

















NTN®






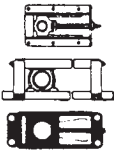
Bearing Units



CAT. NO. **2400-XI/E**

Dimension Table

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Technical
Data

Set screw type


























Eccentric locking
collar type

Adapter type

Ball bearings










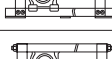

Set screw type (1)

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






Set screw type (2)

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	Rhombus flanged units pressed steel housing		ASPF2 204 ASRPF2 206
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	Take-up stretcher units		UCT2 408
	Type L stretcher units		UCL2 410
	Type M stretcher units		UCM2 411 UCM3 412






Eccentric locking collar type (1)

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Pillow blocks	Pillow blocks cast housing		UELPL2 242 UELPL3 246	
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	Narrow pillow blocks cast housing		UELUP2 258	
	Light pillow blocks cast housing		AELPB2 268	
	Pillow blocks pressed steel housing		AELPP2 270 AELRPP2 272	
	Flanged units	Square flanged units cast housing		UELFU2 274 UELF2 278 UELF3 282
		Square flanged units cast housing w/ spigot joint		UELFS3 288
Round flanged units cast housing w/ spigot joint			UELFC2 294	
Rhombus flanged units cast housing			UELFU2 298 UELFL2 302 UELFL3 306	
Light rhombus flanged units cast housing			AELFB2 312 AELFD2 314 JELFD2 315	








Eccentric locking collar type (2)

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Flanged units	Round flanged units pressed steel housing		AELPF2 316 JELPF2 318 AELRPF2 320
	Rhombus flanged units pressed steel housing		AELPFL2 322 AELRPFL2 324 JELPFL2 326
	Take-up units	Take-up units cast housing	
Cartridge units	Cartridge units cast housing		UEL2 338 UEL3 340
Stretcher units	Mini stretcher units		AELPT2 344 JELPT2 345






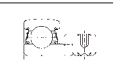
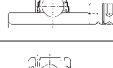
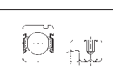


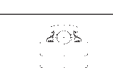
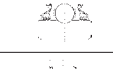





Adapter type

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	Square flanged units cast housing w/ spigot joint		UKFS3 370
	Round flanged units cast housing w/ spigot joint		UKFC2 374 UKFCX 378
	Rhombus flanged units cast housing		UKFL2 382 UKFL3 386 UKFLX 390
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Ball bearings

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Bearings with solid grease

(For food machinery)



Overview

“Solid grease” is a lubricant essentially composed of lubricating grease and ultra-high polymer polyethylene. Solid grease has the same viscosity as ordinary grease at normal temperature, but as a result of a special heat treatment process, this grease solidifies retaining a large proportion of the lubricant in it. Thanks to this solidification, the grease does not easily leak from the bearing, even when the bearing is subjected to strong vibrations or centrifugal force, helping to extend bearing life.

Table 1 Major components in solid greases

Solid grease (code)	Resin	Lubricant	Operating temperature range (°C)
General-purpose solid grease (LP03)	Ultra-high polymer polyethylene ①	Li-mineral oil grease	-20 ~ +80 (Constant use:+60 and less)
Food-grade solid grease (LP09)	Ultra-high polymer polyethylene ①	Ultra-high polymer polyethylene ②	-10 ~ +100 (Constant use:+80 and less)

① Conforms to FDA standard.

② Conforms to H-1 standard of NSF.

Features

1. Reduced lubricant leakage

Because the base oil is retained in a solid mixture, it is less likely to leak out of the bearing. During operation, temperature rise and/or centrifugal force will cause a gradual release of the base oil into the raceway groove. Eliminating grease leakage from the bearing ensures a consistent supply of lubricant and prevents contamination of the surrounding environment.

2. Superior lubrication

Bearings with solid grease resist grease leakage prolonging bearing life in applications where high centrifugal force or vibration are present. The solid lubricant does not emulsify when exposed to water also extending both grease and bearing life.

3. Low torque characteristics

The running torque of spot-pack bearings with solid grease is lower than that of bearings using standard lubricants. With conventional greases, a shearing resistance is created as the grease is channeled out of the raceway groove. Spot-pack bearings with solid grease do not experience shear resistance resulting in a lower running torque.

4. Sealing effect

Though solid grease protects a bearing against ingress of foreign matters (water, dust, etc.), it is not a sufficient means as a sealing device. Therefore, for applications that need reliable sealing performance, we recommend the use of contact type rubber seals (deep groove ball bearings, bearing units) or other seals (other bearing types).



Bearings with solid grease for food machinery

Bearing units stainless series

(Stainless bearings + Stainless steel housing)



Guards against corrosion

NTN bearing units in the stainless series feature ball bearings inserted into housings made of stainless that provide superior resistance to corrosion as compared to standard series cast iron units. This series is especially useful in a wide variety of applications because of the rust free properties of the housing.

Please refer to **Table 2** for materials of stainless series.

Maintains a clean operating environment

The solid grease lubricant in the ball bearing, solely developed by NTN, reduces leakage from the bearing, significantly reducing environmental pollution.

Also this grease will not homogenize when water penetrates into the bearing raceway.

Note) It is not the bearing for clean room

Table 2 Materials

Parts		Materials
Bearing	Raceways	Martensite stainless steel (equivalent to SUS440C)
	Rolling element	Martensite stainless steel (SUS440C)
	Slinger, Retainer	Austenite stainless steel (SUS304)
	Rubber seal	Nitril rubber
	Set screw (W shape screw head)	Martensite stainless steel (SUS410)
Bearing housing		Austenite stainless steel casting (SCS13)
Cover		Austenite stainless steel (SUS304)

Note) Please refer to P14~P15 for the physical property for each material

Bearings with food solid grease for food machinery

The bearings with solid grease type P-09 boasts a high degree of safety because its heat-solidifying grease for food machinery is composed of food-grade lubricating grease that complies with the NSF's H-1 standard (permitting accidental contact with food) and super molecular weight polyethylene approved according to an FDA (US Food and Drug Administration) standard.

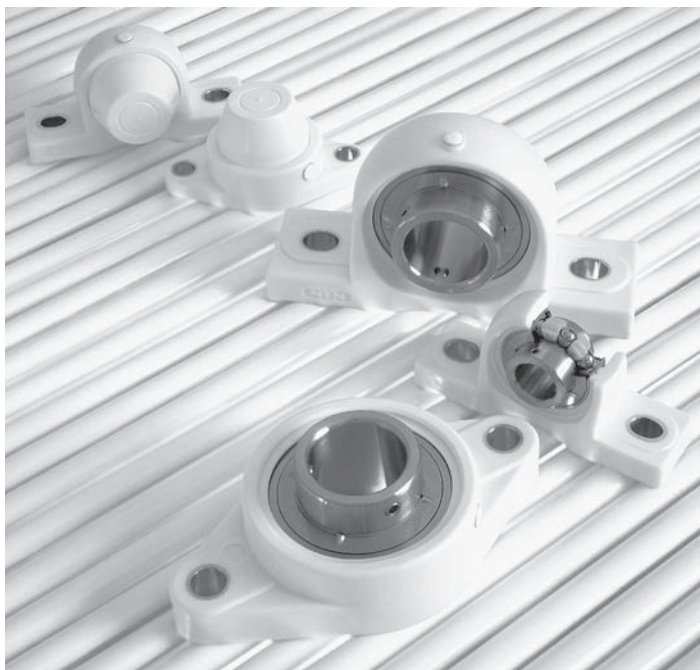
Interchangeability

The basic dimensions are the same as current NTN units and are also compatible with units from other manufacturers ISO standard.

The dimension tables for this series are shown on following pages. Pillow types are shown on page 88-89, Rhombus flange types are shown on page 182-183, The bearings are shown on page 430-431. There are specifications of the grease for food machinery and for heat-resistance in the stainless series bearing unit. Please consult NTN about the details.

Bearing units plastic housing series

(Stainless bearings + Glass fiber reinforced plastic housing)



Guards against corrosion

NTN bearing units in the plastic series feature ball bearings inserted into housings made of plastics that provide superior resistance to corrosion as compared to standard series cast iron units. This series is especially useful in a wide variety of applications because of the nonmagnetic and rust free properties of the housing.

Please refer to **Table 3** for materials of plastic series.

Maintains a clean operating environment

The solid grease lubricant in the ball bearing, solely developed by NTN, reduces leakage from the bearing, significantly reducing environmental pollution. Also, the housing will not stain, nor is there paint to peel and contaminate the environment.

Note) It is not the bearing for clean room

Table 3 Materials

Parts		Materials
Bearing	Raceways	Martensite stainless steel (equivalent to SUS440C)
	Rolling element	Martensite stainless steel (SUS440C)
	Slinger, Retainer	Austenite stainless steel (SUS304)
	Rubber seal	Nitryl rubber
	Set screw (W shape screw head)	Martensite stainless steel (SUS410)
Bearing housing	Housing	Glass reinforced Polyester
	Sleeve for set bolt	Austenite stainless steel (SUS 304)
	Nut for grease fitting	Austenite stainless steel (SUS 304)
Cover		Polypropylene
Plug		Polyethylene

Note) Please refer to P14~P15 for the physical property for each material

Light weight

Weight is reduced more than 30% to 60% over standard series units.

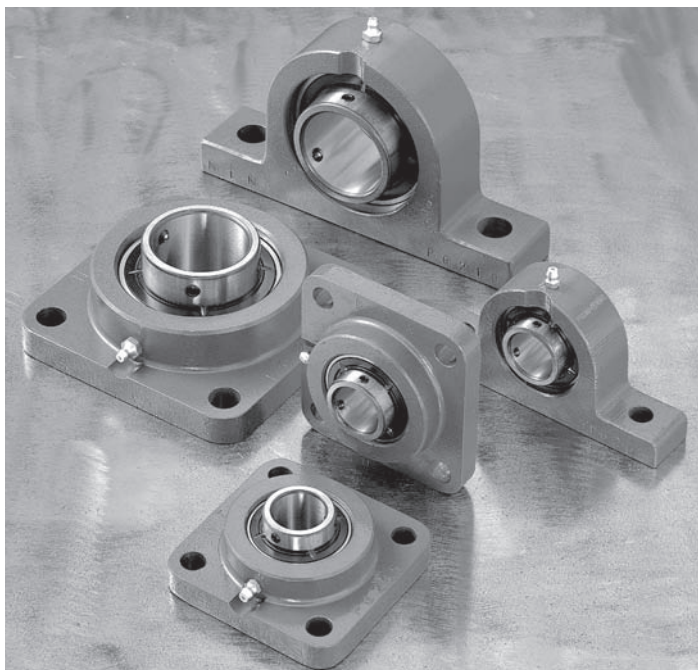
Water resistant

The glass filled polyester housing not only reduces corrosion but offers better water resistance.

The dimension tables for this series are shown on following pages. Pillow types are shown on page 90-91. Rhombus flange types are shown on page 184-185. The bearings are shown on page 430-431. There are specifications of the grease for food machinery and for heat-resistance in the stainless series bearing unit. Please consult NTN about the details.

Note) Over tightening the setting bolt may deform the plastic housing. Use the tightening torque guideline listed in **Table 11.1(2)** (P51).

Bearing units steel series (Rolled steel housing for general structures)



Superior Housing Strength

Made of precision gas cut rolled steel, NTN steel housings offer superior strength characteristics when compared to cast iron and cast steel housings.

The housing material is SS400 of JIS G3101 (Mechanical properties of general structural rolled steel). please refer **Table 3.3** (page 14) for mechanical property.

Consistent Microstructure

The rolled steel microstructure is more consistent than cast iron or cast steel, reducing the risk of housing fracture under severe conditions.

Interchangeability

Rolled steel housing dimensions are consistent with cast units, allowing them to be interchanged with NTN standard housings and other manufacturers ISO standard.

In general, if both cast iron and steel series housings are within the same size range, the steel housings are considered safer. This is because they require a lower safety factor than ductile or cast iron housings (Please refer to **Table 4**). In addition, the design and shape of the steel series provides higher strength. (Solid base etc.)

Table 4 Safety factor

Material		Static load	Pepeated load		Impact load
			Pulsating	Reversed	
SS400	Rolled steel for structure	3	5	8	12
FC200	Gray cast iron	4	6	10	15
FCD450	Ductile cast iron	4	6	10	15
SC450	Cast steell	4	6	10	15

Table 5 Material strength

Material		Tensil strength ^{*1} (N/mm ²)
SS400	Rolled steel for structure	400
FC200	Gray cast iron	200 ^{*2}
FCD450	Ductile cast iron	450 ^{*2}
SC450	Cast steell	450 ^{*2}

*1 Minimum value of material standard

*2 Respective casting pouring sample

Applications

NTN rolled steel housings provide superior strength to cast steel and cast iron. Their ability to resist impact loads makes them suitable for applications involving heavy loads and vibration. Possible applications for NTN rolled steel housings include but are not limited to conveyors, trucks and overhead cranes at steel mills, mining machinery and pollution control equipment.

Housing shape

There are various shapes for steel series. The dimension tables for this series are shown on following pages. Pillow types are shown on page 84-87. Thick pillow types are shown on page 98-99. Square flange types are shown on page 138-141. Square flange with spigot joint types are shown on page 148-149. Round flange with spigot joint types are shown on page 162-163. Rhombus flange type are shown on page 178-181. Take-up types are shown on page 230-233.

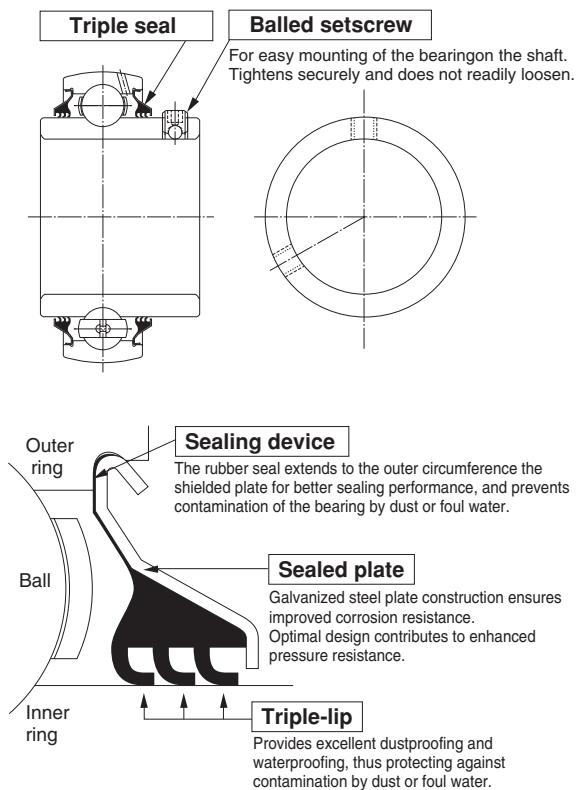
NTN Triple-Sealed Bearings for Bearing Units

These reliable triple-sealed bearings are dustproof and waterproof.

They ensure a longer bearing life even when exposed to heavy airborne dust and splashes of foul water.



1. Construction



Types

- **Low torque triple-sealed bearing**
(Cylindrical-bore, set screw type)
UC201D1LLJ through UC208D1LLJ
UC305D1LLJ through UC320D1LLJ
- **High torque triple-sealed bearing**
(Cylindrical-bore, set screw type)
UC201D1LLS through UC212D1LLS
(Square-bore type for agricultural machines)
1AS-11/8, 4AS09-11/4, etc.

2. Features

Better dustproofing and waterproofing ensure a longer bearing life.

Triple-sealed bearings feature a secure bearing seal with three lips. This special seal offers reliable dustproofing and waterproofing superior to those of standard bearings used in bearing units. In addition, it ensures a longer service life, even when exposed to heavy airborne dust and splashes of foul water. (Patent pending)

Reduces maintenance cost.

A bearing life longer than that of a standard bearing unit configurations means extended maintenance intervals, greatly reduced maintenance costs (of inspection, relubrication, replacement, etc.), and increased availability of machinery.

Decreases price of the bearing unit and contributes to more compact machinery.

The triple-sealed bearing unit replaces conventional covered bearing units in certain operating conditions, greatly decreasing the cost of bearing units. In addition, if the cover is not required, the machinery can be made more compact.

Secure balled setscrew

The triple-sealed bearing is mounted on the shaft with NTN's unique balled setscrew, which features an embedded ball in its tip. Compared with knurled cup point or cup-point setscrews, the balled setscrew provides much greater resistance to loosening, as it does not readily loosen due to vibration or impact.

Interchangeability

The triple-sealed bearing unit conforms to the JIS (Japanese Industrial Standard) for UC-type bearings. It is not only ready to use as a relubricable bearing, but it also replaces the conventional bearing units of NTN and other manufacturers. It therefore serves as a ready replacement for existing bearing units.

In the meantime, the relubricatable type is recommended to minimize the wear of the seal lip.

3. Allowable Operating Temperature Range and Speed

The triple-sealed bearing can be used in a temperature range of -15°C to 100°C.

● Allowable speed

Triple-sealed bearing unit $\cdots d_n$ value : 36000

High-torque triple-sealed bearing unit $\cdots d_n$ value : 21000

1. Construction

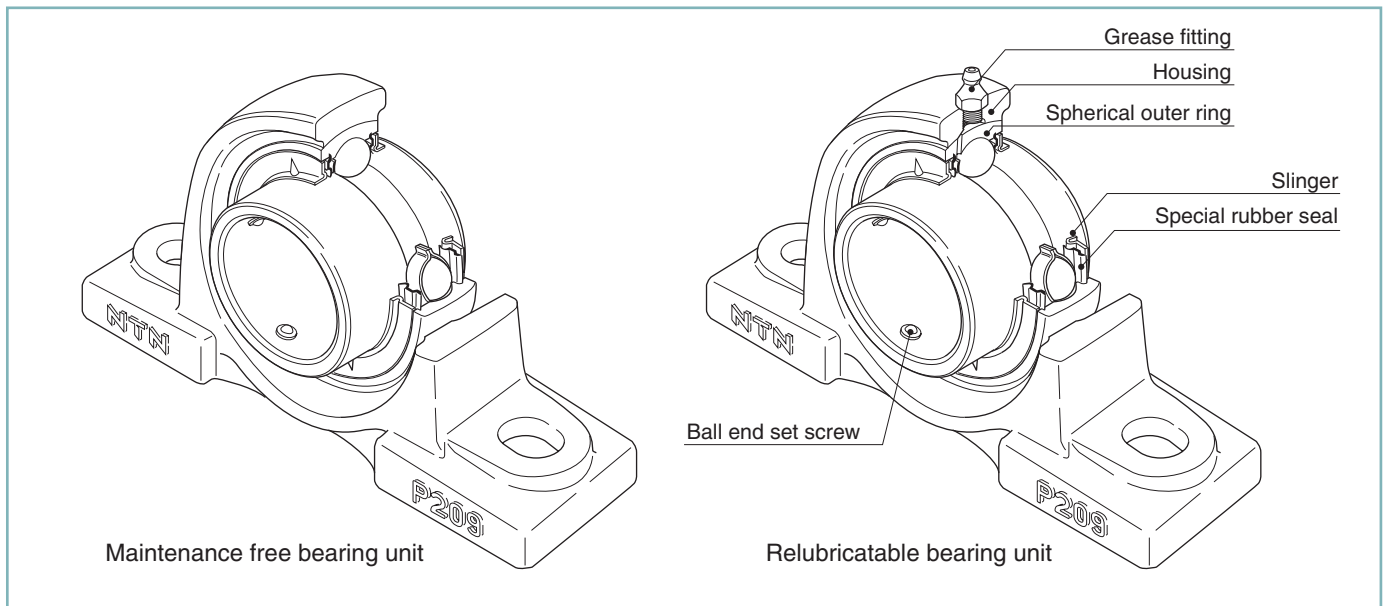
The NTN bearing unit is a combination of a radial ball bearing, seal, and a housing of high-grade cast iron or pressed steel, which comes in various shapes.

The outer surface of the bearing and the internal surface of the housing are spherical, so that the unit is self-aligning.

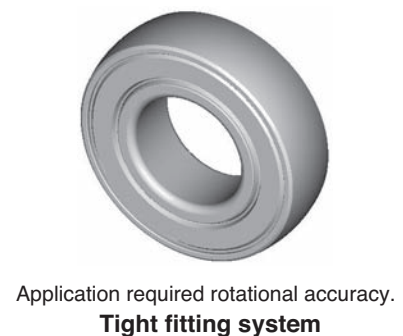
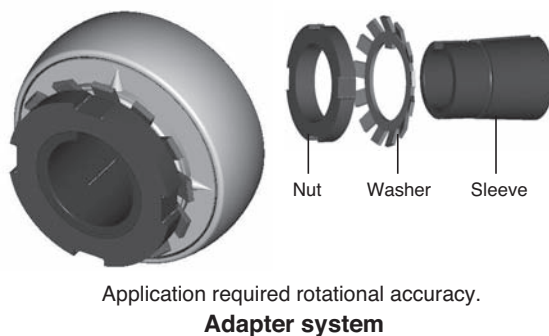
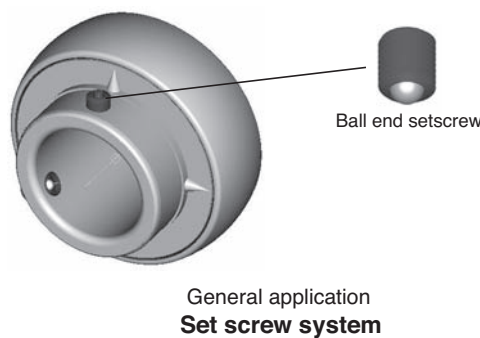
The inside construction of the ball bearing for the unit is such that steel balls and retainers of the same type as in series 62 and 63 of the NTN deep groove ball bearing are used. A duplex seal consisting of a combination of an oil-proof synthetic rubber seal and a slinger, unique to NTN, is provided on both sides.

Depending on the type, the following methods of fitting to the shaft are employed:

- (1) The inner ring is fastened onto the shaft in two places by set screws.
- (2) The inner ring has a tapered bore and is fitted to the shaft by means of an adapter.
- (3) In the eccentric locking collar system the inner ring is fastened to the shaft by means of eccentric grooves provided at the side of the inner ring and on the collar.



■ **Mounting system for bearing unit** (Please refer to P56 ~ P59 for Mounting bearing unit on the shaft)



2. Design Features and Advantages

2.1 Maintenance free type

The NTN Maintenance free bearing unit contains a high-grade lithium-based grease, good for use over a long period, which is ideally suited to sealed-type bearings. Also provided is an excellent sealing device, unique to NTN, which prevents any leakage of grease or penetration of dust and water from outside.

It is designed so that the rotation of the shaft causes the sealed-in grease to circulate through the inside space, effectively providing maximum lubrication. The lubrication effect is maintained over a long period with no need for replenishment of grease.

To summarize the advantages of the NTN maintenance free bearing unit:

- (1) As an adequate amount of good quality grease is sealed in at the time of manufacture, there is no need for replenishment. This means savings in terms of time and maintenance costs.
- (2) Since there is no need for any regreasing facilities, such as piping, a more compact design is possible.
- (3) The sealed-in design eliminates the possibility of grease leakage, which could lead to stained products.

2.2 Relubricatable type

The NTN relubricatable type bearing unit has an advantage over other similar units being so designed as to permit regreasing even in the case of misalignment of 2° to the right or left. The hole through which the grease fitting is mounted usually causes structural weakening of the housing.

However, as a result of extensive testing, in the NTN bearing unit the hole is positioned so as to minimize this adverse effect. In addition, the regreasing groove has been designed to minimize weakening of the housing.

While the NTN maintenance free type bearing unit is satisfactory for use under normal operating conditions in-doors, in the following circumstances it is necessary to use the relubricatable type bearing unit:

- (1) Cases where the temperature of the bearing rises above 100°C, 212°F:
- (2) Cases where there is excessive dust, but space does not permit using a bearing unit with a cover.
- (3) Cases where the bearing unit is constantly exposed to splashes of water or any other liquid, but space does not permit using a bearing unit with a cover.
- (4) Cases in which the humidity is very high, and the machine in which the bearing unit is used is run only intermittently.
- (5) Cases involving a heavy load of which the C_r/P_r value is about 10 or below, and the speed is 10 rpm or below, or the movement is oscillatory.
- (6) Cases where the number of revolutions is relatively high and the noise problem has to be considered; for example, when the bearing is used with the fan of an air conditioner.

2.3 Special sealing feature

2.3.1 Standard bearing units

The sealing device of the ball bearing for the NTN bearing unit is a combination of a heat-resistant and oil-proof synthetic rubber seal and a slinger of an exclusive NTN design.

The seal, which is fixed in the outer ring, is steelreinforced, and its lip, in contact with the inner ring, is designed to minimize frictional torque.

The slinger is fixed to the inner ring of the bearing with which it rotates. There is a small clearance between its periphery and the outer ring.

These two types of seals on both sides of the bearing prevent grease leakage, and foreign matter is prevented from entering the bearing from outside.

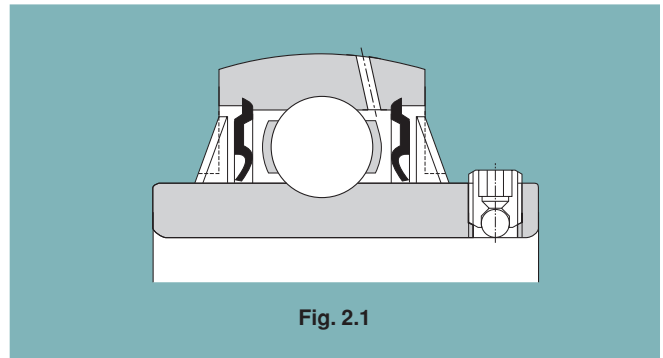


Fig. 2.1

2.3.2 Bearing units with covers

The NTN bearing unit with a cover consists of a standard bearing unit and an outside covering for extra protection against dust. Special consideration has been given to its design with respect to dust-proofing.

Sealing devices are provided in both the bearing and the housing, so that units of this type operate satisfactorily even in such adverse environments as flour mills, steel mills, foundries, galvanizing plants and chemical plants, where excessive dust is produced and/or liquids are used. They are also eminently suitable for outdoor environments where dust and rain are inevitable, and in heavy industrial machinery such as construction and transportation equipment.

The rubber seal of the cover contacts with the shaft by its two lips, as shown in **Fig. 2.2** and **2.3**. By filling the groove between the two lips with grease, an excellent sealing effect is obtained and, at the same time, the contacting portions of the lips are lubricated. Furthermore, the groove is so designed that when the shaft is inclined the rubber seal can move in the radial direction.

When bearing units are exposed to splashes of water rather than to dust, a drain hole (5 to 8 mm, 0.2 to 0.3 inches in diameter) is provided at the bottom of the cover, and grease should be applied to the side of the bearing itself instead of into the cover.

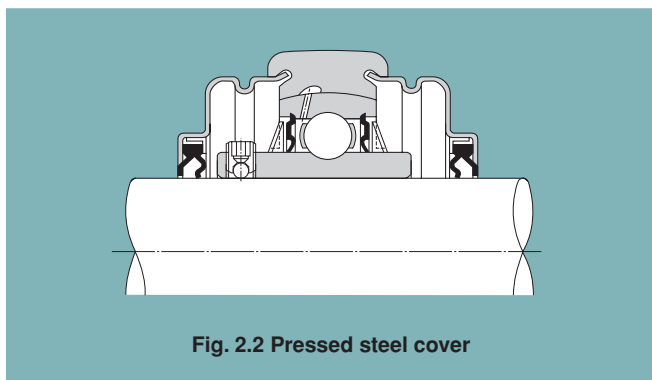


Fig. 2.2 Pressed steel cover

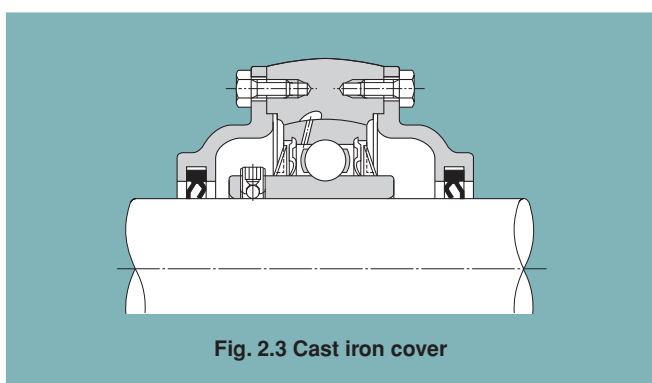


Fig. 2.3 Cast iron cover

2.4 Secure fitting

Fastening the bearing to the shaft is effected by tightening the ball-end set screw, situated on the inner ring. This is a unique NTN feature which prevents loosening, even if the bearing is subjected to intense vibrations and shocks.

2.5 Self-aligning

With the NTN bearing unit, the outer surface of the ball bearing and the inner surface of the housing are spherical, thus this bearing unit has self-aligning characteristic. Any misalignment of axis that may arise from poor workmanship on the shaft or errors in fitting will be properly adjusted.

2.6 Higher rated load capacity

The bearing used in the unit is of the same internal construction as those in NTN bearing series 62 and 63, and is capable of accommodating axial load as well as radial load, or composite load. The rated load capacity of this bearing is considerably higher than that of the corresponding self-aligning ball bearings used for standard plummer blocks.

2.7 Light weight yet strong housing

Housings for NTN bearing units come in various shapes. They consist of either high-grade cast iron, one-piece casting, or of precision finished pressed steel, the latter being lighter in weight. In either case, they are practically designed to combine lightness with maximum strength.

2.8 Easy mounting

The NTN bearing unit is an integrated unit consisting of a bearing and a housing.

As the bearing is prelubricated at manufacture with the correct amount of high-grade lithium base, it can be mounted on the shaft just as it is. It is sufficient to carry out a short test run after mounting.

2.9 Accurate fitting of the housing

In order to simplify the fitting of the pillow block and flange type bearing units, the housings are provided with a seat for a dowel pin, which may be utilized as needed.

2.10 Bearing replaceability

The bearing used in the NTN bearing unit is replaceable. In the event of bearing failure, a new bearing can be fitted to the existing housing.

3. Material

3.1 Raceway and rolling element materials

Materials with high hardness and appropriate toughness are used for the inner rings, outer rings and balls of the insert bearings since large compression forces and repetitive stresses are applied to a small contact. In general Cold-rolled steel is used for the cages. For special applications, stainless steel is also available for use in the insert bearings.

3.2 Housing materials

The most common materials used in NTN bearing unit housings are cast iron or steel plate, with cast iron being the standard.

For special applications, materials such as spheroidal graphite iron, structural steel, stainless steel cast iron or

plastic resin are also available for use in the housings. The chemical resistance properties of glass-fiber reinforced resin are shown in **Table 3.5**.

3.2.1 Cast iron housing

NTN uses gray cast iron as the standard material for cast iron housings.

Among metallic materials cast iron has a high damping capacity, which is an ideal characteristic for mechanical components. This means cast iron, exhibits superior performance when absorbing vibration, compared with other materials. Additionally cast iron is suitable for high temperatures of up to 300C°.

3.2.2 Steel plate housing

Cold-rolled steel sheet or hot-rolled mild steel sheet is used for steel plate housings.

Table 3.1 JIS G 5501 Mechanical properties of gray iron product

Code of material	Mechanical properties of separately casted test piece material	
	Tensile strength N/mm ²	Brinell hardness HB
FC200	Min. 200	Max. 232

Table 3.2 JIS G 5502 Mechanical properties of nodular graphite cast iron

Code of material	Mechanical properties of separately casted test piece material			
	Tensile strength N/mm ²	0.2% Proof stress N/mm ²	Elongation %	(Reference) Hardness HB
FCD450-10	Min. 450	Min. 280	Min. 10	140 - 210

Table 3.3 JIS G 3101 Mechanical properties of general structural rolled steel

Code of material	Mechanical properties			
	Steel thickness mm	Yield point or Proof stress N/mm ²	Tensile strength N/mm ²	Elongation % Test piece in ()
SS400	Over 16 Incl. 40	Min. 235	400 - 510	21 (No. 1A)
	Over 40 Incl. 100	Min. 215		23 (No. 4)
	Over 100	Min. 205		

Table 3.4 JIS G 5152 Mechanical properties of stainless cast steel product

Code of material	Mechanical properties of separately casted test piece material			
	Tensile strength N/mm ²	0.2% Proof stress N/mm ²	Elongation %	Hardness HB
SCS13	Min. 440	Min. 185	Min. 30	Max. 183

Table 3.5 Water and chemical resistance of glass fiber reinforcing resin housing (PBT)

	Chemicals	Temperature °C	Deterioration ratio ¹⁾ %			Chemicals	Temperature °C	Deterioration ratio ¹⁾ %		
			Number of days soaked					Number of days soaked		
			30 days	90 days				30 days	90 days	
Acid	Hydrochloric acid, 10%	23	89	85	Organic solvent	Ethyl alcohol	23	99	96	
	Sulfuric acid, 36%	23	97	97		Methyl alcohol	23	91	82	
		60	84	60		Isopropyl alcohol	23	100	100	
	Acetic acid 10%	23	88	88		Acetone	23	86	74	
Alkaline	Potassium hydroacid, 5%	23	88	10		Methyl Ethyl Keton	23	90	80	
	Sodium hydroacid, 10%	23	※	※		Ethyl acetate	23	96	86	
	Ammonia hydroacid, 10%	23	96	87		Methylene chloride	23	54	54	
Oil	Motor oil	23	100	100		ethylene glycole	23	100	100	
	Brake oil	23	100	100		Sodium	Zinc chrolide 10%	23	97	94
	Gasoline (Regular)	23	100	100			Calcium chrolide 10%	23	98	98
		60	93	90	Sodium chrolide 5%		23	97	97	

Remarks 1) Deterioration (%) is the strength after test divided by the strength before test.

The ※ symbol indicates that results could not be measured as the test piece dissolved.

Remarks 2) The values listed in the table are not guaranteed as they are the result of soaking without operating stresses on the sample. Because this strength data is general, it does not apply under all operating conditions. Actual housing strength will vary depending on the type and concentration of liquid, temperature, load, etc.

Table 3.6 Anti-Corrosion capability

NTN recommends ratings of ◎ to ○ for optimum corrosion resistance. ◎ ○ △ ▲ ×
excellent ← → poor

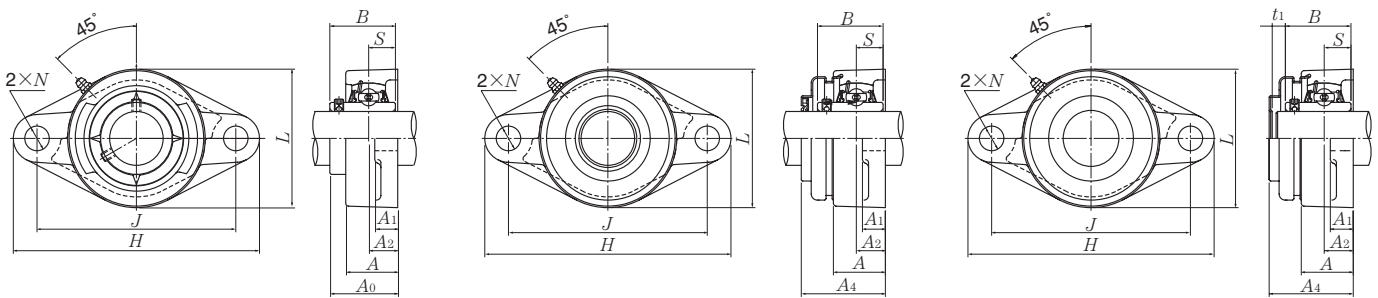
Materials	Condition	Atmosphere		Water		Acid		
		Dry	Wet	Natural water	Sodium water	Nitric acid	Sulfuric acid	Hydrochloric acid
Martensite stainless steel	SUS440C, SUS410	○	△	△	▲	▲	×	×
Austenite stainless steel	SUS304, SCS13	◎	◎	◎	○	◎	○	△
Polyester plastics		◎	◎	◎	◎	▲	○	○
Polypropylene, polyethylene		◎	◎	◎	◎	○	○	○
High carbon steel	SUJ2	△	▲	▲	×	×	×	×
Carbon steel, Cast iron		▲	×	×	×	×	×	×

Remarks: This data is obtained by observation of the surface conditions of materials.

Note that these anti-corrosion capabilities are altered by anti-corrosion surface treatment.

Not recommended for use in liquid.

Rhombus flanged units cast housing Set screw type

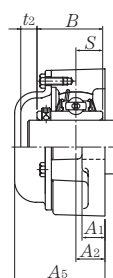
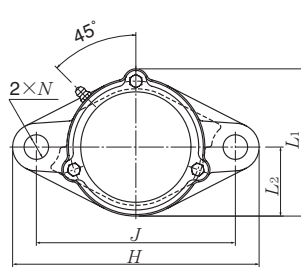
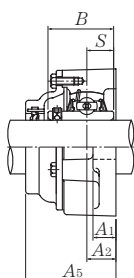
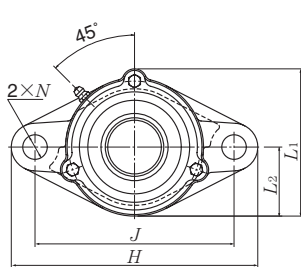


Press steel dust cover type (Open end)
S-UCFL...D1

Press steel dust cover type (Close end)
SM-UCFL...D1

Shaft dia. mm inch	Unit number ¹⁾	Nominal dimensions										Bolt size mm inch	Bearing number
		H	J	A ₂	A ₁	A	N	L	A ₀	B	S		
12 1/2	UCFL201D1 UCFL201-008D1	113 4 7/16	90 3 35/64	15 19/32	11 7/16	25.5 1	12 15/32	60 2 3/8	33.3 1 5/16	31 1.2205	12.7 0.500	M10 3/8	UC201D1 UC201-008D1
15 9/16 5/8	UCFL202D1 UCFL202-009D1 UCFL202-010D1	113 4 7/16	90 3 35/64	15 19/32	11 7/16	25.5 1	12 15/32	60 2 3/8	33.3 1 5/16	31 1.2205	12.7 0.500	M10 3/8	UC202D1 UC202-009D1 UC202-010D1
17 11/16	UCFL203D1 UCFL203-011D1	113 4 7/16	90 3 35/64	15 19/32	11 7/16	25.5 1	12 15/32	60 2 3/8	33.3 1 5/16	31 1.2205	12.7 0.500	M10 3/8	UC203D1 UC203-011D1
20 3/4	UCFL204D1 UCFL204-012D1	113 4 7/16	90 3 35/64	15 19/32	11 7/16	25.5 1	12 15/32	60 2 3/8	33.3 1 5/16	31 1.2205	12.7 0.500	M10 3/8	UC204D1 UC204-012D1
25 13/16 7/8 15/16 1	UCFL205D1 UCFL205-013D1 UCFL205-014D1 UCFL205-015D1 UCFL205-100D1	130 5 1/8	99 3 57/64	16 5/8	13 1/2	27 1 1/16	16 5/8	68 2 11/16	35.8 1 13/32	34.1 1.3425	14.3 0.563	M14 1/2	UC205D1 UC205-013D1 UC205-014D1 UC205-015D1 UC205-100D1
30 1 1/16 1 1/8 1 3/16 1 1/4	UCFL206D1 UCFL206-101D1 UCFL206-102D1 UCFL206-103D1 UCFL206-104D1	148 5 13/16	117 4 39/64	18 45/64	13 1/2	31 1 7/32	16 5/8	80 3 5/32	40.2 1 37/64	38.1 1.5000	15.9 0.626	M14 1/2	UC206D1 UC206-101D1 UC206-102D1 UC206-103D1 UC206-104D1
35 1 1/4 1 5/16 1 3/8 1 7/16	UCFL207D1 UCFL207-104D1 UCFL207-105D1 UCFL207-106D1 UCFL207-107D1	161 6 11/32	130 5 1/8	19 3/4	15 19/32	34 1 11/32	16 5/8	90 3 17/32	44.4 1 3/4	42.9 1.6890	17.5 0.689	M14 1/2	UC207D1 UC207-104D1 UC207-105D1 UC207-106D1 UC207-107D1
40 1 1/2 1 9/16	UCFL208D1 UCFL208-108D1 UCFL208-109D1	175 6 7/8	144 5 43/64	21 53/64	15 19/32	36 1 13/32	16 5/8	100 3 15/16	51.2 2 1/64	49.2 1.9370	19 0.748	M14 1/2	UC208D1 UC208-108D1 UC208-109D1
45 1 5/8 1 11/16 1 3/4	UCFL209D1 UCFL209-110D1 UCFL209-111D1 UCFL209-112D1	188 7 13/32	148 5 53/64	22 55/64	16 5/8	38 1 1/2	19 3/4	108 4 1/4	52.2 2 1/16	49.2 1.9370	19 0.748	M16 5/8	UC209D1 UC209-110D1 UC209-111D1 UC209-112D1

Remarks: 1) These numbers indicate relubricatable type. If maintenance free type is needed, please order without suffix "D1".
Note: Please refer to page 44 for size of grease fitting.

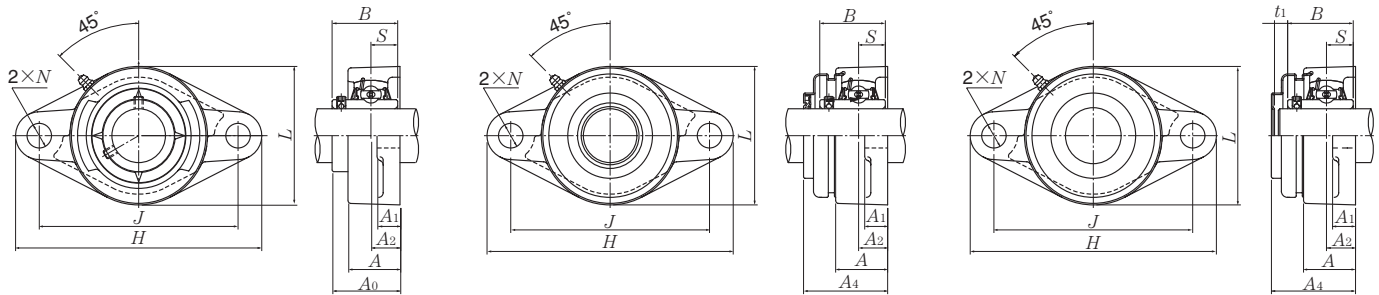


Cast dust cover type (Open end)
C-UCFL...D1

Cast dust cover type (Close end)
CM-UCFL...D1

Housing number ¹⁾	Unit number ¹⁾ pressed steel dust cover type	Unit number ¹⁾ cast dust cover type	Nominal dimensions						Mass (approx.)		
			mm		inch				kg		lb
			t_1	t_2	A_4	A_5	L_1	L_2	UCFL	S(SM)	C(CM)
FL204D1	S(SM)-UCFL201D1	C(CM)-UCFL201D1	5	8	40.5	46	67	30	0.5	0.5	0.6
FL204D1	S(SM)-UCFL201-008D1	C(CM)-UCFL201-008D1	$1\frac{3}{64}$	$\frac{5}{16}$	$1\frac{19}{32}$	$1\frac{13}{16}$	$2\frac{5}{8}$	$1\frac{3}{16}$	1.1	1.1	1.3
FL204D1	S(SM)-UCFL202D1	C(CM)-UCFL202D1	5	8	40.5	46	67	30	0.5	0.5	0.6
FL204D1	S(SM)-UCFL202-009D1	C(CM)-UCFL202-009D1	$1\frac{3}{64}$	$\frac{5}{16}$	$1\frac{19}{32}$	$1\frac{13}{16}$	$2\frac{5}{8}$	$1\frac{3}{16}$	1.1	1.1	1.3
FL204D1	S(SM)-UCFL202-010D1	C(CM)-UCFL202-009D1	$1\frac{3}{64}$	$\frac{5}{16}$	$1\frac{19}{32}$	$1\frac{13}{16}$	$2\frac{5}{8}$	$1\frac{3}{16}$	1.1	1.1	1.3
FL204D1	S(SM)-UCFL203D1	C(CM)-UCFL203D1	5	8	40.5	46	67	30	0.5	0.5	0.6
FL204D1	S(SM)-UCFL203-011D1	C(CM)-UCFL203-011D1	$1\frac{3}{64}$	$\frac{5}{16}$	$1\frac{19}{32}$	$1\frac{13}{32}$	$2\frac{5}{8}$	$1\frac{3}{16}$	1.1	1.1	1.3
FL204D1	S(SM)-UCFL204D1	C(CM)-UCFL204D1	5	8	40.5	46	67	30	0.4	0.4	0.6
FL204D1	S(SM)-UCFL204-012D1	C(CM)-UCFL204-012D1	$1\frac{3}{64}$	$\frac{5}{16}$	$1\frac{19}{32}$	$1\frac{13}{16}$	$2\frac{5}{8}$	$1\frac{3}{16}$	0.9	0.9	1.3
FL205D1	S(SM)-UCFL205D1	C(CM)-UCFL205D1	7	11	44.5	51	74	34	0.6	0.6	0.8
FL205D1	S(SM)-UCFL205-013D1	C(CM)-UCFL205-013D1									
FL205D1	S(SM)-UCFL205-014D1	C(CM)-UCFL205-014D1									
FL205D1	S(SM)-UCFL205-015D1	C(CM)-UCFL205-015D1	$\frac{9}{32}$	$\frac{7}{16}$	$1\frac{3}{4}$	2	$2\frac{29}{32}$	$1\frac{11}{32}$	1.3	1.3	1.8
FL205D1	S(SM)-UCFL205-100D1	C(CM)-UCFL205-100D1									
FL206D1	S(SM)-UCFL206D1	C(CM)-UCFL206D1	7	11	49	56	85	40	0.9	0.9	1.2
FL206D1	S(SM)-UCFL206-101D1	C(CM)-UCFL206-101D1									
FL206D1	S(SM)-UCFL206-102D1	C(CM)-UCFL206-102D1									
FL206D1	S(SM)-UCFL206-103D1	C(CM)-UCFL206-103D1	$\frac{9}{32}$	$\frac{7}{16}$	$1\frac{15}{16}$	$2\frac{7}{32}$	$3\frac{11}{32}$	$1\frac{9}{16}$	2.0	2.0	2.6
FL206D1	S(SM)-UCFL206-104D1	C(CM)-UCFL206-104D1									
FL207D1	S(SM)-UCFL207D1	C(CM)-UCFL207D1	8	10	55	59	97	45	1.2	1.2	1.4
FL207D1	S(SM)-UCFL207-104D1	C(CM)-UCFL207-104D1									
FL207D1	S(SM)-UCFL207-105D1	C(CM)-UCFL207-105D1									
FL207D1	S(SM)-UCFL207-106D1	C(CM)-UCFL207-106D1	$\frac{5}{16}$	$\frac{25}{64}$	$2\frac{5}{32}$	$2\frac{5}{16}$	$3\frac{13}{16}$	$1\frac{25}{32}$	2.6	2.6	3.1
FL207D1	S(SM)-UCFL207-107D1	C(CM)-UCFL207-107D1									
FL208D1	S(SM)-UCFL208D1	C(CM)-UCFL208D1	8	9	62	66	106	50	1.5	1.5	1.9
FL208D1	S(SM)-UCFL208-108D1	C(CM)-UCFL208-108D1									
FL208D1	S(SM)-UCFL208-109D1	C(CM)-UCFL208-109D1	$\frac{5}{16}$	$\frac{23}{64}$	$2\frac{7}{16}$	$2\frac{19}{32}$	$4\frac{3}{16}$	$1\frac{31}{32}$	3.3	3.3	4.2
FL209D1	S(SM)-UCFL209D1	C(CM)-UCFL209D1	8	12	63	70	113	54	1.8	1.9	2.3
FL209D1	S(SM)-UCFL209-110D1	C(CM)-UCFL209-110D1									
FL209D1	S(SM)-UCFL209-111D1	C(CM)-UCFL209-111D1	$\frac{5}{16}$	$\frac{15}{32}$	$2\frac{15}{32}$	$2\frac{3}{4}$	$4\frac{7}{16}$	$2\frac{1}{8}$	4.0	4.2	5.1
FL209D1	S(SM)-UCFL209-112D1	C(CM)-UCFL209-112D1									

Rhombus flanged units cast housing Set screw type



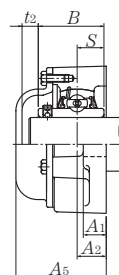
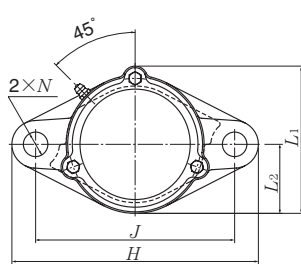
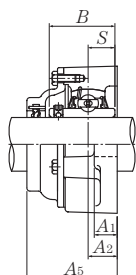
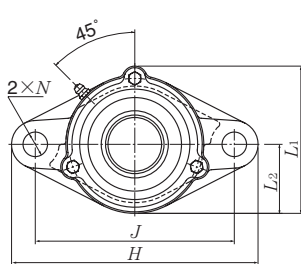
Press steel dust cover type (Open end)
S-UCFL...D1

Press steel dust cover type (Close end)
SM-UCFL...D1

Shaft dia. mm inch	Unit number ¹⁾	Nominal dimensions										Bolt size mm inch	Bearing number
		mm					inch						
		H	J	A ₂	A ₁	A	N	L	A ₀	B	S		
50 1 ¹³ / ₁₆ 1 ⁷ / ₈ 1 ¹⁵ / ₁₆ 2	UCFL210D1 UCFL210-113D1 UCFL210-114D1 UCFL210-115D1 UCFL210-200D1	197	157	22	16	40	19	115	54.6	51.6	19	M16	UC210D1 UC210-113D1 UC210-114D1 UC210-115D1 UC210-200D1
55 2 2 ¹ / ₁₆ 2 ¹ / ₈ 2 ³ / ₁₆	UCFL211D1 UCFL211-200D1 UCFL211-201D1 UCFL211-202D1 UCFL211-203D1	224	184	25	18	43	19	130	58.4	55.6	22.2	M16	UC211D1 UC211-200D1 UC211-201D1 UC211-202D1 UC211-203D1
60 2 ¹ / ₄ 2 ⁵ / ₁₆ 2 ³ / ₈ 2 ⁷ / ₁₆	UCFL212D1 UCFL212-204D1 UCFL212-205D1 UCFL212-206D1 UCFL212-207D1	250	202	29	18	48	23	140	68.7	65.1	25.4	M20	UC212D1 UC212-204D1 UC212-205D1 UC212-206D1 UC212-207D1
65 2 ¹ / ₂ 2 ⁹ / ₁₆	UCFL213D1 UCFL213-208D1 UCFL213-209D1	258	210	30	22	50	23	155	69.7	65.1	25.4	M20	UC213D1 UC213-208D1 UC213-209D1
70 2 ⁵ / ₈ 2 ¹¹ / ₁₆ 2 ³ / ₄	UCFL214D1 UCFL214-210D1 UCFL214-211D1 UCFL214-212D1	265	216	31	22	54	23	160	75.4	74.6	30.2	M20	UC214D1 UC214-210D1 UC214-211D1 UC214-212D1
75 2 ¹³ / ₁₆ 2 ⁷ / ₈ 2 ¹⁵ / ₁₆ 3	UCFL215D1 UCFL215-213D1 UCFL215-214D1 UCFL215-215D1 UCFL215-300D1	275	225	34	22	56	23	165	78.5	77.8	33.3	M20	UC215D1 UC215-213D1 UC215-214D1 UC215-215D1 UC215-300D1
80 3 ¹ / ₁₆ 3 ¹ / ₈ 3 ³ / ₁₆	UCFL216D1 UCFL216-301D1 UCFL216-302D1 UCFL216-303D1	290	233	34	22	58	25	180	83.3	82.6	33.3	M22	UC216D1 UC216-301D1 UC216-302D1 UC216-303D1

Remarks: 1) These numbers include relubricatable type. If maintenance free type is needed, please order without suffix "D1".

Note: Please refer to page 44 for size of grease fitting.

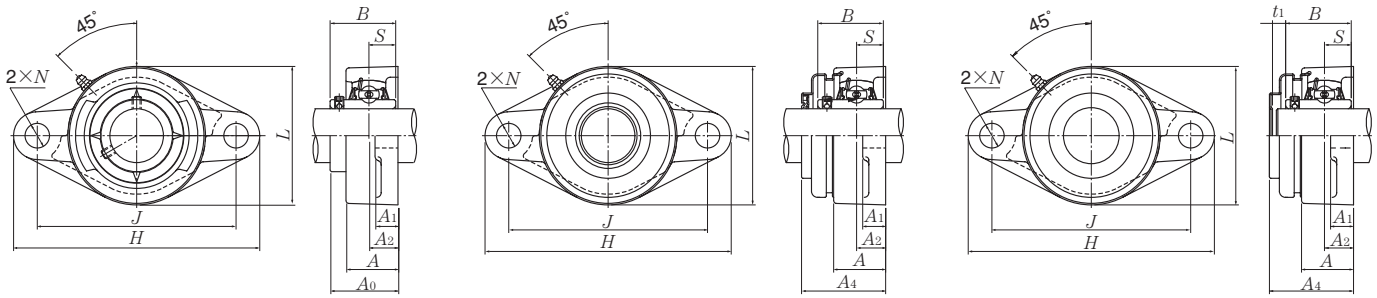


Cast dust cover type (Open end)
C-UCFL...D1

Cast dust cover type (Close end)
CM-UCFL...D1

Housing number ¹⁾	Unit number ¹⁾ pressed steel dust cover type	Unit number ¹⁾ cast dust cover type	Nominal dimensions						Mass (approx.)		
			mm		inch				kg		lb
			t_1	t_2	A_4	A_5	L_1	L_2	UCFL	S(SM)	C(CM)
FL210D1	S(SM)-UCFL210D1	C(CM)-UCFL210D1	8	12	65.5	72	120	58	2.0	2.1	2.7
FL210D1	S(SM)-UCFL210-113D1	C(CM)-UCFL210-113D1									
FL210D1	S(SM)-UCFL210-114D1	C(CM)-UCFL210-114D1	$\frac{5}{16}$	$\frac{15}{32}$	$2\frac{19}{32}$	$2\frac{27}{32}$	$4\frac{23}{32}$	$2\frac{9}{32}$	4.4	4.6	6.0
FL210D1	S(SM)-UCFL210-115D1	C(CM)-UCFL210-115D1									
FL210D1	S(SM)-UCFL210-200D1	C(CM)-UCFL210-200D1									
FL211D1	S(SM)-UCFL211D1	C(CM)-UCFL211D1	10	11	71	75	133	65	2.9	3.0	3.4
FL211D1	S(SM)-UCFL211-200D1	C(CM)-UCFL211-200D1									
FL211D1	S(SM)-UCFL211-201D1	C(CM)-UCFL211-201D1	$\frac{25}{64}$	$\frac{7}{16}$	$2\frac{25}{32}$	$2\frac{15}{16}$	$5\frac{1}{4}$	$2\frac{9}{16}$	6.4	6.6	7.5
FL211D1	S(SM)-UCFL211-202D1	C(CM)-UCFL211-202D1									
FL211D1	S(SM)-UCFL211-203D1	C(CM)-UCFL211-203D1									
FL212D1	S(SM)-UCFL212D1	C(CM)-UCFL212D1	8	12	80	86	144	70	3.8	4.0	4.6
FL212D1	S(SM)-UCFL212-204D1	C(CM)-UCFL212-204D1									
FL212D1	S(SM)-UCFL212-205D1	C(CM)-UCFL212-205D1	$\frac{5}{16}$	$\frac{15}{32}$	$3\frac{5}{32}$	$3\frac{3}{8}$	$5\frac{21}{32}$	$2\frac{3}{4}$	8.4	8.8	10
FL212D1	S(SM)-UCFL212-206D1	C(CM)-UCFL212-206D1									
FL212D1	S(SM)-UCFL212-207D1	C(CM)-UCFL212-207D1									
FL213D1	S(SM)-UCFL213D1	C(CM)-UCFL213D1	11	15	83.5	90	157	78	4.8	4.9	5.8
FL213D1	S(SM)-UCFL213-208D1	C(CM)-UCFL213-208D1									
FL213D1	S(SM)-UCFL213-209D1	C(CM)-UCFL213-209D1	$\frac{7}{16}$	$\frac{19}{32}$	$3\frac{9}{32}$	$3\frac{17}{32}$	$6\frac{3}{16}$	$3\frac{1}{16}$	11	11	15
FL214D1	—	C(CM)-UCFL214D1	—	16	—	98	164	80	5.4	—	7.7
FL214D1		C(CM)-UCFL214-210D1									
FL214D1	—	C(CM)-UCFL214-211D1	—	$\frac{5}{8}$	—	$3\frac{27}{32}$	$6\frac{15}{32}$	$3\frac{5}{32}$	12	—	17
FL214D1		C(CM)-UCFL214-212D1									
FL215D1	—	C(CM)-UCFL215D1	—	17	—	102	169	82	6.0	—	7.1
FL215D1		C(CM)-UCFL215-213D1									
FL215D1	—	C(CM)-UCFL215-214D1	—	$2\frac{1}{32}$	—	$4\frac{1}{32}$	$6\frac{21}{32}$	$3\frac{7}{32}$	13	—	16
FL215D1		C(CM)-UCFL215-215D1									
FL215D1		C(CM)-UCFL215-300D1									
FL216D1	—	C(CM)-UCFL216D1	—	16	—	106	183	90	7.4	—	8.6
FL216D1		C(CM)-UCFL216-301D1									
FL216D1	—	C(CM)-UCFL216-302D1	—	$\frac{5}{8}$	—	$4\frac{3}{16}$	$7\frac{7}{32}$	$3\frac{17}{32}$	16	—	19
FL216D1		C(CM)-UCFL216-303D1									

Rhombus flanged units cast housing Set screw type

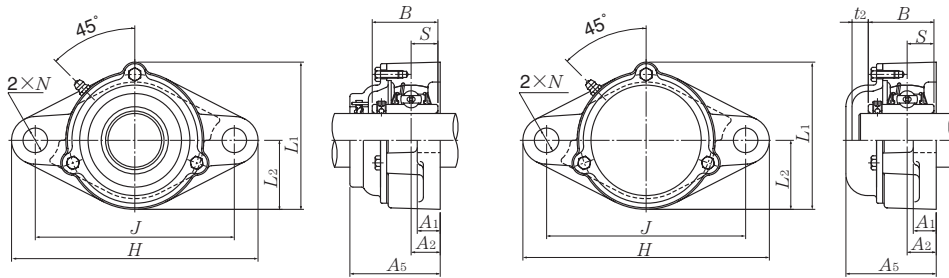


Press steel dust cover type (Open end)
S-UCFL...D1

Press steel dust cover type (Close end)
SM-UCFL...D1

Shaft dia. mm inch	Unit number ¹⁾	Nominal dimensions										Bolt size mm inch	Bearing number
		H	J	A ₂	A ₁	A	N	L	A ₀	B	S		
85 3 ¹ / ₄ 3 ⁵ / ₁₆ 3 ⁷ / ₁₆	UCFL217D1	305	248	36	24	63	25	190	87.6	85.7	34.1	M22 7/8	UC217D1
	UCFL217-304D1												UC217-304D1
	UCFL217-305D1	12	9 ⁴⁹ / ₆₄	1 ²⁷ / ₆₄	1 ⁵ / ₁₆	2 ¹⁵ / ₃₂	6 ³ / ₆₄	7 ¹⁵ / ₃₂	3 ²⁹ / ₆₄	3.3740	1.343		UC217-305D1
	UCFL217-307D1												UC217-307D1
90 3 ¹ / ₂	UCFL218D1	320	265	40	24	68	25	205	96.3	96	39.7	M22 7/8	UC218D1
	UCFL218-308D1	12 ¹⁹ / ₃₂	10 ⁷ / ₁₆	1 ³⁷ / ₆₄	1 ⁵ / ₁₆	2 ¹¹ / ₁₆	6 ³ / ₆₄	8 ¹ / ₁₆	3 ⁵¹ / ₆₄	3.7795	1.563		UC218-308D1

Remarks: 1) These numbers indicate relubricatable type. If maintenance free type is needed, please order without suffix "D1".
Note: Please refer to page 44 for size of grease fitting.



Cast dust cover type (Open end)
C-UCFL...D1

Cast dust cover type (Close end)
CM-UCFL...D1

Housing number ¹⁾	Unit number ¹⁾ pressed steel dust cover type	Unit number ¹⁾ cast dust cover type	Nominal dimensions						Mass (approx.)		
			mm			inch			kg		lb
			t_1	t_2	A_4	A_5	L_1	L_2	UCFL	S(SM)	C(CM)
FL217D1	—	C(CM)-UCFL217D1	—	20	—	114	192	95	8.8	—	10
FL217D1	—	C(CM)-UCFL217-304D1	—	$\frac{25}{32}$	—	$4\frac{1}{2}$	$7\frac{9}{16}$	$3\frac{3}{4}$	19	—	22
FL217D1	—	C(CM)-UCFL217-305D1	—	$\frac{25}{32}$	—	$4\frac{1}{2}$	$7\frac{9}{16}$	$3\frac{3}{4}$	19	—	22
FL217D1	—	C(CM)-UCFL217-307D1	—	$\frac{25}{32}$	—	$4\frac{1}{2}$	$7\frac{9}{16}$	$3\frac{3}{4}$	19	—	22
FL218D1	—	C(CM)-UCFL218D1	—	19	—	122	205	102	11	—	13
FL218D1	—	C(CM)-UCFL218-308D1	—	$\frac{3}{4}$	—	$4\frac{13}{16}$	$8\frac{1}{16}$	$4\frac{1}{32}$	24	—	29