AS 3785.2—2006
Reconfirmed 2017

AS 3785.2—2006

Australian Standard®

# Underground mining—Shaft equipment

# Part 2: Shaft winding arresting systems



This Australian Standard® was prepared by Committee ME-018, Mining Equipment. It was approved on behalf of the Council of Standards Australia on 20 September 2006.
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The following are represented on Committee ME-018:

- Australasian Institute of Mining and Metallurgy
- Australian Chamber of Commerce and Industry
- Australian Industry Group
- Department of Consumer and Employment Protection (WA)
- Department of Labour New Zealand
- Department of Natural Resources and Mines (Qld)
- Department of Primary Industries, Mine Safety (NSW)
- Engineers Australia

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This Standard was issued in draft form for comment as DR 05518.

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 public comment period.

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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.

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STANDARDS AUSTRALIA

# RECONFIRMATION

# OF
# AS 3785.2—2006
# Underground mining—Shaft equipment
# Part 2: Shaft winding arresting systems

## RECONFIRMATION NOTICE

Technical Committee ME-018 has reviewed the content of this publication and, in accordance with Standards Australia procedures for reconfirmation, it has been determined that the publication is still valid and does not require change.

Certain documents referenced in the publication may have been amended since the original date of publication. Users are advised to ensure that they are using the latest versions of such documents as appropriate, unless advised otherwise in this Reconfirmation Notice.

Approved for reconfirmation in accordance with Standards Australia procedures for reconfirmation on 26 February 2017.

The following are represented on Technical Committee ME-018:

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NOTES

Australian Standard®

# Underground mining—Shaft equipment

# Part 2: Shaft winding arresting systems

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# PREFACE

This Standard was prepared by the Standards Australia Committee ME-018, Mining Equipment, to supersede AS 3785.2—1991, *Underground mining—Shaft equipment*. Part 2: *Friction winding arresting systems*.

It is one of a series of Standards on mine shaft equipment. The other Standards in the series are as follows:

| AS | |
|---|---|
| 3785 | Underground mining—Shaft equipment |
| 3785.1 | Part 1: Drum winding overwind safety catch system |
| 3785.2 | Part 2: Shaft winding arresting systems (this Standard) |
| 3785.3 | Part 3: Drum winding gripper systems |
| 3785.4 | Part 4: Conveyances for vertical shafts |
| 3785.5 | Part 5: Headframes |
| 3785.6 | Part 6: Guides and rubbing ropes for conveyances |
| 3785.7 | Part 7: Sheaves |

The term ‘informative’ has been used in this Standard to define the application of the appendix to which it applies. An ‘informative’ appendix is only for information and guidance.

CONTENTS

*Page*

## FOREWORD

Arresting systems should be incorporated in winding installations to limit the damage or injury resulting from an overwind which may follow a malfunction or failure of the winder control or safety system (or both). Such devices may be installed in the headframe and/or at the bottom of the shaft.

The use of risk management techniques is recommended to ensure safe outcomes for the transport of personnel in conveyances. This Standard provides guidance for the use of typical arresting systems. Risk management techniques may also be applied to evaluate acceptable damage criteria that may result in cases where personnel safety is not involved.

In the event of travel occurring beyond normal hoisting limits and outside the winding installation design conditions, overwind safety catches are generally installed in the headframe in association with arrestors. These complement the arresting system. They act during an overwind to prevent excessive fall-back of the ascending conveyance in the event of a failure of the conveyance suspension equipment or any winding ropes.

Where safety catches are used, refer to AS 3785.1, *Underground mining—Shaft equipment* Part 1: *Shaft overwind safety catch system* for requirements.

**DRUM WINDERS**

During an overwind that causes the detaching hook to be drawn into the catchplate or detaching bell and the rope to be detached, the conveyance will continue upward until its kinetic energy is dissipated either by energy-absorbing devices or by harmless conversion to gravitational potential energy. The possibility of damage to the conveyance, the conveyance suspension gear, and the conveyance contents should be avoided by designing the conveyance suspension equipment with sufficient length and freedom of movement to ensure that the conveyance can rise unimpeded until the kinetic energy is harmlessly dissipated.

Loss of control could occur as a result of system malfunction.

**FRICTION WINDERS**

During an overwind resulting from loss of control, the conveyance will enter the arresting system to be brought to rest.

Loss of control could occur as a result of system malfunction or load imbalance causing slippage, brake failure or contamination of the groove resulting in rope slip and similar.

The overwind safety catch system should act to limit the distance that a conveyance can fall back following such an overwind.

STANDARDS AUSTRALIA

# Australian Standard
# Underground mining—Shaft equipment

## Part 2: Shaft winding arresting systems

## 1 SCOPE

This Standard specifies requirements for arresting systems in vertical shaft winding installations.

It covers—

(a) overwind and underwind arrestors for vertical shaft friction winding installations; and

(b) overwind and underwind arrestors for vertical drum winding installations.

NOTES:

1 Guidelines on information that should be provided by the purchaser are given in Appendix A.

2 Guidelines on information that should be provided by the supplier are given in Appendix B.

## 2 DEFINITIONS

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

### 2.1 Arresting system

An assembly, incorporating one or more arrestors, for decelerating and stopping the conveyance(s) within a winding system.

### 2.2 Arrestor

A device in an arresting system used for absorbing winding system energy.

### 2.3 Balance rope

One or more wire ropes connecting the undersides of a pair of conveyances.

### 2.4 Conveyance

Any car carriage, cage, skip, kibble, or stage, in which persons, minerals or materials are wound through a shaft or any counterweight.

### 2.5 Dead load

The load due to the mass of all permanent conveyance structures, ropes, and attachments.

### 2.6 Drum winding system

A winding system in which each winding rope coils on and off the drum during winding.

### 2.7 Entry velocity

The velocity of the conveyance at the point of entry to the arresting system.

### 2.8 Friction winding system

A winding system in which the driving force is transmitted to all winding ropes by friction between the drive pulley and the rope(s).

### 2.9 Headframe

The structure, including its footing, which supports the rope loads in a mine winding installation.