

REVIEWER ACTIVITIES:
Air Force -- 99
Navy -- SH, MC
DLA -- IS
Other -- NS

USER ACTIVITIES:
Army -- AV

This military standard is approved for use by all Departments and Agencies of the Department of Defense.
Selection for all new engineering and design applications and for repetitive use shall be made from this document.

P. A.		OS	INTERNATIONAL INTEREST	TITLE		MILITARY STANDARD		FED. SUP CLASS								
Other Cust		AT				DS3225		3110								
11																
PROCUREMENT SPECIFICATION				SUPERSEDES:				SHEET 1 OF 3								
NONE																
Dash No.	AFBMA bearing number (See Note 12)	A	B	C	D	E	R	Y	T	P	S	O	K factor	Basic dynamic load ratings (daN)	a	
		Bore	Outside dia.	Bearing width	Cone width	Cup width	Max. shaft fillet radius	Max. housing fillet radius	Shaft	Shoulder diameter	Housing			Radial	Thrust	Effective load center
1	JLM104948-JLM104910	50	82	21.5	21.5	17.0	3.0	0.5	60	55.0	76	78.0	1.91	1500	785	-5.4
2	JM205149-JM205110	50	90	28.0	28.0	23.0	3.0	2.5	62	57.0	80	85.0	1.78	2220	1245	-7.6
3	JHM807045-JHM807012	50	105	37.0	36.0	29.0	3.0	2.5	69	63.0	90	100.0	1.20	3180	2660	-7.5
4	JLM506849-JLM506810	55	90	23.0	23.0	18.5	1.5	0.5	63	61.0	82	86.0	1.45	1685	1165	-2.8
5	JM207049-JM207010	55	95	29.0	29.0	23.5	1.5	2.5	64	62.0	85	91.0	1.74	2400	1380	-7.6
6	JH307749-JH307710	55	110	39.0	39.0	32.0	3.0	2.5	71	64.1	97	104.0	1.69	3780	2240	-11.7
7	JLM508748-JLM508710	60	95	24.0	24.0	19.0	5.0	2.5	75	66.0	85	91.0	1.45	1820	1260	-2.7
8	JLM710949-JLM710910	65	105	24.0	23.0	18.5	3.0	1.0	77	71.0	96	100.5	1.29	1980	1535	-0.3
9	JM511945-JM511910	65	110	28.0	28.0	22.5	3.0	2.5	78	72.0	99	105.0	1.45	2620	1800	-3.4
10	JH211749-JH211710	65	120	39.0	38.5	32.0	3.0	2.5	80	74.0	107	114.0	1.73	4100	2360	-10.8
11	JLM813049-JLM813010	70	110	26.0	25.0	20.5	1.0	2.5	78	77.0	98	105.0	1.20	2200	1820	+0.4
12	JM612949-JM612910	70	115	29.0	29.0	23.0	3.0	2.5	83	77.0	103	110.0	1.36	2740	2020	-2.5
13	JLM714149-JLM714110	75	115	25.0	25.0	19.0	3.0	2.5	87	81.0	104	110.0	1.27	2200	1735	+0.4
14	JM714249-JM714210	75	120	31.0	29.5	25.0	3.0	2.5	88	82.9	108	115.0	1.31	3020	2300	-2.0
15	JH415647-JH415610	75	145	51.0	51.0	42.0	3.0	2.5	94	89.0	129	139.0	1.61	6550	4060	-14.4
16	JM515649-JM515610	80	130	35.0	34.0	28.5	3.0	2.5	94	88.0	117	125.0	1.50	3800	2540	-5.2
17	JM716649-JM716610	85	130	30.0	29.0	24.0	3.0	2.5	98	92.0	117	125.0	1.31	3160	2400	-0.2
18	JHM516849-JHM516810	85	140	39.0	38.0	31.5	3.0	2.5	100	93.9	125	134.0	1.43	4550	3200	-5.9
19	JH217249-JH217210	85	150	46.0	46.0	38.0	3.0	2.5	105	95.2	134	142.0	1.76	6200	3520	-11.9
20	JM718149-JM718110	90	145	35.0	34.0	27.0	3.0	2.5	101	99.0	131	138.8	1.31	4200	3200	-2.0
21	JHM318448-JHM318410	90	155	44.0	44.0	35.5	3.0	2.5	106	100.0	140	148.0	1.71	6100	3580	-10.0
22	JM719149-JM719113	95	150	35.0	34.0	27.0	3.0	2.5	109	104.0	135	143.0	1.32	4160	3160	-1.6
23	JM720249-JM720210	100	155	36.0	35.0	28.0	3.0	2.5	115	109.0	140	149.0	1.24	4480	3620	+0.3
24	JHM720249-JHM720210	100	160	41.0	40.0	32.0	3.0	2.5	117	109.4	143	153.9	1.18	5450	4380	-2.5
25	JM822049-JM822010	110	165	35.0	35.0	26.5	3.0	2.5	124	119.0	149	159.0	1.44	4500	3820	+3.0
26	JHM522649-JHM522610	110	180	47.0	46.0	38.0	3.0	2.5	127	121.8	162	172.0	1.44	7200	5000	-6.0
27	JHM534149-JHM534110	170	230	39.0	38.0	31.0	3.0	2.5	184	178.0	217	224.0	1.52	6900	4550	+4.6
28	JM734449-JM734410	170	240	46.0	44.5	37.0	3.0	2.5	185	180.0	222	231.7	1.34	8850	6600	+5.0
29	JM736149-JM736110	180	250	47.0	45.0	37.0	3.0	2.5	196	190.5	232	242.6	1.22	9150	7500	+9.0
30	JM738249-JM738210	190	260	46.0	44.0	36.5	3.0	2.5	206	200.0	242	252.0	1.22	8550	7000	+10.8
31	JHM840449-JHM840410	200	300	65.0	62.0	51.0	3.5	2.5	223	214.8	273	288.9	1.12	14750	13200	+8.1

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NOTES:

1. MATERIAL: Cones, cups, and rollers: bearing quality - carburizing grade alloy or through-hardening grade alloy steel in accordance with FED-STD-66. Cage; carbon steel (stamped). Powdered process steel, e.g., Sinta Forge may be used.
2. HARDNESS: Cones, cups and rollers: 58 to 64 Rockwell C.
3. TOLERANCES: Precision grade (Class B) shall be specified only when technically justified.
 - a. Standard grade (Class K) (allowable tolerances are in micrometers).

Assembled bearing maximum radial runout		
Cup O.D. (B)	Incl.	Tolerance
Over		
80	180	40
180	315	50

Bearing width (C)		
Bore size range	Plus	Minus
Over	Incl.	
18	80	200
80	250	200
		0

Cup diameter (B)		
Size range	Plus	Minus
Over	Incl.	
80	120	0
120	180	0
180	250	0
250	315	0
		-20
		-25
		-30
		-40

Cone bore (A)		
Size range	Plus	Minus
Over	Incl.	
30	50	0
50	80	0
80	120	0
120	180	0
180	250	0
		-13
		-15
		-20
		-25
		-30

b. Precision grade (Class B) (allowable tolerances are in micrometers).

Assembled bearing maximum radial runout		
Cup O.D. (B)	Incl.	Tolerance
Over		
80	150	3.5
150	180	4.0
180	315	5.0

Bearing width (C)		
Bore size range	Plus	Minus
Over	Incl.	
18	120	200
120	180	200
180	250	200
		300

Cup diameter (B)		
Size range	Plus	Minus
Over	Incl.	
80	180	0
180	250	0
250	315	0
		-10
		-13
		-15

Cone bore (A)		
Size range	Plus	Minus
Over	Incl.	
30	180	0
180	315	0
		-10
		-13

4. DIMENSIONS: Unless otherwise specified, all dimensions are in millimeters (mm). Dimensions T, P, S, and O are recommended shaft and housing shoulder diameters. Dimensions R and Y are the maximum fillet radii on the shaft and the housing respectively, which will be cleared by the bearing corners.

5. EFFECTIVE LOAD CENTER: Dimension (a) locates a point on the cone axis which is the center of pressure of all resisting forces set up by the bearing rollers. All moments should be calculated from this point when determining bearing loading and shaft stresses. A minus value of (a) indicates that the center is inside the cone backface.

6. OPERATING TEMPERATURE: Recommended operating temperature not to exceed 121° Celsius (250° Fahrenheit).

7. LUBRICATION: Bearings shall be furnished without lubrication. Bearings shall be furnished with preservative per MIL-C-11796, Class 3.

P. A. Other Cust	OS AT 11	INTERNATIONAL INTEREST	TITLE BEARING, ROLLER, TAPERED, SINGLE ROW OF ROLLERS (METRIC SERIES)	MILITARY STANDARD DS3225
PROCUREMENT SPECIFICATION NON			SUPERSEDES:	SHEET 2 OF 3

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8. BASIC DYNAMIC LOAD RATING: Basic dynamic load rating is that constant stationary load which a group of apparently identical bearings with stationary cups (outer rings) can endure for a rating life of 90 million revolutions of the cone (inner ring). The basic dynamic load ratings listed herein are based on a rated life of 90 million revolutions or 3000 hours at 500 r/min.

To compare the load ratings on this document with others whose basis for rating are other than 90 million revolutions or 3000 hours at 500 r/min use the following formula:

$$C = \text{Other Bearing Rating} \times \left(\frac{R_1}{500} \right)^{1/f} \times \left(\frac{H_1}{3000} \right)^{1/f}$$

where:

R_1 = r/min at which other bearing is rated

H_1 = Hours life at which other bearing is rated

f = Other bearing fatigue factor

9. RATING LIFE (HOURS): Rating life is the number of hours at some constant speed of the cone (inner ring) that 90 percent of a group of apparently identical bearings will complete or exceed before first evidence of fatigue develops. The magnitude of the rated life in hours is found from the following:

$$L_{10} = \frac{1.5 \times 10^6}{R} \left(\frac{C}{P} \right)^{10/3} \text{ hours}$$

where:

C = Basic dynamic load rating, daN

P = Equivalent load (combined radial and thrust load), daN

R = Revolutions per minute, r/min

The average life is approximately four times the rating life.

10. K FACTOR: The K factor is the ratio of the basic radial dynamic load rating to basic thrust dynamic load rating.

11. CONTACT ANGLE: These bearings have a contact angle (α) between 10 and 19 degrees. The contact angle is the angle between the line of action of the roller load and a plane perpendicular to the bearing axis.

12. PART NUMBER: The part number shall consist of the DS number, followed by the dash number, followed by -K for a standard grade bearing or -B for a precision grade bearing.

Examples: DS 3225-15-K is a standard grade bearing
DS 3225-15-B is a precision grade bearing

The AFBMA (Anti-Friction Bearing Manufacturers Association) cup and cone numbers are for reference only and are not to be used for ordering purposes.

13. CAGE CLEARANCE: Designers should provide a clearance of 3.2 mm minimum between the outside edge of the cage and the housing counterbore.

14. SUPERSESSON: DS 3225-8-K supersedes Army drawing 11602374-14.

15. For design feature purposes, this standard takes precedence over procurement documents referenced herein.

16. Referenced documents shall be of the issue in effect on the date of invitation for bids or request for proposal.

P. A. Other Cust OS AT 11	INTERNATIONAL INTEREST	TITLE BEARING, ROLLER, TAPERED, SINGLE ROW OF ROLLERS (METRIC SERIES)	MILITARY STANDARD DS3225
PROCUREMENT SPECIFICATION NONE	SUPERSEDES:	SHEET 3	OF 3