FEDERAL SUPPLY CLASS
3120

RATIONALE

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

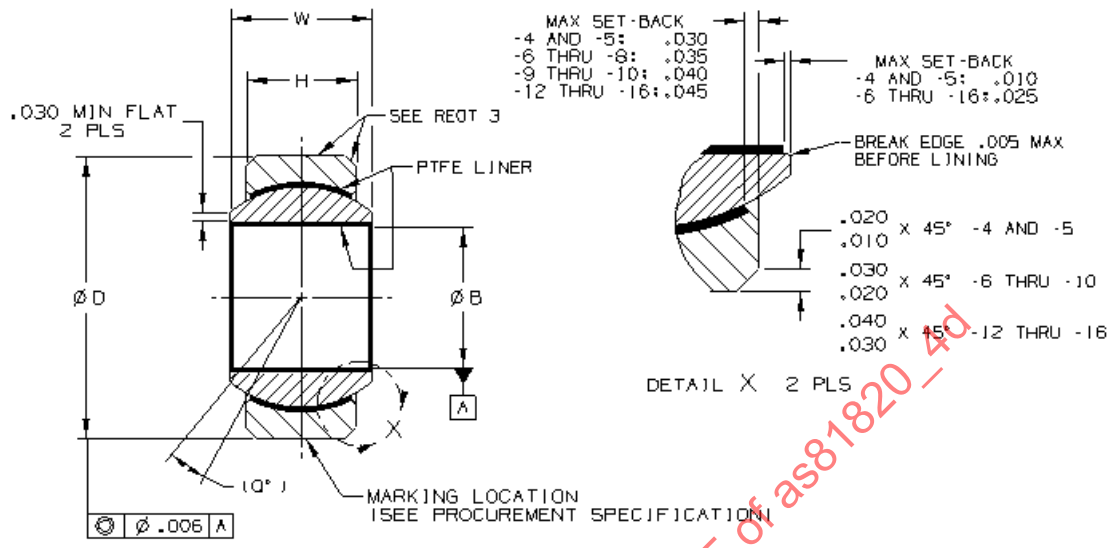


FIGURE 1 - PART CONFIGURATION

TABLE 1 - DIMENSIONS AND STRENGTHS

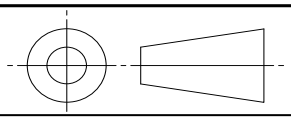
PART NO.**	ϕB +.0000 −.0010	ϕD +.0000 −.0005	H ±.005	Q° (REF)	W +.000 −.002	STATIC LIMIT LOAD RADIAL LB	STATIC LIMIT LOAD AXIAL LB	OSCIL-LATING LOAD LB	NO-LOAD ROTATIONAL BREAKAWAY TORQUE IN-LB STANDARD	NO-LOAD ROTATIONAL BREAKAWAY TORQUE IN-LB * "K" TYPE	WT LB MAX (REF)
M81820/4- 4	.2510	.6562	.250	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	10 200	1100	4900	1.0-15.0	0-1.0	.040
M81820/4- 7	.4385	.9062	.343	8	.437	12 950	1400	6700	1.0-15.0	0-1.0	.050
M81820/4- 8	.5010	1.0000	.390	8	.500	17 250	2100	8250	1.0-15.0	0-1.0	.070
M81820/4- 9	.5635	1.0937	.437	8	.562	22 150	3680	10 600	1.0-15.0	0-1.0	.090
M81820/4-10	.6260	1.1875	.500	8	.625	27 700	4720	13 250	1.0-15.0	0-1.0	.120
M81820/4-12	.7510	1.4375	.593	8	.750	40 600	6750	19 400	1.0-15.0	0-1.0	.210
M81820/4-14	.8760	1.5625	.703	8	.875	55 950	9350	26 750	1.0-25.0	0-2.0	.270
M81820/4-16	1.0010	1.7500	.797	9	1.000	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" DESIGNATION AFTER THE PART NUMBER (E.G., M81820/4A-5).

ISSUED 1998-04 REVISED 2014-07

SAE values your input. To provide feedback on this Technical Report, please visit
http://www.sae.org/technical/standards/AS81820/4D

THIRD ANGLE PROJECTION



CUSTODIAN: ACBG

PROCUREMENT SPECIFICATION: AS81820

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

REV. D

TO PLACE A DOCUMENT ORDER: **Tel: 877-606-7323 (inside USA and Canada)** **Tel: +1 724-776-4970 (outside USA)**
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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	1ST OVERSIZE (.010) ϕD
M81820/4- 4T	.2500	.6662
M81820/4- 5T	.3125	.7600
M81820/4- 6T	.3750	.8225
M81820/4- 7T	.4375	.9162
M81820/4- 8T	.5000	1.0100
M81820/4- 9T	.5625	1.1037
M81820/4-10T	.6250	1.1975
M81820/4-12T	.7500	1.4475
M81820/4-14T	.8750	1.5725
M81820/4-16T	1.0000	1.7600

PART NO. 3/	NOMINAL SIZE	2ND OVERSIZE (.020) ϕD
M81820/4- 4U	.2500	.6762
M81820/4- 5U	.3125	.7700
M81820/4- 6U	.3750	.8325
M81820/4- 7U	.4375	.9262
M81820/4- 8U	.5000	1.0200
M81820/4- 9U	.5625	1.1137
M81820/4-10U	.6250	1.2075
M81820/4-12U	.7500	1.4575
M81820/4-14U	.8750	1.5825
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 PART NUMBER (E.G., M81820/4A-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 INCHES. 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.

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 ±.010 AND ANGLES ±.5°.

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. 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.

2. 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.

3. DASH NUMBER DESIGNATES NOMINAL BORE DIA IN SIXTEENTHS OF AN INCH.

4. DIMENSION “øD” TO BE MET AFTER PLATING. DIMENSION "H" TO BE MET BEFORE PLATING WHEN APPLICABLE.

5. EXAMPLE OF PART NO.: