

SAE Technical Standards Board Rules provide that: "This report is published by SAE to advance the state of technical and engineering sciences. The use of this report is entirely voluntary, and its applicability and suitability for any particular use, including any patent infringement arising therefrom, is the sole responsibility of the user."

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

REV.
A

AS27640™/1

FEDERAL SUPPLY CLASS
3110

RATIONALE

THIS DOCUMENT REVISION ADDS THE FULLY SUBSTANTIATED AMS5655 MATERIAL FOR THE RINGS AND THE HEAT TREAT REQUIREMENT. AMS3666 IS BEING REMOVED AS A SEAL MATERIAL AS NO SUPPLIER UTILIZES IT ON THIS SERIES. THE LUBRICATION IS BEING REVISED FROM A TRADE NAME TO AN INDUSTRY AVAILABLE SPECIFICATION MIL-PRF-23827 TYPE 1. ZINC NICKEL PER AMS2417 WILL BE INDICATED BY "E" SUFFIX. ADDS PASSIVATION IN ACCORDANCE WITH AMS2700, METHOD 1 (NITRIC ACID). CRES BALLS WILL BE INDICATED BY "T" SUFFIX.

NOTICE

THE COMPLETE REQUIREMENTS FOR PROCURING THE PRODUCT DESCRIBED HEREIN SHALL CONSIST OF THIS DOCUMENT AND THE LATEST ISSUE OF AS7949.

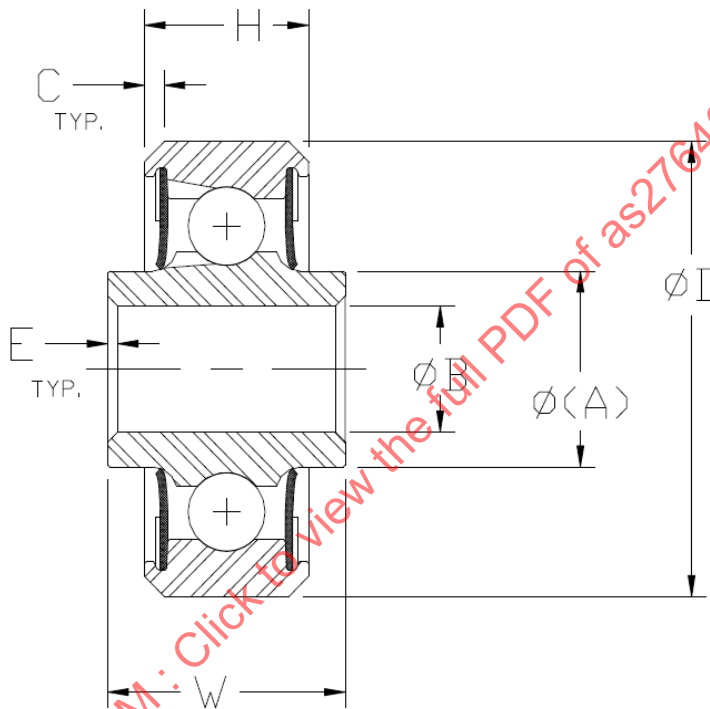
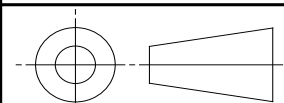


FIGURE 1 - CREN AIRFRAME BEARING

SAE values your input. To provide feedback on this Technical Report, please visit <http://www.sae.org/technical/standards/AS27640/1A>

THIRD ANGLE PROJECTION



CUSTODIAN: ACBG

PROCUREMENT SPECIFICATION: AS7949



AEROSPACE STANDARD

BEARING, BALL, AIRFRAME,
ANTI-FRICTION, HEAVY DUTY, CORROSION
RESISTANT NITROGEN STEEL (CREN)

AS27640™/1
SHEET 1 OF 4

REV.
A

Copyright 2016 SAE International
All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of SAE.

TO PLACE A DOCUMENT ORDER: Tel: 877-606-7323 (inside USA and Canada)
Fax: 724-776-0790

Tel: +1 724-776-4970 (outside USA)
Email: CustomerService@sae.org

SAE WEB ADDRESS: <http://www.sae.org>

ISSUED 2011-03 REVISED 2016-01

TABLE 1 - DIMENSIONS, LOAD RATINGS, WEIGHT, AND TORQUE

AS DASH NO.	øB BORE +.0000 -.0005 2/	øD OUTSIDE DIAMETER +.0000 -.0005 1 1/2/	W WIDTH INNER RING +.000 -.005 1/	H WIDTH OUTER RING +.000 -.005 1/	(øA) SHOULDER DIAMETER INNER RING (REF)	E 4/	C 3/	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		WEIGHT POUNDS (APPROX)	Z/ MAXIMUM STARTING TORQUE (IN-OZ)		
						CORNER CHAMFER X 45°				INNER RING BORE +.015 -.000	OUTER RING OD +.015 -.000			CASE I	CASE II
-3A	.1900	.6250	.245	.203	.280	.005	.010	1,560	700	1,520	1,260	.01	2.0		
-3	.1900	.7774	.297	.270	.331	.005	.022	1,880	900	1,700	1,450	.03	2.0		
-4	.2500	.9014	.484	.335	.390	.005	.032	2,680	1,200	2,410	2,030	.04	2.0		
-5	.3125	1.2500	.558	.375	.469	.015	.032	5,620	2,500	4,900	3,970	.09	2.0		
-6	.3750	1.4375	.620	.469	.591	.015	.032	7,910	3,500	6,540	5,410	.15	3.0		
-8	.5000	1.6875	.620	.500	.768	.015	.044	11,800	5,200	9,320	7,700	.21	4.0		
-10	.6250	1.9375	.620	.500	.850	.015	.044	14,100	6,200	11,000	9,060	.28	4.0		

1/ ALL DIMENSIONS TO BE MET AFTER SURFACE TREATMENT.

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/ 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: CORROSION RESISTANT NITROGEN STEEL (CREN) PER AMS5898, AMS5925 OR AISI 422 STEEL PER AMS5655.

BALLS: NO SUFFIX CODE: CORROSION RESISTANT NITROGEN STEEL (CREN) PER AMS5898 OR AMS5925.

SUFFIX CODE "T": CORROSION RESISTANT STEEL (CRES) PER AMS5880 OR AMS5618. CRES BALLS SHALL BE PASSIVATED IN ACCORDANCE WITH AMS2700, METHOD 1 (NITRIC ACID) OR METHOD 2 (CITRIC ACID), OR ASTM A967/A967M, CITRIC I, II, OR III.

SEALS: POLYTETRAFLUOROETHYLENE (PTFE) PER AMS3652.

SEAL RETAINERS: ANY CORROSION RESISTANT STEEL.

2. HARDNESS:

RINGS: STEEL PER AMS5898 AND AMS5925: THROUGH HARDEN TO 58 HRC MINIMUM.

STEEL PER AMS5655: RING WALL THICKNESS AT RACEWAY .090 OR LESS: CASE HARDEN TO 58 HRC MINIMUM AT A CASE DEPTH OF 1/3 OF THE WALL THICKNESS.

RING WALL THICKNESS AT RACEWAY GREATER THAN .090: CASE HARDEN TO 58 HRC MINIMUM AT A CASE DEPTH OF .030

BALLS: 58 HRC MINIMUM.

3. STABILITY:

RINGS AND BALLS SHALL BE STABILIZED FOR OPERATION UP TO 350 °F.

	AEROSPACE STANDARD	AS27640™/1 SHEET 2 OF 4	REV. A
	BEARING, BALL, AIRFRAME, ANTI-FRICTION, HEAVY DUTY, CORROSION RESISTANT NITROGEN STEEL (CREN)		

4. 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 AS27640/1 DASH NUMBER. MIL-PRF-23827 TYPE I SHALL NOT BE USED FOR OPERATION WHERE TEMPERATURES EXCEED 250 °F.

5. SURFACE ROUGHNESS:
RACEWAYS AND BALLS SHALL HAVE A MAXIMUM SURFACE ROUGHNESS OF 8 µin Ra PER ASME B46.1

6. SURFACE TREATMENT:

NO SUFFIX CODE	ALL EXTERNAL SURFACES EXCEPT BORE AND SEALS SHALL BE PLATED WITH CADMIUM PER AMS-QQ-P-416, TYPE I, CLASS 2, .0003 TO .0006 THICK.
SUFFIX CODE "E"	ALL EXTERNAL SURFACES EXCEPT BORE AND SEALS SHALL BE PLATED WITH ZINC NICKEL PER AMS2417, TYPE 2, GRADE B .0003 TO .0006 THICK.
SUFFIX CODE "P"	ALL RING AND BALL SURFACES SHALL BE PASSIVATED IN ACCORDANCE WITH AMS2700, METHOD 1 (NITRIC ACID) OR METHOD 2 (CITRIC ACID), OR ASTM A967/A967M, CITRIC I, II, OR III.

7. RADIAL INTERNAL CLEARANCE:

NO SUFFIX CODE:	.0004 TO .0010
SUFFIX CODE "R":	.0002 TO .0005

8. ECCENTRICITIES:

<u>RADIAL</u>	<u>LATERAL</u>
INNER RING: .0010 MAXIMUM	INNER RING: .0010 MAXIMUM
OUTER RING: .0016 MAXIMUM	OUTER RING: .0016 MAXIMUM

9. PART NUMBER:
THE PART NUMBER SHALL BE SEQUENCED LEFT TO RIGHT WITHOUT SPACES WITH DESIGNATIONS IN THE FOLLOWING SEQUENCE.

