



SURFACE VEHICLE STANDARD	J1200™	JAN2017
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	Superseding J1200 APR2013	
Blind Rivets - Break Mandrel Type		

RATIONALE

To advance the goal of harmonization, SAE J1200 is cancelled and superseded by IFI 114, Break Mandrel Blind Rivets. (www.indfast.org)

CANCELLATION NOTICE

This Technical Report has been declared "CANCELLED" as of January 2017 and has been superseded by IFI 114. By the action, this document will remain listed in the respective index, if applicable. Cancelled Technical Reports are available from SAE.

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FOREWORD

This Document has not changed other than to put it into the new SAE Technical Standards Board Format. According to this format, Scope is Section 1, References is Section 2, and Definitions is Section 3. Metric is now the primary unit followed by English units in parentheses.

1. SCOPE

This SAE Standard establishes the dimensional, mechanical, and performance requirements of inch and metric break mandrel blind rivets suitable for use in joining the component parts of an assembly.

2. REFERENCES

There are no referenced publications specified herein.

3. DEFINITIONS

3.1 BLIND RIVET

A blind rivet is a blind fastener which has a self-contained mechanical, chemical, or other feature which permits the formation of an upset on the blind end of the rivet and expansion of the rivet shank during rivet setting to join the component parts of an assembly.

3.2 BREAK MANDREL BLIND RIVET

Break mandrel blind rivets are pull mandrel-type blind rivets, where during the setting operation the mandrel is pulled into or against the rivet body and breaks at or near the junction of the mandrel shank and its upset end.

4. GENERAL SPECIFICATIONS

4.1 Designations

These rivets are designated by styles and grades as described below in addition to size, length, and finish.

4.1.1 Rivet Styles

The two basic styles of break mandrel blind rivets are designated as protruding head and flush head. Protruding head rivets are available in two styles designated as regular head and large head. Flush head rivets are available in the 120 degrees countersunk head.

4.1.2 Rivet Grades

The material combination of break mandrel blind rivets are designated as grades, with each material combination representing a different combination of rivet body material and mandrel material as given in Table 1.

Table 1 - Grades of break mandrel blind rivets

Grade Designation	Rivet Body Material	Mandrel Material
10	Aluminum Alloy 5050	Aluminum Alloy 7178 or 2024
11	Aluminum Alloy 5052	Aluminum Alloy 7178 or 2024
16	Aluminum Alloy 5154	Carbon Steel
18	Aluminum Alloy 5052	Carbon Steel

19	Aluminum Alloy 5056	Carbon Steel
20	Copper alloy No. 110	Carbon Steel
30	Low Carbon Steel	Carbon Steel
40	Nickel-Copper Alloy (Monel)	Carbon Steel
50	Stainless Steel (300 Series)	Carbon Steel
51	Stainless Steel (300 Series)	Stainless Steel (300 Series)

4.2 Dimensions and Tolerances

The design of break mandrel type blind rivets shall be in accordance with the practice of the manufacturer providing the dimensions shown in Section 7 are maintained and rivets meet the mechanical and performance requirements of this standard. Tolerance on dimensions in tables, not designated otherwise, shall be 0.25 mm (± 0.010 in).

4.3 Materials

Rivet bodies and mandrels shall be made of the material specified for the grade in Table 1. When the specific material analysis is not given, the analysis shall be selected by the manufacturer and shall be such to assure that rivets meet the mechanical and performance requirements specified under Section 5.

4.4 Finishes

Grade 30 rivet bodies are either zinc or cadmium plated with a minimum plating thickness of 0.004 mm (0.00015 in). Rivet bodies of all other grades are furnished plain (bare metal), unless otherwise specified. Because mandrels are discarded following rivet setting, mandrels of all materials may be furnished plain or with a protective coating at the option of the manufacturer, unless otherwise specified.

5. MECHANICAL AND PERFORMANCE REQUIREMENTS

5.1 Shear Strength

Rivets, except those described in 5.2.1, shall have ultimate shear loads not less than the minimum ultimate shear loads specified for the applicable size and grade given in Tables 2A and 2B, when tested in accordance with 6.1.

5.2 Tensile Strength

Rivets, except those described in 5.2.1, shall have ultimate tensile loads not less than the minimum ultimate tensile loads specified for the applicable size and grade given in Tables 3A and 3B when tested in accordance with 6.2.

5.2.1 Grade 20 rivet is not subject to either shear or tensile testing. For all other grades, protruding head rivets with specified maximum grip lengths shorter than 1.0 times the nominal rivet diameter, and flush head rivets with specified maximum grip lengths shorter than 1.5 times the nominal rivet diameter shall not be subject to either shear or tensile testing.

5.3 Mandrel Break Load

While the rivet is being set, the axially applied load necessary to break the mandrel shall be within the limits specified for the applicable rivet size and grade in Tables 4A and 4B when tested in accordance with 6.3.

5.4 Mandrel Retention

The mandrel shall be retained within the rivet body such that a force in excess of 8.9 N (2 lb) is required to reduce the mandrel protrusion to its specified minimum.

Table 2A - Ultimate shear loads of break mandrel blind rivets

Nominal Rivet Size mm	Ultimate Shear Load ¹ (Force)	Ultimate Shear Load ⁽¹⁾ (Force)	Ultimate Shear Load ⁽¹⁾ (Force)	Ultimate Shear Load ⁽¹⁾ (Force)	Ultimate Shear Load ⁽¹⁾ (Force)
	Min/N Grades 10, 11, & 18	Min/N Grades 16 & 19	Min/N Grade 30	Min/N Grade 40	Min/N Grades 50 & 51
2.4	310	400	580	890	1020
3.2	530	760	1160	1560	1870
4.0	850	1160	1650	2450	2890
4.8	1160	1690	2400	3560	4230
6.3	2050	3110	4450	6230	7560

¹Grade 20 rivet is not subject to shear testing.

Table 2B - Ultimate shear loads of break mandrel blind rivets

Nominal Rivet Size or Basic Shank Dia	Ultimate Shear Load ² (Force) Min, lb Grades 10, 11, & 18	Ultimate Shear Load ⁽¹⁾ (Force) Min, lb Grades 16 & 19	Ultimate Shear Load ⁽¹⁾ (Force) Min, lb Grade 30	Ultimate Shear Load ⁽¹⁾ (Force) Min, lb Grade 40	Ultimate Shear Load ⁽¹⁾ (Force) Min, lb Grades 50 & 51
3/32 0.0938	70	90	130	200	230
1/8 0.1250	120	170	260	350	420
5/32 0.1562	190	260	370	550	650
3/16 0.1875	260	380	540	800	950
1/4 0.2500	460	700	1000	1400	1700

Table 3A - Ultimate tensile loads of break mandrel blind rivets

Nominal Rivet Size mm	Ultimate Tensile Load ³ (Force) Min/N Grades 10, 11, & 18	Ultimate Tensile Load ⁽¹⁾ (Force) Min/N Grades 16 & 19	Ultimate Tensile Load ⁽¹⁾ (Force) Min/N Grade 30	Ultimate Tensile Load ⁽¹⁾ (Force) Min/N Grade 40	Ultimate Tensile Load ⁽¹⁾ (Force) Min/N Grades 50 & 51
2.4	360	530	760	1110	1250
3.2	670	980	1380	2000	2360
4.0	1020	1560	2090	3110	3650
4.8	1420	2220	3020	4450	5340
6.3	2490	4090	5520	8230	9340

Table 3B - Ultimate tensile loads of break mandrel blind rivets

Nominal Rivet Size or Basic Shank Dia	Ultimate Tensile Load ⁴ (Force) Min, lb Grades 10, 11, & 18	Ultimate Tensile Load ⁽¹⁾ (Force) Min, lb Grades 16 & 19	Ultimate Tensile Load ⁽¹⁾ (Force) Min, lb Grade 30	Ultimate Tensile Load ⁽¹⁾ (Force) Min, lb Grade 40	Ultimate Tensile Load ⁽¹⁾ (Force) Min, lb Grades 50 & 51
3/32 0.0938	80	120	170	250	280
1/8 0.1250	150	220	310	450	530
5/32 0.1562	230	350	470	700	820
3/16 0.1875	320	500	680	1000	1200
1/4 0.2500	560	920	1240	1850	2100

²Grade 20 rivet is not subject to shear testing.³Grade 20 rivet is not subject to tensile testing.⁴Grade 20 rivet is not subject to tensile testing.