AS 2756—1985
UDC 621.316-218

Australian Standard®
2756—1985

LOW VOLTAGE SWITCHGEAR AND CONTROLGEAR—
MOUNTING RAILS FOR MECHANICAL SUPPORT OF ELECTRICAL EQUIPMENT

STANDARDS ASSOCIATION OF AUSTRALIA
Incorporated by Royal Charter

E

This Australian standard was prepared by Committee EL/6, Industrial Switchgear and Controlgear. It was approved on behalf of the Council of the Standards Association of Australia on 12 October 1984 and published on 4 March 1985.

The following interests are represented on Committee EL/6:

Australian Electrical and Electronic Manufacturers Association

Australian-British Chamber of Commerce

Bureau of Steel Manufacturers of Australia

Confederation of Australian Industry

Department of Defence

Department of Defence Support

Electrical Contractors Associations of Australia

Electricity Supply Association of Australia

Institution of Engineers Australia

Metropolitan Water Sewerage and Drainage Board, N.S.W.

Railways of Australia Committee

Testing authorities

This standard was issued in draft form for comment as DR 84020.

AUSTRALIAN STANDARD

LOW VOLTAGE SWITCHGEAR AND CONTROLGEAR—
MOUNTING RAILS FOR MECHANICAL SUPPORT OF ELECTRICAL EQUIPMENT

AS 2756—1985

First published.....1985

PUBLISHED BY THE STANDARDS ASSOCIATION OF AUSTRALIA
STANDARDS HOUSE, 80 ARTHUR ST, NORTH SYDNEY, N.S.W.
ISBN 0 7262 3583 0

PREFACE

This standard was prepared by the Association's Committee on Industrial Switchgear and Controlgear.

It applies to three basic types of rail section currently available in steel or aluminium alloys for the mounting and mechanical support of items of low voltage switchgear and controlgear equipment.

The standard is based on IEC 715, Dimensions of Low-voltage Switchgear and Controlgear—Standardized Mounting On Rails for Mechanical Support of Electrical Devices in Switchgear and Controlgear Installations, and acknowledgement is made of the assistance received therefrom.

Attention is drawn to the fact that the grade of cold-rolled steel sheet, specified in Appendix A as being suitable for the manufacture of the steel mounting rail sections, is not at present covered by AS 1595 and that AS 2338 does not provide for the 1.5 mm material thickness specified for some rail sections.

In accordance with the international system of units (SI), the unit used for tensile stress in Appendix A and torsional stress and shear modulus in Appendix B of this standard is the megapascal (MPa) whereas newtons per square millimetre (N/mm^2) is used in IEC 715. Also in Appendix B of this standard, the unit for torque is the newton metre (N.m) whereas the newton millimetre (N.mm) is used in IEC 715. Accordingly the numerical values for such terms differ from those in IEC 715.

The application guide in Appendix B differs considerably from IEC 715 and has been redrafted. The calculations in Appendix B of IEC 715 for torsional deflection of these non-annular rail sections are not included.

CONTENTS

STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard

for

LOW VOLTAGE SWITCHGEAR AND CONTROLGEAR—MOUNTING RAILS FOR MECHANICAL SUPPORT OF ELECTRICAL EQUIPMENT

FOREWORD

Manufacturers and users of switches, circuit-breakers, relays, contactors, terminal blocks and other discrete items of low voltage electrical equipment have for some time studied the problem of mounting such equipment within an assembly in such a manner as to facilitate easy fixing, removal or rearrangement.

A solution which has already found a degree of 'natural standardization' in a number of highly industrialized countries is the production of steel or aluminium alloy mounting rail sections onto which any such equipment, grouped within a particular physical size, may be attached.

The following two methods are used for fixing the equipment items onto mounting rails:

(a) By clipping directly onto the rail (a method particularly suitable for 'Top hat' and 'G' section rails).

(b) By means of accessory items such as sliding nuts, hooked or 'T' head bolts (a method particularly suitable for 'C' section rails).

In the case of 'G' section rails, the first of these methods has been mainly used for mounting terminal blocks which snap in and out of position and are clamped in rows by adjustable end stops.

One or more rails can be used as necessary for fixing equipment.

The rail may take the form of a standard section as an integral part of the enclosure.

Rails are also available of composite sections which combine, for example, 'Top hat' and 'C' section sizes thus accepting devices with various arrangements for mounting.

Since rail mounting may affect the performance of equipment, it may be advisable for equipment manufacturers to give guidance in their literature on the suitability for this form of mounting.

1. SCOPE AND GENERAL

1.1 SCOPE. This standard specifies dimensional and functional requirements for the compatible mounting of varied electrical devices on various types of rails in switchgear and controlgear assemblies.

Appendices deal with specific steel mounting rails satisfying the requirements of this standard, and give additional dimensional data and loading requirements applicable to such rails.

1.2 OBJECT. The object of this standard is to specify those dimensions which are critical for the correct design of rails and equipment. The following sections are covered by this standard:

(a) 'Top hat' section.

(b) 'C' section.

(c) 'G' section.

NOTES:

1. The detailed design and material of specific steel rails is given in the appendices.
2. Other types of rails and relevant mountings which are not covered by this standard can be used.

1.3 REFERENCED DOCUMENTS. The following documents are referred to in this standard:

AS 1100	Drawing Practice Part 10—Geometry Tolerancing
AS 1595	Cold-rolled Unalloyed Low Carbon Steel, Sheet and Strip
AS 2338	Preferred Dimensions of Wrought Metal Products
SAA MP19	Report on Preferred Numbers and Their Use.

2. FUNCTIONAL REQUIREMENTS.

The basic functional requirement of mounting rails is that they shall adequately support the electrical equipment.

The rail itself, in combination with the distance between the points of support and the nature of these supports, shall be of sufficient mechanical strength and stiffness to endure the static and dynamic load of the equipment.

NOTE: The performance of the equipment mounted on rail should be verified to ensure correct operation.

Because of the great variety of equipment, and of combinations of equipment, and the spatial distribution of such equipment, it is not possible to state specific requirements that ensure proper performance under all conditions. However, the detailed dimensions and the strength requirements given in Appendix A and the equipment load capacities given in Appendix B have been shown by experience to be suitable for use with a variety of equipment such as contactors, fuses, switches, terminal blocks and circuit-breakers.

The responsibility for the correct construction and choice of materials lies with the manufacturer of the complete assembly.

3. STANDARD DIMENSIONS

3.1 GENERAL. The dimensions given in millimetres are those which are critical for the correct design of the rail and the equipment to be mounted thereon. Seven nominal rail type and size designations are specified in this standard as follows:

(a) TH 35 and TH 75 for 'Top hat' section rails, as shown in Fig. 1.

(b) C20 and C30, as shown in Fig. 2, and C40 and C50, as shown in Fig. 3, for 'C' section rails.

(c) G32, as shown in Fig. 4, for 'G' section rails.

In Figs 1, 2, 3 and 4 magnified details of the edge of the rail are shown which include manufacturing tolerances. The angular tolerances indicated in these magnified details are one-sided and shall remain between zero and the values indicated. They include design tolerances.

3.2 TOP HAT SECTION RAIL. The cross-hatched areas in Fig. 1 show the maximum space available for the rails, their supporting structure and fixing means. The remaining space is the maximum space which can be counted on as available for the equipment to be mounted on the rails.

The rails are symmetrical within the given tolerances.

3.3 'C' SECTION RAIL. The cross-hatched areas shown in Figs 2 and 3 show the maximum space available for the rails, and their supporting structure; it does not take into account the fixing means for the rails. The remaining space is the maximum space which can be counted on as available for the equipment to be mounted on the rails.

The rails are symmetrical within the tolerances given.

NOTE: The preferred dimensions for wrought metal products specified in AS 2338, which conform to the series of preferred numbers in accordance with SAA MP19, do not provide for a 1.5 mm thick material. If 1.6 mm thick material, produced in accordance with AS 2338, is used for the manufacture of C30 rail section, the clearances between the rail and equipment mounted thereon may be reduced to an unacceptable degree.

3.4 'G' SECTION RAIL. The cross-hatched area shown in Fig. 4 shows the maximum space available for the rail and its supporting structure; it does not take into account the fixing means for the rail. The remaining space is the maximum space which can be counted on as available for the equipment to be mounted on the rails.

NOTE: If 1.6 mm material, produced in accordance with AS 2338, is used for the manufacture of G32 rail section, the clearances between the rail and equipment mounted thereon may be reduced to an unacceptable degree.

4. MARKING

NOTE: Manufacturers who place the number of this Australian standard on mounting rails for the mechanical support of electrical equipment, on packaging or on literature related thereto should ensure that the products are manufactured to comply with the standard.