FEDERAL SUPPLY CLASS
3110

RATIONALE

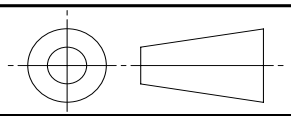
AS21432 REV A IS A FIVE YEAR REVIEW AND UPDATE OF THIS SPECIFICATION. FIGURE AND TABLES REFORMATTED, CAD PLATE WARNING ADDED, MATERIALS AND HEAT TREATMENTS CLARIFIED.

TABLE 1 - TOLERANCE VALUE

Ø d BASIC STUD DIA.		ALLOWABLE DEVIATION FROM d OF SINGLE MEAN DIA., d_{mp}		ALLOWABLE DEVIATION FROM COTTER PIN DIA., d_1	
OVER	INCL	HIGH	LOW	HIGH	LOW
.1250	.5000	+0	-.0015	+.010	-0

Ø D BASIC OUTSIDE DIA.		ALLOWABLE DEVIATION FROM D OF SINGLE MEAN DIA., D_{mp}		ALLOWABLE DEVIATION FROM OUTER RING WIDTH C	
OVER	INCL	HIGH	LOW	HIGH	LOW
.4375	1.1250	+.0010	-.0005	+0	-.005

THIRD ANGLE PROJECTION



ISSUED 2002-11 REVISED 2007-10

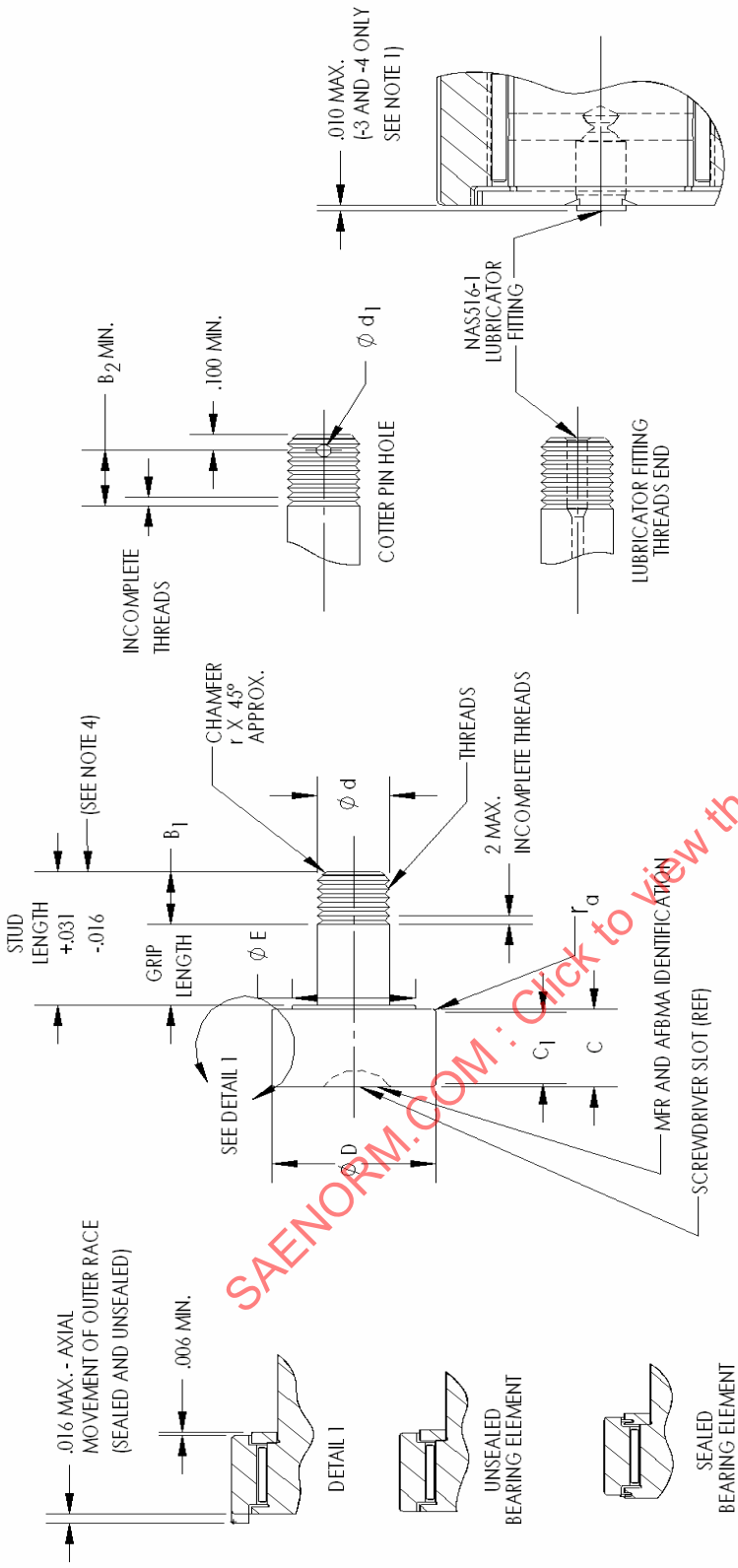
CUSTODIAN: SAE ACBG/ROLLING ELEMENT SUBCMTE.

PROCUREMENT SPECIFICATION: AS39901

SAE Aerospace
An SAE International Group

AEROSPACE STANDARD

(R) BEARING, ROLLER, NEEDLE, TRACK ROLLER, INTEGRAL STUD, TYPE VII, ANTIFRICTION, INCH



FIRST DASH NO.	Ø d STUD	Ø D OUTER RING OUTSIDE DIA.	C OUTER RING WIDTH	C_1 TRACK CONTACT WIDTH MIN.	THREAD SIZE UNJF-3A	B_1 THREAD LENGTH REF.	Ø E MIN.	B_2 MIN.	Ø d_1 COTTER PIN MALE	r_a RAD MIN.	r	TOTAL RADIAL PLAY MAX.	LIMIT LOAD RATING lb_f	1/ lb-in MAX.	TRACK CAPACITY 40 HRC lb_f	LOAD RATING AS A TRACK ROLLER lb_f	MASS (APPROX) lb
-3	.1900	.5000	.281	.230	.1900-32	.344	.297	.211	.070	.022	.031	.0017	790	28	385	395	.014 + (GRIPLENGTH NO. x .0005)
-4	.2500	.6875	.281	.230	.2500-28	.344	.359	.224	.076	.022	.031	.0017	940	30	525	470	.031 + (GRIPLENGTH NO. x .0009)
-5	.3125	.7500	.344	.290	.3125-24	.359	.422	.234	.076	.022	.047	.0017	1660	42	725	830	.043 + (GRIPLENGTH NO. x .0014)
-6	.3750	.8750	.469	.380	.3750-24	.359	.500	.265	.106	.032	.047	.0017	2720	55	1100	1360	.081 + (GRIPLENGTH NO. x .0020)
-7	.4375	1.0000	.531	.430	.4375-20	.422	.562	.283	.106	.032	.047	.0017	3860	150	1425	1930	.125 + (GRIPLENGTH NO. x .0026)
-8	.5000	1.1250	.656	.530	.5000-20	.422	.625	.314	.106	.046	.047	.0017	6080	205	1975	3040	.190 + (GRIPLENGTH NO. x .0035)

1/ INSTALLATION TORQUE LUBRICATED THREADS

REQUIREMENTS:

1. MATERIAL:

   OUTER RING AND NEEDLES: 52100 STEEL PER AMS 6440, AMS 6444, AMS 6447 OR ASTM A295/A295M.

   STUD: 52100 STEEL PER AMS 6440 OR AISI 8620 STEEL PER AMS 6274.

   ENDWASHER: 52100 STEEL PER AMS 6440 OR AISI 1010, 1018, 1117 OR 1213 STEEL PER AMS-STD-66.

   SEALS: ACETAL RESIN PER ASTM D 6778 POM 111 OR NYLON PER L-P-410, OR PTFE PER AMS 3652, OR PTFE IMPREGNATED FIBERGLASS PER AMS 3666.

2. HEAT TREAT:

   OUTER RING: HARDEN AND TEMPER TO 58-62 HR_C.

   NEEDLES: HARDEN AND TEMPER TO 60-64 HR_C.

   ENDWASHERS: HARDEN AND TEMPER TO 52-56 HR_C. AISI 1010, 1018, 1117, OR 1213 HARDENED TO A DEPTH OF .005 MINIMUM WITH A SURFACE HARDNESS OF 51-59 HRC ON THE WEAR SURFACE. REMAINDER MAY BE SOFTENED FOR MANUFACTUING.

   STUD (RACEWAY): CARBURIZE WITH A SURFACE HARDNESS OF 60 HR_C MINIMUM OR INDUCTION HARDEN TO 60 HR_C MINIMUM.

   STUD (FLANGE): SURFACE HARDNESS 51 HR_C MINIMUM.

   STUD (SHANK): HARDEN TO 36-46 HR_C.

3. FINISH OR PLATING:

   OUTER RING: CHROME PLATE PER AMS-QQ-C-320, CLASS 2. OD AND OD CORNERS .0004 TO .0010 INCH THICKNESS. FACES MINIMUM .0003 INCH THICKNESS.

   ENDWASHERS: ALL EXPOSED SURFACES ZINC-NICKEL IN ACCORDANCE WITH AMS 2417, TYPE 2, OR CADMIUM PLATED IN ACCORDANCE WITH AMS-QQ-P-416, TYPE I, CLASS 2, WITH A THICKNESS OF .0003 TO .0006 INCH.

   STUD: ALL EXPOSED SURFACES ZINC-NICKEL IN ACCORDANCE WITH AMS 2417, TYPE 2, OR CADMIUM PLATED IN ACCORDANCE WITH AMS-QQ-P-416, TYPE I, CLASS 2, WITH A THICKNESS OF .0003 TO .0006 INCH.

4. MARKING: THE MARKING SHALL CONSIST OF THE MS PART NUMBER AND THE MANUFACTURERS CAGE CODE MARKED IN ACCORDANCE WITH MIL-STD-130 AND A LOT CONTROL NUMBER IF SPACE IS AVAILABLE.

5. LUBRICANT: MIL-PRF-23827 TYPE 1 OR MIL-PRF-81322. ALL BEARINGS SHALL BE PREPACKED WITH GREASE CONFORMING TO MIL-PRF-23827 TYPE 1 UNLESS OTHERWISE SPECIFIED. IF MIL-PRF-81322 IS REQUIRED, ADD THE SUFFIX “G” TO THE MS PART NUMBER.

6. PACKAGING: BEARINGS SHALL BE INDIVIDUALLY PACKAGED TO THE REQUIREMENTS OF MIL-DTL-197. PACKAGE MARKED WITH MANUFACTURER’S NAME OR TRADEMARK, AND DATE OF LUBRICATION BY MONTH AND YEAR AND LOT CONTROL NUMBER.

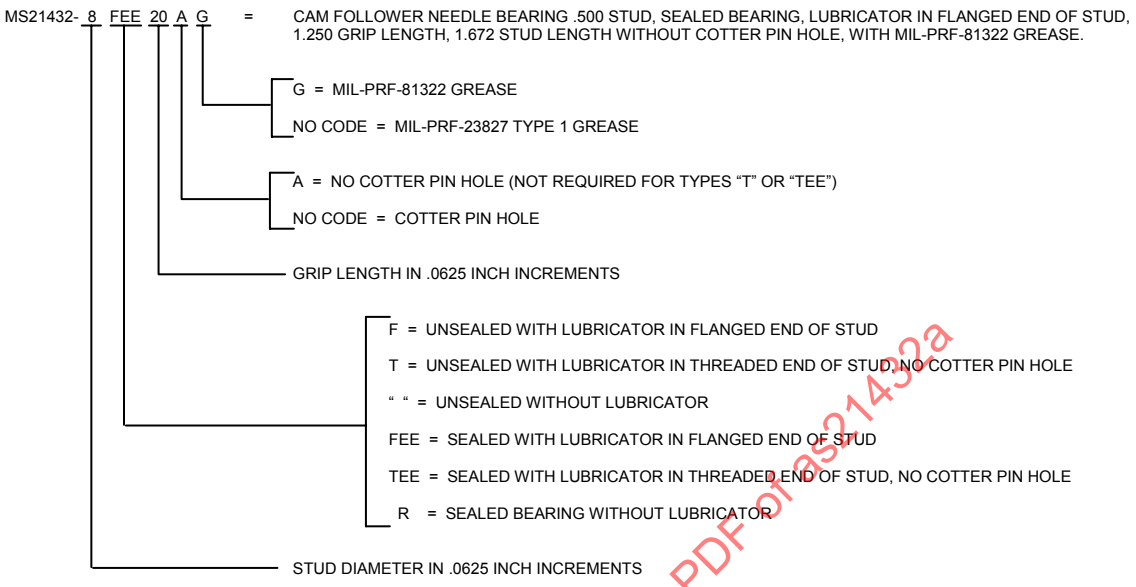
7. TEMPERATURE:

   OPERATING TEMPERATURE RANGE -65F TO 250 °F FOR MIL-PRF-23827 LUBRICATED BEARINGS.

   OPERATING TEMPERATURE RANGE -65F TO 350 °F FOR MIL-PRF-81322 LUBRICATED BEARINGS.

8. PART NUMBER: THE PART NUMBER SHALL CONSIST OF THE MS SPECIFICATION NUMBER FOLLOWED BY A DASH NUMBER TAKEN FROM THE TABLE AND THE APPLICABLE SUFFIXES.

EXAMPLE OF PART NUMBER:



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. MS21432-3 MAY BE CODED FOR LUBRICATION FACILITIES IN THE FLANGED END ONLY. LUBRICATION FITTING FOR THE MS21432-3 MAY BE SHIPPED SEPARATELY AND INSTALLED ON ASSEMBLY. LUBRICATORS INSTALLED IN THE THREADED END OF STUD SHALL BE FLUSH. LUBRICATORS INSTALLED IN THE FLANGED END OF STUD ON MS21432-3 AND -4 MAY EXTEND .05 INCH BEYOND THE FLANGED END THEREBY NECESSITATING AN INCREASE OF .05 INCH, ON ALL OTHER SIZES THE LUBRICATOR SHALL BE FLUSH OR INDENTED.

2. THE TRACK BRINELL CAPACITY IS CRITICAL IN RESPECT TO THE ROLLER CAPACITY OF THE BEARING. AN INCREASE IN HARDNESS OF THE TRACK WILL INCREASE THE BRINELL CAPACITY OF THE TRACK, BUT IN NO CASE SHOULD THE ROLLING CAPACITY OF THE BEARING BE EXCEEDED.

3. THE LIMIT LOAD RATING CAN BE DEFINED AS THE MAXIMUM LOAD WHICH CAN BE APPLIED TO A BEARING WITHOUT IMPAIRING THE SUBSEQUENT FUNCTIONING OF THE BEARING IN AIRFRAME APPLICATIONS.

   THE ULTIMATE OR STATIC FRACTURE LOAD RATING IS NOT LESS THAN 1.5 TIMES THE LIMIT LOAD RATING.

   TO FULLY REALIZE THIS RATING, COMPUTATION MUST BE PROVIDED FOR STUD DEFLECTION IN ORDER TO ASSURE FULL TRACK CONTACT UNDER LOAD.

4. FOR INSPECTION PURPOSES NOMINAL STUD LENGTH IS THE SUM OF NOMINAL GRIPLENGTH AND THE THREAD LENGTH ("B1" DIMENSION).

5. BEARING SHALL BE PREPACKED WITH GREASE AS CODED.