

CLARK®



Straddle Stacker

Operator's Manual **SSX12/16/18**

OM-992
December 2014

Do not remove this manual
from the truck.

Record the following information pertaining to your truck.

Model No. _____

Serial No. _____

Customer Truck Identification No. _____

Truck Weight, Empty _____

Truck Rated Capacity _____

Truck Gross Weight _____

Truck Gross Weight, Loaded w/ Rated Load _____

Special Equipment or Attachments _____

IMPORTANT

Do not expose this manual to hot water or steam.

Contents

	PAGE
Foreword.....	II
1. Safety Regulations.....	1.1
2. Know your Truck.....	2.1
3. Inspection and Maintenance.....	3.1
4. Lifting, Transport and Storage	4.1
5. Specifications.....	5.1



Foreword

All technical data and all illustrations in these Operating Instructions are without obligation. We reserve the right to make alterations in the interests of technical progress.

The performance, economy and security of a truck depend to a great extent on its proper handling as well as on regular maintenance and care. The following Operator Instructions should help you to make the best use of your CLARK truck. Read through the instructions carefully and follow the given procedures strictly. Acquaint yourself with the controls and in particular observe all the safety regulations. Carry out all maintenance and care work at the recommended time intervals. CLARK trucks are characterized by their easy maintenance design. You will therefore be able to carry out this work in a short time and without too much effort.

Regular maintenance and care of your truck is recommended not just on economic ground because a faulty truck represents a source of potential danger.

In addition you should observe the national regulations which provide inspections at set intervals of time. The contents and volume of the regulations could be different from country to country.

For any checkup, repair, maintenance and all other work concerning your truck, please contact your CLARK dealer. Here, specially trained service personnel will be glad to help you at any time. Should you desire to carry out maintenance, repair and all other work on your truck yourself, you can of course obtain all required spare parts and all necessary materials from your CLARK dealer. Please note: Only original CLARK spare parts guarantee the trouble free functioning and optimum economy of your truck. Original CLARK spare parts are the best for your truck. With their dimensional stability as well as their high material quality due to a continuous and strict quality control, they correspond to those parts used in the series production of our trucks.

Finally we would like to draw your attention to the fact that any secondary damages due to improper handling, insufficient maintenance, wrong repairs or the use of other than original CLARK spare parts waive any liability by CLARK.



1. Safety Regulations

Warning symbols

Always follow the warnings given in this Operator's Manual and on the truck to avoid accidents from occurring.

Warning levels

Warning text is given in four levels and provides information on the risks, describe the consequences, and instruct how to avoid accidents.

DANGER

Warns that an accident will occur if you do not follow the instructions. The consequences are serious personal injury or possibly death, and/or extremely severe material damage.

WARNING

Warns that an accident can occur if the instructions are not followed. The consequences are serious personal injury or possibly death, and/or severe material damage.

CAUTION

Warns that an accident can occur if the instructions are not followed. The consequences are personal injury and/or material damage.

NOTE

Marks the risk of an accident or breakdown if the instructions are not followed.

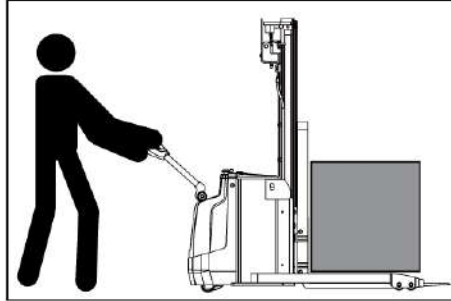


1. Safety Regulations

1. Correct Use and Application

General

The industrial truck described in the present operating instructions is designed for lifting, lowering and transporting load units.



It must be used, operated and serviced in accordance with the present instructions. Any other type of use is beyond the scope of application and can result in damage to personnel, the industrial truck or property.

Correct operation

CAUTION

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

The load must rest on the load handler or be lifted by an attachment approved by the manufacturer.

The load must rest on the back of the fork carriage and centrally between the forks.

- Lifting and lowering of loads.
- Transporting lowered loads.
- Do not drive the truck with the fork excessively raised.
- Do not carry or lift passengers.
- Do not push or pull load units.

1. Safety Regulations

Conditions for operation

- Operation in industrial and commercial environments.
- Operation only on secure, level surfaces with sufficient load bearing capacity.
- Operation only on routes that are visible and approved by the proprietor.
- Negotiating inclines up to a maximum of 12 % at unloaded.
- Do not negotiate inclines crosswise or at an angle, or transport loads facing downhill.
- Operate in areas with limited public traffic.



Special equipment and authorization is required if the truck is to be used in extreme conditions. The truck is not authorized for use in areas at risk of explosion.



1. Safety Regulations

2. Safe driving

The truck is a power-driven truck using batteries. Therefore, unlike common trucks, an accident during battery charging may cause injury to the operator or adverse effects to electric components. Accordingly, it is important to pay special attention to the use of the batteries.

Basic requirements for safety

Prior to operating the truck for the first time, carefully read this operating manual to understand fully the functions of the truck and practice the driving function in a large area.



Never smoke in the vicinity of the truck while the battery is being charged. Take care against any spark or flame in the vicinity of the truck.

Make it a habit to check the truck prior to driving.

Carefully read the safety rules prior to operating the truck to ensure correct operation.



WARNING

Never drive the truck in intoxicated state.

Drunk-driving is the most serious cause of accidents; never drive the truck if you drank even a small amount.

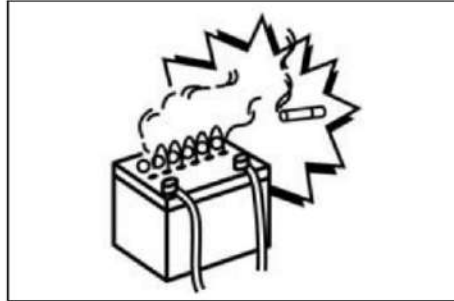


1. Safety Regulations

Removal of equipment subject to fire and explosion

Perform makeup or change of distilled water of the battery in a safe, well-ventilated place.

Gas emitted from the battery electrolyte is flammable. Keep away the battery from open fire when checking the electrolyte level.



Never store flammable materials or use open fire in the vicinity of the place of battery charging.

Fill the battery with distilled water; never add sulfuric acid.

Battery charging generates hydrogen and oxygen gases, which are highly likely to cause explosion. A large quantity of gas is generated particularly when battery charging is complete. Pay special attention to prevent contact between the battery and open fire such as flame.

Keep metal tools away from the top of the battery.

Prevent any bending of or impact on the battery since such may damage truck high-pressure lines such as tubes and hoses.

Carefully examine all lines such as tubes and hoses. Never check the battery for leaks with bare hands. Fasten all the connections to the specified torques.



CAUTION

Charge the battery at the specified place and have a fire extinguisher ready.



1. Safety Regulations

Getting ready to drive

Check the components of the truck including the brake, steering devices, and horn. If any of them is defective, repair the component prior to driving.

Fully understand how to operate the equipment as well as the operation and safety rules of the attachments.

Check the surroundings for any object or person prior to driving the truck.

Never attempt sudden starting, turning, or braking.

Precautions during driving

When driving the truck into a warehouse or a factory, check the truck width and access door width as well as the height of the access door.

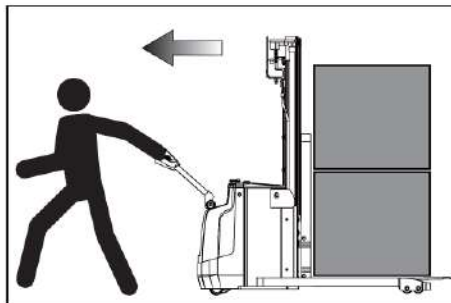
When loading cargo, check the stacked cargo for any items likely to fall.

Load cargo within the range of the forks, with the center of gravity aligned between left and right to prevent loads applied beyond the center of the forks.

Never perform work with loads applied on the tips of the forks.

Change the driving direction at a safe speed. Take care particularly when changing the driving direction with the load fully lowered.

If the cargo is so large that the operator's vision is blocked, drive the truck in the forward direction. Always remember to look in the driving direction while driving the truck.



1. Safety Regulations

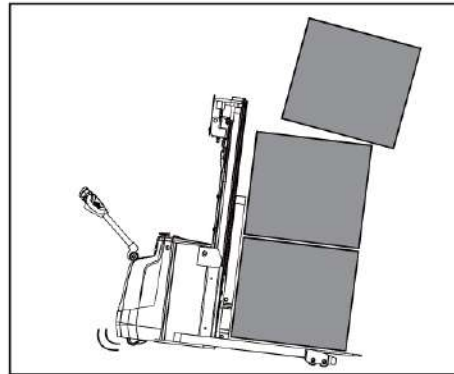
If driving the truck on a slope is inevitable, travel with the load facing up the slope. (refer to page 1.16 “gradients”)

Sudden change of driving direction on a slope is very hazardous. Pay special attention when you have to do so.

Stability

CLARK the trucks are absolutely stable in the permitted working positions and when driving, if used with due care and attention and observing the maximum permissible loads.

Proof of sufficient stability is given by CLARK through tests on a tiltable platform corresponding to the related regulations (EC guideline No. 2006/42/EC)



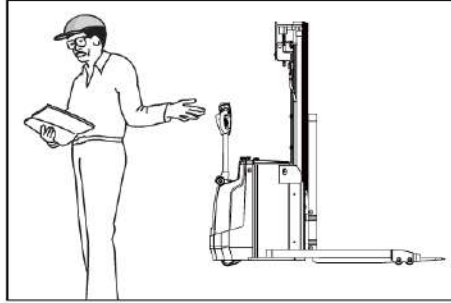
Therefore, never overload your truck. Take care as to the correct weight and load center of your load. The mounting of extra counter weights to increase the load capacity is not permitted. Memorize the maximum permissible rated capacities of your truck and, if you use one or several attachments, also the remaining load capacities indicated separately for these attachments. The load capacity of a truck is influenced by the load center and also the lift height.

1. Safety Regulations

3. Inspection

Inspection prior to bringing into first use

The truck must be checked as to its functionability prior to taking it into operation. The working area to be used must be tested as to its ground conditions (carrying capacity, flatness, sufficient width).



Regular and statutory inspections

The trucks must be regularly checked by trained and authorized service personnel. The time intervals between the regular checks are often prescribed by a national authority. CLARK recommends an annual check-up based on an average operational performance.

Statutory inspections are required, if for instance the operator adds an attachment to his truck. Modifications to the truck are prohibited.

1. Safety Regulations

Truck modification

Unauthorized truck modification is not permitted.

A) Except where provided in “B)”, no modifications or alterations to a powered industrial truck, which may affect, for example, capacity, stability or safety requirements of the truck, shall be made without the prior written approval of the original truck manufacturer, its authorized representative, or a successor thereof.

This includes changes affecting, for example braking, steering, visibility and the addition of removable attachments. When the manufacturer or its successor approve a modification or alteration, they shall also make and approve appropriate changes to capacity plate, decals, tags and operation and maintenance handbooks.

B) Only in the event that the truck manufacturer is no longer in business and there is no successor in the interest to the business, the user may arrange for a modification or alteration to a powered industrial truck, provided, however, that the user shall:

- Arrange for the modification or alteration to be designed, tested and implemented by an engineer(s) expert in industrial trucks and their safety
- Maintain a permanent record of the design, test(s) and implementation of the modification or alteration
- Approve and make appropriate changes to the capacity plate(s), decals, tags and instruction handbook
- Affix a permanent and readily visible label to the truck stating the manner in which the truck has been modified or altered together with the date of the modification or alteration, and the name and address of the organization that accomplished the tasks.



1. Safety Regulations

4. Operation

The driver

Only trained and authorized personnel may be charged with driving a truck. Please also observe the legal regulations in your country.



The authorization of the supervisor shall be obtained for each, use about which the operator is not sure if it conforms to the intended use. In particularly difficult cases such as a simultaneous use of two trucks for the transport of heavy or bulky loads, the supervisor himself shall be present at the site and, assume the responsibility and management for this transport.

Please carefully read this User Manual and understand the contents.

We strongly recommend that you wear safety clothes suited for your work. Any wide or loose clothing must be avoided. Always wear a hard hat, safety shoes and, if required, safety glasses.



Never drive your truck with wet or oily hands or shoes. If you slip off the controls or under the wheel, serious accidents and personal injury may occur.

1. Safety Regulations

Do not wear watches, rings, or accessories during the operation of the truck.



Never put your feet under the forks or touch the forks.

Never stand on the forks.



The working area

1) Operating aisles

Always drive and park the truck indoors.

Operate the truck in clean and tidy areas only. The operating aisles shall have no obstacles that block the vision of the operator. Carefully check the ground for flatness and for any obstacle. The ground of the work area for transporting the load shall be flat and even.

2) Hazard areas

Trucks which are to be used in flammable or explosive environments must be specially equipped for this purpose. The hazard areas must be identified accordingly.

3) Electrostatic charge

In case of any possible electrostatic charging between the floor and the tire, friction between them shall be reduced to prevent electrostatic charging.

1. Safety Regulations

Handling of loads

Picking up and placing of loads

The trucks must never be loaded in excess of their rated capacity. The values indicated on the name plate apply only when the upright is in a vertical position.

Always position the forks under the load as far as is practicable. The load shall not protrude significantly over the fork tips and the fork tips shall not extend substantially beyond the load. Take care that the load is correctly balanced (centered) on both forks. Check the stability and balance of the load. Never lift a load with one fork only.

When storing and stacking loads, correct placement is essential. Always place the loads carefully. Make sure that you do not exceed the maximum permissible stacking load when stacking and storing loads onto shelves.

There shall be an adequate clearance between the highest parts of the trucks or the load and the fixed parts of the surrounding areas.

Never move loads stacked higher than the carriage backrest. The simultaneous pickup of several unit loads is not advised. Defective unit loads should not be moved or stacked.

The following procedure shall always be observed :

- If another person comes close to the mast, the lifting or lowering movement shall be stopped immediately.
- Drive directly to the stack with a lowered.
- Raise the load to the stacking height
- Drive the truck carefully forward until the load has entered the stack and, if necessary, push the load forward
- Lower the load
- Look backwards

1. Safety Regulations

- Forward the truck so that the fork arms can be lowered without touching the stack

Transport of swinging loads

The transport of swinging loads is only permitted with the consent and approval of the truck manufacturer.

The following points must be observed when transporting swinging loads :



- The swinging of the load shall be prevented by the right selection of speed and the way of driving (careful braking and steering). Jerky movements should always be avoided.
- Driving on inclines or slopes with a hanging load is forbidden.
- The fastening means of the suspended load shall not be unintentionally moved or loosened.
- It shall be ensured that there are no persons in the driving lane and in the driving direction.
- It shall be ensured that no persons are in danger as a result of the swinging loads.
- If necessary, appropriate aids shall be made available (e.g. holding ropes or bars) and that they are used by the persons for guiding the load.
- A load restriction may be necessary depending on the length of the swinging load. The truck manufacturer shall be contacted for this purpose.

1. Safety Regulations

Transport of inflammable loads

The transport of molten loads is only permitted with the consent and approval of the truck manufacturer.

The following instructions must be observed if molten loads are being transported :

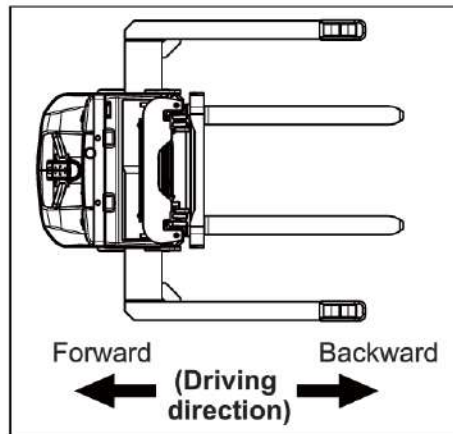
- A slopping over of the load must be prevented by a correct selection of speed and manner of driving (careful braking and steering). Jerky movements should always be avoided,
- Driving on inclines or slopes is forbidden with molten loads
- The lowering speed shall be limited if necessary.

When driving

1) Driving conduct

The operator shall comply with internal instructions on in-house traffic regulations and the relevant road traffic regulations on public roads. The speed of the truck has to be adjusted to local conditions. For example, the operator shall drive slowly in bends, at and in narrow passageways or gates, when driving through swinging doors,

at blind intersections or on uneven surfaces. He always shall keep a safe braking distance from vehicles or persons in front of him and he must always have his truck under control. Sudden stops, quick turns, overtaking at dangerous or blind intersections shall be avoided.



1. Safety Regulations

With the exception of the trucks specially fitted for this purpose, the trucks with a operator's seat or stand shall not be put in motion when the operator is not assuming the operating position.

Whilst driving, it is forbidden, amongst other things:

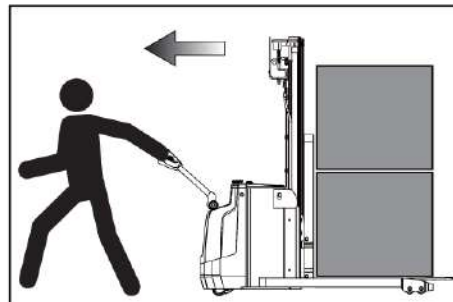
- For the driver to lean over the edge of the truck
- To move from one truck to another or to fixed parts of a building.

The driver shall bring his truck to a standstill as soon as possible if the steering or brake equipment is defective.

2) Visibility

Do not drive backwards if the load is hindering your view. In this instance, drive forwards.

The operator shall always look in the driving direction even when reversing over a short distance.



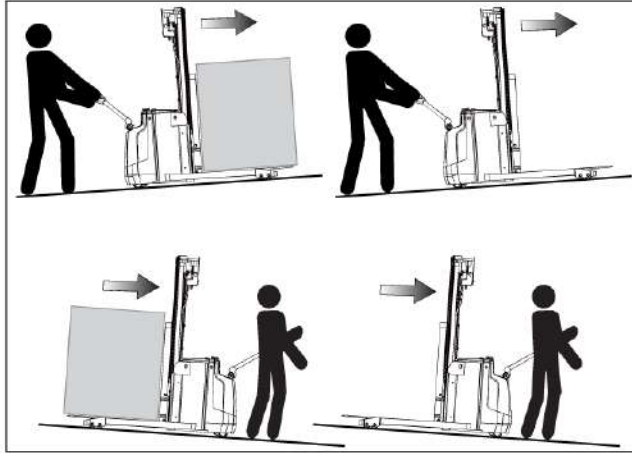
If, however, the view is still impaired, a banksman should be used to overcome the hindrance. The truck may then only be driven at walking speed and with particular caution, see also page 1.20 "Behavior during Operation".

Ensure that the working area of your truck is adequately illuminated.

1. Safety Regulations

3) Gradients

Always keep the load on the upper-side on gradients. This prevents the slipping of the load from the forks or the rolling over of the truck. In a laden condition, travel uphill in reverse direction and downhill in forward direction.



With restricted visibility always seek assistance when travelling on gradients. Do not turn when going up or down a ramp. Never drive diagonally across the gradient. The truck can easily roll over in this case. Always reduce your speed and drive with special care.

Gradients should always have a sufficiently rough surface. For smooth, and even travel avoid any load contact with the ground.

Gradients used by the trucks shall not exceed the limits specified by the manufacturer.

4) Braking

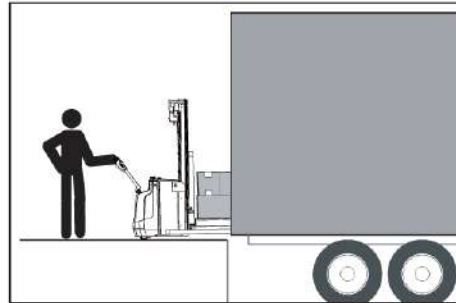
Always maintain the driving speed such that the forward braking distance is always adequate. Note that sudden braking increases the braking distance proportional to the driving speed, possibly causing the spinning of driving wheels or overturning of the truck.

The braking test shall be conducted after cleaning the truck.

1. Safety Regulations

5) Loading and unloading of vehicles

Always approach the vehicle carefully. Make sure that load distribution is well-balanced when loading or unloading. If you have to travel onto a vehicle for the loading or unloading process take particular care not to exceed the maximum permissible load capacity of the



vehicle floor and the bridge plate. Both must be able to support the weight of the truck and load. Bridge plates must be securely fixed and must not slip when being entered. Secure the vehicle you enter with blocks against rolling. When entering vehicles or traveling on bridge plates reduce speed and be particularly careful. Also be very careful when traveling on bridge plates, especially close to the ramp edges. Keep a safe distance from the ramp edges particularly if the surface is wet or slippery.

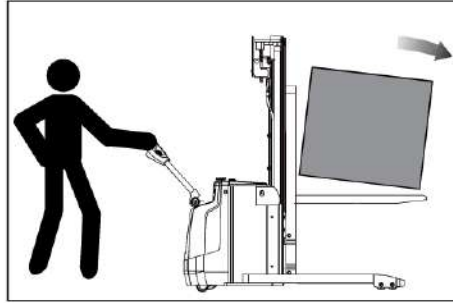
6) Conditions for keeping the truck inside a container

It shall be possible for the truck to be kept in a container. The driver shall verify that the container where the truck is loaded is securely fastened to prevent swaying, and that it is capable of withstanding the truck weight.

1. Safety Regulations

7) With raised forks

Never move your truck with the load raised. Your truck can lose stability in this condition. Only travel with the upright extended in the immediate area for picking up and stacking the loads. When raising the forks watch for obstacles above.



8) Climate conditions for operation

- Max. ambient temperature, short period (max. of 1 hour) : + 40 °C
- Mean average temperature under continuous operation conditions : + 25 °C
- Lowest ambient temperature : -10 °C
- Attitude for operation : Max. of 2000 m above sea level
- Relative humidity : 30 ~ 95% (non-condensing)

9) Tips for Operation according to the Weather

1. Hot weather

Driving in hot weather impairs driving ability and work efficiency. Take a rest at regular intervals.

1. Safety Regulations

2. Cold Weather



WARNING

Hydraulic systems respond to controls slowly in cold weather. It is strongly recommended to warm the equipment up before starting operation.

- Take utmost care when driving on an icy surface.
- Replace worn wheels immediately. Especially, worn wheels can cause serious accident on icy ground.
- Do not abruptly brake or start on icy ground.



WARNING

Do not expose bare skin to the cold, metal surface of the equipment. Otherwise, skin can be frozen and stick to the metal surface.

1. Safety Regulations

Behavior during operation

1) When driving

Avoid any abrupt starting, excessive traveling speeds and sudden directional changes.

Select the driving speed so that sufficient stopping distance is always available. It must be remembered that the net stopping distance increases by approximately the square of the speed and that sharp braking of the truck can cause the drive wheels to slip and the truck to tip over. Braking on curves further increases the danger of the truck tipping due to the tilting moment which occurs.

Reduce speed before curves and ramps, in narrow passageways, on wet roads and restricted visibility.

Always operate the truck carefully even without a load. An unladen truck can roll over more quickly on curves than a load truck. Always operate your truck safely and avoid accidents.

Always look in the driving direction.

2) Safety of people

Always make sure that there is nobody within the hazardous area of your truck. Ask these people to leave the area immediately.

Never use your truck with persons within this area. Never allow anyone to stand under the lifted load or to pass under the load.

Do not let other persons ride on the truck.



1. Safety Regulations

3) Truck tip over

The trucks can be tipped over if not operated properly. Teach your operators that there are a number of things they must watch for that can cause a truck to tip over.

- Slow down before turning.
- Drive with the forks lowered enough to stabilize the load.
- Raising a load high moves the center of gravity and lowers the capacity.
- Check capacities; don't overload the truck.
- Do not move unstable loads.
- Do not turn on down- and upslopes
- Do not drive with the load downhill on down- and upslope
- Drive careful with swinging loads
- Drive careful and slowly at ramp edges or steps
- Move long, high, or wide loads slowly and carefully.
- Don't forget, your truck has front steering. A turn into a soft shoulder or off a dock can tip a truck over. Watch the steer end of your truck, and keep those steer wheel on the road.
- Turn too sharply with forks raised and your truck can tip over, even at slow speeds and with no load. So take your time; slow down.
- Transporting spacious loads may in the result the truck tipping over in strong winds.
- When transporting liquids, a change in the centre of gravity within a picked-up container can result in the truck tipping over as a result of the effects of inertia e.g. when starting or braking or cornering.

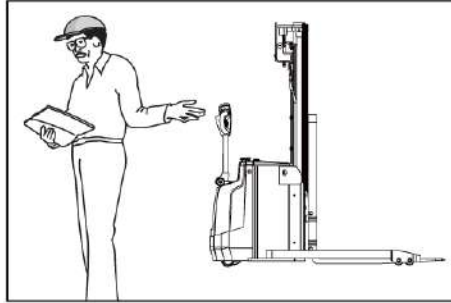


1. Safety Regulations

Troubleshooting

Daily inspection before operation

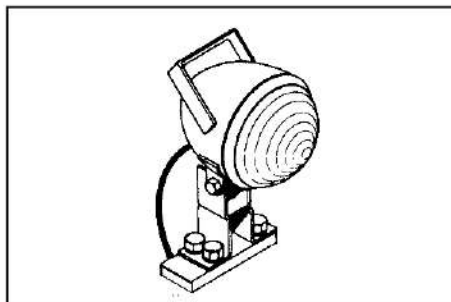
Before starting to work check your truck daily in accordance with the section "Daily Inspection". Always make sure that all safety systems are operating correctly. Never operate a truck which is damaged or not safe to operate. Check all warning and information signs. Any missing or damaged signs must be replaced immediately.



Safety devices and switches may not be removed or rendered unusable. Predetermined set values may only be changed in agreement with the manufacturer. Damage and other faults must be reported immediately to the person in charge.

Illumination

Drive the trucks in poorly illuminated areas must be install adequate lighting fixtures.



1. Safety Regulations

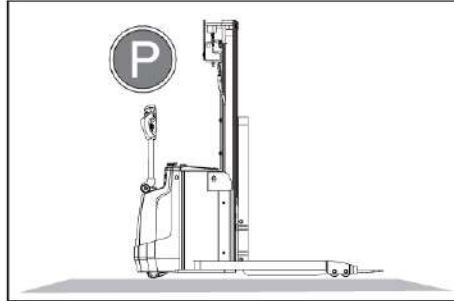
Leaving the truck

When leaving the truck, shall be turned key off.

Never leave the truck with the upright raised.

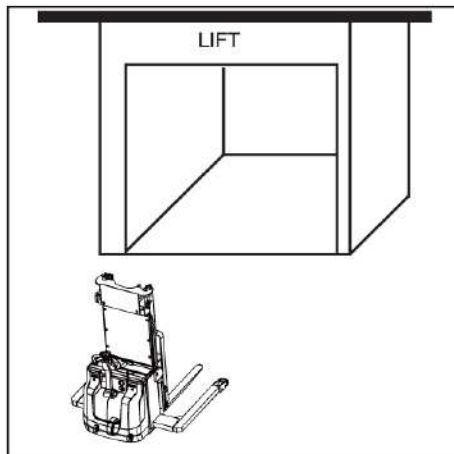
Lower the forks fully to the ground, apply the parking brake, put the tiller handle and directional lever in the neutral position and secure your truck against unauthorized use by third persons.

Never park your truck on gradients. But if this is necessary always secure the truck with wedges.



Transport of the trucks in elevators

The transport of the trucks in elevators is only permitted if the elevator has a sufficient load capacity and is designed for this purpose. The truck must be secured in a way that it cannot touch the elevator walls and may not move inadvertently. All persons travelling with the truck must enter the elevator after the truck and must leave before the truck.



1. Safety Regulations

Unauthorized mounting of electric device prohibited

IMPORTANT

Mounting electric parts on the truck at the discretion of users may have critical effects on the truck and peripheral devices.

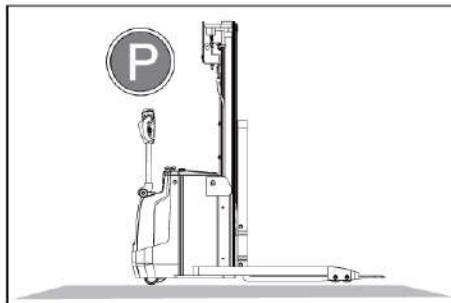
CLARK is not responsible for any issue arising from mounting electric parts without its approval.

Please consult with the engineering staff of CLARK when wishing to mount electric parts.



Parking the truck

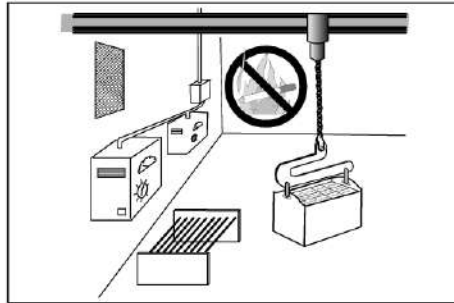
- Park your truck in authorized areas only. For this purpose:
 - Fully lower the forks to the ground
 - Make sure that the directional lever is kept in neutral position
 - Turn the key to "Off" position
 - Remove the key.
 - In case of a need to park the truck for a prolonged period of time, turn power off



1. Safety Regulations

Charging batteries of electric trucks

The charging and maintenance of batteries may only be carried out in rooms particularly designed for this purpose by qualified personnel. In case of automatic charging devices the batteries may also be recharged by the driver himself. Please carefully read the operating instructions of the charging set manufacturer.



Smoking and handling of open fires in charging stations is prohibited. Please observe the valid legal regulations of your country.



Turn the key switch to OFF position and make sure that the power shut off switch is turned off prior to connecting the power cord to the charger-mounted truck.

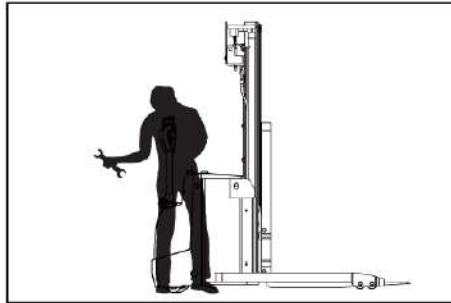
1. Safety Regulations

Repair

Never carry out any maintenance or repair work under the forks. If the carriage must be lifted for maintenance and repair work, the carriage and inner rails must always be secured against inadvertent lowering. This can be obtained by means of a crane or with suitably dimensioned wooden beams. The beams must be inserted under the inner rails in a way that they cannot tip over. Any maintenance and repair work may only be carried out by trained and authorized personnel.



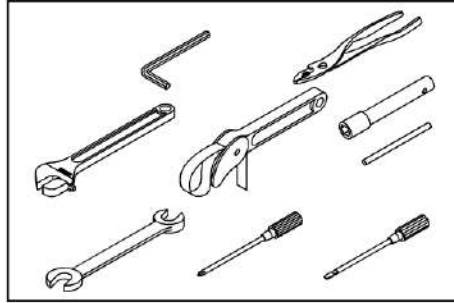
Safety equipment and switches may not be removed or made inefficient. Factory set adjustment values may not be changed.



For any checkup, repair, maintenance and all other work concerning your truck, please contact your CLARK dealer. Here, specially trained service personnel will be glad to help you at any time. Should you desire to carry out maintenance, repair and all other work on your truck yourself, you can of course obtain all required spare parts and all necessary materials from your CLARK dealer. Please note: Only original CLARK spare parts guarantee the trouble free functioning and optimum economy of your truck. Original CLARK spare parts are the best for your truck. With their dimensional stability as well as their high material quality due to a continuous and strict quality control, they correspond to those parts used in the series production of our trucks.

1. Safety Regulations

Finally we would like to draw your attention to the fact that any secondary damages due to improper handling, insufficient maintenance, wrong repairs or the use of other than original CLARK spare parts waive any liability by CLARK.



Fire Extinguisher

Prepare a fire extinguisher at the designated place and learn how to use it to prepare for a fire accident.



You must be well aware of the actions to take in a fire or other accident.

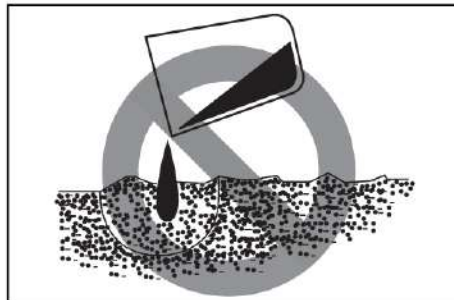
Define the emergency contact and prepare communication means and contact information.

Waste Disposal

Do not dump waste oil in sewer or river.

Collect drain oil in an oil pan.

Never spill waste oil on the ground.



The waste materials from oil, filter or battery must be classified and kept at designated places and disposed of by an authorized disposal service provider or nearest A/S center.

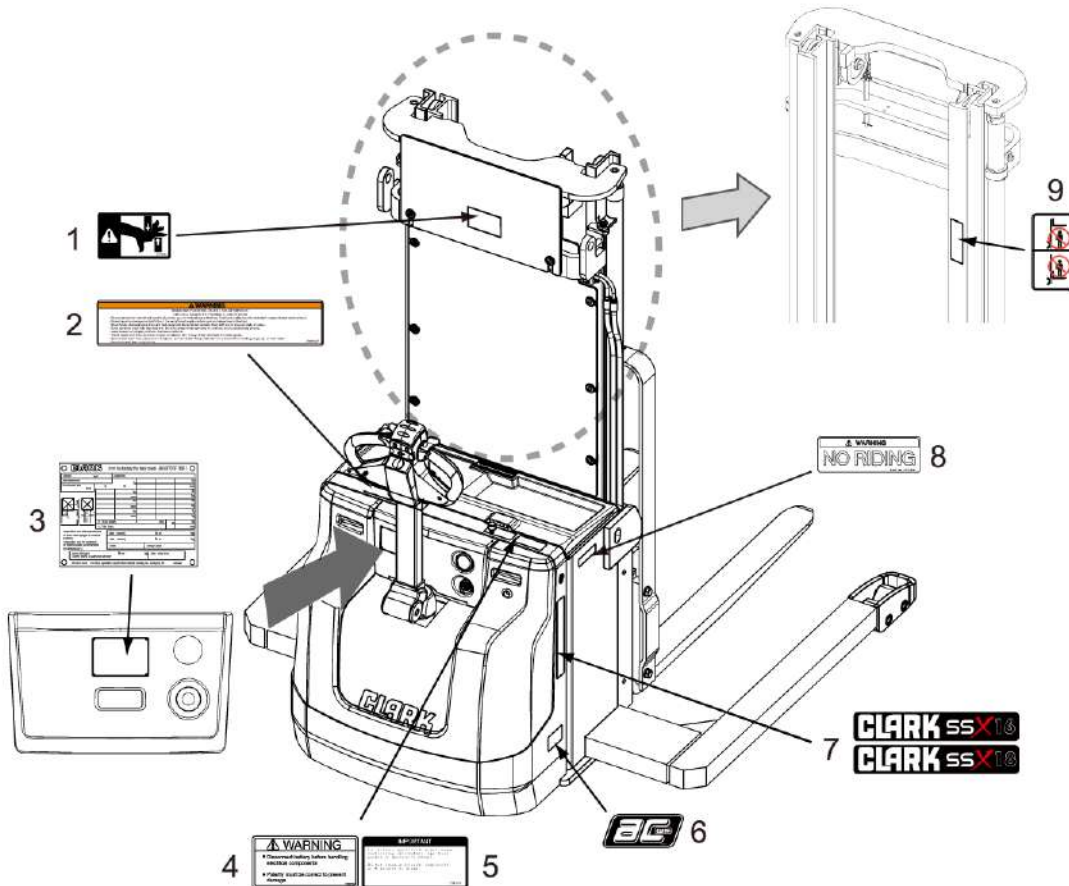
1. Safety Regulations

5. Warning and instruction decal

Names and positions of decals

The figure below shows the names and positions of the decals :

1. Decal - Hand Safety
2. Decal - Warning
3. Name Plate
4. Decal - Warning for Handling Electric Components
5. Decal - Importance of Handling Battery
6. Decal - AC Power Logo
7. Decal - Model
8. Decal - No Riding
9. Decal - Fork Safety



1. Safety Regulations

Affixing the warning decals

Any illegible safety and instruction decal shall be cleaned or replaced.

Only cloth and soapy water shall be used for cleaning the decals. Never use solvent.

Replace damaged, loosened, or illegible decals with new ones.

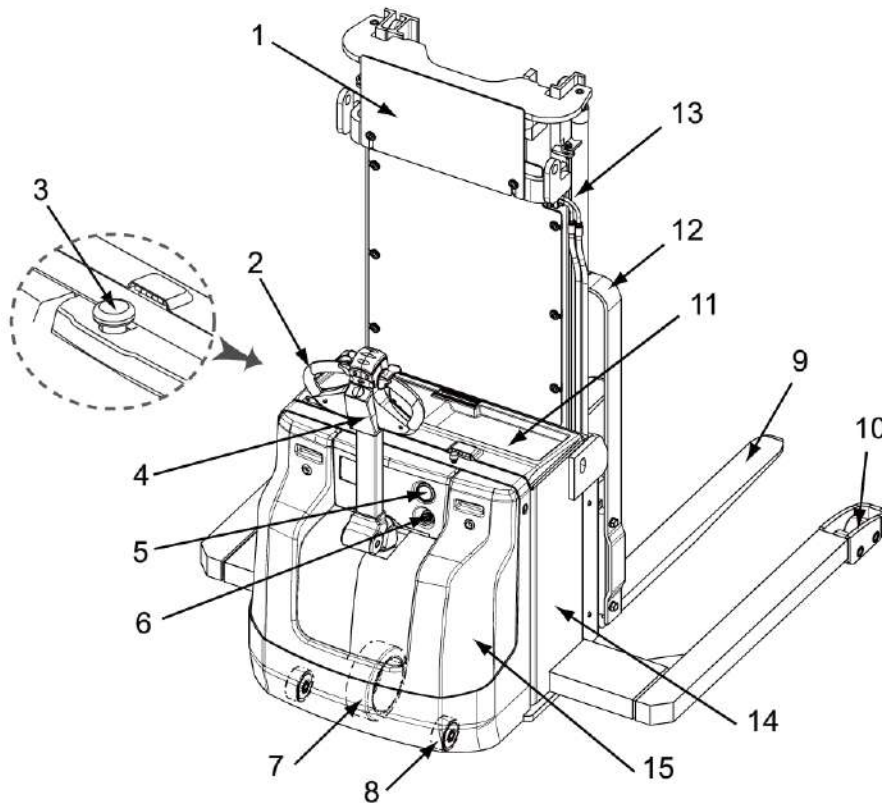
New decals shall be affixed to new parts mounted as replacement. Contact the CLARK dealer for new warning decals.



2. Know your Truck

1. Truck description

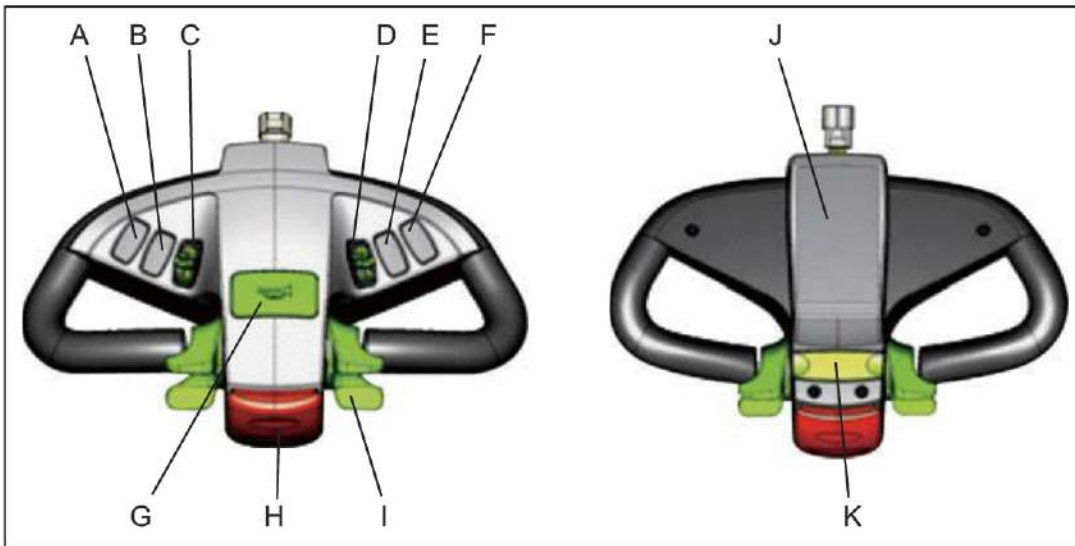
Truck name



1. Protection Guard
2. Tiller Handle(See page 2.2)
3. Emergency Shut off Switch
4. Keypad (Option, See page 2.6)
5. Instrument Panel (See page 2.10)
6. Key Switch
7. Drive Wheel
8. Caster
9. Fork
10. Load Wheel
11. Battery Cover
12. Carriage
13. Mast
14. Frame
15. Front Cover

2. Know your Truck

TILLER HANDLE



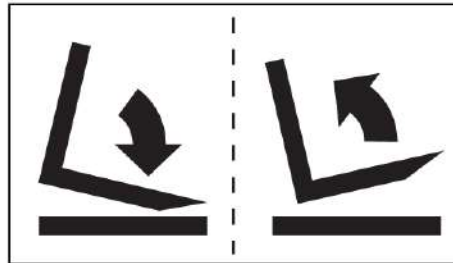
Designations and functions

A : Blind cap

Cap used for blind holes

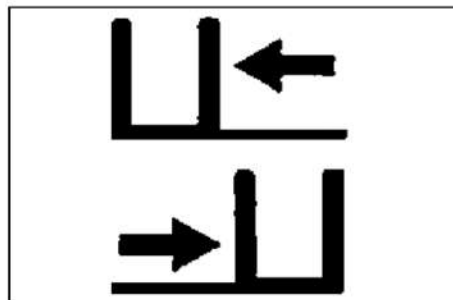
A : Tilt switch (option)

Pressing the switch forward inclines the forks forward.
Pressing the switch backward inclines the forks backward.



B, E : Side shift switch (option)

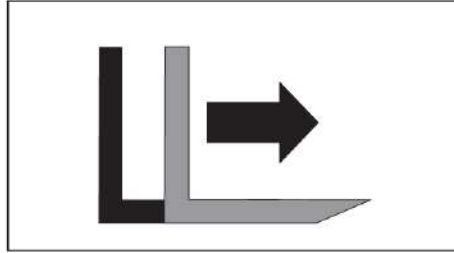
Operating the switch allows moving the forks to the left or right.



2. Know your Truck

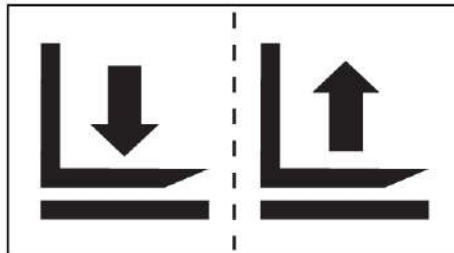
B, E : Reach switch (option)

Operating the switch allows moving the mast in or out.



C, D : Lift lever

Pushing the lever forward lowers the forks. Pulling it backward lifts the forks.

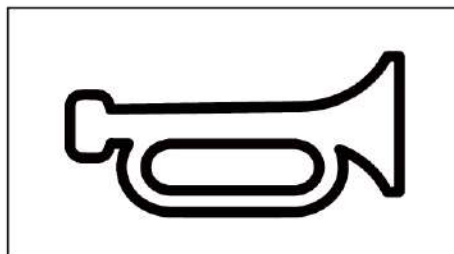


F : Constant speed switch (option)

This function limits the driving speed of the truck to a certain rate.

G : Horn

The switch is used for sounding a warning.



H : Emergency reverse button (Belly button)

The button is part of safety equipment. Pressing the button drives the truck backward in the fork direction for three seconds.

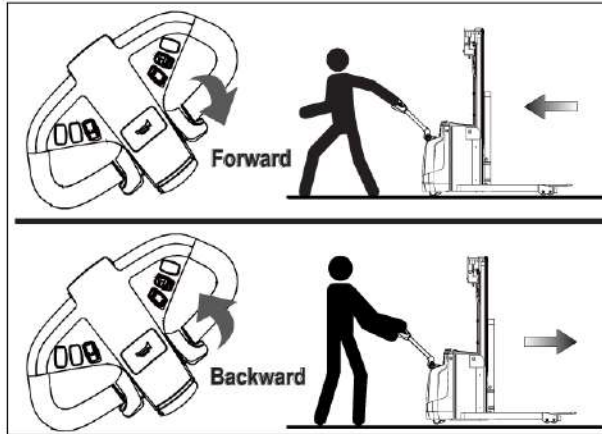
2. Know your Truck

I : Directional lever

The lever is used for adjusting the forward and backward driving speed of the truck.

Turn the lever in the driving direction (forward or backward). The more the lever is turned, the higher the driving speed increases. When the

directional lever is released, and the lever is within the work range, the truck is kept at the neutral position and stops.



J : Keypad (option)

The switch is used for the pin code functions.

The truck operates when codes are entered on the keypad in lieu of key switches. The settings are automatically switched to the settings configured for individual operators to customize the operation of the truck for the operators.

K : Pin wheel switch (option)

When the truck is in a space where the tiller arm operation is difficult, the truck can be driven forward and backward with the pin wheel switch without operating the accelerator. Pressing the switch once and holding it down drives the truck backward. Pressing the switch twice and holding it down drives the truck forward. (Forward and backward speed is limited to a certain speed. When the switch is held down, the truck operates even in a position beyond the operation zone of the tiller arm. Note, however, that the truck stops after operating for approx. 10 seconds.)

2. Know your Truck

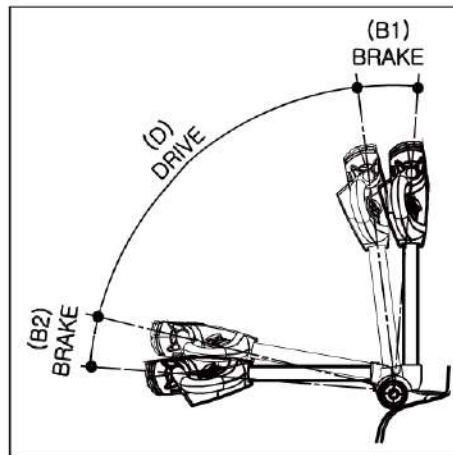
Tiller handle operation

Drive position : When the tiller handle is kept in the middle position (position D)

Brake position : When the tiller handle is kept at the top (position B1) or bottom (position B2)

NOTE

Releasing the tiller handle automatically moves it to the top position.

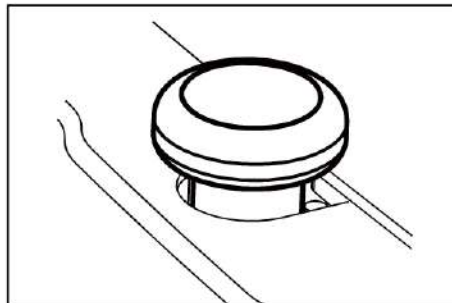


Emergency shut off switch

During the operation of the truck, power of the truck may be shut off completely by pressing the emergency shut off switch in an emergency situation.

The switch is installed on the top cover for easy access by the operator.

Make sure that the switch is kept turned off when charging the batteries with the truck-mounted battery charger.



CAUTION

Never use the emergency shut off switch as service brake.

2. Know your Truck

Keypad (option)



Keypad construction

The keypad consists of 10 digit keys (4), an Enter key (1) and ESC key (2) and LED indicator (3).

The LED indicates the starting up the truck operating statuses via a red/green LED;

When the correct password code is entered, the truck is ready for use.

You can allocate an individual code to each truck, operator or group of operators.

When the truck is supplied from the factory, the password code is set "0000".

Change the master and operator password code when you use the truck for the first time.

2. Know your Truck

Function

1) Starting the truck

The operator enters the four digit password code, followed by "Enter"

If the Enter key is pressed, the truck controller is powered up.

After establishing the CAN communication the four digits are sent to the truck controller.

The truck controller decides if the code is accepted or not.

Pressing the ESC-Key will reset the input sequence.

Entering more (or less) than four digits will not cause any action.

Procedure

- Switching on the emergency disconnect.
LED (3) flashes one time red and green for 1sec

- Enter the code.

Only a 4 Digit code will be accepted from Controller. After pressing "Enter" the Key pad relays will be closed and Controller could start up and flashes Green led at the handle controller.

When you enter the correct operator 4 digit code the flashes LED (3) flashes green.

If the LED (3) flashes red this means the wrong code has been entered.

If less or more than 4 digits and "Enter" are typed in, the Handle will not start up the Controller.

In this case the handle control also the flashes red LED.

Try again. 4 Digit code and "Enter" key. The truck is switched on.

2. Know your Truck

2) Switching the truck off

When the truck is operational, any key will not be sent to the truck controller.

If the “ESC” key is pressed, it will also be sent to the controller. After some delay the tiller head controller will disconnect the truck controller from power.

Procedure

- Press a ESC key (2).
- The truck is switched off.

3) Auto shutdown timer

After a certain time without use of the truck, the truck must shut down automatically.

Shutdown time is adjustable between 1 minute and 60 minutes with steps 1,2,5,10,15,20,30 and 60 Minutes.

If auto shutdown function is set to OFF, No shutdown will be automatically done.

A new action on the truck during shut down counting will reset the counter.

4) Key Code setting mode

The truck will start up to follow the operator profile according to the key code selected.

Operator profiles have power / normal / economy mode. Each mode can get a different performance as set by a supervisor.

The profile designates an operator as 0, 1, 2~14 and can provide the different truck speeds / accelerating rate / braking rates.



2. Know your Truck

Parameter settings

Setting values can be adjusted via handset programming. Refer to the brief menu for pin code functions.

Menu		Setting value range	Standard setting	Function
Operator profile	Operator number	0~14	0,1,2	Key Code setting Mode, Choose the operating profile mode
	Operator passage	0000~9999	0000 1111 2222	Starting the truck, Change the Pin code Number (0000 → mode 0, 1111 → mode 1, 2222 → mode 2)
	Operator mode	0~2	0,1,2	Truck running mode (0: Economy / 1: Normal / 2: Power)
Service Configuration	Auto shutdown function	OFF/ON	OFF	Auto shutdown Time setting mode
	Auto shutdown Time	1~60	1	Auto shutdown timer set It can be treated by service person only

2. Know your Truck

Instrument Panel

LED function

The MDI-CAN has only a LED. This LED is red and lights and blinks when an alarm is present.

Display function



1) Hour meter

An alpha-numeric liquid crystal display is fitted in the centre of the unit that shows the Hours Worked. The display is backlit (the backlight is normally on).

2) Alarms

The same display can also indicate the Alarm state, showing a Code corresponding to the type of Alarm. To attract attention, the Red LED will start blinking when an Alarm is generated. (refer to 2.17 page)

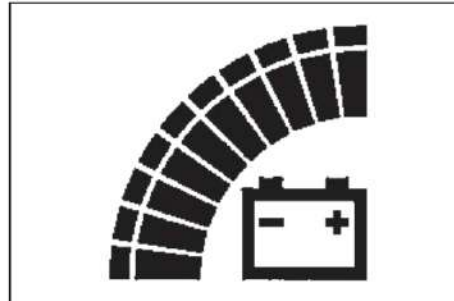
3) Software version

When the Key Switch is initially closed, the display shows the EPROM Version for a few seconds (EPXXX where XXX represents the version): MDI-CAN and then controller EPROM Version appears, each one for 2 seconds. Simultaneously the service symbol appears.

2. Know your Truck

4) Battery State of charge

The battery's State of Charge indication is integrated in the LCD display; it is shown by ten notches. Each notch represents the 10% of the battery charge. As the battery becomes discharged, the notches turn off progressively, one after the other, in proportion to the value



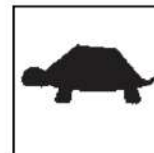
of the residual battery charge. This value, sent to the MDI-CAN by the controller via CAN-BUS, is displayed in the Tester Menu of the Zapi Console connected to the controller. When BATTERY LOW alarm appears on the controller, the battery symbol which is under the notches blinks. When the battery capacity is reduced to "Low," an alarm is triggered. In such case, the truck can still be driven; note, however, that mast lifting operation or initial operation is limited.

5) Other information

Three symbols inform the operator as follows :

Turtle Symbol :

It is normally off; when it appears (fixed) it shows activation of the "turtle" mode of the truck, in which maximum speed and acceleration are reduced.



2. Know your Truck

Service Symbol :

It is normally off; when it appears (fixed) it shows the request of programmed maintenance or the Alarm state. In this case the relative code will be displayed. The information supplied by the MDI-CAN can be extremely useful. Failures can be quickly identified by the Operator or Service Technician thereby finding the fastest solution to the problem.



Technician

Hourglass Symbol :

It is normally off; it blinks when the Hour Meter is working.



NOTE

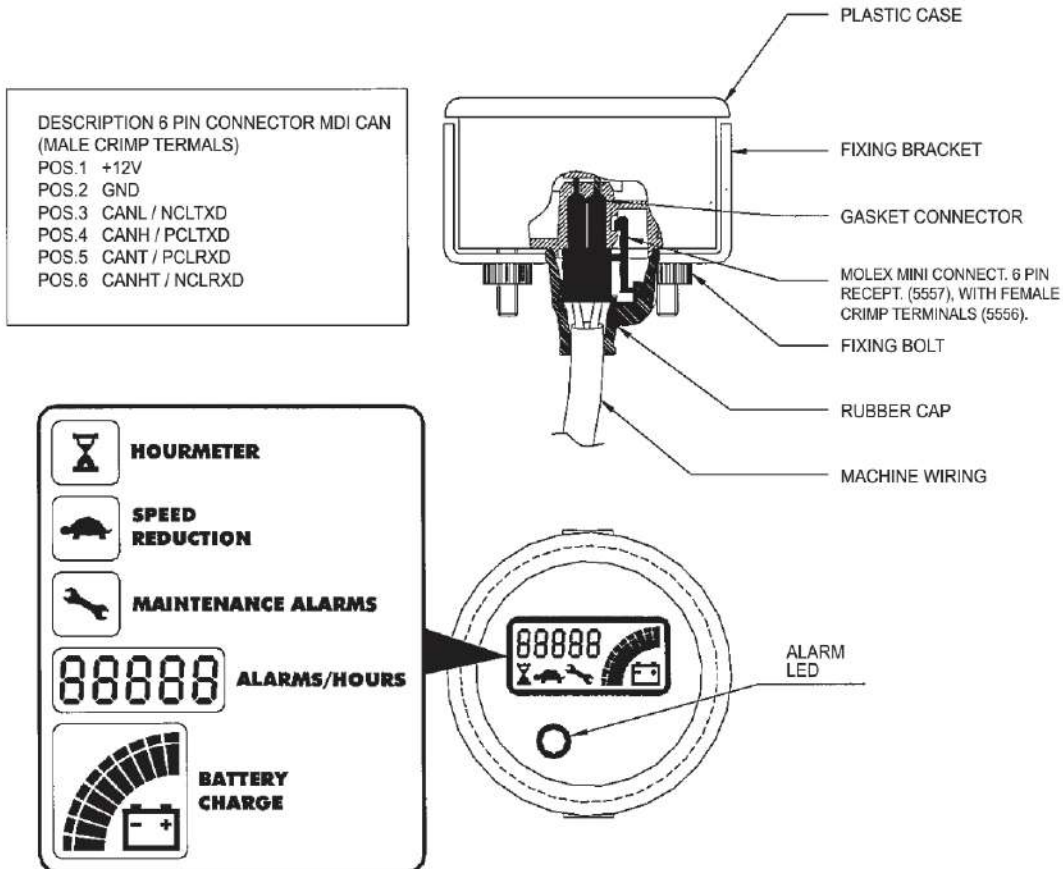
When the Key Switch is closed, the MDI-CAN makes a general test lighting all the display liquid crystals, the led and the backlight.

In this paragraph and in the following paragraphs the display behavior if the ZAPI MDI-CAN adopts the standard protocol is described. The ZAPI MDI-CAN can also use a not standard protocol. The controller decides which of the two protocols use. If the not standard protocol is used, the controller decides how to manage icons, LED, backlight and which information write in the MDI-CAN memory.

2. Know your Truck

Installation

1) Connection scheme



2. Know your Truck

2) Connector description

CNA connector : Molex Minifit

– CANBUS communication version

A1	+12V	MDI CAN positive power supply
A2	GND	MDI CAN negative power supply
A3	CANL	CAN Low signal.
A4	CANH	CAN High signal.
A5	CANT	A 120 ohm CANBUS termination resistance is connected between this pin and CANL. To connect this pin to CNA #6 to insert the resistance.
A6	CANHT	Internally short circuited to CANH. To connect this pin to CNA #5 to insert the 120 ohm termination resistance.

– SERIAL communication version

A1	+12V	MDI CAN positive power supply
A2	GND	MDI CAN negative power supply
A3	NCLTXD	Serial Transmission negative.
A4	PCLTXD	Serial Transmission positive.
A5	PCLRXD	Serial Reception positive.
A6	NCLRXD	Serial Reception negative.

2. Know your Truck

Hour-meter Memory Service

The MDI-CAN indicator retains the Hour Meter value in its own memory (EEPROM). In this way it is possible to transfer the machine hour meter value into other controllers, if a replacement is required, without loss of the hour meter record for a particular machine.

This can be achieved as follows :

- With the key Switch open, connect the ZAPI Console to controller.
- Close the key Switch. Set the function "LOAD HM FROM MDI" to ON. This can be found in the ADJUSTMENTS Menu. In some versions, this function may be called "AUX FUNCTION1".
- Open and close the key Switch.

The replacement controller will now receive and retain the machine hour meter value of the previous controller.

It has to be considered that :

- On default, the parameter "LOAD HM FROM MDI" is set to OFF. Therefore if this type of function is not activated as described above, the memory of the hour-meter will be lost at turn on.
- To avoid this situation, if the operator forgets to set parameter, the MDI-CAN signals the alarm "A98" for 1 minute. This alarm warns the operator of the imminent cancellation of the hour meter memory. After 1 minute, if the operator has not intervened, the hour meter of the MDI-CAN will be re-written, with the hour meter value of the new controller (Zero Hours if the controller is new).

2. Know your Truck

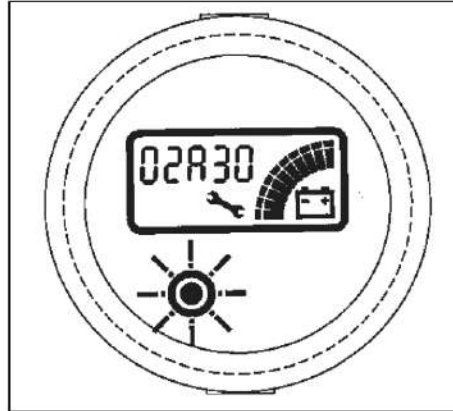
Alarms

The ZAPI MDI-CAN gives indication of the Alarms of the controllers to which it is connected via CAN-BUS, with a corresponding code.

When an Alarm is generated, the Red LED blinks to attract the attention of the operator.

The symbol of Monkey Wrench also appears. The string shown on the display is XXAYY, where

XX and AYY represent respectively the alarmed node and the alarm code. The alarm code meaning must be present in the controller user manual.



Decoding of the alarms displayed on the MDI-CAN

Using the indication given by the MDI-CAN and after reference to the following table, the operator can solve the problem, if the failure is not serious. It will also be necessary to refer to the paragraph describes the Alarms in the Manual of the relevant controller.

If the Alarm information suggests or indicates a serious problem, the operator will be able to give useful information to the Service Centre, thereby reducing down time with relative costs savings.

2. Know your Truck

CLARK CODE	ZAPI CODE	ALARM	CONTROL
6	225	MOTOR SHUTDOWN	Traction
7	211	STALL ROTOR	
11	227	PASSWORD NOT OK	
12	226	PASSWORD YET PRESENT	
21	229	BATTERY CHARGE	
65	65	MOTOR TEMPERATURE	
66	66	BATTERY LOW	
79	79	INCORRECT START	
88	249	MAINTENANCE HOUR	
89	218	SENSOR MOTOR TEMPERATURE KNOCKOUT	

NOTE

The 16A06 string corresponds to the NO COMMUNICATION alarm. It is the only MDI-CAN alarm and it indicates a problem in the communication with the traction controller. Check the connection between MDI-CAN and controller.

NOTE

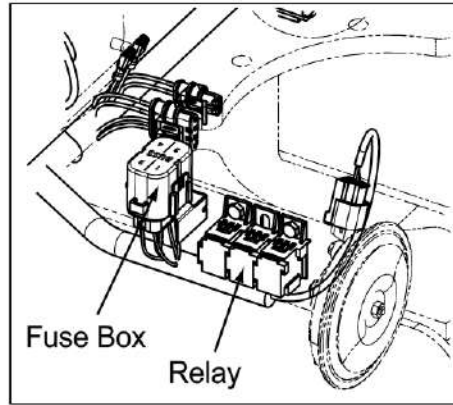
If you see alarms other than the codes indicated in the table above, please call the CLARK service center.

2. Know your Truck

Fuses

Replace faulty fuses only with fuses of the same amperage.

If a fuse blows frequently, there is a fault in the electrical system. To rectify the fault, contact your CLARK dealer.



Specification

NO	Capacity	Load Name
F1	4A	Tiller
F2	4A	Controller
F3	4A	Accessory
F4	4A	Hyd. Valve

UL Classification Symbol

Your truck meets the a UL standard if the UL classification symbol is affixed (see fig.).

If this symbol is absent, you may want to not place the truck in service in your operation.



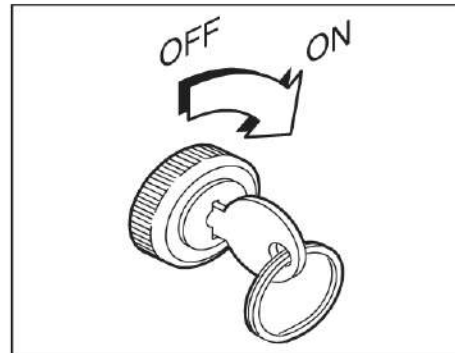
2. Know your Truck

2. Operation of the truck

Key switch

Turning the key switch to the ON position makes the truck ready for operation.

Turning the key switch to OFF position cuts off power supply to the instrument panel, motor, and electric circuits and allows the removal of the key.



Inspection of the truck prior to starting work

A damaged truck or defective components may cause accidents.

If damage or defect of the truck or the components is detected during inspection, do not start the truck until the defect is corrected.

- Immediately report damage or defect to the supervisor.
- Affix a tag on the defective truck and prevent the operation of the truck.
- Return the truck to operable conditions only after the defect is identified and corrected.

2. Know your Truck

Inspection prior to operation

Check the external surfaces of the truck for any indication of damage or leaks and immediately replace any damaged hoses or connectors.

Check the battery mount and wiring for damage; make sure they are securely connected.

Check the battery connector for secure connection.

Check the load handler for cracking or bending. Otherwise, check the forks for visible damage indication such as abrasion.

Check the driving wheel and the road wheels for damage.

Check the markings and decals for legibility and cleanliness.

Check the emergency shut off switch.

Make sure that the controls function smoothly, and the tiller handle comes fully to the vertical position when released.

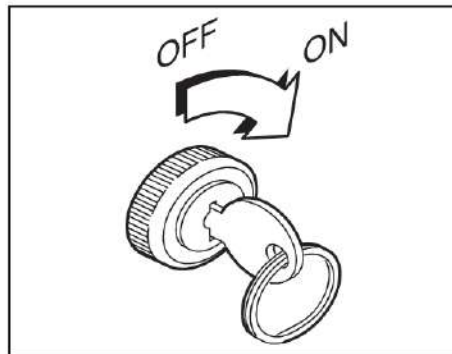
Check the warning signal.

Check the brake.

Getting ready for operation

1) Startup

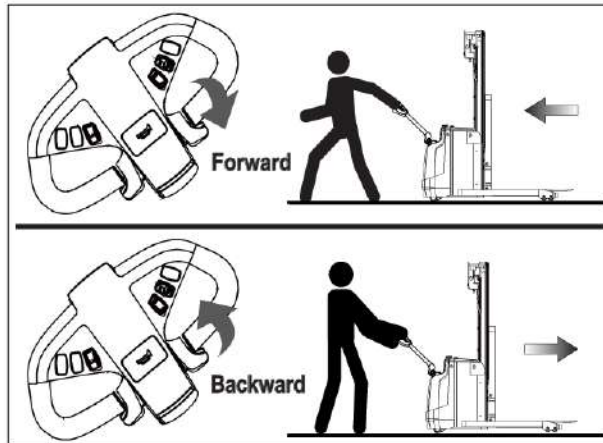
Check the components and batteries for any abnormal condition. If there are no abnormal conditions, turn the key switch to ON position. At this time, the remaining battery indicator and the operating hour indicator light up simultaneously.



2. Know your Truck

2) Driving

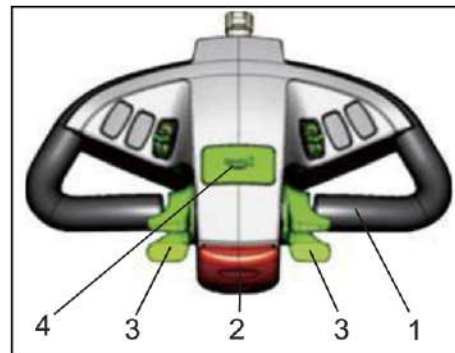
When driving the truck with loaded, do so with the fork kept raised. The truck moves forward when rotating the lever forward while tilting the tiller and backward when rotating the lever backward. The rotary limit switch and the Hall sensor embedded in the steering wheel allow adjusting the driving speed and facilitate the operation of the truck.



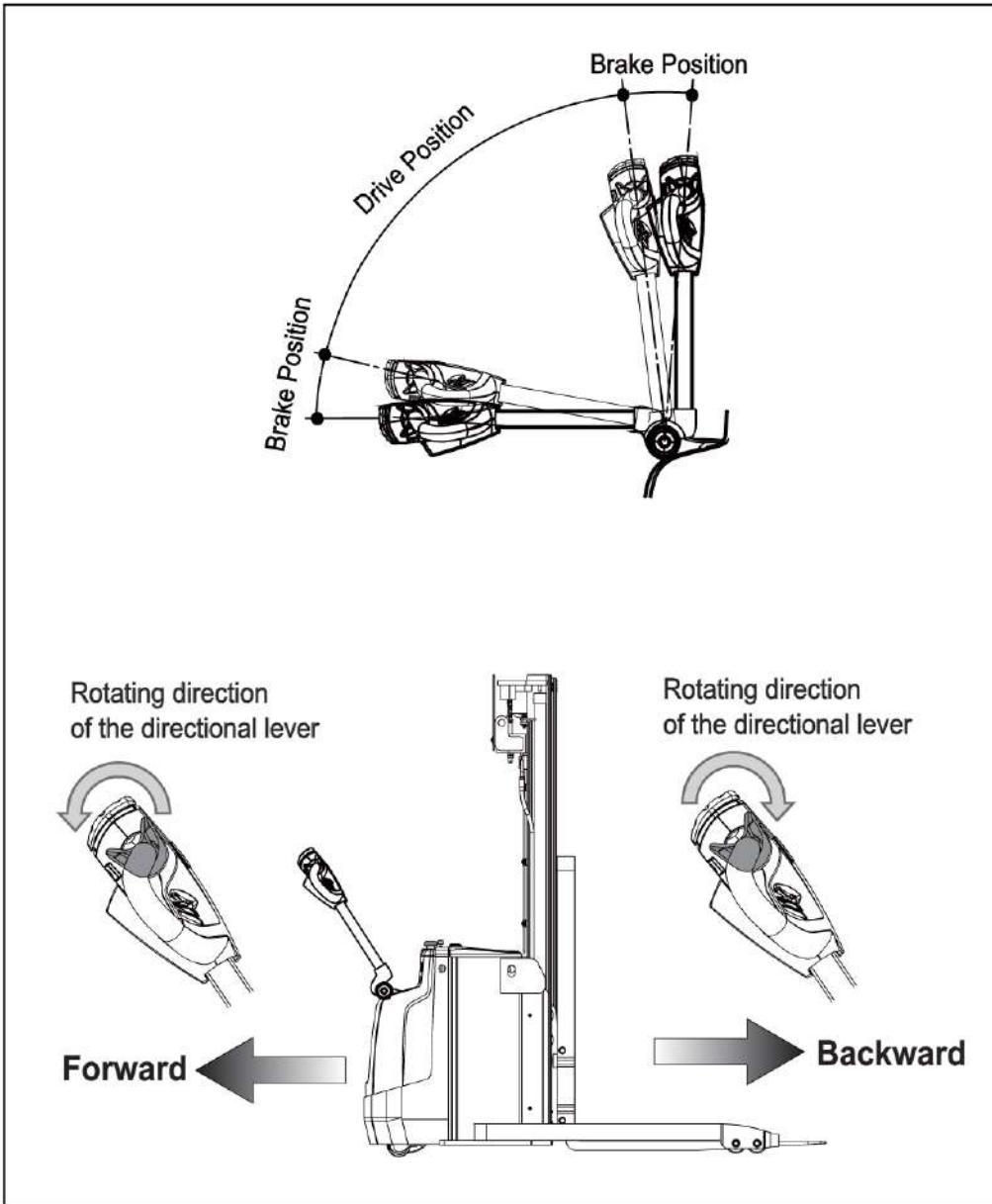
DANGER

Rapid rotation of the directional lever may cause accidents. Slowly rotate the lever when starting the truck.

1. Handle
2. Emergency reverse button
3. Directional lever (speed adjustment)
4. Horn



2. Know your Truck



2. Know your Truck

3) When changing the driving direction to the left or right

Slowly turn the driving handle to the desired direction. Minimizing the driving speed at this time ensures safety.

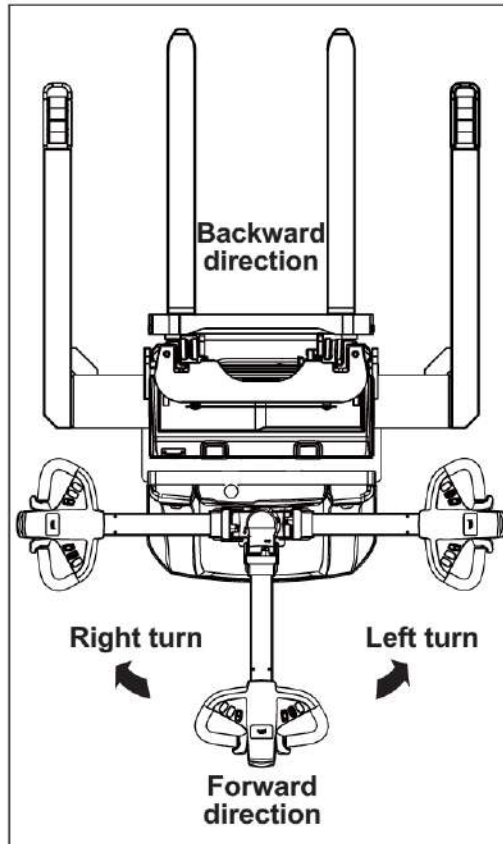
Perform left or right steering as shown on the figure.

The tiller handle may be rotated to both left and right directions by 90 degrees.



WARNING

There is a need to reduce the driving speed sufficiently before changing the driving direction to prevent the truck from overturning.



- The truck shall be operated in the specified areas by a qualified operator.
- Do not change the driving direction until the truck is brought to a standstill.
- When leave the truck, align the steering wheel to the center, apply the brake, park the truck, and then turn the key switch to OFF position.
- When servicing the truck or charging the battery, turn the key switch to OFF position to cut off power supply to the truck completely. Actuate the emergency cut-off switch.
- Do not forcibly operate the tiller handle while the truck is kept at a standstill.

2. Know your Truck

CAUTION

Since the truck is power-driven, there are a number of power cables and parts inside the truck. Performing inspection work with the switch kept turned on may cause serious damage to the truck or electric shock to the operator due to short circuit.

CAUTION

Never operate the driving lever with the brake applied (there may be adverse effects on the condition and lifecycle of the motors and controllers of the truck). Do not attempt sudden acceleration or sudden startup (may adversely affect the truck). Sudden change of driving direction during driving may cause the truck to overturn.

WARNING

The backward driving speed on a descending slope is higher than the speed on flat ground. Do not change the direction of the forward and backward switch during operation (the truck may be adversely affected, resulting in failures). Failure or loss of control of the truck during operation causes accidents.

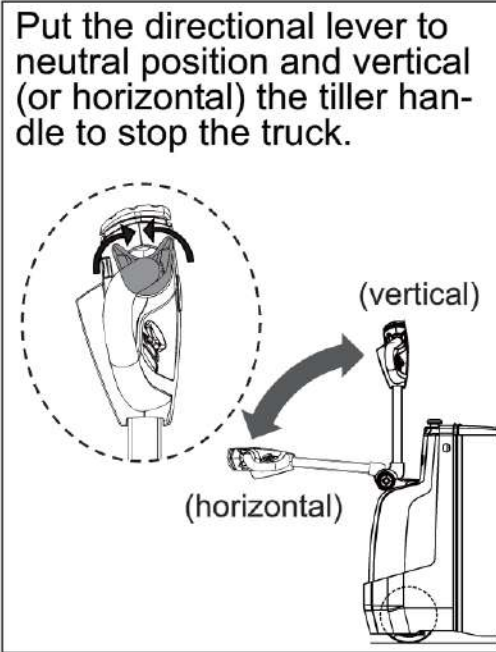
2. Know your Truck

Stopping the truck

To stop driving

Turning the directional lever in the reverse direction of driving while accelerating the truck may cause rapid deceleration due to electric braking.

When driving the truck slowly, put the directional lever to neutral position, vertical (or horizontal) the tiller handle to stop driving the truck.



CAUTION

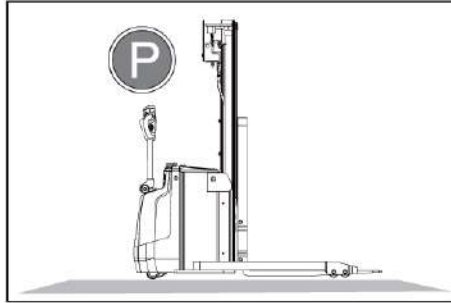
- Do not stop the truck if the directional lever is not kept at the neutral position.
- If the proximity sensor on the connection of the steering handle is damaged, the lever is inoperable. In such case, press the emergency shutoff switch to stop the truck.
- Never use the emergency shut off switch as service brake.
- Sudden braking of the truck during driving may cause slippage between the wheels and the ground. Always drive the truck slowly.
- Lowering the tiller handle to stop the truck shall be done for finely controlled operation. Once work is complete, keep the tiller handle vertical and put the directional control into the neutral position.

2. Know your Truck

Parking

A truck that is not securely blocked causes accidents.

When parking the truck on a slope, or if the tiller handling is not kept vertical when parking, or when parking the truck with load / tiller handle is kept lowered, a dangerous situation arises. Never perform this type of parking.



- Always park the truck on flat and even ground. If necessary, make use of wedges to block the truck.
- Always lower the mast and the forks fully.
- Select a place for parking where persons are not injured by the lowered forks.

To park the truck safely

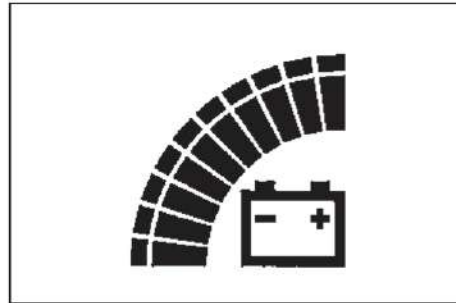
Procedures

- Fully lower the carriage.
- Turn the key switch and remove the key.
- For the pin code, press the ESC key.
- In case of a need to park the truck for a prolonged period of time, press the emergency shut off switch.

2. Know your Truck

Remaining battery indicator

The calibration for the battery power remaining indicator is based on the standard battery. When you use batteries that do not require service or a special battery, indication and re-calibration of the remaining battery indicator shall be performed by a qualified engineer. Failure to perform this adjustment may cause damage to the battery due to the excessive consumption of battery power.

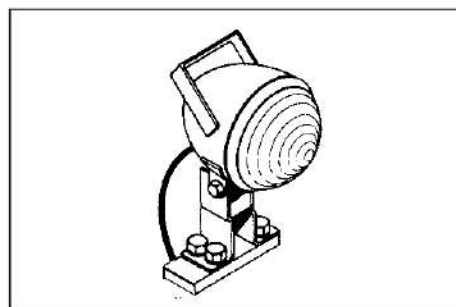


Lifting is prohibited if the remaining battery is lower than the required level.

3. Safety regulations for truck operation

Travel routes and work areas

Only use lanes and routes specifically designated for truck traffic. Unauthorized third parties must stay away from work areas. Loads must only be stored in places specially designated for this purpose.



The truck shall only be driven in a work area with good lighting conditions to protect persons and loads from any damage. Install additional lighting fixtures if driving the truck in areas with poor lighting is inevitable.

2. Know your Truck



CAUTION

Do not exceed the permissible surface and spot load limits on the travel routes. At blind spots get a second person to assist.

Travel conduct

The driver must adapt the travel speed to local conditions. The truck must be driven at slow speed when negotiating bends or narrow passageways, when passing through swing doors and at blind spots. The driver must always observe an adequate braking distance between the truck and the vehicle in front and must be in control of the truck at all times. Abrupt stopping (except in emergencies), rapid U turns and overtaking at dangerous or blind spots are not permitted. Do not lean out or reach beyond the working and operating area. Do not drive on an uneven surface. The road wheels and the driving wheel may be damaged.

Travel visibility

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

2. Know your Truck

Negotiating slopes and inclines

Negotiating slopes or inclines is only permitted if they are specifically designed as travel routes, are clean and have a non-slip surface and providing they can be safely travelled along in accordance with the truck's technical specifications. The truck must always be driven with the load unit facing uphill. The industrial truck must not be turned, operated at an angle or parked on inclines or slopes. Inclines must only be negotiated at slow speed, with the driver ready to brake at any moment.

Negotiating lifts and docks

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

Type of loads to be carried

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

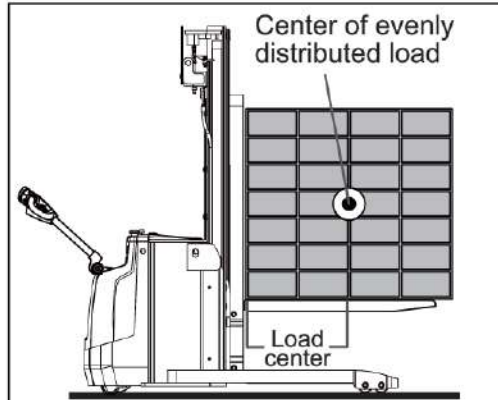
2. Know your Truck

Lifting, transporting and stacking cargos

Capacity & Load Center

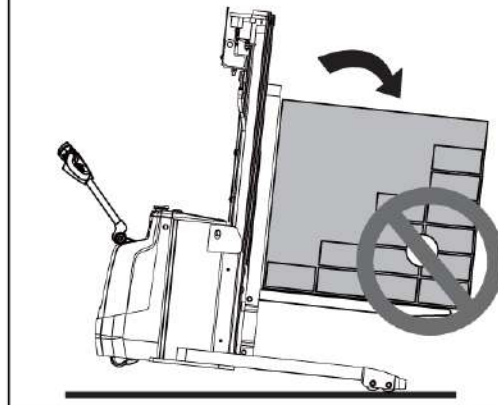
Truck capacity

Capacity is the load (including pallet or container) that can be lifted to a given height at a given load center. See the name plate on your truck. Make certain you use the correct units of measure.



Load center

Load center is the distance from the load backrest or vertical face of the fork to the center of an evenly distributed load.



Loads must be evenly distributed

Your truck could tip over if a load is shifted to the front or side of a pallet or container. Make sure your load is evenly distributed and centered over the forks.

2. Know your Truck

Precautions for transporting load

WARNING

Non-secure and wrongly loaded load may cause accidents.

The operator shall make sure that the forks are correctly inserted into the pallet, and that the capacity of the truck is not exceeded before lifting the forks.

- Instruct other persons to leave the hazardous area where the truck is operated. If any person does not leave the area, halt the work using the truck.
- Carry only correctly secured and loaded. Pay special attention to preventing overturning or dropping of some load.
- Do not transport damaged loads.
- Never exceed the maximum weight stipulated in the capacity table.
- Never stand under lifted forks.
- Never stand on the forks.
- Do not lift a person on the forks.
- Insert the forks under load as low as practically possible.

NOTE

Perform stacking and recovery at further lowered speed.



2. Know your Truck

How to operate the truck

Movement in the fork direction (backward)

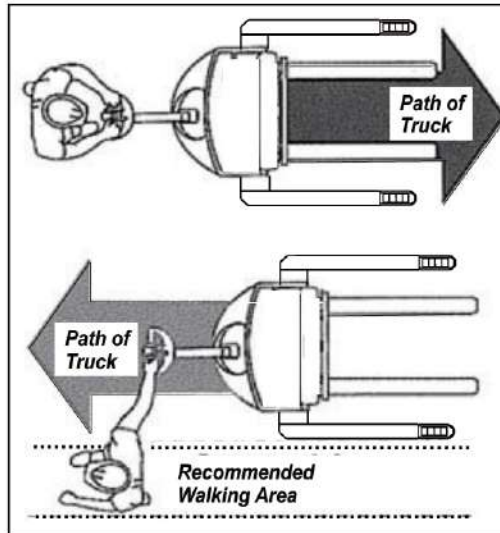
Operate the tiller handle and directional lever with both hands when moving in the direction of forks (backward).

Movement in the direction of front cover (forward)

When moving in the direction of the front cover (forward), walk with the truck on one side and slightly ahead of the front cover.

Hold the tiller handle with a hand closest to the truck and operate the directional lever while moving in that direction.

Make sure there are no persons or other objects in the movement path of the truck. Take care against the collision of the feet and the torso with the truck when changing the driving direction. The operator shall wear the stipulated safety items.

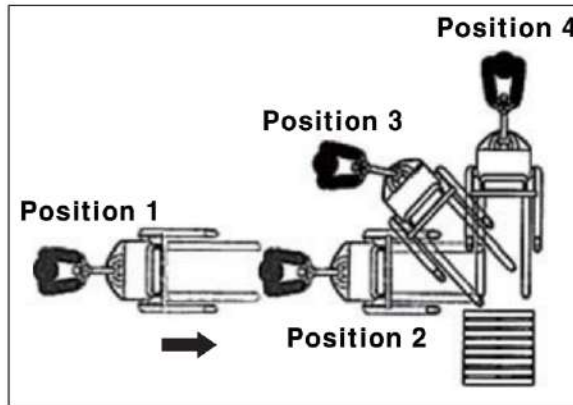


2. Know your Truck

Entering a pallet

Follow these steps when entering a pallet with your truck :

1. Approach the pallet from either side with the nearest fork about 3 in. (76 mm) out in the aisle. (Position 1)
2. When the fork is just forward of the pallet edge, stop. (Position 2)
3. Turn the tiller handle to swing the front of the truck out into aisle until the fork begin to enter the pallet at an angle. (Position 3)
4. Continue maneuvering the truck, gradually returning the tiller handle straight ahead until the truck faces the pallet squarely. (Position 4)
5. Drive the truck forks-first until the pallet is completely on the forks. Make sure that the load wheels are not resting on any of the boards on the bottom of the pallet.
6. Lift the pallet just enough to raise it off the floor, rack or load beneath.
7. Change direction and carefully swing the truck out into the aisle.



2. Know your Truck

Lifting the forks

Requirements

Insert the forks correctly into the pallet.

The load weight shall be compliant with the capacity of the truck.

The load should be always evenly on the forks.

Procedures

Carefully drive the truck to the pallet.

Slowly insert the forks into the pallet until the fork shank reaches the pallet end.

Press the “Lift” button until the forks are lifted to the desired height.



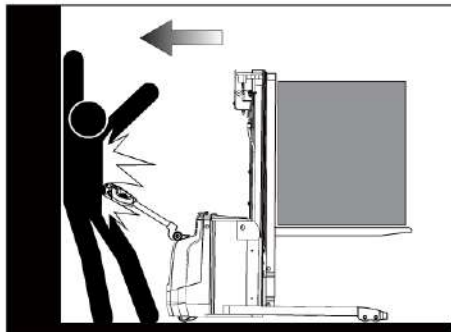
CAUTION

Once the forks reach the desired height, release the button.

Cautions during operation

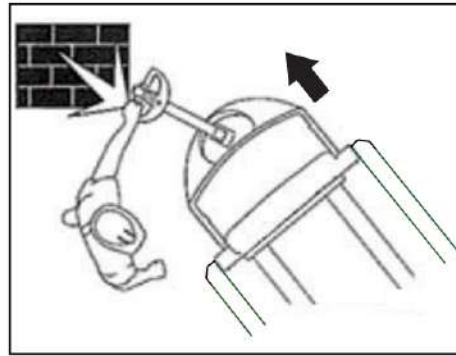
Carefully read and fully understand the following requirements :

- Carefully examine the movement path of the truck. No part of the operator or other person shall be caught or pressed between the truck and the stationary section.
- Make sure that the front cover is securely fastened.



2. Know your Truck

- When moving in the direction of the front cover (forward), first move the truck by walking by the side of the truck. Make sure that the truck neither hits your leg nor treads on your foot.
- When moving the forks first (backward), hold the tiller handle with both hands to operate the truck. In particular, care shall be exercised when changing the driving direction. Adequate gap shall be maintained between the feet of the operator and the truck.
- Move the truck in the direction of best visibility. Carefully examine the direction of movement and reduce the driving speed in congested areas.
- Reduce the driving speed if the floor of the operating area is slippery or wet. Do not drive the truck by running over objects on the floor. Particular attention shall be paid to coarse floor.
- Move the truck with the forks lowered near the floor. Load cargo against the vertical surface of the mast or forks.
- Carefully examine the area before changing the driving direction.
- Never attempt sudden control of the truck such as sudden braking. Practice smooth operation at normal driving speed.
- When lifting or lowering the forks, make sure that there are no persons or obstacles in the vicinity of movement of the forks.
- Further attention shall be paid when using the truck in a place with risk of falling objects.
- Do not ride on the truck.



2. Know your Truck

- Once operation of the truck is complete, fully lower the forks and drive the truck. Never park the truck on a slope. If parking the truck on a slope is inevitable, secure the wheels of the truck with blocks.
- Never forcibly operate the tiller handle when the truck is kept at a standstill.

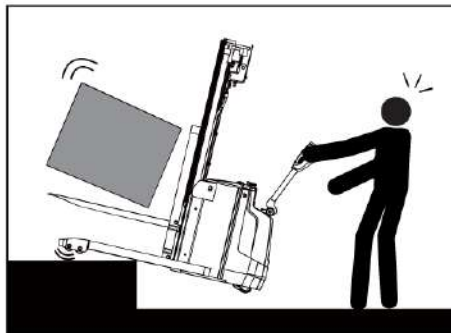
Slow down for spills or wet floors

Powder or liquid spills can cause slippery floors. Slow down or you could lose control of steering and braking. Be careful and allow for a longer stopping distance. Don't run over objects on the floor.



Avoid falls and tipovers

Tipovers and falls are very serious accidents; you can be crushed or even killed. The best way to prevent injury is to know where you are at all times and follow the rules of safe truck operation.



- Be extremely careful when working around docks, dockboards and trailers.
- Stay away from the edge of docks and ramps.
- Make sure dockboards are secure.
- Check that trailer wheels are chocked.

2. Know your Truck

- Travel with the load or forks close to the ground. Watch for overhead obstructions. Perform all truck movements smoothly and at a speed that will give you time to react in an emergency.
- An unloaded truck can tip over also. You must be just as careful using an unloaded truck as you are using a loaded one.

Use your truck safely

Keep your hands and feet away from all moving parts such as masts, chains, forks or wheels.

Never stand on or under the forks, or allow anyone else to stand on or under them. The only way to lift people is with an approved platform. Never ride on the truck or let anyone else ride. There is no safe place to sit or stand.

Before you leave your truck :

Lower the forks to the floor.

Shut the truck off with the key or disconnect the battery.



2. Know your Truck

Transporting cargo

Requirements

- Load shall be correctly loaded on the forks.
- The mast shall be kept lowered for transport of load. (Approx. 10 cm above the ground)
- The ground conditions shall be good.

Procedures

- Slowly increase and decrease the driving speed.
- Adjust the driving speed adequately according to the conditions of driving path and cargo for transport.
- Drive the truck at constant speed.
- Make sure that there are no passersby on the crossing and path.
- Never drive the truck at a blind spot while examining the surroundings.
- On slanted surfaces or slopes, always transport cargo kept uphill; never make curved motions or turning.

2. Know your Truck

Unloading load

Stacking load



CAUTION

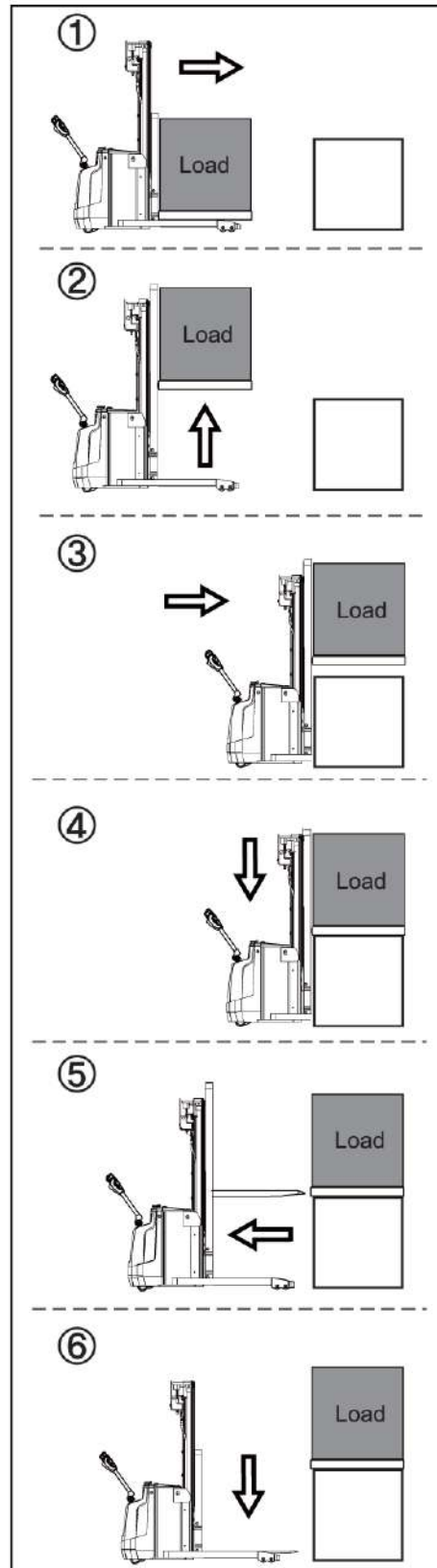
Do not stack loads in front of safety equipment, on the driving path or emergency road, or near equipment that is always used.

Requirements

- Location of warehouse adequate for storing loads

Procedures

- Carefully drive the truck to the place of storage.
- Press the “Lower” button.
- Carefully lower load.
- Care shall be exercised when removing the forks from the pallet.



2. Know your Truck

Platform operation (Optional)

Scope of operation :

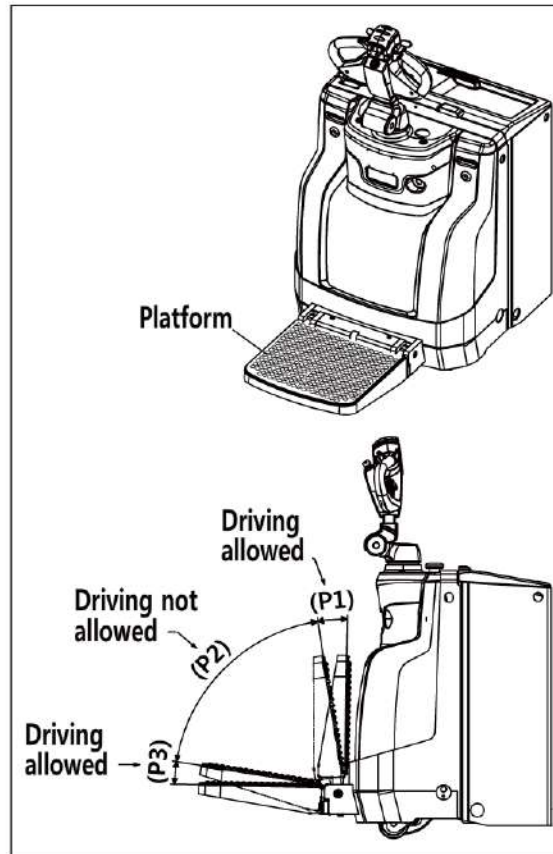
When the platform is kept at the top position (P1) or the bottom position (P3)

Scope of inoperability :

When the platform is kept in the middle position (P2)

NOTE

When getting on the platform to drive the truck, lower the platform to the bottom position (P3) first.



Storage of the truck (routine)

Always keep the battery terminals clean. Clean the terminals with baking soda to remove foreign materials, if any, and apply grease on the terminal block to prevent contamination by foreign materials.

Perform full charging of the battery every 6 ~ 8 weeks to avoid reducing the service life of the battery. Note that the service life of the battery is reduced when continuously operating the truck at a low charging level.

3. Inspection and Maintenance

1) Daily inspection

Always check that your truck is operationally safe. Never drive a truck you have not checked. Before starting work, you should convince yourself that the truck is in an operationally safe state. Carry out this inspection by the following list.



- Checking the truck for any signs of damage and dirt
- Check wheel
- Check wheel nuts for tightness
- Check the display unit are working properly
- Check horn is working properly
- Check service brake is working properly
- Check parking brake is working properly
- Check steering is working properly
- Check upright and hydraulic system are working properly
- Check tension of lift chains is equal
- Check forks
- Check battery acid level and battery charge
- Check battery connectors are a tight fit
- Check battery and wiring connectors are a tight fit



CAUTION

**Always check that your truck is operationally safe.
Never drive a truck you have not checked.**

3. Inspection and Maintenance

2) Maintenance Safety Regulations

Persons to be appointed for maintenance and recurring inspections

Only qualified and authorized persons are allowed to carry out maintenance work. Periodic inspections shall be carried out by a technical expert. The aforesaid technical expert shall submit his expert opinion and evaluation only from the point of view of safety without being influenced by company and economic circumstances. He shall have sufficient knowledge and experience in order to be able to assess the status and condition of the truck and the effectiveness of the protective equipment in accordance with the latest state of the art and the basic principles for the inspection of the trucks. The truck manufacturer has trained staff available for maintenance and periodic inspections.

Intervals for maintenance work

The maintenance work shall be carried out in intervals specified in Page 3.14. Important is to carry out the safety check in accordance with national regulations. CLARK recommends checks in accordance with the FEM 4.004. The truck must be inspected at least annually (consider national regulations) or after any unusual event by a qualified inspector. The owner is responsible for ensuring that faults are immediately rectified. The service intervals stated are based on single shift operation under normal operating conditions. They must be reduced accordingly if the truck is to be used in conditions of extreme dust, temperature fluctuations or multiple shifts.

3. Inspection and Maintenance

Periodic inspections

A periodic inspection shall be carried out in the EU member states in accordance with directive 95/63/EC (Directive on Minimum Regulations for Safety and Health Protection) then equipment is used by employees at work. The relevant national regulations shall be observed with regard to non-EU states. A periodic inspection by a technical expert shall include an examination of the current state of the components, equipment and installations, together with the completeness and effectiveness of the safety devices. The truck also shall be thoroughly examined for any damages or impediments caused by possible improper use. A test record must be issued. The results of the tests must be kept until the next examination at the latest. The operator shall ensure that defects are rectified as soon as possible.

Quality and quantity of the required oils and lubricants

Only the oils and lubricants stated in the operating instructions shall be used.

Spare parts

Only those spare parts shall be used which are specified by the manufacturer. If spare parts are used which have not been approved by the truck manufacturer, the risk of accidents can increase due to inadequate quality or an incorrect connection. If inadmissible spare parts are used, the user shall assume full and unlimited responsibility for any damage sustained. The CE Declaration of Conformity of the manufacturer ceases to be valid if spare parts not approved by the manufacturer are used.



3. Inspection and Maintenance

Servicing for which no special qualification is required

Simple servicing such as checking the oil level or checking the level of liquid in the battery may also be carried out by the operator. Additional details can be found in the operating instructions.

Safety installations

All safety devices shall be re-installed after servicing and repairs and shall be checked for proper functioning.

Settings

If hydraulic and electric components are repaired or replaced, the equipment related settings shall be observed.

Lifting and jacking up



WARNING

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

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



3. Inspection and Maintenance

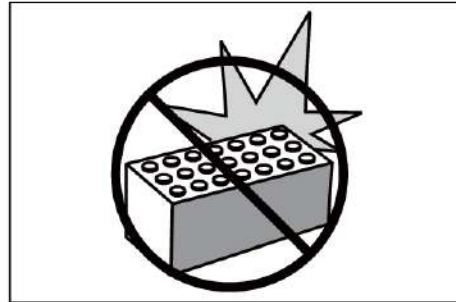
Cleaning



CAUTION

Do not use flammable liquids to clean the industrial truck.

- Always disconnect the battery before starting cleaning work.
- Carry out all necessary safety measures to prevent sparking before cleaning (e.g. by short-circuiting).
- Do not clean the electrical system with water.
- Clean the electrical system with weak suction or compressed air (use a compressor with a water trap) and not a conductive, anti-static brush.



CAUTION

If the truck is to be cleaned with a water jet or a high-pressure cleaner, all electrical and electronic components must be carefully covered beforehand as moisture can cause malfunctions. Do not clean with pressurized water.

3. Inspection and Maintenance

3) Maintenance

Electrical system

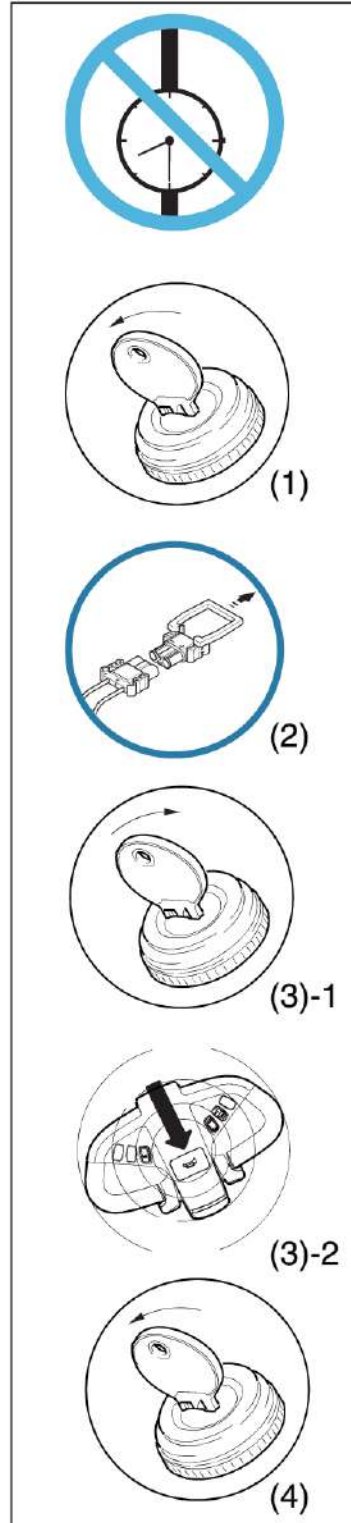
 **WARNING**

Work on the electric equipment of the trucks shall only be carried out in a power free condition. Work on live components for functional testing, checks and adjustments shall only be carried out by instructed and authorized persons taking the appropriate precautionary measures. Before carrying out any maintenance work on electrical components, always disconnect the battery and take off watches, jewelry, rings or other metal objects.

High-performance, modern controls are equipped with capacitors. Residual voltage can still be present after the battery has been disconnected.

For this reason, undertake the following measures before servicing :

1. Switch off.
2. Disconnect the battery connector.
3. Switch on the ignition and wait until the display lights go out. Activate the horn for approx. 5 seconds.
4. Switch off.



3. Inspection and Maintenance

Before calling customer service at your CLARK dealer because of a performance drop or total failure of your truck, please check the following points :

1. Is the battery sufficiently charged?
2. Is the battery connector connected correctly and securely?
3. Are there any foreign particles in the operating panel?
4. Are all wires, cables and plug connections securely connected and damage free?
5. Are all fuses in working order?
(Check the fuse connections for corrosion).

Electric motor

General visual check

Check for damage to terminal boards. Check for damage to encoder connector and temperature sensor connector.



Motor over temperature operation checklist

When the overheat alert of driving motor appears by the environment temperature rising and using the vehicle excess, this vehicle travels slowly due to reduce the output of motor by the controller. When the overheat alert (#065) of driving motor appears, the operator must stop the truck, and cool the motor long enough, and then restart the operation of truck.

3. Inspection and Maintenance

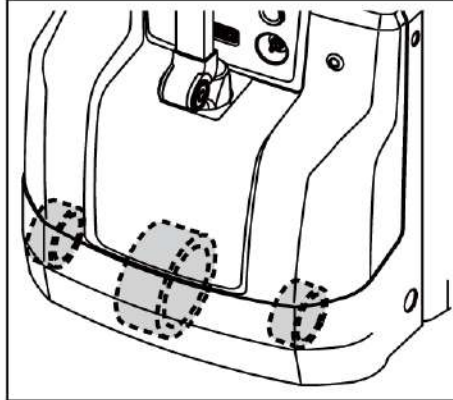
Wheels



WARNING

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

The quality of wheels affects the stability and performance of the truck. Uneven wear affects the truck's stability and increases the stopping distance.



- When replacing wheels make sure the truck is not skewed.
- Always replace wheels in pairs, i.e. left and right at the same time.

When replacing wheels installed at the factory, only use the manufacturer's original spare parts. Otherwise the truck's rated performance cannot be ensured.

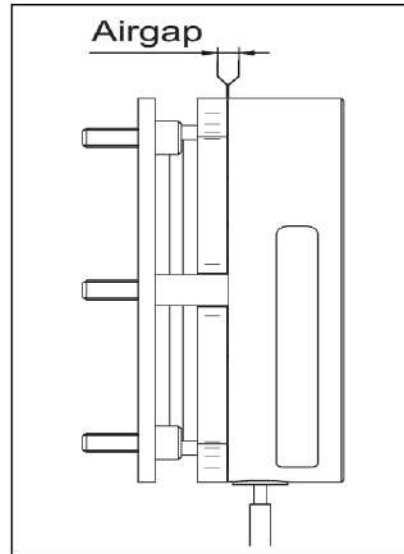
3. Inspection and Maintenance

Brake disc

With the wear of the disc, the brake airgap will increase. The airgap value must be checked regularly using feeler gauges.

NOTE

When the maximum airgap (0.45mm) is exceeded the brake must be replaced.



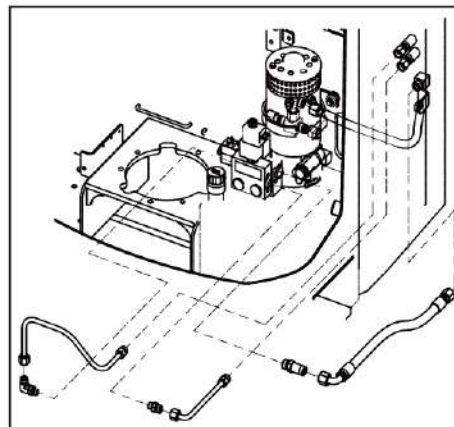
Hydraulic hoses

WARNING

The hoses must be replaced every six years. The manufacturer's customer service department is specially trained to carry out these operations.

WARNING

Pressurized hydraulic oil can penetrate the skin through fine holes or hairline cracks in the hydraulic lines, causing severe injury.



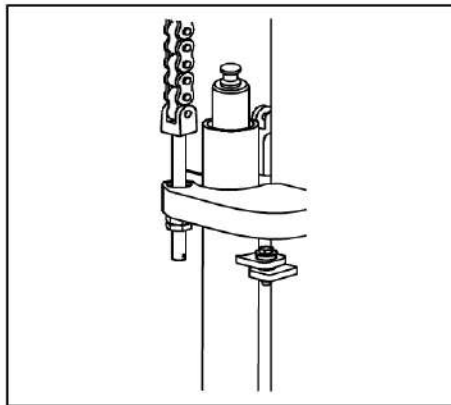
3. Inspection and Maintenance

- Call for a doctor immediately if you are injured.
- Do not touch pressurized hydraulic lines.
- Report any defects immediately to your supervisor.
- Tag out and decommission a faulty truck.
- Only return the truck to service when you have identified and rectified the fault.
- Spilled fluids must be removed immediately with an appropriate cleaning agent. The cleaning agent / consumable mixture must be disposed of in accordance with regulations.

Adjust the lift chains

The lift chains are adjusted at the chain anchors. For this, the locknuts must be undone and, depending on the required setting, the top nut screwed up or down. After the adjustment has been made, the lock-nuts must be tightened up again.

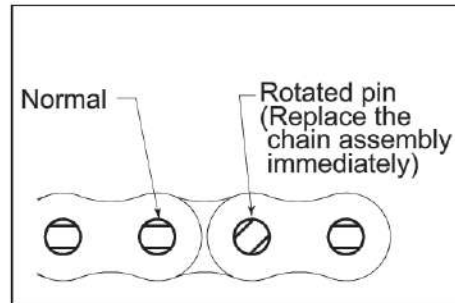
If the lift chains stretch by more than 3% of their original length, they must be replaced for safety reasons. Observe the statutory regulations of your country. You can contact your CLARK dealer with confidence for this.



3. Inspection and Maintenance

Chain pin rotating or protruding

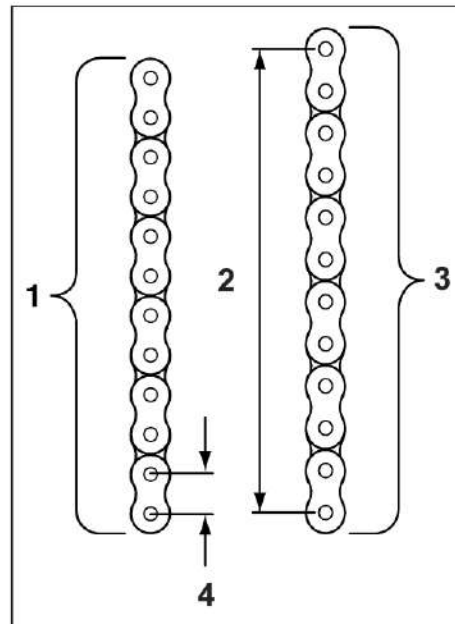
If high-load tension is applied to the chain in an inappropriate state of lubrication, this may cause abnormal frictional force between the link plate and the pin, and the pin may rotate if the fixing force is exceeded.



If a rotated pin is detected during the regular inspection, immediately replace the chain assembly.

Lift Chain Wear and Replacement Criteria

1. (NEW CHAIN LENGTH) The distance from the first pin counted to the last pin counted in a span while the chains are lifting a small load.
2. (WORN CHAIN LENGTH) The distance from the first pin counted to the last pin counted in a span while the chains are lifting a small load
3. (SPAN) The number of pins in the length (segment) of chain to be measured.



4. (PITCH) The distance from the center of one pin to the center of the next pin.

3. Inspection and Maintenance

All chains must be replaced if any link has wear of 3% or more, or if any of the damaged conditions noted above are found during inspection. Order replacement chains from your CLARK dealer.

Replace all chains as a set. Do not remove factory lubrication or paint new chains. Replace anchor pins and worn or broken anchors when installing new chains. Adjust tension on new chains. Lubricate chains when they are installed on the upright

Servicing and Inspection

Thorough and expert servicing is one of the most important requirements for the safe operation of the industrial truck. Failure to perform regular servicing can lead to truck failure and poses a potential hazard to personnel and equipment.



WARNING

The application conditions of an industrial truck have a considerable impact on the wear of the service components.

We recommend that a CLARK customer service adviser carries out an application analysis on site to work out specific service intervals to prevent damage due to wear.

The service intervals stated are based on single shift operation under normal operating conditions. They must be reduced accordingly if the truck is to be used in conditions of extreme dust, temperature fluctuations or multiple shifts.

3. Inspection and Maintenance

Troubleshooting

This chapter enables the user to identify and rectify basic faults and the effects of incorrect operation. When trying to locate a fault, proceed in the order shown in the table.

If, after carrying out the following remedial action, the truck cannot be restored to operation or if a fault in the electronics system is displayed with a corresponding error code, contact the manufacturer's service department. Additional troubleshooting must only be performed by the manufacturer's specialist service engineers. The manufacturer's customer service department is specially trained to carry out these operations.

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

- Truck serial number
- Error number on the display unit (if applicable)
- Error description
- Current location of truck

1) Truck does not start

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

3. Inspection and Maintenance

2) Load cannot be lifted

Possible Cause	Action
Truck not operational	Carry out all measures listed under "Truck does not start"
Hydraulic oil level too low	Check the hydraulic oil level
Battery discharge monitor has switched off	Charge the battery
Faulty fuse	Check fuses
Excessive load	Note maximum capacity, see Name plate

Types of batteries

1) Specifications

Model	Capacity (AH/5hr)	Size (mm)	Type	Weight (min./max.)
SSX12	24V, 150	650 x 145 x 560	2PzS/BS	143kg/ 159kg
	24V, 180	624 x 212 x 537	2PzS/DIN-B	171kg/ 286kg
	24V, 220	624 x 212 x 627	2PzS/DIN-B	
	24V, 225	645 x 217 x 581	12-85-7[C]	
	24V, 225	645 x 219 x 576	12-85-7[E]	
SSX16 SSX18	24V, 270	624 x 284 x 537	3PzS/DIN-B	231kg/ 361kg
	24V, 330	624 x 284 x 627	3PzS/DIN-B	
	24V, 340	645 x 274 x 581	12-85-9[C]	
	24V, 340	652 x 280 x 576	12-85-9[E]	



CAUTION

Batteries without insulated terminals shall be covered with an insulating mat that is not slippery.

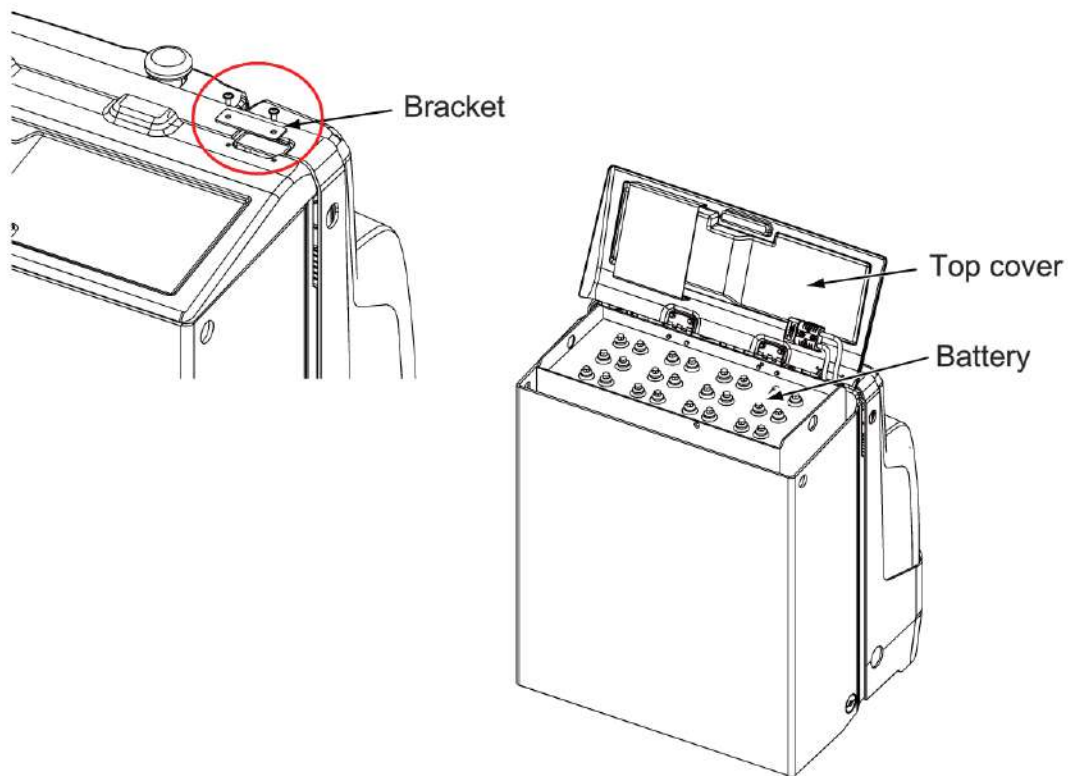
3. Inspection and Maintenance

2) Battery replacement

When replace battery, please remove the bracket and open the top cover.



Care shall be exercised to protect the power cable from damage due to interference between the battery and the cable while replacing the battery.



3. Inspection and Maintenance

Battery charging

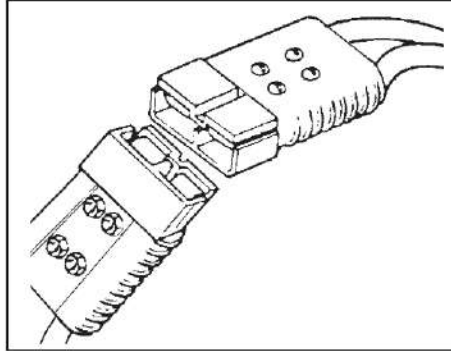
1) Caution



WARNING

Gas generated during battery charging may cause an explosion.

A mixture of hydrogen and oxygen (electrolytic gas) is generated during battery charging. Gas generation is one of the chemical reactions. This gas mixture is highly explosive; never ignite the mixture.



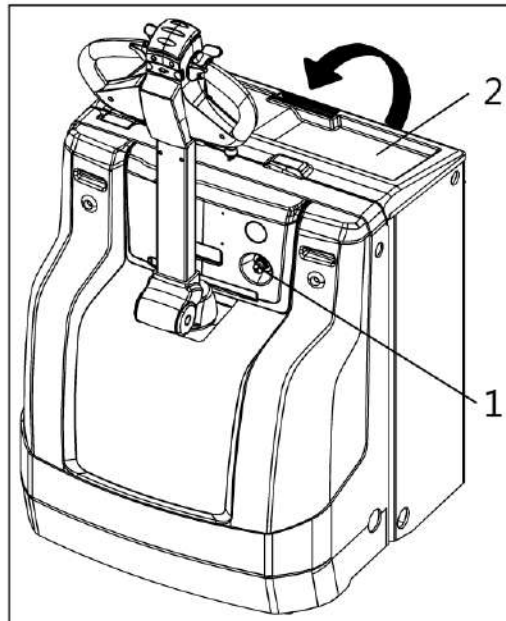
- Stop the truck before connecting the battery charging cable to the battery connector or disconnect the cable from the connector.
- The battery charger shall be adapted to the battery for voltage and charging capacity.
- Check the cables and the plug connectors for any visible indication of damage prior to charging the battery.
- Adequate ventilation shall be ensured during battery charging.
- Never smoke when handling the battery; avoid any open flame.
- When parking the truck for battery charging, make sure there is no flammable or lubricant that may ignite by a spark within a 2-meter radius of the truck.

3. Inspection and Maintenance

- Firefighting facilities shall be provided at the place of battery charging.
- Do not place any metal object on the battery.
- Comply with the safety regulations of the battery and charger manufacturer.

2) Exposing the battery

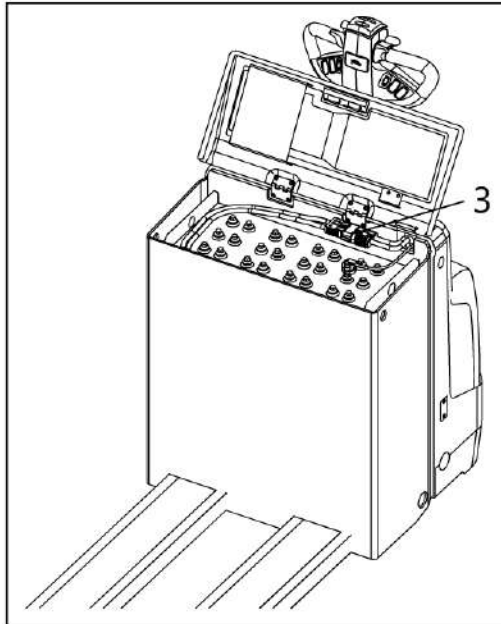
1. Park the truck and render it safe.
 - Key switch off(1) and depress the emergency disconnecter.
2. Fold up battery hood(2)
3. Carefully open or close the battery hood.
4. All covers and connections must be restored to the normal operating condition before the truck is started up for work.



3. Inspection and Maintenance

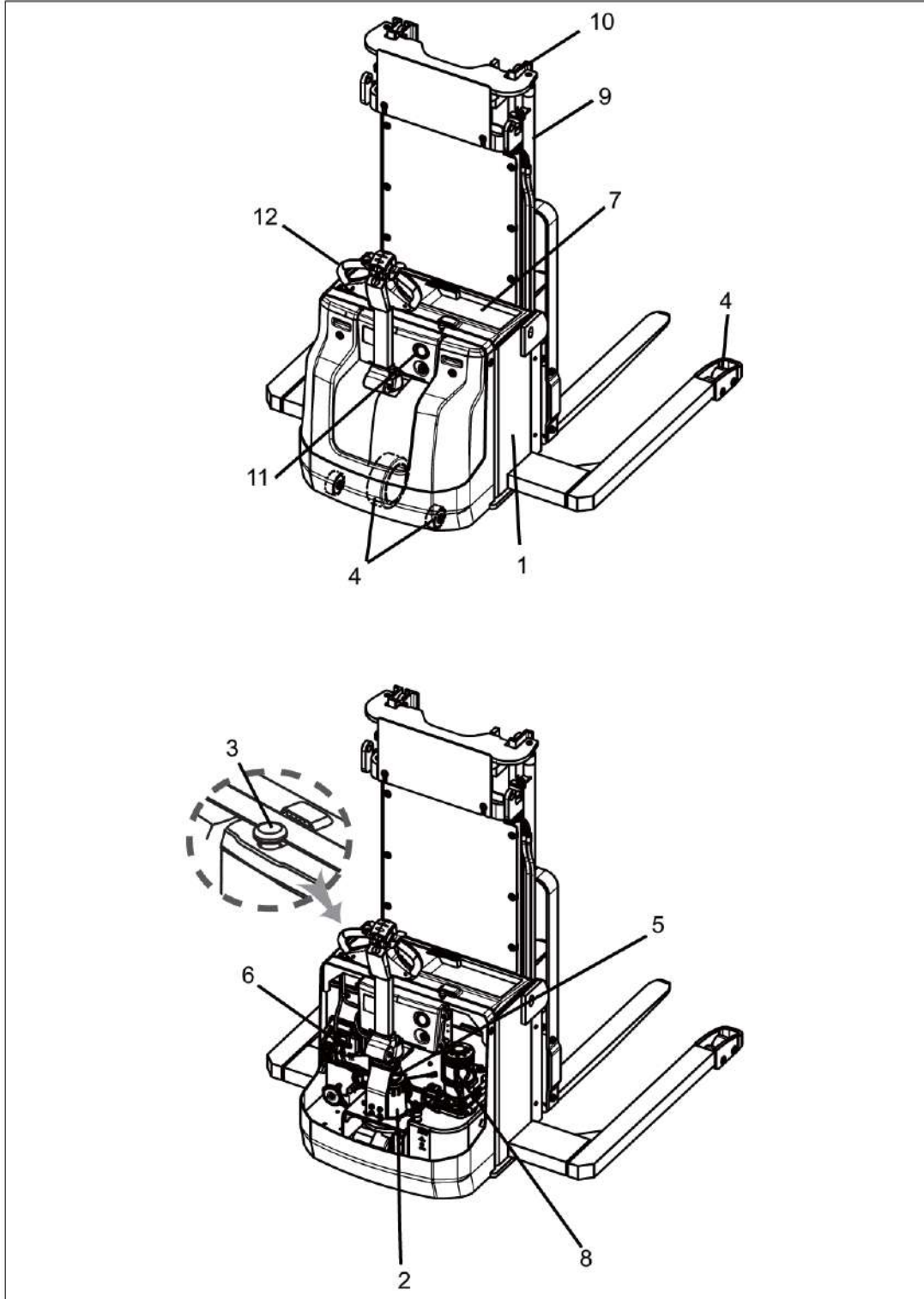
3) Charging the battery with stationary battery charger

1. When charging the battery, the truck has to be parked in-doors in a sufficiently ventilated environment.
2. Park the truck and render it safe.
 - Key switch off(1) and depress the emergency disconnecter.
3. Fold up battery hood(2).
 - During the charging operation the tops of the battery cells must be exposed to ensure adequate ventilation. Metal objects must not be placed on the battery. Prior to starting the charging operation, check all cable connections and plugged connections for visible damage.
4. Pull battery connector(3) from the battery connection of the truck.
5. Connect the charging cable of the battery charging station with the battery connector(3) and switch on the battery charger.



3. Inspection and Maintenance

Maintenance schedule



3. Inspection and Maintenance

Service to be done in accordance of list (1/2)

Type of lubricant		Working hours				
		Weekly by driver	450	900	2000	
A	Axle oil		~	~		
G1	Grease (Bearing, Bushing)		500	1000		
G2	Grease (Spline)					
G3	Grease (rail)					
H	Hydraulic Oil	Type of lubricant	a)	b)	c)	d)
M	Motor oil	Item number in the drawing				
1) Lifting device						
	Forks thickness at heel				X	
	Forks permanent deformation, left and right forks uniformity				X	
	Forks cracks at heel and mountings			X		
	Chains length over at least 6 pitches			X		
	Check tension of lift chains	10		X		
	Elongation of chain	10		X		
	Check chain anchor bolt condition	10	X			
	Oil lift chains	10	M	X		
	Cleaning, checking and lubricating the upright inside rails, rollers and side loader	10	G3	X		
	Mast, mast mounting and lift bracket deformation, damage and cracks in welded portion	10		X		
	Mast and lift bracket looseness	10	X			
	Mast strip wear and damage	10		X		
	Roller and roller pin wear, damage and rotating condition	10	X			
	Cylinder leakage, deformation, mounting looseness, uneven movement and damage	9	X			
2) Drive unit and brakes						
	Service brake, braking performance	5	X			
	Parking brake, braking performance	12	X			
	Brake system: check for damage to hoses, piping, linkage and cable looseness	5		X		
	Brake system: check for functionality, distance and wear on drum and shoes	5			X	
	Brake system: check return spring and automatic adjusting function	5			X	
	Check wheel condition (Damage, tread depth, screws and nuts, air pressure, abnormal noise)	4	X			
	Replace drive unit oil	2	A			X
	Check drive unit oil level (First : 50 hours)	2		X		

3. Inspection and Maintenance

Service to be done in accordance of list (2/2)

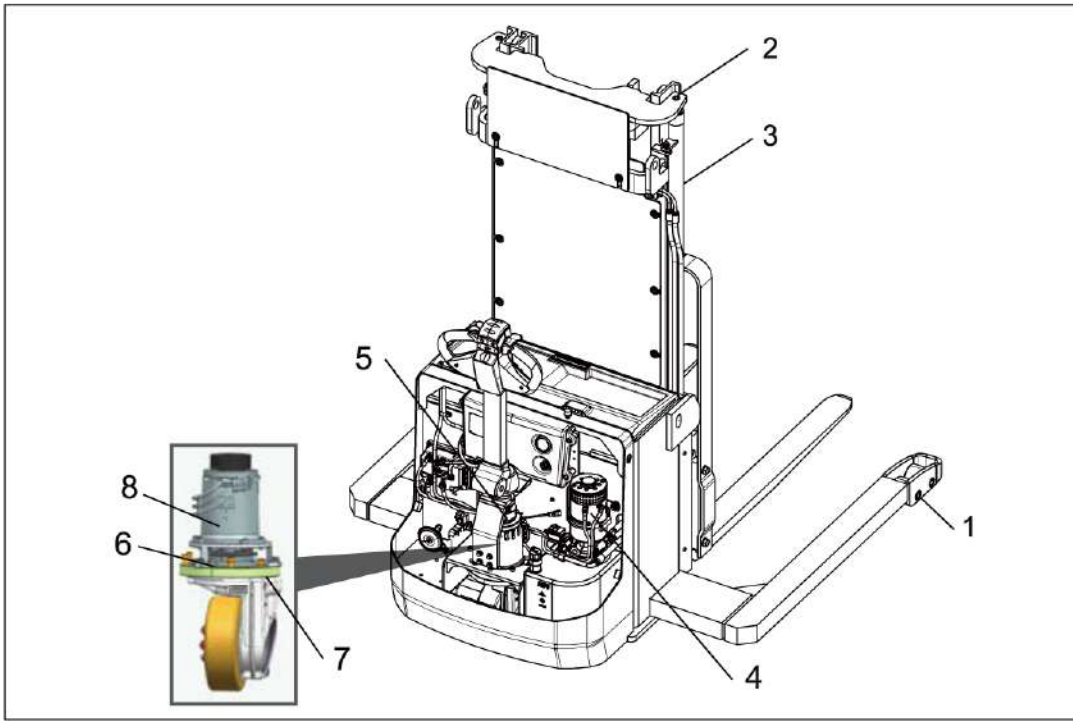
Type of lubricant		Working hours			
		Weekly by driver	450	900	2000
A	Axle oil				
G1	Grease (Bearing, Bushing)		~	~	
G2	Grease (Spline)		500	1000	
G3	Grease (rail)				
H	Hydraulic Oil	Type of lubricant	a)	b)	c)
M	Motor oil	Item number in the drawing			d)
	Check drive unit mounting and fasteners	2			X
3) Operator controls					
	Control lever linkage looseness and functionality			X	
4) Electrical equipment					
	Battery condition, restraint and data	7	X		
	Emergency shut off	3	X		
	Electrical wiring and fuses	6	X		
	Horn functionality	12	X		
	Instrumentation functionality	11	X		
5) Hydraulic system					
	Lift system creep test			X	
	Oil leakage and damage, unusual noise	8	X		
	Replace hydraulic oil	8	H		X
6) Vehicle frame and safety equipment					
	Mounting points			X	
	Frame, safety equipment check deformation, damage and welded portion cracking			X	
7) Tiller handle					
	Functions of the switches	12	X		
	Operability of the directional lever	12	X		
	Movement of the tiller handle	12			X
8) Miscellaneous					
	Check safety marking and decals				X
	Operating instructions				X
	Check Attachments				X
	Check the tightening torque of critical fastening elements		X		

- NOTES:**
- a) Weekly by driver
 - b) 450~500 hours or every 6 months
 - c) 900~1000 hours or every year
 - d) Keep a year with 2000 hours

★ In heavy conditions the service intervals could be reduced

3. Inspection and Maintenance

Lubrication chart



No.	Servicing point	Period / Working hours			Lubricant
		500 h (3 months)	1000 h (6 months)	2000 h (1 years)	
1	Wheel bearing			L	(G1)
2	Upright beam	L			(G3)
3	Lifting chain	L			(M)
4	Hydraulic system	C		O	(H)
5	Brakes		C		
6	Steering bearing		L		
7	Axle	C			(A)
8	Driving motor axle, spline			L	(G2)

2. Inspection and Maintenance

Approved oil and grease products

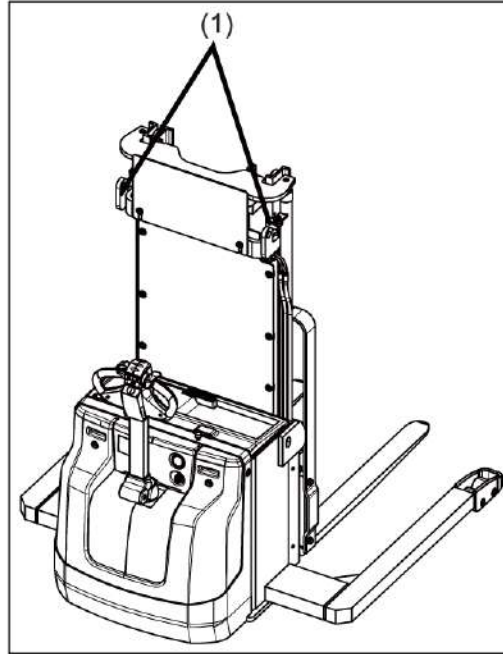
Lubricant		Specification	Applicable section	Capacity
(G1)	Grease	CLARK specification MS-6 or MS107-C.	Bearing and bushing	
(H)	Hydraulic oil	AZOLLAZS32 (S-OIL)	Hydraulic system	9.5 L
(A)	Axle oil	Standard: 85w90 * The oil shall satisfy the requirements of GL-5 for API service (using oil satisfying GL-4 only prohibited).	Gear	1.05L
(M)	Motor oil	Pursuant to CLARK #886396	Chain	
(G2)	Grease	Kluberflex BEM34-132 or Dow corning Molykote G-N plus paste	Driving motor axle, spline	
(G3)	Grease	Pursuant to CLARK #3762516	Mast rail	

4. Lifting, Transport and Storage

1. Lifting by crane

WARNING

The use of unsuitable lifting gear can cause the truck to crash when being lifted by crane. Prevent the truck from striking other objects when it is being raised, and avoid any involuntary movements. If necessary secure the truck with guide ropes.



- The truck should only be handled by people who are trained in using lifting slings and tools.
 - Wear safety shoes when lifting the truck by crane.
 - Do not stand under a swaying truck.
 - Do not walk into or stand in a hazardous area.
 - Always use lifting gear with sufficient capacity (for truck weight see truck data plate).
 - Always attach the crane slings to the prescribed strap points and prevent them from slipping.
 - Use the lifting gear only in the prescribed load direction.
 - Crane slings should be fastened in such.
- Park the truck securely.
 - Secure the lifting slings to the strap points (1).
 - The truck can now be lifted by the crane.

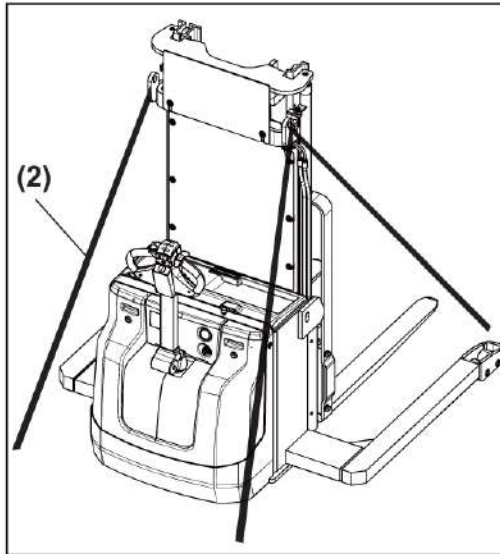
4. Lifting, Transport and Storage

2. Transport

WARNING

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

- Loading must be carried out by specially trained staff.
 - The truck must be securely fastened when transported on a lorry or a trailer.
 - The lorry / trailer must have fastening rings.
 - Use wedges to prevent the truck from moving.
 - Use only tension belts or tie-down straps or with sufficient strength.
 - Disconnect battery connector during transport.
- Move the truck onto the transporting truck.
 - Park the truck securely.
 - Strap the belts (2) around the truck and tension them sufficiently.



The truck can now be transported.

4. Lifting, Transport and Storage

3. Storing the truck

Take the following actions if the truck is not used for one week or longer.

1) Battery

Fully charge the battery and perform routine maintenance of the battery.

Charge the battery every three months for purposes of maintenance and check the electrolyte level.

2) Hydraulic system

Change the oil of the hydraulic system when storing the truck for one year or longer. See the specifications on Page 3.23.

3) Driving equipment

Support the driving section of the truck with blocks to prevent loads on the driving wheel and the rod wheel when storing the truck for one week or longer. (The wheels shall not come into contact with the ground.)

4. Lifting, Transport and Storage

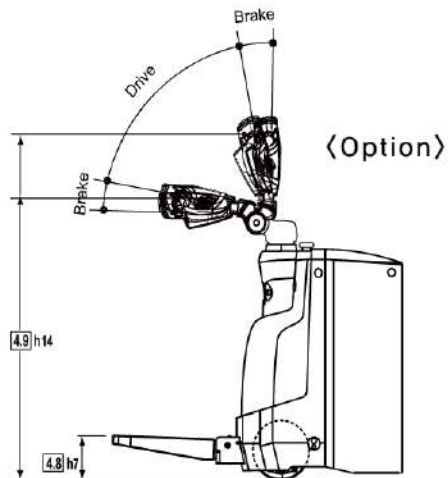
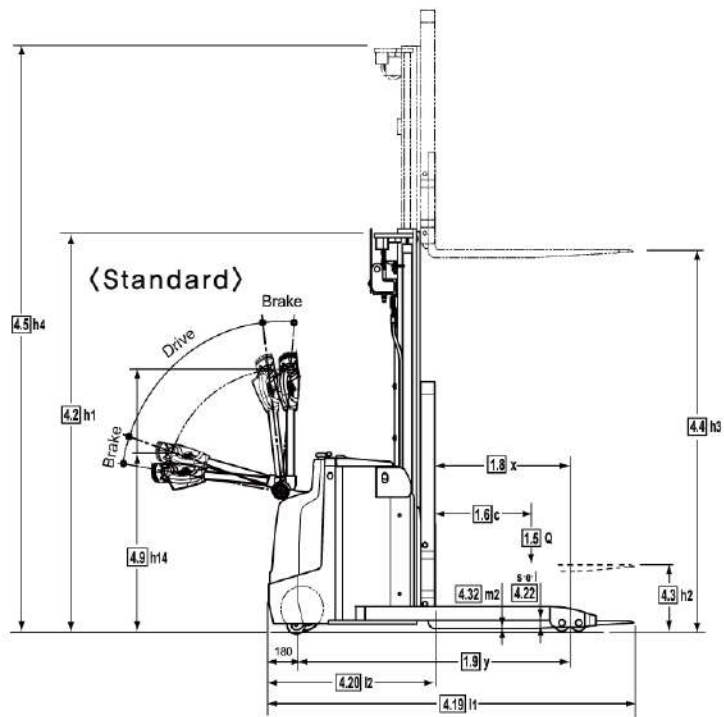
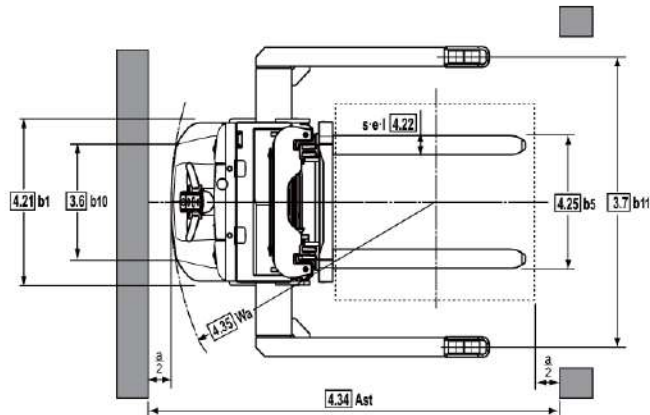
4) Starting the truck after storing

When operating the truck after storing for a certain period, check the following prior to starting the truck :

- Damage or contamination of the truck
- Wheel
- Tightened conditions of connections
- Instrument panel
- Horn operation
- Brake operation
- Tiller handle operation
- Upright and hydraulic system operation
- Tension of the lift chain
- Forks and fastening equipment
- Battery electrolyte level and charging rate
- Conditions of battery connector connection
- Conditions of the battery and wire ring connector connection



5. Specifications



5. Specifications

Specifications	1.1	Manufacture (Abbreviation)			CLARK		
	-	Truck classifications			Straddle Stacker		
	1.2	Manufacture's designation			SSX12	SSX16	SSX18
	1.3	Drive Unit			24V - electric	24V - electric	24V - electric
	1.4	Operator type stand on / driver seated			Walkie	Walkie	Walkie
	1.5	Load Capacity / rated load	Q	t	1.2	1.6	1.8
	1.6	Load Center distance	c	mm	600	600	600
	1.8	Load Center distance, centre of load axle to fork face	x	mm	728	695	695
	1.9	Wheelbase	y	mm	1310	1384	1384
WT	2.1	Service weight		kg	920	1010	1070
	2.2	Axle loading, laden front / rear		kg	742 / 1378	783 / 1827	861 / 2009
	2.3	Axle loading, unladen front / rear		kg	653 / 267	707 / 303	749 / 321
Tyres, Chassis	3.1	Tire type, P=Pneumatic, SE=Solid, C=Cushion			PU	PU	PU
	3.2	Tire size, front			230x82	230x82	230x82
	3.3	Tire size, rear			2x85x70	2x85x70	2x85x70
	3.4	Additional wheels (dimensions)			122x50	122x50	122x50
	3.5	Wheels, number front/rear			1x +1/4	1x +1/4	1x +1/4
	3.6	Tread, front	b ₁₀	mm	490	490	490
	3.7	Tread, rear	b ₁₁	mm	1420~1522	1420~1522	1420~1522
Dimensions	4.2	Height, upright lowered	h ₁	mm	2050	2050	2050
	4.3	Freelift	h ₂	mm	82	82	82
	4.4	Lift height	h ₃	mm	3042	3042	3042
	4.5	Height upright extended	h ₄	mm	3594	3594	3594
	4.8	Stand height (Optional platform)	h ₇	mm	160	160	160
	4.9	Height of tiller in drive position, min / max	h ₁₄	mm	823 / 1248	823 / 1248	823 / 1248
	4.9	Height of tiller in drive position, min / max (Opt. platform)	h ₁₄	mm	1066 / 1290	1066 / 1290	1066 / 1290
	4.15	Height, fork lowered	h ₁₃	mm	52	52	52
	4.19	Overall length	l ₁	mm	1905	2003	2003
	4.20	Length to face of forks	l ₂	mm	835	933	933

5. Specifications

Dimensions	4.21	Width	b ₁	mm	830	830	830
	4.22	Fork dimensions	s•e•l	mm	40x100 x1070	40x100 x1070	40x100 x1070
	4.23	Fork carriage ISO 2328,A,B			CL IIA	CL IIA	CL IIA
	4.24	Fork carriage width	b ₃	mm	787	787	787
	4.25	Distance between fork-arms	b ₅	mm	Max.751	Max.751	Max.751
	4.31	Ground clearance minimum, unladen	m ₁	mm	55	55	55
	4.32	Ground clearance center of wheelbase	m ₂	mm	35	35	35
	4.33	Aisle width for pallets 1000x1200 crossways	A _{st}	mm	2422	2436	2436
	4.34	Aisle width for pallets 800x1200 lengthways	A _{st}	mm	2382	2472	2472
	4.35	OutsideTurning radius	Wa	mm	1563	1628	1628
Performance	5.1	Travel speed, laden / unladen		km/h	6 / 6	6 / 6	6 / 6
	5.2	Lift speed, laden / unladen		m/s	0.15/0.24	0.12/0.20	0.11/0.20
	5.3	Lowering speed, laden / unladen		m/s	0.30/0.25	0.30/0.25	0.30/0.25
	5.8	Max. gradeability, laden / unladen		%	8 / 12	8 / 12	7 / 11
	5.10	Service brake			Electroma gnetic	Electroma gnetic	Electroma gnetic
Electric	6.1	Drive motor rating (S2 60min)		kW	1	1	1
	6.2	Lift motor rating (S3 15%)		kW	3.2	3.2	3.2
	6.3	Battery according to DIN43531/35/36 A,B,C,no			DIN43535	DIN43535	DIN43535
	6.4	Battery voltage, nominal capacity		AH/ 5hr	24V/ 150~225	24V/ 270~340	24V/ 270~340
	6.5	Battery weight, Min / Max		kg	143 / 286	231 / 361	231 / 361
	6.6	Energy consumption according to VDI cycle		kWh/h			
	-	Drive motor control			AC inverter	AC inverter	AC inverter
	-	Speed control			MOSFET	MOSFET	MOSFET
	-	Hydraulic motor control			DC	DC	DC
	Etc.	10.7	Sound level, driver's ear according to DIN 12053		dB (A)		

Serial Numbers

Truck: _____

Upright: _____

Drive Unit: _____

Control Panel: _____

Drive Motor: _____

Hydraulic Unit: _____



OM-992

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