

RATIONALE

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

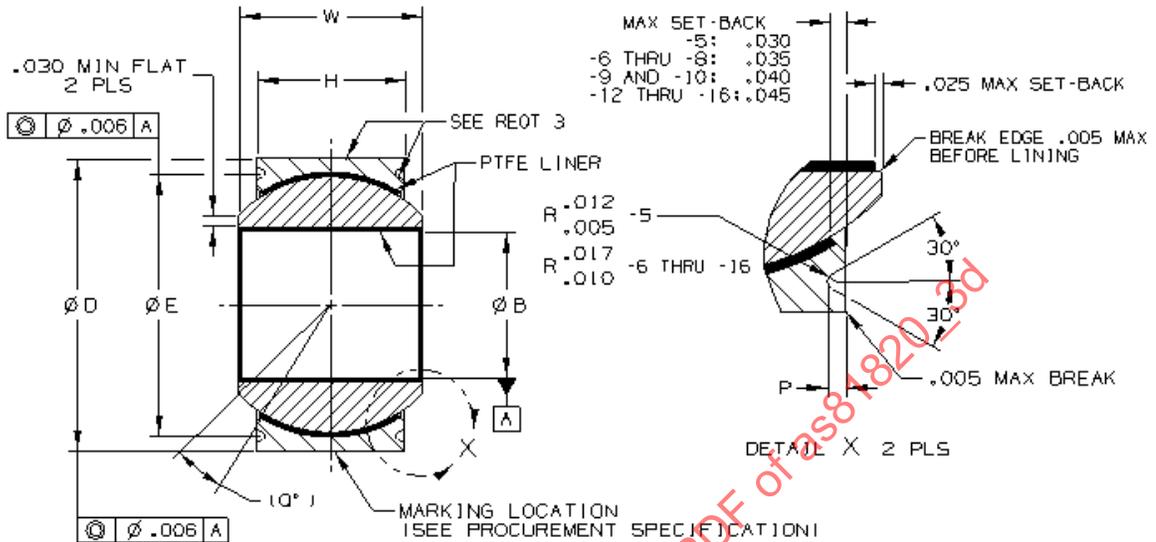


FIGURE 1 - PART CONFIGURATION

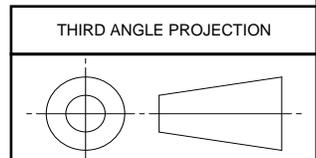
TABLE 1 - DIMENSIONS AND STRENGTHS

PART NO.**	φB +.0000 -.0010	φD +.0000 -.0005	H ±.005	P +.000 -.010	Q° (REF)	W +.000 -.002	φE +.000 -.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	
M81820/3- 5	.3135	.6875	.317	.025	14	.437	.625	9300	1640	4450	1.0-15.0	0-1.0	.035
M81820/3- 6	.3760	.8125	.406	.035	8	.500	.712	13 000	2630	6200	1.0-15.0	0-1.0	.060
M81820/3- 7	.4385	.9375	.442	.035	10	.562	.837	17 300	3650	8250	1.0-15.0	0-1.0	.080
M81820/3-7A	.4385	.9062	.442	.035	10	.562	.806	17 300	3650	8250	1.0-15.0	0-1.0	.080
M81820/3- 8	.5010	1.0000	.505	.035	9	.625	.900	21 400	4970	10 600	1.0-15.0	0-1.0	.100
M81820/3- 9	.5635	1.1250	.536	.035	10	.687	1.025	26 600	5370	13 200	1.0-15.0	0-1.0	.135
M81820/3-10	.6260	1.1875	.567	.035	12	.750	1.087	29 000	6130	16 150	1.0-15.0	0-1.0	.160
M81820/3-12	.7510	1.3750	.630	.055	13	.875	1.251	37 000	7730	24 800	1.0-15.0	0-1.0	.240
M81820/3-14	.8760	1.6250	.755	.055	6	.875	1.501	56 000	10 800	26 750	1.0-25.0	0-2.0	.350
M81820/3-16	1.0010	2.1250	1.005	.055	12	1.375	2.001	103 000	19 300	49 300	1.0-25.0	0-2.0	.970

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

** FOR TYPE A BEARINGS, THE CORRESPONDING PART NUMBER WILL HAVE AN "A" DESIGNATION AFTER THE PART NUMBER (E.G., M81820/3A-5).

SAE values your input. To provide feedback on this Technical Report, please visit <http://www.sae.org/technical/standards/AS81820/3D>



CUSTODIAN: ACBG

PROCUREMENT SPECIFICATION: AS81820



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

AS81820/3
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) ϕ D	PART NO. 3/	NOMINAL SIZE	2 ND OVERSIZE (.020) ϕ D
M81820/3- 5T	.3125	.6975	M81820/3- 5U	.3125	.7075
M81820/3- 6T	.3750	.8225	M81820/3- 6U	.3750	.8325
M81820/3- 7T	.4375	.9475	M81820/3- 7U	.4375	.9575
M81820/3-7AT	.4375	.9162	M81820/3-7AU	.4375	.9262
M81820/3- 8T	.5000	1.0100	M81820/3- 8U	.5000	1.0200
M81820/3- 9T	.5625	1.1350	M81820/3- 9U	.5625	1.1450
M81820/3-10T	.6250	1.1975	M81820/3-10U	.6250	1.2075
M81820/3-12T	.7500	1.3850	M81820/3-12U	.7500	1.3950
M81820/3-14T	.8750	1.6350	M81820/3-14U	.8750	1.6450
M81820/3-16T	1.0000	2.1350	M81820/3-16U	1.0000	2.1450

- 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., M81820/3A-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 IN 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	AS81820/3 SHEET 2 OF 4	REV. D
	BEARING, PLAIN, SELF-ALIGNING, SELF-LUBRICATING, LINED BORE, LOW SPEED, WIDE, 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
-5K THRU -12K	.0007 INCH	.0021 INCH
-14K THRU -16K	.0010 INCH	.0030 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.

