

Australian Standard™

Welding of ferrous castings

Part 1: Steel castings



This Australian Standard was prepared by Committee MT-001, Iron and Steel. It was approved on behalf of the Council of Standards Australia on 28 March 2006. This Standard was published on 24 April 2006.

The following are represented on Committee MT-001:

Australian Railway Associations
Australian Building Codes Board
Australian Foundry Institute
Australian Industry Group
Australian Steel Institute
Bureau of Steel Manufacturers of Australia
Institute of Material Engineering Australasia

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This Standard was issued in draft form for comment as DR 05344.

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Welding of ferrous castings

Part 1: Steel castings

Originally as AS 1988—1977.
Previous edition AS 1988—1989.
Revised and redesignated as AS 1988.1—2006.

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Published by Standards Australia GPO Box 476, Sydney, NSW 2001, Australia

ISBN 0 7337 7387 7

PREFACE

This Standard was prepared by the Australian members of the Joint Standards Australia/Standards New Zealand Committee MT-001, Iron and Steel to supersede AS 1988—1989, *Welding of steel castings*.

After consultation with stakeholders in both countries, Standards Australia and Standards New Zealand decided to develop this Standard as an Australian, rather than an Australian/New Zealand Standard.

The objective of this edition is to revise the list of welding consumables and to introduce details on welded connections and the qualification of procedures and personnel.

Steel castings may require welding to make them satisfactory for their intended service, and this has long been accepted as part of the normal production process. The procedures in this Standard can be specified to ensure good welding practice during production, repair, rectification, and fabrication of steel castings. In fabrication, the use of welding has to be taken into account at the design and foundry stages.

During the preparation of this Standard, cognisance was taken of the following Standards.

AS/NZS

- | | |
|--------|-------------------------------------|
| 1554 | Structural steel welding |
| 1554.1 | Part 1: Welding of steel structures |

ISO

- | | |
|-------|---|
| 11970 | Specification and approval of welding procedures for production welding of steel castings |
|-------|---|

This Standard is one of a series of Standard covering the range of cast irons and steels. The series comprises the following:

AS

- | | |
|--------|---|
| 1830 | Grey cast iron |
| 1831 | Ductile cast iron |
| 1832 | Malleable cast iron |
| 1833 | Austenitic cast iron |
| 1988 | Welding of ferrous castings |
| 1988.1 | Part 1: Steel castings (this Standard) |
| 1988.2 | Part 2: Cast iron castings |
| 2027 | Wear-resistant white cast iron |
| 2074 | Cast steels |
| 4314 | Metal castings—Patterns, pattern equipment and coreboxes for the production of sand moulds and sand cores |
| 4738 | Metal castings |
| 4738.1 | Part 1: Ferrous sand moulded |
| 5049 | Cast iron—Designation of microstructure of graphite |

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

The terms ‘normative’ and ‘informative’ have been used in this Standard to define the application of the appendix to which they apply. A ‘normative’ appendix is an integral part of a Standard, whereas an ‘informative’ appendix is only for information and guidance.

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Australian Standard
Welding of ferrous castings

Part 1: Steel castings

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard specifies the requirements for fusion welding of steel castings where it is used for the following:

- (a) To rectify and/or modify a casting as part of the normal production process.
- (b) To rectify a casting that has been in service.
- (c) For the joining together of steel castings by fusion welding, where the subsections of the final fabrication are designed for the foundry plan in the stage.

NOTE: For prequalification refer to AS/NZS 1554.1.

The provisions in this Standard are applicable to the following welding processes:

- (i) Manual metal-arc welding (MMAW).
- (ii) Submerged arc welding (SAW).
- (iii) Gas metal-arc welding (GMAW or MIG), including pulsed mode.
- (iv) Gas tungsten-arc welding (GTAW or TIG).
- (v) Flux-cored arc welding (FCAW).
- (vi) Electroslag (including consumable guide) welding (ESW).
- (vii) Electro gas welding (EGW).

1.2 EXCLUSIONS

The Standard does not apply to the welding of castings by the following processes:

- (a) Oxyacetylene welding (OAW).
- (b) Friction welding (FW).
- (c) Thermit welding (TW).
- (d) Resistance welding (RW).

The Standard does not apply to hard facing (see AS/NZS 2576) or the welding of steel castings complying with AS 1210. For the fusion welding and fusion weld repair of cast irons, reference should be made to AS 1988.2.

1.3 REFERENCED DOCUMENTS

The following documents are referred to in this Standard: