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The New Machinery Directive 2006/42/EC
Changes to the Essential Health and Safety Requirements
and
their possible consequences for (draft) harmonised European Standards

INTRODUCTION

The following pages contain a summary of the new elements in the EHSR ⁽¹⁾ formulated in Annex I of the new Machinery Directive 2006/42/EC (English version) *that may have consequences for the contents of the harmonised European Standards or draft Standards.*

The following coding is used:

Framed text: changes with possibly significant consequences for machinery safety standards

Unframed description of changes: changes that will normally not have significant consequences for machinery safety standards.

Cited text of Annex I is presented in italics.

In principle EHSR that are unchanged or with only smaller “editorial” changes, are not included in this summary.

¹ EHSR: Essential Health and Safety Requirement

ANNEX I

Essential health and safety requirements relating to the design and construction of machinery

GENERAL PRINCIPLES

A “new” first point is detailing the **principles of risk assessment**, previously mentioned in few words in the preliminary observation 3:

1. *The manufacturer of machinery or his authorised representative must ensure that a risk assessment is carried out in order to determine the health and safety requirements which apply to the machinery. The machinery must then be designed and constructed taking into account the results of the risk assessment.*

By the iterative process of risk assessment and risk reduction referred to above, the manufacturer or his authorised representative shall:

- *determine the limits of the machinery, which include the intended use and any reasonably foreseeable misuse thereof,*
 - *identify the hazards that can be generated by the machinery and the associated hazardous situations,*
 - *estimate the risks, taking into account the severity of the possible injury or damage to health and the probability of its occurrence,*
 - *evaluate the risks, with a view to determining whether risk reduction is required, in accordance with the objective of this Directive,*
 - *eliminate the hazards or reduce the risks associated with these hazards by application of protective measures, in the order of priority established in section 1.1.2(b).*
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1. Essential Health and Safety Requirements**1.1. General Remarks**

1.1.1. Definitions

Addition of some definitions, in line with the terminology of standards:

For the purpose of this Annex: (“new” terminology)

- a) hazard (means)*
 - e) risk*
 - f) guard*
 - g) protective device*
 - h) intended use*
 - i) reasonably foreseeable misuse*
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1.1.2. Principles of safety integration

- In a): more explicit mentioning of the necessity for the manufacturer to take measures against the “**reasonably foreseeable misuse**”.
 - In a): more precision about the “phases of life” to be dealt with, by adding explicitly the phases of transport, disabling and scrapping.
 - Relocation of the previous point d) to a separate EHSR 1.1.6 “**Ergonomics**”.
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1.1.4. Lighting

- The previous EHSR 3.1.2 on the same subject for mobile machinery has disappeared and is now covered by this general EHSR.
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1.1.5. Design of machinery to facilitate its handling

- The previous EHSR 3.1.3 on the same subject for mobile machinery is now incorporated in this general EHSR (making this specific aspect now generally applicable and not only to mobile machinery).
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1.1.6. Ergonomics (“new” EHSR)

- Previously included in EHSR 1.1.2.d. (“*principles of safety integration*”).
 - Completed with a list of the main aspects of ergonomics.
 - Covers also the requirements of the previous EHSR 1.2.8.: “*Software*”.
 - Moving “ergonomics” to a separate EHSR is an indication of the extra importance the legislator has given to the subject.
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1.1.7. Operating positions (“new” EHSR)

- Incorporates elements from the previous EHSR 3.2.1 for mobile machinery and EHSR 4.2.1.1 for lifting machinery concerning:
 - measures against exhaust gases and/or lack of oxygen;
 - good working conditions and protection of the operator position against hazards;
 - the need for an adequate cab and means for evacuation and emergency exit.
 - **These requirements are now generally applicable and not only to mobile machinery or machines for lifting.**
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1.1.8. Seating (“new” EHSR)

- Incorporates elements from the previous EHSR 3.2.2 and EHSR 3.2.3 for mobile machinery and EHSR 4.2.1.2 for lifting machinery concerning:
 - design for installation of seats where appropriate;
 - for integral sitting operator position seats to be provided with the machine;
 - stability of operator position and possibility of adapting the seat and its position;
 - reduction of vibrations, strength of seat mountings, slip-resistant footrests.
- **These requirements are now generally applicable and not only to mobile machinery or machines for lifting.**

1.2. Control systems (previously “Controls”)

1.2.1. Safety and reliability of control systems

- **Combines** now the requirements of the previous **EHSR 1.2.1** “*Safety and reliability of control systems*” and **1.2.7** “*Failure of the control circuit*”.

New elements (besides smaller modifications of the formulation):

- Measures for ensuring that “**reasonably foreseeable human error during operation does not lead to hazardous situations**”.

- The following additional requirements:
 - “**The parameters of the machinery must not change in an uncontrolled way, where such change may lead to hazardous situations**”.
 - “**The safety-related parts of the control system must apply in a coherent way to the whole of an assembly of machinery and/or partly completed machinery**”.
 - “**For cable-less control, an automatic stop must be activated when correct control signals are not received, including loss of communication**”.

1.2.2. Control devices

- The requirement concerning the use of control devices with PPE is now only in 1.1.2.

- The preference for pictograms for marking of devices has been added.
- Concerning the possibility that **persons can be in a danger zone during starting** without being observed by the operator:
 - Addition of a **technical alternative** for (direct or indirect) observation: design of the control system in such a way that **“starting is prevented while someone is in the danger zone”**.
 - This requirement is now **applicable to “each control position”** (in the past only to the main control position).
- **A new provision** is added for ensuring that if necessary **machinery can only be controlled** from control positions located **in one or more predetermined zones or locations**.
- **“New” provisions** incorporating elements from previous 3.2.1 and thus making their application general and not only to mobile machinery:
 - Measures for ensuring that in **case of more than one control position** the use of one of them precludes the use of the others (except for stop controls and emergency stops).
 - When machinery has **two or more operating positions**, the presence of all required devices at each position and the design/location of these devices, without the operators hindering or putting each other into danger.

1.2.3. Starting

- The requirement concerning the easy restarting of automated plants functioning in automated mode has disappeared.

New requirement:

- *“If safety requires that **starting and/or stopping must be performed in a specific sequence**, there must be devices which ensure that these operations are performed in the correct order”.*

1.2.4. Stopping (previously “Stopping device”)

1.2.4.1. Normal stop (new numbering)

- The effect of the devices for normal stop is now expressed in terms of **“functions”** (previously in terms of **“moving parts”**).

1.2.4.2. Operational stop (new requirement)

- *“Where, for operational reasons, a stop control that does not cut off the energy supply to the actuators is required, **the stop condition must be monitored and maintained”**.”*

1.2.4.3. **Emergency stop** (new numbering)

New elements:

- “The emergency stop function must be **available and operational at all times**, regardless of the operating mode”.
- “Emergency stop devices **must be a back-up** to other safeguarding measures and not a substitute for them”.

1.2.4.4. **Assembly of machinery** (previously “**Complex installations**”):

- Besides the new heading and numbering no other significant changes.
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1.2.5. **Selection of control or operating modes** (previously “*Mode selection*”)

- Besides limited reformulation the requirement concerning the (4) conditions in the control or operating modes for interventions with certain safety provisions disabled, is **completed with the following**:

*“If these four conditions cannot be fulfilled simultaneously, the control or operating mode selector must activate **other protective measures** designed and constructed to ensure a safe intervention zone”.*

1.2.6. **Failure of the power supply**

- **Addition of the following criterion** in case of a failure of the power supply:
 - “the **parameters of the machinery** must not change in an uncontrolled way when such change can lead to hazardous situations”.
-

Previous 1.2.7. *Failure of the control circuit*

- Incorporated in other EHSR (see above).
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Previous 1.2.8. *Software*

- Incorporated in other EHSR (see above and also EHSR 1.7.11)
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1.3. Protection against mechanical hazards

1.3.1. Risk of loss of stability (new heading)

- **Explicit extension** of the requirement to the different “phases of life” of the machinery: “*transportation, assembly, dismantling and any other action involving the machinery*”. (see also 1.1.2.a)

1.3.6. Risks related to variations in operating conditions (new heading)

- The new title is more general than the old one (“*variations in the rotational speed of tools*”) and thus more in line with the content of the requirement.

1.3.8. Choice of protection against risks arising from moving parts

- As well in 1.3.8.1 (transmission parts) as in 1.3.8.2 (parts involved in the process) the terminology concerning movable guards has been brought closer to that used in the related European standards, while the structure of 1.4.2.2, referred to here has been somewhat modified.
- The examples of guards and protective devices have been deleted.

1.3.9. Risks of uncontrolled movements (new requirement):

- This is in fact part of the previous EHSR 3.4.1 concerning mobile machinery : “***When a part of the machinery has been stopped, any drift away from the stopping position, for whatever reason other than action on the control devices, must be prevented or must be such that it does not present a hazard***”.
- The modification makes the requirement generally applicable instead of only to mobile machinery.

1.4. Required characteristics of guards and protective devices

1.4.1. General requirements

- “New” requirement that ***guards and protective devices must “be securely held in place”***: previously in 1.4.2.1 for fixed guards (and thus made more general).
- “New” requirement that, “***where possible, guards must protect against the ejection or falling of materials and objects***”: previously in 1.4.2.2. for “type B” movable guards intended for moving parts directly involved in the process and in 1.4.2.3. for adjustable guards (and thus made more general).
- New requirement adding to the previous point that, ***where possible, guards must protect against emissions generated by the machinery***.

1.4.2.1. (Special requirements for guards) **Fixed guards**

- Additional requirement: "***Their fixing systems must remain attached to the guards or to the machinery when the guards are removed***".

1.4.2.2. (Special requirements for guards) **Interlocking movable guards**

- Besides the addition of the word "*Interlocking*" in the heading, the terminology has been brought closer to that of the European Standards, while the structure has been improved for more clarity.

1.5. Risks due to other hazards

1.5.1. Electricity supply

- The reference to the Low Voltage Directive, in the past rather confusing, is reformulated in a clear way, with the requirement for application of the "**safety objectives**" of **73/23/EEC**.
- Concerning the formalities the text is now clearly saying that **when the Low Voltage Directive is applicable** to a machine in the scope of the Machinery Directive, **only the conformity assessment rules of the Machinery Directive have to be observed with regard to the electrical hazards**.

1.5.7. Explosion

- The detailed enumeration of measures / steps (old 2nd paragraph) is deleted from this requirement.
- The old 3rd and 4th paragraphs are replaced by a new 2nd paragraph: "***Machinery must comply, as far as the risk of explosion due to its use in a potentially explosive atmosphere is concerned, with the provisions of the specific Community Directives.***"

1.5.8. Noise

- Addition of the following text: "***The level of noise emission may be assessed with reference to comparative emission data for similar machinery***".

1.5.9. Vibrations

- Addition of the following text: "***The level of vibration emission may be assessed with reference to comparative emission data for similar machinery***".

1.5.10. Radiation

Restructuring and reformulation of the text, including changes as follows:

- A clear **distinction** between **functional and undesirable radiation** and, for functional radiation, between **ionising and non-ionising radiation**.
 - For **functional ionising radiation** the emission level to which the operator is exposed must be **as low as possible** while, where necessary, (other) **protective measures** must be taken.
 - For **functional non-ionising radiation** the emission level to which the operator is exposed must be **limited to non-dangerous levels**.
-

1.5.13. Emissions of hazardous materials and substances (previously “Emissions of dust, gases, etc.”)

- More detailed formulation, at first sight without really significant consequences for the machinery designer.
 - The enumeration of possible methods against emissions has been completed, also including now precipitation by water spraying, previously mentioned in EHSR 3.5.3. for mobile machinery.
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1.5.15. Risk of slipping, tripping or falling

- **Addition concerning parts of machinery where persons are liable to move about or stand:**
“Where appropriate, these parts must be fitted with **handholds that are fixed relative to the user and that enable them to maintain their stability**”.
-

1.5.16. Lightning (“New” requirement):

- This is the text of the previous EHSR 4.1.2.8 concerning machinery with lifting hazards: “*Machinery in need of protection against the effects of lightning while being used must be fitted with a **system for conducting the resultant electrical charge to earth***”.
 - The modification makes the requirement generally applicable instead of only to machinery for lifting.
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1.6. Maintenance

- Besides some reformulations there seem not to be changes with significant consequences for machinery design.
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1.7. Information (previously: "Indicators")

1.7.1. Information and warnings on the machinery

- The previous EHSR 1.7.0 and 1.7.1 are **restructured** in the EHSR 1.7.1, with addition of general elements from EHSR 1.7.2 and the essential message of the previous EHSR 1.2.8 ("software").
 - There seem to be **no significant new elements** with consequences for the harmonised standards.
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1.7.3 Marking of machinery

- Limited **additions** to the text concerning marking, including the following new elements (**printed in bold**):

- *the business name and full address of the manufacturer **and, where applicable, his authorised representative,***
 - ***designation of the machinery,***
 - *the year of construction, **that is the year in which the manufacturing process is completed.***
- It is prohibited to pre-date or post-date the machinery when affixing the CE marking.***
-

1.7.4. Instructions: Language / languages

- Concerning the language of the instructions distinction is now made between:
 - The "**original instructions**": this indication is applicable to all language versions **verified by the manufacturer of his authorised representative** (and appearing on these versions)
 - The "**translation of the original instructions**": this indication is applicable to **all other translations** (provided by the manufacturer, his authorised representative or by the person introducing the machinery into the language area in question) and must appear on these versions.
 - **All machinery must be accompanied:**
 - Either by "**original instructions**" in the official language / languages of the Member State in which it is placed on the market and/or put into service,
 - Or by "**original instructions**" in another language, in which case the instructions must be accompanied by a "**translation of the original instructions**" in the official language(s) of the Member State.
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1.7.4. Instructions:

- The new EHSR 1.7.4 is **more structured** than the previous EHSR 1.7.4, with after an introduction the following items:
 - **1.7.4.1. General principles for the drafting of instructions**
 - **1.7.4.2. Contents of the instructions**
 - **1.7.4.3. Sales literature**
-

1.7.4.1. General principles for the drafting of instructions

- Besides the new rules concerning languages and the message of previous 1.7.4.h), we find here the follow new provision (“c”): *“The contents of the instructions must cover not only the intended use of the machinery but also take into account any **reasonably foreseeable misuse** thereof”*. See also comments to 1.1.2.a).

1.7.4.2. Contents of the instructions

General

- **The list of subjects** that must be included in the instructions is restructured and also **completed** with a more explicit citation of some items and also additional items (including elements from other EHSR):
 - *d) a general description of the machinery;*
 - *i) assembly, installation and connection instructions, including drawings, diagrams and the means of attachment and the designation of the chassis or installation on which the machinery is to be mounted;*
 - *l) information about the residual risks that remain despite the inherent safe design measures, safeguarding and complementary protective measures adopted;*
 - *m) instructions on the protective measures to be taken by the user, including, where appropriate, the personal protective equipment to be provided;*
 - *o) the conditions in which the machinery meets the requirement of stability during use, transportation, assembly, dismantling when out of service, testing or foreseeable breakdowns;*
 - *q) the operating **method to be followed in the event of accident or breakdown**; if a blockage is likely to occur, the operating method to be followed so as to enable the equipment to be safely unblocked;*
 - *t) the **specifications of the spare parts** to be used, when these affect the health and safety of operators;*
- **Note:** The items d), i), l), m), and o) above are normally covered in the standard by a correct reference to clause 6.5 of EN ISO 12100-2.

Particular information on noise emissions

- Concerning the information on airborne noise emissions to be given by the manufacturer, we find the following **new elements**:
 - The limit for the obligation to inform about the **sound power level** has been reduced from 85 to 80 dB(A).
 - *“Whenever sound emission values are indicated the **uncertainties** surrounding these values must be specified”*.
 - *“Where **specific Community Directives** lay down other requirements for the measurement of sound pressure levels or sound power levels, those Directives **must be applied** and the corresponding provisions of this section shall not apply”*.

Some other particular modifications

- Item g) of the old EHSR 1.7.4, concerning the specific information for machinery intended for use in a potentially explosive atmosphere, is deleted.
- A **new item** has been added concerning the emission of **non-ionising radiation**:
“(v) where machinery is likely to emit non-ionising radiation which may cause harm to persons, in particular persons with active or non-active implantable medical devices, **information concerning the radiation emitted for the operator and exposed persons**”.

1.7.4.3. Sales literature

- The text of the previous EHSR 1.7.4.d) is reformulated, without really new elements.

2. Supplementary EHSR for certain categories of machinery

2.1. Foodstuffs machinery and machinery for cosmetics or pharmaceutical products (previously: “Agri-foodstuffs machinery”)

- **Restructuring:**
 - 2.1.1. General
 - 2.1.2. Instructions
- Reformulation and elimination of some examples, without significant new elements.

- **Extension of the scope of this chapter 2.1. to machinery for cosmetics or pharmaceutical products.**

2.2. Portable hand-held and/or hand-guided machinery

- **Restructuring:**
 - 2.2.1. General
 - Requirements for design and construction
 - 2.2.1.1. Instructions
 - 2.2.2. *Portable fixing and other impact machinery*
 - 2.2.2.1. *General*
 - 2.2.2.2. *Instructions*

- **New element in 2.2.1:** Additional requirement for the **design of handles** for making starting and stopping straightforward.
- Concerning the information on **vibrations** to be given by the manufacturer, we find the following **changes and new elements in 2.2.1.1:**
 - The value to be given becomes “**the vibration total value to which the hand-arm system is subjected...**”.
 - “**the uncertainty of measurement**” must be given.
 - Additional rules for the measurement methods.
- **New 2.2.2** with additional **general requirements** for portable fixing and other impact machinery and **specific requirements for cartridge operated** portable fixing and other impact machinery.

2.3. Machinery for working wood and material with similar physical characteristics

- Some editorial changes and the deletion of some examples, without significant consequences.

- The requirement in b) about the “**risk of ejection of pieces of wood**” has been made more general by reformulation into “**the risk of ejection of work pieces and parts of them**”.

3. Supplementary EHSR to offset hazards due to mobility

3.1.1. Definitions

- New definition of “*Machinery presenting hazards due to its mobility*”, replacing part of the previous introduction of this chapter 3.

Old 3.1.2. Lighting

- Requirement moved to (new) EHSR 1.1.4, making its application general.
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Old 3.1.3. Design of machinery to facilitate its handling

- Requirement moved to (new) EHSR 1.1.5, making its application general.
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3.2.1. Driving position

- Some elements about controls have been moved from the old EHSR 3.2.1 to (new) 1.2.2, making their application general.
 - Some other elements about the driving position are now in (new) EHSR 1.1.7, making their application general.
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3.2.2. Seating

- Part of the seat design requirements have been moved to new ESHR 1.1.8, making them general.

- The **requirement for a “restraint system”** (previously “safety belt or equivalent device”) for the persons in case of ROPS is reformulated and also extended to TOPS and FOPS. It applies now to “*machinery equipped with*” such system(s) instead of machinery “*with provision for a ROPS*”.
 - Such “*restraint system*” **is no longer required if this system “increases the risk”**.
-

3.2.3. Positions for other persons (previously: “Other places”)

- The old 2nd paragraph requiring seats for other work places has been deleted, taking account of new EHSR 1.1.8.
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3.3. Control systems (previously “Controls”)

Introduction added, containing following elements:

- **Measures against unauthorised use** of controls (from previous EHSR 3.3.2).

- Detailed **general requirements concerning remote control**.
-

3.3.1. Control devices

- The requirement from EHSR 1.2.2 concerning **acoustic and/or visual warning signals before starting** if the operator can not observe persons in the danger zone, in the past not applicable to the mobility function, **applies now in the case of reversing**.
-

3.3.3. Travelling function

- More detailed requirements concerning **remote control**.

3.4.1. Uncontrolled movements

- Part of previous text has been moved to new ESHR 1.3.9, making it general.

3.4.2. Moving transmission parts

- The original text of EHSR 3.4.2 (*Risk of break-up during operation*) has been deleted (the general principles were already in EHSR 1.3.2)
- The new text of this EHSR is the previous text of 3.4.8 concerning the conditional deviation from the requirement for interlocking of movable guards.

3.4.3. Roll-over and tip-over (previously "Rollover")

- Extension of the scope of this requirement to "**tipping over**".
- The requirement is now for a **ROPS or TOPS (previously for "anchorage points")** and exception from it in cases where the ROPS or TOPS "*increases the risk*".
- **Deletion of the list with examples of machines** for which ROPS is required.

3.4.4. Falling objects

- More general formulation concerning the persons to be protected (now including also "*other person(s)*").
- The requirement is now for **FOPS (previously for "anchorage points")**.

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

- Some changes of terminology:
 - "*transmission shafts with universal joints*" becomes "*removable mechanical transmission devices*".
 - "*towed machinery*" becomes "*recipient machinery*"....

- Addition of a rule concerning the design of the **guard of the driving device** ("*it must be possible to open this guard...*").

Old 3.4.8. Moving transmission parts

- See new 3.4.2.
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3.5.3. Emissions of hazardous substances (previously “Emissions of dust, gases, etc.”)

- The previous text on alternative protection means or modes, additional to those of (old) EHSR 1.5.13, has been deleted, but elements of it have been moved to EHSR 1.5.13.

- As for the exemption from the 2nd and 3rd paragraph of 1.5.13 where the main function of the machinery is the spraying of products, the text has been completed with the obligation of protecting the operator against the emissions.
-

3.6.1. Signs, signals and warnings (previously “Signs and warning”)

- The examples of light signals to be provided have been deleted.

- Addition of a requirement as follows: “*where necessary, there must be an **appropriate connection between a trailer and the machinery for the operation of signals***”.
-

3.6.3. Instructions (previously “Instruction handbook”)

3.6.3.1. Vibrations (title added to this item that was previously numbered a))

Concerning the information on **vibrations** to be given by the manufacturer, we find here the following **changes and new elements**:

- The values to be given become:
 - “**the vibration total value to which the hand-arm system is subjected...**”.
 - “**the highest root mean square value of weighted acceleration to which the whole body is subjected...**”.
 - “**the uncertainty of measurement**” must be given.
 - Additional rules for the measurement methods are formulated.
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3.6.3.2. Multiple uses

- Title added to this item that was previously numbered b).
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4. Supplementary EHSR to offset hazards due to lifting operations

Introductory text:

- The informative details about the nature of the hazards have been deleted.
-

4.1.1. Definitions

- New definitions:

- “Lifting operation”
- “Carrier”

- For “Dynamic test” some reformulation concerning the “dynamic test coefficient”.
 - The definitions of “lifting accessories” and “separate lifting accessories” are no longer here (see scope and definitions in articles 1 and 2 of the Directive).
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4.1.2.1. Risks due to lack of stability

- Besides some reformulation the specific requirement concerning stability testing for “self-propelled industrial trucks with lift exceeding 1,80 m” has been deleted.
-

4.1.2.3. Mechanical strength

- The sentence stating that “The dynamic tests must be performed on machinery ready to be put into service under normal conditions of use” has been deleted, as well as, in the same paragraph, the examples of “simultaneous movements”.
-

4.1.2.7. Movements of loads during handling (previously “handling of loads”)

- Slight reformulation of the requirement, with explicit addition of the “carrier” as potential source of dangerous movements.
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Old 4.1.2.8. Lightning

- Requirement moved to (new) EHSR 1.5.16, making its application general.
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4.1.2.8. Machinery serving fixed landings (New requirement, previously very limited, dealing with aspects concerning the extension of the scope of the Directive e.g. to construction site hoists, slow moving lifts...):

- **4.1.2.8.1. Movements of the carrier**
- **4.1.2.8.2. Access to the carrier** (including some elements from previous EHSR 4.2.3)
- **4.1.2.8.3. Risks due to contact with the moving carrier**
- **4.1.2.8.4. Risks due to the load falling off the carrier**
- **4.1.2.8.5. Landings**

4.1.3. Fitness for purpose

- The previous requirement 4.2.4, applicable to powered lifting machinery, has been relocated under “4.1. General” and is now applicable to all lifting machinery. This is also confirmed by the reformulation, including now a more explicit requirement that “*The static and dynamic tests ... must be performed on all lifting machinery ready to be put into service*”.

Old 4.2.1.1. Driving position (referring to old 3.2.1) (deleted)

- With old EHSR 3.2.1 some elements about controls have been moved to (new) 1.2.2, making their application general.
- Some other elements of old EHSR 3.2.1 about the driving position are now in (new) EHSR 1.1.7, making their application general.

Old 4.2.1.2. Seating (referring to part of old 3.2.2 and to old 3.2.3) (deleted)

- See comments to 3.2.2 and 3.2.3.

4.2.1. Control of movements (previously “4.2.1.3. Control devices”)

- The terminology concerning the “*hold-to-run control devices*” has been brought in line with that of the standards.

4.2.2. Loading control (previously “4.2.1.4”)

- Slight reformulation.

4.2.3. Installations guided by ropes (previously “4.2.2. Installation guided by cables”)

- Slight reformulation (“*cables*” replaced by “*ropes*”).
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Old 4.2.3. *Risks to exposed persons. Means of access to driving position and intervention points*

- Requirement deleted, but its elements incorporated in new EHSR 4.1.2.7 and 4.1.2.8.2.
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Old 4.2.4. *Fitness for purpose*

- Requirement moved to new EHSR 4.1.3, making it more general.
-

4.3. Information and marking (previously “Marking”)

4.3.1. Chains, ropes and webbing (previously “Chains and ropes”)

- Some limited reformulation including in the text about the certificate the change from “*should*” into “*must*”.
-

4.3.2. Lifting accessories

- The marking items “*identification of the manufacturer*” and “*CE marking*” have been deleted (these are already in chapter 1 of the EHSR).
-

4.3.3. Lifting machinery (previously “Machinery”)

- Besides some other reformulation,

the term “*nominal load*” has been changed into “*working load*”.

4.4. Instructions

4.4.1. Lifting accessories

- Some reformulation of the text.

- Additionally the instructions must give “***the static test coefficient used***”.
-

4.4.2. Lifting machinery (previously “Machinery”)

- The information about the maximum working load is brought in line with the reformulation of EHSR 4.3.3.
 - Additional element in the instructions concerning the fitness for purpose testing: “*where appropriate, a **test report detailing the static and dynamic tests** carried out by or for the manufacturer or his authorised representative*”.
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5. Suppl. EHSR for machinery intended for underground work

Old 5.3. Lighting

- This old EHSR containing an exception from the requirement of EHSR 1.1.4. concerning lighting of internal parts requiring frequent inspection and adjustment and of maintenance areas, has been deleted.

5.3. Control devices (previously "5.4.")

5.4. Stopping (previously "5.5.")

- In line with the terminology used in the standards "*dead man's control*" is made into "*enabling device*" while additional information on the purpose of this device is given.

6. Supplementary EHSR for machinery presenting particular hazards due to the lifting of persons

Title chapter 6: Includes no longer the "*moving*" of persons other than by lifting.

6.1.1. Mechanical strength (previously "6.1.2")

- The old requirement on space and strength of the floor of the carrier is now extended to the complete "*carrier, including any trapdoors*".
- Additional details in the requirements concerning the "*suspension or supporting system*".
- If ropes or chains are used, an additional more explicit requirement for at least **two independent ropes or chains, each with their own anchorage**.

6.2. Control devices (previous 6.2)

- The exception from the obligation for a "*hold-to-run control device*" (previously called "*maintained command type control device*") applies now "*where the carrier itself is completely enclosed*" (instead of "*in the case of machinery serving specific levels*") (old 6.2.1).
 - The old EHSR 6.2.2. has been deleted but the content of it is practically dealt with in the remaining text.
 - The content of the old EHSR 6.2.3. is moved to new 6.3.1 (with reformulation).
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6.3. Risks to persons in or on the carrier

- This new heading covers, besides the old EHSR 6.3 (“Risks of persons falling from the carrier”) also the “Risks due to movements of the carrier” and the “Risks due to objects falling on the carrier”.

“New” 6.3.1. Risks due to movements of the carrier

- This “new” requirement corresponds practically to the old EHSR 6.2.3. and 6.4.2 (“excess speeds” has been deleted).

6.3.2. Risk of persons falling from the carrier (previously “6.3.”)

- This requirement contains the elements of old EHSR 6.3.
- The requirement of old EHSR 6.3.3 on the slip-resistant character of the carrier floor has been deleted (but already in a general way present in EHSR 1.5.15).

- A requirement has been added concerning the **stability of the carrier and the prevention of dangerous movements when the carrier is designed as a work station.**
- The requirement of old EHSR 6.3.2 has been reformulated by adding the need for prevention of **inadvertent opening of trapdoors.**

6.3.3. Risk due to objects falling on the carrier (new requirement)

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

6.4. Machinery serving fixed landings (new)

6.4.1. Risks to persons in or on the carrier

- Precautions against **contact of persons with fixed or moving elements.** If necessary the carrier shall be enclosed, with interlocking doors with locking.
- Measures and devices against **uncontrolled upward or downward movements of the carrier.** Devices must be able to stop the carrier at maximum load and speed.
- Prevention of harmful **decelerations** during stopping actions.
- The old EHSR 6.4.1 is deleted but the related hazards are covered by other clauses.

6.4.2. Controls at landings

- Controls at the landings other than for emergency use **shall not initiate movements when control devices in the carrier are operated or when the carrier is not at a landing.**
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- The main elements of old EHSR 6.4.2 are integrated in new 6.3.1.

6.4.3. Access to the carrier

- Guarding at the landings and on the carrier must ensure a **safe transfer of goods and persons** to and from the carrier.

6.5. Markings

- Additional requirement for including in the marking of the carrier:
 - *“the number of persons permitted on the carrier”*
 - *“the maximum working load”*.