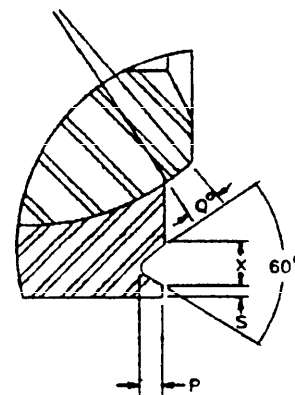
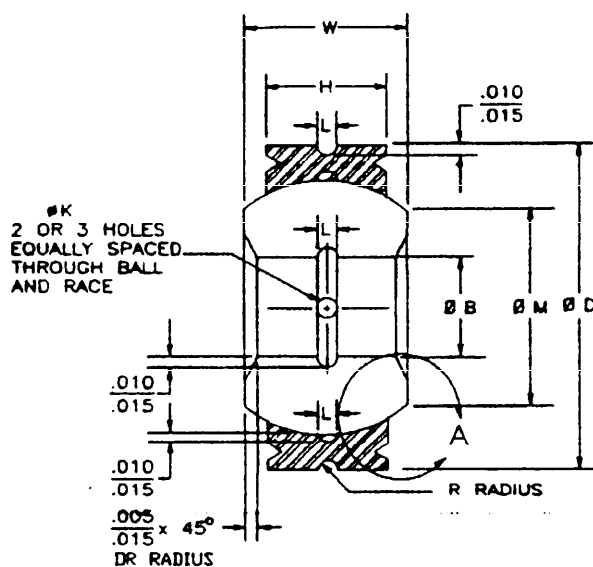


EQUIPMENTS FOR ACQUIRING THE PRODUCT(S) DESCRIBED HEREIN SHALL CONSIST OF THE FOLLOWING SPECIFICATION LISTED IN THAT ISSUE OF THE L, SPECIFIED IN THE SOLICITATION: MIL-B-8978

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

FORM APPROVED  
OMB NO. 0704-0188



DETAIL A

**REQUIREMENTS:**

1. MATERIAL: BALL - 52100, 440C AMS 5630  
RACE - CODES: 'S' ALLOY STEEL, MIL-S-5000, MIL-S-6758 DR MIL-S-6050  
'B' ALUMINUM BRONZE (AMPCO 15) DR ALUMINUM BRONZE PER ASTM B124, ASTM B150, ASTM B169 AND ASTM B283--  
EXCEPT THE CHEMICAL COMPOSITION SHALL BE:

ELEMENT	Cu	Al	Fe	Ni	Si	Mn	Sn	Zn	SUM OF NAMED ELEMENTS MIN
PERCENT	80.0 to 93.0	6.5 to 11.0	4.0 1/	1.0 12/	2.2 12/	1.5 1/	.60 1/	1.0 1/	99.5

1/ MAXIMUM

2/ WHEN BOTH SILICON AND NICKEL ARE PRESENT, ONLY ONE SHALL BE IN EXCESS OF 0.25 PERCENT.

2. FINISH: BALL - CHROME PLATE QQ-C-320, CLASS 2, 0.0002 MINIMUM ON SPHERICAL SURFACES AND FACES.  
RACE - ZINC-NICKEL PLATING PER AMS 2417, TYPE 2 WITH A THICKNESS RANGE OF 0.0003 TO 0.0006 INCHES.
3. HARDNESS: BALL - Rc 56 MIN.  
RACE - ALLOY STEEL Rc 27-36.
4. LUBRICATION: PREPACKED WITH MIL-G-21164 GREASE.
5. SURFACE TEXTURE: SPHERICAL SURFACE OF BALL 8 RHR; BORE, BALL FACE AND OUTER RACE O.D. 32 RHR.  
ALL OTHER SURFACES 125 RHR, IN ACCORDANCE WITH ANSI/ASME B46.1.
6. TEMPERATURE RANGE: -65°F TO +250°F
7. INTERNAL CLEARANCE: RADIAL - 0.0005 TO 0.0020 INCH  
AXIAL - 0.010 MAXIMUM.
8. BREAK SHARP EDGES AND CORNERS AND REMOVE ALL BURRS AND SLIVERS.

**NOTES:**

1. DIMENSIONS IN INCHES. UNLESS OTHERWISE SPECIFIED, TOLERANCES: DECIMALS  $\pm 0.010$ , ANGLES  $\pm 1/2^\circ$ .
2. EXAMPLE OF PART NUMBER:

MS21154 X XX  
BASIC PART NUMBER BORE DIAMETER CODE IN MULTIPLES OF 1/16 INCH. OUTER RACE MATERIAL CODE

3. FOR EXISTING INVENTORIES, CADMIUM PLATED PARTS ARE ACCEPTABLE.

(F) DENOTES CHANGES

PREPARING ACTIVITY: NAVY - AS CUSTODIANS: ARMY-AV NAVY-AS AIR FORCE-99 DLA-IS REVIEW: USAF-84 USER: PROJECT NUMBER: 3120-0740	<b>MILITARY SPECIFICATION SHEET</b> TITLE BEARING, PLAIN, SELF-ALIGNING, GROOVED OUTER RING	SPECIFICATION SHEET NUMBER <b>MS21154</b> REV F 14 FEB 94 SUPERSEDING MS21154 REV E 12 OCT 93 AMSC - N/A FSC 3120
DISTRIBUTION STATEMENT A. APPROVED FOR PUBLIC RELEASE; DISTRIBUTION IS UNLIMITED.		PAGE 1 OF 2

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-8976

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

FORM APPROVED  
OMB NO. 0704-0188

TABLE 1. DIMENSIONS AND LOADS

DASH NO.	ØB + .0000 - .0005	ØD + .0000 - .0005	H ± .0005	ØK	L ± .0005 (a)	ØH MIN	P + .000 - .015	Ø° MIN	S + .000 - .010	V + .000 - .002	X + .000 - .010	ALLOY STEEL		ALUMINUM BRONZE	
												RADIAL STATIC LIMIT LOAD (b)	AXIAL STATIC LIMIT LOAD (c)	RADIAL STATIC LIMIT LOAD (b)	AXIAL STATIC LIMIT LOAD (c)
3	.1900	.5625	.218	.047	.062	.293	.030	10	.020	.281	.045	4600	2100	2800	850
4	.2500	.6562	.250			.364				.343		7080	2800	4300	1100
5	.3125	.7500	.281			.419	.040	9		.375	.055	8500	3550	5200	1400
6	.3750	.8125	.312			.475				.406		11050	4400	6750	1760
7	.4375	.9062	.343	.062	.078	.530		8	.030	.437		13900	5400	8900	2150
8	.5000	1.0000	.390			.600				.500		18850	7050	11500	2800
9	.5625	1.0937	.437			.670				.562		25500	8900	15600	3550
10	.6250	1.1875	.500			.739	.060			.625	.080	31950	11700	19500	4650
12	.7500	1.4375	.593			.920				.750		46750	16500	28500	6575
14	.8750	1.5625	.703	.078	.093	.980				.875		62750	23300	38300	9300
16	1.0000	1.7500	.797			1.118		9		1.000		83350	30000	51000	12000

(a) RACE ID GROOVE (L DIMENSION) AND HOLE DIAMETER TO BE MEASURED BEFORE BEARING ASSEMBLY BUT SWAGING SHALL NOT RESTRICT GREASE FLOW.

(b) THESE BEARINGS MAY EXPERIENCE SOME METAL YIELDING AT THE RADIAL STATIC LIMIT LOADS LISTED.

(c) THE LIMIT AND ULTIMATE AXIAL LOAD CAPACITY OF THE BEARING CAN BE ACHIEVED ONLY WHEN THE SIDE FACE INSIDE THE GROOVE IS SUPPORTED.

TABLE 1 (CONT'D)

DASH	R RADIUS (REF)	BALL DIA. MAX.		SUPPORT TEST FIXTURE INNER DIA. (c)
		ALLOY STEEL	ALUM. BRONZE	
3		.407	.438	.4125
4	.045	.501	.501	.5062
5		.563	.594	.5600
6		.657	.657	.6225
7	.065	.719	.719	.7162
8		.814	.814	.7600
9		.907	.907	.8537
10		.970	1.001	.9475
12	.088	1.188	1.251	1.1975
14		1.313	1.376	1.3225
16		1.501	1.563	1.5100

Ⓣ DENOTES CHANGES

PREPARING ACTIVITY: NAVY - AS  
CUSTODIANS: ARMY - AV NAVY - AS  
AIR FORCE - 99 DLA - IS  
REVIEW: USAF - 84  
USER:  
PROJECT NUMBER 3120-0740

# MILITARY SPECIFICATION SHEET

TITLE  
BEARING, PLAIN, SELF-ALIGNING,  
GROOVED OUTER RING

SPECIFICATION SHEET NUMBER

MS21154

REV F  
14 FEB 94

SUPERSEDING  
MS21154

REV E  
12 OCT 93

AMSC - N/A

FSC 3120

DISTRIBUTION STATEMENT  
A. APPROVED FOR PUBLIC RELEASE. DISTRIBUTION IS UNLIMITED.

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