



AEROSPACE STANDARD

AS1561™**REV. B**

Issued 1981-11
Reaffirmed 2006-05
Revised 2021-08

Superseding AS1561A

Stud, Locked in - Ring, Straight,
Installation and Removal of

RATIONALE

Add AS3319, AS3320, AS3321, and AS3322 to applicable documents (2.1). Update source of supply company name in Table 2. Minor editorial changes.

1. SCOPE

1.1 This SAE Aerospace Standard provides minimum design, installation, and removal requirements for AS3319 through AS3322 studs and is applicable when specified on engineering drawings, or in procurement documents.

2. APPLICABLE DOCUMENTS

The following publications form a part of this document to the extent specified herein. The latest issue of SAE publications shall apply. The applicable issue of other publications shall be the issue in effect on the date of the purchase order. In the event of conflict between the text of this document and references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

2.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), www.sae.org.

AS1620	Stud, Locked in - Ring, Straight, Hole Preparation for
AS3319	Stud - Straight, Ring Locked, Corrosion And Heat Resistant Steel (UNS S66286), .1900-24 UNJC X .1900-32 UNJF
AS3320	Stud - Straight, Ring Locked, Corrosion And Heat Resistant Steel (UNS S66286), .2500-20 UNJC-3A X .2500-28 UNJF-3A
AS3321	Stud - Straight, Ring Locked, Corrosion And Heat Resistant Steel (UNS S66286), .3125-18 UNJC-3A X .3125-24 UNJF-3A
AS3322	Stud - Straight, Ring Locked, Corrosion And Heat Resistant Steel (UNS S66286), .3750-16 UNJC X .3750-24 UNJF

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3. GENERAL DESIGN INFORMATION

- 3.1 These straight studs are ring locked to prevent the stud from rotating during service and while assembling or removing the nut. The stud shear engagement area to resist tensile loads is shown in Table 1.

Table 1 - Shear engagement area

BASIC STUD PART NUMBER (REF) /1/	THREAD MINIMUM SHEAR ENGAGEMENT AREA IN ²
AS3319	0.1142
AS3320	0.2075
AS3321	0.3331
AS3322	0.4891

/1/ The thread shear minimum engagement area is the axial thread shear axial area of the stud that must resist thread stripping due to tensile loads applied to the stud. It does not represent a dimension of either the members in an unassembled condition.

- 3.2 Dimensioning in inches.
- 3.3 Studs AS3319 through AS3322 are to be installed per this document into stud holes prepared per AS1620.
- 3.4 Installed stud shall have an “A” projection above the boss equivalent to the “A” dimension on the stud drawing as shown in AS3319 through AS3322.
- 3.5 When ring lock studs are installed in soft boss materials (Al, mag, brass, bronze, etc.), the lockring is of sufficient hardness for its external serrations to broach their own way into the boss. When studs are installed in hard boss materials (steel, Ti, heat resistant alloy, etc.), it will be necessary to broach serrations in the counterbore area prior to stud installation.

4. DESIGN REQUIREMENTS

- 4.1 Minimum data to be specified on engineering drawing or specification:
- 4.1.1 Boss diameter to be at least the minimum specified in AS1620.
- 4.1.2 Location of holes and thread size. If tap drill depth is not through, specify control depth dimensions.
- 4.1.3 Applicable stud part number (AS3319 through AS3322).
- 4.1.4 Install stud per AS1561.
- 4.1.5 If material requires a corrosion protective coating, so specify.

5. INSTALLATION OF STUD

- 5.1 Installation into AS1620 soft boss (Al, mag, brass, bronze):
- 5.1.1 Apply a corrosion protective coating in the prepared hole as specified on the stud installation drawing.
- 5.1.2 Screw the stud into the prepared hole by hand until the lockring contacts the top of boss and the top of lockring bears against the stud serration stop (Figure 2). This will automatically provide the proper stud projection “A” (Figure 1).
- 5.1.3 Using the applicable lockring drive tool shown in Table 2, drive the lockring into the counterbore until the face of the tool bears against the boss surface. The lockring shall be installed flush to 0.010 below the boss surface per Figures 1 and 2.