



Lifting module Basic
max. lifting force 1,000 N, stroke from 200 to 600 mm, manual-hydraulic version



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1 Validity of the documentation

These operating instructions are valid for the lifting module basic of the following types:

- 8910-01-20-H
- 8910-01-30-H
- 8910-01-40-H
- 8910-01-50-H
- 8910-01-60-H

2 Description

The stroke movement is obtained by a hydro-mechanical lifting jack with single-lever actuation, with oil being pumped by means of a piston pump into a plunger cylinder.

For lowering the oil returns by the weight of the load from the cylinder back to the reservoir.

The lifting units are ideal for height adjustment of tables, demonstration objects and similar equipments as well as for medical treatment equipments.

3 Target group of this document

- Specialists, fitters and set-up men of machines and installations with hydraulic expert knowledge.

Qualification of the personnel

Expert knowledge means that the personnel must

- be in the position to read and completely understand technical specifications such as circuit diagrams and product-specific drawing documents,
- have expert knowledge (electric, hydraulic, pneumatic knowledge, etc.) of function and design of the corresponding components.

An **expert** is somebody who has due to its professional education and experiences sufficient knowledge and is familiar with the relevant regulations so that he

- can judge the entrusted works,
- can recognize the possible dangers,
- can take the required measures to eliminate dangers,
- knows the acknowledged standards, rules and guidelines of the technology.
- has the required knowledge for repair and mounting.

Further qualification / age restrictions

The personnel must:

- be physically and mentally in the position to do the work required
- be at least 18 years old

Young people under the age of 18 years may only work at the product supervised by a specialist, and if it is required for the vocational training (minimum age of 16 years),

- protect the working area as per the existing rules

The responsibility for different activities at the product have to be clearly defined and kept. Unclear competences are a security risk.



4 Symbols and signal words

⚠ DANGER
<p>Danger of life / heavy health damages Stands for an imminent danger. If it is not avoided, death or very severe injuries will result.</p>

⚠ WARNING
<p>Person damage Stands for a possibly dangerous situation. If it is not avoided, death or very severe injuries will result.</p>

⚠ CAUTION
<p>Easy injuries / property damage Stands for a possibly dangerous situation. If it is not avoided, minor injuries or material damages will result.</p>



Hazardous to the environment

The symbol stands for important information for the proper handling with materials that are hazardous to the environment. Ignoring these notes can lead to heavy damages to the environment.



Mandatory sign!

The symbol stands for important information, necessary protection equipment, etc.

► Note

This symbol stands for tips for users or especially useful information. This is no signal word for a dangerous or harmful situation.

5 Safety instructions

5.1 Basic information

The operating instructions serve for information and avoidance of dangers when installing the products into the machine as well as information and references for transport, storage and maintenance.

Only in strict compliance with these operating instructions, accidents and property damages can be avoided as well as trouble-free operation of the products can be guaranteed.

Furthermore, the consideration of the operating instructions will result in:

- reduced down times and repair costs,
- increased service life of the products.

► Note

These operating instructions are not a replacement for the operating instructions of the entire machine.

5.2 General safety tips

⚠ WARNING
<p>Poisoning due to contact with hydraulic oil! Wear, damage of the seals, ageing and incorrect mounting of the seal kit by the operator can lead to escapes of oil. Incorrect connection can lead to escapes of oil at the ports. For handling with hydraulic oil consider the material safety data sheet. Wear protection equipment.</p>

⚠ WARNING
<p>Injury by high-pressure injection (squirting out of hydraulic oil under high pressure)! Improper connection and use can lead to escapes of oil under high pressure at the seals. Mounting or dismounting of the element must only be made in depressurised mode. Fixing has to be made in an appropriate way.</p>

⚠ WARNING
<p>Injury by crushing! Components of the product make a movement while they are in operation. This can cause injuries. Keep parts of the body and items out of the working area!</p>

⚠ CAUTION
<p>Damage of components! Side loads and forced conditions on the product lead to the premature failure. Avoid forced conditions (overdetermination) of the product. Max. forces and torques see technical characteristics.</p>

⚠ CAUTION
<p>Damage of components! The admissible performance data of the product, see chapter "Technical characteristics", may not be exceeded.</p>

⚠ CAUTION
<p>Damage of components! With hydraulic pressure very high forces are generated. The fixture or machine must be in the position to compensate these forces.</p>



	⚠ CAUTION
	<p>Damage of components!</p> <p>For cleaning / disinfection the plunger should be retracted to avoid degreasing of the plunger.</p> <p>For cleaning / disinfection the environment temperature and the temperature of the cleaning agent of max. 70°C must not be exceeded.</p> <p>The application of cold water immediately after cleaning / disinfection is not admissible.</p>

	⚠ CAUTION
	<p>Damage of components!</p> <p>The product must not be cleaned with</p> <ul style="list-style-type: none"> • vacuum steam procedure, steam ray or high-pressure cleaner • abrasives, scouring pads or other blunting materials • cleaning agents with corrosive or caustic ingredients • organic solvents as halogen or aromatic hydrocarbons and ketones (cellulose thinner, acetone, etc.), since this can damage the product.

► **Note - qualification of the user**
All works may only be effected by qualified personnel familiar with the handling of hydraulic components.

5.3 Warning

	⚠ WARNING
	<p>Injuries due to misuse, incorrect operation or abuse!</p> <p>Injuries can occur if the product is not used within the intended use and the technical performance data.</p> <p>Before start up, read the operating instructions!</p>

5.4 Personal protective equipment



For works at and with the product, wear safety goggles!



For works at and with the product, wear protective gloves!



For works at and with the product, wear safety shoes!

6 Application

6.1 Principal use

- Industrial assembly working places
- Height adjustment of assembly working places in workshops
- Maintenance works
- Assembly fixtures
- Adjusting systems in supply processes of mid-sized objects
- Handling systems for product packing and transfer

6.2 Intended use

The products are used as components in medical engineering, in trade fair construction and for office and communication furniture in the commercial sector. They are used to produce a vertical, linear movement and / or force.

Furthermore the following belongs to possible uses:

- Use within the capacity indicated in the technical characteristics (see data sheet).
- Use as per operating instructions.
- Compliance with service intervals.
- Qualified and trained personnel for the corresponding activities.
- Mounting of spare parts only with the same specifications as the original part.

6.3 Misapplication

	⚠ WARNING
	<p>Injuries, material damages or malfunctions!</p> <p>Do not modify the product!</p>

The use of these products is not admitted:

- For domestic use.
- On pallets or machine tool tables in primary shaping and metal forming machine tools.
- If due to vibrations or other physical / chemical effects damages of the products or seals can be caused.
- In environments, that are used to change the characteristics of the material (magnetising, radiation, photochemical procedures, etc.).
- In areas for which special guidelines apply, especially installations and machines:
 - For the use on fun fairs and in leisure parks.
 - In environments for which special hygiene regulations are valid
 - For military purposes.
 - In mines.
 - In explosive and aggressive environments (e.g. ATEX).
 - In the aerospace industry.
 - For passenger transport.

Special solutions are available on request!

7 Installation

7.1 Design

	⚠ WARNING
	<p>Injury by falling parts!</p> <p>Keep hands and other parts of the body out of the working area.</p> <p>Wear personal protection equipment!</p>

	⚠ CAUTION
	<p>Damage of components!</p> <p>Some product types have a considerable weight. These have to be secured against working free during transport.</p> <p>Weight specifications see chapter "Technical characteristics".</p>



⚠ CAUTION

Damage of components!
Side loads and forced conditions on the product lead to the premature failure.
Avoid forced conditions (overdetermination) of the product.
Max. forces and torques see technical characteristics.

⚠ CAUTION

Damage of components!
The maximum operating torque at the operating shaft must not be exceeded.
This can be achieved e.g. by limiting the operating stroke of the customer's operating element (hand lever or pedal) by the floor.

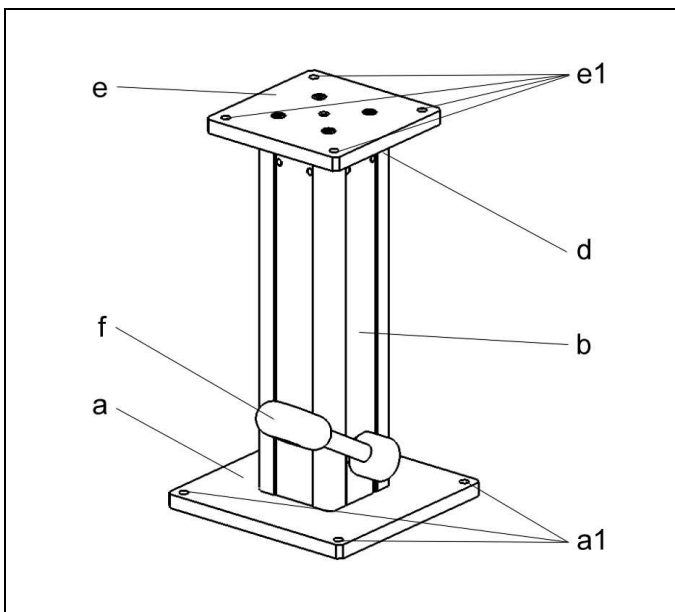


Figure 1: Components

a Base plate	e Top plate
a1 Four holes (Ø 10.5) for fixing at the base construction	a1 Four holes (Ø 10.5) to fix the fixture
b Guiding tube, exterior	f Foot pedal
d Guiding tube, interior	

7.2 Fixing of the product

⚠ WARNING

Injury due to overturning product!
Overturning product due to missing or incorrect fixing!
Fasten bottom plate on the floor.
When introducing torques within the load limit (see technical characteristics) we recommend to use an additional base plate (accessory) and to secure this plate correctly.

⚠ CAUTION

Damage of components!
Foot pedal is pressed down below the lower edge of the base plate.
The customer has to make sure that this will be prevented by the concrete floor or a corresponding base plate connecting construction.

1. Install the product so that for the required cleaning and maintenance works there is all around a clearance zone of at least 700 mm.
2. The product has to be mounted horizontally on a plane and solid concrete floor (concrete strength grade B 25) or a rigid connecting construction of the customer (flatness 0.20 mm).
3. Fasten the bottom plate of the product with hexagon socket head cap screws ISO 4762 - M10 onto the concrete floor or the connecting construction of the customer.
4. For this purpose professionally insert into the concrete floor heavy-duty dowels (e.g. Fischer part-no.: SL M-10 N).

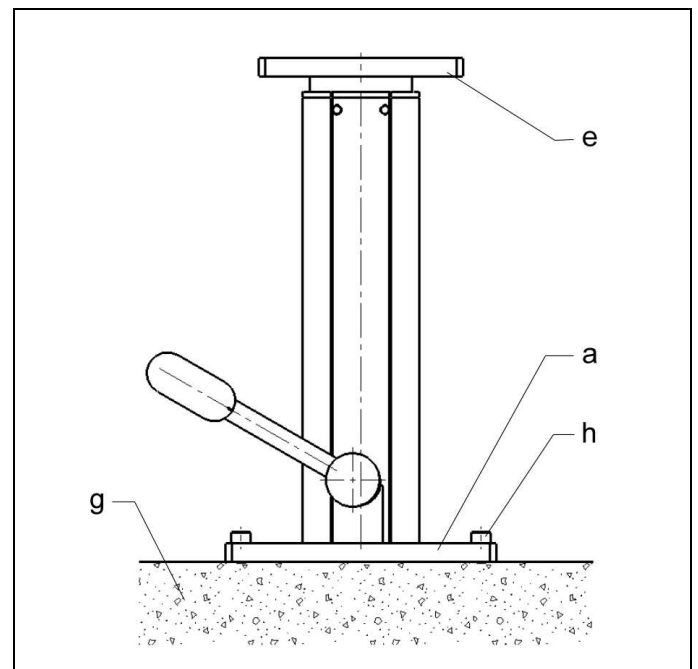


Figure 2: Principle of fixing

a Base plate	g Concrete floor or connecting construction
e Top plate	h Fixing screws (4x)



7.3 Mounting of the customer's connecting construction

	⚠ WARNING
	<p>Injury due to overturning product! Overturning product due to eccentric load provided by the user! The centre of gravity of the user's load must be within the 4 fixing screws of the bottom plate. When introducing torques within the load limit (see technical characteristics) we recommend to use an additional base plate (accessory) and to secure this plate correctly.</p>

1. For fixing of the customer's connecting construction there are 4 bore holes (for M10 - Ø 10.5 mm) at the top plate. All provided bore holes have to be used!
2. Fasten the connecting construction at the top plate.

Note

Dangers due to the connecting construction of the customer, as e.g. squeezing points have to be excluded by the customer's design.

8 Start up

	⚠ WARNING
	<p>Poisoning due to contact with hydraulic oil! Wear, damage of the seals, ageing and incorrect mounting of the seal kit by the operator can lead to escapes of oil. Incorrect connection can lead to escapes of oil at the ports. For handling with hydraulic oil consider the material safety data sheet. Wear protection equipment.</p>

1. Check tight seat (check tightening torque of the fixing screws).

9 Operation

	⚠ WARNING
	<p>Injuries due to non-compliance of the operating instructions! The product may only be operated, if the operating instructions - especially the chapter "Safety instructions" have been read and understood.</p>

	⚠ WARNING
	<p>Injury by crushing! Components of the product make a movement while they are in operation. This can cause injuries. Keep parts of the body and items out of the working area!</p>

	⚠ WARNING
	<p>Injuries due to misuse, incorrect operation or abuse! Injuries can occur if the product is not used within the intended use and the technical performance data. Before start up, read the operating instructions!</p>

The operator is obliged to report immediately any changes at the product that may affect the safety to the safety expert or to the person who is responsible for safety and to stop operating the product.

9.1 Working place

The working place is designed in front of the lifting module.

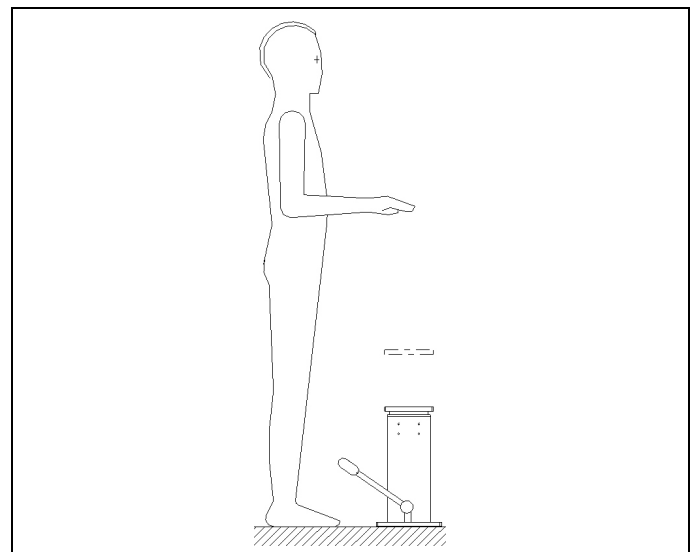


Figure 3: working place

9.2 Behaviour in an emergency

In emergencies the product may not be operated.

9.3 Lifting

The stroke movement is produced by the internal, hermetically-sealed, hydraulic lifting jack with foot pedal with oil being pumped by means of a piston into a plunger cylinder.

To lift the top plate, the foot pedal has to be depressed by approx. 40° several times. The pedal returns to its off-position by means of a return spring.

9.4 Lowering

To lower the top plate, the foot pedal has to be pressed upwards by approx. 10°. Thereby the oil returns due to the weight of the user's load from the plunger cylinder into the reservoir, the top plate lowers.



10 Maintenance

10.1 Plan for maintenance

Maintenance works	Interval	by...
Cleaning, visual check of the lifting module and inspection of the guide unit	daily	operator
Control of the fixing screws, retighten if required. Control of the guide unit	half-yearly checks	expert
Check smooth running with little load over the entire stroke range	yearly	expert
Check smooth running with load over the entire stroke range	yearly	expert
Check the check valve of the internal lifting jack with load	yearly	expert
Revision by the manufacturer (recommendation)	after 50,000 cycles (lifting and lowering)	ROEMHELD service staff
Repair	in case of damages	ROEMHELD service staff



Note

Pay attention to the qualification of the personnel.

10.2 Cleaning

	⚠ WARNING
	Danger of injury due to a lifting or lowering movement! Do not reach into the stroke area during the lifting or lowering movement.

The following cleaning works have to be effected daily at the mechanical components.

- Clean with cleaning clothes or cleaning rags.
- Slightly lubricate the metallic components (plates, guides, etc.).

10.3 Daily checks

	⚠ WARNING
	Danger of injury due to a lifting or lowering movement! Do not reach into the stroke area during the lifting or lowering movement.

- Visual check of the lifting module
- Check the guide unit for damages and possible running marks, repair if required.

10.4 Half-yearly checks

	⚠ WARNING
	Injury due to a lifting or lowering movement! Before cleaning switch off power supply.

- Check all fixing screws of the lifting module, retighten if required.
- Check all cable fixings and fittings, retighten if required.
- Check the wear of the guide unit based on the guiding clearance. If the clearance exceeds 0.5 mm, the guiding elements have to be exchanged. (See chapter repair).

10.5 Yearly checks

To maintain the product in a safe condition and ready for operation, the function safety of the internal lifting jack has to be checked annually by an expert (see maintenance schedule).

10.5.1 Check smooth running of the product with little load over the entire stroke range

	⚠ CAUTION
	Damage of components! If smooth running of the product does not work perfectly, even if only partial stroke ranges are affected, the product must no longer be used. Observe the checking intervals.

- Press the foot pedal upwards until the top plate is completely lowered.
- Fix the test weight at the top plate (10% of the nominal load).
- Depress the foot pedal several times until the top plate is completely lifted.
- Press the foot pedal upwards until the top plate is completely lowered.

10.5.2 Check smooth running of the product with load over the entire stroke range

	⚠ CAUTION
	Damage of components! If smooth running of the product does not work perfectly, even if only partial stroke ranges are affected, the product must no longer be used. Observe the checking intervals.

- Press the foot pedal upwards until the top plate is completely lowered.
- Fix the test weight at the top plate (nominal load).
- Depress the foot pedal several times until the top plate is completely lifted.
- Press the foot pedal upwards until the top plate is completely lowered.



10.5.3 Check the check valve of the internal lifting jack with load

Note

If the top plate of the product lowers independently, it may no longer be operated!

- Press the foot pedal upwards until the top plate is completely lowered.
- Fix the test weight at the top plate (nominal load).
- Depress the foot pedal several times until the top plate is completely lifted.
- Top plate may not lower independently

11 Repair

Note

Repair works, as e.g. the change of the interior lifting jack may only be effected by the ROEMHELD service technicians.

12 Trouble shooting

	CAUTION
	Damage of components! All works only to be effected by ROEMHELD service staff.

Trouble	Cause	Remedy
Top plate does not lift or lower after the operation of the foot pedal	Internal lifting jack defect	Replace internal lifting jack
Top plate lowers without operation of the foot pedal	Internal lifting jack defect	Replace internal lifting jack

13 Technical characteristics

Max. lifting force	1000 N
Stroke	200 ... 600 mm
Function	Manual-hydraulic
Operation	Foot pedal
Lifting profile	Aluminium, colourless anodised
Top and bottom plate	aluminium, black anodised

Type	Number of operations	Weight	Stroke
8910-01-20-H	16	9.5 kg	200 mm
8910-01-30-H	25	10 kg	300 mm
8910-01-40-H	33	11.5 kg	400 mm
8910-01-50-H	41	13 kg	500 mm
8910-01-60-H	50	14.5 kg	600 mm

Querkräfte

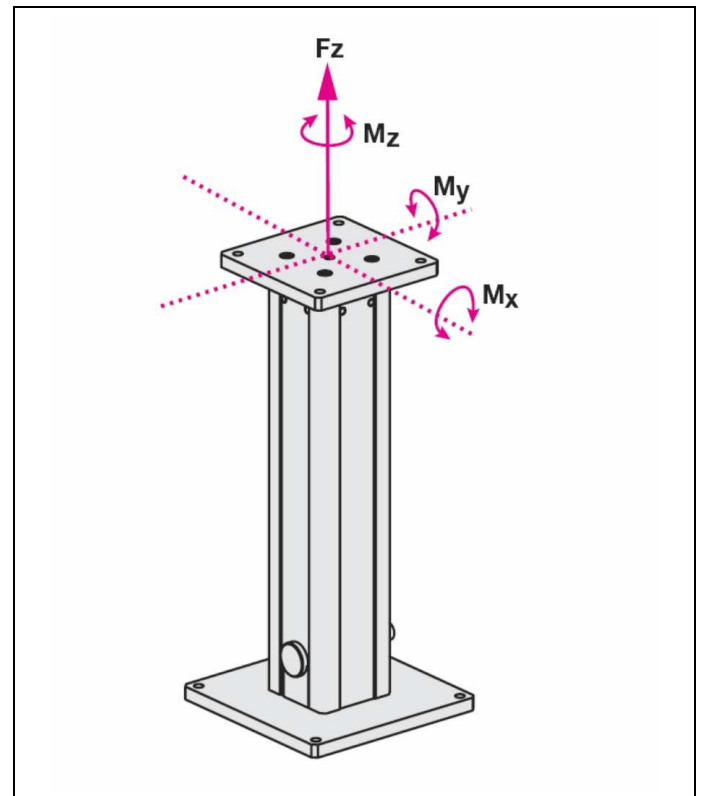


Abb. 4:

Max. load torque M_z	50 Nm
Max. load torque M_x or M_y	100 Nm

Note

In the case of eccentric loads, it is recommended to compensate these by counterweights. In off-position the indicated maximum torques may occur.

The forces and torques have to be considered by the operator. During the lifting motion only 50% of the maximum values are admitted.

Tightening torques

The tightening torques for the fixing screws of the customer's connecting construction are to be taken from the VDI guideline 2230.

Emissions

The A valued continuous sound level of the lifting module is less than 75 dB(A) in operation.

14 Accessory

Base plate for increased stability	
Part-no.	6311-412
Data sheet	M 8.100
Further accessories	M 8.110, M 8.130, M 8.131



15 Disposal



Hazardous to the environment

Due to possible environmental pollution, the individual components must be disposed only by an authorised expert company.

The individual materials have to be disposed as per the existing regulations and directives as well as the environmental conditions.

Special attention has to be drawn to the disposal of components with residual portions of hydraulic fluids. The instructions for the disposal at the material safety data sheet have to be considered.

For the disposal of electrical and electronic components (e.g. stroke measuring systems, proximity switches, etc.) country-specific legal regulations and specifications have to be kept.

16 Declaration of manufacture

Manufacturer

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35321 Laubach, Germany
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16.1 Validity of the documentation

These operating instructions are valid for the lifting module basic of the following types:

- 8910-01-20-H
- 8910-01-30-H
- 8910-01-40-H
- 8910-01-50-H
- 8910-01-60-H

They are designed and manufactured in line with the relevant versions of the directives **2006/42/EC** (EC MSRL) and in compliance with the valid technical rules and standards.

In accordance with EC-MSRL and EN 982, these products are components that are not yet ready for use and are exclusively designed for the installation in a machine, a fixture or a plant.

According to the pressure equipment directives the products are not to be classified as pressure reservoirs but as hydraulic placing devices, since pressure is not the essential factor for the design, but the strength, the inherent stability and solidity with regard to static or dynamic operating stress.

The products may only be put into operation after it was assessed that the incomplete machine/machine, in which the product shall be installed, corresponds to the machinery directives (2006/42/EC).

The manufacturer commits to transmit the special documents of the products to state authorities on request.

The technical documentation as per appendix VII part B was prepared for the products.

16.2 List of the applied standards

2001/95/EC, General product safety

92/58/EEC, Minimum requirements for the provision of safety and/or health signs at work

89/391/EEC, Introduction of measures to encourage improvements in the safety and health of workers at work

89/655/EEC, Minimum safety and health requirements for the use by workers of personal protective equipment at the workplace

Operating safety regulations (BetrSichV) for the transposal of the directive on the introduction of measures to encourage improvements in the safety and health of workers at work. (German implementation of the Work Equipment Directive 89/655/EEC)

Product Safety Act - PSG; November 2011

DIN EN ISO 12100, 2011-03, Safety of machinery; Basic concepts, General principles for design (replacement for part 1 and 2)

DIN EN ISO 13857; 2008-06, Safety of machinery - Safety distances to prevent hazard zones being reached by upper and lower limbs. (replaces: DIN EN 294)

DIN EN 349, 2008-09, Safety of machinery. Minimum gaps to avoid crushing of parts of the human body

DIN EN 614-1 a. 2, 2009-06, Safety of machinery - Ergonomic design principles

DIN EN 1494; 2009-05, Mobile or movable jacks and associated lifting equipment

DIN EN 626-1, 2008-09, Safety of machinery - Reduction of risks to health from hazardous substances emitted by machinery

DIN EN ISO 4413, 2011-04, Hydraulic fluid power - General rules and safety requirements for systems and their components

DIN EN 1037, 2008-11, safety of machinery - prevention of unexpected start-up.

DIN EN 81714-2, 2007-08, Design of graphical symbols for use in the technical documentation of products

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