# Original Manufacturer Operating and Maintenance Instructions

GB

# Material Lifts

LMX 500 LHX 330 LHX 500





## **Product identification**

Type:

LMX 500 LHX 330 LHX 500

## **Document identification**

- Translation of the German original operating instructions -

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## **Manufacturer**

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Before commencing any works, these operating and maintenance instructions must be carefully read!

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# **1** Description

The material and installation lift is a mobile lifting device, which can be used in closed spaces. Under the conditions listed in point 6 "*Monitoring of safety equipment*" in these operating instructions, the material lifts listed below can also be used outside closed spaces. (see page 14).

The listed material lifts must only be used on level surfaces and load-bearing substrate, irrespective of whether they are used within or outside of closed spaces.

Prior to using the unit, please ensure that there are no steep slopes, holes, rubble or slippery ground or other safety hazards.

This must be checked each time prior to commissioning.

The max. load is ...

Туре	Max. load [kg]
LMX 500	500
LHX 330	500
LMX 500	500

The installation lifts of the LHX series consist of a standard material and installation lift LMX with an "electro-hydraulic drive".

The standard power supply is 230V 50Hz.

# **2** Transport

## 2.1 Conditions of transport

In order to prevent damage or life-threatening injuries during the transport of the material and installation lifts, it is imperative that the following points are observed:

- Transport works must only be carried out by qualified personnel in accordance with the safety instructions and in compliance with the unladen weight of the material-installation lift, using a sufficient number of people.
- For the transportation of the material-installation lifts and associated component parts only appropriate means of transport and suitable load handling attachments and lifting tackle must be used.
- Prior to moving, check if any potential parking brakes must be released. After relocating, the parking brakes must be applied.
- During transport, the permitted floor load must be observed!
- It is generally prohibited to be positioned below suspended loads!
- Ensure that your vehicle is suitable for the transportation of these material-installation lifts. Check if your load securing equipment (e.g. lashing straps) is sufficient to appropriately secure the load. The loading process must only be carried out on level surfaces.
- The material-installation lifts must be sufficiently secured on the loading area of your vehicle.
- The integrated wheels in the front parts are not designed for bearing permanent loads!

## 2.2 Transportation risks

During the transport of the material-installation lifts, the following specific hazards must be expected:

- Improper moving of the material lifts may result in injury to persons or damage to objects.
- To prevent accidents, always ensure that you have a clear view in the driving direction and that there are no people in the transport area. Depending on the circumstances, at least one further person is required for safety purposes.
- If the proper load handling equipment is not used, the material-installation lift may be severely damaged.
- Should a component of the material lift be damaged or disabled during transport, commissioning of the material-installation lift is not permitted, as the consequences are not calculable. The lift may only be commissioned when the damage has been properly repaired.
- Make sure that all parking brakes have been engaged after transportation, as the material lift could otherwise begin to move automatically.

## 2.3 Transport of material and installation lift

The installation lift can be transported in vehicles or on trailers either upright or lying flat. If it is lying on its side during transport, the rail safety mechanism must be locked (Fig. 1) and the cable must be tight, as otherwise the rails slide apart and the cable could become slack.

The installation lift is dispatched with the front parts of the chassis folded up and reverse mounted crane fork (example LMX Fig. 2).



Fig. 1 - Rail safety mechanism



Fig. 2 - Transport position

Ensure that your vehicle is suitable for the transportation of these material lifts. Check if your load securing equipment (e.g. lashing straps) is sufficient to appropriately secure the load. The loading process must only be carried out on level surfaces.

For the loading of the material lifts, put the unit into the transport position (Fig. 2). Tilt the material lift on the loading area with the loading wheels (near the hoist). Now raise the material lift at the chassis and push the same horizontally via the loading wheels on the loading area into the transport position. When the transport position has been reached, secure the material lift with suitable load securing equipment.

The material lifts must be sufficiently secured on the loading area of your vehicle.

We recommend that the material lifts of type LHX 300 and LHX 500 are loaded by 2 persons!

## LHX:

During each transport where the material and installation lift LHX is lying on its side, the hydraulic tank **must also be** closed by means of the block tap (Fig. 2.1).

CAUTION! If the tank is not closed, oil will leak out!



Fig. 2.1 - block tap

After unloading from the transport vehicle or during the removal of the material lift from the storage site, move it with the black wheels (ø250mm ).

For this purpose, carefully tilt the material lift backwards (hoist side) and let it onto the wheels (ø250mm). Keep the material lift balanced in this transport position.



Caution at sharp gradients. The operator must always stand on the sloping side. Potentially wheel the unit around using 2 persons.

# **3** Installation

## 3.1 Notes

The material-installation lift has undergone a function test prior to professional packing! The packaging material must be disposed of or reused in accordance with the applicable rules of each country of installation.

During the installation of the equipment/system, the following safety instructions must always be observed, in order to avoid life-threatening injuries, damage to machinery/systems and other material damage.

- Upon delivery, check the material lift for damage. Only a faultless material lift may be set up. Any potential transport damage must be immediately reported by the transport company or the responsible body. If appropriate, the lift must not be commissioned.
- Setting up, assembly and installation of the material lifts may only be carried out by qualified persons in compliance with the safety instructions.
- The transport locks may only be removed when the components have been taken to their ultimate position and when they have been properly mounted there.
- Prior to the start of the setting-up work, all components must be checked for transport damage. Pay particular attention to the cable guide (Danger: slack cable!)
- It must be ensured that only authorised persons are present in the work area and that other persons are not exposed to hazards by the setting-up work.
- The material lift may only be set up on level and suitable (bearing capacity, oil tightness) areas.
- All connections in the material lift e.g. cables or similar must be laid in such a way that they do not cause any risk of stumbling.
- The rules for the operating materials, lubricants and auxiliary supplies must be observed.
- Welding operations cause a fire hazard, therefore it is imperative to be familiar with the fire-extinguishing appliances on site.

## 3.2 Setting-up of the material-installation lift

First install the chassis with both front parts, by loosening and removing the horizontally integrated hexagon screw M16 x 170 with the hexagon nut.

Fold down the front parts in order:

First, fold down one front part, push the hexagon screw M16 x 170 into the existing hole from above and firmly screw in with the hexagon nut. Repeat this process for the remaining side.



For this purpose, use a suitable tool to ensure that the link is strong.



When folding the front parts, watch the boom (rail package) and if necessary, keep the same back to prevent tipping of the material lift.

If you wish to set the unit to the transport position, follow the steps for the setting-up in reverse order.

For storing the material lift, select a safe storage place where the unit is protected from dirt, weather and unauthorised use. Leave the unit only on level surfaces and fix the castors with locks.

# 4 Commissioning

Directly after setting up or prior to commissioning LHX lifts, the block tap at the hydraulic tank must always be opened (Fig. 2.2.)!



Fig. 2.2 - block tap



Prior to connecting the installation lift LHX with the local supply network, check with a connector plug if the electric equipment of the lift is compatible with the local supply network. If this is not the case, you must not operate the material and installation lift LHX with this supply network!

Before putting the device into operation, check the wire rope for damage, correct wire guidance and correct winding of the wire rope. In case of defective components (wire cable, pulleys, mountings, cable crimping etc.) and/or incorrect cable guidance (wire cable is not running in the pulley), the commissioning or operating of the equipment is prohibited or must be stopped immediately!

Unbolt the carriage by pulling out the rail safety mechanism, turning it backwards and to lower it again in the last rail (Example: Fig. 3 LMX).

Release the hexagon nut of the fork safety bolt and then remove the latter. Now pull the crane fork from the carriage by carefully lifting the carriage.

Fit the crane fork either to the underside or the upper side of the carriage (Example: Fig. 4 LMX). The fork arms are now pointing away from the rail package. Push through the fork safety bolt and screw on with the hexagon nut.

The two lateral outriggers (Fig. 6) must be attached for <u>additional</u> stability and aligned accordingly. The outriggers may only be lowered to the extent that the four castors <u>do not loose</u> <u>contact with the ground</u>. Ensure that the locking bolts lock the outriggers.

With the spirit level (Example: fig. 5 LMX) the lift can be levelled off. The unit must be level on all sides.











Fig. 5 - Spirit level above winchFig. 6 - Lateral outriggers with spindleFollow the steps for commissioning in reverse order to stop the unit.

# **5** Operation of LMX / LHX

The installation lift must only be used on even surfaces, all locks at the castors must be engaged and never overloaded.

Installation lifts must not be wheeled around when loaded. The material lifts can be used within enclosed spaces. Under the conditions listed in point 6 "*Monitoring of safety equipment*" in these operating instructions, the material lifts listed can also be used outside closed spaces (see page 14).

## LMX:

The load is lifted by turning the crank handle clockwise. The load is automatically held if the crank handle is released. To lower the load, the crank handle must be turned anti-clockwise. The crank handle is prevented from winding back by means of an integrated automatic brake. Approx. 20 m of unloaded cable can be spooled on the winch drum. Only a length of cable still enabling the winch drum flange to project at least 1.5 times the cable diameter can be spooled. This avoids overloading the winch and the cable running off at the side of the drum. It is important to ensure that the wire rope is correctly wound onto the winding drum. When driving down while loaded, at least 2 winds of the cable must remain on the drum.

Cable recommendation	Cable Ø 7 mm
Single wire strength	1770 N/qmm
DIN	Zinc coated according to DIN 3060, Section 20 + 22 VBG 14 UVV (Accident Prevention Regulations)

## <u>LHX:</u>

After the power supply required for the unit has been established, switch the unit on via the motor protection circuit breaker. The circuit breaker serves at the same time as emergency shut-off for the unit. The hydraulic winch is operated via a manual control valve.

- Manual lever up = load upwards
- Manual lever down = load downwards

After releasing the manual lever, it automatically goes into the middle position and the hydraulic winch is shut down. The raised load is then kept in the respective position by means of a non-return valve and hydraulically operated brakes.

An overloading of the hydraulic winch due to overload is prevented by a pressure relief valve.



It must be ensured that the hydraulic shutoff valve shuts off the winch in the lowest position of the crane fork. Otherwise, damage is caused to the wire cable and the hydraulic winch.

After the work with this unit has been completed, or if the work with the material and installation lift LHX is stopped for a longer period of time, the unit must be switched off using the circuit breaker, in order to avoid unnecessary warming up of the hydraulic oil and unnecessary wear and tear.

After the work is completed and the unit is left, it must be secured against unintended use (lock on circuit breaker)!



The load must be secured on the crane fork with appropriate load securing equipment (e.g. lashing straps) when moving up and down! The load must be placed centrally in accordance with the crane fork diagram.



Prior to commencing work with the installation lift, the operator must be familiarised with the unit and accurately instructed (Section 43 VBG 14 UVV).

Read, understand and follow the safety regulations and instructions by the manufacturer as well as the operating manual.

Also read, understand and follow the safety regulations of the employer and the workplace regulations.

# 6 Safety

# 6.1 Safety instructions for assembly, commissioning, operation and maintenance

- The material lift may only be operated, maintained and repaired by authorised, qualified and instructed technical personnel!
- For safety reasons, the responsibilities of the personnel for assembly, commissioning, operation and maintenance must be precisely defined!
- Refrain from any operation that adversely affects the safety of the material lift!
- The material lift may only be operated in a technically good order, while keeping safety and potential dangers in mind. In case of any malfunctions, the material lift must be shut down immediately!
- If the operator identifies any safety-relevant changes in the material-installation lift, he has a duty to shut down the material-installation lift immediately and report this to the competent person!
- For the security of the operator, all arising maintenance, cleaning and repair work may only be carried out without the lift being loaded and appropriately secured!
- Prior to the commencement of all cleaning, servicing and repair works, the material lift must be secured against rolling away unexpectedly or the rails extending. For this purpose, the following procedure must be followed:
- Push down the locking brake at the castors, let the rail safety mechanism snap in
- Set up and place appropriate warning signs, cordon off or secure the area
- The operator must ensure that the safe condition of protection systems and locks at the material lift are checked by qualified person at regular intervals, at least, however, once a year.
- Work at the material-installation lift may only be carried out by specialist personnel.

## 6.2 Monitoring of the safety devices

- Never overload the installation lift.
- Do not carry any persons only use for loads. Only use the unit for the intended purpose.
- The load must be secured on the crane fork with appropriate load securing equipment (e.g. lashing straps) when moving up and down! The load must be placed centrally in accordance with the crane fork diagram.
- Persons must not stand below the load. Persons are not permitted to be present in the working and hazardous area of the material lift, except the operator.
- Do not stand below the load.
- Do not use a ladder at or on the lift.
- Never drive the extended lift with a load.
- Never leave the material lift unattended in operational condition or with a load that is being lifted.
- Caution with tight wires, projected ceilings and overhead lines above the lift. Always keep a sufficient safety distance to electric lines and devices.
- Distance to live overhead lines of at least 5 m (up to 200kV), at higher voltage, the distance must be correspondingly larger. While doing so, follow the respective official regulations.
- The load centre must never be a distance of more than 330 mm from the back of the fork.

- When using crane fork extensions or bulky loads, the maximum load must be reduced in proportion to the load centre.
- The material lifts can be used outside enclosed spaces in the following conditions:
  - Load : 0 kg up to a maximum of 500 kg
  - Wind force : Use up to a maximum of wind force 3 (Beaufort scale)
  - Surface of load : lengthways (of the chassis) : 1.25 m<sup>2</sup>

: crossways (of the chassis) : 1.00 m<sup>2</sup>

When lifting loads with large wind-exposed areas (i.e. air ducts, metal containers), operations must be discontinued correspondingly earlier.

• Daily:

- the wire cable and the cable guidance (pulleys, pulley displacements)
- correct winding of the wire rope on the rope drum
- the crane fork
- the rail profiles
- the rail guide (plastic rolls)
- the chassis with the front components
- the manual winch or the hydraulic winch

- Hydr. functional components (e.g. hoses, screw fittings, motor, brakes, and similar)

- the castors and wheels
- the fixing elements (e.g. screws, nuts and bolts)
- the outriggers with the supporting spindles

need to be checked.

In case of damage or signs of damage immediately discontinue operation. Check the entire unit for deformation or damage, corrosion or oxidation and tears in welding seams or components.

- Always carry out an inspection prior to commissioning.
- Always carry out a functional test prior to commissioning.
- It is strictly prohibited to modify the unit in such a way that the safety may be adversely affected or that the official safety regulations are breached.
- These operating instructions are expressly a part of the material lifts and must always be kept with the units.
- The stickers on the material lift must be clearly visible and recognisable in terms of content (text and pictures).

## 6.3 General safety instructions

Apart from the notes in these operating instructions the general safety and accident prevention regulations must be observed:

- The material-installation lift may only be operated if all protection systems are fully functional and there is no apparent damage to the lift. Prior to each commissioning, the material-installation lift must be checked for external visible damage and functionality of existing safety devices
- The operator is responsible to ensure that all persons using the material-installation lift have read and understood the entire operating instructions, paying particular attention to the chapter "Safety"!
- Böcker Maschinenwerke GmbH does not accept any liability for damage resulting from failure to comply with the operating instructions!
- Unauthorised modifications and alterations of the material-installation lift relating to safety are expressly prohibited!
- This include for example:
  - 1. Removal of safety devices
  - 2. Installation of non-original components etc...

Böcker Maschinenwerke GmbH does not accept any liability for damage attributable to such actions! These are carried out solely at the risk of the user! Operating and maintenance tasks must only be carried out by qualified personnel who are familiar with these operating and maintenance instructions.

The operational safety of the material-installation lift is only ensured if the lift is used as intended. In case of doubt, the manufacturer should be consulted. The manufacturer does not accept any liability for damage caused as a result of improper use of the unit!

During all works, the existing respective domestic regulations regarding accident prevention and occupational safety, as well as, if applicable, the internal regulations of the respective operator, must be complied with, even if these are not comprehensively described in these instructions.

The respective local applicable legal safety regulations must be complied with.

When any work is carried out on the unit, the surrounding area must be free from obstructions. The work area should, if possible, be identified or marked in colour and if necessary, cordoned off.

Always ensure that you are wearing protective clothing (protective helmet, glasses, gloves) when using the material lift!

# 7 Maintenance and inspection

- Daily:
- the wire cable and the cable guidance (pulleys, pulley displacements)
- correct winding of the wire rope on the rope drum
- the crane fork
- the rail profiles
- the rail guide (plastic rolls)
- the chassis with the front components
- the manual winch or the hydraulic winch
- Hydr. functional components (e.g. hoses, screw fittings, motor, brakes, and similar)
- the castors and wheels
- the fixing elements (e.g. screws, nuts and bolts)
- the outriggers with the supporting spindles

need to be checked.

- In case of damage or signs of damage immediately discontinue operation. Prior to commissioning the material lift, defective or damaged components must be replaced. (see also point 9 "Replacement parts").
- Check the entire unit for deformation or damage, corrosion or oxidation and tears in welding seams or components.
- Protect the lift from contamination, rain and other weather effects. The mast elements made of aluminium should be protected from dirt and rubbish.
- Treat the interior side of the mast with silicone spray.
- Check plastic rolls and pulleys for wear and tear or damage.
- The crank handle winch has already been greased at the factory. The thread at the crank handle must, however, be greased at all times. It is recommended to regularly oil the bearing bushes of the drive shafts and the drum hubs. For this purpose, observe the enclosed original operating instructions of the manufacturer of the manual winch.



## Do not oil or grease the brake mechanism!

• Ensure that the lift is inspected annually by a qualified person Parts that are subject to wear and tear and safety components must be replaced as required. Only original parts must be used (Section 39-40-50 VBG 14 UVV)

- The installation lift must be inspected by a qualified person depending on operating conditions and the operational circumstances, however, at least once every year (annual occupational safety inspection in accordance with UVV).
- These operating instructions are expressly a part of the material lifts and must always be kept with the units.
- The stickers on the material lift must be clearly visible and recognisable in terms of content (text and pictures).

# 8 Conduct in case of malfunction

Before commencing work, check if the mast components are running upwards in the correct sequence. First, the carriage must lift up, then the front mast, then the 2. mast etc. The sequence during lowering is reversed. If the sequence changes, this should be checked immediately.

Potential causes:

- The wire cable has jumped from the pulley.
- The wire rope is not correctly wound on the rope drum
- Pulleys or pulley bearings are defective.
- The pulley does not turn properly or not at all.
- Plastic pulleys or plastic pulley bearings are defective.
- The plastic pulley bearings do not turn properly or not at all.
- There is dirt and rubbish between the mast components or on the pulleys.
- Damaged mast cable or carriage.
- Overloading or one-sided load.

It is imperative to remove the cause and restore the correct sequence. In case of queries regarding the unit you can call us at any time.

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# **9** Replacement parts

Only original replacement parts may be used, as otherwise warranty claims will not be valid and the safety of the lift may potentially no longer be ensured. Modifications and alterations not carried out by us release us from any responsibility in the event of any damage. In the event of repair or procurement of replacement parts, please contact us.

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# **10** Safety regulations

During the operation of the installation lifts, the operating instructions and accident prevention regulations must categorically be observed (VBG 14 UVV lifting platforms).

## 10.1 UVV Regulations VBG 14 Lifting platforms

#### Protection against unauthorised use

Section 7. (1) Lifting platforms that are operated and moved by power must have an integral device at an easily accessible place, to secure the lifting platform against unauthorised use after final shutdown.

## Supporting equipment

Section 20. (1) The only supporting equipment permitted to be available are steel wire cables, steel link chains, pistons with cylinder, spindles, support nuts or gear racks. Supporting equipment made of plastic is not permitted.

(2) steel wire cables must be zinc-coated and consist of at least 114 individual wires The strength of the individual wire must be at least 1570 N/qmm and must not exceed 2000 N/qmm. As cable connections, only splices, spelter sockets, aluminium pressed sleeves, rope locks or wedge sockets may be used. Rope locks must be manufactured with an inlaid thimble.

#### Additional requirements for mechanical power units

Section 22. (1) Cable drums of power-operated winches must be arranged in such a way that the cable on the does not get entangled. If entanglement of the cable is not reliably prevented, cables may only be spooled on the drum in a single layer. At the lowest position of the load handling attachment, there must still be at least two cable turns on the drum.

## **Regular inspections**

Section 39. Lifting platforms must be inspected by a qualified person after the first commissioning in intervals of no longer than one year.

#### Requirements in relation to the operator

Section 43. Only persons aged 18 or over are permitted to independently operate lifting platforms, provided they have been instructed on how to operate the lifting platform and they have demonstrated their ability to do so to the employer.

They must be expressly instructed by the employer to operate the lifting platform. The instruction to operate lifting platforms must be given in writing.

To Section 43, Sentence 1:

#### Instructions for implementation

Independent operation is operation without supervision.

To Section 43, Sentence 3:

#### Note

This requirement relates to all persons operating a lifting platform. For this purpose, it is irrelevant whether the operation in accordance with Section 43, Sentence 1 VBG 14 is independent or not independent, i.e. under supervision. If a lifting platform is operated by several persons, each persons must be instructed in writing.

#### Commissioning

Section 46. (1) Portable lifting platforms must be set up in accordance with the operating instructions stably and in such a way that there are no pinch points and shear points between the lifting platform and parts of the surrounding area, and that at normal operation, the usual day-to-day tasks involving the load handling attachment or the load can be carried out unimpeded.

The proper condition of outriggers on suitable ground must be checked prior to the commissioning of the lifting platform. Power-operated outriggers must be observed during extending and retracting.

Lifting platforms, which are set up in the traffic area of vehicles or which protrude into such an area, must be appropriately secured against traffic hazards.

Prior to starting work with the load handling attachment, the safety devices preventing persons and objects from falling must be in a protective position.

To Section 46 (1):

#### Instructions for implementation

During set-up the ground conditions must also be considered with regard to stability.

To Section 46 (3):

#### Instructions for implementation

Warning lights, barriers or safety posts can for instance be used for securing against traffic hazards.

#### Additional requirements during operation of lifting platforms

Section 50 (1) A performance check must be carried out on lifting platforms daily, in case of less frequent use prior to commissioning.

1. Lifting platforms that are only suitable for use in enclosed spaces must not be used

outside suchspaces.

- 2. Beacons for yellow flashing lights at portable lifting platforms must be switched on if setting up in the traffic area of rail vehicles or power-operated railless vehicles.
- 3. If, with the use of lifting platforms, working platforms or supporting structures tilted out laterally in the traffic area of road vehicles lower than 4.5 m above the ground, the area below the working platform and the supporting structure must be secured.
- 4. In the case of lifting platforms, the operational movements of the working platform may only be controlled from the same.
- 5. In case of stronger winds than permitted for operation, the operation must be discontinued and the working platform must be taken back to the starting position.
- 6. Aerial rescue vehicles may only be used as lifting platforms if they conform with the provisions of these accident prevention regulations.

## Decommissioning

Section 51. Lifting platforms that are operated and moved with power must be secured against unauthorised use after decommissioning.

To Section 51:

#### Note

The term "Decommissioning" is addressed in the standard sheet DIN 32541 "Operation of machinery and similar technical work equipment; terms for activities" Edition May 1977). According to this, decommissioning is deemed to be the "cessation of the provision for use". According to the meaning, decommissioning according to the standard sheet is therefore the final withdrawal of a machine or the withdrawal of a machine over a prolonged period of time. However, this interpretation for decommissioning within the meaning of the accident prevention regulations would mean that this situation may already occur in the case of a work interruption, if due to the operational circumstances it is necessary to secure the lifting platform against unauthorised use.

# 11 Technical data LMX 500



	Features		
А	Lifting height, crane fork at top	mm	4800
В	Lifting height, crane fork at the bottom	mm	4350
	Carrying capacity	kg	500
Н	Length of crane fork	mm	650
I	Width of crane fork	mm	560
Е	Length of chassis	mm	1610
F	Width of chassis	mm	760
G	Width of chassis incl. outriggers	mm	1920
С	Height of mast	mm	1970
D	Length of transport	mm	765
F	Width of transport	mm	760
	Unladen weight without outriggers	kg	202
	Unladen weight with outriggers	kg	216

# 12 Technical data LHX 330 / 500



The dimensions and technical data are subject to change!

# Appendix

#### LMX500 with electric glass suction unit

When using the electric glass suction unit provided by Kappel in connection with the Böcker material lift LMX 500, the following must be observed.



It is imperative to consider the wind force if using outdoors! At a wind force higher than wind force 3 (Beaufort scale, 19 km/h), operation must be discontinued immediately! In addition, when using outdoors, the area of the glass pane must be reduced to  $2 \text{ m}^2$ !

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