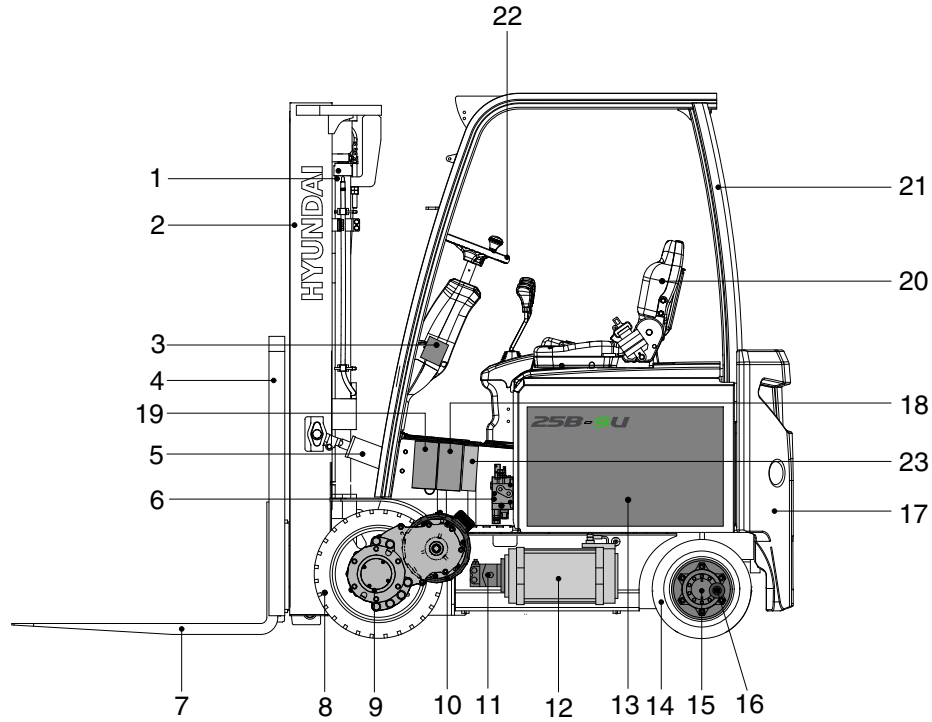


SECTION 2 REMOVAL & INSTALLATION OF UNIT

Group 1 Major components	2-1
Group 2 Removal and installation of unit	2-2

GROUP 1 MAJOR COMPONENTS



25BC9U2SM01

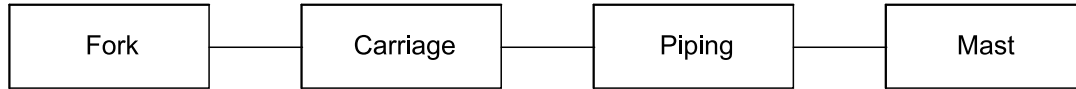
- | | | | | | |
|---|--------------------|----|-------------------|----|---------------------|
| 1 | Lift cylinder | 9 | Drive unit | 17 | Counterweight |
| 2 | Mast | 10 | Drive motor | 18 | Traction controller |
| 3 | Steering unit | 11 | Hyd gear pump | 19 | Pump controller |
| 4 | Backrest | 12 | Pump motor | 20 | Seat |
| 5 | Tilt cylinder | 13 | Battery | 21 | Overhead guard |
| 6 | Main control valve | 14 | Rear wheel | 22 | Steering wheel |
| 7 | Forks | 15 | Steering axle | 23 | Fan assy |
| 8 | Front wheel | 16 | Steering cylinder | | |

GROUP 2 REMOVAL AND INSTALLATION OF UNIT

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

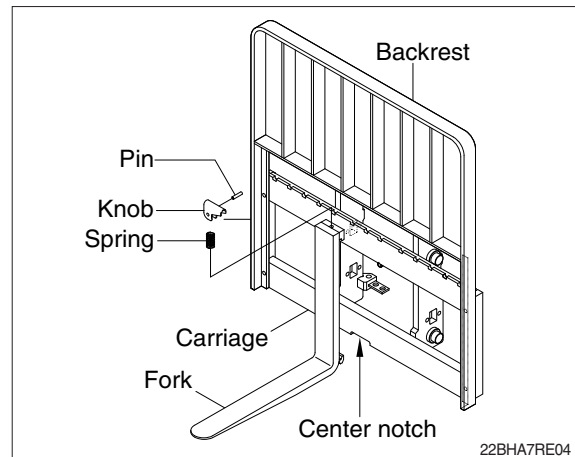
1. MAST

1) REMOVAL



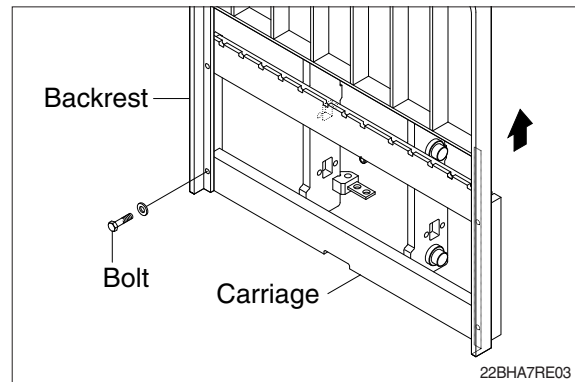
(1) Forks

- ① Lower the fork carriage until the forks are approximately 25mm (1in) 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.



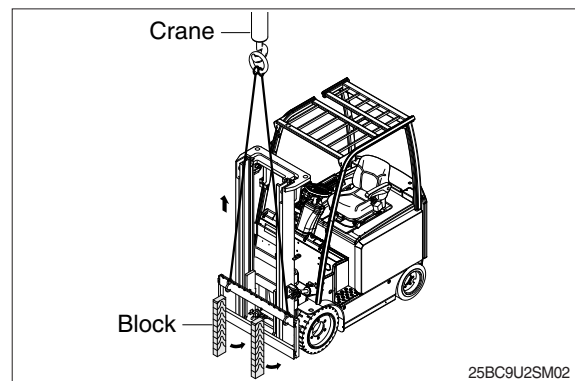
(2) Backrest (If necessary)

- ① Remove bolts securing backrest to fork carriage. Lift backrest straight up and remove it from carriage.

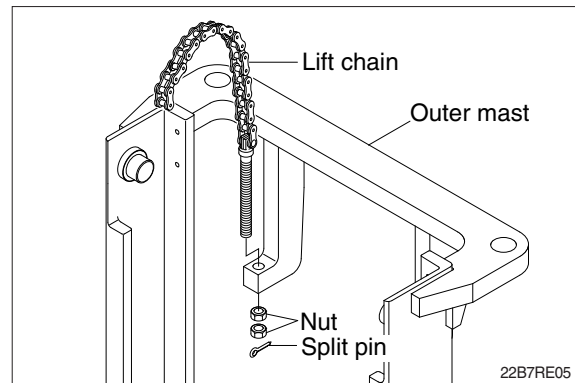


(3) Carriage

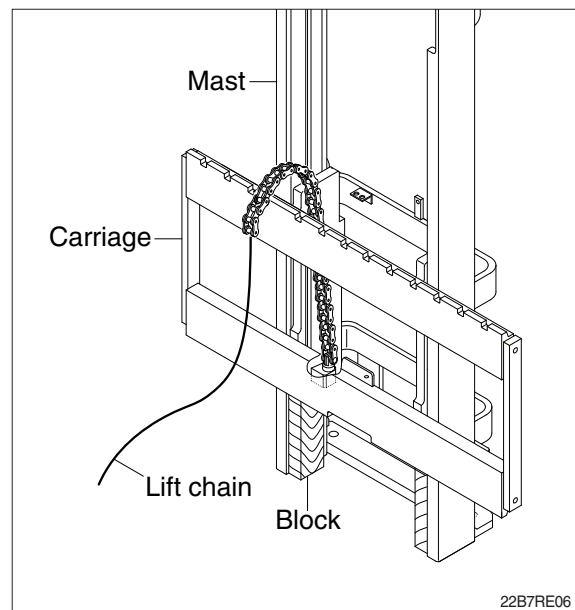
- ① With the mast vertical, raise the carriage high enough to place blocks under the load forks. This is done to create slack in the load chains when the carriage is lowered. Lower the carriage all the way down to the floor. Make sure the carriage is level, this will prevent any binding when the mast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



- ② While supporting lift chains, remove the split pins and nuts from anchor pins of stationary upright.



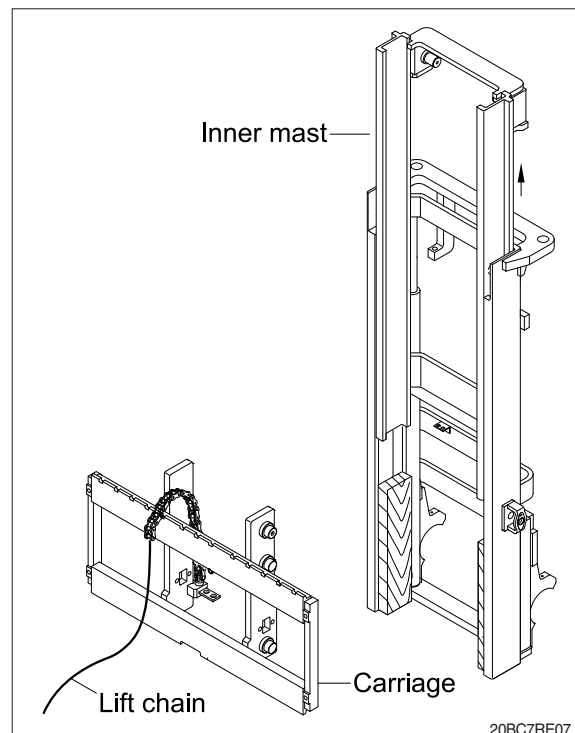
- ③ Pull the chains out of the sheaves and drape them over the front of the carriage.



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

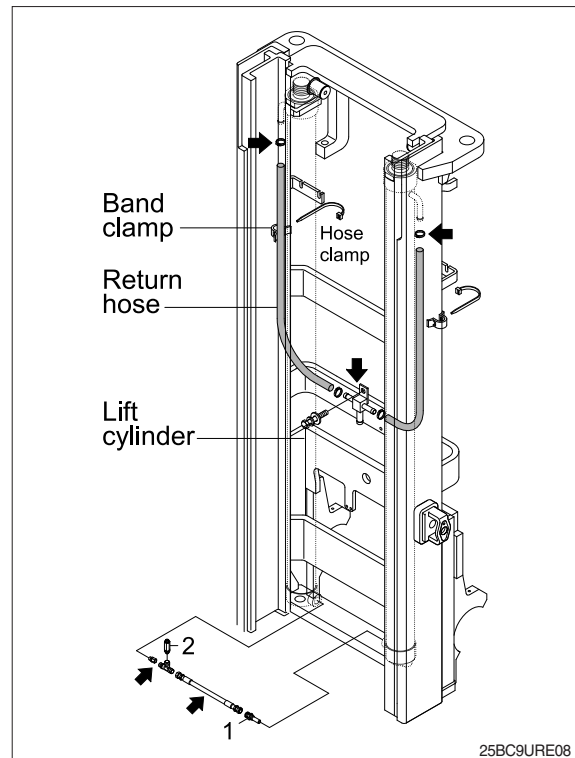
▲ Make sure that carriage remains on floor and does not bind while mast is being raised.

- ⑤ 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 cylinder.
- ② Remove the return hoses from the connector.
- ③ Remove hose assembly, tee, velocity fuse valve(1) from the lift cylinder.
- ④ Disconnect hose assembly from the flow regulator(2).

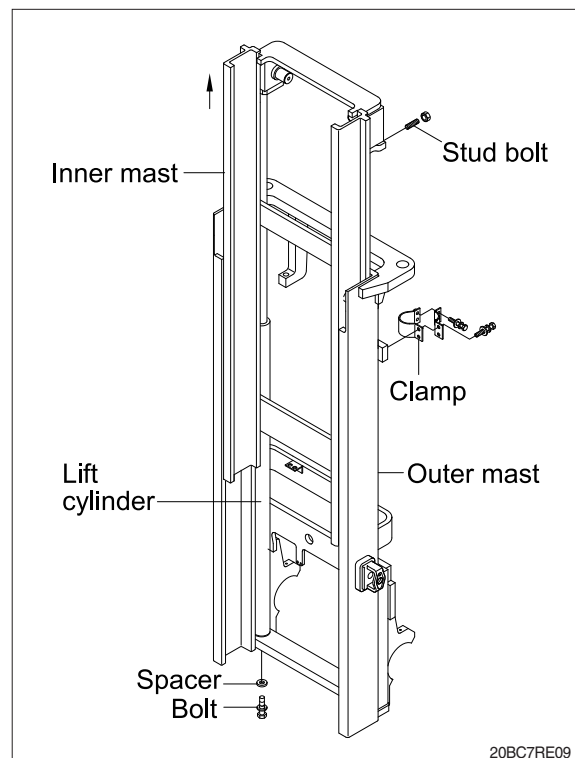


(5) Lift cylinder

- ① Loosen hexagonal bolts and remove spacers securing the 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.

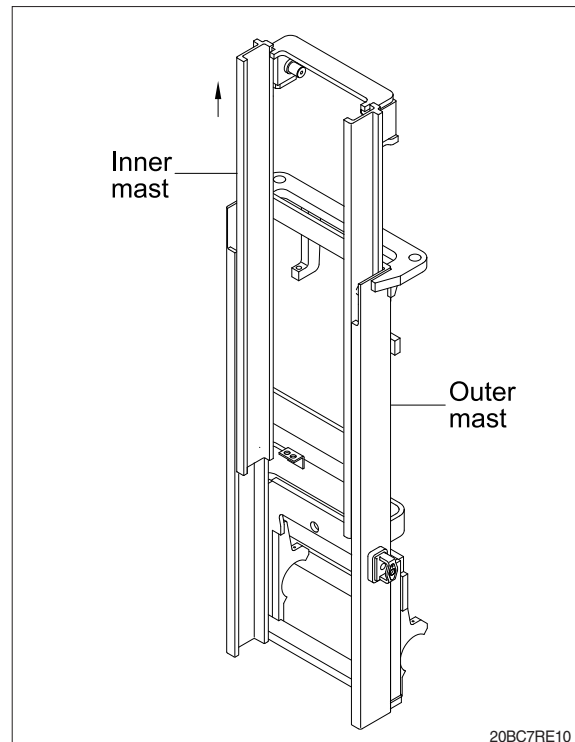
- ③ Loosen and remove hexagon bolts and clamp securing cylinder.
- ④ Using an overhead hoist, slowly raise the inner mast high enough to clear lift cylinder.
- ⑤ Using an overhead hoist, draw out lift cylinder carefully and put down on the work floor.



(6) Inner mast

- ① Using an overhead hoist raise the inner mast straight and carefully draw out of outer mast section.

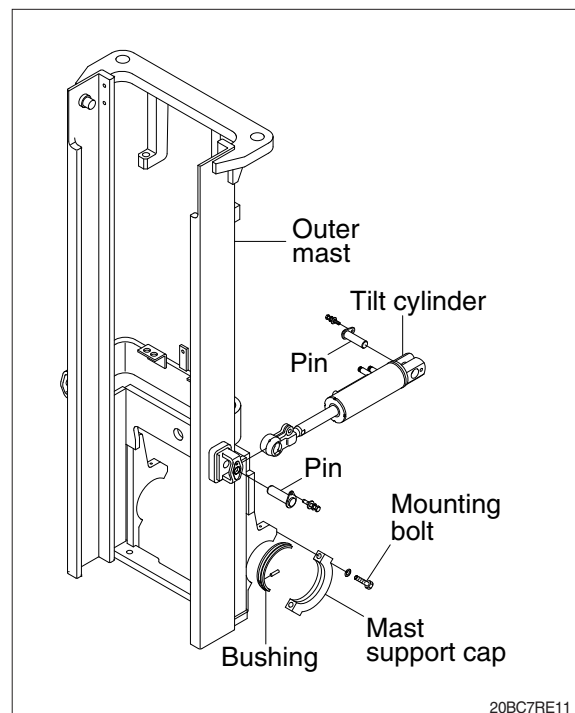
▲ Be careful the mast not to swing or fall.



(7) Tilt cylinder pin

(8) Mast support cap

- ① Attach a crane to the stay at the top of the outer mast, and raise enough to sustain jacked up machine.
 - ※ This operation is carried out from under the machine, so use a pit, or if there is no pit, jack up the machine and loosen with an impact wrench.
- ② Remove the mounting bolts from the cap. Then slowly raise the outer mast.



2) 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) Trunnion cap

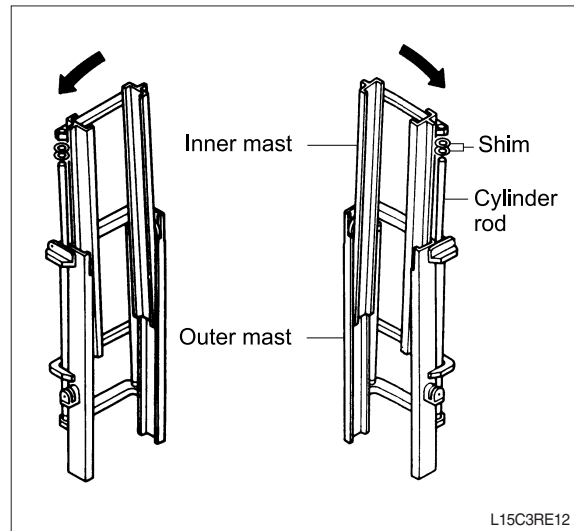
- ① Check the trunnion cap and spring pin for wear.
- ② Jack up the machine so that the front is raised and then using an overhead hoist assemble outer mast to drive axle unit.
- ③ Tighten mounting bolts to trunnion cap. Apply loctite #277.
 - Tightening torque : 19.9~26.9 kgf · m (144~195 lbf · ft)

(2) Tilt cylinder pin

Hold the mast with a crane, operate the tilt control lever and align the holes, then knock the pin.

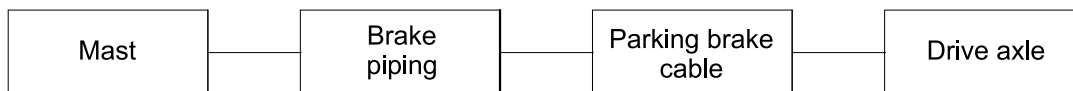
(3) Lift cylinder installation and adjustment

- 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 (0.04 in)
- ※ Lubricate the grease into the nipple sufficiently.



2. POWER TRAIN ASSEMBLY

1) REMOVAL

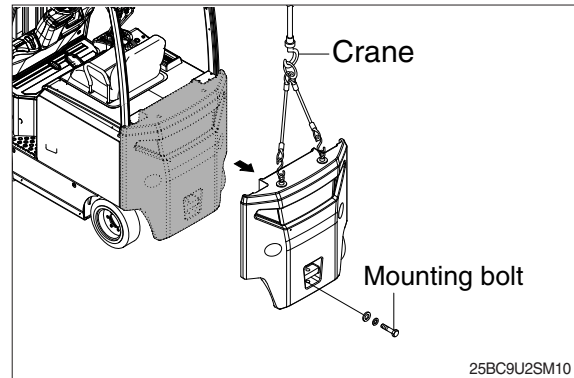


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(1) Mast and counterweight

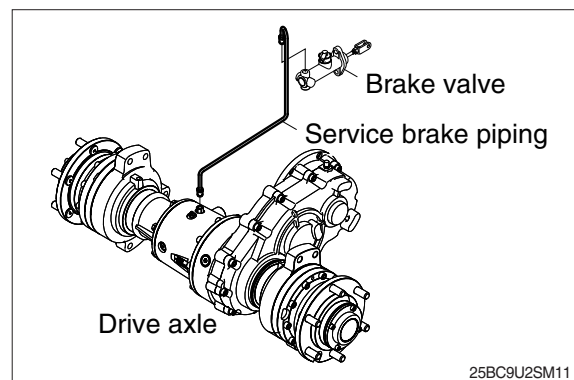
Refer to section on mast (page 2-2)

- ※ After removing mast, remove the counterweight to prevent the truck from turning over.



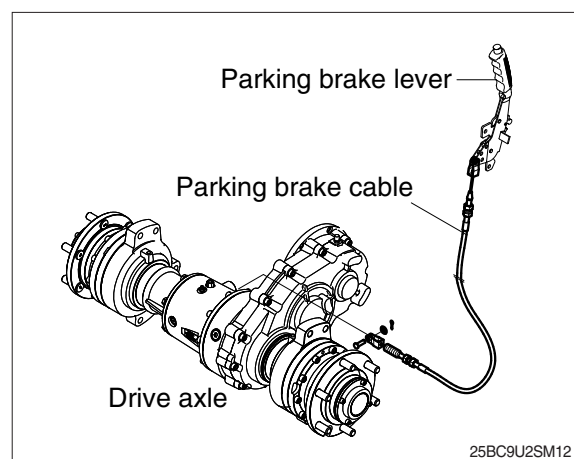
(2) Brake piping

Disconnect the brake piping from the wheel brake assembly.



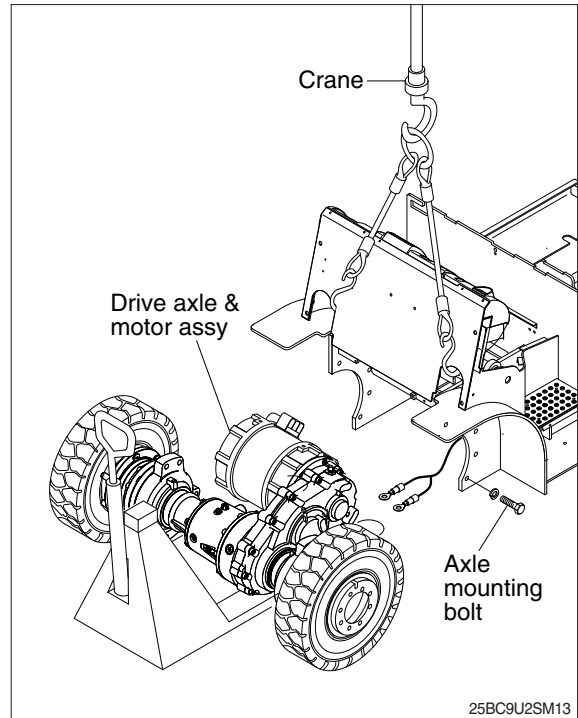
(3) Parking brake cable

Disconnect parking brake cable from the wheel brake assembly.

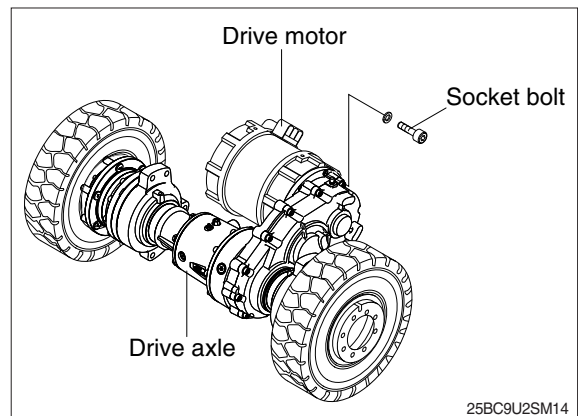


(4) Drive axle and motor assy

- ① Attach a crane to the tilt cylinder notches on the dashboard and raise the machine enough for truck to slide under drive axle-transmission-drive motor assembly.
- ② Put the block between the truck and drive axle assembly.
- ③ Disconnect the harness from the drive motor terminal.
- ④ Remove drive axle mounting bolts from the frame and then slowly pull out the truck with drive axle forward the front.



- ⑤ Remove five socket bolts holding the drive motor in place.
- ⑥ Carefully remove the drive motor from the drive axle.



2) INSTALLATION

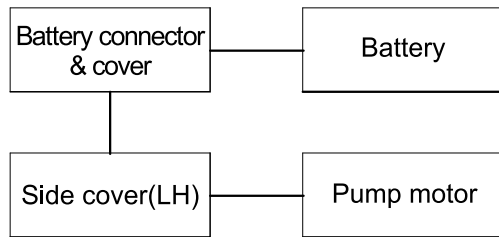
Installation is the reverse order of removal, but be careful of the following points.

- (1) Tighten the mounting bolts and apply loctite #277.
 - Drive axle
53~58 kgf · m (383~420 lbf · ft)
 - Drive motor
8.5~11.5 kgf · m (61.5~83.2 lbf · ft)

3. ELECTRICAL COMPONENTS

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

1) REMOVAL



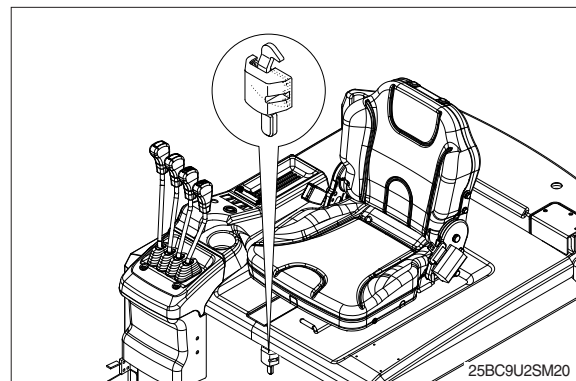
22B7RE29

(1) Battery

▲ Before pulling out the battery plug, tilt the mast forward a little, and lower the fork to the lowest position.

The batteries weigh from around 1180 kg to 1410 kg so the extreme care must be taken when handling them.

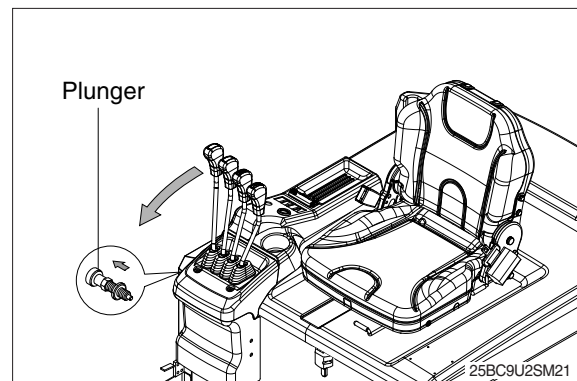
① Release the battery cover latch.



② Pull the plunger and tilt the levers forward.

③ Open the battery cover.

④ Disconnect the battery connector.

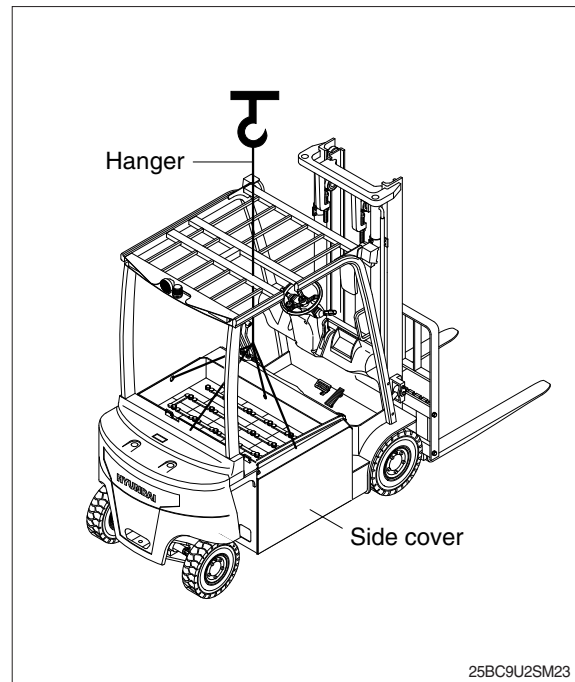


⑤ Using a battery hanger, carefully raise the battery assembly.

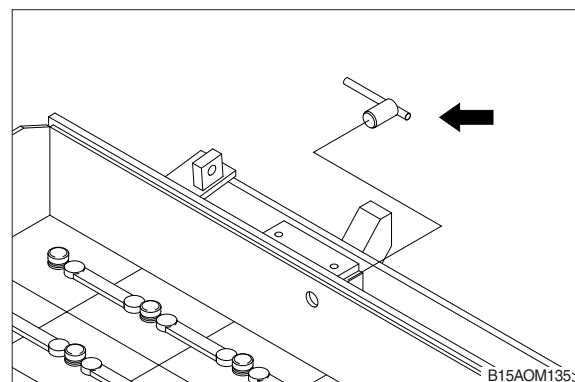
▲ Put down the battery with fork lift or chain block by hang up hook at 4 links which located in right and left of the battery.

※ Be careful not to damage overhead guard or control system.

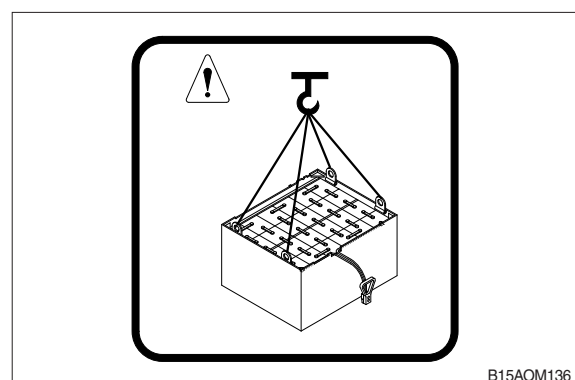
⑥ Remove the side cover.



⑦ Loosen the battery stopper.

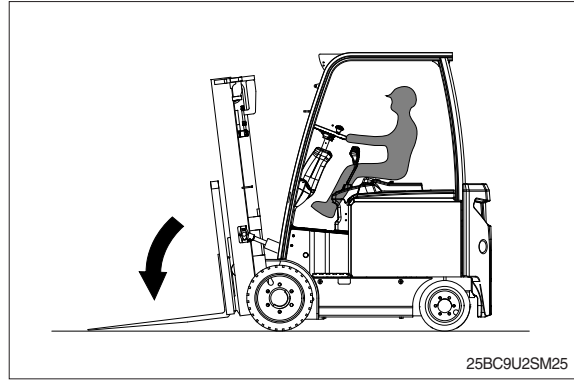


⑧ Put down the battery with fork lift or chain block by hang up hook at 4 links which located in right and left of the battery.

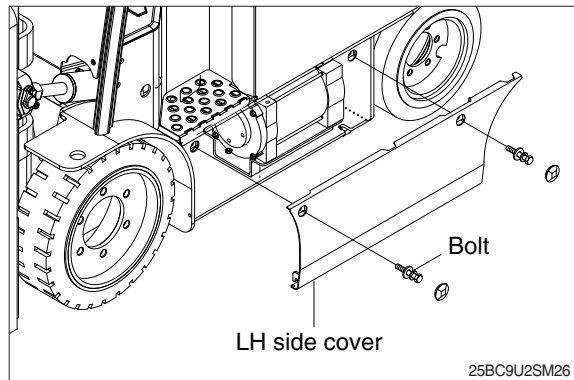


(2) Pump motor

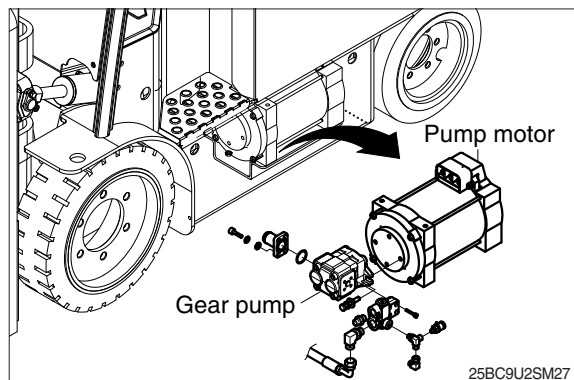
- ① Lower the fork to floor.



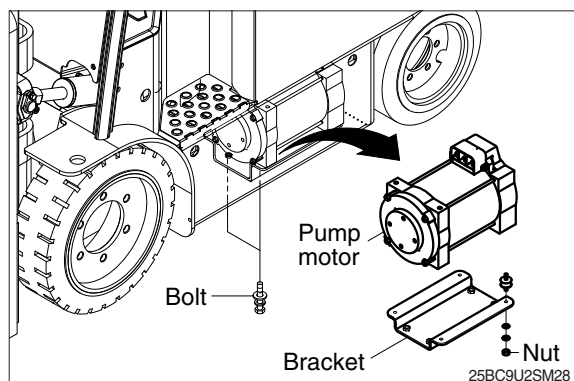
- ② Remove the left hand side cover.



- ③ Disconnect the wiring of pump motor and remove the gear pump from pump motor.

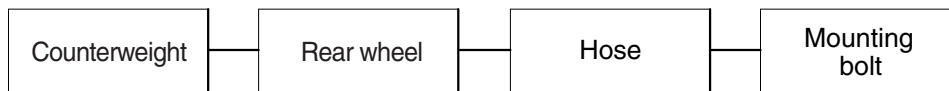


- ④ Remove the tightening bolts of the pump motor mounting bracket. Loosen the nut and remove the motor from mounting bracket.

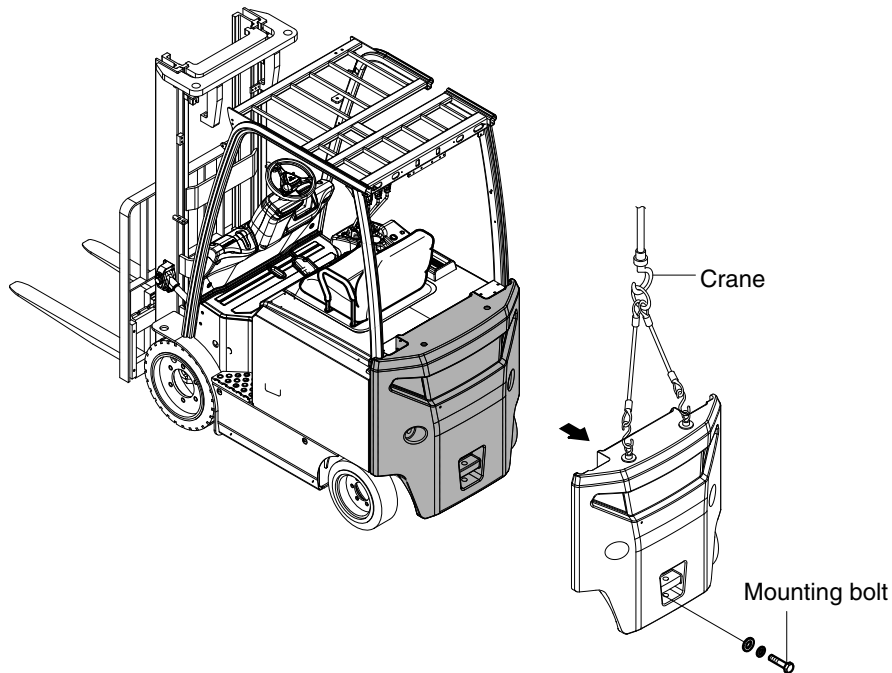


4. STEERING AXLE

1) REMOVAL



D35ARE37



25BC9U2SM30

① Counterweight

Install a lifting tool in the counterweight, and raise with a crane.
Remove the mounting bolts, raise slightly and move to the rear.

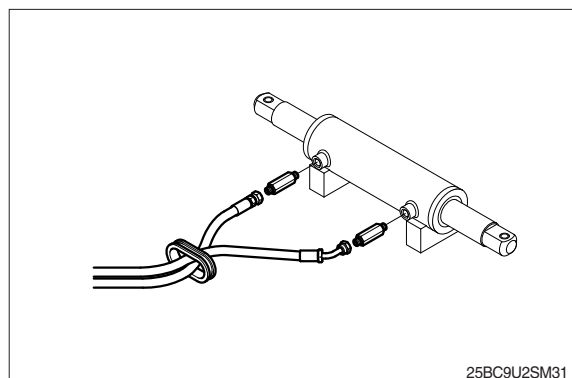
- Weight of counterweight (standard)

25BC-9U	1025 kg (2260 lb)	32BC-9U	1395 kg (3075 lb)
30BC-9U	1191 kg (2626 lb)	-	-

- Tightening torque : 85~115 kgf · m (615~832 lbf · ft). Apply loctite #277.

② Hose

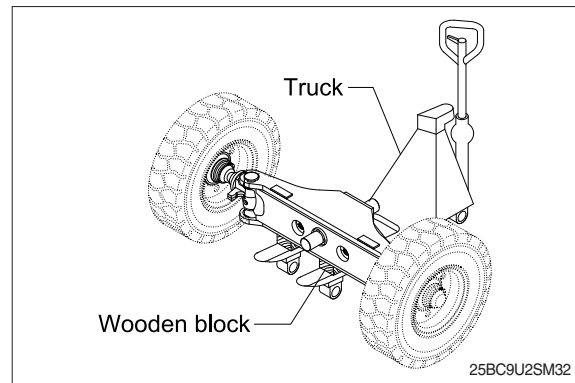
Disconnect the hoses from the steering cylinder.



25BC9U2SM31

③ Mounting bolt

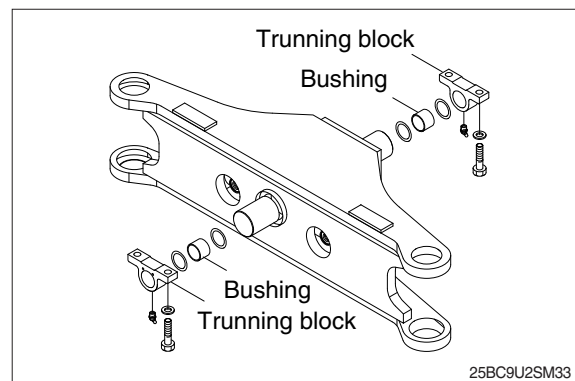
Put a block under the rear axle, support on a truck, and raise the frame with a crane. Remove the mounting bolts installed to the frame, and pull out to the rear. There are shims between the support and rear axle to prevent play.



(2) INSTALLATION

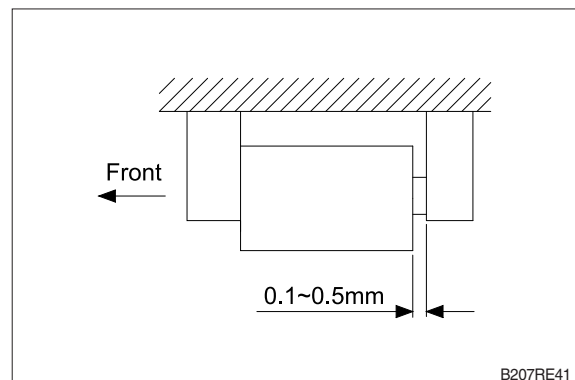
Installation is in the reverse order to removal, but be careful of the following points.

- ① When replacing the bushing at the trunnion block, install so that the hole in the bushing faces down.



- ② Install the trunnion block so that the clearance is under 0.5mm when the trunnion block is pushed fully to the rear. Tightening torque of mounting bolt for trunnion block.

· 49.5~66.5 kgf · m (358~481 lbf · ft)



- ③ When installing the rear wheel, coat the hub bolt with molybdenum disulphide, and tighten the nut to 6~9 kgf · m (43~65 lbf · ft).
- ④ When installing the counterweight, align with the center of frame. Coat the mounting bolt with molybdenum disulphide and tighter.

GROUP 3 MAINTENANCE FOR HOSE

1) MAINTENANCE

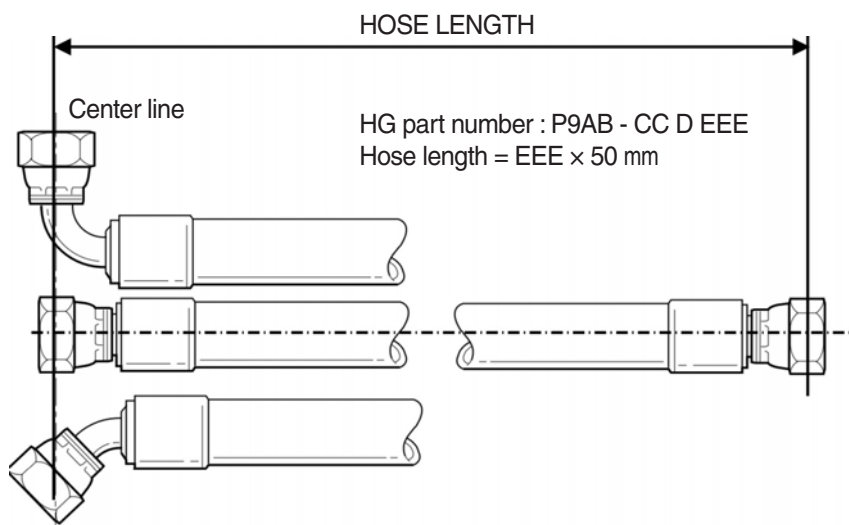
The function and service life of hydraulic components depend to a great extent on how they are maintained regularly. Therefore, it is very important to prevent dirt from entering the hydraulic system. Some simple advice to keep the hydraulic system clean:

- 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 HG 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.



35D9VB1GE01

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 plug in place for as long as possible.