

IFI NOTES:

1. *This specification is under the jurisdiction of the IFI Standards and Technical Practices Committee and directly under the Technical Committee of IFI's Division I. First published in 1982, it has been revised and reissued in 1999. Sizes in this document are based on a "soft" conversion from inch practice and reflect the needs of major users.*
2. *SAE J1200, "Blind Rivets – Break Mandrel Type," covers both inch and metric series of blind rivets. The requirements of SAE J1200, as they relate to metric rivets, are essentially identical to those in IFI-505. Copies of SAE J1200 are available from the Society of Automotive Engineers, Inc., 400 Commonwealth Drive, Warrendale, PA 15096.*

1. Scope

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

1.2 Definitions

1.2.1 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.

1.2.2 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.

1.2.3 Definitions of other terms used in this standard are given in IFI-110/550, *Glossary of Terms Relating to Blind Rivets*.

2. Designations

2.1 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 two styles designated as 100 deg countersunk head and 120 deg countersunk head.

2.2 Grades. The material combinations 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 5.

2.3 Design. The design of break mandrel blind rivets shall be in accordance with the practice of the manufacturer.

3. Requirements

3.1 Materials and Processes

3.1.1 Material. Rivet bodies and mandrels shall be made of the material specified for the grade in Table 5. 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 in 3.3.

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3.1.2 Finish. Grade 30 rivet bodies are either zinc or cadmium plated with a minimum plating thickness of 4 μm . 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.

3.2 Dimensional Requirements

3.2.1 Rivet Dimensions. Protruding and flush head break mandrel blind rivets shall conform to the dimensions given in Tables 1 and 3, respectively.

3.2.2 Application Data. Recommendations on the selection and application of protruding and flush head break mandrel blind rivets are given in Tables 2 and 4, respectively.

3.3 Mechanical and Performance Requirements

3.3.1 Shear Strength. Rivets, except those described in 3.3.3, shall have ultimate shear strengths not less than the minimum ultimate shear strengths specified for the applicable size and grade given in Table 6 when tested in accordance with 2.1 of IFI-522.

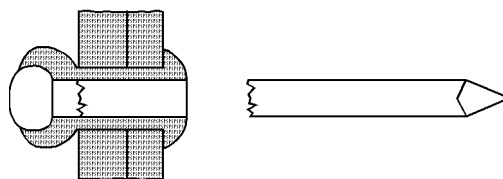
3.3.2 Tensile Strength. Rivets, except those described in 3.3.3, shall have ultimate tensile strengths not less than the minimum ultimate tensile strengths specified for the applicable size and grade given in Table 6 when tested in accordance with 2.2 of IFI-522.

3.3.3 Grade 20 rivets are 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.

3.3.4 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 Table 7, when tested in accordance with 2.3 of IFI-522.

3.3.5 Blind Head Formation. The axially applied load necessary to upset the end of the rivet body, i.e., form the blind side head, shall not exceed 80 percent of the actual mandrel break load, when tested in accordance with 2.4 of IFI-522.

Properly set rivet



4. Inspection

Rivets shall be inspected to determine conformance with dimensional, mechanical and performance requirements. Inspection shall be as agreed between manufacturer and purchaser.

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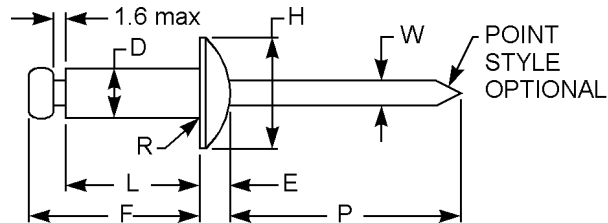


Table 1 Dimensions of Regular and Large Protruding Head Style Break Mandrel Blind Rivets

Rivet Series No.	Nom Rivet Size	D		H		E	H		E	R	W	P	F
		Body Dia		Style 1 — Regular Head			Style 2 — Large Head			Radius of Fillet	Mandrel Dia	Mandrel Protrusion	Blind Side Protrusion
				Head Dia		Head Height	Head Dia		Head Height				
		Max	Min	Max	Min	Max	Max	Min	Max	Max	Nom	Min	Max
3	2.4	2.44	2.29	5.03	4.52	0.81	7.44	6.83	1.02	0.4	1.45	25	L + 2.5
4	3.2	3.25	3.10	6.65	6.05	1.02	9.91	9.14	1.65	0.5	1.93	25	L + 3.0
5	4.0	4.04	3.89	8.33	7.52	1.27	12.40	11.38	1.90	0.5	2.41	27	L + 3.5
6	4.8	4.85	4.65	10.01	9.04	1.52	16.51	15.24	2.34	0.7	2.90	27	L + 4.0
8	6.3	6.48	6.25	13.33	12.07	2.03	19.81	18.29	2.72	0.8	3.84	31	L + 4.5
See Notes										3			4

NOTES:

1. All dimensions are in millimeters.
2. For application data see Table 2.
3. The junction of head and shank shall have a fillet with a max radius as shown. For Grades 40, 50, and 51 rivets, the max fillet radius for No. 6 rivets shall be 0.9 mm, and for No. 8 rivets shall be 1.5 mm.
4. When computing the blind side protrusion (F), the max length of rivet (L) as given in Table 2 for the applicable grip shall be used. Minimum blind side clearance may be calculated by subtracting the actual grip (G), (i.e., total thickness of the material to be joined), from the specified blind side protrusion (F). (Example: to join two plates, each 2.5 mm thick, with a No. 5 rivet, a No. 54 rivet would be used. Minimum blind side clearance necessary to permit proper rivet setting would be $L + 3.5 - G$, which is $10.8 + 3.5 - 5.0$, and equals 9.3 mm.)

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