

EP EST122 OPERATION MANUAL



Operation Manual

EST122





EP EQUIPMENT CO.,LTD. is one of the world's leading companies manufacture, design material handling equipment and provide related service. With over 100,000 square metres plant it produces over 100,000 trucks per year, and provides professional, effective and optimized material handling solutions worldwide, until now it has developed three major kinds of business:

- Material handling equipment: Focus on electric forklift and warehouse equipment
- OEM parts: Global parts supply
- Imow industry,online: One-stop industrial products supply

Guided by our customer-oriented concept, EP has developed service centers in more than 30 countries around the world, from which customers are able to receive timely local service. Moreover, 95% of warranty parts can be shipped out within 24 hours after been ordered. Through our online after-sales service system, customers can process their warranty claims, order spare parts and consult the operation manuals, maintenance materials and spare parts catalogs.

With business all over the world, EP has thousands of employees and hundreds of agents worldwide to provide our global customers with prompt local service.

Based on the concept of sharing economy , EP also offer rental service for various logistics equipment. Adhering to the idea "Making the leasing of logistic equipment more simple", EP is devoted to providing customized one-stop leasing solutions for our customers with our high quality, reasonable price and prompt rental service.

EP's mission&vision is " Let more people apply the electrical material handling equipment to relieve the intensity of labour" and "Let's grow together".

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Preface ►

Thank you for buying our products.

The manual will show you the way of correctly using the truck as well as relevant preventive maintenance and safety operation. The truck should be operated only by well-trained professionals and by no means by non-working personnel. Operators are supposed to read through the manual before actually operating the truck.

● Explanations on the manual

With the continuous upgradation and improvement of our company's products, you may find a slight difference existing between your carrier and some introductions in the manual.

All the information, specifications and illustrations in the manual are effective in times of printing and our company maintains the right to modify the specification (s) or design (s) of our products at any time without any beforehand notification.

● Safety signs and corresponding explanations



DANGER

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



WARNING

Please strictly adhere to these safety instructions to avoid personal injury or major damage to equipment.



CAUTION

Please pay attention to the important safety instructions.



NOTE

Pay attention to Instruction.

Internet address and QR code of Parts manual

By entering the address <http://www.ep-care.com> in a web browser or by scanning the QR code, Login after registration, Select "Parts purchase" function and input part number or model name to find the truck.



Fig0000-00017OM

Note: After registration, please send email to info@ep-care.com to activate your account

Intended use ►

The lift truck is designed for transporting and stacking the loads stated in the load capacity diagram.

In particular we refer to:

- the safety rules of your trade association.
- the special measures required for driving on public roads in accordance with the StVZO (Road Traffic Licensing Regulations).
- other local regulations.

The rules for the intended and approved use of industrial trucks must be followed under all circumstances by the responsible persons, especially by the operator and service personnel.

The user, and not EP, is responsible for any danger arising from applications not authorised by the manufacturer.

If you want to use the truck for applications not mentioned in this manual, please first contact your authorised dealer.

No changes, particularly no modifications and additions, may be made to the truck without the approval of the manufacturer.

● Obligations and responsibilities of equipment user

In the manual, “equipment user” refers to any natural person or legal person directly using or appointing or authorizing others to use the carrier. In such special situations as renting or sales, the “equipment user” represents the interested parties supposed to bear operation obligations as specified by the contractual terms concluded between equipment owner and corresponding users. Equipment users must ensure the use of the carrier only for purposes specified and timely eliminate all the dangers that may threaten the life and health of the users themselves or any other third party, in addition to which they must also strictly abide by accident prevention provisions, other safety technology provisions and equipment operation, maintenance and repair guidelines, and ensure that all the operators seriously read and completely understand the contents of the operation instruction.

Should any violation of the operation instruction occur, the quality guarantee of our company will be invalid automatically, and our company will assume none of the responsibilities for losses resulting from any nonstandard operation of the equipment implemented by any client, equipment user or any third party without the authorization of the client service department of our company.

● Series

This product has a compact chassis, 4-point ground contact, balanced tiller and a microprocessor electronic control system. The machine is lightweight, highly efficient and easy to handle.

● Design

The latest ergonomic and practical design, adaptable to all operators and working conditions.

● Control handle

The composite construction control handle head provides excellent impact resistance. The ergonomic control layout is suitable for left-handed and right-handed operators. The horn, lifting and lowering devices can be operated using one hand without changing grip. The emergency reverse switch integrated into the tiller head protects the operator if the truck recoils.

● **Driving**

The electronic control unit ensures comfortable use and lower costs.

Precise control of driving speed.

Jolt-free starting and smooth acceleration to maximum speed.

Simply release or turn the drive direction switch to brake.

Booster circuit prevents the truck rolling back when starting on a gradient.

● **Hydraulics**

Gear pump driven by fully enclosed air-cooled motor.

Safety valve and lowering brake protect the hydraulic system.

● **Brake system**

The electromagnetic brake with dust protection function can be used as a safety brake and parking brake. Braking is controlled by the drive controller, the brake's electromagnet acts on the motor shaft and automatic braking is activated when the tiller is in the horizontal or vertical position (end stop brake).

● **Battery**

It uses a large-capacity lead-acid battery or lithium-ion battery and the battery charge can be viewed on the display unit.

● **Equipment refit**

Any installation or retrofitting of any additional device that may influence or enhance the functions of the carrier must be approved by our company in writing beforehand.

Legal requirements for marketing

Declaration

EP EQUIPMENT CO., LTD.

Address: No.1 Xiaquan Village, Lingfeng Street, Anji, Huzhou, Zhejiang

We declare that the

Industrial truck: according to this operation manual

Type: according to this operation manual

complies with the most recent version of Machinery Directive 2006/42/EC.

Personnel authorised to compile the technical documents:

See EC/EU Declaration of Conformity

EP EQUIPMENT CO., LTD.

EC/EU Declaration of Conformity

The manufacturer declares that this industrial truck complies with the EC Machinery Directive and the provisions of other applicable EC/EU directives effective at the time of sale. This can be verified by means of the EC/EU Declaration of Conformity and the relevant certification label on the nameplate.

The industrial truck is supplied with the EC/EU Declaration of Conformity document. This declaration proves that this truck complies with the requirements of the EC Machinery Directive. Unauthorized modification or additional installation of equipment to the structure of the industrial truck may affect its safety, and will therefore invalidate the EC/EU Declaration of Conformity.

The EC/EU Declaration of Conformity must be carefully conserved and kept ready to be presented to the relevant authorities. If this industrial truck is sold, this declaration document must be handed over to the new owner.

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A

Identification points and data plates

- Have the nameplates of a truck fixed its main body and alarming labels pasted on its outer cover.
- Should any nameplate or alarming label lose or be damaged, please conduct replacement immediately or contact with the sales department or corresponding agent of our company when necessary.
- Such truck-related information as product model, serial number, manufacturing date, rated load lifting capacity, lifting height, load centre distance and dead weight are all shown in the nameplates.



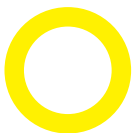
Anti-pinch hand label



Notice "No standing under the load carriage" label



Instructions label



Emergency stop switch label



Anti-pinch foot label



Do not rest on the stacker label

➤ The load capability chart

The capacity plate gives the capacity (Q) of the truck in kg for a vertical mast.

The maximum capacity is shown as a table with a given load centre of gravity D (in mm) and the required lift height H (in mm).

The capacity plate of the truck indicates the truck's capacity with the forks as originally supplied.

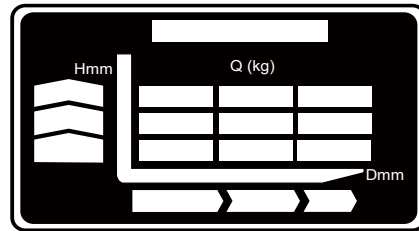


Fig0000-000120M

➤ Truck nameplate

For queries regarding the truck or ordering spare parts please quote the truck serial number.

| Item | Description |
|------|------------------------------|
| 1 | TRUCK NAME |
| 2 | MODEL TYPE |
| 3 | SERIES NO. |
| 4 | MANUFACTURE DATE |
| 5 | UNLADEN MASS |
| 6 | UNLADEN MASS WITHOUT BATTERY |
| 7 | BATTERY VOLTAGE |
| 8 | RATED DRIVE POWER |
| 9 | MAX CAPACITY |
| 10 | MAX LIFT HEIGHT |
| 11 | RATED CAPACITY |
| 12 | LOAD CENTER |
| 13 | MAX BATTERY WEIGHT |
| 14 | MIN BATTERY WEIGHT |

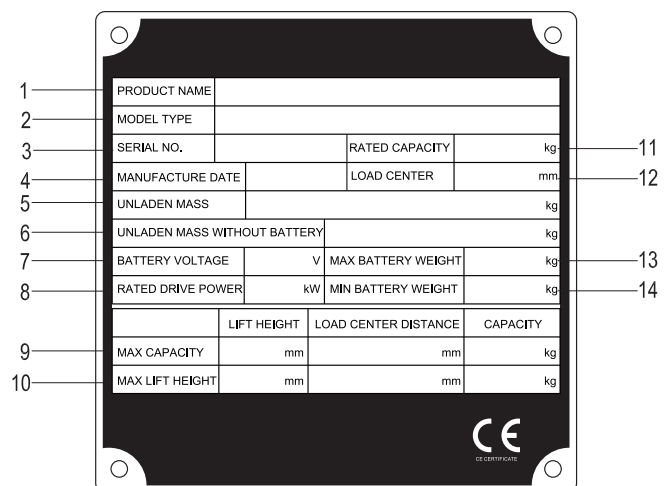
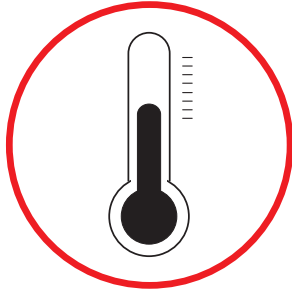


Fig0000-000150M

B

Operation

1.1 Utilization safety specification



Applicable environment temperature for lithium-ion battery: 5 °C - 40 °C



Don't use the truck in rainwater.



Don't use the truck in non-position.

Fig0000-00016OM

i NOTE

The truck can by no means be used under the temperature lower than 5 °C for a long time, or in refrigeratory or under the condition that such environmental factor as temperature or humidity changes extremely before special equipment is additionally installed and the permit of the manufacturer is acquired.

➤ Improper use



Avoid the use of the truck by non-working personnel.
Don't ride on the truck.
Don't carry or lift people by the truck.



Don't use the truck on slippery road surfaces.
(such as road surfaces with oil stain or residual snow or those frozen ones)



Don't carry goods on steep slope to prevent goods from sliding off.

Fig0000-00181OM

i NOTE

Conditions of operation road surface: the truck should run on solid, flat, level and paved road surfaces (including both running and lifting)



Don't leave the truck before it is parked as regulated.



Don't use the truck when any non-working personnel is in the dangerous area.
Don't be distracted when using the truck.
Don't be distracted when using the truck.



Fig0000-00182OM

Don't place any part of your body in any moving part of the truck to avoid being clamped.

1.1.1 EN standards

Continuous sound level: 67 dB(A)

according to EN 12053 as stipulated in ISO 4871

The continuous sound level is a value averaged according to standard regulations, taking the sound pressure level into account when driving, lifting and idling. The sound pressure level is measured at the ear.

Electromagnetic compatibility (EMC)

The manufacturer confirms compliance with the limit values for electromagnetic emission and interference immunity as well as testing of static electricity discharge according to EN 12895 and the references to other standards contained therein.

Electrical or electronic components and their arrangement may only be modified after written approval by the manufacturer has been obtained.

1.1.2 Conditions for application



Working condition requirements:

The walking, lifting and lowering devices, harness and components are IP55 dust and water-resistant.

The truck's maximum operation altitude is up to 2000m.

Trucks can only be operated in adequately illuminated working areas to avoid injuries. In case of insufficient light, an additional lighting equipment is needed to ensure that the driver can see properly.

If you must travel on an incline, the gradients should be below A% at full load, or below B% without a load. (For the value of A and B, refer to the Gradability in technical data)

1.1.3 Stability



Stability is guaranteed if your truck is used properly in accordance with its intended purpose. Common reasons for a loss of truck stability include:

Emergency stops or sharp turns.

Driving with a raised load or a load handling device.

Turning the vehicle around on or driving across a slope.

Driving up or down a slope with the load pointing downhill.

Driving with a wide load.

Carrying a swinging load.

Driving near the edge of a ramp or up steps.

Tilting the mast forward while carrying a raised load.

Driving on uneven surfaces.

Overloading the truck.

Carrying bulky loads in strong winds.

When carrying liquid, its centre of mass inside the container may shift due to inertial force (such as when pulling away, braking or turning).

➤ Wind loads

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

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

2.2 Display and manipulation

2.2.1 Control handle

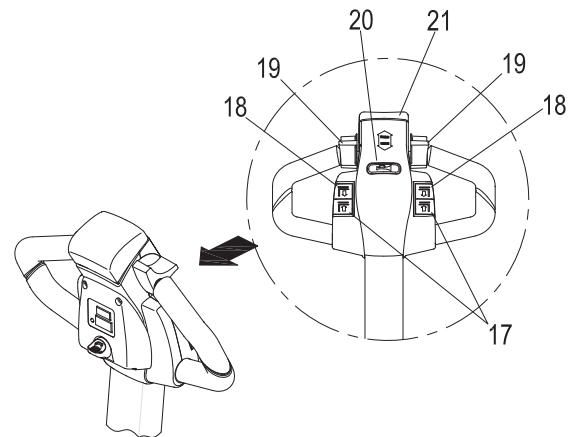


Fig0000-00069OM

| | | |
|----|--------------------------|---------------------------------------------------------------|
| 17 | Lowering button | Lower loading parts |
| 18 | Lifting button | Lift loading parts |
| 19 | Drive switch | Controls travel direction and speed |
| 20 | Horn button | Send out sound warning signals |
| 21 | Emergency reverse switch | Through touching the button, truck drives away from operator. |

2.2.2 Key switch

1.Key switch

Connect and interrupt control current.

When the key rotates to gear “OFF”, the control current of the truck will be interrupted;
When the key rotates to gear “ON”, the control current of the truck will be connected.

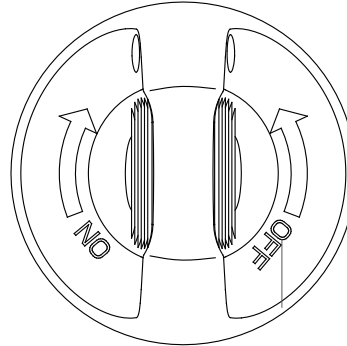


Fig0000-000700M

2.2.3 Display instrument

LED (1) displays the remaining electric of the battery;

LCD (2) displays the total operation time of the truck;

LCD (3) is a fault indicating light.

| DISPLAY | DESCRIPTION |
|----------------|----------------|
| Continuous red | Normal |
| Flashing | Truck failure. |

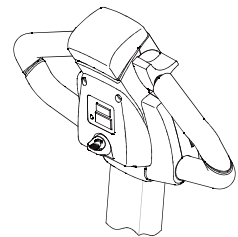
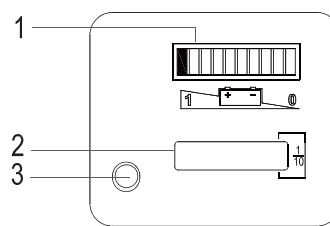


Fig2108-000180M

Refer to relevant descriptions in “discharge indicator and hour meter” for the display functions of LED (1).

i NOTE

Truck failure is in the service manual controller error message section.

The LCD display (2) show battery remaining charge.
When the truck has been released via the key switch, the battery charge status is displayed.
The color of the LCD (2) represent the following conditions:

| LCD color | Remaining charge capacity (reference value) |
|--------------|------------------------------------------------|
| Green | 70-100% |
| Orange | 30-60% |
| Flashing Red | 0-20% |

If remaining battery capacity is below 30%, A flashing red LCD shows warning.
If remaining battery capacity is below 20%, Two flashing red LCDS show warning, And lifting is now prohibited. The battery must be charged.

The battery discharge indicator has a memory function, it can remember the battery power after the power is turned off, and next time when it is turned on, it will show the power in it's memory.
If you want to reset battery discharge indicator, please turn on the key after properly charging.

2.3 Truck use and operation



2.3.1 Preparation for use



WARNING

The following are inspection and preparation operations that must be implemented before the truck is put into daily use.

| Daily Check Items | O.K.(√) | Remark |
|------------------------------------------------------------------------------------|---------|--------|
| Check for Fluid Leakage | | |
| Check operation switch, display equipment and component functions. | | |
| Check horn. | | |
| Check forward and reverse driving control functions. | | |
| Check the function of the emergency brake by activating the emergency stop switch. | | |
| Check lifting and lowering control functions. | | |
| Check emergency reverser function. | | |
| Check the battery installation, making sure not to damage the battery cables. | | |
| Check the function of the steering function | | |
| Check the battery charging plug | | |
| Check the drive wheels and rollers for wear and damage. | | |
| Check the hydraulic functions. | | |
| Check brake function of electromagnetic brakes. | | |
| Check whether optional functions are operating normally. | | |

Table 1: Table of Daily Inspections by Operators is only a sample table for the daily inspections of operators, and it can be adjusted according to specific requirements.



WARNING

The truck should be regularly maintained by qualified maintenance engineers or technicians that have passed the training of and also been authorized by the manufacturer.



2.3.2 Commissioning

The truck must only be operated on battery current!

To prepare the truck for operation after delivery or transportation, the following operations must be performed:

Check the equipment for completeness.

If necessary, install the battery. Make sure that the battery cable is not damaged.

Charge the battery.

Check for Fluid Leakage.

Check the brake function.

Check the lifting and lowering function.

Check the driving function.

Check the steering function.

The truck can now be started, see 2.3.3 Truck starting

i NOTE

If the truck is delivered in multiple parts, setup and commissioning must only be performed by trained, authorised personnel.

Wheel flattening

If the truck has been parked for a long period, the wheel surfaces may tend to flatten. This flattening has a negative effect on the safety and stability of the truck. Once the truck has covered a certain distance, the flattening will disappear.

2.3.3 Truck starting

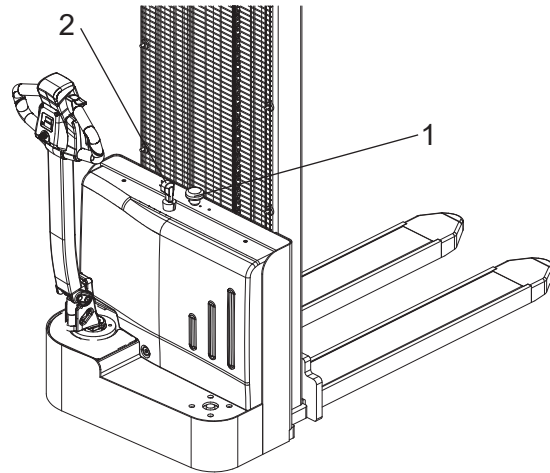
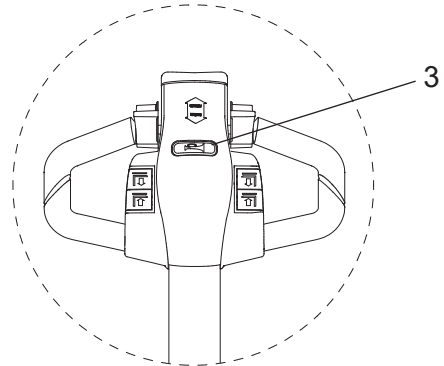


1. Release the emergency stop switch(1);

2. Turn the key switch (2) to start the truck;

3. Test the horn button(3);

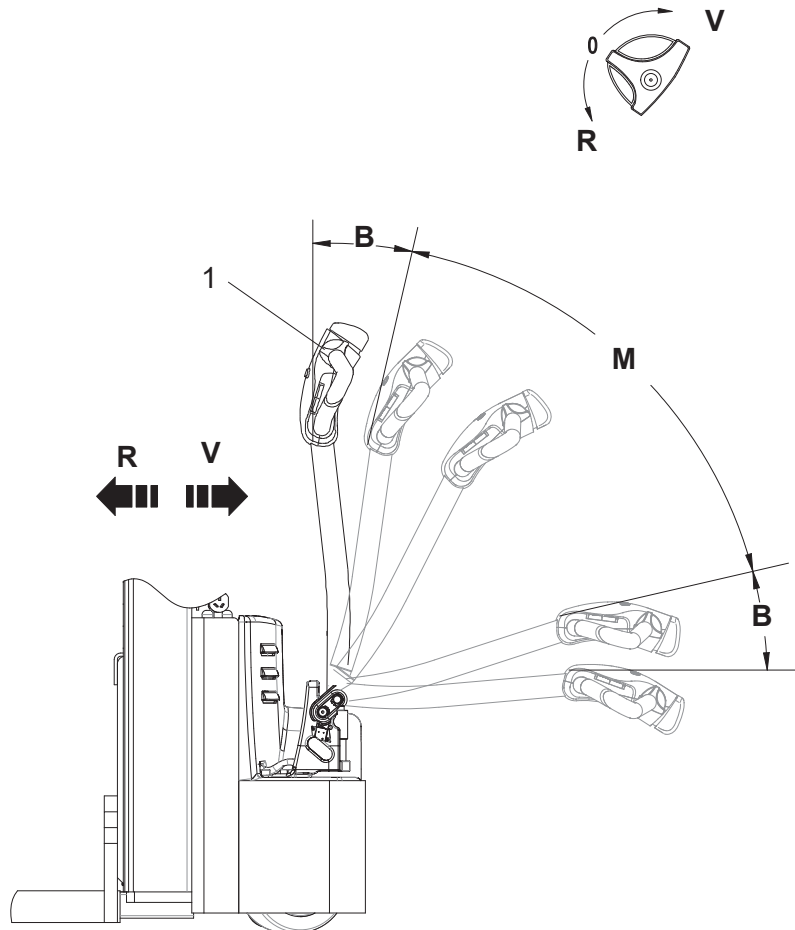
The truck is now operational. Put the tiller in the drive position(M) and use the drive switch to control direction and speed.



2.3.4 Running, steering and braking

1. Running

➤ Running area



Tilt the control shaft into the running area (M) and control the running direction and speed of the using the drive switch(1). (the larger the turning angle, the faster corresponding speed)

i NOTE

When using the truck on a ramp or a uneven road, please lift the mast to prevent its bottom from colliding with the road surface.

i NOTE

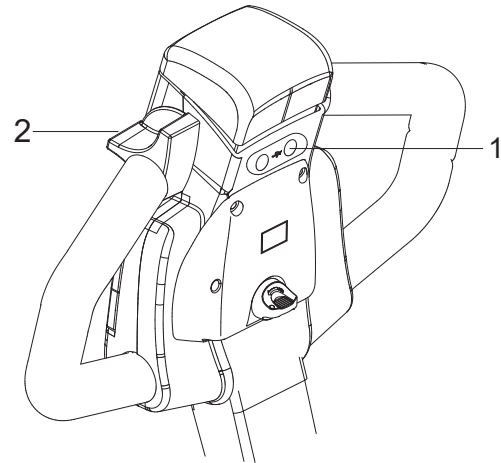
V is forwards.

R is reverse.

B is brake.

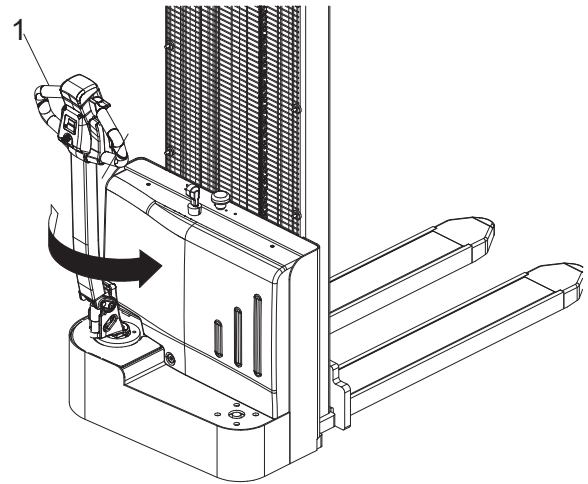
M is running area.

- *Keep the handle in the vertical state, and press tortoise speed button (1) and drive switch(2) at the same time, then the vehicle will move at a low speed.*



2. Steering

Turn the control handle (1) left or right according to the desired direction.



3. Braking

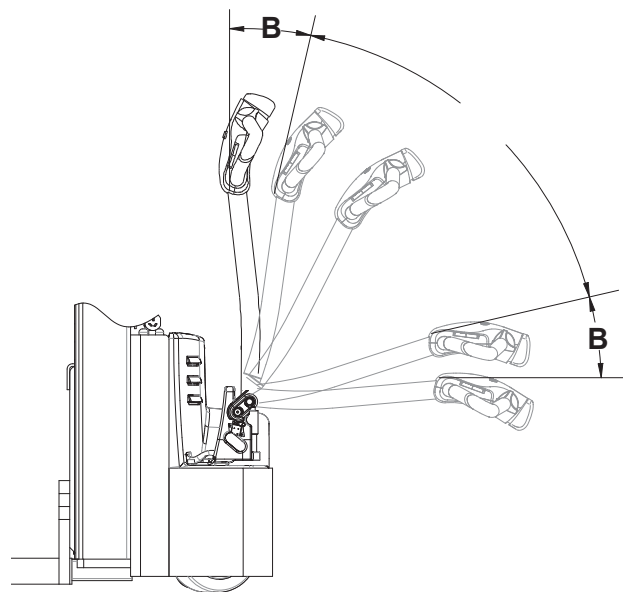
Mechanical operating brake

The truck is braked when the operating handle is released.

The mechanical brake engages when the tiller is positioned in Braking area.

 **CAUTION**

If the control handle moves slowly into the brake position, identify the cause and rectify the fault. If necessary, replace the gas spring!



➤ **Emergency stop switch**

Press the emergency stop switch, and then all the electrically propelled functions will be interrupted.

➤ **Regenerative braking**

Release the drive switch. The drive switch will automatically return to the initial position and the vehicle will begin to enter the regenerative braking state. When it decelerates to <math><1\text{ km/h}</math>, the electromagnetic brake will bring the motor to a stop.

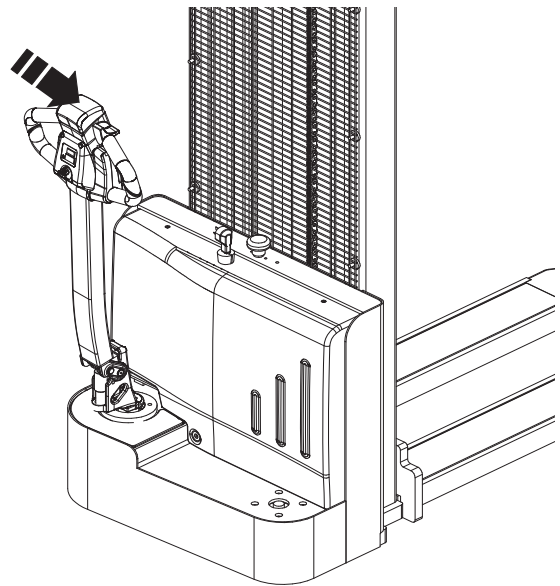
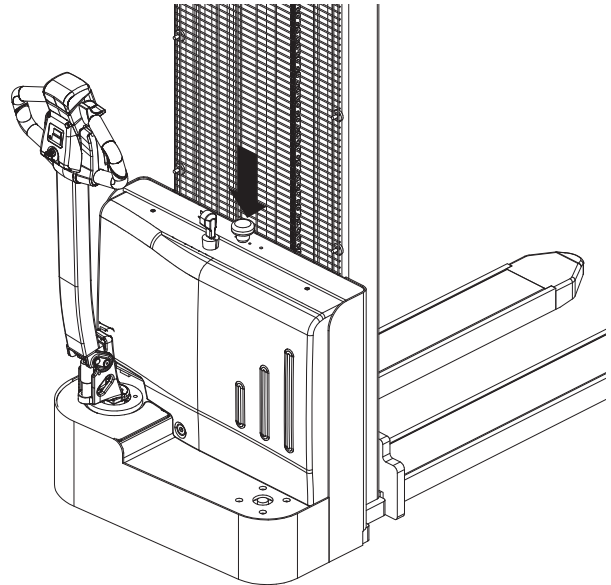
 **CAUTION**

Open the drive switch; if the drive switch cannot quickly return to the initial position or resets very slowly, identify the cause and rectify the fault.

➤ **Emergency reverse switch**

Braking can be accomplished by changing the direction of travel.

Press the reverse switch in the opposite direction until the truck comes to a stop, then release the drive switch.



2.3.5 Goods picking



1. Lifting

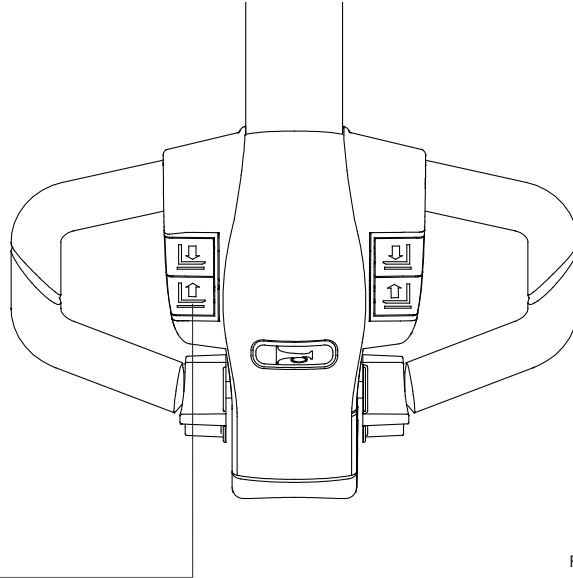


Fig2108-00024OM

Keep pressing the lifting button until reaching the required lifting height

2. Lowering

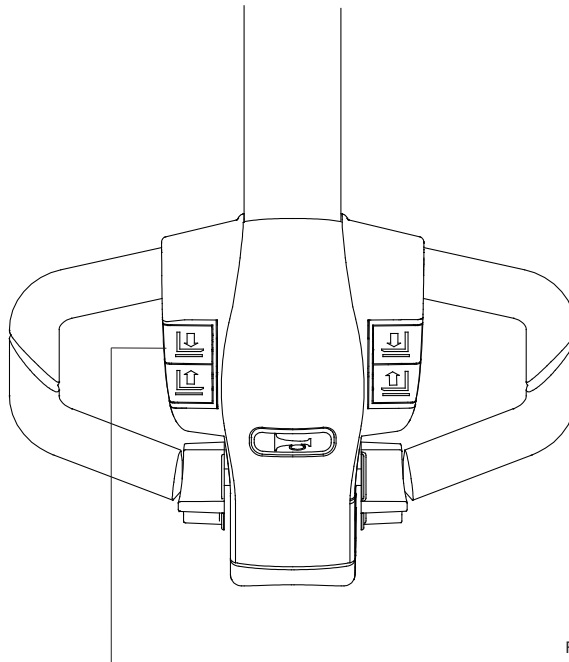
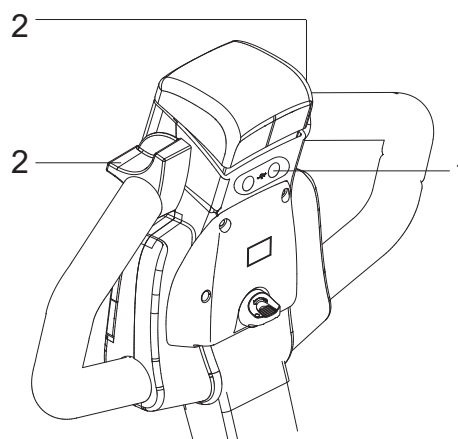


Fig2108-00025OM

Lower the truck to the bottom through pressing the lowering button.

Keep the handle in the vertical state, and press creep speed button (1) and drive switch(2) at the same time, then the vehicle will move at a low speed.



 **WARNING**

Goods failing to be arranged and fixed may result in accidents.

 **NOTE**

To avoid shortening the service life of the oil cylinder, try not to lift the stacker mast to the highest state for every lifting operation.

➤ **Emergency lowering**

The solenoid valve is equipped with an emergency lowering screw for manual emergency lowering. This operation can be executed if the hydraulic system develops a fault. The solenoid valve with the emergency lowering screw is located on the valve body of the hydraulic pump.

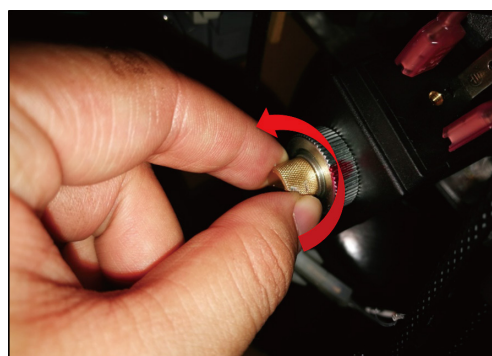
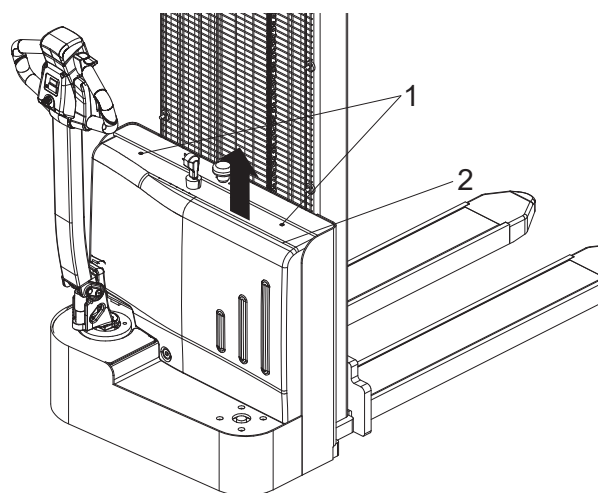


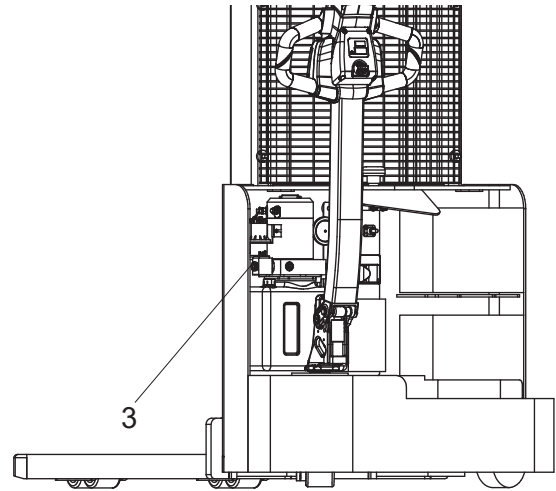
Fig2108-00065OM

Do not stand in the vicinity of the forks when the fork arms are being lowered. Always keep your hands on the screw during lowering, so you can stop the lowering operation at any time.

Unscrew the two large screws(1) and pull out the cover(2).



The emergency lowering screw is located on the solenoid valve(3).



2.3.6 Parking the truck securely

➤ Lower the mast to the bottom;

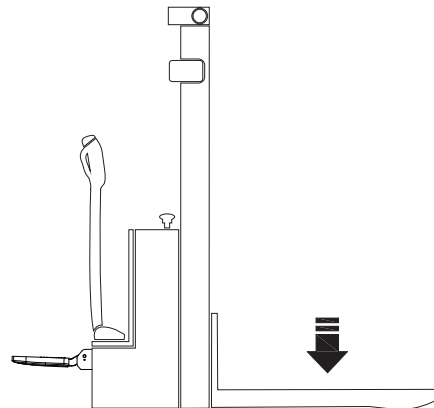
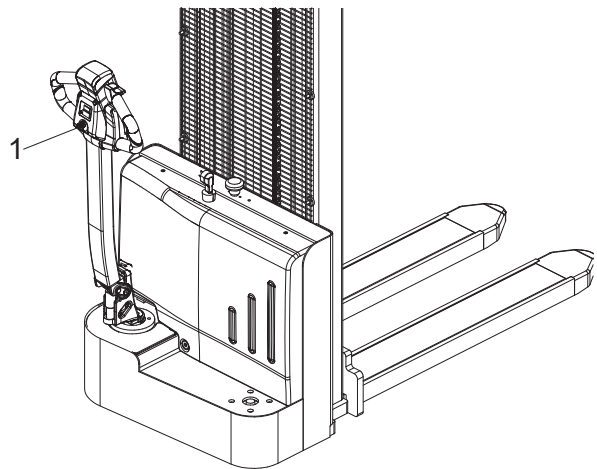


Fig2108-00026OM

➤ Turn off the key switch (2) ;



2.3.7 Drive switch

The drive directions of the truck are forward (2) and reverse (1).

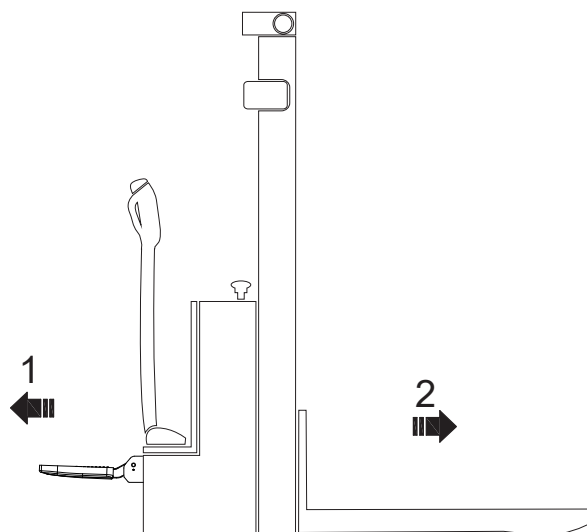


Fig2108-00028OM

2.3.8 Loading

Before lifting a load, ensure that its weight does not exceed the truck's maximum load capacity. Refer to the rated load capacity specified on the truck's nameplate. Ensure that the load is stable and uniform to prevent any partial spillage. Check that the width of the load is compatible with the width of the forks.

CAUTION

Safety footwear must be worn.

CAUTION

Do not touch nearby loads or loads positioned at the side or in front of the load being handled. Arrange the loads with a small space between them to prevent them coming into contact with one another.

Picking up a load from the ground

Approach goods carefully when driving the vehicle.
 Lower the forks so that they can easily be inserted into the pallet.
 Insert the forks below the pallet.
 If the goods are shorter than the forks, move the goods a few centimetres from the end of the forks so as not to scratch the goods in front.
 Lift the goods a few centimetres.

➤ **Carrying a load**



DANGER

Personnel must not stand under or near the mast when the load is in the raised position.



DANGER

Never transport a load with the forks in the raised position as the equipment may become unstable.

*Always drive forwards for optimum visibility.
When carrying a load on a slope, always climb and descend with the load up-hill.
Never travel diagonally across the slope or make a U-turn.
Reverse gear must only be used for depositing a load. Since visibility in this direction is restricted, you should only travel at very low speed.
Never drive with an unstable load.
If visibility is poor, let someone guide you.
Be careful of low passageways, low doorways, scaffolding, pipes etc.
To facilitate movement over obstacles, increase the ground clearance.
Check that the width of the load is compatible with the width of the aisle.*

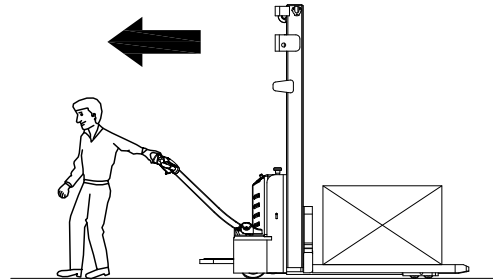


Fig2108-00029OM

➤ Setting a load down on the ground

Carefully move the load into the deposit area.
Lower the load until the fork arms are free.
Move the forks straight back.
Lift the forks a few centimeter again.

CAUTION

Be careful not to touch nearby loads or those behind the equipment.

CAUTION

Do not touch nearby loads or loads positioned behind the equipment.

CAUTION

Before you remove the load, ensure that there are no people in the vicinity.

➤ Stacking a load

Carefully drive the machine to the required location.
Raise the forks clearly above the level where the load is to be placed.
Drive the truck backward into the racking.
Lower the load until the fork arms are free.
Move the forks straight back.
Lower the forks again until they are a few centimeters away from the ground.

DANGER

Personnel must not stand under or near the truck when the load is in the raised position.

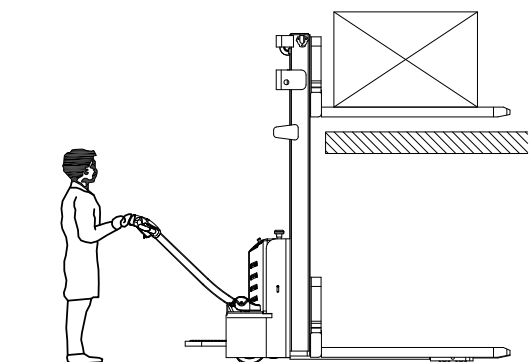


Fig2108-000300M

➤ **Picking up a load at height**

Carefully drive the machine to the required location.

Raise the forks to the height of the pallet.

Carefully move the forks forward under the pallet.

Lift the forks until the pallet moves away from the racking.

Reverse the truck to free the pallet.

Lower the goods again until they are a few centimeters away from the ground.

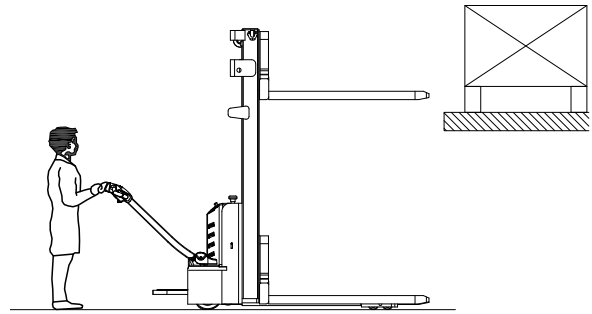


Fig2108-00031OM

! CAUTION

If the equipment has an initial lift control, separate the goods from the racking. To maintain maximum stability, never use the initial lift control, to avoid overloading the equipment.

2.3.9 Using the truck on a slope

i NOTE

Incorrect use of the truck on slopes places stress on the traction motor, brakes and battery.

Be particularly careful near slopes:
 Never attempt a slope with a gradient greater than that specified in the truck's data sheet.
 Make sure that the ground is dry with a nonslip surface and that the route is clear.

➤ Ascending slopes

Travel up slopes must always be forward, with the load uphill. Without a load, we recommend that you ascend slopes forwards.

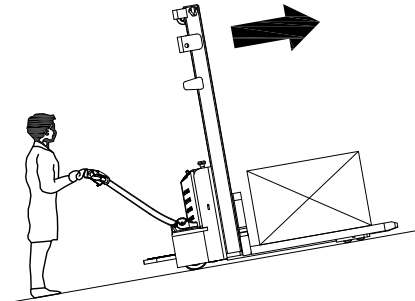


Fig2108-00032OM

➤ Descending slopes

Travel down slopes must always backwards, with the load uphill.

Without a load, it is recommended that slopes are descended forwards. In all cases, travel at a very low speed and brake very gradually.

⚡ DANGER

In all cases, you must travel at a very low speed and brake very gradually.

Risk to life and/or risk of major equipment damage.

Never park the truck on a slope.

Never park the truck on a slope. Never make a U-turn or take shortcuts on a slope. The driver must drive very slowly on slopes.

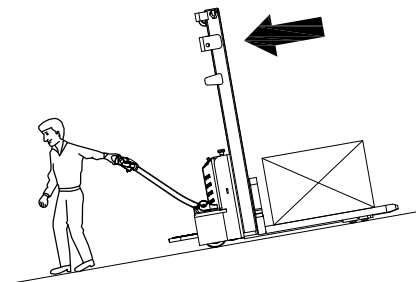


Fig2108-00033OM

➤ Starting on a slope

If you have to stop and then start on slope, proceed as follows:

Stop on the slope by pressing the accelerator in the opposite direction until the machine comes to a standstill.

Return the accelerator to the neutral position, then release the accelerator control button to apply the parking brake.

To restart, press the accelerator button for the desired direction.

The truck will move.

2.3.10 Operating the truck without its own drive system

If the truck has to be moved after a failure has rendered it immobile, proceed as follows:

Set the emergency stop switch "OFF".

Set the key switch "OFF" and remove the key.

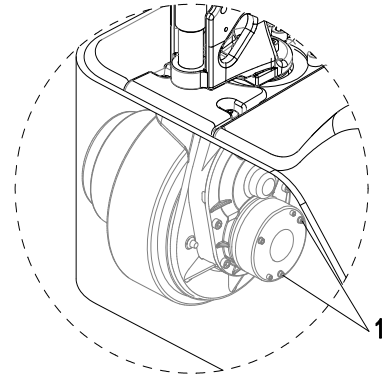
Prevent the truck from rolling away.

Lift the vehicle carefully with lifting equipment.

Screw in two screws(1), M4*35mm until the truck can be moved (no braking action).

After setting down the truck at the destination, unscrew two screws(1).

Braking action is restored!



DANGER

After setting down the truck at the destination, unscrew two screws(1).

Braking action is restored.

WARNING

This operating mode is not permitted when negotiating inclines and gradients.

2.3.11 Transporting the truck

CAUTION

When transporting the truck, check that it is properly supported on wooden blocks and correctly tied with rope.

Fold the side protection bars and foldable platform so they do not protrude from the vehicle body.

➤ **Tie points and position**

Lower the fork arms to the lowest position.

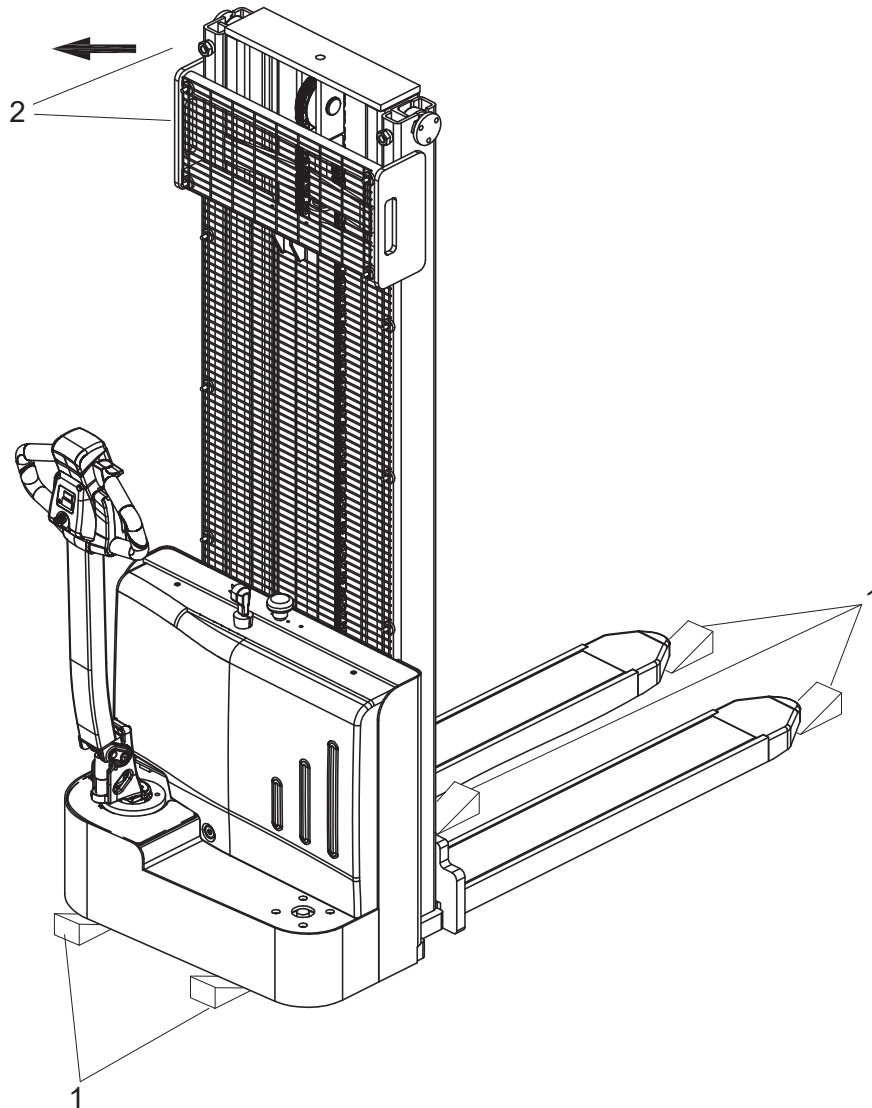
Use wooden chocks (1) to secure the front and rear of the vehicle.

Pass the tensioner through the inner and outer masts and secure the masts to the upper fixing points of the vehicle, as indicated by position (2) in the figure.

Tighten by pulling in the direction of the arrow.

i NOTE

The stacker should be loaded and unloaded by specially trained personnel. Effective measures must be taken based on the specific situation to ensure the correctness and safety of measurement and loading/unloading operations.



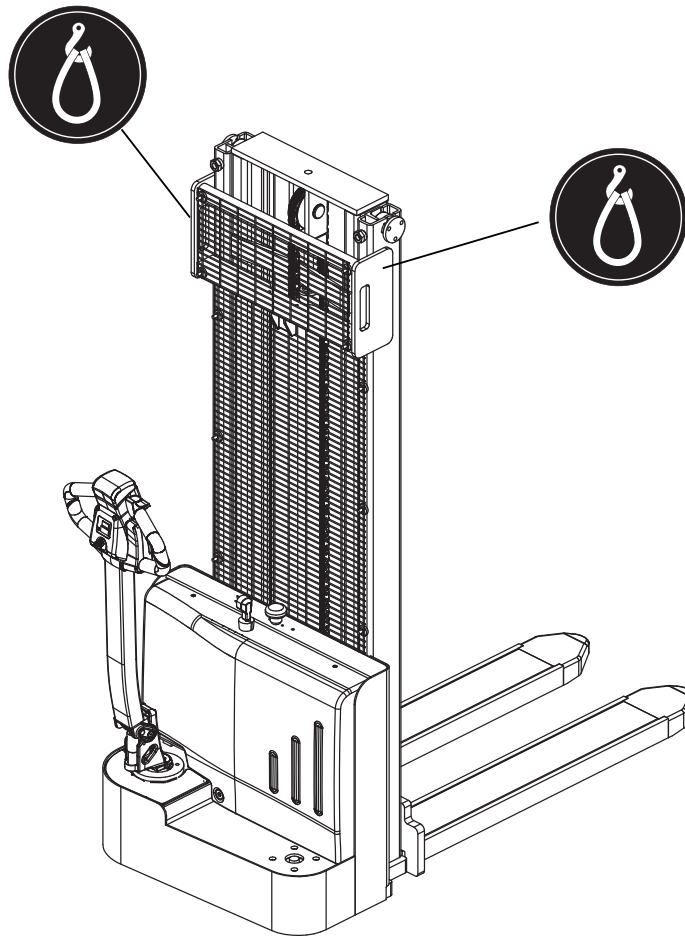


2.3.12 Hoisting

Remove the load before hoisting the stacker.
Disconnect the power supply.
Attach slings in the positions identified by the hook symbol.

 **DANGER**

*Personnel must not stand below or near the truck when the stacker is being lifted.
Do not sling the truck by the control handle.*





Battery use and maintenance

1.1 Safety and warning

1.1.1 Safety regulations for handling acid batteries

The truck must be parked and rendered safe before any operations on batteries are under taken.

- These trucks are equipped with maintenance-free batteries. No distilled water can be added to this battery type. The cell covers are fixed tight and must not be opened. Opening the covers will damage the battery.
- Smoking and naked flames are not permitted when handling batteries. No inflammable substances or spark-generating materials must be present or stored within a distance of 2 meters of the truck parked for battery recharging. The location must be well ventilated and fire fighting equipment must be kept ready.
- Only trained and authorized personnel are permitted to charge, service and replace the batteries.
- Batteries are recycled in accordance with national regulations; please comply with the relevant regulations.

Servicing of lead-acid batteries

The lead-acid battery cell screw caps must be kept dry and clean. Terminals and cable shoes must be clean, lightly greased with pole grease and must be securely tightened.

Daily Maintenance

Charge the discharged battery;

Visual inspection for excessive dirtiness and mechanical damage after the charging.

➤ Safety and warning



- Abide by the operation manual!
- All the operations related to the storage battery must be implemented under the instruction of professionals!



- Explosion or fire disaster is likely to occur; avoid short circuit!



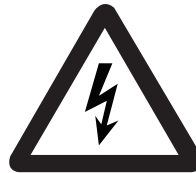
- Always wear protective clothing (e.g. safety goggles and safety gloves) when working on cells and batteries.



- Don't knock over the storage battery!
- Using lifting and delivery devices as specified. Prevent the storage battery cell, interface and connection cable from being damaged by the lifting hook!



- No smoke and fire!
- Avoid the existence of open fire, fiery metal wire or sparks around the storage battery, otherwise explosion or fire disaster may occur!



- Dangerous voltage!
- Avoid hot plugging!
- Notice: the metal part of the storage battery cell is electrified, so don't place any external object or tool on the battery cell!



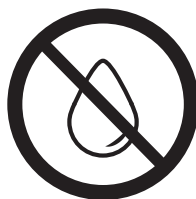
- Don't trample on the storage battery to prevent it from fierce shaking or shacking!



Keep the battery away from all fire sources, heat sources and flammable or explosive materials.



Do not place the battery on top of conductive objects.



Avoid the battery becoming corroded by water or corrosive liquid.

➤ Accidental contact, "first aid"

Acid and alkaline electrolytes create burns in eyes and on the skin.

A source of clean water, from tap or a dedicated sterile reservoir, shall be provided in the vicinity of the battery under charging or maintenance for removing electrolyte splashed onto body parts.



WARNING

In the event of accidental contact with electrolyte, the eyes shall be immediately flooded with large quantities of water for an extended period of time. In all cases immediate medical attention shall be obtained.

In the event of accidental skin contact with electrolyte, the affected parts shall be washed with large quantities of water or with adequate neutralizing solutions. If irritation of skin persists medical attention shall be obtained.

1.2 Handling the battery

1.2.1 Battery charging

➤ Precautions

The vehicle must be parked in a wellventilated room.

There must be no metal parts on the surface of the battery.

Before charging, check all cables and plug connections for visible damage.

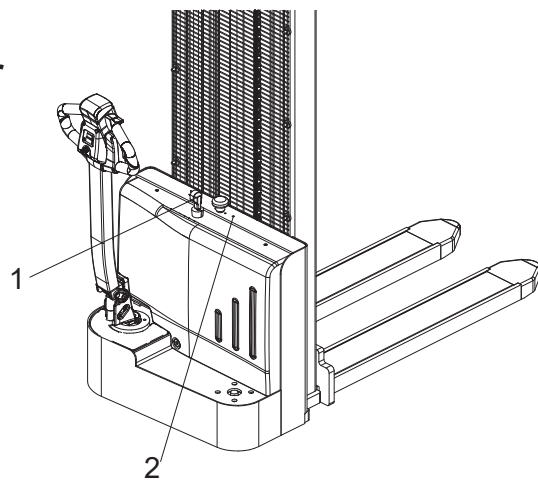
Before and after charging, make sure power is turned OFF.

It is essential to follow the safety regulations of the battery charging provided by their manufacturers.

➤ Charging the battery with internal charger

Park the truck in the designated charging area.

Pull the charger cord (1) from the truck and examine it for damage. If undamaged, plug the charger into voltage range 100-240V, 50/60Hz wall outlet. As long as the built-in charger is connected to the outlet, the truck should not be moved.



Charging indicator(2)

| NO. | LED status | Phenomenon | Cause | Remedy | Description |
|-----|-----------------------|---------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------|-----------------|
| 1 | Red light is on | | Trouble free | / | Charging |
| 2 | Green light is on | | Trouble free | / | End of charging |
| 3 | | Current/ voltage changes | Indicator failure | Return to factory maintenance | Charger failure |
| 4 | No indicator light | No change in current/voltage | The power input line is in good contact with the socket and the charger | Charger failure,return to factory maintenance | Charger failure |
| 5 | Red light flashes | | The power input cable is not in good contact with the socket | Check if the input power line is in good contact | |
| 6 | Yellow light is on | | Storage battery fails. (battery reverse connection) | Eliminate battery failure | |
| 7 | | | Storage battery fails.(battery is not connected) | Eliminate battery failure | |
| 8 | | | Ambient temperature is too high | Ambient temperature drops to normal | |
| 9 | Yellow light flashes | | Storage battery voltage exceeds 32.5V | Eliminate battery failure | |
| 10 | | | Charger failure | return to factory maintenance | |



WARNING

Recharge the battery observing the instructions provided by the battery supplier and by the battery charger supplier.

1.2.2 Battery type & dimensions & Charging time

All the batteries are maintenance free.

Battery types & dimensions are as follows:

| Tuck type | voltage/ rated capacity | Dimension | Charger | Charging time |
|-----------|-------------------------------|-------------|---------|------------------|
| EST122 | 2x12/85 | 260x165x210 | 10A | 8h |

1.2.3 Handling of the battery acid

➤ Do not deep discharge battery:

If you discharge the battery completely till the trucks do not move any more, you will shorten the service time of the battery.

As soon as the signal for charging appears, no more lifting or travelling, please charge it immediately.

➤ Battery maintenance:

The battery cell covers must be kept dry and clean. The terminals and cable shoes must be clean, secure this with a light coating of dielectric grease. Batteries with non insulated terminals must be covered with a non slip insulation mat.

➤ Cleaning the battery

Do not use dry cloth or fibre cloth to clean the battery to prevent static charging and explosion.

Unfix battery plug.

Clean with wet cloth.

Wear glasses to protect eyes, wear rubber overshoes and rubber gloves.

➤ Battery Disposal

Batteries must only be disposed of as stipulated in the national environmental protection regulations or waste disposal provisions. The battery manufacture's specifications for the disposal must be followed.

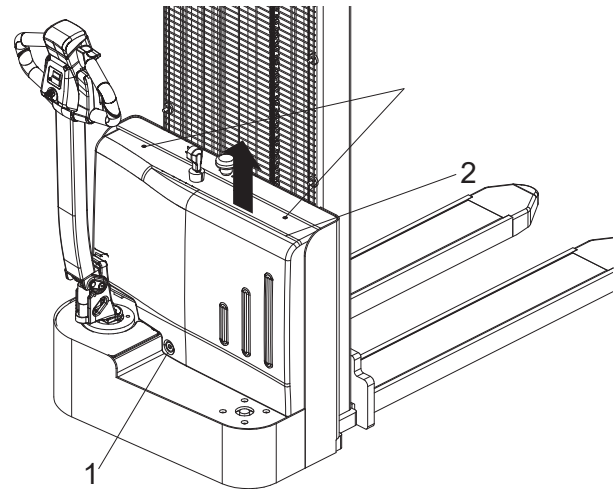
1.3 Battery removal and installation

Removing and installing from the top

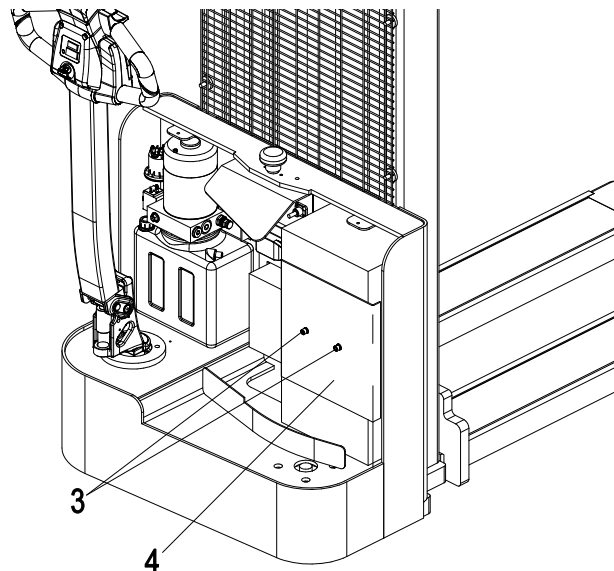
Park the truck securely as described in paragraph 2.3.6 of chapter B and turn off the power before removal and installation of the battery.

Battery removal and installation steps:

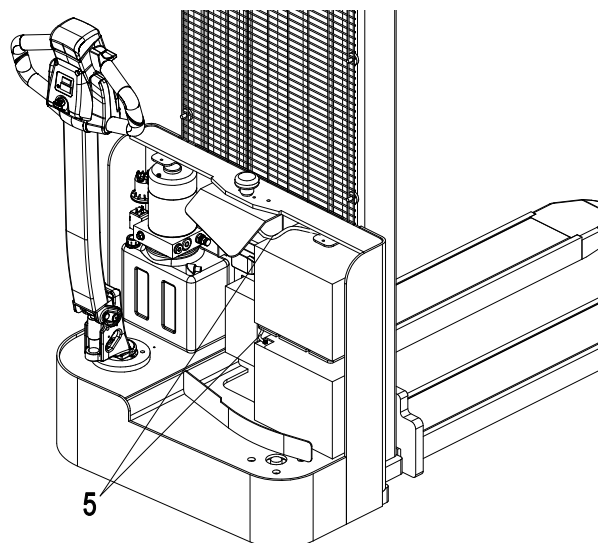
a: Unscrew the three screws (1) and remove the cover(2).



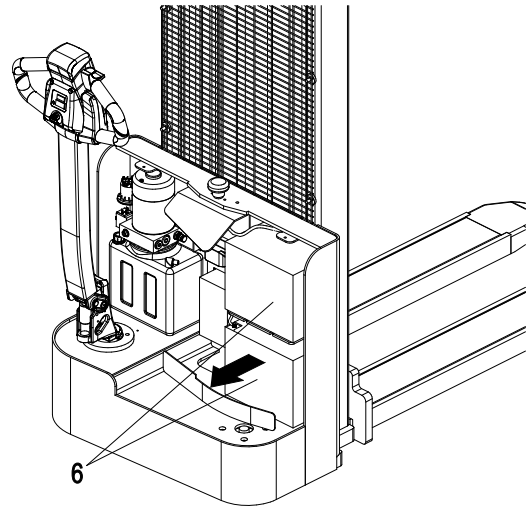
b: Unscrew the 2 screws(3) and remove the battery cover(4).



c: Remove the three battery cables shown in the image(5).



Remove the battery(6).



i NOTE

Pay attention to the operation of the battery to avoid short circuits.

i NOTE

Route the battery cable so that it is not trapped when the battery is inserted.

Installing the battery

Installation is in the reverse order, pay attention on battery installation position and cable connection. Make sure to protect the cables to avoid damage when you install the battery.

Well place cables to avoid be damaged when you remove and install battery.

D

Maintenance

1.1 Truck maintenance

Only through regularly implementing truck maintenance work can the sustainable and reliable use of the forklift be ensured.

Only those receiving professional training and approved as qualified can be competent in various equipment care maintenance operations. If you intend to independently implement maintenance, you are recommended to have your maintenance personnel receive on-site training from the service representative of the equipment supplier.

1.1.1 Safety announcement

It is improper to clean the truck using inflammable liquid.

Ensure that the power supply has been completely disconnected before actual maintenance operation.

Use only approved spare parts.

1.1.2 Decommissioning the industrial truck

If required to be parked for over one month, the truck must be placed in a dry and frost-free environment.

Raise and chock the truck: the wheels must not touch the ground in order to prevent irreversible deformation of the tyres.

Clean the truck carefully.

Check the hydraulic oil level and replenish if necessary, see page D5.

Coat any unpainted metal parts with a thin layer of oil or grease.

Recharge the battery every 2 months.

1.1.3 Restoring the truck to operation

Thoroughly clean the truck.

Clean the battery. Grease the pole screws using pole grease and reconnect the battery.

Recharge the battery.

Check if the hydraulic oil contains condensed water and change if necessary.

Follow the daily checklist, see page B7.



1.1.4 Maintenance table

| | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 50-hour/7-Day maintenance | |
| Check the functions of the operation switches and display | |
| Check alarm system functions | |
| Check the emergency switch functions | |
| Check steering system functions | |
| Check the drive wheel and load wheel for worn or damage | |
| Check the functions of hydraulic system | |
| 250-hour/60-Day maintenance | |
| After operating for 250 hours in total, the truck should also be maintained according to the following procedures in addition to the 50-hour maintenance mentioned above | |
| 8 | Inspect where there is any damage in the cables and whether the terminals are reliable |
| 9 | Inspect whether there is any screw losing or slipping out |
| 10 | Inspect whether there is any abrasion or damage in the oil pipes |
| 11 | Inspect where is any leakage in the hydraulic oil |
| 500-hour/3-month maintenance | |
| After operating for 500 hours in total, the truck should also be maintained according to the following procedures in addition to the 250-hour maintenance mentioned above | |
| 12L | Inspect or add the gear grease |
| 13L | Inspect and lubricate using the lithium-based lubrication grease the lubrication mouths in moving parts |
| 14 | Inspect and lubricate using the lithium-based lubrication grease the bearing between the driving engine and the gear box |
| After operating for 1000 hours in total, the truck should also be maintained according to the following procedures in addition to the 250-hour maintenance and 500-hour maintenance mentioned above | |
| 15 | Inspect and fasten the controller and other electrical apparatus elements |
| 16 | Inspect whether there is any abnormal sound or disclosure of the gear box |
| 17 | Inspect the abrasion situations of the driving wheel/bearing wheel/caster and please timely replace seriously abraded ones |
| 18 | Inspect whether all the oil pipes, pipelines and joints are reliably connected and whether all the sealing elements are reliable |
| 19L | Inspect the level of the oil liquid, and if the level fails to reach the minimum one as required, please timely add hydraulic oil with the same specifications |
| 21 | Check that the oil tank is fixed and check it for leaks. |

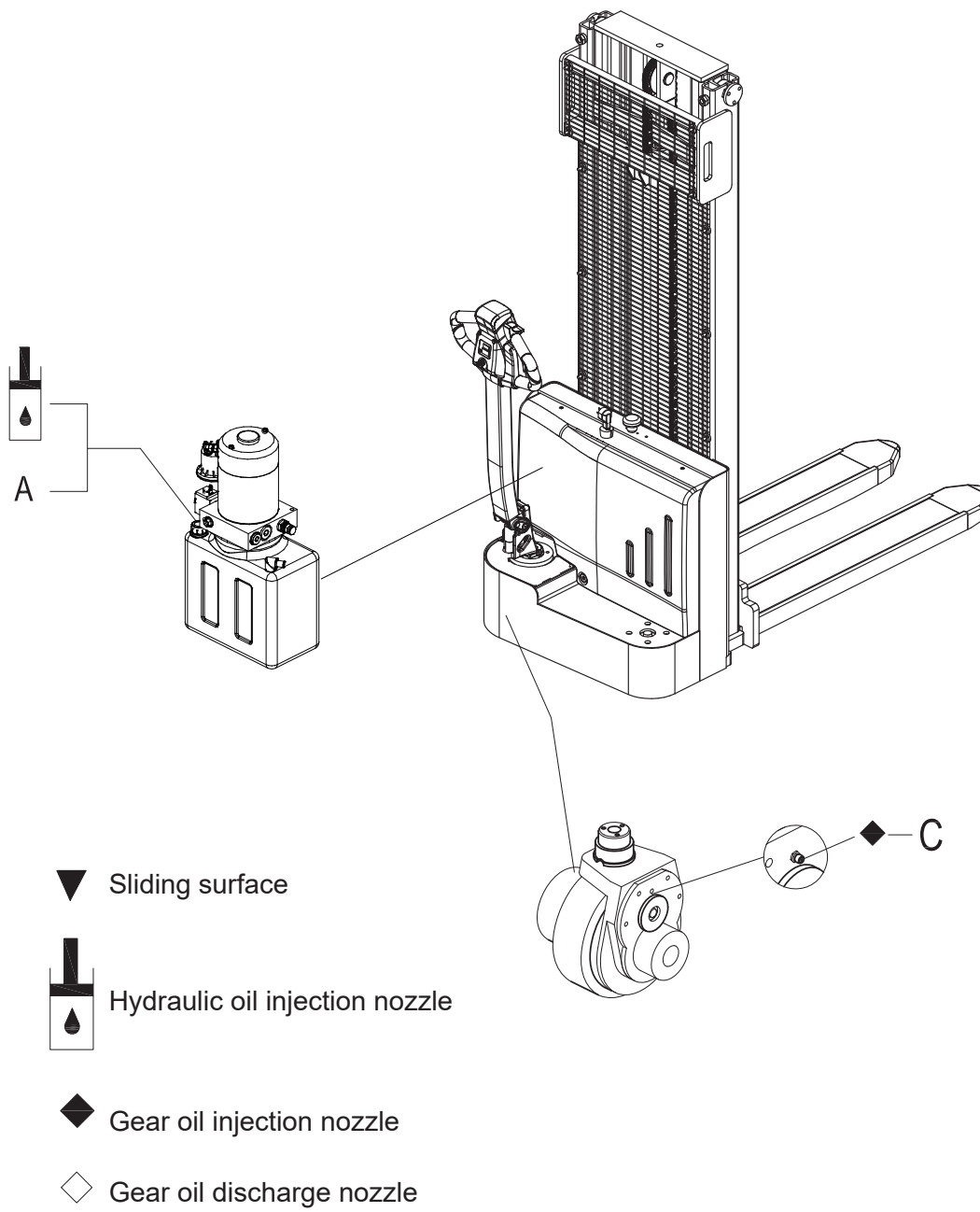
| | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| After operating for 1000 hours in total, the truck should also be maintained according to the following procedures in addition to the 250-hour maintenance, 500-hour maintenance and 1000-hour maintenance mentioned above | |
| 22 | Inspect the running, lifting and lowering speed, braking distance and other operation performances of the truck Inspect and add gearbox lubrication grease |
| 23L | Inspect and replace gearbox gear oil |
| 24 | Inspect where there is any damage in the oil cylinders and whether corresponding installations are reliable |
| 25 | Check hoses, pipes and interfaces for damage and ensure their tightness and sealing. |
| 27 | Inspect whether the bearing capacity reaches the rated load and implement corresponding adjustment through the flood valve adopted in the hydraulic station |
| 28 | Inspect whether all the labels are clear and intact |
| After operating for 2000 hours in total, the truck should also be maintained according to the following procedures in addition to the 250-hour maintenance, 500-hour maintenance, 500-hour maintenance and 1000-hour maintenance mentioned above | |
| 29 | Inspect and replace the hydraulic filter |
| 30 | Check the condition and tightness of the mast and chains |
| 31 | Adjust the length of the mast chains |
| 32 | Clean and lubricate the chains |
| 33 | Lubricate the mast |
| 34 | Check the condition and mountings of the mast protectors |

➤ **Maintenance operations that do not require special training**

Simple maintenance operations such as checking the hydraulic fluid level or checking the battery electrolyte level (if necessary) can be carried out by persons with no special training. A specific qualification is not necessary.

Complicated maintenance operations such as replacing the battery, replacing the wheels and so on should be carried out by the authorised service centre.

Refer to the maintenance section of this manual for further information.

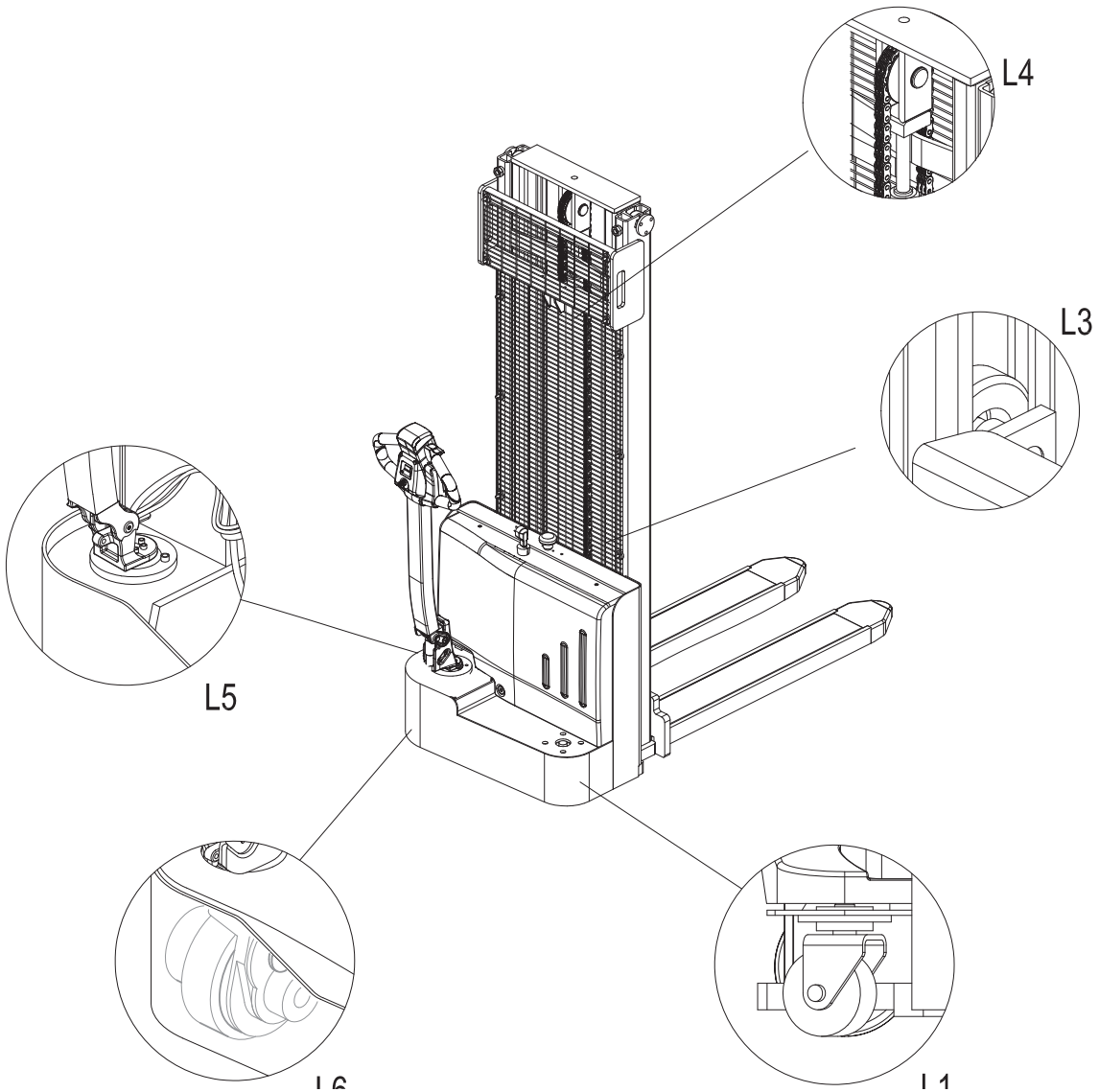
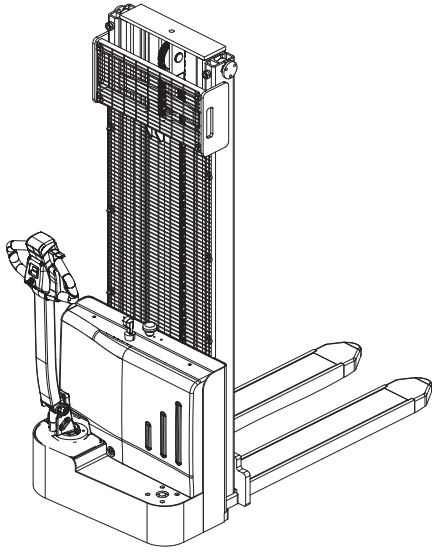


| Lubricants | | | | |
|-------------------|--------------------------------------------------------|----------------------|--------------------|-------------------------------|
| Code | Type | Specification | Amount | Position |
| A | Anti-wear hydraulic oil | L-HM32 | See Table 1 | Hydraulic System |
| | Low temperature anti-wear hydraulic oil (cold storage) | L-HV32 | | |
| B | Multi-purpose grease | Polylub GA352P | Appropriate amount | Sliding surface (See Table 2) |
| C | Grease (MoS ₂) | - | 110 grams | Gearbox |

| Table 1 Application Amount of Hydraulic Oil | | |
|----------------------------------------------------|----------------------------|-------------------|
| Mast Series | Lifting height (mm) | Amount (L) |
| 2-stage mast | 2500 | 4.2 |
| | 2700 | 4.2 |
| | 3000 | 4.5 |
| | 3300 | 4.8 |

**Table 2 Sliding Surface
Lubrication Table**

| Code | Position |
|------|---------------------------|
| L1 | Caster |
| L3 | Steel channel and rollers |
| L4 | Chains |
| L5 | Steering Bearing |
| L6 | Drive Wheel |



1.2 Maintenance Instructions

1.2.1 Check the hydraulic oil level

i NOTE

If there are popping noises coming from the tubing when lifting, this indicates that the hydraulic oil is insufficient and should be promptly replenished.

! CAUTION

Do not add hydraulic oil that contains impurities.

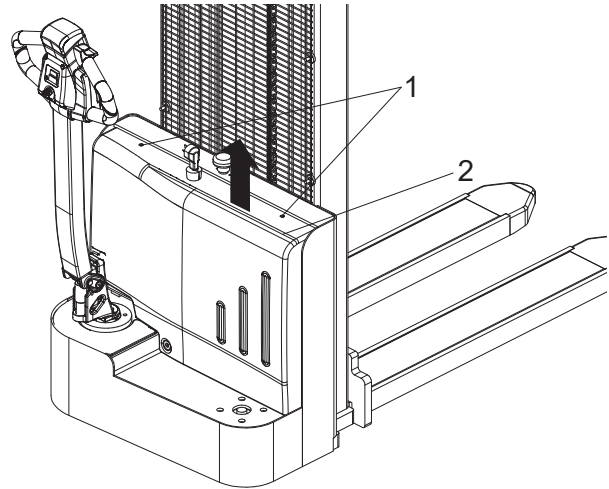
Fully lower the mast.

Press the emergency off switch.

Unscrew two screws(1).

Remove the front hood(2).

Check the hydraulic oil quantity on the hydraulic tank according to Lubrication Points.



i NOTE

You can lift again after you have finished adding the oil. You must continue checking the hydraulic oil level if there is still a banging noise.

Reinstall the disassembled parts in reverse order.

i NOTE

Only use hydraulic oil that meets the specifications. Refer to "Lubricants Points".

1.2.2 How to add oil

It is necessary to add hydraulic oil when you heard explosion sound from pipe during lifting.

Prepare the truck for maintenance and repairs (See Maintenance Instructions).

Open the front panel.

Add hydraulic oil of the correct grade (See Lubrication point).

Add hydraulic oil till you can't hear explosion sound during lifting any more.

Re-install in the reverse order.

1.2.3 How to add grease

Prepare the truck for maintenance and repairs (See Maintenance Instructions).

Remove the front panel.

Add grease of the correct grade (See Lubrication point).

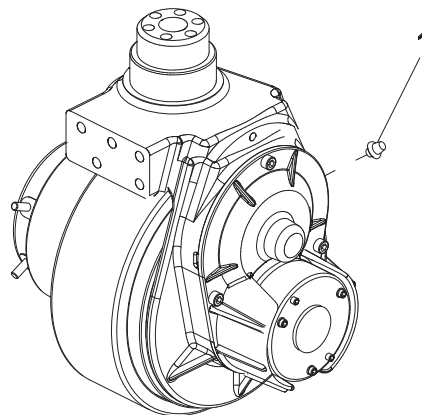
Add transmission oil every 500 operating hours or at least annually.

Install following the above steps in reverse order.



WARNING

Don't not add gear oil that contains impurities.



1.2.4 Checking fuses

Fully lower the mast.

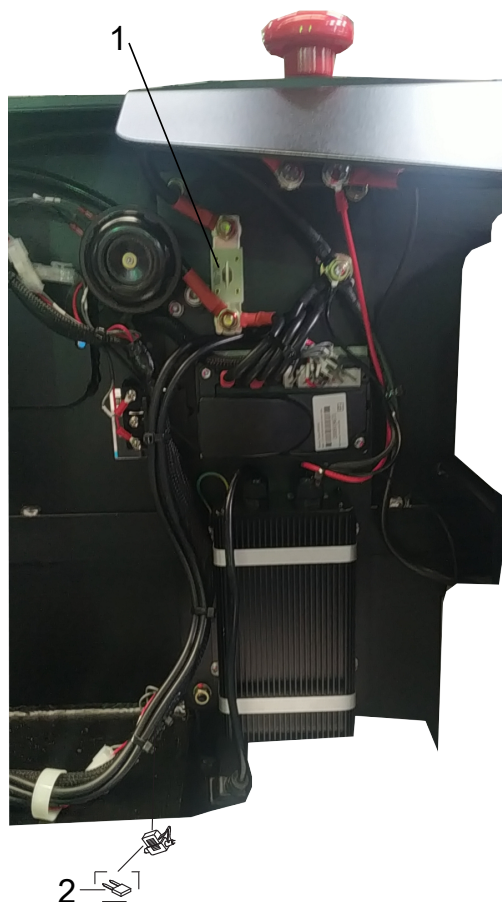
Press the emergency stop switch.

Remove the front hood.

Check that all fuses are in working order.

If necessary, replace them with fuses that match the parameters specified in the table below.

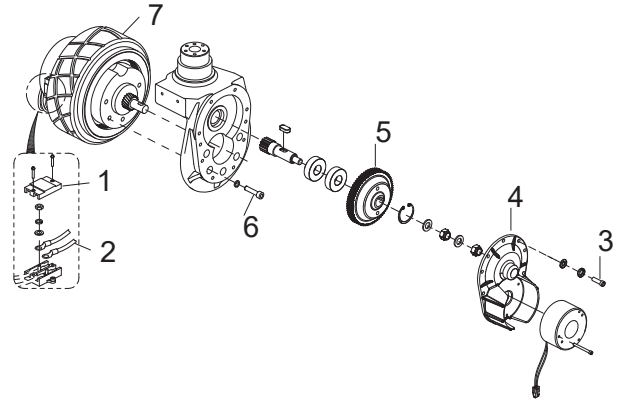
| No. | Checking fuses for the following functions or components | Value |
|-----|----------------------------------------------------------|-------|
| 1 | Traction / Lift motor fuse | 150A |
| 2 | Wire harness fuses | 5A |



1.2.5 Drive Wheel

Removal

Remove the drive assembly.
 Dismantle the motor cable mounting base(1),and remove the motor cables(2);
 Loosen the eight screws(3) with a wrench, and remove the gearbox cover(4) and gear set(5);
 Unscrew the five screws(6) and knock out the assembly from the gearbox(7);
 Knock out the drive motor(13), and remove the oil seal(8);
 Loosen the six screws(9) with a wrench, and dismantle the large ring gear(10), bearing(11) and drive wheel(12) by order.



Installation

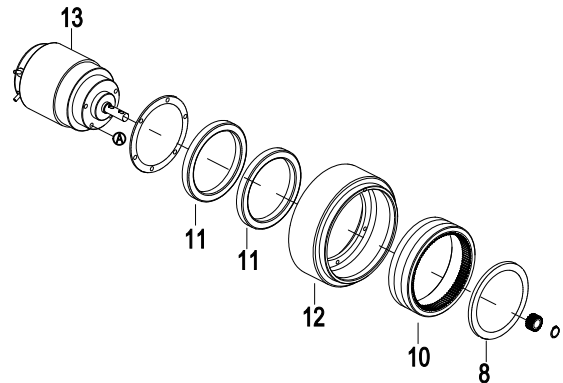
Install according to the reverse order of removal.

CAUTION

Tyre wear can affect the stability of the truck, adjust the caster with minor wear on a regular basis, or replace the caster with heavy wear. Quality of tyres directly affects the stability and driving performance of the device. If you need to replace the factory-fitted tyres, please use original spare parts provided by the equipment manufacturer to reach the original design performance of the truck.

Faults and Causes

| | | |
|---|-------|------------------------------------|
| 1 | Fault | Drive wheel slipping or jumping |
| | Cause | Wear |
| 2 | Fault | Drive wheel cracking or degumm-ing |
| | Cause | Improper use |
| 3 | Fault | Vehicle sways while running |
| | Cause | Drive wheel lock nut loosening |



1.2.6 Load Wheels-Removal and Installation

Removal

Lift the vehicle carefully with lifting equipment through the lifting holes at back;



CAUTION

Make sure the lifting equipment is solid and secure, and the load capacity should be greater than the total weight of the vehicle.

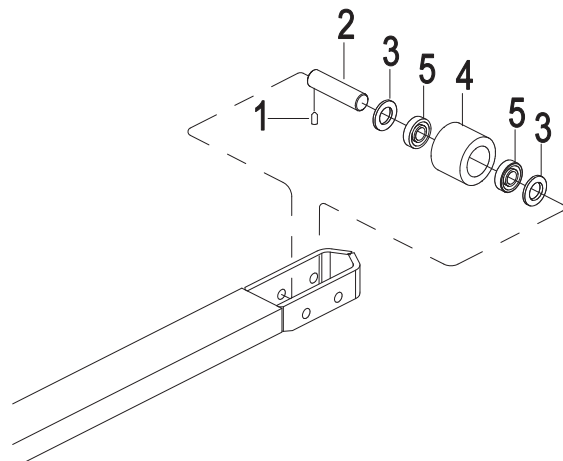
Place a wooden wedge under the chassis near load wheel, make the load wheel off the ground.



CAUTION

When replacing wheels, be sure that the truck won't tilt.

Remove the coiled elastic cylindrical pin(1) within the wheel bridge with an ejector pin of 4mm in diameter;
Turn the wheel bridge to vertical direction, knock out the wheel pin shaft(2) from side, and remove the load wheel and bearing assembly;
Remove the bearing(5) of load wheel(4) with hammer and jacking equipment.
Loosen the set screw (1) in the fork leg with a wrench;
Knock out the wheel pin shaft (2) from side, and remove washers(3), load wheel and bearing assembly;
Remove the bearing (5) of load wheel (4) with hammer and jacking equipment.

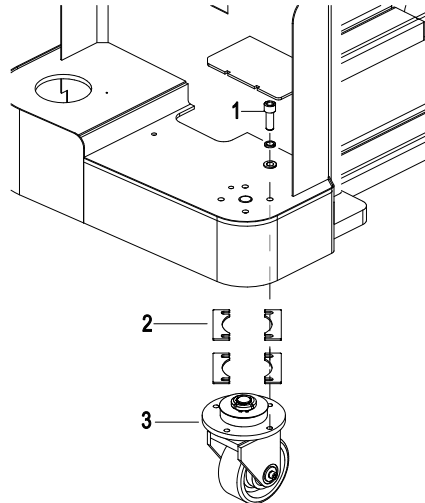


Installation and Commissioning

Install according to the reverse order of removal;
Run the truck to see if the load wheel is functioning properly. If there is blocking or noise, please install again.

CAUTION

When installing, please apply appropriate amount of grease on the axle first.



1.2.7 Caster - Removal and Installation

Removal

Remove the cover;
Lift the truck carefully with lifting equipment through the lifting holes at front and back.

WARNING

Make sure the lifting equipment is solid and secure, and the load capacity should be greater than the total weight of the vehicle. Lifting height of not more than 300mm, to prevent the hazards to the maintenance personnel working under the vehicle for caster removal and installation.

Unscrew four screws(1), then remove the caster(3) and adjustment shim(2).

Installation

Install according to the reverse order of removal.

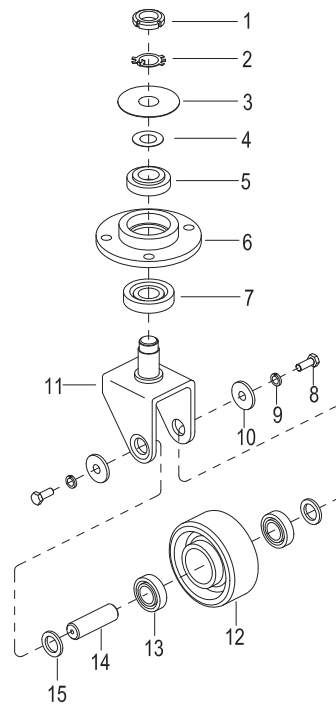
Adjustment

Park the truck with replacement completed on level ground to see if the casters and drive wheel can both be in contact with the ground;

When the truck is running, check if the caster is functioning properly.

After long time of use, the drive wheel will wear and tear to certain level, at this time, adjust the height of caster(3) through increasing or decreasing the number of adjustment shims(2) to make the two casters and drive wheel to be in close contact with the ground.

Upon maintenance or replacement for parts of the caster, please refer to two figures as below:



➤ **Troubleshooting**

If the fault cannot be rectified after carrying out the remedial procedure, notify the Manufacture's service department, as any further troubleshooting can only be performed by specially trained and qualified service personnel.

| Fault | Probable Cause | Action |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Truck does not start. | <ul style="list-style-type: none"> -Battery cables not plugged in -Key switch in "0" position -Battery charge too low -Faulty fuse -Truck in charge mode | <ul style="list-style-type: none"> -Check the battery cables and connect if necessary. -Set key switch to "1" -Check battery charge, charge battery if necessary -Check fuses. -Interrupt charging |
| Load cannot be lifted | <ul style="list-style-type: none"> -Charging capacity too low -Truck not operational -Hydraulic oil level too low | <ul style="list-style-type: none"> -Charging the battery -Carry out all measures listed under "Truck does not start" -Check the hydraulic oil level |

➤ **Final decommissioning, disposal:**

The final scrap treatment of the forklift must be implemented according to the current laws and regulations of China, especially the provisions related to such aspects as storage battery, consumables, fuel oil and electric equipment.



Technical data

Standard Version Specifications

Technical specification details in accordance with VDI 2198. Technical modifications and additions reserved.

Performance data for standard trucks

| Distinguishing mark | | | | |
|---------------------|-------------------------------------------------|---|----|------------|
| 1.2 | Model designation | | | EST122 |
| 1.3 | Drive unit | | | electrics |
| 1.4 | Operator type | | | pedestrian |
| 1.5 | rated capacity | Q | t | 1.2 |
| 1.6 | Load center distance | c | mm | 600 |
| 1.8 | Load distance | x | mm | 798 |
| 1.9 | Wheelbase | y | mm | 1212 |
| Weight | | | | |
| 2.1 | Service weight (include battery) | | kg | 595 |
| 2.2 | Axle loading, laden driving side/loading side | | kg | 670/1125 |
| 2.3 | Axle loading, unladen driving side/loading side | | kg | 450/145 |
| Types, Chassis | | | | |
| 3.1 | "Tyre type driving wheels/loading wheels" | | | PU/PU |

| | | | | |
|-------------------|---------------------------------------------------------|------------|----|---------------|
| 3.2 | Tyre size, driving wheels(diameter×width) | | mm | Ø210×70 |
| 3.3 | Tyre size, loading wheels(diameter×width) | | mm | Ø74×72 |
| 3.4 | Tyre size, caster wheels(diameter×width) | | mm | Ø130×55 |
| 3.5 | Wheels, number driving, caster/loading (x=drive wheels) | | mm | 1x +1/4 |
| 3.6 | Track width, front,driving side | b10 | mm | 531 |
| 3.7 | Track width,rear,loading side | b11 | mm | 405 |
| Dimensions | | | | |
| 4.2 | Height, mast lowered | h1 | mm | 1956 |
| 4.3 | Free lift | h2 | mm | / |
| 4.4 | Lift height | h3 | mm | 2630 |
| 4.5 | Height, mast extended | h4 | mm | 3271 |
| 4.9 | Height drawbar in driving position min./max. | h14 | mm | 750/ 1340 |
| 4.10 | Height of wheel arms | | | / |
| 4.15 | Lowered height | h13 | mm | 85 |
| 4.19 | Overall length | l1 | mm | 1713 |
| 4.20 | Length to face of forks | l2 | mm | 563 |
| 4.21 | Overall width | b1/ b2 | mm | 792 |
| 4.22 | Fork dimensions | s/ e/ l | mm | 60/ 170/ 1150 |
| 4.24 | Fork carriage width | b3 | mm | 680/770 |
| 4.25 | Distance between fork-arms | b5 | mm | 570/685 |
| 4.26 | Distance between wheel arms | | | / |
| 4.31 | Ground clearance, laden, below mast | m1 | | / |

| | | | | |
|-------------------------|-----------------------------------------------|-------|--------|-----------------|
| 4.32 | Ground clearance, center of wheelbase | m2 | mm | 25 |
| 4.34.1 | Aisle width for pallets 800 × 1200 lengthways | Ast | mm | 2224 |
| 4.34.2 | Turning radius | Wa | mm | 2158 |
| 4.35 | Turning radius | Wa | mm | 1390 |
| Performance data | | | | |
| 5.1 | Travel speed, laden/ unladen | km/ h | km/h | 4.2 /4.5 |
| 5.2 | Lifting speed, laden/ unladen | | m/ s | 0.10/0.14 |
| 5.3 | Lowering speed, laden/ unladen | | m/ s | 0.10/0.10 |
| 5.8 | Max. gradeability, laden/ unladen | | % | 4/10 |
| 5.10 | Service brake type | | | Electromagnetic |
| Electric-engine | | | | |
| 6.1 | Drive motor rating S2 60 min | hp | kW | 0.75 |
| 6.2 | Lift motor rating at S3 15% | hp | kW | 2.2 |
| 6.3 | The maximum allowed size battery | in. | mm | 260x165x210 |
| 6.4 | Battery voltage/nominal capacity K5 | V/ Ah | | 2x12/85 |
| 6.5 | Battery weight | lb. | kg | 2x24 |
| Addition data | | | | |
| 8.1 | Type of drive control | | | DC |
| 10.5 | Steering type | | | Mechanical |
| 10.7 | Sound pressure level at the driver's ear | | dB (A) | 74 |

Dimensions

