



robatherm AHUs.

Transport and unloading.

October 2024

English - Translation of the original instructions

Air handling units | type RM/RL/TI-50



You can find the currently valid version of these instructions, and further instructions, on our website at www.robatherm.com/manuals.

This leaflet is based on the generally accepted engineering standards at the time of drafting. Since the printed version is not subject to change control, the current version must be requested from robatherm or downloaded from the Internet at www.robatherm.com before application.

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Content subject to change.

To improve readability, this document does not use male, female, and non-binary pronouns (m/f/d). All pronouns apply equally to all genders.

Last modified: October 2024

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General remarks

Information about these instructions

These instructions will facilitate safe and efficient use of the AHU.



All persons working on the AHU must thoroughly read and understand these instructions before starting any kind of work.

Safe working is dependent on adhering to all safety information and instructions.

Accident prevention regulations

In addition to the information in these instructions, the local accident prevention and national occupational health and safety regulations apply.

Further information

The instructions describe all the available options. Whether and which options are available in the AHU depends on the options selected and the country for which the AHU is intended. The illustrations serve as an example and may differ.

The instructions consist of several parts and have the following structure:



Fig. 1: Parts of the instructions

Main operating instructions

- ➔ Transport and unloading
- ➔ Installation and assembly
- ➔ Commissioning
- ➔ Operation and faults
- ➔ Maintenance and cleaning
- ➔ Disabling and disposal

Environmental protection

NOTE



Risk to the environment due to incorrect handling of environmentally hazardous substances.

Improper handling of environmentally hazardous substances can cause damage to the environment. Incorrect disposal of environmentally hazardous substances can endanger the environment.

- Observe the instructions in the operating manual.
- Environmentally hazardous substances must be disposed of by a waste disposal and recycling company.
- In case of leakage of environmentally hazardous substances, take appropriate measures (see chapter "Chemical hazard due to operating fluids ", page 9) and inform competent authorities.

Personnel qualification

AHUs may only be transported by persons with appropriate qualifications.

→ Professional driver

The professional driver has a valid driver's license for the motor vehicle according to Directive 2003/59/EC with entry of code number 95 in the driver's license. Professional drivers are trained for the specific task area in which they work and know the relevant standards and regulations. The professional driver has in-depth knowledge of transport and load securing. The professional driver is able to carry out transport work on the basis of professional training, knowledge and experience and to recognize and avoid possible dangers independently.

Security

General risk sources

General hazards

WARNING



Danger of crushing from reaching under suspended loads

When positioning the delivery sections for the installation and assembly of the AHU, there is a risk of crushing people or limbs if people are in the danger zone or limbs reach into the danger zone.

- Leave the danger zone.
- Do not reach under the delivery section.
- Do not stand below suspended loads.
- Wear safety footwear of a min. protection class S1 according to EN ISO 20345.
- Observe the safety regulations for the industrial truck and means of transport.



WARNING



Danger to life from falling!

A falling height of more than 1 m constitutes a fall hazard.

- For falling heights of 1 m or more, a railing is recommended.
- From falling heights of 3 m, fall protection can be implemented using anchor points.

WARNING



Danger to life due to incorrect storage and transport

If a roof load is applied to a correspondingly marked section (e.g., by stacking), this will cause the structure to fail. When craning the section, failure of the casing construction and falling of the section or parts of it may cause danger to life.

- Do not load the roof.



WARNING



Danger to life from wrong transportation

If the lifting lugs are loaded incorrectly (e.g. for lashing on a lorry), this will cause the structure to fail. When craning a unit on DIN frame, failure of the lifting lugs and the unit on DIN frame or parts of it falling may cause danger to life.

- Do not use lifting lugs for load securing on the lorry.

WARNING**Danger to life from suspended loads and falling objects**

Danger to life from failing transport lugs, lifting lugs or lifting tubes.

- No additional loads on in or on the delivery sections.
- Do not install any components in or on the delivery section before transporting it to the final installation site.
- Only use suitable permitted lifting equipment (rope, chains, lifting straps, turnbuckles) complying with BGV D6 (German employers' liability insurance association regulations) to transport and unload the delivery sections.
- Only attach lifting equipment to the transport lugs, lifting lugs or lifting tubes on the delivery sections.
- Lifting equipment must be approved for the weight of the delivery section.
- For transport lugs, the angle of inclination between the lifting equipment and load must be between 45° and 55°.
- For lifting lugs, the maximum permitted oblique pull is 10°.
- For lifting tubes, the maximum permitted oblique pull is 30°.
- Reduce the load capacity by spreading the lifting equipment in accordance with the lifting equipment table.
- Observe the safety regulations for the conveyor vehicles and means of transport.
- Do not stand below suspended loads.

WARNING**Danger to life from falling objects**

There is a danger to life from the delivery section falling over during unloading and transport with the forklift due to it having an offset centre of gravity or a narrow footprint.

- No additional loads on in or on the delivery sections.
- Do not install any components in or on the delivery section before transporting it to the final installation site.
- For delivery sections with a narrow footprint, first secure with suitable auxiliary tools and materials provided on site to prevent falling over (rope, supports, etc.).
- Only unload the delivery section from the base frame or pallet or transport using these.
- If the centre of gravity is off-centre, reposition the forks.
- Underrun the delivery section completely.
- Tilt the lifting mast slightly towards the forklift and secure the delivery section at the lifting mast to prevent it from tipping over.
- Observe the forklift safety instructions.

WARNING



Danger to life due to loose parts falling over

Removing transport locks from loose parts before final unloading at the installation site poses a risk of fatal injury from falling over.

- When unloading by crane, attach loose parts to the crane first.
- When unloading with the forklift, first secure loose parts against falling over with suitable on-site aids (ropes, supports, ...)
- Then remove transport locks.

CAUTION



Risk of cutting due to sharp edges

There is a risk of being cut by the sharp edges when touching the metal edges.

- Wear personal protective equipment (cut-resistant gloves and long-sleeved clothing).

NOTICE



Risk of material damage from incorrect transportation

All delivery sections are fitted with transport lugs, lifting lugs or transport frame openings. Delivery sections without a base frame are equipped with their own disposable pallets for transportation. Incorrect transportation can result in material damage.

- Transport delivery sections ensuring that the base frame/DIN frame/transport frame or the squared timbers/pallet are always at the bottom and the transport lugs are always at the top.
- Unload and transport in accordance with these instructions.
- Completely under-run the delivery section when unloading with forklift trucks.

Chemical hazard due to operating fluids

WARNING



Damage to health from mercury

UV-C illuminants contain mercury. Mercury is toxic and dangerous to the environment.

- Avoid contact with skin and eyes. In case of contact, flush skin and eyes with plenty of water. Take off contaminated clothing.
- Do not swallow. If swallowed, induce vomiting.
- Ensure good air exchange in the danger zone.
- Comply with the safety data sheet of the manufacturer.

CAUTION



Risk of serious injuries due to hazardous substances

There is a risk of poisoning if the carton is damaged or if the UV-C illuminants break.

- When handling broken UV-C illuminants, follow the safety instructions for handling mercury.
- Avoid direct contact with eyes, skin, and clothing.
- Ensure excellent ventilation of the AHU and the rooms connected via the ducts.
- Keep broken pieces of UV-C illuminants in airtight packaging and dispose of properly.

TIP



Removal of small amounts of mercury

UV-C illuminants contain small amounts of mercury. Removal of the small amount leaked at breakage can be done with special sorbents for mercury.

Installation site requirements

For information on the installation site, see "Installation and assembly" chapter "Requirements for the installation site".

Types of unloading

Individual sections are to be loaded onto the truck in such a way that they can be unloaded depending on the selected unloading method. The following types of unloading are possible:

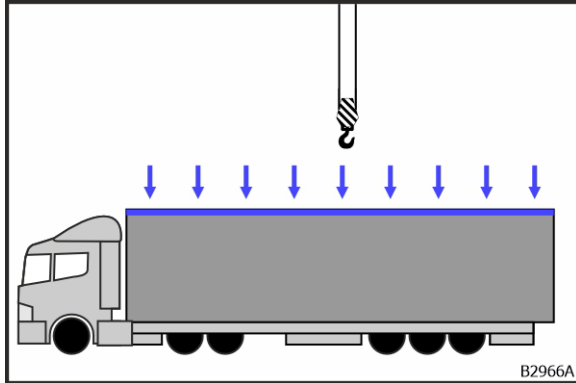


Fig. 2: Crane unloading

- Unloading via the roof by means of transport lugs see chapter "Unloading by means of transport lugs", page 13.

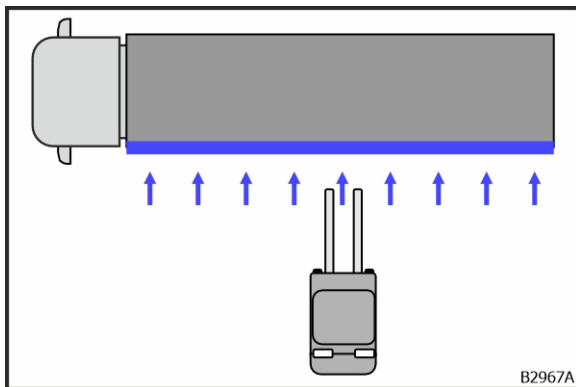


Fig. 3: Forklift unloading from the side

- Unload from the side using base frame or pallet see chapter "Forklift unloading and transport ", page 38.

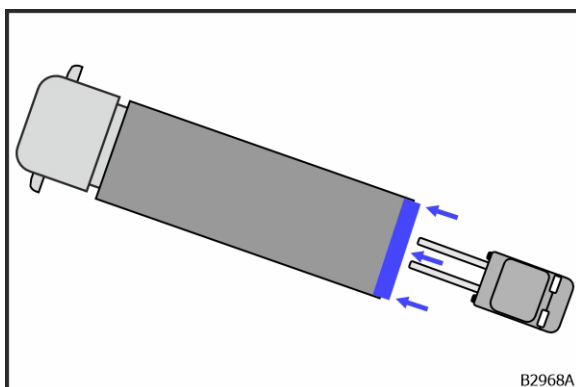


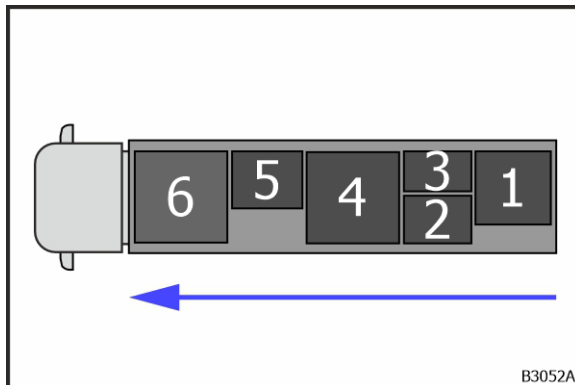
Fig. 4: Forklift unloading from the back

- Unloading via the rear end by means of base frame or pallet see chapter "Forklift unloading and transport ", page 38.

Units on DIN frame are unloaded by means of lifting lugs, see chapter "Unloading by means of lifting lugs", page 15.

AHUs with appropriate openings in the transport frame are unloaded using lifting tubes; see chapter "Unloading using lifting tubes", page 21.

Unloading sequence



Start unloading the truck from the rear.

Fig. 5: Unloading sequence

Crane unloading and transport

Personnel qualification

The work described in this section may only be performed if the person has the following qualifications:

- Crane operator

Crane operators are trained for the specific task area in which they work and know the relevant standards and regulations. Based on a theoretical and practical examination, the crane operator has in-depth knowledge of load suspension devices and lifting equipment as well as of estimating, slinging, setting down and storing loads. The crane operator is able to carry out transport work on the basis of professional training, knowledge and experience and to recognize and avoid possible dangers independently.

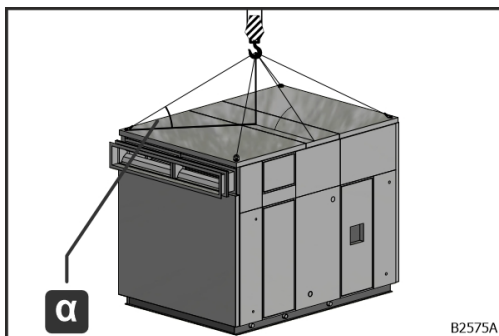
Unloading by means of transport lugs

Each section is equipped with four transport lugs. The transport lugs are located in the corners on the roof of the section.

Aids for unloading by means of transport lugs

- 4x shackles for transport lugs with \varnothing 30 mm
- Other suitable lifting equipment

Craning of sections by means of transport lugs



Attach lifting equipment to all transport lugs. The angle of inclination α between the lifting equipment and the load must be between 45° and 55° , otherwise use lifting gear.

Fig. 6: Cranes with transport lugs

Craning of sections with roof rack frames

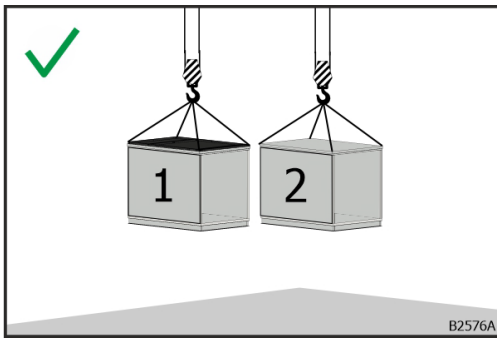


Fig. 7: Craning sections

Always crane sections individually. The upper section (2) must not be connected to the lower section (1) until the lower section (1) is at the final installation site.

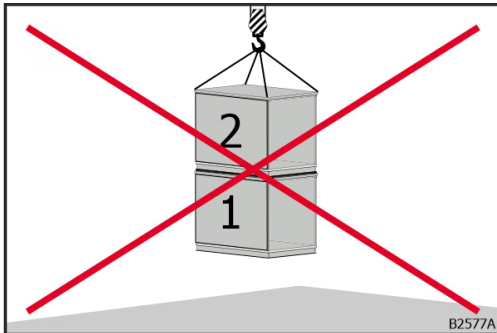


Fig. 8: Incorrect craning of sections

The roof rack frame is not designed to lift the lower section (1) together with the upper section (2).

Unloading by means of lifting lugs

WARNING



Danger to life due to incorrectly struck load

Due to the inclined position of the unit on DIN frame, the lifting lugs are not loaded evenly. There is a risk of death due to the failure of lifting lugs.

- Determine the center of gravity.
- Correct inclined position by changing the rope length.
- For uniform loading, use turnbuckles as lifting equipment.
- Use lifting gear.

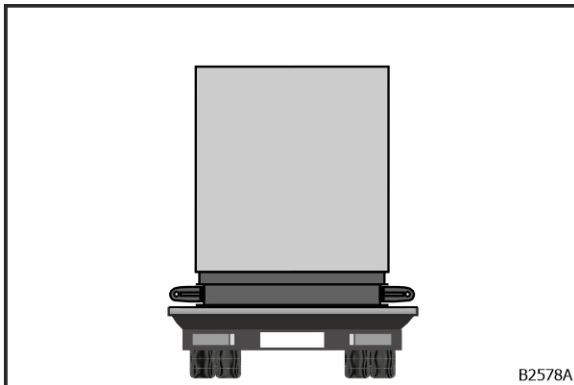


Fig. 9: Unit on DIN frame on a lorry

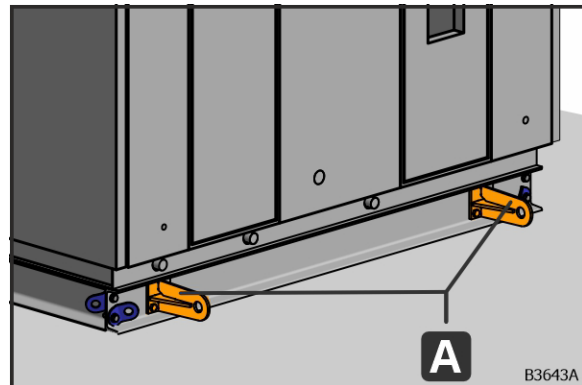


Fig. 10: Lifting lugs (A)

For AHUs completely mounted on a DIN frame, the lifting lugs (A) must be used.

The positions of the lifting lugs (A) on units on DIN frames are designed exclusively for transport and cannot be used for positioning the support structure (support point).

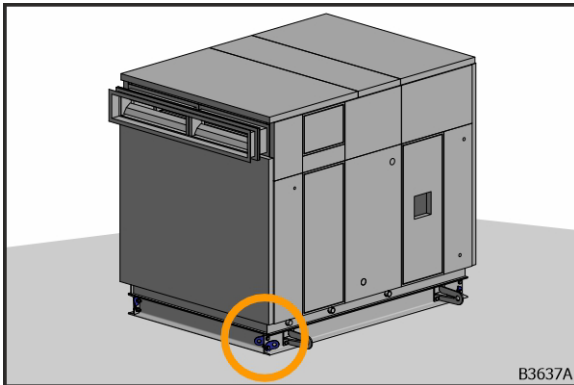


Fig. 11: Corner of the DIN frame

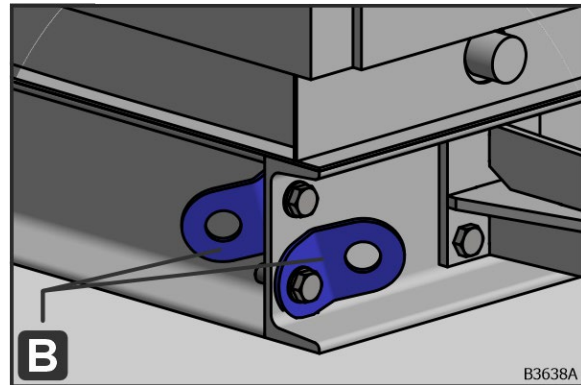


Fig. 12: Transport lugs (B) on the DIN frame

Every corner of the DIN frame is fitted with transport lugs (B). The transport lugs (B) on the DIN frame are only used to attach ropes for positioning.

Auxiliary tools for unloading units on DIN frame by means of lifting lugs

Traverse requirements

Use traverses with load capacity \geq transport weight. Directly connecting the crane hook to the lifting points is not permitted. Reduce the load capacity by spreading the lifting equipment in accordance with the lifting equipment table.

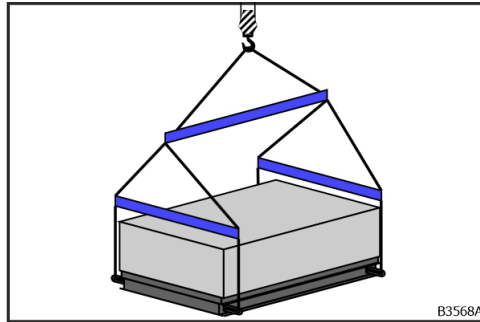


Fig. 13: Example of on-site lifting devices for 4 lifting lugs

In the case of units on DIN frames, it is absolutely essential that a suitable on site lifting device (e.g. loading gear) is used to ensure even load distribution across all lifting lugs. The traverses must have a sufficient number of lifting points. All lifting lugs must be used for the crane procedure. Refer to the technical drawing for the number of lifting lugs.

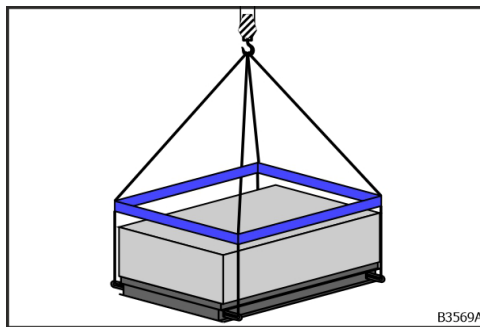


Fig. 14: Example of on-site lifting devices for 4 lifting lugs

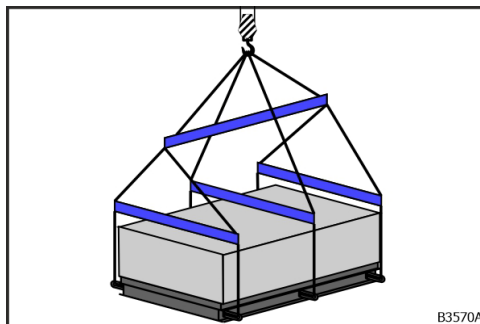


Fig. 15: Example of on-site lifting devices for 6 lifting lugs

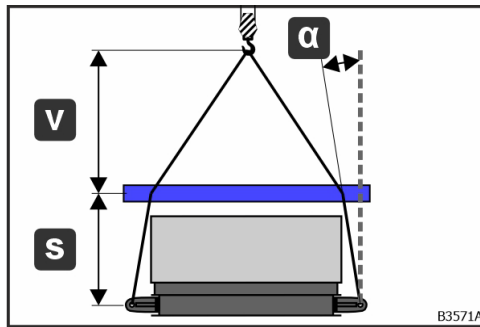


Fig. 16: Selecting the traverses

Use traverses with attachment elements that can be adjusted in width and length.

- Angle α must not be negative ($\alpha \geq 0^\circ$).
- Choose a very small distance s .
- Choose a very large distance v .
- $v > s$

The width and length of the traverses must be right for the distance between the lifting lugs to prevent oblique pull.

Requirements for other lifting equipment

- Use chains with load tensioners to adjust the chain length.
- Polyester slings are not suitable.

Craning units on DIN frame using lifting lugs

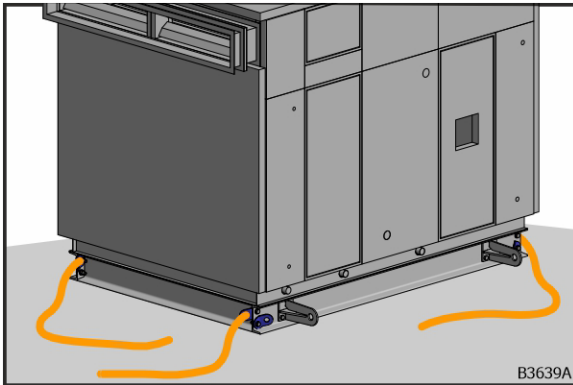


Fig. 17: Guide rope for positioning

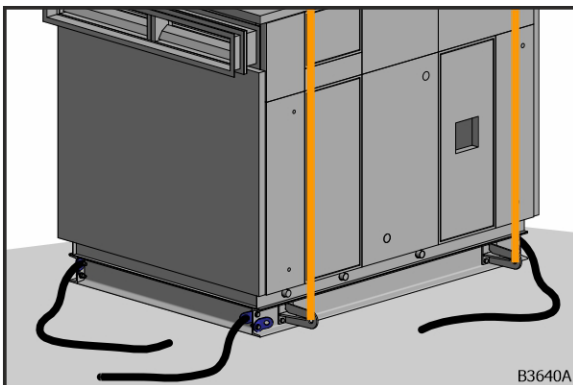


Fig. 18: Attaching the unit on DIN frame to the lifting lugs

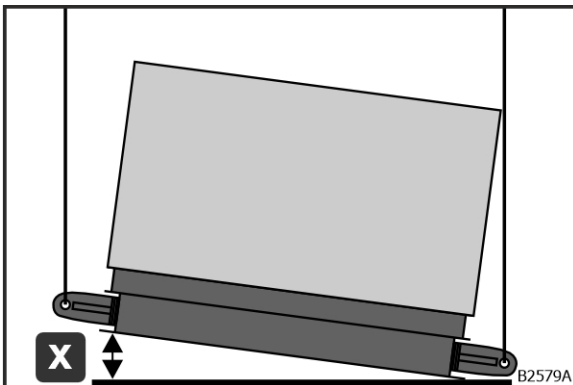


Fig. 19: Inclined position in width direction

1. Before the crane operation, attach guide ropes to each corner of the DIN frame in the transport lugs (B) for positioning.
 2. Attach the unit on DIN frame to the lifting lugs (A) see chapter "Auxiliary tools for unloading units on DIN frame by means of lifting lugs", page 16.
- The maximum permissible inclined position in the width direction when using a crane is $x \leq 5$ cm.

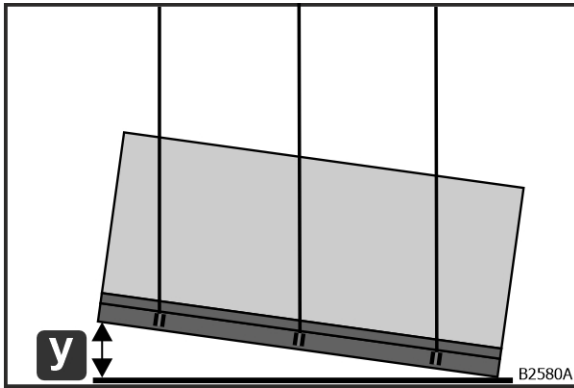


Fig. 20: Inclined position in longitudinal direction

- The maximum permissible inclined position in the longitudinal direction when using a crane is $y \leq 30$ cm.

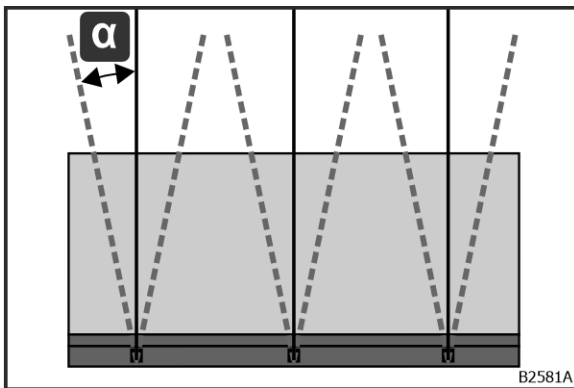


Fig. 21: oblique pull

- The maximum permissible oblique pull of lifting equipment when craning one piece delivery steel base frames is $\alpha \leq 10^\circ$.
3. Adjust the lifting equipment so that the AHU is craned horizontally to prevent it from tipping over.

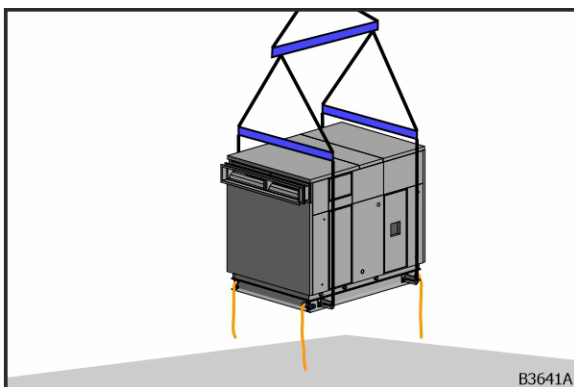


Fig. 22: Unit on DIN frame on the crane

4. Hold the guide rope.

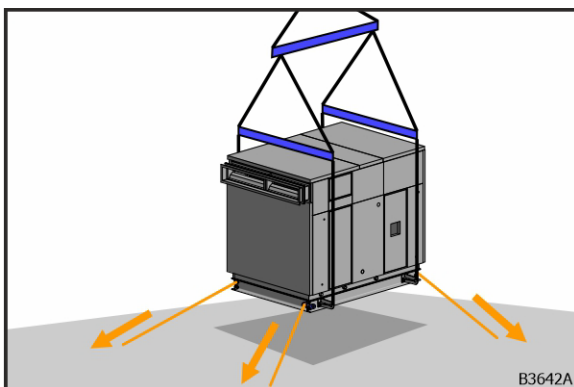


Fig. 23: Positioning using guide ropes

5. Turn and position the unit on DIN frame using the guide ropes.

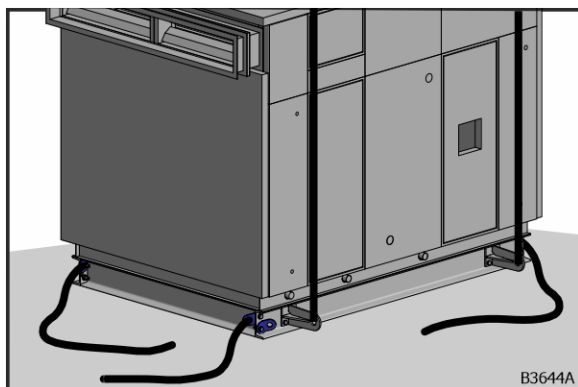


Fig. 24: Unit on DIN frame set down

6. Set down the unit on DIN frame.

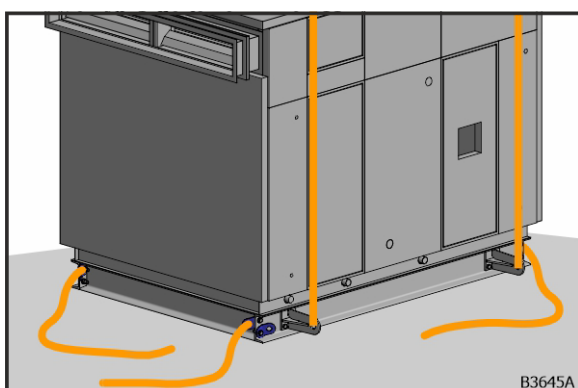


Fig. 25: Guide rope and lifting equipment

7. Remove the guide rope and lifting equipment.

Unloading using lifting tubes

Proper use

The lifting tubes are suitable for transporting delivery sections by crane with a maximum weight of 3 t. The maximum permissible load per lifting tube is 1 t. The delivery sections concerned are equipped with transport frame openings with reinforcing plates. The lifting tubes are designed for a maximum crane angle of $\pm 30^\circ$ and for a maximum of 500 load changes.

WARNING



Danger from misuse

Serious personal injury or even death and damage to property can be caused by misuse of the lifting tubes.

The lifting tubes may only be used in conjunction with the transport frame. No other use is permitted, in particular the transportation of delivery sections that are not expressly intended for this type of transportation.

The lifting tubes are only intended for transporting by crane. No other use is permitted, in particular transportation with transport castors or lifting with the aid of lifting jacks.

The load to be moved may have a maximum weight of 3 t.

The lifting tube may only be used for transporting the unit widths specified on the nameplate.

Setup

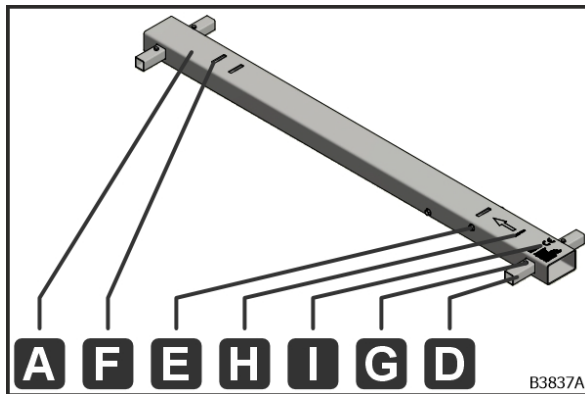


Fig. 26: Lifting tube (A)

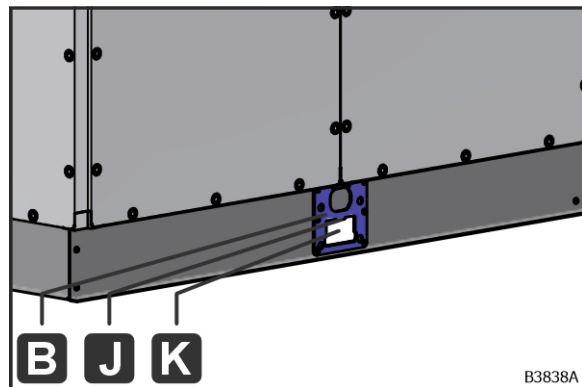


Fig. 27: Transport frame opening (K)

A – lifting tube; B – reinforcing plate; D – safety tube; E – stop; F – slotted hole to prevent slipping; G – safety screw with nut; H – arrow for insert direction and transport frame width; I – nameplate; J – anti-slip lug; K – transport frame opening

AHUs with transport frame openings (K) must be craned using the lifting tubes (A) provided in the scope of delivery.

The positions of the transport frame openings (K) are designed exclusively for transportation using lifting tubes (A) and cannot be used for positioning the support structure (support point).

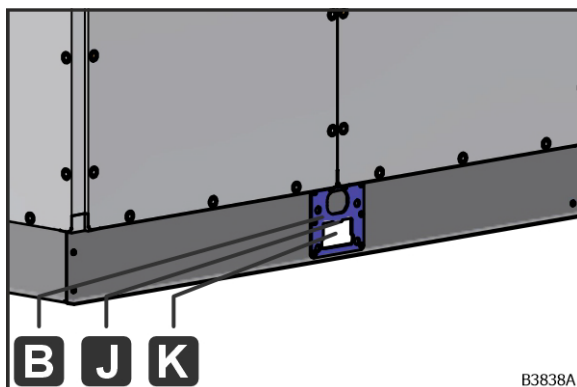


Fig. 28: Transport frame opening (K) with reinforcing plate (B)

The number of transport frame openings (K) varies depending on the dimensions and weight of the delivery section. Refer to the technical drawing for the number of transport frame openings (K).

The transport frame openings (K) are fitted with reinforcing plates (B). The lifting tubes are inserted into these transport frame openings (K). The anti-slip lug (J) holds the lifting tube in position during crane operation (see chapter "Work steps", page 31).

Aids for unloading AHUs using lifting tubes

Aids included in scope of delivery

WARNING



Danger to life from using incorrect lifting tubes

If lifting tubes are used that are not matched to the unit width, this will cause the structure to fail. When using a crane to lift the delivery section, failure of the lifting tubes or the transport frame and the delivery section or parts of it falling may pose a risk to life.

- Select lifting tubes in accordance with table see chapter "Selecting the lifting tubes in relation to the transport frame width", page 25.

The appropriate lifting tubes (A) must be selected according to the transport frame width (T).

Methods for determining the transport frame width

Measuring the transport frame width (T)

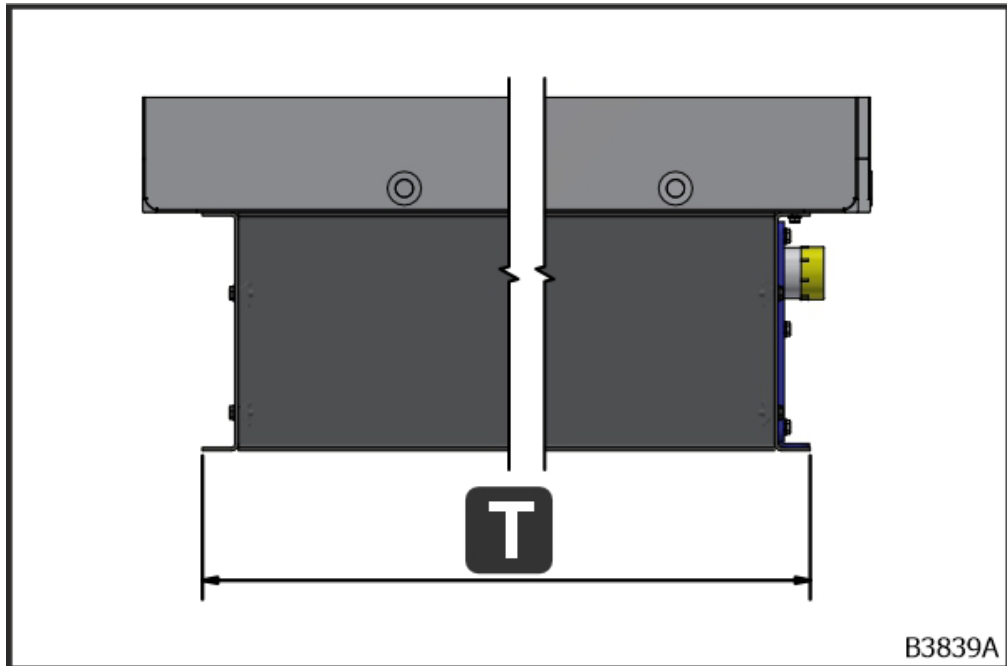


Fig. 29: Measuring the transport frame width (T)

Reading off the transport frame width (T) from the technical drawing

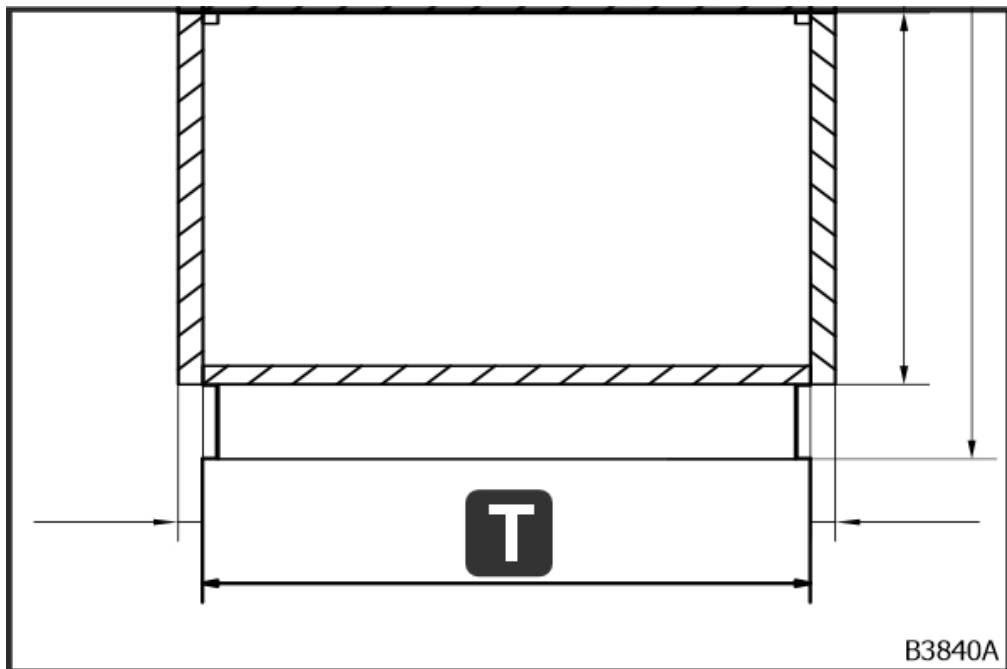


Fig. 30: Reading off the transport frame width (T)

Selecting the lifting tubes in relation to the transport frame width

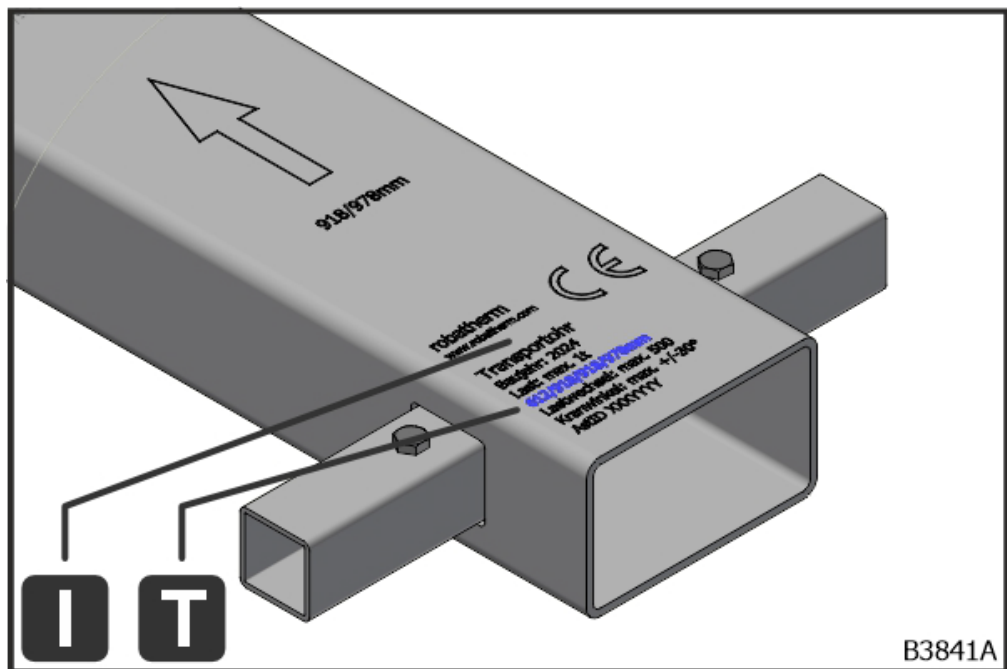


Fig. 31: Lifting tube (A) with nameplate (I) and transport frame width (T)

Read the transport frame widths (T) that the lifting tube (A) is designed for on the nameplate (I). Lifting tubes are available for the transport frame widths (T) listed in the table.

T – transport frame width [mm]	Lifting tube length [mm]
612/672/918/978	1417
1224/1284/1530/1590	2029
1836/1896	2335
2142/2202	2641
2448/2508	2947

Table 1: Selecting the lifting tubes

Aids to be provided by the customer

WARNING



Danger to life due to non-use of all intended lifting tubes

If not all available transport frame openings are fitted with lifting tubes and used for crane operation, the structure will fail. When using a crane to lift the delivery section, failure of the lifting tubes or the transport frame and the delivery section or parts of it falling may pose a risk to life.

- Fit all transport frame openings with lifting tubes.
- Use all lifting tubes provided for crane operation.

WARNING



Danger to life due to incorrectly attached load

If the delivery section is tilted, the lifting tubes will not be loaded evenly. This will cause the structure to fail. When using a crane to lift the delivery section, failure of the lifting tubes or the transport frame and the delivery section or parts of it falling may pose a risk to life.

- Determine the centre of gravity.
- Minimise the inclined position by altering the rope length.
- Use turnbuckles as lifting equipment for even loading.
- Use lifting gear.

Traverse requirements

Use traverses with load capacity \geq transport weight. Directly connecting the crane hook to the lifting points is not permitted. Reduce the load capacity by spreading the lifting equipment in accordance with the lifting equipment table.

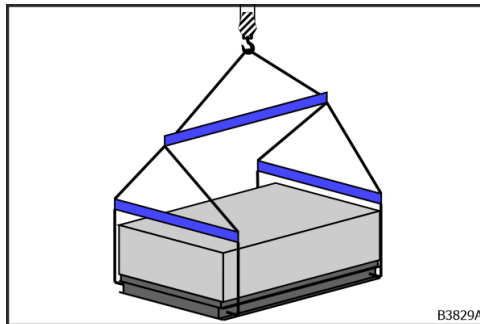


Fig. 32: Example of on-site lifting devices for 2 lifting tubes

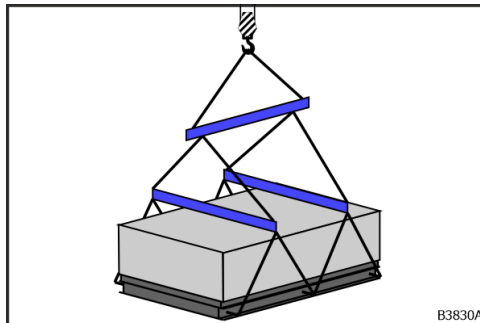


Fig. 33: Example of on-site lifting devices for 3 lifting tubes

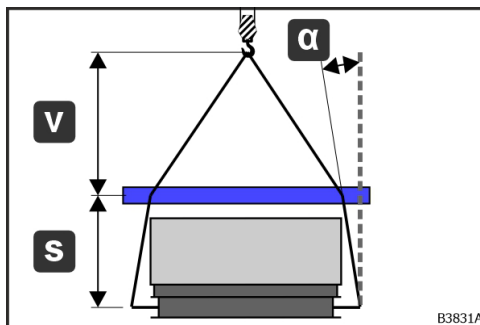


Fig. 34: Selecting the traverses

When craning using lifting tubes (A), it is absolutely essential that a suitable on-site lifting device (e.g. loading gear) is used to ensure even load distribution across all lifting tubes (A). The traverses must have a sufficient number of lifting points. Refer to the technical drawing for the number of transport frame openings (K) and lifting tubes (A). All transport frame openings (K) must be fitted with lifting tubes (A). All lifting tubes (A) must be used for craning.

Use traverses with attachment elements that can be adjusted in width and length.

- Angle α must not be negative ($\alpha \geq 0^\circ$).
- Choose a very small distance s .
- Choose a very large distance v .
- $v > s$

The width of the traverses must correspond to the distances between the lifting points of the lifting tubes (A) in order to prevent oblique pull.

Requirements for other lifting equipment

- Use chains with load tensioners to adjust the chain length.
- Polyester slings are not suitable.

Tool

The following tool is required:

- Ring spanner, open-end spanner or socket spanner with key size 10 socket

Craning delivery sections using lifting tubes

Packaging

The transport frame openings (K) must be accessible for transportation by means of lifting tubes. Remove any interfering packaging.

The transport frame connectors must be accessible for inspection. Remove any interfering packaging.

Requirements

WARNING



Danger to life due to damaged or incomplete structure

If the transport frame connectors, reinforcing plates or lifting tubes are damaged or incomplete, the structure will fail. When using a crane to lift the delivery section, failure of the lifting tubes or the transport frame and the delivery section or parts of it falling may pose a risk to life.

- Check the transport frame connectors, reinforcing plates and lifting tubes before craning see chapter "Requirements", page 29.

A delivery section comprises several casings that are bolted together at the factory via the transport frames and transport frame connectors.

The condition of the transport frame connectors (C) must be checked:

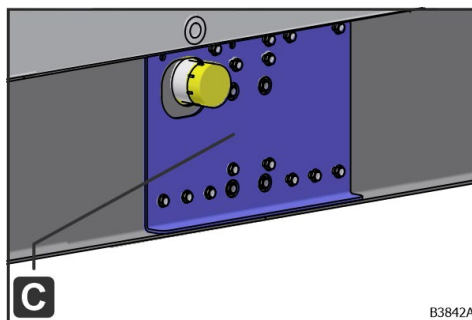


Fig. 35: Transport frame connector (C)

- Check the fastening of the transport frame connectors (C). Every transport frame connector (C) must be secured with 16 screws. If incomplete, the delivery section must not be craned.
- Visually inspect all parts for cracks, corrosion and/or deformations (e.g. large gaps, deformed lugs or holes). In the case of abnormalities, the delivery section must not be craned.

The transport frame openings (K) are fitted with reinforcing plates (B).

The condition of the reinforcing plates (B) must be checked:

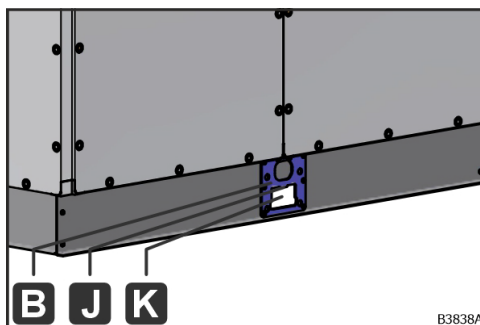


Fig. 36: Reinforcing plate (B) with anti-slip lug (J)

- Check the fastening of the reinforcing plates (B). Every reinforcing plate (B) must be secured with 8 screws. If incomplete, the delivery section must not be craned.
- Visually inspect all parts for cracks, corrosion and/or deformations (e.g. large gaps, deformed anti-slip lug (J), deformed holes). In the case of abnormalities, the delivery section must not be craned.

The condition of the lifting tube (A) must be checked:

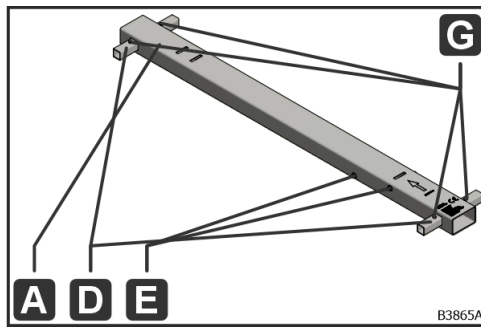


Fig. 37: Lifting tube (A) with safety tubes (D), safety screws with nut (G) and stops (E)

- Check the assembly is complete. Every assembly comprises:
 - 1 x lifting tube (A)
 - 2 x safety tubes (D)
 - 4 x safety screw with nut (G)
 - 2/4 x stop (E)

If incomplete, the lifting tube (A) must not be used.

- Visually inspect all parts for cracks, corrosion and/or deformation (e.g. dents and indentations). If there are any abnormalities, the lifting tube (A) must not be used.

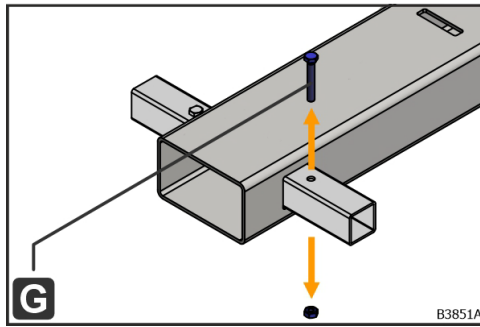
Work steps

Fig. 38: Removal of the safety screw (G)

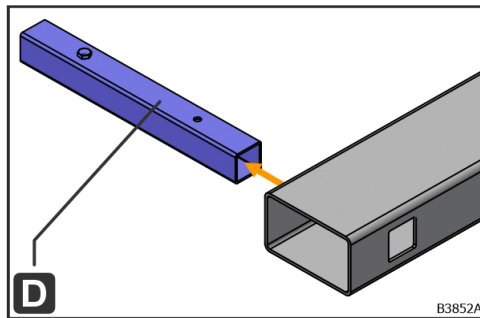


Fig. 39: Removal of the safety tube (D)

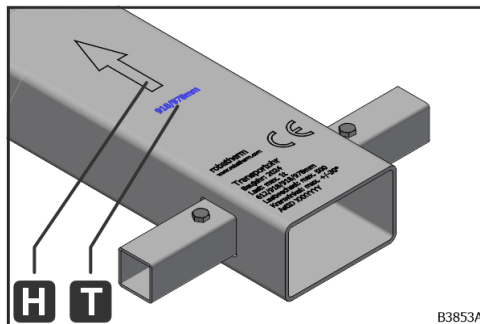


Fig. 40: Reading off the transport frame width (T)

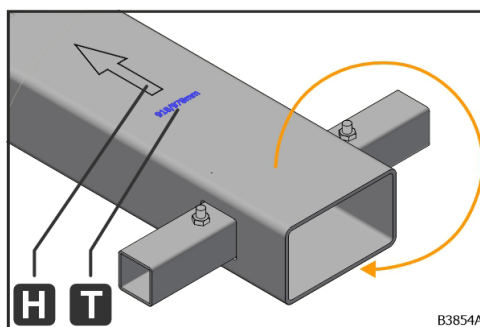


Fig. 41: Turning the lifting tube (A)

1. Remove one safety screw (G) with nut from the insertion side.
2. Remove the safety tube (D).
3. Read off the transport frame width (T) from the arrow for insertion direction (H). If necessary, use the lifting tube (A).

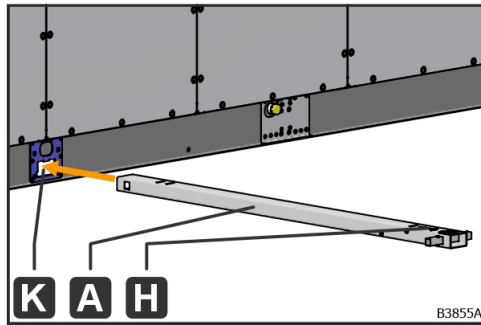


Fig. 42: Inserting the lifting tube (A)

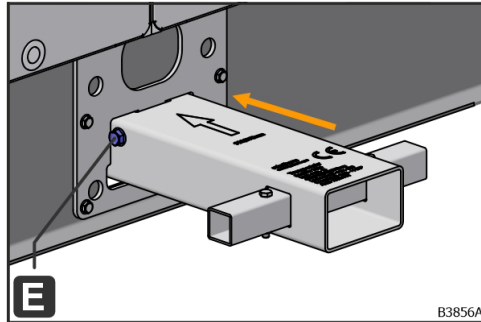


Fig. 43: Stop (E) of the lifting tube (A)

TIP



Assistance when inserting the lifting tubes

To make it easier to insert the lifting tube (A) into the transport frame opening (B), insert a tube/pipe, bar or wooden slat, for example, into the transport frame opening on the opposite side to guide the lifting tube (A).

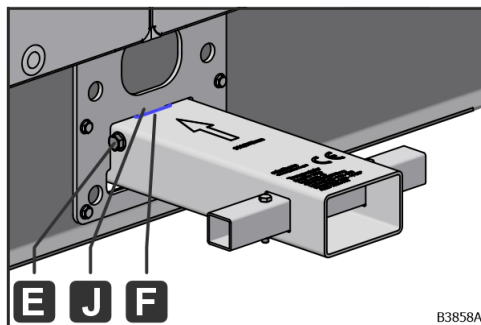


Fig. 44: Insertion side

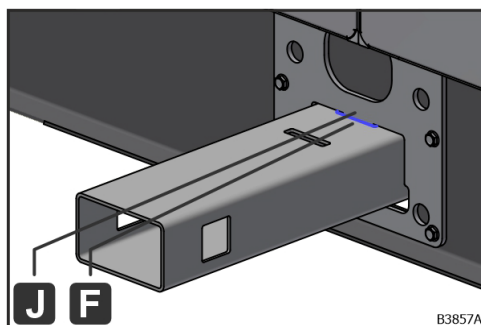


Fig. 45: Opposite side

4. Insert the lifting tube (A) in the direction of the arrow (H) into the transport frame opening (K) up to the upper stop (E).

→ The lifting tube (A) has been inserted correctly when the anti-slip lug (J) meets the slotted hole for anti-slip protection (F) at both ends.

WARNING**Danger to life from falling load due to missing safety device**

If the lifting equipment is not secured (safety tubes, safety screws with nuts), the load may fall. When using a crane to lift the delivery section, the lifting equipment slipping and the delivery section or parts of it falling may pose a risk to life.

- The safety tubes and safety screws with nuts must be fitted on both sides of the lifting tube.
- Observe the work steps set out in the operating instructions.

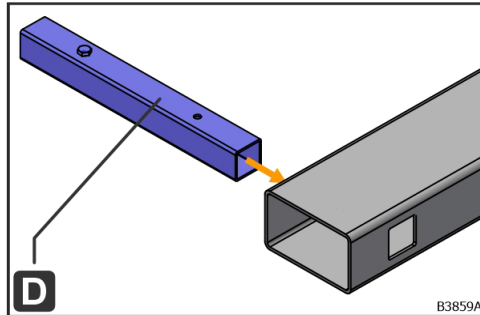


Fig. 46: Inserting the safety tube (D)

5. Insert the dismantled safety tube (D) into the lifting tube (A).

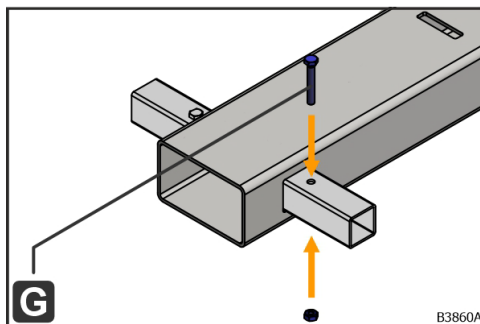


Fig. 47: Fitting the safety screw with nut (G)

6. Fit the safety screw (G) with nut.

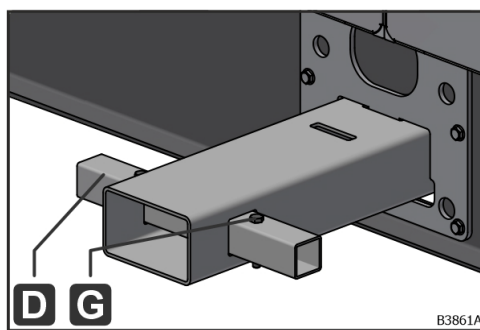


Fig. 48: Safety tube (D) with safety screw and nut (G)

- The safety device has been fitted correctly.

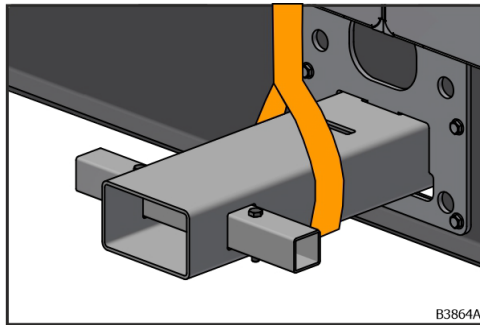


Fig. 49: Attached lifting tube

7. Attach the delivery section to all lifting tubes (A) with on-site lifting equipment see chapter "Aids to be provided by the customer", page 26.

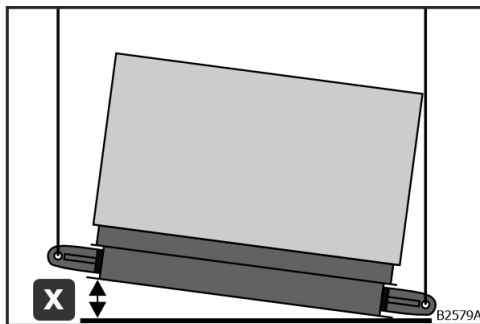


Fig. 50: Inclined position in width direction

- The maximum permissible inclined position in the width direction when using a crane is $x \leq 5$ cm.

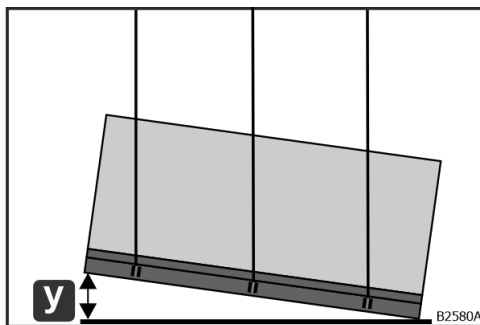


Fig. 51: Inclined position in longitudinal direction

- The maximum permissible inclined position in the longitudinal direction when using a crane is $y \leq 30$ cm.

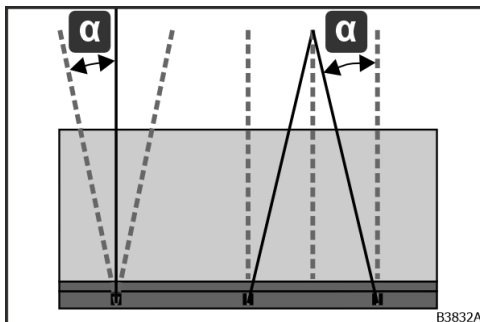


Fig. 52: oblique pull

- The maximum permissible oblique pull for lifting equipment when craning using lifting tubes is $\alpha \leq 30^\circ$.
8. Adjust the lifting equipment so that the delivery section is craned horizontally to prevent it from tipping.

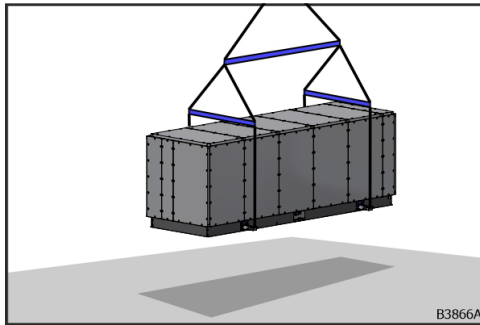


Fig. 53: Delivery section attached to the crane

9. Crane the delivery section.

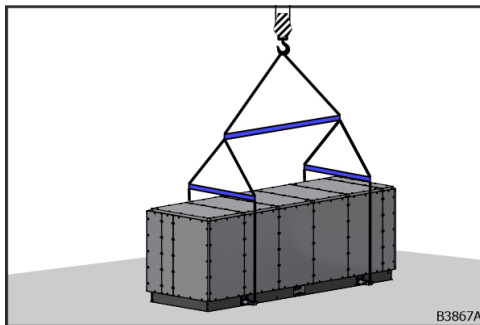


Fig. 54: Delivery section set down

10. Set down the delivery section.

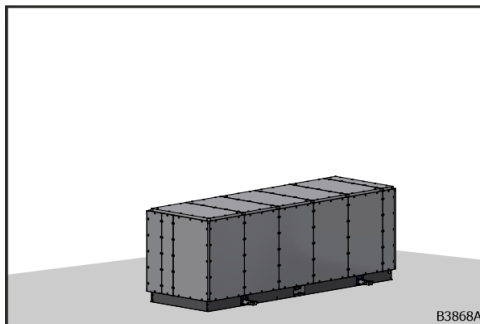


Fig. 55: Lifting equipment removed

11. Remove the lifting equipment.

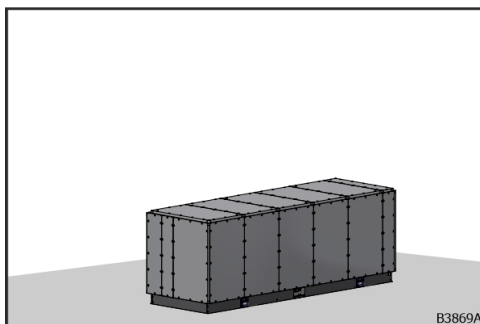


Fig. 56: Lifting tube (A) removed

12. Remove the lifting tubes (A) in reverse order.

Storage

The following storage conditions must be observed for the lifting tubes:

- Do not store outdoors.
- Store in a dry place.
- Do not expose to aggressive media.

Craning of rotary heat exchangers

To prevent loose rotary heat exchangers from falling over, proceed as follows:

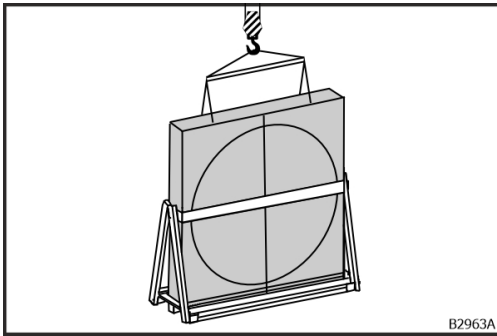


Fig. 57: Attaching the rotary heat exchanger to the crane

1. Attach the rotary heat exchanger to the crane. For slinging on the crane per rotor casing, see attachment "Hoval - Rotary heat exchanger - Instructions for installation, commissioning and scheduled maintenance" chapter "Lifting the exchanger".

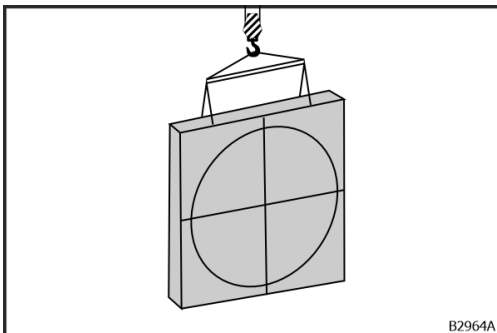


Fig. 58: Removing transport lock

2. Remove the transport lock.

→ The rotary heat exchanger can be craned safely.

In the case of two-part rotary heat exchangers, the segments of the accumulation mass are supplied in a wooden box.

Craning hydraulics on a skid

NOTE



Material damage when craning hydraulics on a skid

When craning hydraulics on a skid, material damage can occur due to the load suspension and lifting equipment.

- Do not crane hydraulics on a skid.

Forklift unloading and transport

Personnel qualification

The work described in this section may only be performed if the person has the following qualifications:

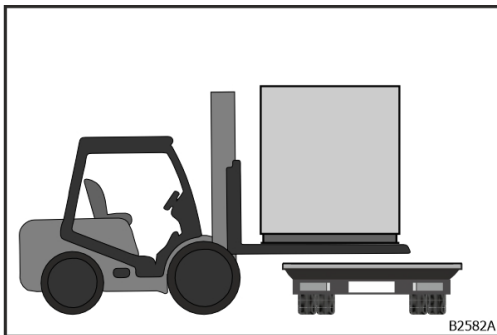
→ Forklift driver

Forklift drivers are trained for the specific task area in which they work and know the relevant standards and regulations. Based on a theoretical and practical examination, the forklift driver has in-depth knowledge of industrial trucks as well as of estimating, lifting, transporting, setting down and storing loads. The forklift driver is able to perform transport work based on professional training, knowledge and experience, and to recognize and avoid possible hazards independently.

General remarks about forklift unloading

Delivery sections with base frames are equipped with wood beams for transport to allow the forks of the industrial truck to pass underneath.

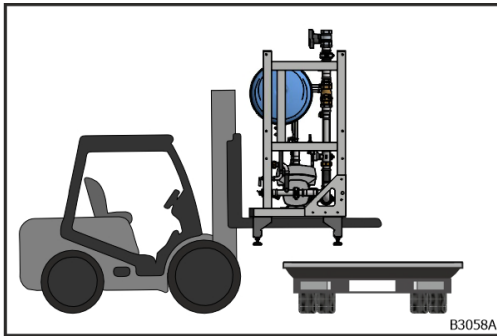
Delivery sections without a base frame are equipped with disposable pallets for transport.



Completely underrun the delivery section to avoid damage to the casing. The forks of the forklift may only engage the base frame or the pallet.

Fig. 59: Unloading with forklift

Forklift unloading of hydraulics on a skid



Fully retract hydraulics on a skid to avoid damage. The forks of the forklift may only engage the lower rack or the pallet.

Fig. 60: Unloading hydraulics on a skid with the forklift

Packaging and storage

Sections are packed in foil for transport. This packaging does not meet the requirements for storing the sections outdoors. The storage location must meet the requirements for the installation site for indoor units (see "Installation and assembly" chapter "Requirements for the installation site").

If the sections are stored for an extended period, the instructions "Disabling and disposal" from chapter "Disabling" apply.

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