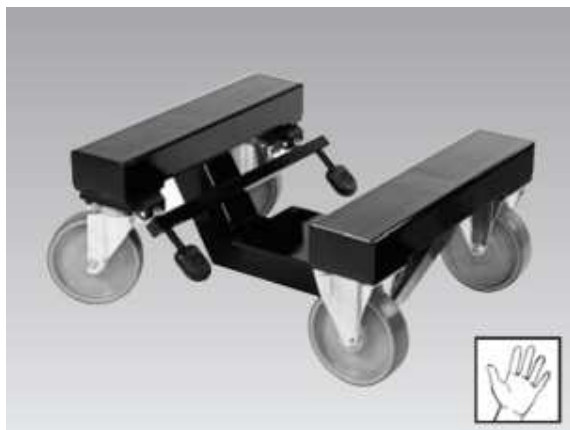




## Cart modules WMS

Max. load 2,000 to 6,000 N, manual operation



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### 1 Validity of the documentation

This documentation applies to the cart modules WMS as per data sheet M 5.101. These are the types and/or order numbers:

- 8900 02 01 O, WMS 200
- 8900 06 01 O, WMS 600

### 2 Description of the product

The cart modules WMS are offered for two different loads. For the cart module WMS 200 the maximum admissible load is 2,000 N and for WMS 600 the maximum load is 6,000 N.

The cart modules WMS consist of a welded sturdy steel frame with two fixed rollers and two steering rollers. The steering rollers are equipped with a parking brake.

In the centre of the steel frame there is a mounting plate. This plate is used for fixation of lifting modules.

Alternatively workshop setups can be mounted at the steel frame.

### 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 Safety instructions

### **DANGER**

#### Danger of life / heavy health damages

Stands for an imminent danger.

If it is not avoided, death or very severe injuries will result.

### **WARNING**

#### Person damage

Stands for a possibly dangerous situation.

If it is not avoided, death or very severe injuries will result.

### **CAUTION**

#### Easy injuries / property damage

Stands for a possibly dangerous situation.

If it is not avoided, minor injuries or material damages will result.



#### 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 Product-specific safety instructions

It is imperative to comply with the following notes to ensure a safe operation:

- The maximum workpiece weight (see technical characteristics), including customer's fixture, must not be exceeded.
- When exceeding the workpiece weight, there may be an internal failure of components.
- The max. total of the adm. torque load must not be exceeded (see technical characteristics).
- Loading may only be effected centrally. Otherwise the mobile lifting module could topple over or parts could be damaged.
- Lateral movement with loads is only admissible at walking pace and in the lower stroke position of the lifting drive.
- The cart may only be used on plane, straight, solid floors.

## 6 For your safety

### 6.1 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 :

- avoid injuries
- reduce down times and repair costs,
- increase the service life of the products.

### 6.2 Safety instructions

#### **CAUTION**

##### Transverse forces and forced conditions!

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.

##### Performance of the product!

The admissible performance data of the product, see chapter "Technical characteristics", may not be exceeded.

##### Cleaning process!

The product must not be cleaned with:

- 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 personnel

All works may only be effected by qualified personnel familiar with the handling of hydraulic components.

### 6.2.1 Warning

#### **WARNING**

##### **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!

### 6.2.2 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!**

## 7 Application

### 7.1 Intended use

The products are used in industrial applications.

Furthermore the following are intended 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.

Cart modules for the transport of devices, assembly fixtures or testing devices within the production.

Cart modules in combination with lifting modules are advantageously used in assembly or production processes, if components have to be transported to working places with different working heights.

Lifting carts can also be used as working surface. The lifting carts with the components will be pushed to the individual working places and adjusted to the optimum ergonomic working height, loading and unloading of the components is not required.

### 7.2 Misapplication

#### **WARNING**

##### **Injuries, material damages or malfunctions!**

- Do not modify the product!

The use of these products is not admitted:

- For the 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.
- On pallets or machine tool tables that are used to change the characteristics of the material (magnetise, radiation, photochemical procedures, etc.).

- In areas for which special guidelines apply, especially installations and machines:
  - For the use at fun fairs and in leisure parks.
  - In food processing or special hygiene regulations.
  - For military purposes.
  - In mines.
  - In explosive and aggressive environments (e.g. ATEX).
  - In medical engineering.
  - In the aerospace industry.
  - For passenger transport.
- For applications other than vertical lifting of loads. Hanging operation (e. g. from the ceiling) is inadmissible.

**Special solutions are available on request!**

## 8 Transport

#### **WARNING**

##### **Injury due to overturning product!**

- Overturning product due to inappropriate means of transportation.
- Do not stand below the load during lifting and lowering, stay outside the danger zone.
- Use suitable means of transportation.
- Pay attention to the weight of the equipment.
- Pay attention that the product is safely located (centre of gravity see instruction sign).

The product is secured and delivered on a pallet for transport. The product fixed on the pallet for transport may only be transported to the place of installation by means of a corresponding conveyor (pay attention to the min. lifting force).

Pay attention that the product is safely located on the hand-lift truck or fork lift truck.

The pallet must be lifted from the pallet by means of a conveyor. It is important to pay attention to the centre of gravity of the product

### 8.1 Mounting of the customer's connecting construction

#### **WARNING**

##### **Injury due to overturning product!**

Overturning product due to customer's eccentric load!

- The position of the centre of gravity of the customer's load must be within the four rollers. The admissible torque load (see technical characteristics) must not be exceeded.

1. For fixing of the customer's connecting construction there are 4 bore holes (for M10 -  $\varnothing$  10,5 mm ) at the base plate. All provided bore holes have to be used!
2. Fasten the connecting construction at the top plate.

The workpiece carriers have to be designed so that no components can fall down during the assembly process and that only centric pressure loads act on the lifting module. Also mechanical threats have to be excluded by the design.

**NOTE**

**Dangers due to the connecting construction of the customer**

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

**9 Installation**

**9.1 Design**

**CAUTION**

**Great weight may fall**

Some product types have a considerable weight. These have to be secured against working free during transport.

Weight specifications see chapter "Technical characteristics".

**Transverse forces and forced conditions!**

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.

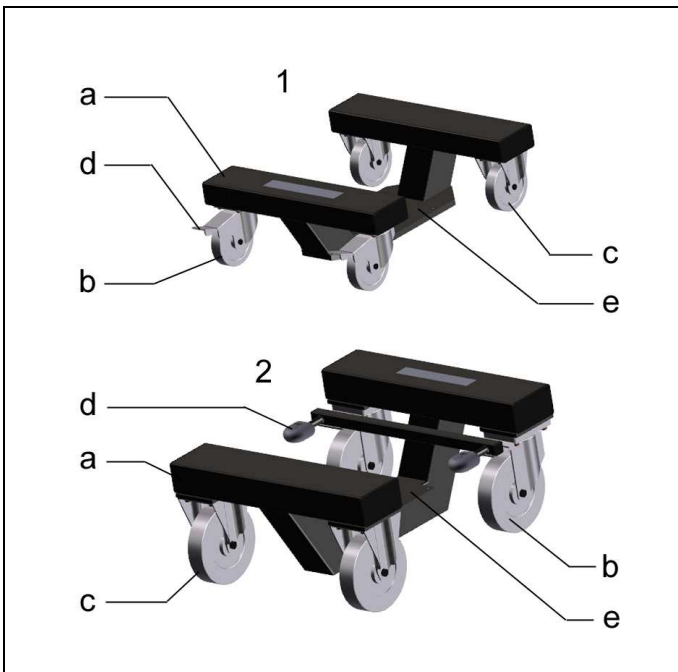


Figure 1: Components

1 Cart module WMS 200	c Fixed roller
2 Cart module WMS 600	d Brake
a Moving mechanism	e Base plate
b Steering roller	

**10 Operation**

**WARNING**

**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.

**Injury by overturning product and their setups!**

- The product may only be moved at walking pace.
- The overall centre of gravity must be taken into account.

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.

**10.1 Operation of the brake**

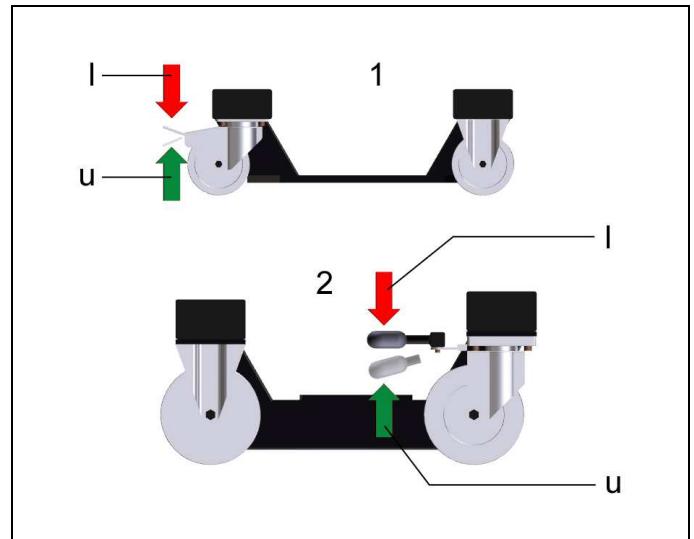


Figure 2: Depress the brake pedal

1 Cart module WMS 200	l lock the brake
2 Cart module WMS 600	U unlock the brake

**11 Maintenance**

**11.1 Plan for maintenance**

Maintenance works	Interval	by...
Cleaning, visual inspection of the product	daily	Operator
Check all fixing screws, retighten if required. Control of the steering rollers, fixed rollers and the brakes	half-yearly checks	Expert
Repair	in case of damages	Specialist

**NOTE**

Pay attention to the qualification of the personnel.

## 11.2 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.).

## 12 Trouble shooting

### **⚠ CAUTION**

#### All work by service personnel only!

- All works only to be effected by ROEMHELD service staff.

Trouble	Cause	Remedy
Holding force of the brakes is not sufficient	Brakes and rollers are worn out	Exchange rollers or brakes

## 13 Technical characteristics

Operation of the brake	manual
------------------------	--------

Module	Weight
WMS 200	40 kg
WMS 600	85 kg

### Side loads

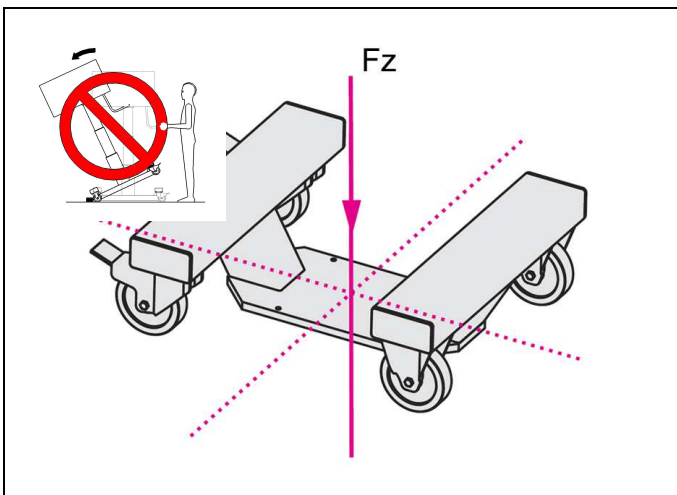


Figure 3: Graphical representation of the torque loads

Max. admissible load $F_z$	
WMS 200	2,000 N
WMS 600	6,000 N

## **i NOTE**

### case of eccentric loads

- 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.

### centre of gravity

- If the of the customer's setups is too high, the product loses stability.
- Pay attention to the centre of gravity of the setups and select a lower centre of gravity, if required.

### Tightening torques

- The tightening torques for the fixing screws have to be designed with reference to the application (e. g. as per VDI 2230).

### safety against overturning

The safety against overturning for the product is to be designed according to the application (e. g. as per DIN EN 1494).

## 14 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.

## 15 Declaration of manufacture

### Manufacturer

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Römheldstraße 1-5  
35321 Laubach, Germany  
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www.roemheld.com

### 15.1 Validity of the documentation

This documentation applies to the cart modules WMS as per data sheet M 5.101. These are the types and/or order numbers:

- 8900 02 01 O, WMS 200
- 8900 06 01 O, WMS 600

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.

## 15.2 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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Laubach, 03.12.2013