SRG

Cylindrical Roller Bearings for the Backing Shafts of Multi-roll Mills

SRG BEARINGS

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About us 公司简介

SRG Bearings is an internationally renowned bearing brand belonging to SRG GROUP LIMITED. It is a bearing factory that integrates bearing production, research and development, and export. We mainly provide roller and ball bearings.

SRG Bearing Factory was established in 1997 and is located in Liaocheng City, Shandong Province. It is a long-standing bearing production enterprise. We have 120 CNC machine tools, 6 bearing processing production lines, and can independently complete bearing production, assembly, precision grinding, heat treatment, and other processes. The inner bore size range is from 3mm to 6.5m, and the weight range is from 10.5g to 2.6 tons.

Our main products include:

Miniature and medium-sized deep groove ball bearings
Double row self-aligning roller bearings
Four-row heavy-duty cylindrical roller bearings
Self-aligning roller bearings
Thrust ball bearings, thrust ball and roller bearings
Single and double row tapered roller bearings
Needle roller bearings
High-precision spindle bearings
Pillow block bearings, shaft sleeves, steel balls
Technical support
Maintenance and repair
Product training

SRG bearings are widely used in railways, mines, machinery, automobiles, ships, metallurgy, petroleum, electricity, agriculture, textile, and aviation industries.

SRG products have been sold to Europe, Asia, America, and Southeast Asia, which are our most important markets. We have spent a lot of time developing new products while also producing high-quality products. We are popular both domestically and internationally.

We welcome your inquiries and look forward to future cooperation.

Product introduction

1. Introduction

Based on many years of experience and recorded success in the area of multi-roll mills, SRG supplies high-durability, high-precision cylindrical roller bearings for backing shafts. SRG also supplies regrinding jigs that can grind the outside diameter surface of the bearings with exact precision.

More durable outer ring

Inner ring with longer rolling fatigue life

Outer ring with higher running accuracy after regrinding

More efficient outer ring regrinding

2、Construction and Advantages of SRG Bearings

On each backing shaft of a multi-roll mill, several bearings are installed side by side. With their outside diameter surfaces in direct contact with the intermediate rolls, these bearings rotate while carrying components of rolling force. Therefore, the outer rings of these bearings are required to have adequate rigidity and fatigue strength, and should be finished with high precision.

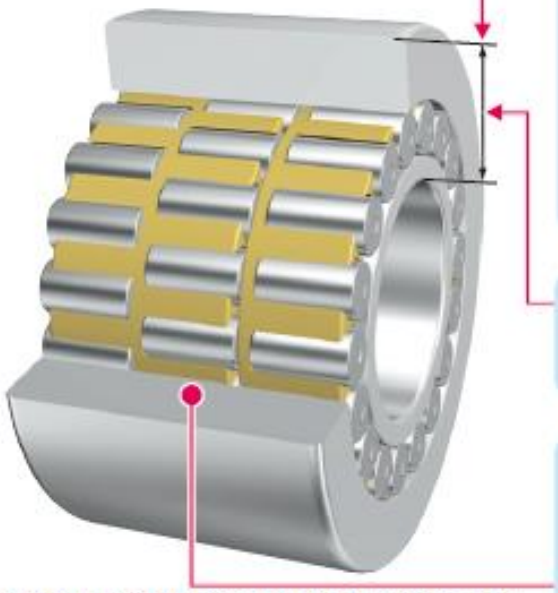


Fig. 2 Structural row of three row cylindrical roller bearing

Fig. 3 Structural row of sealed type multiple row cylindrical roller bearing

- The outside diameter surfaces of these bearings are crowned, preventing load concentration at the ends and thus protecting the intermediate rolls from damage.

Fig. 4 Typical Contact Stress Distribution of Outer-ring Outside Surface

- The bearing section height and running accuracy of JTEKT's precision produced bearings realize optimal load distribution, contributing to the improved precision of rolled products.

- The outer rings of SRG bearings for backing shafts are made from a newly developed steel material, processed by JTEKT's original cored hardening treatment.
Compared with carburized steel, this newly developed steel has the following advantages:
  - The suitably soft core ensures superior impact resistance.
  - The thick hardened surface layer ensures high rigidity and provides the outside diameter surface with an increased regrinding allowance.
  - The excellent material composition realizes high fatigue strength.

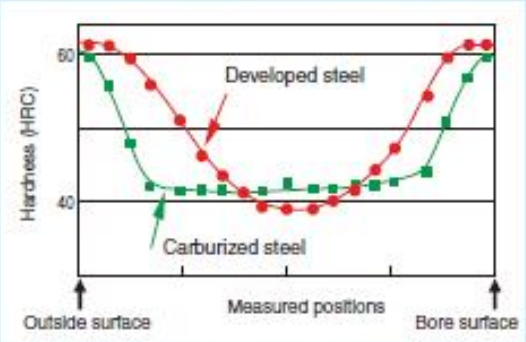


Fig. 5 Typical Hardness Distribution of cored hardening Outer Ring

Fig. 6 Macroscopic Material Composition

* The cored hardening treatment is applicable to bearings of no less than 130 mm in bore diameter.

3. Regrinding Jigs for Bearings for Backing Shafts

Overview

The outside diameter surfaces of the bearings used on the backing shafts of multi-roll mills should be ground periodically to retain precise bearing performance, thus ensuring the quality of rolled products. SRG supplies the jigs that grind bearing's outside diameter surface with high precision.

Fig. 7 Bearing-regrinding Jig

Advantages

1 The jigs minimize the radial runout of the bearings.

Once the bearing is installed into the jig, the jig completely nullifies any clearance on the fitting surface between the jig and bearing and the internal clearance of the bearing, eliminating play in the radial direction. The jig grinds the outside diameter surface while turning the outer ring and retaining the inner ring as stationary, enabling grinding under the same conditions as when in operation.

2 The jigs improve efficient installation and removal.

Bearings can be installed on and removed from the jig easily without the need of disassembling the inner ring and outer ring. There is no possibility that rollers will come off.

Jig Types and Constructions

The jigs come in two types, which should be selected according to the dimensions and types of backing-shaft bearings. Please specify the type suitable to your needs.

■ Type 1

This type is suitable to bearings with the outer ring with ribs and with a bore diameter no less than 70 mm.
This jig requires holes for work carrier on the end face of the outer ring.

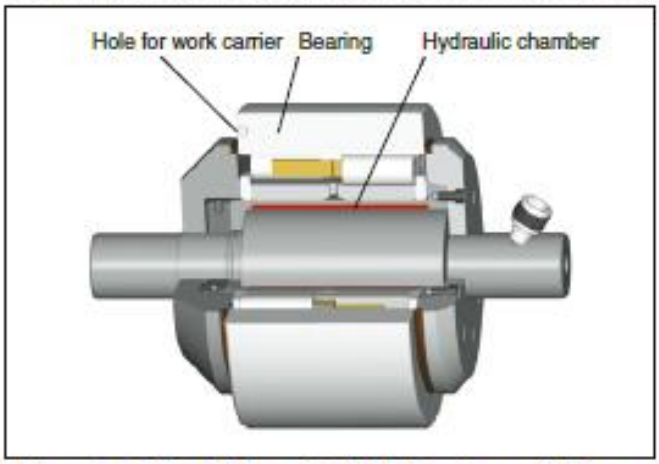


Fig. 8 Typical Installation of Suitable Bearing on Jig Type 1

■ Type 2

This jig is suitable with bearings with the outer ring without ribs, such as those used on the Sendzimir Rolling Mills ZR21 an ZR22.

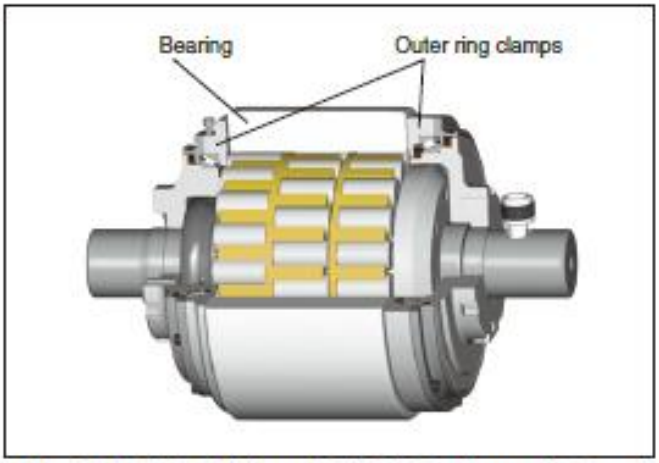


Fig. 9 Typical Installation of Suitable Bearing on Jig Type 2

4、Measurement for Bearing Section Height

Overview

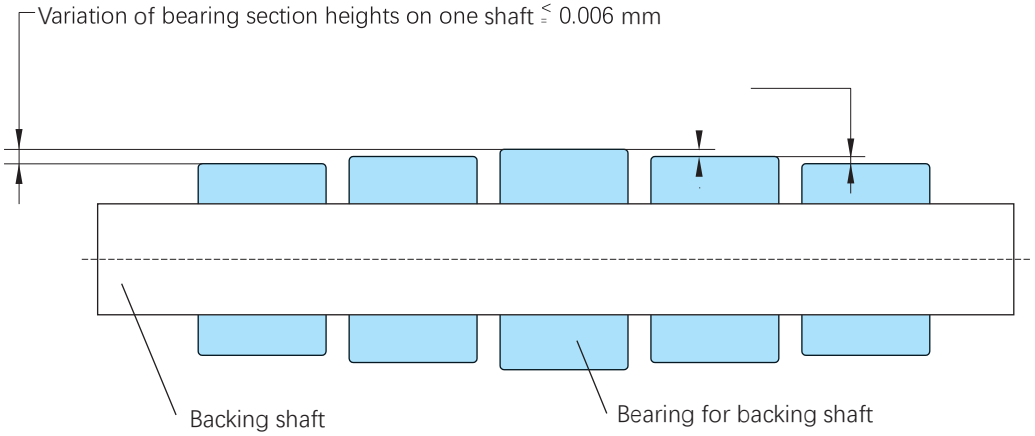
When the outside diameter surface of a bearing is ground, it is critical to accurately control the variation of bearing section heights of all the bearings installed on the backing shaft. SRG supplies Measurement for bearing section height that suit the individual bearings listed on the dimensional table.

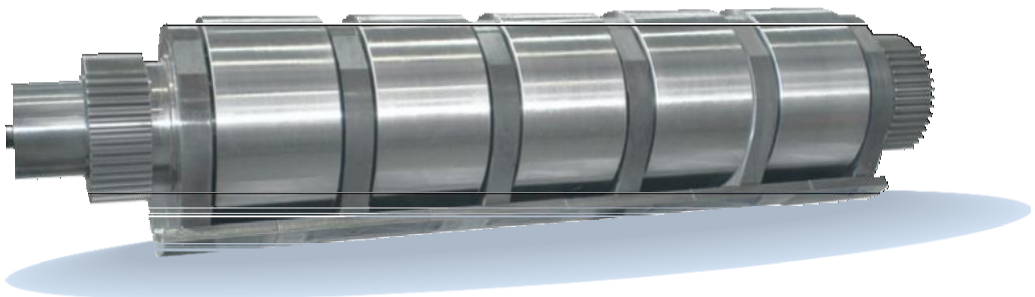
Advantages

- **These bearing section height measurements are highly rigid and perform extremely precise measurement.**
- **These measurements can measure the running accuracy of the outer rings as well.**
- **For easy bearing installation and removal, the measurements are arbor-shaped.**

Reference information

SRG can supply the bearings listed in the dimensional table such that they can be assembled on the backing shaft so as to satisfy the bearing section height tolerances shown below:





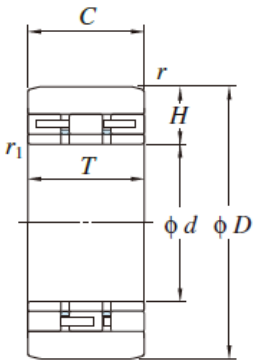
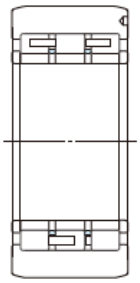


Fig.1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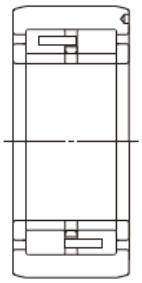


Fig.3

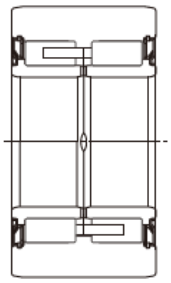


Fig.4


Fig.5

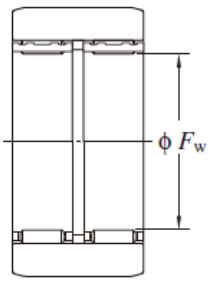


Fig.6

Bearing number	Boundary dimensions (mm)						Basic load rating (kN)	
	$d\,(F_w)$	D	T	C	r	r_1	C_r	C_{0r}
04DC04046ADS	(18)	35	–	46	0.5	–	33.8	52
05DC05045ADS	(25)	45	–	45	0.8	–	35.3	59.3
06DC05055BDS	(28)	48	–	55	0.8	–	44.5	93.3
06DC05055DS	(28)	54	–	55	0.8	–	44.5	93.3
06DC0846A	31.75	76.2	46.23	45.85	0.8	1.5	96.3	183
09DC09055DS	(45)	85	–	55	0.8	–	59.1	160
10DC1280DS	50	120	80	80	1.5	1.5	268	379
10DC1285DS	50	120	85	85	1.5	1.5	303	427
11N1226V	54.999	120	25.999	25.999	1.6	1.6	77.7	138
11DC1252	55	120	52.197	52	1.6	1.6	203	341
12DC1695DS	60	160	95	95	1.5	2	398	589
12DC1690DS	62	155	90	90	1	2	356	529
12DC16110DS	62	155	110	110	1	2	404	622
13DC1770DS	65	165	70	70	1.5	2	424	586
13DC17100DS	65	170	100	100	2	2	398	597
14DC1690LDS-1	70	160	90	90	1.5	1.5	347	546
14DC1690ADS	70	160.07	90	90	1.5	1.5	379	667
18DC2294DS	90	220	94	94	2	1.5	687	997
18DC2294/96DS	90	220	96	94	3	3	494	700
18DC2295DS	90	220	95	95	2	2	532	795
18DC22130ADS	90	220	130	130	2	2	699	1130
18DC23100DS	90	230	100	100	2	3	643	982
18DC26125DS	90	260	125	125	2	2	923	1520

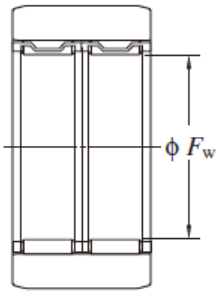


Fig.7

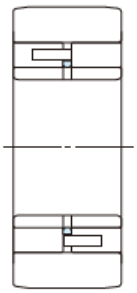
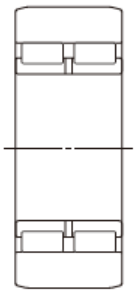


Fig.8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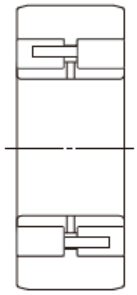
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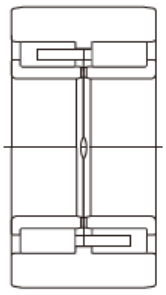
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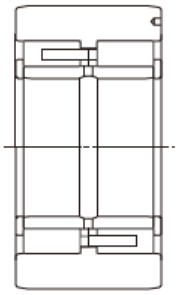


Fig.12


Fig.13

Bearing number	Fig.	Bearing section height at the time of manufacture (mm)	Mass (kg)	Compatible Rolling Mill Model	Number of bearings used per mill[1)]
04DC04046ADS	6	8.4875	0.225	Z-High	24
05DC05045ADS	6	9.9875	0.350	Z-High	64
06DC05055BDS	7	9.9875	0.468	Z-High	128
06DC05055DS	7	12.9875	0.677	Z-High	64
06DC0846A	9	22.200	1.27	ZR34	40
09DC09055DS	7	19.9925	1.69	Z-High	128
10DC1280DS	3	34.976	5.15	KT	32
10DC1285DS	3	34.984	5.40	KT	32
11N1226V	13	32.4672	1.69	ZR24	24,56
11DC1252	9	32.483	3.27	ZR24	40
12DC1695DS	3	46.484	11.5	KT	20(32)
12DC1690DS	3	46.484	9.97	KST	8(44)
12DC16110DS	2	46.484	12.2	KST	36(44)
13DC1770DS	10	49.982	8.83	Sundwig	40
13DC17100DS	3	52.480	13.5	KT	10(34)
14DC1690LDS-1	11	44.977	10.1	ZR33	40
14DC1690ADS	1	45.000	10.5	ZR33	32,48,72
18DC2294DS	10	64.976	21.2	Sundwig	40
18DC2294/96DS	5	65.000	21.0	Sundwig	64
18DC2295DS	3	64.982	20.9	KST	40
18DC22130ADS	2	64.982	28.7	KST	32,40
18DC23100DS	3	69.980	24.2	KT	24(34)
18DC26125DS	3	84.970	41.3	KT	34

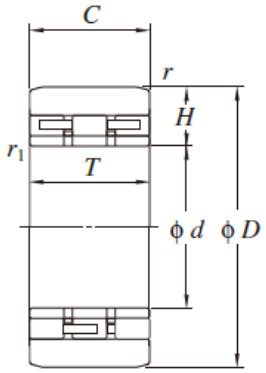
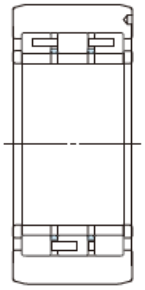


Fig.1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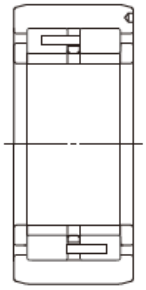
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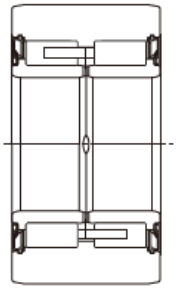


Fig.4


Fig.5

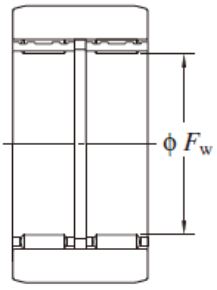
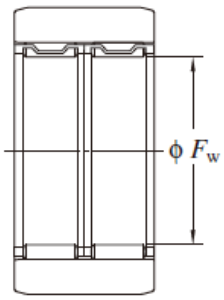


Fig.6

Bearing number	Boundary dimensions (mm)						Basic load rating (kN)	
	$d(F_w)$	D	T	C	r	r_1	C_r	C_{0r}
20DC23080DS	**100**	225.021	80	80	1.5	1.5	607	991
20DC23100NDS-1	**100**	225	100	100	3	1.5	547	838
20DC23120KDS-2	**99.995**	225	120	120	1.5	1.5	625	995
20DC23120LDS-1	**100**	225	120	120	3	1.5	676	1 100
20DC23120MDS	**100**	225.021	120	120	1.5	1.5	814	1 440
20DC2695DS	**100**	260	95	95	2	2	698	1 060
20DC26105DS	**100**	260	105	105	2	2	710	787
20DC26130DS	**100**	260	130	130	2	2	952	1 580
22DC28165DS	**110**	280	165	165	2	2	1 120	1 880
23DC26140DS	**115**	260	140	140	3	2	976	1 690
24DC28165DS	**120**	280	165	165	2	3	1 100	1 940
24DC35165ADS	**120**	350	165	165	2	3	1 370	2 220
26DC30130DS	**130**	300.02	130	129	2	3	1 050	1 740
26DC30130BDS	**130**	300.02	130	129	4	3.5	1 070	1 620
26DC30132ADS	**130**	300.02	132	129	2	3	1 140	1 830
26DC30160DS	**130**	300	160	159.5	4	3.5	1 330	2 340
26DC30170MDS-5	**130**	300	172.644	172.644	4	3.5	1 560	2 900
26DC30170KDS-3	**130**	300	172.644	172.644	4	3.5	1 320	2 210
26DC35175DS	**130**	350	175	175	2	3	1 400	2 300
36DC41171DS	**180**	406.42	171.04	171.04	4	4	2 060	3 810
36DC41171ADS	**180**	406.42	171.04	171.04	4	1	1 910	3 340
36DC41171KDS	**180**	406.42	171.04	171.04	4	3	1 550	2 700
36DC41217DS+DP	**179.984**	406.43	223.96	217	4	0.5	2 350	4 500
36DC41224KDS	**179.984**	406.43	224.25	220	4	3	1 870	3 340
36DC41224QDS	**180**	406.42	224.25	224	4	3	2 290	4 230



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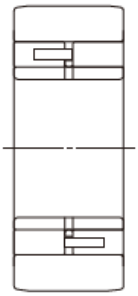
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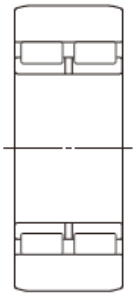
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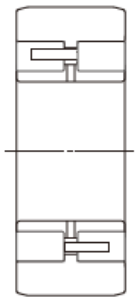
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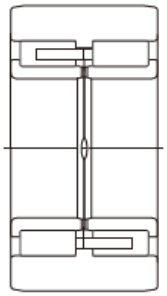
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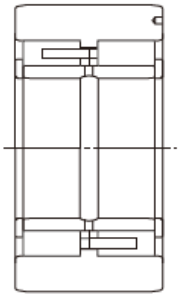
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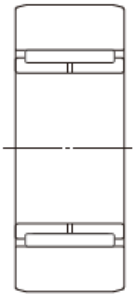
Fig.13

Bearing number	Fig.	Bearing section height at the time of manufacture (mm) H	Mass (kg)	Compatible Rolling Mill Model	Number of bearings used per mill[1)]
20DC23080DS	8	62.474	18.2	**ZR23**	12(36)
20DC23100NDS-1	11	62.480	21.7	**ZR23**	40
20DC23120KDS-2	4	62.474	26.0	**ZR23**	32,40,48
20DC23120LDS-1	12	62.4775	26.3	**ZR23**	32,48,56
20DC23120MDS	1	62.474	27.2	**ZR23**	32
20DC2695DS	3	79.970	30.2	**KT**	32
20DC26105DS	3	79.970	33.5	**KT**	32
20DC26130DS	3	79.970	41.5	**KT**	32
22DC28165DS	2	84.965	60.2	**KT**	10(34)
23DC26140DS	2	72.470	41.9	**KST**	40
24DC28165DS	3	79.965	57.7	**KT**	14(38)
24DC35165ADS	12	114.965	98.3	**KT**	24(34)
26DC30130DS	3	85.010	52.2	**Sundwig**	56
26DC30130BDS	5	85.010	51.8	**Sundwig**	–
26DC30132ADS	3	85.010	53.8	**Sundwig**	72
26DC30160DS	1	84.9617	64.8	**ZR22**	40,48
26DC30170MDS-5	1	84.955	72.6	**ZR22**	40,48
26DC30170KDS-3	4	84.955	70	**ZR22**	40,48
26DC35175DS	12	109.965	101	**KT**	24(38)
36DC41171DS	1	113.155	130	**ZR21**	48,56
36DC41171ADS	12	113.155	124	**ZR21**	48,56
36DC41171KDS	4	113.155	121	**ZR21**	48
36DC41217DS+DP	1	113.155	161	**ZR21**	40,48
36DC41224KDS	4	113.181	150	**ZR21**	32,48
36DC41224QDS	11	113.155	162	**ZR21**	40,48