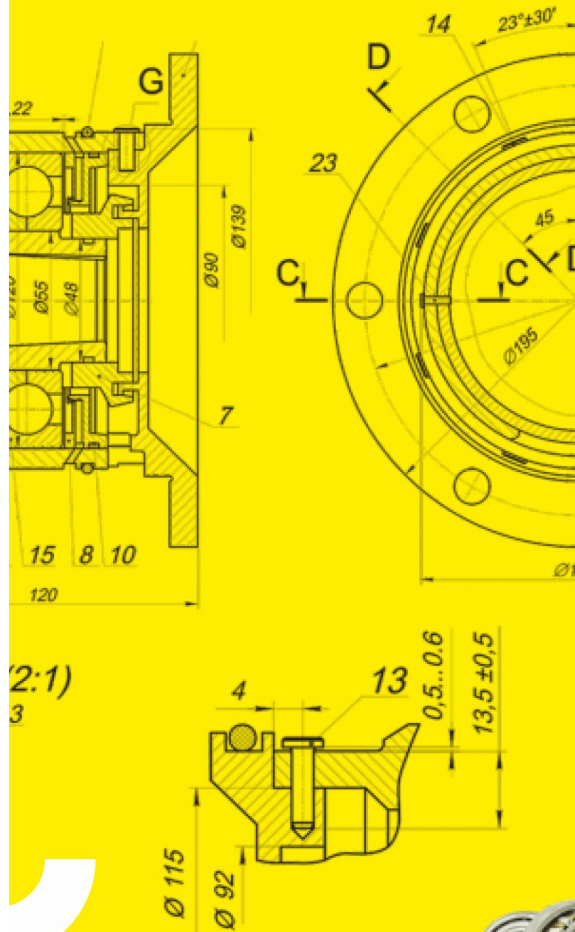


CELEBRATING
75
YEARS



CK BIRLA GROUP

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flexible solutions



ROLLING BEARINGS

Bearing Designation and Nomenclature



2 WHEELERS



3 WHEELERS



4 WHEELERS



TRACTORS



LCV, HCV



INDUSTRIES



RAILWAYS



AEROSPACE



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CATALOGUE/TC-106, 01/2024

This version supersedes all previously published versions. All the bearing mentioned in this catalogue are manufactured with normal tolerance class. We can, however, supply other class bearing against specific requirement.

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Founded in 1946, NBC is India's first bearings manufacturer and the last word in quality and durability. In 2020, the company acquired leading European manufacturer, Kinex Bearings to further boost its expertise.

75 years since its beginning, NBC remains India's leading bearings manufacturer and exporter. NBC is also the world's only bearings manufacturer to receive the prestigious Deming Grand Prize for Total Quality Management.



Products from NBC

Since the challenges faced by industry are many, NBC offers a diverse range of exceptional bearings. NBC bearings are available in sizes from 04 mm bore to 2000 mm outer diameter.



* Products with special features like high temperature application, special heat treatment, coated roller/faces and cage options are also available across product range.

Induction-Hardening

It is a type of surface hardening in which a 'metal part' is induction-heated and then quenched. Hardening may be done on the surface or throughout the entire surface and properties of the remaining part remains unaffected.

Case-Hardening

It is a process of heating the metal so that the surface is hard and the core is soft. This process is used when bearing are subjected to high impact loads. It can minimize wear & tear and increase the strength of the steel surface. This process can done by Carburizing and Nitriding.

The bearing operating temperature under standard heat treatment process with normal tempering is around 120°C. For bearing to operate at temperature higher than 120°C, special heat treatment process is required.

For case hardening steel the carbon content is reduced approximately 0.15% (low carbon steel) is the most common for roller bearings. High hardness up to 64HRC on the surface throughout circumference with soft Core.

02 Bearing Designation & Nomenclature

2.1 Bearing Designation

The bearing designation may consist of a basic designation with or without prefixes and suffixes. It includes

- Bearing type
- Boundary dimensions
- Basic design

The number and letter combinations indicates bearing type and dimensions. Basic design includes tolerances, internal clearances & other related specifications. In bearing designation system:

- The first digit indicates the bearing type.
- The second & third identify the ISO dimension series. The second digit indicates the width or height series. The third digit indicates the diameter series.
- The last two digits indicates the bearing bore, which multiplied by 5 gives the bearing bore diameter in mm.

There are exceptions in the basic bearing designation system:

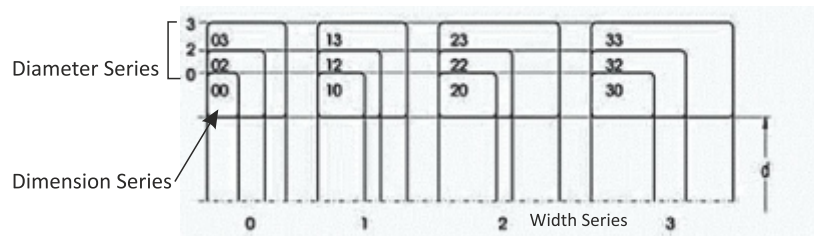
1. Bearings size code for the following bore diameter are:

- 00 = 10 mm
- 01 = 12 mm
- 02 = 15 mm
- 03 = 17 mm

2. For bearings with a bore diameter < 10 mm, or ≥ 500 mm, the bore diameter (d) is generally given as 617/7 (d = 7 mm) or 294/530 (d = 530 mm).

3. In case of standard bearing, when bearing diameter are non-standard, then it is denoted as 63/28 (d=28 mm)

Bearing Series indicates the bearing type and the dimension series.

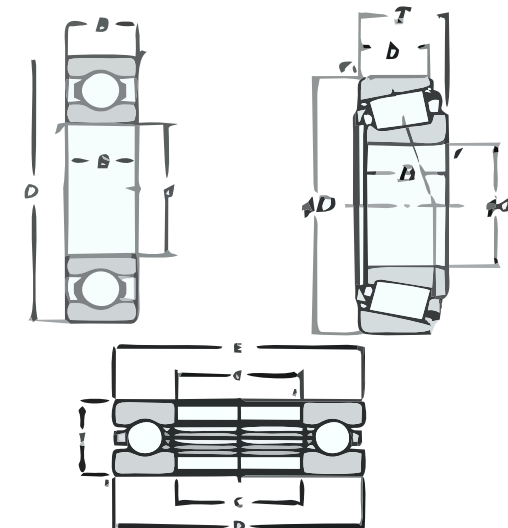


Deep Groove Ball Bearing	160XX, 68XX, 69XX 60XX, 62XX, 63XX, 64XX,
Angular Contact Ball Bearing	32XX, 33XX, 72XX, QJ2XX, QJ3XX
Self – Aligning Ball Bearing	N2XX,, N3XX, N4XX ,NJ2XX, NJ3XX, NJ4XX , NJ22XX,NJ23XX, NU2XX, NU3XX, NU4XX, NU10XX, NU22XX, NU23XX, NUP3XX,NUP4XX, NUP22XX,NUP23XX, NN30XX, NNU49XX
Needle Roller Bearing	K, HK, Bk, N48, NA49, NA69,
Taper Roller Bearing	302XX, 303XX, 313XX, 320XX, 322XX, 323XX, 329XX, 330XX
Spherical Roller Bearing	213XX , 222XX,223XX,230XX,231XX,232XX,233XX,239XX,240XX
Thrust Ball Bearing	511XX, 512XX, 513XX, 532XX, 522XX, 523XX, 524XX,

The bearing boundary /fitment dimensions consists of bore, outer diameter, width size & chamfer dimensions and are based on the ISO dimensional system which specifies the following dimensions for rolling bearings: bore diameter, d, outside diameter, D, width, B or T and chamfer dimension, r.

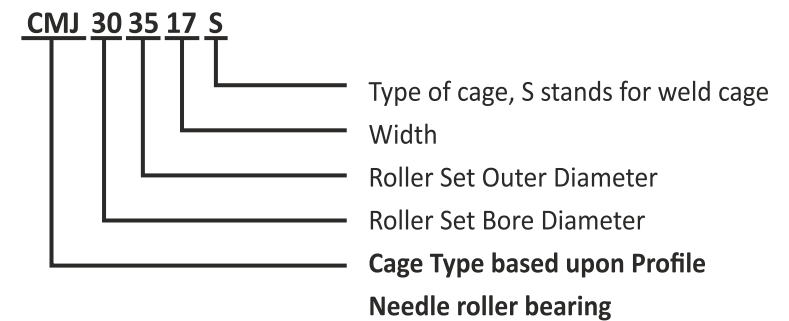
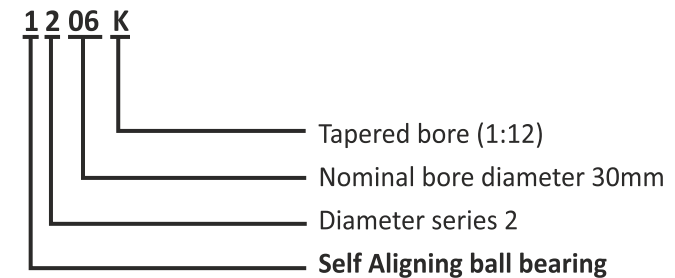
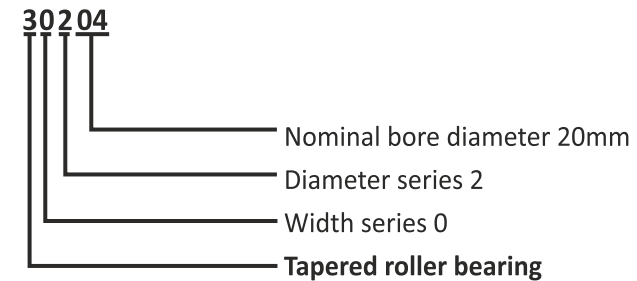
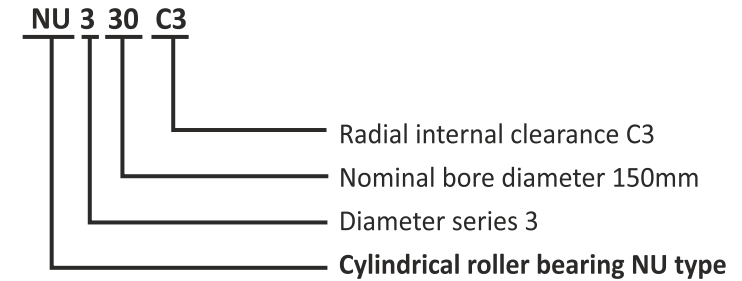
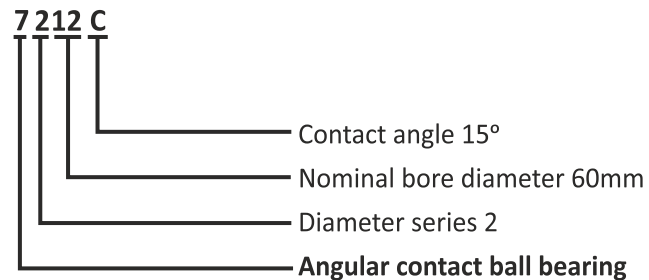
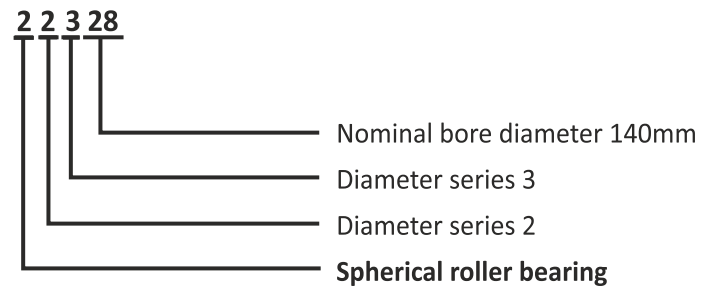
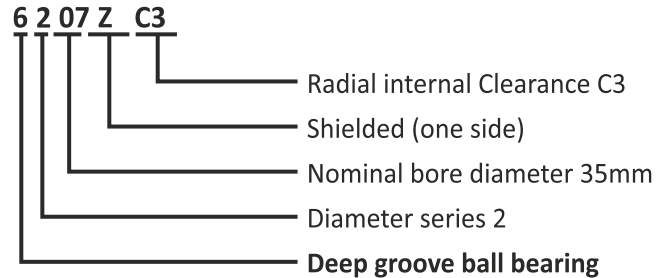
The boundary dimensions for metric bearings based on ISO standards are:

- ISO15 for radial rolling bearings, except tapered roller bearings, insert bearings and needle roller bearings
- ISO355 for tapered roller bearings
- ISO104 for thrust bearings



Bearing Designation (Examples)

Rolling bearing part numbers indicate bearing type, dimensions, tolerances, internal construction & other related specifications.



2.2 Bearing Nomenclature:

Bearing basic number

Series code	Interpretation			Bore diameter code	Interpretation
	Bearing type	Dimension series code			
		Width series	Dia. Series		
68 69 60 62 63	6- Deep groove ball bearings	-	8 9 0 2 3	/0.6 /1.5 /xx	0.6 1.5 xx
78 79 70 72 73	7- Angular contact ball bearings	-	8 9 0 2 3	00 01 02 03	10 12 15 17
12 13 22 23	1,2- Self aligning ball bearings	-	2 3 2 3	04 05 . . 92 96	dia. code multiplied by 5 gives the bore dia. Value in mm
NU10 NU2 NU22 NU3 NU23 NU4 NNU49 NN30	NU, NJ, NH, NUP, N, NF, NNU, NN, RNU, RN- Cylindrical roller bearings	1 - 2 - 2 - 4 3	0 2 2 3 3 4 9 0	/500 /530 /560 . . /2,360 /2,500	500 530 560 . . 2,360 2,500
302 303 313 320 322 323 329 330 331 332	3- Tapered roller bearings	0 0 1 2 2 2 2 3 3 3	2 3 3 0 2 3 9 0 1 2		
239 230 240 231 241 222 232 213 223	2- Spherical roller bearings	3 3 4 3 4 2 3 1 2	9 0 0 1 1 2 2 3 3		
292 293 294	2- Spherical roller thrust bearings	9 9 9	2 3 4		

CODE	INTERPRETATION (PREFIXES)
4T	Case carburized bearing (Inner ring, outer ring & roller)
TS1-	Bearing with special heat treatment for operating temp. up to 130°C
TS2-	Bearing with special heat treatment for operating temp. up to 160°C
TS3-	Bearing with special heat treatment for operating temp. up to 200°C
TS4-	Bearing with special heat treatment for operating temp. up to 250°C
TM-	Long life special heat-treated bearing (one ring)
TMB-	Long life special heat-treated bearing (both the rings)
AST-	Bearing with one of the components treated in carbo nitriding (rollers are with normal heat treatment)
ASTB-	Bearing with both the components treated in carbo nitriding (rollers are with normal heat treatment)
CR-	Creep resistance bearing with single side O-ring on outer race
CR2-	Creep Resistance bearing with both side 'O' ring on outer race
L-	Light series (taper roller bearing-inch series)
LM-	Light medium series (taper roller bearing- inch series)
HM-	Heavy medium series (taper roller bearing- inch series)
M-	Medium series (taper roller bearing- inch series)
H-	Heavy series (non-interchangeable with other cones & cups- for taper roller bearing inch series)
HH-	Heavy heavy series (non-interchangeable with other cones & cupsfor taper roller bearing- inch series)
N-	Taper bearing having non-standard boundary dimensions
N-	Cylindrical bearing having non-standard boundary dimensions
NA-	Cones mated with double cup to form double row non-adjustable bearing (non-interchangeable with other cones & cups)
X-	Inch series tapered roller bearing converted into metric series
T-	Tapered roller thrust bearing
J-	Inch series bearing with metric designation
SP-	Standard bearing with deviations in Dimensions(OD/width ect.) from original bearing number
QJ-	Four point angular contact ball bearing
BB,LS,MS-	Ball bearing with non-standard boundary dimensions
Nxxxx	Ball bearing having non-standard boundary dimensions (xxx - is auto generated numeric digit i.e. 123 etc.)

Note: For any Prefix not found in the table, please contact NEI Engineering

NOMENCLATURE: BEARING SUFFIXES

Suffixes for Internal Design Modification Code

CODE	INTERPRETATION
A-	Internal design modification from A onward
B-	Contact angle 40°, angular contact ball bearing
B-	Contact angle 10° ~17°, Tapered roller bearings
C-	contact angle 15°, angular contact ball bearing
C-	Contact angle 17° ~24°, Tapered roller bearings
C(n),CS(n)	Deep groove ball bearing with increased/different load ratings (C1, CS1 etc.)
D-	Contact angle 24° ~32°, Tapered roller bearings
E-	Cylindrical/Spherical roller bearing with optimized internal geometry for increased load rating
E-	Tapered roller bearing with special crown on raceways
F-	For different bearing stand requirement other than ISO
M-	Modified design (ball bearing, tapered roller bearing)
X(n)-	Special feature (Inner ring or outer ring) e.g. X1, X2
SPL-	Optimized internal design for low torque
C-	Spherical roller bearing with symmetrical rollers, flangeless inner ring, a non-integral guide ring between the two rows of rollers centered on the inner ring and one pressed steel window-type cage for each roller row
CA-	Spherical roller bearing with one-piece machined brass cage (double pronged), symmetrical rollers and retaining ribs
CC-	Similar to 'C' configuration but with enhanced roller & raceways surface finish
V-	Full complementary cylindrical roller bearing
LT-	Optimized internal design for low torque
AN	Special groove profile for Inner or Outer ring.

Note: For any Suffix not found in the table, please contact NEI Engineering

Suffixes for Seal/Shield

CODE	INTERPRETATION
LB-	Synthetic rubber seal, non-contact type, on one side
LLB-	Synthetic rubber seal, non- contact type, on both side
LH-	Low friction synthetic rubber seal , contact type, double lip , on one side
LLH-	Low friction synthetic rubber seal , contact type, double lip , on both side
LU-	Synthetic rubber seal, contact type, double lip , on one side
LLU-	Synthetic rubber seal, contact type, double lip , on both side
LV-	Low friction synthetic rubber seal , contact type, triple lip , on one side
LLV-	Low friction synthetic rubber seal , contact type, triple lip , on both side
LUA-	Acrylic rubber seal (Contact type), single side with Seal groove on Inner race
LLUA-	Acrylic rubber seal (Contact type), both side with Seal groove on Inner race
LUA1-	Fluorine rubber seal (FKM), LU type, on one side, for high temperature up to 200° C
LLUA1-	Fluorine rubber seal, LU type, on both side, for high temperature up to 200° C
LUA2-	Silicone rubber seal, LU type, on one side, for extreme temperture-100 to +200° C
LLUA2-	Silicone rubber seal, LU type, on both side, for extreme temp. -100 to +200°C
RS-	NBR rubber seal (Contact type), single side with no Seal groove on Inner race
RSS-	NBR rubber seal (Contact type), on both with no Seal groove on Inner race
Z-	Metallic shield, single side
ZZ-	Metallic shield , double side
ZA-	Removable pressed steel shield, on one side
ZZA-	Removable pressed steel shield, on both side
LW-	Synthetic rubber (NBR) seal, contact type, four-lip, on one side, for wheel application
LLW-	Synthetic rubber (NBR) seal, contact type, four-lip, on both side, for wheel application
LWA-	Acrylic rubber (ACM) seal, contact type, four-lip, on one side, for wheel application

Note: For any Suffix not found in the table, please contact NEI Engineering

Suffixes for Seal/Shield

LLWA-	Acrylic rubber (ACM) seal, contact type, four-lip, on both side, for wheel application
LWA1-	Fluorine rubber seal (FKM), contact type, four-lip, on one side, for wheel application
LLWA1	Fluorine rubber seal (FKM), contact type, four-lip, on both side, for wheel application
L-	Seal Groove for Flange type Polyamide cage
Lt1	Low torque seal for UTRB

Suffixes : Cage

J-	Pressed steel cage
T2X-	Polyamide cage
T2X1-	Polyamide Cage with Flange
G2-	Pin type steel cage
TF	Pressed steel cage with Tufftride Treatment
M	Machined brass cage, (spherical / cylindrical roller bearing)

Suffixes: External design modification code

D-	Double row outer ring or inner ring
K-	Tapered bore, 1/12 taper on dia.
K30-	Tapered bore, 1/30 taper on dia.
N-	Standard locating snap ring groove on outer ring
N1-	Locating snap ring groove on outer ring with knurling
NR-	Locating snap ring on outer ring
NX(n)-	Non-standard locating snap ring groove on outer ring (NX1, NX2...)
N2X(n)-	Both sides non-standard locating snap ring groove on outer ring (N2X2, N2X3...)
G-	Helical groove in bearing bore (Multi-row tapered / cylindrical roller bearing components)
W-	Lubrication grooves / slots in the side faces of the bearing rings (Multi-row tapered roller bearings)
W3	Bearing with blind hole in outer ring for Pin fitting (Ball Bearing)
W33-	Bearing with annular groove and three lubrication holes in the outer ring (Spherical roller bearing)
W33X-	Similar to 'W33' configuration but with six lubrication holes

Note: For any Suffix not found in the table, please contact NEI Engineering

Suffixes: Bearing arrangement type code

DB-	Two single-row deep groove/angular contact ball/ tapered roller bearing matched for mounting in a back-to-back arrangement
DF-	Two single-row deep groove/angular contact ball/ tapered roller bearing matched for mounting in a face-to-face arrangement
DT-	Two single-row deep groove/angular contact ball/ tapered roller bearing matched for mounting in a tandem arrangement
TSF	Flanged cup

Suffixes: Internal clearance code

C2-	Clearance less than Normal
CN-	Normal clearance
C3-	Clearance greater than normal
C4-	Clearance greater than C3
C5-	Clearance greater than C4
CNL-	Radial clearance range on lower side of CN
C3L-	Radial clearance range on lower side of C3
C4L-	Radial clearance range on lower side of C4
C5L-	Radial clearance range on lower side of C5
CNH-	Radial clearance range on higher side of CN
C3H-	Radial clearance range on higher side of C3
C4H-	Radial clearance range on higher side of C4
C5H-	Radial clearance range on higher side of C5
CS(n)-	Special radial clearance as per customer requirement (e.g. CS1, CS2 etc.)

Suffixes: Tolerance class code

P0-	Normal Tolerance class (Class 0, 6X) specified by IS/ISO/JIS
P6-	Tolerance class 6 specified by IS/ISO/JIS
P5-	Tolerance class 5 specified by IS/ISO/JIS
P4-	Tolerance class 4 specified by IS/ISO/JIS
P2-	Tolerance class 2 specified by IS/ISO/JIS

Note: For any Suffix not found in the table, please contact NEI Engineering

Suffixes: Noise class code

EM-	Noise level class for electric motor application
EMB-	Bearing for Electric motor vehicle
EML-	Low Noise bearings

Suffixes for Internal Design Modification Code

CODE	INTERPRETATION (PREFIX)
C	Needle roller and machined cage assembly
CBC	"Needle roller and machined cage assembly for piston pins"
PC	"Needle roller and machined cage assembly for crank pins"
CJ••S	Needle roller and weld cage assembly
CMJ••S	Needle roller and weld cage assembly
CV••S	Needle roller and weld cage assembly
HC	Drawn-cup needle roller bearing
HMC	Drawn-cup needle roller bearing for heavy loading
HC-F	Speical Type Drawn-cup needle roller bearing
F	Flat end type roller

CODE	INTERPRETATION (SUFFIX)
CAGE	
Q	Soft Nitriding on cage
E	Carburizing + Hardening + Tempering HT on cage
D	Black Oxide on cage
C	Copper Plating on cage
S	Silver Plating on cage
ROLLER	
-	Through Hardened treatment on roller
AS	Carbonitriding Treatment on Roller
E1	Crowning (End drop) on roller
SF	Improved surface finish on roller OD

Note: For any Suffix not found in the table, please contact NEI Engineering

03 Bearing Selection & Arrangement