Process Specification for the Installation of Solid Rivets

Engineering Directorate

Structural Engineering Division

May 2020

National Aeronautics and
Space Administration

Lyndon B. Johnson Space Center
Houston, Texas

Process Specification for the Installation of Solid Rivets

Prepared by:	Signature on File	05/28/2020
	Jay Bennett Materials and Processes Branch/ES4	Date
Reviewed by:	Signature on File	05/28/2020
	John Figert Materials and Processes Branch/ES4	Date
Approved by:	Signature on File	05/28/2020
	Brian Mayeaux Materials and Processes Branch/ES4	Date

REVISIONS		
VERSION	**DESCRIPTION**	**DATE**
--	Original version	5/9/96
A	Revision	5/16/97
B	Revision, Added reference to Sealing PRC, added requirement for written shop procedures, removed revision letter from MIL-STD-403, and other updating.	4/23/01
C	Changed Division name. Identified M&P branch in Section 3.0. Revised section 3.1 (Work Instructions) and moved to section 6.1, restructured section 6, added section 7.0. (Process Qualification) and bumped remaining sections, revised new section 9.0 (Training).	10/2004
D	Retitled section 4.0 (Applicable Documents) to (References), and updated the number and titles of documents in that section. Added a requirement to section 6.2 (General Requirements) that allows technician to shorten rivets to improve installation quality.	2/2007
E	Changed signatories. Removed blind rivets from specification. Changed reference specification from MIL-STD-403 to NASM47196. Added countersunk rivet shaving in 3.0 section (Usage).	5/2020

1.0 SCOPE

This process specification establishes requirements for the installation of solid rivets in flight hardware manufactured by JSC.

2.0 APPLICABILITY

This process specification shall be applicable whenever installation of solid rivets is invoked per Section 3.0, “Usage”.

3.0 USAGE

This process specification shall be called out on the engineering drawing by using a drawing note. For example:

INSTALL RIVETS PER NASA/JSC PRC-9001.

A drawing note for sealing the rivet during installation normally will follow the rivet installation note, in accordance with PRC-4004.

If sealant is not required for the design, the engineering drawing shall also read:

DO NOT USE SEALANT

The sealant and the part numbers for the rivets shall be included in the parts list on the engineering drawing.

Note: A sealant is generally required when riveting dissimilar metals. Sealant is also generally required when joining aluminum parts with aluminum rivets. Designers should get approval from NASA Materials and Processes (M&P) before specifying no sealant.

If design requires the head of a countersunk rivet to protrude less than the default of .010”, a flushness requirement must be made on the engineering drawing. The minimum diameter requirement of the countersunk rivets after shaving protects against over-shaving, but excessive flushness requirements may cause rejection of shaved rivets.

4.0 REFERENCES

SOP-007.1	*Preparation and Revision of Process Specifications*
JPR 8500.4	*Engineering Drawing System Manual*
NASM47196	*Preparation for and Installation of Buck-type rivets*
NASA/JSC PRC-4004	*Process Specification for the Sealing of Joints and Faying Surfaces*

5.0 MATERIAL REQUIREMENTS

None.

6.0 PROCESS REQUIREMENTS

6.1 WORK INSTRUCTIONS

All work shall be performed to written procedures. The work instructions shall contain sufficient detail to ensure that the manufacturing process produces consistent, repeatable products that comply with this specification.

For work performed at JSC facilities, these work procedures consist of Detailed Process Instructions (DPI's).

For contracted work, the contractor shall be responsible for preparing, maintaining, and certifying written work procedures that meet the requirements of this specification.

6.2 GENERAL REQUIREMENTS

Installation of solid rivets shall comply with NASM47196, except using the sealant as specified on the engineering drawing.

Rivets may be shortened by installer if necessary to achieve a better appearance, as long as the grip size called out on the engineering drawing is still used. The tool to cut off the rivet must be specified in the written work procedures and must be a tool specifically designed and sold for that task.

7.0 PROCESS QUALIFICATION

None required.

8.0 PROCESS VERIFICATION

Process verification for Installation of solid rivets shall comply with NASM47196.

9.0 TRAINING AND CERTIFICATION OF PERSONNEL

This process shall be performed by personnel qualified through training or experience and certified by their supervision to conduct the process.

10.0 DEFINITIONS

None.