

REV.
C

SAE AS27642

FEDERAL SUPPLY CLASS
3110

RATIONALE

IN ORDER TO BRING THE AS27642 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.

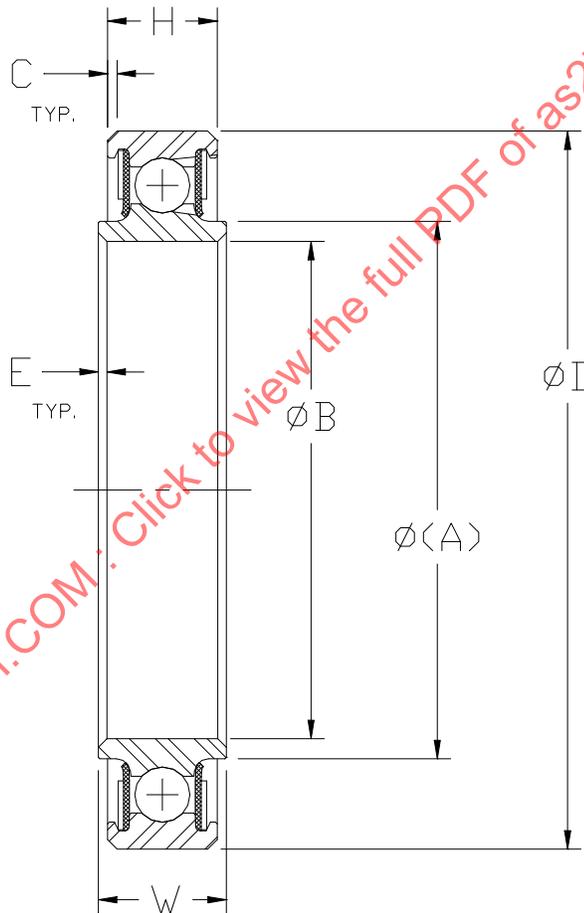
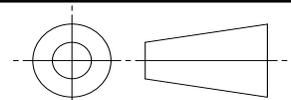


FIGURE 1 - PART CONFIGURATION

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THIRD ANGLE PROJECTION



CUSTODIAN: AIRFRAME CONTROL BEARINGS GROUP

PROCUREMENT SPECIFICATION: AS7949

SAE Aerospace
An SAE International Group

AEROSPACE STANDARD

(R) BEARING, BALL, AIRFRAME,
EXTRA LIGHT DUTY

SAE AS27642
SHEET 1 OF 4

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SAE reviews each technical report at least every five years at which time it may be reaffirmed, revised, or cancelled. SAE invites your written comments and suggestions.

ISSUED 1998-04 REVISED 2012-07

TABLE 1 - DIMENSIONS

MS DASH NO.	øB BORE 2/	BORE TOLERANCE		øD OUTSIDE DIAMETER +0.000 -0.010 1/ 2/	W WIDTH INNER RING +0.000 -0.005 1/	H WIDTH OUTER RING +0.000 -0.005 1/	(ØA) SHOULDER DIAMETER INNER RING (APPROX)	E CORNER CHAMFER X 45° 4/		WEIGHT POUNDS (APPROX)
		WITHOUT SUFFIX S	WITH SUFFIX S					INNER RING BORE +0.015 -0.000	OUTER RING OD +0.015 -0.000	
-16	1.0000	+0.0000 -0.0005		1.7500			1.141			.14
-21	1.3125	+0.0005 -0.0005	+0.0000 -0.0005	2.0625	.437	.375	1.454	.024	.024	.16
-23	1.4375			2.1875			1.575			.17
-25	1.5625			2.3125			1.693			.19
-29	1.8125			2.5625			1.931			.21
-33	2.0625			2.8125			2.231			.23
-37	2.3125			3.0625			2.468			.26
-47	2.9375			3.8750			3.093			.49
-49	3.0625	4.0000	3.222	.53						
-52	3.2500	4.1875	3.479	.65						
-56	3.5000	4.4375	3.775	.70						
-60	3.7500	4.6875	4.014	.74						
-64	4.0000	4.9375	4.253	.78						
-68	4.2500	+0.0000 -0.0010	+0.0000 -0.0010	5.3125	.531	.531	4.517	.039	.039	.87
-72	4.5000			5.5625			4.774			.92
-76	4.7500			5.8125			5.046			1.00
-80	5.0000			6.0625			5.246			1.04
-84	5.2500			6.3125			5.506			1.09
-88	5.5000			6.5625			5.770			1.14
-92	5.7500			6.8125			6.033			1.18
-96	6.0000	7.0625	6.303	1.23						

1/ ALL DIMENSIONS TO BE MET AFTER PLATING.

2/ OUT-OF-ROUND TOLERANCES: BORE WITHOUT SUFFIX "S": -16 +0.002, -0.007

-21 THROUGH -49 +0.008, -0.008

-52 THROUGH -96 +0.005, -0.015

BORE WITH SUFFIX "S": -16 THROUGH -49 +0.003, -0.008

-52 THROUGH -96 +0.003, -0.013

OUTER DIA: +0.010, -0.020.

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.

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TABLE 2 - TOLERANCES AND LOADS

MS DASH NO.	RADIAL INTERNAL CLEARANCE		ECCENTRICITIES				RADIAL LIMIT LOAD RATING LB	THRUST LIMIT LOAD RATING LB	5/ 6/ RADIAL LOAD RATING (LB) FOR AVERAGE LIFE OF 10 000 COMPLETE 90° CYCLES		7/ MAXIMUM STARTING TORQUE (in-oz)
	WITHOUT SUFFIX S	WITH SUFFIX S	RADIAL		LATERAL				CASE I	CASE II	
-16							8090	3600	4260	3960	5.0
-21							9840	4400	4590	4290	7.0
-23							10 500	4700	4650	4360	9.0
-25	.0003						11 300	5000	4680	4420	9.0
-29	TO		.0010	.0016	.0010	.0016	12 700	5600	4760	4530	14.0
-33	.0010						14 400	6400	4820	4630	14.0
-37							15 800	7000	4880	4690	20.0
-47							24 700	10 900	6600	6390	30.0
-49							27 500	12 100	8150	7840	32.0
-52		.0001					28 700	12 600	8210	7880	8/
-56		TO					31 200	13 700	8240	7970	
-60		.0005	.0012	.0016	.0010	.0016	33 100	14 600	8290	8010	
-64							35 000	15 400	8350	8100	
-68							41 900	18 400	10 280	9900	
-72	.0003						44 300	19 500	10 330	10 000	
-76	TO						46 700	20 500	10 350	10 050	
-80	.0015						48 200	21 200	10 360	10 090	
-84			.0014	.0018	.0012	.0018	50 600	22 300	10 420	10 120	
-88							53 000	23 300	10 480	10 200	
-92							55 400	24 400	10 550	10 240	
-96			.0020	.0016	.0020		57 700	25 400	10 520	10 210	

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/ 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.

8/ TORQUE VALUES FOR THESE SIZE BEARINGS SHALL BE SPECIFIED IN PURCHASE ORDERS.

REQUIREMENTS:

- MATERIAL: RINGS AND BALLS: 52100 STEEL PER AMS6440 OR AMS6444
SEALS: POLYTETRAFLUOROETHYLENE (PTFE) PER AMS3652
SEAL RETAINERS: ANY CORROSION RESISTANT STEEL
- 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 MS27642 DASH NUMBER. MIL-PRF-23827 TYPE I SHALL NOT BE USED FOR OPERATION WHERE TEMPERATURES EXCEED 250 °F.
- HARDNESS: HEAT TREAT RINGS AND BALLS TO 60-66 HRC AND STABILIZE FOR OPERATION AT 250 °F
- SURFACE ROUGHNESS: RACEWAYS AND BALL SHALL HAVE A MAXIMUM SURFACE ROUGHNESS OF 8 µin Ra PER ANSI/ASME B46.1
- 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

 An SAE International Group	AEROSPACE STANDARD	SAE AS27642 SHEET 3 OF 4	REV. C
	(R) BEARING, BALL, AIRFRAME, EXTRA LIGHT DUTY		