

This series consists of a matched set of 9200UDT and 7200DT flush ground bearings having a  $29^\circ$  contact angle. One-piece, land guided, machined brass cages are standard for this series.

These bearings are mounted in pairs in applications where substantial thrust loads are present. This arrangement divides the thrust load in one direction while accommodating reversing thrust load. To increase thrust capacity in one direction additional bearings may be mounted in tandem.

For proper mounting orientation refer to page 239

MRC Bearing Number	Bore		Outside Diameter D		Width B		Fillet Radius <sup>1)</sup>				Basic Radial Load Rating <sup>2)</sup>				Speed Rating <sup>3)</sup>	
											Dynamic C <sub>d</sub> <sup>4)</sup>		Static C <sub>0</sub>		Grease	Oil
	d	mm	in	mm	in	mm	in	mm	in	mm	in	N	lbf	N	lbf	RPM
97207U2	35	1.3780	72	2.8346	34	1.3386	1.0	.04	.60	.024	37 770	8 480	34 000	7 640	7 400	9 600
97208U2	40	1.5748	80	3.1496	36	1.4173	1.0	.04	.60	.024	49 400	11 100	45 500	10 200	6 200	8 000
97209U2	45	1.7717	85	3.3465	38	1.4961	1.0	.04	.60	.024	49 400	11 100	46 500	10 500	5 800	7 600
97210U2	50	1.9685	90	3.5433	40	1.5748	1.0	.04	.60	.024	54 000	12 100	54 000	12 100	5 100	6 600
97211U2	55	2.1654	100	3.9370	42	1.6535	1.5	.060	1.0	.040	79 300	17 800	75 000	16 900	4 800	6 200
97212U2	60	2.3622	110	4.3307	44	1.7323	1.5	.060	1.0	.040	85 200	19 100	88 000	19 800	4 300	5 600
97213U2	65	2.5591	120	4.7244	46	1.8110	1.5	.060	1.0	.040	104 000	23 400	110 000	24 700	3 900	5 100
97214U2	70	2.7559	125	4.9213	48	1.8898	1.5	.060	1.0	.040	104 000	23 400	110 000	24 700	3 700	4 800
97215U2	75	2.9528	130	5.1181	50	1.9685	1.5	.060	1.0	.040	130 000	29 200	140 000	31 500	3 400	4 500
97216U2	80	3.1496	140	5.5118	52	2.0472	2.0	.080	1.0	.040	121 000	27 200	134 000	30 100	3 300	4 200
97217U2	85	3.3465	150	5.9055	56	2.2047	2.0	.080	1.0	.040	148 000	33 300	166 000	37 300	3 000	3 900
97218U2	90	3.5433	160	6.2992	60	2.3622	2.0	.080	1.0	.040	190 000	42 700	236 000	53 100	2 900	3 800
97219U2	95	3.7402	170	6.6929	64	2.5197	2.0	.080	1.0	.040	199 000	44 700	228 000	51 300	2 800	3 600
97220U2	100	3.9370	180	7.0866	68	2.6772	2.0	.080	1.0	.040	225 000	50 600	260 000	58 500	2 600	3 300
97221U2	105	4.1339	190	7.4803	72	2.8346	2.0	.080	1.0	.040	242 000	54 400	295 000	66 300	2 400	3 100
97222U2	110	4.3307	200	7.8740	76	2.9921	2.0	.080	1.0	.040	265 000	59 600	310 000	69 700	2 300	3 000
97224U2	120	4.7244	215	8.4646	80	3.1496	2.0	.080	1.0	.040	281 000	63 200	355 000	79 800	2 200	2 800
97226U2	130	5.1181	230	9.0551	80	3.1496	2.5	.10	1.0	.040	319 000	71 700	415 000	93 300	2 000	2 600
97228U2	140	5.5118	250	9.8425	84	3.3071	2.5	.10	1.0	.040	338 000	76 000	465 000	105 000	1 800	2 400
97230U2	150	5.9055	270	10.6299	90	3.5435	2.5	.10	1.0	.040	397 000	89 200	560 000	126 000	1 700	2 200
97232U2	160	6.2992	290	11.4173	96	3.7795	2.5	.10	1.0	.040	442 000	99 400	670 000	135 000	1 600	2 100
97234U2	170	6.6929	310	12.2047	104	4.0945	3.0	.12	1.0	.040	468 000	105 000	735 000	165 000	1 500	2 000
97236U2	180	7.0866	320	12.5984	104	4.0945	3.0	.12	1.0	.040	494 000	111 000	780 000	175 000	1 500	1 900

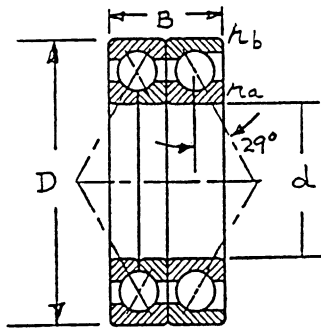
<sup>1)</sup> Fillet radius indicates maximum fillet radius on shaft or in housing which bearing corner will clear.

<sup>2)</sup> For thrust rating multiply C by 1.32 and C<sub>0</sub> by 2.94.

<sup>3)</sup> Listed values are for machined brass cage.

Values have been determined through historical application and practice.

<sup>4)</sup> Rating for one million revolutions or 500 hours at 33 1/3 rpm.



This series consists of a matched set and 9300UDT and 7300DT flush ground bearings having a  $29^\circ$  contact angle. One-piece, land guided, machined brass cages are standard for this series.

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MRC Bearing Number	Bore		Outside Diameter D		Width B		Fillet Radius <sup>1)</sup>				Basic Radial Load Rating <sup>2)</sup>				Speed Rating <sup>3)</sup>	
											Dynamic C <sub>d</sub> <sup>4)</sup>		Static C <sub>0</sub>		Grease RPM	Oil RPM
	d	mm	in	mm	in	mm	in	mm	in	mm	in	N	lbf	N	lbf	RPM
97307U2	35	1.3780	80	3.1496	42	1.6535	1.5	.06	1.0	.040	58 500	13 200	48 000	10 800	6 800	8 800
97308U2	40	1.5748	90	3.5433	46	1.8110	1.5	.06	1.0	.040	71 500	16 100	61 500	13 700	5 800	7 600
97309U2	45	1.7717	100	3.9370	50	1.9685	1.5	.06	1.0	.040	85 200	19 200	75 000	16 900	5 100	6 600
97310U2	50	1.9685	110	4.3307	54	2.1260	2.0	.08	1.0	.040	121 000	27 200	106 000	23 800	4 600	6 000
97311U2	55	2.1654	120	4.7244	58	2.2835	2.0	.08	1.0	.040	140 000	31 500	125 000	28 100	4 100	5 300
97312U2	60	2.3622	130	5.1181	62	2.4409	2.0	.08	1.0	.040	159 000	35 700	146 000	32 800	3 900	5 100
97313U2	65	2.5591	140	5.5118	65	2.5984	2.0	.08	1.0	.040	178 000	40 000	173 000	38 900	3 700	4 800
97314U2	70	2.7559	150	5.9055	70	2.7559	2.0	.08	1.0	.040	182 000	40 900	170 000	38 200	3 300	4 200
97315U2	75	2.9528	160	6.2992	74	2.9134	2.0	.08	1.0	.040	225 000	50 600	228 000	51 300	3 100	4 000
97316U2	80	3.1496	170	6.6929	78	3.0709	2.0	.08	1.0	.040	234 000	52 600	240 000	54 000	2 900	3 800
97317U2	85	3.3465	180	7.0866	82	3.2283	2.5	.10	1.0	.040	265 000	59 600	285 000	64 100	2 800	3 600
97318U2	90	3.5433	190	7.4803	86	3.3858	2.5	.10	1.0	.040	276 000	62 000	300 000	67 400	2 600	3 400
97319U2	95	3.7402	200	7.8740	90	3.5433	2.5	.10	1.0	.040	291 000	65 400	325 000	73 100	2 500	3 200
97320U2	100	3.9370	215	8.4646	94	3.7008	2.5	.10	1.0	.040	312 000	70 100	365 000	82 100	2 400	3 100
97321U2	105	4.1339	225	8.8583	98	3.8583	2.5	.10	1.0	.040	332 000	74 600	400 000	89 900	2 300	3 000
97322U2	110	4.3307	240	9.4488	100	3.9370	2.5	.10	1.0	.040	371 000	83 400	475 000	107 000	2 200	2 800
97324U2	120	4.7244	260	10.2362	110	4.3307	2.5	.10	1.0	.040	423 000	95 100	560 000	126 000	2 000	2 600
97326U2	130	5.1181	280	11.0236	116	4.5669	3.0	.12	1.0	.040	468 000	105 000	640 000	144 000	1 800	2 400
97328U2	140	5.5118	300	11.8110	124	4.8819	3.0	.12	1.0	.040	507 000	114 000	735 000	165 000	1 800	2 200
97330U2	150	5.9055	320	12.5984	130	5.1181	3.0	.12	1.0	.040	559 000	126 000	865 000	194 000	1 600	2 100
97332U2	160	6.2992	340	13.3858	136	5.3543	3.0	.12	1.0	.040	616 000	139 000	965 000	217 000	1 500	2 000
97334U2	170	6.6929	360	14.1732	144	5.6693	3.0	.12	1.0	.040	650 000	146 000	1 040 000	234 000	1 500	1 900
97336U2	180	7.0866	380	14.9606	150	5.9055	3.0	.12	1.0	.040	689 000	155 000	1 160 000	261 000	1 400	1 800

<sup>1)</sup> Fillet radius indicates maximum fillet radius on shaft or in housing which bearing corner will clear.

<sup>2)</sup> For thrust rating multiply C by 1.32 and C<sub>0</sub> by 2.94.

<sup>3)</sup> Listed values are for machined brass cage.

Values have been determined through historical application and practice.

<sup>4)</sup> Rating for one million revolutions or 500 hours at 33 1/3 rpm.

*Duplex 97000 U2 Series  
29 Degree Angular Contact  
Bearings*

*Dynamic and static equivalent load  
and life rating*

**Dynamic equivalent radial load**

$$P = 1.0 F_R \quad \text{when } \frac{F_A}{F_R} \leq 0.80$$

$$P = 0.39 F_R + 0.76 F_A \quad \text{when } \frac{F_A}{F_R} > 0.80$$

P = Dynamic equivalent radial load

F<sub>R</sub> = Radial load

F<sub>A</sub> = Thrust load

**Static equivalent radial load**

$$P_0 = 1.0 F_R + 0.66 F_A$$

P<sub>0</sub> is always  $\geq F_R$

P<sub>0</sub> = Static equivalent radial load

F<sub>R</sub> = Radial load

F<sub>A</sub> = Thrust load

**Life rating**

$$L_{10} = \left(\frac{C}{P}\right)^3 \quad (\text{millions of revolutions})$$

or

$$L_{10h} = \frac{10^6}{60n} \left(\frac{C}{P}\right)^3 \quad (\text{Hours})$$

C = Dynamic radial load rating

P = Dynamic equivalent radial load

n = Speed in rpm

**Dynamic equivalent radial load  
and life calculation examples**

Bearing size: 97313 U2

Speed: 1750 RPM

Rating (C) = 40000

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**Case 1**Thrust load ( $F_A$ ) = 5000

$$\frac{F_A}{F_R} > 0.80$$

$$P = 0.39 F_R + 0.76 F_A = 0.76 \times 5000$$

$$P = 3800$$

$$C = 40000$$

$$\text{Life (L}_{10}\text{)} = \left(\frac{C}{P}\right)^3 = \left(\frac{40000}{3800}\right)^3 = 1166 \times 10^6 \text{ Rev.}$$

or

$$\begin{aligned} \text{Life (L}_{10}\text{h)} &= \frac{10^6}{60n} \left(\frac{C}{P}\right)^3 = \frac{10^6}{60 \times 1750} \left(\frac{40000}{3800}\right)^3 \\ &= 11100 \text{ Hours} \end{aligned}$$

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**Case 2**Radial load ( $F_R$ ) = 3000Thrust load ( $F_A$ ) = 5000

$$\frac{F_A}{F_R} = 1.67$$

$$\text{Since } \frac{F_A}{F_R} > 0.80,$$

$$P = 0.39 F_R + 0.76 F_A = 0.39 \times 3000 + 0.76 \times 5000$$

$$P = 4970$$

$$C = 40000$$

$$\text{Life (L}_{10}\text{)} = \left(\frac{C}{P}\right)^3 = \left(\frac{40000}{4970}\right)^3 = 521 \times 10^6 \text{ Rev.}$$

or

$$\begin{aligned} \text{Life (L}_{10}\text{h)} &= \frac{10^6}{60n} \left(\frac{C}{P}\right)^3 = \frac{10^6}{60 \times 1750} \left(\frac{40000}{4970}\right)^3 \\ &= 4965 \text{ Hours} \end{aligned}$$

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