



Original Instruction Manual

Single Mobile Rack

Rotom Type 50100

Twin Mobile Rack

Rotom Type 50200

Keep filed for future use!

| Revision | | | | |
|------------|---------|---------|--------------|-------------|
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The Rotom Deutschland GmbH reserves the right to modify this document and the technical data specified herein without prior notice.

We have established this instruction manual to the best of our knowledge and belief. Should you nevertheless find faults or ambiguities, we kindly request you to inform us accordingly. Furthermore, we are grateful for any hints and suggestions. Please kindly contact:

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Version.....

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Elsdorf, 16-01-2013

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1 General

1.1 Scope of Supply and Responsibilities

The mobile racks are being built according to the state of the art and the recognized and safety-related rules and regulations.

The mobile racks consist of the following components:

| Component | Manufacturer |
|--------------------------|---|
| Base Carrier Mobile Rack | Rotom Deutschland GmbH Otto Str. 2 50189 Elsdorf F. R. Germany |
| Jams / Stanchions | Rotom Deutschland GmbH Otto Str. 2 50189 Elsdorf F. R. Germany |
| Base Plate Veneer Wood | Rotom Deutschland GmbH Otto Str. 2 50189 Elsdorf F. R. Germany |
| Base Plate Galvanized | Rotom Deutschland GmbH Otto Str. 2 50189 Elsdorf F. R. Germany |

1.2 Other Applicable Documents

- Apart from this instruction manual, the documents supplied by the third party suppliers must be observed. The companies mentioned are being specified in chapter 8.2 Third Party Documentation.
- Apart from this instruction manual, especially BGR 234 (health and safety regulations required by German Institution for statutory accident insurance and prevention) has to be observed.

2 Security

2.1 Usage according to intended purpose

The mobile racks described serve for the temporary storage of products and goods. For up taking, stacking and transport of the mobile racks appropriate forklift trucks must be used solely.

Any other use is prohibited.

The usage according to intended purpose includes the observation of the instruction manuals of third party suppliers.

The field of application of the mobile racks is the industrial and commercial area, indoor and outdoor.

2.2 Safety Signs

The following signal words are being used in this document in connection with safety signs for the illustration of possible hazards



Hazard!

Death, serious injury or considerable material damage **will occur** unless the appropriate precautionary measures are being taken.



Warning!

Death, serious physical injury or considerable material damage **might occur** unless the appropriate precautionary measures are being taken.



Caution!

Slight physical injury might occur unless the appropriate precautionary measures are being taken.



Attention!

Material damage might occur unless the appropriate precautionary measures are being taken.



Information/Hint

Here you can find information and hints on how to execute the following activities effectively and securely.

2.3 Safety Instructions

Prerequisite for the safe handling of the mobile racks described is the knowledge of the basic safety instructions and the regulations for industrial health and safety.

This instruction manual includes all relevant hints on how to handle mobile racks safely.

The internal health and safety standards must be observed.



Hazard!

Danger to life by physical contact of live parts.



The safety distances to live machinery parts must be observed.



Warning!

Fire protection installations for storage devices must be executed and arranged in such a way that they are being protected against mechanical damages.



Warning!

The escape and rescue routes must be kept free permanently. They must not be blocked, even not temporarily.



Warning!

The materials to be stored must be grouped according to their specific characteristics and their specific requirements to the kind of storage. Prohibitions of mixed storage and chemical incompatibility must be observed.



Warning!

Danger of slipping due to escaping liquids

Clean the floor immediately in case of soiling! Dispose of the cleaning wipes into the collecting containers provided for this purpose.



Warning!

Danger of tripping

Take care that the components of the mobile rack do not represent tripping hazards.



Warning!

Storage devices must be illuminated sufficiently and in a glare-free way. The illumination devices must be executed and arranged in such a way that they are being protected against mechanical damages.



Caution!

All elements of storage devices (e.g. metal floors, metal grates, pallets, etc.), especially the edges and corners, must be designed in such a way that injuries are being avoided.



Caution!

Personal protective equipment (e.g. safety boots, helmet, gloves, etc.) must be provided for all employees according to the existent hazards.

2.4 Definition of Terms

- By 'warehouse', a room or area inside of buildings is meant which is intended to accommodate stored goods in package and transportable containers for the purpose of storage.
- By 'storage', the keeping for later use or for handing over to other parties is meant.
- Storing devices are pallets with or without stacking supports as well as stackable containers for recycling.
- 'Stacking support devices' are tools for recycling purposes, which are to be connected with the flat pallets. These are e.g. stanchions, which are placed on, or connected on or in as well as their connections.
- 'Routes' are corridors and ways in warehouses, which do not serve exclusively for loading and unloading of storage devices.
- 'Rack aisles' or 'storage aisles' are corridors that are entered and driven on for the purpose of loading and unloading of storage devices. No difference is made whether these corridors are entered or

passed exclusively by persons and manual-driven means of transport or by means of power-operated transport devices as well.

- 'Floor' is the complete floor structure (e.g. concrete layer, screed and floor covering).
- The floor is the ground area that is accessible for persons.
- The payload is the load resulting from the goods in storage.
- 'Load' means the load resulting from the payload and the net weight of storage devices. 'Forces that occur during operation' means the load plus all forces and load conditions that occur during proper operation of the warehouse, e.g. those occurring by storing and removal.

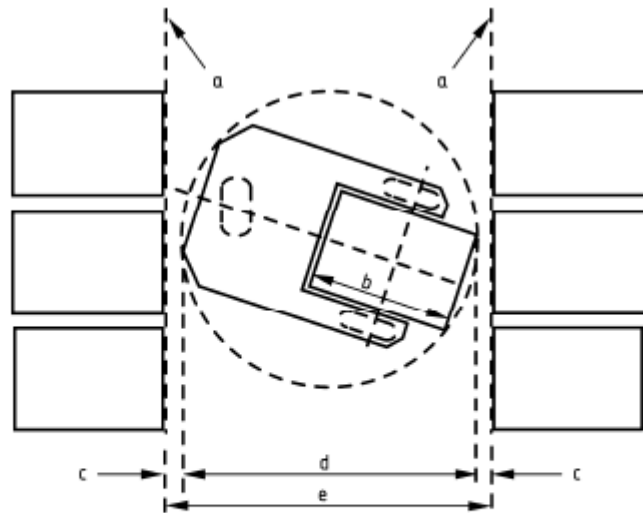
2.5 Requirements on the Warehouse Construction

Installation Areas

- The installation areas for storing facilities and devices must be designed in such a way that the net weights and admissible payloads can be received safely.
- The floor surfaces must be designed level and even. Tripping hazards must be avoided.

Routes, Corridors

- Storing facilities and devices must be established and installed in such a way that sufficiently dimensioned corridors are available.
- Routes for pedestrians between storing facilities and storing devices must be minimum 1.25 m broad.
- Routes for power-operated and track-bound means of transport must be so broad that a safety distance of minimum 0.5 m on both sides of the transport device is guaranteed. When dimensioning, the space required for manoeuvring processes must be considered.



Legende

- a Positionierungslinie auf dem Boden markiert
- b maximales Draufsichtmaß der Palette bzw. Last
- c Freiraum
- d Durchmesser des Wendekreises für Stapler und Last
- e lichte Arbeitsgangbreite

Legend

- a Positioning line marked on the floor
- b maximum front view dimension of the pallet or load
- c free space
- d diameter turning radiuses for lift truck and load

Example for working width for a narrow corridor

- Passages between shelves must have a working width of minimum 2.1 m. The working width of carriageways must be dimensioned in relation to the means of transport used.

2.6 Requirements on Storage Devices

- The storage devices must be constructed and installed in such a way that the payload of the storage good provided can be received safely in any operating mode. The stability of stacks must be provided in any operating mode.
- Storage devices must be installed properly aligned and plumbed. Deviations of the pillars from the perpendicular in longitudinal and depth direction must not be more than 1/200 of the support height.
- Racks must be established perpendicularly. If the inclination is more than 2 %, the stacks must be uninstalled in a riskless way.
- The marking on stackable storing devices must be carried out in such a way that the admissible payload and the admissible imposed load are shown separately from each other.

Example for a marking:

ROTOM/1 t/4,4 t/12

It means:

ROTOM = Manufacturer, Importer or Operator

1 t = admissible payload of a stacking device

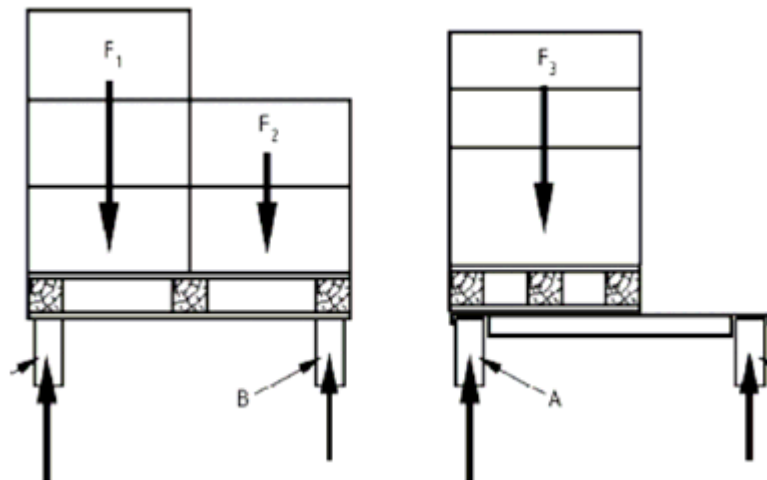
4,4 t = admissible imposed load

12 = Construction Year 2012

- Stacking devices of flat pallets with stacking auxiliary devices must be designed in such a way that they can be stacked positively on top of each other.
- Stacking auxiliary devices must be sufficiently sustainable and must be connectable to the mobile racks positively and detachably. They must be coordinated with the storing devices used with regard to load capacity, surcharge and stacking height.

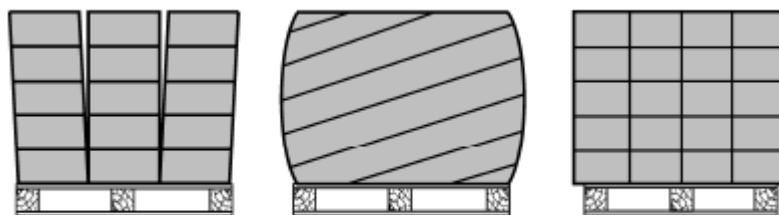
2.7 Requirements on Load Units

- The storing of load units heavier than determined by the supplier and shown on load markings, is not admissible.
- An asymmetrical load distribution on the pallet must be avoided. In case of utilization of the admissible shelf load and bay load, an asymmetrical load distribution may lead to an overloading of the storing auxiliary device.



Asymmetrical pallet loads, while side A bears more load than side B

- The merchandise must be stored on the pallet so as to remain stable.



(a) gefächert
(a) spreading

(b) ausgebaucht
(b) bulging

(c) hinausragend
(c) protruding

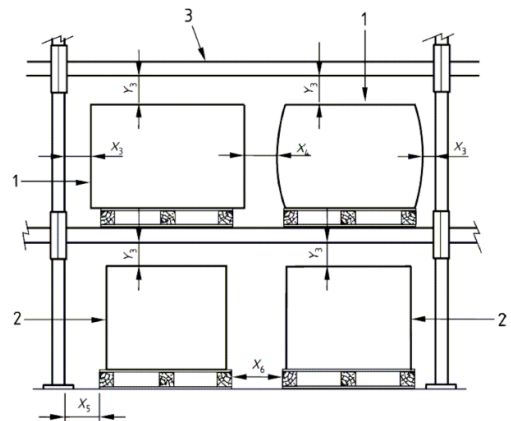
Characteristics of load units on pallets to be avoided

- The actual measurements of the load units (see illustration hereafter) must not conflict with the free spaces that are foreseen for a secure operation.

| H | X | Y |
|-------|-----|-----|
| 3000 | 75 | 75 |
| 6000 | 75 | 100 |
| 9000 | 75 | 125 |
| 13000 | 100 | 150 |

Legende

- 1 Palette mit Ladungsüberhang
- 2 Palette ohne Ladungsüberhang
- 3 Träger ohne Durchbiegung



- 1 Pallet with load overhang
- 2 Pallet without load overhang
- 3 Carrier without deflection

Necessary free spaces between load unit and stacking auxiliary device

- Load units must be executed and secured in such a way that they cannot fall down.
- In case of pallet storing the securities against load units falling down must be 0.5 m high even at the top shelves.

2.8 Requirements on the Operation of Warehouses

- The admissible load of warehouse installations and devices must not be exceeded and must not endanger their stability. Load units must not be dropped jerkily.
- Any passage of other persons during the working hours shall be prevented.
- Storing rooms shall not be misused as common room.
- Warehouse installations and devices must be loaded in such a way that the stored goods cannot fall out or down.
- Stored goods – especially long loads – must be stored in such a way that they do not protrude into the passages. While stacking, sufficiently dimensioned traffic ways must be created and kept free.
- The entrepreneur must establish instruction manuals for warehouse installations and devices on the basis of the manufacturer's assembly and operating instructions and must disclose them to the assured.

- Defects noted on warehouse installations and devices that might endanger the assured, must be repaired immediately and properly. Until the elimination of these defects, the warehouse installations and devices must be withdrawn from use.

2.9 Special Requirements on the Operation of Warehouse Devices by means of Stacking Support

- Stacks must be established vertically. If the inclination amounts to more than 2 %, the stacks removed safely.
- During the stacking process of pallets and stackable containers with strongly different loads, these must be removed by lifting it upwards. The removal of stored goods from within stacks is only allowed, if the storing devices are determined for this purpose from their construction type.
- No ladders or other objects may be leant on stacks, since the stability of the stacks might be affected.
- The slimness of stacks – the relation of height and narrow side of the base – must not exceed 6:1. The stability factor must be at least 2.0.
- Solely in the occurrence and interaction of especially favourable storing conditions, a larger slimness may be chosen divergently, provided that the stability factors as per enclosure 11 of BGR 234 are adhered to. Moreover, this is subject to the approval of the accident insurance institution in charge.

Explanations:

Favourable storing conditions result from an occurrence of

- a plain storing floor,
 - stiff loading units or firm storing goods,
 - a high load factor of the load units and
 - an equal load distribution.
- The requirement of especially favourable storing conditions includes the fact that no other persons are in the stacking area.
 - The admissible slimness with corresponding safety factors against tipping over can be determined with enclosure 1 of BGR 234.

2.10 Requirements on Personnel, Duty of Care

2.10.1 General

Never have storing works carried out by personnel when under the influence of substances that delay reactions or personnel who is not medically fit to operate.

Personnel to be trained, taught, instructed or undergoing general training may only work in a warehouse under the continuous supervision of an experienced person.



Information/Hint

The instruction manuals must be permanently available at the place of operation of the device. The employees must know the filing location.

2.10.2 Personnel's Duty of Care

The personnel must:

- have read and understood the instruction manual
- have been introduced to the requirements for the operation of warehouses
- be medically fit to use storage devices.

2.10.3 Training of the Personnel

Reliable, well-trained and instructed personnel must only carry out Works in warehouses.

Experts who can judge the works assigned to them due to their specific training, knowledge and experiences and who can detect potential hazards and initiate necessary countermeasures to eliminate risks of accidents can carry out maintenance works.

| Activities | Minimum Qualification |
|-----------------------|---------------------------------|
| Transport | Instructed qualified personnel |
| Installation/start-up | Instructed qualified personnel |
| Normal operation | Instructed qualified personnel |
| Maintenance/cleaning | Instructed person |
| Repair | Persons with technical training |
| Tests | Qualified person |

2.10.4 Minimum Age

- The personnel must be of minimum age 18.
- Exception: Apprentices under age 18 are allowed to operate the device for training purpose a supervisor.

2.11 Emergency Action

Please note the following:

- Locations of first aid stations must be known.
- The personnel must be informed about emergency action.
- Appropriate behaviour in the case of emergency must be regularly checked and logged.

In case of emergency:

- Execution of first aid measures on the injured person.
- Call the doctor or the in-house paramedic.
- Inform superiors.
- Follow the instructions of superiors or auxiliary personnel.

3 Technical Data

3.1 Measurements

| Component | Measurements (LxBxH) [m] |
|--------------------|--------------------------|
| Complete Equipment | Approx. 50 x 4 x 4 |

3.2 Environmental Conditions

| Environmental Conditions | |
|------------------------------------|----------------------|
| Admissible ambient temperature | -15 °C up to + 45 °C |
| Noise emission in the area of saws | max. 90 dB (A) |

For technical data on the components, please refer to the documentations delivered by the sub-suppliers specified in the enclosure.

4 Description of Mobile Rack

4.1 Schematic Diagram

Drawings to be included by Rotom

4.2 Functional Description / Assembly

Place the rack on an even and sufficiently loadable underground.

Put one tube each into the respective holder at the four edges of the rack (take care that the tubes have the same length). Take care that the tubes have no cracks, deformations, corrosion or other damages.

Make sure again that the tubes are inserted sufficiently deep in the rack and that all tubes are of the same length and quality.

Lift up the second rack with an appropriate load-lifting device and position it on the four tubes of the lower rack. Take care that the plates of the upper rack are placed sufficiently deep and centred onto the tubes of the lower rack. Make sure that also the top rack is in a horizontal position and that the stack is stable.

Sufficiently instructed qualified personnel must only carry out the installation. During the stacking process and use of the load-lifting device, nobody is allowed to stay in the direct hazardous area.

5 Transport

The transport of storing devices must only be carried out with appropriate forklift trucks. The soil condition must be considered when transposing the storing devices.



Hazard!

Danger to life by physical contact of live parts.



The safety distances to live machinery parts must be observed.



Warning!

Falling Load. Use sufficiently dimensioned devices, ropes or belts for moving machinery parts and tools by means of a crane. Pay attention to a secure hold and a horizontal load distribution.

- Do not step or stand under a suspended load.
- Determine a competent instructor for the lifting process.



Warning!

The escape and rescue routes must be kept free permanently. They must not be blocked, even not temporarily.



Warning!

Only use appropriate transport vehicles with sufficient loading capacity! Secure the load reliably.

6 Maintenance

Is in the operator's responsibility.

6.1 Maintenance Schedule

The racks and tubes must be controlled visually before and after use with the aim to identify cracks, deformations or other potential damages. Racks and tubes with visible defects and/or damages must under no circumstances be used and must be inhibited for use.

6.2 Repair

Repair works must only be carried out in agreement with the manufacturer Rotom GmbH.

Please observe the sub-supplier's documents.



Warning!

By use of unauthorized spare parts persons might be injured and the facility might be damaged.

Only use original spare parts.

7 Dismounting and Disposal

In case of an exchange of the individual components and its disposal comply with legal requirements.

8 Enclosures

8.1 Index of Illustrations

8.2 Third-party Documentation

| Components | Manufacturer |
|------------|--------------|
| | |
| | |
| | |
| | |

8.3 BG Rules (Institution for statutory accident insurance and prevention)

BGR 234