

FED. SUPPLY CLASS

53GP

**1. SCOPE**

- 1.1 This specification defines the inspection criteria and requirements in inches for gaging the head protrusion values for 100° flush head rivets and threaded fasteners;  
Type A - Rivets (i.e. NAS525).  
Type B - Externally threaded 100° Full Flush Head fasteners (i.e. NAS1580).  
Type C - Externally threaded 100° Reduced Flush Head fasteners (i.e. NAS1581).
- 1.2 This specification includes the individual flush head protrusion gage block diameters, the method for determining applicable individual gage block diameters and acceptable gage diameter wear factors.
- 1.3 Recommendations for improvement and/or corrections to this standard practice document should be directed to an NASC Representative or to the National Aerospace Standards Committee.
- 1.4 Specifications herein, of issue in effect on date of price inquiry, are a part of this specification to the extent indicated. In the case of conflict, the requirements herein shall take precedence.
- 1.5 This Standard Practice takes precedence over documents referenced herein.

**2. REFERENCED DOCUMENTS**

- 2.1 ASME International  
ASME B46.1 - Surface Texture (Surface Roughness, Waviness, and Lay)  
ASME Y14.5M-1994 - Dimensioning and Tolerancing.  
ASME Y14.36M-1996 - Surface Texture Symbols
- 2.2 ASTM International  
ASTM E 140 - Standard Hardness Conversion Table for Metals
- 2.3 Aerospace Industries Association  
NAS525 - Rivet, 100 Degree Countersunk Head  
NAS1580 - Bolt, 100 Degree Flush Head, 95 KSI Fsu  
NAS1581 - Bolt, 100 Degree Reduced Flush Head, 95 KSI Fsu
- 2.4 SAE International  
ARP9013 - Statistical Product Acceptance Requirements

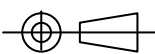
**3. DEFINITIONS**

None

**4. GENERAL REQUIREMENTS**

- 4.1 HEAD PROTRUSION
- 4.2 Fastener head protrusion characteristic "H", measured in accordance with FIGURE 1, shall meet the requirements tabulated in TABLE I. The fastener protrusion values tabulated in TABLE I may be corrected to allow for acceptable gage block diameter "ØA" wear in accordance with Section 5.
- 4.3 The fastener head protrusion "H" shall be measured with an indicating gage calibrated to .0005 inch, fitted with a stylus and mounted in a fixture to assure proper alignment. The indicating base of the fixture shall be capable of maintaining perpendicularity between the stylus axis (Datum A) and the fixture base.

THIRD  
ANGLE  
PROJECTION



CUSTODIAN  
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**3**

PROCUREMENT  
SPECIFICATION

NONE

TITLE  
**HEAD PROTRUSION GAGING,  
100° FLUSH HEAD FASTENERS,  
GAGE BLOCK, GAGE DIAMETERS AND STYLUS**

CLASSIFICATION  
STANDARD PRACTICE

**NAS9800**  
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- 4.4 The head angle, head cocking, and the head to shank fillet radii shall be checked by means of an optical comparator or by equivalent methods.
- 4.5 Flush head protrusion values defined in the part standard or the procurement specification shall take precedence over the values listed herein.
- 4.6 The inspection sampling plan for head protrusion shall be in accordance with ARP9013, 98% IRR or higher, or TABLE IV. No rejectable conditions permitted within sample. If one rejectable condition is found, the entire lot shall be rejected.

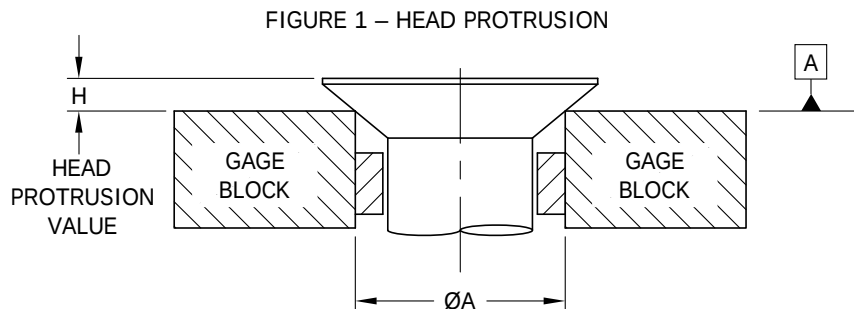


TABLE I – HEAD PROTRUSION VALUES

| TYPE A  |       |       |                 | TYPE B  |       |       |                 | TYPE C  |       |       |                 |
|---------|-------|-------|-----------------|---------|-------|-------|-----------------|---------|-------|-------|-----------------|
| NOM DIA | H     |       | STYLUS TYPE /3/ | NOM DIA | H     |       | STYLUS TYPE /3/ | NOM DIA | H     |       | STYLUS TYPE /3/ |
|         | MAX   | MIN   |                 |         | MAX   | MIN   |                 |         | MAX   | MIN   |                 |
|         |       |       |                 | .112    | .0212 | .0192 | S1 or S01       |         |       |       |                 |
| .125    | .0197 | .0166 | S2 or S02       | .138    | .0243 | .0221 | S2 or S02       |         |       |       |                 |
| .156    | .0220 | .0186 | S2 or S02       | .164    | .0278 | .0250 | S2 or S02       | .164    | .0220 | .0186 | S2 or S02       |
| .190    | .0250 | .0210 | S3 or S03       | .190    | .0285 | .0255 | S3 or S03       | .190    | .0250 | .0210 | S2 or S02       |
| .250    | .0278 | .0232 | S3 or S03       | .250    | .0351 | .0319 | S3 or S03       | .250    | .0278 | .0232 | S3 or S03       |
| .312    | .0305 | .0255 | S4 or S04       | .312    | .0409 | .0374 | S4 or S04       | .312    | .0305 | .0255 | S3 or S03       |
| .375    | .0333 | .0277 | S4 or S04       | .375    | .0459 | .0422 | S4 or S04       | .375    | .0333 | .0277 | S3 or S03       |
| .438    | .0430 | .0370 | S4 or S04       | .438    | .0470 | .0425 | S4 or S04       | .438    | .0430 | .0370 | S4 or S04       |
| .500    | .0458 | .0392 | S5 or S05       | .500    | .0529 | .0482 | S5 or S05       | .500    | .0458 | .0392 | S4 or S04       |
| .562    | .0515 | .0445 | S5 or S05       | .562    | .0590 | .0541 | S5 or S05       | .562    | .0515 | .0445 | S4 or S04       |
| .625    | .0543 | .0467 | S6 or S06       | .625    | .0683 | .0622 | S6 or S06       | .625    | .0543 | .0467 | S4 or S04       |
|         |       |       |                 | .750    | .0769 | .0707 | S7 or S07       | .750    | .0531 | .0469 | S5 or S05       |
|         |       |       |                 | .875    | .0875 | .0805 | S7 or S07       | .875    | .0867 | .0797 | S6              |
|         |       |       |                 | 1.000   | .0989 | .0911 | S7 or S07       | 1.000   | .0957 | .0879 | S7              |

## 5. DETAIL REQUIREMENTS

### 5.1 GAGE BLOCK

- 5.1.1 Maximum wear limits of the gage block diameter “ØA”, shown in the FIGURE 1 and FIGURE 2 Gage Blocks on Datum A, are tabulated in TABLE II, Column B, “WEAR LIMIT MAX”.
- 5.1.2 Gage compensation for acceptable wear of “ØA”, shown in FIGURE 1 and FIGURE 2 Gage Blocks on Datum A shall be calculated by setting the dial indicating gage to zero on Datum A, placing the calibration ball for the size in accordance with TABLE II in gage diameter “ØA” and then measuring the ball protrusion height assuring that the extreme top of the ball is located. The difference between the TABLE II Gage Ball Calibration Height in column “B” and the actual obtained measurement is the correction value. The correction value should be noted on the calibration tag.

REVISION

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**Documents**

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