

# Operation Manual

**EPL152**

**EPL154**

**EPL163**

**EPL185**





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”.

EP EQUIPMENT CO., LTD

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## Preface ►

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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**

Means that failure to comply can cause risk to life and/or major damage to property.



#### **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.



**Note:** After registration, please send email to [info@ep-care.com](mailto:info@ep-care.com) to activate your account

## Intended use ►

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**The lift truck is designed for transporting and stacking the loads stated in the nameplate.**

**In particular we refer to:**

- the safety rules of your trade association.
- In accordance with the special provisions for driving on public roads specified by national specifications.
- 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.

### **Technical description**

The truck consists of robust steel chassis and is driving on a traction wheel and 2 load wheels. Caster wheels provide for good stability even with high loads.

The truck will be stopped by a regenerative service brake and hold by an automatic electromagnetic parking brake in it's parking position.

The load is lifted by a hydraulic cylinder that activates a lifting shaft that transmits the lifting movement by a push-rod to the load wheels.

The control handle is used for smooth steering and control of drive speed, lifting and lowering, braking and the horn without changing the position of the hand. The long tiller shaft allows effortless steering and a safe distance to the truck. A gas spring returns the control handle always into a vertical position that activates the brake automatically.

An emergency reverse switch on the control head protects the operator from being squeezed by the truck in confined spaces.

An electronic controller operates all electric functions and guaranties safety.

A key switch secures the truck from unauthorized use.

The ergonomic design of the truck guaranties safe and easy operation. .

## ● 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.

## ● 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.

Company name: Zhejiang EP Equipment Co., Ltd

Address: Zhongli Industrial Park, Xiquan Village, Dipu Town,

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E-mail: [info@ep-ep.com](mailto:info@ep-ep.com)

## Legal requirements for marketing

### Declaration

EP EQUIPMENT CO., LTD.

Address: XIAQUAN, DIPU, ANJI, ZHEJIANG, CHINA

We declare that the machine

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. Unauthorised 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 stored and made available to be presented to the relevant authorities when necessary. If this industrial truck is sold, this declaration document must be handed over to the new owner.



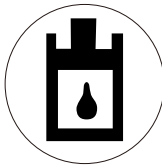
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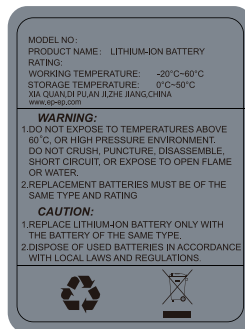
# A

## Nameplates and alarming labels

- 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.



**Hydraulic oil port**



**Battery nameplate**



**Lithium label**



**Anti-pinch label**



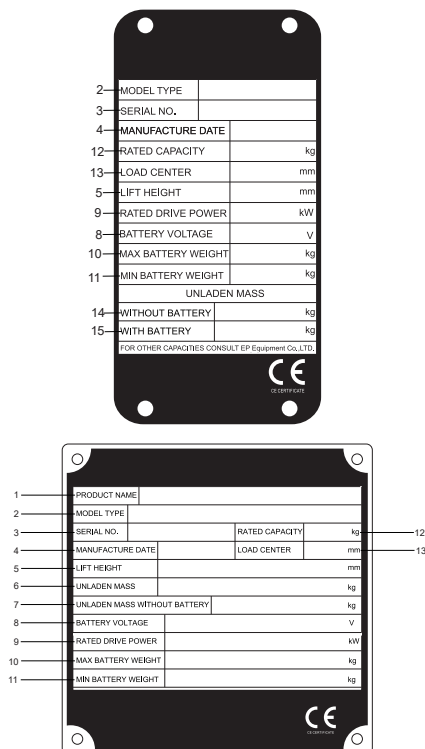
**Do not rest on the pallet label**



**Instructions label**



## ➤ Nameplate



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

## ➤ Hoisting

Remove the load before hoisting the pallet truck.

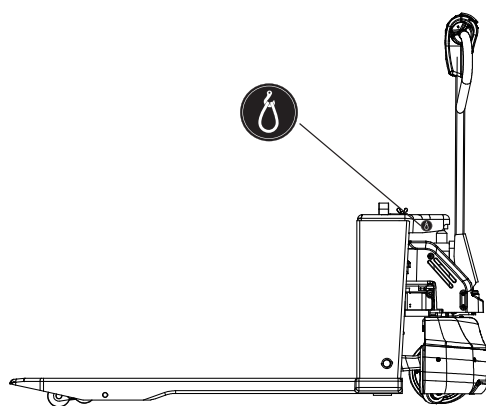
Disconnect the power supply.

Attach slings in the positions identified by the hook symbol.

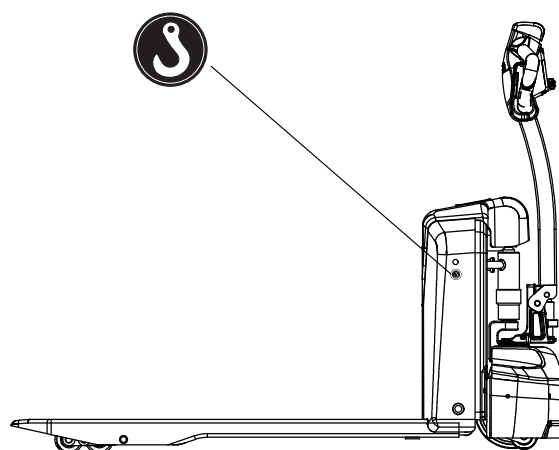


### **DANGER**

*Personnel must not stand below or near the truck when the pallet truck is being lifted.*



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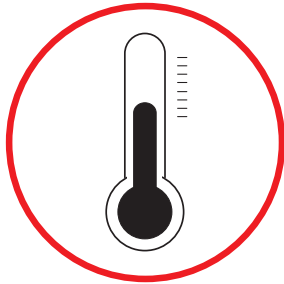


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# B

## Operation

### 2.1 Utilization safety specification



Applicable environment temperature: -10 °C - 40 °C



Don't use the truck in rainwater.



Don't use the truck in non-position.

#### **i** NOTE

*The carrier 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.*



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.

#### **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.



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

### 2.1.1 EN standards



**Continuous sound level:** 74 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.

## 2.1.2 Conditions for application



### Working condition requirements:

- Indoor use.
- 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)

## 2.1.3 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:**

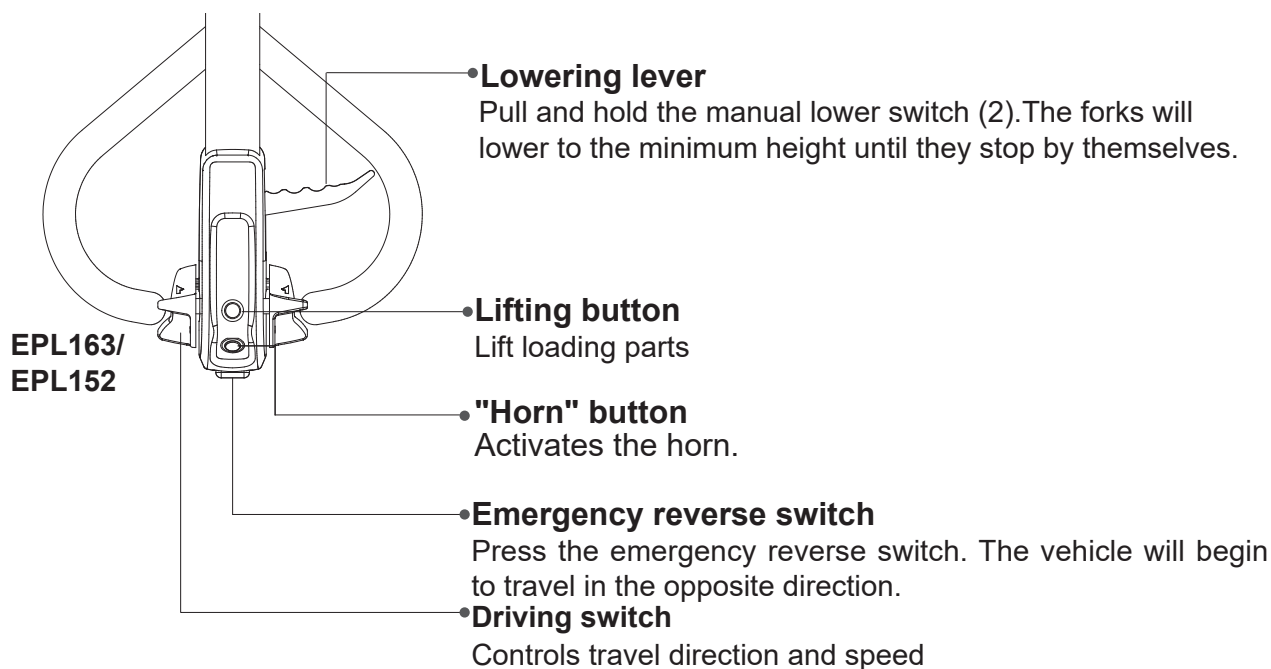
- Emergency stops or sharp turns
- Driving with a raised load or a load handling device
- Turning the vehicle around on or driving across a slope
- Driving up or down a slope with the load pointing downhill
- Driving with a wide load
- Carrying a swinging load
- Driving near the edge of a ramp or up 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)

## 2.2 Display and manipulation

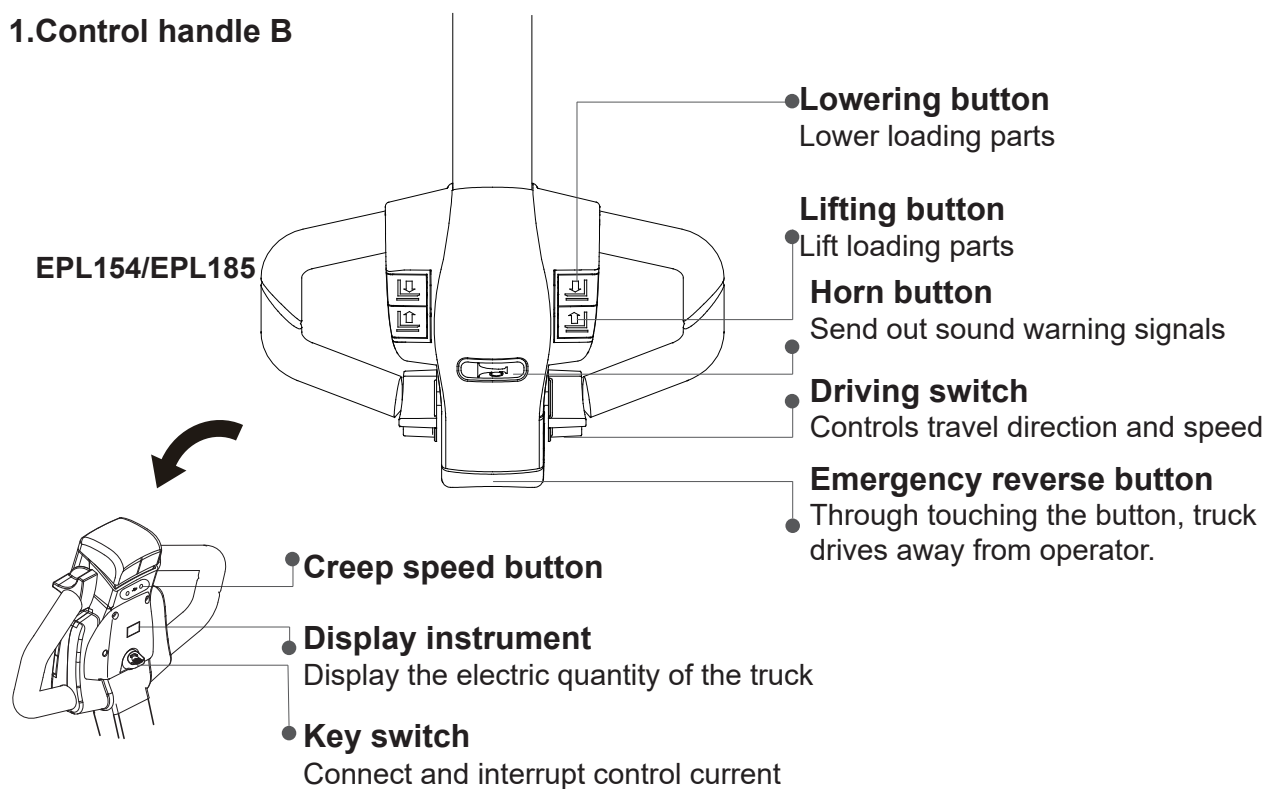
### 2.2.1 Control handle



#### 1. Control handle A



#### 1. Control handle B



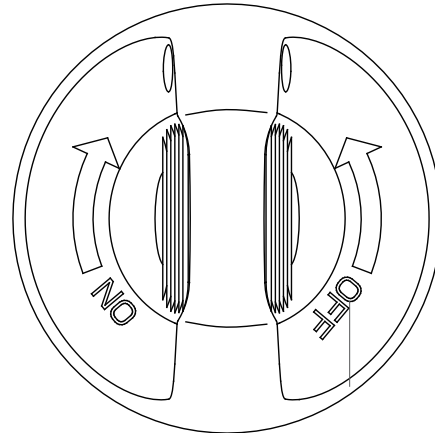
## 2.2.2 Key switch



### 1.Key switch A

#### 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.

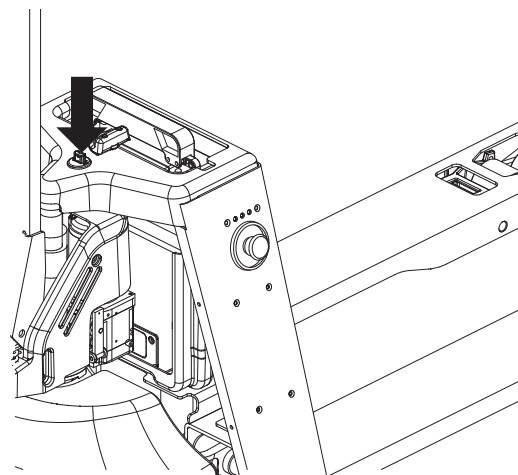


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### 2.Key switch B

#### Connect and interrupt the control current.

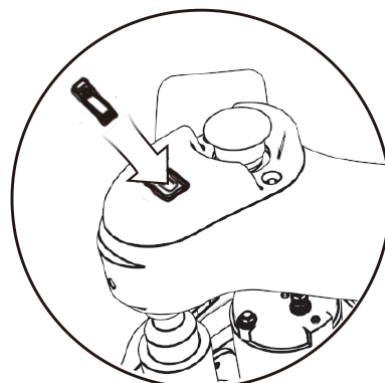
- When pulling out the induction key(1), the control current of the truck will be interrupted;
- When inserting the induction key, the control current of the truck will be connected.



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#### **i** NOTE

*Pulling out the key switch of a forklift before leaving can prevent the forklift from starting accidentally.*

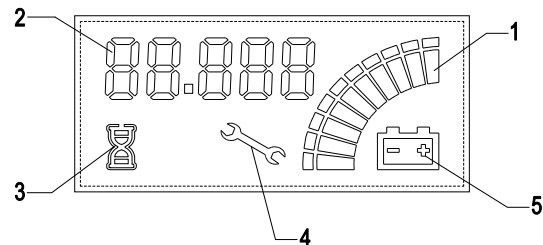


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## 2.2.3 Display instrument

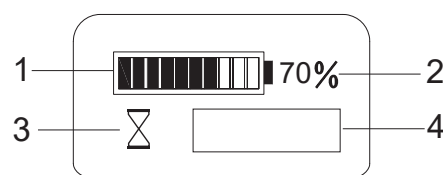


- LED (1) displays the remaining charge;
- LED (2) displays the total running time normally. If fault, display the fault code;
- LED (3) flashing, and the vehicle starts timing;
- LED (4) is on, indicate vehicle failure;
- LED (5) is on under normal, it will flashing when the power is less than 20% ;



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- LED (1) displays the remaining charge;
- LED (2) displays remaining charge percentage;
- LED (3) displays Interlock switch status indication. Solid on, interlock switch is disconnect. Blink, interlock switch is closed, the truck start time ;



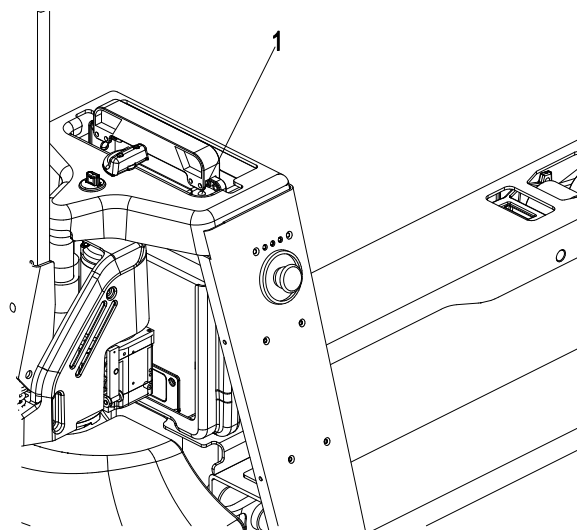
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- LED (4) displays the total running time normally. If fault, display the fault code.

The LCD display (1) show battery residual capacity.

The color of the LCD (1) represent the following conditions:

Component	LCD color	Residual capacity
Standard battery residual capacity	Green	30-100%
	Yellow	15-30%
	Quick flashing red light (Flashing period 2s)	7-15%
	Slow flashing red light (Flashing period 1s)	0-7%

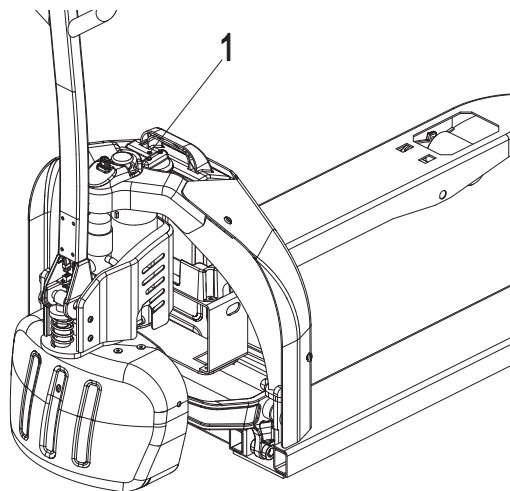


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**i NOTE**


After the red light starts flashing, the battery will enter the low-voltage protection state. According to the battery state, The truck will appear accidental power-off protection. Please charge the battery after restarting to avoid damage to the battery.



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If the controller detects a battery failure, flashes of LCD (1) represent battery failure information until the failure is remedied. Details of failure information are shown as below:

- Under-voltage of single cell battery: The green light repeats in a cycle of flashing once in 1 second, pausing for 2 seconds and then flashing twice, pausing for 3 seconds.
- Over-voltage of single cell battery: The green light repeats in a cycle of flashing once in 1 second, pausing for 2 seconds and then flashing three times, pausing for 3 seconds.
- Short circuit protection: The green light repeats in a cycle of flashing once in 1 second, pausing for 2 seconds and then flashing four times, pausing for 3 seconds.
- Over-current protection: The green light repeats in a cycle of flashing once in 1 second, pausing for 2 seconds and then flashing five times, pausing for 3 seconds.
- Battery temperature is too high: The green light repeats in a cycle of flashing twice in 1 second, pausing for 2 seconds and then flashing three times, pausing for 3 seconds.
- Battery temperature is too low: The green light repeats in a cycle of flashing twice in 1 second, pausing for 2 seconds and then flashing four times, pausing for 3 seconds.
- Contactor-related failures: The green light repeats in a cycle of flashing three times in 1 second, pausing for 2 seconds and then flashing four times, pausing for 3 seconds.
- The yellow light flashes rapidly in 1 second when other failures happen.

 *When powered off, if the green light of power indicator is always on, it means that the battery is in a balanced state, which is a normal phenomenon.*

## 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.

Table 1. Table of daily inspections by operators

### Operator's Daily Checklist

Date \_\_\_\_\_ Operator \_\_\_\_\_  
 Truck No. \_\_\_\_\_ No. \_\_\_\_\_  
 Department \_\_\_\_\_  
 Runtime  
 Meter Reading \_\_\_\_\_

Daily Check Items	O.K.(√)	Remark
Check for Fluid Leakage		
Check for scratches, deformation or cracks.		
Check Decal Condition		
Check the smooth movement of the wheels.		
Check the function of the emergency brake by activating the emergency stop switch.		
Check, the tiller arm- switch braking function		
Check the lifting and lowering functions by operating the buttons.		
Check if all bolts and nuts are tightened firmly.		
Check the vertical creep of the truck.(if equipped)		
Check the lithium-ion installation, making sure not to damage the battery cables.		
Recharge the lithium-ion battery		

**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 Comissioning**



*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 2.3.2 Truck starting*



#### **WARNING**

*The truck must only be operated with a lithium-ion battery.*



#### **NOTE**

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

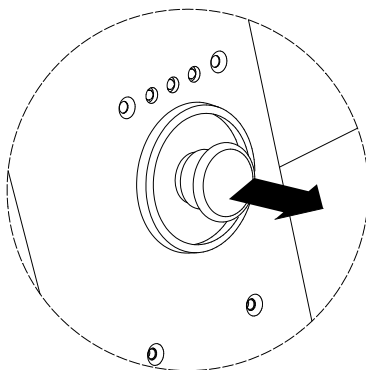
#### **Wheel flattening**

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.

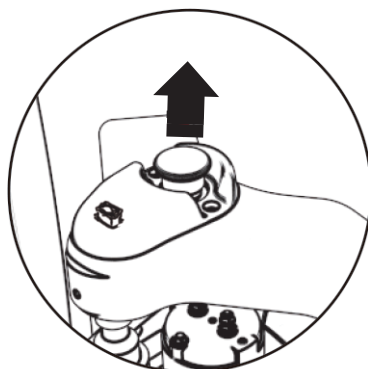
### 2.3.3 Truck starting



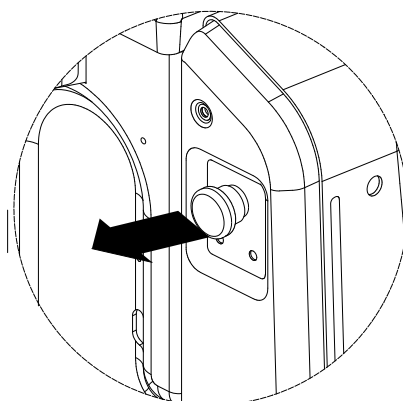
#### 1. Release the emergency stop switch.



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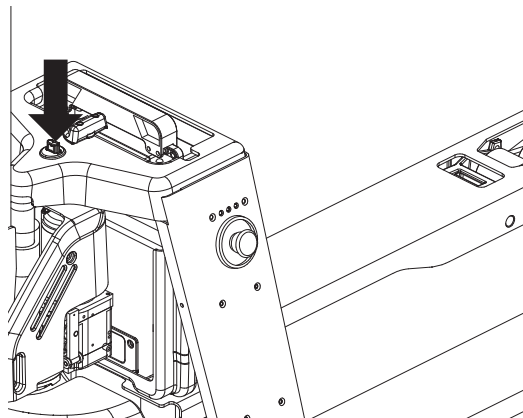


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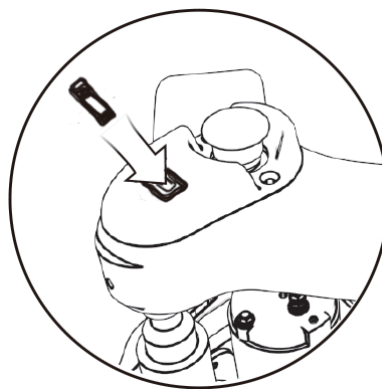


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**2. Connect the key switch to start the truck.**

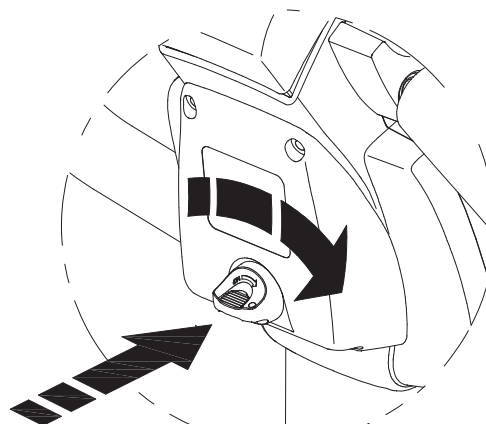


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**2. Open the key switch to start the truck**



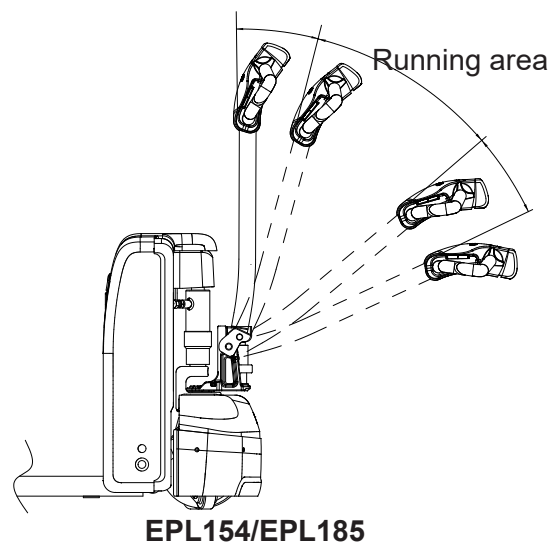
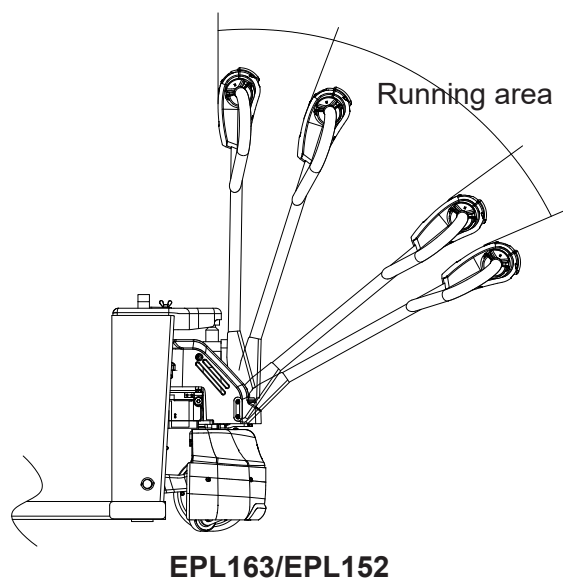
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## 2.3.4 Running, swerving and braking

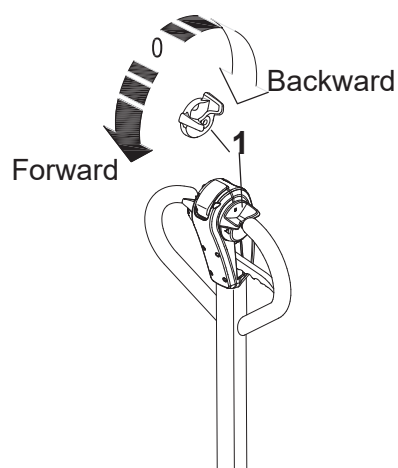
### 1. Running

#### ➤ Running area



#### ➤ Rotary button

Control the running direction and speed of the truck using the drive switch (1). (the larger the rotary angle, the faster corresponding speed)

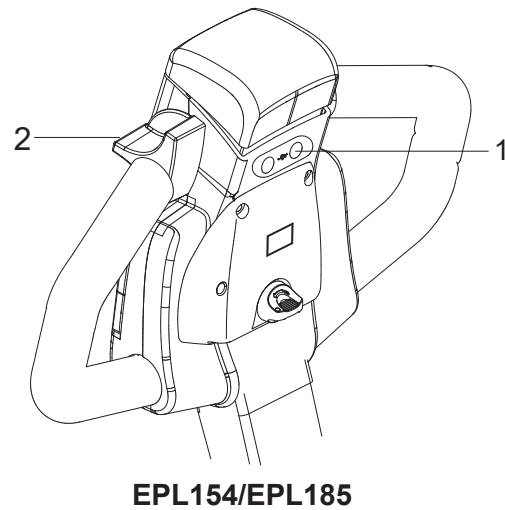
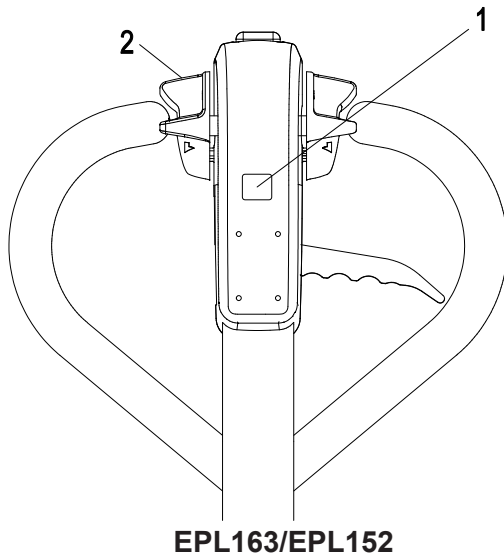


#### **i** NOTE

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

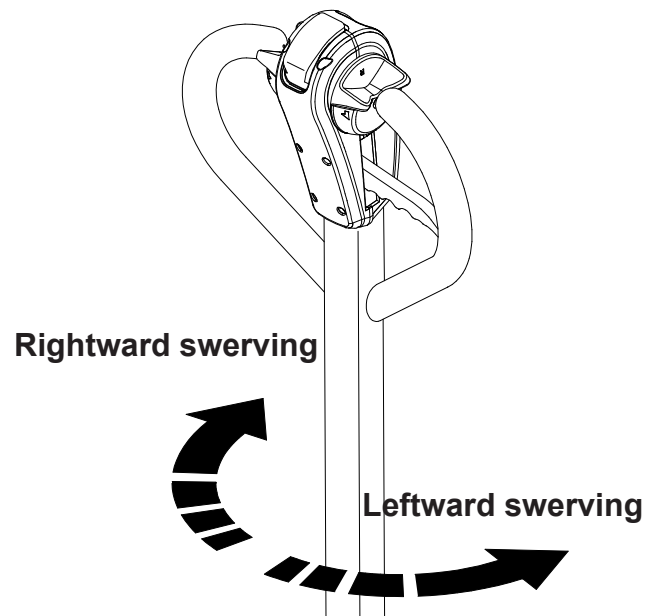
**i** **NOTE**

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.



## 2.Swerving

Rotate the operation hand shank leftward or rightward as required.



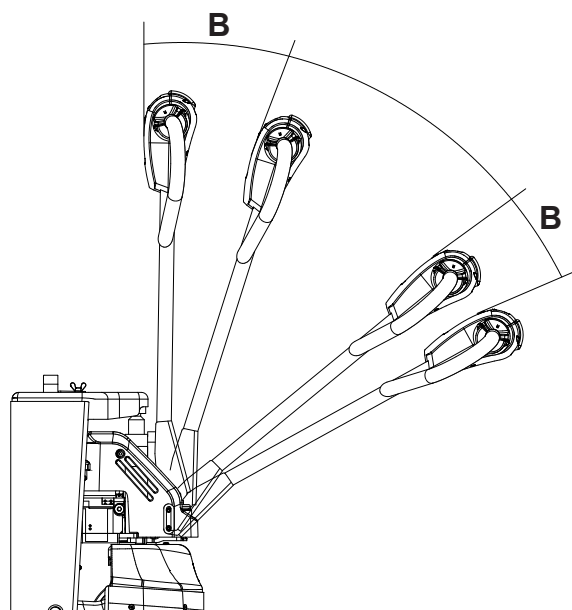


### 3.Braking

#### ➤ Mechanical operating brake

The truck is braked when the operating handle is released.

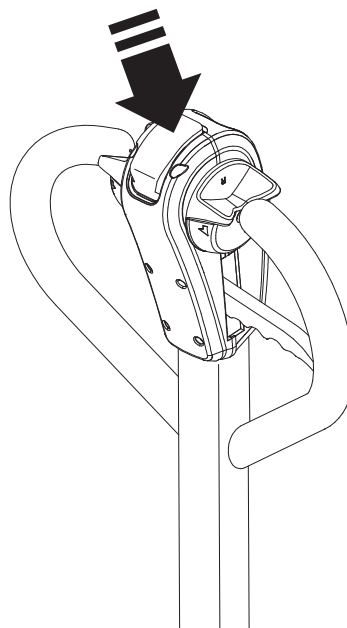
The mechanical brake engages when the tiller is positioned in Braking area.



#### ➤ Reverse braking

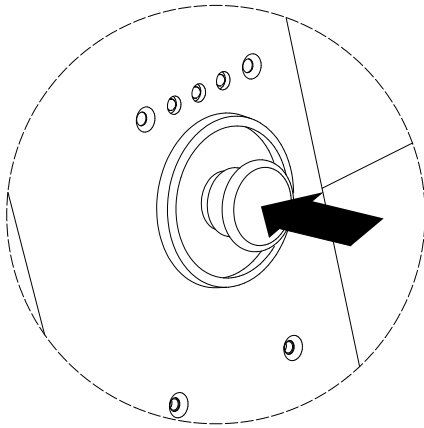
Braking can be accomplished by changing the direction of travel.

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

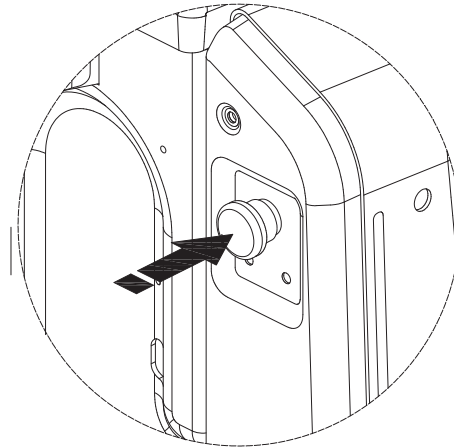


➤ **Emergency stop switch**

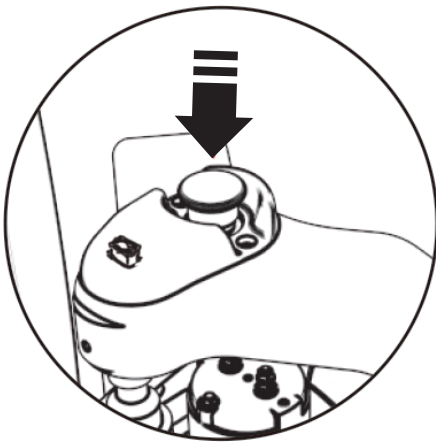
Press the emergency stop switch, and then all the electrically propelled functions will be interrupted.



**EPL163**



**EPL154/EPL185**



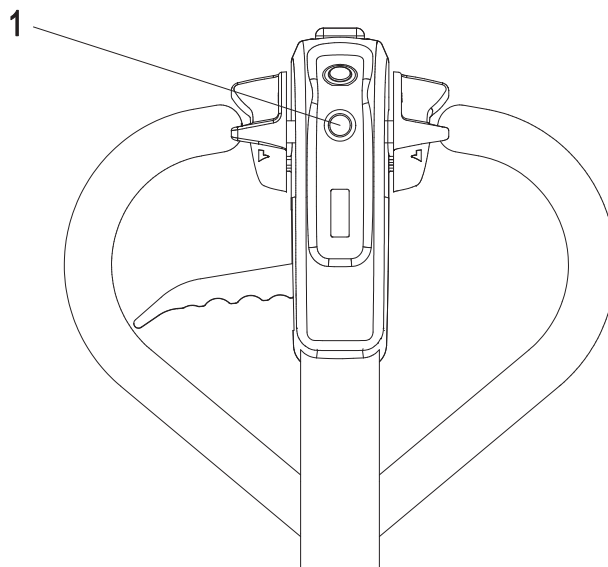
**EPL152**

## 2.3.5 Goods picking



### 1. Lifting

Keep pressing the lifting button (1) until reaching the required lifting height.



EPL163/EPL152

### 2. Lowering

Set forks to the lowest position by pulling lowering lever upward.



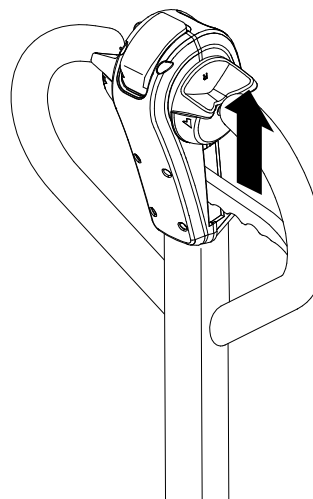
#### **WARNING**

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

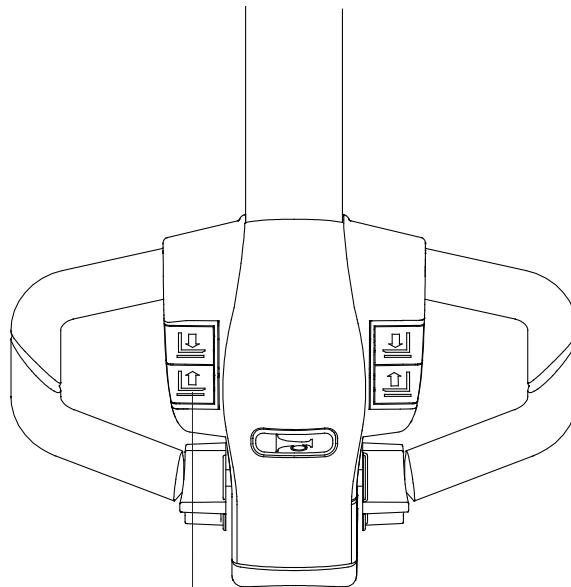


#### **NOTE**

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

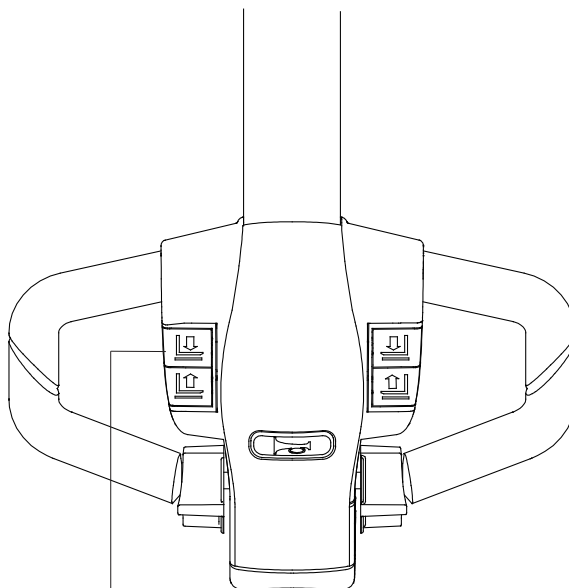


EPL163/EPL152



**EPL154/EPL185**

Keep pressing the lifting button until reaching the required lifting height



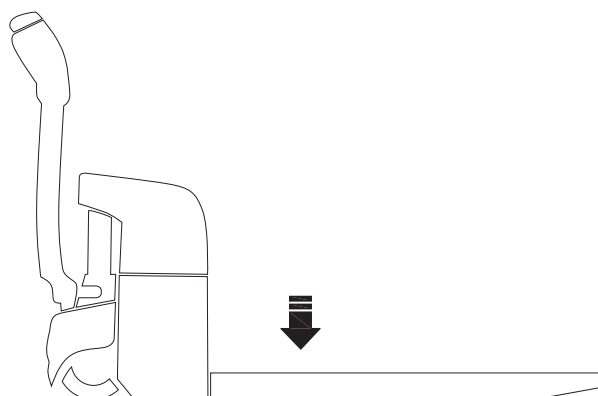
**EPL154/EPL185**

Lower the pallet forks to the bottom through pressing the lowering button.

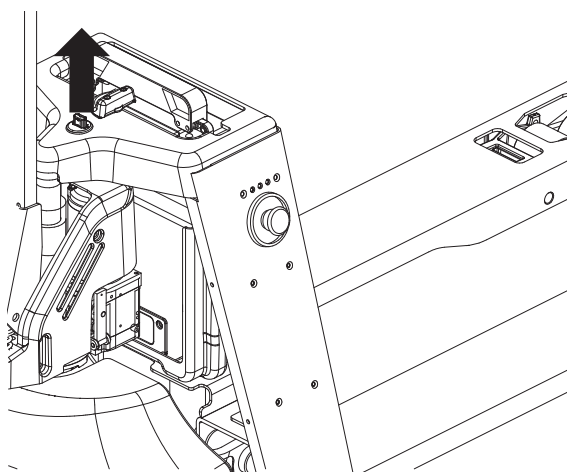
## 2.3.6 Parking the truck securely



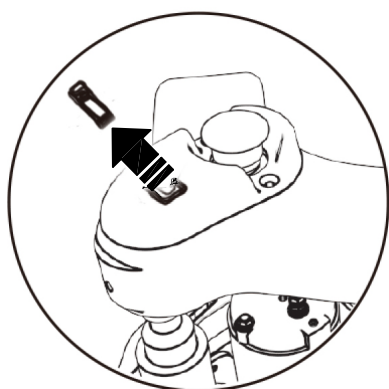
Lower the forks to the bottom;



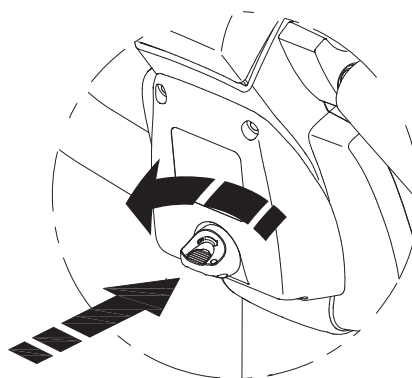
Turn off the key switch or pull out the key;



**EPL163**

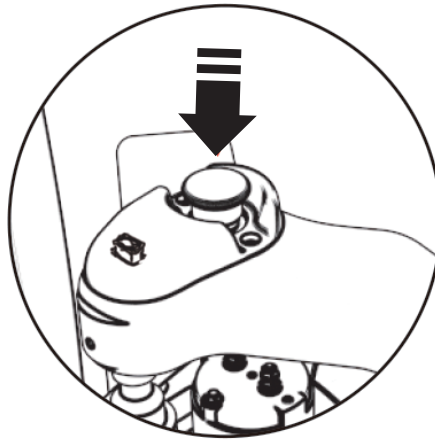


**EPL152**

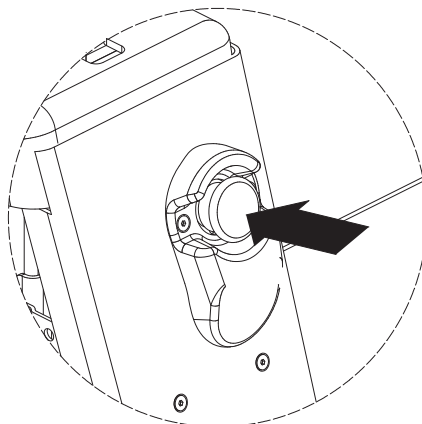


**EPL154/EPL185**

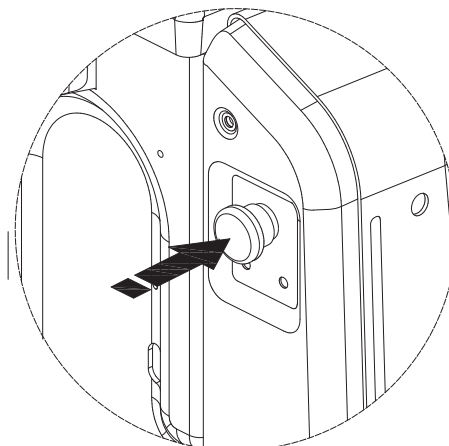
Press the emergency stop switch to cut off storage battery connection;



**EPL152**



**EPL163**



**EPL154/EPL185**

**WARNING**

- Should it be necessary for operators to leave the truck, even for just a moment, the truck should also be well parked as specified.
- The trucks are not allowed to park on the slopes.
- The forks must be lowered to the bottom.

**2.3.7 Drive directions**

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





## 2.3.8 Loading



- Approach the load carefully.
- Adjust the height of the forks until they can be easily inserted into the pallet.
- Insert the forks under the load.
- If the load is shorter than the forks, position the forks so that the front of the load overhangs them by a few centimeters, to avoid interference with the load immediately ahead.
- Raise the load a few centimeters above its support.
- Back the truck away from the stack or any neighbouring loads, gently and in a straight line.

### ➤ Transporting loads

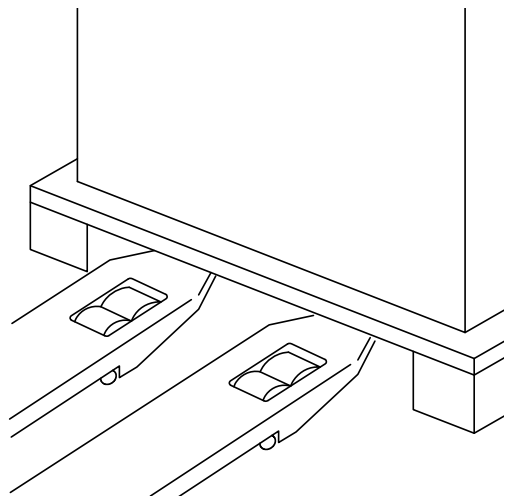
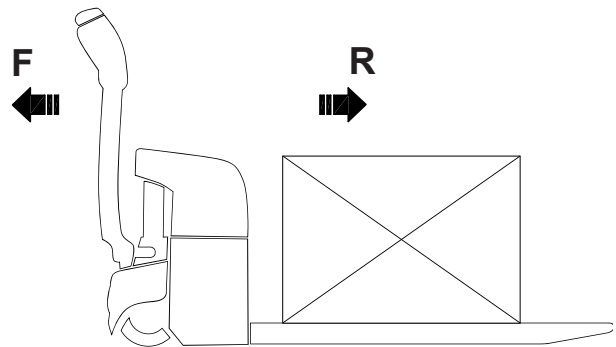
Always carry loads in the forward direction of travel (R) in order to have the best visibility.

When carrying a load on a slope, always ascend or descend with the load uphill. Never drive sideways across a slope or perform a U-turn.

Reverse travel (F) is to be used solely for unloading. Since visibility is reduced when travelling in this direction, drive only at very slow speed.

### ➤ Unloading

Carefully drive the truck to the desired location.  
Carefully drive the truck to the unloading area.  
Lower the load until the fork arms are free from the pallet.  
Back the truck away in a straight line.  
Raise the forks to proper height.



### **CAUTION**

• If the field of vision is poor, ask a guide for assistance.

## 2.3.9 Using the truck on a slope

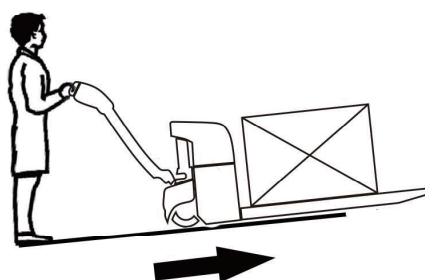
### **i** NOTE

*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 non-slip surface and that the route is clear.

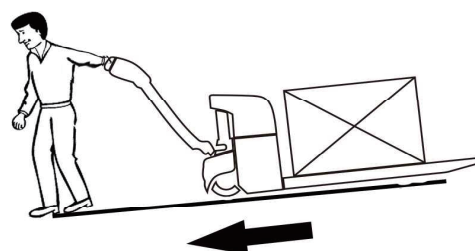
#### ➤ **Ascending slopes**

Always ascend slopes travelling in the reverse direction, with the load facing uphill. Without a load, it is recommended to ascend slopes forwards.



#### ➤ **Descending slopes**

Travel down slopes must always be forwards, with the load uphill. Without a load, it is recommended to descend slopes forwards. In all cases, travel at a very low speed and brake very gradually.



### **DANGER**

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

*Never park the truck on a slope.*

*Never make a U-turn or take shortcuts on a slope. On a slope, the operator must drive very slowly.*

#### ➤ **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.

## **i** NOTE

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

### 2.3.10 Truck transport



Place the truck on a wooden pallet.

## **i** NOTE

*Only use haulage equipment with sufficient load capacity.*

- *The load weight includes the net weight of the truck (including battery weight) and the wooden pallet.*
- *The pallet or wooden box should be large and strong enough to withstand the weight of the truck.*
- *Pay attention to the fork blades when lifting the truck onto the pallet, to prevent injuries caused by the forks.*

*Follow the prescribed steps and park the vehicle correctly.*

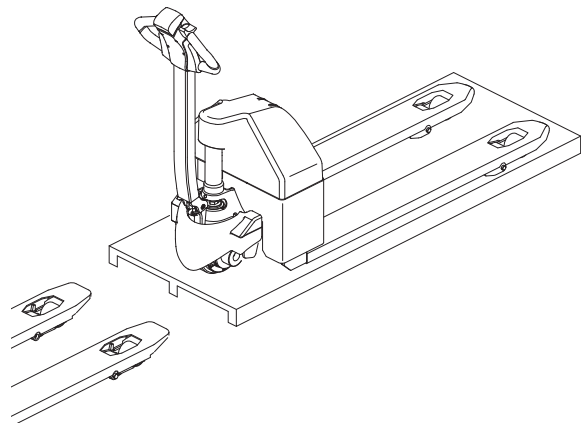
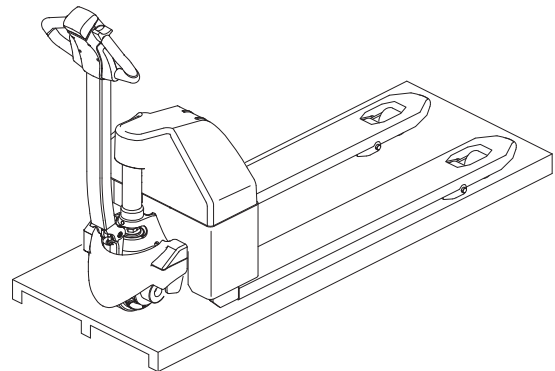
- *Make sure the forks are aligned with the pallet, move slowly and stop after inserting the forks as far into the pallet as possible.*



## **CAUTION**

*Operate on open, level ground and pay attention to ground conditions when lifting and lowering the pallet to prevent the truck from tipping.*

*When transporting the truck, make sure it is fully secured and take precautionary measures against bad weather.*



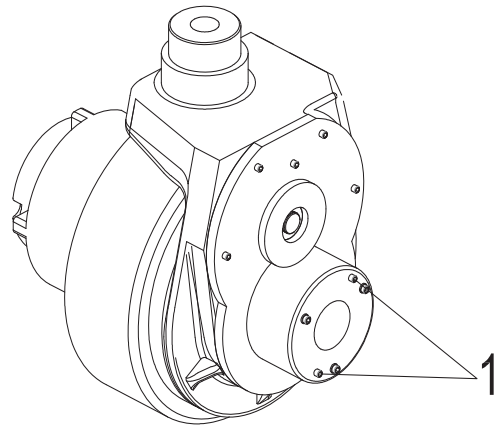
### 2.3.11 Operating the truck without its own drive system



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.
- Remove the cover.
- 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.



#### **WARNING**

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

# C

## Battery use and maintenance

### 3.1 Safety and warning



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



- Protective gloves must be worn for storage battery operation!



- 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!



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



- Do not place the battery on top of conductive objects.



#### **WARNING**

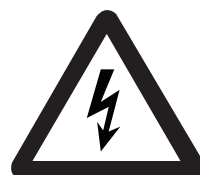
*Should such issues as failing to abide by the operation manual, failing to use the original parts for maintenance or damaging caused by users themselves occur, the quality guarantee will be invalid automatically!*



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



- 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!



- 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!



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



- Avoid the battery becoming corroded by water or corrosive liquid.



- The charging environment temperature should be 5°C to 40°C.

## 3.2 Battery charging

### 3.2.1 Precautions



- The truck must be parked within a shady and ventilated room;
- Do not place metal objects on the battery;
- All the cable and plug connection parts should be inspected in terms of obvious damages before charging;
- The plugs on the battery cells must always be dry and clean.
- The surface of the battery cells must be clear to ensure sufficient.

#### Charging environment:



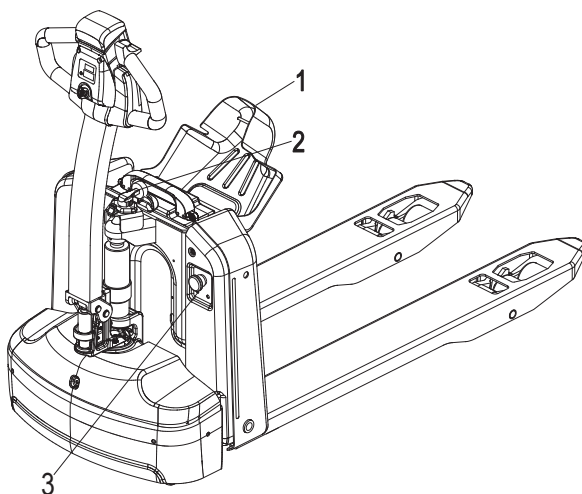
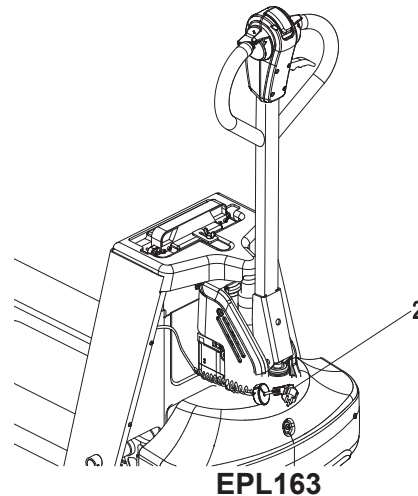
#### **WARNING**

*Lithium battery must be charged above 0°C, as excessively low charging temperature is likely to result in the short circuit of battery cell.*

### 3.2.2 Charging the battery with internal charger

Charge maintenance-free or lithium battery through a built-in charger

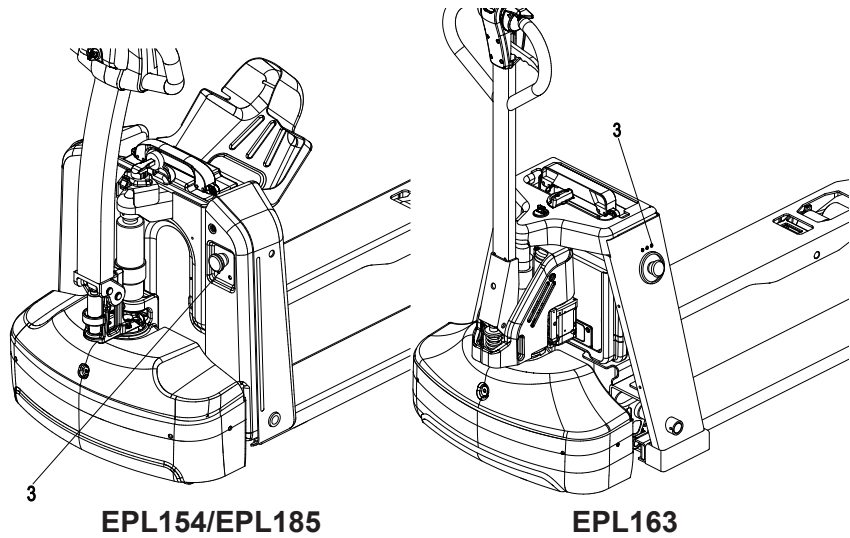
- Inspect whether relevant charging requirements are satisfied according to “3.2.1 precautions”;
- Park the truck securely as described 2.3.5;
- Open the upper cover (1) for EPL185;
- Pull out the power plug (2) and have it inserted into a proper power supply.



EPL154/EPL185

**i NOTE**

The charging voltage is single-phase, ranging from 100V to 240V, please don't exceed the voltage range mentioned above.



**Charging indicator(3)**

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	Yellow light flashes		Ambient temperature is too high	Ambient temperature drops to normal	
9			Storage battery voltage exceeds 32.5V	Eliminate battery failure	
10			Charger failure	return to factory maintenance	



### 3.2.3 Charging the battery with external charger

- Inspect whether relevant charging requirements are satisfied according to “3.2.1 precautions”;
- Park the truck securely as described 2.3.5;
- Remove the battery; (see section 3.4)
- Plug into charging stand and charge;
- The LED light on the charging stand comes on.

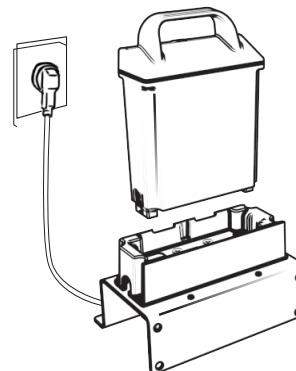
A fully charging time see described in paragraph 3.2.4.

#### LED MODE

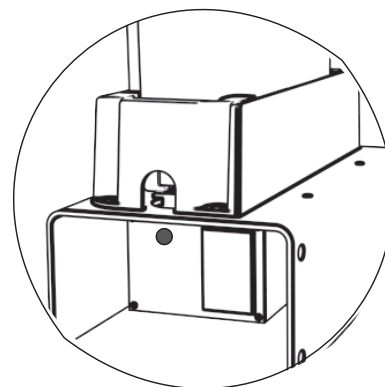
Charging mode : LED Red on  
 Full charged : LED Green on  
 Charger fault : LED Yellow flash  
 Battery fault : LED Yellow on

#### Accessories

When charging the lithium-ion battery use only the EP charger .



**EPL152**



**EPL152**

### 3.2.4 Battery type & dimensions&Charging time

All the batteries are maintenance free.  
 Battery types & dimensions are as follows:

Tuck type	Voltage/ Rated capacity	Dimensions	Charger	Charging time
			Internal	
EPL163	24V/30Ah	270×110×400	10A	3h
EPL152	24V/20Ah	200x100x350	10A	2h
EPL154	24V/30Ah	270×110×400	10A	3h
EPL185	48V/20Ah	270×110×400	10A	2h

## 3.3 Handling of the lithium-ion battery

### 3.3.1 Information on the conformity of lithium-ion batteries

The manufacturer of the lithium-ion battery declares that: the lithium-ion battery conforms with the provisions of the following EU directive 2014/30/EU in accordance with EN12895.

This declaration of conformity with EU directives applies only to battery use that conforms to the recommendations described in the operating instructions.

### 3.3.2 Special lithium-ion safety rules



#### **DANGER**

Have class D fire extinguishers or inert gas, carbon dioxide, powder or foam fire extinguishers near the zone in which the lithium-ion batteries are used.



#### **DANGER**

Do not open the battery. Electrical risk. Only the After-Sales Service Centre technicians can open the battery.

#### **It is necessary to respect the following guidelines:**

Read the documents provided with the battery carefully.

Only persons who have been trained to work with lithium-ion technology are permitted to work on the batteries (for example After-Sales Service Centre technicians).

Do not place lithium-ion batteries on or near flames or hot heat sources ( $> 65^{\circ}\text{C}$ ). This may cause the batteries to overheat or burst into flames. This type of use also impairs the performance of the batteries and reduces their service life.

Improper use may cause overheating or serious injury. Respect the following safety rules:

- Never short circuit the battery terminals
- Do not reverse the battery polarity
- Do not open the battery
- Do not submit the battery to excessive mechanical constraints
- Do not expose the battery unit to humidity or water ( $> 80\%$ )

#### **BMS (Battery Management System)**

The battery is permanently monitored by the BMS (Battery Management System).

This provides the communication with the truck.

The BMS continually monitors items such as the cell temperature, the voltage and the charge status of the cells.

### 3.3.3 Transportation

Before transporting any lithium-ion battery, check the current regulations on the transport of dangerous goods. Comply with these when preparing the packaging and transport. Train authorised staff to dispatch lithium-ion batteries.



#### **i** NOTE

*It is recommended that the original packaging is kept for any subsequent dispatch.*

*A lithium-ion battery is a special product.*

*Special precautions should be taken when:*

- *Transporting a truck equipped with a lithium-ion battery*
  - *Transporting only the lithium battery*
- A class 9 danger label must be affixed to the packaging for transport.*

*It is different if the battery is transported on its own or in a truck. An example of a label appears in this supplement.*

*Refer to the latest current regulations before dispatch as the information might have changed since this supplement was written.*

*Special documents must be sent with the battery. Refer to the applicable standards or regulations.*

#### **i** NOTE

*Recharge the lithium-ion battery before transporting it taking account of the transport mode (plane, boat, road). Excessive discharge on arrival could damage the performance of the battery.*

### 3.3.4 Scrapping lithium-ion batteries

#### **ENVIRONMENT NOTE**

Comply with current regulations for scrapping batteries. Take care to minimise, as far as possible, any impact on the environment.

Lithium-ion batteries must be sent to the collection centre to be recycled. Contact the After-Sales Service Centre to agree how to send them.

Apply the following main rules for transport:

- Make sure that the battery is discharged
- Affix the Class
- Use packaging that complies with international regulations
- Use the original packaging, if possible. Use sturdy packaging capable of bearing the weight of the batteries. Store it in a dry place.
- Wedge the battery well in the packaging to prevent it moving during transport
- Pack batteries individually in plastic bags. Package them to prevent any risk of shortcircuit between terminals.
- Identify the type and number of batteries on the outside of the packaging.
- Do not store near to a heat source.

### 3.3.5 Storage

We recommend that batteries are stored at a height between 60 and 120 cm.

- Store the battery in a dry place at a temperature between 0 and 40° to preserve its service life. This area must not be hermetically sealed to allow air renewal;
- Check the battery charge level regularly. Do this at least every three months to maintain the charge level above 30%. Recharge the battery if necessary.

### 3.3.6 Common Problems and Solutions

During the use and maintenance of the lithium-ion battery, the battery or battery system may have one or more of the following abnormal conditions, please organize the professional engineers and technicians to perform the necessary processing according to the instructions in this manual; if you have any questions about the status or solutions, please contact ep dealer or after-sales service department of the company to obtain professional technical support.

- If the battery is found to have abnormal mechanical characteristics such as swelling, cracked casing, melted casing, and distortion of the casing before and during installation, stop using the battery immediately, place it in open and well-ventilated space, and contact the after-sales service.
- If abnormalities such as looseness, cracks, cracks in the insulation layer, burn marks, etc. of the battery's pole pressing bolts, conductive strips, main circuit wires and connectors are found before and during the installation, stop using the battery immediately, check the reason for analysis and give it a fix;
- If the polarity of the positive and negative terminals of the battery is found not match the polarity identification before installation, please stop using the battery immediately and contact the after-sales service department to replace the battery or obtain other solutions;
- If there is fire or smoke happens to the battery, move it to the open air immediately, evacuate people in time, and pour a large amount of cold water onto the battery to cool it down and put out the fire.
- If the battery is found to emit smoke before and during installation, immediately stop using the battery and bury it with sand, and notify the after-sales service department of the company for record and obtain technical support;

### 3.3.7 Disposal of Used Battery Packs

To prevent environmental pollution, the battery should be sent to a local recycling center or special organization.

### 3.4 Battery removal and installation

Park the truck securely as described in paragraph 2.3.5 and turn off the power before removal and installation of the battery.

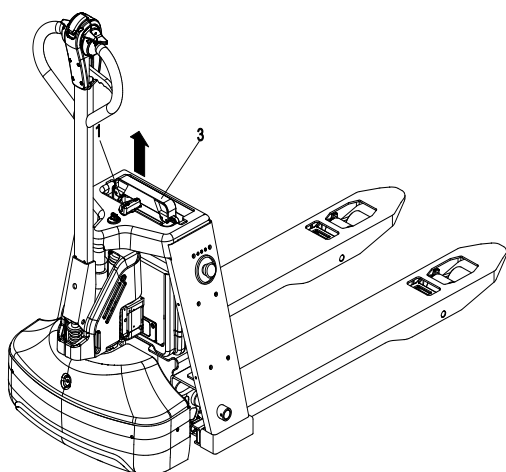
#### Battery removal and installation steps:

- Unscrew the battery baffle(1) for EPL152and EPL163;
- Open the upper cover(4),unscrew battery baffle(2) for EPL154/EPL185;
- Just hold the handle and pull the battery(3) out;
- Install in reverse order.

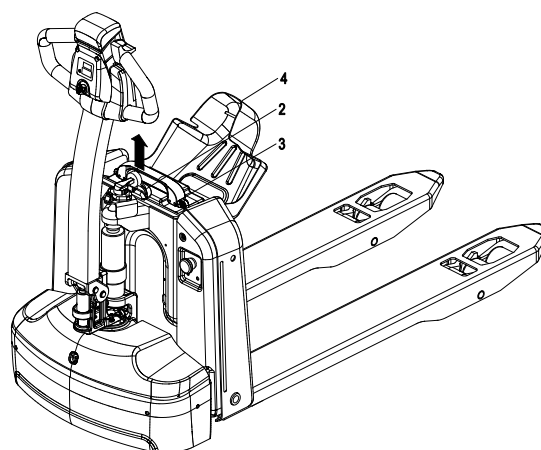


#### WARNING

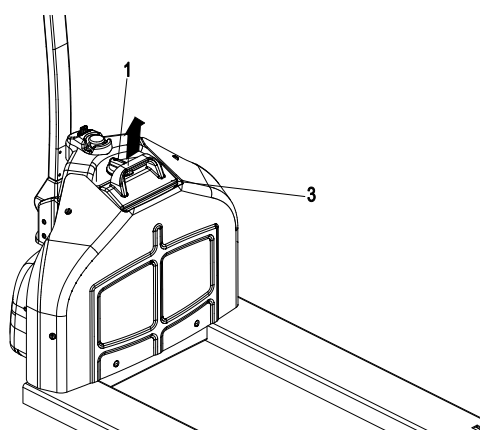
*Before removing the battery, make sure the vehicle is completely powered off.*



**EPL163**



**EPL154/EPL185**



**EPL152**



## Maintenance

### 4.1 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.

#### **Safety announcement:**

- Tyre replacement: please implement tire replacement using the tires designated by the manufacturer, as unqualified tires may influence the properties and stability of the products.
- It is improper to clean the truck using inflammable liquid.
- Ensure that the power supply has been completely disconnected before actual maintenance operation.

#### **Long-term parking:**

- If required to be parked for over one month, the truck must be placed in a dry and frost-free environment.
- Clean the truck carefully.
- Coat any unpainted metal parts with a thin layer of oil or grease.
- In case that the truck is out of use for a long time, the storage battery should better be taken out.
- Recharge the lithium-ion battery every 2 months. Please observe the above instructions.
- Raise and chock the truck: the wheels must not touch the ground in order to prevent irreversible deformation of the tyres.



#### **WARNING**

#### **Discharge can damage the battery**

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

- Before a long period of inactivity, the battery must be fully charged.
- To ensure a long battery life, we recommend charging the battery every 14 days when it is not being used.

#### **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.

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

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

A complete test must be carried out on the technical condition of the truck with regard to safety. The truck must also be examined thoroughly for damage. The operating company is responsible for ensuring that faults are rectified immediately.

## Spare parts:

Only original spare parts have been certified by our quality assurance department. To ensure safe and reliable operation of the Pallet truck, use only the manufacturer's spare parts. Used parts, oils and fuels must be disposed of in accordance with the relevant environmental protection regulations. For oil changes, contact the manufacturer's specialist department.

## Tyre replacement

*Any repairs or maintenance to the truck must be performed only by trained and authorized technicians. Remove and install the tyre see the service manual.*

## Troubleshooting

If the fault cannot be rectified after carrying out the remedial procedure, notify the Manufacturer'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"> <li>–Battery connector not plugged in</li> <li>–Key switch in “0” position</li> <li>–Incorrect CanCode code</li> <li>–Battery charge too low</li> <li>–Faulty fuse</li> <li>–Truck in charge mode</li> </ul>	<ul style="list-style-type: none"> <li>–Check the battery connector and connect if necessary.</li> <li>–Set key switch to “I”</li> <li>–Check code</li> <li>–Check battery charge, charge battery if necessary</li> <li>–Check fuses.</li> <li>–Interrupt charging</li> </ul>
Load cannot be lifted	<ul style="list-style-type: none"> <li>–Charging capacity below 15%</li> <li>–Truck not operational</li> <li>–Hydraulic oil level too low</li> <li>–Faulty fuse</li> </ul>	<ul style="list-style-type: none"> <li>–Charging the battery</li> <li>–Carry out all measures listed under “Truck does not start”</li> <li>–Check the hydraulic oil level</li> <li>–Check fuses.</li> </ul>

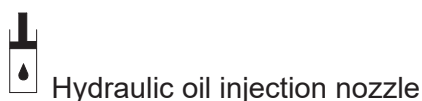
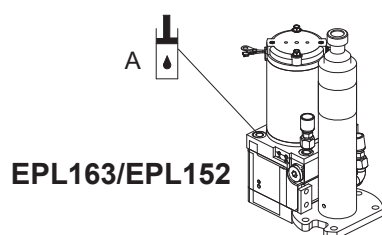
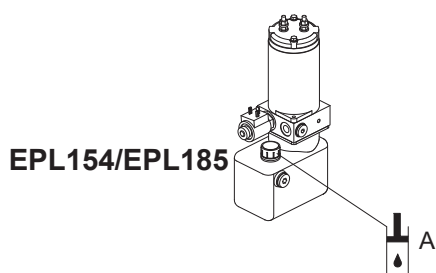
## 4.2 Maintenance table

Daily maintenance	
1	Inspect and manipulate the functions of the Control handle's manipulation switches and the display instruments
2	Inspect the emergency outage function of the emergency stop switch or the storage battery puller.
3	Inspect the swerving function.
4	Inspect the braking function
5	Inspect whether there is any abrasion or damage in the driving wheel/load wheel/caster
6	Inspect whether there is any damage or abnormality in the truck.
7	Inspect whether the optional functions are under normal operation.
250-hour/2-month maintenance	
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/universal wheel 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
20	Inspect the air gap of the electromagnetic brake, and if the air gap is larger than 0.4mm, please replace the friction plates.
21	Inspect where is any abrasion or damage in the link mechanism



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
24	Inspect where there is any damage in the oil cylinders and whether corresponding installations are reliable
25L	Clean the oil tank and replace the hydraulic oil
26	Inspect and replace the hydraulic filter
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



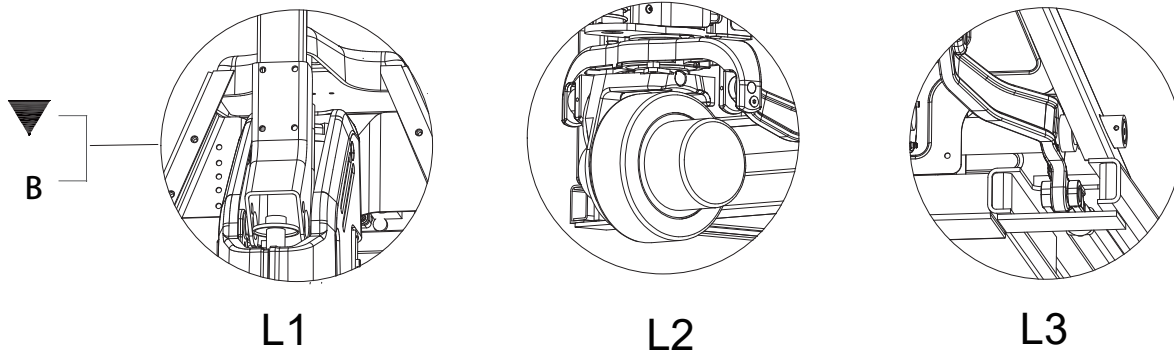
**Table 1 Lubricants**

Code	Type	Specification	Amount	Position
A	Anti-wear hydraulic oil	L-HM32	180-200mL	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 3#(MoS <sub>2</sub> )	-	110 grams	Gearbox

**i NOTE**

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

<b>Table 1 Sliding Surface Lubrication Table</b>	
<b>Code</b>	<b>Position</b>
L1	Steering shaft for EPL163
L2	Drive Wheel
L3	Long Shaft





## Technical data

### Standard Version Specifications

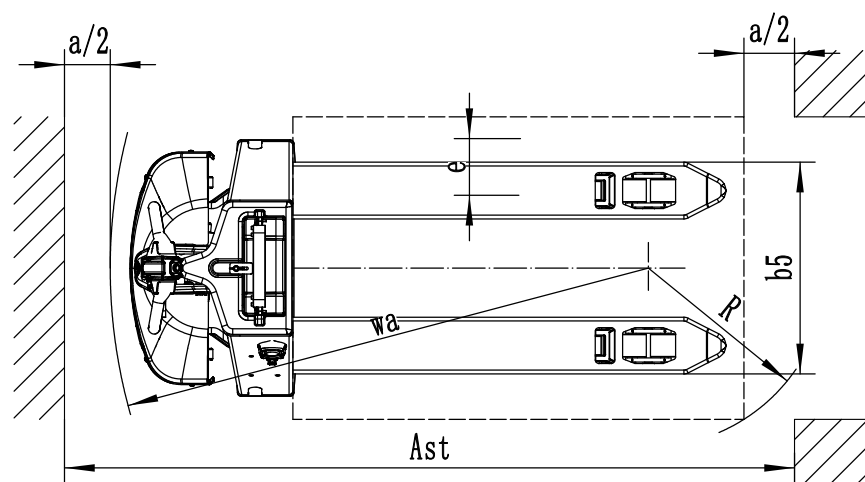
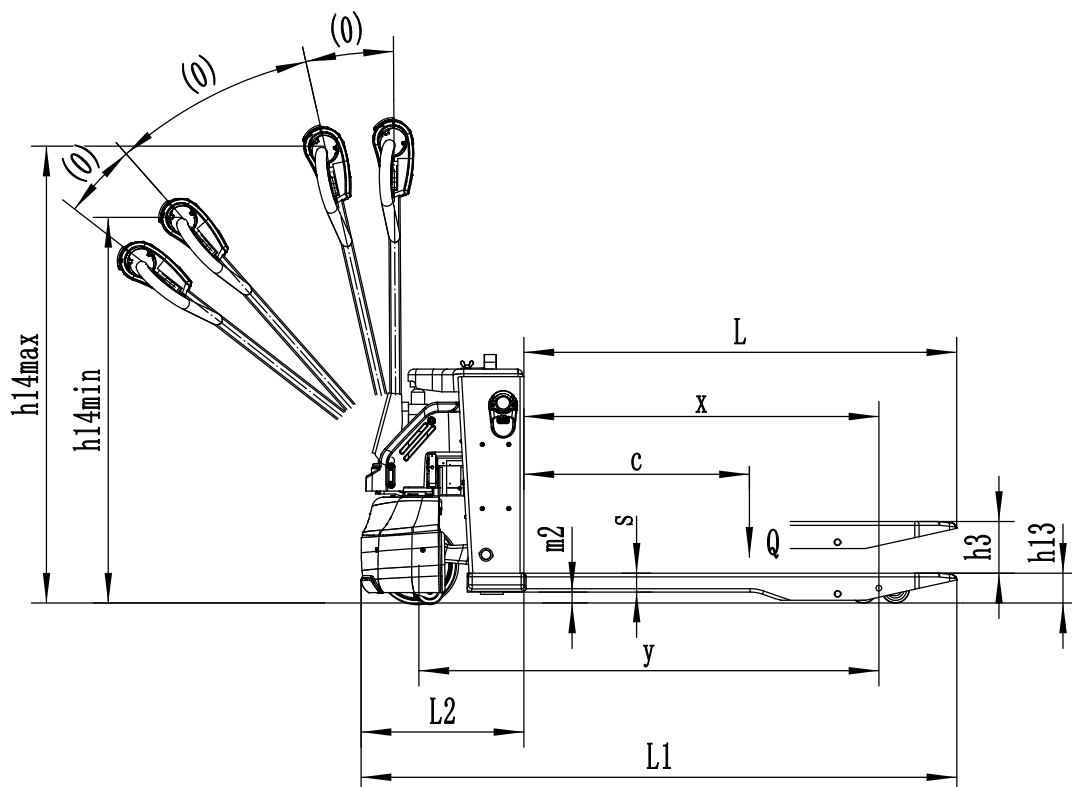
Technical specification details in accordance with VDI 2198. Technical modifications and additions reserved.

### Performance data for standard trucks

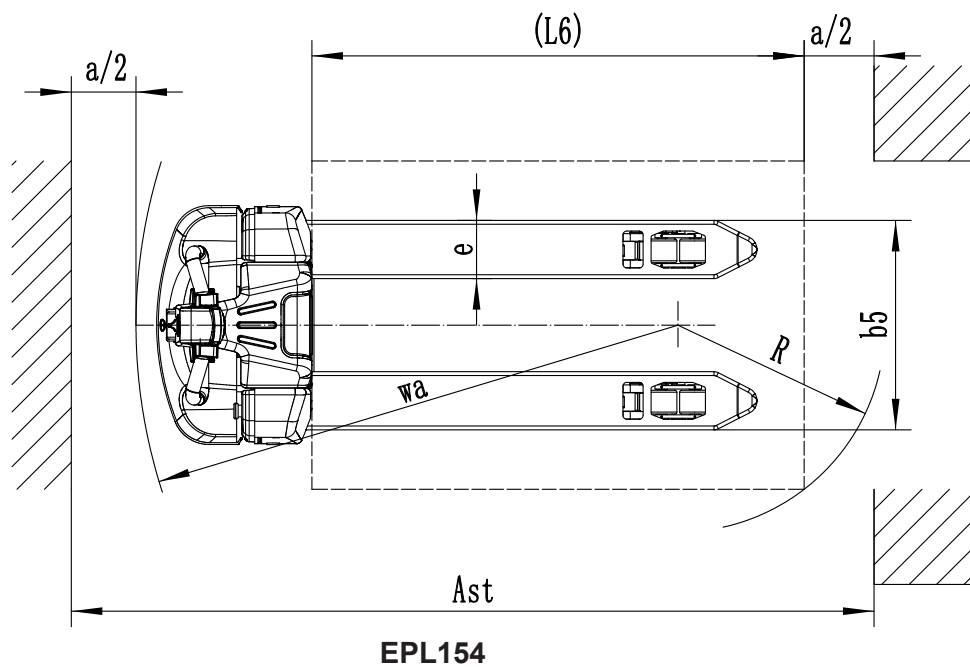
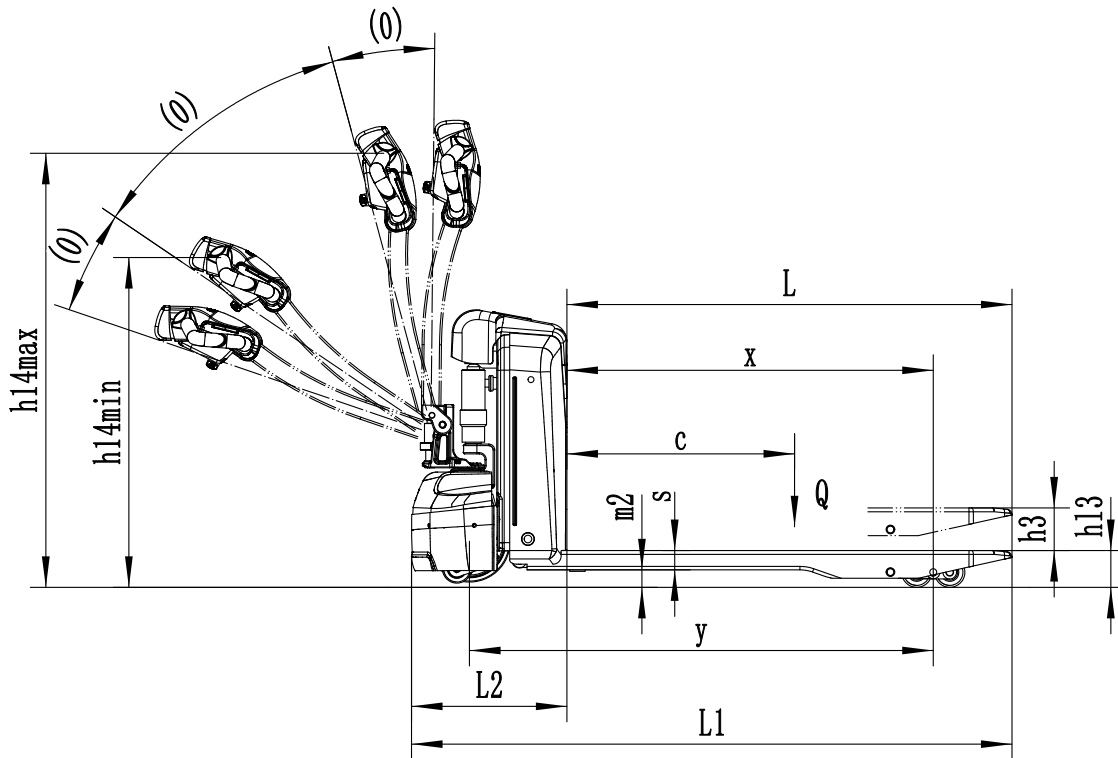
Distinguishing mark					
1.1	Manufacturer			EP	EP
1.2	Model designation			EPL154	EPL163
1.3	Drive unit			Battery	Battery
1.4	Operator type			Pedestrian	Pedestrian
1.5	rated capacity	Q	kg	1500	1600
1.6	Load center distance	c	mm	600	600
1.8	Load distance	x	mm	940(875)	950(880)
1.9	Wheelbase	y	mm	1200(1135)	1220(1150)
Weight					
2.1	Service weight (include battery)		kg	150/(160)	130
2.2	Axle loading, laden driving side/ loading side		kg	510/1140	490/1240
2.3	Axle loading, unladen driving side/ loading side		kg	120/30	100/30
Types, Chassis					
3.1	"Tyre type driving wheels/ loading wheels"			PU/PU	PU/PU

3.2	Tyre size, driving wheels(diameter×width)		mm	Φ210x70	Φ210x70
3.3	Tyre size, loading wheels(diameter×width)		mm	Φ80x60(Φ74x88)	Φ80x60(Φ74x88)
3.4	Tyre size, caster wheels(diameter×width)		mm	Φ74x30	Φ74x30
3.5	Wheels, number driving, caster/loading (x=drive wheels)		mm	1x,2/4(1x,2/2)	1x,2/4(1x,2/2)
3.6	Track width, front,driving side	b10	mm	450	450
3.7	Track width,rear,loading side	b11	mm	390/(535)	410/(535)
<b>Dimensions</b>					
4.4	Lift height	h3	mm	115	115
4.9	Height drawbar in driving position min./max.	h14	mm	700/1260	750/1190
4.15	Lowered height	h13	mm	80	80
4.19	Overall length	l1	mm	1550	1580
4.20	Length to face of forks	l2	mm	400	425
4.21	Overall width	b1/ b2	mm	610(695)	685
4.22	Fork dimensions	s/ e/ l	mm	50x150x1150	50x150x1150
4.25	Distance between fork-arms	b5	mm	540(685)	560(685)
4.32	Ground clearance, center of wheelbase	m2	mm	30	30
4.34.1	Aisle width for pallets 1000 × 1200 crossways	Ast	mm	2145	2175
4.34.2	Aisle width for pallets 800 × 1200 lengthways	Ast	mm	2050	2080
4.35	Turning radius	Wa	mm	1330	1360
<b>Performance data</b>					
5.1	Travel speed, laden/unladen	km/ h	km/h	4/4.5	4.5/5
5.2	Lifting speed, laden/unladen		m/ s	0.028/0.031	0.02/0.024

5.3	Lowering speed, laden/ unladen		fpm	m / s	0.068/0.043	0.09/0.06
5.8	Max. gradeability, laden/ unladen		%		6\16	5\16
5.10	Service brake type				electric	electric
<b>Electric-engine</b>						
6.1	Drive motor rating S2 60 min		hp	kW	0.75	0.75
6.2	Lift motor rating at S3 15%		hp	kW	0.8	0.7
6.3	The maximum allowed size battery		in.	mm	270*110*440	270*110*440
6.4	Battery voltage/nominal capacity K5		V/ Ah		24/30 (optional 60)	24/30 (optional 60)
6.5	Battery weight		lb.	kg	10	10
<b>Addition data</b>						
8.1	Type of drive control				DC	DC
10.5	Steering type				mechanical	mechanical
10.7	Sound pressure level at the driver's ear		dB (A)		<74	<74



**EPL163**



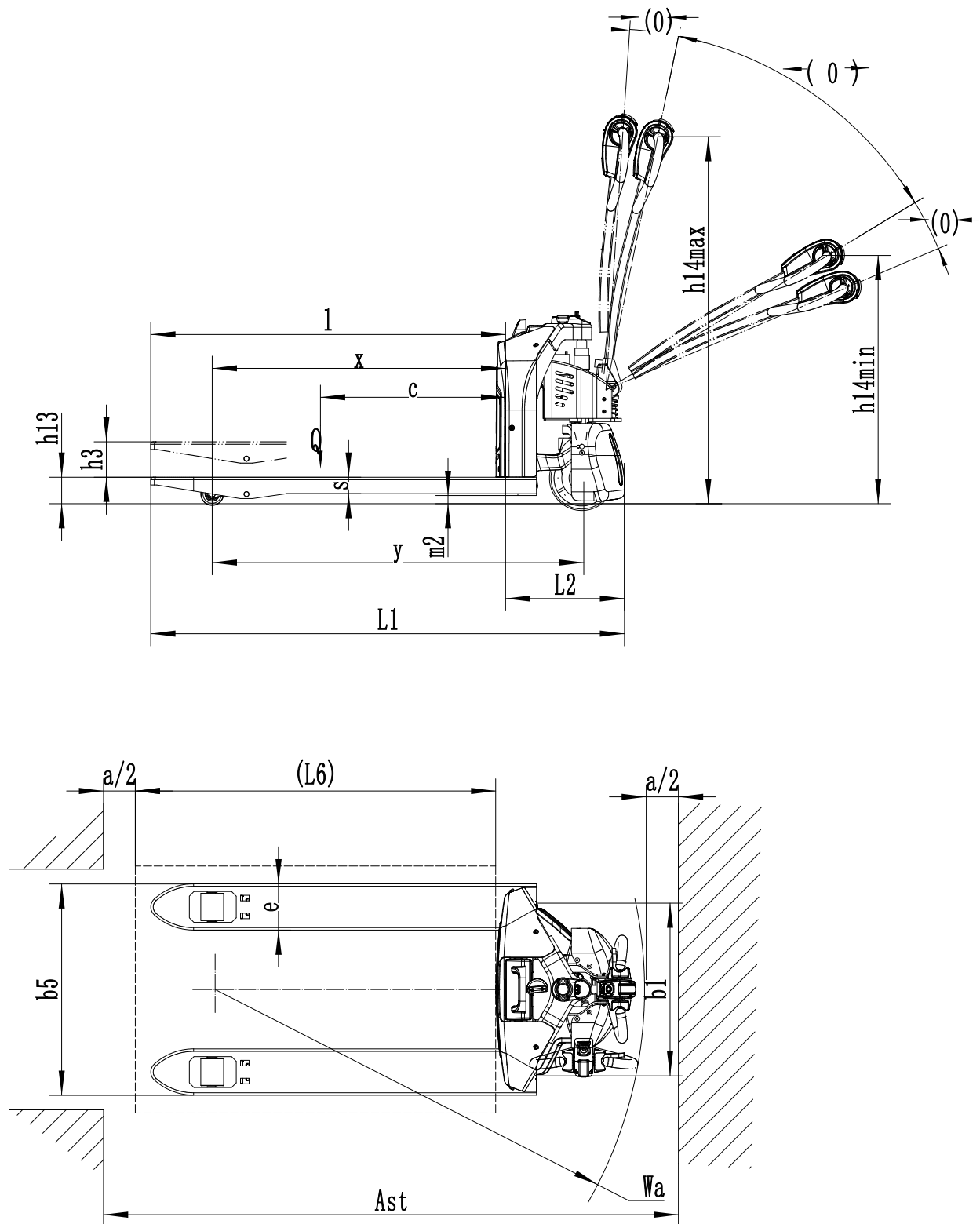
**EPL154**

Distinguishing mark					
1.1	Manufacturer			EP	EP
1.2	Model designation			EPL152	EPL185
1.3	Drive unit			Battery	Battery
1.4	Operator type			Pedestrian	Pedestrian
1.5	rated capacity	Q	kg	1500	1800
1.6	Load center distance	c	mm	600	600
1.8	Load distance	x	mm	950 (880)	940(875)
1.9	Wheelbase	y	mm	1190 (1120)	1200(1135)
Weight					
2.1	Service weight (include battery)		kg	125 (140)	160(170)
2.2	Axle loading, laden driving side/ loading side		kg	485/1140	560/1400
2.3	Axle loading, unladen driving side/loading side		kg	95/30	130/30
Types,Chassis					
3.1	"Tyre type driving wheels/loading wheels"			PU/PU	PU/PU

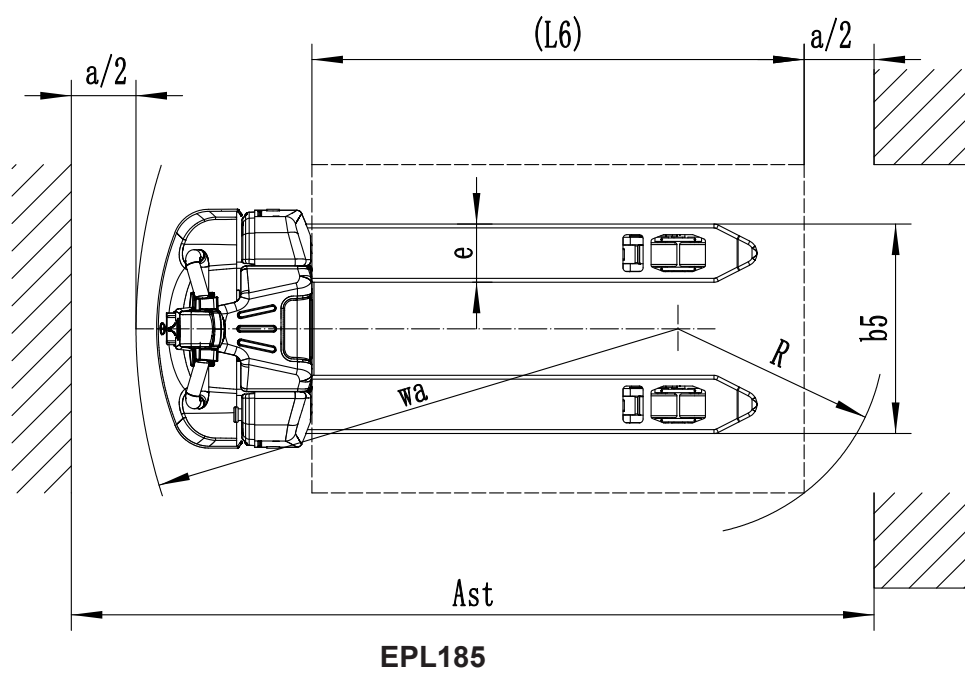
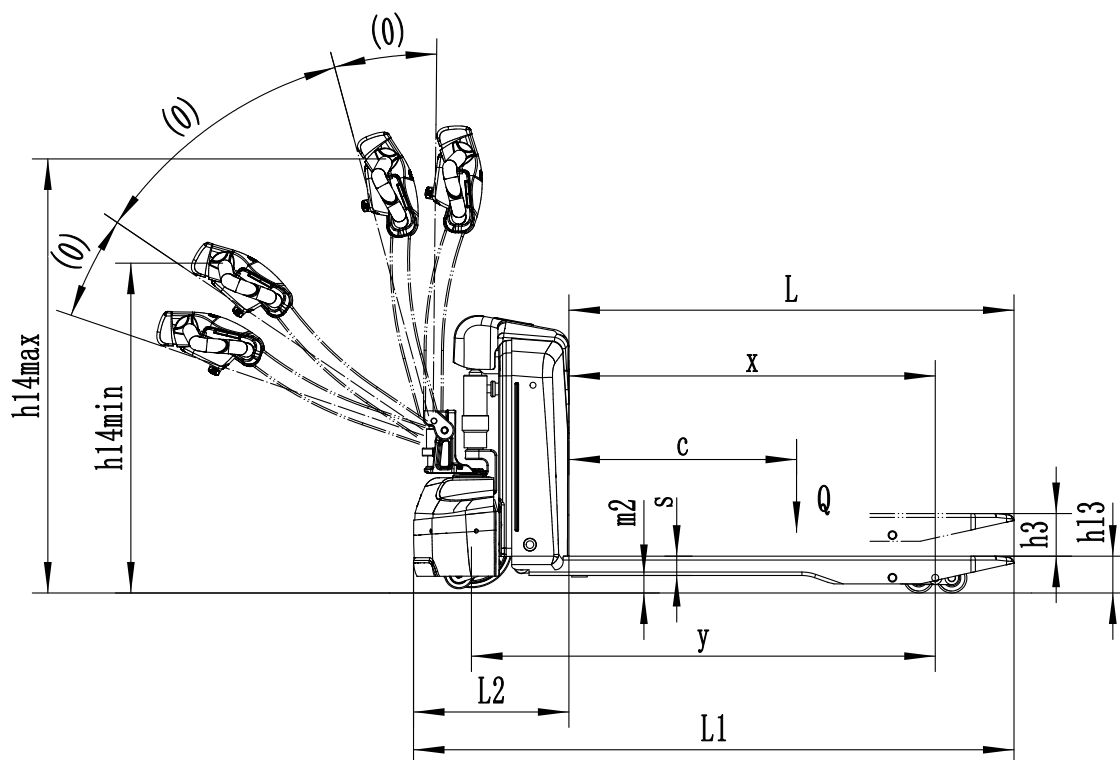


3.2	Tyre size, driving wheels(diameter×width)		mm	Φ210x70	Φ210x70
3.3	Tyre size, loading wheels(diameter×width)		mm	Φ80x60(Φ74x88)	Φ80x60(Φ74x88)
3.4	Tyre size, caster wheels(diameter×width)		mm	/	Φ74x30
3.5	Wheels, number driving, caster/loading (x=drive wheels)		mm	1x,4(1x,2)	1x,2/4(1x,2/2)
3.6	Track width, front,driving side	b10	mm	/	450
3.7	Track width,rear,loading side	b11	mm	410/(535)	390/(535)
<b>Dimensions</b>					
4.4	Lift height	h3	mm	115	115
4.9	Height drawbar in driving position min./max.	h14	mm	750/1190	700/1260
4.15	Lowered height	h13	mm	80	80
4.19	Overall length	l1	mm	1540	1550
4.20	Length to face of forks	l2	mm	400	400
4.21	Overall width	b1/ b2	mm	560(685)	610(695)
4.22	Fork dimensions	s/ e/ l	mm	50x150x1140	50x150x1150
4.25	Distance between fork-arms	b5	mm	560(685)	540(685)
4.32	Ground clearance, center of wheelbase	m2	mm	30	30
4.34.1	Aisle width for pallets 1000 × 1200 crossways	Ast	mm	2145	2145
4.34.2	Aisle width for pallets 800 × 1200 lengthways	Ast	mm	2070	2050
4.35	Turning radius	Wa	mm	1330	1330
<b>Performance data</b>					
5.1	Travel speed, laden/unladen	km/ h	km/h	4.5/5	5/5.5
5.2	Lifting speed, laden/unladen		m/ s	0.017/0.024	0.020/0.025

5.3	Lowering speed, laden/ unladen		fpm	m/ s	0.09/0.06	0.065/0.030
5.8	Max. gradeability, laden/ unladen		%		6\16	6\16
5.10	Service brake type				electric	electric
<b>Electric-engine</b>						
6.1	Drive motor rating S2 60 min		hp	kW	0.75	0.9
6.2	Lift motor rating at S3 15%		hp	kW	0.5	0.8
6.3	The maximum allowed size battery		in.	mm	200x100x350	270x110x440
6.4	Battery voltage/nominal capacity K5		V/ Ah		24/20	48/20(option 30)
6.5	Battery weight		lb.	kg	7	14
<b>Addition data</b>						
8.1	Type of drive control				DC	DC
10.5	Steering type				mechanical	mechanical
10.7	Sound pressure level at the driver's ear		dB (A)		<74	<74



**EPL152**



**EPL185**