

ELECTRIC LIFT TRUCK OPERATOR'S MANUAL

56 SERIES

NTF200P

NTF360P

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
ELECTRIC FORKLIFT TRUCK

INTRODUCTION



The operator should read and understand the 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 tractor. Keep this manual after reading.
- If you have any questions, please feel free to contact your local NICHYU dealer.

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

	DANGER	Indicates an extremely hazardous situation which, if not avoided, will result in death or serious injury. You shall observe this instruction.
	WARNING	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury. You shall observe this instruction.
	CAUTION	Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. You shall observe this instruction.
	NOTE	Indicates suggestions, tips and hints related to the safety of a operator and maintain of a tractor.

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1

SAFETY OPERATION

Information for safety operation



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



Only a trained and authorized operator shall operate the tractor.



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



Do not use a tractor in the following circumstances.

- ① **Where the temperature is less than -10°C or more than 40°C .**
- ② **Where the explosive gas (thinner, gasoline etc.) may exist.**



Keep the operator's compartment clean at all times.



Do not operate the tractor with greasy or wet hands.



Do not modify the tractor.

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

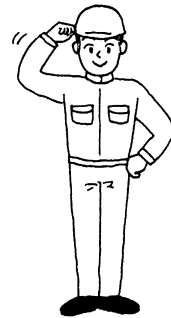


Carry out the daily inspection before operation.



Prior to handling, confirm the weight of a load.

- Prohibit to draw over the rated drawbar pull.

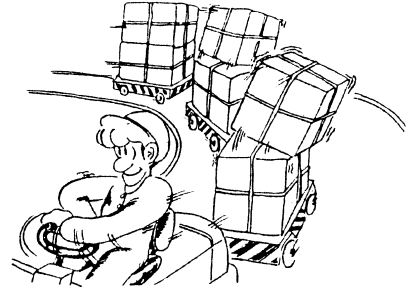


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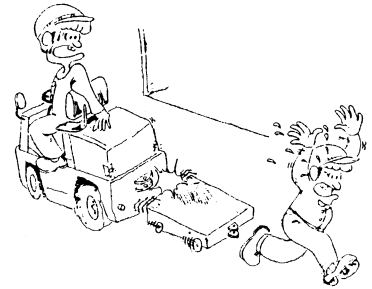
SAFETY OPERATION



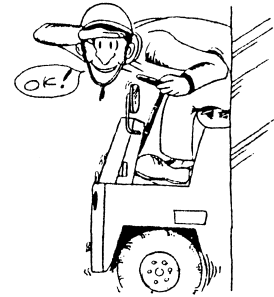
Refrain from a sudden start, quick braking and quick turn.



Be careful about the condition of road surface, and not couple while the tractor is leaned and is on and incline.



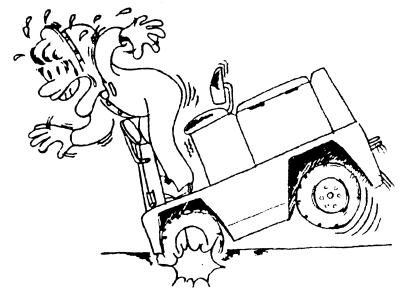
When turning, be sure to confirm safety around the truck, and travel slowly.



Do not either run sideways or change the direction along the inclined surface.



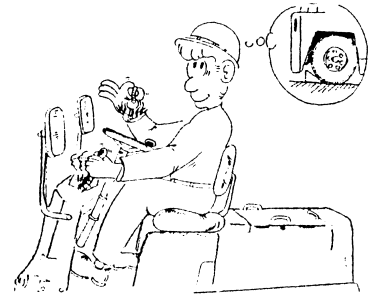
Do not run over an obstacle on the road.



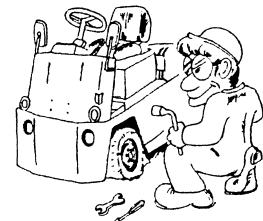


When leaving the truck, remove the key.

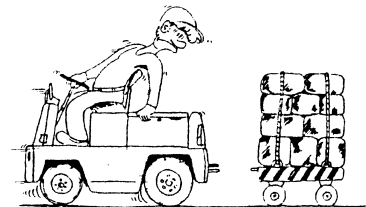
- Refrain from parking on an incline. If parking on an incline should unavoidably be obliged, be sure to apply buffer-stops.



When the truck is damaged, immediately repair and never operate the truck until the repair is finished.



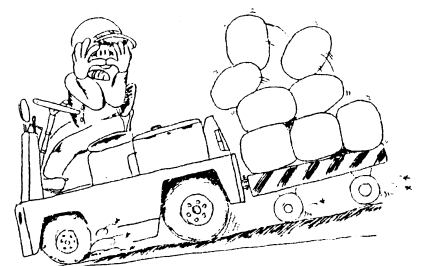
When coupling the trailer, approach slowly.



When turning, the trailers draw near to the inside. So make large turn considerably.



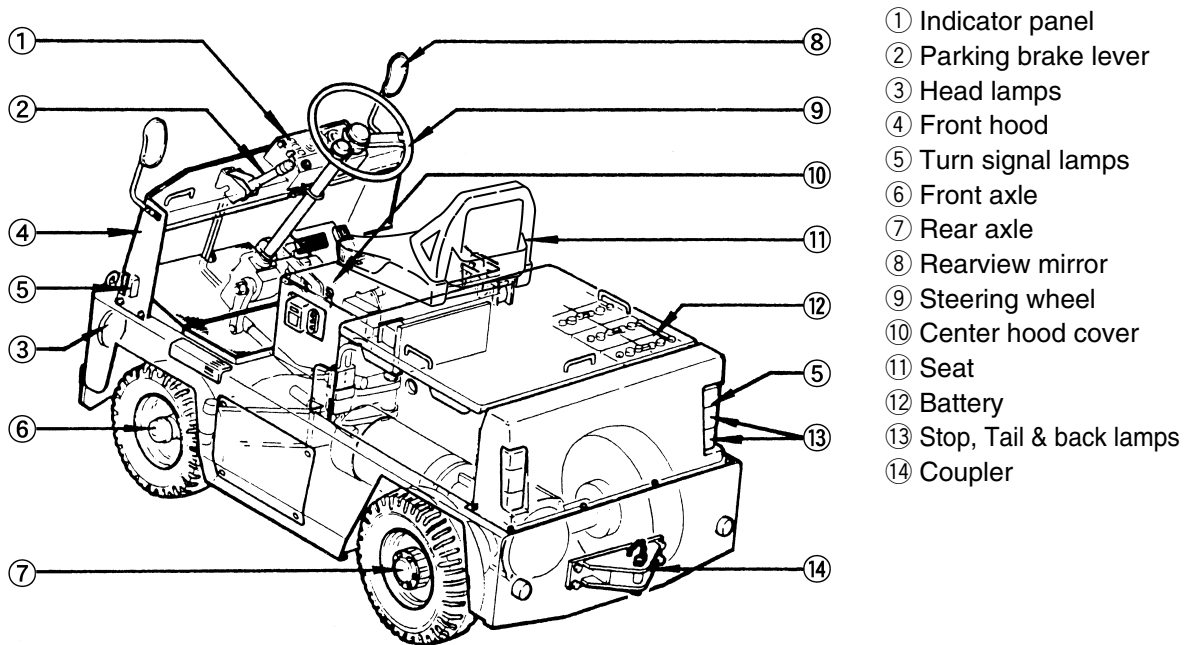
Refrain, from turning and quick braking on an incline as it is dangerous.



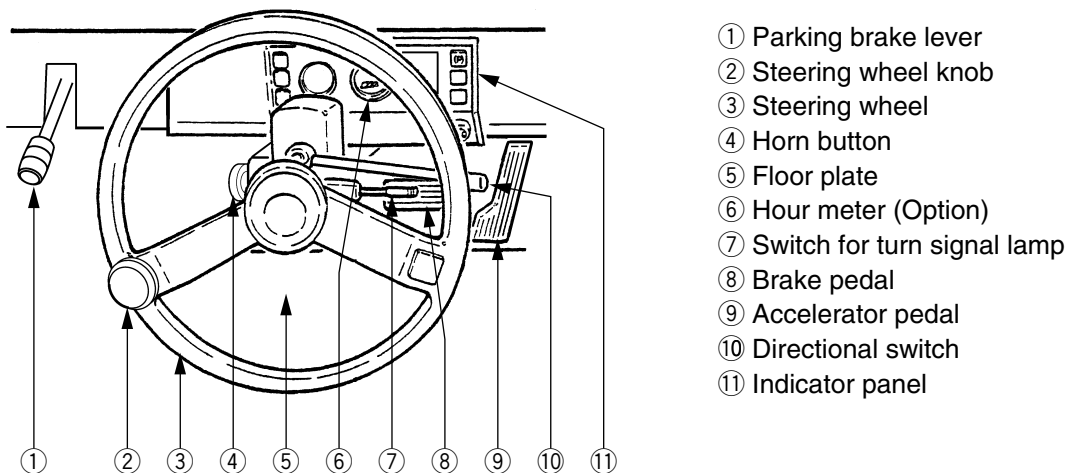
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PARTS NAME AND FUNCTION

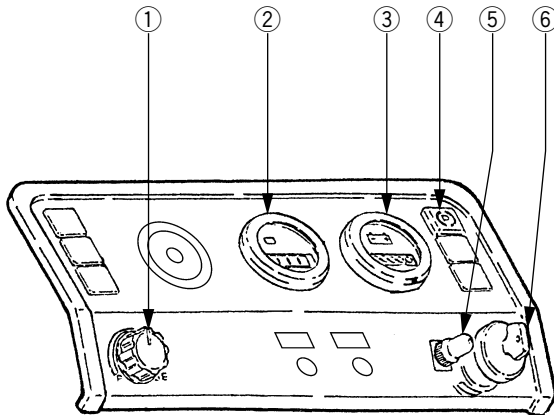
■ ***Name of parts***



■ ***Driving system***



Indicator panel



- ① Save energy switch
- ② Hour meter (Option)
- ③ Battery capacity indicator
- ④ Parking lamp (red)
- ⑤ Switch for head lamp and tail lamp
- ⑥ Key switch

① Save energy switch

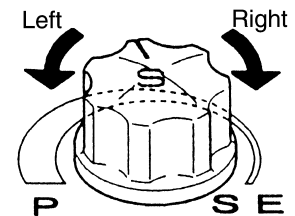
The switch adjusts peak current flowing to the traction motor. When turning the switch clockwise, starting power and gradeability are reduced. This results the soft acceleration and save the battery energy consumption.

When turning the switch to the left end ("P" position), the acceleration and gradeability are maximum.

The forcible by-pass circuit can activate at this "P" position only.

When starting is difficult, set this switch to "P" (click is heard) and depress the accelerator pedal fully. After three to five seconds, the by-pass contactor is activated and the tractor start moving.

When turning the switch to the right end ("SE" position), the acceleration becomes soft.

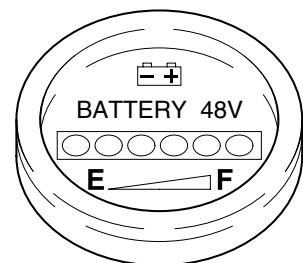


② Hour meter (Option)

The hour meter indicates the operational integrating hour. it is useful to know the operational hour efficiency and periodical inspection for the better management and schedule of materials handling.

③ Battery capacity indicator

The battery capacity indicator measures the state of charge of the battery. when the key switch is turned on, the five green lamps will light, one at a time from left to right to indicate the state of charge of the battery. With fully charged battery, all five will light. As the battery energy is used, the lights will go out one at a time from right to left. When red light begins to flash, battery needs to be recharged.



④ **Parking lamp (red)**

The parking lamp indicates parking brake applied. The parking lamp warns against starting while parking brake is applied.

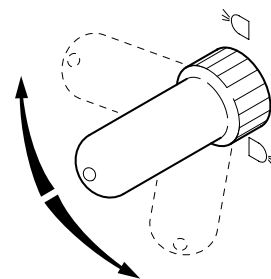
⑤ **Switch for head lamp and tail lamp**

Switch position :

Tilt up : Turn on the head lamps and the tail lamps.

Neutral : All lamps are turned off.

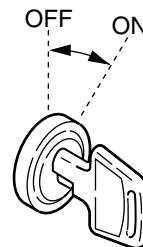
Tilt down : Turn on the tail lamps.



⑥ **Key switch**

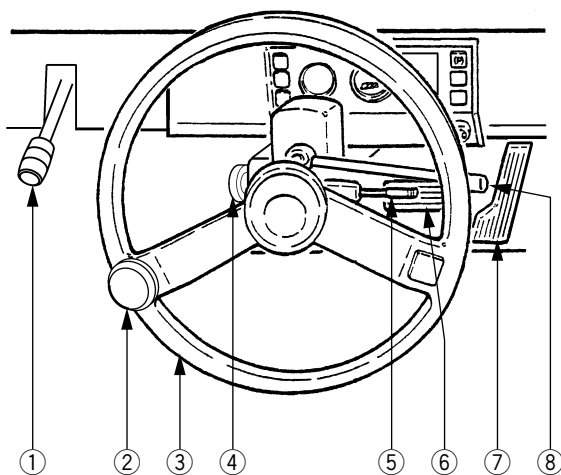
OFF : This is the position to insert or remove a key.

ON : Preparation for operation is completed by turning the key switch clockwise, and at the same time, the operation lamp (green) on the battery capacity indicator is put on.



Turn off the key switch while stopping operation or charging the battery.

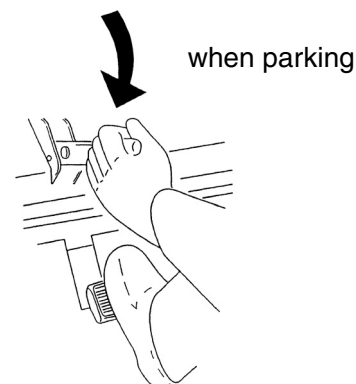
■ Operation



- ① Parking brake lever
- ② Steering wheel knob
- ③ Steering wheel
- ④ Horn button
- ⑤ Switch for turn signal lamp
- ⑥ Brake pedal
- ⑦ Accelerator pedal
- ⑧ Directional switch

① **Parking brake lever**

Pull the parking brake lever fully when parking. Push the parking brake lever forward when releasing the parking brake.



② Steering wheel knob ③ Steering wheel

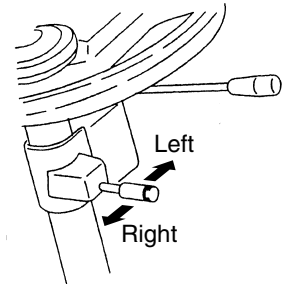
When steering the wheel, grasp the steering wheel by the right hand and the left hand are put on the steering wheel lightly.

④ Horn button

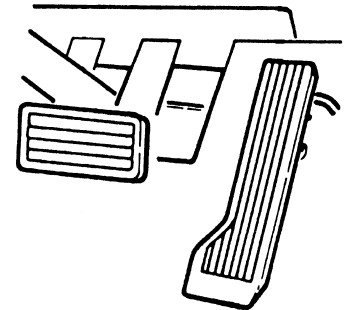
Horn button is equipped on the left side of the post for steering wheel. Horn sounds by pushing button.

⑤ Switch for turn signal lamp

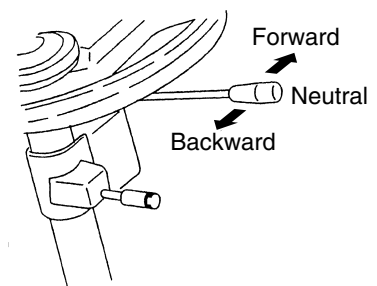
Lamp at either right or left hand side is put on when the switch is either pushed or pulled. Move the switch by finger lightly.

**⑥ Brake pedal and ⑦ Accelerator pedal**

Depress the accelerator pedal gently. The travel speed is adjusted by depressing angle of the pedal.

**⑧ Directional switch**

When the switch is pushed forward, truck is ready to go forward. When it is pulled, truck is ready to go backward.



Do not depress accelerator pedal before turning on key switch and putting directional switch either direction.

Seat

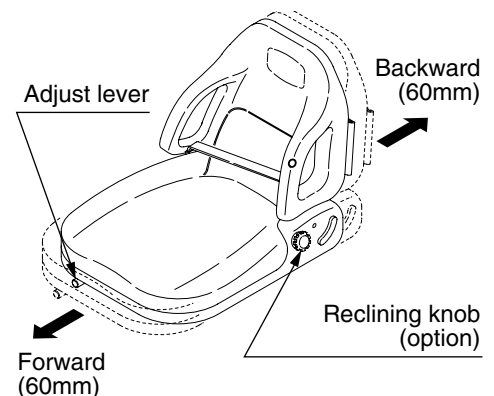
Operator restraint type seat is equipped as standard. It is adjustable for the best position to forward or backward.

Adjust the seat for proper operating position. The operator's manual can be stored in the box behind the back of the seat.

Adjustable position of the seat

Forward : 60mm

Backward : 60mm



3

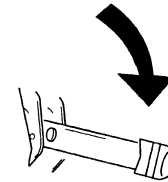
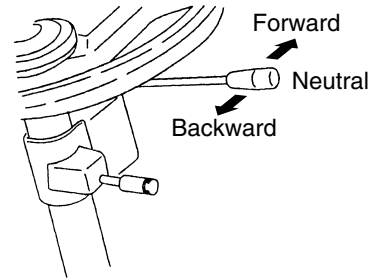
DRIVING AND OPERATION



- Do not operate the tractor prior to daily inspection.
- Be sure to confirm safety around the tractor when operating.

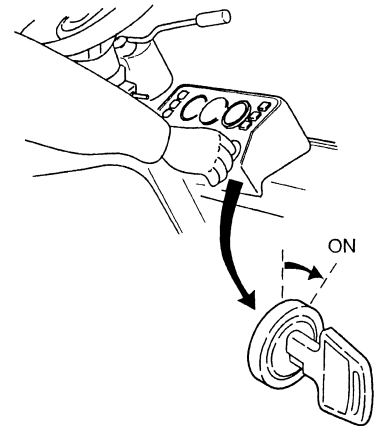
■ ***Preparation of start***

- 1) Check the directional switch is in the neutral position and the parking brake is applied.



- 2) **Turn on the key switch**

Grasp the steering wheel knob and then turn on the key switch.



- 3) **Operation of the directional lever**

Operate the directional lever to the moving direction.

Forward : Push the lever forward.

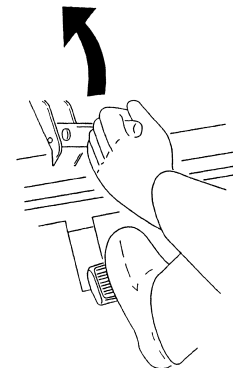
Backward : Pull the lever backward.

- 4) **Release the parking brake**

Depress the brake pedal.

Push the parking brake lever forward fully to release the parking brake.

Grasp the steering wheel knob by the left hand, put the right hand lightly on the steering wheel.



■ **Traveling**

1) **Start**

Release the brake pedal and depress the accelerator pedal gradually, then the tractor will begin to move.

Acceleration varies in accordance with the depressing of the accelerator pedal.

2) **Slow down**

Reducing depression of accelerator pedal slows down travel speed.



Slow down at the next areas.

- **At a corner**
- **Approaching to load or pallet.**
- **Approaching to loading area.**
- **Narrow aisle area.**
- **On a rough floor.**

3) **Traveling with stipulated speed**

Observe an appropriate stipulated travel speed in the working place when the truck operates at factory or indoor.

4) **Turning**

When turning corner, slow down and turn the steering wheel and taking care the trailers not to hit the corner and so on. When towing the trailer, taking enough care the turning.

5) **Stop**

Slow down and apply the brake slowly.



Do not apply brake suddenly.

6) **Towing**

Approach to the trailer, confirming the position of couplers, so as to be in one line and connect the couplers between the tractor and the trailer. Confirm that the individual loads on the trailers are put on securely and drawbar pins are inserted into the coupling devices securely.

Start to drive slowly so as to decrease the looseness of coupling device and drive at constant speed. On turning at a corner, slow down beforehand and make a large turn. On arriving the destination, loosening depression of accel pedal and brake gradually. Avoid a sudden brake so as not to hit the trailers each other and fall down the cargo from the trailers.

7) Parking

When parking the tractor,

- When getting off the tractor, correctly apply the parking brake lever.
- Do not park the tractor on a slope.



Remove the key swith when operator leaves truck.

4

BATTERY AND CHARGER

■ Battery



- This section explains NICHYU's genuine battery (GS made) 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)



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



► Pay attention to an electric shock



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



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

► Connect correctly



Do not swap the positive and negative terminals.

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

► Keep tools away



Keep tools away from terminals to avoid sparks or shorting.

► Do not over-discharge



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



- Keep the upper surface of the battery clean.
- Do not use a dry cloth when cleaning, as it may produce static electricity.



Clean the battery before charging.

► Wear safty clothes



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

► Be careful the electrolyte



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 NICHYU'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



- 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.



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

■ *Precautions for charging the battery*

► Check electrolyte level



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.



Do not over-charge the battery.

► Pay attention to an electric shock



Do not touch the terminal or transformer when charging.

- The charger has high voltage and power when working.

► Charge in well-ventilated areas.



- 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.

► Check cable and plug

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



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

► Check specific gravity

Measure the specific gravity of all cells before charge.

► Interruption of charge

- 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 recommended.)

■ 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 with-
in $\pm 10\%$ of the rated input voltage.



The charger should be used within 0°C to
 $+ 40^{\circ}\text{C}$ ambient temperature.
If the temperature is 40°C or above, the charger
may be overheated.



The charger shall be protected from the mois-
ture 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 period-
ically.
If you find any damages, do not use the charg-
er 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.

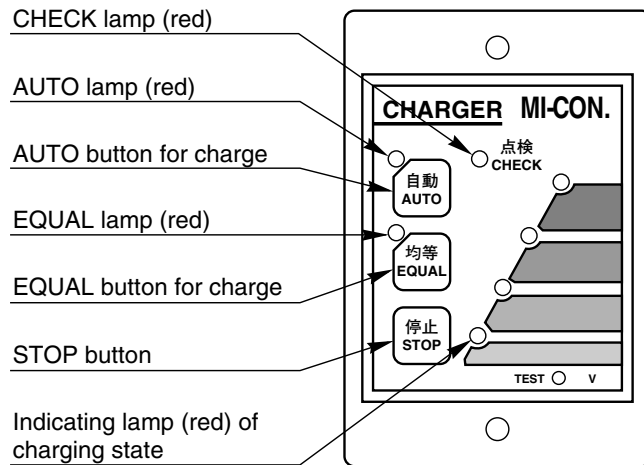


Do not use the charger continuously to charge
some batteries in turn.
The continuous use can cause overheating,
and the charger may be damaged.

■ Charging method

▶ Control panel (Controller)

▶ Normal (Daily charge)



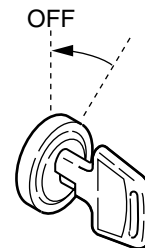
Lamps indicate the state of charging. The four lamps turn on from bottom to top by turns in accordance with the charging state. All four lamps turn on when charged fully.

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

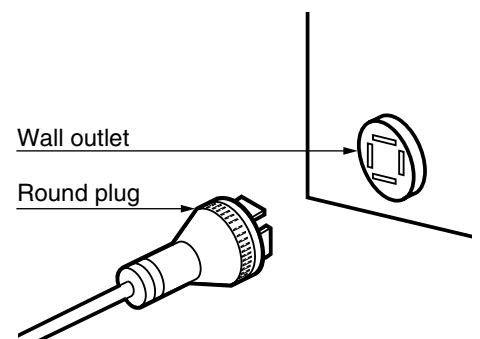
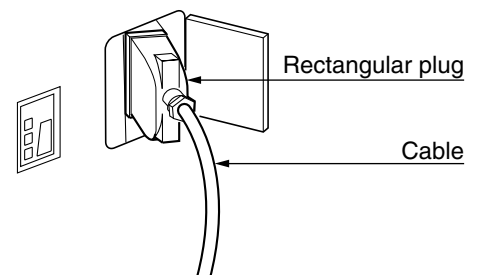
○ Built-in charger

- ① Move the forklift truck to designated charging area.
- ② Turn off the key switch and remove the key.

- ③ Connect the rectangular plug to the receptacle on the charger panel.



- ④ Connect the A.C. plug of the charger.



Then both AUTO and EQUAL lamps turn on.



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

- ⑤ Push the AUTO button.
The AUTO lamp (red) is turned on, and EQUAL lamp is turned off.

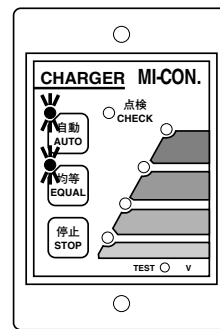
- ⑥ When charge is completed, all four lamps (red) of charging state are turned on.

- ⑦ Disconnect the battery plug and the A.C. plug of the charger, and firmly connect with the chassis plug.

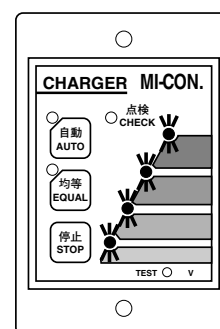
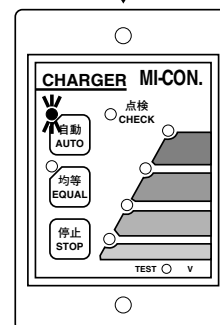
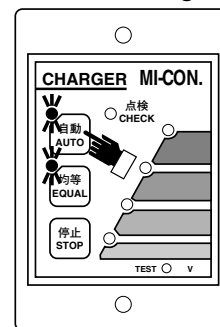
► Balancing charge

- Do not disconnect a charging plug, an electric source plug and battery plug.
- Do not operate the all control levers on the truck by using charger.
- When discontinue the charging of battery, push the stop button with dry hands only.
- Do not touch any parts of charger and cable by wet hands.

Specific gravity of electrolyte in each cell becomes



Start to charge



Charge is stopped automatically.



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

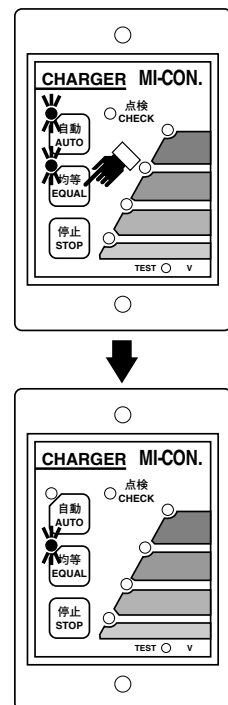
Balancing charge is required for the following cases.

- Every two weeks when the lift 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 to charge

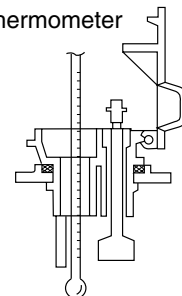


- ② Measure all cells after completion for charge.

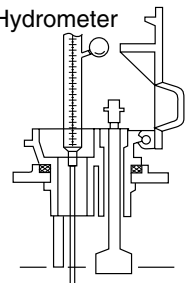


When the specific gravity is 1.26-1.28 at 20°C, the battery is fully charged.

Thermometer



Hydrometer



► **Supplementary charging**

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

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 electrolyte level**

After a charge is finished, check the electrolyte level in each cell.

If the level is low, add distilled water to the specific level.

■ Level of electrolyte and specific gravity

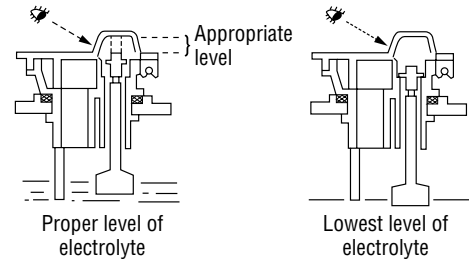
► Electrolyte level

After charging the battery, the electrolyte level is decreased.

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

► 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)

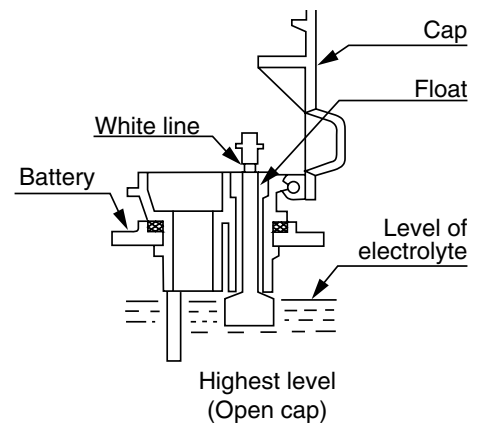
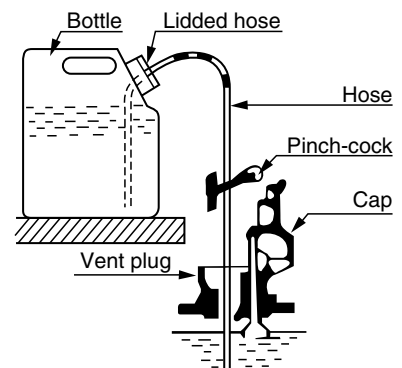
► Replenishment of water

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.

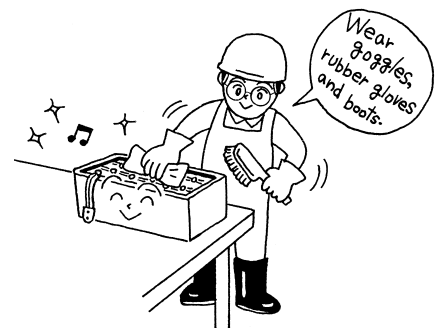
- ① Open the vent caps of all battery cells.
- ② Replenish water into each cell.
- ③ Stop replenishing when the red float is raised and the white line appears.
- ④ After replenishing to all cells, close all vent caps completely.
- ⑤ Clean the top of cells by wet cloth.



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



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



► 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)



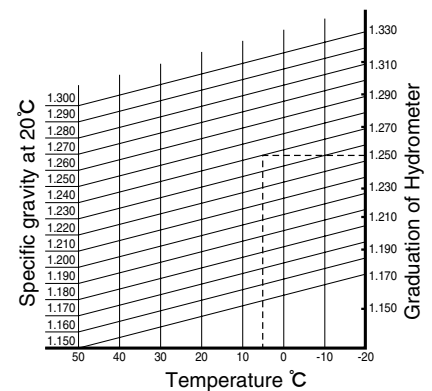
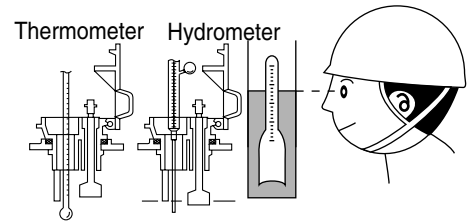
When the specific gravity is below 1.18 at 20°C, should be done the balancing charge.

SPECIFIC GRAVITY OF ELECTROLYTE AND THERMAL CONVERSION TABLE



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.



5

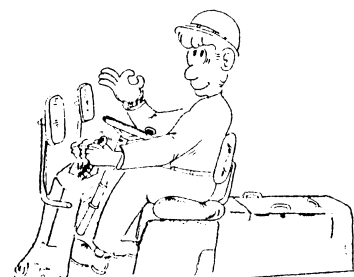
INSPECTION PRIOR TO OPERATION

A daily pre-operation inspection is the key to safety and keeping the tractor in good condition. At beginning of each shift, check your tractor to make sure it is in safe operating condition.

If faults are found, contact NICHYU's qualified facility.



- Do not operate the tractor until finishing repairs and inspections.
- Inspecting tractor 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 checking function.



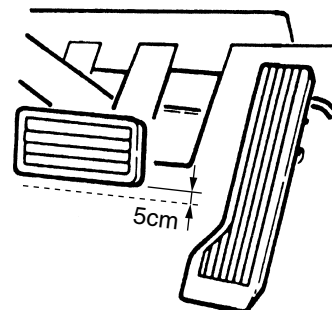
Check points and contents

	No.	Check points	Contents
Braking system	1	Brake pedal	Stroke of foot brake pedal and braking force
	2	Brake oil	Quantity and leakage
	3	Stop lamp	Put ON/OFF
	4	Parking brake	Working
Steering system	5	Play of steering wheel	Play and looseness, Operating condition
Wheel	6	Tyres	Air pressure, Abnormal wearing and / or damage
	7	Hub nuts	Securely tighten
Battery	8	Charging	Check battery capacity indicator and specific gravity, Plug is securely connected
Others	9	Turn signal lamps & horn	Put ON/OFF, Sound
	10	Head lamps	Put ON/OFF
	11	Coupler	Abnormality
	12	Others than the above	Any abnormality

Inspection procedure

① Check of foot brake pedal

Check the working of brake and confirm the depth of the foot brake pedal (approx. 5cm from floor plate). Braking distance without a load is approx. 3m.





② Check of brake oil

Remove the cap of brake oil tank and check the quantity and condition of the brake oil.

③ Check of stop lamp

When depressing the foot brake pedal, confirm whether the stop lamp is put on.

④ Check of parking brake

Pull the lever and check the pulling depth is appropriate. And then check if the brake works enough and there is abnormality.

⑤ Check play of steering wheel

Turn the steering wheel to the right and left, and check the free play (5-10cm) and steering operation.

⑥ Inspection of tyres

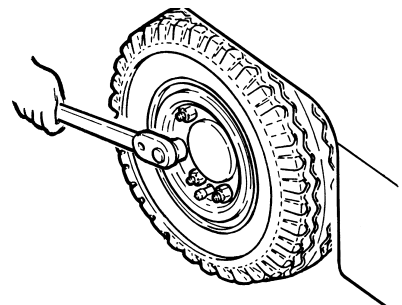
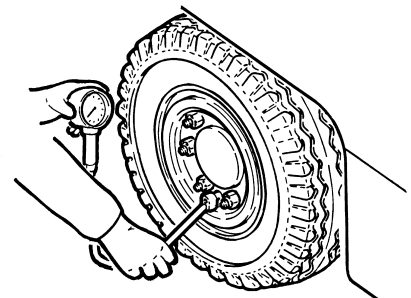
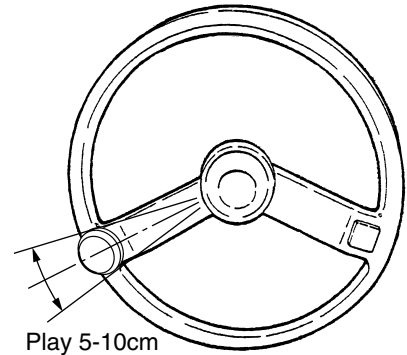
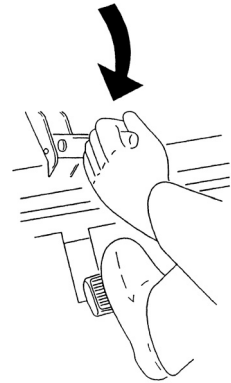
Measure the air pressure by using the air pressure gauge.

Standard air pressure		MPa (kgf/cm ²)
Models		
Tyres	NTF200P	NTF360P
Front	7.0	8.5
Rear	7.0	8.5

After checking air pressure, check that no air is leaking from the valve.

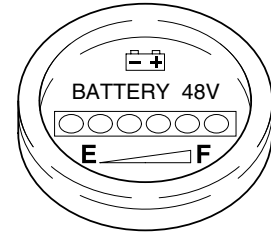
⑦ Check of hub nut

Check if the hub nuts are loosend using a box wrench.

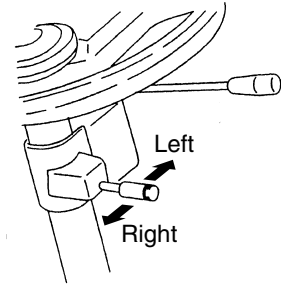


⑧ Check charging

After turning the key switch on, the green lamps of the indicator will light, one at a time. when all 5 are lit, the battery is fully charged. When the red lamp is flashing, the battery is low and requires charging.

**⑨ Check of turn signal lamp and horn**

Check if either turn signal lamp on left or right hand side is turned on by pushing or pulling the turn signal lamp switch respectively. Make sure if the horn sounds by pushing either horn button before operation.

**⑩ Check of head lamp**

Check if lamps put on.

⑪ Check of coupler

Check if there isn't any abnormality.

⑫ Others

Inspect other parts if any abnormalities are found.

6

INSPECTION OF AFTER OPERATION

■ Inspection after working

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

- Any damage or oil leakage.
- Apply grease if required.
Refer to [Lubrication points and recommended oil]
- Check any abnormal parts which are found any defects while operation.



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



If the tractor will be stored for a long time, the following maintenance should be done.

1. The tractor should be stored where no rain or snow, the temperature between -10°C and 40°C , and no open flames.
2. The balancing charge should be done every 15 to 20 days while storing.

7

PERIODIC SERVICING



Periodic inspections and maintenance are necessary to keep your NICHYU tractor 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 NICHYU's qualified facility for adjustments and/or repairs.

■ Precautions of maintenance



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



Use NICHYU recommended 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



- 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.
- Clean the electrical components with compressed air.

► Precautions during servicing



- 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.

■ 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.



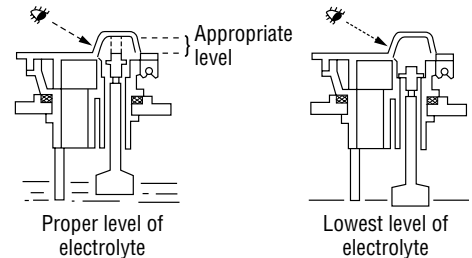
Be sure to disconnect the battery plug when inspecting the electrical system.

► Check the level of electrolyte

Refer to [Level of electrolyte and specific gravity].



- 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)

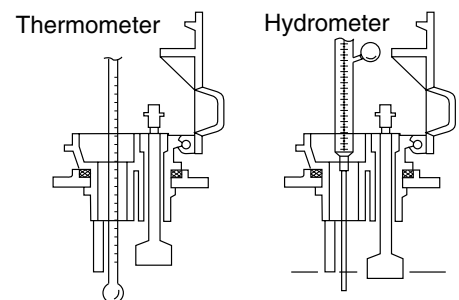
► Check for specific gravity of electrolyte

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.



- 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 and making of the float difficult to see.
Clean the caps by the following procedures.

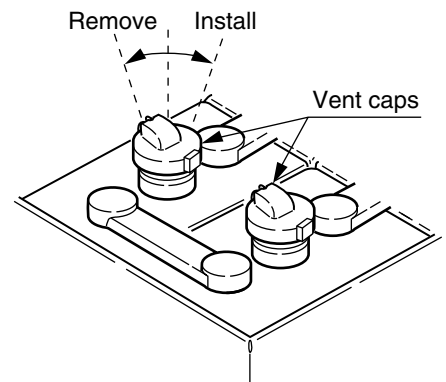


This is the case of Japanese battery.

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



Make sure all vent caps are completely closed.

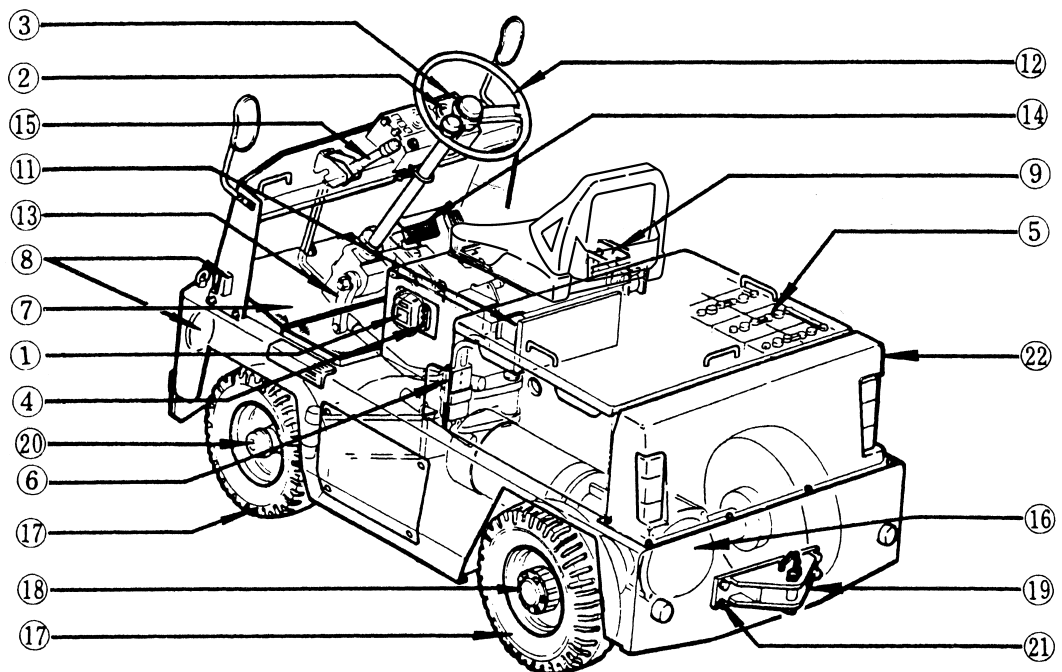


■ Monthly (200-hour) servicing

Perform the following service in addition to the weekly (50-hour) maintenance schedule.

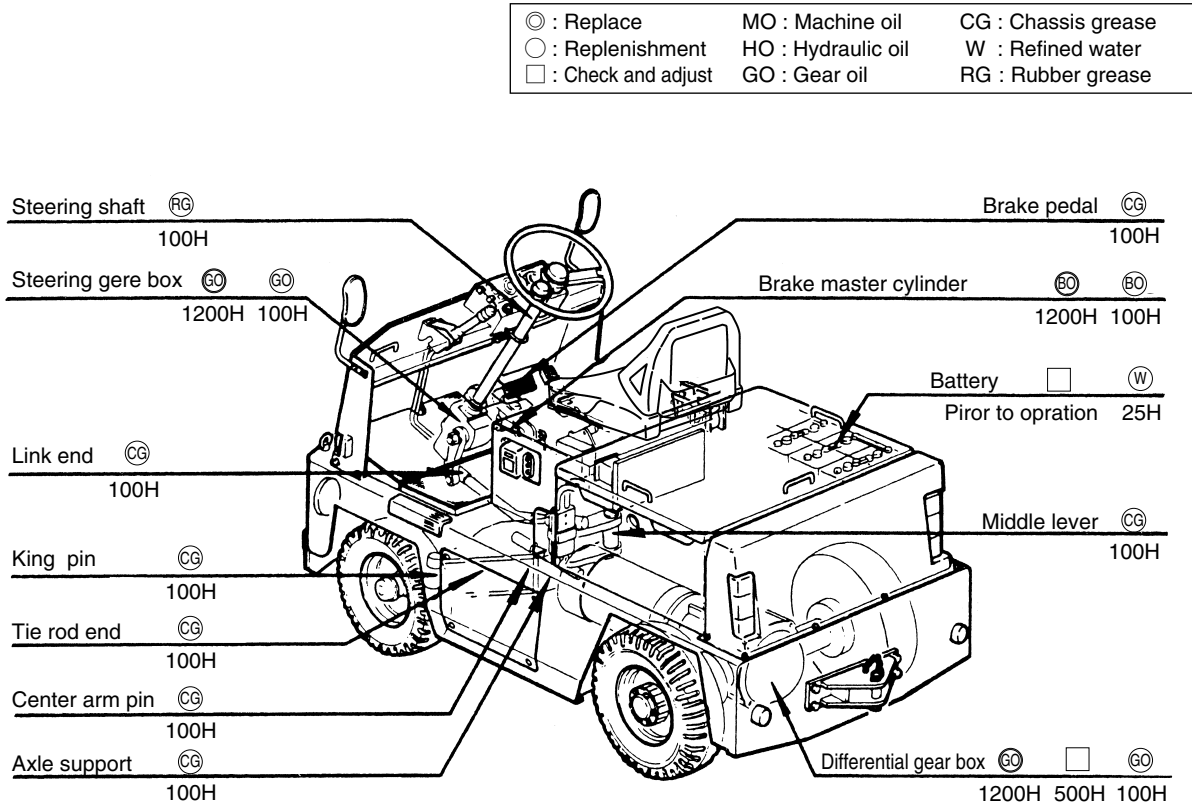
If an adjustment or replacement parts is required, contact NICHII-YU's qualified facility.

System	No.	Check points	Contents
Battery, Charge, Electric System	1	Magnet switch	Function and contacts
	2	Battery capacity indicator	Function
	3	Pilot lamp	Function
	4	Plug for charger	Damage
	5	Electrolyte	Specific gravity, quantity, leaking
	6	Terminal, plug	Damage
	7	Horn	Sound
	8	Hesd lamp, Tail & stop lamps, Back lamp & Turn signal lamps	Function
	9	Contactor	Contact, operation
	10	Micro switch	Function
	11	Wiring, terminals	Damage, looseness
Traction, steering, brake	12	Steering wheel	Play and movement
	13	Steering link	Lubrication
	14	Brake linkage	Lubricant and movement
	15	Parking brake	Function
	16	Gear case	Oil quantity, linkage and abnormal noise
	17	Tyres	Damage and wearing
	18	Hub nut	Tightening
Others	19	Coupler	Crack and transformation
	20	Various parts	Grease, Lubrication
	21	Bolt and nuts	Looseness
	22	Chassis	Transformation and crack



■ Lubrication points and recommended oil

► Lubrication points



► Recommended oil

Manufacture	Shell	ESSO	Mobile
Gear oil	Spirax EP 90	ESSO Gear Oil GP-90	Mobilube HD 90
Grease	Alvania Grease 2 Retinax A		

■ Every three-month (600-hour) servicing

Perform the following service in addition to the monthly (200-hour) maintenance schedule.

If an adjustment or replacement parts is required, contact NICHYU's qualified facility.

Check points	Contents
Contactors	When roughness is excessively, replace it.
Motors	Wearing of the carbon brushes.

■ Semiannually (1200-hour) servicing

Perform the following service in addition to the (600-hour) maintenance schedule.

If an adjustment or replacement parts is required, contact NICHYU's qualified facility.

Check points	Contents
Rear axle	Change of gear oil
Brake oil	Stain and change of the brake oil

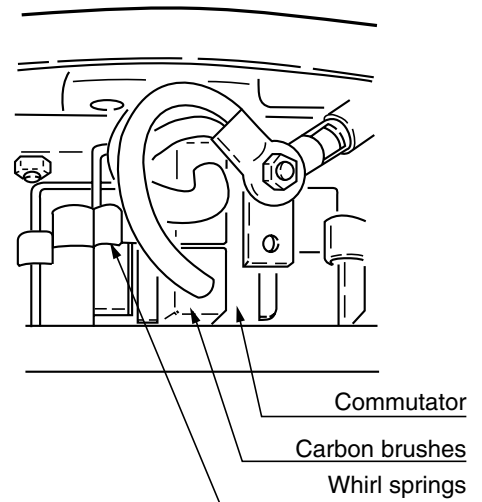
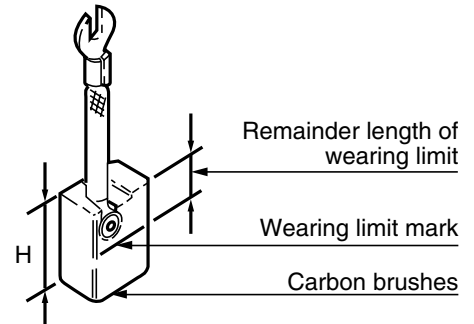
○ Inspection of motor brushes

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 of the motor.

Wearing limit carbon brushes (mm)

H	Wearing limit	Qty
32 mm	22 mm	8 pcs.



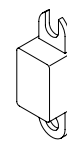
■ Replacing parts and trouble shooting

▶ Replacing fuses



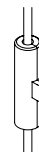
Be sure to disconnect the battery plug.

	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. Tighten the nuts securely.	



NTF200P : 275A (1 pce.) / 15A (1 pce.)
NTF360P : 275A (1 pce.) / 30A (1 pce.)

Main fuse (for travel)
[under the center food cover]



For control circuit : 5A (1 pce.)
For accessory circuit : 10A (1 pce.)

Tube fuse [under the indicator panel]



Be sure to use the fuses with prescribed amps.



NTF200P : 275A (1 pce.) / 15A (1 pce.)
NTF360P : 275A (1 pce.) / 30A (1 pce.)

Fuse (3Phone 200/220V)
[in the Charger unit]

8

QUICK FAULT FINDING AND PARTS CHANGING

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

If the following problem are occurred, check by the following points.

Troubles	Check points	Solutions
Tractor does not run	Fuse for the auxiliary control circuit would be blown out.	If the fuse is blown, replace with new fuse with prescribed amps.
	Brake micro switch is damaged. (No operating sound when the tiller arm is moved up and down.)	Contact your local NICHYU dealer.
	Control micro switch is damaged. (No operating sound when the control knob is turned.)	Contact your local NICHYU dealer.
	Fuse for the traveling circuit would be blown out.	Contact your local NICHYU dealer.
	Battery plug connection is loose.	Connect the battery plug securely.
Not to be charged	Fuse for A.C. electric source is blown out.	If the fuse is blown, replace with new fuse with prescribed amps, or contact your local NICHYU dealer.
	Charging plug, A.C. plug and battery plug connection are bad.	Connect all plugs securely.
	Fuse for A.C. or D.C. of the charger is blown out.	If the fuse is blown, replace with new fuse with prescribed amps, or contact your local NICHYU dealer.

When a fault could not be corrected, contact NICHYU's qualified facility.

► Procedure of contact changing

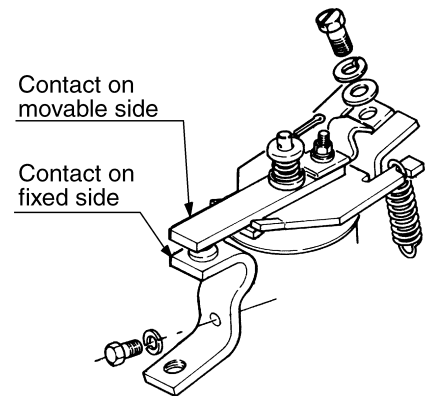


Be sure to disconnect the battery plug.

When tightening up the contact, check contacting angle. If contact angle is incorrect, the life of the contact tips will be shortened.

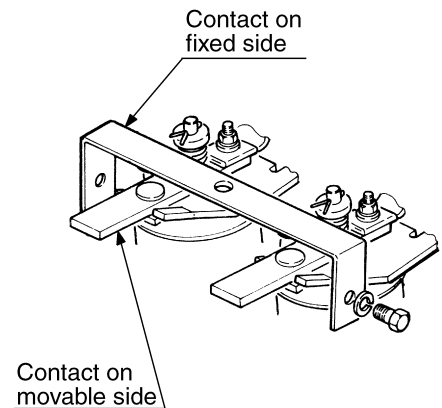
○ Contactor for travelling by-pass

- ① Remove off fitting bolt for the contact on fixed side.
- ② Remove off split pin, push spring and fitting bolt and then replace the contact on movable side.



○ Contactor for forwarding and reversing

- ① Remove off split pin, push spring and fitting bolt and then replace the contact on movable side.
- ② Remove off fitting bolt for the contact and then replace the contact on fixed side.



9

PERIODICAL REPLACING PARTS

Periodical inspection and maintenance are very important to keep the good condition of your truck.

The parts in the table are also very important for safe operation.

NICHIYU recommends that you replace these parts every period as listed in the Periodical replacement parts chart even if their appearances are good.

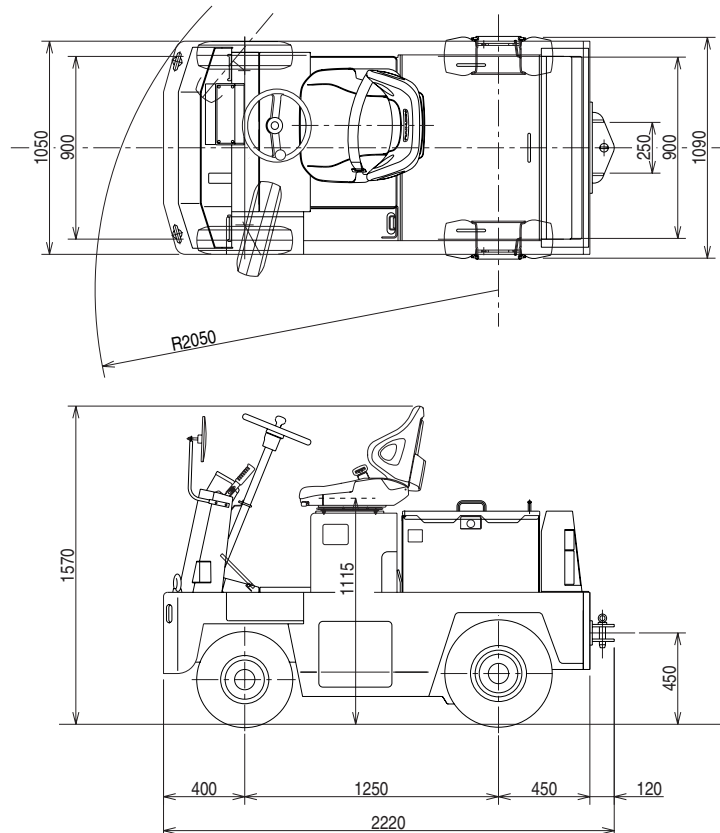
The periodical replacement of parts is not covered by warranty.

	Periodical replacement parts	Period
1	Cup and dust seal of brake master cylinder and wheel cylinder	1 year
2	Brake hoses or tubes	2 years
3	Stop switch	2 years

10

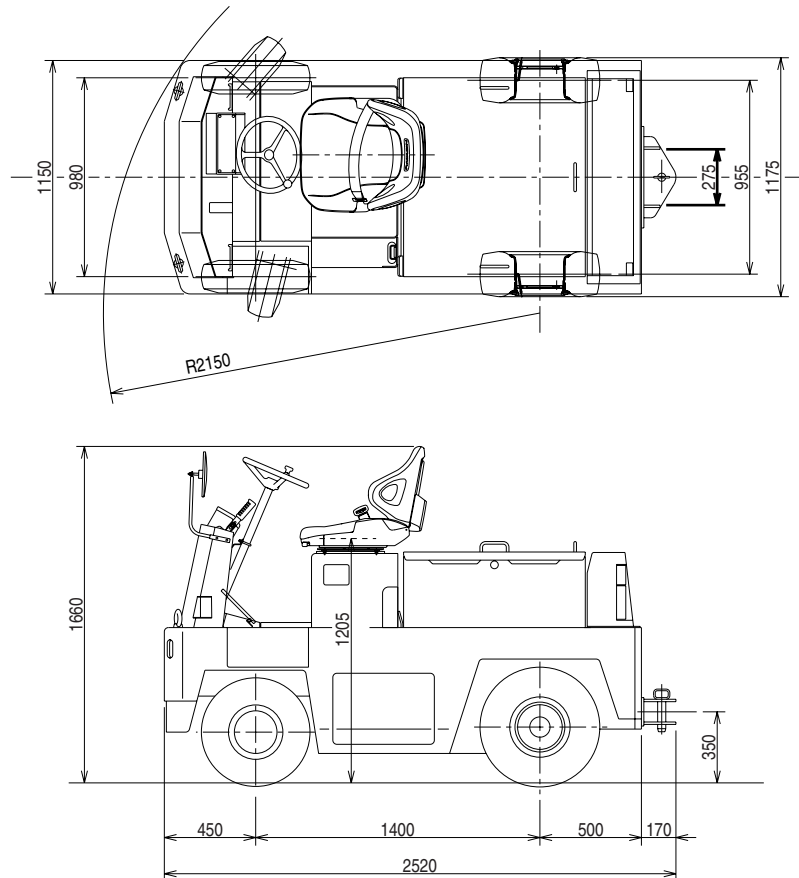
SPECIFICATIONS

NTF200P



Drawbar pull (1 Hour)	1.96 KN (200 kgf)
Travel speed	Laden 7.0 km/h
	Unladen 15.0 km/h
Motor	7.8 kw
Battery	48V 330 Ah/5HR
Control system	FET chopper control
Charger	Automatic built-in charger
	3 Phase 200V 6.4KVA
Tyres	Front 5.00 - 8 - 8PR
	Rear 21 X 8 - 9 - 14PR
Service weight	1795 kg (w/o battery)

NTF360P



Drawbar pull (1 Hour)	3.53 KN (360 kgf)
Travel speed	Laden 6.0 km/h
	Unladen 12.0 km/h
Motor	10.0 kw
Battery	72V 400 Ah/5HR
Control system	FET chopper control
Charger	Automatic built-in charger
	3 Phase 200V 12.0KVA
Tyres	Front 6.00 - 9 - 10PR
	Rear 23 X 9 - 10 - 16PR
Service weight	2705kg (w/o battery)

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Overseas Customer Service Division

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