

Australian Standard[®]

**Suspended ceilings, recessed
luminaires and air diffusers —
Interface requirements for
physical compatibility**

This Australian Standard was prepared by Committee LG/11, Recessed Luminaires for Suspended Ceilings. It was approved on behalf of the Council of Standards Australia on 10 July 1990 and published on 11 February 1991.

The following interests are represented on Committee LG/11:

Air-conditioning and Refrigeration Equipment Manufacturers Association of Australia
Australian Electrical and Electronic Manufacturers Association
Building Owners and Managers Association of Australia
Confederation of Australian Industry
Electrical Contractors Associations of Australia
Illuminating Engineering Societies of Australia
Metal Trades Industry Association of Australia
Public Works Department, New South Wales
Royal Australian Institute of Architects
The Association of Consulting Engineers Australia

Review of Australian Standards. *To keep abreast of progress in industry, Australian Standards are subject to periodic review and are kept up to date by the issue of amendments or new editions as necessary. It is important therefore that Standards users ensure that they are in possession of the latest edition, and any amendments thereto.*

Full details of all Australian Standards and related publications will be found in the Standards Australia Catalogue of Publications; this information is supplemented each month by the magazine 'The Australian Standard', which subscribing members receive, and which gives details of new publications, new editions and amendments, and of withdrawn Standards.

Suggestions for improvements to Australian Standards, addressed to the head office of Standards Australia, are welcomed. Notification of any inaccuracy or ambiguity found in an Australian Standard should be made without delay in order that the matter may be investigated and appropriate action taken.

Australian Standard[®]

**Suspended ceilings, recessed
luminaires and air diffusers—
Interface requirements for
physical compatibility**

First published as AS 2946—1987
Second edition 1991.

PREFACE

This Standard was prepared by the Standards Australia Committee on Recessed Luminaires for Suspended Ceilings to supersede AS 2946—1987.

Problems involving non-compatibility of recessed luminaires and suspended ceiling systems arise mainly from the following:

- (a) The use of luminaires with tubular fluorescent lamps based on imperial units of measurement in buildings that are constructed using metric building modules. This generally requires the use of luminaires which extend at one or both ends above the structural members of the ceiling in order to accommodate the lamps. With such luminaires it is not possible to install more than two successive luminaires, end-to-end.
- (b) Differences in the form and dimensions of the members used to support the suspended ceiling. Whilst differences exist between ceilings of different type, there have been significant variations in the members used in the construction of ceilings of the same basic type.

The committee, after considering the various alternatives, concluded that the only practical way of achieving compatibility between suspended ceilings and recessed luminaires was to establish 'standard' section dimensions for the ceiling runners and to specify luminaire mounting requirements by reference to these 'standard' dimensions. However, requirements have been specified only for the most commonly used types of suspended ceiling. It is recognized that the section dimensions of the ceiling runners currently used may in some instances differ from those specified in this Standard and that the adoption of the 'standard' dimensions may not be immediately possible, e.g. until replacement tooling is required.

This Standard also addresses the interface between recessed luminaires which incorporate facilities for air supply and the associated air diffusers. Requirements are specified which have the objective of ensuring physical compatibility.

One of the objects of this Standard is to facilitate the availability of recessed luminaires and air diffusers on an 'off-the-shelf' basis. However, it is recognized that 'special' luminaires and air diffusers which depart from the specified requirements may occasionally be needed for particular applications.

The main alterations made in this edition are as follows:

- (a) A reduction in the maximum height for luminaires which utilize deep reflector/louvre optical systems (see Clause 3.1).
- (b) A reduction in the height of the securing button on single-sided air diffusers and changes to the requirements for the corresponding keyhole or slot on the sides of air-handling luminaires (see Clause 4.5.3 and Figure 5.1).
- (c) Provision for alternative sizes (i.e. heights) for single-sided and double-sided air diffusers (see Figures 5.1 and 5.2).
- (d) Addition of a requirement for air handling luminaires to incorporate means to ensure the correct positioning of air diffusers (see Clause 4.5.1 and Figure 4.5).

© Copyright — STANDARDS AUSTRALIA

Users of Standards are reminded that copyright subsists in all Standards Australia publications and software. Except where the Copyright Act allows and except where provided for below no publications or software produced by Standards Australia may be reproduced, stored in a retrieval system in any form or transmitted by any means without prior permission in writing from Standards Australia. Permission may be conditional on an appropriate royalty payment. Requests for permission and information on commercial software royalties should be directed to the head office of Standards Australia.

Standards Australia will permit up to 10 percent of the technical content pages of a Standard to be copied for use exclusively in-house by purchasers of the Standard without payment of a royalty or advice to Standards Australia.

Standards Australia will also permit the inclusion of its copyright material in computer software programs for no royalty payment provided such programs are used exclusively in-house by the creators of the programs.

Care should be taken to ensure that material used is from the current edition of the Standard and that it is updated whenever the Standard is amended or revised. The number and date of the Standard should therefore be clearly identified.

The use of material in print form or in computer software programs to be used commercially, with or without payment, or in commercial contracts is subject to the payment of a royalty. This policy may be varied by Standards Australia at any time.

CONTENTS

	<i>Page</i>
SECTION 1 SCOPE AND GENERAL	
1.1 SCOPE	4
1.2 REFERENCED DOCUMENTS	4
1.3 DEFINITIONS	5
1.4 LUMINAIRE TYPE DESIGNATIONS	6
SECTION 2 SUSPENDED CEILINGS	
2.1 DESIGN AND INSTALLATION	7
2.2 SECTION DIMENSIONS OF CEILING RUNNERS	7
2.3 CEILING GRID DIMENSIONS	7
2.4 SUPPORT OF CEILING RUNNERS	7
2.5 DEAD LOAD DUE TO LUMINAIRES	7
SECTION 3 LUMINAIRES (OTHER THAN AIR-HANDLING)	
3.1 METHOD OF MOUNTING AND ASSOCIATED DIMENSIONS	9
3.2 VERTICAL CLEARANCE FOR INSERTION AND WITHDRAWAL	9
3.3 PROVISION FOR CONNECTION TO THE SUPPLY	9
3.4 LIGHT CONTROLLING DEVICES FOR TYPE T2.1 LUMINAIRES	9
3.5 MARKING AND PROVISION OF INFORMATION	9
SECTION 4 AIR-HANDLING LUMINAIRES	
4.1 METHOD OF MOUNTING AND ASSOCIATED DIMENSIONS	16
4.2 VERTICAL CLEARANCE FOR INSERTION AND WITHDRAWAL	16
4.3 PROVISION FOR CONNECTION TO THE SUPPLY	16
4.4 MARKING AND PROVISION OF INFORMATION	16
4.5 PROVISION FOR AIR DIFFUSERS	16
SECTION 5 AIR DIFFUSERS	
5.1 FORM AND DIMENSIONS	22
5.2 FINISH OF SURFACES EXPOSED TO VIEW	22
5.3 INLET DUCT CONNECTION	22
5.4 REPORTING OF ACOUSTIC AND AIR FLOW TEST DATA	22
5.5 MARKING	22
APPENDIX A INFORMATION TO BE PROVIDED	25
TABLE 1.1 TYPE DESIGNATIONS FOR RECESSED LUMINAIRES	6
FIGURES	
1.1 SCHEMATIC ILLUSTRATION OF PHYSICAL INTERACTION BETWEEN SUSPENDED CEILINGS, RECESSED LUMINAIRES AND AIR DIFFUSERS	5
2.1 SECTION DIMENSIONS OF CEILING RUNNERS	8
3.1 PHYSICAL INTERFACE REQUIREMENTS FOR TYPE T1 LUMINAIRES ...	10
3.2 PHYSICAL INTERFACE REQUIREMENTS FOR TYPE M1 LUMINAIRES ...	11
3.3 PHYSICAL INTERFACE REQUIREMENTS FOR TYPE T2.1 LUMINAIRES	12
3.4 PHYSICAL INTERFACE REQUIREMENTS FOR TYPE T2.2 LUMINAIRES	13
3.5 PHYSICAL INTERFACE REQUIREMENTS FOR TYPE MC LUMINAIRES	14
3.6 PHYSICAL INTERFACE REQUIREMENTS FOR TYPE F LUMINAIRES	15
4.1 PHYSICAL INTERFACE REQUIREMENTS FOR TYPE T1/A LUMINAIRES	17
4.2 PHYSICAL INTERFACE REQUIREMENTS FOR TYPE M1/A LUMINAIRES	18
4.3 PHYSICAL INTERFACE REQUIREMENTS FOR TYPE T2/A LUMINAIRES	19
4.4 PHYSICAL INTERFACE REQUIREMENTS FOR TYPE MC/A LUMINAIRES	20
4.5 AIR SLOT DETAIL FOR AIR-HANDLING LUMINAIRES	21
5.1 FORM AND DIMENSIONS OF SINGLE-SIDED AIR DIFFUSERS	23
5.2 FORM AND DIMENSIONS OF DOUBLE-SIDED AIR DIFFUSERS	24

STANDARDS AUSTRALIA

Australian Standard

**Suspended ceilings, recessed luminaires and air diffusers—
Interface requirements for physical compatibility**

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE This Standard specifies requirements for certain features of suspended ceilings, recessed luminaires and air diffusers with the object of ensuring physical compatibility when installed. A schematic illustration of the physical interactions involved is given in Figure 1.1 which also identifies the sections of this Standard that specify the applicable requirements.

The requirements of this Standard apply principally to luminaires with tubular fluorescent lamps which are designed for use in—

- (a) exposed, semi-exposed and concealed ceiling systems which utilize pressed metal tiles, viz. metal pan ceilings;
- (b) exposed and semi-exposed ceiling systems which utilize tiles of various materials other than pressed metal; and
- (c) flush or sheeted ceilings affixed to metal or timber supports.

Certain requirements may also be applicable to luminaires designed for use with other types of suspended ceiling systems and to luminaires which utilize other lamp types. However, the requirements do not apply to suspended ceilings which are required to be of fire-rated construction.

The Standard incorporates a system for designating recessed luminaires according to the type of suspended ceiling in which they are intended to be used, the mounting method adopted and whether or not they are provided with air-handling facilities (see Table 1.1).

The Standard does not purport to cover all essential requirements for suspended ceilings, recessed luminaires or air diffusers. Attention is particularly drawn to Standards which deal with—

- (i) the design and installation of suspended ceilings (see AS 2785);
- (ii) essential safety requirements for luminaires (see AS 3137);
- (iii) interior lighting, including the control of glare from luminaires (see the AS 1680 series); and
- (iv) the ventilation and air conditioning of buildings (see AS 1668.1 and AS 1668.2).

NOTE: Appendix A provides details of the information which should be provided to facilitate the physical compatibility of suspended ceilings, recessed luminaires and air diffusers.

1.2 REFERENCED DOCUMENTS The following documents are referred to in this Standard:

AS

- 1217 Acoustics—Determination of sound power levels of noise sources
- 1217.1 Part 1: Guidelines for the use of basic Standards for the preparation of noise test codes
- 1668 SAA Mechanical Ventilation and Airconditioning Code
- 1668.1 Part 1: Fire precautions in buildings with air-handling systems
- 1668.2 Part 2: Ventilation requirements
- 1680 Interior lighting
- 2785 Suspended ceilings—Design and installation
- 3100 Approval and test specification—Definitions and general requirements for electrical materials and equipment
- 3112 Approval and test specification—Plugs and plug socket-outlets
- 3137 Approval and test specification—Luminaires (lighting fittings)
- 3191 Approval and test specification—Electric flexible cords

ADC

Equipment Test Code 1062 R3.*

* Published by the Air Diffusion Council, Chicago, U.S.A.