

REV.
C

SAE AS27648

FEDERAL SUPPLY CLASS
3110

RATIONALE

IN ORDER TO BRING THE AS27648 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

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

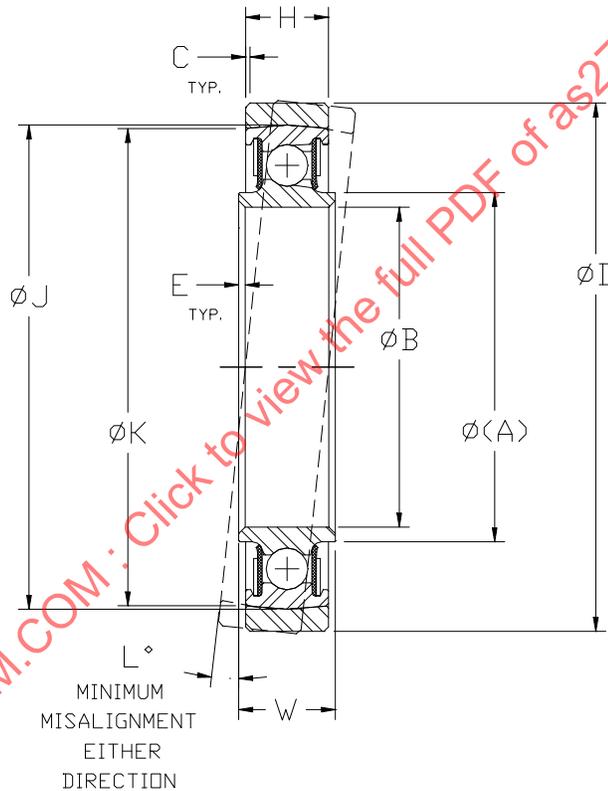
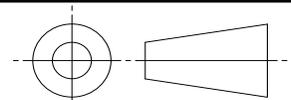


FIGURE 1 - PART CONFIGURATION

SAE values your input. To provide feedback on this Technical Report, please visit <http://www.sae.org/technical/standards/AS27648C>

THIRD ANGLE PROJECTION



CUSTODIAN: AIRFRAME CONTROL BEARINGS GROUP

PROCUREMENT SPECIFICATION: AS7949

SAE Aerospace
An SAE International Group

AEROSPACE STANDARD

BEARING, BALL, AIRFRAME,
ANTI-FRICTION, EXTERNAL SELF ALIGNING,
EXTRA LIGHT DUTY

SAE AS27648
SHEET 1 OF 4

REV. C

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ISSUED 1998-04 REVISED 2012-07

TABLE 1 - DIMENSIONS

MS DASH NO.	ØB BORE 2/	BORE TOLERANCE	ØD		W	H	(ØA) SHOULDER DIAMETER INNER RING (APPROX)	E 4/		C 3/		ØK TO SHARP CORNER (REF)	ØJ BRG. SPHERE OUTSIDE DIAMETER	L° MISALIGNMENT ANGLE EITHER DIRECTION 5/	WEIGHT POUNDS (APPROX)	
			OUTSIDE DIAMETER	INNER RING	WIDTH INNER RING	WIDTH OUTER RING		CORNER CHAMFER X 45°								
			+0.000 -0.010 1/ 2/	+0.000 -0.005 1/	+0.000 -0.005 1/	INNER RING BORE +0.015 -0.000		OUTER RING OD +0.015 -0.000								
-16	1.0000	+0.0000 -0.0005	1.9375				1.141					1.709	1.740	7° 25'	.18	
-21	1.3125	+0.0005 -0.0005	2.2500	.437	.375		1.454	.024	.024			2.028	2.052	6° 30'	.20	
-23	1.4375		2.3750			1.575	2.155			2.178	6°	.22				
-25	1.5625		2.5000			1.693	2.282			2.302	5° 45'	.25				
-29	1.8125		2.7500			1.931	2.535			2.552	5°	.27				
-33	2.0625		3.0000			2.231	2.787			2.802	5°	.30				
-37	2.3125		3.2500			2.468	3.039			3.052	4° 30'	.33				
-47	2.9375		4.1250			3.093	3.846			3.865	4° 30'	.64				
-48	3.0000		4.2500			.531	.469			3.222	.039	.039	3.972	3.990	4°	.69
-49	3.0625		4.2500							3.222			3.972	3.990	4°	.69

- 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/ MISALIGNMENT ANGLE IS NOT TO EXCEED MINIMUM REQUIREMENT IN DESIGN OR APPLICATION.

TABLE 2 - LOADS AND STARTING TORQUE

MS DASH NO.	RADIAL LIMIT LOAD RATING LB	THRUST LIMIT LOAD RATING LB	6/ RADIAL LOAD RATING (LB) FOR AVERAGE LIFE OF 10 000 COMPLETE 90° CYCLES		8/ MAXIMUM STARTING TORQUE (in-oz)
			7/		
			CASE I	CASE II	
-16	8085	1600	4260	3960	5.0
-21	9840	2000	4590	4290	7.0
-23	10 500	2200	4650	4360	9.0
-25	11 300	2300	4680	4420	9.0
-29	12 700	2600	4760	4530	14.0
-33	14 400	2900	4820	4630	14.0
-37	15 800	3200	4880	4690	20.0
-47	24 700	5000	6600	6390	30.0
-48	27 500	5500	8150	7840	30.0
-49	27 500	5500	8150	7840	32.0

- 6/ CASE I - LOAD FIXED WITH RESPECT TO OUTER RING.
CASE II - LOAD FIXED WITH RESPECT TO INNER RING.
- 7/ THESE RATINGS ARE FOR OPERATION UP TO 250 °F. FOR OPERATION UP TO 350 °F, THE RATINGS SHALL BE REDUCED BY 20%.
- 8/ 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 LETTER "G" AFTER THE MS27648 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: .0003 TO .0010, DOES NOT INCLUDE RADIAL LOOSENESS BETWEEN THE BEARING OUTER RING AND SELF-ALIGNING RING
7. RADIAL ECCENTRICITY: INNER RING, .0010 MAX, OUTER RING, .0016 MAX.
8. LATERAL ECCENTRICITY: INNER RING, .0010 MAX, OUTER RING, .0016 MAX.
9. PART NUMBER: THE PART NUMBER SHALL BE SEQUENCED LEFT TO RIGHT WITH DESIGNATIONS IN THE FOLLOWING SEQUENCE:

EXAMPLE OF PART NUMBER:

