

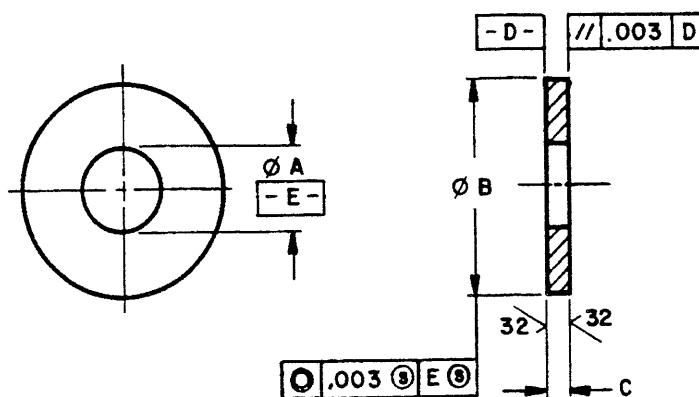
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3120USER ACTIVITIES:  
NAVY-OS

TABLE I. DASH NUMBERS AND DIMENSIONS.

DASH NUMBER	$\phi A$ INSIDE DIAMETER		$\phi B$ OUTSIDE DIAMETER		$C$ THICKNESS	
	NOM SIZE	ACTUAL SIZE	NOM SIZE	ACTUAL SIZE	NOM SIZE	ACTUAL SIZE
02062	1/8	$0.130 \begin{smallmatrix} +.010 \\ -.002 \end{smallmatrix}$	3/8	0.370	1/16	$0.062 \pm .002$
03082	3/16	$0.192 \begin{smallmatrix} +.010 \\ -.002 \end{smallmatrix}$	1/2	0.495	1/16	$0.062 \pm .002$
04102	1/4	$0.255 \pm .005$	5/8	$0.625 \begin{smallmatrix} +.005 \\ -.010 \end{smallmatrix}$	1/16	$0.062 \begin{smallmatrix} +.002 \\ -.005 \end{smallmatrix}$
05122	5/16	0.315	3/4	$0.750 \begin{smallmatrix} +.005 \\ -.010 \end{smallmatrix}$	1/16	0.062
05A123	5/16	0.318	3/4	0.745	3/32	0.093
06122	3/8	0.377	3/4	0.750	1/16	0.062
06A144	3/8	0.380	7/8	0.870	1/8	0.125
06B122	3/8	0.390	3/4	0.750	1/16	0.062
07122	7/16	0.439	3/4	0.750	1/16	0.062
08146	1/2	0.505	7/8	0.875	3/16	0.187
08A186	1/2	0.505	1 1/8	1.125	3/16	0.187
08B122	1/2	0.507	3/4	$0.750 \begin{smallmatrix} +.005 \\ -.010 \end{smallmatrix}$	1/16	0.062
08C162	1/2	0.510	1-0	$1.000 \pm .010$	1/16	0.062
08D163					3/32	0.093
08B164					1/8	0.125
09202	9/16	0.565	1 1/4	$1.250 \pm .015$	1/16	0.062
09204					1/8	0.125

21 Feb 84

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APPROVED

REVIEWER ACTIVITIES:  
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P. A. Other Cust	84 OS AT 99	INTERNATIONAL INTEREST	TITLE BEARING, WASHER, THRUST, SINTERED BRONZE, OIL IMPREGNATED	MILITARY STANDARD MS21783
PROCUREMENT SPECIFICATION MIL-B-5687		SUPERSEDES:		PAGE 1 OF 4

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TABLE I. DASH NUMBERS AND DIMENSIONS. - CONTINUED

DASH NUMBER	$\varnothing$ A INSIDE DIAMETER		$\varnothing$ B OUTSIDE DIAMETER		C THICKNESS	
	NOM SIZE	ACTUAL SIZE	NOM SIZE	ACTUAL SIZE	NOM SIZE	ACTUAL SIZE
10162	5/8	0.627	1-0	1.000	1/16	0.062
10163					3/32	0.093
10164					1/8	0.125
10192	5/8	0.627	1 3/16	1.187	1/16	0.062
10193					3/32	0.093
10196					3/16	0.187
10204			1 1/4	1.250	1/8	0.125
10244			1 1/2	1.500	1/8	0.125
12202	3/4	0.753	1 1/4	1.250	1/16	0.062
12204			1 3/8	1.375	1/8	0.125
12222					1/16	0.062
12A253	3/4	0.765	1 9/16	1.562 $\pm$ .010	3/32	0.094
12A254					1/8	0.125
12A256					3/16	0.187
12A284			1 3/4	1.750 $\pm$ .010	1/8	0.125
14244	7/8	0.890	1 1/2	1.500 $\pm$ .010	1/8	0.125
14344			2 1/8	2.125 $\pm$ .010		
16244	1-0	1.003	1 1/2	1.500 $\pm$ .015	1/8	0.125
16A282		1.012	1 3/4	1.750 $\pm$ .015	1/16	0.062
16A284					1/8	0.125
16A324			2-0	2.000 $\pm$ .015	1/8	0.125 $\pm$ .010
20284		1.253	1 3/4	1.750 $\pm$ .015	1/8	0.125 $\pm$ .010
20324	1 1/4		2-0	2.000 $\pm$ .015	1/8	0.125 $\pm$ .010

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TABLE I. DASH NUMBERS AND DIMENSIONS. - CONTINUED

DASH NUMBER	Ø A INSIDE DIAMETER		Ø R OUTSIDE DIAMETER		C THICKNESS	
	NOM SIZE	ACTUAL SIZE	NOM SIZE	ACTUAL SIZE	NOM SIZE	ACTUAL SIZE
20A284	1 1/4	1.265	1 3/4	1.750 $\pm$ .015	1/8	0.125 $\pm$ .010
20A322			2-0	2.000 $\pm$ .015	1/16	0.062
20A324					1/8	0.125 $\pm$ .010
24404	1 1/2	1.510	2 1/2	2.500 $\pm$ .015	1/8	0.125 $\pm$ .010
24406					3/16	0.187 $\pm$ .010
24564			3 1/2	3.500 $\pm$ .015	1/8	0.125 $\pm$ .010
24566					3/16	0.187 $\pm$ .010
28424	1 3/4	1.765 $\pm$ .010	2 5/8	$\begin{smallmatrix} +.020 \\ 2.625 \\ -.015 \end{smallmatrix}$	1/8	0.125 $\pm$ .010
32484	2-0	$\begin{smallmatrix} +.010 \\ 2.001 \\ -.000 \end{smallmatrix}$	3-0	3.000 $\pm$ .020	1/8	0.125 $\pm$ .010
32488					1/4	0.250 $\pm$ .010

## REQUIREMENTS:

1. MATERIAL. SINTERED COPPER BASE, POWDERED METAL IN ACCORDANCE WITH MIL-B-5687, TYPE I, GRADE I. YIELD STRENGTH IN COMPRESSION, 11,000 psi (min) FOR 0.1% PERMANENT SET.
2. SURFACE ROUGHNESS. ALL SURFACES SHALL HAVE A SURFACE ROUGHNESS 125/ EXCEPT AS NOTED.
3. HARDNESS. 30 - 70HRH.
4. POROSITY. OIL CONTENT BY VOLUME, 20% MINIMUM.
5. LUBRICATION. THRUST BEARINGS ARE TO BE IMPREGNATED 10% MINIMUM WITH OIL CONFORMING TO MIL-L-6085.
6. DIMENSIONAL TOLERANCES AND CHAMFERS (SEE TABLE II AND III). DIMENSIONAL TOLERANCES FOR INSIDE DIAMETER (ID), OUTSIDE DIAMETER (OD) AND THICKNESS SHALL BE  $\pm$ 0.005 EXCEPT AS OTHERWISE INDICATED IN TABLE I.
7. BEARING DIMENSIONS. THE OUTSIDE DIAMETER (OD) AND INSIDE DIAMETER (ID) SHALL BE IN SIXTEENTH OF AN INCH INCREMENTS; THE THICKNESS SHALL BE IN 1/32 INCH INCREMENTS.
8. PART NUMBER. THE PART NUMBER CONSISTS OF THE BASIC MILITARY STANDARD (MS) NUMBER FOLLOWED BY A DASH NUMBER TAKEN FROM TABLE I.  
AN ALPHA LETTER AFTER THE ID CODE INDICATES PORE SIZES THAT ARE LARGER THAN PREFERRED COMMERCIAL STOCKED SIZES. THE BEARING DIMENSIONS SHALL BE SPECIFIED IN ACCORDANCE WITH REQUIREMENT 7.

EXAMPLE 1. MS21783-08146

INDICATES A THRUST BEARING HAVING AN ID OF 1/2 INCHES (OR = 8/16 OR 1/2), AN OD OF 7/8 INCHES (14 = 14/16 OR 7/8) AND A THICKNESS OF 3/16 INCHES (6 = 6/32 OR 3/16).

EXAMPLE 2. MS21783-16A324

INDICATES A THRUST BEARING HAVING AN ID OF 1 INCH (16 = 16/16 OR 1), AN OD OF 2 INCHES (32 = 32/16 OR 2) AND A THICKNESS OF 1/8 INCHES (4 = 4/32 = 1/8). THE LETTER "A" AFTER THE ID CODE INDICATES PORE SIZES THAT ARE LARGER THAN PREFERRED COMMERCIAL STOCKED SIZES.

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9. **LOADING.** THE NORMAL PV FACTOR FOR THRUST BEARINGS IS APPROXIMATELY 10,000 WHERE P = SAFE LOADING IN POUNDS PER SQUARE INCH (#/IN<sup>2</sup>) OF PROJECTED BEARING AREA ( $\pi/4 (OD^2 - ID^2)$ ) AND V = SHAFT VELOCITY IS IN FEET PER MINUTE (ft/min). SHAFT VELOCITY IS SPECIFIED AT INSIDE DIAMETER OF THRUST BEARING. SEE TABLE IV FOR PERMISSIBLE LOAD RATINGS. IMERSION IN OIL, INTERMITTENT LOADING OR PRESSURE LUBRICATION WILL PERMIT HIGHER PV VALUES.

TABLE II. DIMENSIONAL TOLERANCES.

DIMENSION	TOLERANCE
INSIDE DIAMETER AND OUTSIDE DIAMETER	$\pm .005$
THICKNESS	$\pm .005$
PARALLELISM (//) FULL INDICATOR MOVEMENT (FIM)	0.003
CONCENTRICITY (◎) FULL INDICATOR MOVEMENT (FIM)	0.003

TABLE III. CHAMFERS.

RANGE	SIZE
WALL THICKNESS UP TO AND INCLUDING 3/32 INCH	BREAK EDGES
WALL THICKNESS GREATER THAN 3/32 INCH AND UP TO 2 INCH OUTSIDE DIAMETER	1/64 X 45 DEGREES

TABLE IV. PERMISSIBLE LOAD RATINGS FOR THRUST BEARINGS.

SHAFT VELOCITY (FEET PER MINUTE)	PERMISSIBLE LOAD (POUNDS PER SQUARE INCH)
SLOW AND INTERMITTENT	800
25	400
26 TO 50 INCL	200
51 TO 100 INCL	100
101 TO 150 INCL	65
151 TO 200 INCL	50
OVER 200	SEE REQUIREMENT 9

## NOTES:

1. DIMENSIONS ARE IN INCHES.
2. THESE THRUST BEARINGS ARE NOT INTENDED FOR BEARING ON ASSEMBLY.
3. REFERENCED DOCUMENTS SHALL BE OF THE ISSUE IN EFFECT ON DATE OF INVITATIONS FOR BIDS OR REQUEST FOR PROPOSAL, EXCEPT THAT REFERENCED ADOPTED INDUSTRY DOCUMENTS SHALL GIVE THE DATE OF THE ISSUE ADOPTED.
4. FOR DESIGN FEATURE PURPOSES, THIS STANDARD TAKES PRECEDENCE OVER PROCUREMENT DOCUMENTS REFERENCED HEREIN.

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