

INCH-POUND

MS3314A(AS)  
14 June 2018  
SUPERSEDING  
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## DETAIL SPECIFICATION SHEET

### LUG, SUSPENSION, 1000 POUND CLASS, AIRBORNE EQUIPMENT

This specification sheet is approved for use by the Naval Air Systems Command, Department of the Navy and is available for use by all Departments and Agencies of the Department of Defense.

The requirements for acquiring the product described herein shall consist of this specification sheet.

#### REQUIREMENTS:

1. Material: Steel bar in accordance with SAE AMS6415. Bar stock shall be furnished in the rough turned condition.
2. Forging: The suspension lugs shall be constructed from forgings in accordance with SAE AMS-F-7190, Grade A. Induction heating shall be used. Note that SAE AMS-F-7190, Grade A requires 100 percent magnetic particle inspection of raw forgings prior to heat treatment.
3. Heat treatment: Heat treat in accordance with SAE AMS-H-6875 to Rockwell Hardness C38-44. Threads shall not be manufactured prior to heat treat.
4. Finish: Cadmium plate in accordance with SAE AMS-QQ-P-416, Type II, Class 2.  
Alternate: Electrodeposited zinc coating in accordance with ASTM B633, Type II, SC3. Maximum thickness for cadmium or zinc plating is 0.0008 inches thick. Acid pickling for cleaning is prohibited. Acid dip of 20 seconds maximum for surface activation after bake and before plating is allowed. Dip and plating process to have low hydrogen content. The cleaning method used shall not be injurious to any of the parts nor shall the parts be contaminated by the cleaning agent. Barrel plating and the use of brighteners is prohibited.

Embrittlement relief: Within 4 hours after plating, all lugs shall be baked at  $375^{\circ}\text{F} \pm 25^{\circ}\text{F}$  for a minimum of 16 hours.

A post chromate conversion treatment bake of  $100^{\circ}\text{F} \pm 10^{\circ}\text{F}$  for 24-36 hours is required to ensure full drying of the chromate. Post chromate bake shall begin within 4 hours after application of chromate.

Inspection: All dimensional limits and surface roughness designations shall apply after plating.

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- Salt spray testing is required for each plating lot. Three lugs shall be exposed to a 5 percent neutral salt spray in accordance with ASTM B117 for 96 hours minimum. Lugs shall show no evidence of white salts or red rusting of the base metal due to corrosion.
5. Surface roughness: Unless otherwise specified, finish for all machined surfaces shall be a maximum of 125 RMS. Finish for all forged surfaces shall be a maximum of 250 RMS. Surface readings shall be made in accordance with ASME B46.1 after the suspension lug has been plated.
  6. Part or Identifying Number (PIN): Steel stamp or engrave on the bottom of the lug in accordance with MIL-STD-130 using 0.06 +0.065/-0.000 characters with manufacturer's CAGE code, date of manufacture, "MS3314", "Lug, Suspension", and inspection lot number in accordance with MIL-STD-1168. Mark as depicted on Figure 1.
  7. Thread shall be in accordance with FED-STD-H28/2. Acceptability of threads shall be in accordance with FED-STD-H28/20, System 22.
  8. A forging flash/mismatch flat on top of the 0.203 radius is permissible, but shall be not greater than 0.015 high and 0.150 wide. The 0.015 height shall be within the 0.550 +0.000/-0.031 thickness dimension.
  9. The 0.125 ±0.015 radius applies after forging. Less than full tangency of the 0.125 radius to the 1.750 diameter is permissible on the finished part.
  10. 0.422 +0.000/-0.030 is the widest point along the 0.094 ±0.031 radius of bail.
  11. (Critical characteristic.) Each lug shall be tested for hardness in accordance with ASTM E18 and shall meet requirement 3. Hardness test shall be performed on bottom of lug or on the machined surface of the 1.750 diameter.
  12. (Critical characteristic.) Each lug shall be subjected to a magnetic particle test in two planes in accordance with ASTM E1444/E1444M after machining and prior to plating. There shall be no evidence of cracks, seams, laps, or other defects. Mark each acceptable lug with the letter "M" using rubber stamp and green ink. The wet fluorescent procedure and continuous application shall be used.
  13. The lug hole shall be broached or machined under the web and produce a 63 RMS or finer finish.
  14. For testing purposes and in accordance with requirement 15, an inspection lot shall consist of one group of lugs, heat treated at one time in one furnace, and subjected to the same treatment operations.
  15. Testing:
    - Test 1
      1. Each lug of the sample shall withstand a load of 27,000 pounds in direction W without permanent deformation.
      2. Each lug of the sample shall withstand a load of 35,000 pounds in direction W without evidence of fracture.
    - Test 2
      1. Each lug of the sample shall withstand a load of 18,000 pounds in direction X without permanent deformation.
      2. Each lug of the sample shall withstand a load of 24,000 pounds in direction X without evidence of fracture.

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### Test 3

Each lug of the sample shall withstand a 0.100 minimum deflection measured at the center of the cross bar in direction Y without fracture.

### Test 4

Each lug of the sample shall pass the following impact test. The finished lug, conditioned for not less than 24 hours at minus 65 °F prior to test and notched as shown on Figure 1, shall withstand without fracture, an impact load of not less than 200 foot-pounds applied in direction Z. The impact load shall be produced by a body weighing not less than 20 pounds falling freely through a distance of not less than 10 feet. The striking surface shall be flat 0.25 diameter and not less than a Rockwell hardness of C60.

Tests 1 through 4 are considered destructive. All lugs subjected to these tests shall be scrapped.

For tests 1 through 3, the lugs shall be mounted in a threaded fixture. The total length of thread engagement between the lug and fixture shall not be greater than 0.50 inch. The threads in the fixture shall meet the following special conditions: pitch diameter minimum 1.7013, minor diameter minimum 1.6696. The load shall be supplied by a fixture simulating a bomb rack hook having a bearing surface 0.40 inch in width. Test pulls on each lug, at each level, shall be held for not less than one minute.

16. The shipping and storage container shall be a box complying with style RSC/0201 in accordance with ASTM D5118/D5118M. The fiberboard shall conform to type (CF), Class (WR), Variety (SW), Grade W5C (275 psi dry bursting strength) in accordance with ASTM D4727/D4727M. The inside box dimensions shall be 11.25 inches by 9.5 inches by 5.375 inches deep. A fiberboard sheet shall divide the box into two layers. Each layer shall be divided into 30 equal cells formed by full height, half-slotted partitions for 60 lugs. The partitions and layer divider shall be fabricated from corrugated fiberboard of the same type, class, variety and grade as the box. The box bottom and second layer shall be lined with polyethylene sheet in accordance with A-A-59135, Class 1. The box flaps shall be secured with reinforced gummed tape in accordance with ASTM D5749, Type 1. The tape shall be not less than 3 inches wide. The tape shall be centered the full length of the outer flap seams and extend over each end of the box not less than 3 inches onto the box ends. Tape shall be properly moistened and sufficiently compressed to ensure tight adhesion to the container.

Unit Load: 64 boxes configured in 4 layers of 16 boxes each shall be banded and shrink wrapped to a 40 inch by 48 inch pallet. A partial unit load of 1, 2, or 3 layers may be shipped.

Container marking: Marking of the container shall comply with MIL-STD-129. The characters shall be approximately 0.25 inch, but not less than 0.125 inch. 2D bar coding applies.

17. The chamfer applies before threading for rolled threads.
18. No burrs permitted; broken edges 0.062 maximum; fillets 0.062R maximum. Surface roughness 250 RMS maximum, unless otherwise specified.

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19. Repair not permitted.
20. All suspension lugs shall be free of burrs, chips, sharp edges, cracks, laps, unblended radii, surface defects, die marks, broach streaks, dirt, grease, rust, corrosion, or other foreign material.

INTENDED USE. The suspension lugs covered by this specification sheet are intended to support airborne equipment hung from aircraft suspension racks. The lugs are intended for all-service use (Navy, Marine Corps, Air Force, and Army, for aircraft and ordnance).

REFERENCED DOCUMENTS. In addition to MS3314, this specification sheet references:

A-A-59135, ASME B46.1, ASTM B117, ASTM B633, ASTM D4727/D4727M, ASTM D5118/D5118M, ASTM D5749, ASTM E18, ASTM E1444/E1444M, SAE AMS-QQ-P-416, SAE AMS6415, SAE AMS-H-6875, SAE AMS-F-7190, MIL-STD-129, MIL-STD-130, MIL-STD-1168, FED-STD-H28/2, and FED-STD-H28/20.

### CONCLUDING MATERIAL

Custodian:  
Navy - AS

Preparing activity:  
Navy - AS  
Project 1325-2018-001

NOTE: The activity listed above was interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at <https://assist.dla.mil>.

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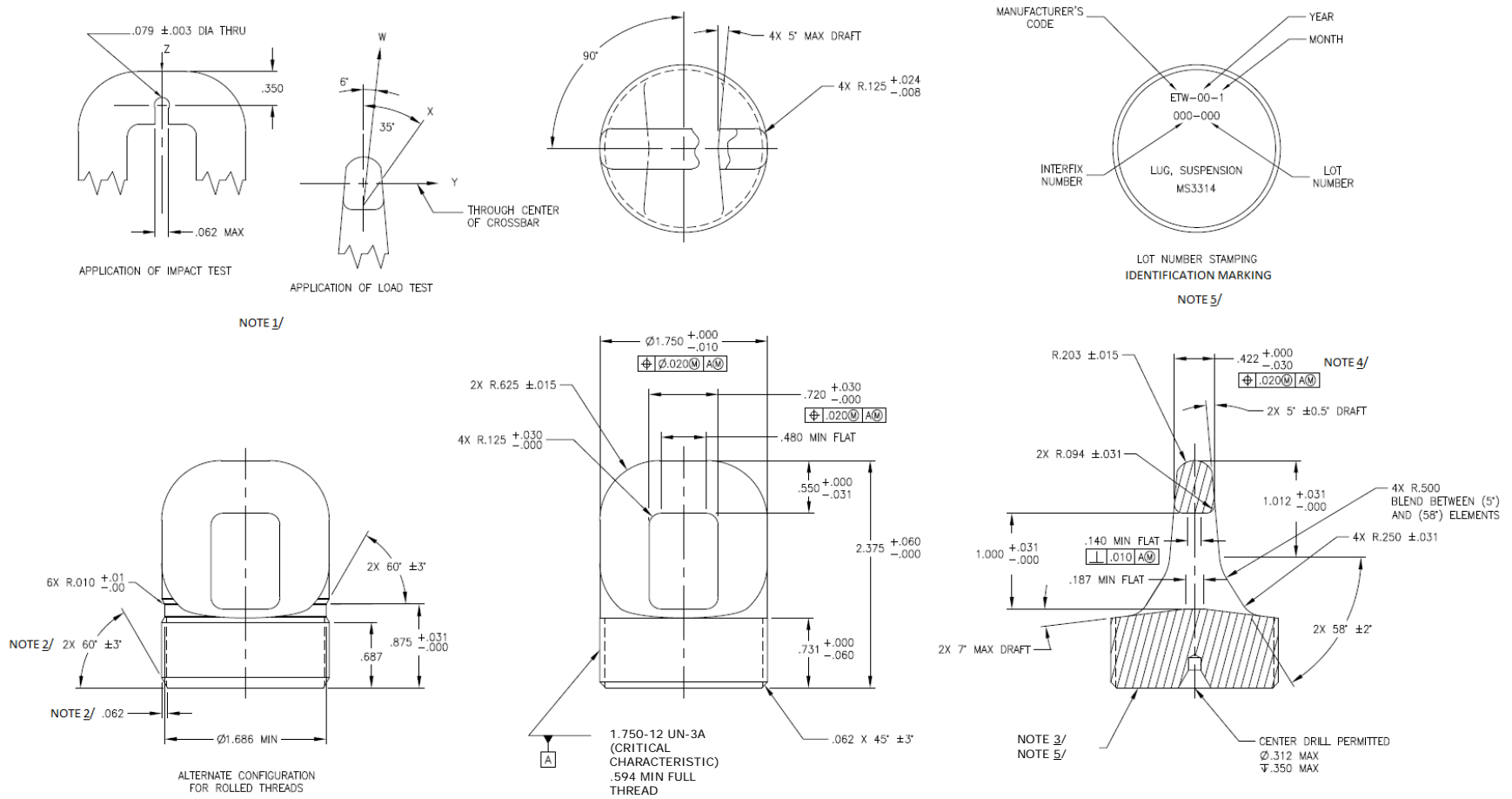


FIGURE 1. Lug, suspension, 1000 pound class, airborne equipment (see Notes 1/ and 6/).

NOTES:

1/ See testing requirement 15.

2/ See requirement 17.

3/ See requirement 11 (critical characteristic).

4/ See requirement 10.

5/ See requirement 6.

6/ Unless otherwise specified, dimensions are in inches, tolerances  $\pm 0.03$  for two decimal places,  $\pm 0.010$  for three decimals, angles  $\pm 1$  degree.