

---

# Design Guidelines for Manually Operated Conveyor Belts Tensioning Mechanism for Use in Coal Mines

---

MDG 4

Produced by Mine Safety Operations Division,  
New South Wales Department of  
Primary Industries

October 1994



**NSW DEPARTMENT OF  
PRIMARY INDUSTRIES**

*NSW Department of Primary Industries  
516 High St, Maitland NSW 2320  
(PO Box 344, Hunter Region  
Mail Centre 2310)*

Fax: (02) 4931 6790

Phone: (02) 4931 6632

Website: [www.dpi.nsw.gov.au/minerals/safety](http://www.dpi.nsw.gov.au/minerals/safety)

<b>PUBLISHED</b>	<b>October 1994</b>
<b>First Published</b>	<b>January 1989</b>
<b>Reprinted</b>	<b>October 1994</b>
<b>File Reference</b>	<b>CM87/1880</b>

## DISCLAIMER

The compilation of information contained in this document relies upon material and data derived from a number of third party sources and is intended as a guide only in devising risk and safety management systems for the working of mines and is not designed to replace or be used instead of an appropriately designed safety management plan for each individual mine. Users should rely on their own advice, skills and experience in applying risk and safety management systems in individual workplaces.

Use of this document does not relieve the user (or a person on whose behalf it is used) of any obligation or duty that might arise under any legislation (including the Occupational Health & Safety Act 2000, any other Act containing requirements relating to mine safety and any regulations and rules under those Acts) covering the activities to which this document has been or is to be applied.

The information in this document is provided voluntarily and for information purposes only. The New South Wales Government does not guarantee that the information is complete, current or correct and accepts no responsibility for unsuitable or inaccurate material that may be encountered.

Unless otherwise stated, the authorised version of all reports, guides, data and other information should be sourced from official printed versions of the agency directly. Neither the Department of Primary Industries, the New South Wales Government, nor any employee or agent of the Department, nor any author of or contributor to this document produced by the Department shall be responsible or liable for any loss, damage, personal injury or death howsoever caused.

Users should always verify historical material by making and relying upon their own separate inquiries prior to making any important decisions or taking any action on the basis of this information.

© Copyright NSW Department of Primary Industries

This work is copyright. Apart from any use as permitted under the Copyright Act 1968, no part may be reproduced by any process without prior written permission from the NSW Government. Requests and enquiries concerning reproduction and rights should be sent to the Director of Mine Safety Operations, NSW Department of Primary Industries.

## DESIGN GUIDELINES FOR MANUALLY OPERATED CONVEYOR BELT TENSIONING MECHANISM

The following design criteria is to be used to implement the requirement that the tensioning device of a manually operated take-up winch must not spin uncontrollably when under tension. This requirement shall come into force on 1st July, 1989, reference CM87/188 date 20th February, 1987.

The intention is to eliminate the potential for a hazardous situation to occur with personnel operating large diameter hand wheels used with small reduction manually operated winches.

### DETAILS

In order to satisfy the above requirements, it will be necessary to comply with the following guidelines:-

- (1) The overall design is such that tensioning can be done safely by one (1) person, without undue effort, regardless of whether the belt is running or stationary.
- (2)
  - (a) The hand wheel must be a fully enclosed disc having a smooth surfaces to ensure that the wheel cannot be sprogged or persons exposed to risk of injury by entrapment.
  - (b) The maximum permitted diameter of the hand wheel is 600mm.
  - (c) Crank handles or protrusions or spokes are not to be used in conjunctions with or as a hand wheel.
- (3) If a pawl or ratchet is used to hold the hand wheel stationary then it must be safely and simultaneously accessible to the person operating the hand wheel.
- (4) The addition of a brake to control the release of tension is permitted.
- (5) Disconnection of the hand wheel from the drive and use a brake when releasing tension is considered a good approach, provided that the hand wheel cannot accidentally engage.
- (6) If a system is capable of being operated both manually and under power operation then a fail safe system of disconnecting the hand wheel before the power operation can commence must be provided.
- (7) The foregoing requirements also apply where a manually operated tensioning device is used in conjunction with a counterweight tensioning system.
- (8) A fully operated system that contains no manual device is permitted.

L.J. Roberts  
Senior Inspector of Mechanical Engineering