

# Battery Powered Lift & Drive Hand Pallet Truck

## Operation and Service Manual

BDH15M, BDH15S, BDH15E  
BDH15-60M, BDH15-60LL  
BDH15C, BDH15LL

Read this manual carefully and understand completely before operating. Keep filing this manual for future reference. If this copy is lost, please contact your local supplier for a replacement.

### Explanation of Terms and Symbols

In this manual, 「Warning」, 「Caution」 are defined and specified as below. Notice of Warnings are very important for safe operations. As these are very Important to protect operators from accidents resulting in personal injury and death, and damage to property, so make sure to read thoroughly and understand fully before operation.

 **Warning** Incorrect operation may result in serious injury or death of the operator.

 **Caution** Incorrect operation may result in injury and damage to the property. The occurrence of the danger is lower than "Warning" articles.



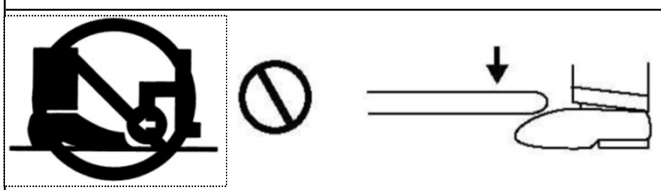
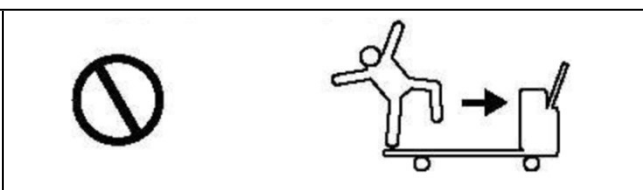
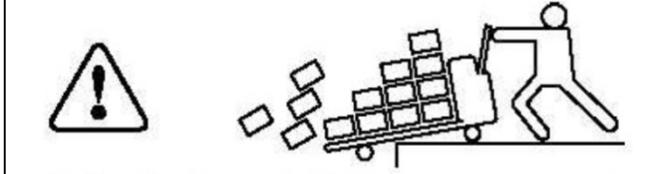
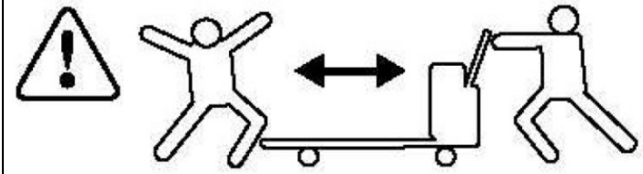
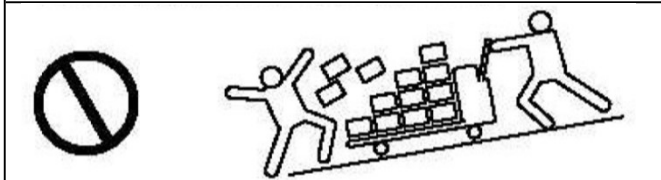
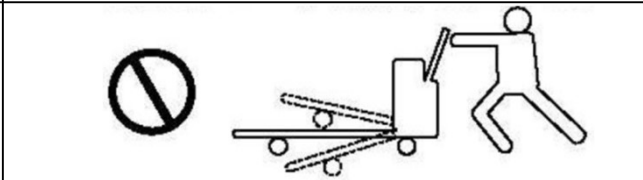
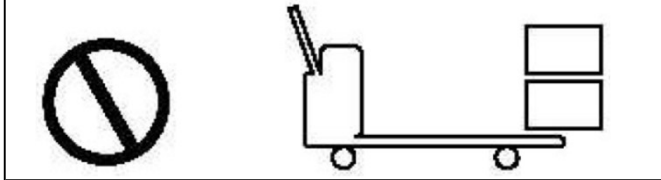
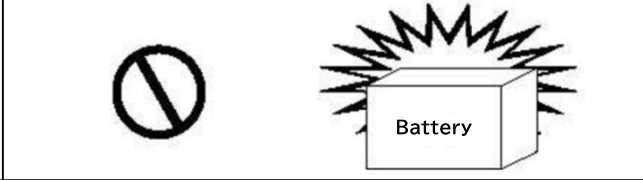
The specified act that **should not** be conducted.



Warnings and cautions that are possible to occur due to incorrect operation.

### **Warning !**

◎ Hazard or unsafe practice which, if not avoided, may result in DEATH or SEVERE PERSONAL INJURY and PROPERTY DAMAGE.

	
<p>KEEP HANDS &amp; FEET CLEAR of rolling Wheels and under Fork SEVERE PERSONAL INJURY could result.</p>	<p>NEVER sit, stand or ride on forks. SEVERE PERSONAL INJURY could result.</p>
	
<p>Pay close attention when using in areas of multi level floor. Truck may lose control and result in overturn and fall of the unit and could result in SEVERE PERSONAL INJURY and damage to the unit</p>	<p>USE ONLY in areas clear of all personnel and objects. SEVERE PERSONAL INJURY could result.</p>
	
<p>DO NOT use on slope or unlevel surface floor Truck may lose control and result in overturn and fall of the unit and could result in SEVERE PERSONAL INJURY and damage to the unit such as burnt motor etc.</p>	<p>DO NOT drive sudden acceleration, sudden braking and a sharp turn Cargo may lose balance and fall. Unit may lose control and runaway. SEVERE PERSONAL INJURY could result.</p>
	
<p>DO NOT load one fork more than other and DO NOT load tips on fork. Damage to the truck and SEVERE PERSONAL INJURY could result, or DEATH could result.</p>	<p>KEEP AWAY from open flame when charging battery. Handle battery after fully reading the instruction manual.</p>



## Cautions in General !

### 【 Environment Conditions for Use 】

- ☐ Place for use           ..... Indoor
- ☐ Temperature           ..... 5~40°C   No Condensation and No Freezing
- ☐ Humidity               ..... 35~85%

### 【 Cargo Conditions to be loaded 】

- ☐ Load size limit       ..... 600X600 ~ 1200X1200
- ☐ Load weight limit   ..... 1500 kg.

1. Make sure to perform Pre-Operation Checks  
→ Failure to do so may result in collision accident
2. Do Not handle unstable (unsecured) and over capacity load  
→ Or could result in accident and malfunction
3. Do Not leave any obstacles on aisles  
→ Or could result in collision accident and obstruct the traffic
4. Check if there is any water and oil etc. on aisles  
→ Pallet truck may slip and could not drive
5. Keep flammable away from pallet truck  
→ Failure to do so may result in fire  
Battery may generate hydrogen gas which is inflammable
6. Do Not operate outdoor  
→ Failure to do so may result in malfunction
7. This pallet truck is NOT waterproof. Do Not use in wet and humid conditions.  
→ Failure to do so may result in rust and malfunction
8. Do Not remove any lables, Serial Plate, Safety Device etc.  
→ Or could result in accident
9. Do Not alter or modify the pallet truck in any way.  
→ Or could result in accident and malfunction
10. Do Not unload the cargo while driving pallet truck  
→ Or cargo could fall and result in accident of cargo hitting somebody
11. Keep hands and feet clear between fork and pallet when inserting forks into pallet  
→ Or hands and feet could be pinched (caught) and get injured
12. Do Not drag the cargo (load)  
→ Or cargo could fall and result in accident of cargo hitting somebody
13. When inserting forks into reversable pallet or plastic pallet, pay close attention lest fork (load) wheel should obstruct(catch) frame of pallet.



→ Or pallet truck could be damaged

14. Keep feet and hands clear under cargo, fork and bumper etc.  
→ Or hands and feet could be pinched (caught) and get injured
15. Keep hands and fingers clear of movable member of handle  
→ Or hands and fingers could be pinched (caught) and get injured
16. If you need to service inside unit etc. of danger, make sure to turn off the power and unplug the cable before servicing.  
→ Failure to do so may result in accident
17. Fork is supported by hydraulic cylinder and lowers naturally little by little  
→ Fork can not keep raised position for long time which please note.
18. Check the surroundings and pay close attention before operating pallet truck  
→ Failure to do so may result in accident
19. Drive and operate pallet truck on the flat surface floor  
→ Or cargo could fall and result in accident of cargo hitting somebody
20. Always be ready to push Emergency Stop Switch in an emergency  
→ Failure to do so may result in accident
21. Make sure to turn off power when leaving pallet truck  
→ Failure to do so may result in accident due to possible malfunction

## **Cautions on Battery Handling**

1. When plug in and out Connector Plug, seize Connector Plug firmly in hand.  
Do Not seize cable.  
→ If pull the cable, it could result in disconnection and short circuit.
2. Do Not pull curled Charge Cable excessively.  
→ Or could result in disconnection and short circuit
3. Plug in Charge Plug firmly to avoid loose connection  
→ Or could result in heat generation and fire
4. Do Not touch the metal portion of Charge Plug with wet hands and fingers  
→ Or could result in get the electric shock etc.
5. Fix and tighten the terminals firmly  
→ Or could result in heat generation and fire
6. Keep battery surface clean always  
→ Or could result in heat generation and fire
7. Do Not short circuit battery  
→ Or could result in heat generation and fire
8. Use only genuine battery charger  
→ Or could result in battery explosion

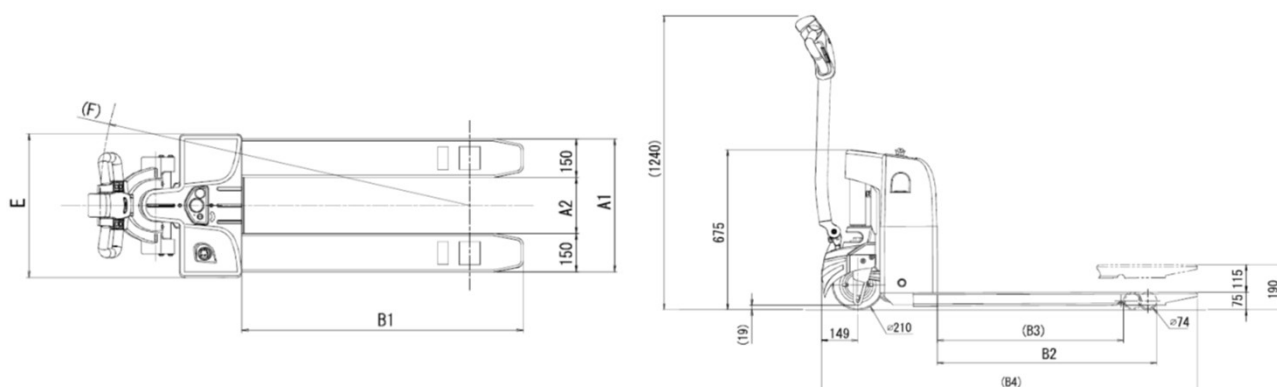
### **Caution**

- **Make sure to turn off power when leaving the pallet truck, or not in use. If battery is discharged to some extent, battery replacing could be required.**
- **Turn off power and push Emergency Stop Switch if not use pallet truck for long time**  
**(However, it is not recommended to use Emergency Stop Switch too frequently more than necessary which could result in malfunction)**

## **Cautions on Inspection, Repair, Maintenance etc.**

1. Make sure to turn off the power and remove wiring from battery when servicing pallet truck such as Inspection, Repair, Maintenance etc.  
→ Or could result in get the electric shock etc.
2. Only trained, or specially assigned personnel under observation of supervisor can work on servicing work of pallet truck.
3. When hang up pallet truck for servicing work, Do Not get under. If necessary to get under for servicing work, use stable supporter (or stand) to avoid fall.
4. Do Not hang up loaded pallet truck  
→ Or could result in the fall of the pallet truck.

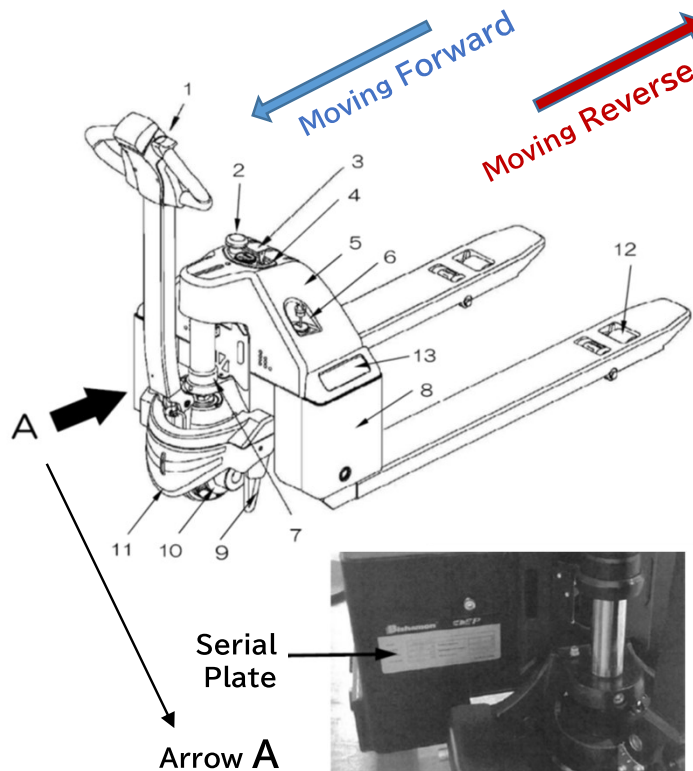
# 1. Specifications



Model No.	A1	A2	B1	B2	B3	B4	E	F
BDH15M	520	220	1,070	903	766	1,541	560	R1405
BDH15S			980	863	676	1,471		R1315
BDH15E			1,220	1,053	916	1,691		R1555
BDH15-60M	600	300	1,070	903	766	1,541	600	R1405
BDH15-60LL			1,220	1,053	916	1,691		R1555
BDH15C	685	385	1,070	903	766	1,541	685	R1405
BDH15LL			1,220	1,053	916	1,691		R1555

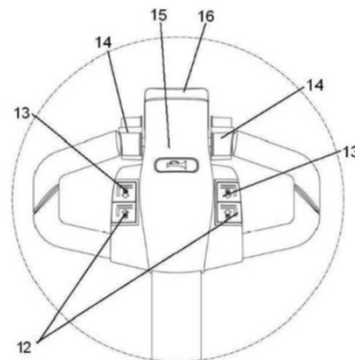
Model No.	BDH15
Capacity	1,500kg
Vertical Travel	115mm (at Fork Tip)
Min. Fork Height	75mm
Max. Fork Height	190mm (stop by Upper Limit Switch)
Wheel	Front $\Phi$ 74mm X Rear $\Phi$ 210mm Polyurethane
Drive Speed	3.5km/h (Fully loaded) 4.0km/h (Without Load)
Motor for Lifting	0.84kw
Motor for Driving	0.65kw
Lifting Speed	3.1meter/min. (Fully loaded) 3.6meter/min. (Without Load)
Lowering Speed	3.1meter/min. (Fully loaded) 3.5meter/min. (Without Load)
Safety Device	<ul style="list-style-type: none"> <li>• Speed to be reduced to 1/2 when turning Drive Handle 45°</li> <li>• Slow Start Control</li> <li>• Safety Switch (Protect operator from being trapped between wall and truck)</li> </ul>
Battery	24V 70Ah (Rated Capacity - 5 hour)
Charger	Built-In Type AC100~250V Applicable
Hyd. Cylinder	$\Phi$ 30mm X 608mm
Hyd. Oil	ISO VG46
Oil Volume	0.8L
Option	<ul style="list-style-type: none"> <li>• Auxiliary Wheels</li> <li>• Foot Guard</li> </ul>

## 2. Name and Functions of Components



1	Handle
2	Emergency Stop Switch
3	Battery Indicator
4	Key Switch
5	Cover (Upper Side)
6	Charger Plug
7	Lift Cylinder
8	Frame
9	Balance Stand
10	Drive Wheel
11	Cover (Lower Side)
12	Fork Wheel
13	Cover (685mm Width Model Only)

### 2-1 Control Handle



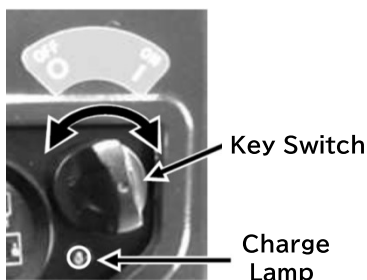
No.	Name	Function
12	『 DOWN 』 button	Lower the Fork
13	『 UP 』 button	Raise the Fork
14	Control Lever	Control driving speed and direction
15	Horn Button	Sound the alarm
16	<b>Safety Switch</b> (Collision Safety Switch)	If operator was trapped between wall and truck and Switch was pushed during forward moving , truck stops and then moves to reverse direction until Switch is returned to neutral.

## 2-2 Key Switch

Key Switch is primary power switch.

If turning clockwise, power will be **ON**

If turning counterclockwise, power will be **OFF**



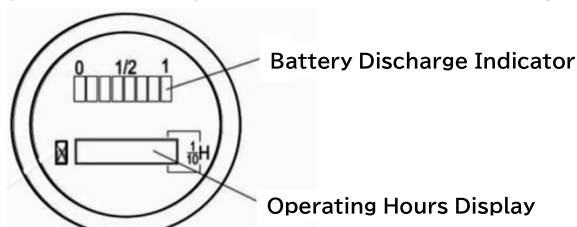
**Charge Lamp shows charging condition**

● Red	Color Light	: Charging
● Green	Color Light	: Fully charged
● Yellow	Color Light	: Deteriorated battery
● Yellow	Color <b>Blinking</b>	: Malfunction of charger
● Red	Color <b>Blinking</b>	: Not detecting the current output of charger Defective charger, or connection failure of Input side wiring
● No Light On		

### ⚠ Caution

- Make sure to turn off power when leaving the pallet truck, or not in use. If battery is discharged to some extent, battery replacing could be required.
- Turn off power and push Emergency Stop Switch if not use pallet truck for long time (However, it is not recommended to use Emergency Stop Switch too frequently more than necessary which could result in malfunction)

## 2-3 Battery Discharge Indicator and Operating Hours Display



### 【 Battery Discharge Indicator 】

This indicator shows battery charge status. If battery is fully charged, right side LED light becomes on. LED light will be changed depending on battery remaining capacity. LED light become blinking when charge is required.

- (1) (1) If LED, 2nd from left is blinking, it shows 70% of battery was discharged. → **Charging is required.**
- (2) (2) If LED, the very left and 2nd from left are blinking alternately, it shows 80% of battery was discharged. → **Charging is required**

Once LED start blinking, Pallet Truck can not drive with high speed to reduce the battery discharge. Battery need to be charged immediately, and once battery is fully charged, Pallet Truck can drive with high speed again.

### ⚠ Caution !

**If battery is overdischarged, it is possible battery can not be charged any more. Always try to charge beforehand.**

### 【 Operating Hours Display 】

This display shows hours truck was operated. The range is 0.0~99,999.0 hours



Electromagnetic Brake

### ⚠ Caution

- Brake can be released in case truck can not drive due to malfunction, or battery discharge. Insert accessory Screw into 2ea. open holes on the brake and screw in. If screw is missing, use M4X40mm screw.
- After moving truck to battery charging station, remove screw.
- **DO NOT** try to move truck forcibly without releasing brake. It could result in malfunction.

## 3. Operation

### 3-1 Preparation of the Operation

- ① Make sure to perform 『 5-3 Pre-Operation Check 』 before operating.  
Refer to Page 11.

#### ⚠ Caution

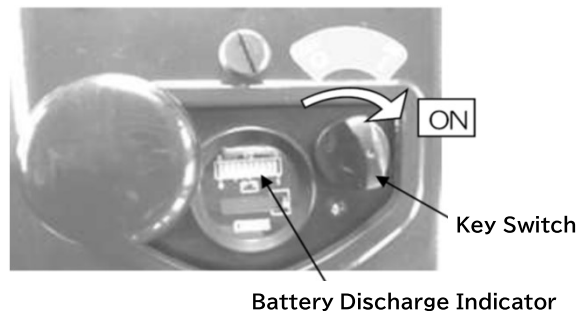
**Even small malfunction could lead to accident. If any abnormality is detected, STOP using the truck immediately, and report to managing supervisor, and DO NOT operate until truck is repaired completely.**

- ② Driver (Operator) Authorization :  
Make sure only authorized personnel can operate the pallet truck.  
Operator MUST read this operation manual completely and thoroughly understand before operating, and follow all safety instructions.

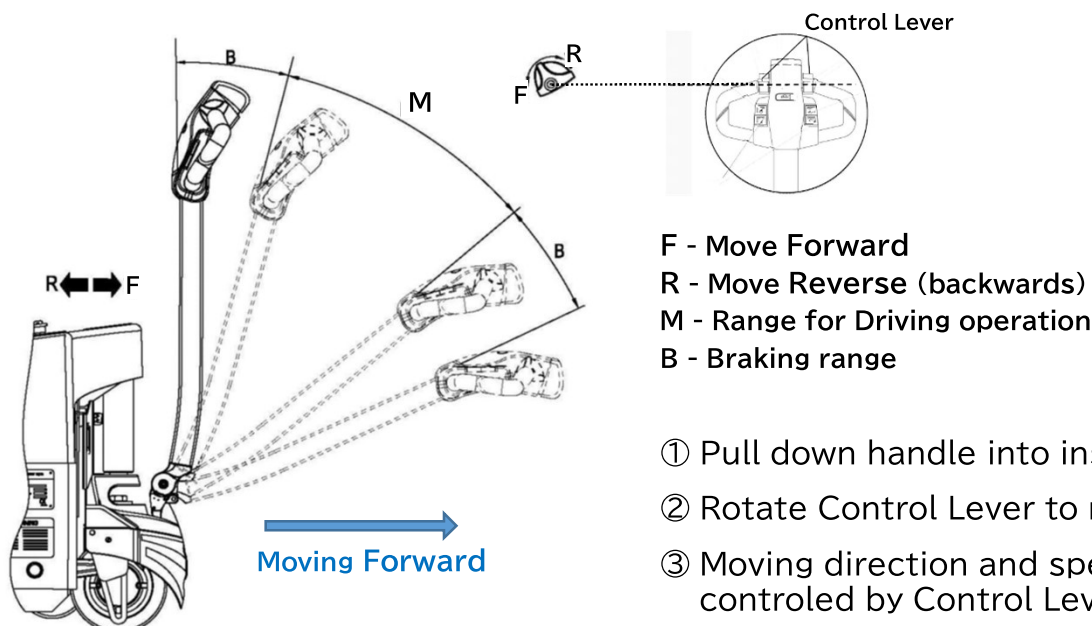
#### ⚠ Caution

**Spend enough time to try and touch each component and device to become familiar with truck before operating. Even after became familiar, operate carefully and DO NOT operate recklessly. Or it could result in fatal accident and damage to property.**

- ③ Make sure operating areas are clear of all personnel and objects.
- ④ Turn On Key Switch. (you can hear the fan is running inside)  
You can see LED light is On of the Battery Indicator.



### 3-2 Driving (Maneuvering) Operation



### 3-3 Brake

#### 3-3-(1) Handle Brake

Brake is automatically applied when handle enters within **B** range.

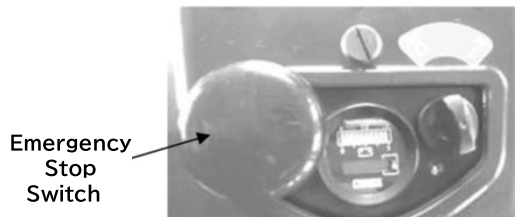
#### ⚠ Caution

**Make sure Handle would return to upright position when handle is released. If NOT, it is necessary to replace Gas Spring.**

#### 3-3-(2) Control Lever Brake

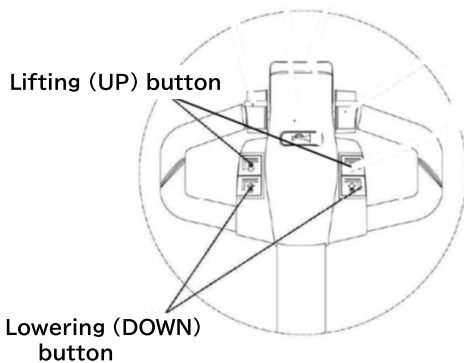
Brake is automatically applied when Handle is relased and driving speed is reduced down to less than 1km/h.

#### 3-3-(3) Emergency Stop Switch



When pushed Emergency Stop Switch, all functions would be stopped.

### 3-4 Lifting and Lowering



#### 3-4-(1) Lifting

Push "UP" button

#### 3-4-(2) Lowering

Push "DOWN" button

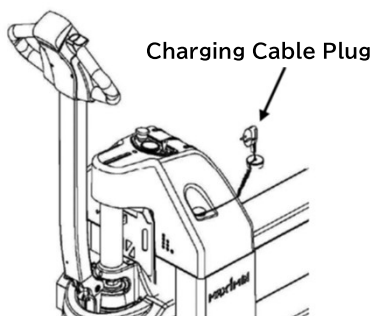
#### ⚠ Caution

- **DO NOT** load more than its rated capacity
- Load center should be locaed as close as fork center

**If overloaded, or operating lifting and lowering with biased (uneven) load, it could result in malfuction of truck or load falling.**

## 4. Charging and Replacing Battery

### 4-1 Charging Battery



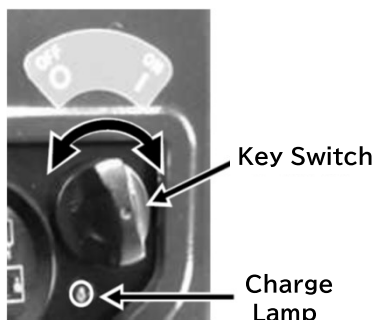
Connect charging cable plug into receptacle.

#### ⚠ Caution

- **DO NOT** operate truck during charging. Or it may stop charging and damage truck
- It takes about 8 hours to charge full. But it depends on battery conditions
- Battery life is about 500 times full charge. But it depends on battery conditions
- **DO NOT** use battery charger other than genuine charger. Or it may explode.



## 4-2 Charge Lamp Display



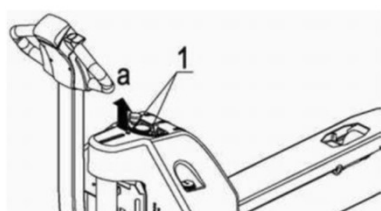
Charge Lamp shows charging condition

- Red Color Light : Charging
- Green Color Light : Fully charged
- Yellow Color Light : Deteriorated battery
- Yellow Color Blinking : Malfunction of charger
- Red Color Blinking : Not detecting the current output of charger
- No Light On : Defective charger, or connection failure of Input side wiring

## 4-3 Replacing Battery

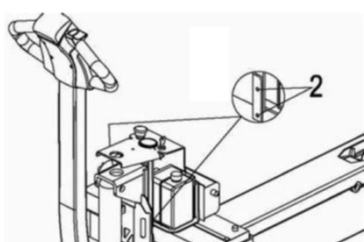
### ⚠ Caution

**Make sure to turn off power (Key Switch and Emergency Stop Switch) before battery replacing. Also go to wide open area for battery replacing.**

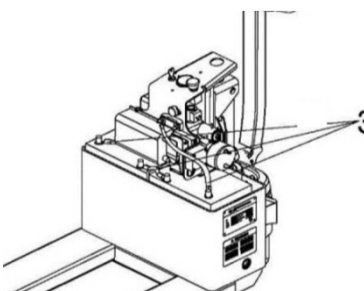


#### ① Remove cover

Lift up forks (if battery is still charged).  
Remove 2ea. Screws of **1** by flat-head screwdriver and unfasten Emergency Stop Switch. And then pull up cover to arrow **a** direction



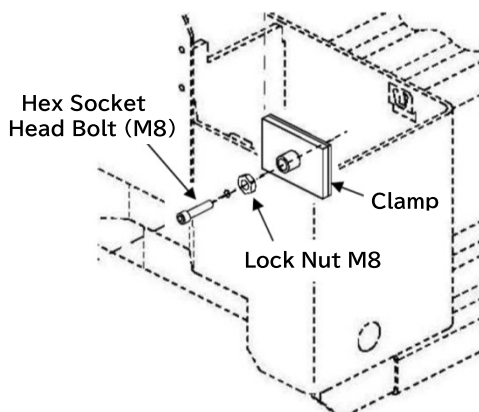
#### ② Remove 4ea. Screw of **2** (2ea. at each side) Use Hex Wrench (5mm) to remove screws



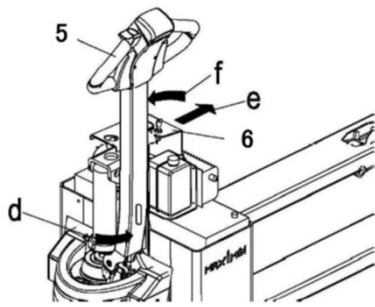
#### ③ Remove 3ea. Battery cable of **3**

### ⚠ Caution

**Pay close attention not to damage battery cable when removing and installing battery cable. Or it could result in short circuit.**



#### ④ Unfasten clamp which is fixing battery of both sides battery. Unfasten Lock Nut (M8) by 13mm Spanner, and then unfasten Hex Socket Head Screw (M8) by Hex Wrench (6mm)



⑤ Turn Handle (5) fully towards **d** direction

⑥ Pull bracket (6) towards **e** direction, and rotate to **f** direction so that battery can be taken out.

⑦ Pull up battery towards **g** direction

⑧ After replacing battery, install back cover and screws etc. in the reverse procedure.



### Caution

**Battery size and capacity affects the operability and safety of truck. For better performance, use genuine battery.**

## 5. Periodic Inspections

### 5-1 Regular Inspection

Perform the periodic inspections for safe operation.

※ If any abnormality is found, STOP using immediately and contact supplier of this truck. And DO NOT use until abnormality is removed completely and repaired. Or it could result in fatal accident and damage to truck.

### 5-2 Replacing Parts

It is necessary to replace consumable parts regularly for safe use, and is recommended to stock such consumable parts for replacing regularly.

#### 【 Wheel 】

Wheel Quality is very important and affects safety and performance of truck. Make sure to use genuine wheels. If NOT, it could result in malfunction and can not be repaired.



### Caution

**Uneven wear of fork wheel (load wheel) could lead to unstable operability and cargo falling. Replace both sides wheels at same time when replacing fork wheel**

#### 【 Hyd. Hose 】

Replace Hyd. Hose every 6 years.

## Essential Inspections

### 5-3 Pre-Operation Checks

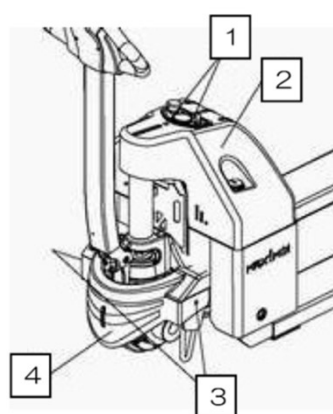
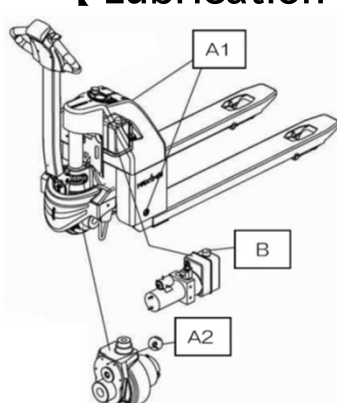
Major Components	Components (Parts)	Page	No.	Inspection Method	Judgement Criteria
Control	Handle	5	1	By Hands	Handle return to upright position when releasing handle at tilted position.
	Control Lever	5	14	By Hands	Truck move Forward and Reverse, and Lever return to Neutral when releasing
	『 DOWN 』 button	5	12	By Hands	Fork lowers when pushing
	『 UP 』 button	5	13	By Hands	Fork rises when pushing
	Horn Button	5	15	By Hands	An alarm sounds
	Safety Switch	5	16	By Hands	When pushing Control Lever down to "Forward" direction and push Safety Switch, truck stops and then reverse
	Key Switch	5	4	By Hands	Refer <b>Page 6</b> to check function
Braking System	Brake			By Hands	Truck can not be moved neither forward nor reverse when Key Switch is off
				By Hearing	Should not have abnormal noise
Drive System	Lift Cylinder	5	7	By Hearing	Should not have abnormal noise
				By Visual	Should not have oil leak
	Drive Wheel	5	10	By Hearing	Should not have abnormal noise

### 5-4 Periodic Checks (Every 1,000 hours or Every Half Year)

Major Components	Components (Parts)	Inspection Method	Judgement Criteria
External Appearance	Frame	By Hands	Should not have damage
		By Hands	Should not have loosening of Bolts etc.
	Cover	By Hands	Should not have damage
		By Hands	Should not have loosening of Bolts etc.
Wheels	Wheels	By Visual	Should not have wear, crack, damage
		By Hearing	Should not have abnormal noise
Power	Battery	By Visual	Should not have damage
		By Hands	Should not have loosening of cable
Wiring	Cable	By Visual	Should not have strip or roll up etc.
Lubrications	Grease Fittings	By Visual	Refer to <b>below</b> . A spots need to be greased
Hyd. Oil	Hyd. Oil	By Visual	Should have designated volume
Braking System	Brake	By Visual	Remove if any obstacles

## 6. Lubrication and Fill the Hyd. Oil

### 【 Lubrication Points



#### 6-1 Greasing - Lithium Grease

**A1** : A1 can be lubricated directly without removing cover

**A2** : Remove cover **4** by 2ea. screws of **3** to lubricate **A2**

#### 6-2 Fill the Hyd. Oil (ISO VG46 - Total 800ml)

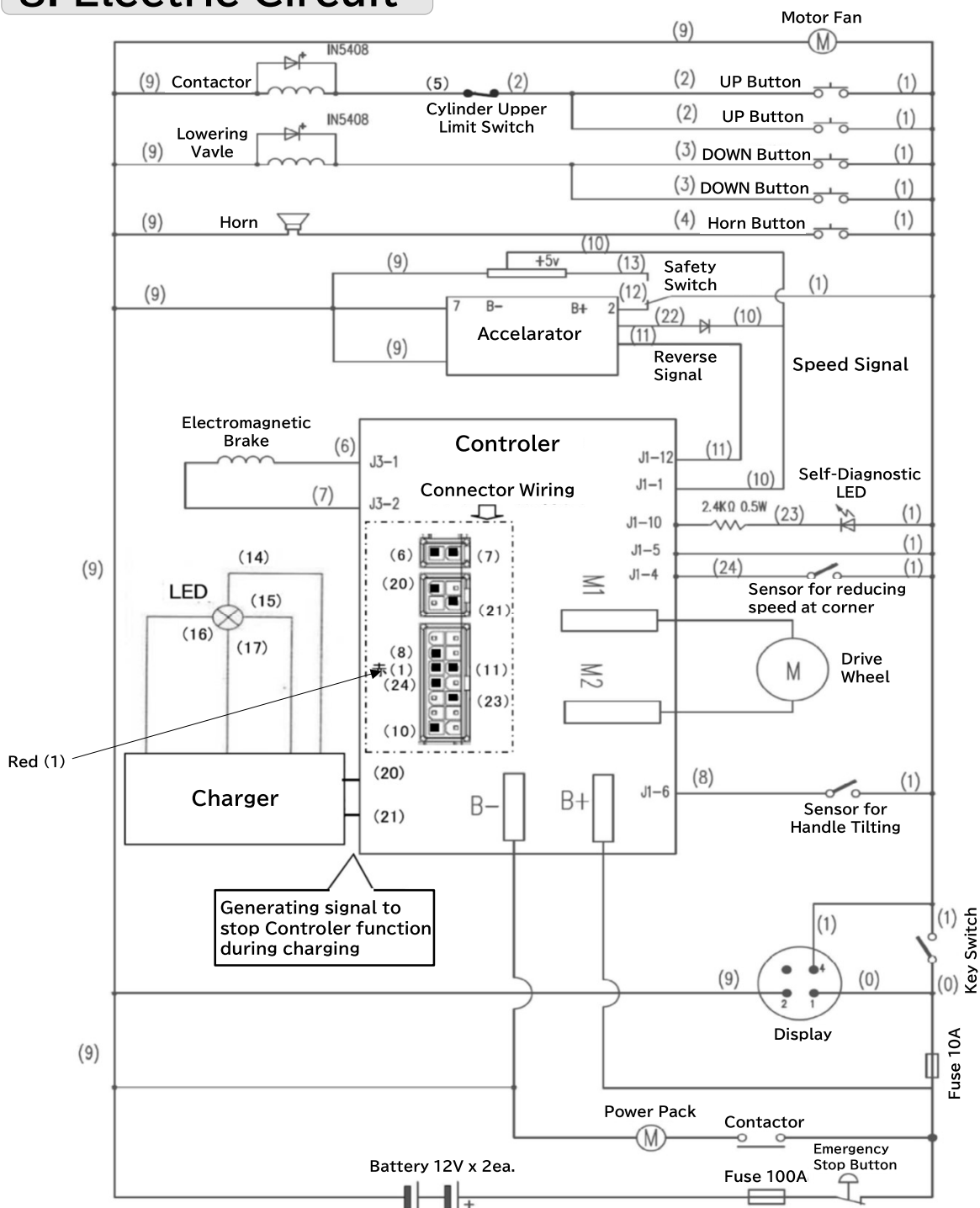
- 1) Remove **screws of 1** and pull up **cover 2** and remove
- 2) There is oil gauge at back side of **Cap B**. Check and fill the oil.

## 7. Troubleshooting

The below show how to deal with relatively minor malfunctions. For other further issues, please contact your supplier of this pallet truck.

Symptoms of malfunction	Possible Cause	Action
Power is not supplied	Key Switch is not ON	Turn on Key Switch
	Battery voltage is low	Check battery and charge
	Fuse is blown out	Replace fuse
	Pallet Truck is being charged	Stop charging
Can not lift up cargo	Lack of hyd. oil	Fill the oil as designated
	Cargo is too heavy	Check the weight of cargo
	Malfunction of Upper Limit Switch	Adjust, or replace Upper Limit Switch
Can not charge	Malfunction of Charge Lamp	Replace Charge Lamp
	Battery deterioration	Replace battery
	Malfunction of charger	Replace battery charger
Can not drive high speed	Speed control worked due to battery low voltage	Charge battery

## 8. Electric Circuit



## 9. Disposal

When disposing of this pallet truck, dispose of the metal, non-metal, plastic, and hydraulic oil components separately. There are regulations for disposing of the hydraulic oil, so make sure to sort and follow the local rules. If you have any questions regarding disposal, please check with your supplier of the pallet truck.

## 10. Product Warranty Conditions

### Warranty

Should the unit malfunction within the warranty period (Within one (1) year of purchase) when it has been operated in accordance with the user manual and the warning labels on the unit, we will adjust the defective component, repair it, or send a replacement part free of charge. However, this does not apply in the case of secondary damage or any damage to which any of the following apply:

- (1) Damage or injury resulting from incorrect operation, improper inspection, improper storage, or any other type of negligence
- (2) Damage of injuries resulting from changes (modifications) that negatively impact the product's operation mechanism
- (3) Consumable parts that are damaged and need to be replaced
- (4) Damage or injury resulting from fires, earthquakes, wind, floods, or other natural disasters or external factors
- (5) Problem resulting from specified parts not being used
- (6) Error in the warranty claim process (Ex: failure to indicate Model or Serial No.etc.)
- (7) Damage or injury resulting from installation
- (8) Repairs performed not by our company or not by our authorized dealer
- (9) Damage confirmed to be the result of overuse, user error, or accident

Furthermore, all rubber components and other naturally degradable products used in this products and its accessories, as well as all consumable products, fall outside the scope of this warranty.

**This pallet truck is not waterproof, so rust, corrosion, short circuits, and other damage caused by water is not covered under warranty.**

### How to Claim Warranty

If you decide to file claim for this product based on the above, please contact your dealer. The dealer will carry out the necessary procedures. In addition, we can not decide whether or not any particular situation falls within the scope of this warranty.

## 11. After Sales Service

•Product does not work properly	→	Review the manual and try to find solution
•Product still does not work properly	→	Contact your supplier and request repairs
•Repairs within the warranty period	→	The warranty is valid one year from the date of purchase. We will service your product in accordance with warranty conditions.
•Repairs out of warranty period	→	Consult with your supplier
•Availability of Spare Parts	→	The spare parts are available for 8 years after discontinuing manufacturing

Contact your supplier of pallet truck for any information regarding after service.  
When contacting your pallet truck supplier, provide following information.

- Model No.
- Serial No.
- Purchase Date
- Conditions of trouble

Record the above information in the table below for future inquiries.

Model No.	
Serial No.	
Purchase Date	
Lifter Supplier	
Installer	
Trouble Date and conditions	Date :
	Date :
	Date :
	Date :