NICHIYU

# ELECTRIC LIFT TRUCK

# OPERATOR'S MANUAL

## 70 SERIES

## RB10D(F)
## RB15D(F)

**⚠ WARNING**

Unsafe use of this lift truck may cause serious injury or death. Operators and maintenance personnel must read this manual and be sure that they understand its contents before operating, inspecting or carrying out maintenance on this lift truck. This manual should be kept near the lift truck for reference and periodically reviewed by all operators and maintenance personnel who come in contact with it.

# ELECTRIC
# LIFT TRUCKS

# OPERATOR'S
# MANUAL

NICHIYU

# INTRODUCTION

**The operator must read and understand the instruction of safe operation contained in this manual.**

- This operator's manual provides for the proper operation, easy maintenance and periodical inspection.
- Prior to operation, read this manual carefully for safe and efficient operation.
- Specifications and equipment in this manual are subject to change without any notice by the manufacturer for further improvement and modifications.
- Make sure these important instructions in this manual are available for the operator on each delivery or transfer of lift truck. Keep this manual after reading.
- If you have any questions, please feel free to contact your local NICHIYU dealer.

**⚠ and ☞ are very important for you and others for safety. Follow these instructions.**

| | | |
|---|---|---|
| ⚠ | **DANGER** | Indicates an exteremely hazardous situation which, if not avoided, will result in death or serious injury.<br>You must follow this instruction. |
| | **WARNING** | Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.<br>You must follow this instruction. |
| | **CAUTION** | Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.<br>You must follow this instruction. |
| ☞ | **NOTE** | Indicates suggestions, tips and hints related to the safety of an operator and maintenance of a truck. |

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**To know about safe operation**


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**To know about procedure of operation**


2 PART NAME AND FUNCTION (P16)

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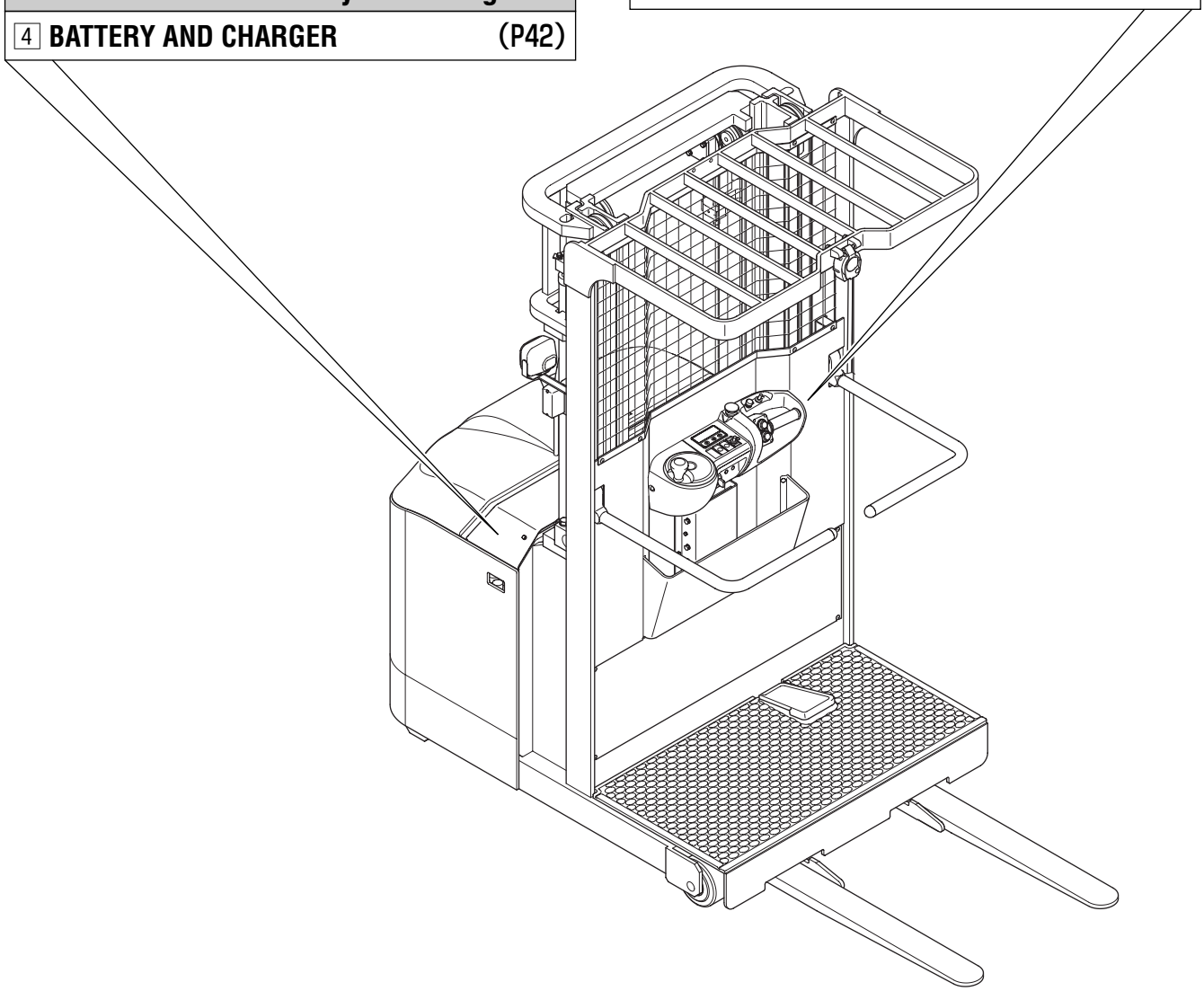


# 1 SAFE OPERATION

## ■Safety Decals and Name Plates

CAUTION

**Safety decals and name plates are installed on the forklift truck to give information about possible hazardous.**

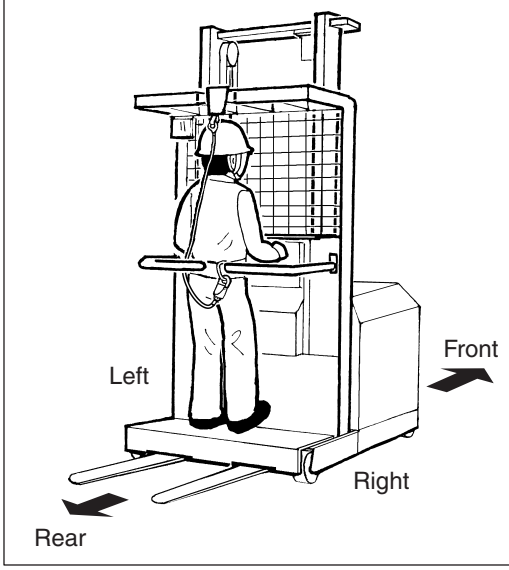
CAUTION

**If you find that decals and name plates are removed and/or unreadable, contact your local NICHIYU dealer for replacement.**

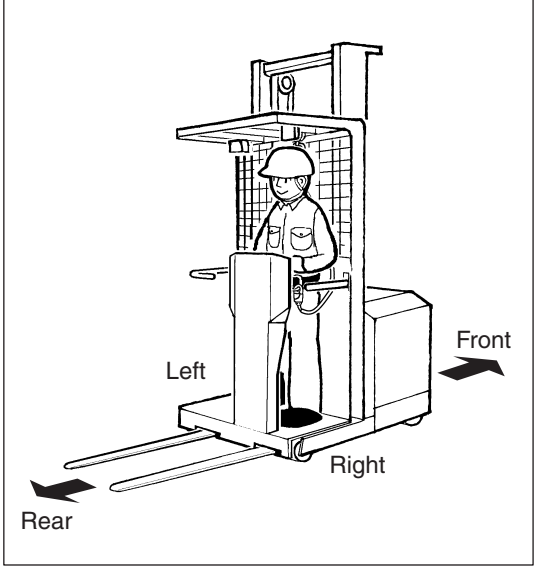
### ▶Indication of direction

This model has two different chassis type of the "**drive-front type**" and the "**fork-front type**".
In this manual, the "front" or "forward" means the drive unit side, and the "rear" or "backward" means the fork side.
Please pay attention especially if your truck is the "**fork-front type**".

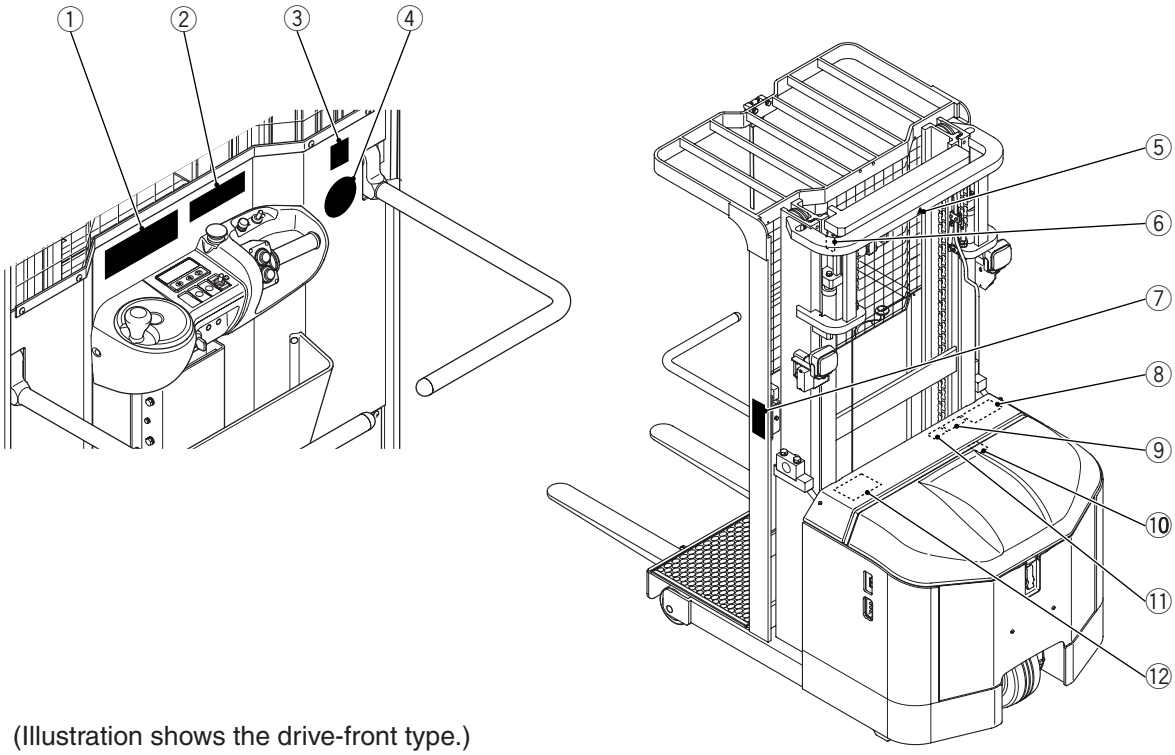
**RB10/15D (Drive-front type)**




**RB10/15F (Fork-front type)**



# ▶ Decals and Name Plates




(Illustration shows the drive-front type.)

①

**⚠ CAUTION**

1. Only a trained and authorized operator shall operate this truck.
2. Prior to operation,read the operator's manual carefully for safe and efficient operation.
3. Carry out the daily inspection before operation. Do not operate the lift truck until repairing if any damage or fault are found.
4. Use the fuse with prescribed amps for replacement.
5. Always wear a helmet and safety belt. Apply the safety guard while operation.
6. Make sure the accelerator grip is in neutral position before turning on the key switch.
7. Do not operate any functions from outside of the operator's compartment.
8. Never allow anyone to ride on the lift truck other than operator.
9. Do not make a sudden start,stop or turn.
10. Do not operate or park on an incline.
11. Do not travel while the forks are in the raised position.
12. Do not overload.Failure to observe the rated capacity can cause to tip over.
13. Do not carry the off-center load.
14. Lifting and lowering should be done on the flat floor.
15. Lower the fork slowly when loading.
16. Stop the lowering operation immediately when the fork hang up the rack and/or load and lift the forks slowly to prevent unstable position.
17. When getting off the lift truck, lower the forks on the floor,turn off the key switch and remove the key.

50004-11790

②

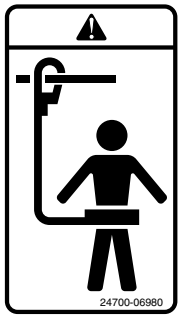
MODEL **NICHIYU** Nippon Yusoki Co., Ltd.

| | | | |
|---|---|---|---|
| MAXIMUM LOAD/LC LIFT HEIGHT | kg / mm | | |
| | kg / mm | | |
| SERIAL NO. | | MFG. YEAR | |
| SERVICE WEIGHT W/O BATTERY | kg | VOLTAGE | V |
| BATTERY WEIGHT | MIN. kg | MAX. | kg |

LOAD CHART
LIFT HEIGHT
mm
CAPACITY kg
LOAD CENTER mm

50006-91500 (英)

③



④

JAPAN INDUSTRIAL VEHICLES ASSOCIATION

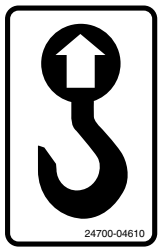
JIVA

**CERTIFICATE**

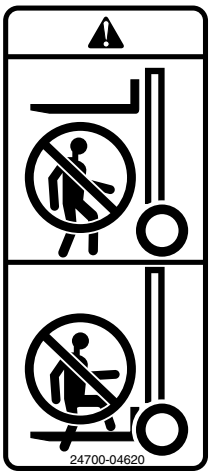
This is to certify that this is a new fork lift truck which has been manufactured for exportation by
**NIPPON YUSOKI CO., LTD.**
as stated in the certificate issued by them.

⑤

⑥




⑦



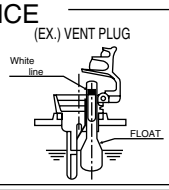

⑧

**DANGER**

- GASES produced by this battery can be explosive.
  Cigarettes, flames or sparks could cause battery to explode.
  Make sure batteries are stored and charged in a well–ventilayed area.
- Batteries contain SULFURIC ACID can cause severe burns.
  Avoid contact with skin, eyes or clothing.
  In event of accident flush with water and call a physician immediately.
- Wear rubber gloves to prevent ELECTRIC SHOCK during checking.
  and maintaining.
- Keep out of reach of children.

IMPORTANT POINT FOR MAINTENANCE

1. Keep the electrolyte level at proper height.
   (When electrolyte decreased, fill purified water
   and stop filling immediately if confirmed the white line of the
   float as shown herein, for over–filling causes overflow.)
2. Always give the battery an adequate charge and
   do not use the battery at overdischarged condition.
3. Keep the surface of battery clean and dry.




G6E（英文）

⑨

**Fire hazards !**

1. Always charge the battery in well ventilated area.
   DO NOT smoke, keep flames away.
2. DO NOT use equipment that is liable to
   produce sparkes, in this area.
3. Open the battery cover while charging battery.

24700-06990

⑩

⑪

**注意**

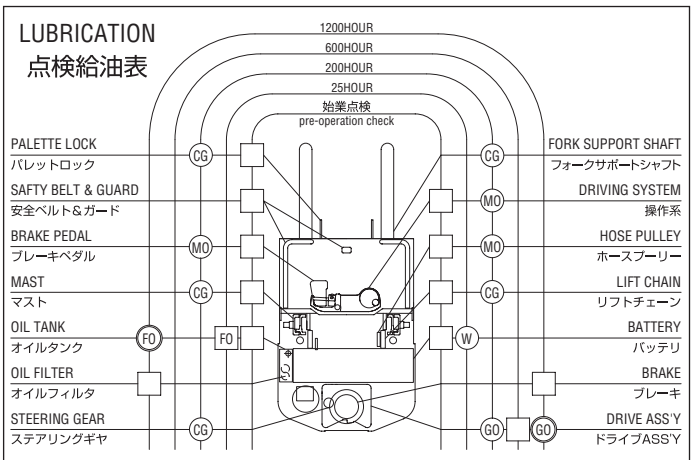
バッテリプラグを抜いたまま長期間（約１ヶ月以上）車両を放置しないでください。内部データの消失により、起動できなくなります。

DO NOT leave the battery plug disconnected for more than one month, or the truck becomes unoperable for loss of stored data.

54000-92410

⑫

LUBRICATION
点検給油表




○ : LUBRICATION 給油
◎ : REPLACE 交換
□ : CHECK AND ADJUSTMENT 点検・調整

CG : CHASSIS GREASE シャーシグリース
MO : MACHINE OIL マシンオイル
GO : GEAR OIL ギャーオイル

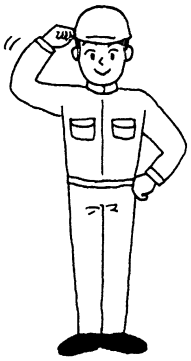
FO : FORK OIL フォークオイル
W : REFINED WATER 精製水

50002-95620-A（和、英）

# ■*Information for safety operation*

WARNING

**Do not operate forklift truck while taking drugs and/or alcohol; otherwise, an accident may occur which can cause serious injury or death.**



CAUTION

**Only a trained and authorized operator shall operate the forklift truck.**

CAUTION

**The operator is recommended to wear a helmet, safety shoes and working clothes.**

CAUTION

**Do not use a forklift truck in the following circumstances.**

**① Where the temperature is less than –10°C (except cold-storage use forklift truck) or more than 40°C.**

**② Where the explosive gas (thinner, gasoline etc.) may exist.**

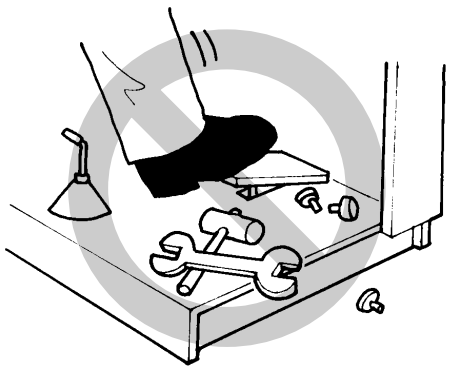
**When using a forklift truck in the following area, consult your local NICHIYU dealer before operation.**

**① Where the explosive materials such as gunpowder are exist.**

**② The dusty place.**

CAUTION

**Keep the operator's compartment clean at all times.**



CAUTION

**Do not operate the forklift truck with greasy or wet hands.**

CAUTION

**NICHIYU forklift truck is equipped with an overhead guard, safety strap and protection guard.**

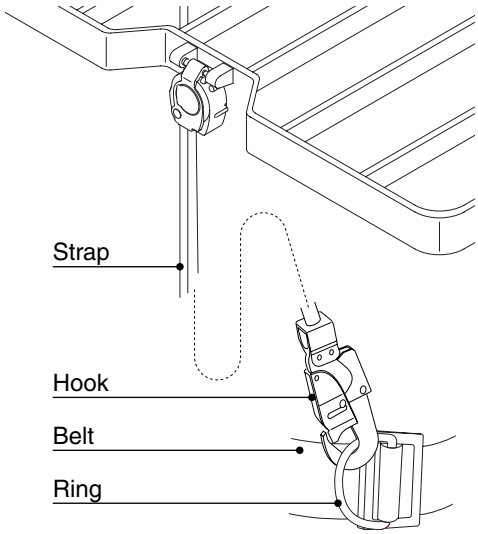
- Do not operate the forklift truck if these items are not installed correctly.
- Pay attention for overhead area because the overhead guard cannot endure for any kinds of impact.

NOTE

The overhead guard, safety strap and protection guard are the standard equipment of this truck.

WARNING

- **Always use the safety strap while operation.**
- **Make sure that the safety strap is hung on the overhead guard correctly. Pull the strap and fix the hook on the ring on the belt.**
- **The maximum applicable weight of the operator for this strap is 120kg. If the operator's weight is more than 120kg, use another heavy duty strap instead.**



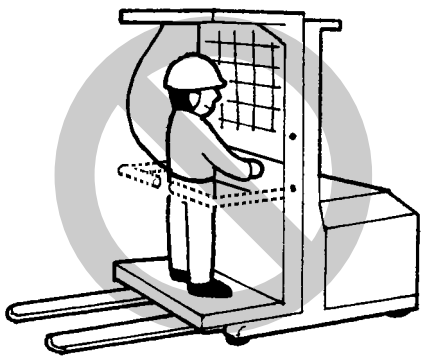

WARNING

- **Carry out the inspection of the strap every month by following the attached instruction on the strap.**
- **The safety strap can use one time only. If any impacts are applied to the strap, never use again and replace to the new one immediately.**
- **Even no impact is applied, replace the strap every two years to keep the best performance.**

CAUTION

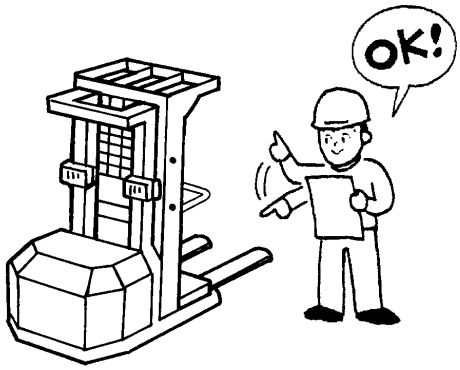
**Do not modify the forklift truck.**

- Modifications and additions shall not be performed without the written approval of NICHIYU. Contact NICHIYU's qualified facility for details.
- Do not install any parts blocking visibility from operating position.



CAUTION

- **Carry out the daily inspection before using the forklift truck.**
- **Do not use the forklift truck without inspection.**




CAUTION

- **Stop operation immediately if any damages or faults are found on the forklift truck.**
- **Do not operate the forklift truck until it is repaired completely.**
- Contact to your local Nichiyu dealer for repair the forklift truck.

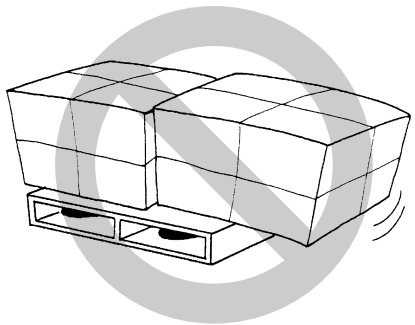
CAUTION

**Do not overload. Failure to observe the rated capacity can cause the forklift truck to turnover.**

- Refer to the load chart and make sure thyat the weight of the load and the load center are within the capacity of your forklift truck before handling. If the attachment is installed on the forklift truck, the maximum capacity should be reduced. Read the instruction manual of the attachment before operation.

CAUTION

**Use the proper size pallet with enough strength for the load.**

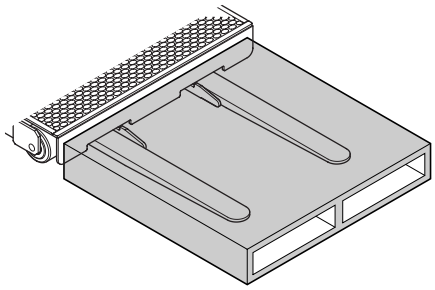


CAUTION

**If the pallet does not have the lower board (such as the skid-type pallet), the pallet locking device does not activated. Make sure that the pallet locking device is activated properly before use the forklift truck.**

CAUTION

**Insert the fork into the pallet completely to activate the pallet locking devise securely.**



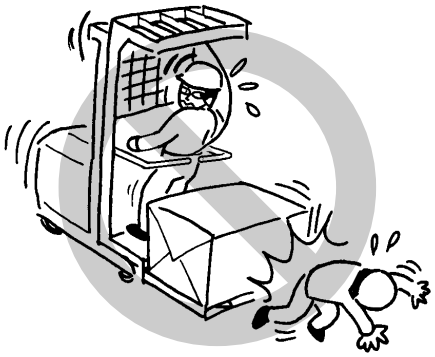
CAUTION

**Make sure that the load is palletized securely in a proper shape. If the load is unstable, it can easily shift and fall on someone.**

CAUTION

**Look all around the forklift truck before moving.**

- Make sure that the accelerator grip is in the neutral position before turning on the key switch.
- Make sure no person is around the forklift truck before starting.

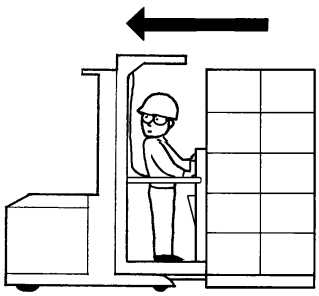


NOTE

Make sure the accelerator grip position. When releasing the grip, it must be returned to the neutral position by itself.

CAUTION

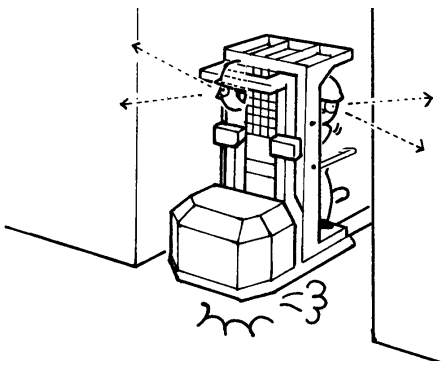
**If the load blocks your view, or when you travel down a grade with a load, drive to the drive unit side. Always look in the direction of travel. A look-out helper may be required if your visibility is obstructed.**



CAUTION

**Stop at blind corner and/or intersection.**

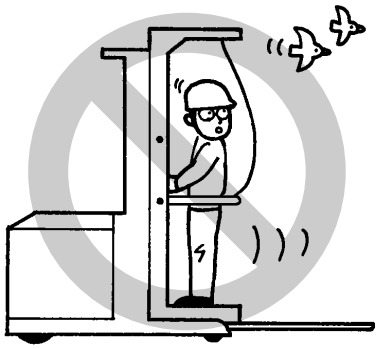
- If you cannot see where you are going, travel slowly around corners.
- Sound a horn at cross aisles and where visibility is restructed.



CAUTION

**Always look in the direction of travel.**

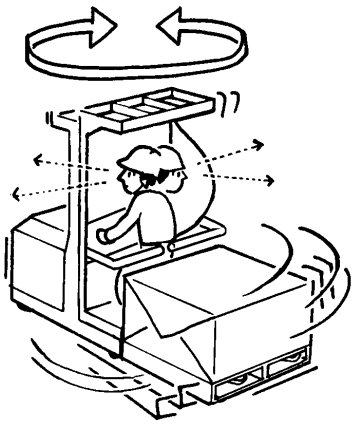
- Always be aware of people near your forklift truck. Do not proceed near them until they are aware of you.



CAUTION

**Be aware of tail swing.**

- Always make sure that the tail swing are is clear before turning.
- When turning in aisles, especially narrow aisles, keep as far away as possible from loads and racks. Be extra cautious near people.
- Failure to observe the tail swing area when making a turn can cause serious accidents.



CAUTION

**Do not make a sudden start, stop or turn.**

- A sudden start or braking can cause the load to fall.
- A sharp turn while traveling can cause the forklift truck to turnover.

CAUTION

**Do not go over obstacles, curbs, ditches, ridges and railroad trucks.**

- Avoid bumps, holes, spill spots and loose materials that may cause the forklift truck to swerve or tip.

CAUTION

- **Slow down when meeting with another forklift truck.**
- **Do not overtake another forklift truck.**

CAUTION

**Always check road surface, and stay away from soft or uneven ground to avoid turning over.**

CAUTION

**Avoid slippery surface.**

- Water, sand, gravel, ice or mud can cause a turnover.
- Do not go into a flooded or water covered area.

CAUTION

**Keep enough clearance.**

- Serious accidents can be caused by hitting pipes and beams near the ceiling with mast or overhead guard. Make sure there is enough clearance for ceiling and height limit of the entrance.

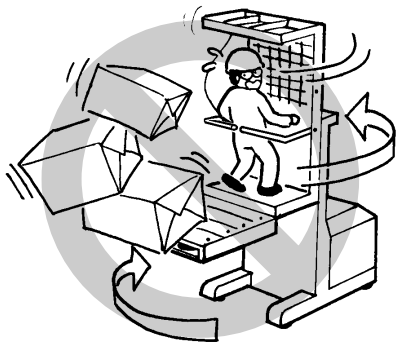
CAUTION

**Make sure that the floor has enough strength for the forklift truck and the load.**

WARNING

**Do not drive the forklift truck with lifting the fork (operator compartment) at high position.**

- The stability of the forklift truck with high lifting position is low and possible to turnover if drive.



NOTE

This truck has the automatic speed reduction system by lifting height and/or the steering angle, however, the forklift truck should be traveled less than 500mm lift with slow speed. If the lifting height is more than 4900mm, the truck does not drive.

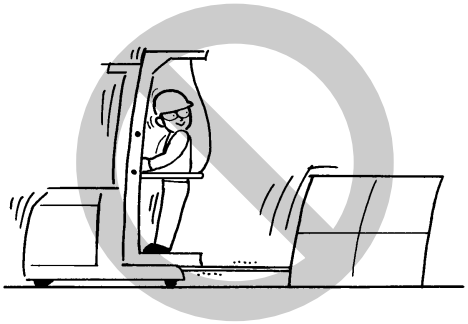
CAUTION

**Do not push or drag the load.**

- Do not lift the load by the tip of the fork.
- Misuse can damage the load as well as the forklift truck.

CAUTION

**Do not drag any loads with rope by the forklift truck.**

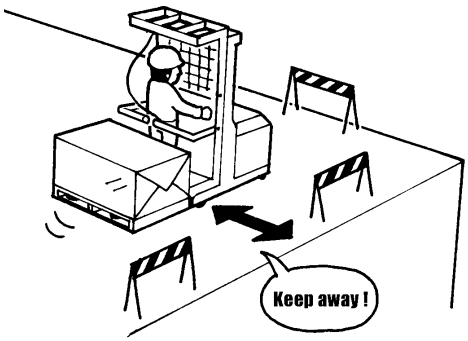


WARNING

**Never allow anyone to walk or stand under raised forks.**

CAUTION

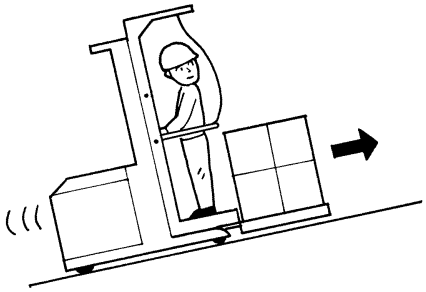
**Keep enough distance from the edge of docks, ramps and platforms.**



CAUTION

**Travel carefully on slope with a loaded forklift truck.**

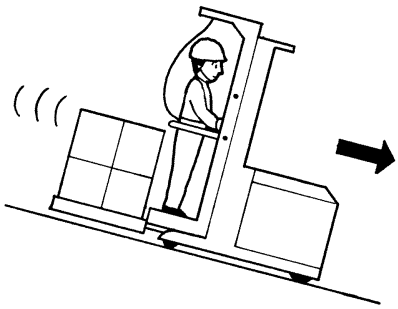
- When traveling up or down with a loaded forklift truck, keep the load upgrade to maintain control.
- Travel with plugging brake if necessary.



CAUTION

**Make sure the fork or the load is not touched on the ground when going up or down a slope.**

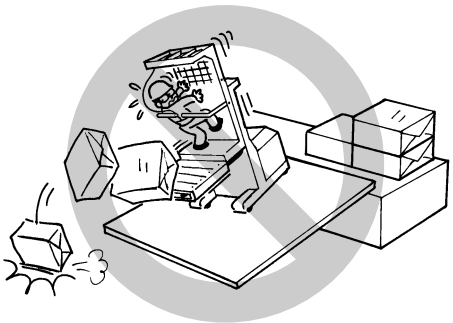
- When going down a slope, the braking distance may be longer.



CAUTION

**Do not turn on, or angle across an incline.**

- Failure to observe this rule can cause the forklift truck to turnover.



CAUTION

**Do not handle an off-center load.**

- If the weight of the load is not centered between forks, the load can fall from the fork or pallet when you turn a corner or hit a bump.
- An off-centered load will increase the possibility of the forklift truck to turnover.

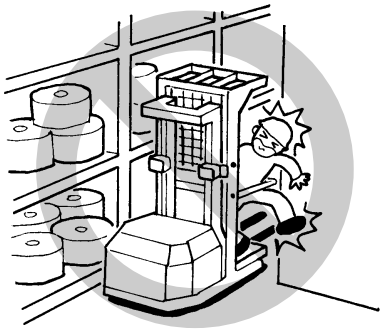
WARNING

- **Never allow anyone to ride on the fork-lift truck other than the operator.**
- **At no time shall anyone be allowed to ride on forks of the forklift truck.**

CAUTION

**Do not put legs or arms out of the chassis while operating.**

- They may be hit while operation if put out of the chassis.



WARNING

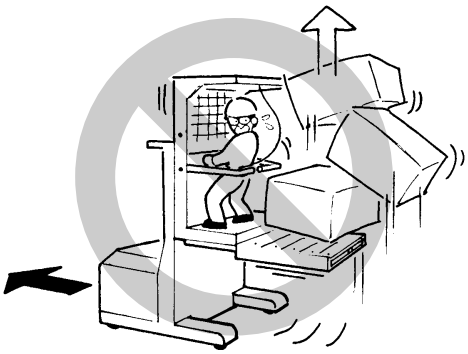
- **Do not put any parts of your body outside the operator's compartment of the forklift truck.**
- **Keep hands and feet inside the operator's compartment.**
- **Do not put fingers on the front mesh guard.**

CAUTION

- **All operations such as turning the key switch and steering must be done in the operator's compartment.**
- **If your body or cloth catch buttons or levers, the forklift truck may be moved unexpectedly.**

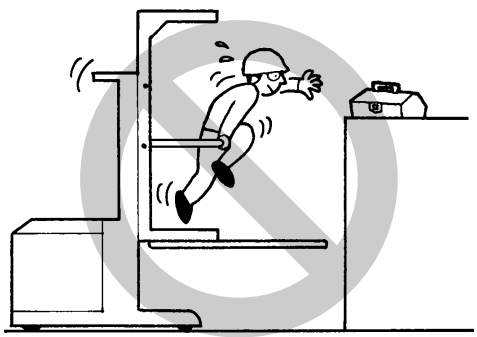
WARNING

- **When lifting or lowering the load, stop traveling.**
- **Do not handle the load on uneven surface to avoid turning over.**



CAUTION

**Never hang your body on the operator guard.**



CAUTION

**Do not drop any items from the operator's compartment.**

CAUTION

**Do not jump on or off the forklift truck.**

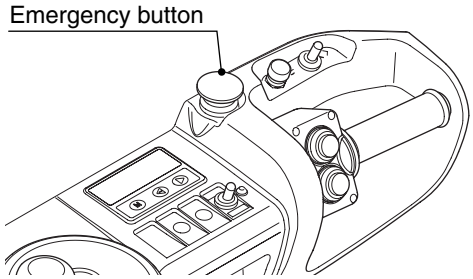
- Getting on or off the forklift truck after stopping completely.
- Do not grab the steering handle or the accelerator grip when getting on or off.

CAUTION

**If any abnormalities are occurred while operation, push the emergency button.**

CAUTION

**Do not use the emergency button except the emergency case.**




CAUTION

**Do not tow any items by the forklift truck.**

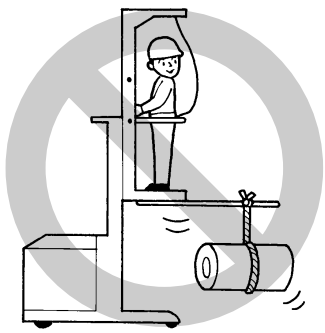
CAUTION

**If the forklift truck has any problems on the brake or steering system, do not tow by another tractor or forklift truck.**

CAUTION

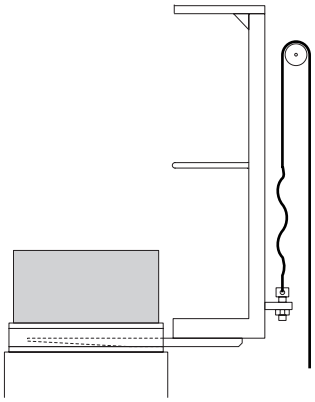
**Do not abuse the fork.**

- Misuse can cause an accident as well as property damages.



CAUTION

**When the lift chain is slacked, the safety monitor icon is flashed and lowering and traveling functions are locked.**

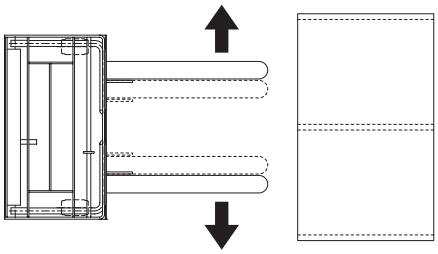


NOTE

When slacking the chain,
- Lift the fork a little bit to recover from slacking.
- Remove the fork from the pallet after correcting the chain.

CAUTION

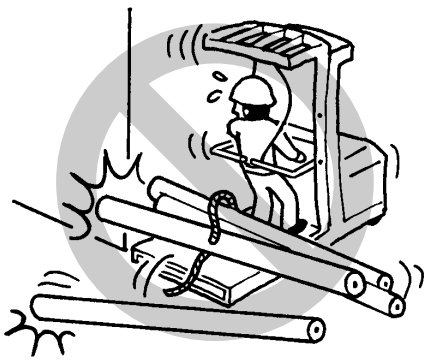
**Avoid off-center loading.**



- Set forks as far as apart as possible for the maximum support of the pallet or the load.
- Improper spreading of forks can cause unstable or off-center loading.
- Consult to your local Nichiyu dealer for adjustment of the fork spread.

CAUTION

**Travel carefully when handling with a long or wide load.**



- Be careful when handling a load. The load should be handled at a low lifting position.
- Lifting and lowering should be done slowly.
- When traveling and turning, slow down to avoid moving the load.

WARNING

**Never allow anyone to hold or pick loads off while traveling, lifting or lowering.**

CAUTION

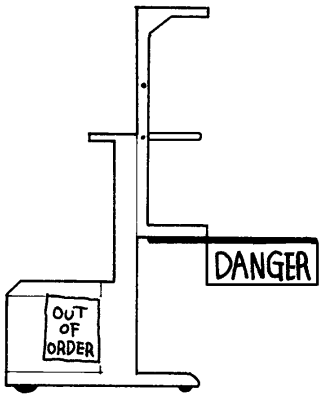
**Do not put or pick any loads on the fork directly. Always use the proper pallet.**

- The load may be slipped off.

CAUTION

**When parking the forklift truck which requires repairing, a warning or "out-of order" sign shall be placed on the forklift truck and remove the key.**

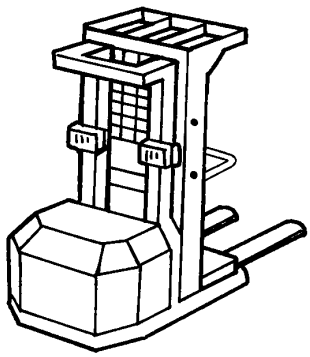
- When the fork cannot lower because of the fault, place a large sign or marker on the fork. This procedures will caution other forklift trucks and pedestrians.




CAUTION

**When parking the forklift truck :**
- **Lower the fork to the bottom.**
- **Turn off the key switch and remove the key.**

- The fork shall be lowered on the ground. Otherwise, it may hit someone.



CAUTION

**Do not leave the forklift truck with loading.**

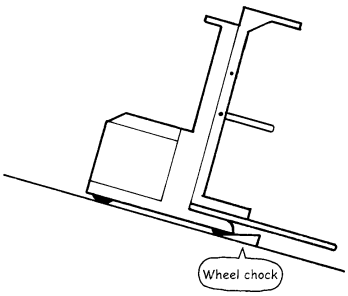
CAUTION

- **Park the forklift truck at the reserved place.**
- **Do not park on or near flammable objects.**

CAUTION

**Do not park the forklift truck on a slope.**

- The forklift truck may be moved accidentally.
- Use wheel chocks if required to park on a slope.




NOTE

- Raise the fork to the top end a w times after operation to protect inside of the lift cylinder.
- If you have no chance to raise the fork to the top end, the inside of the lift cylinder may be rust.

CAUTION

- **Do not use water to clean the forklift truck.**
- **If hosing water, cover all electric components.**

- If water is splashed on electric components, they may be damaged. If required to hose water, protect them with covers and disconnect the battery..
- If water is splashed on them, dry completely before connecting the battery.

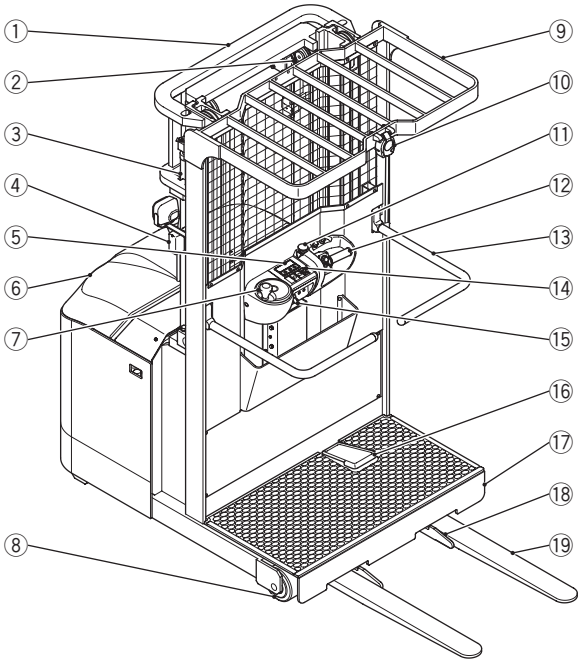
CAUTION

**DO NOT leave the battery plug disconnected for more than one month, or the truck becomes unoperable for loss of stored data.**

# 2 PART NAME AND FUNCTION

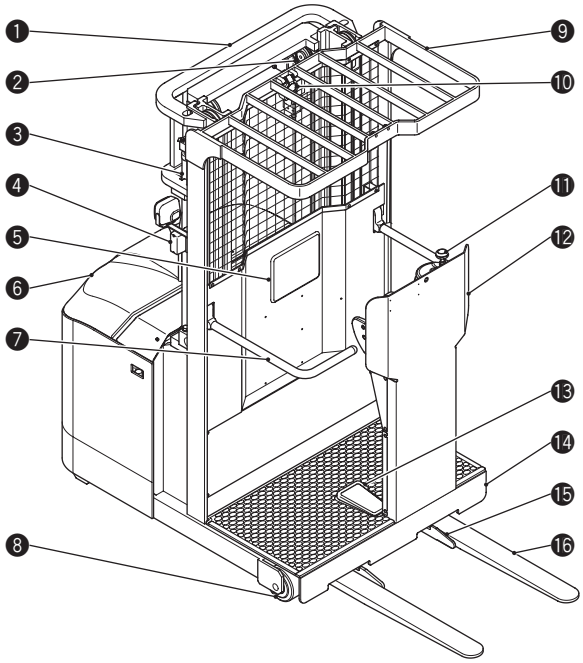
## ■Name of parts

**Drive-front type**



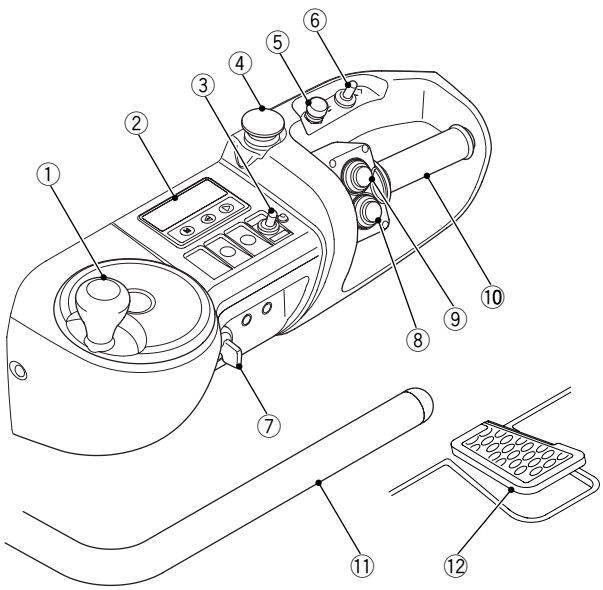

① Mast
② Wire
③ Lift cylinder
④ Turn signal lamp
⑤ Indicator panel
⑥ Top cover
⑦ Steering wheel
⑧ Load wheel
⑨ Overhead guard
⑩ Safety strap
⑪ Emergency button
⑫ Accelerator grip
⑬ Safety guard
⑭ Cancel switch of the pallet locking device
⑮ Key switch
⑯ Brake pedal
⑰ Operator's compartment
⑱ Pallet lock lever
⑲ Fork

**Fork-front type**



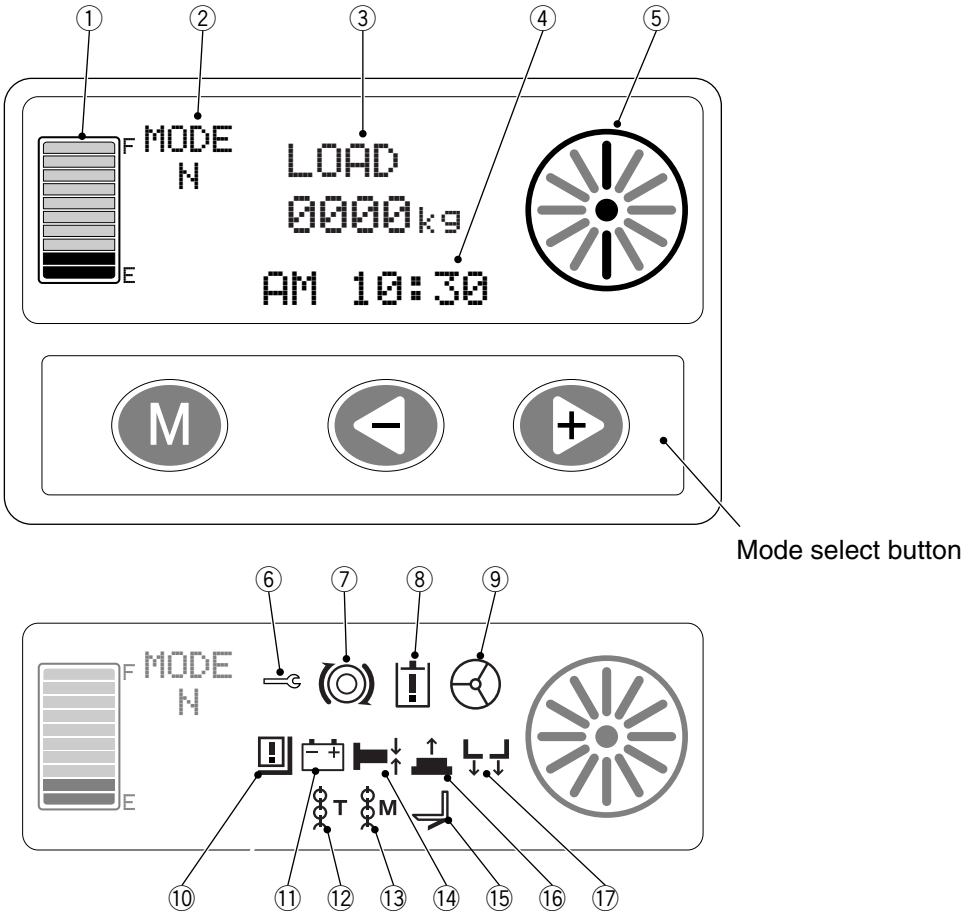

❶ Mast
❷ Wire
❸ Lift cylinder
❹ Turn signal lamp
❺ Body cushion
❻ Top cover
❼ Safety guard
❽ Load wheel
❾ Overhead guard
❿ Safety strap
⓫ Steering wheel
⓬ Steering post
⓭ Brake pedal
⓮ Operator's compartment
⓯ Pallet lock lever
⓰ Fork

## ■Driving equipment




① Steering wheel
② Indicator panel
③ Cancel switch of the pallet locking device
④ Emergency button
⑤ Horn button
⑥ Turn signal switch
⑦ Key switch
⑧ Lower button
⑨ Lift button
⑩ Accelerator grip
⑪ Safety guard
⑫ Brake pedal

# ■Indicator panel




① Battery discharge indicator
② Travel mode monitor
③ Weight gauge, traveling speed monitor
④ Clock, hour meter, odometer, lifting height monitor
⑤ Wheel indicator
⑥ Service (spanner) icon
⑦ Safety monitor [travel circuit]
⑧ Safety monitor [hydraulic circuit]
⑨ Safety monitor [power steering circuit]
⑩ Safety monitor [overload] (option)
⑪ Safety monitor [battery]
⑫ Safety monitor [chain slack - table side]
⑬ Safety monitor [chain slack - mast side] (for 3-stage mast only)
⑭ Safety monitor [accelerator lever]
⑮ Safety monitor [pallet lock cancellation]
⑯ Safety monitor [lift button]
⑰ Safety monitor [safety guard]

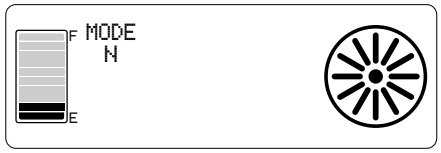
NOTE

Above safety monitor icons are shown for explanation. They are not indicated when the truck is normal. When any abnormalities are occurred, these icons will be flashed.

# ■Indication of display

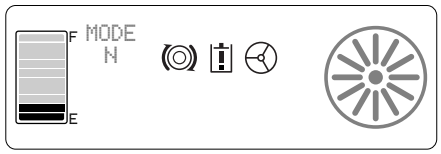
Turn on the key switch.

**When the key switch is turned on.**




After 0.5 second

All preset icons are displayed.

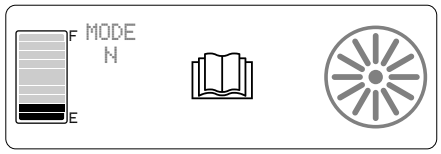



After 2.0 seconds

The self-diagnosis function checks the control system and display “OK!” when no abnormalities are found.

After 1.0 second

The “read manual” icon flashes three times and then shows the normal screen.
If any abnormalities are detected, the error code is displayed.

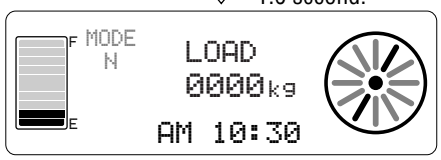



NOTE

If traveling or hydraulic operation is done while showing the checking screen, the normal screen is shown immediately.

**Normal screen**

Three flashes for 1.0 second.




CAUTION

**Contact to your local Nichiyu dealer if the error code is displayed.**

## ▶Mode setting buttons

NOTE

If traveling or hydraulic operation is done while showing the setting screen, the normal screen is displayed immediately.

**Mode select button**

**Normal screen**

**Setting screen**

Press Ⓜ button of the mode selection for more than 3 seconds. ⇨

**Time setting screen**
- Time setting

••• Refer the page 26, item 5

Press Ⓜ button of the mode selection (for less than 3 seconds). ⇨

**Mode setting screen**
- Travel mode setting
- Clock, Hour meter, odometer, lifting height indication selection
- Intensity of display
- Regeneration mode setting

••• Refer the page 24.

Press ◁ or ▷ button of the mode selection. ⇨

**Hour meter readout screen**
- Hour meter readout

••• Refer Function of display (page 20, item ④)

# ■*Function of display*

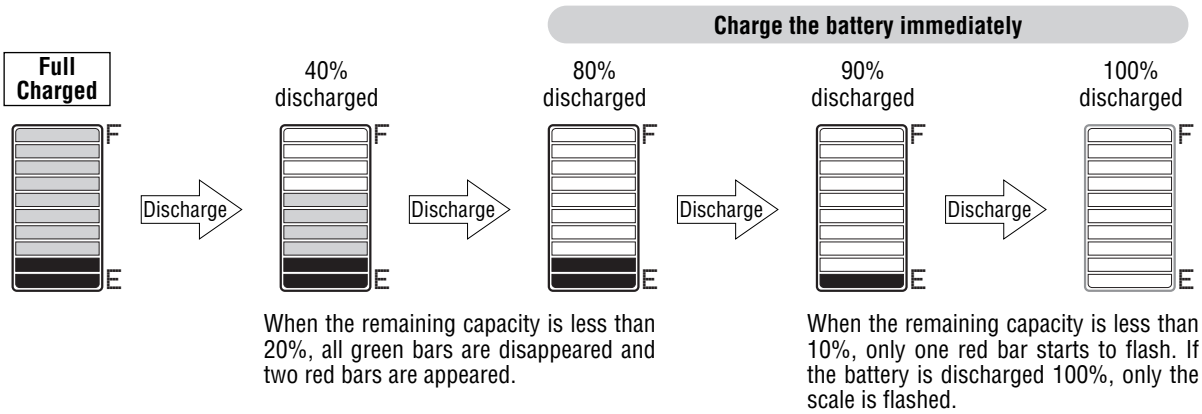
This forklift has the self-diagnosis function.

### ① Battery discharge indicator

The battery discharge indicator shows the discharged condition of the battery.

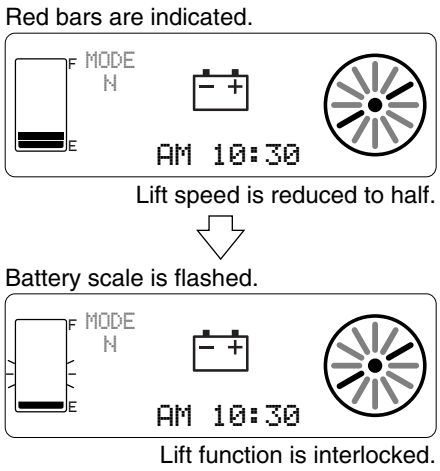
CAUTION

**Do not over-discharge.**
**The battery life can be shorted by over-discharging.**



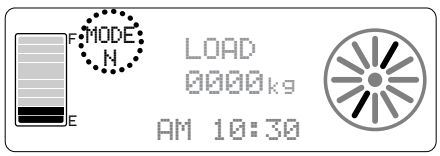

**● Lift interrupt (option)**

When all green bars are disappeared and two red bars are remained, then the lift speed is reduced to half and the battery icon is flashed on the display as well. When only red bar is remained, lift function is interlocked.




### ② Travel mode monitor

The travel mode is indicated on the screen.
Refer “Various kinds of mode selection” section for details.

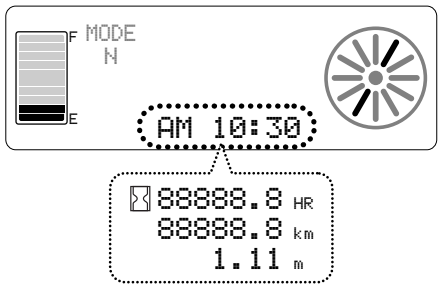


### ③ Weight gauge, traveling speed monitor

When the forklift truck is stopped, the loading weight is indicated. When traveling, the traveling speed is indicated.

### ④ Clock, hour meter, odometer, lifting height monitor

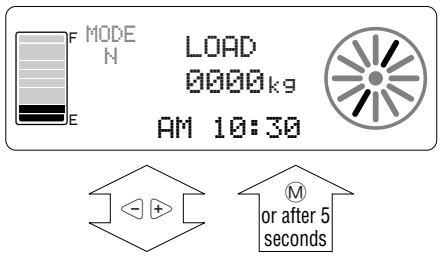
This area shows one of the clock, hour meter, odometer or lifting height which is selected.
Refer “Various kinds of mode selection” section for details.



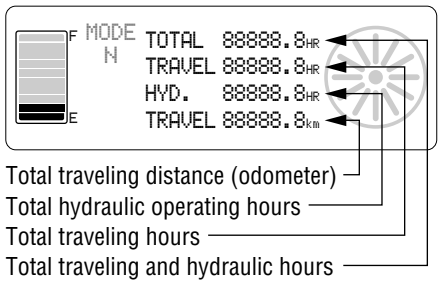

The hour meter shows hours for turning on the key switch. The actual operating hour also can be displayed as option.
It is useful to know the total operating hours for the daily job management and scheduling of the periodical maintenance.

When pressing ◁− or +▷ button, each individual hours for total, travel, hydraulic and odometer are displayed for 5 seconds. The normal screen and hour meter screen can be changed by pressing ◁− or +▷ button. After 5 seconds, the normal screen is displayed automatically.

**Normal screen**



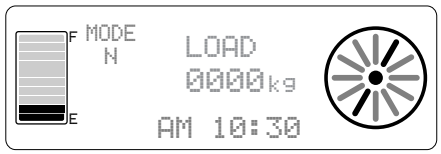

**Hour meter readout screen**




**The hour meter screen is returned to the normal screen even less than 5 seconds by operating traveling or hydraulic function.**

### ⑤ Wheel indicator

This indicator shows the current direction of the drive wheel.

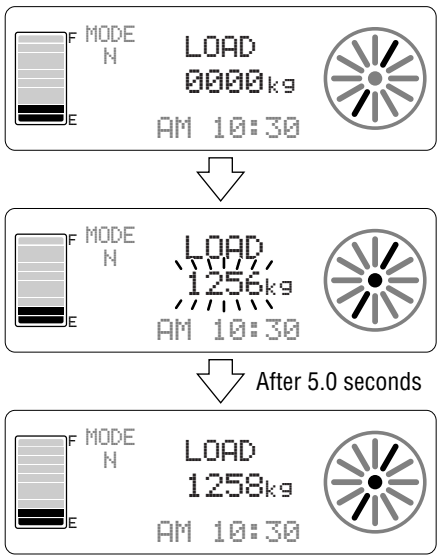


## ○ Loading weight indicator (weight gauge)

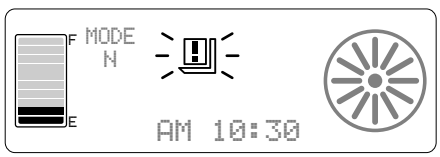
**CAUTION**

- **The indicated weight on the screen is for reference only.**
- **The indicated value is not accurate after lowering or some time later after stopping the hydraulic operation. To get the accurate weight, raise the fork about 500mm above the floor and stop. Then the indicated weight is the most accurate.**
- **After stopping to lift, if the actual load weight is changed within 50kg by picking or removing loads, the indication on the screen may not be changed.**
- **This function cannot use as the official weight gauge.**

After stopping to travel, raise the fork about 500mm above the floor. After stopping to lift, the indication is flashed about 5 seconds. (hydraulic pressure is fluctuated for about 5 seconds) Read the indicated value after stopping to flash.

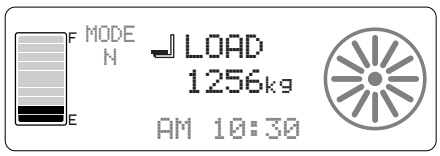



**Overload detection (option)**
When the forklift truck detects overloading, the "LOAD" and the weight indications are disappeared and the overload icon starts to flash on the screen with beeping.



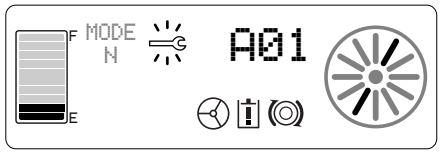

**NOTE**

Zero adjustment (for NET weight)
After grabbing the pallet on the fork, push ◁ button to adjust the weight of the pallet.
By pushing the ◁ button again, the screen is returned to the normal indication without adjustment.
The zero adjustment cannot be done when flashing the weight indication.



### ⑥ Service (spanner) icon

This icon warns the fault of the forklift truck to an operator. If a fault is detected, this icon flashes and the presumed defective part is shown on the display with beeping sound. If some different defects are detected, all related icons are flashed on the screen.

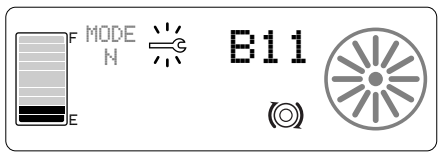



CAUTION

- **When following errors are detected, traveling, hydraulic and power steering functions are interlocked.**
  **B11 - B19, C20 - C24 or C29, D30 - D39, or G60 - G62.**
- **When these errors are displayed, the mode select button does not function.**

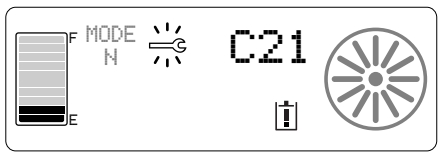
### ⑦ Safety monitor (for travel circuit)

When fault is detected in the travel circuit, the service icon is flashed and the presumed defective error code is displayed.



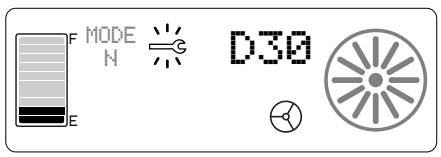

### ⑧ Safety monitor (for hydraulic circuit)

When fault is detected in the hydraulic circuit, the service icon is flashed and the presumed defective error code is displayed.



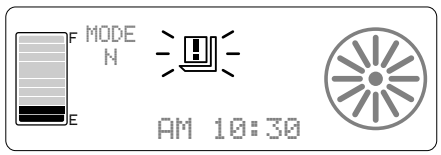

### ⑨ Safety monitor (for power steering circuit)

When fault is detected in the power steering circuit, the service icon is flashed and the presumed defective error code is displayed.



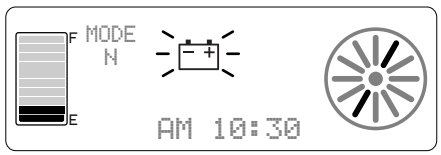

### ⑩ Safety monitor (for overloading) (option)

When overloading is detected, the overload icon is flashed.



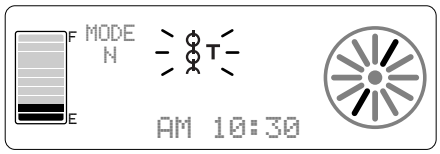

### ⑪ Safety monitor (for battery)

When the battery is discharged, the battery icon is flashed.



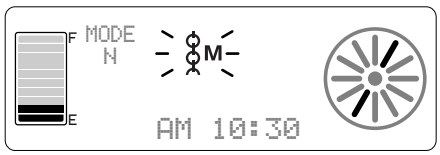
### ⑫ Safety monitor (for chain slacking / table side)

When the lift chain of the table side is slacked, the monitor icon is flashed and the lowering and traveling functions are interlocked.
Raise the fork a little to get recover the chain.



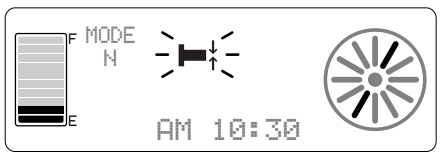

### ⑬ Safety monitor (for chain slacking / mast side) (for 3-stage mast only)

When the lift chain of the mast side is slacked, the monitor icon is flashed and the lowering and traveling functions are interlocked.
Raise the fork a little to get recover the chain.



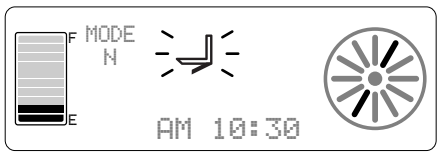

### ⑭ Safety monitor (for accelerator grip)

When the key switch is turned on with turning the accelerator grip, the monitor icon is flashed and the truck does not run. Release the accelerator grip and turn on the key switch.



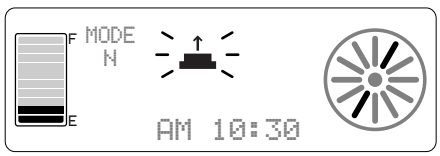

### ⑮ Safety monitor (for pallet lock cancellation)

When the pallet lock switch is turned off with opening the operator guard over the pre-stop lifting height, the pallet lock icon is flashed. Turn on the pallet lock switch, or close the operator guard.



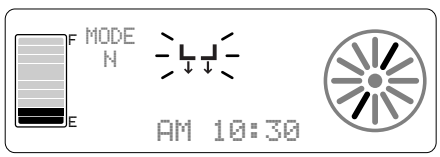

### ⑯ Safety monitor (for lift button)

When the key switch is turned on with pushing the lift or lower button, the lift button icon is flashed and the hydraulic function is interlocked.
Release the lift and lower buttons before turning on the key switch.




### ⑰ Safety monitor (for safety guard)

When the operator guard (safety guard) is opened (not engaged) and operate the accelerator or hydraulic buttons, the safety guard icon is flashed and the truck does not move. Close (engage) the guard securely.



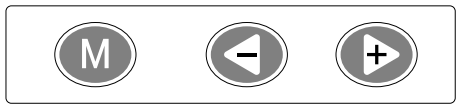
# ■ Various kinds of mode selection

1 **Travel mode setting**
2 **Meter mode setting**
3 **Display brightness adjustment**
4 **Neutral regeneration setting**
5 **Time setting**

CAUTION

**If traveling or hydraulic operation is done while setting, the display is returned to the normal screen immediately.**

Press Ⓜ button. Then the travel setting mode screen is shown.




## 1 Travel mode setting

This screen is used to set the travel mode.
Press ⊖ or ⊕ button to set. After setting, press Ⓜ button to change the screen for meter mode setting.

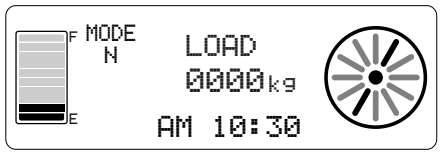
The travel mode has following three settings.

**E : Economy**
This mode is convenient for the slow speed inching. This mode saves the battery energy consumption also.

**N : Normal**
This is the normal traveling mode. The quick acceleration and smooth inching can be realized.

**P : Power**
This is the most powerful mode for acceleration.

**Normal screen**




Ⓜ Less than 3 seconds

**Travel mode setting screen**

Traveling mode is flashed
Choose E, N or P by ⊖ or ⊕ button.

Ⓜ

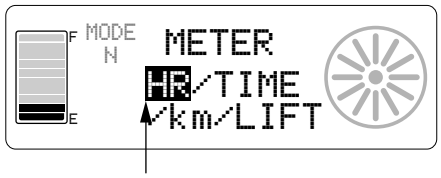
**Go to the meter mode setting screen.**

## 2 Meter mode setting screen

The hour meter, clock, odometer or lifting height can be selected to display on the screen.
Press ⊖ or ⊕ button to choose the mode.
After setting, press Ⓜ to change the screen for the display brightness adjusting.

When ⊖ or ⊕ button is pushed on the normal screen, the hour meter setting screen is displayed.

**Meter mode setting screen**




Meter mode is flashed.
Press ⊖ or ⊕ button so choose HR, TIME, km or LIFT.

Ⓜ

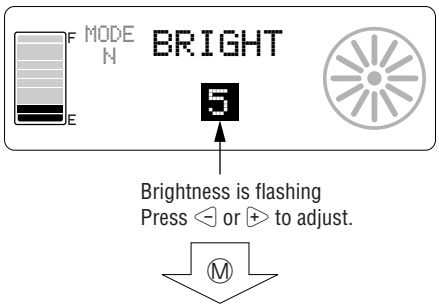
**Go to the display brightness adjust screen.**

### 3 Display brightness adjust screen

The brightness of the screen can be adjusted on this screen.

Make sure that “BRIGHT” and the number are displayed on the screen.
Press ◁ or ▷ button to adjust the brightness of the screen.
Brightness can be adjusted from 0 to 7 (7 steps).
After adjustment, press Ⓜ button to change the screen for the neutral regeneration setting.

**Display brightness adjustment screen**




**Go to the neutral regeneration setting screen.**

NOTE

Refer the table below for the brightness setting.

| BRIGHTNESS | | |
|---|---|---|
| 0<br>Dark | ⟷ | 7<br>Bright |

CAUTION

**If traveling or hydraulic operation is done while showing the mode setting screen, the normal screen is displayed immediately.**

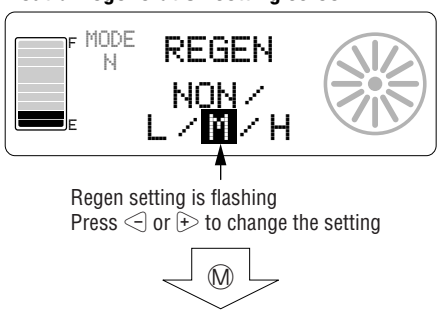
### 4 Neutral regeneration setting

This mode can be set the regenerative braking force.

NOTE

**Neutral regeneration :**
The electric brake is applied when releasing the accelerator pedal while traveling. The braking force can charge the battery and save the battery energy.

**Neutral regeneration setting screen**




**Return to the normal screen**

Make sure that the REGEN screen is displayed. Press ◁ or ▷ button to choose the mode. The neutral regenerative force can be set to NON, L (LOW), M (MID) or H (HIGH).

NOTE

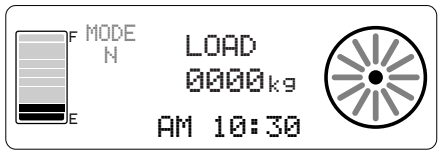
Default setting is MID.

After setting press Ⓜ button to return to the normal screen.

## 5 How to set the time

When the Ⓜ button is pressed for more than 3 seconds, the time setting screen is displayed.
To return to the normal screen, press Ⓜ again.

**Normal screen**




Ⓜ More than 3 seconds

### ① Setting of "AM" or "PM"

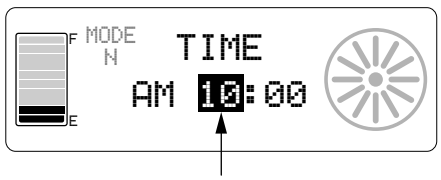
Make sure that AM or PM is flashing. Then press ⊖ or ⊕ to change the setting.
Press Ⓜ button to get the time setting screen.

AM or PM is flashing
Set AM or PM by ⊖ or ⊕ button.

Ⓜ

### ② Hour setting

Make sure that the hour is flashing.
Press ⊖ or ⊕ to change the hour.
Hour can be set between 1 and 12.
After setting, press Ⓜ button to change the minute.

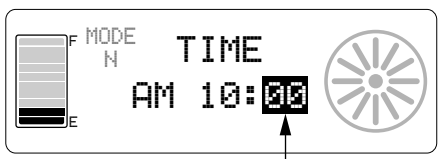



Hour is flashing
Set the hour by ⊖ or ⊕ button.

Ⓜ

### ③ Minute setting

Make sure that the minute is flashing.
Press ⊖ or ⊕ to change the minute.
Minute can be set between 00 and 59.
After setting, press Ⓜ button.




Minute is flashing
Set the minute by ⊖ or ⊕ button.

Ⓜ

Then, "COMPLETE" is flashed three times and return to the normal screen.

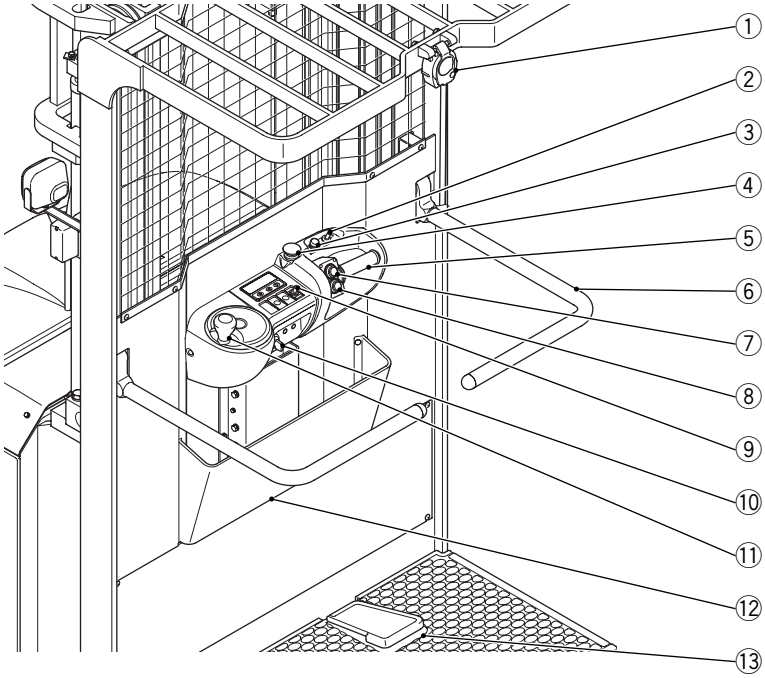
"COMPLETE" message flashes 3 times.

**Return to the normal screen.**

CAUTION

**The second is set to "00" when ⊖ or ⊕ button is pressed.**

# ■Operating equipment

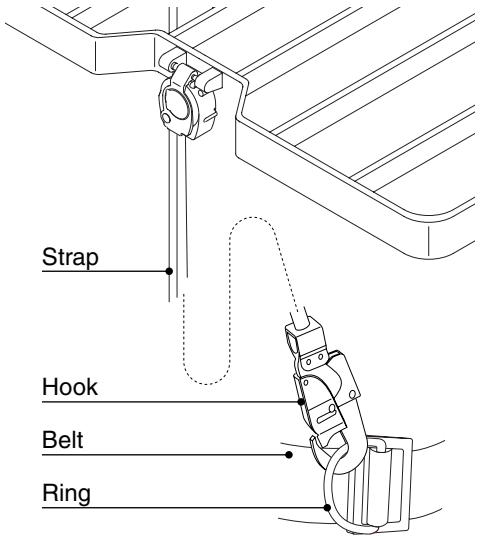



① Safety strap
② Turn signal switch
③ Horn button
④ Emergency button
⑤ Accelerator grip
⑥ Safety guard
⑦ Lift button
⑧ Lower button
⑨ Pallet lock cancel switch
⑩ Key switch
⑪ Steering wheel
⑫ Glove compartment
⑬ Brake pedal

(Illustration shows the drive-front type)

### ① Safety strap

In case of falling the operator from the operator compartment, this strap holds the operator's body to reduce damages.




WARNING

- **Always use the safety strap while operation.**
- **Make sure that the safety strap is hung on the overhead guard correctly. Pull the strap and fix the hook on the ring on the belt.**

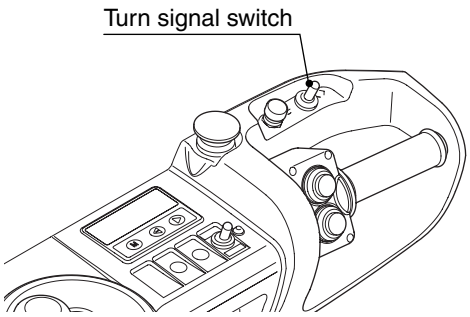
WARNING

- **Carry out the inspection of the strap every month by following the attached instruction on the strap.**
- **The safety strap can use one time only. If any impacts are applied to the strap, never use again and replace to the new one immediately.**
- **Even no impact is applied, replace the strap every two years to keep the best performance.**

### ② Turn signal switch

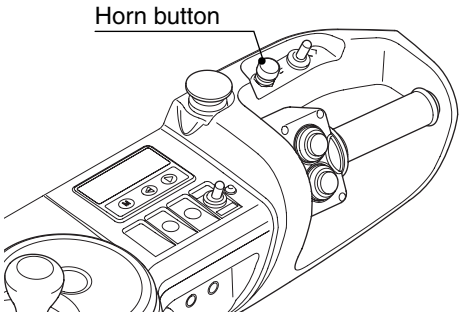
Use the turn signal lamp when turning.

- When the switch is turned to the right, the right hand side lamp is flashed.
- When the switch is turned to the left, the left hand side lamp is flashed.



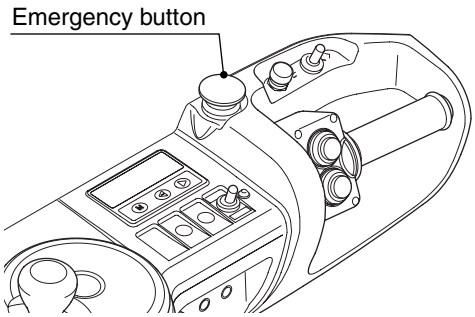

### ③ Horn button

The horn sounds by pushing this button.




### ④ Emergency button

When pushing the emergency button, traveling, lifting and lowering functions are stopped.
To cancel the emergency stop condition, turn the knob of the emergency button to clockwise and turn off and on the key switch.




CAUTION

**Do not use this button except the emergency case.**

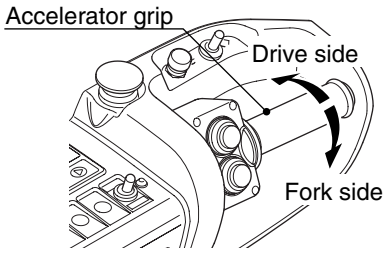
### ⑤ Accelerator grip

Change the traveling direction and speed.
When releasing the grip, it returns to the neutral position by itself.

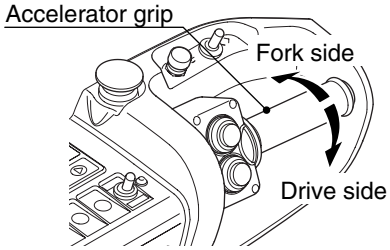
Traveling direction

| | Turn the grip to forward | Turn the grip to backward |
|---|---|---|
| **Drive-front type** | Drive side | Fork side |
| **Fork-front type** | Fork side | Drive side |

**[Drive-front type]**

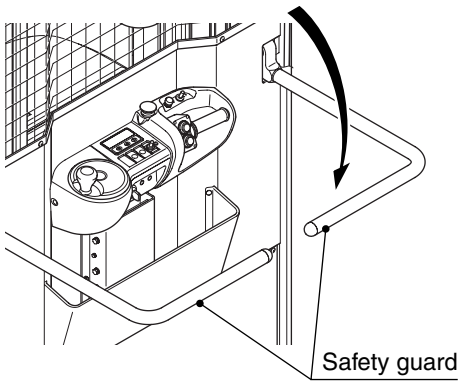



**[Fork-front type]**



### ⑥ Safety guard

The safety guard shall be closed while operation.




NOTE

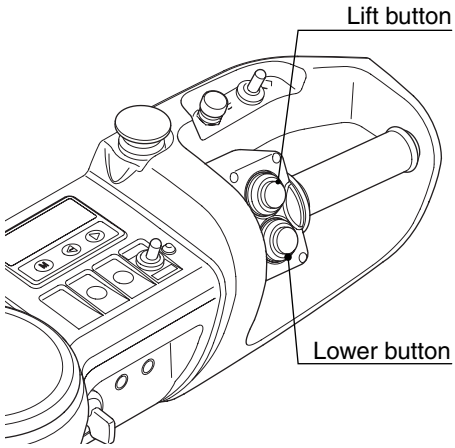
If the guard is opened when the lifting height is more than the pre-stop height and the pallet lock device is disengaged, the warning buzzer is beeped.

### ⑦ Lift button

- Push lightly : The fork lifts with slow speed.
- Push to the end : The fork lifts with high speed.
- Release the button : Stop lifting.

### ⑧ Lower button

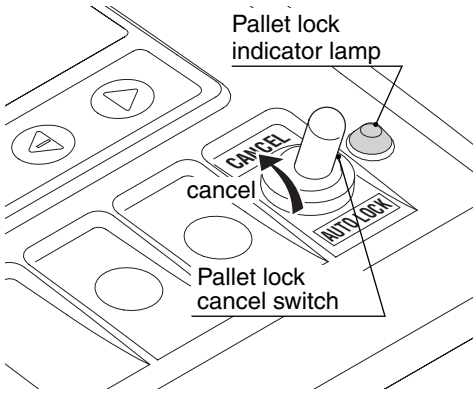
- Push lightly : The fork lowers with slow speed.
- Push to the end : The fork lowers with high speed.
- Release the button : Stop lowering.




NOTE

When lowering, the fork is stopped at the pre-stop height to prevent hitting the floor strongly.
To lower to the bottom, release the lower button once and push again.

### ⑨ Pallet lock cancel switch



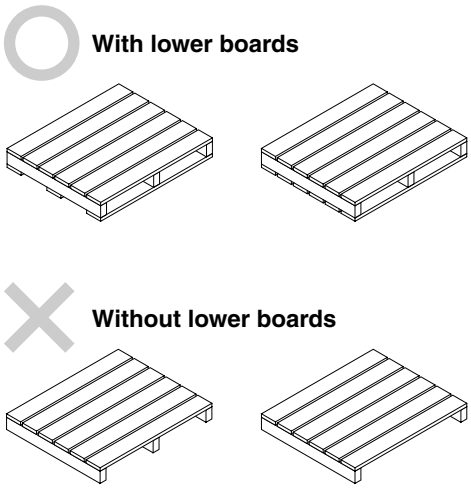

NOTE

**Automatic pallet locking system :**

- This device secures the pallet on the fork. The pallet does not move so much even if the operator rides on the edge of the pallet, however, do not ride on the edge of the pallet for safety sake.
- When inserting the fork into the pallet and raise the fork more than the pre-stop height, the pallet lock devise activates automatically. Then, the pallet lock indicator lamp is lit on the dash. When the pallet is stored in the shelf of the rack, or when lowering less than the pre-stop height, then the pallet lock is released automatically.
- The pallet lock function is activated automatically. So, any operations are not required in the normal operation.

The pallet lock cancel switch can be used if the pallet is required to release. Usually, this switch should be turned off to activate the pallet lock automatically.

**If the pallet does not have the lower board (such as the skid-type pallet), the pallet locking device does not activated. Make sure that the pallet locking device is activated properly before use the forklift truck.**



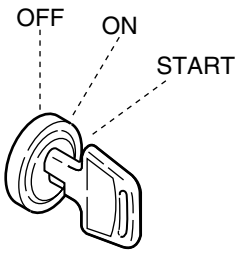

If the forklift truck detects the error, the truck does not move. Use the proper pallet to activate the pallet lock.
When the key switch is turned off and turned on again, the error is reset but the same thing happens again when detecting the improper pallet.

### ⑩ Key switch

**OFF** : This position turns off all electric circuit except some accessories. The key can be insert or remove at this position.

**ON** : After turning on all electric circuit, the key is held in this position.

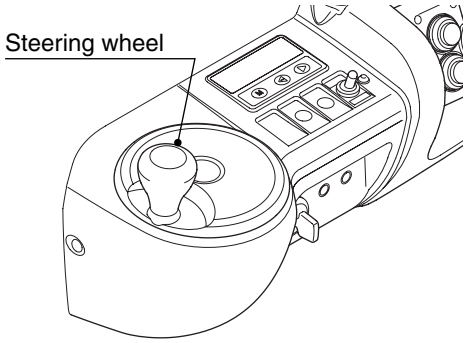
**START** : Turn the key into the right from the [ON] position to engage the truck function. The [START] position connects all electric circuits to allow the operation of the forklift truck and the display is turned on.




**Turn the key switch off when leaving the forklift truck or charging the battery.**

### ⑪ Steering wheel

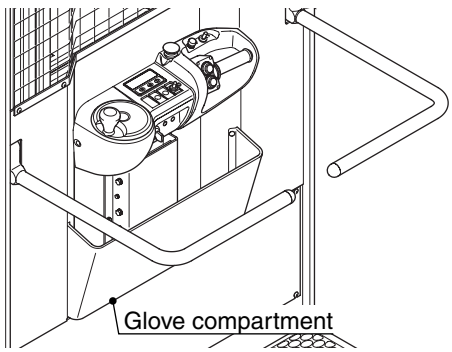
Grasp the wheel knob by the left hand for steering operation.
The direction of the drive wheel is indicated on the screen.




The height of the control panel can be adjusted 50mm.

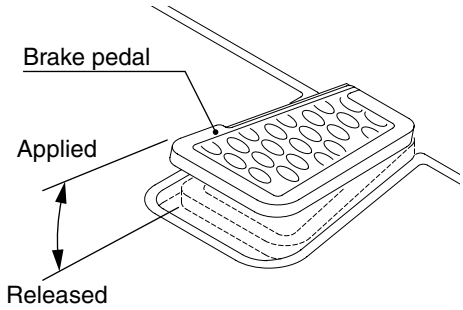
### ⑫ Glove compartment

For store some items such as the operator's manual.



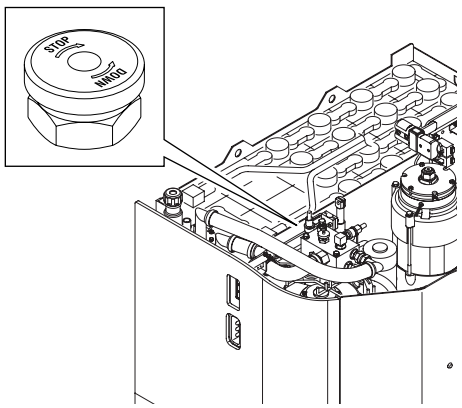
### ⑬ Brake pedal

The brake is released and the electrical travel circuit is connected by depressing the brake pedal.
The brake is applied and the electrical travel circuit is disconnected by releasing the brake pedal. (Deadman brake system)




### Knob for emergency lowering

If the problem happens and the lowering function does not work, open the cover of the chassis and find the lowering knob.
When turning the knob to the direction of “DOWN”, the operator’s compartment is lowered.
Turn the knob to the direction of “STOP” to stop lowering.



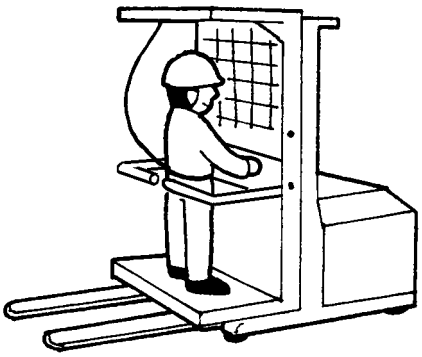

CAUTION

**Make sure the safety around the forklift truck and operator’s compartment before lowering.**

# 3 DRIVING AND OPERATION

**Do not operate the forklift truck prior to daily inspection.**
**Inspect the forklift truck before you operate it to be sure that it is properly maintained and in a good working order.**

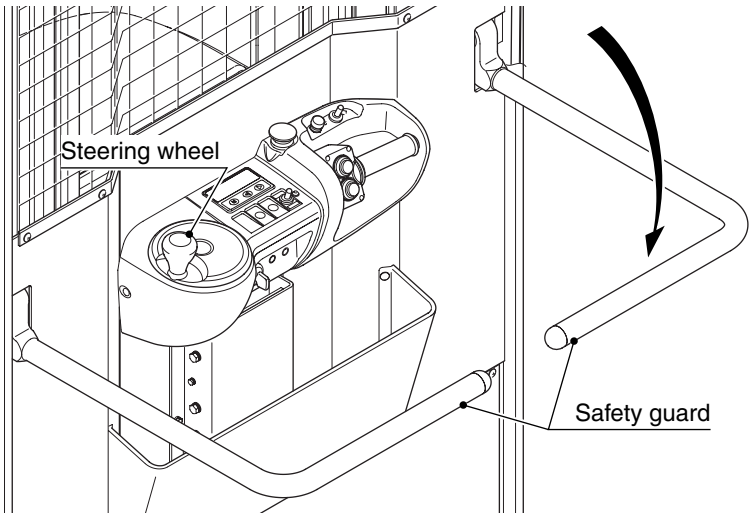
## ■Preparation of start



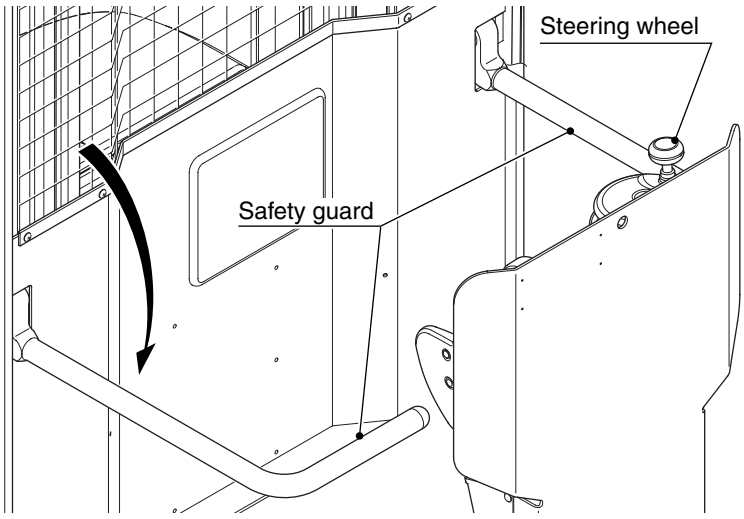
1) Set the safety strap and close the safety guard.

If the safety guard is not closed completely, the forklift truck does not move.

**Drive-front type**




**Fork-front type**

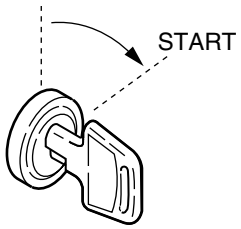


2) Make sure that the accelerator grip is in a neutral position.

NOTE

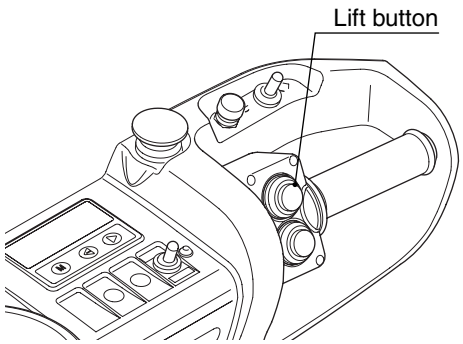
- If turning on the key switch with pressing the lift or lower button, the error is detected, Release the lift and lower buttons and turn on the key switch again.
- If turning on the key switch with turning the accelerator grip, the error is detected. Release the accelerator grip and turn on the key switch again.

3) Turn on the key switch.
Grasp the steering wheel knob and then turn on the key to the “START” position.

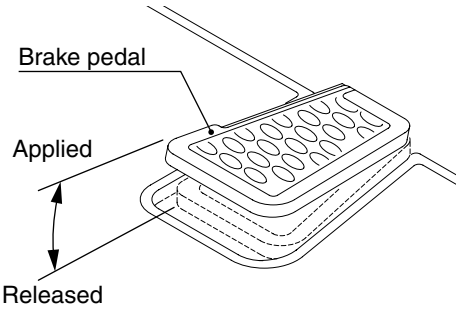



4) Push the lift button to raise the fork to about 200 or 300mm high from the ground.

5) If traveling uneven road or slope (more than 1 degrees), keep the fork height less than 500mm.



# ■Traveling



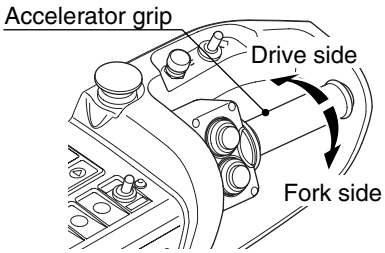

### 1) Start

Depress the foot switch and turn the accelerator grip gradually. Then the truck starts to move.

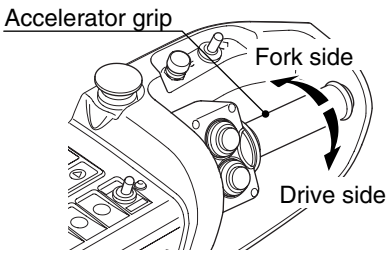
Traveling direction

| | Turn the grip to forward | Turn the grip to backward |
|---|---|---|
| **Drive-front type** | Drive side | Fork side |
| **Fork-front type** | Fork side | Drive side |

**[Drive-front type]**




**[Fork-front type]**




NOTE

The travel speed can be adjusted by the turning angle of the accelerator grip.

CAUTION

**Do not start or stop suddenly.**

- Sudden start or stop can cause the load to fall off.

### 2) Reducing speed

Return the accelerator grip to the neutral position.

CAUTION

**The traveling speed must be reduced in next cases.**

- **At a corner**
- **Approaching to loads**
- **Approaching to the loading area**
- **In a narrow aisle**
- **On the bad surface of the road**

### 3) Turning

CAUTION

**When turning, slow the speed down and steer the wheel carefully.. Make sure the tail swing area is clear.**

- Sudden or high speed turning can cause the load to fall off or turnover of the forklift truck.

NOTE

If the lifting height is between 500mm and 4900mm, the truck speed is reduced automatically by the steer angle. However, the turning at high lifting position is very dangerous. Keep the lifting height less than 500mm and travel slowly when turning.
If the lifting height is more than 4900mm, the truck does not run.

### 4) Stopping

Release the accelerator grip. Then release the brake pedal to stop.

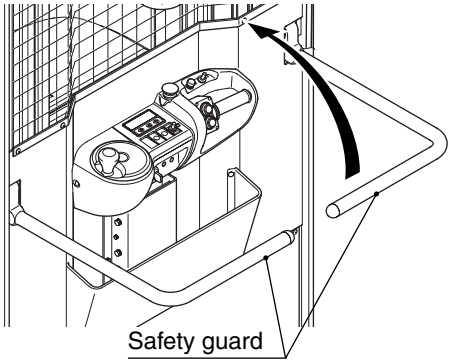
CAUTION

**Do not stop suddenly.**
**Sudden stop can cause falling loads or turnover the forklift truck.**

### 5) Parking

CAUTION

- **When parking the forklift truck, lower the fork to the floor.**
- **When leaving the forklift truck, remove the key.**
- **Open the safety guard and raise it to the highest position.**



# ■Stacking operation

Illustrations on this page show the drive-front type forklift truck. If your truck is the fork-front type, the operating direction is opposite.

CAUTION

- **Check following matters before operating the forklift truck.**
- **Make sure that the operating area is clear.**

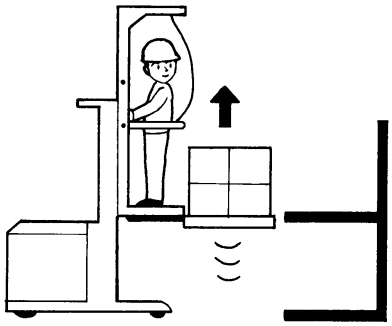
When stacking a load, observe following procedures.

① Slow down the travel speed.

② Stop in front of the stacking place.

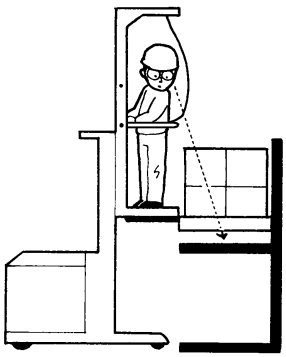
③ Check for safety around the stacking area.

④ Adjust the position of the forklift truck to be square with the stacking place.

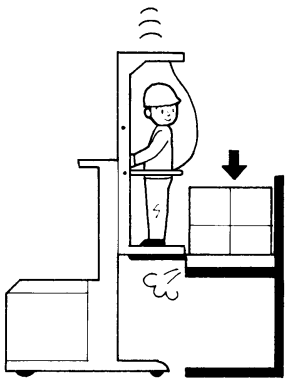


⑤ Lift up the load slowly above the stacking height.

⑥ Make sure the stacking position and move backward slowly. Stop the truck at the stacking position.



⑦ Lower the load slowly to put on the stacking position.

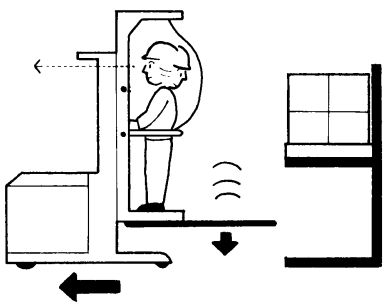


NOTE

When the load is not aligned at front or rear end ;

1) Lower the fork until the load is put on the shelf, and the fork is free from the pallet.
2) Move forward about 1/6 length of the fork.
3) Lift (50 to 100mm) the fork again and move backward to align the load. Then, lower again in the position slowly.

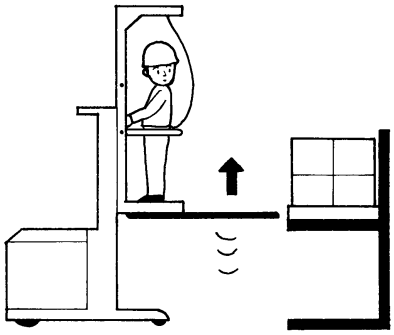
⑧ Make sure the safety of forward direction. Then move forward slowly to remove the fork from the pallet. Do not hitch the fork on the pallet or the load.



⑨ Make sure that the tips of the fork is off the load or pallet. Then, lower the fork to the pre-stop height.

# ■Picking operation

Illustrations on this page show the drive-front type fork-lift truck. If your truck is the fork-front type, the operating direction is opposite.



When picking a load, observe following procedures.

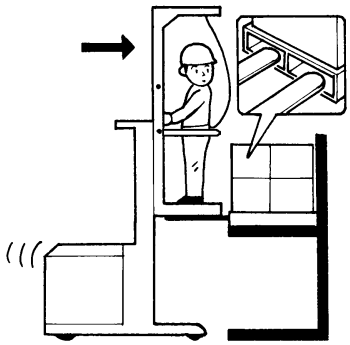
① Slow down the travel speed.

② Stop in front of the picking place.

③ Adjust the position of the forklift truck to be square with the picking place.

④ Make sure that the picking load is not collapsed.

⑤ Lift up the fork slowly to the pallet position.

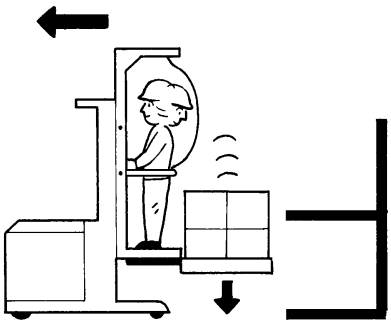


⑥ Make sure the fork inserting position of the pallet and move backward slowly until the fork is inserted in the pallet completely.

NOTE

When the fork cannot insert into the pallet completely;
1) Insert the fork into the pallet about 3/4 length of the fork. Raise the fork about 50 or 100mm. Then move forward to pull the pallet out of the shelf about 100 or 200mm. Then, lower the pallet on the shelf.
2) Insert the fork again into the pallet completely.

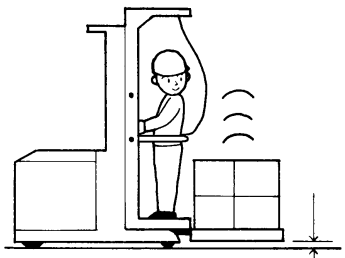
⑦ Raise the fork about 50 or 100mm.



⑧ Make sure the safety of forward direction. Then move forward slowly to remove the pallet from the shelf.

⑨ Lower the fork slowly to the pre-stop height.

⑩ Transport the load to the destination.



150-180mm

# ■Safety tips for picking a load

CAUTION

**Make sure following things before operation.**
- **Pallets or loads are not overhanged from shelves.**
- **No obstacles are stayed on the aisle.**
- **No damage on the pallet.**
- **Pallet is securely locked on the fork.**

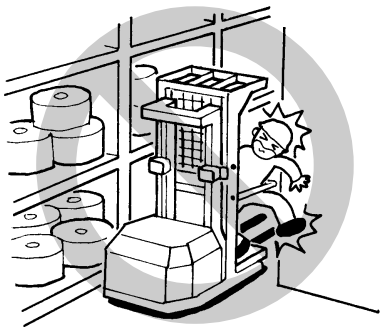
When picking the load,

① Wear the hard hat and safety strap. Close the operator guard.

② Insert the fork into the pallet completely.

③ Move the forklift truck to the picking position.

④ Slow down to approach the picking area and stop at the position.



CAUTION

**When traveling in the aisle,**
- **Do not put head or hands over the chassis.**
- **Do not travel over obstacles.**
- **Travel straight.**

NOTE

- If the lifting height is between 500mm and 4900mm, the truck speed is reduced automatically by the steer angle. However, the turning at high lifting position is very dangerous. Keep the lifting height less than 500mm and travel slowly when turning. If the lifting height is more than 4900mm, the truck does not run.
- The guide roller for safe traveling in the aisle is available as option.

⑤ Raise the fork to the picking position.

WARNING

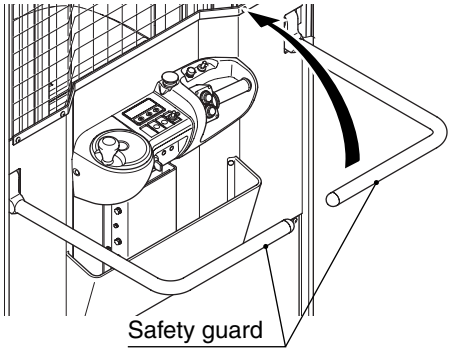
- **Make sure that the safety strap is worn correctly and the pallet is fully inserted by the fork and locked by the pallet lock device.**
- **When lifting or lowering, stop traveling completely.**

⑥ Stop lifting when matching the height of the fork and the shelf.

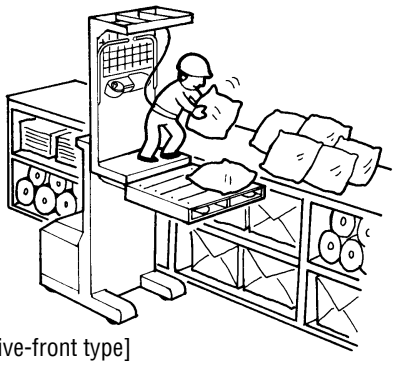
⑦ Turn off the key switch.

⑧ Face to the fork side.

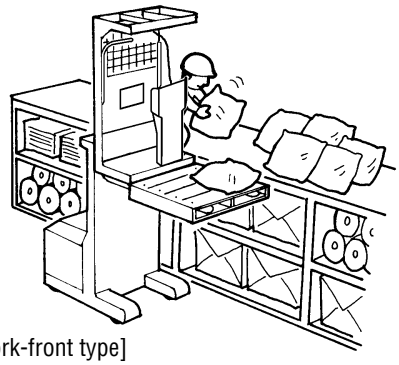
⑨ Raise the operator guard fully.




⑩ Pick items from the shelf and put them on the pallet on the fork.



[Drive-front type]



[Fork-front type]

CAUTION

- **Put picked items evenly on the pallet.**
- **Do not ride on the pallet.**
- **Do not straddle on the shelf and the forklift truck when picking items.**

⑪ Close the safety guard completely after finishing picking.

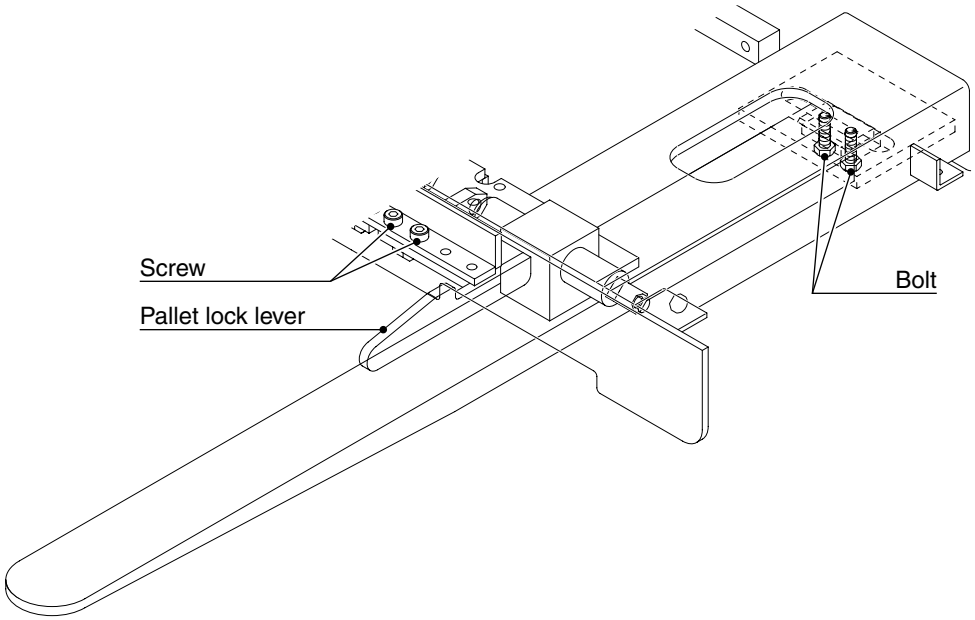
⑫ Face to the control panel side and turn on the key switch.

⑬ Lower the fork to about 500mm high from the ground.

⑭ Move to the destination.

# ■Fork position adjustment

By loosening the fitting bolt of the fork, the fork can be moved to right or left to adjust the fork spread.
Tighten all bolts securely after adjustment.

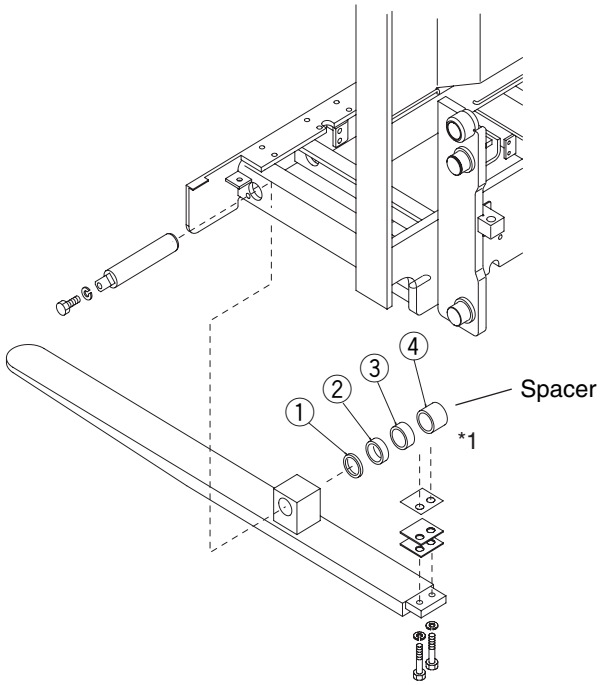



CAUTION

- **When changing the fork position, the pallet lock lever is also required to change the position.**
- **Contact to your local Nichiyu dealer to adjust the fork position.**

# ■Fork spread adjustment

The fork spread can be adjusted by change of the four spacer's conbination and by loosening the fitting bolts. Tighten all bolts securely after adjustment.



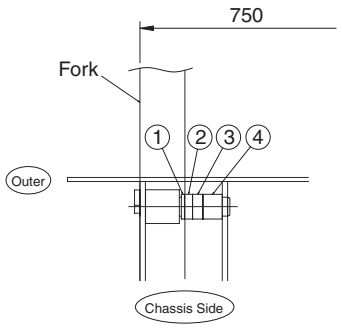
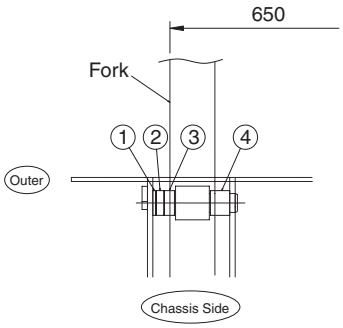
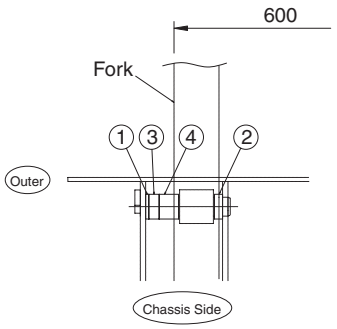
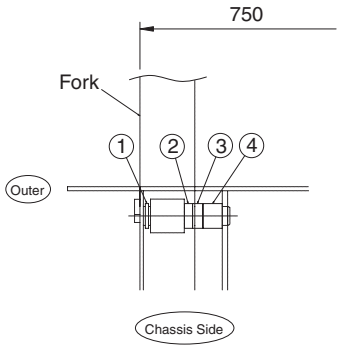
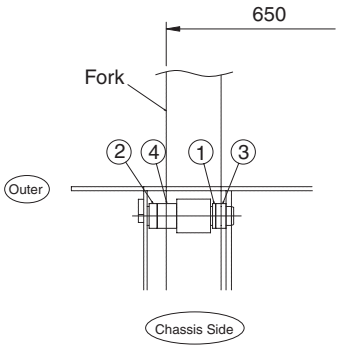
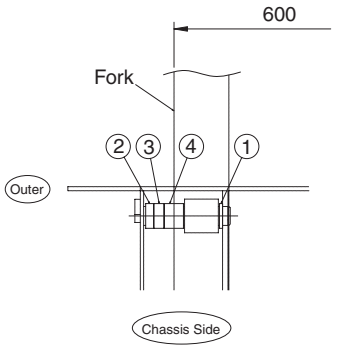

APPLICABLE TRUCKS
RB10-70 : 415AD0762~
RB15-70 : 416AD0290~

*1 : RB10 / Fork spread width 750mm (STD)

Spacer

| No. | Parts Number | L (mm) |
|---|---|---|
| ① | 50006-63080 | 7 |
| ② | 50006-63090 | 18 |
| ③ | 50006-63100 | 23 |
| ④ | 50006-63110 | 43 |

Spacer's conbination

| | Fork spread width 750mm (STD) | Fork spread width 650mm | Fork spread width 600mm |
|---|---|---|---|
| RB10 |  |  |  |
| RB15 |  |  |  |

# 4 BATTERY AND CHARGER

## ■Battery

CAUTION

- **This section explains NICHIYU's genuine battery and charger.**
- **When the lift truck is equipped with another type battery and/or charger, please follow the instructions provided by that manufacturer.**

### ▶ Keep away from fire (Explosive gas)

DANGER

- **Never allow open flame to come near the battery.**
- **Explosive gas is always present in the battery.**
- **Smoking, flames, or sparks will result in battery explosions.**

### ▶ Pay attention to an electric shock

DANGER

**Do not make a short circuit.**
**The battery has high voltage and power.**

WARNING

**When servicing the battery, wear the safety goggles, rubber gloves and boots.**

### ▶ Connect correctly

DANGER

**Do not swap the positive and negative terminals.**

- It can cause sparking, burning and/or explosion.

### ▶ Keep tools away

DANGER

**Keep tools away from terminals to avoid sparks or shorting.**

## ▶ Do not over-discharge

CAUTION

**Do not use the forklift truck until no longer run, it will shorten the battery life.**

- When the battery discharge indicator shows empty, charge the battery as soon as possible.

## ▶ Keep clean

WARNING

- **Keep the upper surface of the battery clean.**
- **Do not use a dry cloth when cleaning, as it may produce static electricity.**
- **Wear the safety goggles, rubber gloves and boots.**

WARNING

**Clean the battery before charging.**

## ▶ Wear safety clothes

WARNING

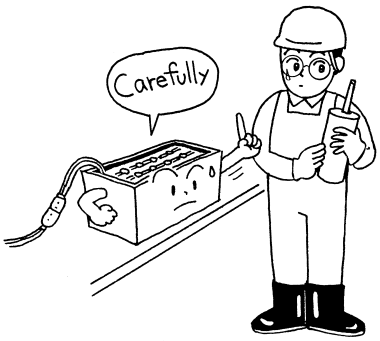
**Wear safety goggles, rubber gloves and boots to protect yourself.**

## ▶ Be careful the electrolyte

WARNING

**Be careful the electrolyte does not touch the skin.**

- Electrolyte of the battery is sulfuric acid.



## ▶ Emergency first aid

**The battery contains sulfuric acid which causes severe burns if touched.**
**If an accident occurs, receive emergency first aid and consult your physician immediately.**

- **Spilled on skin:**
  **Wash down with water for 10 to 15 minutes.**
- **Splashed in eye:**
  **Wash down with water for 10 to 15 minutes.**
- **Swallowed:**
  **Drink large amounts of milk or water.**
- **Splashed on clothes:**
  **Take off clothes immediately.**

**If you do not follow these instructions, you will be seriously injured or killed.**

## ▶ Close vent caps securely

**Make sure all vent caps are closed securely. Failure to close the caps can cause leaking of electrolyte.**

## ▶ Washing

**Do not wash the battery on the forklift truck. It causes damage to the truck.**

## ▶ Abnormal battery

**If the battery shows the following situation, contact NICHIYU's qualified service facility or battery manufacturer.**

- **The battery stinks.**
- **The electrolyte is muddy.**
- **The electrolyte decreases fast.**
- **The temperature of electrolyte is too high.**

## ▶ Do not disassemble the battery.

**Do not drain the electrolyte, disassemble and repair the battery.**

## ▶ Storage

CAUTION

- **When storing the battery, store in a well-ventilated and dry place.**
- **Keep the battery away from open flames or ignitions.**

## ▶ Do not dispose of used batteries.

CAUTION

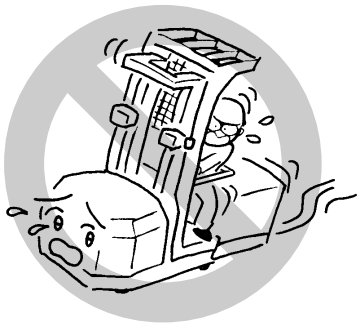
**Please contact NICHIYU's qualified service facility or the battery manufacturer for disposal.**

# ■*Precautions for charging the battery*

## ▶ Check electrolyte level

CAUTION

**Do not use the forklift truck if the electrolyte level is low.**



- Failure to keep proper level of the electrolyte can cause overheating or burning of the battery and electrical components of the forklift truck.
- Check electrolyte level once a week. If the level is low, add distilled water to the specific level.

## ▶ Do not over-charge.

CAUTION

**Do not over-charge the battery.**

## ▶ Pay attention to an electric shock

CAUTION

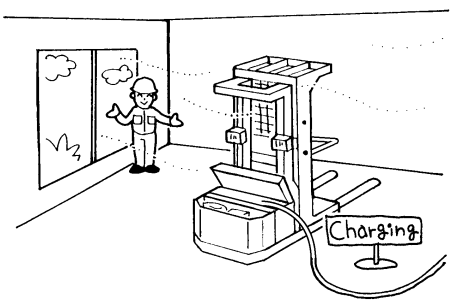
**Do not touch the terminal or transformer when charging.**

- The charger has high voltage and power when working.

## ▶ Charge in well-ventilated areas.

WARNING

- **Charge batteries only in approved and well-ventilated areas.**
- **Explosive gas comes out of the battery while charging. If you use the local supply charger, follow its manufacturer's instruction.**



## ▶ Open the top cover

CAUTION

- **While charging the battery, the hydrogen gas is produced and need to open the top cover to diffuse.**
- **When the top cover is closed, the charging function does not start. (Built-in charger)**

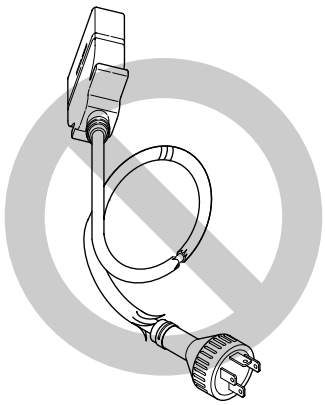
## ▶ Check cable and plug

CAUTION

**Prior to charging, check the condition of the cable and plug.**

CAUTION

**Do not charge the battery if cable or plug is damaged.**



## ▶ Check specific gravity

CAUTION

**Measure the specific gravity of all cells before charge.**

- The abnormality of the battery may be found by comparing of the specific gravity before and after charging.
  (Refer the section “Reading of specific gravity”)

## ▶ Interruption of charge

CAUTION

- **When interrupting the charge, push the STOP button of the charger before disconnecting plugs.**
- **Failure to observe this instruction can cause a hazardous electrical shock or explosion of the battery by sparking.**

## ▶ Kinds of charge

- There are three kinds of charge. These charges are a normal charge, a balancing charge and a supplementary charge.
- Charging time depends on the discharging condition and capacity of the battery.
- Generally, 8 to 10 hours are required to charge the battery fully.

| Classification | Application |
|---|---|
| Normal charge | After daily operation or when the “E” segment of the battery discharge indicator is lit. |
| Blancing charge | Every two weeks (Check electrolyte level and specific gravity ) |
| Supplementary charge | In a recess |
| Charge for storage | Carry out the blancing charge before storing the battery for an extended time. (Periodical charge for every 15 to 30 days during storage is recomended.) |

# ■Charger

**Use the same value of a fuse for replacement.**
**If you need to replace the fuse for the charger, disconnect all input and output plugs first.**

**The supplied voltage should be stabilized within ±10% of the rated input voltage.**

**The charger should be used within 0°C to + 40°C ambient temperature.**
**If the temperature is 40°C or above, the charger may be overheated.**

**The charger shall be protected from the moisture such as rain and snow.**
**Failure to do so can cause an electrical short and/or fire.**

**Do not use for other purpose.**
**The charger is designed to charge the battery for the forklift truck.**

**Inspect plugs and cables of the charger periodically.**
**If you find any damages, do not use the charger until it is repaired.**

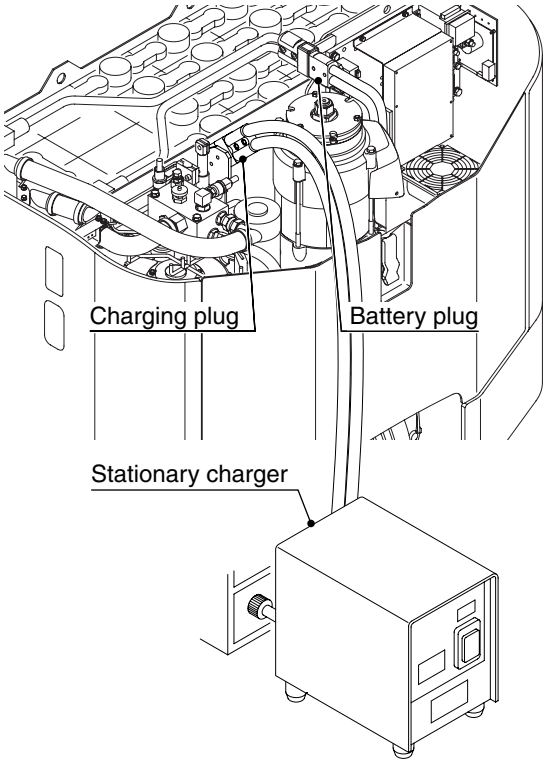
**The ground cable shall be connected.**
**Otherwise, an electrical shock hazard may be caused.**

**Do not disassemble or modify the charger.**

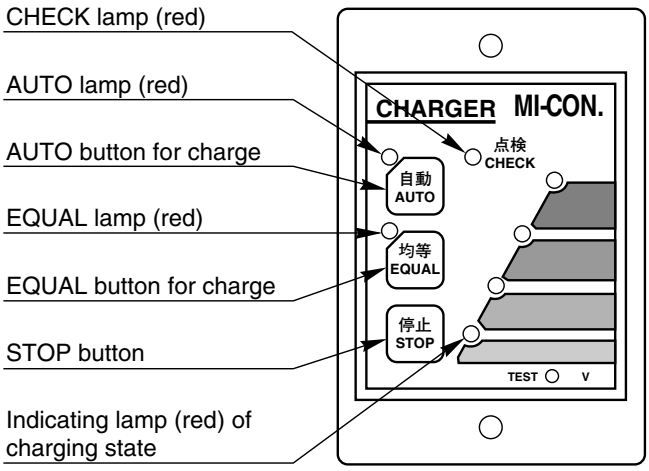
**Do not use the charger continuously to charge some batteries in turn.**
**The continuous use can cause overheating, and the charger may be damaged.**

# ■How to charge the battery (By stationary charger)

## ▶Stationary charger




## ▶Control panel (Controller)



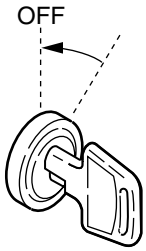

Lamps indicate the state of charging. The four lamps turn on from bottom to top by turns in accordance with the charging state. All four lamps turn on when charged fully.

## ▶ Normal (Daily charge)

This charge returns the battery to a fully charged condition after operating the forklift truck.

① Move the forklift truck to designated charging area.

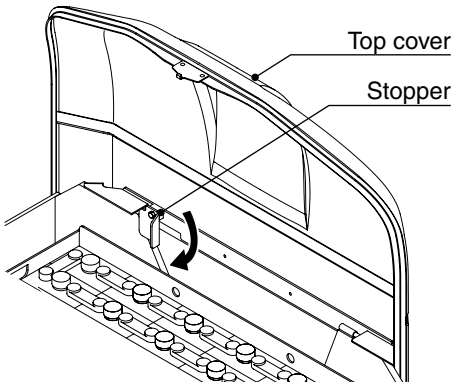
② Turn off the key switch and remove the key.




③ Release the latch and open the top cover.

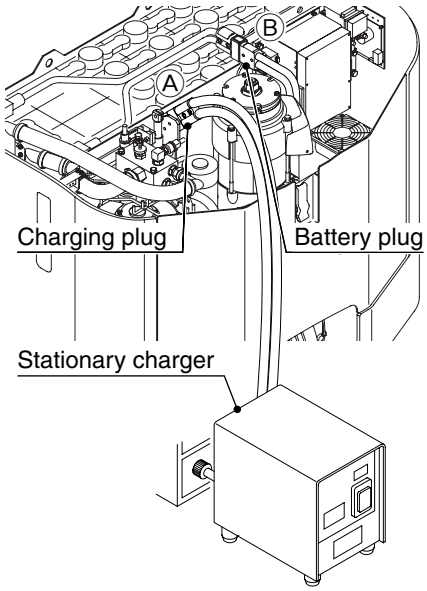
CAUTION

- **While charging the battery, the hydrogen gas is produced and need to open the top cover to diffuse.**
- **When the top cover is closed, the charging function does not start.**



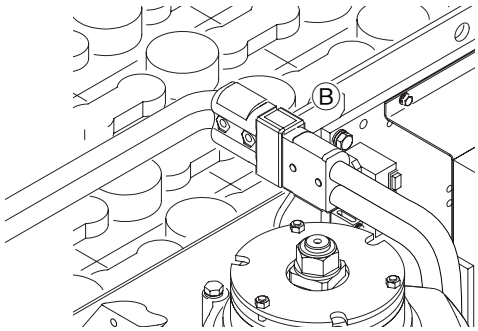

④ Fix the top cover by the stopper.

⑤ Connect the stationary charger to the plug Ⓐ for charging battery.

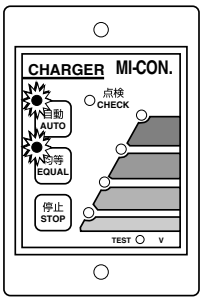



CAUTION

**Do not disconnect the plug Ⓑ between chassis and battery while charging battery and also storing the truck in a warehouse for a long time. Othewise the small battery on the control board for back-up memory will be discharged and all setting data may be lost.**



Then both “AUTO” and “EQUAL” lamps turn on.

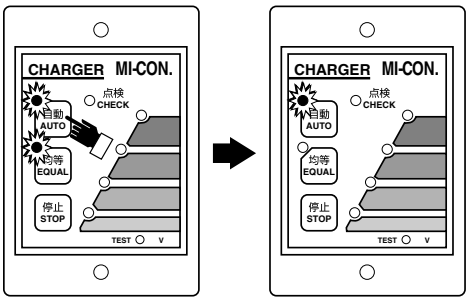



NOTE

If “AUTO” and “EQUAL” lamps do not turn on, make sure the charger’s cable is connected correctly.

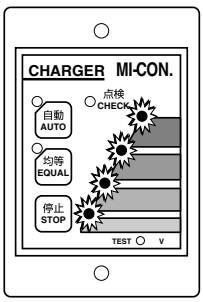
⑧ Push the “AUTO” button.
The “AUTO” lamp (red) is turned on, and “EQUAL” lamp is turned off.

**Automatic charge is started.**




⑨ When charge is completed, all four lamps (red) of charging state are turned on.

⑩ After finishing to charge, push the “STOP” button.




**Charge is stopped automatically.**

CAUTION

- **Do not disconnect the rectangular plug, A.C. plug and battery plug while charging.**
- **Do not operate any hydraulic valve levers or accelerator pedal while charging.**
- **Push the “STOP” button when discontinue to charge.**

CAUTION

**Do not touch any parts of charger and cable by wet hand.**

- The charger operates with high voltage. Touch by wet hand may cause electrical shock.

⑪ Disconnect the rectangular plug and A.C. plug.

⑫ Close the top cover and secure the latch.

CAUTION

**Be careful not to pinch your fingers when closing the top cover.**

NOTE

When the ambient temperature is low, the automatic supplementary charge function may be activated. In this case, the “AUTO” lamp will flash after charging. Press “AUTO” button again and disconnect the charging plug and the power supply plug.

## ▶Balancing charge

Specific gravity of electrolyte in each cell becomes unbalanced after a certain time of charge.
In this case, charge the battery for a little bit longer than a normal charge in order to equalize all cells.

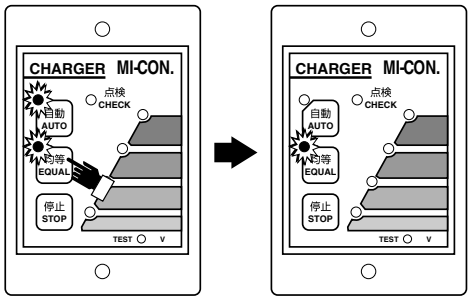
**Manual balancing charge**
Balancing charge is required for the following cases.

- Every two weeks when the forklift truck is operated every day.
- Not charged for a couple of days after discharged.
- Over-discharged.

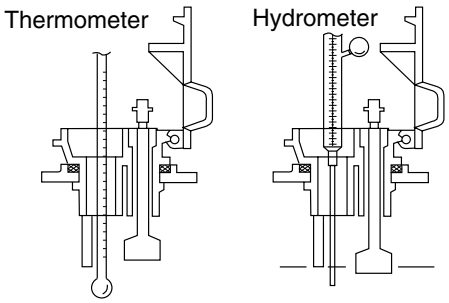
### ○ Charging procedure

① Push the "EQUAL" button the same way as with a normal charge.
"EQUAL" lamp (red) will turn on.

**Start the balancing charge.**




② After completion of charging, measure the specific gravity of each cell.




NOTE

If the specific gravity is 1.26-1.28 at 20 degrees, the battery is fully charged.

## ▶Supplementary charging

When one charge is not enough to finish the daily work, a supplementary charge should be done during a break time.

The procedure of the charge is the same as with a normal charge.

CAUTION

**When the ambient temperature is low, the automatic supplementary charge function may be activated. In this case, the "AUTO" lamp will flash while charging.**

CAUTION

**Push the "STOP" button first before disconnecting the battery plug when a charge is interrupted.**

## ▶Charging for long time storage

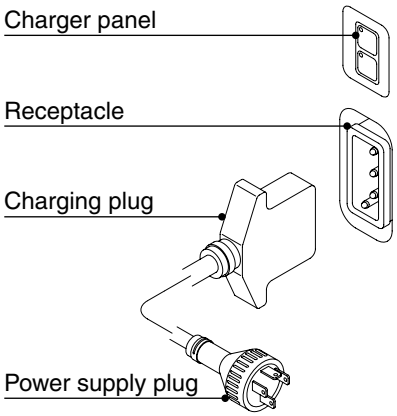
Carry out the balancing charge before storage.
The periodical charge for every 15 to 30 days is recommended while in storage.

## ▶Check the specific gravity

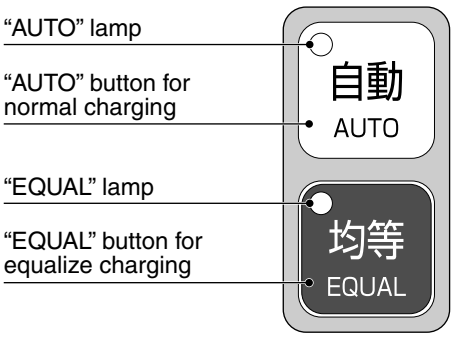
After charging the battery, check the specific gravity.
(Refer the section of "Level of electrolyte and specific gravity" for details.)

# ■How to charge the battery (By built-in charger) [option]

## ▶Built-in charger




## ▶Charger panel



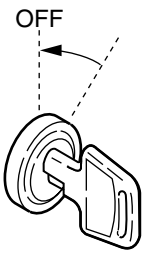

## ▶Normal (Daily) charge

This charge recovers the battery to a full-charged condition after operating the forklift truck.

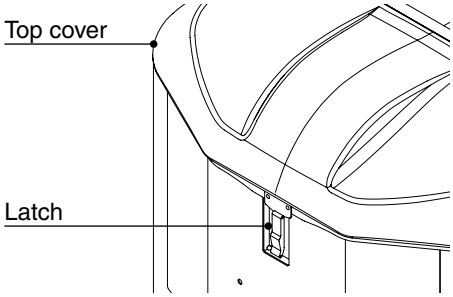
○ **Built-in charger (Option)**

① Move the forklift truck to designated charging area.

② Turn off the key switch.



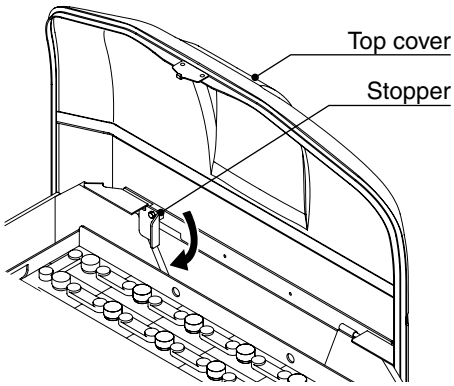
③ Release the latch and open the top cover.




CAUTION

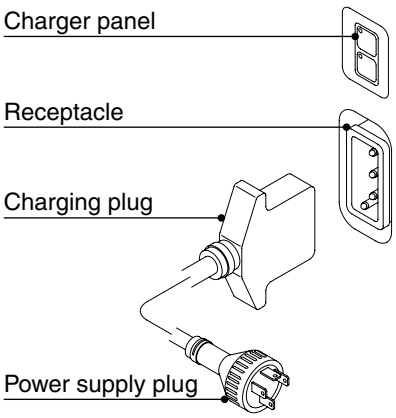
- **While charging the battery, the hydrogen gas is produced and need to open the top cover to diffuse.**
- **When the top cover is closed, the charging function does not start.**

④ Fix the top cover by the stopper.




⑤ Connect the charging plug to the receptacle on the chassis.

⑥ Connect the power plug to the power supply.



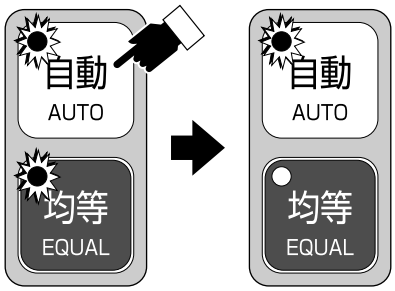

Then, both “AUTO” and “EQUAL” lamps are turned on.

NOTE

If these lamps are not turned on, make sure the power cable is connected correctly.

⑦ Push “AUTO” button.
The “AUTO” lamp stays on and the “EQUAL” lamp is disappeared.

**The automatic charge is started.**




⑧ When charging is completed, the “AUTO” lamp is flashed.

⑨ Push the “AUTO” button again to turn off the “AUTO” lamp.

⑩ Disconnect the charging plug and the power plug.

CAUTION

- **Do not disconnect the receptacle, power plug and the battery plug while charging.**
- **Do not operate any hydraulic buttons or accelerator grip while charging.**
- **Push “AUTO” button again to stop charging when interrupting to charge.**

CAUTION

**Do not touch any parts of the charger and cables by wet hand.**

- The charger carries high voltage. Touch by wet hand may cause electric shock.

⑪ Close the top cover and secured by the latch.

CAUTION

**Be careful not to pinch your fingers when closing the top cover.**

NOTE

When the ambient temperature is low, the automatic supplementary charge function may be activated. In this case, the “AUTO” lamp will flash after charging. Press “AUTO” button again and disconnect the charging plug and the power supply plug.

# ▶ Balancing charge

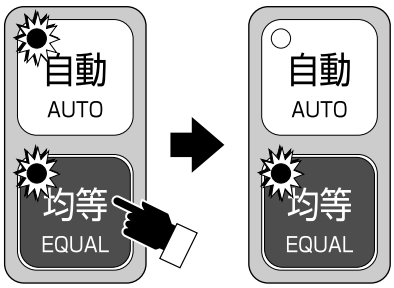
Specific gravity of electrolyte in each cell becomes unbalanced after a certain time of the charge. In this case, charge the battery for a bit longer than a normal charge in order to equalize all cells.

**Automatic balancing charge**
In the case of the built-in charger, the controller selects the “EQUAL” mode automatically once of ten charges even pushing the “AUTO” button.

**Manual balancing charge**
Balancing charge is required for the following cases.

- Every two weeks when the lift truck is operated every day.
- Not charged for a couple of days after discharged.
- Over-discharged.

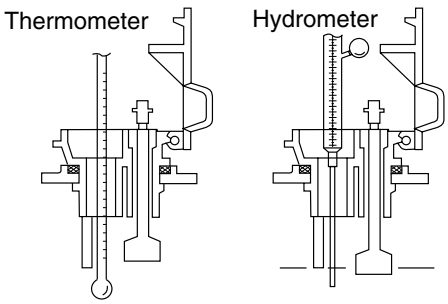
**The balancing charge is started.**




## ○ Charging procedure

① Push the “EQUAL” button a the same way as with a normal charge.
“EQUAL” lamp is turned on.

② After completion of charging, measure the specific gravity of each cell.




NOTE

If the specific gravity is 1.26-1.28 at 20 degrees, the battery is fully charged.

NOTE

If the battery plug was disconnected, the memorize of the time of charging is cleared in the controller and the automatic balancing charge is not activated corectly. In this case, the manual balancing charge is recommended.

## ▶Supplementary charging

When one charge is not enough to finish the daily work, a supplementary charge should be done during a break time.

The procedure of the charge is the same as with a normal charge.

**When the ambient temperature is low, the automatic supplementary charge function may be activated.**
**In this case, the AUTO lamp will flash while charging.**

**Push the STOP button first before disconnecting the battery plug when a charge is interrupted.**

## ▶Charging for long time storage

Carry out the balancing charge before storage.
The periodical charge for every 15 to 30 days is recommended while in storage.

## ▶Check the specific gravity

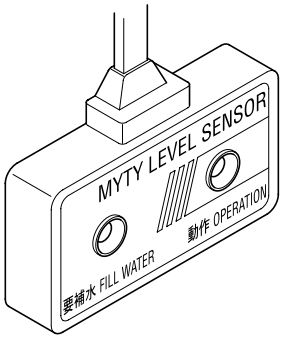
After charging the battery, check the specific gravity.
(Refer the section of “Level of electrolyte and specific gravity” for details.)

# ■Level of electrolyte and specific gravity

## ▶Electrolyte level

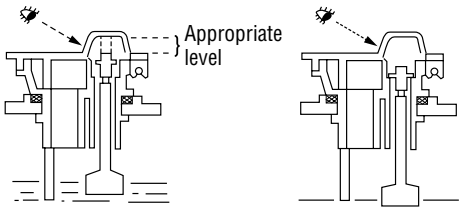
If the battery is used when the electrolyte level is low, the battery will become overheated causing it to have a shorter life.

- When the battery level sensor which is mounted on the side of the battery case shows the red flashing, the electrolyte level is too low. (Level sensor is equipped on the Japanese battery only.)




## ▶Check of electrolyte level

Electrolyte level can be checked by the float which is equipped in the vent cap.



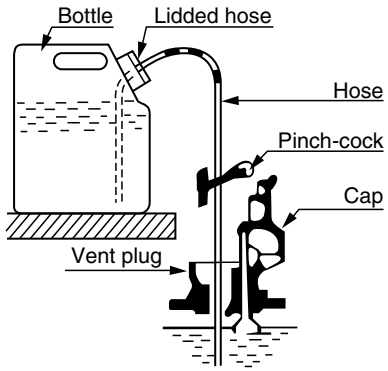

**(N.B. This is the case of GS brand battery)**

## ▶Replenishment of water

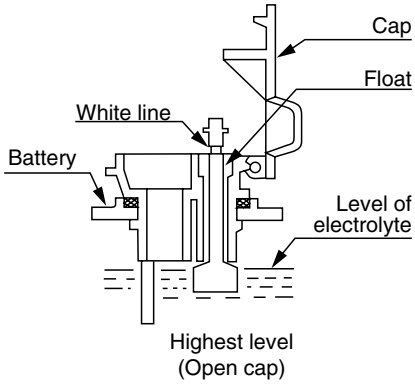
To maintain the specific level of electrolyte, replenish with refined or distilled water.
(You do not need to replenish the sulfuric acid. Use refined or distilled water only.)
Wear safety goggles, rubber gloves and boots for your protection.

① Open the vent caps of all battery cells.

② Replenish water into each cell.




③ Stop replenishing when the red float is raised and the white line appears.




**(N.B. This is the case of GS brand Battery)**

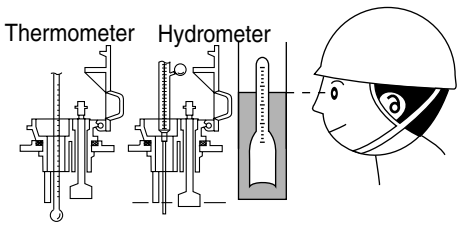
④ After replenishing to all cells, close all vent caps completely.

⑤ Clean the top of cells by wet cloth.

CAUTION

- **Do not replenish water over the maximum level.**
- **Overfilling will cause the electrolyte to overflow while charging resulting in damage to the forklift truck.**

## ▶ Reading of specific gravity




The specific gravity of electrolyte is changed by temperature.
Measure the temperature of electrolyte by a thermometer and the gravity of electrolyte by a hydrometer.

Convert the actual gravity to the specific one at 20°C by the thermal conversion table.

| | |
|---|---|
| Specific gravity at full charged | 1.280 (at 20°C) |
| Specific gravity at discharged | 1.180 (at 20°C) |

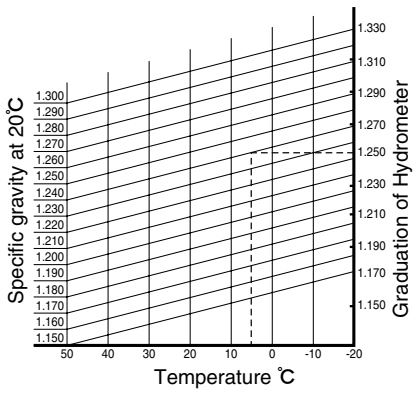
CAUTION

**When the specific gravity is below1.18 at 20°C, should be done the balancing charge.**

**SPECIFIC GRAVITY OF ELECTROLYTE AND THERMAL CONVERSION TABLE**

NOTE

How to convert the specific gravity:
For example, if the hydrometer reading is 1.25 at 5°C, the specific gravity at 20°C is 1.24.



# ■Exchanging battery

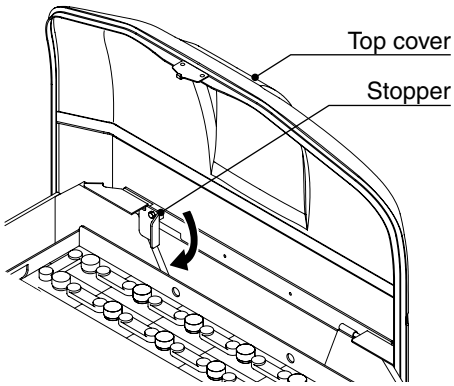
CAUTION

- **When an exchange of a battery is required, the discharged battery should be charged as soon as possible.**
- **Exchange the battery on the flat floor with following procedure.**

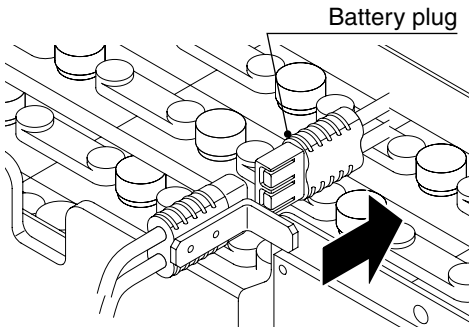
① Turn off the key switch.

② Release the latch and open the top cover.

③ Fix the top cover by the stopper.

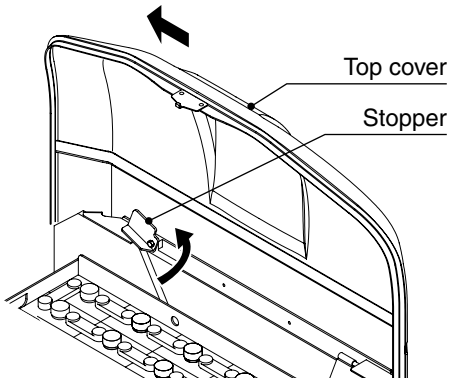



④ Disconnect the battery plug.



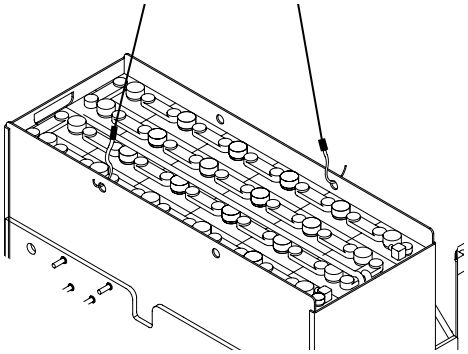

⑤ Release the stopper and remove the top cover by sliding.

⑥ Hang the battery with slings and exchange.




CAUTION

- **When exchanging the battery by another forklift truck, use proper slings and hooks.**
- **When lifting up the battery, be careful not to damage the chassis or equipments by hitting the battery box.**



⑦ After replacing the full-charged battery, connect the battery plug securely.

⑧ Install the top cover and secure by the latch.

CAUTION

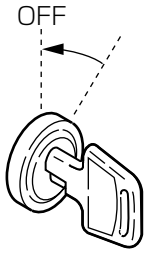
**Be careful not to pinch your fingers when closing the top cover.**

# ■Exchanging battery (for optional side loading type)

CAUTION

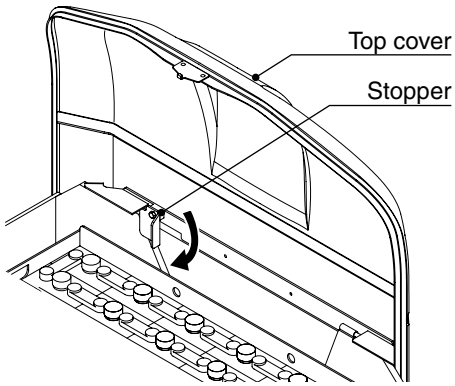
- **When an exchange of a battery is required, the discharged battery should be charged as soon as possible.**
- **Exchange the battery on the flat floor with following procedure.**

① Turn off the key switch.

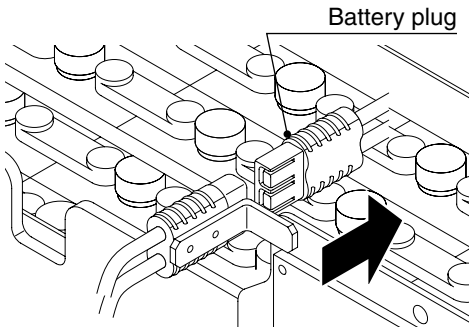



② Release the latch and open the top cover.

③ Fix the top cover by the stopper.



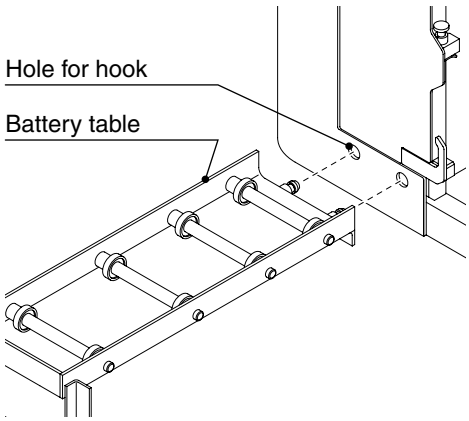

④ Disconnect the battery plug.




⑤ Apply the battery table in the hole of the chassis.

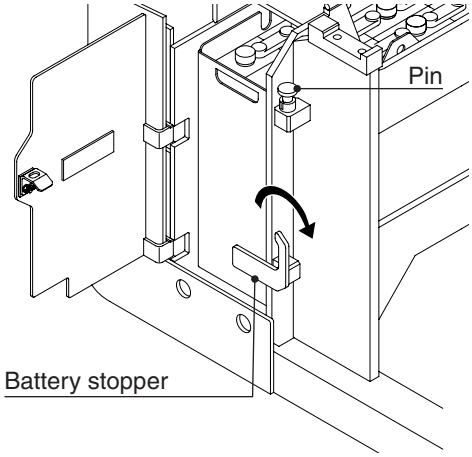
CAUTION

**Secure the battery stand in the hole of the chassis.**

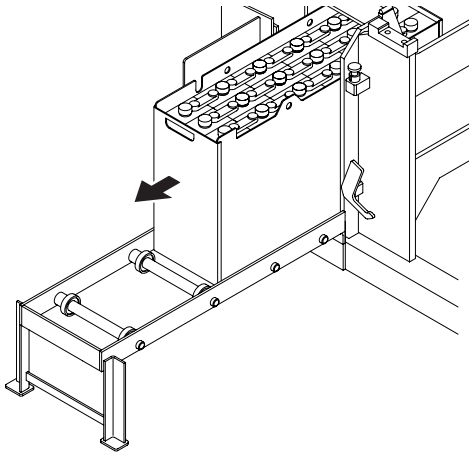


⑥ Pull the pin and open the side cover.

⑦ Release the battery stopper.



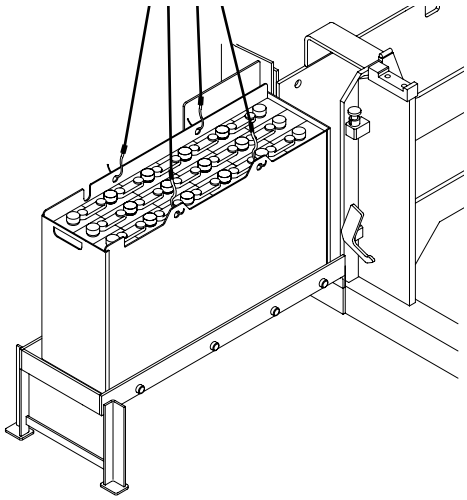

⑧ Pull the battery out on the table slowly.



CAUTION

**If pulling the battery strongly, the battery stand may be disengaged or pinched fingers.**

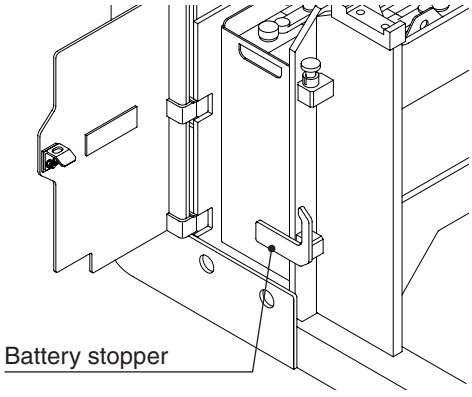
⑨ Hang the battery with slings and exchange.



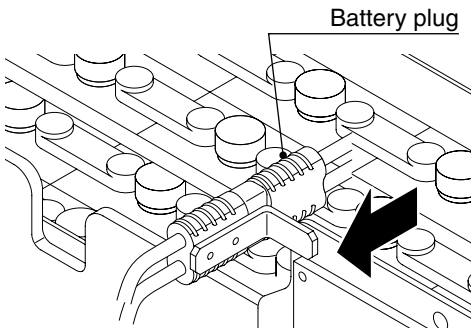
CAUTION

- **When exchanging the battery by another forklift truck, use proper slings and hooks.**
- **When lifting up the battery, be careful not to damage the chassis or equipments by hitting the battery box.**

⑩ After replacing the full-charged battery, apply the battery stopper securely and close the side cover.



- connect the battery plug securely.
- Close the top cover and secure by the latch.




## ▶ Battery carrier (option)

The battery carrier is available as option.
It is useful for easy transfer of the battery. The battery carrier has the adjuster of the height of the roller base.

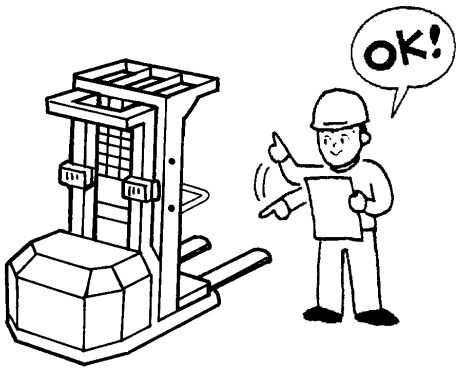
CAUTION

- **Use proper carrier to fit the forklift truck.**
- **Make sure the hook is inserted to the hole on the chassis completely.**
- **Set the battery stopper securely at the end of the roller base before moving the carrier.**

- If the stopper is not applied properly, the battery may be dropped from the roller base.

# 5 INSPECTION PRIOR TO OPERATION

A daily pre-operation inspection is the key to safety and keeping the forklift truck in good condition.
At the beginning of each shift, check your forklift truck to make sure it is in safe operating condition.
If faults are found, contact NICHIYU's qualified facility.




CAUTION

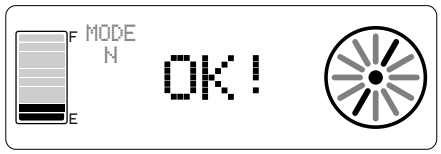
- **Do not operate the forklift truck until finishing repairs and inspections.**
- **Inspecting trucks should be made on a flat floor.**
- **Be sure to turn off the key switch and disconnect the battery plug while checking the electrical system except while turning on the lamps and checking operation.**

## ■Check point and contents

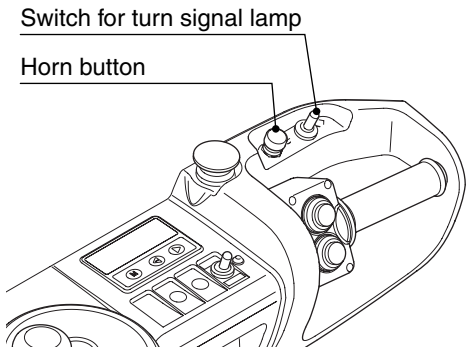
| | No. | Check points | Contents |
|---|---|---|---|
| Safety monitor | 1 | Function | Braking force |
| Lamp & Horn | 2 | Turn signal lamps, horn | Turn on and off, Sound |
| Braking system | 3 | Brake pedal | Braking distance, Braking force |
| | 4 | Magnetic brake | Operating condition |
| Steering system | 5 | Power steering operation | Operating of all parts |
| Loading & hydraulic system | 6 | Function | Function, Any crack, Lubrication |
| | 7 | Oil piping | Oil leakage |
| | 8 | Hydraulic oil | Appropriate quantity |
| | 9 | Lift chain | Equal tension of both right and left chains |
| | 10 | Wire of lifting height detection | Looseness of wire |
| Wheels | 11 | Tyres | Abnormal wearing and /or damage |
| | 12 | Hub nuts | Securely tighten of fitting bolts and nuts |
| Battery | 13 | Charging | Check battery capacity indicator and specific gravity, Plug is securely connected. |
| Others | 14 | Overhead guard | Any cracks or abnormalities. |
| | 15 | Safety strap | Any damages on the strap, hook or belt. |
| | 16 | Others than the above | Any abnormalities. |

# ■*Inspection procedure*

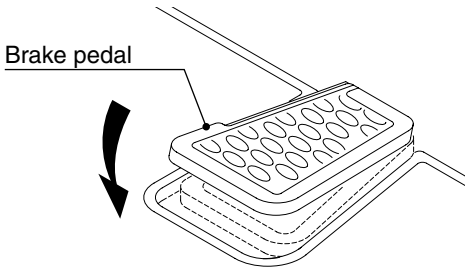
### ① Safety monitor
Make sure the [OK] sign is displayed on the screen for a few seconds after turning on the key switch.




### ② Turn signal lamps and horn
Check operation of lights and horn.



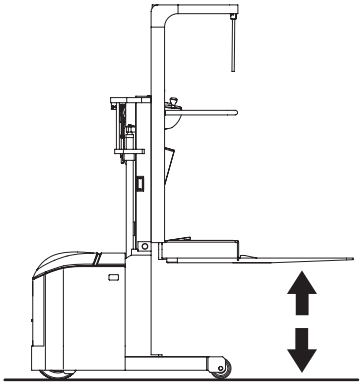

### ③ Brake pedal
Check performance of the brake and make sure if the brake is released when depressing the brake pedal.
The proper braking distance is about 2.5 m when loaded.




### ④ Magnetic brake
Make sure if the brake is applied when releasing the brake pedal.

### ⑤ Power steering
Make sure the function of the power steering after turning on the key switch.
Make sure that the steering indicator shows the correct wheel direction.

### ⑥ Hydraulic functions
Check lifting and lowering functions are normal and smooth.

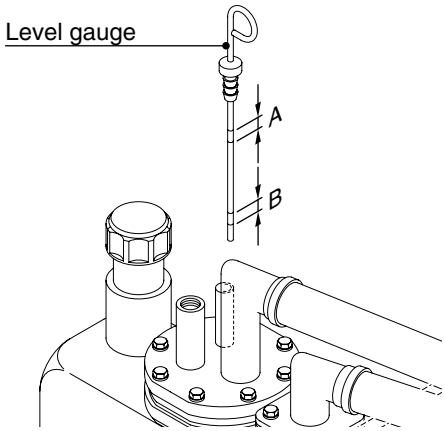


### ⑦ Hydraulic piping
Make sure no oil leaking is found on all hydraulic piping.

### ⑧ Hydraulic oil level
After lowering the fork to the bottom completely, check the hydraulic oil level by the gauge.

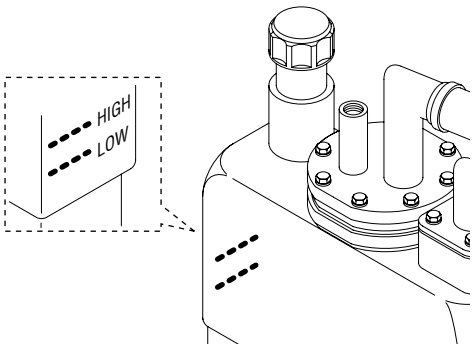
**[RB10]**
If within the range, the oil level is normal.

| Model | Quantity of oil | Oil level |
|---|---|---|
| RB10-3000~5000 | 9.0 ℓ | A |
| RB10-M5300~6000 | 8.3 ℓ | B |



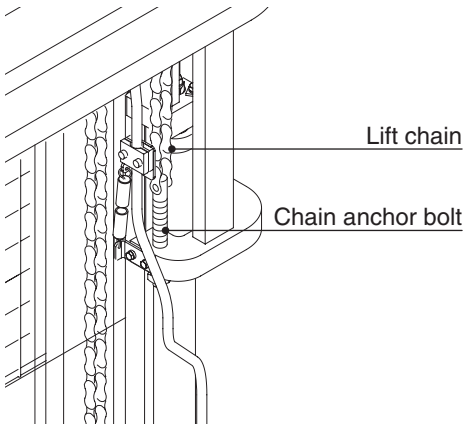
[RB10]

**[RB15]**
If the level is between HIGH and LOW, the quantity of the oil is normal.



[RB15]

### ⑨ Lift chain
Raise the fork about 200mm above the floor and check the lift chains for equal tension.
The operator's compartment should be level.
If the tension is not equally, adjust by the chain anchor bolts.

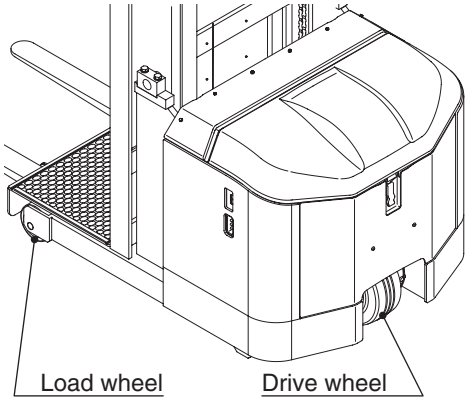



CAUTION

**After proper adjustment, tighten up the lock nut securely.**

### ⑩ Wire of height detection
Make sure that the wire for the height detection is not loosened.
If the wire is loosened, adjust the tension by adjusting nut.

### ⑪ Wheels
Check all tires for damages or abnormal wearing.

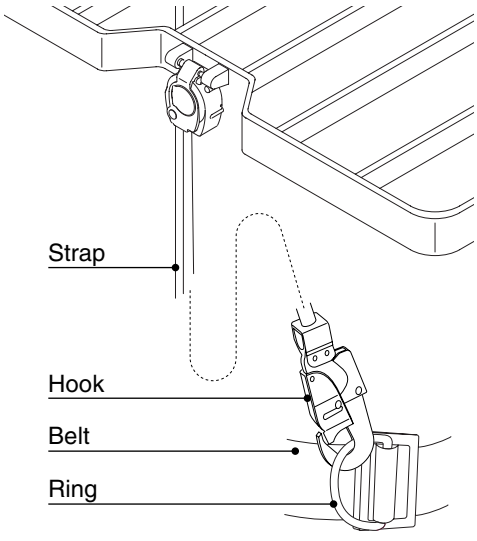



### ⑫ Wheel fitting bolts
Make sure all fitting bolts are tightened securely.

### ⑬ Charging battery
Measure the specific gravity of the electrolyte of the battery.
If it shows 1.260 - 1.280 at 20 degrees conversion, the battery is fully charged.
Make sure the electrolyte level.

### ⑭ Overhead guard
Make sure no cracks or damages are found on the overhead guard.

### ⑮ Safety strap
Make sure no damages or abnormalities are found on the safety strap.




WARNING

**In the following case, the safety strap shall be replaced.**
- **If the retracting function of the strap does not work by overloading or stretching.**
- **If any impacts are applied to the strap. (Strap can use one time only.)**
- **If the core (foundation) of the strap is exposed.**

WARNING

**Carry out the inspection of the strap every month by following the attached instruction on the strap.**

### ⑯ Others
Make sure no abnormal noise or parts are found.

CAUTION

**When checking inside of covers or doors, or checking electric components, turn the key switch off and disconnect the battery.**

# 6 INSPECTION OF AFTER OPERATION

## ■Inspection after working

At the end of each shift, clean the forklift truck and inspect the following items.

- Any damage or oil leakage.
- Apply grease if required.
  Refer to [Lubrication points and recommended oil]
- Raise the lift carriage to the maximum lifting height several times if your normal operation did not require to do so. (The hydraulic oil is supplied to the full stroke of the cylinder by lifting to the maximum height. It helps to prevent rust from forming inside the cylinders.)
- Check any abnormal parts which are found any defects while operation.

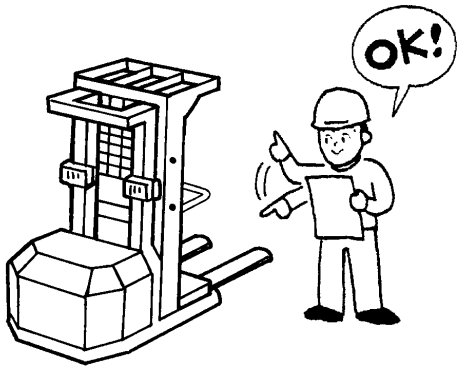
- **A small fault can cause a serious accident.**
- **Do not operate the forklift truck until finishing repairs and inspections.**

**Do not apply water to clean the forklift truck.**

- Water can damage the electric components of the forklift truck.

# 7 PERIODIC SERVICING

**Periodic inspections and maintenance are necessary to keep your NICHIYU forklift truck running safely and smoothly.**
**Hours shown in the maintenance schedule are based on eight hours operation per day and 200-hour operation per month.**
**Make your own maintenance schedule using this formula for your operation requirements.**




**All servicing and repairs shall be made by authorized personnel.**

- Contact NICHIYU's qualified facility for adjustments and/or repairs.

## ■*Precautions of maintenance*

**Use NICHIYU genuine parts for replacement.**
**If non-genuine parts are used and a problem occurs, NICHIYU will not offer any guarantees.**

**Use NICHIYU recomended oil.**
**Refer to [Recommended oil].**

### ▶Maintenance place

- **Servicing facility should provide adequate equipment and safety guards.**
- **Servicing place should be on a flat floor.**
- **Be sure there is adequate ventilation in the service area.**
- **Fire extinguishers shall be provided at the servicing facility.**

## ▶ Precautions of maintenance

CAUTION

- Smoking shall be prohibited.
- Wear safeguard (helmet, shoes, glasses, gloves and boots) and suitable clothes.
- Wipe off spilt oil at once.
- When lubricating, remove grease and dust off nipples and fittings with a brush or a cloth before lubrication.
- Turn off the key switch and disconnect the battery plug except when required for trouble shooting.
- When servicing a forklift truck, lower forks to the floor.
- Clean the electrical components with compressed air.

## ▶ Precautions during servicing

CAUTION

- Do not put your feet under forks and be careful not to stumble over forks.
- When forks are lifted up, put blocks under the inner mast to prevent the mast and forks from falling.
- Be careful not to pinch your hands when opening and closing the covers and clamps.
- When working as a group, be sure everyone works safely with each other.
- Use only suitable tools.
- The hydraulic circuit may have a high pressure condition. Release the inside pressure before performing any service or repairs.
- Do not climb on the mast.

WARNING

**Never put any part of your body into mast structure or between mast and forklift truck.**

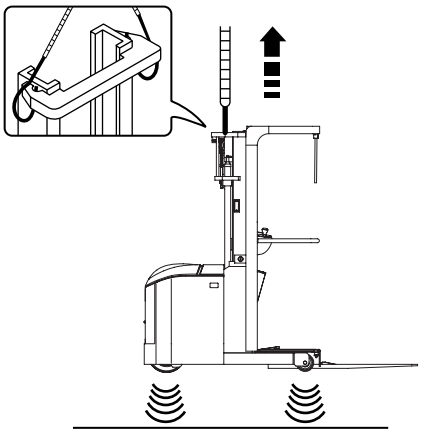
## ▶ Jacking up

**WARNING**

**Do not go under the forklift truck while it is being jacked up.**
**Failure to observe this warning can cause seriously injury or death if the forklift truck falls on you.**

**CAUTION**

- **Before jacking up the forklift truck, make sure no one is around and no load is on the forklift truck.**
- **Before jacking up, place wheel chocks at tires.**
- **After jacking up, use blocking or proper stands to prevent the forklift truck from falling.**



## ▶ Hoisting the truck

**CAUTION**

- **Lift the forklift truck by trained persons only.**
- **Place slings and hooks to the designated positions.**
- **Use slings and hooks which has sufficient strength.**

## ▶ Disposal of waste

**CAUTION**

**Observe local regulation to dispose oil, battery, etc.**

# ■ *Weekly (50-hour) servicing*

Inspect the following items in addition to the inspection prior to operation.

| Check points | Contents |
|---|---|
| Electrolyte level | Check the electrolyte level. When the level is low, replenish with refined water. |
| Specific gravity of electrolyte | Measure the specific gravity and temperature of electrolyte of all cells. |
| Cleaning of battery | Clean the top surface and vent cap of each cell. |

**CAUTION**

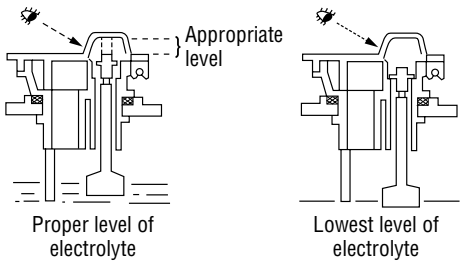
**Be sure to disconnect the battery plug when inspecting the electrical system.**

## ▶ Check the level of electrolyte

Refer to [Level of electrolyte and specific gravity].

CAUTION

- **After completing the replenishment, securely close the vent caps.**
- **Do not replenish the water over the maximum level.**



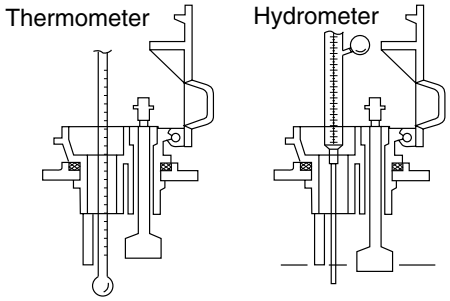

**(N.B. This is the case of GS brand battery)**

## ▶ Check for specific gravity of electrolyte

Measure the quantity and specific gravity of all cells.

**Normal** : It is normal when all cells specific gravity are the same.
**Abnormal** : It is abnormal if the difference of the specific gravity is more than 0.05 from other cells.

Refer to [Battery electrolyte and specific gravity] how to inspect the specific gravity of battery.




## ▶ Cleaning of battery

Keep the battery clean by wiping off with a damp cloth.

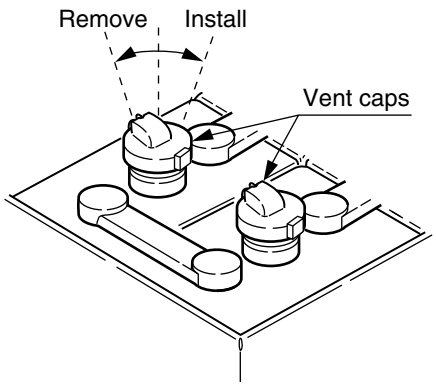
CAUTION

- **The battery should be cleaned before charging.**
- **Wear rubber gloves and boots to prevent an electrical shock.**
- **Do not clean the battery plug with water.**

**The inside of vent caps will be stained making the float difficult to see.**
**Clean the caps by the following procedures.**

NOTE

This is the case of GS Battery.




① Remove the vent caps by turning counterclockwise.
② Wash the inside of vent caps with a neutral cleanser.
If they are severely stained, brush them.
③ Install the vent caps by turning clockwise.

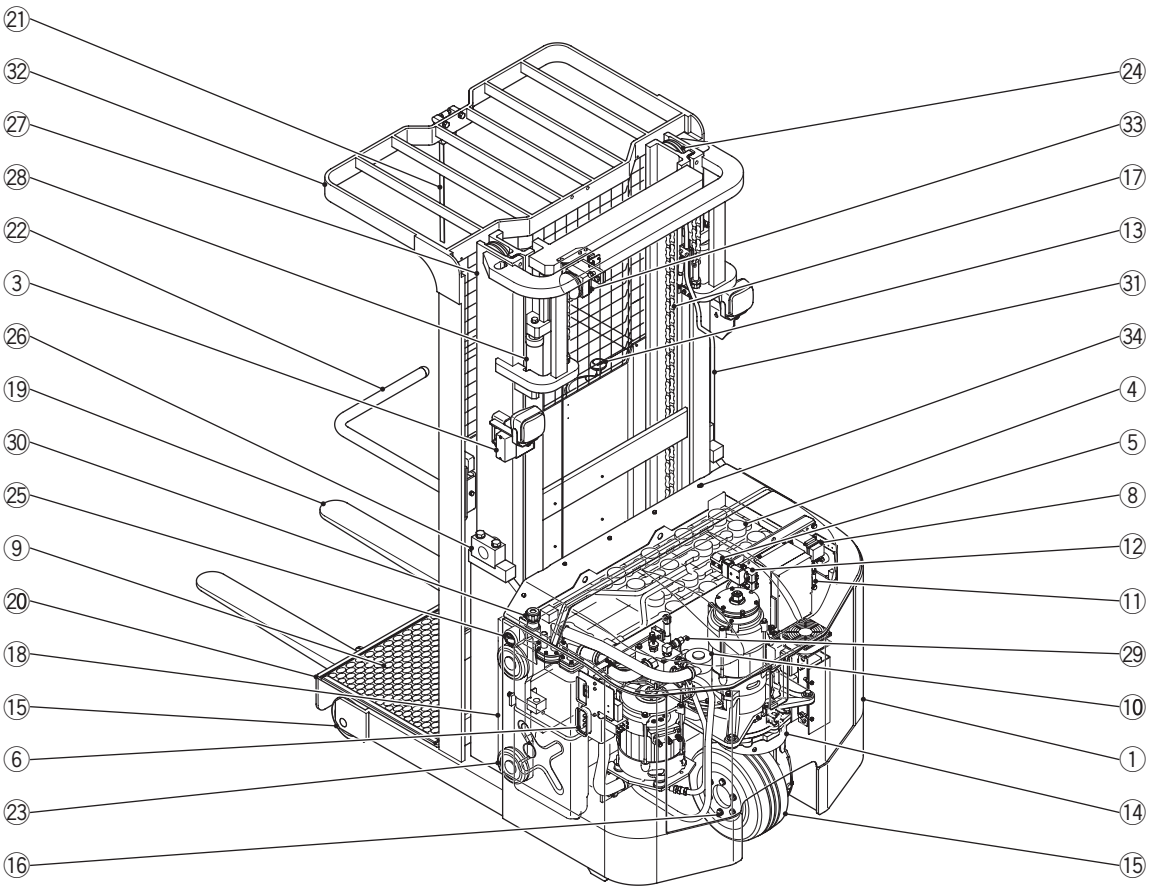
CAUTION

**Make sure all vent caps are completely closed.**

# ■Monthly (200-hour) servicing

Perform the following service in addition to the weekly (50-hour) maintenance schedule.
If an adjustment or replacement parts is required, contact to your local Nichiyu dealer.

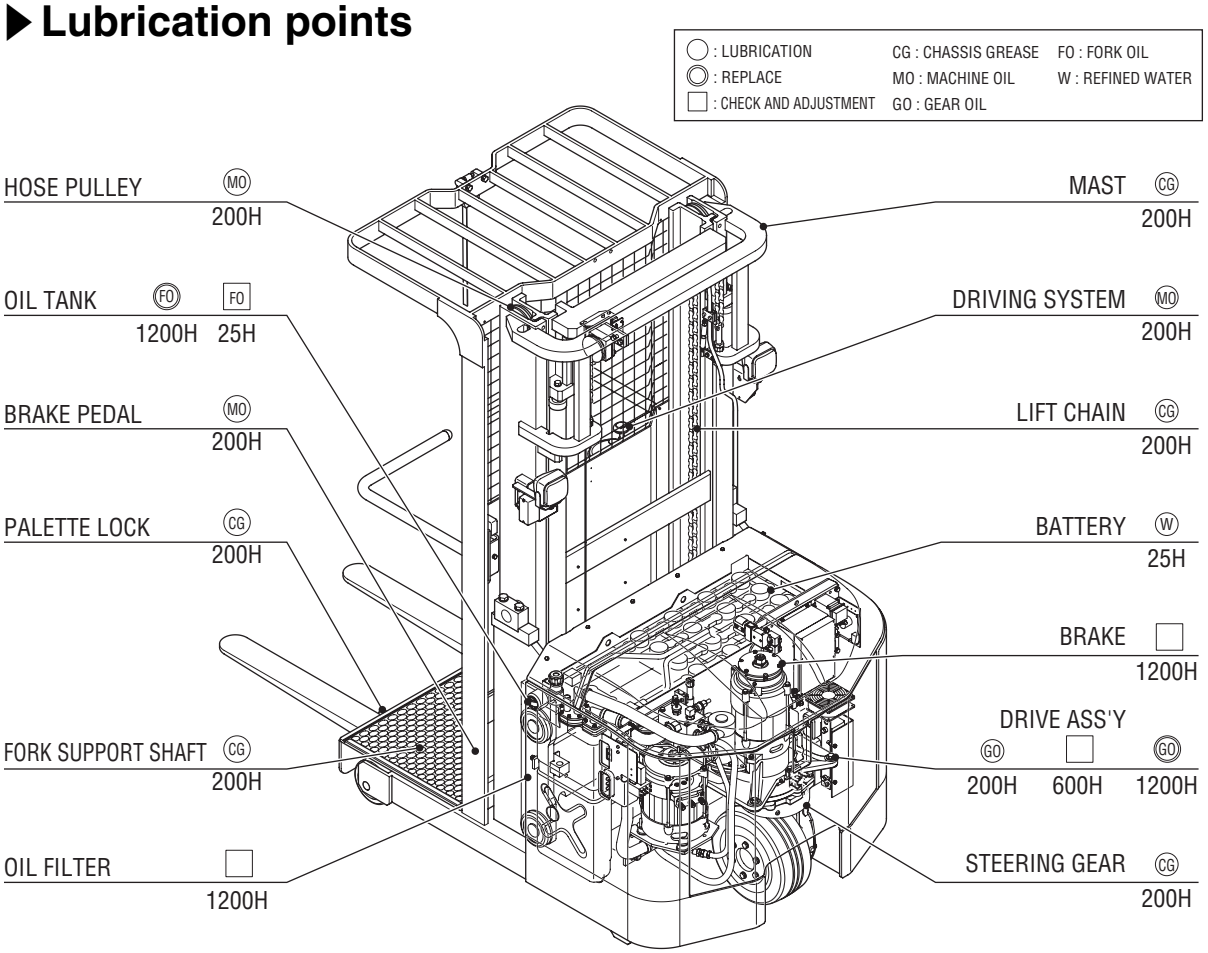
| System | No. | Check points | Contents |
|---|---|---|---|
| Appearance | 1 | General | Distortion, Crack, or Abnormal noise |
| | 2 | Horn | Sound |
| | 3 | Turn signal lamp | Function |
| Battery, Charger, Electric system | 4 | Battery electrolyte | Quantity, Specific gravity and Dirt |
| | 5 | Terminal plug | Damage, Loosening, Dirt |
| | 6 | Receptacle, plug for charger | Damage, Looseness |
| | 7 | Key switch | Function |
| | 8 | Contactors | Contacts and Function |
| | 9 | Micro switches | Function |
| | 10 | EPS motor | Brush, Commutator condition |
| | 11 | Fuse | Capacity, Looseness |
| | 12 | Cables, Terminals | Damage, Looseness |
| Drive, Steering, Hydraulic, Brake system | 13 | Steering wheel | Play, Function |
| | 14 | Gear case | Oil level, Oil leaking, Abnormal noise |
| | 15 | Tires | Damage, wearing |
| | 16 | Hub nut of the drive wheel | Looseness |
| | 17 | Lift chain | Lubrication, Tension |
| | 18 | Lift carriage | Adjustment, Lubrication, Crack, Distortion |
| | 19 | Fork | Crack, Transformation |
| | 20 | Driver's compartment | Transformation |
| | 21 | Safety strap | Retraction, Wear, Crack, Transformation |
| | 22 | Safety guard | Transformation |
| | 23 | Lift roller | Adjustment, Lubrication |
| | 24 | Mast roller | Adjustment, Lubrication |
| | 25 | Side roller | Adjustment, Lubrication |
| | 26 | Mast support block, Fitting bolt | Looseness |
| | 27 | Outer mast, Inner mast | Play |
| | 28 | Lift cylinder | Oil leaking |
| | 29 | Hydraulic valve | Function, Oil leaking |
| | 30 | Hydraulic oil tank | Oil level, Oil leaking |
| | 31 | Hydraulic hose, piping | Oil leaking, Transformation |
| | 32 | Overhead guard | Crack, Transformation |
| | 33 | Wire for height detection | Wear, Abnormal noise, Transformation |
| | 34 | Bolts, Nuts | Looseness |




(Illustration shows the drive-front type)

# ■Lubrication points and recommended oil

## ▶Lubrication points




(Illustration shows the drive-front type)

## ▶Recommended oil

| Manufacturer | Shell | ESSO | Mobile |
|---|---|---|---|
| Gear oil | Spyluxe EP 80 | ESSO Gear Oil GP SAE 80 | Mobilube GX-80 |
| Grease | Alvania Grease 2 | ESSO Beacon 2 | Mobilluxe 2 |

Use NICHIYU genuine parts "NICHIYU FORK OIL B" for hydraulic oil.

# ■Every three-month (600-hour) servicing

Perform following service in addition to the monthly (200-hour) maintenance schedule.
If an adjustment or replacement parts are required, contact to your local Nichiyu dealer.

| Check points | Contents |
|---|---|
| Contactors | When surface roughness of the contact tip is excessively, replace it. |
| Power steering motor | Wearing of the carbon brushes |
| Drive A'ssy | Gear oil level |

**When opening the cover or doors to check inside of the chassis, turn off the key switch and disconnect the battery.**

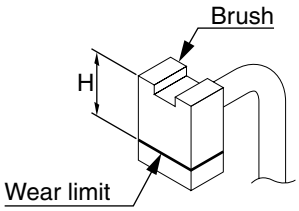
# ■Semiannually (1200-hour) servicing

Perform following service in addition to the semiannually (600-hour) maintenance schedule.
If an adjustment or replacement parts are required, contact to your local Nichiyu dealer.

| Check points | Contents |
|---|---|
| Contactors | When surface roughness of the contact tip is excessively, replace it. |
| Power steering motor | Wearing of the carbon brushes |
| Drive A'ssy | Replace gear oil |
| Hydraulic oil | Change hydraulic oil |
| Oil filters | Cleaning oil filters |
| Brake | Check and adjust the brake system |

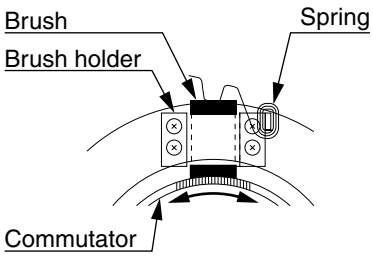
**When opening the cover or doors to check inside of the chassis, turn off the key switch and disconnect the battery.**

● **Inspection of brushes of the power steering motor**
Raise up the whirl spring and then pull out the carbon brush to check the length.
If the brush is worn more than the wearing limit, replace all brushes at the same time.




Wearing limit of carbon brushes.

| | H | Wearing limit |
|---|---|---|
| Power steering motor | 25mm | 9mm |



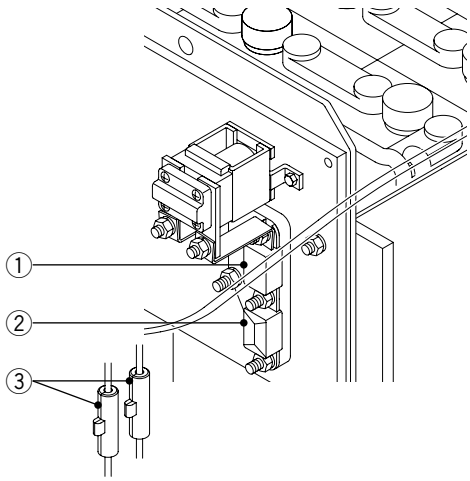

# ■*Replacing parts and trouble shooting*

## ▶ Replacing fuses

CAUTION

**Be sure to disconnect the battery plug.**

① Fuse 100A (For transformer)
② Fuse 325A (For hydraulic / Travel)
③ Tube fuse 10A




| | Replacing procedure |
|---|---|
| Fuse | Loosen the mounting nuts and removing the fuses. |
| Tube fuse | Loosen a cap and removing the fuse. |
| Insufficient tightening of the mounting nuts may cause of poor contact and it can cause overheating or fire.<br>Tighten the nuts securely. | |

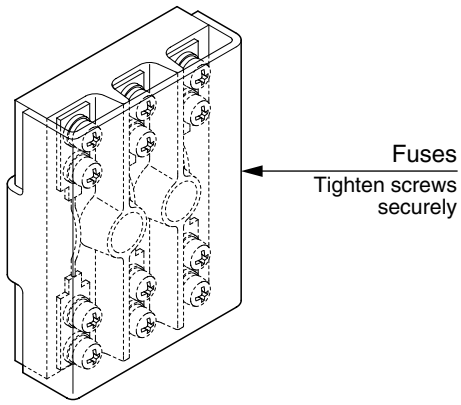
CAUTION

**Be sure to use the fuses with prescribed amps.**

## ▶ Replacing fuses of charger for three phases power supply

CAUTION

**Be sure to disconnect the A.C. plug.**




| Replacing procedure |
|---|
| Loosen the mounting screws, and replace fuses. |
| Insufficient tightening of the screws may cause of poor contact and can cause overheating or fire.<br>Tighten screws securely. |

CAUTION

**Be sure to use the fuses with prescribed amps.**

| | Fuse rating |
|---|---|
| RB10<br>RB15 | 10A (3.0 KVA) |
| | 15A (4.3 KVA) |

## ▶ Replacing bulb

CAUTION

**Be sure to turn off the key switch and disconnect the battery plug.**

| Replacing |
|---|
| Remove a glass of lamp.<br>Release a bulb by pushing and turning lightly. |

| Bulb for | Rating |
|---|---|
| Turn signal lamp | 56V (25W) |
| Head lamp (Option) | 56V (40W) |

CAUTION

**Be sure use bulbs with prescribed ratings.**

# 8 QUICK FAULT FINDING

CAUTION

- **When checking, be sure to turn off the key switch and disconnect the battery plug.**
- **When a fault cannot be corrected, contact NICHIYU's qualified facility.**

To find the cause of following faults, check the truck by check points and solutions.

| Symptom | Check point | Solution |
|---|---|---|
| Forklift truck does not run | Fuse for the auxiliary control circuit is blown? | If the fuse is blown, contact to your local Nichiyu dealer. |
| | Fuse for the main circuit is blown? (It is shown on the display if fuse is blown) | If the fuse is blown, contact to your local Nichiyu dealer. |
| | Interlock function is activated? | Check if the safety monitor icon is not flashed. |
| | Battery plug is connected securely? | Connect the battery plug securely. |
| No function even turning on the key switch | Accelerator grip is not turned before turning on the key switch? | Refer the section 4 “Driving and operation”. |
| | Lift or lower button is not pushed before turning on the key switch? | |
| | The emergency button is released? | Turn the emergency button knob to counter clockwise and turn off the key switch to reset. |
| | Battery plug is connected securely? | Connect the battery plug securely. |
| | The charger cable was disconnected? | Disconnect the charging plug. |
| Not charging the battery | Fuse for A.C. electric source is blown? | If the fuse is blown, contact to your local Nichiyu dealer. |
| | Charging plug, A.C. plug and battery plug are connected securely? | Connect all plugs securely. |
| | Fuse for A.C. or D.C. of the charger is blown? (in case of the built-in charger, check the hydraulic fuse also) | If the fuse is blown, contact to your local Nichiyu dealer. |
| Lamps do not turn on | Fuse is normal?, The lead wires are not damaged?, The bulb is not burnt? | Contact to your local Nichiyu dealer. |

If you have any other problems or you cannot fix even following above procedure, contact to your local Nichiyu dealer.

## Error code table

| Error number | | | Contents | Solutions |
|---|---|---|---|---|
| | Traction | A01 | Bad conductivity of contacts. | |
| | | B10 | Main fuse is blown. | |
| | | B11 | Traction circuit fault (U-phase) | Turn off the key switch. |
| | | B12 | Traction circuit Fault (V-phase) | Turn off the key switch. |
| | | B13 | Traction circuit Fault (W-phase) | Turn off the key switch. |
| | | B14 | Current sensor fault | Turn off the key switch. |
| | | B15 | Accelerator fault | Turn off the key switch. |
| | | B19 | Emergency stop (Traction circuit) | Turn off the key switch. |
| | Hydraulic | C20 | Hydraulic valve contamination. | Turn off the key switch. |
| | | C21 | Pump motor circuit fault (U-phase) | Turn off the key switch. |
| | | C22 | Pump motor circuit Fault (V-phase) | Turn off the key switch. |
| | | C23 | Pump motor circuit Fault (W-phase) | Turn off the key switch. |
| | | C24 | Current sensor fault | Turn off the key switch. |
| | | C25 | Micro switch in the lift button. | |
| | | C29 | Emergency stop (Hydraulic circuit) | Turn off the key switch. |
| | EPS | D30 | EPS transistor fault | Turn off the key switch. |
| | | D31 | EPS steering sensor fault | Turn off the key switch. |
| | | D32 | EPS drive sensor fault | Turn off the key switch. |
| | | D33 | Cut off the wire of EPS circuit | Turn off the key switch. |
| | | D39 | Emergency stop (EPS circuit) | Turn off the key switch. |
| Others | | E40 | Pallet lock | Turn off the key switch. |
| | | F41 | Hydraulic pressure sensor | |
| | | E42 | Rotary encoder (on the mast) fault. | |
| | | G60 | Traction motor current defect | Turn off the key switch. |
| | | G61 | Hydraulic motor current defect | Turn off the key switch. |
| | | G62 | EPS motor current defect | Turn off the key switch. |
| | | G63 | Traction voltage fault | |
| | | G64 | Hydraulic voltage fault. | |
| | | G66 | Traction FET overheating | |
| | | G67 | Hydraulic FET overheating | |
| | | G68 | FET gate or external 5 volts fault. | |
| | | G70 | Traction voltage fault | |
| | | G71 | Hydraulic voltage fault. | |
| | | G72 | EPS voltage fault | |
| | | (W05) | Overloading | |
| | | (W07) | Battery is flat | |
| | | (W11) | Grip of the accelerator | Grip is returned to the neutral position. |
| | | (W12) | Lift switch | Switch is in the neutral position. |
| | | (W13) | Safety guard | |
| | | (W14) | Ceiling detect switch | Fork lowering |
| | | (W15) | Chain slacking (table side) | Fork raising |
| | | (W16) | Chain slacking (mast side) (3-stage mast only) | Fork raising |
| | | (W18) | Pallet lock cancel | Pallet lock, or safety guard. |

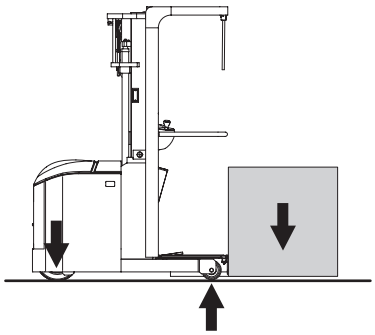
# 9 PERIODICAL REPLACEMENT PARTS

Periodical inspection and maintenance are very important to keep your forklift truck in good condition.
The parts in the following table are also very important for safe operation but it is difficult to check the condition by appearance.
Therefore, Nichiyu strongly recommends to replace these parts in every period even if it looks no problem.
The periodical replacement of these parts is not covered by warranty.

| Periodical replacement parts | | Period |
|---|---|---|
| 1 | Mast hanging cable | 1 year |
| 2 | Mast hanging hoses | 1-2 years |
| 3 | Safety strap | 2 years |
| 4 | Power cylinder of the pallet rock. | 2 years |
| 5 | Body belt of the safety strap. | 3 years |
| 6 | Fixed hoses | 2-3 years |
| 7 | Charging cables | 2-4 years |
| 8 | Lift chain | 2-4 years |

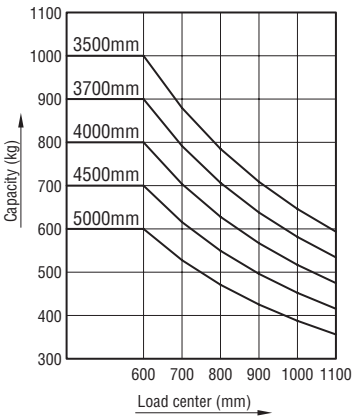
# 10 STABILITY OF FORKLIFT TRUCK

As shown in the following illustration, the forklift truck is balanced on its load wheel with the maximum rated capacity load on the forks.
Therefore, careful attention should be paid to the load center.
If the load weight and/or gravity exceed the rated capacity or load center, the drive and caster wheels are lifted and the forklift truck tips over.



## ■Load center and load chart

Distance from the load center of gravity to the fork surface is called the load center.
The LOAD CHART shows the relation of the load center and capacity.
Observe the LOAD CHART which are installed on each forklift truck.




CAUTION

**1) Insert the fork into the pallet fully.**
**2) The excess stress may be applied to the forklift truck if the load is handled by the tip of the fork even that weight is within the maximum lifting capacity.**
**3) Do not handle the shifted load to avoid slipping down the load as well as to damage the forklift truck.**
**4) Lifting or lowering must be done slowly and carefully.**

## ■Stability of the forklift truck

The stability of the forklift truck is prescribed by safety regulation in each country.
The safety of the forklift truck is guaranteed under restricted conditions in those regulations.
So, the safety of the forklift truck is NOT guaranteed for all operating conditions.
The condition is as follows.

- The operating surface must be flat and hard.
- When travelling, the mast and fork must be in the standard condition.
- When stacking or picking a load, the fork should be levelled. The operating speed should be slow down.
- The truck must be well maintained.

NOTE

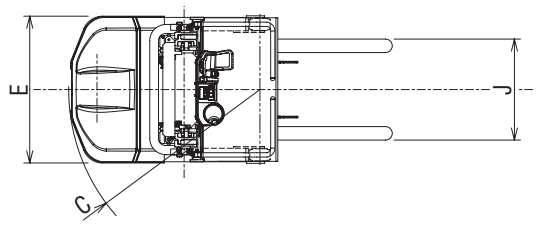
The standard condition when unloaded is that the fork is raised about 300mm above the floor.

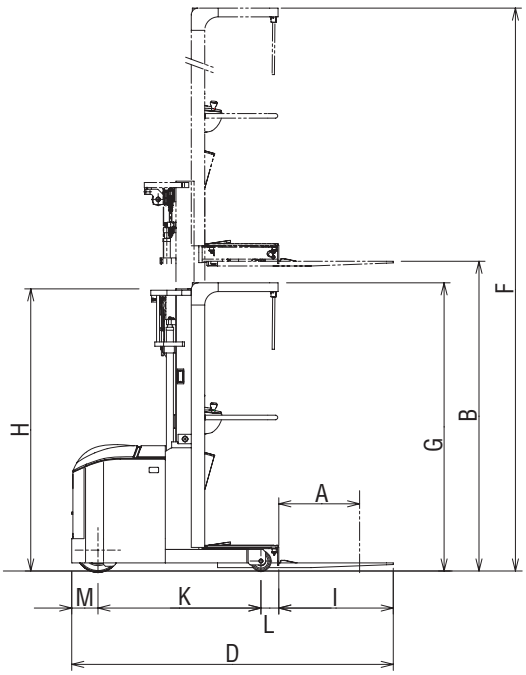
NOTE

The standard condition when loaded is that the fork is raised about 300mm above the floor with the maximum weight of the load.

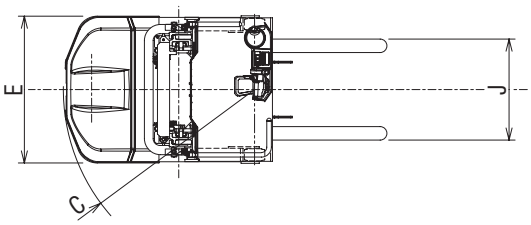
# 11 SPECIFICATIONS

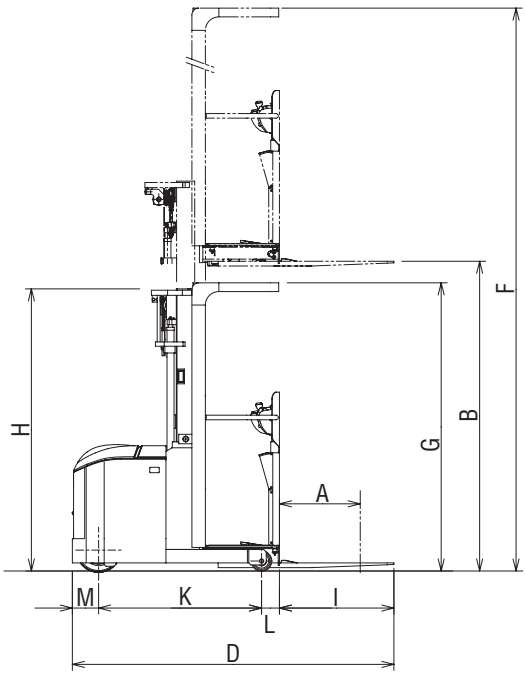
**RB10/15D [Drive-front type]**




**RB10/15F [Fork-front type]**



| Model | | | | | RB10 | RB15 |
|---|---|---|---|---|---|---|
| Specification | Capacity | | | kg | 1000 | 1500 |
| | Load center | | A | mm | 600 | |
| | Maximum lift height | | B | mm | 3000 | |
| | Travel speed | Loden | | km/h | 8.0 | 7.5 |
| | | Unloden | | km/h | 9.0 | 8.0 |
| | Lift speed | Loden | | mm/s | 220 | 200 |
| | | Unloden | | mm/s | 330 | 320 |
| | Minimum turning radius | | C | mm | 1420 | 1520 |
| Overall dimension | Overall length | | D | mm | 2455 | 2560 |
| | Overall width | | E | mm | 1090 | |
| | Overall height | Fork raised | F | mm | 5080 | |
| | | Fork lowered | G | mm | 2140 | |
| | | Mast lowered height | H | mm | 2095 | |
| | Fork length | | I | mm | 920 | |
| | Fork width | | J | mm | 560-750 | 610-750 |
| | Wheelbase | | K | mm | 1210 | 1315 |
| | Front overhang | | L | mm | 130 | |
| | Rear overhang | | M | mm | 195 | |
| | Service weight (w.o./battery) | | | kg | 1740(1780) | 1890 (1930) |
| Tire | Drive (rubber) | | | | Ø330 X 145 X 1pc. | |
| | Load (Urethane) | | | | Ø152 X 90 X 2pc. | Ø152 X109 X 2pc. |
| Control system | Traction/Hydraulic | | | | Inverter control | |
| | EPS | | | | Chopper control | |
| Motor | Traction | | | kw | 2.6 | |
| | Hydraulic | | | | 8.8 | |
| | EPS | | | | 0.3 | |
| Battery (48V) | | | | 5HR | 201Ah | 210Ah |
| Charger (3Phases 200V) | | | | | Automatic stationary charger | |

Specifications are subject to change without notice for improvement.
Service weight in a bracket is for the fork-front type.

# 12 COLD STORAGE TYPE FORKLIFT TRUCK

The NICHIYU electric forklift trucks for Cold Storage Application are designed to operate in the cold storage area. This forklift truck is designed for –35°C class cold storage area.

CAUTION

- **The indoor and outdoor operations should be the same ratio, and the continuous indoor operation is 30 minutes maximum.**
- **Do not leave the forklift truck in a cold storage area.**
- **The battery shall be charged outside of the cold storage area.**

- The electrical and mechanical parts are protects from rusting, corrosion and low temperature, but periodical cleaning, lubrication and maintenance are very important.

## ■Protection from rust and corrosion

When going in and out of the cold storage area, the forklift trucks is exposed to moisture which can cause rusting or corrosion. To protect from the weather elements, a special coating and painting are applied to the cold storage application truck. Also stainless bolts, nuts and washers are used on some parts for protection.

## ■Protection from low temperature

### 1) Hydraulic oil and grease

Low viscosity oil and grease are required. Refer the following table.

### 2) Lubricating system

The grease nipples are provided on the major sliding parts. Lubricate periodically to protect these parts from rusting and wearing.

### 3) Electrical parts

The control system and switches are protected from rusting and freezing.

### (4) Non-slip tire

To prevent slipping, the non-slip tire is used for the drive tire.

Required lubricant

| Manufacture | Shell | ESSO |
|---|---|---|
| Hydraulic oil | Tellus T15 | UNIVIS 43 |
| Grease | Alvania grease RA | Beacon 325 |
| Gear oil | Same as standard | Same as standard |

RB10/15-70 SERIES

**OPERATOR'S MANUAL**

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