

REV.
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SAE AS21150

RATIONALE

FEDERAL SUPPLY CLASS
3110

AS21150 REV D IS A FIVE YEAR REVIEW. UPDATED SPECIFICATIONS TO CURRENT REQUIREMENTS, REFORMATTED GRAPHICS, TABLES AND NOTES, ADDED ZINC-NICKEL CODE, ADDED OPTIONAL MATERIAL FOR INNER RACE AND BALLS AND REMOVED "OR AN APPROVED EQUIVALENT" TO SEAL MATERIAL

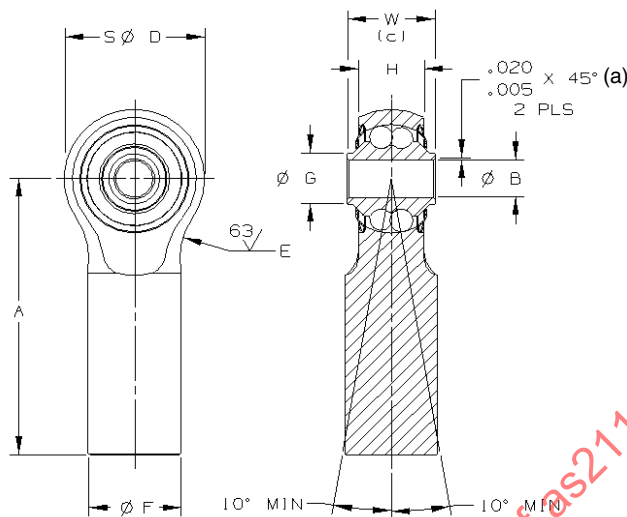


FIGURE 1

TABLE 1 - DIMENSIONS AND TOLERANCES

MS21150 DASH NUMBER	BORE SIZE NOM	A	ØB	ØD	E	ØF	H	ØG	W	WT LB APPROX
		±.010	+0.000 -0.003	±.010	NOM	+0.000 -0.002	±.010	MIN	+0.000 -0.002	
-1	3/16	1.375	.1900	.781	.390	.430	.328	.276	.437	.07
-2	1/4	1.875	.2500	.938	.500	.625	.438	.340	.593	.16

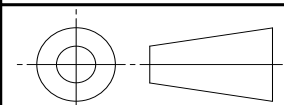
TABLE 2 - ENGINEERING DATAMS21150 DASH NUMBER	RADIAL STRENGTH		AXIAL STRENGTH		RADIAL LOAD RATING 10 000 COMPLETE 90° CYCLES (b) (d)		MAXIMUM STARTING TORQUE
	LIMIT LOAD LBF	FRACTURE LOAD LBF	LIMIT LOAD LBF	FRACTURE LOAD LBF	CASE I	CASE II	IN-OZ
-1	1000	1500	200	300	1000	1000	3.0
-2	1720	2580	345	520	1720	1720	4.0

REQUIREMENTS:

- (a) A RADIUS GIVING THE SAME FILLET CLEARANCE WILL BE ACCEPTABLE.
- (b) CASE I - LOAD FIXED WITH RESPECT TO OUTER RACE (AVERAGE LIFE RATING).
CASE II - LOAD FIXED WITH RESPECT TO INNER RACE (AVERAGE LIFE RATING).
- (c) 10° MIN. MISALIGNMENT IN EITHER DIRECTION SHALL OCCUR WITHOUT INTERFERENCE BETWEEN BALL HOUSING AND SURFACES INDICATED BY DIMENSION "W".
- (D) THESE RATINGS ARE FOR OPERATIONS UP TO 250 °F MAXIMUM. WHEN SUBJECTED TO OPERATION ABOVE 250 °F, THE RATINGS SHOULD BE REDUCED BY 20%.

SAE values your input. To provide feedback
on this Technical Report, please visit
<http://www.sae.org/technical/standards/AS21150D>

THIRD ANGLE PROJECTION



CUSTODIAN: SAE AIRFRAME CONTROL BEARINGS GROUP

PROCUREMENT SPECIFICATION: AS6039

SAE Aerospace
An SAE International Group

AEROSPACE STANDARD

BEARING, BALL, ROD END, DOUBLE ROW,
PRECISION, SOLID SHANK, SELF-ALIGNING,
AIRFRAME, TYPE I, -65 TO 300 °F

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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. FOR DESIGN FEATURE PURPOSES, THIS STANDARD TAKES PRECEDENCE OVER ANY OTHER DOCUMENTS REFERENCED HEREIN.

2. REFERENCED DOCUMENTS SHALL BE OF THE ISSUE IN EFFECT ON DATE OF INVITATION FOR BID.

3. RADIAL CLEARANCE: .0000 TO .0004 INCHES UNDER 5.5 LB FULLY REVERSING GAGE LOAD.

4. AXIAL CLEARANCE: .0000 TO .003 INCHES UNDER 5.5 LB FULLY REVERSING GAGE LOAD.

5. MATERIAL:

INNER RACE AND BALLS: AISI E52100 STEEL PER AMS6440 OR AMS6444; BALLS IAW ASTM F 2215.

ROD END BODY: AISI 4130 STEEL PER AMS-S-6758 OR AISI 8620 STEEL PER AMS6274.

SEALS: POLYTETRAFLUORETHYLENE PER AMS3652 OR AMS3666 OR POLYETHERESTER PER ASTM D 4550, GROUP 4, CLASS 1, GRADE 1.

SEAL RETAINERS: STEEL CORROSION RESISTANT, AISI 300 OR AISI 400 SERIES STEEL.

6. HEAT TREATMENT:

INNER RACE AND BALLS: 60-66 HRC

ROD END BODY RACEWAY: 59-63 HRC: STABILIZE FOR OPERATION AT 250 °F. THE ROD END BODY RACEWAY SHALL BE CASE HARDENED TO ACHIEVE AN EFFECTIVE CASE DEPTH (50 HRC POINT) FROM A MINIMUM OF 25% TO A MAXIMUM OF 50% OF THE RING THICKNESS. THE ROD END SHANK SHALL HAVE A HARDNESS OF 92.5 HRB MINIMUM TO 45 HRC MAXIMUM AND THE ROD END HEAD O.D. SHALL HAVE A HARDNESS OF 32 TO 48 HRC.

7. FINISH CODE: " " (NO CODE) INDICATES CADMIUM PLATE PER AMS-QQ-P-416, TYPE I, CLASS 2.

"E" INDICATES ZINC-NICKEL PLATE PER AMS2417, TYPE 2

8. LUBRICANT: ALL BEARINGS SHALL BE PREPACKED 80% TO 100% FULL WITH GREASE QUALIFIED TO MIL-PRF-81322 OR MIL-PRF-23827 TYPE 1. IF MIL-PRF-23827 IS REQUIRED ADD THE SUFFIX "G" TO THE MS PART NUMBER AND LIMIT BEARING OPERATION TO NOT MORE THAN 250 °F.

9. REMOVE ALL BURRS AND SHARP EDGES.

10. SURFACE ROUGHNESS: RACEWAYS AND BALLS SHALL NOT EXCEED 8 (Ra). SHANK 63 (Ra) WHERE INDICATED. ALL OTHER MACHINED SURFACES SHALL NOT EXCEED 125 (Ra). AS FORGED SURFACES ON OUTER SURFACE OF ROD END BODY ARE ACCEPTABLE.

11. DIMENSIONS IN INCHES, UNLESS OTHERWISE SPECIFIED.

12. DIMENSIONS TO BE MET AFTER PLATING.

 An SAE International Group	AEROSPACE STANDARD	SAE AS21150 SHEET 2 OF 3	REV. D
	BEARING, BALL, ROD END, DOUBLE ROW, PRECISION, SOLID SHANK, SELF-ALIGNING, AIRFRAME, TYPE I, -65 TO 300 °F		