

RATIONALE

THE REASON FOR UPDATING THIS SPECIFICATION IS TO ADD A 440C BALL MATERIAL OPTION AND REMOVE CHROME PLATING AS AN OPTION.

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AS81820/1

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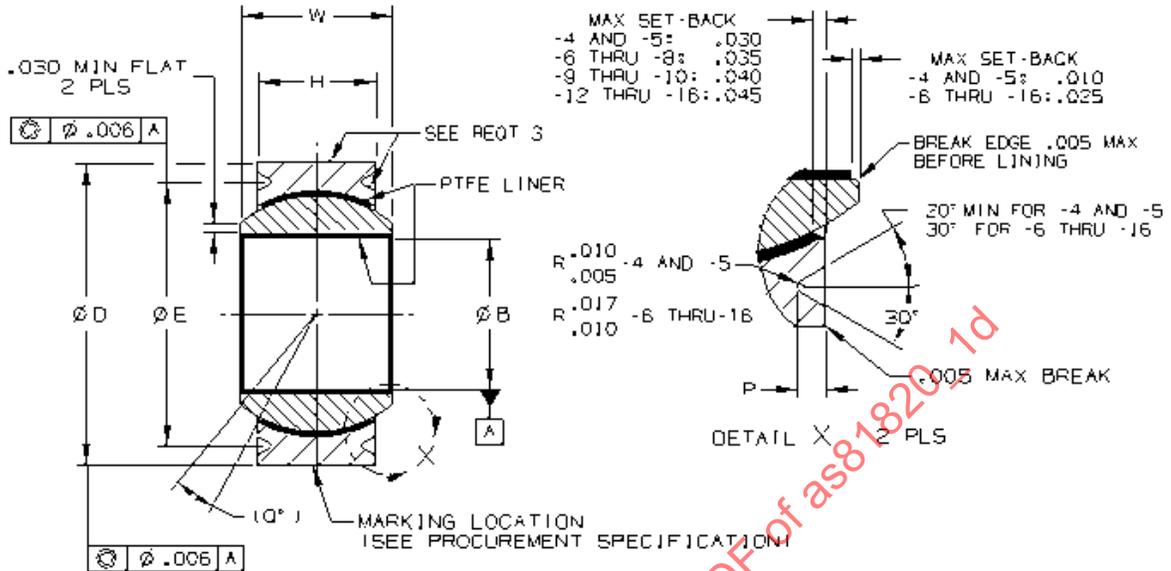


FIGURE 1 - PART CONFIGURATION

TABLE 1 - DIMENSIONS AND STRENGTHS

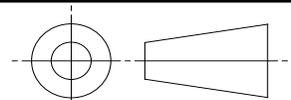
PART NO.**	φB +0.000 -0.010	φD +0.000 -0.005	H ±0.005	P +0.000 -0.010	Q (REF)	W +0.000 -0.002	φE +0.000 -0.008	STATIC LIMIT LOAD		OSCILLATING LOAD LB	NO-LOAD ROTATIONAL BREAKAWAY TORQUE IN-LB		WT LB MAX (REF)
								RADIAL LB	AXIAL LB		STANDARD	* "K" TYPE	
M81820/1- 4	.2510	.6562	.250	.025	10	.343	.594	5550	430	2650	1.0- 5.0	0- .5	.020
M81820/1- 5	.3135	.7500	.281	.035	10	.375	.660	7700	700	3700	1.0-15.0	0-1.0	.030
M81820/1- 6	.3760	.8125	.312	.035	9	.406	.712	10 200	1100	4900	1.0-15.0	0-1.0	.040
M81820/1- 7	.4385	.9062	.343	.035	8	.437	.806	12 950	1400	6700	1.0-15.0	0-1.0	.050
M81820/1- 8	.5010	1.0000	.390	.055	8	.500	.876	17 250	2100	8250	1.0-15.0	0-1.0	.070
M81820/1- 9	.5635	1.0937	.437	.055	8	.562	.970	22 150	3680	10 600	1.0-15.0	0-1.0	.090
M81820/1-10	.6260	1.1875	.500	.055	8	.625	1.063	27 700	4720	13 250	1.0-15.0	0-1.0	.120
M81820/1-12	.7510	1.4375	.593	.055	8	.750	1.313	40 600	6750	19 400	1.0-15.0	0-1.0	.210
M81820/1-14	.8760	1.5625	.703	.055	8	.875	1.438	55 950	9350	26 750	1.0-25.0	0-2.0	.270
M81820/1-16	1.0010	1.7500	.797	.055	9	1.000	1.626	73 800	12 160	35 250	1.0-25.0	0-2.0	.390

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

** FOR TYPE A BEARINGS, THE CORRESPONDING PART NUMBER WILL HAVE AN "A" DESIGNATOR AFTER THE PART NUMBER (E.G., M81820/1A-5).

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THIRD ANGLE PROJECTION



CUSTODIAN: AIRFRAME CONTROL BEARINGS GROUP

PROCUREMENT SPECIFICATION: AS81820



AEROSPACE STANDARD

BEARING, PLAIN, SELF-ALIGNING, SELF-LUBRICATING, LINED BORE, LOW SPEED, NARROW, GROOVED RACE, -65 TO +325 °F

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SHEET 1 OF 4

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**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	1 ST OVERSIZE (.010) φD	PART NO. 3/	NOMINAL SIZE	2 ND OVERSIZE (.020) φD
M81820/1- 4T	.2500	.6662	M81820/1- 4U	.2500	.6762
M81820/1- 5T	.3125	.7600	M81820/1- 5U	.3125	.7700
M81820/1- 6T	.3750	.8225	M81820/1- 6U	.3750	.8325
M81820/1- 7T	.4375	.9162	M81820/1- 7U	.4375	.9262
M81820/1- 8T	.5000	1.0100	M81820/1- 8U	.5000	1.0200
M81820/1- 9T	.5625	1.1037	M81820/1- 9U	.5625	1.1137
M81820/1-10T	.6250	1.1975	M81820/1-10U	.6250	1.2075
M81820/1-12T	.7500	1.4475	M81820/1-12U	.7500	1.4575
M81820/1-14T	.8750	1.5725	M81820/1-14U	.8750	1.5825
M81820/1-16T	1.0000	1.7600	M81820/1-16U	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 PART NUMBER (E.G., M81820/1A-5).

REQUIREMENTS:

1. MATERIAL:

BALL: 440C (AMS5630, AMS5880, OR AMS5618) OR PH13-8 CRES PER AMS5629 (SEE NOTE 5 FOR P/N EXAMPLE AND DESIGNATION).

RACE: 17-4PH CRES PER AMS5643.

LINER: PTFE SHALL BE INCLUDED IN THE LINER.

2. SURFACE TEXTURE: BALL DIA Ra 8 MAX; BALL FACES AND RACE DIA Ra 32 MAX; ALL OTHER METALLIC SURFACES Ra 125 MAX. LINER SURFACES ARE EXEMPT FROM SURFACE TEXTURE MEASUREMENTS.

3. SURFACE FINISH:

RACE: PLATING, WHEN SPECIFIED, SHALL BE ZINC-NICKEL PLATING PER AMS2417, TYPE 2, GRADE A OR B (ONLY GRADE B SHALL BE PERMITTED ON BEARINGS MANUFACTURED AFTER JUNE 1, 2015) OR CADMIUM PLATING PER AMS-QQ-P-416, TYPE II, CLASS 2 WITH A THICKNESS RANGE OF .0003 TO .0006 INCH. PLATING SHALL BE ON THE OUTSIDE DIAMETER SURFACE AND ON THE FLAT BETWEEN THE OUTSIDE DIAMETER AND THE GROOVE. THE PLATING RUNOUT SHALL OCCUR EITHER IN THE GROOVE OR ON THE SIDE FACE AREA BETWEEN THE GROOVE AND THE BALL. SEE NOTE 5 FOR P/N EXAMPLE AND DESIGNATION.

THE PTFE LINER IN THE OUTER RACE INSIDE DIAMETER AND IN THE BALL BORE SHALL BE PROTECTED FROM EXPOSURE TO PLATING SOLUTIONS DURING PROCESSING.

BALL: PASSIVATE BALL AS DETAIL PER AMS2700, METHOD 1 (NITRIC ACID) OR METHOD 2 (CITRIC ACID), OR ASTM A967. CITRIC 1, CITRIC 2, AND CITRIC 3 ARE ACCEPTABLE. BALL SURFACE FINISH SHALL BE AS ORIGINALLY QUALIFIED.

4. HARDNESS: BALL 440C HRC 55-62 OR PH13-8 HRC 43 MIN; RACE: HRC 28 MIN, HRC 37 MAX BEFORE SWAGING.

	AEROSPACE STANDARD		AS81820/1 SHEET 2 OF 4	REV. D
	BEARING, PLAIN, SELF-ALIGNING, SELF-LUBRICATING, LINED BORE, LOW SPEED, NARROW, GROOVED RACE, -65 TO +325 °F			

5. 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 .1 INCH-POUND, THE INTERNAL RADIAL CLEARANCE SHALL BE MEASURED AND SHALL NOT EXCEED THE VALUES IN TABLE 3. THESE REQUIREMENTS APPLY TO THE TORQUE AND INTERNAL PLAY BETWEEN THE SPHERICAL BALL AND THE OUTER RING. THIS STANDARD DOES NOT DEFINE REQUIREMENTS FOR TORQUE OR INTERNAL PLAY BETWEEN THE BEARING BORE AND SHAFT.

TABLE 3 - INTERNAL CLEARANCE

DASH NO.	MAXIMUM RADIAL PLAY	MAXIMUM AXIAL PLAY
-4K THRU -12K	.0007 INCH	.0028 INCH
-14K THRU -16K	.0010 INCH	.0040 INCH

6. BREAK SHARP EDGES AND CORNERS AND REMOVE ALL BURRS AND SLIVERS.
7. DIMENSIONS ARE IN INCHES. UNLESS OTHERWISE SPECIFIED, TOLERANCES ARE: DECIMALS ± 0.10 AND ANGLES $\pm 5^\circ$.

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.

- 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.
- 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.
- DASH NUMBER DESIGNATES NOMINAL BORE DIA IN SIXTEENTHS OF AN INCH.
- DIMENSION "øD" TO BE MET AFTER PLATING. DIMENSION "H" TO BE MET BEFORE PLATING WHEN APPLICABLE.
- EXAMPLE OF PART NO.

