



OPERATOR'S MANUAL

Original

En (English)



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1 INTRODUCTION

1 INTRODUCTION

This manual illustrates the correct methods of operating and maintaining your forklift truck, as well as describing the recommended daily checks and periodic inspection procedures. Accordingly, be sure to read through this manual carefully even though you may already be familiar with our forklift trucks, as it contains information specific to this particular series.

This manual is based on the specifications of a standard truck. For information on other truck versions, contact the manufacturer's service centre. **In addition to this manual, be sure to read the separate publication entitled "Manual for Safe Operation".**

The manufacturer reserves the right to make changes or updates to the specifications in this manual, without notice and without incurring any liability. The illustrations in the publication may differ from the actual design.

(OPT) in this manual denotes optional equipment.



2 BEFORE USE

2.1 General recommendations

Read through this Manual and the Manual for Safe Operation in their entirety. This will provide a complete understanding of how the forklift truck works and ensure it is used properly and safely. Running the truck correctly will improve its performance and extend its service life. Drive with special caution to enable complete familiarization with the new truck. In addition to the standard operating procedures, pay particular attention to the following aspects of safety.

Acquire a thorough knowledge of the forklift truck. Be sure to gain a thorough knowledge of operation and components, safety devices, attachments, operating limits and precautionary measures. Read the warning labels affixed to the truck carefully.

Learn all aspects of safe driving and management of safety issues. It is vital to understand and observe the rules governing traffic in the work area. Find out from the supervisor or department manager if there are special precautionary measures required.

Wear suitable clothing when operating the truck. Unsuitable clothing may interfere with smooth operation of the truck and cause an unexpected accident.

Make the usual checks before each shift and carry out periodic maintenance. This will prevent unexpected malfunctions, improve efficiency, reduce costs and ensure safe operating conditions are maintained.

Use only the recommended lubricants. Low-grade lubricants will shorten the service life of the truck.

Check the centre of gravity and the load capacity of the truck. Avoid excessive or unevenly balanced loads. Overloading or uneven loading is dangerous. If the centre of gravity is shifted toward the front, even though the load is below the maximum limit, reduce the weight of the load as indicated on the identification data plate.

Never attempt to drive the truck with a load at a height greater than that specified. Driving with a load elevated beyond the specified height may cause the truck to tip over due to the centre of gravity being higher. Refer to the Manual for directions on safe use.

Do not tilt the mast forward when the forks are raised with a load. At worst, this operation could cause the truck to tip over due to loss of stability.

Exercise due care when using the truck.

Keep well clear of exposed power lines. Be certain of where inside and outside power lines are routed and keep a safe distance from them.

If any unusual noises are heard or anything out of the ordinary noticed, stop immediately, inspect the truck and have it repaired if necessary.

2.2 Recommendations for electric trucks

When washing the truck, be careful not to splash water directly on the motor or electrical components. If the motor or electrical parts are splashed directly with water, the forklift truck may malfunction or break down. If the truck is in such a state that washing becomes unavoidable, cover electrical parts with a panel of insulating material so as to prevent them getting wet.

Do not make any modifications to the electrical circuit. Any attempt to do so may affect the operation of the precision devices built into the battery-operated forklift truck, causing a malfunction or accident. If modifications become necessary, contact the manufacturer's service centre.

For vehicles equipped with non-marking tyres, a static strap should preferably be fitted.

Cold store models (OPT). The continuous duty limit for cold store models in a refrigerated enclosure is 30 minutes, which must be followed by an interval of 30 minutes at ambient temperature before the truck returns to the cold environment. The minimum ambient operating



2 BEFORE USE

temperature is -28°C . To avoid probable breakdown of the truck, make certain this minimum limit is not exceeded.

Do not let the battery run down completely. Always check the condition of the battery.

Keep naked flames away during the battery charge procedure. Combustible gas is produced during charging. Charge in a well-ventilated open area, away from naked flames.

If thunder is heard in the distance, stop recharging the battery and unplug the charger cable. If thunder is heard overhead, do not touch the plug or the cable as these could deliver an electric shock if lightning were to strike nearby. It is strongly advisable to wire lightning conductors or voltage limiters into the electrical circuit in locations where thunderstorms are commonplace.



3 USE OF THE TRUCK

3.1 General Indications

When driving the truck, keep an eye on alarm indicators and/or buzzers.

Do not remove or modify any component without seeking advice. If an inspection is considered necessary, contact the service centre.



3.2 Function

3.2.1 S.A.S. (System of Active Stability)

3.2.1.1 When used

⚠ WARNING

- Whenever you get on an SAS models, it is recommended to check the caution plate, which will inform you what functional features are provided on the truck. Do not use the truck before making certain that each of the features is operating correctly.
- Models equipped with twin wheels do not have an swing lock cylinder.
- When driving the truck, pay attention to any warning lights. Should an error code be indicated by a warning lamp or the display, park the truck at a safe location and ask a manufacturer's service centre for an inspection.
- The SAS, which is electronically controlled, may need to be initialized after completion of maintenance operations. Do not remove or modify any SAS features. Contact the manufacturer's service centre whenever an inspection is required.
- When washing the truck, carefully prevent water from spraying directly over the electronics (controller, sensor and switches) employed in the SAS.

The SAS models are equipped with a controller, sensors and various actuators. If any of these are found not to be operating normally, it will tell you that:

- Steering wheel knob is out-of-position may not be corrected.
- Functions such as automatic forks leveling control, front tilt angle control and rear tilt speed control may not be operated.
- The swing lock cylinder cannot be unlocked.



3 USE OF THE TRUCK

If any of the above-mentioned conditions occur, a buzzer will go off and an error code will be shown on the display. Move the truck into a safe position and contact the manufacturer's service centre for inspection and repair.

3.2.1.2 Functions

Rear axle swing lock

When the truck makes a turn on the spot, a centrifugal force will be generated in the lateral direction of the truck. In such an event, the device will operate so that the rear axle will be locked from pivoting to support the truck on four wheels. Thus, the stability of the truck will be enhanced in both right and left directions.

⚠ WARNING

Preventing rear axle oscillation increases the stability of the truck, but this does not mean that it cannot tip over. Use the truck according to the instructions given in this manual.

Forks levelling control

Tilting the mast forward while pressing the tilt lever switch will cause the load to automatically stop at its horizontal position (mast positioned vertically).

After stopping the forks in the horizontal position with the tilt lever switch pressed, you may need to tilt the forks further forward. To do this, return the tilt lever to the neutral position. Then, after releasing the switch, operate it again.

When the tilt lever is operated from the backward to the forward position with the switch depressed, the mast will perform as follows:

Lifting height	Without load	With load
High	The tilting stops with the forks levelled (mast vertical)	Not tilting forward
Reduced	The tilting stops with the forks levelled (mast vertical)	The tilting stops with the forks levelled (mast vertical) or up to 1° to the rear, depending on the load

⚠ WARNING

- If the mast is tilted forward with the load raised, pressing the fork leveling switch will stop the movement of the mast. This must be avoided because the truck could tip over.
- When the truck is carrying an attachment, do not allow the forks to assume the horizontal position automatically under a heavy load with the engine running at full speed. This is dangerous.
- Some specialty models to which a heavy attachment is mounted may not be equipped with the automatic fork leveling control. Check with the manufacturer's service centre in advance.

The mast will not move if it is tilted forward by pressing the tilt lever switch with a load at an elevated height (more than 2 m).

When the mast is tilted forward from its vertical position, it will not be possible to tilt forward even if the tilt lever switch is pressed.

Mast forward tilt control

Depending on the lift and the load, the angle at which the mast can be tilted forward is automatically controllable within a range of values illustrated below:

Lifting height	Light or no load	Intermediate load	Heavy load
High	Front tilt angle - no limitation	Front tilt angle - restricted from 1° to 5°	Forward tilt angle - restricted to 1°
Reduced	Front tilt angle - no limitation	Front tilt angle - no limitation	Front tilt angle - no limitation

⚠ WARNING

- If a load is tilted forward at a low lift height and then raised, there is a risk that the truck may tip forward when the load stops at a height having a tilt angle beyond the specified angle value. Always ensure the mast



is vertical when elevating the load and only tilt forward when the height required has been reached.

- Never attempt to settle the position of a load which is at a great height by tilting the mast forward, since the truck could tip over.
- Even with a load positioned within the allowable angle, never tilt the mast beyond its vertical position, or the truck may tip over, losing its stability forward or backward. Never tilt the mast forward with an elevated load.
- Some specialty models to which a heavy attachment is mounted may not be equipped with the mast forward tilt control. Check with the manufacturer's service centre in advance.
- Whenever an attachment is mounted to or replaced on a truck, ask the manufacturer's service centre for an inspection.
- If you alternate two or more removable attachments, the heaviest one should be used to carry out readings (SAS setting). Check with the manufacturer's service centre in advance.
- When mounting an attachment to a truck without forks, the attachment must be compatible with the model. Check with the manufacturer's service centre in advance.

When the forks are raised to maximum height, a high relief pressure may be generated in the lift cylinders. The high pressure causes the truck to judge that it has a high load even if there is no load. It follows that the mast will block forward tilting. In this case, lower the forks slightly (to release the pressure) and the mast may be tilted forward.

Mast rear tilt control

Depending on the lift and the load, the mast can be tilted backward and aligned via the fork levelling, within a range of values illustrated below:

Mast tilt speed control

Light load or no load	Intermediate or heavy load
The tilting stops with the forks levelled (mast vertical)	The tilting stops with the forks levelled (mast vertical) or up to 1° to the rear, depending on the load

At a high lift, the mast tilt speed is controlled (slowed down) regardless of load weight. Even if the lift height is modified during tilting from high to reduced, the tilt speed control remains active.

At a low lift height, the mast can be tilted backward at full speed regardless of load weight. If the tilt lever button is pressed and the mast tilted backward at a low lift, the backward tilt speed of the mast is controlled (slowed down) as long as the tilt lever knob button is turned on.

If the forks are raised from a low lift to a high lift height while the mast is tilting backward, the tilt speed control will remain active as long as the tilt lever button is pressed. The mast tilts backward at the maximum speed when the tilt lever button is released.

The tilt speed control is managed by the pump motor rpm. Never lift to a high lift height or perform tilt and attachment operations at the same time.

Key lock - lifting

The forks cannot be lowered with the key switch to OFF.

Steering wheel synchronization

If the steering wheel knob does not match the angle of the rear wheels, the problem will be automatically corrected while turning the steering wheel. In this way the knob is maintained in a constant position with respect to the rear wheels.



3 USE OF THE TRUCK



3.2.2 O.P.S. (Operator Presence Sensing)

The OPS System disables the drive and disallows load handling operations when the operator is not properly seated in the truck for more than two seconds. To reset the truck functions, the operator must sit correctly in the seat and place the traveling and material handling controls in neutral.

The OPS indicator will be shown on the display until the operator sits correctly in the seat.

3.2.2.1 OPS malfunction alarm

If an error occurs within the OPS system, an error code appears in the display to inform the operator that the sensing system could be out of order. Other possible abnormalities:

- The OPS indicator is not displayed when the operator vacates the seat.
- The OPS indicator does not disappear when the operator sits on the seat.

Park the truck and contact the service centre.

3.2.3 Auto-off function

All systems of the truck will shut down after a preset time (normally 10 minutes) if the operator vacates the driving position (with the parking brake applied).

3.2.4 Emergency stop button

The emergency stop button cuts off the power to the truck and blocks all functions. It must only be used in an emergency (accident or for preventive purposes).

WARNING

If the truck is moving, stop it using the braking devices and then use the emergency stop button. Using the emergency stop button when the truck is moving is only allowed if the braking devices malfunction.

3.2.5 Models equipped with clamp attachment

Trucks equipped with a clamp attachment (e.g. for paper rolls) must be fitted with one or more secondary controls designed to prevent unintentional release of the load. When a clamp attachment of any kind is used on a forklift truck, the operating control (e.g. hydraulic control valve lever) must comply with ISO3691-1 standard.

3.2.6 Cold store truck models

The continuous duty limit for cold store models in a refrigerated enclosure is 30 minutes, which must be followed by an interval of 30 minutes at ambient temperature before the truck returns to the cold environment. The minimum ambient operating temperature is -28 °C. To avoid probable breakdown of the truck, make certain this minimum limit is not exceeded.

3.3 Recycling/Discarding

The forklift truck uses a lead acid battery. Materials contained in batteries are harmful to the environment and to human health; accordingly, batteries should be returned to manufacturers for recycling. When the life cycle of the battery is at an end (replacement with new battery) or if the entire truck is to be scrapped, special attention must be given to environmental risks when arranging the disposal/recycling of batteries. Contact the manufacturer of the batteries for guidance on disposal and replacement.





4 LOAD AND STABILITY

The forklift truck exceeds the test requirements laid down by the reference directives and standards, assuring a sufficient degree of stability under normal working conditions with correct and reasonable use. The stability of the trucks is affected by the ground characteristics, tyres, general maintenance conditions and the type of use.

- (1) Load centre of gravity
- (2) Maximum lift height

4.1 Load centre of gravity

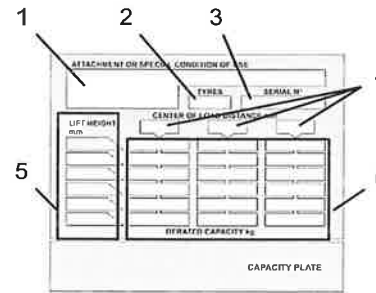
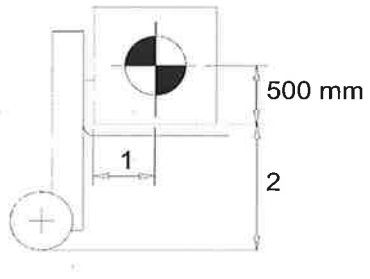
Indicates the distance of the centre of gravity of the load, measured horizontally on the front side of the fork heel and vertically on the upper side of the fork.

4.2 Maximum lift height

Maximum height is the highest position of the forks with the mast in the vertical position. The arrow symbol applied to the right mast element indicates the current lift height (available only for masts with max. lift height of more than 3300 mm).

4.3 Actual capacity

Indicates the maximum load the truck can carry, lift and stack at specified height, distance from centre of gravity and extension values (where applicable) during normal operation.

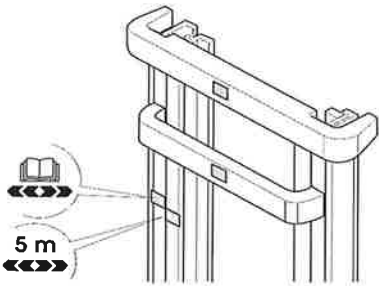


4.4 Actual capacity plate

- (1) Special model, Attachment model
- (2) Tires
- (3) Serial number
- (4) Load center
- (5) Lifting height
- (6) Actual capacity

⚠ WARNING

Fitting other attachments or changing the tyre type or other components, affects the other values shown. In this case the plate must be replaced.

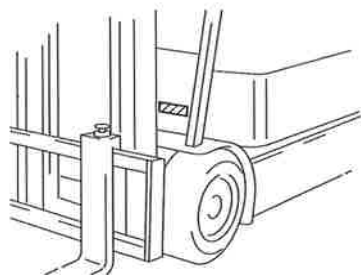


5 TRUCK IDENTIFICATION

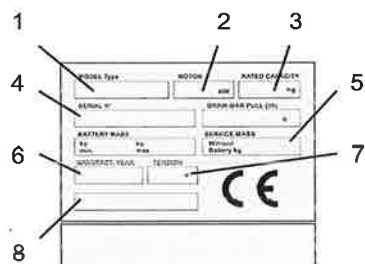
5 TRUCK IDENTIFICATION

5.1 Frame serial number

The frame serial number is located on the front crossbeam. This number is needed for reference purposes when contacting the service centre for information or advice regarding the truck.



5.2 Identification plate

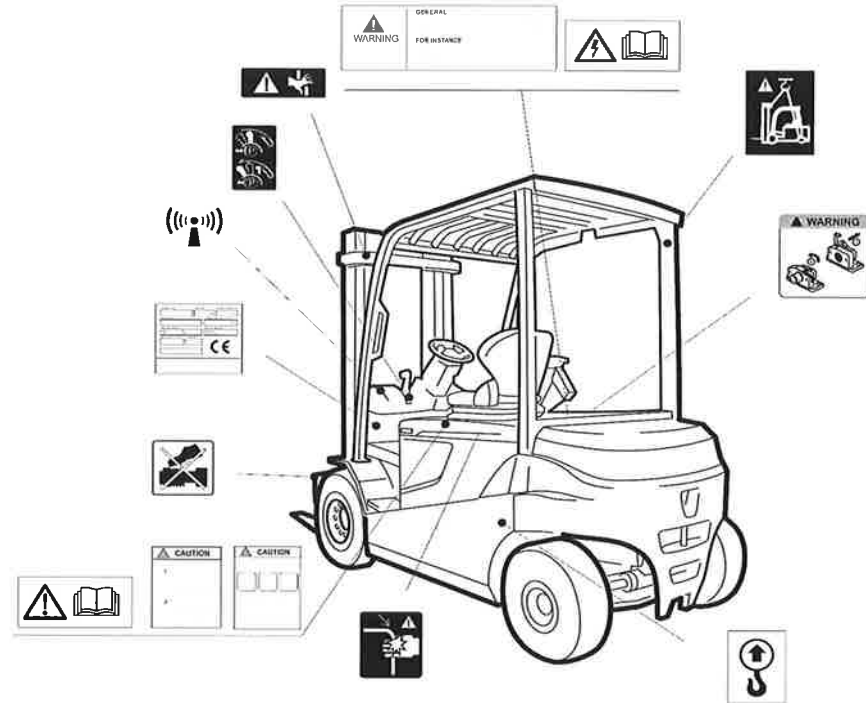
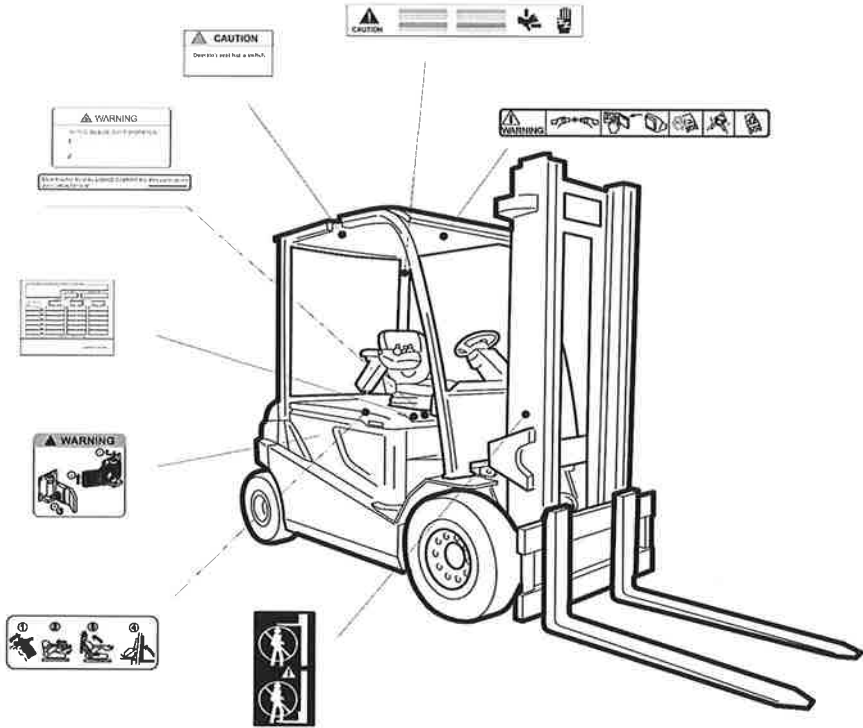


- (1) Model
- (2) Motor power
- (3) Rated capacity
- (4) Serial number
- (5) Weight (without battery)
- (6) Year of manufacture
- (7) Battery voltage
- (8) Notes



6 WARNING LABELS

6.1 Position



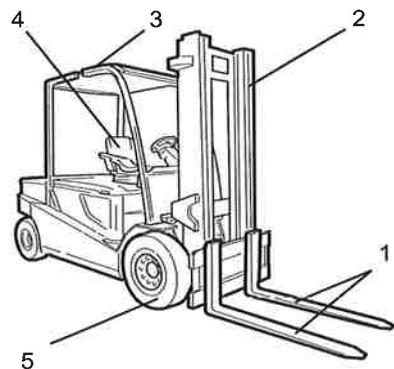
6.2 Meaning of symbol

WARNING! Read the Operator Manual carefully before using the lift truck.

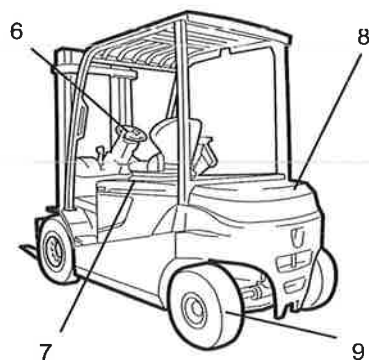
7 MAIN COMPONENTS

7 MAIN COMPONENTS

7.1 General view



- (1) Forks
- (2) Mast
- (3) Overhead guard
- (4) Operator's seat
- (5) Front wheel

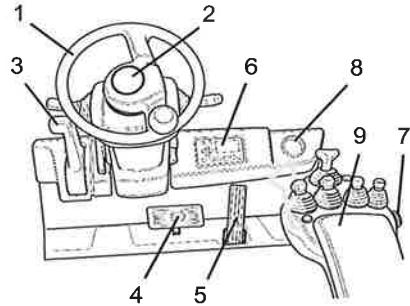


- (6) Steering wheel
- (7) Battery hood
- (8) Counterweight
- (9) Rear wheel

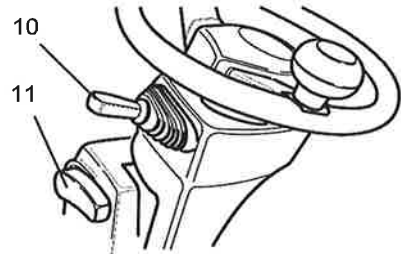


8 DRIVING CONTROLS AND INSTRUMENTS PANEL

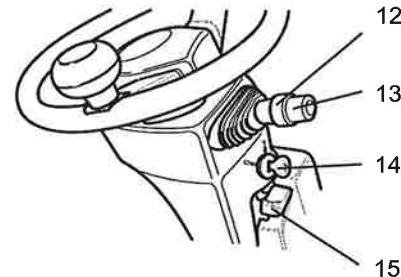
8.1 Controls



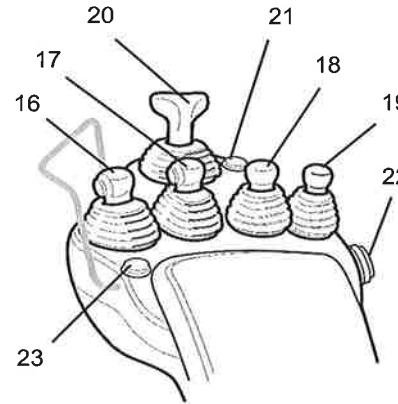
- (1) Steering wheel
- (2) Horn push
- (3) Parking brake lever
- (4) Brake pedal
- (5) Accelerator pedal
- (6) Multi-function display
- (7) Emergency stop button
- (8) Cup holder
- (9) Armrest



- (10) Travel direction lever (only with single accelerator pedal)
- (11) Steering column tilt adjustment lever



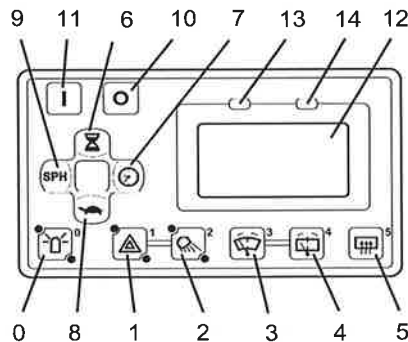
- (12) Lights switch (OPT)
- (13) Direction indicator switch (OPT)
- (14) Ignition key switch
- (15) Steering column release lever



- (16) Lift lever
- (17) Tilt lever
- (18) Lever for attachments
- (19) Lever for attachments (OPT)
- (20) Travel direction lever
- (21) Height limiter button
- (22) Emergency stop button
- (23) Horn push

9 INSTRUMENT PANEL FUNCTIONS

9 INSTRUMENT PANEL FUNCTIONS



9.1 Dashboard

9.1.1 Dashboard

Buttons:

- (0) Beacon (OPT)
- (1) Hazard warning lights (OPT)
- (2) Rear working light (OPT)
- (3) Front wind-screen wiper (OPT)
- (4) Rear wind-screen wiper (OPT)
- (5) Heated rear window (OPT)
- (6) Hour meter
- (7) Clock
- (8) Speed reduction
- (9) Power select
- (10) OUT button
- (11) OK button

Other:

- (12) Display
- (13) Alarm indicator (red Led)
- (14) Operation indicator (green Led)

9.1.2 Beacon

Press button (0) to switch on the beacon. The top Led will light up. Press again to switch off.



9.1.3 Hazard warning lights

Press button (1) to switch on the warning lights. Press again to switch off.



9.1.4 Rear working lights

Press button (2) to switch on the rear work lights. Press again to switch off.

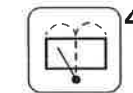


9.1.5 Front wiper

Press button (3) no. times

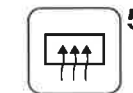
- (1) intermittent
- (2) high speed
- (3) OFF

Press button (3) and hold to activate the screen wash.



9.1.6 Rear windscreen wiper

Press button (4) to switch on the rear screen wiper. Press again to switch off. Press button (4) and hold to activate the screen wash.

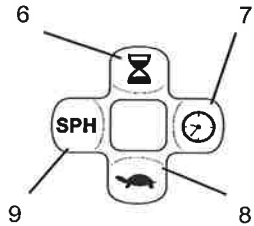


9.1.7 Heated rear window

Press button (5) to switch on the heater Press again to switch off. The heater switches off automatically after 15 minutes.

In the models with heated seat (OPT) this button enables a menu used to enable the heated rear window and the heated seat.

When the heated rear window or the heated seat are enabled, the relative indicator appears on the display. If both are enabled, the respective indicators appear in sequence.



9.1.8 Push button panel

9.1.8.1 Hour meter

Press button (6) to access the hour meter menu (see chapter: Operator Menu).

9.1.8.2 Clock

Press button (7) to toggle between time and date. Press button (7) and hold to access the clock menu (see chapter: Operator Menu).

9.1.8.3 Speed reduction

Where enabled, this setting limits the maximum travel speed and lifting speed of the truck. Press button (8) to switch on speed reduction. Press again to switch off. Press button (8) and hold to access the Travel Settings (see chapter: Operator Menu).

This setting can be enabled or disabled by the service centre.

9.1.8.4 Power mode selection

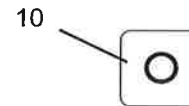
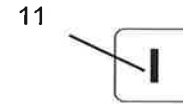
Press button (9) to change the travel / load handling power mode; this functionality remains disabled if the forklift truck is in motion.

S mode (eco): setting for maximum operating time.

P mode (balance): setting for optimal balance between work performance and operating time.

H mode (performance): setting for highest work performance, and both travel and load handling performs maximally.

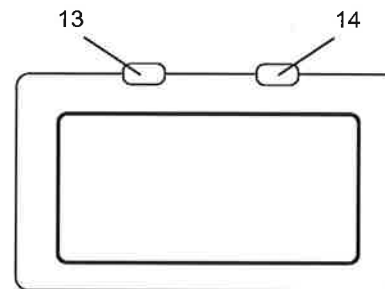
SPH (custom): setting defined by the operator using the Power Control menu



Press button (9) and hold to access the Power Control menu (see chapter: Operator Menu).

9.1.9 OK - OUT buttons

The OK (11) and OUT (10) buttons are used to surf the Operator menu.



9.1.10 Alarm indicator - Operation indicator

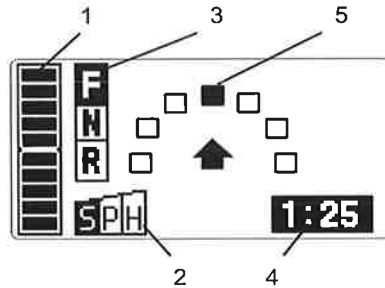
The red alarm indicator light (13) blinks when an error has occurred. The green operation indicator light (14) shows when the truck is switched on.

9.2 Display indicators

9.2.1 Main screen

The operating screen provides various information when the truck is running:

9 INSTRUMENT PANEL FUNCTIONS



- (1) battery charge level
- (2) power mode
- (3) travel direction
- (4) time/date
- (5) steering direction

Battery charge level and steering direction are displayed only if the forklift truck is stationary or moving at low speed.

9.2.1.1 Battery charge level

Starts blinking when the battery charge level falls below 20%. When the level drops to 10%, the alarm light (13) will also start to blink. Should the battery run down completely to 0%, a sound signal will be emitted by the buzzer. When the battery charge level falls to 20%, the travel speed and lift speed are reduced automatically, and will be reduced still further when the level falls to 10%.



9.2.1.2 Power mode

It shows the currently selected operating performance/material handling mode.



9.2.1.3 Travel direction

Displays the travel direction currently selected.

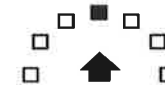
- F: forward
- N: neutral
- R: reverse



The travel direction is also shown by the steering indicator. An upwardly directed arrow indicates forward, and a downwardly directed arrow indicates reverse.

9.2.1.4 Time/date

Displays the time (hours and minutes) or the date (day and month).



9.2.1.5 Steering direction

The steering direction can be indicated in one of two ways, selected by the operator. The arrow indicates the selected travel direction.



9.2.2 Other indicators

Other indications may be displayed, some of which may be optional.

9.2.2.1 Speed reduction

Indicates that the speed reduction is active.



9.2.2.2 OPS - seat

The indicator lights up when the operator vacates the seat. The operation of the truck remains inhibited until the operator resumes a correct position on the seat.



9.2.2.3 Mast tilt

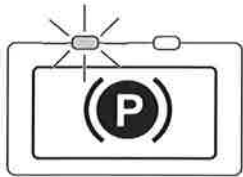
(OPT) - The up arrow indicates forward tilt, the down arrow indicates backward tilt. The tilt angle of the mast is displayed in unit of 1 degrees

9.3 Alarms

Certain errors are generated by incorrect operations that occur when starting the truck or operating the controls. These errors inhibit the operation of the truck temporarily, while at the same time causing an alarm icon to appear in the display. The majority of the errors in question are recoverable.

⚠ WARNING

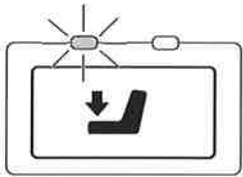
If an error message persists even after taking the remedial measures indicated below, contact the manufacturer's service centre.



9.3.1 Parking brake error

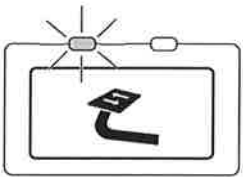
One of the following cases has occurred:

- Attempt made to set the truck in motion with the parking brake still applied. Release the brake and try again.
- The truck has been switched off with parking brake disengaged. Apply the parking brake.



9.3.2 OPS error

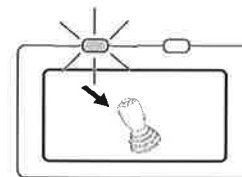
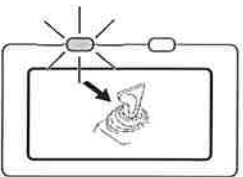
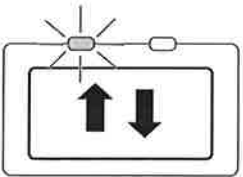
Attempt made to operate the truck with the operator not positioned correctly on the seat. Release the accelerator pedal, return all levers to their neutral positions, resume a correct position on the seat and try again.



9.3.3 Drive errors

One of the following cases has occurred:

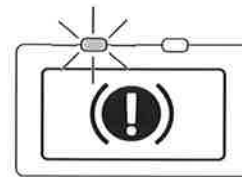
- Drive pedal pressed during the start-up sequence. Repeat the start-up sequence correctly.
- Truck vacated by the operator with the direction lever (if any) engaged. Shift the lever to neutral.
- Forward and reverse drive pedals (if any) depressed simultaneously. Press one pedal only.



9.3.4 Lift error

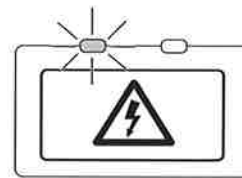
One of the following cases has occurred:

- Load handling controls operated during the start-up sequence. Repeat the start-up sequence correctly.
- Load handling controls operated with the operator not positioned correctly on the seat. Place the controls in neutral, resume a correct position on the seat and try again.



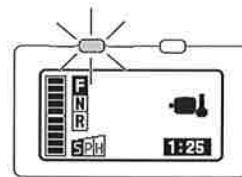
9.3.5 Brakes alarm

Level of brake fluid low: contact the manufacturer's service centre.



9.3.6 Voltage alarm

Residual voltage in the electrical controls of the truck. Wait until the icon disappears. In the meantime, do not open the battery hood.



9.3.7 Overheating alarm

Truck overheating: performance levels are reduced in order to protect systems and devices, and if operation is prolonged, the truck will shut down. An error code indicates which component is overheating.

- PM: pump motor
- DM: drive motor
- PC: pump control
- DC: drive control



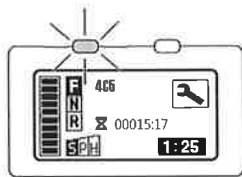
9 INSTRUMENT PANEL FUNCTIONS

NOTICE

It is recommended to discontinue use as soon as possible and to park the truck until the alarm goes off, preferably in a cool place, sheltered from direct sunlight.

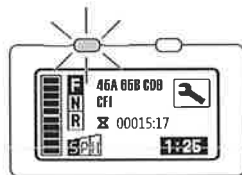
9.3.8 Side battery stopper alarm

Indicated with alphanumeric code 4C5. The side battery stopper (OPT) is not positioned correctly. (see chapter: Body parts - Battery hood).



9.3.9 Unrecoverable error

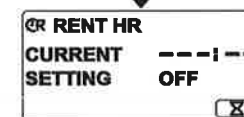
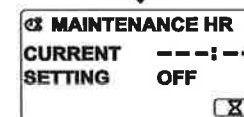
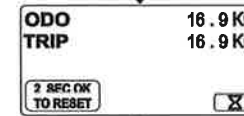
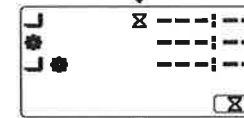
All other messages, indicated by an alphanumeric code. Switch the truck off and on again: if the message persists, contact the manufacturer's service centre.



9.4 Operator menu

9.4.1 Hour meter menu

Press and hold the hour meter button to access the Hour Meter Menu. Press the hour meter button to edit the sequential display.



Key switch ON hour meter (WORK)

Counts the time when the key switch is turned ON. (for models with PIN code entry system.)

Hour meter (LAP)

Counts the time when the key switch is turned ON. (for models with PIN code entry system.) Press OK and hold down the push button for more than two seconds to reset the hour meter.

Pump motor hour meter

Counts the time when the pump motor is enabled in the power mode for material handling operations (not for hydraulic steering).

Drive motor on time hour meter

Counts the time when the drive motors are enabled in power mode or regenerative brake mode.

Pump/drive motor on time hour meter

Counts the time when the drive or pump motor are enabled in power mode or regenerative brake mode (not for hydraulic steering).

Odometer (ODO)

Counts the distance covered.

Trip meter (TRIP)

It counts the travel distance, and it can be reset. Press OK and hold down the push button for more than two seconds to reset the hour meter.

Planned maintenance hour meter

When this setting is on, the preset interval for maintenance and the time since the last service are displayed.

Rental hour meter

When this setting is on, the preset rental interval and the time passed, or alternatively the rental end date, are displayed.



9.4.2 Clock menu

Press and hold down the clock button to access the Clock menu.

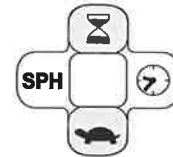
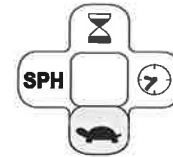
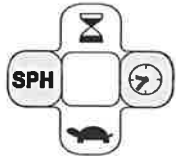
The clock and power selection buttons are used to increase or decrease the value. Press OK to confirm and proceed to the next value or press OUT to exit the menu.

The value sequence is:

Date: day/month/year (day of the week)

Display 12 h/ 24 h

Time: hours/minutes



9.4.3 Travel Settings menu

Hold down the speed reduction button to access the travel settings menu. The hour meter and speed reduction buttons are used to select the required element. Press OK to confirm or press OUT to exit the menu.

Low speed

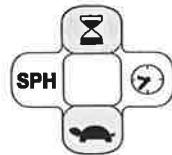
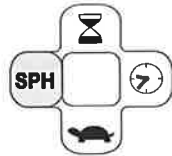
This menu is used to set the speed reduction mode. The clock and power selection buttons are used to increase or decrease the low speed value. Press OK to confirm or press OUT to exit the menu.

Speed alarm

This menu is used to enable an acoustic alarm to warn that the truck speed has exceeded a set value. The clock and power selection buttons are used to increase or decrease the speed value. Press OK to confirm or press OUT to exit the menu. If the speed is set to more than 50 km/h the low speed function is disabled: in this case "OFF" is displayed.



9 INSTRUMENT PANEL FUNCTIONS



9.4.4 Power control menu

This setting can be enabled or disabled by the service centre.

Hold down the power selection button to access the power control menu. This menu is used to set the SPH (custom) power mode for drive and lifting power. The hour meter and speed reduction buttons are used to select the required element. Press OK to confirm or press OUT to exit the menu.

Drive power

This menu is used to set the truck speed and acceleration.

Lift power

This menu is used to set the material handling speed and acceleration.

The procedure is that used for the drive and lift power settings. The clock and power selection buttons are used to increase or decrease the power value. Press OK to confirm or press OUT to exit the menu.



system checks the entered PIN. In case of a typing error, press the LOGOFF (2) button to reset the numbers entered.

If the PIN is correct, the buzzer emits a short sound, the green LED comes on and the truck starts, running according to the settings associated to the PIN code.

If the PIN is not correct, the buzzer emits a long sound and the truck does not start.

Logoff operation

If the operator of the truck vacates the driving seat for a period of time longer than that programmed by the manufacturer's service centre, the truck will shut down. However, it is also possible to switch off the truck beforehand by pressing the LOGOFF button. The green LED goes out, the red LED comes on and the buzzer emits a short sound, before the truck is switched off.

9.5.2 DHU

(OPT) - The device is type-approved for use on GSM 900/1800 and 3G networks. During installation, operation, servicing and repairs, the following safety regulations must be complied with. The non-compliance with these regulations constitutes a breach of the safety standards of the design, production and foreseen use of the product. The manufacturer shall not be liable for any consequences deriving from the non-compliance with these safety precautions.

This device emits radio waves during operation: the unit may interfere with the operation of televisions, radios, computers or other unprotected devices.

⚠ WARNING

- Risk of interference with medical appliances. The DHU emits radio waves in the same way as mobile phones and may therefore cause interference with medical appliances. Such interference may compromise patient safety. If the DHU is used near medical appliances, the same rules

9.5 Other functions

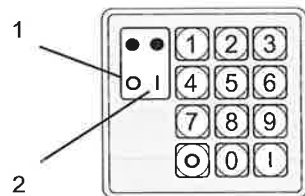
9.5.1 PIN code entry

(OPT) - With this feature, the key switch is replaced with a ten-key pad. When starting the truck (pressing the ON button) the operator must enter a PIN number. This can help to prevent any use of the truck by unauthorized persons. The PIN code consists of a sequence of five numbers. To activate the truck, the operator must enter the correct PIN number every time.

PIN code entry is not an anti-theft security system.

Login operation

To access the truck the operator has to enter the PIN, and then press the LOGIN button (1) within 10 seconds. The green LED comes on and the buzzer emits a short sound, while the





and precautions established for the use of mobile phones in the affected area must be complied with.

- Risk of fire or explosion. The DHU can generate sparks which may ignite flammable chemicals. Do not use the DHU at petrol stations or near fuels or other flammable chemicals.
- Risk of involuntary detonation of explosives. The radio waves generated by the DHU can cause the involuntary detonation of explosives by triggered detonators or similar devices. The same rules applied to radio transmitters must be complied with near explosive areas. This usually means that the DHU cannot be used in these areas.
- Risk of injury or material damage. In some special areas the radio waves generated by the DHU can lead to unforeseen risks. In these areas, comply with the rules and instructions applied to the use of radio transmitters, mobile phones and similar devices.

DHU PIN code request

Before starting the truck, the DHU demands a PIN code to be entered on the keypad (see chapter on "PIN code entry system").

9.5.3 Shock sensor

(OPT) - This function detects and records any collisions to the truck when running. If the setting is enabled, the shock sensor icon is displayed when starting the truck.

If the detected shock exceeds the preset alarm value on front, back or lateral direction, the "Shock Alarm" icon and buzzer signal an alarm to the operator. Because only the administrator can cancel the buzzer sounds, the operator necessarily must report it to the administrator. The detected shock values, date and time are recorded on the multi-function display at the moment of the detection. If the "PIN code entry system" option is enabled, the PIN code is also recorded.

The strength of the shock generated on the vehicle depends on the objects the vehicle collided against. Not all of the collisions can be detected.

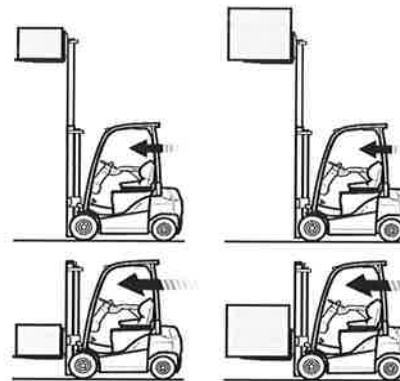
The shock generated in the usual operation depends on the road conditions, the loads, and the material handling operations.

All the detected records may not be necessarily based on a actual collision. Please investigate the records in consideration of the possibility of erroneous detections in the usual operation in addition to actual collisions.

9.5.4 Speed control

(OPT) - This function automatically limits the maximum speed, acceleration and deceleration by detecting the forks height (Low/High) and the loaded weight, reducing the possibility of falling of loads. Uneven ground can cause speed and acceleration variations.

Regenerative braking works according to the weight load.



Lifting height	Light or no load	Heavy load
High	Unaltered braking	The braking is reduced according to the load weight
Reduced	Unaltered braking	





9 INSTRUMENT PANEL FUNCTIONS

⚠ DANGER

- Safe driving is always necessary. The auto speed control helps to prevent the risk of lilling but does not completely eliminate all risk.
- When loads are lifted high, never step on the accelerator pedal suddenly, or never shift the vehicle from the neutral to driving condition with keeping the accelerator pedal stepped on.

Settings

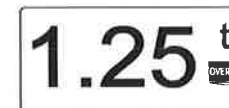
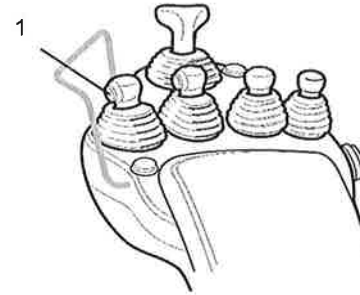
This function can only be enabled/disabled by an administrator. When enabled, the auto speed control indicator is shown on the display.

This function exclusively controls the acceleration/deceleration, without limiting the maximum speed. In this case, the auto speed control indicator is shown with the colours inverted (2).

The maximum speed is controlled within an interval between unlimited speed and 8 km/h. If the speed reduction setting is enabled, the lower value is taken as a reference.

The deceleration limitation is disabled in the following cases:

- truck speed less than 3 km/h
- brake pedal microswitch is pressed
- for models with Tilting Pedal (OPT), when the accelerator pedal in the direction opposite to the travel direction is pressed firmly.



9.5.5 Load and overload sensor

Load Meter

(OPT) - Holding down the load display switch (1) on the lift lever turns the main screen to the load sensor screen, where the load weight is displayed in 0.01 t units. Weights less than 100 kg are displayed as 0.00 t. The load indicator screen is not displayed if the truck speed is read.

Conditions for measuring

The mast should be vertical and the forks height should be at height of approximately 500 mm for measuring.

This function is not usable for business dealings and certifications.

To facilitate measurements, it reads the lift cylinder pressure: it should not be used to judge whether the overload value is near the allowable value.

When the mast is lifted to maximum height, an excessive reading may be given due to the residual pressure generated.

The precision may be reduced in the high lift position (due to bending and friction on the mast): in this case an arrow icon is shown on the load sensor display.

Over load alarm

The administrator may set a value above which the overload alarm is triggered, when the operator uses the load sensor. In this case the buzzer will sound.

On request, the manufacturer's service centre can set the alarm so that it comes on automatically when the set value is exceeded. However, the signal may be given erroneously also with lighter loads, due to load fluctuations during driving or due to an increase in load during lifting.





This function should not be used to judge the allowable load.

9.5.6 Height selector

(OPT) - This option consists of three functions that automatically stop the forks at the required height as follows.

Maximum height limiter

The administrator can set a lift height limit value. Consequently, the forks can't be raised over that limit.

Height limiter

The operator can set a lift height limit value. Consequently, the forks can't be raised over that limit. The operator can enable/disable this function using the height limiter switch.

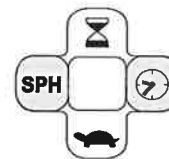
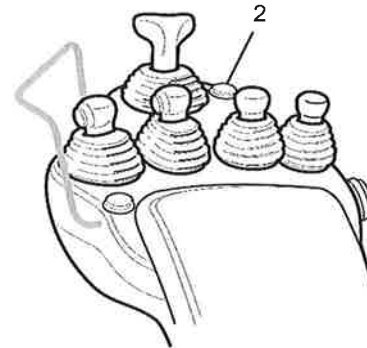
Automatic height control

The operator can memorise a maximum of three lift heights. Using the automatic height control switch the operator can enable one of the memorised heights. Consequently, the forks can't be raised over that limit.

If the maximum height limiter or the height limiter is set, the positions memorized of the Automatic Height Control may be higher than the height limited by them. In this case the higher positions memorised by the automatic height control are not shown on the screen and cannot be selected. The heights memorised will be available again when the maximum height limiter or the height limiter are disabled.

9.5.6.1 Maximum height limiter

When the lift lever is operated upward and the forks reach the maximum height limiter position, the forks automatically stop there and buzzer sounds for a second. If the lift lever is operated upward at the height where forks have already exceeded the maximum height limiter position, the forks never rise and the buzzer also sounds for a second. Only the administrator can use the setting menu for "Maximum Height Limiter". If this setting is enabled, the maximum height limiter icon is displayed when starting the truck. Whenever the operator attempts to exceed the set height limit the forks are blocked.



9.5.6.2 Height limiter

This function is used to memorize a fork limit height position. When the required position is memorized and the height limiter switch (2) is enabled the function is active and the height limiter indicator is shown on the display.

When the lift lever is operated upward and the forks reach the memorized position, the forks automatically stop there, the icon flashes and the buzzer sounds. The forks can be lifted above the memorized position by releasing the height limiter switch. If the lift lever is operated upward at the height where forks have already exceeded the memorized position, the forks never rise up and the buzzer also sounds for a second.

To set the height position, access the travel settings menu. Use the clock selection and power buttons to select the height limiter menu. After selection press OK to confirm and access the setting.

Once in the menu, lift the mast to the required fork height and select "SET" (use the clock and power control buttons to select) and hold down OK for more than two seconds until "OK" appears to confirm that the position has been memorized. The height limiter is now active. Press OUT to exit the menu.

To reset, enter the height limiter menu and select "CLR" (use the clock and power control buttons to select) and hold down OK for more than two seconds until "OK" appears to confirm that the position has been reset. The height limiter function is now disabled until new positions are memorized. Press OUT to exit the menu.

When the required position is memorized and the height limiter switch is enabled the function is active and the height limiter indicator is shown on the display. Whenever the operator attempts to exceed the set height limit the forks are





9 INSTRUMENT PANEL FUNCTIONS

blocked and a buzzer sounds. The forks can be lifted above the memorized height limiter position by releasing the height limiter switch.

9.5.6.3 Automatic height control

This function is used to memorize up to three preferential height positions. A short click of the load display switch (1) with the lever in neutral will display the service screen. The order of the height memories is always displayed on the screen in low order.

The click counter and selected position memorization are indicated as follows, whatever the effective position of the forks at that time.

- (1) Lower height
- (2) Intermediate height
- (3) Upper height
- (4) No height selected (counter reset)

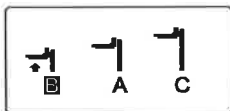
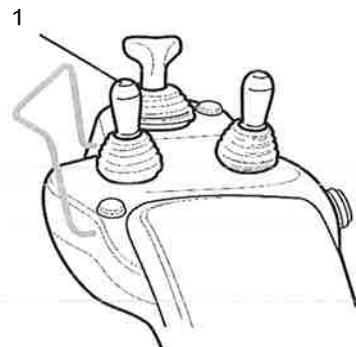
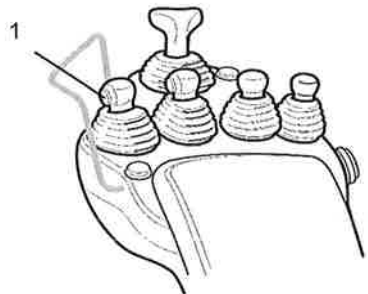
The selected height and service screen are cleared if there are no clicks or lift operations within 10 seconds or the lift lever is moved downwards or to neutral.

Moving the lift lever upwards within 10 seconds will stop the forks automatically at the selected height, when this height is reached the buzzer will sound.

- (1) Lower height: single short buzzer sound (pi..pi..pi..)
- (2) Intermediate height: two short buzzer sounds (pipi..pipi..pipi..)
- (3) Upper height: three short buzzer sounds (pipipi..pipipi..pipipi..)

When a limitation function of the material handling or the OPS function activates, all the function of the Height Selector (including the screen) are canceled. The movement of the mast is halted.

When selecting a favorite height position lower than the current height, this function prevents forks from lifting. In this case, the buzzer sounds for a second, and the screen informs the operator of the invalid operation.



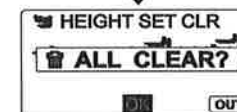
On models with joystick, it is not possible to select a required height during tilting operations, as the automatic levelling function is active.

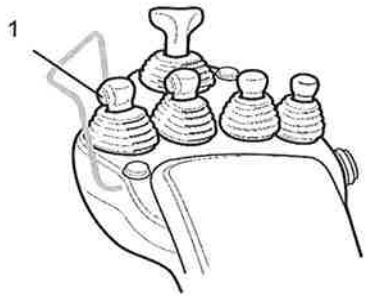
Settings

To memorize the height position, access the travel settings menu. Use the clock selection and power buttons to select the height settings menu. After selection press OK to confirm and access the setting. The operator must lift the forks up to the height he wants to memorize. At this time, the setting screen displays the height relation between three memories and the current height. The operator can then select the memory to overwrite - A, B or C - using the clock selection and power buttons. Hold down OK for two seconds to overwrite the current height in the selected memory. If the memory is overwritten the "OK" and settings screens are displayed. Press OUT to exit the menu.

To memorize a height position there must be at least 100 mm (approx) difference between the three memorized heights.

It is possible to clear all three memories at the same time. The cancellation screen is displayed by selecting the Height Settings Control menu in the Travel Settings menu. Hold down OK for at least two seconds to clear all three memorized heights. The "OK" and settings screens will be displayed. Press OUT to exit the menu. This procedure does not clear the height limiter and maximum height limiter memories.



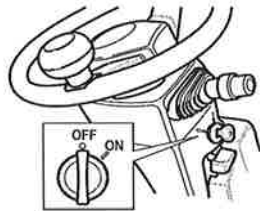


Automatic height control and Load sensor

If the truck is fitted with both the Height Selector and the Load Sensor, the load switch (1) has two functions: automatic height control selector and load sensor switch. A short click on the active load switch will, as usual, enable the automatic height control. Longer pressure enables the Load sensor, if the lifting lever is in neutral. The Load sensor is not enabled while the mast is lifted to the height memorized by the automatic height control.

10 SWITCHES AND LEVERS

10 SWITCHES AND LEVERS



10.1 Steering column

10.1.1 Ignition key switch

Insert the key with the teeth facing upward.

OFF - The key can be inserted and pulled out in this position.

ON - Turn the key clockwise from the OFF position. When the key is in this position the truck is ready to be started.

⚠ WARNING

- Sit in the seat, and turn the key switch to ON. If the OPS indicator is displayed on the screen, release the accelerator pedal and return all levers to their neutral positions. Make sure that the OPS indicator goes off.
- Do not turn the key switch to ON while pressing the accelerator pedal at the same time.
- Remove the key switch when the vehicle is not in use.

NOTICE

When the key switch is turned to OFF, the forks will not lower even if the lift lever is shifted downward (key-lift interlock).

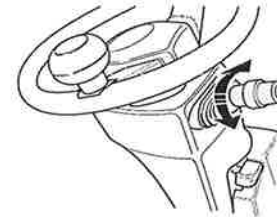
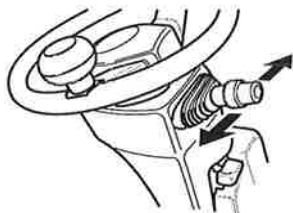
10.1.2 Direction indicator switch

(OPT) - This switch causes the direction indicators to flash.

Left turn - Push the lever forward

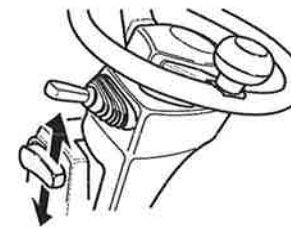
Right turn - Pull the lever back

The direction indicators will operate even when the start key is positioned at OFF. The direction indicators switch returns automatically to the neutral position after the truck has been steered.



10.1.3 Light switch

(OPT) - The first notch turns on the rear position lights. The second notch turns on the front headlights.

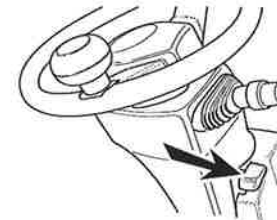


10.1.4 Steering column tilt adjustment lever

The steering wheel can be angled toward or away from the operator by pulling up the tilt lever and positioning as required. Pull the adjust lever up to secure the steering wheel in the preferred position. After making the adjustment, try and move the steering wheel back and forth to make certain it is locked in position.

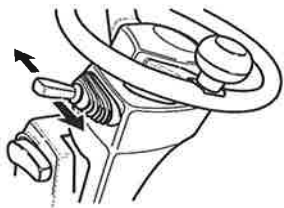
⚠ CAUTION

Always adjust the steering wheel position before setting the truck in motion. Never adjust the steering wheel position while driving the truck.



10.1.5 Steering column release lever

This lever allows the steering column to be tilted forward, but without any adjustment of its position: the column can only be pulled back to its original position. The release function is useful for operations such as opening the battery hood, or when the operator needs to tilt the column forward but without changing its current position. Press the lever to release the steering column and tilt it forward. To return the column to its original position, simply pull back until it clicks into place.



10.1.6 Direction lever

(Only with single accelerator pedal)

This lever selects forward or reverse travel. The neutral position is between the forward and reverse positions.

Forward - Push the lever forward

Reverse - Pull the lever back

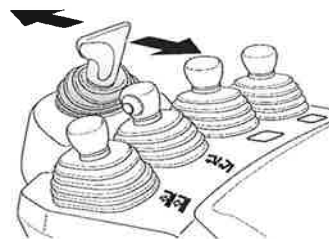
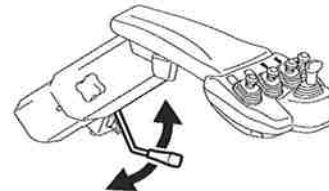
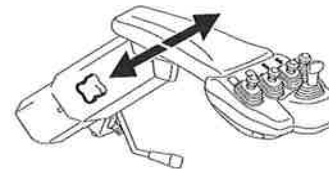
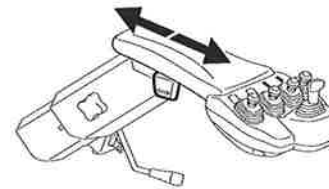
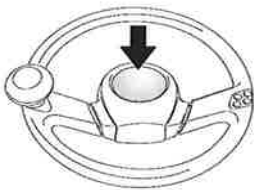
Push the lever in the direction opposite to the travel direction, and depress the accelerator pedal to induce the electric braking action.

⚠ CAUTION

- Bring the truck to a halt when changing between forward and reverse. Perform this manoeuvre with care when the forks are loaded.
- If the OPS indicator is displayed on the screen, release the accelerator pedal, return all levers to their neutral positions and resume the correct position on the seat.

10.1.7 Horn push

Press the button on the hub of the steering wheel to sound the horn.



10.2 Armrest

10.2.1 Position adjustment

The armrest is adjustable for position so that the operator can maintain a correct and comfortable working posture.

Adjusting the backward/forward position

Loosen the forward/backward position adjustment knob by pulling it up, then adjust the front and back positions. After adjusting, push the forward/backward position adjustment knob to fix it at its original position.

Height adjustment

Loosen the height adjustment knob by turning clockwise and move up or down to adjust the height.

Tilt adjustment

Loosen the turn-lock lever by pulling it up, then adjust the tilting position. After adjusting, push the turn-lock lever to fix it at its original position.

⚠ WARNING

- After adjusting the armrest position, make sure that it is securely locked into position.
- Never adjust the armrest position while driving the truck.

10.2.2 Travel direction switch

To change the direction of travel, preselect forward or reverse travel by pressing the travel direction switch. The travel direction can also be changed when the fork lift truck is moving.

Forward - Push the switch forward

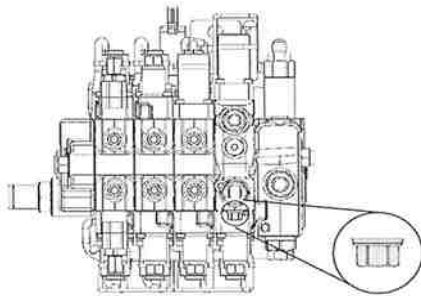
Backward - Push the switch backward

The travel direction reverts automatically to neutral if the operator alights from the truck.

10 SWITCHES AND LEVERS

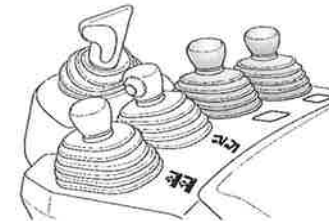
10.2.3 Forks descent release

In the event of malfunction while the forks are lifted and they cannot be lowered using the controls, this can be done by loosening the release screw on the directional valve under the battery hood. Having completed the operation, tighten the screw to its original position.



10.2.4.3 Levers for attachments

These levers are used to control any fitted attachments.



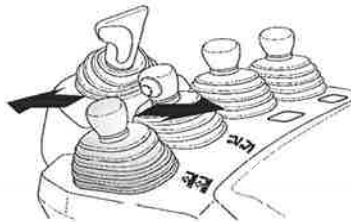
10.2.4 Minilevers

10.2.4.1 Lift lever

Used to lift or lower the forks. The lever tilt controls the speed.

Lift - Pull the lever

Lower - Push the lever forward



10.2.5 Joystick

10.2.5.1 Load handling joystick

(OPT) - The lever controls the fork lifting and lowering and the mast tilting. Tilting the lever diagonally will control two movements at the same time. The lever tilt controls the speed.

Up - Shift the joystick to the right

Down - Shift the joystick to the left

Forward tilting - Push the joystick

Backward tilting - Pull the joystick

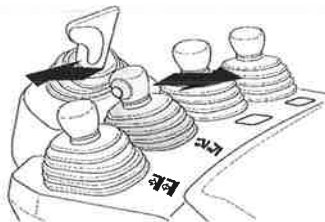


10.2.4.2 Tilt lever

Used to tilt the mast forward and backward. The lever tilt controls the speed.

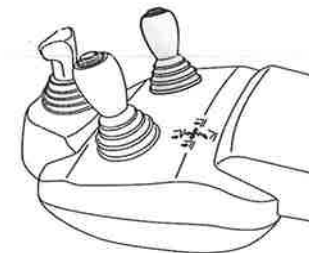
Forward - Push the lever forward

Backward - Pull the lever



10.2.5.2 Joystick for attachments

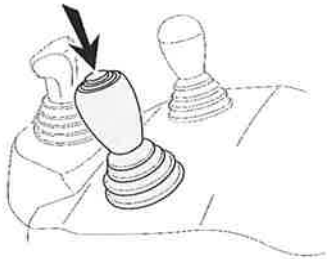
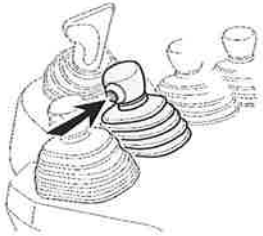
This lever is used to control any fitted attachments.





10.2.6 Fork leveling button

Press the button and tilt the mast forward. The forks stop in the horizontal position (with the mast in the vertical position). To tilt the mast further forward, return the lever to neutral, press the button and move the lever.



10.2.7 Sideshift

(OPT) - Used to shift the forks horizontally. The lever tilt controls the speed.

Forks right - Pull the lever

Forks left - Push the lever forward

10.3 Pedal

10.3.1 General recommendations

⚠ CAUTION

- Apply the brakes with great care when transporting a load.
- Always release the accelerator pedal before applying the brakes.
- Slow down before setting the direction and travel change.
- If the OPS indicator is displayed on the screen, return to the seat and release the accelerator pedal. Make certain that the OPS indicator is off.

Lifting height	Without load	With load
High	The tilting stops with the forks levelled (mast vertical)	Not tilting forward
Reduced	The tilting stops with the forks levelled (mast vertical)	The tilting stops with the forks levelled (mast vertical) or up to 1° to the rear, depending on the load

⚠ DANGER

Refer to chapter "Using the truck - Fork levelling control"



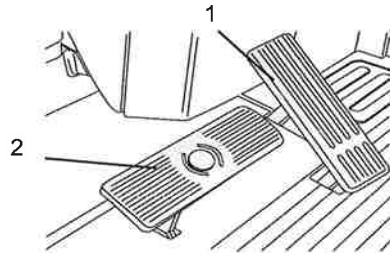
10 SWITCHES AND LEVERS

10.3.2 Single accelerator pedal + brake

This type of accelerator pedal controls the travel speed only; the travel direction is selected by means of a separate switch or lever.

Travel - Press the accelerator pedal (1)

Brake - Press the brake pedal (2)



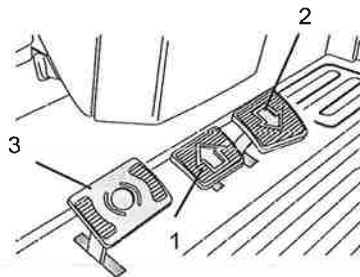
10.3.3 Double accelerator pedal + brake

These accelerator pedals serve both to select the travel direction, forward or reverse, and to control the travel speed.

Forward - Press the left accelerator pedal (1)

Reverse - Press the right accelerator pedal (2)

Brake - Press the brake pedal (3)



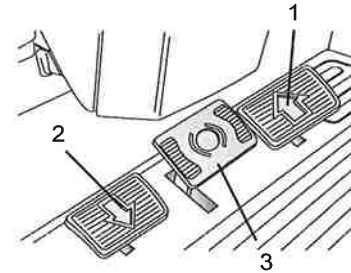
10.3.4 Swaying pedal

These accelerator pedals serve both to select the travel direction, forward or reverse, and to control the travel speed.

Forward - Press the right accelerator pedal (1)

Reverse - Press the left accelerator pedal (2)

Brake - Press the brake pedal (3)

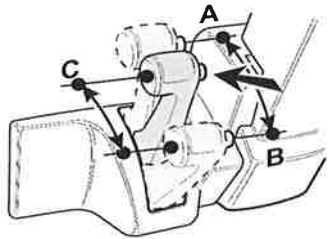


10.4 Other controls

10.4.1 Parking brake

⚠ CAUTION

- Be certain to depress the brake pedal when operating the parking brake.
- To park the truck safely, be certain to follow the parking procedure described in the Manual for Safe Operation.



10.4.1.1 Lever operated version

To enable the brake, pull the lever to position B. When the lever is released it returns to the park position C. To release the brake, pull the lever once and hold down the knob on the upper end of the lever handgrip, to return the lever to the original position A.

NOTICE

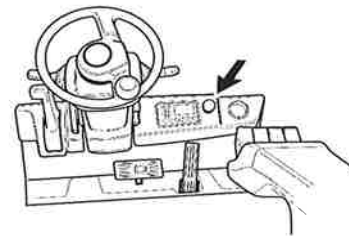
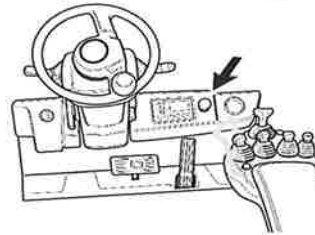
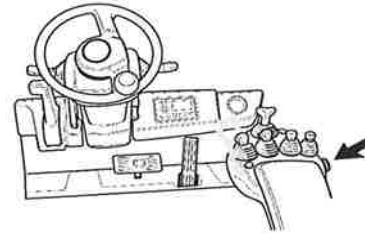
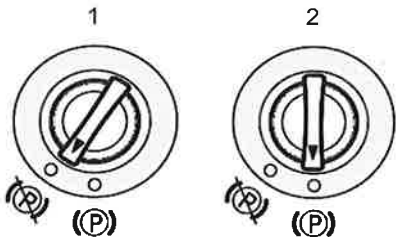
- When operating the lever, hold it only by the handgrip.
- If the parking brake remains engaged with the truck in motion, the brakes could suffer damage. If required, have the truck checked by the service centre.

10.4.1.2 Switch operated version

With the switch in the OFF position (1), operation of the truck is enabled. With the switch in the ON position (2), drive is deactivated; the brakes are inhibited. With this version, the truck brakes automatically when on a gradient.

⚠ DANGER

This precautionary braking function is not a replacement for the parking brake.



10.4.2 Emergency stop button

In the event of an emergency, press the self-locking emergency button to disconnect power and immobilize the truck (drive and lift motors inhibited). Lift the button to reset the emergency circuit and resume normal operation.

NOTICE

Do not use the emergency stop button as a main power switch to shut down the truck and its systems.

⚠ WARNING

For correct use, read the chapter "Using the Truck - Functions" carefully.

10.4.3 Emergency stop button

In the event of an emergency, press the self-locking emergency button to disconnect power and immobilize the truck (drive and lift motors inhibited). Lift the button to reset the emergency circuit and resume normal operation.

NOTICE! Do not use the emergency stop button as a main power switch to shut down the truck and its systems.

WARNING! For correct use, read the chapter "Using the Truck - Functions" carefully.

11 BODY COMPONENTS

11 BODY COMPONENTS

11.1 Operator's seat

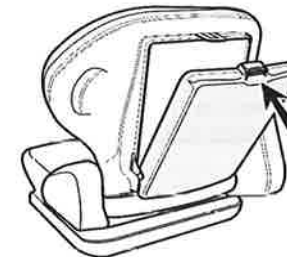
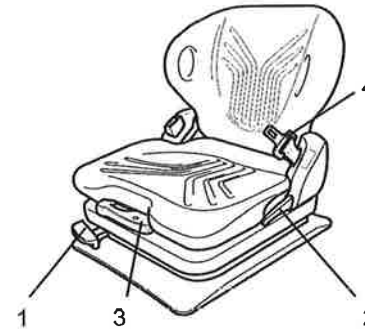
CAUTION

The operation of the OPS sensor is such that travel and load handling functions remain inhibited as long as the operator is not properly settled on the seat. Be sure to stay correctly in position on the seat while the truck is in operation. Do not activate the OPS sensor by any means other than sitting on the seat.

The suspension mechanism of the seat provides a comfortable sitting position, adapted to the weight of the occupant. The optimum driving position can be selected using the dedicated controls.

CAUTION

- Always adjust the seating position before driving the truck. An incorrect seating position will make the truck difficult to steer.
- After making the necessary adjustments, push against the seat with gentle body movements to ensure that it is firmly locked in position.



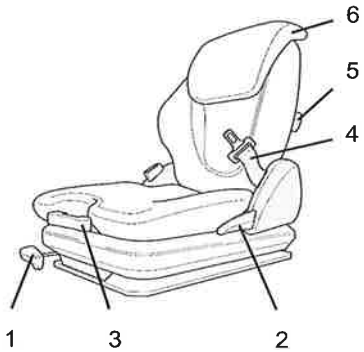
11.1.1 Seat

- (1) Slide lever
Pull the slide lever up to move the seat back or forward. Releasing the lever, the seat will lock in position.
- (2) Rake adjustment knob
Press the knob to adjust the angle of rake of the backrest.
- (3) Weight adjustment lever (set according to the weight of the occupant)
Turn the lever clockwise for heavier body weight; turn counterclockwise for lighter body weight.
- (4) Seat belt

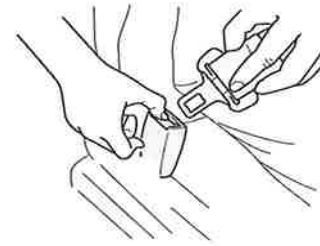
11.1.1.1 Pocket

Located on the rear side of the seat, used to store the Operator Manual and Manual for Safe Operation. Press the retainer and pull down the cover to open the pocket. If either manual is missing, ask the service centre for a replacement copy. Always make certain the pocket is closed securely.

11.1.2 Seat MSG



- (1) Slide lever
Pull the slide lever up to move the seat back or forward. Releasing the lever, the seat will lock in position.
- (2) Rake adjustment knob
Press the knob to adjust the angle of rake of the backrest.
- (3) Weight adjustment lever (set according to the weight of the occupant)
Pull the lever outwards. For a higher weight, lower the lever; for a lower weight, raise the lever.
- (4) Seat belt
- (5) Lumbar support adjust hand grip
Turn the knob to adjust the lumbar support.
- (6) Adjustable backrest height



11.1.3 Seat belt

To wear the safety belt, pull out from the swivel joint and place the tongue in the buckle, until a click is heard. Check that the buckle is securely closed by pulling the belt. The seat belt length automatically adjusts to fit the operator. To release the belt, push the release button and allow the belt to retract. If the seat belt is locked and cannot be pulled out any further, tug sharply on the belt just once, allow it to slacken, then pull it slowly.

⚠ WARNING

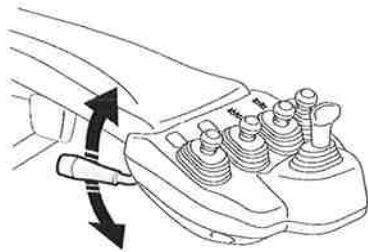
- Always fasten the seat belt when operating the truck.
- In the event of the truck tipping over, the seat and the seat belt considerably reduce the risk of serious or fatal injury.
- Should the truck tip over, the danger of serious or fatal injury is greatly reduced if the operator remains inside the protective structure.
- Be sure to read the section of the Manual for Safe Operation concerning the residual risks of tipping over.

11.1.4 Swivel seat

(OPT) - This option can improve posture and the view when driving in reverse. Also it makes getting off easier, because it rotates the seat to the left and makes more room between the mast and the rear of the seat.



11 BODY COMPONENTS

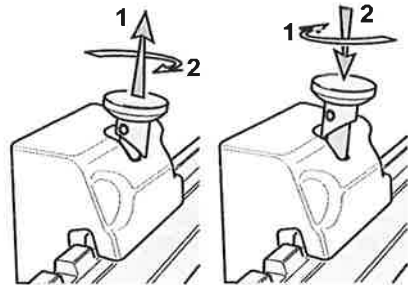


Pull the lock release lever upward to swivel the seat. Seat can be returned to neutral position by pulling it.

CAUTION

While rotating the seat, do not place the hands or other body parts near the swivel area.

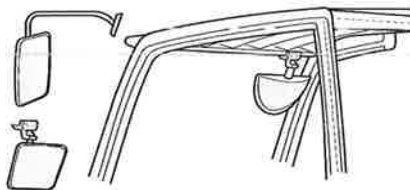
11.2 Forks



It is important to adjust the position of the forks as best suited to the load, so that the centre of gravity coincides with the centre of the truck. To adjust the forks, lift and turn each stop to unlock, so that the forks are free to slide left and right. Having made the adjustment, reposition the stops to lock the forks in place.

11.3 Rear view mirrors

(OPT) - Adjust the angle of the rear view mirrors before starting the truck



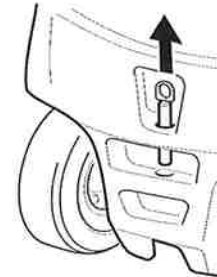
WARNING

Do not rely only on the mirrors when reversing the truck.

11.4 Draw bar

11.4.1 General recommendations

The draw bar, located behind the counterweight, is used to pull the vehicle free if the wheels become lodged in a gutter or stuck in mud. The draw bar can also be used for loading the forklift truck onto another vehicle.

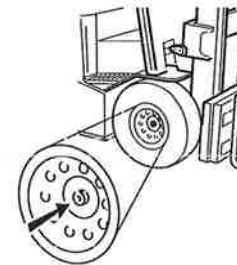


NOTICE

Do not use the draw bar to tow the truck long distances, or for towing other vehicles with the truck.

11.4.2 Version with switch operated parking brake

The front wheels of this forklift truck version are held by a negative brake that must be released by loosening the bolt on each hub before the truck can be towed. The truck must be towed only in an emergency, for short distances, and at low speed. Once the towing operation is completed, retighten both bolts to their previous setting. The front wheels must be raised slightly in order to tighten the bolts. It is advisable to contact the service centre in this situation.

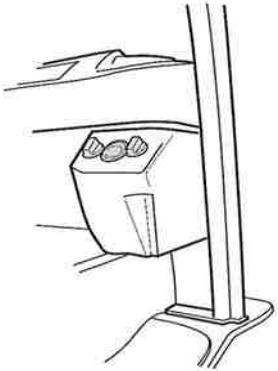




11.5 Heater

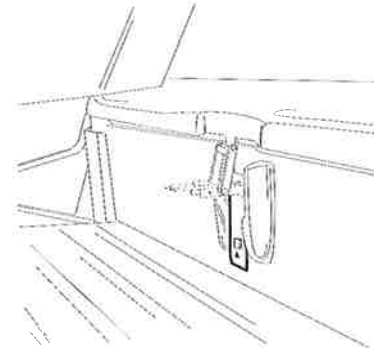
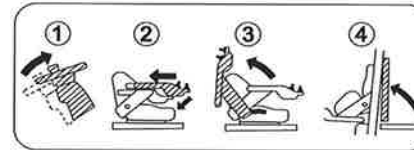
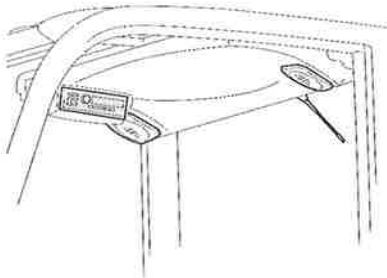
(OPT) - Turn the blower switch (1) clockwise to start the heater and select the fan speed. The switch has four positions: OFF, low speed, medium speed, high speed.

Turn the heater switch (2) clockwise to select the temperature. Three positions are available: low, medium and high heat.



11.6 Stereo system

(OPT) - Refer to the manual provided by the manufacturer.



11.7 Battery hood

11.7.1 Opening

1. Move the seat fully back.
2. Fix the armrest at its lowest setting.
3. If the truck is fitted with a cab (OPT), open the rear window fully.
4. Release the battery hood catch by pulling the button upwards, then pull the catch upwards.
5. Grip the battery hood by the handle and open it up completely.

⚠ WARNING

Before opening the battery hood, make certain that the truck is switched off and that the mast is fully upright with the forks lowered.

11.7.2 Closing

Push the battery hood down and secure it with the catch. When closing the hood, make certain that the battery cables are correctly positioned.

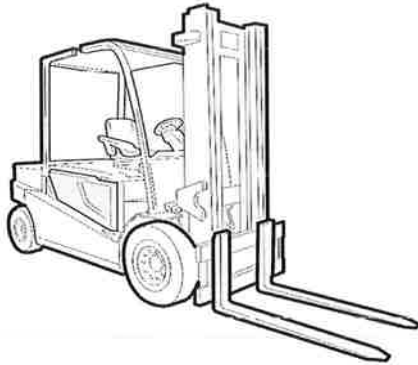
⚠ WARNING

Make certain that the battery is held securely in place before using the truck.

11 BODY COMPONENTS

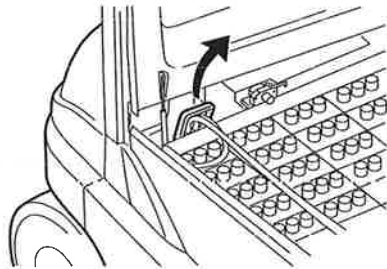
11.7.3 Side panel

To remove the side panel, open the battery hood, and ease the panel upwards until free.



11.7.4 Battery plug

This plug connects the battery to the truck's electrical system. Before disconnecting or connecting the plug, make certain the truck is switched off. Keep the battery plug permanently connected unless it is absolutely necessary to disconnect it.

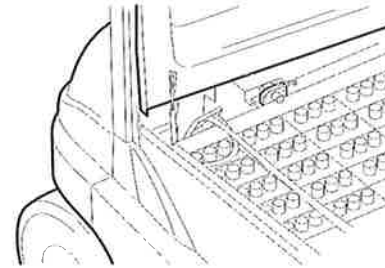


⚠ CAUTION

- Disconnect the battery plug before inspecting the electrical circuit.
- Do not disconnect the plug while the battery is recharging: the plug could get damaged or a short-circuit could be caused.
- When disconnecting the battery, pull the plug by its handle. Do not tug the cables.

11.7.5 Battery stopper

To release the battery stopper, pull the handle upwards, then press the catch on the battery compartment. To lock the catch, reverse this same procedure.

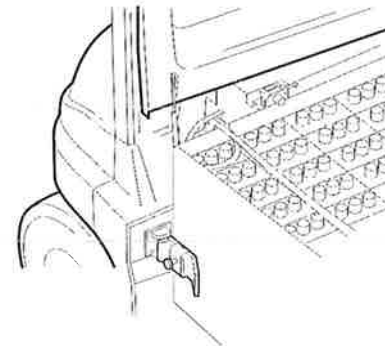


⚠ WARNING

Keep the battery stopper permanently locked unless it is absolutely necessary to release it.

11.7.6 Side battery stopper

Locked in the safety position, the side battery grip stops the battery from sliding out sideways. Release procedure: loosen the screw, lift the retainer and rotate outwards then release to lock in the open position. Perform the procedure in reverse order to lock the retainer in the safety position.



⚠ WARNING

Always keep the side battery grip in the safety position unless otherwise necessary.

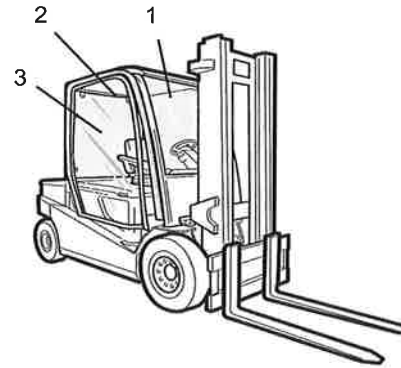


11.7.7 Wiper tank

The tank is filled by way of the plug. It can be filled up to the level of the plug.

NOTICE

When filling the screen wash tank, be careful not to spill liquid outside of the tank.



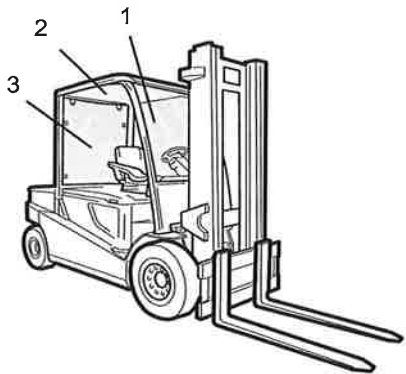
11.8.2 Canvas cab

- (1) Windscreen
- (2) Roof
- (3) Rear window
- (4) Canvas side

11.8 Cab (OPT)

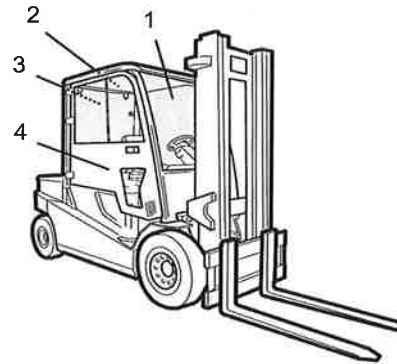
11.8.1 Half cab

- (1) Windscreen
- (2) Roof
- (3) Rear window



11.8.3 Full cab

- (1) Windscreen
- (2) Roof
- (3) Rear window
- (4) Side door





12 PRE-SHIFT CHECKS

12 PRE-SHIFT CHECKS

12.1 Recommendations

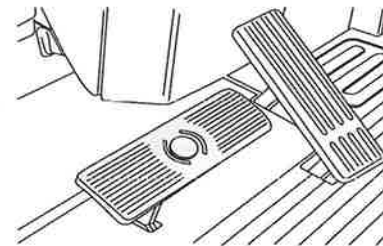
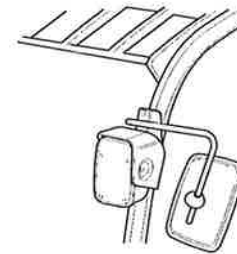
Pre-shift checks must be carried out by the user of the forklift truck. To ensure safety and comfort during operation, always carry out the recommended checks before starting work.

WARNING

If there is a problem or if there is an unrecoverable error indicated in the display., suspend operations immediately and have the truck checked over by the manufacturer's service centre.

12.2 Inspections table

Item	Inspection
Previously detected malfunctions	Correct.
Exterior	Attitude of truck, oil leaks, water leaks, parts not fixed tight, external damage.
Wheels	Wear or damage; rims, wheel nuts.
Headlamps	Quality of lighting; cracks.
Brake pedal	Braking action
Parking brake	Braking action
Steering wheel	Looseness, play, vibration, tendency to pull to one side.
Horn	Sound.
Instruments	Functioning.
Material handling system	Functional efficiency of all sections; oil leaks, cracks, looseness.
Electric motor	Abnormal noise; rotation.
Battery	Charge.
Seat belt	Cuts, fraying; condition of buckle and anchorage.
Antistatic strap (if installed)	Integrity



12.3 Walkaround inspection

12.3.1 Attitude of the truck

Does the vehicle lean abnormally to one side or to the other? If so, make certain there are no punctures (trucks equipped with inflatable tyres), and check for possible problems with the undercarriage.

12.3.2 Beneath the truck

Check for possible oil or water leaks on the ground where the truck is parked. Check for loose or damaged parts. If anything out of the ordinary is discovered, have the truck checked over by the manufacturer's service centre.

12.3.3 Headlamps

(if fitted)

Make certain that the filaments are not damaged. Make certain that the lenses are intact and clean.

Certain devices are supplied as optionals (OPT).

12.4 On-board inspection

12.4.1 Brake pedal

1. Depress the brake pedal fully, and check that a sufficient reaction can be felt.
2. When the pedal is kept down, make certain that it does not travel any further.
3. Check that there is no abnormal movement in the pedal either when depressed or when released.
4. If any irregularity is observed, contact the manufacturer's service centre.



12.4.2 Parking brake

Check that the parking brake can be engaged and released correctly. If anything out of the ordinary is discovered, have the truck checked over by the manufacturer's service centre.

12.4.3 OPS indicator

Sit on the driving seat and switch on the truck. Make sure that the OPS indicator is not displayed on the screen.

WARNING

In any of the following cases, suspend operations and have the truck checked over by the manufacturer's service centre:

- The OPS indicator is not displayed when the operator vacates the seat.
- The OPS indicator does not disappear when the operator returns to the seat.

12.4.4 Measuring instruments

Measuring instruments are indispensable for understanding the status of the truck during operation. Switch on the truck to check the correct operation of each instrument.

12.4.5 Battery charge level

Carry out the check after switching on the truck. Check the battery charge indicator on the display to see whether or not the charge is sufficient.



12.4.6 Load handling system

Inspect the forks to ensure that they are correctly positioned and free of cracks or deformations.

Inspect the mast to ensure that the chain is correctly tensioned and the structure free of any deformation; check that there are no oil leaks from cylinders and pipes.

Operate the load handling controls to ensure they are working properly.

Before using the truck each day, be sure to test the full extension and retraction of each hydraulic cylinder, several times.

It may happen on new trucks that frictional contact between surfaces will cause the fork carriage to become stuck when lowered. In this eventuality, simply raise the fork carriage momentarily to remove the impediment.

If anything out of the ordinary is discovered, have the truck checked over by the manufacturer's service centre.

12.4.7 Steering wheel

Carry out the check after switching on the truck.

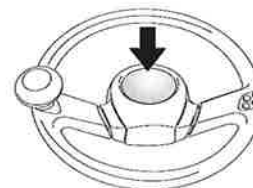
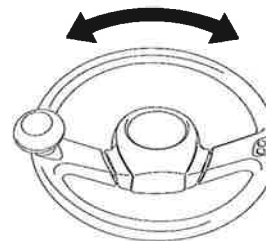
Align the rear wheels for straight-ahead travel, and proceed to check for possible play in the steering wheel.

Turn the steering wheel and move it up and down to check that there is no looseness.

If anything out of the ordinary is discovered, have the truck checked over by the manufacturer's service centre.

12.4.8 Horn

Operate the horn to make certain that it sounds normally.





12 PRE-SHIFT CHECKS

12.4.9 Full cab (if installed)

Check that the doors, the gas springs holding the doors open and the locks and hinges on the doors are all working properly.

12.5 Low speed**12.5.1 Brakes**

Depress the brake pedal, checking that there is no irregularity in the braking action, and that the truck brakes in a straight line. Apply the parking brake, checking that the truck comes to a standstill and that the parking position is held steady.

12.5.2 Engine

Drive the truck and check that the motor runs smoothly, making no unusual noises. Operate the load handling controls to test the pump motor.

12.5.3 Steering system

Drive the truck at low speed in a safe area, turning the steering wheel left and right to check for smooth operation.

12.5.4 Load handling system

Test the operation of the mast, checking that it can be tilted forward and back and elevated without difficulty.

12.6 Before parking

Remove dirt and dust from all components of the truck, then perform the following operations.

Inspect for oil or water leaks.

Inspect each component in turn to detect any possible deformation, scoring, dents or cracks.

Lubricate each component as necessary.

Raise and lower the forks fully, so as to lubricate the inside of the lift cylinder.

If anything out of the ordinary is noticed during operation, report it to a supervisor or department manager.

⚠ WARNING

Do not use the truck until repairs have been completed.



13 DO-IT-YOURSELF MAINTENANCE

13.1 Recommendations

Certain routine maintenance tasks must be carried out by the user of the truck, in order to ensure safety and operating comfort. Routine maintenance must be carried out every week or after every 40 hours operation, whichever is sooner. Do-it-yourself maintenance consists essentially in making the inspections indicated in the table alongside. Lubricants will need replacing periodically, depending on the extent to which they become contaminated; take the appropriate actions. Entrust any adjustment and replacement of parts that may be required to the manufacturer's service centre.

⚠ WARNING

Always refer to the Manual for Safe Operation.

In the event of the truck having to stand idle for an extended period, longer than one week, perform the following operations once a week:

- Raise and lower the forks fully to lubricate the inside of the lift cylinders.
- Drive the truck at low speed, covering a distance of at least 10 metres, in both forward and reverse directions.

13.2 Do-it-yourself maintenance table

Item	Inspection
Battery	Check level; top-up demineralized water; check relative density
Hydraulic oil	Oil level; impurities, viscosity
Tires	Condition; tread wear; pressure (for tyres)
Greasing the mast and steering linkages	MP Grease
Chain lubrication	Engine oil
Nuts and bolts	Retightening
Electric fan - filter and conveyor (if fitted)	Cleanliness

13.3 Battery electrolyte level

When checking the electrolyte, make certain that the truck is standing on a flat surface and carrying no load on the forks.

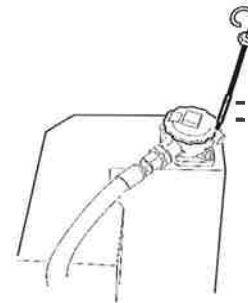
⚠ CAUTION

This check should always be made after the battery has been fully charged.

13.4 Hydraulic oil level

Park the truck on a level surface and lower the forks to the ground before checking the level of the hydraulic oil.

1. Remove the foot board.
2. Remove the dipstick, clean with a clean cloth and place back in the tank, so that the plug comes into contact with the entrance hole.
3. Extract the stick delicately and check that the oil level is between the two level lines.
4. If the oil level is low, top up. Remove any oil residues around the tank immediately.



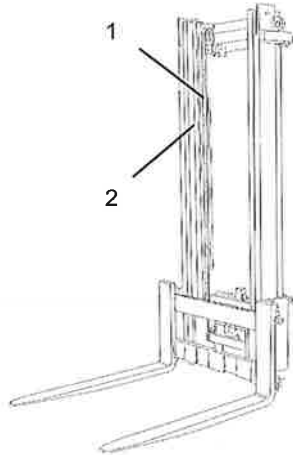
13.5 Greasing

Grease the components listed below as and when needed.

13 DO-IT-YOURSELF MAINTENANCE

13.5.1 Mast

Chains (1) and guide channels (2).



13.5.2 Sideshift

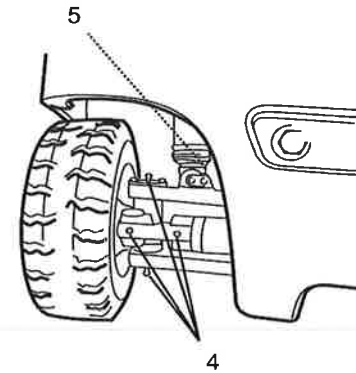
(OPT) - Before greasing, clean the grease nipples (3) thoroughly. After lubricating, wipe off excess grease with a cloth.



13.5.3 Rear axle

Rear wheel ball bearings. Before greasing, clean the ball grease nipples (4) on each wheel thoroughly. After lubricating, wipe off excess grease with a cloth.

Swing lock cylinder. Before greasing, clean the grease nipple (5) on the rear base of the cylinder (access from the left) thoroughly. After lubricating, wipe off excess grease with a cloth.

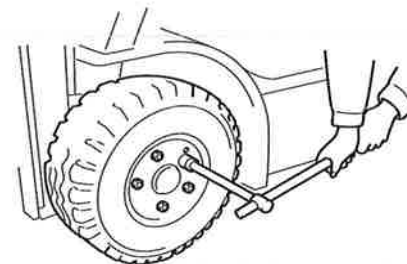


13.6 Tyre tread

Check the state of wear and the general condition of the tyre tread. The wear limit can vary according to the tyre manufacturer's specifications.

13.7 Retightening of nuts and bolts

Retighten nuts and bolts of the drive unit, counterweight, overhead guard, wheels, rear axle and mast. For the correct tightening torques, refer to chapter: Service Data.



13.8 Charging the battery

When the truck stands idle for two weeks or longer, all the batteries must be fully recharged and stored with the plug disconnected, so as to avoid any needless discharge. If the truck is to



remain idle for any significant length of time, the battery must be recharged regularly, once a month.

13.9 Replacing the battery

⚠ WARNING

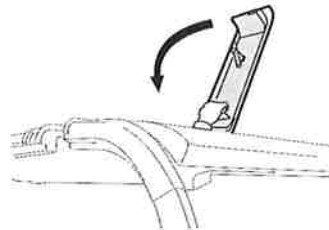
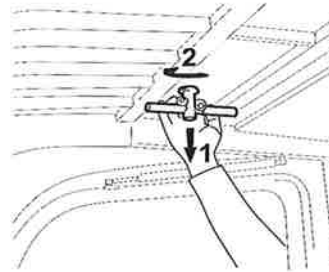
Switch the truck off before connecting or disconnecting the plugs.

13.9.1 Standard version

1. Open the hatch of the overhead guard.
2. Open the battery hood (see chapter: Battery Hood")
3. Disconnect the battery plug.
4. Remove the side panel.
5. Release the battery stopper.
6. Attach a sling to the battery case and remove with a hoist.

⚠ WARNING

Use fibre webbing, chain or wire rope of suitable strength, designed especially for lifting duties.



13.9.2 Overhead guard hatch

The hatch of the overhead guard must remain securely closed during normal use of the truck. When the battery is replaced from above using a hoist, the hatch needs to be opened. To open the hatch, pull the knob downwards and twist to release, then pull the hatch upwards to open. To close the hatch, pull it down with the handle, then pull the knob downwards and twist to lock.

⚠ WARNING

Never use different tools and procedures to open and close the hatch.

13.9.3 Version with low lift-out lateral battery extraction

1. Open the hatch of the overhead guard.
2. Open the battery hood (see chapter: Battery Hood")
3. Disconnect the battery plug.
4. Remove the side panel.
5. Release the battery stopper.
6. Release the lateral battery stopper.
7. Attach a sling to the battery case and remove with a hoist.

⚠ WARNING

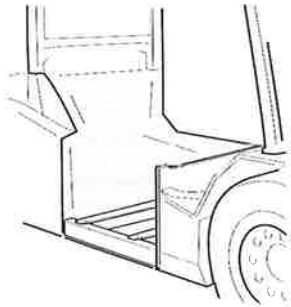
Use fibre webbing, chain or wire rope of suitable strength, designed especially for lifting duties.

⚠ CAUTION

Switch the truck off before connecting or disconnecting the plugs.

13.9.4 Slide-out version

1. Open the hatch of the overhead guard.
2. Open the battery hood (see chapter: Battery Hood")
3. Disconnect the battery plug.
4. Remove the side panel.
5. Release the battery stopper.
6. Release the lateral battery stopper.
7. Attach a sling to the battery case and remove with a hoist.

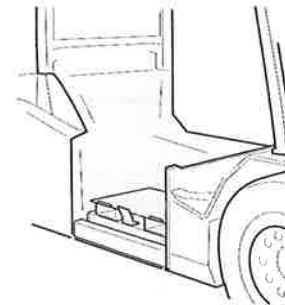


⚠ WARNING

Use fibre webbing, chain or wire rope of suitable strength, designed especially for lifting duties.

⚠ CAUTION

Switch the truck off before connecting or disconnecting the plugs.



13.9.5 Slide-out with fork pockets version

1. Open the battery hood (see chapter: Battery Hood")
2. Disconnect the battery plug.
3. Remove the side panel.
4. Release the battery stopper.
5. Remove the battery by picking up the tray with another forklift truck and drawing clear.

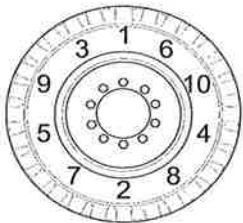
⚠ CAUTION

- Switch the truck off before connecting or disconnecting the plugs.
- After completing the operation, check that the edge of the battery tray does not project beyond the new battery.

13.10 Replacement of tyres

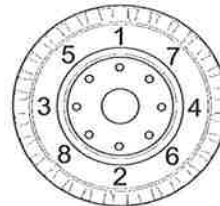
⚠ WARNING

- When the truck is jacked up, keep clear of the area under the forks and the frame. Serious injury could occur if the jack were to be removed accidentally.
- Use a hydraulic jack of suitable rated capacity.



13.10.1 Front wheels

1. Park the truck on a level surface.
2. Apply the parking brake and chock the wheels.
3. Tilt the mast backwards, raise the forks about 1 metre, and position the jack under the frame at a point near the front wheels.
4. Jack up the truck until the tyres are about to clear the ground, and loosen the wheel nuts.
5. Jack up the truck so that the tyres are completely clear of the ground. Remove the wheel nuts and the wheel.
6. To fit a wheel after replacing or repairing the tyre, repeat the steps of the removal procedure in reverse order. The wheel nuts must be tightened uniformly in the sequence illustrated. For the correct wheel nut tightening torques, see chapter: Service Data.
7. Drive the truck both forward and in reverse 2 or 3 times so as to check for any looseness in the wheel nuts, then retighten if necessary.



13.10.2 Rear wheels

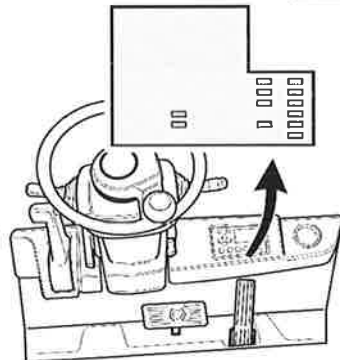
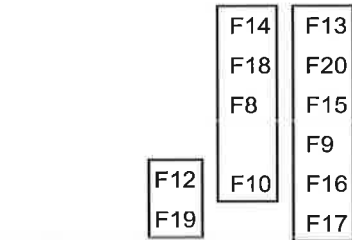
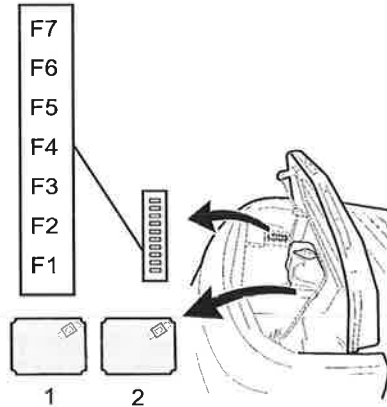
1. Park the truck on a level surface.
2. Apply the parking brake and chock the wheels.
3. Position the jack under the frame at a point near the rear wheels.
4. Jack up the truck until the tyres are about to clear the ground, and loosen the wheel nuts.
5. Jack up the truck so that the tyres are completely clear of the ground. Remove the wheel nuts and the wheel.
6. To fit a wheel after replacing or repairing the tyre, repeat the steps of the removal procedure in reverse order. Tighten the wheel nuts in the same sequence as for the front wheels. For the correct wheel nut tightening torques, see chapter: Service Data.
7. Drive the truck both forward and in reverse 2 or 3 times so as to check for any looseness in the wheel nuts, then retighten if necessary.



13 DO-IT-YOURSELF MAINTENANCE

13.11 Replacement of fuses

When lights do not work or there is no response from the electrical circuit, the relative fuse may be blown. Fuses rated 80 V are located near the rear enclosure of the controls. The power fuses of the drive system (1) and lift system (2) are located on the respective controls. To access the fuses, open the battery hood and remove the rear cover. Fuses rated 12 and 24 V are located under the dashboard, on the right. To access the fuses, remove the dashboard cover.

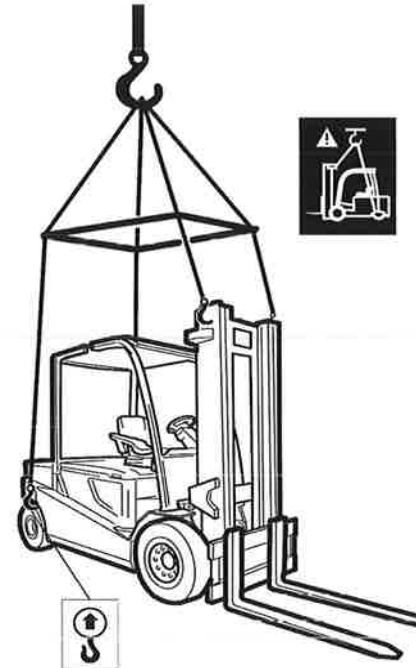


NOTICE

- Always replace a fuse with another of the same capacity. For the allocation and rated capacity of fuses, see chapter: Service Data.
- If the replacement fuse blows immediately on being fitted, have the electrical system checked by the manufacturer's service centre.

13.12 Lifting the truck

When the truck needs to be hoisted, attach the slings at the front to the lifting holes near the top of the mast, and at the rear, to the anchor points near the wheel arches, as illustrated. Protect the overhead guard suitably from possible rubbing contact with the slings.



⚠ WARNING

Use fibre webbing, chain or wire rope of suitable strength, designed especially for lifting duties.



14 PERIODIC MAINTENANCE

14.1 General Indications

Regular inspection and maintenance is required to keep your forklift truck in perfect working order, and should be carried out by specialized technicians: to find out more, contact the manufacturer's service center. Maintenance intervals refer to normal use of a standard vehicle; they are also based on total operating hours or months elapsed over the life cycle of the vehicle, whichever comes first (it is worth pointing out that most inspections are scheduled every 1000 operating hours or at least once every six months). For trucks used on multiple shifts, the intervals must be reduced to the following values:

15% for 2 daily shifts

30% for 3 daily shifts

INSPECTION METHOD:

I: Inspect, correct and replace as required

M: Measure and correct, and adjust as required

T: Tighten

C: Clean

(*) New vehicles: inspections carried out every six weeks/every 250 hours only apply to new vehicles (whether used in multiple shifts or not)

14.2 Periodic Replacements Table

REPLACEMENT CYCLE (Based on total hours operation or months elapsed during the life cycle of the truck, whichever is sooner)	every 6 weeks	every 12 months	every 30 months	every 60 months
	every 250 hours	every 2000 hours	every 5000 hours	every 10000 hours
Drive unit oil	•*	•		
Hydraulic oil		•		
Hydraulic oil filter	•*	•		
Oil tank breather filter		•		
Brake fluid		•		
Tilt cylinder hydraulic hoses			•	
Steering system hoses			•	
Mast chains				•

REPLACEMENT CYCLE (Based on total hours operation or months elapsed during the life cycle of the truck, whichever is sooner)	every 6 weeks	every 12 months	every 30 months	every 60 months
	every 250 hours	every 2000 hours	every 5000 hours	every 10000 hours
Chain anchor rods				•
High pressure hydraulic hoses				•
Swing lock cylinder				•

14.3 Periodic Maintenance Table

MAINTENANCE CYCLE (Based on total hours operation or months elapsed during the life cycle of the truck, whichever is sooner)	every 6 weeks	every 6 months	every 12 months
	every 250 hours	every 1000 hours	every 2000 hours
DRIVE SYSTEM			
Wheels			
Tyres presenting cuts, damage or uneven tread		I	←
Metal chips, pebbles or foreign matter trapped in tyre treads	I*, C*	I, C	←
Tread depth	I*	I	←
Tyre pressure (trucks with pneumatic tyres)	M*	M	←
Torque settings for hub nuts	T*	T	←
Integrity of wheel discs and rims	I*	I	←
Fixing of front and rear wheel ball bearings and unusual noise	I*	I	←
Front axle			
Integrity			I
Fixing of unit to frame		I	←
Fixing and unusual noise		I	←
Rear axle			
Integrity			I
Fixing of unit to frame		I	←
Fixing and unusual noise		I	←
Fixing of rear axle relative to longitudinal axis of truck	I*	I	←
Play in hub	I*	I	←
Mechanical travel limit		I	←
Leaks from steering cylinders (if installed)	I*	I	←



14 PERIODIC MAINTENANCE

MAINTENANCE CYCLE (Based on total hours operation or months elapsed during the life cycle of the truck, whichever is sooner)	every 6 weeks	every 6 months	every 12 months
	every 250 hours	every 1000 hours	every 2000 hours
Integrity and deformation of steering cylinders (if installed)		I	←
Tightening torque of steering cylinders (if installed)		I	←
Steering king pin (if installed)		I	←
Play in linkages (if installed)		I	←
POWER TRANSMISSION SYSTEM			
Drive unit			
General condition, integrity and cleanliness		I, C	←
Oil leakage		I	←
Oil level and condition	I*	I	←
Fixing of nuts and bolts			I
Tightening torque of motor/transmission fixing bolts		T	←
Tightening torque of drive unit/frame fixing bolts		T	←
Cleanliness and tightness of the screw plugs		C, T	←
Condition and cleanliness of breather pipe		I, C	←
ELECTRICAL SYSTEM			
General			
Truck insulation		I	←
Integrity of antistatic cord (if installed)		I	←
Engine			
Cleanliness		I, C	←
Fixing		I	←
Sound when running		I	←
Insulation resistance		I	←
Tightening torque for power cables		T	←
Battery			
Anomaly in the top part of battery and/or case		I	←
Spilled liquid inside the case		I, C	←
Cleanliness and condition of socket plug		I, C	←
Condition of power cables		I	←
Fixing and cleanliness of terminals		I, C	←
Insulation resistance		I	←
Charging level		I	←
Electrolyte level		I	←

MAINTENANCE CYCLE (Based on total hours operation or months elapsed during the life cycle of the truck, whichever is sooner)	every 6 weeks	every 6 months	every 12 months
	every 250 hours	every 1000 hours	every 2000 hours
Relative density of electrolyte		M	←
Voltage measurement of each cell after charging			M
Magnetic switch - Contactors			
Fixing, cleanliness and integrity of contacts		I	←
Cleanliness, integrity, operating conditions of auxiliary contact		I, C	←
Installation conditions of arc contacts (if installed)		I	←
Coil fixing		I	←
Fixing and installation conditions of main circuit wires		I	←
Tightening torque for connected cables		T	←
Functional testing of all connected devices		I	←
Microswitch - Potentiometers			
Fixing and integrity of installation		I	←
Operating conditions and enabling times		I	←
Operating conditions for the accelerator and brake pedal potentiometers		I	←
Operating conditions for armrest levers potentiometer (if installed)		I	←
Direction switch (if installed)			
Integrity and operating conditions		I	←
Wiring connections		I	←
Electronic control unit			
Integrity, cleanliness and operating conditions		I, C	←
Presence of alarms in log		I	←
Tightening torque for power cables		T	←
Wiring harness connections		I	←
Status of connectors		I	←
Cleaning of control compartment (with compressed air)		C	←
Functional efficiency of electric fan (if installed)		I	←
Cleaning of electric fan duct and filter		C	←
Fuses and relays			
Wiring harness fixing		I	←
Operation of all functions protected by fuses and relays		I	←
Electrical wiring			



MAINTENANCE CYCLE (Based on total hours operation or months elapsed during the life cycle of the truck, whichever is sooner)	every 6 weeks	every 6 months	every 12 months
	every 250 hours	every 1000 hours	every 2000 hours
Fixing, integrity and condition of the wiring harness			←
Integrity of wiring harness cable insulation			←
Fixing of connections and condition of taping			←
STEERING SYSTEM			
Steering wheel			
Play and fixing	*		←
Steering valve			
Oil leakage	*		←
Installation and fixing	*		←
Maximum pressure		M	←
Steering system			
Steering angle right and left			
Power steering - Hydraulic steering motor (if installed)			
Oil leakage			←
Integrity of power steering hose			
BRAKING SYSTEM			
General			
Brake fluid / oil level (if installed)			←
Leakage of fluid / oil			←
Brake bleeding system (if installed)			←
Low level warning light (if installed)			
Brake pedal			
Braking performance			←
Pedal travel/free travel			←
Return travel			←
Lever linkages	*		←
Parking brake			
Braking performance			←
Apply force to lever and limit switch (if installed)			←
Parking switch operating conditions (if present)			←
Clearance, wear and cleanliness of the magnetic disks (if present)			←
Brake discs			

MAINTENANCE CYCLE (Based on total hours operation or months elapsed during the life cycle of the truck, whichever is sooner)	every 6 weeks	every 6 months	every 12 months
	every 250 hours	every 1000 hours	every 2000 hours
Wear and damage			
LOAD HANDLING SYSTEM			
Forks			
Wear and integrity of locking pins and forks			←
Alignment of left and right fork tips			←
Wear on fork heels			←
Cracks on welded parts			←
Mast and lift bracket			
Deformation, damage and cracks presented by welded parts			←
Roller wear, damage and rotating condition			←
Wear and damage to mast support bushings			←
Adjustment, wear and damage presented by mast pads			←
Wear and damage to roller pin			←
Fixing of masts and lift bracket			←
Condition of side, bottom and top pads on fork carriages	*		←
Chain and chain rollers			
Chain integrity and tension	*		←
Chain lubrication			←
Fault with chain anchoring bolts and nuts			←
Wear and damage presented by chain rollers			←
Free rotation of chain rollers			←
Attachments (if fitted)			
Abnormalities and conditions of installation			←
HYDRAULIC SYSTEM			
Cylinders			
Oil leakage			←
Fixing and integrity of cylinder rod and rod end			←
Operating conditions, fixing and integrity of tilting cylinder installation			←
Natural drop, natural forward tilt			←
Installation of mast cylinders: fixing and integrity			←
Raising and lowering speed			←



14 PERIODIC MAINTENANCE

MAINTENANCE CYCLE (Based on total hours operation or months elapsed during the life cycle of the truck, whichever is sooner)	every 6 weeks	every 6 months	every 12 months
	every 250 hours	every 1000 hours	every 2000 hours
Non-uniform movement			←
Hydraulic pump			
Oil leakage and abnormal noise			←
Hydraulic oil tank			
Oil leakage			←
Oil level, contamination			←
Oil tank and filter conditions			←
Hydraulic filter			
Cleanliness			C
Control lever (if present)			
Operating condition			←
Oil control valve			
Oil leakage			←
Operation of unloading valve			←
Measurement of unloading pressure			M
Oil pressure pipelines			
Oil leakage			←
Integrity			←
Fixing of lever linkages			←
SAFETY DEVICES, etc.			
Body			
Frame, cross member, etc. damage and cracking.			
Fixing of nuts and bolts			
Overhead guard			
Integrity			←
Cracks presented by welded part			←
Load backstop grille			
Deterioration, damage and cracks			←
Fixing of installation components			←
Seat			
Fixing and integrity of installation			←
Operation of seat microswitch	*		←
Operating conditions and integrity of seat belt			←
OPS			

MAINTENANCE CYCLE (Based on total hours operation or months elapsed during the life cycle of the truck, whichever is sooner)	every 6 weeks	every 6 months	every 12 months
	every 250 hours	every 1000 hours	every 2000 hours
Operating conditions	*		←
Self-locking emergency stop button			
Operating conditions			←
Dashboard			
Operating conditions			←
Horn			
Installation and operating conditions			←
Lighting system (OPT)			
Installation and operating conditions			←
Turn signals (OPT)			
Installation and operating conditions			←
Reversing warning horn (OPT)			
Operating conditions			←
Rear view mirrors (OPT)			
Integrity and cleanliness			←
Rear reflection			←
Cabin (OPT)			
Integrity of roof			←
Integrity and operating conditions of doors, side windows, rear window			←
Integrity and operating conditions of heated windows			←
Integrity and operation windscreen wipers			←
Integrity and operating conditions of cab heater			←
Lubrication			
General condition - refer to the Lubrication Chart			←



14.3.1 SAS Periodic maintenance

MAINTENANCE CYCLE (Based on total hours operation or months elapsed during the life cycle of the truck, whichever is sooner)	every 6 weeks	every 6 months	every 12 months
	every 250 hours	every 1000 hours	every 2000 hours
S.A.S.			
Operation			←
Integrity and tightness of sensors and wiring harnesses			←
Integrity, deformation and oil leaks on working components			←
Performance of the swing lock cylinder and/or accumulator			←
Condition of load sensor			←

14.4 Lubrication Chart

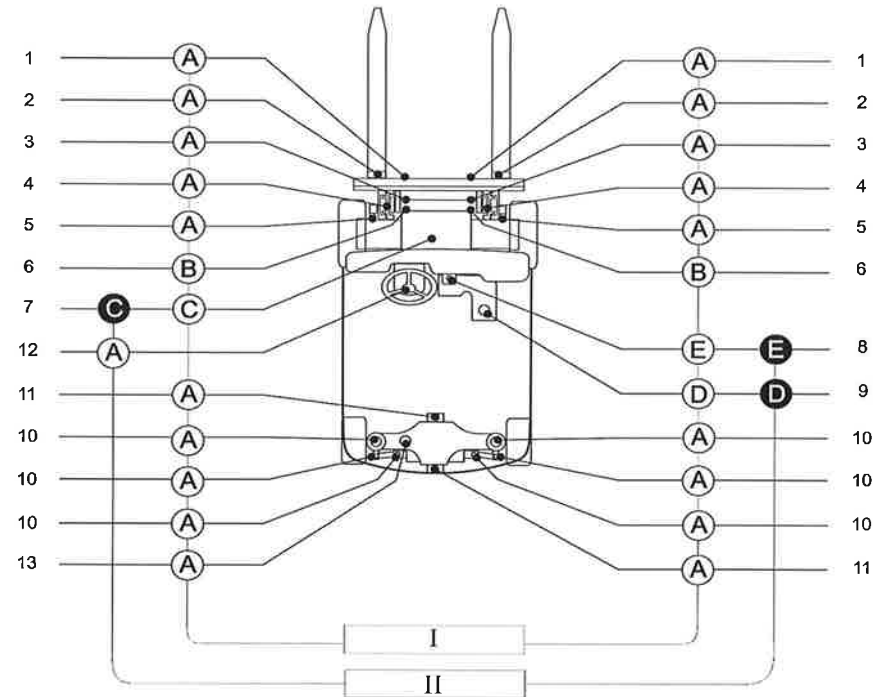
1	Sideshift (*) (OPT)
2	Fork positioning pins
3	Chain anchor rods
4	Mast guides (*)
5	Mast fasteners
6	Lift chains (*)
7	Drive unit
8	Brake fluid reservoir
9	Oil tank
10	Rear wheel ball bearings (*)
11	Rear axle beam pins
12	Horn contact ring and contact spring
13	Swing lock cylinder (*)

(*) and every 40 hours as part of do-it-yourself maintenance

I	Every 1000 hours (6 months)
II	Every 2000 hours (12 months)

○	Inspection and application
●	Replacement

(A)	Molybdenum disulphide based grease
(B)	Chain spray
(C)	Transmission oil
(D)	Hydraulic oil
(E)	Brake fluid





15 SERVICE DATA

15 SERVICE DATA

15.1 Values

Item	Value	
Relative density of battery electrolyte at 20°C	Standard	1.280
	Limit	1.150
Tightening torque - Nm	Drive unit to frame	720
	Counterweight to frame	680
	Overhead guard on chassis	83
	Rear axle to frame	300
	Mast to frame	200
	Wheel nuts:	
	▪ single front	422
▪ twin front	441	
▪ rear	304	
Noise level (LPA) according to EN 12053 - dB (A)	Uncertainty K=4 dB (A)	69.9
Overall truck body vibration to EN 13059 - m/s ²	Uncertainty K = 0,14 x a m/s ² (a: listed value)	0.41

15.2 Lubricants and fluids

Point of application	Capacity	Type
Drive unit	2.5 l	Mobilfluid 424 or equivalent
Brakes	Version with lever operated parking brake: 1.7 l Version with switch operated parking brake: 1.6 l	Mobilfluid 424 or equivalent
Hydraulic oil tank	30 l	Standard version: VG32; Wladoil HY SY HVI 32 or Agip Arnica 32 or equivalent
Frame and mast; grease nipples	Quantity as needed	Standard version: Mobilgrease Special or equivalent Cold climate version: Esso Beacon 32S or equivalent
Mast lift chains	Quantity as needed	Interflon Fin Lube TF, Kluberolil 4UH1-32N, Rexnord kædespray REXOIL or equivalent
Battery	Quantity as needed	Distilled or demineralized water

Point of application	Capacity	Type
Wiper tank	Required quantity (max. 2.1 l)	Standard version: Standard wiper fluid for motor vehicles Cold climate version: Low temperature wiper fluid for motor vehicles

NOTICE

Do not mix different types of oils

15.3 Fuses

80V fuses Rear compartment	Amperes - A	12V / 24V fuses Dashboard	Amperes - A
F1 (converter input - standard devices - 80V/24V)	15	F8 (sidelights) (OPT)	7.5
F2 (key)	5	F9 (24 V power supply) (OPT)	5
F3 (converter output - standard devices - 80 V/24 V)	30	F10 (board power supply)	10
F4 (audible warning)	5	F12 (12 V power supply) (OPT)	5
F5 (heater) (OPT)	30	F13 (board power)	2
F6 (converter input - optional devices - 80 V/24 V)	15	F14 (front work lights)	7.5
F7 (converter input - optional devices - 80 V/12 V)	5	F15 (front screen wiper) (OPT)	7.5
F11 (heated pneumatic seat) (OPT)	10	F16 (rear screen wiper) (OPT)	7.5
		F17 (heater) (OPT)	5
		F18 (rear work lights)	7.5
		F19 (radio, courtesy light) (OPT)	7.5
Traction power fuse	400	F20 (heated rear window) (OPT)	10
Lift and steering power fuse	400	F23 (heated seat + lights on mast) (OPT)	15

15.4 Truck weight

Version	Weight (with battery) - kg
4.0 t	6556
4.5 t	7086
5.0 t	7721



15.5 Wheels

Type	4.0 - 4.5	5.0 t
Front	250-15	28x12.5-15
Front twin	7.00-15	
Rear	23x9-10	

15.6 Batteries

Type	Version	Length - mm	Width - mm	Height - mm	Minimum required weight (with case) - kg	Maximum weight - kg	Voltage and rated capacity - V / Ah
Standard	4.0 t	1028	999	784	2069	2287	80 / 840
	4.5 t						
	5.0 t						
High capacity	1028	999	784	2069	2287	80 / 930	
Slide-out with fork pockets	1026	996	627	1635	1807	80 / 750	



16 TRUCK DIMENSIONS

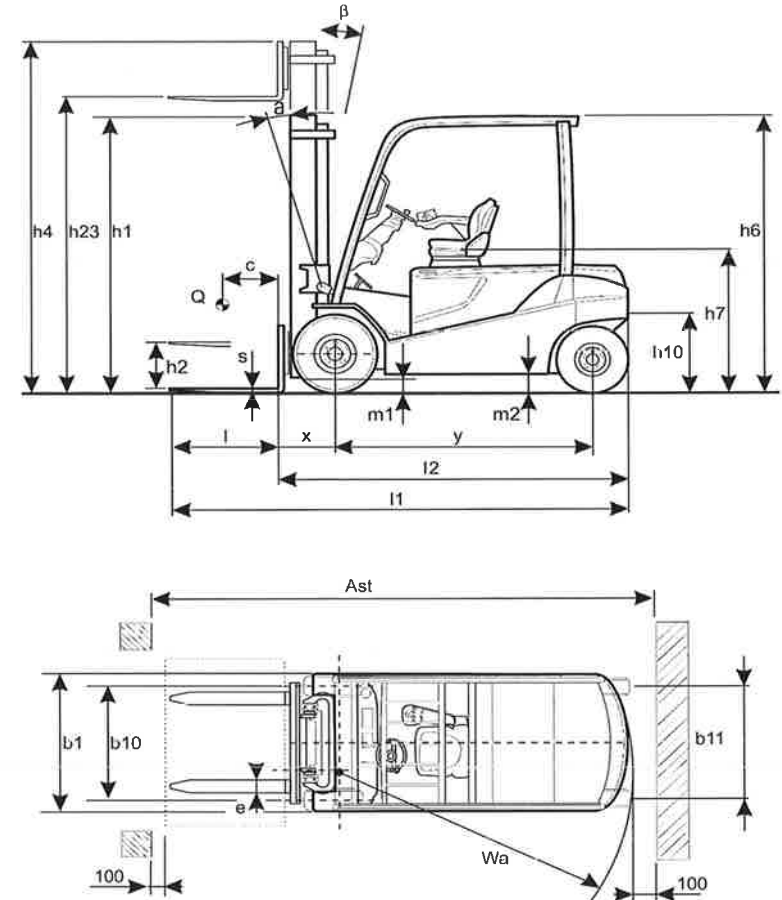
16 TRUCK DIMENSIONS

16.1 Dimensions

Position	Version		
	4.0 t	4.5 t	5.0 t
b1	1345	←	1440
b10	1119	←	1145
b11	1113	←	←
α/β	5 / 10	←	←
h1	2500	←	←
h2	80	←	←
h23	3350	←	3360
h4	4156	←	←
h6	2360	←	←
h7	1277	←	←
h10	550	←	←
m1	150	←	←
m2	145	←	←
l1	3902	3942	4269
l2	2902	2942	3069
x	513	←	523
y	2030	←	←
c	500	←	600
s / e / l	50 / 150 / 1000	←	60 / 150 / 1200
Wa	2579	←	2660
Ast (with 1200 mm pallets)	4492	←	4583

The data are expressed in mm and refer to the standard truck with mast V3300 and superelastic wheels.

16.2 Positions





17 CE DECLARATION OF CONFORMITY

17.1 EXAMPLE

TOYOTA

TOYOTA MATERIAL HANDLING EUROPE

EC DECLARATION OF CONFORMITY

We

Toyota Material Handling Europe AB
Svarvargatan 8 SE 59581 Mjölby
Sweden

Declare that:

the counterbalanced trucks

Make: TOYOTA

Type: 8FBMT40
8FBMT45
8FBMT50

are in compliance with:

The Machinery Directive 2006/42/CE in its last active version;

The Electromagnetic Compatibility Directive 2004/108/CE and following amendments, as manufactured according to the Harmonised Standard EN 12895;

Person entitled to constitute the technical file (for the Directive 2006/42/EC) :

First name:
Name:

Address: Toyota Material Handling Europe AB
Svarvargatan 8 SE 59581 Mjölby
Sweden

Mjölby, / /2013

Signature

17



17 CE DECLARATION OF CONFORMITY
