

~~DIRECTIVE 2006/42/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL~~
~~of 17 May 2006~~
~~on machinery, and amending Directive 95/16/EC (recast)~~
Proposal for a
REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL
on machinery products

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ANNEX Ⅲ**ESSENTIAL HEALTH AND SAFETY REQUIREMENTS RELATING TO THE DESIGN AND CONSTRUCTION OF MACHINERY PRODUCTS****2. SUPPLEMENTARY ESSENTIAL HEALTH AND SAFETY REQUIREMENTS FOR CERTAIN CATEGORIES OF MACHINERY PRODUCTS**

Foodstuffs machinery, machinery for cosmetics or pharmaceutical products, hand-held and/or **handguided hand-guided** machinery, portable fixing and other impact machinery, machinery for working wood and material with similar physical characteristics and machinery for pesticide application **mustshall** meet all the essential health and safety requirements **set-outdescribed** in this chapter (see General Principles, point 4).

2.1. FOODSTUFFS MACHINERY AND MACHINERY FOR COSMETICS OR PHARMACEUTICAL PRODUCTS**2.1.1. General**

Machinery intended for use with foodstuffs or with cosmetics or pharmaceutical products **mustshall** be designed and constructed in such a way as to avoid any risk of infection, sickness or contagion.

The following requirements **mustshall** be observed:

- (a) materials in contact with, or intended to come into contact with, foodstuffs or cosmetics or pharmaceutical products **mustshall** satisfy the conditions set down in the relevant **Directives-Union legal acts**. The machinery **mustshall** be designed and constructed in such a way that these materials can be cleaned before each use. Where this is not possible, disposable parts **mustshall** be used;
- (b) all surfaces in contact with foodstuffs or cosmetics or pharmaceutical products, other than surfaces of disposable parts, **mustshall**:
 - i.** be smooth and have neither ridges nor crevices, which could harbour organic materials. The same applies to their joinings;
 - ii.** be designed and constructed in such a way as to reduce the projections, edges and recesses of assemblies to a minimum;
 - iii.** be easily cleaned and disinfected, where necessary after removing easily dismantled parts; the inside

surfaces mustshall have curves with a radius sufficient to allow thorough cleaning;

- (c) it mustshall be possible for liquids, gases and aerosols deriving from foodstuffs, cosmetics or pharmaceutical products as well as from cleaning, disinfecting and rinsing fluids to be completely discharged from the machinery (if possible, in a 'cleaning' position);
- (d) machinery mustshall be designed and constructed in such a way as to prevent any substances or living creatures, in particular insects, from entering, or any organic matter from accumulating in, areas that cannot be cleaned;
- (e) machinery mustshall be designed and constructed in such a way that no ancillary substances hazardous to health, including the lubricants used, can come into contact with foodstuffs, cosmetics or pharmaceutical products. Where necessary, machinery mustshall be designed and constructed in such a way that continuing compliance with this requirement can be checked.

2.1.2. Instructions

The instructions for foodstuffs machinery and machinery for use with cosmetics or pharmaceutical products mustshall indicate recommended products and methods for cleaning, disinfecting and rinsing, not only for easily accessible areas but also for areas to which access is impossible or inadvisable.

2.2. PORTABLE HAND-HELD AND/OR HAND-GUIDED MACHINERY

2.2.1. General

Portable hand-held and/or hand-guided machinery mustshall:

- (a) depending on the type of machinery, have a supporting surface of sufficient size and have a sufficient number of handles and supports of an appropriate size, arranged in such a way as to ensure the stability of the machinery under the intended operating conditions;⁷ⁱ
- (b) except where technically impossible, or where there is an independent control device, in the case of handles which cannot be released in complete safety, be fitted with manual start and stop control devices arranged in such a way that the operator can operate them without releasing the handles;⁷ⁱ
- (c) present no risks of accidental starting and/or continued operation after the operator has released the handles. Equivalent steps mustshall be taken if this requirement is not technically feasible;⁷ⁱ
- (d) permit, where necessary, visual observation of the danger zone and of the action of the tool with the material being processed.
- (e) The handles of portable machinery must have a device or a connected exhaust system, with an extraction connection outlet or equivalent system to capture or reduce emissions of hazardous substances. This requirement does not apply where its application would result in the creation of a new risk, where the main function of the machinery is the spraying of hazardous substances and to emissions of internal combustion engines. The handles of portable machinery shall be designed and constructed in such a way as to make starting and stopping straightforward.

2.2.1.1. Instructions

The instructions mustshall give the following information concerning vibrations-, expressed as acceleration (m/s²), and transmitted by portable ~~hand-held~~handheld and hand-guided machinery:

- (a) the vibration total value from continuous vibrations to which the hand-arm system is subjected, ~~if it exceeds 2,5 m/s²;~~
- (b) ~~Where this the mean~~ value ~~does not exceed 2,5 m/s², this must be mentioned,~~ of the peak amplitude of the acceleration from repeated shock vibrations, to which the hand-arm system is subjected;
- (c) the uncertainty of ~~measurement~~ both measurements.

~~These~~The values ~~must be referred to in the first subparagraph shall~~ either be those actually measured for the machinery in question or those established on the basis of measurements ~~taken for in respect of a~~ technically comparable machinery product, which is representative of the ~~machinery to be produced~~ state of the art.

If harmonised standards ~~are not or technical specifications adopted by the Commission in accordance with Article 17(3) cannot be~~ applied, the vibration data ~~must~~ shall be measured using the most appropriate measurement code for the machinery.

The operating conditions during measurement and the methods used for measurement, or the reference of the harmonised standard applied, ~~must~~ shall be specified.

2.2.2. Portable fixing and other impact machinery

2.2.2.1. General

Portable fixing and other impact machinery ~~must~~ shall be designed and constructed in such a way that:

- (a) energy is transmitted to the impacted element by the intermediary component that does not leave the device;~~;~~
- (b) an enabling device prevents impact unless the machinery is positioned correctly with adequate pressure on the base material;~~;~~
- (c) involuntary triggering is prevented; where necessary, an appropriate sequence of actions on the enabling device and the control device ~~must~~ shall be required to trigger an impact;~~;~~
- (d) accidental triggering is prevented during handling or in case of shock;~~;~~
- (e) loading and unloading operations can be carried out easily and safely.

Where necessary, it ~~must~~ shall be possible to fit the device with splinter guard(s) and the appropriate guard(s) ~~must~~ shall be provided by the manufacturer of the machinery.

2.2.2.2. Instructions

The instructions ~~must~~ shall give the necessary information regarding:

- (a) the accessories and interchangeable equipment that can be used with the machinery;~~;~~
- (b) the suitable fixing or other impacted elements to be used with the machinery;~~;~~
- (c) where appropriate, the suitable cartridges to be used.

2.3. MACHINERY FOR WORKING WOOD AND MATERIAL WITH SIMILAR PHYSICAL CHARACTERISTICS

Machinery for working wood and materials with similar physical characteristics **mustshall** comply with the following requirements:

- (a) the machinery **mustshall** be designed, constructed or equipped in such a way that the piece being machined can be placed and guided in safety; where the piece is hand-held on a work-bench, the latter **mustshall** be sufficiently stable during the work and **mustshall** not impede the movement of the piece;
- (b) where the machinery is likely to be used in conditions involving the risk of ejection of **workpieceswork pieces** or parts of them, it **mustshall** be designed, constructed, or equipped in such a way as to prevent such ejection, or, if this is not possible, so that the ejection does not engender risks for the operator and/or exposed persons;
- (c) the machinery **mustshall** be equipped with an automatic brake that stops the tool in a sufficiently short time if there is a risk of contact with the tool whilst it runs down;
- (d) where the tool is incorporated into a non-fully automated machine, the latter **mustshall** be designed and constructed in such a way as to eliminate or reduce the risk of accidental injury.

2.4. MACHINERY FOR **PESTICIDEPLANT PROTECTION PRODUCTS** APPLICATION

2.4.1. Definition

'Machinery for **pesticideplant protection products** application' means machinery specifically intended for the application of plant protection products within the meaning of Article 2, **point (1)**, of Regulation (EC) No 1107/2009 of the European Parliament and of the **Council of 21 October 2009 concerning the placing of plant protection products on the market (1).Council.**

2.4.2. General

The manufacturer of machinery for pesticide application or his **or her** authorised representative **mustshall** ensure that an assessment is carried out of the risks of unintended exposure of the environment to pesticides, in accordance with the process of risk assessment and risk reduction referred to in the General Principles, point 1.

Machinery for pesticide application **mustshall** be designed and constructed taking into account the results of the risk assessment referred to in the first **paragraphsubparagraph** so that the machinery can be operated, adjusted and maintained without unintended exposure of the environment to pesticides.

Leakage **mustshall** be prevented at all times.

2.4.3. Controls and monitoring

It **mustshall** be possible to easily and accurately control, monitor and immediately stop the pesticide application from the operating positions.

2.4.4. Filling and emptying

The machinery **mustshall** be designed and constructed to facilitate precise filling with the necessary

quantity of pesticide and to ensure easy and complete emptying, while preventing spillage of pesticide and avoiding the contamination of the water source during such operations.

2.4.5. Application of pesticides

2.4.5.1. Application rate

The machinery mustshall be fitted with means of adjusting the application rate easily, accurately and reliably.

2.4.5.2. Distribution, deposition and drift of pesticide

The machinery mustshall be designed and constructed to ensure that pesticide is deposited on target areas, to minimise losses to other areas and to prevent drift of pesticide to the environment. Where appropriate, an even distribution and homogeneous deposition mustshall be ensured.

2.4.5.3. Tests

In order to verify that the relevant parts of the machinery comply with the requirements set out in sections 2.4.5.1 and 2.4.5.2 the manufacturer or his or her authorised representative mustshall, for each type of machinery concerned, perform appropriate tests, or have such tests performed.

2.4.5.4. Losses during stoppage

The machinery mustshall be designed and constructed to prevent losses while the pesticide application function is stopped.

2.4.6. Maintenance

2.4.6.1. Cleaning

The machinery mustshall be designed and constructed to allow its easy and thorough cleaning without contamination of the environment.

2.4.6.2. Servicing

The machinery mustshall be designed and constructed to facilitate the changing of worn parts without contamination of the environment.

2.4.7. Inspections

It mustshall be possible to easily connect the necessary measuring instruments to the machinery to check the correct functioning of the machinery.

2.4.8. Marking of nozzles, strainers and filters

Nozzles, strainers and filters mustshall be marked so that their type and size can be clearly identified.

2.4.9. Indication of pesticide in use

Where appropriate, the machinery mustshall be fitted with a specific mounting on which the operator can place the name of the pesticide in use.

2.4.10. Instructions

The instructions mustshall provide the following information:

- (a) precautions to be taken during mixing, loading, application, emptying, cleaning, servicing and transport operations in order to avoid contamination of the environment;
- (b) detailed conditions of use for the different operating environments envisaged, including the corresponding preparation and adjustments required to ensure the deposition of pesticide on target areas while minimising losses to other areas, to prevent drift to the environment and, where appropriate, to ensure an even distribution and homogeneous deposition of pesticide;
- (c) the range of types and sizes of nozzles, strainers and filters that can be used with the machinery;
- (d) the frequency of checks and the criteria and method for the replacement of parts subject to wear that affect the correct functioning of the machinery, such as nozzles, strainers and filters;
- (e) specification of calibration, daily maintenance, winter preparation and other checks necessary to ensure the correct functioning of the machinery;
- (f) types of pesticides that may cause incorrect functioning of the machinery;
- (g) an indication that the operator should keep updated the name of the pesticide in use on the specific mounting referred to in section 2.4.9;
- (h) the connexion and use of any special equipment or accessories, and the necessary precautions to be taken;
- (i) an indication that the machinery may be subject to national requirements for regular inspection by designated bodies, as provided for in Directive 2009/128/EC of the European Parliament and of the Council ~~of 21 October 2009 establishing a framework for Community action to achieve the sustainable use of pesticides (1)~~;
- (j) the features of the machinery, which mustshall be inspected to ensure its correct functioning;
- (k) instructions for connecting the necessary measuring instruments.

3. SUPPLEMENTARY ESSENTIAL HEALTH AND SAFETY REQUIREMENTS TO OFFSET HAZARDSRISKS DUE TO THE MOBILITY OF MACHINERY

Machinery presenting hazardsrisks due to its mobility mustshall meet all the essential health and safety requirements described in this chapter (see General Principles, point 4).

3.1. GENERAL

3.1.1. Definitions

- (a) 'Machinery presenting hazardsrisks due to its mobility' means
 - i. machinery the operation of which requires either mobility while working, or continuous or semi-continuous movement between a succession of fixed working locations, or
 - ii. machinery which is operated without being moved, but which may be equipped in such a way as to enable it to be moved more easily from one place to another.
- (b) 'Driver' means ~~an operator~~ a person responsible for the movement of a machine. ~~The driver, who~~ may be transported by the machinery or may be on foot, accompanying the machinery, or may guide the machinery by remote control or may remotely supervise the autonomous mobile machinery product

regardless of the distance and the means of control communication.

(c) 'Autonomous mobile machinery' means a mobile machinery that has an autonomous mode, in which all the essential safety functions of the mobile machinery are ensured in its travel and working operations area without permanent interaction of an operator.

3.2. WORK POSITIONS

3.2.1. Driving position

Visibility from the driving position mustshall be such that the driver can, in complete safety for himself or herself and the exposed persons, operate the machinery and its tools in their foreseeable conditions of use. Where necessary, appropriate devices mustshall be provided to remedy hazardsrisks due to inadequate direct vision.

Machinery on which the driver is transported mustshall be designed and constructed in such a way that, from the driving positions, there is no risk to the driver from inadvertent contact with the wheels and tracks.

The driving position of ride-on drivers mustshall be designed and constructed in such a way that a driver's cab may be fitted, provided this does not increase the risk and there is room for it. The cab mustshall incorporate a place for the instructions needed for the driver.

3.2.2. Seating

Where there is a risk that operators or other persons transported by the machinery may be crushed between parts of the machinery and the groundsurroundings should the machinery roll or tip over, in particular for machinery equipped with a protective structure referred to in section 3.4.3 or 3.4.4, ~~their seats must~~ the machinery shall be designed or equipped with a restraint system so as to keep the persons in their seats or in the protective structure, without restricting movements necessary for operations or movements relative to the structure caused by the suspension of the seats. Such restraint systems ~~should~~ provision shall not be fitted if they increase the risk.

A visual or audible signal shall be provided at the driving position alerting the driver when the restraint system is not active.

3.2.3. Positions for other persons

If the conditions of use provide that persons other than the driver may occasionally or regularly be transported by the machinery or work on it, appropriate positions mustshall be provided which enable them to be transported or to work on it without risk.

The second and third ~~paragraphs~~ subparagraphs of section 3.2.1 also apply to the places provided for persons other than the driver.

3.2.4. Supervisory control function

Autonomous mobile machinery products shall have a supervisory control function specific to the autonomous mode. This function shall allow the operator to remotely receive information from the machine. The supervisory control function shall only allow actions to stop and to start remotely the machine. It shall be designed and constructed to allow those actions only when the driver can see directly

or indirectly the machine's movement and working area and the protective devices are operational. The information the driver receives from the machine when the supervisory control function is active shall enable the driver to have a complete and accurate view of the operation, movement and safe positioning of the machine in its travel and working area.

This information shall alert the driver of the occurrence of unforeseen or dangerous situations present or impending, which require driver's intervention.

If the supervisory control function is not active, the machinery shall not be able to operate.

3.3. CONTROL SYSTEMS

If necessary, steps mustshall be taken to prevent unauthorised use of controls.

In the case of remote controls, each control unit mustshall clearly identify the machinery to be controlled from that unit.

The remote control system mustshall be designed and constructed in such a way as to affect only:

(a) the machinery in question;

(b) the functions in question.

Remote controlled machinery mustshall be designed and constructed in such a way that it will respond only to signals from the intended control units.

3.3.1. Control devices

The driver mustshall be able to actuate all control devices required to operate the machinery from the driving position, except for functions, which can be safely actuated only by using control devices located elsewhere. These functions include, in particular, those for which operators other than the driver are responsible or for which the driver has to leave the driving position in order to control them safely.

Where there are pedals, they mustshall be so designed, constructed and fitted as to allow safe operation by the driver with the minimum risk of incorrect operation. They mustshall have a slip-resistant surface and be easy to clean.

Where their operation can lead to hazards, notably dangerous movements, the control devices, except for those with presetpre-set positions, mustshall return to the neutral position as soon as they are released by the operator.

In the case of wheeled machinery, the steering system mustshall be designed and constructed in such a way as to reduce the force of sudden movements of the steering wheel or the steering lever caused by shocks to the guide wheels.

Any control that locks the differential mustshall be so designed and arranged that it allows the differential to be unlocked when the machinery is moving.

The sixth paragraph of section 1.2.2, concerning acoustic and/or visual warning signals, applies only in the case of reversing.

3.3.2. Starting/moving

All travel movements of self-propelled machinery with a ride-on driver mustshall be possible only if the driver is at the controls.

Where, for operating purposes, machinery is fitted with devices which exceed its normal clearance zone (e.g. stabilisers, jib, etc.), the driver mustshall be provided with the means of checking easily, before

moving the machinery, that such devices are in a particular position which allows safe movement.

This also applies to all other parts which ~~7.2~~ to allow safe movement, have to be in particular positions, locked if necessary.

Where it does not give rise to other risks, movement of the machinery ~~mustshall~~ depend on safe positioning of the aforementioned parts.

It ~~mustshall~~ not be possible for unintentional movement of the machinery to occur while the engine is being started.

The movement of an autonomous mobile machinery product shall take into account the risks related to the area where it is intended to move and work.

3.3.3. Travelling function

Without prejudice to road traffic regulations, self-propelled machinery and its trailers ~~mustshall~~ meet the requirements for slowing down, stopping, braking and immobilisation so as to ensure safety under all the operating, load, speed, ground and gradient conditions allowed for.

The driver ~~mustshall~~ be able to slow down and stop self-propelled machinery by means of a main device. Where safety so requires, in the event of a failure of the main device, or in the absence of the energy supply needed to actuate the main device, an emergency device with a fully independent and easily accessible control device ~~mustshall~~ be provided for slowing down and stopping.

Where safety so requires, a parking device ~~mustshall~~ be provided to render stationary machinery immobile. This device may be combined with one of the devices referred to in the second paragraph, ~~provided that~~ if it is purely mechanical.

Remote-controlled machinery ~~mustshall~~ be equipped with devices for stopping operation automatically and immediately and for preventing potentially dangerous operation in the following situations:

- (a) if the driver loses control ~~7.2~~
- (b) if it receives a stop signal ~~7.2~~
- (c) if a fault is detected in a safety-related part of the system ~~7.2~~
- (d) if no validation signal is detected within a specified time.

Section 1.2.4 does not apply to the travelling function.

Autonomous mobile machinery products shall comply with any of the following conditions:

- (a) it shall move and operate in an enclosed zone fitted with a peripheral protection system comprising guards or protective devices;
- (b) it shall be equipped with devices intended to detect any human, domestic animal or any other obstacle in its vicinity, where those obstacles could give rise to a risk to health and safety of persons or of domestic animals or to safe operation of the machinery product.

The movements of mobile machinery products connected with one or more trailers or towed equipment, including autonomous mobile machinery products, connected with one or more trailers or towed equipment, shall not give rise to risks for persons, domestic animals or any other obstacle in the danger zone of such machinery products and trailers or towed equipment.

3.3.4. Movement of pedestrian-controlled machinery

Movement of pedestrian-controlled self-propelled machinery ~~mustshall~~ be possible only through sustained

action on the relevant control device by the driver. In particular, it mustshall not be possible for movement to occur while the engine is being started. The control systems for pedestrian-controlled machinery mustshall be designed in such a way as to minimise the risks arising from inadvertent movement of the machine towards the driver, in particular:

(a) Crushing;

(b) injury from rotating tools.

The speed of travel of the machinery mustshall be compatible with the pace of a driver on foot.

In the case of machinery on which a rotary tool may be fitted, it mustshall not be possible to actuate the tool when the reverse control is engaged, except where the movement of the machinery results from movement of the tool. In the latter case, the reversing speed mustshall be such that it does not endanger the driver.

3.3.5. Control circuit failure

A failure in the power supply to the power-assisted steering, where fitted, mustshall not prevent machinery from being steered during the time required to stop it.

For autonomous mobile machinery, a failure in the steering system shall not have an impact on the safety of the machinery.

3.4. PROTECTION AGAINST MECHANICAL HAZARDSRISKS

3.4.1. Uncontrolled movements

~~Machinery must~~A machinery product shall be designed, constructed and where appropriate placed on its mobile support in such a way as to ensure that, when moved, uncontrolled oscillations of its centre of gravity do not affect its stability or exert excessive strain on its structure.

3.4.2. Moving transmission parts

By way of exception to section 1.3.8.1, in the case of engines, moveable guards preventing access to the moving parts in the engine compartment need not have interlocking devices if they have to be opened either by the use of a tool or key or by a control located in the driving position, providing the latter is in a fully enclosed cab with a lock to prevent unauthorised access.

3.4.3. Roll-over and tip-over

Where, in the case of self-propelled machinery with a ride-on driver, operator(s) or other person(s), there is a risk of rolling or tipping over, the machinery mustshall be fitted with an appropriate protective structure, unless this increases the risk.

This structure mustshall be such that in the event of rolling or tipping over it affords the ride-on person(s) an adequate deflection-limiting volume.

In order to verify that the structure complies with the requirement laid down in the second paragraph, the manufacturer or his or her authorised representative mustshall, for each type of structure concerned, perform appropriate tests or have such tests performed.

3.4.4. Falling objects

Where, in the case of self-propelled machinery with a ride-on driver, operator(s) or other person(s), there is a risk due to falling objects or material, the machinery mustshall be designed and constructed in such a way as to take account of this risk and fitted, if its size allows, with an appropriate protective structure.

This structure mustshall be such that, in the event of falling objects or material, it guarantees the ride-on person(s) an adequate deflection-limiting volume.

In order to verify that the structure complies with the requirement laid down in the second paragraph, the manufacturer or his or her authorised representative mustshall, for each type of structure concerned, perform appropriate tests or have such tests performed.

3.4.5. Means of access

Handholds and steps mustshall be designed, constructed and arranged in such a way that the operators use them instinctively and do not use the control devices to assist access.

3.4.6. Towing devices

All machinery used to tow or to be towed mustshall be fitted with towing or coupling devices designed, constructed and arranged in such a way as to ensure easy and secure connection and disconnection and to prevent accidental disconnection during use.

Insofar as the tow bar load so requires, such machinery mustshall be equipped with a support with a bearing surface suited to the load and the ground.

3.4.7. Transmission of power between self-propelled machinery (or tractor) and recipient machinery

Removable mechanical transmission devices linking self-propelled machinery (or a tractor) to the first fixed bearing of recipient machinery mustshall be designed and constructed in such a way that any part that moves during operation is protected over its whole length.

On the side of the self-propelled machinery (or tractor), the power take-off to which the removable mechanical transmission device is attached mustshall be protected either by a guard fixed and linked to the self-propelled machinery (or tractor) or by any other device offering equivalent protection.

It mustshall be possible to open this guard for access to the removable transmission device. Once it is in place, there mustshall be enough room to prevent the drive shaft damaging the guard when the machinery (or the tractor) is moving.

On the recipient machinery side, the input shaft mustshall be enclosed in a protective casing fixed to the machinery.

Torque limiters or freewheels may be fitted to universal joint transmissions only on the side adjoining the driven machinery. The removable mechanical transmission device mustshall be marked accordingly.

All recipient machinery, the operation of which requires a removable mechanical transmission device to connect it to self-propelled machinery (or a tractor), mustshall have a system for attaching the removable mechanical transmission device so that, when the machinery is uncoupled, the removable mechanical transmission device and its guard are not damaged by contact with the ground or part of the machinery.

The outside parts of the guard mustshall be so designed, constructed and arranged that they cannot turn with the removable mechanical transmission device. The guard mustshall cover the transmission to the ends of the inner jaws in the case of simple universal joints and at least to the centre of the outer joint or joints in the case of wide-angle universal joints.

If means of access to working positions are provided near to the removable mechanical transmission device, they ~~must~~shall be designed and constructed in such a way that the shaft guards cannot be used as steps, unless designed and constructed for that purpose.

3.5. PROTECTION AGAINST OTHER ~~HAZARDS~~RISKS

3.5.1. Batteries

The battery housing ~~must~~shall be designed and constructed in such a way as to prevent the electrolyte being ejected on to the operator in the event of rollover or ~~tip over~~tip over and to avoid the accumulation of vapours in places occupied by operators.

~~Machinery must~~A machinery product shall be designed and constructed in such a way that the battery can be disconnected with the aid of an easily accessible device provided for that purpose.

The batteries with automatic charging for mobile machinery, including autonomous mobile machinery products, shall be designed to prevent hazards referred to in sections 1.3.8.2. and 1.5.1., including the risks of contact or collusion of the machine with a person or another machine when the machine moves autonomously to the charging station.

3.5.2. Fire

Depending on the hazards anticipated by the manufacturer, machinery ~~must~~shall, where its size permits:

(a) either allow easily accessible fire extinguishers to be fitted, or

(b) be provided with built-in extinguisher systems.

3.5.3. Emissions of hazardous substances

The second and third paragraphs of section 1.5.13 do not apply where the main function of the machinery is the spraying of products. However, the operator ~~must~~ shall be protected against the risk of exposure to such hazardous emissions.

Ride-on mobile machinery having spraying of products as the main function shall be equipped with filtration cabs or equivalent safety measures.

3.5.4. Risk of contact with live overhead power lines

Depending on the height of the machinery products, mobile machinery product shall, where relevant, be designed, constructed and equipped, so as to prevent the risk of exposure to contact with an energised overhead power line or the risk of creating an electric arc between any part of the machinery or an operator driving the machinery and an energised overhead power line.

When the risk of contact or electric arc with an energised overhead power line cannot be fully avoided, mobile machinery products shall be designed, constructed and equipped in such hazardous emissionsa way that all hazards of an electrical nature are prevented or can be prevented in the event of contact or electrical arc with an energized power line.

3.6. INFORMATION AND INDICATIONS

3.6.1. Signs, signals and warnings

All machinery ~~must~~products shall have signs and/or instruction plates concerning use, adjustment and maintenance, wherever necessary, so as to ensure the health and safety of persons. They ~~must~~shall be chosen, designed and constructed in such a way as to be clearly visible and indelible.

Without prejudice to the provisions of road traffic regulations, machinery product with a ride-on driver ~~must~~shall have the following equipment:

- (a) an acoustic warning device to alert persons;~~;~~
- (b) a system of light signals relevant to the intended conditions of use; the latter requirement does not apply to machinery product intended solely for underground working and having no electrical power;~~;~~
- (c) where necessary, there ~~must~~shall be an appropriate connection between a trailer and the machinery product for the operation of signals.

Remote-controlled machinery which, under normal conditions of use, exposes persons to the risk of impact or crushing ~~must~~shall be fitted with appropriate means to signal its movements or with means to protect persons against such risks. The same applies to machinery product, which involves, when in use, the constant repetition of a forward and backward movement on a single axis where the area to the rear of the machine is not directly visible to the driver.

Machinery ~~must~~shall be constructed in such a way that the warning and signalling devices cannot be disabled unintentionally. Where it is essential for safety, such devices ~~must~~shall be provided with the means to check that they are in good working order and their failure ~~must~~shall be made apparent to the operator.

Where the movement of machinery or its tools is particularly hazardous, signs on the machinery ~~must~~shall be provided to warn against approaching the machinery while it is working; the signs ~~must~~shall be legible at a sufficient distance to ensure the safety of persons who have to be in the vicinity.

3.6.2. Marking

The following ~~must~~shall be shown legibly and indelibly on all machinery products:

- (a) nominal power expressed in kilowatts (kW);~~;~~
- (b) mass of the most usual configuration, in kilograms (kg);

and, where appropriate:

- (a) maximum drawbar pull provided for at the coupling hook, in Newtons (N);~~;~~
- (b) maximum vertical load provided for on the coupling hook, in Newtons (N).

3.6.3. Instructions

3.6.3.1. Vibrations

The instructions ~~must~~shall give the following information concerning vibrations, ~~expressed as acceleration~~ (m/s²), transmitted by the machinery to the hand-arm system or to the whole body:

- (a) the vibration total value ~~from continuous vibrations~~ to which the hand-arm system is subjected,~~if it exceeds 2,5 m/s²;~~
- (b) ~~Where this the mean value does not exceed 2,5 m/s², this must be mentioned, of the peak amplitude of the acceleration from repeated shock vibrations, to which the hand-arm system is subjected;~~
- (c) the highest root mean square value of weighted acceleration to which the whole body is subjected, if it exceeds 0,5 m/s². Where this value does not exceed 0,5 m/s², this ~~must~~shall be mentioned;~~;~~

(d) the uncertainty of ~~measurement~~measurements.

These values ~~must~~shall be either those actually measured for the machinery in question or those established on the basis of measurements taken for technically comparable machinery, z which is representative of the machinery to be produced.

Where harmonised standards ~~are not~~ technical specifications adopted by the Commission in accordance with Article 17(3) cannot be applied, the vibration ~~must~~shall be measured using the most appropriate measurement code for the machinery concerned.

The operating conditions during measurement and the measurement codes used ~~must~~shall be described.

3.6.3.2. Multiple uses

The instructions for a machinery product allowing several uses depending on the equipment used and the instructions for the interchangeable equipment ~~must~~shall contain the information necessary for safe assembly and use of the basic machinery product and the interchangeable equipment that can be fitted.

3.6.3.3. Autonomous mobile machinery products

The instructions for use of autonomous mobile machinery products shall specify the characteristics of its intended travel, working areas and danger zones.

4. SUPPLEMENTARY ESSENTIAL HEALTH AND SAFETY REQUIREMENTS TO OFFSET HAZARDS DUE TO LIFTING OPERATIONS

Machinery presenting hazards due to lifting operations ~~must~~shall meet all the relevant essential health and safety requirements described in this chapter (see General Principles, point 4).

4.1. GENERAL

4.1.1. Definitions

- (a) 'Lifting operation' means a movement of unit loads consisting of goods and/or persons necessitating, at a given moment, a change of level~~;~~;
- (b) 'Guided load' means a load where the total movement is made along rigid or flexible guides whose position is determined by fixed points~~;~~;
- (c) 'Working coefficient' means the arithmetic ratio between the load guaranteed by the manufacturer or his or her authorised representative up to which a component is able to hold it and the maximum working load marked on the component~~;~~;
- (d) 'Test coefficient' means the arithmetic ratio between the load used to carry out the static or dynamic tests on lifting machinery or a lifting accessory and the maximum working load marked on the lifting machinery or lifting accessory~~;~~;
- (e) 'Static test' means the test during which lifting machinery or a lifting accessory is first inspected and subjected to a force corresponding to the maximum working load multiplied by the appropriate static test coefficient and then re-inspected once the said load has been released to ensure that no damage has occurred~~;~~;
- (f) 'Dynamic test' means the test during which lifting machinery is operated in all its possible configurations at the maximum working load multiplied by the appropriate dynamic test coefficient with

account being taken of the dynamic behaviour of the lifting machinery in order to check that its functions properly;

(g) 'Carrier' means a part of the machinery on or in which persons and/or goods are supported in order to be lifted.

4.1.2. Protection against mechanical hazardsrisks

4.1.2.1. Risks due to lack of stability

Machinery mustshall be designed and constructed in such a way that the stability required by section 1.3.1 is maintained both in service and out of service, including all stages of transportation, assembly and dismantling, during foreseeable component failures and also during the tests carried out in accordance with the instruction handbook. To that end, the manufacturer or his or her authorised representative mustshall use the appropriate verification methods.

4.1.2.2. Machinery running on guide rails and rail tracks

Machinery mustshall be provided with devices, which act on the guide rails or tracks to prevent derailment.

If, despite such devices, there remains a risk of derailment or of failure of a rail or of a running component, devices mustshall be provided which prevent the equipment, component or load from falling or the machinery from overturning.

4.1.2.3. Mechanical strength

Machinery, lifting accessories and their components mustshall be capable of withstanding the stresses to which they are subjected during their lifetime, both in and, where applicable, out of use, under the installation and operating conditions provided for and in all relevant configurations, with due regard, where appropriate, to the effects of atmospheric factors and forces exerted by persons. This requirement mustshall also be satisfied during transport, assembly and dismantling.

Machinery and lifting accessories mustshall be designed and constructed in such a way as to prevent failure from fatigue and wear, taking due account of their intended use.

The materials used mustshall be chosen on the basis of the intended working environments, with particular regard to corrosion, abrasion, impacts, extreme temperatures, fatigue, brittleness, radiation and ageing.

Machinery and lifting accessories mustshall be designed and constructed in such a way as to withstand the overload in the static tests without permanent deformation or patent defect. Strength calculations mustshall take account of the value of the static test coefficient chosen to guarantee an adequate level of safety. That coefficient has, as a general rule, the following values:

(a) manually-operated machinery and lifting accessories: 1, 5;

(b) other machinery: 1, 25.

Machinery mustshall be designed and constructed in such a way as to undergo, without failure, the dynamic tests carried out using the maximum working load multiplied by the dynamic test coefficient. This dynamic test coefficient is chosen so as to guarantee an adequate level of safety: the coefficient is, as a

general rule, equal to 1,1. As a general rule, the tests will be performed at the nominal speeds provided for. Should the control circuit of the machinery allow for a number of simultaneous movements, the tests mustshall be carried out under the least favourable conditions, as a general rule by combining the movements concerned.

4.1.2.4. Pulleys, drums, wheels, ropes and chains

Pulleys, drums and wheels mustshall have a diameter commensurate with the size of the ropes or chains with which they can be fitted.

Drums and wheels mustshall be designed, constructed and installed in such a way that the ropes or chains with which they are equipped can be wound without coming off.

Ropes used directly for lifting or supporting the load mustshall not include any splicing other than at their ends. Splicings are, however, tolerated in installations, which are intended by design to be modified regularly according to needs of use.

Complete ropes and their endings mustshall have a working coefficient chosen in such a way as to guarantee an adequate level of safety. As a general rule, this coefficient is equal to 5.

Lifting chains mustshall have a working coefficient chosen in such a way as to guarantee an adequate level of safety. As a general rule, this coefficient is equal to 4.

In order to verify that an adequate working coefficient has been attained, the manufacturer or his or her authorised representative mustshall, for each type of chain and rope used directly for lifting the load and for the rope ends, perform the appropriate tests or have such tests performed.

4.1.2.5. Lifting accessories and their components

Lifting accessories and their components mustshall be sized with due regard to fatigue and ageing processes for a number of operating cycles consistent with their expected life-span as specified in the operating conditions for a given application.

Moreover:

- (a) the working coefficient of wire-rope/rope-end combinations mustshall be chosen in such a way as to guarantee an adequate level of safety; this coefficient is, as a general rule, equal to 5. Ropes mustshall not comprise any splices or loops other than at their ends;
- (b) where chains with welded links are used, they mustshall be of the short-link type. The working coefficient of chains mustshall be chosen in such a way as to guarantee an adequate level of safety; this coefficient is, as a general rule, equal to 4;
- (c) the working coefficient for textile ropes ~~or~~ slings or webbing is dependent on the material, method of manufacture, dimensions and use. This coefficient mustshall be chosen in such a way as to guarantee an adequate level of safety; it is, as a general-rule, equal to 7, provided the materials used are shown to be of very good quality and the method of manufacture is appropriate to the intended use. Should this not be the case, the coefficient is, as a general rule, set at a higher level in order to secure an equivalent level of safety. Textile ropes ~~and~~ slings or webbings mustshall not include any knots, connections or splicing other than at the ends of the sling, except in the case of an endless sling;
- (d) all metallic components making up, or used with, a sling mustshall have a working coefficient chosen in such a way as to guarantee an adequate level of safety; this coefficient is, as a general rule, equal to 4;

- (e) the maximum working load of a multilegged sling is determined on the basis of the working coefficient of the weakest leg, the number of legs and a reduction factor which depends on the slinging configuration;
- (f) in order to verify that an adequate working coefficient has been attained, the manufacturer or his or her authorised representative mustshall, for each type of component referred to in (a), (b), (c) and (d), perform the appropriate tests or have such tests performed.

4.1.2.6. Control of movements

Devices for controlling movements mustshall act in such a way that the machinery on which they are installed is kept safe.

- (a) Machinery mustshall be designed and constructed or fitted with devices in such a way that the amplitude of movement of its components is kept within the specified limits. The operation of such devices mustshall, where appropriate, be preceded by a warning.
- (b) Where several fixed or rail-mounted machines/machine products can be manoeuvred simultaneously in the same place, with risks of collision, such machinery mustshall be designed and constructed in such a way as to make it possible to fit systems enabling these risks to be avoided.
- (c) Machinery mustshall be designed and constructed in such a way that the loads cannot creep dangerously or fall freely and unexpectedly, even in the event of partial or total failure of the power supply or when the operator stops operating the machine.
- (d) It mustshall not be possible, under normal operating conditions, to lower the load solely by friction brake, except in the case of machinery whose function requires it to operate in that way.
- (e) Holding devices mustshall be designed and constructed in such a way that inadvertent dropping of the loads is avoided.

4.1.2.7. Movements of loads during handling

The operating position of machinery mustshall be located in such a way as to ensure the widest possible view of trajectories of the moving parts, in order to avoid possible collisions with persons, equipment or other machinery, which might be manoeuvring at the same time and liable to constitute a hazard.

Machinery with guided loads mustshall be designed and constructed in such a way as to prevent persons from being injured by movement of the load, the carrier or the counterweights, if any.

4.1.2.8. Machinery serving fixed landings

4.1.2.8.1. Movements of the carrier

The movement of the carrier of machinery serving fixed landings mustshall be rigidly guided to and at the landings. Scissor systems are also regarded as rigid guidance.

4.1.2.8.2. Access to the carrier

Where persons have access to the carrier, the machinery mustshall be designed and constructed in such a way as to ensure that the carrier remains stationary during access, in particular while it is being loaded or unloaded.

The machinery mustshall be designed and constructed in such a way as to ensure that the difference in level between the carrier and the landing being served does not create a risk of tripping.

4.1.2.8.3. Risks due to contact with the moving carrier

Where necessary in order to fulfil the requirement expressed in the second paragraph of section 4.1.2.7, the travel zone mustshall be rendered inaccessible during normal operation.

When, during inspection or maintenance, there is a risk that persons situated under or above the carrier may be crushed between the carrier and any fixed parts, sufficient free space mustshall be provided either by means of physical refuges or by means of mechanical devices blocking the movement of the carrier.

4.1.2.8.4. Risk due to the load falling off the carrier

Where there is a risk due to the load falling off the carrier, the machinery mustshall be designed and constructed in such a way as to prevent this risk.

4.1.2.8.5. Landings

Risks due to contact of persons at landings with the moving carrier or other moving parts mustshall be prevented.

Where there is a risk due to persons falling into the travel zone when the carrier is not present at the landings, guards mustshall be fitted in order to prevent this risk. Such guards mustshall not open in the direction of the travel zone. They mustshall be fitted with an interlocking device controlled by the position of the carrier that prevents:

(a) hazardous movements of the carrier until the guards are closed and locked;

(b) hazardous opening of a guard until the carrier has stopped at the corresponding landing.

4.1.3. Fitness for purpose

When lifting machinery or lifting accessories are placed on the market or are first put into service, the manufacturer or his or her authorised representative mustshall ensure, by taking appropriate measures or having them taken, that the machinery or the lifting accessories which are ready for use — whether manually or power-operated — can fulfil their specified functions safely.

The static and dynamic tests referred to in section 4.1.2.3 mustshall be performed on all lifting machinery ready to be put into service.

Where the machinery cannot be assembled in the manufacturer's premises or in the premises of his or her authorised representative, the appropriate measures mustshall be taken at the place of use by the manufacturer, or by his or her authorised representative or by another subject on the manufacturers' behalf. Otherwise, the measures may be taken either in the manufacturer's premises or at the place of use.

4.2. REQUIREMENTS FOR MACHINERY PRODUCTS WHOSE POWER SOURCE IS OTHER THAN MANUAL EFFORT

4.2.1. Control of movements

Hold-to-run control devices mustshall be used to control the movements of the machinery or its equipment. However, for partial or complete movements in which there is no risk of the load or the machinery colliding, the said devices may be replaced by control devices authorising automatic stops at

pre-selected positions without the operator holding a hold-to-run control device.

4.2.2. Loading control

Machinery with a maximum working load of not less than 1 000 kilograms or an overturning moment of not less than 40 000 Nm mustshall be fitted with devices to warn the driver and prevent dangerous movements in the event:

(a) of overloading, either as a result of the maximum working load or the maximum working moment due to the load being exceeded, or

(b) of the overturning moment being exceeded.

4.2.3. Installations guided by ropes

Rope carriers, tractors or tractor carriers mustshall be held by counterweights or by a device allowing permanent control of the tension.

4.3. INFORMATION AND MARKINGS

4.3.1. Chains, ropes and webbing

Each length of lifting chain, rope or webbing not forming part of an assembly mustshall bear a mark or, where this is not possible, a plate or irremovable ring bearing the name and address of the manufacturer or his or her authorised representative and the identifying reference of the relevant certificate.

The certificate mentioned above mustshall show at least the following information:

(a) the name and address of the manufacturer and, if appropriate, his or her authorised representative;

(b) a description of the chain or rope, which includes:

i. its nominal size,

ii. its construction,

iii. the material from which it is made, and

iv. any special metallurgical treatment applied to the material;

(c) the test method used;

(d) the maximum load to which the chain or rope should be subjected in service. A range of values may be given on the basis of the intended applications.

4.3.2. Lifting accessories

Lifting accessories mustshall show the following particulars:

i. identification of the material where this information is needed for safe use;

ii. the maximum working load.

In the case of lifting accessories on which marking is physically impossible, the particulars referred to in the first paragraph mustshall be displayed on a plate or other equivalent means and securely affixed to the accessory.

The particulars mustshall be legible and located in a place where they are not liable to disappear as a result of wear or jeopardise the strength of the accessory.

4.3.3. Lifting machinery

The maximum working load mustshall be prominently marked on the machinery. This marking mustshall be legible, indelible and in an un-coded form.

Where the maximum working load depends on the configuration of the machinery, each operating position mustshall be provided with a load plate indicating, preferably in diagrammatic form or by means of tables, the working load permitted for each configuration.

Machinery intended for lifting goods only, equipped with a carrier, which allows access to persons, mustshall bear a clear and indelible warning prohibiting the lifting of persons. This warning mustshall be visible at each place where access is possible.

4.4. INSTRUCTIONS

4.4.1. Lifting accessories

Each lifting accessory or each commercially indivisible batch of lifting accessories mustshall be accompanied by instructions setting out at least the following particulars:

- (a) the intended use;
- (b) the limits of use (particularly for lifting accessories such as magnetic or vacuum pads which do not fully comply with section 4.1.2.6(e));
- (c) instructions for assembly, use and maintenance;
- (d) the static test coefficient used.

4.4.2. Lifting machinery

Lifting machinery mustshall be accompanied by instructions containing information on:

- (a) the technical characteristics of the machinery, and in particular:
 - i. the maximum working load and, where appropriate, a copy of the load plate or load table described in the second paragraph of section 4.3.3,
 - ii. the reactions at the supports or anchors and, where appropriate, characteristics of the tracks,
 - iii. where appropriate, the definition and the means of installation of the ballast;
- (b) the contents of the logbook, if the latter is not supplied with the machinery;
- (c) advice for use, particularly to offset the lack of direct vision of the load by the operator;
- (d) where appropriate, a test report detailing the static and dynamic tests carried out by or for the manufacturer or his or her authorised representative;
- (e) for machinery, which is not assembled on the premises of the manufacturer in the form in which it is to be used, the necessary instructions for performing the measures referred to in section 4.1.3 before it is first put into service.

5. SUPPLEMENTARY ESSENTIAL HEALTH AND SAFETY REQUIREMENTS FOR MACHINERY PRODUCTS INTENDED FOR UNDERGROUND WORK

Machinery products intended for underground work mustshall meet all the essential health and safety requirements described in this chapter (see General Principles, point 4).

5.1. RISKS DUE TO LACK OF STABILITY

Powered roof supports mustshall be designed and constructed in such a way as to maintain a given

direction when moving and not slip before and while they come under load and after the load has been removed. They mustshall be equipped with anchorages for the top plates of the individual hydraulic props.

5.2. MOVEMENT

Powered roof supports mustshall allow for unhindered movement of persons.

5.3. CONTROL DEVICES

The accelerator and brake controls for movement of machinery running on rails mustshall be hand-operated. However, enabling devices may be foot-operated.

The control devices of powered roof supports mustshall be designed and positioned in such a way that, during displacement operations, operators are sheltered by a support in place. The control devices mustshall be protected against any accidental release.

5.4. STOPPING

Self-propelled machinery running on rails for use in underground work mustshall be equipped with an enabling device acting on the circuit controlling the movement of the machinery such that movement is stopped if the driver is no longer in control of the movement.

5.5. FIRE

~~The second indent of section~~Section 3.5.2 (b) is mandatory in respect of machinery, which comprises highly flammable parts.

The braking system of machinery intended for use in underground workings mustshall be designed and constructed in such a way that it does not produce sparks or cause fires.

Machinery with internal combustion engines for use in underground workings mustshall be fitted only with engines using fuel with a low vaporising pressure and which exclude any spark of electrical origin.

5.6. EXHAUST EMISSIONS

Exhaust emissions from internal combustion engines mustshall not be discharged upwards.

6. SUPPLEMENTARY ESSENTIAL HEALTH AND SAFETY REQUIREMENTS FOR MACHINERY PRODUCTS PRESENTING PARTICULAR HAZARDSRISKS DUE TO THE LIFTING OF PERSONS

Machinery products presenting hazardsrisks due to the lifting of persons mustshall meet all the relevant essential health and safety requirements described in this chapter (see General Principles, point 4).

6.1. GENERAL

6.1.1. Mechanical strength

The carrier, including any trapdoors, mustshall be designed and constructed in such a way as to offer the space and strength corresponding to the maximum number of persons permitted on the carrier and the maximum working load.

The working coefficients for components set out in sections 4.1.2.4 and 4.1.2.5 are inadequate for machinery intended for the lifting of persons and mustshall, as a general rule, be doubled. Machinery

intended for lifting persons or persons and goods mustshall be fitted with a suspension or supporting system for the carrier designed and constructed in such a way as to ensure an adequate overall level of safety and to prevent the risk of the carrier falling.

If ropes or chains are used to suspend the carrier, as a general rule, at least two independent ropes or chains are required, each with its own anchorage.

6.1.2. Loading control for machinery moved by power other than human strength

The requirements of section 4.2.2 apply regardless of the maximum working load and overturning moment, unless the manufacturer can demonstrate that there is no risk of overloading or overturning.

6.2. CONTROL DEVICES

Where safety requirements do not impose other solutions, the carrier mustshall, as a general rule, be designed and constructed in such a way that persons in the carrier have means of controlling upward and downward movements and, if appropriate, other movements of the carrier.

In operation, those control devices mustshall override any other devices controlling the same movement with the exception of emergency stop devices.

The control devices for ~~these~~the movements mustreferred to in the first paragraph shall be of the hold-to-run type except where the carrier ~~itself~~ is completely enclosed. If there is no risk of persons or objects on the carrier colliding or falling and no other risks due to the upward and downward movements of the carrier, control devices authorising automatic stops at preselected positions may be used instead of hold-to-run type control devices

6.3. RISKS TO PERSONS IN OR ON THE CARRIER

6.3.1. Risks due to movements of the carrier

Machinery for lifting persons mustshall be designed, constructed or equipped in such a way that the acceleration or deceleration of the carrier does not engender risks for persons.

6.3.2. Risk of persons falling from the carrier

The carrier mustshall not tilt to an extent, which creates a risk of the occupants falling, including when the machinery and carrier are moving.

Where the carrier is designed as a ~~work station~~workstation, provision mustshall be made to ensure stability and to prevent hazardous movements.

If the measures referred to in section 1.5.15 are not adequate, carriers mustshall be fitted with a sufficient number of suitable anchorage points for the number of persons permitted on the-carrier. The anchorage points mustshall be strong enough for the use of personal protective equipment against falls from a height.

Any trapdoor in floors or ceilings or side doors mustshall be designed and constructed in such a way as to prevent inadvertent opening and mustshall open in a direction that obviates any risk of falling, should they open unexpectedly.

6.3.3. Risk due to objects falling on the carrier

Where there is a risk of objects falling on the carrier and endangering persons, the carrier mustshall be equipped with a protective roof.

6.4. MACHINERY SERVING FIXED LANDINGS

6.4.1. Risks to persons in or on the carrier

The carrier mustshall be designed and constructed in such a way as to prevent risks due to contact between persons and/or objects in or on the carrier with any fixed or moving elements. Where necessary in order to fulfil this requirement, the carrier itself mustshall be completely enclosed with doors fitted with an interlocking device that prevents hazardous movements of the carrier unless the doors are closed. The doors mustshall remain closed if the carrier stops between landings where there is a risk of falling from the carrier.

The machinery mustshall be designed, constructed and, where necessary, equipped with devices in such a way as to prevent uncontrolled upward or downward movement of the carrier. These devices mustshall be able to stop the carrier at its maximum working load and at the foreseeable maximum speed.

The stopping action mustshall not cause deceleration harmful to the occupants, whatever the load conditions.

6.4.2. Controls at landings

Controls, other than those for emergency use, at landings mustshall not initiate movements of the carrier when:

- (a) the control devices in the carrier are being operated,
- (b) the carrier is not at a landing.

6.4.3. Access to the carrier

The guards at the landings and on the carrier mustshall be designed and constructed in such a way as to ensure safe transfer to and from the carrier, taking into consideration the foreseeable range of goods and persons to be lifted.

6.5. MARKINGS

The carrier mustshall bear the information necessary to ensure safety including:

- (a) the number of persons permitted on the carrier,
- (b) the maximum working load.