

1. Scope

1.1 Scope. This standard establishes the dimensional, mechanical and performance requirements of metric structural flush break pull mandrel self-plugging 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 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 Metric structural flush break pull mandrel self-plugging 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 a point within or above the rivet head. Flush break means that the break plane of the mandrel occurs above the junction of rivet shank and head, thus the shear plane(s) of the joints will occur through rivet shank and mandrel.

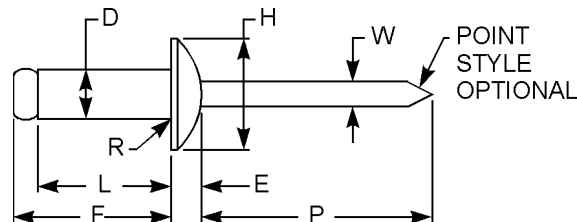


Table 1 Dimensions of Metric Regular and Large Protruding Head Style Structural Flush Break Pull Mandrel Self-Plugging Blind Rivets

Rivet Series No.	Nom Rivet Size	D		H		E	H		E	R	W	P	F	L
		Body Dia		Style 1 — Regular Head			Style 2 — Large Head			Radius of Fillet	Mandrel Dia	Mandrel Protrusion	Blind Side Protrusion	Rivet Body Length
				Head Dia		Head Height	Head Dia		Head Height					
		Max	Min	Max	Min	Max	Max	Min	Max	Max	Nom	Min	Max	Max
4	3.2	3.25	3.10	6.25	6.05	1.02	9.91	9.14	1.65	0.5	1.93	19	L + 4.75	See Table 2
5	4.0	4.04	3.89	8.33	7.52	1.27	12.40	11.38	1.90	0.5	2.41	19	L + 5.15	
6	4.8	4.85	4.65	10.01	9.04	1.52	16.51	15.24	2.34	0.7	2.90	19	L + 5.53	
8	6.3	6.47	6.25	13.33	12.07	2.03	19.81	18.29	2.72	0.8	3.84	19	L + 6.34	
See Notes										3			4	

NOTES:

- All dimensions are in millimeters.
- For application data see Table 2.
- The junction of head and shank shall have a fillet with a max radius as shown. For Grades 40, 50, 51 and 52 rivets, the max fillet radius for 4.8 mm rivets shall be 0.9 mm, and for 6.3 mm rivets shall be 1.52 mm.
- When computing the blind side protrusion (F), the max length of rivet body (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 2.54 mm thick, with a No. 5 rivet, a No. 53 rivet would be used. Minimum blind side clearance necessary to permit proper rivet setting would be $L + 5.15 \text{ mm} - G$ which is $9.19 + 5.15 - 5.08$, and equals 9.26 mm.).

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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 metric structural flush break pull mandrel self-plugging 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 structural flush break pull mandrel self-plugging 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 structural flush break pull mandrel self-plugging 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.

3.1.2 Finish. Grade 30 rivet bodies are either zinc or cadmium plated with a minimum plating thickness of 0.0038 mm. Rivet bodies of all other grades are furnished plain (bare metal) unless otherwise specified. Grade 30 mandrels may be either zinc or cadmium plated or 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 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 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, *Mechanical Testing of Metric Blind Rivets*.

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 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.

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Table 2 Application Data for Metric Protruding Head Style Structural Flush Break Pull Mandrel Self-Plugging Blind Rivets

Rivet Series No.	Nom Rivet Size	Recommended Metric Drill Size	Recommended Hole Size		Rivet No.	Grip Range		Rivet Body Length L
			Max	Min		Min	Max	Max
4	3.2	3.3	3.38	3.28	41	1.19	1.98	5.38
					41.5	1.98	2.77	6.98
					42	2.77	3.58	6.98
					42.5	3.58	4.37	8.55
					43	4.37	5.15	8.55
					43.5	5.15	5.94	10.15
					44	5.94	6.75	10.15
					44.5	6.75	7.54	11.72
					45	7.54	8.32	11.72
					45.5	8.32	9.11	13.32
					46	9.11	9.92	13.32
					46.5	9.92	10.71	14.90
					47	10.71	11.50	14.90
					47.5	11.50	12.28	16.50
					48	12.28	13.07	16.50
					48.5	13.07	13.86	18.07
5	4.0	4.1	4.16	4.06	49	13.36	14.67	18.07
					49.5	14.67	15.46	19.67
					50	15.46	16.24	19.67
					52	2.77	3.58	7.61
					52.5	3.58	4.37	9.19
					53	4.37	5.15	9.19
					53.5	5.15	5.94	10.79
					54	5.94	6.75	10.79
					54.5	6.75	7.54	12.36
					55	7.54	8.32	12.36
					55.5	8.32	9.11	13.96
					56	9.11	9.92	13.96
					56.5	9.92	10.71	15.56
					57	10.71	11.50	15.56
					57.5	11.50	12.28	17.13
					58	12.28	13.07	17.13
					58.5	13.07	13.86	18.70
					59	13.86	14.67	18.70
					59.5	14.67	15.46	20.30
					60	15.46	16.24	20.30

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