

Australian Standard™

**Lifting components for Grade T chain  
slings**

**STANDARDS**  
Australia



This Australian Standard was prepared by Committee ME-025, Lifting Tackle. It was approved on behalf of the Council of Standards Australia on 2 March 2006. This Standard was published on 16 June 2006.

---

The following are represented on Committee ME-025:

Australian Chamber of Commerce and Industry  
Australian Forging Group  
Australian Industry Group  
Australian Maritime Safety Authority  
Crane Industry Council of Australia  
Department of Defence (Australia)  
Engineers Australia  
Institute of Quarrying Australia  
National Association of Testing Authorities Australia  
Victorian WorkCover Authority  
WorkCover New South Wales

---

### **Keeping Standards up-to-date**

Standards are living documents which reflect progress in science, technology and systems. To maintain their currency, all Standards are periodically reviewed, and new editions are published. Between editions, amendments may be issued. Standards may also be withdrawn. It is important that readers assure themselves they are using a current Standard which should include any amendments which may have been published since the Standard was purchased.

Detailed information about Standards can be found by visiting the Standards Web Shop at [www.standards.com.au](http://www.standards.com.au) and looking up the relevant Standard in the on-line catalogue.

Alternatively, the printed Catalogue provides information current at 1 January each year, and the monthly magazine, *The Global Standard*, has a full listing of revisions and amendments published each month.

Australian Standards™ and other products and services developed by Standards Australia are published and distributed under contract by SAI Global, which operates the Standards Web Shop.

We also welcome suggestions for improvement in our Standards, and especially encourage readers to notify us immediately of any apparent inaccuracies or ambiguities. Contact us via email at [mail@standards.org.au](mailto:mail@standards.org.au), or write to the Chief Executive, Standards Australia, GPO Box 476, Sydney, NSW 2001.

---

*This Standard was issued in draft form for comment as DR 05302.*

Australian Standard™

**Lifting components for Grade T chain slings**

First published as AS 3776—1990.  
Second edition 2006.

**COPYRIGHT**

© Standards Australia

All rights are reserved. No part of this work may be reproduced or copied in any form or by any means, electronic or mechanical, including photocopying, without the written permission of the publisher.

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

ISBN 0 7337 7513 6

## PREFACE

This Standard was prepared by Standards Australia Committee ME-025, Lifting Tackle, to supersede AS 3758—1990.

In the preparation of this Standard, cognizance was taken of the following Standards:

- (a) BS EN 1677-1:2000 Components for slings. Safety. Forged steel components, Grade 8.
- (b) BS EN 1677-2:2000 Components for slings. Safety. Forged steel lifting hooks with latch, Grade 8.
- (c) BS EN 1677-3:2001 Components for slings. Safety. Forged steel self-locking hooks, Grade 8.
- (d) BS EN 1677-4:2000 Components for slings. Safety. Links, Grade 8.

Previously, quality grade was designated as T, 8, 80 or 800. International usage has focused on Grade 8 and, for the purposes of this Standard, Grade T or Grade 8 are the predominant description of quality grade.

The objective of this Standard is to provide requirements for lifting components for use in Grade T chain slings and ensure that product supplied meets its design intent. This Standard is for reference by manufacturers, suppliers, testers, users and regulators.

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.

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

## CONTENTS

	<i>Page</i>
SECTION 1 SCOPE AND GENERAL	
1.1 SCOPE .....	5
1.2 REFERENCED DOCUMENTS .....	5
1.3 DEFINITIONS .....	6
SECTION 2 GENERAL DESIGN, MANUFACTURING AND MECHANICAL PROPERTIES	
2.1 DESIGN .....	9
2.2 MATERIALS AND HEAT TREATMENT .....	9
2.3 MANUFACTURING METHODS AND WORKMANSHIP .....	10
2.4 MECHANICAL PROPERTIES .....	10
SECTION 3 TESTING AND VERIFICATION	
3.1 TYPE TESTING OF MECHANICAL PROPERTIES .....	12
3.2 MANUFACTURING TESTS .....	12
3.3 MANUFACTURING TEST REGIME AND ACCEPTANCE CRITERIA .....	13
SECTION 4 CONNECTORS AND MECHANICAL JOINING DEVICES	
4.1 DESIGN .....	16
4.2 MATERIALS AND HEAT TREATMENT .....	16
4.3 MANUFACTURING METHODS AND WORKMANSHIP .....	16
4.4 MECHANICAL PROPERTIES .....	17
4.5 TYPE TESTING OF MECHANICAL PROPERTIES .....	17
4.6 ASSEMBLY .....	17
SECTION 5 LINKS	
5.1 DESIGN .....	18
5.2 MATERIALS AND HEAT TREATMENT .....	19
5.3 MANUFACTURING METHODS AND WORKMANSHIP .....	19
5.4 MECHANICAL PROPERTIES .....	20
5.5 TYPE TESTING OF MECHANICAL PROPERTIES .....	20
SECTION 6 LIFTING HOOKS WITH LATCH	
6.1 GENERAL .....	22
6.2 DESIGN .....	22
6.3 MATERIALS AND HEAT TREATMENT .....	23
6.4 MANUFACTURING METHODS AND WORKMANSHIP .....	23
6.5 MECHANICAL PROPERTIES .....	23
6.6 TYPE TESTING OF MECHANICAL PROPERTIES .....	23
SECTION 7 OTHER HOOKS	
7.1 SCOPE .....	24
7.2 SPECIFIC TYPES OF HOOKS .....	24
7.3 DESIGN .....	25
7.4 MATERIALS AND HEAT TREATMENT .....	25
7.5 MANUFACTURING METHODS AND WORKMANSHIP .....	25
7.6 MECHANICAL PROPERTIES .....	25
7.7 TYPE TESTING OF MECHANICAL PROPERTIES .....	25
7.8 ASSEMBLY .....	26

7.9	INSTRUCTIONS FOR USE.....	26
SECTION 8 SELF-LOCKING HOOKS		
8.1	SCOPE .....	27
8.2	DESIGN .....	27
8.3	MATERIALS AND HEAT TREATMENT .....	28
8.4	MANUFACTURING METHODS AND WORKMANSHIP .....	28
8.5	MECHANICAL PROPERTIES.....	29
8.6	TYPE TESTING OF MECHANICAL PROPERTIES .....	29
SECTION 9 MARKING .....		
		31
SECTION 10 INSTRUCTIONS FOR USE		
10.1	GENERAL .....	31
10.2	CRADLE GRAB HOOKS.....	33
10.3	LINKS.....	33
10.4	HOOKS WITH A LATCH .....	33
10.5	SELF-LOCKING HOOKS .....	33
SECTION 11 HAZARDS		
11.1	HAZARD IDENTIFICATION .....	34
11.2	RISK ASSESSMENT.....	34
APPENDICES		
A	MECHANICAL PROPERTIES.....	35
B	TESTING .....	37
C	DETERMINATION OF WORKING LOAD LIMIT (WLL) .....	41
D	STANDARDS FOR COMPONENTS USED IN LIFTING SYSTEMS.....	42

## STANDARDS AUSTRALIA

**Australian Standard**  
**Lifting components for Grade T chain slings**

## SECTION 1 SCOPE AND GENERAL

**1.1 SCOPE**

This Standard specifies requirements for forged lifting components for use in chain sling assemblies with corresponding sizes of Grade T chain complying with AS 2321. The components include hooks with eyes, clevises and other joining devices, mechanical connecting devices, and any other terminal fittings used in a lifting system based on Grade T chain.

This Standard does not apply to welded components other than welded master links, welded multi-link assemblies, welded joining links nor does it apply to components subject to an existing Australian Standard.

## NOTES:

- 1 AS 2321 specifies chain in terms of the ISO quality grade designation system. The ISO system also permits Grade T to be designated as Grade S.
- 2 A list of standards applicable to components used in lifting systems is given in Appendix D.

**1.2 REFERENCED DOCUMENTS**

The following documents are referenced in this Standard:

## AS

- |        |   |
|--------|---|
| 1171   | Non-destructive testing—Magnetic particle testing of ferromagnetic products, components and structures                |
| 1442   | Carbon steels and carbon-manganese steels—Hot-rolled bars and semifinished products                                   |
| 1444   | Wrought alloy steels—Standard, hardenability (H) series and hardened and tempered to designated mechanical properties |
| 2062   | Non-destructive testing—Penetrant testing of products and components  |
| 2193   | Calibration and classification of force-measuring systems   |
| 2318   | Swivels for hoists  |
| 2321   | Short-link chain for lifting purposes   |
| 3775   | Chain slings—Grade T  |
| 3775.2 | Part 2: Care and use  |
| 3998   | Non-destructive testing—Qualification and certification of personnel  |

## AS/NZS

- |        |   |
|--------|---|
| 1554   | Structural steel welding  |
| 1554.4 | Part 4: Welding of steel structures subject to high levels of fatigue loading |