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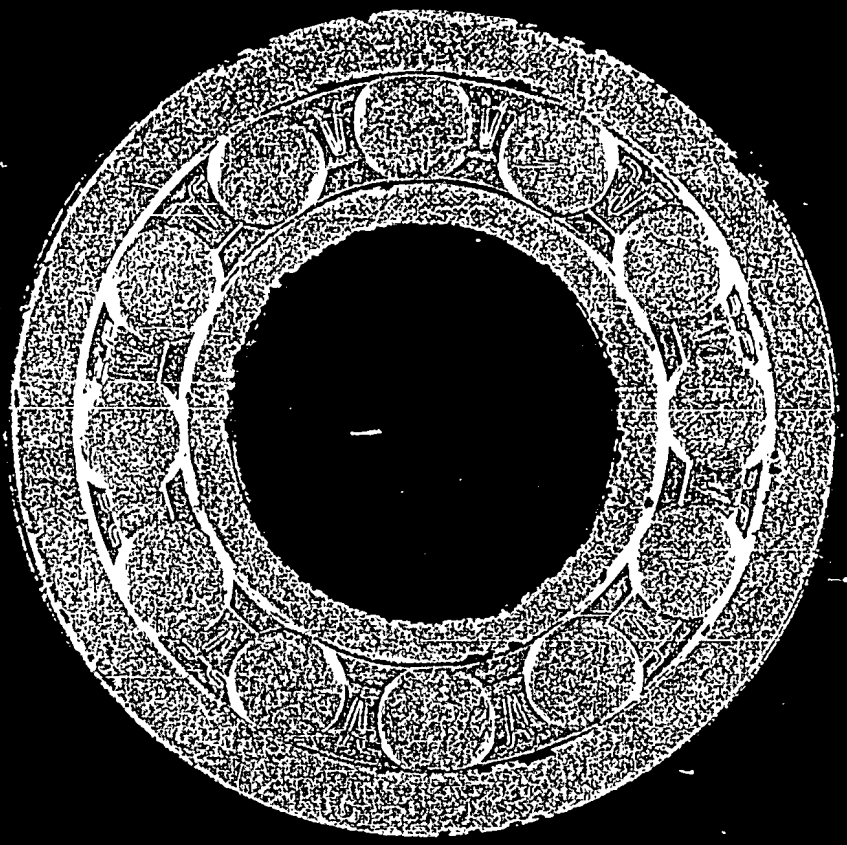

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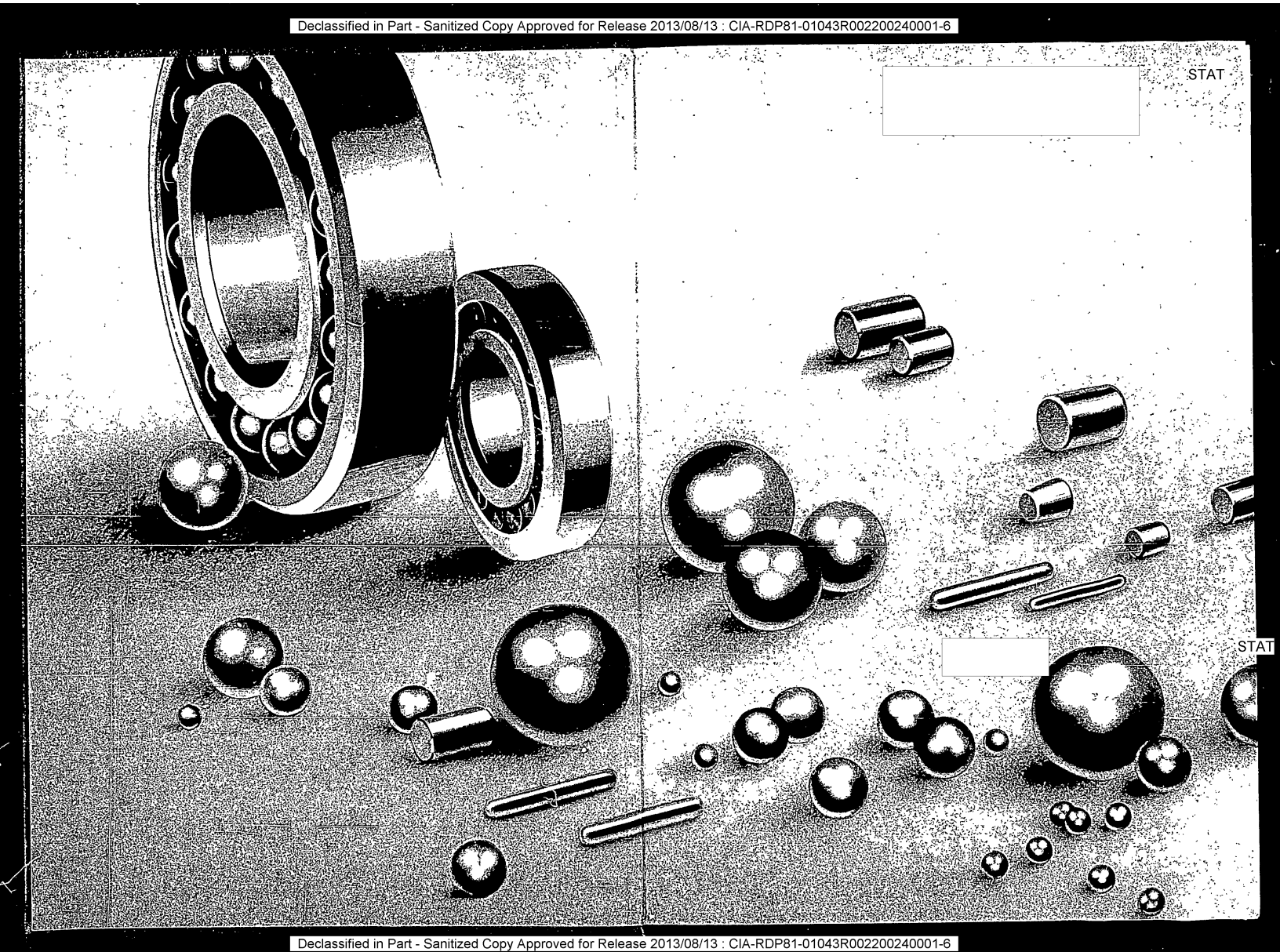
BALL AND ROLLER BEARINGS



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BALL AND ROLLER
BEARINGS

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CONTENTS

FOREWORD

This catalogue contains data concerning all types and sizes of antifriction bearings designed to satisfy the requirements of all branches of the machine building industry.

The catalogue contains essential information pertaining to the selection, application, mounting and dismantling of antifriction bearings. This information comprises:

characteristics of the main types of antifriction bearings;
standard specifications for ball and roller bearings;
mounting fits for antifriction bearings;
seals and closures;
axial clamping and retaining methods;
lubrication of ball and roller bearings;
mounting and dismantling of antifriction bearings;
system of symbols for ball and roller bearings;
dimensions and capacities of ball and roller bearings.

The tables of bearing dimensions and capacities included in this catalogue contain both standard and non-standard bearings manufactured at the present time.

All non-standard bearings are special.

Additional information, which serves to facilitate the proper application of antifriction bearings, has been included as an appendix. This material comprises:

assortment of rolling elements such as balls, cylindrical and needle rollers with tables indicating the quantity per kilogram and weight per 1000 pieces;

index of bearings included in this catalogue;

list of valid U.S.S.R. Standards referring to antifriction bearings;

table for converting previous (obsolete) bearing symbols to present system of symbols in accordance with U.S.S.R. Standards;

tables for converting inches into millimeters and vice versa.

I. GENERAL INFORMATION

SYSTEM OF SYMBOLS FOR ANTIFRICTION BEARINGS*

GENERAL

1. The system of numbering bearings is designed for: a) marking bearings during their production, b) indicating requirements of drawings and specifications, c) use in documents concerning orders and shipments as well as for accounting and stock inventory and d) use as reference in technical literature.

2. The symbol identifies the principal characteristics of the bearing including:

a) Bore of bearing or bushing,
b) Series of bearing,
c) Type of bearing,
d) Design features of the bearing,
e) Bearing accuracy.

All the digits of the bearing number, which identify the above characteristics are comprised of numerals except for the bearing accuracy. The latter is indicated by a letter arranged at the left of the numerical designation.

3. The characteristics indicated by the separate digits, in accordance with their order in the bearing number, are given in Table 1.

Table 1

Digit place in bearing number (from right to left)	Key to digit
1st and 2nd	Shaft diameter (bearing or bushing bore)
3rd and 7th	Series
4th	Type
5th and 6th	Design features

* For more detailed information see GOST 3189-46.

DESIGNATION OF THE BORE OF THE BEARINGS

4. The bore of the bearing (or shaft diameter), for dimensions less than 495 mm, is designated in the bearing number by the first two digits from the right which is the quotient obtained when the bearing bore is divided by 5. If the bore cannot be divided by 5 without a remainder, the whole number part of the quotient is indicated and the numeral "9" is placed in the third place.

This rule has the following exceptions:

a) For all bearings with bores from 10 to 20 mm, except magneto (separable) bearings, the bearing bore is designated in accordance with Table 2.

Table 2

Nominal bore of bearing mm	Bore designation
10	00
12	01
15	02
17	03

If the bearing bore does not coincide with the standard diameters indicated in Table 2, the bearing is designated in accordance with the nearest standard bore and the digit "9" is placed in the 3rd place.

b) For all bearings having a bore up to 9 mm inclusively, the first digit of the number indicates the actual bore in millimeters and the digit "0" is placed in the 3rd place. The second digit, in this case, indicates the series of the bearing (see lower, paragraph 6).

Example: 1025 indicates a double row self-aligning light series ball bearing with a bore of 5 mm; 25 indicates a single row light series ball bearing with a bore of 5 mm. If the bearing bore is not a whole number the bore designation is taken as the nearest whole number. In this case "0" is retained in the 3rd place and the digits "4" or "5" are placed in the 2nd place.

Example: Single row ball bearings with bores of 1/4" (6.35 mm) and 5/16" (7.938 mm) may be designated as 46 and 58.

c) For magneto (separable) ball bearings (series 6000) the first two digits of the bearing number indicate the actual bore of the bearing.

Example: 6017 indicates a magneto ball bearing with a bore of 17 mm.

5. Bearings having a bore of 495 mm or more are designated by a fraction. The denominator of this fraction indicates the actual bore while the numerator contains digits identifying the other characteristics of the bearing in accordance with Table 1 and in the order stipulated for all bearings.

DESIGNATION OF THE SERIES OF THE BEARINGS

6. The third digit, together with the 7th digit identifies the series of bearings of all bores, except small bores (up to 9 mm inclusively), in accordance with Table 3. Zeroes to the left of the last significant digit (reading from right to left) are omitted.

7. The series of bearings having bores up to 9 mm (inclusively) are designated by the digits "1", "2", "3", "6", "7", "8" or "9" in the second place corresponding to the designation of the series of bores in accordance with Table 3. In this case, the digit "6" as well as the digit "7" indicates an indefinite (non-standard) series.

Example: 37 indicates a single row medium series ball bearing with a bore of 7 mm; 68 indicates a single row non-standard series ball bearing with a bore of 8 mm.

Table 3

Series		Super-light											Extra-light							
Bore characteristics		8				9							1							
Width characteristics		Narrow	Standard	Wide	Extra-wide	Narrow	Standard	Wide	Extra-wide				Narrow	Standard	Wide	Extra-wide				
Series designation	3rd digit from the right	8	8	8	8	8	9	9	9	9	9	9	1	1	1	1	1	1	1	1
	7th digit from the right	7	1	2	3	4	7	1	2	3	4	5	6	7	0	2	3	4	5	6
Example of series designations		7000800	1000800		3007800		7000900	1000900			4032900			7000100	100	2007100	3003100	4854100		

Series		Extra-light				Light				Medium				Heavy		Indefinite (non-standard)		Non-standard bore	Small-sized
Bore characteristics		7				2 or 5*				3 or 6*				4		7	8	9	0
Width characteristics		Narrow	Standard	Wide	Extra-Wide	Narrow	Standard	Wide	Extra-wide	Narrow	Standard	Wide	Extra-wide	Narrow	Wide	Indefinite			Various
Series designation	3rd digit from the right	7	7	7	7	2	2	5	2	3	3	6	3	4	4	7	8	9	0
	7th digit from the right	7	1	2	3	0	1	0	3	0	1	0	3	0	2	0	0	0	0
Example of series designations		7002700	1007700		3003700	200		3500	3056200	300		3600	3056300	400	2086400	700	800	900	1000

Notes:

1. For thrust bearings, the digit "5" in the 3rd place and "0" in the 7th place indicates an extra-heavy series.

2. Digits "5" and "6" marked with an asterisk (*), characterize the series in bore and width.

DESIGNATION OF TYPE OF BEARINGS

8. The type of the bearing is indicated by the fourth digit in the bearing number and in accordance with Table 4.

Table 4

4th digit from the right	Type of bearing
0	Single row (radial) ball
1	Double row (radial) self-aligning ball
2	Cylindrical (radial) roller with short rollers
3	Double row (radial) self-aligning roller
4	Cylindrical (radial) roller with long rollers or needles
5	Flexible roller
6	Angular-contact ball
7	Taper roller
8	Ball thrust
9	Roller thrust

DESIGNATION OF DESIGN FEATURES OF BEARINGS

9. Design features of the bearing are indicated in the bearing number by a digit in the 5th place or two digits in the 5th and 6th places.

Example: 50210 indicates a single row light series ball bearing with a fixing groove on the outer ring.

Due to the large variety of design features of bearings it is impossible to indicate their designations here.

DESIGNATION OF CLASS OF ACCURACY OF BEARINGS

10. The class of accuracy of bearings is indicated by one or two letters arranged before the bearing number in accordance with Table 5.

Table 5

Class of accuracy	Designation
Special	П
Special-intermediate	ВП
High	В
High-intermediate	АВ
Extra-high	А
Extra-high intermediate	СА
Super-high	С

Notes:

1. The designation of standard accuracy bearings is not marked on the bearings or indicated in documents concerning these bearings.

Example: СА 36208 indicates a bearing No. 36208 with a class of accuracy СА.

2. The accuracy class designation of bearings with small bores is marked on the packing carton boxes.

PRINCIPAL DIMENSIONS OF BALL AND ROLLER BEARINGS*

1. The Tables 7 to 10 given below contain standard principal dimensions of the following types of bearings:

a) Tables 7 and 8 for radial ball and roller bearings and also for angular-contact bearings in which the outer and inner ring faces are in one plane (Fig. 1);

b) Table 9 for single row taper roller bearings (Fig. 2);

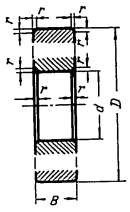


Fig. 1

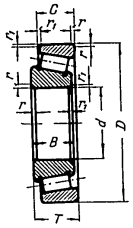


Fig. 2

c) Table 10 for ball and roller thrust bearings (Fig. 3 and 4). The minimum bore diameter d_1 of the stationary rings of thrust bearings, omitted in Table 10, is given in Table 6.

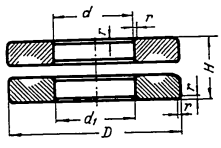


Fig. 3

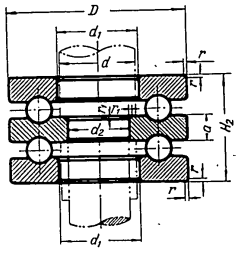


Fig. 4

* For more detailed information see GOST 3478-54

2. The following dimensions are indicated for each dimensional series:

a) Bores d;

b) Outside diameter D;

c) Width or height B, C, T, H and H_2;

d) Dimensions of corner chamfer r.

3. The taper of taper bore bearings is 1 to 12 while the minimum bore diameter in the plane of the ring face is equal to the bore d of bearings with cylindrical bores (Fig. 5).

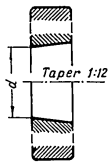


Fig. 5

Table 6

Bore diameter mm	up to 120	above 120 to 300	above 300 to 400	above 400 to 500	above 500 to 630	above 630 to 800	above 800 to 1000	above 1000 to 1200
$d_1 \geqslant$	d +0.2	d +0.3	d +0.4	d +0.5	d +0.6	d +0.7	d +0.8	d +1.0

4. The system of designating the dimensional series is explained in this catalogue on page 9.

Principal Dimensions of Radial and Radial-Thrust Bearings (excepting Taper Roller Bearings), mm

Table 7

Bore series 8									Super-light Bore series							
d	D	Width series: Narrow 7	Standard 1	Wide 2	Extra-wide 3	Extra-wide 4	Corner chamfer dimensions for series 7	1-4	d	D	Width series: Narrow 7	Standard 1	Wide 2	Corner chamfer dimensions for series 1-2
		Width B					r				Width B			r
3	7	—	2	—	—	—	—	0.2	3	8	—	3	4	0.3
4	9	—	2.5	—	—	—	—	0.2	4	11	—	4	5	0.4
5	11	—	3	—	—	—	—	0.3	5	13	—	4	6	0.5
6	13	—	3.5	—	6	—	—	0.3	6	15	—	5	7	0.5
7	14	—	3.5	—	6	—	—	0.3	7	17	—	5	8	0.5
8	16	—	4	—	6	—	—	0.4	8	19	—	6	9	0.5
9	17	—	4	—	6	—	—	0.4	9	20	—	6	9	0.5
10	19	—	5	—	7	—	—	0.5	10	22	—	6	10	0.5
12	21	—	5	—	7	—	—	0.5	12	24	—	6	10	0.5
15	24	—	5	—	7	—	—	0.5	15	28	—	7	11	0.5
17	26	—	5	—	7	—	—	0.5	17	30	—	7	11	0.5
20	32	4	7	—	10	—	0.5	0.5	20	37	7	9	11	0.5
25	37	4	7	—	10	—	0.5	0.5	25	42	7	9	11	0.5
30	42	4	7	—	10	—	0.5	0.5	30	47	7	9	11	0.5
35	47	4	7	—	10	—	0.5	0.5	35	55	7	10	13	1
40	52	4	7	—	10	—	0.5	0.5	40	62	8	12	14	1
45	58	4	7	—	10	13	0.5	0.5	45	68	8	12	14	1
50	65	5	7	10	12	15	0.5	0.5	50	72	8	12	14	1
55	72	7	9	11	13	17	0.5	0.5	55	80	9	13	16	1
60	78	7	10	12	14	18	0.5	0.5	60	85	9	13	16	1
65	85	7	10	13	15	20	0.5	1	65	90	9	13	16	1
70	90	8	10	13	15	20	0.5	1	70	100	10	16	19	1
75	95	8	10	13	15	20	0.5	1	75	105	10	16	19	1
80	100	8	10	13	15	20	0.5	1	80	110	10	16	19	1
85	110	9	13	16	19	25	0.5	1.5	85	120	11	18	22	1.5
90	115	9	13	16	19	25	0.5	1.5	90	125	11	18	22	1.5
95	120	9	13	16	19	25	0.5	1.5	95	130	11	18	22	1.5
100	125	9	13	16	19	25	0.5	1.5	100	140	13	20	24	2
105	130	9	13	16	19	25	0.5	1.5	105	145	13	20	24	2
110	140	10	16	19	23	30	1	1.5	110	150	13	20	24	2
120	150	10	16	19	23	30	1	1.5	120	165	14	22	27	2
130	165	11	18	22	26	35	1	2	130	180	16	24	30	2.5
140	175	11	18	22	26	35	1	2	140	190	16	24	30	2.5
150	190	13	20	24	30	40	1	2	150	210	19	28	36	3
160	200	13	20	24	30	40	1	2	160	220	19	28	36	3
170	215	14	22	27	34	45	1	2	170	230	19	28	36	3
180	225	14	22	27	34	45	1	2	180	250	22	33	42	3
190	240	16	24	30	37	50	1.5	2.5	190	260	22	33	42	3
200	250	16	24	30	37	50	1.5	2.5	200	280	25	38	48	3.5
220	270	16	24	30	37	50	1.5	2.5	220	300	25	38	48	3.5
240	300	19	28	36	45	60	1.5	3	240	320	25	38	48	3.5
260	320	19	28	36	45	60	1.5	3	260	360	31	46	60	4
280	350	22	33	42	52	69	2	3	280	380	31	46	60	4
300	380	25	38	48	60	80	2.5	3.5	300	420	37	56	72	5
320	400	25	38	48	60	80	2.5	3.5	320	440	37	56	72	5
340	420	25	38	48	60	80	2.5	3.5	340	460	37	56	72	5
360	440	25	38	48	60	80	2.5	3.5	360	480	37	56	72	5
380	480	31	46	60	75	100	3	3.5	380	520	44	65	82	6
400	500	31	46	60	75	100	3	3.5	400	540	44	65	82	6
420	520	31	46	60	75	100	3	3.5	420	560	44	65	82	6
440	540	31	46	60	75	100	3	3.5	440	600	50	74	92	6
460	580	37	56	72	90	118	3.5	4	460	620	50	74	92	6
480	600	37	56	72	90	118	3.5	4	480	650	54	78	98	6
500	620	37	56	72	90	118	3.5	4	500	670	54	78	98	6
530	650	37	56	72	90	118	3.5	4	530	710	57	82	102	6
560	680	37	56	72	90	118	3.5	4	560	750	60	85	108	6
600	730	42	60	78	98	128	4	4	600	800	63	90	115	6
630	780	48	69	88	112	150	4	5	630	850	71	100	128	8
670	820	48	69	88	112	150	4	5	670	900	73	103	132	8
710	870	50	74	95	118	160	5	5	710	950	78	106	140	8
750	920	54	78	100	128	170	5	6	750	1000	80	112	145	8
800	980	57	82	106	136	180	5	6	800	1060	82	115	150	8
850	1030	57	82	106	136	180	5	6	850	1120	85	118	155	8
900	1090	60	85	112	140	190	6	6	900	1180	88	122	165	8
950	1150	63	90	118	150	200	6	6	950	1250	95	132	175	10
1000	1220	71	100	128	165	218	6	8	1000	1320	103	140	185	10
1060	1280	71	100	128	165	218	6	8	1060	1400	109	150	195	10
1120	1360	78	106	140	180	243	6	8						

Extra-ligth series																
Bore series 9											Bore series 1					
Extra-wide				Corner chamfer dimensions for series		d	D	Width series: Narrow 7	Standard 0	Wide 2	Extra-wide 3	Extra-wide 4	Extra-wide 5	Extra-wide 6	Corner chamfer dimensions for series 7	0-6
3	4	5	6	7	1-6			Width B							r	
—	—	—	—	—	0.2	—	—	—	—	—	—	—	—	—	—	—
6	—	—	—	—	0.3	—	—	—	—	—	—	—	—	—	—	—
6	—	—	—	—	0.4	—	—	—	—	—	—	—	—	—	—	—
7	—	—	—	—	0.4	6	17	—	6	—	9	—	—	—	—	0.5
7	—	—	—	—	0.5	7	19	—	6	—	10	—	—	—	—	0.5
9	—	—	—	—	0.5	8	22	—	7	9	11	14	19	25	—	0.5
9	—	—	—	—	0.5	9	24	—	7	10	12	15	20	27	—	0.5
10	—	16	22	—	0.5	10	26	—	8	10	12	16	21	29	—	0.5
10	—	16	22	—	0.5	12	28	7	8	10	12	16	21	29	0.5	0.5
10	13	18	23	—	0.5	15	32	8	9	11	13	17	23	30	0.5	0.5
10	13	18	23	—	0.5	17	35	8	10	12	14	18	24	32	0.5	0.5
13	17	23	30	0.5	0.5	20	42	8	12	14	16	22	30	40	0.5	1
13	17	23	30	0.5	0.5	25	47	8	12	14	16	22	30	40	0.5	1
13	17	23	30	0.5	0.5	30	55	9	13	16	19	25	34	45	0.5	1.5
15	20	27	36	0.5	1	35	62	9	14	17	20	27	36	48	0.5	1.5
16	22	30	40	0.5	1	40	68	9	15	18	21	28	38	50	0.5	1.5
16	22	30	40	0.5	1	45	75	10	16	19	23	30	40	54	1	1.5
16	22	30	40	0.5	1	50	80	10	16	19	23	30	40	54	1	1.5
19	25	34	45	0.5	1.5	55	90	11	18	22	26	35	46	63	1	2
19	25	34	45	0.5	1.5	60	95	11	18	22	26	35	46	63	1	2
19	25	34	45	0.5	1.5	65	100	11	18	22	26	35	46	63	1	2
23	30	40	54	1	1.5	70	110	13	20	24	30	40	54	71	1	2
23	30	40	54	1	1.5	75	115	13	20	24	30	40	54	71	1	2
23	30	40	54	1	1.5	80	125	14	22	27	34	45	60	80	1	2
26	35	46	63	1	2	85	130	14	22	27	34	45	60	80	1	2
26	35	46	63	1	2	90	140	16	24	30	37	50	67	90	1.5	2.5
26	35	46	63	1	2	95	145	16	24	30	37	50	67	90	1.5	2.5
30	40	54	71	1	2	100	150	16	24	30	37	50	67	90	1.5	2.5
30	40	54	71	1	2	105	160	18	26	33	41	56	75	100	1.5	3
30	40	54	71	1	2	110	170	19	28	36	45	60	80	109	1.5	3
34	45	60	80	1	2	120	180	19	28	36	46	60	80	109	1.5	3
37	50	67	90	1.5	2.5	130	200	22	33	42	52	69	95	125	2	3
37	50	67	90	1.5	2.5	140	210	22	33	42	53	69	95	125	2	3
45	60	80	109	1.5	3	150	225	24	35	45	56	75	100	136	2	3.5
45	60	80	109	1.5	3	160	240	25	38	48	60	80	109	145	2.5	3.5
45	60	80	109	1.5	3	170	260	28	42	54	67	90	122	160	2.5	3.5
52	69	95	125	2	3	180	280	31	46	60	74	100	136	180	3	3.5
52	69	95	125	2	3	190	290	31	46	60	75	100	136	180	3	3.5
60	80	109	145	2.5	3.5	200	310	34	51	66	82	109	150	200	3	3.5
60	80	109	145	2.5	3.5	220	340	37	56	72	90	118	160	218	3.5	4
60	80	109	145	2.5	3.5	240	360	37	56	72	92	118	160	218	3.5	4
75	100	136	180	3	3.5	260	400	44	65	82	104	140	190	250	4	5
75	100	136	180	3	3.5	280	420	44	65	82	106	140	190	250	4	5
90	118	160	218	3.5	4	300	460	50	74	95	118	160	218	290	5	5
90	118	160	218	3.5	4	320	480	50	74	95	121	160	218	290	5	5
90	118	160	218	3.5	4	340	520	57	82	106	133	180	243	325	5	6
90	118	160	218	3.5	4	360	540	57	82	106	134	180	243	325	5	6
106	140	190	250	4	5	380	560	57	82	106	135	180	243	325	5	6
106	140	190	250	4	5	400	600	63	90	118	148	200	272	355	6	6
106	140	190	250	4	5	420	620	63	90	118	150	200	272	355	6	6
118	160	218	290	5	5	440	650	67	94	122	157	212	280	375	6	8
118	160	218	290	5	5	460	680	71	100	128	163	218	300	400	6	8
118	170	230	308	5	6	480	700	71	100	128	165	218	300	400	6	8
128	170	230	308	5	6	500	720	71	100	128	167	218	300	400	6	8
136	180	243	325	5	6	530	780	80	112	145	185	250	335	450	8	8
140	190	258	345	6	6	560	820	82	115	150	195	258	355	462	8	8
150	200	272	355	6	6	600	870	85	118	155	200	272	365	488	8	8
165	218	300	400	6	8	630	920	92	128	170	212	290	388	515	8	10
170	230	308	412	6	8	670	980	100	136	180	230	308	425	560	8	10
180	243	325	438	6	8	710	1030	103	140	185	236	315	438	580	8	10
185	250	335	450	8	8	750	1090	109	150	195	250	335	462	615	10	10
195	258	355	462	8	8	800	1150	112	155	200	258	345	475	630	10	10
200	272	365	488	8	8	850	1220	118	165	212	272	365	500	670	10	10
206	280	375	500	8	8	900	1280	122	170	218	280	375	515	690	10	10
224	300	400	545	8	10	950	1360	132	180	236	300	412	560	730	10	10
236	315	438	580	8	10	1000	1420	136	185	243	308	412	560	750	10	10
250	335	462	615	10	10	1060	1500	140	195	250	325	438	600	800	12	12

Principal Dimensions of Radial and Radial-Thrust Bearings (excepting Taper Roller Bearings), mm

Table 8

Extra-light series								Light series							
Bore series 7								Bore series 2 (5)*							
d	D	Width series				Corner chamfer dimensions for series		d	D	Width series				Corner chamfer dimensions
		Narrow	Standard	Wide	Extra-wide	7	1—3			Narrow	Standard	Wide	Extra-wide	
		7	1	2	3	r				0	1	(0)*	3	r
		Width B								Width B				
—	—	—	—	—	—	—	—	3	10	4	—	—	—	0.3
—	—	—	—	—	—	—	—	4	13	5	—	—	—	0.4
—	—	—	—	—	—	—	—	5	16	5	—	—	—	0.5
—	—	—	—	—	—	—	—	6	19	6	—	—	—	0.5
—	—	—	—	—	—	—	—	7	22	7	—	—	—	0.5
—	—	—	—	—	—	—	—	8	24	7	—	—	—	0.5
—	—	—	—	—	—	—	—	9	26	8	—	—	—	1
—	—	—	—	—	—	—	—	10	30	9	—	14	—	1
—	—	—	—	—	—	—	—	12	32	10	—	14	15.9	1
—	—	—	—	—	—	—	—	15	35	11	—	14	15.9	1
—	—	—	—	—	—	—	—	17	40	12	—	16	17.5	1
—	—	—	—	—	—	—	—	20	47	14	—	18	20.6	1.5
—	—	—	—	—	—	—	—	25	52	15	—	18	20.6	1.5
—	—	—	—	—	—	—	—	30	62	16	—	20	23.8	1.5
—	—	—	—	—	—	—	—	35	72	17	—	23	27	2
—	—	—	—	—	—	—	—	40	80	18	—	23	30.2	2
—	—	—	—	—	—	—	—	45	85	19	—	23	30.2	2
—	—	—	—	—	—	—	—	50	90	20	—	23	30.2	2
—	—	—	—	—	—	—	—	55	100	21	—	25	33.3	2.5
—	—	—	—	—	—	—	—	60	110	22	—	28	36.5	2.5
—	—	—	—	—	—	—	—	65	120	23	—	31	38.1	2.5
—	—	—	—	—	—	—	—	70	125	24	—	31	39.7	2.5
—	—	—	—	—	—	—	—	75	130	25	—	31	41.3	2.5
—	—	—	—	—	—	—	—	80	140	26	—	33	44.4	3
—	—	—	—	—	—	—	—	85	150	28	—	36	49.2	3
—	—	—	—	—	—	—	—	90	160	30	—	40	52.4	3
—	—	—	—	—	—	—	—	95	170	32	—	43	55.6	3.5
100	165	21	30	39	52	2	3	100	180	34	—	46	60.3	3.5
105	175	22	33	42	56	2	3	105	190	36	—	50	65.1	3.5
110	180	22	33	42	56	2	3	110	200	38	—	53	69.8	3.5
120	200	25	38	48	62	2.5	3	120	215	40	42	58	76	3.5
130	210	25	38	48	64	2.5	3	130	230	40	46	64	80	4
140	225	27	40	50	68	2.5	3.5	140	250	42	50	68	88	4
150	250	31	46	60	80	3	3.5	150	270	45	54	73	96	4
160	270	34	51	66	86	3	3.5	160	290	48	58	80	104	4
170	280	34	51	66	88	3	3.5	170	310	52	62	86	110	5
180	300	37	56	72	96	3.5	4	180	320	52	62	86	112	5
190	320	42	60	78	104	4	4	190	340	55	65	92	120	5
200	340	44	65	82	112	4	4	200	360	58	70	98	128	5
220	370	48	69	88	120	4	5	220	400	65	78	108	144	5
240	400	50	74	95	128	5	5	240	440	72	85	120	160	5
260	440	57	82	106	144	5	5	260	480	80	90	130	174	6
280	460	57	82	106	146	5	6	280	500	80	90	130	176	6
300	500	63	90	118	160	6	6	300	540	85	98	140	192	6
320	540	71	100	128	176	6	6	320	580	92	105	150	208	6
340	580	78	106	140	190	6	6	340	620	92	118	165	224	8
360	600	78	106	140	192	6	6	360	650	95	122	170	232	8
380	620	78	106	140	194	6	6	380	680	95	132	175	240	8
400	650	80	112	145	200	8	8	400	720	103	140	185	256	8
420	700	88	122	165	224	8	8	420	760	109	150	195	272	10
440	720	88	122	165	226	8	8	440	790	112	155	200	280	10
460	760	95	132	175	240	8	10	460	830	118	165	212	296	10
480	790	100	136	180	248	8	10	480	870	125	170	224	310	10
500	830	106	145	190	264	10	10	500	920	136	185	243	336	10
530	870	109	150	195	272	10	10	530	980	145	200	258	355	12
560	920	115	160	206	280	10	10	560	1030	150	206	272	365	12
600	980	122	170	218	300	10	10	600	1090	155	212	280	388	12
630	1030	128	175	230	315	10	10	630	1150	165	230	300	412	15
670	1090	136	185	243	336	10	10	670	1220	175	243	315	438	15
710	1150	140	195	250	345	12	12	710	1280	180	250	325	450	15
750	1220	150	206	272	365	12	12	750	1360	195	265	345	475	18
800	1280	155	212	272	375	12	12	800	1420	200	272	355	488	18
850	1360	165	224	290	400	15	15	850	1500	206	280	375	515	18
900	1420	165	230	300	412	15	15	—	—	—	—	—	—	—
950	1500	175	243	315	438	15	15	—	—	—	—	—	—	—

Medium series							Heavy series				
Bore series 3 (6)*							Bore series 4				
d	D	Width series				Corner chamfer dimensions	d	D	Width series		Corner chamfer dimensions
		Narrow	Standard	Wide	Extra-wide				Narrow	Wide	
		0	1	(0)*	3	r			0	2	r
		Width B							Width B		
3	13	5	—	—	7	0.5	—	—	—	—	—
4	16	5	—	—	10	0.5	—	—	—	—	—
5	19	6	—	—	11	0.5	—	—	—	—	—
6	22	7	—	11	13	0.5	—	—	—	—	—
7	26	9	—	13	15	0.5	—	—	—	—	—
8	28	9	—	13	15	0.5	8	30	10	14	1
9	30	10	—	14	16	1	9	32	11	15	1
10	35	11	—	17	19	1	10	37	12	16	1
12	37	12	—	17	19	1.5	12	42	13	19	1.5
15	42	13	—	17	19	1.5	15	52	15	24	2
17	47	14	—	19	22.2	1.5	17	62	17	29	2
20	52	15	—	21	22.2	2	20	72	19	33	2
25	62	17	—	24	25.4	2	25	80	21	36	2.5
30	72	19	—	27	30.2	2	30	90	23	40	2.5
35	80	21	—	31	34.9	2.5	35	100	25	43	2.5
40	90	23	—	33	36.5	2.5	40	110	27	46	3
45	100	25	—	36	39.7	2.5	45	120	29	50	3
50	110	27	—	40	44.4	3	50	130	31	53	3.5
55	120	29	—	43	49.2	3	55	140	33	57	3.5
60	130	31	—	46	54	3.5	60	150	35	60	3.5
65	140	33	—	48	58.7	3.5	65	160	37	64	3.5
70	150	35	—	51	63.5	3.5	70	180	42	74	4
75	160	37	—	55	68.3	3.5	75	190	45	77	4
80	170	39	—	58	68.3	3.5	80	200	48	80	4
85	180	41	—	60	73	4	85	210	52	86	5
90	190	43	—	64	73	4	90	225	54	90	5
95	200	45	—	67	77.8	4	95	240	55	95	5
100	215	47	—	73	82.6	4	100	250	58	98	5
105	225	49	—	77	87.3	4	105	260	60	100	5
110	240	50	—	80	92.1	4	110	280	65	108	5
120	260	55	—	86	106	4	120	310	72	118	6
130	280	58	—	93	112	5	130	340	78	128	6
140	300	62	—	102	118	5	140	360	82	132	6
150	320	65	67	108	128	5	150	380	85	138	6
160	340	68	71	114	136	5	160	400	88	142	6
170	360	72	75	120	140	5	170	420	92	145	6
180	380	75	79	126	150	5	180	440	95	150	8
190	400	78	83	132	155	6	190	460	98	155	8
200	420	80	87	138	165	6	200	480	102	160	8
220	460	88	99	145	180	6	220	540	115	180	8
240	500	95	111	155	195	6	240	580	122	190	8
260	540	102	120	165	206	8	260	620	132	206	10
280	580	108	128	175	224	8	280	670	140	224	10
300	620	109	140	185	236	10	300	710	150	236	10
320	670	112	155	200	238	10	320	750	155	250	12
340	710	118	165	212	272	10	340	800	165	265	12
360	750	125	170	224	290	10	360	850	180	280	12
380	780	128	175	230	300	10	380	900	190	300	12
400	820	136	185	243	308	10	400	950	200	315	15
420	850	136	190	250	315	12	420	980	206	325	15
440	900	145	200	265	345	12	440	1030	212	335	15
460	950	155	212	280	365	12	460	1060	218	345	15
480	980	160	218	290	375	12	480	1120	230	365	18
500	1030	170	230	300	388	15	500	1150	236	375	18
530	1090	180	243	325	412	15	530	1220	250	400	18
560	1150	190	258	335	438	15	560	1280	258	412	18
600	1220	200	272	355	462	18	600	1360	272	438	18
630	1280	206	280	375	488	18	630	1420	280	450	18
670	1360	218	300	400	515	18	670	1500	290	475	18
710	1420	224	308	412	530	18	—	—	—	—	—
750	1500	236	325	438	560	18	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—

* Digits (5), (0) and (6), (0) refer to light series wide type and medium series wide type, respectively.

Table 9

Principal Dimensions of Single Row Taper Roller Bearings, mm

Super-light series								Extra-light series								Light series							
Bore series 9								Bore series 1								Bore series 2 (3)*							
d	D	Wide series 2				Corner chamfer dimensions		d	D	Wide series 2				Corner chamfer dimensions		d	D	Width series					
																		Narrow 0				Wide (0)*	
		B	C	T		r	r_1			B	C	T		r	r_1			B	C	T		B	C
				Max.	Min.							Max.	Min.							Max.	Min.		
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	15	35	11	10	12	11.5	14	11
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	17	40	12	11	13.5	13	15	12
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	20	47	14	12	15.5	15	17	14
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	25	52	15	13	16.5	16	18	15
—	—	—	—	—	—	—	—	30	55	16	14	17.2	16.8	1.5	0.5	30	62	16	14	17.5	17	20	16
35	55	13	11	14.2	13.8	1	0.3	35	62	17	15	18.2	17.8	1.5	0.5	35	72	17	15	18.5	18	23	17
40	62	14	12	15.2	14.8	1	0.3	40	68	18	16	19.2	18.8	1.5	0.5	40	80	20	16	20	19.5	25	18
45	68	14	12	15.2	14.8	1	0.3	45	75	19	16	20.2	19.8	1.5	0.5	45	85	19	16	21	20.5	25	19
50	72	14	12	15.2	14.8	1	0.3	50	80	19	16	20.2	19.8	1.5	0.5	50	90	21	17	22	21.5	27	20
55	80	16	14	17.3	16.7	1.5	0.5	55	90	22	19	23.3	22.7	2	0.8	55	100	21	18	23	22.5	27	20
60	85	16	14	17.3	16.7	1.5	0.5	60	95	22	19	23.3	22.7	2	0.8	60	110	23	19	24	23.5	29	22
65	90	16	14	17.3	16.7	1.5	0.5	65	100	22	19	23.3	22.7	2	0.8	65	120	23	20	25	24.5	31	23
70	100	19	16	20.3	19.7	1.5	0.5	70	110	24	20	25.3	24.7	2	0.8	70	125	26	21	26.5	26	33	25
75	105	19	16	20.3	19.7	1.5	0.5	75	115	24	20	25.3	24.7	2	0.8	75	130	26	22	27.5	27	34	26
80	110	19	16	20.3	19.7	1.5	0.5	80	125	27	23	29.3	28.7	2	0.8	80	140	26	22	28.5	28	36	27
85	120	22	19	23.4	22.6	2	0.8	85	130	27	23	29.3	28.7	2	0.8	85	150	28	24	31	30	38	29
90	125	22	19	23.4	22.6	2	0.8	90	140	30	26	32.4	31.6	2.5	0.8	90	160	31	26	33	32	40	30
95	130	22	19	23.4	22.6	2	0.8	95	145	30	26	32.4	31.6	2.5	0.8	95	170	34	27	35	34	43	32
100	140	24	20	25.4	24.6	2	0.8	100	150	30	26	32.4	31.6	2.5	0.8	100	180	34	29	37.5	36.5	46	34
105	145	24	20	25.4	24.6	2	0.8	105	160	33	28	35.4	34.6	3	1	105	190	37	30	39.5	38.5	48	36
110	150	24	20	25.4	24.6	2	0.8	110	170	36	31	38.4	37.6	3	1	110	200	39	32	41.5	40.5	50	38
120	165	27	23	29.4	28.6	2	0.8	120	180	36	31	38.4	37.6	3	1	120	215	41	34	44	43	54	41
130	180	30	26	32.5	31.5	2.5	0.8	130	200	42	36	45.5	44.5	3	1	130	230	41	34	44.5	43	54	41
140	190	30	26	32.5	31.5	2.5	0.8	140	210	42	36	45.5	44.5	3	1	140	250	42	36	46.5	45	56	43
150	210	36	31	38.5	37.5	3	1	150	225	45	38	48.5	47.5	3.5	1.2	150	270	45	38	50	48	60	46
160	220	36	31	38.5	37.5	3	1	160	240	48	41	51.5	50.5	3.5	1.2	160	290	48	40	53	51	63	49
170	230	36	31	38.5	37.5	3	1	170	260	54	46	57.5	56.5	3.5	1.2	170	310	52	43	58	56	68	53
180	250	42	36	45.5	44.5	3	1	180	280	60	52	64.5	63.5	3.5	1.2	180	320	52	43	58	56	68	53
190	260	42	36	45.5	44.5	3	1	190	290	60	52	64.5	63.5	3.5	1.2	190	340	55	46	61	59	72	56
200	280	48	41	51.5	50.5	3.5	1.2	200	310	66	56	70.5	69.5	3.5	1.2	200	360	58	48	65	63	77	60
220	300	48	41	51.5	50.5	3.5	1.2	220	340	72	62	76.5	75.5	4	1.5	220	400	65	54	71	69	85	66
240	320	48	41	51.5	50.5	3.5	1.2	240	360	72	62	76.5	75.5	4	1.5	240	440	72	60	80	78	94	73
—	—	—	—	—	—	—	—	260	400	82	71	87.7	86.3	5	2	260	480	80	67	90	88	105	81
—	—	—	—	—	—	—	—	280	420	82	71	87.7	86.3	5	2	280	500	80	67	90	88	105	81
—	—	—	—	—	—	—	—	300	460	95	82	100.7	99.3	5	2	300	540	85	71	97	95	113	87
—	—	—	—	—	—	—	—	320	480	95	82	100.7	99.3	5	2	320	580	92	75	105	103	122	94

Medium series															
Bore series 3 (6)*															
d	D	Width series										Corner chamfer dimensions			
		Narrow 0				Wide (0)*									
		B	C	T		B	C	T		r	r_1				
				Max.	Min.			Max.	Min.						
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
15	42	13	11	14.5	14	17	14	18.5	18	1.5	0.5				
17	47	14	13	15.5	15	19	16	20.5	20	1.5	0.5				
20	52	16	13	16.5	16	21	18.5	22.5	22	2	0.8				
25	62	17	15	18.5	18	24	21	25.5	25	2	0.8				
30	72	19	17	21	20.5	29	23	29	28.5	2	0.8				
35	80	21	18	23	22.5	31	27	33	32.5	2.5	0.8				
40	90	23	20	25.5	25	33	28.5	35.5	35	2.5	0.8				
45	100	26	22	27.5	27	36	31	38.5	38	2.5	0.8				
50	110	29	23	29.5	29	40	34	42.5	42	3	1				
55	120	29	25	32	31	44.5	36.5	46	45	3	1				
60	130	31	27	34	33	47.5	39	49	48	3.5	1.2				
65	140	33	28	36.5	35.5	48	41	51.5	50.5	3.5	1.2				
70	150	37	30	38.5	37.5	51	43	54.5	53.5	3.5	1.2				
75	160	37	31	40.5	39.5	55	46.5	58.5	57.5	3.5	1.2				
80	170	39	33	43	42	59.5	49	62	61	3.5	1.2				
85	180	41	35	45	44	60	50.5	64	63	4	1.5				
90	190	43	36	47	46	66.5	53.5	68	67	4	1.5				
95	200	45	39	50	49	67	57	72	71	4	1.5				
100	215	47	39	52	51	73	61.5	78	77	4	1.5				
105	225	49	41	54	53	77	64.5	82	81	4	1.5				
110	240	50	42	55	54	80	66	85	84	4	1.5				
120	260	55	46	60	59	86	70.5	91	90	4	1.5				
130	280	58	49	64.5	63	93	78	99.5	98	5	2				
140	300	62	53	68.5	67	102	85	108.5	107	5	2				
150	320	65	55	73	71	108	90	115	113	5	2				
160	340	68	58	76	74	114	95	122	120	5	2				
170	360	72	62	81	79	120	100	128	126	5	2				
180	380	75	64	84	82	126	106	135	133	5	2				
190	400	78	65	87	85	132	109	141	139	6	2.5				
200	420	80	67	90	88	138	115	147	145	6	2.5				
220	460	88	73	98	96	145	122	155	153	6	2.5				
240	500	95	80	106	104	155	132	166	164	6	2.5				
260	540	102	85	110	108	165	136	177	175	8	3.5				
280	580	108	90	120	118	175	145	188	186	8	3.5				
300	540	—	—	—	—	—	—	—	—	—	—				
320	580	—	—	—	—	—	—	—	—	—	—				

* Digits (5), (0) and (6), (0) refer to light series wide type and medium series wide type, respectively.

Principal Dimensions of Single and Double Ball and Roller Thrust Bearings, mm

Table 10

Extra-light series										Light series									
Bore series 9						Bore series 1						Bore series 2							
Height series						Height series						Height series							
Extra-low	Low	Standard				Extra-low	Low	Standard				Extra-low	Low	Standard					
7	9	1				7	9	0				7	9	0					
Height H			Corner chamfer dimensions			Height H			Corner chamfer dimensions			Height H					Corner chamfer dimensions		
d	D				r	d	D			r	d	D				H_3	a	d_3	r
4	12	4	—	6	0.5	—	—	—	—	—	4	16	6	—	8	—	—	—	0.5
6	16	5	—	7	0.5	—	—	—	—	—	6	20	6	—	9	—	—	—	0.5
8	18	5	—	7	0.5	—	—	—	—	—	8	22	6	—	9	—	—	—	0.5
10	20	5	—	7	0.5	10	24	6	—	9	0.5	10	26	7	—	11	—	—	—	1
12	22	5	—	7	0.5	12	26	6	—	9	0.5	12	28	7	—	11	—	—	—	1
15	26	5	—	7	0.5	15	28	6	—	9	0.5	15	32	8	—	12	22	5	10	1
17	28	5	—	7	0.5	17	30	6	—	9	0.5	17	35	8	—	12	—	—	—	1
20	32	6	—	8	0.5	20	35	7	—	10	0.5	20	40	9	—	14	26	6	15	1
25	37	6	—	8	0.5	25	42	8	—	11	1	25	47	10	—	15	28	7	20	1
30	42	6	—	8	0.5	30	47	8	—	11	1	30	52	10	—	16	29	7	25	1
35	47	6	—	8	0.5	35	52	8	—	12	1	35	62	12	—	18	34	8	30	1.5
40	52	6	—	9	0.5	40	60	9	—	13	1	40	68	13	—	19	36	9	30	1.5
45	60	7	—	10	0.5	45	65	9	—	14	1	45	73	13	—	20	37	9	35	1.5
50	65	7	—	10	0.5	50	70	9	—	14	1	50	78	13	—	22	39	9	40	1.5
55	70	7	—	10	0.5	55	78	10	—	16	1	55	90	16	21	25	45	10	45	1.5
60	75	7	—	10	0.5	60	85	11	—	17	1.5	60	95	16	21	26	46	10	50	1.5
65	80	7	—	10	0.5	65	90	11	—	18	1.5	65	100	16	21	27	47	10	55	1.5
70	85	7	—	10	0.5	70	95	11	—	18	1.5	70	105	16	21	27	47	10	55	1.5
75	90	7	—	10	0.5	75	100	11	—	19	1.5	75	110	16	21	27	47	10	60	1.5
80	95	7	—	10	0.5	80	105	11	—	19	1.5	80	115	16	21	28	48	10	65	1.5
85	100	7	—	10	0.5	85	110	11	—	19	1.5	85	125	18	24	31	55	12	70	1.5
90	105	7	—	10	0.5	90	120	14	—	22	1.5	90	135	20	27	35	62	14	75	2
100	120	9	—	14	1	100	135	16	21	25	1.5	100	150	23	30	38	67	15	85	2
110	130	9	—	14	1	110	145	16	21	25	1.5	110	160	23	30	38	67	15	95	2
120	140	9	—	14	1	120	155	16	21	25	1.5	120	170	23	30	39	68	15	100	2
130	150	9	—	14	1	130	170	18	24	30	1.5	130	190	27	36	45	80	18	110	2.5
140	160	9	—	14	1	140	180	18	24	31	1.5	140	200	27	36	46	81	18	120	2.5
150	170	9	—	14	1	150	190	18	24	31	1.5	150	215	29	39	50	89	20	130	2.5
160	180	9	—	14	1	160	200	18	24	31	1.5	160	225	29	39	51	90	20	140	2.5
170	190	9	—	14	1	170	215	20	27	34	2	170	240	32	42	55	97	21	150	2.5
180	200	9	—	14	1	180	225	20	27	34	2	180	250	32	42	56	98	21	150	2.5
190	215	11	—	17	1.5	190	240	23	30	37	2	190	270	36	48	62	109	24	160	3
200	225	11	—	17	1.5	200	250	23	30	37	2	200	280	36	48	62	109	24	170	3
220	250	14	—	22	1.5	220	270	23	30	37	2	220	300	36	48	63	110	24	190	3
240	270	14	—	22	1.5	240	300	27	36	45	2.5	240	340	45	60	78	—	—	—	3.5
260	290	14	—	22	1.5	260	320	27	36	45	2.5	260	360	45	60	79	—	—	—	3.5
280	310	14	—	22	1.5	280	350	32	42	53	2.5	280	380	45	60	80	—	—	—	3.5
300	340	18	24	30	1.5	300	380	36	48	62	3	300	420	54	73	95	—	—	—	4
320	360	18	24	30	1.5	320	400	36	48	63	3	320	440	54	73	95	—	—	—	4
340	380	18	24	30	1.5	340	420	36	48	64	3	340	460	54	73	96	—	—	—	4
360	400	18	24	30	1.5	360	440	36	48	65	3	360	500	63	85	110	—	—	—	5
380	420	18	24	30	1.5	380	460	36	48	65	3	380	520	63	85	112	—	—	—	5
400	440	18	24	30	1.5	400	480	36	48	65	3	400	540	63	85	112	—	—	—	5
420	460	18	24	30	1.5	420	500	36	48	65	3	420	580	73	95	130	—	—	—	6
440	480	18	24	30	1.5	440	540	45	60	80	3.5	440	600	73	95	130	—	—	—	6
460	500	18	24	30	1.5	460	560	45	60	80	3.5	460	620	73	95	130	—	—	—	6
480	520	18	24	30	1.5	480	580	45	60	80	3.5	480	650	78	103	135	—	—	—	6
500	540	18	24	30	1.5	500	600	45	60	80	3.5	500	670	78	103	135	—	—	—	6
530	580	23	30	38	2	530	640	50	67	85	4	530	710	82	109	140	—	—	—	6
560	610	23	30	38	2	560	670	50	67	85	4	560	750	85	115	150	—	—	—	6
600	650	23	30	38	2	600	710	50	67	85	4	600	800	90	122	160	—	—	—	8
630	680	23	30	38	2	630	750	54	73	95	4	630	850	100	132	175	—	—	—	8
670	730	27	36	45	2.5	670	800	58	78	105	5	670	900	103	140	180	—	—	—	8
710	780	32	42	53	2.5	710	850	63	85	112	5	710	950	109	145	190	—	—	—	8
750	820	32	42	53	2.5	750	900	67	90	120	5	750	1000	112	150	195	—	—	—	8
800	870	32	42	53	2.5	800	950	67	90	120	5	800	1060	118	155	205	—	—	—	10
850	920	32	42	53	2.5	850	1000	67	90	120	5	850	1120	122	160	212	—	—	—	10
900	980	36	48	63	3	900	1060	73	95	130	6	900	1180	125	170	220	—	—	—	10
950	1030	36	48	63	3	950	1120	78	103	135	6	950	1250	136	180	236	—	—	—	10
1000	1090	41	54	70	3.5	1000	1180	82	109	140	6	1000	1320	145	190	250	—	—	—	12
1060	1150	41	54	70	3.5	1060	1250	85	115	150	6	1060	1400	155	206	265	—	—	—	12
1120	1220	45	60	80	3.5	1120	1320	90	122	160	6	—	—	—	—	—	—	—	—	—
1180	1280	45	60	80	3.5	1180	1400	100	132	175	8	—	—	—	—	—	—	—	—	—
1280	1360	50	67	85	4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Note: Bore (d), of stationary ring, see Table 6.

Medium series										Heavy series										Extra-heavy series			
Bore series 3										Bore series 4										Bore series 5			
Height series										Height series													
Extra-low	Low	Standard								Extra-low	Low	Standard								Low-series			
7	9	0								7	9	0								9			
Height H				H_3	a	d_3	Corner chamfer dimensions r			Height H				H_3	a	d_3	Corner chamfer dimensions r			Height H		Corner chamfer dimensions r	
d	D									d	D									d	D		
4	20	7	—	11	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
6	24	8	—	12	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
8	26	8	—	12	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10	30	9	—	14	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12	32	9	—	14	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
15	37	10	—	15	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
17	40	10	—	16	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
20	47	12	—	18	—	—	1.5	—	—	—	—	—	—	—	—	—	—	—	—	17	52	21	1.5
25	52	12	—	18	34	8	20	1.5	25	60	16	21	24	45	11	15	1.5	25	60	24	1.5
30	60	14	—	21	38	9	25	1.5	30	70	18	24	28	52	12	20	1.5	30	85	34	2
35	68	15	—	24	44	10	30	1.5	35	80	20	27	32	59	14	25	2	35	100	39	2
40	78	17	22	26	49	12	30	1.5	40	90	23	30	36	65	15	30	2	40	110	42	2.5
45	85	18	24	28	52	12	35	1.5	45	100	25	34	39	72	17	35	2	45	120	45	3
50	95	20	27	31	58	14	40	2	50	110	27	36	43	78	18	40	2.5	50	135	51	3
55	105	23	30	35	64	15	45	2	55	120	29	39	48	87	20	45	2.5	55	150	58	3.5
60	110	23	30	35	64	15	50	2	60	130	32	42	51	93	21	50	2.5	60	160	60	3.5
65	115	23	30	36	65	15	55	2	65	140	34	45	56	101	23	50	3	65	170	63	3.5
70	125	25	34	40	72	16	55	2	70	150	36	48	60	107	24	55	3	70	180	67	4
75	135	27	36	44	79	18	60	2.5	75	160	38	51	65	115	26	60	3	75	190	69	4
80	140	27	36	44	79	18	65	2.5	80	170	41	54	68	120	27	65	3.5	80	200	73	4
85	150	29	39	49	87	19	70	2.5	85	180	42	58	72	128	29	65	3.5	85	215	78	5
90	155	29	39	50	88	19	75	2.5	90	190	45	60	77	135	30	70	3.5	90	225	82	5
100	170	32	42	55	97	21	85	2.5	100	210	50	67	85	150	33	80	4	100	250	90	5
110	190	36	48	63	110	24	95	3	110	230	54	73	95	166	37	90	4	110	270	95	6
120	210	41	54	70	123	27	100	3.5	120	250	58	78	102	177	40	95	5	120	300	109	6
130	225	42	58	75	130	30	110	3.5	130	270	63	85	110	192	42	100	5	130	320	115	6
140	240	45	60	80	140	31	120	3.5	140	280	63	85	112	196	44	110	5	140	340	122	6
150	250	45	60	80	140	31	130	3.5	150	300	67	90	120	209	46	120	5	150	360	125	8
160	270	50	67	87	153	33	140	4	160	320	73	95	130	226	50	130	6	160	380	132	8
170	280	50	67	87	153	33	150	4	170	340	78	103	135	236	50	135	6	170	400	140	8
180	300	54	73	95	165	37	150	4	180	360	82	109	140	245	52	140	6	180	420	145	8
190	320	58	78	105	183	40	160	5	190	380	85	115	150	—	—	—	6	190	440	150	8
200	340	63	85	110	192	42	170	5	200	400	90	122	155	—	—	—	6	200	460	155	10
220	360	63	85	112	—	—	—	5	220	420	90	122	160	—	—	—	8	220	500	170	10
240	380	63	85	112	—	—	—	5	240	440	90	122	160	—	—	—	8	240	540	180	10
260	420	73	95	130	—	—	—	6	260	480	100	132	175	—	—	—	8	260	580	190	12
280	440	73	95	130	—	—	—	6	280	520	109	145	190	—	—	—	8	280	620	206	12
300	480	82	109	140	—	—	—	6	300	540	109	145	190	—	—	—	8	300	670	224	12
320	500	82	109	140	—	—	—	6	320	580	118	155	205	—	—	—	10	320	710	236	12
340	540	90	122	160	—	—	—	6	340	620	125	170	220	—	—	—	10	340	750	243	15
360	560	90	122	160	—	—	—	6	360	640	125	170	220	—	—	—	10	360	780	250	15
380	600	100	132	175	—	—	—	8	380	670	132	175	224	—	—	—	10	380	820	265	15
400	620	100	132	175	—	—	—	8	400	710	140	185	243	—	—	—	10	400	850	272	15
420	650	103	140	180	—	—	—	8	420	730	140	185	243	—	—	—	10	420	900	290	18
440	680	109	145	190	—	—	—	8	440	780	155	206	265	—	—	—	12	440	950	308	18
460	710	112	150	195	—	—	—	8	460	800	155	206	265	—	—	—	12	460	980	315	18
480	730	112	150	195	—	—	—	8	480	850	165	224	290	—	—	—	12	480	1000	315	18
500	750	112	150	195	—	—	—	8	500	870	165	224	290	—	—	—	12	500	1060	335	18
530	800	122	160	212	—	—	—	10	530	920	175	236	308	—	—	—	12	530	1090	335	18
560	850	132	175	224	—	—	—	10	560	980	190	250	335	—	—	—	15	560	1150	355	18
600	900	136	180	236	—	—	—	10	600	1030	195	258	335	—	—	—	15	600	1220	375	18
630	950	145	190	250	—	—	—	12	630	1090	206	280	365	—	—	—	15	630	1280	388	18
670	1000	150	200	258	—	—	—	12	670	1150	218	290	375	—	—	—	15	670	1320	388	18
710	1060	160	212	272	—	—	—	12	710	1220	230	308	400	—	—	—	18	710	1400	412	18
750	1120	165	224	290	—	—	—	12	750	1280	236	315	412	—	—	—	18	—	—	—	—
800	1180	170	230	300	—	—	—	12	800	1360	250	335	438	—	—	—	18	—	—	—	—
850	1250	180	243	315	—	—	—	15	—	—	—	—	—	—	—	—	—	—	—	—	—	—
900	1320	190	250	335	—	—	—	15	—	—	—	—	—	—	—	—	—	—	—	—	—	—
950	1400	200	272	355	—	—	—	15	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

CHARACTERISTICS OF MAIN TYPES OF ANTIFRICTION BEARINGS

1. SINGLE ROW BALL BEARINGS

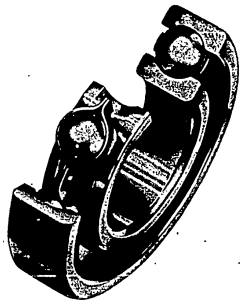


Fig. 6

Single row ball bearings, due to their design features, are capable of carrying a thrust load, acting in either direction along the axis of the shaft, besides the usual radial load. This thrust load, however, should not exceed 70 per cent of the non-utilized permissible radial load at a given computed average life.

If the radial clearance between the balls and races of the bearing rings is increased, these bearings acquire the properties of radial-thrust bearings and provide excellent performance in carrying pure thrust loads. In this capacity, they often are substituted for ball thrust bearings.

The capacity for carrying thrust loads in either direction allows this type of bearing to be used for fixing shafts or housings in an axial direction.

Single row ball bearings are capable of operating at higher speeds than other alternative designs of bearings of the corresponding size.

The maximum allowable operating speed of single row radial bearings may be increased if the bearings are more accurately manufactured as well as with the use of solid retainers of antifriction materials such as textolite, brass, duralumin, etc.

Single row ball bearings have the lowest friction losses in comparison with other types of bearings of the corresponding size. For this reason, this type of bearings should be given preference in designing machinery if its computed average life is within the limits which provide a normal working capacity of the machine.

Single row ball bearings provide satisfactory performance in cases in which the housings of all bearings, mounted on one shaft, are bored in a single set-up or measures are taken to ensure that the bores are in accurate alignment. It is necessary to remember that this design of bearings may operate only if the misalignment of the inner ring in reference to the outer ring does not exceed 15'. If this type of bearing is installed in a machine assembly with less accurate alignment, the expected life of the bearing will be sharply decreased and breakdowns due to the overheating of the bearing or breakage of the retainer may occur.

Alternative designs of the main type of single row ball bearings are:

a) Single row ball bearings with a filling slot or groove. Due to the increased number of balls these bearings are capable of carrying larger radial loads but the presence of the filling slot in the inner and outer rings does not allow the bearings to carry increased thrust loads. Consequently, these bearings are more restricted in their applications.

b) Bearings with a groove on the outside of the outer ring for a snap ring.

This design allows the bearing housing to be bored through without a shoulder.

c) Single and double shielded bearings as well as bearings with built-in felt or rubber seals. These bearings are to be used in bearing assemblies where a lack of space provides difficulties in installing separate sealing devices in the bearing housing or in cases where it is impossible to add lubricant to the bearings after installation.

Single row ball bearings find application in low power electric motors, gear boxes of automobiles, tractors and machine tools, axle boxes of intra-works transporting trucks, idle pulleys, conveyer rollers and other similar machine assemblies.

2. CYLINDRICAL ROLLER BEARINGS WITH SHORT ROLLERS

Fig. 7

Cylindrical roller bearings with short rollers are available in a number of alternative designs:

1. Bearings, type 2000. Outer ring straight, inner ring with two lips providing a separable type of bearings in which the rollers and retainer remain on the inner ring. This type of bearings is applicable in bearing assemblies that require a floating support (the outer ring may have axial movement along the rollers). This type of bearing is only capable of carrying a radial load; it cannot carry a thrust load.

2. Bearings, type 32000. Inner ring straight, outer ring with two lips providing a separable type of bearings in which the rollers and retainer remain in the outer ring when the inner ring is disassembled. This type of bearings is applicable in bearing assemblies that require a floating support (the inner ring may have axial movement along the rollers). These bearings are also only capable of carrying a radial load, they cannot carry thrust loads.

3. Bearings, type 42000. Inner ring with one lip, outer ring with two lips providing a separable design in which the inner ring can be removed and the rollers and retainer remain in the outer ring. This type of bearings is applicable in bearing assemblies requiring location of the shaft in one direction. These bearings are capable of carrying radial loads.

4. Bearings, type 62000. Outer ring with two lips, inner ring with one lip and with separate, loose lip of profiled cross section to provide separable type of bearing in which loose lip is removed, inner ring is also removed and rollers and retainer remain in the outer ring. This type of bearings is used when it is necessary to locate the shaft in both directions. They can carry radial loads.

5. Bearings, type 92000. This type is similar to the preceeding type except that the loose lip has a rectangular cross-section. Bearings, type 92000, are also capable of carrying radial loads and of locating the shaft in both directions.

6. Bearings, type 102 000. Inner ring with two lips, two retaining rings on outer ring, full of rollers and without a retainer. This bearing is non-separable. It carries only radial load; it does not carry thrust loads but outer ring is located axially in reference to the rollers by the retaining rings. For this reason, it is unnecessary to secure the outer ring in the housing.

Cylindrical roller bearings with short rollers have larger radial load capacities than ball bearings of the same size.

The selection of one or another of the alternative designs of roller bearings depends on the special features of the given bearing assembly and demands stipulated by mounting requirements.

Due to their separable design, cylindrical roller bearings with short rollers are more convenient in mounting than ball bearings.

Cylindrical roller bearings with short rollers should be used in bearing assemblies having short, rigid shafts which are not distorted by external stresses. They should not be applied in assemblies in which misalignment of the inner and outer rings are possible.

In cases, when a roller bearing having one ring without lips is used for one support of a shaft; a bearing locating the shaft in reference to the housings should be used in the second support.

Cylindrical roller bearings with short rollers can be successfully applied in the following machine assemblies: medium and high powered electric motors, spindles of metalcutting machine tools, bearings of centrifugal pumps, axle boxes of underground railway trains, tramways, railway rolling stock, etc.

Cylindrical roller bearings with short rollers having a bore diameter up to 100 mm are available with a retainer stamped of sheet steel. However, in accordance with the size of the lot being produced, they are also available with a solid retainer of non-ferrous metals. In operation both of these alternative designs are equivalent in their capacities.

3. DOUBLE ROW SELF-ALIGNING BALL BEARINGS

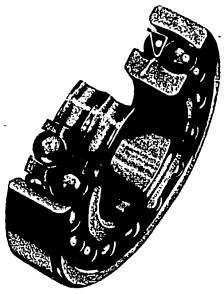


Fig. 8

Double row self-aligning ball bearings, type 1000, are designed in the main, for carrying radial loads but, at the same time, they can carry small thrust loads in both directions.

It is not advisable to use these bearings for pure thrust loads, as in this case only one row of balls will be under load.

The thrust load, acting simultaneously with the radial load should not exceed 20 per cent of the non-utilized permissible radial load at a given computed average life.

Type 1000 bearings, due to the features of their design, can operate with considerable misalignment (up to 3°) of the inner ring in reference to the outer ring. This misalignment may be due to the fact that the bearing seats are not in line or that the shaft is distorted by the action of the load.

As a consequence of their capacity for self-alignment, these bearings can be installed in machine assemblies with housings standing separately and with misalignment of the axes of the bearing seats.

An alternative design of the type 1000 bearings is the 11000 type with a tapered bore (taper 1 to 12) and installed on a clamping sleeve.

Bearings on clamping sleeves can be mounted on smooth shafts without shoulders and the shaft diameters for seating the bearings may be less accurately machined. The use of clamping sleeves considerably simplifies assembly and disassembly of the bearings. Besides this, the clamping sleeve allows some adjustment of the radial clearance in the bearing by expanding the inner ring slightly by means of the clamping sleeve.

Double row self-aligning ball bearings find wide application in agricultural machinery, fans, blowers, textile, knitting, paper-manufacturing and other machinery.

4. DOUBLE ROW SELF-ALIGNING ROLLER BEARINGS

Double row self-aligning roller bearings have a type designation of 3000. These bearings have the largest load capacities of any bearings of the same dimensions.

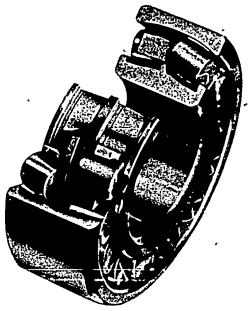


Fig. 9

Self-aligning roller bearings can simultaneously carry a thrust load in either direction besides the radial load.

The thrust load, acting together with the radial load should not exceed 20 per cent of the non-utilized permissible radial load.

The self-alignment capacity of this bearing is the same as for double row self-aligning ball bearings.

An alternative design of this type of bearing is bearing type 13000 with a tapered bore (taper 1 to 12) which can be mounted either directly on a tapered seat of the shaft or on a smooth cylindrical shaft by means of an intermediate clamping sleeve clamping-stripping sleeve or adapter.

Double row self-aligning roller bearings are used as supports for long multi-support shafts subject to considerable deflection under the action of external loads, as well as in machine assemblies where the bearing housings stand separately and it is not expedient to arrange the housings on a common baseplate.

This type of bearing can be successfully applied in assemblies of the following machines: coal-cutting combines and coal-cutters; centrifugal blowers, pumps and draught fans; rolling mills and medium and high power reducing gear units, log frames; travelling truck wheels and wire rope pulleys of port cranes; screens and rock crushers and many other types of machines in which the bearings are subject to heavy loads.

5. ANGULAR-CONTACT BALL BEARINGS

(Types 6000, 36000, 46000 and 66000)

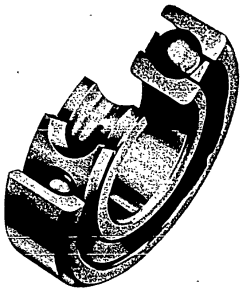


Fig. 10

These bearings are designed to withstand combination loads acting in both the radial and axial directions.

A single row bearing of this type may resist pure thrust loads acting in one direction. To locate the shaft in both directions this type of bearing must be applied in pairs (duplex installation).

Installation of these bearings in pairs allows the unit to be preloaded.

For withstanding large thrust loads, a number of these bearings may be installed one after another (narrow face of the outer ring of one bearing against the wide face of the outer ring of the other bearing) in the so-called "tandem" arrangement.

When properly selected so as to ensure a uniform distribution of the load between the separate bearings, such a set of bearings may withstand a very considerable load and each bearing carries that part of the load obtained by dividing the total load by the number of bearings in the set. The limiting speed of a group of bearings equals the maximum allowable speed of the component bearings.

This type of bearing can be applied in assemblies having rigid two-support shaft with a comparatively small distance between the supports. They can also be used in assemblies that require adjustment of the internal clearance in the bearings during mounting and in operation.

The applications of angular-contact ball bearings include: spindles of machine tools and woodworking machinery, electric motors, centrifuges, worm gear reducing units, front wheels of automobiles, magnetos, etc.

6. NEEDLE ROLLER BEARINGS

(Type 74000)

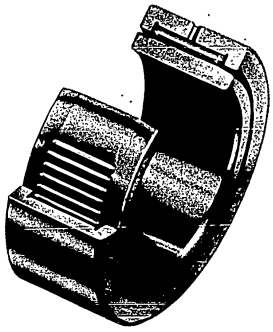


Fig. 11

Needle roller bearings are designed for resisting only radial loads. Due to the small diameter of the rollers (needles), these bearings have smaller outside diameters when compared with other bearings having the same bore diameters.

This type of bearing, in accordance with the features of design of the bearing assembly, may be used without either an inner or outer ring or even without any rings, merely using a set of needle rollers. In these cases the roller races in the housing or on the shaft should possess the same qualities as the bearing ring (as to hardness, accuracy and finish). This bearing does not locate the shaft or housing axially and is very sensitive to misalignment of the seating surfaces. The bearing seats for two support needle roller bearing assemblies must be bored in a single set-up.

Needle roller bearings find application in machine assemblies, where space is limited, and are often used in oscillating machine members.

To provide reliable working capacity, bearings in oscillating assemblies should be lubricated with fluid mineral oil.

Machine assemblies in which needle roller bearings are widely used include: universal joints of automobiles, piston pins, connecting rod pins, engine camshafts, rocker arms of distributor mechanisms, supports of crank-arm mechanisms, etc.

7. FLEXIBLE ROLLER BEARINGS

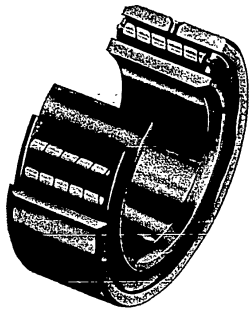


Fig. 12

These bearings are designed for withstanding only radial loads. They do not locate the shaft or housing axially. These bearings, however, are capable of resisting impact loads.

Flexible roller bearings are available in two types: Type 5000 having two solid rings and a set of rollers held in a retainer and type 45000 with a stamped split outer ring and a set of rollers held in a retainer.

Other modifications of the main type 5000 are available as a bearing with one solid outer ring and a set of rollers in a retainer and known as type 35000 as well as a roller assembly in a retainer and without rings, type 65000.

Flexible roller bearings are used in machine assemblies where accurate rotation is not essential, as for instance: intra-works transportation facilities, various assemblies of agricultural machinery, combines, ploughs, working and transporting rolls of roller tables for rolling mills, etc.

8. TAPER ROLLER BEARINGS

Taper roller bearings are, in fact, radial-thrust bearings designed for withstanding combination loads (radial and thrust).

If two bearings are mounted adjacent to each other or at the opposite ends of a two-support shaft, they can carry pure radial loads.

Taper roller bearings are manufactured with interchangeable outer rings or cups. As the outer ring (cup) is separable, these bearings are convenient for separate mounting the outer ring in the housing and the inner ring (cone) and rollers on the shaft.

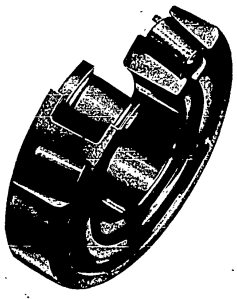


Fig. 13

Alternative designs of the single row taper roller bearing, type 7000, are:

Type 67000 with flange on outer ring (flanged-cup);

Type 27000 with large taper angle of outer ring (cup) in a range from 25° to 29°;

Types 37000, 97000 and 47000 are double row roller bearings, without and with axial clearance adjustment, respectively;

Type 77000 is a fourrow roller bearing.

Single row taper roller bearings are to be used in machine assemblies having rigid two-support shafts with a comparably short distance between the supports. The bearing allows for the adjustment of axial clearance during mounting, as well as in operation.

It must be stressed that these bearings react very sensitively to the working axial clearance. Excessive tightening will result in a sharp raise in temperature while on the other hand excessive axial clearance may bring about bearing failure. Consequently, during both initial mounting and subsequent operations, it is necessary to adjust the axial clearance with special care.

Double and fourrow taper roller bearings are manufactured with a certain amount of axial clearance incorporated in the bearing and are not to be adjusted during mounting operations.

The increase in axial clearance in these bearings due to wear in operation is compensated for by grinding down the spacer rings.

Taper roller bearings find application in the following assemblies of various machinery:

Type 7000 — medium and high power worm gear reducing units, auto truck wheels, tractor crawler rollers, machine tool spindles;

Type 67000 — in machine tools or machine assemblies with limited space;

Type 27000 — in rear axles of automobiles and machine assemblies subject to large thrust loads;

Types 37000, 97000 and 47000 — in reducing units transmitting very high power, in rolls of transporting and working roller tables of rolling mills, in working rolls of rolling mills;

Type 77000 — on supporting rolls of rolling mills for withstanding large radial loads with comparatively small thrust loads.

9. BALL THRUST BEARINGS

Fig. 14

Both single and double ball thrust bearings are available.

Single thrust bearings, type 8000, are designed for carrying a thrust load in one direction.

Double thrust bearings, type 38000, are designed for carrying thrust loads in both directions.

The single thrust bearing consists of two rings and a set of balls in a retainer. The revolving or "tight" ring of the bearing is mounted directly on the shaft with a suitable fit while the second, stationary or "loose" ring, is mounted in the housing. The bore of the "loose" ring, as a rule, is larger than the bore of the "tight" ring by an amount approximately up to 1 mm.

As a lack of coincidence of the axes of the housing and shaft may result in premature bearing failure, it is advisable to provide self-alignment of the rings by mounting the "loose" ring in the housing with a clearance in the order of 0.4 to 0.6 mm on the diameter. This clearance will compensate for any misalignment between the axes of the housing and shaft.

To eliminate the effects of mounting misalignment of the bearing rings due to a lack of squareness of the housing shoulder to the shaft axis, it is advisable to arrange spacers of some plastic material under the "loose" ring. Such spacers may be made of linoleum, leather, oil-resistant rubber (sevanite), etc.

Double ball thrust bearings consist of one "tight" or rotating ring with two ball races, two "loose" or stationary rings and two sets of balls in retainers.

Ball thrust bearings with spherical seating rings, single, type 18000 and double, type 848000, are non-standard types and not advisable for application in newly designed assemblies. This is due to the excessive sliding friction between the spherical surfaces of the bearing and seating rings which sharply limit their self-aligning properties.

During operation, under the action of centrifugal forces, the unloaded row of balls, especially in double row bearings, has a tendency to run out of the races. This shifts the axes of rotation of the balls and causes sliding friction between the balls and races. This latter results in overheating and failure of the surfaces of the balls and races. To avoid this, it is advisable to provide a constant load on the unloaded balls and "loose" ring by means of continuously acting springs.

In many machine assemblies, to withstand thrust loads, it is possible to use single row ball bearings by selecting the bearing to suit the thrust load.

Ball thrust bearings are used in the assemblies of the following machines: vertical centrifuges, low-speed reducing gear units transmitting large torques, crane hooks, machine tool spindles, pivots of rotary cranes, live centers of machine tools, jacks and other machinery.

STANDARD SPECIFICATIONS FOR BALL AND ROLLER BEARINGS*

CLASSIFICATION

1. In accordance with their accuracy in dimensions and in running, standardized antifriction bearings are arranged in the following classes of accuracy:

Class of accuracy	Designation	Accuracy of manufacture of bearing rings	
		Inner	Outer
Main Classes			
Standard	H	H	H
Special	П	П	П
High	B	B	B
Extra-high	A	A	A
Super-high	C	C	C
Intermediate Classes			
Special-intermediate	ВП	B	П
High-intermediate	AB	A	B
Extra-high-intermediate	CA	C	A

2. The classes of accuracy refer to the following types and series of bearings according to Table 11 given below:

* For more detailed information see GOST 520-55

Table 11

Class of accuracy	Types and series of bearings
C and CA	a) Single row ball bearings (GOST 4788-49, OST 6121-39, series 200 and 300) b) Angular-contact ball bearings (GOST 831-54, series and types 6000, 36100, 36200, 46100, 46200) c) Duplex angular-contact ball bearings (GOST 832-41, light series with 12° and 26° contact angle) d) Cylindrical roller bearings with short rollers (GOST 294-41, types 2000 and 32000 of light and medium series and GOST 4789-49, type 32000) e) Taper roller bearings (GOST 5379-50 and GOST 333-41)
A and AB	All the above-mentioned ball and roller bearings for C and CA classes of accuracy as well as: a) Single row ball bearings (OST 6121-39, series 400) b) Angular-contact ball bearings (GOST 831-54, series 36300, 66300, 46400, 66400 and 46300) c) Duplex angular-contact ball bearings (GOST 832-41, medium and heavy series) d) Cylindrical roller bearings with short rollers (GOST 294-41, type 2000 and 32000 of heavy series and type 42000) e) Ball thrust bearings* (GOST 6874-54, type 8000) f) Double row self-aligning ball bearings with a bore diameter up to 80 mm (GOST 5720-51)
B, П and ВП	All the above-mentioned ball and roller bearings for C, CA, A and AB classes of accuracy as well as: a) Double row angular-contact ball bearings (GOST 4252-48) b) Single row ball bearings with shields (GOST 7242-54) c) Double row self-aligning ball bearings (GOST 5720-51)
H	All the types of ball and roller bearings provided for in GOST 520-55

Note: For use in machine assemblies where operating conditions do not require accuracy in running (bearings for rolls of conveyers or roll tables, small trucks, timber hauling trucks, pulleys, winches, feeders) bearings with lower requirements of HO and O classes of accuracy may be manufactured as stipulated in GOST 4793-49.

* Type 8000 ball thrust bearings (GOST 6874-54) of AB, ВП and П classes of accuracy are not manufactured.

SPECIFICATIONS

3. The accuracy of the dimensions of bearings are determined by the tolerances of their chief dimensions such as the bore, outside diameter and width of rings.

The accuracy of running of bearings is determined by the following runout components:

a) radial runout of outer, inner and tight rings;

b) axial runout of faces of inner ring;

c) axial runout of raceways of inner and outer rings.

4. Tolerances for the bores and outside diameters, widths, parallelism of faces as well as for radial and axial runout of rings, for each class of accuracy, are given in Tables 12, 13, 14, 15 and 16.

5. As a result of out-of-roundness, taper and other deviations from an exact cylindrical surface, during measurement different values are obtained for the diameter in one or several sections.

The effective deviations of maximum (d_{max} and D_{max}), minimum (d_{min} and D_{min}) and mean (d_m and D_m) diameters in accordance with the accuracy classes must be within the limits indicated in Tables 12, 13, 14 and 15.

The mean diameter is defined as the arithmetical mean of the maximum and minimum diameter measurements:

$$d_m = \frac{d_{max} + d_{min}}{2} \text{ or}$$

$$D_m = \frac{D_{max} + D_{min}}{2}$$

Example: For a nominal bore diameter $d = 100$ mm, the limits in accordance with Table 12 are:

high limit for mean diameter d_m — zero;
low limit for mean diameter d_m — minus 0.02 mm;
high limit for maximum diameter d_{max} — plus 0.005 mm;
low limit for minimum diameter d_{min} — minus 0.025 mm.

consequently:

maximum mean diameter, d_m	100.000 mm
minimum mean diameter, d_m	99.980 mm
maximum permissible diameter measurement, d_{max}	100.005 mm
minimum permissible diameter measurement, d_{min}	99.975 mm

If during measurement, d_{max} turns out to be equal to 99.998 mm and d_{min} = 99.976 mm, the bearing is considered as within the limits in reference to the bore, as:

$d_m = \frac{99.998 + 99.976}{2} = 99.987$ mm is within the indicated limits (100.000 and 99.980 mm); d_{max} does not exceed 100.005 and d_{min} is over 99.975 mm.

If, however, during inspection $d_{max} = 100.004$ mm and $d_{min} = 99.998$ mm the bearing is not within the bore limits, as:

$d_m = \frac{100.004 + 99.998}{2} = 100.001$ mm. This exceeds the indicated limits (100.000 — 99.980 mm) even though d_{max} is less than 100.005 mm and d_{min} exceeds 99.975 mm.

6. The mounting height dimensions of angular-contact ball bearings should not be beyond the limits stipulated in the standards.

MARKING AND LUBRICATING OF BEARINGS

7. Each manufactured bearing should have the trade mark of the manufacturing works as well as the bearing symbol (according to GOST 3189-46) indicating the type, size and class of accuracy of the bearing.

8. Separable ball and roller bearings are marked on both rings.

9. All supplied bearings are to be lubricated with a protective lubricant and should be carefully wrapped separately in moisture-proof paper.

The initial lubrication and packing of bearings, if they are subsequently properly storaged, will ensure protection from corrosion for a period of 12 months.

Table 12

RADIAL AND RADIAL-THRUST BALL AND ROLLER BEARINGS

Inner Ring Tolerances

Classes of Accuracy H, П, B and BП

Tolerances in μ ($1\ \mu = 0.001$ mm)

Nominal bore of bearing (d), mm		Bore tolerances				Width tolerances				Face surfaces not parallel			Axial runout of faces			Radial runout			Axial runout of raceways		
		d_m		$d_{max.}$	$d_{min.}$	Inner and outer rings of radial and angular-contact bearings excepting taper roller bearings		Inner rings of single row taper roller bearings		Class of accuracy											
										H	П	B and BП	H	П	B and BП	H	П	B and BП	H	П	B and BП
over	up to	High limit	Low limit	High limit	Low limit	High limit	Low limit	High limit	Low limit	not over											
—	30	0	—10	+ 3	—13	0	—100	0	—200	20	16	10	20	16	10	13	10	10	40	32	20
30	50	0	—12	+ 3	—15	0	—120	0	—240	20	16	10	20	16	10	15	12	10	40	32	20
50	80	0	—15	+ 4	—19	0	—150	0	—300	25	20	12	25	20	12	20	16	12	50	40	25
80	120	0	—20	+ 5	—25	0	—200	0	—400	25	20	12	25	20	12	25	20	14	50	40	25
120	180	0	—25	+ 6	—31	0	—250	0	—500	30	24	15	30	24	15	30	24	16	60	48	30
180	250	0	—30	+ 8	—38	0	—300	0	—600	30	24	15	30	24	15	40	32	20	60	48	30
250	315	0	—35	+ 9	—44	0	—350	0	—700	35	28	17	35	28	17	50	40	24	70	56	35
315	400	0	—40	+10	—50	0	—400	0	—800	40	32	20	40	32	20	60	48	30	80	64	40
400	500	0	—45	+12	—57	0	—450	0	—900	45	36	22	45	36	22	65	52	32	90	72	45
500	630	0	—50			0	—500														
630	800	0	—75			0	—750														
800	1000	0	—100			0	—1000														

Notes: 1. For replacing ball and roller bearings during repairs of automobiles, tractors, agricultural and other machinery, if the bearing seats on the shafts show mounting wear, bearings may be manufactured in the standard class of accuracy but with the tolerance zone of the bore shifted toward the minus direction by a value equal to the tolerance on the mean diameter. Such bearings are marked with the letter "M" placed before the bearing number.

2. For ball and roller bearings with tapered bores, the nominal bore diameter is defined as the minimum diameter of the taper.

3. The permissible taper of the bores of ball and roller bearings, classes B and BП, should not exceed 50 % of the tolerance on d_m (mean diameter).

4. Tolerances on the width of inner rings of ball and roller bearings with tapered bores, as well as on the width of outer rings of taper roller bearings are not standardized but the upper limit of the ring width is the nominal value.

5. The tolerances for axial runout of faces and raceways are given for inspection with the bearing mounted on a mandrel.

5. The tolerances for axial runout of rings of self-aligning bearings and radial roller bearings is not checked.

6. Axial runout of rings of self-aligning bearings and radial roller bearings is not checked.

6. Axial runout of faces and out-of-parallelism of inner rings with tapered bores is not checked.

7. Permissible axial runout of faces and out-of-parallelism of inner rings with tapered bores is not checked.

7. Permissible axial runout of faces and out-of-parallelism of inner rings designed to be mounted on clamping or stripping sleeves should not exceed 150 % of the values given in Table 12 and the deviation of the diameter "d" — 300 % of the values given in this table for the mean diameter "d_m" with a sign + ; the out-of-roundness of the bore should not exceed the tolerance zone of "d_{max}" and "d_{min}" of the table.

8. The radial runout of inner rings of ball and roller bearings designed to be mounted on clamping or stripping sleeves should not exceed 150 % of the values given in Table 12 and the deviation of the diameter "d" — 300 % of the values given in this table for the mean diameter "d_m" with a sign + ; the out-of-roundness of the bore should not exceed the tolerance zone of "d_{max}" and "d_{min}" of the table.

Table 13

RADIAL AND RADIAL-THRUST BALL AND ROLLER BEARINGS

Outer Ring Tolerances

Classes of Accuracy H, П, B, BП and AB

Tolerances in μ ($1\ \mu = 0.001$ mm)

Nominal outside diameter (D), mm		Tolerances for outside diameter. Radial runout							Axial runout of raceways		
		D_m		$D_{max.}$	$D_{min.}$	Classes of accuracy					
				Diametral series: extra-light (1,7), light, medium and heavy*		H	П and BП	B and AB	H	П and BП	B and AB
over	up to	High limit	Low limit	High limit	Low limit	Not over					
—	18	0	— 8	+ 2	—10	15	12	7	40	32	20
18	30	0	— 9	+ 2	—11	15	12	7	40	32	20
30	50	0	—11	+ 3	—14	20	16	10	40	32	20
50	80	0	—13	+ 4	—17	25	20	12	40	32	20
80	120	0	—15	+ 5	—20	35	28	17	45	36	22
120	150	0	—18	+ 6	—24	40	32	20	50	40	25
150	180	0	—25	+ 7	—32	45	36	22	60	48	30
180	250	0	—30	+ 8	—38	50	40	25	70	56	35
250	315	0	—35	+ 9	—44	60	48	30	80	64	40
315	400	0	—40	+10	—50	70	56	35	90	72	45
400	500	0	—45	+12	—57	80	64	40	100	80	50
500	630	0	—50	+14	—64	100	80	50	120	96	60
630	800	0	—75	+20	—95	120	95	60	140	112	70
800	1000	0	—100	+30	—130	140	115	70	160	130	80
1000	1250	0	—125								
1250	1600	0	—160								

Notes: 1. For replacing ball and roller bearings during repairs of automobiles, tractors, agricultural and other machinery, if the housing bore shows mounting wear, bearings may be manufactured in the standard class of accuracy but with the tolerance zone of the ring outside diameter shifted toward the plus direction by a value equal to the tolerance on the mean diameter of the outer ring. Such bearings are marked with the letter "Б" placed before the bearing number.

2. Axial runout of rings of self-aligning bearings and radial roller bearings is not checked.

3. The taper of outside cylindrical surface of bearings of B and AB accuracy classes is not to exceed 50 % of the tolerance on D_m.

4. The tolerance zone of ball bearings according to GOST 4061-48 and of roller bearings type 102000 according to GOST 294-41 may be exanded by a value equal to the permissible high limit.

* For extra-light series (1) up to D-80 mm, for extra-light series (7) up to D-250 mm and for light series up to D-315 mm.

Tolerances on diameters not given in this table are special.

Table 14

RADIAL AND RADIAL-THRUST BALL AND ROLLER BEARINGS

Classes of Accuracy A, C, AB and CA — **Inner Ring Tolerances**

Tolerances in μ (1 μ = 0.001 mm)

Nominal bore of bearing (d) mm		Bore tolerances				Width tolerances				Face surfaces not parallel		Axial runout of faces		Radial runout		Axial runout of raceways	
		d_m		$d_{max.}$	$d_{min.}$	Inner and outer rings of radial and angular-contact bearings excepting taper roller bearings		Inner rings of single row taper roller bearings		Classes of accuracy							
over	up to	High limit	Low limit	High limit	Low limit	High limit	Low limit	High limit	Low limit	A and AB	C and CA	A and AB	C and CA	A and AB	C and CA	A and AB	C and CA
										Not over							
1	30	— 2	— 8	0	—10	0	— 60	0	—120	7	4	7	4	5	3	13	8
30	50	— 3	—10	0	—12	0	— 72	0	—150	7	4	7	4	5	3	13	8
50	80	— 4	—12	0	—15	0	— 90	0	—180	8	5	8	5	6	4	18	10
80	120	— 5	—15	0	—20	0	—120	0	—240	8	5	8	5	7	5	18	10
120	180	— 6	—18	0	—25	0	—150	0	—300	10	6	10	6	8	6	20	12
180	250	— 7	—22	0	—30	0	—180	0	—360	10	—	10	—	10	—	20	—
250	315	— 8	—28	0	—35	0	—210	0	—420	12	—	12	—	12	—	23	—
315	400	—10	—35	0	—40	0	—240	0	—480	13	—	13	—	15	—	27	—

Notes: 1. The permissible bore taper of ball and roller bearings should not exceed 50% of the tolerance on d_m.

2. Tolerances on the width of outer rings of taper roller bearings are not standardized but the upper limit of the ring width is the nominal value.

3. The tolerances for axial runout of faces and raceways are given for inspection with the bearing mounted on a mandrel.

4. Axial runout of rings of self-aligning bearings and radial roller bearings is not checked.

Table 15

RADIAL AND RADIAL-THRUST BALL AND ROLLER BEARINGS

Classes of Accuracy A, C and CA — **Outer Ring Tolerances**

Tolerances in μ (1 μ = 0.001 mm)

Nominal outside diameter (D) mm		Tolerances for outside diameter				Radial runout		Axial runout of raceways	
		D_m		$D_{max.}$	$D_{min.}$	Classes of accuracy			
over	up to	High limit	Low limit	High limit	Low limit	A and CA	C	A and CA	C
						not over			
—	18	— 2	— 6	0	— 8	5	3	13	8
18	30	— 2	— 7	0	— 9	5	3	13	8
30	50	— 2	— 8	0	—11	7	4	13	8
50	80	— 3	—10	0	—13	8	5	13	8
80	120	— 4	—12	0	—15	12	7	15	9
120	150	— 5	—15	0	—18	13	8	18	10
150	180	— 6	—18	0	—25	15	9	20	12
180	250	— 7	—22	0	—30	17	10	23	14
250	315	— 8	—28	0	—35	20	12	27	16
315	400	—10	—30	0	—40	23	—	30	—
400	500	—10	—35	0	—45	27	—	33	—
500	630	—10	—40	0	—50	33	—	40	—

Notes: 1. Taper of outside cylindrical surface is not exceed 50% of the tolerance on D_m.

2. Axial runout of rings of self-aligning bearings and radial roller bearings is not checked.

Table 16

BALL THRUST BEARINGS

Classes of Accuracy H, B and A

Tolerances on Bores and Outside Diameters, Runout

Tolerances in μ (1 μ = 0.001 mm)

Nominal diameters* d, d_2, D mm		Tolerances for bores d and d_2		Tolerances for outside diameter D		Raceways of opposite faces not parallel (axial runout) for stationary "loose" flat and rotating "tight" ring of single and double thrust bearings			Radial runout (twice the eccentricity) of raceways of rotating "tight" rings		
						Class of accuracy					
						H	B	A	H	B	A
over	up to	High limit	Low limit	High limit	Low limit	not over					
—	30	0	—10	0	— 30	15	10	5	40	30	15
30	50	0	—12	0	— 36	15	10	6	40	30	18
50	80	0	—15	0	— 45	20	10	7	50	40	22
80	120	0	—20	0	— 60	25	15	8	50	40	26
120	180	0	—25	0	— 75	30	15	10	60	50	30
180	250	0	—30	0	— 90	40	20	15	60	50	36
250	315	0	—35	0	—105	50	25		70	60	
315	400	0	—40	0	—120	60	30		80	60	
400	500	0	—45	0	—135	60	30		80	60	
500	630			0	—180						
630	800			0	—225						

Note: Tolerances on diameters of "loose" rings of ball thrust bearings mounted with great clearances are tripled.

* The values of permissible out-of-parallelism and runout are fixed in accordance with the dimensions of the "loose" ring bore.

CORNER CHAMFERS OF BALL AND ROLLER BEARINGS*

The mounting corner chamfers of bearings, which should clear the fillet radius in the housing or on the shaft, are made either symmetrical (Fig. 15) or with a step on the face surface (Fig. 16).

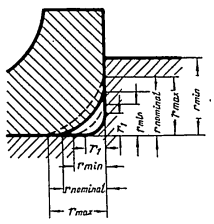


Fig. 15

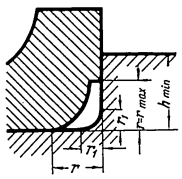


Fig. 16

The maximum permissible fillet radius on the shaft and in the housing, the corner chamfer limits and the minimum shoulder heights on the shaft and in the housing are given in Table 17, below:

Dimensions in mm

Table 17

Dimensions of bearing corner chamfers			Max. fillet radius on shaft or in housing	Shoulder height
$r_{nominal}$	$r_{max.}$	$r_{min.}$	r_1	$h_{min.}$
0.2	0.4	0.1	0.1	—
0.3	0.5	0.2	0.2	—
0.4	0.7	0.2	0.2	—
0.5	0.8	0.3	0.3	1
1	1.5	0.7	0.6	2.5
1.5	2.1	1.1	1	3
2	2.7	1.3	1	3.5
2.5	3.3	1.8	1.5	4.5
3	4	2.3	2	5
3.5	4.5	2.5	2	6
4	5.2	3	2.5	7
5	6.3	3.7	3	9
6	7.5	4.7	4	11
8	10	6	5	14
10	12.5	7.5	6	18
12	15	9.5	8	22
15	19	12	10	27
18	23	14	12	32

* For more detailed information see GOST 4253-48

MOUNTING DIMENSIONS OF TAPER ROLLER BEARINGS

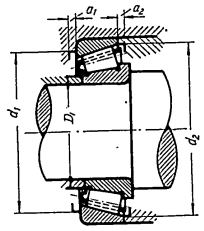


Fig. 17

Table 18

Series 7200

Dimensions in mm

Bearing number	D_1 max.	d_1 min.	d_2 min.	a_1 min.	a_2 min.
7203	23	33	36,5	3	2
7204	26	39	43	3	3
7205	31	43	48	3	3
7206	37	52	58	3	3
7207	43	61	67	4	3
7208	48	68	75	4	3.5
7209	53	73	80	4	4.5
7210	58	78	85	4	4.5
7211	63	87	94	5	4.5
7212	69	95	102	5	4.5
7213	75	105	112	6	4.5
7214	80	108	117	6	5
7215	85	113	123	6	5
7216	90	122	132	6	6
7217	96	130	140	7	6
7218	102	138	150	7	6
7219	108	146	160	7	7
7220	114	155	168	7	8
7221	120	163	178	9	9
7222	125	171	188	9	9
7224	135	184	203	11	9
7226	145	199	218	11	9
7228	157	215	237	12	10
7230	168	233	255	12	10

Table 19

Series 7300

Dimensions in mm

Bearing number	D_1 max.	d_1 min.	d_2 min.	a_1 min.	a_2 min.
7302	22	35	38	3	3
7303	25	39	42	3	3
7304	27	43	47	3	3
7305	33	53	57	3	3
7306	38	61	66	3	4.5
7307	43	68	74	5	4.5
7308	50	76	82	5	5
7309	56	85	93	5	5
7310	62	94	102	5	6
7311	67	103	111	5	6
7312	73	112	120	5	7
7313	80	121	130	6	7.5
7314	85	129	140	6	7.5
7315	91	138	149	6	8.5
7316	97	147	159	6	9
7317	102	155	167	7	10
7318	108	163	177	7	10
7319	113	171	186	7	11
7320	121	183	200	7	12
7321	127	193	209	12	12
7322	135	205	222	14	12
7324	145	219	239	14	12

Table 20

Series 7500

Dimensions in mm

Bearing number	D_1 max.	d_1 min.	d_2 min.	a_1 min.	a_2 min.
7506	37	52	58	3	4
7507	43	61	67	4	5
7508	48	68	75	4	5.5
7509	53	73	80	4	5.5
7510	58	78	85	4	5.5
7511	63	87	94	5	5.5
7512	69	95	102	5	5.5
7513	75	105	112	6	5.5
7514	80	108	117	6	6
7515	85	113	123	6	6
7516	90	122	132	6	7
7517	96	130	140	7	8
7518	102	138	150	7	8
7519	108	146	160	7	10
7520	114	155	168	7	10
7521	120	163	178	7	10
7522	125	171	188	9	10
7524	135	184	203	10	11
7526	145	199	218	10	11
7528	157	215	237	10	12
7530	168	233	255	10	13

Table 21

Series 7600

Dimensions in mm

Bearing number	D_1 max.	d_1 min.	d_2 min.	a_1 min.	a_2 min.
7604	27	43	47	3	4
7605	33	53	57	3	5
7606	38	61	66	3	5.5
7607	43	68	74	5	7.5
7608	50	76	82	5	8
7609	56	85	93	5	8
7610	62	94	102	5	9
7611	67	103	111	5	10
7612	73	112	120	5	11
7613	80	121	130	6	11.5
7614	85	129	140	6	11.5
7615	91	138	149	6	12.5
7616	97	147	159	6	13
7617	102	155	167	12	14
7618	108	163	177	12	14
7619	113	171	186	12	14
7620	121	183	200	12	16
7621	127	193	209	12	17
7622	135	205	222	14	17
7624	145	219	239	14	18

INSTRUCTIONS FOR SELECTING ANTIFRICTION BEARINGS

GENERAL INSTRUCTIONS

In the selection of the type and size of ball and roller bearings the following factors are to be considered:

a) The magnitude and the direction of the load (radial, thrust or combined see Fig. 18 a, b and c);

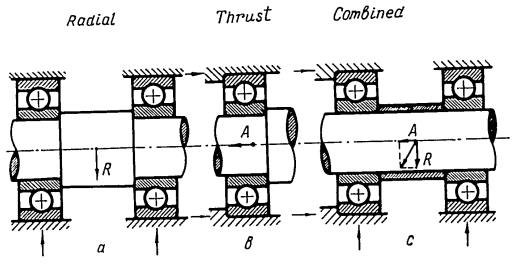


Fig. 18

b) The nature of the load (constant, variable, or impact);

c) Speed of rotating ring of bearing (r. p. m.);

d) Desired life (expected term of service expressed in hours);

e) Surrounding atmosphere (temperature, humidity, acidity, etc.);

f) Requirements arising from the design of the machine assembly (necessity for self-alignment to compensate for shaft or housing misalignments, provision for axial movement of shaft, the desirability of mounting the bearing directly on the shaft or on either a clamping or a clamping-stripping sleeve; necessity for adjusting radial and axial clearance of bearing, available space for the assembly, rigidity, accuracy of running, etc.);

g) Cost of the bearing.

This last factor is very important in decreasing the cost of the machine as a whole. For this reason, it is inexpedient to use more expensive double row self-aligning roller bearings if it is possible to ensure normal operation with other types of bearings as for instance, self-aligning radial ball bearings or bearings with cylindrical rollers. With the same aim in view bearings of standard accuracy should be used when possible and for assemblies which do not require accurate running, bearings class "O" or "HO" should be used (see GOST 4793-49).

When selecting bearings, it is not advisable to fix an excessively large term of service (expected life) as this surplus capacity increases the size of the selected bearing and consequently will result in the development of a heavy and expensive machine.

The following sequence should be observed in selecting bearings:

a) The type of bearing is selected proceeding from the operating conditions and design of the given bearings assembly in accordance with the directions given in the section "Characteristics of the Main Types of Antifriction Bearings" of this catalogue;

b) The size of the bearing is determined in accordance with the acting loads, speed and required term of service;

c) The class of accuracy of the bearing is established taking into consideration the requirements for the accuracy of running of the assembly.

The required size of bearing is chosen by means of its capacity coefficient "C". This coefficient is the most essential rating basis of the bearing and depends upon the internal construction of the bearing, the material used in its manufacture and a number of other factors.

In order to insure uninterrupted function of the bearing unit at high speeds (in this case the acting loads should be of moderate rate) not only the correct design and type of bearing is to be considered but special attention must be paid to the bearing unit design, to the seating surfaces of the bearing and to the bearing lubrication which should correspond to the adequate operating conditions.

Mounting conditions for high speed units are of decided importance and in particular clearance adjustment of angular-contact bearings.

Therefore, if the machine designer has no sufficient experience in solving all these problems it is suggested that the Supplier be consulted.

COMPUTATION OF THE EXPECTED LIFE OF BEARINGS

The expected life of a bearing is understood to be that period of time, expressed in hours of operation, for which not less than 90 per cent of a lot of bearings should operate, at identical conditions, without showing any traces of fatigue of the metal. Typical signs of fatigue are traces of crumbling of metal on the working surfaces and apparent as pitting or scaling (flaking)*.

* See GOST 520-55, paragraph 19.

The expected life of any given bearing depends on the magnitude and direction of the loads, speed, capacity coefficient and a number of other factors, effect of which on the expected life will be taken up lower.

The relation between the computed life expectancy "h", equivalent load "Q", speed "n" and capacity coefficient "C" is expressed by the following empirical equation:

$$Q\,(n \cdot h)^{0.3} = C \qquad (1)$$

This formula is valid for speeds of $n > 10$ r. p. m. but not exceeding the limiting speed permissible for any given bearing. For speeds "n", from 1 to 10 r.p.m. "C" is calculated as for 10 r.p.m. For $n < 1$ r.p.m., the load is considered to be static and, in the selection of a bearing, is compared with the permissible static load of a given bearing.

The capacity coefficient, limiting speed and permissible static loading for standard bearings, excepting flexible roller bearings, are indicated in the bearing dimension tables of this catalogue.

Due to the special conditions met with the computations for flexible roller bearings, this catalogue indicates the permissible loads for such bearings.

The capacity coefficient for bearings without rings is indicated in the catalogue for conditions in which the surface hardness of the bearing race in the housing or on the shaft is not less than $R_c - 60$.

EQUIVALENT LOAD

The equivalent load Q takes into consideration the nature and direction of the load, as well as special features of the kinematic arrangement and temperature conditions of the assembly.

For radial bearings the equivalent load is defined as:

$$Q = (R \cdot K_k + m \cdot A)\, K_b \cdot K_t \qquad (2)$$

for radial-thrust bearings as:

$$Q = [R \cdot K_k + m\,(A - S)]\, K_b \cdot K_t \qquad (3)$$

and for thrust bearings as:

$$Q = A \cdot K_b \cdot K_t \qquad (4)$$

The values included in the formulae (2, 3 and 4) are defined as follows:

- R — radial load in kg;
- A — thrust load in kg;
- S — axial force (reaction) appearing in the bearing as a result of the radial load (existing only in the installation of radial-thrust bearings);
- m — coefficient which takes into account the different effect of the radial and thrust load on the bearing term of service;
- K_b — coefficient which accounts for the effect of the nature of the load on the bearing term of service;
- K_t — coefficient which takes into consideration the temperature conditions and its effect on the term of service;
- K_k — coefficient which accounts for the effect of which of the bearing rings rotates in reference to the load vector upon the term of service.

The values of the coefficients K_b, K_t, K_k and m are indicated in Tables 22, 23, 24 and 25.

SELECTION OF RADIAL BALL AND ROLLER BEARINGS

These bearings are selected with the aid of the formula:

$$C = (R \cdot K_k + m \cdot A)\, K_b \cdot K_t\, (n \cdot h)^{0.3}. \qquad (5)$$

This formula is obtained by combining equation 1 and formula 2. To facilitate computations, the value $(n \cdot h)^{0.3}$ may be taken from Table 28.

An example of the selection of a radial ball bearing as follows:

Considering the operating conditions of the assembly, a single row ball bearing has been chosen. It is subject to the following loads: radial $R = 550$ kg and thrust $A = 270$ kg at a speed of the outer ring of $n = 1250$ r. p. m. The load vector is stationary in reference to the inner ring. During operation the bearing is subject to light shocks and small short-time overloads. The working temperature of the bearing does not exceed 100° C. The desirable expected life is 5000 hours.

It is necessary to determine the size of the bearing, suitable for the above conditions, if the shaft has a diameter of 95 mm.

The capacity coefficient is determined from formula:

$$C = (R \cdot K_k + m \cdot A)\, K_b \cdot K_t\, (n \cdot h)^{0.3}, \qquad (5)$$

where: $K_b = 1.2$ (see Table 22),
$K_t = 1.0$ (see Table 23),
$K_k = 1.4$ (see Table 24).

Coefficient "m" is determined from Table 25 which indicates $m = 1.5$; however, since $\frac{R}{A} = \frac{550}{270} \approx 2$, "m" is to be increased by 15%. The final value is $m = 1.5 \cdot 1.15 = 1.725$.

Substituting these values of the coefficients in formula (5), the value of coefficient "C" is determined:

$$C = (550 \cdot 1.4 + 1.725 \cdot 270)\, 1.2 \cdot 1.0\, (1250 \cdot 5000)^{0.3}$$

according to Table 28, $(1250 \cdot 5000)^{0.3} = 110$ and consequently $C \approx 180000$.

Therefore, the given working conditions require a bearing capacity of which coefficient "C" is not less in value than 180000. The single row ball bearing, number 319, fully satisfies this requirement.

On the selection of cylindrical roller bearings only the radial load is taken into consideration in accordance with the formula:

$$C = R \cdot K_k \cdot K_b \cdot K_t \, (n \cdot h)^{0.3}. \qquad (6)$$

As a rule, these bearings are to be used in machine assemblies where they are subject only to a radial load. Certain designs of cylindrical roller bearings can, if necessary, withstand small accidental thrust loads which can be neglected in expectant life computations.

SELECTION OF RADIAL-THRUST BEARINGS

The formula for the selection of radial-thrust bearings is:

$$C = [R \cdot K_k + m \, (A - S)] \, K_b \cdot K_t \, (n \cdot h)^{0.3}. \qquad (7)$$

Due to the angular-contact between the balls or rollers and the rings, the action of the radial load in radial-thrust ball or roller bearings creates a force S directed along the shaft axis (Fig. 19). This force, to some extent, relieves the bearing of the acting thrust load.

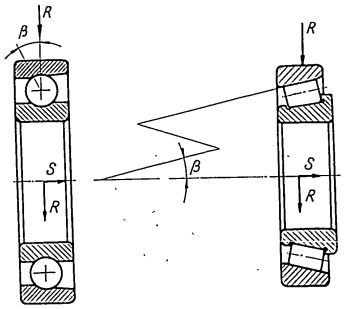


Fig. 19

In some cases, with a definite ratio of radial loads on two bearings installed with unlike faces (tandem arrangement) toward each other, these axial forces compensate each other and consequently need not be taken into consideration in the computations. The equivalent load Q is then determined from formula (2).

If the axial components do not compensate each other, the equivalent radial load is computed by one of the formulae of Table 26. These formulae have been compiled for various arrangements of radial-thrust bearings and various ratios of radial load R, thrust load A and axial component S. The value of the axial component S of the radial load R is computed from the formula:

$$S \approx 1.3 \, R \operatorname{tg} \beta$$

where β is the angle of contact between the balls or rollers and the race of the outer bearing ring.

Approximate values of the angle β are:

Angular-contact ball bearings, type 36000 — 12°, type 46000 — 26°, type 66000 — 36°.

Taper roller bearings, type 7000 — 11° to 15°, type 27000 — 25° to 29°.

The value of coefficient "m" for tentative computations can be taken from Table 25. For more exact computations, it can be determined from the formula:

$$m = \frac{1}{2.6 \operatorname{tg} \beta}.$$

In selecting double row or fourrow taper roller bearings, in case of thrust loads the latter are considered to be carried by only one row of rollers.

The capacity coefficient of one row of rollers is determined by dividing the tabulated coefficient "C" by 1.70 for double row and by 3.0 for fourrow bearings.

The equivalent load for double row taper roller bearings is computed from the formula:

$$Q_1 = 0.5 \, R + 0.4 \, A \operatorname{cotg} \beta.$$

The following is an example of the selection of radial-thrust ball bearings: two angular-contact ball bearings are to be installed in the assembly in an arrangement illustrated by Fig. 20. The following loads act on the bearings: $R_1 = 100$ kg,

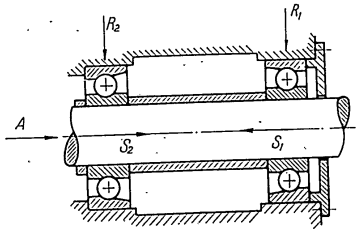


Fig. 20

$R_2 = 210$ kg and $A = 90$ kg at a shaft speed of $n = 5000$ r. p. m. The load vector moves in relation to the inner ring. During operation, the bearing is subject to moderate shocks of a vibrating load. The working temperature does not exceed 60° C. The desirable expected life is 2000 hours. The shaft is 40 mm in diameter.

It is necessary to determine the sizes of the bearings suitable for the given conditions.

In this case $R_1 < R_2$, $A > O$ and consequently the equivalent loads should be determined in accordance with arrangement 15 of Table 26, which indicates:

a) for bearing 1:

$$Q_1 = \left\{ R_1 \cdot K_k + m\,[A + (S_2 - S_1)] \right\} K_b \cdot K_t.$$

For angular-contact ball bearings with a contact angle of 26°, $m = 0.7$ (Table 25). The axial components S of the radial loads are determined from the formulae: $S_1 = 1.3\ R_1\ \mathrm{tg}\ \beta_1$ and $S_2 = 1.3\ R_2\ \mathrm{tg}\ \beta_2$. For a contact angle of 26°, $\mathrm{tg}\ \beta = 0.487$, then:

$$S_1 = 1.3 \cdot 100 \cdot 0.487 = 63 \text{ kg}$$
$$S_2 = 1.3 \cdot 210 \cdot 0.487 = 133 \text{ kg}.$$

Under the given conditions the following coefficients are valid for both bearings:

$K_b = 1.5$ (Table 22);
$K_t = 1$ (Table 23);
$K_k = 1$ (Table 24).

Therefore: $Q_1 = \left\{100 \cdot 1 + 0.7\,[90 + (133 - 63)]\right\} \cdot 1.5 \cdot 1.0$

$$Q_1 = 318 \text{ kg}$$

The capacity coefficient of bearing 1 should equal:

$$C = Q_1\,(n \cdot h)^{0.3};\ C = 318\ (5000 \cdot 2000)^{0.3} \approx 40000.$$

This capacity coefficient, for an angular-contact ball bearing with a bore of 40 mm, corresponds to bearing number 46208 with dimensions 40×80×18 mm.

b) for bearing 2:

$$Q_2 = R_2 \cdot K_k \cdot K_b \cdot K_t$$

and after substituting the numerical values:

$$Q_2 = 210 \cdot 1.0 \cdot 1.5 \cdot 1.0$$
$$Q_2 = 315 \text{ kg}.$$

The required capacity coefficient is determined from the equation:

$$C = Q_2\,(n \cdot h)^{0.3}$$
$$C = 315\ (5000 \cdot 2000)^{0.3} = 40000.$$

This corresponds to the same bearing, number 46208, as for the first support.

An example of the selection of a double row taper roller bearing as follows:

a double row taper roller bearing with a bore not less than 120 mm is to be selected to suit the following operating conditions: $R = 2400$ kg, $A = 350$ kg, $n = 250$ r. p. m.; the shaft rotates (the inner ring moves in relation to the load vector). The load includes heavy shocks and short-time overloads up to 300%, the expected bearing temperature is 150° C and the desirable expected life is 5000 hours.

The capacity coefficient is determined by the formula:

$$\frac{C}{1.7} = (0.5\,R \cdot K_k + 0.4\,A\,\mathrm{cotg}\,\beta)\ K_b \cdot K_t\ (n \cdot h)^{0.3}$$

where $K_b = 3$ (Table 22);
$K_t = 1.1$ (Table 23);
$K_k = 1$ (Table 24);

then: $C = 1.70\ (1200 + 0.4 \cdot 350 \cdot 5.67) \cdot 3 \cdot 1.1\ (250 \cdot 5000)^{0.3}$

and $C = 756{,}000$.

This capacity coefficient corresponds to bearing, number 2097726, having a bore $d = 130$ mm.

SELECTION OF THRUST BEARINGS

The formula for the selection of thurst bearings is obtained by transforming the formula (5) in which $R = O$ and $m = 1$ for thrust bearings.

Then: $C = A \cdot K_b \cdot K_t\ (n \cdot h)^{0.3}$. (S)

The procedure for selecting the bearings does not differ from that for radial and angular-contact bearings.

SELECTION OF BEARINGS OPERATING UNDER VARIABLE LOADS AND AT VARIABLE SPEEDS

Bearings for assemblies where the load and speed are variable (speed gear box shaft bearings, rope drums, etc.) are selected by means of the equivalent variable cycle load $Q_{E.V.C.}$ and the equivalent speed n_{eq}.

The alternating loads are taken to be: $Q_1, Q_2, Q_3, \ldots Q_n$ and the corresponding speeds: $n_1, n_2, n_3, \ldots n_n$.

The duration of bearing operation at each load condition in relation to the total term of service in fractions of unity are:

$$\alpha_1, \alpha_2, \alpha_3, \ldots \alpha_n.$$

Let the speed (r. p. m.) to be "n" (usually taken as the prevailing speed) so that:

$$\beta_1 = \frac{n_1}{n};\ \beta_2 = \frac{n_2}{n};\ \beta_3 = \frac{n_3}{n};\ \ldots\ldots\ \beta_n = \frac{n_n}{n}$$

and the equivalent variable cycle load $Q_{E.V.C.}$ is determined (for all bearings except flexible roller bearings) from the formula:

$$Q_{E.V.C.} = \sqrt[3.33]{\alpha_1 \beta_1 Q_1^{3.33} + \alpha_2 \beta_2 Q_2^{3.33} + \alpha_3 \beta_3 Q_3^{3.33} + \ldots\ldots + \alpha_n \beta_n Q_n^{3.33}} \quad (9)$$

In some cases the equivalent variable cycle load can be determined from simplified formulae. If, for instance, the load varies as a linear function from $Q_{min.}$ to $Q_{max.}$, the equivalent variable cycle $Q_{E.V\ C.}$ can be determined with sufficient accuracy from the formula:

$$Q_{E.V.C.} = \frac{Q_{min.} + 2\,Q_{max.}}{3}.$$

The equivalent load, used when selecting the bearing, is defined as:

$$Q = Q_{E.V.C.} \cdot K_b \cdot K_t \cdot K_k.$$

If a combined load is acting on the bearing, the equivalent load is first computed from formula 2 or the formulae given in Table 26.

An example of the computation of the equivalent variable cycle load as follows:

The bearing operates under the following variable conditions:

$Q_1 = 290$ kg; $n_1 = 640$ r. p. m.
$Q_2 = 270$ kg; $n_2 = 1075$ r. p. m.
$Q_3 = 70$ kg; $n_3 = 2000$ r. p. m.

The durations of the load variations are, respectively:

$$\alpha_1 = 0.2,\ \alpha_2 = 0.3,\ \alpha_3 = 0.5.$$

The conditional speed is taken as the speed of the third load variation as it is prevailing in the present case so that:

$n = n_3 = 2000$ r.p.m.; then:

$$\beta_1 = \frac{n_1}{n} = \frac{640}{2000} = 0.32;$$

$$\beta_2 = \frac{n_2}{n} = \frac{1075}{2000} = 0.537;$$

$$\beta_3 = \frac{n_3}{n} = 1.$$

Substituting the values of α, ß and Q in the formula (9) the equivalent variable cycle load is obtained as

$$Q_{E.V.C.} = \sqrt[3.33]{0.2 \cdot 0.32 \cdot 290^{3.33} + 0.3 \cdot 0.537 \cdot 270^{3.33} + 0.5 \cdot 170^{3.33}} = 177 \text{ kg}.$$

The capacity coefficient is determined from the equation:

$$C = Q_{E.V.C.} \cdot K_b \cdot K_t \cdot K_k\ (n \cdot h)^{0.3}$$

where "n" the conditional speed used for computing $Q_{E.V.C.}$ (in this example $n = 2000$ r. p. m.).

As an approximate check for the proper selection of bearings operating under variable loads and at variable speeds the following formula can be used to simplify computations:

$$\frac{1}{h} = \frac{\alpha_1}{h_1} + \frac{\alpha_2}{h_2} + \frac{\alpha_3}{h_3} + \ldots + \frac{\alpha_n}{h_n}, \quad (10)$$

where $h_1, h_2, h_3, \ldots h_n$ are terms of service for the bearing in houst at each load conditions and are determined from Table 28 from the equation:

$$(n \cdot h)^{0.3} = \frac{C}{Q \cdot K_b \cdot K_t \cdot K_k}.$$

The following is an example of the checking of the selection of a bearing operating under variable load and at variable speeds:

Bearing, number 46 209 (C = 44 000), operates under the following conditions:

I — $Q_1 = 530$ kg; $n_1 = 630$ r. p. m.; $\alpha_1 = 0.2$
II — $Q_2 = 475$ kg; $n_2 = 1000$ r. p. m.; $\alpha_2 = 0.3$
III — $Q_3 = 200$ kg; $n_3 = 2000$ r. p. m.; $\alpha_3 = 0.5$.

$K_b = 1$, $K_t = 1$, $K_k = 1$

then:

$$(h_1 \cdot 630)^{0.3} = \frac{44000}{530} = 83.0 \text{ (Table 28)}; \quad h_1 = 4000 \text{ hours}$$

$$(h_2 \cdot 1000)^{0.3} = \frac{44000}{475} = 92.6 \text{ (Table 28)}; \quad h_2 = 3500 \text{ hours}$$

$$(h_3 \cdot 2000)^{0.3} = \frac{44000}{200} = 220 \text{ (Table 28)}; \quad h_3 = 32000 \text{ hours}$$

according to formula (10)

$$\frac{1}{h} = \frac{0.2}{4000} + \frac{0.3}{3500} + \frac{0.5}{32000}$$

$h \approx 7000$ hours.

BEARING SELECTION FOR STATIC LOADS

If a bearing under load is stationary or rotates at a speed less than 1 r. p. m., it should be selected in accordance with its static load capacity.

The bearing data tables in this catalogue include values of the static load capacity of bearings or, as it may be called, the permissible static load Q_{ST}. Loads acting on the bearing should not exceed its static load capacity.

If a bearing operates under impact load or special accuracy of running is required, the permissible static load Q_{ST} of the selected bearing should be twice the acting load.

BEARING SELECTION BY MEANS OF THE EQUIVALENT LOAD TABLE

Besides the bearing data tables, which include the capacity coefficient "C", Table 29 indicates the permissible loads Q in accordance with the speed "n" and the value "C" for a computed expected life of h = 5000 hours.

If it is necessary to select a bearing for some other expected life, the correction factor Kg is added to the formula for computing the equivalent load Q. This factor depends on the value of the desirable expected life. Values of the correction factor Kg are given in Table 27.

The corresponding capacity coefficient is determined from Table 29 in accordance with the computed equivalent load Q and the given speed "n". Using this capacity coefficient and the tables of bearing data, the required size of bearing is selected.

An example of the selection of a bearing using the equivalent load table as follows:

The operating conditions require a single ball thrust bearing, on a shaft 120 mm, subject to a thrust load of 1700 kg at a shaft speed of 500 r. p. m. The load acts with considerable shocks and vibration. The temperature is not over 50° C and the desirable expected life is 2000 hours.

It is necessary to determine the size of the bearing.

The equivalent load is determined from the formula:

$$Q = A \cdot K_b \cdot K_t \cdot K_g$$

where: $K_b = 2.0$ (Table 22);
$K_t = 1$ (Table 23);
$K_g = 0.78$ (Table 27);

then $Q = 1700 \cdot 2 \cdot 1 \cdot 0.78 = 2652$ kg

This load at a speed of 500 r. p. m. in Table 29 corresponds to a capacity coefficient of 220000.

Using this value, the bearing, number 8224, having dimensions of 120×170×39 mm, is selected from the ball thrust bearing data table.

Table 22

APPROXIMATE VALUES OF COEFFICIENT K_b

Nature of the bearing load	K_b
Steady load, no shocks	1
Light shocks. Short-time overloads up to 125 % of normal (computed) load	1 to 1.2
Moderate shocks. Vibrating load. Short-time overloads up to 150 % of normal (computed) load	1.3 to 1.8
Loads with considerable shocks and vibration. Short-time overloads up to 200 % of normal (computed) load	1.8 to 2.5
Loads with heavy shocks and short-time overloads up to 300 % of normal (computed) load	2.5 to 3

Table 23

VALUE OF TEMPERATURE FACTOR K_t

Bearing working temperature, °C	125	150	175	200	225	250
K_t	1.05	1.1	1.15	1.25	1.35	1.4

Table 24

VALUES OF COEFFICIENT K_k

Which ring rotates in relation to the load vector	K_k
Inner ring	1
Outer ring:	
Self-aligning bearings	1.1
All other types of bearings	1.4

Table 25

VALUES OF COEFFICIENT m

Type of bearing	Type and series designation	Bearing bore, mm	m
Single row ball bearings	100, 200, 300, 400	all bores	1.5
Self-aligning ball bearings, light series	1200, 11200, 111200	up to 17 20 to 40 45 and over	2.5 3.5 4.5
Ditto, medium series	1300, 11300, 111300	up to 30 35 and over	3 4
Ditto, wide series	1500, 1600, 11500, 11600, 111500, 111600	all bores	2.5
Self-aligning roller bearings, light series	3500, 13500, 113500	all bores	4.5
Ditto, medium series	3600, 13600, 113600	all bores	3.5
Single row angular-contact ball bearings	36000 46000 66000	all bores	1.5 0.7 0.5
Magneto ball bearings	6000	all bores	2
Taper roller bearings, extra-light and light series	7100 7200 7500	all bores	1.5
Ditto, medium series	7300 7600	all bores	1.8
Ditto with large taper angle (steep angle)	27300	all bores	0.7

Note: Coefficient "m" depends on the ratio of the radial R and thrust A loads;

at $\frac{R}{A} > 2$ the value is taken directly from the table;

at $\frac{R}{A} \approx 2$ the value "m" is increased by 15 %;

at $\frac{R}{A} \approx 1$ the value "m" is increased by 25 %; for pure thrust loads the value "m" is increased by 35 % (this does not concern bearings, types 46000, 66000 and 27300).

At $\frac{R}{A} > 5$, the thrust load on single row and angular-contact ball bearings, as well as taper roller bearings, may be neglected.

The coefficient "m" depends on the angle of contact between the raceway and the balls or rollers.

Table 26

Formulae for Determining Equivalent Radial Loads for Radial-Thrust Bearings

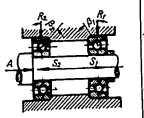
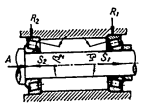
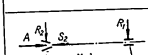
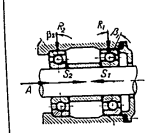
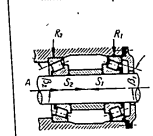
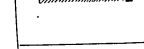
Diagram of bearing arrangement and acting forces	Arrangement No.	Ratio of forces			Formulae
	1	$R_1 = 0$ $R_2 \neq 0$	$A \geq 0$	$A \leq S_2$	$Q_1 = m\,(S_2 - A) K_b \cdot K_t$ $Q_2 = R_2 K_K \cdot K_b \cdot K_t$
	2		$A > 0$	$A \geq S_2$	$Q_1 = O$ $Q_2 = [R_2 \cdot K_K + m\,(A - S_2)]\, K_b \cdot K_t$
	3	$R_1 \neq 0$ $R_2 = 0$	$A \geq 0$	any ratio of A and S_1	$Q_1 = R_1 \cdot K_K \cdot K_b \cdot K_t$ $Q_2 = m\,(A + S_1)\, K_b \cdot K_t$
	4	$R_1 = R_2$	$A \geq 0$	—	$Q_1 = R_1 \cdot K_K \cdot K_b \cdot K_t$ $Q_2 = (R_2 K_K + m\,A)\, K_b \cdot K_t$
	5	$R_1 > R_2$	$A \geq 0$	any ratio of A and $(S_1 - S_2)$	$Q_1 = R_1 \cdot K_K \cdot K_b \cdot K_t$; $Q_2 = \{R_2 \cdot K_K + m\,[A + (S_1 - S_2)]\}\, K_b \cdot K_t$
	6	$R_1 < R_2$	$A \geq 0$	$A \leq (S_2 - S_1)$	$Q_1 = \{R_1 \cdot K_K + m\,[(S_2 - S_1) - A]\}$ $K_b \cdot K_t$; $Q_2 = R_2 \cdot K_K \cdot K_b \cdot K_t$
	7		$A > 0$	$A > (S_2 - S_1)$	$Q_1 = R_1 \cdot K_K \cdot K_b \cdot K_t$; $Q_2 = \{R_2 K_K + m\,[A - (S_2 - S_1)]\}\, K_b \cdot K_t$
 Floating radial bearing	8	any ratio of R_2 and R_1	$A > 0$	$A > S_2$	$Q_1 = R_1 \cdot K_K \cdot K_b \cdot K_t$ $Q_2 = [R_2 \cdot K_K + m(A - S_2)]$ $K_b \cdot K_t$
	9	$R_1 = 0$ $R_2 \neq 0$	$A \geq 0$	any ratio of A and S_2	$Q_1 = m\,(A + S_2)\, K_b \cdot K_t$ $Q_2 = R_2 \cdot K_K \cdot K_b \cdot K_t$
	10	$R_1 \neq 0$ $R_2 = 0$	$A \geq 0$	$A \leq S_1$	$Q_1 = R_1 \cdot K_K \cdot K_b \cdot K_t$ $Q_2 = m\,(S_1 - A)\, K_b \cdot K_t$
	11		$A > 0$	$A \geq S_1$	$Q_1 = [R_1 \cdot K_K + m(A - S_1)]$ $K_b \cdot K_t$; $Q_2 = O$
	12	$R_1 = R_2$	$A \geq 0$	—	$Q_1 = (R_1 \cdot K_K + m \cdot A)\, K_b \cdot K_t$ $Q_2 = R_2 \cdot K_K \cdot K_b \cdot K_t$
	13	$R_1 > R_2$	$A \geq 0$	$A < (S_1 - S_2)$	$Q_1 = R_1 \cdot K_K \cdot K_b \cdot K_t$; $Q_2 = \{R_2 \cdot K_K + m[(S_1 - S_2) - A]\}\, K_b \cdot K_t$
	14		$A > 0$	$A > (S_1 - S_2)$	$Q_1 = \{R_1 \cdot K_K + m\,[A - (S_1 - S_2)]\}$ $K_b \cdot K_t$; $Q_2 = R_2 \cdot K_K \cdot K_b \cdot K_t$
	15	$R_1 < R_2$	$A \geq 0$	any ratio of A and $(S_2 - S_1)$	$Q_1 = \{R_1 \cdot K_K + m[A + (S_2 - S_1)]\}$ $K_b \cdot K_t$; $Q_2 = R_2 \cdot K_K \cdot K_b \cdot K_t$
 Floating radial bearing	16	any ratio of R_1 and R_2	$A > 0$	$A > S_1$	$Q_1 = [R_1 \cdot K_K + m\,(A - S_1)]$ $K_b \cdot K_t$; $Q_2 = R_2 \cdot K_K \cdot K_b \cdot K_t$

Table 27

VALUES OF COEFFICIENT K_g

Desirable expected life, hours	K_g	Desirable expected life, hours	K_g	Desirable expected life, hours	K_g
500	0.50	2000	0.78	10000	1.24
750	0.56	3000	0.83	15000	1.40
1000	0.62	5000	1.00	25000	1.65
1500	0.70	7500	1.12	50000	2.00

VALUES $(n \cdot h)^{0.3} = \frac{C}{Q}$

n, r.p.m. / h, hrs	10	16	20	25	32	40	50	63	80	100	125	160	200	250	320	400
100	8.0	9.2	9.8	10.5	11.2	12.0	13.0	13.8	14.8	16.0	17.0	18.2	19.5	21.0	22.4	24.0
125	8.5	9.8	10.5	11.2	12.0	13.0	13.8	14.8	16.0	17.0	18.2	19.5	21.0	22.4	24.0	25.7
160	9.2	10.5	11.2	12.0	13.0	13.8	14.8	16.0	17.0	18.2	19.5	21.0	22.4	24.0	25.7	27.5
200	9.8	11.2	12.0	13.0	13.8	14.8	16.0	17.0	18.2	19.5	21.0	22.4	24.0	25.7	27.5	29.5
250	10.5	12.0	13.0	13.8	14.8	16.0	17.0	18.2	19.5	21.0	22.4	24.0	25.7	27.5	29.5	32.0
320	11.2	13.0	13.8	14.8	16.0	17.0	18.2	19.5	21.0	22.4	24.0	25.7	27.5	29.5	32.0	34.0
400	12.0	13.8	14.8	16.0	17.0	18.2	19.5	21.0	22.4	24.0	25.7	27.5	29.5	32.0	34.0	36.3
500	13.0	14.8	16.0	17.0	18.2	19.5	21.0	22.4	24.0	25.7	27.5	29.5	32.0	34.0	36.3	39.0
630	13.8	16.0	17.0	18.2	19.5	21.0	22.4	24.0	25.7	27.5	29.5	32.0	34.0	36.3	39.0	41.7
800	14.8	17.0	18.2	19.5	21.0	22.4	24.0	25.7	27.5	29.5	32.0	34.0	36.3	39.0	41.7	44.7
1000	16.0	18.2	19.5	21.0	22.4	24.0	25.7	27.5	29.5	32.0	34.0	36.3	39.0	41.7	44.7	48.0
1250	17.0	19.5	21.0	22.4	24.0	25.7	27.5	29.5	32.0	34.0	36.3	39.0	41.7	44.7	48.0	51.3
1600	18.2	21.0	22.4	24.0	25.7	27.5	29.5	32.0	34.0	36.3	39.0	41.7	44.7	48.0	51.3	55.0
2000	19.5	22.4	24.0	25.7	27.5	29.5	32.0	34.0	36.3	39.0	41.7	44.7	48.0	51.3	55.0	59.0
2500	21.0	24.0	25.7	27.5	29.5	32.0	34.0	36.3	39.0	41.7	44.7	48.0	51.3	55.0	59.0	63.0
3200	22.4	25.7	27.5	29.5	32.0	34.0	36.3	39.0	41.7	44.7	48.0	51.3	55.0	59.0	63.0	67.6
4000	24.0	27.5	29.5	32.0	34.0	36.3	39.0	41.7	44.7	48.0	51.3	55.0	59.0	63.0	67.6	72.5
5000	25.7	29.5	32.0	34.0	36.3	39.0	41.7	44.7	48.0	51.3	55.0	59.0	63.0	67.6	72.5	77.7
6300	27.5	32.0	34.0	36.3	39.0	41.7	44.7	48.0	51.3	55.0	59.0	63.0	67.6	72.5	77.7	83.2
8000	29.5	34.0	36.3	39.0	41.7	44.7	48.0	51.3	55.0	59.0	63.0	67.6	72.5	77.7	83.2	89.0
10000	32.0	36.3	39.0	41.7	44.7	48.0	51.3	55.0	59.0	63.0	67.6	72.5	77.7	83.2	89.0	95.5
12500	34.0	39.0	41.7	44.7	48.0	51.3	55.0	59.0	63.0	67.6	72.5	77.7	82.2	89.0	95.5	102
16000	36.3	41.7	44.7	48.0	51.3	55.0	59.0	63.0	67.6	72.5	77.7	83.2	89.0	95.5	102	110
20000	39.0	44.7	48.0	51.3	55.0	59.0	63.0	67.6	72.5	77.7	83.2	89.0	95.5	102	110	117
25000	41.7	48.0	51.3	55.0	59.0	63.0	67.6	72.5	77.7	83.2	89.0	95.5	102	110	117	126
32000	44.7	51.3	55.0	59.0	63.0	67.6	72.5	77.7	83.2	89.0	95.5	102	110	117	126	135
40000	48.0	55.0	59.0	63.0	67.6	72.5	77.7	83.2	89.0	95.5	102	110	117	126	135	145
50000	51.3	59.0	63.0	67.6	72.5	77.7	83.2	89.0	95.5	102	110	117	126	135	145	155
63000	55.0	63.0	67.6	72.5	77.7	83.2	89.0	95.5	102	110	117	126	135	145	155	166
80000	59.0	67.6	72.5	77.7	83.2	89.0	95.5	102	110	117	126	135	145	155	166	178

Note: The values in this table have been computed under the assumption that $10^{0.3} = 2$.

Table 28

500	630	800	1000	1250	1600	2000	2500	3200	4000	5000	6300	8000	10000	12500	16000	n, r.p.m. / h, hrs
25.7	27.5	29.5	32.0	34.0	36.3	39.0	41.7	44.7	48.0	51.3	55.0	59.0	63.0	67.6	72.5	100
27.5	29.5	32.0	34.0	36.3	39.0	41.7	44.7	48.0	51.3	55.0	59.0	63.0	67.6	72.5	77.7	125
29.5	32.0	34.0	36.3	39.0	41.7	44.7	48.0	51.3	55.0	59.0	63.0	67.6	72.5	77.7	83.2	160
32.0	34.0	36.3	39.0	41.7	44.7	48.0	51.3	55.0	59.0	63.0	67.6	72.5	77.7	83.2	89.0	200
34.0	36.3	39.0	41.7	44.7	48.0	51.3	55.0	59.0	63.0	67.6	72.5	77.7	83.2	89.0	95.5	250
36.3	39.0	41.7	44.7	48.0	51.3	55.0	59.0	63.0	67.6	72.5	77.7	83.2	89.0	95.5	102	320
39.0	41.7	44.7	48.0	51.3	55.0	59.0	63.0	67.6	72.5	77.7	83.2	89.0	95.5	102	110	400
41.7	44.7	48.0	51.3	55.0	59.0	63.0	67.6	72.5	77.7	83.2	89.0	95.5	102	110	117	500
44.7	48.0	51.3	55.0	59.0	63.0	67.6	72.5	77.7	83.2	89.0	95.5	102	110	117	126	630
48.0	51.3	55.0	59.0	63.0	67.6	72.5	77.7	83.2	89.0	95.5	102	110	117	126	135	800
51.3	55.0	59.0	63.0	67.6	72.5	77.7	83.2	89.0	95.5	102	110	117	126	135	145	1000
55.0	59.0	63.0	67.6	72.5	77.7	83.2	89.0	95.5	102	110	117	126	135	145	155	1250
59.0	63.0	67.6	72.5	77.7	83.2	89.0	95.5	102	110	117	126	135	145	155	166	1600
63.0	67.6	72.5	77.7	83.2	89.0	95.5	102	110	117	126	135	145	155	166	178	2000
67.6	72.5	77.7	83.2	89.0	95.5	102	110	117	126	135	145	155	166	178	191	2500
72.5	77.7	83.2	89.0	95.5	102	110	117	126	135	145	155	166	178	191	204	3200
77.7	83.2	89.0	95.5	102	110	117	126	135	145	155	166	178	191	204	219	4000
83.2	89.0	95.5	102	110	117	126	135	145	155	166	178	191	204	219	235	5000
89.0	95.5	102	110	117	126	135	145	155	166	178	191	204	219	235	251	6300
95.5	102	110	117	126	135	145	155	166	178	191	204	219	235	251	269	8000
102	110	117	126	135	145	155	166	178	191	204	219	235	251	269	289	10000
110	117	126	135	145	155	166	178	191	204	219	235	251	269	289	309	12500
117	126	135	145	155	166	178	191	204	219	235	251	269	289	309	331	16000
126	135	145	155	166	178	191	204	219	235	251	269	289	309	331	355	20000
135	145	155	166	178	191	204	219	235	251	269	289	309	331	355	380	25000
145	155	166	178	191	204	219	235	251	269	289	309	331	355	380	407	32000
155	166	178	191	204	219	235	251	269	289	309	331	355	380	407	437	40000
166	178	191	204	219	235	251	269	289	309	331	355	380	407	437	469	50000
178	191	204	219	235	251	269	289	309	331	355	380	407	437	469	502	63000
191	204	219	235	251	269	289	309	331	355	380	407	437	469	502	540	80000

EQUIVALENT LOADS COMPUTED IN ACCORDANCE WITH THE CAPACITY COEFFICIENT "C" AND THE BEARING SPEED

Table 29

Capacity coefficient (C) in thousands	Bearing speed, r. p. m.								Capacity coefficient (C) in thousands
	10	25	50	100	250	350	500	750	
	Equivalent load, kg, at an expected life of 5000 hrs.								
1.7	66	50	40	33	25	23	20	18	1.7
2	78	60	48	39	30	27	24	21	2
2.4	94	70	58	47	35	32	29	25	2.4
2.6	100	76	62	50	38	35	31	27	2.6
2.8	110	82	67	55	41	37	33	29	2.8
2.9	114	86	70	57	43	39	35	31	2.9
3.1	120	92	75	60	46	42	38	33	3.1
3.4	132	100	80	66	50	46	40	36	3.4
3.7	144	110	90	72	55	50	45	40	3.7
4.1	160	120	98	80	60	56	49	44	4.1
4.3	168	126	104	84	63	58	52	46	4.3
4.7	184	138	114	92	69	64	57	50	4.7
5.4	210	160	130	105	80	72	65	57	5.4
5.9	230	174	142	115	87	80	71	62	5.9
6.1	238	180	146	119	90	82	73	65	6.1
6.4	250	188	155	125	94	87	78	69	6.4
7.1	276	208	170	138	104	96	85	75	7.1
7.5	292	220	180	146	110	100	90	80	7.5
8	312	236	192	156	118	107	96	85	8
8.5	330	250	204	165	125	114	102	90	8.5
8.8	342	260	212	171	130	118	106	94	8.8
9.3	362	274	224	181	137	126	112	100	9.3
9.6	374	282	230	187	141	128	115	102	9.6
10	390	294	240	195	147	134	120	106	10
10.6	410	312	254	205	156	142	127	113	10.6
11	430	324	264	215	162	148	132	117	11
11.3	440	332	270	220	166	152	135	120	11.3
11.6	450	340	280	225	170	156	140	124	11.6
12.3	480	360	290	240	180	165	145	130	12.3
12.5	490	370	300	245	185	168	150	133	12.5
13	500	380	310	250	190	175	155	138	13
13.5	530	400	320	265	200	180	160	145	13.5
14	545	415	335	273	208	190	168	150	14
14.6	570	430	350	285	215	196	175	156	14.6
15	585	440	360	292	220	202	180	160	15
15.5	600	460	360	300	230	210	180	170	15.5
16	620	475	380	310	235	215	190	172	16
16.7	660	490	400	330	245	225	200	180	16.7
17.1	670	500	410	335	250	230	205	185	17.1
18	700	530	430	350	265	245	215	192	18
19	740	560	455	370	280	255	225	205	19
20	780	590	490	390	295	265	245	215	20
21	840	635	520	420	315	285	260	230	21
22	870	660	540	435	330	300	270	240	22
24	940	710	580	470	355	325	290	265	24
16	15	12	11	10	9	8	8	7	1.7
19	17	15	13	12	10	9	9	8	2
23	21	17	16	14	12	11	11	10	2.4
25	23	19	17	15	13	12	12	11	2.6
27	24	20	18	16	14	13	13	12	2.8
29	25	21	19	17	15	14	13	12	2.9
31	27	23	21	19	17	16	14	13	3.1
33	30	25	23	20	18	17	16	14	3.4
36	32	28	25	23	20	18	17	16	3.7
40	36	30	28	25	22	20	19	17	4.1
42	37	32	29	26	23	21	20	18	4.3
46	41	35	32	28	25	23	21	20	4.7
53	47	40	36	33	28	26	25	23	5.4
58	52	44	40	36	31	29	27	25	5.9
59	53	45	41	37	32	29,5	28	26	6.1
63	56	48	44	40	35	32	29	27	6.4
69	62	52	48	42	37	34	32	30	7.1
72	65	55	50	45	40	36	34	32	7.5
78	70	59	54	48	43	39	37	34	8
83	74	62	57	51	45	41	39	36	8.5
86	77	65	59	53	47	43	40	37	8.8
90	80	68	63	56	50	45	43	40	9.3
94	84	70	64	58	51	47	44	41	9.6
98	87	74	67	60	53	49	46	43	10
103	92	78	71	62	56	52	49	45	10.6
108	96	81	74	66	59	54	50	47	11
110	98	83	76	69	60	55	52	48	11.3
113	100	85	78	70	62	56	53	49	11.6
120	107	90	83	73	65	60	56	52	12.3
123	108	93	84	75	66	62	57	53	12.5
125	113	95	88	78	69	63	60	55	13
132	115	100	90	80	73	66	62	57	13.5
135	120	104	95	84	75	68	64	60	14
142	127	107	98	87	78	71	67	62	14.6
146	130	110	101	90	80	72	69	64	15
150	135	115	105	90	85	75	71	66	15.5
155	140	118	108	95	86	78	73	68	16
165	145	123	112	100	90	83	76	71	16.7
170	150	125	115	103	93	85	78	73	17.1
175	160	135	123	107	96	88	82	77	18
185	165	140	128	115	103	92	87	81	19
195	175	148	132	123	108	98	92	85	20
210	180	155	143	130	115	105	96	89	21
212	195	165	150	135	120	109	101	94	22
235	210	178	163	145	128	118	110	102	24

Capacity coefficient (C) in thousands	Bearing speed, r. p. m.							
	10	25	50	100	250	350	500	750
	Equivalent load, kg, at an expected life of 5000 hrs.							
25	970	740	600	485	370	340	300	270
26	1010	760	620	505	380	350	310	280
27	1060	800	650	520	400	365	325	290
28	1090	830	670	545	415	380	335	300
29	1130	860	700	565	430	390	350	310
30	1180	890	720	590	445	405	360	320
31	1210	910	750	605	455	415	375	330
32	1250	940	770	625	470	425	385	340
33	1290	970	790	645	485	440	395	350
34	1330	1000	820	665	500	460	405	360
35	1360	1030	840	680	515	470	420	370
36	1400	1060	860	700	530	485	430	385
37	1440	1090	890	720	545	500	445	395
38	1480	1120	910	740	560	510	455	405
39	1540	1160	950	770	580	530	475	420
40	1560	1180	960	780	590	540	480	425
41	1600	1200	980	800	600	550	490	440
42	1640	1240	1010	820	620	565	505	450
43	1680	1270	1030	840	635	575	515	460
44	1720	1300	1060	860	650	590	530	470
45	1760	1330	1080	880	665	610	540	480
46	1790	1350	1100	895	675	620	550	490
47	1830	1380	1130	915	690	630	565	500
48	1870	1410	1150	935	705	650	575	510
49	1910	1440	1170	955	720	660	585	520
50	1950	1470	1200	975	735	670	600	530
52	2020	1530	1240	1010	765	700	620	550
54	2100	1590	1300	1050	795	730	650	570
57	2220	1680	1370	1110	840	770	685	600
60	2340	1770	1440	1170	885	810	720	640
62	2410	1830	1500	1200	915	830	750	660
64	2490	1890	1540	1250	945	860	770	680
66	2570	1940	1580	1280	970	890	790	700
68	2650	2000	1630	1320	1000	910	815	720
70	2700	2060	1680	1360	1030	940	840	740
72	2800	2120	1730	1400	1060	970	865	760
74	2880	2180	1770	1440	1090	990	885	780
76	2950	2240	1820	1470	1120	1020	910	810
78	3040	2300	1870	1520	1150	1040	935	830
80	3110	2350	1920	1550	1170	1070	960	850
82	3190	2410	1970	1600	1200	1100	975	870
84	3270	2470	2020	1630	1230	1130	1010	890
86	3350	2530	2060	1670	1260	1150	1030	920
88	3420	2590	2110	1710	1290	1180	1050	940
90	3500	2650	2160	1750	1320	1210	1080	960

Continued

Capacity coefficient (C) in thousands	r. p. m.								
	1000	1500	2500	3500	5000	7500	10000	12500	16000
	at an expected life of 5000 hrs.								
25	245	220	185	170	150	135	122	115	106
26	250	225	190	175	155	140	125	119	111
27	265	235	200	183	163	145	132	124	115
28	275	245	210	190	170	150	138	128	119
29	285	255	215	195	175	155	143	133	123
30	295	265	223	203	180	160	148	137	128
31	310	275	230	207	190	165	155	142	132
32	315	280	235	210	193	170	158	147	136
33	323	290	243	220	198	175	162	151	140
34	335	300	250	230	205	180	168	156	145
35	340	305	255	235	210	185	170	160	149
36	350	315	265	243	215	193	175	165	153
37	360	325	273	250	223	198	180	170	157
38	370	335	280	255	228	203	185	174	162
39	385	345	290	265	235	210	190	179	166
40	390	350	295	270	240	213	195	183	170
41	400	360	300	275	245	220	200	188	174
42	410	370	308	280	250	225	205	192	179
43	420	375	315	288	255	230	210	197	183
44	430	385	325	295	265	235	215	202	187
45	440	395	335	305	270	240	220	205	191
46	445	400	340	310	275	245	223	211	196
47	455	410	345	315	283	250	228	215	200
48	470	420	355	325	290	255	235	220	204
49	475	425	360	330	295	260	238	225	208
50	485	430	370	335	300	265	243	229	213
52	505	450	385	350	310	275	250	238	221
54	525	470	400	365	325	285	260	248	230
57	555	500	420	385	340	300	280	261	242
60	585	520	445	405	360	320	290	275	255
62	600	540	455	415	375	330	300	284	264
64	625	560	475	430	385	340	310	293	272
66	640	580	485	445	395	350	320	302	281
68	660	595	500	455	405	360	330	312	289
70	680	610	515	470	420	370	340	321	298
72	700	625	530	485	430	380	350	330	306
74	720	640	545	495	440	390	360	339	315
76	740	660	560	510	455	405	370	348	323
78	760	680	575	520	465	415	380	358	332
80	775	690	585	535	480	425	390	367	341
82	800	710	600	550	490	435	400	376	349
84	810	730	615	565	505	445	405	385	358
86	835	750	630	575	515	460	420	394	366
88	855	770	645	590	525	470	428	403	375
90	870	780	660	605	540	480	435	412	383

Capacity coefficient (C) in thousands	Bearing speed, r. p. m.							
	10	25	50	100	250	350	500	750
	Equivalent load, kg. at an expected life of 5000 hrs.							
92	3580	2700	2200	1790	1350	1230	1100	980
94	3660	2770	2260	1830	1380	1260	1130	1000
96	3740	2820	2300	1870	1410	1290	1150	1020
98	3860	2910	2380	1930	1450	1330	1190	1050
100	3890	2940	2400	1940	1470	1340	1200	1060
104	4050	3060	2500	2020	1530	1400	1250	1100
108	4200	3180	2590	2100	1590	1450	1290	1150
112	4360	3290	2680	2180	1640	1500	1340	1190
116	4520	3410	2780	2260	1700	1560	1390	1240
120	4680	3530	2880	2340	1760	1620	1440	1280
124	4820	3650	2980	2410	1820	1670	1490	1320
128	4980	3770	3070	2490	1880	1720	1530	1360
132	5140	3880	3160	2570	1940	1770	1580	1400
136	5300	4000	3260	2650	2000	1820	1630	1450
140	5450	4120	3350	2720	2060	1880	1680	1490
144	5600	4240	3450	2800	2120	1930	1720	1530
148	5750	4350	3550	2880	2170	1990	1770	1580
152	5910	4480	3640	2950	2240	2040	1820	1620
158	6200	4640	3780	3100	2320	2120	1890	1680
164	6380	4820	3930	3200	2410	2200	1960	1740
170	6620	5000	4080	3310	2500	2280	2040	1810
176	6840	5180	4220	3420	2590	2360	2110	1870
182	7080	5360	4360	3540	2680	2450	2180	1940
188	7320	5540	4520	3660	2770	2530	2260	2000
194	7560	5700	4660	3780	2850	2600	2330	2060
200	7780	5880	4800	3890	2940	2680	2400	2130
210	8170	6170	5040	4080	3080	2820	2520	2230
220	8540	6480	5260	4270	3240	2950	2630	2340
230	8950	6750	5500	4480	3380	3090	2750	2450
240	9400	7060	5760	4700	3530	3220	2880	2560
250	9700	7350	6000	4850	3670	3350	3000	2660
260	10100	7640	6220	5050	3820	3490	3110	2770
270	10500	7940	6460	5250	3970	3620	3230	2870
280	10900	8240	6700	5450	4120	3760	3350	2980
290	11300	8530	6950	5680	4260	3900	3470	3090
300	11700	8840	7200	5850	4420	4020	3600	3190
310	12000	9120	7440	6000	4560	4160	3720	3300
320	12500	9410	7680	6250	4700	4290	3840	3410
330	12800	9700	7900	6400	4850	4430	3950	3510
340	13200	10000	8150	6600	5000	4560	4070	3620
350	13600	10300	8370	6800	5150	4700	4180	3730
360	14000	10600	8620	7000	5300	4830	4310	3830
370	14400	10900	8870	7200	5450	4970	4430	3940
380	14800	11200	9100	7400	5600	5100	4550	4040
390	15200	11500	9350	7600	5750	5240	4670	4150

Continued

r. p. m.										Capacity coefficient (C) in thousands
1000	1500	2500	3500	5000	7500	10000	12500	16000		
at an expected life of 5000 hrs.										
890	800	675	615	550	490	445	422	392		92
920	820	690	630	560	500	460	431	400		94
930	840	705	645	570	510	465	440	409		96
960	860	720	665	590	520	480	449	417		98
970	870	730	670	600	530	485	458	426		100
1010	900	760	700	620	550	500	—	—		104
1050	940	800	720	640	570	520	—	—		108
1090	970	820	750	670	590	540	—	—		112
1130	1010	850	780	700	620	560	—	—		116
1170	1040	880	810	720	640	580	—	—		120
1200	1080	910	830	745	660	600	—	—		124
1240	1110	940	860	765	680	620	—	—		128
1280	1150	970	880	790	700	640	—	—		132
1320	1180	1000	910	815	720	660	—	—		136
1360	1220	1030	940	840	740	680	—	—		140
1400	1260	1060	960	860	760	700	—	—		144
1440	1290	1080	990	880	790	720	—	—		148
1480	1320	1120	1020	920	810	740	—	—		152
1550	1370	1160	1060	940	840	770	—	—		158
1600	1430	1200	1100	980	870	800	—	—		164
1650	1480	1250	1140	1020	890	820	—	—		170
1710	1530	1290	1180	1050	930	850	—	—		176
1770	1580	1340	1220	1090	970	830	—	—		182
1830	1630	1380	1260	1130	1000	910	—	—		188
1890	1690	1420	1300	1160	1030	940	—	—		194
1950	1740	1470	1340	1200	1070	970	—	—		200
2040	1830	1540	1410	1260	1110	1020	—	—		210
2130	1910	1620	1470	1310	1170	1070	—	—		220
2240	2000	1690	1540	1380	1220	1120	—	—		230
2350	2090	1770	1610	1440	1280	1170	—	—		240
2430	2170	1830	1670	1500	1330	1220	—	—		250
2530	2260	1910	1740	1550	1380	1260	—	—		260
2630	2340	1980	1810	1610	1430	1310	—	—		270
2720	2440	2050	1880	1670	1490	1360	—	—		280
2840	2520	2130	1950	1730	1540	1420	—	—		290
2920	2600	2210	2010	1800	1590	1460	—	—		300
3000	2700	2280	2080	1860	1650	1500	—	—		310
3120	2780	2350	2150	1920	1700	1560	—	—		320
3200	2870	2420	2220	1970	1760	1600	—	—		330
3300	2960	2500	2280	2030	1810	1650	—	—		340
3400	3050	2570	2350	2090	1860	1700	—	—		350
3500	3120	2650	2400	2150	1910	1750	—	—		360
3600	3220	2720	2480	2210	1970	1800	—	—		370
3700	3300	2800	2550	2270	2030	1850	—	—		380
3800	3390	2870	2620	2330	2070	1900	—	—		390

Capacity coefficient (C) in thousands	Bearing speed, r. p. m.							
	10	25	50	100	250	350	500	750
	Equivalent load, kg, at an expected life of 5000 hrs.							
400	15600	11800	9600	7800	5900	5360	4800	4260
420	16400	12400	10060	8200	6200	5640	5040	4470
440	17100	13000	10500	8550	6500	5900	5250	4680
460	17900	13500	11000	8950	6750	6180	5500	4900
480	18700	14100	11500	9350	7050	6440	5750	5120
500	19500	14700	12000	9750	7350	6700	6000	5320
520	20200	15300	12400	10100	7650	6980	6200	5540
540	21000	15900	13000	10500	7950	7250	6500	5750
570	22200	16600	13700	11100	8400	7650	6850	6070
600	23700	18000	14600	11850	9000	8180	7200	6490
630	24500	18600	15100	12200	9300	8450	7550	6700
650	25300	19100	15500	12600	9550	8720	7750	6920
670	26100	19800	16000	13000	9900	9000	8000	7140
730	28400	21500	17500	14200	10100	9800	8750	7760
760	29500	22400	18200	14700	11200	10200	9100	8080
800	31100	23500	19200	15500	11700	10720	9600	8520
850	33100	25000	20400	16500	12500	11400	10200	9050
890	34600	26250	21300	17300	13100	11900	10600	9500
920	35800	27000	22000	17900	13500	12400	11000	9800
950	36900	28000	22800	18400	14000	12800	11400	10100
980	38100	28800	23500	19000	14400	13100	11700	10400
1070	41600	31400	25600	20800	15700	14300	12800	11300
1260	49000	37100	30200	24500	18500	16900	15100	13400
1340	52000	39400	32100	26000	19700	17900	16000	14250
1440	56000	42400	34500	28000	21200	19300	17200	15300
1500	58400	44200	36000	29200	22100	20100	18000	16000
1660	64600	48800	39800	32300	24400	22300	19900	17700
1960	76200	57600	47000	38100	28800	26300	23500	20800

Note: These equivalent loads are valid for bearings operating at speeds that do not exceed the maximum permissible speed indicated in this catalogue for a given bearing.

Continued

r. p. m.										Capacity coefficient (C) in thousands
1000	1500	2500	3500	5000	7500	10000	12500	16000		
at an expected life of 5000 hrs.										
3900	3480	2950	2680	2400	2130	1950	—	—		400
4100	3650	3100	2820	2520	2230	2050	—	—		420
4270	3830	3250	2950	2620	2340	2130	—	—		440
4480	4000	3370	3090	2750	2450	2240	—	—		460
4670	4180	3520	3220	2870	2560	2330	—	—		480
4870	4350	3650	3350	3000	2660	2430	—	—		500
5050	4520	3820	3490	3100	2770	2520	—	—		520
5250	4700	3970	3620	3250	2870	2620	—	—		540
5550	4960	4200	3820	3420	3030	2770	—	—		570
5920	5300	4500	4090	3650	3240	2960	—	—		600
6110	5480	4650	4220	3770	3350	3050	—	—		630
6300	5650	4770	4360	3870	3460	3150	—	—		650
6500	5820	4950	4500	4000	3570	3250	—	—		670
7100	6340	5350	4900	4370	3880	3550	—	—		730
7350	6600	5600	5100	4550	4040	3670	—	—		760
7750	6960	5850	5360	4800	4260	3870	—	—		800
8250	7400	6250	5700	5100	4520	4120	—	—		850
8650	7750	6560	5950	5320	4750	4320	—	—		890
8950	8000	6750	6200	5500	4900	4470	—	—		920
9200	8260	7000	6400	5700	5050	4600	—	—		950
9500	8500	7200	6550	5850	5200	4750	—	—		980
10400	9300	7850	7150	6400	5650	5000	—	—		1070
12200	10900	9300	8450	7550	6700	6160	—	—		1260
13000	11600	9800	8900	8000	7100	6500	—	—		1340
14000	12500	10600	9650	8600	7650	7000	—	—		1440
14600	13000	11050	10100	9000	8000	7300	—	—		1500
16100	14400	12200	11100	9950	8850	8050	—	—		1660
19000	17000	14400	13100	11700	10400	9500	—	—		1960

MAIN INSTRUCTIONS FOR SELECTING FITS FOR ANTIFRICTION BEARINGS*

GENERAL PRINCIPLES

The selection of the nature of the fits between the bearing rings and the shaft or housing, that is, the selection of the shaft and housing fits, for the most part depends on the magnitude, direction and nature of the bearing loads; the type and size of the bearing and its mounting arrangement in the assembly, as well as the class of accuracy of the bearing.

The nature of the stress distribution inside the bearing differs for the inner and outer ring and consequently different fits are required, as a rule, in the housing and on the shaft.

The working conditions of the inner and outer rings depend mainly on whether the given ring is stationary or rotates in relation to the radial load on the bearing. In this connection, the following types of ring loading are distinguished: local, circulatory and oscillatory.

Local loading is defined as an arrangement in which the load on the bearing is being constantly carried by a limited portion of the race and is transmitted to a limited section of the bearing seat on the shaft or in the housing. This type of loading occurs when the given ring does not rotate in reference to the load.

An example of local loading is the loading of the stationary outer ring at a load, constant in direction, and a rotating inner ring.

Circulatory loading is one in which the load on the bearing is consecutively carried by the whole circumference of the race and is transmitted consecutively to the whole circumference of the bearing seat on the shaft or in the housing.

This type of loading can be observed when a given ring rotates in reference to the constant direction of the load or when the direction of the load varies (rotating load) in reference to the stationary ring. An example of circulatory loading is the load on the rotating inner ring at a constant direction of the bearing load.

Oscillatory loading is one in which a load of constant direction acts together with a rotating load on the bearing and the resultant load does not make a full revolution but oscillates in a definite portion of the stationary ring. The bearing seat on the shaft or in the housing has the same type of loading.

The types of loading of rings in accordance with the operating conditions are indicated in Table 30.

* For more detailed information see GOST 3325-55.

BEARING FITS

The bearing fits on shafts are in the basic hole system of fits while in housings they are in the basic shaft system. It is necessary to point out that the bearing bore limits, as stipulated by GOST 520-55, are to the minus side of the nominal bore while the hole limits for the basic hole OST system are arranged to the plus side. Consequently, the class of fits obtained for the inner rings of bearings on shafts, machined to standard transition fit gauges (in accordance with OST NKM 1011 and OST 1012), differs from the standard fits of shafts in the basic hole system in that the former are more tight.

In accordance with the required class of fit of the bearing bore on the shaft, the shaft tolerances are selected from the following series of basic hole $Г_1$, $Т_1$, $Н_1$, $П_1$ and $С_1$ (extra fine force, drive, wringing and slide fits, respectively) in accordance with OST NKM 1011 (Table 36); Г, Т, Н, П, С, Д and Х (fine heavy force, force, drive, wringing, push, slide, easy slide and normal running fits, respectively) in accordance with OST 1012 (Table 38).

Table 30

TYPES OF LOADING OF BEARING RINGS

Operating conditions		Type of loading	
Nature of radial load carried by the bearing	Which ring rotates	Inner ring	Outer ring
Constant in direction	Inner	Circulatory	Local
	Outer	Local	Circulatory
A load, constant in direction, combined with a rotating load, smaller in magnitude. (Resultant load oscillates)	Inner	Circulatory	Oscillatory
	Outer	Oscillatory	Circulatory
A load, constant in direction, combined with a rotating load, larger in magnitude. (Resultant load rotates)	Inner	Local	Circulatory
	Outer	Circulatory	Local
Constant in direction	Both inner and outer rings in the same or opposite directions	Circulatory	Circulatory
Rotates together with inner ring		Local	Circulatory
Rotates together with outer ring		Circulatory	Local

If bearings are to be mounted on taper clamping or clamping-stripping sleeves, the shaft should be machined to the tolerances for the fit B_3 (plain basic shaft fit) in accordance with OST 1023. In assemblies, which do not require accurate running, the shaft may be machined to the tolerances for fit B_{3a} (extra-plain basic shaft fit) in accordance with OST NKM 1027 or B_4 (rough basic shaft fit) in accordance with OST 1024.

In accordance with the required class of fit of the bearing outside diameter in the housing, the housing bore tolerances are selected from the following series of basic shaft fits: $Г_1$, $Т_1$, $Н_1$, $П_1$ and $С_1$ (extra fine force, drive, wringing, push and slide fits, respectively) in accordance with OST NKM 1021 (Table 37); Г, Т, Н, П, С and Д (fine heavy force, force, drive, wringing, push, slide and easy slide fits) according to OST 1022, C_3 (plain slide fit) according to OST 1023 and P_7 according to ISA-3 (Table 39).

FITS FOR RADIAL BEARINGS

In accordance with the type of loading the following fits are recommended for mounting radial bearings on shafts or in housings.

Shaft Mounting Fits

Type of loading of inner ring	Fits
Local	$П_n$, $С_n$, $Д_n$, $Х_n$, $П_{1n}$, $С_{1n}$
Circulatory	$Г_n$, $Т_n$, $Н_n$, $П_n$, $Г_{1n}$, $Т_{1n}$, $Н_{1n}$, $П_{1n}$
Oscillatory	$П_n$, $П_{1n}$

Housing Mounting Fits

Type of loading of outer ring	Fits
Local	$С_n$, $С_{1n}$, $С_{3n}$, $П_n$, $П_{1n}$, $Д_n$
Circulatory	P_{7n}, $Г_n$, $Т_n$, $Н_n$, $Г_{1n}$, $Т_{1n}$, $Н_{1n}$
Oscillatory	$П_n$, $П_{1n}$

When mounting radial bearings having a class of accuracy A or C only extra fine tight or slide fits should be used.

At high speeds and local loading, the shaft or housing should be machined to the gauge for fits П or $П_1$.

FITS FOR NEEDLE ROLLER BEARINGS

Needle roller bearings with solid rings are to be mounted on shafts and in housings with the same fits as radial bearings.

For needle roller bearings with thin, stamped (split) outer rings, it is advisable to machine the housing seats to the fine fit gauges П for housings of steel or cast-iron or Н for housings of aluminium or light alloys.

In some cases, when mounting needle roller bearings with thin, stamped outer rings, a selective assembly system is recommended according to which the bearings and housings are segregated into groups within the limits of the total tolerance on the diameters. The bearings are then assembled into the housings of the corresponding groups. This avoids excessive interferences or clearances.

The following tolerances are recommended for machining shafts (race surface for the needles):

For rotation of the bearing — fine basic shaft fit В; for small-amplitude oscillations and static loads — fine fit to gauge Н (fits according to OST 1022).

Note: Heavily loaded needle roller bearings, as well as other types of bearings, should not be mounted directly in housings of light alloys. In such cases, the use of an intermediate steel sleeve is recommended.

Fits for Radial-Thrust Bearings

The following fits are recommended for radial-thrust bearings in accordance with the load and type of loading:

Ring and type of loading	Fits
Non-adjustable circulatory loaded rings of all classes of accuracy	$Г_n$, $Т_n$, $Н_n$, $П_n$ for shaft and housing and P_7 for housing
Adjustable circulatory loaded rings (bearing assembly design not recommended)*	$П_n$
Adjustable or non-adjustable locally loaded rings which do not move directly on the seating surface	$П_n$, $С_n$ for shaft and $Т_n$, $Н_n$, $С_n$ for housing
Adjustable locally loaded rings	$С_n$, $Д_n$, $Х_n$ for shaft and $С_n$ for housing

Note: The fits for the rings of paired (duplex) bearings, which have been preloaded during manufacture, should be specially stipulated.

* The material of the bearing seats should be of increased hardness; the bearing seats on the shaft should be hardened and special hardened sleeves should be inserted into the housing.

FITS FOR THRUST BEARINGS

The required tight fit of the rotating rings of thrust bearings on their shaft is ensured by manufacturing the bearing seat to the tolerances corresponding to the gauge for fit П.

The "loose" or stationary ring of the thrust bearing should be mounted in the housing with sufficient clearance to ensure self-alignment in a radial direction.

EXAMPLES OF FIT SELECTION

Examples of the selection of fits for ball and roller bearings are indicated in Tables 40 and 41. They are given to facilitate the use of the bearing fit tables.

The working conditions, indicated in these tables, are characterized by the following computed expected life:

easy conditions — over 10000 hours
normal conditions — 5000 to 10000 hours
heavy conditions — 2500 to 5000 hours
special conditions — agreed upon with the Supplier.

For impact and vibrating loads (as, for instance, railway and tramway axle boxes, engine crankshafts, rock crushers, etc.) fits for bearings are selected as for heavy conditions without taking into consideration the computed expected life.

SURFACE FINISH AND TOLERANCES FOR ERRORS IN THE GEOMETRICAL FORM OF THE BEARING SEATS

The quality of the surface finish of bearing seats should not be lower than the classes of finish in accordance with GOST 2789-51 indicated in Table 31.

Table 31

CLASSES OF FINISH FOR BEARING SEATS

Bearing seats	Bearing classes of accuracy	Nominal diameters, mm	
		up to 80	above 80 to 500
		Class of finish	
On shafts	H and П	7	6
	B and A	8	7
	C	9	8
In housing bores	H and П	7	6
	B, A and C	8	7
Faces of shoulders on shafts and in housings	H and П	6	6
	B, A and C	7	6

The finish symbols have the following values expressed as the root mean-square of the surface irregularities in microns or micro-inches.

Finish class symbol	Root mean-square of surface irregularities	
	microns	micro-inches
6	3.2 to 1.6	126 to 63
7	1.6 to 0.8	63 to 32
8	0.8 to 0.4	32 to 16
9	0.4 to 0.2	16 to 8

The surface finish of bearing seats on shafts or in housings for mounting ball and roller bearings classes HO and O (in accordance with GOST 4793-43) may be one class for HO and two classes for O lower than those indicated in Table 31 for bearings classes H and П.

The errors in the geometrical form of bearing seats on shafts and in housings should be within the limits indicated in Tables 32, 33, 34 and 35.

Table 32

TOLERANCES FOR ERRORS IN GEOMETRICAL FORM OF SHAFTS AND HOUSINGS

Class of accuracy of ball and roller bearings to be mounted	Out-of-roundness		Taper (differences in diameters of extreme sections of bearing seat)	
H, П and B	1/2	of tolerance for diameter in any section of bearing seat	1/2	of tolerance of bearing seat diameter
A and C	1/4		1/4	

Table 33

TOLERANCES FOR ERRORS IN GEOMETRICAL FORM OF SHAFT SEATS FOR MOUNTING BALL AND ROLLER BEARINGS ON CLAMPING OR CLAMPING-STRIPPING SLEEVES

Classes of fits of shaft seating for adapting sleeve	Out-of-roundness		Difference in diameters of extreme sections of seat for sleeve	
B_3, B_{3a}, B_4	1/4	of tolerance for diameter in any section of seat	1/4	of tolerance of sleeve seat diameter

Table 34

FACE RUNOUT OF SHAFT SHOULDERS

Nominal shaft diameters mm		Permissible face runout of shaft shoulders, microns Class of accuracy of ball and roller bearings			
over	up to	H and П	B	A	C
—	50	20	10	7	4
50	120	25	12	8	6
120	250	30	15	10	8
250	315	35	17	12	—
315	400	40	20	13	—

Table 35

FACE RUNOUT OF HOUSING SHOULDERS

Nominal housing bores mm		Permissible face runout of housing shoulders, microns Class of accuracy of ball and roller bearings			
over	up to	H and П	B	A	C
—	80	40	20	13	8
80	120	45	22	15	9
120	150	50	25	18	10
150	180	60	30	20	12
180	250	70	35	23	14
250	315	80	40	27	16
315	400	90	45	30	—
400	500	100	50	33	—

Table 36

SHAFT MOUNTING FITS FOR BALL AND ROLLER BEARINGS, CLASS OF ACCURACY A AND C

Nominal diameter (d) mm		Tolerances in microns									
		Bearing bore tolerances	Fits								
			$Г_{1n}$		$Т_{1n}$		$Н_{1n}$		$Н_{1n}$		$С_{1n}$
			Shaft tolerances								
over	up to	high limit	high limit	low limit	high limit	low limit	high limit	low limit	high limit	low limit	high limit	low limit
—	6	— 2	— 8	+ 13	+ 8	+ 10	+ 5	+ 6	+ 1	+ 3	— 2	0	— 5
6	10	— 2	— 8	+ 16	+ 9	+ 12	+ 6	+ 8	+ 2	+ 4	— 3	0	— 6
10	18	— 2	— 8	+ 20	+ 11	+ 15	+ 7	+ 10	+ 2	+ 5	— 3	0	— 8
18	30	— 2	— 8	+ 24	+ 13	+ 17	+ 8	+ 12	+ 2	+ 6	— 3	0	— 9
30	50	— 3	— 10	+ 28	+ 16	+ 20	+ 9	+ 14	+ 2	+ 7	— 4	0	— 11
50	80	— 4	— 12	+ 33	+ 19	+ 24	+ 10	+ 16	+ 3	+ 8	— 5	0	— 13
80	120	— 5	— 15	+ 38	+ 23	+ 28	+ 12	+ 19	+ 3	+ 9	— 6	0	— 15
120	180	— 6	— 18	+ 45	+ 26	+ 32	+ 14	+ 22	+ 4	+ 10	— 7	0	— 18
180	250	— 7	— 22	+ 52	+ 30	+ 36	+ 16	+ 25	+ 4	+ 11	— 8	0	— 20
250	260	— 8	— 28	+ 52	+ 30	+ 36	+ 16	+ 25	+ 4	+ 11	— 8	0	— 20
260	315	— 8	— 28	+ 58	+ 35	+ 40	+ 18	+ 28	+ 4	+ 13	— 9	0	— 22
315	360	— 10	— 35	+ 58	+ 35	+ 40	+ 18	+ 28	+ 4	+ 13	— 9	0	— 22
360	400	— 10	— 35	+ 65	+ 40	+ 45	+ 20	+ 32	+ 5	+ 15	— 10	0	— 25

Table 37

HOUSING MOUNTING FITS FOR BALL AND ROLLER BEARINGS, CLASS OF ACCURACY A AND C

Nominal diameter (D) mm		Tolerances in microns									
		Bearing outside diameter tolerances	Fits								
			$Г_{1n}$		$Т_{1n}$		$Н_{1n}$		$Н_{1n}$		$С_{1n}$
			Housing bore tolerances								
over	up to	high limit	low limit	high limit	low limit	high limit	low limit	high limit	low limit	high limit	low limit	high limit
—	18	— 2	— 6	— 20	— 8	— 15	— 4	— 10	+ 1	— 5	+ 7	0	+ 11
18	30	— 2	— 7	— 24	— 10	— 17	— 4	— 12	+ 2	— 6	+ 8	0	+ 13
30	50	— 2	— 8	— 28	— 12	— 20	— 5	— 14	+ 2	— 7	+ 9	0	+ 15
50	80	— 3	— 10	— 33	— 14	— 24	— 5	— 16	+ 2	— 8	+ 10	0	+ 18
80	120	— 4	— 12	— 38	— 17	— 28	— 6	— 19	+ 3	— 9	+ 12	0	+ 21
120	150	— 5	— 15	— 45	— 20	— 32	— 7	— 22	+ 3	— 10	+ 14	0	+ 24
150	180	— 6	— 18	— 45	— 20	— 32	— 7	— 22	+ 3	— 10	+ 14	0	+ 24
180	250	— 7	— 22	— 52	— 23	— 36	— 8	— 25	+ 3	— 11	+ 16	0	+ 27
250	260	— 8	— 28	— 52	— 23	— 36	— 8	— 25	+ 3	— 11	+ 16	0	+ 27
260	315	— 8	— 28	— 58	— 27	— 40	— 9	— 28	+ 4	— 13	+ 18	0	+ 30
315	360	— 10	— 30	— 58	— 27	— 40	— 9	— 28	+ 4	— 13	+ 18	0	+ 30
360	400	— 10	— 30	— 65	— 30	— 45	— 10	— 32	+ 5	— 15	+ 20	0	+ 35
400	500	— 10	— 35	— 65	— 30	— 45	— 10	— 32	+ 5	— 15	+ 20	0	+ 35

SHAFT MOUNTING FITS FOR BALL AND

Nominal diameter (d) mm		Bearing bore tolerance	Tolerances					
			Fits					
			Г$_n$		Т$_n$		П$_n$	
			Shaft tolerances					
over	up to	High limit	Low limit	High limit	Low limit	High limit	Low limit	High limit	Low limit
—	6	0	—10	+16	+ 8	+13	+ 5	+ 9	+ 1
6	10	0	—10	+20	+10	+16	+ 6	+12	+ 2
10	18	0	—10	+24	+12	+19	+ 7	+14	+ 2
18	30	0	—10	+30	+15	+23	+ 8	+17	+ 2
30	50	0	—12	+35	+18	+27	+ 9	+20	+ 3
50	80	0	—15	+40	+20	+30	+10	+23	+ 3
80	120	0	—20	+45	+23	+35	+12	+26	+ 3
120	180	0	—25	+52	+25	+40	+13	+30	+ 4
180	250	0	—30	+60	+30	+45	+15	+35	+ 4
250	260	0	—35	+60	+30	+45	+15	+35	+ 4
260	315	0	—35	+70	+35	+50	+15	+40	+ 4
315	360	0	—40	+70	+35	+50	+15	+40	+ 4
360	400	0	—40	+80	+40	+60	+20	+45	+ 5

HOUSING MOUNTING FITS FOR BALL AND

Nominal diameter (D) mm		Bearing outside diameter tolerance	Tolerances					
			Fits					
			Г$_n$		Т$_n$		П$_n$	
			Housing tolerances					
over	up to	High limit	Low limit	Low limit	High limit	Low limit	High limit	Low limit	High limit
—	18	0	— 8	—24	— 5	—19	0	—14	+ 5
18	30	0	— 9	—30	— 6	—23	0	—17	+ 6
30	50	0	—11	—35	— 7	—27	0	—20	+ 7
50	80	0	—13	—40	— 8	—30	0	—23	+ 8
80	120	0	—15	—45	—10	—35	0	—26	+ 9
120	150	0	—18	—52	—12	—40	0	—30	+10
150	180	0	—25	—52	—12	—40	0	—30	+10
180	250	0	—30	—60	—15	—45	0	—35	+11
250	260	0	—35	—60	—15	—45	0	—35	+11
260	315	0	—35	—70	—18	—50	0	—40	+12
315	360	0	—40	—70	—18	—50	0	—40	+12
360	400	0	—40	—80	—20	—60	0	—45	+15
400	500	0	—45	—80	—20	—60	0	—45	+15

ROLLER BEARINGS, CLASS OF ACCURACY H, II and B

Table 38

in microns

П$_n$		С$_n$		Д$_n$		Х$_n$	
Shaft tolerances							
High limit	Low limit	High limit	Low limit	High limit	Low limit	High limit	Low limit
+ 4	— 4	0	— 8	— 4	—12	—10	— 22
+ 5	— 5	0	—10	— 5	—15	—13	— 27
+ 6	— 6	0	—12	— 6	—18	—16	— 33
+ 7	— 7	0	—14	— 8	—22	—20	— 40
+ 8	— 8	0	—17	—10	—27	—25	— 50
+10	—10	0	—20	—12	—32	—30	— 60
+12	—12	0	—23	—15	—38	—40	— 75
+14	—14	0	—27	—18	—45	—50	— 90
+16	—16	0	—30	—22	—52	—60	—105
+16	—16	0	—30	—22	—52	—60	—105
+18	—18	0	—35	—26	—60	—70	—125
+18	—18	0	—35	—26	—60	—70	—125
+20	—20	0	—40	—30	—70	—80	—140

ROLLER BEARINGS, CLASS OF ACCURACY H, II and B

Table 39

In microns

П$_n$		С$_n$		С$_{2n}$		Д$_n$		Р$_7$	
Housing tolerances									
Low limit	High limit	Low limit	High limit	Low limit	High limit	Low limit	High limit	Low limit	High limit
— 6	+13	0	+19	0	+35	+ 6	+25	—29	—11
— 7	+16	0	+23	0	+45	+ 8	+30	—35	—14
— 8	+18	0	+27	0	+50	+10	+35	—42	—17
—10	+20	0	+30	0	+60	+12	+42	—51	—21
—12	+23	0	+35	0	+70	+15	+50	—59	—24
—14	+27	0	+40	0	+80	+18	+60	—68	—28
—14	+27	0	+40	0	+80	+18	+60	—68	—28
—16	+30	0	+45	0	+90	+22	+70	—79	—33
—16	+30	0	+45	0	+90	+22	+70	—88	—36
—18	+35	0	+50	0	+100	+26	+80	—88	—36
—18	+35	0	+50	0	+100	+26	+80	—98	—41
—20	+40	0	+60	0	+120	+30	+90	—98	—41
—20	+40	0	+60	0	+120	+30	+90	—108	—45

EXAMPLES OF THE SELECTION OF SHAFT MOUNTING FITS FOR BALL AND ROLLER BEARINGS

Table 40

General conditions determining selection of fit			Names of machines and bearing assemblies	Bearing bores				Fits
				Radial bearings		Radial-thrust bearings		
Rotating or stationary shaft	Type of loading of inner ring	Operating conditions and other remarks		Ball	Roller	Ball	Roller	
				mm				
Stationary shaft	Local	Light or normal duty	Rollers of belt conveyers and cableways for light loads	Bearings of all sizes				$Д_n$
		Normal or heavy duty conditions (bearing clearance adjusted by means of inner ring)	Front and rear wheels of automobiles and tractors, wheels of trucks, aircraft, etc.					$Д_n, X_n$
		Normal or heavy duty	Idler rollers, pulleys, rollers for roller tables, rollers for aircraft controls					C_n
Rotating shaft	Circulatory	Light or normal duty	Centrifuges, turbocompressors, centrifugal pumps, fans, electric motors, reducing gear units, machine tool speed gear boxes	up to 40	up to 40	up to 100	up to 40	$H_n, П_n, П_{1n}$
				up to 100	up to 100	over 100	up to 100	$H_n, П_n, H_{1n}$
				up to 250	up to 250	up to 250	up to 250	T_n
		Normal or heavy duty	Electric motors, output up to 100 kW, machine tools, turbines, crank gear, automobile or tractor transmissions, machine tool spindles, reducing gear units	up to 100	up to 40	up to 100	up to 100	$H_n, П_n, H_{1n}$
				over 100	up to 100	over 100	up to 180	T_n, T_{1n}
					up to 250		up to 250	$Г_n, Г_{1n}$
		Heavy duty or impact loads	Railway and tramway axle boxes, engine crankshafts, electric motors (output over 100 kW), trucks of travelling cranes, rollers for roller tables, large machine tools, crushers	Bearings of all sizes				$Г_n, T_n$
			Railway and tramway axle boxes, rolls of rolling mills	Bearings mounted on clamping-stripping sleeves, all diameters				B_3
		Normal duty	Transmission shafting and assemblies not requiring accurate running	Bearings mounted on taper clamping sleeves, all diameters				B_3 B_4

Table 41

EXAMPLES OF THE SELECTION OF HOUSING MOUNTING FITS FOR BALL AND ROLLER BEARINGS

(Housings of cast-iron or cast-steel)

General conditions determining selection of fit			Names of machines and bearing assemblies	Fits
Rotating shaft or rotating housing	Type of loading of outer ring	Operating conditions and other remarks		
Rotating housing	Circulatory	Normal duty	Rollers of belt conveyers, idle rollers	T_n, H_n
		Normal or heavy duty	Rollers of roller tables, compressor crankshaft bearings, trucks of travelling cranes	$Г_n$
		Normal or heavy duty (for accurate assemblies)	Spindle bearings of heavy duty machine tools (milling machines, horizontal boring, drilling and milling machines)	$Г_{1n}, T_{1n}$
		Heavy duty (for thinwall housings)	Plane wheels, front and rear automobile and tractor wheels	P_7
Rotating shaft	Local	Normal duty	Centrifugal pumps, fans, centrifuges. Machine tool spindle bearings	$П_n, П_{1n}$
		Normal or heavy duty (movement along axis impossible)	Taper-roller bearings of transmissions and rear axles of automobiles and tractors	$T_n, П_n, H_n$
		Normal or heavy duty	Majority of bearings of general machine building, reducing gear units, railway and tramway axle boxes	C_n
	Local or oscillatory	Light or normal duty (split housing)	Transmission shafting and assemblies not requiring accurate running	C_{3n}
		Normal or heavy duty	Spindle bearings of grinding machines, engine crankshaft main bearings	$П_n, П_{1n}, H_n, H_{1n}$

AXIAL CLAMPING AND RETAINING METHODS FOR ANTI-FRICTION BEARINGS MOUNTED ON SHAFTS OR IN HOUSINGS

Endwise movement of bearing rings along the bearing seats, under the action of a thrust load, can be prevented by employing shaft end or intermediate clamping members to retain the inner ring on the shaft.

The larger the magnitude of the thrust load and the higher the speed of one of the bearing rings, the more reliably should the bearing ring be clamped.

The most widely used methods for axially clamping the inner and outer rings of bearings in their assemblies are illustrated lower and accompanied by brief descriptions.

1. CLAMPING INNER RINGS

Clamping by means of a tongued lock washer and a locking nut in which the inner tongue of the washer enters a slot in the shaft and one of the external wings is bent into a slot of the nut (Dimensions of nuts and lock washers are in accordance with OST 26002) (Fig. 21).

Clamping by means of two nuts, one of which acts as a lock nut. A lock washer is installed between the nuts to avoid rotation of the main nut when the lock nut is being tightened (Fig. 22).

Retaining by means of a split ring (of 2 halves). After installation in a groove of the shaft, the halves are fastened together with wire (Fig. 23).

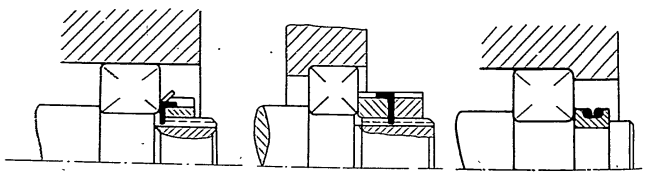


Fig. 21 Fig. 22 Fig. 23

Retaining by means of a snap ring (round or rectangular cross section) fitted into a groove in the shaft (Fig. 24).

Clamping by means of a split nut locked by a screw (Fig. 25).

Clamping (on a smooth shaft) by means of a tapered clamping sleeve, locking nut and tongued lock washer. Used for self-aligning ball and roller bearings (clamping sleeve dimensions in accordance with GOST 5557-50) (Fig. 26).

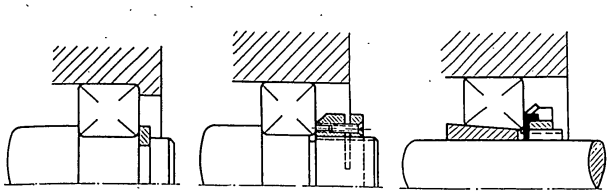


Fig. 24 Fig. 25 Fig. 26

Clamping by means of a stripping sleeve, nut and lock washer. Used for self-aligning roller bearings when the shaft extension is over 80 mm in diameter (Fig. 27).

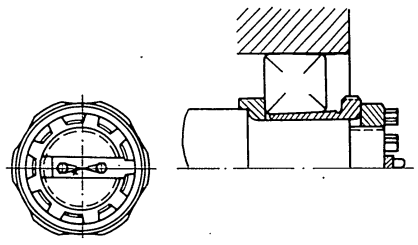


Fig. 27

Clamping by means of a form end washer, three bolts and a special lock washer. If there is no vibration, the bolts can be prevented from loosening by a wire passed through holes drilled in their heads and twisted (Fig. 28).

Clamping by means of a heavy end washer, three bolts with spring washers or wire (Fig. 29).

Clamping by means of a form nut which is at the same time a member of the labyrinth closure (Fig. 30).

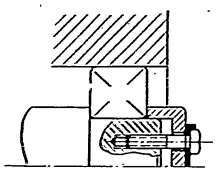


Fig. 28

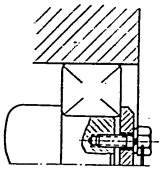


Fig. 29

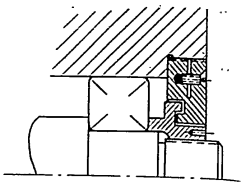


Fig. 30

Clamping by means of a sleeve with a shoulder and a form washer. Used on a smooth shaft (Fig. 31).

Clamping by means of a plain thick washer and a castle nut with a split pin (Fig. 32).

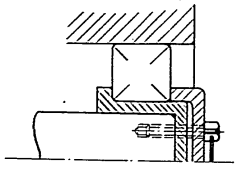


Fig. 31

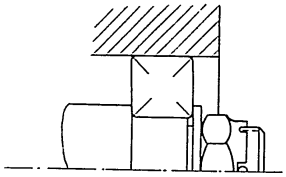


Fig. 32

Clamping by means of a sleeve with a shoulder, lock washer and nut. The sleeve is fastened to the shaft by three bolts (Fig. 33).

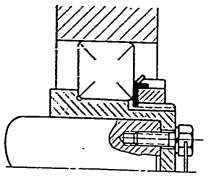


Fig. 33

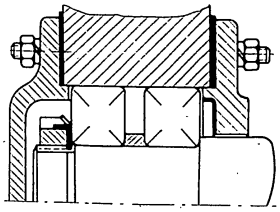


Fig. 34

Clamping two bearings by means of a nut, lock washer and a spacer between the inner rings (Fig. 34).

2. CLAMPING OUTER RINGS

Clamping by means of stamped housing cover, a washer and bolts (Fig. 35).

Retaining by means of a snap wire or ring (circular or rectangular cross section) inserted in a groove in the housing bore (Fig. 36).

Retaining by means of a snap ring inserted in a groove on the outside diameter of the bearing (Fig. 37)

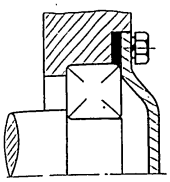


Fig. 35

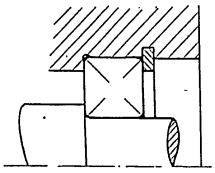


Fig. 36

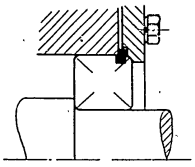


Fig. 37

Clamping by means of the flange on the outer ring of the bearing (for taper roller bearings) (Fig. 38).

Clamping by means of a housing cover with a narrow flange fitting into the housing bore (Fig. 39).

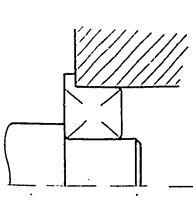


Fig. 38

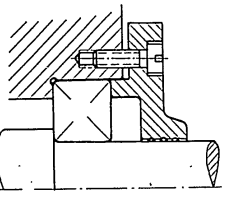


Fig. 39

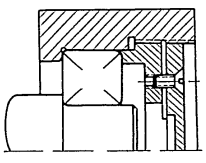


Fig. 40

Clamping by means of a housing cover with external threads and a slot. The cover is locked by a screw. (Fig. 40).

SEALS AND CLOSURES

Seals and closures of bearing assemblies are designed to prevent the loss of lubricant from the bearing and to protect it from dust, dirt, moisture, acid fumes and other injurious matter which may enter the bearing.

Insufficient protection of the bearing from the surrounding atmosphere or adjacent machine parts may considerably shorten its term of service. Besides this, the leakage of lubricant is not only detrimental to normal operating conditions for bearings but soil the mechanism and often result in spoilage of the product manufactured on this machine.

The construction of a sealing device or closure should be as simple as possible but at the same time it should be sufficiently reliable for the given operating conditions.

The more complex and expensive designs of seals and closures can be suitably applied only for heavy bearing duty when the use of the simpler types of closures will not ensure normal operation of the bearing.

The more widely used types of sealing devices and closures for bearings are:

1. Felt seals;
2. Annular clearances and grooves (grease grooves);
3. Protective washers or flanges;
4. Oil slinger rings and grooves;
5. Cup seals;
6. Labyrinths closures.

The selection of a proper type of bearing seal depends on:

1. The nature of the surrounding atmosphere;
2. Design features of the bearing assembly;
3. Speed of the bearing (peripheral speed on shaft);
4. Type of lubricant: fluid (mineral oil) or grease;
5. Operating temperature of bearing.

Fig. 41 a illustrates the most common designs of single and double ring felt seals for split housings while Fig. 41 b shows a felt seal arranged in the removable cover of the housing.

A seal design providing for periodical or constant compression of the felt ring to compensate for wear is shown in Fig. 42.

Felt seals are, for the most part, designed to protect bearings operating in not very dusty conditions and with grease for lubricant. They can, however, be used

in a combination with other types of seals for fluid lubricant. Fig. 43 illustrates a combination system of sealing; an oil slinger flange has been added to the felt seal. This flange, during rotation, throws the oil into a recess in the housing cover

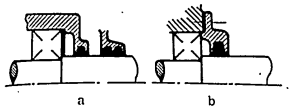


Fig. 41

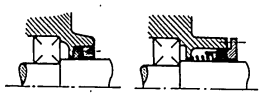


Fig. 42

and so prevents leakage. The narrow annular clearance between the shaft and the housing cover is filled with grease. This increases the reliability of the seal in protecting the bearing from dirt from the outside.

The devices illustrated in Figs. 41 to 43 may be employed for mechanisms operating in a comparatively clean and dry surrounding atmosphere.

The closure illustrated in Fig. 44 is a combination of a felt seal and a labyrinth. The labyrinth clearance should in all cases be filled with grease without regard for the type of lubricant in the bearing (labyrinth closures are more fully illustrated below).

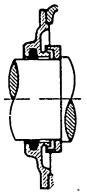


Fig. 43

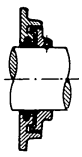


Fig. 44

Felt seals may be employed if the peripheral speed of the shaft*, where it contacts the seal, does not exceed 4 to 5 m per sec for ground shafts and 7 to 8 m per sec for polished shafts and high quality felt. At higher speeds, the friction of the felt on the shaft causes a high temperature which hardens the felt and decreases the efficiency of the seal.

* In all the types of seals and closures described here, the shaft is considered as rotating in all cases.

Fig. 45 illustrates the more widely employed designs of closures in which annular clearances and grooves are used as sealing member. This type of closure is based on the creation of a small annular clearance, between the housing cover and the shaft (Fig. 45 a), filled with grease which prevents the entry of foreign matter into the bearing.

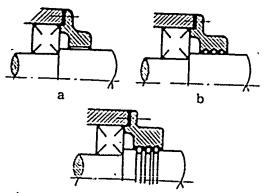


Fig. 45

Grease grooves are provided in the housing cover (and often on the shaft also) to facilitate retaining the grease in the annular clearance (Figs. 45 b and 45 c).

This type of closure can be used in all cases when the bearing is lubricated with grease and operates in comparatively clean surroundings.

The peripheral speed of the shaft is not limited for this type of closure. The thinning-out temperature of the grease filling the annular clearances should be higher than the working temperature of the bearing assembly to prevent it from running out of the clearance.

Protective washers and flanges, most frequently met with in practice, are shown in Fig. 46. Protective washers may be stationary (stamped "a" and

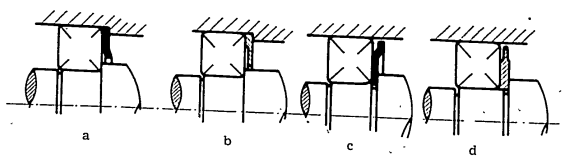


Fig. 46

turned "b") or rotary (stamped "c" and turned "d"). The sealing action of stationary washers is negligible. Due to the narrow annular clearance between the washer and the shaft, stationary washers mechanically prevent the lubricant from leaking out and the entry of foreign matter into the bearing.

Rotary washers or flanges, due to the centrifugal force, throw off the oil or foreign matter which gets on the washer. This type operates more efficiently than the stationary type.

Rotary flanges and washers are the more reliable, the higher their peripheral speed.

Stationary washers are employed, in the majority of cases, for bearings with grease lubrication while rotary washers are used for any type of lubrication.

Oil slinger rings and grooves on shafts have found wide application in preventing the leakage of oil from bearings (Fig. 47).

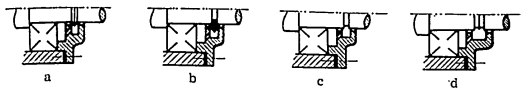


Fig. 47

Oil, passing out of the bearing, runs on to the ring or into the groove and is thrown by centrifugal force into a recess of the housing cover from where it drains back into the bearing through a specially provided channel. Oil slinger rings can be made integral with the shaft (Fig. 47 a) or installed in a groove on the shaft (Fig. 47 b). They may be of the single (Fig. 47 c) or double type (Fig. 47 d). These devices provide the highest efficiency at high peripheral speeds and only in assemblies lubricated with fluid lubricant (oil).

In cup seals, the sealing member is a cup of leather, rubber, plastics, etc. which may be enclosed in a metal holder. The contact of the seal on the shaft is provided either due to the elasticity of the cup (Fig. 48) or by the aid of an annular

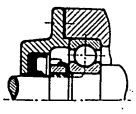


Fig. 48

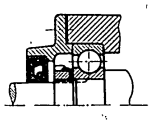


Fig. 49

coil spring (garter spring) (Fig. 49) which passes the cup to the rotating shaft. If the chief aim is the retention of the lubricant, the seal should be applied cupped inward toward the bearing. If it is necessary to protect bearing from external dirt, it should be cupped in the opposite direction. In cases, when both the above requirements are present, a double seal is employed with the separate seals cupped in both directions (Fig. 50).

For ordinary quality of finish of the friction surfaces of the shaft, the use of cup (leather) seals is permissible for peripheral speeds of the shaft not exceeding 6 to 7 m per sec. If the shaft has a fine finish, speeds up to 15 m per sec may be allowed.

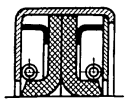


Fig. 50

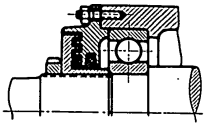


Fig. 51

This type of seal operates efficiently under the most difficult conditions with either grease or oil as the lubricant.

Labyrinth closures (Fig. 51) operate very reliably under comparatively difficult bearing operation conditions. The sealing action is based on the provision of a tortuous path of small clearance between the rotating and stationary members of the closure. This path is sealed by a film of grease. This type of closure has the following considerable advantages over felt and cup seals: low internal friction of the lubricant, absence of members subject to wear, simple maintenance and unlimited peripheral speeds of the shaft.

Labyrinth closures combined with other types of seals (felt seals, protective washers, grease grooves, oil slingers, etc.) are the most reliable and effective of all types of seals. In accordance with the design of the assembly, either axial (Fig. 52) or radial (Fig. 53) labyrinth closures may be applied. In cases where

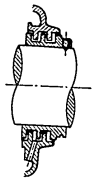


Fig. 52

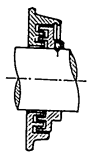


Fig. 53

temperature extensions of the shaft are possible, the use of axial labyrinth closures is excluded due to the possible contact between the rotary and stationary members of the closure.

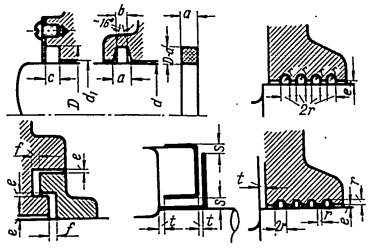
Labyrinth closures operate equally effectively for both grease and oil lubricants. In either case, the labyrinth paths should be filled with grease.

Not one of the above sealing devices or closures can be considered as a universal type. Consequently, in engineering practice and especially for difficult operating conditions, a combination arrangement is often employed comprising the above described main elements suitably selected to provide the highest efficiency in operation.

Recommended dimensions for some types of seals and closures, for normal operating conditions, are given in Table 42.

Table 42

DIMENSIONS FOR FELT SEALS, CLEARANCE AND LABYRINTH CLOSURES, mm



$f=5e$ $t=2,5s$

Fig. 54

d	d_1	D	a	b	c	e	r	s	d	d_1	D	a	b	c	e	r	s
10	11	23	6	4.3	5	0.2	1.5	0.6	80	81.5	103	12	9	10	0.3	2	0.8
15	16	28	6	4.3	5	0.2	1.5	0.6	85	87	108	12	9	10	0.4	2	1
20	21	33	6	4.3	5	0.2	1.5	0.6	90	92	113	12	9	10	0.4	2	1
25	26	38	6	4.3	5	0.2	1.5	0.6	95	97	118	12	9	10	0.4	2	1
30	31	43	6	4.3	5	0.2	1.5	0.6	100	102	123	12	9	10	0.4	2	1
35	36	48	6	4.3	5	0.2	1.5	0.6	105	107	128	12	9	10	0.4	2	1
40	41	59	9	6.5	8	0.2	1.5	0.6	110	112	133	12	9	10	0.4	2	1
45	46	64	9	6.5	8	0.2	1.5	0.6	120	122	154	16	11.5	13	0.5	2.5	1.2
50	51.5	69	9	6.5	8	0.3	2	0.8	130	133	165	16	11.5	13	0.5	2.5	1.2
55	56.5	74	9	6.5	8	0.3	2	0.8	140	143	178	19	14	16	0.5	2.5	1.2
60	61.5	79	9	6.5	8	0.3	2	0.8	150	153	188	19	14	16	0.5	2.5	1.2
65	66.5	84	9	6.5	8	0.3	2	0.8	160	163	198	19	14	16	0.5	2.5	1.2
70	71.5	89	9	6.5	8	0.3	2	0.8	170	173	208	19	14	16	0.5	2.5	1.2
75	76.5	98	12	9	10	0.3	2	0.8	180	183	218	19	14	16	0.5	2.5	1.2

LUBRICATION OF BALL AND ROLLER BEARINGS

1. FUNCTIONS OF A BEARING LUBRICANT

The chief duties of an antifriction bearing lubricant are:

1. To decrease sliding friction between the balls or rollers and the retainer, as well as between the ring lips and the ends of the rollers;

2. To decrease the sliding friction between the rolling members and the race, due to the elastic contact deformation in the bearing under load;

3. To prevent corrosion of the high-quality finish of the rolling members and the bearing races;

4. To aid in sealing the bearing against the entry of abrasive dust or other foreign matter;

5. To facilitate uniform distribution of heat caused by friction to all parts of the bearing and to dissipate heat from the bearing.

2. QUALITY OF LUBRICANTS SUITABLE FOR ANTIFRICTION BEARING LUBRICATION

Lubricants used for ball and roller bearings must satisfy the following requirements:

a) High stability, both chemical and physical;

b) They should not contain mechanical impurities or moisture in excess of the quantities stipulated in the U.S.S.R. Standards or Specifications;

c) They should not cause corrosion and should protect the bearing from corrosion. The lubricant, consequently, should contain no free acids and other corrosive substances;

d) Greases should possess good plastic properties which will facilitate in resisting the action of centrifugal forces that have a tendency to throw the lubricant out of the bearing during operation. The grease should not separate into its constituents nor should soap separation take place. Such separations would leave hard soap deposits which cause premature breakdown or even an accident. During operation, grease should maintain its initial consistency, plasticity and smooth, non-fibrous, texture.

e) The viscosity of fluid mineral oils should not be sharply changed during operation. It is desirable that the viscosity is not to be sharply affected by temperature changes. Oil should be well purified, possess high lubricating properties and the internal friction should be at a minimum.

3. SELECTION OF LUBRICANTS FOR ANTIFRICTION BEARINGS

Either oil or grease may be used for antifriction bearing lubrication, the choice depending on the operating conditions and design of the equipment to which the bearings are applied.

Fluid lubricants — oils are the most efficient bearing lubricants but elaborate oiling devices and closures are frequently required to provide the necessary hermetic properties.

When selecting a grade of oil, it is necessary to take into consideration the load, speed and operating temperature of the bearing. The higher the load and temperature, the higher the viscosity of the oil should be. For small loads, low temperatures and high speeds low viscosity oils are used.

A list of mineral oils, which can be used for lubricating ball and roller bearings, are given below.

No.	Grade of oil	GOST or Specification No.
1	Velosit	GOST 1840-42
2	Tsiatim-1M	Spec. 327-48
3	Vaseline oil-МВП	GOST 1805-42
4	Transformer oil	GOST 982-43
5	Spindle oil-2 and 3	GOST 1837-42
6	Spindle oil-АУ	GOST 1642-50
7	Machine oil-Л, С and СУ	GOST 1707-42
8	Cylinder oil-2	GOST 1841-42
9	Bright stock	Spec. 233-47
10	Aviation oil, МС-14, МС-20, МС-24, МК-22	GOST 1013-49
11	Motor oil 4, 6, 10, 18	GOST 1862-42
12	Turbine oil-Л, УТ and Т	GOST 32-47

Animal and vegetable oils, in their pure form, are not recommended for lubricating ball and roller bearings as they contain a large amount of organic acids which may cause corrosion in the operation of the bearing. Besides this, such oils have a tendency to change their chemical and physical properties during operation and especially at the high temperatures and churning that take place in bearings.

4. METHODS FOR APPLYING OIL TO BEARINGS

Oil can be applied to ball and roller bearings in the following manner: 1) From drop feed oil cups when a definite supply of oil to the bearing is required (a few drops per minute); 2) By means of wick lubricators, when the bearings are mounted

on vertical shafts; 3) By means of an oil reservoir with the balls or rollers dipping into the oil or by splash feed from other members dipping into a common reservoir with the bearings and 4) By a circulatory system.

When a bearing is lubricated by dipping into an oil reservoir, the oil level should not exceed the axis of the lower ball or roller for speeds up to 3000 r. p. m. At speeds over 3000 r. p. m. the oil should just reach the lower ball or roller.

It is necessary to be very careful when designing a method for applying oil to bearings operating at high speeds. Such bearings require a constant supply of oil in small amounts for ordinary operating temperatures (70°—80° C) and increased quantities (up to 3 litres per min) when it is necessary to dissipate heat from a bearing which overheats. In the latter case, it is better to feed the oil by means of pressure spraying or as an oil mist created by mixing the oil in a definite proportions with dry compressed air.

As oils are liquids, suitable seals must be provided to prevent their leakage from the housing. This matter must be given special attention. In cases where the operating conditions and the design allow the use of felt seals, the felt should be cleaned of dust, dirt and other abrasive substances before cutting out the rings. The edges of rings should be cut off evenly. Before installing the felt seals in the retaining grooves, they should be dehydrated and impregnated with mineral oil. The latter is accomplished by immersing them in an oil bath at a temperature of 105°—110° C for 25 to 30 min. The same oil is used for impregnating the rings as for lubricating the bearings during operation.

Recently, oil-resistant rubber (sevanit) seals have found wide application. They properly prevent oil leakage from the bearing housing and protect it from the entry of foreign matter, dust and dirt.

5. GREASE LUBRICATION

Greases are plastic colloidal systems which retain their form at normal temperatures (20° to 30° C) but easily change it by the action of small external forces. Greases form a plastic seal between the shafts and housings of bearings to prevent the entry of abrasives and dirt to the working surfaces of the bearing. This is of utmost importance when the bearing housing is surrounded by an atmosphere containing much dust and dirt.

In composition, greases are complex formations consisting chiefly of mineral oil and a thickener.

The most widely used greases have soaps, that is, the salts of natural or synthetic fatty acids, as thickeners.

Commercial greases are produced with either calcium, mixed calcium and sodium, sodium, aluminium, lithium, lead or other soap bases.

In accordance with the soap base of the grease, the latter possesses specific properties.

Calcium soap greases (fatty solid oil Л, М and Т according to GOST 1033-41) have a melting point below 90° C. They are practically not water soluble and consequently moisture resistant. They can be used for excessive moisture conditions when the operating temperature of the bearing does not exceed 55°—60° C. Calcium soap greases, which contain water as a necessary structural element, cannot operate for lengthy periods of time at temperatures of 55°—60° C and especially above this temperature. At this temperature the structurally combined water is evaporated. In this case the grease separates into its constituents, the more liquid components leak out through the housing clearances and the soap densifies, often to a hard black deposit.

Sodium soap greases; Konstalin УТ-1 (GOST 1957-53), Konstalin СК-У ТС-1 (GOST 5703-51) and grease КВ-УТМ (GOST 2931-51) are produced, as a rule, of refined mineral oils and sodium soap. These greases are very sensitive to moisture. When mixed with water, they form an emulsion of the oil-water type that is washed off the working surfaces of the bearing. For this reason sodium soap greases should be used when the bearing operates in dry surroundings.

Sodium base greases have a higher melting point than calcium greases. The melting point of sodium base greases varies with the various grades, but may be as high as 175° C.

Sodium soap greases are very stable. They possess the property of being solidified again into grease upon being cooled after having been melted. At this, they do not lose their lubricating properties.

Mixed calcium and sodium soap greases, No. 1-13 УТВ (GOST 1631-52) and ИП 1 (GOST 3257-53), contain a predominant quantity of calcium soap. This renders them less sensitive to moisture than sodium base greases and they may be used in the presence of excessive moisture.

Grease No. 1-13 may be used at working temperatures up to 80° C and grease ИП 1 (for rolling mills) may be used at working temperatures up to 60° C.

The oil industry produces a number of greases for special purposes.

Grease Tsiatim 201 — УТВМ-1 (Spec. 326-50) is used for lubricating small size bearings operating in a wide range of temperatures above and below 0° C. This grease is also used for completely sealed (double seal) bearings. These bearings are lubricated during assembly at the Works and the lubricant cannot be changed or replenished during operation. Completely sealed bearings must not, under any circumstances, be washed in gasoline (petrol) or kerosene.

When greases are used as bearing lubricants, leakage can be prevented without the use of elaborate seals, the bearing will operate for considerable periods without changing the lubricant and the bearing is effectively protected against the entrance of foreign materials from the surroundings.

Greases are not recommended in cases where special requirements are made concerning minimum friction during operation.

The amount of grease that should be applied into the housing must be determined from practical consideration in each actual case.

An excessive amount of grease in the bearing always causes a rise in working temperature. Therefore, if a suitable amount of grease is supplied to the bearing and one is certain of its proper quality, an additional amount of grease should not be added in the housing if a sharp rise in temperature is noted during operation. Instead of this, the reason for the high temperature must be found out and eliminated.

A slight rise in temperature may always be possible when beginning operation with a new bearing. Under normal operating conditions, however, the temperature should fall after a few hours and remain stable during subsequent operation.

STORAGE AND RENEWAL OF PACKING AND CORROSION PREVENTING OF BEARINGS

The main cause of damages to bearings, before they are mounted, is corrosion.

Even the very slightest darkening or traces of corrosion on bearing races, balls or rollers will result in premature destruction of the bearing. The rules for handling bearings in storage must be strictly followed to maintain them in a proper condition.

As a protection against corrosion, the surfaces of the bearing are coated with an uninterrupted layer of anti-corrosive lubricant (slush).

Common grease УН3 (GOST 3005-51) or petrolatum УН (GOST 782-53) is used as this anti-corrosive lubricant. If bearings have been properly packed and stored, these lubricants can reliably protect bearings from corrosion for a period of 12 months. To maintain bearings in a proper condition, they must be inspected periodically and repacked after from 9 to 12 months of storage. Repacking of bearings provides for:

cleaning of bearings to remove the old lubricant;

coating of the bearings with a fresh layer of lubricant;

packing of the lubricated bearings.

When washing the bearings before repacking, besides removing the old lubricant, all of the surfaces should be carefully cleaned of dirt which may have entered the bearing through damaged packing.

Depending on the quantity of bearings, undergoing repacking, and the available equipment; bearings may be washed in gasoline (petrol), hot mineral oil or emulsions (solvents).

1. WASHING OF BEARINGS IN GASOLINE (PETROL)

An adequate quantity of gasoline and 6 to 8% (by volume to gasoline) light mineral oil, as for instance industrial oil "12" or "20" (GOST 1707-51) are poured into a clean bucket or tank. To remove the old lubricant, the bearing (medium and small sizes) is immersed in the gasoline, the inner ring is held while the outer ring is slowly rotated until the retainer, races and rolling elements are cleaned of grease.

If the bearing is very dirty, it should be cleaned in gasoline, without rotation, until the most part of the dirt is removed. This prevents the hard particles of dirt from damaging the polished working surfaces of the bearing.

If a large number of bearings are to be cleaned at the same time, it is necessary to provide two baths, one for preliminary and the other for finish washing.

When the bearing is clean, it is removed from the tank, the gasoline is allowed to run off and it is placed to dry on a bench covered with clean paper.

2. WASHING IN HOT MINERAL OIL

This method of washing bearings has found wide application. It is especially convenient to wash large sized bearings with hot oil.

In this method, the bearings are washed in metal baths heated by electricity or steam. The dimensions of the bath depend on the quantities and sizes of bearings to be washed. A metal electrically-heated bath of welded design with a cover and thermometer is shown on Fig. 55.

A grating, on which the bearings are placed, is arranged at a distance of 50—70 mm above the bottom. This prevents the bearings from contacting the highly heated bottom and the settled dirt.

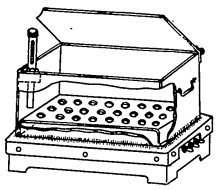


Fig. 55

Washing is carried out by lowering the bearings on metal hooks into the bath containing clean mineral oil (industrial oil "12" or "20"), heated to 95°—100° C for from 5 to 20 min. During immersion in the oil, the bearings are shaken a few times.

As the bearings become heated, their protective grease melts and mixes with the heating oil. After washing, the bearings are removed from the bath and placed on a clean pan to allow the oil to drain off.

Very dirty bearings should be cleaned in two baths providing a preliminary and finish wash.

For washing a large number of small bearings in hot oil, it is convenient to use special baskets made of wire screen. The basket containing the bearings is immersed into the hot oil bath and shaken to facilitate the washing.

3. WASHING IN A WATER SOAP SOLUTION

When repacking large lots of bearings, to economize oil and gasoline, they can be washed preliminarily in a 2—2.5% aqueous olein-potassium or olein-sodium soap solution at a temperature of 75° to 95° C followed by obligatory subsequent washing in hot oil.

Soaps made of vegetable oils or fatty acids may also be used.

During washing, the bearings are hung on hooks or arranged in baskets, immersed into the bath and shaken to speed up the washing.

The washed bearings are hung above the bath so that the excess soap solution drains off and then carried to the second bath.

In the second bath, the bearings are washed in "industrial oil 12 or 20" or "turbine oil 22" (GOST 32-53) at a temperature from 90° to 100° C.

If the bearings are to be inspected, they should be washed in gasoline after having been washed in the second bath and cooled.

4. SLUSHING OF THE BEARINGS

Bearings, washed by means of one of the above methods, should be subsequently washed in a bath of cannon grease at a temperature from 110° to 120° C to completely remove all moisture.

After the grease has drained off and the bearings have cooled to some extent, they are carried to another bath containing cannon grease at a temperature from 60° to 70° C or petrolatum at a temperature from 55° to 60° C.

Immersion for a short time (20—30 sec) in this bath coats the bearings with a layer of anti-corrosive grease.

5. REPACKING OF THE BEARINGS

1. After washing and slushing of the bearings they are placed on metal pans until the grease solidifies.

2. The cooled bearings are wrapped in moisture proof paper and placed in cartons, boxes or on the shelf.

3. During reslushing and packing, bearings should not be touched by bare hands as corrosion may appear at the places touched due to the perspiration on the hands. Bearings should be handled by means of oiled paper or metal hooks. The grease, paper and auxiliary tools should be clean.

6. STORAGE ROOMS

Rooms for the storage of bearings should be clean, dry and isolated from dust, acid fumes and other volatile matter which may cause corrosion. The storage room should be suitably equipped, have central heating and ventilation and be

provided with the necessary fire-prevention measures. The air temperature in the room should be constant and in the range from 5° to 25° C.

It is not advisable to store bearings at lower temperatures as the grease may crystallize and cracks may appear in the grease coating through which moisture might penetrate and cause corrosion.

On the other hand, the temperature should not be high enough to melt the grease and allow it to run off the bearing surfaces. The daily fluctuation in temperature should not exceed 5° C.

Sharp fluctuations in temperature in a short period of time are not permissible as the bearings may "sweat" and be subject to corrosion.

The relative humidity should not exceed 70%.

The conditions under which bearings are being stored should be systematically checked.

The area of the storage room depends upon the number and sizes of bearings in storage.

Centralized warehouses for the storage of large lots of bearings should satisfy the stipulations of fire prevention regulations and comprise:

a) a vestibule,

b) a separate room for the servicing personnel,

c) an isolated room for repacking of bearings,

d) a room for storing of bearings on shelves or in boxes.

MOUNTING AND DISMANTLING OF BALL AND ROLLER BEARINGS

Years of experience in the application of antifriction bearings have shown that improper mounting is one of the main reasons for premature failure of bearings in operation. It is consequently imperious that each maintenance man should know and follow the chief mounting rules for ball and roller bearings indicated below.

1. PREPARING OF BEARING SEATS FOR MOUNTING

The bearing seats should have a carefully machined cylindrical surface with dimensions corresponding strictly to those indicated in the shop drawings.

The presence of dents, traces of corrosion, metal chips and abrasive particles on the bearing seats make bearing mounting very difficult and in some cases, impossible.

Before mounting, it is necessary to examine carefully the bearing seats on the shaft and in the housing, faces of the shoulders, fillet radii and machine parts associated with the bearings (flanges, spacers, sleeves, etc.).

a) Dents, burrs and corrosion spots discovered on the bearing seats should be carefully removed.

Dents and burrs are removed with a smooth file and then the file scratches are eliminated with fine emery cloth No. 000.

b) All lubricating channels in the shaft and housing should be checked, cleaned out and blown through with compressed air.

c) After eliminating the machining defects, the bearing seats and machine parts associated with the bearings should be cleaned of chips, sawdust and sand, washed with kerosene, wiped dry with clean rags and inspected to check whether the dimensions correspond to those on the shop drawings.

d) Bearing seats and associated machine parts that are incorrectly machined, that have taper and out-of-roundness exceeding the tolerances and a poor finish must not be accepted for mounting.

Inspection must be carried out with gauges and tools of the proper accuracy.

e) Parts of bearing assemblies in which the noted defects have not been eliminated should not be accepted for mounting.

All properly machined bearing seats in the housings and on the shafts, as well as the parts associated with the bearings should be coated before assembly with a thin layer of oil and be protected from dirt.

2. HANDLING OF ANTIFRICTION BEARINGS BEFORE MOUNTING

a) The bearing should not be taken out of its packing nor should the protective grease be washed off until just before mounting. It should then be unpacked and washed in gasoline or hot mineral oil.

The washing of the bearings may be omitted if the packing is undamaged and the grease has not hardened.

b) To avoid dirt in the bearing, it should not be placed directly on the bench after unpacking. If necessary, it should be placed on a piece of clean paper.

c) To avoid corrosion, the washed bearing should not be held in the bare hand. Clean paper or cloth should be used for this purpose.

The use of bearings as gauges for machining bearing seats is not recommended. Only universal measuring tools or gauges should be used.

3. MOUNTING OF BEARINGS

a) Bearings should be mounted on shafts by means of a mounting sleeve (soft metal tubing) and a hydraulic or screw press, a mounting sleeve and a hammer or by means of special mounting devices.

The use of a press in mounting antifriction bearings is strongly recommended, as its use ensures a smooth, shockless pressure on the mounted bearing and there is no danger of damaging associated parts (seals and oil catcher washers). For small sized shafts, mounting bearings with a press can be carried out by two methods: either the shaft is set up stationary and the bearing is pressed on it or the shaft is pressed into the stationary bearing.

Pressing a bearing on a shaft by means of a press and mounting tube is shown in Fig. 56.

If the shaft is pressed into the shaft, the inner ring of the bearing should be set up on a face block having a hole slightly larger than the bearing bore (Fig. 57).

Special care must be taken to align the shaft and bearing properly as otherwise the mounting will be difficult and the ground surface of the shaft will be burred or distorted. In some cases the inner ring of the bearing may be ruptured.

The pressing force should be applied only to the bearing ring that is being mounted with an interference fit. This force should not be transmitted through the balls or rollers.

If a press is not available or cannot be used, the most efficient method for mounting bearings is by means of a mounting tube with a plug (Fig. 58) and a hammer.

The spherical form of the plug ensures a more proper distribution of the pressing force on the face surface of the ring.

A flange is welded to the mounting tube to protect the bearing from particles of metal and dirt which may fall on the bearing from the tube walls and plug during the hammer blows.

The inside diameter of the tube should be slightly larger than the seat on the shaft and the end should be carefully squared.

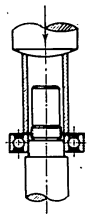


Fig. 56

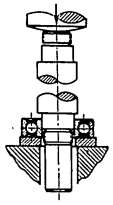


Fig. 57

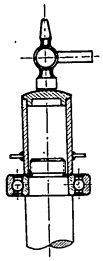


Fig. 58

To facilitate mounting bearings on shafts it is advisable to heat them in hot mineral oil. The oil temperature should not exceed 100° C.

b) If the bearing is mounted with an interference fit in the housing (and a clearance fit on the shaft), the above mounting methods may be used. In most cases, special mounting tubes or arbors, similar to those used for mounting bearings on shafts but with suitable dimensions, are used for pressing bearings into housings.

c) When it is necessary to mount the bearing with an interference fit both on the shaft and in the housing, a flange is welded to the open end of the tube to apply the force simultaneously to both rings of the bearing (Fig. 59). In other cases, a special solid arbor is used.

To facilitate mounting and to prevent damage to bearing seats when the outer rings of bearings are mounted into housings with drive fits, the housings, in some cases, are heated to a temperature of 100° C in an oil bath or (for large sizes) in a muffle furnace.

d) When mounting the bearing, care must be taken to fit it tight against the shoulder face without any clearance. To ensure such a fit the bearing should be driven, with a hammer through the mounting tube, firmly against the shoulder while the bearing is cooling.

e) For proper operation of all bearings and especially those which are not self-aligning, the axes of the shaft and housing must coincide precisely. If the

axes do not coincide, the rolling elements may be overloaded due to their jamming (Fig. 60). This will cause premature failure of the bearing. For this reason, the bearing seats should be accurately aligned before mounting.

f) As a result of improper machining of the bearing seats in split housings, a clearance may appear between the halves of the housing when the bearing is installed (before tightening the housing cover bolts) as illustrated in Fig. 61. Upon tightening the bolts, the outside ring of the bearing will be distorted and the rolling elements (balls or rollers) will be clamped between the bearing rings in two opposite zones. Such a bearing is subject to premature failure in operation. Consequently, housings with this defect should be corrected.

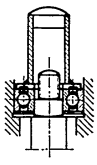


Fig. 59

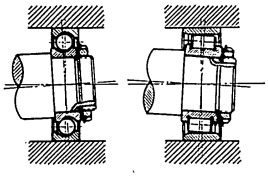


Fig. 60

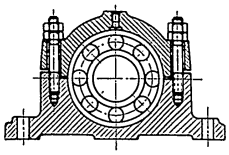


Fig. 61

g) It is very important in finishing the mounting of bearing assemblies in which adjustable (radial-thrust or thrust ball and roller) bearings are installed, to properly adjust the axial clearance of the bearings.

This axial clearance adjustment should be carried out with extreme care. Not only the bearing life and normal operation of the mechanism, but also the quality of the workpiece machined will depend on this adjustment if the bearings are installed in such assemblies as, for instance, machine tool spindles.

h) After mounting the shaft with bearings in the housing and assembly of parts associated with the bearings, it is necessary to check whether rotating parts clear stationary parts (washers, covers, spacers, lubricating devices, etc.) and whether oil is properly supplied to the bearings.

It is necessary to check carefully the assembly of sealing devices and especially the clearances in labyrinth closures.

i) Before the test run, the mechanism should be turned over by hand if possible. The bearings should run easily without jolts or jamming. If it is difficult to rotate the mounted bearings, the reason causing this abnormal condition should be ascertained and eliminated.

The temperature of the bearings and the running noise should be noted during the test run. A sounding tube or rod or even a screwdriver is held to the

machine body and the ear is applied to the end of the tube or handle of the screwdriver to determine the running noise. A normally mounted bearing should operate without discernible noise or shocks. A toneless broken noise is an indication of dirt in the bearing. A whistling noise indicates that the bearing is insufficiently lubricated or that some parts of the bearing assembly are interfering with each other.

Improper mounting of bearings is, in most cases, accompanied with a rise in temperature. A normal working temperature of a bearing is one in which its temperature does not exceed the ambient temperature by more than 60° C and the actual temperature does not exceed 90° C. An excessive temperature may draw the temper of the bearing elements and sharply decrease its life.

In all cases, when defects are discovered, the tests should be interrupted and the reasons for the defects discovered and eliminated. Only after this may the assembly be considered as completed.

4. DISMANTLING OF BALL AND ROLLER BEARINGS

Bearings should be removed without damaging them or other associated parts of the assembly. The possibility of fulfilling this requirement depends a great deal on the designed form and dimensions of the bearing assembly parts. This should be taken into consideration when designing the assembly.

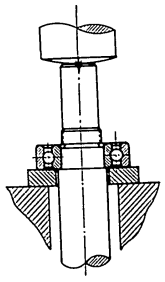


Fig. 62

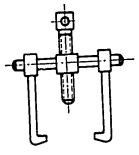


Fig. 63

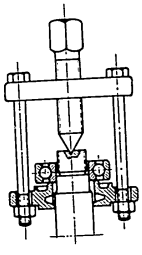


Fig. 64

The removal of bearings, mounted on a shaft or in a housing with an interference fit, should, as a rule, be carried out by means of a press, and screw or hydraulic pulling tools.

An example of removing a bearing from a shaft by means of a vertical press is illustrated in Fig. 62.

In this case, the two bearing rings are set up with their faces supported on two flat pads of the same thickness. The shaft is then pressed downward, out of the inner ring of the bearing.

Fig. 63 illustrates a screw-type pulling device with two tie rods.

The tie rods should not deform during operation.

An annular recess or slots are provided on the seating shoulder of the shaft to accommodate the lugs or claws of the pulling device.

In some cases bolts are used, instead of the tie rods with lugs, (Fig. 64) together with demounting rings or semi-rings.

A universal pulling device with three tie rods is shown in Fig. 65.

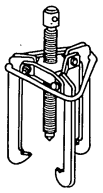


Fig. 65

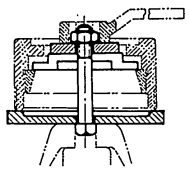


Fig. 66

When bearings are removed from housings, a press or pulling device is also used but they are somewhat different in design.

Fig. 66 illustrates a method for pressing the outer ring of a taper roller bearing out of a housing by means of washers and a bolt with a nut.

To facilitate the removal of bearings, mounted on shafts with interference fits, and to avoid damaging the bearing seats, the bearings are heated by mineral oil at a temperature from 90° to 100° C.

When heating the bearing it is necessary to take care that the hot oil is applied to the inner ring of the bearing and not to the shaft. It is convenient to pour the oil on the bearing from some vessel having the form of a watering-pot.

The part of the shaft, on which the hot oil may accidentally be poured, should be covered with asbestos or cardboard. This measure will decrease the heating of the shaft and allow a larger temperature difference to be created between the bearing ring and shaft.

To detect the moment more certainly, when the bearing fit on the shaft has loosened to the maximum extent, it is advisable to apply the pulling device to the bearing with a preliminary load before beginning to pour the hot oil on the bearing. When the fit has loosened properly, the elastic forces of the stressed parts of the pulling device will begin to pull the bearing.

5. BEARING MAINTENANCE DURING OPERATION

Antifriction bearings demand proper care during the operation of the machines in which they are installed. Besides this, bearing assemblies of machines should be systematically inspected.

The assemblies are checked by an external examination and a sound inspection of the bearings in operation.

Defects, most frequently met with in bearing operation, include the following:

a) Excessive temperature of the bearing assembly;

b) Abnormal noise or shock during operation;

c) Throwing of lubricant out of the housing.

Bearing overheating may be caused by:

a) The presence in bearings of dirt or grit which has entered during mounting or in operation;

b) Either excess or lack of lubricant in bearing;

c) The friction of parts associated with the bearing (labyrinth closures, seals, washers, nuts, etc.);

d) Improper bearing mounting;

e) Improper application of the bearing;

f) Excessive wear or failure of the bearing elements.

Abnormal noise as well as overheating during bearing operation may be the result of dirt in the bearing, damage to the working surfaces or interference between the retainer and parts associated with the bearing.

Rhythmic knocks heard in a bearing may be the result of crumbling of raceways or bearing rolling elements. They may also be the result of defects in the meshing of gears or other assemblies of the machine.

Lubricant may be thrown out of the bearing as a result of wear, inefficient sealing devices or excess of lubricant. This is easily discerned by leaks and spots of lubricant on the housing.

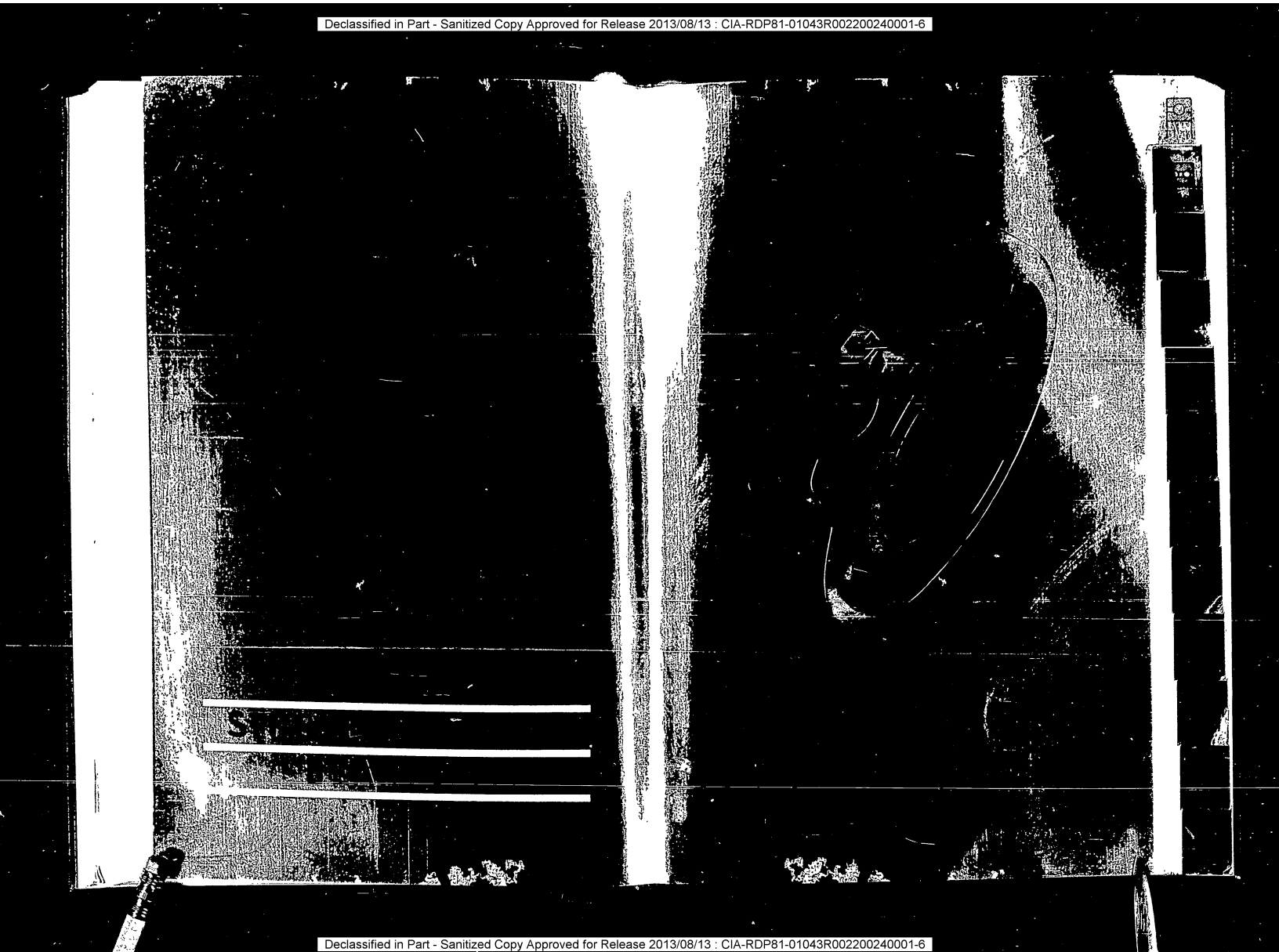
Besides the external inspection, attention must be paid to add and change the lubricant in the bearing systematically. In the absence of a centralized lubricating

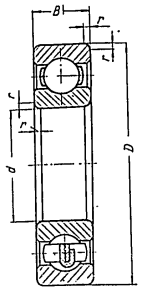
system, lubricant should be added to and changed in the bearings in accordance with a schedule, compiled beforehand and taking into consideration the operating conditions and the type and grade of lubricant used. A timely addition of lubricant is especially important for bearings operating at high speed.

Detailed inspection is carried out as a measure of preventative maintenance, in definite periods of time, without regard for the actual condition of the bearing assembly.

During detailed inspection the bearing assembly must be opened to determine the condition of the bearing, the possibility of further operation, as well as the proper condition of the sealing and lubricating devices and the parts associated with the bearing. The periods between detailed inspection should be determined to suit the operating conditions, the intensity of operation of the bearing assembly and its degree of importance in the operation of the machine as a whole.

II. BEARING DIMENSIONS AND CAPACITIES



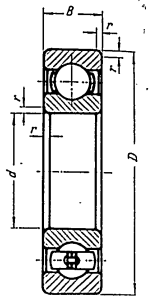


SINGLE ROW BALL BEARINGS

Bearing number	Dimensions, mm				Capacity coefficient	Maximum speed, r. p. m.	Basic static load capacity Qsr.	Weight (approx.)
	d	D	B	r	C*		kg	kg
Super-light series								
Standard bearings								
1000095	5	13	4	0.4	—	—	—	0.0025
Extra-light series								
Standard bearings (GOST 4788-49)								
EL 7 17	7	19	6	0.3	3400	25000	110	0.007
EL 8 8	8	22	7	0.5	3700	25000	130	0.012
Light series								
Standard bearings (OST 6121-39)								
EL 3 23	3	10	4	0.3	610	25000	20	0.0016
EL 4 24	4	13	5	0.3	1160	25000	40	0.003
EL 5 25	5	16	5	0.5	2000	25000	70	0.005
EL 6 6	6	19	6	0.5	3400	25000	110	0.008
EL 7 7	7	22	7	0.5	3700	25000	130	0.013
R7 9	9	26	8	1	5400	25000	190	0.019
Medium series								
Standard bearings (OST 6121-39)								
R4 4	4	16	5	0.5	2000	25000	70	0.005
R5 5	5	19	6	0.5	3400	25000	110	0.008
Non-standard bearings								
66	6	22	6	0.5	—	—	—	0.012
89B	9	22	7	0.5	—	—	—	0.011
16100 700	10	28	8	0.5	—	—	—	0.023
701	12	28	7	0.5	—	—	—	0.018

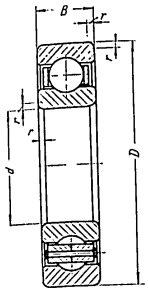
* Permissible bearing loads at various speeds for an expected life of 5000 hrs are indicated in Table 29.

SINGLE ROW BALL BEARINGS



Bearing number	Dimensions, mm d	D	B	r	Capacity coefficient C*	Maximum speed, r. p. m.	Basic static load capacity Qsr, kg	Weight (approx.) kg
					Extra-light series			
					Standard bearings (GOST 4788-49)			
60084к	104	20	42	12	1	5900	16000	420	0.069
60010к	110	50	80	16	1.5	24000	8000	1100	0.25
					Extra-light series			
1600L	7000102	15	32	8	0.5	—	—	—	0.025
1600S	7000105	25	47	8	1	—	—	—	0.056
1600	7000108	40	68	9	1	—	—	—	0.126
					Non-standard bearings			
	705	25	52	10	1.5	—	—	—	0.09

* Permissible bearing loads at various speeds for an expected life of 5000 hrs are indicated in Table 29.



SINGLE ROW BALL BEARINGS

Bearing number	Dimensions, mm d	D	B	r	Capacity coefficient C*	Maximum speed, r. p. m.	Basic static load capacity, Qsr. kg	Weight (approx.) kg
					Super-light series			
	1000924	120	165	22	2	—	—	—	1.37
	1000964	320	440	56	4	—	—	—	23
					Extra-light series			
					Standard bearings			
1600K	7000106	30	55	9	1.5(1)	—	—	—	0.102
1600Л	7000107Б	35	62	9	1	—	—	—	0.13
1601Л	7000114	70	110	13	1	—	—	—	0.504
					Extra-light series			
					Standard bearings (GOST 4788-49)			
60112к	112Б	60	95	18	2	37000	8000	1700	0.61
42130к	130Л	150	225	35	3.5	152000	2500	9400	5.04
60134к	134	170	260	42	3.5	194000	2500	12000	7.677
					Non-standard bearings			
	906	32	55	9	1.5(1)	—	—	—	0.095
	709	45	75	11	1	—	—	—	0.199
	710	50	80	11	1	—	—	—	0.213
	915БК	76	146	27	2.5	—	—	—	2.162
	727	135	195	28	4(2)	—	—	—	3.086
	733К	165	250.5	35	3.5	—	—	—	6.425
	750	250	335	41	5	—	—	—	11.015

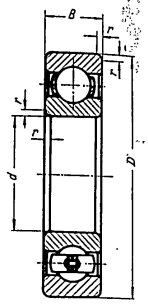
Note: The values in parentheses indicate the mounting corner chamfer of the inner ring.

* Permissible bearing loads at various speeds for an expected life of 5000 hrs are indicated in Table 29.

SINGLE ROW BALL BEARINGS

LIGHT SERIES

Standard bearings (OST 6121-39)



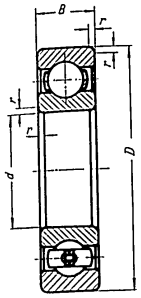
Bearing number	Dimensions, mm				Capacity coefficient C*	Maximum speed, r. p. m.	Basic static load capacity Qs., kg	Weight (approx.) kg
	d	D	B	r				
200	10	30	9	1	7100	20000	250	0.03
201	12	32	10	1	7100	20000	260	0.037
202	15	35	11	1	8500	16000	340	0.045
203	17	40	12	1.5	11300	16000	420	0.06
204	20	47	14	1.5	15000	16000	600	0.1
205	25	52	15	1.5	16000	13000	700	0.12
206	30	62	16	1.5	22000	13000	950	0.19
207	35	72	17	2	30000	10000	1300	0.27
208	40	80	18	2	39000	10000	1700	0.37
209	45	85	19	2	39000	8000	1700	0.42
210	50	90	20	2	42000	8000	1900	0.47
211	55	100	21	2.5	52000	8000	2400	0.58
212	60	110	22	2.5	62000	6300	3000	0.77
213	65	120	23	2.5	68000	6300	3300	0.98
214	70	125	24	2.5	74000	5000	3600	1.04
215	75	130	25	2.5	78000	5000	4000	1.13
216	80	140	26	3	84000	5000	4200	1.38
217	85	150	28	3	98000	4000	5000	1.75
218	90	160	30	3	112000	4000	5900	2.2
219	95	170	32	3.5	124000	4000	6700	2.6
220	100	180	34	3.5	136000	3200	7700	3.2
221	105	190	36	3.5	152000	3200	8700	3.8
222	110	200	38	3.5	164000	3200	9700	4.4
224	120	215	40	3.5	182000	3200	11000	6
226	130	230	40	4	182000	2500	11000	7.5
228	140	250	42	4	182000	2500	11000	9
230	150	270	45	4	230000	2500	14500	11.3
232	160	290	48	4	280000	2000	19500	14
234	170	310	52	5	280000	2000	19500	16.5
236	180	320	52	5	320000	1600	22500	17.5
238	190	340	55	5	340000	1600	25500	20.6
240	200	360	58	5	340000	1600	25500	24
244	220	400	65	5	360000	1300	26000	36.5

* Permissible bearing loads at various speeds for an expected life of 5000 hrs are indicated in Table 29.

SINGLE ROW BALL BEARINGS

MEDIUM SERIES

Standard bearings (OST 6121-39)



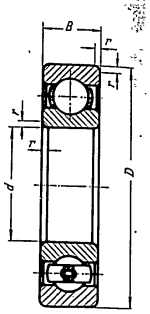
Bearing number	Dimensions, mm				Capacity coefficient C*	Maximum speed, r. p. m.	Basic static load capacity Qsr. kg	Weight (approx.) kg
	d	D	B	r				
300	10	35	11	1	10000	16000	370	0.05
301	12	37	12	1.5	12300	16000	450	0.06
302	15	42	13	1.5	13500	16000	520	0.08
303	17	47	14	1.5	17100	13000	650	0.11
304	20	52	15	2	19000	13000	750	0.14
305	25	62	17	2	27000	10000	1100	0.23
306	30	72	19	2	33000	10000	1400	0.35
307	35	80	21	2.5	40000	8000	1700	0.44
308	40	90	23	2.5	48000	8000	2100	0.63
309	45	100	25	2.5	57000	6300	2500	0.83
310	50	110	27	3	72000	6300	3500	1.08
311	55	120	29	3	84000	6300	4100	1.37
312	60	130	31	3.5	94000	5000	4600	1.71
313	65	140	33	3.5	106000	5000	5400	2.09
314	70	150	35	3.5	120000	5000	6200	2.6
315	75	160	37	3.5	132000	4000	6900	3.1
316	80	170	39	3.5	144000	4000	7600	3.6
317	85	180	41	4	158000	4000	8700	4.3
318	90	190	43	4	170000	3200	9600	5
319	95	200	45	4	182000	3200	10500	5.7
320	100	215	47	4	210000	3200	12500	7.2
321	105	225	49	4	230000	2500	14000	8.3
322	110	240	50	4	260000	2500	16500	9.8
324	120	260	55	4	270000	2500	17500	14
326	130	280	58	5	290000	2000	19000	18
328	140	300	62	5	320000	2000	21500	22
330	150	320	65	5	350000	2000	24500	26

* Permissible bearing loads at various speeds for an expected life of 5000 hrs are indicated in Table 29.

SINGLE ROW BALL BEARINGS

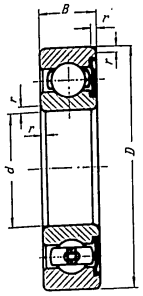
HEAVY SERIES

Standard bearings (OST 6121-39)



Bearing number	Dimensions, mm				Capacity coefficient	Maximum speed, r. p. m.	Basic static load capacity Qst.	Weight (approx.)
	d	D	B	r	C*		kg	kg
403	17	62	17	2	29000	10000	1100	0.27
404	20	72	19	2	39000	10000	1600	0.40
405	25	80	21	2.5	47000	8000	2000	0.51
406	30	90	23	2.5	60000	8000	2500	0.72
407	35	100	25	2.5	68000	6300	3100	0.93
408	40	110	27	3	78000	6300	3500	1.20
409	45	120	29	3	92000	6300	4400	1.55
410	50	130	31	3.5	108000	5000	5300	1.91
411	55	140	33	3.5	120000	5000	6000	2.3
412	60	150	35	3.5	132000	4000	6700	2.8
413	65	160	37	3.5	144000	4000	7600	3.4
414	70	180	42	4	182000	4000	10000	5
415	75	190	45	4	194000	4000	11000	5.9
416	80	200	48	4	210000	3200	12000	7
417	85	210	52	5	220000	3200	13000	8.5
418	90	225	54	5	250000	2500	15500	10

* Permissible bearing loads at various speeds for an expected life of 5000 hrs are indicated in Table 29.



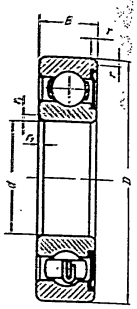
SINGLE SHIELD SINGLE ROW BALL BEARINGS

Bearing number	Dimensions, mm				Capacity coefficient	Maximum speed, r. p. m.	Basic static load capacity Qst.	Weight (approx.)
	d	D	B	r	C**		kg	kg
Light series								
Standard bearings (GOST 7242-54)								
60200	10	30	9	1(0.5)*	7100	20000	250	0.03
60201	12	32	10	1(0.5)*	7100	20000	260	0.038
60202	15	35	11	1(0.5)*	8500	16000	340	0.045
60203	17	40	12	1.5	11300	16000	420	0.065
60204	20	47	14	1.5	15000	16000	600	0.1
60205	25	52	15	1.5	16000	13000	700	0.12
60206	30	62	16	1.5	22000	13000	950	0.19
60208	40	80	18	2	39000	10000	1700	0.36
60214	70	125	24	2.5	74000	5000	3600	1.04
Medium series								
Standard bearings (GOST 7242-54)								
60310	50	110	27	3	72000	6300	3500	1.1
Non-standard bearings								
60902	16	35	11	1	—	—	—	0.044

* The values in parentheses refer to the corner chamfer of the inner ring.

** Permissible bearing loads at various speeds for an expected life of 5000 hrs are indicated in Table 29.

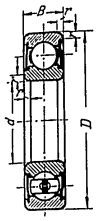
SINGLE SHIELD SINGLE ROW BALL BEARINGS



Bearing number	Dimensions, mm					Capacity coefficient	Maximum speed, r. p. m.	Basic static load capacity Qsr.	Weight (approx.)
	d	D	B	r_1	r	C*		kg	kg
Extra-light series									
Standard bearings (GOST 7242-54)									
60018	8	22	7	0.3	0.5	3700	25000	130	0.011
Light series									
Standard bearings (GOST 7242-54)									
60024	4	13	5	0.3	0.3	1160	25000	40	0.003
60007	7	22	7	0.5	0.5	3700	25000	130	0.012
Non-standard bearings									
60064	4	16	5.5	0.3	0.5	—	—	—	0.005
60066	6	19	6.5	0.3	0.5	—	—	—	0.008
600		22	7	0.2	0.5	—	—	—	0.011

* Permissible bearing loads at various speeds for an expected life of 5000 hrs are indicated in Table 29.

DOUBLE SHIELD SINGLE ROW BALL BEARINGS



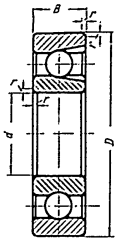
Bearing number	Dimensions, mm				Capacity coefficient	Basic static load capacity Qsr.	Weight (approx.)
	d	D	B	r	C*	kg	kg
Extra-light series							
Standard bearings (GOST 7242-54)							
80018	8	22	7	0.5(0.3)	3700	130	0.0116
80104	20	42	12	1	10600	420	0.068
80106	30	55	13	1.5	11600	500	0.12
Light series							
Standard bearings (GOST 7242-54)							
80024	4	13	5	0.3	1160	40	0.003
80007	7	22	7	0.5	3700	130	0.0124
80009	9	26	8	1(0.5)	5400	190	0.019
80200	10	30	9	1(0.5)	7100	250	0.029
80201	12	32	10	1(0.5)	7100	260	0.036
80202K**	15	35	11	1(0.5)	8500	340	0.042
80203K	17	40	12	1.2(1.5)	11300	420	0.064
80204	20	47	14	1.5	15000	600	0.104
80205K	25	52	15	1.5	16000	700	0.117
80215	75	130	25	2.5	78000	4000	1.173
80218	90	160	30	3	112000	5900	2.174
Non-standard bearings							
80064	4	16	5.5	0.5(0.3)	—	—	0.006
80066	6	19	6.5	0.5(0.3)	—	—	0.008
80089B	9	22	7	0.5(0.2)	—	—	0.011
80701	12	30	8/10	0.8(0.5)	—	—	0.028
80801	12	30	8	0.8(0.5)	—	—	0.027
80702	15	35	11/14	0.5	—	—	0.048
80902	16	35	12.7	1	—	—	0.058
80905	25.4	52	14	1.5	—	—	0.121
80906	32	55	13	1.5(1)	—	—	0.135

Notes:

1. Bearings of the 80000 series are filled with grease "Tsiatim 201" (GOST 6267-52).
2. Values in parentheses refer to the inner ring.

* Permissible bearing loads at various speeds for an expected life of 5000 hrs are indicated in Table 29.

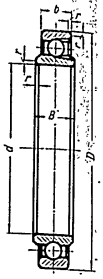
** One side of outer ring has a chamfer of 1X30°.



Type 970000

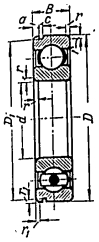
SINGLE ROW BALL BEARINGS WITH FILLING SLOT AND WITHOUT RETAINER

Non-standard bearings



Type 900000

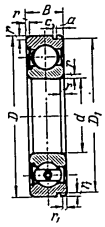
Bearing number	Dimensions, mm					Weight (approx.)
	d	D	B	b	r	kg
970700	10	21	5	—	0.5	0.008
970702	15	37	9	—	1	0.049
970902	16	37	9	—	1	0.048
970705	25	52	9	—	1	0.088
970205	25	52	15	—	1.5	0.12
970206	30	62	16	—	1.5	0.19
970208	40	80	18	—	2	0.4
970711	55	90	10	—	1	0.3
970921	107	145	16	—	2	0.711
900904	22	35	7	6	0.5	0.024
900805	25	37	7	6	0.5	0.022
900706	30	42	7	6	0.5	0.025
900907	34	45	7	6	0.5	0.028
900808	40	52	7	6	0.5	0.031
900809	45	57	7	6	0.5	0.035
900810	50	65	7	6	0.5	0.055
900912	58	73	7	6	0.5	0.066



Type 50000

SINGLE ROW BALL BEARINGS WITH SNAP RING GROOVE ON OUTER RING

Standard bearings



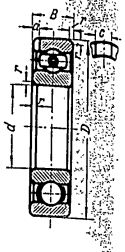
Type 15000

Bearing number	Dimensions, mm								Capacity coefficient	Maximum speed, r. p. m.	Basic static load capacity, Qsr.	Weight (approx.)
	d	D	D_1	B	a	C	r	r_1	C*		kg	kg
50204	20	47	44.6	14	2.45	1.3	1.5	0.5	15000	16000	600	0.1
50205	25	52	49.7	15	2.45	1.3	1.5	0.5	16000	13000	700	0.12
150206	30	62	59.6	16	3.25	1.9	1.5	0.5	22000	13000	950	0.19
50207	35	72	68.8	17	3.25	1.9	2	0.8	30000	10000	1300	0.27
50208	40	80	76.8	18	3.25	1.9	2	0.8	39000	10000	1700	0.37
50209	45	85	81.8	19	3.25	1.9	2	0.8	39000	8000	1700	0.42
150210A	50	90	86.8	20	3.25	2.7	0.8	0.8	42000	8000	1900	0.47
50213	65	120	115.2	23	4.05	3.1	2.5	0.8	68000	6300	3300	0.98
50217	85	150	145.2	28	4.9	3.1	3	0.8	98000	4000	5000	1.75
50305	25	62	59.6	17	3.25	1.9	2	0.8	27000	10000	1100	0.23
50306	30	72	68.8	19	3.25	1.9	2	0.8	33000	10000	1400	0.35
50307	35	80	76.8	21	3.25	1.9	2.5	0.8	40000	8000	1700	0.44
50308	40	90	86.8	23	3.25	2.7	2.5	0.8	48000	8000	2100	0.62
50309	45	100	96.8	25	3.25	2.7	2.5	0.8	57000	6300	2500	0.83
50310	50	110	106.8	27	3.25	2.7	3	0.8	72000	6300	3500	1.07
50311	55	120	115.2	29	4.05	3.1	3	0.8	84000	6300	4100	1.37
50313	65	140	135.2	33	4.9	3.1	3.5	0.8	106000	5000	5400	2.09
50407	35	100	96.8	25	3.25	2.7	2.5	0.8	68000	6300	3100	0.93
50408	40	110	106.8	27	3.25	2.7	3	0.8	78000	6300	3500	1.2
50409	45	120	115.2	29	4.05	3.1	3	0.8	92000	6300	4400	1.55
50411	55	140	135.2	33	4.9	3.1	3.5	0.8	120000	5000	6000	2.3
50412	60	150	145.2	35	4.9	3.1	3.5	0.8	132000	4000	6700	2.8

* Permissible bearing loads at various speeds for an expected life of 5000 hrs are indicated in Table 29.

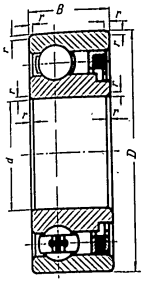
SINGLE ROW BALL BEARINGS
WITH SNAP RING GROOVE ON OUTER RING

Non-standard bearings

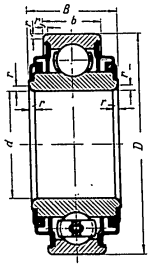


Bearing number	Dimensions, mm						Weight (approx.)
	d	D	B	a	c	r	kg
940705	25	52	12	2.5	3	1.5	0.1

FELT SEAL SINGLE ROW BALL BEARINGS



Type 20000



Type 530000

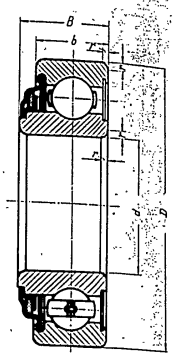
Bearing number	Dimensions, mm					Capacity coefficient	Maximum speed, r. p. m	Basic static load capacity Qst.	Weight (approx.)
	d	D	B	b	r	C*		kg	kg
Light series									
Standard bearings (GOST 4061-48)									
530206	30	62	24	16	1.5	22000	2500	950	0.26
530209	45	85	29	21	2	39000	2000	1700	0.47
Non-standard bearings									
20703A	17	40	14	—	1.5	—	—	—	0.085
20803	17	47	15.5	—	1.5	—	—	—	0.12
30804	20	47	18	14	1.5	—	—	—	0.12
530211	55	100	27	21	2.5	—	—	—	0.7

* Permissible bearing loads at various speeds for an expected life of 5000 hrs are indicated in Table 29.

SINGLE FELT SEAL SINGLE ROW BALL BEARINGS

Non-standard bearings

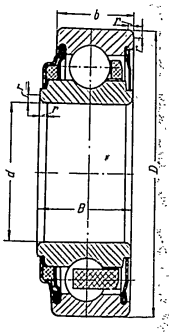
Bearing number	Dimensions, mm					Weight (approx.)
	d	D	B	b	r	kg
520806	30	62	20	16	1.5	0.23

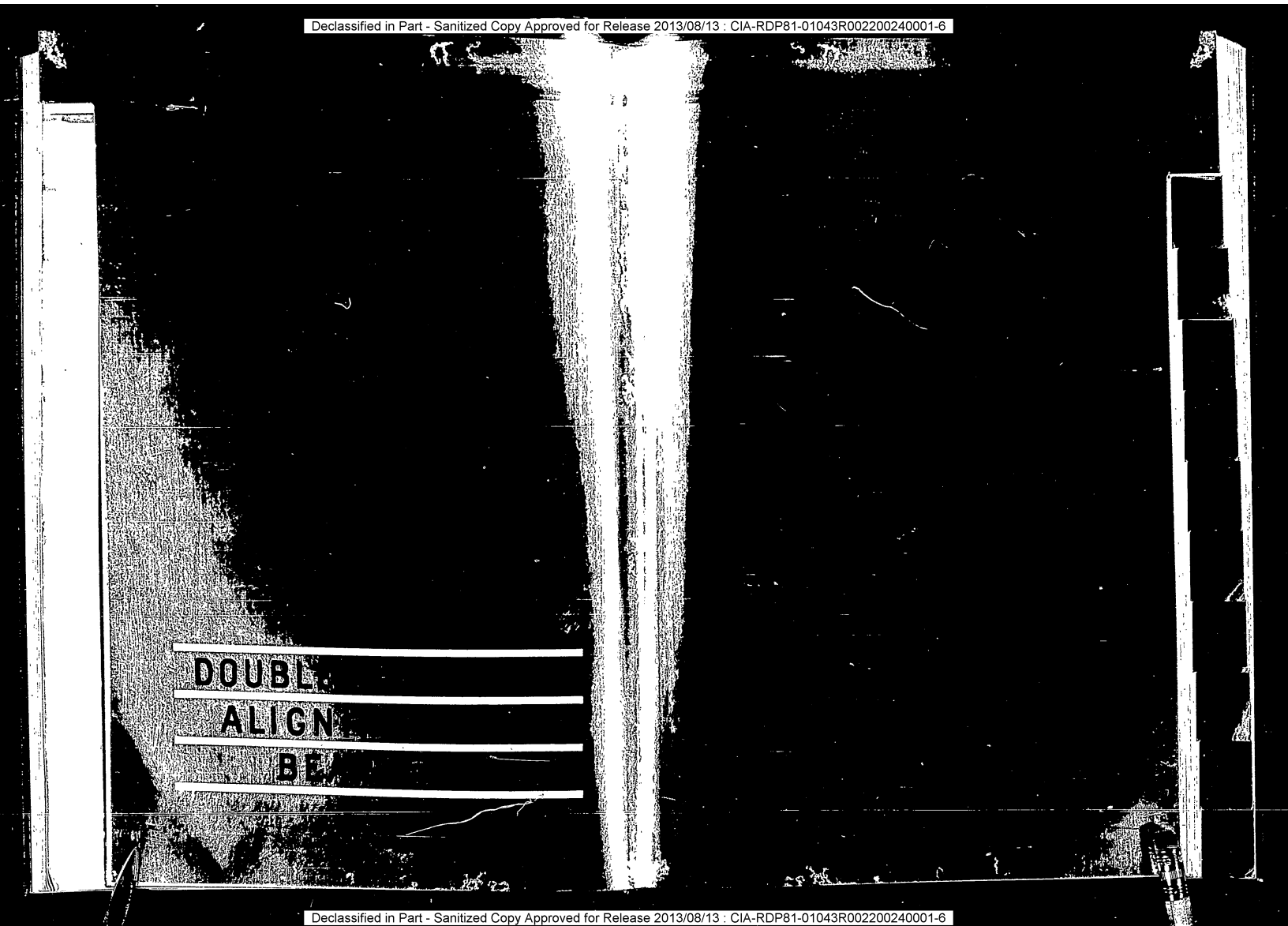


SEALED AND SHIELDED SINGLE ROW BALL BEARINGS

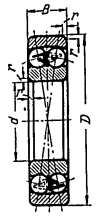
Non-standard bearings

Bearing number	Dimensions, mm					Weight (approx.)
	d	D	B	b	r	kg
140806	30	62	20.5	17	1.5	0.23





Declassified in Part - Sanitized Copy Approved for Release 2013/08/13 : CIA-RDP81-01043R002200240001-6



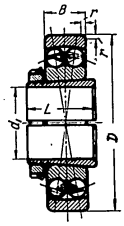
Type 1000

DOUBLE ROW SELF-ALIGNING BALL BEARINGS

LIGHT SERIES

Standard bearings

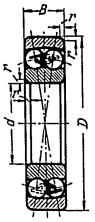
Type 1000 (GOST 5720-51)
Type 11000 (OST 7634-39)



Type 11000

Bearing number		Dimensions, mm						Capacity coefficient C*	Maximum speed, r. p. m.	Basic static load capacity Qsr. kg	Weight (approx.), kg	
Type 1000	Type 11000	d	d_1	D	B	L	r				Type 1000	Type 11000
1005	—	5	—	19	6	—	0.5	2400	25000	56	0.009	—
1006	—	6	—	19	6	—	0.5	2400	25000	56	0.009	—
1007	—	7	—	22	7	—	0.5	2800	25000	70	0.014	—
1008	—	8	—	22	7	—	0.5	2800	25000	70	0.014	—
1009	—	9	—	26	8	—	1	4100	20000	100	0.022	—
1200	—	10	—	30	9	—	1	5400	20000	140	0.033	—
1201	—	12	—	32	10	—	1	6100	20000	155	0.04	—
1202	—	15	—	35	11	—	1	8000	16000	215	0.05	—
1203	—	17	—	40	12	—	1.5	9300	16000	250	0.07	—
1204	11203	20	17	47	14	28	1.5	11600	16000	330	0.12	0.18
1205	11204	25	20	52	15	30	1.5	15000	13000	420	0.14	0.24
1206	11205	30	25	62	16	31	1.5	20000	13000	610	0.22	0.34
1207	11206	35	30	72	17	33	2	22000	10000	710	0.32	0.49
1208	11207	40	35	80	18	34	2	27000	10000	920	0.42	0.61
1209	11208	45	40	85	19	35	2	31000	8000	1000	0.47	0.71
1210	11209	50	45	90	20	39	2	33000	8000	1100	0.53	0.81
1211	11210	55	50	100	21	40	2.5	41000	6300	1400	0.71	1.04
1212	11211	60	55	110	22	41	2.5	46000	6300	1700	0.88	1.29
1213	11212	65	60	120	23	42	2.5	50000	5000	1800	1.15	1.61
1214	—	70	—	125	24	—	2.5	54000	5000	2000	1.26	—
1215	11213	75	65	130	25	44	2.5	60000	5000	2300	1.36	2.2
1216	11214	80	70	140	26	48	3	64000	5000	2500	1.67	2.7
1217	11215	85	75	150	28	52	3	78000	4000	3000	2.1	3.3
1218	11216	90	80	160	30	55	3	88000	4000	3400	2.5	3.9
1219	11217	95	85	170	32	58	3.5	100000	4000	3900	3.1	4.6
1220	11218	100	90	180	34	61	3.5	108000	3200	4300	3.7	5.5
1221	11219	105	95	190	36	63	3.5	116000	3200	4700	4.4	6.3
1222	11220	110	100	200	38	66	3.5	132000	3200	5600	5.2	7.4
1224	11222	120	110	215	42	75	3.5	170000	2500	7500	6.8	9.4

* Permissible bearing loads at various speeds for an expected life of 5000 hrs are indicated in Table 29.



Type 1000

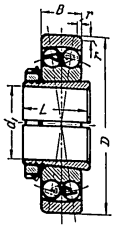
DOUBLE ROW SELF-ALIGNING BALL BEARINGS

MEDIUM SERIES

Standard bearings

Type 1000 (GOST 5720-51)

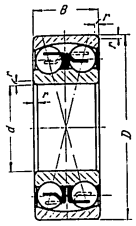
Type 11000 (OST 7634-39)



Type 11000

Bearing number		Dimensions, mm						Capacity coefficient C*	Maximum speed, r. p. m	Basic static load capacity Qst., kg	Weight (approx.), kg	
Type 1000	Type 11000	d	d_1	D	B	L	r				Type 1000	Type 11000
1300	—	10	—	35	11	—	1	7500	16000	190	0.06	—
1301	—	12	—	37	12	—	1.5	9600	16000	250	0.07	—
1302	—	15	—	42	13	—	1.5	10000	16000	280	0.09	—
1303	—	17	—	47	14	—	1.5	14000	13000	390	0.13	—
1304	11303	20	17	52	15	32	2	15500	13000	430	0.16	0.23
1305	11304	25	20	62	17	33	2	21000	10000	640	0.26	0.36
1306	11305	30	25	72	19	35	2	27000	10000	830	0.39	0.5
1307	11306	35	30	80	21	39	2.5	32000	8000	1000	0.5	0.67
1308	11307	40	35	90	23	39	2.5	40000	8000	1300	0.7	0.91
1309	11308	45	40	100	25	41	2.5	50000	6300	1700	0.96	1.19
1310	11309	50	45	110	27	46	3	57000	6300	1800	1.21	1.49
1311	11310	55	50	120	29	48	3	68000	5000	2400	1.58	1.91
1312	11311	60	55	130	31	50	3.5	78000	5000	2800	1.96	2.3
1313	11312	65	60	140	33	52	3.5	86000	5000	3100	2.5	2.9
1314	—	70	—	150	35	—	3.5	100000	4000	3700	3	—
1315	11313	75	65	160	37	56	3.5	104000	4000	4000	3.6	4.4
1316	11314	80	70	170	39	61	3.5	116000	4000	4500	4.3	5.2
1317	11315	85	75	180	41	63	4	132000	4000	5200	5.1	6.2
1318	11316	90	80	190	43	68	4	148000	3200	6000	5.7	7.1
1319	11317	95	85	200	45	71	4	164000	3200	6800	6.7	8.2
1320	11318	100	90	215	47	74	4	182000	3200	7600	8.3	10

* Permissible bearing loads at various speeds for an expected life of 5000 hrs are indicated in Table 29.



Type 1000

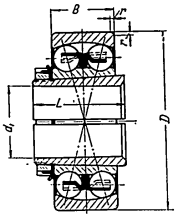
DOUBLE ROW SELF-ALIGNING BALL BEARINGS

LIGHT SERIES, WIDE TYPE

Standard bearings

Type 1000 (GOST 5720-51)

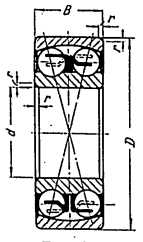
Type 11000 (GOST 7634-39)



Type 11000

Bearing number		Dimensions, mm						Capacity coefficient C*	Maximum speed, r. p. m.	Basic static load capacity Qst., kg	Weight (approx.) kg	
Type 1000	Type 11000	d	d_1	D	B	L	r				Type 1000	Type 11000
1504	11503	20	17	47	18	32	1.5	14000	16000	420	0.14	0.2
1505	11504	25	20	52	18	33	1.5	15500	13000	450	0.16	0.27
1506	11505	30	25	62	20	35	1.5	20000	13000	600	0.26	0.38
1507	11506	35	30	72	23	39	2	28000	10000	850	0.4	0.56
1508	11507	40	35	80	23	39	2	31000	10000	1000	0.51	0.69
1509	11508	45	40	85	23	41	2	34000	8000	1100	0.55	0.79
1510	11509	50	45	90	23	46	2	35000	8000	1200	0.59	0.87
1511	11510	55	50	100	25	48	2.5	40000	6300	1400	0.81	1.2
1512	11511	60	55	110	28	50	2.5	50000	6300	1800	1.09	1.49
1513	11512	65	60	120	31	52	2.5	64000	6300	2300	1.46	2
1514	—	70	—	125	31	—	2.5	66000	5000	2400	1.52	—
1515	11513	75	65	130	31	56	2.5	68000	5000	2500	1.62	2.5
1516	11514	80	70	140	33	61	3	76000	5000	2800	2	3.1
1517	11515	85	75	150	36	63	3	88000	4000	3300	2.5	3.7
1518	11516	90	80	160	40	68	3	104000	4000	4000	3.4	4.7
1519	11517	95	85	170	43	71	3.5	120000	3200	4800	4.2	5.7
1520	11518	100	90	180	46	74	3.5	136000	3200	5700	5	6.7

* Permissible bearing loads at various speeds for an expected life of 5000 hrs are indicated in Table 29.



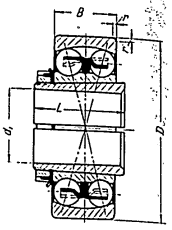
Type1000

DOUBLE ROW SELF-ALIGNING BALL BEARINGS

MEDIUM SERIES, WIDE TYPE

Standard bearings

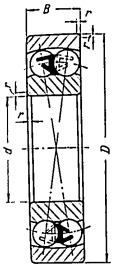
Type 11000 (OST 7634-39)
Type 1000 (GOST 5720-51)



Type 11000

Bearing number		Dimensions, mm						Capacity coefficient	Maximum speed, r. p. m.	Basic static load capacity Qsr.	Weight (approx.), kg	
Type 1000	Type 11000	d	d_1	D	B	L	r	C*		kg	Type 1000	Type 11000
1604	11603	20	17	52	21	35	2	19000	10000	570	0.21	0.29
1605	11604	25	20	62	24	39	2	27000	10000	800	0.34	0.48
1606	11605	30	25	72	27	42	2	35000	8000	1050	0.5	0.63
1607	11606	35	30	80	31	47	2.5	44000	8000	1400	0.68	0.86
1608	11607	40	35	90	33	49	2.5	52000	6300	1700	0.93	1.14
1609	11608	45	40	100	36	52	2.5	62000	6300	2100	1.23	1.52
1610	11609	50	45	110	40	59	3	72000	5000	2500	1.61	2
1611	11610	55	50	120	43	62	3	84000	5000	2900	2.1	2.5
1612	11611	60	55	130	46	65	3.5	100000	4000	3500	2.6	3.1
1613	11612	65	60	140	48	67	3.5	112000	4000	4200	3.2	3.8
1614	—	70	—	150	51	—	3.5	124000	4000	4800	4.3	—
1615	11613	75	65	160	55	74	3.5	136000	3200	5500	5.2	6.2
1616	11614	80	70	170	58	80	3.5	152000	3200	6200	6.2	7.3
1617	11615	85	75	180	60	84	4	164000	2500	6600	7.2	8.5
1618	11616	90	80	190	64	89	4	182000	2500	7400	8.5	10.1

* Permissible bearing loads at various speeds for an expected life of 5000 hrs are indicated in Table 29.

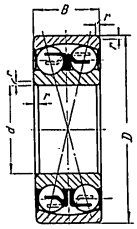


DOUBLE ROW SELF-ALIGNING BALL BEARINGS

Non-standard bearings

Bearing number	Dimensions, mm				Weight (approx.)
	d	D	B	r	kg
1411	55	140	33	3.5	2.68
1412	60	150	35	3.5	3.72
1730	150	235	36 (39.98)*	4	6

* Bearing width measured over protruding balls.



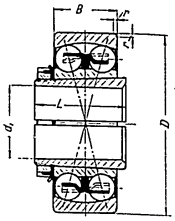
Type1000

DOUBLE ROW SELF-ALIGNING BALL BEARINGS

MEDIUM SERIES, WIDE TYPE

Standard bearings

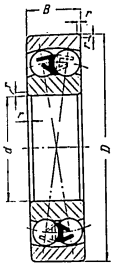
Type 11000 (OST 7634-39)
Type 1000 (GOST 5720-51)



Type 11000

Bearing number		Dimensions, mm						Capacity coefficient C*	Maximum speed, r. p. m.	Basic static load capacity Qsr. kg	Weight (approx.), kg	
Type 1000	Type 11000	d	d_1	D	B	L	r				Type 1000	Type 11000
1604	11603	20	17	52	21	35	2	19000	10000	570	0.21	0.29
1605	11604	25	20	62	24	39	2	27000	10000	800	0.34	0.48
1606	11605	30	25	72	27	42	2	35000	8000	1050	0.5	0.63
1607	11606	35	30	80	31	47	2.5	44000	8000	1400	0.68	0.86
1608	11607	40	35	90	33	49	2.5	52000	6300	1700	0.93	1.14
1609	11608	45	40	100	36	52	2.5	62000	6300	2100	1.23	1.52
1610	11609	50	45	110	40	59	3	72000	5000	2500	1.61	2
1611	11610	55	50	120	43	62	3	84000	5000	2900	2.1	2.5
1612	11611	60	55	130	46	65	3.5	100000	4000	3500	2.6	3.1
1613	11612	65	60	140	48	67	3.5	112000	4000	4200	3.2	3.8
1614	—	70	—	150	51	—	3.5	124000	4000	4800	4.3	—
1615	11613	75	65	160	55	74	3.5	136000	3200	5500	5.2	6.2
1616	11614	80	70	170	58	80	3.5	152000	3200	6200	6.2	7.3
1617	11615	85	75	180	60	84	4	164000	2500	6600	7.2	8.5
1618	11616	90	80	190	64	89	4	182000	2500	7400	8.5	10.1

* Permissible bearing loads at various speeds for an expected life of 5000 hrs are indicated in Table 29.

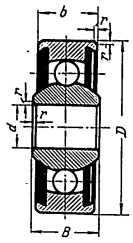


DOUBLE ROW SELF-ALIGNING BALL BEARINGS

Non-standard bearings

Bearing number	Dimensions, mm				Weight (approx.) kg
	d	D	B	r	
1411	55	140	33	3.5	2.68
1412	60	150	35	3.5	3.72
1730	150	235	36 (39.93)*	4	6

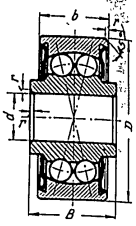
* Bearing width measured over protruding balls.



Type 981000

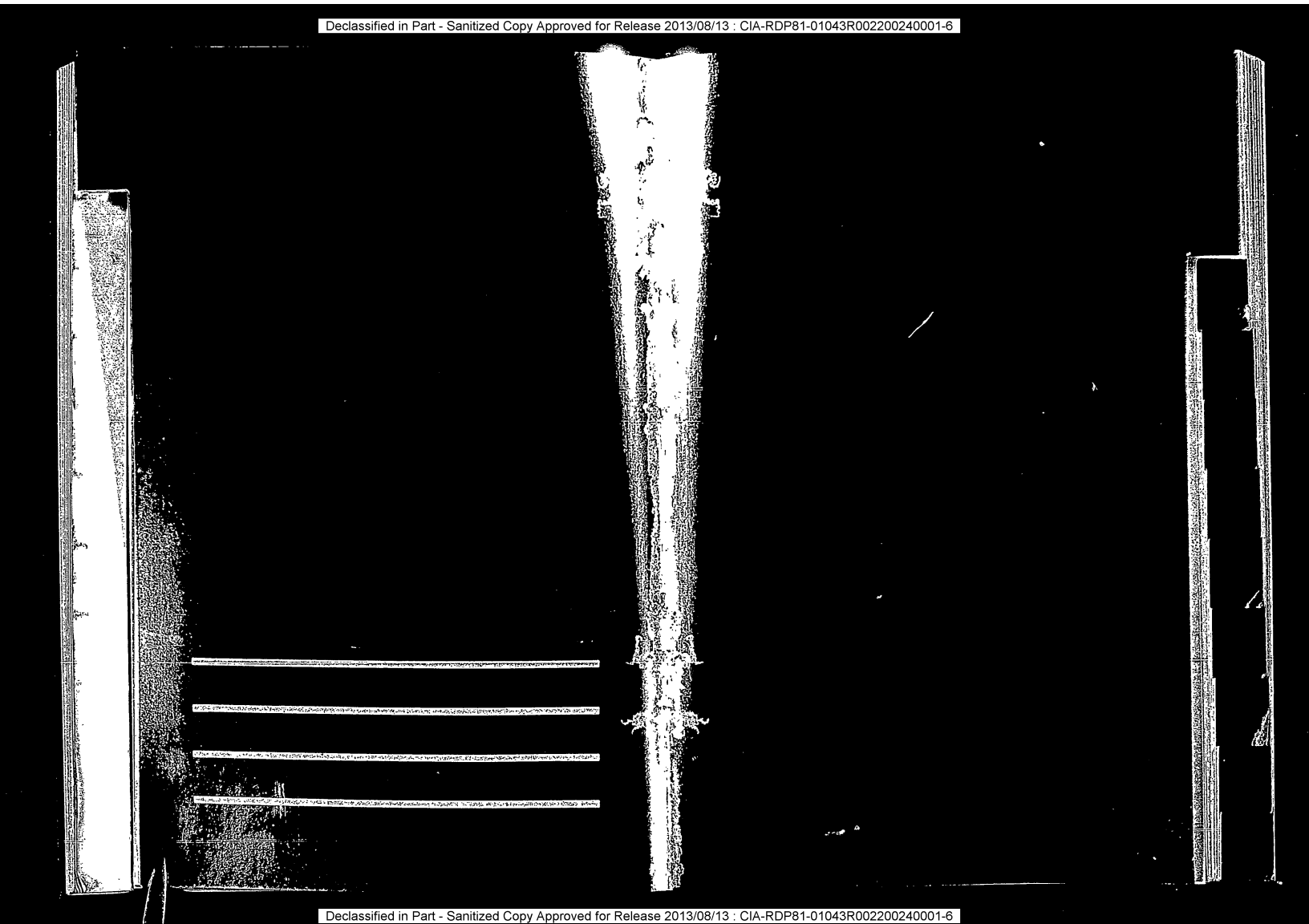
DOUBLE SHIELD SELF-ALIGNING BALL BEARINGS

Non-standard bearings



Type 971067

Bearing number	Dimensions, mm					Weight (approx.)
	d	D	b	B	r	kg
981065	5	20	7	8	0.5	0.0118
981067	7	24	9	12	0.5	0.02
981068	8	30	10	14	0.5	0.04
971067	7	24	12	18	1	0.03
981700	10	37	12	16	0.5	0.075



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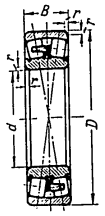


Type 3000

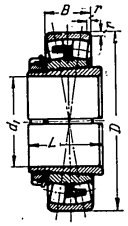
DOUBLE ROW SELF-ALIGNING ROLLER BEARINGS

LIGHT SERIES, WIDE TYPE

Standard bearings

Type 3000 (GOST 5721-51)

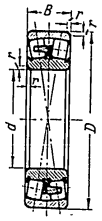
Type 13000 (GOST 7634-39)



Type 13000

Bearing number		Dimensions, mm						Capacity coefficient	Maximum speed, r.p.m.	Basic static load capacity, Qst.	Weight (approx.), kg	
Type 3000	Type 13000	d	d_1	D	B	L	r	C*		kg	Type 3000	Type 13000
3516	13514	80	70	140	33	61	3	188000	3000	11500	2.2	3.2
3517	13515	85	75	150	36	63	3	200000	2500	14000	2.8	4.1
3518	13516	90	80	160	40	68	3	240000	2500	15000	3.6	4.9
3519	13517	95	85	170	43	71	3.5	310000	2500	19000	4.2	5.8
3520	13518	100	90	180	46	74	3.5	340000	2000	21500	5.2	6.8
3522	13520	110	100	200	53	81	3.5	420000	2000	27000	7.4	9.5
3524	13522	120	110	215	58	91	3.5	520000	2000	32500	9.2	11.7
3526	13523	130	115	230	64	100	4	630000	1600	39500	11.4	15
3528	13525	140	125	250	68	106	4	730000	1600	44000	14.5	18.9
3530	13527	150	135	270	73	113	4	800000	1300	50000	18.5	24
3532	13528	160	140	290	80	121	4	980000	1300	60000	23	30
3534	13530	170	150	310	86	128	5	1070000	1300	68000	29	37
3536	13532	180	160	320	86	129	5	1160000	1000	72000	30	39
3538	13534	190	170	340	92	136	5	1260000	1000	80000	37	47
3540	13536	200	180	360	98	144	5	1440000	1000	89000	45	56

* Permissible bearing loads at various speeds for an expected life of 5000 hrs are indicated in Table 29.



Type 3000

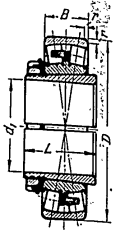
DOUBLE ROW SELF-ALIGNING ROLLER BEARINGS

MEDIUM SERIES, WIDE TYPE

Standard bearings

Type 3000 (GOST 5721-51)

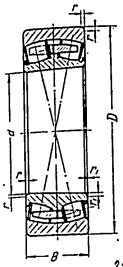
Type 13000 (OST 7634-39)



Type 13000

Bearing number		Dimensions, mm						Capacity coefficient	Maximum speed, r. p. m.	Basic static load capacity Qsr.	Weight (approx.) kg	
Type 3000	Type 13000	d	d_1	D	B	L	r	C*		kg	Type 3000	Type 13000
3608	13607	40	35	90	33	49	2.5	120000	5000	6700	1.03	1.25
3609	13608	45	40	100	36	52	2.5	148000	4000	8200	1.4	1.69
3610	13609	50	45	110	40	59	3	182000	4000	10500	1.9	2.3
3611	13610	55	50	120	43	62	3	210000	4000	11500	2.4	2.8
3612	13611	60	55	130	46	65	3.5	240000	3200	13500	3	3.5
3613	13612	65	60	140	48	67	3.5	290000	3200	16000	3.6	4.2
3614	—	70	—	150	51	—	3.5	330000	3200	18500	4.4	—
3615	13613	75	65	160	55	74	3.5	370000	2500	21000	5.4	6.4
3616	13614	80	70	170	58	80	3.5	420000	2500	24000	6.4	7.5
3617	13615	85	75	180	60	84	4	460000	2500	27000	7.4	8.7
3618	13616	90	80	190	64	89	4	500000	2500	29000	8.8	10.3
3619	13617	95	85	200	67	93	4	570000	2000	32000	10.3	12.1
3620	13618	100	90	215	73	100	4	670000	2000	38000	13	15
3622	13620	110	100	240	80	108	4	850000	1600	47000	18.1	21
3624	13622	120	110	260	86	119	4	980000	1600	56000	22	26
3626	13623	130	115	280	93	129	5	1160000	1600	65000	29	33
3628	13625	140	125	300	102	140	5	1260000	1300	73000	36	41
3630	13627	150	135	320	108	148	5	1440000	1300	82000	43	50
3632	13628	160	140	340	114	155	5	1660000	1300	94000	51	59
3634	13630	170	150	360	120	162	5	1820000	1000	108000	60	70
3636	13632	180	160	380	126	169	5	2000000	1000	116000	70	80
3638	13634	190	170	400	132	176	6	2200000	1000	130000	81	92
3640	13636	200	180	420	138	184	6	2400000	800	142000	94	106
3652	—	260	—	540	165	—	8	3800000	600	219000	195	—
Non-standard bearings												
3680	—	400	—	820	243	—	10	—	—	—	641	—

* Permissible bearing loads at various speeds for an expected life of 5000 hrs are indicated in Table 29.

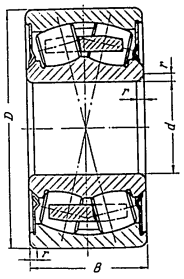


Taper of inner ring bore 1:12

DOUBLE ROW SELF-ALIGNING ROLLER BEARINGS

Bearing number	Dimensions, mm					Capacity coefficient	Maximum speed, r. p. m.	Basic static load capacity Qsr.	Weight (approx.)
	d	D	B	r	r_1	C*		kg	kg
Standard bearings (GOST 5721-57)									
113544	220	400	108	5	1.5	1660000	800	104000	66.7
113656	280	580	175	8	2.5	3800000	500	232000	234
Non-standard bearings									
113732	160	265	84	3.5	2	—	—	—	18.5

* Permissible bearing loads at various speeds for an expected life of 5000 hrs are indicated in Table 29.



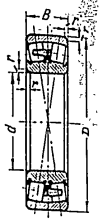
DOUBLE ROW SELF-ALIGNING ROLLER BEARINGS

Non-standard bearings

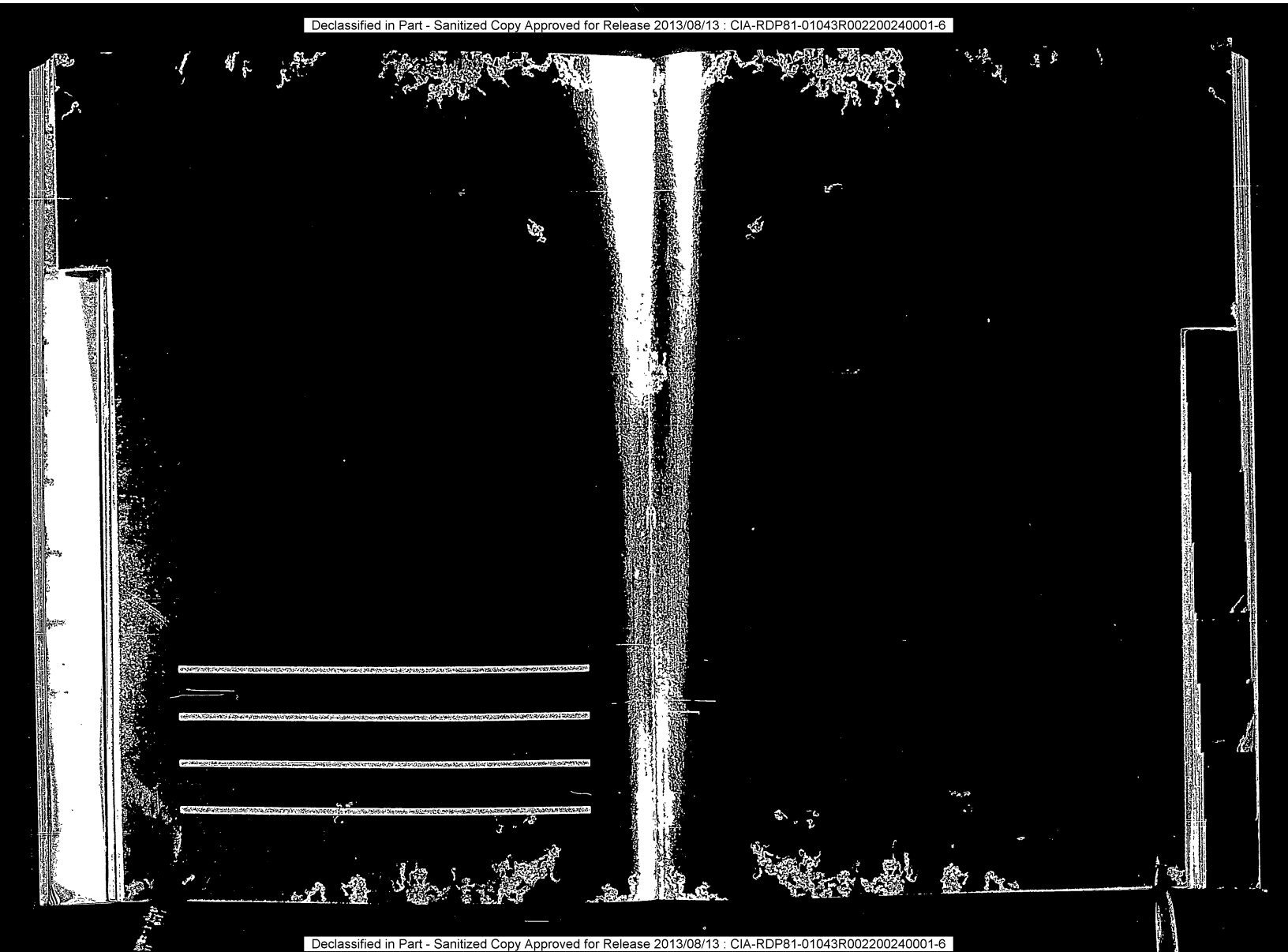
Bearing number	Dimensions, mm				Weight (approx.)
	d	D	B	r	kg
83704	20	52	26	1.5	0.278
83705	25	62	29	1.5	0.415

DOUBLE ROW SELF-ALIGNING ROLLER BEARINGS

Non-standard bearings



Bearing number	Dimensions, mm				Weight (approx.)
	d	D	B	r	kg
3744	220	365	120	5	52.3
3948	239.85	395	124	5	65
3880	400	590	142	6	145
23144 3003744	220	370	120	5	55
23048 3003148	240	360	92	4	35.5
23152 3003752	260	440	144	5	95



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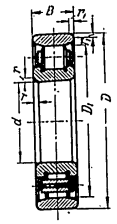
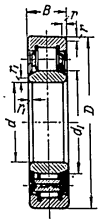
CYLINDRICAL ROLLER BEARINGS WITH SHORT ROLLERS

LIGHT SERIES

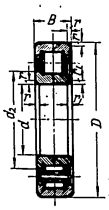
Standard bearings (GOST 294-41)



Type 2000



Type 32000



Type 42000

Bearing number			Dimensions, mm								Capacity coefficient	Maxim. speed, r. p. m.	Basic static load capacity Qsr.	Weight (approx.)
Type 2000	Type 32000	Type 42000	d	D	B	r	r_1	D_1	d_1	d_2	C		kg	kg
—	—	42202	15	35	11	1	0.5	—	20	22	8800	16000	390	0.06
2204	32204	42204	20	47	14	1.5	1	40	27	29.8	18000	16000	850	0.11
2205	32205	42205	25	52	15	1.5	1	45	32	34.9	20000	13000	1000	0.16
2206	32206	42206	30	62	16	1.5	1	53.5	38.5	41.8	27000	13000	1200	0.2
2207	32207	42207	35	72	17	2	1	61.8	43.8	47.1	39000	10000	1900	0.3
2208	32208	42208	40	80	18	2	2	70	50	54.2	50000	10000	2500	0.4
2209	32209	42209	45	85	19	2	2	75	55	59	54000	8000	2700	0.5
2210	32210	42210	50	90	20	2	2	80.4	60.4	64.1	57000	8000	3000	0.6
2211	32211	42211	55	100	21	2.5	2	88.5	66.5	69.8	70000	8000	3700	0.7
2212	32212	42212	60	110	22	2.5	2.5	97.5	73.5	77.6	84000	6300	4400	0.9
2213	32213	42213	65	120	23	2.5	2.5	105.6	79.6	83.9	98000	6300	5200	1.1
2214	32214	42214	70	125	24	2.5	2.5	110.5	84.5	88.6	98000	5000	5200	1.3
2215	32215	42215	75	130	25	2.5	2.5	116.5	88.5	92.9	120000	5000	6300	1.4
2216	32216	42216	80	140	26	3	3	125.3	95.3	100.1	132000	5000	7300	1.7
2217	32217	42217	85	150	28	3	3	133.8	101.8	107.1	152000	4000	8400	2.1
2218	32218	42218	90	160	30	3	3	143	107	114.2	188000	4000	10000	2.5
2219	32219	42219	95	170	32	3.5	3.5	151.5	113.5	120	210000	4000	11000	3.2
2220	32220	42220	100	180	34	3.5	3.5	160	120	128	230000	3200	11500	3.5
2221	32221	42221	105	190	36	3.5	3.5	168.8	126.8	135	250000	3200	13500	4
2222	32222	42222	110	200	38	3.5	3.5	178.5	132.5	141.5	310000	3200	16000	5
2224	32224	42224	120	215	40	3.5	3.5	191.5	143.5	153	350000	3200	18000	6.4
2226	32226	42226	130	230	40	4	4	204	156	165.5	360000	2500	19000	7.3
2228	32228	42228	140	250	42	4	4	221	169	179.5	420000	2500	22500	9.1
2230	32230	42230	150	270	45	4	4	238	182	193	480000	2500	27000	11
2232	32232	42232	160	290	48	4	4	257	193	202	570000	2000	32000	14
—	32234	42234	170	310	52	5	5	272	208	219.8	670000	2000	37000	17
—	—	42240	200	360	58	5	5	—	—	258	850000	1600	46500	—

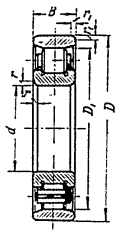
Note: Bearings of this design are also available with a stamped steel retainer.

* Permissible bearing loads at various speeds for an expected life of 5000 hrs are indicated in Table 29.

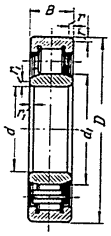
CYLINDRICAL ROLLER BEARINGS WITH SHORT ROLLERS

MEDIUM SERIES

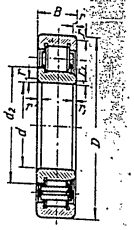
Standard bearings (GOST 294-41)



Type 2000



Type 32000



Type 42000

Bearing number			Dimensions, mm								Capacity coefficient C*	Maxim. speed, r p. m	Basic static load capacity Qsr. kg	Weight (approx.) kg
Type 2000	Type 32000	Type 42000	d	D	B	r	r_1	D_1	d_1	d_2				
2305	32305	42305	25	62	17	2	2	53	35	39	35000	10000	1600	0.2
2306	32306	42306	30	72	19	2	2	62	42	46.2	45000	10000	2100	0.3
2307	32307	42307	35	80	21	2.5	2	68.2	46.2	50.8	54000	8000	2600	0.5
2308	32308	42308	40	90	23	2.5	2.5	77.5	53.5	57.8	66000	8000	3000	0.7
2309	32309	42309	45	100	25	2.5	2.5	86.5	58.5	62.9	90000	6300	4200	0.9
2310	32310	42310	50	110	27	3	3	95	65	70.2	100000	6300	4900	1.2
2311	32311	42311	55	120	29	3	3	104.5	70.5	76	132000	6300	6200	1.7
2312	32312	42312	60	130	31	3.5	3.5	113	77	81.6	158000	5000	7600	2
2313	32313	42313	65	140	33	3.5	3.5	121.5	83.5	91	170000	5000	8500	2.5
2314	32314	42314	70	150	35	3.5	3.5	130	90	97	200000	5000	10000	3.1
2315	32315	42315	75	160	37	3.5	3.5	139.5	95.5	102.2	230000	4000	11500	3.7
2316	32316	42316	80	170	39	3.5	3.5	147	103	111	240000	4000	12000	4.4
2317	32317	42317	85	180	41	4	4	156	108	114.5	290000	4000	14500	5.2
2318	32318	42318	90	190	43	4	4	165	115	124	320000	3200	16000	6.1
2319	32319	42319	95	200	45	4	4	173.5	121.5	130	340000	3200	17000	7
2320	32320	42320	100	215	47	4	4	185.5	129.5	137.8	400000	3200	19000	8.6
2321	32321	42321	105	225	49	4	4	195	135	147	460000	2500	22500	9.8
2322	32322	42322	110	240	50	4	4	207	143	154	520000	2500	26000	11
2324	32324	42324	120	260	55	4	4	226	154	168.5	650000	2500	33000	14
2326	32326	42326	130	280	58	5	5	243	167	180.8	730000	2000	36000	18
2328	32328	42328	140	300	62	5	5	260	180	194.3	800000	2000	40000	22
2330	32330	42330	150	320	65	5	5	277	193	210	890000	2000	44000	26
2332	32332	42332	160	340	68	5	5	—	208	225	950000	2000	47000	31
2334	32334	42334	170	360	72	5	5	—	220	238	1070000	1600	52000	36
2336	32336	42336	180	380	75	5	5	330	230	249	1260000	1600	59000	42

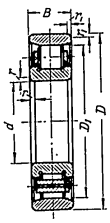
Note: Bearings of this design are also available with a stamped steel retainer.

* Permissible bearing loads at various speeds for an expected life of 5000 hrs are indicated in Table 29.

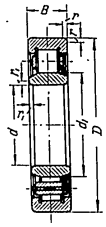
CYLINDRICAL ROLLER BEARINGS WITH SHORT ROLLERS

HEAVY SERIES

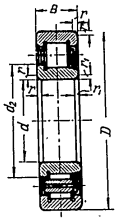
Standard bearings (GOST 294-41)



Type 2000



Type 32000



Type 42000

Bearing number			Dimensions, mm							Capacity coefficient C*	Maximum speed, r. p. m.	Basic static load capacity, Qsr. kg	Weight (approx.) kg
Type 2000	Type 32000	Type 42000	d	D	B	r and r_1	D_1	d_1	d_2				
2406	32406	42406	30	90	23	2.5	73	45	50.5	78000	8000	3500	0.73
2407	32407	42407	35	100	25	2.5	83	53	59	96000	6300	4500	0.94
2408	32408	42408	40	110	27	3	92	58	64.8	123000	6300	5600	1.25
2409	32409	42409	45	120	29	3	100.5	64.5	71.8	140000	6300	6400	1.8
2410	32410	42410	50	130	31	3.5	110.8	70.8	78.8	170000	5000	7900	2.3
2411	32411	42411	55	140	33	3.5	117.2	77.2	85.2	180000	5000	8700	2.8
2412	32412	42412	60	150	35	3.5	127	83	91	220000	4000	10500	3.4
2413	32413	42413	65	160	37	3.5	135.3	89.3	97.6	240000	4000	11500	4
2414	32414	42414	70	180	42	4	152	100	107.4	310000	4000	14500	5.9
2415	32415	42415	75	190	45	4	160.5	104.5	115	360000	4000	17000	7.1
2416	32416	42416	80	200	48	4	170	110	119.5	400000	3200	19000	8.3
2417	32417	42417	85	210	52	5	177	113	125	460000	3200	22000	9.8
2418	32418	42418	90	225	54	5	191.5	123.5	137	520000	2500	25000	11
2419	32419	42419	95	240	55	5	201.5	133 5	145.5	540000	2500	27000	14
2420	32420	42420	100	250	58	5	211	139	153.5	630000	2500	30500	16
2421	32421	42421	105	260	60	5	220.5	144.5	159.5	670000	2500	34000	18
2422	32422	42422	110	280	65	5	235	155	171	760000	2500	37500	22
2424	32424	42424	120	310	72	6	260	170	188	980000	2000	47500	30
—	32426	42426	130	340	78	6	289	185	201	1260000	2000	59000	39
—	32428	42428	140	360	82	6	302	198	219	1340000	2000	63500	46
—	32430	42430	150	380	85	6	317	213	234	1440000	1600	68000	53

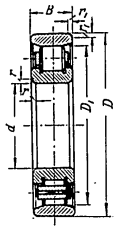
Note: Bearings of this design are also available with a stamped steel retainer.

* Permissible bearing loads at various speeds for an expected life of 5000 hrs are indicated in Table 29.

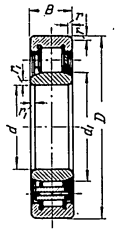
CYLINDRICAL ROLLER BEARINGS WITH SHORT ROLLERS

MEDIUM SERIES

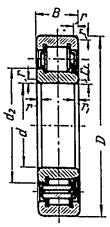
Standard bearings (GOST 294-41)



Type 2000



Type 32000



Type 42000

Bearing number			Dimensions, mm								Capacity coefficient	Maxim. speed, r p. m.	Basic static load capacity Qsr	Weight (approx.)
Type 2000	Type 32000	Type 42000	d	D	B	r	r_1	D_1	d_1	d_2	C*		kg	kg
2305	32305	42305	25	62	17	2	2	53	35	39	35000	10000	1600	0.2
2306	32306	42306	30	72	19	2	2	62	42	46.2	45000	10000	2100	0.3
2307	32307	42307	35	80	21	2.5	2	68.2	46.2	50.8	54000	8000	2600	0.5
2308	32308	42308	40	90	23	2.5	2.5	77.5	53.5	57.8	66000	8000	3000	0.7
2309	32309	42309	45	100	25	2.5	2.5	86.5	58.5	62.9	90000	6300	4200	0.9
2310	32310	42310	50	110	27	3	3	95	65	70.2	100000	6300	4900	1.2
2311	32311	42311	55	120	29	3	3	104.5	70.5	76	132000	6300	6200	1.7
2312	32312	42312	60	130	31	3.5	3.5	113	77	81.6	158000	5000	7600	2
2313	32313	42313	65	140	33	3.5	3.5	121.5	83.5	91	170000	5000	8500	2.5
2314	32314	42314	70	150	35	3.5	3.5	130	90	97	200000	5000	10000	3.1
2315	32315	42315	75	160	37	3.5	3.5	139.5	95.5	102.2	230000	4000	11500	3.7
2316	32316	42316	80	170	39	3.5	3.5	147	103	111	240000	4000	12000	4.4
2317	32317	42317	85	180	41	4	4	156	108	114.5	290000	4000	14500	5.2
2318	32318	42318	90	190	43	4	4	165	115	124	320000	3200	16000	6.1
2319	32319	42319	95	200	45	4	4	173.5	121.5	130	340000	3200	17000	7
2320	32320	42320	100	215	47	4	4	185.5	129.5	137.8	400000	3200	19000	8.6
2321	32321	42321	105	225	49	4	4	195	135	147	460000	2500	22500	9.8
2322	32322	42322	110	240	50	4	4	207	143	154	520000	2500	26000	11
2324	32324	42324	120	260	55	4	4	226	154	168.5	650000	2500	33000	14
2326	32326	42326	130	280	58	5	5	243	167	180.8	730000	2000	36000	18
2328	32328	42328	140	300	62	5	5	260	180	194.3	800000	2000	40000	22
2330	32330	42330	150	320	65	5	5	277	193	210	890000	2000	44000	26
2332	32332	42332	160	340	68	5	5	—	208	225	950000	2000	47000	31
2334	32334	42334	170	360	72	5	5	—	220	238	1070000	1600	52000	36
2336	32336	42336	180	380	75	5	5	330	230	249	1260000	1600	59000	42

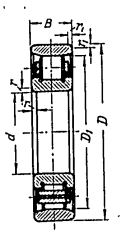
Note: Bearings of this design are also available with a stamped steel retainer.

* Permissible bearing loads at various speeds for an expected life of 5000 hrs are indicated in Table 29.

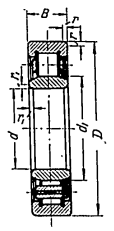
CYLINDRICAL ROLLER BEARINGS WITH SHORT ROLLERS

HEAVY SERIES

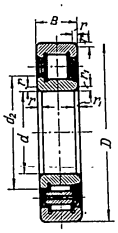
Standard bearings (GOST 294-41)



Type 2000



Type 32000

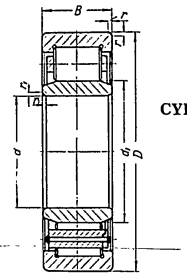


Type 42000

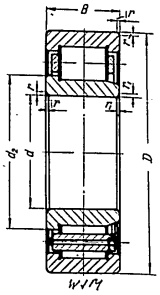
Bearing number			Dimensions, mm							Capacity coefficient	Maximum speed, r. p. m.	Basic static load capacity, Qsr.	Weight (approx.)
Type 2000	Type 32000	Type 42000	d	D	B	r and r_1	D_1	d_1	d_2	C*		kg	kg
2406	32406	42406	30	90	23	2.5	73	45	50.5	78000	8000	3500	0.73
2407	32407	42407	35	100	25	2.5	83	53	59	96000	6300	4500	0.94
2408	32408	42408	40	110	27	3	92	58	64.8	123000	6300	5600	1.25
2409	32409	42409	45	120	29	3	100.5	64.5	71.8	140000	6300	6400	1.8
2410	32410	42410	50	130	31	3.5	110.8	70.8	78.8	170000	5000	7900	2.3
2411	32411	42411	55	140	33	3.5	117.2	77.2	85.2	180000	5000	8700	2.8
2412	32412	42412	60	150	35	3.5	127	83	91	220000	4000	10500	3.4
2413	32413	42413	65	160	37	3.5	135.3	89.3	97.6	240000	4000	11500	4
2414	32414	42414	70	180	42	4	152	100	107.4	310000	4000	14500	5.9
2415	32415	42415	75	190	45	4	160.5	104.5	115	360000	4000	17000	7.1
2416	32416	42416	80	200	48	4	170	110	119.5	400000	3200	19000	8.3
2417	32417	42417	85	210	52	5	177	113	125	460000	3200	22000	9.8
2418	32418	42418	90	225	54	5	191.5	123.5	137	520000	2500	25000	11
2419	32419	42419	95	240	55	5	201.5	133.5	145.5	540000	2500	27000	14
2420	32420	42420	100	250	58	5	211	139	153.5	630000	2500	30500	16
2421	32421	42421	105	260	60	5	220.5	144.5	159.5	670000	2500	34000	18
2422	32422	42422	110	280	65	5	235	155	171	760000	2500	37500	22
2424	32424	42424	120	310	72	6	260	170	188	980000	2000	47500	30
—	32426	42426	130	340	78	6	289	185	201	1260000	2000	59000	39
—	32428	42428	140	360	82	6	302	198	219	1340000	2000	63500	46
—	32430	42430	150	380	85	6	317	213	234	1440000	1600	68000	53

Note: Bearings of this design are also available with a stamped steel retainer.

* Permissible bearing loads at various speeds for an expected life of 5000 hrs are indicated in Table 29.



Type 32000



Type 42000

CYLINDRICAL ROLLER BEARINGS WITH SHORT ROLLERS

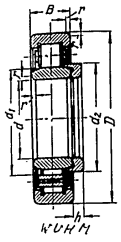
MEDIUM SERIES, WIDE TYPE

Standard bearings (GOST 294-41)

Bearing number		Dimensions, mm							Capacity coefficient	Maximum speed, r. p. m.	Basic static load capacity Qsr.	Weight (approx.)
Type 32000	Type 42000	d	D	B	r	r_1	d_1	d_2	C*		kg	kg
32605	42605	25	62	24	2	2	35	39	46000	10000	2300	0.4
32606	42606	30	72	27	2	2	42	46.2	54000	10000	2800	0.6
32607	42607	35	80	31	2.5	2	46.2	50.8	66000	8000	3500	0.85
32608	42608	40	90	33	2.5	2.5	53.5	57.8	84000	8000	4600	1.1
32609	42609	45	100	36	2.5	2.5	58.5	64	124000	6300	6200	1.5
32610	42610	50	110	40	3	3	65	71	137000	6300	7400	1.85
32611	42611	55	120	43	3	3	70.5	76	158000	5000	8800	2.4
32612	42612	60	130	46	3.5	3.5	77	81.6	196000	5000	11000	3
32613	42613	65	140	48	3.5	3.5	83.5	91	220000	4000	12000	3.6
32614	42614	70	150	51	3.5	3.5	90	97	265000	4000	15000	4.4
32615	42615	75	160	55	3.5	3.5	95.5	102.2	310000	4000	17500	5.4
32616	42616	80	170	58	3.5	3.5	103	111	330000	4000	19000	6.4
32617	42617	85	180	60	4	4	108	114.5	380000	3200	21500	7.4
32618	42618	90	190	64	4	4	115	124	400000	2500	22500	8.4
32619	42619	95	200	67	4	4	121.5	130.5	460000	2500	26000	10.2
32620	42620	100	215	73	4	4	129.5	139	540000	2500	31000	13.5
32622	42622	110	240	80	4	4	143	154	730000	2500	42000	17.5
32624	42624	120	260	86	4	4	154	167.5	890000	2500	48000	22.5
32626	42626	130	280	93	5	5	167	180.8	1070000	2000	59000	28.5
32628	42628	140	300	102	5	5	180	194.3	1070000	2000	65000	37
32630	42630	150	320	108	5	5	193	210	1260000	1600	68000	45
32632	42632	160	340	114	5	5	208	225	1340000	1600	79000	54
32634	42634	170	360	120	5	5	215	229	1660000	1300	100000	63
32636	42636	180	380	126	5	5	232	252	1660000	1300	113000	74

Note: Bearings of this design are also available with a stamped steel retainer.

* Permissible bearing loads at various speeds for an expected life of 5000 hrs are indicated in Table 29.



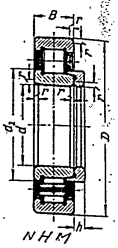
CYLINDRICAL ROLLER BEARINGS WITH SHORT ROLLERS WITH STRAIGHT INNER RING AND ONE LOOSE WASHER

Bearing number	Dimensions, mm							Capacity coefficient	Maximum speed, r. p. m.	Basic static load capacity Qsr.	Weight (approx.)
	d	D	B	h	d_1	d_2	r	C*		kg	kg
Standard bearings (GOST 294-41)											
52618	90	190	64	12	115	124	4	400000	2500	22500	9.27 Cast-iron retainer
52624	120	260	86	14	154	167.5	4	890000	2500	48000	22.5
52626	130	280	93	14	167	180.8	5	1070000	2000	59000	28.5
52630	150	320	108	15	193	210	5	1260000	1600	68000	45
Non-standard bearings											
52320	100	215	47	13	129.5	139	4	—	—	—	9.8
52328	140	300	62	15	180	194.3	5	—	—	—	22

Note: Bearings of this design are also available with a stamped steel retainer.

* Permissible bearing loads at various speeds for an expected life of 5000 hrs are indicated in Table 29.

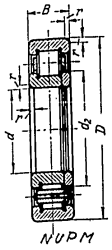
CYLINDRICAL ROLLER BEARINGS WITH SHORT ROLLERS WITH ONE SHOULDER ON INNER RING AND ONE LOOSE FORM WASHER



Bearing number	Dimensions, mm						Capacity coefficient	Maximum speed, r. p. m.	Basic static load capacity Qst.	Weight (approx.)
	d	D	B	h	d_2	r	C*		kg	kg
Standard bearings (GOST 294-41)										
62310	50	110	27	8	70.2	3	100000	6300	4900	1.2
62313	65	140	33	10	91	3.5	170000	5000	8500	2.5
62315	75	160	37	11	102.2	3.5	230000	4000	11500	3.7
62318	90	190	43	12	124	4	320000	3200	16000	6.9
62414	70	180	42	12	107.4	4	310000	4000	14500	5.9
62415	75	190	45	13	115	4	360000	4000	17000	7.1
62417	85	210	52	14	125	5	460000	3200	22000	9.8
62612	60	130	46	9.5	81.6	3.5	196000	5000	11000	3
62613	65	140	48	10	91	3.5	220000	4000	12000	3.6
Non-standard bearings										
62719	95	220	65	19	137.3	3.5	—	—	—	10.2

Note: Bearings of this design are also available with a stamped steel retainer.

* Permissible bearing loads at various speeds for an expected life of 5000 hrs are indicated in Table 29.

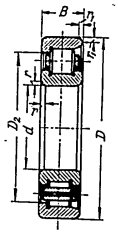


CYLINDRICAL ROLLER BEARINGS WITH SHORT ROLLERS WITH ONE SHOULDER ON INNER RING AND ONE LOOSE FLAT WASHER

Bearing number	Dimensions, mm					Capacity coefficient	Maximum speed, r p. m.	Basic static load capacity Qst.	Weight (approx.)
	d	D	B	d_2	r	C*		kg	kg
Standard bearings (GOST 294-41)									
92314*	70	150	35	97	3.5	200000	5000	10000	3.1
92412	60	150	35	91	3.5	220000	4000	10500	3.4
92426	130	340	78	201.6	6	1260000	2000	59000	40.7
92428	140	360	82	219	6	1340000	2000	63000	44.8
Non-standard bearings									
92718	90	180	30	—	3	—	—	—	3.5
92721	105.023	190	36	—	4	—	—	—	4.66

Note: Bearings of this design are also available with a stamped steel retainer.

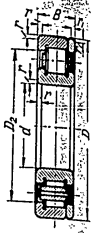
* Permissible bearing loads at various speeds for an expected life of 5000 hrs are indicated in Table 29.



Type 12000
NFM

CYLINDRICAL ROLLER BEARINGS WITH SHORT ROLLERS

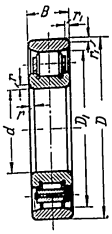
Non-standard bearings



Type 22000
NPM

Bearing number	Dimensions, mm						Weight (approx.) kg
	d	D	B	D_2	r	r_1	
12302	15	42	13	32.4	1.5	0.8	0.104
12204	20	47	14	37.3	1.5	1	0.133
12307	35	80	21	64.3	2.5	2	0.648
12208	40	80	18	66.2	2	2	0.456
12308	40	90	23	73.6	2.5	2.5	0.786
12309	45	100	25	81.4	2.5	2.5	1.053
12310	50	110	27	91.2	3	3	1.352
12311	55	120	29	99.4	3	3	1.7
12416	80	200	48	160	4	4	8.67
12218	90	160	30	136.4	3	3	2.748
12318	90	190	43	157	4	4	6.24
12418	90	225	54	179	5	5	12.01
22320	100	215	47	176.5	4	4	9.2
22524	120	215	58	184	3.5	3.5	8.75
12526	130	230	64	195	4	4	11.86
12728	140	215	50/45	189	3	3	6.9
12228	140	250	42	211.5	4	4	9.66
12736	180	280	55/50	245.5	3	3	12.8
12746	230	350	70/65	306.4	3	3	26.6

Note: Bearings of this design are also available with a stamped steel retainer.



CYLINDRICAL ROLLER BEARINGS WITH SHORT ROLLERS WITH STRAIGHT OUTER RING

Non-standard bearings

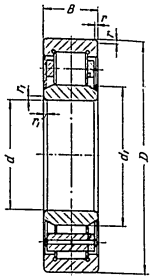
Bearing number	Dimensions, mm						Weight (approx.) kg
	d	D	B	D_1	r	r_1	
2902	16	40	12	33.9	1.5	0.8	0.084
2505 WL25	25	52	18	45	1.5	1	0.187
2710	50	100	21	86	2.5	2.5	0.85
2910	52	85	16	76.5	1.5	1.5	0.36
2712	60	140	51	122	3.5	3.5	3.75
2916	82	122	19	111	2.5	2.5	0.8
2519 WL9	95	170	43	151.5	3.5	3.5	4.52
2524 WL720	120	215	58	191.5	3.5	3.5	9.52
2626 WM730	130	280	93	243	5	5	29.9
2732	160	215	30	198	4	4	3.34
2740	200	340	50	303	5	3.5	19.25
2746*	230	370	80	334	5	5	37.4
2768	340	530	133.25	476	6	6	112.7
2961	304.8	469.9	98.5	421.35	5	5	67.29

Note: Bearings of this design are also available with a stamped steel retainer.

* With an oil hole in the outer ring.

CYLINDRICAL ROLLER BEARINGS WITH SHORT ROLLERS WITH STRAIGHT INNER RING

Non-standard bearings

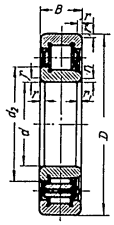


Bearing number	Dimensions, mm					Weight (approx.)
	d	D	B	d_1	r and r_1	kg
32719	95	220	65	125.5	3.5	10.5
32524	120	215	58	143.5	3.5	9.3
32544	220	400	108	268	5	62

Note: Bearings of this design are also available with a stamped steel retainer.

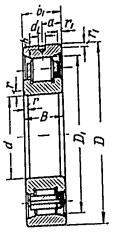
CYLINDRICAL ROLLER BEARINGS WITH SHORT ROLLERS WITH ONE SHOULDER ON INNER RING

Non-standard bearings



Bearing number	Dimensions, mm					Weight (approx.)
	d	D	B	d_2	r and r_1	kg
42717	85	125	20	100.5	1.5	0.9
42524	120	215	58	153	3.5	9.3
42526	130	230	64	165.5	4	12

Note: Bearings of this design are also available with a stamped steel retainer.

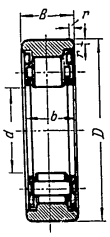


CYLINDRICAL ROLLER BEARINGS WITH SHORT ROLLERS STRAIGHT OUTER RING AND HOLE FOR LOCKING

Non-standard bearings

Bearing number	Dimensions, mm										Weight (approx.)
	d	D	B	b_1	d_1	a	D_1	h	r	r_1	kg
402310	50	110	27	27	10	13.5	95	3	3	3	1.2
402715	75	160	37	45	10	29	139.5	3	3.5	2	3.95
402318	90	190	43	43	10	21.5	165	3	4	4	6.1

Note: Bearings of this design are also available with a stamped steel retainer.



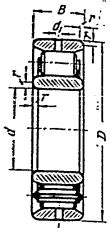
CYLINDRICAL ROLLER BEARINGS WITH SHORT ROLLERS WITHOUT INNER RING, NON-SEPARABLE TYPE

Non-standard bearings

Bearing number	Dimensions, mm					Weight (approx.)
	d	D	B	b	r	kg
922205	25	52	15	14.6	1	0.12
922906	31.793	62.025	27	26	1.5	0.18

CYLINDRICAL ROLLER BEARINGS WITH SHORT ROLLERS BOTH RINGS WITHOUT SHOULDERS

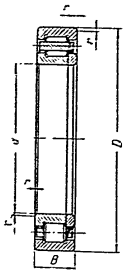
Non-standard bearings



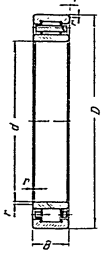
Bearing number	Dimensions, mm					Weight (approx.)
	d	D	B	d_1	r	kg
132756	280	440	135	12	3	67
1327/675	675	840	120	9	4	134
1327/840	840	1040	125	12	5	217
1327/890	890	1090	130	10	4	250

CYLINDRICAL ROLLER BEARINGS WITH SHORT ROLLERS

Non-standard bearings

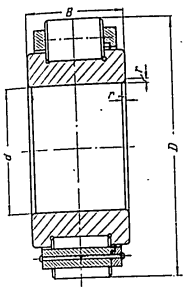


Type 927/700, etc.



Type 327/600, etc.

Bearing number	Dimensions, mm				Weight (approx.)
	d	D	B	r	kg
327/600	600	830	150	6	254
327/700	700	930	160	8	299
327/770	770	1020	170	10	395
327/825	825	1100	180	12	489
927/700	700	930	160	8	314
927/770	770	1020	170	10	410
927/825	825	1100	180	12	507



CYLINDRICAL ROLLER BEARINGS WITH SHORT ROLLERS WITHOUT OUTER RING

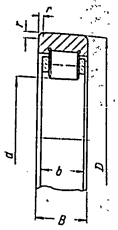
Bearing number	Dimensions, mm				Capacity coefficient C*	Maximum speed, r. p. m.	Basic static load capacity Q_{st}, kg	Weight (approx.) kg
	d	D	B	r				
Standard bearings (GOST 5377-50)								
502208	40	70	18	2	50000	10000	2200	0.3
502218	90	143	30	3	120000	4000	9000	1.7
Non-standard bearings								
502902	16	33.9	12	1.5	—	—	—	0.051
502308	40	77.5	23	2.5	—	—	—	0.458
502310	50	95	27	3	—	—	—	0.843

Notes. 1. Bearings of this design are also available with a stamped steel retainer.

2. The capacity coefficient C and the static load capacity Q_{st} are valid, if the roller race in the housing has a surface hardness not less than $R_c = 60$.

* Permissible bearing loads at various speeds for an expected life of 5000 hrs are indicated in Table 29

CYLINDRICAL ROLLER BEARINGS WITH SHORT ROLLERS WITHOUT INNER RING

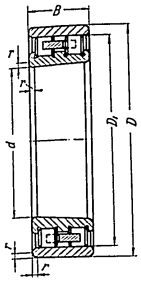


Bearing number	Dimensions, mm					Capacity coefficient	Maximum speed, r. p. m.	Basic static load capacity $Q_{ST.}$ kg	Weight (approx.) kg
	d	D	B	b	r	C*			
Standard bearings (GOST 5377-50)									
292202	20	35	11	9	1	8800	16000	430	0.038
292203	22.9	40	12	10	1.5	10000	16000	450	0.065
292204	27	47	14	10.7	1.5	16600	16000	700	0.1
292205	32	52	15	12	1.5	18000	13000	850	0.106
292206	38.5	62	16	14	1.5	28000	13000	1100	0.163
292207	43.8	72	17	15	2	37000	10000	1700	0.8
292308	53.5	90	23	18.3	2.5	60000	8000	3000	0.59
292218	107	160	30	25.4	3	188000	4000	9000	2.09
292122	125	170	28	26	3	136000	4000	7600	1.6
292220	120	180	34	32	3.5	188000	3200	9800	2.65
Non-standard bearings									
2927146 Б	82	110	18	15	2	—	—	—	0.48

Notes. 1. Bearings of this design are also available with a stamped steel retainer.

2. The capacity coefficient C and the static load capacity $Q_{ST.}$ are valid, if the roller race on the shaft has a surface hardness not less than $R_c = 60$.

* Permissible bearing loads at various speeds for an expected life of 5000 hrs are indicated in Table 29.



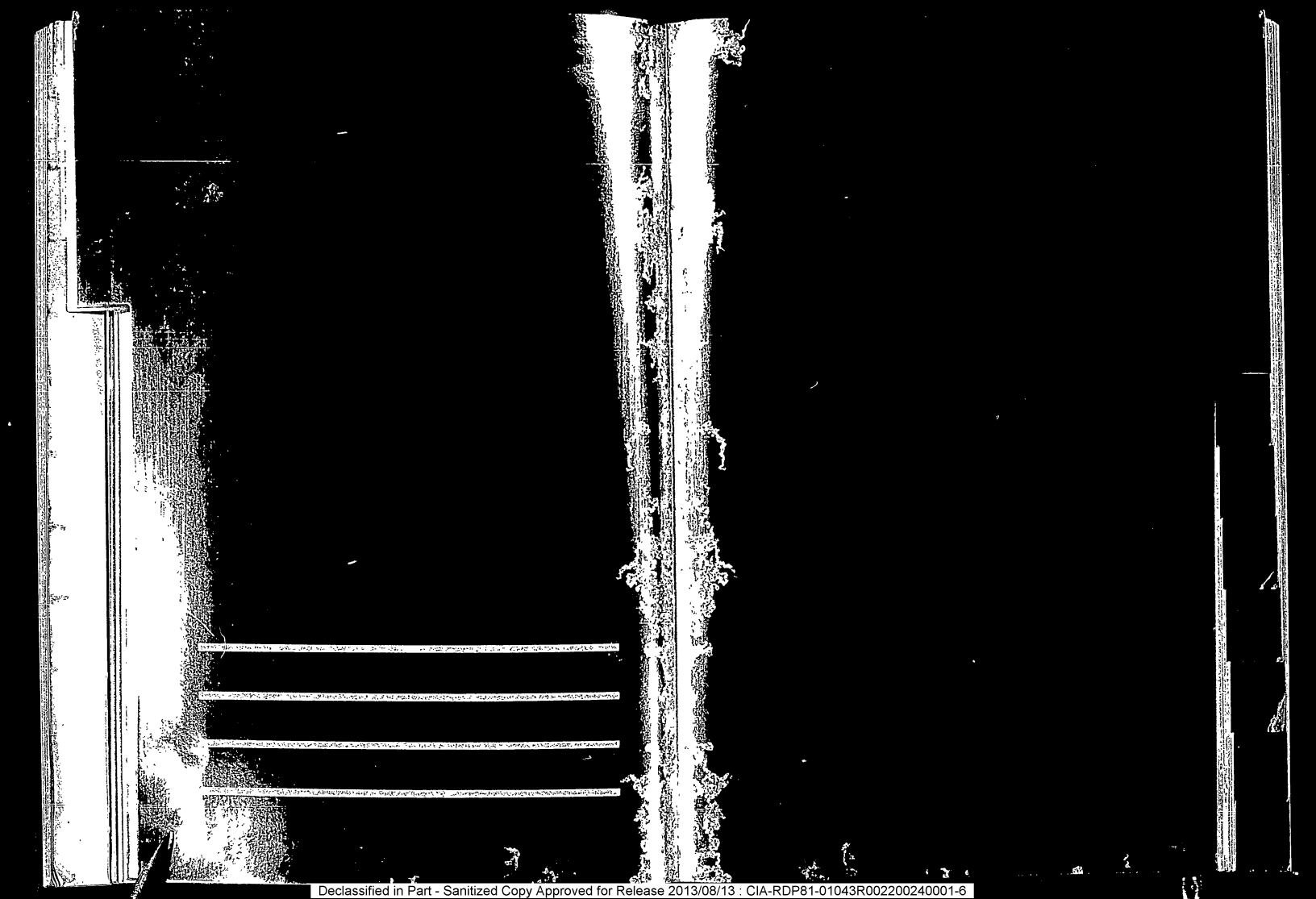
DOUBLE ROW CYLINDRICAL ROLLER BEARINGS WITH SHORT ROLLERS WITH A TAPER BORE

(Taper 1:12)

EXTRA-LIGHT SERIES

Non-standard bearings, adjustable type

Bearing number	Dimensions, mm					Weight (approx.) kg
	d	D	B	r	D_1	
3182110	50	80	23	1.5	72.5	0.428
3182111	55	90	26	2	81	0.63
3182112	60	95	26	2	86	0.69
3182113	65	100	26	2	91	0.73
3182114	70	110	30	2	100	1.075
3182115	75	115	30	2	105	1.135
3182116	80	125	34	2	113	1.5
3182117	85	130	34	2	118	1.58
3182118	90	140	37	2.5	127	2.12
3182119	95	145	37	2.5	132	2.2
3182120	100	150	37	2.5	137	2.22
3182121	105	160	41	3	146	2.84
3182122	110	170	45	3	155	3.74
3182124	120	180	46	3	165	3.86
3182126	130	200	52	3	182	5.36
3182128	140	210	53	3	192	6.05
3182130	150	225	56	3.5	206	7.5
3182132	160	240	60	3.5	219	8.387
3182134	170	260	67	3.5	236	12.9
3182136	180	280	74	3.5	255	16.9
3182138	190	290	75	3.5	265	17.9
3182140	200	310	82	3.5	282	22
3182144	220	340	90	4	310	29
3182148	240	360	92	4	330	32.7
3182152	260	400	104	5	364	47.5
3182156	280	420	106	5	384	49.2



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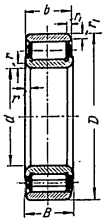
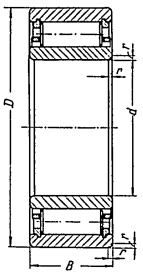


CYLINDRICAL ROLLER BEARINGS WITH LONG ROLLERS WITH SHOULDERS ON INNER RING WIDE TYPE

Non-standard bearings

Bearing number	Dimensions, mm						Weight (approx.) kg
	d	D	b	B	r	r_1	
954708	40	90	36	38	2.5	1	1.11
954712	60	120	58	60	3.5	0.8	3
954912	60.25	120	58	60	3.5	1	3



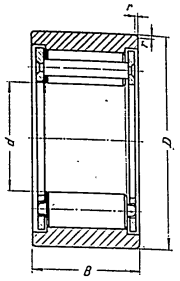
CYLINDRICAL ROLLER BEARINGS WITH LONG ROLLERS

Non-standard bearings

Bearing number	Dimensions, mm				Weight (approx.) kg
	d	D	B	r	
3104236	180	320	112	5	36.94

CYLINDRICAL ROLLER BEARINGS WITH LONG ROLLERS

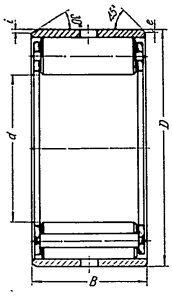
Non-standard bearings



Bearing number	Dimensions, mm				Weight (approx.)
	d	D	B	r	kg
294906	31.75	62	33	1	0.425

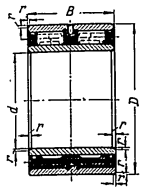
CYLINDRICAL ROLLER BEARINGS WITH LONG ROLLERS

Non-standard bearings



Bearing number	Dimensions, mm					Weight (approx.)
	d	D	B	i	e	kg
34925	127	206.375	101.6	2.5	0.5	10.88
34930	152.4	234.95	101.6	3	0.5	13.56

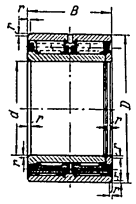
Note. Surface hardness of roller races on the shaft should not be less than $R_c = 60$.



Type 784742

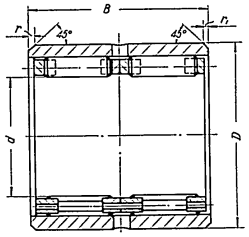
DOUBLE ROW CYLINDRICAL ROLLER BEARINGS WITH LONG ROLLERS

Non-standard bearings



Type 794742

Bearing number	Dimensions, mm				Weight (approx.)
	d	D	B	r	kg
784742	210	330	190	4	71
794742	210	330	190	4	70



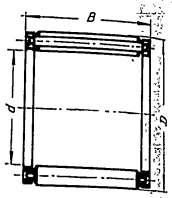
DOUBLE ROW CYLINDRICAL ROLLER BEARINGS WITH LONG ROLLERS WITHOUT INNER RING

Non-standard bearings

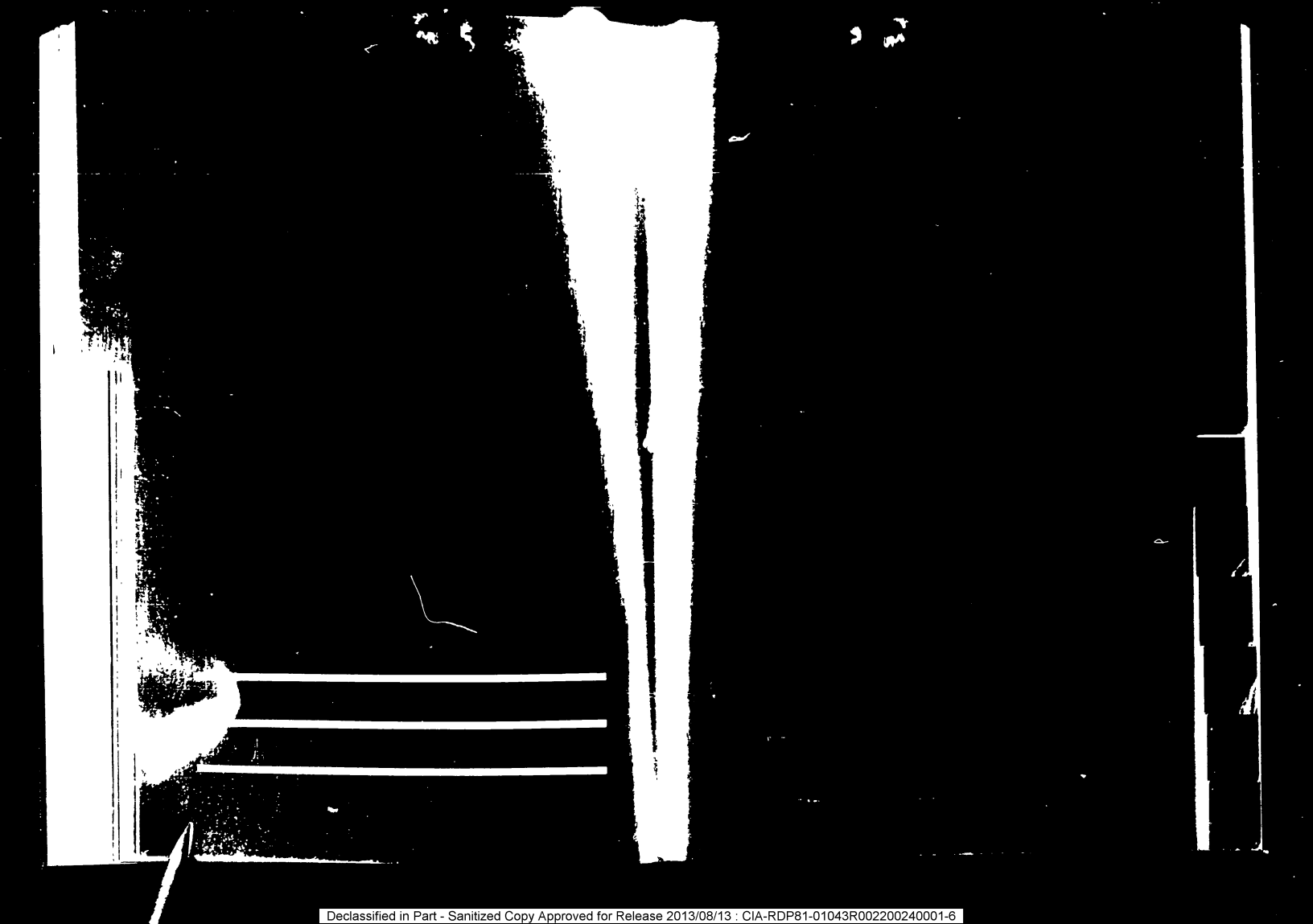
Bearing number	Dimensions, mm					Weight (approx.)
	d	D	B	r	r_1	kg
944914	72	110	100	0.5	2	5

CYLINDRICAL ROLLER ASSEMBLIES WITH LONG ROLLERS WITHOUT RINGS

Non-standard bearings



Bearing number	Dimensions, mm			Weight (approx.)	Bearing number	Dimensions, mm			Weight (approx.)
	d	D	B	kg		d	D	B	kg
64903	19.05	28.588	36.5	0.07	64906	27.71	42.825	44	0.2
64904	19.051	28.588	43	0.08	64706	29.975	42	44.1	0.18
64704	20	30	18	0.04	864906	31.65	46.814	44.1	0.22
864904	20.612	33.325	35	0.12	64907	32	52.012	49	0.32
64805	25	38	24.7	0.09	64707	35	48	69	0.8
864705	25	33.05	20	0.1	864911	52.412	71.475	43.3	0.44
64905	25.4	41.288	60.2	0.28	864915	74	106	57.9	0.27



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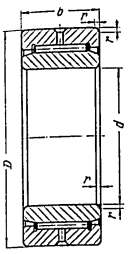
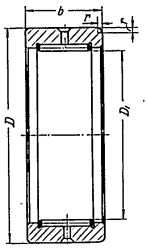


Type 4074000

NEEDLE ROLLER BEARINGS

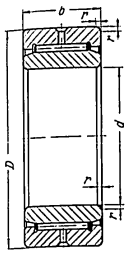
Standard bearings (GOST 4657-49)



Type 4084000

Bearing number		Dimensions, mm					Capacity coefficient	Maximum speed, r p.m.	Basic static load capacity Qst. kg	Weight (approx.) kg	
Type 4074000	Type 4084000	d	D	b	r	D_1	C*			Type 4074000	Type 4084000
4074103	4084103	17	35	18	0.5	24.3	25600	5000	800	0.098	0.065
4074104	4084104	20	42	22	1	28.7	38500	5000	1260	0.175	0.118
4074105	4084105	25	47	22	1	33.5	42500	4000	1460	0.201	0.134
4074106	4084106	30	55	25	1.5	40.1	55000	3200	2000	0.311	0.202
4074107	4084107	35	62	27	1.5	45.9	67500	3200	2500	0.415	0.268
4074108	4084108	40	68	28	1.5	51.6	73000	2500	2800	0.495	0.311
4074109	4084109	45	75	30	1.5	57.4	87000	2500	3500	0.637	0.402
4074110	4084110	50	80	30	1.5	62.1	97000	2000	3800	0.69	0.439
4074111	4084111	55	90	35	2	69.8	110000	1600	4650	0.965	0.6
4074112	4084112	60	95	35	2	74.6	115000	1600	5000	1.125	0.701
4074113	4084113	65	100	35	2	80.3	122000	1300	5400	1.197	0.718
4074114	4084114	70	110	40	2	88	146000	1300	6700	1.702	1.001
4074115	4084115	75	115	40	2	92.7	152000	1300	7100	1.796	1.065
4074116	4084116	80	125	45	2	100.3	178000	1000	8500	2.458	1.443
4074117	4084117	85	130	45	2	104.8	183000	1000	8900	2.579	1.537
4074918	4084918	90	125	35	2	105	146000	1000	7100	1.562	0.93
4074919	4084919	95	130	35	2	110.8	152000	1000	7500	1.634	0.933
4074920	4084920	100	140	40	2	117.7	198000	1000	10000	2.29	1.34
4074922	4084922	110	150	40	2	127	212000	800	10800	2.45	1.46
4074924	4084924	120	165	45	2	139.4	264000	800	13900	3.47	2.07
4074926	4084926	130	180	50	2.5	151.5	320000	630	17300	4.6	2.74
4074928	4084928	140	190	50	2.5	161.7	335000	630	18400	4.9	2.9
4074930	4084930	150	210	60	3	177.1	405000	500	23000	7.7	4.16

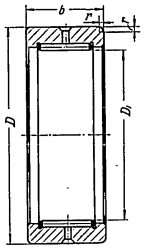
* Permissible bearing loads at various speeds for an expected life of 5000 hrs are indicated in Table 29.



Type 4074000

NEEDLE ROLLER BEARINGS

Standard bearings (GOST 4657-49)



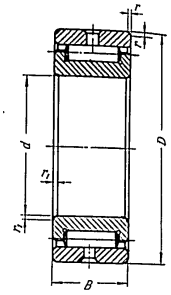
Type 4084000

Bearing number		Dimensions, mm					Capacity coefficient	Maximum speed, r.p.m.	Basic static load capacity Qst, kg	Weight (approx.) kg	
Type 4074000	Type 4084000	d	D	b	r	D_1	C*			Type 4074000	Type 4084000
4074103	4084103	17	35	18	0.5	24.3	25600	5000	800	0.098	0.065
4074104	4084104	20	42	22	1	28.7	38500	5000	1260	0.175	0.118
4074105	4084105	25	47	22	1	33.5	42500	4000	1460	0.201	0.134
4074106	4084106	30	55	25	1.5	40.1	55000	3200	2000	0.311	0.202
4074107	4084107	35	62	27	1.5	45.9	67500	3200	2500	0.415	0.268
4074108	4084108	40	68	28	1.5	51.6	73000	2500	2800	0.495	0.311
4074109	4084109	45	75	30	1.5	57.4	87000	2500	3500	0.637	0.402
4074110	4084110	50	80	30	1.5	62.1	97000	2000	3800	0.69	0.439
4074111	4084111	55	90	35	2	69.8	110000	1600	4650	0.965	0.6
4074112	4084112	60	95	35	2	74.6	115000	1600	5000	1.125	0.701
4074113	4084113	65	100	35	2	80.3	122000	1300	5400	1.197	0.718
4074114	4084114	70	110	40	2	88	146000	1300	6700	1.702	1.001
4074115	4084115	75	115	40	2	92.7	152000	1300	7100	1.796	1.065
4074116	4084116	80	125	45	2	100.3	178000	1000	8500	2.458	1.443
4074117	4084117	85	130	45	2	104.8	183000	1000	8900	2.579	1.537
4074918	4084918	90	125	35	2	105	146000	1000	7100	1.562	0.93
4074919	4084919	95	130	35	2	110.8	152000	1000	7500	1.634	0.933
4074920	4084920	100	140	40	2	117.7	198000	1000	10000	2.29	1.34
4074922	4084922	110	150	40	2	127	212000	800	10800	2.45	1.46
4074924	4084924	120	165	45	2	139.4	264000	800	13900	3.47	2.07
4074926	4084926	130	180	50	2.5	151.5	320000	630	17300	4.6	2.74
4074928	4084928	140	190	50	2.5	161.7	335000	630	18400	4.9	2.9
4074930	4084930	150	210	60	3	177.1	405000	500	23000	7.7	4.16

* Permissible bearing loads at various speeds for an expected life of 5000 hrs are indicated in Table 29.

NEEDLE ROLLER BEARINGS

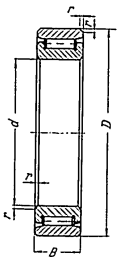
Non-standard bearings



Bearing number	Dimensions, mm					Weight (approx.)
	d	D	B	r	r_1	kg
174708	40	66	22	1.5	1	0.36

NEEDLE ROLLER BEARINGS

Non-standard bearings

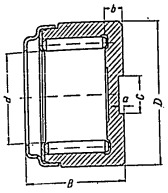


Bearing number	Dimensions, mm				Weight (approx.)
	d	D	B	r	kg
174728	140	180	32	2	2.283

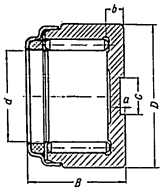
NEEDLE ROLLER BEARINGS WITHOUT INNER RING

UNIVERSAL JOINT TYPE

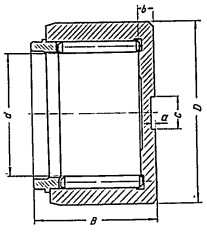
Non-standard bearings



Type 804704



Type 804705

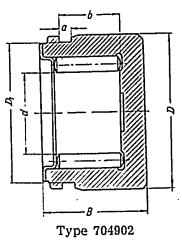


Type 804900

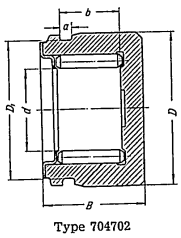
Bearing number	Dimensions, mm						Weight (approx.)
	d	D	B	b	a	c	kg
804704	22	35	26.5	4	1.5	10	0.095
804705	25	39	28	5	1.5	9.9	0.13
804906	33.65	50	34.4	4	1.5	9	0.25
804907	33.65	50	28.4	4	1.5	9	0.17

NEEDLE ROLLER BEARINGS WITHOUT INNER RING

UNIVERSAL JOINT TYPE



Type 704902

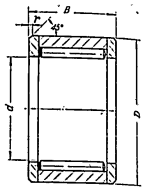


Type 704702

Bearing number	Dimensions, mm						Weight (approx.)
	d	D	B	b	a	D_1	kg
704902	15.2	28	19	11	2.5	25.7	0.06
704702	16.3	30	21	12.5	3	27.5	0.07

NEEDLE ROLLER BEARINGS WITH ONLY OUTER RING, LOOSE WASHERS AND WITHOUT INNER RING

Non-standard bearings

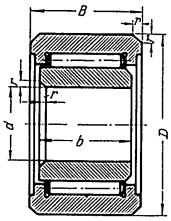


Bearing number	Dimensions, mm				Weight (approx.) kg
	d	D	B	r	
994706*	30	45	36	1	0.23
994713	65	80	31	0.5	0.38

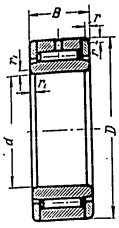
* Bearing number 994706 has an oil hole in the outer ring.

NEEDLE ROLLER BEARINGS WITH LIPS ON OUTER RING

Non-standard bearings



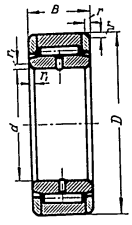
Bearing number	Dimensions, mm					Weight (approx.) kg
	d	D	B	b	r	
874901	13	32	20	17	1.5	0.09



NEEDLE ROLLER BEARINGS WITH LOOSE WASHERS

Non-standard bearings

Bearing number	Dimensions, mm					Weight (approx.) kg
	d	D	B	r	r_1	
54707	35	58	22	1.5	1	0.27
54810	50	80	28	2	2	0.64



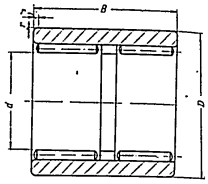
NEEDLE ROLLER BEARINGS WITH LOOSE WASHERS

Non-standard bearings

Bearing number	Dimensions, mm					Weight (approx.) kg
	d	D	B	r	r_1	
54708	40	66	22	1.5	1	0.35
54808	40	68	31	1.5	1	0.56
54712	60	90	28	2	2	0.71

DOUBLE ROW NEEDLE ROLLER BEARINGS WITHOUT INNER RING

Non-standard bearings

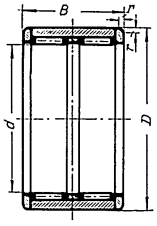


Bearing number	Dimensions, mm				Weight (approx.) kg
	d	D	B	r	
934905*	24	37	32	1	0.147
984905	24	37	32	1	0.147

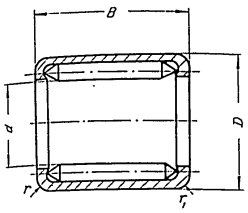
* Bearing number 934905 has an oil hole in the outer ring.

DOUBLE ROW NEEDLE ROLLER BEARINGS WITH LOOSE SHOULDERS AND WITHOUT INNER RING

Non-standard bearings



Bearing number	Dimensions, mm				Weight (approx.) kg
	d	D	B	r	
894713	65	80	45	0.5	0.55
894918	90.8	110	60	2	1.3

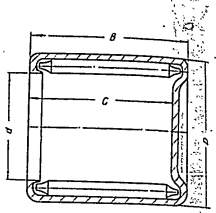


NEEDLE ROLLER BEARINGS WITH ONLY ONE OUTER RING (STAMPED)

Bearing number	Dimensions, mm					Weight (approx.) kg
	d	D	B	r	r_1	
Standard bearings (GOST 4060-48)						
942/8	8	14	12	2.3	1.2	0.0076
941/12	12	17	12	1.8	1.2	0.009
941/15	15	20	12	1.8	1.2	0.0106
942/20	20	26	20	2.25	1.2	0.0276
943/25	25	32	25	2.6	1.2	0.05
943/40	40	50	38	2.6	1.8	0.125
943/45	45	55	38	3.1	2.55	0.181
Non-standard bearings						
94056	6.35	11.112	7.937	1.3	1	0.00367
94049	9.5	14.5	16	1.4	1.1	0.0099
94904	22	28	12	2.25	1.5	0.02
94708	40	50	16	2.6	1.8	0.0775

NEEDLE ROLLER BEARINGS WITH ONLY ONE OUTER RING (STAMPED) CLOSED ON ONE SIDE

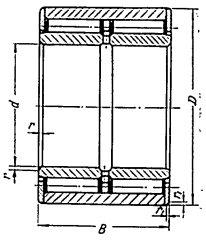
Non-standard bearings



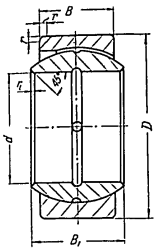
Bearing number	Dimensions, mm				Weight (approx.) kg
	d	D	B	c	
694900	9.5	14.5	16	14	0.01
694904	22	28	12	9.8	0.0215

DOUBLE ROW NEEDLE ROLLER BEARINGS

Non-standard bearings



Bearing number	Dimensions, mm					Weight (approx.) kg
	d	D	B	r	r_1	
884724	120	165	115	3	1	8.58



SELF-ALIGNING BEARINGS FOR MOVABLE JOINTS

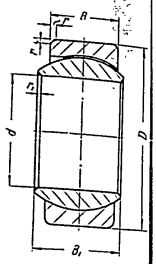
Standard bearings (GOST 3635-54)

Bearing number		d	D	B	B_1	r_1	r	Allowable load	Weight (approx.)
Type III	Type IIIC							kg	kg
III 5	—	5	14	4	6	0.5	0.5	1 000	0.004
III 6	IIIC 6	6	14	4	6	0.5	0.5	1 000	0.004
III 7	IIIC 7	7	17	5	8	0.5	0.5	1 625	0.008
III 8	IIIC 8	8	17	5	8	0.5	0.5	1 625	0.008
III 9	IIIC 9	9	20	6	9	0.5	0.5	2400	0.012
III 10	IIIC 10	10	20	6	9	0.5	0.5	2400	0.012
III 12	IIIC 12	12	22	7	10	0.5	1	3150	0.017
III 15	IIIC 15	15	28	8	12	0.5	1	5175	0.032
III 17	IIIC 17	17	32	10	14	0.5	1	6500	0.048
III 20	IIIC 20	20	35	12	16	0.5	1	8700	0.065
III 25	IIIC 25	25	42	16	20	0.5	1	14000	0.115
III 30	IIIC 30	30	47	18	22	0.5	1	18000	0.158
III 40	—	40	62	22	28	0.5	1.5	29150	0.315
—	2 IIIC 10	10	30	10	14	0.5	1	5500	0.052
—	2 IIIC 12	12	32	12	16	0.5	1	7500	0.064
—	2 IIIC 15	15	35	14	18	0.5	1	9450	0.081

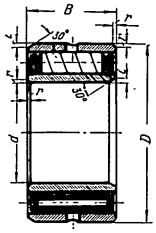
Note. IIIC 6, 7 and 8 bearings have a groove on the sphere only.

SELF-ALIGNING BEARINGS FOR FIXED JOINTS

Standard bearings (GOST 3635-54)



Bearing number	d	D	B	B_1	r_1	r	Allowable load kg	Weight (approx.) kg
IIIM 5	5	14	4	6	0.5	0.5	2000	0.004
IIIM 6	6	14	4	6	0.5	0.5	2000	0.004
IIIM 7	7	17	5	8	0.5	0.5	3250	0.008
IIIM 8	8	17	5	8	0.5	0.5	3250	0.008
IIIM 9	9	20	6	9	0.5	0.5	4800	0.012
IIIM 10	10	20	6	9	0.5	0.5	4800	0.012
IIIM 12	12	22	7	10	0.5	1	6300	0.017
IIIM 15	15	28	8	12	0.5	1	10350	0.032
IIIM 17	17	32	10	14	0.5	1	13000	0.048
IIIM 20	20	35	12	16	0.5	1	17400	0.065
IIIM 25	25	42	16	20	0.5	1	28000	0.115
IIIM 30	30	47	18	22	0.5	1	36000	0.158
2 IIIM 15	15	35	9	18	0.5	1	18900	0.068
2 IIIM 20	20	47	15	26	0.5	1	26250	0.191
2 IIIM 25	25	52	15	28	0.5	1.5	30000	0.262
9 IIIM 35	35	55	15	22	0.5	1	34500	0.190



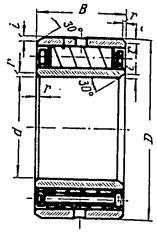
FLEXIBLE ROLLER BEARINGS

Standard bearings (OST 26005)

Bearing number	Dimensions, mm					Speed, r. p. m.						Weight (approx.)
	d	D	B	l	r	25	50	100	300	500	1000	kg
						Allowable radial load, kg, at expected life of 5000 hrs						
5210	50	90	44	2	0.5	2000	1600	1250	720	530	330	1.3
5212	60	110	49	2.5	0.5	2700	2200	1700	1000	750	450	1.941
5214	70	125	60	2.5	0.5	3800	3000	2300	1350	980	600	3.5
5215	75	130	67	2.5	0.5	4400	3500	2650	1500	1100	700	3.8
5216	80	140	67	3	0.5	5000	4000	3000	1700	1300	750	4.4
5217	85	150	70	3	0.5	5600	4500	3500	1900	1400	850	5.2
5218	90	160	70	3	0.5	5800	4700	3700	2000	1500	900	7.3
5220	100	180	82	3.5	0.8	7500	6000	4600	2600	1900	1100	10.5
5222	110	200	89	3.5	0.8	9200	7400	5600	3100	2200	1300	14.1
5224	120	215	98	4	0.8	10500	8500	6500	3600	2600	1500	15.56
5228	140	250	120	4.5	1	13500	11500	9600	5000	3800	2000	26
5230	150	270	120	4.5	1	14000	12500	10000	5400	4000	2000	27.8
5232	160	290	124	5	1	15000	12700	10500	5900	4100	2200	35.93
5236	180	320	149	5	1	16000	14000	11000	5500	4000	2400	46.1
5306	30	72	30	1.5	0.3	880	750	620	390	300	200	0.62
5307	35	80	35	1.5	0.3	1200	1000	800	500	370	250	0.9

FLEXIBLE ROLLER BEARINGS

Non-standard bearings

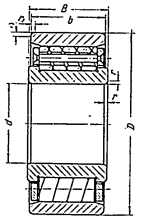


Bearing number	Dimensions, mm					Speed, r. p. m						Weight (approx.)
	d	D	B	i	r	25	50	100	300	500	1000	
						Allowable radial load, kg, at expected life of 5000 hrs						kg
5826	130	230	110	5	2	11500	9800	7300	4000	2700	1500	20.21
5736	180	320	150	6.5	2	16000	14000	11000	5500	4000	2400	46.725
5740	200	340	175	6	1.2	24000	21500	18500	10000	7100	3500	67.8
5744	220	380	175	8	2	25000	23000	19000	10100	7200	—	87.27
5756*	280	420	127	4	4	16000	14000	11000	5500	4000	—	61.226
3005218	90	160	52.4	3	0.5	3850	3100	2400	1350	980	590	4.8
3005220	100	180	60	3.5	0.8	4950	3800	3000	1700	1200	750	6.9

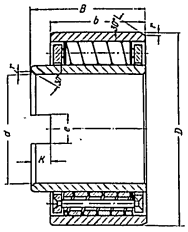
* Outer ring without oil hole.

FLEXIBLE ROLLER BEARINGS WITH SHOULDERS ON THE INNER RING

Non-standard bearings



Bearing number	Dimensions, mm						Speed, r. p. m.						Weight (approx.)
	d	D	B	b	r	r_1	25	50	100	300	500	1000	
							Allowable radial load, kg, at expected life of 5000 hrs						kg
55709	45	100	46	44	2.5	2.5	1800	1550	1200	750	550	400	1.6
55720	100	165	46	44	5	5	3700	3000	2200	1250	950	550	3.75



FLEXIBLE ROLLER BEARINGS

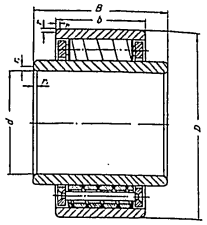
Non-standard bearings

Bearing number	Dimensions, mm							Speed, r. p. m.						Weight (approx.)
	d	D	B	b	e	K	r	25	50	100	300	500	1000	
								Allowable radial load, kg, at expected life of 5000 hrs						kg
15707*	35	80	42	34.9	10	5	2	1150	1000	800	500	350	250	0.9
15917*	87.313	160	79.5	52.4	25.8	8.8	0.5	3850	3100	2400	1350	980	590	5.75
15725	125	230	120	80	26	11	2	9000	7500	5600	3000	2150	1200	16
15925*	125.413	230	117.5	80	25.8	9.5	0.8	9000	7500	5600	3000	2150	1200	16.77
15826	130	230	160	110	40	15	2	11500	9800	7300	4000	2700	1500	22
15930*	150.813	270	136.5	89	35.8	11.5	1	10000	8750	7100	3800	2800	1400	23.98
15832	160	290	170	124	40	15	1	15000	12700	10500	5900	4100	2200	41.1
15933*	165.513	290	139.7	98	38.9	11.5	1.2	10000	9000	7600	4400	3000	1600	33.9
15736	180	320	215	150	45	10	2	16000	14000	11000	5500	4000	2400	57.16
15744	220	380	240	175	40	15	2	25000	23000	19000	10100	7200	—	96
3015220	100.013	180	92	60	25.8	9.5	0.8	4950	3800	3000	1700	1200	750	7.76

* With oil groove in outer ring.

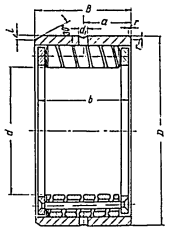
FLEXIBLE ROLLER BEARINGS WITH WIDE INNER RING

Non-standard bearings



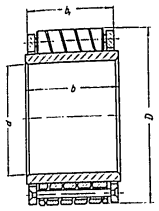
Bearing number	Dimensions, mm						Speed, r. p. m.						Weight (approx.)
	d	D	B	b	r	r_1	25	50	100	300	500	1000	kg
							Allowable radial load, kg, at expected life of 5000 hrs						
985713	65	140	55	45	2.5	0.5	3000	2500	2000	1200	900	550	2.86

FLEXIBLE ROLLER BEARINGS WITH ONLY OUTER RING



Bearing number	Dimensions, mm								Weight (approx.)
	d	D	B	b max.	a	d_1	l	r	kg
	Standard bearings (OST 26005)								
35212	60	90	44	42.7	22	8	2	0.5	1
35220	100	150	70	68.65	35	10	3	0.5	4
	Non-standard bearings								
35914	68	100	34	31.7	17	8	2.5	2.5	0.8

Note. For bearings without inner ring the surface hardness of the shaft should not be less than $R_c = 45$.

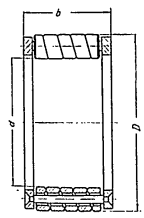


FLEXIBLE ROLLER BEARINGS WITHOUT OUTER RING

Non-standard bearings

Bearing number	Dimensions, mm				Weight (approx.)
	d	D	b	b_1	kg
905930	148	210	89	86.4	8.4

Note. For bearings without outer rings the surface hardness of the housing should not be less than $R_c = 45$.



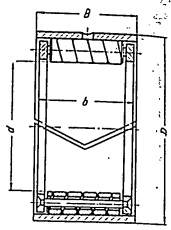
FLEXIBLE ROLLER BEARINGS WITHOUT RINGS

Non-standard bearings

Bearing number	Dimensions, mm			Weight (approx.)
	d	D	b max.	kg
65902	15.863	28.565	24.3	0.05
65910	52.4	80.975	44	0.67
65911	53.977	92.079	70.5	1.75
65915	73.025	101.625	89.5	1.85

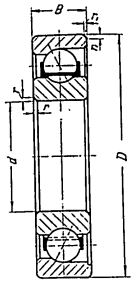
Note. For bearings without rings the surface hardness of the shaft and housing should not be less than $R_c = 45$.

FLEXIBLE ROLLER BEARINGS WITH SPLIT OUTER RING



Bearing number	Dimensions, mm				Weight (approx.) kg
	d	D	B	b max.	
Standard bearings (OST 26005)					
45213	65	120	100	98	3.37
45511	55	100	100	99.1	2.35
Non-standard bearings					
45904	19.05	36.51	38	36.5	0.12
45804	20	34	25	24	0.07
845904	22	40	38	36.8	0.15
45905	22.225	39.688	38	36.8	0.15
845905	25.4	49.214	50	49.3	0.4
845806	30	56	76	73.4	0.57

Note. For bearings without inner rings the surface hardness of the shaft should not be less than $R_c = 45$.



ANGULAR-CONTACT BALL BEARINGS
MAGNETO TYPE

Non-standard bearings

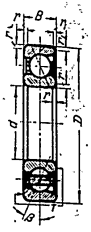
Bearing number	Dimensions, mm					Weight (approx.)
	d	D	B	r	r_1	kg
6003	3	16	5	0.3	0.2	0.005
6004	4	16	5	0.3	0.2	0.005
6005	5	16	5	0.3	0.2	0.005
6006	6	21	7	0.5	0.3	0.011
6007	7	22	7	0.5	0.3	0.013
6008	8	24	7	0.5	0.3	0.015
6010	10	28	8	0.5	0.3	0.023
6012	12	32	7	0.5	0.3	0.029
6015	15	35	8	0.5	0.3	0.035
6017	17	44	10	0.8	0.5	0.073
6020	20	47	12	1.5 (0.7)	1 (0.5)	0.095

Note. Bearings are available with non-standard corner chamfers indicated in parentheses.

ANGULAR-CONTACT BALL BEARINGS

EXTRA-LIGHT SERIES

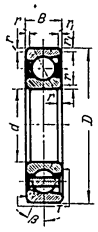
Standard bearings (GOST 831-54)



Angle $\beta = 26°$

Bearing number	Dimensions, mm							Capacity coefficient	Maximum speed, r. p. m.	Basic static load capacity, $Q_{ST.}$ kg	Weight (approx.) kg
	d	D	B	T Max	T Min.	r	r_1	C*			
46114	70	110	20	20	19.7	2	1	57000	6300	3100	0.717
46115	75	115	20	20	19.7	2	1	57000	6300	3200	0.777
46117	85	130	22	22	21.5	2	1	70000	5000	4100	1.038
46118	90	140	24	24	23.5	2.5	1.2	78000	5000	4500	1.43
46120	100	150	24	24	23.5	2.5	1.2	88000	4000	5400	1.56
46122	110	170	28	28	27.5	3	1.5	116000	4000	7200	2.37
46124	120	180	28	28	27.5	3	1.5	124000	3200	7900	2.378
46126	130	200	33	33	32.5	3	1.5	152000	3200	9200	4.138
46130	150	225	35	35	34.5	3.5	2	170000	2500	12000	4.98

* Permissible bearing loads at various speeds for an expected life of 5000 hrs are indicated in Table 29.



ANGULAR-CONTACT BALL BEARINGS

LIGHT SERIES

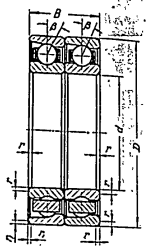
Standard bearings (GOST 831-54)

Type 36000; angle $\beta = 12°$ Type 46000; angle $\beta = 26°$

Bearing number		Dimensions, mm							Capacity coefficient C*		Maximum speed r. p. m.	Basic static load capacity $Q_{ST.}$ kg		Weight (approx.)
Type 36000	Type 46000	d	D	B	T Max.	T Min.	r	r_1	Type 36000	Type 46000		Type 36000	Type 46000	kg
36200	46200	10	30	9	9	8.8	1	0.5	7500	7100	20000	300	270	0.03
36201	46201	12	32	10	10	9.8	1	0.5	8100	7500	20000	340	310	0.037
36202	46202	15	35	11	11	10.8	1	0.5	9300	8100	16000	380	380	0.045
36203	46203	17	40	12	12	11.8	1.5	0.8	14000	12300	16000	600	500	0.06
36204	46204	20	47	14	14	13.8	1.5	0.8	18000	16700	16000	800	750	0.1
36205	46205	25	52	15	15	14.8	1.5	0.8	20000	18000	13000	900	800	0.12
36206	46206	30	62	16	16	15.8	1.5	0.8	27000	25000	13000	1300	1200	0.19
36207	46207	35	72	17	17	16.8	2	1	35000	33000	10000	1900	1600	0.27
36208	46208	40	80	18	18	17.8	2	1	49000	42000	10000	2400	2100	0.37
36209	46209	45	85	19	19	18.8	2	1	52000	44000	8000	2600	2200	0.42
36210	46210	50	90	20	20	19.8	2	1	54000	48000	8000	2800	2400	0.47
36211	46211	55	100	21	21	20.7	2.5	1.2	64000	57000	8000	3400	3100	0.58
36212	46212	60	110	22	22	21.7	2.5	1.2	76000	70000	6300	4100	3800	0.77
36213	46213	65	120	23	23	22.7	2.5	1.2	86000	80000	6300	4800	4500	0.98
36214	46214	70	125	24	24	23.7	2.5	1.2	96000	88000	5000	5200	4900	1.04
36215	46215	75	130	25	25	24.7	2.5	1.2	100000	92000	5000	5600	5200	1.13
36216	46216	80	140	26	26	25.7	3	1.5	108000	104000	5000	6400	6300	1.38
36217	46217	85	150	28	28	27.5	3	1.5	120000	112000	4000	7300	6800	1.75
36218	46218	90	160	30	30	29.5	3	1.5	140000	128000	4000	8600	7900	2.2
36219	46219	95	170	32	32	31.5	3.5	2	158000	148000	4000	9900	9200	2.6
36220	46220	100	180	34	34	33.5	3.5	2	170000	164000	3200	11500	10500	3.2
36234	—	170	310	52	52	51.5	5	2.5	400000	—	2000	32000	—	16.5

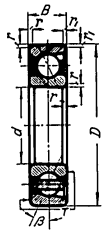
* Permissible bearing loads at various speeds for an expected life of 5000 hrs are indicated in Table 29.

DUPLEX ANGULAR-CONTACT BALL BEARINGS



Bearing number	Dimensions, mm					Angle	Capacity coefficient	Maximum speed, r. p. m.	Basic static load capacity Qst.	Weight (approx.)
	d	D	B	r	r_1	β°	C*		kg	kg
Standard bearings (GOST 832-41)										
436205	25	52	30	1.5	0.8	12	32000	13000	1800	0.24
436206	30	62	32	1.5	0.8	12	43000	13000	2600	0.44
436208	40	80	36	2	1	12	78000	10000	4800	0.74
446206	30	62	32	1.5	0.8	26	40000	13000	2400	0.44
446215	75	130	50	2.5	1.2	26	158000	5000	10500	2.87
446306	30	72	38	2	1	26	60000	10000	3400	0.78
Non-standard bearings										
466322	110	240	100	4	2	36	—	—	—	22.31

* Permissible bearing loads at various speeds for an expected life of 5000 hrs. are indicated in Table 29.



ANGULAR-CONTACT BALL BEARINGS

MEDIUM SERIES

Standard bearings (GOST 831-54)

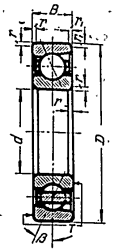
Angle β = 26°

Bearing number	Dimensions, mm							Capacity coefficient	Maximum speed, r. p. m.	Basic static load capacity Qst.	Weight (approx.)
	d	D	B	T		r	r_1	C*		kg	kg
				Max.	Min.						
46303	17	47	14	14	13.8	1.5	0.5	19000	13000	770	0.11
46304	20	52	15	15	14.8	2	1	21000	13000	900	0.14
46305	25	62	17	17	16.8	2	1	31000	10000	1400	0.23
46306	30	72	19	19	18.8	2	1	38000	10000	1700	0.35
46307	35	80	21	21	20.8	2.5	1.2	46000	8000	2100	0.44
46308	40	90	23	23	22.8	2.5	1.2	57000	8000	2800	0.63
46309	45	100	25	25	24.8	2.5	1.2	70000	6300	3600	0.83
46310	50	110	27	27	26.8	3	1.5	80000	6300	4400	1.08
46311	55	120	29	29	28.7	3	1.5	100000	6300	5500	1.37
46312	60	130	31	31	30.7	3.5	2	112000	5000	6400	1.71
46313	65	140	33	33	32.7	3.5	2	124000	5000	7300	2.09
46314	70	150	35	35	34.7	3.5	2	140000	5000	8300	2.6
46315	75	160	37	37	36.7	3.5	2	158000	4000	9300	3.1
46316	80	170	39	39	38.7	3.5	2	170000	4000	10500	3.6
46317	85	180	41	41	40.5	4	2	182000	4000	11500	4.3
46318	90	190	43	43	42.5	4	2	194000	3200	13000	5
46319	95	200	45	45	44.5	4	2	220000	3200	14000	5.7
46320	100	215	47	47	46.5	4	2	250000	3200	17000	7.2
46330	150	320	65	65	64.5	5	2.5	440000	2000	36000	26

* Permissible bearing loads at various speeds for an expected life of 5000 hrs are indicated in Table 29.

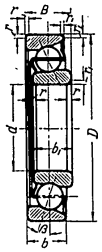
ANGULAR-CONTACT BALL BEARINGS

Standard bearings (GOST 831-54)



Bearing number	Dimensions, mm							Angle	Capacity coefficient	Maximum speed, r. p. m	Basic static load capacity Qsr.	Weight (approx.)
	d	D	B	T Max.	T Min.	r	r_1	β°	C*		kg	kg
66406	30	90	23	23	22.6	2.5	1.2	36	54000	8000	2700	0.77
66407	35	100	25	25	24.6	2.5	1.2	36	64000	6300	3200	1.05
36308	40	90	23	23	22.6	2.5	1.2	12	60000	8000	2900	0.74
66408	40	110	27	27	26.6	3	1.5	36	80000	6300	4100	1.37
66409	45	120	29	29	28.6	3	1.5	36	96000	6300	5100	1.75
66410	50	130	31	31	30.6	3.5	2	36	108000	5000	5900	2.17
66412	60	150	35	35	34.4	3.5	2	36	132000	4000	7800	3.52
46416	80	200	48	48	47.4	4	1.2	26	230000	3200	15500	7
36318	90	190	43	43	42.2	4	2	12	220000	3200	14200	6.45
46418	90	225	54	54	53.4	5	2.5	26	270000	2500	20000	12
66322	110	240	50	50	49.2	4	2	36	260000	2500	18000	11.16
Non-standard bearings												
66128	140	210	33	33	32.5	3	1	36	—	—	—	4.8
66432	160	400	88	88	87.5	6	3	40	—	—	—	61.9
46792	460	600	50	50	49	5	2.5	26	—	—	—	37.9

* Permissible bearing loads at various speeds for an expected life of 5000 hrs are indicated in Table 29.

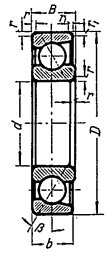


ANGULAR-CONTACT BALL BEARINGS

Non-standard bearings

Angle β = 20° to 26°

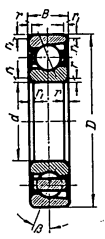
Bearing number	Dimensions, mm								Weight (approx.)
	d	D	B Max.	B Min.	b	b_1	r	r_1	kg
26202	15	35	11.5	11	9	9	1	0.3	0.04
26903	15.876	42.877	15.34	14.84	12.7	—	1	0.3	0.1
26203	17	40	12.5	12	10	10	1.5	0.5	0.067
26204	20	47	14.5	14	12	12	1.5	0.5	0.09
26205	25	52	15.5	15	12	12	1.5	0.5	0.14
26905	25.4	58.753	16	15.5	16	17.2	2	0.5	0.2
26906	28	65	30	29.7	18	24.5	2.5	0.5	0.45
26216	80	140	26.5	26	21	21	3	1	1.51



Type 936700

ANGULAR-CONTACT BALL BEARINGS

Non-standard bearings

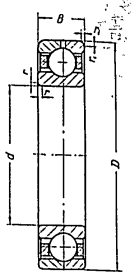


Type 926722

Bearing number	Dimensions, mm						Angle	Weight (approx.)
	d	D	B max.	b	r	r_1	β°	kg
936700	10	30	9	8.5	1	1	12	0.03
926722	110	175	30	—	1.5	1	26	2.7

ANGULAR-CONTACT BALL BEARINGS WITH SPLIT OUTER RING

Non-standard bearings

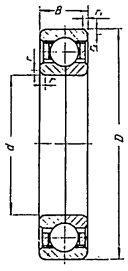


Bearing number	Dimensions, mm					Weight (approx.)
	d	D	B	r	r_1	kg
116207	35	72	17	2	2	0.356
116211У	55	100	21	2.5	1.5	0.674
116213	65	120	23	2.5	2.5	1.12
116215	75	130	25	2.5	2.5	1.34
116222*	110	200	38	3.5	3.5	5.5

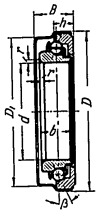
* Bearing number 116222 have not oil holes in the outer ring.

ANGULAR-CONTACT BALL BEARINGS WITH SPLIT INNER RING

Non-standard bearings



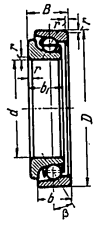
Bearing number	Dimensions, mm					Weight (approx.)
	d	D	B	r	r_1	kg
126220Г	100	180	34	2.5	3.5	3.87
126220Б	100	180	34	2.5	3.5	3.43
126222	110	200	38	2.5	3.5	4.87
126725	125	200	30	3.5	3.5	3.44
176130	150	225	35	3.5	3.5	4.59
176134	170	260	42	3.5	3.5	9



Type 986711

ANGULAR-CONTACT BALL BEARINGS

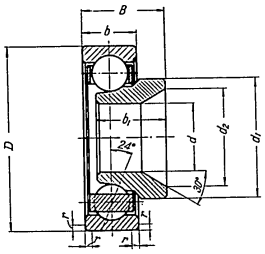
Non-standard bearings



Type 916913

Angle $\beta = 26°$

Bearing number	Dimensions, mm								Weight (approx.)
	d	D	D_1	B	b	b_1	h	r	kg
986711	55	90	83.5	23	19	—	13.5	2	0.39
916913	63	102	—	27	22	23	—	2.5	0.7



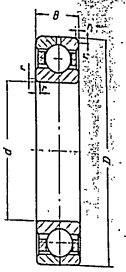
ANGULAR-CONTACT BALL BEARINGS

Non-standard bearings

Bearing number	Dimensions, mm									Weight (approx.)
	d	d_1	d_2	D	B		b	b_1	r	kg
					Max.	Min.				
226906	32	48	42	72	30	29.3	19	24.5	2	0.45

ANGULAR-CONTACT BALL BEARINGS WITH SPLIT OUTER RING

Non-standard bearings

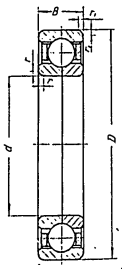


Bearing number	Dimensions, mm					Weight (approx.)
	d	D	B	r	r_1	kg
116207	35	72	17	2	2	0.356
116211у	55	100	21	2.5	1.5	0.674
116213	65	120	23	2.5	2.5	1.12
116215	75	130	25	2.5	2.5	1.34
116222*	110	200	38	3.5	3.5	5.5

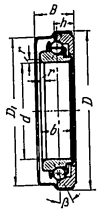
* Bearing number 116222 have not oil holes in the outer ring.

ANGULAR-CONTACT BALL BEARINGS WITH SPLIT INNER RING

Non-standard bearings



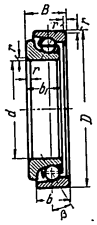
Bearing number	Dimensions, mm					Weight (approx.)
	d	D	B	r	r_1	kg
126220Г	100	180	34	2.5	3.5	3.87
126220В	100	180	34	2.5	3.5	3.43
126222	110	200	38	2.5	3.5	4.87
126725	125	200	30	3.5	3.5	3.44
176130	150	225	35	3.5	3.5	4.59
176134	170	260	42	3.5	3.5	9



Type 986711

ANGULAR-CONTACT BALL BEARINGS

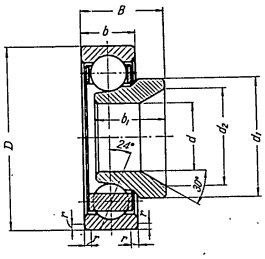
Non-standard bearings



Type 916913

Angle $\beta = 26°$

Bearing number	Dimensions, mm								Weight (approx.)
	d	D	D_1	B	b	b_1	h	r	kg
986711	55	90	83.5	23	19	—	13.5	2	0.39
916913	63	102	—	27	22	23	—	2.5	0.7



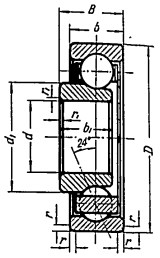
ANGULAR-CONTACT BALL BEARINGS

Non-standard bearings

Bearing number	Dimensions, mm								Weight (approx.)
	d	d_1	d_2	D	B		b	b_1	r	kg
					Max.	Min.				
226906	32	48	42	72	30	29.5	19	24.5	2	0.45

ANGULAR-CONTACT BALL BEARINGS

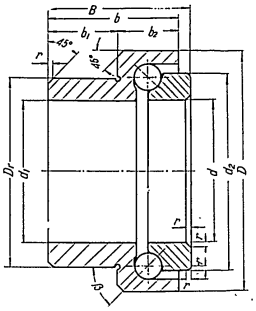
Non-standard bearings



Bearing number	Dimensions, mm									Weight (approx.)
	d	d_1	D	B		b	b_1	r	r_1	kg
				Max.	Min.					
326705	25	36.6	62	20	19.5	17	17	2	1	0.28

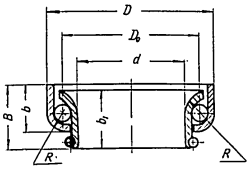
ANGULAR-CONTACT BALL BEARINGS

Non-standard bearings



Angle β = 45°

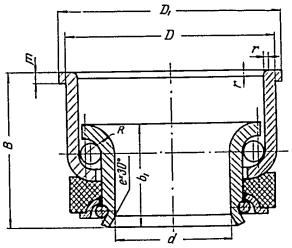
Bearing number	Dimensions, mm										Weight (approx.)
	d	d_1	d_2	D	D_1	B	b	b_1	b_2	r	kg
746905	26	27	38.5	44	32.5	21	19.5	10	9.5	0.5	0,1



ANGULAR-CONTACT BALL BEARINGS STAMPED BODY TYPE

Non-standard bearings

Bearing number	Dimensions, mm							Weight (approx.)
	d	D_0	D	B	b	b_1	R	kg
636905	23.5	30	36.5	14	10.5	12.5	4.25	0.03



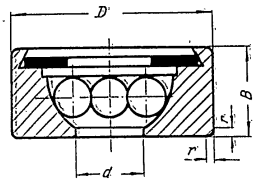
ANGULAR-CONTACT BALL BEARINGS STAMPED BODY TYPE

Non-standard bearings

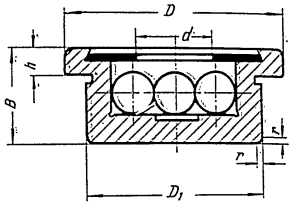
Bearing number	Dimensions, mm									Weight (approx.)
	d	D	D_1	B	b_1	m	R	r	e	kg
836906	28	42	44	26	17	1.5	4.5	1.5	2	0.06

ANGULAR-CONTACT BALL BEARINGS
CUP TYPE WITHOUT INNER RINGS

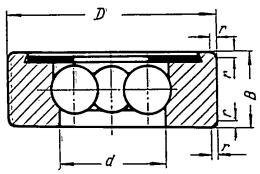
Non-standard bearings



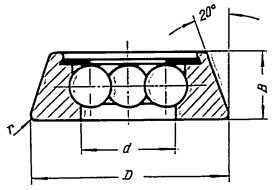
Type 516053



Type 526055



Type 506057

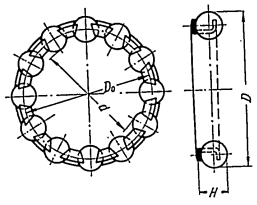


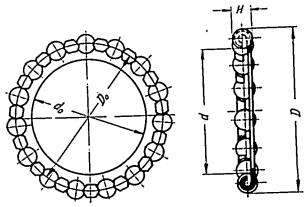
Type 536057 K

Bearing number	Dimensions, mm				Weight (approx.)
	d	D (D_1)	B (h)	r	kg
516053	3	9	4	0.3	0.0015
526055	5	14(11)	6(1.7)	0.5	0.004
506057	8.8	16	5.5	0.5	0.0066
536057 K	8.8	17.6	5.5	0.3	0.0065

ANGULAR-CONTACT BALL BEARINGS
WITHOUT RINGS

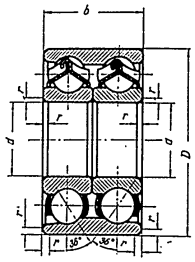
Non-standard bearings





Bearing design 876707
d_0=26,6

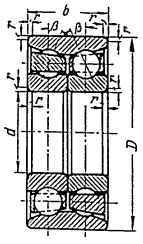
Bearing number	Dimensions, mm			
	d	D	H	D_0
876901	11	19	4.7	15
876902	11.1	21.1	5.84	16.1
876903	12.6	20.6	4.85	16.6
876704	14.9	26.9	7.1	20.9
876905	17.5	29.5	7.13	23.5
876906	23.6	35.6	7.1	29.6
876907	28.5	40.5	7	34.5
876707	29	37	4	33



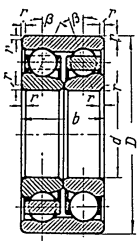
DOUBLE ROW ANGULAR-CONTACT BALL BEARINGS WITH TWO INNER RINGS

Non-standard bearings

Bearing number	Dimensions, mm				Weight (approx.)
	d	D	b	r	kg
286805	25	62	28	1.5	0.5



Type 3156000



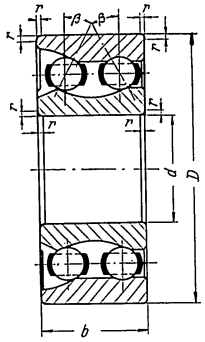
Type 3086000

DOUBLE ROW ANGULAR-CONTACT BALL BEARINGS WITH TWO INNER RINGS

Non-standard bearings

Bearing number	Dimensions, mm				Weight (approx.)
	d	D	b	r	kg
3156205	25	52	20.6	1.5	0.2
3156307	35	80	35	1.5	0.8
3086304	20	52	22.22	1	0.28
3086309	45	100	39.69	2.5	1.42
3086313	65	140	58.74	3.5	4.1

Note. For bearings 3156205 and 3156307, angle $\beta = 35°$; for all other bearings, angle $\beta = 26°$.



DOUBLE ROW ANGULAR-CONTACT BALL BEARINGS

Standard bearings (GOST 4252-48)

Angle $\beta = 26°$

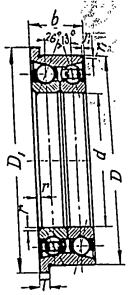
Bearing number	Dimensions, mm				Capacity coefficient	Maximum speed, r. p. m.	Basic static load capacity Q_{ST}	Weight (approx.)
	d	D	b	r	C**		kg	kg
3056204	20	47	20.6	1	25000	10000	980	0.17
3056205	25	52	20.6	1	28000	8000	1200	0.19
3056206*	30	62	24	1	38000	8000	1700	0.32
3056207	35	72	27	1.5	60000	6300	2800	0.48
3056208*	40	80	30	1	60000	6300	2800	0.65
3056216*	80	140	44.5	2	148000	3200	8500	2.65

* Bearings non-standard in width.

** Permissible bearing loads at various speeds for an expected life of 5000 hrs are indicated in Table 29.

DOUBLE ROW ANGULAR-CONTACT BALL BEARINGS WITH TWO INNER RINGS AND FLANGED OUTER RING

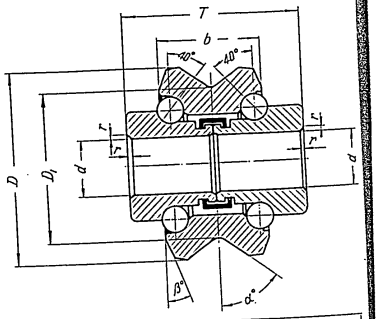
Non-standard bearings



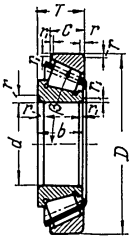
Bearing number	Dimensions, mm								Weight (approx.)
	d	D	D_1	b	T		r	r_1	kg
					Max.	Min.			
3166118	90	140	149.2	37	6.3	6	1.5	1.5	2.28

SPECIAL DOUBLE ROW ANGULAR-CONTACT BALL BEARINGS WITH TWO INNER RINGS

Non-standard bearings



Bearing number	Dimensions, mm								Weight (approx.)
	d	D	D_1	T	b	r	α°	β°	kg
676901	12	42.945	30.6	28.66	22	1	39° 15′	20° 45′	0.16
676701	12	42.945	30.8	31	22	1	39° 15′	20° 45′	0.18
776901	12.75	47.615	35	38	24	1	38° 30′	21° 30′	0.25
776801	12.75	51.615	39	38	24	1	38° 30′	21° 30′	0.33



TAPER ROLLER BEARINGS

LIGHT SERIES

Standard bearings (GOST 333-55)

Angle $\beta = 12°$ to $16°$

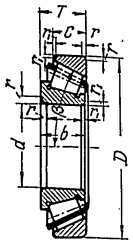
Bearing number	Dimensions, mm								Capacity coefficient	Maximum speed, r. p. m.	Basic static load capacity $Q_{ST.}$	Weight (approx.)
	d	D	T		b	c	r	r_1	C *		kg	kg
			Max.	Min.								
7202	15	35	12	11.5	11	9	1	0.3	14000	6300	700	0.05
7203	17	40	13.5	13	12	11	1.5	0.5	20000	6300	1000	0.08
7204	20	47	15.5	15	14	12	1.5	0.5	28000	5000	1300	0.12
7205	25	52	16.5	16	15	13	1.5	0.5	35000	5000	1600	0.15
7206	30	62	17.5	17	16	14	1.5	0.5	43000	5000	2100	0.22
7207	35	72	18.5	18	17	15	2	0.8	50000	5000	2500	0.32
7208	40	80	20	19.5	20	16	2	0.8	66000	5000	3300	0.42
7209	45	85	21	20.5	19	16	2	0.8	70000	5000	3500	0.47
7210	50	90	22	21.5	21	17	2	0.8	82000	5000	4000	0.53
7211	55	100	23	22.5	21	18	2.5	0.8	90000	4000	4500	0.69
7212	60	110	24	23.5	23	19	2.5	0.8	112000	4000	5600	0.86
7213	65	120	25	24.5	23	20	2.5	0.8	120000	3200	6300	1.1
7214	70	125	26.5	26	26	21	2.5	0.8	152000	3200	7800	1.22
7215	75	130	27.5	27	26	22	2.5	0.8	158000	3200	8200	1.34
7216	80	140	28.5	28	26	22	3	1	170000	3200	9100	1.59
7217	85	150	31	30	28	24	3	1	200000	2500	10500	2
7218	90	160	33	32	31	26	3	1	230000	2500	12000	2.5
7219	95	170	35	34	32	27	3.5	1.2	270000	2000	14000	3.2
7220	100	180	37.5	36.5	34	29	3.5	1.2	280000	2000	15000	3.7
7221	105	190	39.5	38.5	36	30	3.5	1.2	320000	1600	16500	4.5
7222	110	200	41.5	40.5	38	32	3.5	1.2	360000	1600	18500	5.6
7224	120	215	44	43	41	34	3.5	1.2	400000	1300	22000	6.6
7226	130	230	44.5	43	40	34	4	1.5	440000	1300	23000	7.6
7228	140	250	46.5	45	42	36	4	1.5	480000	1000	24000	9.5
7230	150	270	50	48	45	38	4	1.5	520000	1000	25000	12
7236	180	320	58	56	52	43	5	2	670000	800	34000	20
7244	220	400	71	69	65	52	5	2	1070000	800	57000	35.5

* Permissible bearing loads at various speeds for an expected life of 5000 hrs are indicated in Table 29.

TAPER ROLLER BEARINGS

LIGHT SERIES, WIDE TYPE

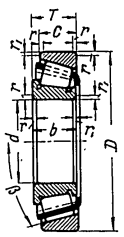
Standard bearings (GOST 333-55)



Angle β = 12° to 16°

Bearing number	Dimensions, mm								Capacity coefficient	Maximum speed r. p. m.	Basic static load capacity Qst.	Weight (approx.)
	d	D	T		b	c	r	r1	C*		kg	kg
			Max.	Min.								
7506 K	30	62	21.5	21	20.5	17	1.5	0.5	57000	5000	2800	0.28
7507	35	72	24.5	24	23	19	2	0.8	78000	5000	3700	0.42
7508	40	80	25	24.5	23.5	19	2	0.8	84000	4000	4300	0.51
7509 K	45	85	25	24.5	23.5	20	2	0.8	84000	4000	4300	0.56
7510	50	90	25	24.5	23.5	20	2	0.8	94000	4000	5000	0.59
7511	55	100	27	26.5	25	21	2.5	0.8	116000	3200	5700	0.82
7512 K	60	110	30	29.5	28	24	2.5	0.8	152000	3200	8100	1.1
7513	65	120	33	32.5	31	27	2.5	0.8	176000	3200	9100	1.48
7514	70	125	33.5	33	31	27	2.5	0.8	182000	3200	9700	1.56
7515	75	130	33.5	33	31	27	2.5	0.8	188000	2500	10000	1.62
7516	80	140	35.5	35	33	28	3	1	220000	2500	12000	2
7517	85	150	39	38	36	30	3	1	260000	2000	13000	2.5
7518	90	160	43	42	40	34	3	1	310000	2000	16000	3.3
7519	95	170	46	45	45.5	37	3.5	1.2	380000	2000	20000	4
7520	100	180	49.5	48.5	46	39	3.5	1.2	390000	1600	21000	5
7521	105	190	53.5	52.5	50	43	3.5	1.2	460000	1600	24000	5.9
7522	110	200	56.5	55.5	53.5	46	3.5	1.2	520000	1300	26000	7.3
7524	120	215	62	61	58	50	3.5	1.2	600000	1300	33000	9.6
7526	130	230	68.5	67	65	54	4	1.5	730000	1000	40000	10.7
7528	140	250	72.5	71	68	58	4	1.5	890000	1000	47000	13.8
7530	150	270	78	76	74	60	4	1.5	980000	1000	53000	18
7536	180	320	91	90	86	70	5	2	1160000	800	59000	27.4

* Permissible bearing loads at various speeds for an expected life of 5000 hrs are indicated in Table 29.



TAPER ROLLER BEARINGS

MEDIUM SERIES

Standard bearings (GOST 333-55)

Angle β = 10° to 14°

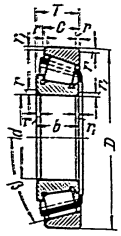
Bearing number	Dimensions, mm								Capacity coefficient	Maximum speed, r. p. m.	Basic static load capacity Qst.	Weight (approx.)
	d	D	T		b	c	r	r1	C*		kg	kg
			Max.	Min.								
7302	15	42	14.5	14	13	11.1	1.5	0.5	26000	5000	1100	0.09
7303	17	47	15.5	15	14	12	1.5	0.5	28000	5000	1300	0.13
7304	20	52	16.5	16	16	13	2	0.8	38000	5000	1600	0.17
7305	25	62	18.5	18	17	15	2	0.8	45000	5000	2100	0.25
7306	30	72	21	20.5	19	17	2	0.8	60000	5000	2800	0.38
7307	35	80	23	22.5	21	18	2.5	0.8	74000	5000	3400	0.52
7308	40	90	25.5	25	23	20	2.5	0.8	92000	4000	4300	0.7
7309	45	100	27.5	27	26	22	2.5	0.8	128000	4000	5800	0.92
7310	50	110	29.5	29	29	23	3	1	152000	4000	7100	1.19
7311	55	120	32	31	29	25	3	1	164000	3200	7500	1.53
7312	60	130	34	33	31	27	3.5	1.2	194000	3200	9200	1.9
7313	65	140	36.5	35.5	33	29	3.5	1.2	230000	3200	11000	2.3
7314	70	150	38.5	37.5	37	30	3.5	1.2	270000	3200	12500	3
7315	75	160	40.5	39.5	37	31	3.5	1.2	280000	2500	13000	3.4
7316	80	170	43	42	39	33	3.5	1.2	310000	2500	15000	4
7317	85	180	45	44	41	35	4	1.5	350000	2000	17500	4.7
7318	90	190	47	46	43	36	4	1.5	380000	2000	17500	5.5
7319	95	200	50	49	45	39	4	1.5	440000	1600	21500	6.4
7320	100	215	52	51	47	39	4	1.5	500000	1600	24000	7.9
7321	105	225	54	53	49	41	4	1.5	540000	1600	25500	10.5
7322	110	240	55	54	50	42	4	1.5	570000	1300	26500	12
7324	120	260	60	59	55	46	4	1.5	670000	1300	32000	15
7330	150	320	73	71	65	53	5	2	920000	800	44000	29
7352	260	540	110	108.5	102	80	8	3.5	2500000	630	135000	125

* Permissible bearing loads at various speeds for an expected life of 5000 hrs are indicated in Table 29.

TAPER ROLLER BEARINGS

MEDIUM SERIES, WIDE TYPE

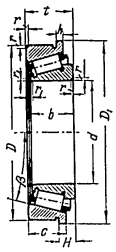
Standard bearings (GOST 333-55)



Angle $\beta = 11°$ to $15°$

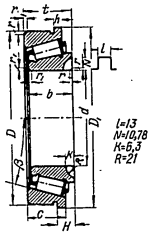
Bearing number	Dimensions, mm								Capacity coefficient	Maximum speed r. p. m.	Basic static load capacity Qst kg	Weight (approx.) kg
	d	D	T Max.	T Min.	b	c	r	r_1	C*			
7604	20	52	22.5	22	21	18	2	0.8	46000	5000	2100	0.27
7605	25	62	22.5	25	24	21	2	0.8	70000	5000	3200	0.36
7606	30	72	29	28.5	29	23	2	0.8	100000	4000	4400	0.54
7607	35	80	33	32.5	31	27	2.5	0.8	116000	4000	5300	0.72
7608	40	90	35.5	35	33	28.5	2.5	0.8	140000	4000	6600	0.99
7609	45	100	38.5	38	36	30	2.5	0.8	170000	4000	8000	1.33
7610	50	110	42.5	42	40	34	3	1	210000	3200	9900	1.74
7611	55	120	46	45	44.5	36.5	3	1	260000	3200	13000	2.2
7612	60	130	49	48	47.5	39	3.5	1.2	300000	3200	15000	2.8
7613	65	140	51.5	50.5	48	41	3.5	1.2	320000	3200	16000	3.4
7614	70	150	54.5	53.5	51	43	3.5	1.2	380000	2500	18500	4.1
7615	75	160	58.5	57.5	55	46.5	3.5	1.2	440000	2500	21000	5
7616	80	170	62	61	59.5	49	3.5	1.2	500000	2000	25500	5.9
7617	85	180	64	63	60	50.5	4	1.5	540000	2000	26500	6.9
7618	90	190	68	67	66.5	53.5	4	1.5	630000	1600	31000	8.1
7619	95	200	72	71	67	57	4	1.5	670000	1600	33000	9.5
7620	100	215	78	77	73	61.5	4	1.5	800000	1600	39500	12
7621	105	225	82	81	77	64.5	4	1.5	890000	1300	43000	13.8
7622	110	240	85	84	80	66	4	1.5	980000	1300	47500	16.5
7624	120	260	91	90	86	70.5	4	1.5	1070000	1000	53000	21

* Permissible bearing loads at various speeds for an expected life of 5000 hrs are indicated in Table 29.



Type 67000

TAPER ROLLER BEARINGS WITH FLANGE ON OUTER RING



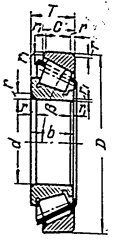
Type 87518

Angle $\beta \approx 15°$

Bearing number	Dimensions, mm										Capacity coefficient	Max. speed, r. p. m.	Basic static load capacity Qst. kg	Weight (approx.) kg
	d	D	D_1	t max.	b	c	H	h	r	r_1	C*			
Standard bearings (GOST 3169-46)														
67203	17	40	43	13.5	12	11	5	2.5	1.5	0.5	20000	6000	950	0.082
67204	20	47	51	15.5	14	12	6.5	3	1.5	0.5	28000	5000	1300	0.131
67207	35	72	77	18.5	17	15	7.5	4	2	0.8	50000	5000	2500	0.343
67510	50	90	96	25	23.5	20	10	5	2	0.8	92000	4000	4500	0.8
67512	60	110	117	30	30	24	12	6	2.5	0.8	152000	3200	7100	1.4
Non-standard bearings														
67714	70	120	125	45	42	37	14	6	3.5	1.2	—	—	—	1.95
67915	73.842	127.025	133.4	37	36	29	14.5	6	3	0.8	—	—	—	1.555
87518	90	160	168	43	40	34	16	7	3	1	—	—	—	3.5
67719	95	165	170	46	45.5	37	14	5	3.5	1.2	—	—	—	4
767920	95.275	152.425	158.75	39.688	36.322	30.163	15.875	6.35	2.5	0.8	—	—	—	2.56
67922	107.975	165.125	171	39	37	30	15.8	6.8	3	1	—	—	—	3.068
67728	140	230	238	58	57	45	23	10	4	1.5	—	—	—	9.3
679/622	622.3	725.487	734	46	46	34	20	8	6	2	—	—	—	21.22

* Permissible bearing loads at various speeds for an expected life of 5000 hrs are indicated in Table 29.

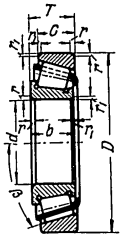
TAPER ROLLER BEARINGS, STEEP ANGLE TYPE



Bearing number	Dimensions, mm								Angle β° (approx.)	Capacity coefficient C*	Maximum speed, r.p.m.	Basic static load capacity Qst. kg	Weight (approx.) kg
	d	D	b	c	T Max.	T Min.	r	r1					
Non-standard bearings													
27706	30	72	24.0	17.6	24.5	24.3	2(4)	1	21	—	—	—	0.46
27908	38.1	88.505	23.5	17.5	25.5	25	2.5	0.8	27	—	—	—	0.71
27709	45	100	29	20.5	32	31.5	2.5	0.8	26	—	—	—	1.03
27911	53.975	123.825	32.79	25.4	37.013	36.013	3(3.5)	0.8	26	—	—	—	1.8
Standard bearings (GOST 7260-54)													
27317	85	180	41	30	45	44	4	1.5	27	260000	2000	13500	4.7

Note. Values in parentheses refer to the inner ring.

* Permissible bearing loads at various speeds for an expected life of 5000 hrs are indicated in Table 29.



TAPER ROLLER BEARINGS

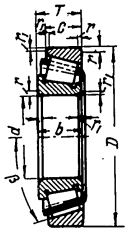
Non-standard bearings

Bearing number	Dimensions, mm								Angle β° (approx.)	Weight (approx.) kg
	d	D	b	c	T Max.	T Min.	r	r1		
7904	19.05	49.225	21	17.5	23.5	23	2	0.8	11	0.19
7905	22.225	56.896	20	16	20	19.5	1.5(2)	0.8	12	0.25
7906	30.213	63.502	20.5	17	20.5	20	1.5(3.5)	0.8	14	0.28
7809	45	90	40	32.5	38.5	38	2.5	0.8	11	1.14
807709	45	100	43	37	43	42.5	2.5	0.5/1	11	1.5
7907	38.1	76.203	25.5	19	24.5	24	1.5(4)	0.8	13	0.5
7908	41	90	33	28.5	35.5	35.3	2.5	0.8	11	0.9
7709	45	100	30	22	27.5	27	2.5	0.8	12	0.994
7909	47	100	43	37	43	42.5	2.5	0.5/1	12	1.56
7712	60	120	44	37	46	45	3.5	1.2	13	2.24
7913	63.5	112.712	30	24	30.316	30.163	3.5(4)	0.5	15	1.23
807813	65	110	30	24	30.5	30.35	3.5(4)	0.8	15	1.0
807713	65	150	54	44.5	54	53	3	0.6	14	4.2
7714	70	120	42	37	45	44	3.5	1.2	15	1.95
7815	75	135	46	35	44.5	43.5	3	1	15	2.4
7717	85	200	49.2	34.9	52.7	51.7	3.5	1.5	25	7.45
7718	90	160	46	40.5	50	49	4	1.5	15	3.9
7818	90	170	58	50	62	61	3.5	1.2	15	5.78
707919	93.688	152.425	36.322	30.163	39 688	38.888	2.5	0.8	14	2.54
707920	95.275	152.425	36.322	30.163	39.688	38.888	2.5	0.8	14	2.48
7821	105	180	46	39	49.5	48.5	3.5	1	15	4.824
7721	105	215	73	61.5	78	77	4	1.5	12	11.38
7723	115	190	49	35	49	48	3.5	1	16	5.2

Continued

Bearing number	Dimensions, mm								Angle (approx.)	Weight (approx.)
	d	D	b	c	T Max.	T Min.	r	r_1		kg
7728	140	225	34	30	38	36.5	2.5	1.2	27°	4.9
7828	140	300	82	60	90	89	5	1.5	26°	27.5
7730	150	254	72.5	50	67	66	3(5)	1.5	15°	14
7832	160	375	79.4	60.3	87.3	85.8	6	1.5	25°	40.3
7933	165.1	288.925	63.5	47.6	63.5	62.5	3.5(7)	2	14°	17.4
7736	180	290	63.5	48	65	64	3	1.5	16°	19.8
7941	203.2	317.5	63.5	46.05	63.5	62.5	3.4	1.5	18°	18.5
7841	205	485	95.2	73	117.47	116	6	1.5	30°	91
7716	230	355.6	72.5	54	72.5	71	4(6)	3	14°	23.5
7947	234.95	327.025	50	39	52.4	50.9	3(6)	2.5	17°	12.3
7951	254	422.275	79.8	66.7	86.1	84.6	3.5(7)	2	14°	41
7851	225	560	104.775	69.85	123.825	122.325	8	3	30°	117
7860	300	440	70	55	73	71.5	5(6)	2(1.5	16°	31.46
7760	300	500	90	65	90	88.5	10	1.5	10°	67.9
7772	360	530	77.5	60	80	78.5	6	2.5/1.5	15°	55.3
7784	420	620	95	70	95	93.5	6	1.5	13°	92
7998	489.03	643.87	81	64	81	79.5	3(6)	2	14°	62.4
77560	560	820	135	105	140	138	10	3	14°	232
7718	90	140	30	26	32.5	31.5	2.5	0.8	13°	1.6
7724	120	180	36	31	38.5	37.5	3	1	14°	3.11
7728	140	210	42	36	45.5	44.5	3	1	14°	5.078
7732	160	240	48	41	51.5	50.5	3.5	1.2	14°	7.23
7738	190	290	46	40	51	49.5	3.5	1.2	14°	11.824
7744	220	340	72	62	76.5	75.5	4	1.5	13°	30
7756	280	420	82	71	87.5	86	5	1.5	14°	39

Note. Values in parentheses refer to the inner ring.



TAPER ROLLER BEARINGS

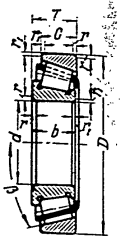
Non-standard bearings

Bearing number	Dimensions, mm							Contact angle	Weight, (approx.)
	d	D	T max.	b	c	r	r_1	β	kg
877907*	33.02	58	—	—	17	—	—	20°	0.21
817907	34.925	76.2	29.37	29.85	23.813	3	0.8	13°	
807919K	95.25	161.925	41.5	36.5	35	3.5	1	16°40′	3.26
807920K	101.6	161.925	41.5	36.5	35	3.5	1	16°40′	2.94
807930	152.4	307.975	88.9	93.7	62	6/10	2.5	13°18′	20.2
817948K	241.122	368.3	76.5	72	62	4	1.5	11°55′	25
807948K	241.3	368.3	76.5	72	62	4	1.5	13°40′	25

* Without inner ring.

TAPER ROLLER BEARINGS

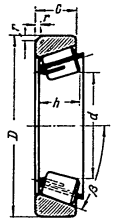
Non-standard bearings



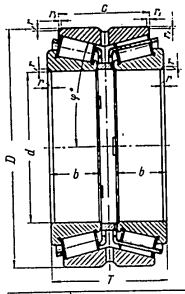
Bearing number	Dimensions, mm							Angle	Weight (approx.)
	d	D	T max.	b	c	r	r_1	β	kg
2007938	190	260	45.5	42	36	3	1	14°20′	6.35
2007948	240	320	51.5	48	41	3.5	1.2	16°35′	10.9
2007952	260	360	64.5	60	52	3.5	1.2	13°50′	17.7
2007188	440	650	96.4	94	67	6.8	2	17°10′	31.4

TAPER ROLLER BEARINGS WITHOUT INNER RING

Non-standard bearings



Bearing number	Dimensions, mm					Angle β° (approx.)	Weight (approx.)
	d	D	h	c	r		kg
977906	28.07	44.477	9.576	9.576	1.5	18	0.07
977907	33.02	49.225	12.4	11	1.5	20	0.08
977908	40.62	66	13.5	12	1.5	21	0.18
977909	46.673	72	17.2	14	2	27	—



DOUBLE ROW TAPER ROLLER BEARINGS

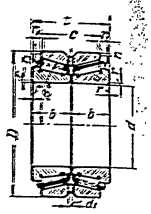
Standard bearings (GOST 6364-52)

Bearing number	Dimensions, mm								° (approx.)	Capacity coefficient	Maximum speed, r. p. m.	Basic static load capacity Qsr.	Weight (approx.)
	d	D	b	c	T Max.	T Min.	r	r_1		C*		kg	kg
Super-light series 9													
2097944	220	300	48	88	110	108	3.5	1.2	12	980000	800	66000	21.1
2097952	260	360	60	108	134	132	3.5	1.2	11	1440000	630	97000	38.8
2097960	300	420	72	128	160	158	4	1.5	11	2000000	500	131000	62.9
1097996	480	650	78	130	180	178	6	2.5	16	2900000	250	191000	151
10979/710	710	950	106	175	240	237	8	3.5	17	6000000	150	448000	415
Extra-light series 1													
2097136	180	280	60	108	134	132.5	3.5	1.2	11	1160000	800	68000	27.9
2097140	200	310	66	120	152	150	3.5	1.2	14	1500000	800	87000	39.3
2097144	220	340	72	130	165	163	4	1.5	13	1820000	800	105000	48.06
2097148	240	360	72	130	165	163	4	1.5	12	1960000	630	112000	54.5
2097152	260	400	82	146	186	184	5	2	11	2500000	630	150000	76.8
97180	400	600	90	150	206	204	6	2.5	15	3800000	320	216000	180
97184	420	620	90	150	206	204	6	2.5	15	3800000	320	223000	187
97188	440	650	94	152	212	210	8	3.5	16	3800000	320	229000	213
97192	460	680	100	175	230	228	8	3.5	12	4550000	250	267000	253
971/560	560	820	115	185	260	257	8	3.5	15	6000000	200	404000	410
Extra-light series 7													
2097726	130	210	48	90	110	108.5	3	1	10	760000	1300	43000	13.5
2097730	150	250	60	112	138	136.5	3.5	1.2	9	1160000	1000	63000	25.8
2097732	160	270	66	120	150	148.5	3.5	1.2	12	1340000	800	75000	34.9
2097736	180	300	72	134	164	162.5	4	1.5	10	1660000	800	92000	43.3
2097752	260	440	106	180	225	223	5	2	9	3070000	500	179000	127
1097760	300	500	90	152	205	203	6	2.5	12	3070000	500	171000	142.8
1097768	340	580	106	170	242	240	6	2.5	16	3800000	500	230000	226
Light series 2													
97515	75	130	31	62	75	73.5	2.5	0.8	15	310000	1600	16500	3.65
97518	90	160	40	78	96	94.5	3	1	15	480000	1600	25500	7.44
97520	100	180	46	92	112	110.5	3.5	1.2	15	650000	1300	34500	11.52
97521	105	190	50	96	118	116.5	3.5	1.2	15	730000	1300	39000	13.5
97526	130	230	65	120	150	148.5	4	1.5	16	1160000	1000	66000	22.9

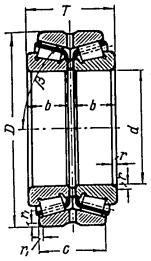
* Permissible bearing loads at various speeds for an expected life of 5000 hrs are indicated in Table 29.

NON-ADJUSTABLE DOUBLE ROW TAPER ROLLER BEARINGS

Non-standard bearings



Bearing number	Dimensions, mm								Angle β° (approx.)	Weight (approx.) kg
	d	D	r	b	c	d_1	r	r_1		
37718	90	161.925	100	50	85	6	4	1.5	13	8.8
37720	100	190	125	62.5	100	8	4	2	10	14.6
37820	101.6	168.275	92	46	70	6	4	1.2	16	8.5
37925	127	235	145	72.5	115	10	3.5	2	14	27
37726	130	235	145	72.5	115	10	3	2	13	24.8
37927	133.35	215.9	106.4	53.2	81	10	3.5	1.5	18	13
37727	135	220	106.6	53.3	80.96	10	3.5	1.5	18	13.5
37928	136.52	190.5	85.7	42.85	73	8	3.5	1.2	12	7.4
37230	150	254	145	72.5	110	10	5	2	15	26.6
37730	150	255	145	72.5	110	10	5	2	15	26.7
37732	160	270	140	70	110	10	3.5	1.5	14	32.7
37736	180	285	107.95	53.975	79.37	10	3.5	3	13	25
37841	205	317.5	150	75	110	10	5	2	19	40
37741	205	320	150	75	110	10	5	2	19	41.1
37745	225	360	146.45	73.225	111.12	10	4	5	13	46.5
37746	230	355	145	72.5	110	10	6	3	14	44.2
37748	240	370	120	60	86	10	6	1.5	14	37
37852	260	400	150	75	110	10	6	1.5	13	67
37752	260	430	180	90	130	12	10	3	13	87.2
37860	300	440	140	70	100	12	6	1.5	16	60
37760	300	500	180	90	125	12	10	1.5	10	131.8
37766	330	560	180	90	150	12	10	3	11	176
37768	340	500	155	77.5	110	12	6	1.5	14	95
37770	350	590	200	100	140	12	12	2.5	15	180.3
37772	360	530	155	77.5	110	12	6	1.5	15	107
37780	400	590	185	92.5	125	12	6	1.5	12	151
37784	420	620	190	95	120	12	6	1.5	13	172
377/540	540	790	190	95	130	12	8	1.5	11	324
377/560	560	820	270	135	190	12	10	3	14	451.5



NON-ADJUSTABLE DOUBLE ROW TAPER ROLLER BEARINGS

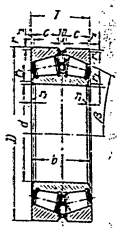
Non-standard bearings

Bearing number	Dimensions, mm								Angle β° (approx.)	Weight (approx.) kg
	d	D	b	c	T		r	r_1		
					Max.	Min.				
57707*	35	80	23.3	45	57	56.75	2	0.5	20	1.22
97773	365	535	81	136	180	178.5	5	3	11	116
97798	490	640	81	144	180	178.5	10	3	14	180
977/520	520	740	86	120	190	189	3.5	3.5	15	237
977/720	720	915	82	140	190	189	3	6	13	286
979/610	609.6	812.8	82.5	146	190.5	187.5	8	3.5	13	257.4

* This bearing can be adjusted by displacement of the inner rings as no spacer ring is provided between them.

NON-ADJUSTABLE DOUBLE ROW TAPER ROLLER BEARINGS

Non-standard bearings

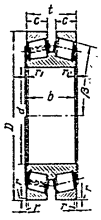


Angle $\beta = 12°$ to 17°

Bearing number	Dimensions, mm								Weight (approx.)
	d	D	b	c	T Max.	T Min.	r	r_1	kg
847792	460	730	200	86	200	199	6	3	330
8479,610	609.6	812.8	190.5	62	190.5	187.5	8	3.5	271.5
847929	146.05	241.3	165	41	165	163.5	5	3	30

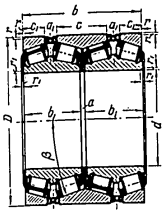
ADJUSTABLE DOUBLE ROW TAPER ROLLER BEARING

Non-standard bearings



Angle $\beta = 12°$

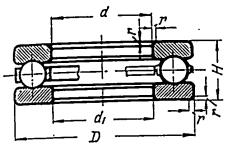
Bearing number	Dimensions, mm							Weight (approx.)
	d	D	t	b	c	r	r_1	kg
47792	460	760	200	200	86	6	3	360



FOUR ROW TAPER ROLLER BEARINGS

Non-standard bearings

Bearing number	Dimensions, mm										Angle β° (approx.)	Weight (approx.)
	d	D	b	b_1	a (approx.	c	c_1	a_1 (approx.)	r	r_1		kg
77741	205	320	205	96	13	85	36	24	4	4	17	56
77748	240	410	270	128	14	114	50	28	5	5	11	145
77752	260	400	255	119	17	111	47	25	10	5	15	120.15
777752	260	440	300	140	20	130	55	30	6	3	25	181
3077256-p	280	520	340	156	28	152	62	32	6	6	13	318
77958	292.1	476.25	292	140	16	130	55	26	3	1.5	13	212
77760	300	500	350	165	20	148	64	37	6	6	25	262
77961	304.65	438.05	279.4 281	135	11	120.6	54	25.7	5	3	16	133
77766	330	580	360	172	16	152	68	36	6	6	14	408
777770	350	590	420	200	20.5	180	80	40.5	6	3	25	475
77779	395	545	288.7	122.9	23.4	113.9	55	33.2	10	5	16	188
77788	440	650	355	172	11.5	145	67	38.5	6	6	17	407
777792	460	730	440	210	20.5	180	80	50.5	10	5	26	608
30777/530-p	530	880	540	260	24.5	224	100	60.5	10	10	17	1350
777/533	533	810	450	208	34.5	190	78	52.5	8	8	13	760
777/620	620	800	365	171.5	22.5	164	71	30.0	6	3	12	473
777/650	650	1030	560	273	14	240	113	47	15	10	12	1769
778/660	660	855	320	152	16.5	136	60	32.5	10	5	12	449
777/660	660	1070	650	312	16.5	276	135	52.5	10	10	12	2240
777/750	750	1130	690	330	30.5	290	130	70.5	10	10	17	2460
3077776	380	620	388	184	20	170	75	34	6	6	16	460



BALL THRUST BEARINGS

EXTRA-LIGHT SERIES

Standard bearings (GOST 6874-54)

$d_1 \geq d + 0.2$ mm

Bearing number	Dimensions, mm				Capacity coefficient	Maximum speed, r. p. m.	Basic static load capacity Q_{sr}.	Weight (approx.)
	d	D	H	r	C*		kg	kg
8100	10	24	9	0.5	10000	10000	1000	0.02
8101	12	26	9	0.5	10600	10000	1100	0.022
8102	15	28	9	0.5	11300	8000	1200	0.024
8103	17	30	9	0.5	12500	8000	1400	0.03
8104	20	35	10	0.5	16700	6300	2000	0.04
8105	25	42	11	1	19000	6300	2400	0.06
8106	30	47	11	1	21000	6300	2700	0.07
8107	35	53	12	1	28000	5000	3700	0.09
8108	40	60	13	1	35000	5000	4800	0.12
8109	45	65	14	1	37000	5000	5200	0.15
8110	50	70	14	1	39000	4000	5700	0.16
8111	55	78	16	1	52000	4000	7800	0.24
8112	60	85	17	1.5	57000	3200	8500	0.29
8113	65	90	18	1.5	65000	3200	9600	0.34
8114	70	95	18	1.5	70000	2500	10500	0.36
8115	75	100	19	1.5	72000	2500	11000	0.42
8116	80	105	19	1.5	74000	2500	11500	0.43
8117	85	110	19	1.5	76000	2000	12500	0.46
8118	90	120	22	1.5	94000	2000	14000	0.68
8120	100	135	25	1.5	124000	2000	20000	1
8122	110	145	25	1.5	126000	1600	21000	1.08
8124	120	155	25	1.5	128000	1600	22000	1.16
8126	130	170	30	1.5	164000	1300	29000	1.87
8128	140	180	31	1.5	170000	1300	30000	2.1
8130	150	190	31	1.5	182000	1000	32000	2.2
8132	160	200	31	1.5	188000	1000	35000	2.3
8134	170	215	34	2	230000	1000	42500	3.3
8136	180	225	34	2	240000	800	45500	3.5
8138	190	240	37	2	270000	800	52000	4.1
8140	200	250	37	2	280000	630	54000	4.2
8144	220	270	37	2	300000	630	60000	4.6
8148	240	300	45	2.5	380000	630	79000	7.6
8152	260	320	45	2.5	400000	500	87000	8.1
8156	280	350	53	2.5	500000	500	108000	12.2
8160	300	380	62	3	630000	400	142000	17.5
8164	320	400	63	3	650000	400	146000	18.9
8168	340	420	64	3	670000	320	160000	20
8172	360	440	65	3	730000	320	170000	22

* Permissible bearing loads at various speeds for an expected life of 5000 hrs are indicated in Table 29.

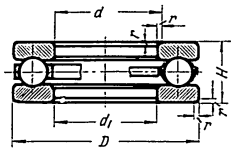
BALL THRUST BEARINGS

LIGHT SERIES

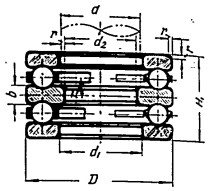
Standard bearings

Type 8000
(GOST 6874-54)

Type 38000
(OST 7221-39)



Type 8000



Type 38000

$d_1 \geq d + 0.2$ mm

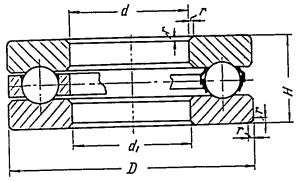
Bearing number		Dimensions, mm							Capacity coefficient	Maximum speed, r. p. m	Basic static load capacity Q_{st}. kg	Weight (approx.) kg	
Type 8000	Type 38000	d	d_2	D	H	H_1	b	r	C*			Type 8000	Type 38000
8200	—	10	—	26	11	—	—	1	11900	8000	1300	0.03	—
8201	—	12	—	28	11	—	—	1	13200	8000	1400	0.034	—
8202	38202	15	10	32	12	22	5	1	15000	8000	1700	0.041	0.09
8203	—	17	—	35	12	—	—	1	16000	6300	1800	0.053	—
8204	38204	20	15	40	14	26	6	1	24000	6300	2800	0.08	0.15
8205	38205	25	20	47	15	28	7	1	31000	6300	3800	0.12	0.23
8206	38206	30	25	53	16	29	7	1	35000	5000	4400	0.15	0.28
8207	38207	35	30	62	18	34	8	1.5	48000	5000	6400	0.22	0.42
8208	38208	40	30	68	19	36	9	1.5	57000	5000	7500	0.27	0.54
8209	38209	45	35	73	20	37	9	1.5	60000	4000	8500	0.32	0.62
8210	38210	50	40	78	22	39	9	1.5	70000	4000	9900	0.39	0.71
8211	38211	55	45	90	25	45	10	1.5	86000	3200	12000	0.61	1.12
8212	38212	60	50	95	26	46	10	1.5	100000	3200	14000	0.69	1.25
8213	38213	65	55	100	27	47	10	1.5	100000	2500	14000	0.77	1.36
8214	38214	70	55	105	27	47	10	1.5	100000	2500	15000	0.81	1.48
8215	38215	75	60	110	27	47	10	1.5	104000	2500	15500	0.86	1.57
8216	38216	80	65	115	28	48	10	1.5	116000	2000	18000	0.95	1.69
8217	38217	85	70	125	31	55	12	1.5	144000	2000	22500	1.3	2.3
8218	38218	90	75	135	35	62	14	2	170000	1600	27000	1.77	3.2
8220	38220	100	85	150	38	67	15	2	200000	1600	32500	2.4	4.3
8222	—	110	—	160	38	—	—	2	210000	1600	35000	2.6	—
8224	—	120	—	170	39	—	—	2	220000	1300	37000	2.9	—
8226	—	130	—	190	45	—	—	2.5	270000	1300	47000	4.2	—
8228	—	140	—	200	46	—	—	2.5	290000	1000	50000	4.5	—
8230	—	150	—	215	50	—	—	2.5	290000	1000	61000	5.8	—
8232	—	160	—	225	51	—	—	2.5	330000	1000	64000	6.7	—
8234	—	170	—	240	55	—	—	2.5	380000	800	72000	8.3	—
8236	—	180	—	250	56	—	—	2.5	400000	800	76000	8.9	—
8238	—	190	—	270	62	—	—	3	570000	630	95000	11.9	—
8240	—	200	—	280	62	—	—	3	500000	630	104000	12.4	—
8244	—	220	—	300	63	—	—	3	500000	630	104000	13.7	—

* Permissible bearing loads at various speeds for an expected life of 5000 hrs are indicated in Table 29.

Continued

Bearing number		Dimensions, mm							Capacity coefficient	Maximum speed, r. p. m.	Basic static load capacity Q_{st}. kg	Weight (approx.) kg	
Type 8000	Type 38000	d	d_2	D	H	H_1	b	r	C*			Type 8000	Type 38000
8256	—	280	—	380	80	—	—	3.5	730000	400	163000	27.8	—
8268	—	340	—	460	96	—	—	4	950000	320	232000	52	—
8272	—	360	—	500	110	—	—	5	1070000	320	298000	67.65	—
8292	—	460	—	620	130	—	—	6	1440000	250	397000	117.2	—

* Permissible bearing loads at various speeds for an expected life of 5000 hrs are indicated in Table 29.



BALL THRUST BEARINGS

MEDIUM SERIES

Standard bearings (GOST 6874-54)

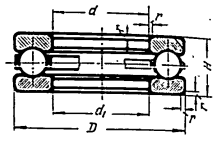
$d_1 \geq d + 0.2$ mm

Bearing number	Dimensions, mm				Capacity coefficient	Maximum speed, r. p. m.	Basic static load capacity Q_{st}.	Weight (approx.)
	d	D	H	r	C*		kg	kg
8305	25	52	18	1.5	39000	5000	4700	0.18
8306	30	60	21	1.5	50000	4000	6400	0.27
8307	35	68	24	1.5	62000	3200	8000	0.39
8308	40	78	26	1.5	78000	3200	10000	0.55
8309	45	85	28	1.5	90000	3200	12500	0.69
8310	50	95	31	2	108000	2500	15500	1
8311	55	105	35	2	140000	2500	20000	1.34
8312	60	110	35	2	140000	2000	20000	1.43
8313	65	115	36	2	158000	2000	24000	1.57
8314	70	125	40	2	182000	2000	28500	2.1
8315	75	135	44	2.5	210000	1600	32500	2.7
8316	80	140	44	2.5	210000	1600	32500	2.8
8317	85	150	49	2.5	250000	1300	39500	3.7
8318	90	155	50	2.5	260000	1300	42500	3.9
8320	100	170	55	2.5	280000	1000	45500	5.1
8322	110	190	63	3	350000	1000	61000	7.9
8324	120	210	70	3.5	420000	800	78000	10.9
8326	130	225	75	3.5	460000	800	88000	13.3
8328	140	240	80	3.5	500000	630	96000	15.9
8330	150	250	80	3.5	520000	630	104000	16.7
8336	180	300	95	4	670000	500	139000	28.17
8340	200	340	110	5	850000	400	192000	43.59
8368	340	540	160	6	1500000	250	435000	138

* Permissible bearing loads at various speeds for an expected life of 5000 hrs are indicated in Table 29.

BALL THRUST BEARINGS

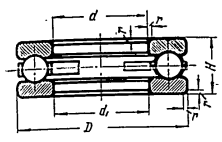
HEAVY SERIES



$d_1 \geq d + 0.2$ mm

Bearing number	Dimensions, mm				Capacity coefficient	Maximum speed, r. p. m.	Basic static load capacity Qst, kg	Weight (approx.) kg
	d	D	H	r	C*			
Standard bearings (GOST 6874-54)								
8420	100	210	85	4	500000	630	92000	14.9
8426	130	270	110	5	730000	500	153000	31.8
Non-standard bearings								
8413	65	140	56	3	220000	1300	37000	4.2

* Permissible bearing loads at various speeds for an expected life of 5000 hrs are indicated in Table 29.



BALL THRUST BEARINGS

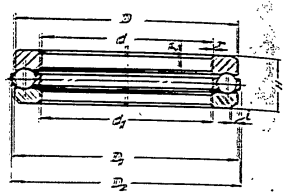
Non-standard bearings

$d_1 \geq d + 0.2$ mm

Bearing number	Dimensions, mm				Weight (approx.) kg
	d	D	H	r	
808100	10	26	12	0.5	0.02
808903	18	35	12	0.5	0.04
808205	25	48	15.5	1	0.12
808106	30	50	14	1	0.09
808107	35	55	16	1	0.11
808108	40	60	16	1	0.14
808208	40	64	18	1.5	0.27
8908	42	58	12	1.5	0.1
808209	45	73	22	1	0.32
808211	55	88	24.5	1.5	0.61
808212	60	90	24.5	1.5	0.69
808214	70	103	27	1.5	0.81
808216	80	115	29	1.5	0.95
8717	85	140	35	2	1.94
808220	100	150	32.5	1.5	2.3
808320	100	172	57	2.5	5.6
8760	300	435	104	5	54
8768	340	440	50	3	21
9008188	440	540	60	3.5	30
8791	455	650	120	6	116
8948	238/242	340	70	3.5	20.8
8974	368/370	529	131	6	105.5
81/670	670	800	105	5	105
98681/750	750	900	90	5	102
10089/1180	1180	1280	80	3.5	103.4

BALL THRUST BEARINGS

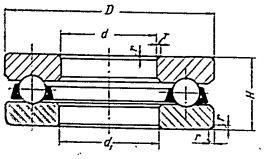
Non-standard bearings



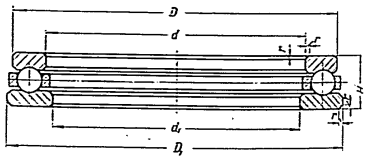
Bearing number	Dimensions, mm								Weight (approx.) kg
	d	d_1	D	D_1	D_2	B	r	r_1	
998911	53	53	72	72	75	15.5	0.5	0.5	0.17
998912	57	57	74	74	75	17.5	0.5	3.5	0.23
998914	71.5	71.5	93	93	97	21	0.5	0.5	0.24
998915	80	76.3	96	95	100	21	0.5	5.25	0.23
998916	78	78	98	98	102	15	0.5	0.5	0.3
998920	101	101.2	122	122	127	16	0.5	0.5	0.43

BALL THRUST BEARINGS

Non-standard bearings

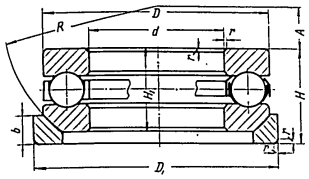


Type 8708



Type 958726

Bearing number	Dimensions, mm						Weight (approx.) kg
	d	d_1	D	D_1	H	r	
8708	40	58	100	—	28	1.5	0.96
958726	130	130.3	170	235	41	1.5	5.84



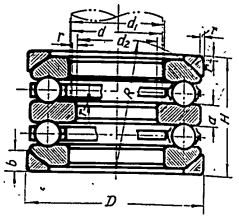
SELF-ALIGNING BALL THRUST BEARINGS

Non-standard bearings

Bearing number	Dimensions, mm									Weight (approx.) kg
	d	D	D_1	H	H_1	R	A	b	r	
18204	20	40	42	17	14.7	36	18	5	1	0.11
18205	25	47	50	19	16.7	40	19	5.5	1	0.16
18206	30	53	55	20	17.8	45	22	5.5	1	0.21
18207	35	62	65	22	19.9	50	24	7	1.5	0.29
18208	40	68	72	23	20.3	56	28.5	7	1.5	0.35
18209	45	73	78	24	—	56	26	7.5	1.5	0.4
18210	50	78	82	26	—	64	32.5	7.5	1.5	0.5
18211	55	90	95	30	28	72	35	9	1.5	0.62
18212	60	95	100	31	28	72	32.5	9	1.5	0.7
18213	65	100	105	32	28.7	80	40	9	1.5	0.97
18214	70	105	110	32	29	80	38	9	1.5	0.83
18217	85	125	130	37	33.1	100	52	11	1.5	1.62
18220	100	150	155	45	40.9	112	52	14	2	2.91
18222	110	160	165	45	40.2	125	65	14	2	3.13
18224	120	170	175	46	40.8	125	61	16	2	3.5
18226	130	190	195	53	47.9	140	67	17	2.5	5.36
18228	140	200	210	55	48.6	160	87	17	2.5	5.9
18312	60	110	115	42	38.3	90	41	11.5	2	1.8
18315	75	135	140	52	47.993	100	37	15	2.5	2.9
18320	100	170	175	64	59.2	125	46	18	2.5	6.1
18322	110	190	195	72	67.2	140	51	20.5	3	9.1
18324	120	210	220	80	74.1	160	63	22	3.5	12.5
18413	65	140	145	65	60.2	112	40	17.5	3	4.4
18426	130	270	280	128	115.2	200	58	38	5	37
18719	95	140	151	43.5	—	115	60	12.5	2	2.66
18786	430	580	610	150	—	500	301.3	—	5	120
18886	430	570	600	135	—	480	293	—	5	98

DOUBLE SELF-ALIGNING BALL THRUST BEARINGS

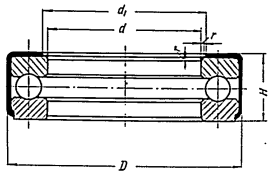
Non-standard bearings



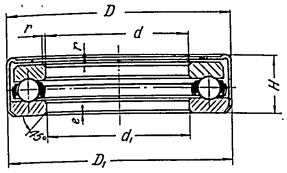
Bearing number	Dimensions, mm									Weight (approx.) kg
	d	d_1	d_2	D	H	b	a	R	r	
848208	40	42	30	69	42	7	6.5	50	1	0.7
848209	45	47	35	78	48	8	7	60	1	0.85
848311	55	57	40	110	73	11	14	80	1	2.7
48307	35	37	30	72	52	7.5	10	56	0.5	0.73
48324	120	123	100	220	143	22	27	160	2	23

BALL THRUST BEARINGS WITHOUT RETAINER, IN SHELL

Non-standard bearings



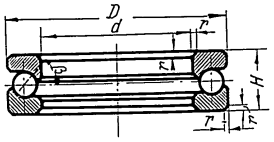
Bearing number	Dimensions, mm					Weight (approx.) kg
	d	d_1	D	H	r	
108804	20	24	37	11	1.2	0.05
108904	20.88	25.4	42.45	13.5	0.8	0.05
108905	25.1	30	51	15.875	1	0.14
108906	27.1	30	51	15.875	1	0.13
108708	40	43	63	14	1	0.15
98206	30.1	31.5	53	16	1	0.14
108710	50	55	80.5	22.8	1.5	0.4



BALL THRUST BEARINGS IN SHELL

Non-standard bearings

Bearing number	Dimensions, mm							Weight (approx.) kg
	d	d_1	D	D_1	H	r	e	
588911	52.388	52.8	83.5	84.5	20.7	1.5	1.5	0.38



BALL THRUST BEARINGS

(Thrust-Radial type)

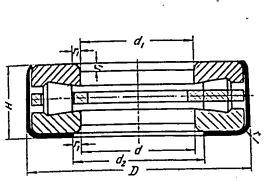
Non-standard bearings

Angle $\beta = 45°$

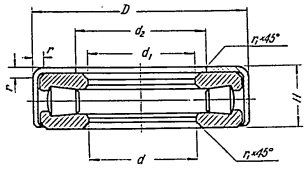
Bearing number	Dimensions, mm				Weight (approx.) kg
	d	D	H	r	
778706	30	48	12	0.5	0.08
778707	34	51	12.1	1.5	0.085

ROLLER THRUST BEARINGS IN SHELL

Non-standard bearings

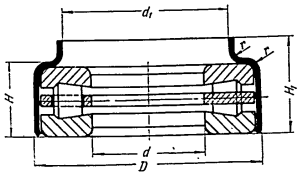


Types 29903 and 29908



Type 29905

Bearing number	Dimensions, mm							Weight (approx.)
	d	d_1	d_2	D	H	r	r_1	kg
29903	16.129	16.129	24	41.275	12.7	2	1	0.074
29905	26.000	25.552	30	50.76	15.875	2	1	0.13
29908	38.354	38.354	43.2	72.619	21.432	2	2	0.38

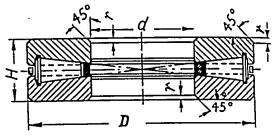


ROLLER THRUST BEARINGS IN SPECIAL SHELL

Non-standard bearings

Bearing number	Dimensions, mm						Weight (approx.)
	d	d_1	D	H	H_1	r	kg
99905	26	35	50	17	21	2	0.14

TAPER ROLLER THRUST BEARINGS

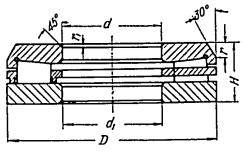


Bearing number	Dimensions, mm				Capacity coefficient	Maximum speed, r. p. m	Basic static load capacity Qsr.	Weight (approx.)
	d	D	H	r	C*		kg	kg
Non-standard bearings								
19742	210	460	122	10	—	—	—	117.2
Standard bearings (GOST 5380-50)								
9019452	260	480	132	8	2300000	100	310000	112.85
9019464	320	580	155	10	3300000	100	460000	190

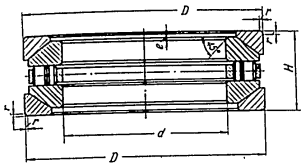
* Permissible bearing loads at various speeds for an expected life of 5000 hrs are indicated in Table 29.

ROLLER THRUST BEARINGS WITH FLAT RING

Non-standard bearings



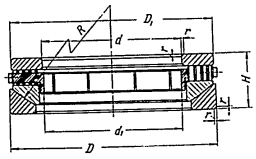
Bearing number	Dimensions, mm						Weight (approx.)
	d	d_1	D	H	r	r_1	kg
49742	210	212	460	150	25	10	126



ROLLER THRUST BEARINGS WITH CYLINDRICAL ROLLERS AND TWO SEATING RINGS

Non-standard bearings

Bearing number	Dimensions, mm					Weight (approx.)
	d	D	H	r	e	kg
979936	181.5	266.7	85.7	5	2.5	19.6



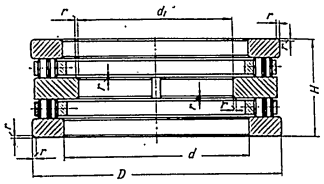
ROLLER THRUST BEARINGS WITH CYLINDRICAL BEARINGS AND ONE SEATING RING

Non-standard bearings

Bearing number	Dimensions, mm							Weight (approx.)
	d	d_1	D	D_1	H	R	r	kg
969961	305	302	455	445	110	350	4	67.5

DOUBLE ROW ROLLER THRUST BEARINGS

Non-standard bearings



Bearing number	Dimensions, mm					Weight (approx.)
	d	d_1	D	H	r	kg
59920	101.6	76.2	203.2	97	2	18.5
89739	195	155	280	105	2	26
89752	260	220	370	140	3	58
89764	323	270	430	165	3	83

III. REFERENCE DATA

ASSORTMENT OF BALLS AND ROLLERS

I. Balls in accordance with GOST 3722-54 manufactured of steel IIIX

Ball diameter		Weight per 1000 pieces, kg	Number of pieces in 1 kg	Ball diameter		Weight per 1000 pieces, kg	Number of pieces in 1 kg
in inches	in mm			in inches	in mm		
—	1	0.004	250000	—	14	11.3	88.5
1/16	1.588	0.016	62500	9/16	14.288	12	83.3
—	2	0.0326	30303	—	15	13.9	71.8
3/32	2.381	0.055	18181	19/32	15.081	14.1	70.8
—	2.5	0.064	15625	5/8	15.875	16.5	60.6
—	3	0.110	9090	—	16	16.8	59.6
1/8	3.175	0.130	7692	21/32	16.669	19.1	52.3
—	3.5	0.174	5747.1	—	17	20.034	49.9
5/32	3.969	0.250	4000	11/16	17.463	21.9	45.9
—	4	0.26	3846	23/32	18.256	25.0	40.0
—	4.5	0.371	2695.4	—	19	28.0	35.7
3/16	4.763	0.440	2272	3/4	19.05	28.4	35.6
—	5	0.51	1961	25/32	19.844	32.4	30.9
13/64	5.159	0.559	1788	13/16	20.638	36.2	27.6
—	5.5	0.676	1479.3	27/32	21.431	40.1	24.9
7/32	5.556	0.700	1428	7/8	22.225	45.2	22.1
15/64	5.953	0.860	1162	29/32	23.019	50.0	20.0
—	6	0.88	1136	15/16	23.813	55.5	18.0
1/4	6.350	1.03	970	1	25.4	67.4	14.8
—	6.5	1.116	896.1	1 1/16	26.988	80.8	12.37
—	7	1.395	716.8	1 1/8	28.576	95.5	10.45
9/32	7.144	1.50	666	—	30	110.426	9.1
5/16	7.938	2.05	487	1 3/16	30.163	112.8	8.86
—	8	2.082	480.3	1 1/4	31.750	131.9	7.58
11/32	8.731	2.68	373	1 13/32	35.720	185.6	5.38
—	9	2.964	337.4	1 1/2	38.100	227.3	4.40
3/8	9.525	3.55	281	—	40	263.0	3.30
25/64	9.922	3.98	251	—	50	514.0	1.94
—	10	4.1	244	2	50.800	538.8	1.85
13/32	10.319	4.43	225	—	60	883.0	1.16
—	11	5.412	184.8	2 1/2	63.50	1052	0.951
7/16	11.113	5.64	177	3	76.200	1818	0.550
15/32	11.906	6.93	144	—	100	4108.2	0.245
—	12	7.1	140	4	101.6	4311	0.231
1/2	12.7	8.42	118	6	152.4	14550	0.0687
17/32	13.494	10.1	99.0				

2. Balls manufactured to special Specifications of stainless steel, grade X18 (EN 229)

Ball diameter		Weight per 1000 pieces, kg	Number of pieces in 1 kg	Ball diameter		Weight per 1000 pieces, kg	Number of pieces in 1 kg
in inches	in mm			in inches	in mm		
1/8	3.175	0.130	7692	11/16	17.463	21.9	45.9
—	4	0.260	4000	3/4	19.05	28.4	35.6
3/16	4.763	0.440	2272	7/8	22.225	45.2	22.1
—	5	0.510	1961	1	25.4	67.4	14.8
1/4	6.350	1.03	970	1 1/4	31.75	131.9	7.58
5/16	7.938	2.05	487	1 1/2	38.1	227.3	4.40
—	10.0	4.1	244	2	50.80	538.8	1.85
1/2	12.7	8.42	118	3	76.20	1818	0.550
9/16	14.288	12.0	83.3				

3. Balls manufactured to special Specifications of silicomolybdenum steel, grade 55 CMA

Ball diameter		Weight per 1000 pieces, kg	Number of pieces in 1 kg	Ball diameter		Weight per 1000 pieces, kg	Number of pieces in 1 kg
in inches	in mm			in inches	in mm		
5/16	7.938	2.05	487	5/8	15.875	16.5	60.6
3/8	9.525	3.55	281	3/4	19.05	28.4	35.6
7/16	11.113	5.64	177	1	25.4	67.4	14.8
1/2	12.7	8.42	118				

4. Cylindrical Roller manufactured to special Specifications of steel, grade IIIX

Roller dimensions		Weight per 1000 pieces, kg	Number of pieces in 1 kg	Notes	Roller dimensions		Weight per 1000 pieces, kg	Number of pieces in 1 kg	Notes
Δ	l				Δ	l			
3	5	0.274	3649.6		6	8	1.756	569.5	
4	6	0.585	1709.4		6	8.5	1.865	536.2	
4	8	0.78	1282.1		6	12	2.633	379.8	
4.5	5.5	6.789	147.3		6.5	11	2.833	353	
4.5	13	1.605	623.1		7	10	2.987	334.8	
5	5	0.762	1312.3		8	12	4.681	213.6	
5	8	1.219	820.3		10	20	12.191	82	Manufactured of steel, grade 50 XH
5.5	9	1.66	602.4		12.5	22	20.953	47.73	
5.5	16	2.95	339		15	25	34.389	29.1	

5. Needle Rollers manufactured of steel IIIX in accordance with GOST 6870-54

Needle roller dimensions Δ × l	Weight per 1000 pieces, kg	Number of pieces in 1 kg	Notes	Needle roller dimensions Δ × l	Weight per 1000 pieces kg	Number of pieces in 1 kg	Notes
1.5×14	0.19	5263		2.5×16	0.63	1587	
1.6×9	0.14	7143	Manufactured of stainless steel X18 (ЭИ 229)	2.5×18	0.69	1449	
1.6×9.35	0.14	7143		2.5×20	0.75	1333	
1.6×18	0.28	3571	Manufactured of stainless steel X18 (ЭИ 229)	3×16	0.88	1136	
1.9×24.5	0.54	1852		3×18	1	1000	
2×8	0.19	5263		3×20	1.11	901	
2×10	0.24	4167		3×24	1.31	763	
2×24	0.58	1724		3.5×30	2.1	476	
2×14	0.34	2941		4×34	3.3	303	
2×20	0.48	2083		4×40	3.9	256	
2.5×10	0.37	2703		5×44	6.63	151	
2.5×14	0.52	1923		5×50	7.5	133	

METRIC CONVERSION

Inches / Fractional parts of inches	0"	1"	2"	3"	4"	5"
	Millimeters					
		25.400	50.801	76.202	101.603	127.004
1/64"	0.396	25.797	51.198	76.599	102.000	127.401
1/32"	0.793	26.194	51.595	76.996	102.397	127.798
3/64"	1.190	26.591	51.992	77.393	102.794	128.195
1/16"	1.587	26.988	52.389	77.790	103.191	128.592
5/64"	1.984	27.385	52.786	78.187	103.588	128.989
3/32"	2.381	27.782	53.183	78.584	103.985	129.386
7/64"	2.778	28.179	53.580	78.981	104.382	129.782
1/8"	3.175	28.576	53.977	79.377	104.778	130.179
9/64"	3.572	28.972	54.373	79.774	105.175	130.576
5/32"	3.968	29.369	54.770	80.171	105.572	130.973
11/64"	4.365	29.766	55.167	80.568	105.969	131.370
3/16"	4.762	30.163	55.564	80.965	106.366	131.767
13/64"	5.159	30.560	55.961	81.362	106.763	132.164
7/32"	5.556	30.957	56.358	81.759	107.160	132.561
15/64"	5.953	31.354	56.755	82.156	107.557	132.958
1/4"	6.350	31.751	57.152	82.553	107.954	133.354
17/64"	6.747	32.148	57.549	82.949	108.350	133.751
9/32"	7.144	32.544	57.945	83.346	108.747	134.148
19/64"	7.540	32.941	58.342	83.743	109.144	134.545
5/16"	7.937	33.338	58.739	84.140	109.541	134.942
21/64"	8.334	33.735	59.136	84.537	109.938	135.339
11/32"	8.731	34.132	59.533	84.934	110.335	135.736
23/64"	9.128	34.529	59.930	85.331	110.732	136.133
3/8"	9.525	34.926	60.327	85.728	111.129	136.530
25/64"	9.922	35.323	60.724	86.125	111.526	136.927
13/32"	10.319	35.720	61.121	86.521	111.922	137.323
27/64"	10.716	36.116	61.517	86.918	112.319	137.720
7/16"	11.112	36.513	61.914	87.315	112.716	138.117
29/64"	11.509	36.910	62.311	87.712	113.113	138.514
15/32"	11.906	37.307	62.708	88.109	113.510	138.911
31/64"	12.303	37.704	63.105	88.506	113.907	139.308
1/2"	12.700	38.101	63.502	88.903	114.304	139.705
33/64"	13.097	38.498	63.899	89.300	114.701	140.102
17/32"	13.494	38.895	64.296	89.697	115.098	140.499
35/64"	13.891	39.292	64.693	90.093	115.494	140.895
9/16"	14.288	39.688	65.089	90.490	115.891	141.292
37/64"	14.684	40.085	65.486	90.887	116.288	141.689
19/32"	15.081	40.482	65.883	91.284	116.685	142.086
39/64"	15.478	40.879	66.280	91.681	117.082	142.483
5/8"	15.875	41.276	66.677	92.078	117.479	142.880
41/64"	16.272	41.673	67.074	92.475	117.876	143.277
21/32"	16.669	42.070	67.471	92.872	118.273	143.674
43/64"	17.066	42.467	67.868	93.269	118.670	144.071
11/16"	17.463	42.864	68.265	93.666	119.066	144.467

TABLE — INCHES TO MILLIMETERS

Inches / Fractional parts of inches	6"	7"	8"	9"	10"	11"
	Millimeters					
	152.405	177.806	203.207	228.608	254.009	279.410
1/64"	152.802	178.203	203.604	229.005	254.406	279.807
1/32"	153.199	178.600	204.001	229.402	254.803	280.204
3/64"	153.596	178.997	204.398	229.799	255.200	280.601
1/16"	153.993	179.394	204.795	230.196	255.597	280.998
5/64"	154.390	179.791	205.192	230.593	255.993	281.394
3/32"	154.787	180.187	205.588	230.989	256.390	281.791
7/64"	155.183	180.584	205.985	231.386	256.787	282.188
1/8"	155.580	180.981	206.382	231.783	257.184	282.585
9/64"	155.977	181.378	206.779	232.180	257.581	282.982
5/32"	156.374	181.775	207.176	232.577	257.978	283.379
11/64"	156.771	182.172	207.573	232.974	258.375	283.776
3/16"	157.168	182.569	207.970	233.371	258.772	284.173
13/64"	157.565	182.966	208.367	233.768	259.169	284.570
7/32"	157.962	183.363	208.764	234.165	259.565	284.966
15/64"	158.359	183.760	209.160	234.561	259.962	285.363
1/4"	158.755	184.156	209.557	234.958	260.359	285.760
17/64"	159.152	184.553	209.954	235.355	260.756	286.157
9/32"	159.549	184.950	210.351	235.752	261.153	286.554
19/64"	159.946	185.347	210.748	236.149	261.550	286.951
5/16"	160.343	185.744	211.145	236.546	261.947	287.348
21/64"	160.740	186.141	211.542	236.943	262.344	287.745
11/32"	161.137	186.538	211.939	237.340	262.741	288.142
23/64"	161.534	186.935	212.336	237.737	263.137	288.539
3/8"	161.931	187.332	212.732	238.133	263.534	288.935
25/64"	162.327	187.728	213.129	238.530	263.931	289.332
13/32"	162.724	188.125	213.526	238.927	264.328	289.729
27/64"	163.121	188.522	213.923	239.324	264.725	290.126
7/16"	163.518	188.919	214.320	239.721	265.122	290.523
29/64"	163.915	189.316	214.717	240.118	265.519	290.920
15/32"	164.312	189.713	215.114	240.515	265.916	291.317
31/64"	164.709	190.110	215.511	240.912	266.313	291.714
1/2"	165.106	190.507	215.908	241.309	266.709	292.110
33/64"	165.503	190.904	216.304	241.705	267.106	292.507
17/32"	165.899	191.300	216.701	242.102	267.503	292.904
35/64"	166.296	191.697	217.098	242.499	267.900	293.301
9/16"	166.693	192.094	217.495	242.896	268.297	293.698
37/64"	167.090	192.491	217.892	243.293	268.694	294.095
19/32"	167.487	192.888	218.289	243.690	269.091	294.492
39/64"	167.884	193.285	218.686	244.087	269.488	294.889
5/8"	168.281	193.682	219.083	244.484	269.885	295.286
41/64"	168.678	194.079	219.480	244.881	270.281	295.682
21/32"	169.075	194.476	219.876	245.277	270.678	296.079
43/64"	169.471	194.872	220.273	245.674	271.075	296.476
11/16"	169.868	195.269	220.670	246.071	271.472	296.873

Inches / Fractional parts of inches	0"	1"	2"	3"	4"	5"
	Millimeters					
45/64"	17.860	43.260	68.661	94.062	119.463	144.864
23/32"	18.256	43.657	69.058	94.459	119.860	145.261
47/64"	18.653	44.054	69.455	94.856	120.257	145.658
3/4"	19.050	44.451	69.852	95.253	120.654	146.055
49/64"	19.447	44.848	70.249	95.650	121.051	146.452
25/32"	19.844	45.245	70.646	96.047	121.448	146.849
51/64"	20.241	45.642	71.043	96.444	121.845	147.246
13/16"	20.638	46.039	71.440	96.841	122.242	147.643
53/64"	21.035	46.436	71.837	97.238	122.638	148.039
27/32"	21.432	46.833	72.233	97.634	123.035	148.436
55/64"	21.828	47.229	72.630	98.031	123.432	148.833
7/8"	22.225	47.626	73.027	98.428	123.829	149.230
57/64"	22.622	48.023	73.424	98.825	124.226	149.627
29/32"	23.019	48.420	73.821	99.222	124.623	150.024
59/64"	23.416	48.817	74.218	99.619	125.020	150.421
15/16"	23.813	49.214	74.615	100.016	125.417	150.818
61/64"	24.210	49.611	75.012	100.413	125.814	151.215
31/32"	24.607	50.008	75.409	100.810	126.210	151.611
63/64"	25.004	50.405	75.805	101.206	126.607	152.008

Continued

Inches / Fractional parts of inches	6"	7"	8"	9"	10"	11"
	Millimeters					
45/64"	170.265	195.666	221.067	246.468	271.869	297.270
23/32"	170.662	196.063	221.464	246.865	272.266	297.667
47/64"	171.059	196.460	221.861	247.262	272.663	298.064
3/4"	171.456	196.857	222.258	247.659	273.060	298.461
49/64"	171.853	197.254	222.655	248.056	273.457	298.858
25/32"	172.250	197.651	223.052	248.453	273.853	299.254
51/64"	172.647	198.048	223.448	248.849	274.250	299.651
13/16"	173.043	198.444	223.845	249.246	274.647	300.048
53/64"	173.440	198.841	224.242	249.643	275.044	300.445
27/32"	173.837	199.238	224.639	250.040	275.441	300.842
55/64"	174.234	199.635	225.036	250.437	275.838	301.239
7/8"	174.631	200.032	225.433	250.834	276.235	301.636
57/64"	175.028	200.429	225.830	251.231	276.632	302.033
29/32"	175.425	200.826	226.227	251.628	277.029	302.430
59/64"	175.822	201.223	226.624	252.025	277.426	302.826
15/16"	176.219	201.620	227.020	252.421	277.822	303.223
61/64"	176.615	202.016	227.417	252.818	278.219	303.620
31/32"	177.012	202.413	227.814	253.215	278.616	304.017
63/64"	177.409	202.810	228.211	253.612	279.013	304.414

12" = 304.811 mm

ENGLISH CONVERSION TABLE — MILLIMETERS TO INCHES

(1 mm = 0.0393701")

Millimeters	Inches	Millimeters	Inches	Millimeters	Inches	Millimeters	Inches	Millimeters	Inches
0.01	0.0004	0.43	0.0169	0.85	0.0335	28	1.1024	70	2.7559
0.02	0.0008	0.44	0.0173	0.86	0.0339	29	1.1417	71	2.7953
0.03	0.0012	0.45	0.0177	0.87	0.0343	30	1.1811	72	2.8347
0.04	0.0016	0.46	0.0181	0.88	0.0346	31	1.2205	73	2.8740
0.05	0.0020	0.47	0.0185	0.89	0.0350	32	1.2598	74	2.9134
0.06	0.0024	0.48	0.0189	0.90	0.0354	33	1.2992	75	2.9528
0.07	0.0028	0.49	0.0193	0.91	0.0358	34	1.3386	76	2.9921
0.08	0.0031	0.50	0.0197	0.92	0.0362	35	1.3780	77	3.0315
0.09	0.0035	0.51	0.0201	0.93	0.0366	36	1.4173	78	3.0709
0.10	0.0039	0.52	0.0205	0.94	0.0370	37	1.4567	79	3.1102
0.11	0.0043	0.53	0.0209	0.95	0.0374	38	1.4961	80	3.1496
0.12	0.0047	0.54	0.0213	0.96	0.0378	39	1.5354	81	3.1890
0.13	0.0051	0.55	0.0217	0.97	0.0382	40	1.5748	82	3.2284
0.14	0.0055	0.56	0.0220	0.98	0.0386	41	1.6142	83	3.2677
0.15	0.0059	0.57	0.0224	0.99	0.0390	42	1.6535	84	3.3071
0.16	0.0063	0.58	0.0228	1.00	0.0394	43	1.6929	85	3.3465
0.17	0.0067	0.59	0.0232	2	0.0787	44	1.7323	86	3.3858
0.18	0.0071	0.60	0.0236	3	0.1181	45	1.7717	87	3.4252
0.19	0.0075	0.61	0.0240	4	0.1575	46	1.8110	88	3.4646
0.20	0.0079	0.62	0.0244	5	0.1969	47	1.8504	89	3.5039
0.21	0.0083	0.63	0.0248	6	0.2362	48	1.8898	90	3.5433
0.22	0.0087	0.64	0.0252	7	0.2756	49	1.9291	91	3.5827
0.23	0.0091	0.65	0.0256	8	0.3150	50	1.9685	92	3.6221
0.24	0.0094	0.66	0.0260	9	0.3543	51	2.0079	93	3.6614
0.25	0.0098	0.67	0.0264	10	0.3937	52	2.0473	94	3.7008
0.26	0.0102	0.68	0.0268	11	0.4331	53	2.0866	95	3.7402
0.27	0.0106	0.69	0.0272	12	0.4724	54	2.1260	96	3.7795
0.28	0.0110	0.70	0.0276	13	0.5118	55	2.1654	97	3.8189
0.29	0.0114	0.71	0.0280	14	0.5512	56	2.2047	98	3.8583
0.30	0.0118	0.72	0.0283	15	0.5906	57	2.2441	99	3.8976
0.31	0.0122	0.73	0.0287	16	0.6299	58	2.2835	100	3.9370
0.32	0.0126	0.74	0.0291	17	0.6693	59	2.3228	200	7.8740
0.33	0.0130	0.75	0.0295	18	0.7087	60	2.3622	300	11.9110
0.34	0.0134	0.76	0.0299	19	0.7480	61	2.4016	400	15.7480
0.35	0.0138	0.77	0.0303	20	0.7874	62	2.4410	500	19.6850
0.36	0.0142	0.78	0.0307	21	0.8268	63	2.4803	600	23.0220
0.37	0.0146	0.79	0.0311	22	0.8661	64	2.5197	700	27.5591
0.38	0.0150	0.80	0.0315	23	0.9055	65	2.5591	800	31.4961
0.39	0.0154	0.81	0.0319	24	0.9449	66	2.5984	900	35.4331
0.40	0.0157	0.82	0.0323	25	0.9843	67	2.6378	1000	39.3701
0.41	0.0161	0.83	0.0327	26	1.0236	68	2.6772		
0.42	0.0165	0.84	0.0331	27	1.0630	69	2.7165		

LIST OF VALID U.S.S.R.

STANDARDS REFERRING TO ANTIFRICTION BEARINGS

U. S. S. R. Standard	Title of Standard
GOST 3189-46	Ball and roller bearings. System of notation.
GOST 3395-46	Ball and roller bearings. Classification.
GOST 520-55	Ball and roller bearings. Specifications.
GOST 3722-54	Ball bearings. Balls. Specifications.
GOST 3478-54	Ball and roller bearings. Standard chief dimensions.
GOST 3325-55	Ball and roller bearings. Fits.
GOST 4060-48	Needle roller bearings with only an outer stamped split ring.
OST 26005	Flexible roller bearings.
GOST 4657-49	Needle roller bearings. Types. Chief dimensions.
GOST 333-55	Taper roller bearings. Chief dimensions.
GOST 7260-54	Taper roller bearings with large taper angle (steep angle type).
GOST 3169-46	Taper roller bearings with flanged outer ring (flanged cup type). Dimensions.
GOST 294-41	Cylindrical roller bearings with short rollers. Types and chief dimensions.
GOST 5377-50	Cylindrical roller bearings with short rollers, without either inner or outer ring. Light series. Types and chief dimensions.
GOST 4789-49	Single row cylindrical roller bearings with short rollers. Extra-light series. Types. Chief dimensions.
GOST 5721-51	Double row self-aligning roller bearings. Types and chief dimensions.
GOST 5380-50	Taper roller thrust bearings. Chief dimensions.
OST 7634-39	Ball and roller bearings on clamping sleeves.
GOST 4253-48	Ball and roller bearings. Corner chamfers.
GOST 4793-49	Ball and roller bearings, class of accuracy HO and O for assemblies that do not require accurate running. Specifications.
OST 6121-39	Single row ball bearings.
GOST 4788-49	Single row ball bearings. Extra-light series. Chief dimensions.
GOST 2893-54	Single row ball bearings. Groove and snap rings on outer ring. Dimensions.
GOST 7242-54	Shielded single row ball bearings.
GOST 4061-48	Sealed single row ball bearings.
GOST 5720-51	Double row self-aligning ball bearings. Types and chief dimensions.
GOST 831-54	Single row angular-contact ball bearings. Types and chief dimensions.

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U.S.S.R. Standard	Title of standard
GOST 4252-48	Double row angular-contact ball bearings. Types and chief dimensions.
GOST 832-41	Duplex angular-contact ball bearings. Types and chief dimensions.
GOST 6874-54	Single row ball thrust bearings.
OST 7221-39	Double row ball thrust bearings.
OST 26003	Split housings for radial antifriction bearings.
OST 26041	Clamping sleeves, nuts and lock washers for ball and roller bearings. Specifications.
GOST 5557-50	Clamping sleeves for ball and roller bearings. Types and dimensions.
OST 26002	Nuts and lock washers for clamping sleeves for ball and roller bearings.
GOST 3635-54	Self-aligning bearings.
GOST 800-55	Bearing ring blank tubing steel ШХ15. Specifications.
GOST 4727-49	Round wire of chromium steel for bearing ball and roller blanks.
GOST 6364-52	Double row taper roller bearings.
GOST 801-47	Chromium steel for ball and roller bearings. Specifications.
GOST 503-41	Cold rolled low carbon strip steel (used for manufacturing bearing retainers).
GOST 6870-54	Needle roller bearings. Needle rollers.

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U. S. S. R. Standard	Title of standard
GOST 4252-48	Double row angular-contact ball bearings. Types and chief dimensions.
GOST 832-41	Duplex angular-contact ball bearings. Types and chief dimensions.
GOST 6874-54	Single row ball thrust bearings.
OST 7221-39	Double row ball thrust bearings.
OST 26003	Split housings for radial antifriction bearings.
OST 26041	Clamping sleeves, nuts and lock washers for ball and roller bearings. Specifications.
GOST 5557-50	Clamping sleeves for ball and roller bearings. Types and dimensions.
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GOST 800-55	Bearing ring blank tubing steel ШХ15. Specifications.
GOST 4727-49	Round wire of chromium steel for bearing ball and roller blanks.
GOST 6364-52	Double row taper roller bearings.
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GOST 6870-54	Needle roller bearings. Needle rollers.

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38212	208	42332	140	46115	176	50207	125
38213	208	42334	140	46117	176	50208	125
38214	208	42336	140	46118	176	50209	125
38215	208	42406	141	46120	176	50213	125
38216	208	42407	141	46122	176	50217	125
38217	208	42408	141	46124	176	50305	125
38218	208	42409	141	46126	176	50306	125
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54808	163	67719	195	97518	201	466322	178
54810	163	67728	195	97520	201	502208	151
55709	170	67915	195	97521	201	502218	151
55720	170	67922	195	97526	201	502308	151
57707	203	77741	205	97773	203	502310	151
59920	220	77748	205	97798	203	502902	151
60007	122	77752	205	98206	214	506057	186
60018	122	77760	205	99905	217	516053	186
60024	122	77766	205	108708	214	520806	128
60064	122	77779	205	108710	214	526055	186
60066	122	77788	205	108804	214	530206	127
60089	122	77958	205	108904	214	530209	127
60200	121	77961	205	108905	214	530211	127
60201	121	80007	123	108906	214	536057 К	186
60202	121	80009	123	113544	137	588911	215
60203	121	80018	123	113656	137	636905	185
60204	121	80024	123	113732	137	676701	190
60205	121	80064	123	116207	182	676901	190
60206	121	80066	123	116211 У	182	694900	166
60208	121	80089 Б	123	116213	182	694904	166
60214	121	80104	123	116215	182	704702	161
60310	121	80106	123	116222	182	704902	161
60902	121	80200	123	126220 Г	182	707919	197
62310	144	80201	123	126220 Б	182	707920	197
62313	144	80202 К	123	126222	182	746905	184
62315	144	80203 К	123	126725	182	767920	195
62318	144	80204	123	132756	150	776801	190
62414	144	80205 К	123	140806	128	776901	190
62415	144	80215	123	150206	125	777752	205
62417	144	80218	123	150210 А	125	777770	205
62612	144	80701	123	174708	160	777792	205
62613	144	80702	123	174728	160	778706	215
62719	144	80801	123	176130	182	778707	215
64704	158	80902	123	176134	182	784742	157
64805	158	80905	123	226906	183	794742	157
64903	158	80906	123	286805	188	804704	161
64904	158	83704	137	292122	152	804705	161
64905	158	83705	137	292202	152	804906	161
65902	173	87518	195	292203	152	804907	161
65910	173	89739	220	292204	152	807709	197
65911	173	89752	220	292205	152	807713	197
65915	173	89764	220	292206	152	807813	197
66128	180	92314	145	292207	152	807919 К	199
66322	180	92412	145	292218	152	807920 К	199
66406	180	92426	145	292220	152	807930	199
66407	180	92428	145	292308	152	807948 К	199
66408	180	92718	145	294906	156	808100	211
66409	180	92721	145	326705	184	808106	211
66410	180	94049	165	402310	149	808107	211
66412	180	94056	165	402318	149	808108	211
66432	180	94708	165	402715	149	808205	211
67203	195	94904	165	436205	178	808208	211
67204	195	97180	201	436206	178	808209	211
67207	195	97184	201	436208	178	808211	211
67510	195	97188	201	446206	178	808212	211
67512	195	97192	201	446215	178	808214	211

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808220	211	970711	124	3056207	189	4074924	159
808320	211	970902	124	3056208	189	4074926	159
808903	211	970921	124	3056216	189	4074928	159
817907	199	971067	134	3077256-р	205	4074930	159
817948 К	199	977906	200	3077776	205	4084103	159
836906	185	977907	200	3086304	188	4084104	159
845806	174	977908	200	3086309	188	4084105	159
845904	174	977909	200	3086313	188	4084106	159
845905	174	979936	219	3104236	155	4084107	159
847792	204	981065	134	3156205	188	4084108	159
847929	204	981067	134	3156307	188	4084109	159
848208	214	981068	134	3166118	190	4084110	159
848209	214	981700	134	3182110	153	4084111	159
848311	214	984905	164	3182111	153	4084112	159
864705	158	985713	172	3182112	153	4084113	159
864904	158	986711	183	3182113	153	4084114	159
874901	162	994706	162	3182114	153	4084115	159
876704	187	994713	162	3182115	153	4084116	159
876707	187	998911	212	3182116	153	4084117	159
876901	187	998912	212	3182117	153	4084918	159
876902	187	998914	212	3182118	153	4084919	159
876903	187	998915	212	3182119	153	4084920	159
876905	187	998916	212	3182120	153	4084922	159
876906	187	998920	212	3182121	153	4084924	159
876907	187	1000095	115	3182122	153	4084926	159
877907	199	1000924	117	3182124	153	4084928	159
884724	166	1000964	117	3182126	153	4084930	159
894713	164	1097760	201	3182128	153	7000102	116
894918	164	1097768	201	3182130	153	7000105	116
900706	124	1097996	201	3182132	153	7000106	117
900805	124	2007188	200	3182134	153	7000107 Б	117
900808	124	2007938	200	3182136	153	7000108	116
900809	124	2007948	200	3182138	153	7000114	117
900810	124	2007952	200	3182140	153	9008188	211
900904	124	2097136	201	3182144	153	9019452	218
900907	124	2097140	201	3182148	153	9019464	218
900912	124	2097144	201	3182152	153	77/560	198
905930	173	2097148	201	3182156	153	81/670	211
916913	183	2097152	201	4074103	159	327/600	150
922205	149	2097726	201	4074104	159	327/700	150
922906	149	2097730	201	4074105	159	327/770	150
926722	181	2097732	201	4074106	159	327/825	150
934905	164	2097736	201	4074107	159	377/540	202
936700	181	2097752	201	4074108	159	377/560	202
940705	126	2097944	201	4074109	159	679/622	195
944914	157	2097952	201	4074110	159	777/533	205
954708	155	2097960	201	4074111	159	777/620	205
954712	155	2927146 Б	152	4074112	159	777/650	205
954912	155	3003148	138	4074113	159	777/660	205
958726	212	3003744	138	4074114	159	777/750	205
969961	219	3003752	138	4074115	159	778/660	205
970205	124	3005218	170	4074116	159	927/700	150
970206	124	3005220	170	4074117	159	927/770	150
970208	124	3015220	171	4074918	159	927/825	150
970700	124	3056204	189	4074919	159	942/8	165
970702	124	3056205	189	4074920	159	941/12	165

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942-20	165	9868[750	211	IIIC 7	167	IIIM 7	168
943-25	165	III 5	167	IIIC 8	167	IIIM 8	168
943-40	165	III 6	167	IIIC 9	167	IIIM 9	168
943-45	165	III 7	167	IIIC 10	167	IIIM 10	168
971 560	201	III 8	167	2 IIIC 10	167	IIIM 12	168
977 520	203	III 9	167	IIIC 12	167	IIIM 15	168
977 720	203	III 10	167	2 IIIC 12	167	2 IIIM 15	168
979 610	203	III 12	167	IIIC 15	167	IIIM 17	168
1327 675	150	III 15	167	2 IIIC 15	167	IIIM 20	168
1327 840	150	III 17	167	IIIC 17	167	2 IIIM 20	168
1327 850	150	III 20	167	IIIC 20	167	IIIM 25	168
3479 610	204	III 25	167	IIIC 25	167	2 IIIM 25	168
10029 1180	211	III 30	167	IIIC 30	167	IIIM 30	168
10979 710	201	III 40	167	IIIM 5	168	9 IIIM 35	168

TABLE FOR CONVERTING PREVIOUS (OBSOLETE) BEARING SYMBOLS TO PRESENT U. S. S. R. STANDARD SYMBOLS

Obsolete number	Present number	Obsolete number	Present number	Obsolete number	Present number
86	66	514	3086313	537	7907
95	25	(86713)		538	7905
105-A	940705	515	983713	539	29905
106	7000106	516	7712	540	864904
500	926722	517	7721	541	64905
501-A	15707	518	958726	542	65915
502	7709	519	7718	543	7913
503	7909	520	7818	544	27908
504	845904	521	45511	547	99905
505	916913	522	45213	548	986711
506	954708	525	7906	550	7714
507	8708	526	7904	551	996909
508	954712	528	977907	1-8009	980079
509	954709	529	65902	(980089)	
510	954912	532-A	64903	80084	80064
511	8717	533-A	64904	80086	80066
512	954720	534	65910	80098	80008

Continued

Obsolete number	Present number	Obsolete number	Present number	Obsolete number	Present number
80101	80801	718	2712	1130	1730
2-80104	980704	719	45804	1-37714	37741
2-80105	980705	734	108905	1-5226	5826
1-80200	980800	734 cn	108906	5244	5744
1-80400	980700	740	49742	5256	5756
1-81105	981065	768	970053	7113	807813
(981085)		(970013)		7706	7606
1-81007	981067	769	970055	8210-A	108710
(981087)		(970015)		9205	970205
552	7809	779	947701	9206	970206
553	64706	807	526055	1-20203	20703
554	27709	1-81008	981068	1-37130	37730
555	970711	(981088)		1-37148	37748
556	845806	86704	3086304	1-37320	37720
558	977908	86709	3086309	1-37526	37726
567	65911	1-92219	792919	56700	3056200
570	70218	94088	942/8	56704	3056204
572-B	912919	1-94204	94904	56706	3056206
574	8726	94701	941/12	56707	3056207
579	998916	94702	941/15	56708	3056208
599	54708	94704	924/20	56716	3056216
602	54808	94705	943/25	56805	3056205
615	936700	94709	943/45	80004	80024
617	9926	156705	3156205	1-80005	980085
619	64906	808	516053	2-80005	980075
620-A	57707	(516013)		1-80007	980077
621-B	64704	809	506057	2-80007	980067
622	108904	(506016)		(980087)	
624	922205	810	536057	156707	3156307
634	8908	(536016)		400105	7000105
648	808220	814	998920	502103	3502103
651	87518	817	67714	1-970208	970208
652	54707	820	900805	1077724	777/620
653	54810	821	900808	1077730	777/650
656	96903	823	900810	1077732	777/660
690	100752	825	971067	1077750	777/750
691	96704	(971087)		1097704	977/520
692	45905	856	922906	1097744	977/720
694	45904	860	36792	1132735	1327/675
695	845905	861	864906	1132768	1327/840
697-B	27911	881	864911	1132778	1327/890
708	7000108	883	18719	77/533	777/533
709	112741				

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Design and specifications of ball and roller bearings illustrated herein are subject to change without notice.

Vneshtorgizdat. Order No. 1224

STAT

RILLENKUGELLAGER DER REIHE 6200

Kurzzeichen G.P.Z.	S.K.F.	Maße in mm d.	D.	B.	Gewicht kg.	Preise in ö.S. 6200	6200 Z	6200 ZZ	6200 N	6200 ZN
200	6200	10	30	9	0.037	14.30	15.60	16.30		
201	6201	12	32	10	0.037	14.30	15.60	16.30		
202	6202	15	35	11	0.045	14.30	15.60	16.30		
203	6203	17	40	12	0.06	15.20	16.30	17.60		
204	6204	20	47	14	0.1	17.60	18.70	19.50	19.--	
205	6205	25	52	15	0.12	19.50	20.80	22.10	21.--	
206	6206	30	62	16	0.11	24.80	25.--			27.--
207	6207	35	72	17	0.27	29.90	31.--		31.80	
208	6208	40	80	18	0.37	36.50	37.10		38.--	
209	6209	45	85	19	0.42	39.70			41.40	
210	6210	50	90	20	0.47	49.50			51.20	51.90
211	6211	55	100	21	0.58	58.--				
212	6212	60	110	22	0.77	71.30				
213	6213	65	120	23	0.98	97.30			101.--	
214	6214	70	125	24	1.04	104.20	108.--			
215	6215	75	130	25	1.13	111.--		118.--		
216	6216	80	140	26	1.38	130.20				
217	6217	85	150	28	1.75	155.60			158.--	
218	6218	90	160	30	2.20	189.10		210.--		
219	6219	95	170	32	2.6	221.70				
220	6220	100	180	34	3.2	251.50				
221	6221	105	190	36	3.8	294.--				
222	6222	110	200	38	4.4	330.--				
224	6224	120	215	40	6.-	380.--				
226	6226	130	230	40	7.5	530.--				
228	6228	140	250	42	9.-	720.--				
230	6230	150	270	45	11.3	935.--				
232	6232	160	290	48	14.-					
234	6234	170	310	52	16.5					
236	6236	180	320	52	17.5					
238	6238	190	340	55	20.6					
240	6240	200	360	58	24.-					
244	6244	220	400	65	36.5					

RILLENKUGELLAGER DER REIHE 6300

Kurzzeichen G.P.Z.	S.K.F.	Maße in mm d.	D.	B.	Gewicht kg.	6300	Preise in ö.S. 6300 Z	6300 ZZ	6300 N	6300 ZN
300	6300	10	35	11	0.05	15.--				
301	6301	12	37	12	0.06	15.60				
302	6302	15	42	13	0.08	15.60				
303	6303	17	47	14	0.11	18.90				
304	6304	20	52	15	0.14	20.90				
305	6305	25	62	17	0.23	25.80	26.40		27.20	
306	6306	30	72	19	0.35	31.30			34.--	
307	6307	35	80	21	0.44	41.10			43.50	
308	6308	40	90	23	0.63	50.90			53.20	
309	6309	45	100	25	0.83	73.80			75.--	
310	6310	50	110	27	1.08	88.10	89.80		90.--	
311	6311	55	120	29	1.37	116.60			118.--	
312	6312	60	130	31	1.71	132.70				
313	6313	65	140	33	2.09	162.50			165.--	
314	6314	70	150	35	2.6	176.10				
315	6315	75	160	37	3.1					
316	6316	80	170	39	3.6	248.--				
317	6317	85	180	41	4.3	285.20				
318	6318	90	190	43	5.-	350.90				
319	6319	95	200	45	5.7	605.10				
320	6320	100	215	47	7.2	694.40				
321	6321	165	225	49	8.3	930.--				
322	6322	110	240	50	9.8	1074.--				
324	6324	120	260	55	14.--	1165.--				
326	6326	130	280	58	18.--					
328	6328	140	300	62	22.--					
330	6330	150	320	65	26.--					

RILLENKUGELLAGER DER REIHE 6400

Kurzzeichen G.P.S.	S.K.F.	Maße in mm d.	D.	b.	Gewicht kg.	6400	Preise in ö.S. 6400 N	6400 Z	6400 ZZ	6400 ZN
403	6403	17	62	17	0.27	32.80				
404	6404	20	72	19	0.40	41.70				
405	6405	25	80	21	0.51	49.60				
406	6406	30	90	23	0.72	59.20				
407	6407	35	100	25	0.93	80.60				
408	6408	40	110	27	1.20	96.10	99.-			
409	6409	45	120	29	1.55	117.20	143.20			
410	6410	50	130	31	1.91	143.20				
411	6411	55	140	33	2.3	176.10	184.--			
412	6412	60	150	35	2.8	195.30				
413	6413	65	160	37	3.4	232.--				
414	6414	70	180	42	5.-	352.--				
415	6415	75	190	45	5.9	411.--				
416	6416	80	200	48	7.-	638.60				
417	6417	85	210	52	18.5					
418	6418	90	225	54	10.5					
		RILLENKUGELLAGER UNTER 10 mm								
23	EL 3	3	10	4	0.0016	11.30				
24	EL 4	4	13	5	0.003	11.20				
25	EL 5	5	16	5	0.005	11.20				
6	EL 6	6	19	6	0.008	11.80				
17	EL 7	7	19	6	0.007	11.80				
8	EL 8	8	22	7	0.012	12.60				
4	R 4	4	16	5	0.005	11.80				
5	R 5	5	19	6	0.008	11.80				
7	R 7	7	22	7	0.013	12.60				
9	R 9	9	26	8	0.019	13.--				
		SCHULTERKUGELLAGER								
6003	E 3	3	16	5	0.005					
4	E 4	4	16	5	0.005					
5	E 5	5	16	5	0.005	13.--				
6006	E 6	6	21	7	0.011	14.30				
7	E 7	7	22	7	0.013	15.--				
8	E 8	8	24	7	0.015	15.60				
6010	E 10	10	28	8	0.023	18.20				
12	E 12	12	32	7	0.029	19.50				
15	E 15	15	35	8	0.035	21.80				
6017	EA 17	17	44	10	0.073	20.20				
20	E 20	20	47	12	0.095	34.50				

P E N D E L K U G E L L A G E R

LAGERREIHEN 1200, 1200K, 1200 K+H

Kurzzeichen G.P.Z.	S.K.F.	G.P.Z.	S.K.F.	Maße in mm d.	di.	D.	B.	l	Gewicht kg.	Preise in ö.S. 1200	m.Hülse
1200	1200			10		30	9		0.033		
1201	1201			12		32	10		0.04	16.50	
1202	1202			15		35	11		0.05	17.--	
1203	1203			17		40	12		0.07	21.20	
1204	1204	11203	1204 K+H	20	17	47	14	28	0.12	25.20	43.80
1205	1205	11204	1205 K+H	25	20	52	15	30	0.14	27.--	45.60
1206	1206	11205	1206 K+H	30	25	62	16	31	0.22	32.60	54.--
1207	1207	11206	1207 K+H	35	30	72	17	33	0.32	37.20	61.30
1208	1208	11207	1208 K+H	40	35	80	18	34	0.42	46.50	71.10
1209	1209	11208	1209 K+H	45	40	85	19	35	0.47	49.80	76.90
1210	1210	11209	1210 K+H	50	45	90	20	39	0.53	55.30	88.10
1211	1211	11210	1211 K+H	55	50	100	21	40	0.71	71.30	111.--
1212	1212	11211	1212 K+H	60	55	110	22	41	0.88	84.30	127.80
1213	1213	11212	1213 K+H	65	60	120	23	43	1.15	111.60	159.40
1214	1214			70	--	125	24	--	1.26	124.--	
1215	1215	11213	1215 K+H	75	65	130	25	44	1.36	133.--	188.90
1216	1216	11214	1216 K+H	80	70	140	26	48	1.67	138.90	204.90
1217	1217	11215	1217 K+H	85	75	150	28	52	2.1	170.30	244.40
1218	1218	11216	1218 K+H	90	80	160	30	55	2.5	310.--	399.30
1219	1219	11217	1219 K+H	95	85	170	32	58	3.1	226.--	324.--
1220	1220	11218	1220 K+H	100	90	180	34	61	3.7	384.40	502.40
1221	1221	11219	1221 K+H	105	95	190	36	63	4.4		
1222	1222	11210	1222 K+H	110	100	200	38	66	5.2	338.--	498.--
1224	1224	11222	1224 K+H	120	110	215	42	75	6.8		

P E N D E L K U G E L L A G E R

LAGERREIHEN 1300, 1300K, 1300 K+H

Kurzzeichen G.P.S.	S.K.F.	G.P.Z.	S.K.F.	Maße in mm d	di	D.	B.	l	Gewicht kg.	Preise in ö.S. 1300	1300K+H
1300	1300			10	7	35	11		0.06		
1301	1301			12		37	12		0.07	20.60	
1302	1302			15		42	13		0.09	24.--	
1303	1303			17		47	14		0.13	26.--	
1304	1304	11303	1304 K+H	20	17	52	15	32	0.16	28.30	
1305	1305	11304	1305 K+H	25	20	62	17	33	0.26	35.--	55.50
1306	1306	11305	1306 K+H	30	25	72	19	35	0.39	44.--	66.60
1307	1307	11306	1307 K+H	35	30	80	21	39	0.50	52.70	78.10
1308	1308	11307	1308 K+H	40	35	90	23	39	0.70	62.60	88.80
1309	1309	11308	1309 K+H	45	40	100	25	41	0.96	76.90	106.--
1310	1310	11309	1310 K+H	50	45	110	27	46	1.21	92.--	126.50
1311	1311	11310	1311 K+H	55	50	120	29	48	1.58	130.20	161.80
1312	1312	11311	1312 K+H	60	55	130	31	50	1.96	158.10	203.90
1313	1313	11312	1313 K+H	65	60	140	33	52	2.5	170.40	230.70
1314	1314	11313	1314 K+H	70	--	150	35	--	3.--	197.--	
1315	1315	11313	1315 K+H	75	65	160	37	56	3.6	240.--	302.--
1316	1316	11314	1316 K+H	80	70	170	39	61	4.3	361.50	345.--
1317	1317	11315	1317 K+H	85	75	180	41	63	5.1	320.--	398.--
1318	1318	11316	1318 K+H	90	80	190	43	68	5.7	370.--	464.--
1319	1319	11317	1319 K+H	95	85	200	45	71	6.7	606.--	709.--
1320	1320	11318	1320 K+H	100	90	215	47	74	8.3	682.--	796.--

PENDELKUGELLAGER

LAGERREIHEN 2200, 2200K, 2200 K+H

Kurzzeichen G.P.Z.	S.K.F.	G.P.Z.	S.K.F.	Maße in mm d	di	D.	B.	l	Gewicht kg	Preise ö.S. 2200	2200K+H
1504	2204	11503	2204 K+H	20	17	47	18	32	0.14	33.80	
1505	2205	11504	2205 K+H	25	20	52	18	33	0.16	36.40	
1506	2206	11505	2206 K+H	30	25	62	20	35	0.26	45.-	67.50
1507	2207	11506	2207 K+H	35	30	72	23	39	0.40	53.30	78.70
1508	2208	11507	2208 K+H	40	35	80	23	39	0.51	60.40	85.60
1509	2209	11508	2209 K+H	45	40	85	23	41	0.55	65.80	94.30
1510	2210	11509	2210 K+H	50	45	90	25	46	0.59	70.20	104.70
1511	2211	11510	2211 K+H	55	50	100	28	48	0.81	81.70	123.40
1512	2212	11511	2212 K+H	60	55	110	31	50	1.09	104.-	150.-
1513	2213	11512	2213 K+H	65	60	120	31	52	1.46	136.-	186.50
1514	2214	11513	--	70	--	125	31	--	1.52	152.-	-.-
1515	2215	11513	2215 K+H	75	65	130	33	56	1.62	169.-	231.-
1516	2216	11514	2216 K+H	80	70	140	36	61	2.-	185.-	254.50
1517	2217	11515	2217 K+H	85	75	150	40	63	2.5	210.-	288.-
1518	2218	11516	2218 K+H	90	80	160	43	68	3.4	252.-	346.-
1519	2219	11517	2219 K+H	95	85	170	46	71	4.2	300.-	403.-
1520	2220	11518	2220 K+H	100	90	180	46	74	5.-	345.-	460.-

LAGERREIHEN 2300, 2300K, 2300 K+H

1604	2304	11603	2304 K+H	20	17	52	21	35	0.21	39.70	
1605	2305	11604	2305 K+H	25	20	62	24	39	0.34	49.60	72.80
1606	2306	11605	2306 K+H	30	25	72	27	42	0.50	60.80	86.30
1607	2307	11606	2307 K+H	35	30	80	31	47	0.68	83.70	112.50
1608	2308	11607	2308 K+H	40	35	90	33	49	0.93	100.-	131.-
1609	2309	11608	2309 K+H	45	40	100	36	52	1.23	121.50	157.20
1610	2310	11609	2310 K+H	50	45	110	40	59	1.61	153.20	192.70
1611	2311	11610	2311 K+H	55	50	120	43	62	2.1	191.-	238.-
1612	2312	11611	2312 K+H	60	55	130	46	65	2.6	223.20	274.20
1613	2313	11612	2313 K+H	65	60	140	48	67	3.2	260.40	317.40
1614	2314	--	-- ---	70	--	150	51	--	4.3	301.30	
1615	2315	11613	2315 K+H	75	65	160	55	74	5.2	350.-	423.-
1616	2316	11614	2315 K+H	80	70	170	58	80	6.2	401.70	482.-
1617	2317	11615	2316 K+H	85	75	180	60	84	7.2	680.-	770.-
1618	2318	11616	2317 K+H	90	80	190	64	89	8.5	782.-	890.-

PENDELROLLENLAGER

Lagerreihen 22200, 22200 K, 22200 K+H

Bezeichnung G.P.Z.	S.K.F.	G.P.Z.	S.K.F.	Maße in mm d	di	D	B	L	Gewicht kg	Preise in öS. 22200	22200 K+H
3516	22216	13514	22216 K+H	80	70	140	33	61	2.2	410.-	480.-
3517	22217	13515	22217 K+H	85	75	150	36	63	2.8	472.-	550.-
3518	22218	13516	22218 K+H	90	80	160	40	68	3.6	515.-	613.-
3519	22219	13517	22219 K+H	95	85	170	43	71	4.2	602.-	705.-
3520	22220	13518	22220 K+H	100	90	180	46	74	5.2	700.-	816.-
3522	22222	13520	22222 K+H	110	100	200	53	81	7.4	850.-	1018.-
3524	22224	13522	22224 K+H	120	110	215	58	91	9.2	1045.-	1250.-
3526	22226	13523	22226 K+H	130	115	230	64	100	11.4	1240.-	1490.-
3528	22228	13524	22228 K+H	140	125	250	68	106	14.5	1730.-	2014.-
3530	22230	13527	22230 K+H	150	135	270	73	113	18.5	2000.-	2425.-
3532	22232	13528	22232 K+H	160	140	290	80	121	23.-	2200.-	
3534	22234	13530	22234 K+H	170	150	310	86	128	29.-		
3536	22236	13532	22236 K+H	180	160	320	86	129	30.-		
3538	22238	13534	22238 K+H	190	170	340	92	136	37.-		
3540	22240	13536	22240 K+H	200	180	360	98	144	45.-		

Lagerreihen 22300, 22300 K, 22300 K+H

3608	22308	13607	22308 K+H	40	35	90	33	49	1.03	262.-	293.-
3609	22309	13608	22309 K+H	45	40	100	36	52	1.4	288.-	324.-
3610	22310	13609	22310 K+H	50	45	110	40	59	1.9	335.-	375.-
3611	22311	13610	22311 K+H	55	50	120	43	62	2.4	375.-	422.-
3612	22312	13611	22312 K+H	60	55	130	46	65	3.-	450.-	502.-
3613	22313	13612	22313 K+H	65	60	140	48	67	3.6	512.-	569.-
3614	22314	--	--	70	--	150	51	--	4.4	556.-	
3615	22315	13613	22315 K+H	75	65	160	55	74	5.4	636.-	709.-
3616	22316	13614	22316 K+H	80	70	170	58	80	6.4	780.-	860.-
3617	22317	13615	22317 K+H	85	75	180	60	84	7.4	792.-	882.-
3618	22318	13616	22318 K+H	90	80	190	64	89	8.8	932.-	1040.-
3619	22319	13617	22319 K+H	95	85	200	67	93	10.3	1260.-	1385.-
3620	22320	13618	22320 K+H	100	90	215	73	100	13.-	1545.-	1690.-
3622	22322	13620	22322 K+H	110	100	240	80	108	18.1	1909.-	2119.-
3624	22324	13622	22324 K+H	120	110	260	86	119	22.-	2200.-	2446.-
3626	22326	13623	22326 K+H	130	115	280	93	129	29.-	2650.-	2938.-
3628	22328	13625	22328 K+H	140	125	300	102	140	36.-	3020.-	3350.-
3630	22330	13627	22330 K+H	150	135	320	108	148	43.-	3400.-	3875.-
3632	22332	13628	22332 K+H	160	140	340	114	155	51.-		
3634	22334	13630	22334 K+H	170	150	360	120	162	60.-		
3636	22336	13632	22336 K+H	180	160	380	126	169	70.-	6200.-	7254.-
3638	22338	13634	22338 K+H	190	170	400	132	176	81.-		
3640	22340	13636	22340 K+H	200	180	420	138	184	94.-		
3652	22352	--	--	260	--	540	165	--	195.-		

Z Y L I N D E R R O L L E N L A G E R

L e i c h t e Serie

N 200=2200, NU 200=32200, NJ 200=42200

Bezeichnung						Dimensionen			Gew.	Preis ö.S.		
GPZ	SKF	GPZ	SKF	GPZ	SKF	d	D	B	kg	N 200	NU 200	NJ 200
				42202	NJ202	15	35	11	0.06			
2204	NU204	32204	NU204	42204	204	20	47	14	0.11	52.80	60.--	61.20
2205	205	32205	205	42205	205	25	52	15	0.16	57.60	68.20	71.-
2206	206	32206	206	42206	206	30	62	16	0.2	67.-	73.20	776.90
2207	207	32207	207	42207	207	35	72	17	0.3	77.50	79.50	83.-
2208	208	32208	208	42208	208	40	80	18	0.4	88.60	91.70	96.20
2209	209	32209	209	42209	209	45	85	19	0.5	98.40	98.60	104.40
2210	210	32210	210	42210	210	50	90	20	0.6	110.40	113.40	119.60
2211	211	32211	211	42211	211	55	100	21	0.7	122.40	127.20	134.40
2212	212	32212	212	42212	212	60	110	22	0.9	142.80	146.40	154.80
2213	213	32213	213	42213	213	65	120	23	1.1	170.40	172.80	186.--
2214	214	32214	214	42214	214	70	125	24	1.3	192.-	190.80	202.80
2215	215	32215	215	42215	215	75	130	25	1.4	204.-	210.-	220.80
2216	216	32216	216	42216	216	80	140	26	1.7	226.80	238.80	248.40
2217	217	32217	217	42217	217	85	150	28	2.1	272.40	279.60	289.20
2218	218	32218	218	42218	218	90	160	30	2.5	313.70	302.40	336.-
2219	219	32219	219	42219	219	95	170	32	3.2	366.-	368.40	387.60
2220	220	32220	220	42220	220	100	180	34	3.5	429.60	417.60	451.20
2221	221	32221	221	42221	221	105	190	36	4.-		484.80	510.-
2222	222	32222	222	42222	222	110	200	38	5.-		531.60	558.-
2224	224	32224	224	42224	224	120	215	40	6.4		603.60	645.60
2226	226	32226	226	42226	226	130	230	40	7.3			
2228	228	32228	228	42228	228	140	250	42	9.1			
2230	230	32230	230	42230	230	150	270	45	11			
2232	232	32232	232	42232	232	160	290	48	14			
2234	234	32234	234	42234	234	170	310	52	17			
2240	240	32240	240	42240	240	200	360	58				

Z Y L I N D E R R O L L E N L A G E R

M i t t l e r e Serie

N 300=2300, NU 300=32305, NJ 300=42305

Bezeichnung						Dimension			Gew.	Preis ö. S.		
GPZ	SKF	GPZ	SKF	GPZ	SKF	d	D	B	kg.	N 300	NU 300	NJ 300
2305	NM305	32305	NU305	42305	NJ305	25	62	17	0.2	65.10	73.70	73.90
2306	306	32306	306	42306	306	30	72	19	0.3	83.50	85.--	90.40
2307	307	32307	307	42307	307	35	80	21	0.5	96.20	102.50	109.30
2308	308	32308	308	42308	308	40	90	23	0.7	113.40	115.30	122.40
2309	309	32309	309	42309	309	45	100	25	0.9	132.--	140.40	152.40
2310	310	32310	310	42310	310	50	110	27	1.2	158.40	159.60	168.--
2311	311	32311	311	42311	311	55	120	29	1.7	194.40	195.60	210.--
2312	312	32312	312	42312	312	60	130	31	2.-	221.-	223.20	243.--
2313	313	32313	313	42313	313	65	140	33	2.5	255.40	252.-	272.40
2314	314	32314	314	42314	314	70	150	35	3.1	319.20	315.60	351.60
2315	315	32315	315	42315	315	75	160	37	3.7	354.-	351.60	378.--
2316	316	32316	316	42316	316	80	170	39	4.4	417.60	398.40	429.60
2317	317	32317	317	42317	317	85	180	41	5.2	474.--	458.40	499.20
2318	318	32318	318	42318	318	90	190	43	6.1	550.80	542.40	572.40
2319	319	32319	319	42319	319	95	200	45	7.-	620.40	620.40	696.--
2320	320	32320	320	42320	320	100	215	47	8.6		722.40	752.40
2321	321	32321	321	42321	321	105	225	49	9.8			
2322	322	32322	322	42322	322	110	240	50	11			
2324	324	32324	324	42324	324	120	260	55	14			
2326	326	32326	326	42326	326	130	280	58	18			
2328	328	32328	328	42328	328	140	300	62	22			
2330	330	32330	330	42330	330	150	320	65	26			
2332	332	32332	332	42332	332	160	340	68	31			
2334	334	32334	334	42334	334	170	360	72	36			
2336	336	32336	336	42336	336	180	380	75	42			

KEGELROLLENLAGER

LAGERREIHE 30200

Kurzzeichen G.P.Z.	Kurzzeichen S.K.F.	Maße in mm d	D.	T Max.	T Min.	b	c	Gewicht kg	Preise in ö.S.
72o2	3o2o2	15	35	12	11.5	11	9	o.o5	
72o3	3o2o3	17	4o	13.5	13.-	12	11	o.o8	3o.--
72o4	3o2o4	2o	47	15.5	15.-	14	12	o.12	32.6o
72o5	3o2o5	25	52	16.5	16.-	15	13	o.15	35.8o
72o6	3o2o6	3o	62	17.5	17.-	16	14	o.22	37.2o
72o7	3o2o7	35	72	18.5	18.-	17	15	o.32	43.6o
72o8	3o2o8	4o	8o	2o.-	19.5	2o	16	o.42	58.-
7209	3o2o9	45	85	21.-	2o.5	19	16	o.47	62.-
721o	3o21o	5o	9o	22.-	21.5	21	17	o.53	67.4o
7211	3o211	55	1oo	23.-	22.5	21	18	o.69	76.--
7212	3o212	6o	11o	24.-	23.5	23	19	o.86	92.4o
7213	3o213	65	12o	25.-	24.5	23	2o	1.1	102.-
7214	3o214	7o	125	26.5	26.-	26	21	1.22	13o.2o
7215	3o215	75	13o	27.5	27.-	26	22	1.34	143.2o
7216	3o216	8o	14o	28.5	28.-	26	22	1.59	165.--
7217	3o217	85	15o	31.-	3o.-	28	24	2.-	181.-
7218	3o218	9o	16o	33.-	32.-	31	26	2.5	262.6o
7219	3o219	95	17o	35.-	34.-	32	27	3.2	271.--
722o	3o22o	1oo	18o	37.5	36.5	34	29	3.7	337.--
7221	3o221	1o5	19o	39.5	38.5	36	3o	4.5	43o.--
7222	3o222	11o	2oo	41.5	4o.5	38	32	5.6	51o.--
7224	3o224	12o	215	44.-	43.-	41	34	6.6	684.5o
7226	3o226	13o	23o	44.5	43.-	4o	34	7.6	
7228	3o228	14o	25o	46.5	45.-	42	36	9.5	
723o	3o23o	15o	27o	5o.-	48.-	45	38	12.-	
7236	3o236	18o	32o	58.-	56.-	52	43	2o.-	
7244	3o244	22o	4oo	71.-	69.-	65	52	35.2	

KEGELROLLENLAGER mit BUND

G.P.S.	S.K.F.	d	B.	D1	c	b	c	kg.	Preis
672o3		17	4o	43	13.5	12	11	o.o82	
672o4		2o	47	51	15.5	14	12	o.131	
672o7		35	72	77	18.5	17	15	o.343	
6751o	3221o B	5o	9o	96	25.-	23.5	2o	o.8	76.--
67512		6o	11o	117	3o.-	3o.-	24	1.4	
67518	32218 B	9o	16o	168	43.-	4o.-	34	3.5	385.--
67815		75	135	--	--	46.-	35	2.4	189.1o

KEGELROLLENLAGER

LAGERREIHE 3o3oo.

Kurzzeichen G.P.Z.	Kurzzeichen S.K.F.	Maße in mm d	D.	T Max.	T Min.	b	c	Gewicht kg.	Preise in ö.S.
73o2	3o3o2	15	42	14.5	14.--	13	11.1	o.o9	28.9o
73o3	3o3o3	17	47	15.5	15.--	14	12	o.13	29.8o
73o4	3o3o4	2o	52	16.5	16.--	16	13	o.17	35.3o
73o5	3o3o5	25	62	18.5	18.--	17	15	o.25	41.--
73o6	3o3o6	3o	72	21.-	2o.5	19	17	o.38	51.5o
73o7	3o3o7	35	8o	23.--	22.5	21	18	o.52	58.6o
73o8	3o3o8	4o	9o	25.5	25.--	23	2o	o.7	74.4o
73o9	3o3o9	45	1oo	27.5	27.--	26	22	o.92	93.--
731o	3o31o	5o	11o	29.5	29.--	29	23	1.19	112.2o
7311	3o311	55	12o	32.-	31.--	29	25	1.53	136.4o
7312	3o312	6o	13o	34.-	33.--	31	27	1.9o	158.1o
7313	3o313	65	14o	36.5	35.5	33	29	2.3	184.8o
7314	3o314	7o	15o	38.5	37.5	37	3o	3.-	223.2o
7315	3o315	75	16o	4o.5	39.5	37	31	3.4	315.--
7316	3o316	8o	17o	43.-	42.-	39	33	4.--	
7317	3o317	85	18o	45.-	44.-	41	35	4.7	
7318	3o318	9o	19o	47.-	46.-	43	37	5.5	
7319	3o319	95	2oo	5o.--	49.-	45	39	6.4	
732o	3o32o	1oo	215	52.-	51.-	47	39	7.9	
7321	3o321	1o5	225	54.-	53.-	49	41	1o.5	
7322	3o322	11o	24o	55.-	54.-	5o	42	12.-	
7324	3o324	12o	26o	6o.-	59.-	55	46	15.-	
733o	3o33o	15o	32o	73.-	71.-	65	53	29.-	
7352	3o352	26o	52o	11o.-	1o8.5	1o2	8o	125.-	

K E G E L R O L L E N L A G E R

LAGERREIHE 322oo.

Kurzzeichen G.P.Z.	Kurzzeichen S.K.F.	Maße in mm d	D.	Max.	Min.	b	c	Gewicht kg.	Preise in ö.S.
75o6	322o6	3o	62	21.5	21.-	2o.5	17	0.28	49.--
75o7	322o7	35	72	24.5	24.-	23.-	19	0.42	59.2o
75o8	322o8	4o	8o	25.-	24.5	23.5	19	0.51	66.3o
75o9	322o9	45	85	25.-	24.5	23.5	2o	0.56	71.3o
751o	3221o	5o	9o	25.-	24.5	23.5	2o	0.59	75.7o
7511	32211	55	1oo	27.-	26.5	25.-	21	0.82	92.3o
7512	32212	6o	11o	3o.-	29.5	28.-	24	1.1	120.9o
7513	32213	65	12o	33.-	32.5	31.-	27	1.48	168.-
7514	32214	7o	125	33.5	33.-	31.-	27	1.56	178.-
7515	32215	75	13o	33.5	33.-	31.-	27	1.62	179.8o
7516	32216	8o	14o	33.5	33.-	33.-	28	2.-	196.--
7517	32217	85	15o	39.-	38.-	36.-	3o	2.5	216.--
7518	32218	9o	16o	43.-	42.-	4o.-	34	3.3	4o4.9o
7519	32219	95	17o	46.-	45.-	45.5	37	4.-	375.--
752o	3222o	1oo	18o	49.5	48.5	46.-	39	5.-	435.--
7521	32221	1o5	19o	53.5	52.5	5o.--	43	5.9	536.--
7522	32222	11o	2oo	56.5	55.5	53.5	46	7.3	575.--
7524	32224	12o	215	62.-	61.-	58.-	5o	9.6	8o6.--
7526	32226	13o	23o	68.5	67.-	65.-	58	1o.7	
7528	32228	14o	25o	72.5	71.-	68.-	58	13.8	
753o	3223o	15o	27o	78.-	76.-	74.-	6o	18.-	
7536	32236	18o	32o	91.-	9o.-	86.-	7o	27.4	

S C H R Ä G R O L L E N L A G E R

LAGERREIHE 323oo.

Kurzzeichen G.P.Z.	Kurzzeichen S.K.F.	Maße in mm d	D	Max.	Min.	b	c	Gewicht kg.	Preise in ö.S.
76c4	323o4	2o	52	22.5	22.-	21.-	18.-	o.27	46.--
76o5	323o5	25	62	22.5	25.-	24.-	21.-	o.36	46.7o
76o6	323o6	3o	72	29.-	28.5	29.-	23.-	o.54	6o.8o
76o7	323o7	35	8o	33.-	32.5	31.-	27.-	o.72	8o.-
76o8	323o8	4o	9o	35.5	35.-	33.-	28.5	o.99	98.6o
76o9	323o9	45	1oo	38.5	38.-	36.-	3o.-	1.33	136.4o
761o	3231o	5o	11o	42.5	42.-	4o.-	34.-	1.74	166.2o
7611	32311	55	12o	46.-	45.-	44.5	36.5	2.2	2o9.6o
7612	32312	6o	13o	49.-	48.-	47.5	39.-	2.8	238.1o
7613	32313	65	14o	51.5	5o.5	48.-	41.-	3.4	375.1o
7614	32314	7o	15o	54.5	53.5	51.-	43.-	4.1	441.4o
7615	32315	75	16o	58.5	57.5	55.-	46.5	5.-	542.5o
7616	32316	8o	17o	62.-	61.-	59.5	49.-	5.9	
7617	32317	85	18o	64.-	63.-	6o.-	5o.5	6.9	
7618	32318	9o	19o	68.-	67.-	66.5	53.5	8.1	
7619	32319	95	2oo	72.-	71.-	67.-	57.-	9.5	
762o	3232o	1oo	215	78.-	77.-	73.-	61.5	12.-	
7621	32321	1o5	225	82.-	81.-	77.-	64.5	13.8	
7622	32322	11o	24o	85.-	84.-	8o.-	66.-	16.5	
7624	32324	12o	26o	91.-	9o.-	86.-	7o.5	21.-	

SPEZIALKEGELROLLENLAGER

G.P.Z.	S.K.F.	d	D	b	c	Max.	Min.	Preis
27706		3o.-	72.-	24.-	17.6	24.5	24.3	
27908	44150/44348	38.1	88.5o	23.5	17.5	25.5	25.-	
27709		45.-	1oo.-	29.-	2o.5	32.-	31.5	1o5.4o
27911	72212/72487	53.975	123.825	32.79	25.4	37.o13	36.o13	
27318		85.-	18o.-	41.-	3o.-	45.-	44.-	
7118	32o18	9o.-	14o.-	3o.-	26.-	32.5	31.5	218.2o

DOPPELREIHIGE KEGELROLLENLAGER

97518	KeZ	9o	35.-	8o.-	23-3[illegible]	45.-	57.-	56.75	1.22	121.-
			9o.-	16o.-	4o.-	78.-	96.-	94.5	7.44	5o2.-
9753o	KeZ	15o	15o.-	27o				172.5		868.-
2o97136		18o	18o	28o	6o.-	1o8.-	134.-	132.5		1ooo.-

A S C I A L RILLENKUGELLAGER

einseitig wirkend

LAGERREIHE 51100

Kurzzeichen G.P.Z.	Kurzzeichen S.K.F.	Maße in mm d	D	H	Gewicht kg.	Preise in ö.S.
8100	51100	10	24	9	0.02	12.90
8101	51101	12	26	9	0.022	13.60
8102	51102	15	28	9	0.024	14.30
8103	51103	17	30	9	0.028	15.10
8104	51104	20	35	10	0.04	16.30
8105	51105	25	42	11	0.06	18.20
8106	51106	30	47	11	0.07	19.60
8107	51107	35	53	12	0.09	24.80
8108	51108	40	60	13	0.12	27.40
8109	51109	45	65	14	0.15	30.70
8110	51110	50	70	14	0.16	32.60
8111	51111	55	78	16	0.24	38.40
8112	51112	60	85	17	0.29	43.70
8113	51113	65	90	18	0.34	48.80
8114	51114	70	95	18	0.36	50.80
8115	51115	75	100	19	0.42	60.80
8116	51116	80	105	19	0.43	64.50
8117	51117	85	110	19	0.46	76.40
8118	51118	90	120	22	0.68	90.--
8120	51120	100	135	25	1.--	108.--
8122	51122	110	145	25	1.08	130.--
8124	51124	120	155	25	1.16	160.--
8126	51126	130	170	30	1.87	230.--
8128	51128	140	180	31	2.1	270.--
8130	51130	150	190	31	2.2	
8132	51132	160	200	31	2.3	
8134	51134	170	215	34	3.3	
8136	51136	180	225	34	3.5	
8138	51138	190	240	37	4.1	
8140	51140	200	250	37	4.2	
8144	51144	220	270	37	4.6	
8148	51148	240	300	45	7.6	
8152	51152	260	320	45	8.1	
8156	51156	280	350	53	12.2	
8160	51160	300	380	62	17.5	
8164	51164	320	400	63	18.9	
8168	51168	340	420	64	20.-	
8172	51172	360	440	65	22.-	

STAT

A S C I A L R I L L E N L A G E R

Lagerreihen 51200, 52202

Kurzzeichen G.P.Z.	Kurzzeichen S.K.F.	G.P.Z.	S.K.F.	Maße in mm d	d2	D	H	H1	Preise in ö.S. 51200	52200
8200	51200			10		26	11		14.80	
8201	51201			12		28	11		15.30	
8202	51202	382o2	522o2	15	16	32	12	22	16.10	
8203	51203			17	--	35	12	--	17.--	
8204	51204	382o4	522o4	20	15	40	14	26	18.80	34.--
8205	51205	382o5	522o5	25	20	47	15	28	20.80	39.--
8206	51206	382o6	522o6	30	25	53	16	29	26.10	46.30
8207	51207	382o7	522o7	35	30	62	18	34	31.30	54.70
8208	51208	382o8	522o8	40	30	68	19	36	37.20	65.--
8209	51209	382o9	522o9	45	35	73	20	37	44.40	75.--
8210	51210	38210	52210	50	40	78	22	39	48.20	84.--
8211	51211	38211	52211	55	45	90	25	45	59.20	101.--
8212	51212	38212	52212	60	50	95	26	46	66.70	115.70
8213	51213	38213	52213	65	55	100	27	47	72.50	122.--
8214	51214	38214	52214	70	55	105	27	47	85.40	140.--
8215	51215	38215	52215	75	60	110	27	47	88.10	167.--
8216	51216	38216	52216	80	65	115	28	28	98.90	182.--
8217	51217	38217	52217	85	70	125	31	55	132.--	250.--
8218	51218	38218	52218	90	75	135	35	62	158.10	
8220	51220	38220	52220	100	85	150	38	67	182.--	
8222	51222	-	-	110	--	160	38	--	236.--	
8224	51224	-	-	120	--	170	39	--	307.--	
8226	51226	-	-	130	--	190	45	--		
8228	51228	-	-	140	--	200	46	--		
8230	51230	-	-	150	--	215	50	--		
8232	51232	-	-	160	--	225	51	--		
8234	51234	-	-	170	--	240	55	--		
8236	51236	-	-	180	--	250	56	--		
8238	51238	-	-	190	--	270	62	--		
8240	51240	-	-	200	--	280	62	--		
8244	51244	-	-	220	--	300	63	--		

STAT

A S C I A L R I L L E N K U G E L L A G E R

LAGERREIHE 51300

Kurzzeichen G.P.Z.	Kurzzeichen S.K.F.	Maße in mm d	D	H	Preise in ö. S.	Gewicht kg.
8305	51305	25	52	18	28.20	0.18
8306	51306	30	60	21	35.30	0.27
8307	51307	35	68	24	32.40	0.39
8308	51308	40	78	26	51.50	0.55
8309	51309	45	85	28	60.--	0.69
8310	51310	50	95	31	77.50	1.--
8311	51311	55	105	35	92.--	1.34
8312	51312	60	110	35	202.10	1.43
8313	51313	65	115	36	215.10	1.57
8314	51314	70	125	40	260.40	2.1
8315	51315	75	135	44	-	2.7
8316	51316	80	140	44	352.10	2.8
8317	51317	85	150	49	[illegible]	3.7
8318	51318	90	155	50	461.90	3.9
8320	51320	100	170	55	567.30	5.1
8322	51322	110	190	63	-	7.9
8324	51324	120	210	70	-	10.9
8326	51326	130	225	75	-	13.3
8328	51328	140	240	80	-	15.9
8330	51330	150	250	80	-	16.7
8336	51336	180	300	95	-	28.17
8340	51340	200	340	110	-	43.59
8368	51368	340	540	160	-	138.--

SPEZIAL LÄNGSLAGER M. KAPPE

98671	D-38579	55	90	23	95.50	0.38
588911	I-62235	52.39	85.3	20.64	84.20	