

REV.
B

AS81820/4

FEDERAL SUPPLY CLASS
3120

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.

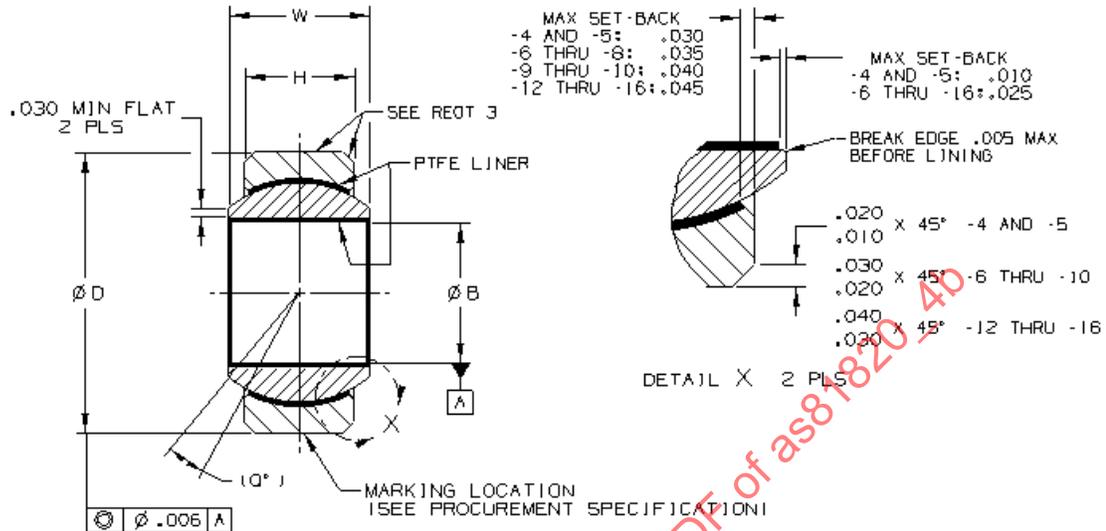


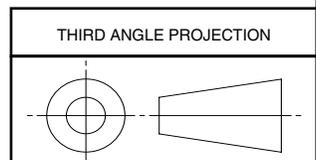
FIGURE 1

TABLE 1 - DIMENSIONS AND STRENGTHS

PART NO.**	φB +.0000 -.0010	φD +.0000 -.0005	H ±.005	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	
M81820/4- 4	.2510	.6562	.250	10	.343	5550	430	2650	1.0- 5.0	0-0.5	.020
M81820/4- 5	.3135	.7500	.281	10	.375	7700	700	3700	1.0-15.0	0-1.0	.030
M81820/4- 6	.3760	.8125	.312	9	.406	10200	1100	4900	1.0-15.0	0-1.0	.040
M81820/4- 7	.4385	.9062	.343	8	.437	12950	1400	6700	1.0-15.0	0-1.0	.050
M81820/4- 8	.5010	1.0000	.390	8	.500	17250	2100	8250	1.0-15.0	0-1.0	.070
M81820/4- 9	.5635	1.0937	.437	8	.562	22150	3680	10600	1.0-15.0	0-1.0	.090
M81820/4-10	.6260	1.1875	.500	8	.625	27700	4720	13250	1.0-15.0	0-1.0	.120
M81820/4-12	.7510	1.4375	.593	8	.750	40600	6750	19400	1.0-15.0	0-1.0	.210
M81820/4-14	.8760	1.5625	.703	8	.875	55950	9350	26750	1.0-25.0	0-2.0	.270
M81820/4-16	1.0010	1.7500	.797	9	1.000	73800	12160	35250	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" DESIGNATION AFTER THE MS PART NUMBER (E.G., M81820/4A-5).



CUSTODIAN: SAE 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, CHAMFERED RACE, -65 TO +325 °F

AS81820/4
SHEET 1 OF 4

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ISSUED 1998-04 REVISED 2007-10

TABLE 2 - OVERSIZE BEARING DIMENSIONS 1/ 2/

RESTRICTED USAGE FOR REPAIR WORK ONLY

.010" AND .020" 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
M81820/4- 4T	.2500	.6662	M81820/4- 4U	.2500	.6762
M81820/4- 5T	.3125	.7600	M81820/4- 5U	.3125	.7700
M81820/4- 6T	.3750	.8225	M81820/4- 6U	.3750	.8325
M81820/4- 7T	.4375	.9162	M81820/4- 7U	.4375	.9262
M81820/4- 8T	.5000	1.0100	M81820/4- 8U	.5000	1.0200
M81820/4- 9T	.5625	1.1037	M81820/4- 9U	.5625	1.1137
M81820/4-10T	.6250	1.1975	M81820/4-10U	.6250	1.2075
M81820/4-12T	.7500	1.4475	M81820/4-12U	.7500	1.4575
M81820/4-14T	.8750	1.5725	M81820/4-14U	.8750	1.5825
M81820/4-16T	1.0000	1.7600	M81820/4-16U	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., M81820/4A-5).

REQUIREMENTS:

1. MATERIAL: BALL: PH13-8 Mo STEEL ALLOY PER AMS 5629, CONDITION H1000.
RACE: 17-4 PH STEEL ALLOY PER AMS 5643.
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 AMS 2417, 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 CHAMFER. PLATING RUNOUT SHALL OCCUR IN THE SIDE FACE AREA BETWEEN THE CHAMFER AND THE BALL.
- 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 AMS 2700, 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 AMS 2460 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	AS81820/4 SHEET 2 OF 4	REV. B
	BEARING, PLAIN, SELF-ALIGNING, SELF-LUBRICATING, LIINED BORE, LOW SPEED, NARROW, CHAMFERED RACE, -65 TO +325 °F		

TABLE 3 - INTERNAL CLEARANCE

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

- BREAK SHARP EDGES AND CORNERS AND REMOVE ALL BURRS AND SLIVERS.
- DIMENSIONS ARE IN INCHES. UNLESS OTHERWISE SPECIFIED, TOLERANCES ARE; DECIMALS ± 0.10 AND ANGLES $\pm 0.5^\circ$.

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.

