Australian Standard™

Mechanical properties of fasteners made of carbon steel and alloy steel

Part 7: Torsional test and minimum torques for bolts and screws with nominal diameters 1 mm to 10 mm

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Standards Australia

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Australian Building Codes Board

Australian Chamber of Commerce and Industry

Australian Industry Group

Bureau of Steel Manufacturers of Australia

Electricity Supply Association of Australia

Federal Chamber of Automotive Industries

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PREFACE

This Standard was prepared by the Standards Australia Committee ME/29, Fasteners.

The objective of this Standard is to provide manufacturers and users of threaded fasteners with the test procedure for the determination of the torsional strength and the minimum breaking torques for bolts and screws with property classes 8.8 to 12.9 and with nominal diameters of 1 mm to 10 mm.

This Standard is identical with and has been reproduced from ISO 898-7:1992, *Mechanical properties of fasteners*, Part 7: *Torsional test and minimum torques for bolts and screws with nominal diameters 1 mm to 10 mm*.

Statements expressed in mandatory terms in notes to text, tables and figures are deemed to be requirements of this Standard.

As this Standard is reproduced from an international Standard, the following applies:

(a) Its number appears on the cover and title page while the International Standard number appears only on the cover.

(b) In the source text, 'this part of ISO 898' should read 'this Australian Standard'.

(c) A full point substitutes for a comma with referring to a decimal marker.

References to international Standards should be replaced by references to equivalent Australian Standards, as follows:

Reference to International Standard		*Australian, New Zealand or Australian/New Zealand Standard*	
ISO		AS	
898	Mechanical properties of fasteners made of carbon steel and alloy steel	4291	Mechanical properties of fasteners made of carbon steel and alloy steel
898-1	Part 1: Bolts, screws and studs	4291.1	Part 1: Bolts, screws and studs

The term 'informative' has been used in this Standard to define the application of the annex to which it applies. An 'informative' annex is only for information and guidance.

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AUSTRALIAN/NEW ZEALAND STANDARD

Mechanical properties of fasteners made of carbon steel and alloy steel

Part 7:
Torsional test and minimum torques for bolts and screws with nominal diameters 1 mm to 10 mm

1 Scope

This part of ISO 898 specifies a torsional test for the determination of the breaking torque of bolts and screws with nominal diameters 1 mm to 10 mm with property classes 8.8 to 12.9 in accordance with ISO 898-1. The test applies to bolts and screws with thread less than M3 for which no breaking and proof loads are indicated in ISO 898-1, as well as to short bolts and screws with nominal diameters 3 mm to 10 mm which cannot be subjected to a tensile test.

The minimum breaking torques are not valid for hexagon socket set screws.

2 Normative reference

The following standard contains provisions which, through reference in this text, constitute provisions of this part of ISO 898. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this part of ISO 898 are encouraged to investigate the possibility of applying the most recent edition of the standard indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 898-1:1988, *Mechanical properties of fasteners — Part 1: Bolts, screws and studs.*

3 Torsional test

3.1 Principle

Determination of the breaking torque by clamping the bolt or screw to be tested into a test device.

3.2 Apparatus

3.2.1 Test device for torsional test, such as is shown in figure 1.

3.2.2 Torquemeter, with a scale which shall not exceed the quintuple of the respective minimum breaking torque. The maximum inaccuracy of the torquemeter shall be $\pm$ 7 % of the minimum breaking torque to be tested.

3.3 Test conditions

The bolt or screw shall be exclusively subjected to torsion whereby the respective minimum breaking torque according to table 2 shall be reached before rupture occurs. The test result shall not be influenced by head friction or by thread friction.

3.4 Procedure

Clamp the bolt or screw into the test device over at least two full threads, having a free thread length of at least one thread diameter present between the head of the bolt or screw and the threaded insert (see figure 1). Apply the torque in a continuously increasing manner.