

Bearings for Iron & Steel Works

NSK provides outstanding bearing performance and reduced maintenance costs in a wide range of steel mill processes, including casting, rolling, finishing, raw material handling and iron making.



Long-Life Materials

Super-TF Material (Please refer to CAT. No.E1203 for details.)

- Features**
- Long service life under both clean and contaminated conditions
 - Improved wear and seizure resistance
 - Excellent dimensional stability
 - Improved high-temperature performance

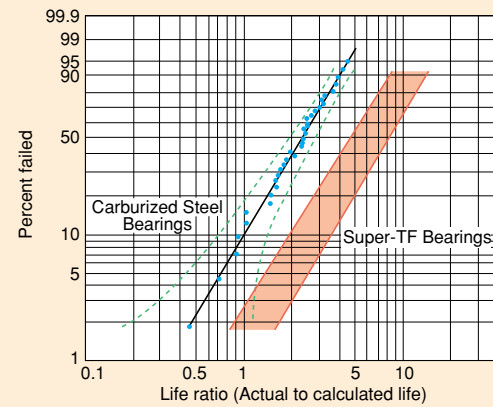


Fig. 1 Field data on Super-TF bearings

Other long-life materials from NSK:

- Hi-TF steel
- Highly purified steel
- Special steel for continuous caster bearings

How long service life is achieved under contaminated lubrication conditions:

In environments where foreign particles have become mixed into the lubricant, intensified stress around areas dented by such particles causes flaking, as shown in Fig. 2. This intensified stress can be minimized by optimizing the level of austenite retained in the bearing material.

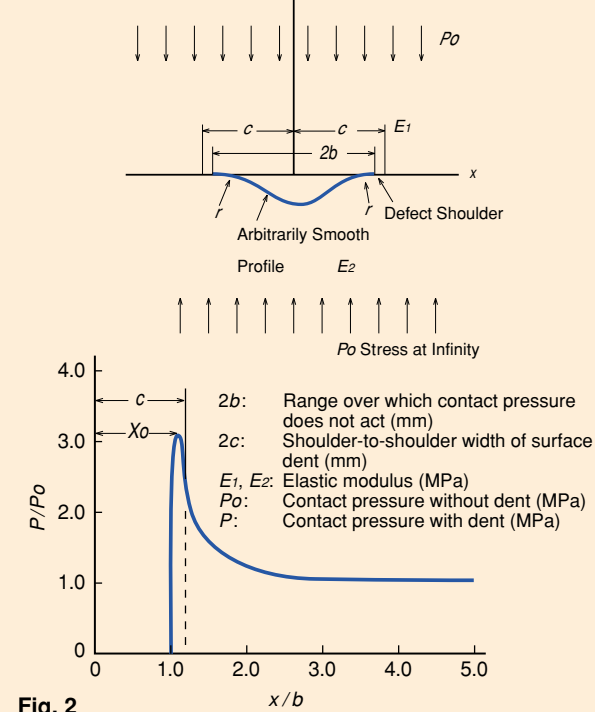


Fig. 2

Significantly Reduced Grease Consumption and Improved Durability

NSK, the first in the world with sealed roll neck bearings, delivers again with **Extra-Capacity Sealed-Clean™ Bearings** for roll necks.

High-load capacity design

New internal structure specifications combined with a new type of seal increase bearing capacity.

New seal and holder

The new seal and its holder make handling easier and minimize seal damage. (Patents pending)

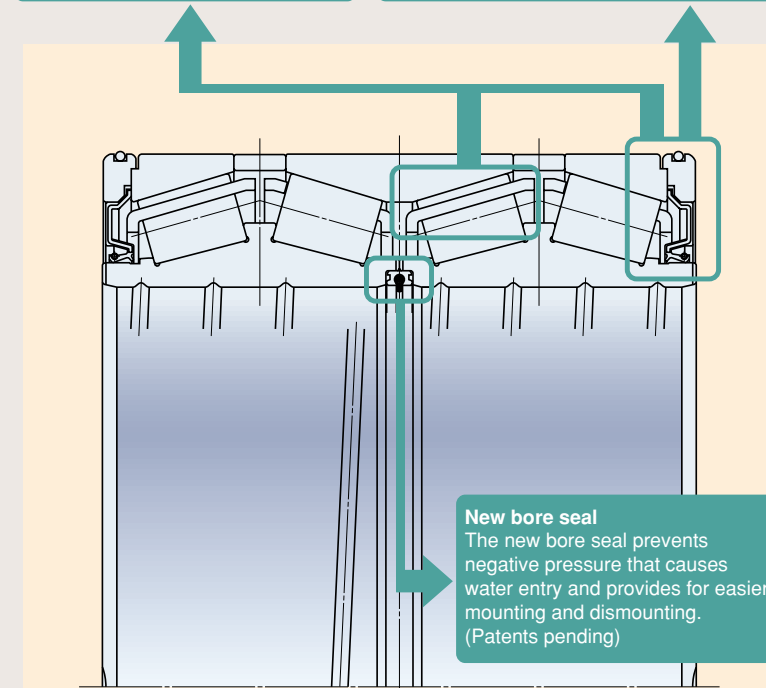


Fig. 5 Extra-Capacity Sealed-Clean™ Bearing

In addition to this bearing, other sealed-clean bearings offered by NSK include:

- Bearings for sintering machine pallets
- Bearing units for tension levellers
- Bearings for continuous caster rollers
- Bearings for chain conveyors
- Cylindrical roller bearings for crane sheaves
- Bearings for table rollers

Negative pressure develops inside sealed roll neck bearings because of internal temperature changes. This negative pressure causes water to more readily enter the bearing. In response, NSK has developed a new bore seal. Located in a position relatively free from coolant water, the new seal eliminates the build-up of negative pressure and thereby minimizes the entry of water, resulting in extended grease life.

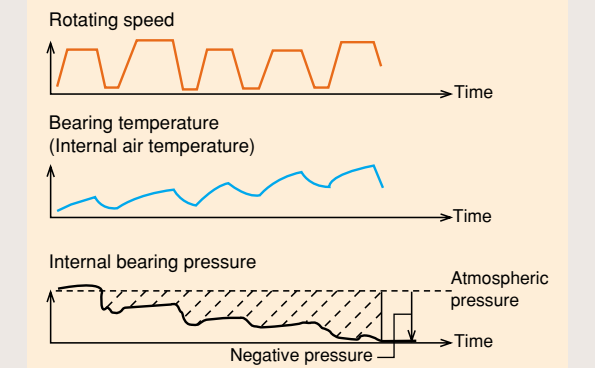


Fig. 6 Representation of internal negative pressure during operation of conventional sealed-clean roll neck bearings

New Bore Seal

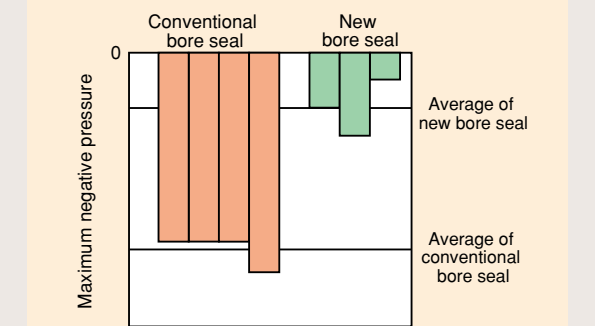


Fig. 7 Seal type and maximum negative pressure

Improved Handling

Ultra-Large Split Bearings for BOFs & Converter Trunnions

Features

- Bearing can be replaced without dismantling the bull gear
- Significant savings in time and cost of bearing replacement
- High-capacity design combines a joint ring with a seal ring

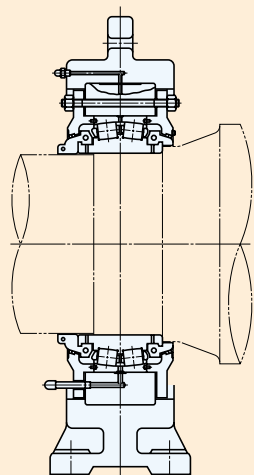


Fig. 3 Ultra-Large Split Bearing

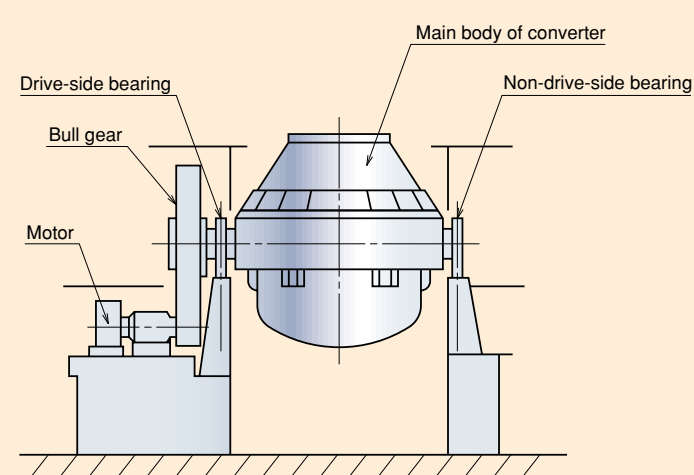
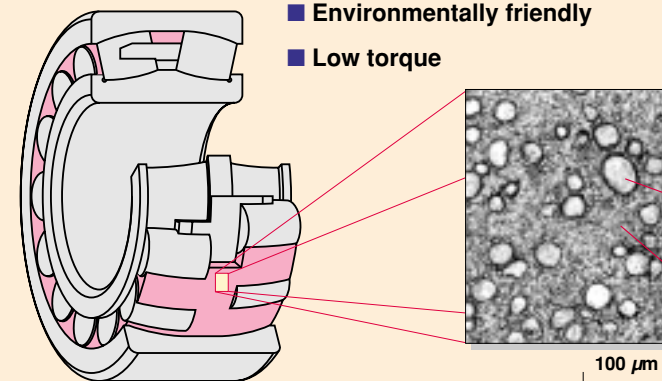


Fig. 4

Molded-Oil™ Bearings (Please refer to CAT. No.E1216 for details.)

Features

- Excellent performance in water- and dust-contaminated environments
- Environmentally friendly
- Low torque



Close-up of Molded Oil

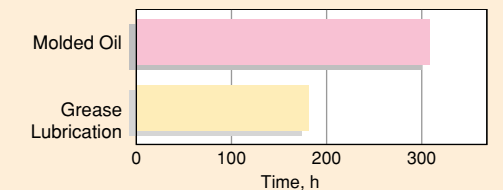
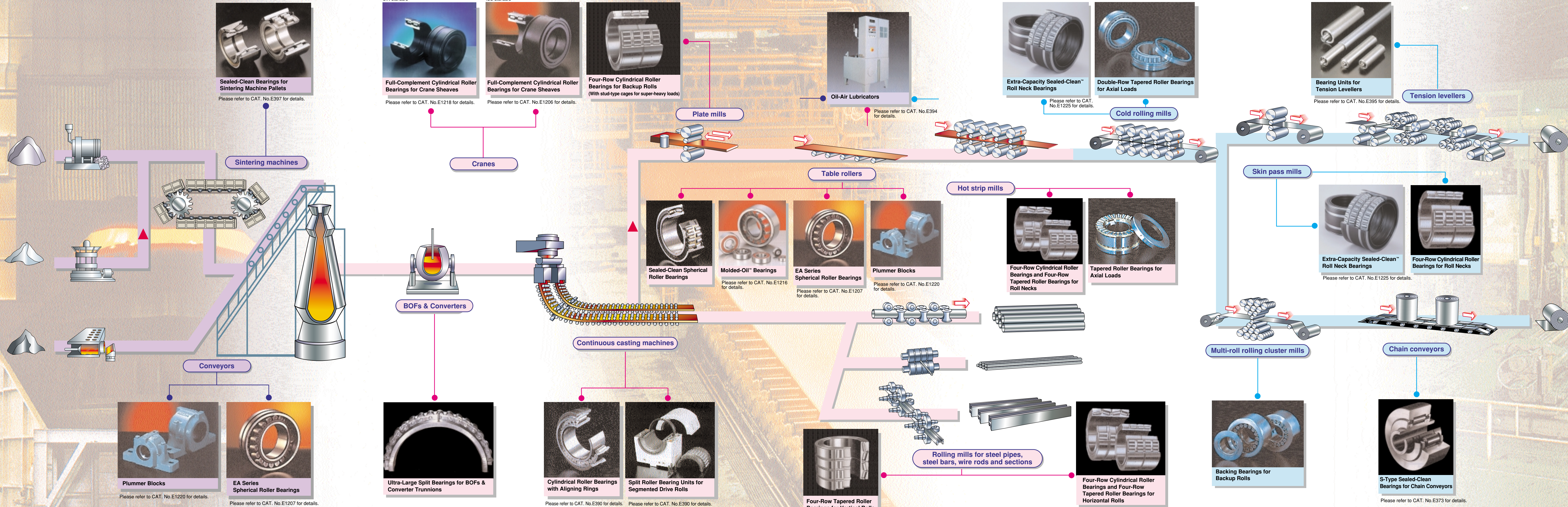


Fig. 8 Results of durability tests under exposure to water

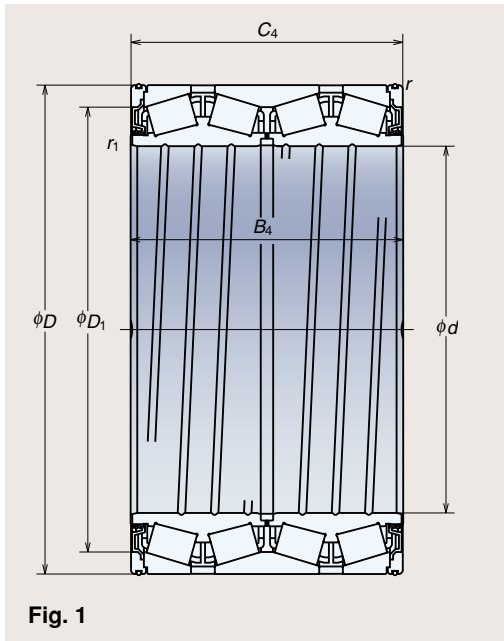
Portion containing mostly polyolefin
Polyolefin commonly chosen to replace dioxin-generating vinyl chloride for packaging food in supermarkets.

Portion containing mostly lubricating oil
The lubricating oil is mineral oil-based.

NSK Bearings for Iron & Steel Works



Extra-Capacity Sealed-Clean™ Roll Neck Bearings



Higher load capacity

Bearing No.	Load Capacity (kN) (Increase over previous sealed-clean products)
STF254KVS3551E	2510 (+15%)
STF279KVS3951E	2750 (+20%)
STF343KVS4551E	2830 (+29%)
STF482KVS6151E	4900 (+34%)

Bearing No.	Boundary Dimensions (mm; inches in parentheses)							Basic Load Ratings (kN)	
	<i>d</i>	<i>D</i>	<i>B₄</i>	<i>C₄</i>	<i>D₁</i>	<i>r₁</i> (min)	<i>r</i> (min)	<i>C_r</i>	<i>C_{0r}</i>
STF254KVS3551E	254.000 (10.0000)	358.775 (14.1250)	269.875 (10.6250)	269.875 (10.6250)	320	1.5	3.3	2510	5650
STF279KVS3951E	279.400 (11.0000)	393.700 (15.5000)	269.875 (10.6250)	269.875 (10.6250)	352	1.5	6.4	2750	6050
STF343KVS4551E	343.052 (13.5060)	457.098 (17.9960)	254.000 (10.0000)	254.000 (10.0000)	416	1.5	3.3	2830	6700
STF482KVS6151E	482.600 (19.0000)	615.950 (24.2500)	330.200 (13.0000)	330.200 (13.0000)	573	4.3	6.4	4900	13500

Full-Complement Cylindrical Roller Bearings for Crane Sheaves



*1 JIS Standard

*2 DIN Standard

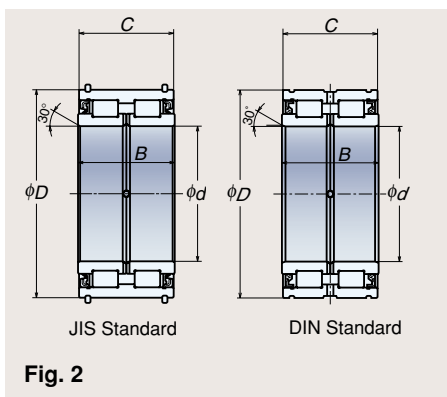


Fig. 2

Bearing No.	Boundary Dimensions (mm)				Basic Load Ratings (kN)		Mass (kg) (approx)
	<i>d</i>	<i>D</i>	<i>B</i>	<i>C</i>	<i>C_r</i>	<i>C_{0r}</i>	
*1 RS-5008DSNR	40	68	38	37	79.5	116	0.56
*2 RS-5008DSE7NA							
*1 RS-5010DSNR	50	80	40	39	100	158	
*2 RS-5010DSE7NA							
*1 RS-5015DSNR	75	115	54	53	179	305	
*2 RS-5015DSE7NA							
*1 RS-5020DSNR	100	150	67	66	320	585	
*2 RS-5020DSE7NA							

Ultra-Large Split Bearings for BOFs and Converter Trunnions

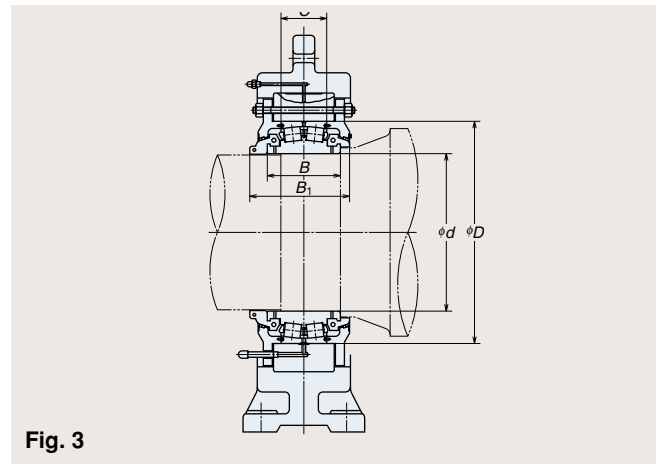


Fig. 3

Bearing No.	Boundary Dimensions (mm)					Basic Load Ratings (kN)	
	d	D	C	B	B_1	C_r	C_{0r}
950SLPT1451	950	1400	300	520	600	12300	27900
1200SLPT1752	1200	1700	410	660	730	17300	43500
1400SLPT1951	1400	1900	530	880	880	22800	65000

Cylindrical Roller Bearings for Backup Rolls (With stud-type cages for super-heavy loads)

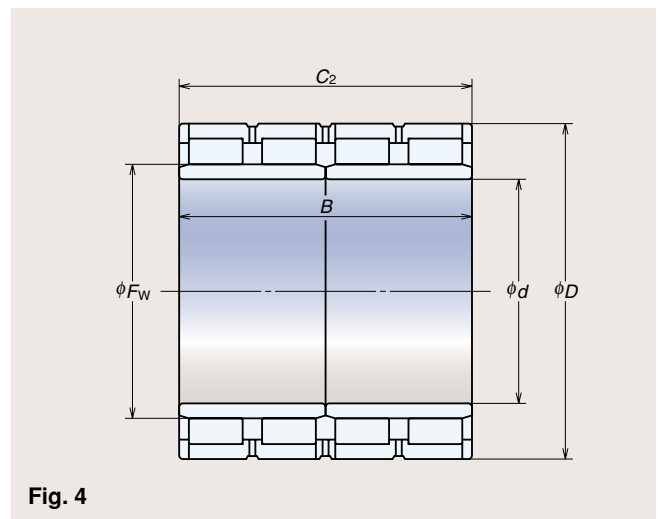
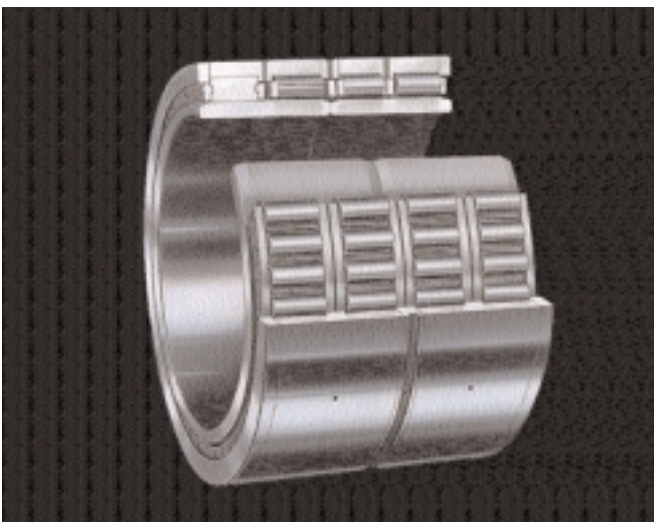
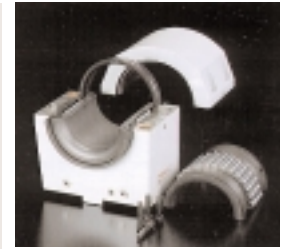
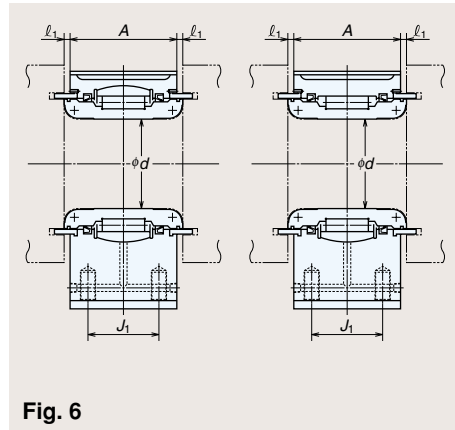
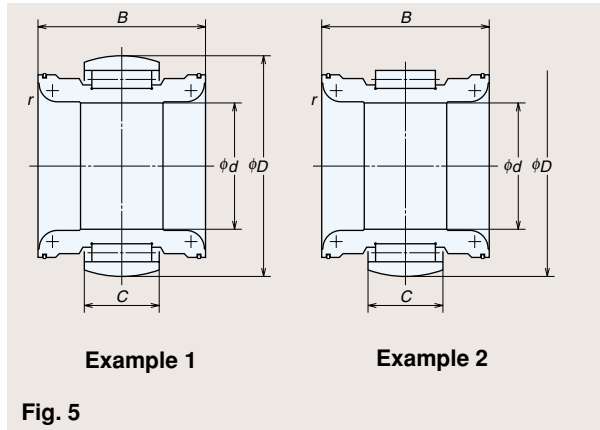


Fig. 4

Bearing No.	Boundary Dimensions (mm)					Basic Load Ratings (kN)	
	d	D	B	C_2	F_w	C_r	C_{0r}
STF800RV1014	800	1080	700	700	878	19100	55000
STF1270/1200RV1612	1270	1602	850	850	1350	32000	103000
STF1348RV1711	1348.95	1745	1010	1000	1466	42500	134000

Rolling Bearings for Continuous Caster Rolls

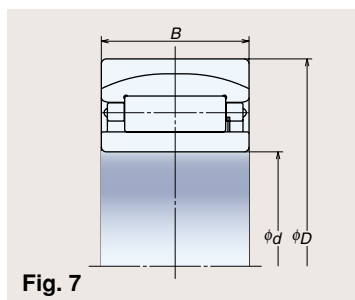
Split Roller Bearing Units for Segmented Drive Rolls



Bearing No.	Boundary Dimensions (mm)					Basic Load Ratings (kN)		Roll Diameter (mm)	Example
	d	D	B	C	r (min)	C_r	C_{0r}		
110RNPH1801	110	180	137	49	15	272	570	230	2
110RNP1802	110	180	149	60	20	390	865	250	1
160RNPH2502	160	255	199	90	20	735	1730	310	2
170RNP2601	170	265	214	100	20	880	2050	330	1

Bearing No.	Shaft Diameter (mm)	Boundary Dimensions (mm)		
	d	A	l_1	J_1
110PCR2301	110	120	9.5	—
110PCR2501	110	139	5.5	—
160PCR3101	160	178	11	—
170PCR3301	170	194	10.5	340

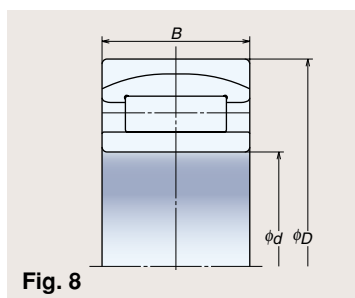
Cylindrical Roller Bearings with Aligning Rings (Cage type)



Bearing No.	Boundary Dimensions (mm)			Basic Load Ratings (kN)		
	Free Side	d	D	B	C_r	C_{0r}
110RUB41		110	180	69	271	490
140RUB40		140	210	69	330	670
140RUB41		140	225	85	435	830
170RUB41		170	280	109	710	1330
170RUB32		170	310	110	915	1590
200RUB41		200	340	140	1080	2200



Cylindrical Roller Bearings with Aligning Rings (Full-Complement type)



Bearing No.	Boundary Dimensions (mm)			Basic Load Ratings (kN)		
	Free Side	d	D	B	C_r	C_{0r}
110RUB41APV		110	180	69	375	805
110RUB32APV		110	200	69.8	440	805
150RUB40APV		150	225	75	435	1070
150RUB32APV		150	270	96	815	1640
200RUB40APV		200	310	109	960	2250
200RUB32APV		200	360	128	1320	2760

EA Series Spherical Roller Bearings



- Higher load capacity (+10 to 20%) and longer life
- High-strength and low-friction cage
- High-speed performance
- High-temperature specifications

Bearing No.		Boundary Dimensions (mm)				Basic Load Ratings (kN)		Limiting Speed (rpm)	
Cylindrical Bore	Tapered Bore	d	D	B	r (min)	C_r	C_{0r}	Grease Lubrication	Oil Lubrication
21309EAE4	21309EAKE4	45	100	25	1.5	119	144	4500	5600
22210EAE4	22210EAKE4	50	90	23	1.1	99	119	5000	6300
21310EAE4	21310EAKE4	50	110	27	2	142	174	4300	5300
22310EAE4	22310EAKE4	50	110	40	2	197	234	3800	4800
22216EAE4	22216EAKE4	80	140	33	2	212	275	3200	4000
21316EAE4	21316EAKE4	80	170	39	2.1	284	375	2800	3600
22316EAE4	22316EAKE4	80	170	58	2.1	435	565	2400	3000
22224EAE4	22224EAKE4	120	215	58	2.1	550	765	2000	2600
22324EAE4	22324EAKE4	120	260	86	3	955	1320	1600	2000
22226EAE4	22226EAKE4	130	230	64	3	655	940	1900	2400

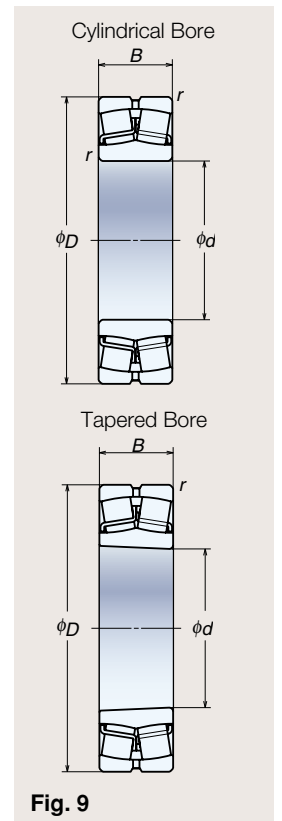


Fig. 9

Bearing Units for Tension Levellers



Work Roll and Intermediate Roll Unit Bearings

Unit No. Work roll (Intermediate roll)	Boundary Dimensions (mm)				
	d	D	L_1	L_2	D_1
8UMB05 + (WX3013) (IX3013)	8	30	1466	1250	26
12UMB08 + (WX3015) (IX3015)	12	30	1730	1500	28
15UMB08 + (WX4022) (IX4022)	15	40	2433.5	2200	38

High-precision and high-speed performance spindle-shaped roll unit with thrust blocks at both ends

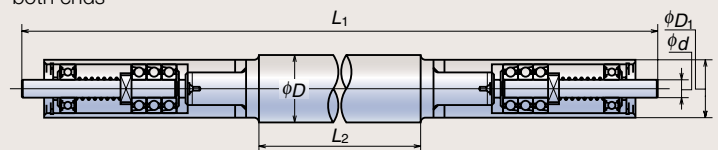


Fig. 10

Backup Roll Unit Bearings

Bearing Unit No.	Boundary Dimensions (mm)				Basic Load Ratings (kN)		Example
	d	D	L_1	L_2	C_r	C_{0r}	
27UMB07	22	50	163	135	89	143	1
35UMB84	22.4	63	204	163	87.5	165	1
35UMB47	24	65	193	243	105	209	1
40UMB30	26	75	264	215	136	237	1
34UMB23	26	75	264	215	147	234	2

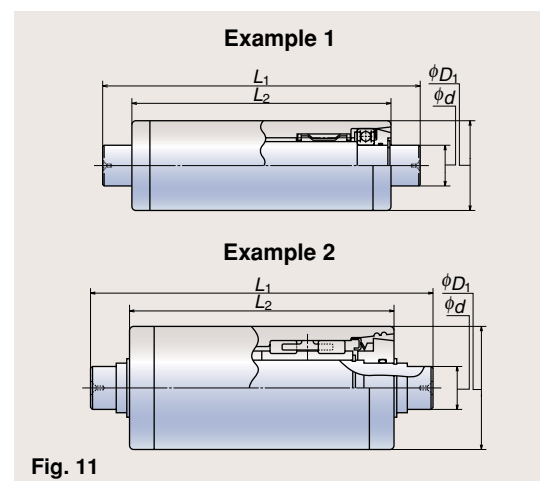


Fig. 11