



Design of post-installed and cast-in fastenings in concrete



This Australian Standard® was prepared by Committee ME-029, Fasteners. It was approved on behalf of the Council of Standards Australia on 12 April 2018.
This Standard was published on 4 May 2018.

The following are represented on Committee ME-029:

- Association of Accredited Certification Bodies
 - Association of Wall and Ceiling Industries of Australia
 - Australian Building Codes Board
 - Australian Chamber of Commerce and Industry
 - Australian Engineered Fasteners and Anchors Council
 - Australian Industry Group
 - Australian Steel Institute
 - Austroads
 - Bureau of Steel Manufacturers of Australia
 - Galvanizers Association of Australia
 - Materials Australia
 - National Association of Steel-Framed Housing
 - National Association of Testing Authorities Australia
 - New Zealand Heavy Engineering Research Association
 - Society of Automotive Engineers - Australasia
 - Steel Construction New Zealand
 - Swinburne University of Technology
-

This Standard was issued in draft form for comment as DR AS 5216:2017.

Standards Australia wishes to acknowledge the participation of the expert individuals that contributed to the development of this Standard through their representation on the Committee and through the public comment period.

Keeping Standards up-to-date

Australian Standards® are living documents that 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Standards may also be withdrawn.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 that may have been published since the Standard was published.

Detailed information about Australian Standards, drafts, amendments and new projects can be found by visiting www.standards.org.au

Standards Australia welcomes suggestions for improvements, and encourages readers to notify us immediately of any apparent inaccuracies or ambiguities. Contact us via email at mail@standards.org.au, or write to Standards Australia, GPO Box 476, Sydney, NSW 2001.

AS 5216:2018
(Incorporating Amendment No. 1)

Australian Standard[®]

**Design of post-installed and cast-in
fastenings in concrete**

First published as SA TS 101:2015.
Revised and redesignated AS 5216:2018.
Reissued incorporating Amendment No. 1 (August 2019).

COPYRIGHT

© Standards Australia Limited

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, unless otherwise permitted under the Copyright Act 1968.

ISBN 978 1 76072 052 0

PREFACE

This Australian Standard was prepared by the Standards Australia Committee ME-029, Fasteners, to supersede SA TS 101:2015, *Design of post-installed and cast-in fastenings for use in concrete*.

This Standard incorporates Amendment No. 1 (August 2019). The changes required by the Amendment are indicated in the text by a marginal bar and amendment number against the clause, note, table, figure or part thereof affected.

The objective of this Australian Standard is to provide minimum design requirements for fastenings used to transmit loads to concrete for safety-critical applications.

Standards Australia acknowledges and thanks the European Committee for Standardization—CEN, Rue de la Science 23, B-1040 Brussels, Belgium for permission to reproduce its content in the development of this Standard.

The terms ‘normative’ and ‘informative’ are used in Standards to define the application of the appendices or annexes to which they apply. A ‘normative’ appendix or annex is an integral part of a Standard, whereas an ‘informative’ appendix or annex is only for information and guidance.

This Standard includes a commentary on some of the clauses. The commentary directly follows the relevant clause, is designated by ‘C’ preceding the clause number and is printed in italics in a box. The commentary is for information and guidance and does not form part of the Standard.

CONTENTS

	<i>Page</i>
SECTION 1 SCOPE AND GENERAL	
1.1 SCOPE AND APPLICATION.....	5
1.2 NORMATIVE REFERENCES	6
1.3 DEFINITIONS.....	7
1.4 NOTATION.....	13
1.5 LOADING ON FASTENERS.....	21
SECTION 2 MATERIALS AND INSTALLATION	
2.1 TYPES OF FASTENERS AND FASTENER GROUPS	22
2.2 DIMENSIONS OF FASTENERS	23
2.3 FASTENER MATERIALS	23
2.4 CONCRETE	23
2.5 REINFORCEMENT	24
SECTION 3 GENERAL DESIGN REQUIREMENTS	
3.1 GENERAL.....	25
3.2 VERIFICATIONS FOR DESIGN.....	25
3.3 CONCRETE CONDITION.....	27
3.4 VERIFICATION OF FASTENER STRENGTH.....	27
SECTION 4 DETERMINATION OF FORCES ACTING ON FASTENERS	
4.1 GENERAL.....	36
4.2 POST-INSTALLED FASTENERS.....	36
4.3 ANCHOR CHANNEL.....	42
4.4 SUPPLEMENTARY REINFORCEMENT	44
SECTION 5 DETAILING OF SUPPLEMENTARY REINFORCEMENT	46
SECTION 6 DESIGN FOR TENSILE LOADING	
6.1 GENERAL.....	48
6.2 POST-INSTALLED FASTENERS.....	48
6.3 CAST-IN ANCHOR CHANNEL.....	62
SECTION 7 DESIGN FOR SHEAR LOADING	
7.1 GENERAL.....	70
7.2 POST-INSTALLED FASTENERS.....	70
7.3 CAST-IN ANCHOR CHANNEL.....	78
SECTION 8 DESIGN FOR COMBINED TENSION AND SHEAR LOADING	
8.1 STEEL FAILURE.....	85
8.2 FAILURE MODES OTHER THAN STEEL.....	86
8.3 ADDITIONAL VERIFICATION FOR FASTENERS WITH SUPPLEMENTARY REINFORCEMENT	88
SECTION 9 DESIGN FOR SERVICEABILITY	
9.1 VERIFICATION OF SERVICEABILITY LIMIT STATE—DISPLACEMENT	90
9.2 VERIFICATION OF SERVICEABILITY LIMIT STATE—SUPPLEMENTARY REINFORCEMENT	90

This is a free preview. Purchase the entire publication at the link below:

[Product Page](#)

-
- [Looking for additional Standards? Visit Intertek Inform Infostore](#)
 - [Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation](#)
-