TRACK ROLLERS

Overview: Track rollers (also known as cam followers) are characterized by their thick-walled outer rings that run directly on a track. The thick outer rings permit high load-carrying capability while minimizing both distortion and bending stresses. Sealed designs with internal thrust washers help extend service life under conditions of infrequent lubrication.

- **Sizes:** 16 mm - 110 mm ($^1/_2$ in. - 4 in.) bore.
- **Markets:** Ram support rollers, material handling and indexing equipment.
- **Features:** Available in two basic designs: with an inner ring for straddle mounting in a yoke or with an integral stud for cantilever mounting.
- **Benefits:** High load-carrying capability with minimized distortion and bending stresses. Extended service life under conditions of infrequent relubrication.

C

Yoke Type Track Rollers – Metric Nominal Dimensions

Bore diameter from 10 mm to 17 mm (for NA22)
00 = 10 mm
01 = 12 mm
02 = 15 mm
03 = 17 mm

Bore diameter > 17 mm (for NA22)
05 = 25 mm

NA22 **05** **2RS**

Prefix
NA22 track roller, yoke type, profiled outside diameter with inner ring, sealed
RNA22 track roller, yoke type, profiled outside diameter without inner ring, sealed
RSTO track roller, yoke type, profiled outside diameter without inner ring, without washers
STO track roller, yoke type, profiled outside diameter with inner ring, without washers
NATR track roller, yoke type, profiled outside diameter with inner ring, with washers
NUTR track roller, yoke type, profiled outside diameter with inner ring, with washers; two paths of full complement cylindrical rollers

Suffix
TN molded cage of reinforced, engineered polymer
DZ cylindrical outside diameter
ZZ two washers for track rollers used for axial location
.2RS lip contact seal on each side of the bearing
ZZ.DZ two washers for track rollers used for axial location; cylindrical outside diameter
DZ.TN cylindrical outside diameter; molded cage of reinforced, engineered polymer
.2RS.DZ lip contact seal on each side of bearing; cylindrical outside diameter

STO **25** **DZ**

Bore diameter for STO, NATR, NUTR:
25 = 25 mm
45 = 45 mm

NUTR **45** **100** **DZ**

Outside diameter for NUTR
100 = 100 mm

Stud Type Track Rollers – Metric Nominal Dimensions

Prefix Modification
E Eccentric stud

Suffix
SK hexagonal wrench socket in stud head
DZ.2RS cylindrical outside diameter: lip contact seals on each end of bearing
.2RS lip contact seal on each side of the bearing
DZ cylindrical outside diameter

KR **E** **22** **.2RS**

Prefix
KR track roller, stud type with cage; profiled outside diameter
KRV track roller, stud type, full complement needle rollers; profiled outside diameter
NUKR track roller, stud type, full complement of cylindrical rollers (2 rows) profiled outside diameter

Outside diameter
22 = 22 mm

Track Rollers / Cam Followers – Inch Nominal Dimensions

Prefix
CR stud type
YCR yoke type

Outside Diameter
8 = $^{8}/_{16}$ = $^{1}/_{2}$ in.
16 = $^{16}/_{16}$ = 1 in.
32 = $^{32}/_{16}$ = 2 in.
36 = $^{36}/_{16}$ = 2$^{1}/_{4}$ in.

CR **S** **B** **E** - **16**

Design Modifications
S seals with internal thrust washers (CR Type only)
B hex wrench socket
C crowned O.D.
E eccentric stud (CR Type only)

Full Complement Yoke Type Track Rollers - Metric Nominal Dimensions

Prefix
- **NUTR** track roller, yoke type, profiled outside diameter with inner ring and washers (two paths of cylindrical rollers)
- **FG** track roller, yoke type, profiled outside diameter standard series
- **FGU** track roller, yoke type, profiled outside diameter light series
- **FGU** track roller, yoke type, profiled outside diameter heavy series (larger O.D. than light series of same bore size)
- **FP** track roller, yoke type, profiled outside diameter small series
- **RNA** track roller, yoke type, profiled outside diameter 11000 Series (without seals)

(see tables for dimensions)

RNA 110 12 B6

NUTR 45 100 .DZ

Suffix
- **.DZ** cylindrical outside diameter (NUTR styles only)
- **EE** 2 polymer shields (FG styles only)
- **EEM** 2 metal shields (FG styles only)
- **MM** 2 metal shields (FGU styles only)

Bore diameter
45 = 45 mm

Outside diameter
100 = 100 mm

FG L 6 19 EEM

Prefix Modification
- **L** cylindrical outside diameter

Full Complement Stud Type Track Rollers - Metric Nominal Dimensions

Prefix
- **NUKR** track roller, stud type, profiled outside diameter (two paths of cylindrical rollers)
- **KRV** track roller, stud type, profiled outside diameter with full complement of needle rollers
- **GC** track roller, stud type, profiled outside diameter small series (up to 15 mm O.D.), standard series
- **GCU** track roller, stud type, profiled outside diameter light series

Outside diameter
16 = 16 mm

KRV 16 .DZ

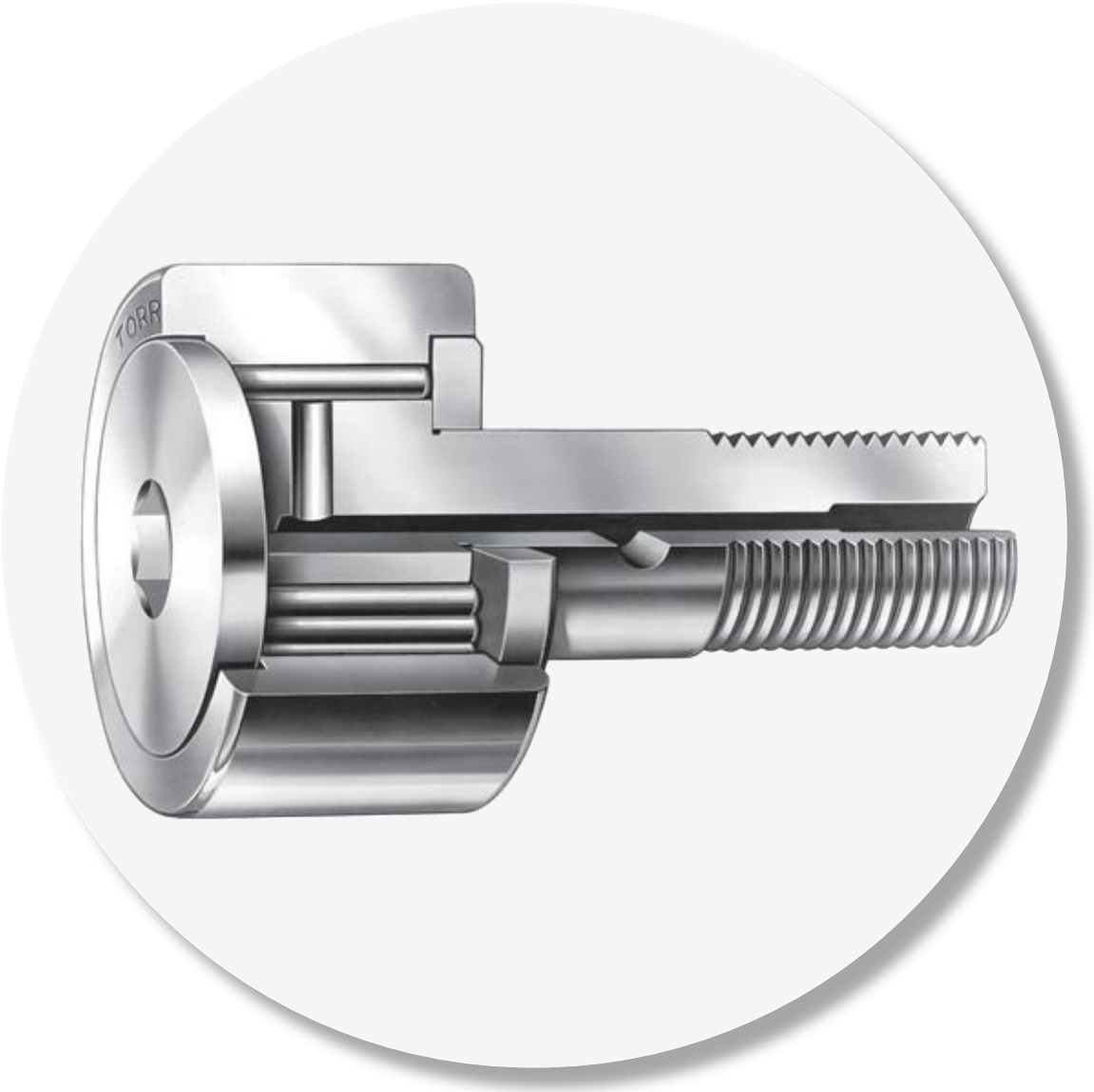
NUKR 62 .2SK

GC L 6 19 EEM

Prefix Modification
- **L** cylindrical outside diameter
- **R** eccentric collar

Bore diameter
45 = 45 mm

Suffix
- **.DZ** cylindrical outside diameter (KRV styles only)
- **.2SK** hexagonal socket in stud head (NUKR styles only)
- **EE** 2 polymer shields (GC, GCR styles only)
- **EEM** 2 metal shields (GC, GCR styles only)
- **MM** 2 metal shields (GCU, GCUR styles only)


TORR

Stud Type and Yoke Type Track Rollers

C

STUD TYPE AND YOKE TYPE TRACK ROLLERS –

METRIC SERIES

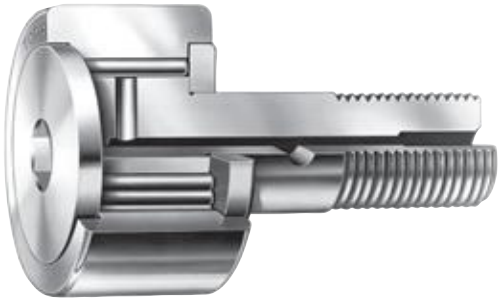
Timken track rollers listed in this catalog have been designed with outer rings of a large radial cross section to withstand heavy rolling and shock loads on track type or cam-controlled equipment. The outside diameters of the outer rings are either profiled or cylindrical. Profiled track rollers are designed to alleviate uneven bearing loading resulting from deflection, bending or misalignment in mounting.

Stud type track rollers are available in various open designs, as well as with lip contact seals or metal shields.

Yoke type track rollers are designed for straddle mounting. The various metric series designs are grouped and organized as illustrated below.

REFERENCE STANDARDS ARE:

- **ISO 6278** – Needle roller bearings – Track rollers – Boundary dimensions
- **ISO 492** – Radial bearings – Tolerances
- **DIN 620** – Tolerances of Ball and Roller Bearings
- **ISO 281** – Rolling bearings – Dynamic load ratings and rating life



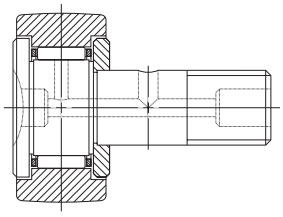
Suffixes – Stud Type, Metric Series (except GC types)	
.2RS	two seals
DZ	cylindrical outside diameter
DZ.2RS	cylindrical outside diameter • two seals
SK	hexagonal socket in flange end
2SK	hexagonal socket in both flange and stud ends

Suffixes – Yoke Type, Metric Series (except FP or FG types)	
DZ.TN	cylindrical outside diameter • molded cage of reinforced engineered polymer
TN	molded cage of reinforced engineered polymer
DZ	cylindrical outside diameter
ZZ	two end washers for the outer ring
ZZ.DZ	two end washers for the outer ring • cylindrical outside diameter
.2RS	two seals
.2RS.DZ	two seals • cylindrical outside diameter

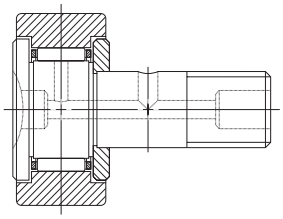
Suffixes – Yoke Type (FP, FG) and Stud Type (GC)	
EE	polymer seals
EEM	metal shields
MM	metal shields

STUD TYPE METRIC SERIES TRACK ROLLER TYPES

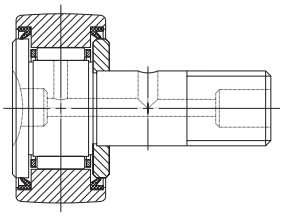
STUD TYPE TRACK ROLLERS, CAGED NEEDLE ROLLERS



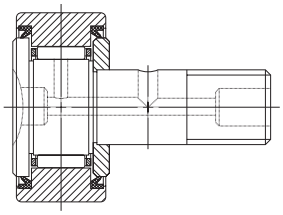
KR



KR.DZ

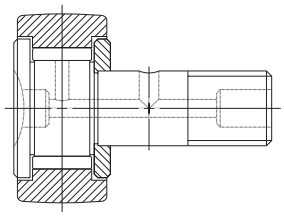


KR.2RS

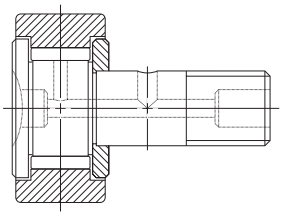


KR.DZ.2RS

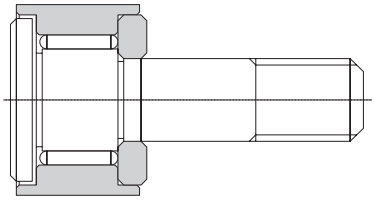
STUD TYPE TRACK ROLLERS, FULL COMPLEMENT NEEDLE ROLLERS



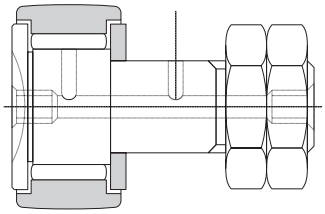
KRV



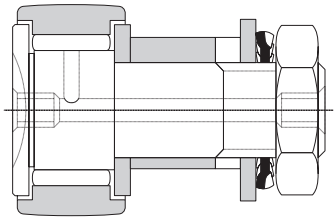
KRV.DZ



GC/GCL

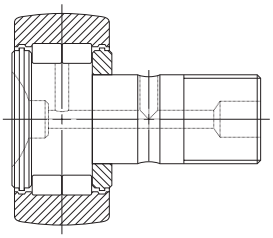


GC/GCL

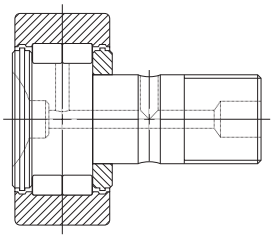


GCR/GCRL

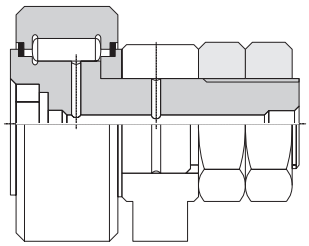
STUD TYPE TRACK ROLLERS, FULL COMPLEMENT CYLINDRICAL ROLLERS



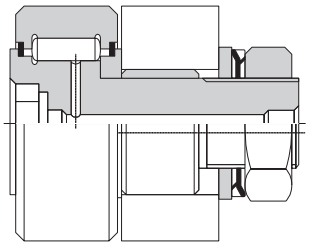
NUKR



NUKR.DZ



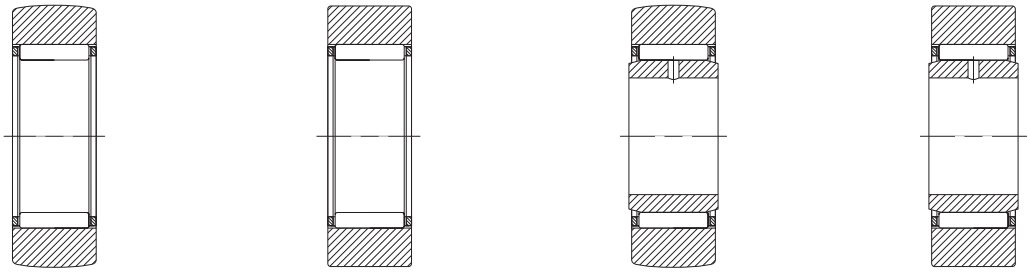
GCU/GCUL



GCUR/GCURL

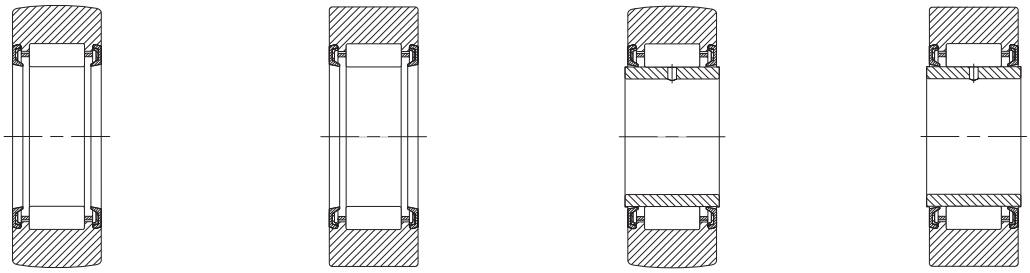
TYPES OF METRIC SERIES YOKE TYPE TRACK ROLLERS

YOKE TYPE TRACK ROLLERS WITHOUT END WASHERS



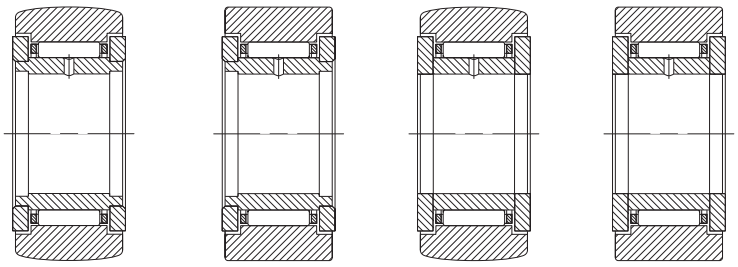
RSTO | RSTO.DZ | STO | STO.DZ

SEALED YOKE TYPE TRACK ROLLERS WITHOUT END WASHERS.



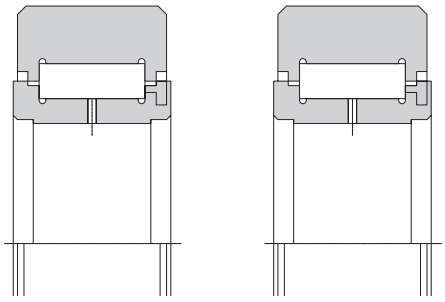
RNA22.2RS | RNA22.2RS.DZ | NA22.2RS | NA22.2RS.DZ

YOKE TYPE TRACK ROLLERS WITH END WASHERS



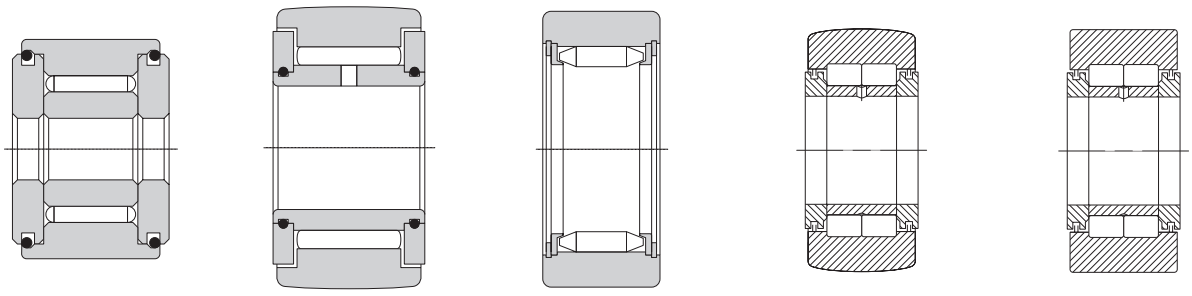
NATR | NATR.DZ | STO.ZZ | STO.ZZ.DZ

YOKE TYPE TRACK ROLLERS WITH FULL COMPLEMENT OF CYLINDRICAL ROLLERS



FGU/FGUL Light | FGU/FGUL Heavy

YOKE TYPE TRACK ROLLERS WITH END WASHERS, FULL COMPLEMENT OF NEEDLE ROLLERS



FP/FPL | FG/FGL | RNA1100 | NUTR | NUTR.DZ

CONSTRUCTION

STUD TYPE TRACK ROLLERS

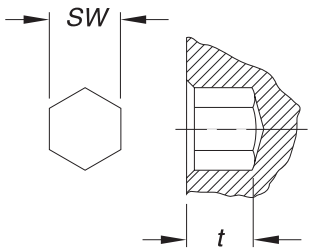
The metric series stud type track roller is a non-separable unit, consisting of a large radial cross-section outer ring, needle roller and cage radial assembly or a full complement of needle or cylindrical rollers, a stud and a retaining washer securely fastened to the stud.

The seals on the sealed stud type track rollers are located in the counterbores of the outer ring and seal against the stud flange and the retaining washer, providing good retention of lubricant and exclusion of foreign material. The seals are thermally stable in a temperature range between -30° C and 110° C.

A screwdriver slot (standard) or a hexagonal wrench socket (customer requested) in the head of the stud facilitates mounting. Wrench sizes are listed on the dimensional tables where found among certain GC Series sizes on pages later in this section. Other metric series hexagonal socket sizes are listed in Table 1.

TABLE 1 –
HEXAGONAL SOCKET – METRIC SERIES

Stud Type Track Roller Outside Diameter		Dimensions	
> mm	≤	SW	t
	16	3	2.5
19	26	4	2.5
30	35	6	4
40	52	8	5
62	72	12	7
80	90	17	10



ECCENTRIC STUDS FOR STUD TYPE TRACK ROLLERS

To provide radial adjustment of the outer ring toward the track or cam surface at the time of installation, some metric series stud type track rollers are available with eccentric studs which are specified by adding the letter "E" to the designation letters: KRE and NUKRE. The GCR and GCUR Series include an eccentric bushing added to the track roller stud. Appropriate dimensions of the eccentric stud bushing are listed in Table 2 and 2A.

Since a track roller with an eccentric stud is usually adjusted upon installation by turning the stud in the mounting hole, a close clearance fit between the outside diameter of the bushing and the mounting hole is necessary. For turning the stud, a hexagonal wrench is generally more convenient than a screwdriver, thus, the option of a hexagonal wrench socket in the head of the stud should be considered.

Some applications may require more secure positioning than provided by the tightened stud nut. If so, it is recommended that the mounting hole and the eccentric bushing be drilled at the time of installation to accept a locating dowel pin.

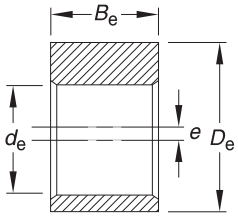


TABLE 2 –
ECCENTRIC BUSHING DIMENSIONS –
METRIC SERIES (EXCEPT GCR, GCUR SERIES)

Stud Type Outside >	Track Roller Diameter mm ≤	Dimensions			
		d_e	D_e	B_e	e
	16	6	9	7	0.5
19	19	8	11	9	0.5
22	26	10	13	10	0.5
30	32	12	15	11	0.5
35	35	16	20	14	1.0
40	40	18	22	16	1.0
47	52	20	24	18	1.0
62	72	24	28	22	1.0
80	90	30	35	29	1.5

TABLE 2A -
ECCENTRIC BUSHING DIMENSIONS
METRIC SERIES GCR, GCUR

over mm	incl.	de	De	Bw	e
-	19	6	9	7.5	0.5
19	28	10	14	10.5	1.0
28	32	12	16	11.5	1.0
32	35	16	21	15.1	1.5
35	40	18	24	17.1	1.5
40	52	20	27	19.1	2.0
52	72	24	36	24.1	3.0
72	90	30	42	30.7	3.0
90	110	36	48	36.5	3.0
110	-	42	54	43.5	3.0

YOKE TYPE TRACK ROLLERS

METRIC SERIES YOKE TYPE TRACK ROLLERS WITHOUT END WASHERS

These yoke type track rollers are available with a profiled or a cylindrical outside diameter of the outer ring, and with or without a separable inner ring. Since they are supplied without end washers, their outer rings must be guided by the adjacent end locating surfaces. Tolerance class F6 is the normal specification for the bore of the metric series needle roller and cage radial assemblies used with these yoke type track rollers.

YOKE TYPE TRACK ROLLERS – SERIES RSTO & STO

Series STO have a separable inner ring and when the inner ring is removed they become series RSTO. They run directly on a hardened and ground inner raceway. Quality requirements for inner raceways are given in the engineering section of this catalog.

SEALED YOKE TYPE TRACK ROLLERS WITHOUT END WASHERS – SERIES RNA 22.2RS & NA22.2RS

These yoke type track rollers have the same bore diameter and outside diameter as most of the other metric series yoke type track rollers listed in this catalog. The thick section outer ring is made of one-piece channel-shaped bearing quality steel, heat treated to yield maximum load carrying capability. The integral end flanges provide axial guidance for the large diameter needle rollers, and a cage supplies their inward retention. These track rollers have two integral lip contact seals designated by .2RS. The seals are thermally stable in a temperature range between -30° C and 110° C. Care should be exercised when mounting track rollers without inner rings onto inner raceways to avoid damage to the seals. Inner raceway quality requirements are given in the engineering section of this catalog.

METRIC SERIES YOKE TYPE TRACK ROLLERS WITH END WASHERS

These yoke type track rollers are available with a crowned or a cylindrical outside diameter of the outer ring. Metric series yoke type track rollers with end washers, depending on the internal construction, may be end guided, either through the end washers or between the end faces of the rollers and the inside faces of the outer ring flanges.

YOKE TYPE TRACK ROLLERS – SERIES NATR & STO.ZZ

The series NATR yoke type track rollers are of non-separable design consisting of a crowned or a cylindrical outer ring, caged needle rollers, an inner ring and two retaining end washers securely fastened to the inner ring. The series STO.ZZ yoke type track rollers are of separable design with two loose end washers. These end washers placed in the counter bores of the outer ring form very effective labyrinth type shields, providing good retention of lubricant and exclusion of foreign material. A lubrication hole in the inner ring enables relubrication when a cross-drilled bolt or shaft, which can be serviced from the end, is used.

YOKE TYPE TRACK ROLLERS – SERIES NUTR

The series NUTR yoke type track rollers are of non-separable design consisting of a profiled or cylindrical outer ring, two rows of full complements of cylindrical rollers, an inner ring, two retaining end washers and two shields. The outer ring is located axially through the cylindrical rollers.

A lubricating hole in the inner ring enables relubrication when a cross-drilled bolt or shaft, which can be serviced from the end, is used.

The smallest track roller of this series has an outside diameter of 35 mm. NUTR yoke type track rollers are well suited to carry high loads and designs with a thicker outer ring are particularly suitable for high shock loads. Designs with thicker outer ring have a larger outside diameter which can be identified by the bearing designation (e.g., NUTR 1542).

YOKE TYPE TRACK ROLLERS – SERIES FP AND FG

The FP and FG non-separable inner ring designs are available in profiled or cylindrical outer rings. Both employ a full complement of needle rollers and require relubrication via a pathway through the shaft. The FP Series is the smallest series available and is not offered with seals.

YOKE TYPE TRACK ROLLERS – SERIES FGU (LIGHT AND HEAVY TYPES)

The FGU non-separable inner ring desings are available in profiled or cylindrical outer rings. All FGU Series use a full complement of cylindrical rollers between the inner and outer rings and require relubrication via a pathway through the shaft. The FGU Heavy series uses a thicker outer ring section and are capable of higher loads.

Both FGU Series are only available with a metal shield for a roller sealing option.

YOKE TYPE TRACK ROLLERS – SERIES RNA, RNAB, RNAL

The RNA and RNAB Series design use a full complement of needle rollers retained with a pair of end washers. A separate, matching inner ring is listed in the tables of part numbers. The RNAL Series use a cylindrical outer ring and is only offered in limited sizes.

DIMENSIONAL ACCURACY

The tolerances of the basic metric series caged roller and NUKR stud type and yoke type track rollers whose outer rings have a cylindrical outside diameter, correspond to tolerances specified in ISO-492 Radial bearings - Tolerances. The outer ring tolerances given in Table 4 apply to the outer rings used in the caged roller and NUKR stud type and caged roller and NUTR yoke type, metric series, track rollers. Metric series track rollers with a crowned outside diameter are the exception: their outside diameter tolerances is 0-0.05 for all caged roller sizes and NUTR, NUKR types. The remaining types have h9 tolerance on profiled outer diameters and h7 for straight diameters. Stud diameter and stud length tolerances are given in Table 3. The inner ring tolerances given in Table 5 apply to inner rings used in metric series caged roller, NUKR Series yoke type track rollers.

TABLE 3 –
TOLERANCES FOR STUD DIAMETER AND STUD LENGTH – METRIC SERIES

Stud Diameter mm		μm		Stud Length mm		
>	≤	high	low		high	low
d_1		Δd_{1S}		B_2	ΔB_2	
3	6	0	-12			
6	10	0	-15	all		
10	18	0	-18	lengths	0	-1
18	30	0	-21			
30	50	0	-25			
50	80	0	-30			
80	100	0	-35			

MOUNTING STUD TYPE TRACK ROLLERS

When the stud shank of a metric series stud type track roller is mounted in a hole of tolerance H7, the installation force should be applied only to the center portion of the flanged end of the stud, preferably with an arbor press. The surface of the hole in the machine element which supports the stud must not deform under the expected load, and the support should be sufficiently rigid to resist bending loads. Deformation and bending will cause uneven loading of the outer ring.

In mounting the stud type track roller, the retaining washer must be firmly backed up by a flat shoulder which is square with the stud center line. The shoulder diameter must be no smaller than the minimum clamping diameter, d_a listed in the tabular data.

The maximum inherent strength of the stud is obtained when the track roller is supported as close as possible to the retaining washer, which minimizes the bending moment. For this reason the edge of the housing which supports the stud shank should be kept as sharp as practical, but free from burrs.

The clamping nut should not be tightened with a torque value higher than the maximum listed. A screwdriver slot or hexagonal wrench socket in the flanged end of the stud is provided for a tool to prevent the stud from turning when the nut is being tightened. Hexagonal nuts are supplied with all metric series stud type track rollers.

TABLE 4 –OUTER RING – METRIC SERIES (CAGED ROLLER AND NUKR, NUTR TYPES)

Tolerances in mm (0.001 mm)

mm		cylindrical		crowned				
>	≤	high	low	high	low	high	low	max.
D		Δ_{Dmp}				Δ_{Cs}		K_{ea}
10	18	0	-8	0	-50	0	-120	15
18	30	0	-9	0	-50	0	-120	15
30	50	0	-11	0	-50	0	-120	20
50	80	0	-13	0	-50	0	-120	25
80	120	0	-15	0	-50	0	-120	35
120	150	0	-18	0	-50	0	-120	40
150	180	0	-25	0	-50	0	-150	45
180	240	0	-30	0	-50	0	-200	50

TABLE 5 – INNER RING – METRIC SERIES (CAGED ROLLER AND NUTR TYPES)

Tolerances in mm (0.001 mm)

mm					
>	≤	high	low	high	low
d		Δ_{dmp}		Δ_{Bs}	
2.5	18	0	-8	0	-180
18	30	0	-10	0	-210
30	50	0	-12	0	-250
50	80	0	-15	0	-300
80	120	0	-20	0	-350

YOKE TYPE TRACK ROLLERS

The machine element with the holes in which the mounting bolt or shaft is supported must be sufficiently rigid to resist local crushing under the applied load, and to resist bending which can cause uneven loading of the needle rollers.

When applied loads are high, the h6 or j6 tolerance should be used in conjunction with a high strength shaft or bolt for mounting metric series yoke type track rollers. When loads are moderate, a g6 tolerance may be used with a high strength shaft or bolt. For light loads, the loose transition fit with the f6 tolerance may be used with an unhardened shaft or bolt.

The yoke type track rollers with inner rings, also those with end washers as well as inner rings, should be clamped endwise between parallel faces perpendicular to the axis to prevent the retaining washers from coming off under load. The dimensions of machine parts adjoining the metric series yoke type track rollers should be based on the minimum clamping diameter d_a to ensure that the washers are adequately supported. If the track roller cannot be end clamped, a close axial fit in the yoke is required. Care should be taken that the lubricating hole is located in the unloaded zone of the raceway.

The metric series yoke type track rollers without inner rings require a hardened and ground shaft or bolt with a k5 tolerance. Inner raceway quality requirements are given in the engineering section of this catalog.

C

LOAD RATINGS

DYNAMIC LOADING AS A TRACK ROLLER

When the outer ring of a stud type or yoke type track roller runs on a track, the contact, under a radial load, causes elastic (oval) deformation of the outer ring. As a result, a smaller zone of the raceway is loaded and the load is distributed on fewer needle rollers. This in turn affects the dynamic and static load ratings of the track rollers. Also, this deformation generates bending stress in the outer ring which must not exceed the maximum permitted for the material of the outer ring. The maximum permissible dynamic ($F_{r\ perm}$) radial load condition is determined by this requirement.

The rating life of stud type or yoke type track rollers should be calculated using the dynamic load ratings C_w shown in the tables. The tables also show the maximum permissible radial load, $F_{r\ perm}$ that can be dynamically applied on stud type or yoke type track rollers. However, to calculate the L_{10} life of a track roller, the applied radial load must not be greater than $C_w/2$ based on ideal operating conditions of alignment, lubrication, temperature, speed, and accelerations.

STATIC RATING AS A TRACK ROLLER

In addition to the basic static load rating C_0, the tables also list the maximum permissible static radial load $F_{0r\ perm}$ that may be applied to a stud type or yoke type metric series track roller. The values of $F_{0r\ perm}$ result in a calculated minimum static factor f_s of 0.7 for the worst condition of internal load distribution in metric series track roller operation. **The $F_{0r\ perm}$ values must not be exceeded**. The static factor f_s can be calculated using the following formula:

$$f_s \geq 0.7 \bullet \frac{F_{0r\ perm}}{P_{0r}}$$

where

$F_{0r\ perm}$ = Maximum permissible static radial load (kN)

P_{0r} = Equivalent static load (kN)
$P_{0r} = F_{0r}$ for metric series track rollers

F_{0r} = Static radial load (kN)

f_s = Static factor whose values should not be smaller than those suggested in Table 6.

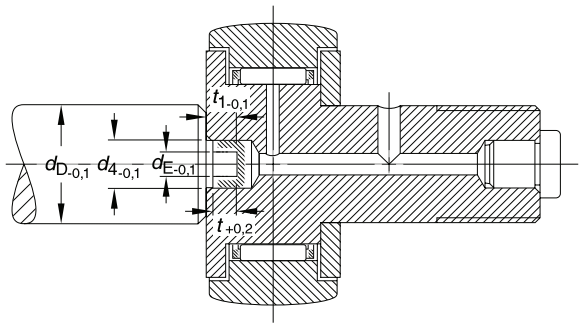
TABLE 6 –
SUGGESTED VALUES FOR STATIC FACTORS F_S FOR METRIC SERIES TRACK ROLLERS

Requirements For Yoke Type Track Rollers And Stud Type Track Rollers	Suggested f_s Values
High shock-type loads	
Quiet running	1.5...2.5
Normal loading	
Normal quietness of running	1...1.5
Minor impact loads and rotary motion particularly quiet running not required	0.7...1

LUBRICATION OF STUD TYPE TRACK ROLLERS

Timken metric series stud type track rollers are supplied with a lithium soap based, general purpose grease. When the caged KR Series track rollers are operated at low speeds, with light loads and in clean environments, there often is no need to relubricate the track roller. In other applications, periodic relubrication may be necessary to obtain optimum performance. The full complement series of track rollers have less internal volume available for grease storage, therefore, they may require more frequent lubrication than caged type track rollers. Stud type track rollers, with a screwdriver slot in the flanged end of the stud, have provisions for relubrication through the flanged end of the stud. Metric series stud type track rollers with hexagonal sockets can not be relubricated from the flanged end of the stud. Both types of metric series stud type track rollers, with outside diameters larger than 22 mm (28 mm for all GC variations), allow for relubrication through the threaded end of the stud. In addition, caged roller and NUKR Series stud type track rollers with 30 mm and larger outside diameters allow for relubrication through a cross-drilled hole in the stud shank. The ends of the axial holes are counterbored to accept press-fit grease fittings of series VENN. The grease fittings are supplied with metric series stud type track rollers. Hole diameters (d_4) for these grease fittings are listed in the tables of dimensions on pages later in this chapter as it applies. Note that the GC small series has no axial hole.

One or more plugs are supplied with every metric series stud type track roller to close off unused holes. At the flanged end, the plug must not be pushed in too deeply as it may cover the cross-drilled lubricating hole. The plug should be pressed in using an installation tool whose dimensions are given in Table 8. If the cross-drilled hole in the stud shank is not used, it will be covered when the track roller is properly installed.



During installation of the track roller it will be desirable to ensure that the cross drilled hole is positioned in the unloaded zone of the track roller raceway. The location of the cross-drilled hole can be best recognized by its alignment with the manufacturer's stamp or parallel to the screwdriver slot, in certain cases.

LUBRICATION OF YOKE TYPE TRACK ROLLERS

Yoke type track rollers are produced with a lubricating hole in the inner ring so they can be relubricated through a cross-drilled hole in the supporting shaft or bolt. When mounting yoke type track rollers, care should be taken that the lubrication hole is located in the unloaded raceway zone.

Oil is the preferred lubricant for yoke type track rollers. Continuous oil lubrication or frequent grease lubrication should be used for steady rotating conditions. Applications involving slow, intermittent oscillations are not as critical, and longer intervals between relubrication are permitted. Sealed yoke type track rollers are normally supplied with an initial charge of a medium temperature grease. Caged yoke type track rollers have maximum grease storage capacity and, consequently, longer pregreased life than full complement types.

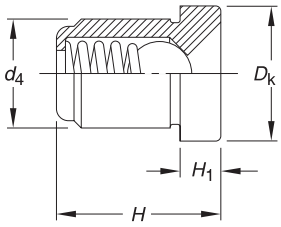


TABLE 7 – METRIC SERIES GREASE FITTINGS, SERIES VENN

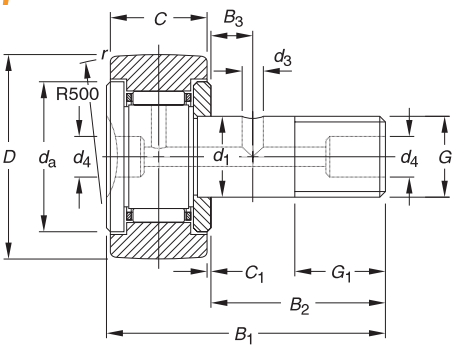
Designation	Dimensions mm				Wt. g approx.
	d_4	D_K	H	H_1	
VENN 4	4	6	6	1.5	0.4
VENN 6	6	8	7	2	1.6
VENN 8	8	10	12	3	4.7

TABLE 8 – INSTALLATION TOOL FOR METRIC SERIES PLUG

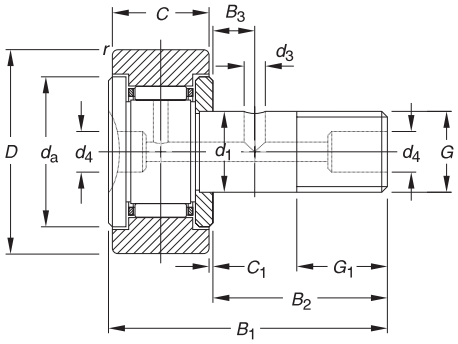
Stud Type Track Roller Outside Diameter mm		Dimensions				
>	≤	d_4	d_D	d_E	t	t_1
16	26	3.9	10	2.7	3.7	4.5
30	40	5.9	12	4.7	4.7	7
47	90	7.9	15	6.7	6.7	10

NEEDLE ROLLER AND CAGE ASSEMBLIES, STUD TYPE (KR SERIES)

METRIC SERIES

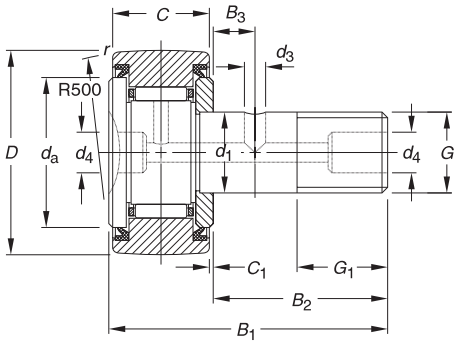


KR



KR.DZ

Outer Dia.	Dimensions mm/in.										Thread	
mm	d_1	h_7	C	$r_{s\,min}$	B_1	B_2	B_3	G_1	d_4	d_3	G	C_1
16	6 0.2362	16 0.6299	11 0.433	0.3 0.012	28.2 1.110	16 0.630		8 0.315	4 0.157		M6x1	0.6 0.024
	6 0.2362	16 0.6299	11 0.433	0.3 0.012	28.2 1.110	16 0.630		8 0.315	4 0.157		M6x1	0.6 0.024
19	8 0.3150	19 0.7480	11 0.433	0.3 0.012	32.2 1.268	20 0.787		10 0.394	4 0.157		M8x1.25	0.6 0.024
	8 0.3150	19 0.7480	11 0.433	0.3 0.012	32.2 1.268	20 0.787		10 0.394	4 0.157		M8x1.25	0.6 0.024
22	10 0.3937	22 0.8661	12 0.472	0.3 0.012	36.0 1.417	23 0.906		12 0.472	4 0.157		M10x1	0.6 0.024
	10 0.3937	22 0.8661	12 0.472	0.3 0.012	36.2 1.425	23 0.906		12 0.472	4 0.157		M10x1	0.6 0.024
26	10 0.3937	26 1.0236	12 0.472	0.3 0.012	36.0 1.417	23 0.906		12 0.472	4 0.157		M10x1	0.6 0.024
	10 0.3937	26 1.0236	12 0.472	0.3 0.012	36.2 1.425	23 0.906		12 0.472	4 0.157		M10x1	0.6 0.024
30	12 0.4724	30 1.1811	14 0.551	0.6 0.024	40.0 1.575	25 0.984	6 0.236	13 0.512	6 0.236	3 0.118	M12x1.5	0.6 0.024
	12 0.4724	30 1.1811	14 0.551	0.6 0.024	40.2 1.583	25 0.984	6 0.236	13 0.512	6 0.236	3 0.118	M12x1.5	0.6 0.024
32	12 0.4724	32 1.2598	14 0.551	0.6 0.024	40.0 1.575	25 0.984	6 0.236	13 0.512	6 0.236	3 0.118	M12x1.5	0.6 0.024
	12 0.4724	32 1.2598	14 0.551	0.6 0.024	40.2 1.583	25 0.984	6 0.236	13 0.512	6 0.236	3 0.118	M12x1.5	0.6 0.024

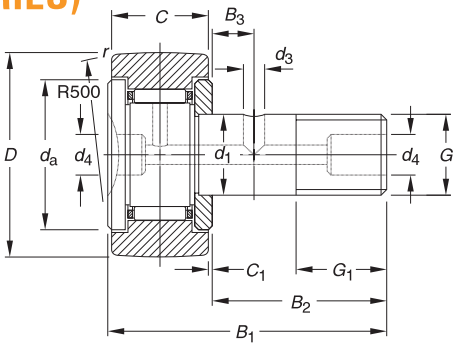


KR.2RS

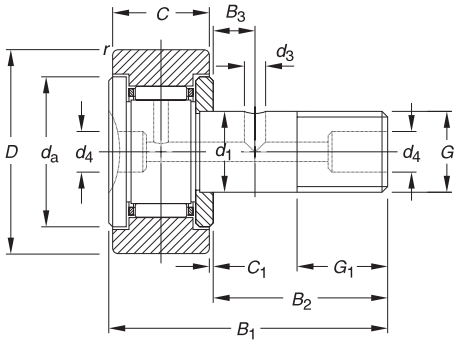
		Load Ratings kN/lbf.					Tightening Torque Nm/in.-lbs.	Limiting Speed Grease	Wt. kg/lbs.
	Bearing Designation	Dynamic	Static	As a Track Roller Dynamic		Static			
d_a		C	C_o	C_w	$F_{r\ perm}$	$F_{0r\ perm}$		RPM	
11 0.433	**KR16**	**3.60** 810	**3.58** 800	**2.97** 670	**2.85** 640	**3.58** 800	**7** 62.0	**17000**	**0.019** 0.042
11 0.433	**KR16.DZ**	**3.60** 810	**3.58** 800	**2.97** 670	**2.85** 640	**3.58** 800	**7** 62.0	**17000**	**0.019** 0.042
13 0.512	**KR19**	**4.18** 940	**4.65** 1050	**3.28** 740	**3.29** 740	**4.22** 950	**16** 142	**13000**	**0.031** 0.068
13 0.512	**KR19.DZ**	**4.18** 940	**4.65** 1050	**3.28** 740	**3.29** 740	**4.22** 950	**16** 142	**13000**	**0.031** 0.068
15 0.591	**KR22**	**5.35** 1200	**6.79** 1530	**3.94** 890	**4.04** 910	**5.45** 1230	**28** 248	**10000**	**0.046** 0.101
15 0.591	**KR22.DZ**	**5.35** 1200	**6.79** 1530	**3.94** 890	**4.04** 910	**5.45** 1230	**28** 248	**10000**	**0.046** 0.101
15 0.591	**KR26**	**5.35** 1200	**6.79** 1530	**4.55** 1020	**6.78** 1520	**7.24** 1630	**28** 248	**10000**	**0.059** 0.130
15 0.591	**KR26.DZ**	**5.35** 1200	**6.79** 1530	**4.55** 1020	**6.78** 1520	**7.24** 1630	**28** 248	**10000**	**0.059** 0.130
21 0.827	**KR30**	**7.89** 1770	**9.79** 2200	**6.32** 1420	**7.74** 1740	**9.31** 2090	**45** 398	**8200**	**0.087** 0.192
21 0.827	**KR30.DZ**	**7.89** 1770	**9.79** 2200	**6.32** 1420	**7.74** 1740	**9.31** 2090	**45** 398	**8200**	**0.087** 0.192
21 0.827	**KR32**	**7.89** 1770	**9.79** 2200	**6.65** 1490	**9.62** 2160	**10.3** 2320	**45** 398	**8200**	**0.095** 0.209
21 0.827	**KR32.DZ**	**7.89** 1770	**9.79** 2200	**6.65** 1490	**9.62** 2160	**10.3** 2320	**45** 398	**8200**	**0.098** 0.216

NEEDLE ROLLER AND CAGE ASSEMBLIES, SEALED, STUD TYPE (KR...2S SERIES)

METRIC SERIES

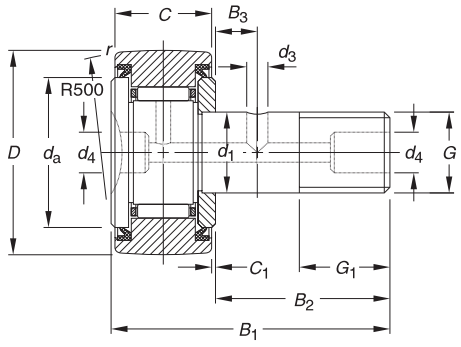


KR



KR.DZ

Outer Dia.	Dimensions mm/in.										Thread	
mm	d_1	h_7	C	$r_{s\,min}$	B_1	B_2	B_3	G_1	d_4	d_3	G	C_1
16	6 0.2362	16 0.6299	11 0.433	0.3 0.012	28.2 1.110	16 0.630		8 0.315	4 0.157		M6x1	0.6 0.024
	6 0.2362	16 0.6299	11 0.433	0.3 0.012	28.2 1.110	16 0.630		8 0.315	4 0.157		M6x1	0.6 0.024
19	8 0.3150	19 0.7480	11 0.433	0.3 0.012	32.2 1.268	20 0.787		10 0.394	4 0.157		M8x1.25	0.6 0.024
	8 0.3150	19 0.7480	11 0.433	0.3 0.012	32.2 1.268	20 0.787		10 0.394	4 0.157		M8x1.25	0.6 0.024
22	10 0.3937	22 0.8661	12 0.472	0.3 0.012	36.2 1.425	23 0.906		12 0.472	4 0.157		M10x1	0.6 0.024
	10 0.3937	22 0.8661	12 0.472	0.3 0.012	36.2 1.425	23 0.906		12 0.472	4 0.157		M10x1	0.6 0.024
26	10 0.3937	26 1.0236	12 0.472	0.3 0.012	36.2 1.425	23 0.906		12 0.472	4 0.157		M10x1	0.6 0.024
	10 0.3937	26 1.0236	12 0.472	0.3 0.012	36.2 1.425	23 0.906		12 0.472	4 0.157		M10x1	0.6 0.024
30	12 0.4724	30 1.1811	14 0.551	0.6 0.024	40.2 1.583	25 0.984	6 0.236	13 0.512	6 0.236	3 0.118	M12x1.5	0.6 0.024
	12 0.4724	30 1.1811	14 0.551	0.6 0.024	40.2 1.583	25 0.984	6 0.236	13 0.512	6 0.236	3 0.118	M12x1.5	0.6 0.024
32	12 0.4724	32 1.2598	14 0.551	0.6 0.024	40.2 1.583	25 0.984	6 0.236	13 0.512	6 0.236	3 0.118	M12x1.5	0.6 0.024
	12 0.4724	32 1.2598	14 0.551	0.6 0.024	40.2 1.583	25 0.984	6 0.236	13 0.512	6 0.236	3 0.118	M12x1.5	0.6 0.024

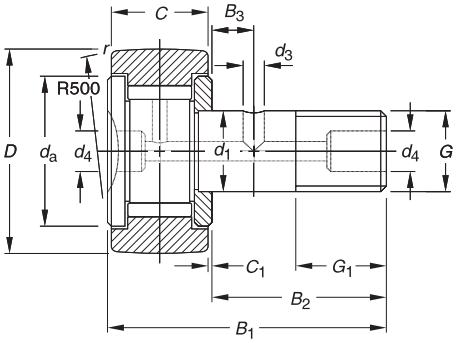


KR.2RS

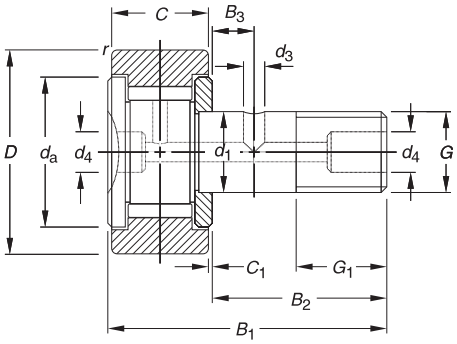
	Bearing Designation	Load Ratings kN/lbf. Dynamic	Static	As a Track Roller Dynamic		Static	Tightening Torque Nm/in.-lbs.	Limiting Speed Grease	Wt. kg/lbs.
d_a		C	C_o	C_w	$F_{r\ perm}$	$F_{Or\ perm}$		RPM	
11 0.433	KR16.2RS	3.60 810	3.58 800	2.97 670	2.85 640	3.58 800	7.0 61.96	17000	0.019 0.042
11 0.433	KR16.DZ.2RS	3.60 810	3.58 800	2.97 670	2.85 640	3.58 800	7.0 61.96	17000	0.01 0.042
13 0.512	KR19.2RS	4.18 940	4.65 1050	3.28 740	3.29 740	4.22 950	16 141.61	13000	0.031 0.068
13 0.512	KR19.DZ.2RS	4.18 940	4.65 1050	3.28 740	3.29 740	4.22 950	16 141.61	13000	0.031 0.068
15 0.591	KR22.2RS	5.35 1200	6.79 1530	3.94 890	4.04 910	5.45 1230	28 247.82	10000	0.046 0.101
15 0.591	KR22.DZ.2RS	5.35 1200	6.79 1530	3.94 890	4.04 910	5.45 1230	28 247.82	10000	0.046 0.101
15 0.591	KR26.2RS	5.35 1200	6.79 1530	4.55 1020	6.78 1520	7.24 1630	28 247.82	10000	0.059 0.130
15 0.591	KR26.DZ.2RS	5.35 1200	6.79 1530	4.55 1020	6.78 1520	7.24 1630	28 247.82	10000	0.059 0.130
21 0.827	KR30.2RS	7.89 1770	9.79 2200	6.32 1420	7.74 1740	9.31 2090	45 398.28	8200	0.087 0.192
21 0.827	KR30.DZ.2RS	7.89 1770	9.79 2200	6.32 1420	7.74 1740	9.31 2090	45 398.28	8200	0.087 0.192
21 0.827	KR32.2RS	7.89 1770	9.79 2200	6.65 1490	9.62 2160	10.3 2320	45 398.28	8200	0.098 0.216
21 0.827	KR32.DZ.2RS	7 .89 1770	9.79 2200	6.65 1490	9.62 2160	10.3 2320	45 398.28	8200	0.098 0.216

FULL COMPLEMENT WITH NEEDLE ROLLER (KRV SERIES) OR CYLINDRICAL ROLLERS, STUD TYPE (NUKR SERIES)

METRIC SERIES

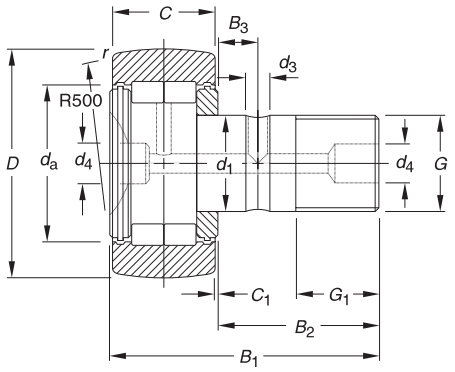


KRV

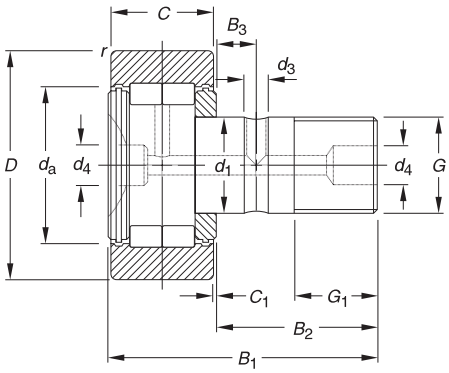


KRV.DZ

Outer Dia.	Dimensions mm/in.										Thread	
mm	d_1	D, h_7	C	$r_{s\,min}$	B_1	B_2	B_3	G_1	d_4	d_3	G	C_1
16	6 0.2362	16 0.6299	11 0.433	0.3 0.012	28.2 1.110	16 0.630		8 0.315	4 0.157		M6x1	0.6 0.024
	6 0.2362	16 0.6299	11 0.433	0.3 0.012	28.2 1.110	16 0.630		8 0.315	4 0.157		M6x1	0.6 0.024
19	8 0.3150	19 0.7480	11 0.433	0.3 0.012	32.2 1.268	20 0.787		10 0.394	4 0.157		M8x1.25	0.6 0.024
	8 0.3150	19 0.7480	11 0.433	0.3 0.012	32.2 1.268	20 0.787		10 0.394	4 0.157		M8x1.25	0.6 0.024
22	10 0.3937	22 0.8661	12 0.472	0.3 0.012	36.2 1.425	23 0.906		12 0.472	4 0.157		M10x1	0.6 0.024
	10 0.3937	22 0.8661	12 0.472	0.3 0.012	36.2 1.425	23 0.906		12 0.472	4 0.157		M10x1	0.6 0.024
26	10 0.3937	26 1.0236	12 0.472	0.3 0.012	36.2 1.425	23 0.906		12 0.472	4 0.157		M10x1	0.6 0.024
	10 0.3937	26 1.0236	12 0.472	0.3 0.012	36.2 1.425	23 0.906		12 0.472	4 0.157		M10x1	0.6 0.024
30	12 0.4724	30 1.1811	14 0.551	0.6 0.024	40.2 1.583	25 0.984	6 0.236	13 0.512	6 0.236	3 0.118	M12x1.5	0.6 0.024
	12 0.4724	30 1.1811	14 0.551	0.6 0.024	40.2 1.583	25 0.984	6 0.236	13 0.512	6 0.236	3 0.118	M12x1.5	0.6 0.024
32	12 0.4724	32 1.2598	14 0.551	0.6 0.024	40.2 1.583	25 0.984	6 0.236	13 0.512	6 0.236	3 0.118	M12x1.5	0.6 0.024
	12 0.4724	32 1.2598	14 0.551	0.6 0.024	40.2 1.583	25 0.984	6 0.236	13 0.512	6 0.236	3 0.118	M12x1.5	0.6 0.024
35	16 0.6299	35 1.3780	18 0.709	0.6 0.024	52 2.047	32.5 1.280	8 0.315	17 0.669	6 0.236	3 0.118	M16x1.5	0.8 0.031
40	18 0.7087	40 1.5748	20 0.787	1 0.039	58 2.283	36.5 1.437	8 0.315	19 0.748	6 0.236	3 0.118	M18x1.5	0.8 0.031
47	20 0.7874	47 1.8504	24 0.945	1 0.039	66 2.598	40.5 1.594	9 0.354	21 0.827	6 0.236	4 0.157	M20x1.5	0.8 0.031
52	20 0.7874	52 2.0472	24 0.945	1 0.039	66 2.598	40.5 1.594	9 0.354	21 0.827	6 0.236	4 0.157	M20x1.5	0.8 0.031
62	24 0.9449	62 2.4409	29 1.142	1 0.039	80 3.150	49.5 1.949	11 0.433	25 0.984	8 0.315	4 0.157	M24x1.5	0.8 0.031
72	24 0.9449	72 2.8346	29 1.142	1.1 0.043	80 3.150	49.5 1.949	11 0.433	25 0.984	8 0.315	4 0.157	M24x1.5	0.8 0.031
80	30 1.1811	80 3.1496	35 1.378	1.1 0.043	100 3.937	63 2.480	15 0.591	32 1.260	8 0.315	4 0.157	M30x1.5	1.0 0.039
90	30 1.1811	90 3.5433	35 1.378	1.1 0.043	100 3.937	63 2.480	15 0.591	32 1.260	8 0.315	4 0.157	M30x1.5	1.0 0.039



NUKR



NUKR.DZ

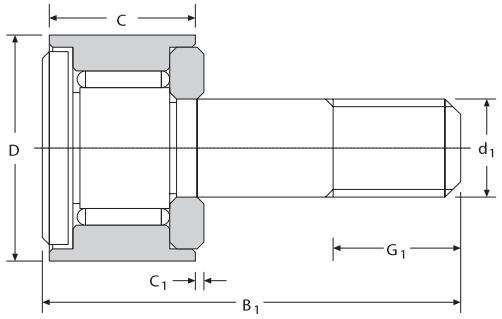
C

da	Bearing Designation	Load Ratings kN/lbf. Dynamic C	Static C0	As a Track Roller Dynamic Cw	Fr perm	Static F0r perm	Tightening Torque Nm/in.-lbs.	Limiting Speed Grease RPM	Wt. kg/lbs.
11 0.433	KRV16	6.90 1550	8.40 1890	5.11 1150	3.49 780	6.28 1410	7 62.0	5700	0.019 0.042
11 0.433	KRV16.DZ	6.90 1550	8.40 1890	5.11 1150	3.49 780	6.28 1410	7 62.0	5700	0.019 0.042
13 0.512	KRV19	8.08 1820	11.0 2470	5.66 1270	4.13 930	7.43 1670	16 142	4300	0.031 0.068
13 0.512	KRV19.DZ	8.08 1820	11.0 2470	5.66 1270	4.13 930	7.43 1670	16 142	4300	0.031 0.068
15 0.591	KRV22	9.45 2120	14.3 3210	6.32 1420	5.04 1130	9.07 2040	28 248	3400	0.046 0.101
15 0.591	KRV22.DZ	9.45 2120	14.3 3210	6.32 1420	5.04 1130	9.07 2040	28 248	3400	0.046 0.101
15 0.591	KRV26	9.45 2120	14.3 3210	7.30 1640	8.60 1930	12.7 2860	28 248	3400	0.059 0.130
15 0.591	KRV26.DZ	9.45 2120	14.3 3210	7.30 1640	8.60 1930	12.7 2860	28 248	3400	0.059 0.130
21 0.827	KRV30	13.4 3010	19.8 4450	9.85 2210	9.20 2070	15.7 3530	45 398	2800	0.087 0.192
21 0.827	KRV30.DZ	13.4 3010	19.8 4450	9.85 2210	9.20 2070	15.7 3530	45 398	2800	0.087 0.192
21 0.827	KRV32	13.4 3010	19.8 4450	10.4 2340	11.3 2540	17.4 3910	45 398	2800	0.098 0.216
21 0.827	KRV32.DZ	13.4 3010	19.8 4450	10.4 2340	11.3 2540	17.4 3910	45 398	2800	0.098 0.216
25 0.984	NUKR35.2SK	24.7 5550	29.4 6610	16.2 3640	10.1 2270	16.1 3620	53.2 471	6100	0.170 0.375
27 1.063	NUKR40.2SK	26.6 5980	33.3 7490	18.7 4200	15.0 3370	23.9 5370	77.5 686	5300	0.250 0.551
33 1.299	NUKR47.2SK	41.4 9310	53.2 12000	28.1 6320	20.5 4610	32.7 7350	109 965	4500	0.380 0.838
37 1.457	NUKR52.2SK	45.8 10300	63.1 14200	29.6 6650	22.2 4990	35.4 7960	109 965	3700	0.461 1.016
45 1.772	NUKR62.2SK	62.7 14100	83.1 18700	40.9 9190	29.6 6650	47.2 10600	193 1 708	3200	0.790 1.742
51 2.008	NUKR72.2SK	68.9 15500	97.8 22000	46.1 10400	39.6 8900	63.1 14200	193 1 708	2600	1.040 2.293
52 2.047	NUKR80.2SK	95.4 21400	130 29200	69.7 15700	63.2 14200	101 22700	390 3 452	2900	1.550 3.417
52 2.047	NUKR90.2SK	95.4 21400	130 29200	77.8 17500	97.8 22000	128 28800	390 3 452	2900	2.020 4.453

FULL COMPLEMENT, SMALL SERIES, UNSEALED, STUD TYPE (GC SERIES)

METRIC SERIES

GC: convex outer ring
GCL: cylindrical outer ring



GC Series

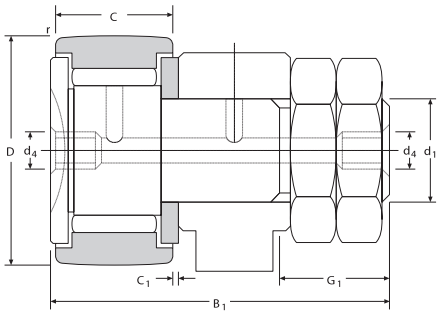
Outer Dia.	Dimensions mm/in.							Profiled Designation
mm	D	d_1	C	C_1	$r_{s\ min}$	B_1	G_1	
10	10	4	8	0.25	0.2	19.5	6	GC 10
	0.3937	0.1575	0.315	0.010	0.008	0.768	0.236	
11	11	4	8	0.25	0.2	19.5	6	GC 11
	0.4331	0.1575	0.315	0.010	0.008	0.768	0.236	
12	12	5	9	0.25	0.2	22.5	7	GC 12
	0.4724	0.1969	0.354	0.010	0.008	0.886	0.276	
13	13	5	9	0.25	0.2	22.5	7	GC 13
	0.5118	0.1969	0.354	0.010	0.008	0.886	0.276	
14	14	6	9.5	0.25	0.3	26	8	GC 14
	0.5512	0.2362	0.374	0.010	0.012	1.024	0.315	
15	15	6	9.5	0.25	0.3	26	8	GC 15
	0.5906	0.2362	0.374	0.010	0.012	1.024	0.315	

Cylindrical Designation	Tightening Torque Nm/in.-lbs.	Load Ratings kN/lbf. Dynamic		Static	Limiting Speed Grease	Wt. kg/lbs.
		C_1	$F_{r\ perm}$	F_0	RPM	
GCL 10	**0.9**	**2.13**	**0.52**	**0.96**	**14000**	**0.006**
	7.97	479	117	216		0.014
GCL 11	**0.9**	**2.48**	**0.52**	**0.96**	**14000**	**0.007**
	7.97	558	117	216		0.016
GCL 12	**1.8**	**2.98**	**0.90**	**1.68**	**11000**	**0.011**
	15.93	670	202	378		0.024
GCL 13	**1.8**	**3.35**	**0.90**	**1.68**	**11000**	**0.011**
	15.93	753	202	378		0.024
GCL 14	**3.0**	**3.5**	**1.48**	**2.75**	**10000**	**0.016**
	26.55	787	333	618		0.035
GCL 15	**3.0**	**3.75**	**1.48**	**2.75**	**10000**	**0.018**
	26.55	843	333	618		0.039

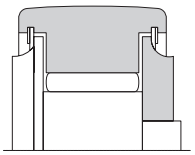
FULL COMPLEMENT, STANDARD SERIES, WITH OR WITHOUT SEALS, STUD TYPE (GC SERIES)

METRIC SERIES

GC: convex outer ring
GCL: cylindrical outer ring



GC/GCL



GC...EE, GC...EM

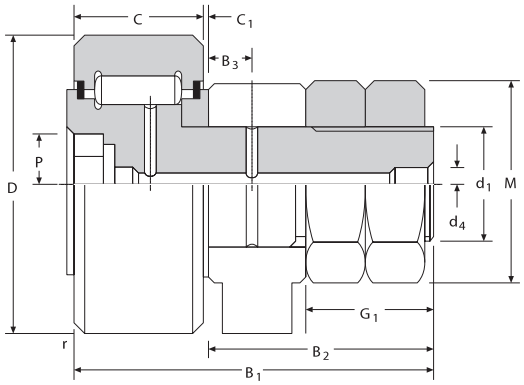
Outer Dia.	Dimensions mm/in.							Profiled Designation
mm	D	d_1	C	C_1	$r_{s\ min}$	B_1	G_1	
16	16	6	11	0.60	0.3	28.3	8	GC 16
	0.6299	0.2362	0.433	0.024	0.012	1.114	0.315	
19	19	8	11	0.60	0.3	32.3	10	GC 19
	0.748	0.315	0.433	0.024	0.012	1.272	0.394	
22	22	10	12	0.60	0.3	36.3	12	GC 22
	0.8661	0.3937	0.472	0.024	0.012	1.429	0.472	
24	24	10	12	0.60	0.3	36.3	12	GC 24
	0.9449	0.3937	0.472	0.024	0.012	1.429	0.472	
26	26	10	12	0.60	0.3	36.3	12	GC 26[4]
	1.0236	0.3937	0.472	0.024	0.012	1.429	0.472	
28	28	10	12	0.60	0.3	36.3	12	GC 28
	1.1024	0.3937	0.472	0.024	0.012	1.429	0.472	
30	30	12	14	0.60	0.6	40.3	13	GC 30
	1.1811	0.4724	0.51	0.024	0.024	1.587	0.512	
32	32	12	14	0.60	0.6	40.3	13	GC 32
	1.2598	0.4724	0.51	0.024	0.024	1.587	0.512	
35	35	16	18	0.80	0.6	52.3	17	GC 35
	1.378	0.6299	0.709	0.031	0.024	2.059	0.669	
47	47	20	24	0.80	1	66.3	21	GC 47
	1.8504	0.7874	0.45	0.031	0.039	2.61	0.827	
52	52	20	24	0.80	1	66.3	21	GC 52
	2.0472	0.7874	0.45	0.031	0.039	2.61	0.827	
62	62	24	29	0.80	1	80.3	25	GC 62
	2.4409	0.9449	1.142	0.031	0.039	3.161	0.984	
72	72	24	29	0.80	1	80.3	25	GC 72
	2.8346	0.9449	1.142	0.031	0.039	3.161	0.984	
80	80	30	35	1.00	1	100.3	32	GC 80
	3.1496	1.1811	1.378	0.039	0.039	3.949	1.26	
85	85	30	35	1.00	1	100.3	32	GCL 85 EE
	3.3465	1.1811	1.378	0.039	0.039	3.949	1.26	
	85	30	35	1.00	1	100.3	32	GCL 85 EEM
	3.3465	1.1811	1.378	0.039	0.039	3.949	1.26	
90	90	30	35	1.00	1	100.3	32	GC 90
	3.5433	1.1811	1.378	0.039	0.039	3.949	1.26	

Tightening Torque Nm/in.-lbs.	Load Ratings kN/lbf. Dynamic		Static	Limiting Speed Grease	mm wrench	mm/in.	Wt. kg/lbs.
	C	$F_{r\ perm}$	F_0	RPM			
3	**5.05**	**1.18**	**2.2**	**9300**	**N/A**	**4**	**0.021**
26.6	1140	265	495			0.157	0.046
8	**5.75**	**2.83**	**5.2**	**7600**	**N/A**	**4**	**0.034**
70.8	1290	636	1170			0.157	0.075
20	**6.3**	**4.9**	**8.1**	**6300**	**N/A**	**4**	**0.058**
177	1420	1100	1820			0.157	0.128
20	**6.9**	**5.2**	**9.2**	**6300**	**N/A**	**4**	**0.067**
177	1550	1170	2070			0.157	0.148
20	**8.9**	**5.2**	**9.6**	**5500**	**N/A**	**4**	**0.072**
177	2000	1170	2160			0.157	0.159
20	**9.6**	**5.2**	**9.6**	**5500**	**N/A**	**4**	**0.08**
177	2160	1170	2160			0.157	0.176
26	**12.9**	**7.7**	**14.3**	**4800**	**8**	**4**	**0.115**
230	2900	1730	3210			0.157	0.254
26	**13.8**	**7.7**	**14.3**	**4800**	**8**	**4**	**0.12**
230	3100	1730	3210			0.157	0.265
64	**19.2**	**11.4**	**24**	**3850**	**10**	**6**	**0.208**
566	4320	2560	5400			0.236	0.459
120	**28.3**	**21.4**	**40**	**2700**	**14**	**6**	**0.477**
1060	6360	4810	8990			0.236	1.052
120	**34**	**21.4**	**40**	**2700**	**14**	**6**	**0.542**
1060	7640	4810	8990			0.236	1.195
220	**42**	**31**	**57.5**	**2330**	**12**	**6**	**0.944**
1950	9440	6970	12900			0.236	2.081
220	**44**	**31**	**57.5**	**2330**	**12**	**6**	**1.165**
1950	9890	6970	12900			0.236	2.568
450	**60**	**50**	**93**	**1700**	**14**	**8**	**1.915**
3980	13500	11200	20900			0.315	4.222
450	**64**	**50**	**93**	**1700**	**14**	**8**	**2.096**
3980	14400	11200	20900			0.315	4.621
450	**64**	**50**	**93**	**1700**	**14**	**8**	**2.096**
3980	14400	11200	20900			0.315	4.621
450	**65**	**50**	**93**	**1700**	**14**	**8**	**2.287**
3980	14600	11200	20900			0.315	5.042

FULL COMPLEMENT, WITH METAL SEALS, STUD TYPE (GCU...MM SERIES)

METRIC SERIES

GCU: convex outer ring
GCUL: cylindrical outer ring



GCU, GCUL

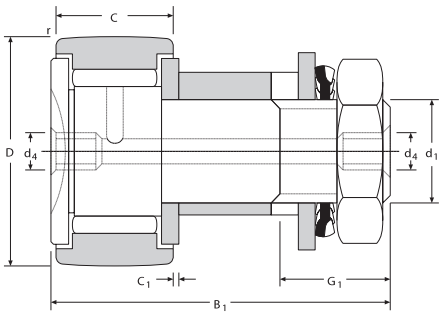
Outside Dia.	Dimensions mm/in.							Profiled Designation	Cylindrical Designation
mm	D	d_1	C	C_1	B_1	G_1	r_{smin}		
35	35 1.3780	16 0.6299	18 0.709	0.85 0.033	52.3 2.059	17 0.669	0.6 0.024	GCU 35 MM	GCUL 35 MM
40	40 1.5748	18 0.7087	20 0.787	0.85 0.033	58.3 2.295	19 0.748	1.0 0.039	GCU 40	
	40 1.5748	18 0.7087	20 0.787	0.85 0.033	58.3 2.295	19 0.748	1.0 0.039	GCU 40 MM	GCUL 40 MM
47	47 1.8504	20 0.7874	24 0.945	0.85 0.033	66.3 2.610	21 0.827	1.0 0.039	GCU 47 MM	GCUL 47 MM
52	52 2.0472	20 0.7874	24 0.945	0.85 0.033	66.3 2.610	21 0.827	1.0 0.039		GCUL 52
	52 2.0472	20 0.7874	24 0.945	0.85 0.033	66.3 2.610	21 0.827	1.0 0.039	GCU 52 MM	GCUL 52 MM
62	62 2.4409	24 0.9449	29 1.142	0.85 0.033	80.3 3.161	25 0.984	1.0 0.039	GCU 62 MM	
72	72 2.8346	24 0.9449	29 1.142	0.85 0.033	80.3 3.161	25 0.984	1.1 0.043		GCUL 72 MM
80	80 3.1496	30 1.1811	35 1.378	1.10 0.043	100.3 3.949	32 1.260	1.1 0.043	GCU 80 MM	
90	90 3.5433	30 1.1811	35 1.378	1.10 0.043	100.3 3.949	32 1.260	1.1 0.043		GCUL 90
	90 3.5433	30 1.1811	35 1.378	1.10 0.043	100.3 3.949	32 1.260	1.1 0.043	GCU 90 MM	
100	100 3.9370	36 1.4173	40 1.575	1.10 0.043	117.3 4.618	38 1.496	2.0 0.079	GCU 100	
	100 3.9370	36 1.4173	40 1.575	1.10 0.043	117.3 4.618	38 1.496	2.0 0.079	GCU 100 MM	
110	110 4.3307	36 1.4173	40 1.575	1.10 0.043	117.3 4.618	38 1.496	2.0 0.079	GCU 110 MM	GCUL 110 MM
120	120 4.7244	42 1.6535	46 1.811	1.10 0.043	136.3 5.366	44 1.732	2.0 0.079	GCU 120 MM	
130	130 5.1181	42 1.6535	46 1.811	1.10 0.043	136.3 5.366	44 1.732	2.0 0.079		GCUL 130
	130 5.1181	42 1.6535	46 1.811	1.10 0.043	136.3 5.366	44 1.732	2.0 0.079	GCU 130 MM	

Tightening Torque Nm/in.-lbs.	Load Ratings kN/lbf. Dynamic C	Dynamic $F_{r\ perm}$	Static F_{01}	Limiting Speed Grease RPM	mm wrench	mm/in. B_3	mm/in. d_4	Wt. kg/lbs.
64 566	**17.0** 3820	**7.80** 1750	**17.2** 3870	**5700**	**10**	**8** 0.315	**6** 0.236	**0.200** 0.441
90 797	**20.0** 4500	**11.5** 2590	**22.0** 4950	**5200**	**12**	**8** 0.315	**6** 0.236	**0.289** 0.637
90 797	**20.0** 4500	**11.5** 2590	**22.0** 4950	**5200**	**12**	**8** 0.315	**6** 0.236	**0.289** 0.637
120 1060	**29.5** 6630	**15.5** 3480	**33.0** 7420	**4400**	**14**	**9** 0.354	**6** 0.236	**0.450** 0.992
120 1060	**36.5** 8210	**21.5** 4830	**40.0** 8990	**4400**	**14**	**9** 0.354	**6** 0.236	**0.520** 1.146
120 1060	**36.5** 8210	**21.5** 4830	**40.0** 8990	**4400**	**14**	**9** 0.354	**6** 0.236	**0.520** 1.146
220 1950	**52.0** 11700	**31.0** 6970	**58.0** 13000	**3700**	**12**	**11** 0.433	**6** 0.236	**0.910** 2.006
220 1950	**63.0** 14200	**31.0** 6970	**58.0** 13000	**3700**	**12**	**11** 0.433	**6** 0.236	**1.140** 2.513
450 3980	**76.0** 17100	**48.0** 10800	**93.0** 20900	**2700**	**14**	**15** 0.591	**8** 0.315	**1.870** 4.123
450 3980	**94.0** 21100	**50.0** 11200	**93.0** 20900	**2700**	**14**	**15** 0.591	**8** 0.315	**2.230** 4.916
450 3980	**94.0** 21100	**50.0** 11200	**93.0** 20900	**2700**	**14**	**15** 0.591	**8** 0.315	**2.230** 4.914
740 6550	**115** 25900	**76.0** 17100	**142** 31900	**2300**	**17**	**20** 0.787	**8** 0.315	**3.290** 7.253
740 6550	**115** 25900	**76.0** 17100	**142** 31900	**2300**	**17**	**20** 0.787	**8** 0.315	**3.290** 7.253
740 6550	**129** 29000	**76.0** 17100	**142** 31900	**2300**	**17**	**20** 0.787	**8** 0.315	**3.800** 8.378
1 200 10620	**150** 33700	**120** 27000	**200** 45000	**2000**	**19**	**24** 0.945	**8** 0.315	**5.422** 1.953
1 200 10620	**163** 36600	**121** 27200	**223** 50100	**2000**	**19**	**24** 0.945	**8** 0.315	**5.780** 12.743
1 200 10620	**163** 36600	**121** 27200	**223** 50100	**2000**	**19**	**24** 0.945	**8** 0.315	**5.780** 12.743

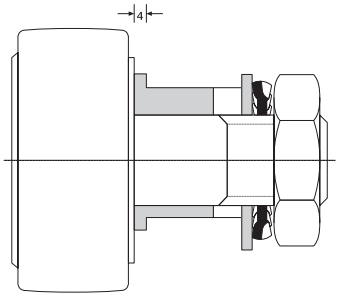
FULL COMPLEMENT, ECCENTRIC, STUD TYPE (GCR SERIES)

METRIC SERIES

GCR: convex outer ring
GCRL: cylindrical outer ring



GCR 16-52



GCR 62-90

Outer Dia.	Dimensions mm/in.							Profiled Designation	Cylindrical Designation
mm	D	d_1	C	C_1	B_1	G_1	$r_{a\ min}$		
16	16 0.6299	6 0.2362	11 0.433	0.60 0.024	28.3 1.114	8 0.315	0.3 0.012	GCR 16	
	16 0.6299	6 0.2362	11 0.433	0.60 0.024	28.3 1.114	8 0.315	0.3 0.012	GCR 16 EE	GCRL 16 EE
	16 0.6299	6 0.2362	11 0.433	0.60 0.024	28.3 1.114	8 0.315	0.3 0.012	GCR 16 EEM	GCRL 16 EEM
19	19 0.748	8 0.315	11 0.433	0.60 0.024	32.3 1.272	10 0.394	0.3 0.012	GCR 19	
	19 0.748	8 0.315	11 0.433	0.60 0.024	32.3 1.272	10 0.394	0.3 0.012	GCR 19 EE	GCRL 19 EE
	19 0.748	8 0.315	11 0.433	0.60 0.024	32.3 1.272	10 0.394	0.3 0.012	GCR 19 EEM	
22	22 0.8661	10 0.3937	12 0.472	0.60 0.024	36.3 1.429	12 0.472	0.3 0.012	GCR 22 EE	GCRL 22 EE
	22 0.8661	10 0.3937	12 0.472	0.60 0.024	36.3 1.429	12 0.472	0.3 0.012	GCR 22 EEM	GCRL 22 EEM
24	24 0.9449	10 0.3937	12 0.472	0.60 0.024	36.3 1.429	12 0.472	0.3 0.012	GCR 24	
	24 0.9449	10 0.3937	12 0.472	0.60 0.024	36.3 1.429	12 0.472	0.3 0.012	GCR 24 EE	GCRL 24 EE
	24 0.9449	10 0.3937	12 0.472	0.60 0.024	36.3 1.429	12 0.472	0.3 0.012	GCR 24 EEM	GCRL 24 EEM
26	26 1.0236	10 0.3937	12 0.472	0.60 0.024	36.3 1.429	12 0.472	0.3 0.012	GCR 26	
	26 1.0236	10 0.3937	12 0.472	0.60 0.024	36.3 1.429	12 0.472	0.3 0.012	GCR 26 EE	GCRL 26 EE
28	28 1.1024	10 0.3937	12 0.472	0.60 0.024	36.3 1.429	12 0.472	0.3 0.012	GCR 28 EE	
	28 1.1024	10 0.3937	12 0.472	0.60 0.024	36.3 1.429	12 0.472	0.3 0.012	GCR 28 EEM	GCRL 28 EEM
30	30 1.1811	12 0.4724	14 0.551	0.60 0.024	40.3 1.587	13 0.512	0.6 0.024	GCR 30 EE	GCRL 30 EE
	30 1.1811	12 0.4724	14 0.551	0.60 0.024	40.3 1.587	13 0.512	0.6 0.024	GCR 30 EEM	GCRL 30 EEM
32	32 1.2598	12 0.4724	14 0.551	0.60 0.024	40.3 1.587	13 0.512	0.6 0.024	GCR 32	
	32 1.2598	12 0.4724	14 0.551	0.60 0.024	40.3 1.587	13 0.512	0.6 0.024	GCR 32 EE	GCRL 32 EE
	32 1.2598	12 0.4724	14 0.551	0.60 0.024	40.3 1.587	13 0.512	0.6 0.024	GCR 32 EEM	
35	35 1.378	16 0.6299	18 0.709	0.80 0.031	52.3 2.059	17 0.669	0.6 0.024	GCR 35	
	35 1.378	16 0.6299	18 0.709	0.80 0.031	52.3 2.059	17 0.669	0.6 0.024	GCR 35 EE	GCRL 35 EE
	35 1.378	16 0.6299	18 0.709	0.80 0.031	52.3 2.059	17 0.669	0.6 0.024	GCR 35 EEM	GCRL 35 EEM

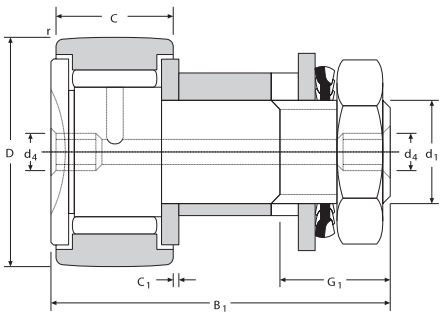
Tightening Torque Nm/in.-lbs.	Load Ratings kN/lbf. Dynamic		Static	Limiting Speed Grease	mm/in.	Wt. kg/lbs.
	C_0	$F_{r\ perm}$	F_0	RPM	d_4	
2 17.7	**5.05** 1140	**1.18** 265	**2.20** 495	**9300**	**4** 0.157	**0.024** 0.053
2 17.7	**5.05** 1140	**1.18** 265	**2.20** 495	**9300**	**4** 0.157	**0.024** 0.053
2 17.7	**5.05** 1140	**1.18** 265	**2.20** 495	**9300**	**4** 0.157	**0.024** 0.053
5 44.3	**5.75** 1290	**2.83** 636	**4.50** 1010	**7600**	**4** 0.157	**0.039** 0.086
5 44.3	**5.75** 1290	**2.83** 636	**4.50** 1010	**7600**	**4** 0.157	**0.039** 0.086
5 44.3	**5.75** 1290	**2.83** 636	**4.50** 1010	**7600**	**4** 0.157	**0.039** 0.086
16 142	**6.30** 1420	**4.90** 1100	**5.60** 1260	**6300**	**4** 0.157	**0.057** 0.126
16 142	**6.30** 1420	**4.90** 1100	**5.60** 1260	**6300**	**4** 0.157	**0.057** 0.126
16 142	**6.90** 1550	**5.20** 1170	**5.60** 1260	**6300**	**4** 0.157	**0.072** 0.159
16 142	**6.90** 1550	**5.20** 1170	**5.60** 1260	**6300**	**4** 0.157	**0.072** 0.159
16 142	**6.90** 1550	**5.20** 1170	**5.60** 1260	**6300**	**4** 0.157	**0.072** 0.159
16 142	**8.90** 2000	**5.20** 1170	**6.10** 1370	**5500**	**4** 0.157	**0.080** 0.176
16 142	**8.90** 2000	**5.20** 1170	**6.10** 1370	**5500**	**4** 0.157	**0.080** 0.176
16 142	**9.60** 2160	**5.20** 1170	**6.10** 1370	**5500**	**4** 0.157	**0.088** 0.194
16 142	**9.60** 2160	**5.20** 1170	**6.10** 1370	**5500**	**4** 0.157	**0.088** 0.194
22 195	**12.9** 2900	**7.70** 1730	**10.4** 2340	**4800**	**4** 0.157	**0.118** 0.260
22 195	**12.9** 2900	**7.70** 1730	**10.4** 2340	**4800**	**4** 0.157	**0.118** 0.260
22 195	**13.8** 3100	**7.70** 1730	**10.4** 2340	**4800**	**4** 0.157	**0.126** 0.278
22 195	**13.8** 3100	**7.70** 1730	**10.4** 2340	**4800**	**4** 0.157	**0.126** 0.278
22 195	**13.8** 3100	**7.70** 1730	**10.4** 2340	**4800**	**4** 0.157	**0.126** 0.278
55 487	**19.2** 4320	**11.4** 2560	**11.0** 2470	**3850**	**6** 0.236	**0.220** 0.485
55 487	**19.2** 4320	**11.4** 2560	**11.0** 2470	**3850**	**6** 0.236	**0.220** 0.485
55 487	**19.2** 4320	**11.4** 2560	**11.0** 2470	**3850**	**6** 0.236	**0.220** 0.485

Continued on next page.

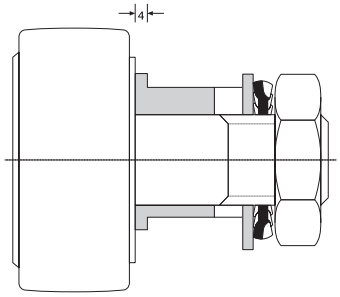
FULL COMPLEMENT, ECCENTRIC, STUD TYPE (GCR SERIES) – *continued*

METRIC SERIES

GCR: convex outer ring
GCRL: cylindrical outer ring



GCR 16-52



GCR 62-90

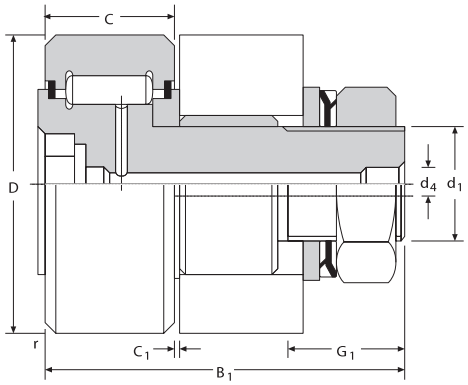
Outer Dia.	Dimensions mm/in.							Profiled Designation	Cylindrical Designation
mm	D	d_1	C	C_1	B_1	G_1	$r_{a\ min}$		
40	40 1.5748	18 0.7087	20 0.787	0.80 0.709	58.3 2.295	19 0.748	1 0.039	GCR 40	GCRL 40
	40 1.5748	18 0.7087	20 0.787	0.80 0.709	58.3 2.295	19 0.748	1 0.039	GCR 40 EE	GCRL 40 EE
	40 1.5748	18 0.7087	20 0.787	0.80 0.709	58.3 2.295	19 0.748	1 0.039	GCR 40 EEM	GCRL 40 EEM
47	47 1.8504	20 0.7874	24 0.945	0.80 0.709	66.3 2.61	21 0.827	1 0.039	GCR 47 EE	
	47 1.8504	20 0.7874	24 0.945	0.80 0.709	66.3 2.61	21 0.827	1 0.039	GCR 47 EEM	GCRL 47 EEM
52	52 2.0472	20 0.7874	24 0.945	0.80 0.709	66.3 2.61	21 0.827	1 0.039	GCR 52	
	52 2.0472	20 0.7874	24 0.945	0.80 0.709	66.3 2.61	21 0.827	1 0.039	GCR 52 EE	GCRL 52 EE
	52 2.0472	20 0.7874	24 0.945	0.80 0.709	66.3 2.61	21 0.827	1 0.039	GCR 52 EEM	GCRL 52 EEM
62	62 2.4409	24 0.9449	29 1.142	0.80 0.709	80.3 3.161	25 0.984	1 0.039	GCR 62	
	62 2.4409	24 0.9449	29 1.142	0.80 0.709	80.3 3.161	25 0.984	1 0.039	GCR 62 EE	
	62 2.4409	24 0.9449	29 1.142	0.80 0.709	80.3 3.161	25 0.984	1 0.039	GCR 62 EEM	GCRL 62 EEM
72	72 2.8346	24 0.9449	29 1.142	0.80 0.709	80.3 3.161	25 0.984	1 0.039	GCR 72 EE	GCRL 72 EE
	72 2.8346	24 0.9449	29 1.142	0.80 0.709	80.3 3.161	25 0.984	1 0.039		GCRL 72 EEM
80	80 3.1496	30 1.1811	35 1.378	1.00 0.039	100.3 3.949	32 1.26	1 0.039	GCR 80	
	80 3.1496	30 1.1811	35 1.378	1.00 0.039	100.3 3.949	32 1.26	1 0.039	GCR 80 EE	GCRL 80 EE
	80 3.1496	30 1.1811	35 1.378	1.00 0.039	100.3 3.949	32 1.26	1 0.039	GCR 80 EEM	GCRL 80 EEM
90	90 3.5433	30 1.1811	35 1.378	1.00 0.039	100.3 3.949	32 1.26	1 0.039	GCR 90	GCRL 90
	90 3.5433	30 1.1811	35 1.378	1.00 0.039	100.3 3.949	32 1.26	1 0.039	GCR 90 EE	
	90 3.5433	30 1.1811	35 1.378	1.00 0.039	100.3 3.949	32 1.26	1 0.039	GCR 90 EEM	

Tightening Torque Nm/in.-lbs.	Load Ratings kN/lbf. Dynamic		Static	Limiting Speed Grease	mm/in.	Wt. kg/lbs.
	C_0	$F_{r\ perm}$	F_0	RPM	d_4	
75 664	**20.0** 4500	**14.2** 3190	**12.3** 2770	**3150**	**6** 0.236	**0.321** 0.708
75 664	**20.0** 4500	**14.2** 3190	**12.3** 2770	**3150**	**6** 0.236	**0.321** 0.708
75 664	**20.0** 4500	**14.2** 3190	**12.3** 2770	**3150**	**6** 0.236	**0.321** 0.708
100 885	**28.3** 6360	**21.4** 4810	**23.7** 5330	**2700**	**6** 0.236	**0.500** 1.102
100 885	**28.3** 6360	**21.4** 4810	**23.7** 5330	**2700**	**6** 0.236	**0.500** 1.102
100 885	**34.0** 7640	**21.4** 4810	**23.7** 5330	**2700**	**6** 0.236	**0.568** 1.252
100 885	**34.0** 7640	**21.4** 4810	**23.7** 5330	**2700**	**6** 0.236	**0.568** 1.252
100 885	**34.0** 7640	**21.4** 4810	**23.7** 5330	**2700**	**6** 0.236	**0.568** 1.252
180 1590	**42.0** 9440	**31.0** 6970	**28.8** 6470	**2330**	**8** 0.315	**1.035** 2.282
180 1590	**42.0** 9440	**31.0** 6970	**28.8** 6470	**2330**	**8** 0.315	**1.035** 2.282
180 1590	**42.0** 9440	**31.0** 6970	**28.8** 6470	**2330**	**8** 0.315	**1.035** 2.282
180 1590	**44.0** 9890	**31.0** 6970	**28.8** 6470	**2330**	**8** 0.315	**1.278** 2.818
180 1590	**44.0** 9890	**31.0** 6970	**28.8** 6470	**2330**	**8** 0.315	**1.278** 2.818
370 3270	**60.0** 13500	**50.0** 11200	**54.0** 12100	**1700**	**8** 0.315	**2.074** 4.572
370 3270	**60.0** 13500	**50.0** 11200	**54.0** 12100	**1700**	**8** 0.315	**2.074** 4.572
370 3270	**60.0** 13500	**50.0** 11200	**54.0** 12100	**1700**	**8** 0.315	**2.074** 4.572
370 3270	**65.0** 14600	**50.0** 11200	**54.0** 12100	**1700**	**8** 0.315	**2.435** 5.368
370 3270	**65.0** 14600	**50.0** 11200	**54.0** 12100	**1700**	**8** 0.315	**2.435** 5.368
370 3270	**65.0** 14600	**50.0** 11200	**54.0** 12100	**1700**	**8** 0.315	**2.435** 5.368

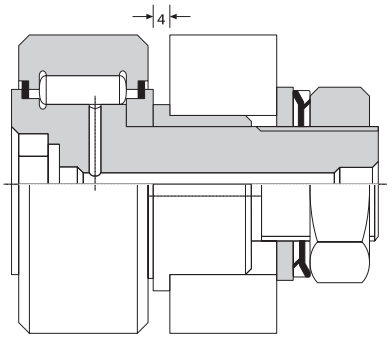
FULL COMPLEMENT ECCENTRIC, WITH METAL SEALS, STUD TYPE (GCUR...MM SERIES)

METRIC SERIES

GCUR: convex outer ring
GCURL: cylindrical outer ring



GCUR 35-52



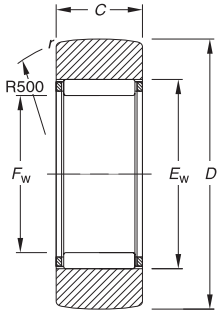
GCUR 62-130

Outside Dia.	Dimensions mm/in.							Profiled Designation	Cylindrical Designation
mm	D	d_1	C	C_1	B_1	G_1	r_{smin}		
35	35 1.3780	16 0.6299	18 0.709	0.85 0.033	52.3 2.059	17 0.669	0.6 0.024	GCUR 35	
40	40 1.5748	18 0.7087	20 0.787	0.85 0.033	58.3 2.295	19 0.748	1.0 0.039	GCUR 40	
	40 1.5748	18 0.7087	20 0.787	0.85 0.033	58.3 2.295	19 0.748	1.0 0.039		GCURL 40 MM
52	52 2.0472	20 0.7874	24 0.945	0.85 0.033	66.3 2.610	21 0.827	1.0 0.039	GCUR 52 MM	
62	62 2.4409	24 0.9449	29 1.142	0.85 0.033	80.3 3.161	25 0.984	1.0 0.039	GCUR 62	
	62 2.4409	24 0.9449	29 1.142	0.85 0.033	80.3 3.161	25 0.984	1.0 0.039	GCUR 62 MM	
72	72 2.8346	24 0.9449	29 1.142	0.85 0.033	80.3 3.161	25 0.984	1.1 0.043	GCUR 72	
	72 2.8346	24 0.9449	29 1.142	0.85 0.033	80.3 3.161	25 0.984	1.1 0.043	GCUR 72 MM	
80	80 3.1496	30 1.1811	35 1.378	1.10 0.014	100.3 3.949	32 1.260	1.1 0.043	GCUR 80	
	80 3.1496	30 1.1811	35 1.378	1.10 0.043	100.3 3.949	32 1.260	1.1 0.043	GCUR 80 MM	
90	90 3.5433	30 1.1811	35 1.378	1.10 0.043	100.3 3.949	32 1.260	1.1 0.043	GCUR 90	
100	100 3.9370	36 1.4173	40 1.575	1.10 0.043	117.3 4.618	38 1.496	2.0 0.079	GCUR 100	
	100 3.9370	36 1.4173	40 1.575	1.10 0.043	117.3 4.618	38 1.496	2.0 0.079	GCUR 100 MM	
110	110 4.3307	36 1.4173	40 1.575	1.10 0.043	117.3 4.618	38 1.496	2.0 0.079	GCUR 110 MM	
120	120 4.7244	42 1.6535	46 1.811	1.10 0.043	136.3 5.366	44 1.732	2.0 0.079	GCUR 120 MM	
130	130 5.1181	42 1.6535	46 1.811	1.10 0.043	136.3 5.366	44 1.732	2.0 0.079	GCUR 130	
	130 5.1181	42 1.6535	46 1.811	1.10 0.043	136.3 5.366	44 1.732	2.0 0.079	GCUR 130 MM	

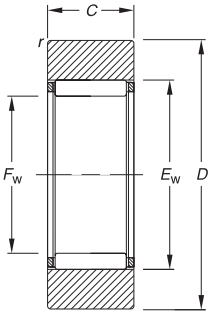
Tightening Torque Nm/in.-lbs.	Load Ratings kN/lbf. Dynamic		Static	Limiting Speed Grease	mm wrench	mm/in.	Wt. kg/lbs.
	C	$F_{r\ perm}$	F_{01}	RPM		d_4	
55 487	**17.0** 3820	**7.8** 1750	**10.0** 2250	**5700**	**10**	**6** 0.236	**0.215** 0.474
75 664	**20.0** 4500	**10.9** 2450	**10.9** 2450	**5200**	**12**	**6** 0.236	**0.313** 0.690
75 664	**20.0** 4500	**10.9** 2450	**10.9** 2450	**5200**	**12**	**6** 0.236	**0.313** 0.690
100 885	**36.5** 8210	**21.3** 4790	**21.3** 4790	**4400**	**14**	**6** 0.236	**0.555** 1.224
180 1593	**52.0** 11690	**28.8** 6470	**28.8** 6470	**3700**	**12**	**6** 0.236	**1.022** 2.253
180 1593	**52.0** 11690	**28.8** 6470	**28.8** 6470	**3700**	**12**	**6** 0.236	**1.022** 2.253
180 1593	**63.0** 14160	**28.8** 6470	**28.8** 6470	**3700**	**12**	**6** 0.236	**0.113** 0.249
180 1593	**63.0** 14160	**28.8** 6470	**28.8** 6470	**3700**	**12**	**6** 0.236	**0.113** 0.249
370 3275	**76.0** 17090	**48.0** 10790	**54.0** 12140	**2700**	**14**	**8** 0.315	**0.182** 0.401
370 3275	**76.0** 17090	**48.0** 10790	**54.0** 12140	**2700**	**14**	**8** 0.315	**0.182** 0.401
370 3275	**94.0** 21130	**50.0** 11240	**54.0** 12140	**2700**	**14**	**8** 0.315	**0.182** 0.402
610 5399	**115** 25850	**76.0** 17090	**83.0** 18660	**2300**	**17**	**8** 0.315	**0.244** 0.539
610 5399	**115** 25850	**76.0** 17090	**83.0** 18660	**2300**	**17**	**8** 0.315	**0.244** 0.539
610 5399	**129** 29000	**76.0** 17090	**83.0** 18660	**2300**	**17**	**8** 0.315	**0.245** 0.540
1000 8851	**150** 33720	**120** 26980	**130** 29230	**2000**	**19**	**8** 0.315	**0.328** 0.724
1000 8851	**150** 33720	**121** 27200	**130** 29230	**2000**	**19**	**8** 0.315	**0.329** 0.725
1000 8851	**150** 33720	**121** 27200	**130** 29230	**2000**	**19**	**8** 0.315	**0.329** 0.725

CAGED, WITHOUT INNER RING, NO END WASHERS, YOKE TYPE (RSTO SERIES)

METRIC SERIES



RSTO



RSTO.DZ

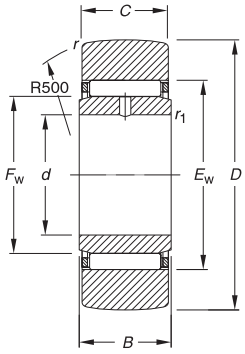
Outer Dia.	Dimensions						Bearing Designation	Load Ratings kN/lbf. As a Bearing Dynamic	Static	As a Track Roller Dynamic		Static	Limiting Speed Grease	Wt. kg/lbs.
mm	D	B	C	F_w	E_w	rs		C	C_o	C_w	$F_{r\ perm}$	$F_{Or\ perm}$	RPM	
16	16 0.6299	8 0.315	7.8 0.307	7 0.2756	10 0.394	0.3 0.012	RSTO5A.TN	2.74 616	2.44 549	2.49 560	2.97 668	2.44 549	19000	0.009 0.020
	16 0.6299	8 0.315	7.8 0.307	7 0.2756	10 0.394	0.3 0.012	RSTO5ADZ.TN	2.74 616	2.44 549	2.49 560	2.97 668	2.44 549	19000	0.009 0.020
19	19 0.7480	10 0.394	9.8 0.386	10 0.3937	13 0.512	0.3 0.012	RSTO6	5.40 1210	6.43 1450	4.15 933	4.04 908	5.63 1270	13000	0.014 0.031
	19 0.7480	10 0.394	9.8 0.386	10 0.3937	13 0.512	0.3 0.012	RSTO6DZ	5.40 1210	6.43 1450	4.15 933	4.04 908	5.63 1270	13000	0.014 0.031
	19 0.7480	10 0.394	9.8 0.386	10 0.3937	13 0.512	0.3 0.012	RSTO6TN	5.40 1210	6.43 1450	4.15 933	4.04 908	5.63 1270	13000	0.014 0.031
24	24 0.9449	10 0.394	9.8 0.386	12 0.4724	15 0.591	0.3 0.012	RSTO8	5.85 1320	7.51 1690	4.79 1080	6.67 1500	7.44 1670	10000	0.023 0.051
	24 0.9449	10 0.394	9.8 0.386	12 0.4724	15 0.591	0.3 0.012	RSTO8DZ	5.85 1320	7.51 1690	4.79 1080	6.67 1500	7.44 1670	10000	0.023 0.051
30	30 1.1811	12 0.472	11.8 0.465	14 0.5512	20 0.787	0.3 0.012	RSTO10	10.40 2340	10.6 2380	8.62 1940	7.69 1730	10.6 2380	9400	0.044 0.097
	30 1.1811	12 0.472	11.8 0.465	14 0.5512	20 0.787	0.3 0.012	RSTO10DZ	10.40 2340	10.6 2380	8.62 1940	7.69 1730	10.6 2380	9400	0.044 0.097
32	32 1.2598	12 0.472	11.8 0.465	16 0.6299	22 0.866	0.3 0.012	RSTO12	11.20 2520	11.9 2680	8.80 1980	7.65 1720	10.9 2450	8100	0.049 0.108
	32 1.2598	12 0.472	11.8 0.465	16 0.6299	22 0.866	0.3 0.012	RSTO12DZ	11.20 2520	11.9 2680	8.80 1980	7.65 1720	10.9 2450	8100	0.049 0.108
35	35 1.3780	12 0.472	11.8 0.465	20 0.7874	26 1.024	0.3 0.012	RSTO15	12.90 2900	15.3 3440	9.13 2050	6.95 1560	11.2 2520	6300	0.052 0.115
	35 1.3780	12 0.472	11.8 0.465	20 0.7874	26 1.024	0.3 0.012	RSTO15DZ	12.90 2900	15.3 3440	9.13 2050	6.95 1560	11.2 2520	6300	0.052 0.115

Continued on next page.

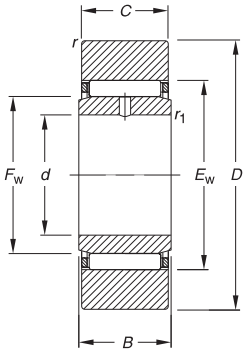
Outer Dia.	Dimensions						Bearing Designation	Load Ratings kN/lbf. As a Bearing Dynamic	As a Bearing Static	As a Track Roller Dynamic	As a Track Roller	As a Track Roller Static	Limiting Speed Grease	Wt. kg/lbs.
mm	D	B	C	F_w	E_w	r_s		C	C_o	C_w	$F_{r\ perm}$	$F_{Or\ perm}$	RPM	
40	40 1.5748	16 0.630	15.8 0.622	22 0.8661	29 1.142	0.3 0.012	RSTO17	19.00 4270	23.3 5240	13.8 3100	11.4 2560	18.2 4090	5800	0.095 0.209
	40 1.5748	16 0.630	15.8 0.622	22 0.8661	29 1.142	0.3 0.012	RSTO17DZ	19.00 4270	23.3 5240	13.8 3100	11.4 2560	18.2 4090	5800	0.095 0.209
47	47 1.8504	16 0.630	15.8 0.622	25 0.9843	32 1.260	0.3 0.012	RSTO20	20.00 4500	25.3 5690	15.3 3440	16.5 3710	22.2 4990	5000	0.134 0.295
	47 1.8504	16 0.630	15.8 0.622	25 0.9843	32 1.260	0.3 0.012	RSTO20DZ	20.00 4500	25.3 5690	15.3 3440	16.5 3710	22.2 4990	5000	0.134 0.295
52	52 2.0472	16 0.630	15.8 0.622	30 1.1811	37 1.457	0.3 0.012	RSTO25	22.40 5040	31.0 6970	16.0 3600	16.9 3800	23.7 5330	4100	0.155 0.342
	52 2.0472	16 0.630	15.8 0.622	30 1.1811	37 1.457	0.3 0.012	RSTO25DZ	22.30 5010	31.0 6970	16.0 3600	16.9 3800	23.7 5330	4100	0.155 0.342
62	62 2.4409	20 0.787	19.8 0.780	38 1.4961	46 1.811	0.6 0.024	RSTO30	33.30 7490	51.0 11470	22.3 5010	23.2 5220	34.2 7690	3200	0.258 0.569
	62 2.4409	20 0.787	19.8 0.780	38 1.4961	46 1.811	0.6 0.024	RSTO30DZ	33.30 7490	51.0 11470	22.3 5010	23.2 5220	34.2 7690	3200	0.258 0.569
72	72 2.8346	20 0.787	19.8 0.780	42 1.6535	50 1.969	0.6 0.024	RSTO35	35.20 7910	56.6 12720	25.2 5670	33.3 7490	43.0 9670	2900	0.37 0.816
	72 2.8346	20 0.787	19.8 0.780	42 1.6535	50 1.969	0.6 0.024	RSTO35DZ	35.20 7910	56.6 12720	25.2 5670	33.3 7490	43.0 9670	2900	0.370 0.816
80	80 3.1496	20 0.787	19.8 0.780	50 1.9685	58 2.283	0.6 0.024	RSTO40	38.80 8720	67.8 15240	25.9 5820	34.7 7800	45.0 10120	2400	0.430 0.948
	80 3.1496	20 0.787	19.8 0.780	50 1.9685	58 2.283	0.6 0.024	RSTO40DZ	38.80 8720	67.8 15240	25.9 5820	34.7 7800	45.0 10120	2400	0.430 0.948
85	85 3.3465	20 0.787	19.8 0.780	55 2.1654	63 2.480	0.6 0.024	RSTO45	40.30 9060	73.5 16520	26.0 5850	35.8 8050	45.5 10230	2200	0.447 0.985
90	90 3.5433	20 0.787	19.8 0.780	60 2.3622	68 2.677	0.6 0.024	RSTO50	41.80 9400	79.2 17800	26.0 5850	37.1 8340	45.8 10300	2000	0.495 1.091

CAGED, WITH INNER RING, NO END WASHERS YOKE TYPE (STO SERIES)

METRIC SERIES



STO



STO.DZ

Outer Dia.	Dimensions								Bearing Designation	Load Ratings kN/lbf. As a Bearing Dynamic	As a Bearing Static	As a Track Roller Dynamic	As a Track Roller Static		Limiting Speed Grease	Wt. kg/lbs.
mm	D	d	B	C	F_w	E_w	r_s	r_{1s}		C	C_o	C_w	$F_{r\ perm}$	$F_{Or\ perm}$	RPM	
19	**19** 0.7480	**6** 0.2362	**10** 0.394	**9.8** 0.386	**10** 0.3937	**13** 0.5118	**0.3** 0.012	**0.3** 0.012	**STO6**	**5.40** 1210	**6.43** 1450	**4.15** 933	**4.04** 908	**5.63** 1270	**9400**	**0.018** 0.040
	19 0.7480	**6** 0.2362	**10** 0.394	**9.8** 0.386	**10** 0.3937	**13** 0.5118	**0.3** 0.012	**0.3** 0.012	**STO6DZ**	**5.40** 1210	**6.43** 1450	**4.15** 933	**4.04** 908	**5.63** 1270	**9400**	**0.018** 0.040
24	**24** 0.9449	**8** 0.3150	**10** 0.394	**9.8** 0.386	**12** 0.4724	**15** 0.5906	**0.3** 0.012	**0.3** 0.012	**STO8**	**5.85** 1320	**7.51** 1690	**4.79** 1080	**6.67** 1500	**7.44** 1670	**8100**	**0.028** 0.062
	24 0.9449	**8** 0.3150	**10** 0.394	**9.8** 0.386	**12** 0.4724	**15** 0.5906	**0.3** 0.012	**0.3** 0.012	**STO8DZ**	**5.85** 1320	**7.51** 1690	**4.79** 1080	**6.67** 1500	**7.44** 1670	**8100**	**0.028** 0.062
30	**30** 1.1811	**10** 0.3937	**12** 0.472	**11.8** 0.465	**14** 0.5512	**20** 0.7874	**0.3** 0.012	**0.3** 0.012	**STO10**	**10.4** 2340	**10.6** 2380	**8.62** 1940	**7.69** 1730	**10.6** 2380	**6300**	**0.065** 0.143
	30 1.1811	**10** 0.3937	**12** 0.472	**11.8** 0.465	**14** 0.5512	**20** 0.7874	**0.3** 0.012	**0.3** 0.012	**STO10DZ**	**10.4** 2340	**10.6** 2380	**8.62** 1940	**7.69** 1730	**10.6** 2380	**6300**	**0.065** 0.143
32	**32** 1.2598	**12** 0.4724	**12** 0.472	**11.8** 0.465	**16** 0.6299	**22** 0.8661	**0.3** 0.012	**0.3** 0.012	**STO12**	**11.2** 2520	**11.9** 2680	**8.80** 1980	**7.65** 1720	**10.9** 2450	**5800**	**0.114** 0.251
	32 1.2598	**12** 0.4724	**12** 0.472	**11.8** 0.465	**16** 0.6299	**22** 0.8661	**0.3** 0.012	**0.3** 0.012	**STO12DZ**	**11.2** 2520	**11.9** 2680	**8.80** 1980	**7.65** 1720	**10.9** 2450	**5800**	**0.114** 0.251
35	**35** 1.3780	**15** 0.5906	**12** 0.472	**11.8** 0.465	**20** 0.7874	**26** 1.0236	**0.3** 0.012	**0.3** 0.012	**STO15**	**12.9** 2900	**15.3** 3440	**9.13** 2050	**6.95** 1560	**11.2** 2520	**5000**	**0.160** 0.353
	35 1.3780	**15** 0.5906	**12** 0.472	**11.8** 0.465	**20** 0.7874	**26** 1.0236	**0.3** 0.012	**0.3** 0.012	**STO15DZ**	**12.9** 2900	**15.3** 3440	**9.13** 2050	**6.95** 1560	**11.2** 2520	**5000**	**0.156** 0.344
40	**40** 1.5748	**17** 0.6693	**16** 0.630	**15.8** 0.622	**22** 0.8661	**29** 1.1417	**0.3** 0.012	**0.3** 0.012	**STO17**	**19.1** 4290	**23.3** 5240	**13.8** 3100	**11.4** 2560	**18.2** 4090	**4100**	**0.114** 0.251
	40 1.5748	**17** 0.6693	**16** 0.630	**15.8** 0.622	**22** 0.8661	**29** 1.1417	**0.3** 0.012	**0.3** 0.012	**STO17DZ**	**19.1** 4290	**23.3** 5240	**13.8** 3100	**11.4** 2560	**18.2** 4090	**4100**	**0.114** 0.251
47	**47** 1.8504	**20** 0.7874	**16** 0.630	**15.8** 0.622	**25** 0.9843	**32** 1.2598	**0.3** 0.012	**0.3** 0.012	**STO20**	**19.8** 4450	**25.3** 5690	**15.3** 3440	**16.5** 3710	**22.2** 4990	**3200**	**0.325** 0.717
	47 1.8504	**20** 0.7874	**16** 0.630	**15.8** 0.622	**25** 0.9843	**32** 1.2598	**0.3** 0.012	**0.3** 0.012	**STO20DZ**	**20.0** 4500	**25.3** 5690	**15.3** 3440	**16.5** 3710	**22.2** 4990	**3200**	**0.156** 0.344

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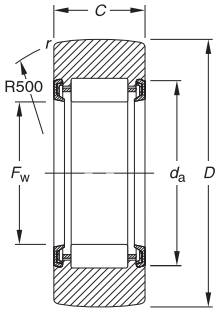
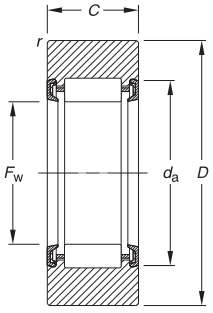
Outer Dia.	Dimensions								Bearing Designation	Load Ratings kN/lbf. As a Bearing Dynamic		As a Track Roller Dynamic		Static	Limiting Speed Grease	Wt. kg/lbs.
mm	D	d	B	C	F_w	E_w	r_s	r_{ls}		C	C_o	C_w	$F_{r\ perm}$	$F_{Or\ perm}$	RPM	
52	52 2.0472	25 0.9843	16 0.630	15.8 0.622	30 1.1811	37 1.4567	0.3 0.012	0.3 0.012	STO25	22.4 5040	31.0 6970	16.0 3600	16.9 3800	23.7 5330	2900	0.435 0.959
	52 2.0472	25 0.9843	16 0.630	15.8 0.622	30 1.1811	37 1.4567	0.3 0.012	0.3 0.012	STO25DZ	22.4 5040	31.0 6970	16.0 3600	16.9 3800	23.7 5330	2900	0.435 0.959
62	62 2.4409	30 1.1811	20 0.787	19.8 0.780	38 1.4961	46 1.8110	0.6 0.024	0.6 0.024	STO30	33.3 7490	51.0 11470	22.3 5010	23.2 5220	34.2 7690	2400	0.325 0.717
	62 2.4409	30 1.1811	20 0.787	19.8 0.780	38 1.4961	46 1.8110	0.6 0.024	0.6 0.024	STO30DZ	33.3 7490	51.0 11470	22.3 5010	23.2 5220	34.2 7690	2400	0.325 0.717
72	72 2.8346	35 1.3780	20 0.787	19.8 0.780	42 1.6535	50 1.9685	0.6 0.024	0.6 0.024	STO35	35.2 7910	56.6 12720	25.2 5670	33.3 7490	43.0 9670	2200	0.435 0.959
	72 2.8346	35 1.3780	20 0.787	19.8 0.780	42 1.6535	50 1.9685	0.6 0.024	0.6 0.024	STO35DZ	35.2 7910	56.6 12720	25.2 5670	33.3 7490	43.0 9670	2200	0.435 0.959
80	80 3.1496	40 1.5748	20 0.787	19.8 0.780	50 1.9685	58 2.2835	0.6 0.024	1.0 0.039	STO40	38.8 8720	67.8 15240	25.9 5820	34.7 7800	45.0 10120	2000	0.540 1.190
	80 3.1496	40 1.5748	20 0.787	19.8 0.780	50 1.9685	58 2.2835	0.6 0.024	1.0 0.039	STO40DZ	38.8 8720	67.8 15240	25.9 5820	34.7 7800	45.0 10120	2000	0.540 1.190
85	85 3.3465	45 1.7717	20 0.787	19.8 0.780	55 2.1654	63 2.4803	0.6 0.024	1.0 0.039	STO45	40.3 9060	73.5 16520	26.0 5850	35.8 8050	45.5 10230	13000	0.580 1.279
	85 3.3465	45 1.7717	20 0.787	19.8 0.780	55 2.1654	63 2.4803	0.6 0.024	1.0 0.039	STO45DZ	40.3 9060	73.5 16520	26.0 5850	35.8 8050	45.5 10230	13000	0.580 1.279
90	90 3.5433	50 1.9685	20 0.787	19.8 0.780	60 2.3622	68 2.6772	0.6 0.024	1.0 0.039	STO50	41.8 9400	79.2 17800	26.0 5850	37.1 8340	45.8 10300	10000	0.650 1.433
	90 3.5433	50 1.9685	20 0.787	19.8 0.780	60 2.3622	68 2.6772	0.6 0.024	1.0 0.039	STO50DZ	41.8 9400	79.2 17800	26.0 5850	37.1 8340	45.8 10300	10000	0.650 1.433

CAGED, WITHOUT INNER RING, NO END WASHERS, SEALED, YOKE TYPE (RNA22 SERIES)

METRIC SERIES



RNA22.2RS



RNA22.2RS.DZ

C

Outer Dia.	Dimensions					Bearing Designation	Load Ratings kN/lbf. As a Bearing Dynamic	Static	As a Track Roller Dynamic		Static	Limiting Speed Grease	Wt kg/lbs.
mm	D	C	F_w	E_w	r_s		C	C_o	C_w	$F_{r\ perm}$	$F_{Or\ perm}$	RPM	
19	19 0.7480	11.8 0.465	10 0.3937	14 0.551	0.3 0.012	RNA22/6.2RS	4.70 1060	5.43 1220	4.13 928	3.06 688	4.59 1030	13000	0.014 0.031
	19 0.7480	11.8 0.465	10 0.3937	14 0.551	0.3 0.012	RNA22/6.2RS.DZ	4.70 1060	5.43 1220	4.13 928	3.06 688	4.59 1030	13000	0.014 0.031
24	24 0.9449	11.8 0.465	12 0.4724	18 0.709	0.3 0.012	RNA22/8.2RS	6.70 1510	6.08 1370	5.31 1190	3.37 758	5.22 1170	11000	0.025 0.055
	24 0.9449	11.8 0.465	12 0.4724	18 0.709	0.3 0.012	RNA22/8.2RS.DZ	6.70 1510	6.08 1370	5.31 1190	3.37 758	5.22 1170	11000	0.025 0.055
30	30 1.1811	13.8 0.543	14 0.5512	20 0.787	0.6 0.024	RNA2200.2RS	8.50 1910	9.45 2120	8.03 1810	7.85 1760	9.45 2120	9400	0.049 0.108
	30 1.1811	13.8 0.543	14 0.5512	20 0.787	0.6 0.024	RNA2200.2RS.DZ	8.50 1910	9.45 2120	8.03 1810	7.85 1760	9.45 2120	9400	0.049 0.108
32	32 1.2598	13.8 0.543	16 0.6299	22 0.866	0.6 0.024	RNA2201.2RS	9.00 2020	10.5 2360	8.2 1840	7.78 1750	10.1 2270	8100	0.053 0.117
	32 1.2598	13.8 0.543	16 0.6299	22 0.866	0.6 0.024	RNA2201.2RS.DZ	9.00 2020	10.5 2360	8.2 1840	7.78 1750	10.1 2270	8100	0.053 0.117
35	35 1.3780	13.8 0.543	20 0.7874	27 1.063	0.6 0.024	RNA2202.2RS	12.2 2740	14.5 3260	9.24 2080	6.00 1350	10.2 2290	6300	0.055 0.121
	35 1.3780	13.8 0.543	20 0.7874	27 1.063	0.6 0.024	RNA2202.2RS.DZ	12.2 2740	14.5 3260	9.24 2080	6.00 1350	10.2 2290	6300	0.055 0.121
40	40 1.5748	15.8 0.622	22 0.8661	30 1.181	1.0 0.039	RNA2203.2RS	16.3 3660	17.8 4000	11.9 2680	8.50 1910	13.7 3080	5900	0.090 0.198
	40 1.5748	15.8 0.622	22 0.8661	30 1.181	1.0 0.039	RNA2203.2RS.DZ	16.3 3660	17.8 4000	11.9 2680	8.50 1910	13.7 3080	5900	0.090 0.198
47	47 1.8504	17.8 0.701	25 0.9843	35 1.378	1.0 0.039	RNA2204.2RS	19.6 4410	20.2 4540	14.8 3330	11.0 2470	16.7 3750	5200	0.150 0.331
	47 1.8504	17.8 0.701	25 0.9843	35 1.378	1.0 0.039	RNA2204.2RS.DZ	19.6 4410	20.2 4540	14.8 3330	11.0 2470	16.7 3750	5200	0.150 0.331

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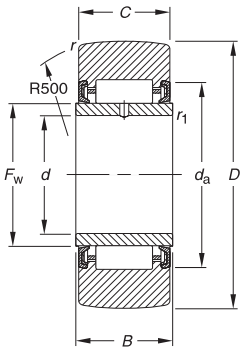
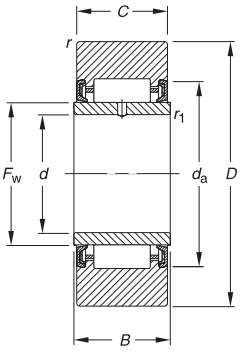
Outer Dia.	Dimensions					Bearing Designation	Load Ratings kN/lbf. As a Bearing Dynamic		As a Track Roller Dynamic		Static	Limiting Speed Grease	Wt. kg/lbs.
mm	D	C	F_w	E_w	r_s		C	C_o	C_w	$F_{r\ perm}$	$F_{0r\ perm}$	RPM	
52	52 2.0472	17.8 0.701	30 1.1811	40 1.575	1.0 0.039	RNA2205.2RS	21.6 4860	24.3 5460	15.5 3480	11.3 2540	17.7 3980	4300	0.171 0.377
	52 2.0472	17.8 0.701	30 1.1811	40 1.575	1.0 0.039	RNA2205.2RS.DZ	21.6 4860	24.3 5460	15.5 3480	11.3 2540	17.7 3980	4300	0.171 0.377
62	62 2.4409	19.8 0.780	35 1.3780	47 1.850	1.0 0.039	RNA2206.2RS	29.0 6520	32.8 7370	21.2 4770	15.8 3550	24.8 5580	3700	0.285 0.628
	62 2.4409	19.8 0.780	35 1.3780	47 1.850	1.0 0.039	RNA2206.2RS.DZ	29.7 6680	32.8 7370	21.2 4770	15.8 3550	24.8 5580	3700	0.285 0.628
72	72 2.8346	22.8 0.898	42 1.6535	54 2.126	1.1 0.043	RNA2207.2RS	40.5 9100	52.5 11800	28.6 6430	24.2 5440	37.9 8520	3000	0.490 1.080
	72 2.8346	22.8 0.898	42 1.6535	54 2.126	1.1 0.043	RNA2207.2RS.DZ	40.5 9100	52.5 11800	28.6 6430	24.2 5440	37.9 8520	3000	0.420 0.926
80	80 3.1496	22.8 0.898	48 1.8898	60 2.362	1.1 0.043	RNA2208.2RS	44.0 9890	60.0 13490	30.4 6830	27.8 6250	42.0 9440	2600	0.515 1.135
	80 3.1496	22.8 0.898	48 1.8898	60 2.362	1.1 0.043	RNA2208.2RS.DZ	44.3 9960	60.0 13490	30.4 6830	27.8 6250	42.0 9440	2600	0.515 1.135
85	85 3.3465	22.8 0.898	52 2.0472	64 2.520	1.1 0.043	RNA2209.2RS	45.6 10250	63.9 14370	30.9 6950	29.7 6680	43.7 9820	2400	0.565 1.246
	85 3.3465	22.8 0.898	52 2.0472	64 2.520	1.1 0.043	RNA2209.2RS.DZ	45.6 10250	63.9 14370	30.9 6950	29.7 6680	43.7 9820	2400	0.565 1.246
90	90 3.5433	22.8 0.898	58 2.2835	70 2.756	1.1 0.043	RNA2210.2RS	48.5 10900	71.3 16030	31.0 6970	29.4 6610	43.4 9760	2100	0.590 1.301
	90 3.5433	22.8 0.898	58 2.2835	70 2.756	1.1 0.043	RNA2210.2RS.DZ	48.5 10900	71.3 16030	31.0 6970	29.4 6610	43.4 9760	2100	0.590 1.301

CAGED, WITH INNER RING, NO END WASHERS, SEALED, YOKE TYPE (NA SERIES)

METRIC SERIES



NA22.2RS



NA22.2RS.DZ

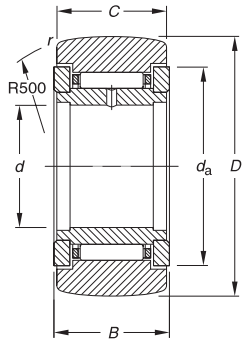
Outer Dia.	Dimensions								Bearing Designation	Load Ratings kN/lbf. As a Bearing Dynamic		As a Bearing Static		As a Track Roller Dynamic		As a Track Roller Static	Speed Grease	Wt. kg/lbs.
mm	D	d	B	C	F_w	E_w	r_s	r_{1s}		C		C_o		C_w	$F_{r\ perm}$	$F_{Or\ perm}$	RPM	
19	19 0.7480	6 0.2362	12 0.472	11.8 0.465	10 0.3937	14 0.5512	0.3 0.012	0.3 0.012	NA22/6.2RS	4.70 1060		5.43 1220		4.13 928	3.06 688	4.59 1030	13000	0.018 0.040
	19 0.7480	6 0.2362	12 0.472	11.8 0.465	10 0.3937	14 0.5512	0.3 0.012	0.3 0.012	NA22/6.2RS.DZ	4.70 1060		4.55 1020		4.13 928	3.06 688	4.59 1030	13000	0.018 0.040
24	24 0.9449	8 0.3150	12 0.472	11.8 0.465	12 0.4724	18 0.7087	0.3 0.012	0.3 0.012	NA22/8.2RS	6.70 1510		6.08 1370		5.31 1190	3.37 758	5.22 1170	11000	0.031 0.068
	24 0.9449	8 0.3150	12 0.472	11.8 0.465	12 0.4724	18 0.7087	0.3 0.012	0.3 0.012	NA22/8.2RS.DZ	6.70 1510		6.08 1370		5.31 1190	3.37 758	5.22 1170	11000	0.031 0.068
30	30 1.1811	10 0.3937	14 0.551	13.8 0.543	14 0.5512	20 0.7874	0.6 0.024	0.3 0.012	NA2200.2RS	8.50 1910		9.45 2120		8.03 1810	7.85 1760	9.45 2120	9400	0.057 0.126
	30 1.1811	10 0.3937	14 0.551	13.8 0.543	14 0.5512	20 0.7874	0.6 0.024	0.3 0.012	NA2200.2RS.DZ	8.50 1910		9.45 2120		8.03 1810	7.85 1760	9.45 2120	9400	0.057 0.126
32	32 1.2598	12 0.4724	14 0.551	13.8 0.543	16 0.6299	22 0.8661	0.6 0.024	0.3 0.012	NA2201.2RS	9.00 2020		10.5 2360		8.20 1840	7.78 1750	10.1 2270	8100	0.063 0.139
	32 1.2598	12 0.4724	14 0.551	13.8 0.543	16 0.6299	22 0.8661	0.6 0.024	0.3 0.012	NA2201.2RS.DZ	9.00 2020		10.5 2360		8.20 1840	7.78 1750	10.1 2270	8100	0.063 0.139
35	35 1.3780	15 0.5906	14 0.551	13.8 0.543	20 0.7874	27 1.0630	0.6 0.024	0.3 0.012	NA2202.2RS	12.2 2740		14.5 3260		9.24 2080	6.00 1350	10.2 2290	6300	0.070 0.154
	35 1.3780	15 0.5906	14 0.551	13.8 0.543	20 0.7874	27 1.0630	0.6 0.024	0.3 0.012	NA2202.2RS.DZ	12.2 2740		14.5 3260		9.24 2080	6.00 1350	10.2 2290	6300	0.070 0.154
40	40 1.5748	17 0.6693	16 0.630	15.8 0.622	22 0.8661	30 1.1811	1.0 0.039	0.3 0.012	NA2203.2RS	16.3 3660		17.8 4000		11.9 2680	8.50 1910	13.7 3080	5900	0.107 0.236
	40 1.5748	17 0.6693	16 0.630	15.8 0.622	22 0.8661	30 1.1811	1.0 0.039	0.3 0.012	NA2203.2RS.DZ	16.3 3660		17.8 4000		11.9 2680	8.50 1910	13.7 3080	5900	0.107 0.236
47	47 1.8504	20 0.7874	18 0.709	17.8 0.701	25 0.9843	35 1.3780	1.0 0.039	0.3 0.012	NA2204.2RS	19.6 4410		20.2 4540		14.8 3330	11.0 2470	16.7 3750	5200	0.175 0.386
	47 1.8504	20 0.7874	18 0.709	17.8 0.701	25 0.9843	35 1.3780	1.0 0.039	0.3 0.012	NA2204.2RS.DZ	19.6 4410		20.2 4540		14.8 3330	11.0 2470	16.7 3750	5200	0.175 0.386

Continued on next page.

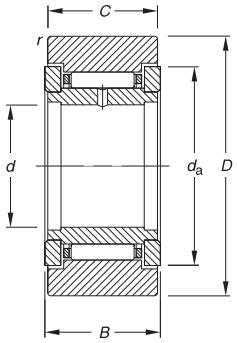
Outer Dia.	Dimensions								Bearing Designation	Load Ratings kN/lbf. As a Bearing Dynamic		As a Track Roller Dynamic		Static	Speed Grease	Wt. kg/lbs.
mm	D	d	B	C	F_w	E_w	r_s	r_{1s}		C	C_o	C_w	$F_{r\ perm}$	$F_{0r\ perm}$	RPM	
52	52	25	18	17.8	30	40	1.0	0.3	NA2205.2RS	21.6	24.3	15.5	11.3	17.7	4300	0.202
	2.0472	0.9843	0.709	0.701	1.1811	1.5748	0.039	0.012		4860	5460	3480	2540	3980		0.445
	52	25	18	17.8	30	40	1.0	0.3	NA2205.2RS.DZ	21.6	24.3	15.5	11.3	17.7	4300	0.202
	2.0472	0.9843	0.709	0.701	1.1811	1.5748	0.039	0.012		4860	5460	3480	2540	3980		0.445
62	62	30	20	19.8	35	47	1.0	0.3	NA2206.2RS	29.0	32.8	21.2	15.8	24.8	3700	0.324
	2.4409	1.1811	0.787	0.780	1.3780	1.8504	0.039	0.012		6520	7370	4770	3550	5580		0.714
	62	30	20	19.8	35	47	1.0	0.3	NA2206.2RS.DZ	29.0	32.8	21.2	15.8	24.8	3700	0.324
	2.4409	1.1811	0.787	0.780	1.3780	1.8504	0.039	0.012		6520	7370	4770	3550	5580		0.714
72	72	35	23	22.8	42	54	1.1	0.6	NA2207.2RS	40.5	52.5	28.6	24.2	37.9	3000	0.490
	2.8346	1.3780	0.906	0.898	1.6535	2.1260	0.043	0.024		9100	11800	6430	5440	8520		1.080
	72	35	23	22.8	42	54	1.1	0.6	NA2207.2RS.DZ	40.5	52.5	28.6	24.2	37.9	3000	0.490
	2.8346	1.3780	0.906	0.898	1.6535	2.1260	0.043	0.024		9100	11800	6430	5440	8520		1.080
80	80	40	23	22.8	48	60	1.1	0.6	NA2208.2RS	44.0	60.0	30.4	27.8	42.0	2600	0.615
	3.1496	1.5748	0.906	0.898	1.8898	2.3622	0.043	0.024		9890	13500	6830	6250	9440		1.356
	80	40	23	22.8	48	60	1.1	0.6	NA2208.2RS.DZ	44.0	60.0	30.4	27.8	42.0	2600	0.615
	3.1496	1.5748	0.906	0.898	1.8898	2.3622	0.043	0.024		9890	13500	6830	6250	9440		1.356
85	85	45	23	22.8	52	64	1.1	0.6	NA2209.2RS	45.0	63.9	30.9	29.7	43.7	2400	0.661
	3.3465	1.7717	0.906	0.898	2.0472	2.5197	0.043	0.024		10100	14400	6950	6680	9820		1.457
	85	45	23	22.8	52	64	1.1	0.6	NA2209.2RS.DZ	45.0	63.9	30.9	29.7	43.7	2400	0.661
	3.3465	1.7717	0.906	0.898	2.0472	2.5197	0.043	0.024		10100	14400	6950	6680	9820		1.457
90	90	50	23	22.8	58	70	1.1	0.6	NA2210.2RS	48.0	71.3	31.0	29.4	43.4	2100	0.712
	3.5433	1.9685	0.906	0.898	2.2835	2.7559	0.043	0.024		10800	16000	6970	6610	9760		1.570
	90	50	23	22.8	58	70	1.1	0.6	NA2210.2RS.DZ	48.0	71.3	31.0	29.4	43.4	2100	0.712
	3.5433	1.9685	0.906	0.898	2.2835	2.7559	0.043	0.024		10800	16000	6970	6610	9760		1.570

CAGED, WITH INNER RING, WITH END WASHERS, YOKE TYPE (NATR, STO...ZZ SERIES)

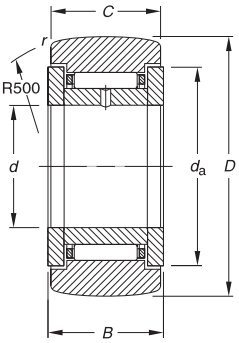
METRIC SERIES



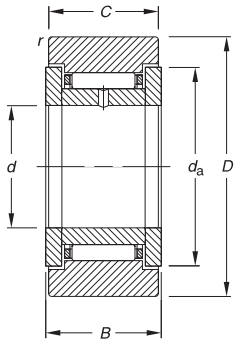
NATR



NATR.DZ



STO.ZZ



STO.ZZ.DZ

Outer Dia.	Dimensions						Bearing Designation	Load Ratings kN/lbf. As a Bearing Dynamic	As a Bearing Static	As a Track Roller Dynamic	As a Track Roller	As a Track Roller Static	Limiting Speed Grease	Wt. kg/lbs.
mm	D	d	B	C	d_a	r_s		C	C_o	C_w	$F_{r\ perm}$	$F_{Or\ perm}$	RPM	
16	16 0.6299	5 0.1969	12 0.472	11.0 0.433	13 0.512	0.3 0.012	NATR5	4.62 1040	5.19 1170	3.34 751	2.62 589	4.01 901	13000	0.017 0.037
	16 0.6299	5 0.1969	12 0.472	11.0 0.433	13 0.512	0.3 0.012	NATR5DZ	4.62 1040	5.19 1170	3.34 751	2.62 589	4.01 901	13000	0.017 0.037
19	19 0.7480	6 0.2362	12 0.472	11.0 0.433	16 0.630	0.3 0.012	NATR6	4.84 1090	5.66 1270	3.84 863	4.28 962	5.28 1190	12000	0.022 0.049
	19 0.7480	6 0.2362	12 0.472	11.0 0.433	16 0.630	0.3 0.012	NATR6DZ	5.84 1310	6.66 1500	3.84 863	4.28 962	5.28 1190	12000	0.022 0.049
	19 0.7480	6 0.2362	14 0.551	13.8 0.543	15 0.591	0.3 0.012	STO6ZZ	5.37 1210	6.47 1450	4.31 969	5.23 1180	6.17 1390	12000	0.024 0.053
	19 0.7480	6 0.2362	14 0.551	13.8 0.543	15 0.591	0.3 0.012	STO6ZZ.DZ	5.37 1210	6.47 1450	4.31 969	5.23 1180	6.17 1390	12000	0.024 0.053
24	24 0.9449	8 0.3150	14 0.551	13.8 0.543	18 0.709	0.3 0.012	STO8ZZ	5.82 1310	7.54 1700	4.97 1120	7.54 1700	8.14 1830	9900	0.040 0.088
	24 0.9449	8 0.3150	14 0.551	13.8 0.543	18 0.709	0.3 0.012	STO8ZZ.DZ	5.82 1310	7.54 1700	4.97 1120	7.54 1700	8.14 1830	9900	0.040 0.088
	24 0.9449	8 0.3150	15 0.591	14.0 0.551	20 0.787	0.3 0.012	NATR8	8.39 1890	8.67 1950	6.66 1500	5.79 1300	8.08 1820	10000	0.043 0.095
	24 0.9449	8 0.3150	15 0.591	14.0 0.551	20 0.787	0.3 0.012	NATR8DZ	9.39 2110	9.67 2170	6.66 1500	5.79 1300	8.08 1820	10000	0.043 0.095
30	30 1.1811	10 0.3937	15 0.591	14.0 0.551	24 0.945	0.6 0.024	NATR10	9.57 2150	9.45 2120	8.15 1830	8.58 1930	10.1 2270	9400	0.068 0.150
	30 1.1811	10 0.3937	15 0.591	14.0 0.551	24 0.945	0.6 0.024	NATR10DZ	9.57 2150	9.45 2120	8.15 1830	8.58 1930	10.1 2270	9400	0.068 0.150
	30 1.1811	10 0.3937	16 0.630	15.8 0.622	23 0.906	0.3 0.012	STO10ZZ	10.4 2340	10.6 2380	8.94 2010	9.64 2170	11.4 2560	9400	0.071 0.157
	30 1.1811	10 0.3937	16 0.630	15.8 0.622	23 0.906	0.3 0.012	STO10ZZ.DZ	10.4 2340	10.6 2380	8.94 2010	9.64 2170	11.4 2560	9400	0.071 0.157
32	32 1.2598	12 0.4724	15 0.591	14.0 0.551	26 1.024	0.6 0.024	NATR12	10.2 2290	10.5 2360	8.32 1870	8.50 1910	10.4 2340	8100	0.075 0.165
	32 1.2598	12 0.4724	15 0.591	14.0 0.551	26 1.024	0.6 0.024	NATR12DZ	10.2 2290	10.5 2360	8.32 1870	8.50 1910	10.4 2340	8100	0.075 0.165
	32 1.2598	12 0.4724	16 0.630	15.8 0.622	25 0.984	0.3 0.012	STO12ZZ	11.2 2520	11.9 2680	9.13 2050	9.54 2140	11.7 2630	8100	0.078 0.172
	32 1.2598	12 0.4724	16 0.630	15.8 0.622	25 0.984	0.3 0.012	STO12ZZ.DZ	11.2 2520	11.9 2680	9.13 2050	9.54 2140	11.7 2630	8100	0.078 0.172

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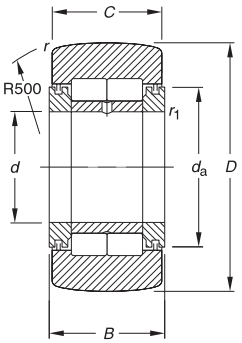
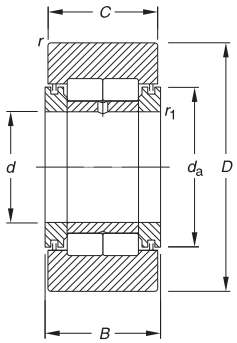
Outer Dia.	Dimensions						Bearing Designation	Load Ratings kN/lbf. As a Bearing		As a Track Roller			Limiting Speed Grease	Wt. kg/lbs.
								Dynamic	Static	Dynamic		Static		
mm	D	d	B	C	d_a	r_s		C	C_o	C_w	$F_{r\ perm}$	$F_{Or\ perm}$	RPM	
35	35 1.3780	15 0.5906	16 0.630	15.8 0.622	30 1.181	0.3 0.012	STO15ZZ	12.9 2900	15.3 3440	9.47 2130	8.52 1920	12.1 2720	6300	0.089 0.196
	35 1.3780	15 0.5906	16 0.630	15.8 0.622	30 1.181	0.3 0.012	STO15ZZ.DZ	12.9 2900	15.3 3440	9.47 2130	8.52 1920	12.1 2720	6300	0.089 0.196
40	40 1.5748	17 0.6693	20 0.787	19.8 0.780	33 1.299	0.3 0.012	STO17ZZ	19.0 4270	23.3 5240	14.2 3190	13.4 3010	19.3 4340	5600	0.145 0.320
	40 1.5748	17 0.6693	20 0.787	19.8 0.780	33 1.299	0.3 0.012	STO17ZZ.DZ	19.0 4270	23.3 5240	14.2 3190	13.4 3010	19.3 4340	5600	0.145 0.320
47	47 1.8504	20 0.7874	20 0.787	19.8 0.780	37 1.457	0.3 0.012	STO20ZZ	20.0 4500	25.4 5710	15.7 3530	19.5 4380	23.5 5280	4900	0.200 0.441
	47 1.8504	20 0.7874	20 0.787	19.8 0.780	37 1.457	0.3 0.012	STO20ZZ.DZ	20.0 4500	25.4 5710	15.7 3530	19.5 4380	23.5 5280	4900	0.200 0.441
52	52 2.0472	25 0.9843	20 0.787	19.8 0.780	42 1.654	0.3 0.012	STO25ZZ	22.4 5040	31.1 6990	16.4 3690	19.8 4450	25.1 5640	4100	0.240 0.529
	52 2.0472	25 0.9843	20 0.787	19.8 0.780	42 1.654	0.3 0.012	STO25ZZ.DZ	22.4 5040	31.1 6990	16.4 3690	19.8 4450	25.1 5640	4100	0.240 0.529
62	62 2.4409	30 1.1811	25 0.984	24.8 0.976	52 2.047	0.6 0.024	STO30ZZ	33.3 7490	51.0 11500	23.0 5170	26.9 6050	36.2 8140	3200	0.412 0.908
	62 2.4409	30 1.1811	25 0.984	24.8 0.976	52 2.047	0.6 0.024	STO30ZZ.DZ	33.3 7490	51.0 11500	23.0 5170	26.9 6050	36.2 8140	3200	0.412 0.908
72	72 2.8346	35 1.3780	25 0.984	24.8 0.976	56 2.205	0.6 0.024	STO35ZZ	35.2 7910	56.6 12700	25.9 5820	39.2 8810	45.5 10200	2900	0.555 1.224
	72 2.8346	35 1.3780	25 0.984	24.8 0.976	56 2.205	0.6 0.024	STO35ZZ.DZ	35.2 7910	56.6 12700	25.9 5820	39.2 8810	45.5 10200	2900	0.555 1.224
80	80 3.1496	40 1.5748	26 1.024	25.8 1.016	64 2.520	0.6 0.024	STO40ZZ	38.8 8720	67.8 15200	26.8 6020	41.5 9330	48.1 10800	2400	0.700 1.543
	80 3.1496	40 1.5748	26 1.024	25.8 1.016	64 2.520	0.6 0.024	STO40ZZ.DZ	38.8 8720	67.8 15200	26.8 6020	41.5 9330	48.1 10800	2400	0.700 1.543
85	85 3.3465	45 1.7717	26 1.024	25.8 1.016	69 2.717	0.6 0.024	STO45ZZ	40.3 9060	73.5 16500	26.9 6050	42.4 9530	48.6 10900	2200	0.770 1.698
	85 3.3465	45 1.7717	26 1.024	25.8 1.016	69 2.717	0.6 0.024	STO45ZZ.DZ	40.3 9060	73.5 16500	26.9 6050	42.4 9530	48.6 10900	2200	0.770 1.698

FULL COMPLEMENT, WITH INNER RING, WITH END WASHERS, CYLINDRICAL ROLLERS, YOKE TYPE (NUTR SERIES)

METRIC SERIES



NUTR



NUTR.DZ

Outer Dia.	Dimensions							Bearing Designation	Load Ratings kN/lbf. As a Bearing Dynamic	As a Bearing Static	As a Track Roller Dynamic	As a Track Roller Static		Limiting Speed Grease	Wt. kg/lbs.
mm	D	d	B	C	d_a	r_s	r_{1s}		C	C_o	C_w	$F_{r\ perm}$	$F_{0r\ perm}$	RPM	
35	35 1.3780	15 0.5906	19 0.748	18 0.709	24 0.945	0.6 0.024	0.3 0.012	NUTR15	24.7 5550	29.3 6590	16.2 3640	10.1 2270	16.1 3620	6100	0.105 0.231
	35 1.3780	15 0.5906	19 0.748	18 0.709	24 0.945	0.6 0.024	0.3 0.012	NUTR15DZ	22.8 5130	29.4 6610	16.2 3640	10.1 2270	16.1 3620	6100	0.105 0.231
40	40 1.5748	17 0.6693	21 0.827	20 0.787	27 1.063	1.0 0.039	0.3 0.012	NUTR17	26.6 5980	33.4 7510	18.7 4200	15.0 3370	23.9 5370	5300	0.154 0.340
	40 1.5748	17 0.6693	21 0.827	20 0.787	27 1.063	1.0 0.039	0.3 0.012	NUTR17DZ	24.5 5510	33.3 7490	18.7 4200	15.0 3370	23.9 5370	5300	0.154 0.340
42	42 1.6535	15 0.5906	19 0.748	18 0.709	24 0.945	0.6 0.024	0.3 0.012	NUTR1542	22.8 5130	29.4 6610	20.0 4500	21.2 4770	28.4 6380	6100	0.166 0.366
	42 1.6535	15 0.5906	19 0.748	18 0.709	24 0.945	0.6 0.024	0.3 0.012	NUTR1542DZ	22.8 5130	29.4 6610	20.0 4500	21.2 4770	28.4 6380	6100	0.166 0.366
47	47 1.8504	17 0.6693	21 0.827	20 0.787	27 1.063	1.0 0.039	0.3 0.012	NUTR1747	24.5 5510	33.3 7490	22.0 4950	28.1 6320	33.6 7550	5300	0.230 0.507
	47 1.8504	17 0.6693	21 0.827	20 0.787	27 1.063	1.0 0.039	0.3 0.012	NUTR1747DZ	24.5 5510	33.3 7490	22.0 4950	28.1 6320	33.6 7550	5300	0.230 0.507
	47 1.8504	20 0.7874	25 0.984	24 0.945	32 1.260	1.0 0.039	0.3 0.012	NUTR20	39.0 8770	53.2 12000	28.1 6320	20.5 4610	32.7 7350	4500	0.254 0.560
	47 1.8504	20 0.7874	25 0.984	24 0.945	32 1.260	1.0 0.039	0.3 0.012	NUTR20DZ	39.0 8770	53.2 12000	28.1 6320	20.5 4610	32.7 7350	4500	0.254 0.560
52	52 2.0472	20 0.7874	25 0.984	24 0.945	32 1.260	1.0 0.039	0.3 0.012	NUTR2052	39.0 8770	53.2 12000	31.6 7100	31.0 6970	45.9 10300	4500	0.326 0.719
	52 2.0472	20 0.7874	25 0.984	24 0.945	32 1.260	1.0 0.039	0.3 0.012	NUTR2052DZ	39.0 8770	53.2 12000	31.6 7100	31.0 6970	45.9 10300	4500	0.326 0.719
	52 2.0472	25 0.9843	25 0.984	24 0.945	37 1.457	1.0 0.039	0.3 0.012	NUTR25	43.0 9670	63.1 14200	29.6 6650	22.2 4990	35.4 7960	3700	0.291 0.642
	52 2.0472	25 0.9843	25 0.984	24 0.945	37 1.457	1.0 0.039	0.3 0.012	NUTR25DZ	43.0 9670	63.1 14200	29.6 6650	22.2 4990	35.4 7960	3700	0.291 0.642
62	62 2.4409	25 0.9843	25 0.984	24 0.945	37 1.457	1.0 0.039	0.3 0.012	NUTR2562	43.0 9670	63.1 14200	36.0 8090	43.9 9870	57.8 13000	3700	0.460 1.014
	62 2.4409	25 0.9843	25 0.984	24 0.945	37 1.457	1.0 0.039	0.3 0.012	NUTR2562DZ	43.0 9670	63.1 14200	36.0 8090	43.9 9870	57.8 13000	3700	0.460 1.014
	62 2.4409	30 1.1811	29 1.142	28 1.102	44 1.732	1.0 0.039	0.3 0.012	NUTR30	60.0 13500	83.1 18700	40.8 9170	29.0 6520	46.2 10400	3200	0.480 1.058
	62 2.4409	30 1.1811	29 1.142	28 1.102	44 1.732	1.0 0.039	0.3 0.012	NUTR30DZ	60.0 13500	83.1 18700	40.8 9170	29.0 6520	46.2 10400	3200	0.480 1.058

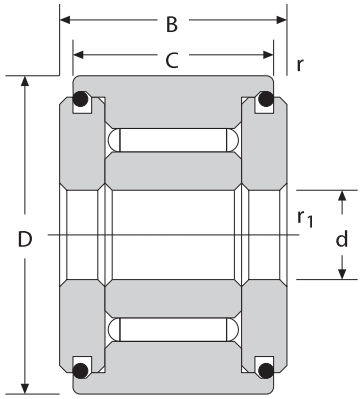
Continued on next page.

Outer Dia.	Dimensions							Bearing Designation	Load Ratings kN/lbf. As a Bearing Dynamic		As a Track Roller Dynamic			Limiting Speed Grease	Wt. kg/lbs.
										Static			Static		
mm	D	d	B	C	d_a	r_s	r_{ls}		C	C_o	C_w	$F_{r\ perm}$	$F_{Or\ perm}$	RPM	
72	72 2.8346	30 1.1811	29 1.142	28 1.102	44 1.732	1.0 0.039	0.3 0.012	NUTR3072	60.0 13500	83.1 18700	48.6 10900	53.2 12000	74.2 16700	3200	0.711 1.567
	72 2.8346	30 1.1811	29 1.142	28 1.102	44 1.732	1.0 0.039	0.3 0.012	NUTR3072DZ	60.0 13500	83.1 18700	48.6 10900	53.2 12000	74.2 16700	3200	0.711 1.567
	72 2.8346	35 1.3780	29 1.142	28 1.102	50 1.969	1.1 0.043	0.6 0.024	NUTR35	65.5 14700	97.8 22000	45.9 10300	38.7 8700	61.7 13900	2600	0.655 1.444
	72 2.8346	35 1.3780	29 1.142	28 1.102	50 1.969	1.1 0.043	0.6 0.024	NUTR35DZ	65.5 14700	97.8 22000	45.9 10300	38.7 8700	61.7 13900	2600	0.655 1.444
80	80 3.1496	35 1.3780	29 1.142	28 1.102	50 1.969	1.1 0.043	0.6 0.024	NUTR3580	65.5 14700	97.8 22000	51.7 11600	58.7 13200	81.9 18400	2600	0.865 1.907
	80 3.1496	35 1.3780	29 1.142	28 1.102	50 1.969	1.1 0.043	0.6 0.024	NUTR3580DZ	65.5 14700	97.8 22000	51.7 11600	58.7 13200	81.9 18400	2600	0.865 1.907
	80 3.1496	40 1.5748	32 1.260	30 1.181	55 2.165	1.1 0.043	0.6 0.024	NUTR40	88.0 19800	132 29700	60.6 13600	48.0 10800	76.5 17200	2500	0.848 1.870
	80 3.1496	40 1.5748	32 1.260	30 1.181	55 2.165	1.1 0.043	0.6 0.024	NUTR40DZ	88.0 19800	132 29700	60.6 13600	48.0 10800	76.5 17200	2500	0.848 1.870
85	85 3.3465	45 1.7717	32 1.260	30 1.181	60 2.362	1.1 0.043	0.6 0.024	NUTR45	93.0 20900	146 32800	62.0 13900	50.2 11300	80.0 18000	2200	0.917 2.022
	85 3.3465	45 1.7717	32 1.260	30 1.181	60 2.362	1.1 0.043	0.6 0.024	NUTR45DZ	93.0 20900	146 32800	62.0 13900	50.2 11300	80.0 18000	2200	0.917 2.022
90	90 3.5433	40 1.5748	32 1.260	30 1.181	55 2.165	1.1 0.043	0.6 0.024	NUTR4090	88.0 19800	132 29700	69.1 15500	75.4 17000	111 25000	2500	1.162 2.562
	90 3.5433	40 1.5748	32 1.260	30 1.181	55 2.165	1.1 0.043	0.6 0.024	NUTR4090DZ	88.0 19800	132 29700	69.1 15500	75.4 17000	111 25000	2500	1.162 2.562
	90 3.5433	50 1.9685	32 1.260	30 1.181	65 2.559	1.1 0.043	0.6 0.024	NUTR50	98.0 22000	160 36000	63.3 14200	52.9 11900	84.3 19000	2000	0.988 2.178
	90 3.5433	50 1.9685	32 1.260	30 1.181	65 2.559	1.1 0.043	0.6 0.024	NUTR50DZ	98.0 22000	160 36000	63.3 14200	52.9 11900	84.3 19000	2000	0.988 2.178
100	100 3.9370	45 1.7717	32 1.260	30 1.181	60 2.362	1.1 0.043	0.6 0.024	NUTR45100	93.0 20900	146 32800	74.3 16700	92.2 20700	127 28600	2200	1.412 3.113
	100 3.9370	45 1.7717	32 1.260	30 1.181	60 2.362	1.1 0.043	0.6 0.024	NUTR45100DZ	93.0 20900	146 32800	74.3 16700	92.2 20700	127 28600	2200	1.412 3.113
110	110 4.3307	50 1.9685	32 1.260	30 1.181	65 2.559	1.1 0.043	0.6 0.024	NUTR50110	98.0 22000	160 36000	79.0 17800	110 24700	141 31700	2000	1.727 3.807
	110 4.3307	50 1.9685	32 1.260	30 1.181	65 2.559	1.1 0.043	0.6 0.024	NUTR50110DZ	98.0 22000	160 36000	79.0 17800	110 24700	141 31700	2000	1.727 3.807

FULL COMPLEMENT, NON-SEPARABLE, SMALL SERIES, UNSEALED, YOKE TYPE (FP SERIES)

METRIC SERIES

FP: convex outer ring
FPL: cylindrical outer ring



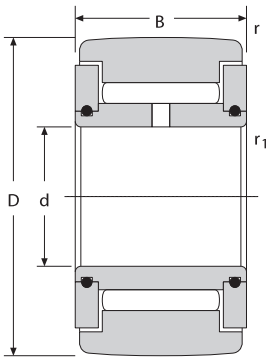
FP, FPL

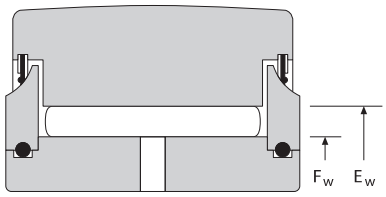
Outside Dia.	Dimensions mm/in.						Designation		Load Ratings kN/lbf.			Limiting Speed	Wt. kg/lbs.
							Profiled Track Roller	Cylindrical Track Roller	Dynamic		Static	Grease	
mm	D	d	C	B	r_{smin}	r_{1smin}			C	$F_{r\ perm}$	$F_{0r\ perm}$	RPM	
10	10 0.3937	3 0.1181	8 0.315	8.7 0.343	0.2 0.008	0.15 0.006	FP 3 10	FPL 3 10	2.13 480	1.16 260	2.05 460	13800	0.004 0.009
12	12 0.4724	4 0.1575	9 0.354	9.7 0.382	0.2 0.008	0.15 0.006	FP 4 12	FPL 4 12	2.98 670	1.82 410	3.35 750	11400	0.006 0.013
13	13 0.5118	4 0.1575	9 0.354	9.7 0.382	0.2 0.008	0.15 0.006	FP 4 13	FPL 4 13	3.35 750	2.45 550	3.95 890	11400	0.008 0.018
14	14 0.5512	4 0.1575	9 0.354	10.2 0.402	0.3 0.012	0.15 0.006	FP 4 14		3.50 790	2.55 570	4.35 980	10100	0.010 0.022
15	15 0.5906	4 0.1575	9 0.354	10.2 0.402	0.3 0.012	0.15 0.006	FP 4 15		3.50 790	3.20 720	4.75 1070	10100	0.011 0.024

FULL COMPLEMENT, NON-SEPARABLE, SEALED OR UNSEALED, YOKE TYPE (FG SERIES)

METRIC SERIES

FG: convex outer ring
FGL: cylindrical outer ring





FG, FGL

Outside Dia.	Dimensions mm/in.							Designation		Load Ratings kN/lbf.			Limiting Speed	Wt. kg/lbs.
								Profiled Track Roller	Cylindrical Track Roller	Dynamic		Static	Grease	
mm	D	d	B	F_w	E_w	r_{smin}	r_{fsmin}			C	$F_{r\,perm}$	$F_{0r\,perm}$	RPM	
16	16 0.6299	5 0.1969	12 0.472	7.7 0.3031	10.7 0.4213	0.3 0.012	0.3 0.012	FG 5 16	FGL 5 16	5.05 1140	3.25 730	5.40 1210	9300	0.016 0.035
	16 0.6299	5 0.1969	12 0.472	7.7 0.3031	10.7 0.4213	0.3 0.012	0.3 0.012	FG 5 16 EE	FGL 5 16 EE	5.05 1140	3.25 730	5.40 1210	9300	0.016 0.035
	16 0.6299	5 0.1969	12 0.472	7.7 0.3031	10.7 0.4213	0.3 0.012	0.3 0.012	FG 5 16 EEM		5.05 1140	3.25 730	5.40 1210	9300	0.016 0.035
19	19 0.7480	6 0.2362	12 0.472	9.7 0.3819	12.7 0.5000	0.3 0.012	0.3 0.012	FG 6 19	FGL 6 19	5.80 1300	4.05 910	6.70 1510	7600	0.019 0.042
	19 0.7480	6 0.2362	12 0.472	9.7 0.3819	12.7 0.5000	0.3 0.012	0.3 0.012	FG 6 19 EE	FGL 6 19 EE	5.80 1300	4.05 910	6.70 1510	7600	0.019 0.042
	19 0.7480	6 0.2362	12 0.472	9.7 0.3819	12.7 0.5000	0.3 0.012	0.3 0.012	FG 6 19 EEM	FGL 6 19 EEM	5.80 1300	4.05 910	6.70 1510	7600	0.019 0.042
24	24 0.9449	8 0.3150	13 0.512	12.0 0.4724	15.0 0.5906	0.3 0.012	0.3 0.012	FG 8 24	FGL 8 24	6.90 1550	6.60 1480	9.20 2070	6300	0.037 0.082
	24 0.9449	8 0.3150	13 0.512	12.0 0.4724	15.0 0.5906	0.3 0.012	0.3 0.012	FG 8 24 EE	FGL 8 24 EE	6.90 1550	6.60 1480	9.20 2070	6300	0.037 0.082
	24 0.9449	8 0.3150	13 0.512	12.0 0.4724	15.0 0.5906	0.3 0.012	0.3 0.012	FG 8 24 EEM	FGL 8 24 EEM	6.90 1550	6.60 1480	9.20 2070	6300	0.037 0.082
	24 0.9449	8 0.3150	15 0.591	12.0 0.4724	15.0 0.5906	0.3 0.012	0.3 0.012	FG 8 24 15	FGL 8 24 15	8.70 1960	8.50 1910	12.3 2770	6300	0.044 0.097
	24 0.9449	8 0.3150	15 0.591	12.0 0.4724	15.0 0.5906	0.3 0.012	0.3 0.012	FG 8 24 15 EE	FGL 8 24 15 EE	8.70 1960	8.50 1910	12.3 2770	6300	0.044 0.097
	24 0.9449	8 0.3150	15 0.591	12.0 0.4724	15.0 0.5906	0.3 0.012	0.3 0.012	FG 8 24 15 EEM	FGL 8 24 15 EEM	8.70 1960	8.50 1910	12.3 2770	6300	0.044 0.097
30	30 1.1811	10 0.3937	15 0.591	15.2 0.5984	20.2 0.7953	0.6 0.024	0.3 0.012	FG 10 30	FGL 10 30	12.9 2900	8.50 1910	15.5 3480	4800	0.066 0.146
	30 1.1811	10 0.3937	15 0.591	15.2 0.5984	20.2 0.7953	0.6 0.024	0.3 0.012	FG 10 30 EE	FGL 10 30 EE	12.9 2900	8.50 1910	15.5 3480	4800	0.066 0.146
	30 1.1811	10 0.3937	15 0.591	15.2 0.5984	20.2 0.7953	0.6 0.024	0.3 0.012	FG 10 30 EEM	FGL 10 30 EEM	12.9 2900	8.50 1910	15.5 3480	4800	0.066 0.146
32	32 1.2598	12 0.4724	15 0.591	17.6 0.6929	22.6 0.8898	0.6 0.024	0.3 0.012	FG 12 32	FGL 12 32	12.9 2900	8.30 1870	16.2 3640	4200	0.077 0.170
	32 1.2598	12 0.4724	15 0.591	17.6 0.6929	22.6 0.8898	0.6 0.024	0.3 0.012	FG 12 32 EE	FGL 12 32 EE	12.9 2900	8.30 1870	16.2 3640	4200	0.077 0.170
	32 1.2598	12 0.4724	15 0.591	17.6 0.6929	22.6 0.8898	0.6 0.024	0.3 0.012	FG 12 32 EEM	FGL 12 32 EEM	12.9 2900	8.30 1870	16.2 3640	4200	0.077 0.170
35	35 1.3780	15 0.5906	19 0.748	20.1 0.7929	25.2 0.9921	0.6 0.024	0.3 0.012	FG 15 35	FGL 15 35	18.0 4050	12.2 2740	25.6 5760	3750	0.103 0.227
	35 1.3780	15 0.5906	19 0.748	20.1 0.7929	25.2 0.9921	0.6 0.024	0.3 0.012	FG 15 35 EE	FGL 15 35 EE	18.0 4050	12.2 2740	25.6 5760	3750	0.103 0.227
	35 1.3780	15 0.5906	19 0.748	20.1 0.7929	25.2 0.9921	0.6 0.024	0.3 0.012	FG 15 35 EEM	FGL 15 35 EEM	18.0 4050	12.2 2740	25.6 5760	3750	0.103 0.227

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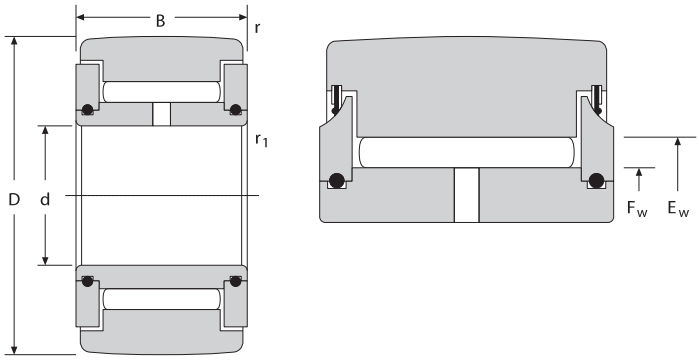
FULL COMPLEMENT, NON-SEPARABLE, SEALED OR UNSEALED, YOKE TYPE (FG SERIES) – *continued*

METRIC SERIES

FG: convex outer ring
FGL: cylindrical outer ring



FG, FGL

Outside Dia.	Dimensions mm/in.							Designation Profiled Track Roller	Designation Cylindrical Track Roller	Load Ratings kN/lbf. Dynamic		Static	Limiting Speed Grease	Wt. kg/lbs.
mm	D	d	B	F_w	E_w	r_{smin}	r_{1smin}			C	$F_{r\,perm}$	$F_{0r\,perm}$	RPM	
40	40 1.5748	17 0.6693	21 0.827	24.0 0.9449	30.0 1.1811	0.6 0.024	0.3 0.012	FG 17 40	FGL 17 40	22.3 5010	14.2 3190	31.0 6970	3150	0.155 0.342
	40 1.5748	17 0.6693	21 0.827	24.0 0.9449	30.0 1.1811	0.6 0.024	0.3 0.012	FG 17 40 EE	FGL 17 40 EE	22.3 5010	14.2 3190	31.0 6970	3150	0.155 0.342
	40 1.5748	17 0.6693	21 0.827	24.0 0.9449	30.0 1.1811	0.6 0.024	0.3 0.012	FG 17 40 EEM	FGL 17 40 EEM	22.3 5010	14.2 3190	31.0 6970	3150	0.155 0.342
47	47 1.8504	20 0.7874	25 0.984	28.7 1.1299	34.7 1.3661	1.0 0.039	0.3 0.012	FG 20 47	FGL 20 47	28.3 6360	21.4 4810	44.5 10000	2700	0.295 0.650
	47 1.8504	20 0.7874	25 0.984	28.7 1.1299	34.7 1.3661	1.0 0.039	0.3 0.012	FG 20 47 EE	FGL 20 47 EE	28.3 6360	21.4 4810	44.5 10000	2700	0.295 0.650
	47 1.8504	20 0.7874	25 0.984	28.7 1.1299	34.7 1.3661	1.0 0.039	0.3 0.012	FG 20 47 EEM	FGL 20 47 EEM	28.3 6360	21.4 4810	44.5 10000	2700	0.295 0.650
52	52 2.0472	25 0.9843	25 0.984	33.5 1.3189	39.5 1.5551	1.0 0.039	0.3 0.012	FG 25 52	FGL 25 52	29.0 6520	23.6 5310	48.0 10800	2330	0.310 0.683
	52 2.0472	25 0.9843	25 0.984	33.5 1.3189	39.5 1.5551	1.0 0.039	0.3 0.012	FG 25 52 EE	FGL 25 52 EE	29.0 6520	23.6 5310	48.0 10800	2330	0.310 0.683
	52 2.0472	25 0.9843	25 0.984	33.5 1.3189	39.5 1.5551	1.0 0.039	0.3 0.012	FG 25 52 EEM	FGL 25 52 EEM	29.0 6520	23.6 5310	48.0 10800	2330	0.310 0.683
62	62 2.4409	30 1.1811	29 1.142	38.2 1.5039	44.2 1.7402	1.0 0.039	0.3 0.012	FG 30 62	FGL 30 62	38.5 8660	38.0 8540	73.0 16400	2050	0.490 1.080
	62 2.4409	30 1.1811	29 1.142	38.2 1.5039	44.2 1.7402	1.0 0.039	0.3 0.012	FG 30 62 EE	FGL 30 62 EE	38.5 8660	38.0 8540	73.0 16400	2050	0.490 1.080
	62 2.4409	30 1.1811	29 1.142	38.2 1.5039	44.2 1.7402	1.0 0.039	0.3 0.012	FG 30 62 EEM		38.5 8660	38.0 8540	73.0 16400	2050	0.490 1.080
72	72 2.8346	35 1.3780	29 1.142	44.0 1.7323	50.0 1.9685	1.0 0.039	0.6 0.024	FG 35 72	FGL 35 72	43.5 9780	49.0 11000	90.0 20200	1800	0.670 1.477
	72 2.8346	35 1.3780	29 1.142	44.0 1.7323	50.0 1.9685	1.0 0.039	0.6 0.024	FG 35 72 EE	FGL 35 72 EE	43.5 9780	49.0 11000	90.0 20200	1800	0.670 1.477
	72 2.8346	35 1.3780	29 1.142	44.0 1.7323	50.0 1.9685	1.0 0.039	0.6 0.024	FG 35 72 EEM	FGL 35 72 EEM	43.5 9780	49.0 11000	90.0 20200	1800	0.670 1.477
80	80 3.1496	40 1.5748	32 1.260	49.7 1.9567	55.7 2.1929	1.0 0.039	0.6 0.024	FG 40 80		54.0 12100	66.0 14800	123 27700	1620	0.890 1.962
	80 3.1496	40 1.5748	32 1.260	49.7 1.9567	55.7 2.1929	1.0 0.039	0.6 0.024	FG 40 80 EE	FGL 40 80 EE	54.0 12100	66.0 14800	123 27700	1620	0.890 1.962
	80 3.1496	40 1.5748	32 1.260	49.7 1.9567	55.7 2.1929	1.0 0.039	0.6 0.024	FG 40 80 EEM	FGL 40 80 EEM	54.0 12100	66.0 14800	123 27700	1620	0.890 1.962
85	85 3.3465	45 1.7717	32 1.260	55.4 2.1811	61.4 2.4173	1.0 0.039	0.6 0.024	FG 45 85 EE		53.0 11900	69.0 15500	125 28100	1450	0.970 2.138
	85 3.3465	45 1.7717	32 1.260	55.4 2.1811	61.4 2.4173	1.0 0.039	0.6 0.024	FG 45 85 EEM	FGL 45 85 EEM	53.0 11900	69.0 15500	125 28100	1450	0.970 2.138
90	90 3.5433	50 1.9685	32 1.260	62.1 2.4449	68.1 2.6811	1.0 0.039	0.6 0.024	FG 50 90		51.0 11500	74.0 16600	123 27700	1300	1.04 2.293

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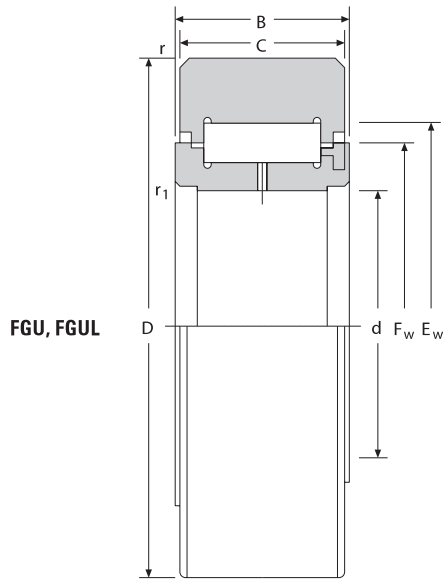
C

Outside Dia.	Dimensions mm/in.							Designation		Load Ratings kN/lbf.			Limiting Speed	Wt. kg/lbs.
								Profiled Track Roller	Cylindrical Track Roller	Dynamic		Static	Grease	
mm	D	B	C	F_w	E_w	r_{smin}	r_{1smin}			C	$F_{r\ perm}$	$F_{0r\ perm}$	RPM	
	90 3.5433	50 1.9685	32 1.260	62.1 2.4449	68.1 2.6811	1.0 0.039	0.6 0.024	FG 50 90 EE	FGL 50 90 EE	51.0 11500	74.0 16600	123 27700	1300	1.04 2.293
	90 3.5433	50 1.9685	32 1.260	62.1 2.4449	68.1 2.6811	1.0 0.039	0.6 0.024	FG 50 90 EEM	FGL 50 90 EEM	51.0 11500	74.0 16600	123 27700	1300	1.04 2.29
100	100 3.9370	55 2.1654	36 1.417	70.0 2.7559	77.0 3.0315	1.5 0.059	0.6 0.024	FG 55 100	FGL 55 100	60.0 13500	88.0 19800	142 31900	1150	1.35 2.976
	100 3.9370	55 2.1654	36 1.417	70.0 2.7559	77.0 3.0315	1.5 0.059	0.6 0.024	FG 55 100 EEM	FGL 55 100 EEM	60.0 13500	88.0 19800	142 31900	1150	1.35 2.976
110	110 4.3307	60 2.3622	36 1.417	75.0 2.9528	82.0 3.2283	1.5 0.059	0.6 0.024	FG 60 110		67.0 15100	102 22900	168 37800	1090	1.65 3.638
	110 4.3307	60 2.3622	36 1.417	75.0 2.9528	82.0 3.2283	1.5 0.059	0.6 0.024	FG 60 110 EEM	FGL 60 110 EEM	6 7.0 15100	102 22900	168 37800	1090	1.65 3.638
120	120 4.7244	65 2.5591	42 1.654	80.0 3.1496	87.0 3.4252	1.5 0.059	0.6 0.024	FG 65 120		83.0 18700	135 30300	223 50100	1020	2.35 5.181
	120 4.7244	65 2.5591	42 1.654	80.0 3.1496	87.0 3.4252	1.5 0.059	0.6 0.024	FG 65 120 EEM	FGL 65 120 EEM	83.0 18700	135 30300	223 50100	1020	2.35 5.181
125	125 4.9213	70 2.7559	42 1.654	85.0 3.3465	92.0 3.6220	1.5 0.059	0.6 0.024	FG 70 125 EEM	FGL 70 125 EEM	83.0 18700	144 32400	228 51300	960	2.50 5.512
130	130 5.1181	75 2.9528	42 1.654	90.0 3.5433	97.0 3.8189	1.5 0.059	0.6 0.024	FG 75 130 EEM		84.0 18900	155 34800	234 52600	910	2.65 5.842
140	140 5.5118	80 3.1496	48 1.890	100.0 3.9370	108.0 4.2520	2.0 0.079	1.0 0.039	FG 80 140		99.0 22300	197 44300	275 61800	820	3.40 7.496
	140 5.5118	80 3.1496	48 1.890	100.0 3.9370	108.0 4.2520	2.0 0.079	1.0 0.039	FG 80 140 EEM	FGL 80 140 EEM	99.0 22300	197 44300	275 61800	820	3.40 7.496
150	150 5.9055	85 3.3465	48 1.890	107.0 4.2126	115.0 4.5276	2.0 0.079	1.0 0.039	FG 85 150		105 23600	220 49500	300 67400	770	4.00 8.818
	150 5.9055	85 3.3465	48 1.890	107.0 4.2126	115.0 4.5276	2.0 0.079	1.0 0.039	FG 85 150 EEM		105 23600	220 49500	300 67400	770	4.00 8.818
160	160 6.2992	90 3.5433	54 2.126	115.0 4.5276	123.0 4.8425	2.0 0.079	1.0 0.039	FG 90 160 EEM		120 27000	288 64700	370 83200	710	5.30 11.7
170	170 6.6929	95 3.7402	54 2.126	120.0 4.7244	128.0 5.0394	2.0 0.079	1.0 0.039	FG 95 170 EEM		129 29000	302 67900	410 92200	690	6.00 13.2
180	180 7.0866	100 3.9370	65 2.559	126.0 4.9606	136.0 5.3543	2.0 0.079	1.5 0.059	FG 100 180		175 39300	353 79400	530 119100	650	8.05 17.8
	180 7.0866	100 3.9370	65 2.559	126.0 4.9606	136.0 5.3543	2.0 0.079	1.5 0.059	FG 100 180 EEM	FGL 100 180 EEM	175 39300	353 79400	530 119100	650	8.05 17.7
200	200 7.8740	110 4.3307	65 2.559	140.0 5.5118	150.0 5.9055	2.0 0.079	1.5 0.059	FG 110 200 EEM		189 42500	420 94400	600 134900	590	10.00 22.0
215	215 8.4646	120 4.7244	65 2.559	150.0 5.9055	160.0 6.2992	2.0 0.079	1.5 0.059	FG 120 215 EEM		199 44700	486 109300	660 148400	550	11.50 25.3
270	270 10.6299	150 5.9055	78 3.071	186.0 7.3228	198.0 7.7953	3.0 0.118	1.5 0.059	FG 150 270 EEM		290 65200	710 159600	1020 229300	440	22.00 48.5

FULL COMPLEMENT, NON-SEPARABLE, LIGHT SERIES, WITH METAL SEALS YOKE TYPE (FGU...MM SERIES)

METRIC SERIES

FGU: convex outer ring
FGUL: cylindrical outer ring



FGU, FGUL

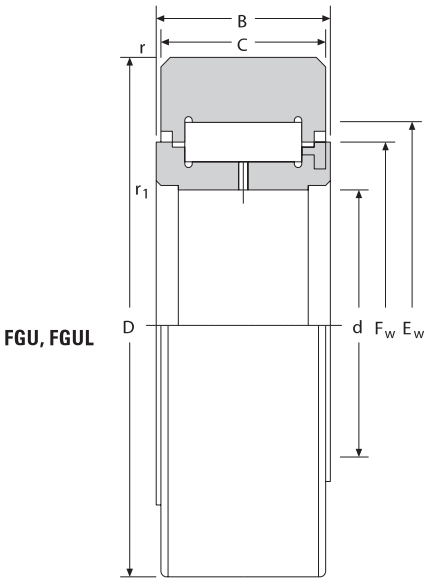
C

Outside Dia.	Dimensions mm/in.								Designation		Load Ratings kN/lbf.			Limiting Speed	Wt. kg/lbs.
									Profiled Track Roller	Cylindrical Track Roller	Dynamic		Static	Grease	
mm	D	d	C	B	F_w	E_w	$r_{s\,min}$	$r_{1s\,min}$			C	$F_{r\,perm}$	$F_{0r\,perm}$	RPM	
35	35 1.3780	15 0.5906	18 0.709	19 0.748	20.4 0.8031	28.4 1.1181	0.6 0.024	0.3 0.012	FGU 15 35		7.80 1750	17.0 3820	17.0 3820	5700	0.096 0.212
	35 1.3780	15 0.5906	18 0.709	19 0.748	20.4 0.8031	28.4 1.1181	0.6 0.024	0.3 0.012	FGU 15 35 MM	FGUL 15 35 MM	7.80 1750	17.0 3820	17.0 3820	5700	0.096 0.212
40	40 1.5748	17 0.6693	20 0.787	21 0.827	23.0 0.9055	31.0 1.2205	0.6 0.024	0.3 0.012	FGU 17 40 MM		11.5 2590	20.0 4500	21.5 4830	5200	0.142 0.313
47	47 1.8504	20 0.7874	24 0.945	25 0.984	27.1 1.0669	37.1 1.4606	1.0 0.039	0.3 0.012	FGU 20 47 MM	FGUL 20 47 MM	15.5 3480	29.5 6630	32.3 7260	4400	0.235 0.518
52	52 2.0472	25 0.9843	24 0.945	25 0.984	31.8 1.2520	41.8 1.6457	1.0 0.039	0.3 0.012	FGU 25 52		17.3 3890	31.5 7080	36.0 8090	3800	0.268 0.591
	52 2.0472	25 0.9843	24 0.945	25 0.984	31.8 1.2520	41.8 1.6457	1.0 0.039	0.3 0.012	FGU 25 52 MM	FGUL 25 52 MM	17.3 3890	31.5 7080	36.0 8090	3800	0.268 0.591
62	62 2.4409	30 1.1811	28 1.102	29 1.142	38.2 1.5039	50.2 1.9764	1.0 0.039	0.3 0.012	FGU 30 62 MM		24.5 5510	44.5 10000	54.00 12100	3200	0.454 1.001
72	72 2.8346	35 1.3780	28 1.102	29 1.142	45.9 1.8071	57.9 2.2795	1.0 0.039	0.6 0.024	FGU 35 72 MM	FGUL 35 72 MM	31.3 7040	50.0 11200	66.0 14800	2700	0.611 1.347
80	80 3.1496	40 1.5748	30 1.181	32 1.260	51.6 2.0315	63.6 2.5039	1.0 0.039	0.6 0.024	FGU 40 80		40.6 9130	59.0 13300	84.0 18900	2400	0.822 1.812
	80 3.1496	40 1.5748	30 1.181	32 1.260	51.6 2.0315	63.6 2.5039	1.0 0.039	0.6 0.024	FGU 40 80 MM	FGUL 40 80 MM	40.6 9130	59.0 13300	84.0 18900	2400	0.822 1.812
110	110 4.3307	60 2.3622	34 1.339	36 1.417	71.2 2.8031	87.2 3.4331	1.5 0.059	0.6 0.024	FGU 60 110 MM		64.0 14400	88.0 19800	129 29000	1800	1.625 3.583
120	120 4.7244	65 2.5591	40 1.575	42 1.654	76.4 3.0079	92.4 3.6378	1.5 0.059	0.6 0.024	FGU 65 120		89.0 20000	110 24700	174 39100	1700	2.300 5.071
	120 4.7244	65 2.5591	40 1.575	42 1.654	76.4 3.0079	92.4 3.6378	1.5 0.059	0.6 0.024	FGU 65 120 MM		89.0 20000	110 24700	174 39100	1700	2.300 5.071
125	125 4.9213	70 2.7559	40 1.575	42 1.654	81.5 3.2087	97.5 3.8386	1.5 0.059	0.6 0.024	FGU 70 125 MM		93.0 20900	110 24700	180 40500	1600	2.070 4.564
140	140 5.5118	80 3.1496	46 1.811	48 1.890	91.7 3.6102	107.7 4.2402	2.0 0.079	1.0 0.039	FGU 80 140 MM		130 29200	138 31000	250 56200	1400	3.450 7.606
160	160 6.2992	90 3.5433	52 2.047	54 2.126	101.8 4.0079	121.8 4.7953	2.0 0.079	1.0 0.039	FGU 90 160 MM		166 37300	188 42300	327 73500	1300	5.185 11.431
170	170 6.6929	95 3.7402	52 2.047	54 2.126	108.2 4.2598	128.2 5.0472	2.0 0.079	1.0 0.039	FGU 95 170 MM		184 41400	198 44500	356 80000	1200	5.925 13.062
200	200 7.8740	110 4.3307	63 2.480	65 2.559	124.1 4.8858	144.1 5.6732	2.0 0.079	1.5 0.059	FGU 110 200 MM		310 69700	280 62900	590 132600	1100	10.200 22.487
215	215 8.4646	120 4.7244	63 2.480	65 2.559	133.6 5.2598	157.6 6.2047	2.0 0.079	1.5 0.059	FGU 120 215		310 69700	310 69700	600 134900	960	11.560 25.485

FULL COMPLEMENT, NON-SEPARABLE, HEAVY SERIES WITH METAL SEALS YOKE TYPE (FGU...MM SERIES)

METRIC SERIES

FGU: convex outer ring
FGUL: cylindrical outer ring



FGU, FGUL

C

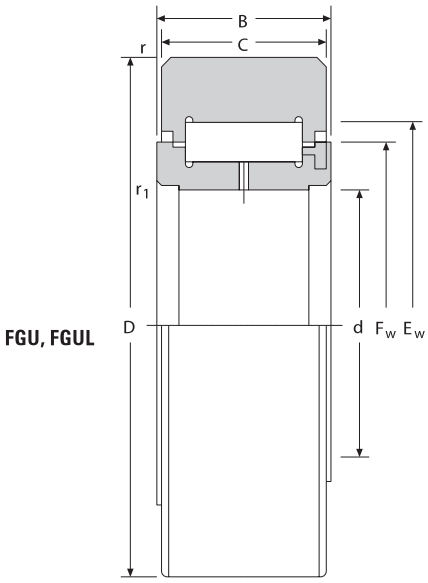
Outside Dia.	Dimensions mm/in.								Designation		Load Ratings kN/lbf.			Limiting Speed	Wt. kg/lbs.
									Profiled Track Roller	Cylindrical Track Roller	Dynamic		Static	Grease	
mm	D	d	C	B	F_w	E_w	r_{smin}	r_{1smin}			C	$F_{r\,perm}$	$F_{0r\,perm}$	RPM	
42	42 1.6535	15 0.5906	18 0.709	19 0.748	20.4 0.8031	28.4 1.1181	1.0 0.039	0.3 0.012	FGU 15 42	FGUL 15 42 MM	16.5 3710	24.0 5400	27.0 6070	5700	0.153 0.337
47	47 1.8504	17 0.6693	20 0.787	21 0.827	20.0 0.7874	28.0 1.1024	1.0 0.039	0.3 0.012		FGUL 17 47 MM	22.0 4950	26.7 6000	32.0 7190	5200	0.214 0.472
52	52 2.0472	20 0.7874	24 0.945	25 0.984	27.1 1.0669	37.1 1.4606	1.0 0.039	0.3 0.012		FGUL 20 52 MM	23.7 5330	36.5 8210	42.5 9550	4350	0.268 0.591
62	62 2.4409	25 0.9843	24 0.945	25 0.984	31.8 1.2520	41.8 1.6457	1.0 0.039	0.3 0.012	FGU 25 62 MM		34.4 7730	44.0 9890	57.0 12800	3800	0.435 0.959
72	72 2.8346	30 1.1811	28 1.102	29 1.142	38.2 1.5039	50.2 1.9764	1.0 0.039	0.3 0.012	FGU 30 72 MM	FGUL 30 72 MM	43.4 9760	60.0 13500	80.0 18000	3150	0.681 1.501
80	80 3.1496	35 1.3780	28 1.102	29 1.142	45.9 1.8071	57.9 2.2795	1.0 0.039	0.6 0.024	FGU 35 80	FGUL 35 80	45.6 10300	62.0 13900	88.0 19800	2700	0.82 1.808
	80 3.1496	35 1.3780	28 1.102	29 1.142	45.9 1.8071	57.9 2.2795	1.0 0.039	0.6 0.024	FGU 35 80 MM		45.6 10300	62.0 13900	88.0 19800	2700	0.82 1.808
90	90 3.5433	40 1.5748	30 1.181	32 1.260	51.6 2.0315	63.6 2.5039	1.0 0.039	0.6 0.024	FGU 40 90 MM		61.0 13700	75.0 16900	116 26100	2440	1.125 2.480
100	100 3.9370	45 1.7717	30 1.181	32 1.260	55.4 2.1811	67.4 2.6535	1.5 0.059	0.6 0.024	FGU 45 100 MM		78.0 17500	85.0 19100	138 31000	2290	1.395 3.075
110	110 4.3307	50 1.9685	30 1.181	32 1.260	61.1 2.4055	73.1 2.8780	1.5 0.059	0.6 0.024	FGU 50 110		91.0 20500	91.0 20500	157 35300	2100	1.683 3.710
	110 4.3307	50 1.9685	30 1.181	32 1.260	61.1 2.4055	73.1 2.8780	1.5 0.059	0.6 0.024	FGU 50 110 MM		91.0 20500	91.0 20500	157 35300	2100	1.683 3.710
120	120 4.7244	55 2.1654	34 1.339	36 1.417	66.1 2.6024	82.1 3.2323	1.5 0.059	0.6 0.024	FGU 55 120		98.0 22000	113 25400	176 39600	1900	2.235 4.927
	120 4.7244	55 2.1654	34 1.339	36 1.417	66.1 2.6024	82.1 3.2323	1.5 0.059	0.6 0.024	FGU 55 120 MM	FGUL 55 120 MM	98.0 22000	113 25400	176 39600	1900	2.235 4.927
130	130 5.1181	60 2.3622	34 1.339	36 1.417	71.2 2.8031	87.2 3.4331	1.5 0.059	0.6 0.024	FGU 60 130 MM		114 25600	121 27200	197 44300	1770	2.62 5.776
140	140 5.5118	65 2.5591	40 1.575	42 1.654	76.4 3.0079	92.4 3.6378	2.0 0.079	0.6 0.024	FGU 65 140 MM		153 34400	145 32600	254 57100	1650	3.56 7.848
150	150 5.9055	70 2.7559	40 1.575	42 1.654	81.5 3.2087	97.5 3.8386	2.0 0.079	0.6 0.024	FGU 70 150 MM		172 38700	153 34400	277 62300	1570	4.09 9.017
160	160 6.2992	75 2.9528	40 1.575	42 1.654	86.6 3.4094	102.6 4.0394	2.0 0.079	0.6 0.024	FGU 75 160		193 43400	160 36000	300 67400	1480	4.65 10.3
	160 6.2992	75 2.9528	40 1.575	42 1.654	86.6 3.4094	102.6 4.0394	2.0 0.079	0.6 0.024	FGU 75 160 MM		193 43400	160 36000	300 67400	1480	4.65 10.3

Continued on next page.

FULL COMPLEMENT, NON-SEPARABLE, HEAVY SERIES WITH METAL SEALS YOKE TYPE (FGU...MM SERIES) – *continued*

METRIC SERIES

FGU: convex outer ring
FGUL: cylindrical outer ring



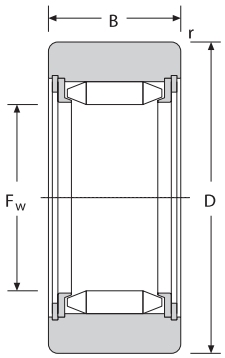
FGU, FGUL

Outside Dia.	Dimensions mm/in.								Designation		Load Ratings kN/lbf.			Limiting Speed	Wt. kg/lbs.
									Profiled Track Roller	Cylindrical Track Roller	Dynamic		Static	Grease	
mm	D	d	C	B	F_w	E_w	r_{smin}	r_{1smin}			C	$F_{r\ perm}$	$F_{0r\ perm}$	RPM	
170	170 6.6929	80 3.1496	46 1.811	48 1.890	91.7 3.6102	107.7 4.2402	2.0 0.079	1.0 0.039	FGU 80 170		247 55500	190 42700	380 85400	1400	6.07 13.4
	170 6.6929	80 3.1496	46 1.811	48 1.890	91.7 3.6102	107.7 4.2402	2.0 0.079	1.0 0.039	FGU 80 170 MM		247 55500	190 42700	380 85400	1400	6.07 13.4
180	180 7.0866	85 3.3465	46 1.811	48 1.890	95.5 3.7598	115.5 4.5472	2.0 0.079	1.0 0.039	FGU 85 180		243 54600	215 48300	390 87700	1330	6.724 14.8
	180 7.0866	85 3.3465	46 1.811	48 1.890	95.5 3.7598	115.5 4.5472	2.0 0.079	1.0 0.039	FGU 85 180 MM	FGUL 85 180 MM	243 54600	215 48300	390 87700	1330	6.724 14.8
190	190 7.4803	90 3.5433	52 2.047	54 2.126	101.8 4.0079	121.8 4.7953	2.0 0.079	1.0 0.039	FGU 90 190 MM		297 66800	250 56200	480 108000	1250	8.515 18.8
260	260 10.2362	120 4.7244	63 2.480	65 2.559	133.6 5.2598	157.6 6.2047	3.0 0.118	1.5 0.059	FGU 120 260 MM		570 128000	395 88800	830 187000	960	19.750 43.6
300	300 11.8110	140 5.5118	75 2.953	78 3.071	152.6 6.0079	176.6 6.9528	3.0 0.118	1.5 0.059	FGU 140 300 MM		860 193000	500 112000	1 160 261000	850	31.265 68.9

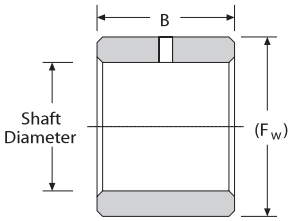
FULL COMPLEMENT, WITHOUT INNER RING, UNSEALED, YOKE TYPE (RNA...B6, RNAB, RNAL SERIES)

SEPARATE INNER RINGS (BIC SERIES)

METRIC SERIES



RNA...B6



BIC

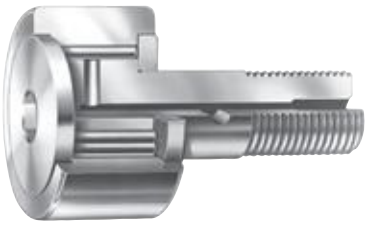
RNA...B6: Convex outer ring to maximum slope of 0.15%. Tolerance h9 on dim. D.
RNAB: Convex outer ring to maximum slope of 1.5%. Tolerance h9 on dim. D.
RNAL: Cylindrical outer ring. Tolerance h7 on dim. D.

Outside Dia.	Dimensions mm/in.						Bearing Designation Series			Load Ratings kN/lbf.			Limiting Speed	Wt. kg/lbs.	Inner Ring Designation	Shaft Dia.
										Dynamic		Static	Grease			
mm	D	d	B	F_w	E_w	r_{smin}	RNA..B6	RNAB	RNAL	C	$F_{r\ perm}$	$F_{0r\ perm}$	RPM			
19	19 0.7480	7.3 0.2874	12 0.472	7.3 0.287	12.3 0.484	0.35 0.014	RNA 11005 B6	RNAB 11005		5.10 1150	4.05 910	4.05 910	8700	0.019 0.042		
22	22 0.8661	9.7 0.3819	12 0.472	9.7 0.382	14.7 0.579	0.35 0.014	RNA 11007 B6	RNAB 11007	RNAL 11007	6.00 1350	5.10 1150	5.20 1170	7000	0.022 0.049		
28	28 1.1024	12.1 0.4764	12 0.472	12.1 0.476	17.1 0.673	0.35 0.014	RNA 11009 B6	RNAB 11009	RNAL 11009	7.40 1660	7.10 1600	7.10 1600	5800	0.028 0.062		
32	32 1.2598	17.6 0.6929	15 0.591	17.6 0.693	22.6 0.890	0.35 0.014	RNA 11012 B6	RNAB 11012	RNAL 11012	10.8 2430	9.10 2050	12.7 2860	4200	0.032 0.071	BIC 1012	12
35	35 1.3780	20.8 0.8189	15 0.591	20.8 0.819	25.8 1.016	0.65 0.026	RNA 11015 B6	RNAB 11015		10.8 2430	9.10 2050	13.4 3010	3650	0.035 0.077	BIC 1015	15
42	42 1.6535	23.9 0.9409	15 0.591	23.9 0.941	28.9 1.138	0.65 0.026	RNA 11017 B6	RNAB 11017	RNAL 11017	13.4 3010	13.9 3120	18.5 4160	3200	0.042 0.093	BIC 1017	17
47	47 1.8504	28.7 1.1299	18 0.709	28.7 1.130	34.7 1.366	0.65 0.026	RNA 11020 B6	RNAB 11020	RNAL 11020	16.8 3780	15.4 3460	23.0 5170	2700	0.047 0.104	BIC 2020	20
52	52 2.0472	33.5 1.3189	18 0.709	33.5 1.319	39.5 1.555	0.65 0.026	RNA 11025 B6	RNAB 11025		17.2 3870	16.5 3710	24.7 5550	2330	0.052 0.115	BIC 1025	25
62	62 2.4409	38.2 1.5039	22 0.866	38.2 1.504	44.2 1.740	0.65 0.026	RNA 11030 B6	RNAB 11030		28.5 6410	31.5 7080	49.5 11100	2050	0.062 0.137	BIC 2030	30
72	72 2.8346	44.0 1.7323	22 0.866	44.0 1.732	50.0 1.969	0.65 0.026	RNA 11035 B6			32.0 7190	41.0 9220	61.0 13700	1800	0.072 0.159	BIC 2035	35
80	80 3.1496	49.7 1.9567	22 0.866	49.7 1.957	55.7 2.193	0.85 0.033		RNAB 11040		34.0 7640	47.0 10600	68.0 15300	1620	0.080 0.176	BIC 2040	40
90	90 3.5433	62.1 2.4449	24 0.945	62.1 2.445	68.1 2.681	0.85 0.033	RNA 11050 B6			32.5 7310	51.0 11500	68.0 15300	1300	0.090 0.198	BIC 11050	50

STUD TYPE AND YOKE TYPE TRACK ROLLERS

INCH SERIES

Inch series track rollers listed in this catalog have been designed with the outer rings of large radial cross section to withstand heavy rolling or shock loads on track type or cam-controlled equipment.



CR with Stud

REFERENCE STANDARD:

- **ANSI/ABMA Std. 18.2** – Needle roller bearings – radial, inch design.

Before selecting specific inch series track rollers, the engineering section of this catalog should be reviewed.

YCR for Yoke Mounting

IDENTIFICATION

The type, special construction features, and size are designated by an identification code consisting of prefix letters followed by a dash and suffix numbers.

The initial prefix letters denote the type of track roller/cam follower. Additional prefix letters are used when it is necessary to denote special construction features. The suffix numbers following the prefix letters denote the size of the track roller. See Table 1.

The basic types are listed below:

CR - regular stud type, full complement needle rollers, inch series

YCR - yoke type, full complement needle rollers, inch series

Construction feature code letters for inch series track rollers are used as required, in the following order:

S - seals with internal thrust washers

B - hexagonal wrench socket in stud head (stud type only)

C - profiled outer ring

E - eccentric stud (stud type only)

Descriptions of typical examples, with complete letter codes combining basic type of bearing and construction features follow. See Table 2.

Since the entire identification code might not appear on the bearing itself, the manufacturer's parts list or another reliable source should always be consulted when ordering bearings for field or service replacement, to make certain that the correct unit with the correct lubricant is specified.

TABLE 1 – IDENTIFICATION CODE – INCH SERIES

Prefix Letters			Suffix Numbers			Complete
type	plus	construction features	plus size	O.D.	equals	Designation
CR	plus	SBE	plus	-16	equals	CRSBE-16
CR	plus			-16	equals	CR-16

TABLE 2 – CODE DESCRIPTION – INCH SERIES

Stud Types	
Description	**Prefix Code**
with seals and internal thrust washers	CRS
with seals, internal thrust washers and profiled outer ring	CRSC
with seals, internal thrust washers, hex socket and profiled outer ring	CRSBC
with seals, internal thrust washers, hex socket, profiled outer ring and eccentric stud	CRSBCE
Yoke Types	
with seals and internal thrust washers	YCRS
with seals, internal thrust washers and profiled outer ring	YCRSC

CONSTRUCTION

Timken products listed on the following pages have been designed with the outer ring of large radial cross section to withstand heavy rolling and shock loads on track type or cam-controlled equipment.

Regular stud type (CR) are designed with integral studs for cantilever mounting. When a regular stud type track roller is used within the permissible dynamic load ($F_{r\ perm}$) given in the tabular data, the ductile core of the stud provides the necessary toughness for and resistance to shock loads. A screwdriver slot or a hexagonal wrench socket in the head of the stud facilitates mounting.

Yoke type (YCR) are designed for straddle mounting. Each type is available with a full complement of needle rollers.

All inch series track roller have a black-oxide finish on all external surfaces.

SEALED TRACK ROLLERS – INCH SERIES

Inch series sealed track rollers contain a lip type seal and an internal thrust washer. On some sizes of track rollers, the thrust washer and seal have been incorporated into a single component. Regardless of configuration, the thrust washer fits between the shoulders of the outer ring and inside faces of the steel retaining washer and flange of the stud. These washers reduce sliding friction and serve to increase the life of the bearing, particularly when it is infrequently relubricated or where misalignment occurs. In all cases, the external dimensions of the sealed bearings are the same as the unsealed bearings. The seals are thermally stable in a temperature range between -25˚ F and +225˚ F.

PROFILED TRACK ROLLERS

These units are available with cylindrical or profiled outer rings.

Track rollers are designed with a profiled outer ring to alleviate the uneven bearing loading resulting from deflection, bending or misalignment in mounting.

To specify a profiled ring for any inch series track roller having a cylindrical outer ring, add the letter "C" at the end of the prefix code. For example:

prefix CR – regular stud type, full complement of needle rollers and cylindrical outer ring

prefix CRC – same as above, but with profiled outer ring.

The O.D. tolerance of profiled track rollers is +0.000 - 0.002 inch. The profile radii are listed in Table 3.

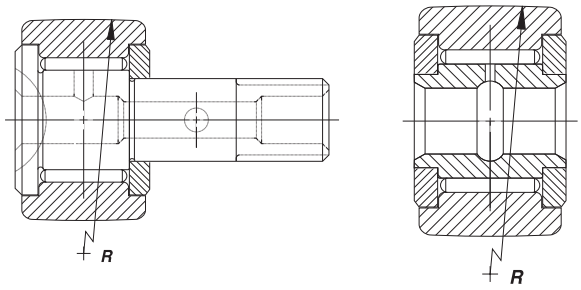
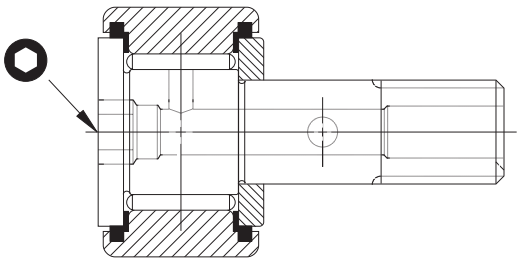


TABLE 3 – PROFILE RADIUS
FOR TYPES CRC, CRSC, CRSBC, YCRC, YCRSC

Size Designation (suffix)	R Profile Radius (approx.) inch	Size Designation (suffix)	R Profile Radius (approx.) inch
-8	6	-28	20
-8-1	7	-30	20
-10	7	-32	24
-10-1	8	-36	24
-12	10	-40	30
-14	10	-44	30
-16	12	-48	30
-18	12	-52	30
-20	14	-56	30
-22	14	-64	30
-24	20		
-26	20		

HEXAGONAL SOCKETS

Smaller sizes of regular inch series stud type units have a screwdriver slot or a hexagonal socket in the flanged end of the stud to facilitate mounting. Larger sizes have a socket to accommodate a hexagonal wrench. Wrench sizes are listed in Table 4.

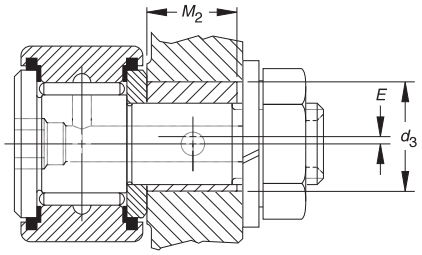


ECCENTRIC STUDS

To provide radial adjustment of the outer ring toward the track or cam surface at the time of installation, the regular inch series stud types are available with eccentric studs which are specified by adding the letter "E" to the construction feature code:

prefix CRSBE – regular stud type track roller with full complement of needle rollers, two seals, with internal thrust washers, hexagonal wrench socket in stud head, and eccentric stud.

Pertinent dimensions of the eccentric stud are listed in Table 5.



Since a track roller with an eccentric stud is usually adjusted upon installation by turning the stud in the mounting hole, a close clearance fit between the outside diameter of the bushing and the mounting hole is necessary. For turning the stud, a hexagonal wrench is generally more convenient than a screwdriver, and an option for a hexagonal wrench socket in the head of the stud should be exercised.

Some applications may require more secure positioning than provided by the tightened stud nut. If so, it is suggested that the housing and eccentric bushing be drilled at the time of installation to accept a locating dowel pin.

TABLE 4 – HEXAGONAL WRENCH SIZES – INCH SERIES

Size Designation (suffix)	Wrench Size Inch	Size Designation (suffix)	Wrench Size Inch
-8	1/8	-28	5/16
-8-1	1/8	-30	5/16
-10	1/8	-32	7/16
-10-1	1/8	-36	7/16
-12	3/16	-40	1/2
-14	3/16	-44	1/2
-16	1/4	-48	3/4
-18	1/4	-52	3/4
-20	1/4	-56	3/4
-22	1/4	-64	3/4
-24	5/16		
-26	5/16		

TABLE 5 – ECCENTRIC BUSHING DIMENSIONS
REGULAR STUD TYPE (TYPE CR)

Size Designation (suffix)	Bushing Outside Diameter +0.001 -0.001	Inch Bushing Width +0.000 -0.010	Eccentricity
	D_e	B_e	e
-8-1	0.250	0.375	0.010
-10-1	0.375	0.437	0.015
-12	0.500	0.500	0.015
-14	0.500	0.500	0.015
-16	0.625	0.500	0.030
-18	0.625	0.500	0.030
-20	0.687	0.625	0.030
-22	0.687	0.625	0.030
-24	0.875	0.750	0.030
-26	0.875	0.750	0.030
-28	1.000	0.875	0.030
-30	1.000	0.875	0.030
-32	1.187	1.000	0.030
-36	1.187	1.000	0.030
-40	1.375	1.125	0.030
-44	1.375	1.125	0.030
-48	1.750	1.250	0.060
-52	1.750	1.250	0.060
-56	1.812	1.375	0.060
-64	2.000	2.000	0.060

* To ensure proper clamping of the stud, the housing should be slightly wider than the maximum width of the eccentric bushing.

LOAD RATINGS

DYNAMIC LOADING AS A TRACK ROLLER

When the outer ring of a stud type or yoke type track roller runs on a track, the contact under a radial load causes elastic (oval) deformation of the outer ring. As a result, a smaller zone of the raceway is loaded and the load is distributed on fewer needle rollers. This in turn affects the track roller's dynamic and static load ratings. Also, this deformation generates bending stress in the outer ring which must not exceed the maximum permitted for the material of the outer ring. The maximum permissible dynamic ($F_{r\,perm}$) radial load condition is determined by this requirement.

The rating life of a stud type or yoke type track roller should be calculated using the dynamic load ratings C_w shown in the tables. The tables also show the maximum permissible radial load, $F_{r\,perm}$ that can be dynamically applied on the stud type or yoke type track rollers. However, to calculate the L_{10} life of a track roller, the applied radial load must not be greater than $C_w/4$ based on ideal operating conditions of alignment, lubrication, temperature, speed and accelerations.

STATIC LOADING

In addition to the basic static load rating C_0, the tables also list the maximum permissible static radial load $F_{0r\ perm}$ that may be applied to a stud type or yoke type track roller. The values of $F_{0r\ perm}$ result in a minimum static factor f_s of 0.7 for the worst condition of internal load distribution in inch series track roller operation. The $F_{0r\ perm}$ values must not be exceeded. The static factor f_s can be calculated using the following formula:

$$f_s \geq 0.7 \bullet \frac{F_{0r\ perm}}{P_{0r}}$$

where

$F_{0r\ perm}$ = Maximum permissible static radial load

P_{0r} = Equivalent static load
$P_{0r} = F_{0r}$ for yoke type track rollers

F_{0r} = Static radial load

f_s = Static factor whose valves should not be smaller than those suggested in table 6

TABLE 6 – SUGGESTED VALUES FOR STATIC FACTORS F_S FOR INCH SERIES TRACK ROLLERS

Requirements For Yoke Type Track Rollers And Stud Type Track Rollers	Suggested f_s Values
High shock-type loads	
Quiet running	1.5...2.5
Normal loading	
Normal quietness of running	1...1.5
Minor impact loads and rotary motion particularly quiet running not required	0.7...1

MOUNTING

The surface of the hole in the machine element, which supports the stud or the mounting shaft, must not deform under the expected load, and the support should be sufficiently rigid to resist bending loads.

Deformation and bending will cause uneven loading of the outer ring.

In mounting the stud type track roller, the retaining washer must be firmly backed up by a flat shoulder which is square with the stud center line. The shoulder diameter must be no smaller than the minimum clamping diameter (d_a) listed in the tabular data.

The maximum inherent strength of the stud is obtained when the unit is supported as close as possible to the retaining washer, which minimizes the bending moment. For this reason, the edge of the housing which supports the stud shank should be kept as sharp as possible, but free from burrs.

To minimize deflection in mounted stud type track rollers, the stud shank should be housed with the fit (d_b) shown in the tabular data. The clamping nut should not be tightened with a torque value higher than the maximum listed. A screwdriver slot or hexagonal socket in the end of the stud is provided for a tool to prevent the stud from turning when the nut is being tightened. Since the bottom of the screwdriver slot is not flat, it is helpful to put a radius on the tip of the screwdriver being used to hold the stud more securely.

When the stud shank is housed with an interference fit, installation force should be applied only to the center portion of the flanged end of the stud, preferably with an arbor press.

When the loads are high, the yoke type track rollers should be mounted on a high strength bolt or shaft with the tight transition fit listed in the tabular data. The bearing should be clamped between flat and parallel faces at right angles to the axis to prevent the retaining washers from coming off under load. If the bearing cannot be clamped, a close axial fit in the yoke is required.

When the applied loads are light to moderate, the inner ring of a yoke type track roller may be mounted on an unhardened shaft or bolt with the loose transition fit listed in the tabular data. Again, the retaining washers should be backed up axially to prevent their coming off under load.

LUBRICATION

All inch series stud type track rollers with a screwdriver slot in the flanged end of the stud have provisions for lubrication through the flanged end of the stud. The 12 and larger sizes of inch series stud type track rollers with screwdriver slots have provisions for relubrication through either end of the stud and through a cross-drilled hole in the shank. The ends of the axial holes are counterbored to accept drive type grease lubrication fittings. Hole diameters for these grease fittings are listed in the tables of dimensions.

Sizes 8 through 10-1 of the inch series stud type track rollers with a hexagonal socket in the flanged end of the stud cannot be relubricated. Size 12 and up have relubrication provisions in the threaded end of the stud and a cross-drilled hole in the shank. At the threaded end of the stud, the axial hole is counterbored to receive a drive type grease fitting. Sizes 12 through 22 and 48 through 64 of inch series stud type track rollers with hexagonal sockets also have provisions for relubrication through the hex socket in the flanged end of the stud. Sizes 48 through 64 are supplied with lubrication fittings which may be installed in the axial hole in the bottom of the hexagonal slot in the head end of the stud, at a depth which allows the hexagonal wrench to be inserted in the wrench socket without damaging the grease fitting.

Plugs are furnished with stud type track rollers to close off unused holes. If the cross-drilled hole in the stud shank is not used, it will be covered when the track roller is installed properly.

Most inch series yoke type track rollers are produced with lubrication holes and grooves in the inner ring bores so they can be relubricated through axially and radially drilled holes in the supporting shaft or bolt.

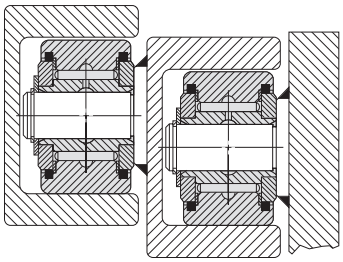
Oil is the preferred lubricant for all types. Use continuous oil lubrication or frequent grease lubrication for steady rotating conditions. Applications involving slow, intermittent oscillation are not as critical, and longer intervals between relubrication are permissible. Both stud and yoke type track rollers are normally supplied with medium temperature grease lubrication.

SPECIAL TRACK ROLLERS/ CAM FOLLOWERS

Track rollers can be obtained with dimensions different from those in the tabular data, if the quantities permit economical production. For these and other modifications please consult your Timken representative.

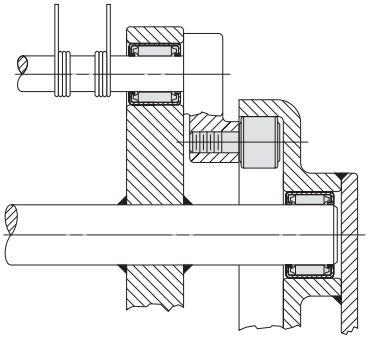
FORKLIFT TRUCK

Yoke type sealed units serve as high capacity and rugged guide rollers for lift trucks. Their design permits them to be mounted on studs welded to the structure. The seals exclude foreign matter and extend the time between relubrication periods.



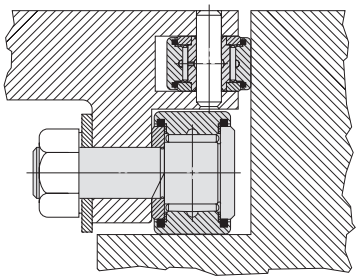
HAY BALER

Stud types are important components on many different types of farm equipment because of their required long service life under punishing loads and severe operating conditions. Needle bearings provide dependable and economical operation in the windrow pickup of hay balers.



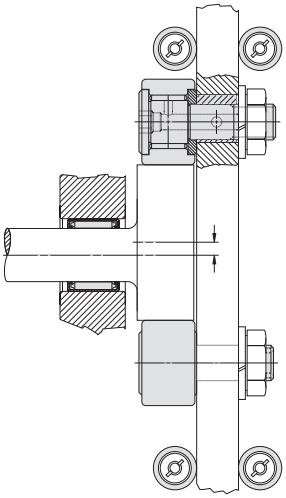
MACHINE WAY

Heavily loaded machine tool tables must travel freely and accurately. Stud and yoke type sealed units, in combination, support and guide such tables under the most severe conditions. The high capacity and the very low wear rate permit heavy loads to be carried without impairing the accuracy of the table's travel. The seals exclude dirt and chips and make the need for relubrication infrequent.



RECIPROCATING SLIDE

Stud types find wide application in feeding and advancing mechanisms on metalworking presses. The rotary motion of an eccentric cam rotating between two cam followers mounted on a slide imparts reciprocating linear motion to the slide. Dwell periods as well as accuracy in both rapid and slow linear actuation of the slide are made possible.

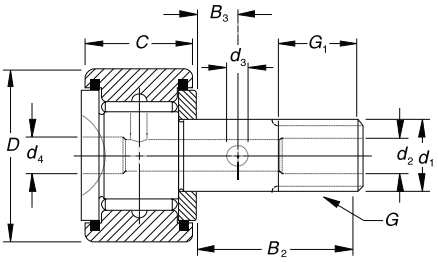


STUD TYPE TRACK ROLLERS
CR, CRS SERIES

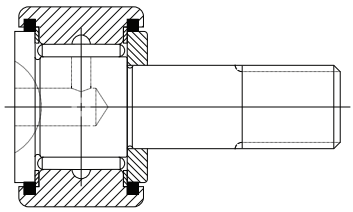
INCH SERIES

- Screwdriver slot in head facilitates mounting.
- Nonseparable, sealed unit with outer ring, full complement of needle rollers, stud seals, self-lubricating resin internal thrust washers, and stud-fastened retaining washer.
- Seals help retain lubricant and exclude foreign matter (CRS Series).
- Relubrication via axially drilled hole through stud with cross-drilled holes in stud raceway and shank.
- Recessed axial hole accepts standard nominal inch drive-type grease lubrication fitting.
- Lubrication fitting plugs furnished to close off unused holes.
- Tolerance limits for outside diameters of stud and outer ring refer to "single mean diameter" (see engineering section).
- A close fit between stud and hole required for mounting.
- Bore dimensions given below result in varying fit (0.0010 in. tight to 0.0005 in. loose).
- Retaining washer should be firmly backed up by flat housing shoulder (perpendicular to the stud axis).
- Shoulder diameter should be at least same size as minimum clamping diameter listed.
- May be mounted with two thin lock nuts or nut and lock washer.

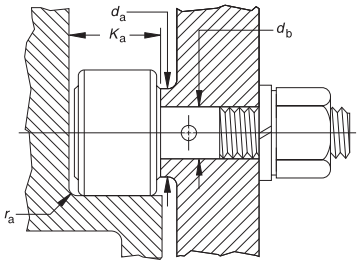
Outside Diameter	Dimensions mm/in.									Track Roller Designation	
	+0.25 -0 +0.0010 -0.0000	+0 -.025 +0.000 -0.001	+0 -.13 +0.000 -0.005	(nom.)	Min.				UNF	Without Seals	With Seals And Internal Thrust Washers
in.	d_1	D	C	B_2	B_3	G_1	d_4, d_2	d_3	G		
1/2	4.826 0.1900	12.70 0.500	8.74 0.344	12.70 0.500	—	6.35 0.250	3.18 .125*	—	10-32	CR-8	CRS-8
	4.826 0.1900	12.70 0.500	9.53 0.375	15.88 0.625	—	6.35 0.250	3.18 .125*	—	10-32	CR-8-1	CRS-8-1
5/8	6.350 0.2500	15.88 0.625	10.31 0.406	15.88 0.625	—	7.92 0.312	3.18 .125*	—	1/4-28	CR-10	CRS-10
	6.350 0.2500	15.88 0.625	11.13 0.438	19.05 0.750	—	7.92 0.312	3.18 .125*	—	1/4-28	CR-10-1	CRS-10-1
3/4	9.525 0.3750	19.05 0.750	12.70 0.500	22.23 0.875	6.35 0.250	9.53 0.375	3.18 0.188	0.094	3/8-24	CR-12	CRS-12
7/8	9.525 0.3750	22.23 0.875	12.70 0.500	22.23 0.875	6.35 0.250	9.53 0.375	3.18 0.188	2.39 0.094	3/8-24	CR-14	CRS-14
1	11.113 0.4375	25.40 1.000	15.88 0.625	25.40 1.000	6.35 0.250	12.70 0.500	3.18 0.188	3.18 0.125	7/16-20	CR-16	CRS-16
1 1/8	11.113 0.4375	28.58 1.125	15.88 0.625	25.40 1.000	6.35 0.250	12.70 0.500	3.18 0.188	3.18 0.125	7/16-20	CR-18	CRS-18
1 1/4	12.700 0.5000	31.75 1.250	19.05 0.750	31.75 1.250	7.92 0.312	15.88 0.625	3.18 0.188	3.18 0.125	1/2-20	CR-20	CRS-20
1 3/8	12.700 0.5000	34.93 1.375	19.05 0.750	31.75 1.250	7.92 0.312	15.88 0.625	3.18 0.188	3.18 0.125	1/2-20	CR-22	CRS-22
1 1/2	15.875 0.6250	38.10 1.500	22.23 0.875	38.10 1.500	9.53 0.375	19.05 0.750	3.18 0.188	2.39 0.094	5/8-18	CR-24	CRS-24
1 5/8	15.875 0.6250	41.28 1.625	22.23 0.875	38.10 1.500	9.53 0.375	19.05 0.750	3.18 0.188	2.39 0.094	5/8-18	CR-26	CRS-26
1 3/4	19.050 0.7500	44.45 1.750	25.40 1.000	44.45 1.750	11.13 0.438	22.23 0.875	3.18 0.188	2.39 0.094	3/4-16	CR-28	CRS-28
1 7/8	19.050 0.7500	47.63 1.875	25.40 1.000	44.45 1.750	11.13 0.438	22.23 0.875	3.18 0.188	2.39 0.094	3/4-16	CR-30	CRS-30
2	22.225 0.8750	50.80 2.000	31.75 1.250	50.80 2.000	12.70 0.500	25.40 1.000	3.18 0.188	3.18 0.125	7/8-14	CR-32	CRS-32
2 1/4	22.225 0.8750	57.15 2.250	31.75 1.250	50.80 2.000	12.70 0.500	25.40 1.000	3.18 0.188	3.18 0.125	7/8-14	CR-36	CRS-36



CR and CRS -12 to -64



CR and CRS -8 to -10-1



Note: Clamping torque is based on lubricated threads. If threads are dry, the torque values listed below may be doubled.

C

Load Rating kN/lbf.					Limiting Speed	Mounting Dimensions mm/in.				Clamping Torque	Wt. kg/lbs.
As a Bearing		As a Track Roller				Bore Dia. for Stud +.013 +0.0005 -0 -0.0000	Max.	Min.	Min.	N*m/lbf. • in.	Approx.
Dynamic	Static	Dynamic		Static	Grease						
C	C_0	C_w	$F_{r\ perm}$	$F_{0r\ perm}$	RPM	d_b	$r_{as\ max}$	K_a	d_a		
4.44 999	4.94 1110	3.01 677	1.04 233	2.49 560	7000	4.826 0.1900	0.25 0.010	10.41 0.41	7.52 0.296	0.90 8	0.010 0.022
4.98 1120	5.69 1280	3.38 759	1.21 272	2.90 652	7000	4.826 0.1900	0.25 0.010	11.18 0.44	7.52 0.296	0.90 8	0.010 0.023
6.05 1360	7.87 1770	4.37 982	2.26 508	5.43 1220	5500	6.350 0.2500	0.38 0.015	11.94 0.47	9.12 0.359	2.26 20	0.019 0.041
6.58 1480	8.76 1970	4.76 1070	2.53 569	6.09 1370	5500	6.350 0.2500	0.38 0.015	12.70 0.50	9.12 0.359	2.26 20	0.020 0.045
10.4 2330	15.2 3410	6.45 1450	2.88 647	6.89 1550	3900	9.525 0.3750	0.38 0.015	14.22 0.56	12.70 0.500	6.21 55	0.034 0.076
10.4 2330	15.2 3410	7.56 1700	4.80 1080	11.5 2590	3900	9.525 0.3750	0.38 0.015	14.22 0.56	12.70 0.500	6.21 55	0.044 0.097
13.3 2980	22.3 5010	8.94 2010	6.05 1360	14.5 3260	3000	11.113 0.4375	0.76 0.030	17.53 0.69	15.09 0.594	16.95 150	0.073 0.161
13.3 2980	22.3 5010	9.88 2220	8.67 1950	18.3 4120	3000	11.113 0.4375	0.76 0.030	17.53 0.69	15.09 0.594	16.95 150	0.089 0.197
21.5 4840	33.18 7460	15.1 3400	9.30 2090	24.3 5470	2600	12.700 0.5000	0.76 0.030	20.57 0.81	19.05 0.750	23.16 205	0.137 0.301
21.5 4840	33.2 7460	16.4 3680	12.6 2840	28.6 6420	2600	12.700 0.5000	0.76 0.030	20.57 0.81	19.05 0.750	23.16 205	0.161 0.354
28.4 6380	40.8 9160	20.1 4520	10.8 2440	26.0 5850	2300	15.875 0.6250	0.76 0.030	23.88 0.94	22.63 0.891	44.06 390	0.239 0.528
28.4 6380	40.8 9160	21.5 4840	14.1 3170	33.8 7610	2300	15.875 0.6250	0.76 0.030	23.88 0.94	22.63 0.891	44.06 390	0.274 0.605
35.8 8040	56.9 12800	25.9 5830	17.7 3980	42.5 9560	1900	19.050 0.7500	1.02 0.040	26.92 1.06	26.59 1.047	84.74 750	0.385 0.848
35.8 8040	56.9 12800	27.4 6150	22.0 4940	49.4 11100	1900	19.050 0.7500	1.02 0.040	26.92 1.06	26.59 1.047	84.74 750	0.430 0.947
43.5 9770	76.1 17100	31.8 7160	26.0 5850	60.5 13600	1700	22.225 0.8750	1.27 0.050	33.78 1.33	30.56 1.203	101.69 900	0.621 1.37
43.5 9770	76.1 17100	34.6 7770	36.7 8250	71.2 16000	1700	22.225 0.8750	1.27 0.050	33.78 1.33	30.56 1.203	101.69 900	0.757 1.67

* No lubrication hole in threaded end.
§ UNS instead of UNF threads.

Continued on next page.

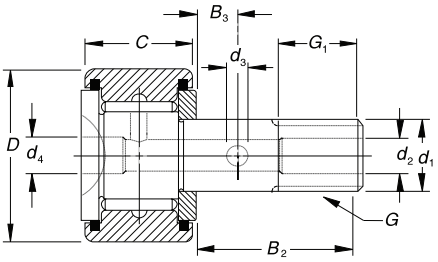
STUD TYPE TRACK ROLLERS
CR, CRS SERIES – *continued*

INCH SERIES

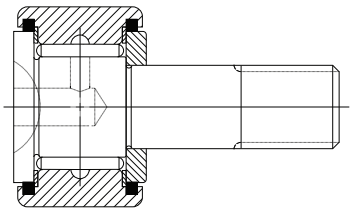
- Screwdriver slot in head facilitates mounting.
- Nonseparable, sealed unit with outer ring, full complement of needle rollers, stud seals, self-lubricating resin internal thrust washers, and stud-fastened retaining washer.
- Seals help retain lubricant and exclude foreign matter (CRS Series).
- Relubrication via axially drilled hole through stud with cross-drilled holes in stud raceway and shank.
- Recessed axial hole accepts standard nominal inch drive-type grease lubrication fitting.
- Lubrication fitting plugs furnished to close off unused holes.
- Tolerance limits for outside diameters of stud and outer ring refer to "single mean diameter" (see engineering section).
- A close fit between stud and hole required for mounting.
- Bore dimensions given below result in varying fit (0.0010 in. tight to 0.0005 in. loose).
- Retaining washer should be firmly backed up by flat housing shoulder (perpendicular to the stud axis).
- Shoulder diameter should be at least same size as minimum clamping diameter listed.
- May be mounted with two thin lock nuts or nut and lock washer.

Outside Diameter	Dimensions mm/in.									Track Roller Designation	
	+0.25 -0 +0.0010 -0.0000	+0 -.025 +0.000 -0.001	+0 -.13 +0.000 -0.005	(nom.)	Min.				UNF	Without Seals	With Seals And Internal Thrust Washers
in.	d_1	D	C	B_2	B_3	G_1	d_4, d_2	d_3	G		
2 1/2	**25.400** 1.0000	**63.50** 2.500	**38.10** 1.500	**57.15** 2.250	**14.27** 0.562	**28.58** 1.125	**3.18** 0.188	**3.18** 0.125	1-14§	**CR-40**	**CRS-40**
2 3/4	**25.400** 1.0000	**69.85** 2.750	**38.10** 1.500	**57.15** 2.250	**14.27** 0.562	**28.58** 1.125	**3.18** 0.188	**3.18** 0.125	1-14§	**CR-44**	**CRS-44**
3	**31.750** 1.2500	**76.20** 3.000	**44.45** 1.750	**63.50** 2.500	**15.88** 0.625	**31.75** 1.250	**3.18** 0.250	**3.18** 0.125	1 1/4-12	**CR-48**	**CRS-48**
3 1/4	**31.750** 1.2500	**82.55** 3.250	**44.45** 1.750	**63.50** 2.500	**15.88** 0.625	**31.75** 1.250	**3.18** 0.250	**3.18** 0.125	1 1/4-12	**CR-52**	**CRS-52**
3 1/2	**34.925** 1.3750	**88.90** 3.500	**50.80** 2.000	**69.85** 2.750	**17.48** 0.688	**34.93** 1.375	**3.18** 0.250	**3.18** 0.125	1 3/8-12	**CR-56**	**CRS-56**
4	**38.100** 1.5000	**101.60** 4.000	**57.15** 2.250	**88.90** 3.500	**19.05** 0.750	**38.10** 1.500	**3.18** 0.250	**3.18** 0.125	1 1/2-12	**CR-64**	**CRS-64**

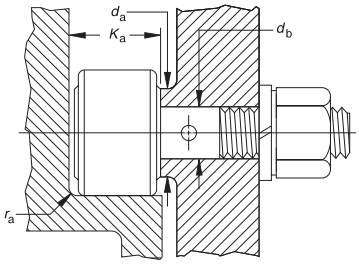
§ UNS instead of UNF threads.



CR and CRS -12 to -64



CR and CRS -8 to -10-1



Note: Clamping torque is based on lubricated threads. If threads are dry, the torque values listed below may be doubled.

C

Load Rating kN/lbf.					Limiting Speed	Mounting Dimensions mm/in.				Clamping Torque	Wt. kg/lbs.
As a Bearing		As a Track Roller				Bore Dia. for Stud +.013 +0.0005 -0 -0.0000					
Dynamic	Static	Dynamic		Static	Grease		Max.	Min.	Min.	N*m/lbf. • in.	Approx.
C	C_0	C_w	$F_{r\ perm}$	$F_{0r\ perm}$	RPM	d_b	$r_{as\ max}$	K_a	d_a		
58.7 13200	**118** 26600	**44.5** 10000	**51.6** 11600	**101** 22700	**1400**	**25.400** 1.0000	**2.29** 0.090	**40.13** 1.58	**34.93** 1.375	**152.53** 1 350	**1.134** 2.50
58.7 13200	**118** 26600	**47.2** 10600	**66.7** 15000	**113** 25500	**1400**	**25.400** 1.0000	**2.29** 0.090	**40.13** 1.58	**34.93** 1.375	**152.53** 1 350	**1.329** 2.93
74.7 16800	**179** 40200	**51.6** 11600	**64.0** 14400	**127** 28600	**990**	**31.750** 1.2500	**2.29** 0.090	**46.48** 1.83	**44.45** 1.750	**231.62** 2 050	**1.905** 4.20
74.7 16800	**179** 40200	**54.7** 12300	**80.1** 18000	**143** 32100	**990**	**31.750** 1.2500	**2.29** 0.090	**46.48** 1.83	**44.45** 1.750	**231.62** 2 050	**2.182** 4.81
111 24900	**227** 51000	**82.3** 18500	**89.8** 20200	**187** 42000	**950**	**34.925** 1.3750	**2.29** 0.090	**52.83** 2.08	**48.82** 1.922	**282.46** 2 500	**2.912** 6.42
138 31100	**321** 72200	**99.2** 22300	**121** 27200	**245** 55000	**780**	**38.100** 1.5000	**2.29** 0.090	**59.18** 2.33	**57.94** 2.281	**338.95** 3 000	**4.291** 9.46

STUD TYPE TRACK ROLLERS
CRSB SERIES

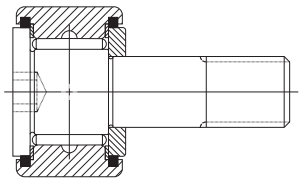
INCH SERIES

- Nonseparable, sealed unit with outer ring, full complement of needle rollers, stud seals, self-lubricating resin internal thrust washers, and stud-fastened retaining washer.
- Seals help retain lubricant and exclude foreign matter (CRS Series).
- Hexagonal wrench socket in stud head for mounting
- Relubrication via axially drilled hole through stud with cross-drilled holes in stud raceway and shank.
- Recessed axial hole accepts standard nominal inch drive-type grease lubrication fitting.
- Lubrication fitting plugs furnished to close off unused holes.
- Tolerance limits for outside diameters of stud and outer ring refer to "single mean diameter" (see engineering section).
- A close fit between stud and hole required for mounting.
- Bore dimensions given below result in varying fit (0.0010 in. tight to 0.0005 in. loose).
- Retaining washer should be firmly backed up by flat housing shoulder (perpendicular to the stud axis).
- Shoulder diameter should be at least same size as minimum clamping diameter listed.
- May be mounted with two thin lock nuts or nut and lock washer.

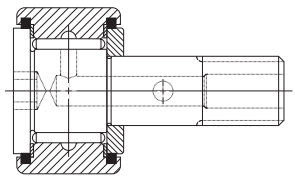
Outside Diameter	Dimensions mm/in.										Bearing Designation
	+0.25 -0 +0.0010 -0.0000	+0 -.025 +0.000 -0.001	+0 -.13 +0.000 -0.005	(nom.)		Min.				UNF	
in.	d_1	D	C	B_2	B_3	G_1	d_4	d_2	d_3	G	
1/2	4.826 0.1900	12.70 0.500	8.74 0.344	12.70 0.500	—	6.35 0.250	—	—	—	10-32	CRSB-8
	4.826 0.1900	12.70 0.500	9.53 0.375	15.88 0.625	—	6.35 0.250	—	—	—	10-32	CRSB-8-1
5/8	6.350 0.2500	15.88 0.625	10.31 0.406	15.88 0.625	—	7.92 0.312	—	—	—	1/4-28	CRSB-10
	6.350 0.2500	15.88 0.625	11.13 0.438	19.05 0.750	—	7.92 0.312	—	—	—	1/4-28	CRSB-10-1
3/4	9.525 0.3750	19.05 0.750	12.70 0.500	22.23 0.875	6.35 0.250	9.53 0.375	4.78 0.188	4.78 0.188	2.39 0.094	3/8-24	CRSB-12
7/8	9.525 0.3750	22.23 0.875	12.70 0.500	22.23 0.875	6.35 0.250	9.53 0.375	4.78 0.188	4.78 0.188	2.39 0.094	3/8-24	CRSB-14
1	11.113 0.4375	25.40 1.000	15.88 0.625	25.40 1.000	6.35 0.250	12.70 0.500	6.35 0.250	4.78 0.188	3.18 0.125	7/16-20	CRSB-16
1 1/8	11.113 0.4375	28.58 1.125	15.88 0.625	25.40 1.000	6.35 0.250	12.70 0.500	6.35 0.250	4.78 0.188	3.18 0.125	7/16-20	CRSB-18
1 1/4	12.700 0.5000	31.75 1.250	19.05 0.750	31.75 1.250	7.92 0.312	15.88 0.625	6.35 0.250	4.78 0.188	3.18 0.125	1/2-20	CRSB-20
1 3/8	12.700 0.5000	34.93 1.375	19.05 0.750	31.75 1.250	7.92 0.312	15.88 0.625	6.35 0.250	4.78 0.188	3.18 0.125	1/2-20	CRSB-22
1 1/2	15.875 0.6250	38.10 1.500	22.23 0.875	38.10 1.500	9.53 0.375	19.05 0.750	—	4.78 0.188	2.39 0.094	5/8-18	CRSB-24
1 5/8	15.875 0.6250	41.28 1.625	22.23 0.875	38.10 1.500	9.53 0.375	19.05 0.750	—	4.78 0.188	2.39 0.094	5/8-18	CRSB-26
1 3/4	19.050 0.7500	44.45 1.750	25.40 1.000	44.45 1.750	11.13 0.438	22.23 0.875	—	4.78 0.188	2.39 0.094	3/4-16	CRSB-28
1 7/8	19.050 0.7500	47.63 1.875	25.40 1.000	44.45 1.750	11.13 0.438	22.23 0.875	—	4.78 0.188	2.39 0.094	3/4-16	CRSB-30
2	22.225 0.8750	50.80 2.000	31.75 1.250	50.80 2.000	12.70 0.500	25.40 1.000	—	4.78 0.188	3.18 0.125	7/8-14	CRSB-32
2 1/4	22.225 0.8750	57.15 2.250	31.75 1.250	50.80 2.000	12.70 0.500	25.40 1.000	—	4.78 0.188	3.18 0.125	7/8-14	CRSB-36
2 1/2	25.400 1.0000	63.50 2.500	38.10 1.500	63.50 2.500	14.27 0.562	28.58 1.125	—	4.78 0.188	3.18 0.125	1-14§	CRSB-40

§ UNS instead of UNF threads.

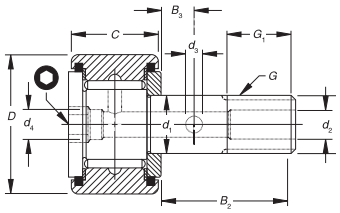
For hexagonal wrench sizes, see page C210.



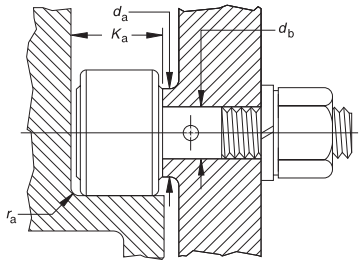
CRSB -8 to -10-1



CRSB -24 to -44



CRSB -12 to -22
CRSB -48 to -64



Note: Clamping torque is based on lubricated threads. If threads are dry, the torque values listed below may be doubled.

C

Load Rating kN/lbf.					Limiting Speed	Mounting Dimensions mm/in.				Clamping Torque	Wt. kg/lbs. Approx.
As a Bearing		As a Track Roller				Bore Dia. for Stud +.013 +0.0005 -0 -0.0000	Max.	Min.	Min.	N*m/lbf. • in.	
Dynamic	Static	Dynamic		Static	Grease						
C	C_0	C_w	$F_{r\ perm}$	$F_{0r\ perm}$	RPM	d_b	$r_{as\ max}$	K_a	d_a		
4.44	**4.94**	**3.01**	**1.04**	**2.49**	**7000**	**4.826**	**0.25**	**10.4**	**7.54**	**0.90**	**0.010**
999	1110	677	233	560		0.1900	0.010	0.41	0.297	8.00	0.022
4.98	**5.69**	**3.38**	**1.21**	**2.90**	**7000**	**4.826**	**0.25**	**11.2**	**7.54**	**0.90**	**0.010**
1120	1280	759	272	652		0.1900	0.010	0.44	0.297	8.00	0.023
6.05	**7.87**	**4.37**	**2.26**	**5.43**	**5500**	**6.350**	**0.38**	**11.9**	**9.12**	**2.26**	**0.019**
1360	1770	982	508	1220		0.2500	0.015	0.47	0.359	20.0	0.041
6.58	**8.76**	**4.76**	**2.53**	**6.09**	**5500**	**6.350**	**0.38**	**12.7**	**9.12**	**2.26**	**0.020**
1480	1970	1070	569	1370		0.2500	0.015	0.50	0.359	20.0	0.045
10.4	**15.2**	**6.45**	**2.88**	**6.89**	**3900**	**9.525**	**0.38**	**14.2**	**12.70**	**6.21**	**0.034**
2330	3410	1450	647	1550		0.3750	0.015	0.56	0.500	55.0	0.076
10.4	**15.2**	**7.56**	**4.80**	**11.5**	**3900**	**9.525**	**0.38**	**17.5**	**12.70**	**6.21**	**0.044**
2330	3410	1700	1080	2590		0.3750	0.015	0.69	0.500	55.0	0.097
13.3	**22.3**	**8.94**	**6.05**	**14.5**	**3000**	**11.113**	**0.76**	**17.5**	**15.09**	**16.95**	**0.073**
2980	5010	2010	1360	3260		0.4375	0.030	0.69	0.594	150	0.161
13.3	**22.3**	**9.88**	**8.67**	**18.3**	**3000**	**11.113**	**0.76**	**20.6**	**15.09**	**16.95**	**0.089**
2980	5010	2220	1950	4120		0.4375	0.030	0.81	0.594	150	0.197
21.5	**33.2**	**15.1**	**9.30**	**24.3**	**2600**	**12.700**	**0.76**	**20.6**	**19.05**	**23.16**	**0.137**
4840	7460	3400	2090	5470		0.5000	0.030	0.81	0.750	205	0.301
21.5	**33.2**	**16.4**	**12.6**	**28.6**	**2600**	**12.700**	**0.76**	**23.9**	**19.05**	**23.16**	**0.161**
4840	7460	3680	2840	6420		0.5000	0.030	0.94	0.750	205	0.354
4 840	**7 460**	**3 680**	**2 840**	**6 420**		**0.5000**	**0.030**	**0.94**	**0.750**	**205**	**0.354**
6380	9160	4520	2440	5850		0.6250	0.030	0.94	0.891	390	0.528
28.4	**40.8**	**21.5**	**14.1**	**33.8**	**2300**	**15.875**	**0.76**	**26.9**	**22.63**	**44.06**	**0.274**
6380	9160	4840	3170	7610		0.6250	0.030	1.06	0.891	390	0.605
35.8	**56.94**	**25.9**	**17.7**	**42.5**	**1900**	**19.050**	**1.02**	**26.9**	**26.59**	**84.74**	**0.385**
8040	12800	5830	3980	9560		0.7500	0.040	1.06	1.047	750	0.848
35.8	**56.94**	**27.4**	**22.0**	**49.4**	**1900**	**19.050**	**1.02**	**33.8**	**26.59**	**84.74**	**0.430**
8040	12800	6150	4940	11100		0.7500	0.040	1.33	1.047	750	0.947
43.5	**76.06**	**31.8**	**26.0**	**60.5**	**1700**	**22.225**	**1.27**	**33.8**	**30.56**	**101.69**	**0.621**
9770	17100	7160	5850	13600		0.8750	0.050	1.33	1.203	900	1.370
43.5	**76.06**	**34.6**	**36.7**	**71.2**	**1700**	**22.225**	**1.27**	**40.1**	**30.56**	**101.69**	**0.757**
9770	17100	7770	8250	16000		0.8750	0.050	1.58	1.203	900	1.670
58.7	**118.32**	**44.5**	**51.6**	**101**	**1400**	**25.400**	**2.29**	**40.1**	**34.93**	**152.53**	**1.134**
13200	26600	10000	11600	22700		1.0000	0.090	1.58	1.375	1 350	2.500

Continued on next page.

STUD TYPE TRACK ROLLERS
CRSB SERIES – *continued*

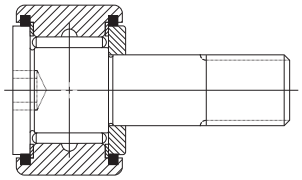
INCH SERIES

- Nonseparable, sealed unit with outer ring, full complement of needle rollers, stud seals, self-lubricating resin internal thrust washers, and stud-fastened retaining washer.
- Seals help retain lubricant and exclude foreign matter (CRS Series).
- Hexagonal wrench socket in stud head for mounting
- Relubrication via axially drilled hole through stud with cross-drilled holes in stud raceway and shank.
- Recessed axial hole accepts standard nominal inch drive-type grease lubrication fitting.
- Lubrication fitting plugs furnished to close off unused holes.
- Tolerance limits for outside diameters of stud and outer ring refer to "single mean diameter" (see engineering section).
- A close fit between stud and hole required for mounting.
- Bore dimensions given below result in varying fit (0.0010 in. tight to 0.0005 in. loose).
- Retaining washer should be firmly backed up by flat housing shoulder (perpendicular to the stud axis).
- Shoulder diameter should be at least same size as minimum clamping diameter listed.
- May be mounted with two thin lock nuts or nut and lock washer.

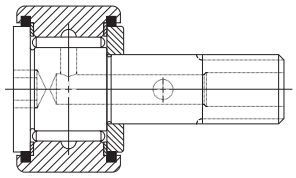
Outside Diameter	Dimensions mm/in.										Bearing Designation
	+0.25 -0 +0.0010 -0.0000	+0 -.025 +0.000 -0.001	+0 -.13 +0.000 -0.005	(nom.)		Min.				UNF	
in.	d_1	D	C	B_2	B_3	G_1	d_4	d_2	d_3	G	
2 3/4	**25.400** 1.0000	**69.85** 2.750	**38.10** 1.500	**63.50** 2.500	**14.27** 0.562	**28.58** 1.125	——	**4.78** 0.188	**3.18** 0.125	1-14§	**CRSB-44**
3	**31.750** 1.2500	**76.20** 3.000	**44.45** 1.750	**63.50** 2.500	**15.88** 0.625	**31.75** 1.250	**6.35** 0.250	**6.35** 0.250	**3.18** 0.125	1 1/4-12	**CRSB-48**
3 1/4	**31.750** 1.2500	**82.55** 3.250	**44.45** 1.750	**63.50** 2.500	**15.88** 0.625	**31.75** 1.250	**6.35** 0.250	**6.35** 0.250	**3.18** 0.125	1 1/4-12	**CRSB-52**
3 1/2	**34.925** 1.3750	**88.90** 3.500	**50.80** 2.000	**69.85** 2.75	**17.48** 0.688	**34.93** 1.375	**6.35** 0.250	**6.35** 0.250	**3.18** 0.125	1 3/8-12	**CRSB-56**
4	**38.100** 1.5000	**101.60** 4.000	**57.15** 2.250	**88.90** 3.500	**19.05** 0.750	**38.10** 1.500	**6.35** 0.250	**6.35** 0.250	**3.18** 0.125	1 1/2-12	**CRSB-64**

§ UNS instead of UNF threads.

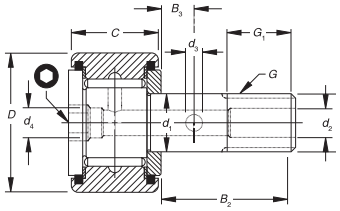
For hexagonal wrench sizes, see page C208.



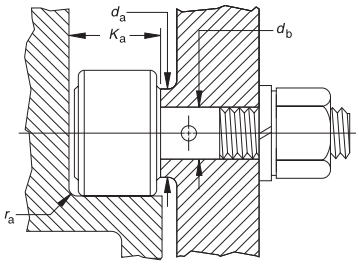
CRSB -8 to -10-1



CRSB -24 to -44



CRSB -12 to -22
CRSB -48 to -64



Note: Clamping torque is based on lubricated threads. If threads are dry, the torque values listed below may be doubled.

C

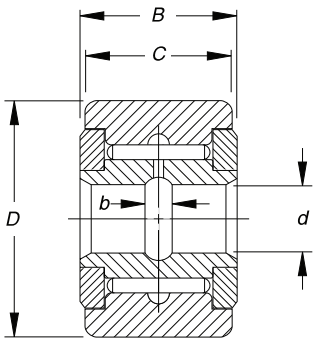
Load Rating kN/lbf.					Limiting Speed	Mounting Dimensions mm/in.				Clamping Torque	Wt. kg/lbs. Approx.
As a Bearing		As a Track Roller				Bore Dia. for Stud +.013 +0.0005 -0 -0.0000					
Dynamic	Static	Dynamic		Static	Grease		Max.	Min.	Min.	N*m/lbf. • in.	
C	C_0	C_w	$F_{r\ perm}$	$F_{0r\ perm}$	RPM	d_b	$r_{as\ max}$	K_a	d_a		
58.7 13200	**118.32** 26600	**47.2** 10600	**66.7** 15000	**113** 25500	**1400**	**25.400** 1.0000	**2.29** 0.090	**44.5** 1.75	**34.93** 1.375	**152.53** 1 350	**1.329** 2.930
74.7 16800	**178.82** 40200	**51.6** 11600	**64.0** 14400	**127** 28600	**990**	**31.750** 1.2500	**2.29** 0.090	**46.5** 1.83	**44.45** 1.750	**231.62** 2 050	**1.905** 4.200
74.7 16800	**178.82** 40200	**54.7** 12300	**80.1** 18000	**143** 32100	**990**	**31.750** 1.2500	**2.29** 0.090	**46.5** 1.83	**44.45** 1.750	**231.62** 2 050	**2.182** 4.810
110.8 24900	**226.86** 51000	**82.3** 18500	**89.8** 20200	**187** 42000	**950**	**34.925** 1.3750	**2.29** 0.090	**52.8** 2.08	**48.82** 1.922	**282.46** 2 500	**2.912** 6.420
138.3 31100	**321.16** 72200	**99.2** 22300	**121** 27200	**245** 55000	**780**	**38.100** 1.5000	**2.29** 0.090	**59.2** 2.33	**57.94** 2.281	**338.95** 3 000	**4.291** 9.460

YOKE TYPE TRACK ROLLERS
YCR, YCRS SERIES

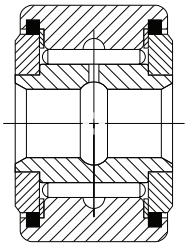
INCH SERIES

- Non-separable unit with outer ring, a full complement of needle rollers, inner ring, self-lubricating resin internal thrust washers, and two retaining washers securely fastened to the inner ring.
- Seals in counterbores of outer ring seal against the retaining washers; retain lubricant and exclude foreign matter (YCRS Series).
- Dimensions shown are for unplated finished unit.
- Tolerance limits for outside diameters of stud and outer ring refer to "single mean diameter" (see engineering section).
- A close fit between stud and hole required for mounting bore dimensions given below result in varying fit (0.0010" tight to 0.0005" loose).
- Machine element must be sufficicently rigid in area of mounting bolt holes to resist local crushing under the applied load and resist bending causing uneven loading of rollers.
- Unit should be clamped endwise between parallel faces (perpendicular to axis) to prevent retaining washers from coming off under load.
- If the unit cannot be clamped, yoke requires a close axial fit.

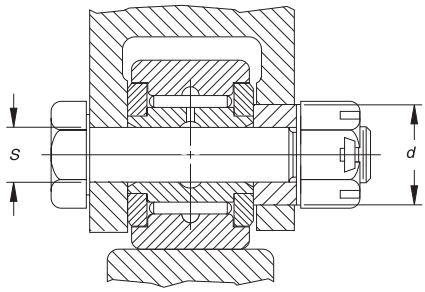
Outside Diameter	Dimensions mm/in.						Track Roller Designation	
	+0 +0.000 -0.03 -0.001	Max.	Min.	+.130 +0.0050 -0.250 -0.0100	+0 +0.000 -.13 -0.005	(nom.)	Without Seals	With Seals and Internal Thrust Washers
in.	D	d		B	C	b		
3/4	19.05 0.75	6.355 0.2502	6.34 0.2496	14.288 0.5625	12.7 0.5	3.18 0.125	YCR-12	YCRS-12
7/8	22.23 0.875	6.355 0.2502	6.34 0.2496	14.288 0.5625	12.7 0.5	3.18 0.125	YCR-14	YCRS-14
1	25.4 1	7.943 0.3127	7.927 0.3121	17.463 0.6875	15.88 0.625	3.18 0.125	YCR-16	YCRS-16
1 1/8	28.58 1.125	7.943 0.3127	7.927 0.3121	17.463 0.6875	15.88 0.625	3.18 0.125	YCR-18	YCRS-18
1 1/4	31.75 1.25	9.53 0.3752	9.515 0.3746	20.638 0.8125	19.05 0.75	4.78 0.188	YCR-20	YCRS-20
1 3/8	34.93 1.375	9.53 0.3752	9.515 0.3746	20.638 0.8125	19.05 0.75	4.78 0.188	YCR-22	YCRS-22
1 1/2	38.1 1.5	11.118 0.4377	11.102 0.4371	23.813 0.9375	22.23 0.875	3.18 0.125	YCR-24	YCRS-24
1 5/8	41.28 1.625	11.118 0.4377	11.102 0.4371	23.813 0.9375	22.23 0.875	3.18 0.125	YCR-26	YCRS-26
1 3/4	44.45 1.75	12.705 0.5002	12.69 0.4996	26.988 1.0625	25.4 1	3.18 0.125	YCR-28	YCRS-28
1 7/8	47.63 1.875	12.705 0.5002	12.69 0.4996	26.988 1.0625	25.4 1	3.18 0.125	YCR-30	YCRS-30
2	50.8 2	15.88 0.6252	15.865 0.6246	33.338 1.3125	31.75 1.25	3.18 0.125	YCR-32	YCRS-32
2 1/4	57.15 2.25	15.88 0.6252	15.865 0.6246	33.338 1.3125	31.75 1.25	3.18 0.125	YCR-36	YCRS-36
2 1/2	63.5 2.5	19.055 0.7502	19.04 0.7496	39.688 1.5625	38.1 1.5	3.68 0.145	YCR-40	YCRS-40
2 3/4	69.85 2.75	19.055 0.7502	19.04 0.7496	39.688 1.5625	38.1 1.5	3.68 0.145	YCR-44	YCRS-44
3	76.2 3	25.403 1.0001	25.387 0.9995	46.038 1.8125	44.45 1.75	3.68 0.145	YCR-48	YCRS-48
3 1/4	82.55 3.25	25.403 1.0001	25.387 0.9995	46.038 1.8125	44.45 1.75	3.68 0.145	YCR-52	YCRS-52
3 1/2	88.9 3.5	28.578 1.1251	28.562 1.1245	52.388 2.0625	50.8 2	3.68 0.145	YCR-56	YCRS-56
4	101.6 4	31.753 1.2501	31.737 1.2495	58.738 2.3125	57.15 2.25	3.68 0.145	YCR-64	YCRS-64



YCR



YCRS



C

Load Ratings kN/lbf.					Limiting Speed	Mounting Dimensions mm/in.				Clamping Diameter	Wt. Approx. kg/lbs.
As a Bearing		As a Track Roller				Shaft Bolt diameter Loose Fit (f7)		Tight Fit (h6)			
Dynamic	Static	Dynamic		Static	Grease	Max.	Min.	Max.	Min.		
C	C_0	C_w	$F_{r\ perm}$	$F_{0\ perm}$	RPM	S				d_a	
10.4 2330	15.2 3410	6.45 1450	2.88 647	6.89 1550	3900	6.342 0.2497	6.332 0.2493	6.363 0.2505	6.353 0.2501	0.06 0.5	0.027 0.06
10.4 2330	15.2 3410	7.56 1700	4.8 1080	11.5 2590	3900	6.342 0.2497	6.332 0.2493	6.363 0.2505	6.353 0.2501	0.06 0.5	0.036 0.08
13.3 2980	22.3 5010	8.94 2010	6.05 1360	14.5 3260	3000	7.93 0.3122	7.92 0.3118	7.95 0.313	7.94 0.3126	0.07 0.594	0.068 0.15
13.3 2980	22.3 5010	9.88 2220	8.67 1950	18.3 4120	3000	7.93 0.3122	7.92 0.3118	7.95 0.313	7.94 0.3126	0.07 0.594	0.077 0.17
21.5 4840	33.2 7460	15.1 3400	9.3 2090	24.3 5470	2600	9.517 0.3747	9.507 0.3743	9.538 0.3755	9.528 0.3751	0.08 0.75	0.109 0.24
21.5 4840	33.2 7460	16.4 3680	12.6 2840	28.6 6420	2600	9.517 0.3747	9.507 0.3743	9.538 0.3755	9.528 0.3751	0.08 0.75	0.136 0.3
28.4 6380	40.7 9160	20.1 4520	10.8 2440	26 5850	2300	11.105 0.4372	11.095 0.4368	11.125 0.438	11.115 0.4376	0.1 0.891	0.186 0.41
28.4 6380	40.7 9160	21.5 4840	14.1 3170	33.8 7610	2300	11.105 0.4372	11.095 0.4368	11.125 0.438	11.115 0.4376	0.1 0.891	0.227 0.5
35.8 8040	56.9 12800	25.9 5830	17.7 3980	42.5 9560	1900	12.692 0.4997	12.682 0.4993	12.718 0.5007	12.708 0.5003	0.12 1.047	0.29 0.64
35.8 8040	56.9 12800	27.4 6150	22 4940	49.4 11100	1900	12.692 0.4997	12.682 0.4993	12.718 0.5007	12.708 0.5003	0.12 1.047	0.363 0.8
43.5 9770	76.1 17100	31.8 7160	26 5850	60.5 13600	1700	15.867 0.6247	15.857 0.6243	15.893 0.6257	15.883 0.6253	0.14 1.203	0.476 1.05
43.5 9770	76.1 17100	34.6 7770	36.7 8250	71.2 16000	1700	15.867 0.6247	15.857 0.6243	15.893 0.6257	15.883 0.6253	0.14 1.203	0.599 1.32
58.7 13200	118 26600	44.5 10000	51.6 11600	100 22700	1400	19.042 0.7497	19.032 0.7493	19.068 0.7507	19.058 0.7503	0.16 1.375	0.816 1.8
58.7 13200	118 26600	47.2 10600	66.7 15000	113 25500	1400	19.042 0.7497	19.032 0.7493	19.068 0.7507	19.058 0.7503	0.16 1.375	1.021 2.25
74.7 16800	179 40200	51.6 11600	64 14400	127 28600	990	25.39 0.9996	25.377 0.9991	25.42 1.0008	25.408 1.0003	0.2 1.75	1.406 3.1
74.7 16800	179 40200	54.7 12300	80.1 18000	143 32100	990	25.39 0.9996	25.377 0.9991	25.42 1.0008	25.408 1.0003	0.2 1.75	1.642 3.62
111 24900	227 51000	82.3 18500	89.8 20200	187 42000	950	28.565 1.1246	28.552 1.1241	28.595 1.1258	28.583 1.1253	0.22 1.922	2.245 4.95
138 31100	321 72200	99.2 22300	121 27200	245 55000	780	31.74 1.2496	31.727 1.2491	31.77 1.2508	31.758 1.2503	0.26 2.281	3.198 7.05

NOTES