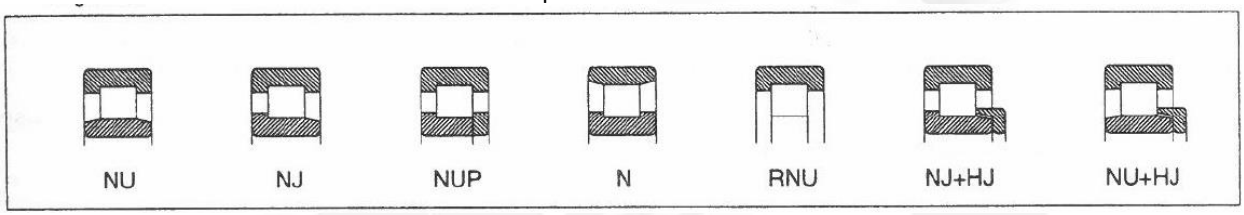
Radial Roller Bearings – General Information

General Description

Cylindrical roller bearings are manufactured in a various range of types and sizes, particularly single row cylindrical roller bearings but also two rows or more. Typical single row designs are shown in the designs below. In case of cylindrical roller bearings, the rollers are laterally guided by the fixed ribs of one ring. The four basic designs (NU, NJ, N and NUP) are given in the bearing tables. Bearings of NU design have two fixed ribs on the outer ring and one smooth inner ring. Bearings of N design have two fixed ribs on the inner ring and one smooth outer ring. These designs allow an axial displacement within certain limits, of the shaft in relation to the housing. Therefore, these rolling bearings are used in non-locating bearing units. Bearings of NJ design have two fixed ribs on the outer ring and a rib on the inner ring which can accept thrust in single direction (axially). Bearings of NUP design have also two fixed ribs on the outer ring and, on the inner ring, a fixed rib and a support washer. This way they can be used as locating bearings, guiding the shaft axially in both directions. The bearings have separable components to make it easier for installation. The table below shows the prefix nomenclature.



Design Modification Suffixes

AR - Grinding addition on the inner ring raceway
B - Cylindrical roller bearing with extended inner ring
C2 – Radial clearance smaller than normal, bearings with interchangeable elements
C2NA - Radial clearance smaller than normal, bearings with non-interchangeable elements
C3 - Radial clearance larger than normal, bearings with interchangeable elements
C3NA - Radial clearance larger than normal, bearings with interchangeable elements
D - Two-piece inner ring
E - Cylindrical roller bearings, E -design (increased Basic static and dynamic loads)
F - Machined steel or special cast iron cage
F2 - Special modifications
K - Tapered bore bearing
M - Machined brass cage guided on the rolling elements
MA - Machined brass cage guided in the outer ring
MB - Machined brass cage guided on the inner ring
MPA - Machined brass cage (one-piece)
N - Circular groove in the outer ring (no snap ring)
NA - Radial clearance, non-interchangeable elements
NR - Circular groove in the outer ring including snap ring
P - Two-pieces outer ring
P5 - P5 Tolerance class more accurate than normal
P51 - Tolerance class P5 and radial clearance C1
P53 - Tolerance class P5 and radial clearance C3
P4 - P4 Tolerance
P41 - Tolerance class P4 and radial clearance C1
R - Non-standardized radial clearance (ex. R45)
TN - Polyamidecage
V - Roller bearing without cage (full-complement)
VH - Self-retaining roller bearing without cage
W3 - Lubrication holes in the outer ring
W4 - Lubrication holes in the outer and inner ring
W5 - Lubrication groove and holes in both rings
W6 - Lubrication groove and holes In the outer ring and lubrication holes in the inner ring
W7 - Locating holes
W8 - Lubrication groove on the outer ring side surfaces
W9 - Lubrication grooves on the inner ring side surfaces
W20 - Lubrication holes in the outer ring
W33 - Lubrication groove and holes on the outer ring
W44 - Lubrication groove and holes on the inner ring
W339 - W9+ W33

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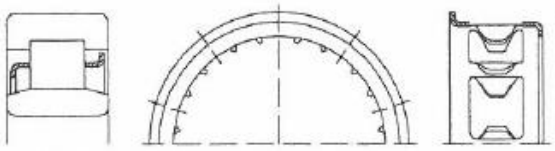
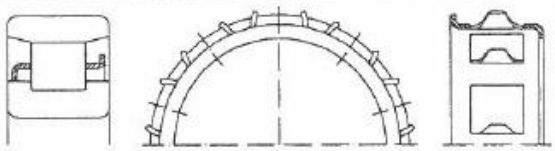
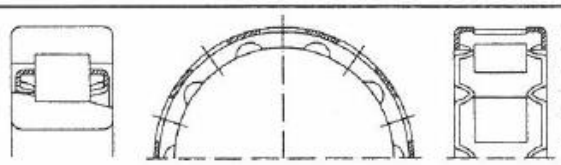
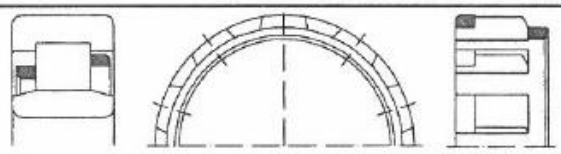
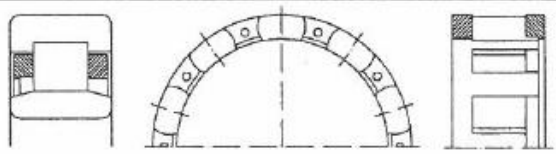
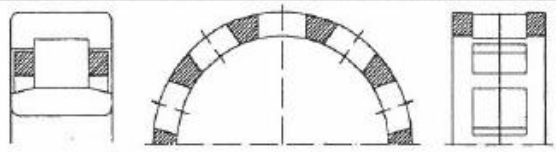
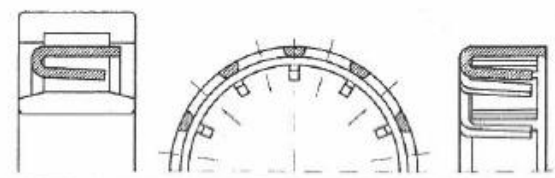
Cages

Small and medium-sized single row cylindrical roller bearings are generally fitted with pressed sheet cages. Large-sized bearings are fitted with machined brass cages with one of the following designs; guided on the rolling elements M, on the outside surface MA, or inner ring surface MB. In case of heavy loads and high speeds, cages are made of one piece machined brass. Glass fibre reinforced polyamide 6.6 cages are successfully used for small and medium-sized bearings, if the operating temperature doesn't exceed + 120°C. These cages have low weight, low coefficient of friction and are quiet while running. Cage design and some technical data are given in tabie4.

Cage design and technical data

Table 4

Cage	Design bearing	cage	Application	Max.value $D_m n$ oil	grease
Pressed sheet cage with tins			- General application - Low inertia - Provides proper bearing lubrication - Moderate speeds - Bearings NU,NJ,NUP	550×10^3	400×10^3
Pressed sheet cage with fins			- General application - Low inertia - Provides proper bearing lubrication - Moderate speeds - Bearings N	550×10^3	400×10^3
Pressed sheet cage			- General application - Low inertia - Provides proper bearing lubrication - Moderate speeds - Bearings construc-tion E type NU,NJ, NUP	550×10^3	400×10^3
Polyamide cage TN			- General application - Low frictional moment - High speeds - Bearings with d< 150 mm	1400×10^3	1100×10^3
Machined brass cage M, MA, MB			- General application - Heavy loads - Moderate and high speeds - Bearings with d> 100 mm	1200×10^3	900×10^3
One piece machined brass cage MPA			- General application - Heavy loads - Provides proper lubrication - High speeds	1400×10^3	1100×10^3
Pressed sheet cage ES			- General application - Low intertia - Provides proper bearing lubrication - Moderate speeds - Better guiding - Increased bearing life - Bearings NU, NJ, NUP	$550X10^3$	$400X10^3$

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