FEDERAL SUPPLY CLASS
3120

RATIONALE

UPDATED AND REVISED FOR 5 YEAR REVIEW. BASE PART NUMBER ALLOWS FOR THE OPTION OF CADMIMUM PLATE OR ZINC NICKEL AT MANUFACTURERS OPTION. ADDED THE OPTION OF ZINC NICKEL PLATING ONLY WHEN E SUFFIX CALLED OUT IN PART NUMBER. DEFAULT OPTION WILL REMAIN CADMIUM PLATE. UPDATED OBSOLETE SPECIFICATIONS FOR CHROME PLATE. ADDED GENERAL NOTES CONSISTANT WITH OTHER AS BEARING SPECIFICATIONS. ADDED THE WORD MINIMUM TO THE GAGE LOAD FOR RADIAL /AXIAL PLAY MEASUREMENT TO MATCH THE PROCUREMENT DOCUMENT CALL OUT (AS8976). CLARIFIED LUBE HOLES/GROOVES DIMENSIONS ON RACE MAY CHANGE AFTER SWAGE AND SHALL NOT BE CAUSE FOR REJECTION.

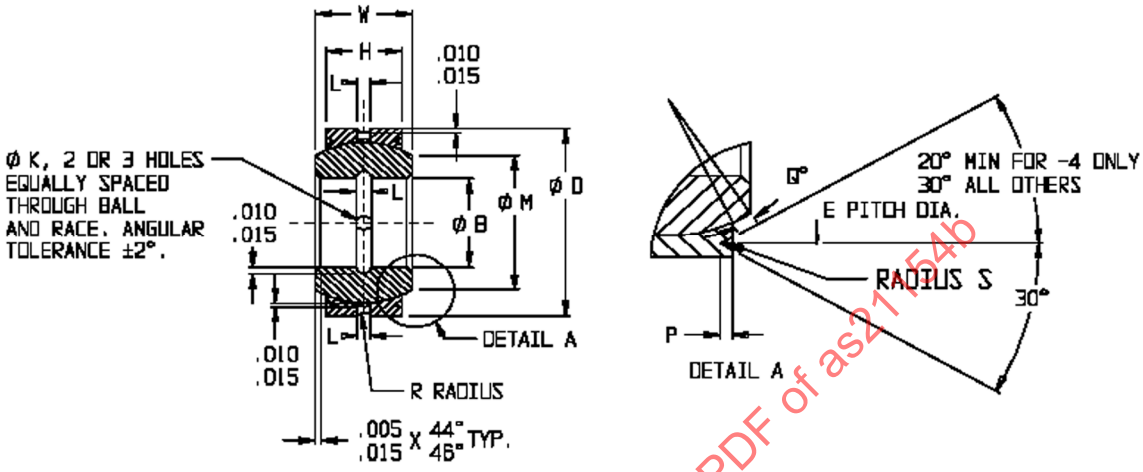


FIGURE 1 – PART CONFIGURATION

TABLE 1 - DIMENSIONS AND LOADS

DASH NO.	Ø B +.0000 –.0005	Ø D +.0000 –.0005	H ±.005	Ø K	L ±.005 (a)	Ø M MIN.	P +.000 –.015	Q° MIN.	Ø E +.000 –.010	RADIUS S	W +.000 –.002	ALLOY STEEL RADIAL STATIC LIMIT LOAD (b)	ALLOY STEEL AXIAL STATIC LIMIT LOAD (c)	ALUMINUM BRONZE RADIAL STATIC LIMIT LOAD (b)	ALUMINUM BRONZE AXIAL STATIC LIMIT LOAD (c)
-03	.1900	.5625	.218	.047	.062	.293	.030	10	.502	.005 .010	.281	4600	2100	2800	850
-04	.2500	.6562	.250			.364			.596		.343	7080	2800	4300	1100
-05	.3125	.7500	.281			.419			.662		.375	8500	3550	5200	1400
-06	.3750	.8125	.312			.475	.040	9	.714		.406	11050	4400	6750	1760
-07	.4375	.9062	.343	.062	.078	.530		8	.808	.010 .020	.437	13900	5400	8500	2150
-08	.5000	1.0000	.390			.600	.060		.878		.500	18850	7050	11500	2800
-09	.5625	1.0937	.437			.670			.972		.562	25500	8900	15600	3550
-10	.6250	1.1875	.500			.739			1.065		.625	31950	11700	19500	4650
-12	.7500	1.4375	.593			.920			1.315		.750	46750	16500	28500	6575
-14	.8750	1.5625	.703	.078	.093	.980			1.440		.875	62750	23300	38300	9300
-16	1.0000	1.7500	.797			1.118		9	1.628		1.000	83350	30000	51000	12000

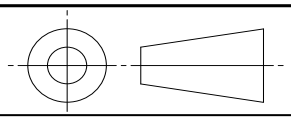
(a) RACE ID GROOVE (L DIMENSION) AND HOLE DIAMETER TO BE MEASURED BEFORE BEARING ASSEMBLY BUT SWAGING SHALL NOT PREVENT GREASE FLOW.

(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 AS DEFINED IN AS8976.

SAE values your input. To provide feedback on this Technical Report, please visit
http://www.sae.org/technical/standards/AS21154B

THIRD ANGLE PROJECTION



ISSUED 1998-05 REVISED 2011-12

CUSTODIAN: AIRFRAME CONTROL BEARINGS GROUP

SAE Aerospace
An SAE International Group

AEROSPACE STANDARD

BEARING, PLAIN, SELF-ALIGNING, GROOVED OUTER RING

TABLE 1 – DIMENSIONS AND LOADS (CONTINUED)

DASH NO.	R RADIUS (REF)	BALL DIA. MAX.	
		ALLOY STEEL	ALUM BRONZE
-03		.407	.438
-04	.045	.501	.501
-05		.563	.594
-06		.657	.657
-07		.719	.719
-08	.065	.814	.814
-09		.907	.907
-10		.970	1.001
-12		1.188	1.251
-14	.088	1.313	1.376
-16		1.501	1.563

REQUIREMENTS:

1. MATERIAL:

   BALL - 52100 AMS6440, AMS6444, AMS-S-7420 OR 440C AMS5630

   RACE - CODES: "S" ALLOY STEEL, AMS-S-5000, AMS-S-6758 OR AMS-S-6050.
   "B" ALUMINUM BRONZE PER ASTM B 124/B 124M, ASTM B 150, ASTM B 169/B 169M AND B 283-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 MAX	1.0 MAX(d)	2.2 MAX(d)	1.5 MAX	.60 MAX	1.0 MAX	99.5

   (d) WHEN BOTH SILICON AND NICKEL ARE PRESENT, ONLY ONE SHALL BE IN EXCESS OF 0.25 PERCENT.

2. FINISH: BALL - CHROME PLATE AMS2460, CLASS 2D, 0.0002 INCH MINIMUM ON SPHERICAL SURFACES AND ON FACES, PLATING RUNOUT ON BALL ID CHAMFERS ALLOWED. DIMS APPLY AFTER PLATE. SHOT PEEN PRIOR TO PLATE NOT REQUIRED.

   FINISH: RACE - CADMIUM PLATE PER AMS-QQ-P-416, TYPE 1, CLASS 2 OR ZINC NICKEL PLATING PER AMS2417, TYPE 2. SEE REQUIREMENT 10 AND NOTE 4.

3. HARDNESS: BALL - HRC 56 MINIMUM.
   RACE - ALLOY STEEL, HRC 27-36, APPLIES PRIOR TO RACE ASSEMBLY (SWAGING).

4. LUBRICATION: PREPACKED WITH MIL-G-21164 GREASE.

5. SURFACE TEXTURE (μ INCHES): SPHERICAL SURFACE OF BALL 8 RA; BORE, BALL FACE AND OUTER RACE O.D. 32 RA. ALL OTHER SURFACES 125 RA, IN ACCORDANCE WITH ASME B 46.1.

6. TEMPERATURE RANGE: -65 TO +250 °F.

7. INTERNAL CLEARANCE MEASURED UNDER A ±5.5 LB. MINIMUM GAGE LOAD:

   RADIAL CLEARANCE 0.0005 TO 0.0020 INCH
   AXIAL CLEARANCE 0.010 INCH MAXIMUM

8. BREAK SHARP EDGES AND CORNERS AND REMOVE ALL BURRS AND SLIVERS.

9. DIMENSIONS IN INCHES. UNLESS OTHERWISE SPECIFIED, TOLERANCES: DECIMALS ±.010, ANGLES ±1/2 DEGREE.

10. OUTER RACE PLATING: BASE PART NUMBER, DEFAULT PLATING IS CADMIUM PLATE PER AMS-QQ-P-416, TYPE 1, CL. II ON ALL EXTERNAL SURFACES OF THE RACE, OR , AT THE OPTION OF THE MANUFACTURER, ZINC NICKEL PLATE PER AMS2417, TYPE 2, ON ALL EXTERNAL SURFACES OF THE RACE. FOR EITHER PLATING OPTION, RUNOUT (WHICH MAY BE INCOMPLETE AND MISSING) MAY OCCUR IN THE RACE ID CHAMFER/SETBACK REGION ON THE RACE. BASE PART NUMBER ALLOWS THE MANUFACTURER TO USE CADMIUM PLATE OR ZINC NICKEL PLATE ON THE OUTER RACE. ONLY WHEN THE “E” SUFFIX IS LISTED SHALL THE RACE PLATING ONLY BE ZINC NICKEL.

    OUTER RACE: PLATING, WHEN SPECIFIED (AS DEFINED IN NOTE 4), SHALL BE ZINC-NICKEL PLATING PER AMS2417, TYPE 2, ON ALL EXTERNAL SURFACES OF THE RACE. PLATING RUNOUT (WHICH MAY BE INCOMPLETE AND MISSING) MAY OCCUR IN THE RACE ID CHAMFER/SETBACK REGION ON THE RACE.