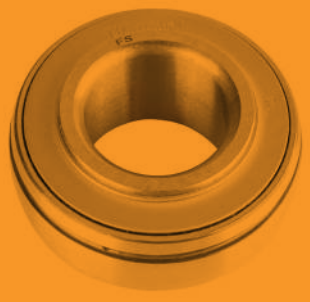
TIMKEN

TIMKEN® U SERIES BALL BEARING HOUSED UNIT CATALOG



TIMKEN® U SERIES BALL BEARING HOUSED UNITS - DESIGNED FOR OPTIMIZED PERFORMANCE

For more than 110 years, Timken innovations continue to keep the world in motion, including the invention of the wide inner ring bearing and the ball bearing housed unit. We continue that innovation by applying our extensive engineering knowledge of bearings, metallurgy, seals and end-user applications to deliver optimized performance from our housed unit product line.

Timken ball bearing housed units help improve efficiencies through:

Increased equipment uptime and reduced maintenance cost.

- Bearings with spherical outer rings and precision-machined cast-iron housings help prevent outer-ring rotation.
- Bearings withstand static misalignment of the shaft of +/– 3 degrees.
- Designed for normal operation between –20° C and 100° C (-4° F and 212° F).
- Wide inner ring ball bearings deliver greater shaft support.
- High-strength housings are suited for most industrial applications.
- Bearings are prelubricated and ready for immediate installation.
- Timken knowledge and support come standard.

Robust sealing designed for the most demanding environments.

- Highly engineered sealing provides extended bearing life and reduced lubrication leakage.
- Bonded seal design with a steel flinger adds additional bearing protection.
- Effective grease retention and reduced debris and moisture ingress improve bearing performance.

Wide range of ready-to-mount units.

- Five different housing designs plus replacement inserts are offered in metric and imperial sizes.
- Set screw locking, tapered bore for use with adapter sleeve and eccentric locking collar design allow for easy installation.
- Extensive range of sizes meets the needs of a wide range of applications.
- Interchangeable without modification in many applications.
- Local in-stock availability ensures the service levels you expect.

Timken supports your job sites with a team of service engineers available around the world. Their services help extend maintenance cycles and maximize uptime.

Timken is your single-source for friction management, with a full range of bearings and related accessories including greases, seals, tools, training and repair services.

HOW TO USE THIS CATALOG

We designed this catalog to help you find the Timken bearings best suited to your equipment needs and specifications.

The product tables list many of the bearing types that are specifically used in thrust positions. For other bearing types, please refer to the respective Timken product catalog reference.

Timken offers an extensive range of bearings and accessories in both imperial and metric sizes. For your convenience, size ranges are indicated in millimeters and inches. Contact your Timken engineer to learn more about our complete line for the special needs of your application.

This publication contains dimensions, tolerances and load ratings, as well as engineering sections describing mounting and fitting practices for shafts and housings, internal clearances, materials and other bearing features. It provides valuable assistance in the initial consideration of the type and characteristics of the bearings that may best suit your particular needs.

ISO, as used in this publication, refers to the International Organization for Standardization and JIS refers to the Japanese Industrial Standards.

Updates are made periodically to this catalog. Visit www.timken.com/catalogs for the most recent version of the Timken® U Series Ball Bearing Housed Unit Catalog.

SHELF LIFE AND STORAGE OF GREASE-LUBRICATED BEARINGS AND COMPONENTS

To help you get the most value from our products, Timken provides guidelines for the shelf life of grease-lubricated ball and roller bearings, components and assemblies. Shelf life information is based on Timken and industry test data and experience.

SHELF LIFE

Shelf life should be distinguished from lubricated bearing/component design life as follows:

Shelf life of the grease-lubricated bearing/component represents the period of time prior to use or installation.

The shelf life is a portion of the anticipated aggregate design life. It is impossible to accurately predict design life due to variations in lubricant bleed rates, oil migration, operating conditions, installation conditions, temperature, humidity and extended storage.

TIMKEN IS NOT RESPONSIBLE FOR THE SHELF LIFE OF ANY BEARING/COMPONENT LUBRICATED BY ANOTHER PARTY.

European REACH compliance

Timken lubricants, greases and similar products sold in standalone containers or delivery systems are subject to the European REACH (Registration, Evaluation, Authorization and Restriction of Chemicals) directive. For import into the European Union, Timken can sell and provide only those lubricants and greases that are registered with ECHA (European Chemical Agency). For further information, please contact your Timken engineer.

STORAGE

Timken suggests the following storage guidelines for our finished products (bearings, components and assemblies, referred to as “products”):

- Unless directed otherwise by Timken, products should be kept in their original packaging until they are ready to be placed into service.
- Do not remove or alter any labels or stencil markings on the packaging.
- Products should be stored in such a way that the packaging is not pierced, crushed or otherwise damaged.
- After a product is removed from its packaging, it should be placed into service as soon as possible.
- When removing a product that is not individually packaged from a bulk pack container, the container should be resealed immediately after the product is removed.
- The storage area temperature should be maintained between 0° C (32° F) and 40° C (104° F); temperature fluctuations should be minimized.
- The relative humidity should be maintained below 60 percent and the surfaces should be dry.
- The storage area should be kept free from airborne contaminants such as, but not limited to, dust, dirt, harmful vapors, etc.
- The storage area should be isolated from undue vibration.
- Extreme conditions of any kind should be avoided.

Due to the fact that Timken is not familiar with your particular storage conditions, we strongly suggest following these guidelines. However, you may be required by circumstances or applicable government requirements to adhere to stricter storage requirements.

Most bearing components typically ship protected with a corrosion-preventive compound that is not a lubricant. These components may be used in oil-lubricated applications without removal of the corrosion-preventive compound. When using some specialized grease lubrications, we advise you to remove the corrosion-preventive compound before packing the bearing components with suitable grease.

Be careful in selecting lubrication, however, since different lubricants are often incompatible.

When you receive a bearing shipment, do not remove products from their packaging until they are ready for mounting so they do not become corroded or contaminated.

Store bearings and bearing housings in an appropriate atmosphere so they remain protected for the intended period.

HOUSING STYLES

Timken offers you the full range of standard and heavy series ball bearing housed units with set screw locking (UC), tapered bore for use with adapter sleeve (UK) and eccentric locking collar (UEL) mechanisms in metric and imperial sizes:

PILLOW BLOCK UNITS

UCP – 12 mm to 140 mm (½ in. to 4 in.)
UELP – 12 mm to 75 mm (½ in. to 3 in.)
UKP – 20 mm to 80 mm (¾ in. to 3 in.)

FOUR-BOLT FLANGED UNITS

UCF – 12 mm to 140 mm (½ in. to 4 in.)
UELF – 12 mm to 75 mm (½ in. to 3 in.)
UKF – 20 mm to 80 mm (¾ in. to 3 in.)

TWO-BOLT FLANGED UNITS

UCFL – 12 mm to 130 mm (½ in. to 4 in.)
UELFL – 12 mm to 75 mm (½ in. to 3 in.)
UKFL – 20 mm to 80 mm (¾ in. to 3 in.)

PILOTED ROUND FLANGED UNITS

UCFC – 12 mm to 90 mm (½ in. to 3½ in.)
UELFC – 12 mm to 75 mm (½ in. to 3 in.)
UKFC – 20 mm to 80 mm (¾ in. to 3 in.)

TAKE-UP UNITS

UCT – 12 mm to 140 mm (½ in. to 4 in.)
UELT – 12 mm to 75 mm (½ in. to 3 in.)
UKT – 20 mm to 75 mm (¾ in. to 3 in.)

WIDE INNER RING BALL BEARINGS

UC – 12 mm to 140 mm (½ in. to 4 in.)
UEL – 12 mm to 75 mm (½ in. to 3 in.)
UK – 20 mm to 80 mm (¾ in. to 3 in.)

NOMENCLATURE
CONFIGURATIONS TO MEET YOUR NEEDS

BALL HOUSED UNITS
Standard and heavy series – wide inner ring, set screw, tapered bore for use with adapter sleeve and eccentric locking collar mechanisms.

HOUSING TYPES
Pillow block, two-bolt flange, four-bolt flange, piloted round flange and take-up.

METRIC BORE SIZES
12 mm – 140 mm

INCH BORE SIZES
½ in. – 4 in.

UC P 2 05 - 16

Bearing Insert Code
UC – Set screw locking mechanism
UEL – Eccentric locking collar
UK – Tapered bore for use with adapter sleeve

Housing Code
P – Pillow block unit
F – Four-bolt flange unit
FL – Two-bolt flanged unit
T – Take-up unit
FC – Piloted round flanged unit

Series Code
2 – standard industrial series
3 – heavy-duty series

Metric Bore Diameter Code For Cylindrical Bore (1)
01 – Nominal bore diameter = 12 mm
02 – Nominal bore diameter = 15 mm
03 – Nominal bore diameter = 17 mm
04 or higher – Bore diameter (mm) = bore diameter code x 5
(1)For adapter UK style - refer to catalog tables for shaft diameter.

Example:
UCF201 = 12 mm bore (Four-bolt flanged unit)
UELP211 = 55 mm bore (Pillow block unit)

Inch Diameter Code
-8 or higher – Bore diameter (in.) = bore diameter code/16

Example:
UCF201-8 = 8/16 in. or ½ in. bore (Four-bolt flanged unit)
UCP205-16 = 16/16 in. or 1 in. bore (Pillow block unit)

TABLE 1. MODEL LIST

Model		Bearing Bore Dia. Surface (Fixing to Shaft)	Model Code	Shaft Diameter				Dimension Table Page Number
				Min.	Max.	Min.	Max.	
				in.		mm		
	Ball bearing inserts	with set screw locking	UC	½	4.0	**12**	**140**	28, 68
		with eccentric locking collar	UEL	½	3.0	**12**	**75**	42
		tapered bore (with adapter(1))	UK	¾	3.0	**20**	**80**	56
	Pillow block units	with set screw locking	UCP	½	4.0	**12**	**140**	18, 60
		with eccentric locking collar	UELP	½	3.0	**12**	**75**	32
		tapered bore (with adapter (1))	UKP	¾	3.0	**20**	**80**	46
	Four-bolt flange units	with set screw locking	UCF	½	4.0	**12**	**140**	20, 62
		with eccentric locking collar	UELF	½	3.0	**12**	**75**	34
		tapered bore (with adapter (1))	UKF	¾	3.0	**20**	**80**	48
	Two-bolt flange units	with set screw locking	UCFL	½	4.0	**12**	**130**	22, 64
		with eccentric locking collar	UELFL	½	3.0	**12**	**75**	36
		tapered bore (with adapter (1))	UKFL	¾	3.0	**20**	**80**	50
	Take-up units	with set screw locking	UCT	½	4.0	**12**	**140**	26, 66
		with eccentric locking collar	UELT	½	3.0	**12**	**75**	40
		tapered bore (with adapter (1))	UKT	¾	3.0	**20**	**75**	54
	Piloted round flanged units	with set screw locking	UCFC	½	3 ½	**12**	**90**	24
		with eccentric locking collar	UELFC	½	3.0	**12**	**75**	38
		tapered bore (with adapter (1))	UKFC	¾	3.0	**20**	**80**	52

(1) Note: Adapter sleeve of the desired size should be ordered separately.

PRODUCT INFO

Precision formed flinger
Provides the first level of protection against contamination.

High-performance seal
Bonded nitrile rubber seal with an engineered interface to the inner ring.

Hardened and ground seal land
Helps protect against abrasive wear, extending seal life.

Outer ring with spherical outside diameter
Engineered fit between bearing and housing to improve bearing life.

Lubrication delivery system
Precision-machined lubrication groove and holes in the outer ring of the bearing.

Engineered balls and cage
Steel cage provides effective ball guidance and high-temperature service capability.

Wide inner ring
Improved shaft support over narrow rings, improving bearing life and reducing misalignment.

Locking types
Three effective locking styles available:

- Set screw locking
  - Simple installation
  - Ideal for reversing applications
  - Provides maximum holding power
- Eccentric locking
  - Easy installation
  - Reliable and provides secure grip to the shaft
  - Minimize shaft damage
- Adapter sleeve locking
  - Highly concentric and secure locking
  - Eliminates shaft damage
  - Prevent fretting corrosion even under adverse conditions

Cast-iron housing
Incorporates ISO 185 Grade 200 (ASTM A48 Grade No. 30) cast iron.

Premium grease
Prelubricated with high-quality lithium-based grease, compatible with most industrial greases.


High-performance seal
Engineered balls and cage
Outer ring with spherical outside diameter
Lubrication groove
Wide inner ring
Housing (pillow block)

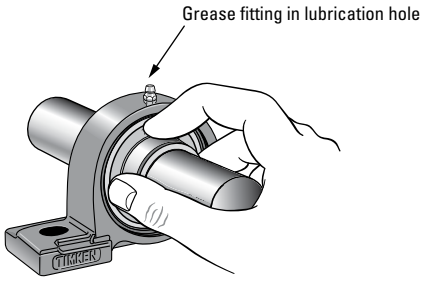
INSTALLATION
UC 200 AND UC 300 SERIES

SET SCREW STYLE UNITS

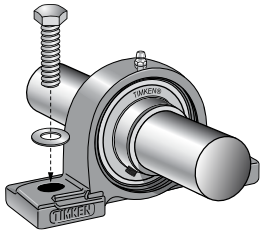
Set screw style units are mounted on the shaft with the help of two set screws in the inner ring located at 120 degrees to each other. The set screw locking mechanism provides ease in mounting and is suitable for applications where the shaft rotation is bidirectional.

Installation procedures for set screw style units are shown below.

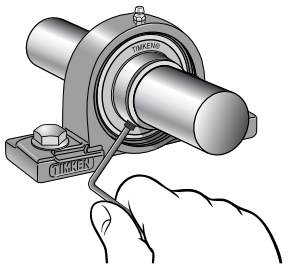
1. Ensure that the shaft is clean, free from burrs, straight and of proper diameter. The bearing should not be mounted on a worn section of the shaft. Using shafts with hardness greater than HRC 45 will reduce effectiveness of locking devices. See table 3 on page 14 for suggested shaft tolerances.
2. Install the supplied grease fitting into the threaded lubrication hole on the housing. Align the bearing in its housing and slide the unit into position on the shaft.



3. Bolt the housing tightly to its mounting supports using an appropriately sized fastener and suggested bolt torque (table 5 on page 14). Flat washers should be used when installing any kind of housed unit. Washers should be properly sized to bolt diameter.



4. Lock the bearing to the shaft by tightening each inner ring set screw incrementally to suggested torque levels (table 4 on page 14).



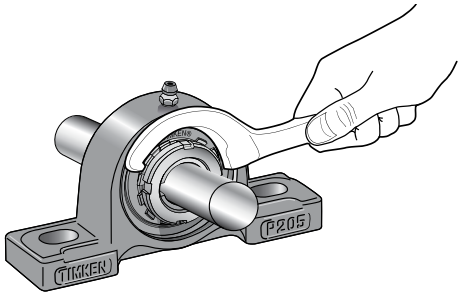
UK SERIES

ADAPTER STYLE UNITS

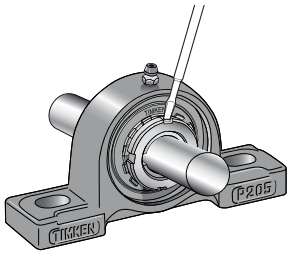
Adapter style units have a tapered bore bearing mounted to the shaft with adapter sleeve assembly, comprised of an adapter sleeve, locknut and lockwasher. This design offers the best shaft concentricity and highest capacity while having the ability to accommodate undersized shafting. These units are most suitable where they are exposed to excessive vibration and impact.

Installation procedures for adapter style units are shown below.

1. Ensure that the shaft is clean, free from burrs, straight and of proper diameter. The bearing should not be mounted on a worn section of the shaft. See table 6 on page 15 for suggested shaft tolerances.
2. Slide the adapter sleeve into position on the shaft. If the sleeve is too tight, expand the slot by using a screwdriver as required.
3. Slide the bearing unit over the adapter sleeve and loosely install the housed unit to its mounting supports using an appropriately sized fastener. Flat washers should be used when installing any kind of housed unit. Washers should be properly sized to bolt diameter.
4. Assemble the lockwasher on the sleeve and thread the locknut onto the adapter sleeve leaving approximately 6.35 mm (¼ in.) between the lockwasher and the inner ring of the bearing.
5. Use a large screwdriver or pry bar to lever the sleeve into position until there is no relative movement between the shaft, adapter sleeve and the bearing's inner ring.
6. Rotate the locknut until hand-tight. Use a spanner wrench to tighten the locknut to the suggested torque (see table 7 on page 15).



7. Bend a tang on the lockwasher into a slot on the locknut to prevent the locknut from loosening.



8. Rotate the shaft by hand while tightening the mounting bolts to make sure the shaft rotates freely. Tighten the housed unit mounting bolts to the recommended bolt tightening torque given in table 5 on page 14.

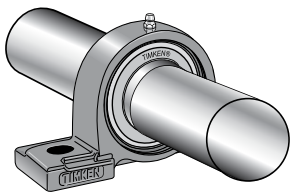
UEL SERIES

ECCENTRIC LOCKING COLLAR UNITS

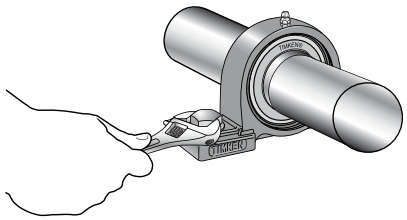
The self-locking collar eliminates the need for locknuts, lockwashers, shoulders, sleeves and adapters. For many agricultural and industrial applications, self-locking collars are the easiest housed units to install. The locking collar has a recessed cam made eccentric to the collar bore. When assembled on the shaft, the locking collar engages or mates with the eccentric cam end of a bearing's inner ring. This assembly grips the shaft tightly with a positive binding action that increases with use. No adjustments of any kind are necessary. The collar set screw provides supplementary locking.

Installation procedures for eccentric locking collar style units are shown below.

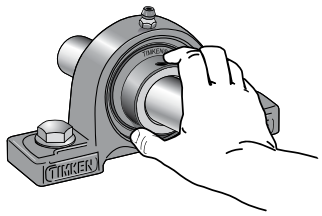
1. Ensure that the shaft is clean, free from burrs, straight and of proper diameter. The bearing should not be mounted on a worn section of the shaft. Using shafts with hardness greater than HRC 45 will reduce effectiveness of locking devices. See table 3 on page 14 for suggested shaft tolerances.
2. Install the supplied grease fitting into the threaded lubrication hole on the housing. Align the bearing in its housing and slide the unit into position on the shaft.



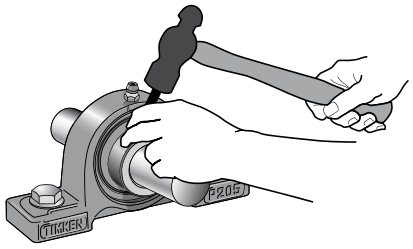
3. Bolt the housing tightly to its mounting supports using an appropriately sized fastener and suggested bolt torque (table 5 on page 14). Flat washers should be used when installing any kind of housed unit. Washers should be properly sized to bolt diameter.



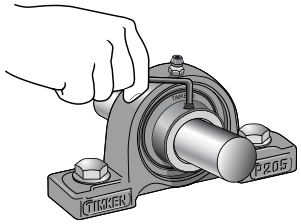
4. Place the eccentric locking collar on the shaft with its cam adjacent to the cam on the end of the bearing inner ring. The eccentric collar's recessed cam will engage the corresponding cam on the bearing inner ring. Turn the collar in the direction of shaft rotation.



5. Using a light weight hammer and a drift pin inserted in the blind hole, tap lightly in the direction of shaft rotation to positively engage the collar. The insert is now locked to the shaft.



6. Tighten the set screw to suggested torque level (see table 4 on page 14).



RELUBRICATION

Timken ball bearing housed units are prelubricated. However, periodic relubrication is advisable in some applications for which these units are designed. Consult your equipment manufacturer's operating manual for the specific relubrication cycle. General guidelines are found in table 2 below.

TABLE 2. GENERAL RELUBRICATION SUGGESTIONS FOR GREASED BEARINGS [1]

Condition	Relubrication Interval
Indoor service	Not required
Outdoor service	Two/three times per year
Severe outdoor exposure	Once a month
High contamination/washdown	Once a week

[1] As a guideline, relubricate until the first indication of grease is observed purging from the bearing.

TECHNICAL DATA

The following tables provide useful installation details related to shaft tolerance, recommended torque for set screws and mounting bolts, bearing internal clearances and the speed ratings.

TABLE 3. SUGGESTED SHAFT TOLERANCE [1]

Shaft Size		Shaft Tolerance	
Over	Incl.	Min.	Max.
mm in.	**mm** in.	**mm** in.	**mm** in.
12 0.500	**18** 0.625	**0** 0.000	**– 0.011** – 0.0004
19 0.750	**30** 1.000	**0** 0.000	**– 0.013** – 0.0005
31 1.125	**50** 1.938	**0** 0.000	**– 0.016** – 0.0006
51 2.000	**80** 3.125	**0** 0.000	**– 0.019** – 0.0007
81 3.250	**120** 3.500	**0** 0.000	**– 0.022** – 0.0009
120 3.50	**140** 4.00	**0** 0.000	**– 0.025** – 0.0010

[1] These are for normal service; for heavy loads, high speeds or vertical shaft applications, consult your equipment manufacturer or your local Timken representative.

For shaft tolerance of taper sleeve inserts, see table 6 on page 15.

TABLE 4. SUGGESTED SET SCREW TIGHTENING TORQUE

Set Screw Size	Tightening Torque	Applicable Bore Ranges		
		UC 200 Series	UEL 200 Series	UC 300 Series
mm in.	**N-m** in.-lbs.			
M6 x 0.75	**4**	201 - 206	204 - 205	305 - 306
¼– 28 UNF	35	201 - 206	–	–
M8 x 1	**9**	207 - 209	206 - 210	307
5⁄16 – 24 UNF	75	207 - 209	–	–
M10 x 1.25	**18**	210 - 212	211 - 212	308 - 309
⅜– 24 UNF	155	210 - 212	–	–
M12 x 1.5	**28**	213 - 218	–	310 - 314
7⁄16 – 20 UNF	248	–	–	–
M14 x 1.5	**35**	–	–	315 - 316
½ – 20 UNF	248	213 - 218	–	–
M16 x 1.5	**56**	–	–	317 - 319
⅝ – 18 UNF	496	–	–	–
M18 x 1.5	**62**	–	–	320 - 324
¾– 16 UNF	549	–	–	–
M20 x 1.5	**83**	–	–	326 - 328
–	–	–	–	–

For tightening torques of adapter locknuts, see table 7 on page 15.

TABLE 5. SUGGESTED MOUNTING BOLT TORQUE

Bolt Size	Tightening Torque	Bolt Size	Tightening Torque
mm	N-m	in.	ft.-lbs.
M10	**12 – 21**	⅜	9 – 16
M12	**21 – 37**	7⁄16	16 – 27
M14	**34 – 60**	½	26 – 44
M16	**53 – 93**	⅝	39 - 69
M20	**104 – 186**	¾	77 – 137
M22	**143 – 256**	⅞	106 – 190
M27	**266 – 478**	1	196 – 353
M30	**360 – 645**	1 ⅛	265 – 476
M33	**494 – 885**	1 ¼	364 – 653
M36	**631 – 1130**	1 ⅜	465 – 833
M39	**740 – 1320**	1 ½	521 - 974
M42	**858 – 1533**	1 ⅝	609 - 1131

Since tapered bore bearings are fixed to the shaft with an adapter, a looser fit is allowable since the adapter sleeve provides excellent concentricity. This makes mounting of the bearing to the shaft much easier.

Table 6 on page 15 shows the dimensional tolerance of the shaft used with tapered bore bearings (with adapters).

TABLE 6. DIMENSIONAL TOLERANCE OF SHAFT USED FOR TAPERED BORE BEARINGS (WITH ADAPTERS)

Shaft Dia.		Dimensional Tolerance of Shaft			
		h8		h9	
Over	Incl.	Min.	Max.	Min.	Max.
mm in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.
18	**30**	**–0.033**	**0**	**-0.052**	**0**
⅝	1 ¼	–0.0013	0	–0.0020	0
30	**50**	**–0.039**	**0**	**-0.062**	**0**
1 ¼	2	–0.0015	0	–0.0024	0
50	**80**	**–0.046**	**0**	**-0.074**	**0**
2	3 ½	–0.0018	0	–0.0029	0

TABLE 7. TIGHTENING TORQUES OF ADAPTER LOCKNUTS (REFERENCE)

Bore Code	UK 200 Series		
	Standard Load		Heavy Load
	Min.	Max.	(Max. x 1.5)
	N-m ft.-lbs.	**N-m** ft.-lbs.	**N-m** ft.-lbs.
5	**25** 18	**38** 28	**56** 41
6	**30** 22	**45** 33	**68** 50
7	**40** 30	**60** 44	**90** 66
8	**50** 37	**75** 55	**113** 83
9	**60** 44	**90** 66	**135** 100
10	**75** 55	**113** 83	**169** 125
11	**100** 74	**150** 111	**225** 166
12	**130** 76	**195** 144	**293** 216
13	**150** 111	**225** 166	**338** 249
15	**170** 125	**255** 188	**383** 282
16	**200** 148	**300** 221	**450** 332

RADIAL INTERNAL CLEARANCE

In the manufacture of ball bearings, it is standard practice to assemble rings and rolling elements with a specified internal clearance. This characteristic is necessary to absorb the loss of clearance due to press fitting the bearing rings at mounting or due to expansion of bearings, shafts and housings. Internal clearance in an application is an important factor that has a significant influence on bearing performance as well as characteristics of heat, noise and vibration.

Table 8 shows the applicable internal clearance for different series bearings and Table 9 shows the available options for internal clearance.

TABLE 8. INTERNAL CLEARANCES - DIFFERENT SERIES

Bearing Bore	Internal Clearance
Cylindrical (UC, UEL)	CN
Tapered (UK)	C3

TABLE 9. INTERNAL CLEARANCE

Nominal Bearing Bore Dia. d		Radial Internal Clearance			
		CN		C3	
Over	Incl.	Min.	Max.	Min.	Max.
µm					
10	**18**	**3**	**18**	**11**	**25**
18	**24**	**5**	**20**	**13**	**28**
24	**30**	**5**	**20**	**13**	**28**
30	**40**	**6**	**20**	**15**	**33**
40	**50**	**6**	**23**	**18**	**36**
50	**65**	**8**	**28**	**23**	**43**
65	**80**	**10**	**30**	**25**	**51**
80	**100**	**12**	**36**	**30**	**58**
100	**120**	**15**	**41**	**36**	**66**
120	**140**	**18**	**48**	**41**	**81**

Remarks

1. Radial internal clearance given in the above table comply with JIS B 1558.
2. Increase in the internal clearance caused due to the applied measured load is given in the Table 10 below. The correction is applicable to the maximum clearance.

TABLE 10. CORRECTION OF CLEARANCE

Nominal Bearing Bore Dia. d		Measured Load	Correction of Clearance	
Over	Incl.		CN	C3
mm		**N**	**µm**	
2.5	**18**	**24.5**	**4**	**4**
18	**50**	**49**	**5**	**6**
50	**280**	**147**	**8**	**9**

SPEED RATINGS

There's no precise method for determining the maximum speed at which a ball bearing can operate. Bearing characteristics and features of surrounding parts, shafts, housings and other components, as well as basic service conditions, are all variables which are dependent upon each other for continued satisfactory high-speed performance.

The safe operating speed of a bearing is often limited by the temperature within the bearing, which in turn, dependent upon the temperature surrounding the application, accuracy of the bearing, shafts, housings, auxiliary parts, etc., and the type and amount of lubricant. Radial bearings with proper internal refinements will operate at high speeds for longer periods if properly installed and lubricated.

Below table shows the standard allowable rotating speeds of ball bearing units.

TABLE 11. ALLOWABLE ROTATING SPEED FOR HOUSED UNITS

Bore Dia. Code	Diameter Series	
	2	3
	RPM	
01	5800	-
02	5800	-
03	5800	-
04	5800	-
05	5100	4600
06	4300	3900
07	3700	3400
08	3300	3100
09	3100	2700
10	2800	2400
11	2500	2300
12	2300	2100
13	2200	1900
14	2100	1800
15	2000	1700
16	1800	1600
17	1700	1500
18	1600	1400
19	-	1400
20	-	1300
21	-	1200
22	-	1100
24	-	1100
26	-	1000
28	-	910

Remarks:

When a bearing unit is used with excessively loose fit, the allowable rotating speed must be calculated by multiplying it by the fitting factor f_c shown in the below table.

TABLE 12. FITTING FACTOR f_c FOR HOUSED UNITS

Type of Ball Bearing Units	Fitting Factor f_c					
	Shaft Tolerance Range Class					
	h5, j5	j6	h6	h7	h8	h9
Set screw locking, UC	-	1	1	0.8	0.5	0.2
Eccentric collar locking, UEL	1	-	-	-	-	-
Tapered bore for use with adapter sleeve, UK	-	-	-	-	1	1

UCFL 200 INDUSTRIAL SET SCREW LOCKING SERIES
CAST-IRON TWO-BOLT FLANGED HOUSED UNITS

- UCFL two-bolt flanged units are suggested for industrial applications where normal loads are encountered.
- This series is primarily designed for applications where the mounting area is restricted.
- Each unit comes assembled and ready for mounting, using bolts through the flange.
- These units use wide inner ring ball bearings with self-aligning spherical outside diameters that compensate for shaft misalignment.
- Timken UCFL series housed units feature the Timken set screw locking (UC) bearing insert.
- Bearing prelubricated and ready for immediate installation.
- Grease fitting supplied for relubrication[1].
- The bonded seal design is well-suited for applications involving wet or dirty environments.
- Bolt-hole spacing dimensions and shaft center location are interchangeable with competitive units.
- Housing designed for ease of bearing replacement.

Shaft Dia. d		Two-Bolt Flange Designation	Bearing Designation	Basic Load Ratings		Dimensions										Bolt Size	Wt.
				Dynamic	Static	H	J	A_1	A	A_0	L	A_2	S	B	N		
				C_r	C_{0r}												
mm	in.			**kN** lbs	**kN** lbs	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**kg** lbs
12		UCFL201	UC201														
	½	UCFL201-8	UC201-8														
15		UCFL202	UC202														
	⅝	UCFL202-10	UC202-10	**12.8** 2878	**6.7** 1495	**113** 4 7⁄16	**90** 3 35⁄64	**11** 7⁄16	**25.5** 1	**33.3** 1 5⁄16	**60** 2 3⁄8	**15** 19⁄32	**12.7** 0.500	**31.0** 1.220	**12** 15⁄32	**M10** 3⁄8	**0.5** 1.1
17		UCFL203	UC203														
	¾	UCFL204-12	UC204-12														
20		UCFL204	UC204														
	⅞	UCFL205-14	UC205-14														
	15⁄16	UCFL205-15	UC205-15	**14.0** 3147	**7.9** 1765	**130** 5 1⁄8	**99** 3 57⁄64	**13** ½	**27.0** 1 1⁄16	**35.8** 1 13⁄32	**68** 2 11⁄16	**16** ⅝	**14.3** 0.563	**34.1** 1.343	**16** ⅝	**M14** ½	**0.6** 1.3
25		UCFL205	UC205														
	1	UCFL205-16	UC205-16														
	1 ⅛	UCFL206-18	UC206-18														
30		UCFL206	UC206	**19.5** 4385	**11.3** 2540	**148** 5 13⁄16	**117** 4 39⁄64	**13** ½	**31.0** 1 7⁄32	**40.2** 1 37⁄64	**80** 3 5⁄32	**18** 45⁄64	**15.9** 0.626	**38.1** 1.500	**16** ⅝	**M14** ½	**1.0** 2.2
	1 3⁄16	UCFL206-19	UC206-19														
	1 ¼	UCFL206-20	UC206-20														
	1 ¼	UCFL207-20	UC207-20														
	1 5⁄16	UCFL207-21	UC207-21														
	1 ⅜	UCFL207-22	UC207-22	**25.7** 5778	**15.4** 3462	**161** 6 11⁄32	**130** 5 1⁄8	**14** 9⁄16	**34.0** 1 11⁄32	**44.4** 1 ¾	**90** 3 17⁄32	**19** ¾	**17.5** 0.689	**42.9** 1.689	**16** ⅝	**M14** ½	**1.2** 2.6
35		UCFL207	UC207														
	1 7⁄16	UCFL207-23	UC207-23														
	1 ½	UCFL208-24	UC208-24														
	1 9⁄16	UCFL208-25	UC208-25	**29.1** 6542	**17.8** 4002	**175** 6 7⁄8	**144** 5 43⁄64	**14** 9⁄16	**36.0** 1 13⁄32	**51.2** 2 1⁄64	**100** 3 15⁄16	**21** 53⁄64	**19.0** 0.748	**49.2** 1.937	**16** ⅝	**M14** ½	**1.6** 3.5
40		UCFL208	UC208														
	1 ⅝	UCFL209-26	UC209-26														
	1 11⁄16	UCFL209-27	UC209-27	**34.1** 7666	**21.3** 4788	**188** 7 13⁄32	**148** 5 53⁄64	**15** 19⁄32	**38.0** 1 ½	**52.2** 2 1⁄16	**108** 4 ¼	**22** 55⁄64	**19.0** 0.748	**49.2** 1.937	**19** ¾	**M16** ⅝	**1.9** 4.2
45		UCFL209	UC209														

[1] For bore sizes up to and including 210, a ¼-28 tapered thread fitting is used. For bore sizes greater than 211, a ⅛ BSPT fitting is used.

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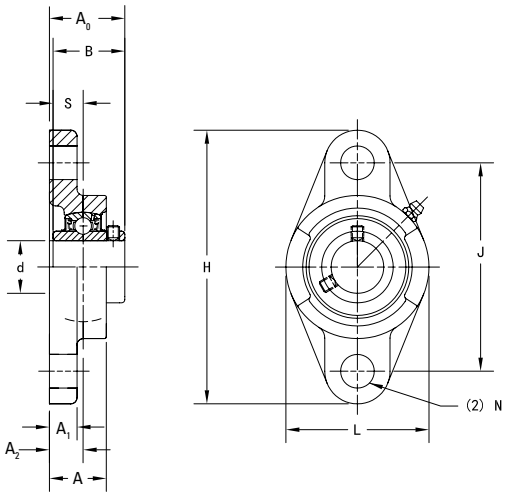

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Shaft Dia. d		Two-Bolt Flange Designation	Bearing Designation	Basic Load Ratings		Dimensions										Bolt Size	Wt.
				Dynamic	Static	H	J	A_1	A	A_0	L	A_2	S	B	N		
				C_r	C_{0r}												
mm	in.			**kN** lbs	**kN** lbs	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**mm** in.	**kg** lbs
	1 7/8	UCFL210-30	UC210-30														
	1 15/16	UCFL210-31	UC210-31	**35.1**	**23.3**	**197**	**157**	**15**	**40**	**54.6**	**115**	**22**	**19.0**	**51.6**	**19**	**M16**	**2.2**
50		UCFL210	UC210	7891	5238	7 3/4	6 3/16	19/32	1 9/16	2 5/32	4 17/32	55/64	0.748	2.031	3/4	5/8	4.9
	2	UCFL210-32	UC210-32														
	2	UCFL211-32	UC211-32														
	2 1/8	UCFL211-34	UC211-34	**43.4**	**29.4**	**224**	**184**	**18**	**43**	**58.4**	**130**	**25**	**22.2**	**55.6**	**19**	**M16**	**3.3**
55		UCFL211	UC211	9757	6609	8 13/16	7 1/4	23/32	1 11/16	2 19/64	5 1/8	63/64	0.874	2.189	3/4	5/8	7.3
	2 3/16	UCFL211-35	UC211-35														
	2 1/4	UCFL212-36	UC212-36														
60		UCFL212	UC212	**52.4**	**36.2**	**250**	**202**	**18**	**48**	**68.7**	**140**	**29**	**25.4**	**65.1**	**23**	**M20**	**4.2**
	2 3/8	UCFL212-38	UC212-38	11780	8138	9 27/32	7 61/64	23/32	1 7/8	2 45/64	5 1/2	1 9/64	1.000	2.563	29/32	3/4	9.3
	2 7/16	UCFL212-39	UC212-39														
	2 1/2	UCFL213-40	UC213-40	**57.2**	**40.1**	**258**	**210**	**20**	**50**	**69.7**	**155**	**30**	**25.4**	**65.1**	**23**	**M20**	**5.1**
65		UCFL213	UC213	12859	9015	10 5/32	8 17/64	25/32	1 31/32	2 3/4	6 3/32	1 3/16	1.000	2.563	29/32	3/4	11.2
	2 3/4	UCFL214-44	UC214-44	**62.2**	**44.1**	**265**	**216**	**20**	**54**	**75.4**	**160**	**31**	**30.2**	**74.6**	**23**	**M20**	**5.7**
70		UCFL214	UC214	13983	9914	10 7/16	8 1/2	25/32	2 1/8	2 31/32	6 5/16	1 7/32	1.189	2.937	29/32	3/4	12.6
	2 15/16	UCFL215-47	UC215-47														
75		UCFL215	UC215	**67.4**	**48.3**	**275**	**225**	**20**	**56**	**78.5**	**165**	**34**	**33.3**	**77.8**	**23**	**M20**	**6.4**
	3	UCFL215-48	UC215-48	15152	10858	12 13/16	8 55/64	25/32	2 7/32	3 3/32	6 1/2	1 11/32	1.311	3.063	29/32	3/4	14.1
	3 1/8	UCFL216-50	UC216-50	**72.7**	**53.0**	**290**	**233**	**20**	**58**	**83.3**	**180**	**34**	**33.3**	**82.6**	**25**	**M22**	**7.8**
80		UCFL216	UC216	16344	11915	11 13/32	9 11/64	25/32	2 9/32	3 9/32	7 3/32	1 11/32	1.311	3.252	63/64	7/8	17.2
	3 1/4	UCFL217-52	UC217-52	**84.0**	**61.9**	**305**	**248**	**22**	**63**	**87.6**	**190**	**36**	**34.1**	**85.7**	**25**	**M22**	**9.8**
85		UCFL217	UC217	18884	13916	12	9 49/64	7/8	2 15/32	3 29/64	7 15/32	1 27/64	1.343	3.374	63/64	7/8	21.6
	3 1/2	UCFL218-56	UC218-56	**96.1**	**71.5**	**320**	**265**	**23**	**68**	**96.3**	**205**	**40**	**39.7**	**96.0**	**25**	**M22**	**12.3**
90		UCFL218	UC218	21604	16074	12 19/32	10 7/16	29/32	2 11/16	3 51/64	8 1/16	1 37/64	1.563	3.780	63/64	7/8	27.1