

RATIONALE

THE REASON FOR UPDATING THIS DOCUMENT IS TO INCORPORATE AN "A" PART NUMBER DESIGNATION FOR A NEW LINER SYSTEM THAT HAS THE SAME WEAR LIMIT BUT 4 TIMES THE LIFE OF THE STANDARD LINER SYSTEM.

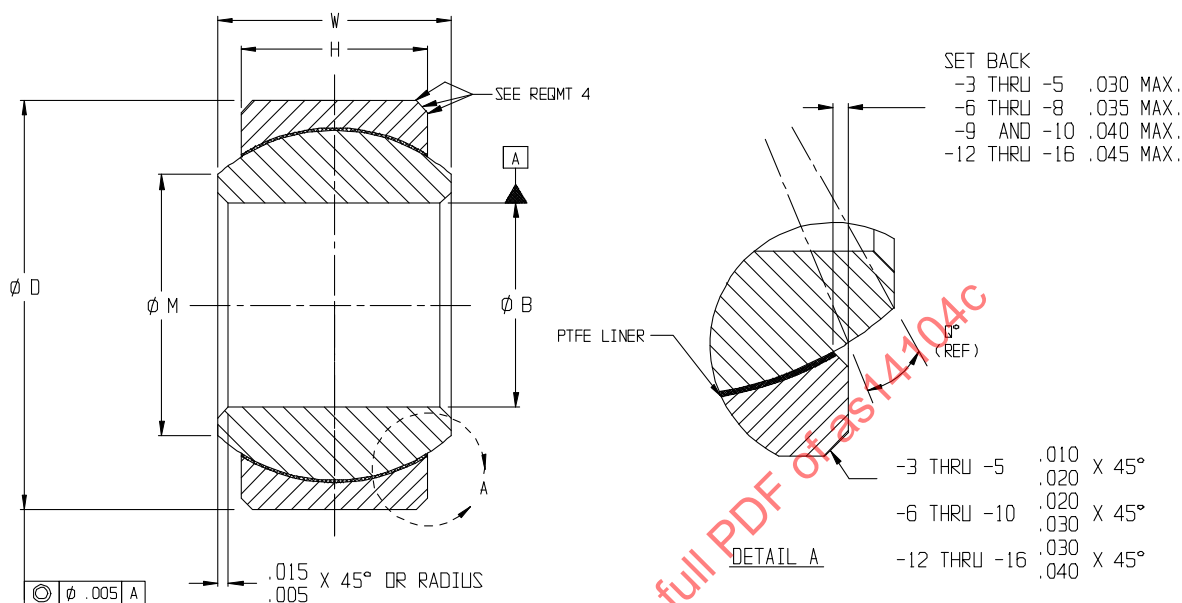


FIGURE 1

TABLE 1 - DIMENSIONS AND STRENGTHS

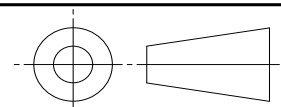
PART NO.***	φB +.0000 -.0005	φD** +.0000 -.0005	H** ±.005	φM MIN	Q° (REF)	W +.000 -.002	STATIC LIMIT LOAD		OSCILLATING LOAD LB	NO-LOAD ROTATIONAL BREAKAWAY TORQUE IN-LB		WT LB MAX (REF)
							RADIAL LB	AXIAL LB		STANDARD	* "K" TYPE	
MS14104- 3	.1900	.5625	.248	.293	10	.281	3975	150	1500	0.25- 5.0	0-0.5	.020
MS14104- 4	.2500	.6562	.250	.364	10	.343	6040	430	3320	0.25- 5.0	0-0.5	.020
MS14104- 5	.3125	.7500	.281	.419	10	.375	8750	700	5460	0.25- 8.0	0-1.0	.030
MS14104- 6	.3750	.8125	.312	.475	9	.406	10540	1100	6600	0.25- 8.0	0-1.0	.040
MS14104- 7	.4375	.9062	.343	.530	8	.437	13200	1400	8050	0.25- 8.0	0-1.0	.050
MS14104- 8	.5000	1.0000	.390	.600	8	.500	17900	2100	10400	0.25- 8.0	0-1.0	.070
MS14104- 9	.5625	1.0937	.437	.670	8	.562	23200	3680	13000	0.25- 8.0	0-1.0	.090
MS14104-10	.6250	1.1875	.500	.739	8	.625	30500	4720	16450	0.25- 8.0	0-1.0	.120
MS14104-12	.7500	1.4375	.593	.920	8	.750	46400	6750	23600	0.25- 8.0	0-1.0	.210
MS14104-14	.8750	1.5625	.703	.980	8	.875	62200	9350	30250	0.25-12.0	0-2.0	.270
MS14104-16	1.0000	1.7500	.797	1.118	9	1.000	82200	12160	38000	0.25-12.0	0-2.0	.390

* SEE REQUIREMENT 5 "NO-LOAD TORQUE" AND NOTE 8.

** SEE NOTE 7

*** FOR TYPE A BEARINGS, THE CORRESPONDING PART NUMBER WILL HAVE AN "A" DESIGNATION AFTER THE MS PART NUMBER (E.G., MS14104A-3).

THIRD ANGLE PROJECTION



CUSTODIAN: SAE AIRFRAME CONTROL BEARINGS GROUP

PROCUREMENT SPECIFICATION: AS81820

SAE Aerospace
An SAE International Group

AEROSPACE STANDARD

(R) BEARING, PLAIN, SELF-LUBRICATING,
SELF-ALIGNING, LOW SPEED, NARROW,
CHAMFERED RACE, -65 TO +325 °F

SAE AS14104C
SHEET 1 OF 4

TABLE 2 - OVERSIZE BEARING DIMENSIONS 1/ 2/
RESTRICTED USAGE FOR REPAIR WORK ONLY
.010 INCH AND .020 INCH OVERSIZE OUTSIDE DIAMETER FOR
REPLACEMENT OF BEARINGS SHOWN ON SHEET 1

PART NO. 3/	NOMINAL SIZE	1ST OVERSIZE (.010) ϕ D	PART NO. 3/	NOMINAL SIZE	2ND OVERSIZE (.020) ϕ D
MS14104- 3T	.1875	.5725	MS14104- 3U	.1875	.5825
MS14104- 4T	.2500	.6662	MS14104- 4U	.2500	.6762
MS14104- 5T	.3125	.7600	MS14104- 5U	.3125	.7700
MS14104- 6T	.3750	.8225	MS14104- 6U	.3750	.8325
MS14104- 7T	.4375	.9162	MS14104- 7U	.4375	.9262
MS14104- 8T	.5000	1.0100	MS14104- 8U	.5000	1.0200
MS14104- 9T	.5625	1.1037	MS14104- 9U	.5625	1.1137
MS14104-10T	.6250	1.1975	MS14104-10U	.6250	1.2075
MS14104-12T	.7500	1.4475	MS14104-12U	.7500	1.4575
MS14104-14T	.8750	1.5725	MS14104-14U	.8750	1.5825
MS14104-16T	1.0000	1.7600	MS14104-16U	1.0000	1.7700

- 1/ BEFORE INITIATING A REPAIR PROCEDURE TO USE AN OVERSIZE BEARING, APPROVAL FOR MODIFYING AND REIDENTIFYING THE BEARING HOUSING MUST BE OBTAINED FROM THE COGNIZANT ENGINEERING AUTHORITY.
2/ REFER TO NAS0331 FOR INSTALLATION PROCEDURE AND STAKING FORCES.
3/ FOR TYPE A BEARINGS, THE CORRESPONDING PART NUMBER WILL HAVE AN "A" DESIGNATION AFTER THE MS PART NUMBER (E.G., MS14104A-3).

REQUIREMENTS:

- MATERIAL: BALL, 440C (AMS5630, AMS5880, OR AMS5618) OR PH13-8Mo AMS5629 H1000 (SEE NOTE 8a). RACE, 17-4PH (AMS5643). LINER, PTFE SHALL BE INCLUDED IN THE LINER.
- SURFACE TEXTURE: BALL DIA Ra 8 MAX; BALL FACES, BALL BORE AND RACE DIA Ra 32 MAX; ALL OTHER METALLIC SURFACES Ra 125 MAX. LINER SURFACES ARE EXEMPT FROM SURFACE TEXTURE MEASUREMENTS.
- HARDNESS: BALL, 440C HRC 55-62 OR PH13-8Mo HRC 43 MIN; RACE HRC 28 MIN/HRC 37 MAX BEFORE SWAGING.
- SURFACE FINISH:

RACE: PLATING, WHEN SPECIFIED, SHALL BE ZINC-NICKEL PLATING PER AMS2417, TYPE 2, OR CADMIUM PLATING PER AMS-QQ-P-416, TYPE II, CLASS 2, WITH A THICKNESS RANGE OF 0.0003 TO 0.0006 INCHES. PLATE ON THE OUTSIDE DIAMETER SURFACE AND ON THE CHAMFER. PLATING RUNOUT SHALL OCCUR IN THE SIDE FACE AREA BETWEEN THE CHAMFER AND THE BALL.

BALL: PH13-8Mo, PASSIVATE PER AMS2700 OR ASTM A 967; 440C, PASSIVATE PER AMS2700 OR ASTM A 967, OPTIONAL. CHROME PLATING PER AMS2460 IS ALLOWED. BALL SHALL BE CHROME PLATED IF QUALIFIED WITH IT.
- NO-LOAD TORQUE: WHEN THE LETTER "K" IS PRESENT IN THE PART NUMBER, LOWER VALUES OF NO-LOAD TORQUE ARE SPECIFIED PER TABLE 1. IF THE MEASURED TORQUE OF A "K" TYPE BEARING IS LESS THAN 0.1 INCH-POUND, THE INTERNAL RADIAL PLAY SHALL BE MEASURED AND SHALL NOT EXCEED THE FOLLOWING:

DASH NO.	MAXIMUM RADIAL PLAY	MAXIMUM AXIAL PLAY
-3K THRU -12K	0.0007 INCH	0.0028 INCH
-14K THRU -16K	0.0010 INCH	0.0040 INCH

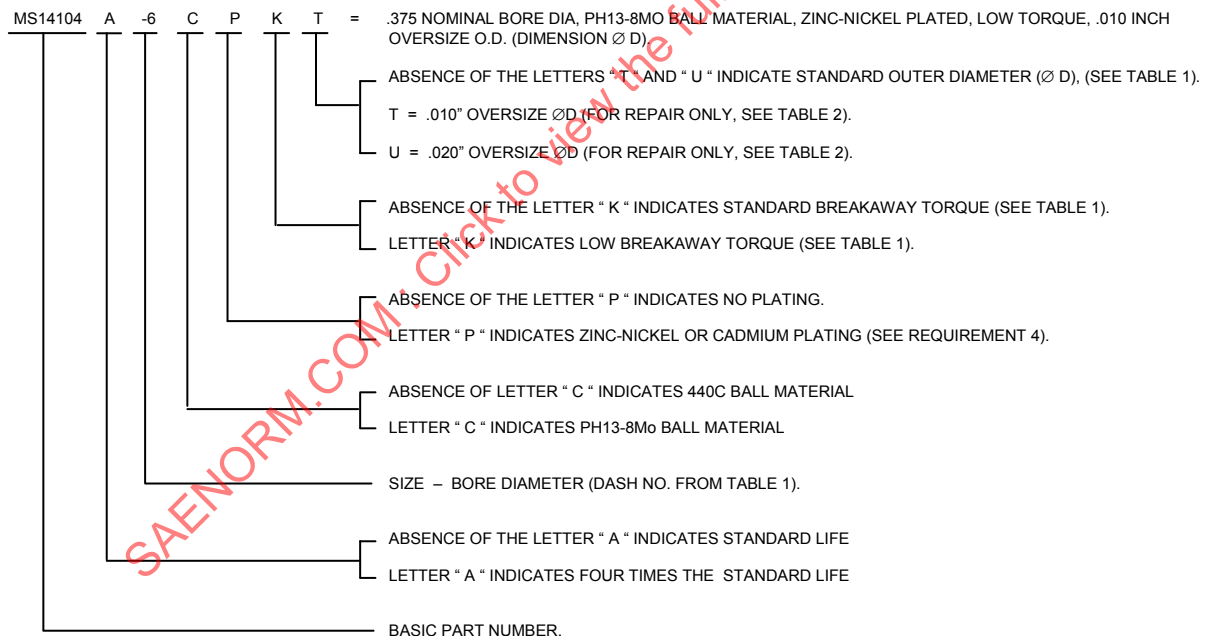
THE INTERNAL AXIAL PLAY SHALL BE MEASURED FOR ALL "K" TYPE BEARINGS.

NOTES:

NOTICE

THIS DOCUMENT REFERENCES A PART WHICH CONTAINS CADMIUM AS A PLATING MATERIAL. CONSULT LOCAL OFFICIALS IF YOU HAVE QUESTIONS CONCERNING CADMIUM'S USE.

1. DIMENSIONS ARE IN INCHES. UNLESS OTHERWISE SPECIFIED, TOLERANCES ARE; DECIMALS ± 0.010 AND ANGLES $\pm 0.5^\circ$.
2. BREAK SHARP EDGES AND CORNERS AND REMOVE ALL BURRS AND SLIVERS.
3. THE -3 SIZE BEARING IS EXEMPT FROM THE "RADIAL STATIC LIMIT LOAD" TEST BECAUSE THE LOAD CAPACITY OF THE BEARING IS PIN CRITICAL.
4. WHEN TESTED TO THE FLUID CONTAMINATION AND SUB-ZERO TEMPERATURE REQUIREMENTS OF THE PROCUREMENT SPECIFICATION, THE OSCILLATING LOAD SHALL BE DECREASED TO 75% OF THE SPECIFIED LOAD.
5. WHEN FLUIDS AND ELEVATED TEMPERATURES (ABOVE 200 °F) ARE BOTH PRESENT IN AN APPLICATION, THEN REDUCTIONS IN OPERATING LOADS OR BEARING LIFE MAY BE REQUIRED.
6. DASH NUMBER DESIGNATES NOMINAL BORE DIA IN SIXTEENTHS OF AN INCH.
7. DIMENSION "øD" TO BE MET AFTER PLATING. DIMENSION "H" TO BE MET BEFORE PLATING WHEN APPLICABLE.
8. EXAMPLE OF PART NO.



- 8a. BALL MATERIAL SHALL BE 440C (AMS5630, AMS5880, OR AMS5618) UNLESS "C" CALLOUT IS PRESENT IN PART NUMBER. "C" INDICATES PH13-8Mo AMS5629 H1000.
9. IN THE EVENT OF A CONFLICT BETWEEN THE TEXT OF THIS STANDARD AND THE REFERENCES CITED HEREIN, THE TEXT OF THIS STANDARD SHALL TAKE PRECEDENCE.