NOTES

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.

- **Catalogue range:** Stud-Type: 10 mm – 130 mm (0.3937 in – 5.1180 in) O.D.
  Yoke-Type: 10 mm – 300 mm (0.3937 in – 11.816 in) O.D.
- **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 re-lubrication.

Caged Yoke-Type Track Rollers – Metric Nominal Dimensions

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

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

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

Prefix
- **NA22** track roller, yoke-type, profiled outer diameter, with inner ring, sealed
- **RNA22** track roller, yoke-type, profiled outer diameter, without inner ring, sealed
- **RSTO** track roller, yoke-type, profiled outer diameter, without inner ring, without washers
- **STO** track roller, yoke-type, profiled outer diameter, with inner ring, without washers
- **NATR** track roller, yoke-type, profiled outer diameter, with inner ring, with washers

Suffix
- **TN** molded cage of reinforced, engineered polymer
- **DZ** cylindrical outer 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 outer diameter
- **DZ.TN** cylindrical outer diameter; molded cage of reinforced, engineered polymer
- **.2RS.DZ** lip contact seal on each side of bearing; cylindrical outer diameter

STO **25** **DZ**

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

Caged Stud-Type Track Rollers – Metric Nominal Dimensions

Prefix Modification
E eccentric stud

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

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

Prefix
KR track roller, stud-type with cage, profiled outer diameter

Outer Diameter
22 = 22 mm

Full Complement Yoke-Type Track Rollers – Metric Nominal Dimensions

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

B convex outer ring to maximum slope of 1.5%. Tolerance h9 on dim.D
L cylindrical outer ring. Tolerance h7 on dim. D

(see tables for dimensions on page B-5-44)

RNA **L** **110** **12** **B6**

B6 convex outer ring to maximum slope of 0.15%. Tolerance h9 on dim. D

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

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

Bore Diameter
6 = 6 mm
45 = 45 mm

Outer Diameter
19 = 19 mm
100 = 100 mm

FG **L** **6** **19** **EEM**

Prefix Modification
L cylindrical outer diameter

Full Complement Stud-Type Track Rollers – Metric Nominal Dimensions

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

Outer Diameter
16 = 16 mm
19 = 19 mm
62 = 62 mm

KRV **16** **.DZ**
NUKR **62** **.2SK**
GC **L** **19** **EEM**

Prefix Modification
- **L** cylindrical outer diameter
- **R** eccentric collar (GC, GCU styles only)
- **E** eccentric stud (NUKR style only)

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

Track Rollers

STUD-TYPE AND YOKE-TYPE TRACK ROLLERS METRIC SERIES — *Page*

Introduction B-5-6

STUD-TYPE METRIC SERIES

Needle Roller and Cage Assemblies (KR Series) B-5-16

Needle Roller and Cage Assemblies, Sealed (KR…2S Series) B-5-18

Full Complement with Needle Rollers (KRV Series) or Cylindrical Rollers (NUKR Series) B-5-20

Full Complement, Small Series, Unsealed (GC Series) B-5-22

Full Complement, Standard Series, with or without Seals (GC Series) B-5-24

Full Complement, with Metal Seals (GCU…MM Series) B-5-26

Full Complement, Eccentric (GCR Series) B-5-28

Full Complement, Eccentric, with Metal Seals (GCUR...MM Series) B-5-30

YOKE-TYPE METRIC SERIES

Caged, without Inner Ring, No End Washers (RSTO Series) B-5-32

Caged, with Inner Ring, No End Washers (STO Series) B-5-33

Caged, without Inner Ring, No End Washers, Sealed (RNA22 Series) B-5-34

Caged, with Inner Ring, No End Washers, Sealed (NA22 Series) B-5-35

Caged, with Inner Ring, with End Washers (NATR, STO...ZZ Series) B-5-36

Full Complement, with Inner Ring, with End Washers, Cylindrical Rollers (NUTR Series) B-5-37

Page

Full Complement, Non-Separable, Small Series, Unsealed (FP Series) B-5-38

Full Complement, Non-Separable, Sealed or Unsealed (FG Series) B-5-39

Full Complement, Non-Separable, Light Series, with Metal Seals (FGU…MM Series) B-5-41

Full Complement, Non-Separable, Heavy Series, with Metal Seals (FGU…MM Series) B-5-42

Full Complement, without Inner Ring, Unsealed (RNA…B6, RNAB, RNAL Series) B-5-44

Separate Inner Rings (BIC Series) B-5-44

STUD-TYPE AND YOKE-TYPE TRACK ROLLERS

METRIC SERIES

JTEKT 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 outer diameters of the outer rings are either crowned or cylindrical. Crowned 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 on page B-5-7 and page B-5-8.

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.

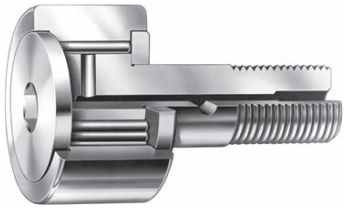


Fig. B5-1. Stud-type track rollers

Fig. B5-2. Yoke-type track rollers

Suffixes – Stud-Type, Metric Series (except GC types)

.2RS	two seals
DZ	cylindrical outer diameter
DZ.2RS	cylindrical outer diameter • two seals
SK	hexagonal socket in flange end
2SK	hexagonal socket in both flange and stud ends

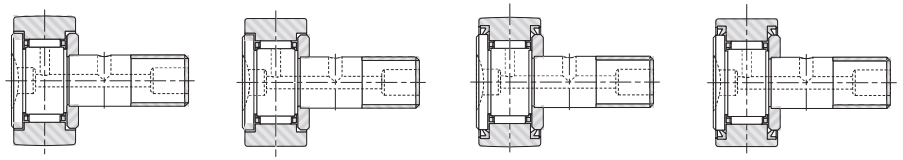
Suffixes – Yoke-Type, Metric Series (except FP or FG types)

DZ.TN	cylindrical outer diameter • molded cage of reinforced engineered polymer
TN	molded cage of reinforced engineered polymer
DZ	cylindrical outer diameter
ZZ	two end washers for the outer ring
ZZ.DZ	two end washers for the outer ring • cylindrical outer diameter
.2RS	two seals
.2RS.DZ	two seals • cylindrical outer diameter

Suffixes – Yoke-Type (FP, FG) and Stud-Type (GC)

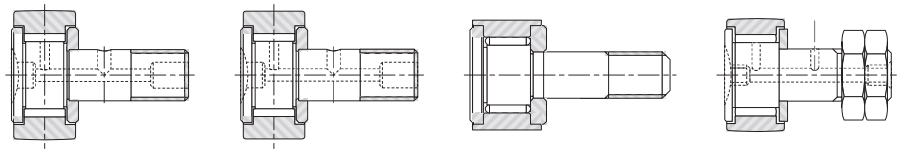
EE	polymer shields
EEM	metal shields
MM	metal shields

STUD-TYPE METRIC SERIES TRACK ROLLER TYPES

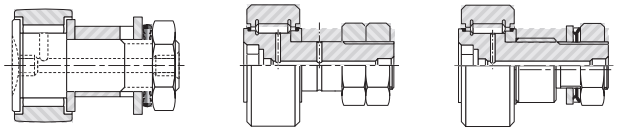


KR KR.DZ KR.2RS KR.DZ.2RS

Fig. B5-3. Stud-type track rollers, caged needle rollers

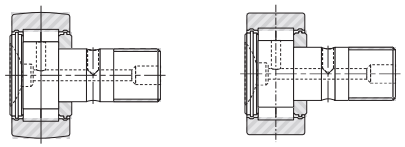


KRV KRV.DZ GC10-15/GCL10-15 GC16-90/GCL16-90



GCR/GCRL GCU/GCUL GCUR/GCURL

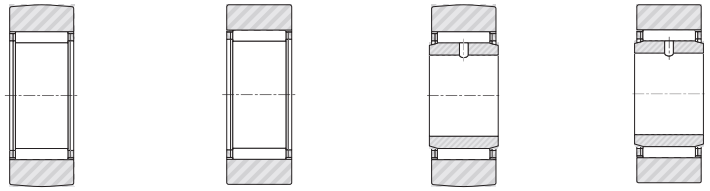
Fig. B5-4. Stud-type track rollers, full complement needle rollers



NUKR NUKR.DZ

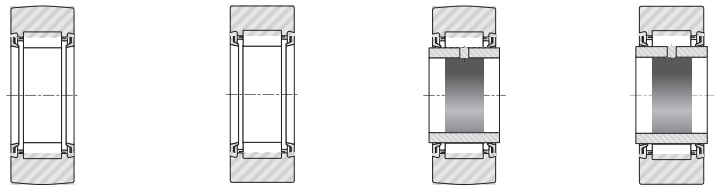
Fig. B5-5. Stud-type track rollers, full complement cylindrical rollers

TYPES OF METRIC SERIES YOKE-TYPE TRACK ROLLERS



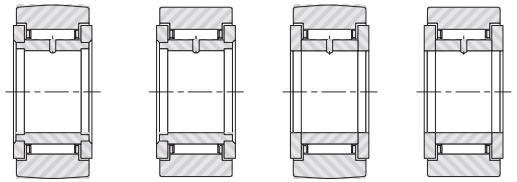
RSTO RSTO.DZ STO STO.DZ

Fig. B5-6. Yoke-type track rollers without end washers



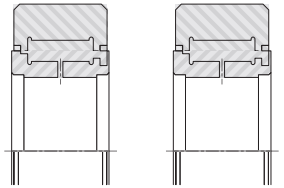
RNA22.2RS RNA22.2RS.DZ NA22.2RS NA22.2RS.DZ

Fig. B5-7. Sealed yoke-type track rollers without end washers



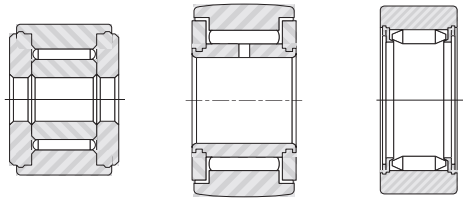
NATR NATR.DZ STO.ZZ STO.ZZ.DZ

Fig. B5-8. Yoke-type track rollers with end washers



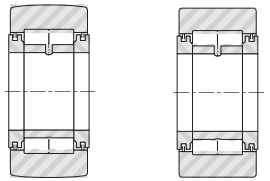
FGU/FGUL Light FGU/FGUL Heavy

Fig. B5-9. Yoke-type track rollers with metal seals, full complement of cylindrical rollers



FP/FPL FG/FGL RNA1100

Fig. B5-10. Yoke-type track rollers with end washers, full complement of needle rollers



NUTR NUTR.DZ

Fig. B5-11. Yoke-type track rollers with end washers, full complement of cylindrical rollers

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, radial needle roller and cage 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 (-25° F and 225° F).

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, beginning on page B-5-24. Other metric series hexagonal socket sizes are listed in Table B5-1.

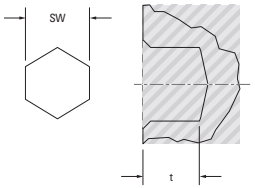


Fig. B5-12. Hexagonal socket – metric series.

Table B5-1. Hexagonal socket wrench sizes

Stud-type track roller O.D.			
>	≤	SW	t
mm in	mm in	mm in	mm in
- -	16.000 0.6299	3.000 0.1181	2.500 0.0984
19.000 0.7480	26.000 1.0236	4.000 0.1575	2.500 0.0984
30.000 1.1811	35.000 1.3779	6.000 0.2362	4.000 0.1575
40.000 1.5748	52.000 2.0472	8.000 0.3150	5.000 0.1968
62.000 2.4409	72.000 2.8346	12.000 0.4724	7.000 0.2756
80.000 3.1496	90.000 3.5433	17.000 0.6693	10.000 0.3937

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 – 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 B5-2 on page B-5-9 and Table B5-3 on page B-5-10.

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 outer 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 exercised.

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.

Fig. B5-13. Eccentric bushing dimensions – metric series (except GCR, GCUR series)

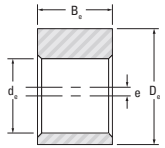


Table B5-2. Eccentric bushing dimensions – metric series (except GCR, GCUR series)

Stud-type track roller O.D.		d_e	D_e	B_e	e
>	≤	Eccentric bushing dimensions			
mm in	mm in	mm in	mm in	mm in	mm in
19.000 07480	19.000 0.7480	8.000 0.3150	11.000 0.4331	9.000 0.3543	0.500 0.0197
22.000 0.8661	26.000 1.10236	10.000 0.3937	13.000 0.5118	10.000 0.3937	0.500 0.0197
30.000 1.1811	32.000 1.2598	12.000 0.4724	15.000 0.5905	11.000 0.4331	0.500 0.0197
35.000 1.3779	35.000 1.3779	16.000 0.6299	20.000 0.7874	14.000 0.5512	1.000 0.0394
40.000 1.5748	40.000 1.5748	18.000 0.7087	22.000 0.8661	16.000 0.6299	1.000 0.0394
47.000 1.8504	52.000 2.0472	20.000 0.7874	24.000 0.9449	18.000 0.7087	1.000 0.0394
62.000 2.4409	72.000 2.8346	24.000 0.9449	28.000 1.1024	22.000 0.8661	1.000 0.0394
80.000 3.1496	90.000 3.5433	30.000 1.1811	35.000 1.3779	29.000 1.1417	1.500 0.0591

Table B5-3. Eccentric bushing dimensions metric series GCR and GCUR

Stud-type track roller O.D.		d_e	D_e	B_e	e
Over	Incl.	Eccentric bushing dimensions			
mm in	mm in	mm in	mm in	mm in	mm in
16.000 0.6299	**16.000** 0.6299	**6.000** 0.2362	**9.000** 0.3543	**7.500** 0.2953	**0.500** 0.0197
16.000 0.6299	**19.000** 0.7480	**8.000** 0.3149	**11.000** 0.4330	**7.500** 0.2953	**0.500** 0.0197
19.000 07480	**28.000** 1.1024	**10.000** 0.3937	**14.000** 0.5512	**10.500** 0.4134	**1.000** 0.0394
28.000 1.1024	**32.000** 1.2598	**12.000** 0.4724	**16.000** 0.6299	**11.500** 0.4528	**1.000** 0.0394
32.000 1.2598	**35.000** 1.3779	**16.000** 0.6299	**21.000** 0.8268	**15.100** 0.5945	**1.500** 0.0591
35.000 1.3779	**40.000** 1.5748	**18.000** 0.7087	**24.000** 0.9449	**17.100** 0.6732	**1.500** 0.0591
40.000 1.5748	**52.000** 2.0472	**20.000** 0.7874	**27.000** 1.0630	**19.100** 0.7520	**2.000** 0.0787
52.000 2.0472	**72.000** 2.8346	**24.000** 0.9449	**36.000** 1.4173	**24.100** 0.9488	**3.000** 0.1181
72.000 2.8346	**90.000** 3.5433	**30.000** 1.1811	**42.000** 1.6535	**30.700** 1.2087	**3.000** 0.1181
90.000 3.5433	**110.000** 4.3307	**36.000** 1.4173	**48.000** 1.8898	**36.500** 1.4370	**3.000** 0.1181
110.000 4.3307	- -	**42.000** 1.6535	**54.000** 2.1260	**43.500** 1.7126	**3.000** 0.1181

METRIC SERIES YOKE-TYPE TRACK ROLLERS WITHOUT END WASHERS

These yoke-type track rollers are available with a profiled or a cylindrical outer 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 radial needle roller and cage assemblies used with these yoke-type track rollers.

YOKE-TYPE TRACK ROLLERS – SERIES RSTO AND 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 AND NA22.2RS

These yoke-type track rollers have the same bore diameter and outer 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 (-25° F and 225° F). Care should be exercised when mounting track rollers without inner rings onto inner raceways, to avoid damage to the seals.

METRIC SERIES YOKE-TYPE TRACK ROLLERS WITH END WASHERS

These yoke-type track rollers are available with a crowned or a cylindrical outer diameter to 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 AND 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 re-lubrication 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 crowned 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 re-lubrication 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 outer diameter of 35.000 mm (1.3780 in). NUTR yoke-type track rollers are well-suited to carry high loads and designs with a thicker outer ring and particularly suitable for high shock loads. Designs with thicker outer rings have a larger outer 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 crowned or cylindrical outer rings. Both employ a full complement of needle rollers and require re-lubrication 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 designs are available in crowned or cylindrical outer rings. All FGU series use a full complement of cylindrical rollers between the inner and outer rings and require re-lubrication via a pathway through the shaft. The FGU heavy series uses a thicker outer ring section and is 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 uses 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 uses 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 outer diameter, correspond to tolerances specified in ISO 492 Radial bearings tolerances. The outer ring tolerances given in Table B5-4 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 outer diameter are the exception – their outer diameter tolerance 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 B5-5. The inner ring tolerances, given in Table B5-6 on page B-5-12, apply to inner rings used in metric series caged roller, NUKR Series yoke-type track rollers.

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.

Table B5-5. Tolerances for stud diameter and stud length – metric series

d_1		Δd_{1S}		B_2	ΔB_2	
Stud diameters				Stud lengths		
>	≤	Max.	Min.		Max.	Min.
mm		µm		mm		
3	**6**	**0**	**-12**	all lengths	**0**	**-1**
6	**10**	**0**	**-15**			
10	**18**	**0**	**-18**			
18	**30**	**0**	**-21**			
30	**50**	**0**	**-25**			
50	**80**	**0**	**-30**			
80	**100**	**0**	**-35**			

Table B5-4. Outer ring – metric series (caged roller and NUKR, NUTR types)

D		Δ_{Dmp}				Δ_{Cs}		K_{ea}
		Cylindrical		Crowned				
>	≤	Max.	Min.	Max.	Min.	Max.	Min.	Max.
mm in	mm in	mm in	mm in	mm in	mm in	mm in	mm in	mm in
10.000 0.3937	**18.000** 0.7087	**0.000** 0.0000	**-0.008** -0.0003	**0.000** 0.0000	**-0.050** -0.0020	**0.000** 0.0000	**-0.120** -0.0047	**0.015** 0.0006
18.000 0.7087	**30.000** 1.1811	**0.000** 0.0000	**-0.009** -0.00035	**0.000** 0.0000	**-0.050** -0.0020	**0.000** 0.0000	**-0.120** -0.0047	**0.015** 0.0006
30.000 1.1811	**50.000** 1.9685	**0.000** 0.0000	**-0.011** -0.0004	**0.000** 0.0000	**-0.050** -0.0020	**0.000** 0.0000	**-0.120** -0.0047	**0.020** 0.0008
50.000 1.9685	**80.000** 3.1496	**0.000** 0.0000	**-0.013** -0.0005	**0.000** 0.0000	**-0.050** -0.0020	**0.000** 0.0000	**-0.120** -0.0047	**0.025** 0.0010
80.000 3.1496	**120.000** 4.7244	**0.000** 0.0000	**-0.015** -0.0006	**0.000** 0.0000	**-0.050** -0.0020	**0.000** 0.0000	**-0.120** -0.0047	**0.035** 0.0014
120.000 4.7244	**150.000** 5.9055	**0.000** 0.0000	**-0.018** -0.0007	**0.000** 0.0000	**-0.050** -0.0020	**0.000** 0.0000	**-0.120** -0.0047	**0.040** 0.0016
150.000 5.9055	**180.000** 7.0866	**0.000** 0.0000	**-0.025** -0.0010	**0.000** 0.0000	**-0.050** -0.0020	**0.000** 0.0000	**-0.150** -0.0059	**0.045** 0.0018
180.000 7.0866	**240.000** 9.4488	**0.000** 0.0000	**-0.030** -0.0012	**0.000** 0.0000	**-0.050** -0.0020	**0.000** 0.0000	**-0.200** -0.0079	**0.050** 0.0020

Table B5-6. Inner ring – metric series (caged roller types)

d		Δ_{dmp}		Δ_{Bs}	
>	≤	Max.	Min.	Max.	Min.
mm in	mm in	mm in	mm in	mm in	mm in
2.500 0.0984	**18.000** 0.7087	**0.000** 0.0000	**-0.008** -0.0003	**0.000** 0.0000	**-0.180** -0.0071
18.000 0.7087	**30.000** 1.1811	**0.000** 0.0000	**0.010** -0.0004	**0.000** 0.0000	**-0.210** -0.0083
30.000 1.1811	**50.000** 1.9685	**0.000** 0.0000	**-0.012** -0.0005	**0.000** 0.0000	**-0.250** -0.0098
50.000 1.9685	**80.000** 3.1496	**0.000** 0.0000	**-0.015** -0.0006	**0.000** 0.0000	**-0.300** -0.0118
80.000 3.1496	**120.000** 4.7244	**0.000** 0.0000	**-0.020** -0.0008	**0.000** 0.0000	**-0.350** -0.0138

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 bearing tables.

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. 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. Hexagonal nuts are supplied with all metric series stud-type track rollers.

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 – including 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 to assure 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.

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 following 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.

Example:

Given: A track roller application for a linear slide in which each roller supports a 4.45 kN (1000 lbf.) load and travels at 609.600 mm (24.0000 in) per second.

Select a track roller and calculate the L_{10} life in hours assuming continuous operation at the given speed. Assume conditions of alignment, lubrication and temperature are ideal.

Solution: Calculate the minimum C_w required.

The applied radial load must not be greater than $C_w/2$ based on ideal operating conditions.

Therefore, $Fr < C_w/2$ or $C_w > 8.9$ kN (2000 lbf.)

For a KRV30, $C_w = 9.85$ kN (2210 lbf.)

To calculate the speed in min^{-1}, V = Pi · D · n

Where:

V = linear velocity
Pi = 3.14
D = outside diameter of the track roller assembly

Therefore, 609.600 mm (24.000 in)/sec. = 3.14 · 30.000 mm · n

Making appropriate substitutions and solving for n yields a value of approximately 388 min^{-1}.

The standard catalog life equation of a roller bearing is:

$$L_{10} = (C/P)10/3 \cdot (16667/n)$$

Where:

L_{10} = calculated fatigue life in hours
C = the dynamic radial load ratings based on 1000000 revolutions
P = the dynamic equivalent radial load
n = speed in min^{-1}

Substituting C_w for C and solving:

$$L_{10} = (9.85/4.45)\ 10/3 \cdot (16667/388) = 604 \text{ hours}$$

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. Exceeding $F_{0r\ perm}$ may cause permanent damage to the track roller. A damaged track roller could cause the equipment in which the track roller is installed to malfunction. The static factor f_s can be calculated using the following formula:

$$f_s \geq 0.7 \left(\frac{F_{0r\ perm}}{P_{0r}} \right)$$

Where:

$F_{0r\ perm}$ = Maximum permissible static radial load
P_{0r} = Equivalent static load (F_{0r} for yoke-type track rollers)
F_{0r} = Static radial load
f_s = Static factor whose values should not be smaller than those suggested in Table B5-7.

Table B5-7. 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	
	Max.	Min.
High shock-type loads Quiet running	2.5	1.5
Normal loading Normal quietness of running	1.5	1
Minor impact loads and rotary motion particularly quiet running not required	1	0.7

LUBRICATION OF STUD-TYPE TRACK ROLLERS

JTEKT 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 is often no need to re-lubricate the track roller. In other applications, periodic re-lubrication 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 re-lubrication through the flanged end of the stud. Metric series stud-type track rollers, with hexagonal sockets, can not be re-lubricated from the flanged end of the stud. Both types of metric series stud-type track rollers – with outer diameters larger than 22.000 mm (0.8661 in) (28.000 mm [1.1024 in] for all GC variations) – allow for re-lubrication through the threaded end of the stud. In addition, caged roller and NUKR Series stud-type track rollers – with 30.000 mm (1.8110 in) and larger outer diameters – allow for re-lubrication 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 B5-9. If the cross-drilled hole in the stud shank is not used, it will be covered when the track roller is properly installed.

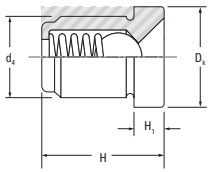


Fig. B5-14. Metric series grease fittings

Table B5-8. Metric series grease fittings, series VENN

Designation	d_4	D_k	H	H_1	Approx. wt.
	mm in	mm in	mm in	mm in	g lbs
VENN 4	4.000 0.1575	6.000 0.2362	6.000 0.2362	1.500 0.0591	0.4 0.0009
VENN 6	6.000 0.2362	8.000 0.3147	7.000 0.2756	2.000 0.0787	1.6 0.0035
VENN 8	8.000 0.3150	10.000 0.3937	12.000 0.4724	3.000 0.1181	4.7 0.0104

During installation of the track roller it is 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, parallel to the screwdriver slot (when applicable).

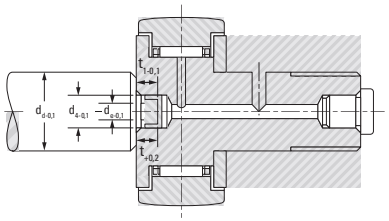


Fig. B5-15. Installation tool for metric series plug

Table B5-9. Installation tool for metric series plug

Stud-type track rollers O.D.		d_4	d_d	d_e	t	t_1
>	≤					
mm in	mm in	mm in	mm in	mm in	mm in	mm in
16.000 0.6299	26.000 1.0236	3.900 0.1535	10.000 0.3937	2.700 0.1063	3.700 0.1457	4.500 0.1772
30.000 1.1811	40.000 1.5748	5.900 0.2323	12.000 0.4724	4.700 0.1850	4.700 0.1850	7.000 0.2756
47.000 1.8504	90.000 3.5433	7.900 0.3110	15.000 0.5905	6.700 0.2638	6.700 0.2638	10.000 0.3937

LUBRICATION OF YOKE-TYPE TRACK ROLLERS

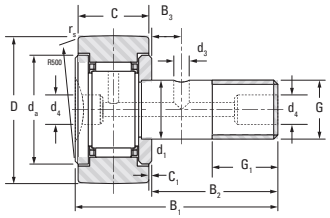
Yoke-type track rollers are produced with a lubricating hole in the inner ring so they can be re-lubricated through a cross-drilled hole in the supporting shaft or bolt. When mounting yoke-type track rollers, care should be taken that the lubrication hole is located in the unloaded raceway zone.

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 re-lubrication 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.

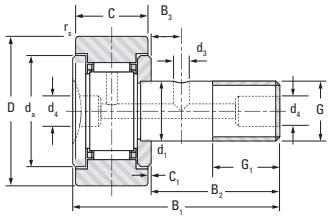
B

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

METRIC SERIES



KR



KR.DZ

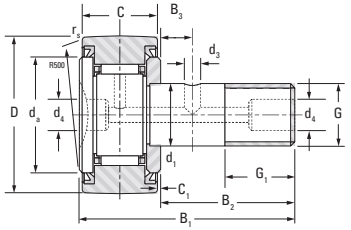
Outer Dia.	d_1 h7	D	C	$r_{s\,min.}$	B_1	B_2	B_3	G_1	d_4	d_3	Thread G	C_1	d_a
mm in	mm in	mm in	mm in	mm in	mm in	mm in	mm in	mm in	mm in	mm in		mm in	mm in
16 0.6299	**6** 0.2362	**16** 0.6299	**11** 0.433	**0.3** 0.012	**28.2** 1.110	**16** 0.630		**8** 0.315	**4** 0.157		M6x1	**0.6** 0.024	**11** 0.433
19 0.7480	**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	**13** 0.512
22 0.8661	**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	**15** 0.591
26 1.0236	**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	**15** 0.591
30 0.551	**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	**21** 0.827
32 0.551	**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	**21** 0.827

Crowned Designation	Cylindrical Designation	Load Ratings					Tightening Torque	Speed Rating Grease	Approx. Wt.
		As a Bearing		As a Track Roller					
		Dynamic	Static	Dynamic		Static			
		C	C_0	C_w	$F_{r\,perm}$	$F_{0r\,perm}$			
		kN lbf		kN lbf			N-m lb-in	min^{-1}	kg lbs
KR16	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
KR19	KR19.DZ	**4.18** 940	**4.65** 1050	**3.28** 740	**3.29** 740	**4.22** 950	**16** 142	13000	**0.031** 0.068
KR22	KR22.DZ	**5.35** 1200	**6.79** 1530	**3.94** 890	**4.04** 910	**5.45** 1230	**28** 248	10000	**0.046** 0.101
KR26	KR26.DZ	**5.35** 1200	**6.79** 1530	**4.55** 1020	**6.78** 1520	**7.24** 1630	**28** 248	10000	**0.059** 0.130
KR30	KR30.DZ	**7.89** 1770	**9.79** 2200	**6.32** 1420	**7.74** 1740	**9.31** 2090	**45** 398	8200	**0.087** 0.192
KR32	KR32.DZ	**7.89** 1770	**9.79** 2200	**6.65** 1490	**9.62** 2160	**10.3** 2320	**45** 398	8200	**0.095** 0.209

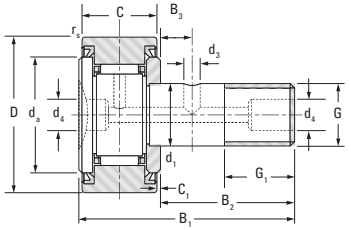
B

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

METRIC SERIES



KR.2RS



KR.DZ.2RS

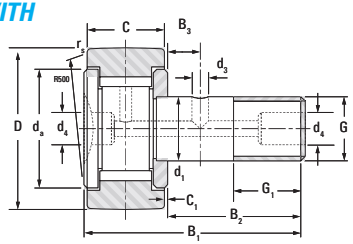
Outer Dia.	d_1 h7	D	C	$r_{s\ min.}$	B_1	B_2	B_3	G_1	d_4	d_3	Thread G	C_1	d_a
mm in	mm in	mm in	mm in	mm in	mm in	mm in	mm in	mm in	mm in	mm in		mm in	mm in
16 0.6299	**6** 0.2362	**16** 0.6299	**11** 0.433	**0.3** 0.012	**28.2** 1.110	**16** 0.630		**8** 0.315	**4** 0.157		M6x1	**0.6** 0.024	**11** 0.433
19 0.7480	**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	**13** 0.512
22 0.8661	**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	**15** 0.591
26 1.0236	**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	**15** 0.591
30 1.1811	**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	**21** 0.827
32 1.2598	**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	**21** 0.827

Crowned Designation	Cylindrical Designation	Load Ratings					Tightening Torque	Speed Rating Grease	Approx. Wt.
		As a Bearing		As a Track Roller					
		Dynamic	Static	Dynamic		Static			
		C	C_0	C_w	$F_{r\ perm}$	$F_{0r\ perm}$			
		kN lbf		kN lbf			N-m lb-in	min^{-1}	kg lbs
KR16.2RS	KR16.DZ.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
KR19.2RS	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
KR22.2RS	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
KR26.2RS	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
KR30.2RS	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
KR32.2RS	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

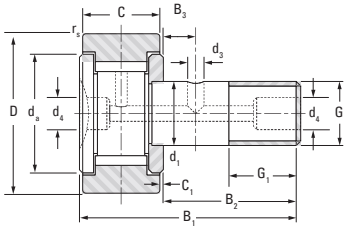
B

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

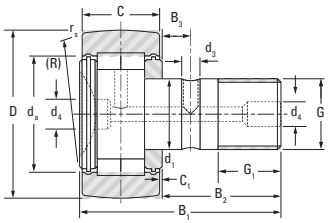
METRIC SERIES



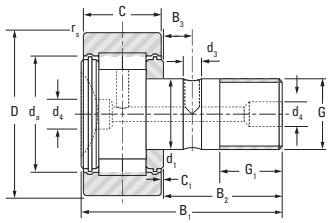
KRV



KRV.DZ



NUKR



NUKR.DZ

Outer Dia.	d_1 h7	D	C	$r_{s\,min.}$	B_1	B_2	B_3	G_1	d_4	d_3	Thread G	C_1	d_a
mm in	**mm** in	**mm** in	**mm** in	**mm** in	**mm** in	**mm** in	**mm** in	**mm** in	**mm** in	**mm** in		**mm** in	**mm** in
16 0.6299	**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	**11** 0.433
19 0.7480	**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	**13** 0.512
22 0.8661	**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	**15** 0.591
26 1.0236	**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	**15** 0.591
30 1.1811	**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	**21** 0.827
32 1.2598	**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	**21** 0.827
35 1.3780	**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	**25** 0.984
40 1.5748	**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	**27** 1.063
47 1.8504	**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	**33** 1.299
52 2.0472	**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	**37** 1.457
62 2.4409	**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	**45** 1.772
72 2.8346	**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	**51** 2.008
80 3.1496	**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	**52** 2.047
90 3.5433	**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	**52** 2.047

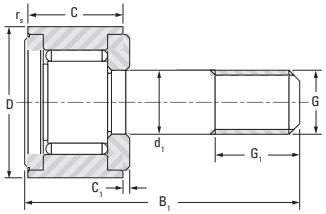
Crowned Designation	Cylindrical Designation	Load Ratings: As a Bearing, Dynamic C	As a Bearing, Static C_o	As a Track Roller, Dynamic C_w	As a Track Roller, Dynamic $F_{r\,perm}$	As a Track Roller, Static $F_{Or\,perm}$	Tightening Torque	Speed Rating Grease	Approx. Wt.
		kN lbf		**kN** lbf			**N-m** lb-in	min^{-1}	**kg** lbs
KRV16	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
KRV19	KRV19.DZ	**8.08** 1820	**11.0** 2470	**5.66** 1270	**4.13** 930	**7.43** 1670	**16** 142	4300	**0.031** 0.068
KRV22	KRV22.DZ	**9.45** 2120	**14.3** 3210	**6.32** 1420	**5.04** 1130	**9.07** 2040	**28** 248	3400	**0.046** 0.101
KRV26	KRV26.DZ	**9.45** 2120	**14.3** 3210	**7.30** 1640	**8.60** 1930	**12.7** 2860	**28** 248	3400	**0.059** 0.130
KRV30	KRV30.DZ	**13.4** 3010	**19.8** 4450	**9.85** 2210	**9.20** 2070	**15.7** 3530	**45** 398	2800	**0.087** 0.192
KRV32	KRV32.DZ	**13.4** 3010	**19.8** 4450	**10.4** 2340	**11.3** 2540	**17.4** 3910	**45** 398	2800	**0.098** 0.216
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
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
NUKR47.2SK		**41.4** 9310	**53.2** 12000	**28.1** 6320	**20.5** 4610	**32.7** 7350	**109** 965	4500	**0.380** 0.838
NUKR52.2SK		**45.8** 10300	**63.1** 14200	**29.6** 6650	**22.2** 4990	**35.4** 7960	**109** 965	3700	**0.461** 1.016
NUKR62.2SK		**62.7** 14100	**83.1** 18700	**40.9** 9190	**29.6** 6650	**47.2** 10600	**193** 1708	3200	**0.790** 1.742
NUKR72.2SK		**68.9** 15500	**97.8** 22000	**46.1** 10400	**39.6** 8900	**63.1** 14200	**193** 1708	2600	**1.040** 2.293
NUKR80.2SK		**95.4** 21400	**130** 29200	**69.7** 15700	**63.2** 14200	**101** 22700	**390** 3452	2900	**1.550** 3.417
NUKR90.2SK		**95.4** 21400	**130** 29200	**77.8** 17500	**97.8** 22000	**128** 28800	**390** 3452	2900	**2.020** 4.453

B

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

METRIC SERIES

GC: crowned outer ring
GCL: cylindrical outer ring



GC10-15/GCL10-15 Series

Outer Dia.	D	d_1	Thread G	C	C_1	$r_{s\,min.}$	B_1	G_1
mm in	**mm** in	**mm** in		**mm** in	**mm** in	**mm** in	**mm** in	**mm** in
10 0.3937	**10** 0.3937	**4** 0.1575	M4 x 0.7	**8** 0.315	**0.25** 0.010	**0.2** 0.008	**19.5** 0.768	**6** 0.236
11 0.4331	**11** 0.4331	**4** 0.1575	M4 x 0.7	**8** 0.315	**0.25** 0.010	**0.2** 0.008	**19.5** 0.768	**6** 0.236
12 0.4724	**12** 0.4724	**5** 0.1969	M5 x 0.8	**9** 0.354	**0.25** 0.010	**0.2** 0.008	**22.5** 0.886	**7** 0.276
13 0.5118	**13** 0.5118	**5** 0.1969	M5 x 0.8	**9** 0.354	**0.25** 0.010	**0.2** 0.008	**22.5** 0.886	**7** 0.276
14 0.5512	**14** 0.5512	**6** 0.2362	M6 x 1	**9.5** 0.374	**0.25** 0.010	**0.3** 0.012	**26** 1.024	**8** 0.315
15 0.5906	**15** 0.5906	**6** 0.2362	M6 x 1	**9.5** 0.374	**0.25** 0.010	**0.3** 0.012	**26** 1.024	**8** 0.315

Crowned Designation	Cylindrical Designation	Load Ratings: As a Bearing, Dynamic C	As a Bearing, Static C_0	As a Track Roller, Dynamic C_w	As a Track Roller, Dynamic $F_{r\,perm}$	As a Track Roller, Static $F_{0r\,perm}$	Tightening Torque	Speed Rating Grease	Approx. Wt.
		kN lbf		**kN** lbf			**N-m** lb-in	min^{-1}	**kg** lbs
GC 10	GCL 10	**2.80** 629	**3.09** 695	**1.92** 432	**1.01** 227	**1.82** 409	**0.9** 7.97	8500	**0.006** 0.014
GC 11	GCL 11	**2.8** 629	**3.09** 695	**2.12** 477	**1.43** 321	**2.58** 580	**0.9** 7.97	8500	**0.007** 0.016
GC 12	GCL 12	**3.74** 841	**4.74** 1070	**2.54** 571	**1.63** 366	**2.94** 661	**1.8** 15.93	6600	**0.011** 0.024
GC 13	GCL 13	**3.74** 841	**4.74** 1070	**2.16** 486	**2.75** 618	**3.89** 874	**1.8** 15.93	6600	**0.011** 0.024
GC 14	GCL 14	**4.05** 910	**5.44** 1220	**2.86** 643	**2.26** 508	**4.07** 915	**3.0** 26.55	5700	**0.016** 0.035
GC 15	GCL 15	**4.05** 910	**5.44** 1220	**3.04** 683	**2.83** 636	**4.65** 1050	**3.0** 26.55	5700	**0.018** 0.039

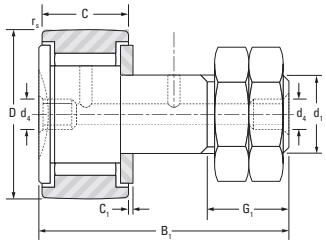
B

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

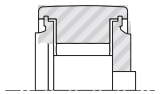
METRIC SERIES

GC: crowned outer ring
GCL: cylindrical outer ring

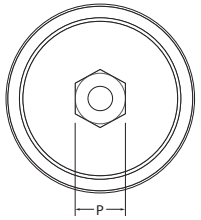
EE: with plastic seals
EEM: with metal seals



GC16-90/GCL16-90 Series



GC...EE, GC...EEM
GCL...EE, GCL...EEM



Hex Socket Roller End

Outer Dia.	D	d_1	Pitch	C	C_1	$r_{s\,min.}$	B_1	G_1	Crowned Designation	Cylindrical Designation
mm in	mm in	mm in	mm	mm in	mm in	mm in	mm in	mm in		
16 0.6299	**16** 0.6299	**6** 0.2362	**1.0**	**11** 0.433	**0.60** 0.024	**0.3** 0.012	**28.3** 1.114	**8** 0.315	GC 16	GCL 16
19 0.748	**19** 0.748	**8** 0.315	**1.25**	**11** 0.433	**0.60** 0.024	**0.3** 0.012	**32.3** 1.272	**10** 0.394	GC 19	GCL 19
22 0.8661	**22** 0.8661	**10** 0.3937	**1.25**	**12** 0.472	**0.60** 0.024	**0.3** 0.012	**36.3** 1.429	**12** 0.472	GC 22	GCL 22
24 0.9449	**24** 0.9449	**10** 0.3937	**1.25**	**12** 0.472	**0.60** 0.024	**0.3** 0.012	**36.3** 1.429	**12** 0.472	GC 24	GCL 24
26 1.0236	**26** 1.0236	**10** 0.3937	**1.25**	**12** 0.472	**0.60** 0.024	**0.3** 0.012	**36.3** 1.429	**12** 0.472	GC 26	GCL 26
28 1.1024	**28** 1.1024	**10** 0.3937	**1.25**	**12** 0.472	**0.60** 0.024	**0.3** 0.012	**36.3** 1.429	**12** 0.472	GC 28	GCL 28
30 1.1811	**30** 1.1811	**12** 0.4724	**1.5**	**14** 0.51	**0.60** 0.024	**0.6** 0.024	**40.3** 1.587	**13** 0.512	GC 30	GCL 30
32 1.2598	**32** 1.2598	**12** 0.4724	**1.5**	**14** 0.51	**0.60** 0.024	**0.6** 0.024	**40.3** 1.587	**13** 0.512	GC 32	GCL 32
35 1.378	**35** 1.378	**16** 0.6299	**1.5**	**18** 0.709	**0.80** 0.031	**0.6** 0.024	**52.3** 2.059	**17** 0.669	GC 35	GCL 35
47 1.8504	**47** 1.8504	**20** 0.7874	**1.5**	**24** 0.45	**0.80** 0.031	**1** 0.039	**66.3** 2.61	**21** 0.827	GC 47	GCL 47
52 2.0472	**52** 2.0472	**20** 0.7874	**1.5**	**24** 0.45	**0.80** 0.031	**1** 0.039	**66.3** 2.61	**21** 0.827	GC 52	GCL 52
62 2.4409	**62** 2.4409	**24** 0.9449	**1.5**	**29** 1.142	**0.80** 0.031	**1** 0.039	**80.3** 3.161	**25** 0.984	GC 62	GCL 62
72 2.8346	**72** 2.8346	**24** 0.9449	**1.5**	**29** 1.142	**0.80** 0.031	**1** 0.039	**80.3** 3.161	**25** 0.984	GC 72	GCL 72
80 3.1496	**80** 3.1496	**30** 1.1811	**1.5**	**35** 1.378	**1.00** 0.039	**1** 0.039	**100.3** 3.949	**32** 1.26	GC 80	GCL 80
85 3.3465	**85** 3.3465	**30** 1.1811	**1.5**	**35** 1.378	**1.00** 0.039	**1** 0.039	**100.3** 3.949	**32** 1.26	GC 85	GCL 85
90 3.5433	**90** 3.5433	**30** 1.1811	**1.5**	**35** 1.378	**1.00** 0.039	**1** 0.039	**100.3** 3.949	**32** 1.26	GC 90	GCL 90

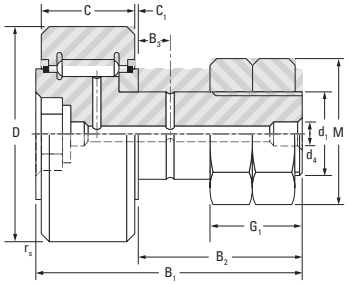
Load Ratings					Tightening Torque	Speed Rating Grease	Wrench	d_4	Approx. Wt.
As a Bearing		As a Track Roller							
Dynamic	Static	Dynamic		Static					
C	C_0	C_w	$F_{r\,perm}$	$F_{0r\,perm}$			P		
kN lbf		kN lbf			N-m lb-in	min^{-1}	mm	mm in	kg lbs
5.66 1270	**6.51** 1460	**4.19** 942	**2.79** 627	**5.02** 1130	**3** 26.6	5700	—	**4** 0.157	**0.021** 0.046
6.44 1450	**8.15** 1830	**4.65** 1050	**3** 785	**6.28** 1410	**8** 70.8	4400	—	**4** 0.157	**0.034** 0.075
7.3 1640	**10.2** 2290	**5.05** 1140	**4.07** 915	**7.33** 1650	**20** 177	3500	—	**4** 0.157	**0.058** 0.128
7.3 1640	**10.2** 2290	**5.45** 1230	**5.42** 1220	**8.63** 1940	**20** 177	3500	—	**4** 0.157	**0.067** 0.148
9.92 2230	**12.9** 2900	**7.09** 1590	**5.43** 1220	**9.77** 2200	**20** 177	3200	—	**4** 0.157	**0.072** 0.159
9.92 2230	**12.9** 2900	**7.57** 1700	**6.95** 1560	**11.4** 2560	**20** 177	3200	—	**4** 0.157	**0.08** 0.176
15.5 3480	**20.4** 4590	**11.2** 2520	**8.48** 1910	**15.3** 3440	**26** 230	2900	**8**	**4** 0.157	**0.115** 0.254
15.5 3480	**20.4** 4590	**11.8** 2650	**10.6** 2380	**18.1** 4070	**26** 230	2900	**8**	**4** 0.157	**0.12** 0.265
23.6 5310	**33.1** 7440	**15.7** 3530	**10.8** 2430	**19.4** 4360	**64** 566	2200	**10**	**6** 0.236	**0.208** 0.459
36.5 8210	**65.5** 14700	**22.5** 5060	**20.2** 4540	**36.4** 8180	**120** 1060	1400	**14**	**6** 0.236	**0.477** 1.052
36.5 8210	**65.5** 14700	**25.2** 5670	**28** 6290	**47.5** 10700	**120** 1060	1400	**14**	**6** 0.236	**0.542** 1.195
43.3 9730	**85.6** 19200	**30.5** 6860	**42.9** 9640	**64.7** 14500	**220** 1950	1200	**12**	**6** 0.236	**0.944** 2.081
43.3 9730	**85.6** 19200	**33.9** 7620	**65.8** 14800	**79.5** 17900	**220** 1950	1200	**12**	**6** 0.236	**1.165** 2.568
65.1 14600	**144** 32400	**42.7** 9600	**62.9** 14100	**95.3** 21400	**450** 3980	870	**14**	**8** 0.315	**1.915** 4.222
65.1 14600	**144** 32400	**45.1** 10100	**75.3** 16900	**106** 23800	**450** 3980	870	**14**	**8** 0.315	**2.096** 4.621
65.1 14600	**144** 32400	**47.1** 10600	**88.8** 20000	**115** 25900	**450** 3980	870	**14**	**8** 0.315	**2.287** 5.042

B

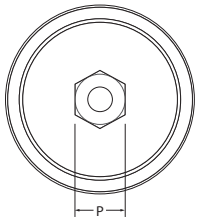
FULL COMPLEMENT, WITH METAL SEALS, STUD-TYPE (GCU...MM SERIES)

METRIC SERIES

GCU: crowned outer ring
GCUL: cylindrical outer ring



GCU, GCUL



Hex Socket Roller End

Outer Dia.	D	d_1	C	C_1	B_1	G_1	$r_{s\ min.}$	Crowned Designation	Cylindrical Designation
mm in	mm in	mm in	mm in	mm in	mm in	mm in	mm in		
35 1.3780	**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 1.5748	**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 1.8504	**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 2.0472	**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 2.4409	**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	GCUL 62 MM
72 2.8346	**72** 2.8346	**24** 0.9449	**29** 1.142	**0.85** 0.033	**80.3** 3.161	**25** 0.984	**1.1** 0.043	GCU 72 MM	GCUL 72 MM
80 3.1496	**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	GCUL 80 MM
90 3.5433	**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	GCUL 90 MM
100 3.9370	**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	GCUL 100 MM
110 4.3307	**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 4.7244	**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	GCUL 120 MM
130 5.1181	**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	GCUL 130 MM

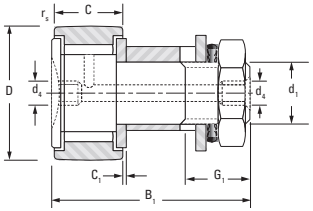
Load Ratings					Tightening Torque	Speed Rating Grease	Wrench	B_2	B_3	d_4	M	Approx. Wt.
As a Bearing		As a Track Roller										
Dynamic	Static	Dynamic		Static								
C	C_0	C_w	$F_{r\ perm}$	$F_{0r\ perm}$			P					
kN lbf		kN lbf			N-m lb-in	min^{-1}	mm	mm in	mm in	mm in	mm in	kg lbs
26.4 5930	**32.4** 7280	**15.4** 3460	**7.25** 1630	**13.1** 2940	**64** 566	2200	**10**	**32.8** 1.291	**8** 0.315	**6** 0.236	**26.0** 1.024	**0.200** 0.441
26.4 5930	**32.4** 7280	**18.7** 4200	**12.1** 2720	**21.8** 4900	**90** 797	2200	**12**	**36.8** 1.449	**8** 0.315	**6** 0.236	**28.6** 1.126	**0.289** 0.637
43.8 9850	**57.9** 13000	**26.7** 6000	**14.3** 3210	**25.8** 5800	**120** 1060	1600	**14**	**40.8** 1.606	**9** 0.354	**6** 0.236	**33.6** 1.323	**0.450** 0.992
43.8 9850	**57.9** 13000	**30.6** 6880	**21.2** 4770	**38.2** 8590	**120** 1060	1600	**14**	**40.8** 1.606	**9** 0.354	**6** 0.236	**33.6** 1.323	**0.520** 1.146
63.7 14300	**87.4** 19600	**44.1** 9910	**30.9** 6950	**55.6** 12500	**220** 1950	1400	**12**	**49.8** 1.961	**11** 0.433	**6** 0.236	**38.9** 1.531	**0.910** 2.006
63.7 14300	**87.4** 19600	**50.8** 11400	**52.7** 11800	**84.1** 18900	**220** 1950	1400	**12**	**49.8** 1.961	**11** 0.433	**6** 0.236	**38.9** 1.531	**1.140** 2.513
100 22500	**140** 31500	**66.8** 15000	**43.8** 9850	**78.8** 17700	**450** 3980	1000	**14**	**63.3** 2.492	**15** 0.591	**8** 0.315	**51.8** 2.039	**1.870** 4.123
100 22500	**140** 31500	**75.8** 17000	**68.1** 15300	**122** 27400	**450** 3980	1000	**14**	**63.3** 2.492	**15** 0.591	**8** 0.315	**51.8** 2.039	**2.230** 4.914
115 25900	**175** 39300	**82.1** 18500	**76.6** 17200	**135** 30300	**740** 6550	840	**17**	**75.3** 2.965	**20** 0.787	**8** 0.315	**61.0** 2.402	**3.290** 7.253
115 25900	**175** 39300	**89.7** 20200	**107** 24100	**161** 36200	**740** 6550	840	**17**	**75.3** 2.965	**20** 0.787	**8** 0.315	**61.0** 2.402	**3.800** 8.378
167 37500	**240** 54000	**124** 27900	**107** 24100	**193** 43400	**1 200** 10620	740	**19**	**88.3** 3.476	**24** 0.945	**8** 0.315	**71.0** 2.795	**5.422** 11.953
167 37500	**240** 54000	**133** 30000	**142** 31900	**228** 51300	**1 200** 10620	740	**19**	**88.3** 3.476	**24** 0.945	**8** 0.315	**71.0** 2.795	**5.780** 12.743

B

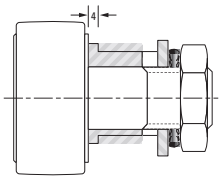
FULL COMPLEMENT, ECCENTRIC, STUD-TYPE (GCR SERIES)

METRIC SERIES

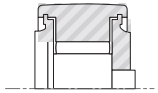
GCR: crowned outer ring
GCRL: cylindrical outer ring
EE: polymer shields
EEM: metal shields



GCR 16-52



GCR 62-90



GCR..EE, GCR..EEM
GCRL..EE, GCRL..EEM

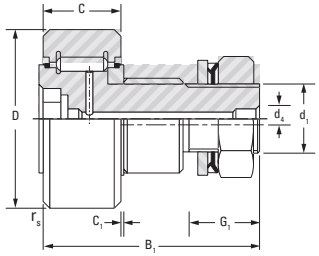
Outer Dia.	D	d_1	C	C_1	B_1	G_1	$r_{s\,min.}$	Crowned Designation	Cylindrical Designation
mm in	mm in	mm in	mm in	mm in	mm in	mm in	mm in		
16 0.6299	**16** 0.6299	**6** 0.2362	**11** 0.433	**0.60** 0.024	**28.3** 1.114	**8** 0.315	**0.3** 0.012	GCR 16	
19 0.748	**19** 0.748	**8** 0.315	**11** 0.433	**0.60** 0.024	**32.3** 1.272	**10** 0.394	**0.3** 0.012	GCR 19	
22 0.8661	**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	GCRL 22
24 0.9449	**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	
26 1.0236	**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	GCRL 26
28 1.1024	**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	GCRL 28
30 1.1811	**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	GCRL 30
32 1.2598	**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	GCRL 32
35 1.378	**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	GCRL 35
40 1.5748	**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
47 1.8504	**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	GCRL 47
52 2.0472	**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	GCRL 52
62 2.4409	**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	GCRL 62
72 2.8346	**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	GCRL 72
80 3.1496	**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	
90 3.5433	**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

Load Ratings					Tightening Torque	Speed Rating Grease	d_4	Approx. Wt.
As a Bearing		As a Track Roller						
Dynamic	Static	Dynamic		Static				
C	C_0	C_w	$F_{r\,perm}$	$F_{0r\,perm}$				
kN lbf		kN lbf			N-m lb-in	min^{-1}	mm in	kg lbs
5.66 1270	**6.51** 1460	**4.19** 942	**2.79** 627	**5.02** 1130	**2** 17.7	5700	**4** 0.157	**0.024** 0.053
6.44 1450	**8.15** 1830	**4.65** 1050	**3** 785	**6.28** 1410	**5** 44.3	4400	**4** 0.157	**0.039** 0.086
7.3 1640	**10.2** 2290	**5.05** 1140	**4.07** 915	**7.33** 1650	**16** 142	3500	**4** 0.157	**0.057** 0.126
7.3 1640	**10.2** 2290	**5.45** 1230	**5.42** 1220	**8.63** 1940	**16** 142	3500	**4** 0.157	**0.072** 0.159
9.92 2230	**12.9** 2900	**7.09** 1590	**5.43** 1220	**9.77** 2200	**16** 142	3200	**4** 0.157	**0.080** 0.176
9.92 2230	**12.9** 2900	**7.57** 1700	**6.95** 1560	**11.4** 2560	**16** 142	3200	**4** 0.157	**0.088** 0.194
15.5 3480	**20.4** 4590	**11.2** 2520	**8.48** 1910	**15.3** 3440	**22** 195	2900	**4** 0.157	**0.118** 0.260
15.5 3480	**20.4** 4590	**11.8** 2650	**10.6** 2380	**18.1** 4070	**22** 195	2900	**4** 0.157	**0.126** 0.278
23.6 5310	**33.1** 7440	**15.7** 3530	**10.8** 2430	**19.4** 4360	**55** 487	2200	**6** 0.236	**0.220** 0.485
29.9 6720	**48** 10800	**18.5** 4160	**13.8** 3100	**24.8** 5580	**75** 664	1800	**6** 0.236	**0.321** 0.708
36.5 8210	**65.5** 14700	**22.5** 5060	**20.2** 4540	**36.4** 8180	**100** 885	1400	**6** 0.236	**0.500** 1.102
36.5 8210	**65.5** 14700	**25.2** 5670	**28** 6290	**47.5** 10700	**100** 885	1400	**6** 0.236	**0.568** 1.252
43.3 9730	**85.6** 19200	**30.5** 6860	**42.9** 9640	**64.7** 14500	**180** 1590	1200	**8** 0.315	**1.035** 2.282
43.3 9730	**85.6** 19200	**33.9** 7620	**65.8** 14800	**79.5** 17900	**180** 1590	1200	**8** 0.315	**1.278** 2.818
65.1 14600	**144** 32400	**42.7** 9600	**62.9** 14100	**95.3** 21400	**370** 3270	870	**8** 0.315	**2.074** 4.572
65.1 14600	**144** 32400	**47.1** 10600	**88.8** 20000	**115** 25900	**370** 3270	870	**8** 0.315	**2.435** 5.368

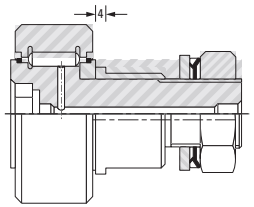
FULL COMPLEMENT, ECCENTRIC, WITH METAL SEALS, STUD-TYPE (GCUR...MM SERIES)

METRIC SERIES

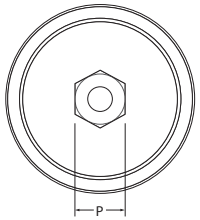
GCUR: crowned outer ring
GCURL: cylindrical outer ring



GCUR 35-52



GCUR 62-130



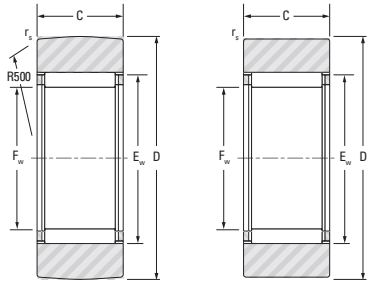
Hex Socket Roller End

Outer Dia.	D	d_1	C	C_1	B_1	G_1	$r_{s\,min.}$	Crowned Designation	Cylindrical Designation
mm in	mm in	mm in	mm in	mm in	mm in	mm in	mm in		
35 1.3780	**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 MM	
40 1.5748	**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 2.0472	**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 2.4409	**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 2.8346	**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 3.1496	**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 3.5433	**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 MM	
100 3.9370	**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 4.3307	**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 4.7244	**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 5.1181	**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	

Load Ratings					Tightening Torque	Speed Rating Grease	Wrench	d_4	Approx. Wt.
As a Bearing		As a Track Roller							
Dynamic	Static	Dynamic		Static					
C	C_o	C_w	$F_{r\,perm}$	$F_{Or\,perm}$			P		
kN lbf		kN lbf			N-m lb-in	min^{-1}	mm	mm in	kg lbs
26.4 5930	**32.4** 7280	**15.4** 3460	**7.25** 1630	**13.1** 2940	**55** 487	2200	**10**	**6** 0.236	**0.215** 0.474
26.4 5930	**32.4** 7280	**18.7** 4200	**12.1** 2720	**21.8** 4900	**75** 664	2200	**12**	**6** 0.236	**0.313** 0.690
43.8 9850	**57.9** 13000	**30.6** 6880	**21.2** 4770	**38.2** 8590	**100** 885	1600	**14**	**6** 0.236	**0.555** 1.224
63.7 14300	**87.4** 19600	**44.1** 9910	**30.9** 6950	**55.6** 12500	**180** 1593	1400	**12**	**6** 0.236	**1.022** 2.253
63.7 14300	**87.4** 19600	**50.8** 11400	**52.7** 11800	**84.1** 18900	**180** 1593	1400	**12**	**6** 0.236	**0.113** 0.249
100 22500	**140** 31500	**66.8** 15000	**43.8** 9850	**78.8** 17700	**370** 3275	1000	**14**	**8** 0.315	**0.182** 0.401
100 22500	**140** 31500	**75.8** 17000	**68.1** 15300	**122** 27400	**370** 3275	1000	**14**	**8** 0.315	**0.182** 0.401
115 25900	**175** 39300	**82.1** 18500	**76.6** 17200	**135** 30300	**610** 5399	840	**17**	**8** 0.315	**0.244** 0.539
115 25900	**175** 39300	**89.7** 20200	**107** 24100	**161** 36200	**610** 5399	840	**17**	**8** 0.315	**0.245** 0.540
167 37500	**240** 54000	**124** 27900	**107** 24100	**193** 43400	**1000** 8851	740	**19**	**8** 0.315	**0.328** 0.724
167 37500	**240** 54000	**133** 30000	**142** 31900	**228** 51300	**1000** 8851	740	**19**	**8** 0.315	**0.329** 0.725

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

METRIC SERIES

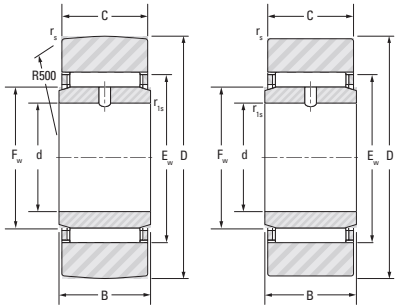


RSTO RSTO.DZ

Outer Dia.	D	C	F_w	E_w	$r_{s\,min.}$	Bearing Designation		Load Ratings					Speed Rating Grease	Approx. Wt.
								As a Bearing		As a Track Roller				
						Crowned Track Roller	Cylindrical Track Roller	Dynamic	Static	Dynamic		Static		
								C	C_0	C_w	$F_{r\,perm}$	$F_{0r\,perm}$		
mm in	mm in	mm in	mm in	mm in	mm in			kN lbf		kN lbf			min^{-1}	kg lbs
16 0.6299	**16** 0.6299	**7.8** 0.307	**7** 0.2756	**10** 0.394	**0.3** 0.012	RSTO5A.TN	RSTO5ADZ.TN	**2.74** 616	**2.44** 549	**2.49** 560	**2.97** 668	**2.44** 549	19000	**0.009** 0.020
19 0.7480	**19** 0.7480	**9.8** 0.386	**10** 0.3937	**13** 0.512	**0.3** 0.012	RSTO6	RSTO6DZ	**5.40** 1210	**6.43** 1450	**4.15** 933	**4.04** 908	**5.63** 1270	13000	**0.014** 0.031
24 0.9449	**24** 0.9449	**9.8** 0.386	**12** 0.4724	**15** 0.591	**0.3** 0.012	RSTO8	RSTO8DZ	**5.85** 1320	**7.51** 1690	**4.79** 1080	**6.67** 1500	**7.44** 1670	10000	**0.023** 0.051
30 1.1811	**30** 1.1811	**11.8** 0.465	**14** 0.5512	**20** 0.787	**0.3** 0.012	RSTO10	RSTO10DZ	**10.40** 2340	**10.6** 2380	**8.62** 1940	**7.69** 1730	**10.6** 2380	9400	**0.044** 0.097
32 1.2598	**32** 1.2598	**11.8** 0.465	**16** 0.6299	**22** 0.866	**0.3** 0.012	RSTO12	RSTO12DZ	**11.20** 2520	**11.9** 2680	**8.80** 1980	**7.65** 1720	**10.9** 2450	8100	**0.049** 0.108
35 1.3780	**35** 1.3780	**11.8** 0.465	**20** 0.7874	**26** 1.024	**0.3** 0.012	RSTO15	RSTO15DZ	**12.90** 2900	**15.3** 3440	**9.13** 2050	**6.95** 1560	**11.2** 2520	6300	**0.052** 0.115
40 1.5748	**40** 1.5748	**15.8** 0.622	**22** 0.8661	**29** 1.142	**0.3** 0.012	RSTO17	RSTO17DZ	**19.00** 4270	**23.3** 5240	**13.8** 3100	**11.4** 2560	**18.2** 4090	5800	**0.095** 0.209
47 1.8504	**47** 1.8504	**15.8** 0.622	**25** 0.9843	**32** 1.260	**0.3** 0.012	RSTO20	RSTO20DZ	**20.00** 4500	**25.3** 5690	**15.3** 3440	**16.5** 3710	**22.2** 4990	5000	**0.134** 0.295
52 2.0472	**52** 2.0472	**15.8** 0.622	**30** 1.1811	**37** 1.457	**0.3** 0.012	RSTO25	RSTO25DZ	**22.40** 5040	**31.0** 6970	**16.0** 3600	**16.9** 3800	**23.7** 5330	4100	**0.155** 0.342
62 2.4409	**62** 2.4409	**19.8** 0.780	**38** 1.4961	**46** 1.811	**0.6** 0.024	RSTO30	RSTO30DZ	**33.30** 7490	**51.0** 11470	**22.3** 5010	**23.2** 5220	**34.2** 7690	3200	**0.258** 0.569
72 2.8346	**72** 2.8346	**19.8** 0.780	**42** 1.6535	**50** 1.969	**0.6** 0.024	RSTO35	RSTO35DZ	**35.20** 7910	**56.6** 12720	**25.2** 5670	**33.3** 7490	**43.0** 9670	2900	**0.37** 0.816
80 3.1496	**80** 3.1496	**19.8** 0.780	**50** 1.9685	**58** 2.283	**0.6** 0.024	RSTO40	RSTO40DZ	**38.80** 8720	**67.8** 15240	**25.9** 5820	**34.7** 7800	**45.0** 10120	2400	**0.430** 0.948
85 3.3465	**85** 3.3465	**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 3.5433	**90** 3.5433	**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

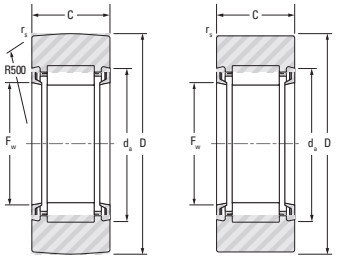


STO STO.DZ

Outer Dia.	D	d	B	C	F_w	E_w	r_s	$r_{1s\,min.}$	Bearing Designation		Load Ratings					Speed Rating Grease	Approx. Wt.
											As a Bearing		As a Track Roller				
									Crowned Track Roller	Cylindrical Track Roller	Dynamic	Static	Dynamic		Static		
											C	C_0	C_w	$F_{r\,perm}$	$F_{0r\,perm}$		
mm in	mm in	mm in	mm in	mm in	mm in	mm in	mm in	mm in			kN lbf		kN lbf			min^{-1}	kg lbs
19 0.7480	**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	STO6DZ	**5.40** 1210	**6.43** 1450	**4.15** 933	**4.04** 908	**5.63** 1270	9400	**0.018** 0.040
24 0.9449	**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	STO8DZ	**5.85** 1320	**7.51** 1690	**4.79** 1080	**6.67** 1500	**7.44** 1670	8100	**0.028** 0.062
30 1.1811	**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	STO10DZ	**10.4** 2340	**10.6** 2380	**8.62** 1940	**7.69** 1730	**10.6** 2380	6300	**0.065** 0.143
32 1.2598	**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	STO12DZ	**11.2** 2520	**11.9** 2680	**8.80** 1980	**7.65** 1720	**10.9** 2450	5800	**0.114** 0.251
35 1.3780	**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	STO15DZ	**12.9** 2900	**15.3** 3440	**9.13** 2050	**6.95** 1560	**11.2** 2520	5000	**0.065** 0.143
40 1.5748	**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	STO17DZ	**19.1** 4290	**23.3** 5240	**13.8** 3100	**11.4** 2560	**18.2** 4090	4100	**0.114** 0.251
47 1.8504	**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	STO20DZ	**19.8** 4450	**25.3** 5690	**15.3** 3440	**16.5** 3710	**22.2** 4990	3200	**0.160** 0.353
52 2.0472	**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	STO25DZ	**22.4** 5040	**31.0** 6970	**16.0** 3600	**16.9** 3800	**23.7** 5330	2900	**0.435** 0.959
62 2.4409	**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	STO30DZ	**33.3** 7490	**51.0** 11470	**22.3** 5010	**23.2** 5220	**34.2** 7690	2400	**0.325** 0.717
72 2.8346	**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	STO35DZ	**35.2** 7910	**56.6** 12720	**25.2** 5670	**33.3** 7490	**43.0** 9670	2200	**0.435** 0.959
80 3.1496	**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	STO40DZ	**38.8** 8720	**67.8** 15240	**25.9** 5820	**34.7** 7800	**45.0** 10120	2400	**0.540** 1.190
85 3.3465	**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	STO45DZ	**40.3** 9060	**73.5** 16520	**26.0** 5850	**35.8** 8050	**45.5** 10230	2200	**0.580** 1.279
90 3.5433	**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	STO50DZ	**41.8** 9400	**79.2** 17800	**26.0** 5850	**37.1** 8340	**45.8** 10300	2000	**0.650** 1.433

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

METRIC SERIES



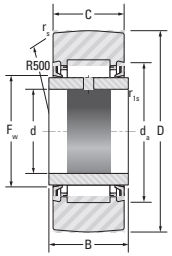
RNA22.2RS

RNA22.2RS.DZ

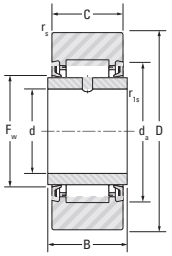
Outer Dia.	D	C	F_w	d_a	$r_{s\,min.}$	Bearing Designation		Load Ratings					Speed Rating Grease	Approx. Wt.
								As a Bearing		As a Track Roller				
						Crowned Track Roller	Cylindrical Track Roller	Dynamic	Static	Dynamic		Static		
								C	C_o	C_w	$F_{r\,perm}$	$F_{0r\,perm}$		
mm in	mm in	mm in	mm in	mm in	mm in			kN lbf		kN lbf			min^{-1}	kg lbs
19 0.7480	19 0.7480	11.8 0.465	10 0.3937	14 0.551	0.3 0.012	RNA22/6.2RS	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 0.9449	24 0.9449	11.8 0.465	12 0.4724	18 0.709	0.3 0.012	RNA22/8.2RS	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 1.1811	30 1.1811	13.8 0.543	14 0.5512	20 0.787	0.6 0.024	RNA2200.2RS	RNA2200.2RS.DZ	8.50 1910	9.45 2120	8.03 1810	7.85 1760	9.45 2120	9400	0.049 0.108
32 1.2598	32 1.2598	13.8 0.543	16 0.6299	22 0.866	0.6 0.024	RNA2201.2RS	RNA2201.2RS.DZ	9.00 2020	10.5 2360	8.2 1840	7.78 1750	10.1 2270	8100	0.053 0.117
35 1.3780	35 1.3780	13.8 0.543	20 0.7874	27 1.063	0.6 0.024	RNA2202.2RS	RNA2202.2RS.DZ	12.2 2740	14.5 3260	9.24 2080	6.00 1350	10.2 2290	6300	0.055 0.121
40 1.5748	40 1.5748	15.8 0.622	22 0.8661	30 1.181	1.0 0.039	RNA2203.2RS	RNA2203.2RS.DZ	16.3 3660	17.8 4000	11.9 2680	8.50 1910	13.7 3080	5900	0.090 0.198
47 1.8504	47 1.8504	17.8 0.701	25 0.9843	35 1.378	1.0 0.039	RNA2204.2RS	RNA2204.2RS.DZ	19.6 4410	20.2 4540	14.8 3330	11.0 2470	16.7 3750	5200	0.150 0.331
52 2.0472	52 2.0472	17.8 0.701	30 1.1811	40 1.575	1.0 0.039	RNA2205.2RS	RNA2205.2RS.DZ	21.6 4860	24.3 5460	15.5 3480	11.3 2540	17.7 3980	4300	0.171 0.377
62 2.4409	62 2.4409	19.8 0.780	35 1.3780	47 1.850	1.0 0.039	RNA2206.2RS	RNA2206.2RS.DZ	29.0 6520	32.8 7370	21.2 4770	15.8 3550	24.8 5580	3700	0.285 0.628
72 2.8346	72 2.8346	22.8 0.898	42 1.6535	54 2.126	1.1 0.043	RNA2207.2RS	RNA2207.2RS.DZ	40.5 9100	52.5 11800	28.6 6430	24.2 5440	37.9 8520	3000	0.490 1.080
80 3.1496	80 3.1496	22.8 0.898	48 1.8898	60 2.362	1.1 0.043	RNA2208.2RS	RNA2208.2RS.DZ	44.0 9890	60.0 13490	30.4 6830	27.8 6250	42.0 9440	2600	0.515 1.135
85 3.3465	85 3.3465	22.8 0.898	52 2.0472	64 2.520	1.1 0.043	RNA2209.2RS	RNA2209.2RS.DZ	45.6 10250	63.9 14370	30.9 6950	29.7 6680	43.7 9820	2400	0.565 1.246
90 3.5433	90 3.5433	22.8 0.898	58 2.2835	70 2.756	1.1 0.043	RNA2210.2RS	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 (NA22 SERIES)

METRIC SERIES



NA22.2RS

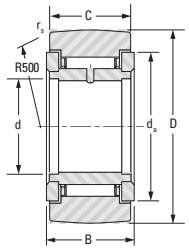


NA22.2RS.DZ

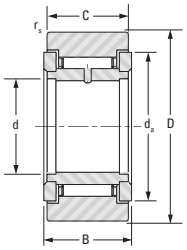
Outer Dia.	D	d	B	C	F_w	d_a	r_s	$r_{1s\,min.}$	Bearing Designation		Load Ratings					Speed Rating Grease	Approx. Wt.
											As a Bearing		As a Track Roller				
									Crowned Track Roller	Cylindrical Track Roller	Dynamic	Static	Dynamic		Static		
											C	C_o	C_w	$F_{r\,perm}$	$F_{0r\,perm}$		
mm in	mm in	mm in	mm in	mm in	mm in	mm in	mm in	mm in			kN lbf		kN lbf			min^{-1}	kg lbs
19 0.7480	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	NA22/6.2RS.DZ	4.70 1060	5.43 1220	4.13 928	3.06 688	4.59 1030	13000	0.018 0.040
24 0.9449	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	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 1.1811	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	NA2200.2RS.DZ	8.50 1910	9.45 2120	8.03 1810	7.85 1760	9.45 2120	9400	0.057 0.126
32 1.2598	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	NA2201.2RS.DZ	9.00 2020	10.5 2360	8.20 1840	7.78 1750	10.1 2270	8100	0.063 0.139
35 1.3780	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	NA2202.2RS.DZ	12.2 2740	14.5 3260	9.24 2080	6.00 1350	10.2 2290	6300	0.070 0.154
40 1.5748	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	NA2203.2RS.DZ	16.3 3660	17.8 4000	11.9 2680	8.50 1910	13.7 3080	5900	0.107 0.236
47 1.8504	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	NA2204.2RS.DZ	19.6 4410	20.2 4540	14.8 3330	11.0 2470	16.7 3750	5200	0.175 0.386
52 2.0472	52 2.0472	25 0.9843	18 0.709	17.8 0.701	30 1.1811	40 1.5748	1.0 0.039	0.3 0.012	NA2205.2RS	NA2205.2RS.DZ	21.6 4860	24.3 5460	15.5 3480	11.3 2540	17.7 3980	4300	0.202 0.445
62 2.4409	62 2.4409	30 1.1811	20 0.787	19.8 0.780	35 1.3780	47 1.8504	1.0 0.039	0.3 0.012	NA2206.2RS	NA2206.2RS.DZ	29.0 6520	32.8 7370	21.2 4770	15.8 3550	24.8 5580	3700	0.324 0.714
72 2.8346	72 2.8346	35 1.3780	23 0.906	22.8 0.898	42 1.6535	54 2.1260	1.1 0.043	0.6 0.024	NA2207.2RS	NA2207.2RS.DZ	40.5 9100	52.5 11800	28.6 6430	24.2 5440	37.9 8520	3000	0.490 1.080
80 3.1496	80 3.1496	40 1.5748	23 0.906	22.8 0.898	48 1.8898	60 2.3622	1.1 0.043	0.6 0.024	NA2208.2RS	NA2208.2RS.DZ	44.0 9890	60.0 13500	30.4 6830	27.8 6250	42.0 9440	2600	0.615 1.356
85 3.3465	85 3.3465	45 1.7717	23 0.906	22.8 0.898	52 2.0472	64 2.5197	1.1 0.043	0.6 0.024	NA2209.2RS	NA2209.2RS.DZ	45.0 10100	63.9 14400	30.9 6950	29.7 6680	43.7 9820	2400	0.661 1.457
90 3.5433	90 3.5433	50 1.9685	23 0.906	22.8 0.898	58 2.2835	70 2.7559	1.1 0.043	0.6 0.024	NA2210.2RS	NA2210.2RS.DZ	48.0 10800	71.3 16000	31.0 6970	29.4 6610	43.4 9760	2100	0.712 1.570

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

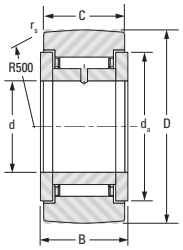
METRIC SERIES



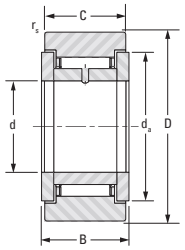
NATR



NATR.DZ



STO.ZZ

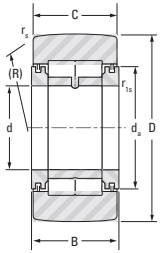


STO.ZZ.DZ

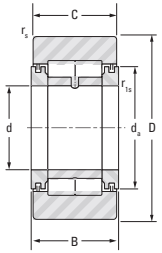
Outer Dia.	D	d	B	C	d_a	$r_{s\,min.}$	Bearing Designation		Load Ratings					Speed Rating Grease	Approx. Wt.
									As a Bearing		As a Track Roller				
							Crowned Track Roller	Cylindrical Track Roller	Dynamic	Static	Dynamic		Static		
									C	C_0	C_w	$F_{r\,perm}$	$F_{0r\,perm}$		
mm in	mm in	mm in	mm in	mm in	mm in	mm in			kN lbf		kN lbf			min^{-1}	kg lbs
16 0.6299	16 0.6299	5 0.1969	12 0.472	11.0 0.433	13 0.512	0.3 0.012	NATR5	NATR5DZ	4.62 1040	5.19 1170	3.34 751	2.62 589	4.01 901	13000	0.017 0.037
19 0.7480	19 0.7480	6 0.2362	12 0.472	11.0 0.433	16 0.630	0.3 0.012	NATR6	NATR6DZ	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	14 0.551	13.8 0.543	15 0.591	0.3 0.012	STO6ZZ	STO6ZZ.DZ	5.37 1210	6.47 1450	4.31 969	5.23 1180	6.17 1390	12000	0.024 0.053
24 0.9449	24 0.9449	8 0.3150	14 0.551	13.8 0.543	18 0.709	0.3 0.012	STO8ZZ	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	NATR8DZ	8.39 1890	8.67 1950	6.66 1500	5.79 1300	8.08 1820	10000	0.043 0.095
30 1.1811	30 1.1811	10 0.3937	15 0.591	14.0 0.551	24 0.945	0.6 0.024	NATR10	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	STO10ZZ.DZ	10.4 2340	10.6 2380	8.94 2010	9.64 2170	11.4 2560	9400	0.071 0.157
32 1.2598	32 1.2598	12 0.4724	15 0.591	14.0 0.551	26 1.024	0.6 0.024	NATR12	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	STO12ZZ.DZ	11.2 2520	11.9 2680	9.13 2050	9.54 2140	11.7 2630	8100	0.078 0.172
35 1.3780	35 1.3780	15 0.5906	16 0.630	15.8 0.622	30 1.181	0.3 0.012	STO15ZZ	STO15ZZ.DZ	12.9 2900	15.3 3440	9.47 2130	8.52 1920	12.1 2720	6300	0.089 0.196
40 1.5748	40 1.5748	17 0.6693	20 0.787	19.8 0.780	33 1.299	0.3 0.012	STO17ZZ	STO17ZZ.DZ	19.0 4270	23.3 5240	14.2 3190	13.4 3010	19.3 4340	5600	0.145 0.320
47 1.8504	47 1.8504	20 0.7874	20 0.787	19.8 0.780	37 1.457	0.3 0.012	STO20ZZ	STO20ZZ.DZ	20.0 4500	25.4 5710	15.7 3530	19.5 4380	23.5 5280	4900	0.200 0.441
52 2.0472	52 2.0472	25 0.9843	20 0.787	19.8 0.780	42 1.654	0.3 0.012	STO25ZZ	STO25ZZ.DZ	22.4 5040	31.1 6990	16.4 3690	19.8 4450	25.1 5640	4100	0.240 0.529
62 2.4409	62 2.4409	30 1.1811	25 0.984	24.8 0.976	52 2.047	0.6 0.024	STO30ZZ	STO30ZZ.DZ	33.3 7490	51.0 11500	23.0 5170	26.9 6050	36.2 8140	3200	0.412 0.908
72 2.8346	72 2.8346	35 1.3780	25 0.984	24.8 0.976	56 2.205	0.6 0.024	STO35ZZ	STO35ZZ.DZ	35.2 7910	56.6 12700	25.9 5820	39.2 8810	45.5 10200	2900	0.555 1.224
80 3.1496	80 3.1496	40 1.5748	26 1.024	25.8 1.016	64 2.520	0.6 0.024	STO40ZZ	STO40ZZ.DZ	38.8 8720	67.8 15200	26.8 6020	41.5 9330	48.1 10800	2400	0.700 1.543
85 3.3465	85 3.3465	45 1.7717	26 1.024	25.8 1.016	69 2.717	0.6 0.024	STO45ZZ	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



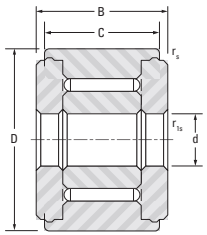
NUTR.DZ

Outer Dia.	D	d	B	C	d_a	r_s	$r_{1s\,min.}$	Bearing Designation		Load Ratings					Speed Rating Grease	Approx. Wt.
										As a Bearing		As a Track Roller				
								Crowned Track Roller	Cylindrical Track Roller	Dynamic	Static	Dynamic		Static		
										C	C_0	C_w	$F_{r\,perm}$	$F_{0r\,perm}$		
mm in	mm in	mm in	mm in	mm in	mm in	mm in	mm in			kN lbf		kN lbf			min^{-1}	kg lbs
35 1.3780	35 1.3780	15 0.5906	19 0.748	18 0.709	24 0.945	0.6 0.024	0.3 0.012	NUTR15	NUTR15DZ	24.7 5550	29.3 6590	16.2 3640	10.1 2270	16.1 3620	6100	0.105 0.231
40 1.5748	40 1.5748	17 0.6693	21 0.827	20 0.787	27 1.063	1.0 0.039	0.3 0.012	NUTR17	NUTR17DZ	26.6 5980	33.4 7510	18.7 4200	15.0 3370	23.9 5370	5300	0.154 0.340
42 1.6535	42 1.6535	15 0.5906	19 0.748	18 0.709	24 0.945	0.6 0.024	0.3 0.012	NUTR1542	NUTR1542DZ	22.8 5130	29.4 6610	20.0 4500	21.2 4770	28.4 6380	6100	0.166 0.366
47 1.8504	47 1.8504	17 0.6693	21 0.827	20 0.787	27 1.063	1.0 0.039	0.3 0.012	NUTR1747	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	NUTR20DZ	39.0 8770	53.2 12000	28.1 6320	20.5 4610	32.7 7350	4500	0.254 0.560
52 2.0472	52 2.0472	20 0.7874	25 0.984	24 0.945	32 1.260	1.0 0.039	0.3 0.012	NUTR2052	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	NUTR25DZ	43.0 9670	63.1 14200	29.6 6650	22.2 4990	35.4 7960	3700	0.291 0.642
62 2.4409	62 2.4409	25 0.9843	25 0.984	24 0.945	37 1.457	1.0 0.039	0.3 0.012	NUTR2562	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	NUTR30DZ	60.0 13500	83.1 18700	40.8 9170	29.0 6520	46.2 10400	3200	0.480 1.058
72 2.8346	72 2.8346	30 1.1811	29 1.142	28 1.102	44 1.732	1.0 0.039	0.3 0.012	NUTR3072	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	NUTR35DZ	65.5 14700	97.8 22000	45.9 10300	38.7 8700	61.7 13900	2600	0.655 1.444
80 3.1496	80 3.1496	35 1.3780	29 1.142	28 1.102	50 1.969	1.1 0.043	0.6 0.024	NUTR3580	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	NUTR40DZ	88.0 19800	132 29700	60.6 13600	48.0 10800	76.5 17200	2500	0.848 1.870
85 3.3465	85 3.3465	45 1.7717	32 1.260	30 1.181	60 2.362	1.1 0.043	0.6 0.024	NUTR45	NUTR45DZ	93.0 20900	146 32800	62.0 13900	50.2 11300	80.0 18000	2200	0.917 2.022
90 3.5433	90 3.5433	40 1.5748	32 1.260	30 1.181	55 2.165	1.1 0.043	0.6 0.024	NUTR4090	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	NUTR50DZ	98.0 22000	160 36000	63.3 14200	52.9 11900	84.3 19000	2000	0.988 2.178
100 3.9370	100 3.9370	45 1.7717	32 1.260	30 1.181	60 2.362	1.1 0.043	0.6 0.024	NUTR45100	NUTR45100DZ	93.0 20900	146 32800	74.3 16700	92.2 20700	127 28600	2200	1.412 3.113
110 4.3307	110 4.3307	50 1.9685	32 1.260	30 1.181	65 2.559	1.1 0.043	0.6 0.024	NUTR50110	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: crowned outer ring
FPL: cylindrical outer ring



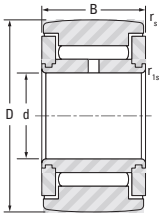
FP, FPL

Outer Dia.	D	d	C	B	$r_{s\,min.}$	$r_{1s\,min.}$	Designation: Crowned Track Roller	Designation: Cylindrical Track Roller	Load Ratings: As a Bearing: Dynamic C	Load Ratings: As a Bearing: Static C_0	Load Ratings: As a Track Roller: Dynamic C_w	Load Ratings: As a Track Roller: Dynamic $F_{r\,perm}$	Load Ratings: As a Track Roller: Static $F_{0r\,perm}$	Speed Rating Grease	Approx. Wt.
mm in	mm in	mm in	mm in	mm in	mm in	mm in			kN lbf		kN lbf			min^{-1}	kg lbs
10 0.3937	**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	**2.8** 629	**3.09** 695	**2.12** 432	**1.43** 227	**2.58** 409	8500	**0.004** 0.009
11 0.4331	**11** 0.4331	**3** 0.1181	**8** 0.315	**8.7** 0.343	**0.2** 0.008	**0.15** 0.006	FP 3 11	FPL 3 11	**2.8** 629	**3.09** 695	**2.12** 477	**1.43** 321	**2.58** 580	8500	**0.005** 0.011
12 0.4724	**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	**3.74** 841	**4.74** 1070	**2.54** 571	**1.63** 366	**2.94** 661	6600	**0.006** 0.013
13 0.5118	**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	**3.74** 841	**4.74** 1070	**2.16** 486	**2.75** 618	**3.89** 874	6600	**0.008** 0.018
14 0.5512	**14** 0.5512	**4** 0.1575	**9** 0.354	**10.2** 0.402	**0.3** 0.012	**0.15** 0.006	FP 4 14	FLP 4 14	**4.05** 910	**5.44** 1220	**2.86** 643	**2.26** 508	**4.07** 915	5700	**0.010** 0.022
15 0.5906	**15** 0.5906	**4** 0.1575	**9** 0.354	**10.2** 0.402	**0.3** 0.012	**0.15** 0.006	FP 4 15	FLP 4 15	**4.05** 910	**5.44** 1220	**3.04** 683	**2.83** 636	**4.65** 1040	5700	**0.011** 0.024

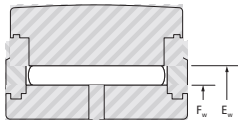
FULL COMPLEMENT, NON-SEPARABLE, SEALED OR UNSEALED, YOKE-TYPE (FG SERIES)

METRIC SERIES

FG: crowned outer ring
FGL: cylindrical outer ring
EE: polymer shields
EEM: metal shields



FG, FGL



FG..EE, FG..EEM
FGL..EE, FGL..EEM

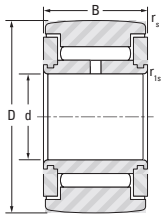
Outer Dia.	D	d	B	F_w	E_w	$r_{s\,min.}$	$r_{1s\,min.}$	Designation: Crowned Track Roller	Designation: Cylindrical Track Roller	Load Ratings: As a Bearing: Dynamic C	Load Ratings: As a Bearing: Static C_0	Load Ratings: As a Track Roller: Dynamic C_w	Load Ratings: As a Track Roller: Dynamic $F_{r\,perm}$	Load Ratings: As a Track Roller: Static $F_{0r\,perm}$	Speed Rating Grease	Approx. Wt.
mm in	mm in	mm in	mm in	mm in	mm in	mm in	mm in			kN lbf		kN lbf			min^{-1}	kg lbs
16 0.6299	**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	**5.66** 1270	**6.51** 1460	**4.19** 942	**2.79** 627	**5.02** 1130	5700	**0.016** 0.035
19 0.7480	**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	**6.44** 1450	**8.15** 1830	**4.65** 1050	**3.49** 785	**6.28** 1410	4400	**0.019** 0.042
24 0.9449	**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	**7.3** 1640	**10.2** 2290	**5.45** 1230	**5.42** 1220	**8.63** 1940	3500	**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	**9.08** 2040	**13.5** 3030	**6.76** 1520	**7.05** 1580	**11.4** 2560	3500	**0.044** 0.097
30 1.1811	**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	**14.2** 3190	**18.3** 4110	**10.3** 2320	**7.67** 1720	**13.8** 3100	2900	**0.066** 0.146
32 1.2598	**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	**15.5** 3480	**21.2** 4770	**10.5** 2360	**7.52** 1690	**13.5** 3030	2400	**0.077** 0.170
35 1.3780	**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	**22.5** 5060	**35.4** 7960	**14.6** 3280	**11.6** 2610	**20.9** 4700	2100	**0.103** 0.227
40 1.5748	**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	**29.9** 6720	**48.0** 10800	**18.5** 4160	**13.8** 3100	**24.8** 5580	1800	**0.155** 0.342
47 1.8504	**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	**36.5** 8210	**65.5** 14700	**22.5** 5060	**20.2** 4540	**36.4** 8180	1400	**0.295** 0.650
52 2.0472	**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	**39.7** 8920	**76.4** 17200	**23.1** 5190	**22.6** 5080	**40.3** 9060	1200	**0.310** 0.683
62 2.4409	**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	**46.5** 10500	**97.9** 22000	**28.9** 6500	**35.5** 7980	**58.2** 13100	1100	**0.490** 1.080
72 2.8346	**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	**50.0** 11200	**113** 25400	**31.4** 7060	**45.6** 10300	**68.4** 15400	920	**0.670** 1.477
80 3.1496	**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	FGL 40 80	**62.1** 14000	**155** 38400	**38.3** 8610	**63.7** 14300	**90.6** 20400	810	**0.890** 1.962
85 3.3465	**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	FGL 45 85	**65.7** 14800	**173** 38900	**38.4** 8630	**67.2** 15100	**91.1** 20500	720	**0.970** 2.138
90 3.5433	**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	FGL 50 90	**69.7** 15700	**194** 43600	**37.8** 8500	**74.3** 16700	**88.7** 19900	640	**1.04** 2.293
100 3.9370	**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	**85.0** 19100	**233** 52400	**45.2** 10200	**87.9** 19800	**103** 23200	570	**1.35** 2.976
110 4.3307	**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		**88.6** 19900	**251** 56400	**48.9** 11000	**99.6** 22400	**119** 26800	530	**1.65** 3.638
120 4.7244	**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	FGL 65 120	**103** 23200	**310** 69700	**58.1** 13100	**131** 29400	**154** 34600	490	**2.35** 5.181
125 4.9213	**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	FGL 70 125	**106** 23800	**332** 74600	**58.7** 13200	**142** 31900	**157** 35300	460	**2.50** 5.512

Continued on next page.

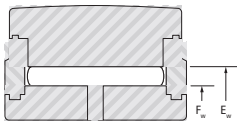
FULL COMPLEMENT, NON-SEPARABLE, SEALED OR UNSEALED, YOKE-TYPE (FG SERIES)

METRIC SERIES

FG: crowned outer ring
FGL: cylindrical outer ring
EE: polymer shields
EEM: metal shields



FG, FGL



FG..EE, FG..EEM
FGL..EE, FGL..EEM

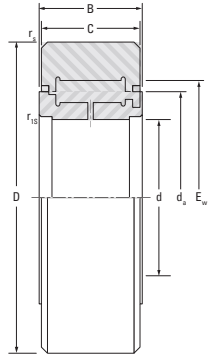
Outer Dia.	D	d	B	F_w	E_w	$r_{s\,min.}$	$r_{1s\,min.}$	Designation: Crowned Track Roller	Designation: Cylindrical Track Roller	Load Ratings: As a Bearing: Dynamic C	Load Ratings: As a Bearing: Static C_o	Load Ratings: As a Track Roller: Dynamic C_w	Load Ratings: As a Track Roller: Dynamic $F_{r\,perm}$	Load Ratings: As a Track Roller: Static $F_{0r\,perm}$	Speed Rating Grease	Approx. Wt.
mm in	mm in	mm in	mm in	mm in	mm in	mm in	mm in			kN lbf		kN lbf			min^{-1}	kg lbs
130 5.1181	**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		**110** 24700	**354** 79600	**59.2** 13300	**155** 34800	**159** 35700	440	**2.65** 5.842
140 5.5118	**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	FGL 80 140	**140** 31500	**455** 102000	**72.4** 13600	**202** 45400	**189** 42500	390	**3.40** 7.496
150 5.9055	**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		**146** 32800	**490** 110000	**75.3** 16900	**227** 51000	**203** 45600	370	**4.00** 8.818
160 6.2992	**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		**168** 37800	**603** 136000	**85.7** 19300	**299** 67200	**244** 54900	340	**5.30** 11.7
170 6.6929	**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		**172** 38700	**629** 141000	**89.8** 20200	**308** 69200	**267** 60000	330	**6.00** 13.2
180 7.0866	**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		**238** 53500	**828** 186000	**126** 28300	**358** 80500	**363** 81600	310	**8.05** 17.8
200 7.8740	**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		**252** 56700	**922** 207000	**133** 29900	**427** 96000	**401** 90100	280	**10.00** 22.0
215 8.4646	**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		**261** 58700	**985** 221000	**138** 31000	**476** 107000	**430** 96700	260	**11.50** 25.3
270 10.6299	**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		**372** 83600	**1470** 330000	**200** 456000	**721** 162000	**658** 148000	210	**22.00** 48.5

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

METRIC SERIES

FGU: crowned outer ring
FGUL: cylindrical outer ring

FGU, FGUL



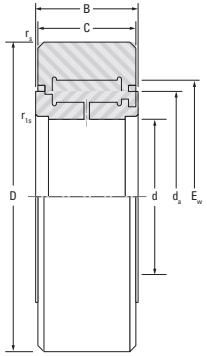
Outer Dia.	D	d	C	B	d_a	E_w	$r_{s\,min.}$	$r_{1s\,min.}$	Designation: Crowned Track Roller	Designation: Cylindrical Track Roller	Load Ratings: Dynamic C	Load Ratings: Dynamic $F_{r\,perm}$	Load Ratings: Static $F_{0r\,perm}$	Speed Rating Grease	Approx. Wt.
mm in	mm in	mm in	mm in	mm in	mm in	mm in	mm in	mm in			kN lbf			min^{-1}	kg lbs
35 1.3780	**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	**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 1.5748	**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 1.8504	**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 2.0472	**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 2.4409	**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 2.8346	**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 3.1496	**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 4.3307	**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 4.7244	**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 4.9213	**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 5.5118	**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 6.2992	**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 6.6929	**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 7.8740	**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 8.4646	**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: crowned outer ring
FGUL: cylindrical outer ring

FGU, FGUL



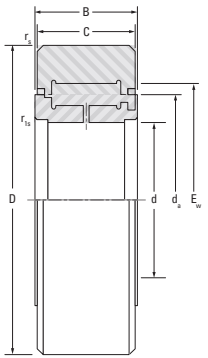
Outer Dia.	D	d	C	B	d_a	E_w	$r_{s\,min.}$	$r_{1s\,min.}$	Designation: Crowned Track Roller	Designation: Cylindrical Track Roller	Load Ratings: As a Bearing Dynamic C	Load Ratings: As a Bearing Static C_0	Load Ratings: As a Track Roller Dynamic C_w	Load Ratings: As a Track Roller Dynamic $F_{r\,perm}$	Load Ratings: As a Track Roller Static $F_{0r\,perm}$	Speed Rating Grease	Approx. Wt.
mm in	mm in	mm in	mm in	mm in	mm in	mm in	mm in	mm in			kN lbf		kN lbf			min^{-1}	kg lbs
42 1.6535	**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	**26.4** 5930	**32.4** 7280	**19.7** 4430	**14.7** 3300	**26.4** 5930	2200	**0.153** 0.337
47 1.8504	**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	FGU 17 47 MM	FGUL 17 47 MM	**28.3** 6360	**36.5** 8210	**21.5** 4830	**18.8** 4230	**31.9** 7170	1900	**0.214** 0.472
52 2.0472	**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	FGU 20 52 MM	FGUL 20 52 MM	**43.8** 9850	**57.9** 13000	**30.7** 6900	**21.3** 4790	**38.3** 8610	1600	**0.268** 0.591
62 2.4409	**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		**48.2** 10800	**68.2** 15300	**35.1** 7890	**30.7** 6900	**55.1** 12400	1400	**0.435** 0.959
72 2.8346	**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	**70** 15700	**103** 23200	**49** 11000	**40** 8990	**72** 16200	1100	**0.681** 1.501
80 3.1496	**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	**77.5** 17400	**124** 27900	**51** 11500	**42.4** 9530	**76.3** 17200	920	**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		**77.5** 17400	**124** 27900	**51** 11500	**42.4** 9530	**76.3** 17200	920	**0.82** 1.808
90 3.5433	**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		**89.2** 20100	**153** 34400	**60.2** 13500	**59.3** 13300	**107** 24100	810	**1.125** 2.480
100 3.9370	**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		**92.7** 20800	**165** 37100	**64.5** 14500	**73.6** 16500	**122** 27400	750	**1.395** 3.075
110 4.3307	**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		**97.8** 22000	**182** 40900	**68.1** 15300	**85.9** 19300	**135** 30300	680	**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		**97.8** 22000	**182** 40900	**68.1** 15300	**85.9** 19300	**135** 30300	680	**1.683** 3.710
120 4.7244	**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		**128** 28800	**215** 48300	**88.7** 19900	**91.8** 20600	**159** 35700	640	**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	**128** 28800	**215** 48300	**88.7** 19900	**91.8** 20600	**159** 35700	640	**2.235** 4.927
130 5.1181	**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		**133** 29900	**232** 52200	**93.4** 21000	**106** 23800	**175** 39300	590	**2.62** 5.776
140 5.5118	**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		**156** 35100	**290** 65200	**110** 24700	**142** 31900	**222** 49900	540	**3.56** 7.848

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

METRIC SERIES

FGU: crowned outer ring
FGUL: cylindrical outer ring

FGU, FGUL



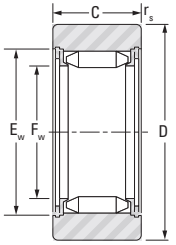
Outer Dia.	D	d	C	B	d_a	E_w	$r_{s\,min.}$	$r_{1s\,min.}$	Designation: Crowned Track Roller	Designation: Cylindrical Track Roller	Load Ratings: As a Bearing Dynamic C	Load Ratings: As a Bearing Static C_0	Load Ratings: As a Track Roller Dynamic C_w	Load Ratings: As a Track Roller Dynamic $F_{r\,perm}$	Load Ratings: As a Track Roller Static $F_{0r\,perm}$	Speed Rating Grease	Approx. Wt.
mm in	mm in	mm in	mm in	mm in	mm in	mm in	mm in	mm in			kN lbf		kN lbf			min^{-1}	kg lbs
150 5.9055	**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		**161** 36200	**310** 69700	**115** 25900	**160** 36000	**240** 54000	510	**4.09** 9.017
160 6.2992	**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		**166** 37300	**329** 74000	**119** 26800	**178** 40000	**257** 57800	480	**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		**166** 37300	**329** 74000	**119** 26800	**178** 40000	**257** 57800	480	**4.65** 10.3
170 6.6929	**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		**195** 43800	**412** 92600	**140** 31500	**229** 51500	**322** 72400	450	**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		**195** 43800	**412** 92600	**140** 31500	**229** 51500	**322** 72400	450	**6.07** 13.4
180 7.0866	**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		**224** 50400	**426** 95800	**162** 36400	**225** 50600	**340** 76400	440	**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	**224** 50400	**426** 95800	**162** 36400	**225** 50600	**340** 76400	440	**6.724** 14.8
190 7.4803	**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		**259** 58200	**524** 118000	**186** 41800	**277** 62300	**412** 92600	410	**8.515** 18.8
260 10.2362	**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		**396** 89000	**875** 197000	**293** 65900	**540** 121000	**730** 164000	300	**19.750** 43.6
300 11.8110	**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		**493** 111000	**1210** 272000	**367** 82500	**818** 184000	**1020** 229000	260	**31.265** 68.9

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

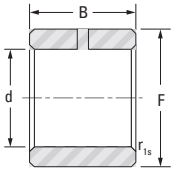
B

SEPARATE INNER RINGS (BIC SERIES)

METRIC SERIES



RNA...B6



BIC

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

Outer Dia.	D	C	F_w	E_w	$r_{s\,min.}$	Track Roller Designations			Load Ratings					Speed Rating Grease	Approx. Wt.	Inner Ring Designation	F	B	d	$r_{1s\,min.}$	Shaft Dia.
									As a Bearing		As a Track Roller										
						RNA...B6	RNAB	RNAL	Dynamic	Static	Dynamic		Static								
									C	C_0	C_w	$F_{r\,perm}$	$F_{0r\,perm}$								
mm in	mm in	mm in	mm in	mm in	mm in				kN lbf		kN lbf			min^{-1}	kg lbs		mm in	mm in	mm in	mm in	mm in
19 0.7480	19 0.7480	12 0.472	7.3 0.287	12.3 0.484	0.35 0.014	RNA 11005 B6	RNAB 11005		5.31 1190	4.44 998	4.82 1080	4.44 998	4.82 1080	6500	0.019 0.042						
22 0.8661	22 0.8661	12 0.472	9.7 0.382	14.7 0.579	0.35 0.014	RNA 11007 B6	RNAB 11007	RNAL 11007	6.42 1440	5.93 1330	5.5 1240	5.26 1180	6.55 1470	4700	0.022 0.049						
28 1.1024	28 1.1024	12 0.472	12.1 0.476	17.1 0.673	0.35 0.014	RNA 11009 B6	RNAB 11009	RNAL 11009	7.37 1660	7.42 1670	6.66 1500	7.42 1670	9.06 2040	3700	0.028 0.062						
32 1.2598	32 1.2598	15 0.591	17.6 0.693	22.6 0.890	0.35 0.014	RNA 11012 B6	RNAB 11012	RNAL 11012	12.7 2850	16.4 3690	9.38 2110	9.48 2130	13.7 3080	2400	0.032 0.071	BIC 1012	17.6 0.693	15 0.591	12 0.472	0.35 0.014	12 0.472
35 1.3780	35 1.3780	15 0.591	20.8 0.819	25.8 1.016	0.65 0.026	RNA 11015 B6	RNAB 11015		13.9 3120	19.4 4360	9.60 2160	9.47 2130	14.1 3170	2000	0.035 0.077	BIC 1015	20.8 0.819	15 0.591	15 0.591	0.65 0.026	15 0.591
42 1.6535	42 1.6535	15 0.591	23.9 0.941	28.9 1.138	0.65 0.026	RNA 11017 B6	RNAB 11017	RNAL 11017	15.0 3370	22.4 5040	11.0 2470	14.4 3240	18.4 4140	1700	0.042 0.093	BIC 1017	23.9 0.941	15 0.591	17 0.669	0.65 0.026	17 0.669
47 1.8504	47 1.8504	18 0.709	28.7 1.130	34.7 1.366	0.65 0.026	RNA 11020 B6	RNAB 11020	RNAL 11020	21.7 4880	33.5 7530	14.6 3280	16.0 3600	23.3 5240	1400	0.047 0.104	BIC 2020	28.7 1.130	18 0.709	20 0.787	0.65 0.026	20 0.787
52 2.0472	52 2.0472	18 0.709	33.5 1.319	39.5 1.555	0.65 0.026	RNA 11025 B6	RNAB 11025		23.6 5310	39.1 8790	15.0 3370	17.1 3840	24.4 5490	1200	0.052 0.115	BIC 1025	33.5 1.319	18 0.709	25 0.984	0.65 0.026	25 0.984
62 2.4409	62 2.4409	22 0.866	38.2 1.504	44.2 1.740	0.65 0.026	RNA 11030 B6	RNAB 11030		34.2 7690	65.8 14800	22.6 5080	32.8 7370	44.3 9960	1100	0.062 0.137	BIC 2030	38.2 1.504	22 0.866	30 1.181	0.65 0.026	30 1.181
72 2.8346	72 2.8346	22 0.866	44.0 1.732	50.0 1.969	0.65 0.026	RNA 11035 B6			36.7 8250	75.7 17000	24.6 5530	42.4 9530	52.2 11700	920	0.072 0.159	BIC 2035	44 1.732	22 0.866	35 1.378	0.65 0.026	35 1.378
80 3.1496	80 3.1496	22 0.866	49.7 1.957	55.7 2.193	0.85 0.033		RNAB 11040		39.2 8810	85.6 19200	25.8 5800	48.7 10900	57.0 12800	810	0.080 0.176	BIC 2040	49.7 1.957	22 0.866	40 1.575	0.85 0.033	40 1.575
90 3.5433	90 3.5433	24 0.945	62.1 2.445	68.1 2.681	0.85 0.033	RNA 11050 B6			44.0 9890	107 24100	25.8 5800	53.1 11900	57.0 12800	640	0.090 0.198	BIC 11050	62.1 2.445	24 0.945	50 1.969	.085 0.033	50 1.969

THRUST BEARINGS, ASSEMBLIES, WASHERS

Overview: Thrust needle roller and cage assemblies are complements of small diameter needle rollers, arranged in a spoke-like configuration. Needle rollers are equally spaced by means of a cage, its web section separates the rollers and provides guidance to keep them tracking in an orbital path. The purpose of these assemblies is to transmit a thrust load between two relatively rotating objects while greatly reducing friction.

Thrust needle roller and cage assemblies also can be unitized with lipped washers to serve as raceway surfaces for the needle rollers. Washers can be supplied separately or can be mechanically unitized to the thrust needle roller and cage assemblies for ease of handling.

- **Catalogue range:** 5 mm – 240 mm (0.1969 in – 9.4488 in).
- **Markets:** Automotive automatic and manual transmissions, automotive accessories (compressors, steering gears, etc.) agricultural and construction equipment.
- **Features:** One-way fool-proof assembly features, anti-rotation locking features and lubrication flow enhancements.
- **Benefits:** High-speed performance and application flexibility.

B