



Fixed side SL type cylindrical roller bearing (open type)

Floating side SL type cylindrical roller bearing (open type)

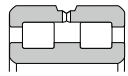
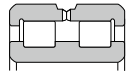
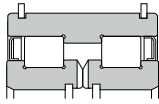
SL type cylindrical roller bearing for sheaves (sealed type)

### 1. Types, design features, and characteristics

SL type cylindrical roller bearings are double-row full complement cylindrical roller bearings that have a thin cross-section and can withstand extremely large radial loads and impact loads. These bearings are suitable for a wide range of slow-moderate speed, heavily loaded

applications such as construction machinery, vehicles, steel machinery, and lifting machinery. These bearings can be produced both with and without seals. **Table 1** shows the characteristics of this bearing type.

**Table 1** SL type cylindrical roller bearing types and characteristics

Type	Features
<p>Open type</p>  <p>SL01 type</p>  <p>SL02 type</p>	<ul style="list-style-type: none"> <li>The SL01 type is used for fixed side bearings and the SL02 is used for float side bearings.</li> <li>The outer ring is divided in the circumferential direction by a special method and reconnected after rollers are embedded. <b>The bearing side surface needs to be firmly fixed in the axial direction by the shoulders of shafts and housings.</b></li> <li>The outer ring has oil grooves and oil holes.</li> <li>The SL01 type can receive an axial load in both directions.</li> <li>Dimensions <math>D_a</math> and <math>d_a</math> are applied for the shoulder dimension of shafts and housings. However, when a moment load or a large axial load is to be used, dimensions <math>J</math> and <math>K</math> are recommended. The dimension table (from C-68 to C-71) shows dimension series codes <math>d_a</math>, <math>D_a</math>, <math>J</math> and <math>K</math>.</li> </ul>
<p>Sealed type</p>  <p>SL04 type</p>	<ul style="list-style-type: none"> <li>The SL04 type is only designed as the fixed side bearing.</li> <li>The inner ring is divided in the circumferential direction by a special method and reconnected after rollers are embedded. <b>The bearing side surface needs to be firmly fixed in the axial direction by the shoulders of shafts and housings.</b></li> <li>The inner ring has oil grooves and oil holes.</li> <li>A radial load and an axial load in both directions can be applied to the bearing.</li> <li>The bearings are shielded, filled with grease, and have snap rings in the outer ring. These bearings are allow easy design into the application. The bearings are mainly used for sheaves.</li> <li>Surface coating treatment is applied to prevent rust.</li> </ul>

Note: For SL type cylindrical roller bearings, three-row, four-row, and five-row bearings are also available besides the double-row. Please contact **NTN** Engineering.

### 2. Dimensional and rotational accuracy

SL type cylindrical roller bearings are made according to JIS class 0 (refer to **Table 6.4** (A-58 to A-59) in section "6. Bearing tolerances"). The outer ring accuracy of the SL01 type and the SL02 type is before division. Regarding the SL04 type, the inner ring accuracy is before surface treatment and division, and the outer ring accuracy is before surface treatment.

### 3. Radial internal clearance

**Table 2** shows the radial internal clearance

**Table 2** Radial internal clearance

Nominal bearing bore diameter $d$ mm	CN (normal)		C3		C4	
	Over	Incl.	Min.	Max.	Min.	Max.
30	50		20	75	40	95
50	80		30	90	55	115
80	120		35	105	80	150
120	180		60	150	110	200
180	250		90	190	155	255
250	315		110	225	195	310
315	400		140	265	245	370
400	500		180	320	300	440

unit:  $\mu\text{m}$

values. It should be noted that the values differ from standard cylindrical roller bearings.

### 4. Selection of recommended fits and radial internal clearance

**Table 3** shows the recommended fits when the bearings are used in outer ring rotating applications such as sheaves and wheels.

**Table 4** shows the relationship between the fits and the radial internal clearance.

**It is necessary to equally apply load on the entire surface of the raceway end on the bearing side face at the time of assembly and removal.**

**Table 3** Recommended fits

Condition		Shaft tolerance class	Housing tolerance class
Outer ring rotational load	Heavy load with thin wall housing	g6 or h6	P7
	Ordinary or heavy load		N7 <sup>1)</sup>
	Light or fluctuating load		M7

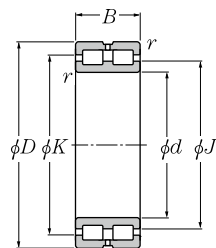
1) N7 must be used for sheaves (to prevent snap ring from coming off).

Refer to **Table 7.2** (A-80) in section "7. Bearing fits" for the inner ring rotational load.

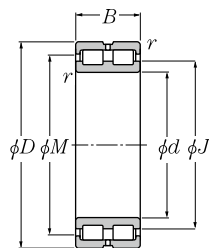
**Table 4** Relationship between fits and radial internal clearance

		Housing fits													
		G 7	H 6	J 6	J 7	K 6	K 7	g 6	M 6	M 7	N 6	N 7	P 6	P 7	
Housing fits	g 6														
	h 6														
	j 5														
	j 6														
	k 5														
	k 6														
	m 5														
	m 6														
	n 5														
	n 6														
	p 6														

Note: Use CN (normal) clearance when the shaft fit is g6, the housing fit is N7 (N6), and the speed is low (for sheaves, etc.)



SL01-48 type  
SL01-49 type  
(fixed side)

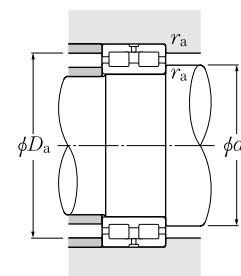


SL02-48 type  
SL02-49 type  
(floating side)

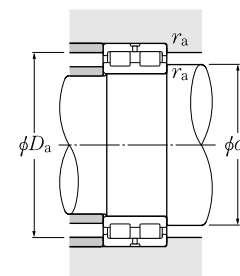
$d$  50 ~ 220mm

	Boundary dimensions			Basic load rating		Allowable speed		Bearing number		Dimensions			
	$d$	$D$	$B$	$r_{s \min}^{1)}$	$C_r$	$C_{0r}$	Grease lubrication	Oil lubrication	Fixed side	Floating side	$J$	$K$	$M$
<b>50</b>	72	22	0.6	49.5	83.0	2 000	4 000	<b>SL01-4910</b>	<b>SL02-4910</b>	58	63	64	1
<b>60</b>	85	25	1	73.0	136	1 700	3 300	<b>SL01-4912</b>	<b>SL02-4912</b>	69.5	74.5	75.5	1
<b>70</b>	100	30	1	105	193	1 400	2 900	<b>SL01-4914</b>	<b>SL02-4914</b>	81.5	88	89.5	1
<b>80</b>	110	30	1	111	215	1 300	2 500	<b>SL01-4916</b>	<b>SL02-4916</b>	90	97	98.5	1
<b>90</b>	125	35	1.1	150	300	1 100	2 200	<b>SL01-4918</b>	<b>SL02-4918</b>	103	111	112.5	1.5
<b>100</b>	140	40	1.1	194	400	1 000	2 000	<b>SL01-4920</b>	<b>SL02-4920</b>	116	125	126.5	2
<b>110</b>	150	40	1.1	202	430	910	1 800	<b>SL01-4922</b>	<b>SL02-4922</b>	125	134	135.5	2
<b>120</b>	165	45	1.1	226	480	830	1 700	<b>SL01-4924</b>	<b>SL02-4924</b>	138.5	148.5	150.5	3
<b>130</b>	180	50	1.5	262	555	770	1 500	<b>SL01-4926</b>	<b>SL02-4926</b>	149	160	162	4
<b>140</b>	190	50	1.5	272	595	710	1 400	<b>SL01-4928</b>	<b>SL02-4928</b>	159.5	170	172.5	4
<b>150</b>	190 210	40 60	1.1 2	235 410	575 865	670 670	1 300 1 300	<b>SL01-4830</b> <b>SL01-4930</b>	<b>SL02-4830</b> <b>SL02-4930</b>	165.5 171.5	173.5 186	175.5 189.5	2 4
<b>160</b>	200 220	40 60	1.1 2	241 425	605 935	630 630	1 300 1 300	<b>SL01-4832</b> <b>SL01-4932</b>	<b>SL02-4832</b> <b>SL02-4932</b>	173.5 185	182.5 199	184 203	2 4
<b>170</b>	215 230	45 60	1.1 2	265 435	650 980	590 590	1 200 1 200	<b>SL01-4834</b> <b>SL01-4934</b>	<b>SL02-4834</b> <b>SL02-4934</b>	186.5 194	196.5 208	198 211.5	3 4
<b>180</b>	225 250	45 69	1.1 2	275 550	695 1 230	560 560	1 100 1 100	<b>SL01-4836</b> <b>SL01-4936</b>	<b>SL02-4836</b> <b>SL02-4936</b>	199 206	209 222	211 225.5	3 4
<b>190</b>	240 260	50 69	1.5 2	315 565	785 1 290	530 530	1 100 1 100	<b>SL01-4838</b> <b>SL01-4938</b>	<b>SL02-4838</b> <b>SL02-4938</b>	208.5 216.5	219.5 232.5	221.5 235.5	4 4
<b>200</b>	250 280	50 80	1.5 2.1	320 665	825 1 500	500 500	1 000 1 000	<b>SL01-4840</b> <b>SL01-4940</b>	<b>SL02-4840</b> <b>SL02-4940</b>	219 232	230 250	232 253.5	4 5
<b>220</b>	270	50	1.5	340	905	450	910	<b>SL01-4844</b>	<b>SL02-4844</b>	240	251	253	4

1) Smallest allowable dimension for chamfer dimension  $r$ . 2) Effective movement amount in axial direction.  
C-68



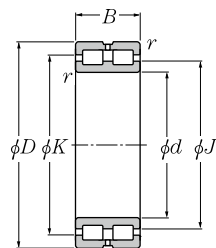
Fixed side



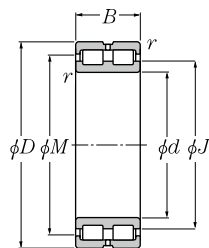
Floating side

Installation-related dimensions			Mass (approx.)	
$d_a^{3)}$	$D_a^{3)}$	$r_{as}$	Fixed side	Floating side
Min.	Max.	Max.		
54	68	0.6	0.3	0.29
65	80	1	0.46	0.44
75	95	1	0.78	0.75
85	105	1	0.88	0.85
96.5	118.5	1	1.35	1.3
106.5	133.5	1	1.95	1.9
116.5	143.5	1	2.15	2.1
126.5	158.5	1	2.95	2.85
138	172	1.5	3.95	3.8
148	182	1.5	4.2	4.1
156.5	183.5	1	2.9	2.8
159	201	2	6.65	6.45
166.5	193.5	1	3.05	2.9
169	211	2	7	6.8
176.5	208.5	1	4.1	3.95
179	221	2	7.35	7.1
186.5	218.5	1	4.3	4.15
189	241	2	10.7	10.5
198	232	1.5	5.65	5.45
199	251	2	11.2	10.9
208	242	1.5	5.9	5.7
211	269	2	15.7	15.3
228	262	1.5	6.4	6.2

3) If the bearing on the fixed side supports an eccentric axial load or a large axial load, shoulder dimension  $J$  and dimension  $K$  are recommended.  
C-69



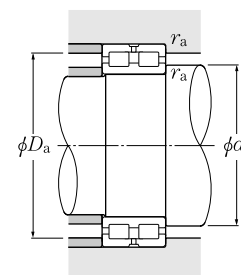
SL01-48 type  
SL01-49 type  
(fixed side)



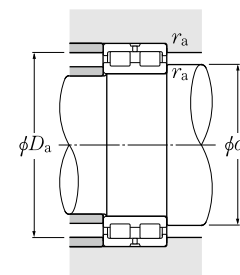
SL02-48 type  
SL02-49 type  
(floating side)

d 220 ~ 440mm

	Boundary dimensions			Basic load rating		Allowable speed		Bearing number		Dimensions			
	d	D	B	$r_{s \min}^{1)}$	$C_r$	$C_{0r}$	Grease lubrication min <sup>-1</sup>	Oil lubrication min <sup>-1</sup>	Fixed side	Floating side	J	K	M
<b>220</b>	300	80	2.1	695	1 620	450	910	<b>SL01-4944</b>	<b>SL02-4944</b>	249.5	267.5	271	5
<b>240</b>	300	60	2	510	1 330	420	830	<b>SL01-4848</b>	<b>SL02-4848</b>	261	275	276.5	4
	320	80	2.1	730	1 770	420	830	<b>SL01-4948</b>	<b>SL02-4948</b>	272.5	290.5	294	5
<b>260</b>	320	60	2	535	1 450	380	770	<b>SL01-4852</b>	<b>SL02-4852</b>	283	297	300	4
	360	100	2.1	1 070	2 520	380	770	<b>SL01-4952</b>	<b>SL02-4952</b>	297	320	324.5	6
<b>280</b>	350	69	2	685	1 860	360	710	<b>SL01-4856</b>	<b>SL02-4856</b>	308	324	327	4
	380	100	2.1	1 110	2 710	360	710	<b>SL01-4956</b>	<b>SL02-4956</b>	319	342	346	6
<b>300</b>	380	80	2.1	805	2 160	330	670	<b>SL01-4860</b>	<b>SL02-4860</b>	330	348	351	6
	420	118	3	1 580	3 800	330	670	<b>SL01-4960</b>	<b>SL02-4960</b>	344	371	377	6
<b>320</b>	400	80	2.1	835	2 310	310	630	<b>SL01-4864</b>	<b>SL02-4864</b>	353	371	374	6
	440	118	3	1 650	4 100	310	630	<b>SL01-4964</b>	<b>SL02-4964</b>	371	398	404	6
<b>340</b>	420	80	2.1	855	2 430	290	590	<b>SL01-4868</b>	<b>SL02-4868</b>	370	388	391	6
	460	118	3	1 690	4 300	290	590	<b>SL01-4968</b>	<b>SL02-4968</b>	388	416	421	6
<b>360</b>	440	80	2.1	885	2 580	280	560	<b>SL01-4872</b>	<b>SL02-4872</b>	393	411	414	6
	480	118	3	1 730	4 500	280	560	<b>SL01-4972</b>	<b>SL02-4972</b>	406	434	439	6
<b>380</b>	480	100	2.1	1 290	3 600	260	530	<b>SL01-4876</b>	<b>SL02-4876</b>	422	444	449	6
	520	140	4	2 300	5 900	260	530	<b>SL01-4976</b>	<b>SL02-4976</b>	437	469	475	7
<b>400</b>	540	140	4	2 410	6 200	250	500	<b>SL01-4980</b>	<b>SL02-4980</b>	450	484	490	7
<b>420</b>	560	140	4	2 470	6 500	240	480	<b>SL01-4984</b>	<b>SL02-4984</b>	472	505	512	7
<b>440</b>	600	160	4	3 000	7 850	230	450	<b>SL01-4988</b>	<b>SL02-4988</b>	503	540	546	7



Fixed side



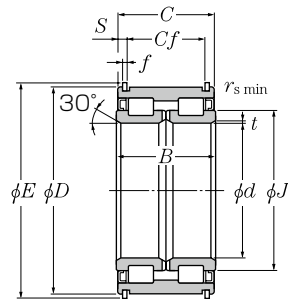
Floating side

Installation-related dimensions			Mass (approx.)	
$d_a^{3)}$	$D_a^{3)}$	$r_{as}$	Fixed side	Floating side
Min.	Max.	Max.		
231	289	2	17.1	16.6
249	291	2	10.2	9.9
251	309	2	18.4	17.9
269	311	2	11	10.6
271	349	2	32	31.2
289	341	2	16	15.6
291	369	2	33.9	33.1
311	369	2	23	22.2
313	407	2.5	53	51.9
331	389	2	24.3	23.5
333	427	2.5	56	54.9
351	409	2	25.6	24.8
353	447	2.5	59	57.8
371	429	2	27	26
373	467	2.5	62	60.8
391	469	2	45.3	44
396	504	3	92.3	90.5
416	524	3	96.4	94.6
436	544	3	101	98.6
456	584	3	139	137

1) Smallest allowable dimension for chamfer dimension  $r$ . 2) Effective movement amount in axial direction.  
C-70

3) If the bearing on the fixed side supports an eccentric axial load or a large axial load, shoulder dimension  $J$  and dimension  $K$  are recommended.  
C-71

# ● SL Type Cylindrical Roller Bearings for Sheaves

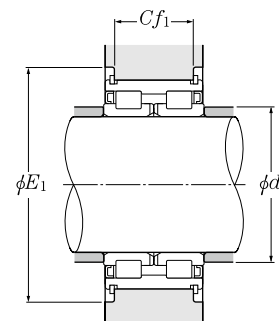


d 40 ~ 170mm

d	Boundary dimensions					Basic load rating			Allowable speed min <sup>-1</sup> Grease lubrication	Bearing number	Dimensions				
	mm					dynamic kN	static				mm				
	D	B	C	t	r <sub>s min</sub>	C <sub>R</sub>	C <sub>0r</sub>		J	E (approx.)	f	Cf	S		
40	68	38	37	0.8	0.6	79.5	116	2 500	SL04-5008NR	51	71.8	2	28	4.5	
45	75	40	39	0.8	0.6	95.5	144	2 200	SL04-5009NR	56.6	79	2	30	4.5	
50	80	40	39	0.8	0.6	100	158	2 000	SL04-5010NR	61	83.8	2	30	4.5	
55	90	46	45	1	0.6	118	193	1 800	SL04-5011NR	67.9	95	2.5	34	5.5	
60	95	46	45	1	0.6	123	208	1 700	SL04-5012NR	73.4	100	2.5	34	5.5	
65	100	46	45	1	0.6	128	224	1 500	SL04-5013NR	78	105	2.5	34	5.5	
70	110	54	53	1	0.6	171	285	1 400	SL04-5014NR	84.5	114.5	2.5	42	5.5	
75	115	54	53	1	0.6	197	325	1 300	SL04-5015NR	90	119.7	2.5	42	5.5	
80	125	60	59	1	0.6	205	350	1 300	SL04-5016NR	96.5	129.7	2.5	48	5.5	
85	130	60	59	1	0.6	214	380	1 200	SL04-5017NR	103.7	134.5	2.5	48	5.5	
90	140	67	66	1.5	0.6	305	540	1 100	SL04-5018NR	110	146.3	2.5	54	6	
95	145	67	66	1.5	0.6	310	560	1 100	SL04-5019NR	114.4	151.3	2.5	54	6	
100	150	67	66	1.5	0.6	330	580	1 000	SL04-5020NR	118.5	156.3	2.5	54	6	
110	170	80	79	1.8	1	385	695	910	SL04-5022NR	131.5	176.4	2.5	65	7	
120	180	80	79	1.8	1	400	750	830	SL04-5024NR	141.5	188.4	3	65	7	
130	200	95	94	1.8	1	535	1 000	770	SL04-5026NR	158	208.4	3	77	8.5	
140	210	95	94	1.8	1	600	1 120	710	SL04-5028NR	167	218.5	3	77	8.5	
150	225	100	99	2	1	690	1 290	670	SL04-5030NR	178.3	233.5	3	81	9	
160	240	109	108	2	1.1	720	1 390	630	SL04-5032NR	191	248.5	3	89	9.5	
170	260	122	121	2	1.1	925	1 790	590	SL04-5034NR	202.7	270.5	4	99	11	

Note: 1. The bearings have grease filled in. 2. Surface treatment is applied to bearings to prevent rust.  
3. The bearings are non-contact shielded type bearings, but contact sealed type bearings are also available based on your request.

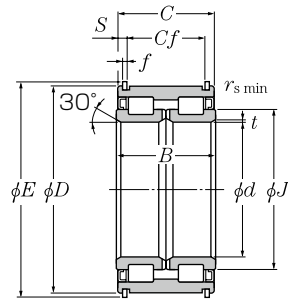
# ● SL Type Cylindrical Roller Bearings for Sheaves



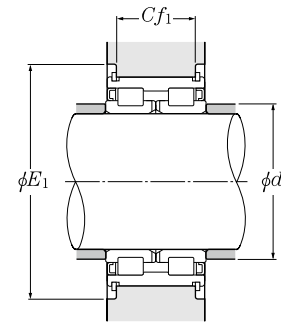
Installation-related dimensions			Mass kg
mm			
d <sub>a</sub> (Min.)	E <sub>1</sub>	Cf <sub>1</sub> <sup>1)</sup>	(approx.)
43.5	82	28	0.552
48.5	88	30	0.688
53.5	94	30	0.752
60	106	34	1.12
65	112	34	1.2
70	116	34	1.27
75	130	42	1.87
80	135	42	1.97
85	145	48	2.66
90	155	48	2.79
96	165	54	3.71
101	175	54	3.87
106	180	54	4.03
116.5	200	65	7
126.5	210	65	7.5
136.5	230	77	11.4
146.5	245	77	12.1
157	260	81	14.6
167	275	89	18.2
177	300	99	24.6

1) Tolerance of dimension Cf<sub>1</sub> SL04-5008NR ~ SL04-5034NR : -0.1 ~ -0.5mm  
SL04-5036NR ~ SL04-5040NR : -0.1 ~ -0.7mm

# ● SL Type Cylindrical Roller Bearings for Sheaves



# ● SL Type Cylindrical Roller Bearings for Sheaves



d 180 ~ 440mm

d	Boundary dimensions					Basic load rating			Allowable speed min <sup>-1</sup> Grease lubrication	Bearing number	Dimensions				
	D	B	C	t	r <sub>s min</sub>	dynamic kN	static kN	C <sub>R</sub>			C <sub>0r</sub>	J	E mm (approx.)	f	Cf
180	280	136	135	2	1.1	1 090	2 140	560	SL04-5036NR	220	290.5	4	110	12.5	
190	290	136	135	2	1.1	1 120	2 230	530	SL04-5038NR	226	300.5	4	110	12.5	
200	310	150	149	2	1.1	1 310	2 650	500	SL04-5040NR	245.5	320.5	4	120	14.5	
220	340	160	159	2.5	1.1	1 640	3 300	450	SL04-5044NR	260	357	6	130	14.5	
240	360	160	159	2.5	1.1	1 710	3 550	420	SL04-5048NR	280.5	377	6	130	14.5	
260	400	190	189	3	1.5	1 950	4 200	380	SL04-5052NR	310	417	7	154	17.5	
280	420	190	189	3	1.5	2 170	4 700	360	SL04-5056NR	325	437	7	154	17.5	
300	460	218	216	3	1.5	2 670	5 850	330	SL04-5060NR	363	481	8	176	20	
320	480	218	216	3	1.5	2 720	6 100	310	SL04-5064NR	376	501	8	176	20	
340	520	243	241	3.5	2	3 650	8 000	290	SL04-5068NR	406	545	8	194	23.5	
360	540	243	241	3.5	2	3 750	8 300	280	SL04-5072NR	421	565	10	194	23.5	
380	560	243	241	3.5	2	3 800	8 750	260	SL04-5076NR	442	585	10	194	23.5	
400	600	272	270	3.5	2	4 250	9 950	250	SL04-5080NR	470	627	12	210	30	
420	620	272	270	3.5	2	4 350	10 300	240	SL04-5084NR	486	647	12	210	30	
440	650	280	278	4.5	3	4 500	11 000	230	SL04-5088NR	518	677	12	210	34	

Installation-related dimensions			Mass kg (approx.)
d <sub>a</sub> (Min.)	E <sub>1</sub>	Cf <sub>1</sub> <sup>1)</sup>	
187	320	110	32.3
197	330	110	33.7
207	350	120	43.5
228.5	380	130	55.5
248.5	400	130	59.5
270	445	154	90.7
290	465	154	96.2
310	510	176	137
330	530	176	144
352	580	194	194
372	600	194	203
392	620	194	212
412	675	210	281
432	695	210	292
456	725	210	331

Note: 1. The bearings have grease filled in. 2. Surface treatment is applied to bearings to prevent rust.  
3. The bearings are non-contact shielded type bearings, but contact sealed type bearings are also available based on your request.

1) Tolerance of dimension Cf<sub>1</sub> SL04-5008NR ~ SL04-5034NR : -0.1 ~ -0.5mm  
SL04-5036NR ~ SL04-5040NR : -0.1 ~ -0.7mm