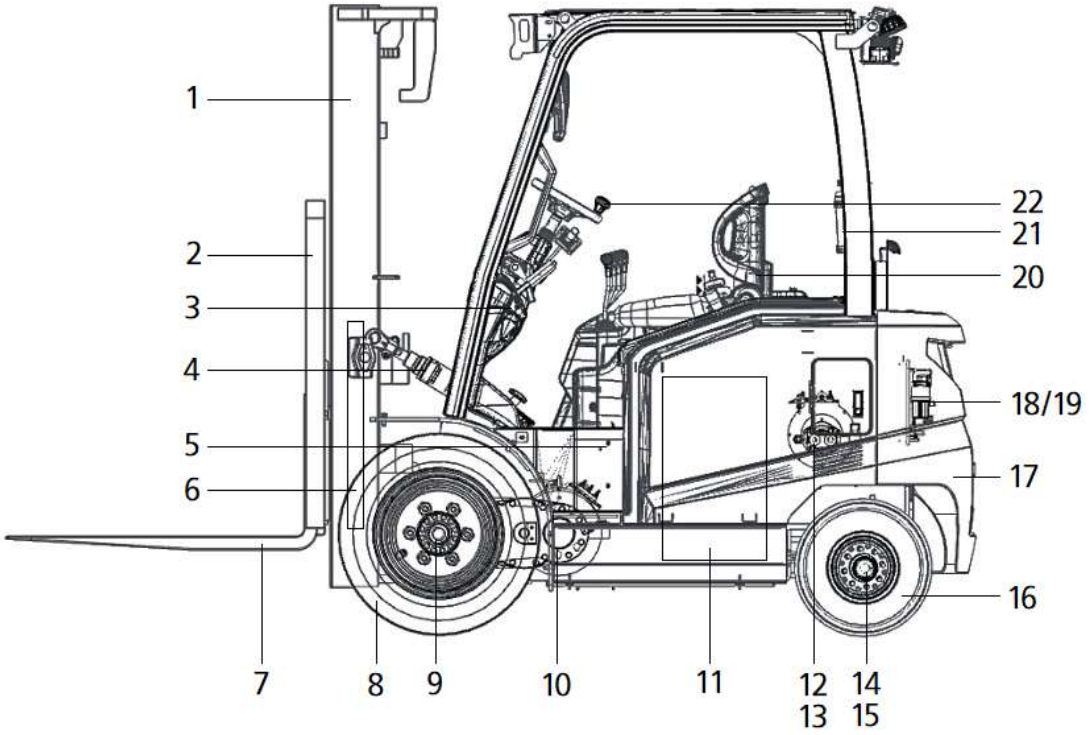
SECTION 2 REMOVAL & INSTALLATION OF UNIT

GROUP 1 MAJOR COMPONENTS



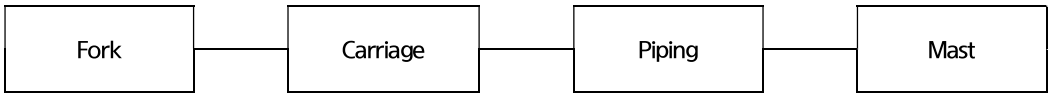
1	Mast	9	Drive axle	17	Counterweight
2	Backrest	10	Drive motor	18	Traction control
3	Steering unit	11	Battery	19	Pump control
4	Tilt cylinder	12	Pump motor	20	Seat
5	Main control valve	13	Hydraulic gear pump	21	Overhead guard
6	Lift cylinder	14	Steering cylinder	22	Steering wheel
7	Fork	15	Steering axle		
8	Front wheel	16	Rear wheel		

GROUP 2 REMOVAL AND INSTALLATION OF UNIT

Remove and install following units as explained in the flow chart.

1. MAST

REMOVAL



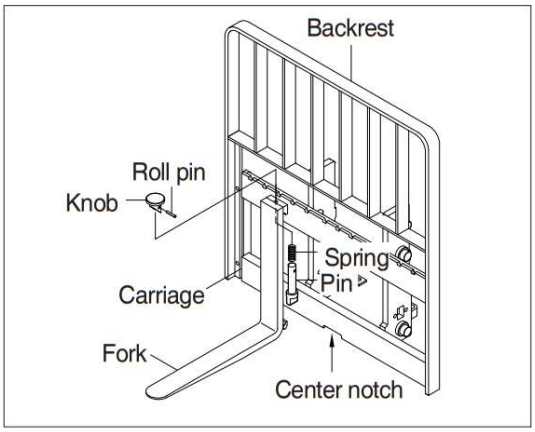
1) Forks

① Lower the fork carriage until the forks are approximately 25 mm from the floor.

② Turn knob up and slide one fork at a time toward the center of the carriage where a notch has been cut in the bottom plate for easy removal.

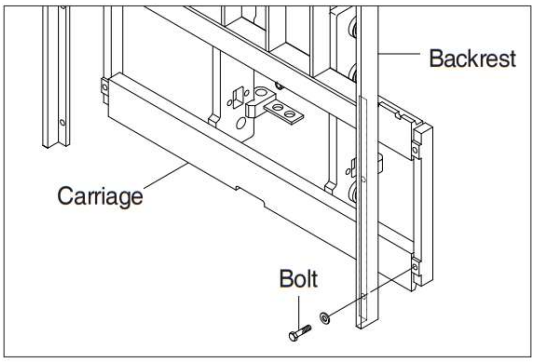
③ Remove only one fork at a time.

※ On larger forks it may be necessary to use a block of wood.



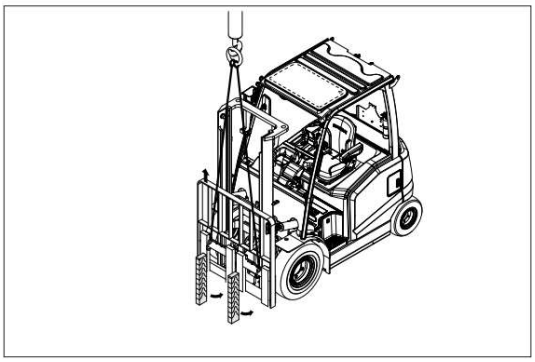
2) Backrest (If necessary)

Remove bolts securing backrest to fork carriage. Lift backrest straight up and remove it from carriage.

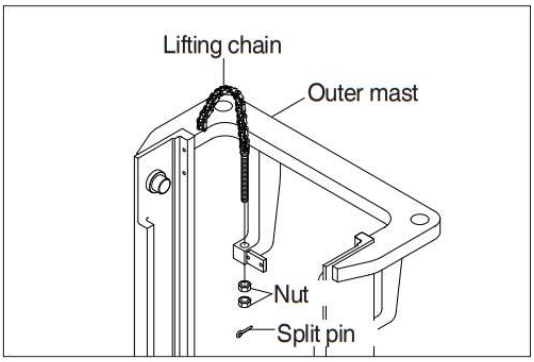


3) Carriage

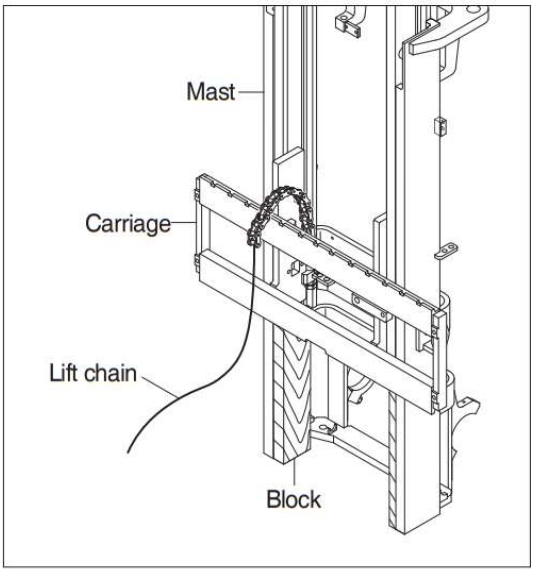
① With the mast vertical, raise the carriage high enough to place blocks under the carriage. This is done to create slack in the load chains when the carriage is lowered. Lower the carriage all the way down to the floor. Make sure the carriage is level, this will prevent any binding when the mast is raised.



② While supporting lift chains, remove the split pin and nuts from the chain anchor.



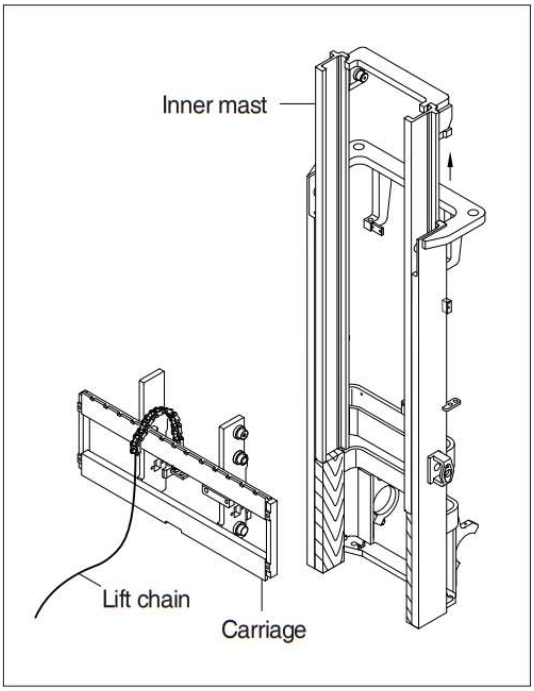
③ Pull the chains out of the sheaves and drape them over the front of the carriage.



④ Slowly raise inner mast upright until mast clears top of fork carriage. Move carriage to work area and lower the mast.

⚠ **Make sure that carriage remains on floor and does not bind while mast is being raised.**

※ Inspect all parts for wear or damage. Replace all worn or damaged parts.

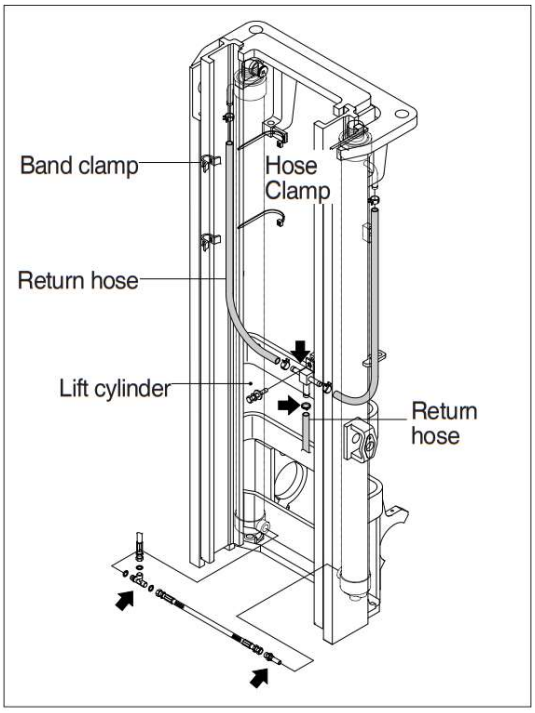


4) Piping

① Remove the return hoses and clamps attached to the lift cylinder

② Remove hose assembly, valve and connector from the lift cylinder

※ Put blind plugs in the piping immediately after removing hoses to prevent the hydraulic oil from flowing out and also prevents dust and dirt from getting in.



5) Lift cylinder

① Loosen and remove stud bolts and washers and secure lift cylinders to outer mast.

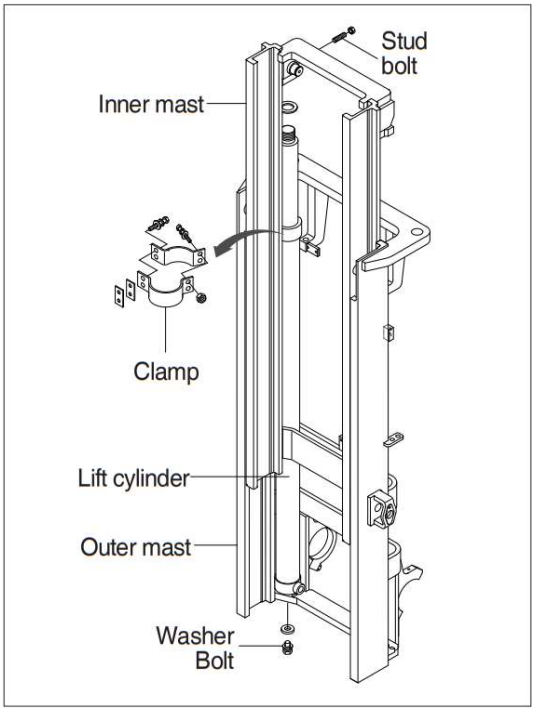
② Bind the lift cylinder with overhead hoist rope and pull up so that the rope has no slack or binding.

※ Make sure that the lift cylinder be tightened firmly for safety.

③ Loosen and remove hexagon bolts and nuts securing the cylinder.

④ Using an overhead hoist, slowly raise the inner mast high enough to clear lift cylinder.

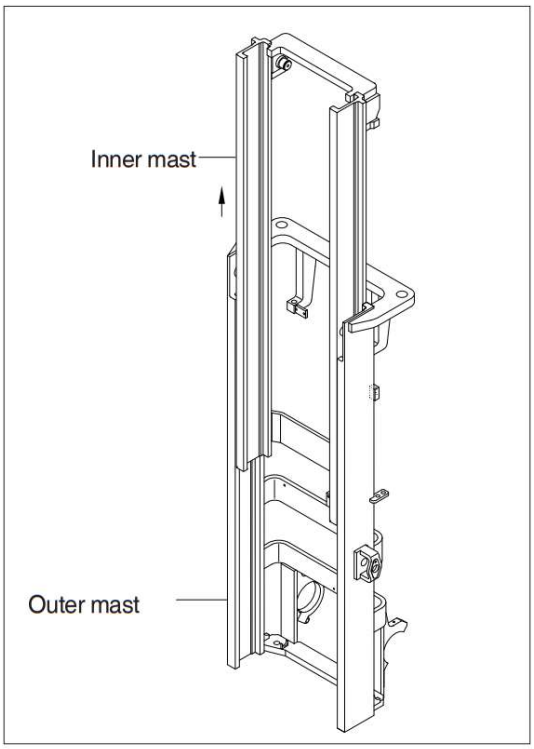
⑤ Using an overhead hoist, draw out lift cylinder carefully and put down on the work floor.



6) Inner mast

Using an overhead hoist raise the inner mast straight and carefully draw out of outer mast section.

⚠ **Be careful the mast not to swing or fall.**



7) Tilt cylinder pin

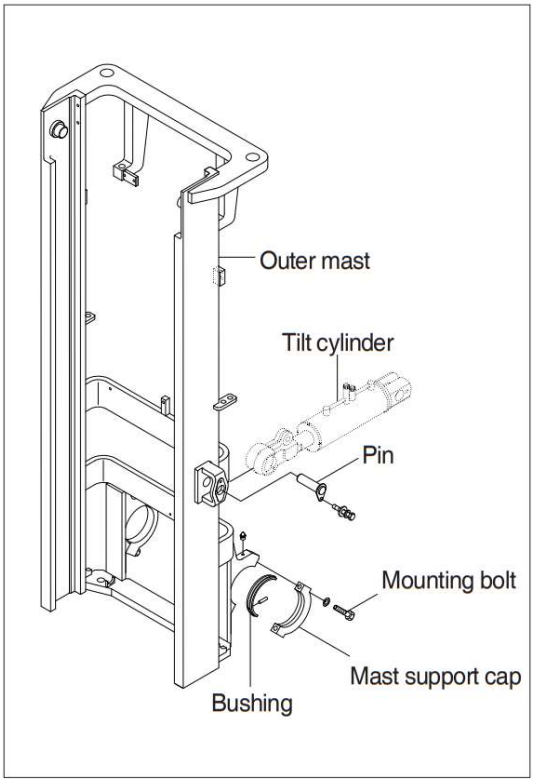
Loosen the bolt and remove the tilt cylinder pin.

8) Mast mounting pin

① Attach a crane to the stay at the top of the outer mast, and raise enough to sustain jacked up truck.

※ **This operation is carried out under the truck, so use a pit, or if there is no pit, jack up the truck and loosen with an impact wrench.**

② Loosen the mounting socket bolts and remove the mast mounting pins. Then slowly raise the outer mast.



INSTALLATION

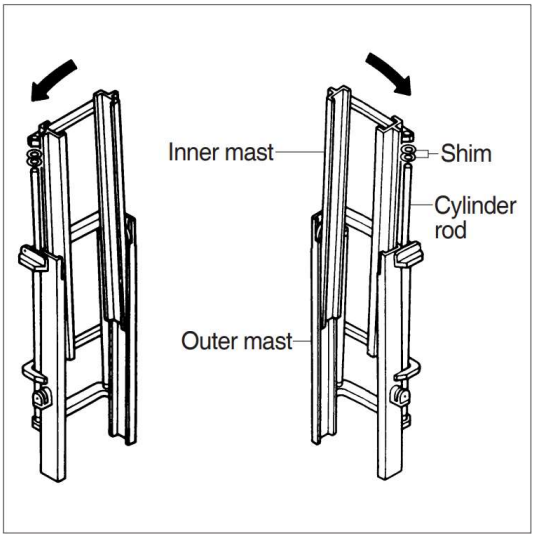
After assembling mast components totally without piping connections, install mast assembly to the equipment.

※ **Installation procedure for each of mast component is the reverse of the removal procedure.**

1) Mast support cap
   ① Check mast mounting bolts and bushings for wear.
   ② Jack up the truck so that the front is raised and then using an overhead hoist assemble outer mast to drive axle unit.
   ③ Tighten mast support cap and mounting bolts to mast. Lubricate with GTP 600 or 1000 PASTE. Tightening torque: 24.5±2.5 kgf·m,

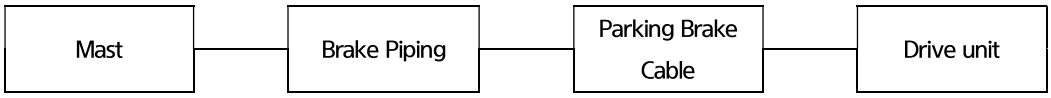
2) Tilt cylinder pin
   Hold the mast with a crane, operate the tilt control lever and align the holes, then knock the pin

3) Lift cylinder installation and adjustment
   ① Assemble the lift cylinder inside the outer mast, then tighten the stopper bolt. If the cylinder assembly has been replaced, adjust as follows so that the left and right cylinders are synchronized at the maximum lifting height.
   ② Assemble the cylinder rod to the inner mast, and check the left-to-right play of the mast at the maximum lifting height.
   ※ If play is to LEFT, install adjustment shim to LEFT cylinder.
   ※ If play is to RIGHT, install adjustment shim to RIGHT cylinder.
   ※ Shim thickness: 1.0 mm.



2. POWER TRAIN ASSEMBLY

REMOVAL



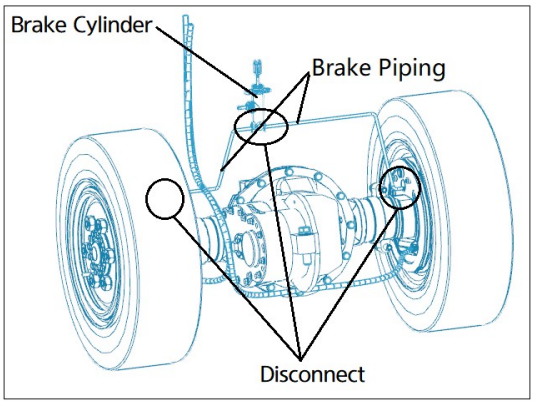
1) Mast

Refer to section on mast to remove mast.

2) Brake Piping

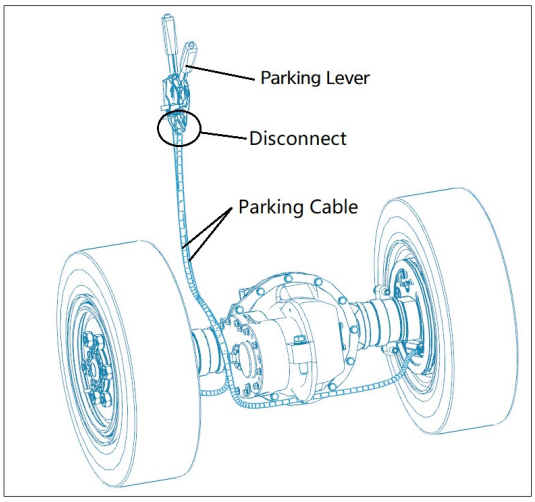
Disconnect the service brake piping from the brake housing of drive axle.

※ **Brake oil will flow out after the pipe is removed.**



3) Parking brake cable

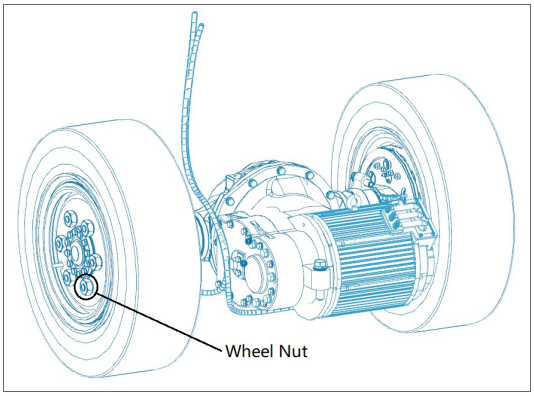
Remove the Parking cable from the drive axle.



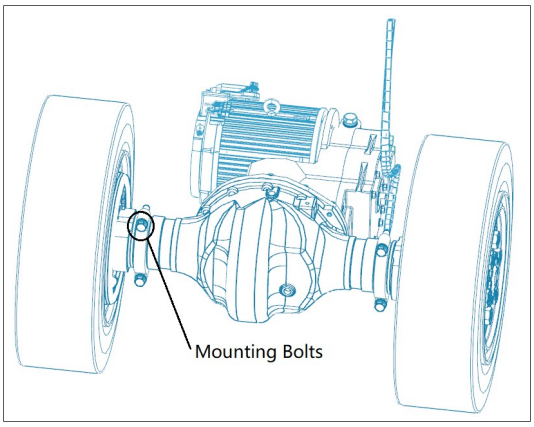
4) Drive axle and drive motor

※ **Before removing the drive axle unit, remove all of the oil from the axle.**

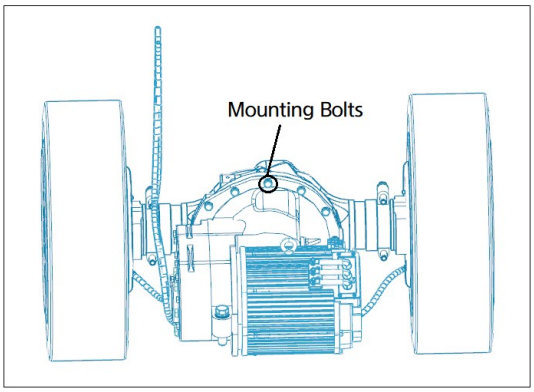
① Unscrew 12 wheel-nuts and remove the wheels.



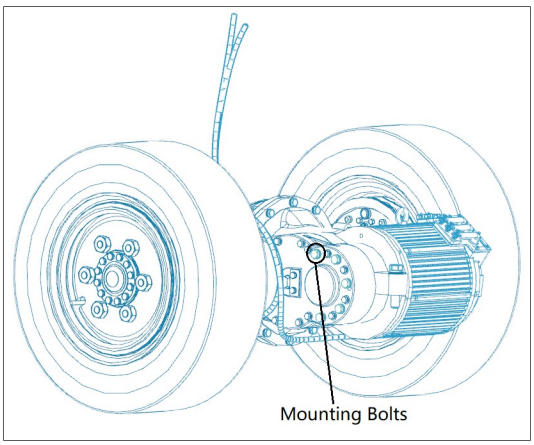
② Remove 4 mounting bolts fixing the axle to the frame and carefully remove the drive motor and axle from the vehicle.



③ Remove 5 mounting bolts fixing the transmission and motor to the axle and carefully remove the transmission and drive motor from the drive axle.

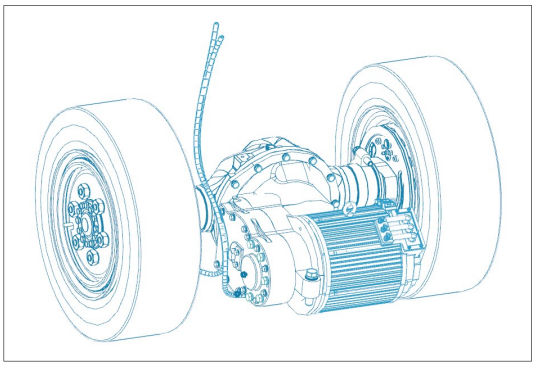


④ Remove 12 mounting bolts fixing the motor to the transmission and carefully remove the drive motor from the transmission.



INSTALLATION

Installation is the reverse order of removal. Refer to Tightening torque for major components in page11.



3. ELECTRICAL COMPONENTS

Before removing each component, disconnect cables and earth lines attached to the component.

REMOVEL

Battery — Pump motor

1) Battery

Battery can be replaced using Forklift, Pallet truck or exclusive jig. Make sure max capacity of the Forklift or Pallet truck is above the battery weight.

⚠ **Using improper method may result in battery tip over accident so be cautious.**

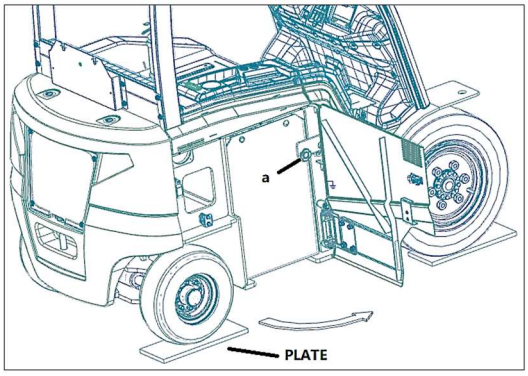
⚠ **Change battery on flat ground.**

⚠ **Battery might fall off if equipment tip over while battery locking device is loose. Always operate equipment with battery locked.**

① Park the truck horizontally and with 140mm or more road clearance, turn the engine off and open the right battery door. Then disconnect the connector and unlock battery locking device (a)

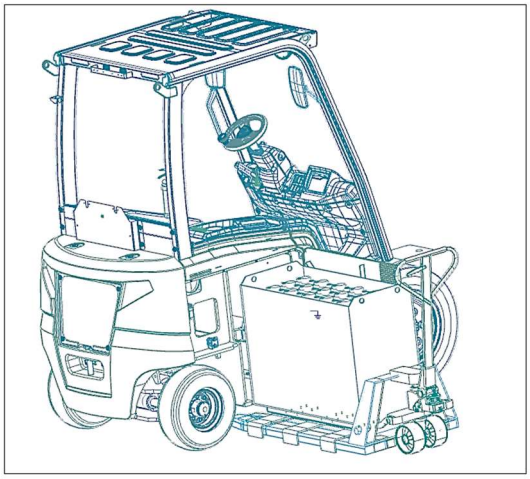
※ **Make sure road clearance is over 140 mm by placing plate (10~20t) under front and rear wheels.**

※ **If manual unlocking procedure is impossible due to battery being too close to the locking device, push the battery in slightly with fork then unlock the locking device.**



② Place fork in a way that battery sits balanced, carefully remove battery from the frame.

※ **When carrying the battery, slow maneuver is required.**

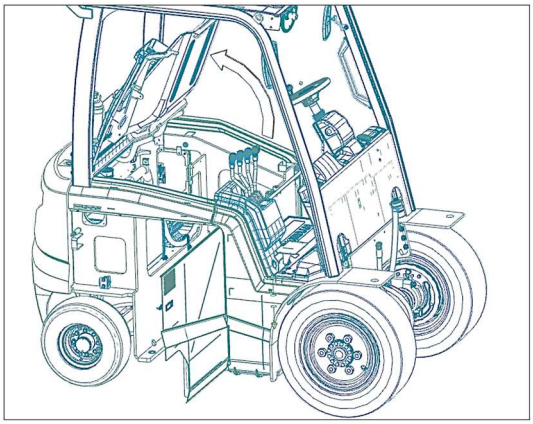


2) Pump Motor

① Lower the fork to floor.
Push the joystick to lower the fork and tilt forward to the ground.

② Remove the battery.

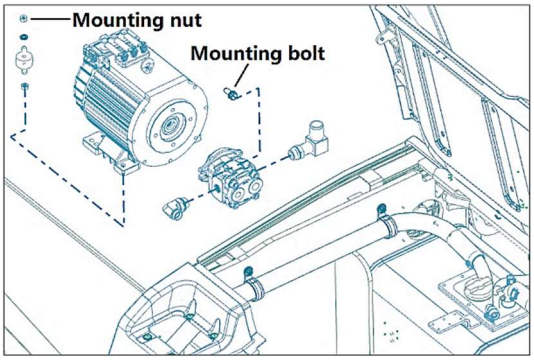
③ Open the battery cover.



④ Remove pump motor, gear pump, wiring for priority valve, rubber hose and hydraulic hose.

⑤ Loosen mounting nut and remove pump motor, gear pump, priority valve from the frame.

⑥ Loosen mounting bolt and remove priority valve and pump motor.

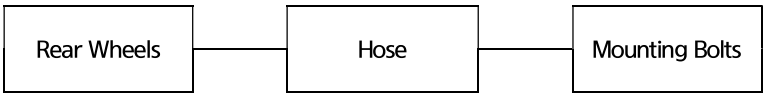


INSTALLATION

Installation is the reverse order of removal. Refer to Tightening torque for major components in 1-8.

4. STEERING AXLE

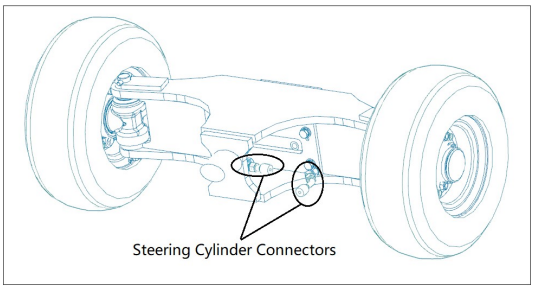
REMOVAL



1) Rear Wheel

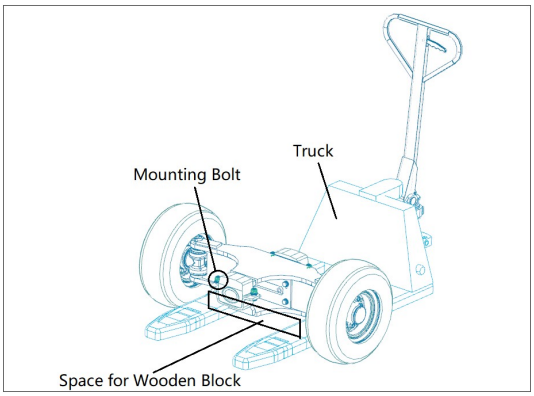
2) Hose

Disconnect the hoses from the steering axle.



3) Mounting Bolt

Put a block between the steering axle and support of truck, and raise the frame with a crane. Remove the mounting bolts installing to the frame, and pull out to the axle.

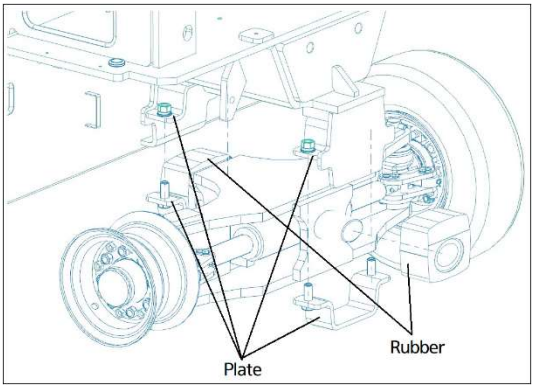


INSTALLATION

1) Mount two rubbers on the steering axle. The rubber is not symmetrical and make sure the hole is in the lower position.

2) Lubricate bolts with Loctite 277.

3) Mount the bolts, spring washers and nuts, make sure nuts are on the top. Tighten torque should be 29.5±0.5 kgf·m.



GROUP 3 MAINTENANCE FOR HOSE

1. MAINTENANCE

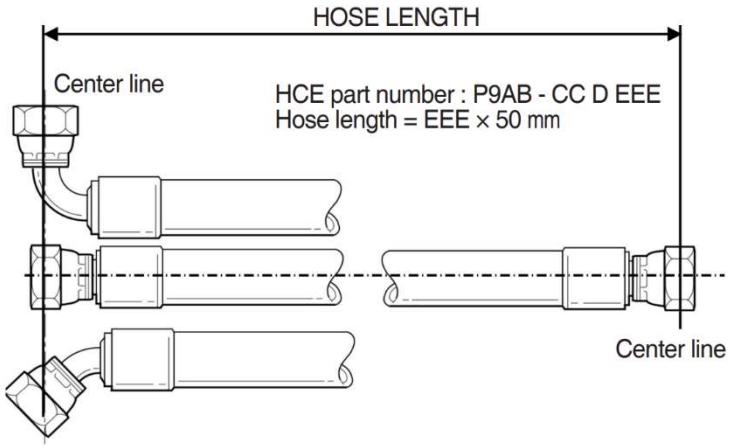
The function and service life of hydraulic components depend to a great extent on how they are maintained regularly. Therefore, it is very important to prevent dirt from entering the hydraulic system. Some simple advice to keep the hydraulic system clean:

- Always clean the area around parts before starting work. If possible, it is better to wash the truck.
- Plug hose connections immediately after disconnecting. If possible, use correct plugs for the connection type. If plugs do not match, use clean plastic bags and cable ties or tape to seal the connection.
- Never reuse oil that has been drained from the truck.
- If possible, filter the oil before pouring it into the truck, oil barrels often contain impurities.

2. HOSE LENGTH

Connected hoses have HCE part number, but if they have no information the hoses are measured as follows:

- The hose length is measured on a laid-out hose between the sealing surfaces
- On angled connections, measure from the sealing surface's center line according to the figure.



3. CAUTION FOR REPLACEMENT

When replacing hoses for maximum service life and functionality, the following must be observed:

- To avoid stress when connecting, a straight hose length must be secured after connection.
- Do not kink the hose. 7% twist reduces the service life by 90%.
- Do not use hoses that are too short. It may cause leakage or damage
- Use the correct coupling to minimize the number of bends.
- Avoid sharp bending.
- When storing, keep the inside of the hose clean. When installing, keep the connector in place for as long as possible.