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REV.  
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AS21151™

## RATIONALE

FEDERAL SUPPLY CLASS  
3110

ADDED GRADE B TO ZINC-NICKEL PLATING, ADDED TOLERANCE TO 45° BORE CHAMFER AND TYPE I OR TYPE II TO AMS3666 SEAL MATERIAL AS AGREED TO BY THE COMMITTEE. UPDATED SEAL MATERIAL SPECIFICATION TO ASTM D6835 PER DOCUMENT SUPERSESSION.

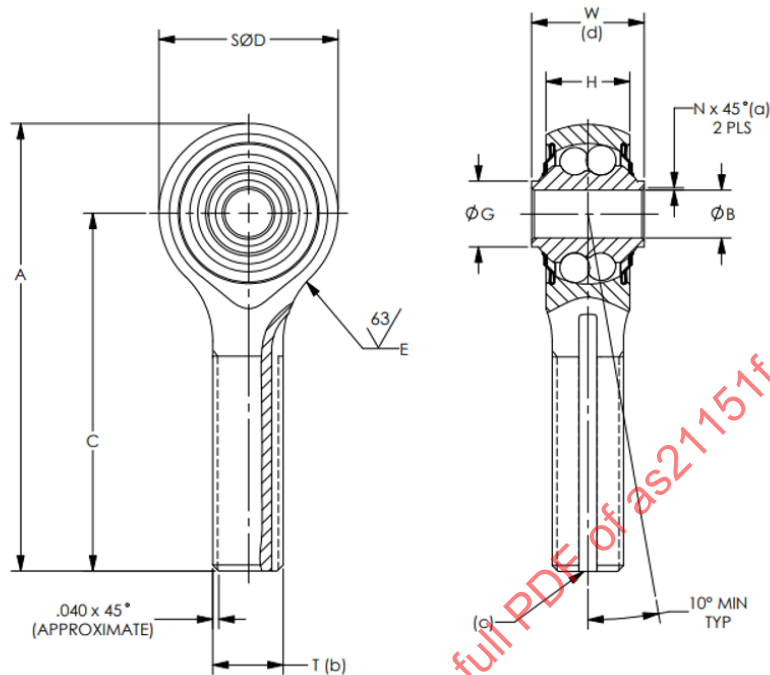


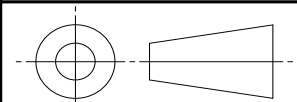
FIGURE 1 - PART CONFIGURATION

TABLE 1 - DIMENSIONS AND TOLERANCES

| MS21151<br>DASH<br>NUMBER<br>(c) | BORE<br>SIZE<br>NOM | A     | ØB                 | C     | ØD    | E    | H     | N                | ØG   | T<br>THREAD | W                | WT<br>LB<br>APPROX |
|----------------------------------|---------------------|-------|--------------------|-------|-------|------|-------|------------------|------|-------------|------------------|--------------------|
|                                  |                     | ±.010 | + .0000<br>- .0003 | ±.031 | ±.010 | NOM  | ±.010 | + .015<br>- .000 | MIN  | UNJF-3A     | + .000<br>- .005 |                    |
| -1                               | 3/16                | 1.375 | .1900              | .750  | .781  | .422 | .328  | .005             | .276 | .1900-32 LH | .437             | .04                |
| -2                               |                     | 2.031 |                    | 1.313 | .969  | .500 | .407  |                  | .299 | .1900-32 RH | .500             |                    |
| -3                               |                     |       |                    |       |       |      |       |                  |      | .3750-24 RH |                  |                    |
| -4                               |                     |       |                    |       |       |      |       |                  |      | .3750-24 LH | .437             |                    |
| -5                               | 1/4                 | 1.812 | .2500              | .938  | .781  | .390 | .328  | .015             | .307 | .2500-28 RH | .500             | .10                |
| -6                               |                     | 1.563 |                    | 1.000 |       | .344 | .328  |                  | .276 | .2500-28 LH | .437             |                    |
| -7                               |                     |       |                    |       |       |      |       |                  |      | .3750-24 RH | .593             |                    |
| -8                               |                     |       |                    |       |       |      |       |                  |      | .3750-24 LH |                  |                    |
| -9                               | 5/16                | 2.438 | .3125              | 1.563 | 1.250 | .500 | .656  | .015             | .501 | .4375-20 RH | .870             | .24                |
| -10                              |                     |       |                    |       |       |      |       |                  |      | .6250-18 RH |                  |                    |
| -11                              |                     |       |                    |       |       |      |       |                  |      | .6250-18 LH |                  |                    |
| -12                              |                     |       |                    |       |       |      |       |                  |      | .6250-18 RH |                  |                    |
| -13                              | 5/8                 | 2.750 | .6250              | 1.500 | 2.000 | .500 | .938  | .015             | .875 | .6250-18 RH | 1.125            | .71                |

For more information on this standard, visit  
<https://www.sae.org/standards/content/AS21151F/>

THIRD ANGLE PROJECTION



CUSTODIAN: ACBG

PROCUREMENT SPECIFICATION: AS6039



## AEROSPACE STANDARD

BEARING, BALL, ROD END, DOUBLE ROW,  
PRECISION, EXTERNAL THREAD, SELF-ALIGNING,  
AIRFRAME, TYPE II, -65 TO 300 °F

AS21151™  
SHEET 1 OF 3

REV.  
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ISSUED 1998-01 REVISED 2024-07

**TABLE 2 - ENGINEERING DATA**

| MS21151<br>DASH<br>NUMBER<br>(c) | RADIAL STRENGTH   |                      | AXIAL STRENGTH    |                      | RADIAL LOAD<br>RATING<br>10000 COMPLETE<br>90° CYCLES (e) (f) |         | MAXIMUM<br>STARTING<br>TORQUE |
|----------------------------------|-------------------|----------------------|-------------------|----------------------|---------------------------------------------------------------|---------|-------------------------------|
|                                  | LIMIT LOAD<br>LBF | FRACTURE LOAD<br>LBF | LIMIT LOAD<br>LBF | FRACTURE LOAD<br>LBF | CASE I                                                        | CASE II | IN-OZ                         |
| -1                               | 1000              | 1500                 | 200               | 300                  | 1000                                                          | 1000    | 3.0                           |
| -2                               |                   |                      |                   |                      |                                                               |         |                               |
| -3                               |                   |                      |                   |                      |                                                               |         |                               |
| -4                               |                   |                      |                   |                      |                                                               |         |                               |
| -5                               | 1000              | 1500                 | 200               | 300                  | 1000                                                          | 1000    | 3.0                           |
| -6                               |                   |                      |                   |                      |                                                               |         |                               |
| -7                               |                   |                      |                   |                      |                                                               |         |                               |
| -8                               | 1720              | 2580                 | 345               | 520                  | 1720                                                          | 1720    | 4.0                           |
| -9                               |                   |                      |                   |                      |                                                               |         |                               |
| -10                              | 2920              | 4375                 | 585               | 880                  | 2920                                                          | 2600    | 6.0                           |
| -11                              |                   |                      |                   |                      |                                                               |         |                               |
| -12                              |                   |                      |                   |                      |                                                               |         |                               |
| -13                              | 7090              | 10600                | 1420              | 2130                 | 6160                                                          | 5340    | 8.0                           |

REQUIREMENTS:

- (a) A RADIUS GIVING THE SAME FILLET CLEARANCE WILL BE ACCEPTABLE. TOLERANCE OF 45° CHAMFER IS  $\pm 2^\circ$ .
- (b) THREADS SHALL CONFORM TO UNJF-3A IN ACCORDANCE WITH AS8879. EXTERNAL THREADS SHALL BE FULLY FORMED BY A SINGLE ROLLING PROCESS. THREAD LENGTH SHALL BE TOTAL LENGTH "C" ALLOWING A MAXIMUM OF TWO IMPERFECT THREADS.
- (c) KEYWAY SLOT, IF REQUIRED, SHALL BE IN ACCORDANCE WITH NASM14198 AND SHALL BE DESIGNATED BY ADDING SUFFIX "C" TO THE DASH NUMBER (-3 THROUGH -13 ONLY). THE KEYWAY SLOT SHALL BE ORIENTATED ALONG THE CENTERLINE OF THE SHANK AND PERPENDICULAR TO THE ROD END HOOP FACE.
- (d) 10° OF MINIMUM MISALIGNMENT IN ANY DIRECTION SHALL OCCUR WITHOUT INTERFERENCE BETWEEN BALL HOUSING AND SURFACES INDICATED BY DIMENSION "W."
- (e) CASE I - LOAD FIXED WITH RESPECT TO OUTER RACE (AVERAGE LIFE RATING).  
CASE II - LOAD FIXED WITH RESPECT TO INNER RACE (AVERAGE LIFE RATING).
- (f) THESE RATINGS ARE FOR OPERATIONS UP TO 250 °F MAXIMUM. WHEN SUBJECTED TO OPERATION ABOVE 250 °F, THE RATINGS SHOULD BE REDUCED BY 20%.

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.

- FOR DESIGN FEATURE PURPOSES, THIS STANDARD TAKES PRECEDENCE OVER ANY OTHER DOCUMENTS REFERENCED HEREIN.
- REFERENCED DOCUMENTS ARE THE ISSUES IN EFFECT ON DATE OF INVITATIONS FOR BID.
- RADIAL CLEARANCE: .0000 TO .0004 INCH UNDER 5.5 POUNDS FULLY REVERSING GAGE LOAD.
- AXIAL CLEARANCE: .0000 TO .003 INCH UNDER 5.5 POUNDS FULLY REVERSING GAGE LOAD.

|                                                                                     |                                                                                                                       |                                 |                         |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|---------------------------------|-------------------------|
|  | <b>AEROSPACE STANDARD</b>                                                                                             | <b>AS21151™</b><br>SHEET 2 OF 3 | <b>REV.</b><br><b>F</b> |
|                                                                                     | BEARING, BALL, ROD END, DOUBLE ROW,<br>PRECISION, EXTERNAL THREAD, SELF-ALIGNING,<br>AIRFRAME, TYPE II, -65 TO 300 °F |                                 |                         |