

**IFI-116-2015  
MULTI-GRIP BREAK MANDREL  
BLIND RIVETS**IFI-116  
2015**1. Introduction.**

**1.1 Scope.** This standard establishes the reference dimensions, hole sizes, mechanical, and performance requirements of inch series multi-grip break mandrel blind rivets in sizes 4 (0.125 in.) through 8 (0.250 in.) suitable for use in joining the component parts of assemblies.

**1.2 Definitions.**

**1.2.1 Multi-grip Blind Rivet.** Multi-grip blind rivets are pull mandrel type blind rivets where during the setting operation the mandrel is pulled into the rivet body and breaks at or near the junction of the mandrel shank and the upset end of the rivet body. Crimp or roll patterns in the rivet body allow for multiple bulb formation in minimum grip and a single upset in maximum grip. The (multi) bulbing feature allows the rivet to have a wider grip range than a standard break mandrel blind rivet in IFI-114.

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

**2. Styles.**

The two basic styles of break mandrel blind rivets are designated as dome head and countersunk head. Dome head rivets are available in two styles designated as regular head and large head. Countersunk head rivets are designated as 120 degree countersunk head.

**3 Rivet Dimensional Requirements.**

Reference dome and countersunk head break mandrel blind rivet dimensions are in Tables 1 and 2, respectively. The design details of multi-grip break mandrel blind rivets shall be at the manufacturer's discretion.

**4 Applications Data.**

Applications data is provided for dome head and countersunk head rivets in Tables 3 and 4, respectively.

**5 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.

**6 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 Tables 6, 7, and 8.

**7 Finish.**

Grade 30 rivet bodies are zinc electroplated with a minimum plating thickness of 0.00015 in. Rivet bodies of all other grades are furnished plain (bare metal) unless otherwise specified. Because mandrels

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are discarded following rivet setting, mandrels of all materials may be furnished plain or with a protective coating at the option of the manufacturer. Stainless steels of Grades 50 and 51 may be passivated.

**8. Mechanical and Performance Requirements.**

**8.1 Shear Strength.** Rivets shall have minimum shear strengths not less than the minimum shear strengths specified for the applicable size and grade given in Table 6 when tested in accordance with of IFI-135, *Mechanical Testing of Blind Rivets*.

**8.2 Tensile Strength.** Rivets shall have minimum tensile strengths not less than the values specified for the applicable size and grade given in Table 7 when tested in accordance with IFI-135.

**8.3 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 Table 8, when tested in accordance with IFI-135.

**8.4 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 90 percent of the actual mandrel break load, when tested in accordance with IFI-135.

**8.5 Mandrel Retention test value.** Prior to rivet installation the mandrel shall be retained in the rivet body with a minimum retention value of 2 lbs. The minimum mandrel head retention immediately after setting is 2 lbs. Mandrel retention is not guaranteed once the completed product is put into service. If long term mandrel retention is required a different blind rivet type should be selected such as defined in IFI-134 or IFI-119.

**9. Test Methods.**

Tests shall be conducted in accordance with the test methods specified in IFI-135.

**10. Inspection.**

Rivets shall be tested by the supplier to the requirements stated in this standard to assure mechanical and physical conformance. Specific quality plans and procedures shall be at the discretion of the supplier unless otherwise specified by the purchaser at the time of inquiry and/or order.

In case of dispute rivet acceptability shall be determined in accordance with the procedures given in IFI-137, *Inspection and Quality Assurance for General Purpose Blind Rivets*.