

AS 3785.1:2024



STANDARDS
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Underground mining — Shaft equipment

Part 1: Overwind safety catch and winding arresting systems



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- Engineers Australia
- Engineers Australia/Mining Electrical and Mining Mechanical Engineering Society
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Part 1: Overwind safety catch and winding arresting systems

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Preface

This Standard was prepared by the Australian members of the joint Standards Australia Committee ME-018, Mining Equipment, to amalgamate, revise and supersede AS 3785.1—2006 and AS 3785.2—2006 as AS 3785.1:2024.

After consultation with stakeholders in both countries, Standards Australia and Standards New Zealand decided to continue to develop this document as an Australian Standard rather than an Australian/New Zealand Standard.

The objective of this document is to provide a specification for overwind safety catch and winding arresting systems installed in shafts in underground mines that enables safe operation. It is for reference by designers, manufacturers, mine operators and regulators.

This document forms part of the AS 3785 series on mine shaft equipment. A list of all parts in this series can be found in the Standards Australia online catalogue.

The major changes in this edition are as follows:

- (a) Amalgamation of AS 3785.1 and AS 3785.2.
- (b) Revision of design to reflect current philosophy of interaction with rope attachment strings.
- (c) Revision of testing requirements to address impracticalities of previous requirements

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

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Introduction

Overwind safety catch systems are intended to hold the conveyance stationary following an overwind event.

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/skyshaft and/or at the bottom of the shaft.

The use of risk management techniques is recommended for the specification of these systems. This document provides guidance for the use of these systems.

In the event of travel occurring beyond normal winding 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.

Drum winders

Overwind safety catch systems should be incorporated in drum winding installations, to provide a safeguard against malfunction of the detaching hook catch mechanism or failure of the suspension gear in the event of an overwind.

Overwind safety catch systems are not intended to handle an entry velocity greater than the design entry velocity, see [Clause 5.1](#).

Friction winders

Overwind safety catch systems should be incorporated in friction winding installations to provide a safeguard against conveyance or counterweight fallback in the event of an overwind and resultant loss of friction between the rope and drum, or in the event of the head ropes breaking.

During an overwind resulting from loss of control, the conveyance will enter the arresting system to be brought to rest. The safety catch system is intended to hold and prevent fallback of the conveyance. Loss of control could occur as a result of load imbalance causing slippage, brake failure, 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.

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Underground mining — Shaft equipment

Part 1: Overwind safety catch and winding arresting systems

1 Scope

This document specifies requirements for overwind safety catch and winding arresting systems in vertical shaft winding installations.

NOTE 1 Guidelines on information that should be provided by the purchaser are given in [Appendix A](#).

NOTE 2 Guidelines on information that should be provided by the supplier are given in [Appendix B](#).

2 Normative references

There are no normative references in this document.

NOTE Documents referenced for informative purposes are listed in the Bibliography.

3 Terms and definitions

For this document, the following terms and definitions apply.

3.1

arresting system

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

3.2

arrestor

device in an arresting system used for absorbing winding system energy

3.3

balance rope

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

3.4

catchplate

detaching bell

apparatus in a headframe which operates a detaching hook in the event of an overwind and from which the detached conveyance is suspended

3.5

competent person

person who has acquired, through education, training, qualification or experience or a combination of these, the knowledge and skill enabling that person to perform the task required

3.6

conveyance

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

3.7

dead load

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