

AMERICAN NATIONAL STANDARD

# Small Solid Rivets

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ANSI B18.1.1 - 1972

7/16 Inch Nominal Diameter and Smaller

(REVISION OF B18.1-1965)

**REAFFIRMED 1995**

FOR CURRENT COMMITTEE PERSONNEL  
PLEASE SEE ASME MANUAL AS-11

**SECRETARIAT**

SOCIETY OF AUTOMOTIVE ENGINEERS  
THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS

**PUBLISHED BY**

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## FOREWORD

American National Standards Committee B18 for the standardization of bolts, screws, nuts, rivets and similar fasteners was organized in March 1922, as Sectional Committee B18, under the aegis of the American Engineering Standards Committee (later the American Standards Association, then the United States of America Standards Institute and, as of October 6, 1969, the American National Standards Institute, Inc.) with the Society of Automotive Engineers and the American Society of Mechanical Engineers as joint sponsors. Subcommittee 1 was subsequently appointed and charged with responsibility for the standardization of rivets.

Initial efforts of the Subcommittee were directed at development of a standard covering solid rivets of less than 1/2 inch nominal diameter which was approved in 1927 and designated B18a—1927.

A proposed standard covering tinnerns, coopers and belt rivets was granted recognition as a tentative document in May of 1928 and was approved as an American Standard in January 1929 under the designation B18g—1928.

Revisions made to both of these standards relative to physical tests were issued as addendums under the designations B18a1—1942 and B18g1—1942, respectively.

Following reorganization of Sectional Committee B18 in 1947, Subcommittee 1 was requested to review the documents under its jurisdiction to bring them up to date and, as necessary, develop them into complete product standards. Revisions to the documents on small rivets, and tinnerns, coopers, and belt rivets were considered at length during several meetings of the Subcommittee held over a period from 1947 to 1951. A draft proposal combining the data contained in both prior documents under the common heading "Small Solid Rivets", incorporating dimensional tolerances with no significant change in basic dimensions was agreed upon by the Subcommittee in November 1952. Following approval by letter ballot of the Sectional Committee and sponsor organizations the revision was submitted to the American Standards Association and was designated an American Standard, B18.1—1953, in June of 1953.

Shortly after publication of the 1953 standard, Subcommittee 1 undertook development of a revision to include data for chamfered points and other minor refinements to meet requirements of the user industry. The resulting proposal was approved by letter ballot of the B18 Committee conducted on May 10, 1954. Subsequent to approval by the sponsors, the revision was presented to the American Standards Association for designation as an American Standard. This was granted on October 5, 1955.

From 1960 to 1962, a number of changes to the standard relating to underhead fillets, dimensioning of countersunk head rivets, points, and material specifications were approved by the Subcommittee. A draft proposal incorporating these revisions and numerous editorial corrections was approved by letter ballot of the Sectional Committee on February 11, 1964. Following approval by the sponsor organizations the revision was designated an American Standard on September 20, 1965.

During 1969 and 1970, Subcommittee 1 drafted a revision of the B18.1 Standard incorporating the addition of the 60-degree flat countersunk head (formerly on Standard ASAE S228), changes to nomenclature for countersunk head and truss head rivets, and a complete reworking of the format to conform with related documents. Subsequent to letter ballot approval by American National Standards Committee B18 and the sponsors, the revision was submitted to the American National Standards Institute and was designated an American National Standard, ANSI B18.1.1—1972, on January 12, 1972.

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## AMERICAN NATIONAL STANDARD

## SMALL SOLID RIVETS

## 7/16 INCH NOMINAL DIAMETER AND SMALLER

**1 INTRODUCTORY NOTES****1.1 SCOPE**

1.1.1 This standard covers complete general and dimensional data for those types of small solid rivets recognized as "American National Standard". All other types of small solid rivets, within the limits of the diameters contained herein, are to be considered special. Also included is an appendix covering formulas on which dimensional data are based. It should be understood, however, that where questions arise concerning acceptance of product, the dimensions in the tables shall govern over recalculation by formula.

1.1.2 The inclusion of dimensional data in this standard is not intended to imply that all of the products described are stock production sizes. Consumers should consult with manufacturers concerning the availability of products.

**1.2 TYPES OF RIVETS**

This standard specifies small solid rivets including flat head, flat countersunk head, button head, pan head, truss head, tinners, cooper, belt; and 60-degree flat countersunk head rivets.

**1.3 TABULAR SIZES**

The nominal sizes of rivets in fractions of an inch or decimals as given for the respective types in Tables 1 through 5, and the sizes as given for the respective types in Tables 6, 7, 8 and 9, shall be considered "American National Standard". This, however, does not preclude the manufacture or use of rivets having other diameters. Where other sizes of rivets having other size designations, such as Birmingham wire gage numbers, are shown in catalogs interposed with "American National Standard" sizes, it is recommended that the data be presented in such form

as to make clear which diameters are and which are not "American National Standard"

**1.4 HEAD PROPORTIONS**

The proportions for heads of rivets indicated in the respective tables shall be standard, other proportions shall be considered special. Where nonstandard diameter rivets are required for special applications, the proportions of heads and points, if pointed, shall preferably be based on the formulations given in Appendix I.

**1.5 DIMENSIONS**

All dimensions in this standard are given in inches, unless otherwise stated.

**1.6 TERMINOLOGY**

For definitions of terms relating to fasteners or component features thereof used in this standard, refer to American National Standard, Glossary of Terms for Mechanical Fasteners ANSI B18.12.

**1.7 RELATED STANDARDS**

It should be noted that standards for large rivets, tubular and split rivets and other related fasteners are published under separate cover as listed on the back sheet of this standard.

**1.8 REFERENCED STANDARDS**

Copies of referenced ASTM Standards may be obtained from the American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania 19103.

Copies of referenced SAE Standards may be obtained from the Society of Automotive Engineers, Inc., Two Pennsylvania Plaza, New York, New York 10001.

## 2 GENERAL DATA

### 2.1 HEADS

The head dimensions tabulated in the respective dimensional tables are applicable to rivets produced by the normal cold heading process. Because the heads of these rivets are not machined or trimmed, the circumference may be somewhat irregular and edges may be rounded or flat.

Tolerances applicable to rivets made by the hot heading or forging process shall be as agreed upon between the manufacturer and purchaser.

### 2.2 UNDERHEAD FILLETS

Rivets other than countersunk types shall be furnished with a definite fillet under the head; however, the radius of fillet shall not exceed 10 per cent of the maximum shank diameter or 0.03 inch, whichever is the smaller.

### 2.3 LENGTH

2.3.1 Measurement. The length of rivet shall be measured, parallel to the axis of rivet, from the extreme end to the plane of the bearing surface for rivets having flat bearing surface type heads, and to the top of the head for rivets having countersunk type heads.

2.3.2 Tolerance on Length. Unless otherwise specified in the dimensional tables, the tolerance on length of rivets shall be as tabulated below for the respective rivet types:

| Rivet Type                                                                      | Tolerance on Length |       |
|---------------------------------------------------------------------------------|---------------------|-------|
|                                                                                 | Plus                | Minus |
| Flat, Flat Countersunk, Pan, Button, Truss and 60-Degree Flat Countersunk Heads | 0.016               | 0.016 |
| Belt                                                                            | 0.031               | 0.000 |

### 2.4 POINTS

Unless otherwise specified, rivets shall have plain sheared ends. The ends shall be at right angles within two degrees to the axis of the rivet and reasonably flat, sufficient for the purposes of driving that end satisfactorily. Where so specified by user, rivets having standard header points shown in Table 10 shall be furnished.

## 2.5 MATERIALS

2.5.1 Steel. Suitable material for solid steel rivets is covered by American Society for Testing and Materials, ASTM Standard A31, Grade A; or SAE Recommended Practice, Mechanical and Chemical Requirements for Nonthreaded Fasteners—SAE J430, Grade 0.

2.5.2 Other Materials. Where so specified, rivets may also be made from corrosion resistant steel, brass, aluminum and other materials having properties as agreed upon between the manufacturer and purchaser.

2.5.3 Hardness. Hardness tests, where required, shall be made on the sides of the rivet shank.

### 2.6 FINISH

Unless otherwise specified, rivets shall be supplied with a natural (as processed) finish, unplated or uncoated.

### 2.7 QUALITY

The finished rivets shall be free from defects affecting their serviceability.

### 2.8 DESIGNATION

Where specifying rivets, the following data shall be included in the designation and shall appear in the sequence shown:

Nominal Size (number, fraction, or decimal equivalent)

Length (fraction or decimal equivalent, where it is a variable)

Type of Rivet (including the head style where needed to define the part)

Pointed (where not a standard feature and other than plain point is desired)

Material

Finish (if required)

Examples:

1/4 x 1 1/4 Flat Head Small Solid Rivet; Steel, Zinc Plated

.125 x .500 Button Head Small Solid Rivet; Pointed, Brass

3 lb Tinnets Rivet; Steel, Zinc Plated

#10 x .38 Belt Rivet; Steel

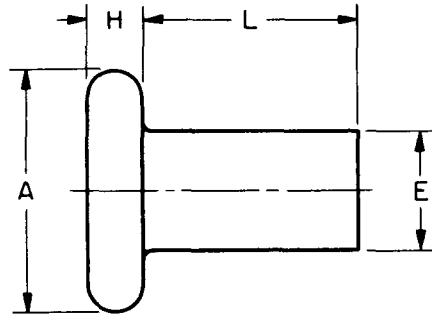


Table 1 Dimensions of Flat Head Rivets

| Nominal<br>Size <sup>1</sup><br>or Basic<br>Shank<br>Diameter | E                 |       | A                |       | H              |       |
|---------------------------------------------------------------|-------------------|-------|------------------|-------|----------------|-------|
|                                                               | Shank<br>Diameter |       | Head<br>Diameter |       | Head<br>Height |       |
|                                                               | Max               | Min   | Max              | Min   | Max            | Min   |
| 1/16 0.062                                                    | 0.064             | 0.059 | 0.140            | 0.120 | 0.027          | 0.017 |
| 3/32 0.094                                                    | 0.096             | 0.090 | 0.200            | 0.180 | 0.038          | 0.026 |
| 1/8 0.125                                                     | 0.127             | 0.121 | 0.260            | 0.240 | 0.048          | 0.036 |
| 5/32 0.156                                                    | 0.158             | 0.152 | 0.323            | 0.301 | 0.059          | 0.045 |
| 3/16 0.188                                                    | 0.191             | 0.182 | 0.387            | 0.361 | 0.069          | 0.055 |
| 7/32 0.219                                                    | 0.222             | 0.213 | 0.453            | 0.427 | 0.080          | 0.065 |
| 1/4 0.250                                                     | 0.253             | 0.244 | 0.515            | 0.485 | 0.091          | 0.075 |
| 9/32 0.281                                                    | 0.285             | 0.273 | 0.579            | 0.545 | 0.103          | 0.085 |
| 5/16 0.312                                                    | 0.316             | 0.304 | 0.641            | 0.607 | 0.113          | 0.095 |
| 11/32 0.344                                                   | 0.348             | 0.336 | 0.705            | 0.667 | 0.124          | 0.104 |
| 3/8 0.375                                                     | 0.380             | 0.365 | 0.769            | 0.731 | 0.135          | 0.115 |
| 13/32 0.406                                                   | 0.411             | 0.396 | 0.834            | 0.790 | 0.146          | 0.124 |
| 7/16 0.438                                                    | 0.443             | 0.428 | 0.896            | 0.852 | 0.157          | 0.135 |

<sup>1</sup>Where specifying nominal size in decimals, zeros preceding decimal shall be omitted.

For additional requirements refer to General Data on Page 2.

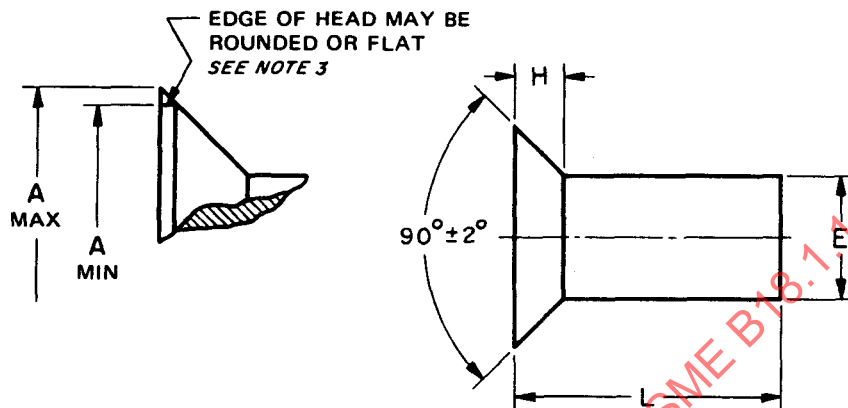


Table 2 Dimensions of Flat Countersunk Head Rivets

| Nominal Size <sup>1</sup><br>or Basic Shank Diameter | E              |       | A                |                  | H                |
|------------------------------------------------------|----------------|-------|------------------|------------------|------------------|
|                                                      | Shank Diameter |       | Head Diameter    |                  | Head Height      |
|                                                      | Max            | Min   | Max <sup>2</sup> | Min <sup>3</sup> | Ref <sup>4</sup> |
| 1/16 0.062                                           | 0.064          | 0.059 | 0.118            | 0.110            | 0.027            |
| 3/32 0.094                                           | 0.096          | 0.090 | 0.176            | 0.163            | 0.040            |
| 1/8 0.125                                            | 0.127          | 0.121 | 0.235            | 0.217            | 0.053            |
| 5/32 0.156                                           | 0.158          | 0.152 | 0.293            | 0.272            | 0.066            |
| 3/16 0.188                                           | 0.191          | 0.182 | 0.351            | 0.326            | 0.079            |
| 7/32 0.219                                           | 0.222          | 0.213 | 0.413            | 0.384            | 0.094            |
| 1/4 0.250                                            | 0.253          | 0.244 | 0.469            | 0.437            | 0.106            |
| 9/32 0.281                                           | 0.285          | 0.273 | 0.528            | 0.491            | 0.119            |
| 5/16 0.312                                           | 0.316          | 0.304 | 0.588            | 0.547            | 0.133            |
| 11/32 0.344                                          | 0.348          | 0.336 | 0.646            | 0.602            | 0.146            |
| 3/8 0.375                                            | 0.380          | 0.365 | 0.704            | 0.656            | 0.159            |
| 13/32 0.406                                          | 0.411          | 0.396 | 0.763            | 0.710            | 0.172            |
| 7/16 0.438                                           | 0.443          | 0.428 | 0.823            | 0.765            | 0.186            |

<sup>1</sup>Where specifying nominal size in decimals, zeros preceding decimal shall be omitted.

<sup>2</sup>Sharp edged head. Tabulated maximum values calculated on basic diameter of rivet and  $92^\circ$  included angle extended to a sharp edge.

<sup>3</sup>Rounded or flat edged irregular shaped head. See Paragraph 2.1 of General Data.

<sup>4</sup>Head height, H, is given for reference purposes only. Variations in this dimension are controlled by the head and shank diameters and the included angle of the head.

For additional requirements refer to General Data on Page 2.

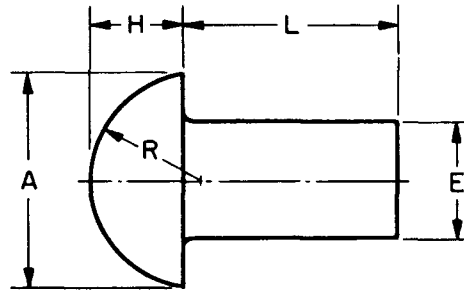


Table 3 Dimensions of Button Head Rivets

| Nominal<br>Size <sup>1</sup><br>or Basic<br>Shank<br>Diameter |       | E                 |       | A                |       | H              |       | R              |
|---------------------------------------------------------------|-------|-------------------|-------|------------------|-------|----------------|-------|----------------|
|                                                               |       | Shank<br>Diameter |       | Head<br>Diameter |       | Head<br>Height |       | Head<br>Radius |
|                                                               |       | Max               | Min   | Max              | Min   | Max            | Min   | Approx         |
| 1/16                                                          | 0.062 | 0.064             | 0.059 | 0.122            | 0.102 | 0.052          | 0.042 | 0.055          |
| 3/32                                                          | 0.094 | 0.096             | 0.090 | 0.182            | 0.162 | 0.077          | 0.065 | 0.084          |
| 1/8                                                           | 0.125 | 0.127             | 0.121 | 0.235            | 0.215 | 0.100          | 0.088 | 0.111          |
| 5/32                                                          | 0.156 | 0.158             | 0.152 | 0.290            | 0.268 | 0.124          | 0.110 | 0.138          |
| 3/16                                                          | 0.188 | 0.191             | 0.182 | 0.348            | 0.322 | 0.147          | 0.133 | 0.166          |
| 7/32                                                          | 0.219 | 0.222             | 0.213 | 0.405            | 0.379 | 0.172          | 0.158 | 0.195          |
| 1/4                                                           | 0.250 | 0.253             | 0.244 | 0.460            | 0.430 | 0.196          | 0.180 | 0.221          |
| 9/32                                                          | 0.281 | 0.285             | 0.273 | 0.518            | 0.484 | 0.220          | 0.202 | 0.249          |
| 5/16                                                          | 0.312 | 0.316             | 0.304 | 0.572            | 0.538 | 0.243          | 0.225 | 0.276          |
| 11/32                                                         | 0.344 | 0.348             | 0.336 | 0.630            | 0.592 | 0.267          | 0.247 | 0.304          |
| 3/8                                                           | 0.375 | 0.380             | 0.365 | 0.684            | 0.646 | 0.291          | 0.271 | 0.332          |
| 13/32                                                         | 0.406 | 0.411             | 0.396 | 0.743            | 0.699 | 0.316          | 0.294 | 0.358          |
| 7/16                                                          | 0.438 | 0.443             | 0.428 | 0.798            | 0.754 | 0.339          | 0.317 | 0.387          |

<sup>1</sup>Where specifying nominal size in decimals, zeros preceding decimal shall be omitted.

For additional requirements refer to General Data on Page 2.

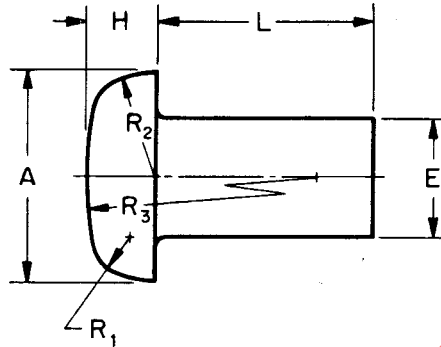


Table 4 Dimensions of Pan Head Rivets

| Nominal<br>Size <sup>1</sup><br>or Basic<br>Shank<br>Diameter | E                 |       | A                |       | H              |       | R <sub>1</sub>           | R <sub>2</sub>         | R <sub>3</sub>          |
|---------------------------------------------------------------|-------------------|-------|------------------|-------|----------------|-------|--------------------------|------------------------|-------------------------|
|                                                               | Shank<br>Diameter |       | Head<br>Diameter |       | Head<br>Height |       | Head<br>Corner<br>Radius | Head<br>Side<br>Radius | Head<br>Crown<br>Radius |
|                                                               | Max               | Min   | Max              | Min   | Max            | Min   | Approx                   | Approx                 | Approx                  |
| 1/16 0.062                                                    | 0.064             | 0.059 | 0.118            | 0.098 | 0.040          | 0.030 | 0.019                    | 0.052                  | 0.217                   |
| 3/32 0.094                                                    | 0.096             | 0.090 | 0.173            | 0.153 | 0.060          | 0.048 | 0.030                    | 0.080                  | 0.326                   |
| 1/8 0.125                                                     | 0.127             | 0.121 | 0.225            | 0.205 | 0.078          | 0.066 | 0.039                    | 0.106                  | 0.429                   |
| 5/32 0.156                                                    | 0.158             | 0.152 | 0.279            | 0.257 | 0.096          | 0.082 | 0.049                    | 0.133                  | 0.535                   |
| 3/16 0.188                                                    | 0.191             | 0.182 | 0.334            | 0.308 | 0.114          | 0.100 | 0.059                    | 0.159                  | 0.641                   |
| 7/32 0.219                                                    | 0.222             | 0.213 | 0.391            | 0.365 | 0.133          | 0.119 | 0.069                    | 0.186                  | 0.754                   |
| 1/4 0.250                                                     | 0.253             | 0.244 | 0.444            | 0.414 | 0.151          | 0.135 | 0.079                    | 0.213                  | 0.858                   |
| 9/32 0.281                                                    | 0.285             | 0.273 | 0.499            | 0.465 | 0.170          | 0.152 | 0.088                    | 0.239                  | 0.963                   |
| 5/16 0.312                                                    | 0.316             | 0.304 | 0.552            | 0.518 | 0.187          | 0.169 | 0.098                    | 0.266                  | 1.070                   |
| 11/32 0.344                                                   | 0.348             | 0.336 | 0.608            | 0.570 | 0.206          | 0.186 | 0.108                    | 0.292                  | 1.176                   |
| 3/8 0.375                                                     | 0.380             | 0.365 | 0.663            | 0.625 | 0.225          | 0.205 | 0.118                    | 0.319                  | 1.286                   |
| 13/32 0.406                                                   | 0.411             | 0.396 | 0.719            | 0.675 | 0.243          | 0.221 | 0.127                    | 0.345                  | 1.392                   |
| 7/16 0.438                                                    | 0.443             | 0.428 | 0.772            | 0.728 | 0.261          | 0.239 | 0.137                    | 0.372                  | 1.500                   |

<sup>1</sup>Where specifying nominal size in decimals, zeros preceding decimal shall be omitted.

For additional requirements refer to General Data on Page 2.

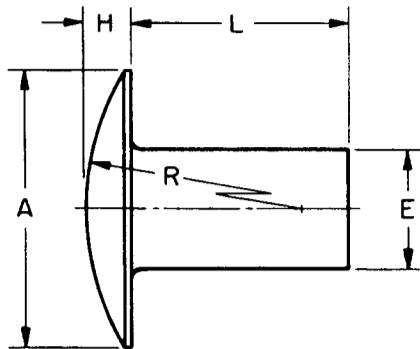


Table 5 Dimensions of Truss Head Rivets<sup>2</sup>

| Nominal<br>Size <sup>1</sup><br>or Basic<br>Shank<br>Diameter | E                 |       | A                |       | H              |       | R              |
|---------------------------------------------------------------|-------------------|-------|------------------|-------|----------------|-------|----------------|
|                                                               | Shank<br>Diameter |       | Head<br>Diameter |       | Head<br>Height |       | Head<br>Radius |
|                                                               | Max               | Min   | Max              | Min   | Max            | Min   | Approx         |
| 3/32 0.094                                                    | 0.096             | 0.090 | 0.226            | 0.206 | 0.038          | 0.026 | 0.239          |
| 1/8 0.125                                                     | 0.127             | 0.121 | 0.297            | 0.277 | 0.048          | 0.036 | 0.314          |
| 5/32 0.156                                                    | 0.158             | 0.152 | 0.368            | 0.348 | 0.059          | 0.045 | 0.392          |
| 3/16 0.188                                                    | 0.191             | 0.182 | 0.442            | 0.422 | 0.069          | 0.055 | 0.470          |
| 7/32 0.219                                                    | 0.222             | 0.213 | 0.515            | 0.495 | 0.080          | 0.066 | 0.555          |
| 1/4 0.250                                                     | 0.253             | 0.244 | 0.590            | 0.560 | 0.091          | 0.075 | 0.628          |
| 9/32 0.281                                                    | 0.285             | 0.273 | 0.661            | 0.631 | 0.103          | 0.085 | 0.706          |
| 5/16 0.312                                                    | 0.316             | 0.304 | 0.732            | 0.702 | 0.113          | 0.095 | 0.784          |
| 11/32 0.344                                                   | 0.348             | 0.336 | 0.806            | 0.776 | 0.124          | 0.104 | 0.862          |
| 3/8 0.375                                                     | 0.380             | 0.365 | 0.878            | 0.848 | 0.135          | 0.115 | 0.942          |
| 13/32 0.406                                                   | 0.411             | 0.396 | 0.949            | 0.919 | 0.145          | 0.123 | 1.028          |
| 7/16 0.438                                                    | 0.443             | 0.428 | 1.020            | 0.990 | 0.157          | 0.135 | 1.098          |

<sup>1</sup>Where specifying nominal size in decimals, zeros preceding decimal shall be omitted.

<sup>2</sup>This rivet was previously designated as a wagon box rivet in addition to the present truss head designation.

For additional requirements refer to General Data on Page 2.

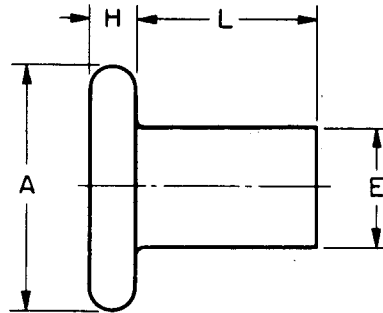


Table 6 Dimensions of Tinners Rivets

| Rivet<br>Size<br>Number <sup>1</sup> | E                 |       | A                |       | H              |       | L               |       |
|--------------------------------------|-------------------|-------|------------------|-------|----------------|-------|-----------------|-------|
|                                      | Shank<br>Diameter |       | Head<br>Diameter |       | Head<br>Height |       | Rivet<br>Length |       |
|                                      | Max               | Min   | Max              | Min   | Max            | Min   | Max             | Min   |
| 6 oz                                 | 0.081             | 0.075 | 0.213            | 0.193 | 0.028          | 0.016 | 0.135           | 0.115 |
| 8 oz                                 | 0.091             | 0.085 | 0.225            | 0.205 | 0.036          | 0.024 | 0.166           | 0.146 |
| 10 oz                                | 0.097             | 0.091 | 0.250            | 0.230 | 0.037          | 0.025 | 0.182           | 0.162 |
| 12 oz                                | 0.107             | 0.101 | 0.265            | 0.245 | 0.037          | 0.025 | 0.198           | 0.178 |
| 14 oz                                | 0.111             | 0.105 | 0.275            | 0.255 | 0.038          | 0.026 | 0.198           | 0.178 |
| 1 lb                                 | 0.113             | 0.107 | 0.285            | 0.265 | 0.040          | 0.028 | 0.213           | 0.193 |
| 1 1/4 lb                             | 0.122             | 0.116 | 0.295            | 0.275 | 0.045          | 0.033 | 0.229           | 0.209 |
| 1 1/2 lb                             | 0.132             | 0.126 | 0.316            | 0.294 | 0.046          | 0.034 | 0.244           | 0.224 |
| 1 3/4 lb                             | 0.136             | 0.130 | 0.331            | 0.309 | 0.049          | 0.035 | 0.260           | 0.240 |
| 2 lb                                 | 0.146             | 0.140 | 0.341            | 0.319 | 0.050          | 0.036 | 0.276           | 0.256 |
| 2 1/2 lb                             | 0.150             | 0.144 | 0.311            | 0.289 | 0.069          | 0.055 | 0.291           | 0.271 |
| 3 lb                                 | 0.163             | 0.154 | 0.329            | 0.303 | 0.073          | 0.059 | 0.323           | 0.303 |
| 3 1/2 lb                             | 0.168             | 0.159 | 0.348            | 0.322 | 0.074          | 0.060 | 0.338           | 0.318 |
| 4 lb                                 | 0.179             | 0.170 | 0.368            | 0.342 | 0.076          | 0.062 | 0.354           | 0.334 |
| 5 lb                                 | 0.190             | 0.181 | 0.388            | 0.362 | 0.084          | 0.070 | 0.385           | 0.365 |
| 6 lb                                 | 0.206             | 0.197 | 0.419            | 0.393 | 0.090          | 0.076 | 0.401           | 0.381 |
| 7 lb                                 | 0.223             | 0.214 | 0.431            | 0.405 | 0.094          | 0.080 | 0.416           | 0.396 |
| 8 lb                                 | 0.227             | 0.218 | 0.475            | 0.445 | 0.101          | 0.085 | 0.448           | 0.428 |
| 9 lb                                 | 0.241             | 0.232 | 0.490            | 0.460 | 0.103          | 0.087 | 0.463           | 0.443 |
| 10 lb                                | 0.241             | 0.232 | 0.505            | 0.475 | 0.104          | 0.088 | 0.479           | 0.459 |
| 12 lb                                | 0.263             | 0.251 | 0.532            | 0.498 | 0.108          | 0.090 | 0.510           | 0.490 |
| 14 lb                                | 0.288             | 0.276 | 0.577            | 0.543 | 0.113          | 0.095 | 0.525           | 0.505 |
| 16 lb                                | 0.304             | 0.292 | 0.597            | 0.563 | 0.128          | 0.110 | 0.541           | 0.521 |
| 18 lb                                | 0.347             | 0.335 | 0.706            | 0.668 | 0.156          | 0.136 | 0.603           | 0.583 |

<sup>1</sup> Size numbers in ounces and pounds refer to the approximate weight of 1000 rivets.

Additional requirements refer to General Data on Page 2.

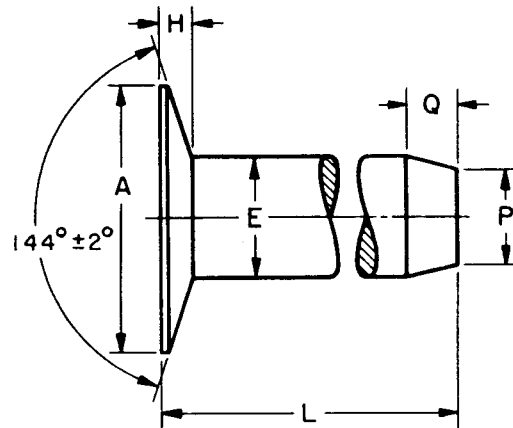


Table 7 Dimensions of Coopers Rivets

| Rivet<br>Size<br>Number <sup>1</sup> | E                 |       | A                |       | H              |       | P           | Q      | L               |       |
|--------------------------------------|-------------------|-------|------------------|-------|----------------|-------|-------------|--------|-----------------|-------|
|                                      | Shank<br>Diameter |       | Head<br>Diameter |       | Head<br>Height |       | Point       |        | Rivet<br>Length |       |
|                                      |                   |       |                  |       |                |       | Diameter    | Length |                 |       |
|                                      | Max               | Min   | Max              | Min   | Max            | Min   | Nom         | Nom    | Max             | Min   |
| 1 lb                                 | 0.111             | 0.105 | 0.291            | 0.271 | 0.045          | 0.031 | Not Pointed |        | 0.249           | 0.219 |
| 1 1/4 lb                             | 0.122             | 0.116 | 0.324            | 0.302 | 0.050          | 0.036 | Not Pointed |        | 0.285           | 0.255 |
| 1 1/2 lb                             | 0.132             | 0.126 | 0.324            | 0.302 | 0.050          | 0.036 | Not Pointed |        | 0.285           | 0.255 |
| 1 3/4 lb                             | 0.136             | 0.130 | 0.324            | 0.302 | 0.052          | 0.034 | Not Pointed |        | 0.318           | 0.284 |
| 2 lb                                 | 0.142             | 0.136 | 0.355            | 0.333 | 0.056          | 0.038 | Not Pointed |        | 0.322           | 0.288 |
| 3 lb                                 | 0.158             | 0.152 | 0.386            | 0.364 | 0.058          | 0.040 | 0.123       | 0.062  | 0.387           | 0.353 |
| 4 lb                                 | 0.168             | 0.159 | 0.388            | 0.362 | 0.058          | 0.040 | 0.130       | 0.062  | 0.418           | 0.388 |
| 5 lb                                 | 0.183             | 0.174 | 0.419            | 0.393 | 0.063          | 0.045 | 0.144       | 0.062  | 0.454           | 0.420 |
| 6 lb                                 | 0.206             | 0.197 | 0.482            | 0.456 | 0.073          | 0.051 | 0.160       | 0.094  | 0.498           | 0.457 |
| 7 lb                                 | 0.223             | 0.214 | 0.513            | 0.487 | 0.076          | 0.054 | 0.175       | 0.094  | 0.561           | 0.523 |
| 8 lb                                 | 0.241             | 0.232 | 0.546            | 0.516 | 0.081          | 0.059 | 0.182       | 0.094  | 0.597           | 0.559 |
| 9 lb                                 | 0.248             | 0.239 | 0.578            | 0.548 | 0.085          | 0.063 | 0.197       | 0.094  | 0.601           | 0.563 |
| 10 lb                                | 0.253             | 0.244 | 0.578            | 0.548 | 0.085          | 0.063 | 0.197       | 0.094  | 0.632           | 0.594 |
| 12 lb                                | 0.263             | 0.251 | 0.580            | 0.546 | 0.086          | 0.060 | 0.214       | 0.094  | 0.633           | 0.575 |
| 14 lb                                | 0.275             | 0.263 | 0.611            | 0.577 | 0.091          | 0.065 | 0.223       | 0.094  | 0.670           | 0.612 |
| 16 lb                                | 0.285             | 0.273 | 0.611            | 0.577 | 0.089          | 0.063 | 0.223       | 0.094  | 0.699           | 0.641 |
| 18 lb                                | 0.285             | 0.273 | 0.642            | 0.608 | 0.108          | 0.082 | 0.230       | 0.125  | 0.749           | 0.691 |
| 20 lb                                | 0.316             | 0.304 | 0.705            | 0.671 | 0.128          | 0.102 | 0.250       | 0.125  | 0.769           | 0.711 |
| 3/8 in.                              | 0.380             | 0.365 | 0.800            | 0.762 | 0.136          | 0.106 | 0.312       | 0.125  | 0.840           | 0.778 |

<sup>1</sup>Size numbers in pounds refer to the approximate weight of 1000 rivets.

For additional requirements refer to General Data on Page 2.

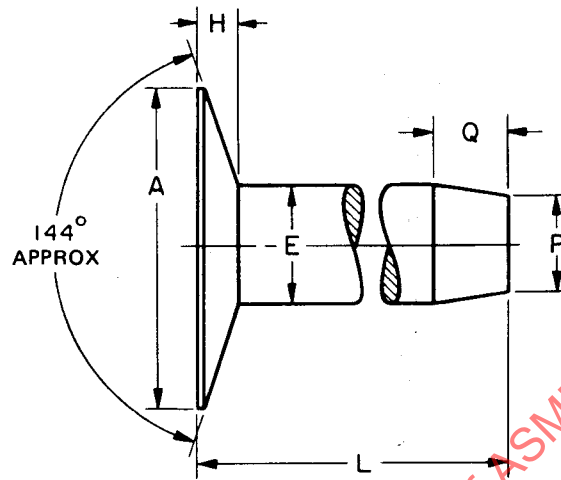


Table 8 Dimensions of Belt Rivets

| Rivet<br>Size<br>Number <sup>1</sup> | E                 |       | A                |       | H              |       | P        | Q      |
|--------------------------------------|-------------------|-------|------------------|-------|----------------|-------|----------|--------|
|                                      | Shank<br>Diameter |       | Head<br>Diameter |       | Head<br>Height |       | Point    |        |
|                                      |                   |       |                  |       |                |       | Diameter | Length |
|                                      | Max               | Min   | Max              | Min   | Max            | Min   | Nom      | Nom    |
| 14                                   | 0.085             | 0.079 | 0.260            | 0.240 | 0.042          | 0.030 | 0.065    | 0.078  |
| 13                                   | 0.097             | 0.091 | 0.322            | 0.302 | 0.051          | 0.039 | 0.073    | 0.078  |
| 12                                   | 0.111             | 0.105 | 0.353            | 0.333 | 0.054          | 0.040 | 0.083    | 0.078  |
| 11                                   | 0.122             | 0.116 | 0.383            | 0.363 | 0.059          | 0.045 | 0.097    | 0.078  |
| 10                                   | 0.136             | 0.130 | 0.417            | 0.395 | 0.065          | 0.047 | 0.109    | 0.094  |
| 9                                    | 0.150             | 0.144 | 0.448            | 0.426 | 0.069          | 0.051 | 0.122    | 0.094  |
| 8                                    | 0.167             | 0.161 | 0.481            | 0.455 | 0.072          | 0.054 | 0.135    | 0.094  |
| 7                                    | 0.183             | 0.174 | 0.513            | 0.487 | 0.075          | 0.056 | 0.151    | 0.125  |
| 6                                    | 0.206             | 0.197 | 0.606            | 0.580 | 0.090          | 0.068 | 0.165    | 0.125  |
| 5                                    | 0.223             | 0.214 | 0.700            | 0.674 | 0.105          | 0.083 | 0.185    | 0.125  |
| 4                                    | 0.241             | 0.232 | 0.921            | 0.893 | 0.138          | 0.116 | 0.204    | 0.141  |

<sup>1</sup>Size number refers to the Stubs iron wire gage number of the stock used in the shank of the rivet.  
For additional requirements refer to General Data on Page 2.

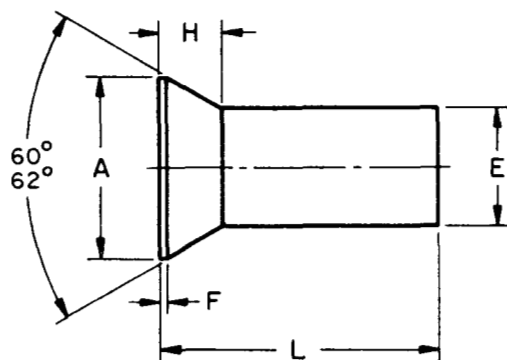
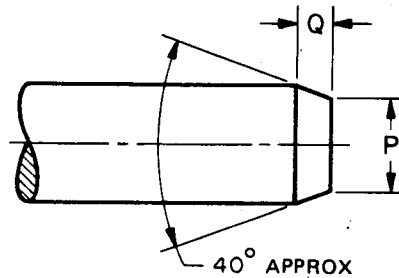


Table 9 Dimensions of 60-Degree Flat Countersunk Head Rivets<sup>1</sup>

| Rivet<br>Size<br>Number | E                 |       | A                |       | H              |       | F                 |
|-------------------------|-------------------|-------|------------------|-------|----------------|-------|-------------------|
|                         | Shank<br>Diameter |       | Head<br>Diameter |       | Head<br>Height |       | Feed<br>Thickness |
|                         | Max               | Min   | Max              | Min   | Max            | Min   | Max               |
| 6                       | 0.204             | 0.197 | 0.306            | 0.286 | 0.099          | 0.084 | 0.008             |
| 5½                      | 0.212             | 0.205 | 0.306            | 0.286 | 0.091          | 0.076 | 0.008             |

<sup>1</sup>This standard is intended to provide one standard head diameter for the two sizes of rivets commonly used to assemble ledger plates and guards for mower cutter bars. The above dimensions together with a standard countersunk hole of 60° included angle and 0.310 to 0.330 in. diameter will insure that the protrusion of finished rivet heads will not exceed 0.005 in.

For additional requirements refer to General Data on Page 2.



**Table 10 Dimensions of Standard Header Points for Small Solid Rivets<sup>3</sup>**  
(Applicable only when pointed rivets are specified)

| Nominal<br>Size <sup>1</sup><br>or Basic<br>Shank<br>Diameter | P                   | Q                   | Nominal<br>Shank<br>Length |
|---------------------------------------------------------------|---------------------|---------------------|----------------------------|
|                                                               | Point<br>Diameter   | Point<br>Length     |                            |
|                                                               | Approx <sup>2</sup> | Approx <sup>2</sup> |                            |
| 3/32 0.094                                                    | 0.077               | 0.023               | 3/4                        |
| 1/8 0.125                                                     | 0.102               | 0.031               | 3/4                        |
| 5/32 0.156                                                    | 0.127               | 0.039               | 1                          |
| 3/16 0.188                                                    | 0.154               | 0.047               | 1                          |
| 7/32 0.219                                                    | 0.179               | 0.055               | 1 3/8                      |
| 1/4 0.250                                                     | 0.204               | 0.062               | 1 3/8                      |
| 9/32 0.281                                                    | 0.230               | 0.070               | 1 1/2                      |
| 5/16 0.312                                                    | 0.255               | 0.078               | 1 1/2                      |
| 11/32 0.344                                                   | 0.281               | 0.086               | 1 5/8                      |
| 3/8 0.375                                                     | 0.307               | 0.094               | 1 5/8                      |
| 7/16 0.438                                                    | 0.358               | 0.110               | 3                          |

<sup>1</sup>Where specifying nominal size in decimals, zeros preceding decimal shall be omitted. Standard header points on intermediate shank diameters shall be to the proportions given in Appendix I.

<sup>2</sup>No standard tolerances for point dimensions are contemplated.

<sup>3</sup>Header points normally apply to these nominal shank lengths or shorter. The pointing of longer shank lengths may require machining to the dimensions specified.

For additional requirements refer to General Data on Page 2.