PROCUREMENT SPECIFICATION

RIVETS: BLIND, HOLLOW, NON-STRUCTURAL

(METRIC NUT-PLATE AND TACK RIVETS)

Authorizing Signature is on FILE

APPROVED: _______________________________

DIRECTOR OF PRODUCT ENGINEERING
1. **SCOPE**

   This specification establishes procurement requirements for pull-through mandrel metric blind rivets.

   Classification - Rivets are furnished in 3 types and number of classes as noted below classes:

   **Type SS**  AISI C1018 Carbon steel, annealed
     - Class 1 - Universal Head
     - Class 2 - 100° Flush Head
     - Class 3 - 100° Flush Shear Head

   **Type CS**  A-286 CRES per AMS 5731
     - Class 1 - Universal Head
     - Class 2 - 100° Flush Head
     - Class 3 - 100° Flush Shear Head

   **Type AS**  5056 Aluminum alloy per QQ-A-430
     - Class 1 – Flat Head Tack Rivet

2. **REFERENCES**

   The following documents form a part of this specification to the extent specified herein:

   - MIL-F-3803  Polyethylene Bags
   - MIL-H-3982  Hardware, Fasteners & Related Items, Packaging and Packing for Shipment and Storage of
   - ANSI/ASQC-Z1.4  Sampling Procedures and Tables for Inspection by Attributes
   - MIL-STD-129  Marking for Shipment and Storage
   - NASM1312  Test Methods, Fasteners
   - PPP-B-566  Boxes, Corrugated or Solid Fiberboard
   - PPP-B-63  Boxes, Corrugated or Solid Fiberboard
   - QQ-A-4  Aluminum Alloy Rod and Wire: For Rivets and Cold Heading

   Order of Precedence - In the event of conflict between the text of this specification and the references cited herein, the text of this specification shall take precedence.

3. **REQUIREMENTS**

   3.1. **Materials** - The material used for rivets manufactured for this specification shall be in accordance with the applicable drawing requirements.

   3.2. **Design and Construction**

      3.2.1. **Construction**: The fastener shall be a two component assembly consisting of a tubular rivet (sleeve) and a mandrel.

      3.2.2. **Installation**: The rivet shall be installed by mechanical means. Installation is to be accomplished by pulling the mandrel through the rivet sleeve, thereby forming the blind head. The mandrel shall be discarded after the installation operation.

      3.2.3. **Shank Expansion**: The rivet is to be considered a shank-expanding type rivet
3.2.4. Lubrication: Lubrication as necessary to assure proper function of the rivet is permissible. Lubricants used shall be stable and not subject to deterioration under recommended handling and storage conditions.

3.2.5. Workmanship: Rivets shall be of uniform quality and shall be finished in accordance with high grade manufacturing practice. Discontinuities such as seams and clinch or die marks are permitted, provided they do not affect other requirements of this specification.

3.3. Finish - All rivets shall be finished in accordance with the applicable drawing.

4. QUALITY ASSURANCE

4.1. Classification of Tests - Inspection and testing of blind rivets shall be classified as follows:
   a. Qualification Tests
   b. Acceptance Tests

Table II lists the tests to be performed

4.1.1. These tests may be performed in all or in part at the discretion of the procuring activity to assure conformance to this specification.

4.2. Lot Definition

4.2.1. A lot of component members (sleeves or mandrels) shall consist of parts which are of the same type and size, fabricated by the same process and procedure as one continuous run or part thereof.

4.2.2. An inspection lot of finished rivets shall consist of assemblies of one combination of component lots.

4.2.3. Dimensional inspections already performed on components need not be repeated after assembly

4.3. Sampling Plan A Tests - Samples shall be selected at random in accordance with standard MIL-STD-105, Inspection Level I, Acceptable Quality Level (AQL) 6.5, and shall be subjected to the following tests described under “Test Methods”.

   a. Examination of product (4.5.1)
   b. Concentricity of Head (4.5.1.1)

4.4. Sampling Plan B Tests - Samples shall be selected at random in accordance with Table III:

   a. Strength (4.5.2)
   b. Expansion (4.5.3)

4.5. Test Methods

4.5.1. Examination of Product - All rivets shall be examined to determine conformance to the requirements of this specification and the drawing with respect to material, workmanship, identification color, instructions, finish and dimensions. Finish and dimensions shall be checked visually and by means of applicable gages. In case of controversy, gages certified by Government laboratories shall be used.

4.5.1.1. Concentricity of Head

   4.5.1.1.1. Universal Head Rivets - Concentricity of universal head rivets shall be determined by observing the total variation of a dial indicator testing the periphery of the head, as the rivet is rotated with its sleeve as an axis. Total variation shall be no more than 0.25MM.
4.5.1.1.2. 100° Flush Head Rivets (Class 2 and 3)- Concentricity of flush head rivets shall be determined by observing the total variation of a dial indicator testing the conical part of the head (adjacent to the top of the rivet), as the rivet is rotated with its sleeve as an axis. Total variation shall be no more than 0,25MM.

4.5.1.1.3. Type AS- concentricity testing is not applicable.

4.5.2. Strengths

4.5.2.1. Tension strength shall be no lower than listed in Table I, when tested in maximum grip in accordance with NASM1312, Test 8. Grip Dash Numbers –020 and -040 are too short for testing.

4.5.2.2. Single shear strength shall be no lower than listed in Table I, when tested in maximum grip in accordance with NASM1312-20. Grip Dash Numbers –020 and -040 are too short for testing.

4.5.3. Installation Test - A sample of each lot of finished rivets, with the exception of the Type AS tack rivet, shall be tested for installation. One half of the sample shall be tested in maximum grip and minimum hole application while the other half is tested in minimum grip and maximum hole condition. Test plate material is at the option of the manufacturer. Installed rivets shall be examined for proper expansion of the blind head, splitting of the rivet sleeve on the blind side, flaking of the plating of the sleeve and failure of the mandrel prior to being pulled through the sleeve. Splits, cracks, or rivets failing to expand as a result of driving in more than five percent of the rivets expanded shall be cause for rejection during qualification. The acceptance criteria provided in Table III shall apply for acceptance testing. Installation testing of the tack rivet is not applicable.

5. PREPARATION FOR DELIVERY

5.1. All rivets shall be packaged in accordance with good commercial practice at one of the following levels:

5.2. Level A - Military Packaging - Unless otherwise specified, parts shall be packaged 100 pieces per box. Boxes shall be solid fiberboard conforming to PPP-B-556. These boxes will be further packaged in Corrugated Fiberboard Boxes conforming to PPP-B-636 or PPP-B-566.

5.3. Level B - Parts shall be bulk packed approximately 5,000 pieces per box in boxes conforming to PPP-B-636 or PPP-B-566.

5.4. Level C- Parts shall be packaged 100 pieces per bag in plastic bags conforming to MIL-F-3803. Bags shall be marked with the part number and manufacturer’s lot number. Bags will be further packaged 50 bags per box in boxes conforming to PPP-B-636 or PPP-B-566.

5.5. Marking for Shipment

5.5.1. Package: Each package shall be durably marked with the following information in such a manner that the markings will not become damaged when the packages are opened:

5.5.1.1. Lot Number

5.5.1.2. Stock Number or Other Identification Number as specified in the Purchase Document.

5.5.1.3. Part Number

5.5.2. In addition to any special marking required by the contract or order, unit and intermediate packages and shipping containers shall be marked in accordance with Standard MIL-STD-129.

5.6. Special Requirements

5.6.1. Preservation: When specified by the procuring activity, preservation of blind rivets shall be accomplished in accordance with the applicable requirements of MIL-H-3982.
### TABLE I

**MINIMUM STRENGTH VALUES**

<table>
<thead>
<tr>
<th>RIVET TYPE (Material)</th>
<th>CLASS (Head Type)</th>
<th>UNIT OF MEASUREMENT</th>
<th>SHEAR</th>
<th>TENSILE</th>
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<tr>
<td></td>
<td></td>
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<td>-25</td>
<td>-30</td>
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<tr>
<td>SS (1018 STEEL)</td>
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<td>LbF</td>
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<td></td>
<td></td>
<td>LbF</td>
<td>115</td>
<td>166</td>
</tr>
<tr>
<td>CS (A286 CRES)</td>
<td>1 &amp; 2</td>
<td>Newtons</td>
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<td>LbF</td>
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### TABLE II

**CLASSIFICATION OF TESTS (not applicable to Type AS products)**

<table>
<thead>
<tr>
<th>PARAGRAPH</th>
<th>TEST</th>
<th>QUALIFICATION</th>
<th>ACCEPTANCE</th>
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<td>INSTALLATION TESTS</td>
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<td>EXAMINATION OF PRODUCT</td>
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<td>TENSION STRENGTH</td>
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<td>PER TABLE III</td>
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<td>SHEAR STRENGTH</td>
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### TABLE III

**SAMPLING PLAN B**

<table>
<thead>
<tr>
<th>LOT SIZE</th>
<th>SAMPLE SIZE</th>
<th>ACCEPTANCE NO.</th>
<th>REJECTION NO.</th>
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<td>UNDER 3,000</td>
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<td>1</td>
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<tr>
<td>3,001 - 35,000</td>
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<td>0</td>
<td>1</td>
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<tr>
<td>OVER 35,000</td>
<td>8</td>
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<td>1</td>
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