



Material and Performance Requirements of Aluminum and Steel Bodied Open and Closed End Blind Rivets

1. SCOPE: This standard covers the material, shear strength, and tensile strength, of aluminum, steel, and stainless-steel special blind rivets in nominal diameters 3.2, 4.0, 4.8, and 6.4

1.1 REFERENCES:

ISO14589 Blind rivets – Mechanical testing

SAE J492 Rivets and riveting

WSD-M1A283-B1,B2,B3,B4,B5,B6,B47,B48,B49,B53,B57 Steel, cross reference for standard parts

2. GENERAL: The various rivet types, their body/mandrel and other design feature combinations are shown in Table 1.

3. MATERIAL: The material for the bodies and mandrels of blind rivets is shown below.

3.1 Aluminum (Al) bodies shall be manufactured from Aluminum Alloy UNS A95052, A95056A, A95154A, A95251 or A95754.

3.2 The material for steel (STL) bodies shall be in accordance with WSD-M1A283-B1/B2/B3/B4/B5/B6/B47/B48/B49/B53 or B57.

3.3 Stainless steel (SS) bodies shall be manufactured from Austenitic stainless steel - 300 series.

3.4 Aluminum (Al) mandrels shall be manufactured from Aluminum Alloy UNS A97075, or A97078.

3.5 The material for steel mandrels shall be any low-carbon steel that meets the requirements of Clause 6. The mandrel shall have a minimum 3 μ protective zinc coating. Trivalent chromate topcoat is permitted. This finish will be used on the mandrel regardless of the finish released for the rivet unless otherwise specified.

3.6 Stainless steel (SS) mandrels shall be manufactured from Austenitic stainless steel 300 series for open end rivets or Ferritic 400 series for closed end rivets.

4. SHEAR AND TENSILE STRENGTH TEST: The shear and tensile strengths for the blind rivets covered by this standard shall be in accordance with Table 1 when tested per ISO 14589 section 3.2.1.1 and 3.2.1.2.

5. MANDREL BREAK LOAD TEST: If a mandrel break load is specified, the test is performed per ISO 14589

6. MANDREL RETENTION TEST: When tested in a fixture per ISO 14589, the load to disassemble the mandrel from the body before the product has been assembled in a panel shall not be less than 10N for all types of rivet and mandrel combinations. After assembly, the push-out load for the retained section of mandrel must not be less than 20N for all types of rivet and mandrel combinations.





Table 1 – Shear Strength, Tensile Strength and Panel Range

			Wide Grip Range Rivets			Bulbing Structural Rivets		Expanding Structural Rivets		
Body Material			AL	STL	SS	AL	STL	AL	STL	SS
Mandrel Material			STL	STL	SS	AL	STL	AL	STL	SS

		Body Diameter (Nominal)	Panel Range							
Minimum Shear Strength (N)	3.2	Any	640	900	1440					
	4.0	Any	1060	1530	2420					
	4.8	Any	1240	2600	4000			2660	5780	5780
	6.4	Any	3100	3110				5780	11120	10500
	6.4	1.5-3.5				5000	10230			
	6.4	2.8-4.8				6000	11500			
	6.4	4.8-6.8				6500	11500			
	6.4	6.8 and larger				7000	11500			

Minimum Tensile Strength (N)	3.2	Any	660	1170	1970					
	4.0	Any	1200	1800	3240					
	4.8	Any	2040	2880	4490			2000	4400	4220
	6.4	Any	2500	3560		2670	7100	3690	8220	8000

