

REV.  
C

SAE AS27644

FEDERAL SUPPLY CLASS  
3110

RATIONALE

IN ORDER TO BRING THE AS27644 DOCUMENT UP TO DATE WITH ALL THE REFERENCE DOCUMENTS, REVISION WAS CREATED. THE CHANGES MADE WERE EDITORIAL AND TO MAKE THE FORMAT THE SAME AS SIMILAR DOCUMENTS WITHIN THE WORKING GROUP. A CODE "E" FOR USE OF ZINC-NICKEL PLATING WAS IMPLEMENTED. THE ADDITION OF SPECIFYING TYPE I FOR MIL-PRF-23827 GREASE AND THE ADDITION OF THE CADMIUM NOTE WAS ALSO ADDED. SEAL MATERIAL POLYTETRAFLUOROETHYLENE SHEET PER AMS3666 WAS REMOVED.

NOTICE

UNDER DEPARTMENT OF DEFENSE POLICIES AND PROCEDURES, ANY QUALIFICATION REQUIREMENTS AND ASSOCIATED QUALIFIED PRODUCTS LIST ARE MANDATORY FOR DOD CONTRACTS. ANY REQUIREMENT RELATING TO QUALIFIED PRODUCTS LISTS / DATABASES (QPL/QPD'S) HAS NOT BEEN ADOPTED BY SAE AND IS NOT PART OF THIS TECHNICAL REPORT.

THE REQUIREMENTS FOR PROCURING THE PRODUCT DESCRIBED HEREIN SHALL CONSIST OF THIS SPECIFICATION SHEET AND THE LATEST ISSUE: SAE AS7949.

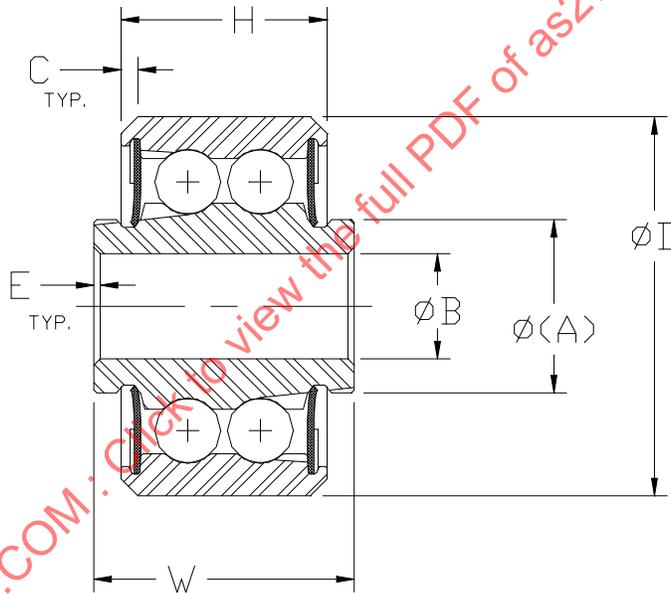
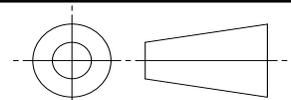


FIGURE 1 - PART CONFIGURATION

SAE values your input. To provide feedback on this Technical Report, please visit <http://www.sae.org/technical/standards/AS27644C>

THIRD ANGLE PROJECTION



CUSTODIAN: SAE AIRFRAME CONTROL BEARINGS GROUP

PROCUREMENT SPECIFICATION: SAE AS7949

**SAE Aerospace**  
An SAE International Group

**AEROSPACE STANDARD**

(R) BEARING, BALL, AIRFRAME,  
ANTI-FRICTION, DOUBLE ROW,  
HEAVY DUTY

**SAE AS27644**  
SHEET 1 OF 3

**REV. C**

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ISSUED 1998-04 REVISED 2012-07

TABLE 1 - DIMENSIONS AND LOADS

MS DASH NO.	øB BORE +.0000 -.0005 2/	øD OUTSIDE DIAMETER +.0000 -.0005 1/ 2/	W WIDTH INNER RING +.000 -.005 1/	H WIDTH OUTER RING +.000 -.005 1/	SHOULDER (ØA) DIAMETER INNER RING (APPROX)	CORNER CHAMFER X 45°		AXIAL INTERNAL CLEARANCE MAX	RADIAL LIMIT LOAD RATING LB	THRUST LIMIT LOAD RATING LB	5/ RADIAL LOAD RATING (LB) FOR AVERAGE LIFE OF 10 000 COMPLETE 90° CYCLES		WEIGHT POUNDS (APPROX) LB	9/ MAXIMUM STARTING TORQUE (in-oz)
						E 4/ INNER RING BORE +.015 -.000	C 3/ OUTER RING OD +.015 -.000				CASE I	CASE II		
-3	.1900	.7774	.495	.473	.302	.005	.018	.005	7/ 2950	1700	2950	2830	.04	1.0
-4	.2500	.9014	.620	.491	.410	.005	.032	.006	7/ 5370	1800	3550	3020	.06	1.0
-5	.3125	1.2500	.745	.687	.469	.015	.032	.006	8/ 11000	4000	7360	6250	.17	1.5
-6	.3750	1.4375	.870	.794	.551	.015	.032	.006	8/ 15760	5300	9690	8120	.26	2.0
-8	.5000	1.6875	.932	.856	.735	.015	.044	.007	23600	7800	14100	11600	.38	3.0
-10	.6250	1.9375	.995	.920	.890	.015	.044	.007	28400	9400	15300	13100	.53	4.5

- 1/ ALL DIMENSIONS TO BE MET AFTER PLATING.
- 2/ OUT-OF-ROUND TOLERANCES: BORE: +.0002, -.0007; OUTER DIA: +.0005, -.0010.
- 3/ A RADIUS GIVING APPROXIMATELY THE SAME GRIP FOR STAKING THE BEARING IN THE HOUSING WILL BE ACCEPTABLE.
- 4/ A RADIUS GIVING APPROXIMATELY THE SAME FILLET CLEARANCE WILL BE ACCEPTABLE.
- 5/ CASE I - LOAD FIXED WITH RESPECT TO OUTER RING.  
CASE II - LOAD FIXED WITH RESPECT TO INNER RING.
- 6/ THESE RATINGS ARE FOR OPERATION UP TO 250 °F. FOR OPERATION UP TO 350 °F, THE RATINGS SHALL BE REDUCED BY 20%.
- 7/ BOLTS OF 160 000 PSI TENSILE STRENGTH ARE REQUIRED TO DEVELOP THE RADIAL LIMITLOAD SHOWN.
- 8/ BOLTS OF 180 000 PSI TENSILE STRENGTH ARE REQUIRED TO DEVELOP THE RADIAL LIMITLOAD SHOWN.
- 9/ SPECIFIED LIMITS ARE FOR BEARINGS LUBRICATED WITH MIL-PRF-81322 GREASE. FOR BEARINGS LUBRICATED WITH MIL-PRF-23827 TYPE I GREASE, THE TORQUE LIMIT SHALL BE THE SPECIFIED VALUE IN THE TABLE MULTIPLIED BY 1.2.

REQUIREMENTS:

1. MATERIAL: RINGS AND BALLS: 52100 STEEL PER AMS6440 OR AMS6444  
  
SEALS: POLYTETRAFLUOROETHYLENE (PTFE) PER AMS3652  
  
SEAL RETAINERS: ANY CORROSION RESISTANT STEEL
2. LUBRICANT: MIL-PRF-81322 OR MIL-PRF-23827 TYPE I. ALL BEARINGS SHALL BE PACKED WITH AN 80% MINIMUM GREASE FILL CONFORMING TO MIL-PRF-81322 UNLESS OTHERWISE SPECIFIED. IF MIL-PRF-23827 TYPE I IS REQUIRED, ADD THE DESIGNATOR "G" AFTER THE MS27644 DASH NUMBER. MIL-PRF-23827 TYPE I SHALL NOT BE USED FOR OPERATION WHERE TEMPERATURES EXCEED 250 °F.
3. HARDNESS: HEAT TREAT RINGS AND BALLS TO 60-66 HRC AND STABILIZE FOR OPERATION AT 250 °F
4. SURFACE ROUGHNESS: RACEWAYS AND BALL SHALL HAVE A MAXIMUM SURFACE ROUGHNESS OF 8 µin Ra PER ANSI/ASME B46.1
5. PLATING: ALL EXTERNAL SURFACES EXCEPT BORE, SEALS AND SEAL RETAINERS SHALL BE PLATED .0003 TO .0006 THICK WITH:  
  
(NO DESIGNATOR) CADMIUM IN ACCORDANCE WITH AMS-QQ-P-416, TYPE I, CLASS 2  
  
DESIGNATOR "E" ZINC-NICKEL IN ACCORDANCE WITH AMS2417, TYPE 2, GRADE B
6. RADIAL INTERNAL CLEARANCE: .0004 TO .0010
7. RADIAL ECCENTRICITY: INNER RING, .0010 MAX, OUTER RING, .0016 MAX.