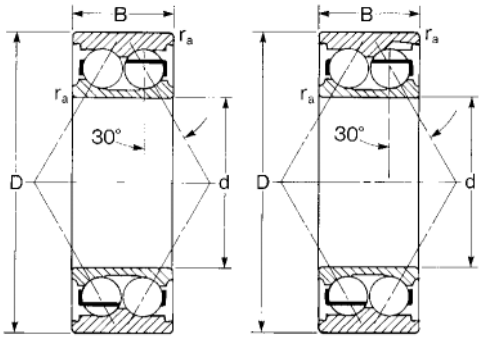

C
Plain

M
Plain

MRC double-row ball bearings are manufactured in two main types: C-type (conrad construction) and M-type (maximum capacity with filling notches). Each row has a 30˚ contact angle.

C-type

Conrad construction, or C-type, double-row ball bearings have contact angles that converge outside the bearing, thereby increasing resistance to misalignment. This type does not have filling notches. These bearings are recommended for applications where single-row bearings are inadequate, but radial loads are not so great as to suggest a filling-notch bearing. They will take heavy radial loads, and axial loads equally in either direction. The C-type design fully meets the requirements of American Petroleum Institute Specification 610.

Both the inner and the outer rings have closure grooves. These bearings are available with seals, shields, and snap-rings.

M-type

This type has filling notches on one side to permit assembling the maximum number of balls into the bearing. Contact angles converge outside the bearing. All inner and outer rings have closure grooves. These bearings may be equipped with seals, shields, or snap-rings; or a combination of these. The M-type bearing has very heavy radial capacity. It also has thrust capacity in one direction, with the ability to accommodate light thrust load in the reversing direction.

Part numbers on M-type double-row bearings are normally located on either the side face or the O.D. The side face marking is always on the side opposite the filling notch and the O.D. marking is offset from the center away from the filling notch. Therefore, double sealed or shielded bearings with the filling notch covered from view can be oriented correctly.

Ball Cages and Types

The cage supplied with C-type and M-type bearings is one-piece, heat-treated steel for maximum retention. It is snapped into place after the full quota of balls has been introduced between the inner and outer ring.

Size	Series	Page
5200C	Light, Non-Filling Notch	**149**
5200C1	Light, Extra Width, Non-Filling Notch	**149**
5300C	Medium, Non-Filling Notch	**150**
5300C1	Medium, Extra Width, Non-Filling Notch	**150**
5400C	Heavy, Non-Filling Notch	**153**
5200M	Light, Filling Notch	**151**
5200M1	Light, Extra Width, Filling Notch	**151**
5300M	Medium, Filling Notch	**152**
5300M1	Medium, Extra Width, Filling Notch	**152**
Equivalent Load and Life		**154**
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MRC 5000 type double-row bearings are made in three series — 5200 Light, 5300 Medium, and 5400 Heavy — each with progressively larger sections. The old-style 5000 type double-rows are available in the SB Conrad and maximum capacity configurations. The SB Conrad version has contact angles which diverge inwardly, thereby increasing resistance to misalignment. The maximum capacity version has contact angles which converge inwardly, giving it the capability of handling moderate misalignment. It also has filling notches on both sides, for the introduction of a maximum complement of balls.

Our new-style double-row bearings are available in the C-type (Conrad construction) and M type (with filling notches on one side only). Both types feature inwardly diverging contact angles, which provide greater rigidity than found in previous double-row filling-notch type bearings.

A unique manufacturing system utilizing "common parts" is employed in the manufacture of the new-style bearings. Using a minimum number of components, the system provides greater flexibility for producing either conrad or maximum-capacity types as open bearings or with a variety of closures. Twenty-two variations of a single bearing size can be made, for a total of 1185 double-row bearing variations to solve your application problems.

This chart outlines the suffixes and widths of MRC 5000 type bearings. The data on this chart do not represent actual availability of double-row products. These data are intended to be used as references for interchanging. New style double-rows appear next to their old-style counterparts that are the same width.

MRC Double-Row Suffix Identification Summary

Suffix	Description
B	Rigid construction, maximum capacity
BK	Rigid construction, maximum capacity, standard width
C	Conrad, rigid construction, standard width
C1	1/8″ additional width from standard; 5205C1 & 5212C1 are 1/16″ wider than standard
F	One shield
FF	Two shields
G	One snap-ring
K	Standard width
M	Maximum capacity, rigid construction, standard width Suffix Description

Suffix	Description
M1	1/8″ additional width from standard; 5205M1 & 5212M1 are 1/16″ wider than standard
Plain	Maximum capacity, nonrigid construction, narrow width in 5200 series, extra width is required with closures
S	Conrad construction (note: always combined with additional suffix letters)
SB	Conrad, rigid construction, narrow width, extra width is required with closures
SBK	Conrad, rigid construction, standard width
Z	One seal
ZZ	Two seals

Basic Bearing Number	Old—Style Suffix	New—Style Suffix	Width (inches)
5200 Series			
5106	SBZZ		29/32
5200	SB		9/16
	SBKF		9/16
	SBKFF		9/16
	SBKZ		9/16
	SBKZZ		9/16
5201	SB		5/8
	SBFG		5/8
	SBKF		5/8
	SBKFF		5/8
	SBKFFG		5/8
	SBKFG		5/8
	SBKZ		5/8
	SBKZZ		5/8
5202	Plain		5/8
	SB		5/8
	SBFG		11/16
	SBKF		5/8
	SBKFF		5/8
	SBKFG		5/8
	SBKZZ		5/8
5203	SB		11/16
	SBKF		11/16
	SBKFF		11/16
	SBKFFG		11/16
	SBKFG		11/16
	SBKZ		11/16
	SBKZZ		11/16
5204	Plain		3/4
	K	M	13/16
	KF	MF	13/16
	SB		3/4
	SBK	C	13/16
	SBKF	CF	13/16
	SBKFF	CFF	13/16
	SBKFFG	CFFG	13/16
	SBKFG	CFG	13/16
	SBKG	CG	13/16
	SBKZ	CZ	13/16
5205	F	MF1	7/8
	K	M	13/16
	KG	MG	13/16
	Plain		3/4
	SB		3/4
	SBF	CF1	7/8
	SBK	C	13/16
	SBKF	CF	13/16
	SBKFF	CFF	13/16
	SBKFG	CFG	13/16
	SBKG	CG	13/16
	—	C1, M1	7/8
5206	F	MF1	1 1/16
	K	M	15/16
	KF	MF	15/16
	KFF	MFF	15/16
	KG	MG	15/16
	Plain		3/4
	SBF	CF1	1 1/16
	SBK	C	15/16
	SBKF	CF	15/16
	SBKFF	CFF	15/16
	SBKFFG	CFFG	15/16
	SBKFG	CFG	15/16
	SBKG	CG	15/16
	SBZZ	CZZ1	1 1/16
	SBKZZG	CZZG1	1 1/16
	—	C1, M1	1 1/16
5207	F	MF1	1 3/16
	K	M	1 1/16
	KF	MF	1 1/16
	KFF	MFF	1 1/16
	KFG	MFG	1 1/16
	KG	MG	1 1/16
	Plain		7/8
	SBK	C	1 1/16
	SBKF	CF	1 1/16
	SBKFF	CFF	1 1/16
	SBKFG	CFG	1 1/16
	SBKFFG	CFFG	1 1/16
	SBKG	CG	1 1/16
	—	C1, M1	1 3/16
5208	BKF	MF	1 3/16
	BKFF	MFF	1 3/16
	K	M	1 3/16
	KF	MF	1 3/16
	KFF	MFF	1 3/16
	KFG	MFG	1 3/16
	KG	MG	1 3/16
	Plain		1
	SBK	C	1 3/16
	SBKF	CF	1 3/16
	SBKFF	CFF	1 3/16
	SBKFG	CFG	1 3/16
	SBKG	CG	1 3/16
5209	K	M	1 3/16
	KF	MF	1 3/16
	KG	MG	1 3/16
	Plain		1
	SBK	C	1 3/16
	SBKF	CF	1 3/16
	SBKFF	CFF	1 3/16
5210	K	M	1 3/16
	KF	MF	1 3/16
	KFF	MFF	1 3/16
	KG	MG	1 3/16
	Plain		1
	—	C	1 3/16
5211	BK	M	1 5/16
	BKG	MG	1 5/16
	K	M	1 5/16
	KF	MF	1 5/16
	KFG	MFG	1 5/16
	KG	MG	1 5/16
	Plain		1 3/16
		C	1 5/16
5212	F	MF1	1 1/2
	FG	MFG1	1 1/2
	K	M	1 7/16
	KF	MF	1 7/16
	KFG	MFG	1 7/16
	KG	MG	1 7/16
	Plain		1 3/8
	—	C1, M1	1 1/2
	—	C	1 7/16
5213	K	M	1 1/2
	KF	MF	1 1/2
	KFG	MFG	1 1/2
	KG	MG	1 1/2
	Plain		1 3/8
	—	C	1 1/2
5214	K	M	1 9/16
	KF	MF	1 9/16
	KFG	MFG	1 9/16
	KG	MG	1 9/16
	Plain		1 7/16
	—	C	1 9/16
5215	K	M	1 5/8
	KF	MF	1 5/8
	KFF	MFF	1 5/8
	KFG	MFG	1 5/8
	KG	MG	1 5/8
	Plain		1 7/16
	—	C	1 5/8
5216	BFF		1 7/8
	K	M	1 3/4
	KF	MF	1 3/4
	KFG	MFG	1 3/4
	KG	MG	1 3/4
	Plain		1 5/8
	—	C	1 3/4
5217	K	M	1 15/16
	KF	MF	1 15/16
	KG	MG	1 15/16
	Plain		1 3/4
	—	C	1 15/16
5218	K	M	2 1/16
	KF	MF	2 1/16
	KG	MG	2 1/16
	Plain		2
	—	C	2 1/16

Basic Bearing Number	Old—Style Suffix	New—Style Suffix	Width (inches)
5219	G		2 3/16
	Plain		2 3/16
5220	G		2 3/8
	Plain		2 3/8
5221	Plain		2 9/16
5222	KF		2 3/4
	Plain		2 3/4
5300 Series			
5300	SB		3/4
5301	SB		3/4
5302	Plain		3/4
	SB		3/4
5303	G		7/8
	KF		7/8
	KFG		7/8
	SB		7/8
	SBG		7/8
	SBKF		7/8
	SBKFF		7/8
	SBKFG		7/8
5304	F	MF1	1
	Plain	M	7/8
	SB	C	7/8
	SBF	CF1	1
	SBG	CG	7/8
	SBKF	CF	7/8
	SBKFF	CFF	7/8
	SBKFFG	CFFG	7/8
	SBKFG	CFG	7/8
	—	C1, M1	1
5305	F		1 1/8
	FG		1 1/8
	G	MG	1
	KFF	MFF	1
	Plain	M	1
	SB	C	1
	SBF		1 1/8
	SBFG		1 1/8
	SBG	CG	1
	SBKF	CF	1
	SBKFF	CFF	1
	SBKFG	CFG	1
5306	B	M	1 3/16
	BKFF	MFF	1 3/16
	F	MF1	1 5/16
	FG	MFG1	1 5/16
	G	MG	1 3/16
	KF	MF	1 3/16
	KFF	MFF	1 3/16
	KFG	MFG	1 3/16
	Plain	M	1 3/16
	—	C1, M1	1 5/16
	—	C	1 3/16
5307	BKFF	MFF	1 3/8
	F	MF1	1 1/2
	FG	MFG1	1 1/2
	G	MG	1 3/8
	KF	MF	1 3/8
	KFG	MFG	1 3/8
	Plain	M	1 3/8
	—	C1, M1	1 1/2
	—	C	1 3/8
5308	BG	MG	1 7/16
	F	MF1	1 9/16
	FG	MFG1	1 9/16
	G	MG	1 7/16
	Plain	M	1 7/16
	—	C	1 7/16
	—	C1, M1	1 9/16
5309	B	M	1 9/16
	F	MF1	1 11/16
	FG	MFG1	1 11/16
	G	MG	1 9/16
	Plain	M	1 9/16
	—	C	1 9/16
	—	C1, M1	1 11/16
5310	F	MF1	1 7/8
	FG	MFG1	1 7/8
	G	MG	1 3/4
	KF	MF	1 3/4
	KFG	MFG	1 3/4
	Plain	M	1 3/4
	—	C	1 3/4
	—	C1, M1	1 7/8
5311	F	MF1	2 1/16
	FG	MFG1	2 1/16
	G	MG	1 15/16
	Plain	M	1 15/16
	—	C	1 15/16
	—	C1, M1	2 1/16
5312	F	MF1	2 1/4
	FG	MFG1	2 1/4
	G	MG	2 1/8
	Plain	M	2 1/8
	—	C	2 1/8
	—	C1, M1	2 1/4
5313	F	MF1	2 7/16
	FG	MFG1	2 7/16
	G	MG	2 5/16
	Plain	M	2 5/16
	—	C	2 5/16
	—	C1, M1	2 7/16
5314	F	MF1	2 5/8
	G	MG	2 1/2
	KF	MF	2 1/2
	KFG	MFG	2 1/2
	Plain	M	2 1/2
	—	C	2 1/2
	—	C1, M1	2 5/8
5315	F	MF1	2 13/16
	G	MG	2 11/16
	Plain	M	2 11/16
	—	C	2 11/16
	—	C1, M1	2 13/16
5316	G	MG	2 11/16
	Plain	M	2 11/16
	—	C	2 11/16
5317	Plain		2 7/8
	—	C	2 7/8
5318	Plain		2 7/8
	—	C	2 7/8
5319	Plain		3 1/16
	—	C	3 1/16
5320	Plain		3 1/4
5321	Plain		3 7/16
5322	Plain		3 5/8
5400 Series			
5403	Plain		1 3/16
5404	Plain		1 3/8
5405	Plain		1 3/8
5406	Plain		1 9/16
	—	C	1 9/16
5407	G		1 3/4
	Plain		1 3/4
	—	C	1 3/4
5408	Plain		1 15/16
	—	C	1 15/16
5409	G		2 1/8
	Plain		2 1/8
	—	C	2 1/8
5410	F		2 7/16
	Plain		2 5/16
	—	C	2 5/16
5411	F		2 5/8
	G		2 1/2
	Plain		2 1/2
	—	C	2 1/2
5412	Plain		2 5/8
	—	C	2 5/8
5413	Plain		2 13/16
	—	C	2 13/16
5414	Plain		3 1/8
	—	C	3 1/8
5415	Plain		3 1/4
	—	C	3 1/4
5416	Plain		3 7/16
	—	C	3 7/16
5417	Plain		3 5/8
	—	C	3 5/8
5418	Plain		3 7/8
	—	C	3 7/8
5419	Plain		4 3/16

Bearing numbers of MRC double-row ball bearings produced before 1983 differ from the new C- and M-types listed in this catalog. Shown below is the interchange of pre-1983 bearing numbers with the new C- and M-types.

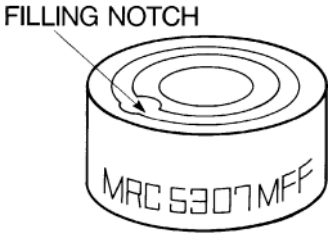
5000 Series double-row bearings not listed here maintain the original bearing number and must be specified by that number when ordering.

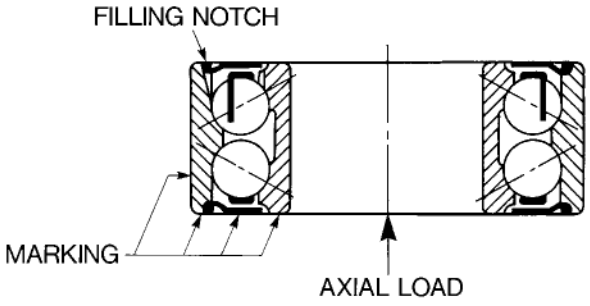
MRC Bearing Numbers	
Prior to 1983	**Superseded by**
5200SB	**5200C***
5200SBKF	**5200CF***
5200SBKFF	**5200CFF***
5200SBKZ	**5200CZ***
5200SBKZZ	**5200CZZ***
5201SB	**5201C***
5201SBKF	**5201CF***
5201SBKFF	**5201CFF***
5201SBKZ	**5201CZ***
5201SBKZZ	**5201CZZ***
5202SB	**5202C***
5202SBKFF	**5202CFF***
5202SBFG	**5202CFG-1***
5202SBKFG	**5202CFG***
5202SBKZ	**5202CZ***
5202SBKZZ	**5202CZZ***
5203SB	**5203C***
5203SBKF	**5203CF***
5203SBKFF	**5203CFF***
5203SBKFG	**5203CFG***
5203SBKZ	**5203CZ***
5203SBKZZ	**5203CZZ***
5204SBK	**5204C**
5204SBKF	**5204CF**
5204SBKFF	**5204CFF**
5204SBKFG	**5204CFG**
5204SBKFFG	**5204CFFG**
5204SBKG	**5204CG**
5204SBKZ	**5204CZ**
5205SBK	**5205C**
5205SBF	**5205CF-1**
5205SBKF	**5205CF**
5205SBKFF	**5205CFF**
5205SBKG	**5205CG**
5206SBK	**5206C**
5206SBF	**5206CF-1**
5206SBKF	**5206CF**
5206SBKFF	**5206CFF**
5206SBKFG	**5206CFG**
5206SBKG	**5206CG**
5206SBZZ	**5206CZZ-1**
5207F	**5207MF-1**
5207SBK	**5207C**
5207SBKF	**5207CF**
5207SBKFF	**5207CFF**
5207SBKFG	**5207CFG**
5207SBKG	**5207CG**
5208SBK	**5208C**
5208SBKF	**5208CF**
5208SBKFF	**5208CFF**
5208SBKFG	**5208CFG**
5208SBKG	**5208CG**
5209K	**5209M**
5209KF	**5209MF**
5209SBFF	**5209CFF**
5209KG	**5209MG**
5210K	**5210M**
5210KF	**5210MF**
5210KFF	**5210MFF**
5210KG	**5210MG**

MRC Bearing Numbers	
Prior to 1983	**Superseded by**
5211K	**5211M**
5211KF	**5211MF**
5211KFG	**5211MFG**
5211KG	**5211MG**
5212F	**5212MF-1**
5212FG	**5212MFG-1**
5212K	**5212M**
5212KF	**5212MF**
5212KFG	**5212MFG**
5212KG	**5212MG**
5213K	**5213M**
5213KF	**5213MF**
5213KFG	**5213MFG**
5213KG	**5213MG**
5214K	**5214M**
5214KF	**5214MF**
5214KG	**5214MG**
5215K	**5215M**
5215KF	**5215MF**
5215KFF	**5215MFF**
5215KFG	**5215MFG**
5215KG	**5215MG**
5216K	**5216M**
5216KF	**5216MF**
5216KFG	**5216MFG**
5216KG	**5216MG**
5217K	**5217M**
5217KF	**5217MF**
5217KG	**5217MG**
5218K	**5218M**
5218KF	**5218MF**
5218KG	**5218MG**
5219	**5219**
5219G	**5219G**
5220	**5220**
5220G	**5220G**
5221	**5221**
5222	**5222**
5222KF	**5222KF**
5300SB	**5300C***
5301SB	**5301C***
5302SB	**5302C***
5303SB	**5303C***
5303SBG	**5303CG***
5303SBKF	**5303CF***
5303SBKFF	**5303CFF***
5303SBKFG	**5303CFG***
5304SB	**5304C**
5304SBF	**5304CF-1**
5304SBKF	**5304CF**
5304SBKFF	**5304CFF**
5305SB	**5305C**
5305SBG	**5305CG**
5305SBKF	**5305CF**
5305SBKFF	**5305CFF**
5305SBKFG	**5305CFG**

MRC Bearing Numbers	
Prior to 1983	**Superseded by**
5306	**5306M**
5306F	**5306MF-1**
5306FG	**5306MFG-1**
5306G	**5306MG**
5306KF	**5306MF**
5306KFF	**5306MFF**
5306KFG	**5306MFG**
5307	**5307M**
5307F	**5307MF-1**
5307FG	**5307MFG-1**
5307G	**5307MG**
5307KF	**5307MF**
5307KFG	**5307MFG**
5308	**5308M**
5308F	**5308MF-1**
5308FG	**5308MFG-1**
5308G	**5308MG**
5309	**5309M**
5309B	**5309M**
5309F	**5309MF-1**
5309FG	**5309MFG-1**
5309G	**5309MG**
5310	**5310**
5310F	**5310MF-1**
5310FG	**5310MFG-1**
5310G	**5310MG**
5310KF	**5310MF**
5310KFG	**5310MFG**
5311	**5311M**
5311F	**5311MF-1**
5311FG	**5311MFG-1**
5311G	**5311MG**
5312	**5312M**
5312F	**5312MF-1**
5312FG	**5312MFG-1**
5312G	**5312MG**
5313	**5313M**
5313F	**5313MF-1**
5313FG	**5313MFG1**
5313G	**5313MG**
5314	**5314M**
5314F	**5314MF-1**
5314G	**5314MG**
5314KF	**5314MF**
5315	**5315M**
5315F	**5315MF1**
5315G	**5315MG**
5316	**5316M**
5316G	**5316MG**
5317	**5317**
5318	**5318**
5319	**5319**
5320	**5320**
5321	**5321**
5322	**5322**

*Listed for information only. Not currently in production. Use SB types.





Since the filling notch row is not visible on 5000MFF and 5000MZZ bearings, it is necessary to identify which row has the notch in those cases where the bearing subject to axial load. Axial load should be carried on the non-filling notch row. A moderate reversing axial load is permissible on the filling notch row.

The filling notch is oriented in relation to the bearing identification marking on the bearing which will be found in one of the following locations:

- Face of the outer ring
- Face of the inner ring
- OD surface of the outer ring
- Face of the closure

In each case the marking will occur on the side of the bearing opposite the filling notch as illustrated above. When the O.D. surface marking is “right side up” the filling notch is in the uppermost row and it is located closest to the non-filling notch row.

A typical application of a 5000MFF or 5000MZZ bearing is shown above in which it is subjected to an axial load in an upward direction. The bearing should be mounted with the filling notch up so that the axial load is taken by the bottom, non-filling notch row.

5200 and 5300 Series

Bore Diameter d				Axial Internal Clearance															
Over		Including		C2				Normal C0				C3				C4			
				.001 mm		.0001 in		.001 mm		.0001 in		.001 mm		.0001 in		.001 mm		.0001 in	
mm	in	mm	in	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
		10	.3937	1	11	0	4	5	21	2	8	12	28	5	11	25	45	10	18
10	.3937	18	7087	1	12	0	5	6	23	2	9	13	31	5	12	27	47	11	19
18	.7087	24	.9449	2	14	1	6	7	25	3	10	16	34	6	13	28	48	11	19
24	.9449	30	1.1811	2	15	1	6	8	27	3	11	18	37	7	15	30	50	12	20
30	1.1811	40	1.5748	2	16	1	6	9	29	4	11	21	40	8	16	33	54	13	21
40	1.5748	50	1.9685	2	18	1	7	11	33	4	13	23	44	9	17	36	58	14	23
50	1.9685	65	2.5591	3	22	1	9	13	36	5	14	26	48	10	19	40	63	16	25
65	2.5591	80	3.1496	3	24	1	9	15	40	6	16	30	54	12	21	46	71	18	28
80	3.1496	100	3.9370	3	26	1	10	18	46	7	18	35	63	14	25	55	83	22	33
100	3.9370	110	4.3307	4	30	2	12	22	53	9	21	42	73	17	29	65	96	26	38

Bore Diameter d				Radial Internal Clearance															
Over		Including		C2				Normal C0				C3				C4			
				.001 mm		.0001 in		.001 mm		.0001 in		.001 mm		.0001 in		.001 mm		.0001 in	
mm	in	mm	in	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
		10	.3937	0.6	7	0	2.4	3	13	1.2	5	8	18	3	7	15	27	6	11
10	.3937	18	.7087	0.6	7	0	3	3.6	14	1.2	5	8	18	3	7	18	27	7	11
18	.7087	24	.9449	1.2	8	0.6	3.6	4	15	1.8	6	11	21	4	8	18	27	7	11
24	.9449	30	1.1811	1.2	9	0.6	3.6	5	16	1.8	7	11	23	4	9	18	31	7	12
30	1.1811	40	1.5748	1.2	10	0.6	3.6	5	17	2.4	7	12	25	5	10	21	33	8	13
40	1.5748	50	1.9685	1.2	11	0.6	4	7	20	2.4	8	12	25	5	10	21	36	8	14
50	1.9685	65	2.5591	1.8	13	0.6	5	8	22	3	8	15	27	6	11	25	38	10	15
65	2.5591	80	3.1496	1.8	14	0.6	5	9	24	3.6	10	18	33	7	13	27	44	11	17
80	3.1496	100	3.9370	1.8	16	0.6	6	11	28	4	11	21	38	8	15	33	50	13	20
100	3.9370	110	4.3307	2.4	18	1.2	7	13	32	5	13	25	44	10	17	40	58	16	23

5400 Series

Bore Diameter d				Axial Internal Clearance															
Over		Including		C2				Normal C0				C3				C4			
				.001 mm		.0001 in		.001 mm		.0001 in		.001 mm		.0001 in		.001 mm		.0001 in	
mm	in	mm	in	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
		30	1.1811	2	15	1	6	8	27	3	11	28	47	11	19	45	75	18	30
30	1.1811	40	1.5748	2	16	1	6	9	29	4	11	31	50	12	20	48	84	19	33
40	1.5748	50	1.9685	2	18	1	7	11	33	4	13	33	54	13	21	51	90	20	35
50	1.9685	65	2.5591	3	22	1	9	13	36	5	14	36	58	14	23	55	96	22	38
65	2.5591	70	2.7559	3	24	1	9	15	40	6	16	40	64	16	25	61	106	24	42
70	2.7559	80	3.1496	0	165	0	65	165	305	65	120	305	430	120	170	430	510	170	200
80	3.1496	90	3.5433	0	200	0	80	200	360	80	140	360	480	140	190	480	610	190	240

Bore Diameter d				Radial Internal Clearance															
Over		Including		C2				Normal C0				C3				C4			
				.001 mm		.0001 in		.001 mm		.0001 in		.001 mm		.0001 in		.001 mm		.0001 in	
mm	in	mm	in	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
		30	1.1811	1	8	0.4	3	2	13	1	5	13	23	5	9	20	38	8	15
30	1.1811	40	1.5748	1	8	0.5	3	6	13	2	5	15	23	6	9	23	41	9	16
40	1.5748	50	1.9685	1	8	0.5	3	6	15	2	6	15	25	6	10	23	44	9	17
50	1.9685	65	2.5591	1	11	0.5	4	6	15	2	6	15	28	6	11	25	45	10	18
65	2.5591	70	2.7559	1	11	0.5	4	6	18	2	7	18	31	7	12	28	48	11	19
70	2.7559	80	3.1496	0	6	0	2	6	18	2	7	18	33	7	13	33	48	13	19
80	3.1496	90	3.5433	0	7	0	3	7	23	3	9	23	44	9	17	44	65	17	26

Dynamic Rating

To obtain dynamic thrust rating multiply dynamic radial rating C by the factor shown below.

Size	Factor
5200SB-5203SB 5300SB-5303SB 5403C-5414C	0.71
5204C&M-5218C&M 5304C&M-5319C&M	0.81

Example:

Bearing size: 5307C
Basic dynamic radial load rating (C) =11100 lbf
Thrust rating factor = 0.81
Thrust rating = $0.81 \times 11100 = 8991$

Static Rating

To obtain static thrust rating multiply static radial rating C_0 by the factor shown below.

Size	Factor
5200SB-5203SB 5300SB-5303SB 5204C&M-5206C&M 5403C-5414C	0.57
5207C&M-5218C&M 5304C&M-5319C&M	0.66

Sizes 5415C-5419C have 0˚ contact angles and are not included in the above tables. When thrust load is present, the equivalent radial load should be used to determine life.

Example:

Bearing size: 5214M
Basic static radial load rating (C_0) = 28100 lbf
Thrust rating factor = 0.66
Thrust rating = $0.66 \times 28100 = 18550$

MRC Extra-Wide 5000 Series Double-Row Ball Bearing Retrofit Kit

Double-row ball bearings with non-standard extra wide width are currently available as a retrofit kit. These replacement units consist of a standard width double-row ball bearing and two specially designed spacers packaged together in a single carton.

Spacers
The Extra-Width Double-Row Ball Bearing Retrofit Kit is simple to use. When used with bearings without snap rings, place both spacers on the same side, as shown in Figure 1.

With snap ring bearings, the inner ring spacer must be installed on the side opposite the snap ring, as shown in Figure 2. The outer spacer is not needed in applications where the bearing's snap ring controls the axial location of the outer ring in the housing.

The spacers accommodate slight variations in the shaft and housing seat width. The inner ring and spacer can be secured to the shaft with a retaining ring or threaded locknut. If a locknut is used, the amount of clamping force can be regulated to make slight adjustments in the shaft's axial location. The spacer rings yield slightly when an axial clamping force is applied. The spacer rings also exert a reaction force, which helps maintain the initial clamping force and helps prevent the inner ring from becoming loose on the shaft. The same circumstances apply to the outer ring spacers when an end cap is used to clamp the bearing's outer ring against a housing shoulder.

Because the spacer rings are designed to yield slightly when axial clamping forces are applied, the spacer rings should always be replaced with new spacer rings anytime the bearing is removed, replaced or reinstalled.

Materials for Rings, Balls and Spacers
High-carbon chromium vacuum-processed steel (SAE 52100) is used for all balls and rings. Machined and roll formed spacer rings are fabricated from 1018 carbon steel and 304 stainless steel.

Mounting Instructions

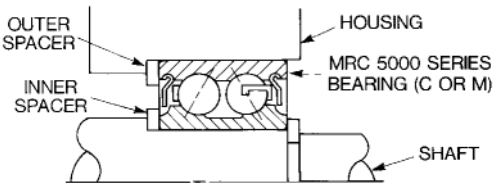


Figure 1

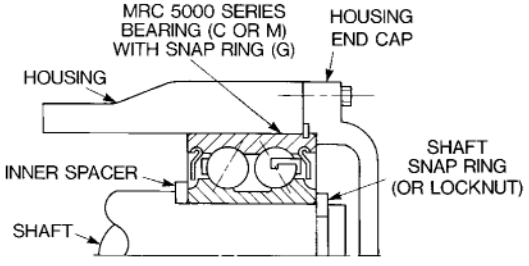


Figure 2

Without Snap Ring

1. Install inner and outer ring spacers onto the shaft and into the housing bore respectively.
2. Install bearing in accordance with normal mounting instructions.
3. If any locking devices such as snap rings or locknuts are normally used to secure the bearing on the shaft or in the housing be sure they are properly installed.
4. These inner and outer ring spacers are adjusted to proper width prior to installation. During bearing installation their width may be slightly altered to accommodate variations in shaft and housing shoulder distances. As a consequence, when a new extra width retrofit bearing kit is installed the new spacer rings supplied with the kit should always be used and the old spacers discarded.

With Snap Ring

1. Install the inner ring spacer onto the shaft. The outer ring spacer is not used with a snap ring bearing and may be discarded.
2. Install bearing in accordance with normal mounting instructions.
3. If any locking devices such as snap rings, locknuts or end caps are normally used to secure the bearing on the shaft or in the housing be sure they are properly installed.
4. These inner and outer ring spacers are adjusted to proper width prior to installation. During bearing installation their width may be slightly altered to accommodate variations in shaft and housing shoulder distances. As a consequence, when a new extra width retrofit bearing kit is installed the new spacer rings supplied with the kit should always be used and the old spacers discarded.

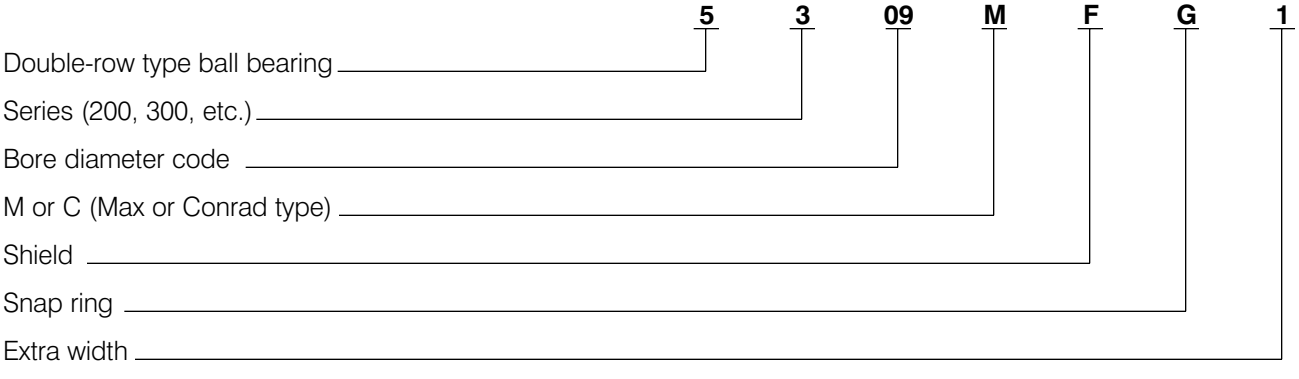
Part Numbers

A listing of available part numbers appears below. This listing may change with sizes being added or deleted based on demand.

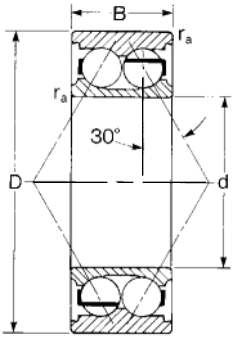
MRC Part Number	Width including Spacers		
	Inches		mm
5205CF1	7/8	.8750	22.23
5205MF1*	7/8	.8750	22.23
5206CF1	1 1/16	1.0625	26.99
5206MF1	1 1/16	1.0625	26.99
5206SBZZ	1 1/16	1.0625	26.99
5212MF1	1 1/2	1.5000	38.10
5304CF1	1	1.0000	25.40
5304MF1	1	1.0000	25.40
5305CF1	1 1/8	1.1250	28.58
5305MFG1	1 1/8	1.1250	28.58
5306MFG1	1 5/16	1.3125	33.34
5306MF1	1 5/16	1.3125	33.34
5307MF1	1 1/2	1.5000	38.10
5307MFG1	1 1/2	1.5000	38.10
5308MFG1	1 9/16	1.5625	39.69
5308MF1	1 9/16	1.5625	39.69
5309MFG1	1 11/16	1.6875	42.86
5309MF1	1 11/16	1.6875	42.86
5310MFG1	1 7/8	1.8750	47.63
5310MF1	1 7/8	1.8750	47.63
5311MFG1	2 1/16	2.0625	52.39
5311MF1	2 1/16	2.0625	52.39
5312MFG1	2 1/4	2.2500	57.15
5312MF1	2 1/4	2.2500	57.15
5313MFG1	2 7/16	2.4375	61.91
5313MF1	2 7/16	2.4375	61.91
5315MF1	2 13/16	2.8125	71.44

*Currently stocked. No spacer needed.

Nomenclature



5200-C bearings are used with moderate to heavy radial loads, two-directional thrust loads, or a combination of both.



CF/SBKF
One Shield

CZ/SBKZ
One Seal

CFF/SBKFF
Two Shields

CZZ/SBKZZ
Two Seals

CFZ/SBKFZ
Shield & Seal

CFG/SBKFG
One Shield
& Snap-Ring

CG/SBKG
Snap-Ring

CFFG/
SBKFFG
Two Shields
& Snap-Ring

CFZG
Shield, Seal
& Snap-Ring

CZZG
Two Seals
& Snap-Ring

CZG
One Seal
& Snap-Ring

MRC Bearing Number	Bore d		Outside Diameter D		Width B		Fillet Radius[1] r_a		Basic Radial Load Rating				Speed Rating[2]		
									Dynamic C[3]		Static C_0				
	mm	in	mm	in	mm	in	mm	in	N	lbf	N	lbf	Open and Shielded Grease RPM	Oil RPM	Single and Double Sealed Grease RPM
5200-SB	10	**.3937**	30	**1.1811**	14.3	**.5630**	.64	**.025**	7 610	**1 710**	4 300	**967**	16 000	22 000	16 000
5201-SB	12	**.4724**	32	**1.2598**	15.9	**.6260**	.64	**.025**	10 400	**2 340**	5 600	**1 260**	15 000	20 000	15 000
5202-SB	15	**.5906**	35	**1.3780**	15.9	**.6260**	.64	**.025**	11 400	**2 560**	6 800	**1 530**	12 000	17 000	12 000
5203-SB	17	**.6693**	40	**1.5748**	17.5	**.6890**	.64	**.025**	14 300	**3 210**	8 800	**1 980**	10 000	15 000	10 000
5204-C	20	**.7874**	47	**1.8504**	20.6	**.8110**	1.0	**.04**	19 000	**4 270**	12 000	**2 700**	9 000	13 000	9 000
5205-C	25	**.9843**	52	**2.0472**	20.6	**.8110**	1.0	**.04**	20 800	**4 680**	14 000	**3 150**	8 000	11 000	8 000
5205-C1	25	**.9843**	52	**2.0472**	22.2	**.8740**	1.0	**.04**	20 800	**4 680**	14 000	**3 150**	8 000	11 000	8 000
5206-C	30	**1.1811**	62	**2.4409**	23.8	**.9370**	1.0	**.04**	28 600	**6 430**	20 400	**4 590**	7 000	9 500	7 000
5206-C1	30	**1.1811**	62	**2.4409**	27.0	**1.0630**	1.0	**.04**	28 600	**6 430**	20 400	**4 590**	7 000	9 500	7 000
5207-C	35	**1.3780**	72	**2.8346**	27.0	**1.0630**	1.0	**.04**	37 700	**8 480**	27 500	**6 180**	6 000	8 000	6 000
5207-C1	35	**1.3780**	72	**2.8346**	30.2	**1.1890**	1.0	**.04**	37 700	**8 480**	27 500	**6 180**	6 000	8 000	6 000
5208-C	40	**1.5748**	80	**3.1496**	30.2	**1.1890**	1.0	**.04**	44 900	**10 100**	34 000	**7 640**	5 600	7 500	5 600
5209-C	45	**1.7717**	85	**3.3465**	30.2	**1.1890**	1.0	**.04**	48 800	**11 000**	39 000	**8 770**	5 000	6 700	5 000
5210-C	50	**1.9685**	90	**3.5433**	30.2	**1.1890**	1.0	**.04**	48 800	**11 000**	39 000	**8 770**	4 800	6 300	4 800
5211-C	55	**2.1654**	100	**3.9370**	33.3	**1.3110**	1.5	**.06**	57 200	**12 900**	47 500	**10 700**	4 300	5 600	4 300
5212-C	60	**2.3622**	110	**4.3307**	36.5	**1.4370**	1.5	**.06**	70 200	**15 800**	58 500	**13 200**	3 800	5 000	3 800
5212-C1	60	**2.3622**	110	**4.3307**	38.1	**1.5000**	1.5	**.06**	70 200	**15 800**	58 500	**13 200**	3 800	5 000	3 800
5213-C	65	**2.5591**	120	**4.7244**	38.1	**1.5000**	1.5	**.06**	80 600	**18 100**	73 500	**16 500**	3 600	4 800	3 600
5214-C	70	**2.7559**	125	**4.9213**	39.7	**1.5630**	1.5	**.06**	88 400	**19 900**	80 000	**18 000**	3 200	4 300	3 200
5215-C	75	**2.9528**	130	**5.1181**	41.3	**1.6260**	1.5	**.06**	95 600	**21 500**	88 000	**19 800**	3 200	4 300	3 200
5216-C	80	**3.1496**	140	**5.5118**	44.4	**1.7480**	2.0	**.08**	106 000	**23 900**	95 000	**21 400**	2 800	3 800	2 800
5217-C	85	**3.3465**	150	**5.9055**	49.2	**1.9370**	2.0	**.08**	124 000	**27 900**	110 000	**24 700**	2 600	3 600	2 600
5218-C	90	**3.5433**	160	**6.2992**	52.4	**2.0630**	2.0	**.08**	130 000	**29 300**	120 000	**27 000**	2 400	3 400	2 400
5219-C	95	**3.7402**	170	**6.6929**	55.6	**2.1890**	2.0	**.08**	159 000	**35 700**	146 000	**32 800**	2 200	3 200	2 200
5220-C	100	**3.9370**	180	**7.0866**	60.3	**2.3740**	2.0	**.08**	178 000	**40 000**	166 000	**37 300**	2 000	3 000	2 000
5221-C	105	**4.1339**	190	**7.4803**	65.1	**2.5630**	2.0	**.08**	186 000	**41 800**	180 000	**40 500**	1 800	2 800	1 800
5222-C	110	**4.3307**	200	**7.8740**	69.8	**2.7480**	2.0	**.08**	203 000	**45 600**	200 000	**45 000**	1 600	2 600	1 600

[1] Fillet radius indicates maximum fillet radius on shaft or in housing which bearing corner will clear.

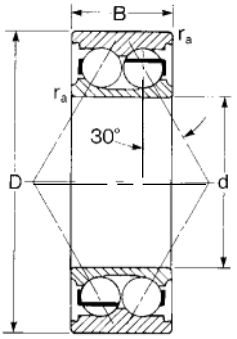
[2] Listed values are for pressed steel cage, ABEC-1.

The values have been determined through historical application and practice. For a more complete explanation, see page 276.

[3] Rating for one million revolutions or 500 hours at 33⅓ RPM.

Note: Extra width bearings identified by the suffix C1 are supplied with a retrofit kit described on pages 147, 148.

5300-C bearings are used with heavy radial loads, two-directional thrust loads, or a combination of both.



CF/SBKF
One Shield

CZ/SBKZ
One Seal

CFF/SBKFF
Two Shields

CZZ/SBKZZ
Two Seals

CFZ/SBKFZ
Shield & Seal

CFG/SBKFG
One Shield
& Snap-Ring

CG/SBKG
Snap-Ring

CFFG/
SBKFFG
Two Shields
& Snap-Ring

CFZG
Shield, Seal
& Snap-Ring

CZZG
Two Seals
& Snap-Ring

CZG
One Seal
& Snap-Ring

MRC Bearing Number	Bore d		Outside Diameter D		Width B		Fillet Radius[1] r_a		Basic Radial Load Rating				Speed Rating[2]		
									Dynamic C[3]		Static C_0		Open and Shielded Grease	Oil	Single and Double Sealed Grease
	mm	in	mm	in	mm	in	mm	in	N	lbf	N	lbf	RPM	RPM	RPM
5300-SB	10	**.3937**	35	**1.3780**	19.1	**.7520**	.64	**.025**	10 600	**2 380**	6 100	**1 370**	15 000	20 000	15 000
5301-SB	12	**.4724**	37	**1.4567**	19.1	**.7520**	1.0	**.04**	11 700	**2 630**	6 800	**1 530**	14 000	18 000	14 000
5302-SB	15	**.5906**	42	**1.6535**	19.1	**.7520**	1.0	**.04**	15 100	**3 390**	9 300	**2 090**	11 000	15 000	11 000
5303-SB	17	**.6693**	47	**1.8504**	22.2	**.8740**	1.0	**.04**	21 600	**4 860**	12 700	**2 860**	11 000	14 000	11 000
5304-C	20	**.7874**	52	**2.0472**	22.2	**.8740**	1.0	**.04**	22 500	**5 060**	14 600	**3 280**	8 500	12 000	8 500
5304-C1	20	**.7874**	52	**2.0472**	25.4	**1.0000**	1.0	**.04**	22 500	**5 060**	14 600	**3 280**	8 500	12 000	8 500
5305-C	25	**.9843**	62	**2.4409**	25.4	**1.0000**	1.0	**.04**	30 700	**6 910**	20 400	**4 590**	7 500	10 000	7 500
5306-C	30	**1.1811**	72	**2.8346**	30.2	**1.1890**	1.0	**.04**	41 600	**9 360**	29 000	**6 520**	6 300	8 500	6 300
5306-C1	30	**1.1811**	72	**2.8346**	33.3	**1.3110**	1.0	**.04**	41 600	**9 360**	29 000	**6 520**	6 300	8 500	6 300
5307-C	35	**1.3780**	80	**3.1496**	34.9	**1.3740**	1.5	**.06**	49 400	**11 100**	34 500	**7 760**	5 600	7 500	5 600
5307-C1	35	**1.3780**	80	**3.1496**	38.1	**1.5000**	1.5	**.06**	49 400	**11 100**	34 500	**7 760**	5 600	7 500	5 600
5308-C	40	**1.5748**	90	**3.5433**	36.5	**1.4370**	1.5	**.06**	60 500	**13 600**	43 000	**9 760**	5 000	6 700	5 000
5308-C1	40	**1.5748**	90	**3.5433**	39.7	**1.5630**	1.5	**.06**	60 500	**13 600**	43 000	**9 670**	5 000	6 700	5 000
5309-C	45	**1.7717**	100	**3.9370**	39.7	**1.5630**	1.5	**.06**	72 800	**16 400**	53 000	**11 900**	4 500	6 000	4 500
5309-C1	45	**1.7717**	100	**3.9370**	42.9	**1.6890**	1.5	**.06**	72 800	**16 400**	53 000	**11 900**	4 500	6 000	4 500
5310-C	50	**1.9685**	110	**4.3307**	44.4	**1.7480**	2.0	**.08**	85 200	**19 200**	64 000	**14 400**	4 000	5 300	4 000
5310-C1	50	**1.9685**	110	**4.3307**	47.6	**1.8740**	2.0	**.08**	85 200	**19 200**	64 000	**14 400**	4 000	5 300	4 000
5311-C	55	**2.1654**	120	**4.7244**	49.2	**1.9370**	2.0	**.08**	106 000	**23 900**	81 500	**18 300**	3 800	5 000	3 800
5311-C1	55	**2.1654**	120	**4.7244**	52.4	**2.0630**	2.0	**.08**	106 000	**23 900**	81 500	**18 300**	3 800	5 000	3 800
5312-C	60	**2.3622**	130	**5.1181**	54.0	**2.1260**	2.0	**.08**	121 000	**27 200**	95 000	**21 400**	3 400	4 500	3 400
5312-C1	60	**2.3622**	130	**5.1181**	57.2	**2.2520**	2.0	**.08**	121 000	**27 200**	95 000	**21 400**	3 400	4 500	3 400
5313-C	65	**2.5591**	140	**5.5118**	58.7	**2.3110**	2.0	**.08**	138 000	**31 100**	108 000	**24 300**	3 200	4 300	3 200
5313-C1	65	**2.5591**	140	**5.5118**	61.9	**2.4370**	2.0	**.08**	138 000	**31 100**	108 000	**24 300**	3 200	4 300	3 200
5314-C	70	**2.7559**	150	**5.9055**	63.5	**2.6970**	2.0	**.08**	153 000	**34 400**	125 000	**28 100**	2 800	3 800	2 800
5314-C1	70	**2.7559**	150	**5.9055**	66.7	**2.6260**	2.0	**.08**	153 000	**34 400**	125 000	**28 100**	2 800	3 800	2 800
5315-C	75	**2.9528**	160	**6.2992**	68.3	**2.6890**	2.0	**.08**	168 000	**37 800**	140 000	**31 500**	2 600	3 600	2 600
5315-C1	75	**2.9528**	160	**6.2992**	71.4	**2.8110**	2.0	**.08**	168 000	**37 800**	140 000	**31 500**	2 600	3 600	2 600
5316-C	80	**3.1496**	170	**6.6929**	68.3	**2.6890**	2.0	**.08**	182 000	**41 000**	156 000	**35 100**	2 400	3 400	2 400
5317-C	85	**3.3465**	180	**7.0866**	73.0	**2.8740**	2.5	**.10**	195 000	**43 900**	176 000	**39 600**	2 200	3 200	2 200
5318-C	90	**3.5433**	190	**7.4803**	73.0	**2.8740**	2.5	**.10**	212 000	**47 700**	196 000	**44 100**	2 000	3 000	2 000
5319-C	95	**3.7402**	200	**7.8740**	77.8	**3.0430**	2.5	**.10**	234 000	**52 700**	224 000	**50 400**	1 900	2 800	1 900
5320-C	100	**3.7370**	215	**9.8425**	82.6	**3.2520**	2.5	**.10**	255 000	**57 300**	255 000	**57 300**	1 800	2 600	1 800
5322-C	110	**4.3307**	240	**9.4488**	92.1	**3.6260**	2.5	**.10**	291 000	**65 400**	305 000	**68 600**	1 700	2 400	1 700

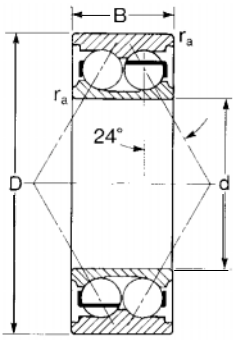
[1] Fillet radius indicates maximum fillet radius on shaft or in housing which bearing corner will clear.

[2] Listed values are for pressed steel cage, ABEC-1.

The values have been determined through historical application and practice. For a more complete explanation, see page 276.

[3] Rating for one million revolutions or 500 hours at 33⅓ RPM.

Note: Extra width bearings identified by the suffix C1 are supplied with a retrofit kit described on pages 147, 148.



5400 Series bearings are used with extremely heavy radial loads, two-directional thrust loads, or a combination of both.

5406-5414 have a 24° contact angle per row.

5415-5418 have a zero degree contact angle.

MRC Bearing Number	Bore d		Outside Diameter D		Width B		Fillet Radius[1] r_a		Basic Radial Load Rating				Speed Rating[2]	
									Dynamic C[3]		Static C_0		Grease	Oil
	mm	in	mm	in	mm	in	mm	in	N	lbf	N	lbf	RPM	RPM
5406C	30	**1.1811**	90	**3.5433**	39.7	**1.5630**	1.5	**.06**	67 600	**15 200**	45 000	**10 100**	5 300	7 000
5407C	35	**1.3780**	100	**3.9370**	44.4	**1.7480**	1.5	**.06**	76 100	**17 000**	49 000	**11 000**	4 800	6 300
5408C	40	**1.5748**	110	**4.3307**	49.2	**1.9370**	2.0	**.08**	88 400	**19 900**	57 000	**12 800**	4 300	5 600
5409C	45	**1.7717**	120	**4.7244**	54.0	**2.1260**	2.0	**.08**	112 000	**25 200**	78 000	**17 600**	4 000	5 300
5410C	50	**1.9685**	130	**5.1181**	58.7	**2.3110**	2.0	**.08**	143 000	**32 200**	102 000	**23 000**	3 600	4 800
5411C	55	**2.1654**	140	**5.5118**	63.5	**2.5000**	2.0	**.08**	146 000	**32 900**	102 000	**23 000**	3 200	4 300
5412C	60	**2.3622**	150	**5.9055**	66.7	**2.6260**	2.0	**.08**	159 000	**35 800**	114 000	**25 700**	3 000	4 000
5413C	65	**2.5591**	160	**6.2992**	71.4	**2.8110**	2.0	**.08**	195 000	**43 900**	156 000	**35 100**	2 800	3 800
5414C	70	**2.7559**	180	**7.0866**	79.4	**3.1260**	2.5	**.10**	199 000	**44 800**	156 000	**35 100**	2 400	3 400
5415C	75	**2.9528**	190	**7.4803**	82.6	**3.2520**	2.5	**.10**	212 000	**47 700**	200 000	**45 000**	2 200	3 200
5416C	80	**3.1496**	200	**7.8740**	87.3	**3.4370**	2.5	**.10**	229 000	**51 500**	216 000	**48 600**	2 000	3 000
5417C	85	**3.3465**	210	**8.2677**	92.1	**3.6260**	3.0	**.12**	255 000	**57 300**	255 000	**57 300**	1 900	2 800
5418C	90	**3.5433**	225	**8.8583**	98.4	**3.8740**	3.0	**.12**	281 000	**63 200**	300 000	**67 400**	1 800	2 600

[1] Fillet radius indicates maximum fillet radius on shaft or in housing which bearing corner will clear.

[2] Listed values are for pressed steel cage, ABEC-1.
The values have been determined through historical application and practice. For a more complete explanation, see page 276.

[3] Rating for one million revolutions or 500 hours at 33⅓ RPM.

Dynamic equivalent radial load and life calculation examples

Bearing size: 5210 M
Speed: 2000 RPM
Basic dynamic radial load rating (C) = 12100 lbf

Case 1

Radial load (F_R) = 1750
F_A/F_R = 0/1750 = 0
Equivalent load (P) = X F_R + Y F_A
Since F_A/F_R < e, equivalent load (P) =
1.0 F_R + 0.78 F_A = 1.0 × 1750 = 1750

Life (L10) = $\left(\frac{C}{P}\right)^3 = \left(\frac{12100}{1750}\right)^3 = 331 \times 10^6$ Rev.

or

Life (L10h) = $\frac{10^6}{60n}\left(\frac{C}{P}\right)^3 = \frac{10^6}{60 \times 2000}\left(\frac{12100}{1750}\right)^3$

= 2755 Hrs

Case 2

Radial load (F_R) = 1750
Thrust load (F_A) = 1300
F_A/F_R = 1300/1750 = 0.74
Equivalent load (P) = X F_R + Y F_A
Since F_A/F_R < e, equivalent load (P) =
1.0 F_R + 0.78 F_A = 1.0 × 1750 + 0.78 × 1300= 2764

Life (L10) = $\left(\frac{C}{P}\right)^3 = \left(\frac{12100}{2764}\right)^3 = 83.9 \times 10^6$ Rev.

or

Life (L10h) = $\frac{10^6}{60n}\left(\frac{C}{P}\right)^3 = \frac{10^6}{60 \times 2000}\left(\frac{12100}{2764}\right)^3$

= 699 Hrs

Case 3

Radial load (F_R) = 1750
Thrust load (F_A) = 13500
F_A/F_R = 1500/1750 = 0.86
Equivalent load (P) = X F_R + Y F_A
Since F_A/F_R < e, equivalent load (P) =
0.63 F_R + 1.24 F_A = 0.63 × 1750 + 1.24 × 1500
= 2963

Life (L10) = $\left(\frac{C}{P}\right)^3 = \left(\frac{12100}{2963}\right)^3 = 68.1 \times 10^6$ Rev.

or

Life (L10h) = $\frac{10^6}{60n}\left(\frac{C}{P}\right)^3 = \frac{10^6}{60 \times 2000}\left(\frac{12100}{2963}\right)^3$

= 568 Hrs

Case 4

Thrust load (F_R) = 1500
F_A/F_R = 1500/0 = ∞
Equivalent load (P) = X F_R + Y F_A
Since F_A/F_R > e, equivalent load (P) =
0.63 F_R + 1.24 F_A = 1.24 × 1500 = 1860

Life (L10) = $\left(\frac{C}{P}\right)^3 = \left(\frac{12100}{1860}\right)^3 = 275 \times 10^6$ Rev.

or

Life (L10h) = $\frac{10^6}{60n}\left(\frac{C}{P}\right)^3 = \frac{10^6}{60 \times 2000}\left(\frac{12100}{1860}\right)^3$

= 2294 Hrs

Bearing size: 5203 SB
Speed: 2000 RPM
Basic dynamic radial load Rating (C) = 3330

Case 1

Radial load (F_R) = 500
F_A/F_R = 0/500 = 0
Equivalent load (P) = X F_R + Y F_A
Since F_A/F_R < e, equivalent load (P) =
1.0 F_R + 0.78 F_A = 1.0 × 500 = 500

Life (L10) = $\left(\frac{C}{P}\right)^3 = \left(\frac{3330}{500}\right)^3 = 295 \times 10^6$ Rev.

or

Life (L10h) = $\frac{10^6}{60n}\left(\frac{C}{P}\right)^3 = \frac{10^6}{60 \times 2000}\left(\frac{3330}{500}\right)^3$

= 2462 Hrs

Case 2

Radial load (F_R) = 500
Thrust load (F_A) = 325
F_A/F_R = 325/500 = 0.65
Equivalent load (P) = X F_R + Y F_A
Since F_A/F_R < e, equivalent load (P) =
1.0 F_R + 0.92 F_A = 1.0 × 500 + 0.792 × 1325= 799

Life (L10) = $\left(\frac{C}{P}\right)^3 = \left(\frac{3330}{799}\right)^3 = 72.4 \times 10^6$ Rev.

or

Life (L10h) = $\frac{10^6}{60n}\left(\frac{C}{P}\right)^3 = \frac{10^6}{60 \times 2000}\left(\frac{3330}{799}\right)^3$

= 603 Hrs

Case 3

Radial load (F_R) = 500
Thrust load (F_A) = 375
F_A/F_R = 375/500 = 0.75
Equivalent load (P) = X F_R + Y F_A
Since F_A/F_R > e, equivalent load (P) =
0.67 F_R + 1.41 F_A
= 0.67 × 500 + 1.41 × 375 = 864

Life (L10) = $\left(\frac{C}{P}\right)^3 = \left(\frac{3330}{864}\right)^3 = 57.3 \times 10^6$ Rev.

or

Life (L10h) = $\frac{10^6}{60n}\left(\frac{C}{P}\right)^3 = \frac{10^6}{60 \times 2000}\left(\frac{3330}{864}\right)^3$

= 477 Hrs

Case 4

Thrust load (F_R) = 375
F_A/F_R = 375/0 = ∞
Equivalent load (P) = X F_R + Y F_A
Since F_A/F_R > e, equivalent load (P) =
0.67 F_R + 1.41 F_A = 1.41 × 375 = 529

Life (L10) = $\left(\frac{C}{P}\right)^3 = \left(\frac{3330}{529}\right)^3 = 249 \times 10^6$ Rev.

or

Life (L10h) = $\frac{10^6}{60n}\left(\frac{C}{P}\right)^3 = \frac{10^6}{60 \times 2000}\left(\frac{3330}{529}\right)^3$

= 2075 Hrs