

EJE 222 / 225 / 222r / 225r / 230 / 235

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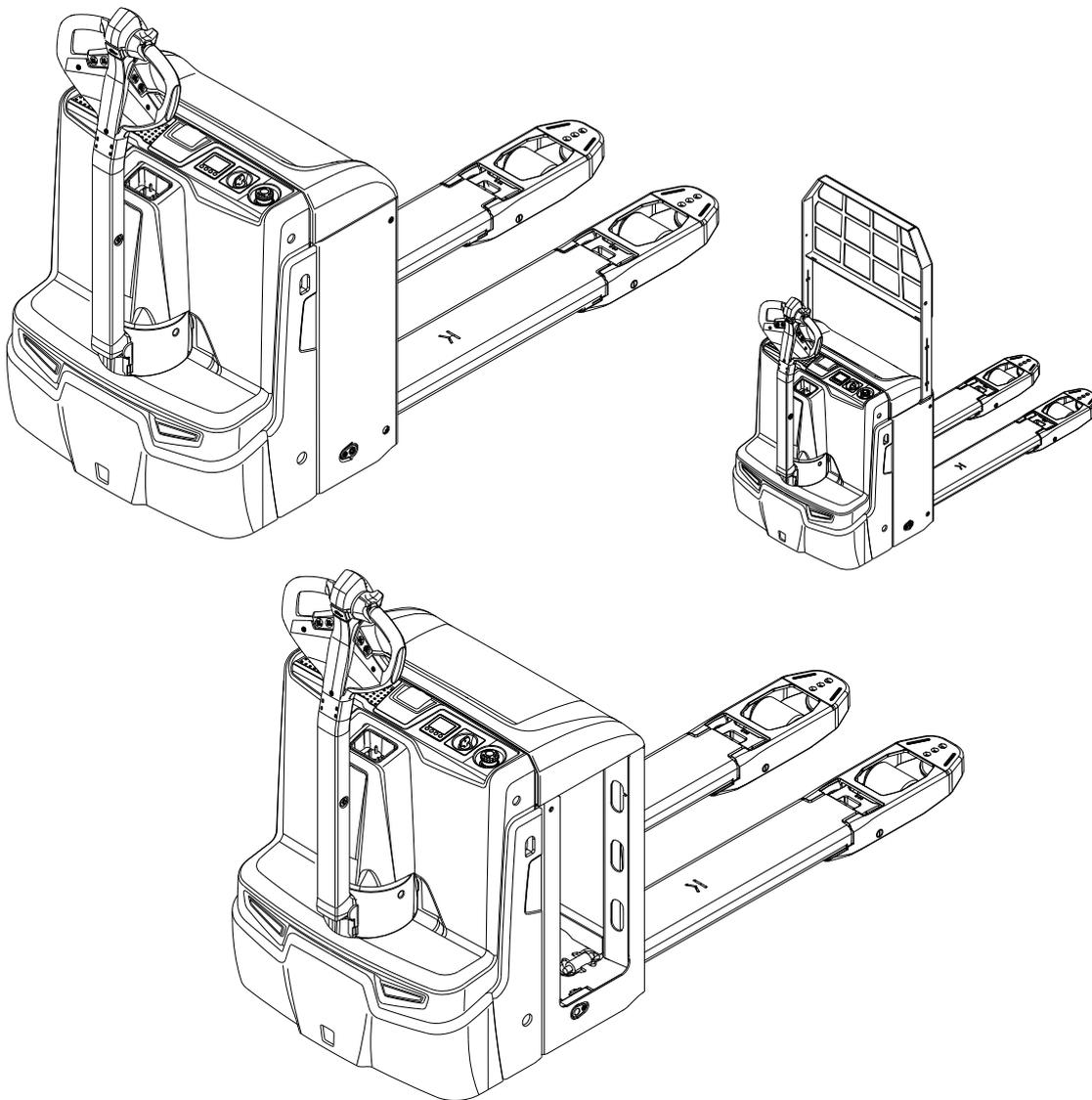
Operating instructions

en-GB

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EJE 222
EJE 225
EJE 222r
EJE 225r
EJE 230
EJE 235



Declaration of Conformity



Manufacturer

Jungheinrich AG, 22039 Hamburg, Germany

Description Industrial truck

Type	Option	Serial no.	Year of manufacture
EJE 222 EJE 225 EJE 222r EJE 225r EJE 230 EJE 235			

On behalf of

Date

EU DECLARATION OF CONFORMITY

The undersigned hereby declare that the powered truck described in detail complies with the current versions of European Directives 2006/42/EG (Machinery Directive) and 2014/30/EU (Electromagnetic Compatibility - EMC). The manufacturer is authorised to compile the technical documentation.

Foreword

Notes on the operating instructions

The present ORIGINAL OPERATING INSTRUCTIONS are designed to provide sufficient instruction for the safe operation of the industrial truck. The information is provided clearly and concisely. The chapters are arranged by letter and the pages are numbered continuously.

The operator manual details different industrial truck models. When operating and servicing the industrial truck, make sure that the particular section applies to your truck model.

Our trucks are subject to ongoing development. We reserve the right to alter the design, equipment and technical features of the system. No guarantee of particular features of the truck should therefore be assumed from the present operating instructions.

Safety notices and text mark-ups

Safety instructions and important explanations are indicated by the following graphics:

⚠ DANGER!

Indicates an extremely hazardous situation. Failure to comply with this instruction will result in severe irreparable injury and even death.

⚠ WARNING!

Indicates an extremely hazardous situation. Failure to comply with this instruction may result in severe irreparable injury and even death.

⚠ CAUTION!

Indicates a hazardous situation. Failure to comply with this instruction may result in slight to medium injury.

NOTICE

Indicates a material hazard. Failure to comply with this instruction may result in material damage.

 Used before notices and explanations.

	Indicates standard equipment
	Indicates optional equipment

Copyright

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A Correct Use and Application

1 General

The truck must be used, operated and serviced in accordance with the present instructions. All other types of use are beyond its scope of application and may result in damage to personnel, the industrial truck or property.

2 Correct application

NOTICE

The maximum load and load distance are indicated on the capacity plate and must not be exceeded.

The load must rest on the load handler.

The load must be fully raised, see page 93.

The following operations are in accordance with regulations and are permitted:

- Lifting and lowering loads.
- Storing and retrieving loads.
- Transporting raised loads.

The following operations are prohibited:

- Carrying and lifting passengers.
- Pushing or pulling loads.

3 Approved application conditions

- Operation in industrial and commercial environments.
- Operation only on secure, level surfaces with sufficient capacity.
- Do not exceed the permissible surface and point load limits on the travel routes.
- Operation only on travel paths that are visible and approved by the operating company.
- Negotiating inclines up to a maximum of 20%.
- Do not travel across or at an angle on inclines. Travel with the load facing uphill.

⚠ WARNING!

Use under extreme conditions

Using the truck under extreme conditions can result in malfunctions and accidents.

- ▶ Special equipment and authorisation are required if the truck is to be constantly used in extreme conditions, especially in dusty or corrosive atmospheres.
 - ▶ The truck cannot be used in areas at risk of explosion.
 - ▶ In adverse weather conditions (thunder, lightning) the industrial truck must not be operated outside or in endangered areas.
-

Lithium-ion batteries

- ➔ If equipped with a lithium-ion battery (○), the permissible operating conditions of the truck may change see page 14.

3.1 Internal Operation Combined with Brief External or Cold Store Operation (●)

In addition to the permissible application conditions in industrial and commercial environments, the truck may also be used in outdoor environments, cold stores and fresh food areas. Secure parking is only permissible indoors or in a cold store environment.

- Permissible temperature range 5°C to 40°C.
- Secure parking is only permissible at +5°C to 40°C.
- Maximum air humidity 95% non-condensing.
- The application areas can be changed, but in general this should be minimised due to thawing and possible corrosion.
- Thawing is permissible only if the truck can be subsequently dried thoroughly.
- Do not charge the battery below +5°C.

3.2 Internal Operation in Cold Stores with Cold Store Equipment (○)

In addition to the permissible operating conditions in industrial and commercial environments, the truck remains primarily in cold stores. The truck should only leave the cold store briefly to hand over a load.

- Permissible temperature range -28°C to +25°C.
- Maximum air humidity 95% non-condensing.
- Thawing is permissible only if the truck can be subsequently dried thoroughly.
- In cold store areas below 5°C the truck must be operated permanently and should not be parked securely for more than 15 minutes.
- Do not charge the battery below +5°C.

NOTICE

Cold store trucks

- ▶ Trucks designed for use in cold stores have a cold store hydraulic oil.
- ▶ If a truck with cold store oil is used outside the cold store, the lowering speeds may increase.

NOTICE

Battery damage

As the temperature becomes increasingly cold, the battery can be damaged if the battery charge is low.

- ▶ If the battery charge is low do not use the truck in areas of -28°C to -5°C.
- ▶ If the battery charge is low it is preferable not to use the truck in areas of -5°C to +5°C.
- ▶ Charge the battery, see page 41.

3.3 Permissible operating conditions for trucks with lithium-ion batteries

Replaceable lithium-ion batteries

- If equipped with a lithium-ion battery (○), the permissible operating conditions change; see the "Lithium-ion battery 24V - 240 Ah / 360 Ah. operating instructions"

Integrated modular lithium-ion batteries

The battery is not authorised for use in cold stores with temperatures below -10°C.

- Permissible temperature range -10°C to +40°C.
- Secure parking (longer than 5 minutes) is only permissible at +5°C to +40°C.
- Maximum air humidity 95% non-condensing.
- The application areas can be changed, but in general this should be minimised due to thawing and possible corrosion.
- Thawing is permissible only if the truck can be subsequently dried thoroughly.
- Do not charge the battery below +5°C.

4 Proprietor responsibilities

For the purposes of the present operating instructions the “operating company” is defined as any natural or legal person who either uses the industrial truck himself, or on whose behalf it is used. In special cases (e.g. leasing or renting) the proprietor is considered the person who, in accordance with existing contractual agreements between the owner and user of the industrial truck, is charged with operational duties.

The proprietor must ensure that the industrial truck is used only for the purpose it is intended for and that danger to life and limb of the user and third parties are excluded. Furthermore, accident prevention regulations, safety regulations and operating, servicing and repair guidelines must be followed. The operating company must ensure that all users have read and understood these operating instructions.

NOTICE

Failure to comply with the operating instructions invalidates the warranty. The same applies if improper work is carried out on the truck by the customer or third parties without the permission of the manufacturer.

5 Adding attachments and/or accessories

The mounting or installation of additional equipment which affects or enhances the performance of the industrial truck requires the written permission of the manufacturer. Local authority approval may also need to be obtained.

Local authority approval however does not constitute the manufacturer’s approval.

6 Removal of components

It is forbidden to modify or remove truck components, particularly protective and safety equipment.

→ If in doubt, contact the manufacturer's customer service department.

7 Wind loads

Wind forces can affect the stability of a truck when lifting, lowering and transporting loads with large surface areas.

Light loads must be especially secured when they are subjected to wind forces. This will prevent the load from sliding or falling.

Stop the truck in both cases.

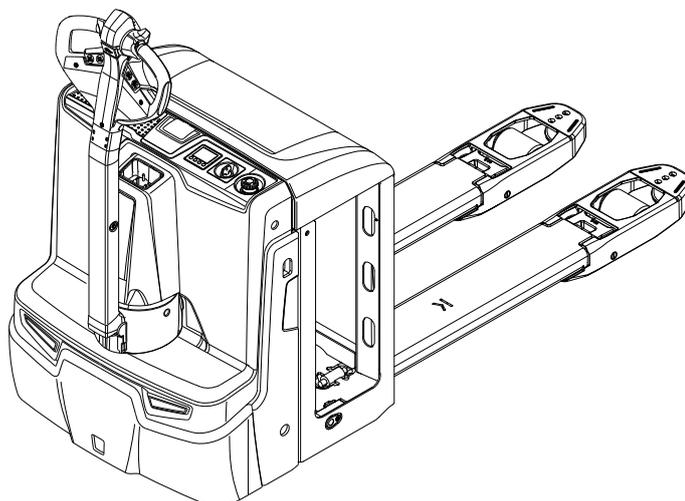
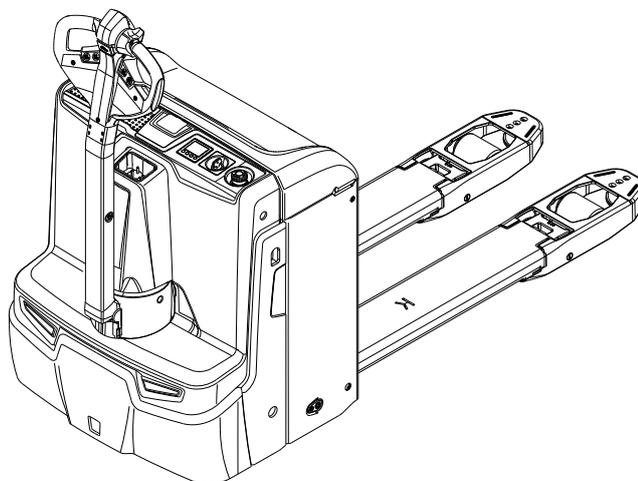
B Truck Description

1 Application

The EJE 222 / 225 / 222r / 225r / 230 / 235 is designed to transport goods on level surfaces. It can lift open-bottom pallets or pallets with transverse boards outside area the load-wheel area, as well as roll cages. The capacity is shown on the capacity plate, Qmax.

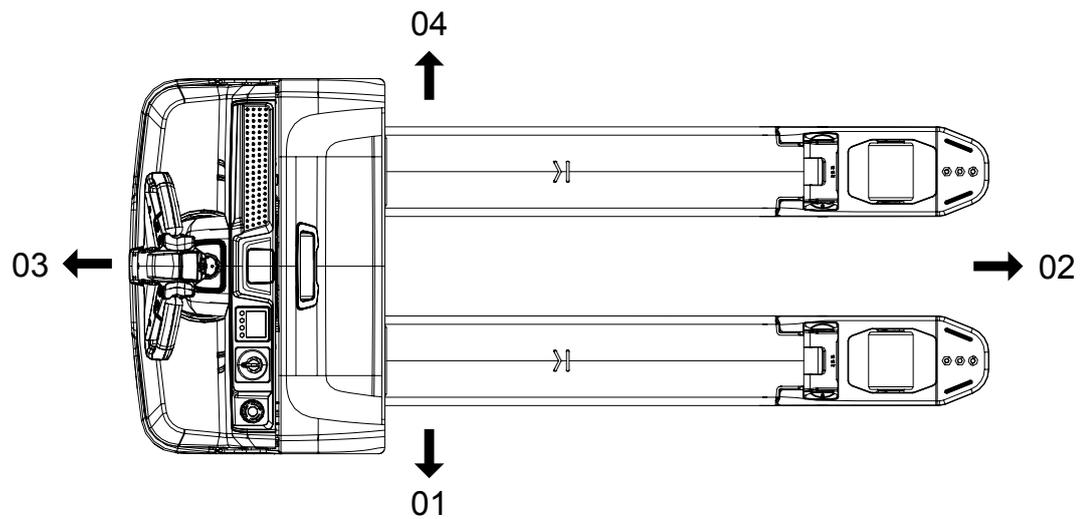
EJE 222r / 225r

The EJE 222r / 225r with ramp lift is particularly suitable for loading and unloading on ramps. In particular, it can be used for lifting and depositing palletised goods right up to the pitch bend.



2 Travel direction definition

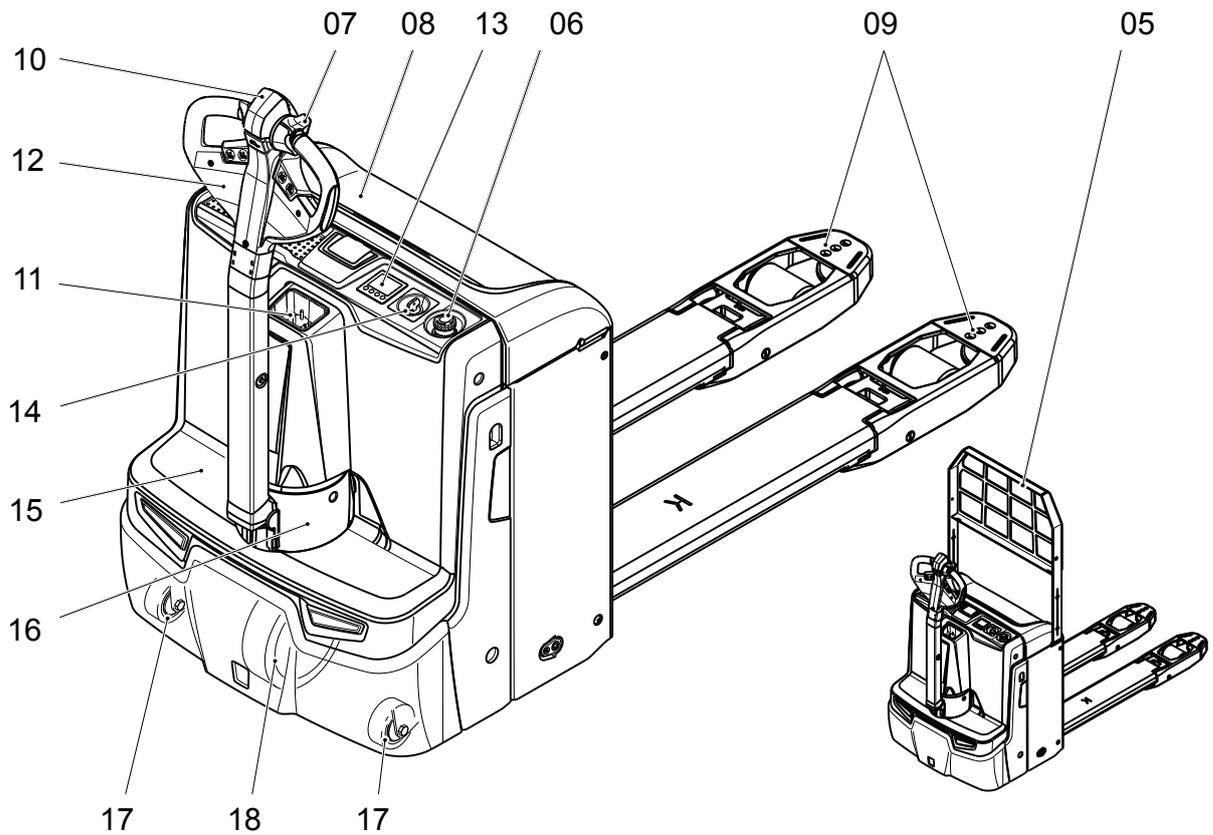
The following determinations have been made for travel direction specification:



Item	Travel Direction
1	Left
2	Drive direction
3	Load direction
4	Right

3 Assemblies and Functional Description

3.1 Assembly Overview



Item		Designation	Item		Designation
5	●	Travel switch	13	○	Mains plug for integrated battery charger
6	●	Battery panel	14	●	Key switch
7	●	Emergency disconnect	14	○	Keypad
8	●	Load handler	14	○	Transponder reader
9	●	Charge status indicator	14	○	ISM Online access module
9	○	Display unit (2-inch display)	15	●	Front panel
10	○	Load guard	16	●	Tiller hood
11	●	Collision safety switch	17	●	Support wheels
12	●	Tiller	18	●	Drive wheel

3.2 Protective and safety equipment

Truck contour

An enclosed, smooth truck perimeter with rounded edges ensures safe handling of the truck. The wheels are surrounded by a solid skirt offering collision protection.

- The truck contour must not be changed. Contact the manufacturer's customer service department, if necessary.

Automatic reset of the controls

When released, a gas strut pushes the swivelling tiller up and activates braking, see page 85.

The travel switch must be held in the travel position to move the truck. When released, the travel switch moves to the neutral position and the truck brakes, see page 89.

Emergency disconnect switch

Activating the emergency disconnect switch rapidly cuts out all electrical functions in hazardous situations, see page 83.

Collision safety switch

When travelling in the drive direction, the collision safety switch changes the travel direction if the truck comes into contact with a person.

The truck brakes, travels away from the operator for 3 s and stops. This prevents the truck driving into the operator.

Emergency stop safety concept

The emergency stop is activated by the traction controller.

Each time the truck is switched on, the system carries out a self-diagnosis.

Foot protection tiller (○)

The assistance system offers enhanced foot protection as the maximum travel speed is only enabled when the operator has moved the tiller by a sufficient amount. The travel speed is reduced in this optional intermediate range, see page 86.

3.3 Functional Description

Electrical system

The truck has an electronic traction controller. The truck electrical system operates with a rated operating voltage of 24 V.

Drive system

An AC three-phase motor actuates the drive wheel via a gearbox.

The electronic traction controller ensures smooth speed control of the drive motor and hence smooth starting, powerful acceleration and electrically controlled braking with energy recovery.

The operator can choose from 3 travel programs depending on the load and the environment: from high-performance to energy-saving (2-inch display).

Hydraulic system

Pressing the lifting button starts the pump unit, supplying hydraulic oil from the oil reservoir to the lift cylinder. Pressing the lifting button raises the load handler at a constant speed; pressing the lowering button lowers the load handler.

Controls and displays

The charge status indicator shows the available battery capacity. The optional display unit (2-inch display) shows the operator key information such as the travel program, service hours, remaining run time, battery capacity and event messages.

Steering

The driver steers with an ergonomic tiller. The drive system can be pivoted +/- 90°.

Operator position

All travel and lift operations can be performed without having to reach.

positionCONTROL (○)

The "positionCONTROL" option enables comfortable approach of predefined entry and lifted heights and free lift heights for up to three definable pallet types with simple actuation of the raise/lower function. "positionCONTROL" can be activated and deactivated with the display unit menu (○).

- Before angled entry into a pallet, positionCONTROL must be deactivated as pallets can become damaged in the event of accidental lifting with the automatic function.

3.3.1 Hourmeter

- Prepare the truck for operation, see page 76 or see page 115.

Service hours are counted while the truck is operational and one of the following controls is applied:

- Tiller in travel zone "F", see page 86.
- "Slow travel button", see page 88.
- "Lift" button, see page 93.
- "Lower" button, see page 93.

On the EJE 222r / 225r the service hours are also counted when one of the following controls is applied:

- "Ramp lift raise" button, see page 92.
- "Ramp lift lower" button, see page 92.

3.3.2 Explanation of travel programs

All trucks in the EJE series are supplied with a pre-set travel program ex works. The information in the section "Performance data" (see page 23) relates to travel program 2.

Travel program 1: reduced top speed, reduced acceleration.

Travel program 2: standard travel program.

Travel program 3: increased acceleration, maximum braking.

4 Technical Specifications

→ Technical data specified in accordance with VDI 2198.
Technical modifications and additions reserved.

4.1 Performance data

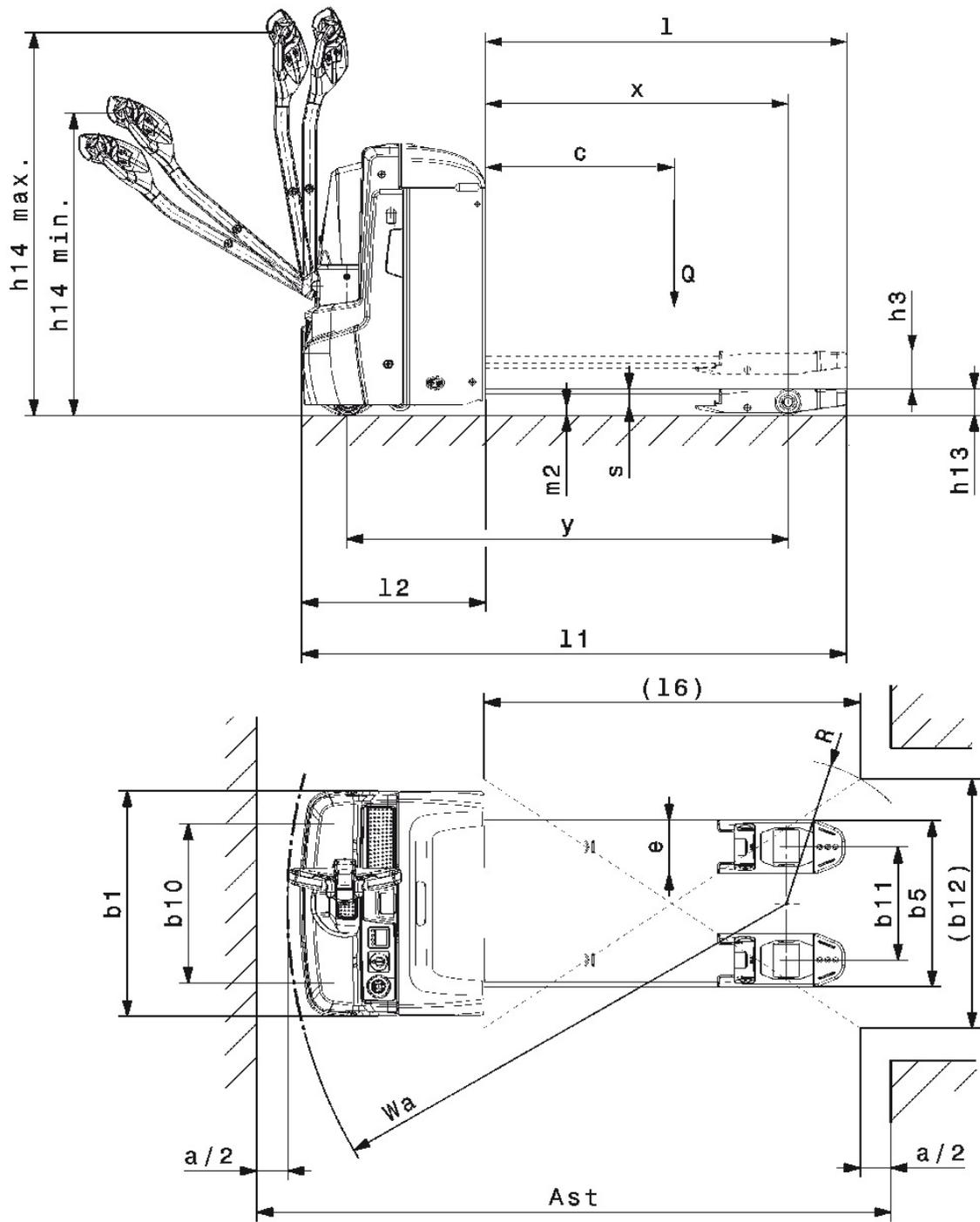
Designation	EJE 222 EJE 222r	EJE 225 EJE 225r	
Rated capacity Q	2200	2500	kg
Travel speed with/without rated load	6.0/6.0		km/h
Lift speed with/without rated load	0.05/0.07		m/s
Lowering speed with/without rated load	0.05/0.04		m/s
Max. gradeability (5 min rating) with/without rated load	8/20		%

Designation	EJE 230	EJE 235	
Rated capacity Q	3000	3500	kg
Travel speed with/without rated load	6.0/6.0	4.0/6.0	km/h
Lift speed with/without rated load	0.04/0.07		m/s
Lowering speed with/without rated load	0.06/0.04		m/s
Max. gradeability (5 min rating) with/without rated load	6/20	5/20	%

4.2 Engine Data

Designation	EJE 222 / 225 / 222r / 225r / 230 / 235	
Drive motor, operating mode S2 60 min	1.7	kW
Lift motor, operating mode S3 15%	2.2	kW

4.3 Dimensions



	Designation	EJE 222 / EJE 225	
h3	Lift	122	mm
c	Load centre distance for standard fork length ¹⁾	600	mm
h13	Load handler lowered	85	mm
h14	Tiller height in travel position min./max.	750/1237	mm
Y	Wheelbase (M/L) ^{2) 3)}	1351/1423	mm
I1	Overall length (M/L) ³⁾	1737/1802	mm
I2	Length including fork shank (M/L) ³⁾	587/659	mm
I	Standard fork length	1150	mm
b1	Fork width	724	mm
b5	Width across forks	535	mm
b10	Track width, front	510	mm
b11	Track width, rear	363	mm
e	Fork width	172	mm
s	Fork-arm thickness	55	mm
m2	Ground clearance, centre of wheelbase	30	mm
x	Load distance ²⁾	908	mm
Wa	Turning radius (M/L) ^{2) 3)}	1532/1604	mm
Ast	Aisle width, pallet 800x1200, lengthways (M/L) ^{3) 5)}	2227/2299	mm
Ast	Aisle width, pallet 1000x1200, crossways (M/L) ^{3) 4)}	2338/2411	mm

¹⁾ For longer fork lengths, the load centre is in the centre of the forks.

²⁾ Load section raised/lowered +56 mm

³⁾ Side battery removal (SBE) M SBE = I1; L SBE = I1 +53 mm

⁴⁾ Load section lowered +50 mm

⁵⁾ Load section lowered +25 mm

	Designation	EJE 222r / EJE 225r	
h3	Lift	122	mm
c	Load centre distance for standard fork length ¹⁾	600	mm
h13	Load handler lowered	85	mm
h14	Tiller height in travel position min./max.	750/1237	mm
Y	Wheelbase (M/L) ^{2) 3)}	1351/1423	mm
I1	Overall length (M/L) ³⁾	1737/1802	mm
I2	Length including fork shank (M/L) ³⁾	587/659	mm
I	Standard fork length	1150	mm
b1	Fork width	724	mm
b5	Width across forks	535	mm
b10	Track width, front	510	mm
b11	Track width, rear	363	mm
e	Fork width	172	mm
s	Fork-arm thickness	55	mm
m2	Ground clearance, centre of wheelbase	30	mm
x	Load distance ²⁾	908	mm
Wa	Turning radius (M/L) ^{2) 3)}	1532/1604	mm
Ast	Aisle width, pallet 800x1200, lengthways (M/L) ^{3) 5)}	2227/2299	mm
Ast	Aisle width, pallet 1000x1200, crossways (M/L) ^{3) 4)}	2338/2411	mm

¹⁾ For longer fork lengths, the load centre is in the centre of the forks.

²⁾ Load section raised/lowered +56 mm

³⁾ Side battery removal (SBE) M SBE = I1; L SBE = I1 +53 mm

⁴⁾ Load section lowered +50 mm

⁵⁾ Load section lowered +25 mm

	Designation	EJE 230 / EJE 235	
h3	Lift	122	mm
c	Load centre distance for standard fork length ¹⁾	600	mm
h13	Load handler lowered	85	mm
h14	Tiller height in travel position min./max.	750/1237	mm
Y	Wheelbase ^{2) 3)}	1351	mm
l1	Overall length ³⁾	1737	mm
l2	Length including fork shank ³⁾	587	mm
l	Standard fork length	1150	mm
b1	Fork width	724	mm
b5	Width across forks	535	mm
b10	Track width, front	510	mm
b11	Track width, rear	363	mm
e	Fork width	172	mm
s	Fork-arm thickness	55	mm
m2	Ground clearance, centre of wheelbase	30	mm
x	Load distance ²⁾	909	mm
Wa	Turning radius ^{2) 3)}	1532	mm
Ast	Aisle width, pallet 800x1200, lengthways (M) ^{3) 5)}	2227	mm
Ast	Aisle width, pallet 1000x1200, crossways (M) ^{3) 4)}	2338	mm

¹⁾ For longer fork lengths, the load centre is in the centre of the forks.

²⁾ Load section raised/lowered +56 mm

³⁾ Side battery removal (SBE) M SBE = I1

⁴⁾ Load section lowered +50 mm

⁵⁾ Load section lowered +25 mm

4.4 Weights

Designation	EJE 222	EJE 225	
Truck weight M/L	535/613		kg
Axle load, laden front/rear (M)	879/1870	970/2072	kg
Axle load without load front/rear (M)	408/127	408/127	kg

Designation	EJE 222r	EJE 225r	
Truck weight M/L	560/640		kg
Axle load, laden front/rear (M)	889/1885	980/2087	kg
Axle load without load front/rear (M)	418/142		kg

Designation	EJE 230	EJE 235	
Truck weight M/L	565		kg
Axle load, laden front/rear (M)	1116/2449	1230/2833	kg
Axle load without load front/rear (M)	430/135		kg

4.5 Tyre type

Designation	EJE 222 EJE 225	EJE 222r EJE 225r	EJE 230 EJE 235	
Tyre size, front	ø230 x 70			
Tyre size, rear				
- Single	ø85x110	ø85x110	-	mm
- Tandem	ø85x85	ø85x85	ø85x85	mm
- Triple	ø85x44	-	-	mm
Additional wheels (dimensions)	ø100x40			mm
Wheels, number front / rear (x = driven)	1x +2/2	1x +2/2	1x +2/4	

4.6 EN norms

Continuous sound pressure level

– EJE 222 / 225 / 222r / 225r / 230 / 235: 70 dB(A)

in accordance with EN 12053 as harmonised with ISO 4871.

- The continuous sound pressure level is calculated according to standard procedures and takes into account the sound pressure level when travelling, lifting and idling. The sound pressure level is measured at the operator's ear.
- Noise levels can fluctuate depending on the floor composition and wheel lining.

Electromagnetic compatibility (EMC)

The manufacturer confirms that the truck adheres to the limits for electromagnetic emissions and resistance as well as the static electricity discharge test in accordance with EN 12895 as well as the standardised instructions contained therein.

- No changes to electric or electronic components or their arrangement may be made without the written agreement of the manufacturer.

WARNING!

Medical equipment can be damaged by non-ionised radiation

Electrical equipment on the truck emitting non-ionised radiation (e.g. wireless data transmission) can affect operators' medical equipment (pacemakers, hearing aids etc.) and result in malfunctions. Consult a doctor or the manufacturer of the medical equipment to clarify whether it can be used near the industrial truck.

4.7 Specifications according to RED guideline (Radio Equipment Directive) for radio units

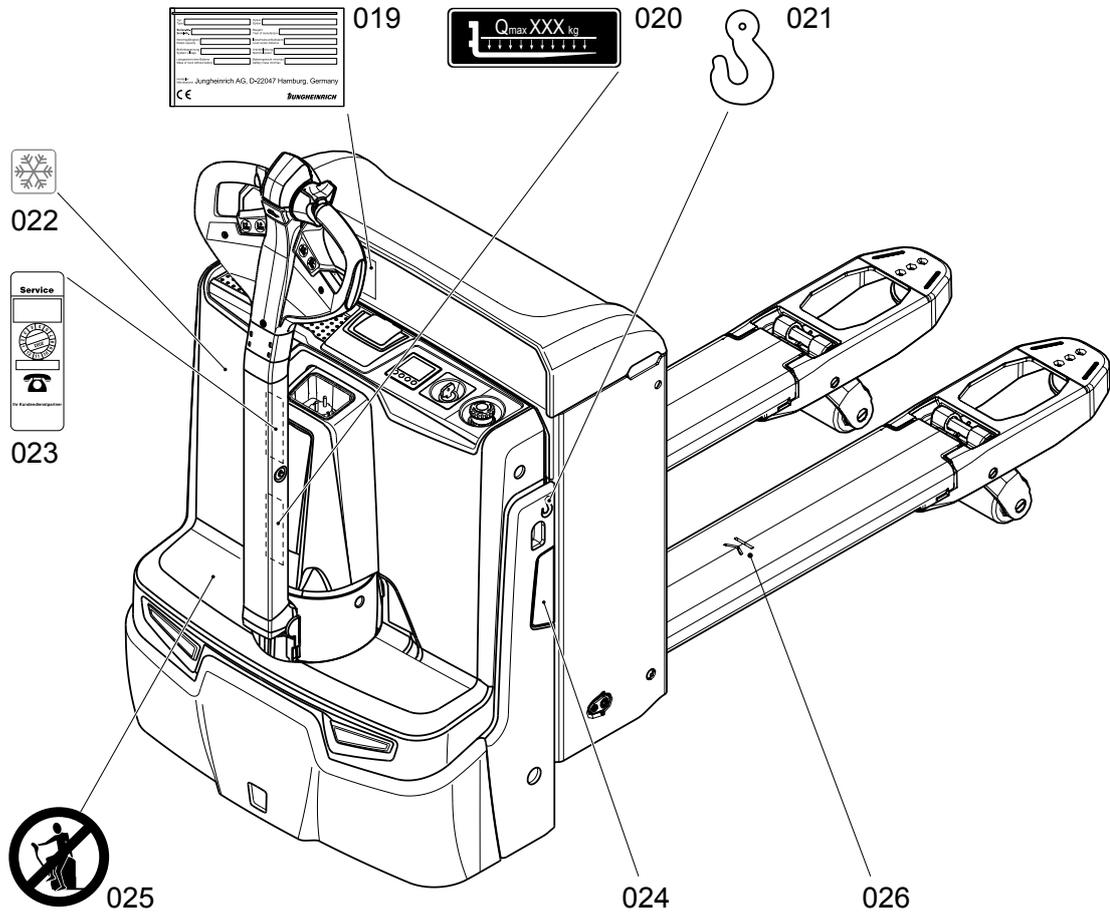
- The table contains any components installed according to the European Directive 2014/53/EU. The table shows the affected frequency range and the emitted transmission power for each component.

Component	Frequency range	Transmission power
WMT 110	13.56 MHz	< 100 mW
WMT 110	2.4 GHz	10 mW
WMT 115	13.56 MHz	< 100 mW
WMT 115	2.4 GHz	10 mW
Radio module (ISM Online)	433.05 - 434.79 MHz	< 10 mW
Access module (ISM Online)	13.56 MHz	< 100 mW
Transponder reader	13.56 MHz	< 100 mW
Telematics Box Basic	2.4 GHz	< 20 mW
Telematics Box Basic	2G 850 /900 MHz	< 2 W
Telematics Box Basic	2G 1800/1900 MHz	< 1 W
Telematics Box Basic	3G 800 - 2100 MHz	< 250 mW
Telematics Box Plus	4G 700-2100 MHz	< 200 mW
Telematics Box Plus	2.4 GHz	< 100 mW
Telematics Box Plus	2.4 GHz	< 10 mW
Telematics Box Plus	5 GHz	< 100 mW
Telematics Box Plus	2G 850/900 MHz	< 2 W
Telematics Box Plus	2G 1800/1900 MHz	< 1 W
Telematics Box Plus	3G 800-2100 MHz	< 250 mW
Telematics Box Plus	4G 700-2100 MHz	< 200 mW

5 Identification points and data plates

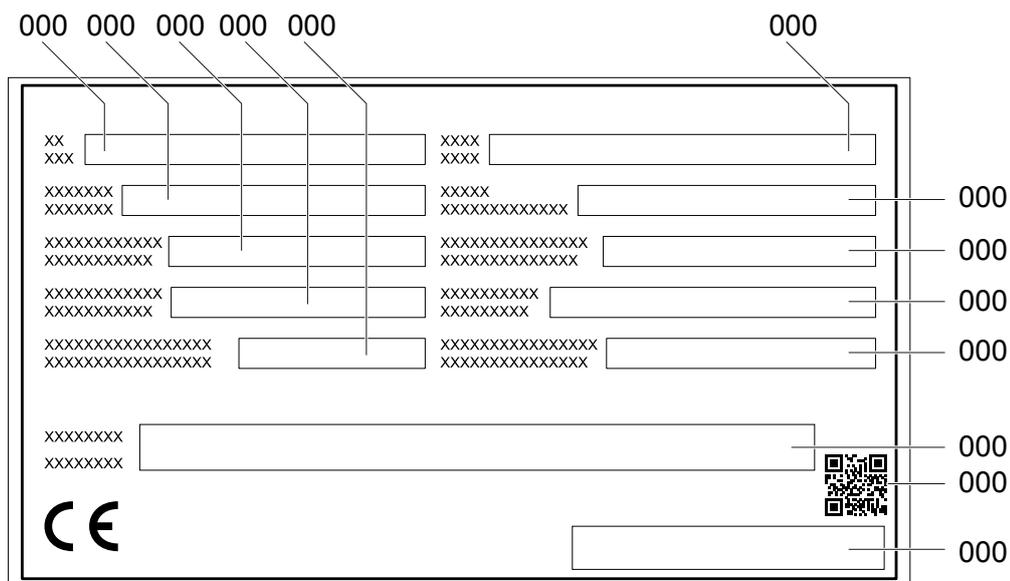
- Warnings and notices such as capacity charts, strap points and data plates must be legible at all times. Replace if necessary.

5.1 Indication Points



Item	Description
19	Truck data plate
20	Capacity Q_{max}
21	Attachment point for loading by crane
22	"Cold store" decal
23	Inspection plaque (○)
24	Prohibition plate: "No passengers"
25	Model description
26	Marking point for pallet angled entry

5.2 Data plate



Item	Model	Item	Model
27	Rated capacity (kg)	34	Load centre distance (mm)
28	Battery voltage (V)	35	Drive output
29	Net weight w.o. battery (kg)	36	Min./max. battery weight (kg)
30	Option	37	Manufacturer
31	Model	38	QR code
32	Serial number	39	Manufacturer's logo
33	Year of manufacture		

→ For queries regarding the truck or when ordering spare parts, always quote the truck serial number (32).

5.3 Truck capacity plate

The capacity plate (20) gives the maximum load-bearing capacity (Q) of the truck in kg assuming the load on the load handler is evenly distributed.



C Transport and Commissioning

1 Lifting by crane

⚠ WARNING!

All persons involved in loading by crane must be trained

Incorrect crane loading procedures due to untrained personnel can cause the truck to fall. There is a risk of injury to personnel and a risk of material damage to the truck.

- ▶ Loading must only be performed by specialist personnel trained for this purpose. The specialist personnel must be instructed in securing loads on road vehicles and handling load securing devices. In each case correct measurements must be taken and appropriate safety measures applied.

⚠ WARNING!

Improper loading by crane can result in accidents

Improper use or use of unsuitable lifting gear can cause the truck to crash when being loaded by crane.

Prevent the truck from hitting other objects during lifting, and avoid uncontrolled movements. If necessary, secure the truck with guide ropes.

- ▶ The truck may be loaded only by people who are trained in using lifting accessories and lifting gear.
- ▶ Wear personal protective equipment (e.g. safety shoes, safety helmet, hi-vis jacket, protective gloves) when loading by crane.
- ▶ Do not stand under suspended loads.
- ▶ Do not walk into or stand in a hazardous area.
- ▶ Always use lifting gear with sufficient capacity (for truck weight, see truck data plate).
- ▶ Always attach the crane lifting gear to the prescribed attachment points and prevent them from slipping.
- ▶ Use the lifting accessories only in the prescribed load direction.
- ▶ Crane lifting gear must be fastened in such a way that it does not come into contact with any attachments when lifting.

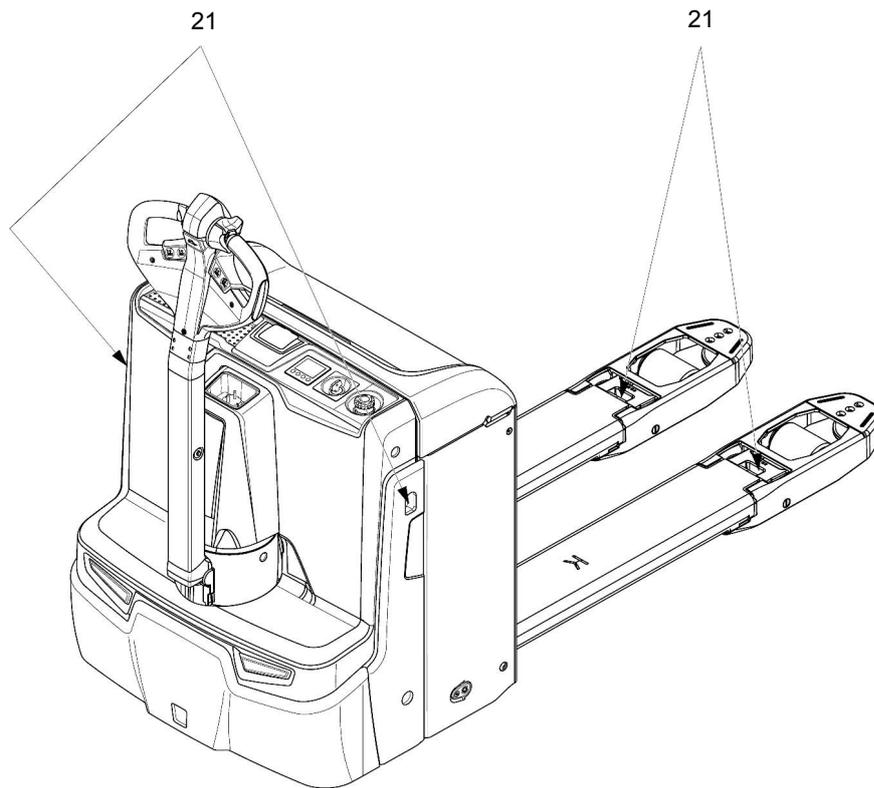
⚠ CAUTION!

Danger of injury from swinging truck

Different battery versions and battery weights can lead to the truck oscillating in a suspended position after being raised.

- ▶ Raise the truck carefully and allow to swing.
- ▶ Keep the hazardous area around the truck clear.

- Strap points (21) on the chassis are provided for transporting the truck with crane lifting gear.



Lifting the truck by crane

Requirements

- Park the truck securely, see page 79.

Tools and Material Required

- Lifting gear
- Crane lifting gear

Procedure

- Open the battery cover and remove the battery if necessary.
- Secure the lifting slings to the strap points (21).

The truck can now be lifted by crane.

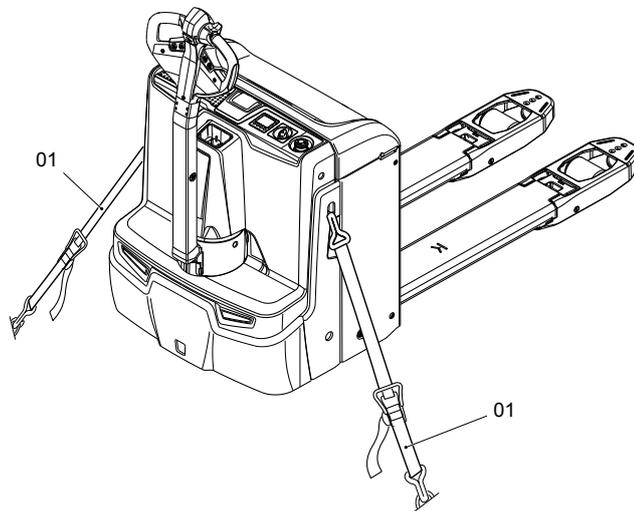
2 Transport

⚠ WARNING!

Uncontrolled movement during transport

Improper fastening of the truck and mast during transport can result in serious accidents.

- ▶ Loading is only to be carried out by specially trained staff. The specialist personnel must be instructed in the securing of loads on road vehicles and in the use of load-securing equipment. When securing the truck, the appropriate measures must be determined and applied for each individual case.
- ▶ The truck must be securely fastened when transported on a lorry or a trailer.
- ▶ The lorry or trailer must have lashing rings.
- ▶ Use wedges to prevent the truck from moving.
- ▶ Use only lashing straps with sufficient load rating.
- ▶ Use anti-slip material to secure loading aids (pallets, wedges,...), e. g. anti-slip mats.



Securing the truck for transport

Requirements

- The truck is loaded.
- The truck is parked securely, see page 79.

Tools and Material Required

- Lashing straps

Procedure

- Attach the lashing straps (40) to the industrial truck and the transport vehicle and tension sufficiently.

The truck can now be transported.

3 Using the Truck for the First Time

⚠ WARNING!

The use of unsuitable energy sources can be hazardous

Rectified AC current will damage the assemblies (controllers, sensors, motors etc.) of the electronic system.

Unsuitable cable connections (too long, insufficient wire cross-section) to the battery (tow cables) can overheat, setting the truck and battery on fire.

- ▶ The truck must only be operated with battery current.
- ▶ Cable connections to the battery (tow leads) must be less than 6 m long and have a minimum cross-section of 50 mm².

Procedure

- Check the equipment is complete.
 - If necessary, install the battery, see page 47. Do not damage the battery cable.
 - Charge the battery, see page 41.
- ➔ The truck settings must match the battery model (if the customer is charging the battery).
- Check the hydraulic oil level and top up if necessary (see page 75).
 - Start up the truck (see page 76).

Truck is operational.

- ➔ If the truck is equipped with a display unit the delivery code is marked on a sticker, see page 112.
- ➔ If the truck is equipped with a keypad or a transponder reader, it can only be operated at first by the keys in the display unit, see page 112.

D Battery - Servicing, Recharging, Replacement

1 Replaceable lead-acid and lithium-ion batteries

1.1 Notes on Battery Technologies

Lithium-ion batteries (○)

The trucks may be optionally equipped with a lithium-ion battery. All notes and information concerning lithium-ion batteries can be found in the separate "Lithium-ion battery 24 V - 240 Ah / 360 Ah" operating instructions.

Acid batteries

The truck is equipped with an acid battery as standard. The following sections relate to this battery technology.

1.2 Safety instructions for handling lead-acid batteries

Maintenance personnel

Batteries may only be charged, serviced or replaced by trained personnel. These operating instructions and the manufacturer's instructions concerning batteries and charging stations must be observed when carrying out the work.

Fire Protection

Do not smoke and avoid naked flames when handling batteries. Wherever an industrial truck is parked for charging there must be no inflammable material or consumables capable of creating sparks within a minimum distance of 2,5 m from the truck. The room must be ventilated. Fire protection equipment must be available.

⚠ CAUTION!

The use of unsuitable fire protection equipment can result in scalding

Extinguishing fires with water can cause a reaction with the battery acid. This can result in scalding from the acid.

- ▶ Use powder extinguishers.
 - ▶ Never extinguish a burning battery with water.
-

Battery maintenance

The battery-cell covers must be kept dry and clean. The terminals and cable lugs must be clean, secure and have a light coating of terminal grease.

⚠ WARNING!

Short circuits can result in fire

Damaged cables can cause short circuits, setting the truck and battery on fire.

- ▶ Before closing the battery cover make sure that the battery cables are not damaged.
-

Battery disposal

Batteries may only be disposed of in accordance with national environmental protection regulations or disposal laws. The manufacturer's disposal instructions must be observed.

⚠ WARNING!

Risk of accidents and injuries when handling acid batteries

Batteries contain dissolved acid, which is toxic and caustic. Above all, avoid any contact with battery acid.

- ▶ Dispose of used battery acid in accordance with regulations.
 - ▶ Always wear protective clothing and goggles when working with batteries.
 - ▶ Do not let battery acid come into contact with skin, clothing or eyes. If necessary, rinse with plenty of clean water.
 - ▶ In the event of physical damage (e.g. skin or eye contact with battery acid) consult a doctor immediately.
 - ▶ Spilled battery acid should be neutralised immediately with plenty of water.
 - ▶ Only batteries with a sealed battery container may be used.
 - ▶ Follow national guidelines and legislation.
-

Using the battery

⚠ WARNING!

Unsuitable batteries that have not been approved by Jungheinrich for the truck can be hazardous

The design, weight and dimensions of the battery have a considerable effect on the operational safety of the truck, in particular its stability and capacity. The use of unsuitable batteries that have not been approved for the truck by Jungheinrich, can lead to a deterioration of the braking characteristics of the truck during energy recovery, causing considerable damage to the electric controller and resulting in serious danger to the health and safety of individuals.

- ▶ Only Jungheinrich-approved batteries may be used on the truck.
 - ▶ Battery equipment may only be replaced with the agreement of Jungheinrich.
 - ▶ When replacing/installing the battery make sure the battery is securely located in the battery compartment of the truck.
 - ▶ Do not use batteries that have not been approved by the manufacturer.
-

Park the truck securely before carrying out any work on the batteries (see page 79).

1.3 Battery types

Depending on the version, the truck is equipped with different battery types. The following table shows which combinations are intended as standard.

The use of battery types not listed here must be agreed with the manufacturer.

The battery weights can be taken from the battery data plate. Batteries with non insulated terminals must be covered with a non slip insulating mat.

EJE 222 / 225 Battery tray M

Top battery removal/ side battery removal

Voltage	Battery type	Min. weight (kg)	Max. dimensions L x W x H (mm)
24 V	24V2PzS180	171	624 x 212 x 537
24 V	24V2PzV160	171	624 x 212 x 537
24 V	24V2PzS250	204	624 x 212 x 628
24 V	24V2PzV200	204	624 x 212 x 628
24 V	24V2PzV174	171	624 x 212 x 537
24 V	24V2PzV220	204	624 x 212 x 628
24 V	24V2PzM180	171	624 x 212 x 537
24 V	24V2PzM250	204	624 x 212 x 628
24 V	24VXFC158	204	624 x 212 x 628
24 V	24VNXS166	204	624 x 212 x 628

EJE 222 / 225 Battery tray L

Top battery removal/ side battery removal

Voltage	Battery type	Min. weight (kg)	Max. dimensions L x W x H (mm)
24 V	24V3PzV300	273	624 x 284 x 628
24 V	24V3PzS375	273	624 x 284 x 628
24 V	24V3PzV330	273	624 x 284 x 628
24 V	24V3PzM375	273	624 x 284 x 628
24 V	24VXFC316	273	624 x 284 x 628
24 V	24VNXS332	273	624 x 284 x 628
24 V	24V LIB 360/390 Ah LB	273	624 x 284 x 628
24 V	24V LIB 240/260 Ah LB	273	624 x 284 x 628

- The truck can be fitted with a lithium-ion battery as an option; see the "Lithium-ion battery 24V - 240 Ah / 360 Ah" operating instructions.

1.4 Exposing the battery

⚠ WARNING!

An unsecured truck can cause accidents

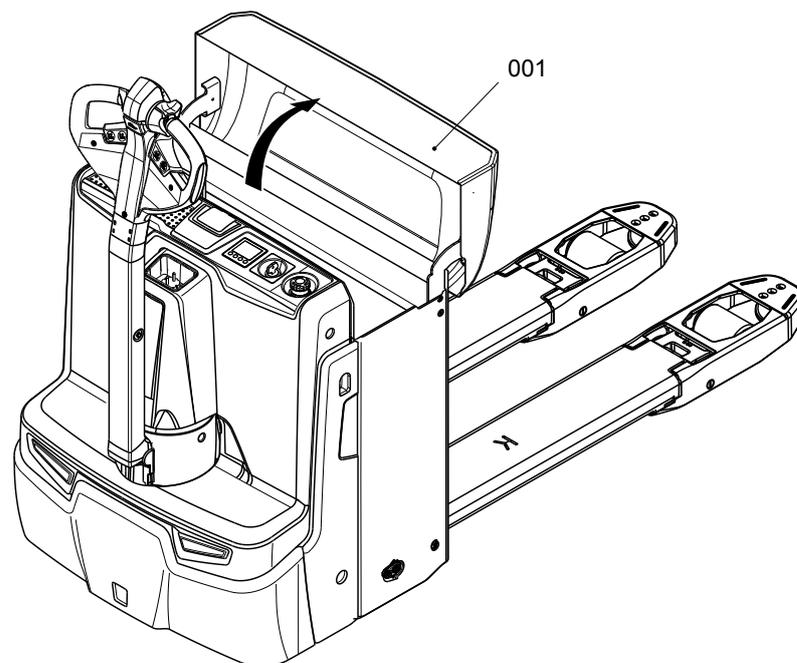
Parking the truck on an incline or with a raised load handler is dangerous and is strictly prohibited.

- ▶ Park the truck on a level surface. In special cases the truck may need to be secured with wedges.
- ▶ Fully lower the load handler.
- ▶ Select a place to park where no other people are at risk of injury from the lowered load handler.
- ▶ If the brakes are not working, place wedges underneath the wheels of the truck to prevent it from moving.

⚠ CAUTION!

Trapping hazard

- ▶ Make sure there is nothing between the battery cover and the truck when you fit the battery cover.



Requirements

- Truck parked on a level surface.
- The truck is parked securely, see page 79.

Procedure

- Open the battery panel (6).

The battery is now exposed.

1.5 Charging the battery

→ Information on charging the integrated modular lithium-ion batteries see page 62.

The following applies for lead-acid batteries:

⚠ WARNING!

The gases produced during charging can cause explosions

The battery produces a mixture of nitrogen and hydrogen (electrolytic gas) during charging. Gassing is a chemical process. This gas mixture is highly explosive and must not be ignited.

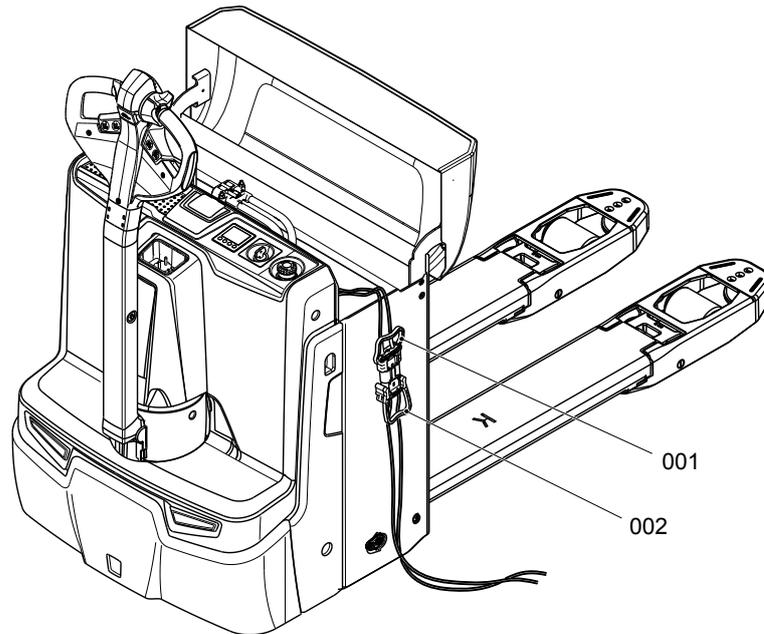
- ▶ Switch the charging station and truck off first before connecting/disconnecting the charging cable of the battery charging station to/from the battery connector.
- ▶ The charger must be adapted to the battery in terms of voltage and charge capacity.
- ▶ Before charging, check all cables and plug connections for visible signs of damage.
- ▶ Ventilate the room in which the truck is being charged.
- ▶ The battery cover must be open and the battery cell surfaces must be exposed during charging to ensure adequate ventilation.
- ▶ Do not smoke and avoid naked flames when handling batteries.
- ▶ Wherever an industrial truck is parked for charging there shall be no inflammable material or lubricants capable of creating sparks within 2,5 m around the truck.
- ▶ Fire protection equipment must be on hand.
- ▶ Do not lay any metallic objects on battery.
- ▶ It is essential to follow the safety regulations of the battery and charger station manufacturers.

NOTICE

Battery damage

The battery, charger (charge characteristics) and battery parameters must match each other, otherwise damage may result.

1.5.1 Charging the battery with a stationary charger



Requirements

- The truck is parked securely, see page 79.
- Battery exposed, see page 40.
- The charging program that matches the battery type is set on the battery charger.

Procedure

- Remove the insulating mat from the battery, if present.
- Disconnect the battery connector (41) from the truck connector.
- Connect the battery connector (41) to the charger cable (42) of the stationary battery charger.
- Commence charging in accordance with the battery-charger operating instructions.

The battery is charging.

- Optional NexSys batteries should only be charged with special NexSys chargers or the internal battery charger (see page 43).

NOTICE

If charging has been interrupted, the full battery capacity will not be available.

Complete battery charging and restore the truck to operation

Requirements

- Battery charging is complete.

Procedure

- Switch off the charger.
- Remove the battery connector (41) from the charging cable (42).
- Connect the battery connector (41) to the truck.
- If applicable, place the removed insulating mat back over the battery.
- Securely close the battery panel.

The truck is now ready for operation.

1.5.2 Charging the battery with the integrated charger (○)

⚠ DANGER!

Risk of electric shock and fire

Damaged and unsuitable cables can cause electric shocks and can overheat, resulting in fires.

- ▶ Always use mains cables with a maximum length of 30 m.
Local regulations must be observed.
 - ▶ Unwind the cable reel fully when using it.
 - ▶ Always use original manufacturer's mains cables.
 - ▶ Insulation safety, acid and caustic ratings must comply with the manufacturer's mains lead.
 - ▶ The charging connector must be dry and clean when used.
-

NOTICE

Improper use of the on-board battery charger can cause material damage

The on-board charger consisting of a battery charger and battery controller must not be opened. If faulty, contact the manufacturer's customer service department.

- ▶ The battery charger must only be used for batteries supplied by the manufacturer or other approved battery types provided they have been adapted by the manufacturer's customer service department.
-

1.5.2.1 Setting the charging characteristics (ELH 2415 / 2425 / 2435)

The charging characteristic is set via parameters from the truck software.

The setting is made by the manufacturer's customer service department.

1.5.2.2 Charging the battery

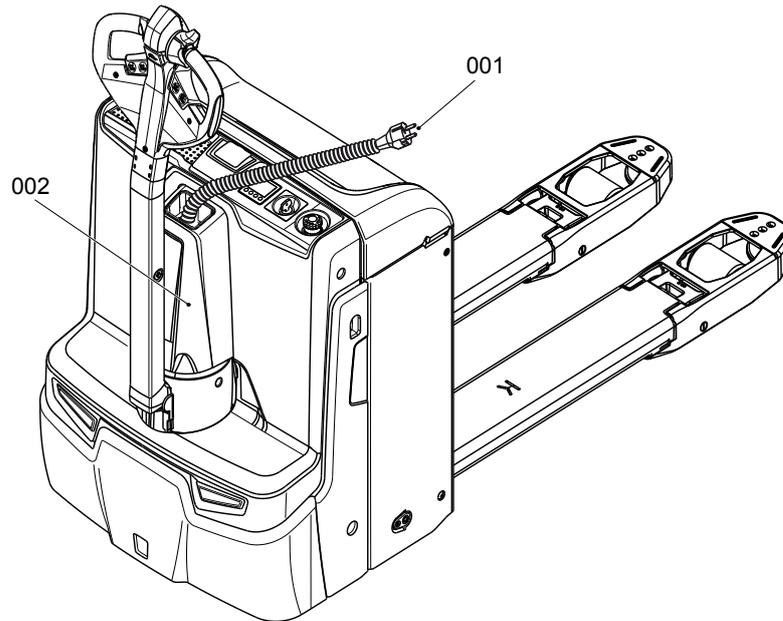
Starting to charge with the on-board charger

Mains connection

Mains voltage: 230 V

Mains frequency: 50 Hz

The mains cable and mains connector (13) of the battery charger are stowed in a storage compartment in the front panel (15).



Charge battery

Requirements

- The truck is parked securely, see page 79.
- Battery is exposed, see page 40.
- The charging program that matches the battery type is set on the battery charger.

Procedure

- Remove the insulating mat from the battery, if present.
- The battery connector (41) must remain plugged in.
- Plug the mains connector (13) into a mains socket.
- The flashing LED indicates the charge status or a fault (for flashing codes, see the "LED display" table).

The battery is now charged.

- If the mains connector is connected to the mains, all the truck's electrical functions will be disconnected (electrical start-up protection). The truck cannot be operated.
- When the mains connector is attached to the mains the battery connector cannot be disconnected.

Completing battery charging; restoring the truck to operation

Requirements

- The battery is fully charged.

Procedure

- If charging has been interrupted, the full battery capacity will not be available.
- Remove the mains connector from the socket and store it in the storage compartment with the cable.
 - If applicable, place the insulating mat back over the battery.
 - Securely close the battery panel.

The truck is now ready for operation.

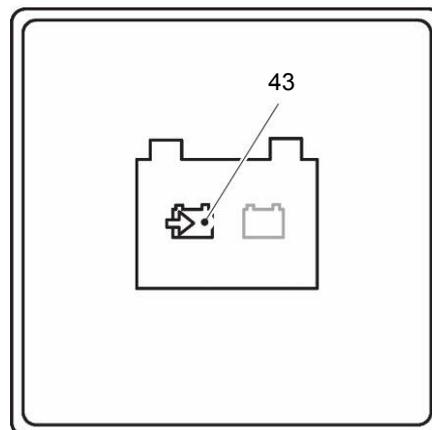
Charging times

The duration of charge depends on the battery capacity.

- Charging continues automatically after a mains failure. Charging can be interrupted by removing the mains connector and continued as partial charging.

LED display (43)

Green LED (charge status)	
Lit	Charging complete, battery full. (Charge interval, float or compensation charge).
Slow flash	Charging.
Rapid flash	Display at beginning of charge or after setting a new characteristic curve. Number of flash pulses corresponds to the characteristic curve set.



Red LED (fault)	
Lit	Charging characteristic or battery parameters invalid
Slow flash	1x flash with noticeable interval: Overvoltage detected before charging starts
	2x flash with noticeable interval: Max. charge time exceeded
	3x flash with noticeable interval: Max. charge capacity exceeded
	4x flash with noticeable interval: Control deviation I_{max}
	5x flash with noticeable interval: Overvoltage cut-out
	6x flash with noticeable interval: Low voltage cut-out
	7x flash with noticeable interval: Battery is faulty, battery error
	8x flash with noticeable interval: Fan error
	9x flash with noticeable interval: Battery disconnected from battery charger during charging.
	10x flash with noticeable interval: Equipment overtemperature

Trickle charge

The trickle charge starts automatically when charging is complete.

Partial charging

Partial charging is possible, but should be the exception rather than the rule.

1.6 Battery removal and installation

⚠ WARNING!

Accident risk during battery removal and installation

Due to the battery weight and acid there is a risk of trapping or scalding when the battery is removed and installed.

- ▶ Note the "Safety regulations for handling acid batteries" section in this chapter.
 - ▶ Wear safety shoes when removing and installing the battery.
 - ▶ Use only batteries with insulated cells and terminal connectors.
 - ▶ Park the truck on a level surface to prevent the battery from sliding out.
 - ▶ Make sure the crane slings have sufficient capacity to replace the battery.
 - ▶ Use only approved battery replacement devices (battery roller stand, replacement trolley etc.).
 - ▶ Make sure the battery is securely located in the truck's battery compartment.
-

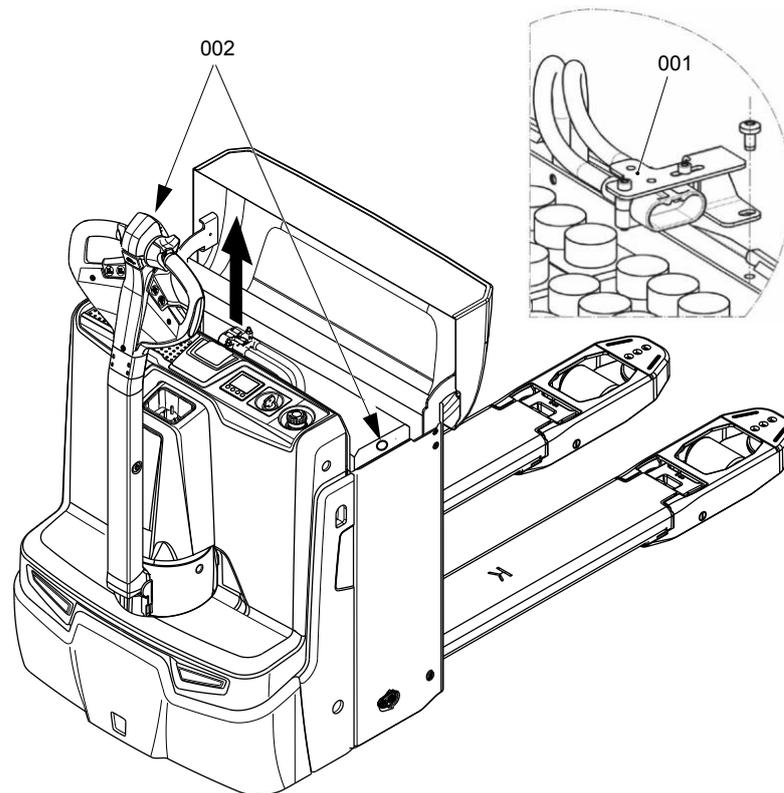
⚠ CAUTION!

Trapping hazard

There is a risk of trapping when you close the battery cover.

- ▶ Do not reach between the battery cover and chassis. Hold the battery cover only by the designated recess.
 - ▶ Close the battery panel carefully and slowly.
-

1.6.1 Changing the battery from the top



Removing the battery

Requirements

- Park the truck securely, see page 79.
- Expose the battery, see page 40.

Tools and Material Required

- Crane lifting gear

Procedure

- Disconnect the battery connector from the truck connector.
- Place the battery cable on the tray so that it cannot be severed when the battery is pulled out.
- Remove the battery lid (45) support.
- Arrange the support and battery connection cable so that they are not damaged when removing the battery.
- Attach the crane lifting gear to the eyes (44).
- The hooks must be fitted in such a way that they do not fall onto the battery cells when the crane lifting gear is slackened. The lifting gear must exert a vertical pull so that the battery container is not compressed.
- Slowly pull the battery up out of the battery tray with the crane lifting gear.

The battery is now removed.

Installing the battery

Requirements

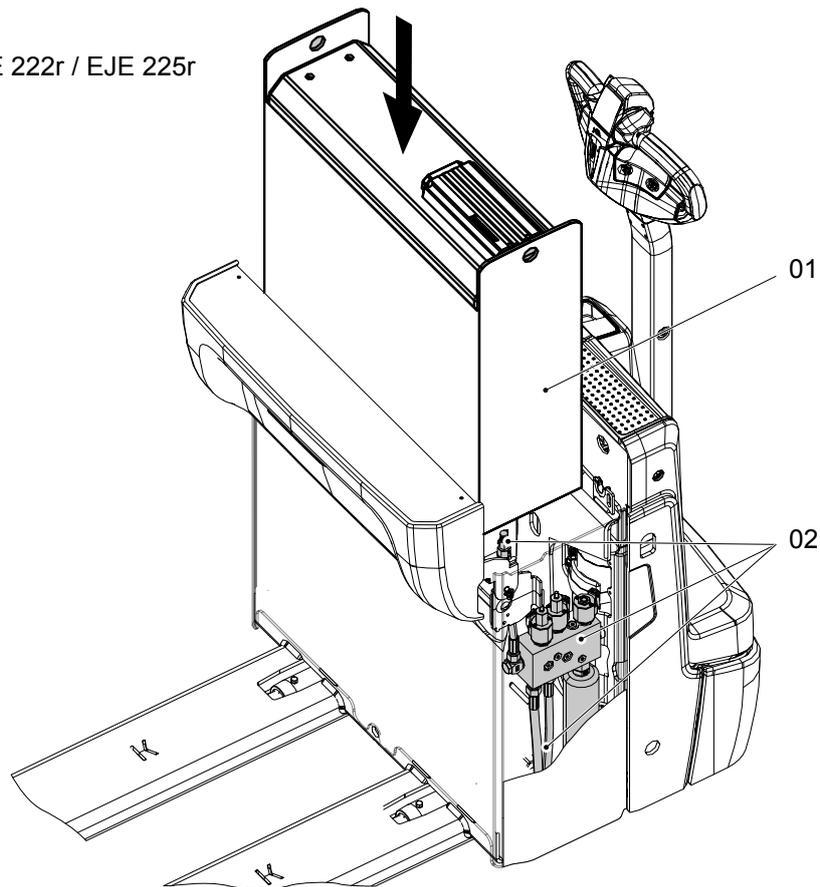
- The truck is parked securely – see page 79.
- Battery compartment is open – see page 40.
- Battery is correctly attached to the crane lifting gear – see page 48.

Procedure

- Place the battery cable on the battery tray such that it cannot be severed by the battery during insertion.
- Ensure that the battery is positioned and connected correctly.
- Carefully lower the battery into the battery tray.
- EJE 222r / 225r only (see figure): When installing the battery (46), ensure that the electrical and hydraulic components of the auxiliary hydraulics (47) are not jammed or damaged.
- Remove the crane lifting gear.
- Fit the battery connector holder.
- Connect the truck and battery connectors.
- Close the battery lid.

The battery is now installed.

EJE 222r / EJE 225r



1.6.2 Removing the battery from the side

⚠ CAUTION!

Trapping hazard

Trapping hazard when removing and installing the battery.

- ▶ When removing and installing the battery do not put your hands between the battery and the chassis.

- ➔ Lateral battery removal is optional only. And on the EJE 222r / 225r, the battery can only be removed from the right-hand side.

Removing the battery

Requirements

- The truck is parked securely, see page 79.
- Battery is exposed, see page 40.

Tools and Material Required

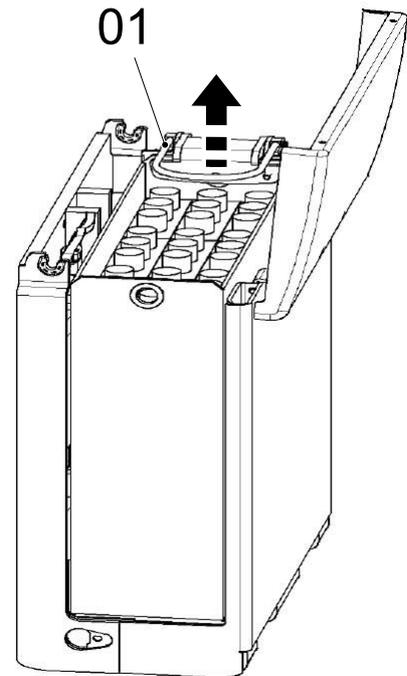
- Battery replacement station/trolley

Procedure

- Disconnect the battery connector (41) from the truck connector.
- Undo the battery latch (48).
- Move the battery replacement station/trolley up to the side of the truck.
- Turn the battery latch as far as the stop.

- ➔ Fully turning the bar moves the battery by approx. 30 mm.
- Carefully push the battery off the truck onto the battery replacement station/trolley.

The battery has now been removed.



Installing the battery

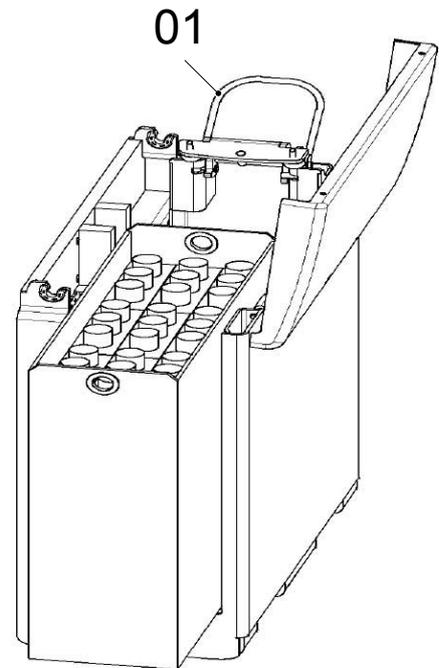
Requirements

- The truck is parked securely, see page 79.
- Battery compartment is freely accessible.

Procedure

- Place the battery cable on the tray so that it cannot be severed when the battery is inserted.
- Ensure that the battery is installed and connected correctly
- Move the battery replacement station/trolley up to the side of the truck.
- Insert the battery.
- Press to return the battery latch to its original position and ensure the battery is locked securely.
- Attach the battery connector and the truck connector.
- Close the battery panel.

The battery is now installed.



2 Integrated modular lithium-ion batteries

2.1 Notes on lithium-ion batteries

Lithium-ion batteries

The truck is equipped with a lithium-ion battery.

General information

The truck is optionally fitted with an integrated modular lithium-ion battery. All notes and information concerning lithium-ion batteries can be found in these operating instructions.

The Jungheinrich lithium-ion batteries are maintenance-free batteries with rechargeable high-performance energy cells. The batteries' daily operating time can be extended through intermediate charges.

The battery is continually monitored by the battery management system. The battery management system checks for example the cell temperature, the voltage and the charge status of the cells, as well as releasing charge and discharge processes.

- The battery management system data can be checked by the manufacturer's customer service department.

Lithium ion battery management system

Charging and discharging of the lithium ion battery is enabled and monitored. Faults or messages warning of approaching critical values are displayed. If necessary, the truck is switched off.

The battery management system is connected to the truck via an interface.

When the charge status approaches a critical value, the operator is notified by the display message.

2.2 Safety regulations for handling lithium-ion batteries

Maintenance personnel

Batteries may only be charged, serviced or replaced by trained personnel. These operating instructions and the manufacturer's instructions concerning batteries and charging stations must be observed when carrying out the work.

2.2.1 Correct application

No hazards are anticipated if the equipment is used correctly.

The following hazards can arise in the event of improper use:

- Physical damage:
Mechanical damage may lead to problems including falling or deformation of the lithium-ion battery due to pressure.
Mechanical damage includes cracks, breaks, splinters or holes in the battery housing. This type of damage can cause a short circuit inside the lithium-ion battery.
- Short circuits:
Short circuits may be caused by connecting the two battery terminals (e.g. battery immersed in water).
- Temperature effects:
High temperatures caused by, for example, sunlight or storage in warm locations (e.g. close to ovens) can cause premature ageing and damage to the lithium-ion battery.

Safe places for storing batteries until the manufacturer's customer service department arrives on site must satisfy the following criteria:

- Do not store in places often frequented by personnel.
- Do not store in places where valuable objects (e.g. cars) are stored.
- A carbon dioxide extinguisher (CO₂) must be provided on site.
- There should be no fire or smoke detectors in the vicinity in order to ensure that an automatic fire detection system is activated only in the event of actual danger (e.g. naked flames).
- Small amounts of discharge from a single lithium-ion battery are not critical to the environment. Above-average natural ventilation is required in this case.
- No ventilation intake pipes should be in the vicinity, as discharged content could spread within a building.

Examples of where to store a non-functional lithium-ion battery:

- Roofed outdoor position
- Ventilated container
- Covered box with pressure and smoke discharge option

2.2.2 Storing the battery

NOTICE

Damage to the lithium-ion battery due to discharge

If the lithium-ion battery is not used for a long period of time, it can become damaged through discharge.

- ▶ Fully charge the battery before extended downtimes.
- ▶ To ensure a long service life of the lithium-ion battery, it must be fully charged every 4 weeks when not in use.

2.2.3 Instructions for disposal

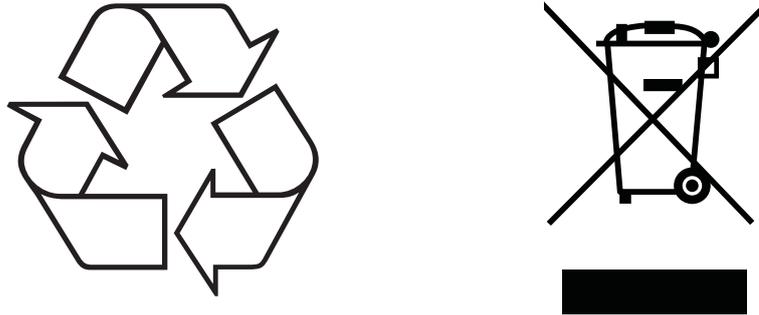
NOTICE

Lithium-ion batteries must be disposed of in accordance with the relevant national environmental protection regulations.

► For lithium-ion battery disposal, contact the manufacturer's customer service department.

Used cells and lithium-ion batteries are recyclable economic goods. In accordance with the marking showing a crossed-out waste bin, these lithium-ion batteries may not be disposed of as domestic waste.

Return or recycling of batteries must be ensured in accordance with the Battery Directive 2006/66/EG.



Used lithium-ion batteries must be treated as hazardous waste.

Lithium-ion batteries marked with the recycling symbol and the sign showing a crossed-out waste bin must not be disposed of with ordinary household waste.

Buy-back terms and type of recycling are to be agreed with the manufacturer.

2.2.4 Shipping information

The Jungheinrich lithium-ion battery is a hazardous material. The applicable ADR regulations must be observed during transport.

→ ADR = Accord européen relatif au transport international des marchandises Dangereuses par Route

→ If in doubt, contact the manufacturer's customer service department.

A modular lithium-ion battery fixed in the truck can be transported without special precautions.

2.2.5 Battery lifetime and maintenance

NOTICE

Damage to the lithium-ion battery due to discharge

If the lithium-ion battery is not used for a long period of time, it can become damaged through discharge.

► Fully charge the battery before extended downtimes.

► To ensure a long service life of the lithium-ion battery, it must be fully charged every 4 weeks when not in use.

The lithium-ion battery is wear-free.

The components are designed to be maintenance-free, and therefore no maintenance intervals are defined for this battery.

The battery is continually monitored by the battery management system.

2.2.6 Dangers and information relating to fire in the vicinity of the lithium-ion battery

The lithium ion battery may be damaged by a fire in the vicinity of the lithium ion battery. When fighting a lithium-ion battery fire, the following dangers and information must be taken into consideration.

2.2.6.1 Particular hazard from combustion products

⚠ WARNING!

Contact with combustion products can be hazardous

Fires produce combustion products.

Combustion is a chemical process by which a flammable material combines with oxygen under heat and light (fire).

The resulting combustion products can occur in the form of smoke, through leaking fluids, escaping gases, debris as well decomposition products of certain chemicals.

These combustion products are substances that enter the body through the respiratory tract and / or the skin, where they can produce and adverse effects such as choking.

▶ Avoid contact with combustion products.

▶ Use protective equipment.

-
- Hydrogen fluoride (HF) Hydrofluoric acid = extremely corrosive
 - Risk of toxic substances produced by pyrolysis
 - Risk of highly flammable gas mixtures.
 - Other combustion products: Carbon monoxide & - dioxide.

2.2.6.2 Special fire fighting protective equipment

- Use self-contained breathing apparatus.
- Wear protective overalls.

2.2.6.3 Additional fire fighting instructions

To prevent secondary fires from occurring, the lithium-ion battery must be cooled from the outside. Fluids or solids must never be directed into the lithium-ion battery.

Suitable extinguishing agents

- Carbon dioxide extinguisher (CO₂)
- Water (not on mechanically opened or damaged batteries!)

Unsuitable extinguishing agents

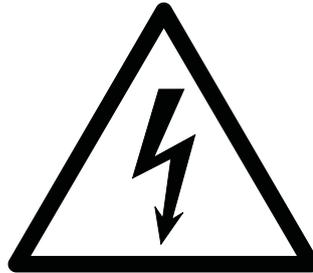
- Foam
- Grease fire extinguishing agents
- Powder extinguishers
- Metal fire extinguishers (PM 12i extinguishers)
- Metal fire powder PL-9/78 (DIN EN 3SP-44/95)
- Dry sand

2.2.7 Touch voltage hazard

⚠ WARNING!

Hazardous contact voltages only arise in the event of a technical or physical defect. The batteries are normally charged. There is still some residual voltage in a discharged battery. This must be considered as a hazardous contact voltage.

With this kind of defect the battery must not be touched and must not come into contact with metal objects see page 53.



2.2.8 Hazard and Safety Instruction Phrases

Hazard and safety instruction phrases are codified hazard and safety instruction phrases for hazardous materials used as part of the globally harmonised system for the grading and identification of chemicals.

The following H phrases describe the hazards arising from the battery cells and their contents.

The P phrases describe the safety measures to be applied.

2.2.8.1 Hazard Instruction Phrases (H phrases)

Physical hazards (H200 range)

H242	Heating can result in fire.
------	-----------------------------

2.2.8.2 Safety Instruction Phrases (P phrases)

General (P100 range)

P102	Keep out of reach of children.
------	--------------------------------

Prevention (P200 range)

P201	Obtain special instructions before use.
P202	Read and understand all safety instructions before use.
P233	Keep containers sealed.
P235 + P410	Keep cool. Protect against direct sunlight.
P251	Do not penetrate or burn, even after use.
P261	Avoid inhalation of dust, smoke, gas, steam, vapours or aerosols.

Reaction (P300 range)

P314	Seek medical advice or assistance if feeling unwell.
P304 + P340	In case of inhalation: Bring the person into fresh air and ensure he or she can breath unhindered.
P313 + P332	For skin irritation: Seek medical advice or assistance.
P313 + P337	For persistent eye irritation: Seek medical advice or assistance.
P370 + P378	In the event of fire: Use CO ₂ to extinguish.
P370 + P380	In the event of fire: Clear the area.

Storage (P400 range)

P410 + P412	Protect against direct sunlight and do not subject to temperatures in excess of 50 °C.
P411 + P235	Keep cool and do not store in temperatures in excess of 40 °C.

Disposal (P500 range)

P502	Obtain information on recycling or reuse from the manufacturer or supplier.
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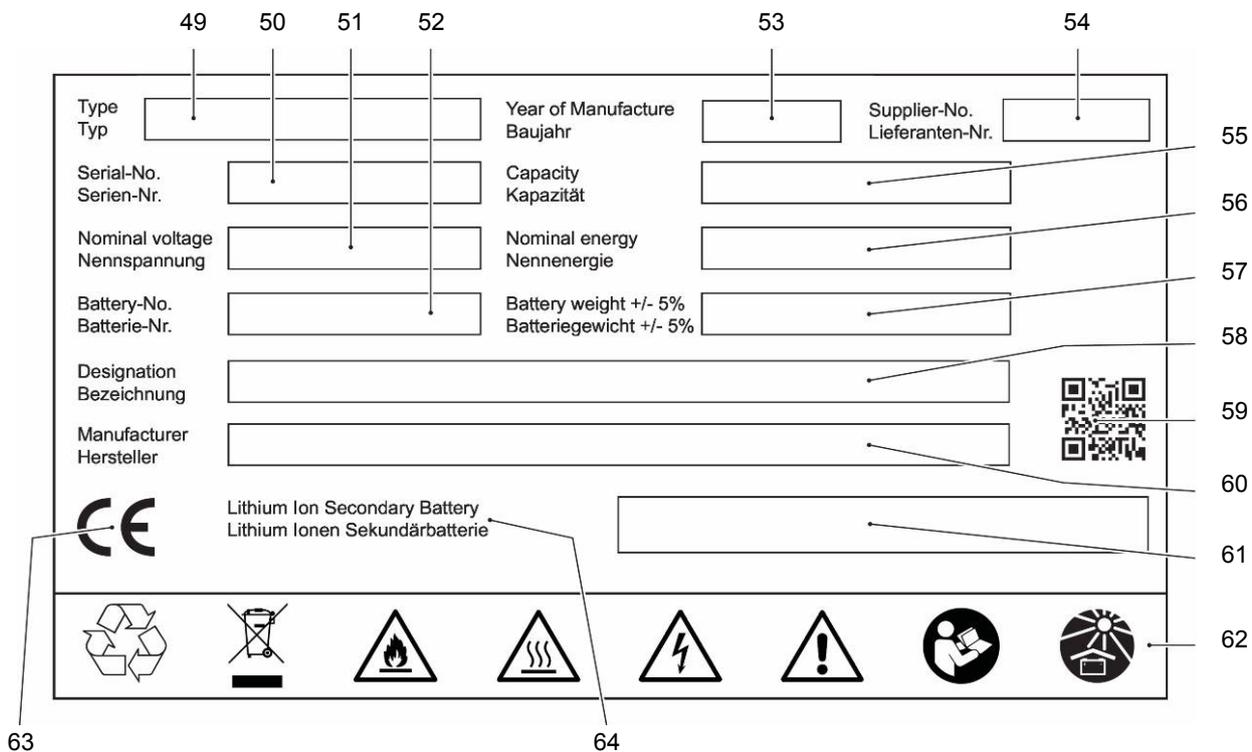
2.3 Battery types

Depending on the version, the truck is equipped with different battery types. The following table shows the different battery types.

Battery type	Rated voltage	Number of cells	Capacity
Lithium ion	25.6 V	3.2 V x 8 cells	130 Ah
Lithium ion	25.6 V		260 Ah

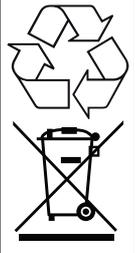
2.4 Battery data plate

The integrated modular lithium-ion battery is an inherent component of the truck and must not be changed by the operator or owner. For this reason, the data plate of the battery is not directly visible.



Item	Model	Item	Model
49	Battery type	57	Battery weight ($\pm 5\%$) in kg
50	Serial number	58	Description
51	Rated voltage in Volts (V)	59	QR code
52	Battery number	60	Manufacturer
53	Year of manufacture	61	Manufacturer's logo
54	Supplier number	62	Safety symbols and warnings, see page 60
55	Rated capacity in Amp hours (Ah)	63	CE marking
56	Rated energy in Watt hours (Wh)	64	Lithium-ion secondary battery

2.4.1 Safety and warning information

	<p>Used lithium-ion batteries must be treated as hazardous waste. Lithium-ion batteries marked with the recycling symbol and the sign showing a crossed-out waste bin must not be disposed of with ordinary household waste. Buy-back terms and type of recycling are to be agreed with the manufacturer in accordance with the Battery Directive 2006/66/EG.</p>
	<p>Avoid fire and short circuits due to overheating. Do not ignite or position an open flame, glowing embers, or sparks near the lithium-ion battery. Keep lithium-ion batteries away from strong heat sources.</p>
	<p>Hot surfaces. Battery cells can generate very high short-circuit currents, causing them to become hot.</p>
	<p>Dangerous electrical voltage! Battery cells can generate very high short-circuit currents, causing them to become hot. Caution! The metal parts of the battery cells are constantly under voltage, so do not place any foreign objects or tools on the lithium-ion battery. Observe the accident prevention regulations and DIN EN 50272-3.</p>
	<p>Wear personal protective equipment (e.g. safety goggles and safety gloves) when handling damaged battery cells and lithium-ion batteries. Use only insulated tools. If the contents leak out, do not inhale the fumes. Always wash your hands after completing the work. Do not mechanically machine the lithium-ion battery, strike, crush, compress, notch, dent or modify it in any way. Do not open, damage, penetrate, bend, heat the lithium-ion battery or allow it to become hot, do not throw it into a fire, short circuit it or immerse it in water. Do not store it or operate it in pressurised containers.</p>
	<p>Follow the operating instructions and keep them in a visible position in the charging area. If any faults are found on the lithium-ion battery, contact the manufacturer's customer service department immediately. Do not carry out any actions on your own. Do not open the lithium-ion battery.</p>
	<p>Protect the lithium-ion battery from solar radiation or other forms of heat radiation. Do not expose the lithium-ion battery to heat sources.</p>

2.5 Usability as a Function of the Battery Temperature

Lithium-ion battery temperature	Usability
-10°C to +55°C ^{1, 2}	Travel and hydraulic functions: – The usable battery capacity and power is reduced at low temperatures.
0°C to +55°C ³	Charging of the lithium-ion battery: – In the event of high temperatures ($\geq 50^\circ\text{C}$), the charging time of the lithium-ion battery is extended due to a reduction in the charge current.

- ¹ The permissible range of the lithium-ion battery operating temperature does not increase the permissible range of the truck's operating temperature. Observe the permissible temperature range for the use of the truck.
- ² Corresponds to an ambient temperature of approx. -10°C to +40°C.
- ³ Corresponds to an ambient temperature of approx. 0°C to +40°C.

Cold-store application (below -10°C) is prohibited.

If the temperature is too high or too low, the battery management system shuts down the lithium-ion battery.

Extended exposure to low temperatures causes the lithium-ion battery to cool down, thereby reducing the usable battery capacity.

WARNING!

Danger of accidents due to regenerative braking fault

Regenerative braking faults can result in extended stopping distances and accidents, particularly when travelling on inclines. Other persons can be injured in the truck's hazardous area.

- ▶ Keep all persons out of the hazardous area during travel operations.
- ▶ Instruct other people to move out of the hazardous area of the truck. Stop working with the truck if people do not leave the hazardous area.
- ▶ In emergencies, use the service brake for braking.

If the lithium-ion battery is in a low-temperature area, the lift function may be impaired and regenerative braking with the coasting brake may be interrupted.

-  A symbol on the optional display unit provides a warning when the lithium-ion battery is in a low-temperature area.

2.6 Exposing the battery

Exposing the fixed lithium-ion battery is analogous to exposing the replaceable batteries, see page 40.

2.7 Charging the battery

2.7.1 Safety instructions for charging lithium-ion batteries

- Only charge the lithium-ion battery with the manufacturer's stationary battery charger SLH 300i. Observe the battery charger operating instructions.

⚠ WARNING!

Warning: hazardous electrical voltage!

The charger is an electric component conducting voltages and currents that are hazardous to people.

- ▶ The charger must only be operated by trained technicians.
 - ▶ Disconnect the mains supply and the battery connector before carrying out any work on the charger.
 - ▶ The charger should only be opened and serviced by trained electricians.
-

⚠ WARNING!

Risk of accidents and injuries when handling lithium-ion batteries

Improper use can result in overheating, fire or explosion.

- ▶ Do not expose the lithium-ion battery during charging.
 - ▶ Do not use the lithium ion battery cable connected to the truck for charging.
 - ▶ Do not place any metallic objects on the lithium-ion battery.
-

⚠ WARNING!

Charging with an unsuitable battery charger can be hazardous

The use of an unsuitable charger can cause the battery to overheat.

- ▶ Only charge the lithium-ion battery with a stationary battery charger specially designed for this battery. Observe the operating instructions and operating conditions for the battery charger.
-

NOTICE

Intermediate charging of the lithium-ion battery

Intermediate charging of the lithium-ion battery is possible, i.e. a battery that is not fully discharged can be charged or partially charged at any time.

- ▶ The lithium-ion battery should be fully charged before use.
 - ▶ To ensure reliable operation of the lithium-ion battery, it must be fully charged at least every 4 weeks with frequent intermediate charging.
 - ▶ Turn off the battery charger before disconnecting the lithium-ion battery from the charger.
-



If the battery is fully discharged or if the battery temperature is below the permissible level, the battery will not charge. Fully discharged batteries cannot be charged by the user (faulty). Contact the manufacturer's customer service department.

NOTICE

Battery damage

The battery, charger (charge characteristics) and battery parameters must match each other, otherwise damage may result.

2.7.2 Activating the lithium-ion battery

If the lithium-ion battery is not used for several hours, it switches to energy-saving mode to protect against deep discharge.

The lithium-ion battery can be reactivated by connecting it to the stationary battery charger, see page 65.

2.7.3 Compensation charging

The lithium-ion battery can be partially charged (compensation charging) each time there is a break in use, without limiting its service life. The following information must be borne in mind when carrying out compensation charging of the lithium-ion battery.

NOTICE

Intermediate charging of the lithium-ion battery

Intermediate charging of the lithium-ion battery is possible, i.e. a battery that is not fully discharged can be charged or partially charged at any time.

- ▶ The lithium-ion battery should be fully charged before use.
 - ▶ To ensure reliable operation of the lithium-ion battery, it must be fully charged at least every 4 weeks with frequent intermediate charging.
 - ▶ Turn off the battery charger before disconnecting the lithium-ion battery from the charger.
-

2.7.4 Partial charging, interrupting and re-starting charging

The charging process can be interrupted on the battery charger and continued as a partial charge. The charging process is automatically adapted to the charge status of the battery, see the operating instructions for the battery charger SLH 300i.

- Charging continues automatically after a mains failure.

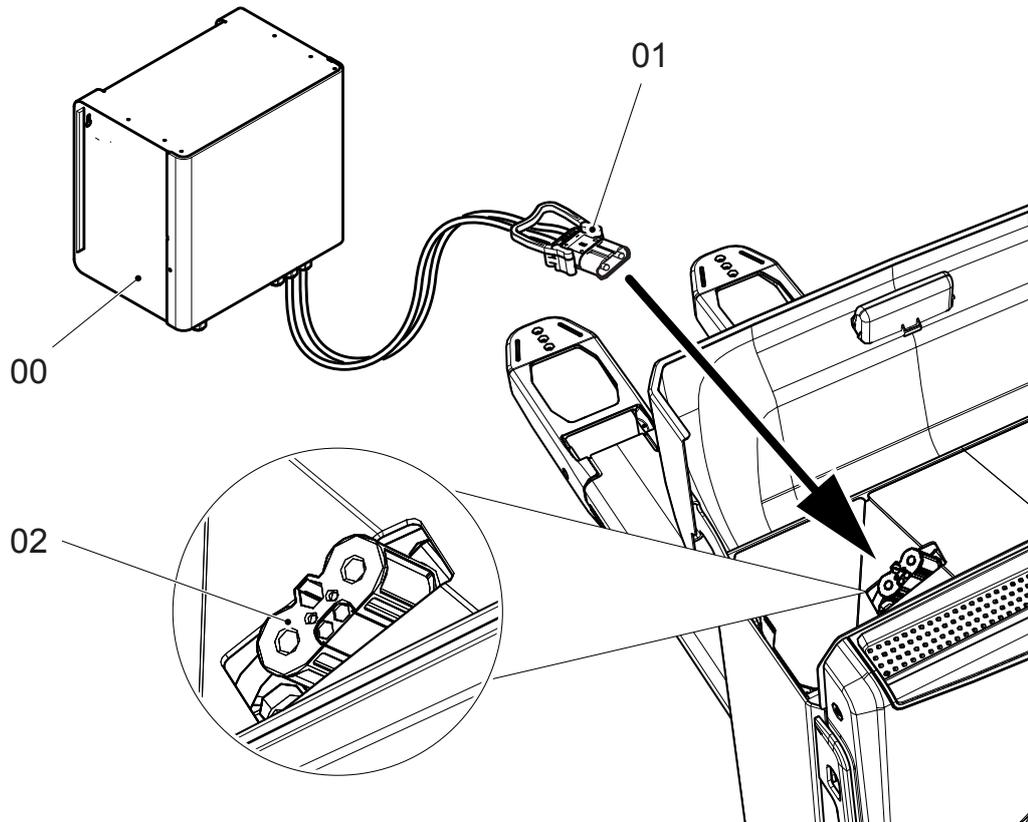
2.7.5 Trickle charging the lithium-ion battery

A fully charged lithium-ion battery can be connected to the battery charger for automatic trickle charging.

In the event of an extended period out of use, it is recommend that the trickle charge function of the battery charger be used in order to maintain the available capacity of the battery.

2.7.6 Charging the battery with a stationary charger

- Only charge the lithium-ion battery with the manufacturer's stationary battery charger SLH 300i. Observe the battery charger operating instructions.



Charging the battery

Requirements

- The truck is parked securely, see page 79.
- The battery charger has been tested and is free of defects, see the operating instructions for the battery charger SLH 300i.
- The battery charger is connected to the power supply, but not yet turned on.
- Battery is exposed, see page 40.

Procedure

- Connect the charge connector (65) of the battery charger (66) to the charge connector (67) of the battery.
- Commence charging in accordance with the battery charger operating instructions.
- If the charge status is to be displayed:
 - Reset the emergency disconnect switch so that the control unit is powered up again, see page 83.
 - In this case, the truck should not be switched on.

The battery is now charged.

⚠ WARNING!

There is a danger of sparks if charging is improperly interrupted

Owing to the high charge currents, there is a risk of spark discharge if the charge connector is removed while charging is active. There is a risk of injury and of damage to the electrical contacts.

▶ Stop charging on the battery charger before removing the charge connector.

NOTICE

If charging has been interrupted, the full battery capacity will not be available.

Completing battery charging; restoring the truck to operation

Requirements

- The battery is partially or complete charged.
- Complete charging in accordance with the battery charger operating instructions.
- Disconnect the charge connector of the battery charger (65) from the charge connector (67) of the battery.
- Close the battery lid.

The truck is now ready for operation.

2.7.7 Charging the battery with an on-board charger

The process for charging the integrated modular lithium-ion battery with an integrated battery charger is the same as the process for charging the replaceable batteries, see page 43.

E Operation

1 Safety Regulations for the Operation of Forklift Trucks

Driver authorisation

The truck may only be used by suitably trained personnel, who have demonstrated to the proprietor or his representative that they can drive and handle loads and have been authorised to operate the truck by the proprietor or his representative.

Operator's rights, responsibilities and rules of conduct

The driver must be informed of his duties and responsibilities and be instructed in the operation of the truck and shall be familiar with the operating instructions. Safety shoes must be worn on pedestrian-operated trucks.

Unauthorised use of truck

The operator is responsible for the truck during the time it is in use. The operator must prevent unauthorised persons from driving or operating the truck. Do not carry passengers or lift other people.

Damage and faults

The supervisor must be informed immediately of any damage or faults to the truck or attachment. Trucks which are unsafe for operation (e.g. wheel or brake problems) must not be used until they have been rectified.

Repairs

The operator must not carry out any repairs or alterations to the truck without authorisation and the necessary training to do so. The operator must never disable or adjust safety mechanisms or switches.

Safety devices, warning signs and warning instructions

Safety devices, warning signs (see page 31) and warning instructions in the present operating instructions must be strictly observed.

Hazardous area

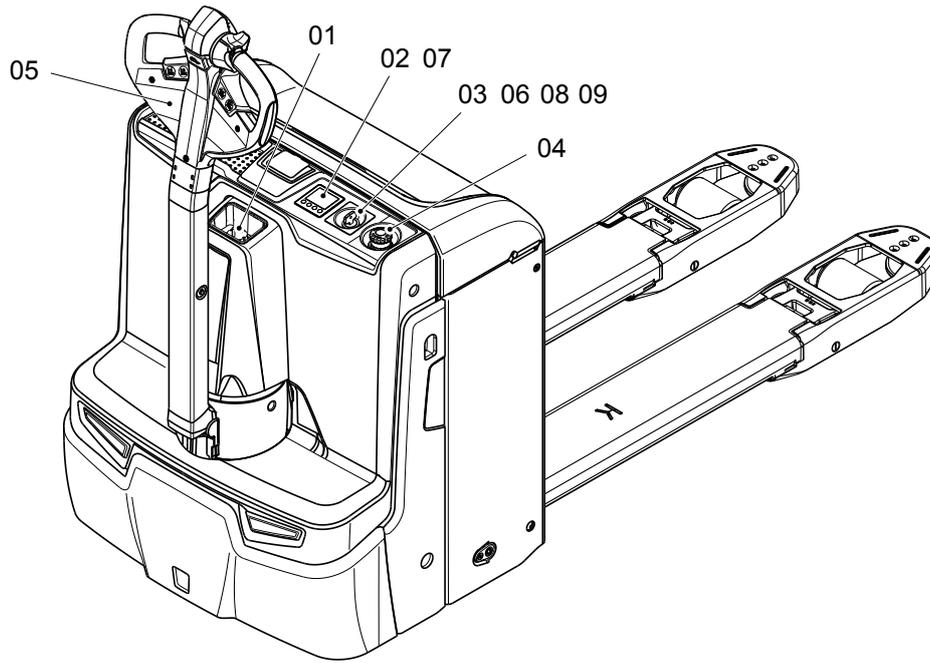
⚠ WARNING!

Risk of accidents/injury in the hazardous area of the truck

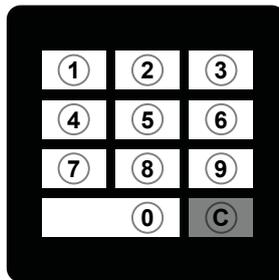
A hazardous area is defined as the area in which people are at risk due to travel or lifting operations of the truck, its load handler or the load. This also includes the area within reach of falling loads or lowering/falling operating equipment.

- ▶ Instruct unauthorised persons to leave the hazardous area.
 - ▶ In case of danger to third parties, give a warning signal in good time.
 - ▶ If unauthorised persons are still within the hazardous area, stop the truck immediately.
-

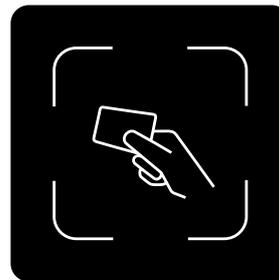
2 Displays and Controls



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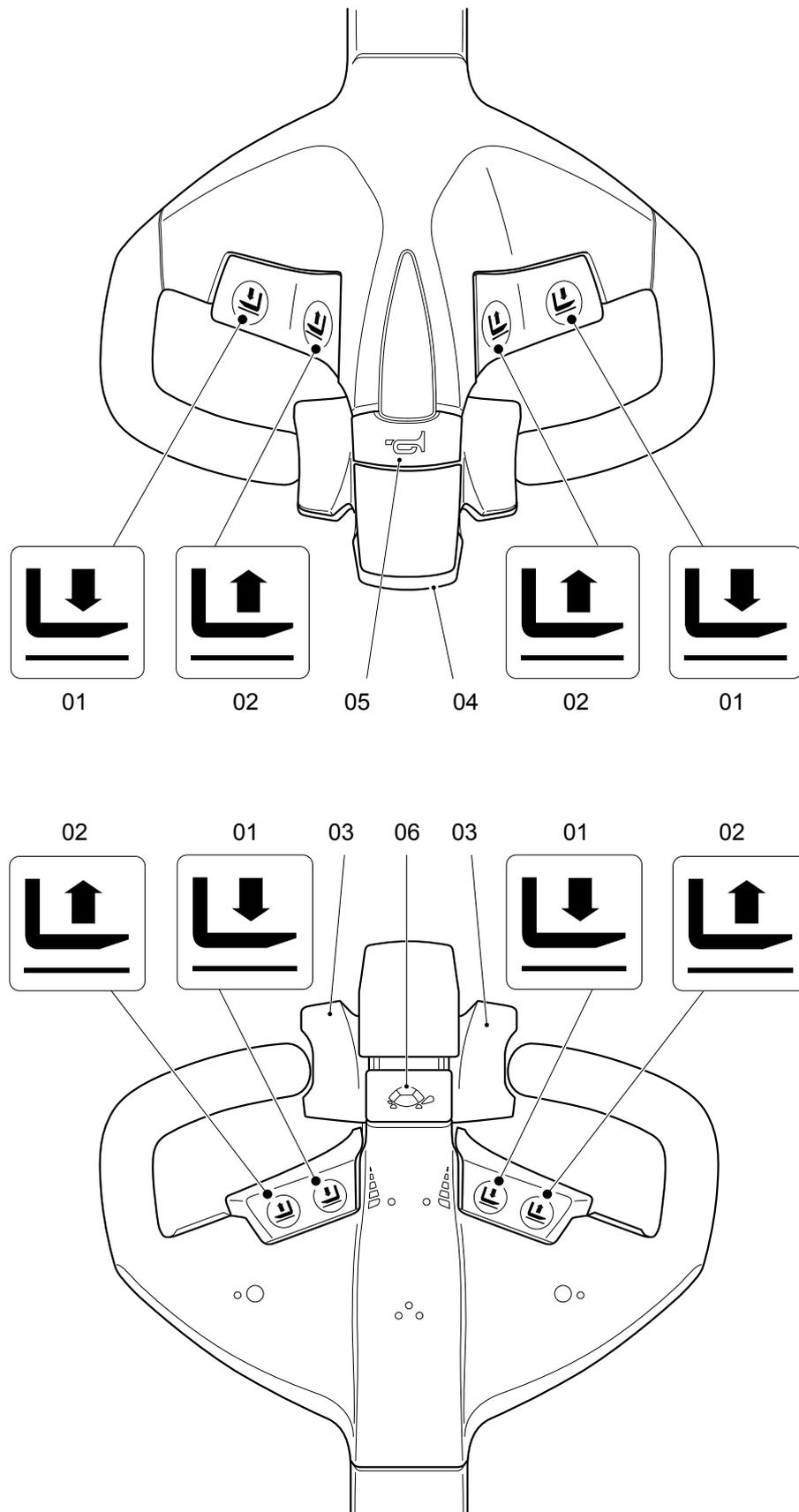
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Item	Control/display		Function
7	Emergency disconnect switch	●	Used to brake the truck with maximum force and to interrupt the truck functions in an emergency. Activating the emergency disconnect switch disables all electrical functions in hazardous situations.
9	Charge status indicator	●	Shows the battery charge status.
12	Tiller		Used for steering and braking.
13	Mains connector for integrated battery charger	○	Used to charge the battery with an integrated battery charger, see page 43.
14	Key switch and key	●	Truck release by switching on the control voltage. Prevents the truck from being switched on by unauthorised personnel.

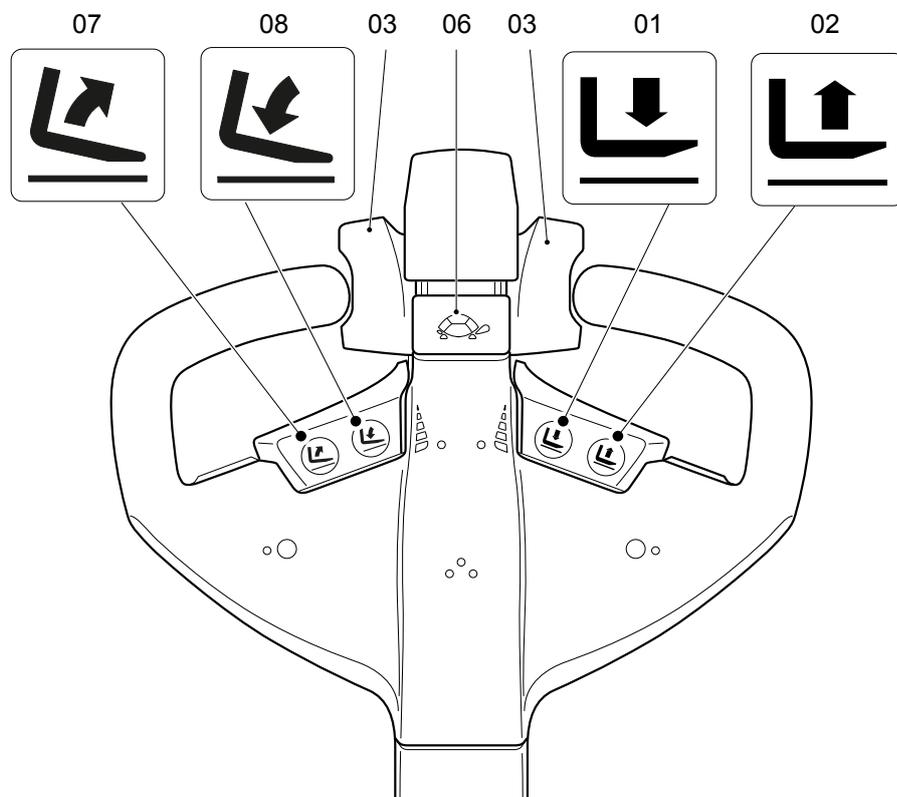
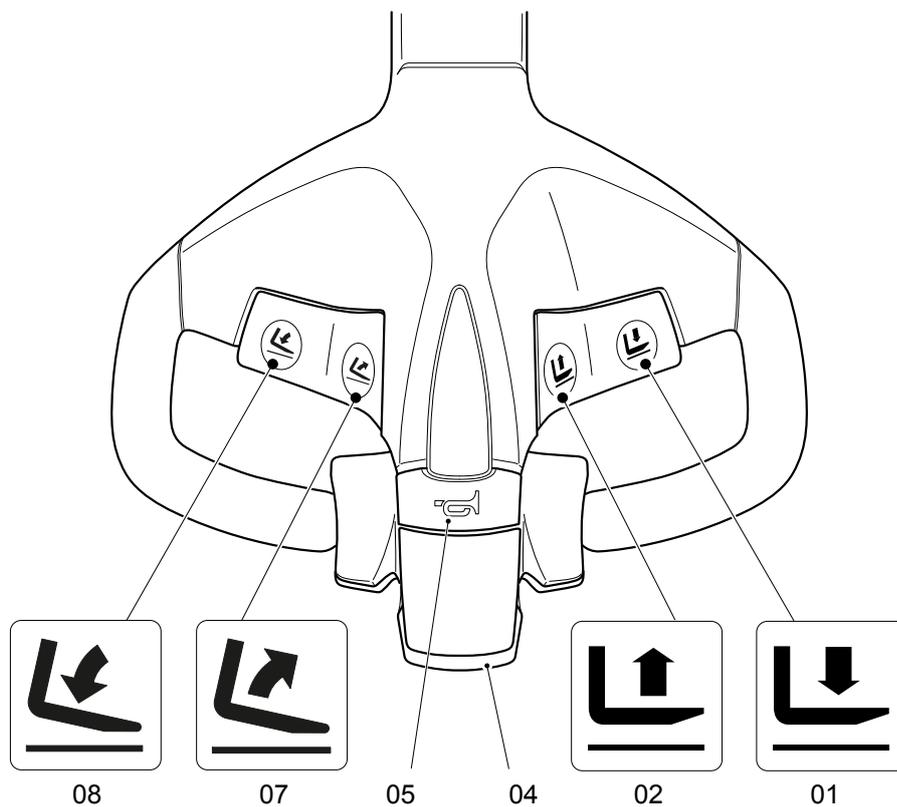
Item	Control/display		Function
68	2-inch display unit with soft keys	○	Display for: <ul style="list-style-type: none"> – Battery charge status – Battery capacity – Service hours – Travel program – Warning indicators – Event messages Selection of <ul style="list-style-type: none"> – Travel program – Options Replaces the key switch <ul style="list-style-type: none"> – Truck release by entering master and access codes
69	Transponder reader	○	Replaces the key switch <ul style="list-style-type: none"> – Solely to expand the display unit – Releases the truck via a card/transponder
70	ISM Online access module	○	Replaces the key switch <ul style="list-style-type: none"> – Releases the truck via a card/transponder – Displays readiness for operation – Operational-data logging – Data exchange with card/transponder
71	Keypad	○	Replaces the key switch <ul style="list-style-type: none"> – Solely to expand the display unit – Truck release by entering setup and access codes

2.1 Tiller

EJE 222 / 225 / 230 / 235



Item	Control/display		Function
5	Travel switch	●	Controls travel direction and travel speed.
11	Collision safety switch	●	Safety feature, drive direction travel only: When applied the truck travels for approx. 3 seconds in the load direction. The parking brake then applies. The truck remains switched off until the travel switch is set to neutral.
73	"Warning signal" button (horn)	●	Used to trigger the warning signal (horn).
75	"Slow travel" button	●	If the tiller is in the upper braking zone, braking can be overridden by pressing the switch, and the truck can move at reduced speed (slow travel), see page 88.
77	"Lift load fork" button	●	Raises the load fork at an adjustable speed.
78	"Lower load fork" button	●	Lowers the load fork at an adjustable speed.

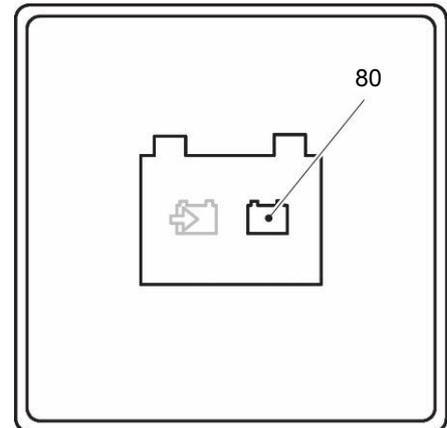


Item	Control/display		Function
5	Travel switch	●	Controls travel direction and travel speed.
11	Collision safety switch	●	Safety feature, drive direction travel only: When applied the truck travels for approx. 3 seconds in the load direction. The parking brake then applies. The truck remains switched off until the travel switch is set to neutral.
73	"Warning signal" button (horn)	●	Used to trigger the warning signal (horn).
75	"Slow travel" button	●	If the tiller is in the upper braking zone, braking can be overridden by pressing the switch, and the truck can move at reduced speed (slow travel), see page 88.
76	"Ramp lift lower" button		Lowers the ramp lift.
77	"Lift load fork" button	●	Raises the load fork at an adjustable speed.
78	"Lower load fork" button	●	Lowers the load fork at an adjustable speed.
79	"Ramp lift raise" button		Raises the ramp lift.

2.2 Charge Status Indicator

After the truck has been started, the charge status of the battery is shown. The LED (80) colours represent the following conditions:

LED colour	Charge status
Green	40 - 100%
Orange	30 - 40 %
Green/orange flashes 1 Hz	20 - 30 %
Red	0 - 20 %



→ If the LED is lit red, load can no longer be lifted. Lifting is only enabled when the battery connected is at least 70% charged.

If the LED flashes red and the truck is not ready for operation, inform the manufacturer's customer service department. Red flashing is a truck controller code. The flashing sequence indicates the type of fault.

2.3 Battery discharge monitor

→ The standard setting for the battery discharge indicator / discharge monitor is based on standard batteries. When using maintenance-free batteries or special batteries, the display and cut-off points of the battery discharge monitor must be set by the manufacturer's customer service department. If this setting is not configured, the battery may be damaged due to deep discharge.

NOTICE

Full discharge can damage the battery

Self-discharge can cause the battery to fully discharge. Full discharge shortens the useful life of the battery.

► Charge the battery at least every 2 months.

→ Charge the battery see page 41.

If the residual capacity falls below the required level, lifting is inhibited. A corresponding display (80) appears.

3 Starting up the truck

3.1 Checks and operations to be performed before starting daily operation

WARNING!

Any damage and other defects to the truck can result in accidents.

If damage or other truck defects are discovered during the following checks, the truck must be taken out of service until it has been repaired.

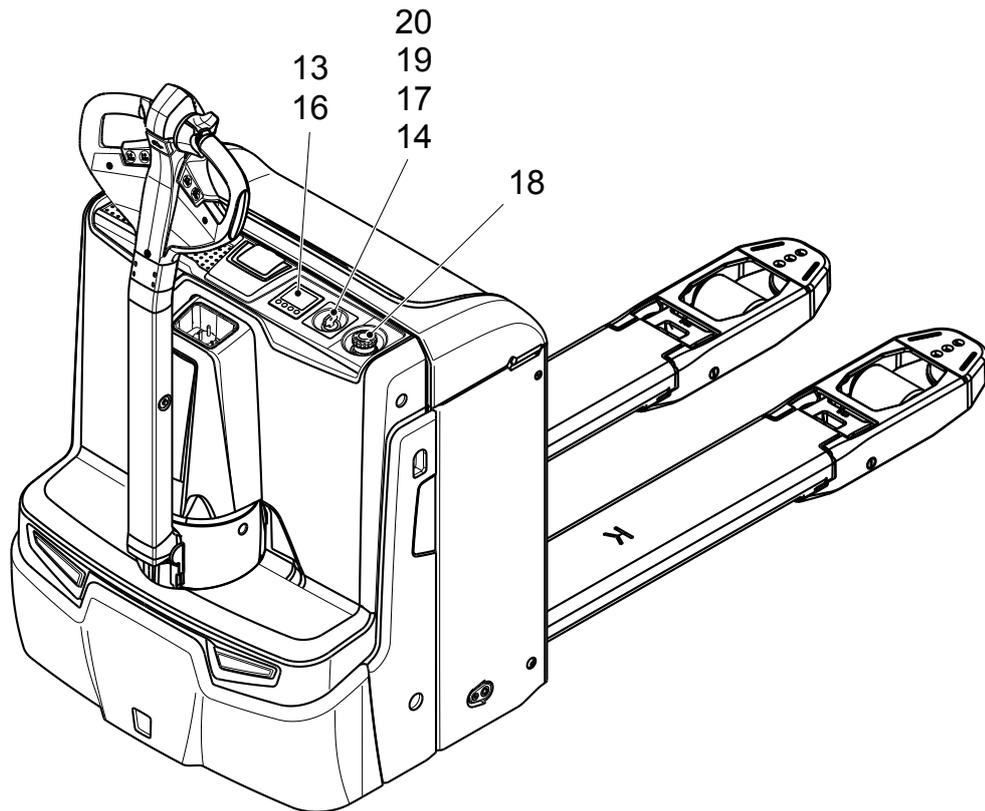
- ▶ Report any defects immediately to your supervisor.
- ▶ Tag out the defective truck and take it out of service.
- ▶ Do not return the industrial truck to service until you have identified and rectified the fault.

Inspection before daily operation

Procedure

- Check the industrial truck externally for signs of damage and leakage.
Damaged hoses must be replaced immediately.
- Check that the battery is securely mounted and that the cable connections are free of damage and firmly secured.
- Check the battery connectors are secure.
- Check the load handler for visible signs of damage such as cracks, bent or severe wear.
- Check the drive wheel and load wheels for damage.
- Check the markings and labels for completeness and legibility, see page 31.
- Make sure the drive panels and covers are secure and check for damage.
- Make sure the load restrainer or options bar is secure and check for damage.
- Check tiller return.

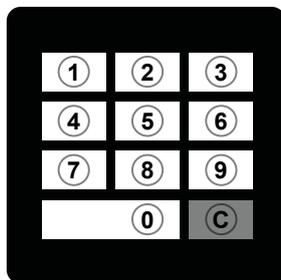
3.2 Preparing the truck for operation



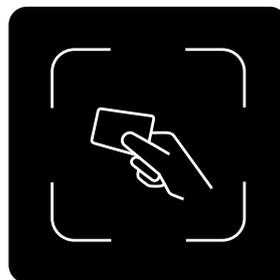
→ On the EJE 222r / 225r, you should check that the load handler is lowered when establishing operational readiness – see page 93. If the load handler is not fully lowered, it can tilt slightly when raised.



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Switching on the truck

Requirements

- Checks and operations before starting daily work performed, see page 75.

Procedure

- Pull the emergency disconnect switch (7) to unlock it.
- Switch on the truck; to do this
 - Insert the key in the key switch (14) and turn it as far to the right as it will go.
 - Enter the code in the display unit (68), see page 115.
 - Enter the code in the keypad (71), see page 120.
 - Hold the transponder in front of the transponder reader (69), see page 125.
 - Hold the card or transponder in front of the ISM Online access module (70) and press the  button on the ISM Online access module, see page 111.
- For checks and operations to be carried out when the truck is operational, see page 78.

Truck is operational.

- *The charge status indicator (81) shows the current battery charge status.*
- *The display unit (68) indicates the current battery charge status and the service hours.*

3.3 Checks and operations to be carried out when the truck is operational

WARNING!

Risk of accident due to damage to or other defects in the truck and optional features

If damage or other truck or attachment (optional equipment) defects are discovered during the following checks, the truck must be taken out of service until it has been repaired.

- ▶ Report any defects immediately to your supervisor.
 - ▶ Mark defective truck and take out of service.
 - ▶ Do not return the industrial truck to service until you have identified and rectified the fault.
-

Requirements

- Checks and operations before starting daily work performed, see page 75.
- Truck is switched on, see page 76.

Procedure

- Test warning devices and safety equipment:
 - Test the Emergency Disconnect function by pressing the Emergency Disconnect switch. The main circuit is disconnected and no truck operations can be performed. Now pull the emergency disconnect switch to unlock it, see page 83.
 - Test the horn by pressing the "warning signal" button, see page 68.
 - Check braking efficiency, see page 89.
 - Test the steering, see page 89.
 - Test the travel functions, see page 86.
 - Test the "collision safety switch" by actuating the "collision safety switch" button whilst driving in the drive direction, see page 68.
- Test the controls and displays and check for damage, see page 68.
 - Check tiller return function.
 - Check that the controls automatically return to the zero position after actuation.

3.4 Parking the truck securely

⚠ WARNING!

An unsecured truck can cause accidents

Do not leave an unsecured truck.

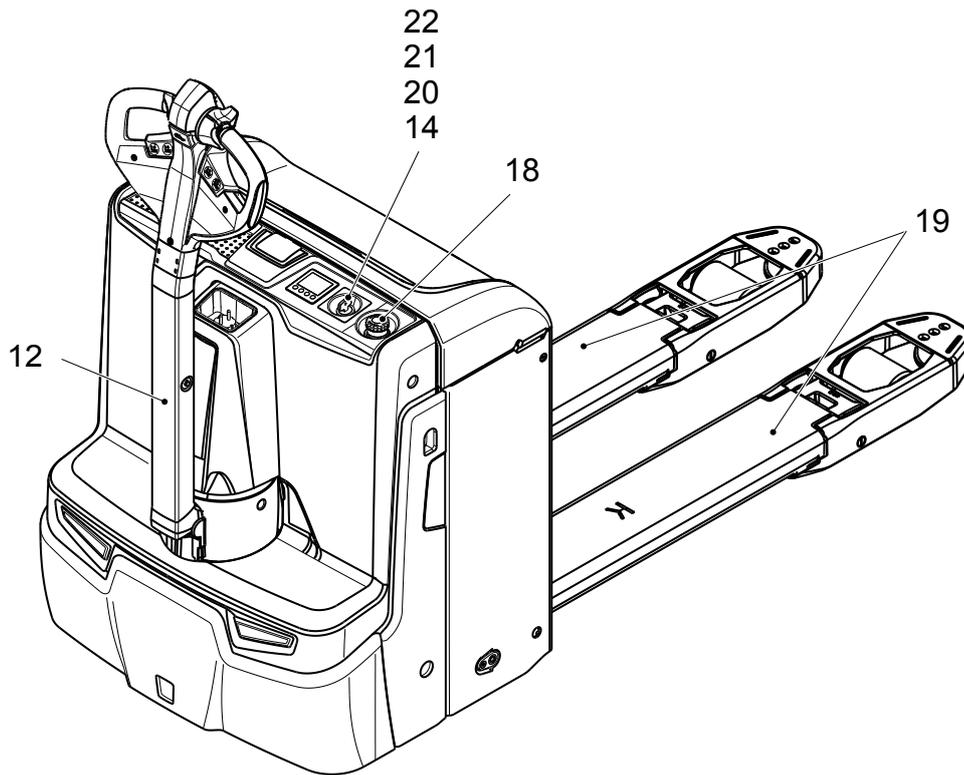
- ▶ Park the truck securely when leaving it.
 - ▶ Exception: If the operator intends to remain in the immediate vicinity and is leaving the truck for only a short while, the applied parking brake is sufficient to hold the truck, see page 89. Immediate vicinity is when the operator is able respond to malfunctions or attempts to use the truck by unauthorised persons immediately.
-

⚠ WARNING!

An unsecured truck can cause accidents

Do not park the truck on an incline. Do not park the truck without the brakes engaged. Do not park and leave the truck with the load handler raised.

- ▶ Park the truck on a level surface. In special cases the truck may need to be secured with wedges.
 - ▶ Fully lower the load handler when leaving the truck.
 - ▶ Select a place to park where no other people are at risk of injury from the lowered load handler.
 - ▶ If the brakes are not working, place wedges underneath the wheels of the truck to prevent it from moving.
-



Parking the truck securely

Procedure

- Park the truck on a level surface.
- Fully lower the load handler (8), see page 93.
- Using the tiller (12), turn the drive wheel to the straight-ahead position.
- Switch off the truck; to do this:
 - Turn the key in the key switch (14) anti-clockwise as far as it will go. Remove the key.
 - If equipped with a keypad (71): see page 120.
 - If equipped with a transponder reader (69): see page 125.
 - Press the  button on the ISM Online access module (70).
- Press the emergency disconnect switch (7).

The truck is parked.

4 Industrial Truck Operation

4.1 Safety regulations for truck operation

Travel routes and work areas

Only use lanes and routes specifically designated for traffic. Unauthorised third parties must stay away from work areas. The load may only be stored in the designated locations.

The truck must only be operated in work areas with sufficient lighting to avoid danger to personnel and materials.

DANGER!

Do not exceed the permissible surface and point loading on the travel lanes.

At blind spots get a second person to assist.

The driver must ensure that the loading dock /dock leveller cannot be removed or come loose during loading/unloading.

Conduct while travelling

The operator must adapt the travel speed to local conditions. The truck must be driven at slow speed when negotiating bends or narrow passageways, when passing through swing doors and at blind spots. The operator must always observe an adequate braking distance between the forklift truck and the vehicle in front and must be in control of the truck at all times. Abrupt stopping (except in emergencies), rapid U turns and overtaking at dangerous or blind spots are not permitted.

Travel visibility

The operator must look in the direction of travel and must always have a clear view of the route ahead. If the truck is carrying loads that affect visibility, the truck must travel against the load direction. If this is not possible, a second person must walk alongside the truck as a lookout to observe the travel route while maintaining eye contact with the operator. Proceed only at walking pace and with particular care. Stop the truck as soon as you lose eye contact.

Negotiating slopes and inclines

Negotiating slopes and inclines up to 20% is only permitted when they are recognised lanes. The slopes and inclines must be clean, have a non-slip surface, and negotiating them safely must be within the technical specifications of the truck. The truck must always be driven with the load facing uphill. The industrial truck must not be turned, operated at an angle or parked on inclines or slopes. Inclines must only be negotiated at slow speed, with the driver ready to brake at any moment.

Negotiating lifts, loading ramps and docks

Lifts may only be negotiated if they have sufficient capacity, are suitable for driving on and authorised for truck traffic by the owner. The driver must satisfy himself of the above before entering these areas. The truck must enter lifts with the load in front and must take up a position which does not allow it to come into contact with the walls of the lift shaft. Persons riding in the lift with the forklift truck must only enter the lift after the truck has come to a rest and must leave the lift before the truck. The driver must ensure that the loading ramp / dock cannot move or come loose during loading / unloading.

Type of loads to be carried

The operator must make sure that the load is in a satisfactory condition. Loads must always be positioned safely and carefully. Use suitable precautions to prevent parts of the load from tipping or falling down. Prevent liquid loads from sloshing out.

⚠ WARNING!

Electromagnetic influence can result in accidents

Strong magnets can cause electronic components such as Hall sensors to become damaged, resulting in accidents.

- ▶ Do not use magnets in the operating area of the truck. Exceptions to this rule are commercial, weak clamping magnets for attaching notices.
-

4.2 Emergency Disconnect

⚠ CAUTION!

Applying maximum braking can result in accidents

Applying the Emergency Disconnect switch during travel will cause the truck to decelerate to a halt at maximum force. This may cause the load to slide off the load handler. There is a higher risk of accidents and injury.

- ▶ Do not use the Emergency Disconnect switch as a service brake.
 - ▶ Use the Emergency Disconnect switch during travel only in emergencies.
-

⚠ CAUTION!

Faulty or non-accessible Emergency Disconnect switches can cause accidents

A faulty or non-accessible Emergency Disconnect switch can cause accidents. In dangerous situations the operator cannot bring the truck to a halt in time by applying the Emergency Disconnect switch.

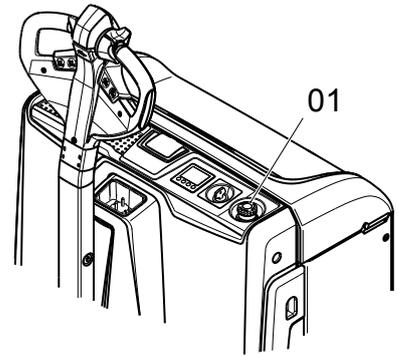
- ▶ The operation of the Emergency Disconnect switch must not be affected by any objects placed in its way.
 - ▶ Report any defects on the Emergency Disconnect switch immediately to your supervisor.
 - ▶ Mark defective truck and take out of service.
 - ▶ Do not return the industrial truck to service until you have identified and rectified the fault.
-

Pressing the emergency disconnect switch

Procedure

- Press the emergency disconnect switch (7).

All electrical functions are deactivated. The truck brakes to a halt.



- Press the Emergency Disconnect switch on in emergencies.
- Do not use the emergency disconnect switch as a service brake; otherwise, wear of the drive wheel will increase significantly.

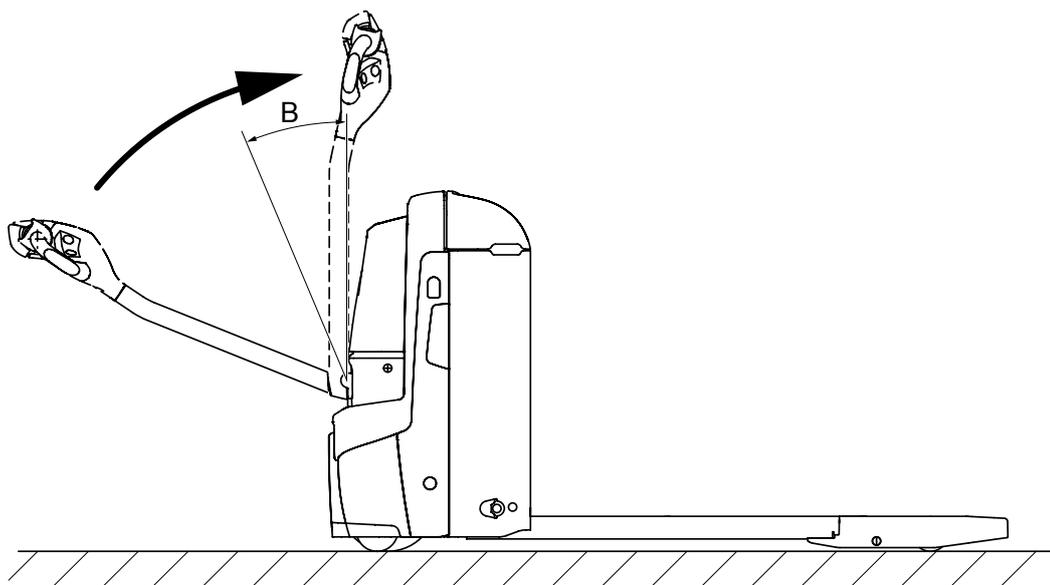
Releasing the Emergency Disconnect switch

Procedure

- Pull the Emergency Disconnect switch (7) to unlock it.

All electrical functions are enabled and the truck is operational again (provided the truck was operational before the Emergency Disconnect was pressed).

4.3 Automatic braking



- When the tiller is released, it returns automatically to the upper brake zone (B) and the brakes are applied automatically.

⚠ WARNING!

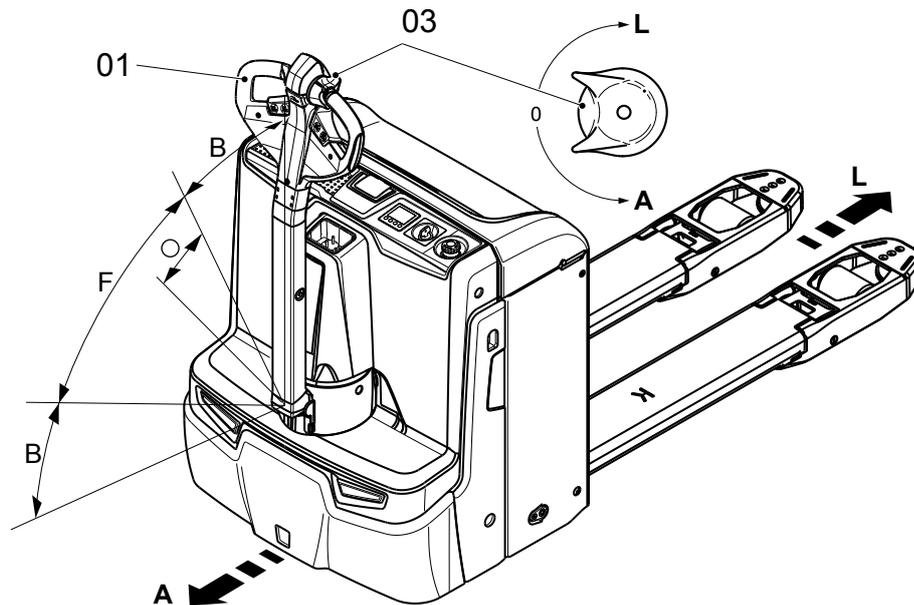
Risk of collision due to a defective tiller

Operating the truck with a defective tiller can lead to collisions with persons or objects.

- ▶ If the tiller returns to the brake position slowly or not at all, the truck must be taken out of service until the cause of this fault is rectified.
 - ▶ Contact the manufacturer's customer service department.
-

4.4 Travel

- Trucks can be equipped with an optional foot protection tiller. In this case, the travel speed is reduced in the upper range (○) of the travel zone F, see page 21.



Requirements

- Truck prepared for operation, see page 75

Procedure

- Set the tiller (12) to the travel zone (F) and actuate the travel switch (5) in the load direction (L) or the drive direction (A).
- Control the travel speed with the travel switch (5).

- When the travel switch is released it automatically returns to its original position.

The brake is released and the truck moves in the selected direction.

- Preventing the truck from “rolling downhill”:
If the truck rolls backwards on an incline, the controller detects this and the brake is applied automatically after a short jolt.

4.5 Changing direction during travel

⚠ CAUTION!

Danger when changing direction during travel

Changing direction during travel causes the truck to decelerate sharply. When the truck changes direction, it can start travelling at high speed in the opposite direction unless the travel switch is released in time.

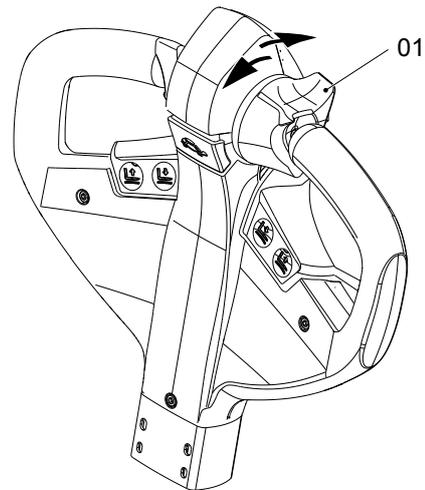
- ▶ After setting off in the opposite direction, apply the travel switch gently or not at all.
 - ▶ Do not perform any sudden steering operations.
 - ▶ Always face in the direction of travel.
 - ▶ Maintain an adequate overview of the route you are travelling.
-

Changing direction during travel

Procedure

- Set the travel switch (5) to the opposite direction while travelling.

The truck decelerates until it starts to travel in the opposite direction.



4.6 Slow travel

⚠ CAUTION!

The driver must be particularly careful when applying the "slow travel" button (75). The brake is only activated when the "slow travel" button is released.

- ▶ In hazardous situations, brake by immediately releasing the slow travel button (75) or the travel switch (5).

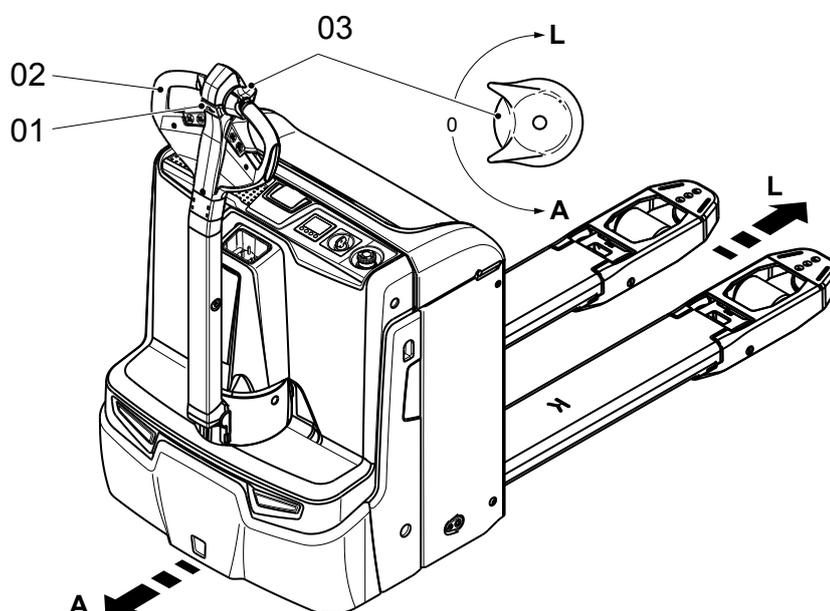
The truck can be operated with an upright tiller (12) (e.g. in congested areas / elevator).

Activating slow travel

Procedure

- Press the slow travel switch (75).
- Actuate the travel switch (5) in the load direction (L) or drive direction (A).

The brake is released. The truck travels at slow speed.



Switching off slow travel

Procedure

- Release the slow travel switch (75).
In zone "B", the brake applies and the truck stops.
In zone "F", the truck continues at slow travel speed.
- Release the travel switch (5).

Slow travel is cancelled and the brake is applied. The truck can then be driven again at normal speed.

4.7 Steering

Procedure

- Move the tiller (12) to the left or right.

The truck is steered in the required direction.

4.8 Brakes

⚠ CAUTION!

- ▶ In hazardous situations, swing the tiller to the brake position or press the emergency disconnect switch.

Braking types

The brake pattern of the truck depends largely on the travel-lane conditions. The driver must take this into account when driving the truck.

The truck can brake in the following ways:

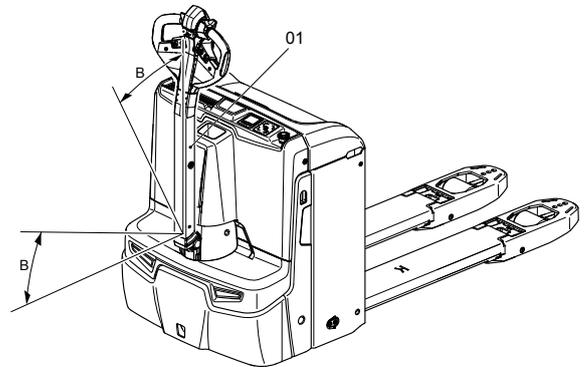
- Braking with the service brake, (tiller in braking zone "B")
- Braking by inversion braking (travel switch)
- Braking by regenerative braking (coasting brake)
- Actuating the emergency disconnect switch, see page 83
Actuate only in an emergency, as damage to the drive wheel may occur.

Braking with the service brake

Procedure

- Move the tiller (12) up or down to one of the brake zones (B).

The truck decelerates at the maximum rate until it comes to a halt.

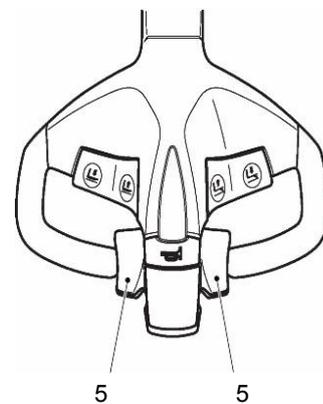


Inversion braking

Procedure

- While travelling, set the travel switch (5) to the opposite direction.

The truck brakes regeneratively until it starts to move in the opposite direction.



The brake force can be set by the customer service department on request.

Regenerative braking

Procedure

- If the travel switch is set to 0, the truck automatically brakes regeneratively.

The truck brakes to a halt regeneratively via the coasting brake. The brake is then applied.

- When braking regeneratively, energy is returned to the battery, ensuring a longer service time.
- The brake force can be set by the customer service department on request.

4.9 Raising or Lowering the Load Handler

⚠ WARNING!

Accident risk when lifting and lowering

Other people can be injured in the truck's hazardous area.

The hazardous area is defined as the area in which people are at risk from the movement of the truck including the load handler, etc. This also includes areas which can be reached by falling loads, operating equipment, etc.

Apart from the driver (in the normal operating position) there should be no other people in the truck's hazardous area.

- ▶ Instruct other people to move out of the hazardous area of the truck. Stop working with the truck if people do not leave the hazardous area.
- ▶ If people do not leave the hazardous area despite the warning, prevent the truck from being used by unauthorised people.
- ▶ Only carry loads that have been secured and positioned in accordance with regulations. Use suitable precautions to prevent parts of the load from tipping or falling down.
- ▶ Never exceed the maximum loads specified on the capacity plate.
- ▶ Do not stand on the load handler.
- ▶ Do not lift other people on the load handler.
- ▶ Never reach or climb into moving truck parts.
- ▶ Do not climb onto parts of the building or other trucks.

4.9.1 Raising the load handler

Procedure

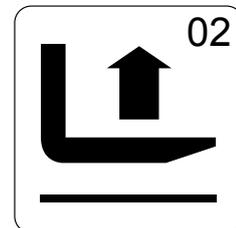
Press the "Raise load handler " button (77) until you reach the desired lift height.

NOTICE

Risk of material damage to the hydraulic unit

When the mechanical end stop of the load has been reached, release the "Raise load handler" button. Otherwise the hydraulic unit could suffer material damage.

The load handler is raised.

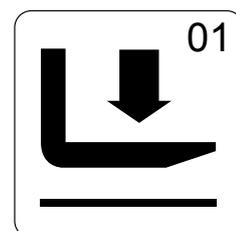


4.9.2 Lowering the load handler

Procedure

- Press the "Lower load handler" button (78) until you reach the desired lift height.

The load handler is lowered.

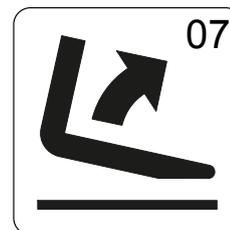


4.9.3 Raising the ramp lift

EJE 222r / 225r

Requirements

- Truck operational, see page 76.



Procedure

- Press the “ramp lift raise” button (79) until you reach the desired lift height.

The load handler is raised to ramp lift.

- If the load handler is raised with the "load handler raise" button, it cannot change directly to ramp lift. When the "ramp lift raise" button is applied the load handler is first fully lowered and then raised to ramp lift.
- If the load handler is raised with ramp lift, it cannot change directly to normal lift. When the "load handler raise" button is applied, ramp lift is first fully lowered and then the load handler is raised.

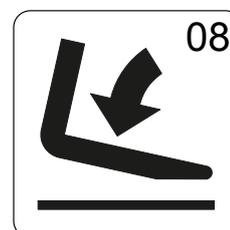
4.9.4 Lowering ramp lift

EJE 222r / 225r

Procedure

- Press the “ramp lift lower” button (76) until you reach the desired lift height.

The load handler is lowered from ramp lift.



- When you release the "ramp lift lower" button (76) or the "load handler lower" button a lag time of 1 to 2 seconds begins. If the "ramp lift raise" button (79) or the "load handler raise" button are pressed during this lag time, the load handler is raised after a delay.
The lag time ensures that the load handler is fully lowered.

4.10 Lifting, transporting and depositing loads

⚠ WARNING!

Unsecured and incorrectly positioned loads can cause accidents

Before lifting a load unit, the driver must make sure that it has been correctly palletised and does not exceed the truck's capacity.

- ▶ Instruct other people to move out of the hazardous area of the truck. Stop working with the truck if people do not leave the hazardous area.
 - ▶ Only carry loads that have been correctly secured and positioned. Use suitable precautions to prevent parts of the load from tipping or falling down.
 - ▶ Damaged loads must not be transported.
 - ▶ Never exceed the maximum loads specified on the load chart.
 - ▶ Do not stand on the load handler.
 - ▶ Do not lift other people on the load handler.
 - ▶ Insert the load handler as far as possible underneath the load.
-

⚠ CAUTION!

- ▶ Do not lift longitudinal goods (e.g. pipes) from the side.
-

4.10.1 Raising a load

Picking up the load units

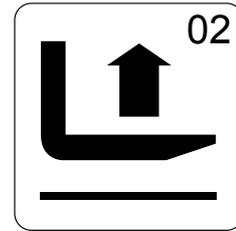
Requirements

- Load unit correctly palletised.
- Load weight matches the truck's capacity.
- Fork arms evenly loaded for heavy loads.

Procedure

- Drive the truck carefully up to the pallet.
- Carefully insert the fork arms into the pallet.
- Press the "Raise load handler" button (77) until you reach the maximum lift height.

The load unit is raised.



4.10.2 Raising the load with ramp lift

EJE 222r / 225r

Requirements

- Load correctly palletised.
- Load weight matches the truck's rated capacity.
- Load handler evenly laden for heavy loads.
- Truck is on a ramp.
- Load handler lowered.

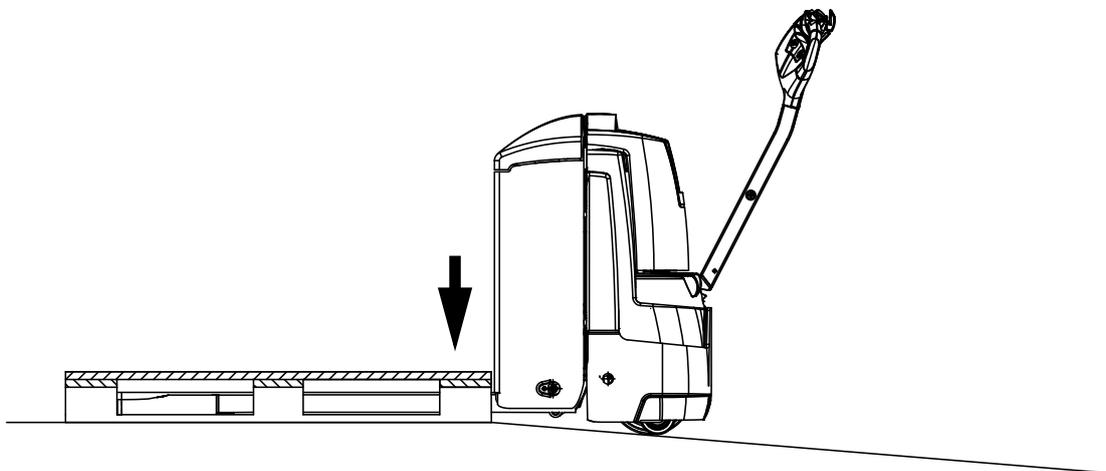
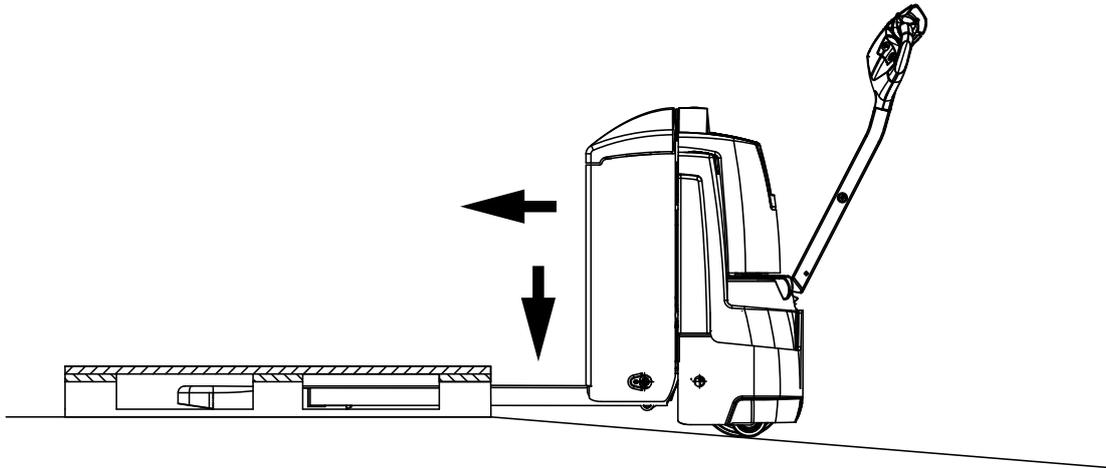
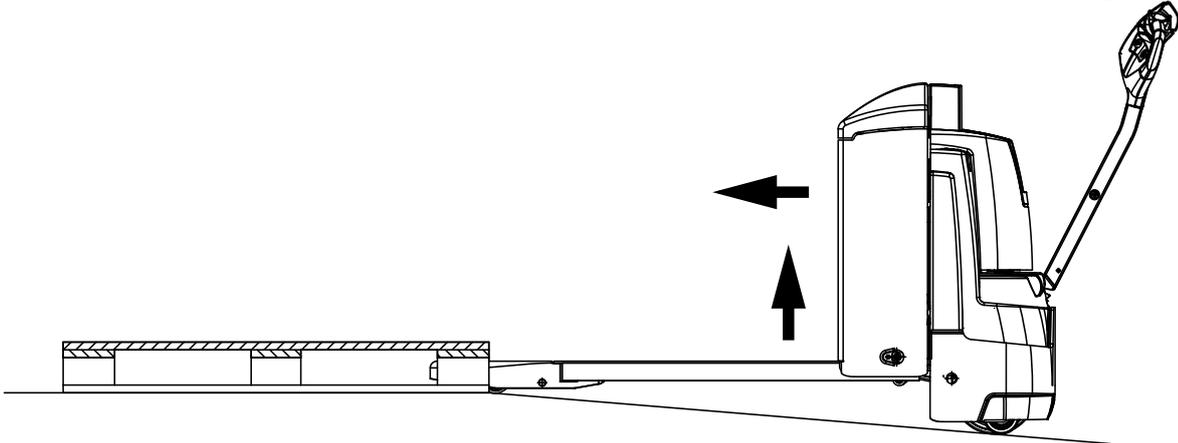
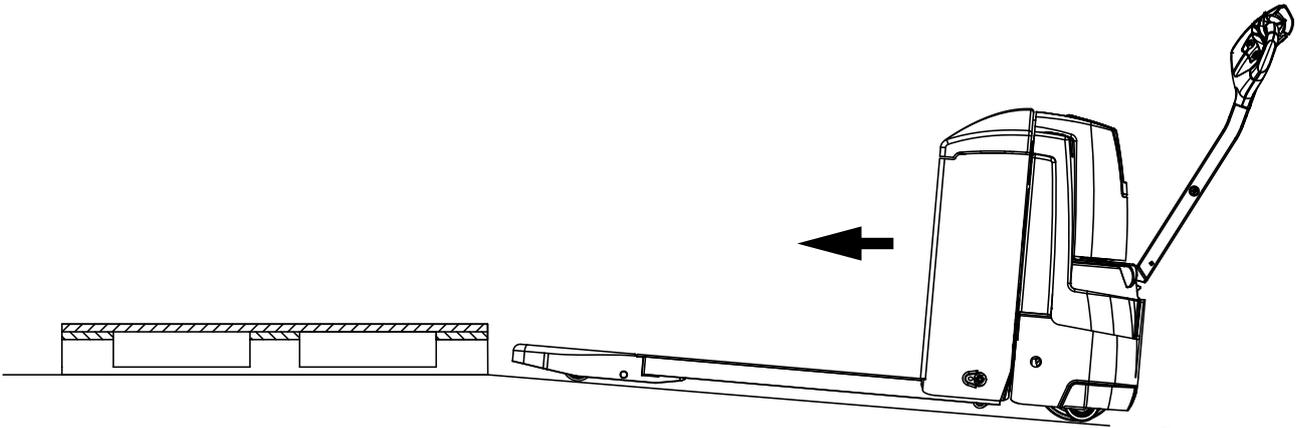
Procedure

- Drive the truck slowly up to the pallet.
- Raise ramp lift (see page 92).
- Slowly insert the load handler into the pallet and lower the ramp lift incrementally.
- Insert the load handler into the pallet until the pallet is resting against the back of the load handler.

→ The load must not extend by more than 50 mm beyond the load handler tips.

- Fully lower the ramp lift.
- Raise the load handler until you reach the desired height, (see page 91).

The load is raised.



4.10.3 Transporting a load

Transporting Load Units

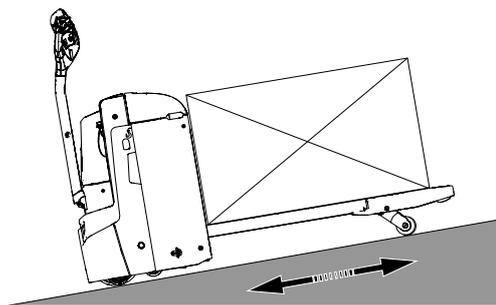
Requirements

- Load raised correctly.
- Good ground conditions.

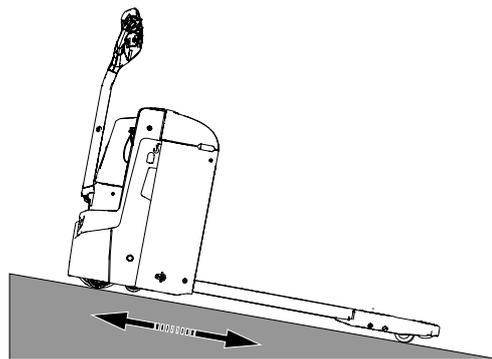
Procedure

- Accelerate and decelerate with care.
- Adapt your travel speed to the conditions of the route and the load you are transporting.
- Travel at a constant speed.
- Be prepared to brake at all times.
 - Brake gently in normal circumstances.
 - Only stop abruptly in hazardous situations.
- Watch out for other traffic at crossings and passageways.
- Always travel with a lookout at blind spots.
- Do not travel across or at an angle on inclines. Do not turn on slopes and inclines, and always drive with the load facing uphill.

Travel direction for transport runs and empty runs



Transport runs: The load must be transported on the upslope.



Travelling unladen: The load handler can be oriented towards the downslope.

4.10.4 Depositing a load

Depositing load units

NOTICE

Loads must not be deposited on travel or escape routes, in front of safety mechanisms or operating equipment that must be accessible at all times.

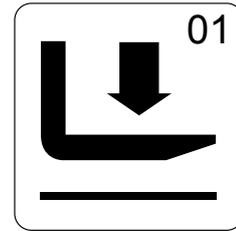
Requirements

- Warehouse location suitable for storing the load.

Procedure

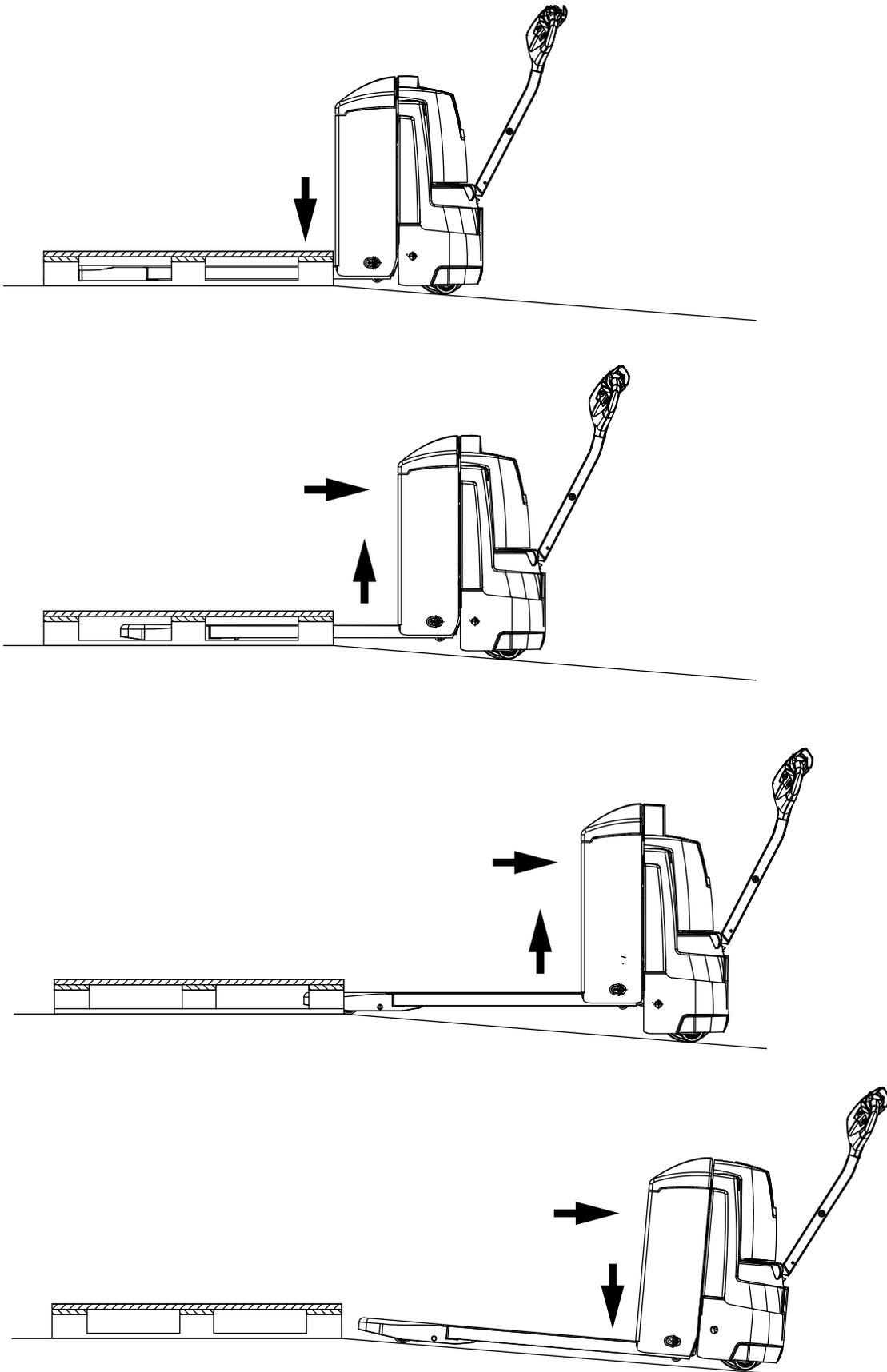
- Drive carefully up to the storage location.
- Press the “Lower load handler” button (78).
- Carefully lower the load handler so that the forks are clear of the load.
- Carefully remove the forks from the pallet.

The load unit is lowered.



4.10.5 Depositing the load with ramp lift

EJE 222r / 225r



⚠ CAUTION!

Loads must not be deposited on travel or escape routes, in front of safety mechanisms or operating equipment that must be accessible at all times.

Requirements

- Storage location suitable for storing the load.

Procedure

- Drive carefully up to the storage location.
 - Lower the load handler fully (see page 91).
- ➔ Avoid lowering the load suddenly to prevent the load and load handler from damage.
- Carefully remove the load handler from the pallet and raise the ramp lift incrementally (see page 92).
 - When the load handler has been fully removed from the pallet, lower the ramp lift.

The load has been deposited.

NOTICE

Avoid depositing the load suddenly to avoid damaging the load, load handler and the rack.

4.10.6 Lifting or lowering the load handler with the automatic lifting/lowering function - positionCONTROL (o)

⚠ WARNING!

Risk of accidents while lifting with the automatic lifting function

Damage can occur from the use of the automatic lifting function in the hazardous area of the truck, since this function cannot be cancelled by releasing a control.

- ▶ Be particularly careful when activating automatic lifting.
 - ▶ Avoid activating automatic lifting accidentally.
-

After activation by the operator, automatic lifting enables the truck to lift continuously up to a set free lift height or above the intermediate height up to the lift limit.

After activation by the operator, automatic lowering enables the truck to lower continuously down to a set lifted height or below the lifted height down to the lowering limit.

The automatic lifting/lowering function can be activated and deactivated using the options menu on the display unit, see page 68.

- The status and usage of the automatic lifting/lowering function are shown on the display unit, see page 68.
- The free lift height, lifted height and time interval until activation of the automatic lifting/lowering function can be set by the manufacturer's customer service department.

Requirements

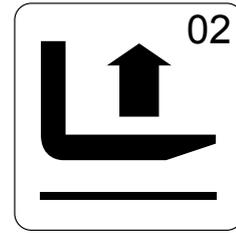
- Truck operational, see page 76.

Raising the load handler

Procedure

- Briefly press the "Raise load handler" button (77).

The load handler is raised continuously up to the free lift height.

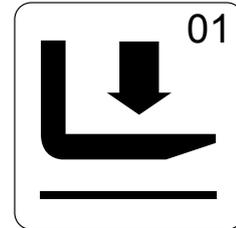


Lowering the load handler

Procedure

- Briefly press the "Lower load handler" button (78).

The load handler is lowered continuously down to the lifted height or the lowering limit.



- Actuating the emergency disconnect switch or vacating the platform will interrupt automatic lifting/lowering.
- Pressing the respective button for longer allows the height of the load handler to be adjusted manually, including whilst using the automatic raise/lower function.

5 Troubleshooting

This chapter enables the operator to localize and rectify basic faults or the results of incorrect operation himself. When trying to locate a fault, proceed in the order shown in the remedy table.



If, after carrying out the following remedial action, the truck cannot be restored to operation or if a fault in the electronics system is displayed with a corresponding error code, contact the manufacturer's service department.

Troubleshooting must only be performed by the manufacturer's customer service department. The manufacturer has a service department specially trained for these tasks.

In order for customer services to react quickly and specifically to the fault, the following information is essential:

- Truck serial number
- Event message from the display unit (if applicable)
- Error description
- Current location of truck.

5.1 Truck does not start

Possible Cause	Action
Battery connector not plugged in	Check the battery connector and plug it in if necessary.
Emergency Disconnect pressed.	Unlock the Emergency Disconnect
Key switch set to O.	Set the key switch to "I"
Battery charge too low	Check the battery charge and charge battery if necessary.
Faulty fuse	Check fuses

5.2 Load cannot be lifted

Possible cause	Action
Truck not operational	Carry out all actions listed under "Truck does not start"
Hydraulic oil level too low	Check the hydraulic oil level
Battery discharge monitor has switched off	Charge battery
Excessive load	Note maximum capacity, see data plate.

5.3 Lithium-ion battery fault

If any faults are found in the battery or the Jungheinrich charger, contact the manufacturer's customer service department immediately.

The operating company must not carry out any remedial work on its own.

Independent attempts to tamper with or repair the battery may invalidate the warranty. A service agreement with Jungheinrich will help identify faults.

⚠ WARNING!

Do not open the battery.

5.3.1 Restricted use (slow travel, lift cut-off, no travel) of the truck

Possible cause	Actions
<ul style="list-style-type: none"> – Error in a strand (event message 5195.x) The lithium-ion battery can still be used, but with reduced capacity. 	<ul style="list-style-type: none"> – Connect the lithium-ion battery to the battery charger. – If the malfunction persists, contact the manufacturer's customer service department.

→ For other malfunctions, see the truck operating instructions.

5.3.2 Truck can no longer be switched on

Possible cause	Action
<ul style="list-style-type: none"> – The lithium-ion battery has switched to energy-saving mode to protect against deep discharge. 	<ul style="list-style-type: none"> – Switch the lithium-ion battery from energy-saving mode to normal operation, see page 64. – Connect the battery to the battery charger. – If the malfunction persists, contact the manufacturer's customer service department.
<ul style="list-style-type: none"> – The lithium-ion battery was operated outside of the application range or has a fault. The following error messages indicate that the lithium-ion battery is being operated outside of the application range and will lead to the battery shutting down: <ul style="list-style-type: none"> – High temperature: E5409.1 – Low temperature: E5413.2 – Low voltage: E5344.1 / E5342.1 Before the lithium-ion battery is shut down, corresponding warnings appear on the truck. 	<ul style="list-style-type: none"> – Adjust the lithium-ion battery to the permissible application range, see page 14. – Connect the battery to the battery charger. – If the malfunction persists, contact the manufacturer's customer service department.

6 Operating the truck without its own drive system

WARNING!

Accidental truck movement

When the brakes are deactivated, the truck must be parked on a level surface, as the brakes are no longer effective.

- ▶ Do not install or remove the brake on slopes or inclines.
 - ▶ The brake may only be installed or removed by the manufacturer's customer service department.
 - ▶ Do not park the truck with the brake removed.
-

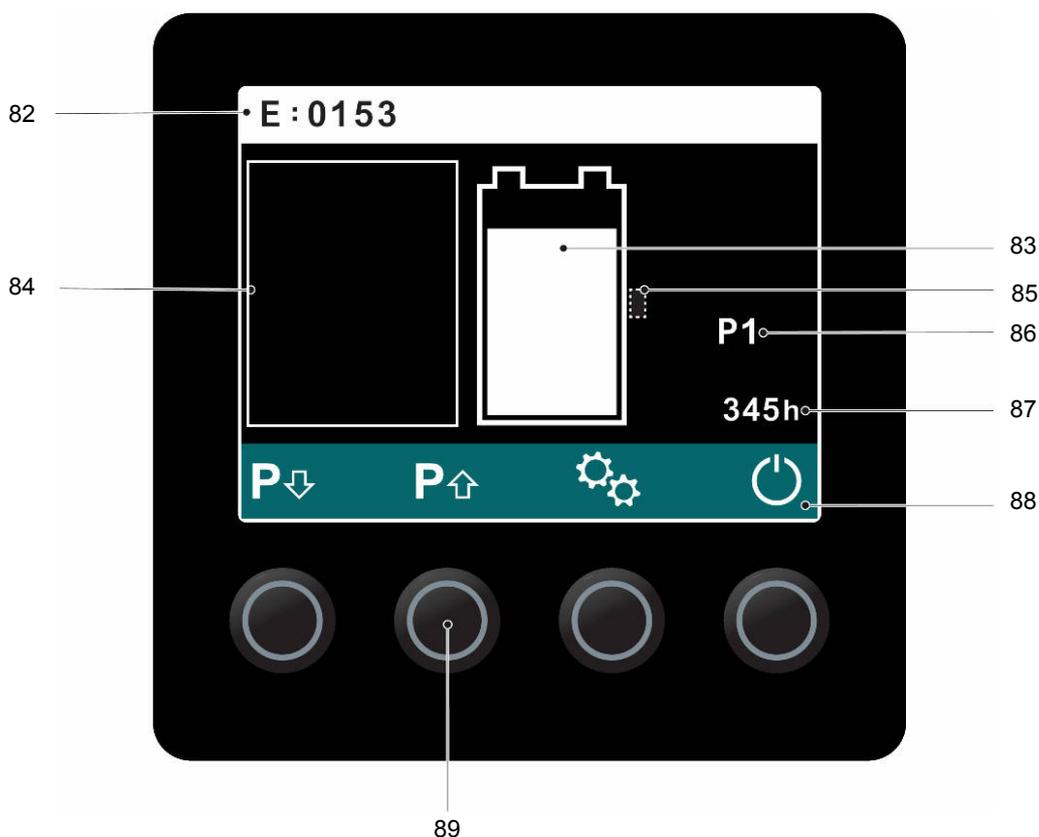
Recovering the truck

The truck can be moved without its own drive system only when the drive wheel brake is disassembled.

The brake may be disassembled and assembled only by authorised service personnel.

7 Optional equipment

7.1 Display unit (2 inch display)



Item	Control or display	Function
82	Information line	Display of event messages, speed and remaining run time
83	Battery capacity display	Battery discharge status
84	Symbol field	Displays the symbols, see page 109.
85	Battery type (characteristics)	Displays the set battery type or set battery characteristic curve ¹ 1 = Maintenance-free gel/dry-cell battery 2 = Special battery, for example XFC
86	Travel program	Shows the active travel program.
87	Service hours	see page 22
88	Button allocation	see page 107
89	Buttons	Selection buttons for the functions shown above them.

¹⁾ If the setting is for normal or high-performance wet-cell batteries or batteries for special options, no battery type is shown.

7.1.1 Information field

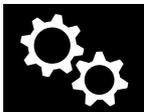
Any event messages are shown in the left section of the information line (82).

The right section of the information line shows the truck speed in km/h or mph.

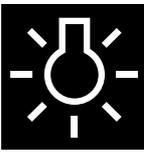
7.1.2 Button allocation of the display unit (o)

Functions and operator menus that can be operated via the icons and keys of the display unit depend on the operating situation as well as the scope and settings of the truck.

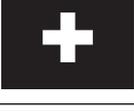
Button allocation within the main menu

Symbol	Meaning
	Travel program: To change the travel program
	Settings (○): To change to the menu to administer the codes or transponders
	Shutdown (○): Allows the truck to be switched off Shutdown is only on the display if the truck is switched on with an access code.

Button allocation in options menu (○)

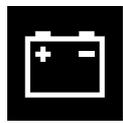
Symbol	Meaning
	Menu change: Changes to the next operator menu
	Settings (○): To change to the menu to administer the codes or transponders
	"DayLED" position light (○): Switches the position light on/off
	positionCONTROL (○): Switches the function for automatic approach of predefined entry and lifted heights on and off

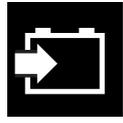
Key allocation in menu for managing codes or transponders (○)

Symbol	Meaning
	Change Set-Up Code: To change the set-up code and to activate the keypad or the transponder reader.
	Edit access code / transponder: To add or delete access codes and transponders.
	Up selection: To select access codes or transponders.
	Down selection: To select access codes or transponders.
	Clear: To delete selected access codes.
	Add: To add new access codes.
	Back: Cancels the current procedure and returns to the previous menu.
	Confirm: To confirm an entry or a transponder code.

7.1.3 Symbols in the display

Any number of pictograms can be displayed in the pictogram field (84). Which pictograms are shown in the pictogram field depends on the operating and truck status.

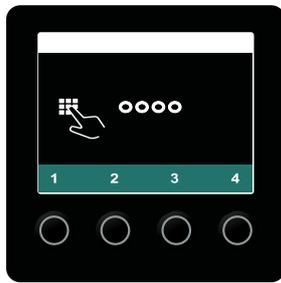
Symbol	Meaning	Colour	Function
	Stop notice	Red	Functions deactivated due to truck malfunction
	Warning	Yellow	Operating error
		Red	Truck malfunction detected. Travel is restricted to slow travel or lift, lower and travel functions are reduced.
	Battery indicator, low residual capacity	Yellow	Residual capacity $\leq 30\%$ The battery must be charged soon.
		Red	Residual capacity $\leq 20\%$ The battery must be charged immediately.
	Overtemperature	Yellow	Overtemperature detected. Lifting, lowering and travel functions reduced.
		Red	Overtemperature detected. Lifting, lowering and travel functions deactivated.
	Lithium-ion battery low temperature (○)	Yellow	Lithium-ion battery low temperature detected – Discharge currents and energy recovery are reduced at low temperatures.
			Lithium-ion battery below permissible temperature range – The truck switches off via the battery contactor.
	Lift deactivated	Yellow	Illuminates if the lifting functions are shut off due to insufficient battery capacity.
	Tiller position	Yellow	Lights up on power-up with tiller in travel zone. Illuminates with travel switch operated and tiller in braking zone.
	Support arm lift lifting limit	Yellow	Illuminates if the "lift support arms" button is pressed when the lifting limit of the support arm lift has been reached.

Symbol	Meaning	Colour	Function
	Support arm lift lowering limit	Yellow	Illuminates if the "lower support arms" button is pressed when the lowering limit of the support arm lift has been reached.
	Charging	Green	Battery charge display (on-board charger only): <ul style="list-style-type: none"> – Flashing: Charging in progress – Steady light: Charging complete
		Red	Charging interrupted
	Slow travel (○)	Yellow	Illuminates when a reduction in travel speed is required, e.g. optional when the load handler is fully lowered.
	Shock display (ISM) (○)	Yellow	Medium-sized shock due to improper driver actions <ul style="list-style-type: none"> – Slow travel triggered
		Red	Severe shock due to improper driver actions <ul style="list-style-type: none"> – Lifting, lowering and travel functions deactivated.
  	positionCONTROL (○)	Green	<ul style="list-style-type: none"> – Illuminates when one of the predefined entry/lifted heights has been selected with positionCONTROL. – Flashing when one of the predefined entry/lifted heights is being used. Automatic mode is active.

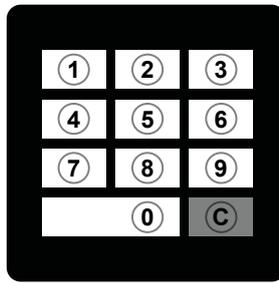
7.2 Keyless Access System

The keyless access systems serve as a replacement for the key switch to release the truck.

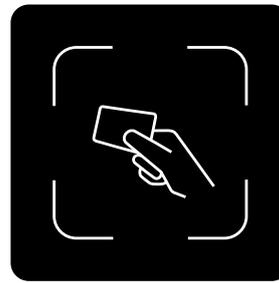
The keyless access system allows an individual code to be allocated to each operator or group of operators.



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Item	Description
68	Display unit (EasyAccess Softkey): <ul style="list-style-type: none"> – Description see page 106 – Entry of 4-digit set-up and access codes – For set-up and access codes with the numbers 1 to 4 – Up to 10 access codes can be stored
71	Keypad (EasyAccess PINCode): <ul style="list-style-type: none"> – Only in combination with the display unit (68) – Entry of 4-digit set-up and access codes and C (clear) – For set-up and access codes with the numbers 0 to 9 – Up to 100 access codes can be stored
69	Transponder reader (EasyAccess Transponder): <ul style="list-style-type: none"> – Only in combination with the display unit (68) – Up to 100 transponders can be stored
70	ISM online access module: <ul style="list-style-type: none"> – If the truck is equipped with an ISM Online access module, see "ISM Online Access Module" operating instructions.

7.3 General Information about the Use of Keyless Access Systems

The default code is to be found on a sticker. When using for the first time, change the set-up code and remove the sticker!

- Default code: 1-2-3-4
- Factory set-up code: 2-4-1-2

- When allocating the codes, ensure the rider trucks are given a different code than pedestrian trucks.
- When a valid code is entered or a valid transponder used, a green tick appears in the display unit.
When an invalid code has been entered or a invalid transponder used, a red cross is displayed, and the entry must be repeated.
- If the truck is not used for a certain length of time, the display unit switches to standby mode. Pressing any key cancels the standby mode.

The following additional settings can be performed by the manufacturer's customer service department.

7.4 Commissioning the Keypad and the Transponder Reader

If the truck is equipped with a keypad or a transponder reader, it can only be operated using the keys in the display unit. The keypad and the transponder reader have to be activated by the operating company.

7.4.1 Activating the keypad

Procedure

- Release the emergency disconnect switch, see page 83.
- Enter the default code 1-2-3-4 using the keys below the display unit (68).

The truck is switched on.

- Press the key below the "Settings" symbol (90).
- Press the key below the "Change set-up code" symbol (91).
- Enter the set-up code 2-4-1-2 using the keypad (71).

The set-up code entered is displayed.

- When starting the truck for the first time, change the set-up code. The new set-up code must not be the same as the default set-up code or an access code.

Press the key below the "Delete" symbol (92).

The set-up code is deleted.

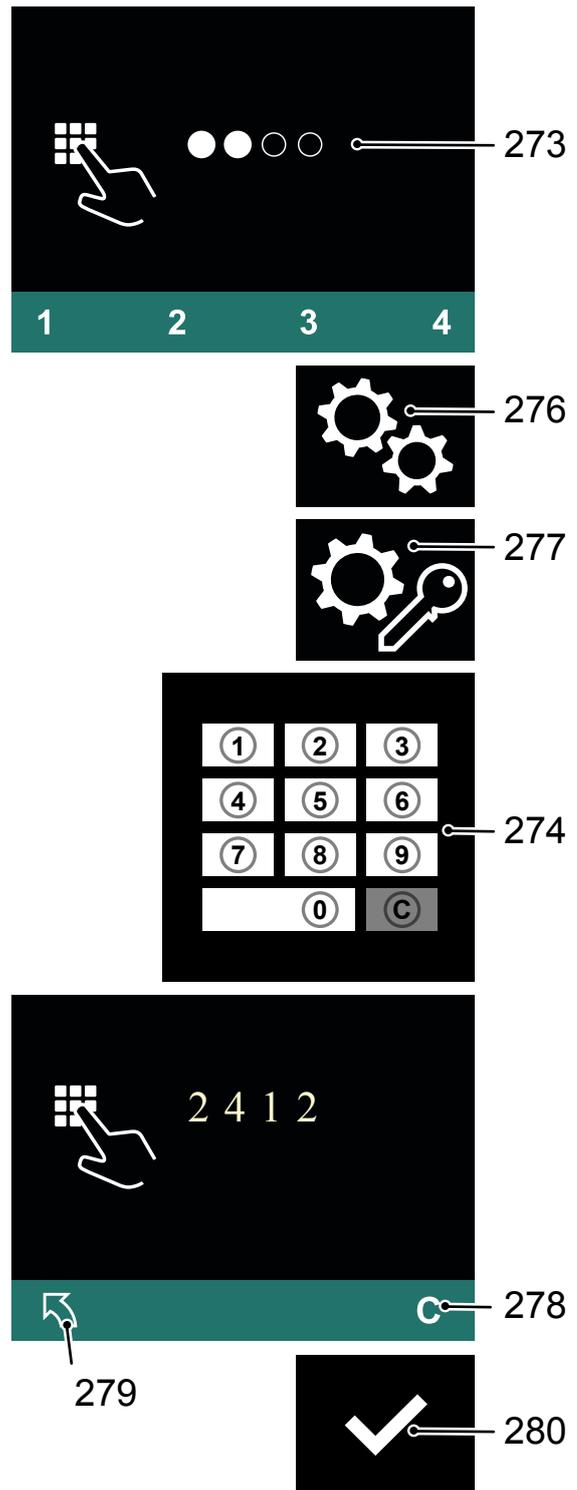
- Enter the new set-up code using the keypad (71).
- Press the key below the "Confirm" symbol (94).

The new set-up code is displayed.

- If the new set-up code was entered incorrectly, the procedure can be repeated using the key below the "Delete" symbol (92).

- To return to the main menu, press the key below the "Back" symbol (93).
- Delete the default code, see page 123.
- Create access codes, see page 122.

The keypad is active.



7.4.2 Activating the transponder reader

Procedure

- Release the emergency disconnect switch, see page 83.
- Enter the default code 1-2-3-4 using the keys below the display unit (68).

The truck is switched on.

- Press the key below the "Settings" symbol (90).
- Press the key below the "Change set-up code" symbol (91).
- Enter the set-up code 2-4-1-2 using the keys below the display unit (68).

The set-up code entered is displayed.

- Press the key below the "Delete" symbol (92).

The set-up code is deleted.

- Hold a transponder in front of the transponder reader (69).

This transponder thus becomes the set-up transponder.

- Press the key below the "Confirm" symbol (94).

The code for the set-up transponder is displayed.

→ *If the wrong transponder has been used, the procedure can be repeated using the key below the "Delete" symbol (92).*

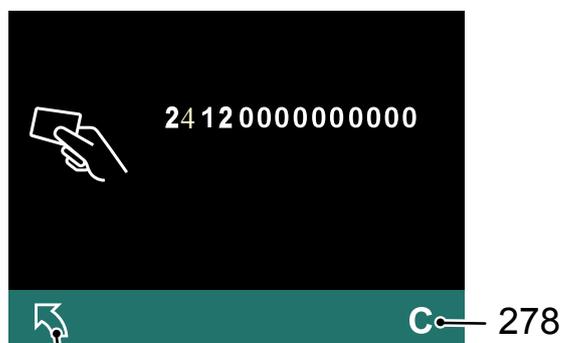
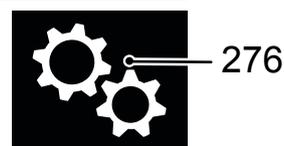
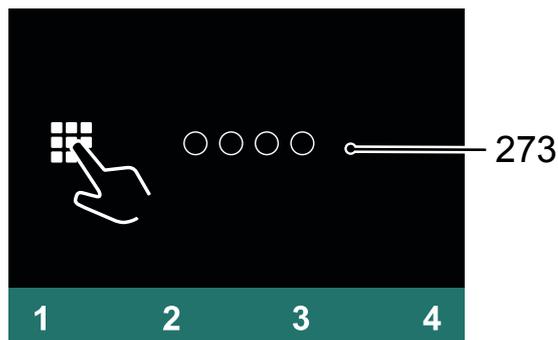
- To return to the main menu, press the key below the "Back" symbol (93).

→ The default code can no longer be used and must be deleted.

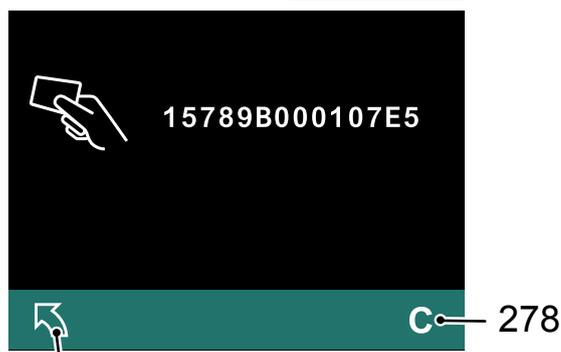
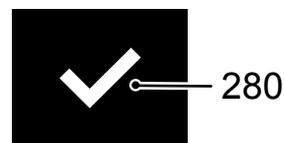
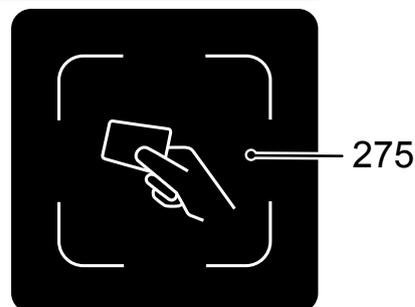
Delete the default code, see page 128.

- Add new transponders, see page 127.

The transponder reader is now active.



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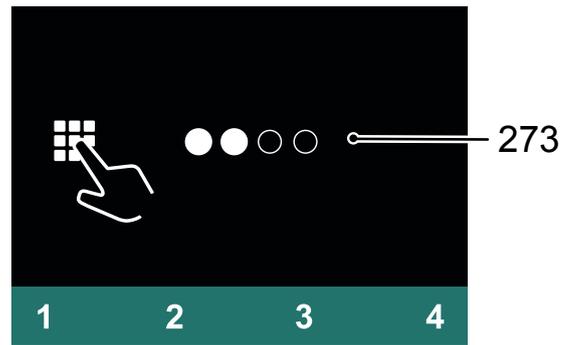
7.5 Using the Display:

7.5.1 Switch on the truck with the access code.

Procedure

- Release the emergency disconnect switch, see page 83.
- Enter the access code with the buttons below the display (68).

The truck is switched on.

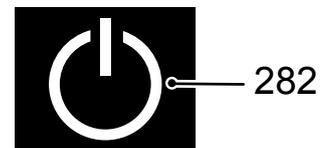


7.5.2 Switching off the truck

Procedure

- Press the key under the "Switch off" symbol (95) in the display unit.
- Press the Emergency Disconnect switch, see page 83.

The truck is switched off.



7.5.3 Changing the Set-up Code

Requirements

- The truck is switched on, see page 120.

Procedure

- Press the key below the "Settings" symbol (90).
- Press the key below the "Change set-up code" symbol (91).
- Enter the set-up code using the keys below the display unit (68).

The set-up code entered is shown as filled-in circles.

- Press the key below the "Delete" symbol (92).

The set-up code is deleted.

- Enter the new set-up code using the keys below the display unit (68).

→ The new set-up code must be different from existing access codes.

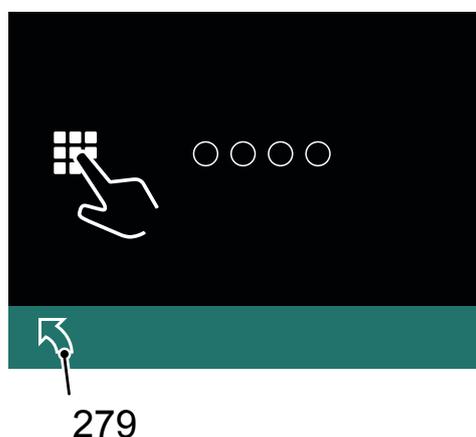
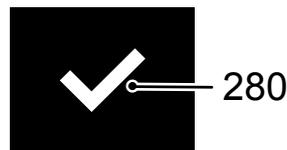
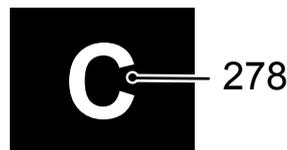
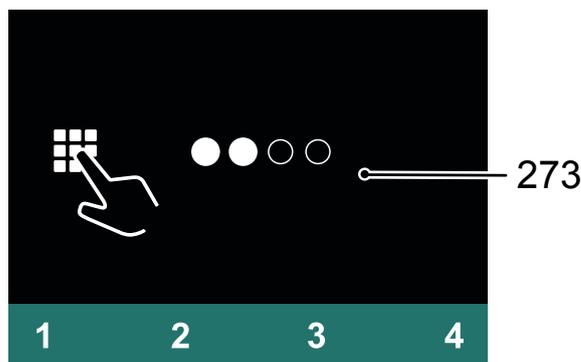
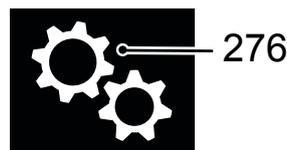
- Press the key below the "Confirm" symbol (94).

The new set-up code is displayed.

→ If the new set-up code has been entered incorrectly, delete it and add a set-up code again.

To return to the main menu, press the key below the "Back" symbol (93).

The set-up code has been changed.



7.5.4 Adding a new access code

Requirements

- The truck is switched on, see page 120.

Procedure

- Press the key below the "Settings" symbol (90).
- Press the key below the "Edit access code" symbol (96).

The set-up code is requested.

- Enter the set-up code using the keys below the display unit (68).

All the access codes are displayed.

- Press the key below the "Add" symbol (97).
- Enter the new access code using the keys below the display unit (68).

→ The new access code must be different from existing access codes.

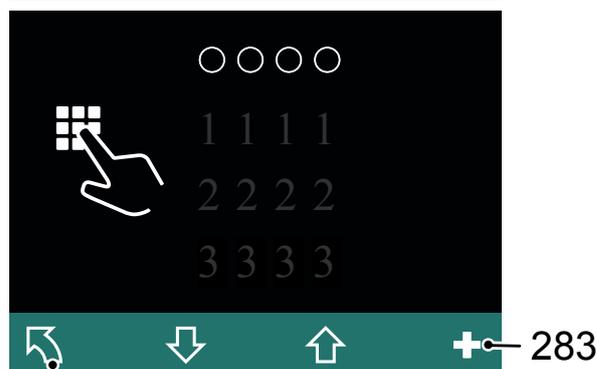
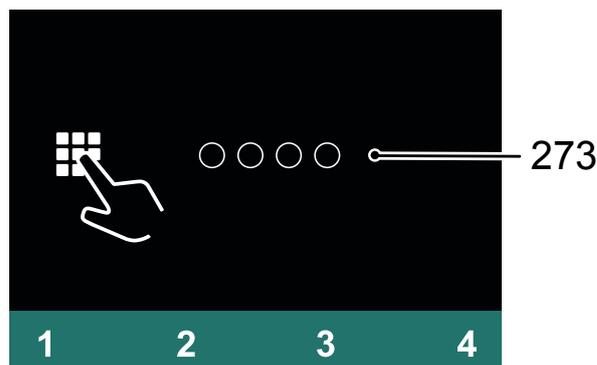
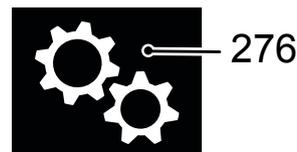
- Press the key below the "Confirm" symbol (94).

The new access code is displayed.

→ If the new access code has been entered incorrectly, delete it, see page 123, and add an access code again.

To return to the main menu, press the key below the "Back" symbol (93).

A new access code has been added.



7.5.5 Deleting an access code

Requirements

- The truck is switched on, see page 120.

Procedure

- Press the key below the "Settings" symbol (90).
- Press the key below the "Edit access code" symbol (96).

The set-up code is requested.

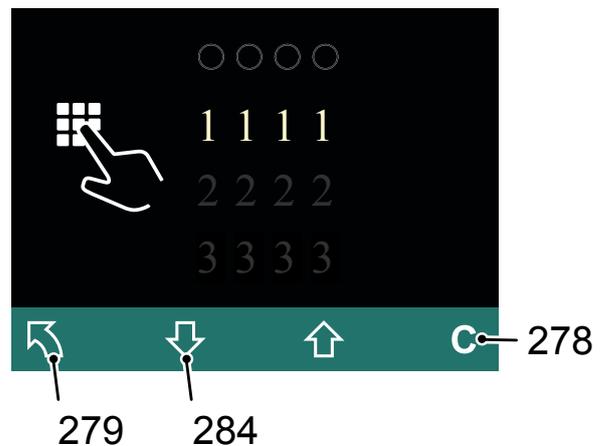
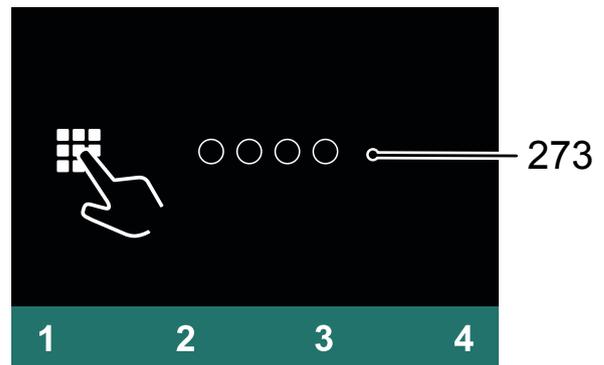
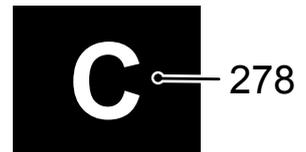
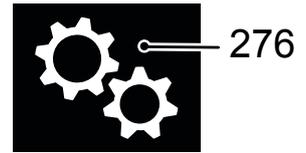
- Enter the set-up code using the keys below the display unit (68).

All the access codes are displayed.

- Select the access code to be deleted using the key below the "Down selection" symbol (98).
- Press the key below the "Delete" symbol (92).

The access code has been deleted.

- To return to the main menu, press the key below the "Back" symbol (93).



7.5.6 Displaying the Log-in Process

The use of the last different access codes is displayed during the log-in process. The last log-in is displayed first.

- If multiple access codes are logged as being displayable simultaneously, the display area can be moved by scrolling forward or back.

Requirements

- The truck is switched on, see page 115.

Procedure

- Press the key below the "Settings" symbol (90).
- Press the key below the "Log-in process" symbol (99).
- Enter the set-up code using the keys below the display unit (68).

The set-up code entered is shown as filled-in circles.

- To scroll forward, press the button under the "Down selection" symbol (98) as many times as necessary.

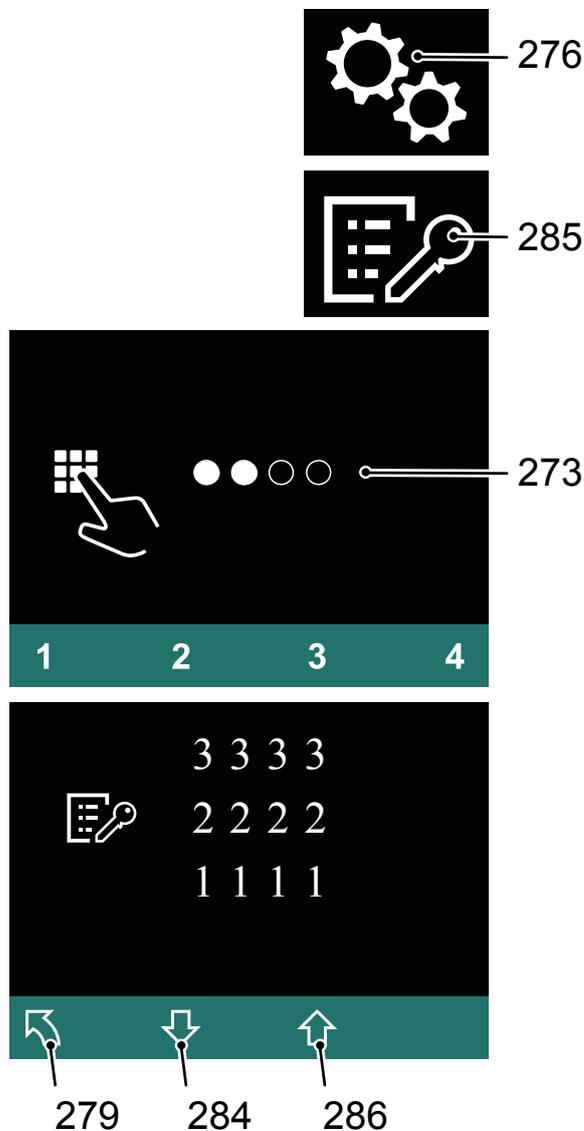
The display area moves: Additional earlier log-ins are displayed.

- To scroll back, press the button under the "Up selection" symbol (100) as many times as necessary.

The display area moves: More recent log-ins are displayed.

- To return to the main menu, press the key below the "Back" symbol (93).

The log-in process is displayed.



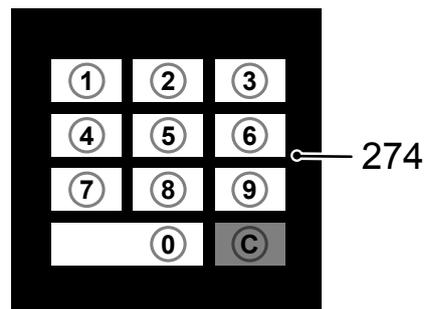
7.6 Using the Keypad

7.6.1 Switch on the truck with the access code.

Procedure

- Release the emergency disconnect switch, see page 83.
- Enter the access code with the keypad (71).

The truck is switched on.



Procedure

- Press the key under the "Switch off" symbol (95) in the display unit.
- Press the Emergency Disconnect switch, see page 83.

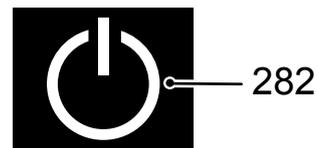
The truck is switched off.

7.6.2 Switching off the truck

Procedure

- Press the key under the "Switch off" symbol (95) in the display unit.
- Press the Emergency Disconnect switch, see page 83.

The truck is switched off.



7.6.3 Changing the Set-up Code

Requirements

- The truck is switched on, see page 120.

Procedure

- Press the key below the "Settings" symbol (90).
- Press the key below the "Change set-up code" symbol (91).
- Enter the set-up code using the keypad (71).

The set-up code entered is shown in the display unit (68) as filled-in circles.

- Press the key below the "Delete" symbol (92).

The set-up code is deleted.

- Enter the new set-up code using the keypad (71).

→ The new set-up code must be different from existing access codes.

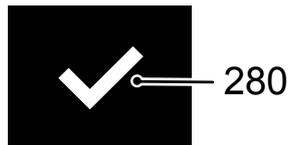
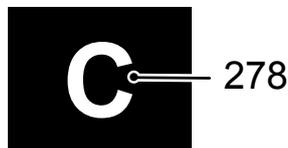
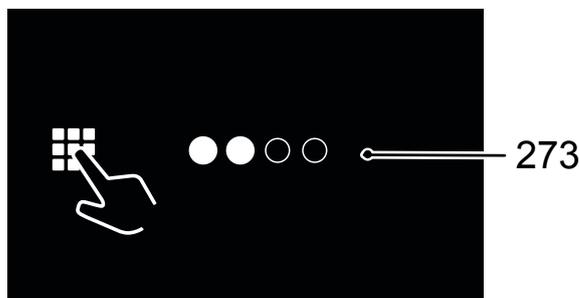
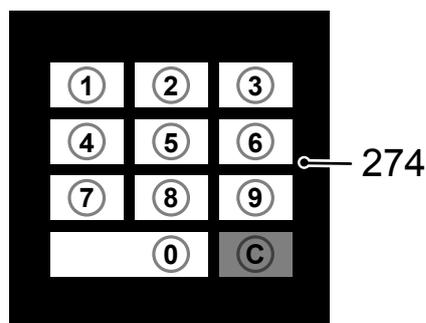
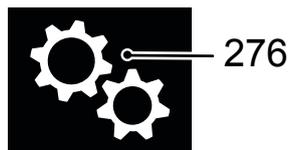
- Press the key below the "Confirm" symbol (94).

The new set-up code is displayed.

→ If the new set-up code has been entered incorrectly, delete it and enter the correct set-up code.

To return to the main menu, press the key below the "Back" symbol (93).

The set-up code has been changed.



7.6.4 Adding a new access code

Requirements

- The truck is switched on, see page 120.

Procedure

- Press the key below the "Settings" symbol (90).
- Press the key below the "Edit access code" symbol (96).

The set-up code is requested.

- Enter the set-up code using the keypad (71).

All access codes are shown on the display unit (68).

- Press the key below the "Add" symbol (97).
- Enter a new access code using the keypad (71).

→ The new access code must be different from existing access codes.

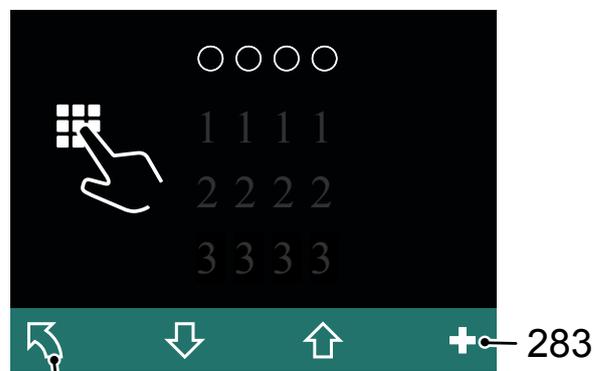
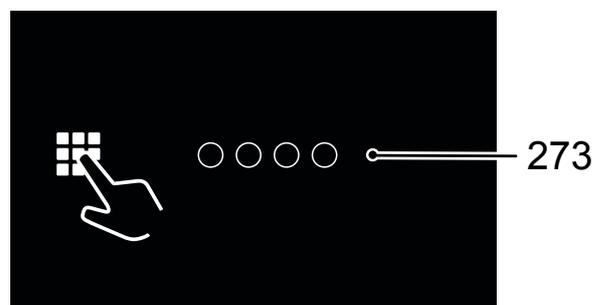
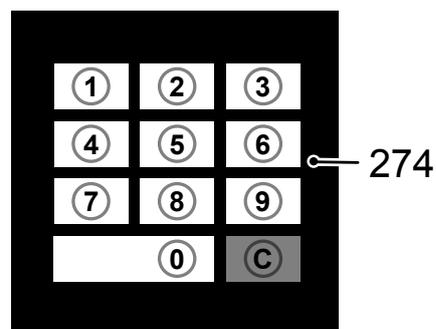
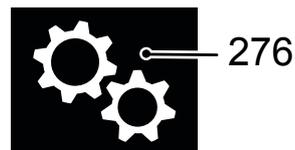
- Press the key below the "Confirm" symbol (94).

The new access code is shown on the display unit (68).

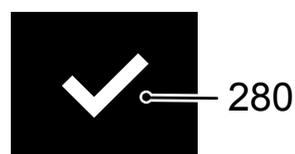
→ If the new access code has been entered incorrectly, delete it, see page 123, and enter the correct access code.

To return to the main menu, press the key below the "Back" symbol (93).

A new access code has been added.



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7.6.5 Deleting an access code

Requirements

- The truck is switched on, see page 120.

Procedure

- Press the key below the "Settings" symbol (90).
- Press the key below the "Edit access code" symbol (96).

The set-up code is requested.

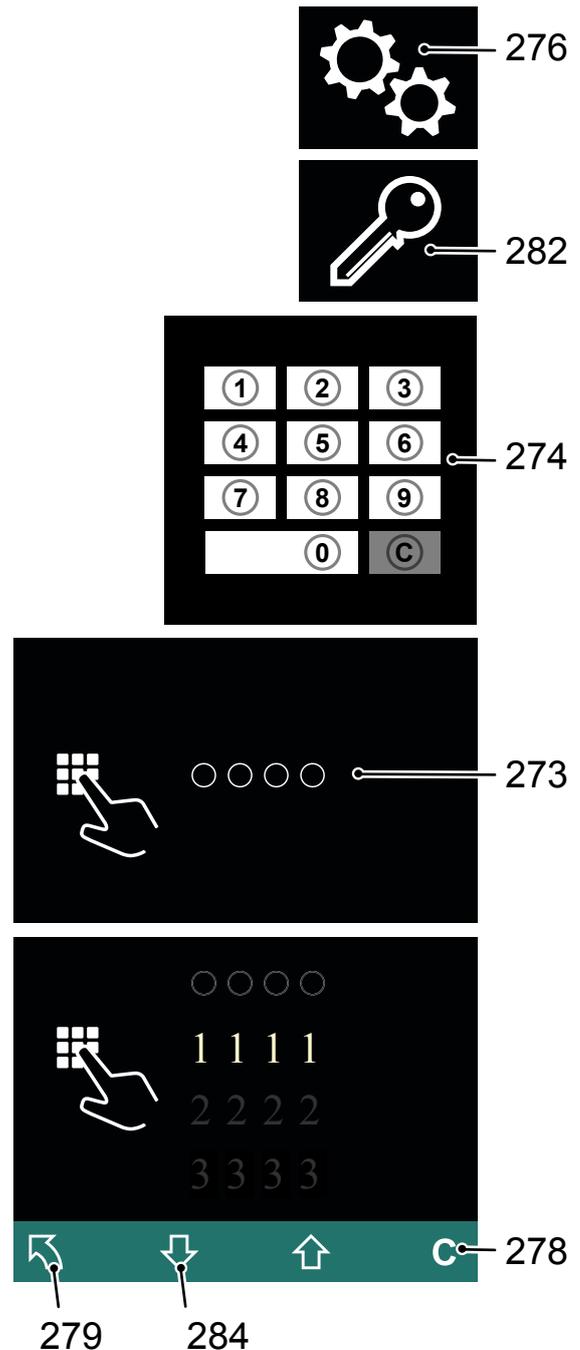
- Enter the set-up code using the keypad (71).

All access codes are shown on the display unit (68).

- Select the access code to be deleted using the key below the "Down selection" symbol (98).
- Press the key below the "Delete" symbol (92).

The access code has been deleted.

- To return to the main menu, press the key below the "Back" symbol (93).



7.6.6 Displaying the Log-in Process

The use of the last different access codes is displayed during the log-in process. The last log-in is displayed first.

- ➔ If multiple access codes are logged as being displayable simultaneously, the display area can be moved by scrolling forward or back.

Requirements

- The truck is switched on, see page 115.

Procedure

- Press the key below the "Settings" symbol (90).
- Press the key below the "Log-in process" symbol (99).
- Enter the set-up code using the keypad (71).

The set-up code entered is shown in the display unit (68) as filled-in circles.

- To scroll forward, press the button under the "Down selection" symbol (98) as many times as necessary.

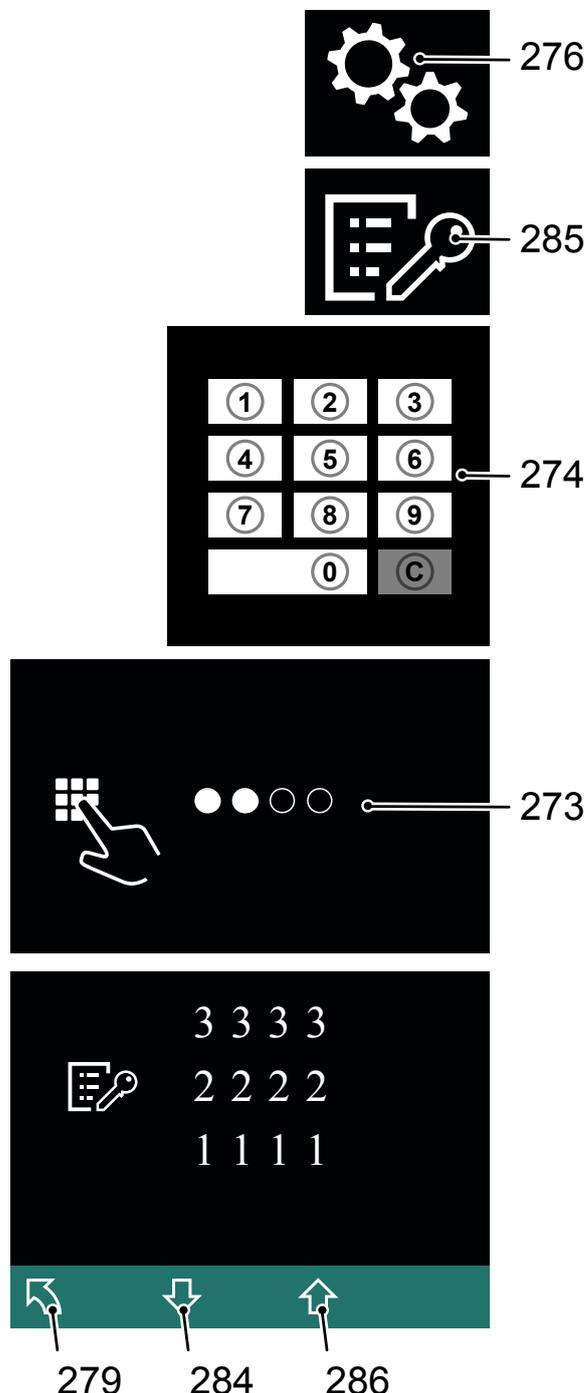
The display area moves: Additional earlier log-ins are displayed.

- To scroll back, press the button under the "Up selection" symbol (100) as many times as necessary.

The display area moves: More recent log-ins are displayed.

- To return to the main menu, press the key below the "Back" symbol (93).

The log-in process is displayed.



7.7 Operating the transponder reader

NOTICE

Take care not to damage the transponder. If the transponder is damaged, the truck cannot be switched on.

7.7.1 Switching on the truck with the transponder

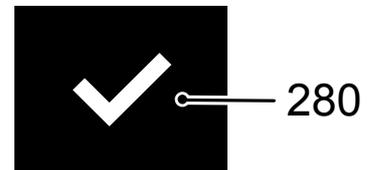
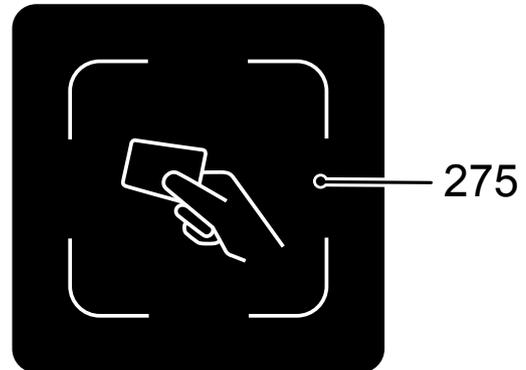
Procedure

- Release the Emergency Disconnect switch, see page 83.
- Hold the transponder in front of the transponder reader (69).

A green tick appears and remains until the transponder has been confirmed. If there is no confirmation within 20 seconds the access prompt appears.

- Press the button below the "Confirm" symbol (94).

The truck is switched on.



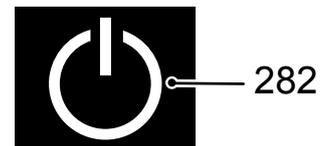
- The truck can only be switched on when the display unit (68) is lit. If the display unit is in standby the code or transponder will not be recognised. Pressing any key cancels standby mode.

7.7.2 Switching the truck off (transponder reader)

Procedure

- Press the key under the "Switch off" symbol (95) in the display unit.
- Press the Emergency Disconnect switch, see page 83.

The truck is switched off.



7.7.3 Changing the Set-up Transponder

Requirements

- The truck is switched on, see page 125.

Procedure

- Press the key below the "Settings" symbol (90).
- Press the key below the "Change set-up code" symbol (91).
- Place the set-up transponder on the transponder reader (69).

The code of the set-up transponder is shown on the display unit (68).

- Press the key below the "Delete" symbol (92).

A dashed line is shown.

- Place the new set-up transponder on the transponder reader (69).

→ The new set-up transponder code must be different from existing transponder codes.

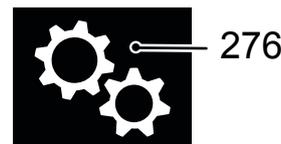
- Press the key below the "Confirm" symbol (94).

The new code for the set-up transponder is displayed.

→ If the wrong transponder has been used, the procedure can be repeated using the key below the "Delete" symbol (92).

To return to the main menu, press the key below the "Back" symbol (93).

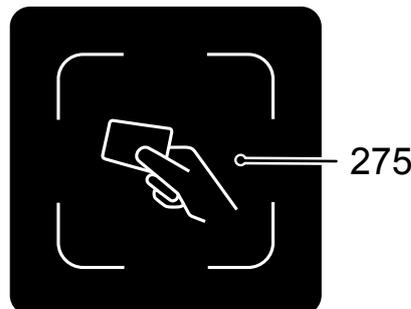
The set-up transponder has been changed.



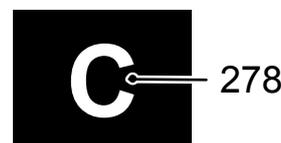
276



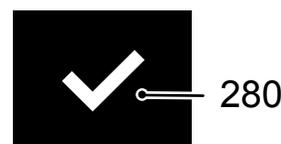
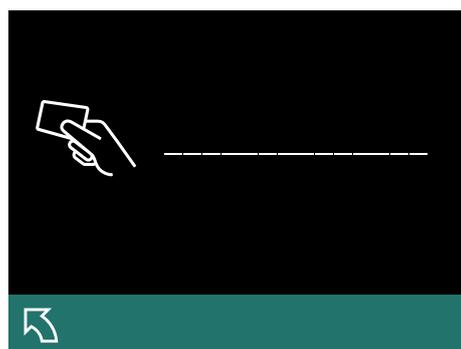
277



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278



280



273



279

7.7.4 Adding a new transponder

Requirements

- The truck is switched on, see page 125.

Procedure

- Press the key below the "Settings" symbol (90).
- Press the key below the "Edit transponder" symbol (96).

The set-up transponder is requested.

- Place the set-up transponder on the transponder reader (69).

All transponder codes are shown on the display unit (68).

- Press the key below the "Add" symbol (97).
- Place the new transponder on the transponder reader (69).

→ The new transponder code must be different from existing transponder codes.

- Press the key below the "Confirm" symbol (94).

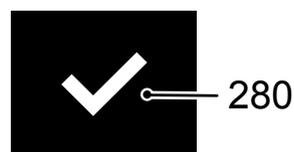
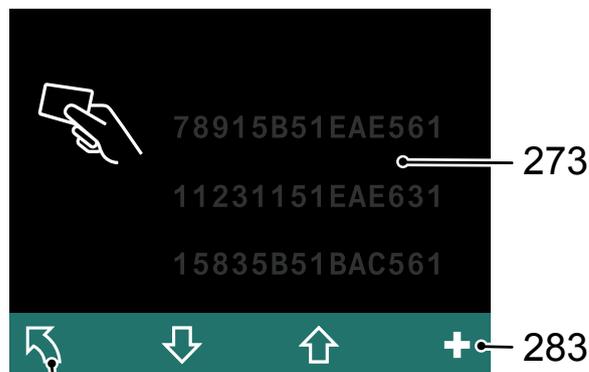
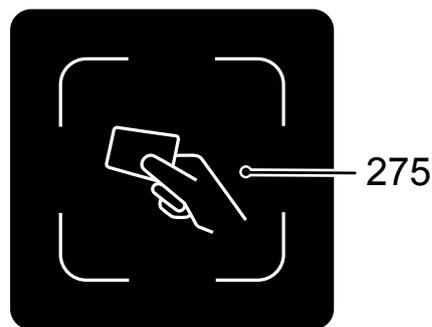
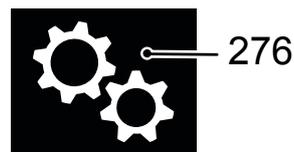
The new transponder code is displayed.

→ If the wrong transponder has been used, delete it, see page 128, and add a correct transponder.

To return to the main menu, press the key below the "Back" symbol (93).

A new transponder has been added.

→ The transponder codes saved are sorted first of all numerically and then alphabetically.



7.7.5 Deleting transponders

Requirements

- The truck is switched on, see page 125.

Procedure

- Press the key below the "Settings" symbol (90).
- Press the key below the "Edit transponder" symbol (96).

The set-up transponder is requested.

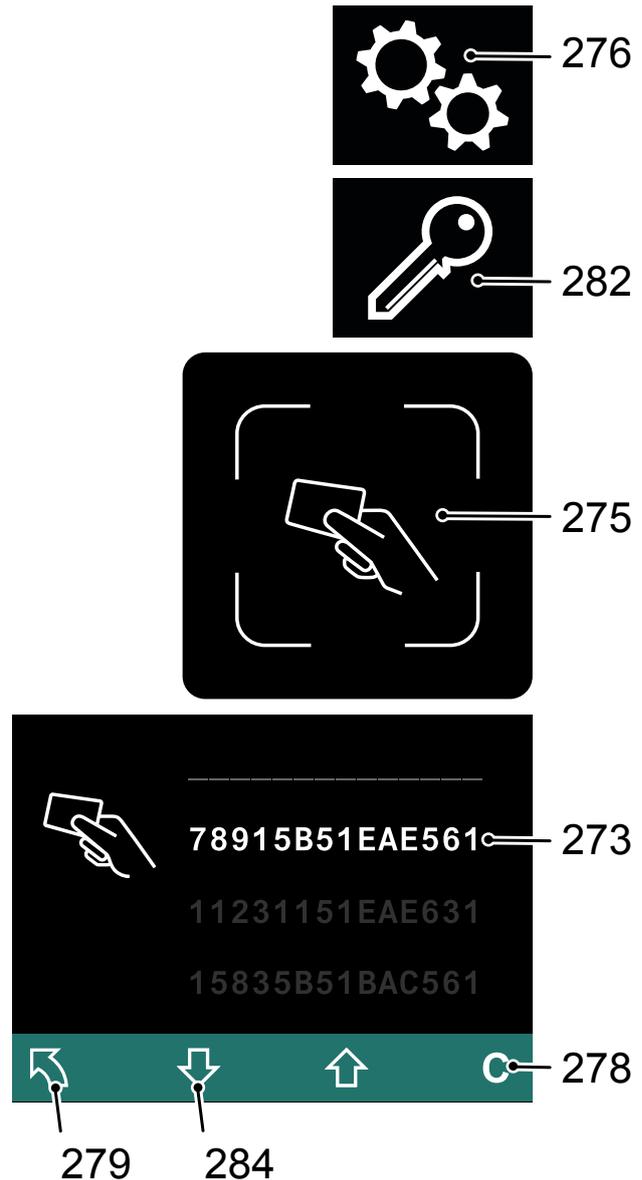
- Place the set-up transponder on the transponder reader (69).

All transponder codes are shown on the display unit (68).

- Select the transponder code to be deleted using the key below the "Down selection" symbol (98).
- Press the key below the "Delete" symbol (92).

The transponder has been deleted.

- To return to the main menu, press the key below the "Back" symbol (93).



7.7.6 Displaying the Log-in Process

The use of the last different transponders is displayed during the log-in process. The last log-in is displayed first.

- ➔ If multiple transponders are logged as being displayable simultaneously, the display area can be moved by scrolling forward or back.

Requirements

- The truck is switched on, see page 115.

Procedure

- Press the key below the "Settings" symbol (90).
- Press the key below the "Log-in process" symbol (99).
- Place the set-up transponder on the transponder reader (69).
- To scroll forward, press the button under the "Down selection" symbol (98) as many times as necessary.

The display area moves: Additional earlier log-ins are displayed.

- To scroll back, press the button under the "Up selection" symbol (100) as many times as necessary.

The display area moves: More recent log-ins are displayed.

- To return to the main menu, press the key below the "Back" symbol (93).

The log-in process is displayed.



7.8 Access module (ISM Online)

- *If equipped with ISM Online access module, see "ISM Online access module" operating instructions.

7.9 Parameters

- The default settings can be changed by the manufacturer's customer service department.

For supplied batteries, the correct battery parameter is set ex works.

F Industrial Truck Maintenance

1 Spare Parts

To ensure safe and reliable operation, use only the manufacturer's original spare parts.

The manufacturer's original spare parts are consistent with the manufacturer's specifications and guarantee the highest possible quality of safety, size accuracy and material.

The installation or use of non-original spare parts can negatively affect the specified properties of the product and impair safety. The manufacturer cannot be held liable for damage caused by the use of non-original spare parts.

The product-related electronic spare parts catalogue can be found at (www.jungheinrich.de/spare-parts-search) by entering the serial number.

→ The serial number can be found on the data plate, see page 32.



2 Operational Safety and Environmental Protection

The inspections and maintenance tasks listed in chapter "Maintenance, Inspection and Changing of Maintenance Parts Requiring Replacement" must be performed according to the defined service intervals (see page 151).

The manufacturer recommends the replacement of the maintenance parts also listed in chapter "Maintenance, Inspection and Changing of Maintenance Parts Requiring Replacement" according to the specified replacement intervals (see page 151).

⚠ WARNING!

Risk of accidents and component damage

Any modification to the truck, in particular the safety mechanisms, is prohibited.

Exception: Operating companies should only make changes or have changes made to powered industrial trucks if the manufacturer is no longer operating in the field and there is no successor to the business; operating companies must however:

- Ensure that the changes to be made are planned, tested and performed by a specialist engineer in industrial trucks taking safety into account.
- Keep permanent records of the construction, tests and completion of changes
- Carry out and have authorised the respective changes to the capacity data plates, decals and stickers as well as the operating instructions and workshop manuals
- Attach a permanent and clearly visible marking to the truck indicating the types of changes made, the date of the changes and the name and address of the organisation responsible for the work.

NOTICE

Only original spare parts are subject to the manufacturer's quality control. To ensure safe and reliable operation, use only the manufacturer's spare parts.

For safety reasons, only components which have been specially agreed by the manufacturer for this truck may be installed near the computer, controllers and wire guidance sensors (antennae). These components (computers, controllers, wire guidance sensors (antennae)) must therefore not be replaced by similar components from other trucks of the same series.

-
- On completion of inspection and service work, carry out the operations listed in the “Recommissioning the truck after cleaning or maintenance work” section (see page 150).

3 Maintenance Safety Regulations

Maintenance personnel

The truck should only be serviced and repaired by the manufacturer's specialist customer service personnel who have been trained to do this. We therefore recommend that you enter into a maintenance contract with the manufacturer's local sales office.

Customer Services

Customer Services are specially trained in the use of the truck and are able to carry out maintenance and repairs independently. Customer Services are aware of the relevant standards, guidelines and safety regulations as well as potential risks.

Operating company

The maintenance personal of the operating company has the technical expertise and experience to perform the activities in the maintenance check list for the operating company. The maintenance and repair work to be performed by the operating company are also written down, see page 131.

Settings

When repairing or replacing hydraulic, electric or electronic components or assemblies, always note the truck-specific settings.

3.1 Working on the electrical system

WARNING!

Electrical current can cause accidents

Ensure the electrical system is de-energised before starting work. The capacitors in the control must be completely discharged. The capacitors are fully discharged approx. 10 minutes after disconnecting the electrical system from the battery.

Before starting maintenance on the electrical system:

- ▶ Only suitably trained electricians may work on the truck's electrical system.
- ▶ Before working on the electrical system, take all precautionary measures to avoid electric shocks.
- ▶ Park the truck securely (see page 79).
- ▶ Disconnect the battery.
- ▶ Remove any rings, metal wristbands etc.

CAUTION!

Fire hazard

Do not use flammable liquids to clean the industrial truck.

- ▶ Disconnect the battery before starting cleaning work.
- ▶ Carry out all necessary safety measures to prevent sparking before cleaning (e.g. by short-circuiting).

3.2 Consumables and used parts

⚠ CAUTION!

Consumables and used parts are an environmental hazard

Used parts and consumables must be disposed of in accordance with the applicable environmental-protection regulations. Oil changes should be carried out by the manufacturer's customer service department, whose staff are specially trained for this task.

▶ Note the safety regulations when handling these materials.

3.3 Wheels

⚠ WARNING!

The use of wheels that do not match the manufacturer's specifications can result in accidents

The quality of wheels affects the stability and performance of the truck.

Uneven wear reduces truck stability and increases the stopping distance.

▶ After replacing wheels, make sure the truck is not skewed.

▶ Always replace wheels in pairs, i.e. left and right at the same time.

☞ When replacing wheels fitted at the factory, only use the manufacturer's original spare parts. Otherwise the truck's rated performance cannot be ensured, see page 131.

3.4 Hydraulic system

⚠ WARNING!

Leaky hydraulic systems can result in accidents

Hydraulic oil can escape from leaky and faulty hydraulic systems.

▶ Report any defects immediately to your supervisor.

▶ Mark the defective truck and take it out of service.

▶ Do not return the truck to service until the fault has been identified and rectified.

▶ Remove any spilled hydraulic oil immediately with an appropriate bonding agent.

▶ The bonding agent/consumable mixture must be disposed of in accordance with regulations.

⚠ WARNING!

Faulty hydraulic hoses can result in injury and infection

Pressurised hydraulic oil can escape from fine holes or hairline cracks in the hydraulic hoses. Brittle hydraulic hoses can burst during operation. People standing near the truck can be injured by the hydraulic oil.

▶ Call for a doctor immediately if you are injured.

▶ Do not touch pressurised hydraulic hoses.

▶ Report any defects immediately to your supervisor.

▶ Mark the defective truck and take it out of service.

▶ Only restore the truck to service when the fault has been rectified.

NOTICE

Testing and replacing hydraulic hoses

Hydraulic hoses can become brittle through age and must be checked at regular intervals. The operating conditions of the truck have a considerable impact on the ageing of the hydraulic hoses.

- ▶ Hydraulic hoses must be checked at least 1x per year and replaced if necessary.
 - ▶ If the operating conditions become more arduous, the inspection intervals must be reduced accordingly.
 - ▶ In normal operating conditions, a precautionary replacement of the hydraulic hoses is recommended after 6 years. The owner must carry out a risk assessment to ensure safe, prolonged use. The resulting protection measures must be observed and the inspection interval reduced accordingly.
-

- The auxiliary hydraulics of the EJE 222r / 225r is a closed system. The auxiliary hydraulics must only be replaced or topped up by the manufacturer's customer service department who are specially trained for this task.
- Mini measurement connections on the truck should only be used by the manufacturer's trained customer service department.

4 Lubricants and Lubrication Schedule

4.1 Handling consumables safely

Handling consumables

Consumables must always be handled correctly. Follow the manufacturer's instructions.

⚠ WARNING!

Improper handling is hazardous to health, life and the environment

Consumables can be flammable.

- ▶ Keep consumables away from hot components and naked flames.
 - ▶ Always keep consumables in prescribed marked containers.
 - ▶ Always fill consumables in clean containers.
 - ▶ Do not mix up different grades of consumable. The only exception to this is when mixing is expressly stipulated in the Operating Instructions.
-

⚠ CAUTION!

Spilled consumables can cause slipping and endanger the environment

Risk of slipping from spilled consumables. The risk is greater when combined with water.

- ▶ Do not spill consumables.
 - ▶ Spilled consumables must be removed immediately with an appropriate bonding agent.
 - ▶ The bonding agent / consumable mixture must be disposed of in accordance with regulations.
-

⚠ WARNING!

Improper handling of oils can be hazardous

Oils (chain spray / hydraulic oil) are flammable and poisonous.

- ▶ Dispose of used oils in accordance with regulations. Store used oil safely until it can be disposed of in accordance with regulations.
 - ▶ Do not spill oil.
 - ▶ Spilled oils must be removed immediately with an appropriate bonding agent.
 - ▶ The mixture consisting of the bonding agent and oil must be disposed of in accordance with regulations.
 - ▶ Observe national regulations when handling oils.
 - ▶ Wear safety gloves when handling oils.
 - ▶ Prevent oil from coming into contact with hot motor parts.
 - ▶ Do not smoke when handling oil.
 - ▶ Avoid contact and digestion. If you swallow oil do not induce vomiting but seek medical assistance immediately.
 - ▶ Seek fresh air after breathing in oil fumes or vapours.
 - ▶ If oil has come into contact with your skin, rinse your skin with water.
 - ▶ If oil has come into contact with your eyes, rinse them with water and seek medical assistance immediately.
 - ▶ Replace oil-soaked clothing and shoes immediately.
-

⚠ CAUTION!

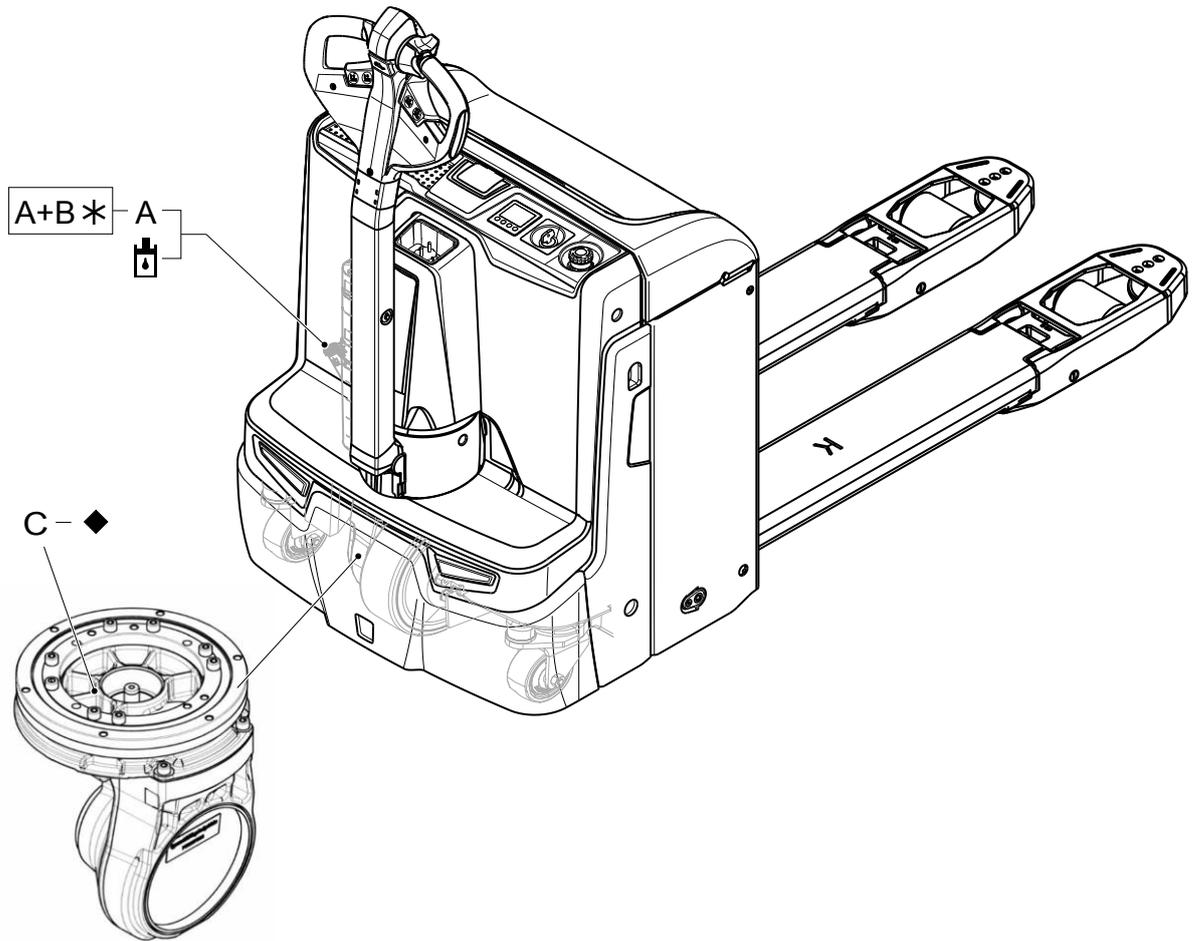
Consumables and used parts are an environmental hazard

Used parts and consumables must be disposed of in accordance with the applicable environmental-protection regulations. Oil changes should be carried out by the manufacturer's customer service department, whose staff are specially trained for this task.

▶ Note the safety regulations when handling these materials.

4.2 Lubrication Schedule

- The truck is equipped with lubrication-free bushes. As such, no lubrication is required as part of maintenance.



⊕	Hydraulic-oil filler plug	*	Cold store application
◆	Transmission oil filling		

4.3 Consumables

Code	Order no.	Quantity	Description	Used for	Volume
A	51132826 *	1.0 l	Jungheinrich hydraulic oil	Hydraulic system	1.0 l
	51132827 *	5.0 l			
B	51081875	5.0 l	Cold store hydraulic oil Renolin MR310	Cold store hydraulic system	See note
C	50449961	5.0 l	SAE J306 75W-90	Transmission	1.1 l



For cold-store applications, the hydraulic oil and the cold-store hydraulic oil must be mixed in a 1:1 ratio.

*The trucks are factory-equipped with a special hydraulic oil (the Jungheinrich hydraulic oil with a blue colouration) and the cold store hydraulic oil (red colouration). The Jungheinrich hydraulic oil is available only from the Jungheinrich service department. The Jungheinrich hydraulic oil may be mixed with one of the named alternative hydraulic oils.

5 Maintenance and repairs

5.1 Preparing the truck for maintenance and repairs

Procedure

- Park the truck securely, see page 79.
- Disconnect the battery to prevent the truck from being switched on accidentally.

5.2 Lifting and jacking up the truck safely

⚠ WARNING!

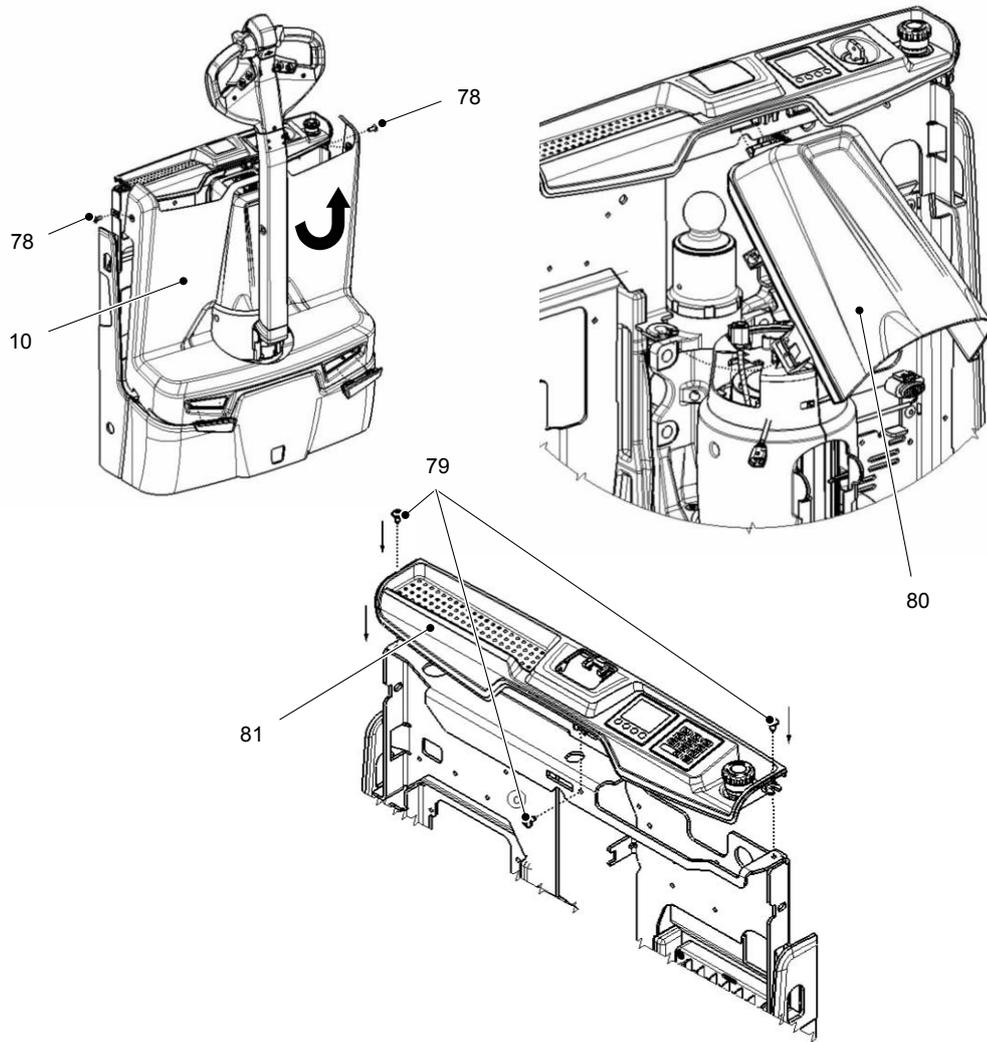
Lifting and jacking up the truck safely

In order to raise the truck, the lifting gear must only be secured to the points specially provided for this purpose.

In order to raise and jack up the truck safely, proceed as follows:

- ▶ Jack up the truck only on a level surface and prevent it from moving accidentally.
 - ▶ Always use a jack with sufficient capacity. When jacking up the burden carrier, take appropriate measures to prevent it from slipping or tipping over (e.g. wedges, wooden blocks).
 - ▶ In order to raise the truck, the lifting accessories must only be secured to the points specially provided for this purpose, see page 33.
-

5.3 Front panel disassembly and assembly



Removing the covers

Requirements

- Truck prepared for maintenance and repair work, see page 140.

Tools and Material Required

- Allen key, size 13 (7 Nm)

Procedure

- Remove the M8 hex. bolt with width across flats 13 (7 Nm) (101) from the front panel (15).
- Lift and remove the front panel (15).
- Turn the drive panel (103) approx. 90°, loosen on the tiller and remove.
- Remove the screws (102) from the dashboard panel (5 Nm) (104).
- Remove the dashboard panel (104).

The covers have been removed.

5.4 Cleaning

5.4.1 Cleaning the truck

- The truck may only be cleaned in the designated locations, which adhere to the stipulations of the country of use.

⚠ CAUTION!

Fire hazard

Do not use flammable liquids to clean the industrial truck.

- ▶ Disconnect the battery before starting cleaning work.
- ▶ Carry out all necessary safety measures to prevent sparking before cleaning (e.g. by short-circuiting).

NOTICE

Risk of component damage when cleaning the truck

Cleaning with a high-pressure cleaner can result in malfunctions due to humidity.

- ▶ Cover all electronic system assemblies (controllers, sensors, motors etc.) before cleaning the truck with a high-pressure cleaner.
- ▶ Do not hold the jet of the pressure washer by the marked points to avoid damaging them (see page 31).
- ▶ Do not clean the truck with a steam jet.

Cleaning the truck

Requirements

- Truck prepared for maintenance and repair work, see page 140.

Tools and Material Required

- Water-based solvents
- Sponge or cloth

Procedure

- Clean the surface of the truck with water-based solvents and water. Use a sponge or cloth to clean.
- Dry the truck after cleaning, e.g. with compressed air or a dry cloth.
- Carry out all the tasks in the section "Recommissioning the truck after cleaning or maintenance work" (see page 147).

The truck is now clean.

5.4.2 Cleaning the electrical system assemblies

⚠ CAUTION!

Risk of electrical system damage

Cleaning the assemblies (controllers, sensors, motors etc.) of the electronic system with water can damage the electrical system.

- ▶ Do not clean the electrical system with water.
 - ▶ Clean the electrical system with weak suction or compressed air (use a compressor with a water trap) and not a conductive, anti-static brush.
-

Cleaning the electrical system assemblies

Requirements

- Truck prepared for maintenance and repair work (see page 140).

Tools and Material Required

- Compressor with water separator
- Non-conductive, antistatic brush

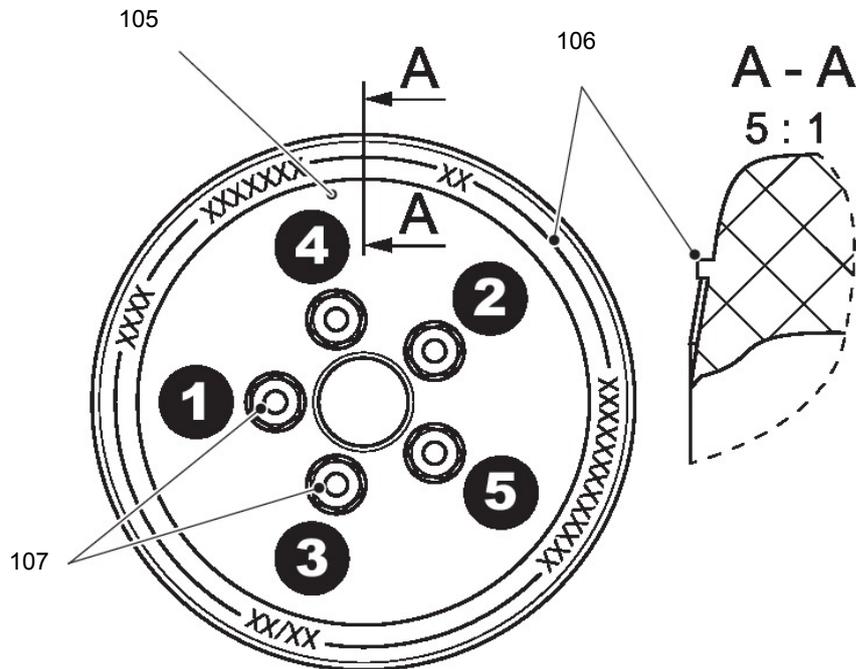
Procedure

- Expose the electrical system, see page 40.
- Clean the electrical system assemblies with weak suction or compressed air (use a compressor with a water separator) and a non-conductive, anti-static brush.
- Fit the electrical system panel, see page 40.
- Carry out all the tasks in the section "Recommissioning the truck after cleaning or maintenance work" (see page 147).

The electrical system assemblies are now clean.

5.5 Check wheel attachment and wear

- Replace the wheels if the wear limit (106) has been reached.
- The drive wheel must only be replaced by authorised service personnel.



- The wheel nuts on the drive wheel must be re-tightened in accordance with the maintenance intervals indicated in the maintenance checklist, see page 151.

Tightening the wheel nuts

Requirements

- Prepare the truck for maintenance and repair work, see page 151.

Tools and Material Required

- Torque wrench

Procedure

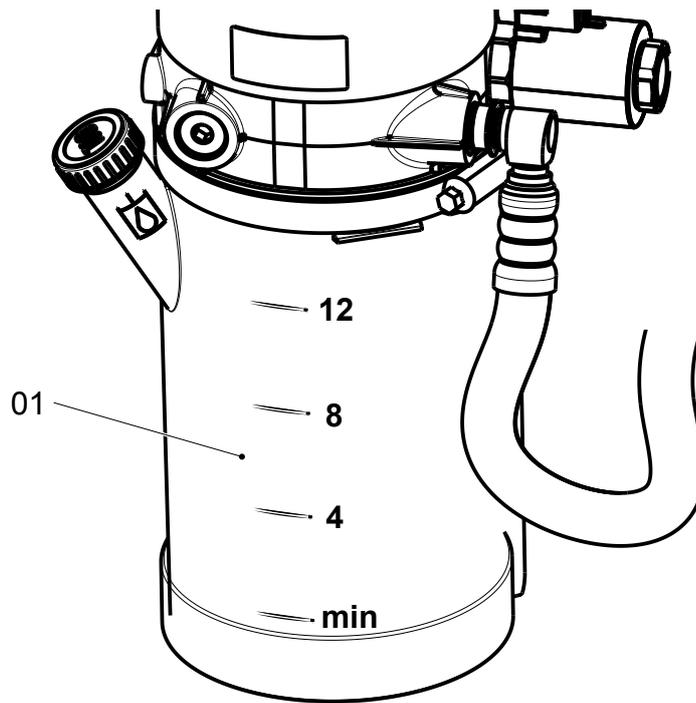
- Position the drive wheel (105) perpendicular to the longitudinal axis of the truck.
- Tighten all wheel nuts (107) using the torque wrench through the opening in the chassis.

To do this, tighten the wheel nuts in the indicated order

- initially to 10 Nm
- then to 150 Nm.

The wheel nuts have now been tightened.

5.6 Checking the hydraulic oil level



Checking the oil level

Requirements

- Lower the load handler.
- Prepare the truck for maintenance and repairs, see page 140.

Procedure

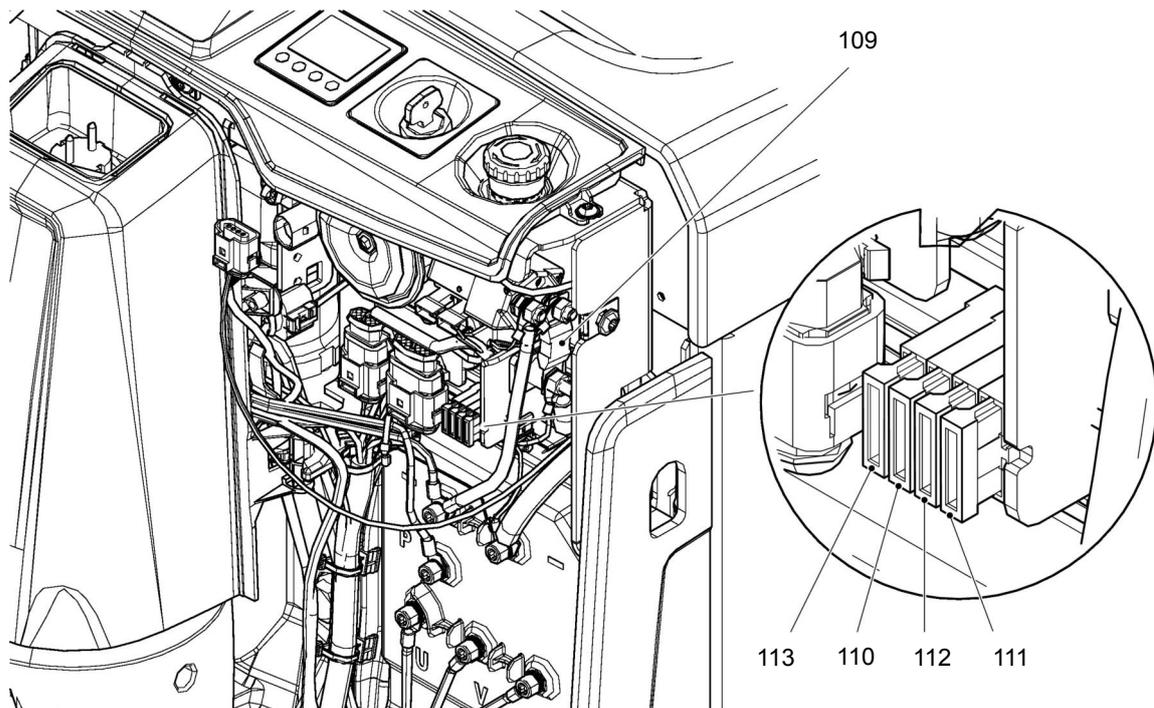
- Disassemble the front panel, see page 141.
- Check the oil level in the hydraulic reservoir (108).

- With the load handler lowered, the hydraulic oil level in the hydraulic reservoir must be at roughly the "8" marking.
- If necessary, add hydraulic oil of the correct grade, see page 139.

The oil level has now been checked.

- The auxiliary hydraulics of the EJE 222r / 225r is a closed system. The auxiliary hydraulics must only be replaced or topped up by the manufacturer's customer service department who are specially trained for this task.
- Mini measurement connections on the truck should only be used by the manufacturer's trained customer service department.

5.7 Checking electrical fuses



Checking fuses

Requirements

- Truck prepared for maintenance and repair work, see page 140.
- Front panel removed, see page 141.

Procedure

- Check the fuse ratings against the table and their condition, and replace if necessary.

The fuses have been checked.

Item	Designation	Protection	Rating
109	F50	Drive motor / pump motor	200 A
113	9F22	Sensor system	4 A
110	6F1	Control measuring input	2 A
112	F18	Main fuse	4 A.
111	9F17	Auxiliary hydraulics EJE 222r / 225r	2A

5.8 Restoring the truck to service after maintenance and repairs

Procedure

- Thoroughly clean the truck – see page 142.
- Lubricate the truck according to the lubrication diagram, see page 138.
- On trucks with lead-acid batteries: Clean the battery, grease the terminals and connect the battery.
- Charge the battery, see page 41.
- Start up the truck, see page 75.

6 Decommissioning the industrial truck

If the truck is to be out of service for more than a month, it must be stored in a frost-free and dry room. All necessary measures must be taken before, during and after decommissioning as described hereafter.

When the truck is out of service it must be jacked up so that all the wheels are clear of the ground. This is the only way of ensuring that the wheels and wheel bearings are not damaged.

→ Jack up the truck, see page 133.

If the truck is to be out of service for more than 6 months, agree further measures with the manufacturer's customer service department.

6.1 Prior to decommissioning

6.1.1 Trucks with lead-acid battery

Procedure

- Thoroughly clean the truck, see page 142.
- Prevent the truck from rolling away accidentally.
- Check the hydraulic oil level and replenish if necessary, see page 145.
- Apply a thin layer of oil or grease to any non-painted mechanical components.
- Lubricate the truck according to the lubrication schedule, see page 138.
- Charge the battery, see page 41.
- Disconnect the battery, clean it and grease the terminals.

→ In addition, follow the battery manufacturer's instructions.

6.1.2 Truck with lithium-ion battery

Procedure

- Thoroughly clean the truck, see page 142.
- Prevent the truck from rolling away accidentally.
- Check the hydraulic oil level and replenish if necessary, see page 145.
- Apply a thin layer of oil or grease to any non-painted mechanical components.
- Lubricate the truck according to the lubrication diagram, see page 138.
- Charge the battery, see page 62.

6.2 Action to be taken during decommissioning

NOTICE

Damage to the lithium-ion battery due to discharge

If the lithium-ion battery is not used for a long period of time, it can become damaged through discharge.

- ▶ Fully charge the battery before extended downtimes.
 - ▶ To ensure a long service life of the lithium-ion battery, it must be fully charged every 4 weeks when not in use.
-

NOTICE

Full discharge can damage the battery

Self-discharge can cause the battery to fully discharge. Full discharge shortens the useful life of the battery.

▶ Charge the battery at least every 2 months.



Charge the battery see page 41.

6.3 Restoring the truck to service after decommissioning

Procedure

- Thoroughly clean the truck – see page 138.
- Lubricate the truck according to the lubrication diagram, see page 41.
- On trucks with lead-acid batteries: Clean the battery, grease the terminals and connect the battery.
- Charge the battery, see page 75.
- Start up the truck, see page 75.

7 Safety tests to be performed at intervals and after unusual incidents

The truck must be inspected at least annually (refer to national regulations) or after any unusual event by a qualified inspector. The manufacturer offers a safety inspection service which is performed by personnel specifically trained for this purpose.

A complete test must be carried out on the technical condition of the truck with regard to safety. The truck must also be examined thoroughly for damage.

The operating company is responsible for ensuring that faults are rectified immediately.

8 Final de-commissioning, disposal

- Final de-commissioning or disposal of the truck in must be performed in accordance with the regulations of the country of use. In particular, regulations governing the disposal of batteries, consumables and electronic and electrical systems must be observed.

The truck must only be disassembled by trained personnel in accordance with the procedures as specified by the manufacturer.

G Maintenance, Inspection and Changing of Maintenance Parts Requiring Replacement

⚠ WARNING!

Lack of maintenance can result in accidents

Failure to perform regular maintenance and inspections can lead to truck failure and poses a potential hazard to personnel and equipment.

- ▶ Thorough and expert maintenance and inspections are among the most important requirements for the safe operation of the industrial truck.

NOTICE

The application conditions of an industrial truck have a considerable impact on component wear. The following service, inspection and replacement intervals are based on single-shift operation under normal operating conditions. The intervals must be reduced accordingly if more stringent requirements are placed on the equipment, e.g., use in conditions of extreme dust, temperature fluctuations or multiple shifts.

- ▶ To prevent damage due to wear, the manufacturer recommends an on-site application analysis to agree on appropriate intervals.

The following chapter defines the tasks to be performed, the respective intervals to be observed and the maintenance parts for which replacement is recommended.

1 Maintenance Contents EJE 222/ 225/ 225US

Issued on: 2019-12-12 08:00

1.1 Owner

To be performed every 50 service hours, but at least once a week.

1.1.1 Maintenance contents

1.1.1.1 Standard equipment

Hydraulic operations
Correct the hydraulic oil level.
Steering
Test the tiller return function.

1.1.1.2 Optional equipment

Lead-acid battery, international

Power supply
Correct the battery acid level using demineralised water.

Lead-acid battery

Power supply
Correct the battery acid level using demineralised water.

1.1.2 Inspection contents

1.1.2.1 Standard equipment

The following points must be checked:

Electrical system
Warning and safety devices are in accordance with the operating instructions
Function of display and controls
The function of the emergency disconnect and for damage
Power supply
Battery and battery components for damage
The function and secure seating of the battery connector and for damage
Travel
The function of the collision safety switch and for damage
Wheels for wear and damage
Chassis/structure
Industrial truck for damage and leaks
Labels are legible, complete and plausible
Doors or covers for damage
Protective mechanism against trapping and shearing is present, secure, functions correctly and is free of dirt and damage
Hydraulic operations
The function of the hydraulic system
The forks or load handler for wear and damage

1.1.2.2 Optional equipment

The following points must be checked:

Standard on-board charger

Battery charger

The mains plug and mains cable for damage

On-board charger 35A

Battery charger

The mains plug and mains cable for damage

Lead-acid battery, international

Power supply

Battery and battery components for damage

Battery cable connections are secure

Lead-acid battery

Power supply

Battery cable connections are secure

1.2 Customer Service

In accordance with the EJE 222/ 225/ 225US service interval, to be performed every 1000 service hours, but at least once a year.

1.2.1 Maintenance contents

1.2.1.1 Standard equipment

Brakes
Test the brake with the tiller in the maximum vertical and horizontal positions.
Measure the air gap of the magnetic brake.

Electrical system
Test the contactors and/or relays.
Carry out a chassis insulation-resistance test.

Chassis/structure
Check that the panels and covers as well as mounting brackets are secure. Ensure they function correctly and are safe.

Hydraulic operations
Correct the hydraulic oil level.
Test the pressure relief valve.

Agreed services
Carry out a test run with the rated load or a customer-specific load.
Demonstration after maintenance.

Steering
Test the tiller return function.

1.2.1.2 Optional equipment

Standard on-board charger

Battery charger

Test the immobiliser on trucks with on-board chargers.
--

Carry out a potential measurement on the chassis while charging is in progress.

Data radio

System components

Clean the scanner and terminal.

Other inspections

Agreed services

Note: Tests on other options and special parts such as radio data and access modules (ISM) must be recorded in the test report.

On-board charger 35A

Battery charger

Test the immobiliser on trucks with on-board chargers.
--

Clean the fan.

Carry out a potential measurement on the chassis while charging is in progress.

Lead-acid battery, international

Power supply

Clean and grease the battery terminals.

Clean the battery.

Measure the acid density and battery voltage.

Correct the battery acid level using demineralised water.

Lead-acid battery

Power supply

Clean and grease the battery terminals.

Clean the battery.

Measure the acid density and battery voltage.

Correct the battery acid level using demineralised water.

1.2.2 Inspection contents

The following points must be checked:

1.2.2.1 Standard equipment

Electrical system
Cables and engine are secure and for damage
Warning and safety devices are in accordance with the operating instructions
Function of display and controls
The function of the emergency disconnect and for damage
Contactors and/or relays for wear and damage
The electric wiring for damage (insulation damage, connections) and the fuse ratings
Power supply
The function of the battery latch and battery attachment and for damage
The function and secure seating of the battery connector and for damage
Travel
Drivetrain bearings for wear and damage
Transmission for noise and leaks
Wheel bearings and attachment for wear and damage
Wheels for wear, damage and secure mounting
Chassis/structure
Industrial truck for damage and leaks
The secure seating of the chassis and screw connections and for damage
Labels are legible, complete and plausible
Protective mechanism against trapping and shearing is present, secure, functions correctly and is free of dirt and damage
Hydraulic operations
The function of the "hydraulic system" controls and for legibility, completeness and plausibility
The function of the lift mechanism and for wear and damage
The secure seating of the cylinders and piston rods and for leaks and damage
The function of the hydraulic system
The forks or load handler for wear and damage
Tie/plunger rods are uniformly adjusted and for wear and damage
the secure seating of the hoses, pipes and connections and for wear, leaks, damage, blisters and kinks
Steering
Lateral play of the tiller
The steering components for play and damage

1.2.2.2 Optional equipment

Standard on-board charger

Battery charger
The mains plug and mains cable for damage
The secure seating of the cables and electrical connections and for damage

Electrolyte circulation

Power supply
The function of the hose connections and pump

Aquamatik

Power supply
The function of the Aquamatik plug, hose connections and float and for leaks
The function of the flow indicator and for leaks

Lateral battery removal

Power supply
The function of the battery latch and battery attachment and for damage

Shock sensor / data recorder

Electrical system
The shock sensor/data recorder is secure and for damage

Data radio

System components
The function and secure seating of the scanner and terminal and for damage
Fuse ratings
The secure seating of the cables and for damage

Access module

Electrical system
Access module is secure and functions correctly and for damage

Entry skids/rollers

Hydraulic operations
The function of entry skids or entry rollers and for damage and wear

On-board charger 35A

Battery charger

The mains plug and mains cable for damage

The function of the fan and for damage
--

The secure seating of the cables and electrical connections and for damage
--

Hinged frame

Chassis/structure

The function and attachment of the folding frame and its stop and for damage
--

Lead-acid battery, international

Power supply

The secure seating of the battery, battery cables and cell connectors and for damage
--

The presence of safety labels are present and for damage
--

Lead-acid battery

Power supply

The secure seating of the battery, battery cables and cell connectors and for damage
--

1.2.3 Maintenance parts

The manufacturer recommends the replacement of the following maintenance parts at the specified intervals.

1.2.3.1 Standard equipment

maintenance part	service hours	months
Hydraulic oil	2000	12
Hydraulic system - breather filter	2000	12
Hydraulic oil filter	2000	12
Transmission oil	10000	

1.2.3.2 Optional equipment

Cold-store application

maintenance part	service hours	months
Hydraulic oil	1000	12
Hydraulic oil additive	1000	12
The transmission oil in cold-store application	10000	12

2 Maintenance Contents EJE 230/235

Issued on: 2019-12-12 08:00

2.1 Owner

To be performed every 50 service hours, but at least once a week.

2.1.1 Maintenance contents

2.1.1.1 Standard equipment

Hydraulic operations
Correct the hydraulic oil level.
Steering
Test the tiller return function.

2.1.1.2 Optional equipment

Lead-acid battery, international

Power supply
Correct the battery acid level using demineralised water.

Lead-acid battery

Power supply
Correct the battery acid level using demineralised water.

2.1.2 Inspection contents

2.1.2.1 Standard equipment

The following points must be checked:

Electrical system
Warning and safety devices are in accordance with the operating instructions
Function of display and controls
The function of the emergency disconnect and for damage
Power supply
Battery and battery components for damage
The function and secure seating of the battery connector and for damage
Travel
The function of the collision safety switch and for damage
Wheels for wear and damage
Chassis/structure
Industrial truck for damage and leaks
Labels are legible, complete and plausible
Doors or covers for damage
Protective mechanism against trapping and shearing is present, secure, functions correctly and is free of dirt and damage
Hydraulic operations
The function of the hydraulic system
The forks or load handler for wear and damage

2.1.2.2 Optional equipment

The following points must be checked:

Standard on-board charger

Battery charger

The mains plug and mains cable for damage

On-board charger 35A

Battery charger

The mains plug and mains cable for damage

Lead-acid battery, international

Power supply

Battery and battery components for damage

Battery cable connections are secure

Lead-acid battery

Power supply

Battery cable connections are secure

2.2 Customer Service

In accordance with the EJE 230/235 service interval, to be performed every 1000 service hours, but at least once a year.

2.2.1 Maintenance contents

2.2.1.1 Standard equipment

Brakes
Test the brake with the tiller in the maximum vertical and horizontal positions.
Electrical system
Test the contactors and/or relays.
Carry out a chassis insulation-resistance test.
Chassis/structure
Check that the panels and covers as well as mounting brackets are secure. Ensure they function correctly and are safe.
Hydraulic operations
Correct the hydraulic oil level.
Test the pressure relief valve.
Agreed services
Carry out a test run with the rated load or a customer-specific load.
Demonstration after maintenance.
Steering
Test the tiller return function.

2.2.1.2 Optional equipment

Standard on-board charger

Battery charger
Test the immobiliser on trucks with on-board chargers.
Carry out a potential measurement on the chassis while charging is in progress.

Data radio

System components
Clean the scanner and terminal.

Other inspections

Agreed services
Note: Tests on other options and special parts such as radio data and access modules (ISM) must be recorded in the test report.

On-board charger 35A

Battery charger
Test the immobiliser on trucks with on-board chargers.
Clean the fan.
Carry out a potential measurement on the chassis while charging is in progress.

Lead-acid battery, international

Power supply
Clean and grease the battery terminals.
Clean the battery.
Measure the acid density and battery voltage.
Correct the battery acid level using demineralised water.

Lead-acid battery

Power supply
Clean and grease the battery terminals.
Clean the battery.
Measure the acid density and battery voltage.
Correct the battery acid level using demineralised water.

2.2.2 Inspection contents

The following points must be checked:

2.2.2.1 Standard equipment

Electrical system
Cables and engine are secure and for damage
Warning and safety devices are in accordance with the operating instructions
Function of display and controls
The function of the emergency disconnect and for damage
Contactors and/or relays for wear and damage
The electric wiring for damage (insulation damage, connections) and the fuse ratings
Power supply
The function of the battery latch and battery attachment and for damage
The function and secure seating of the battery connector and for damage
Travel
Drivetrain bearings for wear and damage
Transmission for noise and leaks
Wheel bearings and attachment for wear and damage
Wheels for wear, damage and secure mounting
Chassis/structure
Industrial truck for damage and leaks
The secure seating of the chassis and screw connections and for damage
Labels are legible, complete and plausible
Protective mechanism against trapping and shearing is present, secure, functions correctly and is free of dirt and damage
Hydraulic operations
The function of the "hydraulic system" controls and for legibility, completeness and plausibility
The function of the lift mechanism and for wear and damage
The secure seating of the cylinders and piston rods and for leaks and damage
The function of the hydraulic system
The forks or load handler for wear and damage
Tie/plunger rods are uniformly adjusted and for wear and damage
the secure seating of the hoses, pipes and connections and for wear, leaks, damage, blisters and kinks
Steering
Lateral play of the tiller
The steering components for play and damage

2.2.2.2 Optional equipment

Standard on-board charger

Battery charger
The mains plug and mains cable for damage
The secure seating of the cables and electrical connections and for damage

Electrolyte circulation

Power supply
The function of the hose connections and pump

Aquamatik

Power supply
The function of the Aquamatik plug, hose connections and float and for leaks
The function of the flow indicator and for leaks

Lateral battery removal

Power supply
The function of the battery latch and battery attachment and for damage

Shock sensor / data recorder

Electrical system
The shock sensor/data recorder is secure and for damage

Data radio

System components
The function and secure seating of the scanner and terminal and for damage
Fuse ratings
The secure seating of the cables and for damage

Access module

Electrical system
Access module is secure and functions correctly and for damage

Entry skids/rollers

Hydraulic operations
The function of entry skids or entry rollers and for damage and wear

On-board charger 35A

Battery charger

The mains plug and mains cable for damage

The function of the fan and for damage
--

The secure seating of the cables and electrical connections and for damage
--

Hinged frame

Chassis/structure

The function and attachment of the folding frame and its stop and for damage
--

Lead-acid battery, international

Power supply

The secure seating of the battery, battery cables and cell connectors and for damage
--

The presence of safety labels are present and for damage
--

Lead-acid battery

Power supply

The secure seating of the battery, battery cables and cell connectors and for damage
--

2.2.3 Maintenance parts

The manufacturer recommends the replacement of the following maintenance parts at the specified intervals.

2.2.3.1 Standard equipment

maintenance part	service hours	months
Hydraulic oil	2000	12
Hydraulic system - breather filter	2000	12
Hydraulic oil filter	2000	12
Transmission oil	10000	

2.2.3.2 Optional equipment

Cold-store application

maintenance part	service hours	months
Hydraulic oil	1000	12
Hydraulic oil additive	1000	12
The transmission oil in cold-store application	10000	12