

USER ACTIVITIES:
Army — AV

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

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.

Dash No.	AFBMA (A) bearing number (See Note 11) Cone-Cup	A	B	C	D	R	Y	P.	S	(A) K factor	Basic dynamic load ratings (lb) (A)	
											Radial	Thrust
1	21075-21226D	0.7500	2.2500	1.4375	1.9375	0.06	0.03	1.24	2.01	0.99	3260	1730
2	43132-43319D	1.3125	3.1875	1.5625	2.1875	0.08	0.06	2.01	2.91	0.87	5500	3320
3	44162-44363D	1.6250	3.6250	1.5625	2.1875	0.09	0.06	2.24	3.35	0.75	6050	4250
11	53176-53376D	1.7500	3.7500	1.7500	2.5626	0.05	0.03	2.32	3.50	0.79	7350	4900
4	53176-53390D	1.7500	3.8750	1.7500	2.5626	0.05	0.06	2.32	3.56	0.79	7350	4900
12	55200-55444D	2.0000	4.4375	1.8125	2.5625	0.14	0.06	2.80	4.13	0.66	7900	6300
13	72200-72488D	2.0000	4.8750	1.8125	3.0625	0.14	0.06	2.91	4.53	0.79	11900	7900
5	55206-55444D	2.0625	4.4375	1.8125	2.5625	0.14	0.06	2.83	4.13	0.66	7900	6300
6	66225-66462D	2.2500	4.6250	2.1250	2.8750	0.14	0.03	2.99	4.37	0.93	11000	6200
14	66585-66522D	2.3622	5.1174	1.8750	2.7500	0.14	0.03	3.11	4.65	0.88	11400	6850
15	78250-78549D	2.5000	5.5000	2.0395	3.0625	0.09	0.06	3.35	5.16	0.67	12900	10100
16	9285-9220D	3.0000	6.3750	2.7810	4.1560	0.14	0.03	4.06	6.03	0.82	21800	14000
7	9378-9320D	3.0000	7.0000	2.9375	4.3125	0.14	0.09	4.13	6.46	0.76	22800	15800

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3110

P. A. OS Other Cust. AT 11	INTERNATIONAL INTEREST	TITLE BEARING, ROLLER, TAPERED, DOUBLE ROW OF ROLLERS, STEEP ANGLE, TWO SINGLE CONES, ONE DOUBLE CUP, ADJUSTABLE, TYPE 763 (TDOS)	MILITARY STANDARD MS 19087
PROCUREMENT SPECIFICATION FF-B-187	SUPERSEDES:		SHEET 1 OF 3

DD FORM 672-1 (COORDINATED)

REPLACES DD FORM 672-1, 1-64, WHICH IS OBSOLETE

3110-0518

(A) denotes changes. For NOTES see sheets 2 and 3.

APPROVED 30 Apr 59 REVISED (A) 13 Jan 82

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Dash No.	AFBMA (A) bearing number (See Note 11) Cone-Cup	A	B	C	D	R	Y	Recommended shoulder (A) diameter		K factor	Basic dynamic load ratings (lb) (A)	
								Shaft	Housing		Radial	Thrust
17	9385-9320D	3.3125	7.0000	2.9375	4.3125	0.14	0.09	4.37	6.46	0.76	22800	15800
• 8	98350-98789D	3.5000	7.8750	3.1581	4.5625	0.14	0.09	4.65	7.40	0.92	31500	17900
18	HM921343-HM921310D	3.5400	7.4790	2.1300	3.3800	0.14	0.06	4.61	7.13	0.67	21400	16800
19	M919048-M919010D	3.5425	6.3740	1.7500	2.7500	0.14	0.06	4.29	6.06	0.80	15000	9850
20	HM821547-HM821511D	3.9362	7.7500	2.9300	4.0700	0.14	0.06	4.84	7.36	0.96	27800	15200
9	98400-98789D	4.0000	7.8750	3.1581	4.5625	0.14	0.09	5.04	7.40	0.92	31500	17900
21	37425-37626D	4.2500	6.2500	1.5625	2.1251	0.14	0.03	4.80	5.98	0.96	9600	5250
22	H924045-H924010D	4.3750	8.4375	3.3125	4.5625	0.14	0.06	5.47	8.07	0.87	36600	22100
23	HH924349-HH924310D	4.3750	9.5000	4.2500	6.2500	0.25	0.06	6.18	8.90	0.80	52500	34500
*10	HM926740-HM926710D	4.5000	9.0000	3.3125	4.5625	0.14	0.09	5.75	8.63	0.79	39000	25900

*Inactive for new design after 13 Jan 82.

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., Sinter Forge may be used.
2. HARDNESS: Cones, cups and rollers: 58 to 64 Rockwell C.
3. TOLERANCES: Standard grade (AFBMA Class 4) (allowable tolerances are in 0.0001 inch).

Cone bore (A) (A)			
Size range		Tolerance	
Over	Incl.	Plus	Minus
0	3.0000	5	0
3.0000	6.0000	10	0

Cup diameter (B)			
Size range		Tolerance	
Over	Incl.	Plus	Minus
0.0000	12.0000	10	0
12.0000	24.0000	20	0

Bearing width (C) (A)			
Bore size range		Tolerance	
Over	Incl.	Plus	Minus
0	4.0000	160	0
4.0000	12.0000	280	200

Assembled bearing maximum radial runout			
Cup O.D. (B)		Tolerance	
Over	Incl.	Over	Incl.
0	24.0	0	20

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P. A. OS Other Code AT 11	INTERNATIONAL INTEREST	TITLE BEARING, ROLLER, TAPERED, DOUBLE ROW OF ROLLERS, STEEP ANGLE, TWO SINGLE CONES, ONE DOUBLE CUP, ADJUSTABLE, TYPE 763 (TDOS)	MILITARY STANDARD MS19087
PROCUREMENT SPECIFICATION FF-B-187		SUPERSEDES:	SHEET 3 OF 3

DD FORM 672-1 (COORDINATED)

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4. **DIMENSIONS:** All dimensions are in inches. Dimensions P and S 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. **OPERATING TEMPERATURE:** Recommended operating temperature not to exceed 121° Celsius (250° Fahrenheit).

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

7. **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

8. **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:

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

where:

C = Basic dynamic load rating, lb.

P = Equivalent load (combined radial and thrust load), lb.

R = Revolutions per minute, r/min.

The average life is approximately four times the rating life.

9. **K FACTOR:** The K factor is the ratio of the basic radial dynamic load rating (for a one-row bearing) to basic thrust dynamic load rating.

10. **CONTACT ANGLE:** All bearings are steep angle bearings having a contact angle (α) between 22 and 31 degrees. The contact angle is the angle between the line of action of the roller load and a plane perpendicular to the bearing axis.

11. **PART NUMBER:** The MS part number consists of the MS number, plus the dash number. Example: MS19087-15. The AFBMS (Anti-Friction Bearing Manufacturers Association) cup and cone numbers are for reference only and are not to be used for ordering purposes.

12. **CAGE CLEARANCE:** Designers should provide a clearance of .125 inch minimum between the outside edge of the cage and the housing counterbore.

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

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

APPROVED 30 Apr 59 REVISED (A) For changes see sheets 1, 2, and 3.

3110-0518