

Railway Bearings Technical Data

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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2 WHEELERS



3 WHEELERS



4 WHEELERS



TRACTORS



LCV, HCV



INDUSTRIES



RAILWAYS



AEROSPACE



WINNER
DERIVING GRAND PRIZE

Products from NBC

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.



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.

22 Railway Bearing Technical Data

22.1 Bearing and Axle Box details for Railway Applications

NBC provides cost effective solution and bearings to meet railway applications requirements. The bearings are specially designed to sustain harsh environment, shock & variable loads and high temperature. The railway product includes axle boxes and different types of bearings.

NBC is manufacturing axle boxes and bearings for fitment to

- locomotives
- ICF broad and meter gauge coaches, as well as
- For various wagon builders.



Cylindrical Roller bearings

Cylindrical Roller bearings are used in all traction motors for electric locomotives and electric cars. These bearings are utilized due to their high-speed and heavy-load capabilities, as well as their ease of assembly and disassembly.

Insulated bearings were developed for traction motor



Cartridge Tapered Roller Bearing

CTRB bearings are highly integrated with surrounding components and advanced sealing mechanisms. They offer outstanding performance and durability.

CTRB inch series are approved by the Association of American Railroads (AAR) for use on freight car axles and has been widely used in markets all over the world.

Optimo series: Upgraded cartridge tapered roller was developed for 25 ton axle load.



Spherical Roller Bearings

Spherical roller bearings can sustain, not only heavy radial loads, but also axial loads in either direction. They have excellent radial load carrying capacity and are suitable for use where there are heavy or impact loads.



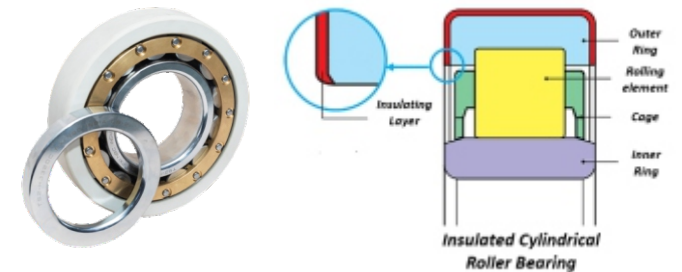
“Insuohm” Insulated Cylindrical Roller Bearing

Electrical insulation coating to prevent electrical pitting in the bearings and hence improved bearing life in Traction motor bearings. Features:

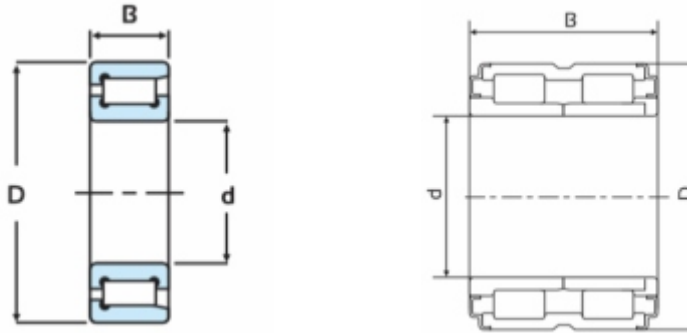
- Improves bearing life in electrical current passage
- Optimized coating with plasma spray process
- High insulation resistance
- High dimensional stability after coating
- Easy to mount

Benefits:

- Higher operational reliability
- Increased machine uptime
- Reduced overall operating costs
- Improves lubricant life
- Insulation over wide range of operating temperature.

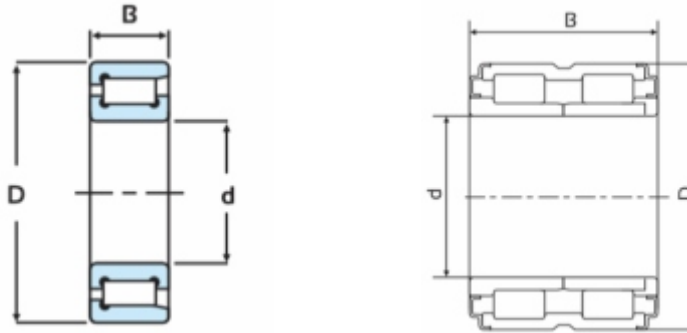


Bearings and Axle Boxes For Diesel Electric Locomotives



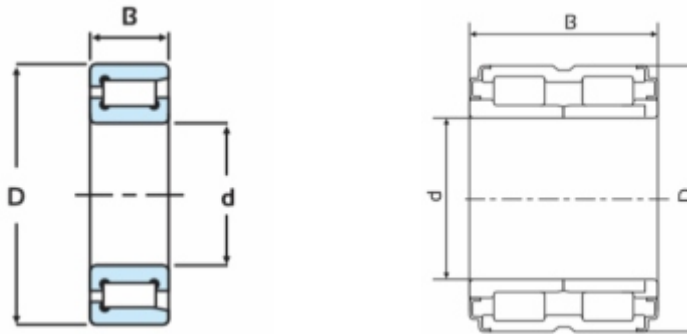
Locomotives	NEI Assembly Drg.	Boundary Dimensions				Basic Load Rating				Fatigue load limit	Bearing Number
		mm				KN		Kgf		KN	
		d	D	B	r	Dynamic Cr	Static Cor	Dynamic Cr	Static Cor	Cu	
ZDM4	X-158	100	200	67	4.0	441	496	44963	50536	54	WJ100X200 & WU100X200W
YDM4, YDM4A	92-4253	120	215	60	4.0	419	540	42713	55054	56	L6179 & L6180 RB5069 & RB5070
	X-151 (Step Size)	118	215	60	4.0	419	540	42713	55054	56	
WDS5, WDS6, WDM2, WCG2, WAM4, WAM4A, WAG5, WAG5A, WCAM1	92-4271C	150	270	80	2.0	718	932	73206	95036	91	L6204 & L6205 RB5043 & RB5044
	X-119 (Step Size)	148	270	80	2.0	718	932	73206	95036	91	
WDM3A, WAM4	X-105	150	270	80	2.0	718	932	73206	95036	91	RB5020 (2 Nos.) with Special Loose Lip RB5021 & RB5022 RB5062 (2 Nos.) with Special Loose Lip RB5063 & RB5064
	X-141 (Step Size)	148	270	80	1.5	718	932	73206	95036	91	
WDS3	92-4204	200	360	98	4.0	1022	1370	104245	139691	123	L6019 (2 Nos.)
WDS4	92-4277A	200	360	236	1.6	1756	2742	179019	279551	245	L6207 (1-Set)
WDP3A, WAP3, WAP6	X-180 (End Axle)	150	270	80	2.0	718	932	73206	95036	91	L6204 & L6205 RB5020 (2 Nos.) with Special Loose Lip RB5022
	X-180 (Middle Axle)	150	270	80	2.0	718	932	73206	95036	91	
WDP1	X-174	150	270	80	2.0	718	932	73206	95036	91	RB5020 (2 Nos.) with Special Loose Lip RB5021 & RB5022
WDG3A, WDM3B, WDM3D	X-171	150	270	80	2.0	718	932	73206	95036	91	RB5020 (2 Nos.) with Special Loose Lip RB5021 & RB5022
	X-182	148	270	80	1.5	718	932	73206	95036	91	

Bearings and Axle Boxes For Diesel Electric Locomotives



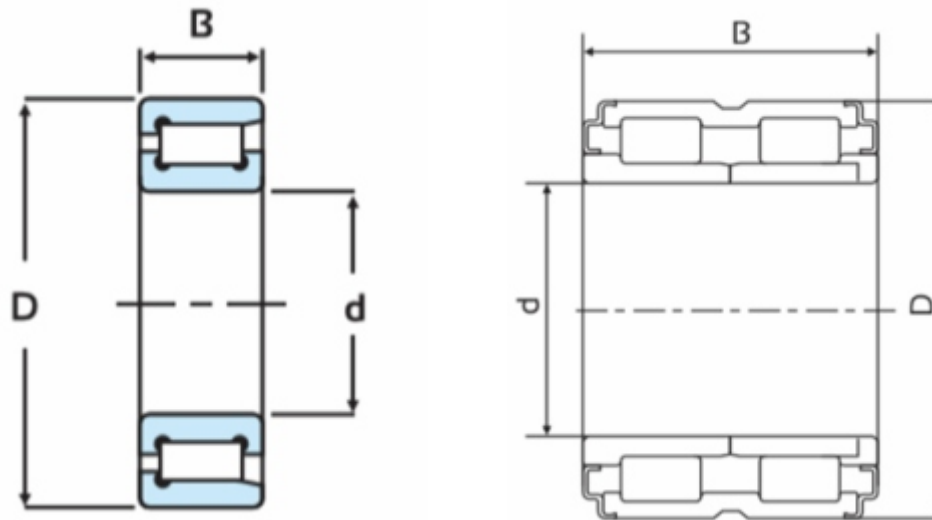
Locomotives	NEI Assembly Drg.	Boundary Dimensions				Basic Load Rating				Fatigue load limit	Bearing Number
		mm				KN		Kgf		KN	
		d	D	B	r	Dynamic Cr	Static Cor	Dynamic Cr	Static Cor	Cu	
WAP1, WAP4	X-122	150	270	80	2.0	718	932	73206	95036	91	RB5020 (2 Nos.) with Special Loose Lip RB5021 & RB5022 RB5062 (2 Nos.) with Special Loose Lip RB5063 & RB5064
	X-186 (Step Size)	148	270	80	1.5	718	932	73206	95036	91	
Sri Lankan Railways (SL3200WB)	X-187	150	270	80	2.0	718	932	73206	95036	91	RB5020 (2 Nos.) with Special Loose Lip RB5021 & RB5022
Malaysian Railways 2300HP	X-188	150	270	80	2.0	718	932	73206	95036	91	RB5020 (2 Nos.) with Special Loose Lip RB5021 & RB5022
WDP4	X-190	Refer CTRB Page of Catalogue									Adapter Assembly with CTRB 6-1/2x12 Class 'F' Bearing
WDG3A, WDM3D	X-191	150	270	174	1.2	1434	1980	146184	201901	193	RB5081D-E (End Axle) RB5081D-M (Middle Axle)
WDM3D, WDM3E, WDM3F	X-192	150	270	80	2.0	718	932	73206	95036	91	RB5020 (2 Nos.) with Special Loose Lip RB5021 & RB5022
2300 HP Cape Gauge Diesel Electric Locomotive	X-194	150	270	80	2.0	718	932	73206	95036	91	RB5020 (2 Nos.) with Special Loose Lip RB5021 & RB5022

Bearings and Axle Boxes For Diesel Electric Locomotives



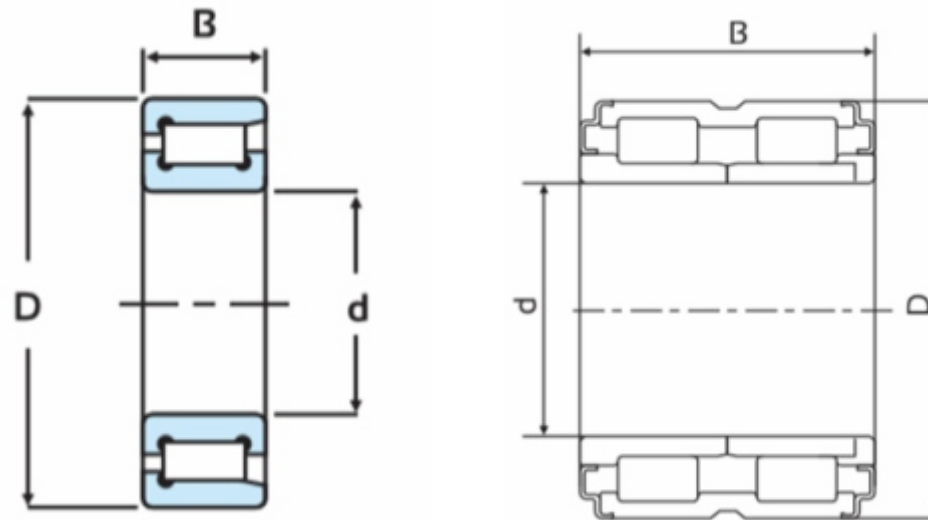
Locomotives	NEI Assembly Drg.	Boundary Dimensions				Basic Load Rating				Fatigue load limit	Bearing Number
		mm				KN		Kgf		KN	
		d	D	B	r	Dynamic Cr	Static Cor	Dynamic Cr	Static Cor	Cu	
WDM3A	X-197	150	270	174	1.2	1434	1980	146184	201901	193	RB5081D-E (End Axle) RB5081D-M (Middle Axle)
WDG3A, WDM3D	X-198	150	270	174	1.2	1434	1980	146184	201901	193	RB5081D-E (End Axle) RB5081D-M (Middle Axle)
WAG9, WAP7	X-181	150	250	160	2.1	1326	1800	135163	183546	178	RB5080D
	X-202 (Step Size)	148	250	160	2.1	1326	1800	135163	183546	178	RB5088D
Sri Lankan Railways M8A Loco	X-205	150	270	80	2.0	718	932	73206	95036	91	RB5020 (2 Nos.) with Special Loose Lip RB5021 & RB5022
WDP1M	X-211	150	270	80	2.0	718	932	73206	95036	91	RB5020 (2 Nos.) with Special Loose Lip RB5021
WDP3AM	X-212	150	270	80	2.0	718	932	73206	95036	91	RB5020 (2 Nos.) with Special Loose Lip RB5022 L6204 & L6205

Bearings and Axle Boxes For Electric Locomotives



Locomotives	NEI Assembly Drg.	Boundary Dimensions				Basic Load Rating				Fatigue load limit	Bearing Number
		mm				KN		Kgf		KN	
		d	D	B	r	Dynamic Cr	Static Cor	Dynamic Cr	Static Cor	Cu	
WAM4, WAM4A, WAG5, WAG5A, WAG5C, WAG5D, WCAM1, WCG2	92-4271C	150	270	80	2.0	718	932	73206	95036	91	L6204 & L6205
	X-119 (Step Size)	148	270	80	2.0	718	932	73206	95036	91	RB5043 & RB5044
WAM4, WAG5B, WCAM1	X-105	150	270	80	2.0	718	932	73206	95036	91	RB5020 (2 Nos.) with Special Loose Lip RB5021 & RB5022
	X-141 (Step Size)	148	270	80	1.5	718	932	73206	95036	91	RB5062 (2 Nos.) with Special Loose Lip RB5063 & RB5064
WAP3, WAP6	X-180 (End Axle)	150	270	80	2.0	718	932	73206	95036	91	L6204 & L6205
	X-180 (Middle Axle)	150	270	80	2.0	718	932	73206	95036	91	RB5020 (2 Nos.) with Special Loose Lip RB5022
WAG7, WCM6	X-171	150	270	80	2.0	718	932	73206	95036	91	RB5020 (2 Nos.) with Special Loose Lip RB5021 & RB5022
	X-182 (Step Size)	148	270	80	1.5	718	932	73206	95036	91	RB5062 (2 Nos.) with Special Loose Lip RB5063 & RB5064

Bearings and Axle Boxes For Electric Locomotives

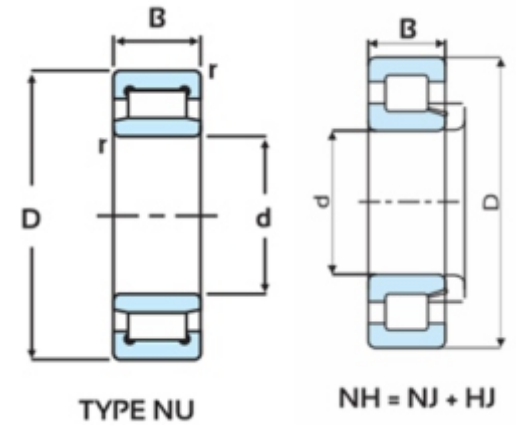


Locomotives	NEI Assembly Drg.	Boundary Dimensions				Basic Load Rating				Fatigue load limit	Bearing Number
		mm				KN		Kgf		KN	
		d	D	B	r	Dynamic Cr	Static Cor	Dynamic Cr	Static Cor	Cu	
WAP1, WAP4	X-122	150	270	80	2.0	718	932	73206	95036	91	RB5020 (2 Nos.) with Special Loose Lip RB5021 & RB5022
	X-186(Step Size)	148	270	80	1.5	718	932	73206	95036	91	RB5062 (2 Nos.) with Special Loose Lip RB5063 & RB5064
WAP3, WAP6	X-149	150	270	80	2.0	718	932	73206	95036	91	L6204 & L6205
WAG9, WAP7	X-181	150	250	160	2.1	1326	1800	135163	183546	178	RB5080D
	X-202(Step Size)	148	250	160	2.1	1326	1800	135163	183546	178	RB5088D
WAG7	X-207	150	270	80	2.0	718	932	73206	95036	91	RB5020 (2 Nos.) with Special Loose Lip RB5021 & RB5022
	X-182(Step Size)	148	270	80	1.5	718	932	73206	95036	91	RB5062 (2 Nos.) with Special Loose Lip RB5063 & RB5064
WAG5HB, 1400 HP LOCO	X-179	150	270	80	2.0	718	932	73206	95036	91	RB5020 (2 Nos.) with Special Loose Lip RB5021 & RB5022

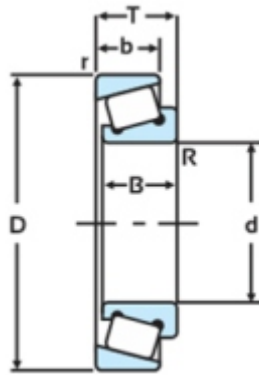
Bearing for Traction Motor Suspension Unit Application

Cylindrical roller bearing

Boundary Dimensions				Basic Load Rating				Fatigue load limit	Bearing Number	Mass Kg. (Apporox.)
mm				KN		Kgf		KN		
d	D	B	r	Dynamic Cr	Static Cor	Dynamic Cr	Static Cor	Cu		
220	340	56	3	561	750	57217	76478	67	NH1044	20.6
320	440	56	3	700	1107	71379	112881	90	NU1964	24.7

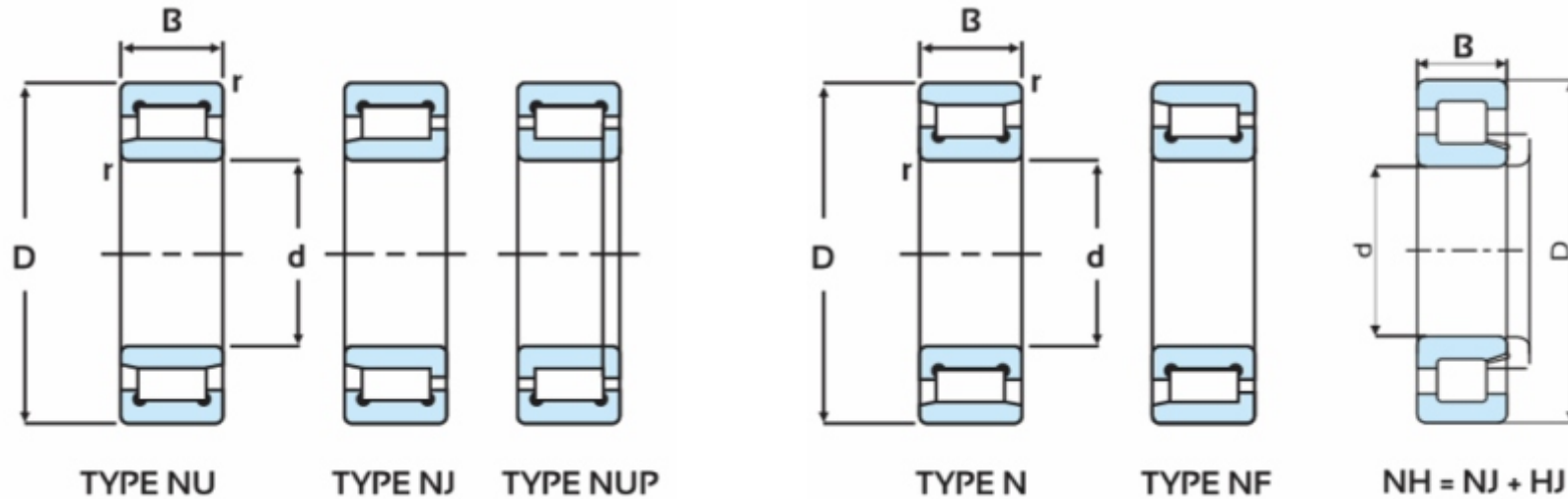


Single Row Taper Roller Bearing (Inch series)



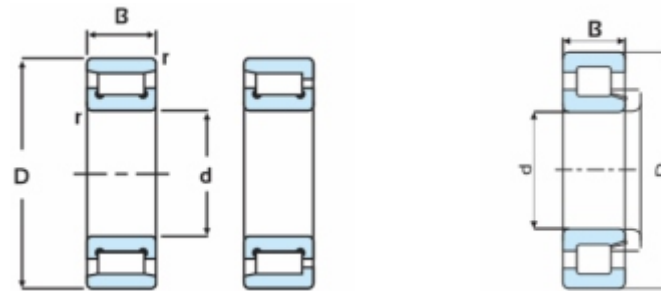
Boundary Dimensions							Basic Load Rating				Fatigue load limit	e	Bearing Number	Mass Kg. (Apporox.)
mm							KN		Kgf		KN			
d	D	T	B	b	R	r	Dynamic Cr	Static Cor	Dynamic Cr	Static Cor	Cu			
198.298	279.4	46.038	49.212	36.513	3.5	3.3	409	787	41685	80230	73	0.51	67981/67919	9.3
199.949	279.4	46.038	49.212	36.513	3.5	3.3	409	787	41685	80230	73	0.51	67982/67919	9.0
220.662	314.325	61.912	66.675	49.212	1.6	5.0	700	1239	71379	126341	113	0.33	M244249A/N1060	15.0
221.17	314.325	61.91	66.675	49.212	1.6	5.0	700	1239	71379	126341	113	0.33	M244210/N1059	14.0
255.6	342.9	57.15	63.5	44.45	1.5	3.3	689	1282	70237	130766	113	0.35	M349547/M349510	13.80
257.175	358.775	71.438	76.2	53.975	1.5	3.3	920	1664	93763	169637	145	0.33	M249747/M249710	20.65

Cylindrical Roller Bearing for Traction Motor



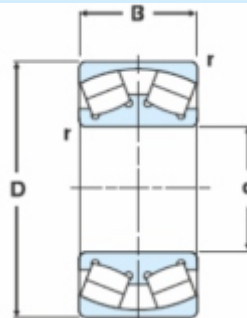
Boundary Dimensions				Basic Load Rating				Fatigue load limit	Bearing Number	Mass Kg. (Apporox.)
mm				KN		Kgf		KN		
d	D	B	r	Dynamic Cr	Static Cor	Dynamic Cr	Static Cor	Cu		
90	190	43	3.0	334	327	34034	33344	36	TS2-NU318C L1BX C4 PX1	6.6
90	190	43	3.0	354	355	36097	36199	39	TS2-NH318C L1BX C4 P6	6.7
90	190	43	3.0	354	355	36097	36199	39	TS2-NH318C L1BX2 C4 P6	6.6
100	215	47	3.0	425	425	43293	43337	45	TS2-NH320C L1BX CS123 PX1	9.8
100	215	47	3.0	425	425	43293	43337	45	TS2-NH320C L1BX2 CS123 PX1	9.8
120	260	55	4.0	534	551	54476	56185	55	TS2-NH324 L1BX1 CS175M P6	17.0
130	280	58	4.0	734	795	74805	81066	78	TS2-NU326C L1BX C4 PX1	18.8
140	300	62	4.0	743	797	75719	81270	77	TS2-NU328E L1BX C4 P6	22.4
140	300	62	4.0	743	797	75719	81270	77	TS2-NU328E L1BX2 C4 P6	22.3
150	320	65	4.0	896	986	91365	100542	93	TS2-NU330E L1BX1 CS188 P6	26.9
150	320	65	4.0	849	922	86523	93976	87	TS2-NU330C L1BX2 CS188 PX4	26.7
160	340	68	4.0	995	1102	101415	112371	102	TS2-N332E L1BX2 CS355	31.5
180	320	86	4.0	1100	1501	112167	153057	139	TS2-NU2236E L1BX2 C4	30.2
120	215	40	2.1	390	430	39768	43847	45	TS2-NU224E L1BX C4 P6	6.8

Insulated Cylindrical Roller Bearing for Traction Motor



Boundary Dimensions				Basic Load Rating				Fatigue load limit	Bearing Number	Mass Kg. (Apporox.)
mm				KN		Kgf		KN		
d	D	B	r	Dynamic Cr	Static Cor	Dynamic Cr	Static Cor	Cu		
100	215	47	3	450	469	45887	47824	50	TS2-NH320C L1BX CS123 PX1 ZC2	9.8
160	340	68	4	995	1102	101415	112371	102	TS2-N332E L1BX2 CS355 ZC2	31.5
95	170	32	2.1	244	265	24840	27022	30	TS2-NH219E L1BX C4 P6 ZC2	3.5

Spherical Roller bearing for Passenger Car Wheel Application



Boundary Dimensions				Basic Load Rating				Fatigue load limit	Bearing Number	Mass Kg. (Apporox.)
mm				KN		Kgf		KN		
d	D	B	r	Dynamic Cr	Static Cor	Dynamic Cr	Static Cor	Cu		
100	215	73	3	672	730	68524	74438	77	22320	12.9
130	280	93	4	1091	1231	111237	125525	120	22326	27.7
140	300	102	4	1267	1464	129167	149284	139	22328 BL1C3	33.8

22.4 AAR Standard Cartridge Taper Roller Bearing (CTRB)

Cartridge Tapered Roller Bearings (CTRB) are manufactured by National Engineering Industries Ltd. Jaipur under the technical collaboration and license of M/s Amsted Rail INC, USA.

This bearing is a self-contained, pre-assembled, pre-adjusted, pre-lubricated and completely sealed unit. The bearing has been designed for rapid mounting / dismounting and long service life.

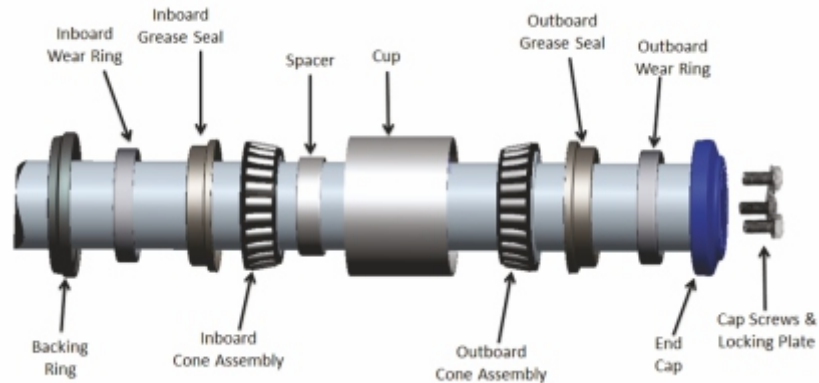


Fig. 1: Exploded View of Cartridge Tapered Roller Bearing



CTRB part number details:

REF	DESCRIPTION	QTY.	CLASS 'C' (5X9) PART NO.	CLASS 'D' (5-1/2X10) PART NO.	CLASS 'E' (6X11) PART NO.	CLASS 'F' (6-1/2X12) PART NO.	CLASS 'K' (6-1/2X9) PART NO.
1	CONE ASSEMB	2	HM124646	HM127446	HM129848	HM133444	HM133444
2	DOUBLE CUP	1	HM124618XD	HM127415XD	HM129814XD	HM133416XD	G202
3	SPACER	1	HM124646XA	HM127446XA	HM129848XA	HM133444XA	G205
4	WEAR RING	2	906Z	1006Z	1106Z	1206Z	G206
5	EFFICIENCY PLUS DDL SEAL	2	907ST	1007ST	1107G	1207G	G207G
6	BACKING RING	1	915NFZ	1015FZ	1115FZ	1215FZ	G215
7	AXLE END ASSEMBLY	1	911	1011	1111	1211	G211
7.1	AXLE END CAP	1	900	1000	1100	1200	G200
7.2	LOCKING PLAT	1	913	1013	1113	1213	1213
7.3	CAP SCREW	3	1012	1012	1112	1212	1212

Upgraded Class E (6x11) CTRB



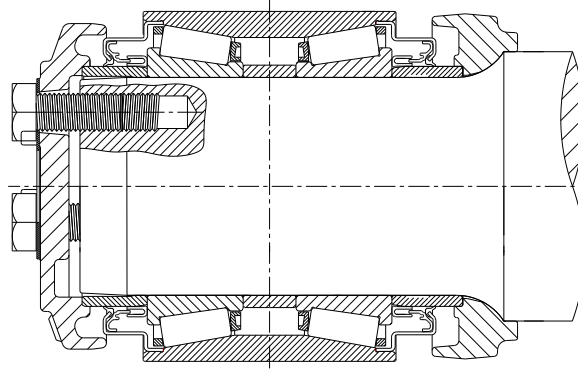
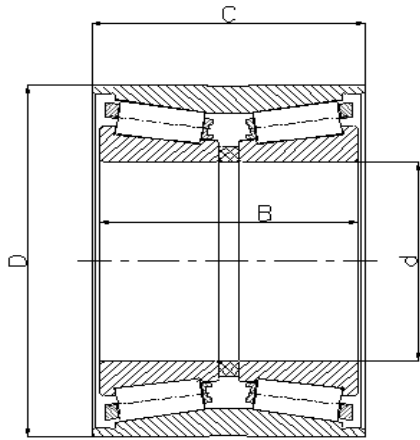
Upgraded (OptimoX) Cartridge Taper Roller Bearing (CTRB 6x11 Class 'E') for 25 tonne axle load

Upgraded (Optimo series) Cartridge Tapered Roller Bearings (CTRB 6x11 Class 'E') are manufactured by National Engineering Industries Ltd. Jaipur.

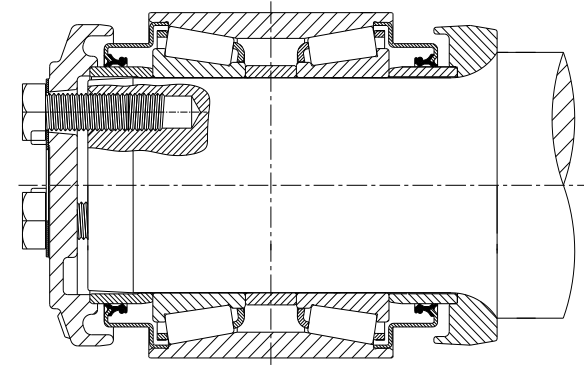
Upgraded (Optimo series) Bearing Benefits

- Best Grease Retention and Lower Torque (Efficiency Plus®)
- Increase in L_{10} Bearing Life
- Stronger Polymer Cage for Rail Impact Conditions
- Optimized Raceways for the Rail Environment

AAR Standard Cartridge Tapered Roller Bearings



CTRB Optimo Series

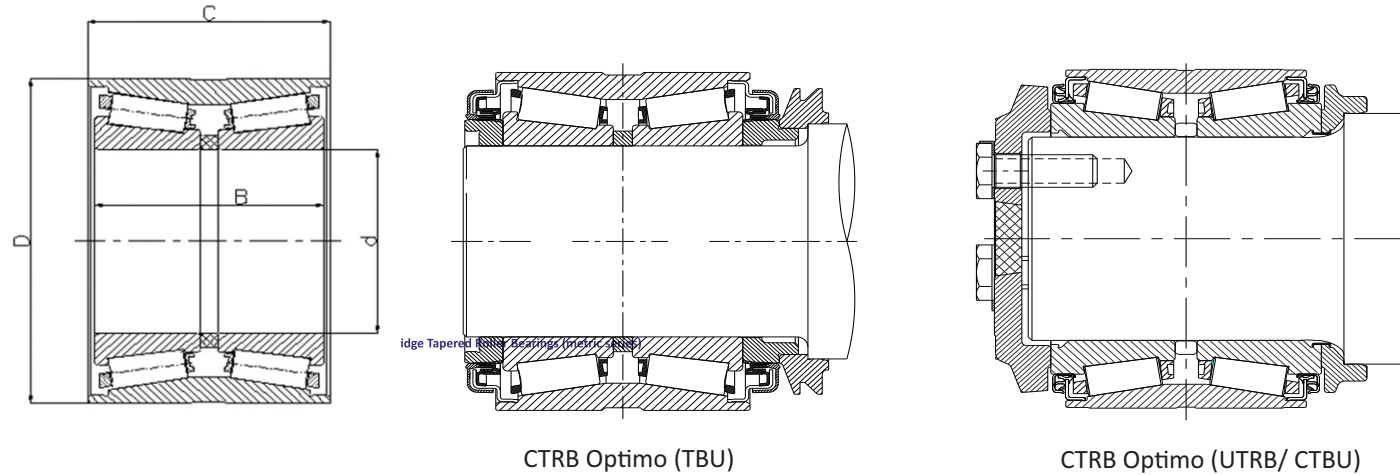


CTRB

Boundary Dimensions				Basic Load Rating				Fatigue load limit	Weight Kg	Designation	Performance	Cage	Bearing Size	Specification	Main Application
mm				KN		Kgf		KN							
d	D	B	C	Dynamic Cr	Static Co	Dynamic Cr	Static Co	Cu							
119.063	195.263	137.14	142.9	684	1109	69747	113085	119	25	CTRB CLASS C (5x9)	-	J	Class C	AAR	Freight
131.75	207.963	146.71	152.4	724	1232	73826	125643	129	27	CTRB CLASS D (5 1/2X10)	-	J	Class D	AAR	Freight
144.45	220.663	156.31	163.5	774	1348	78925	137436	138	33	CTRB CLASS E (6x11)	-	J	Class E	AAR	Freight
144.45	220.663	156.31	163.5	774	1348	78925	137436	138	33	CTRB CLASS E (6x11) - Optimo	LT	T2X	Class E	AAR	Freight
157.15	252.413	178.46	184.15	1052	1825	107272	186095	180	50	CTRB CLASS F (6 1/2X12) - Optimo	LT	T2X	Class F	AAR	Loco
157.15	249.873	154.25	160	1052	1825	107272	186095	180	40	CTRB CLASS K (6 1/2X9) - Optimo	LT	T2X	Class K	AAR	Freight

Codes	Description
LT	Low Torque Seal
T2X	Polyamide Cage
J	Pressed Steel Cage
AAR	According to AAR standard for axle bearings

METRIC CARTRIDGE TAPERED ROLLER BEARINGS



Boundary Dimensions				Basic Load Rating				Fatigue load limit	Weight Kg	Designation	Performance	Cage	Bearing Size	Specification	Main Application
mm				KN		Kgf		KN							
d	D	B	C	Dynamic Cr	Static Co	Dynamic Cr	Static Co	Cu							
120	195	125	131.5	787	1109	80252	113087	118	17.3	UTRB 120x195x131.5 - Optimo(CTBU)	-	T2X	CTRBOptimo 120x195 EN 12080	Metro/Tram	
120	195	125	131.5	787	1109	80252	113087	118	17.3	UTRB 120x195x131.5 (CTBU)	-	J	CTRBOptimo 120x195 EN 12080	Metro/Tram	
130	230	151	160	980	1636	99933	166826	167	30.6	CTRBOptimo 130x230x160 - Optimo(TBU)	-	T2X	CTRBOptimo 130X230 EN 12080	Metro	
130	230	151	160	980	1636	99933	166826	167	32.1	CTRBOptimo 130x230x160 - Optimo(TBU)	ZT	T2X	CTRBOptimo 130X230 EN 12080	Coach	
130	240	170	160	1129	1727	115126	176106	176	34.0	CTRBOptimo 130x240x160 - Optimo (TBU)	-	T2X	CTRBOptimo 130X240 EN 12080	Coach	
130	250	151	160	980	1636	99933	166826	167	40.07	CTRBOptimo 130x250x160 - Optimo(TBU)	-	T2X	CTRBOptimo 130x250 EN 12080	Loco	
150	250	180	160	1054	1834	107478	187017	181	31.5	CTRBOptimo 150x250x160 - Optimo(TBU)	-	T2X	CTRBOptimo 150X250 EN 12080	Freight	
150	250	154.5	160	1054	1834	107478	187017	181	31.5	CTRBOptimo 150x250x160 (TBU)	ZT	T2X	CTRBOptimo 150X250D IR	Loco	

Codes	Description
ZT	Zero Torque Seal
T2X	Polyamide Cage
J	Pressed Steel Cage
D	Groove with Oil hole on Cup for lubrication

Codes	Description
UTRB	Unitized Tapered Roller Bearing
CTRBOptimo	Cartridge Tapered Roller Bearing
EN 12080	According to EN 12080 for axle bearings
IR	Indian Railway