FED. SUPPLY CLASS
5320

1. SCOPE

1.1 Scope. This specification covers the preparation for and installation of buck rivets.

2. APPLICABLE DOCUMENTS

2.1 Government documents. The following documents of the issue in effect on date of invitation for bid or request for proposals form a part of the specification to the extent specified herein:

SPECIFICATIONS

Federal
TT-P-1757 Primer Coating, Zinc Chromate, Low Moisture Sensitivity

STANDARDS

Military
MIL-STD-171 Finishing of Metal and Wood Surfaces

Copies can be obtained from the Department of Defense Single Stock Point (DODSSP). http://quicksearch.dla.mil/

3. REQUIREMENTS

3.1 Rivets. The rivet type, size, and material shall be as specified on the engineering drawing, parts list or specification.

3.1.1 Rivet handling. The rivets, as furnished, shall be free from dust or dirt.

3.2 Preparation for installation

3.2.1 Rivet holes

3.2.1.1 Drilling. Oversize, oblong and irregular-shaped holes shall be cause for rejection. Rivet holes shall be drilled in accordance with the following requirements:

a. All holes shall be drilled normal (at 90 degrees) to the working surface.

b. Extreme pressure shall not be applied and holes shall not be punched through with the drill.

c. When drilling through more than one sheet, hold the sheets securely together so there is no misalignment of holes due to shifting or separation of sheets.

3.2.1.2 Piercing. Only piercing tools which produce true and clean holes equivalent to acceptable drilled holes may be used. Piercing tools shall not be used without written approval from the procuring activity. If piercing is used, all holes shall be inspected for radial cracking.

3.2.1.3 Hole size. Hole size for rivets shall conform to Table I unless otherwise specified on the engineering drawing or specification.

THE INITIAL RELEASE OF THIS DOCUMENT SUPERSEDES MIL-R-47196, REVISION A. PART NUMBERS REMAIN M47196.

THIRD ANGLE PROJECTION	CUSTODIAN	REVISION
	NATIONAL AEROSPACE STANDARDS COMMITTEE	2
PROCUREMENT SPECIFICATION: NONE	TITLE: PREPARATION FOR AND INSTALLATION OF BUCK-TYPE RIVETS	CLASSIFICATION SPECIFICATION: NASM47196

3.2.1.4 Countersinking. Countersinking shall be used in the installation of all flush type rivets. Countersinks shall be produced with a tool that incorporates an automatic stop countersinking feature. The countersinking tool shall be held at 90 degrees to the work surface during the entire cutting cycle. Countersinks shall be free of chatter marks and concentric with the rivet holes. The countersink diameter shall be in accordance with Table VI unless otherwise specified on the applicable drawings or specifications.

3.3 Installation

3.3.1 Cleaning mating surfaces. Before parts are riveted together, all chips, burrs and foreign material shall be removed from the mating surfaces. Burrs may be removed from rivet holes by chamfering to a depth not to exceed 10 percent of the stock thickness, or .032 inches, whichever is less. Disassembly after drilling and before riveting, in order to deburr faying surfaces, shall not be required.

3.3.2 Installation grip. The rivet grip lengths shown on drawings shall be verified prior to installation. Grip length shall be changed as material thickness dictates as required to achieve minimum head dimensions as shown in Table III without buckling or bending or other driving difficulties.

3.3.3 Driving procedure

3.3.3.1 Head direction. Unless specified on the engineering drawing or specification, the manufactured head of the rivet shall be located on exterior surfaces.

3.3.3.2 Rivet set. Flat dies may be used on the manufactured head of universal head rivets provided the head is not flattened beyond the dimensions specified on Table II.

3.3.3.3 Peening. The driven rivet shall completely fill the hole. Peening of the driven head by rolling the bucking bar shall not be permitted since the rivet hole will not be filled.

3.3.3.4 Head diameter. Unless otherwise specified on the engineering drawing or specification, all rivets shall be driven to minimum head diameter specified in Table III. Driven head thickness larger than the maximum specified in Table III must be approved by the procuring activity.

3.3.3.4.1 Driven universal heads. Driven universal heads may be formed on the shank side of the rivet using the next smaller size universal type head riveting die (example, 1/8 inch die for 5/32 inch shop head rivet). Driven universal type head size shall conform to the respective rivet diameter shown on Table III, unless otherwise specified on the engineering drawing or specification.

3.3.4 Multiple (gang) riveting

3.3.4.1 Head height. The height of manufactured heads after riveting shall not be less than as specified in Table II.

3.3.4.2 Head flushness. To prevent gapping of heads, when driven with a gang riveter, the rivet heads shall not be flush prior to driving.

3.3.5 Riveting contoured surfaces. Tack rivets or other suitable devices at increments of every fifth or sixth hole must be used before final riveting when riveting contoured surfaces.

3.3.6 Countersunk rivet head flushness. Unless otherwise specified on the engineering drawing or specification, flushness limits shall be .010 inches above to .005 inches below the material surface. Countersink diameters are provided in Table IV for reference.

3.3.7 Shaving countersunk rivets. Rivets failing to meet flushness requirements may be shaved to new close tolerances. The material surface shall not be damaged by the shaving tools. The stop device on the shaver shall be adjusted so that it extends .001 inches to .002 inches beyond the cutter and the setting shall be tested prior to shaving the rivet head. The cutter used in the shaver shall be larger in diameter than the rivet head. Table V contains recommended cutter diameters. Shaved rivets may not protrude prior to shaving in excess of the dimensions shown in Table IV. The minimum head diameter after shaving shall be as specified in Table IV.

3.3.7.1 Shaving countersunk aluminum alloy rivets. If shaving is required for aluminum alloy rivets to meet surface flushness requirements, one of the following checks shall be made to prevent loss of rivet tensile strength:

a. Head protrusion shall not exceed “H” in Table IV, after driving and prior to shaving.

b. Head diameter shall not be less than “ØD” in Table IV after driving and shaving.

3.3.7.2 Refinishing shaved rivet heads. Refinishing of shaved rivet heads shall be required in areas where the parent material is painted, chemically treated, or primed. Refinishing shall be to the same requirements as the parent material.

3.4 Repair procedure. Any repairs exceeding the limitations listed in the sub-paragraphs hereunder are prohibited without prior written approval from the procuring activity.

3.4.1 Oversize rivet holes. When rivet holes are enlarged beyond specified tolerances, the next larger rivet size (diameter) may be used provided the row spacing, pitch and edge margin minimum are maintained and the requirements of paragraph 3.4.3 are not exceeded. The pitch is defined as the distance between the hole centers of adjacent rivets in a row. For pitch minimums, see Table VII. Row spacing minimum shall be .866 times the rivet spacing nominal dimension as given on the drawing. Edge margin is defined as the distance between hole centers and the edge of the material. There are two types of edge margins, visible and invisible. When viewed from the outside, or side from which the rivet is inserted, the material edge in view is the visible edge and the edge hidden is the invisible edge. In case of conflict between the side rivet is inserted or outside, outside shall take precedence. See Table VIII for edge margin minimums. (2)

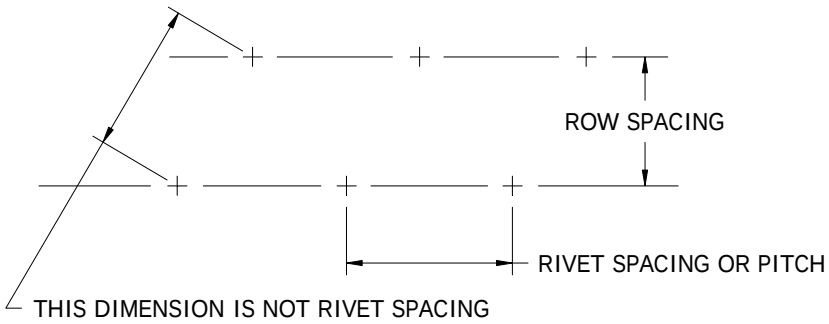

FIGURE 1 – ROW AND RIVET SPACING

3.4.2 Oversize countersinks. When countersinks are enlarged beyond specified tolerances, the next larger size rivet may be used, provided pitch and edge margins requirements are maintained, the material thickness to be riveted will permit the use of a larger rivet, and the limitations of 3.4.3 are not exceeded. The term “next larger size” shall be defined as the next larger diameter listed under the NAS standard drawing, specification or other document specified on the engineering drawing for that application, but not to exceed 1/32 inch increments for sizes up to Ø1/4 inches and 1/16 inch increments for sizes above Ø1/4 inches.

3.4.3 Repair limitations. The combined oversize rivet hole repairs and oversize countersink repairs shall be limited to a maximum of 20 percent of the rivets, or 10 rivets in a single rivet pattern, whichever is less. Repairs to more than two adjacent oversize rivets, or replacing more than half the rivets with oversize rivets in any 10 inch length of pattern is prohibited.

3.5 Corrosion prevention. When the rivet material is dissimilar to the material being riveted (reference MIL-STD-171), the rivet hole, countersink, and rivet shall be coated with zinc chromate primer in accordance with TT-P-1757 prior to installation. The rivet shall be installed while the primer is in the wet condition.