EFG 425-S30

08.16

Operating instructions

GB

51549157

03.18

EFG 425k
EFG 425ks
EFG 425
EFG 425s
EFG 430k
EFG 430ks
EFG 430
EFG 430s
EFG S30
EFG S30s

JUNGHEINRICH

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

NOTE

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 or be lifted by an attachment approved by the manufacturer.
The load must be fully raised, see page 133.

– Lifting and lowering loads.
– Transporting lowered loads over short distances.
– Do not travel with a raised load (>30 cm).
– Do not carry or lift passengers.
– Do push or pull load units.
– Occasional towing of trailer loads.
– When towing trailer loads the load must be secured on the trailer.
– The permissible trailer load must not be exceeded.

	Model	EFG			
		430k	**430**	**S30**	
		430ks	**430s**	**S30s**	
Q	Rated capacity (where C = 500 mm)[1)]	3000	3000	3000	kg
c	Load centre of gravity	500	500	600	mm
	Travel speed with / without load *)	16 / 17	16 / 17	16 / 17	km/h
		19 / 20	19 / 20	19 / 20	
	Lift speed with / without load	0.40 / 0.55	0.40 / 0.55	0.40 / 0.55	m/s
		0.43 / 0.60	0.43 / 0.60	0.43 / 0.60	
	Lowering speed with / without load	0.58	0.58	0.58	m/s
	Gradeability (30 min) with / without load *)	7 / 12	7 / 13	7 / 12	%
		9 / 15	9 / 15	8 / 14	
	Max. gradeability [2)] (5 min) with / without load	15 / 23	15 / 23	15 / 23	%
		17 / 25	18 / 26	17 / 25	
	Acceleration (10 m) with / without load *)	5.0 / 4.5	5.0 / 4.5	5.0 / 4.5	s
		4.5 / 4.0	4.5 / 4.0	4.5 / 4.0	
	Max. operating pressure *)	200	200	200	bar
	Oil flow for attachments	30	30	30	l/min

[1)] for vertical mast 310 ZT.

[2)] The values shown represent the maximum gradeability to overcome short differences in height and surface unevenness (surface edges). The truck must not operate on inclines of more than 15%.

3.9 Conditions of use

Ambient temperature

- operating at -20°C to +40°C
- for parking and charging +5°C to+40°C
- Cold store version in permanent use: -5°C to -20°C
- Tropical version in permanent use: +30°C to +50°C

➔ Special equipment and authorisation are required if the truck is to be used continually in conditions of extreme temperature or condensing air humidity fluctuations.

➔ The permissible operating conditions change if the truck is equipped with a lithium-ion battery (○), see the manufacturer's operating instructions.

3.10 Electrical Requirements

The manufacturer certifies compliance with the requirements for the design and manufacture of electrical equipment, according to EN 1175 "Industrial Truck Safety - Electrical Requirements", provided the truck is used according to its purpose.

C Transport and Commissioning

1 Transport

Transport can be carried out in two different ways, depending on the height of the mast and the local conditions.

– Vertically, with the mast assembled (for low heights)
– Vertically, with the mast dismantled (for large heights), all mechanical connections and hydraulic lines between the basic truck and the mast separated.

2 Truck laden

2.1 Centre of gravity of the truck

⚠ WARNING!

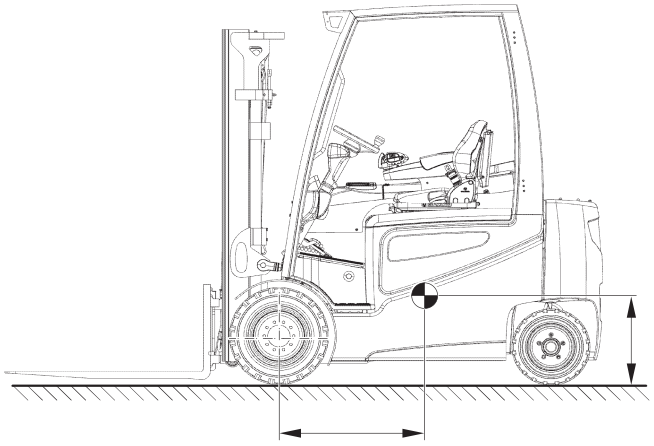
An altered centre of gravity can result in tipovers when cornering.

The overall centre of gravity can vary depending on the truck's equipment (especially the mast version).

For trucks without a mast the centre of gravity will move significantly in the direction of the counterweight.

▶Drive carefully and with modified speed to avoid tipping over.

The picture shows the approximate centre of gravity location.



3 Safety regulations for handling lithium-ion batteries

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

– Physical damage:
  This can occur if a battery falls or is deformed through pressure (e.g. truck forks penetrate the battery housing).
  Mechanical damage includes cracks, breakage, splinters or holes in the battery housing. This type of damage may be caused by a short circuit inside the battery, which may cause battery fire.
– Short circuits:
  These may be caused by connecting the two battery terminals (e.g. battery immersed in water)
– Temperature effects:
  High temperatures caused for example by sunlight or being stored in warm locations (e.g. near ovens) can cause battery fire.

3.1 Fire Hazard

⚠ WARNING!

Burning lithium ion battery cells can be hazardous

Physical damage, thermal effects or incorrect storage in the event of a defect can result in fire.
If the inside of lithium ion battery cells burn, the fire cannot be put out by extinguishing methods.

▶ Avoid contact with combustion products.

▶ Use protective equipment.

▶ Use carbon dioxide extinguishers (Co2) to cool the fire and reduce the chemical reaction.

▶ Use carbon dioxide extinguishers (Co2) to cool the area around the battery and prevent the fire from spreading.

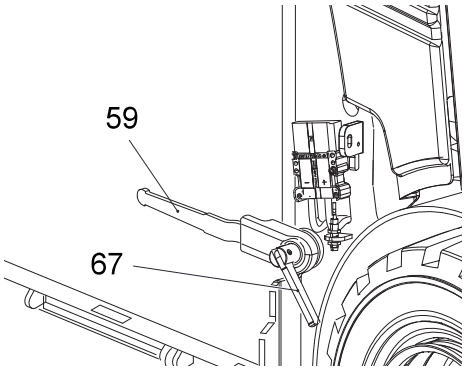
In order to avoid fire hazards, a safe place for storing batteries until the manufacturer's customer service department arrives on site must satisfy the following criteria:

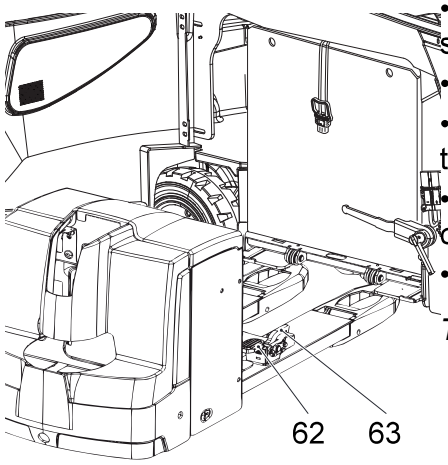
– Do not store in places often frequented by personnel.
– Do not store in places where valuable objects (e.g. cars) are stored.
– A carbon dioxide extinguisher (Co2) must be provided on site.
– There should not be any fire or smoke detectors in the vicinity in order to ensure that an automatic fire detection system is only activated in the event of actual danger (e.g. naked flames).
– Small amounts of discharge from a single 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 battery:

– Roofed outdoor position.
– Ventilated container.

- Close the battery lock (59).
- Close the catch (67) and position it in the green area.





•Undo the safety catch (63).

•To do this press the pedals (62).

•Move the pallet truck away from the forklift truck.

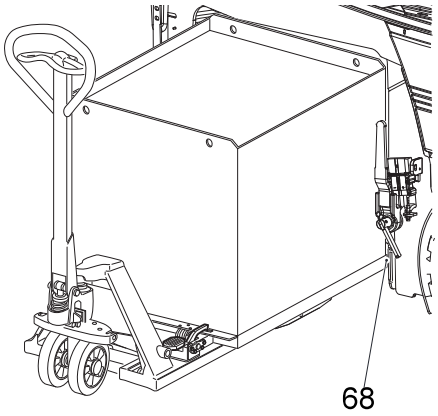
•Attach the battery connector to the truck connector.

•Close the battery door.

The battery is now assembled.

- Using the hand pallet truck, slowly remove the battery as far as the stop (68).

The battery is now removed for maintenance and can be checked.



Battery assembly is the reverse order.

⚠ WARNING!

After inserting the battery close the battery lock and then lower the pallet truck.

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, obligations and responsibilities

The operator 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.

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.

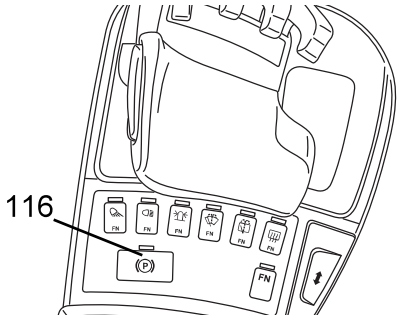
Button allocation in menu for managing codes or transponders (○)

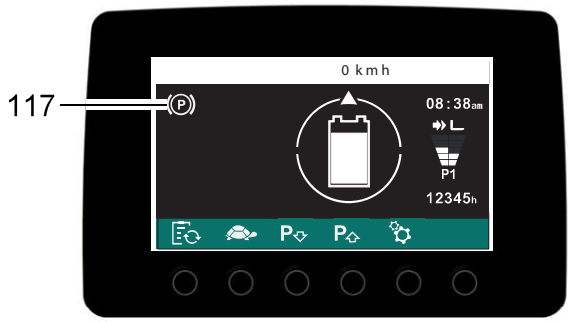
Symbol	Meaning
	Back: Cancels the current procedure and returns to the previous menu.
	Log-in history: Displays the chronological log-in history
	Change set-up code: To change the set-up code and to activate the keypad or the transponder reader.
	Edit access code / transponder: To add or delete access codes or transponders

Button allocation in the submenus

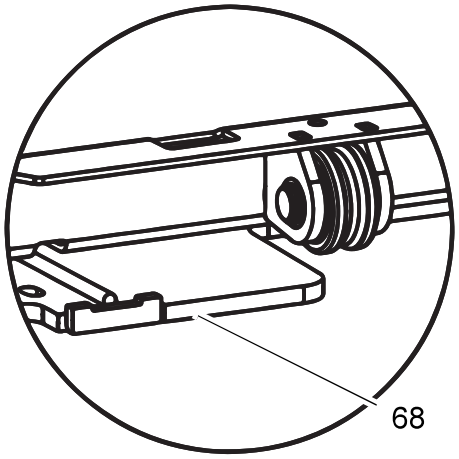
Symbol	Meaning
	Selection up: To select access codes or transponders, to scroll back during the log-in process
	Selection down: To select access codes or transponders, to scroll forward during the log-in process
	Delete: To delete access codes selected
	Add: To add a new access code
	Confirm: To confirm an entry or a transponder code

- Test the seat switch: when the driver's seat is vacated, it should not be possible to activate the hydraulic functions.
- Test the restraint system (○).
- Test the driveCONTROL (○).
  - Raise the fork carriage without load beyond the reference point on the mast. The slow travel symbol lights up on the display.
  - Slowly apply the accelerator pedal on a clear route with good visibility. The maximum speed should be reduced to walking pace (3 km/h).
- Test the hydraulic functions for lifting/lowering, tilting and, if applicable, the attachment.
- Check the accelerator pedal can move freely while the parking brake is applied (116 and 117 lit red simultaneously) and the truck is idling, by pressing it several times.





- Visually inspect the battery attachment and cable connections.
- Check the battery latch is present and working.
- On trucks with lateral battery removal, check the left and right stops (68) in the battery compartment for damage.
- Check the fluid level of the windscreen washing system, see page 117.
- Check the load damper hydraulic accumulator for damage (○).



⚠ DANGER!

A faulty seat belt can cause injury

Using a faulty seat belt can result in injury.

▶ Only operate the truck with the seat belt intact. A faulty seat belt should be replaced immediately.

▶ The truck must remain decommissioned until a functional seat belt has been fitted.

Checking the seat belt

Procedure

- Check the attachment points for wear and damage.
- Check the cover for damage.
- Pull the belt out fully from the retractor and check for damage (loose seams, fraying and nicks).
- Test the belt buckle and make sure the belt returns correctly into the retractor.

Check the automatic locking system

Procedure

- Park the truck on a level surface.
- Jerk the seat belt out suddenly.

The locking system should prevent the belt from coming out.

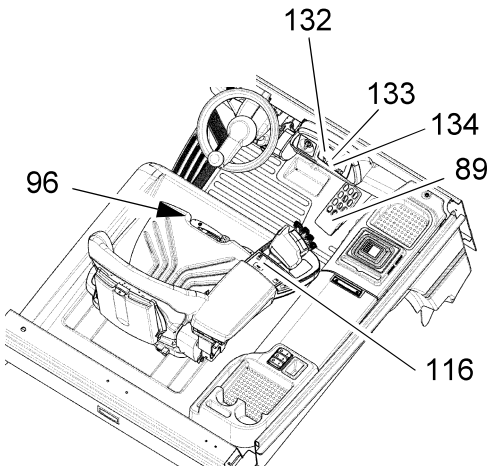
The seat belt has now been checked.

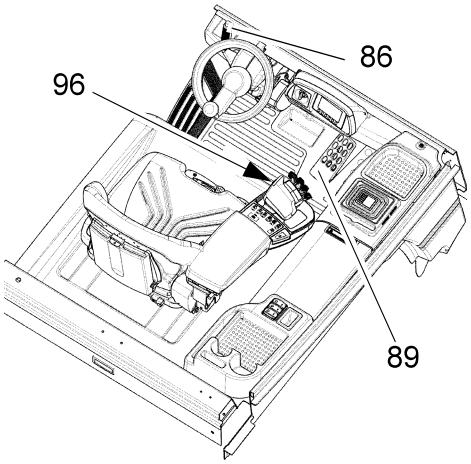
4.7 Travel

⚠ WARNING!

Improper travel can result in accidents

- ▶ Do not get up from the driver's seat during travel.
- ▶ Do not drive the truck unless your are wearing a seat belt and the panels and doors are properly locked.
- ▶ Do not lean out of the truck while travelling.
- ▶ Make sure that the travel area is clear.
- ▶ Adapt your travel speed to the route conditions in the work area and the load.
- ▶ Tilt the mast back and raise the fork carriage approx. 200 mm.
- ▶ Make sure you have sufficient visibility when reversing.





Travel

Requirements

– Truck prepared for operation, see page 117.

Procedure

- Release the parking brake, to do this press the parking brake lever (86) or press the parking brake button (116) (○).
- Select the travel direction with the travel direction switch (96).
- Select the travel speed if necessary, to do this press the slow travel button (132) or the program selector (133/134) (○).
- Raise the load handler approx. 200 mm.
- Tilt the mast back.
- Apply the accelerator pedal (89). The travel speed is governed by the accelerator (89).

The truck travels in the direction selected.

4.10 Adjusting the forks

⚠ WARNING!

Unsecured and incorrectly adjusted forks can cause accidents

Make sure that the fork retaining mechanisms (115) are fitted before adjusting the forks. Depending on the fork carriage, the fork-retaining mechanism (115) will be either via retaining bolts (85 Nm) or fixed stops.

▶ Adjust both forks so that they are equidistant from the outside edges of the fork carriage.

▶ Engage the locking pin in a groove to prevent the forks from moving accidentally.

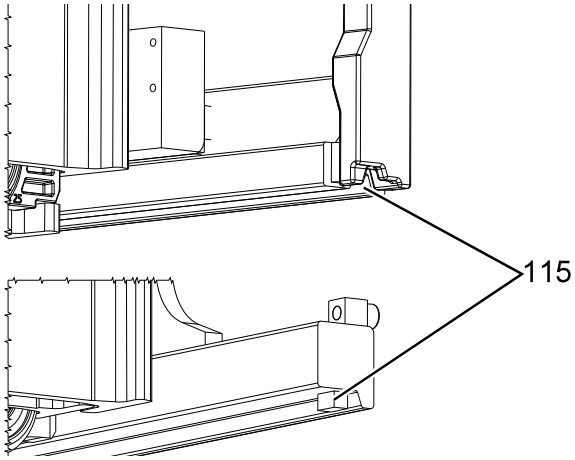
▶ The load centre must lie centrally between the forks.

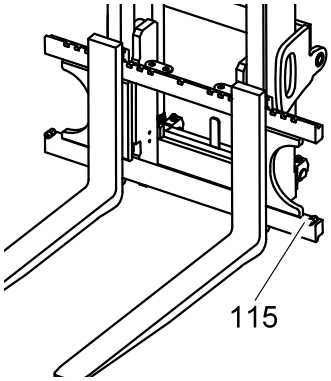
⚠ WARNING!

Trapping hazard

There is a trapping hazard when you perform this operation.

▶ Wear work gloves and safety shoes.

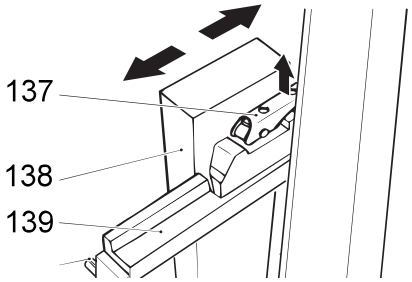




Adjusting the forks

Requirements

– Park the truck securely, see page 119.



Procedure

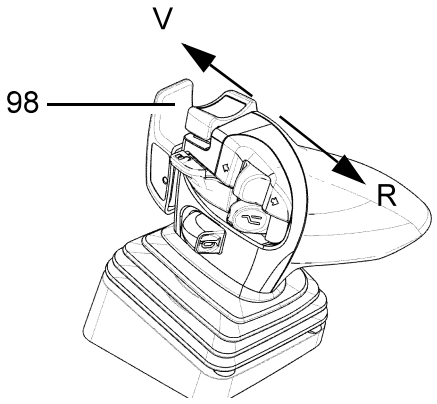
- Lift up the locking lever (137).
- Push the forks (138) into the correct position on the fork carriage (139).

To lift the load securely, the forks (138) must be spread as far apart as possible and positioned centrally with respect to the fork carriage. The load centre must lie centrally between the forks (138).

- Push the locking lever down (137) and move the forks until the locking pin engages in a slot.

The forks are now adjusted.

Positioning the forks with an integrated fork positioner (option)



⚠ CAUTION!

Do not use the fork positioner to clamp loads.

Requirements

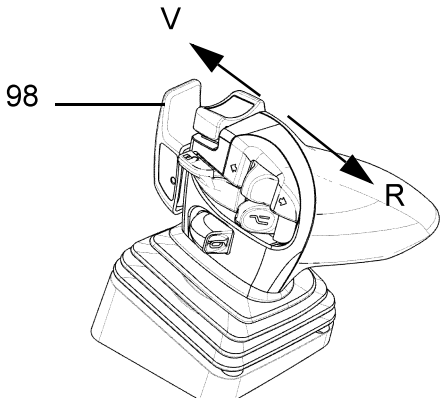
– Truck prepared for operation, see page 117.

Procedure

- Press the acknowledgement key (100) and then within 2 seconds push the fork positioner lever (98) in direction V to move the forks apart.
- Press the acknowledgement key (100) and then within 2 seconds pull the fork positioner lever (98) in direction R to bring the forks together.

The forks are now positioned.

Synchronising the forks on an integrated fork positioner (optional equipment)



Requirements

– Truck prepared for operation, see page 117.
– The fork tines are no longer aligned.

Procedure

- Press the acknowledgement key (100) and then within 2 seconds push the fork positioner lever (98) in direction V to move the forks apart as far as the stop.
- Press the acknowledgement key (100) and then within 2 seconds push the fork positioner lever (98) in direction R to move the forks together up to the stop.

The fork tines are now synchronised.

➔ When the limit position for the operation has been reached (there will be a noise from the pressure relief valve) release the lever. The lever will revert automatically to neutral.

4.16 Operating additional attachments for the Multi Pilot

⚠ WARNING!

Incorrect symbols can cause accidents

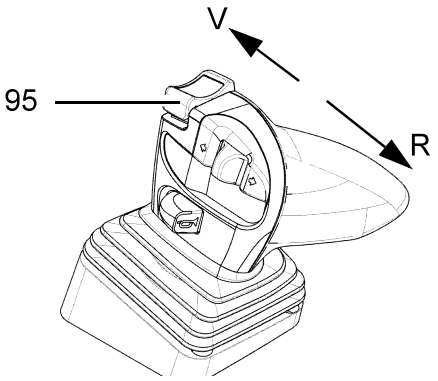
Symbols on controls that do not depict the function of the attachments can cause accidents.

▶ Mark the controls with symbols that indicate their function.

▶ Specify the attachments' direction of movement in accordance with ISO 3691-1 so that they match the controls' direction of movement.

4.16.1 Multi Pilot with control of ZH1 hydraulic port

Depending on the attachments used, the (95) button is assigned the function of the attachment. Unused levers have no function. For connections see page 155.



Procedure

- Operating hydraulic port ZH1:
  Press the (95) button to the left or right.

The attachment performs its operation.

6.2 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 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.

6.3 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.

6.5.4 Adding a new access code

Requirements

– The truck is switched on, see page 169.

Procedure

- Press the key below the "Settings" symbol (145).
- Press the key below the "Edit access code" symbol (151).

  The set-up code is requested.

- Enter the set-up code using the keypad (142).

  All access codes are shown on the display unit (6).

- Press the key below the "Add" symbol (152).
- Enter a new access code using the keypad (142).

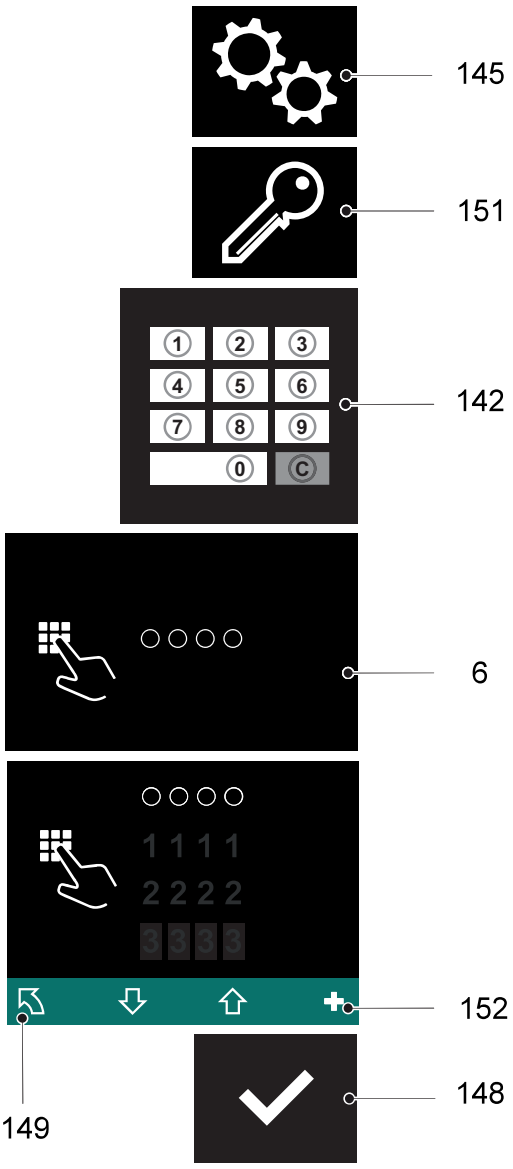
  The new access code must be different from existing access codes.
- Press the key below the "Confirm" symbol (148).

  The new access code is shown on the display unit (6).

If the new access code has been entered incorrectly, delete it, see page 172, and enter the correct access code.

- To return to the main menu, press the key below the "Back" symbol (149).

A new access code has been added.



6.8 Steel cab

For trucks fitted with a steel cabin, both doors can be closed.

⚠ CAUTION!

Open doors can result in accidents

- ▶ Do not travel with an open door. When opening the door make sure there is nobody in the door's swing range.
- ▶ Always close the door tightly and make sure it is locked.
- ▶ Closing the door does not release the driver from his responsibility to wear a seat belt, see page 110.

⚠ CAUTION!

Cabin doors can pose a trapping hazard

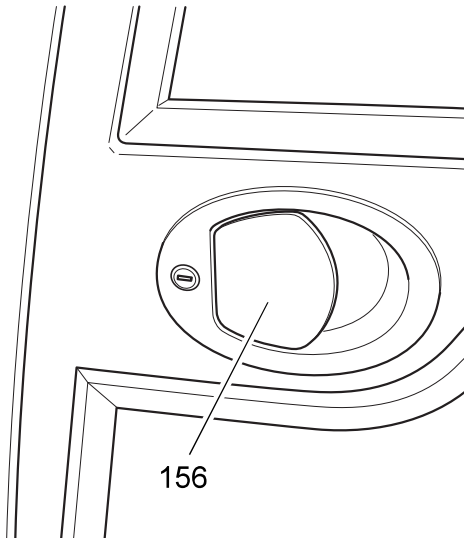
You can trap hands or feet when the cab doors are opened and closed.

- ▶ Make sure there is nothing between the cab chassis / leg well and the cab doors when the doors are opened and closed.

Opening and closing the door

Procedure

- To unlock the cabin door turn the key anti-clockwise.
- To lock the cabin door turn the key clockwise.
- To open the cabin door, unlock the door and pull out the handle (156).



6.20 Load Weighing

Change over via the FN button in the armrest to activate the load weighing display. A load measurement is performed for each lifting and lowering operation that lasts longer than 1 second.
The reading appears at the top left of the display.
A tare can be set if requested by the customer.
Contact the manufacturer's customer service department for this specific task.

Symbol	Meaning
	Load weigh

6.21 Tilt Control

The Tilt Control function is activated when a pre-configured load is raised, and is used to compensate the simultaneous forward tilt of the truck and backward tilt of the mast.

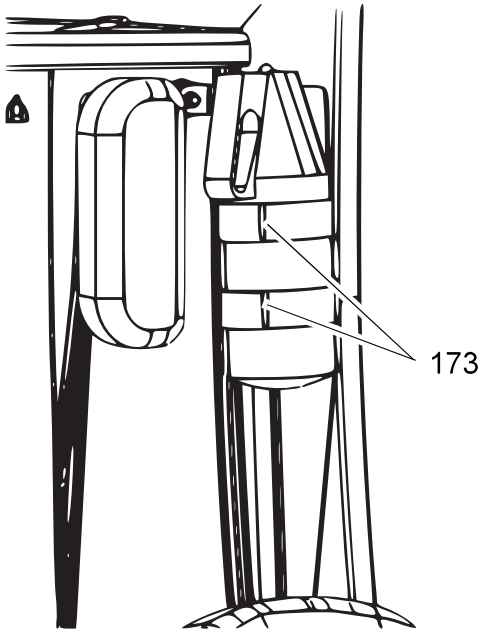
Symbol	Meaning
	Tilt Control

6.29 Fire extinguisher

Procedure

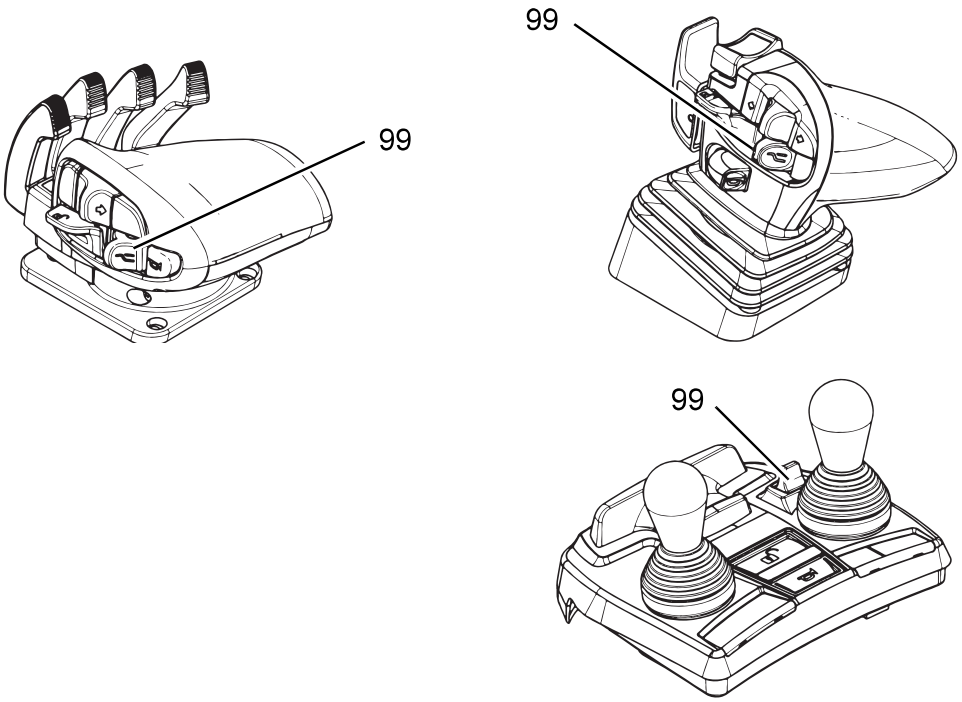
- Open the fasteners (173).
- Pull the fire extinguish out of its bracket.

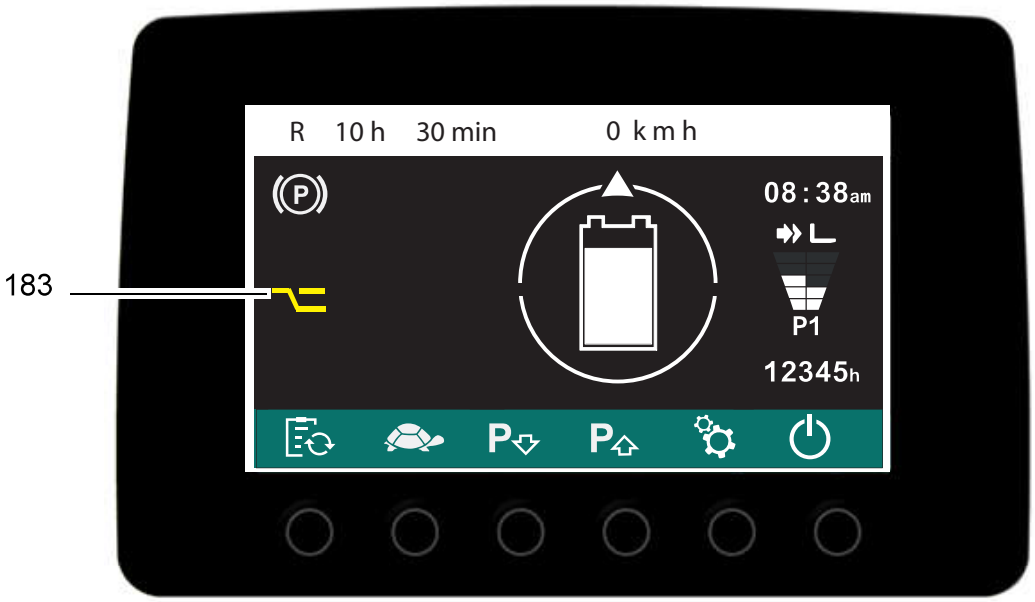
To operate, refer to the illustrations on the fire extinguisher.



Changeover level

The changeover level is activated and deactivated via the button (99) on the control. The symbol for the active changeover level (183) is shown in yellow on the display.





6.38.3 General

⚠ WARNING!

Risk of collision when using the truck terminal

Use of the truck terminal, keyboard or barcode scanner during travel or hydraulic operations can lead to collisions with persons and objects.

- ▶ Do not use the truck terminal, keyboard or barcode scanner during travel or hydraulic operations.
- ▶ Adapt the brackets for the truck terminal, keyboard and barcode scanner to the operator such that injury during normal operation is ruled out.
- ▶ Adjust the operator's seat such that impact with the truck terminal, keyboard and barcode scanner during normal operation is ruled out.

⚠ WARNING!

Risk of collision due to accidental load movement

Use of the barcode scanner can give rise to accidental actuation of the controls, such as the soloPILOT, multiPILOT and duoPILOT, due to the free length of the device's spiral cable. Accidental actuation of controls can lead to load movement and collisions with persons and objects.

- ▶ Increased attention required when using the barcode scanner.
- ▶ Avoid contact with controls when using the barcode scanner.
- ▶ In the event of accidental load movement when using the barcode scanner, press the emergency disconnect button.
- ▶ Store the barcode scanner in the designated support only.
- ▶ Do not use the barcode scanner if the free length of the spiral cable exceeds 900 mm.

7.3 Emergency lowering

The load handler can be lowered manually if a fault occurs in the hydraulic controller.

⚠ WARNING!

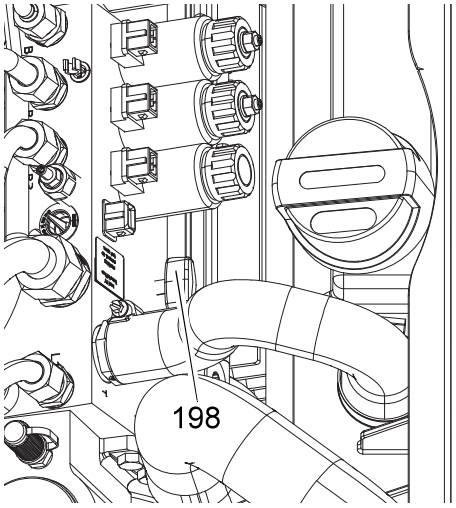
Load handler emergency lowering

- ▶ Instruct other people to move out of the hazardous area of the truck during emergency lowering.
- ▶ Never step or stand underneath a raised load handler.
- ▶ Only operate the emergency lowering valve when standing next to the truck.
- ▶ When the load handler is in the racking, emergency lowering is not permitted.
- ▶ 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.

Mast emergency lowering

Requirements

– Load handler is not in the rack.
– Turn the emergency disconnect switch and key switch off.
– Disconnect the battery.
– Remove the floor plate by undoing the floor plate mounting screws.



Procedure

- Slowly turn the emergency lowering valve (198); the mast and load handler will lower.
- Turn the emergency lowering valve (198) in the opposite direction as far as the stop; the lowering process stops.

The mast is now lowered.

⚠ WARNING!

Only return the truck to service when you have identified and rectified the fault.

3.3 Consumables

Code	Order no.	Quantity	Volume	Description	Used for
A	51 132 827 *	5 l	30 l	Jungheinrich hydraulic oil[1)]	Hydraulic system
	50 429 647	20 l		Renolin 22[2)] HLPD	
	51 037 497	5 l		Renolin 22[2)] HLPD	
	51 082 888 *	5 l		Plantosyn 46 HVI (BIO hydraulic oil)	
	50 124 051	5 l		HV 68[3)]	
E	14 038 650	400 g		Lubrication grease KP 2 K	Rear wheel bearing/steer axle
	29 201 430	1 kg			
G	29 201 280	400 ml		Chain spray	Chains
N	51 289 983	1 l	1.2 l right-hand travel direction/ 1.7 l left-hand travel direction	Fuchs Titan UTTO TO-4/SAE 50	Transmission
	51 295 261	5 l		Fuchs Titan UTTO TO-4/SAE 50	
	51 221 702	50 l		Fuchs Titan UTTO TO-4/SAE 50	
L	51 132 827 *	5 l	2.5 l	Jungheinrich hydraulic oil[1)]	Electric steering
	51 037 497	5 l		Renolin 22[2)] HLPD	
	50 124 051	5 l		HV 68[3)]	
	51 082 888 *	5 l		Plantosyn 46 HVI (BIO hydraulic oil)	

*The trucks are factory-equipped with a special manufacturer's hydraulic oil (the Jungheinrich hydraulic oil with a blue colouration) or the Plantosyn 46 HVI bio hydraulic oil. This special hydraulic oil can only be obtained from the manufacturer's customer service department. The use of named alternative hydraulic oils is not prohibited, but may lead to a decline in functionality. This hydraulic oil may be mixed with one of the named alternative hydraulic oils.

[1)] Applicable for temperatures -5/+40°C

[2)] Applicable for temperatures -20/-5°C

⚠ WARNING!

Industrial trucks are factory-equipped with "HLP D22" hydraulic oil or "Plantohyd 22 S" BIO hydraulic oil.
You cannot change from "Plantohyd 22 S" BIO hydraulic oil to the manufacturer's hydraulic oil. The same applies to changing from the manufacturer's hydraulic oil to "Plantohyd 22 S" bio hydraulic oil.
Do not mix the Plantohyd 22 S bio hydraulic oil with the manufacturer's hydraulic oil or one of the named alternative hydraulic oils.

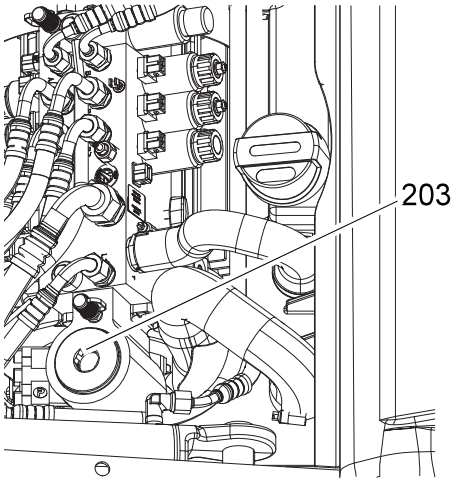
[3)] Applicable for temperatures +30/+50°C

4.6.2 Replacing the hydraulic oil filter

Replacing the oil filter

Requirements

– Park the truck on a level surface.
– Prepare the truck for maintenance and repair work (see page 243).



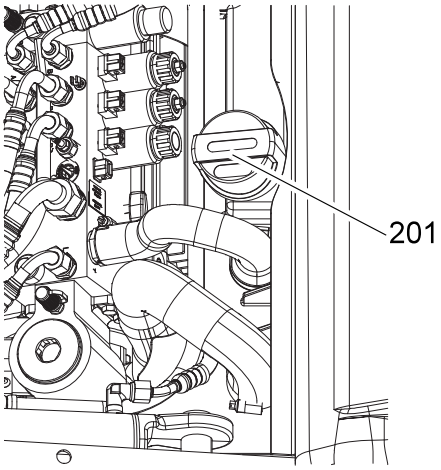
Procedure

- Unscrew the hydraulic oil filter cap (203). The filter element is located on the cap.
- Replace the filter insert; if the O ring is damaged it will also need to be replaced. Apply a thin layer of oil to the O ring on assembly.
- Refit the cap with the new filter element in place.

4.6.3 Replacing the ventilation/discharge filter

Requirements

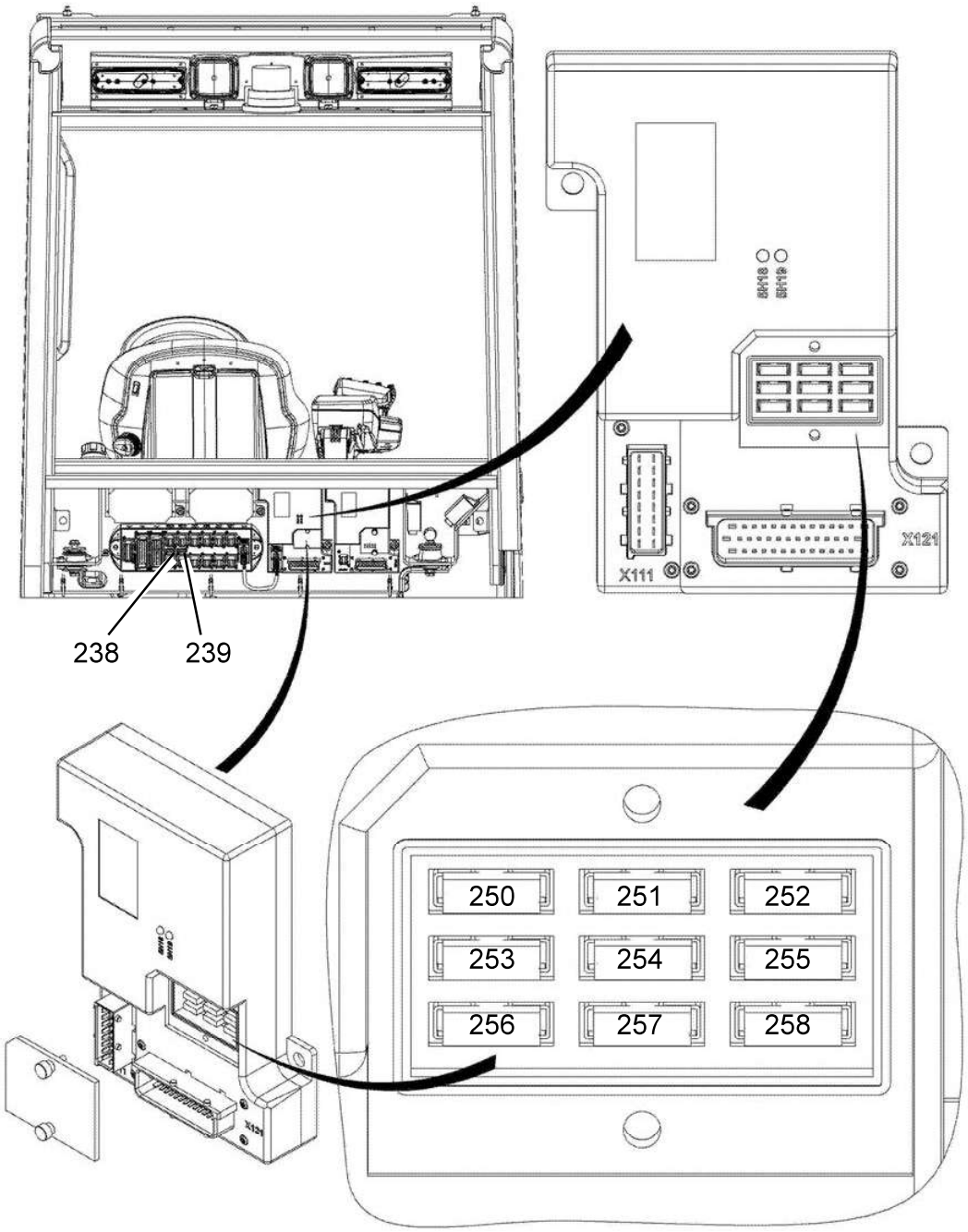
– Park the truck on a level surface.
– Prepare the truck for maintenance and repairs (see page 243).
– Remove the floor plate by undoing the floor plate mounting screws.



Procedure

- Remove the hydraulic reservoir cover.
- Attach the breather filter (201).
- Replace the breather filter.

Collect any spilled hydraulic oil. Dispose of the hydraulic oil and hydraulic oil filter and fuel in accordance with environmental regulations.


238
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X121
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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.

NOTE

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.

During the truck run-in period, after approx. 100 service hours, the operating company must check the wheel nuts/bolts and re-tighten if necessary.

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.