

REV.
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SAE AS81820/1

FEDERAL SUPPLY CLASS
3120

RATIONALE

THE REASON FOR UPDATING THIS SPECIFICATION IS TO ADD THE ZINC NICKEL PLATING ONLY OPTION " E ". THE PLATING OPTION " P " WILL REMAIN AS ZINC NICKEL OR CADMIUM PLATING.

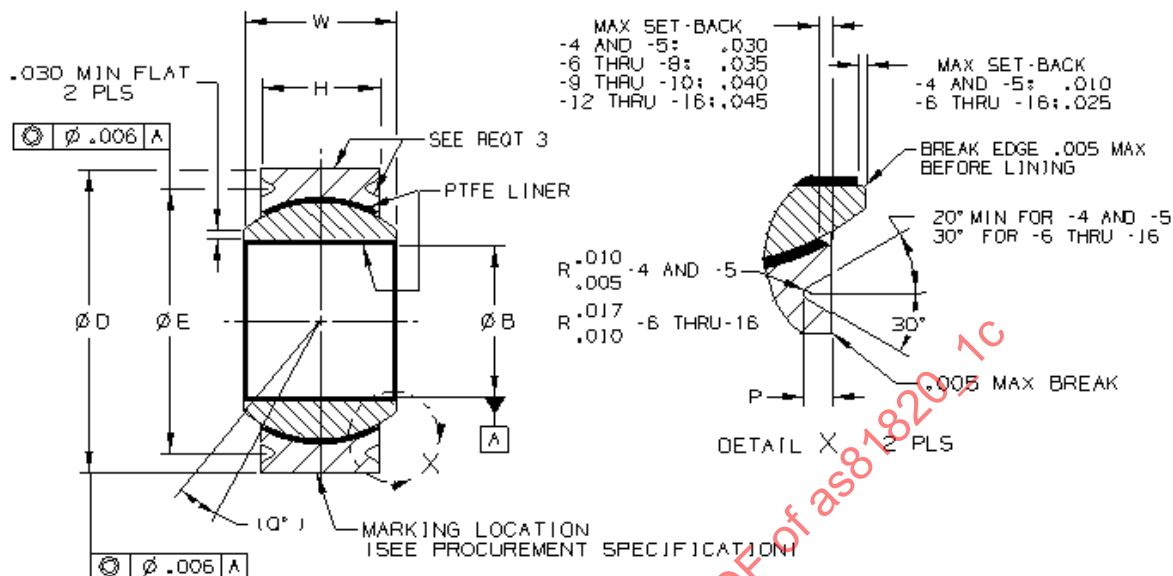


FIGURE 1 - PART CONFIGURATION

TABLE 1 - DIMENSIONS AND STRENGTHS

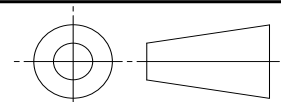
PART NO.**	ØB +.0000 -.0010	ØD +.0000 -.0005	H ±.005	P +.000 -.010	Q* (REF)	W +.000 -.002	ØE +.000 -.008	STATIC LIMIT LOAD		OSCILLATING LOAD LB	NO-LOAD ROTATIONAL BREAKAWAY TORQUE IN-LB		WT LB MAX (REF)
								RADIAL LB	AXIAL LB		STANDARD	* "K" TYPE	
M81820/1- 4	.2510	.6562	.250	.025	10	.343	.594	5550	430	2650	1.0- 5.0	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 MS PART NUMBER (E.G., M81820/1A-5).

SAE values your input. To provide feedback on this Technical Report, please visit <http://www.sae.org/technical/standards/AS81820/1C>

THIRD ANGLE PROJECTION



CUSTODIAN: AIRFRAME CONTROL BEARINGS GROUP

PROCUREMENT SPECIFICATION: AS81820

SAE Aerospace
An SAE International Group

AEROSPACE STANDARD

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

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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
M81820/1- 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 MS PART NUMBER (E.G., M81820/1A-5).

REQUIREMENTS:

1. MATERIAL:

BALL: PH13-8Mo STEEL ALLOY PER AMS5629, CONDITION H1000.

RACE: 17-4 PH STEEL ALLOY 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 OR CADMIUM PLATING PER AMS-QQ-P-416, TYPE II, CLASS 2 WITH A THICKNESS RANGE OF 0.0003 TO 0.0006 in. PLATE ON THE OUTSIDE DIAMETER SURFACE AND ON THE FLAT BETWEEN THE OUTSIDE DIAMETER AND THE GROOVE. PLATING RUNOUT MAY OCCUR EITHER IN THE GROOVE OR IN THE 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 A 967 CITRIC 1, CITRIC 2, AND CITRIC 3 ARE ACCEPTABLE. CHROME PLATING PER AMS2460 IS ALLOWED. BALL SURFACE FINISH SHALL BE AS ORIGINALLY QUALIFIED.

4. HARDNESS: BALL: HRC 43 MIN; RACE: HRC 28 MIN, HRC 37 MAX BEFORE SWAGING.

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 0.1 in-lb, 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 RACE. THIS STANDARD DOES NOT DEFINE REQUIREMENTS FOR TORQUE OR INTERNAL PLAY BETWEEN THE BEARING BORE AND SHAFT.

 An SAE International Group	AEROSPACE STANDARD		SAE AS81820/1 SHEET 2 OF 3	REV. C
	BEARING, PLAIN, SELF-ALIGNING, SELF-LUBRICATING, LINED BORE, LOW SPEED, NARROW, GROOVED RACE, -65 TO +325 °F			