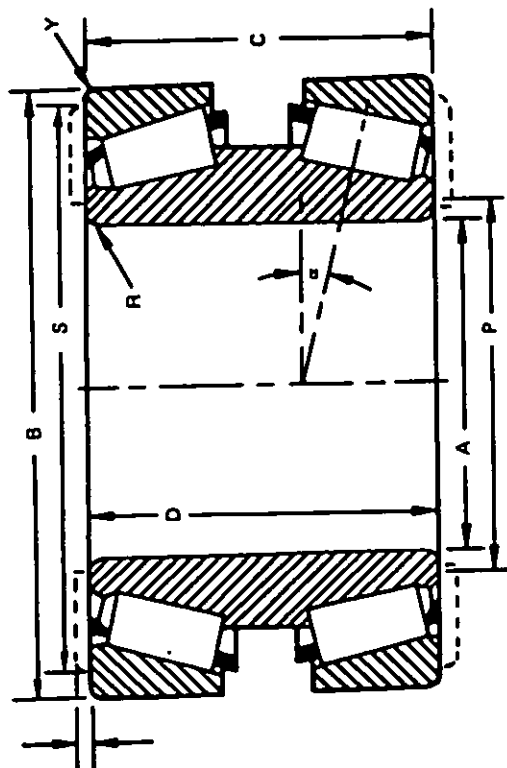


USER ACTIVITIES:  
Army — AV

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.

# CAGE CLEARANCE (SEE NOTE 12)



Dash No.	AFBMA bearing number (See Note 11) Cone-Cup	A Bore	B Outside dia.	C Bearing width over cups	D Cone width	E Max. shaft fillet radius	F Max. housing fillet radius	Recommended diameter		K factor	Basic dynamic load ratings (lb) (Q)	
								Shaft	Housing		Radial	Thrust
19	17116D-17244	1.1875	2.4409	1.3306	1.3750	0.03	0.06	1.40	2.13	1.53	3090	1060
*1	14126D-14276	1.2500	2.7170	1.5632	1.5426	0.06	0.05	1.57	2.36	1.53	4150	1420
20	19145D-19268	1.4375	2.6875	1.4492	1.5000	0.03	0.06	1.67	2.40	1.31	3810	1530
*2	376DE-374	1.8750	3.6718	1.9690	2.0940	0.03	0.05	2.17	3.35	1.73	6550	1980
21	375D-374	2.0000	3.6718	1.9690	2.0940	0.03	0.05	2.24	3.35	1.73	6550	1980
22	399D-394A	2.4375	4.3307	2.1870	2.1870	0.03	0.05	2.76	3.98	1.45	7650	2770
3	39585D-39520	2.5000	4.4375	2.3750	2.3750	0.03	0.13	2.83	3.98	1.72	13300	4050
23	78251D-78551	2.5000	5.3130	2.6020	2.5980	0.09	0.09	3.11	4.61	0.67	12900	10100
*4	765D-752	3.0000	6.3750	3.9980	4.2500	0.14	0.13	3.75	5.75	1.71	26200	8050
24	496D-492A	3.1875	5.2500	3.1875	3.1549	0.06	0.13	3.58	4.72	1.31	12500	5000
25	581D-572	3.1875	5.5115	3.1875	3.1549	0.06	0.13	3.62	4.92	1.45	16800	6100
*5	767D-752A	3.5000	6.3750	3.9980	4.2500	0.06	0.13	3.99	5.75	1.71	26200	8050
*6	865D-854	3.5000	7.5000	4.6250	5.0000	0.38	0.13	4.57	6.69	1.74	36900	11100
26	42362D-42584	3.6250	5.8437	2.2500	2.2812	0.06	0.12	4.06	5.28	1.19	13600	6000
7	868D-854	4.0000	7.5000	4.6250	5.0000	0.06	0.13	4.57	6.69	1.74	36900	11100
*8	945D-932	4.0000	8.3750	5.6250	6.0000	0.41	0.13	5.25	7.36	1.79	46500	13600
27	71426D-71750	4.2500	7.5000	3.8750	4.0000	0.06	0.13	4.80	6.73	1.40	30200	11300
9	71450D-71750	4.5000	7.5000	3.8750	4.0000	0.06	0.13	5.04	6.73	1.40	30200	11300
*10	HH224346DD-HH224310	4.5000	8.3750	5.6250	6.0000	0.13	0.13	5.24	7.56	1.79	54000	15800

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denotes changes. For NOTES see sheets 2 and 3.

P. A. Other Cont.	OS AT 11	INTERNATIONAL INTEREST	TITLE Ⓐ BEARING, ROLLER, TAPERED, TWO ROWS OF ROLLERS, TYPE 757 (TDI) AND 770 (TDIS)	MILITARY STANDARD <b>MS19085</b>
PROCUREMENT SPECIFICATION FF-B-187				SHEET 1 OF 3
SUPERSEDES:				

DD FORM 672-1 (COORDINATED)

3110-0516

APPROVED 30 APR 59 REVISED 13 JAN 82

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.

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

USER ACTIVITIES:  
Army — AV

P. A.	OS	INTERNATIONAL INTEREST	TITLE
Other Cust	AT		Ⓐ BEARING, ROLLER, TAPERED, TWO ROWS OF ROLLERS, TYPE 757 (TDI) AND 770 (TDIS)
11			
PROCUREMENT SPECIFICATION FF-B-187		SUPERSEDES:	

Dash No.	AFBMA Ⓐ bearing number (See Note 11) Cone-Cup	A Bore	B Outside dia.	C Bearing width over cups	D Cone width	R Ⓐ Max. shaft fillet radius	Y Ⓐ Max. housing fillet radius	P Recommended shoulder diameter		Ⓐ K factor	Basic dynamic load ratings (lb) Ⓐ	
								Shaft	Housing		Radial	Thrust
28	M224749D-M224710	4.7500	6.8750	2.6251	2.6875	0.03	0.06	5.08	6.42	1.76	21400	6400
*11	67388D-67322	5.0000	7.7500	3.6250	3.6250	0.06	0.13	5.50	7.09	1.70	32200	9950
*12	EE15303D-153100	5.0000	10.0000	6.3750	6.7500	0.13	0.25	5.88	8.86	1.82	60500	17400
29	48290D-48220	5.0000	7.1875	3.0000	3.0000	0.06	0.13	5.39	6.61	1.91	24600	6750
30	74510D-74850	5.1183	8.5000	4.8750	4.8750	0.06	0.13	5.75	7.72	1.20	32800	14300
31	67390D-67322	5.2500	7.7500	3.6250	3.6250	0.06	0.13	5.71	7.09	1.70	32200	9950
32	48393D-48320	5.3750	7.5000	3.0625	3.0625	0.06	0.13	5.67	6.97	1.82	26100	7500
33	H228649D-H228610	5.3750	8.8750	4.7500	4.7500	0.06	0.13	5.98	7.99	1.76	55500	16600
34	48680D-48620	5.5000	7.8750	3.0625	2.9688	0.03	0.13	5.91	7.28	1.74	26600	8000
*13	99603D-99100	6.0000	10.0000	6.2500	6.2500	0.06	0.13	6.69	8.94	1.43	55500	20400
*14	HH234049D-HH234018	6.0000	12.5000	6.3750	6.7500	0.38	0.27	7.15	11.02	1.79	94500	27800
35	46790D-46720	6.5000	8.8750	3.1250	3.0000	0.03	0.13	6.89	8.23	1.52	28800	9950
36	67790D-67720	7.0000	9.7500	3.5625	3.5625	0.06	0.13	7.48	9.02	1.33	37100	14700
*15	EE91700D-91112	7.0000	11.2500	4.1874	4.1875	0.06	0.13	7.64	10.28	1.35	40200	14900
37	94706D-94113	7.0000	11.3750	4.8750	4.8750	0.06	0.13	7.68	10.20	1.25	57000	24000
*16	HM237546DD-HM237510	7.0000	11.3750	6.2500	6.2500	0.06	0.13	7.63	10.47	1.83	67500	19400
38	H239649D-H239612	7.3750	12.6250	6.6250	6.3750	0.13	0.19	8.23	11.54	1.83	89000	24300
39	EE420750D-421437	7.5000	14.3720	6.2500	6.0000	0.13	0.13	8.70	12.95	1.45	97000	33500
17	93801D-93125	8.0000	12.5000	5.2500	5.2500	0.25	0.13	8.93	11.26	1.12	65800	29400
18	EE420800D-421450	8.0000	14.5000	6.2500	6.0000	0.13	0.13	9.06	13.03	1.45	97000	33500

\*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., Sinta 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) Ⓐ		
Size range	Incl.	Minus
Over		
0	3.0000	5
3.0000	8.0000	10

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

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

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

MILITARY STANDARD

MS19085

SHEET 2 OF 3

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.

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

USER ACTIVITIES:  
Army - AV

P. A. Other Code OS AT 11	INTERNATIONAL INTEREST	TITLE Ⓐ BEARING, ROLLER, TAPERED, TWO ROWS OF ROLLERS, TYPE 757 (TDI) AND 770 (TDS)	MILITARY STANDARD
PROCUREMENT SPECIFICATION FF-B-187	SUPERSEDES:	SHEET 3 OF 3	MS19085

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:

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

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 except dash number 23 are normal angle bearings having a contact angle (α) between 10 and 19 degrees. Bearing dash number 23 is a steep angle bearing 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: MS19085-17. The AFBMA (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.

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