

Tail lifts, mobile lifts and ramps associated with vehicles —

Part 1: Code of practice for tail lifts

Cooperating organizations

The Mechanical Engineering Standards Committee, under whose direction this British Standard was prepared, consists of representatives from the following:

Associated Offices Technical Committee*	Department of Trade (Marine Division)
Association of Consulting Engineers	Department of Transport
Association of Hydraulic Equipment Manufacturers	Electricity Supply Industry in England and Wales
Association of Mining, Electrical and Mechanical Engineers	Engineering Equipment Users' Association
British Compressed Air Society	Federation of Manufacturers of Construction Equipment and Cranes
British Electrical and Allied Manufacturers' Association (BEAMA)	Health and Safety Executive*
British Gas Corporation	Institution of Gas Engineers
British Gear Manufacturers' Association	Institution of Mechanical Engineers
British Internal Combustion Engine Manufacturers' Association	Institution of Plant Engineers
British Pump Manufacturers' Association	Institution of Production Engineers
British Steel Corporation	Lloyd's Register of Shipping
British Steel Industry	London Transport Executive*
Cbmpe	Machine Tool Industry Research Association
Chartered Institution of Building Services	Ministry of Defence
Crown Agents for Oversea Governments and Administrations	National Coal Board
Department of Industry	Oil Companies Materials Association
(Mechanical Engineering)	Process Plant Association
Department of Industry (National Engineering Laboratory)	Society of Motor Manufacturers and Traders Limited
Department of the Environment (PSA)	Telecommunication Engineering and Manufacturing Association (TEMA)
	Water-tube Boilermakers' Association

The organizations marked with an asterisk in the above list, together with the following, were directly represented on the Technical Committee entrusted with the preparation of this British Standard:

Association of Loading Equipment Manufacturers	Garage Equipment Association
British Work Platform Association	Post Office
Federation of Wire Rope Manufacturers of Great Britain	Road Transport Industry Training Board

This British Standard, having been prepared under the direction of the Mechanical Engineering Standards Committee, was published under the authority of the Executive Board and comes into effect on 31 August 1981

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Foreword

This British Standard has been prepared under the direction of the Mechanical Engineering Standards Committee and has been based on proposals provided by the Association of Loading Equipment Manufacturers.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

This code of practice represents a standard of good practice and therefore takes the form of recommendations. Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 14, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

Section 1. General

1 Scope

This code of practice details design and safety recommendations and operating procedures for tail lifts mounted on vehicles associated with lifting goods or freight. It excludes tail lifts for disabled persons or wheelchairs.

2 References

The titles of the standards publications referred to in this code of practice are listed on the inside back cover.

3 Definitions

For the purposes of this code, the following definitions apply.

3.1 tail lift

a lift, fitted to a vehicle, which enables a load-carrying platform to be raised and lowered (The tail lift need not necessarily be mounted at the rear of the vehicle.)

3.2 platform width

the dimension of the platform measured parallel to the adjacent edge of the vehicle

3.3 platform depth

the dimension of the platform measured at right angles to the adjacent edge of the vehicle

3.4 platform vertical travel

the distance between the fully lowered and the fully raised height of the platform

3.5 safe working load

the rated load applied as a uniformly distributed load over the whole platform area or as otherwise specified

3.6 power pack

an independent source of power other than the vehicle prime mover

3.7 power take-off

a mechanical source of power from the vehicle prime mover

4 Statutory requirements

The principal statutory requirements for tail lifts current at the date of publication of this code are contained in the following.

The Health and Safety at Work etc. Act 1974.

The Motor Vehicles (Construction and Use) Regulations 1978, (SI 694).

The Road Vehicles Lighting Regulations 1971, (SI 1017).

Section 2. Safety recommendations

5 Dangers

5.1 Dangers to personnel during normal operation of the tail lift. Dangers to personnel include the following.

- Trapping of feet between the moving platform and the ground or stationary parts of the vehicle or lift.
- Trapping of fingers or parts of the body by moving mechanisms.
- Trapping of persons under the platform.
- Crushing of persons by unsecured loads falling or rolling on or off the platform.
- Falling of persons from the platform especially when the platform height exceeds 2 m above floor or ground level.

5.2 Dangers associated with a fault condition within the tail lift. Fault conditions within the tail lift may result in an inadvertent movement of the mechanisms, thus increasing the dangers listed in 5.1. Tail lifts should be designed to minimize these dangers as follows.

- Hydraulic failure.* The tail lift should be so designed that in the event of failure in any part of the hydraulic piping system, the descent of the tail lift will be either promptly arrested, or its rate of descent limited to a speed not exceeding 0.15 m/s when fully loaded.
- Rope or chain failure.* It is essential that every lift on which the platform is suspended is equipped with a device which, in the event of failure of a rope, chain or any of their attachments, would arrest the descent of the platform on the side where the failure has occurred within 100 mm of its position at the time of breakage.

NOTE Controls should be released immediately to prevent platform tilt.

- Other types of failure.* If other forms of actuation are used, e.g. electromechanical systems, an equivalent safety device or devices should be incorporated.

6 Safety of personnel

6.1 Controls. To avoid the possibility of trapping beneath the platform, it is essential that all tail lifts should be provided with controls of the “deadman’s” type, i.e. movement of the lift platform can only take place while the controls are being operated and the controls, when released, will automatically return to the OFF position to stop the platform. All controls should be designed to prevent accidental operation. The direction of movement of the platform should be clearly marked by arrows on the control device to indicate “raise” and “lower”, and wherever possible, the control device should operate in the natural sense.

Pendant controls should operate at voltages not exceeding 28 V.

Controls should be so sited that

- a) the operator has a clear view of the platform throughout its range of travel;
- b) the controls can be easily and safely reached by the operator.

Controls for closing and opening or tilting the platform should be positioned for operating outside the vehicle.

A device should be incorporated to prevent unauthorized operation of the tail lift.

6.2 Prevention of trapping. The following criteria should be observed to prevent trapping and injury to personnel.

- a) The recommendations of BS 5304 should be complied with wherever possible.
- b) Particular attention should be paid to the elimination of finger and toe traps within the mechanism. Toe trapping can be avoided if there is a minimum safety gap of 75 mm between the platform and any fixed part of the vehicle (see Figure 1). Examples of bridging the safety gap are described in Appendix C and are shown in Figure 2 to Figure 9.
- c) Any safety device fitted should be designed to operate in the “fail safe” mode.

6.3 Prevention of falling. The following criteria should be observed to prevent falling of persons when the tail lift platform height exceeds 2 m above floor or ground level.

- a) Adequately secured grab rails should be provided at both sides of the vehicle aperture, so positioned as to be conveniently held by persons working above 2 m from the floor or ground level.

b) The tail lift platform should have suitable fixings for guard rails on the three sides remote from the vehicle.

c) Guard rails, or other equally effective means, to a height of at least 1 m should be provided for use at the tail lift platform. There should be an upper rail, intermediate rail and a lower rail or toe board.

The strength and fixings of the guard rails should be such that they will resist shock loading caused by the goods being handled and persons leaning on them.

d) A warning notice should be supplied (see clause 20).

Section 3. Design and testing

7 General

Unless stated otherwise, the factor of safety on the yield stress for any part of the tail lift based on its safe working load should be not less than 2. See also 10.6.

8 Operating speeds

The unloaded lifting speed and fully laden lowering speed should not exceed 0.15 m/s.

9 Suspension

9.1 Wire ropes

9.1.1 Selection. Wire ropes should be selected from those specified in BS 302¹⁾ or BS 3530¹⁾, though it is permissible to use a diameter and a tensile grade which fall outside the range covered by those standards.

Wire rope constructions other than those specified in BS 302 and BS 3530 may be used provided that they comply with the strength recommendation given in 9.1.2.

9.1.2 Strength. The ratio between the minimum breaking load and the maximum tensile force induced in a single part of rope, should be not less than 5.

9.2 Wire rope termination. The strength of the rope termination (i.e. the terminal fitting together with the means of its attachment to the rope) should be not less than 80 % of the minimum breaking load of the rope.

¹⁾ Technically equivalent to ISO 2408, ISO 3108 and ISO 3178.