD-500	122	42				
	145	55	285	1 040	980	22	600	190	75	30	M18	UCTU313-600	UC313	43	92.7	59.9	2.68	13.2	-	-	-	-	UCTU313C-600	UCTU313CD-600	122	45				
	145	55	285	1 140	1 080	22	700	190	75	30	M18	UCTU313-700	UC313	46	92.7	59.9	2.68	13.2	-	-	-	-	UCTU313C-700	UCTU313CD-700	122	48				
	145	55	285	1 240	1 180	22	800	190	75	30	M18	UCTU313-800	UC313	49	92.7	59.9	2.68	13.2	-	-	-	-	UCTU313C-800	UCTU313CD-800	122	51				
	145	55	285	1 340	1 280	22	900	190	75	30	M18	UCTU313-900	UC313	51	92.7	59.9	2.68	13.2	-	-	-	-	UCTU313C-900	UCTU313CD-900	122	53				
70	150	55	295	960	900	22	500	200	78	33	M18	UCTU314-500	UC314	44	104	68.2	2.96	13.2	-	-	-	-	UCTU314C-500	UCTU314CD-500	124	46				
	150	55	295	1 060	1 000	22	600	200	78	33	M18	UCTU314-600	UC314	46	104	68.2	2.96	13.2	-	-	-	-	UCTU314C-600	UCTU314CD-600	124	48				
	150	55	295	1 160	1 100	22	700	200	78	33	M18	UCTU314-700	UC314	48	104	68.2	2.96	13.2	-	-	-	-	UCTU314C-700	UCTU314CD-700	124	50				
	150	55	295	1 260	1 200	22	800	200	78	33	M18	UCTU314-800	UC314	51	104	68.2	2.96	13.2	-	-	-	-	UCTU314C-800	UCTU314CD-800	124	53				
	150	55	295	1 360	1 300	22	900	200	78	33	M18	UCTU314-900	UC314	53	104	68.2	2.96	13.2	-	-	-	-	UCTU314C-900	UCTU314CD-900	124	55				
75	155	55	305	980	920	22	500	210	82	32	M18	UCTU315-500	UC315	54	113	77.2	3.24	13.2	-	-	-	-	UCTU315C-500	UCTU315CD-500	134	57				
	155	55	305	1 080	1 020	22	600	210	82	32	M18	UCTU315-600	UC315	57	113	77.2	3.24	13.2	-	-	-	-	UCTU315C-600	UCTU315CD-600	134	60				
	155	55	305	1 180	1 120	22	700	210	82	32	M18	UCTU315-700	UC315	59	113	77.2	3.24	13.2	-	-	-	-	UCTU315C-700	UCTU315CD-700	134	62				
	155	55	305	1 280	1 220	22	800	210	82	32	M18	UCTU315-800	UC315	61	113	77.2	3.24	13.2	-	-	-	-	UCTU315C-800	UCTU315CD-800	134	64				
	155	55	305	1 380	1 320	22	900	210	82	32	M18	UCTU315-900	UC315	64	113	77.2	3.24	13.2	-	-	-	-	UCTU315C-900	UCTU315CD-900	134	67				
80	160	55	315	1 000	940	22	500	220	86	34	M18	UCTU316-500	UC316	57	123	86.7	3.53	13.3	-	-	-	-	UCTU316C-500	UCTU316CD-500	138	60				
	160	55	315	1 100	1 040	22	600	220	86	34	M18	UCTU316-600	UC316	60	123	86.7	3.53	13.3	-	-	-	-	UCTU316C-600	UCTU316CD-600	138	63				
	160	55	315	1 200	1 140	22	700	220	86	34	M18	UCTU316-700	UC316	62	123	86.7	3.53	13.3	-	-	-	-	UCTU316C-700	UCTU316CD-700	138	65				
	160	55	315	1 300	1 240	22	800	220	86	34	M18	UCTU316-800	UC316	64	123	86.7	3.53	13.3	-	-	-	-	UCTU316C-800	UCTU316CD-800	138	67				
	160	55	315	1 400	1 340	22	900	220	86	34	M18	UCTU316-900	UC316	67	123	86.7	3.53	13.3	-	-	-	-	UCTU316C-900	UCTU316CD-900	138	70				



Channel steel frame take-up type

**UCTU**  
Cylindrical bore (with set screws)  
 $d$  85 ~ 90 mm



Variations of tolerance of distance from mounting bottom to center of spherical bore ( $\Delta H_s$ ) and variations of tolerance of distance between centers of bolt holes ( $\Delta J_s$ )

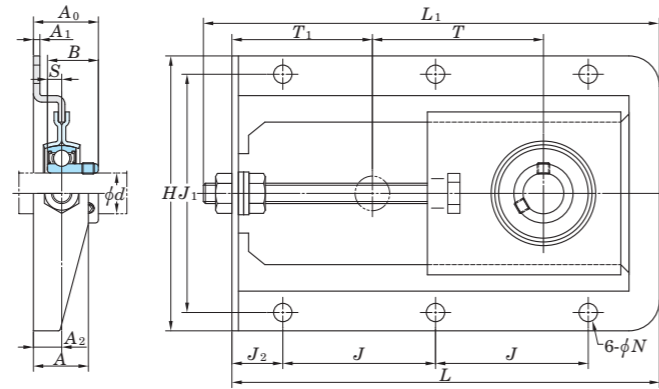
Nominal unit code	$\Delta H_s$	$\Delta J_s$
UCTU208-UCTU212	±2	±0.8
UCTU313-UCTU315		±1.2
UCTU316-UCTU318		

Shaft Dia. mm $d$	Dimensions mm											Bolt Size mm	Standard			Basic Load Ratings kN $C_r$ $C_{0r}$	Fatigue Load Limit kN $C_u$	Factor $f_0$	With Pressed Steel Covers				With Cast Iron Covers			
	$H$	$H_1$	$H_2$	$L$	$J$	$N$	$T$	$T_1$	$B$	$S$	Unit No.		Bearing No.	Mass kg	Unit No.				Dimension mm	Mass kg	Unit No.		Dimension mm	Mass kg		
																			Open Ends Type	Closed End Type	$A_s$		Open Ends Type	Closed End Type	$A_c$	
85	165	55	325	1 020	960	22	500	230	96	40	M18	UCTU317-500	UC317	62	133	96.8	3.82	13.3	-	-	-	-	UCTU317C-500	UCTU317CD-500	146	65
	165	55	325	1 120	1 060	22	600	230	96	40	M18	UCTU317-600	UC317	64	133	96.8	3.82	13.3	-	-	-	-	UCTU317C-600	UCTU317CD-600	146	67
	165	55	325	1 220	1 160	22	700	230	96	40	M18	UCTU317-700	UC317	67	133	96.8	3.82	13.3	-	-	-	-	UCTU317C-700	UCTU317CD-700	146	70
	165	55	325	1 320	1 260	22	800	230	96	40	M18	UCTU317-800	UC317	69	133	96.8	3.82	13.3	-	-	-	-	UCTU317C-800	UCTU317CD-800	146	72
	165	55	325	1 420	1 360	22	900	230	96	40	M18	UCTU317-900	UC317	71	133	96.8	3.82	13.3	-	-	-	-	UCTU317C-900	UCTU317CD-900	146	74
90	170	55	335	1 050	990	22	500	245	96	40	M18	UCTU318-500	UC318	65	143	107	4.11	13.3	-	-	-	-	UCTU318C-500	UCTU318CD-500	150	68
	170	55	335	1 150	1 090	22	600	245	96	40	M18	UCTU318-600	UC318	67	143	107	4.11	13.3	-	-	-	-	UCTU318C-600	UCTU318CD-600	150	70
	170	55	335	1 250	1 190	22	700	245	96	40	M18	UCTU318-700	UC318	70	143	107	4.11	13.3	-	-	-	-	UCTU318C-700	UCTU318CD-700	150	73
	170	55	335	1 350	1 290	22	800	245	96	40	M18	UCTU318-800	UC318	72	143	107	4.11	13.3	-	-	-	-	UCTU318C-800	UCTU318CD-800	150	75
	170	55	335	1 450	1 390	22	900	245	96	40	M18	UCTU318-900	UC318	74	143	107	4.11	13.3	-	-	-	-	UCTU318C-900	UCTU318CD-900	150	77

- Remarks 1. In Part No. of unit and units with covers, fitting codes follow bore diameter numbers. (See Table 2.5 in P.11.)  
 2. Part No. of applicable grease nipples are shown below.  
 C-1/4-28UNF..... 208-210  
 C-R1/8..... 211, 212, 313-318  
 3. As for the triple-lip seal type product, supplementary code L3 follows the Part No. of unit or bearing.  
 (Example of Part No. : UCTU208JL3-500, UC208L3)

4. The unit should be mounted so that load is applied to the frame mounting surface vertically and downward.  
 5. If heavy load ( $P_r/C_r > 0.12$ ), vibration, or impact occurs, contact with JTEKT.  
 6. Tapered bore (with adapter) type bearing units are also available. (Example of Part No. : UKTU208J-500 + H2308X, UK208 + H2308X)  
 7. If frame parts need to be corrosion resistant, contact with JTEKT.  
 8. For the dimensions and forms of applicable bearings, see the dimensional tables of insert bearing for unit.

**SBPTH**  
Cylindrical bore (with set screws)  
 $d$  12 ~ 25 mm



Variations of tolerance of distance between centers of bolt holes ( $\Delta J_s, \Delta J_{1s}$ )

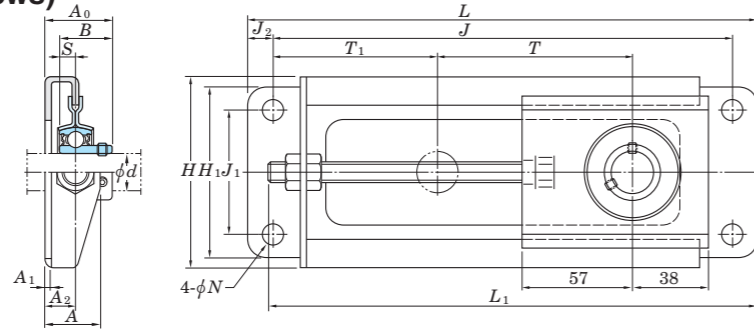
Nominal unit code	$\Delta J_s$	$\Delta J_{1s}$
SBPTH201-SBPTH205	$\pm 0.7$	$\pm 0.7$

Unit: mm

Shaft Dia. mm $d$	Dimensions																Bolt Size inch mm	Unit No.	Bearing No.	Basic Load Ratings		Fatigue Load Limit	Factor $f_0$	Mass kg
	$H$	$L$	$L_1$	$A$	$J$	$J_1$	$J_2$	$N$	$T$	$T_1$	$A_1$	$A_2$	$A_0$	$B$	$S$	$C_r$				$C_{0r}$	$C_u$			
12	5 5/16	8 9/32	8 21/32	1 1/16	2 61/64	4 39/64	3 1/32	11/32	3 15/32	2 23/32	1/8	35/64	1 3/16	0.866	0.236	5/16	M8	SBPTH201-90	SB201	9.55	4.80	0.218	13.2	0.91
	135	210	220	27	75	117	25	9	88	69	3.2	13.9	29.9	22	6									
15	5 5/16	8 9/32	8 21/32	1 1/16	2 61/64	4 39/64	3 1/32	11/32	3 15/32	2 23/32	1/8	35/64	1 3/16	0.866	0.236	5/16	M8	SBPTH202-90	SB202	9.55	4.80	0.218	13.2	0.91
	135	210	220	27	75	117	25	9	88	69	3.2	13.9	29.9	22	6									
17	5 5/16	8 9/32	8 21/32	1 1/16	2 61/64	4 39/64	3 1/32	11/32	3 15/32	2 23/32	1/8	35/64	1 3/16	0.866	0.236	5/16	M8	SBPTH203-90	SB203	9.55	4.80	0.218	13.2	0.91
	135	210	220	27	75	117	25	9	88	69	3.2	13.9	29.9	22	6									
20	5 5/16	8 9/32	8 21/32	1 1/16	2 61/64	4 39/64	3 1/32	11/32	3 15/32	2 23/32	1/8	35/64	1 1/4	0.984	0.276	5/16	M8	SBPTH204-90	SB204	12.8	6.65	0.302	13.2	0.91
	135	210	220	27	75	117	25	9	88	69	3.2	13.9	31.9	25	7									
25	5 5/16	8 9/32	8 21/32	1 1/16	2 61/64	4 39/64	3 1/32	11/32	3 15/32	2 23/32	1/8	35/64	1 5/16	1.063	0.295	5/16	M8	SBPTH205-90	SB205	14.0	7.85	0.357	13.9	0.91
	135	210	220	27	75	117	25	9	88	69	3.2	13.9	33.4	27	7.5									

Remarks 1. For the dimensions and forms of applicable bearings, see the dimensional tables of insert bearing for unit.  
2. If heavy load ( $P_r/C_r > 0.12$ ), vibration, or impact occurs, contact with JTEKT.

**SBNPTH**  
Cylindrical bore (with set screws)  
 $d$  12 ~ 25 mm



Variations of tolerance of distance between centers of bolt holes ( $\Delta J_s, \Delta J_{1s}$ )

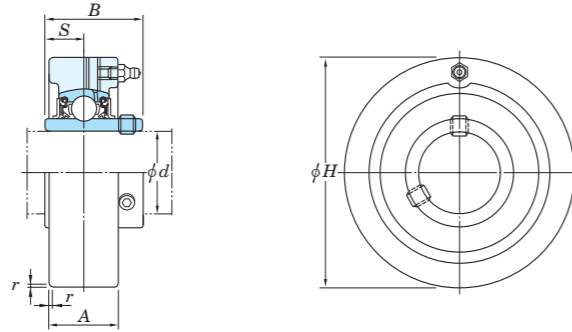
Nominal unit code	$\Delta J_s$	$\Delta J_{1s}$
SBNPTH201-SBNPTH205	$\pm 0.7$	$\pm 0.7$

Unit: mm

Shaft Dia. mm $d$	Dimensions																Bolt Size	Unit No.	Bearing No.	Basic Load Ratings		Fatigue Load Limit	Factor	Mass
	$H$	$H_1$	$L$	$L_1$	$A$	$J$	$J_1$	$J_2$	$N$	$T$	$T_1$	$A_1$	$A_2$	$A_0$	$B$	$S$				$C_r$	$C_{0r}$			
12	$3 \frac{15}{16}$	$3 \frac{17}{32}$	$10 \frac{1}{4}$	$9 \frac{11}{16}$	$1 \frac{1}{16}$	$9 \frac{1}{4}$	$2 \frac{9}{16}$	$\frac{1}{2}$	$\frac{7}{16}$	$3 \frac{15}{16}$	$3 \frac{9}{32}$	$\frac{1}{8}$	$\frac{19}{32}$	$1 \frac{7}{32}$	0.866	0.236	$\frac{5}{16}$	SBNPTH201-100	SB201	9.55	4.80	0.218	13.2	0.93
	100	90	260	246	27	235	65	12.5	11	100	83.5	3.2	15	31	22	6	M8							
15	$3 \frac{15}{16}$	$3 \frac{17}{32}$	$10 \frac{1}{4}$	$9 \frac{11}{16}$	$1 \frac{1}{16}$	$9 \frac{1}{4}$	$2 \frac{9}{16}$	$\frac{1}{2}$	$\frac{7}{16}$	$3 \frac{15}{16}$	$3 \frac{9}{32}$	$\frac{1}{8}$	$\frac{19}{32}$	$1 \frac{7}{32}$	0.866	0.236	$\frac{5}{16}$	SBNPTH202-100	SB202	9.55	4.80	0.218	13.2	0.93
	100	90	260	246	27	235	65	12.5	11	100	83.5	3.2	15	31	22	6	M8							
17	$3 \frac{15}{16}$	$3 \frac{17}{32}$	$10 \frac{1}{4}$	$9 \frac{11}{16}$	$1 \frac{1}{16}$	$9 \frac{1}{4}$	$2 \frac{9}{16}$	$\frac{1}{2}$	$\frac{7}{16}$	$3 \frac{15}{16}$	$3 \frac{9}{32}$	$\frac{1}{8}$	$\frac{19}{32}$	$1 \frac{7}{32}$	0.866	0.236	$\frac{5}{16}$	SBNPTH203-100	SB203	9.55	4.80	0.218	13.2	0.93
	100	90	260	246	27	235	65	12.5	11	100	83.5	3.2	15	31	22	6	M8							
20	$3 \frac{15}{16}$	$3 \frac{17}{32}$	$10 \frac{1}{4}$	$9 \frac{11}{16}$	$1 \frac{1}{16}$	$9 \frac{1}{4}$	$2 \frac{9}{16}$	$\frac{1}{2}$	$\frac{7}{16}$	$3 \frac{15}{16}$	$3 \frac{9}{32}$	$\frac{1}{8}$	$\frac{19}{32}$	$1 \frac{5}{16}$	0.984	0.276	$\frac{5}{16}$	SBNPTH204-100	SB204	12.8	6.65	0.302	13.2	0.93
	100	90	260	246	27	235	65	12.5	11	100	83.5	3.2	15	33	25	7	M8							
25	$3 \frac{15}{16}$	$3 \frac{17}{32}$	$10 \frac{1}{4}$	$9 \frac{11}{16}$	$1 \frac{1}{16}$	$9 \frac{1}{4}$	$2 \frac{9}{16}$	$\frac{1}{2}$	$\frac{7}{16}$	$3 \frac{15}{16}$	$3 \frac{9}{32}$	$\frac{1}{8}$	$\frac{19}{32}$	$1 \frac{11}{32}$	1.063	0.295	$\frac{5}{16}$	SBNPTH205-100	SB205	14.0	7.85	0.357	13.9	0.93
	100	90	260	246	27	235	65	12.5	11	100	83.5	3.2	15	34.5	27	7.5	M8							

Remarks 1. For the dimensions and forms of applicable bearings, see the dimensional tables of insert bearing for unit.  
2. If heavy load ( $P_r/C_r > 0.12$ ), vibration, or impact occurs, contact with JTEKT.

**UCC**  
Cylindrical bore (with set screws)  
*d* 12 ~ (45) mm



*d* (45) ~ 90 mm

Variations of tolerance of outside diameter ( $\Delta H_s$ ), variations of tolerance of width ( $\Delta A_s$ ), and tolerance of circumferential runout of outside diameter (Y)

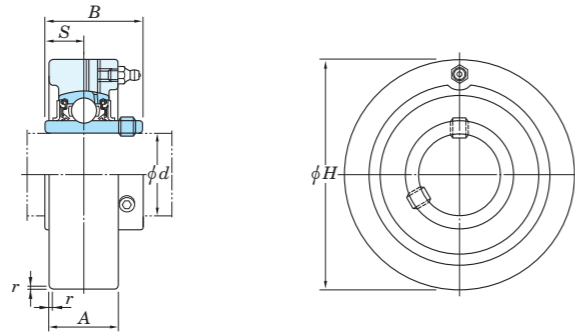
Housing No.		$\Delta H_s$	$\Delta A_s$	Y
C204-C205		0 -0.030	±0.2	0.2
C206-C210	CX05-CX08 C305-C308	0 -0.035		
C211-C213	CX09-CX10 C309-C310	0 -0.040	±0.3	0.3
	CX11-CX12 C311-C314	0 -0.046		
		0 -0.052		
		0 -0.057		

Shaft Dia. mm inch	Dimensions inch mm					Unit No.	Housing No.	Bearing No.	Basic Load Ratings kN		Fatigue Load Limit kN	Factor $f_0$	Mass kg	
	<i>d</i>	<i>H</i>	<i>A</i>	<i>r</i>	<i>B</i>				<i>S</i>	$C_r$				$C_{0r}$
12	1/2					UCC201		UC201					0.52	
15	5/8	2.835	25/32	0.06	1.220	0.500	C204	UC201-8	12.8	6.65	0.302	13.2	0.50	
		72	20	1.5	31	12.7		UC202					UC202-10	0.49
17	3/4					UCC203		UC203					0.47	
20	7/8	3.150	55/64	0.06	1.343	0.563	C205	UC204-12	14.0	7.85	0.357	13.9	0.64	
								UC204					UC205-14	0.64
		15/16	80	22	1.5	34.1	14.3	UC205-15	UC205	14.0	7.85	0.357	13.9	0.64
		1	3.543	1 1/16	0.06	1.500	0.626	CX05	UCX05	19.5	11.3	0.514	13.9	1.0
25	1	3.543	1 1/32	0.08	1.496	0.591	C305	UCX05-16	21.2	10.9	0.495	12.6	1.5	
								UC305					UC305-16	1.5
30	1 1/8	3.346	1 1/16	0.06	1.500	0.626	C206	UCC206-18	19.5	11.3	0.514	13.9	0.81	
								UC206					UC206-19	0.81
	1 3/16	85	27	1.5	38.1	15.9	UC206-20	UCX06	25.7	15.4	0.700	13.9	1.3	
	1 1/4	3.937	1 3/16	0.08	1.689	0.689	CX06	UCX06-19	26.7	15.0	0.682	13.3	1.7	
	1 3/16	100	30	2	42.9	17.5	UCX06-20	UC306	26.7	15.0	0.682	13.3	1.7	
	1 1/4	3.937	1 7/64	0.08	1.693	0.669	C306	UC306	26.7	15.0	0.682	13.3	1.7	
35	1 1/4	3.543	1 7/64	0.08	1.689	0.689	C207	UCC207-20	25.7	15.4	0.700	13.9	0.93	
								UC207-21					UC207-22	0.93
	1 5/16	90	28	2	42.9	17.5	UC207	UC207-23	29.1	17.8	0.809	14.0	1.7	
	1 3/8	4.331	1 11/32	0.08	1.937	0.748	CX07	UCX07	29.1	17.8	0.809	14.0	1.7	
	1 7/16	110	34	2	49.2	19	UCX07-23	UC307	33.4	19.3	0.877	13.2	2.2	
	1 3/8	4.331	1 7/64	0.12	1.890	0.748	C307	UC307	33.4	19.3	0.877	13.2	2.2	
40	1 1/2	3.937	1 3/16	0.08	1.937	0.748	C208	UCC208-24	29.1	17.8	0.809	14.0	1.2	
								UC208-25					UC208	1.2
	1 9/16	100	30	2	49.2	19	UC208	UCX08-24	34.1	21.3	0.968	14.0	2.3	
45	1 1/2	4.724	1 1/2	0.08	1.937	0.748	CX08	UCCX08-24	40.7	24.0	1.09	13.2	2.2	
								UCC308-24					UC308	2.2
1 1/2	4.724	1 11/32	0.12	2.047	0.748	C308	UC308	40.7	24.0	1.09	13.2	2.2		
45	1 5/8	4.331	1 7/32	0.08	1.937	0.748	C209	UCC209-26	34.1	21.3	0.968	14.0	1.5	
								UCC209-27					UC209-26	1.5
								UCC209-28					UC209-27	1.5
1 3/4	110	31	2	49.2	19	UC209-28	UC209	34.1	21.3	0.968	14.0	1.5		

Shaft Dia. mm inch	Dimensions inch mm					Unit No.	Housing No.	Bearing No.	Basic Load Ratings kN		Fatigue Load Limit kN	Factor $f_0$	Mass kg	
	<i>d</i>	<i>H</i>	<i>A</i>	<i>r</i>	<i>B</i>				<i>S</i>	$C_r$				$C_{0r}$
45	1 3/4	4.724	1 1/2	0.08	2.031	0.748	UCCX09-28	CX09	UCX09-28	35.1	23.3	1.06	14.4	2.3
		120	38	2	51.6	19	UCCX09	UCX09	35.1	23.3	1.06	14.4	2.3	
50	1 7/8	5.118	1 1/2	0.12	2.244	0.866	UCC309-28	C309	UC309-28	48.9	29.5	1.34	13.3	2.8
		130	38	3	57	22	UCC309	UC309	48.9	29.5	1.34	13.3	2.8	
50	1 15/16	4.724	1 19/64	0.08	2.031	0.748	C210	UCC210-30	35.1	23.3	1.06	14.4	2.0	
								UCC210-31					UC210-30	2.0
	2	5.118	1 37/64	0.1	2.189	0.874	UCC210-32	UC210-31	43.4	29.4	1.34	14.4	2.8	
	1 15/16	130	40	2.5	55.6	22.2	UCC210	UC210-32	43.4	29.4	1.34	14.4	2.8	
55	2	5.512	1 37/64	0.12	2.402	0.866	C310	UCCX10-31	62.0	38.3	1.74	13.2	3.2	
								UCCX10					UCX10-31	3.2
60	2 1/8	4.921	1 3/8	0.1	2.189	0.874	C211	UCC211-32	43.4	29.4	1.34	14.4	2.2	
								UCC211-34					UC211-32	2.2
	2 7/16	125	35	2.5	55.6	22.2	UCC211	UC211-34	43.4	29.4	1.34	14.4	2.2	
	65	2 3/16	5.906	1 21/32	0.1	2.563	1.000	CX11	UCCX11	52.4	36.2	1.65	14.4	4.0
									UCCX11-35					UCX11-35
	70	2 1/4	5.906	1 47/64	0.12	2.598	0.984	C311	UCCX11-36	71.6	45.0	2.05	13.2	3.9
UCC311-32									UC311-32					3.9
60	2 1/4	5.118	1 1/2	0.1	2.563	1.000	C212	UCC212-36	52.4	36.2	1.65	14.4	2.6	
								UCC212-38					UC212-36	2.6
	2 3/8	6.299	1 47/64	0.1	2.563	1.000	UCC212-39	UC212-38	57.2	40.1	1.82	14.4	4.6	
	2 7/16	160	44	2.5	65.1	25.4	UCCX12	UCX12-39	57.2	40.1	1.82	14.4	4.6	
65	2 1/2	6.299	1 13/16	0.12	2.795	1.024	C312	UCC312	81.9	52.2	2.37	13.2	4.8	
								UCC312					UC312	4.8
75	2 1/2	5.512	1 37/64	0.1	2.563	1.000	C213	UCC213-40	57.2	40.1	1.82	14.4	3.0	
								UCC213					UC213-40	3.0
80	2 1/2	6.693	1 31/32	0.12	2.953	1.181	C313	UCC313-40	92.7	59.9	2.68	13.2	5.7	
								UCC313					UC313-40	5.7
70	2 3/4	7.087	2 3/64	0.12	3.071	1.299	C314	UCC314-44	104	68.2	2.96	13.2	6.7	
								UCC314					UC314-44	6.7
75	2 15/16	7.480	2 11/64	0.16	3.228	1.260	C315	UCC315-47	113	77.2	3.24	13.2	7.8	
								UCC315					UC315-47	7.8
80	3	8.465	2 33/64	0.16	3.780	1.575	C316	UCC315-48	123	86.7	3.53	13.3	9.2	
								UCC316					UC316	9.2
85	3 1/2	8.858	2 19/32	0.16	3.780	1.575	C317	UCC317	133	96.8	3.82	13.3	11.7	
								UCC317					UC317	11.7
90	3 1/2	8.858	2 19/32	0.16	3.780	1.575	C318	UCC318-56	143	107	4.11	13.3	13.1	
								UCC318					UC318-56	13.1

Remarks 1. In Part No. of unit and units with covers, fitting codes follow bore diameter numbers. (See Table 2.5 in P.11.)  
 2. Part No. of applicable grease nipples are shown below.  
 A-1/4-28UNF ..... 201-213, X05-X12, 305-308  
 A-R1/8 ..... 309-328  
 3. As for the triple-lip seal type product (from 201 to 205 are the double-lip seal type products), supplementary code L3 (L2) follows the Part No. of unit or bearing. (Example of Part No.: UCC206JL3, UC206L3)  
 4. For the dimensions and forms of applicable bearings, see the dimensional tables of insert bearing for unit.

**UCC**  
**Cylindrical bore (with set screws)**  
*d* 95 ~ 140 mm



Shaft Dia. mm    inch	Dimensions inch mm					Unit No.	Housing No.	Bearing No.	Basic Load Ratings kN		Fatigue Load Limit kN	Factor <i>f</i> <sub>0</sub>	Mass kg
	<i>d</i>	<i>H</i>	<i>A</i>	<i>r</i>	<i>B</i>				<i>S</i>	<i>C</i> <sub>r</sub>			
95    —	9.449 240	2 53/64 72	0.16 4	4.055 103	1.614 41	<b>UCC319</b>	C319	UC319	153    119	4.45	13.3	15.8	
100    3 15/16 4	10.236 260	2 61/64 75	0.16 4	4.252 108	1.654 42	<b>UCC320</b> <b>UCC320-63</b> <b>UCC320-64</b>	C320	UC320 UC320-63 UC320-64	173    141	5.08	13.2	19.6	
105    —	10.236 260	2 61/64 75	0.16 4	4.409 112	1.732 44	<b>UCC321</b>	C321	UC321	184    153	5.41	13.2	27.0	
110    —	11.811 300	3 5/32 80	0.2 5	4.606 117	1.811 46	<b>UCC322</b>	C322	UC322	205    180	6.15	13.2	29.2	
120    —	12.598 320	3 35/64 90	0.2 5	4.961 126	2.008 51	<b>UCC324</b>	C324	UC324	207    185	6.10	13.5	35.9	
130    —	13.386 340	3 15/16 100	0.24 6	5.315 135	2.126 54	<b>UCC326</b>	C326	UC326	229    214	6.79	13.6	43.0	
140    —	14.173 360	3 15/16 100	0.24 6	5.709 145	2.323 59	<b>UCC328</b>	C328	UC328	253    246	7.54	13.6	52.9	

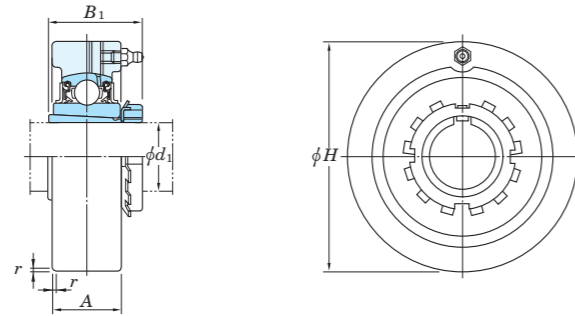
- Remarks 1. In Part No. of unit and units with covers, fitting codes follow bore diameter numbers. (See **Table 2.5** in P.11.)  
 2. Part No. of applicable grease nipples are shown below.  
 A-1/4-28UNF ..... 201~213, X05~X12, 305~308  
 A-R1/8 ..... 309~328  
 3. As for the triple-lip seal type product (from 201 to 205 are the double-lip seal type products), supplementary code L3 (L2) follows the Part No. of unit or bearing. (Example of Part No. : UCC206JL3, UC206L3)  
 4. For the dimensions and forms of applicable bearings, see the dimensional tables of insert bearing for unit.

Variations of tolerance of outside diameter ( $\Delta H_s$ ), variations of tolerance of width ( $\Delta A_s$ ), and tolerance of circumferential runout of outside diameter (Y)

Housing No.		$\Delta H_s$	$\Delta A_s$	Y
C204-C205		0 -0.030	±0.2	0.2
C206-C210	CX05-CX08    C305-C308	0 -0.035		
C211-C213	CX09-CX10    C309-C310	0	±0.3	0.3
	CX11-CX12    C311-C314	-0.040		
	C315-C318	0		
	C319	-0.046		
	C320-C322	0 -0.052	±0.4	0.4
	C324-C328	0 -0.057		

Unit: mm

**UKC**  
**Tapered bore (with adapter)**  
 d<sub>1</sub> 20 ~ (50) mm



d<sub>1</sub> (50) ~ 125 mm

Variations of tolerance of outside diameter ( $\Delta H_s$ ), variations of tolerance of width ( $\Delta A_s$ ), and tolerance of circumferential runout of outside diameter (Y)

Housing No.		$\Delta H_s$	$\Delta A_s$	Y
C205		0 -0.030	±0.2	0.2
C206-C210	CX05-CX08 C305-C308	0 -0.035		
	CX09-CX10 C309-C310	0 -0.040	±0.3	0.3
C211-C213	CX11-CX12 C311-C314	0 -0.046		
	C315-C318 C319	0 -0.052		
	C320-C322 C324-C328	0 -0.057		

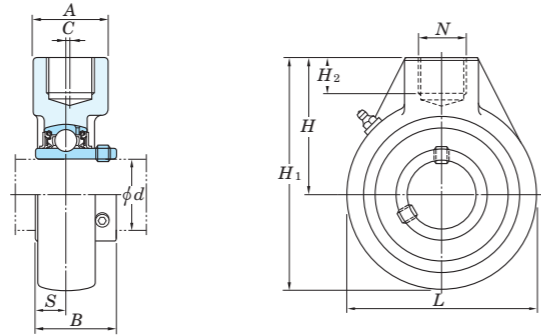
Shaft Dia. mm inch	Dimensions inch mm				Unit No.	Housing No.	Bearing No.	Basic Load Ratings kN		Fatigue Load Limit kN	Factor	Adapter Assembly No.	Mass kg	
	d <sub>1</sub>	H	A	r				B <sub>1</sub>	C <sub>r</sub>					C <sub>0r</sub>
20	3/4	3.150	55/64	0.06	1 3/8	UKC205	C205	UK205	14.0	7.85	0.357	13.9	HE2305X H2305X	0.7
		80	22	1.5	35									
	3/4	3.543	1 1/16	0.06	1 3/8	UKCX05	CX05	UKX05	19.5	11.3	0.514	13.9	HE2305X H2305X	0.99
25	1	3.543	1 1/32	0.08	1 3/8	UKC305	C305	UK305	21.2	10.9	0.495	12.6	HE2305X H2305X	1.6
		90	26	2	35									
	1	3.346	1 1/16	0.06	1 1/2	UKC206	C206	UK206	19.5	11.3	0.514	13.9	H2306X HE2306X	0.89
30	1 1/8	3.937	1 3/16	0.08	1 1/2	UKCX06	CX06	UKX06	25.7	15.4	0.700	13.9	H2306X HE2306X	1.3
		100	30	2	38									
	1 1/8	3.937	1 7/64	0.08	1 1/2	UKC306	C306	UK306	26.7	15.0	0.682	13.3	H2306X HE2306X	1.8
35	1 1/8	4.331	1 1/32	0.08	1 11/16	UKC207	C207	UK207	25.7	15.4	0.700	13.9	HS2307X H2307X	1.0
		90	28	2	43									
	1 1/8	4.331	1 17/64	0.12	1 11/16	UKCX07	CX07	UKX07	29.1	17.8	0.809	14.0	HS2307X H2307X	1.8
40	1 1/4	4.331	1 17/64	0.12	1 11/16	UKC307	C307	UK307	33.4	19.3	0.877	13.2	HS2307X H2307X	2.2
		110	34	2	43									
	1 1/4	3.937	1 3/16	0.08	1 13/16	UKC208	C208	UK208	29.1	17.8	0.809	14.0	HE2308X HS2308X H2308X	1.5
45	1 3/8	4.724	1 1/2	0.08	1 13/16	UKCX08	CX08	UKX08	34.1	21.3	0.968	14.0	HE2308X HS2308X H2308X	2.4
		120	38	2	46									
	1 3/8	4.724	1 11/32	0.12	1 13/16	UKC308	C308	UK308	40.7	24.0	1.09	13.2	HE2308X HS2308X H2308X	2.2
50	1 1/2	4.331	1 7/32	0.08	1 31/32	UKC209	C209	UK209	34.1	21.3	0.968	14.0	HE2309X H2309X	1.8
		110	31	2	50									
	1 1/2	4.724	1 1/2	0.08	1 31/32	UKCX09	CX09	UKX09	35.1	23.3	1.06	14.4	HE2309X H2309X	2.4
55	1 3/4	5.118	1 1/2	0.12	1 31/32	UKC309	C309	UK309	48.9	29.5	1.34	13.3	HE2309X H2309X	2.8
		130	38	3	50									
	1 3/4	4.724	1 19/64	0.08	2 5/32	UKC210	C210	UK210	35.1	23.3	1.06	14.4	HE2310X H2310X	2.2
60	1 3/4	5.118	1 37/64	0.1	2 5/32	UKCX10	CX10	UKX10	43.4	29.4	1.34	14.4	HE2310X H2310X	2.9
		130	40	2.5	55									
	1 3/4	5.512	1 37/64	0.12	2 5/32	UKC310	C310	UK310	62.0	38.3	1.74	13.2	HE2310X H2310X	3.2
65	1 7/8	4.921	1 3/8	0.1	2 5/16	UKC211	C211	UK211	43.4	29.4	1.34	14.4	HS2311X H2311X HE2311X	2.7
		125	35	2.5	59									

Shaft Dia. mm inch	Dimensions inch mm				Unit No.	Housing No.	Bearing No.	Basic Load Ratings kN		Fatigue Load Limit kN	Factor	Adapter Assembly No.	Mass kg	
	d <sub>1</sub>	H	A	r				B <sub>1</sub>	C <sub>r</sub>					C <sub>0r</sub>
50	1 7/8	5.906	1 21/32	0.1	2 5/16	UKCX11	CX11	UKX11	52.4	36.2	1.65	14.4	HS2311X H2311X HE2311X	4.1
		150	42	2.5	59									
55	2	5.906	1 47/64	0.12	2 5/16	UKC311	C311	UK311	71.6	45.0	2.05	13.2	HS2311X H2311X HE2311X	4.1
		150	44	3	59									
60	2 1/8	5.118	1 1/2	0.1	2 7/16	UKC212	C212	UK212	52.4	36.2	1.65	14.4	HS2312X H2312X	3.1
		130	38	2.5	62									
	2 1/8	6.299	1 47/64	0.1	2 7/16	UKCX12	CX12	UKX12	57.2	40.1	1.82	14.4	HS2312X H2312X	4.4
65	2 1/8	6.299	1 13/16	0.12	2 7/16	UKC312	C312	UK312	81.9	52.2	2.37	13.2	HS2312X H2312X	4.7
		160	46	3	62									
	2 1/4	5.512	1 37/64	0.1	2 9/16	UKC213	C213	UK213	57.2	40.1	1.82	14.4	HE2313X H2313X HS2313X	3.3
70	2 3/8	6.693	1 31/32	0.12	2 9/16	UKC313	C313	UK313	92.7	59.9	2.68	13.2	HE2313X H2313X HS2313X	5.8
		170	50	3	65									
	2 1/2	7.480	2 11/64	0.16	2 7/8	UKC315	C315	UK315	113	77.2	3.24	13.2	HE2315X H2315X	8.0
75	2 3/4	7.874	2 23/64	0.16	3 1/16	UKC316	C316	UK316	123	86.7	3.53	13.3	HE2316X H2316X	9.2
		200	60	4	78									
	2 3/4	8.465	2 33/64	0.16	3 7/32	UKC317	C317	UK317	133	96.8	3.82	13.3	H2317X HE2317X	11.6
80	3	8.858	2 19/32	0.16	3 3/8	UKC318	C318	UK318	143	107	4.11	13.3	H2318X	13.1
		225	66	4	86									
	3 1/4	9.449	2 53/64	0.16	3 17/32	UKC319	C319	UK319	153	119	4.45	13.3	HE2319X H2319X	16.1
85	3 1/2	10.236	2 51/64	0.16	3 13/16	UKC320	C320	UK320	173	141	5.08	13.2	HE2320X H2320X	19.2
		260	75	4	97									
	3 1/2	11.811	3 5/32	0.2	4 1/8	UKC322	C322	UK322	205	180	6.15	13.2	H2322X HE2322X	29.1
90	4	12.598	3 35/64	0.2	4 13/32	UKC324	C324	UK324	207	185	6.10	13.5	H2324	36.2
		320	90	5	112									
	4 1/2	13.386	3 15/16	0.24	4 3/4	UKC326	C326	UK326	229	214	6.79	13.6	HE2326 H2326	42.8
100	-	14.173	3 15/16	0.24	5 5/32	UKC328	C328	UK328	253	246	7.54	13.6	H2328	52.9
		360	100	6	131									

- Remarks 1. In Part No. of unit and units with covers, fitting codes follow bore diameter numbers. (See Table 2.5 in P.11.)  
 2. Part No. of applicable grease nipples are shown below.  
 A-1/4-28UNF..... 205-213, X05-X12, 305-308  
 A-R1/8..... 309-328  
 3. In Part No. of unit with adapters and bearing with adapters, Part No. of applicable adapter follow the Part No. shown in the dimensional tables. (Example of Part No. : UKC206J + H2306X, UK206 + H2306X)  
 4. As for the triple-lip seal type product (205 is the double-lip seal type product), supplementary code L3 (or L2) follows the Part No. of unit or bearing.  
 (Example of Part No. : UKC206JL3 + H2306X, UK206L3 + H2306X)  
 5. As for the dimensions and forms of applicable bearings and adapters, see the dimensional tables of insert bearing for unit and adapter assemblies.

Hanger type

**UCHA**  
Cylindrical bore (with set screws)  
d 12 ~ 75 mm



Note 1) Dimensions N screw hole is apply JIS B0203 (Taper Pipe Threads) standards.  
It can not apply to the Parallel Pipe External Thread.  
Also, below shown the dimensions of Taper Pipe Internal Thread.

Nominal of Thread	Female Thread			Thread	Apply Male Thread
	Major Diameter	Pitch Diameter	Minor Diameter	Number of Threads (in 25.4 mm)	
	D	D <sub>2</sub>	D <sub>1</sub>	n	
Rp 3/4	26.441	25.279	24.117	14	R 3/4
Rp 1	33.249	31.770	30.291	11	R 1
Rp 1 1/2	41.910	40.431	38.952	11	R 1 1/2
Rp 1 1/4	47.803	46.324	44.845	11	R 1 1/4

Unit: mm

Shaft Dia. mm inch d	Dimensions inch mm										Unit No.	Housing No.	Bearing No.	Basic Load Ratings kN		Fatigue Load Limit kN C <sub>u</sub>	Factor f <sub>0</sub>	Mass kg
	H	A	L	H <sub>1</sub>	H <sub>2</sub>	N <sup>1)</sup>	C	B	S	C <sub>r</sub>				C <sub>0r</sub>				
12 1/2											UCHA201 UCHA201-8 UCHA202 UCHA202-10 UCHA203 UCHA204-12 UCHA204	HA204	UC201 UC201-8 UC202 UC202-10 UC203 UC204-12 UC204	12.8	6.65	0.302	13.2	0.77 0.75 0.74 0.72
15 5/8	2 17/32	1 9/16	2 17/32	3 25/32	3/4	Rp 3/4	-	1.220	0.500		UCHA205-14 UCHA205-15 UCHA205 UCHA205-16	HA205	UC205-14 UC205-15 UC205 UC205-16	14.0	7.85	0.357	13.9	0.87
17 3/4	64	40	64	96	19	Rp 3/4	-	31	12.7		UCHA206-18 UCHA206 UCHA206-19 UCHA206-20	HA206	UC206-18 UC206 UC206-19 UC206-20	19.5	11.3	0.514	13.9	0.83
20											UCHA207-20 UCHA207-21 UCHA207-22 UCHA207 UCHA207-23	HA207	UC207-20 UC207-21 UC207-22 UC207 UC207-23	25.7	15.4	0.700	13.9	1.2
25 7/8 15/16	2 17/32	1 9/16	3 1/16	4 1/16	3/4	Rp 3/4	-	1.343	0.563		UCHA208-24 UCHA208-25 UCHA208	HA208	UC208-24 UC208-25 UC208	29.1	17.8	0.809	14.0	1.3
30 1 1/8	2 17/32	1 9/16	3 1/16	4 1/16	3/4	Rp 3/4	-	1.500	0.626		UCHA209-26 UCHA209-27 UCHA209-28 UCHA209	HA209	UC209-26 UC209-27 UC209-28 UC209	34.1	21.3	0.968	14.0	1.7
35 1 1/4 1 5/16 1 3/8	2 3/4	1 9/16	3 5/8	4 9/16	3/4	Rp 3/4	-	1.689	0.689		UCHA210-30 UCHA210-31 UCHA210 UCHA210-32	HA210	UC210-30 UC210-31 UC210 UC210-32	35.1	23.3	1.06	14.4	2.1
40 1 1/2 1 9/16	2 7/8	1 9/16	3 25/32	4 3/4	3/4	Rp 3/4	2	1.937	0.748		UCHA211-32 UCHA211-34 UCHA211 UCHA211-35	HA211	UC211-32 UC211-34 UC211 UC211-35	43.4	29.4	1.34	14.4	2.8
45 1 5/8 1 11/16 1 3/4	3 7/32	1 7/8	4 1/4	5 11/32	13/16	Rp 1	5	1.937	0.748		UCHA212-36 UCHA212 UCHA212-38 UCHA212-39	HA212	UC212-36 UC212 UC212-38 UC212-39	52.4	36.2	1.65	14.4	3.9
50 1 7/8 1 15/16	3 9/32	1 7/8	4 21/32	5 19/32	13/16	Rp 1	5	2.031	0.748		UCHA213-40 UCHA213	HA213	UC213-40 UC213	57.2	40.1	1.82	14.4	5.8
55 2 2 1/8	3 7/16	2 3/8	4 31/32	5 29/32	31/32	Rp 1 1/4	7	2.189	0.874		UCHA214-44 UCHA214	HA214	UC214-44 UC214	62.2	44.1	2.01	14.5	5.9
60 2 3/16 2 1/4	4 1/32	2 3/8	5 19/32	6 13/16	1 3/32	Rp 1 1/4	9	2.563	1.000		UCHA215-47 UCHA215 UCHA215-48	HA215	UC215-47 UC215 UC215-48	67.4	48.3	2.17	14.5	5.6
65 2 3/8	4 19/32	2 3/4	6 17/32	7 7/8	1 1/4	Rp 1 1/2	9.5	2.563	1.000									
70 2 7/16	4 19/32	2 3/4	6 17/32	7 7/8	1 1/4	Rp 1 1/2	9.5	2.937	1.189									
75 2 15/16 3	4 19/32	2 3/4	6 17/32	7 7/8	1 1/4	Rp 1 1/2	9.5	3.063	1.311									

Remarks 1. In Part No. of unit and units with covers, fitting codes follow bore diameter numbers. (See Table 2.5 in P.11.)

2. Part No. of applicable grease nipples are shown below.

A-1/4-28UNF..... 201~210

A-R1/8..... 211~215

3. As for the triple-lip seal type product (from 201 to 205 are the double-lip seal type products), supplementary code L3 (or L2) follows the Part No. of unit or bearing. (Example of Part No. : UCHA206JL3, UC206L3)

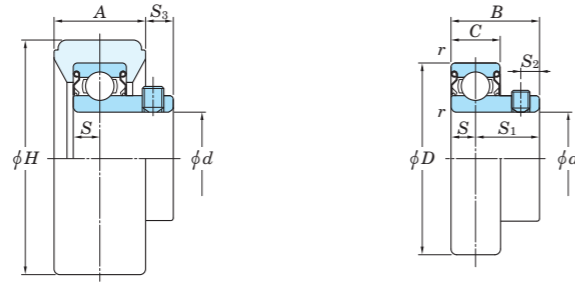
4. For the dimensions and forms of applicable bearings and adapters, see the dimensional tables of insert bearing for unit and adapter assemblies.

5. Tapered bore (with adapter) type products are also available. (Example of Part No. : UKHA205J + H2305X, UK205 + H2305X)

Rubber clamping ring/anti vibration ring type

**RU-M series**  
Cylindrical bore (with set screws)

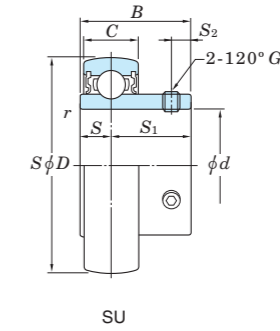
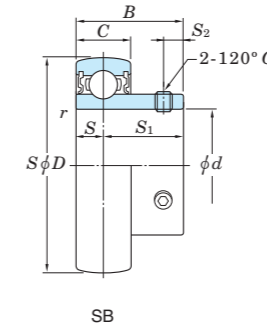
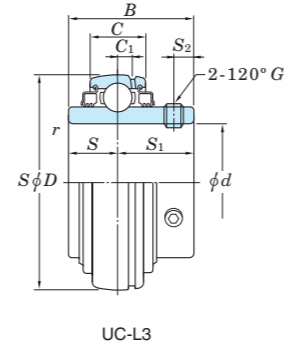
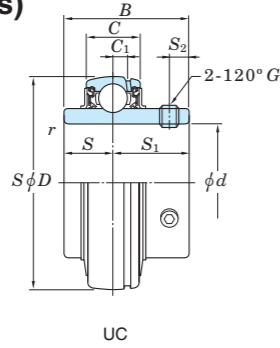
$d$  20 ~ 30 mm



Shaft Dia. mm $d$	Dimensions mm											Unit No.	Housing No.	Bearing No.	Basic Load Ratings kN		Fatigue Load Limit kN	Factor	Set Screw Size	Mass
	$H$	$A$	$D$	$B$	$C$	$r$ (min.)	$S$	$S_1$	$S_2$	$S_3$	$C_r$				$C_{0r}$	$C_u$	$f_0$		kg	
20	64	25	47	27	14	1	7	20	5	7.5	<b>RU12M</b>	R204	SBB204P1 <sup>1)</sup>	12.8	6.65	0.302	13.2	M6×0.75	0.20	
25	64	25	52	27.5	15	1	7.5	20	5.5	7.5	<b>RU16M</b>	R205	SBB205P1 <sup>1)</sup>	14.0	7.85	0.357	13.9	M6×0.75	0.22	
30	79	27	62	28.5	16	1	8	20.5	6	7	<b>RU19M</b>	R206	SBB206P1 <sup>1)</sup>	19.5	11.3	0.514	13.9	M6×0.75	0.34	

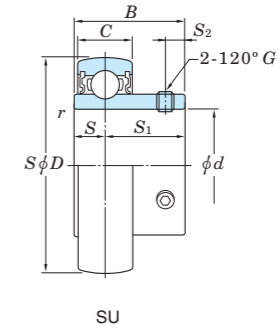
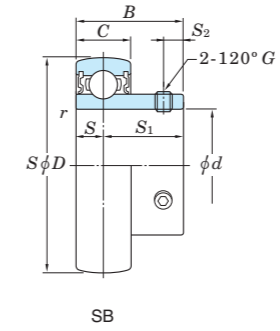
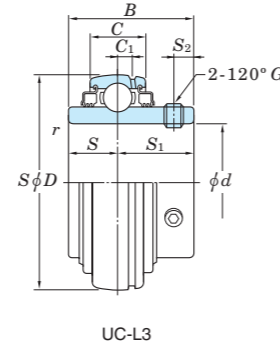
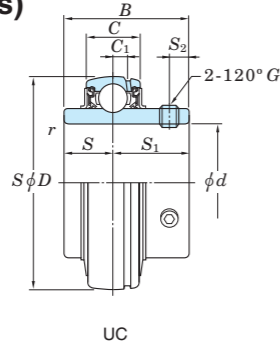
Note 1) P1 indicates that the inner ring width is a special size.



**Insert bearings for units**
**UC, SB, SU**  
**Cylindrical bore (with set screws)**  
**d 8 ~ (30) mm**


Shaft Dia. mm    inch	Dimensions									Basic Load Ratings kN		Fatigue Load Limit kN	Factor	Bearing No.	Dimensions						Set Screw Size G		Mass kg			
	D	B		C		r (min.)		Cr	C0r	Cu	f0	Standard	L3 Type		C1		S		S1		S2			mm	inch	
		mm	inch	mm	inch	mm	inch								mm	inch	mm	inch	mm	inch	mm	inch				mm
8	22	0.866	12	0.472	7	0.276	0.3	0.012	3.27	1.37	0.062	12.4	SU08	-	-	-	3.5	0.138	8.5	0.335	2.8	0.110	M3×0.35	-	0.012	
10	26	1.024	15	0.591	8	0.315	0.3	0.012	4.55	1.95	0.089	12.3	SU000	-	-	-	5	0.197	10	0.394	3	0.118	M3×0.35	-	0.024	
12	28	1.102	15	0.591	8	0.315	0.3	0.012	5.10	2.40	0.109	13.2	SU001	-	-	-	5	0.197	10	0.394	3	0.118	M3×0.35	-	0.026	
	40	1.575	22	0.866	12	0.472	0.6	0.024	9.55	4.80	0.218	13.2	SB201	-	-	-	6	0.236	16	0.630	4	0.157	M5×0.5	-	0.10	
-	47	1.850	31	1.220	16	0.630	0.6	0.024	12.8	6.65	0.302	13.2	UC201	UC201L2	4	0.157	12.7	0.500	18.3	0.720	5	0.197	M6×0.75	-	0.21	
	40	1.575	22	0.866	12	0.472	0.6	0.024	9.55	4.80	0.218	13.2	SB201-8	-	-	-	6	0.236	16	0.630	4	0.157	-	No.10-32UNF	0.10	
-	47	1.850	31	1.220	16	0.630	0.6	0.024	12.8	6.65	0.302	13.2	UC201-8	UC201-8L2	4	0.157	12.7	0.500	18.3	0.720	5	0.197	-	1/4-28UNF	0.21	
	32	1.260	16.5	0.650	9	0.354	0.3	0.012	5.60	2.85	0.130	13.9	SU002	-	-	-	5.5	0.217	11	0.433	3.3	0.130	M4×0.5	-	0.038	
15	40	1.575	22	0.866	12	0.472	0.6	0.024	9.55	4.80	0.218	13.2	SB202	-	-	-	6	0.236	16	0.630	4	0.157	M5×0.5	-	0.10	
	47	1.850	31	1.220	16	0.630	0.6	0.024	12.8	6.65	0.302	13.2	UC202	UC202L2	4	0.157	12.7	0.500	18.3	0.720	5	0.197	M6×0.75	-	0.19	
-	40	1.575	22	0.866	12	0.472	0.6	0.024	9.55	4.80	0.218	13.2	SB202-10	-	-	-	6	0.236	16	0.630	4	0.157	-	No.10-32UNF	0.10	
	47	1.850	31	1.220	16	0.630	0.6	0.024	12.8	6.65	0.302	13.2	UC202-10	UC202-10L2	4	0.157	12.7	0.500	18.3	0.720	5	0.197	-	1/4-28UNF	0.19	
17	35	1.378	17.5	0.689	10	0.394	0.3	0.012	6.00	3.25	0.148	14.4	SU003	-	-	-	6	0.236	11.5	0.453	3.3	0.130	M4×0.5	-	0.050	
	40	1.575	22	0.866	12	0.472	0.6	0.024	9.55	4.80	0.218	13.2	SB203	-	-	-	6	0.236	16	0.630	4	0.157	M5×0.5	-	0.10	
-	47	1.850	31	1.220	16	0.630	0.6	0.024	12.8	6.65	0.302	13.2	UC203	UC203L2	4	0.157	12.7	0.500	18.3	0.720	5	0.197	M6×0.75	-	0.18	
	47	1.850	25	0.984	14	0.551	1	0.039	12.8	6.65	0.302	13.2	SB204-12	-	-	-	7	0.276	18	0.709	5	0.197	-	1/4-28UNF	0.15	
-	47	1.850	31	1.220	16	0.630	1	0.039	12.8	6.65	0.302	13.2	UC204-12	UC204-12L2	4	0.157	12.7	0.500	18.3	0.720	5	0.197	-	1/4-28UNF	0.16	
	42	1.654	21	0.827	12	0.472	0.6	0.024	9.40	5.05	0.230	13.9	SU004	-	-	-	7	0.276	14	0.551	4	0.157	M5×0.5	-	0.080	
20	47	1.850	25	0.984	14	0.551	1	0.039	12.8	6.65	0.302	13.2	SB204	-	-	-	7	0.276	18	0.709	5	0.197	M6×0.75	-	0.15	
	47	1.850	31	1.220	16	0.630	1	0.039	12.8	6.65	0.302	13.2	UC204	UC204L2	4	0.157	12.7	0.500	18.3	0.720	5	0.197	M6×0.75	-	0.16	
-	52	2.047	27	1.063	15	0.591	1	0.039	14.0	7.85	0.357	13.9	SB205-14	-	-	-	7.5	0.295	19.5	0.768	5.5	0.217	-	1/4-28UNF	0.18	
	52	2.047	34.1	1.343	17	0.669	1	0.039	14.0	7.85	0.357	13.9	UC205-14	UC205-14L2	5	0.197	14.3	0.563	19.8	0.780	5.5	0.217	-	1/4-28UNF	0.23	
-	52	2.047	27	1.063	15	0.591	1	0.039	14.0	7.85	0.357	13.9	SB205-15	-	-	-	7.5	0.295	19.5	0.768	5.5	0.217	-	1/4-28UNF	0.18	
	52	2.047	34.1	1.343	17	0.669	1	0.039	14.0	7.85	0.357	13.9	UC205-15	UC205-15L2	5	0.197	14.3	0.563	19.8	0.780	5.5	0.217	-	1/4-28UNF	0.21	
25	47	1.850	22	0.866	12	0.472	0.6	0.024	10.1	5.85	0.266	14.5	SU005	-	-	-	7	0.276	15	0.591	4.5	0.177	M5×0.5	-	0.10	
	52	2.047	27	1.063	15	0.591	1	0.039	14.0	7.85	0.357	13.9	SB205	-	-	-	7.5	0.295	19.5	0.768	5.5	0.217	M6×0.75	-	0.18	
-	52	2.047	34.1	1.343	17	0.669	1	0.039	14.0	7.85	0.357	13.9	UC205	UC205L2	5	0.197	14.3	0.563	19.8	0.780	5.5	0.217	M6×0.75	-	0.20	
	62	2.441	38	1.496	22	0.866	1.1	0.043	21.2	10.9	0.495	12.6	UC305	-	-	-	6	0.236	15	0.591	23	0.906	6	0.236	M6×0.75	-
-	62	2.441	38.1	1.500	19	0.748	1	0.039	19.5	11.3	0.514	13.9	UCX05	UCX05L3	5	0.197	15.9	0.626	22.2	0.874	6	0.236	M6×0.75	-	0.39	
	52	2.047	27	1.063	15	0.591	1	0.039	14.0	7.85	0.357	13.9	SB205-16	-	-	-	7.5	0.295	19.5	0.768	5.5	0.217	-	1/4-28UNF	0.18	
-	52	2.047	34.1	1.343	17	0.669	1	0.039	14.0	7.85	0.357	13.9	UC205-16	UC205-16L2	5	0.197	14.3	0.563	19.8	0.780	5.5	0.217	-	1/4-28UNF	0.20	
	62	2.441	38	1.496	22	0.866	1.1	0.043	21.2	10.9	0.495	12.6	UC305-16	-	-	-	6	0.236	15	0.591	23	0.906	6	0.236	M6×0.75	-
-	62	2.441	38.1	1.500	19	0.748	1	0.039	19.5	11.3	0.514	13.9	UCX05-16	UCX05-16L3	5	0.197	15.9	0.626	22.2	0.874	6	0.236	-	1/4-28UNF	0.38	
	62	2.441	30	1.181	16	0.630	1	0.039	19.5	11.3	0.514	13.9	SB206-18	-	-	-	8	0.315	22	0.866	6	0.236	-	1/4-28UNF	0.27	
-	62	2.441	38.1	1.500	19	0.748	1	0.039	19.5	11.3	0.514	13.9	UC206-18	UC206-18L2	5	0.197	15.9	0.626	22.2	0.874	6	0.236	-	1/4-28UNF	0.34	
	55	2.165	24.5	0.965	13	0.512	1	0.039	13.2	8.25	0.375	14.7	SU006	-	-	-	7.5	0.295	17	0.669	5.5	0.217	M5×0.5	-	0.15	
30	62	2.441	30	1.181	16	0.630	1	0.039	19.5	11.3	0.514	13.9	SB206	-	-	-	8	0.315	22	0.866	6	0.236	M6×0.75	-	0.27	
	62	2.441	38.1	1.500	19	0.748	1	0.039	19.5	11.3	0.514	13.9	UC206	UC206L3	5	0.197	15.9	0.626	22.2	0.874	6	0.236	M6×0.75	-	0.32	
-	72	2.835	42.9	1.689	20	0.787	1	0.039	25.7	15.4	0.700	13.9	UCX06	UCX06L3	5.5	0.217	17.5	0.689	25.4	1.000	6.5	0.256	M8×1	-	0.58	
	72	2.835	43	1.693	24	0.945	1.1	0.043	26.7	15.0	0.682	13.3	UC306	-	-	-	6.5	0.256	17	0.669	26	1.024	6	0.236	M6×0.75	-
-	62	2.441	30	1.181	16	0.630	1	0.039	19.5	11.3	0.514	13.9	SB206-19	-	-	-	8	0.315	22	0.866	6	0.236	-	1/4-28UNF	0.27	
	62	2.441	38.1	1.500	19	0.748	1	0.039	19.5	11.3	0.514	13.9	UC206-19	UC206-19L2	5	0.197	15.9	0.626	22.2	0.874	6	0.236	-	1/4-28UNF	0.32	
-	72	2.835	42.9	1.689	20	0.787	1	0.039	25.7	15.4	0.700	13.9	UCX06-19	UCX06-19L3	5.5	0.217	17.5	0.689	25.4	1.000	6.5	0.256	-	5/16-24UNF	0.58	
	62	2.441	30	1.181	16	0.630	1	0.039	19.5	11.3	0.514	13.9	SB206-20	-	-	-	8	0.315	22	0.866	6	0.236	-	1/4-28UNF	0.27	
-	62	2.441	38.1	1.500	19	0.748	1	0.039	19.5	11.3	0.514	13.9	UC206-20	UC206-20L2	5	0.197	15.9	0.626	22.							

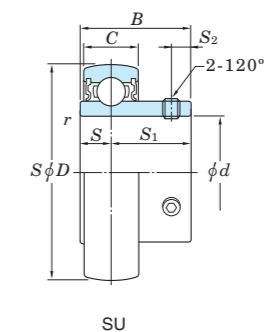
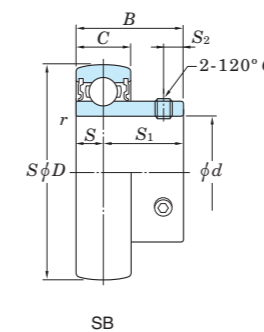
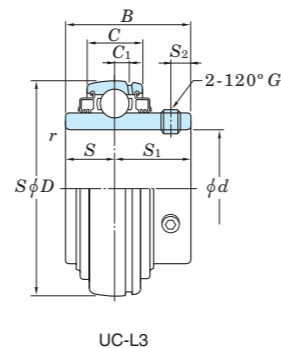
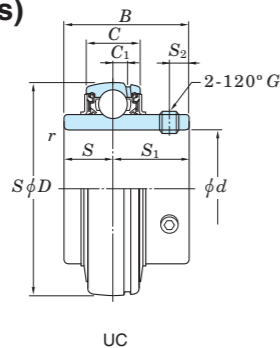
**UC, SB, SU**  
Cylindrical bore (with set screws)  
 $d$  (30) ~ (60) mm



Shaft Dia. mm inch	Dimensions								Basic Load Ratings kN		Fatigue Load Limit kN	Factor	Bearing No.	Dimensions								Set Screw Size G		Mass kg		
	D	B	C	r (min.)	C <sub>r</sub>	C <sub>0r</sub>	C <sub>u</sub>	f <sub>0</sub>	C <sub>1</sub>	S	S <sub>1</sub>	S <sub>2</sub>		Standard	L3 Type	C <sub>1</sub>	S	S <sub>1</sub>	S <sub>2</sub>	mm	inch					
-	1 3/8	72	2.835	32	1.260	17	0.669	1.1	0.043	25.7	15.4	0.700	13.9	SB207-22	-	-	-	8.5	0.335	23.5	0.925	6	0.236	-	1/4-28UNF	0.42
		72	2.835	42.9	1.689	20	0.787	1.1	0.043	25.7	15.4	0.700	13.9	UC207-22	UC207-22L3	5.5	0.217	17.5	0.689	25.4	1.000	6.5	0.256	-	5/16-24UNF	0.48
		80	3.150	49.2	1.937	21	0.827	1.1	0.043	29.1	17.8	0.809	14.0	UCX07-22	UCX07-22L3	6	0.236	19	0.748	30.2	1.189	8	0.315	-	5/16-24UNF	0.75
35	-	72	2.835	32	1.260	17	0.669	1.1	0.043	25.7	15.4	0.700	13.9	SB207	-	-	-	8.5	0.335	23.5	0.925	6	0.236	M6x0.75	-	0.42
		72	2.835	42.9	1.689	20	0.787	1.1	0.043	25.7	15.4	0.700	13.9	UC207	UC207L3	5.5	0.217	17.5	0.689	25.4	1.000	6.5	0.256	M8x1	-	0.48
		80	3.150	49.2	1.937	21	0.827	1.1	0.043	29.1	17.8	0.809	14.0	UCX07	UCX07L3	6	0.236	19	0.748	30.2	1.189	8	0.315	M8x1	-	0.75
		80	3.150	48	1.890	26	1.024	1.5	0.059	33.4	19.3	0.877	13.2	UC307	UC307L3	7.5	0.295	19	0.748	29	1.142	8	0.315	M8x1	-	0.71
-	1 7/16	72	2.835	32	1.260	17	0.669	1.1	0.043	25.7	15.4	0.700	13.9	SB207-23	-	-	-	8.5	0.335	23.5	0.925	6	0.236	-	1/4-28UNF	0.42
		72	2.835	42.9	1.689	20	0.787	1.1	0.043	25.7	15.4	0.700	13.9	UC207-23	UC207-23L3	5.5	0.217	17.5	0.689	25.4	1.000	6.5	0.256	-	5/16-24UNF	0.45
		80	3.150	49.2	1.937	21	0.827	1.1	0.043	29.1	17.8	0.809	14.0	UCX07-23	UCX07-23L3	6	0.236	19	0.748	30.2	1.189	8	0.315	-	5/16-24UNF	0.72
-	1 1/2	80	3.150	34	1.339	18	0.709	1.1	0.043	29.1	17.8	0.809	14.0	SB208-24	-	-	-	9	0.354	25	0.984	8	0.315	-	5/16-24UNF	0.60
		80	3.150	49.2	1.937	21	0.827	1.1	0.043	29.1	17.8	0.809	14.0	UC208-24	UC208-24L3	6	0.236	19	0.748	30.2	1.189	8	0.315	-	5/16-24UNF	0.68
		85	3.346	49.2	1.937	22	0.866	1.1	0.043	34.1	21.3	0.968	14.0	UCX08-24	UCX08-24L3	6	0.236	19	0.748	30.2	1.189	8	0.315	-	5/16-24UNF	0.87
		90	3.543	52	2.047	28	1.102	1.5	0.059	40.7	24.0	1.09	13.2	UC308-24	UC308-24L3	8	0.315	19	0.748	33	1.299	10	0.394	M10x1.25	-	1.05
-	1 9/16	80	3.150	49.2	1.937	21	0.827	1.1	0.043	29.1	17.8	0.809	14.0	UC208-25	UC208-25L3	6	0.236	19	0.748	30.2	1.189	8	0.315	-	5/16-24UNF	0.60
		80	3.150	34	1.339	18	0.709	1.1	0.043	29.1	17.8	0.809	14.0	SB208	-	-	-	9	0.354	25	0.984	8	0.315	M8x1	-	0.60
		80	3.150	49.2	1.937	21	0.827	1.1	0.043	29.1	17.8	0.809	14.0	UC208	UC208L3	6	0.236	19	0.748	30.2	1.189	8	0.315	M8x1	-	0.64
		85	3.346	49.2	1.937	22	0.866	1.1	0.043	34.1	21.3	0.968	14.0	UCX08	UCX08L3	6	0.236	19	0.748	30.2	1.189	8	0.315	M8x1	-	0.83
-	1 5/8	85	3.346	49.2	1.937	22	0.866	1.1	0.043	34.1	21.3	0.968	14.0	UC209-26	UC209-26L3	6	0.236	19	0.748	30.2	1.189	8	0.315	-	5/16-24UNF	0.78
		85	3.346	49.2	1.937	22	0.866	1.1	0.043	34.1	21.3	0.968	14.0	UC209-27	UC209-27L3	6	0.236	19	0.748	30.2	1.189	8	0.315	-	5/16-24UNF	0.74
		85	3.346	49.2	1.937	22	0.866	1.1	0.043	34.1	21.3	0.968	14.0	UC209-28	UC209-28L3	6	0.236	19	0.748	30.2	1.189	8	0.315	-	5/16-24UNF	0.70
		90	3.543	51.6	2.031	24	0.945	1.1	0.043	35.1	23.3	1.06	14.4	UCX09-28	UCX09-28L3	6	0.236	19	0.748	32.6	1.283	9	0.354	-	3/8-24UNF	0.97
-	1 3/4	100	3.937	57	2.244	30	1.181	1.5	0.059	48.9	29.5	1.34	13.3	UC309-28	UC309-28L3	8.5	0.335	22	0.866	35	1.378	10	0.394	M10x1.25	-	1.35
		85	3.346	49.2	1.937	22	0.866	1.1	0.043	34.1	21.3	0.968	14.0	UC209	UC209L3	6	0.236	19	0.748	30.2	1.189	8	0.315	M8x1	-	0.68
		90	3.543	51.6	2.031	24	0.945	1.1	0.043	35.1	23.3	1.06	14.4	UCX09	UCX09L3	6	0.236	19	0.748	32.6	1.283	9	0.354	M10x1.25	-	0.95
-	1 7/8	100	3.937	57	2.244	30	1.181	1.5	0.059	48.9	29.5	1.34	13.3	UC309	UC309L3	8.5	0.335	22	0.866	35	1.378	10	0.394	M10x1.25	-	1.33
		90	3.543	51.6	2.031	24	0.945	1.1	0.043	35.1	23.3	1.06	14.4	UC210-30	UC210-30L3	6	0.236	19	0.748	32.6	1.283	9	0.354	-	3/8-24UNF	0.87
		90	3.543	51.6	2.031	24	0.945	1.1	0.043	35.1	23.3	1.06	14.4	UC210-31	UC210-31L3	6	0.236	19	0.748	32.6	1.283	9	0.354	-	3/8-24UNF	0.82
		100	3.937	55.6	2.189	25	0.984	1.1	0.043	43.4	29.4	1.34	14.4	UCX10-31	UCX10-31L3	7	0.276	22.2	0.874	33.4	1.315	9	0.354	-	3/8-24UNF	1.32
50	-	90	3.543	51.6	2.031	24	0.945	1.1	0.043	35.1	23.3	1.06	14.4	UC210	UC210L3	6	0.236	19	0.748	32.6	1.283	9	0.354	M10x1.25	-	0.80
		100	3.937	55.6	2.189	25	0.984	1.1	0.043	43.4	29.4	1.34	14.4	UCX10	UCX10L3	7	0.276	22.2	0.874	33.4	1.315	9	0.354	M10x1.25	-	1.29
		110	4.331	61	2.402	32	1.260	2	0.079	62.0	38.3	1.74	13.2	UC310	UC310L3	9	0.354	22	0.866	39	1.535	12	0.472	M12x1.5	-	1.69
		90	3.543	51.6	2.031	24	0.945	1.1	0.043	35.1	23.3	1.06	14.4	UC210-32	UC210-32L3	6	0.236	19	0.748	32.6	1.283	9	0.354	-	3/8-24UNF	0.78
-	2	100	3.937	55.6	2.189	25	0.984	1.1	0.043	43.4	29.4	1.34	14.4	UCX10-32	UCX10-32L3	7	0.276	22.2	0.874	33.4	1.315	9	0.354	-	3/8-24UNF	1.26
		100	3.937	55.6	2.189	25	0.984	1.5	0.059	43.4	29.4	1.34	14.4	UC211-32	UC211-32L3	7	0.276	22.2	0.874	33.4	1.315	9	0.354	-	3/8-24UNF	1.26
		120	4.724	66	2.598	34	1.339	2	0.079	71.6	45.0	2.05	13.2	UC311-32	UC311-32L3	10	0.394	25	0.984	41	1.614	12	0.472	M12x1.5	-	2.08
-	2 1/8	100	3.937	55.6	2.189	25	0.984	1.5	0.059	43.4	29.4	1.34	14.4	UC211-34	UC211-34L3	7	0.276	22.2	0.874	33.4	1.315	9	0.354	-	3/8-24UNF	1.15
		100	3.937	55.6	2.189	25	0.984	1.5	0.059	43.4	29.4	1.34	14.4	UC211	UC211L3	7	0.276	22.2	0.874	33.4	1.315	9	0.354	M10x1.25	-	1.11
		110	4.331	65.1	2.563	27	1.063	1.5	0.059	52.4	36.2	1.65	14.4	UCX11	UCX11L3	7.5	0.295	25.4	1.000	39.7	1.563	10.5	0.413	M10x1.25	-	1.80
		120	4.724	66	2.598	34	1.339	2	0.079	71.6	45.0	2.05	13.2	UC311	UC311L3	10	0.394	25	0.984	41	1.614	12	0.472	M12x1.5	-	1.90
-	2 3/16	100	3.937	55.6	2.189	25	0.984	1.5	0.059	43.4	29.4	1.34	14.4	UC211-35	UC211-35L3	7	0.276	22.2	0.874	33.4	1.315	9	0.354	-	3/8-24UNF	1.09
		110	4.331	65.1	2.563	27	1.063	1.5	0.059	52.4	36.2	1.65	14.4	UCX11-35	UCX11-35L3	7.5	0.295	25.4	1.000	39.7	1.563	10.5	0.413	-	3/8-24UNF	1.78
		110	4.331	65.1	2.563	27	1.063	1.5	0.059	52.4	36.2	1.65	14.4	UCX11-36	UCX11-36L3	7.5	0.295	25.4	1.000	39.7	1.563	10.5	0.413	-	3/8-24UNF	1.7
		110	4.331	65.1	2.563	27	1.063	1.5	0.059	52.4	36.2	1.65	14.4	UC212-36	UC212-36L3	7.5	0.295	25.4	1.000	39.7	1.563	10.5	0.413	-	3/8-24UNF	

Insert bearings for units

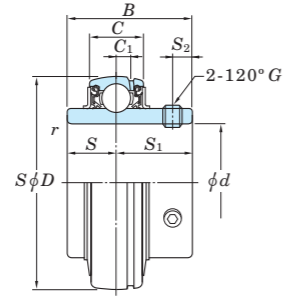
**UC, SB, SU**  
Cylindrical bore (with set screws)  
 $d$  (60) ~ 140 mm



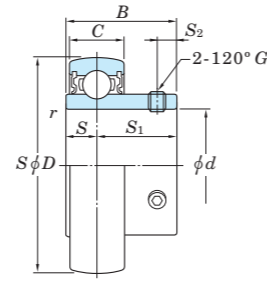
Shaft Dia. mm inch $d$	Dimensions								Basic Load Ratings kN		Fatigue Load Limit kN	Factor	Bearing No.	Dimensions						Set Screw Size G		Mass kg				
	$D$		$B$		$C$		$r$ (min.)		$C_r$	$C_{0r}$	$C_u$	$f_0$		Standard	L3 Type	$C_1$		$S$		$S_1$			$S_2$			
	mm	inch	mm	inch	mm	inch	mm	inch								mm	inch	mm	inch	mm	inch		mm	inch	mm	inch
-	2 7/16	110	4.331	65.1	2.563	27	1.063	1.5	0.059	52.4	36.2	1.65	14.4	UC212-39	UC212-39L3	7.5	0.295	25.4	1.000	39.7	1.563	10.5	0.413	-	3/8-24UNF	1.45
		120	4.724	65.1	2.563	28	1.102	1.5	0.059	57.2	40.1	1.82	14.4	UCX12-39	UCX12-39L3	7.5	0.295	25.4	1.000	39.7	1.563	12	0.472	-	1/2-20UNF	1.95
-	2 1/2	120	4.724	65.1	2.563	28	1.102	1.5	0.059	57.2	40.1	1.82	14.4	UC213-40	UC213-40L3	7.5	0.295	25.4	1.000	39.7	1.563	12	0.472	-	1/2-20UNF	1.94
		125	4.921	74.6	2.937	30	1.181	1.5	0.059	62.2	44.1	2.01	14.5	UCX13-40	UCX13-40L3	9	0.354	30.2	1.189	44.4	1.748	12	0.472	-	1/2-20UNF	2.61
-	-	140	5.512	75	2.953	38	1.496	2.1	0.083	92.7	59.9	2.68	13.2	UC313-40	UC313-40L3	12	0.472	30	1.181	45	1.772	12	0.472	M12x1.5	-	3.24
		120	4.724	65.1	2.563	28	1.102	1.5	0.059	57.2	40.1	1.82	14.4	UC213	UC213L3	7.5	0.295	25.4	1.000	39.7	1.563	12	0.472	M12x1.5	-	1.86
65	-	125	4.921	74.6	2.937	30	1.181	1.5	0.059	62.2	44.1	2.01	14.5	UCX13	UCX13L3	9	0.354	30.2	1.189	44.4	1.748	12	0.472	M12x1.5	-	2.52
		140	5.512	75	2.953	38	1.496	2.1	0.083	92.7	59.9	2.68	13.2	UC313	UC313L3	12	0.472	30	1.181	45	1.772	12	0.472	M12x1.5	-	3.16
-	2 3/4	125	4.921	74.6	2.937	30	1.181	1.5	0.059	62.2	44.1	2.01	14.5	UC214-44	UC214-44L3	9	0.354	30.2	1.189	44.4	1.748	12	0.472	-	1/2-20UNF	2.06
		130	5.118	77.8	3.063	32	1.260	1.5	0.059	67.4	48.3	2.17	14.5	UCX14-44	UCX14-44L3	9	0.354	33.3	1.311	44.5	1.752	12	0.472	-	1/2-20UNF	2.75
-	-	150	5.906	78	3.071	40	1.575	2.1	0.083	104	68.2	2.96	13.2	UC314-44	UC314-44L3	12.5	0.492	33	1.299	45	1.772	12	0.472	M12x1.5	-	3.91
		125	4.921	74.6	2.937	30	1.181	1.5	0.059	62.2	44.1	2.01	14.5	UC214	UC214L3	9	0.354	30.2	1.189	44.4	1.748	12	0.472	M12x1.5	-	2.05
-	-	130	5.118	77.8	3.063	32	1.260	1.5	0.059	67.4	48.3	2.17	14.5	UCX14	UCX14L3	9	0.354	33.3	1.311	44.5	1.752	12	0.472	M12x1.5	-	2.74
		150	5.906	78	3.071	40	1.575	2.1	0.083	104	68.2	2.96	13.2	UC314	UC314L3	12.5	0.492	33	1.299	45	1.772	12	0.472	M12x1.5	-	3.90
-	2 15/16	130	5.118	77.8	3.063	32	1.260	1.5	0.059	67.4	48.3	2.17	14.5	UC215-47	UC215-47L3	9	0.354	33.3	1.311	44.5	1.752	12	0.472	-	1/2-20UNF	2.23
		140	5.512	82.6	3.252	33	1.299	1.5	0.059	72.7	53.0	2.30	14.6	UCX15-47	UCX15-47L3	9	0.354	33.3	1.311	49.3	1.941	14	0.551	-	1/2-20UNF	3.43
-	-	160	6.299	82	3.228	42	1.654	2.1	0.083	113	77.2	3.24	13.2	UC315-47	UC315-47L3	14.5	0.571	32	1.260	50	1.969	14	0.551	M14x1.5	-	4.72
		130	5.118	77.8	3.063	32	1.260	1.5	0.059	67.4	48.3	2.17	14.5	UC215	UC215L3	9	0.354	33.3	1.311	44.5	1.752	12	0.472	M12x1.5	-	2.21
-	-	140	5.512	82.6	3.252	33	1.299	1.5	0.059	72.7	53.0	2.30	14.6	UCX15	UCX15L3	9	0.354	33.3	1.311	49.3	1.941	14	0.551	M12x1.5	-	3.41
		160	6.299	82	3.228	42	1.654	2.1	0.083	113	77.2	3.24	13.2	UC315	UC315L3	14.5	0.571	32	1.260	50	1.969	14	0.551	M14x1.5	-	4.70
-	3	130	5.118	77.8	3.063	32	1.260	1.5	0.059	67.4	48.3	2.17	14.5	UC215-48	UC215-48L3	9	0.354	33.3	1.311	44.5	1.752	12	0.472	-	1/2-20UNF	2.12
		140	5.512	82.6	3.252	33	1.299	1.5	0.059	72.7	53.0	2.30	14.6	UCX15-48	UCX15-48L3	9	0.354	33.3	1.311	49.3	1.941	14	0.551	-	1/2-20UNF	3.32
-	-	160	6.299	82	3.228	42	1.654	2.1	0.083	113	77.2	3.24	13.2	UC315-48	UC315-48L3	14.5	0.571	32	1.260	50	1.969	14	0.551	M14x1.5	-	4.61
		140	5.512	82.6	3.252	33	1.299	2	0.079	72.7	53.0	2.30	14.6	UC216-50	UC216-50L3	9	0.354	33.3	1.311	49.3	1.941	14	0.551	-	1/2-20UNF	2.84
80	-	140	5.512	82.6	3.252	33	1.299	2	0.079	72.7	53.0	2.30	14.6	UC216	UC216L3	9	0.354	33.3	1.311	49.3	1.941	14	0.551	M12x1.5	-	2.79
		150	5.906	85.7	3.374	35	1.378	2	0.079	84.0	61.9	2.60	14.5	UCX16	UCX16L3	10	0.394	34.1	1.343	51.6	2.031	14	0.551	M12x1.5	-	3.87
-	-	170	6.693	86	3.386	44	1.732	2.1	0.083	123	86.7	3.53	13.3	UC316	UC316L3	15	0.591	34	1.339	52	2.047	14	0.551	M14x1.5	-	5.60
		150	5.906	85.7	3.374	35	1.378	2	0.079	84.0	61.9	2.60	14.5	UC217-52	UC217-52L3	10	0.394	34.1	1.343	51.6	2.031	14	0.551	-	1/2-20UNF	3.66
85	-	150	5.906	85.7	3.374	35	1.378	2	0.079	84.0	61.9	2.60	14.5	UC217	UC217L3	10	0.394	34.1	1.343	51.6	2.031	14	0.551	M12x1.5	-	3.45
		160	6.299	96	3.780	38	1.496	2	0.079	96.1	71.5	2.91	14.5	UCX17	UCX17L3	11	0.433	39.7	1.563	56.3	2.217	15	0.591	M12x1.5	-	5.05
-	-	180	7.087	96	3.780	46	1.811	3	0.118	133	96.8	3.82	13.3	UC317	UC317L3	15	0.591	40	1.575	56	2.205	16	0.630	M16x1.5	-	6.90
		160	6.299	96	3.780	38	1.496	2	0.079	96.1	71.5	2.91	14.5	UCX17-55	UCX17-55L3	11	0.433	39.7	1.563	56.3	2.217	15	0.591	-	1/2-20UNF	4.80
-	3 7/16	160	6.299	96	3.780	38	1.496	2	0.079	96.1	71.5	2.91	14.5	UC218-56	UC218-56L3	11	0.433	39.7	1.563	56.3	2.217	15	0.591	-	1/2-20UNF	4.46
		190	7.480	96	3.780	48	1.890	3	0.118	143	107	4.11	13.3	UC318-56	UC318-56L3	15.5	0.610	40	1.575	56	2.205	16	0.630	M16x1.5	-	8.03
90	-	160	6.299	96	3.780	38	1.496	2	0.079	96.1	71.5	2.91	14.5	UC218	UC218L3	11	0.433	39.7	1.563	56.3	2.217	15	0.591	M12x1.5	-	4.35
		170	6.693	104	4.094	40	1.575	2	0.079	109	81.9	3.23	14.4	UCX18	-	11.5	0.453	42.9	1.689	61.1	2.406	16	0.630	M14x1.5	-	6.00
-	-	190	7.480	96	3.780	48	1.890	3	0.118	143	107	4.11	13.3	UC318	UC318L3	15.5	0.610	40	1.575	56	2.205	16	0.630	M16x1.5	-	7.87
		200	7.874	103	4.055	50	1.969	3	0.118	153	119	4.45	13.3	UC319	UC319L3	16.5	0.650	41	1.614	62	2.441	18	0.709	M16x1.5	-	8.91
100	-	190	7.480	117.5	4.626	43	1.693	2.1	0.083	133	105	3.91	14.4	UCX20	-	13	0.512	49.2	1.937	68.3	2.689	18	0.709	M16x1.5	-	8.56
		215	8.465	108	4.252	54	2.126	3	0.118	173	141	5.08	13.2	UC320	UC320L3	18	0.709	42	1.654	66	2.598	20	0.787	M18x1.5	-	11.2
-	3 15/16	190	7.480	117.5	4.626	43	1.693	2.1	0.083	133	105	3.91	14.4	UCX20-63	-	13	0.512	49.2	1.937	68.3	2.689	18	0.709	-	5/8-18UNF	8.56
		215	8.465	108	4.252	54	2.126	3	0.118	173	141	5.08	13.2	UC320-63	UC320-63L3	18	0.709	42	1.654	66	2.598	20	0.787	M18x1.5	-	11.2
-	4	190	7.480	117.5	4.626	43	1.693	2.1	0.083	133	105	3.91	14.4	UCX20-64	-	13										

**UC-S6, SU-S6 (Stainless-series)**  
Cylindrical bore (with set screws)

d 10 ~ 65 mm



UC-S6

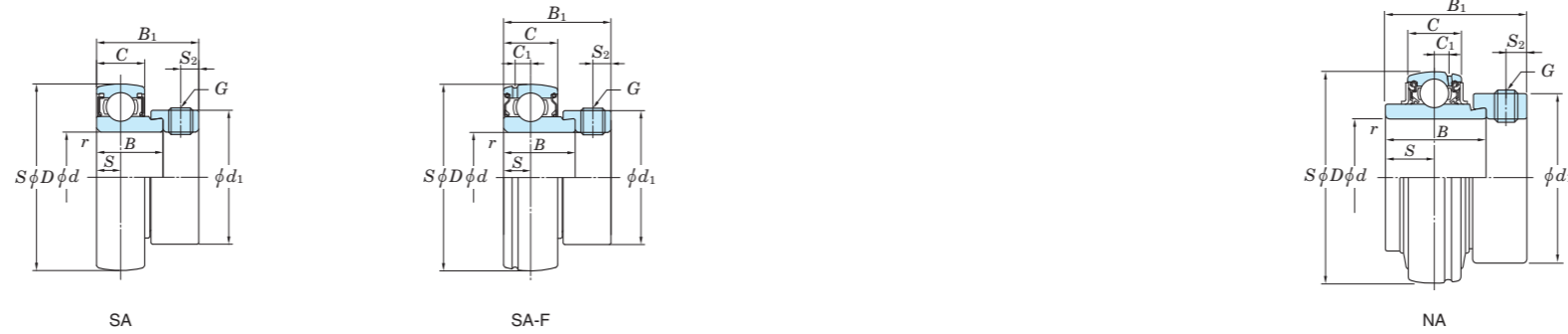


SU-S6

Shaft Dia. mm  d	Dimensions								Basic Load Ratings kN		Fatigue Load Limit kN	Factor	Bearing No.	Dimensions								Set Screw Size G	Mass
	D		B		C		r (min.)		C <sub>r</sub>	C <sub>0r</sub>	C <sub>u</sub>	f <sub>0</sub>		C <sub>1</sub>		S		S <sub>1</sub>		S <sub>2</sub>		mm	kg
	mm	inch	mm	inch	mm	inch	mm	inch						mm	inch	mm	inch	mm	inch	mm	inch		
10	26	1.024	15	0.591	8	0.315	0.3	0.012	3.9	1.55	0.070	12.3	SU000S6	-	-	5	0.197	10	0.394	3	0.118	M3×0.35	0.024
12	28	1.102	15	0.591	8	0.315	0.3	0.012	4.3	1.9	0.086	13.2	SU001S6	-	-	5	0.197	10	0.394	3	0.118	M3×0.35	0.026
	40	1.575	27.4	1.079	13	0.512	0.6	0.024	8.15	3.85	0.175	13.2	UC201XS6	3.5	0.138	11.5	0.453	15.9	0.626	4	0.157	M5×0.5	0.10
15	32	1.260	16.5	0.650	9	0.354	0.3	0.012	4.7	2.25	0.102	13.9	SU002S6	-	-	5.5	0.217	11	0.433	3.3	0.130	M4×0.5	0.038
	40	1.575	27.4	1.079	13	0.512	0.6	0.024	8.15	3.85	0.175	13.2	UC202XS6	3.5	0.138	11.5	0.453	15.9	0.626	4	0.157	M5×0.5	0.10
17	35	1.378	17.5	0.689	10	0.394	0.3	0.012	5.1	2.6	0.118	14.4	SU003S6	-	-	6	0.236	11.5	0.453	3.3	0.130	M4×0.5	0.050
	40	1.575	27.4	1.079	13	0.512	0.6	0.024	8.15	3.85	0.175	13.2	UC203XS6	3.5	0.138	11.5	0.453	15.9	0.626	4	0.157	M5×0.5	0.10
20	42	1.654	21	0.827	12	0.472	0.6	0.024	7.9	4	0.182	13.9	SU004S6	-	-	7	0.276	14	0.551	4	0.157	M5×0.5	0.080
	47	1.850	31	1.220	16	0.630	1	0.039	10.9	5.35	0.243	13.2	UC204S6	4	0.157	12.7	0.500	18.3	0.720	5	0.197	M6×0.75	0.16
25	47	1.850	22	0.866	12	0.472	0.6	0.024	8.5	4.65	0.211	14.5	SU005S6	-	-	7	0.276	15	0.591	4.5	0.177	M5×0.5	0.10
	52	2.047	34.1	1.343	17	0.669	1	0.039	11.9	6.3	0.286	13.9	UC205S6	5	0.197	14.3	0.563	19.8	0.780	5.5	0.217	M6×0.75	0.20
30	55	2.165	24.5	0.965	13	0.512	1	0.039	11.2	6.6	0.300	14.7	SU006S6	-	-	7.5	0.295	17	0.669	5.5	0.217	M5×0.5	0.15
	62	2.441	38.1	1.500	19	0.748	1	0.039	16.5	9.05	0.411	13.9	UC206S6	5	0.197	15.9	0.626	22.2	0.874	6	0.236	M6×0.75	0.32
35	72	2.835	42.9	1.689	20	0.787	1.1	0.043	21.8	12.3	0.559	13.9	UC207S6	5.5	0.217	17.5	0.689	25.4	1.000	6.5	0.256	M8×1	0.48
40	80	3.150	49.2	1.937	21	0.827	1.1	0.043	24.8	14.3	0.650	14.0	UC208S6	6	0.236	19	0.748	30.2	1.189	8	0.315	M8×1	0.64
45	85	3.346	49.2	1.937	22	0.866	1.1	0.043	27.8	16.2	0.736	14.0	UC209S6	6	0.236	19	0.748	30.2	1.189	8	0.315	M8×1	0.68
50	90	3.543	51.6	2.031	24	0.945	1.1	0.043	29.8	18.6	0.845	14.4	UC210S6	6	0.236	19	0.748	32.6	1.283	9	0.354	M8×1	0.80
55	100	3.937	55.6	2.189	25	0.984	1.5	0.059	36.8	23.5	1.07	14.4	UC211S6	7	0.276	22.2	0.874	33.4	1.315	9	0.354	M10×1.25	1.11
60	110	4.331	65.1	2.563	27	1.063	1.5	0.059	44.5	29.0	1.32	14.4	UC212S6	7.5	0.295	25.4	1.000	39.7	1.563	10.5	0.413	M10×1.25	1.54
65	120	4.724	65.1	2.563	28	1.102	1.5	0.059	48.6	32.1	1.46	14.4	UC213S6	7.5	0.295	25.4	1.000	39.7	1.563	12	0.472	M12×1.5	1.86

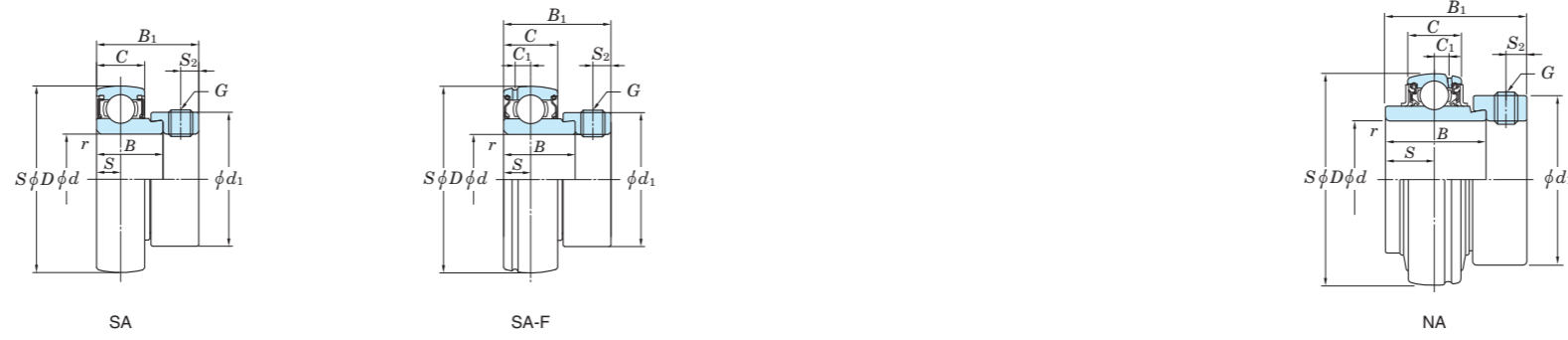
Remarks 1. S6 series product is the stainless-series insert bearing for unit.  
2. S6 series products with lock pin type are J fittings.

**SA, SA-F, NA**  
Cylindrical bore  
(with eccentric locking collar)  
 $d$  12 ~ (30) mm



Shaft Dia mm inch $d$	Dimensions										Basic Load Ratings kN		Fatigue Load Limit kN	Factor	Bearing No.	Dimensions						Set Screw Size G		Mass kg		
	$D$ mm inch	$B$ mm inch	$B_1$ mm inch		$C$ mm inch		$r$ (min.) mm inch		$C_r$	$C_{0r}$	$C_u$	$f_0$	$C_1$ mm inch	$S$ mm inch		$S_2$ mm inch		$d_1$ mm inch		mm inch						
12	40	1.575	19	0.784	28.5	1.122	12	0.472	0.6	0.024	9.55	4.80	0.218	13.2	SA201	-	-	6	0.236	4.8	0.189	28.6	1.126	M6×0.75	-	0.13
	40	1.575	19.1	0.752	28.6	1.126	13	0.512	0.6	0.024	9.55	4.80	0.218	13.2	SA201F	3.4	0.134	6.5	0.256	4.8	0.189	28.6	1.126	M6×0.75	-	0.13
	47	1.850	34.2	1.346	43.7	1.720	16	0.630	1	0.039	12.8	6.65	0.302	13.2	NA201	4	0.157	17.1	0.673	4.8	0.189	33.3	1.311	M6×0.75	-	0.29
-	40	1.575	19	0.784	28.5	1.122	12	0.472	0.6	0.024	9.55	4.80	0.218	13.2	SA201-8	-	-	6	0.236	4.8	0.189	28.6	1.126	-	1/4-28UNF	0.13
	40	1.575	19.1	0.752	28.6	1.126	13	0.512	0.6	0.024	9.55	4.80	0.218	13.2	SA201-8F	3.4	0.134	6.5	0.256	4.8	0.189	28.6	1.126	-	1/4-28UNF	0.13
	47	1.850	34.2	1.346	43.7	1.720	16	0.630	1	0.039	12.8	6.65	0.302	13.2	NA201-8	4	0.157	17.1	0.673	4.8	0.189	33.3	1.311	-	1/4-28UNF	0.29
15	40	1.575	19	0.784	28.5	1.122	12	0.472	0.6	0.024	9.55	4.80	0.218	13.2	SA202	-	-	6	0.236	4.8	0.189	28.6	1.126	M6×0.75	-	0.13
	40	1.575	19.1	0.752	28.6	1.126	13	0.512	0.6	0.024	9.55	4.80	0.218	13.2	SA202F	3.4	0.134	6.5	0.256	4.8	0.189	28.6	1.126	M6×0.75	-	0.13
	47	1.850	34.2	1.346	43.7	1.720	16	0.630	1	0.039	12.8	6.65	0.302	13.2	NA202	4	0.157	17.1	0.673	4.8	0.189	33.3	1.311	M6×0.75	-	0.27
-	40	1.575	19	0.784	28.5	1.122	12	0.472	0.6	0.024	9.55	4.80	0.218	13.2	SA202-10	-	-	6	0.236	4.8	0.189	28.6	1.126	-	1/4-28UNF	0.13
	47	1.850	34.2	1.346	43.7	1.720	16	0.630	1	0.039	12.8	6.65	0.302	13.2	NA202-10	4	0.157	17.1	0.673	4.8	0.189	33.3	1.311	-	1/4-28UNF	0.26
	40	1.575	19	0.784	28.5	1.122	12	0.472	0.6	0.024	9.55	4.80	0.218	13.2	SA203	-	-	6	0.236	4.8	0.189	28.6	1.126	M6×0.75	-	0.13
17	40	1.575	19.1	0.752	28.6	1.126	13	0.512	0.6	0.024	9.55	4.80	0.218	13.2	SA203F	3.4	0.134	6.5	0.256	4.8	0.189	28.6	1.126	M6×0.75	-	0.13
	47	1.850	34.2	1.346	43.7	1.720	16	0.630	1	0.039	12.8	6.65	0.302	13.2	NA203	4	0.157	17.1	0.673	4.8	0.189	33.3	1.311	M6×0.75	-	0.25
	47	1.850	20	0.787	29.5	1.161	14	0.551	1	0.039	12.8	6.65	0.302	13.2	SA204-12	-	-	7	0.276	4.8	0.189	33.3	1.311	-	1/4-28UNF	0.15
-	47	1.850	21.5	0.846	31	1.220	15	0.591	1	0.039	12.8	6.65	0.302	13.2	SA204-12F	3.7	0.146	7.5	0.295	4.8	0.189	33.3	1.311	-	1/4-28UNF	0.19
	47	1.850	34.2	1.346	43.7	1.720	16	0.630	1	0.039	12.8	6.65	0.302	13.2	NA204-12	4	0.157	17.1	0.673	4.8	0.189	33.3	1.311	-	1/4-28UNF	0.23
	47	1.850	20	0.787	29.5	1.161	14	0.551	1	0.039	12.8	6.65	0.302	13.2	SA204	-	-	7	0.276	4.8	0.189	33.3	1.311	M6×0.75	-	0.15
20	47	1.850	21.5	0.846	31	1.220	15	0.591	1	0.039	12.8	6.65	0.302	13.2	SA204F	3.7	0.146	7.5	0.295	4.8	0.189	33.3	1.311	M6×0.75	-	0.19
	47	1.850	34.2	1.346	43.7	1.720	16	0.630	1	0.039	12.8	6.65	0.302	13.2	NA204	4	0.157	17.1	0.673	4.8	0.189	33.3	1.311	M6×0.75	-	0.22
	52	2.047	21	0.827	30.5	1.201	15	0.591	1	0.039	14.0	7.85	0.357	13.9	SA205-14	-	-	7.5	0.295	4.8	0.189	38.1	1.500	-	1/4-28UNF	0.22
-	52	2.047	34.9	1.374	44.4	1.748	17	0.669	1	0.039	14.0	7.85	0.357	13.9	NA205-14	5	0.197	17.5	0.689	4.8	0.189	38.1	1.500	-	1/4-28UNF	0.27
	52	2.047	21	0.827	30.5	1.201	15	0.591	1	0.039	14.0	7.85	0.357	13.9	SA205-15	-	-	7.5	0.295	4.8	0.189	38.1	1.500	-	1/4-28UNF	0.22
	52	2.047	21.5	0.846	31	1.220	15	0.591	1	0.039	14.0	7.85	0.357	13.9	SA205-15F	3.7	0.146	7.5	0.295	4.8	0.189	38.1	1.500	-	1/4-28UNF	0.23
25	52	2.047	34.9	1.374	44.4	1.748	17	0.669	1	0.039	14.0	7.85	0.357	13.9	NA205-15	5	0.197	17.5	0.689	4.8	0.189	38.1	1.500	-	1/4-28UNF	0.29
	52	2.047	21	0.827	30.5	1.201	15	0.591	1	0.039	14.0	7.85	0.357	13.9	SA205	-	-	7.5	0.295	4.8	0.189	38.1	1.500	M6×0.75	-	0.22
	52	2.047	21.5	0.846	31	1.220	15	0.591	1	0.039	14.0	7.85	0.357	13.9	SA205F	3.7	0.146	7.5	0.295	4.8	0.189	38.1	1.500	M6×0.75	-	0.23
-	52	2.047	34.9	1.374	44.4	1.748	17	0.669	1	0.039	14.0	7.85	0.357	13.9	NA205	5	0.197	17.5	0.689	4.8	0.189	38.1	1.500	M6×0.75	-	0.25
	52	2.047	21	0.827	30.5	1.201	15	0.591	1	0.039	14.0	7.85	0.357	13.9	SA205-16	-	-	7.5	0.295	4.8	0.189	38.1	1.500	-	1/4-28UNF	0.22
	52	2.047	21.5	0.846	31	1.220	15	0.591	1	0.039	14.0	7.85	0.357	13.9	SA205-16F	3.7	0.146	7.5	0.295	4.8	0.189	38.1	1.500	-	1/4-28UNF	0.23
-	52	2.047	34.9	1.374	44.4	1.748	17	0.669	1	0.039	14.0	7.85	0.357	13.9	NA205-16	5	0.197	17.5	0.689	4.8	0.189	38.1	1.500	-	1/4-28UNF	0.25
	62	2.441	22	0.866	33.9	1.335	16	0.630	1	0.039	19.5	11.3	0.514	13.9	SA206-18	-	-	8	0.315	6	0.236	44.5	1.752	-	5/16-24UNF	0.3
	62	2.441	23.8	0.937	35.7	1.406	18	0.709	1	0.039	19.5	11.3	0.514	13.9	SA206-18F	4.7	0.185	9	0.354	6	0.236	44.5	1.752	-	5/16-24UNF	0.34
1 1/8	62	2.441	36.5	1.437	48.4	1.906	19	0.748	1	0.039	19.5	11.3	0.514	13.9	NA206-18	5	0.197	18.3	0.720	6	0.236	44.5	1.752	-	5/16-24UNF	0.43
	62	2.441	22	0.866	33.9	1.335	16	0.630	1	0.039	19.5	11.3	0.514	13.9	SA206	-	-	8	0.315	6	0.236	44.5	1.752	M8×1	-	0.3
	62	2.441	23.8	0.937	35.7	1.406	18	0.709	1	0.039	19.5	11.3	0.514	13.9	SA206F	4.7	0.185	9	0.354	6	0.236	44.5	1.752	M8×1	-	0.34
30	62	2.441	36.5	1.437	48.4	1.906	19	0.748	1	0.039	19.5	11.3	0.514	13.9	NA206	5	0.197	18.3	0.720	6	0.236	44.5	1.752	M8×1	-	0.41
	62	2.441	22	0.866	33.9	1.335	16	0.630	1	0.039	19.5	11.3	0.514	13.9	SA206-19	-	-	8	0.315	6	0.236	44.5	1.752	-	5/16-24UNF	0.3
	62	2.441	23.8	0.937	35.7	1.406	18	0.709	1	0.039	19.5	11.3	0.514	13.9	SA206-19F	4.7	0.185	9	0.354	6	0.236	44.5	1.752	-	5/16-24UNF	0.34
-	62	2.441	36.5	1.437	48.4	1.906	19	0.748	1	0.039	19.5	11.3	0.514	13.9	NA206-19	5	0.197	18.3	0.720	6	0.236	44.5	1.752	-	5/16-24UNF	0.41
	62	2.441	22	0.866	33.9	1.335	16	0.630	1	0.039	19.5	11.3	0.514	13.9	SA206-20	-	-	8	0.315	6	0.236	44.5	1.752	-	5/16-24UNF	0.3
	62	2.441	23.8	0.937	35.7	1.406	18	0.709	1	0.039	19.5	11.3	0.514	13.9	SA206-20F	4.7	0.185	9	0.354	6	0.236	44.5	1.752	-	5/16-24UNF	0.34
1 1/4	62	2.441	36.5	1.437	48.4	1.906	19	0.748	1	0.039	19.5	11.3	0.514	13.9	NA206-20	5	0.197	18.3	0.720	6	0.236	44.5	1.752	-	5/16-24UNF	0.38
	72	2.835	23	0.906	36.5	1.437	17	0.669	1.1	0.043	25.7	15.4	0.700	13.9	SA207-20	-	-	8.5	0.335	6.8	0.268	55.6	2.189	-	5/16-24UNF	0.5
	72	2.835	25.4	1.000	38.9	1.531	19	0.748	1.1	0.043	25.7	15.4	0.700	13.9	SA207-20F	5.7	0.224	9.5	0.335	6.8	0.268	55.6	2.189	-	5/16-24UNF	0.57
-	72	2.835	37.6	1.480	51.1	2.012	20	0.787	1.1	0.043	25.7	15.4	0.700	13.9	NA207-20	5.5	0.217	18.8	0.740	6.8	0.268	55.6	2.189	-	5/16-24UNF	0.68
	72	2.835	23	0.906	36.5	1.437	17	0.669	1.1	0.043	25.7	15.4	0.700	13.9	SA207-21	-	-	8.5	0.335	6.8	0.268	55.6	2.189	-	5/16-24UNF	0.5
	72	2.835	25.4	1.000	38.9	1.531	19	0.748	1.1	0.043	25.7	15.4	0.700	13.9	SA207-21F	5.7	0.224	9.5	0.335	6.8	0.268	55.6	2.189	-	5/16-24UNF	0.57
1 5/16	72	2.835	37.6	1.480	51.1	2.012	20	0.787	1.1																	

**SA, SA-F, NA**  
Cylindrical bore  
(with eccentric locking collar)  
*d* (30) ~ 75 mm

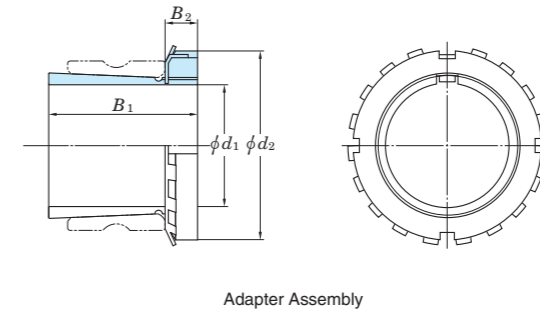
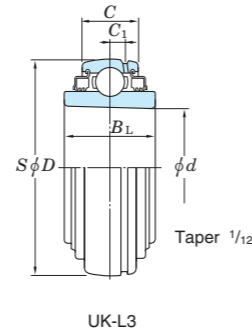
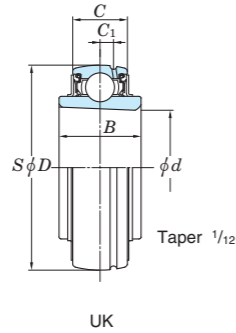


Shaft Dia mm inch <i>d</i>	Dimensions										Basic Load Ratings kN		Fatigue Load Limit kN	Factor	Bearing No.	Dimensions						Set Screw Size G		Mass kg			
	<i>D</i> mm inch	<i>B</i> mm inch	<i>B</i> mm inch		<i>B</i> <sub>1</sub> mm inch		<i>C</i> mm inch		<i>r</i> (min.) mm inch	<i>C</i> <sub>r</sub>	<i>C</i> <sub>0r</sub>	<i>C</i> <sub>u</sub>	<i>f</i> <sub>0</sub>	<i>C</i> <sub>1</sub> mm inch		<i>S</i> mm inch	<i>S</i> <sub>2</sub> mm inch		<i>d</i> <sub>1</sub> mm inch		mm inch						
-	1 3/8	72	2.835	23	0.906	36.5	1.437	17	0.669	1.1	0.043	25.7	15.4	0.700	13.9	SA207-22	-	-	8.5	0.335	6.8	0.268	55.6	2.189	-	5/16-24UNF	0.5
		72	2.835	25.4	1.000	38.9	1.531	19	0.748	1.1	0.043	25.7	15.4	0.700	13.9	SA207-22F	5.7	0.224	9.5	0.335	6.8	0.268	55.6	2.189	-	5/16-24UNF	0.57
		72	2.835	37.6	1.480	51.1	2.012	20	0.787	1.1	0.043	25.7	15.4	0.700	13.9	NA207-22	5.5	0.217	18.8	0.740	6.8	0.268	55.6	2.189	-	5/16-24UNF	0.61
35	-	72	2.835	23	0.906	36.5	1.437	17	0.669	1.1	0.043	25.7	15.4	0.700	13.9	SA207	-	-	8.5	0.335	6.8	0.268	55.6	2.189	M8x1	-	0.5
		72	2.835	25.4	1.000	38.9	1.531	19	0.748	1.1	0.043	25.7	15.4	0.700	13.9	SA207F	5.7	0.224	9.5	0.335	6.8	0.268	55.6	2.189	M8x1	-	0.57
		72	2.835	37.6	1.480	51.1	2.012	20	0.787	1.1	0.043	25.7	15.4	0.700	13.9	NA207	5.5	0.217	18.8	0.740	6.8	0.268	55.6	2.189	M8x1	-	0.61
-	1 7/16	72	2.835	23	0.906	36.5	1.437	17	0.669	1.1	0.043	25.7	15.4	0.700	13.9	SA207-23	-	-	8.5	0.335	6.8	0.268	55.6	2.189	-	5/16-24UNF	0.5
		72	2.835	25.4	1.000	38.9	1.531	19	0.748	1.1	0.043	25.7	15.4	0.700	13.9	SA207-23F	5.7	0.224	9.5	0.335	6.8	0.268	55.6	2.189	-	5/16-24UNF	0.57
		72	2.835	37.6	1.480	51.1	2.012	20	0.787	1.1	0.043	25.7	15.4	0.700	13.9	NA207-23	5.5	0.217	18.8	0.740	6.8	0.268	55.6	2.189	-	5/16-24UNF	0.58
-	1 1/2	80	3.150	27	1.063	40.5	1.595	18	0.709	1.1	0.043	29.1	17.8	0.809	14.0	SA208-24	-	-	9	0.354	6.8	0.268	60.3	2.374	-	5/16-24UNF	0.67
		80	3.150	30.2	1.189	43.7	1.720	22	0.866	1.1	0.043	29.1	17.8	0.809	14.0	SA208-24F	6.4	0.252	11	0.433	6.8	0.268	60.3	2.374	-	5/16-24UNF	0.75
		80	3.150	42.8	1.685	56.3	2.217	21	0.827	1.1	0.043	29.1	17.8	0.809	14.0	NA208-24	6	0.236	21.4	0.843	6.8	0.268	60.3	2.374	-	5/16-24UNF	0.83
-	1 9/16	80	3.150	27	1.063	40.5	1.595	18	0.709	1.1	0.043	29.1	17.8	0.809	14.0	SA208-25	-	-	9	0.354	6.8	0.268	60.3	2.374	-	5/16-24UNF	0.67
		80	3.150	30.2	1.189	43.7	1.720	22	0.866	1.1	0.043	29.1	17.8	0.809	14.0	SA208-25F	6.4	0.252	11	0.433	6.8	0.268	60.3	2.374	-	5/16-24UNF	0.75
		80	3.150	42.8	1.685	56.3	2.217	21	0.827	1.1	0.043	29.1	17.8	0.809	14.0	NA208-25	6	0.236	21.4	0.843	6.8	0.268	60.3	2.374	-	5/16-24UNF	0.79
40	-	80	3.150	27	1.063	40.5	1.595	18	0.709	1.1	0.043	29.1	17.8	0.809	14.0	SA208	-	-	9	0.354	6.8	0.268	60.3	2.374	M8x1	-	0.67
		80	3.150	30.2	1.189	43.7	1.720	22	0.866	1.1	0.043	29.1	17.8	0.809	14.0	SA208F	6.4	0.252	11	0.433	6.8	0.268	60.3	2.374	M8x1	-	0.75
		80	3.150	42.8	1.685	56.3	2.217	21	0.827	1.1	0.043	29.1	17.8	0.809	14.0	NA208	6	0.236	21.4	0.843	6.8	0.268	60.3	2.374	M8x1	-	0.78
-	1 5/8	85	3.346	30.2	1.189	43.7	1.720	22	0.866	1.1	0.043	34.1	21.3	0.968	14.0	SA209-26F	6	0.236	11	0.433	6.8	0.268	63.5	2.500	-	5/16-24UNF	0.82
		85	3.346	42.8	1.685	56.3	2.217	22	0.866	1.1	0.043	34.1	21.3	0.968	14.0	NA209-26	6	0.236	21.4	0.843	6.8	0.268	63.5	2.500	-	5/16-24UNF	0.96
-	1 11/16	85	3.346	30.2	1.189	43.7	1.720	22	0.866	1.1	0.043	34.1	21.3	0.968	14.0	SA209-27F	6	0.236	11	0.433	6.8	0.268	63.5	2.500	-	5/16-24UNF	0.82
		85	3.346	42.8	1.685	56.3	2.217	22	0.866	1.1	0.043	34.1	21.3	0.968	14.0	NA209-27	6	0.236	21.4	0.843	6.8	0.268	63.5	2.500	-	5/16-24UNF	0.91
-	1 3/4	85	3.346	30.2	1.189	43.7	1.720	22	0.866	1.1	0.043	34.1	21.3	0.968	14.0	SA209-28F	6	0.236	11	0.433	6.8	0.268	63.5	2.500	-	5/16-24UNF	0.82
		85	3.346	42.8	1.685	56.3	2.217	22	0.866	1.1	0.043	34.1	21.3	0.968	14.0	NA209-28	6	0.236	21.4	0.843	6.8	0.268	63.5	2.500	-	5/16-24UNF	0.87
45	-	85	3.346	30.2	1.189	43.7	1.720	22	0.866	1.1	0.043	34.1	21.3	0.968	14.0	SA209F	6	0.236	11	0.433	6.8	0.268	63.5	2.500	M8x1	-	0.82
		85	3.346	42.8	1.685	56.3	2.217	22	0.866	1.1	0.043	34.1	21.3	0.968	14.0	NA209	6	0.236	21.4	0.843	6.8	0.268	63.5	2.500	M8x1	-	0.85
		90	3.543	30.2	1.189	43.7	1.720	22	0.866	1.1	0.043	35.1	23.3	1.06	14.4	SA210-30F	6.6	0.260	11	0.433	6.8	0.268	69.9	2.752	-	5/16-24UNF	0.85
-	1 7/8	90	3.543	49.2	1.937	62.7	2.469	24	0.945	1.1	0.043	35.1	23.3	1.06	14.4	NA210-30	6	0.236	24.6	0.969	6.8	0.268	69.9	2.752	-	5/16-24UNF	1.08
		90	3.543	30.2	1.189	43.7	1.720	22	0.866	1.1	0.043	35.1	23.3	1.06	14.4	SA210-31F	6.6	0.260	11	0.433	6.8	0.268	69.9	2.752	-	5/16-24UNF	0.85
		90	3.543	49.2	1.937	62.7	2.469	24	0.945	1.1	0.043	35.1	23.3	1.06	14.4	NA210-31	6	0.236	24.6	0.969	6.8	0.268	69.9	2.752	-	5/16-24UNF	1.04
50	-	90	3.543	30.2	1.189	43.7	1.720	22	0.866	1.1	0.043	35.1	23.3	1.06	14.4	SA210F	6.6	0.260	11	0.433	6.8	0.268	69.9	2.752	M8x1	-	0.85
		90	3.543	49.2	1.937	62.7	2.469	24	0.945	1.1	0.043	35.1	23.3	1.06	14.4	NA210	6	0.236	24.6	0.969	6.8	0.268	69.9	2.752	M8x1	-	1.01
		100	3.937	32.4	1.276	48.4	1.906	24	0.945	1.5	0.059	43.4	29.4	1.34	14.4	SA211-32F	7	0.276	12	0.472	8	0.315	76.2	3.000	-	3/8-24UNF	1.2
-	2	100	3.937	55.5	2.185	71.4	2.811	25	0.984	1.5	0.059	43.4	29.4	1.34	14.4	NA211-32	7	0.276	27.8	1.094	8	0.315	76.2	3.000	-	3/8-24UNF	1.58
		100	3.937	32.4	1.276	48.4	1.906	24	0.945	1.5	0.059	43.4	29.4	1.34	14.4	SA211-34F	7	0.276	12	0.472	8	0.315	76.2	3.000	-	3/8-24UNF	1.2
		100	3.937	55.5	2.185	71.4	2.811	25	0.984	1.5	0.059	43.4	29.4	1.34	14.4	NA211-34	7	0.276	27.8	1.094	8	0.315	76.2	3.000	-	3/8-24UNF	1.49
55	-	100	3.937	32.4	1.276	48.4	1.906	24	0.945	1.5	0.059	43.4	29.4	1.34	14.4	SA211F	7	0.276	12	0.472	8	0.315	76.2	3.000	M10x1.25	-	1.2
		100	3.937	55.5	2.185	71.4	2.811	25	0.984	1.5	0.059	43.4	29.4	1.34	14.4	NA211	7	0.276	27.8	1.094	8	0.315	76.2	3.000	M10x1.25	-	1.39
		100	3.937	32.4	1.276	48.4	1.906	24	0.945	1.5	0.059	43.4	29.4	1.34	14.4	SA211-35F	7	0.276	12	0.472	8	0.315	76.2	3.000	-	3/8-24UNF	1.2
60	2 3/16	100	3.937	55.5	2.185	71.4	2.811	25	0.984	1.5	0.059	43.4	29.4	1.34	14.4	NA211-35	7	0.276	27.8	1.094	8	0.315	76.2	3.000	-	3/8-24UNF	1.36
		110	4.331	61.9	2.437	77.8	3.063	27	1.063	1.5	0.059	52.4	36.2	1.65	14.4	SA212-36	7.5	0.295	31	1.220	8	0.315	84.2	3.315	-	3/8-24UNF	2.03
		110	4.331	61.9	2.437	77.8	3.063	27	1.063	1.5	0.059	52.4	36.2	1.65	14.4	NA212	7.5	0.295	31	1.220	8	0.315	84.2	3.315	M10x1.25	-	1.87
65	2 1/2	120	4.724	68.2	2.685	85.7	3.374	28	1.102	1.5	0.059	57.2															

Insert bearings for units

**UK**  
Tapered bore (with adapter)

$d_1$  20 ~ (50) mm



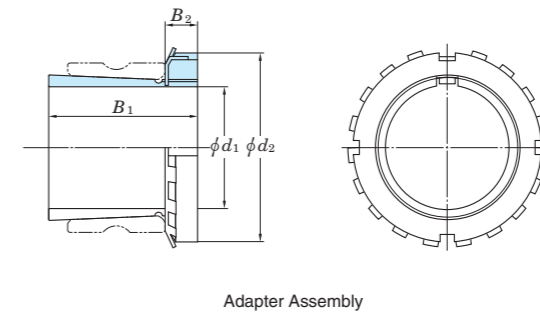
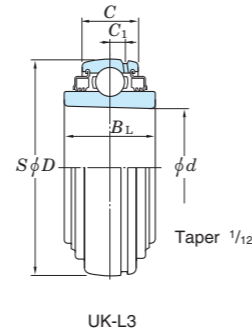
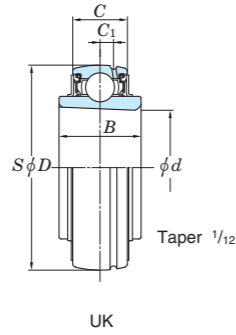
Shaft Dia. mm inch	Dimensions inch mm							Basic Load Ratings kN		Fatigue Load Limit kN	Factor $f_0$	Bearing No.		Mass kg	Adapter Assembly No.	H23 Series Adapter Dimensions inch mm			Mass kg	Sleeve No.				
	$d_1$	$d$	$D$	$B$	$B_L$	$C$	$C_1$	$C_r$	$C_{0r}$			$C_u$	Standard			L3 Type	Standard	L3 Type			Adapter Assembly No.	$B_1$	$B_2$	$d_2$
20	3/4	0.984	2.047	0.945	0.945	0.669	0.197	14.0	7.85	0.357	13.9	UK205	UK205L2	0.18	0.18	HE2305X	1.378	0.315	1.496	0.095	AE2305X			
		25	52	24	24	17	5										H2305X	35	8			38	A2305X	
	3/4	0.984	2.441	1.063	-	0.748	0.197	19.5	11.3	0.514	13.9	UKX05	-	0.27	-	HE2305X	1.378	0.315	1.496	0.095	AE2305X			
25	1	0.984	2.441	1.063	-	0.866	0.236	21.2	10.9	0.495	12.6	UK305	-	0.40	-	H2305X	1.378	0.315	1.496	0.095	AE2305X			
		25	62	27	-	19	5										H2305X	35	8			38	A2305X	
	1	1.181	2.441	1.063	1.063	0.748	0.197	19.5	11.3	0.514	13.9	UK206	UK206L3	0.29	0.29	H2306X	1.496	0.315	1.772	0.13	A2306X			
30	1 1/8	1.181	2.835	1.181	-	0.787	0.217	25.7	15.4	0.700	13.9	UKX06	-	0.43	-	H2306X	1.496	0.315	1.772	0.13	A2306X			
		30	72	30	-	20	5.5										HE2306X	38	8			45	HE2306X	
	1 1/8	1.181	2.835	1.181	-	0.945	0.256	26.7	15.0	0.682	13.3	UK306	-	0.47	-	H2306X	1.496	0.315	1.772	0.13	A2306X			
35	1 1/4	1.378	2.835	1.181	1.181	0.787	0.217	25.7	15.4	0.700	13.9	UK207	UK207L3	0.43	0.43	HS2307X	1.693	0.354	2.047	0.17	AS2307X			
		35	72	30	30	20	5.5										H2307X	43	9			52	A2307X	
	1 1/4	1.378	3.150	1.339	-	0.827	0.236	29.1	17.8	0.809	14.0	UKX07	-	0.53	-	HS2307X	1.693	0.354	2.047	0.17	AS2307X			
40	1 1/2	1.378	3.150	1.299	1.299	1.024	0.295	33.4	19.3	0.877	13.2	UK307	UK307L3	0.60	0.60	HS2307X	1.693	0.354	2.047	0.17	AS2307X			
		35	80	34	-	21	6										H2307X	43	9			52	A2307X	
	1 1/2	1.378	3.150	1.299	1.299	1.024	0.295	33.4	19.3	0.877	13.2	UK307	UK307L3	0.60	0.60	HS2307X	1.693	0.354	2.047	0.17	AS2307X			
45	1 3/8	1.575	3.150	1.339	1.339	0.827	0.236	29.1	17.8	0.809	14.0	UK208	UK208L3	0.58	0.58	HE2308X	1.811	0.394	2.283	0.22	AE2308X			
		40	80	34	34	21	6										HS2308X	46	10			58	AS2308X	
	1 3/8	1.575	3.346	1.417	-	0.866	0.236	34.1	21.3	0.968	14.0	UKX08	-	0.58	-	HE2308X	1.811	0.394	2.283	0.22	AE2308X			
50	1 7/8	1.575	3.543	1.378	1.378	1.102	0.315	40.7	24.0	1.09	13.2	UK308	UK308L3	0.80	0.80	HS2308X	1.811	0.394	2.283	0.22	AS2308X			
		40	85	36	-	22	6										H2308X	46	10			58	A2308X	
	1 7/8	1.575	3.543	1.378	1.378	1.102	0.315	40.7	24.0	1.09	13.2	UK308	UK308L3	0.80	0.80	HS2308X	1.811	0.394	2.283	0.22	AS2308X			
55	2	1.772	3.346	1.417	1.417	0.866	0.236	34.1	21.3	0.968	14.0	UK209	UK209L3	0.65	0.65	HE2309X	1.969	0.433	2.559	0.28	AE2309X			
		45	85	36	36	22	6										H2309X	50	11			65	A2309X	
	2	1.772	3.543	1.417	-	0.945	0.236	35.1	23.3	1.06	14.4	UKX09	-	0.67	-	HE2309X	1.969	0.433	2.559	0.28	AE2309X			
60	2 1/8	1.772	3.937	1.496	1.496	1.181	0.335	48.9	29.5	1.34	13.3	UK309	UK309L3	1.08	1.08	HE2309X	1.969	0.433	2.559	0.28	AE2309X			
		45	100	38	38	30	8.5										H2309X	50	11			65	A2309X	
	2 1/8	1.772	3.937	1.496	1.496	1.181	0.335	48.9	29.5	1.34	13.3	UK309	UK309L3	1.08	1.08	HE2309X	1.969	0.433	2.559	0.28	AE2309X			
70	2 3/8	1.969	3.543	1.417	1.417	0.945	0.236	35.1	23.3	1.06	14.4	UK210	UK210L3	0.65	0.65	HE2310X	2.165	0.472	2.756	0.36	AE2310X			
		50	90	36	36	24	6										H2310X	55	12			70	A2310X	
	2 3/8	1.969	3.937	1.575	-	0.984	0.276	43.4	29.4	1.34	14.4	UKX10	-	0.89	-	HE2310X	2.165	0.472	2.756	0.36	AE2310X			
80	3	1.969	4.331	1.575	1.575	1.260	0.354	62.0	38.3	1.74	13.2	UK310	UK310L3	1.38	1.38	HE2310X	2.165	0.472	2.756	0.36	AE2310X			
		50	110	40	40	32	9										H2310X	55	12			70	A2310X	
	3	1.969	4.331	1.575	1.575	1.260	0.354	62.0	38.3	1.74	13.2	UK310	UK310L3	1.38	1.38	HE2310X	2.165	0.472	2.756	0.36	AE2310X			
90	3 1/2	2.165	3.937	1.575	1.575	0.984	0.276	43.4	29.4	1.34	14.4	UK211	UK211L3	1.09	1.09	HS2311X	2.323	0.472	2.953	0.42	AS2311X			
		55	100	40	40	25	7										H2311X	59	12			75	AE2311X	
	3 1/2	2.165	4.331	1.850	-	1.063	0.295	52.4	36.2	1.65	14.4	UKX11	-	1.15	-	HS2311X	2.323	0.472	2.953	0.42	AS2311X			
100	4	2.165	4.331	1.850	-	1.063	0.295	52.4	36.2	1.65	14.4	UKX11	-	1.15	-	H2311X	2.323	0.472	2.953	0.42	A2311X			
		4	2.165	4.331	1.850	-	1.063	0.295	52.4	36.2	1.65	14.4	UKX11	-	1.15	-	H2311X	2.323	0.472	2.953	0.42	A2311X		
	4	2.165	4.331	1.850	-	1.063	0.295	52.4	36.2	1.65	14.4	UKX11	-	1.15	-	HE2311X	2.323	0.472	2.953	0.42	AE2311X			

Remarks 1. In Part No. of unit with adapters, Part No. of applicable adapters follow the Part No. shown in the dimensional tables.  
(Example of Part No. : UK206 + H2306X, UK206L3 + H2306X)

- Adapter series applicable to UK200 series  
UK200..... H2300X series  
UK200L3 (or L2) ..... H2300X series
- UK205 is the double-lip seal type product (L2).
- Inch bore diameter series adapters are also available (see the dimensional tables of adapters assemblies).
- Of all the products, the lock pin types are H fittings.

Insert bearings for units

**UK**  
Tapered bore (with adapter)  
 $d_1$  (50) ~ (90) mm



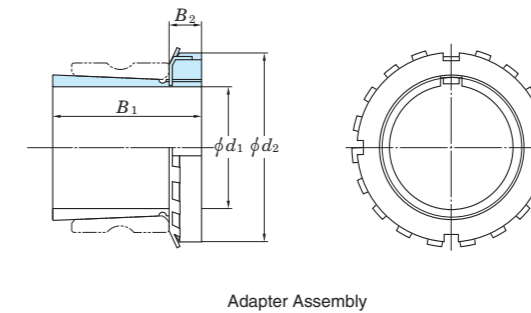
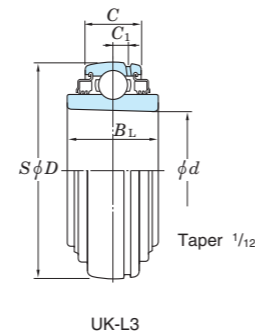
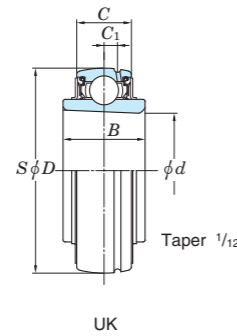
Shaft Dia. mm inch	Dimensions inch mm						Basic Load Ratings kN		Fatigue Load Limit kN	Factor $f_0$	Bearing No.		Mass kg	Adapter Assembly No.	H23 Series Adapter Dimensions inch mm			Mass kg	Sleeve No.
	$d_1$	$d$	$D$	$B$	$B_L$	$C$	$C_1$	$C_r$			$C_{or}$	$C_u$			Standard	L3 Type	Standard		
50	1 7/8	2.165	4.724	1.693	1.693	1.339	0.394	71.6	45.0	2.05	13.2	UK311	UK311L3	HS2311X	2.323	0.472	2.953	0.42	AS2311X
	2	55	120	43	43	34	10							H2311X	59	12	75		A2311X
55	2 1/8	2.362	4.331	1.850	1.850	1.063	0.295	52.4	36.2	1.65	14.4	UK212	UK212L3	HS2312X	2.441	0.512	3.150	0.48	AS2312X
	2 1/8	60	110	47	47	27	7.5							H2312X	62	13	80		A2312X
		60	120	47	-	1.102	0.295	57.2	40.1	1.82	14.4	UKX12	-	HS2312X	2.441	0.512	3.150	0.48	AS2312X
	2 1/8	60	130	47	47	36	11.5	81.9	52.2	2.37	13.2	UK312	UK312L3	H2312X	62	13	80	0.48	A2312X
60	2 1/4	2.559	4.724	1.850	1.850	1.102	0.295	57.2	40.1	1.82	14.4	UK213	UK213L3	HE2313X	2.559	0.551	3.346	0.56	AE2313X
	2 3/8	65	120	47	47	28	7.5							H2313X	65	14	85		A2313X
	2 1/4	2.559	4.921	2.008	-	1.181	0.354	62.2	44.1	2.01	14.5	UKX13	-	HS2313X	2.559	0.551	3.346	0.56	AS2313X
	2 3/8	65	125	51	-	30	9							H2313X	65	14	85	0.56	A2313X
	2 1/4	2.559	5.512	1.929	1.929	1.496	0.472	92.7	59.9	2.68	13.2	UK313	UK313L3	HE2313X	2.559	0.551	3.346	0.56	AE2313X
	2 3/8	65	140	49	49	38	12							H2313X	65	14	85	0.56	AS2313X
65	2 1/2	2.953	5.118	2.008	2.008	1.260	0.354	67.4	48.3	2.17	14.5	UK215	UK215L3	HE2315X	2.874	0.591	3.858	1.05	AE2315X
	2 1/2	75	130	51	51	32	9							H2315X	73	15	98		A2315X
		75	140	55	-	1.299	0.354	72.7	53.0	2.30	14.6	UKX15	-	HE2315X	2.874	0.591	3.858	1.05	AE2315X
2 1/2	75	160	55	55	42	14.5	113	77.2	3.24	13.2	UK315	UK315L3	H2315X	73	15	98	1.05	A2315X	
70	2 3/4	3.150	5.512	2.165	2.165	1.299	0.354	72.7	53.0	2.30	14.6	UK216	UK216L3	HE2316X	3.071	0.669	4.134	1.3	AE2316X
	2 3/4	80	140	55	55	33	9							H2316X	78	17	105		A2316X
		80	150	57	-	1.378	0.394	84.0	61.9	2.60	14.5	UKX16	-	HE2316X	3.071	0.669	4.134	1.3	AE2316X
2 3/4	80	170	55	55	44	15	123	86.7	3.53	13.3	UK316	UK316L3	H2316X	78	17	105	1.3	A2316X	
75	3	3.346	5.906	2.244	2.244	1.378	0.394	84.0	61.9	2.60	14.5	UK217	UK217L3	H2317X	3.228	0.709	4.331	1.45	A2317X
	3	85	150	57	57	35	10							HE2317X	82	18	110		AE2317X
		85	160	63	-	1.496	0.433	96.1	71.5	2.91	14.5	UKX17	-	H2317X	3.228	0.709	4.331	1.45	A2317X
3	85	180	60	60	46	15	133	96.8	3.82	13.3	UK317	UK317L3	HE2317X	3.228	0.709	4.331	1.45	AE2317X	
80	-	3.543	6.299	2.480	2.480	1.496	0.433	96.1	71.5	2.91	14.5	UK218	UK218L3	H2318X	3.386	0.709	4.724	1.7	A2318X
	-	90	160	63	63	38	11							H2318X	86	18	120		A2318X
		90	170	65	-	1.575	0.453	109	81.9	3.23	14.4	UKX18	-	H2318X	3.386	0.709	4.724	1.7	A2318X
-	90	190	60	60	48	15.5	143	107	4.11	13.3	UK318	UK318L3	H2318X	3.386	0.709	4.724	1.7	A2318X	
85	3 1/4	3.740	7.874	2.598	2.598	1.969	0.650	153	119	4.45	13.3	UK319	UK319L3	H2319X	3.543	0.748	4.921	1.95	A2319X
90	3 1/2	95	200	66	66	50	16.5								90	19	125		
		100	190	69	-	1.693	0.512	133	105	3.91	14.4	UKX20	-	HE2320X	3.819	0.787	5.118	2.2	AE2320X
														H2320X	97	20	130		A2320X

Remarks 1. In Part No. of unit with adapters, Part No. of applicable adapters follow the Part No. shown in the dimensional tables.  
(Example of Part No. : UK206 + H2306X, UK206L3 + H2306X)

- Adapter series applicable to UK200 series  
UK200..... H2300X series  
UK200L3 (or L2) ..... H2300X series
- UK205 is the double-lip seal type product (L2).
- Inch bore diameter series adapters are also available (see the dimensional tables of adapters assemblies).
- Of all the products, the lock pin types are H fittings.



**UK**  
**Tapered bore (with adapter)**  
 $d_1$  (90) ~ 125 mm

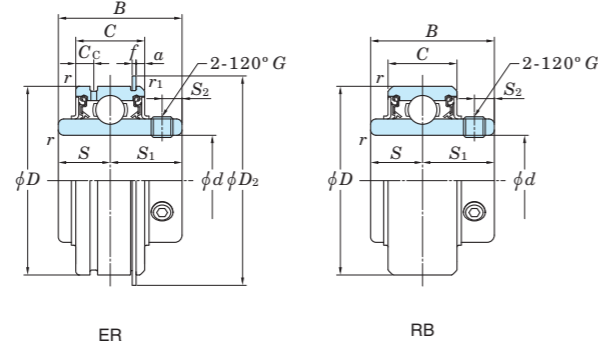


Shaft Dia. mm    inch	Dimensions inch mm							Basic Load Ratings kN		Fatigue Load Limit kN	Factor	Bearing No.		Mass kg	Adapter Assembly No.	H23 Series Adapter Dimensions inch mm			Mass kg	Sleeve No.
	$d_1$	$d$	$D$	$B$	$B_L$	$C$	$C_1$	$C_r$	$C_{0r}$	$C_u$	$f_0$	Standard	L3 Type			Standard	L3 Type	$B_1$		
90 3 1/2	3.937	8.465	2.677	2.677	2.126	0.709	173	141	5.08	13.2	UK320	UK320L3	8.70	8.70	HE2320X	3.819	0.787	5.118	2.2	AE2320X
	100	215	68	68	54	18									H2320X	97	20	130		
100 4	4.331	9.449	3.071	3.071	2.362	0.787	205	180	6.15	13.2	UK322	UK322L3	12.2	12.2	H2322X	4.134	0.827	5.709	2.75	A2322X
	110	240	78	78	60	20									HE2322X	105	21	145		
110 -	4.724	10.236	3.425	3.425	2.520	0.827	207	185	6.10	13.5	UK324	UK324L3	16.1	16.1	H2324	4.409	0.866	6.102	3.2	A2324
	120	260	87	87	64	21									H2324	112	22	155		
115 4 1/2	5.118	11.024	3.425	3.425	2.677	0.866	229	214	6.79	13.6	UK326	UK326L3	18.8	18.8	HE2326	4.764	0.906	6.496	4.6	AE2326
	130	280	87	87	68	22									H2326	121	23	165		
125 -	5.512	11.811	3.819	3.819	2.835	0.906	253	246	7.54	13.6	UK328	UK328L3	23.9	23.9	H2328	5.157	0.945	7.087	5.5	A2328
	140	300	97	97	72	23									H2328	131	24	180		

Remarks 1. In Part No. of unit with adapters, Part No. of applicable adapters follow the Part No. shown in the dimensional tables.  
 (Example of Part No. : UK206 + H2306X, UK206L3 + H2306X)

2. Adapter series applicable to UK200 series  
 UK200..... H2300X series  
 UK200L3 (or L2) ..... H2300X series
3. UK205 is the double-lip seal type product (L2).
4. Inch bore diameter series adapters are also available (see the dimensional tables of adapters assemblies).
5. Of all the products, the lock pin types are H fittings.

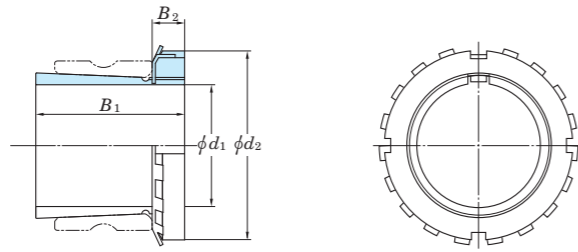
**ER, RB**  
**Cylindrical bore (with set screws),**  
**Cylindrical outside surface**  
*d* 12 ~ 60 mm



Shaft Dia. mm inch	Dimensions						Basic Load Ratings		Fatigue Load Limit	Factor	Bearing No.		Dimensions							Set Screw Size		Mass	
	<i>d</i>	<i>D</i>	<i>B</i>	<i>C</i>	<i>r</i> (min.)	<i>r</i> <sub>1</sub> (min.)	<i>C</i> <sub>r</sub>	<i>C</i> <sub>0r</sub>	<i>C</i> <sub>u</sub>	<i>f</i> <sub>0</sub>	(ER)	(RB)	<i>S</i>	<i>S</i> <sub>1</sub>	<i>S</i> <sub>2</sub>	<i>C</i> <sub>c</sub>	<i>a</i>	<i>f</i>	<i>D</i> <sub>2</sub>	mm	inch	(ER)	(RB)
12 1/2	1.850 47	1.220 31	0.630 16	0.024 0.6	0.020 0.5	12.8	6.65	0.302	13.2	ER201 ER201-8	RB201 RB201-8	0.500 12.7	0.720 18.3	0.197 5	0.157 4	0.094 2.38	0.042 1.07	2.067 52.5	M6×0.75	—	0.27	0.27	
																			—	1/4-28UNF	0.27	0.27	
																			M6×0.75	—	0.25	0.25	
15 5/8	1.850 47	1.220 31	0.630 16	0.039 1	0.020 0.5	12.8	6.65	0.302	13.2	ER202 ER202-10	RB202 RB202-10	0.500 12.7	0.720 18.3	0.197 5	0.157 4	0.094 2.38	0.042 1.07	2.067 52.5	M6×0.75	—	0.24	0.24	
																			—	1/4-28UNF	0.22	0.22	
																			M6×0.75	—	0.22	0.22	
17 3/4	1.850 47	1.220 31	0.630 16	0.039 1	0.020 0.5	12.8	6.65	0.302	13.2	ER203 ER203	RB203 RB203	0.500 12.7	0.720 18.3	0.197 5	0.157 4	0.094 2.38	0.042 1.07	2.067 52.5	M6×0.75	—	0.22	0.22	
																			—	1/4-28UNF	0.22	0.22	
																			M6×0.75	—	0.22	0.22	
20 3/4	1.850 47	1.220 31	0.630 16	0.039 1	0.020 0.5	12.8	6.65	0.302	13.2	ER204-12 ER204	RB204-12 RB204	0.500 12.7	0.720 18.3	0.197 5	0.157 4	0.094 2.38	0.042 1.07	2.067 52.5	M6×0.75	—	0.22	0.22	
																			—	1/4-28UNF	0.22	0.22	
																			M6×0.75	—	0.22	0.22	
25 1	2.047 52	1.343 34.1	0.748 19	0.039 1	0.020 0.5	14.0	7.85	0.357	13.9	ER205-14 ER205-15	RB205-14 RB205-15	0.563 14.3	0.780 19.8	0.217 5.5	0.197 5	0.094 2.38	0.042 1.07	2.272 57.7	M6×0.75	—	0.3	0.29	
																			—	1/4-28UNF	0.28	0.27	
																			M6×0.75	—	0.27	0.26	
25 1	2.047 52	1.343 34.1	0.748 19	0.039 1	0.020 0.5	14.0	7.85	0.357	13.9	ER205 ER205-16	RB205 RB205-16	0.563 14.3	0.780 19.8	0.217 5.5	0.197 5	0.094 2.38	0.042 1.07	2.272 57.7	M6×0.75	—	0.27	0.26	
																			—	1/4-28UNF	0.27	0.26	
																			M6×0.75	—	0.27	0.26	
30 1 1/8	2.441 62	1.500 38.1	0.866 22	0.039 1	0.020 0.5	19.5	11.3	0.514	13.9	ER206-18 ER206	RB206-18 RB206	0.626 15.9	0.874 22.2	0.236 6	0.217 5.5	0.125 3.18	0.065 1.65	2.657 67.5	M6×0.75	—	0.41	0.4	
																			—	1/4-28UNF	0.39	0.38	
																			M6×0.75	—	0.39	0.38	
30 1 1/8	2.441 62	1.500 38.1	0.866 22	0.039 1	0.020 0.5	19.5	11.3	0.514	13.9	ER206-19 ER206-20	RB206-19 RB206-20	0.626 15.9	0.874 22.2	0.236 6	0.217 5.5	0.125 3.18	0.065 1.65	2.657 67.5	M6×0.75	—	0.37	0.36	
																			—	1/4-28UNF	0.37	0.36	
																			M6×0.75	—	0.37	0.36	
35 1 1/4	2.835 72	1.689 42.9	0.945 24	0.043 1.1	0.020 0.5	25.7	15.4	0.700	13.9	ER207-20 ER207-21	RB207-20 RB207-21	0.689 17.5	1.000 25.4	0.256 6.5	0.217 5.5	0.125 3.18	0.065 1.65	3.087 78.4	—	5/16-24UNF	0.69	0.68	
																			—	5/16-24UNF	0.66	0.65	
																			—	5/16-24UNF	0.64	0.63	
35 1 1/4	2.835 72	1.689 42.9	0.945 24	0.043 1.1	0.020 0.5	25.7	15.4	0.700	13.9	ER207 ER207-22	RB207 RB207-22	0.689 17.5	1.000 25.4	0.256 6.5	0.217 5.5	0.125 3.18	0.065 1.65	3.087 78.4	M8×1	—	0.63	0.62	
																			—	5/16-24UNF	0.63	0.62	
																			—	5/16-24UNF	0.61	0.6	
40 1 1/2	3.150 80	1.937 49.2	1.102 28	0.043 1.1	0.020 0.5	29.1	17.8	0.809	14.0	ER208-24 ER208-25	RB208-24 RB208-25	0.748 19	1.189 30.2	0.315 8	0.236 6	0.125 3.18	0.065 1.65	3.402 86.4	—	5/16-24UNF	0.85	0.84	
																			—	5/16-24UNF	0.82	0.81	
																			M8×1	—	0.81	0.78	
40 1 1/2	3.150 80	1.937 49.2	1.102 28	0.043 1.1	0.020 0.5	29.1	17.8	0.809	14.0	ER208 ER208	RB208 RB208	0.748 19	1.189 30.2	0.315 8	0.236 6	0.125 3.18	0.065 1.65	3.402 86.4	M8×1	—	0.81	0.78	
																			—	5/16-24UNF	0.81	0.78	
																			M8×1	—	0.81	0.78	
45 1 5/8	3.346 85	1.937 49.2	1.102 28	0.043 1.1	0.020 0.5	34.1	21.3	0.968	14.0	ER209-26 ER209-27	— —	0.748 19	1.189 30.2	0.315 8	0.236 6	0.125 3.18	0.065 1.65	3.598 91.4	—	5/16-24UNF	1.0	—	
																			—	5/16-24UNF	0.96	—	
																			—	5/16-24UNF	0.92	—	
45 1 5/8	3.346 85	1.937 49.2	1.102 28	0.043 1.1	0.020 0.5	34.1	21.3	0.968	14.0	ER209-28 ER209	— —	0.748 19	1.189 30.2	0.315 8	0.236 6	0.125 3.18	0.065 1.65	3.598 91.4	M8×1	—	0.90	—	
																			—	5/16-24UNF	0.90	—	
																			M8×1	—	0.90	—	
50 2	3.543 90	2.031 51.6	1.102 28	0.043 1.1	0.020 0.5	35.1	23.3	1.06	14.4	ER210-30 ER210-31	— —	0.748 19	1.283 32.6	0.354 9	0.295 7.5	0.125 3.18	0.095 2.41	3.791 96.3	—	3/8-24UNF	1.05	—	
																			—	3/8-24UNF	1.0	—	
																			M10×1.25	—	0.98	—	
50 2	3.543 90	2.031 51.6	1.102 28	0.043 1.1	0.020 0.5	35.1	23.3	1.06	14.4	ER210 ER210-32	— —	0.748 19	1.283 32.6	0.354 9	0.295 7.5	0.125 3.18	0.095 2.41	3.791 96.3	—	3/8-24UNF	0.96	—	
																			—	3/8-24UNF	0.96	—	
																			M10×1.25	—	0.96	—	
55 2 1/8	3.937 100	2.189 55.6	1.181 30	0.059 1.5	0.020 0.5	43.4	29.4	1.34	14.4	ER211-32 ER211-34	— —	0.874 22.2	1.315 33.4	0.354 9	0.295 7.5	0.125 3.18	0.095 2.41	4.185 106.3	—	3/8-24UNF	1.56	—	
																			—	3/8-24UNF	1.45	—	
																			M10×1.25	—	1.41	—	
55 2 1/8	3.937 100	2.189 55.6	1.181 30	0.059 1.5	0.020 0.5	43.4	29.4	1.34	14.4	ER211 ER211-35	— —	0.874 22.2	1.315 33.4	0.354 9	0.295 7.5	0.125 3.18	0.095 2.41	4.185 106.3	—	3/8-24UNF	1.39	—	
																			—	3/8-24UNF	1.39	—	
																			M10×1.25	—	1.39	—	
60 2 3/8	4.331 110	2.563 65.1	1.260 32	0.059 1.5	0.020 0.5	52.4	36.2	1.65	14.4	ER212-36 ER212	— —	1.000 25.4	1.563 39.7	0.413 10.5	0.295 7.5	0.125 3.18	0.095 2.41	4.583 116.4	—	3/8-24UNF	2.02	—	
																			—	3/8-24UNF	1.89	—	
																			M10×1.25	—	1.87	—	
60 2 3/8	4.331 110	2.563 65.1	1.260 32	0.059 1.5	0.020 0.5	52.4	36.2	1.65	14.4	ER212-38 ER212-39	— —	1.000 25.4	1.563 39.7	0.413 10.5	0.295 7.5	0.125 3.18	0.095 2.41	4.583 116.4	—	3/8-24UNF	1.8	—	
																			—	3/8-24UNF	1.8	—	
																			M10×1.25	—	1.8	—	

**H2300X**

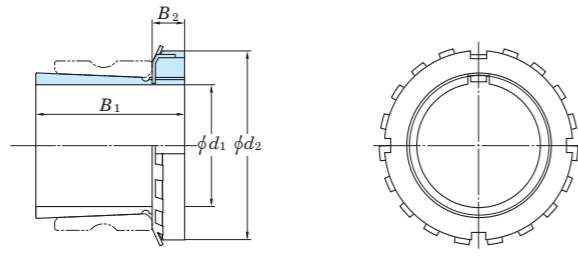
$d_1$  20 ~ 110 mm



mm	Shaft Dia. $d_1$				Dimensions			Adapter Assembly No.				Sleeve No.				Lock Nut No.	Washer No.	Mass kg				
	(H)	(HE)	(HS)	(HA)	$B_1$	$B_2$	$d_2$	(H)	(HE)	(HS)	(HA)	(H)	(HE)	(HS)	(HA)			(H)	(HE)	(HS)	(HA)	
20	—	—	—	—	1.378	0.315	1.496	H2305X	—	—	—	—	A2305X	—	—	—	AN05	AW05X	0.095	—	—	—
	—	3/4	—	—	35	8	38	—	HE2305X	—	—	—	—	—	—	—	AN05	AW05X	—	0.085	—	—
25	—	—	—	—	1.496	0.315	1.772	H2306X	—	—	—	—	A2306X	—	—	—	AN06	AW06X	0.13	—	—	—
	1	—	—	—	38	8	45	—	HE2306X	—	—	—	—	—	—	—	AN06	AW06X	—	0.12	—	—
	—	—	7/8	—	—	—	—	—	—	HS2306X	—	—	—	—	—	—	—	—	—	—	0.16	—
	—	—	—	15/16	—	—	—	—	—	—	—	HA2306X	—	—	—	—	—	—	—	—	—	—
30	—	—	—	—	1.693	0.354	2.047	H2307X	—	—	—	—	A2307X	—	—	—	AN07	AW07X	0.17	—	—	—
	—	—	—	1 3/16	43	9	52	—	—	—	HA2307X	—	—	—	—	—	—	—	—	—	—	0.17
35	—	—	—	—	1.811	0.394	2.283	H2308X	—	—	—	—	A2308X	—	—	—	AN08	AW08X	0.22	—	—	—
	—	1 1/4	—	—	46	10	58	—	HE2308X	—	—	—	—	—	—	—	AN08	AW08X	—	0.28	—	—
40	—	—	—	—	1.969	0.433	2.559	H2309X	—	—	—	—	A2309X	—	—	—	AN09	AW09X	0.28	—	—	—
	1 1/2	—	—	—	50	11	65	—	HE2309X	—	—	—	—	—	—	—	AN09	AW09X	—	0.32	—	—
	—	—	—	1 7/16	—	—	—	—	—	—	HA2309X	—	—	—	—	—	—	—	—	—	—	0.35
45	—	—	—	—	2.165	0.472	2.756	H2310X	—	—	—	—	A2310X	—	—	—	AN10	AW10X	0.36	—	—	—
	1 3/4	—	—	—	55	12	70	—	HE2310X	—	—	—	—	—	—	—	AN10	AW10X	—	0.37	—	—
	—	—	1 5/8	—	—	—	—	—	—	HS2310X	—	—	—	—	—	—	—	—	—	—	0.46	—
	—	—	—	1 11/16	—	—	—	—	—	—	HA2310X	—	—	—	—	—	—	—	—	—	—	0.42
50	—	—	—	—	2.323	0.472	2.953	H2311X	—	—	—	—	A2311X	—	—	—	AN11	AW11X	0.42	—	—	—
	2	—	—	—	59	12	75	—	HE2311X	—	—	—	—	—	—	—	AN11	AW11X	—	0.40	—	—
	—	—	1 7/8	—	—	—	—	—	—	HS2311X	—	—	—	—	—	—	AN11	AW11X	—	—	0.50	—
	—	—	—	1 15/16	—	—	—	—	—	—	HA2311X	—	—	—	—	—	—	—	—	—	—	0.45
55	—	—	—	—	2.441	0.512	3.150	H2312X	—	—	—	—	A2312X	—	—	—	AN12	AW12X	0.48	—	—	—
	—	—	2 1/8	—	62	13	80	—	—	HS2312X	—	—	—	—	—	—	AN12	AW12X	—	—	0.52	—
60	—	—	—	—	2.559	0.551	3.346	H2313X	—	—	—	—	A2313X	—	—	—	AN13	AW13X	0.56	—	—	—
	2 1/4	—	—	—	65	14	85	—	HE2313X	—	—	—	—	—	—	—	AN13	AW13X	—	0.69	—	—
	—	—	2 3/8	—	—	—	—	—	—	HS2313X	—	—	—	—	—	—	AN13	AW13X	—	—	0.55	—
	—	—	—	2 3/16	—	—	—	—	—	—	HA2313X	—	—	—	—	—	—	—	—	—	—	0.76
65	—	—	—	—	2.874	0.591	3.858	H2315X	—	—	—	—	A2315X	—	—	—	AN15	AW15X	1.05	—	—	—
	2 1/2	—	—	—	73	15	98	—	HE2315X	—	—	—	—	—	—	—	AN15	AW15X	—	1.15	—	—
	—	—	—	2 7/16	—	—	—	—	—	—	HA2315X	—	—	—	—	—	—	—	—	—	—	1.15
70	—	—	—	—	3.071	0.669	4.134	H2316X	—	—	—	—	A2316X	—	—	—	AN16	AW16X	1.3	—	—	—
	—	—	—	2 11/16	78	17	105	—	HE2316X	—	—	—	—	—	—	—	AN16	AW16X	—	1.3	—	—
75	—	—	—	—	3.228	0.709	4.331	H2317X	—	—	—	—	A2317X	—	—	—	AN17	AW17X	1.45	—	—	—
	3	—	—	—	82	18	110	—	HE2317X	—	—	—	—	—	—	—	AN17	AW17X	—	1.35	—	—
	—	—	—	2 15/16	—	—	—	—	—	—	HA2317X	—	—	—	—	—	—	—	—	—	—	1.48
80	—	—	—	—	3.386	0.709	4.724	H2318X	—	—	—	—	A2318X	—	—	—	AN18	AW18X	1.7	—	—	—
	3 1/4	—	—	—	86	18	120	—	HE2318X	—	—	—	—	—	—	—	—	—	—	1.49	—	—
	—	—	—	3 3/16	—	—	—	—	—	—	HA2318X	—	—	—	—	—	—	—	—	—	—	1.62
85	—	—	—	—	3.543	0.748	4.921	H2319X	—	—	—	—	A2319X	—	—	—	AN19	AW19X	1.95	—	—	—
	—	—	—	—	90	19	125	—	HE2319X	—	—	—	—	—	—	—	AN19	AW19X	—	2.15	—	—
90	—	—	—	—	3.819	0.787	5.118	H2320X	—	—	—	—	A2320X	—	—	—	AN20	AW20X	2.2	—	—	—
	—	—	—	3 7/16	97	20	130	—	HE2320X	—	—	—	—	—	—	—	AN20	AW20X	—	2.3	—	—
100	—	—	—	—	4.134	0.827	5.709	H2322X	—	—	—	—	A2322X	—	—	—	AN22	AW22X	2.75	—	—	—
	4	—	—	—	105	21	145	—	HE2322X	—	—	—	—	—	—	—	AN22	AW22X	—	2.55	—	—
110	—	—	—	—	4.409	0.866	6.102	H2324	—	—	—	—	A2324	—	—	—	AN24	AW24	3.2	—	—	—
	4 1/4	—	—	—	112	22	155	—	HE2324	—	—	—	—	—	—	—	—	—	—	3.5	—	—
	—	—	—	4 3/16	—	—	—	—	—	—	HA2324	—	—	—	—	—	—	—	—	—	—	3.79

**H2300X**

$d_1$  115 ~ 125 mm



mm	Shaft Dia. $d_1$			Dimensions			Adapter Assembly No.				Sleeve No.				Lock Nut No.	Washer No.	Mass					
	(H)	(HE)	(HS)	(HA)	$B_1$	$B_2$	$d_2$	(H)	(HE)	(HS)	(HA)	(H)	(HE)	(HS)			(HA)	(H)	(HE)	(HS)	(HA)	
115	-	-	-	-	4.764	0.906	6.496	<b>H2326</b>	-	-	-	-	A2326	-	-	-	AN26	AW26	4.6	-	-	-
	4 1/2	-	-	-	121	23	165	-	<b>HE2326</b>	-	-	-	-	AE2326	-	-	AN26	AW26	-	4.7	-	-
	-	-	-	4 7/16	-	-	-	-	-	-	-	<b>HA2326</b>	-	-	-	AA2326	-	-	-	-	-	-
125	-	-	-	-	5.157	0.945	7.087	<b>H2328</b>	-	-	-	-	A2328	-	-	-	AN28	AW28	5.5	-	-	-
	5	-	-	-	131	24	180	-	<b>HE2328</b>	-	-	-	-	AE2328	-	-	-	-	-	5.1	-	-
	-	-	-	4 15/16	-	-	-	-	-	-	-	<b>HA2328</b>	-	-	-	AA2328	-	-	-	-	-	-

16 Parts and accessories

16.1 Part No. of pressed steel covers

Table 16.1 Part No. of pressed steel covers for UC type bearings

Bearing No.	Shaft dia. (mm)	Pressed steel cover No.	
		Open end type	Closed end type
UC201	12	C- 4×12	D- 4
UC202	15	C- 4×15	D- 4
UC203	17	C- 4×17	D- 4
UC204	20	C- 4×20	D- 4
UC205	25	C- 5×25	D- 5
UC206	30	C- 6×30	D- 6
UC207	35	C- 7×35	D- 7
UC208	40	C- 8×40	D- 8
UC209	45	C- 9×45	D- 9
UC210	50	C-10×50	D-10
UC211	55	C-11×55	D-11
UC212	60	C-12×60	D-12
UC213	65	C-13×65	D-13
UC214	70	C-14×70	D-14
UC215	75	C-15×75	D-15
UC216	80	C-16×80	D-16
UC217	85	C-17×85	D-17
UC218	90	C-18×90	D-18
<hr/>			
UCX05	25	C- 6×25	D- 6
UCX06	30	C- 7×30	D- 7
UCX07	35	C- 8×35	D- 8
UCX08	40	C- 9×40	D- 9
UCX09	45	C-10×45	D-10
UCX10	50	C-11×50	D-11
UCX11	55	C-12×55	D-12
UCX12	60	C-13×60	D-13
UCX13	65	C-14×65	D-14
UCX14	70	C-15×70	D-15
UCX15	75	C-16×75	D-16
UCX16	80	C-17×80	D-17
UCX17	85	C-18×85	D-18

Table 16.2 Part No. of pressed steel covers for UK type bearings

Bearing No.	Shaft dia. (mm)	Pressed steel cover No.	
		Open end type	Closed end type
-			
-			
-			
-			
UK205	20	C- 5×20	D- 5
UK206	25	C- 6×25	D- 6
UK207	30	C- 7×30	D- 7
UK208	35	C- 8×35	D- 8
UK209	40	C- 9×40	D- 9
UK210	45	C-10×45	D-10
UK211	50	C-11×50	D-11
UK212	55	C-12×55	D-12
UK213	60	C-13×60	D-13
-			
UK215	65	C-15×65	D-15
UK216	70	C-16×70	D-16
UK217	75	C-17×75	D-17
UK218	80	C-18×80	D-18
<hr/>			
UKX05	20	C- 6×20	D- 6
UKX06	25	C- 7×25	D- 7
UKX07	30	C- 8×30	D- 8
UKX08	35	C- 9×35	D- 9
UKX09	40	C-10×40	D-10
UKX10	45	C-11×45	D-11
UKX11	50	C-12×50	D-12
UKX12	55	C-13×55	D-13
UKX13	60	C-14×60	D-14
-			
UKX15	65	C-16×65	D-16
UKX16	70	C-17×70	D-17
UKX17	75	C-18×75	D-18

Remark In the Part No. of the pressed steel covers for shouldered shaft, shaft diameter follows the basic code of the cover. For example, Part No. of the cover for a shaft with 30 mm diameter for UC206 is C-6×30.

## 16.2 Part No. of cast iron covers

**Table 16.3 Part No. of cast iron covers for UC type bearings**

Bearing No.	Shaft dia. (mm)	Cast iron cover No.		Mounting bolt (reference)
		Open end type	Closed end type	
UC204	20	204FC×20 (204FC3×20) <sup>1)</sup>	204FD (204FD3) <sup>1)</sup>	M3×0.5 (M4×0.7)
UC205	25	205FC×25 (205FC3×25) <sup>1)</sup>	205FD (205FD3) <sup>1)</sup>	M3×0.5 (M4×0.7)
UC206	30	206FC×30	206FD	M4×0.7
UC207	35	207FC×35	207FD	M4×0.7
UC208	40	208FC×40	208FD	
UC209	45	209FC×45	209FD	
UC210	50	210FC×50	210FD	M4×0.7
UC211	55	211FC×55	211FD	
UC212	60	212FC×60	212FD	
UC213	65	213FC×65	213FD	M4×0.7
UC214	70	214FC×70	214FD	
UC215	75	215FC×75	215FD	
UC216	80	216FC×80	216FD	M5×0.8
UC217	85	217FC×85	217FD	
UC218	90	218FC×90	218FD	
UCX18	90	X18C×90 (X18C3×90) <sup>2)</sup>	X18D (X18D3) <sup>2)</sup>	M5×0.8
UCX20	100	X20C×100 (X20C3×100) <sup>2)</sup>	X20D (X20D3) <sup>2)</sup>	
UC305	25	305C×25	305D	M4×0.7
UC306	30	306C×30	306D	
UC307	35	307C×35	307D	
UC308	40	308C×40	308D	M5×0.8
UC309	45	309C×45	309D	
UC310	50	310C×50	310D	
UC311	55	311C×55	311D	M5×0.8
UC312	60	312C×60	312D	
UC313	65	313C×65	313D	
UC314	70	314C×70	314D	M5×0.8
UC315	75	315C×75	315D	
UC316	80	316C×80	316D	
UC317	85	317C×85	317D	M5×0.8
UC318	90	318C×90	318D	
UC319	95	319C×95	319D	
UC320	100	320C×100	320D	M5×0.8
UC321	105	321C×105	321D	
UC322	110	322C×110	322D	
UC324	120	324C×120	324D	M5×0.8
UC326	130	326C×130	326D	M8×1.25
UC328	140	328C×140	328D	

**Table 16.4 Part No. of cast iron covers for UK type bearings**

Bearing No.	Shaft dia. (mm)	Cast iron cover No.		Mounting bolt (reference)
		Open end type	Closed end type	
–				
UK205	20	205FC×20 (205FC3×20) <sup>1)</sup>	205FD (205FD3) <sup>1)</sup>	M3×0.5 (M4×0.7)
UK206	25	206FC×25	206FD	M4×0.7
UK207	30	207FC×30	207FD	M4×0.7
UK208	35	208FC×35	208FD	
UK209	40	209FC×40	209FD	
UK210	45	210FC×45	210FD	M4×0.7
UK211	50	211FC×50	211FD	
UK212	55	212FC×55	212FD	
UK213	60	213FC×60	213FD	M4×0.7
–				
UK215	65	215FC×65	215FD	
UK216	70	216FC×70	216FD	M5×0.8
UK217	75	217FC×75	217FD	
UK218	80	218FC×80	218FD	
UKX18	80	X18C×80 (X18C3×80) <sup>2)</sup>	X18D (X18D3) <sup>2)</sup>	M5×0.8
UKX20	90	X20C×90 (X20C3×90) <sup>2)</sup>	X20D (X20D3) <sup>2)</sup>	
UK305	20	305C×20	305D	M4×0.7
UK306	25	306C×25	306D	
UK307	30	307C×30	307D	
UK308	35	308C×35	308D	M5×0.8
UK309	40	309C×40	309D	
UK310	45	310C×45	310D	
UK311	50	311C×50	311D	M5×0.8
UK312	55	312C×55	312D	
UK313	60	313C×60	313D	
–				
UK315	65	315C×65	315D	M5×0.8
UK316	70	316C×70	316D	
UK317	75	317C×75	317D	M5×0.8
UK318	80	318C×80	318D	
UK319	85	319C×85	319D	
UK320	90	320C×90	320D	M5×0.8
–				
UK322	100	322C×100	322D	
UK324	110	324C×110	324D	M5×0.8
UK326	115	326C×115	326D	M8×1.25
UK328	125	328C×125	328D	

Note 1) Items in parentheses are applicable to the pillow block type (P), square-flanged type (F), rhombic-flanged type (FL), and the take-up type (T) bearings, and can be mounted to housings with three hexagon socket head cap screws (use four to mount other items).

2) Items in parentheses are applicable to the round-flanged type with joint (FC), and can be mounted to housings with three hexagon socket head cap screws (use four to mount other items).

Remark In the nominal No. of the cast iron covers for shouldered shaft, shaft diameter follows the basic code of the cover. For example, Part No. of the covers for a shaft with 60 mm diameter for UC210 is 210FC×60.

16.3 Part No. of stainless covers

Table 16.5 Part No. of stainless covers for UC-S6 type bearings

Bearing No.	Shaft dia. (mm)	Stainless cover No.	
		Open end type	Closed end type
UC204S6	20	C- 4×20J14	D- 4J14
UC205S6	25	C- 5×25J14	D- 5J14
UC206S6	30	C- 6×30J14	D- 6J14
UC207S6	35	C- 7×35J14	D- 7J14
UC208S6	40	C- 8×40J14	D- 8J14
UC209S6	45	C- 9×45J14	D- 9J14
UC210S6	50	C-10×50J14	D-10J14
UC211S6	55	C-11×55J14	D-11J14
UC212S6	60	C-12×60J14	D-12J14

16.4 Part No. of rubber coated covers

Table 16.6 Part No. of rubber coated covers for SU-S6 type bearings

Bearing No.	Shaft dia. (mm)	Rubber coated cover No.	
		Open end type	Closed end type
SU000S6	10	C-000	D-000
SU001S6	12	C-001	D-001
SU002S6	15	C-002	D-002
SU003S6	17	C-003	D-003
SU004S6	20	C-004	D-004
SU005S6	25	C-005	D-005
SU006S6	30	C-006	D-006

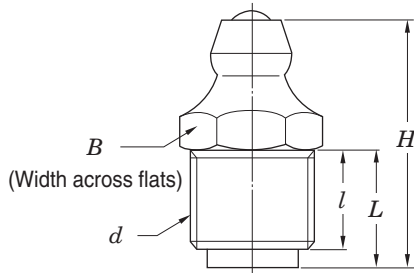
Table 16.7 Part No. of rubber coated covers for SU type bearings

Bearing No.	Shaft dia. (mm)	Rubber coated cover No.	
		Open end type	Closed end type
SU000	10	C-000	D-000
SU001	12	C-001	D-001
SU002	15	C-002	D-002
SU003	17	C-003	D-003
SU004	20	C-004	D-004
SU005	25	C-005	D-005
SU006	30	C-006	D-006

## 16.5 Nominal number and dimensions of grease nipples and reducing socket

**Table 16.8 Nominal number and dimensions of grease nipple**

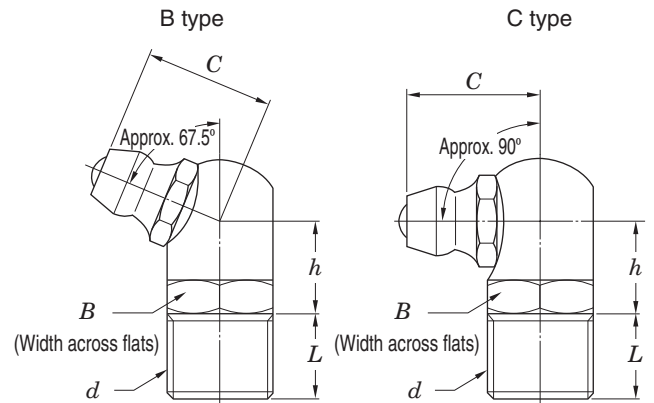
(1) Nominal number and dimensions of A type grease nipple



Unit : mm

Nominal grease nipple No.	Nominal screw code $d$	$B$	$H$	$L$	$l$
A-1/4-28UNF	1/4-28UNF	7	13.5	5.4	4
A-PT1/8	PT1/8	10	20	9.5	8

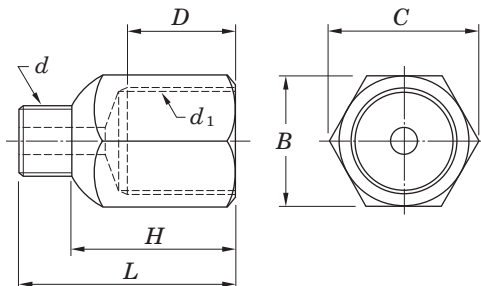
(2) Nominal number and dimensions of B and C type grease nipples



Unit : mm

Nominal grease nipple No.	Nominal screw code $d$	Type	$B$	$C$	$h$	$L$
B-1/4-28UNF	1/4-28UNF	B	8	9.5	6.5	5
C-1/4-28UNF		C				
B-PT1/8	PT1/8	B	10	12.5	8.5	8
C-PT1/8		C				

**Table 16.9 Nominal number and dimensions of reducing socket code**

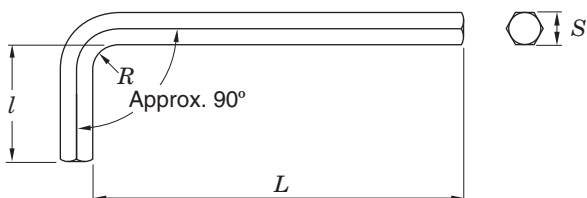


Unit : mm

Nominal No. of reducing socket	Nominal male thread code $d$	Nominal female thread code $d_1$	$B$	$C$	$D$	$H$	$L$
1/4-28UNF-PT1/8	1/4-28UNF	PT1/8	12	13.8	10	15	20
1/4-28UNF-PF1/8		PF1/8					
1/4-28UNF-PT1/4	1/4-28UNF	PT1/4	17	19.6	11	17	22
1/4-28UNF-PF1/4		PF1/4					
PT1/8-PT1/4	PT1/8	PT1/4	17	19.6	11	19	26
PT1/8-PF1/4		PF1/4					

## 16.6 Nominal number and dimensions of Allen key wrench

**Table 16.10 Nominal number and dimensions of Allen key wrench**



Unit : mm

Nominal No. of Allen key wrench	$S$	$L$ (Approx.)	$l$ (Approx.)	$R$ (Approx.)	Applicable set screw
2.5	2.5	56	18	2.5	M5
3	3	63	20	3	M6
4	4	70	25	4	M8
5	5	80	28	5	M10
6	6	90	32	6	M12, M14
8	8	100	36	8	M16, M18
10	10	112	40	10	M20

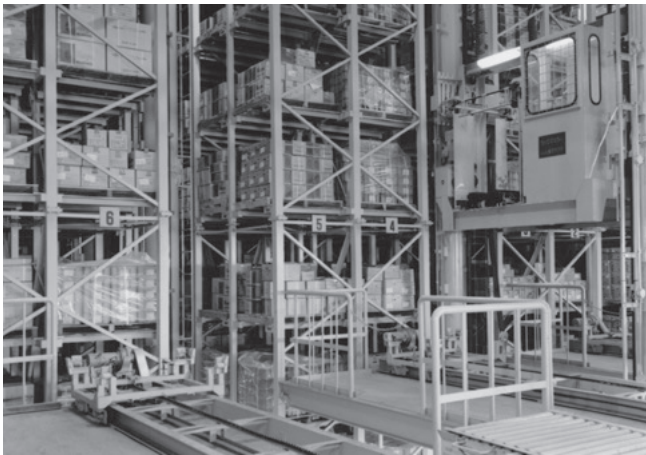


## 17 Example of application

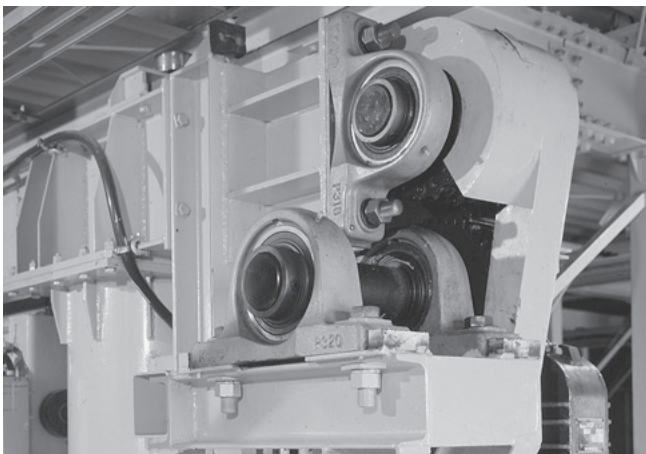
Koyo Insert Bearing Units are used in varied equipment, and their performance contributes to technical advantages, automation, and energy-saving of equipment.

### Automatic warehouse system

Many insert bearing units are used in automatic warehouse systems for automation and energy-saving of the systems.



Automatic warehouse system



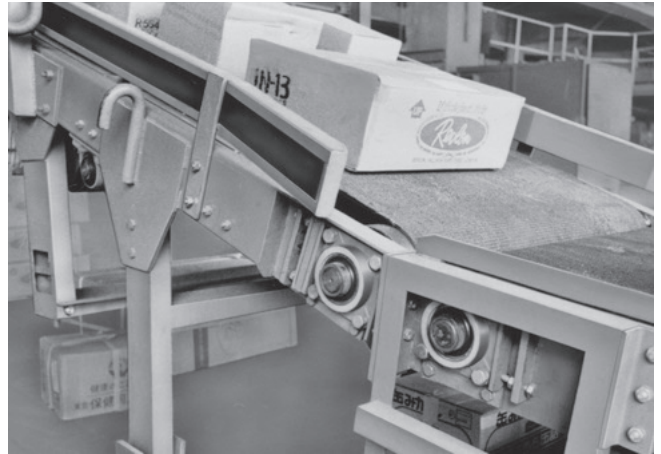
Mast driving system



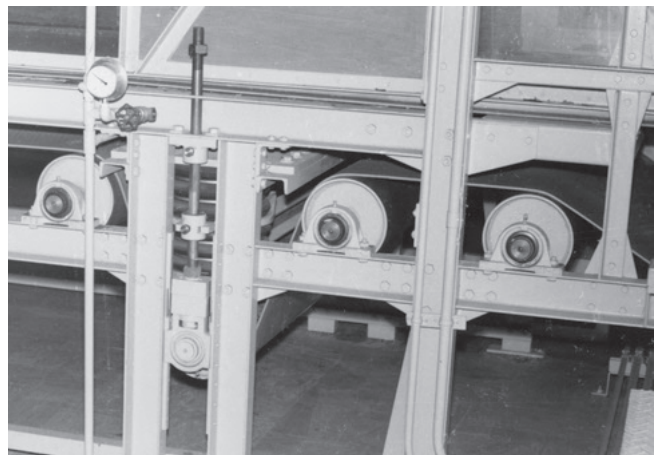
Conveyor

### Delivery center

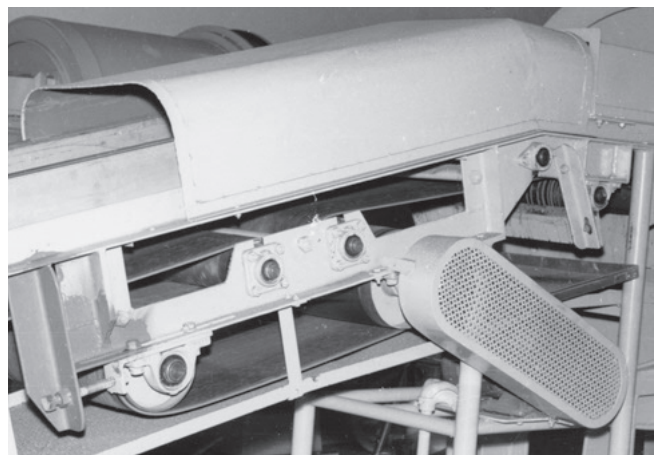
Koyo Insert Bearing Units of various types including pillow block type, flange type, take-up type are used in conveyors of delivery centers.



Belt conveyor



Belt conveyor driving system



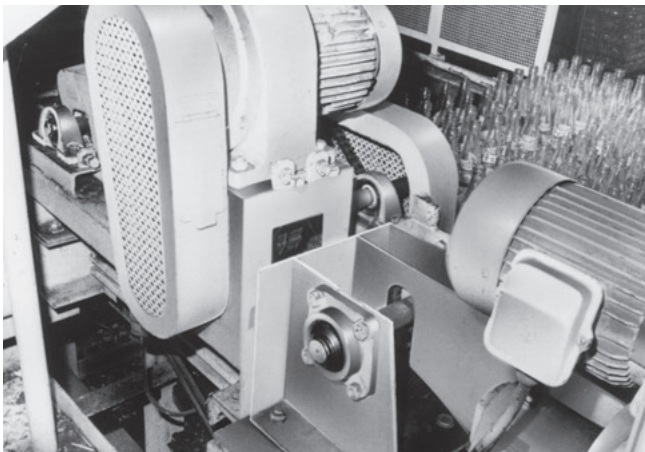
Belt conveyor driving system

### Soft drink plant

Since soft drink manufacturing facilities are frequently cleaned for hygiene control, covered unit, "compact" series unit, and stainless-series unit are suitable for them.



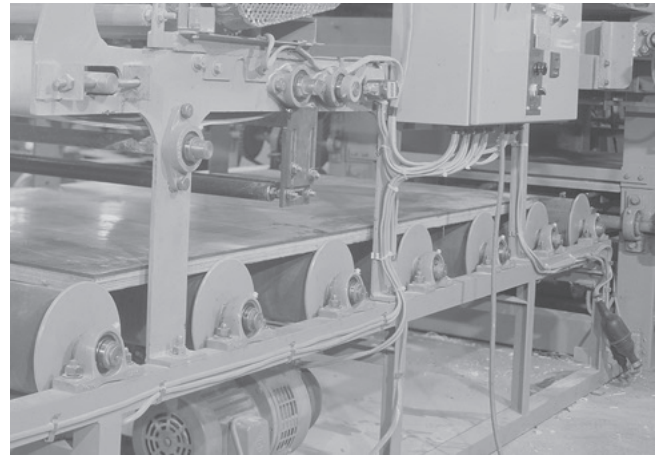
Bottle filling line conveyor



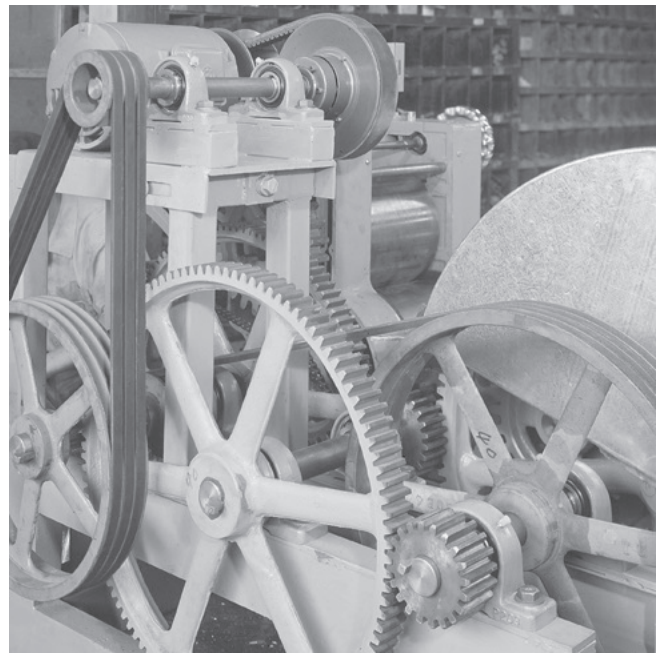
Pallet driving system

### Noodle manufacturing plant

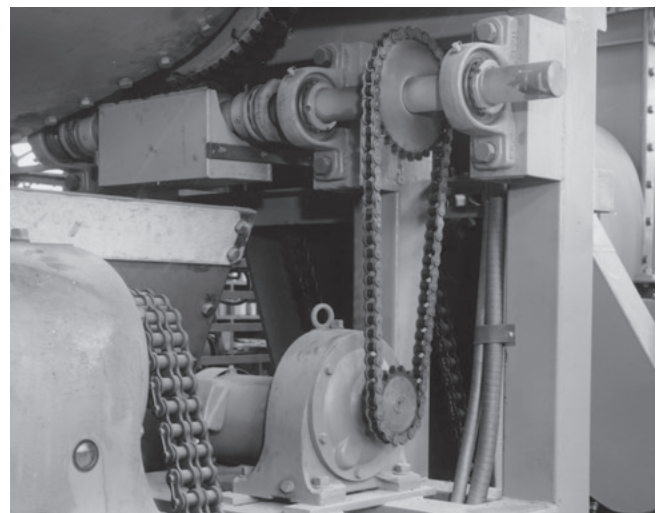
Triple-lip seal units or covered units are suitable for locations dusted with a great deal of noodle flour.



Feeding system



Noodle manufacturing machine driving system

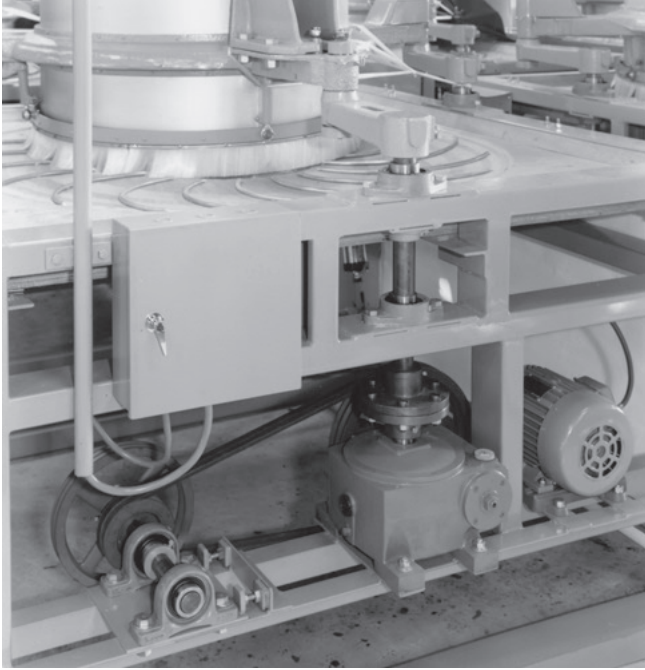


Mixer driving system

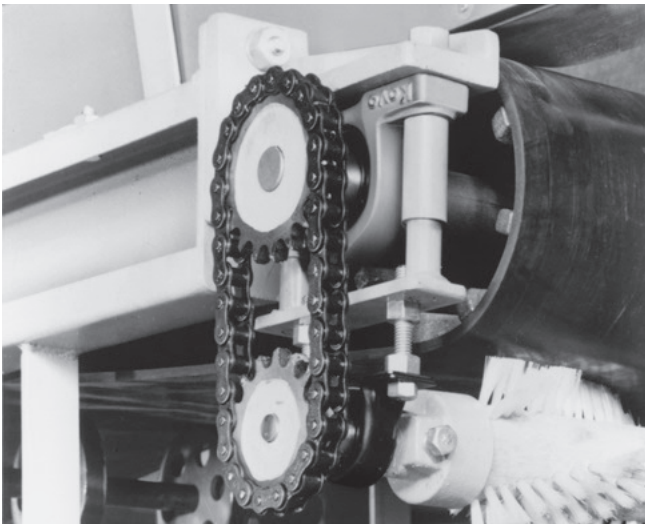
## 17 Example of application

### Tea manufacturing plant

Koyo Insert Bearing Units contribute to the automation of tea manufacturing lines and downsizing of tea manufacturing machines.



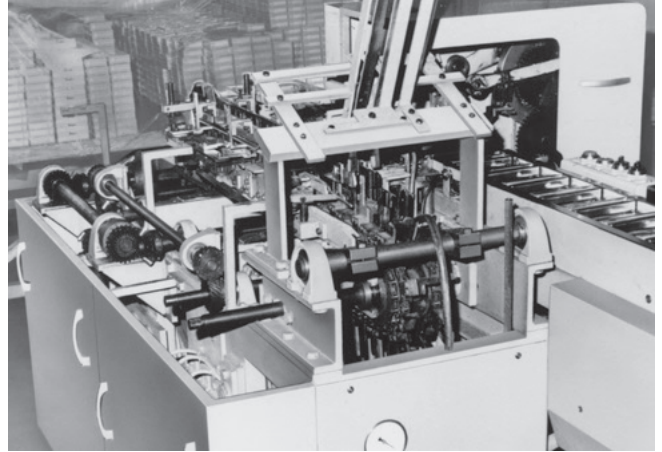
Tea processor driving system



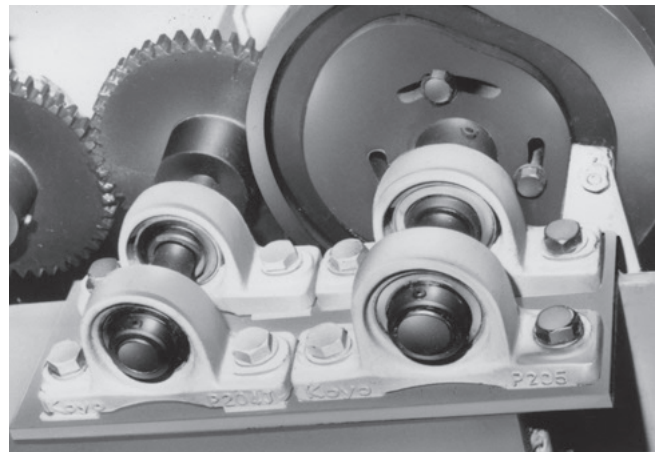
Conveyor driving system

### Packing machine

Koyo Insert Bearing Units, used in transmission units, cam shafts, and conveyors, contribute to high-efficiency and automation of packing lines.



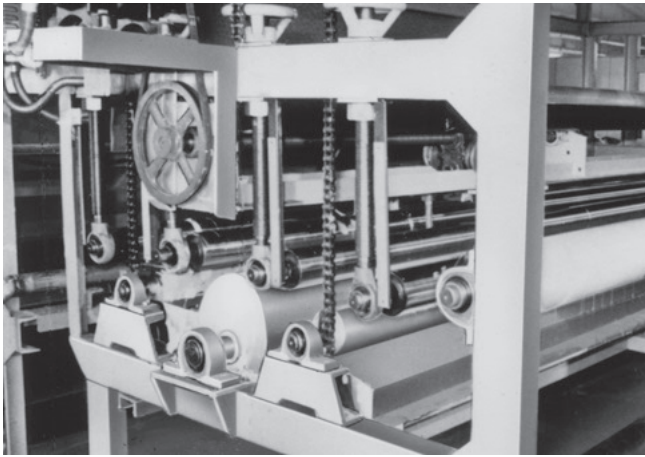
Packing machine



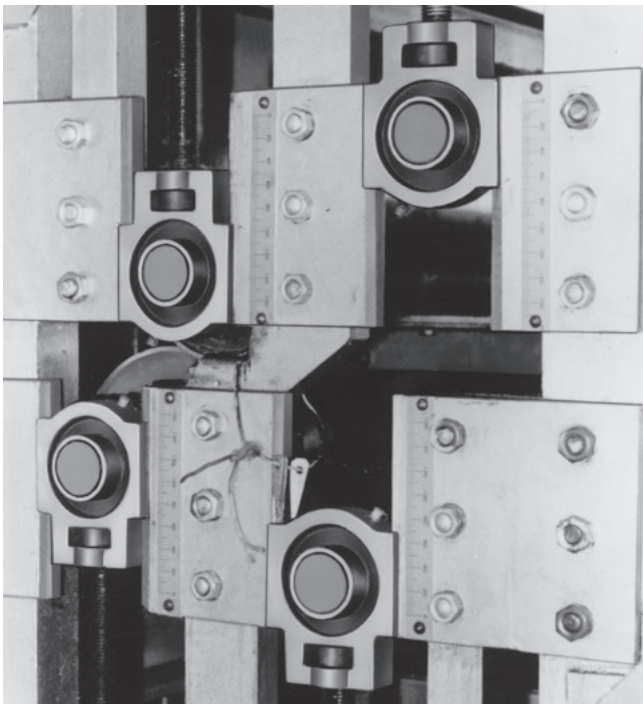
Cam shaft

### Textile machine

Take-up units are suitable for locations where adjustment of distance between shaft axes is required, while hanger units are suitable for locations where the shaft must be hung because of the structure of the machine.



Carpet pasting system



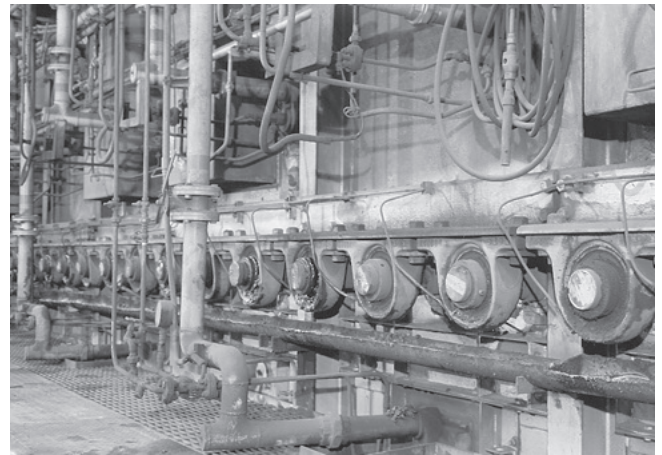
Carpet feeding shaft

### Heat treatment system

The heat resistant unit is used for applications at a high temperature.



Carburizing furnace

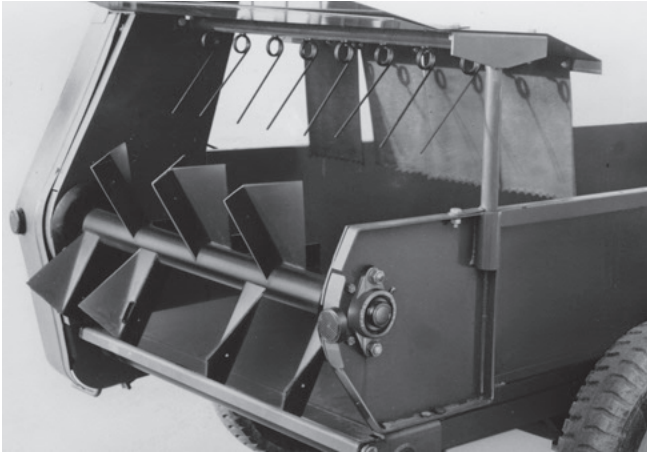


Heat treatment furnace

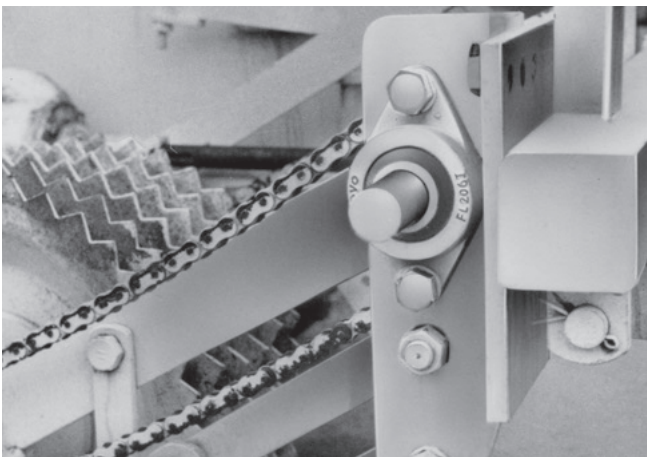
## 17 Example of application

### Agricultural machine

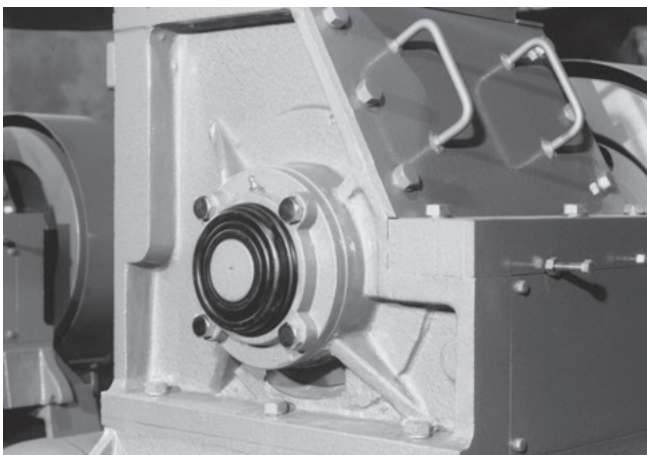
Koyo Insert Bearing Units contribute to downsizing and high-performance of agricultural machines. Triple-lip seal units or covered units are suitable for locations where are subject to a great deal of mud water and dusts.



Small wagon



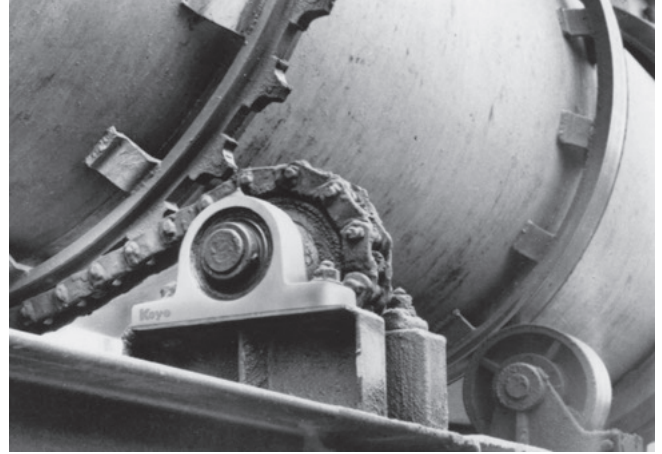
Beat harvester power transmission system



Grain mill

### Construction machinery

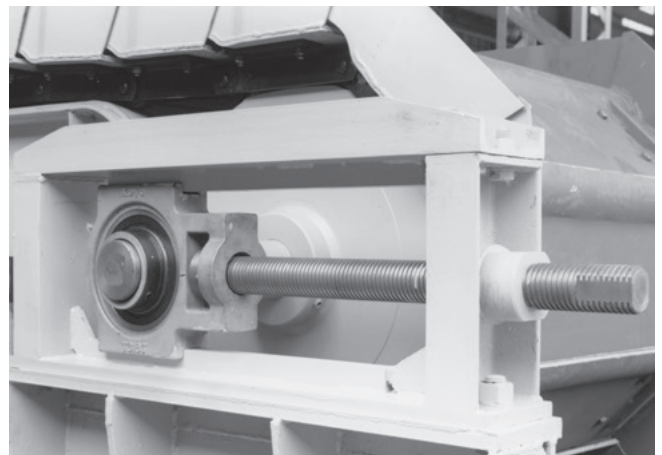
Koyo Insert Bearing Units contribute to high-performance and longer service life of construction machinery used under severe environment.



Concrete mixer



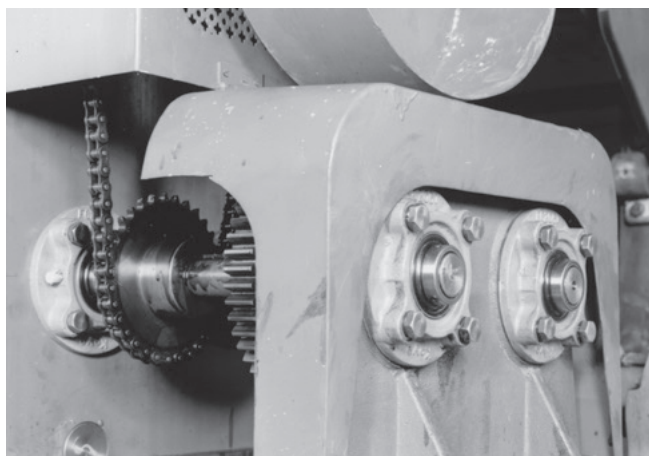
Conveyor



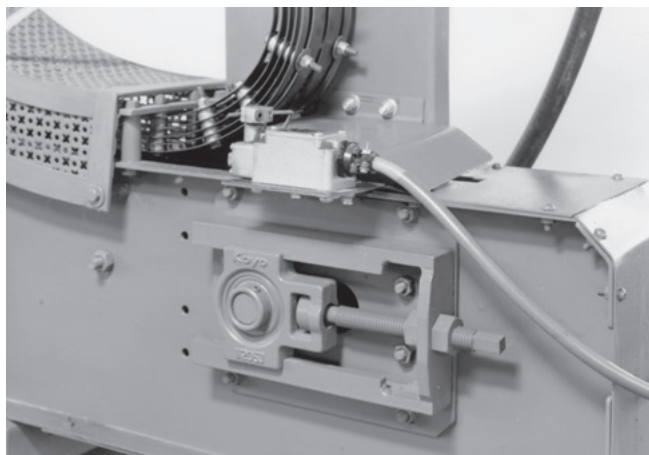
Conveyor

### Other applications

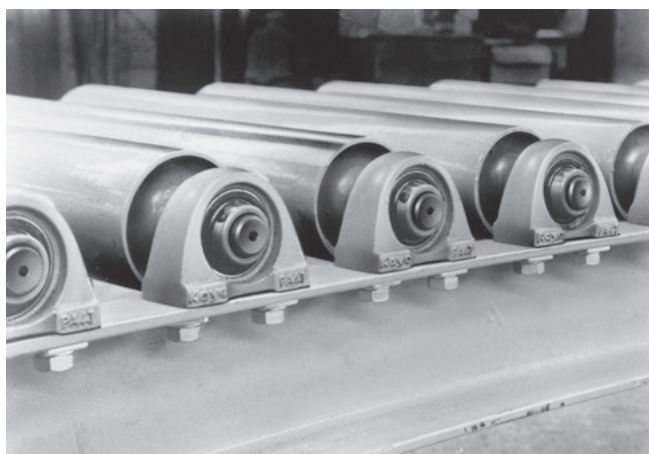
Insert Bearing Units of various types appropriate for applications and specifications are used.



(Round-flanged type with spigot joint)



(Take-up type unit)



(Pillow block type unit)











## Supplementary table (contents)

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Supplementary table 1 Simplified chart of insert bearing unit combinations

Type	Housing for units	Insert bearing for units							
		Cylindrical bore (with set screws)				Tapered bore (with adapter)			
		UC200	UCX00	UC300	Stainless steel UC200S6	UK200	UKX00	UK300	
Pillow block type 	P200, PX00, P300 PK200	UCP200	UCPX00	UCP300		UKP200	UKPX00	UKP300	
	IP200, IP300 PA200, SPA200	UCIP200 UCPA200		UCIP300	UCSPA200S6	UKIP200		UKIP300	
	PH200 LP200	UCPH200							
	P000, SP000 SP200 PP200				UCSP200S6				
Square-flanged type 	F200, FX00, F300 F200E, FX00E SF200 NF200 FS300	UCF200 UCF200E	UCFX00 UCFX00E	UCF300	UCSF200S6	UKF200	UKFX00	UKF300	
				UCFS300				UKFS300	
Rhombic-flanged type 	FL200, FLX00, FL300 FL200E FA200	UCFL200 UCFL200E UCFA200	UCFLX00	UCFL300		UKFL200	UKFLX00	UKFL300	
	FB200 LF200	UCFB200							
	FL000, SFL000 NFL200 SFL200				UCSFL200S6				
Round-flanged type with spigot joint 	FC200, FCX00, FCX00E SFC200	UCFC200	UCFCX00 UCFCX00E		UCFSC200S6	UKFC200	UKFCX00		
Pressed steel flange type 	PF200 PFL200 PFT200								
Take-up type 	T200, TX00, T300 T200E, TX00E ST200 T200+H	UCT200 UCT200E	UCTX00 UCTX200E	UCT300	UCST200S6	UKT200	UKTX00	UKT300	
	TL200 TU200, TU300	UCTL200 UCTU200		UCTU300		(UKTL200) (UKTU200)		(UKTU300)	
	PTH200 NPTH200								
Cartridge type 	C200, CX00, C300	UCC200	UCCX00	UCC300		UKC200	UKCX00	UKC300	
Hanger type 	HA200	UCHA200							

Insert bearing for units					Housing for units	Type
Cylindrical bore (with set screws)		Cylindrical bore (with eccentric locking collar)				
"Compact" series SU000	Stainless steel SU000S6	SB200	SA200	NA200		
				NAP200 NAPK200	P200, PX00, P300 PK200	Pillow block type 
					IP200, IP300 PA200, SPA200	
		BLP200	ALP200		PH200 LP200	Square-flanged type 
UP000	USP000S6	SBPP200	SAPP200		P000, SP000 SP200 PP200	
				NANF200	F200, FX00, F300 F200E, FX00E SF200 NF200 FS300	Rhombic-flanged type 
					FL200, FLX00, FL300 FL200E FA200	
		BLF200	ALF200		FB200 LF200	Round-flanged type with spigot joint 
UFL000	USFL000S6			NANFL200	FL000, SFL000 NFL200 SFL200	
				N AFC200	FC200, FCX00, FCX00E  SFC200	Pressed steel flange type 
		SBPF200 SBPFL200 SBPFT200	SAPF200 SAPFL200		PF200 PFL200 PFT200	
				NAT200	T200, TX00, T300 T200E, TX00E ST200 T200+H	Take-up type 
					TL200 TU200, TU300	
		SBPTH200 SBNPTH200			PTH200 NPTH200	Cartridge type 
				NAC200	C200, CX00, C300	
					HA200	Hanger type 

**Supplementary table 2 Tightening torques of mounting bolts for housing and cast iron cover**

**(1) Tightening torques of mounting bolts for housing (recommended)**

Nominal size of screws	Tightening torques N · m
M 6	2.6– 4.7
M 8	6 – 10
M10	12 – 21
M12	21 – 37
M14	34 – 60
M16	53 – 93
M18	77 – 137
M20	104 – 186
M22	143 – 256
M27	266 – 478
M30	360 – 645
M33	494 – 886
M36	631 – 1 130

**(2) Tightening torques of mounting bolts for cast iron cover (recommended)**

Nominal size of screws	Tightening torques, N · m	Part No. of applicable cast iron covers (reference)		
		200 series	X00 series	300 series
M3	0.3– 0.6	204, 205	–	–
M4	0.8– 1.4	204FC3 (FD3), 205FC3 (FD3), 206–215	–	305–307
M5	1.5– 2.8	216–218	X18, X20	308–324
M8	6 – 10	–	–	326, 328

### Supplementary table 3 Tightening torques of set screws for inner ring and eccentric locking collar

#### (1) Tightening torques of set screws for inner ring and eccentric locking collar (metric series) (recommended)

Nominal size of screws	Tightening torques, N · m	Part No. of applicable bearings						
		UC200, RB200	UCX00	UC300	NA200	SB200	SU000	ER200
M 3X0.35	0.7						000, 001	
M 4X0.5	1.8	–				–	002, 003	
M 5X0.5	3	201X–203X	–	–		201–203	004–006	–
M 6X0.75	4	201–206	X05	305, 306	–	204–207	–	201–206
M 6X1	4	–	–	–	204, 205	–		
M 8X1	8.5	207–209	X06–X08	307	206–210	208		207–209
M10X1.25	17.5	210–212	X09–X11	308, 309	211, 212	–		210–212
M12X1.5	28	213–218	X12–X17	310–314	–			–
M14X1.5	35	–	X18	315, 316				
M16X1.5	56		X20	317–319				
M18X1.5	62		–	320–324				
M20X1.5	83			326, 328				

#### (2) Tightening torques of set screws for inner ring and eccentric locking collar (inch series) (recommended)

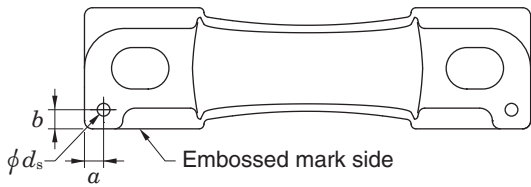
Nominal size of screws	Tightening torques, N · m	Part No. of applicable bearings		
		UC200, ER200, RB200	UCX00	SB200
10-32UNF	3	–	–	201, 202
1/4-28UNF	4	201–206	X05	204–207
5/16-24UNF	8.5	207–209	X06–X08	208
3/8-24UNF	17.5	210–212	X09–X11	–
1/2-20UNF	28	213–218	X12–X18	
5/8-18UNF	56	–	X20	

### Supplementary table 4 Tightening torques of adapter lock nuts (reference)

Bore code	Tightening torques, N · m			Bore code	Tightening torques, N · m		
	UK200	UKX00	UK300		UK200	UKX00	UK300
05	24.5	34	29	16	196	255	441
06	29	39	44	17	225	294	530
07	39	49	59	18	265	343	608
08	49	73	78	19	–	–	706
09	59	78	117	20		490	883
10	73	108	147	22		–	1 220
11	98	137	177	24			1 470
12	127	167	225	26			1 770
13	147	196	265	28			2 150
15	167	215	373				

Supplementary table 5 Machining dimensions of holes for housing dowel pins

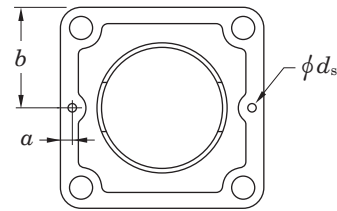
(1) Machining dimensions of holes for pillow block type housing (P) dowel pins (recommended)



Unit : mm

Nominal No.	a	b	ds (reference)	Pin seat thickness
P203	6	6	4	16
P204	6	6	4	16
P205	6	6	4	16
P206	6	6	4	17
P207	8	8	5	18
P208	8	8	5	18
P209	8	8	5	20
P210	10	10	5	21
P211	10	10	6	23
P212	10	10	6	25
P213	10	10	6	27
P214	10	10	8	27
P215	12.5	12.5	8	28
P216	12	12	8	30
P217	12	12	8	32
P218	14	14	8	33
PX05	7	7	5	16
PX06	8	8	5	17
PX07	8	8	5	19
PX08	8	8	5	21
PX09	8	8	5	21
PX10	9	9	6	22
PX11	9	9	6	28
PX12	9	9	6	28
PX13	10	10	8	28
PX14	10	10	8	32
PX15	10	10	8	32
PX16	12	12	8	34
PX17	12	12	8	34
PX18	15	15	10	38
PX20	19	19	10	45
P305	8	8	5	16
P306	10	10	5	17
P307	10	10	5	19
P308	11	11	6	19
P309	11	11	6	21
P310	11	11	6	24
P311	12	12	8	27
P312	12	12	8	29
P313	12	12	8	32
P314	12	12	10	35
P315	14	14	10	35
P316	15	15	10	35
P317	15	15	10	40
P318	15	15	10	40
P319	15	15	10	46
P320	17	17	13	46
P321	17	17	13	46
P322	17	17	13	50
P324	17	17	13	50
P326	20	20	13	50
P328	20	20	13	60

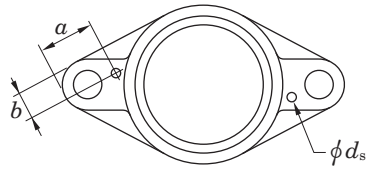
(2) Machining dimensions of holes for square-flanged type housing (F) dowel pins (recommended)



Unit : mm

Nominal No.	a	b	ds (reference)	Pin seat thickness
F204	6	43	4	11
F205	6	47.5	4	13
F206	7.5	54	4	13
F207	7.5	58.5	5	15
F208	7.5	65	5	15
F209	7.5	68.5	5	16
F210	7.5	71.5	5	16
F211	9	81	6	18
F212	9	87.5	6	18
F213	9	93.5	6	22
F214	10	96.5	8	22
F215	10	100	8	22
F216	10	104	8	22
F217	10	110	8	24
F218	10	117.5	8	25
FX05	7.5	54	5	13
FX06	7.5	58.5	5	14
FX07	7.5	65	5	14
FX08	7.5	68.5	5	14
FX09	7.5	71.5	5	14
FX10	9	81	6	20
FX11	9	87.5	6	20
FX12	9	93.5	6	21
FX13	10	93.5	8	21
FX14	10	98.5	8	22
FX15	10	142	8	24
FX16	10	107	8	24
FX17	10	155	8	24
FX18	12	155	10	24
FX20	12	134	10	28
F305	7.5	55	5	13
F306	7.5	62.5	5	15
F307	7.5	67.5	5	16
F308	9	75	6	17
F309	9	80	6	18
F310	9	87.5	6	19
F311	10	92.5	8	20
F312	10	97.5	8	22
F313	10	104	8	22
F314	12	113	10	25
F315	12	118	10	25
F316	12	125	10	27
F317	12	130	10	27
F318	12	140	10	30
F319	12	145	10	30
F320	16	155	13	32
F321	16	155	13	32
F322	16	170	13	35
F324	16	185	13	40
F326	16	205	13	45
F328	16	225	13	55

**(3) Machining dimensions of holes for Rombic-flanged type housing (FL) dowel pins (recommended)**



Unit : mm

Nominal No.	<i>a</i>	<i>b</i>	<i>d<sub>s</sub></i> (reference)	Pin seat thickness
FL204	26	9	4	11
FL205	32	10	4	13
FL206	34	12	4	13
FL207	34	14	5	14
FL208	35	15	5	14
FL209	40	15	5	15
FL210	41	16	5	15
FL211	43	19	6	18
FL212	52	22	6	18
FL213	50	21	6	20
FL214	52	22	8	20
FL215	53	23	8	20
FL216	56	23	8	20
FL217	57	25	8	22
FL218	57	26	8	23
FLX05	27	12	5	13
FLX06	30	14	5	14
FLX07	32	15	5	14
FLX08	33	15	5	14
FLX09	35	16	5	14
FLX10	37	19	6	20
FL305	32	12	5	13
FL306	46	14	5	15
FL307	44	14	5	16
FL308	45	17	6	17
FL309	53	19	6	18
FL310	53	19	6	19
FL311	52	20	8	20
FL312	60	21	8	22
FL313	60	25	8	25
FL314	68	26	10	28
FL315	64	26	10	30
FL316	74	29	10	32
FL317	75	31	10	32
FL318	74	32	10	36
FL319	80	32	10	40
FL320	86	34	13	40
FL321	86	34	13	40
FL322	86	36	13	42
FL324	94	41	13	48

Supplementary table 6 Shaft tolerances (deviation from nominal dimensions)

Nominal shaft dia. (mm)		Deviation classes of shaft dia.															
Over	Up to	d 6	e 6	f 6	g 5	g 6	h 5	h 6	h 7	h 8	h 9	h 10	js 5	js 6	js 7	j 5	j 6
3	6	-30 -38	-20 -28	-10 -18	-4 -9	-4 -12	0 -5	0 -8	0 -12	0 -18	0 -30	0 -48	± 2.5	± 4	± 6	+3 -2	+6 -2
6	10	-40 -49	-25 -34	-13 -22	-5 -11	-5 -14	0 -6	0 -9	0 -15	0 -22	0 -36	0 -58	± 3	± 4.5	± 7.5	+4 -2	+7 -2
10	18	-50 -61	-32 -43	-16 -27	-6 -14	-6 -17	0 -8	0 -11	0 -18	0 -27	0 -43	0 -70	± 4	± 5.5	± 9	+5 -3	+8 -3
18	30	-65 -78	-40 -53	-20 -33	-7 -16	-7 -20	0 -9	0 -13	0 -21	0 -33	0 -52	0 -84	± 4.5	± 6.5	±10.5	+5 -4	+9 -4
30	50	-80 -96	-50 -66	-25 -41	-9 -20	-9 -25	0 -11	0 -16	0 -25	0 -39	0 -62	0 -100	± 5.5	± 8	±12.5	+6 -5	+11 -5
50	80	-100 -119	-60 -79	-30 -49	-10 -23	-10 -29	0 -13	0 -19	0 -30	0 -46	0 -74	0 -120	± 6.5	± 9.5	±15	+6 -7	+12 -7
80	120	-120 -142	-72 -94	-36 -58	-12 -27	-12 -34	0 -15	0 -22	0 -35	0 -54	0 -87	0 -140	± 7.5	±11	±17.5	+6 -9	+13 -9
120	180	-145 -170	-85 -110	-43 -68	-14 -32	-14 -39	0 -18	0 -25	0 -40	0 -63	0 -100	0 -160	± 9	±12.5	±20	+7 -11	+14 -11
180	250	-170 -199	-100 -129	-50 -79	-15 -35	-15 -44	0 -20	0 -29	0 -46	0 -72	0 -115	0 -185	±10	±14.5	±23	+7 -13	+16 -13
250	315	-190 -222	-110 -142	-56 -88	-17 -40	-17 -49	0 -23	0 -32	0 -52	0 -81	0 -130	0 -210	±11.5	±16	±26	+7 -16	±16
315	400	-210 -246	-125 -161	-62 -98	-18 -43	-18 -54	0 -25	0 -36	0 -57	0 -89	0 -140	0 -230	±12.5	±18	±28.5	+7 -18	±18
400	500	-230 -270	-135 -175	-68 -108	-20 -47	-20 -60	0 -27	0 -40	0 -63	0 -97	0 -155	0 -250	±13.5	±20	±31.5	+7 -20	±20
500	630	-260 -304	-145 -189	-76 -120	-22 -54	-22 -66	0 -32	0 -44	0 -70	0 -110	0 -175	0 -280	±16	±22	±35	-	-
630	800	-290 -340	-160 -210	-80 -130	-24 -60	-24 -74	0 -36	0 -50	0 -80	0 -125	0 -200	0 -320	±18	±25	±40	-	-
800	1 000	-320 -376	-170 -226	-86 -142	-26 -66	-26 -82	0 -40	0 -56	0 -90	0 -140	0 -230	0 -360	±20	±28	±45	-	-

\*  $\Delta_{dmp}$  : Single plane mean bore diameter deviation

Unit :  $\mu\text{m}$  (Reference)

												Nominal shaft dia. (mm)		$\Delta_{dmp}^*$ of bearing (class 0)
k 5	k 6	k 7	m 5	m 6	m 7	n 5	n 6	p 6	r 6	r 7	Over	Up to		
+ 6 + 1	+ 9 + 1	+13 + 1	+ 9 + 4	+12 + 4	+ 16 + 4	+13 + 8	+ 16 + 8	+ 20 + 12	+ 23 + 15	+ 27 + 15	3	6	0 - 8	
+ 7 + 1	+10 + 1	+16 + 1	+12 + 6	+15 + 6	+ 21 + 6	+16 +10	+ 19 + 10	+ 24 + 15	+ 28 + 19	+ 34 + 19	6	10	0 - 8	
+ 9 + 1	+12 + 1	+19 + 1	+15 + 7	+18 + 7	+ 25 + 7	+20 +12	+ 23 + 12	+ 29 + 18	+ 34 + 23	+ 41 + 23	10	18	0 - 8	
+11 + 2	+15 + 2	+23 + 2	+17 + 8	+21 + 8	+ 29 + 8	+24 +15	+ 28 + 15	+ 35 + 22	+ 41 + 28	+ 49 + 28	18	30	0 - 10	
+13 + 2	+18 + 2	+27 + 2	+20 + 9	+25 + 9	+ 34 + 9	+28 +17	+ 33 + 17	+ 42 + 26	+ 50 + 34	+ 59 + 34	30	50	0 - 12	
+15 + 2	+21 + 2	+32 + 2	+24 +11	+30 +11	+ 41 + 11	+33 +20	+ 39 + 20	+ 51 + 32	+ 60 + 41	+ 71 + 41	50	65	0 - 15	
									+ 62 + 43	+ 73 + 43	65	80		
+18 + 3	+25 + 3	+38 + 3	+28 +13	+35 +13	+ 48 + 13	+38 +23	+ 45 + 23	+ 59 + 37	+ 73 + 51	+ 86 + 51	80	100	0 - 20	
									+ 76 + 54	+ 89 + 54	100	120		
+21 + 3	+28 + 3	+43 + 3	+33 +15	+40 +15	+ 55 + 15	+45 +27	+ 52 + 27	+ 68 + 43	+ 88 + 63	+103 + 63	120	140	0 - 25	
									+ 90 + 65	+105 + 65	140	160		
									+ 93 + 68	+108 + 68	160	180		
+24 + 4	+33 + 4	+50 + 4	+37 +17	+46 +17	+ 63 + 17	+51 +31	+ 60 + 31	+ 79 + 50	+106 + 77	+123 + 77	180	200	0 - 30	
									+109 + 80	+126 + 80	200	225		
									+113 + 84	+130 + 84	225	250		
+27 + 4	+36 + 4	+56 + 4	+43 +20	+52 +20	+ 72 + 20	+57 +34	+ 66 + 34	+ 88 + 56	+126 + 94	+146 + 94	250	280	0 - 35	
									+130 + 98	+150 + 98	280	315		
+29 + 4	+40 + 4	+61 + 4	+46 +21	+57 +21	+ 78 + 21	+62 +37	+ 73 + 37	+ 98 + 62	+144 +108	+165 +108	315	355	0 - 40	
									+150 +114	+171 +114	355	400		
+32 + 5	+45 + 5	+68 + 5	+50 +23	+63 +23	+ 86 + 23	+67 +40	+ 80 + 40	+108 + 68	+166 +126	+189 +126	400	450	0 - 45	
									+172 +132	+195 +132	450	500		
+32 0	+44 0	+70 0	+58 +26	+70 +26	+ 96 + 26	+76 +44	+ 88 + 44	+122 + 78	+194 +150	+220 +150	500	560	0 - 50	
									+199 +155	+225 +155	560	630		
+36 0	+50 0	+80 0	+66 +30	+80 +30	+110 + 30	+86 +50	+100 + 50	+138 + 88	+225 +175	+255 +175	630	710	0 - 75	
									+235 +185	+265 +185	710	800		
+40 0	+56 0	+90 0	+74 +34	+90 +34	+124 + 34	+96 +56	+112 + 56	+156 +100	+266 +210	+300 +210	800	900	0 -100	
									+276 +220	+310 +220	900	1 000		



**Supplementary table 7 Housing bore tolerances (deviation from nominal dimensions)**

**Supplementary table 7 Housing bore tolerances (deviation from nominal dimensions)**

Nominal Bore dia. (mm)		Deviation classes of housing bore														
Over	Up to	E 6	F 6	F 7	G 6	G 7	H 6	H 7	H 8	H 9	H 10	JS 5	JS 6	JS 7	J 6	J 7
10	18	+ 43 + 32	+ 27 + 16	+ 34 + 16	+17 + 6	+ 24 + 6	+11 0	+ 18 0	+ 27 0	+ 43 0	+ 70 0	± 4	± 5.5	± 9	+ 6 - 5	+10 - 8
18	30	+ 53 + 40	+ 33 + 20	+ 41 + 20	+20 + 7	+ 28 + 7	+13 0	+ 21 0	+ 33 0	+ 52 0	+ 84 0	± 4.5	± 6.5	±10.5	+ 8 - 5	+12 - 9
30	50	+ 66 + 50	+ 41 + 25	+ 50 + 25	+25 + 9	+ 34 + 9	+16 0	+ 25 0	+ 39 0	+ 62 0	+100 0	± 5.5	± 8	±12.5	+10 - 6	+14 -11
50	80	+ 79 + 60	+ 49 + 30	+ 60 + 30	+29 +10	+ 40 + 10	+19 0	+ 30 0	+ 46 0	+ 74 0	+120 0	± 6.5	± 9.5	±15	+13 - 6	+18 -12
80	120	+ 94 + 72	+ 58 + 36	+ 71 + 36	+34 +12	+ 47 + 12	+22 0	+ 35 0	+ 54 0	+ 87 0	+140 0	± 7.5	±11	±17.5	+16 - 6	+22 -13
120	180	+110 + 85	+ 68 + 43	+ 83 + 43	+39 +14	+ 54 + 14	+25 0	+ 40 0	+ 63 0	+100 0	+160 0	± 9	±12.5	±20	+18 - 7	+26 -14
180	250	+129 +100	+ 79 + 50	+ 96 + 50	+44 +15	+ 61 + 15	+29 0	+ 46 0	+ 72 0	+115 0	+185 0	±10	±14.5	±23	+22 - 7	+30 -16
250	315	+142 +110	+ 88 + 56	+108 + 56	+49 +17	+ 69 + 17	+32 0	+ 52 0	+ 81 0	+130 0	+210 0	±11.5	±16	±26	+25 - 7	+36 -16
315	400	+161 +125	+ 98 + 62	+119 + 62	+54 +18	+ 75 + 18	+36 0	+ 57 0	+ 89 0	+140 0	+230 0	±12.5	±18	±28.5	+29 - 7	+39 -18
400	500	+175 +135	+108 + 68	+131 + 68	+60 +20	+ 83 + 20	+40 0	+ 63 0	+ 97 0	+155 0	+250 0	±13.5	±20	±31.5	+33 - 7	+43 -20
500	630	+189 +145	+120 + 76	+146 + 76	+66 +22	+ 92 + 22	+44 0	+ 70 0	+110 0	+175 0	+280 0	±16	±22	±35	-	-
630	800	+210 +160	+130 + 80	+160 + 80	+74 +24	+104 + 24	+50 0	+ 80 0	+125 0	+200 0	+320 0	±18	±25	±40	-	-
800	1 000	+226 +170	+142 + 86	+176 + 86	+82 +26	+116 + 26	+56 0	+ 90 0	+140 0	+230 0	+360 0	±20	±28	±45	-	-
1 000	1 250	+261 +195	+164 + 98	+203 + 98	+94 +28	+133 + 28	+66 0	+105 0	+165 0	+260 0	+420 0	±23.5	±33	±52.5	-	-

\*  $\Delta_{D_{mp}}$  : Single plane mean outside diameter deviation

Unit :  $\mu\text{m}$  (Reference)

													Nominal Bore dia. (mm)		$\Delta_{Dmp}^*$ of bearing (class 0)
K 5	K 6	K 7	M 5	M 6	M 7	N 5	N 6	N 7	P 6	P 7	R 7	Over	Up to		
+ 2 - 6	+ 2 - 9	+ 6 - 12	- 4 - 12	- 4 - 15	0 - 18	- 9 - 17	- 9 - 20	- 5 - 23	- 15 - 26	- 11 - 29	- 16 - 34	10	18	0 - 8	
+ 1 - 8	+ 2 - 11	+ 6 - 15	- 5 - 14	- 4 - 17	0 - 21	- 12 - 21	- 11 - 24	- 7 - 28	- 18 - 31	- 14 - 35	- 20 - 41	18	30	0 - 9	
+ 2 - 9	+ 3 - 13	+ 7 - 18	- 5 - 16	- 4 - 20	0 - 25	- 13 - 24	- 12 - 28	- 8 - 33	- 21 - 37	- 17 - 42	- 25 - 50	30	50	0 - 11	
+ 3 - 10	+ 4 - 15	+ 9 - 21	- 6 - 19	- 5 - 24	0 - 30	- 15 - 28	- 14 - 33	- 9 - 39	- 26 - 45	- 21 - 51	- 30 - 60	50	65	0 - 13	
											- 32 - 62	65	80		
+ 2 - 13	+ 4 - 18	+ 10 - 25	- 8 - 23	- 6 - 28	0 - 35	- 18 - 33	- 16 - 38	- 10 - 45	- 30 - 52	- 24 - 59	- 38 - 73	80	100	0 - 15	
											- 41 - 76	100	120		
+ 3 - 15	+ 4 - 21	+ 12 - 28	- 9 - 27	- 8 - 33	0 - 40	- 21 - 39	- 20 - 45	- 12 - 52	- 36 - 61	- 28 - 68	- 48 - 88	120	140	(up to 150) 0	
											- 50 - 90	140	160	- 18 (over to 150)	
											- 53 - 93	160	180	0 - 25	
+ 2 - 18	+ 5 - 24	+ 13 - 33	- 11 - 31	- 8 - 37	0 - 46	- 25 - 45	- 22 - 51	- 14 - 60	- 41 - 70	- 33 - 79	- 60 - 106	180	200	0 - 30	
											- 63 - 109	200	225		
											- 67 - 113	225	250		
+ 3 - 20	+ 5 - 27	+ 16 - 36	- 13 - 36	- 9 - 41	0 - 52	- 27 - 50	- 25 - 57	- 14 - 66	- 47 - 79	- 36 - 88	- 74 - 126	250	280	0 - 35	
											- 78 - 130	280	315		
											- 87 - 144	315	355		
+ 3 - 22	+ 7 - 29	+ 17 - 40	- 14 - 39	- 10 - 46	0 - 57	- 30 - 55	- 26 - 62	- 16 - 73	- 51 - 87	- 41 - 98	- 93 - 150	355	400	0 - 40	
											- 103 - 166	400	450		
+ 2 - 25	+ 8 - 32	+ 18 - 45	- 16 - 43	- 10 - 50	0 - 63	- 33 - 60	- 27 - 67	- 17 - 80	- 55 - 95	- 45 - 108	- 109 - 172	450	500	0 - 45	
											- 150 - 220	500	560		
0 - 32	0 - 44	0 - 70	- 26 - 58	- 26 - 70	- 26 - 96	- 44 - 76	- 44 - 88	- 44 - 114	- 78 - 122	- 78 - 148	- 155 - 225	560	630	0 - 50	
											- 175 - 255	630	710		
0 - 36	0 - 50	0 - 80	- 30 - 66	- 30 - 80	- 30 - 110	- 50 - 86	- 50 - 100	- 50 - 130	- 88 - 138	- 88 - 168	- 185 - 265	710	800	0 - 75	
											- 210 - 300	800	900		
0 - 40	0 - 56	0 - 90	- 34 - 74	- 34 - 90	- 34 - 124	- 56 - 96	- 56 - 112	- 56 - 146	- 100 - 156	- 100 - 190	- 220 - 310	900	1 000	0 - 100	
											- 250 - 355	1 000	1 120		
0 - 47	0 - 66	0 - 105	- 40 - 87	- 40 - 106	- 40 - 145	- 66 - 113	- 66 - 132	- 66 - 171	- 120 - 186	- 120 - 225	- 260 - 365	1 120	1 250	0 - 125	

Supplementary Table 8 (1) SI units and conversion factors

Mass	SI units	Other Units <sup>1)</sup>	Conversion into SI units	Conversion from SI units
<b>Angle</b>	rad [radian(s)]	° [degree(s)] * ' [minute(s)] * " [second(s)] *	1° = $\pi / 180$ rad 1' = $\pi / 10\,800$ rad 1" = $\pi / 648\,000$ rad	1 rad = 57.295 78°
<b>Length</b>	m [meter(s)]	Å [Angstrom unit] μ [micron(s)] in [inch(es)] ft [foot(feet)] yd [yard(s)] mile [mile(s)]	1 Å = 10 <sup>-10</sup> m = 0.1 nm = 100 pm 1 μ = 1 μm 1 in = 25.4 mm 1 ft = 12 in = 0.304 8 m 1 yd = 3 ft = 0.914 4 m 1 mile = 5 280 ft = 1 609.344 m	1 m = 10 <sup>10</sup> Å 1 m = 39.37 in 1 m = 3.280 8 ft 1 m = 1.093 6 yd 1 km = 0.621 4 mile
<b>Area</b>	m <sup>2</sup>	a [are(s)] ha [hectare(s)] acre [acre(s)]	1 a = 100 m <sup>2</sup> 1 ha = 10 <sup>4</sup> m <sup>2</sup> 1 acre = 4 840 yd <sup>2</sup> = 4 046.86 m <sup>2</sup>	1 km <sup>2</sup> = 247.1 acre
<b>Volume</b>	m <sup>3</sup>	ℓ, L [liter(s)] * cc [cubic centimeters] gal (US) [gallon(s)] floz (US) [fluid ounce(s)] barrel (US) [barrels(US)]	1 ℓ = 1 dm <sup>3</sup> = 10 <sup>-3</sup> m <sup>3</sup> 1 cc = 1 cm <sup>3</sup> = 10 <sup>-6</sup> m <sup>3</sup> 1 gal (US) = 231 in <sup>3</sup> = 3.785 41 dm <sup>3</sup> 1 floz (US) = 29.573 5 cm <sup>3</sup> 1 barrel (US) = 158.987 dm <sup>3</sup>	1 m <sup>3</sup> = 10 <sup>3</sup> ℓ 1 m <sup>3</sup> = 10 <sup>6</sup> cc 1 m <sup>3</sup> = 264.17 gal 1 m <sup>3</sup> = 33 814 floz 1 m <sup>3</sup> = 6.289 8 barrel
<b>Time</b>	s [second(s)]	min [minute(s)] * h [hour(s)] * d [day(s)] *		
<b>Angular velocity</b>	rad/s			
<b>Velocity</b>	m/s	kn [knot(s)] m/h *	1 kn = 1 852 m/h	1 km/h = 0.539 96 kn
<b>Acceleration</b>	m/s <sup>2</sup>	G	1 G = 9.806 65 m/s <sup>2</sup>	1 m/s <sup>2</sup> = 0.101 97 G
<b>Frequency</b>	Hz [hertz]	c/s [cycle(s)/second]	1 c/s = 1 s <sup>-1</sup> = 1 Hz	
<b>Rotational frequency</b>	s <sup>-1</sup>	rpm [revolutions per minute] min <sup>-1</sup> * r/min	1 rpm = 1/60 s <sup>-1</sup>	1 s <sup>-1</sup> = 60 rpm
<b>Mass</b>	kg [kilogram(s)]	t [ton(s)] * lb [pound(s)] gr [grain(s)] oz [ounce(s)] ton (UK) [ton(s) (UK)] ton (US) [ton(s) (US)] car [carat(s)]	1 t = 10 <sup>3</sup> kg 1 lb = 0.453 592 37 kg 1 gr = 64.798 91 mg 1 oz = 1/16 lb = 28.349 5 g 1 ton (UK) = 1 016.05 kg 1 ton (US) = 907.185 kg 1 car = 200 mg	1 kg = 2.204 6 lb 1 g = 15.432 4 gr 1 kg = 35.274 0 oz 1 t = 0.984 2 ton (UK) 1 t = 1.102 3 ton (US) 1 g = 5 car

Note 1) \* : Unit can be used as an SI unit.  
No asterisk : Unit cannot be used.

**Supplementary Table 8 (2) SI units and conversion factors**

Mass	SI units	Other Units <sup>1)</sup>	Conversion into SI units	Conversion from SI units
Density	kg/m <sup>3</sup>			
Linear density	kg/m			
Momentum	kg · m/s			
Moment of momentum, Angular momentum	} kg · m <sup>2</sup> /s			
Moment of inertia		kg · m <sup>2</sup>		
Force	N [newton(s)]	dyn [dyne(s)] kgf [kilogram-force] gf [gram-force] tf [ton-force] lbf [pound-force]	1 dyn = 10 <sup>-5</sup> N 1 kgf = 9.806 65 N 1 gf = 9.806 65 × 10 <sup>-3</sup> N 1 tf = 9.806 65 × 10 <sup>3</sup> N 1 lbf = 4.448 22 N	1 N = 10 <sup>5</sup> dyn 1 N = 0.101 97 kgf  1 N = 0.224 809 lbf
Moment of force	N · m [newton meter(s)]	gf · cm kgf · cm kgf · m tf · m lbf · ft	1 gf · cm = 9.806 65 × 10 <sup>-5</sup> N · m 1 kgf · cm = 9.806 65 × 10 <sup>-2</sup> N · m 1 kgf · m = 9.806 65 N · m 1 tf · m = 9.806 65 × 10 <sup>3</sup> N · m 1 lbf · ft = 1.355 82 N · m	1 N · m = 0.101 97 kgf · m 1 N · m = 0.737 56 lbf · ft
Pressure, Normal stress	Pa [pascal(s)]  or N/m <sup>2</sup> {1 Pa = 1 N/m <sup>2</sup> }	gf/cm <sup>2</sup> kgf/mm <sup>2</sup> kgf/m <sup>2</sup> lbf/in <sup>2</sup> bar [bar(s)] at [engineering air pressure] mH <sub>2</sub> O, mAq [meter water column] atm [atmosphere] mHg [meter mercury column] Torr [torr]	1 gf/cm <sup>2</sup> = 9.806 65 × 10 Pa 1 kgf/mm <sup>2</sup> = 9.806 65 × 10 <sup>6</sup> Pa 1 kgf/m <sup>2</sup> = 9.806 65 Pa 1 lbf/in <sup>2</sup> = 6 894.76 Pa 1 bar = 10 <sup>5</sup> Pa 1 at = 1kgf/cm <sup>2</sup> = 9.806 65 × 10 <sup>4</sup> Pa 1 mH <sub>2</sub> O = 9.806 65 × 10 <sup>3</sup> Pa 1 atm = 101 325 Pa 1 mHg = $\frac{101\ 325}{0.76}$ Pa 1 Torr = 1mmHg = 133.322 Pa	1 MPa = 0.101 97 kgf/mm <sup>2</sup> 1 Pa = 0.101 97 kgf/m <sup>2</sup> 1 Pa = 0.145 × 10 <sup>-3</sup> lbf/in <sup>2</sup> 1 Pa = 10 <sup>-2</sup> mbar  1 Pa = 7.500 6 × 10 <sup>-3</sup> Torr
Viscosity	Pa · s [pascal second]	P [poise] kgf · s/m <sup>2</sup>	10 <sup>-2</sup> P = 1 cP = 1 mPa · s 1 kgf · s/m <sup>2</sup> = 9.806 65 Pa · s	1 Pa · s = 0.101 97 kgf · s/m <sup>2</sup>
Kinematic viscosity	m <sup>2</sup> /s	St [stokes]	10 <sup>-2</sup> St = 1 cSt = 1 mm <sup>2</sup> /s	
Surface tension	N/m			

Note 1) \* : Unit can be used as an SI unit.  
No asterisk : Unit cannot be used.

Supplementary Table 8 (3) SI units and conversion factors

Mass	SI units	Other Units <sup>1)</sup>	Conversion into SI units	Conversion from SI units
<b>Work, energy</b>	J [joule(s)] {1 J = 1 N · m}	eV [electron volt(s)] * erg [erg(s)] kgf · m lbf · ft	1 eV = (1.602 189 2 ± 0.000 004 6) × 10 <sup>-19</sup> J 1 erg = 10 <sup>-7</sup> J 1 kgf · m = 9.806 65 J 1 lbf · ft = 1.355 82 J	1 J = 10 <sup>7</sup> erg 1 J = 0.101 97 kgf · m 1 J = 0.737 56 lbf · ft
<b>Power</b>	W [watt(s)]	erg/s [ergs per second] kgf · m/s PS [French horse-power] HP [horse-power (British)] lbf · ft/s	1 erg/s = 10 <sup>-7</sup> W 1 kgf · m/s = 9.806 65 W 1 PS = 75 kgf · m/s = 735.5 W 1 HP = 550 lbf · ft/s = 745.7 W 1 lbf · ft/s = 1.355 82 W	1 W = 0.101 97 kgf · m/s 1 W = 0.001 36 PS 1 W = 0.001 34 HP
<b>Thermo-dynamic temperature</b>	K [kelvin(s)]			
<b>Celsius temperature</b>	°C [celsius(s)] {t °C = (t + 273.15) K}	°F [degree(s) Fahrenheit]	t°F = $\frac{5}{9} (t - 32) °C$	t°C = $(\frac{5}{9} t + 32) °F$
<b>Linear expansion coefficient</b>	K <sup>-1</sup>	°C <sup>-1</sup> [per degree]		
<b>Heat</b>	J [joule(s)] {1 J = 1 N · m}	erg [erg(s)] kgf · m cal <sub>IT</sub> [l. T. calories]	1 erg = 10 <sup>-7</sup> J 1 cal <sub>IT</sub> = 4.186 8 J 1 Mcal <sub>IT</sub> = 1.163 kW · h	1 J = 10 <sup>7</sup> erg 1 J = 0.238 85 cal <sub>IT</sub> 1 kW · h = 0.86 × 10 <sup>6</sup> cal <sub>IT</sub>
<b>Thermal conductivity</b>	W/ (m · K)	W/ (m · °C) cal/ (s · m · °C)	1 W/ (m · °C) = 1 W/ (m · K) 1 cal/ (s · m · °C) = 4.186 05 W/ (m · K)	
<b>Coefficient of heat transfer</b>	W/ (m <sup>2</sup> · K)	W/ (m <sup>2</sup> · °C) cal/ (s · m <sup>2</sup> · °C)	1 W/ (m <sup>2</sup> · °C) = 1 W/ (m <sup>2</sup> · K) 1 cal/ (s · m <sup>2</sup> · °C) = 4.186 05 W/ (m <sup>2</sup> · K)	
<b>Heat capacity</b>	J/K	J/°C	1 J/°C = 1 J/K	
<b>Massic heat capacity</b>	J/ (kg · K)	J/ (kg · °C)		

Note 1) \* : Unit can be used as an SI unit.  
No asterisk : Unit cannot be used.

**Supplementary Table 8 (4) SI units and conversion factors**

Mass	SI units	Other Units <sup>1)</sup>	Conversion into SI units	Conversion from SI units
<b>Electric current</b>	A [ampere(s)]			
<b>Electric charge, quantity of electricity</b>	C [coulomb(s)]  {1 C = 1 A · s}	A · h *  	1 A · h = 3.6 kC	
<b>Tension, electric potential</b>	V [volt(s)] {1 V = 1 W/A}			
<b>Capacitance</b>	F [farad(s)] {1 F = 1 C/V}			
<b>Magnetic field strength</b>	A/m	Oe [oersted(s)]	$1 \text{ Oe} = \frac{10^3}{4\pi} \text{ A/m}$	1 A/m = $4\pi \times 10^{-3}$ Oe
<b>Magnetic flux density</b>	T [tesla(s)]  {1 T = 1 N/(A · m) = 1 Wb/m <sup>2</sup> = 1 V · s/m <sup>2</sup> }	Gs [gauss(es)] $\gamma$ [gamma(s)]	1 Gs = $10^{-4}$ T 1 $\gamma$ = $10^{-9}$ T	1 T = $10^4$ Gs 1 T = $10^9 \gamma$
<b>Magnetic flux</b>	Wb [weber(s)] {1 Wb = 1 V · s}	Mx [maxwell(s)]	1 Mx = $10^{-8}$ Wb	1 Wb = $10^8$ Mx
<b>Self inductance</b>	H [henry (– ries)] {1 H = 1 Wb/A}			
<b>Resistance (to direct current)</b>	$\Omega$ [ohm(s)] {1 $\Omega$ = 1 V/A}			
<b>Conductance (to direct current)</b>	S [siemens] {1 S = 1 A/V}			
<b>Active power</b>	W  {1 W = 1 J/s = 1 A · V}			

Note 1) \* : Unit can be used as an SI unit.  
No asterisk : Unit cannot be used.

Supplementary table 9 Inch/millimeter conversion

Inch		Inches										
		0	1	2	3	4	5	6	7	8	9	10
		mm										
<b>0</b>	<b>0</b>	<b>0</b>	<b>25.4000</b>	<b>50.8000</b>	<b>76.2000</b>	<b>101.6000</b>	<b>127.0000</b>	<b>152.4000</b>	<b>177.8000</b>	<b>203.2000</b>	<b>228.6000</b>	<b>254.0000</b>
<b>1/64</b>	0.015625	0.3969	25.7969	51.1969	76.5969	101.9969	127.3969	152.7969	178.1969	203.5969	228.9969	254.3969
<b>1/32</b>	0.03125	0.7938	26.1938	51.5938	76.9938	102.3938	127.7938	153.1938	178.5938	203.9938	229.3938	254.7938
<b>3/64</b>	0.046875	1.1906	26.5906	51.9906	77.3906	102.7906	128.1906	153.5906	178.9906	204.3906	229.7906	255.1906
<b>1/16</b>	0.0625	1.5875	26.9875	52.3875	77.7875	103.1875	128.5875	153.9875	179.3875	204.7875	230.1875	255.5875
<b>5/64</b>	0.078125	1.9844	27.3844	52.7844	78.1844	103.5844	128.9844	154.3844	179.7844	205.1844	230.5844	255.9844
<b>3/32</b>	0.09375	2.3812	27.7812	53.1812	78.5812	103.9812	129.3812	154.7812	180.1812	205.5812	230.9812	256.3812
<b>7/64</b>	0.109375	2.7781	28.1781	53.5781	78.9781	104.3781	129.7781	155.1781	180.5781	205.9781	231.3781	256.7781
<b>1/8</b>	0.125	<b>3.1750</b>	<b>28.5750</b>	<b>53.9750</b>	<b>79.3750</b>	<b>104.7750</b>	<b>130.1750</b>	<b>155.5750</b>	<b>180.9750</b>	<b>206.3750</b>	<b>231.7750</b>	<b>257.1750</b>
<b>9/64</b>	0.140625	3.5719	28.9719	54.3719	79.7719	105.1719	130.5719	155.9719	181.3719	206.7719	232.1719	257.5719
<b>5/32</b>	0.15625	3.9688	29.3688	54.7688	80.1688	105.5688	130.9688	156.3688	181.7688	207.1688	232.5688	257.9688
<b>11/64</b>	0.171875	4.3656	29.7656	55.1656	80.5656	105.9656	131.3656	156.7656	182.1656	207.5656	232.9656	258.3656
<b>3/16</b>	0.1875	4.7625	30.1625	55.5625	80.9625	106.3625	131.7625	157.1625	182.5625	207.9625	233.3625	258.7625
<b>13/64</b>	0.203125	5.1594	30.5594	55.9594	81.3594	106.7594	132.1594	157.5594	182.9594	208.3594	233.7594	259.1594
<b>7/32</b>	0.21875	5.5562	30.9562	56.3562	81.7562	107.1562	132.5562	157.9562	183.3562	208.7562	234.1562	259.5562
<b>15/64</b>	0.234375	5.9531	31.3531	56.7531	82.1531	107.5531	132.9531	158.3531	183.7531	209.1531	234.5531	259.9531
<b>1/4</b>	0.25	<b>6.3500</b>	<b>31.7500</b>	<b>57.1500</b>	<b>82.5500</b>	<b>107.9500</b>	<b>133.3500</b>	<b>158.7500</b>	<b>184.1500</b>	<b>209.5500</b>	<b>234.9500</b>	<b>260.3500</b>
<b>17/64</b>	0.265625	6.7469	32.1469	57.5469	82.9469	108.3469	133.7469	159.1469	184.5469	209.9469	235.3469	260.7469
<b>9/32</b>	0.28125	7.1438	32.5438	57.9438	83.3438	108.7438	134.1438	159.5438	184.9438	210.3438	235.7438	261.1438
<b>19/64</b>	0.296875	7.5406	32.9406	58.3406	83.7406	109.1406	134.5406	159.9406	185.3406	210.7406	236.1406	261.5406
<b>5/16</b>	0.3125	7.9375	33.3375	58.7375	84.1375	109.5375	134.9375	160.3375	185.7375	211.1375	236.5375	261.9375
<b>21/64</b>	0.328125	8.3344	33.7344	59.1344	84.5344	109.9344	135.3344	160.7344	186.1344	211.5344	236.9344	262.3344
<b>11/32</b>	0.34375	8.7312	34.1312	59.5312	84.9312	110.3312	135.7312	161.1312	186.5312	211.9312	237.3312	262.7312
<b>23/64</b>	0.359375	9.1281	34.5281	59.9281	85.3281	110.7281	136.1281	161.5281	186.9281	212.3281	237.7281	263.1281
<b>3/8</b>	0.375	<b>9.5250</b>	<b>34.9250</b>	<b>60.3250</b>	<b>85.7250</b>	<b>111.1250</b>	<b>136.5250</b>	<b>161.9250</b>	<b>187.3250</b>	<b>212.7250</b>	<b>238.1250</b>	<b>263.5250</b>
<b>25/64</b>	0.390625	9.9219	35.3219	60.7219	86.1219	111.5219	136.9219	162.3219	187.7219	213.1219	238.5219	263.9219
<b>13/32</b>	0.40625	10.3188	35.7188	61.1188	86.5188	111.9188	137.3188	162.7188	188.1188	213.5188	238.9188	264.3188
<b>27/64</b>	0.421875	10.7156	36.1156	61.5156	86.9156	112.3156	137.7156	163.1156	188.5156	213.9156	239.3156	264.7156
<b>7/16</b>	0.4375	11.1125	36.5125	61.9125	87.3125	112.7125	138.1125	163.5125	188.9125	214.3125	239.7125	265.1125
<b>29/64</b>	0.453125	11.5094	36.9094	62.3094	87.7094	113.1094	138.5094	163.9094	189.3094	214.7094	240.1094	265.5094
<b>15/32</b>	0.46875	11.9062	37.3062	62.7062	88.1062	113.5062	138.9062	164.3062	189.7062	215.1062	240.5062	265.9062
<b>31/64</b>	0.484375	12.3031	37.7031	63.1031	88.5031	113.9031	139.3031	164.7031	190.1031	215.5031	240.9031	266.3031
<b>1/2</b>	0.5	<b>12.7000</b>	<b>38.1000</b>	<b>63.5000</b>	<b>88.9000</b>	<b>114.3000</b>	<b>139.7000</b>	<b>165.1000</b>	<b>190.5000</b>	<b>215.9000</b>	<b>241.3000</b>	<b>266.7000</b>
<b>33/64</b>	0.515625	13.0969	38.4969	63.8969	89.2969	114.6969	140.0969	165.4969	190.8969	216.2969	241.6969	267.0969
<b>17/32</b>	0.53125	13.4938	38.8938	64.2938	89.6938	115.0938	140.4938	165.8938	191.2938	216.6938	242.0938	267.4938
<b>35/64</b>	0.546875	13.8906	39.2906	64.6906	90.0906	115.4906	140.8906	166.2906	191.6906	217.0906	242.4906	267.8906
<b>9/16</b>	0.5625	14.2875	39.6875	65.0875	90.4875	115.8875	141.2875	166.6875	192.0875	217.4875	242.8875	268.2875
<b>37/64</b>	0.578125	14.6844	40.0844	65.4844	90.8844	116.2844	141.6844	167.0844	192.4844	217.8844	243.2844	268.6844
<b>19/32</b>	0.59375	15.0812	40.4812	65.8812	91.2812	116.6812	142.0812	167.4812	192.8812	218.2812	243.6812	269.0812
<b>39/64</b>	0.609375	15.4781	40.8781	66.2781	91.6781	117.0781	142.4781	167.8781	193.2781	218.6781	244.0781	269.4781
<b>5/8</b>	0.625	<b>15.8750</b>	<b>41.2750</b>	<b>66.6750</b>	<b>92.0750</b>	<b>117.4750</b>	<b>142.8750</b>	<b>168.2750</b>	<b>193.6750</b>	<b>219.0750</b>	<b>244.4750</b>	<b>269.8750</b>
<b>41/64</b>	0.640625	16.2719	41.6719	67.0719	92.4719	117.8719	143.2719	168.6719	194.0719	219.4719	244.8719	270.2719
<b>21/32</b>	0.65625	16.6688	42.0688	67.4688	92.8688	118.2688	143.6688	169.0688	194.4688	219.8688	245.2688	270.6688
<b>43/64</b>	0.671875	17.0656	42.4656	67.8656	93.2656	118.6656	144.0656	169.4656	194.8656	220.2656	245.6656	271.0656
<b>11/16</b>	0.6875	17.4625	42.8625	68.2625	93.6625	119.0625	144.4625	169.8625	195.2625	220.6625	246.0625	271.4625
<b>45/64</b>	0.703125	17.8594	43.2594	68.6594	94.0594	119.4594	144.8594	170.2594	195.6594	221.0594	246.4594	271.8594
<b>23/32</b>	0.71875	18.2562	43.6562	69.0562	94.4562	119.8562	145.2562	170.6562	196.0562	221.4562	246.8562	272.2562
<b>47/64</b>	0.734375	18.6531	44.0531	69.4531	94.8531	120.2531	145.6531	171.0531	196.4531	221.8531	247.2531	272.6531
<b>3/4</b>	0.75	<b>19.0500</b>	<b>44.4500</b>	<b>69.8500</b>	<b>95.2500</b>	<b>120.6500</b>	<b>146.0500</b>	<b>171.4500</b>	<b>196.8500</b>	<b>222.2500</b>	<b>247.6500</b>	<b>273.0500</b>
<b>49/64</b>	0.765625	19.4469	44.8469	70.2469	95.6469	121.0469	146.4469	171.8469	197.2469	222.6469	248.0469	273.4469
<b>25/32</b>	0.78125	19.8438	45.2438	70.6438	96.0438	121.4438	146.8438	172.2438	197.6438	223.0438	248.4438	273.8438
<b>51/64</b>	0.796875	20.2406	45.6406	71.0406	96.4406	121.8406	147.2406	172.6406	198.0406	223.4406	248.8406	274.2406
<b>13/16</b>	0.8125	20.6375	46.0375	71.4375	96.8375	122.2375	147.6375	173.0375	198.4375	223.8375	249.2375	274.6375
<b>53/64</b>	0.828125	21.0344	46.4344	71.8344	97.2344	122.6344	148.0344	173.4344	198.8344	224.2344	249.6344	275.0344
<b>27/32</b>	0.84375	21.4312	46.8312	72.2312	97.6312	123.0312	148.4312	173.8312	199.2312	224.6312	250.0312	275.4312
<b>55/64</b>	0.859375	21.8281	47.2281	72.6281	98.0281	123.4281	148.8281	174.2281	199.6281	225.0281	250.4281	275.8281
<b>7/8</b>	0.875	<b>22.2250</b>	<b>47.6250</b>	<b>73.0250</b>	<b>98.4250</b>	<b>123.8250</b>	<b>149.2250</b>	<b>174.6250</b>	<b>200.0250</b>	<b>225.4250</b>	<b>250.8250</b>	<b>276.2250</b>
<b>57/64</b>	0.890625	22.6219	48.0219	73.4219	98.8219	124.2219	149.6219	175.0219	200.4219	225.8219	251.2219	276.6219
<b>29/32</b>	0.90625	23.0188	48.4188	73.8188	99.2188	124.6188	150.0188	175.4188	200.8188	226.2188	251.6188	277.0188
<b>59/64</b>	0.921875	23.4156	48.8156	74.2156	99.6156	125.0156	150.4156	175.8156	201.2156	226.6156	252.0156	277.4156
<b>15/16</b>	0.9375	23.8125	49.2125	74.6125	100.0125	125.4125	150.8125	176.2125	201.6125	227.0125	252.4125	277.8125
<b>61/64</b>	0.953125	24.2094	49.6094	75.0094	100.4094	125.8094	151.2094	176.6094	202.0094	227.4094	252.8094	278.2094
<b>31/32</b>	0.96875	24.6062	50.0062	75.4062	100.8062	126.2062	151.6062	177.0062	202.4062	227.8062	253.2062	278.6062
<b>63/64</b>	0.984375	25.0031	50.4031	75.8031	101.2031	126.6031	152.0031	177.4031	202.8031	228.2031		

## Supplementary table 10 Mechanical properties of metal materials (reference)

### (1) Modulus of longitudinal elasticity, elastic limit, and ultimate strength

Material	Main components and others	Specific gravity	Modulus of longitudinal elasticity (GPa)	Elastic limit $\sigma_e$ (MPa)	Ultimate strength (MPa)		
					Tensile $K_t$	Compression $K_c$	Shear $K_s$
Gray cast iron (FC150)		7.1–7.3	69	29	118	590	108
(FC200)		7.1–7.3	98	88	137– 216	740	206
(FC250)		7.1–7.3	103	88	176– 314	880	206
White heart malleable cast iron	Residual carbon : 1.6% or less	7.1–7.3	158	196	314– 392	820	382
Black heart malleable cast iron		7.2–7.6	158	196	274– 392	820	382
Carbon steel	General	7.7–7.8	196–216	176–245	314– 830	–	–
Extra mild steel	C 0.05–0.15%	7.8	196	118	Up to 372	Virtually identical to tensile strength, provided buckling can be ignored	0.8 $K_t$
Mild steel	C 0.15–0.25%	7.8	204	157	372– 392		0.75 $K_t$
Middle hard steel	C 0.25–0.40%	7.8	206	245–294	490– 590		0.75 $K_t$
Hard steel	C 0.40–0.50%	7.8	216	343	590– 690		0.7 $K_t$
Maximum hard steel	C 0.50–0.65%	7.8	216	372	690– 830		0.65 $K_t$
Mild steel	C 0.18% hot rolling	7.8	206	176	421		314
Hard steel	Oil hardening, tempering at 700 °C	7.8	206	343	590		461
Tool steel	C 0.60–1.50% hardening	7.8	216	441	660	820	
Cast steel	General	7.8–7.9	206–211	176–245	343– 600	343–600	284–382
Cast steel (mild)	C 0.15–0.22%	7.8–7.9	206	196	363– 431	363–431	284
Cast steel (middle hard)	C 0.22–0.30%	7.8–7.9	211	225	392– 490	392–490	333
Cast steel (hard)	C 0.30–0.40%	7.9	211	245	490– 590	490–590	382
Nickel steel	C 0.25–0.35% Ni 2–5%	7.85	206–216	333	640– 830	640	401
Chrome steel	C 0.13–0.48% Cr 0.9–1.2%	7.85	206–216	–	780– 980	–	–
Nickel chrome steel	C, Ni, Cr included	7.85	206–216	–	740– 980	–	382–500
Chromium molybdenum steel	C, Cr, Mo included	7.85	206–216	–	830– 980	–	–
Manganese steel	C 0.2–0.46% Mn 1–1.4%	7.85	206–216	–	440–1 080	–	–
Spring steel		7.86	216	735	1 080–1 670	1 670	–
Stainless steel	C, Cr, Ni included	7.75	206–216	–	620	–	410
Brass casting	Cu 60% Zn 40%	8.5	69	–	176– 216	108	147
Brass (forged plate)	Cu 60% Zn 40%	8.4	78– 98	–	274– 392	314	206
Brass (forged rod)	Cu 60% Zn 40%	8.4	82	–	520	314	314
Phosphor bronze casting	Cu 90% Sn 10% P 0.1%	8.8	93–103	–	196– 294	137	176
Phosphor bronze (forging)	Cu 90% Sn 10% P 0.1%	8.8	132	–	294– 980	206	382
Tin		7.28	39– 54	–	27	–	–
Lead		11.34	15– 17	–	20	–	–
Zinc		7.1	78–127	–	78– 176	–	–

### (2) Allowable stress

Unit : MPa

Material	Tensile $K_t$			Compression $K_c$		Bending $K_b$			Shear $K_s$			Torsion $K_d$		
	<i>a</i>	<i>b</i>	<i>c</i>	<i>a</i>	<i>b</i>	<i>a</i>	<i>b</i>	<i>c</i>	<i>a</i>	<i>b</i>	<i>c</i>	<i>a</i>	<i>b</i>	<i>c</i>
Cast iron (cast)	29– 34	20– 23	10–12	88– 98	59– 65	45– 59	30– 39	15–20	29– 34	20–23	10–12	26– 34	18–23	88–118
Cast iron (machined)	29– 34	20– 23	10–12	88– 98	59– 65	55– 71	–	–	29– 34	20–23	10–12	26– 34	18–23	88–118
Malleable cast iron	44– 69	29– 46	15–23	59– 88	39– 59	44– 98	29– 46	15–23	–	–	–	29– 39	20–26	10– 13
Cast steel	59–118	39– 78	20–39	88–147	59– 98	74–118	49– 78	25–39	47– 94	31–63	16–31	47– 94	31–63	16– 31
Mild steel	98–157	66–105	32–52	98–157	66–105	88–147	59– 98	35–49	78–127	52–85	26–42	78–137	52–91	26– 46
Middle hard steel	118–176	78–118	39–59	118–176	78–118	118–176	78–118	39–59	94–137	63–94	31–47	88–137	59–94	29– 47
Nickel steel	118–176	78–118	39–59	118–176	78–118	118–176	78–118	39–59	94–137	63–94	31–47	88–137	59–92	29– 47
Carbon steel casting	88–118	59– 78	29–39	88–118	59– 78	88–118	59– 78	29–39	71– 93	47–63	24–31	35– 47	24–31	12– 16
Brass (rolled)	10– 59	26– 35	13–20	39– 59	26– 39	39– 59	26– 39	13–20	34– 47	21–31	11–16	31– 47	21–31	11– 16
Bronze	29– 39	20– 26	10–13	29– 39	20– 26	29– 39	20– 26	10–13	–	–	–	–	–	–
Phosphor bronze	59– 88	39– 59	20–29	59– 88	39– 59	59– 88	39– 59	20–29	44– 69	29–46	15–23	44– 69	29–46	15– 23
Aluminum casting	10– 12	7– 8	2– 4	–	–	15– 20	10– 13	5– 7	–	–	–	–	–	–

Remarks 1. *a* is applicable in the case of static load, *b* is applicable in the case of dynamic load, and *c* is applicable to in the case of repeated load.

2. Bending allowable stress  $K_b$  and torsion allowable stress  $K_d$  of cast iron are applicable when the cross section is round and safety factor is within a range from 5 to 6.



Supplementary table 11 Steel hardness conversion

Rockwell C scale 1 471.0 N (150 kgf)	Vickers	Brinell		Rockwell		Shore
		Standard steel ball	Tungsten carbide steel ball	A scale 588.4 N (60 kgf)	B scale 980.7 N (100 kgf)	
68	940			85.6		97
67	900			85.0		95
66	865			84.5		92
65	832		739	83.9		91
64	800		722	83.4		88
63	772		705	82.8		87
62	746		688	82.3		85
61	720		670	81.8		83
60	697		654	81.2		81
59	674		634	80.7		80
58	653		615	80.1		78
57	633		595	79.6		76
56	613		577	79.0		75
55	595	–	560	78.5		74
54	577	–	543	78.0		72
53	560	–	525	77.4		71
52	544	500	512	76.8		69
51	528	487	496	76.3		68
50	513	475	481	75.9		67
49	498	464	469	75.2		66
48	484	451	455	74.7		64
47	471	442	443	74.1		63
46	458	432	432	73.6		62
45	446		421	73.1		60
44	434		409	72.5		58
43	423		400	72.0		57
42	412		390	71.5		56
41	402		381	70.9		55
40	392		371	70.4	–	54
39	382		362	69.9	–	52
38	372		353	69.4	–	51
37	363		344	68.9	–	50
36	354		336	68.4	(109.0)	49
35	345		327	67.9	(108.5)	48
34	336		319	67.4	(108.0)	47
33	327		311	66.8	(107.5)	46
32	318		301	66.3	(107.0)	44
31	310		294	65.8	(106.0)	43
30	302		286	65.3	(105.5)	42
29	294		279	64.7	(104.5)	41
28	286		271	64.3	(104.0)	41
27	279		264	63.8	(103.0)	40
26	272		258	63.3	(102.5)	38
25	266		253	62.8	(101.5)	38
24	260		247	62.4	(101.0)	37
23	254		243	62.0	100.0	36
22	248		237	61.5	99.0	35
21	243		231	61.0	98.5	35
20	238		226	60.5	97.8	34
(18)	230		219	–	96.7	33
(16)	222		212	–	95.5	32
(14)	213		203	–	93.9	31
(12)	204		194	–	92.3	29
(10)	196		187		90.7	28
( 8)	188		179		89.5	27
( 6)	180		171		87.1	26
( 4)	173		165		85.5	25
( 2)	166		158		83.5	24
( 0)	160		152		81.7	24





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