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Information and Notices

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II

(Preparatory Acts)

COMMISSION

Proposal for a Council Directive on the approximation of the laws of the Member States
relating to powered industrial trucks

(Submitted by the Commission to the Council on 11 May 1979)

THE COUNCIL OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Economic Community, and in particular Article 100 thereof,

Having regard to the proposal from the Commission,

Having regard to the opinion of the European Parliament,

Having regard to the opinion of the Economic and Social Committee,

Whereas in each Member State the design and construction of powered industrial trucks are subject to safety provisions which differ from one Member State to another and consequently hinder trade in these appliances; whereas it is therefore necessary to approximate these provisions;

Whereas Council Directive 78/.../EEC of ... on the approximation of the laws of the Member States relating to common provisions for lifting and mechanical handling appliances ⁽¹⁾ laid down a series of common procedures, such as EEC type-approval, EEC type-examination, and EEC independent certification, for the placing on the market of these lifting and mechanical handling appliances; whereas, in the case of powered industrial trucks and in accordance with the usual practice in the Member States, EEC independent certification should be provided for;

Whereas this Directive is a separate Directive within the meaning of Article 2 (2) of Directive 78/.../EEC;

Whereas the technical provisions contained in Annex I do not preclude Community or national measures concerning other safety aspects of these industrial trucks such as electrical safety (Council Directive 73/23/EEC of 19 February 1973 relating to electrical equipment designed for use between certain voltage limits ⁽²⁾), exhaust and noise;

Whereas in the interests of greater safety it appears advisable to introduce provisions relating to pedal arrangement and fuel tank; whereas a transitional period is justified in order to enable manufacturers to adapt their products to these new provisions;

Whereas technical progress necessitates rapid adaptation of the technical requirements; whereas the procedure laid down in Article 22 of Directive 78/.../EEC should therefore be adopted for such adaptations of this Directive;

Whereas the institution of examination and testing methods is an implementing measure of a technical nature; whereas it is appropriate that this be adopted by the Commission in accordance with the same procedure;

HAS ADOPTED THIS DIRECTIVE:

Article 1

1. This Directive shall apply to powered industrial trucks.

⁽¹⁾ OJ No L

⁽²⁾ OJ No L 77, 26. 3. 1973, p. 29.

2. This Directive does not cover:

- (a) tipper vehicles (known as dumpers) or motor-driven barrows, operating on building and construction sites;
- (b) road tractors, lorries, forestry and agricultural tractors, construction plant and trucks used in underground mining operations;
- (c) mobile elevating equipment for construction sites which does not conform to the definition set out in Article 2 (1);
- (d) stacking appliances which move only inside guides and are known as 'rack feeders';
- (e) powered industrial trucks of a capacity exceeding 10 000 kilograms;
- (f) straddle carriers;
- (g) driverless tractors and trucks.

Article 2

1. For the purpose of this Directive, 'powered industrial truck' means any wheeled vehicle, other than those running on rails, that is designed to carry, tow, push, lift or stack any kind of load and is controlled by an operator who either walks with the truck or rides on a specially arranged driving platform which is either unmovably fixed to the chassis or can be raised.

2. Powered industrial trucks covered by this Directive comprise the following three categories:

(a) *Non-elevating platform trucks*

Trucks that carry their load on a fixed platform or some other elevating attachment.

(b) *Tractors and pusher trucks*

Industrial trucks fitted with a towing or pushing device and specially designed to tow or push vehicles travelling on the ground (e.g. trailers, aircraft, etc.) or on rails (wagons).

(c) *Elevating trucks*

- low-lift or high-lift trucks, whether or not counterbalanced and with the operator's position either fixed or rising with the load, whether or not stacking in a particular direction, that travel freely on prepared or unprepared ground or between guides which do not increase the truck's stability, and whether fitted with forks or any other attachment,
- rough-terrain fork trucks for loading, lifting, carrying and stacking, specially designed to

operate on unprepared ground, equipped with a load-carrying device that slides vertically on a fixed or tilting mast and having a substantial ground clearance.

3. 'EEC truck' means any powered industrial truck which satisfies the requirements of this Directive.

Article 3

1. EEC trucks shall be eligible for EEC independent certification in accordance with Article 2 of Directive 78/.../EEC.

2. In order to be eligible for the said EEC independent certification, EEC trucks must comply with the requirements laid down in Annex I hereto, such compliance being certified by the manufacturer by means of a certificate of conformity, a model of which is shown in Annex II, and by the affixing of the mark of conformity in accordance with the conditions set out in Annex III.

Article 4

No Member State may, on grounds relating to the requirements laid down in this Directive, refuse, prohibit or restrict the placing on the market and the entry into service of EEC trucks which meet the requirements laid down in Annex I. Where such trucks are accompanied by a certificate of conformity and bear the mark of conformity referred to in Article 3 indicating that they comply with the requirements of this Directive, it shall be presumed that they so comply.

Article 5

Member States shall take all necessary measures to ensure that manufacturers or importers issue a certificate of conformity only when the powered industrial trucks referred to in Article 1 satisfy the requirements of this Directive.

Article 6

1. Amendments that are necessary in order to adjust Annex I to technical progress shall be adopted in accordance with the procedure laid down in Article 22 of Directive 78/.../EEC.

2. Test and examination methods that are necessary in order to check the compliance of a powered industrial truck with the requirements of this Directive shall likewise be adopted in accordance with this procedure.

Article 7

1. Member States shall bring into force the laws, regulations and administrative provisions necessary in order to comply with this Directive within 18 months following its notification. However, they shall bring into force the provisions necessary in order to comply with 10.5.1.2 and 10.7.1.2.2 of Annex I on 1 January 1985. They shall forthwith inform the Commission thereof.

2. As soon as this Directive has been notified, Member States shall also ensure that the Commission is informed, in sufficient time for it to submit its comments, of any draft laws, regulations or administrative provisions which they intend to adopt in the field covered by this Directive.

Article 8

This Directive is addressed to the Member States.

ANNEX I

TECHNICAL REQUIREMENTS FOR POWERED INDUSTRIAL TRUCKS

1. SCOPE

The scope covers all powered industrial trucks up to and including 10 000 kg capacity.

Excluded are:

 - (a) tipper vehicles, known as dumpers, or motor-driven barrows operating on building and construction sites;
 - (b) road tractors, lorries, forestry and agricultural tractors, construction plant and trucks used in underground mining operations;
 - (c) mobile elevating equipment for construction sites which does not conform to the definition set out in the Directive;
 - (d) stacking appliances which move only inside guides and are known as 'rack feeders';
 - (e) any powered industrial trucks of a capacity exceeding 10 000 kg;
 - (f) straddle carriers;
 - (g) driverless tractors and trucks.

2. CLASSIFICATION OF TRUCKS BY MODE OF ACTION
 - 2.1. **Platform truck**

Truck carrying its load on a non-elevating platform or attachment.

 - 2.2. **Industrial tractor**

Industrial truck, travelling on the ground, fitted with coupling means, and specially designed to draw vehicles travelling on the ground.

 - 2.3. **Shunting tractor**

Tractor which being fitted at the front end and/or rear with a buffer plate can also push vehicles travelling on the ground or on railway track.

 - 2.4. **Lift truck**

Industrial truck which is capable of raising, lowering and transporting loads.
 - 2.4.1. *Stacking lift truck*

Truck fitted with a platform, a fork, or other load-handling devices, able to raise a load, either palletized or not, up to sufficient lift height to allow stacking or tiering in racks.
 - 2.4.1.1. Counterbalanced lift truck

Stacking lift truck fitted with a fork on which the load either palletized or not, is put in a cantilever position in relation with the front wheels and balanced by the mass of the truck.
 - 2.4.1.2. Reach truck with retractable mast or fork carriage

Stacking lift truck with outriggers where the load can be placed in a cantilever position by extending the mast or the fork carriage.

- 2.4.1.3. Straddle truck
Stacking lift truck with outriggers, fitted with a fork located between the outriggers and where the centre of gravity of the load is always within the stability polygon.
- 2.4.1.4. Pallet stacker
Stacking lift truck where the fork arms extend over the frame structure.
- 2.4.1.5. High-lift platform truck
Stacking lift truck with a load platform extending over the frame structure.
- 2.4.1.6. Truck with elevated operator
Stacking lift truck, fitted with an operating position which can be raised with the load carrying means (platform or fork) for stacking and retrieving loads in racks.
- 2.4.1.7. Side-loading truck
Fork truck the retractable mast of which is located between the axles and perpendicular to the longitudinal axis of the truck, allowing it to take and raise a load in a counterbalanced position in relation to one side of the truck and to place it on the integral load platform.
- 2.4.1.8. Rough-terrain fork truck
Machine specially designed to load, lift, carry and stack materials and to operate on unprepared ground (large wheels, large ground clearance, special drive unit) fitted with a load-carrying device sliding vertically on a fixed or tilting mast.
- 2.4.1.9. Lateral-stacking truck
High-lift stacking truck capable of stacking and retrieving loads to one or both sides of the direction of travel.
- 2.4.1.10. Lateral- and front-stacking truck
High-lift stacking truck capable of stacking and retrieving loads along and to one or both sides of the direction of travel.
- 2.4.1.11. Straddle carriers
Lift truck, where the frame and lift unit straddle the load to raise it, move it, and stack it.
- 2.4.2. *Low-lift, non-stacking lift truck*
Powered truck fitted with a platform, fork or other load-handling equipment and able to raise its load to a height just sufficient to allow its transportation.
- 2.4.2.1. Pallet truck
Non-stacking lift truck, fitted with a fork for the handling of pallets.
- 2.4.2.2. Platform floor truck
Non-stacking lift truck fitted with a platform or a chassis for the handling of skids.
- 2.4.2.3. Straddle carriers
Lift truck, where the frame and lift unit straddle the load to raise it and move it.
- 2.4.3. *High- and medium-lift order-picking trucks*
A truck with an elevatable platform for an operator and a device to accommodate the aggregated load (normally fork arms to accept a pallet or stillage) to facilitate picking (and occasional replacing) from stored goods.
'Medium-lift' designates trucks able to elevate the operator platform not more than 2.5 m.

3. CLASSIFICATION ON TRUCKS BY MODE OF CONTROL
 - 3.1. **Rider-controlled**
 - 3.1.1. *Sit-on*: non-elevable operator:
 - facing forward,
 - other than facing forward.
 - 3.1.2. *Sit-on*: elevable operator:
 - facing forward,
 - other than facing forward.
 - 3.1.3. *Stand-on*: non-elevable operator:
 - facing forward,
 - other than facing forward.
 - 3.1.4. *Stand-on*: elevable operator:
 - facing forward,
 - other than facing forward.
 - 3.2. **Pedestrian-controlled** ⁽¹⁾
 - 3.3. **Driverless**
 - 3.3.1. Imposed steering.
 - 3.3.2. Remote-controlled.
4. CLASSIFICATION OF TRUCKS BY HEIGHT OF LIFT
 - 4.1. **Non-lifting** (including platform trucks, industrial tractors and shunting tractors (see 2.1, 2.2 and 2.3))
 - 4.2. **Low-lift** (non-stacking trucks (see 2.4.2))
 - 4.3. **High-lift trucks**
 - 4.3.1. Stacking trucks (see 2.4.1).
 - 4.3.2. Non-stacking (see 2.4.3).
5. CLASSIFICATION OF TRUCKS BY MODE OF TRAVELLING
 - 5.1. **Free-travel truck**
 - 5.1.1. *Uni-directional truck*
Truck able to move in either direction on a line parallel with its longitudinal axis.

⁽¹⁾ Some of these trucks may, on occasion, be adapted to carry the driver and as such are covered by the provisions laid down for trucks in the category of those under 3.1.

- 5.1.2. *Bi-directional truck*
Truck able to move in either direction on a line, parallel with its longitudinal axis, or perpendicular to this axis.
- 5.1.3. *Multi-directional truck*
Truck able to move in any direction relative to its longitudinal axis.
- 5.2. **Guided-travel truck**
Truck fitted with special equipment, able to move only in a path defined by external fixed means.
- 5.3. **Dual-purpose, free- or guided-travel truck**
A free-travel truck equipped for optional guided-travel operation.

- 6. CLASSIFICATION OF TRUCKS BY POWER SOURCE

- 6.1. **Internal combustion**
- 6.1.1. Petrol.
- 6.1.2. Liquefied petroleum gas (LPG).
- 6.1.3. LPG/petrol.
- 6.1.4. Diesel.

- 6.2. **Electric**
- 6.2.1. With storage battery.
- 6.2.2. ICE/electric.
- 6.2.3. Electric, by an independent power source.

- 7. CLASSIFICATION OF TRUCKS BY TYPES OF WHEEL

- 7.1. Wheels with pneumatic tyres.
- 7.2. Wheels with pneumatic shaped solid tyres.
- 7.3. Wheels with solid tyres.
- 7.4. Solid wheels.

- 8. DEFINITION OF THE MAIN COMPONENTS OF TRUCKS

- 8.1. **Basic components of trucks**
- 8.1.1. *Chassis and associated components*

- 8.1.1.1. Chassis
Main frame structure, bearing the various units of the truck (i.e. engine, transmission, lifting gear, etc.).
- 8.1.1.2. Counterweights
A counterbalancing mass fixed to the chassis of a counterbalanced truck at the end opposite to the load-bearing means.
- 8.1.1.3. Ballast containers
Containers which, when filled with ballast, act as counterweights.
- 8.1.1.4. Additional ballast
Additional ballast fitted to the chassis of a lift truck and intended to maintain the original stability.
- 8.1.1.5. Bodywork
Protective or styling panels fitted to the chassis.
- 8.1.1.6. Driving position
Place for the operator and the driving controls of the truck and, where appropriate, load-handling controls.
- 8.1.1.7. Stabilizers
Movable components generally in pairs, normally actuated by hydraulic or mechanical means, for ensuring or increasing the stability of the truck during load-handling operations (8.1.4.1.5).
- 8.1.2. Axles
- 8.1.2.1. Drive (including differential).
- 8.1.2.2. Steer.
- 8.1.2.3. Drive-steer.
- 8.1.2.4. Load.
- 8.1.3. *Driving and steering unit*
Driving unit rotating on the vertical axis, fitted with a single or dual wheel, used for driving and steering the truck.
- 8.1.4. *Wheels*
- 8.1.4.1. Function of wheels.
- 8.1.4.1.1. Drive wheel.
- 8.1.4.1.2. Steer wheel.
- 8.1.4.1.3. Steer and drive wheel.
- 8.1.4.1.4. Load wheel.
- 8.1.4.1.5. Stabilizer wheels.
Auxiliary wheels or castors, solidly or resiliently mounted to the chassis of an industrial truck, usually in pairs, to assist in maintaining stability when the truck is subjected to disturbing forces.
- 8.1.4.2. Arrangement of wheels.
- 8.1.4.2.1. Number of wheels at any mounting.
- 8.1.4.2.1.1. Single (one).
- 8.1.4.2.1.2. Twin (two).
- 8.1.4.2.1.3. Multiple (more than two).

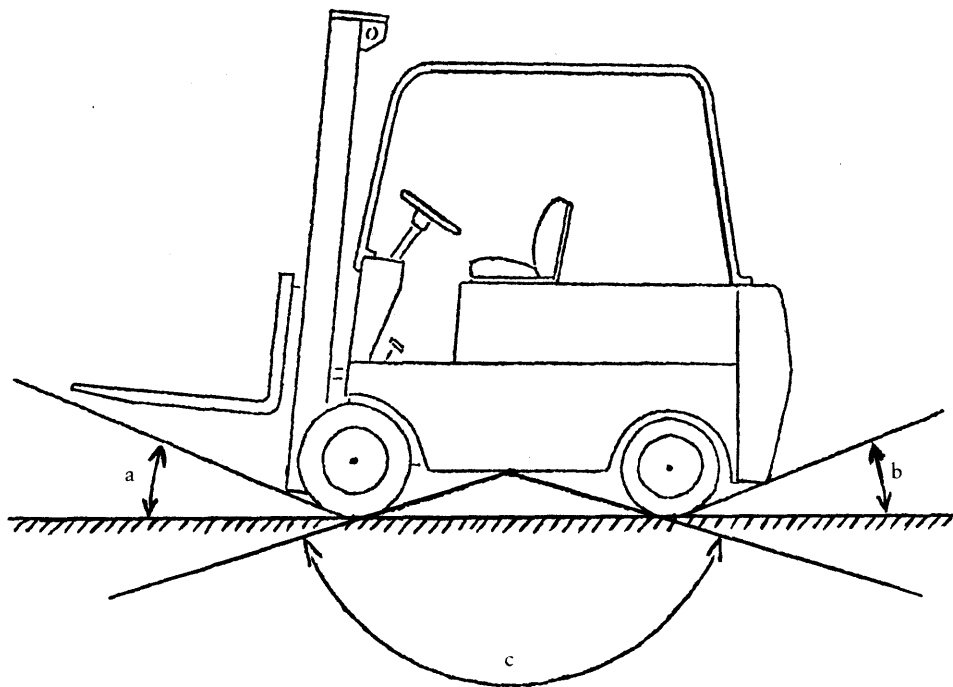
- 8.1.4.2.2. Mounting of wheels.
 - 8.1.4.2.2.1. Counterlever mounting.
 - 8.1.4.2.2.2. Fork mounting.
- 8.1.4.3. Construction of wheels.
 - 8.1.4.3.1. Wheel made from only one material (monobloc, e.g. metal, plastic, rubber).
 - 8.1.4.3.2. Bonded tyred wheel.
 - 8.1.4.3.3. Pressed-on tyred wheel.
 - 8.1.4.3.4. Split rim for removable solid tyres (flat based).
 - 8.1.4.3.5. Split rim for removable solid tyres (conical based).
 - 8.1.4.3.6. Wheels for pneumatic or pneumatic-shaped solid tyres.
- 8.1.4.4. Suspension mountings.
 - 8.1.4.4.1. Articulated.
 - 8.1.4.4.2. Spring-loaded.
 - 8.1.4.4.3. Bogie.
 - 8.1.4.4.4. Tandem.
- 8.1.5. *Prime mover*
 - 8.1.5.1. Electric motor.
 - 8.1.5.2. Internal combustion engine.
 - 8.1.5.2.1. Petrol.
 - 8.1.5.2.2. Liquefied petroleum gas (LPG).
 - 8.1.5.2.3. Petrol/LPG.
 - 8.1.5.2.4. Diesel.
- 8.1.6. *Transmission systems (from prime mover)*
 - 8.1.6.1. Hydraulic.
 - 8.1.6.1.1. Hydrokinetic
A system in which the prime mover torque is transmitted by an hydraulic impeller and turbine.
 - 8.1.6.1.2. Hydrostatic
A system in which torque from the power unit is transmitted by means of a positive displacement hydraulic pump and motor.
 - 8.1.6.2. Mechanical
A system in which the prime mover torque is transmitted by means of a friction clutch and gear (chain, belt) system or directly through a gear (chain, belt) system.
 - 8.1.6.3. Electric
A system in which the prime mover torque is transmitted by means of an electrical generator and motor.
- 8.1.7. *Electrical equipment*
 - 8.1.7.1. Electric trucks.
 - 8.1.7.1.1. Traction battery.
 - 8.1.7.1.2. Charging set (built in or not).

- 8.1.7.1.3. Control devices, controllers, contactors, resistances, electronic control systems.
- 8.1.7.1.4. Accessories (connectors, wires, etc.).
- 8.1.7.2. Engine-powered trucks.
 - 8.1.7.2.1. Starter battery.
 - 8.1.7.2.2. Charging equipment (dynamo, alternator).
 - 8.1.7.2.3. Starter motor.
- 8.1.7.3. Ancillary electrical equipment.
 - 8.1.7.3.1. Lighting.
 - 8.1.7.3.1.1. Driving lights (regulation lights).
 - 8.1.7.3.1.2. Working lights.
 - 8.1.7.3.2. Recording (ampere hour, time-recorder) and indicating (fuel, temperature, etc.).
- 8.1.8. *Supply system for IC engine*
 - 8.1.8.1. Petrol.
 - 8.1.8.1.1. Carburettor.
 - 8.1.8.2. Supply system for LPG.
 - 8.1.8.2.1. Removable container.
 - 8.1.8.2.2. Fixed container with filling valve.
 - 8.1.8.2.3. Pressure reducer.
 - 8.1.8.2.4. Gas-air mixer (vaporizer).
 - 8.1.8.2.5. Valve.
 - 8.1.8.2.6. Safety-valve.
 - 8.1.8.2.7. Piping.
 - 8.1.8.3. Diesel.
 - 8.1.8.3.1. Fuel injection.
 - 8.1.9. *Steering system*
 - 8.1.9.1. Manual.
 - 8.1.9.1.1. Automotive type wheel.
 - 8.1.9.1.2. Steering by lever.
 - 8.1.9.1.3. Steering by tiller.
 - 8.1.9.1.4. Steering by oscillating platform.
 - 8.1.9.2. Power assisted.
 - 8.1.9.2.1. Hydraulic.
 - 8.1.9.2.2. Pneumatic.
 - 8.1.9.2.3. Electric.
 - 8.1.9.3. Power steering.
 - 8.1.10. *Braking system*
 - 8.1.10.1. Types of brakes.
 - 8.1.10.1.1. Service brakes.
 - 8.1.10.1.2. Parking brakes.

- 8.1.10.2. Types of control.
 - 8.1.10.2.1. Mechanical.
 - 8.1.10.2.2. Hydraulic.
 - 8.1.10.2.3. Electric.
 - 8.1.10.2.4. Pneumatic.
 - 8.1.10.2.5. Power-assisted.
- 8.1.11. *Load-bearing attachments*
 - 8.1.11.1. Fork arms.
 - 8.1.11.1.1. Fork arms hook-mounted.
 - 8.1.11.1.2. Fork arms shaft-mounted.
 - 8.1.11.1.3. Fork arms bolted.
 - 8.1.11.1.4. Fork-arm extension.
 - 8.1.11.2. Load platform.
 - 8.1.11.2.1. Fixed.
 - 8.1.11.2.2. Lifting.
 - 8.1.11.2.3. Tipping body.
 - 8.1.11.3. Other attachments.
 - 8.1.11.3.1. Types of attachments.
 - 8.1.11.3.1.1. Fixed — in relation to the fork carrier (crane-arm, boom, etc.) or in relation to the chassis (container, tank, etc.).
 - 8.1.11.3.1.2. Load-bearing attachment or part movable in relation to fork carrier (fork truck) or in relation to chassis (other trucks).
 - 8.1.11.3.1.2.1. Mechanical (drop-bottom container or scoop).
 - 8.1.11.3.1.2.2. Hydraulic (clamp attachment, side-shift, rotating head, etc.).
 - 8.1.11.3.1.2.3. Pneumatic (vacuum, etc.).
 - 8.1.11.3.1.2.4. Electric (electro-magnet).
 - 8.1.11.3.2. Modes of action of equipment.
 - 8.1.11.3.2.1. Simple clamping device for engaging the load (e.g. stabilizer, squeeze, clamp, attachment).
 - 8.1.11.3.2.2. Simple equipment for engaging and imparting movement to the load (e.g. side-shift, push-pull, rotating head).
 - 8.1.11.3.2.3. Multiple equipment (e.g. rotating clamp).
- 8.1.12. *Components associated with movements of the load (excluding travel)*
 - 8.1.12.1. Common components.
 - 8.1.12.1.1. Motor or engine.
 - 8.1.12.1.2. Pump, control-valve, piping and accessories.
 - 8.1.12.2. Lifting assembly (or mast) composed of:
 - a fixed upright in which the fork-arm carriage or one or several moving uprights slide, and
 - one or more lifting-jacks lifting either through chains or wire ropes or directly on the fork-arm carriage (or load platform) and the moving upright(s).
 - 8.1.12.2.1. Upright(s) (fixed or moving)
 - Frame structure composed of structural sections generally in pairs and linked by cross-members.

- 8.1.12.2.2. Lifting jack(s)
Simple lifting jack: jack with single rams used for the elevation of the load.
Compound lifting jack: jack having several concentric rams elevating one after the other or simultaneously.
- 8.1.12.2.3. Other lifting mechanisms (e.g. winches, screws).
- 8.1.12.2.4. Lifting chains
Roller chains; leaf chains.
- 8.1.12.2.4.1. Lifting cables.
- 8.1.12.2.5. Fork-arm carriage
Component sliding along a mast and bearing the load-carrying means.
- 8.1.12.3. Other components.
- 8.1.12.3.1. Tilting system (e.g. tilting-jack(s)).
- 8.1.12.3.2. Reach system.
- 8.1.12.3.3. Lifting systems other than masts (e.g. cranes)
Linkage-lift mechanism; lifting mechanisms for low-lift trucks.
- 8.1.12.4. Mast (classification by arrangement of uprights).
- 8.1.12.4.1. Non-telescopic mast (simple mast)
Mast composed only of a fixed upright.
- 8.1.12.4.2. Telescopic mast
Mast having one fixed upright and one or more moving uprights.
- 8.1.12.4.2.1. Double mast (simple telescopic mast)
Mast having one fixed upright and one moving upright.
- 8.1.12.4.2.2. Triple mast
Mast having one fixed upright and two moving uprights.
- 8.1.12.4.2.3. Quadruple mast
Mast having one fixed upright and three moving uprights.
- 8.2. **Truck data**
- 8.2.1. *Unladen service mass*
Mass of complete truck with its accessories and ready for use, i.e.:
— filled fuel tank for ICE trucks,
— traction battery for electric-storage battery trucks.
The truck being unladen and without driver.
- 8.2.2. *Shipping weight mass*
Mass of truck with its accessories and ready for use but with no source of energy on the truck (i.e. without fuel or traction battery).
The truck being unladen and without driver.
- Note:*
The words 'without fuel' should be understood as follows:
— for petrol, diesel or LPG trucks with a permanently installed container: with the empty container,
— for LPG trucks with removable container: without container.

- 8.2.3. *Mass of traction battery unit*
Mass of the battery unit (i.e. battery, container and ballast if any).
- 8.2.4. Load per axle (front, rear) of the truck in working order, unladen.
- 8.2.5. Load per axle (front, rear) of the truck in working order, with rated load.
- 8.2.6. Load per wheel (front, rear) of the truck in working order, unladen.
- 8.2.7. Load per wheel (front, rear) of the truck in working order, with its rated load.
- 8.2.8. Track.
- 8.2.9. Wheel base.
- 8.2.10. Rated capacity (see Chapter 9).
- 8.2.11. Load centre distance ⁽¹⁾.
- 8.2.12. *Overall dimensions* ⁽¹⁾
Height (over mast, closed; over mast extended; over cab or overhead guard).
Length without fork arms ⁽¹⁾.
Width ⁽¹⁾.
- 8.2.13. Free lift height ⁽¹⁾.
- 8.2.14. Maximum lift height at rated load ⁽¹⁾.
- 8.2.15. Maximum lift height ⁽¹⁾.
- 8.2.16. Overhang (front, rear, lateral).
- 8.2.17. Ground clearance under mast.
- 8.2.18. Ground clearance at centre of wheel base.
- 8.2.19. *Ramp angles in relation to the horizontal plane*
(a) Approach angle (maximum).
(b) Departure angle (maximum).
(c) Traverse angle (minimum).
(See sketch below.)

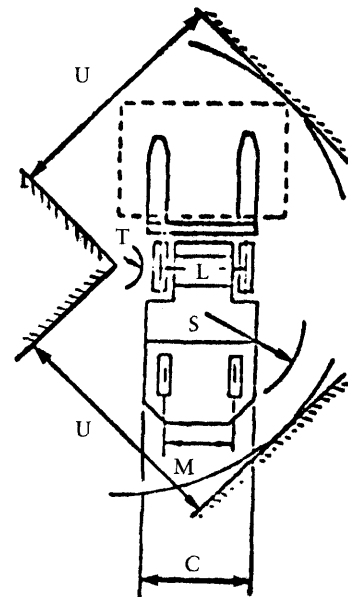
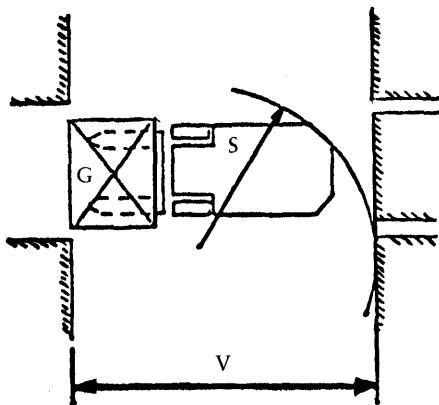
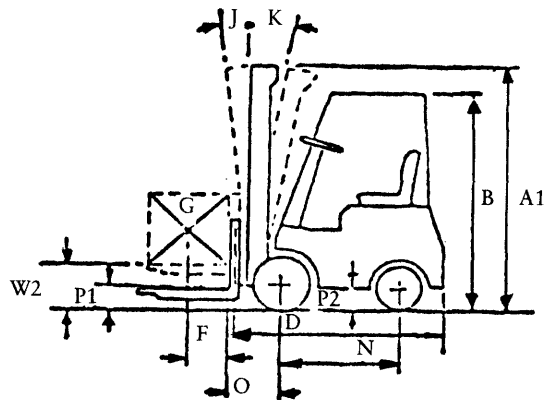
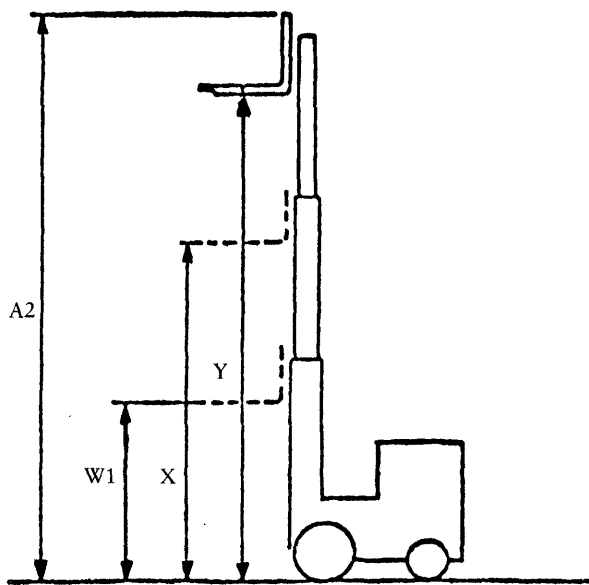


⁽¹⁾ See 'Dimensional characteristics' on page 14.

DIMENSIONAL CHARACTERISTICS

- A1 Height over mast, closed
- A2 Height over mast, extended
- B Height over cab or overhead guard
- C Overall width
- D Length, without forks
- E Length of fork
- F Distance from centre of gravity of the load
- G Centre of gravity of the load
- J Forward tilt (in degrees)
- K Backward tilt (in degrees)
- L Front track
- M Rear track
- N Wheelbase

- O Forward overhang
- P1 Ground clearance under mast
- P2 Ground clearance at centre of wheel base
- S Outside turning radius
- T Inside turning radius
- U Width of theoretical minimum intersecting aisles
- V Width of theoretical minimum aisle for right-angle stacking
- W Free lift height
- W1 Total free lift
- W2 Reduced free lift
- X Maximum lift height at rated load
- Y Maximum lift height



- 8.2.20. Outside turning radius minimum ⁽¹⁾.
- 8.2.21. Width of theoretical minimum intersecting aisle ⁽¹⁾ (laden and unladen).
- 8.2.22. Width of theoretical minimum aisle for right-angle stacking ⁽¹⁾.
- 8.2.23. Drawbar pull.
- 8.2.24. Maximum negotiable gradient on which the truck can start moving either laden or unladen.
- 8.3. **Specific operating terms**
- 8.3.1. Engaging the load.
- 8.3.2. Disengaging the load.
- 8.3.3. Lifting the load.
- 8.3.4. Lowering the load.
- 8.3.5. *Stacking and unstacking*
Stacking: handling consisting of lifting a load, and placing it on a stack composed of similar loads.
Unstacking: handling consisting of removing a load from the topmost position in a stack, and lowering.
- 8.3.6. *Tiering and untiering*
Tiering: handling consisting of lifting a load and placing it on a rack or shelf in a storage system.
Untiering: handling consisting of lifting a load from a rack or shelf and lowering.
- 8.3.7. Tilting the mast (or fork) forward/backward.
- 8.3.8. Extension or retraction of the mast or fork (forward/lateral).
- 8.3.9. Travelling.
- 8.3.10. *Inching*
Small movements of a truck, operated at reduced speed (not more than 2.5 km/h) to enable a load to be positioned precisely during a handling operation (e.g. stacking).
- 8.3.11. Towing.
- 8.3.12. Coupling/uncoupling.
- 8.3.13. Rotating — attachments.
- 8.3.14. *Pivoting* (mast or attachments)
Rotation of the entire lifting assembly or of a single load-carrying unit about a vertical axis, to allow lateral changes to be made from the frontal position or *vice versa*.
- 8.3.15. Load push/load pull.
- 8.3.16. Side-shifting.

⁽¹⁾ See 'Dimensional characteristics' on page 14.

- 8.3.17. Spreading the fork arms.
- 8.3.18. Rotating fork arms.
- 8.3.19. Clamping/unclamping.
- 8.3.20. Load stabilization.
- 8.3.21. Scooping/emptying.
- 8.3.22. Lowering stabilizers/raising stabilizers (for side-loading trucks).
- 8.3.23. Tipping.

- 8.4. **Safety features**
 - 8.4.1. *Stability*

Ability of a truck, either in the loaded or unloaded condition, to resist overturning as a result of static or dynamic forces arising in service.

 - 8.4.1.1. Longitudinal stability
Resistance to overturning forward or backward.
 - 8.4.1.2. Lateral stability (transverse stability)
Resistance to overturning to right or left.
 - 8.4.1.3. Static stability
Resistance to overturning of a stationary truck solely under the action of its load.
 - 8.4.1.4. Dynamic stability
Resistance to overturning of a moving truck under the action of forces developed when:
 - 8.4.1.4.1. — travelling in a straight or curved path,
 - 8.4.1.4.2. — the load is moved in various ways,
 - 8.4.1.4.3. — during a movement combining (1) and (2) above.
 - 8.4.2. *Brakes*

Drawbar drag; stopping distance
 - 8.4.3. *Safety equipment*
 - 8.4.3.1. Guards for driving position
Complete or partial guards bordering the driving position, especially at extreme points, with the object of protecting the driver frontally and/or laterally against contact with fixed obstacles or other vehicles.
 - 8.4.3.2. Overhead guard
Superstructure fixed on the truck above the head of the driver, to protect him from falling objects.
 - 8.4.3.3. Load backrest
Vertical screen usually mounted on the fork carrier to prevent any part of the load transported from falling towards the operator.
 - 8.4.3.4. Spark-arrester (IC engine).
 - 8.4.3.5. Water-muffler.
 - 8.4.3.6. Exhaust gas purifier, catalyzer.

- 8.4.3.7. Flame-proofing equipment.
- 8.4.3.8. Battery discharge indicator.
- 8.4.3.9. Safe load indicator.
- 8.4.3.10. Horn.
- 8.4.3.11. Starting switch.
- 8.4.3.12. Safety switch (on an electric truck)
Switch to cut off the power supply to a traction motor (sometimes also applying the brake), as soon as the operator ceases to exert pressure on the part actuating the switch; this may be a seat or pedal on a rider-controlled truck, or the tiller of a pedestrian-controlled truck.
- 8.4.3.13. Safety reverser
Device located at the end of the tiller of a pedestrian-controlled truck, to reverse the direction of the truck when the device contacts the operator (or an obstacle).
- 8.4.3.14. Emergency switch
A device to switch off the motors of electric trucks, operating independently of the control switches and intended to ensure disconnection of the motor even in the event of the control switch system malfunctioning.
- 8.4.3.15. Driving mirror
- 8.4.3.16. Electrical overload device
- 8.4.3.17. Anti-collision device
Device located ahead of a remote-control truck, which on contact with an obstacle or arrival in close proximity to one, is activated mechanically, optically, magnetically, or by other means, and cuts off the supply current to the traction motor while applying the brakes.

9. CAPACITY OF TRUCKS AND REMOVABLE ATTACHMENTS

9.1. High-lift trucks

9.1.1. *Rated capacity of high-lift trucks*

The rated capacity of a powered industrial high-lift truck is the load in kilograms, permitted by the manufacturer, that the truck type is capable of transporting or lifting in normal operation under specific conditions (see Addendum A).

9.1.2. *Actual capacity of high-lift trucks*

The actual capacity of a powered industrial high-lift truck is the maximum load in kilograms (depending on its attachment and elevating height), permitted by the manufacturer (usually by stability testing), that the subject truck is capable of transporting or lifting in normal operation under specific conditions (see Addendum A).

9.2. Fixed platform and low-lift trucks

9.2.1. *Rated capacity of fixed platform and low-lift trucks*

The rated capacity of a fixed platform or low-lift truck is the maximum load in kilograms, permitted by the manufacturer, uniformly distributed over the load-carrying platforms or device, which the truck is capable of transporting under normal conditions of operation.

9.3. **Industrial tractors**9.3.1. *Rated capacity of industrial tractors*

The rated capacity of an industrial tractor is the rated horizontal drawbar pull in newtons, permitted by the manufacturer, that the industrial tractor can develop at a specified coupling height while moving at a uniform speed of not less than 1% of the maximum no-load speed, on a smooth, dry, horizontal concrete surface. For stand-on or sit-on industrial tractors the driver's mass shall be 90 kg (ballasted accordingly).

When pneumatic tyres are fitted they shall be inflated to the pressure specified by the industrial tractor manufacturer.

9.4. **Removable attachments**

9.4.1. Rated capacity of removable attachments is the maximum load, in kilograms, permitted by the manufacturer, that the attachment is capable of handling in normal operation under specified conditions.

10. **GENERAL PROVISIONS**10.1. **Information plates**

All the information on the plates shall be in the language (languages) of the country where the truck is to be used.

10.1.1. *Identification plates*

10.1.1.1. Every industrial truck shall bear a durable identification plate in a prominent position giving the following information:

All engine-powered trucks	Battery-electric powered
(a) Name of the manufacturer (or the importer) of the truck	(a) d°
(b) Type	(b) d°
(c) Production or serial number and year of manufacture	(c) d°
(d) Unladen mass ⁽¹⁾ of the truck in working order without removable attachments, but with the fork arms in the case of fork-lift trucks	(d) Unladen mass ⁽¹⁾ of the truck in working order without battery and without removable attachments, but with the fork arms in the case of fork trucks
	(e) Authorized maximum and minimum battery mass
	(f) Battery voltage

⁽¹⁾ The mass may be slightly greater or less than that shown in the plate.

10.1.1.2. **Identification plates for removable attachments**

Every removable attachment shall carry a separate identification plate giving the following information:

- (a) name of attachment manufacturer (or importer);
- (b) type;
- (c) production or serial number and year of manufacture;
- (d) mass of attachment;

- (e) distance of the centre of gravity of the attachment from its mounting face on the truck;
 - (f) rated load capacity;
 - (g) in the case of hydraulically operated attachments the operating hydraulic pressure recommended by the attachment manufacturer;
 - (h) 'warning!'; the capacity of the truck and attachment combination shall be adhered to.
- 10.1.1.3. Trucks operating in special conditions
- If a truck is designed to operate in special conditions it shall bear a durable plate in a prominent position, giving the following information:
- (a) designation of the special condition(s) of use;
 - (b) capacity of the truck in each of the special conditions of use.
- 10.1.1.4. Traction batteries and containers
- Each container shall bear a durable identification plate in a prominent position giving the following information:
- (a) name of battery manufacturer;
 - (b) type;
 - (c) serial number;
 - (d) nominal voltage;
 - (e) capacity in ampere hours at the five-hour rate;
 - (f) service mass (with ballast if used to compensate for lack of battery mass).
- Furthermore, the mass shall be stamped on the removable container near the lifting means.
- 10.1.2. *Capacity plates*
- Every truck or tractor shall have a durable capacity plate affixed in a prominent position, easily readable by the operator showing the data specified below.
- This capacity plate may be combined with the identification plate if desired.
- 10.1.2.1. High-lift trucks
- The capacity plate shall show the data specified in Addendum B.
- 10.1.2.2. Fixed platform and low-lift trucks
- The capacity plate shall show the basic rated capacity in kilograms as defined in 9.2.1.
- 10.1.2.3. Industrial tractors
- The capacity plate shall show the drawbar pull in newtons as defined in 9.3.1 and shall also show the period of time during which this pull can be exerted.
- In the case of electric-driven truck tractors, fitted with torque converters, the drawbar pull for one hour of operation shall be given.
- 10.1.3. *Other information*
- It is not obligatory to put this information on a plate.
- 10.1.3.1. Devices for slinging of trucks
- Locations for slinging shall be clearly indicated on the truck (10.8.4).
- 10.1.3.2. Pneumatic tyre inflation pressures
- The inflation pressures shall be clearly indicated on the truck.
- 10.1.3.3. Maximum authorized gradient

10.2. **Immobilization, prevention of unintentional movement and unauthorized use**

10.2.1. A parking brake shall be provided conforming to the requirements specified in 10.3.4.1 and 10.3.4.2.

The special requirements for order picking trucks are covered in Chapter 11.

10.2.2. The truck shall be provided with a special device (e.g. by means of a key) which prevents its use by any unauthorized person.

Switch keys for pedestrian-controlled trucks and for stand-on and sit-on trucks shall not be interchangeable.

10.3. **Brakes/performance**10.3.1. *Brakes*

Powered industrial trucks shall embody brakes capable of developing in either direction, on smooth, level, dry and clean concrete, a minimum drawbar drag 'F'.

The value of 'F' for:

- all trucks (except tractors) is expressed as a percentage of the gross mass of the truck with its rated load,
- tractors is expressed as a percentage of the gross mass of the tractor, without trailers.

The minimum value of 'F' is related in the following tables to the maximum speed attainable by the truck with its rated load or by the tractor without trailers ('V₁' in km/h).

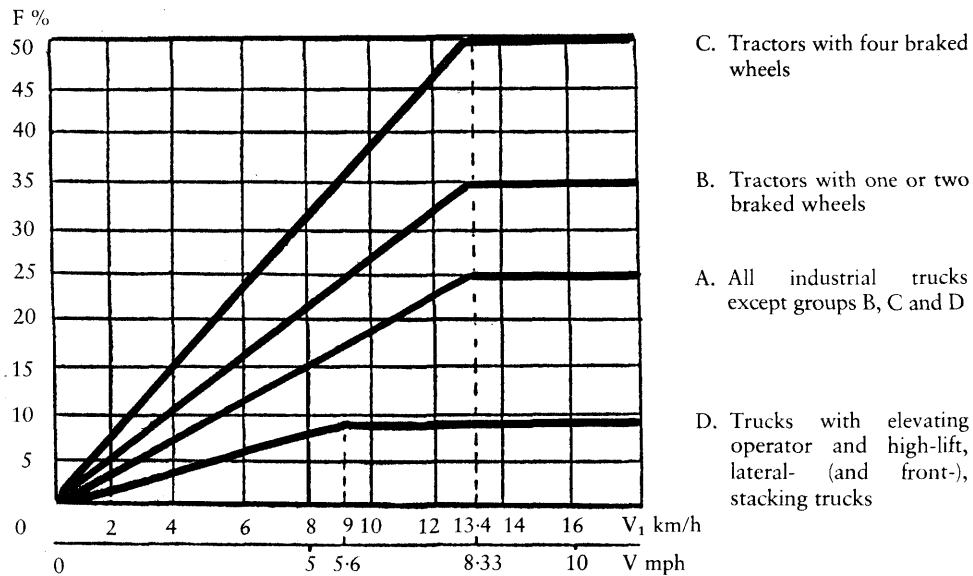
If a truck's actual braking capability is automatically related to speed, the minimum drawbar drag 'F' may be varied as speed is varied (see Graph A).

The minimum value of 'F' in the following tables must be attainable with the appropriate actuating force specified in 10.3.2.

Group	Types of truck	Value of 'F' for:	
		V ₁ ≤ 13.4 km/h	V ₁ > 13.4 km/h
A ⁽¹⁾	All industrial trucks except groups B, C and D	F ≥ 1.86 V ₁ %	F ≥ 25%
B	Tractors with one or two braked wheels	F ≥ 2.6 V ₁ %	F ≥ 35%
C	Tractors with four braked wheels	F ≥ 3.72 V ₁ %	F ≥ 50%
D ⁽²⁾	Trucks with elevating operator and high-lift, lateral- (and front-) stacking trucks	Value of 'F' for:	
		V ₁ ≤ 9.0 km/h	V ₁ > 9.0 km/h
		F ≥ 1.0 V ₁ %	F ≥ 9%

⁽¹⁾ Where the mast or fork arms can be moved out, the values shall apply with the mast or fork arms in the retracted position.⁽²⁾ For further details see 11.1 and 11.2.

GRAPH A

10.3.2. *Service brake controls* ⁽¹⁾

- (a) Brakes applied by depressing the brake pedal shall conform to the above drawbar drag table with a maximum pedal force not exceeding 600 N.
- (b) Brakes applied by releasing the brake pedal shall conform to the above drawbar drag table. The necessary force required to release the brakes and to keep them released while travelling shall not exceed 300 N.
- (c) Brakes applied by means of a hand lever shall conform to the above drawbar drag table, when a maximum force of 150 N is applied to the hand lever.
- (d) Automatically applied brakes on trucks with the driver standing, and pedestrian-controlled trucks shall conform to the above drawbar table.

10.3.3. Only friction brakes, hydrostatic transmissions and electrical braking systems are acceptable as service brakes.

10.3.4. *Parking brake*

10.3.4.1. Each industrial truck except an industrial tractor shall be equipped with a parking brake which shall hold the truck, with its maximum permissible load, without assistance from the driver, on the service gradient specified by the manufacturer. The gradient must not exceed the values shown below:

- (a) Sit-on or stand-on trucks, electric or ICE except types (b) and (c): 15%;
- (b) Narrow-aisle trucks (reach trucks) straddle trucks, pallet-stackers, high-lift platform trucks, or low-lift trucks: 10%;
- (c) Order-picking trucks, high-lift and lateral-stackers: 5%;
- (d) Pedestrian-controlled trucks: 10%;

10.3.4.2. Each industrial tractor with the exception of driverless tractors shall be equipped with a parking brake which shall hold the tractor itself, without trailers, and without assistance from the driver on the maximum gradient that it is able to climb (without load) or on the following gradient, whichever is lower.

Sit-on or stand-on tractors, ICE or electric: 15%.

Pedestrian-controlled tractors: 10%.

⁽¹⁾ Order-picking trucks are covered in Chapter 11.

- 10.3.4.3. **Brake operating systems**
Service and parking brakes shall be operated by means of independent systems, but may be effective on the same arresting equipment (e.g. brake shoes).
This does not apply to trucks which have the type of automatic service/parking brake specified in 10.3.2 (b) and (d).
- 10.4. **Wheels**
When split wheels are used with pneumatic tyres, the truck shall be provided with devices to prevent the user from separating the halves of the wheel before removing the wheel from the axle.
- 10.5. **Controls**
- 10.5.1. *Direction of travel controls*
- 10.5.1.1. Applicable up to and including 31 December 1984
In accordance with ISO Standard 3691 (8.1 to 8.2.3.3, 8.3.1 (a), (b), (e) and 8.3.1.1 to 8.4.3.2).
- 10.5.1.2. Applicable from 1 January 1985
In accordance with ISO Standard 3691 (8.1 to 8.2.3.3, 8.3.1 (a), (b), (e) and 8.3.1.1 to 8.4.3.2).
with the following modifications:
- 8.4.1.1. Pedals
Accelerator and service brake pedals and clutch pedals when fitted to sit-on trucks shall be arranged in accordance with automotive rules and practice as shown in Figure 25 (the paragraph which follows is deleted).
- 8.4.1.2. Gear-change lever
The positions for gear engagement shall be clearly indicated.
- 8.4.1.3. Direction-change lever
It shall be obligatory to operate the direction-change levers by hand. The direction-change levers shall be arranged in such a way that their operation corresponds to the required direction of travel.
- 8.4.1.4. Safety control and brakes — sit-on electric-powered trucks
— The first two paragraphs are retained.
— The last three paragraphs are replaced by:
'The accelerator shall be operated by the right foot and shall increase travel speed when depressed. The service brakes shall be operated by the right foot and shall be applied by depressing the pedal.'
- 8.4.1.5. Safety control and brakes — sit-on internal combustion engine powered trucks
— The first clause of the first paragraph is retained.
— The second clause of the first paragraph is replaced by:
'The accelerator shall be operated by the right foot and shall increase travel speed when depressed.'
— The two following paragraphs are replaced by:
'The service brakes shall always be operated by the right foot and shall be applied by depressing the pedal. If a clutch is fitted, declutching shall be carried out by pressing on the pedal with the left foot. This pedal may also operate the brakes. In the latter case, one large pedal may be utilized to carry out both operations provided its surface area is approximately equal to the total surface area of the brake and clutch pedal shown in Figure 25. Declutching shall be effected by the initial depressing movement of the pedal, the final movement shall apply the brakes.'

- 10.5.2. *Load-handling controls*
In accordance with ISO Standard 3691 (8.5).
- 10.5.3. *Control symbols*
In accordance with ISO Standard 3287.
- 10.6. **Speed limitation ⁽¹⁾**
- 10.6.1. Pedestrian-controlled trucks shall be so designed that they shall not be capable of speed in excess of 6 km/h in the unladen condition when operating on level ground.
Exception
In special areas separated from pedestrians and other types of traffic remote-controlled trucks may be operated at higher speeds.
Single-speed pedestrian-controlled trucks shall be so designed that they cannot reach a speed in excess of 4 km/h, empty and on level ground, or a maximum acceleration of 5%. Single-speed trucks shall be low-lift only.
- 10.6.2. Stand-on trucks shall be so designed that they shall not be capable of speeds in excess of 16 km/h in the laden condition when operating on level ground.
- 10.6.3. It is recommended that sit-on and stand-on trucks having a speed greater than 12 km/h be fitted with a speedometer adapted to the speed conditions of use and to facilitate adherence to speed regulations.
- 10.7. **Requirements for power systems and accessories**
- 10.7.1. *Internal combustion engine driven trucks*
- 10.7.1.1. Exhaust and cooling systems
- 10.7.1.1.1. The exhaust system shall be designed and fitted with due consideration for the comfort and well-being of the operator and other personnel. In particular, the exhaust pipe whether it is placed in a low or high position shall have its exhaust port so arranged as to cause the minimum discomfort to personnel.
- 10.7.1.1.2. The air flow through the cooling system shall be arranged in a manner to avoid discomfort to the operator.
- 10.7.1.2. Fuel tanks
- If a tank is within or contiguous to the engine compartment, the tank and/or filling arrangement shall be isolated from the electrical and exhaust systems by a separate enclosure or by baffles. The tank location and facilities for filling shall be such that spillage or leakage will drain to the ground and not into the engine or operator's compartment or on to electrical or exhaust system parts. Fuel spillage shall not be possible under operating conditions.
- 10.7.1.2.1. Applicable up to and including 31 December 1984
The fuel tank and fill fittings shall be so located as to minimize the possibility of damage to the tank and its fittings.
- 10.7.1.2.2. Applicable from 1 January 1985
The fuel tank shall be removable. The fuel tank and fill fittings shall be so located as to minimize the possibility of damage to the tank and its fittings.
- 10.7.1.3. Fuel systems shall be firmly secured to the truck and the fastenings arranged to minimize the effects of vibration.

⁽¹⁾ Order-picking trucks are covered in Chapter 11.

- 10.7.2. *Additional requirements for internal combustion engine driven trucks, using LPG gas*
- 10.7.2.1. Containers
- 10.7.2.1.1. The container(s) for LPG may be either permanently fixed on the truck or quickly removable. Containers shall comply with the requirements of existing Community Directives.
- 10.7.2.1.2. Containers shall be fitted on the truck in such a way that they are not unduly exposed to erosion nor to the corrosive action of the products handled by the truck. They shall be protected against corrosion.
- 10.7.2.1.3. The containers shall be firmly secured to the truck and the fastening shall be unaffected by vibration.
- 10.7.2.1.4. Containers, whether fixed or removable, shall be equipped with a device to prevent the sudden emission of a large volume of gas, particularly in the case of a pipe failure. The fuel take off on the container shall be equipped with an easily and quickly accessible manually operated valve. The fuel take off shall be in a liquid form, unless the container and engine are specially equipped for direct vapour withdrawal.
- 10.7.2.1.5. All containers which require to be filled to a fixed maximum liquid level by the user shall have the following fittings:
- (a) A suitable safety pressure-relief valve connected to the vapour space of the container. Where such containers are fitted inside compartments of vehicles the discharge side of the relief valve shall be piped to atmosphere.
The gas shall be led away safely.
- (b) A fixed maximum level indicating device. Where containers are fitted inside compartments of vehicles the discharge side of any maximum level indicating device which relies on bleeding gas to atmosphere shall terminate at a readily visible position on the outside of the vehicle.
1. The maximum level indicating device, which relies on bleeding to atmosphere shall be designed so that the bleed hole is not larger than 1.5 mm diameter and also that the parts of the device cannot be completely withdrawn in normal gauging operations.
 2. All maximum liquid level devices shall be suitable for the LPG in use and indicate the maximum product level which shall not exceed that permitted by Community Regulations for pressure vessels in so far as they exist or otherwise to the provisions of the country in which they are used.
- (c) If a liquid level gauge is fitted, it shall not vent to atmosphere.
- 10.7.2.1.6. If containers are installed in a compartment, this compartment shall have permanent openings at the very bottom. The total surface area of these ventilation openings shall be at least 200 cm² allowing adequate ventilation to the outside atmosphere and without risk for the operator.
- 10.7.2.1.7. When containers are removable, their fastening shall permit easy handling and easy checking of installation after the exchange of containers.
- 10.7.2.1.8. When installing removable containers which incorporate a safety relief valve they shall be so located on the truck that the safety pressure-relief valve opening is always in communication with the vapour space (top) of the container. This may be accomplished by an indexing pin which positions the container when the container is properly installed.
- 10.7.2.1.9. If a spare or additional container is carried on the truck, it shall be secured in an approved manner as laid down in 10.7.2.1.3 and 10.7.2.1.8.
- 10.7.2.1.10. Protective caps against inclement weather shall be provided on the connections when stored in the open.

- 10.7.2.1.11. Provision shall be made for the possible fitting of a heat-shield to ensure protection against abnormal increases in temperature of the liquefied petroleum gas (LPG) container, which might be caused by the sun or other heat sources. Containers shall be positioned as far away as is practical from the motor and the exhaust system.
- 10.7.2.2. Piping
- 10.7.2.2.1. Connecting piping and all associated parts shall be easily accessible, protected against damage and wear, and be flexible enough to withstand vibration and deformation in service. Pipe work shall be:
1. so arranged that damage or leaks are easily detectable; and
 2. installed in such a way that it cannot be damaged by the hot parts of the engine.
- Fully rigid pipes shall not be used for connecting the container to equipment on the engine.
- 10.7.2.2.2. Hoses, piping and all connections operating at pressure above one bar gauge shall be suitable for a working pressure of 25 bar and shall withstand without bursting a test pressure of 75 bar.
- Hoses, piping and all connections operating below one bar shall withstand, without bursting, a test pressure of five times the maximum pressure likely to be encountered in service.
- 10.7.2.2.3. The containers and their connections shall be installed in such a way that there are no projections outside the overall contour of the truck. Container connections shall be protected by a rigid guard.
- 10.7.2.2.4. Excessive pressure shall be avoided in any section of pipework containing LPG between two shut-off valves which may be closed; a pressure-relief valve or other suitable means may be used if necessary.
- 10.7.2.2.5. The use of aluminium piping in the liquid lines is not permissible.
- 10.7.2.2.6. Hose lengths shall be as short as possible.
- 10.7.2.3. Equipment
- 10.7.2.3.1. The supply of gas shall be automatically cut off when the engine stops irrespective of whether or not the ignition system has been switched off.
- 10.7.2.3.2. For multi-fuel applications the system shall be designed to avoid the possibility of LPG entering any other fuel container, and so that each fuel source is cut off before the alternative one is opened.
- 10.7.2.3.2.1. If the truck is equipped with two or more containers to supply fuel, they shall be connected via a multi-way valve, or other suitable means so that liquified gas (LPG) can be drawn only from one container at a time. The use of two or more containers (at the same time) is not permitted.
- 10.7.2.3.3. Safety pressure-relief valves or liquid level indicators shall be installed in such a way that they cannot discharge on truck components which represent a source of ignition.
- 10.7.2.3.4. If corrosion of a part will interfere with its proper functioning it shall be provided with a corrosion-resistant protective coating.
- 10.7.2.3.5. All fuel system components shall be firmly secured to the truck and the fastenings arranged to minimize the effect of vibration.
- 10.7.3. *Electric trucks*
- 10.7.3.1. Battery
- 10.7.3.1.1. Metal covers shall be designed to provide an air space of at least 10 mm above the live parts of the battery. Alternatively the covers or live parts of the battery shall be insulated. The insulation must be firmly attached to avoid their disintegration or displacement in normal use.
- 10.7.3.1.2. The cover(s) shall be so constructed that in normal use no force shall be transmitted or contact made with the battery when a force of 980 N is applied to the cover(s) over any area 300 × 300 mm square.

- The cover(s) shall be fitted in such a way as to avoid displacement in normal use.
- 10.7.3.1.3. Suitable ventilation holes shall be provided in the battery container, compartment or cover so that dangerous accumulations of gases shall not occur when the equipment is properly used.
- 10.7.3.1.4. Batteries and containers of all trucks shall be constrained to prevent unforeseen displacement in normal use. On rider lift trucks means shall be provided so that in the event of 90° overturning the battery assembly will be constrained so as to avoid the risk of injury which could otherwise occur by the battery being displaced.
- 10.7.3.1.5. No sparking components shall be installed in the battery container or compartment. Battery connectors can be accepted as non-sparking components provided they are not part of an emergency isolation system (10.7.3.7).
- 10.7.3.1.6. Voltage
The nominal battery voltage shall not exceed 96 volts.
- 10.7.3.1.7. Voltage limits
Electrical equipment shall be so designed that all functions shall operate and safety shall not be jeopardized if the battery voltage should fall below the nominal voltage ⁽¹⁾ by as much as 30% (i.e. to 0.70 of the nominal voltage).
- 10.7.3.2. Connectors (other than charging connectors)
The connectors used for connecting the traction batteries to the equipment of electrically-operated industrial trucks, and to the charging equipment shall comply with the requirements of Addendum C.
- 10.7.3.3. It shall not be possible to energize the truck movement circuits whilst external charging leads are connected.
- 10.7.3.4. Resistors
All resistors shall be located and arranged so as to avoid overheating and damage to adjacent parts of the truck.
- 10.7.3.5. Protection
- 10.7.3.5.1. In the normal operating condition of the truck the uninsulated live parts shall be protected to prevent direct contact.
- 10.7.3.5.2. There shall be no electrical connection to truck frame, with the permissible exception of:
- (a) frame fault detection system;
 - (b) lighting and ancillary equipment, providing its operating voltage does not exceed 24 volts and it is electrically isolated from the main power source.
- 10.7.3.5.3. Motor circuits shall be protected against short circuit conditions
Auxiliary circuits shall be protected against short circuit conditions and dangerous excess currents. Several auxiliary circuits in parallel, with combined current not exceeding 10 amps, may be protected by a single device.
- 10.7.3.5.4. The electric circuits shall be so designed, and if necessary protected, that two or more frame faults cannot cause uncontrolled operation.
- 10.7.3.5.5. Pulse switching systems shall be so arranged that in the event of any fault in the electronic circuit an uncontrolled power-on condition is avoided. Alternatively each system may be duplicated and cross-monitored. Means shall be provided for checking the operation of this safety circuit or system.

⁽¹⁾ Nominal voltage = maximum number of cells which are connected in series multiplied by the nominal voltage of each cell (e.g. 2.0 volts for conventional lead acid cells, 1.2 volts for conventional alkaline cells).

- 10.7.3.5.6. Verification of the dielectric properties
 I. Type text — over voltage (10.7.3.9).
 II. Routine test — insulation resistance (10.7.3.10).
- 10.7.3.6. Conductors
 The cross-sectional area of conductors shall be so selected that during operation of the truck, the temperature shall not exceed that specified for the class of insulation used.
 Electric cables shall be installed in such a way that they are protected from mechanical damage when the truck is in normal service.
 The following provisions apply to conductors external to enclosures (excluding component flying leads):
 (a) all conductors shall be flexible;
 (b) the cross-sectional area of conductors of adequately supported cables and wiring harnesses shall not be less than 0.5 mm²;
 (c) single conductors shall have a cross-sectional area not less than 1.0 mm².
- 10.7.3.7. Emergency isolation
 An emergency isolating control or controls shall be provided which shall be readily accessible to the operator at all times while in any of the operating positions recommended by the manufacturer. The isolating device shall simultaneously isolate all poles of the main supply lines and shall be capable of interrupting the normal maximum current (including motor starting current) by one of the following methods:
 (a) connector specified in 10.7.3.2;
 (b) manual isolator;
 (c) emergency switch connected into the coil circuit of two separate contactors.
- 10.7.3.8. Electro-mechanical brakes
 Where electro-mechanical brakes are fitted these shall be mechanically applied and electrically released.
- 10.7.3.9. Dielectric type test
 For ex-works, new, dry vehicles and with disconnected traction battery, an alternating test voltage between 25 and 100 hertz shall be used for testing between live parts and the frame.
 Semi-conductors or similar electronic components liable to become damaged by application of the test voltage may be bypassed or removed.
 If there should be need to re-check, the alternating test voltage may be reduced to 80% of the test voltage specified in the table.
 The alternating test voltage shall be as follows:
- | Nominal voltage | Alternating test voltage | Testing time |
|-----------------|--------------------------|--------------|
| ≤ 48 | 500 volts | One minute |
| ≥ 48 | 1 500 volts | One minute |
- 10.7.3.10. Dielectric routine test
 The insulation in industrial trucks must possess adequate electrical resistance.
 As a routine test the industrial truck and traction battery shall be checked separately. The test voltage shall be greater than the nominal voltage and less than 500 volts.
 The insulation resistance between live parts and frame of all electric components of the industrial truck shall be deemed adequate if it amounts to at least 1 000 ohms per volt of the battery nominal voltage.
 The insulation resistance of the traction battery shall be deemed adequate if it is at least 1 000 ohms between the live parts and the container.

10.7.3.11. Safety devices for electrical and electronic circuits

The electrical and electronic circuits of safety devices mentioned in the following points:

- 10.7.3.7. Emergency isolation
- 10.10.5. Protection of operator, pedestrian-controlled trucks
- 11.1.1.2. } Reduction of speed and braking
- 11.1.1.3. }
- 11.1.2.1. }
- 11.1.1.4. Speed limitation and prevention of travel
- 11.2.5.2. Slack wire ropes or slack chains
- 11.2.5.11. A second limiting device at the top of travel shall be so designed and fitted that even in the event of one or several faults they remain fail-safe.

In the case of mechanically operated switches their operation shall be effected by opening of the circuit but through a minimum of intermediary devices. Their operation must not solely depend on weights or drag.

Note:

Where it is not possible to satisfy the above requirements by a simple electrical or electronic circuit, it is possible to duplicate the electrical or electronic circuits in order to check their correct functioning. A fault must cause the motion to stop, and restarting must not be possible until the circuit has been restored.

10.8. Systems and components for lifting, tilting and other movements

10.8.1. *Lifting and tilting mechanism* ⁽¹⁾

10.8.1.1. Mast mechanism chains

Only leaf and roller mechanical chains are authorized.

When the lifting mechanism includes chains, the truck manufacturer shall select chain which, in relation to the minimum breaking load certified by the manufacturer of the chain, will provide a factor ⁽²⁾ of at least five to one in relation to the static load that would exist in equally loaded chains when the maximum rated load is in the transporting position, assuming no friction in the mast structure. Pulley diameters shall be at least three times the pitch of the chains.

10.8.1.2. Wire ropes

When the lift mechanism includes wire ropes the truck manufacturer shall select a wire rope which, in relation to the minimum breaking load certified by the manufacturer of the wire rope, will provide a factor ⁽²⁾ of at least six to one in relation to the static load that would exist in equally loaded wire ropes when the maximum rated load is in the transporting position, assuming no friction in the mast structure. The minimum diameter of the wire rope guide pulleys, measured from the bottom of the groove shall be equal to 22 times the diameter of the wire rope.

10.8.1.3. Hydraulic lifting cylinders

Lift cylinders when loaded to the rated load conditions of the truck and connected through the hydraulic circuit of the truck the total leakage of the complete hydraulic lifting system (cylinders, distributor, etc.) shall only allow a descent of the load lower than 100 mm in the first 10 minutes with the hydraulic oil at normal working temperature.

⁽¹⁾ Order-picking trucks are covered in Chapter 11.

⁽²⁾ $K = \frac{\text{minimum breaking load when new}}{\text{carrying capacity} + \text{dead mass}}$

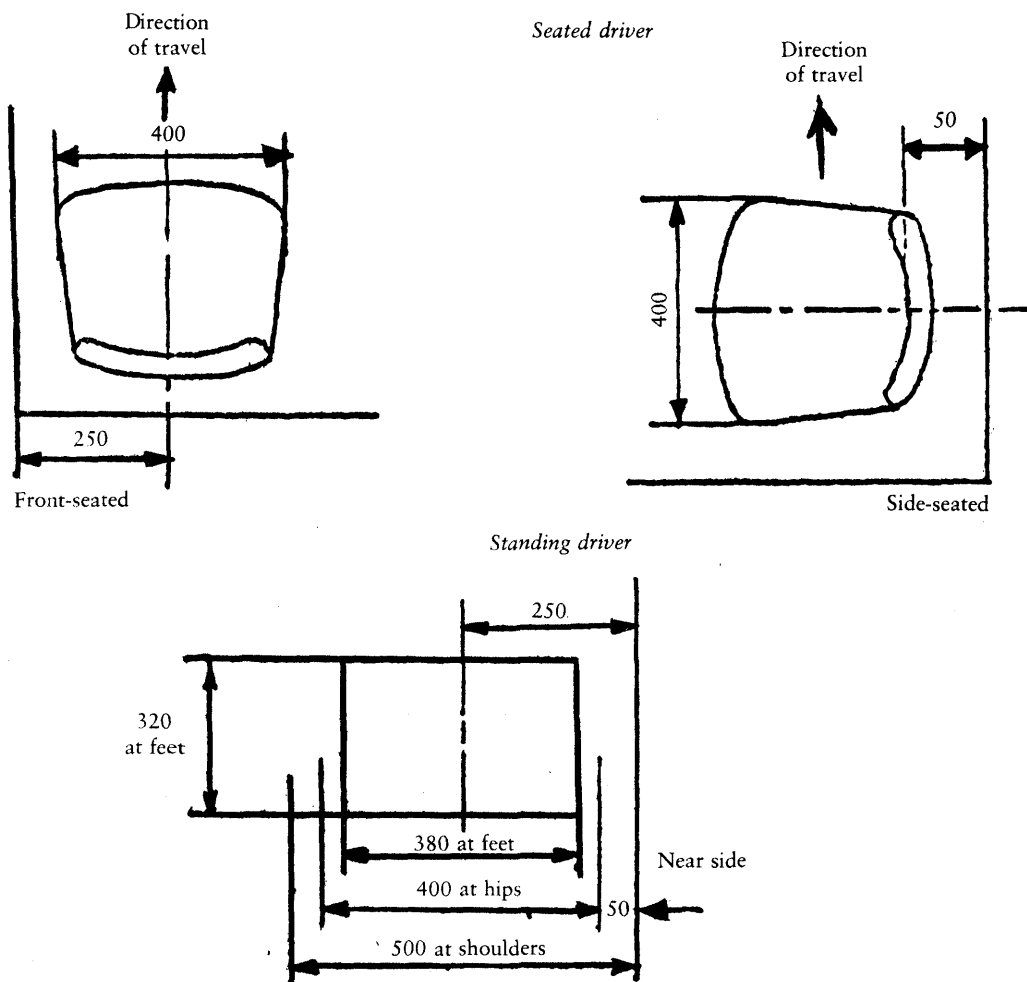
- 10.8.1.4. Limitation of stroke of lifting system
The lift assembly shall be designed to provide positive stops to prevent over-travel. In addition means shall be provided to prevent the fork carrier and moving elements of the mast structure disengaging from the upper end of the mast. All movements with a limited travel shall be provided with positive stops to prevent over-travel.
- 10.8.1.5. Lowering speed limitation
A control device shall be incorporated in the lift circuit which even in the event of a failure of the hydraulic circuit shall restrict the rate of descent speed of the loaded lifting mechanism as much as possible. In no case shall the speed exceed 0.6 m/s.
- 10.8.1.6. Hydraulic tilting systems
The total leakage rate of the complete hydraulic tilting system (cylinder, distributor, etc.) shall only allow a pivoting of the mast to the front of less than 5° in the first 10 minutes, from the vertical mast position when the truck is raising its rated load at a height of 2.5 m or, in the case of trucks of less than 2.5 m, at their maximum height.
The pivoting speed shall not exceed 0.5° in one minute for trucks with a maximum tilt of less than 5°.
- 10.8.2. *Hydraulic systems*
- 10.8.2.1. Hydraulic circuits
Hoses, piping and all connections shall be capable of withstanding, without bursting, a pressure at least equal to three times the operating pressure to which they might actually be subjected.
- 10.8.2.2. All hydraulic systems shall include a reliable device which prevents the pressure in the system from exceeding a preset safe level (pressure-relief valve).
The device shall be so designed and fitted that accidental loosening or adjustment is avoided and that a tool or key is required to alter the pressure setting.
- 10.8.2.3. In the case of a fault or an interruption of the supply of energy, the design of the hydraulic installation shall be such that the hydraulic pressure in the system does not cause the pump to function as an hydraulic motor.
- 10.8.2.4. The hydraulic system shall be designed and installed in such a way that its performance and reliability are not reduced or its components damaged as a result of external stresses, vibration or movements of the truck or components thereof, etc.
- 10.8.2.5. The hydraulic system shall be so designed that the oil in circulation is continuously and automatically filtered.
- 10.8.3. *Fork arms and carrier*
- 10.8.3.1. Fork arms — technical characteristics and testing in accordance with ISO International Standard 2330.
- 10.8.3.2. Fork arms — lateral locations
Means shall be incorporated in the fork arm and carrier to prevent unintentional lateral displacement. Positive stops shall be provided to prevent lateral disengagement at the extremities.
- 10.8.3.3. Fork extensions
Fork extensions shall be designed to prevent accidental disengagement from the fork arm.
- 10.8.4. *Slings devices*
The slinging devices shall be so designed as to avoid any accidental risk of unhooking.

10.9. Operator's position

10.9.1. Dimensions

The operator's seat or standing position shall be so constructed that while operating the truck the operator shall have room to withdraw within the plan outline of the truck.

The dimensions shall not be less than the following dimensions (in mm):

*Note:*

Positions of the operator place, other than front or side facing, are also permitted and equivalent dimensions apply.

10.9.2. Access

Rider trucks shall be designed to permit easy access and egress without undue risk of slipping or falling.

The surface of the floor shall be slip resistant. An adequate number of steps or running boards fitted with slip resistant surfaces or coverings shall be provided.

Each step or running board shall have a height above that next below it or above the ground of preferably 550 mm and shall not in any case exceed 700 mm. Safety handles shall be provided as necessary.

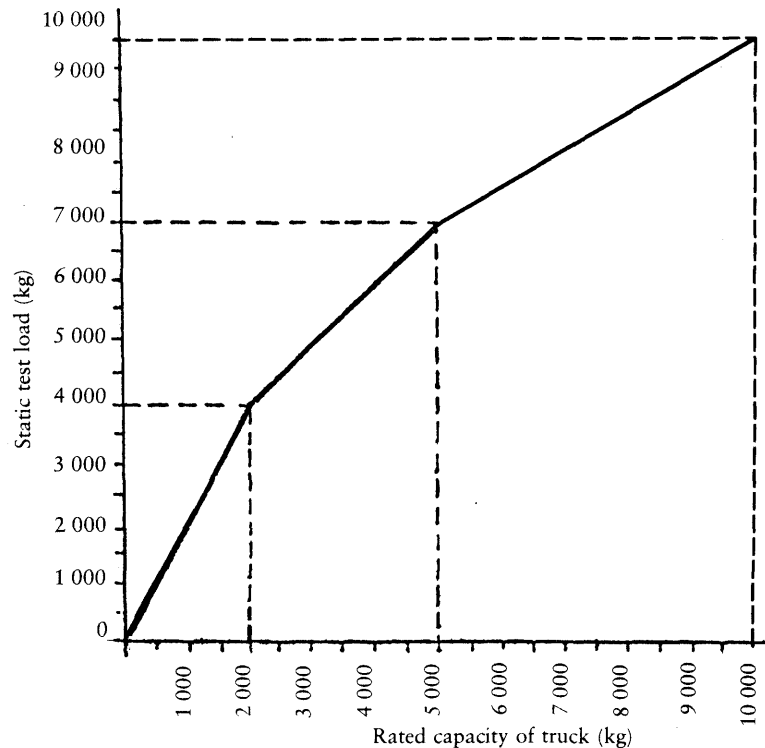
10.9.3.

The operator's seat shall be adequately upholstered and, if necessary, resiliently suspended to minimize the transmission of vibration to the operator's person.

- 10.9.4. *Temperature*
The operator's seat and all parts of the truck within reach of the operator when in his normal operating position or when getting into or leaving his operating place shall be insulated, if necessary, against excessive temperature arising from the engine or other equipment.
- 10.10. *Protective devices*
- 10.10.1. *Operator's overhead guard*
It shall be possible to equip every high-lift industrial truck with an overhead guard to protect the operator. (This does not include pedestrian-controlled trucks or pedestrian trucks with provision for the operator to ride.)
Overhead guards shall conform to the following requirements:
- 10.10.1.1. *Design features*
- 10.10.1.1.1. *General*
The overhead guard shall extend over the operator under all normal circumstances of truck operation.
- 10.10.1.1.2. *Failure of the tilting mechanism shall not, directly or indirectly, involve injury to the operator by reason of failure of the overhead guard.*
- 10.10.1.2. *Dimensions*
- 10.10.1.2.1. *The overhead guard should be designed and constructed in a manner that does not interfere with good visibility.*
- 10.10.1.2.2. *Openings on the top of the overhead guard shall not exceed 150 mm in one of the two dimensions width or length.*
- 10.10.1.2.3. *For rider-seated trucks, a vertical clearance of at least 1 000 mm shall be provided from the point of maximum depression of the seat under the operator to the underside of the guard in the vicinity of the operator's head when he is in his normal operating position.*
- 10.10.1.2.4. *For rider-standing trucks, a vertical clearance of at least 1 880 mm shall be provided from the platform on which the operator stands to the underside of the overhead guard in the vicinity of the operator's head when he is in his normal operating position.*
- 10.10.1.2.5. *The operator's overhead guard shall not hinder the driver while he is mounting or dismounting the truck.*
- 10.10.1.3. *Testing of overhead guards*
- 10.10.1.3.1. *General*
To test protection of the operator from falling objects (but not the impact of a falling capacity load) the following tests are to be carried out on prototype guards fitted to a truck of the type for which it has been designed.

The mounting of the guards on a test chassis is also admissible provided that the mounting is the same as that on the truck for which it is designed.
- 10.10.1.3.2. *Static test*
The overhead guard shall be able to support for one minute a static rigid test load, uniformly distributed on the area of the upper part of the main frame, according to the following table and graph:

Rated capacity of truck (Q kg)	Static test load (kg)
Up to 2 000	$2 \times Q$ maximum 4 000 kg
from 2 000 to 5 000	$2\,000 + Q$ maximum 7 000 kg
from 5 000 to 10 000	$4\,500 + \frac{Q}{2}$ maximum 9 500 kg



10.10.1.3.3. A dynamic test

The overhead guard shall be able to withstand the impact of a hardwood cube, weighing not less than 45 kg.

The test cube shall be positioned to drop in free fall with a flat surface approximately parallel to the top of the overhead guard, and not strike with a corner or edge. The cube shall be dropped a distance of 1.5 m 10 times so that it strikes the guard at random points within a 600 mm diameter circle, whose centre is vertically above the centre point of the operator's seat or position.

10.10.1.3.4. Test results: static and dynamic

After both tests the guard shall not show fracture, parts separation or permanent vertical deformation exceeding 20 mm measured on the underside of the guard within a 600 mm diameter circle, whose centre is vertically above the centre point of the operator's seat or position.

10.10.1.3.5. Auxiliary fixtures

During the dynamic tests, the deformations that might occur on auxiliary fixtures such as wire mesh, cloth, toughened glass, etc., shall be ignored.

10.10.2. Load backrest extension

High-lift trucks shall be designed so that they may be equipped with a load backrest extension.

- 10.10.3. *Platform*
- 10.10.3.1. Operator's stand-on platforms on end-controlled trucks shall extend beyond the operator's position and be so designed that they could withstand a compression force corresponding to the mass of the laden truck and applied along the longitudinal axis of the truck with the outermost projection of the platform against a flat vertical surface.
- Note:*
For the purpose of this section, the operator's platform includes any surrounding reinforcement or parts of the truck which provide resistance to crushing of the platform.
- 10.10.3.2. Operator's stand-on platforms which overhang the truck shall be provided with guards at the side or front of the platform.
- 10.10.3.3. Operator's stand-on platforms which fold or pivot shall be equipped with means to prevent the unintentional folding or pivoting of this platform when the operator is standing thereon.
- 10.10.3.4. Operator's fixed stand-on platforms which are at heights greater than 1 200 mm above the floor shall be equipped with rails or other equally effective means of protection ⁽¹⁾, comprising top rails, intermediate rails and toe boards to a height neither less than 900 mm nor more than 1 100 mm, measured from the upper surface of the top rail to the platform, the toe boards having a minimum height of 100 mm. The rails should be capable of withstanding a force of 900 N applied in any horizontal direction.
- Removable or hinged rails shall be constructed in such a manner that proper rail positioning is easily accomplished and a secured position is visibly discernible.
- When hinged rails are provided they shall open only upwards, inwards or sideways.
- 10.10.4. *Wheel guards*
- Trucks with wheels which extend beyond the confines of the truck chassis shall be provided with devices which ensure the protection of the driver when he is in the normal operating position against objects thrown up by the wheels (e.g. mud, gravel, stones, bolts, etc.).
- 10.10.5. *Protection of operator — pedestrian-controlled trucks*
- The tiller of pedestrian-controlled trucks shall incorporate a device to reverse the direction of travel or stop the truck should the tiller in its operating position come into contact with a solid body (e.g. the operator's person).
- 10.10.6. *Warning devices*
- Rider-controlled industrial trucks shall be equipped with a clearly audible warning device.
- 10.10.7. *Crushing, shearing and trapping points*
- Relative moving parts present a hazard to the operator in his normal operating position.
- Such parts shall be separated by the minimum distances specified hereunder:
- places where the operator's fingers can be trapped: 25 mm,
 - places where the operator's hands or feet can be trapped: 50 mm,
 - places where the operator's arms or legs can be trapped: 100 mm.
- Alternatively it shall be considered a satisfactory solution if the danger points are adequately guarded.

⁽¹⁾ Chains and wire ropes are not considered as equally effective means of protection.

- 10.11. **Visibility**
Visibility on high-lift rider trucks.
This requirement specifies a procedure by which the visibility of unladen industrial trucks fitted with forks or platform ⁽¹⁾ may be ascertained in a direction through the mast and parallel to the forks.
- 10.12. **Environmental conditions**
- 10.12.1. *Noise*
The noise emission of a truck is to be measured in accordance with the following specifications:
- 10.12.1.1. Environmental noise
The maximum admissible noise level in the environment shall be 90 dB(A).
- 10.12.1.2. Noise at operator station
The maximum admissible equivalent noise level (Leq) at the operator's station shall be 90 dB(A).
- 10.12.2. *Operator's cabin*
- 10.12.2.1. If a cabin is fitted in lieu of an overhead guard it shall comply with the requirements of 10.10.1.
- 10.12.2.2. If a totally enclosed cabin is fitted with a heater, the heater's air intake shall be connected to a fresh air inlet.
- 10.12.2.3. Provision shall be made for adequate ventilation of the cabin.
- 10.12.2.4. If glass is used in the window apertures it shall be of the safety glass type.
- 10.13. **Attachments**
- 10.13.1. Attachments (e.g. clamps, side-shifters, etc.) shall be designed and manufactured in such a way that unintentional detachment and lateral displacement are prevented.

Movements of the attachment and its parts shall be mechanically limited at the extreme positions.
- 10.13.2. Clamping devices shall be so designed that the clamping pressure when in the neutral position is automatically sustained. In the event of malfunctions in the power supply system of an attachment unintentional movement of parts supporting a load shall not be possible, nor unintentional separation from the load.
- 10.13.3. If the attachment hydraulic circuit is equipped with its own adjustable pressure-relief valve it shall include means to prevent accidental loosening or unauthorized adjustment.
- 10.13.4. Hydraulic lines (flexible and rigid) and couplings shall be so designed that the possibility of damage from accidental contact with objects is avoided.

The hydraulic coupling and hydraulic pressure of the attachment shall be compatible with the truck.
- 10.13.5. Attachments shall as far as technically possible be so designed and fitted to the truck that the driver has a satisfactory view of the roadway and of the load-lifting member.

⁽¹⁾ Where trucks are fitted with attachments that may reduce visibility they shall be considered as partially loaded and driven as such.

- 10.13.6. **Crushing, sheering and trapping of attachments other than those which grip the load shall conform to the requirements laid down in 10.10.7.**
- 10.13.7. The combined load moment of an attachment and its load shall not exceed the rated load moment of the truck to which it is fitted. The stability of a lift truck/attachment combination together with the load shall be verified by the truck manufacturer or according to his instructions.
- When determining the residual lifting capacity of a truck/attachment combination, account shall also be taken of the impact that occurs when running up against the limit stops (e.g. with a side-shifter) under the nominal load.
- 10.14. **Steering shock restriction**
- The transmission of road shocks to the steering of sit-on and stand-on trucks shall be limited to such an extent as to avoid injury to the operator's hand or arm.
- 10.15. **Lights**
- Sit-on and stand-on trucks shall be so designed that it is possible to equip them when necessary with headlights, red lights and possibly a worklight mounted on a universal swivel.
11. **SPECIAL REQUIREMENTS**
- Trucks with elevating operator position and trucks specifically designed to travel with elevated loads.
- 11.1. **General requirements**
- Trucks shall be so designed that when operating under their special conditions (see Addendum D) their stability enables them to travel safely while the lift mechanism or load orientating mechanism is being actuated, or with the lift mechanism elevated, laden and unladen, or such lesser operations as the manufacturer has decided and has limited the truck performance accordingly by automatic devices.
- The following types of industrial trucks are excluded from Chapter 11:
- (a) trucks without lift (non-elevating operator platform and load carrier);
 - (b) low-lift order-picking trucks where the load elevated is just sufficient to facilitate transportation;
 - (c) medium-lift order-picking trucks where the operator's platform can only be elevated up to and including 1.20 m;
 - (d) 'walk-off' type order-picking trucks whereby the operator leaves the truck platform or pallet and enters into the storage racks in order to move loads on to the platform or pallet.
- 11.1.1. **Operating safety arrangements**
- 11.1.1.1. Where truck stability depends on reduction of speed and/or braking at a certain lift height (or heights), operation beyond those limits shall be automatically prevented.
- Where, above certain lift heights, the truck is only permitted to travel at creep speed (not more than 2.5 km/h), operation above this speed shall be automatically prevented.
- When a truck is designed to carry out three-way stacking it shall have a device which automatically prevents:

- (a) travelling at more than 2.5 km/h when the load is in the forward position;
- (b) horizontal displacements of the load when the appliance is travelling.

This requirement does not apply when the manufacturer guarantees by some other means the stability of the truck.

11.1.1.2. Trucks designed to operate with elevated operator position or with elevated load in a free ranging mode (outside the guided stacking aisles) shall:

- (a) be automatically prevented from travelling above 4 km/h when the operator position or the lifting mechanism is elevated more than 500 mm above its lowest position (see Figure 1);
- (b) be automatically prevented from travelling above 4 km/h when the operator position or lifting mechanism is elevated above 500 mm but not more than 2 500 mm above the lowest position, and restricted to creep speed (not more than 2.5 km/h) at these elevations when the steering is turned more than 10° from a straight ahead position (see Figure 1);
- (c) have traction automatically prevented or restricted to creep speed (not more than 2.5 km/h) when the operator position or the lifting mechanism is elevated more than 2 500 mm above its lowest position (see Figure 1);
- (d) except at creep speed have traction automatically prevented when the load elevating mechanism is being operated.

11.1.1.3. When any part of a truck mechanism is able to intrude laterally into the racking space, a device or devices shall be provided that prevents such movements while the truck is travelling, lifting or lowering, and similarly prevent travelling except at creep speed (not more than 2.5 km/h), when the mechanism is extended or extending.

11.1.1.4. At lift heights, where truck travel is restricted to creep speed (not more than 2.5 km/h), acceleration shall be automatically reduced to a rate not more than the maximum deceleration permitted by the manufacturer for that elevation.

11.1.2. *Service brakes*

11.1.2.1. For operations outside the guided stacking aisles, with the operator position or lifting mechanism not more than 500 mm above its lowest position, the brake drawbar drag shall comply with the requirements of 10.3.1, Group A, or alternatively the travel speed shall be automatically reduced to not more than 9 km/h (see Figure 1).

11.1.2.2. When the operator position or the lifting mechanism is positioned more than 500 mm above its lowest position, both within the guidance aisles and free-ranging, provided the braking capability is automatically related to speed, the brake drawbar drag 'F' (10.3.1) may vary simultaneously with the speed in accordance with the formulae.

11.1.3. *Safety requirements*

All controls and their mechanisms and systems that initiate movements shall be biased to the safe position (movements stopped) and designed to fail-safe. Where such an arrangement is not reasonably practicable, a warning system shall be fitted to indicate failure.

11.2. **Specific requirements for trucks with elevating operator position**

11.2.1. *Speed*

Trucks with an elevating operator position shall be so designed that their travelling speed in the laden condition when operating on level ground does not exceed 16 km/h (see Figure 1).

- 11.2.2. *Traction brakes*
- 11.2.2.1. Service brakes and parking brakes may be operated by a common system. Where this arrangement is used, failure of the system shall result in application of the brakes.
- 11.2.2.2. Service brakes and parking brakes may employ common mechanical arresting equipment (e.g. brake-shoes, cams and cam levers).
- 11.2.2.3. Brake actuation shall be by a control normally biased to the 'brake-on' position. Removal of the operating force shall automatically apply the brakes to give a drawbar drag consistent with stability (10.3.1, Group D). The extra braking required to operate above 9 km/h need not be so biased (11.1.2.1).
- 11.2.2.4. Brakes may be power-assisted, but it shall be possible to obtain the minimum braking specified in 10.3.4.1 (c) in the absence of the power-assistance source.
- 11.2.3. *Operating position*
- 11.2.3.1. The operator's position on trucks designed to operate above 1.2 m shall be provided with guard rails in accordance with the requirements laid down in 10.10.3.4.
- 11.2.3.2. Gates, doors, etc., shall be capable of opening only inwards, upwards and sidwards, and should preferably be self-closing. When the truck is designed to elevate the operator's position above 1.2 m, the gates, doors, etc., shall have a mechanism that prevents traction and elevation movements when the gates, doors, etc., are not properly in place.
- 11.2.3.3. In 'walk-on' type order-picking trucks where a pallet, etc., may be used as a walking surface, means shall be provided to prevent its inadvertent displacement. In addition, 'walk-on' type order-picking trucks elevating above 1.2 m from the ground shall be provided with means to prevent the operator falling from the platform when the pallet is not in place.
- 11.2.3.4. For 'walk-on' type order-picking trucks (11.2.3.3), where the operator position may be raised to heights of more than 1.2 m, the guard rails specified in 11.2.3.1 shall be extended to encompass the whole of the area accessible to the operator (and assistant if permitted by the design).
- 11.2.3.5. Where the enclosure of the operator position is such that an operator could become trapped, either the doors shall be designed to facilitate release from the outside or an alternative means of egress/access, such as a roof trapdoor, shall be provided.
- 11.2.3.6. The floor of the operator's platform shall be approximately horizontal, slip-resistant and, if primarily for outside use, designed to prevent the accumulation of water.
It shall be capable of withstanding a pressure of 1 800 N/m² and a mass of 100 kg distributed over an area of 0.16 m² at any part of its surface.
Where the floor is provided with glazing, it shall be of equivalent strength to the floor or be protected to a standard at least equivalent to the floor.
Where grated flooring is used, the holes or openings shall not allow a 20 mm diameter sphere to pass through. The section of each opening shall in no case exceed 400 mm².
- 11.2.3.7. The materials used in the construction of the operator position shall be difficult to ignite.
- 11.2.3.8. Where the sides of the operator's platform are fitted with glazing, the protection specified in 11.2.3.1 shall be extended across the glazing as appropriate.
- 11.2.4. *Overhead guard*
- An overhead guard meeting the requirements of 10.10.1 shall be fitted above the operating position. Alternatively, the requirement contained in 10.10.1.3.2 may be waived if an elevating arresting device is fitted on top of the overhead guard or on the

roof of the cabin. On hydraulic lifting mechanisms the pressure limiter may be used for this purpose if the overhead guard is of an adequate strength.

11.2.5. *Safety devices and constructional details*

11.2.5.1. A device or devices shall be fitted, or the controls so arranged to ensure that the operator (and his assistant if permitted by the design) ⁽¹⁾ are safely within the confines of the cabin or platform before any movements of the truck or platform can be initiated by the operator, and also to ensure that he/they cannot reasonably extend beyond the confines of the cabin or platform without cancelling truck movements.

11.2.5.2. Where the operator elevating mechanism employs wire ropes or chains, a slack wire rope or chain detecting device shall be fitted which automatically suspends the downward motion of the elevating mechanism of the operating position until fault conditions are corrected and the detecting/safety mechanism is reset.

The elevating mechanism shall be arranged to prevent wire ropes becoming entangled, twisted and displaced from their normal operating position.

11.2.5.3. The aggregate breaking load of the set of chains or wire ropes, as certified by the chain or wire rope manufacturer, shall be at least for chains 10 times, and for wire ropes 12 times the static operating load supported by all the chains or wire ropes together.

11.2.5.4. Safety of lifting equipment.

11.2.5.4.1. The truck shall be equipped with a device to prevent the operating position plummeting in the event of a breakdown or malfunction of the lifting system.

11.2.5.4.2. The requirements of 11.2.5.4.1 are considered to be fulfilled if one of the following precautions are taken:

- 11.2.5.4.2.1. — there is a catching mechanism provided,
— if at least one chain or one wire rope is used to ensure operation of the catching mechanism. This (these) shall comply with the requirements of 10.8.1.1 and 10.8.1.2 respectively.

These shall be in a no-load condition during normal operating conditions. The attachment point(s) shall be so designed as to be compatible with the shock of the safety device coming into action.

It shall not be possible for the operator to disengage this mechanism unless the descent rate is limited to 0.6 m/s.

11.2.5.4.2.2. Fully hydraulic lifting equipment

A device shall be provided which prevents descent in the event of a pipe fracturing or a hose bursting. This device shall be either attached to or incorporated in the lift cylinder.

11.2.5.4.2.3. Combined lifting systems (hydraulic and mechanical):

- the devices mentioned in 11.2.5.4.2.2 shall be applied to the hydraulic lifting mechanism,
— the mechanical lifting system shall have at least two identical chains or wire ropes whose safety factor shall comply with the requirements of 11.2.5.3.

The load shall be uniformly distributed between the chains or the wire ropes.

All effective steps shall be taken to ensure that in the event of breakage of one or more chains or wire ropes, the arrangement of the chain(s) or wire rope(s) and their anchorages remaining in use should be maintained without bringing about any deformation of the basic components of the appliance. The breakage of one chain or wire rope shall cause stopping of the movement which is taking place.

11.2.5.5. Where two control positions are embodied, one on the elevating section and one on the fixed section, it shall be necessary to prevent actuation of the fixed section

⁽¹⁾ Where an order-picking truck is fitted with multiple manning security devices, a lock-out master switch may be fitted to permit variations of the manning team. The switch shall be lockable by a key different to any other used on the truck.

controls before the elevating section controls are operative. However, the emergency lowering requirements specified in 11.2.5.8 shall still be applicable.

The fixed section control position shall be located clear of the area occupied by the elevating section control position when lowered.

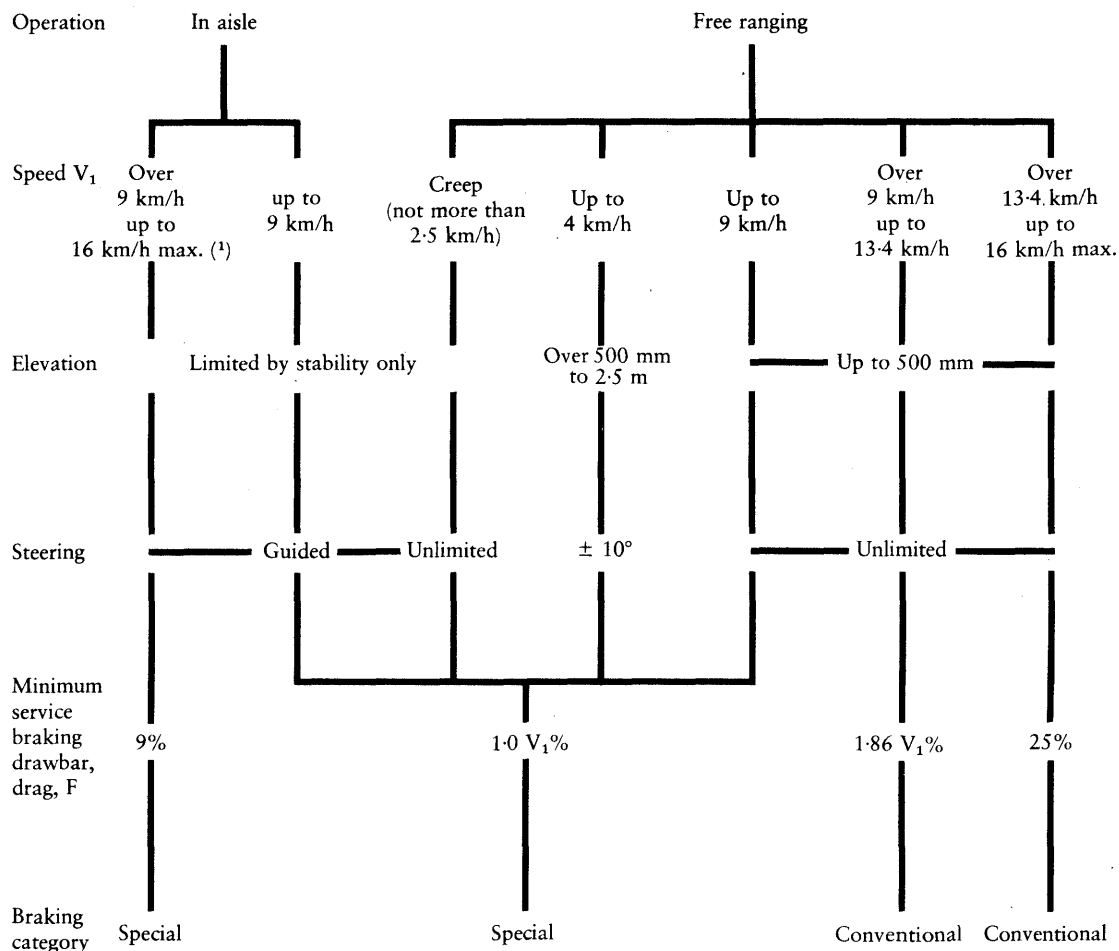
- 11.2.5.6. The energy source (normally the battery) shall be capable of being reliably disconnected from the truck traction, lifting and load manoeuvring systems by a means within easy reach of the operator regardless of the position of the operating cabin/head.
- The system shall be so designed that no danger will result from interruption of the power supply during descent.
- 11.2.5.7. Trucks that are designed to elevate the operator position above 2.5 m shall be provided with means by which the operator can reach the ground safely in the event of the operator position becoming fixed in the elevated position.
- 11.2.5.8. Trucks designed to elevate the operator position above 2.5 m shall be fitted with an emergency lowering control, operable from ground level even in the absence of any energy source. The control position shall be carefully selected so as to avoid any risk to the person who is operating from this position.
- 11.2.5.9. The lifting mechanisms shall be provided with travel limiting devices. One of these devices shall be an obligatory mechanical stop which prevents the lifting mechanism becoming disengaged at the top of its travel.
- Means shall also be provided to prevent the operator's position being accidentally disengaged from the lifting mechanism over the complete range of its movements.
- 11.2.5.10. Trucks with an operator position designed to elevate above 2.5 m shall be fitted with a warning light visible from ground level when the truck is lowering and travelling.
- 11.2.5.11. Trucks equipped with pneumatic tyres shall be fitted with a device or devices that minimize inclination and prevent loss of stability in the case of tyre failure.
- 11.2.6. *Information plates*
- 11.2.6.1. The capacity plate (10.1.2) shall clearly indicate not only the capacity/height relationships but also heights at which brake drawbar drag changes are automatically imposed.
- The capacity plate shall be permanently fixed and be clearly readable by the operator in his driving position.
- 11.2.6.2. In addition to the labelling requirements in 10.1 and elsewhere, the truck shall be fitted with a permanently fixed label clearly indicating the number of persons permitted on the operator's platform while the truck is in use.

12. DOCUMENTATION — OPERATING AND SERVICING INSTRUCTIONS

Each powered industrial truck (or by agreement of the user, each group of trucks) shall be accompanied by a book (or books) detailing full operating and servicing instructions.

The documentation need not necessarily be supplied at the same time as the truck.

FIGURE 1



(1) For non-elevating seated operator the 16 km/h maximum speed does not apply.

Addendum A

DEFINITION OF CAPACITY

1. INTRODUCTION

This addendum defines 'rated capacity' which facilitates the comparison of manufacturer's basic models. This rated capacity is related to a standardized lift height.

It also defines 'actual capacity' which relates to the rating of a truck when fitted with its operational mast. This actual capacity is derived from the relevant standard stability tests.

2. RATED CAPACITY

The manufacturer's rated capacity of a truck shall correspond to the maximum load Q ⁽¹⁾ which it is designed to carry and stack, on fork arms or platform, with a vertical double mast, the maximum lift height of which is equal to the standard lift height 'H', as specified in point 3, and with a standard load centre distance 'D', as specified in point 4, measured horizontally and vertically between the centre of gravity 'G' of the load and:

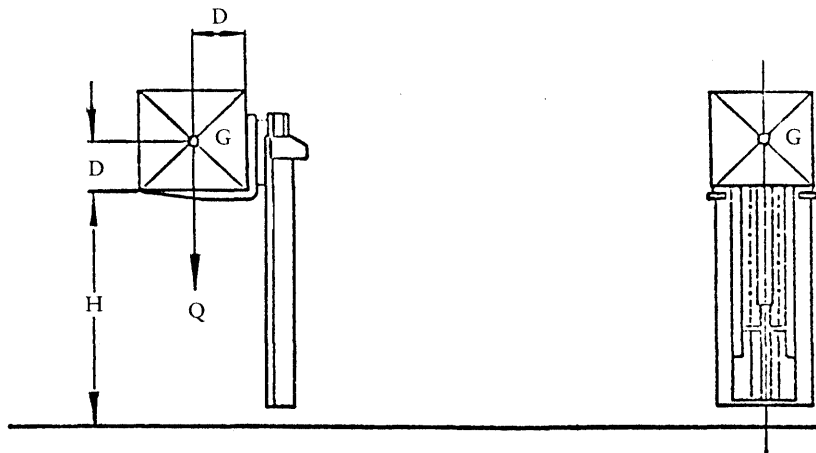
- (a) the front face of the fork shank;
- (b) the upper face of the fork blade (see Figure 1);

or equivalent dimensions in the case of trucks fitted with a platform.

Even if the truck does not utilize a double mast or does not lift to the standard lift height 'H' it shall still be given a rated capacity as if the mast was available.

FIGURE 1

- D = standard load centre distance
- G = load centre of gravity, positioned in the longitudinal plane of symmetry between the mast uprights
- H = standard lift height
- Q = load



⁽¹⁾ When a truck embodies facilities for an elevated operator an allowance of 90 kg shall be included in addition to the rated load 'Q'.

3. STANDARDIZED LIFT HEIGHTS

The standardized lift height is fixed as follows:

H = 2.5 m for pallet stackers and high-lift platform trucks having a width across fork arms or platform up to and including 690 mm.

H = 3.3 m for all other types of truck.

4. STANDARDIZED LOAD CENTRE DISTANCE

- 4.1. For series-produced counter-balanced trucks up to a capacity of 10 000 kg, delivered to countries using the international unit system (SI), the standardized load centre distances used for rating shall be the following:

Load Q	Standardized distances 'D'
Up to but excluding 1 000 kg	400 mm
From and including 1 000 kg up to but excluding 5 000 kg	500 mm
From and including 5 000 kg up to and including 10 000 kg	600 mm

— For all other trucks except side-loading fork-lift trucks, the standard load centre distance used for rating shall be 600 mm.

— Side-loading fork-lift trucks shall be rated at a load centre distance specified by the manufacturer.

— It is permissible to rate trucks for special applications with load centre distances related to the application.

5. ACTUAL CAPACITY

The actual capacity of a truck is derived from the appropriate stability tests and will vary with the different types and heights of mast fitted, and the different load centre distances (see point 4) used in rating. The rating shall be determined with standard fork arms or platform. Additional actual capacity ratings with removable attachments may also be established where permitted by the appropriate stability specification.

*Addendum B***CAPACITY PLATE DATA****1. INTRODUCTION**

This addendum is to facilitate the uniform provision of information on capacity plates.

The derivation of the capacity data is covered in Addendum A.

2. RATED CAPACITY

The rated capacity may be shown on the capacity plate and/or the identification plate.

When shown on the capacity plate the rating shall be in kilograms and shall be entered in such a way that it is not confused with the actual capacity entries.

e.g. 'Rated capacity = 6 000 kg'.

When shown on the identification plate it may form part of the manufacturer's model designation and may be expressed in tonnes or kilograms.

e.g. 'Model No XYZ/6·0'.

3. ACTUAL CAPACITY

The actual capacities, lift heights and load centre distances to be shown on the capacity plate shall comply with the following requirements:

3.1. The actual capacity at the truck maximum lift height and the standardized load centre distance shall always be shown.

Actual capacities of one or more other load centre distances shall also be shown if the truck design permits ⁽¹⁾.

3.2. When it is permissible to lift actual capacities greater than those in 3.1 to truck lift heights less than the maximum, these shall be shown at the associated lift heights and standardized load centre distance.

Actual capacities at one or more other load centre distances shall also be shown if the truck design permits ⁽¹⁾.

3.3. For special applications other actual capacities and load centre distances may also be shown.**4. ATTACHMENTS**

When a truck is fitted with one or more removable load-handling attachments as original equipment, the truck shall carry capacity information additional to that required in point 3. The actual capacities, lift heights and load centre distances with each attachment fitted shall be shown as follows:

4.1. The actual capacities at the truck maximum lift height (if the truck design permits, otherwise at the maximum permitted lift height) and the designed load centre distances shall always be shown.**4.2.** When it is permissible to lift actual capacities greater than those in 4.1. to truck lift heights less than the maximum, these shall be shown at their associated lift heights and designed load centre distance(s).

In addition, the capacity plate shall clearly identify the attachment to which the ratings apply.

⁽¹⁾ The additional load centre distance(s) shall preferably be standardized load centre distances and for trucks delivered in countries using SI units, one of these distances, if not already included, shall be 600 mm.

5. UNITS

The units (SI) used to express the ratings shall be:

- lift height: millimetres (mm),
- load: kilograms (kg),
- load centre distance: millimetres (mm).

6. MARKING

The details entered on the capacity plate may be in the form of a table or diagram.

*Addendum C***SPECIFICATION OF CONNECTORS**

1. **SPECIFICATION**
- 1.1. **Number of models**

This specification applies to three models, defined by their nominal current in amperes: 80, 160 and 320 amperes.
- 1.2. **Definitions**
- 1.2.1. *Nominal current*

The nominal current is the current in amperes that the connector is able to carry continuously without exceeding the allowable temperature rise indicated in 1.3.8.
- 1.2.2. *Emergency current*

The connector is not meant to break a current during normal use. The emergency current is the maximum current that the connector is able to break in case of a disconnection necessitated by exceptional or dangerous circumstances.
- 1.2.3. *Voltages*
- 1.2.3.1. **Maximum voltage**

The connectors shall be capable of being operated up to a maximum voltage of 150 volts, direct current; the maximum voltage shall be marked on the outside of the connector (1.3.11).
- 1.2.3.2. **Operating voltages**

The nominal voltages of traction batteries shall not exceed 96 volts.
- 1.3. **Manufacturing details**

Each connector shall comprise two connectable halves. Each half shall be capable of being fitted with a mounting bracket.
- 1.3.1. *Casings*

The casings shall be of adequate mechanical strength, fire resistant, non-absorbant and resistant to acid, battery gas and dilute bases (e.g. salt). They should be able to be coloured in all the normal colours.
- 1.3.2. *Contacts*

Each half-connector shall comprise two main contacts. Provision shall also be made for two auxiliary contacts. All these contacts shall be adequately protected against corrosion.

On all three models of connector the auxiliary contacts shall be able to carry a current of 20 amperes. They shall not make contact until after connection of the main contacts.
- 1.3.3. *Mechanical parts*

Mechanical parts shall be adequately protected against corrosion.
- 1.3.4. *Non-reversibility*

The casings shall have incorporated a non-removable device ensuring the non-reversibility of the two half-connectors to prevent any reversal of polarity.

1.3.5. *Insulation*

When the two half-connectors are separated, the contacts or current carrying parts shall not be able to come in contact with any metallic parts.

The insulation should be capable of withstanding temperatures from + 90 to - 20 °C.

Considering that the maximum temperature should not exceed 90 °C, the internal and external insulating materials can be chosen from class Y or higher, of recommendation No 85 of the International Electrotechnical Commission (1957).

1.3.6. *Degrees of protection*

1.3.6.1. When the two half-connectors are coupled:

— the assembly shall be protected against accidental contact of persons with live parts and against the introduction of middle-sized foreign bodies,

— the assembly shall be protected against the introduction of liquids when this assembly is tested in its normal operating attitude.

1.3.6.2. The half-connector connected permanently to the battery shall be protected against the accidental contact of persons with live parts and against the introduction of middle-sized foreign bodies.

These various protections shall conform to the degree of protection of Cenelec publication HD 365, namely:

IP 2*— Protection against the contact of fingers with live parts. Protection against the penetration of middle-sized foreign bodies.

IP 3*— Water falling in rain at an angle equal to or smaller than 60° (about 1 rad) with respect to the vertical shall have no harmful effect.

1.3.7. *Coding*

Each connector shall be arranged to be fitted, if needed, with coding means preventing the connection of a male half-connector with a female half-connector meant to operate on another voltage.

1.3.8. *Temperature rise*

The contacts, cable connecting parts, casings and mechanical parts, shall be able to withstand a maximum temperature of 90 °C (i.e. a temperature rise of 65 °C above an ambient temperature of 25 °C). The final temperature should never exceed 90 °C in cases of special operating conditions such as higher ambient temperatures, use of cables of smaller section, etc.

They should also be able to withstand a minimum temperature of - 20 °C.

1.3.9. *Cables*

The two half-connectors should be connected to the battery and to the truck equipment (or to charging circuits) by cables.

The following table indicates, for the three models of connectors, the maximum section of copper cables.

Nominal current (in amperes)	80	160	320
Maximum cable section (in mm ²)	16	35	95

Note:

Variations may be required if aluminium cables are used.

1.3.10. *Locking/manoeuvrability*

Any two half-connectors when joined shall be capable of being secured together by a locking device. This device shall be capable of being unlocked quickly in case of emergency.

The two half-connectors shall be able to be separated easily in any position; one section of the locking device to be fully dimensioned to ensure complete inter-changeability between designs. A grip may be devised to allow connection or disconnection. This grip may be combined with the locking device.

1.3.11. **Marking**

All connectors shall bear legibly and indelibly the following marks:

- manufacturer's name or trademark,
- maximum operating voltage (i.e. 150 V),
- nominal current (in amperes) (i.e. 160 A),
- the signs '+' and '-' corresponding to the contacts to be connected with the positive and negative poles of the battery.

2. **TESTS ON PROTOTYPES**

The following tests shall be carried out on the prototypes of the three models of connectors. Mass-produced connectors shall be guaranteed as being able to pass the same tests.

2.1. **Temperature tests**

The connector shall be connected by means of cables of the maximum allowable section. Cables shall be connected by one of the methods recommended by the connector manufacturer.

They should have a length of 2 m.

Tests shall be carried out under nominal current.

The test shall continue until temperatures are stable.

The rise in temperature shall be measured with thermocouples or by other methods of equivalent precision. The use of ordinary thermometers is prohibited.

Temperatures and temperature rise shall not exceed the values mentioned in 1.3.8.

Temperature rises with cables of lower sections may be quoted.

2.2. **Life test**

Two half-connectors being normally coupled, without current, shall be separated, then coupled again.

This test shall be repeated 5 000 times. After this test, the connector shall be able to pass the temperature tests described in 2.1.

2.3. **Test of disconnection under load**2.3.1. *Test of disconnection in overload conditions*

An assembly of two coupled half-connectors shall be connected to a source of direct current of 96 volts through a circuit having an inductance of 0.50 ± 0.05 millihenrys.

The connector shall carry the following currents:

- model 80 amperes: 200 amperes,
- model 160 amperes: 400 amperes,
- model 320 amperes: 800 amperes.

After the current is established, it shall be broken by separating the two half-connectors.

This test shall be carried out five times consecutively.

After this test, the connector shall be inspected for damage, then coupled again and submitted to the temperature test described in 2.1.

Failing to be able to couple or to pass the temperature test shall result in rejection.

2.3.2. *Test of disconnection under short-circuit conditions*

An assembly of two coupled half-connectors shall be connected to a source of direct current through an inductive circuit having an impedance such that the time constant of the circuit is 15 milliseconds and the current to be broken shall be four times the nominal current, when connected to a supply voltage of 96 volts.

The connector shall be capable of clearing any arcs which are drawn as a result of this emergency disconnection. It is not imperative that the two halves of the connector should remain serviceable after this test.

2.4. Immersion tests

Two coupled half-connectors, without cables, shall be immersed for four hours in a solution of sulphuric acid having a specific gravity of 1.10 ± 0.05 at ambient temperature. After rinsing in clear water and drying the two half-connectors should be able to mate correctly and to pass the temperature test described in 2.1.

This test shall be repeated in the same conditions, using a solution of potassium hydroxyde (caustic potash) of specific gravity 1.10 ± 0.05 .

The coupled half-connectors should be also suspended in hydrogen gas for a period of not less than 48 hours prior to being subjected to the dropping test (2.6).

2.5. Dielectric test

Each half-connector without cables shall be able to withstand, for one minute, a sine-wave alternating current, with a frequency between 25 and 100 hertz and voltage of 2 000 volts rms applied:

- between the two main contacts,
- between the auxiliary contacts, if any, and the main contacts,
- between all the contacts and the metallic parts of the connectors and the metallic parts fitted on the casing (if this casing is made of insulating material).

2.6. Dropping test

A half-connector shall be connected to two lengths of 1.50 m of cable of the maximum allowable section, the ends of which shall be located at 1 m above the ground.

The half-connector shall be dropped from a height of 2 m on to a concrete floor.

This test shall be carried out 25 times.

After these tests, no part of the connector shall show any cracks or permanent deformation.

The half-connector shall be able to mate correctly with another one.

*Addendum D***VALID OPERATING CONDITIONS FOR TRUCKS WITH ELEVATING OPERATOR POSITION
AND TRUCKS SPECIFICALLY DESIGNED TO TRAVEL WITH ELEVATED LOADS**

1. Valid unrestrained operating conditions for trucks which elevate/orientate the load and/or operator while travelling or travel with the load and/or operator elevated are:
 - (a) floors smooth and level, to the truck manufacturer's specification, and able to support the mass of the truck, operator and load in operation;
 - (b) floors free from foreign bodies and material which could affect the operation/stability of the truck;and when in a guided mode (overturning forces unrestrained):
 - (c) guide rails or similar devices which do not permit the longitudinal axis of the truck to deviate from the direction of the aisle by more than 2°.Operating conditions other than the above shall be agreed between all interested parties.
 2. **RESTRAINED OPERATION**

When a truck is restrained in its operating mode so that all overturning forces are resisted by external means (e.g. by truck rollers running in restraining rails fitted to the racking, the respective special stability tests for operation in the aisle are not necessary. However, the forces generated in operation, as advised by the truck manufacturer, shall be capable of being resisted by the equipment/devices of the static installation, and disengagement of the equipment while operating elevated in the aisles shall be prevented.
 3. **AISLE CLEARANCE**

When trucks are operated in their guided mode, the normal aisle safety widths associated with conventional trucks no longer apply.
-

ANNEX II

MANUFACTURER'S (OR IMPORTER'S) CERTIFICATE OF CONFORMITY IN RESPECT OF POWERED INDUSTRIAL TRUCKS

I, the undersigned

(Surname and christian name)

hereby certify that the powered industrial truck specified hereunder conforms in all respects to the requirements of the separate Directive

(Title and number of Directive)

.....

- 1. Category:
- 2. Manufacturer/importer:
- 3. Type:
- 4. Type number/serial number of powered industrial truck:
- 5. Year of manufacture:
- 6. Any additional information:
-
-

Date:

.....

(Signature)

.....

(Position)

ANNEX III

CONFORMITY MARK



1. The conformity mark shall be clearly visible and indelible. It shall be affixed directly beside or on the descriptive plate.
 2. The dimensions of the mark shall be so selected that the information on the mark is clearly legible and visible. The actual diameter of the circle described about the mark shall be at least 15 mm.
 3. The upper half of the conformity mark shall contain the number '3', it being the designed number of this Directive.
-

Proposal for a Council Directive amending for the first time Directive 76/768/EEC on the approximation of the laws of the Member States relating to cosmetic products

(Submitted by the Commission to the Council on 18 May 1979)

THE COUNCIL OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Economic Community, and in particular Article 100 thereof,

Having regard to the proposal from the Commission,

Having regard to the opinion of the European Parliament,

Having regard to the opinion of the Economic and Social Committee,

Whereas the implementation of Council Directive 76/768/EEC of 27 July 1976 on the approximation of the laws of the Member States relating to cosmetic products ⁽¹⁾ showed that certain amendments should be made to Annexes II, III and IV thereto;

Whereas, in order to protect public health, measures should be taken with regard to mandatory warnings on the labels of cosmetic products containing thioglycollic acid, its salts and esters;

Whereas the use of hydrogen peroxide is not restricted to oxidizing colouring agents for hair dyeing; whereas the use of this substance should therefore also be authorized for hair care products, with the requirement that certain warnings be printed on the label to safeguard health;

Whereas in certain circumstances it is not necessary to mention the formaldehyde content on the label when this substance is not used as an ingredient of a cosmetic product but is inevitably present as a residue from the processing of raw materials;

Whereas the field of application and/or use of hydroquinone should be specified;

Whereas the maximum authorized concentration of potassium or sodium hydroxide in depilatories should be specified;

Whereas a decision may be taken with regard to the substances listed in Part 1 of Annex IV to Directive 76/768/EEC in accordance with Article 5 thereof;

Whereas Parts 2 and 3 of Annex IV to the same Directive do not correspond to the list of colouring agents actually used in the preparation of cosmetic products; whereas this list should therefore be updated;

Whereas a list of substances authorized for use as preservatives can be drawn up on the basis of the latest scientific and technical research;

Whereas a procedure for updating the Annexes rapidly should be introduced;

Whereas the presence of traces of substances which cosmetic products must not contain according to Annex II to Directive 76/768/EEC is technologically inevitable with correct manufacturing processes; whereas therefore certain provisions should be made in this connection;

Whereas the English, German and Dutch versions of Directive 76/768/EEC contain typographical errors which should be corrected,

HAS ADOPTED THIS DIRECTIVE:

Article 1

Directive 76/768/EEC is amended in accordance with the following provisions.

Article 2

Annex II is amended as follows:

— Replace '350. Tetrabromosalicylanilides' by:

'350. Tetrabromosalicylanilides except as impurities of tribromosalicylanilide according to the criteria laid down in Part 1 of Annex III.'

⁽¹⁾ OJ No L 262, 17. 9. 1976, p. 169.

— Replace '351. Dibromosalicylanilides, e.g. metabromsalan* and dibromsalan*' by:

'351. Dibromosalicylanilides, e.g. metabromsalan* and dibromsalan* except as impurities of tribromosalicylanilide according to the criteria laid down in Part 1 of Annex III.'

— Replace '360. *Sassafras officinale* Nees' oil containing safrole' by:

'360. Safrole except for normal content in the natural essences used and provided the concentration in the finished product does not exceed 100 ppm.'

— Add:

'362 Chloroform.'

Article 3

1. Part 1 of Annex III is replaced by Annex 1 to this Directive.

2. Part 2 of Annex III is amended as follows:

(a) Reds

— In the third and sixth columns delete:

'E 180' against colouring agent No 10 corresponding to colour index number 15 850.

'E 420' against colouring agent No 26 corresponding to colour index number 77 015.

— In the second column, replace:

'15 630 (Ba)' by '15 630 : 1',

'15 630 (Sr)' by '15 630 : 3',

'15 865 (Sr)' by '15 865 : 3',

'45 170 (Ba)' by '45 170 : 1'.

(b) Oranges and yellows

For colouring agent No 23, replace the colour index number '45 395' in the second column by '45 396'.

(c) Greens and blues

For colouring agent No 4, corresponding to colour index number 44 090, enter the number 'E 142' in the third and sixth columns.

(d) Violets, browns, blacks and whites

Delete colouring agent No 8 corresponding to colour index number 77 005.

In the third and sixth columns delete the number 'E 153' for colouring agents Nos 12 and 13 corresponding to colour index numbers 77 266 and 77 267.

Add reference number '26' and enter number 'E 153' in the third and sixth columns corresponding to this reference number.

Article 4

1. Part 1 of Annex IV is replaced by Annex 2 to this Directive.

2. Part 2 of Annex IV is amended as follows:

(a) Reds

— Delete the following colouring agents:

Reference number	Colour index number
2	12 350
3	12 385
14	75 580

— For reference number 5, replace the numbers '15 500' and '15 500 (Ba)' by '17 200' and delete the reference to the field of application in the fourth column.

— For colouring agent No 6, replace '15 585 (Ba)' in the second column by '15 585: 1'.

(b) Oranges and yellows

— For reference number 2, replace colour index number '45 340' in the second column by '40 850' and add the number 'E 161g' in the third and sixth columns.

(c) Violets, browns, blacks and whites

Delete colouring agent No 8 corresponding to colour index number 77 718.

3. Part 3 of Annex IV is replaced by Annex 3 to this Directive.

Article 5

In Annex V:

— Replace '6. Zirconium and its derivatives' by:

'5. Zirconium and its compounds.

— Delete the following:

'7. Thiomersal* and phenylmercuric compounds (for use as preservatives in concentrated shampoos and creams containing non-ionic emulsifiers which render other preservatives ineffective; maximum concentration 0.003 % calculated as Hg).

Article 6

An Annex VI listing substances which may be used as preservatives in the manufacture of cosmetic products has been added. It is given in Annex 4 to this Directive.

Article 7

Article 4 is amended to read as follows:

'1. Without prejudice to their general obligations deriving from Article 2, Member States shall prohibit the marketing of cosmetic products containing:

- (a) (unchanged)
- (b) (unchanged)
- (c) (unchanged)
- (d) (unchanged)
- (e) preservatives other than those listed in the first part of Annex VI;
- (f) preservatives listed in the first part of Annex VI beyond the limits and outside the conditions laid down.

2. The presence of traces of the substances listed in Annex II may be allowed provided that it is technically unavoidable when correct manufacturing techniques are used and that it conforms with Article 2 of this Directive. The maximum authorized concentrations of these substances will be fixed — in accordance with the procedure provided for in Article 10 — by 31 December 1982 at the latest. On the other hand, the use of the substances listed in Annex II in the manufacture of cosmetic products is prohibited.'

Article 8

Article 5 is amended to read as follows:

'Until 31 December 1982, Member States shall accept the marketing of cosmetic products containing:

- (a) (unchanged)
- (b) (unchanged)
- (c) (unchanged)
- (d) (unchanged)
- (d) the preservatives listed in the second part of Annex VI within the limits and conditions laid down.

On 1 January 1983, these substances, colouring agents and preservatives shall:

- either be definitively permitted,
- or definitively prohibited (Annex II),
- or retained for a further period as specified in Annex IV or VI,
- or deleted from all Annexes to this Directive.'

Article 9

The second paragraph of Article 8 is amended to read as follows:

'2. The amendments necessary for adapting Annexes II and VI to technical progress shall be adopted in accordance with the same procedure.'

Article 10

1. The English language version is corrected in accordance with Annex 5 to this Directive.

2. The German language version is corrected in accordance with Annex 6 to this Directive.

3. The Dutch language version is corrected in accordance with Annex 7 to this Directive.

Article 11

1. Member States shall bring into force the provisions needed in order to comply with this Directive on 27 July 1979 and shall forthwith inform the Commission thereof.

2. Once notified of this Directive, Member States shall undertake to inform the Commission, in good time for the latter to make its own observations, of any other draft laws, regulations or administrative provisions which they intend to adopt in the field covered by this Directive.

Article 12

This Directive is addressed to the Member States.

ANNEX 1

ANNEX III

PART 1

List of substances which cosmetic products must not contain except subject to the restrictions and conditions laid down

Reference number	Substance	Restrictions			Conditions of use and warnings which must be printed on the label
		Field of application and/or use	Maximum authorized concentration in the finished cosmetic product	Other limitations and requirements	
a	b	c	d	e	f
1	Boric acid	(a) Talcs (b) Products for oral hygiene (c) Other products	(a) 5 % (b) 0.5 % (c) 3 %	(a) Not to be used in products for children under three years old	(a) Not to be used for babies
2	Thioglycollic acid and its salts and esters	a) Hair waving or straightening products: — home use — professional use (b) Depilatories (c) Other hair care products which are removed after application	(a) — 8 % ready for use pH ≤ 9.5 — 11 % ready for use pH ≤ 9.5 (b) 5 % pH ≤ 12.65 % (c) 2 % (percentages calculated as thioglycollic acid)		(a) Contains thioglycollic acid. Follow the instructions (b) Contains thioglycollic acid. Follow the instructions (c) Contains thioglycollic acid. Follow the instructions
3	Oxalic acid, its esters and alkaline salts	Hair treatment products	5 %		For hairdressers only
4	Ammonia		6 % calculated as NH ₃		Above 2%: Contains ammonia
5	Tosylchloramide sodium *		0.2 %		

Reference number	Substance	Restrictions			Conditions of use and warnings which must be printed on the label
		Field of application and/or use	Maximum authorized concentration in the finished cosmetic product	Other limitations and requirements	
a	b	c	d	e	f
6	Chlorates of alkali metals	(a) Toothpaste (b) Other uses	(a) 5 % (b) 3 %		
7	Dichloromethane		35 % When mixed with 1,1,1-trichloroethane, total concentration must not exceed 35 %	0.2% as maximum impurity content	For preparations in aerosol dispensers. Do not spray on a naked flame or any incandescent material
8	<i>o</i> and <i>m</i> -Phenylenediamines their N-substituted derivatives and their salts; N-substituted derivatives of <i>P</i> -phenylenediamines ⁽¹⁾	Oxidizing colouring agents for hair dyeing	6 % calculated as free base		Can cause an allergic reaction. Sensitivity test advisable before use. Contains phenylenediamines. Do not use to dye eyelashes or eyebrows
9	Methylphenylenediamines, their N-substituted derivatives and their salts ⁽¹⁾	Oxidizing colouring agents for hair dyeing	10 % calculated as free base		Can cause an allergic reaction. Sensitivity test advisable before use. Contains phenylenediamines. Do not use to dye eyelashes or eyebrows
10	Diaminophenols ⁽¹⁾	Oxidizing colouring agents for hair dyeing	10 % calculated as free base		Can cause an allergic reaction. Sensitivity test advisable before use. Contains diaminophenols. Do not use to dye eyelashes or eyebrows

⁽¹⁾ These substances may be used singly or in combination provided that the sum of the ratios of the levels of each of them in the cosmetic product at the maximum level authorized for each of them does not exceed 1.

Reference number	Substance	Restrictions			Conditions of use and warnings which must be printed on the label
		Field of application and/or use	Maximum authorized concentration in the finished cosmetic product	Other limitations and requirements	
a	b	c	d	e	f
11	Dichlorophen*		0.5 % maximum (except as a preservative)		Contains dichlorophen*. Not to be used for babies
12	Hydrogen peroxide	Hair care products	40 % volume, i.e. 12 % H ₂ O ₂		Contains x% hydrogen peroxide. Not to come into contact with eyes. Rinse eyes immediately if product comes into contact with them
13	Formaldehyde	Nail hardeners	5% calculated as formaldehyde		(a) Protect cuticles with grease or oil. Contains x% formaldehyde if concentration exceeds 0.05%
14	Hydroquinone ⁽¹⁾	Oxidizing colouring agents for hair dyeing	2%		Do not use to dye eyelashes or eyebrows. Rinse eyes immediately if product comes into contact with them. Contains hydroquinone
15	Potassium or sodium hydroxide	(a) Nail cuticle solvent (b) Hair straightener (c) Depilatories (d) Other uses as a neutralizer	(a) 5% by weight ⁽²⁾ (b) 2% by weight ⁽²⁾ (c) Up to pH 12.65 (d) Up to pH 11		(a) Avoid contact with eyes. Can cause blindness. Keep away from children (b) Avoid contact with eyes. Can cause blindness. Keep away from children
16	Lanolin				Contains lanolin

⁽¹⁾ These substances may be used singly or in combination provided that the sum of the ratios of the levels of the content of each of them in the cosmetic product at the maximum level authorized for each of them does not exceed 2.

⁽²⁾ The sum of the two hydroxides expressed by weight as sodium hydroxide.

Reference number	Substance	Restrictions			Conditions of use and warnings which must be printed on the label
		Field of application and/or use	Maximum authorized concentration in the finished cosmetic product	Other limitations and requirements	
a	b	c	d	e	f
17	α -Naphthol	Hair dye	0.5%		Contains α -naphthol
18	Sodium nitrite	Rust inhibitor	0.2%	Do not use with secondary amines	
19	Nitromethane	Rust inhibitor	0.3%		
20	Phenol and its alkaline salts	Soaps and shampoos	1% calculated as phenol		Contains phenol
21	Picric acid	Rust inhibitor	1%		Contains picric acid
22	Pyrogallol ⁽¹⁾	Hair dye	5%		Do not use to dye eyelashes or eyebrows. Rinse eyes immediately if product comes into contact with them. Contains pyrogallol
23	Quinine and its salts	(a) Shampoos (b) Hair lotions	(a) 0.5% calculated as quinine base (b) 0.2% calculated as quinine base		

⁽¹⁾ These substances may be used singly or in combination provided that the sum of the ratios of the levels of each of them in the cosmetic product at the maximum level authorized for each of them does not exceed 2.

Reference number	Substance	Restrictions			Conditions of use and warnings which must be printed on the label
		Field of application and/or use	Maximum authorized concentration in the finished cosmetic product	Other limitations and requirements	
a	b	c	d	e	f
24	Resorcinol ⁽¹⁾	(a) Hair dyes (b) Hair lotions (c) Shampoos	(a) 5% (b) 0.5% (c) 0.5%		(a) Can cause an allergic reaction. Contains resorcinol. Rinse hair well after application. Do not use to dye eyelashes or eyebrows. Rinse eyes immediately if product comes into contact with them (b) Can cause an allergic reaction. Contains resorcinol (c) Can cause an allergic reaction. Contains resorcinol. Rinse hair well after application
25	Ammonium sulphides, alkali and alkaline earth sulphides		2% in pastes 20% for monosulphides in aqueous solution without additive		
26	Zinc salts except for zinc salts of fatty acids, zinc 4-hydroxybenzene-sulphonate and zinc pyrithione		1% calculated as zinc		
27	Zinc 4-hydroxybenzene-sulphonate	(a) Astringent (b) Deodorant	(a) 6% calculated as the anhydrous substance (b) 6% calculated as the anhydrous substance		(a) Avoid contact with eyes (b) Do not spray into eyes

⁽¹⁾ These substances may be used singly or in combination provided that the sum of the ratios of the levels of the content of each of them in the cosmetic product at the maximum level authorized for each of them does not exceed 2.

Reference number	Substance	Restrictions			Conditions of use and warnings which must be printed on the label
		Field of application and/or use	Maximum authorized concentration in the finished cosmetic product	Other limitations and requirements	
a	b	c	d	e	f
28	Ammonium monofluorophosphate	Oral hygiene products	0.15% calculated as F. When mixed with other fluorine compounds permitted under this Annex, total F concentration must not exceed 0.15%		Contains ammonium monofluorophosphate
29	Sodium monofluorophosphate	Ditto	0.15% Ditto		Contains sodium monofluorophosphate
30	Potassium monofluorophosphate	Ditto	0.15% Ditto		Contains potassium monofluorophosphate
31	Calcium monofluorophosphate	Ditto	0.15% Ditto		Contains calcium monofluorophosphate
32	Calcium fluoride	Ditto	0.15% Ditto		Contains calcium fluoride
33	Sodium fluoride	Ditto	0.15% Ditto		Contains sodium fluoride
34	Potassium fluoride	Ditto	0.15% Ditto		Contains potassium fluoride
35	Ammonium fluoride	Ditto	0.15% Ditto		Contains ammonium fluoride

Reference number	Substance	Restrictions			Conditions of use and warnings which must be printed on the label
		Field of application and/or use	Maximum authorized concentration in the finished cosmetic product	Other limitations and requirements	
a	b	c	d	e	f
36	Aluminium fluoride	Ditto	0.15% Ditto		Contains aluminium fluoride
37	Stannous fluoride	Ditto	0.15% Ditto		Contains stannous fluoride
38	Hexadecyl-trimethyl-ammonium fluoride	Ditto	0.15% Ditto		Contains hexadecyl-trimethyl-ammonium fluoride
39	3-(<i>N</i> -Hexadecyl- <i>N</i> -2-hydroxyethylammonio) propylbis (2-hydroxyethyl) ammonium difluoride	Ditto	0.15% Ditto		Contains 3- <i>N</i> -Hexadecyl- <i>N</i> -2-hydroxyethylammonio) propylbis (2-hydroxyethyl) ammonium difluoride
40	<i>N N'N'</i> -Tris(polyoxyethylene)- <i>N</i> -hexadecylpropylenediamine dihydrofluoride	Ditto	0.15% Ditto		Contains <i>NN'N'</i> -tris(polyoxyethylene)- <i>N</i> -hexadecylpropylenediamine dihydrofluoride
41	Octadecyl-ammonium fluoride	Ditto	0.15% Ditto		Contains octadecyl-ammonium fluoride
42	Sodium fluorosilicate	Ditto	0.15% Ditto		Contains sodium fluorosilicate
43	Potassium fluorosilicate	Ditto	0.15% Ditto		Contains potassium fluorosilicate
44	Ammonium fluorosilicate	Ditto	0.15% Ditto		Contains ammonium fluorosilicate

Reference number	Substance	Restrictions			Conditions of use and warnings which must be printed on the label
		Field of application and/or use	Maximum authorized concentration in the finished cosmetic product	Other limitations and requirements	
a	b	c	d	e	f
45	Magnesium fluorosilicate	Ditto	0-15% Ditto		Contains magnesium fluorosilicate
46	1,3-Bis(hydroxymethyl)imidazolidine-2-thione	(a) Hair care preparations (b) Hair care preparations rinsed after use	(a) Up to 2% (b) From 2 to 8%	(a) Prohibited in aerosol dispensers (b) Ditto	(a) Contains 1,3-bis(hydroxymethyl)imidazolidine-2-thione (b) — Rinse hair thoroughly after use — Contains 1,3-bis(hydroxymethyl)imidazolidine-2-thione
47	Tribromosalicylanilide (e.g. Tribromsalan*)	Soap	1%	Purity criteria: 3,4,5 tribromosalicylanilide: 98 % maximum Other bromosalicylanilides: 2% maximum 4',5 dibromosalicylanilide: 0.1% maximum Inorganic bromide: 0.1% maximum expressed as Na Br	Contains tribromosalicylanilide'

ANNEX 2

ANNEX IV

PART 1

LIST OF SUBSTANCES PROVISIONALLY ALLOWED

Reference number	Substance	Restrictions			Conditions of use and warnings which must be printed on the label
		Field of application and/or use	Maximum authorized concentration in the finished cosmetic product	Other limitations and requirements	
a	b	c	d	e	f
1	Methanol	Denaturant for ethanol and isopropyl alcohol	5% Calculated as a % of ethanol and isopropyl alcohol		
5	2,3-Dihydroxypropyl 4-ammobenzoate		5 %		Contains 2,3-dihydroxypropyl 4-ammobenzoate
6	Quinolin-8-ol and bis (8-hydroxy-quinolinium) sulphate		0-3% in base	Not to be used in products applied after sunbathing. Not to be used in talcum powder for babies	Not to be used for babies
32	1,1,1 Trichloroethane (methyl chloroform)	Solvent for aerosol dispensers	35% When mixed with dichloromethane, total concentration must not exceed 35%		Do not spray on a naked flame or any incandescent material'

ANNEX 3

ANNEX IV

PART 3

(A) LIST OF COLOURING AGENTS PROVISIONALLY ALLOWED FOR COSMETIC PRODUCTS WHICH DO NOT COME INTO CONTACT WITH THE MUCOUS MEMBRANES**Reds**

11 215, 12 310, 12 420, 16 150, 18 050, 18 065, 18 810, 26 105, 45 100, 50 240 and Acid Red 195.

Oranges and yellows

11 020, 11 021, 11 680, 11 700, 11 710, 13 065, 16 230, 18 690, 18 736, 19 120, 21 230, 71 105.

Blues and greens

10 006, 10 020, 42 045, 42 080, 44 025, 62 095, 63 000, 74 100, 74 220, 74 350, 77 420, bleu de bromothymol, vert de bromocrésol.

Violets, browns, blacks and whites

12 010, 12 480, 42 555, 46 500, 50 420, 51 319, 61 710, Brown FK.

(B) LIST OF COLOURING AGENTS PROVISIONALLY ALLOWED FOR COSMETIC PRODUCTS WHICH COME INTO CONTACT ONLY BRIEFLY WITH THE SKIN**Reds**

11 210, 12 459, 12 485, 12 512, 12 513, 12 715, 14 895, 14 905, 16 045, 18 125, 18 130, 23 266, 24 790, 27 300, 27 306, 28 160, 45 110, 45 150, 45 220, 60 710, 62 015, 69 025, 71 100, 73 312, 73 915, Pigment Red 144, Pigment Red 166, Pigment Red 170, Pigment Red 188.

Yellows and oranges

11 725, 11 730, 11 765, 11 767, 11 855, 11 870, 12 055, 12 140, 12 700, 12 790, 14 600, 14 690, 15 970, 18 820, 20 040, 21 096, 21 100, 21 105, 21 108, 21 110, 21 115, 22 910, 23 900, 25 135, 25 220, 26 090, 29 020, 40 215, 41 000, 48 040, 48 045, 48 055, 56 205, 75 660, 77 199, 77 878, Acid Yellow 127, Pigment Yellow 93, Pigment Yellow 98, Pigment Orange 31, 77 955.

Blues and greens

12 775, 34 230, 42 052, 42 085, 42 095, 42 100, 50 315, 50 405, 52 015, 52 020, 61 135, 61 505, 61 525, 61 585, 62 005, 62 045, 62 105, 62 560, 69 810, 74 180, 74 255, Solvent Blue 2, Solvent Blue 19, Acid Blue 82, Acid Blue 181, Acid Blue 272.

Violets, browns, blacks and whites

14 805, 17 580, 20 285, 20 470, 21 010, 25 410, 42 510, 42 520, 42 535, 42 650, 45 175, 50 325, 60 010, 60 730, 61 105, 62 030, Acid Brown 19, Acid Brown 82, Disperse Violet 23, Acid Brown 104, Acid Brown 106, Pigment Violet 37, Pigment Brown 30.

ANNEX 4

'ANNEX VI

LIST OF PRESERVATIVES WHICH COSMETIC PRODUCTS MAY CONTAIN

PREAMBLE

1. Preservatives are substances which may be added to cosmetic products, in the maximum concentrations authorized by this Annex, for the primary purpose of inhibiting the development of micro-organisms in such products.
2. The substances marked with an asterisk may also be added to cosmetic products in higher concentrations for specific purposes, e.g. as deodorants in soaps or as anti-dandruff agents in shampoos. In addition to their preservative function, therefore, they can also have antiseptic, antifungal or other properties.
3. Other substances used in the formulation of cosmetic products also have anti-microbial properties and thus help in the preservation of the products, as, for instance, many essential oils and some alcohols. These substances are not included in this Annex.
4. For the purposes of this list:
 - 'Salts' is taken to mean salts of the cations sodium, potassium, calcium, magnesium, ammonium and ethanolamines; salts of the anions chloride, bromide, sulphate, acetate.
 - 'Esters' is taken to mean esters of methyl, ethyl, propyl, isopropyl, butyl, isobutyl, phenyl.

PART 1

LIST OF DEFINITELY PERMITTED SUBSTANCES

Reference number	Substances	Maximum authorized concentration	Limitations and requirements	Conditions of use and warnings which must appear on the label
1	Benzoic acid, salts and esters*	0.5%		
2	Propionic acid and its salts	2% (acid)		
3	Salicylic acid and its salts*	0.5% (acid)	Not to be used in preparations for children, except for shampoos	
4	Sorbic acid and its salts*	0.6% (acid) Not to be cumulated with the concentration specified for esters		
5	Formaldehyde*	0.2% (except for products for oral hygiene) 0.1% (products for oral hygiene) expressed as free formaldehyde	Prohibited in aerosol dispensers, except for foams	Contains formaldehyde if the concentration exceeds 0.05%
6	2,2'-Dihydroxy-3,3',5,5',6,6'-hexachlorodiphenylmethane* (Hexachlorophene)	0.1%	Prohibited in products for children and intimate hygiene products	Not to be used for babies. Contains hexachlorophene
7	<i>o</i> -Phenylphenol and its salts*	0.2% expressed as phenol		
8	Pyridine-1-oxide-2-thiol (zinc pyrithione)	0.5%	Only in products rinsed off after use	

Reference number	Substances	Maximum authorized concentration	Limitations and requirements	Conditions of use and warnings which must appear on the label
9	Inorganic sulphites and bisulphites*	0.2% expressed as free SO ₂		
10	Sodium iodate	0.1%	Only for products rinsed off after use	-
11	Chlorobutanol	0.5%	Prohibited in aerosols	Contains chlorobutanol

PART 2

LIST OF PROVISIONALLY PERMITTED SUBSTANCES

Reference number	Substances	Maximum authorized concentration	Limitations and requirements	Conditions of use and warnings which must appear on the label
1	6-Acetoxy-2,4-dimethyl-1,3-dioxane (Dimethoxane)	0.2%		
2	Boric acid*	3.0%	Not to be used in preparations for children under three years of age, since there may be absorption of products that come into contact with the mucous membranes	Not to be used for babies
3	p-Chlorophenyl-a-glycerylether* (Chlorphenesin)	0.5%		
4	Dehydroacetic acid and its salts	0.6% (acid)		
5	Formic acid*	0.5% (acid)		
6	p-Hydroxybenzoic acid, salts and esters except benzyl ester*	0.4% (acid) for one ester 0.8% (acid) for mixtures of esters		
7	p-Hydroxybenzoic acid, benzyl ester	0.1% (acid)		
8	1,6-Di(4-amidinophenoxy)-n-hexane and its salts (including isethionate + p-hydroxybenzoate)*	0.1%		
9	1,6-Di(4-amidino-2-bromophenoxy)-n-hexane and its salts (including isethionate)	0.1%		

Reference number	Substances	Maximum authorized concentration	Limitations and requirements	Conditions of use and warnings which must appear on the label
10	1,3-Di(4-amidino-2-bromophenoxy)-n-propane and its salts (including isethionate)	0.1%		
11	Sodium ethylmercurithiosalicylate (Thiomersal)	0.007% (of Hg) If mixed with other mercurial compounds authorized by this Directive, the maximum concentration of Hg remains fixed at 0.007% 0.003% (of Hg) If mixed with other mercurial compounds authorized by this Directive, the maximum concentration of Hg remains fixed at 0.003%	For eye make-up only Only in creams with non-ionic bases and in concentrated shampoos where other preservatives are ineffective	Contains ethylmercurithiosalicylate Contains ethylmercurithiosalicylate
12	Phenylmercury and its salts (including borate)	Ditto	Ditto	Contains phenylmercurial compounds
13	Sorbic acid, esters*	0.5% (acid) Must not be cumulated with the concentration specified for the acid and its salts		
14	Undecylenic acid: salts, esters, the amide, the mono- and di-ethanolamides and their sulphosuccinates*	0.2% (acid)		
15	Usnic acid and its salts (including the copper salt)*	0.2%		
16	5-Amino-1,3-di(2-ethylhexyl)-hexahydro-5-methylpyrimidine* (Hexetidine)	0.2%		
17	Benzylformal	0.2%		
18	2-Benzyl-4-chlorophenol (Clorofene)	0.2%		

Reference number	Substances	Maximum authorized concentration	Limitations and requirements	Conditions of use and warnings which must appear on the label
19	5-Bromo-5-nitro-1, 3-dioxane*	0.1%	Only for products rinsed off after use	
20	2-Bromo-2-nitropropane-1, 3-diol (Bronopol)*	0.1%		
21	3,3'-Dibromo-5-5'-dichloro-2-2'-dihydroxydiphenyl methane* (Bromophen)	0.1%		
22	Tetra bromo-o-oresol*	0.3%		
23	Chloracetamide	0.3%		
24	3,4-Dichlorobenzyl alcohol	0.15%		
25	3,4,4'-Trichlorocarbanilide*	0.2%		
26	4-Chloro-m-cresol*	0.2%		
27	4,4'-Dichloro-3-trifluoromethylcarbanilide* (Halocarbon)	0.3%	Maximum concentration in aerosols: 0.2%	
28	2,4,4'-Trichloro-2'-hydroxydiphenylether* (Triclosan)	0.5%		
29	5,5'-Dichloro-2-2'-dihydroxydiphenylmethane*	0.2%		
30	N-(Trichloromethylthio)-4-cyclohexene-1,2-dicarboximide* (Captan)	0.5%		
31	1,6-Di(N-p-chlorophenyl-N'-diguano)-n-hexane, digluconate, diacetate and dihydrochloride* (Chlorhexidine)	0.3%		

Reference number	Substances	Maximum authorized concentration	Limitations and requirements	Conditions of use and warnings which must appear on the label
32	p-Chloro-m-xylene*	0.5%		
33	Dichloro-m-xylene*	0.1%		
34	Paraformaldehyde	0.2% (except products for oral hygiene) 0.1% (products for oral hygiene) Concentrations calculated as theoretically available formaldehyde. Not to be cumulated with the concentration specified for formaldehyde	Prohibited in aerosol dispensers, except for foams	Contains formaldehyde if the concentration exceeds 0.05%
35	8-Hydroxyquinoline and its salts	0.3%	Not to be used in products applied after sunbathing, nor in talcum powders for babies	Not to be used for babies
36	Tri(β -hydroxyethyl)-hexahydrotriazine	0.3%		
37	Imidazolidinyl urea	0.6%		
38	4-Isopropyl 3-methyl phenol	0.1%		
39	N-Methylolchloracetamide	0.3%		
40	Monomethylol-dimethylhydantoin*	0.2% expressed as free formaldehyde or theoretically available formaldehyde	Only for products rinsed off after use	
41	Pyridine-1-oxide-2-thiol-sodium salt (Sodium pyrithione)*	0.5%		

Reference number	Substances	Maximum authorized concentration	Limitations and requirements	Conditions of use and warnings which must appear on the label
42	bis(Pyridine-1-oxide)-2,2'-disulphide, addition product with magnesium sulfate trihydrate	0.5%		
43	Poly(hexamethylene diguanide) hydrochloride*	0.3%		
44	Phenoxyethanol*	1.0%		
45	Hexamethylenetetramine* (Methenamine)	0.2% expressed as free formaldehyde or theoretically available formaldehyde		
46	5-chloro-2-methyl-4-isothiazoline-3-one + 2-methyl-4-isothiazoline-4-one, with magnesium and calcium chloride (Kathon CG)	0.005%		
47	2-Hydroxypyridine-1-oxide*	0.5%	Only for products rinsed off after use	
48	Di-(N-oxopyridyl-2-thio) aluminium camphosphonate	0.2%		
49	1-(3-chloroallyl)-3,5,7-triaza-1-azonia adamantane chloride (Dowicil 200)	0.2%		
50	1-Imidazolyl-1-(4-chlorophenoxy) 3,3-dimethylbutane-2-one	2.0%		
51	Dimethylol-dimethylhydantoin*	0.2% expressed as free formaldehyde or theoretically available formaldehyde		
52	Benzyl alcohol*	1%		

Reference number	Substances	Maximum authorized concentration	Limitations and requirements	Conditions of use and warnings which must appear on the label
53	Dodecylguanidine acetate*	0.5% 0.1%	For products rinsed off after use For other uses	
54	Diisobutyl phenoxy ethoxy ethyl dimethylbenzylammonium chloride	0.1%		
55	Alkyl (C8-C18) dimethylbenzyl ammonium chloride, bromide, saccharinate	0.5%		
56	Alkyl (C12-C22) trimethyl ammonium bromide, chloride	0.1%		

ANNEXE 5 — ANNEX 5 — ANHANG 5 — ALLEGATO 5 — BIJLAGE 5 — BILAG 5

CORRECTIONS TO ENGLISH TEXT OF COUNCIL DIRECTIVE 76/768/EEC OF 27 JULY 1976

ANNEX II (the following points read as indicated):

2. 2-Acetoxyethyltrimethylammonium hydroxide (acetylcholine) and its salts
5. [4-(4-Hydroxy-3-iodophenoxy)-3,5-diiodophenyl] acetic acid and its salts
29. 2-Amino-1,2-bis(4-methoxyphenyl)ethanol and its salts
34. Imperatorin (9-(3-methylbut-2-enyloxy)furo[3,2-g]chromen-7-one
39. Antibiotics, with the exception of that given in Annex V
42. Apomorphine (5,6,6a,7-tetrahydro-6-methyl-4H-dibenzo[de,g]quinoline-10,11-dihydric alcohol) and its salts
48. Benzimidazol-2(3H)-one
49. Benzazepines and bezodiazepines
50. 1-Dimethylaminomethyl-1-methylpropyl benzoate (amylocaine) and its salts
51. 2,2,6-Trimethyl-4-piperidyl benzoate (benzamine) and its salts
52. Isocarboxazid*
72. Nitroderivatives of carbazole
80. Diphenoxylate* hydrochloride
86. *N,N*-bis(2-chloroethyl)methylamine *N*-oxide and its salts
91. Chlormezanone*
95. 2-[2-(4-Chlorophenyl)-2-phenylacetyl]indan-1,3-dione (chlorophacinone — ISO)
112. 2- α -Cyclohexylbenzyl(*N,N,N',N'*-tetraethyl)trimethylenediamine (phenetamine)
117. *O,O'*-Diacetyl-*N*-allyl-*N*-normorphine
119. 5-(α , β -Dibromophenethyl)-5-methylhydantoin
120. *N,N'*-Pentamethylenebis(trimethylammonium) salts, e.g. pentamethonium bromide*
121. *N,N'*-[(Methylimino)diethylene]bis(ethyltrimethylammonium) salts, e.g. azamethonium bromide*
124. *N,N'*-Hexamethylenebis(trimethylammonium) salts, e.g. hexamethonium bromide*
128. 2-Diethylaminoethyl 3-hydroxy-4-phenylbenzoate and its salts
131. *O,O'*-Diethyl *O*-4-nitrophenyl phosphorothioate (parathion—ISO)
132. [Oxalylbis(iminoethylene)]bis[(*o*-chlorobenzyl)diethylammonium] salts, e.g. ambenonium chloride*
143. 1,1-Bis(dimethylaminomethyl)propyl benzoate (amydracaine, alypine) and its salts
156. *N*-(3-Carbamoyl-3,3-diphenylpropyl)-*N,N*-diisopropylmethylammonium salts, e.g. isopropamide iodide*
160. 5,5-Diphenyl-4-imidazolidone

196. (1R,4S,5R,8S)-1,2,3,4,10,10-Hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-1,4:5,8-dime-
thanonaphthalene (endrin — ISO)
204. Ethyl bis(4-hydroxy-2-oxo-1-benzopyran-3-yl) acetate and salts of the acid
207. 4,4'-Dihydroxy-3,3'-(3-methylthiopropylidene)dicoumarin
214. Decamethylenebis(trimethylammonium) salts, e.g. decamethonium bromide
217. α -Santonin [(3S,5aR,9bS)-3,3a,4,5,5a,9b-hexahydro-3,5a-9-trimethylnaphtho [1,2-b]furan-
2,8-dione]
234. 3,4-Dihydro-2-methoxy-2-methyl-4-phenyl-2H,5H-pyrano[3,2-c]-[1]benzopyran-5-one (cyclo
cyclocoumarol)
243. 3-(1-Naphthyl)-4-hydroxycoumarin
268. Phenol and its alkali salts, excluding the exceptions listed in Annex III
271. 2-Phenylindan-1,3-dione (phenindione)
276. Tetraethyl pyrophosphate; TEPP (ISO)
284. α -Piperidin-2-ylbenzyl acetate laevorotatory threoform (levophacetoperane) and its salts
307. Sulphonamides (sulphanilamide and its derivatives . . .) and their salts (rest of entry is correct)
313. Xylometazoline* and its salts
346. 2-[4-Methoxybenzyl-N-(2-pyridyl)amino]ethyl dimethylamine maleate
358. Furo[3,2-g]chromen-7-one and its . . . (rest of entry is correct)
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ANNEXE 6 — ANNEX 6 — ANHANG 6 — ALLEGATO 6 — BIJLAGE 6 — BILAG 6

ÄNDERUNGEN DES DEUTSCHEN TEXTES DES BESCHLUSSES 76/768/EWG DES RATES VOM
27. JULI 1976

ANHANG II (Nachstehende Punkte sollten wie folgt gelesen werden):

51. 2,2,6-Trimethyl-piperidin-4-yl-benzoat
67. Phenylbutazonum*
72. Nitroderivate des Carbazols
81. 2,4-Diaminoazobenzol-hydrochlorid-citrat (Chrysoidin-hydrochlorid-citrat)
128. 2-Diäthylaminoäthyl-4-phenyl-3-hydroxy-benzoat und seine Salze
130. 3-Diäthylaminopropyl-cinnamat
132. N,N'-Bis-(diäthyl)-N,N'-bis-(o-chlorbenzyl)-N,N'-(4,5-dioxo-3,6-diaza-octamethylen)-diammonium-Salze (z. B. Ambenonii chloridum*)
143. 1,1-Bis-(dimethylaminomethyl)-propyl-benzoat (Amydracaine) und seine Salze
156. N-(4-Amino-4-oxo-3,3-diphenyl-butyl)-...
196. ... (Endrin)
204. Äthyl-2,2-bis-(4-hydroxy-3-cumarinyl)-...
216. 2-Isopropyl-4-pentenoyl-harnstoff (Apronalid)
234. 3,4-Dihydro-2-methoxy-2-methyl-4-phenyl-2H,5H-pyrano [3,2-c] [1] benzopyran-5-on (Cyclocumarol)
254. Acenocoumarolum*
281. Physostigma venenosum Balf.
284. (—)-L-Threo — α -phenyl-2-piperidinomethanol-acetat (Levophacetoperan) und seine Salze
318. Glycoside der Thevetia neriifolia Juss.
347. Pyribenzaminum*
340. p-tert.-Butyl-phenol und seine Derivate
341. p-tert.-Butyl-brenzcatechin
358. Eurocumarine [z. B. Trioxysalenum* 8-Methoxypsoralen], ausgenommen normale Gehalte in natürlichen ätherischen Ölen
360. Sassafras officinale Nees, Öl, safrolhaltig

ANHANG III (Erster Teil):

- | | |
|--|---|
| 4. Chlorobutanolum | Spalte e:
In Aerosolpackungen verboten |
| 9. o-,m-Phenylendiamine, ihre N-substituierten Derivate und ihre Salze. N-substituierte Derivate des p-Phenylendiamins | Spalte c:
Oxydations-Haarfärbemittel |
| 10. o-,m-,p-Toluyldiamine, ihre N-substituierten Derivate und ihre Salze | Spalte c:
Oxydations-Haarfärbemittel |

11. Diaminophenole	Spalte c: Oxydations-Haarfärbemittel
	Spalte f: Erzeugnis kann eine allergische Reaktion hervorrufen. Vorherige Allergieprobe ratsam. Enthält ...
13. Wasserstoffperoxid	
15. Hexachlorophenum	Spalte f: Nicht zur Babypflege verwenden. Enthält Hexachlorophen.
16. Hydrochinon	Spalte f: Nicht zur Färbung von Wimpern und Augenbrauen verwenden. Sofort Augen ...
19. α -Naphthol	Spalte c: Oxydations-Haarfärbemittel
24. Pyrogallol	Spalte c: Oxydations-Haarfärbemittel
26. Resorcin	Spalte c: a) Oxydations-Haarfärbemittel
	Spalte f: a) Erzeugnis kann eine allergische Reaktion hervorrufen. Enthält Resorcin. Nach Anwendung die Haare gut spülen. Nicht zur Färbung von Wimpern und Augenbrauen verwenden. Sofort ...

ANHANG III (Zweiter Teil):

d) **Violett, braun, schwarz und weiß**

Nr. 21; 77 891; E 171; Titandioxid (und seine Gemische mit Glimmer)

Nr. 23; 75 170; Guanin oder Perlglanz-Mittel

ANHANG IV (Erster Teil):

5. Monoglycerinester der p-Aminobenzoesäure	Spalte f: Enthält Monoglycerinester der p-Aminobenzoesäure
6. 8-Quinolinol und sein Sulfat	
7. Ammoniummonofluorophosphat	Spalte f: Enthält Ammoniummonofluorophosphat
8. Natriummonofluorophosphat	Spalte f: Enthält Natriummonofluorophosphat
9. Kaliummonofluorophosphat	Spalte f: Enthält Kaliummonofluorophosphat
10. Calciummonofluorophosphat	Spalte f: Enthält Calciummonofluorophosphat
17. Cetylamin-hydrofluorid (Hexadecylamin-hydrofluorid)	Spalte f: Enthält Cetylaminhydrofluorid
18. Bis-(hydroxyäthyl)-aminopropyl-N-hydroxyäthyl- oktadecylamin-dihydrofluorid	Spalte f: Enthält Bis-(hydroxyäthyl)-aminopropyl-N-hydroxyäthyl- oktadecylamin-dihydrofluorid

19. N, N', N'-Tri-(polyoxyäthylen)-N-hexadecyl-propylen-diamin-dihydrofluorid	Spalte f: Enthält N',N',N'-Tri-(polyoxyäthylen)-N-hexadecyl-propylen-diamin-dihydrofluorid
20. Oktadecylamin-hydrofluorid	Spalte f: Enthält Oktadecylamin-hydrofluorid
26. 1,3-Bis(hydroxymethyl)-imidazolidin-2-thion	Spalte e: a) in Aerosolpackungen verboten b) idem Spalte f (a und b): Enthält 1,3-Bis-(hydroxymethyl)-imidazolidin-2-thion
27. 1,3-Bis-(hydroxymethyl)-thioharnstoff	Spalte f: Enthält 1,3-Bis-(hydroxymethyl)-thioharnstoff
29. 1-Hydroxymethylimidazolidin-2-thion	Spalte f: Enthält 1-Hydroxymethylimidazolidin-2-thion
30. 1-(Morpholinomethyl)-thioharnstoff	Spalte f: Enthält 1-(Morpholinomethyl)-thioharnstoff
31. 1,3-Bis-(Morpholinomethyl)-thioharnstoff	Spalte f: Enthält 1,3-Bis-(Morpholinomethyl)-thioharnstoff
32. 1,1,1-Trichloräthan (Methylchloroform)	Spalte c: Aerosolpackungen
33. Tribromsalicylanilid (zum Beispiel Tribromsalanum*)	Spalte f: Enthält Tribromsalicylanilid

ANHANG IV (Zweiter Teil):

Fußnote ⁽²⁾ zur Überschrift:

... ,daß der Farbstoff nicht zur Herstellung von kosmetischen Mitteln verwendet werden darf, die mit den Schleimhäuten des Auges in Berührung kommen können ...

d) **Violett, braun, schwarz und weiß**

Nr. 6; 77 163; Wismutoxichlorid (und seine Verbindungen mit Glimmer)

ANHANG V

4. p-Phenylendiamin und seine Salze

ANNEXE 7 — ANNEX 7 — ANHANG 7 — ALLEGATO 7 — BIJLAGE 7 — BIJLAG 7

LIJST VAN CORRECTIES OP DE NEDERLANDSE TEKST VAN RICHTLIJN 76/768/EEG VAN
DE RAAD VAN 27 JULI 1976

BIJLAGE II	<i>Wordt gelezen:</i>
15. ...Rauwolfia	Rauwolfia
34. ...genzopyran	benzopyran
182. Etheenoxyde	Ethyleenoxide
215. Ipecacuanha Uragoga Bailloen	Uragoga ipecacuanha Baill.
220. Babituurzuur	Barbituurzuur
221. ...bijlage IV	bijlagen IV en V
250. ...alkalische zouten	alkalizouten
268. ...alkalische zouten	alkalizouten
291. Prunus Laurocerasus	Prunus laurocerasus
314. Tetrachlooretheen	Tetrachloorethyleen
315. Tetrachloorkoolstof	Tetrachloorkoolstof
340. p-butyltert.-	p-tert. butyl . . .
341. p-butyl tert.-	p-tert. butyl . . .
BIJLAGE III (eerste deel):	<i>Wordt gelezen:</i>
4. kolom e: ...aerosolgeneratoren	...spuitbussen
8. kolom b: Methyleenchloride	Dichloormethaan
13. kolom b: Waterstofperoxyde	Waterstofperoxide
14. kolom c: ...aerosolgeneratoren	...spuitbussen
26. kolom b en f: resorcine	resorcinol
