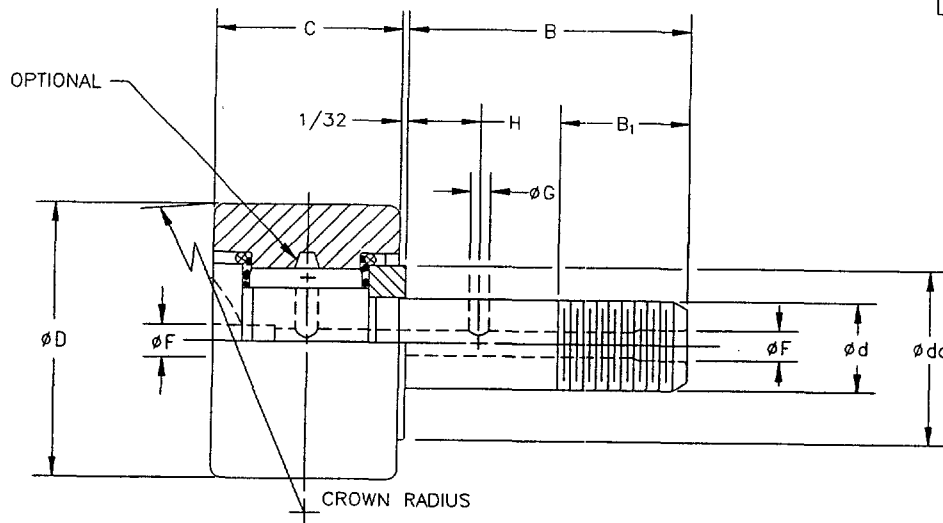


THE REQUIREMENTS FOR ACQUIRING THE PRODUCT(S) DESCRIBED HEREIN SHALL CONSIST OF THIS SPECIFICATION SHEET AND THE ISSUE OF THE FOLLOWING SPECIFICATION LISTED IN THAT ISSUE OF THE DODISS SPECIFIED IN THE SOLICITATION: MIL-B-3990

THIS SPECIFICATION IS APPROVED FOR USE BY ALL DEPARTMENTS AND AGENCIES OF THE DEPARTMENT OF DEFENSE.



Dimensions in inches

Dash No.	Stud Diameter	Outside Diameter	C Outer Ring Width	B Stud Length	B <sub>1</sub> Minimum Perfect Thread Length	Fine Threads UNF	Oil Hole		Lub. Fit-ting Size	Crown Radius Ref.	Total Radial Clearance Max.	da Clamp- ing Dia. Min.	1/ Lbf-in Max.	Capacity As a Track Roller lbf	Track Capacity lbf	Limit Load Rating lbf	Weight Approx. lb
							ØG Hole Dia.	H Hole Center									
-080	0.1900	0.5000	0.344	0.500	0.2500	10-32	-	-	0.125*	6.00	0.0023	0.30	8.0	600	460	600	0.02
-081	0.1900	0.5000	0.375	0.625	0.2500	10-32	-	-	0.125*	7.00	0.0023	0.30	8.0	700	508	700	0.02
-091	0.1900	0.5625	0.375	0.625	0.2500	10-32	-	-	0.125*	7.00	0.0023	0.30	8.0	700	575	700	0.03
-101	0.2500	0.6250	0.406	0.625	0.3125	1/4-28	-	-	0.125*	7.00	0.0023	0.36	10.0	1000	657	1000	0.04
-102	0.2500	0.6250	0.438	0.750	0.3125	1/4-28	-	-	0.125*	8.00	0.0023	0.36	10.0	1100	718	1100	0.05
-111	0.2500	0.6875	0.438	0.750	0.3125	1/4-28	-	-	0.125*	8.00	0.0023	0.36	10.0	1100	865	1100	0.06
-121	0.3750	0.7500	0.500	0.875	0.3750	3/8-24	0.094	0.250	0.188	10.00	0.0023	0.50	55.0	2000	1030	2000	0.08
-141	0.3750	0.8750	0.500	0.875	0.3750	3/8-24	0.094	0.250	0.188	10.00	0.0023	0.50	55.0	2000	1160	2000	0.10
-161	0.4375	1.0000	0.625	1.000	0.5000	7/16-20	0.125	0.250	0.188	12.00	0.0023	0.64	150.0	2900	1480	2900	0.16
-181	0.4375	1.1250	0.625	1.000	0.5000	7/16-20	0.125	0.250	0.188	12.00	0.0023	0.64	150.0	2900	1670	2900	0.20
-201	0.5000	1.2500	0.750	1.250	0.6250	1/2-20	0.125	0.312	0.188	14.00	0.0023	0.77	205.0	4100	2330	4100	0.30
-221	0.5000	1.3750	0.750	1.250	0.6250	1/2-20	0.125	0.312	0.188	14.00	0.0023	0.77	205.0	4100	2570	4100	0.35
-241	0.6250	1.5000	0.875	1.500	0.7500	5/8-18	0.157	0.375	0.188	20.00	0.0023	0.89	390.0	5500	3380	5500	0.53
-261	0.6250	1.6250	0.875	1.500	0.7500	5/8-18	0.157	0.375	0.188	20.00	0.0023	0.89	390.0	5500	3660	5500	0.61
-281	0.7500	1.7500	1.000	1.750	0.8750	3/4-16	0.157	0.438	0.188	20.00	0.0023	1.05	750.0	7700	4500	7700	0.85
-301	0.7500	1.8750	1.000	1.750	0.8750	3/4-16	0.157	0.438	0.188	20.00	0.0023	1.05	750.0	7700	4820	7700	0.95
-321	0.8750	2.0000	1.250	2.000	1.0000	7/8-14	0.188	0.500	0.188	24.00	0.0023	1.20	900.0	10400	6550	10400	1.37
-351	0.8750	2.2500	1.250	2.000	1.0000	7/8-14	0.188	0.500	0.188	24.00	0.0023	1.20	900.0	10400	7370	10400	1.67
-401	1.0000	2.5000	1.500	2.250	1.1250	1-14	0.188	0.562	0.188	30.00	0.0023	1.31	1350.0	16200	4250	16200	2.50
-441	1.0000	2.7500	1.500	2.250	1.1250	1-14	0.188	0.562	0.188	30.00	0.0023	1.31	1350.0	16200	10200	16200	2.93
-481	1.2500	3.0000	1.750	2.500	1.2500	1 1/4-12	0.188	0.625	0.250	30.00	0.0023	1.75	2050.0	24600	13400	24600	4.20
-521	1.2500	3.2500	1.750	2.500	1.2500	1 1/4-12	0.188	0.625	0.250	30.00	0.0023	1.75	2050.0	24600	14500	24600	4.81
-561	1.3750	3.5000	2.000	2.750	1.3750	1 3/8-12	0.188	0.688	0.250	30.00	0.0023	1.92	2500.0	31200	18300	31200	6.42
-641	1.5000	4.0000	2.250	3.500	1.5000	1 1/2-12	0.188	0.750	0.250	30.00	0.0023	2.28	3000.0	41000	24100	41000	9.46

\* OIL HOLE "F" DRILLED FROM THE FLANGE END OF THE STUD TO THE RADIAL OIL HOLE ONLY.  
1/ INSTALLATION TORQUE LUBRICATED THREADS.

(B) DENOTES CHANGES

INCH-POUND

PREPARING ACTIVITY: NAVY-AS

CUSTODIANS: ARMY- AT NAVY-

AIR FORCE- 99 DLA-

REVIEW: ARMY-AT,NAVY-AS,AF-11,99,DLA-IS  
USER:

PROJECT NUMBER: 3110-0851

DISTRIBUTION STATEMENT

A. Approved for public release; distribution is unlimited.

# MILITARY SPECIFICATION SHEET

TITLE

BEARING, ROLLER, NEEDLE, TRACK ROLLER,  
INTEGRAL STUD, SEALED, TYPE VIII,  
ANTIFRICTION, INCH

SPECIFICATION SHEET NUMBER

MS21440

05 DEC 94  
REV B

SUPERSEDING

MS21440A

31 MAR 81

AMSC- N/A

FSC 3110

Page 1 of 2

DD Form 672, MAY 88

PREVIOUS EDITIONS ARE OBSOLETE

TABLE 1. TOLERANCE LIMITS

				Dimensions in inches					
d Basic Stud Diameter		Allowable Deviation From d of Single Mean Dia., d <sub>mp</sub>		D Basic Outer Ring Outside Diameter		Allowable Deviation From D of Single Mean Dia., D <sub>mp</sub>		Allowable Deviation From Outer Ring Width, C	
Over	Incl.	High	Low	Over	Incl.	High	Low	High	Low
0.1250	1.5000	+0.0015	-0.0000	0.4375	4.0000	+0.0020	-0.0005	+0.005	-0.005

## REQUIREMENTS:

1. MATERIAL: Steel, MIL-S-8690, ASTM A304, A304, A322, A331, QQ-S-700, Fed. Std. No. 66, AISI/SAE Steel No. 50100, 51100, 52100. Seals and backing rings - acetal resin per L-P-392 or nylon per L-P-410, type 6/6, wear resistant grade, elastomeric polyester. Construction optional.
2. FINISH:
  - A. Outer Ring - outer ring chrome plated per QQ-C-320, Class 2.  
O.D. and O.D. corners .0004-.0007 in. thickness, faces minimum .0003 in thickness.
  - B. Stud: all external surfaces, except the unthreaded portion of stud shank, zinc-nickel plated per AMS 2417, Type 2 or cadmium plated in accordance with QQ-P-416, Type II, class 2.
  - B. Endplates - all exposed surfaces zinc-nickel plated in accordance with AMS 2417, type 2, or cadmium plated in accordance with QQ-P-416, Type II, class 2, to a minimum thickness of .0003 inches, maximum thickness of .0006.
3. LUBRICANT: MIL-G-81322 or MIL-G-23827.  
All bearings shall be prepacked with grease conforming to MIL-G-81322 unless otherwise specified. If MIL-G-23827 is required add the letter G after the MS part number.
4. MARKING: The marking shall consist of the MS part number and the manufacturer's identification in accordance with MIL-STD-130.
5. PART NUMBER: The MS part number shall consist of the MS number plus the dash number.  
Example: MSXXXXX-061.
- B 6. PACKING: Bearings shall be individually packaged to the requirements of MIL-P-197.  
Package marked with manufacturer's name or trademark, and date of lubrication by month and year.
7. DIMENSIONS: All dimensions are after plating and are in inches.
8. TEMPERATURE: Bearing operating temperature range -65°F to 250°F.
9. Remove all burrs and sharp edges.

## NOTES:

1. DESIGN FEATURES: For design feature purposes, this standard takes precedence over documents referenced herein.
2. REFERENCED DOCUMENTS: Are the issues in effect at the date of invitations for bid.
3. Deletion of cadmium plated bearings acceptable under previous revision, is permitted until January 31, 1995
4. LIMIT LOAD: The limit load rating listed can be defined as the maximum radial load which can be applied to a bearing without impairing the subsequent function of the bearing. The ultimate or static fracture load rating is not less than 1.5 times the limit load rating. The capacity as a track roller is the load bearing will carry as a track roller for an L-10 life of 20,000 revolutions.

PREPARING ACTIVITY: NAVY-AS		MILITARY SPECIFICATION SHEET		SPECIFICATION SHEET NUMBER	
CUSTODIANS: ARMY- AT	NAVY-			05 DEC 94	
AIR FORCE- 99	DLA-	TITLE BEARING, ROLLER, NEEDLE, TRACK ROLLER, INTEGRAL STUD, SEALED, TYPE VIII, ANTIFRICTION, INCH		MS21440	
REVIEW: ARMY-AT,NAVY-AS,AF-11,99,DLA-15	USER:			REV B	
PROJECT NUMBER: 3110-0851				SUPERSEDING MS21440A 31 MAR 81	
DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.				AMSC- N/A FSC 3110	
				Page 2_ of 2_	

DD Form 672, MAY 88

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THIS SPECIFICATION IS APPROVED FOR USE BY ALL DEPARTMENTS AND AGENCIES OF THE DEPARTMENT OF DEFENSE