

Australian Standard[®]

**Underground mining—Winding
suspension equipment**

Part 1: General requirements

This Australian Standard was prepared by Committee ME/18, Mining Equipment. It was approved on behalf of the Council of Standards Australia on 6 October 1988 and published on 13 March 1989.

The following interests are represented on Committee ME/18:

Australasian Institute of Mining and Metallurgy
Australian Coal Association
Australian Mining Industry Council
Broken Hill Mining Managers Association
Bureau of Steel Manufacturers of Australia
Chamber of Mines of Western Australia
Confederation of Australian Industry
Department of Industrial Relations and Employment, New South Wales
Department of Mines, Queensland
Department of Mines, Tasmania
Department of Mines, Western Australia
Institution of Engineers, Australia
Institution of Mining Electrical and Mining Mechanical Engineers
Ministry of Industry Technology and Resources, Victoria
New South Wales Coal Association
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Queensland Coal Board
Queensland Coal Owners Association
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PREFACE

This Standard was prepared by the Standards Australia Committee on Mining Equipment, to supersede (in part) AS 2133—1978, *Mine detaching hooks*, and Supplement No 1 (March 1978) to AS 2133—1978, *Mine detaching hooks inspection and maintenance*.

It is one of a series of Standards on underground mine winding conveyance suspension equipment and is intended to be read in conjunction with Standards covering specific requirements for the following equipment:

- (a) Detaching hooks.
- (b) Drawbars and connecting links for vertical shafts.
- (c) Conveyance shackles and chains.
- (d) Swivels and swivel hooks.
- (e) Rope cappings.

This Standard includes requirements for steel of 1.5 percent manganese which was previously included in AS M3, 1.5 percent manganese steel for colliery tub, skip or mine-car drawbars, shackles and couplings and detaching hooks, which has been withdrawn.

Reference has been made to British Coal documents in the preparation of Appendix B and Appendix D, viz *Design Guide for Cage Suspension Gear*, and *Procedure for Examining Cage Suspension Gear at Testing Centres*.

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FOREWORD

This Standard should be read in conjunction with each Standard on specific requirements for suspension equipment.

It has no legal authority in its own right but may acquire legal standing in one or more of the following ways:

- (a) Adoption by a Regulatory Authority.
- (b) Reference to compliance with the Standard as a contract requirement.
- (c) Claim by a manufacturer or manufacturer's agent of compliance with the Standard.

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STANDARDS AUSTRALIA

Australian Standard

Underground mining—Winding suspension equipment

Part 1: General requirements

1 SCOPE. This Standard specifies general requirements for suspension equipment used in vertical mine shafts.

NOTE: Recommendations for inspection and maintenance are given in Appendix B.

2 APPLICATION. This Standard is intended to assist—

- (a) manufacturers in producing satisfactory mine winding suspension gear; and
- (b) authorities in establishing safety requirements.

3 REFERENCED DOCUMENTS. The documents below are referred to in this Standard.

AS

1050	Methods for the analysis of iron and steel
1065	Methods for ultrasonic testing of ferritic steel forgings
1171	Methods for magnetic particle testing of ferromagnetic products and components
1204	Structural steels—Ordinary weldable grades
1213	Iron and steel—Methods of sampling
1227	General requirements for the supply of hot-rolled steel plates, sections, piling and bars for structural purposes
1275	Metric screw threads for fasteners
1391	Methods for tensile testing of metals
1442	Carbon steels and carbon-manganese steels—Hot-rolled bars and semi-finished products
1544	Methods for impact tests on metals
1544.2	Part 2: Charpy V-notch
1654	Limits and fits for engineering
1710	Non-destructive testing of carbon and low alloy steel plate—Test methods and quality classification
1733	Methods for the determination of grain size in metals
2074	Steel castings
2531	Surface texture
U19	Undercuts and runouts for screw threads
K	Methods for the sampling and analysis of iron and steel

4 DEFINITIONS. For the purpose of this Standard, the definitions below apply.

4.1 Shall—indicates that a requirement is mandatory.

4.2 Should—indicates a recommendation.

4.3 Statutory Authority—an authority having statutory powers to approve the design, manufacture, and use of mine suspension equipment in the State or Territory within the Commonwealth of Australia in which such equipment is to be used.

4.4 Approved and approval—approved or by approval of the Statutory Authority.

4.5 Safe working load—the maximum static load permitted to be carried by the suspension equipment.

4.6 Static factor of safety—the ratio of the ultimate load of the suspension equipment to the safe working load.

4.7 Ultimate load—the minimum load which when applied to a suspension component assembly will produce a complete functional collapse of the component assembly.

4.8 Fatigue reserve factor—the ratio of the allowable stress range for infinite life to the actual stress range, at the highest stressed location in the suspension component, for a loading cycle which alternate sinusoidally between 0 and 1.5 times the safe working load.

4.9 Basic oxygen process—the process of making steel in a basic converter blown with commercially pure oxygen.

4.10 Ruling section—that section, expressed as the equivalent round bar, which is the most important from the point of view of mechanical properties obtained by heat treatment.

NOTE: Guidance on ruling section is given in Appendix C.

4.11 Test piece—a prepared piece for testing, made from a test specimen by some mechanical operation.

4.12 Test sample—a portion of material or product or a group of items selected from a batch or group by a sampling procedure.

4.13 Test specimen—a portion or a single item taken from the test sample for the purpose of applying a particular test. For cast material, the test specimen is cast from the same melt of steel as the casting it represents and may be—

- (a) separately cast; or
- (b) cast integral with the casting.

4.14 Type A components—steel components which under operating conditions are loaded mainly in a tensile manner.

NOTE: All Type A components are nominated in the relevant suspension equipment Standards.

4.15 Type B components—steel components which are not nominated as Type A components.

NOTE: Type B components are nominated in the relevant suspension equipment Standard.