AS 2319—1984

Australian Standard®

RIGGING SCREWS AND TURNBUCKLES

(Title Allocated by Defence Cataloguing Authority: TURNBUCKLE)
NATO Supply Classification: 5340)

This Australian standard was prepared by Committee ME/25, Lifting Tackle. It was approved on behalf of the Council of the Standards Association of Australia on 24 August 1984 and published on 7 December 1984.

The following interests are represented on Committee ME/25:

Association of Australian Forging Industries
Australian Chamber of Commerce
Confederation of Australian Industry
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Department of Defence Support
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This standard was issued in draft form for comment as DR 83031.

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RIGGING SCREWS AND TURNBUCKLES

First published 1979
Second edition 1984

PUBLISHED BY STANDARDS AUSTRALIA
(STANDARDS ASSOCIATION OF AUSTRALIA)
1 THE CRESCENT, HOMEBUSH, NSW 2140
ISBN 0 7262 3532 6

PREFACE

This edition of this standard was prepared by the Association's Committee on Lifting Tackle, to supersede AS 2319—1979.

It is one of a series of standards for components which are used in lifting systems. Standards for other components are as follows:

AS 1138	Thimbles for Use with Wire Rope or Fibre (Natural or Synthetic) Rope
AS 1353	Synthetic-webbing Flat Slings
AS 1380	Fibre-rope Slings (of Natural or Synthetic Rope)
AS 1426	Steel Wire Ropes for Winding and Haulage Purposes in Mines
AS 1438	Wire-coil Flat Slings
AS 1504	Fibre Rope—Three-Strand, Hawser Laid
AS 1656	Steel Wire Ropes (Other Than for Mining Purposes)
AS 1666	Wire-rope Slings
AS 1752	Fibre Rope—Eight-strand Plaited
AS 2076	Wire Rope Grips
AS 2089	Sheave Blocks (Including Ships' Cargo Blocks) of Maximum Lift 60 t
AS 2317	Collared Eyebolts
AS 2318	Swivels
AS 2321	Short-link Chain for Lifting Purposes (Non-calibrated)
AS 2740	Wedge-type Sockets
AS 2741	Shackles
AS 2759	Steel Wire Rope—Application Guide
AS B291	Lifting Rings and Links

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STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard
for
RIGGING SCREWS AND TURNBUCKLES

FOREWORD

Rigging screws and turnbuckles are used in lifting, tensioning and staying systems to make adjustments to the length of the systems. The terms 'rigging screw' and 'turnbuckle' are often applied indiscriminately to all screws which provide means of length adjustment and for tensioning. Rigging screws (see Clause 3.6) are generally used in ships' standing rigging to provide means of length adjustment and for tensioning, and are also used with guys for masts, towers and other tall structures. Turnbuckles (see Clause 3.10) are normally used for general engineering purposes.

In any lifting, tensioning or staying system, the safe working load of each component shall take account of the conditions (such as the classification of load application as specified by AS 1418, Part 1) and shall be compatible with any loads inherent in and applied to the system, and each component should readily connect with each adjacent component. Therefore, it is important that components of lifting, tensioning or staying systems be quickly and positively identified in service for size, lifting capacity and quality grade.

The same quality grading system is used by other Australian standards covering components in lifting, tensioning and staying systems. It allows for positive identification and easy selection, and relates to the mechanical properties of the finished product and not simply to the strength of the material.

SPECIFICATION

1 SCOPE. This standard specifies dimensions, materials, manufacture, marking and testing of forged rigging screws and forged turnbuckles.

Guidance on information to be supplied with enquiries and orders and on care and use is given in Appendices A and B respectively.

2 REFERENCED DOCUMENTS. The following standards are referred to in this standard:

AS 1065 Methods for Ultrasonic Testing of Ferritic Steel Forgings

AS 1171 Methods for Magnetic Particle Testing of Ferromagnetic Products and Components

AS 1418 SAA Crane Code
Part 1—General Requirements

AS 1442 Carbon Steels and Carbon-manganese Steels—Hot-rolled Bars and Semi-finished Products

AS 1444 Wrought Alloy Steels—AISI-SAEStandard, Hardenability (H) and Stainless Series

AS 1627 Code for Practice for Preparation and Pretreatment of Metal Surfaces Prior to Protective Coating
Part 6—Phosphate Treatment of Iron and Steel Surfaces

AS 1650 Galvanized Coatings

AS 1654 Limits and Fits for Engineering

AS 1721 General Purpose Metric Screw Threads

AS 1789 Electroplated Coatings of Zinc on Iron and Steel

AS 1790 Electroplated Coatings of Cadmium on Iron and Steel

AS 1816 Method for Brignell Hardness Test
Part 1—Testing of Metals

3 DEFINITIONS. For the purpose of this standard, the following definitions apply:

3.1 Clevis end fitting—a U-shaped fitting with an integral shank, which has been forged in one piece (sometimes known as a 'jaw end fitting' or 'fork end fitting').

3.2 Finished condition—the condition after completion of processing and proof loading.

3.3 Processing—any treatment subsequent to forging, including heat treatment and application of surface finish coatings, but excluding proof loading and application of temporary protective coatings for storage purposes.

3.4 Production batch (of rigging screws or turnbuckles)—rigging screws or turnbuckles of the same size which have been produced at the same time from the same materials by the same manufacturing and heat treatment processes.

3.5 Proof load—the production proof test force applied after processing, as specified by Clause 9.5

3.6 Rigging screw—a tubular body threaded internally at each end in opposite hand and into which end fittings of optional type (e.g. round eye, elongated eye or clevis) having screwed shanks are fitted (see Figs 1 and 7). The end fittings in a rigging screw may be of different types.

3.7 Self-coloured—a surface colour of closely adhering brown/blue oxides resulting from heat treatment and subsequent handling during manufacture.

3.8 Shall and should—'shall' is taken to be mandatory; 'should' is taken to be advisory.

3.9. Statutory Authority—an authority with statutory powers to control the use of rigging screws and turnbuckles.

3.10 Turnbuckle—an open body consisting of two reins connecting two bosses which are threaded internally on the central axis in opposite hand and into which end fittings of optional type (e.g. round eye, elongated eye or clevis) having screwed shanks are fitted (see Figs 2 and 7). The end fittings in a turnbuckle may be of different types.

3.11 Working load.

3.11.1 *Working load limit (WLL)*—the maximum load which may be applied to the rigging screw or turnbuckle under general conditions of use. The WLL values apply only where the load acts along the axis of the body.

3.11.2 *Safe working load (SWL)*—the maximum load which may be applied to the rigging screw or turnbuckle under the particular conditions of use. It is a rating for the particular application which is to be complied with by the user.

NOTES:

1. The SWL never exceeds the WLL.
2. 1 or Class 3 load applications as specified by AS 1418, Part 1 under recommended conditions of loading, the SWL is equal to the WLL.
3. For Classes 4 and 5 load applications as specified by AS 1418, Part 1 under recommended conditions of loading, the SWL is equal to 0.8 times the WLL.
4. For especially arduous conditions or other than normal conditions of loading, a lower SWL is used.

4 CLASSIFICATION.

4.1 Nominal size. The nominal size of rigging screws and turnbuckles shall be the nominal diameter of the threaded shank of the end fittings.

NOTE: Rigging screws and turnbuckles of sizes smaller than 10 mm are not included as they can be easily overloaded by excessive tensioning (see Appendix B, Paragraph B3).

4.2 Quality grade. Rigging screws and turnbuckles shall be graded for quality by a letter in the series L, P and S in accordance with Table 2.

5 DIMENSIONS AND TOLERANCES.

5.1 General. Rigging screws and turnbuckles shall conform to the dimensions specified in Table 1 as shown by the following figures:

(a) Rigging screw body . . . . . Fig. 1.
(b) Turnbuckle body . . . . . Fig. 2.
(c) Round eye end fitting . . . . . Fig. 3.
(d) Drilled eye end fitting . . . . . Fig. 4.
(e) Elongated eye end fitting . . . . . Fig. 5.
(f) Clevis end fitting . . . . . Fig. 6.