

# LICENCE

for

AS/NZS 1252.2:2016 High-strength steel fastener assemblies for structural engineering - Bolts, nuts and washers - Verification testing for bolt assemblies

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**High-strength steel fastener assemblies  
for structural engineering—Bolts, nuts  
and washers**

**Part 2: Verification testing for bolt  
assemblies**



## **AS/NZS 1252.2:2016**

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee ME-029, Fasteners. It was approved on behalf of the Council of Standards Australia on 25 November 2016 and by the New Zealand Standards Approval Board on 9 December 2016.

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## Australian/New Zealand Standard™

### High-strength steel fastener assemblies for structural engineering—Bolts, nuts and washers

### Part 2: Verification testing for bolt assemblies

Originated in Australia as AS B157—1960.  
Previous edition jointly revised and designated AS/NZS 1252:1996.  
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## PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee ME-029, Fasteners, to supersede, in part, AS/NZS 1252:1996, *High-strength steel bolts with associated nuts and washers for structural engineering*.

This Standard is a companion document to AS/NZS 1252.1, *High-strength steel fastener assemblies for structural engineering—Bolts, nuts and washers, Part 1: Technical requirements*. The verification testing specified in this Standard is additional to the testing required by AS/NZS 1252.1.

The objective of this Standard is to give provisions for verification testing of high-strength steel bolt assemblies for structural engineering, for suppliers, specifiers (e.g. designers, procurement agencies and purchasers) and third-party certification bodies, to provide confidence in the product's conformity with the requirements of AS/NZS 1252.1.

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## STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

**Australian/New Zealand Standard****High-strength steel fastener assemblies for structural engineering—  
Bolts, nuts and washers****Part 2: Verification testing for bolt assemblies**

## SECTION 1 SCOPE AND GENERAL

**1.1 SCOPE OF STANDARD**

This Standard gives provisions for verification testing of high-strength steel bolt assemblies for structural engineering, which is the testing undertaken by the supplier who first puts the product into the market in Australia or New Zealand.

NOTE: The verification testing is additional to the testing required by AS/NZS 1252.1.

**1.2 EXCLUSIONS**

This Standard does not specify requirements for—

- (a) product testing as related to manufacture and ongoing control of production;
- (b) production process control; or
- (c) management systems.

## NOTES:

- 1 Specific initial type testing or product testing requirements, such as test methods, and specific requirements related to ongoing control of production, are contained in AS/NZS 1252.1.
- 2 Production process control is also sometimes referred to as ongoing control of production, production quality control, or factory inspection.
- 3 Specific requirements for management systems are found in other standards, e.g. the requirements for quality management systems are contained in AS/NZS ISO 9001.

**1.3 APPLICATION****1.3.1 General**

Verification testing in accordance with this Standard shall be undertaken by the supplier who first puts the product into the market in Australia or New Zealand. Compliance with this Standard shall be required by specifiers (e.g. designers, procurement agencies and purchasers) to provide confidence by verification testing that the product meets the requirements of AS/NZS 1252.1.

This Standard also provides supplementary requirements for product certification testing and for third-party bodies in carrying out their conformity assessment activities.

## NOTES:

- 1 When ordering fastener assemblies, this Standard should be specified.
- 2 The application of this Standard for verifying product conformity may be limited to one or more product types, or even to specific batches of product.

**1.3.2 Legislation**

This Standard needs to be read in conjunction with the legislation, by-laws, guidelines and regulations of regulatory authorities.

## 1.4 NORMATIVE REFERENCES

The following are the normative documents referenced in this Standard:

NOTE: Documents referenced for informative purposes are listed in the Bibliography.

### AS/NZS

- 1252 High-strength steel fastener assemblies for structural engineering—Bolts, nuts and washers
- 1252.1 Part 1: Technical requirements

### AS/NZS ISO/IEC

- 17065 Conformity assessment—Requirements for bodies certifying products, processes and services
- 17067 Conformity assessment—Fundamentals of product certification and guidelines for product certification schemes

### AS ISO/IEC

- 17000 Conformity assessment—Vocabulary and general principles
- 17025 General requirements for the competence of testing and calibration laboratories
- 17050 Conformity assessment—Supplier's declaration of conformity
- 17050.1 Part 1: General requirements
- 17050.2 Part 2: Supporting documentation

### ISO/IEC TR

- 17026 Conformity assessment—Example of a certification scheme for tangible products

## 1.5 DEFINITIONS

For the purpose of this Standard, the definitions given in AS/NZS 1252.1, AS ISO/IEC 17000, AS ISO/IEC 17025, AS/NZS ISO/IEC 17065, AS/NZS ISO/IEC 17067 and ISO/IEC TR 17026 and those below apply.

### 1.5.1 Authorized representative

Person who is approved to validate and sign inspection documents on behalf of the supplier, and who is positioned in the organization to avoid conflicts of interest with other functions such as purchasing, production, finance or sales.

### 1.5.2 Competent person

A person who has acquired, through education, training, qualification or experience, or a combination of these, the knowledge and skill enabling that person to perform the required task correctly and safely.

### 1.5.3 Supplier's declaration of conformity (SDoC)

A document issued by the supplier declaring that the products supplied comply with the requirements of the relevant Australian or New Zealand Standard and that the documentation required by the Standard is available from the supplier.



## SECTION 2 HIGH-STRENGTH BOLT VERIFICATION TESTING

### 2.1 SCOPE OF SECTION

This Section specifies the requirements for the verification testing that is used to provide confidence in a product's conformity with the requirements of AS/NZS 1252.1.

### 2.2 RESPONSIBLE PARTY

The party responsible for establishing product conformity, based on a verification testing program as set out within this Standard, shall be the supplier.

NOTE: The responsible party may sub-contract verification testing to an accredited testing laboratory.

### 2.3 ELEMENTS OF HIGH-STRENGTH BOLT VERIFICATION TESTING

#### 2.3.1 General

The term 'verification testing' is used to describe the combination of the following:

- (a) Selection, including the planning and preparation activities necessary to collect and produce the appropriate inputs in order to establish product conformity.
- (b) Determination activities, including all types of methods and processes to be used to demonstrate compliance with the requirements of AS/NZS 1252.1, as outlined in this Standard.
- (c) Review of the suitability, adequacy and effectiveness of the selection and determination activities described in Items (a) and (b) and the results of these activities with regard to fulfilment of the specified requirements.
- (d) Decision regarding the outcome of the verification testing process, expressed in terms of product conformity as determined in accordance with this Standard.
- (e) Attestation (issuing of a statement that fulfilment of the specified requirements has been demonstrated).

#### 2.3.2 Selection

Components of a structural bolt assembly shall meet the requirements of AS/NZS 1252.1 with respect to—

- (a) method of manufacture;
  - (b) shape, dimensions and finish;
  - (c) material and mechanical characteristics;
  - (d) identification (marking of components);
  - (e) structural characteristics; and
  - (f) initial type testing and factory production control,
- as detailed in the relevant Clauses of that Standard.

The structural bolt assembly shall meet the requirements of AS/NZS 1252.1 with respect to—

- (i) functional characteristics; and
- (ii) identification (packaging),

as detailed in the relevant Clauses of that Standard.

The party responsible for evaluating the product conformity shall collect all necessary evidence in order to establish that the requirements specified above are met.

### **2.3.3 Determination activities**

#### **2.3.3.1 General**

Determination activities shall be based upon a verification testing program undertaken by competent personnel. This verification testing program shall be carried out in accordance with the minimum sampling and testing plan outlined in Clause 2.3.3.3 under the sole responsibility of the supplier of the products before they are first placed into the market in Australia or New Zealand.

#### **2.3.3.2 Prerequisites for the verification testing program**

Verification testing shall only be performed on product that meets the requirements in AS/NZS 1252.1 for initial type testing (ITT) and factory production control (FPC), including factory production testing.

NOTE: Verification testing is only designed to confirm significant product characteristics for product from a stochastically controlled production process. Therefore, verification testing cannot be used to confirm product characteristics without documentation confirming ITT and FPC.

The party responsible for evaluating product conformity to this Standard shall establish that documentation is available comprising the following:

- (a) Evidence of compliance with the requirements for ITT detailed in Paragraph B2 of Appendix B of AS/NZS 1252.1.
- (b) Evidence of compliance with the requirements for FPC detailed in Paragraph B3 of Appendix B of AS/NZS 1252.1.
- (c) Copies of procedures critical to maintaining product integrity, including testing procedures and nonconforming product procedures.

#### **2.3.3.3 Minimum sampling and testing plan for verification testing**

The minimum sampling and testing plan for verification testing is indicated in Table 2.1 for dimensional characteristics and Table 2.2 for mechanical characteristics.

NOTE: Tables 2.1 and 2.2 are based generally on the requirements in ISO 3269, in which the supplier of product into the Australian or New Zealand market is treated as the purchaser of product (i.e. from the manufacturer) wishing to confirm acceptance.

#### **2.3.3.4 Traceability of components**

The identification number of the manufacturing lots, including the number of units, of the assembly lot to which the verification testing applies, shall be identified both on the test report and on all packaging for the entire assembly lot for the purpose of traceability of components.

**TABLE 2.1**  
**MINIMUM SAMPLING AND TESTING**  
**PLAN FOR VERIFICATION TESTING—DIMENSIONAL**  
**CHARACTERISTICS**

Dimensional characteristic (see Note)	Sample size	Acceptance no. (Ac)
<b>Bolts:</b>		
Width across flats ( $s$ )	3	0
Width across corners ( $e$ )	Not required	—
GO thread gauge	3	0
NO GO thread gauge	3	0
Geometric tolerances	Not required	—
<b>Nuts:</b>		
Width across flats ( $s$ )	3	0
Width across corners ( $e$ )	Not required	—
Nut height ( $m$ )	3	0
Socket NO GO gauge	3	0
Geometric tolerances	Not required	—
<b>Washers:</b>		
Hole diameter ( $d_1$ )	3	0
Outside diameter ( $d_2$ )	2	0
Thickness/chamfer ( $h$ )	3	1

NOTE: Symbols are defined in Figures 2.1, 3.1 and 4.1 of AS/NZS 1252.1, as appropriate.

**TABLE 2.2**  
**MINIMUM SAMPLING AND TESTING**  
**PLAN FOR VERIFICATION TESTING—MECHANICAL**  
**CHARACTERISTICS**

Dimensional characteristic	Sample size	Acceptance no. (Ac)
<b>Bolts:</b>		
Ultimate tensile strength	3	0
Proof load test	3	0
Surface integrity—non-destructive	8	0
Surface integrity—destructive	Not required	—
Chemical composition	Not required	—
Metallurgical characteristics	Not required	—
Coating	3	0
Other specified characteristics	3	0
<b>Nuts:</b>		
Proof load test	3	0
Hardness	8	0
<b>Washers:</b>		
Hardness	8	0
<b>Assemblies:</b>		
Assembly test	3	0

### 2.3.3.5 Sampling, testing and assessment

Sampling, testing and assessment shall be undertaken in the following steps:

- (a) Select samples at random from the assembly lot.
- (b) For each characteristic listed in Tables 2.1 and 2.2, carry out the inspection or test on the number of samples required.
- (c) Record the number of nonconforming characteristics and accept the assembly lot if this number is less than or equal to the acceptance number (Ac).
- (d) For any characteristic, if the number of nonconforming test results is greater than the acceptance number (Ac), then reject the assembly lot.

### 2.3.3.6 Re-testing in case of nonconforming product

Where a test indicates that an assembly lot is nonconforming, a sample of additional items, of the sample size specified in Table 2.3, for the number of non-conformances, shall be taken from the assembly lot and tested for the particular nonconforming parameter(s).

If the additional test results demonstrate conformance, then the assembly lot shall be deemed to comply, and all of the additional results included in the records.

If any of the additional test results demonstrate nonconformance, then the assembly lot shall be rejected as nonconforming and the supplier shall take steps to ensure the manufacturer is informed and the nonconforming assembly lot is not put into the market. The supplier shall have written procedures specifying the processing of nonconforming product.

**TABLE 2.3**  
**MINIMUM SAMPLING AND TESTING**  
**PLAN FOR VERIFICATION TESTING—RE-TESTING AFTER**  
**INITIAL TESTS<sup>#</sup> INDICATE LOT IS NON-CONFORMING**

Initial test sample size = 3		Initial test sample size = 8	
Sample size	Acceptance No. (Ac)	Sample size	Acceptance No. (Ac)
3 (initial sample)	0	8 (initial sample)	0
20	1	50	1
50	2	125	2
Lot to be rejected	3	Lot to be rejected	3

<sup>#</sup> Initial tests in accordance with sampling plan of Table 2.1 or Table 2.2.

### 2.3.3.7 Testing laboratory

Testing shall be performed by a laboratory accredited by a signatory to the International Laboratory Accreditation Corporation (ILAC) through their Mutual Recognition Agreement (MRA) for the tests specified in this Standard. The appropriate logo or further details of the ILAC (MRA) signatory shall be noted on the test certificate.

NOTE: In Australia, ILAC (MRA) bodies include the National Association of Testing Authorities (NATA); in New Zealand, they include International Accreditation New Zealand (IANZ).

### 2.3.3.8 Verification test reports

Review of those verification testing results that are applicable to the product for which conformity is to be established will form part of the assessment of product conformity to this Standard.

The following minimum information shall be included on all supplied test reports:

- (a) Date of testing.
- (b) Printed name, position and signature of the person authorizing the report, with date of issue.
- (c) Identification number of the manufacturing lot sufficient to allow traceability.
- (d) Number of items tested.
- (e) Designation of bolts, nuts and washers.
- (f) Marking of bolts, nuts and washers.
- (g) Coating or surface finish.
- (h) Lubrication type and condition.
- (i) Test clamp length, where relevant.
- (j) Details of the test set-up and devices used for measurement.
- (k) Testing conditions (where the testing procedure allows options).
- (l) Any remarks concerning implementation of the tests, including any special testing conditions and procedures.
- (m) Test results in accordance with AS/NZS 1252.1 and this Standard.
- (n) Where relevant, specifications for the tensioning of the fasteners relevant to the manufacturing lot or assembly lot tested, as appropriate.

- (o) Conclusions.
- (p) Reference to this Australian Standard, i.e. AS/NZS 1252.2.

#### **2.3.4 Review of the verification testing process**

The party responsible for establishing product conformity in accordance with this Standard will establish—

- (a) compliance with the verification testing prerequisites as defined in Clause 2.3.3.2 of this Standard; and
- (b) compliance of the supplied test report(s) with the verification testing program requirements specified in Clauses 2.3.3.3 to 2.3.3.8, inclusive, as applicable to the batch(es) or product type(s) for which product conformity is required to be established.

#### **2.3.5 Outcome of the conformity assessment process**

The party responsible for establishing product conformity in accordance with this Standard will document the outcome of the review which was undertaken as described in Clause 2.3.4. Where it is established that the applicable product complies with this Standard, an attestation of product conformity shall be prepared in accordance with Clause 3.2.

Where product conformity cannot be established, the specifier shall be notified of this outcome.

## SECTION 3     ATTESTATION OF PRODUCT CONFORMITY

### 3.1 SCOPE OF SECTION

This Section specifies the requirements for an attestation of product conformity based on the verification testing outlined in Section 2.

### 3.2 ATTESTATION OF PRODUCT CONFORMITY

Attestation of compliance with this Standard shall take the form of a Supplier's Declaration of Conformity (SDoC) that is applicable to the batch(es) or product type(s) for which product conformity is required to be established. The SDoC may be based, in part, upon conformity assessment to this Standard that has been carried out by a third-party product certification body; however, the verification testing component of the conformity assessment remains the responsibility of the supplier who first puts the product into the market in Australia or New Zealand.

The issued SDoC shall comply with AS ISO/IEC 17050.1 and AS ISO/IEC 17050.2, and include the following:

- (a) Statement from the supplier that the bolt assembly type(s) covered by the SDoC complies with AS/NZS 1252.1 and this Standard.
- (b) Test report numbers for the verification testing carried out under the responsibility of the supplier.

## BIBLIOGRAPHY

AS/NZS ISO

9001      Quality management systems—Requirements

ISO

3269      Fasteners—Acceptance inspection



NOTES

## NOTES

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