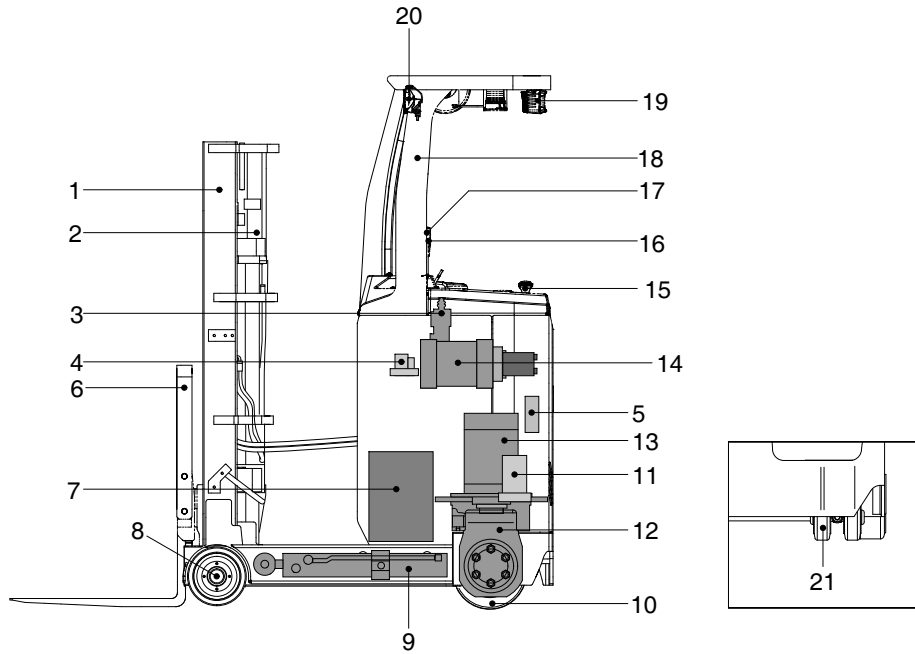


SECTION 2 REMOVAL & INSTALLATION OF UNIT

Group 1 Main Components	2-1
Group 2 Removal and Installation of Unit	2-2
Group 3 Maintenance for Hose	2-24

GROUP 1 MAJOR COMPONENTS



15BRXRE01

- | | | |
|-------------------------|------------------|-------------------------------|
| 1 Mast | 8 Road wheel | 15 Steering wheel |
| 2 Lift cylinder | 9 Reach cylinder | 16 Operating lever |
| 3 Main control valve | 10 Driving wheel | 17 Accelerator |
| 4 EPS Filter | 11 EPS Actuator | 18 Overhead guard |
| 5 EPS Controller | 12 Driving unit | 19 Rear working lamp (Option) |
| 6 Carriage and backrest | 13 Driving motor | 20 Front working lamp |
| 7 Battery | 14 Pump motor | 21 Caster wheel |

GROUP 2 REMOVAL AND INSTALLATION OF UNIT

Remove and install the following components as described in the flow chart.

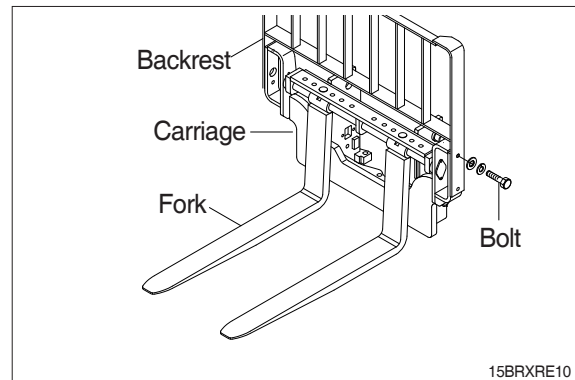
1. MAST

1) REMOVAL



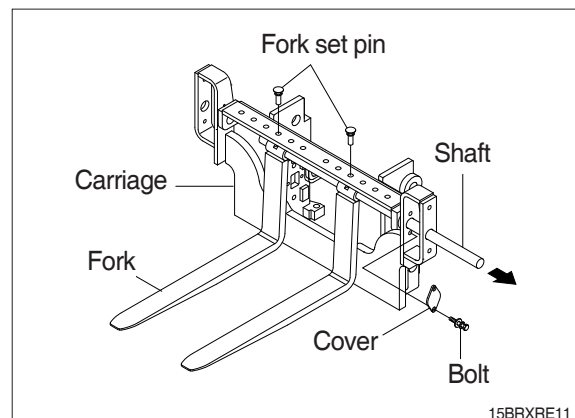
(1) Backrest

- ① Remove bolts mounting the backrest to fork carriage. Raise the backrest straight up to remove from the carriage.



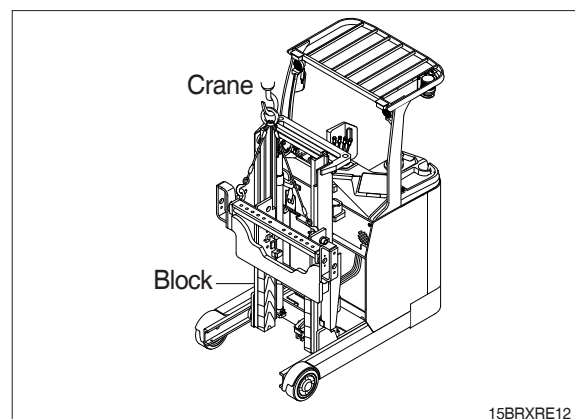
(2) Forks

- ① Disassemble the shaft cover and the bolt.
- ② Remove the fork set pin to take out the shaft.
- ③ Remove the fork careful one by one.

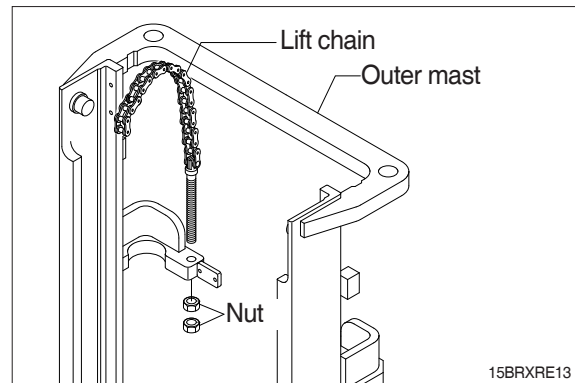


(3) Carriage

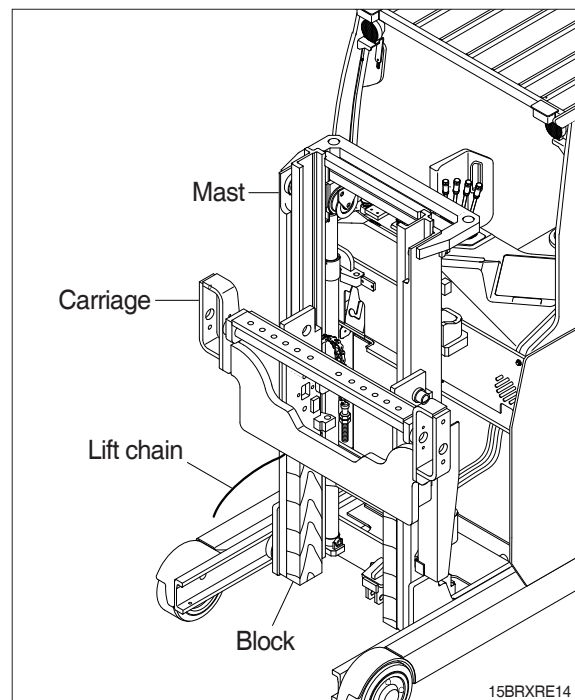
- ① With the mast vertical, raise the carriage high enough to place blocks under the carriage. This is done to create slack in the load chains when the carriage is lowered. Lower the carriage all the way down to the floor. Make sure the carriage is level, this will prevent any binding when the mast is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



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



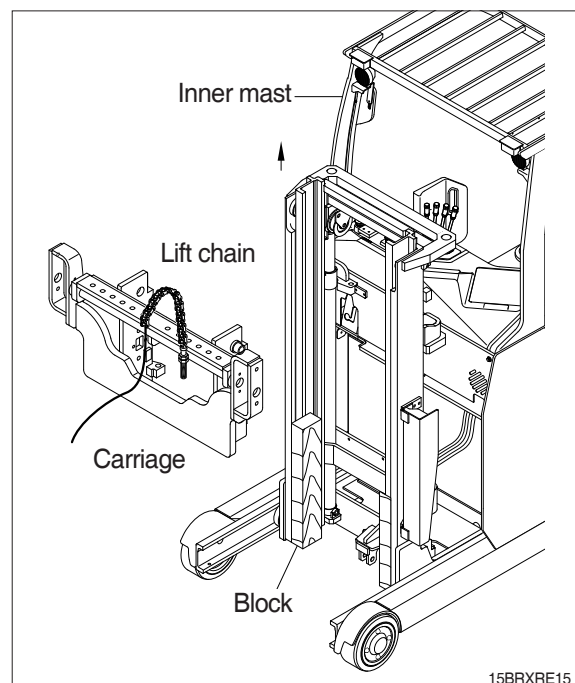
- ③ Remove the chain from the sieve to hang in front of the carrier.



- ④ Slowly raise upright until mast is located on the top of the fork carriage. Move carriage to work area and lower the mast.

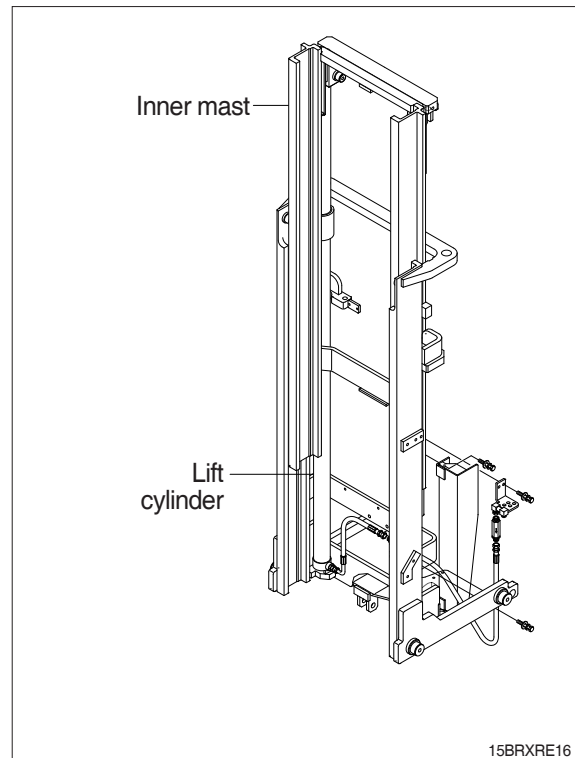
▲ Make sure that carriage remains on floor and does not bind while mast is being raised.

- ⑤ Inspect all parts for wear or damage. Replace all worn or damaged parts. Replace the damaged and worn out parts.



(4) Piping

- ① Remove the hose and clamp attached to the cylinder.
- ② Remove the hose assembly, connector and lowering safety valve from the lift cylinder.
- ③ Disassemble the hose assembly from the flow regulatory.

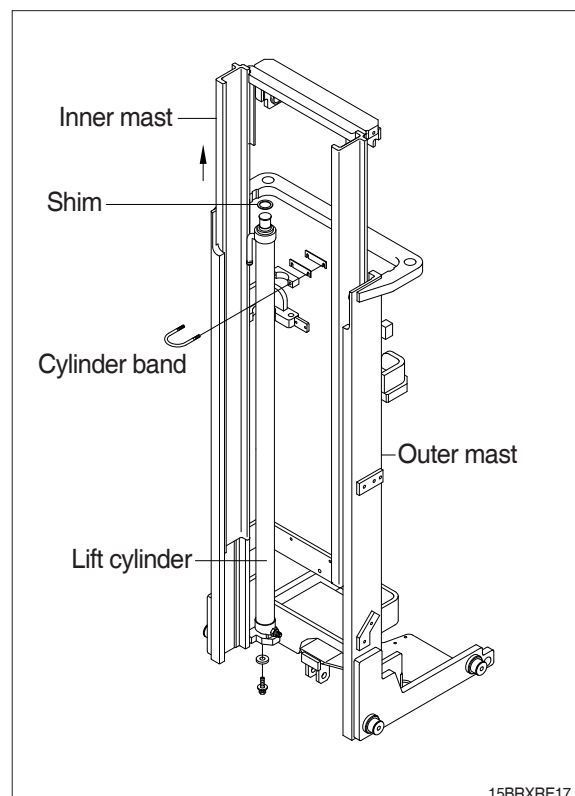


(5) Lift cylinder

- ① Loosen the hexagon bolt to remove the washer that is fixing the lift cylinder on the inner mast.
- ② Bind the lift cylinder with overhead hoist rope and pull up so that the rope has no slack or binding.

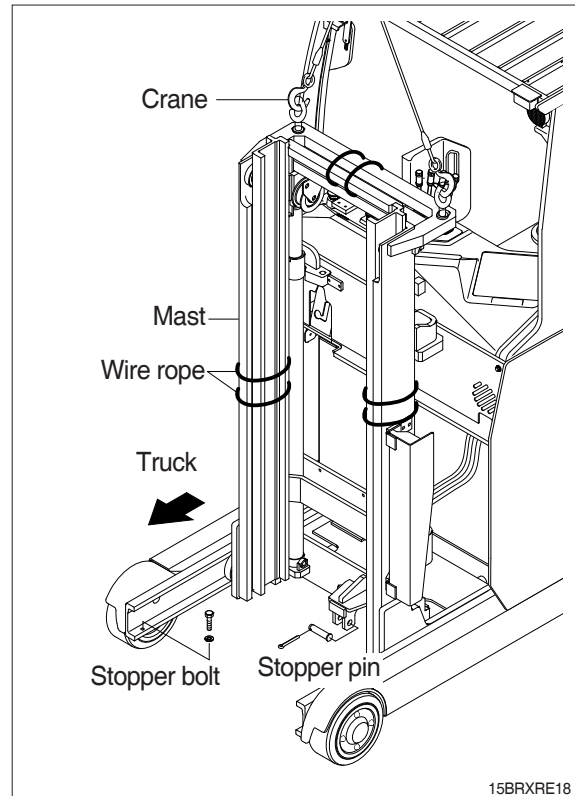
▲ Make sure that the lift cylinder be tightened firmly for safety.

- ③ Loosen and remove the hexagon nut and cylinder band that is fixing the cylinder to the outer mast.
- 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.



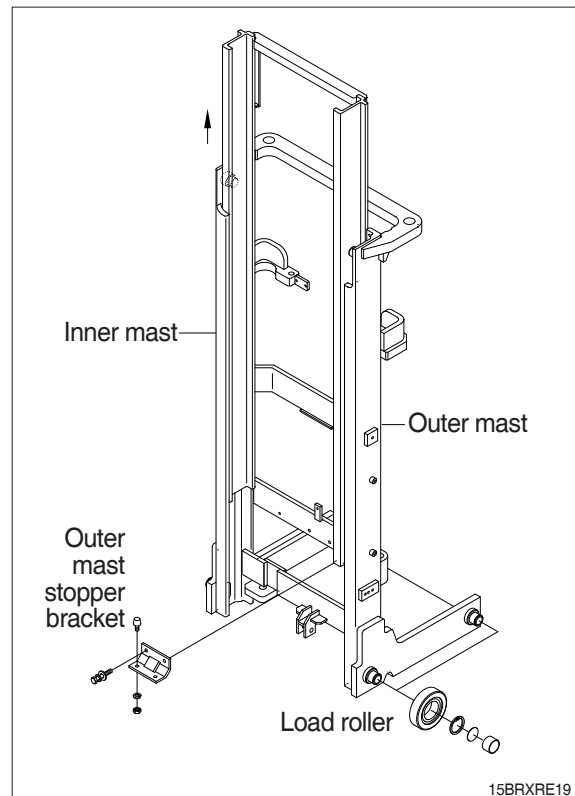
(6) Mast Removal

- ① Tie the inner and outer masts to lift the relevant inner and outer masts with the hoist for removal.
- ② Remove the stopper pin on the end of the reach cylinder to disassemble the stopper bolt on the end of the guide rail.
- ③ Remove the mast while the guide rail is raised.
- ④ Lower the mast and place on the stand.



(7) 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.**
- ② Use the universal puller to remove the rod roller.



2) INSTALLATION

Assemble the mast part while the pipe is not connected, and install the mast assembly on the equipment.

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

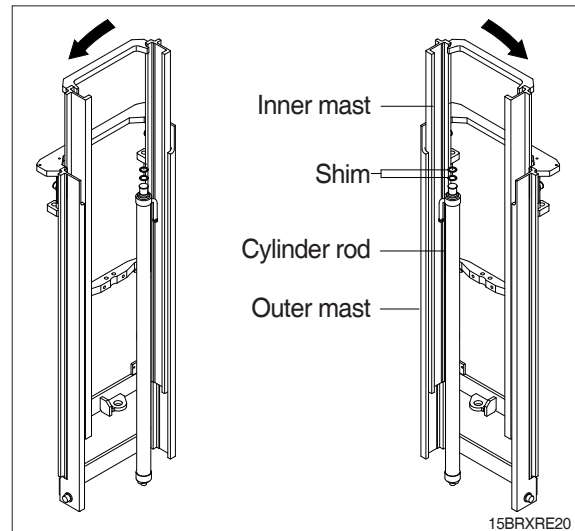
(1) Lift cylinder installation and adjustment

- ① Assemble the lift cylinder inside the outer mast and fasten with the stopper bolt. Cylinder When the assembly is replaced, adjust as follows to enable the left/right cylinder to match 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



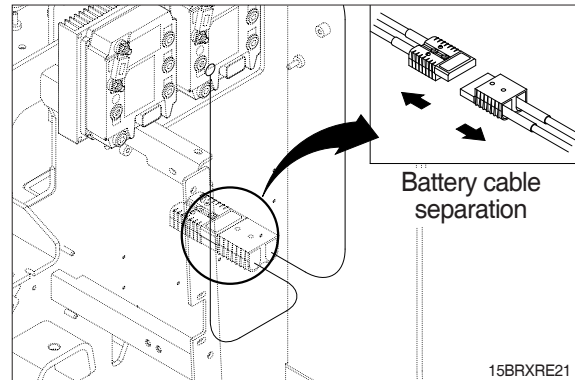
2. Power Transmission Device Assembly

1) REMOVAL

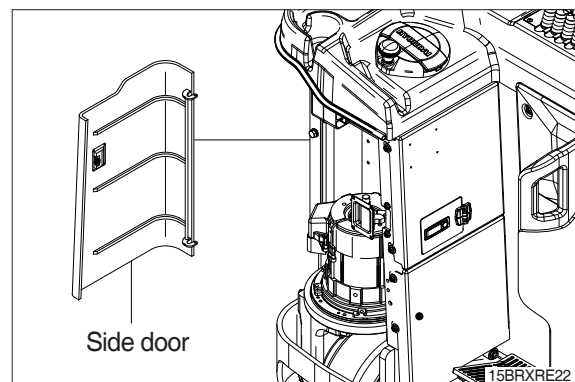


BR7RE001

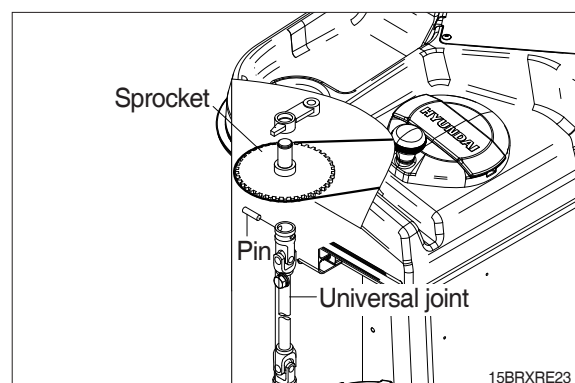
(1) Separate the battery cable.



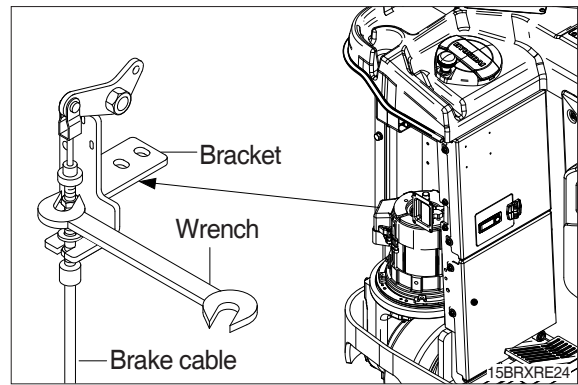
(2) Remove the side door.



(3) Remove the steering joint parts.

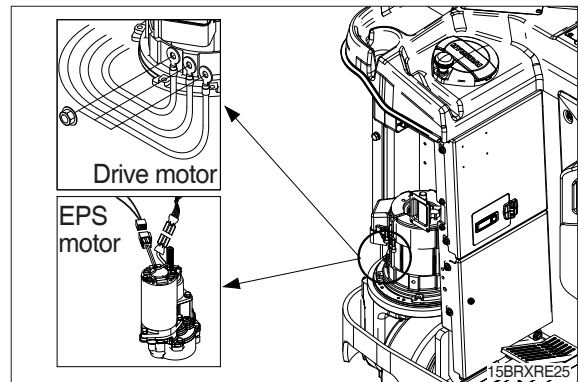


(4) Remove the brake cable.

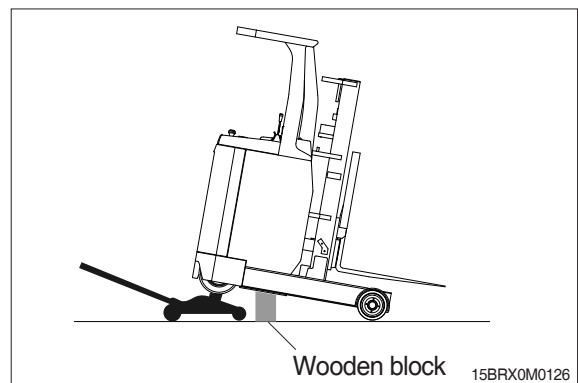


(5) Separate the wire ring.

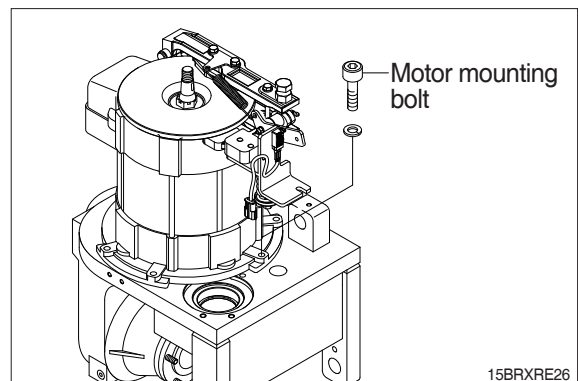
- ① Drive motor wiring
- ② EPS motor wiring.



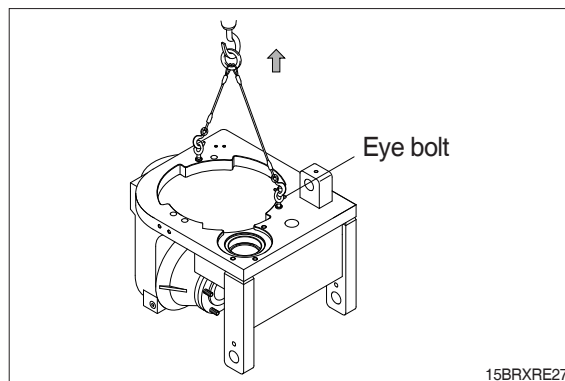
(6) Lift the frame and support both sides of the frame with the wooden block.



(7) Loosen the motor mounting bolt to lift the motor.



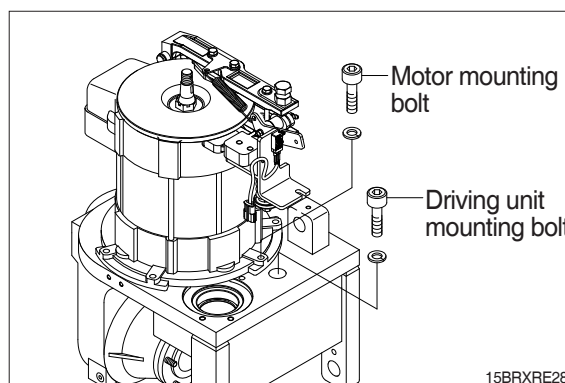
- (8) Remove the driving unit mounting bolt to lift with the eye bolt on the motor mounting tab to remove the driving unit.



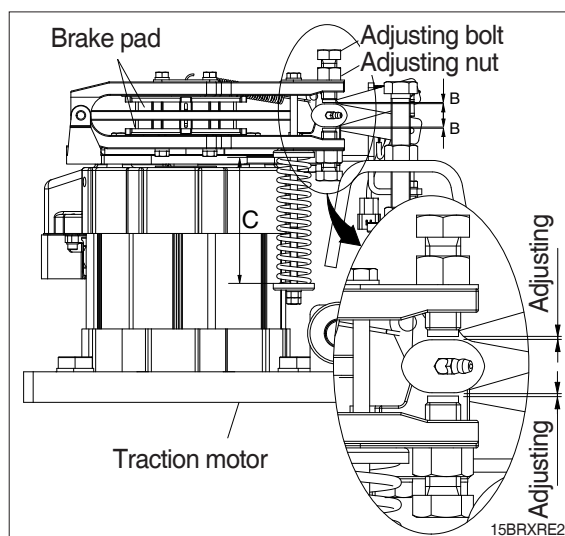
2) INSTALLATION

Assembling is done in reverse order of disassembling, and the following cautions shall be taken.

- (1) Driving Unit Mounting Bolt ($M12 \times 1.75$)
· Tightening Torque : 13.3~15.3 kgf·m
- (2) Driving motor mounting bolt ($M8 \times 1.25$)
· Tightening Torque : 3.7~4.1 kgf·m



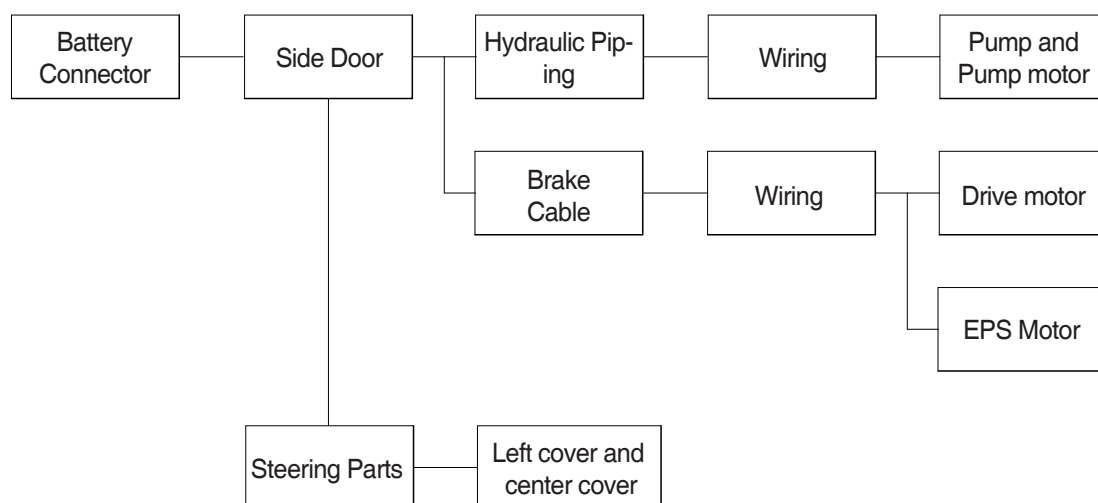
- (3) Check the gap between the brake cam and adjusting bolt (B).
· B : 0.1~0.5 mm
- (4) Check the height (C) of the brake spring, and adjust the height with the adjusting ring nut.
15/18BR-X : 118 ± 1.0 mm
20/25BR-X : 110 ± 1.0 mm



3. ELELECTRICAL COMPONENTS

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

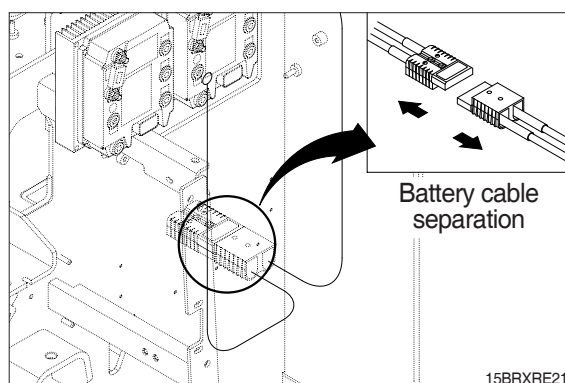
1) REMOVAL



BR7RE002

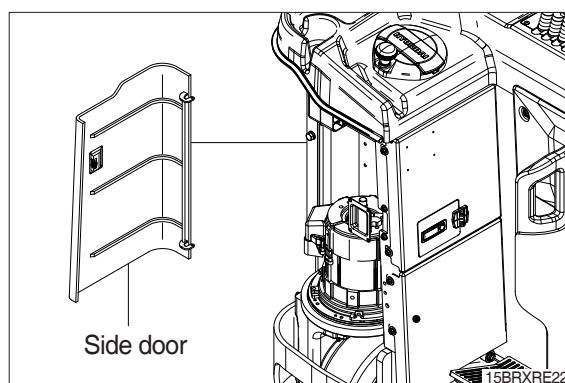
(1) Pump motor

- ① Separate the battery cable.



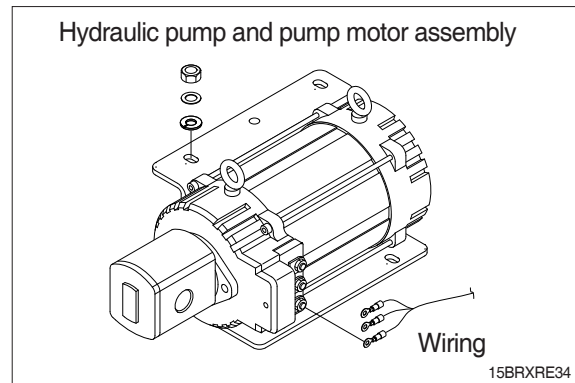
15BRXRE21

- ② Remove the side door.

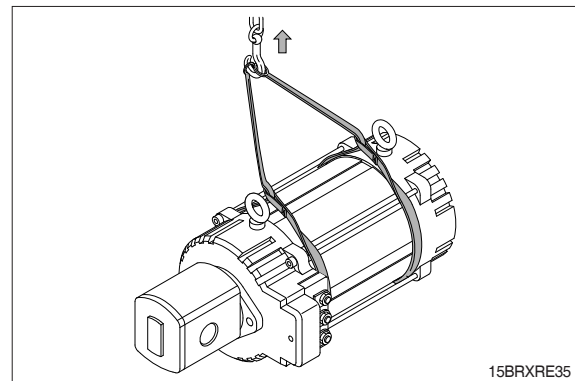


15BRXRE22

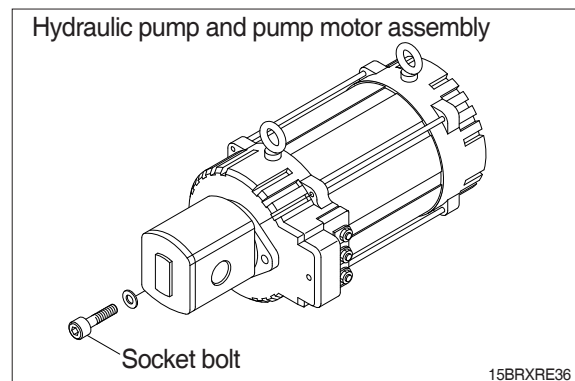
- ③ Separate the hose, pipe and wiring from the hydraulic pump and pump motor. Loosen the mounting nut from the bracket to take out the assembly.



- ④ Tie the hydraulic pump and the pump motor with the wire rope to lift slowly.

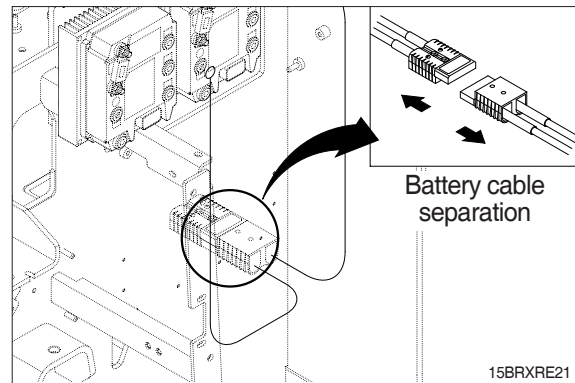


- ⑤ Remove 2 socket bolts fixing the hydraulic pump on the pump motor, and release the pump clamping on the motor.

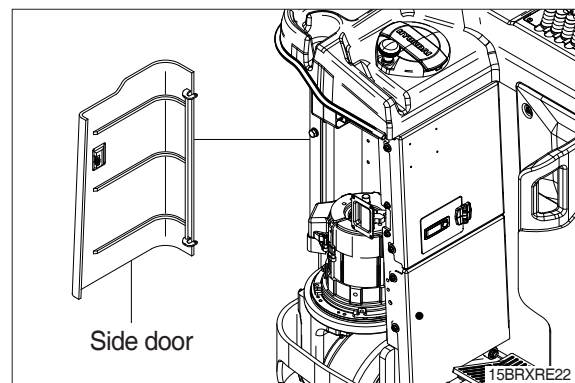


(2) Drive motor

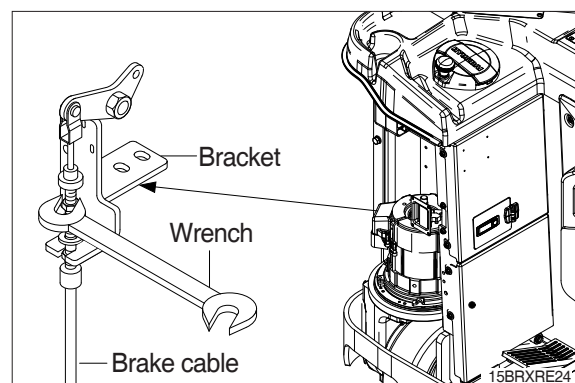
- ① Separate the battery cable.



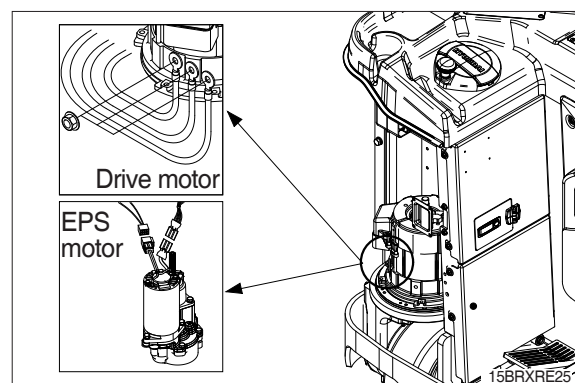
- ② Remove the side door.



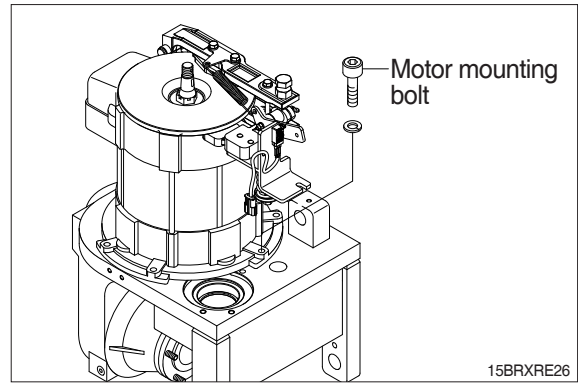
- ③ Remove the brake cable.



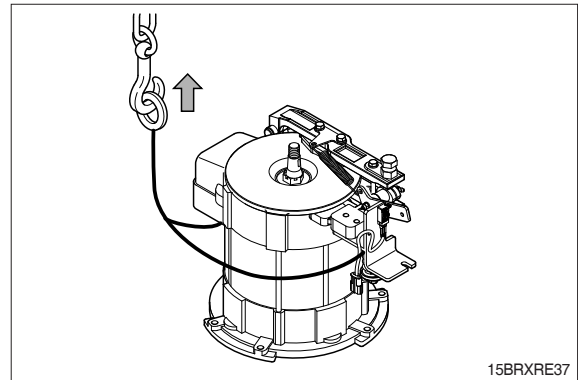
- ④ Separate the wiring.
 - a. Drive motor wiring
 - b. EPS Motor Wiring



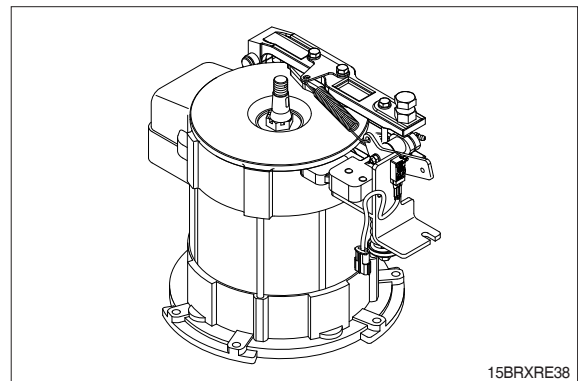
- ⑤ Remove the bolt connecting the motor and the driving unit.



- ⑥ Tie the driving motor with the wire rope and lift slowly.

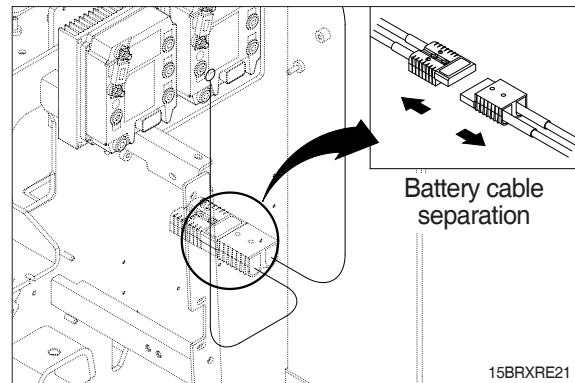


- ⑦ Place the motor on a clean workbench.

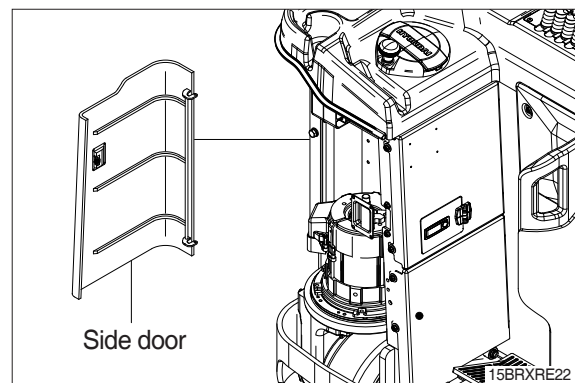


(3) EPS Motor

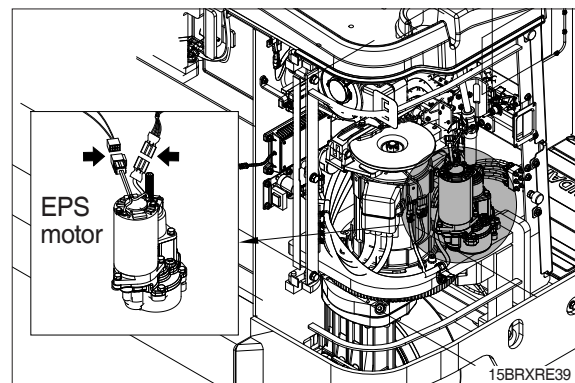
- ① Separate the battery cable.



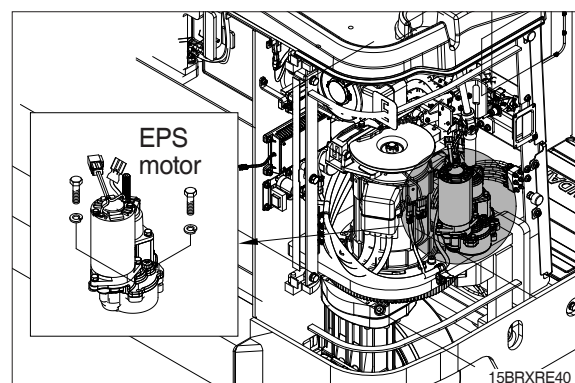
- ② Remove the side door.



- ③ Separate the wire ring.

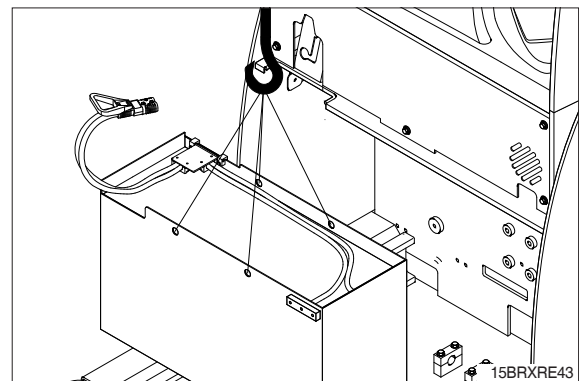
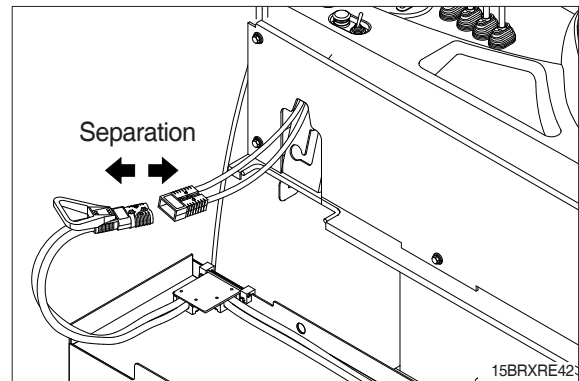
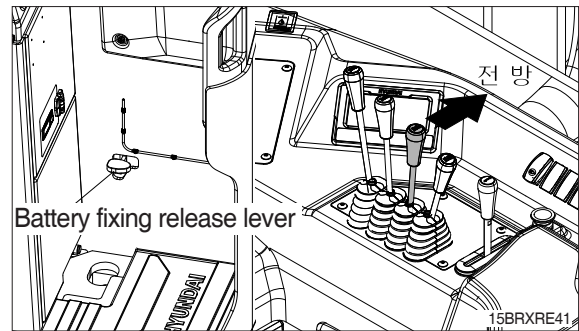


- ④ Loosen the bolt and remove the EPS motor.



(4) BATTERY

- ① Start the lift truck.
- ② Press the battery fixing release lever to release the fixed state of the battery.
- ③ Push the reach lever until the battery comes out from the inner frame.
- ④ Turn OFF the lift truck.
- ⑤ Separate the battery connect.
- ⑥ Use the battery hanger or the carrier to lift the battery carefully.

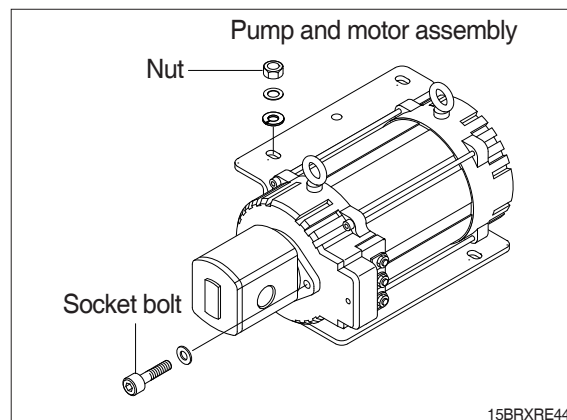


2) INSTALLATION

Assembling is done in reverse order of disassembling, and the following cautions shall be taken.

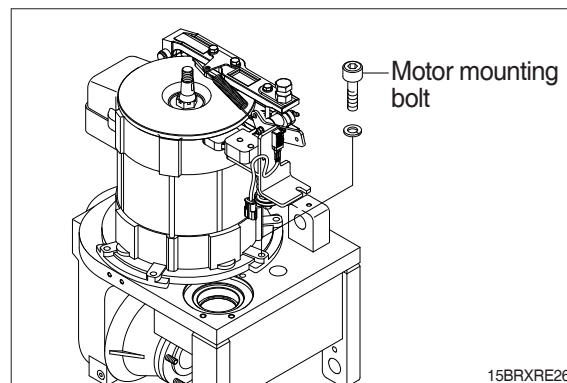
(1) Pump motor

- ① Pump motor mounting bolt.
 - Tightening Torque : 3.7~4.1 kgf·m
- ② Hydraulic pump mounting socket bolt
 - Tightening Torque : 6.9 ± 1.4 kgf·m



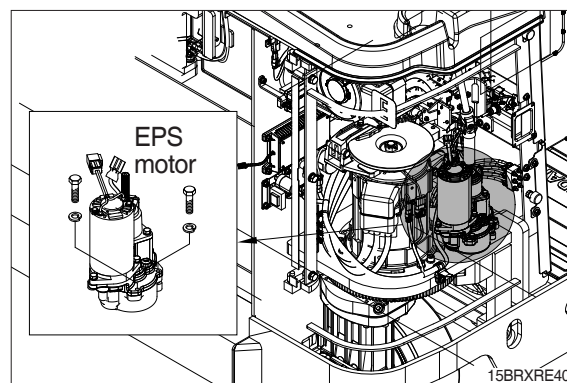
(2) Drive motor

- ① Connecting bolt between the driving motor and unit
 - Fastening torque : 3.7~4.1 kgf·m



(3) EPS Motor

- ① EPS motor mounting bolt.
 - Tightening Torque : 4.05 ± 0.8 kgf·m



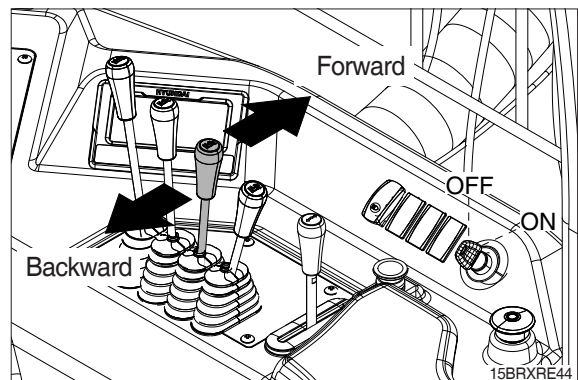
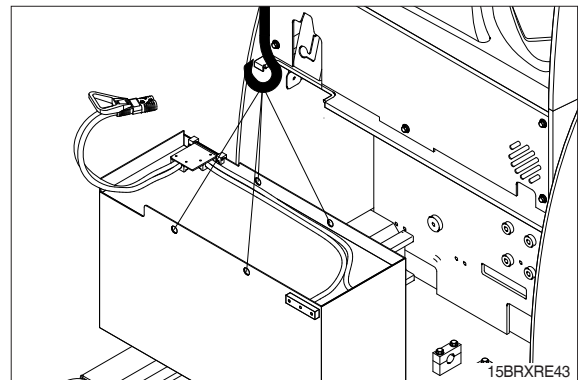
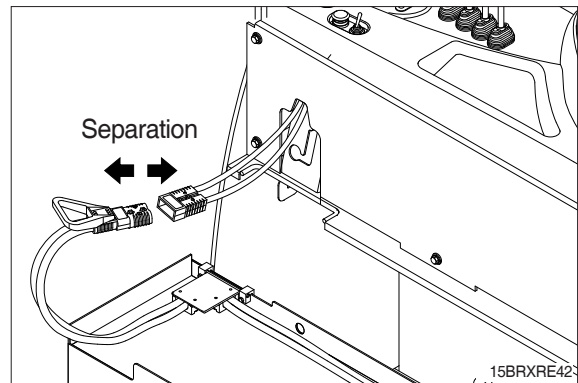
(4) BATTERY

- ① Use the battery hanger or carrier to carefully lift the battery on the guardrail between the mast and the frame.
- ② Connect the battery connector.
- ③ Start the lift truck.
- ④ The reach lever is pulled until it is locked with a clicking sound (Auto Locking).

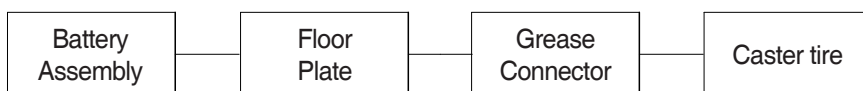
※ PRECAUTION

Caution is required on preventing the hose pipe from being lifted when inserting the battery inside the equipment. When the hose pipe is lifted upwards, stop for a moment to push the hose downwards.

- ⑤ Installation is completed.



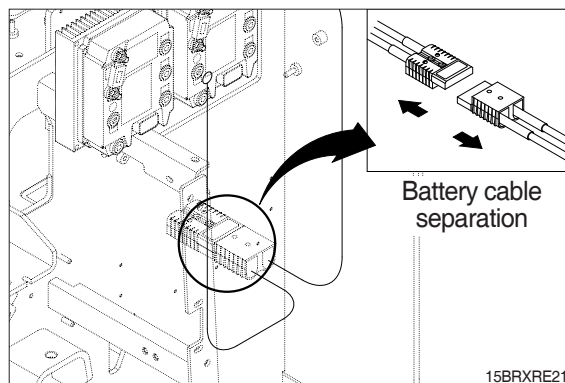
4. CASTER LINK



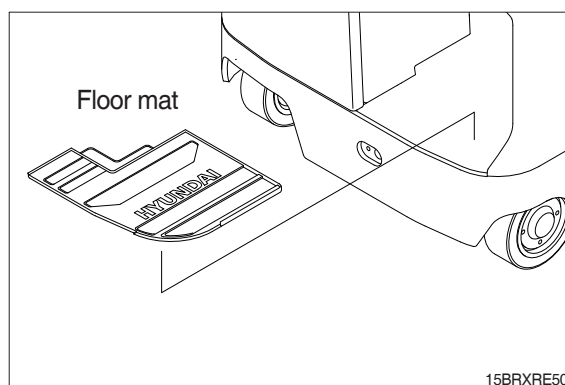
BR7RE003

1) REMOVAL

(1) Battery Cable Separation

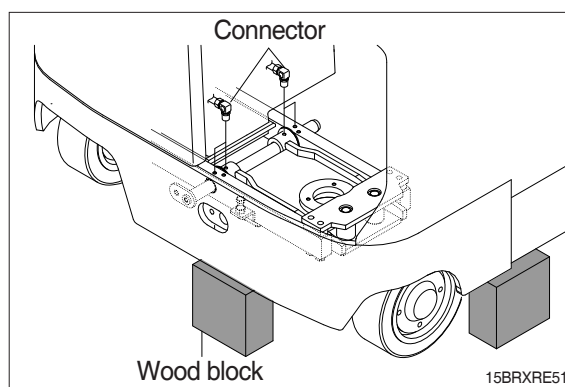


(2) Remove the floor mat and plate.

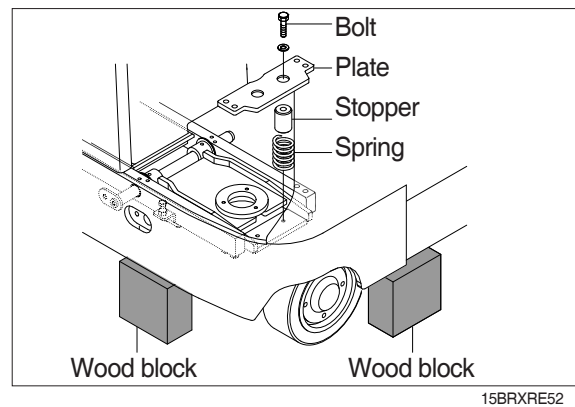


(3) Remove the grease connector.

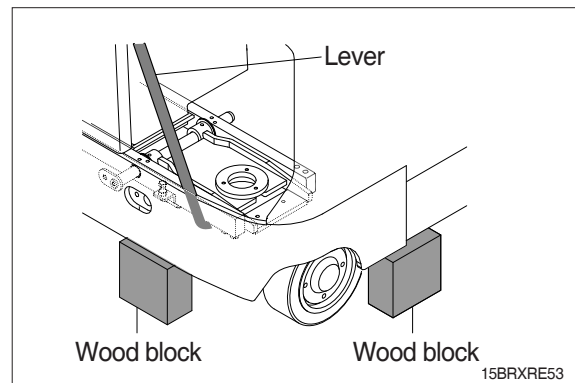
(4) Lift the frame and support both sides of the frame with the wooden block.



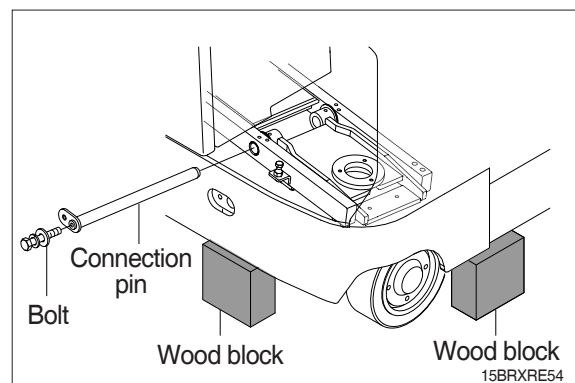
- (5) Loosen the bolt and remove the plate, stopper and spring.



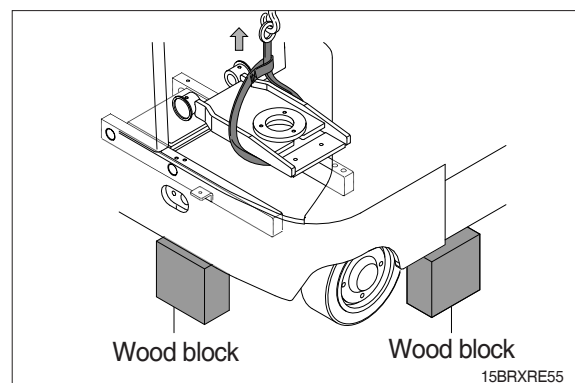
- (6) Lift the caster suspension link with a lever.



- (7) Loosen the bolt and pull the connection pin from the caster suspension link for removal.



- (8) Tie the suspension link with a wire rope and lift slowly.

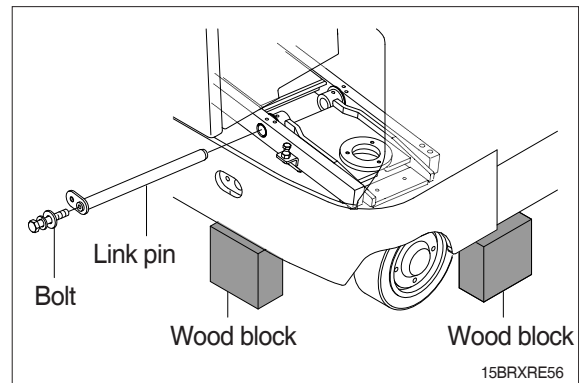


2) INSTALLATION

Assembling is done in reverse order of disassembling, and the following cautions shall be taken.

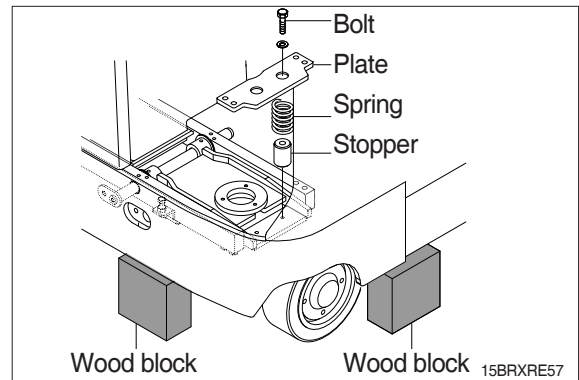
(1) Link pin captive bolt

- Fastening torque : 5.5~8.3 kgf·m



(2) Stopper captive bolt

- Fastening torque : 9.8~15.8 kgf·m

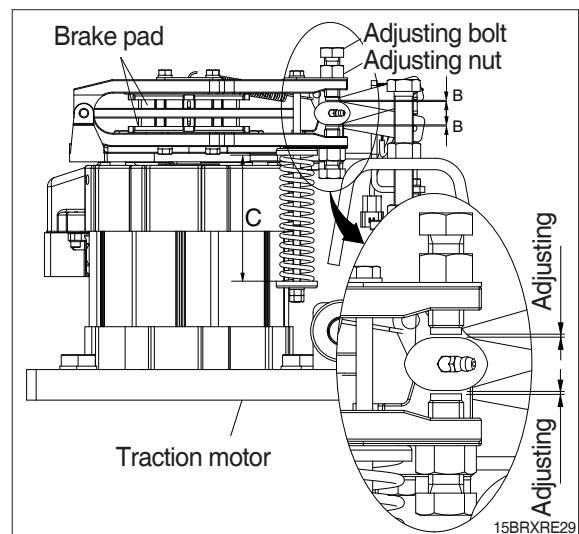


(3) Check the gap between the brake cam and adjusting bolt (B).

- B : 0.1~0.5 mm

(4) Check the height (C) of the brake spring, and adjust the height with the adjusting ring nut.

- ※ 15/18BR-X : 118 ± 1.0 mm
- 20/25BR-X : 110 ± 1.0 mm

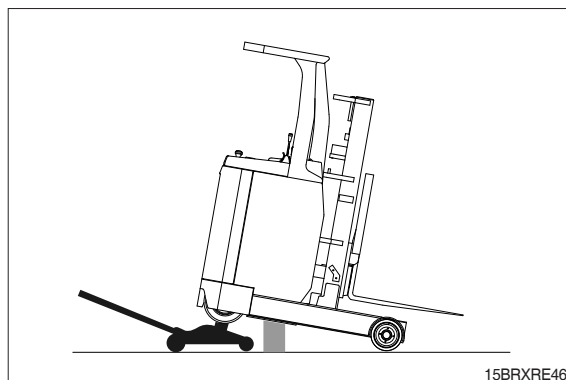


5. TIRES AND WHEELS

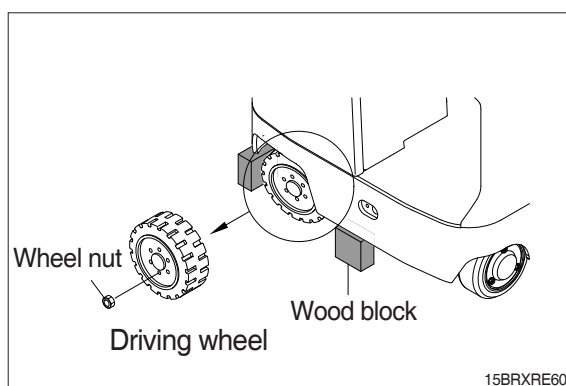
1) REMOVAL

(1) Driving tires and wheels

- ① Lift the frame and support both sides of the frame with the wooden block.
- ※ Lift until the tire is detached from the ground.

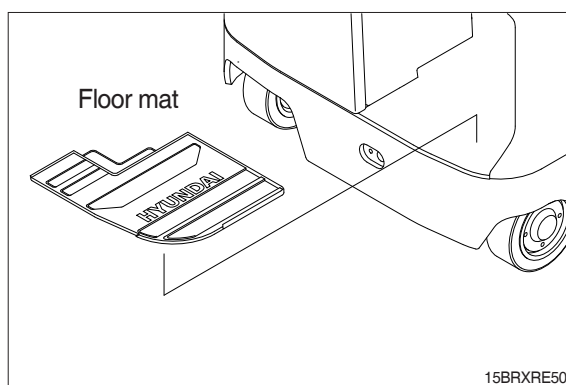


- ② Remove the wheel nut attaching the driving wheel, and take out the driving wheel.
- Wheel nut quantity
15/18BR-X : 7EA
20/25BR-X : 5EA

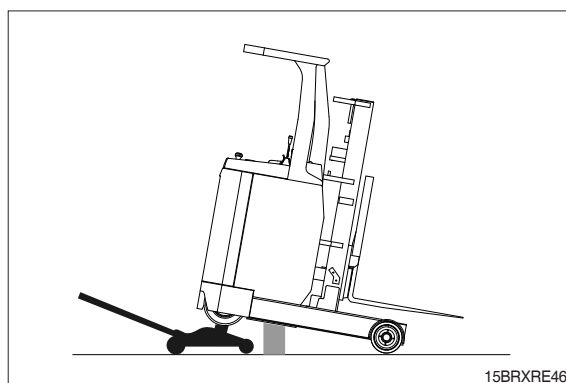


(2) Caster wheel

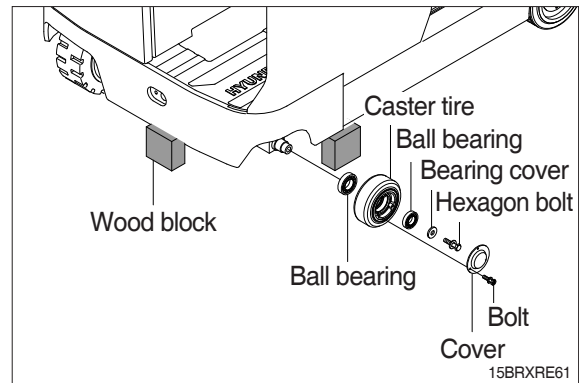
- ① Disassemble the floor mat and floor plate.



- ② Lift the frame with a jack.
 - ③ Support the bottom of the frame with a wooden block.
- ※ Lift until the tire is detached from the ground.

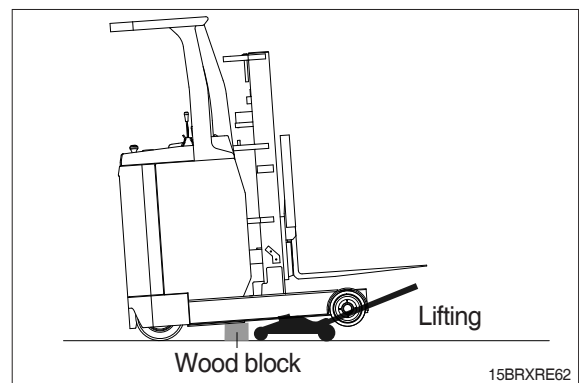


- ④ Remove the cover along with the hexagon bolt and bearing cover in order.
- ⑤ Remove the caster tire and the ball bearing.

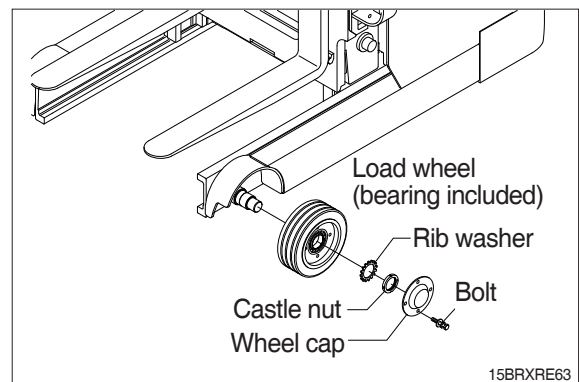


(3) Load wheel

- ① Lift the reach leg to fix the equipment with a wooden block.



- ② Remove the rod wheel cap and disassemble the castle nut and rib washer. Remove the rod wheel along with the bearing.

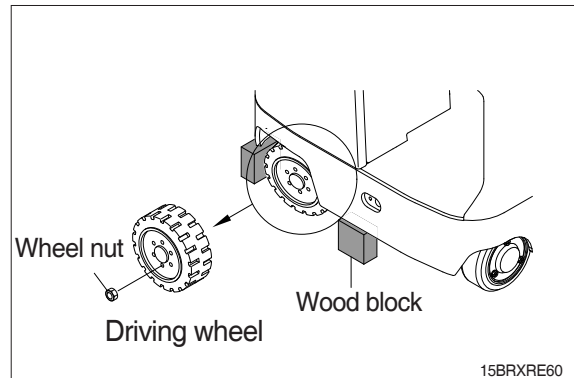


2) INSTALLATION

Assembling is done in reverse order of disassembling, and the following cautions shall be taken.

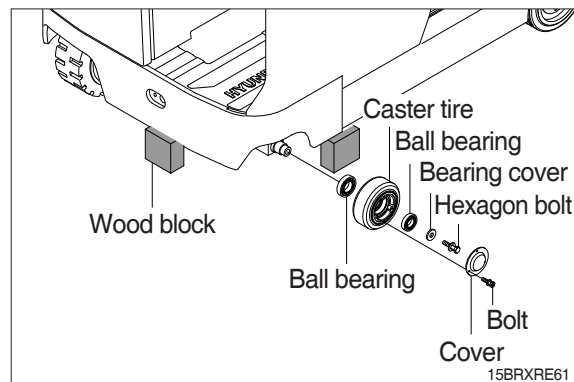
(1) Driving wheel nut

- Fastening torque : 12.9~15.7 kgf·m



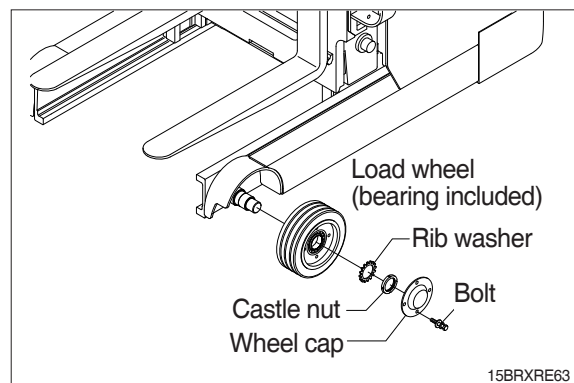
(2) Caster wheel bolt.

- Fastening torque : 11~13 kgf·m



(3) Rod wheel bolt.

- Fastening torque : 4.5~5.5 kgf·m



GROUP 3 MAINTENANCE OF THE HYRAULIC HOSE

1) INSPECTION

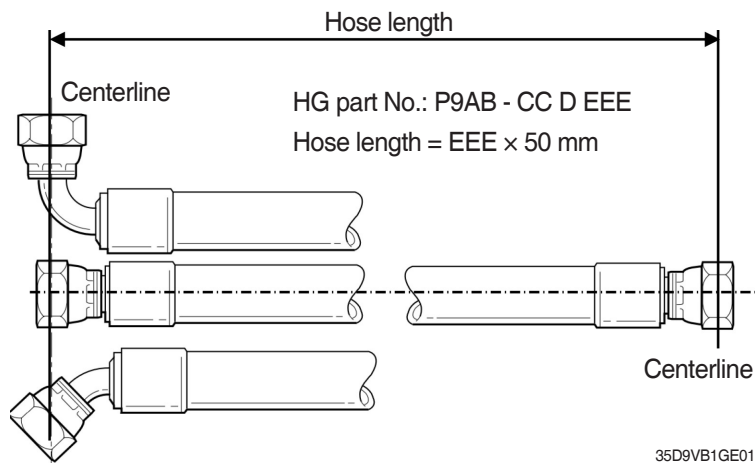
The function and life of the hydraulic parts are influenced by periodic maintenance. Therefore, blocking the penetration of foreign substances into the hydraulic system is important. The method of maintaining the cleanliness of the hydraulic system is shown as follows.

- Clean the surroundings of the parts before starting the lift truck. If possible, wash the lift truck.
- Remove the hose, and flogging is performed immediately on the hose connection. Use the plug according to the connection type. If the plug is inappropriate, use a clean vinyl bag and cable tie or tape to seal the connection.
- Do not reuse the oil that was discharged from the fork truck.
- There may be impurities in the oil, so perform filtering before supplementing or replacing the oil.

2) HOSE LENGTH

The connected hose is indicated with the HG part number. If there is no such information, it shall be measured as follows.

- The hose must be measured with the length between the sealing surfaces of the hose placed.
- Angular connection shall be measured from the center of the sealing surface as shown in the following figure.



3) PRECAUTIONS ON REPLACEMENT

Following the matters shown below when replacing the hose that passed the service life or lost with function.

- The straight hose length must be protected after connection to prevent the deformation.
- Hose must not be twisted. 7% twisting reduces the part life by 90%.
- Do not use a hose that is too short. It can cause oil leakage or damage.
- Use a proper coupling to minimize the curve.
- Avoid steep curves.
- On storage, the inside of the hose shall be cleaned. During the installation, the plug on the connection shall be maintained as long as possible for installation.