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Australian Standard 2318—1979

SWIVELS

STANDARDS ASSOCIATION OF AUSTRALIA
Incorporated by Royal Charter

THE FOLLOWING SCIENTIFIC, INDUSTRIAL AND GOVERNMENTAL ORGANIZATIONS and departments were officially represented on the committee entrusted with the preparation of this standard:

Australasian Steamship Owners Federation

Australian Chamber of Commerce

Bureau of Steel Manufacturers of Australia

Confederation of Australian Industry

Department of Defence

Department of Industrial Relations and Technology, N.S.W.

Department of Labour and Industry, South Australia

Department of Labour and Industry, Tasmania

Department of Labour and Industry, Victoria

Department of Labour Relations, Queensland

Department of Mines and Energy, Northern Territory

Department of Productivity

Department of the Capital Territory

Department of Transport

Electricity Supply Association of Australia

Master Builders Association of N.S.W.

Metal Trades Industry Association of Australia

Railways of Australia Committee

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AUSTRALIAN STANDARD

SWIVELS

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PREFACE

This standard was prepared by the Association's Committee on Lifting Tackle, following an examination of BS 4283, Swivels for Lifting Purposes.

It is one of a series of standards for components of lifting systems. Other standards dealing with lifting systems are as follows:

AS 1353	Synthetic-webbing Flat Slings
AS 1380	Fibre-rope Slings (of Natural or Synthetic Rope)
AS 1438	Wire-coil Flat Slings
AS 1666	Wire Rope Slings
AS 2089	Sheave Blocks (Including Ships' Cargo Blocks) of Maximum Lift 60 t
AS 2317	Eyebolts
AS 2319	Rigging Screws and Turnbuckles
AS 2321	Short-link Chain for Lifting Purposes (Non-calibrated)
*AS B278	Shackles for Lifting Purposes
*AS B291	Lifting Rings and Links

Australian standards are being prepared for other components which are used with lifting systems. They are: chain slings, and hooks.

The standard is in metric units and specifies key dimensions for swivels consistent with BS 4283 and acknowledgement is made of the assistance received therefrom. It was prepared as a 'performance' rather than a 'dimensional' standard.

The swivels have a range of safe working loads from 0.6 t to 20 t. Swivels with and without rolling-element thrust bearing are covered, the component parts of each being geometrically similar. The boundary dimensions of ball-thrust and roller-thrust bearings are identical. For practical reasons, the same bow piece is used for both thrust bearing and plain bearing swivels.

The opportunity has been taken to align material designations with those adopted by the ISO/TC 111, Round Steel Link Chains, Chain Wheels, Lifting Hooks and Accessories. ISO has made provision for the following tabulated grades and those adopted by the committee for lifting tackle equipment standards in Australia are designated as the preferred grades:

Preferred grade	*Non-preferred grade*	*Old grade designation*
L	—	Lower tensile steel
—	M	Higher tensile steel
P	—	Higher tensile steel
—	S	Alloy steel
T	—	Alloy steel
—	V	—

Not all these preferred grades are designated for each lifting tackle product. Some are restricted to recommendation of one grade only, e.g. AS 2317, Eyebolts, designates grade M only. Owing to local conditions and requirements, the Australian designated preferred grades for the various products differ from those grades nominated by ISO for comparable products. To date there is no ISO standard for swivels.

Several appendices have been included to indicate guidance on information to be supplied with an enquiry and order, finishes other than self-coloured, and the care and use of swivels.

This standard may require reference to the following standards:

AS 1057	Glossary of Terms Used in Quality Control
AS 1442	Carbon Steels and Carbon-manganese Steels—Hot-rolled Bars and Semi-finished Products
AS 1444	Wrought Alloy Steels of the AISI-SAE H and Standard Steels Types
AS 1627	Code of 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 on Ferrous Articles
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 B175	Split Cotter Pins
AS B199	Undercuts and Runouts for Screw Threads
ISO 76	Rolling Bearings—Static Load Ratings
BS 4283	Swivels for Lifting Purposes

*In course of metrication and revision.

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STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard for SWIVELS

FOREWORD

Swivels covered by this standard are divided into quality grades. For the purpose of this standard, there are three 'preferred' quality grades which are identified by a letter in the series L, P and T, and two 'non-preferred' grades which are identified by the letters M and S. The range of quality grades extends from 'lower tensile' steel swivels (quality grade L) through 'higher tensile' steels (quality grades M and P) to 'alloy' steel swivels (quality grades S and T).

This quality grading system applies not only to swivels, but also to hooks, rings and/or other accessories, which together form a lifting system. It relates to the mechanical properties of the finished product and not solely to the strength of the material. For example, a swivel of a given quality grade and lifting capacity is capable of being matched by hooks of the same quality grade and lifting capacity to form a lifting system of compatible components. It is, therefore, important that all components of such a lifting system may be quickly and positively identified in service for size, lifting capacity and quality grade.

The materials specified for the swivels are the same as those specified in other Australian standards for other components of lifting tackle. Steels to Australian standards have been specified but other approved materials may be used. Heat treatment appropriate to the grade of steel used is also specified.

This standard covers the more commonly used types of swivels, these swivels being constructed with forged components and having either plain or rolling-element bearings. It does not cover swivels which are fabricated and/or cast in various other materials for special purpose, but it may be used for guidance on such swivels.

The safe working load of the swivel and that of other components constituting a lifting system is to be compatible with the loading inherent in or applied to the system.

SPECIFICATION

1 SCOPE. This standard specifies requirements for forged swivels for lifting purposes comprising a bow piece and a round or elongated eye with or without a rolling-element thrust bearing and having safe working loads in the range 0.6 t to 20 t. Details on key dimensions, materials, heat treatment, manufacture, testing and marking are specified.

NOTES:

1. For swivels other than self-coloured, see Appendix A.
2. For information that should be supplied with an enquiry or order, see Appendix B.
3. A typical swivel assembly is shown in Fig. 1.

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

2.1 Approved and approval—approved by or the approval of the Statutory Authority concerned.

2.2 Finished condition—the condition of a swivel after completion of all processing and proof loading.

2.3 Processing—any treatment of the swivels subsequent to forging, e.g. heat treatment, but excluding proof loading and temporary protective coating.

2.4 Proof load—the force to which after processing (see Clause 2.3) the swivel is subjected as specified in Clause 9.3.

2.5 Self-colour—a swivel of self-colour is one with the surface finish arising from the essential manufacturing operations, the surface finish usually being a closely adhering oxide film due to the heat treatment and subsequent handling.

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

2.7 Statutory Authority—an authority having statutory powers to control the design, manufacture and use of lifting tackle in the State or Territory within the Commonwealth of Australia in which the lifting tackle is to be used.

3 NOMINAL SIZE. The nominal size of the swivel shall be the nominal outside diameter of the thread of the screwed shank with a prefix letter according to the swivel grade designation, e.g. L30.

4 DIMENSIONS AND TOLERANCES.

4.1 Dimensions. The swivel components shall conform to the dimensions specified in Table 1 and Fig. 2. Details on the nominal proportions utilized and the derivation of the dimensions are noted at the head of each appropriate column, based on the theoretical dimension *A* as noted in column 2 of Table 1.

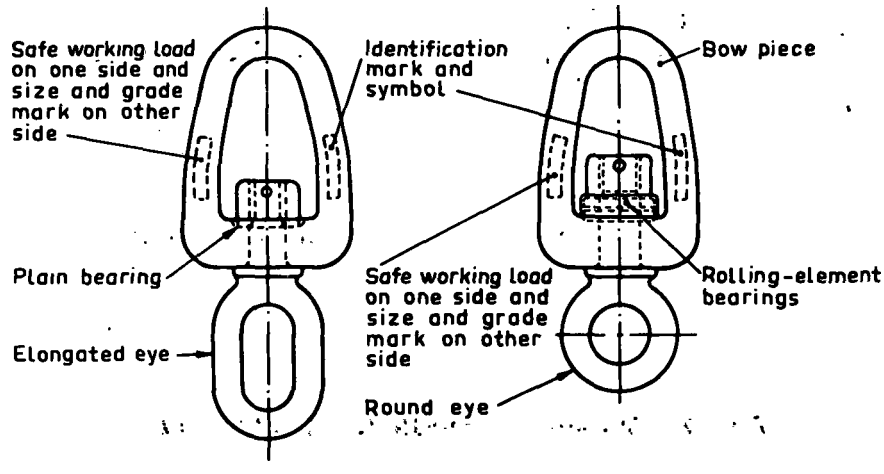
Such dimensions are identical for swivels with or without rolling-element (ball or roller) bearings. The shank length of the round or elongated eye varies to accommodate either the thrust bearing or plain bearing assemblies.

NOTE: The actual shank diameter of the round or elongated eyes which have rolling-element thrust bearings depends upon the size of the bearing and generally is greater than the nominal thread size.

The dimensions of the unmachined portions of the swivel components shall not be less than the dimensions specified in Table 1.

4.2 Tolerances.

4.2.1 *Forging tolerances.* The tolerance on the internal dimensions of the swivel components shall be + 5 percent. The tolerance on the displacement of



(a) PLAIN BEARING (b) ROLLING-ELEMENT BEARING

Fig. 1. TYPICAL SWIVEL ASSEMBLIES