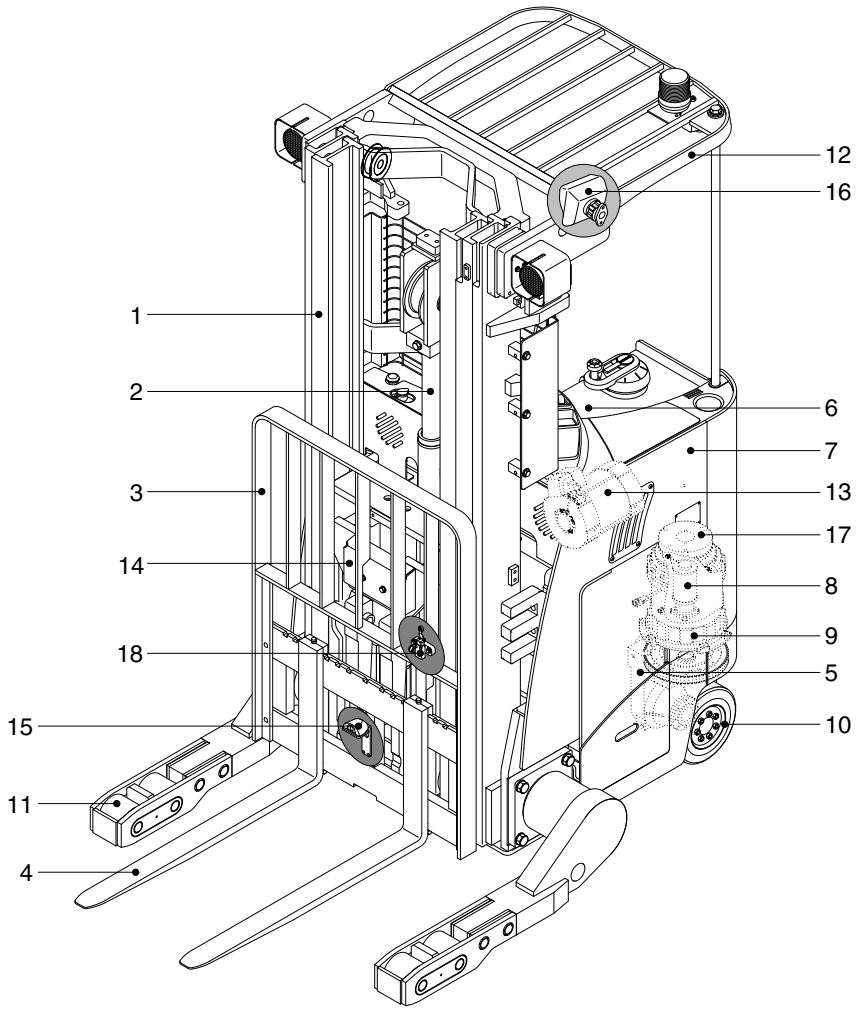
SECTION 2 REMOVAL & INSTALLATION OF UNIT

GROUP 1 MAJOR COMPONENTS



15BRP9OM112

1	Mast	7	Frame	13	Pump motor
2	Lift cylinder	8	EPS motor	14	Reach
3	Carriage and backrest	9	Traction motor	15	Camera (option)
4	Forks	10	Drive wheel	16	Monitor (option)
5	Drive unit	11	Load wheel	17	Electric service brake
6	Dash board	12	Overhead guard	18	Speed limit switch (option)

GROUP 2 REMOVAL AND INSTALLATION OF UNIT

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

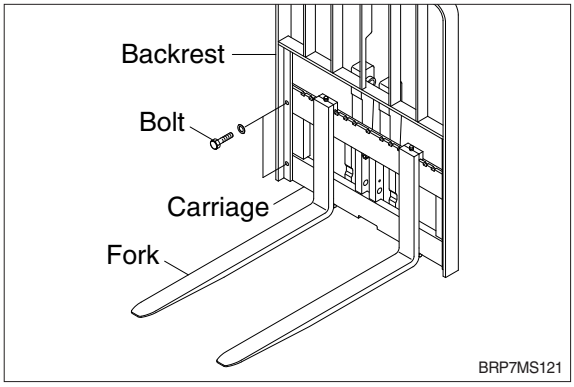
1. MAST

1) REMOVAL

Backrest & fork → Carriage → Piping → Mast

(1) Backrest

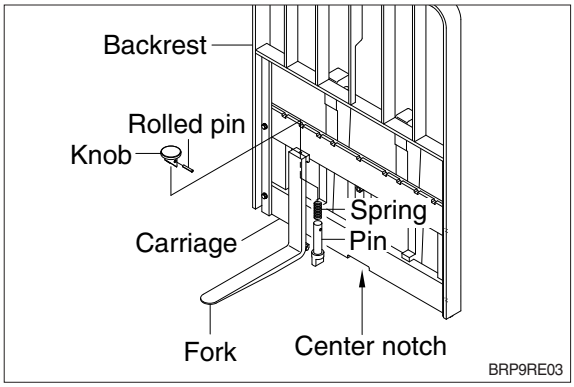
① Remove bolts securing backrest to fork carriage. Lift backrest straight up and remove it from carriage.



(2) Forks

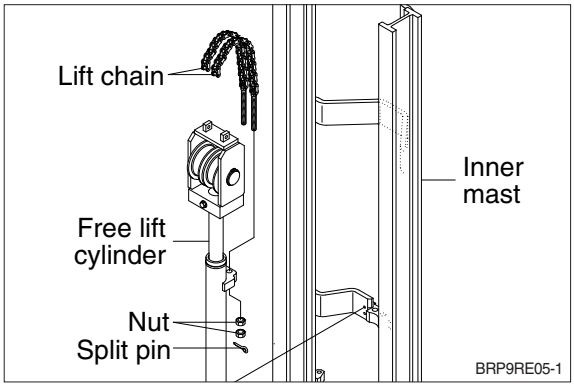
※ Disconnect cable for the fork camera if equipped.

① Remove shaft cover and bolt.
② Remove fork set pin and then draw out the shaft.
③ Carefully remove forks one by one.

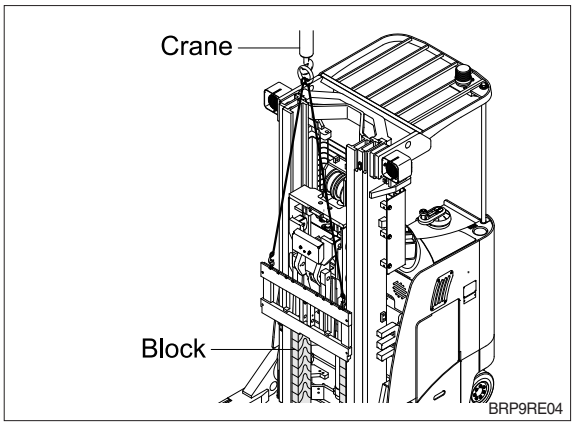


(3) Carriage

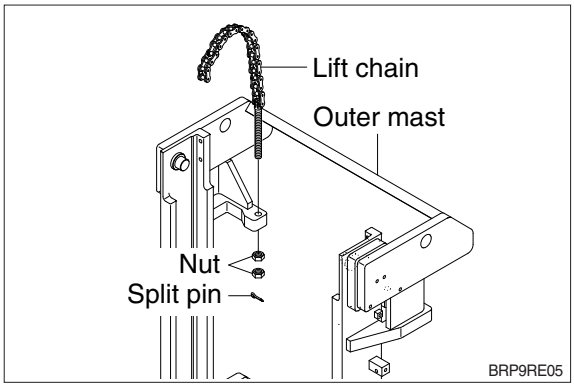
① Disconnect cable for the height indicator if equipped.
② While supporting free lift chains, remove the split pins and nuts from anchor bolts of stationary upright.



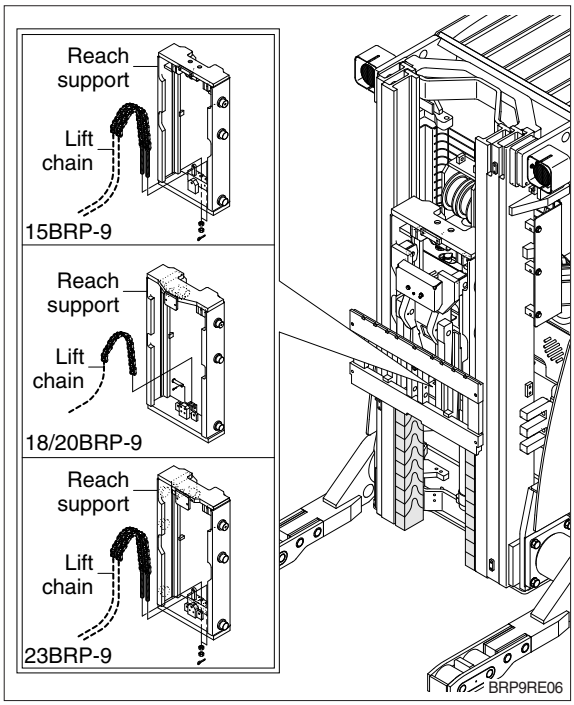
③ With the mast vertical, raise the carriage high enough to place blocks under the load forks. This is done to create slack in the load chains when the carriage is lowered. Lower the carriage all the way down to the floor. Make sure the carriage is level, this will prevent any binding when the mast is raised.



④ While supporting lift chains, remove the split pins and nuts from anchor bolts of stationary upright.



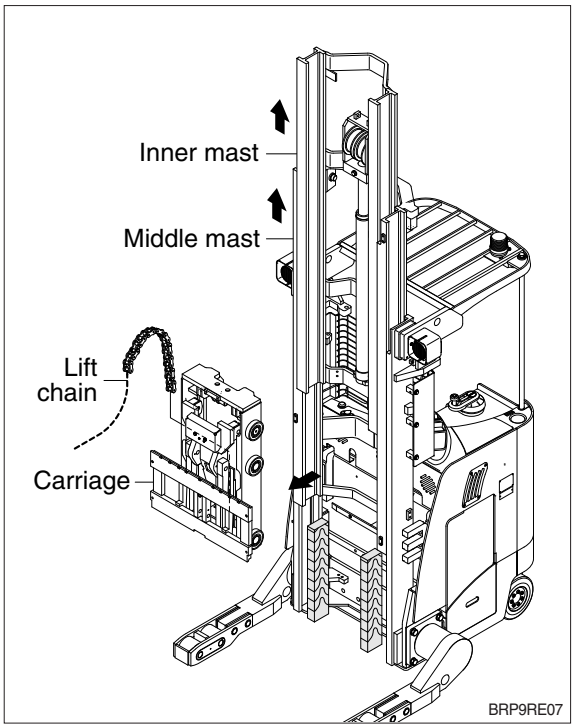
⑤ Pull the chains out of the sheaves and drape them over the front of the carriage.



⑥ 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.

⑦ Inspect all parts for wear or damage. Replace all worn or damaged parts.



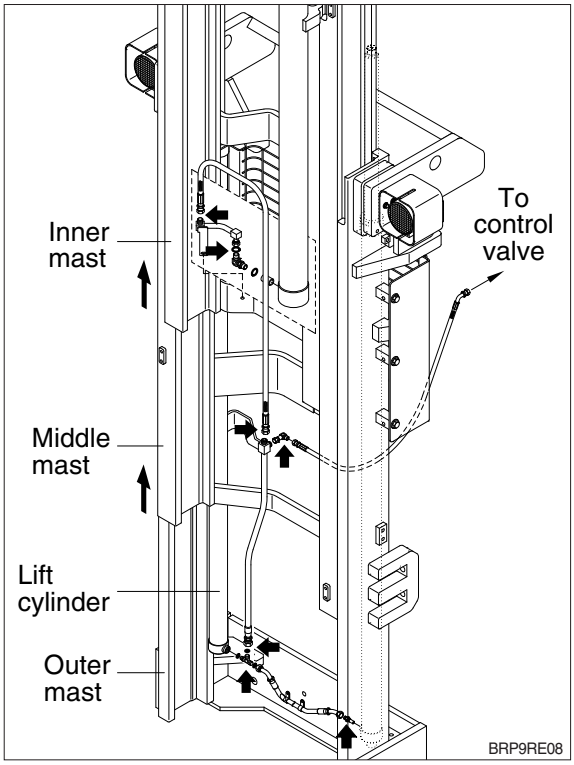
(4) Piping

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

② Remove the return hoses from the connector.

③ Remove hose assembly, connector, down safety valve from the lift cylinder.

④ Disconnect hose assembly from the flow regulator.

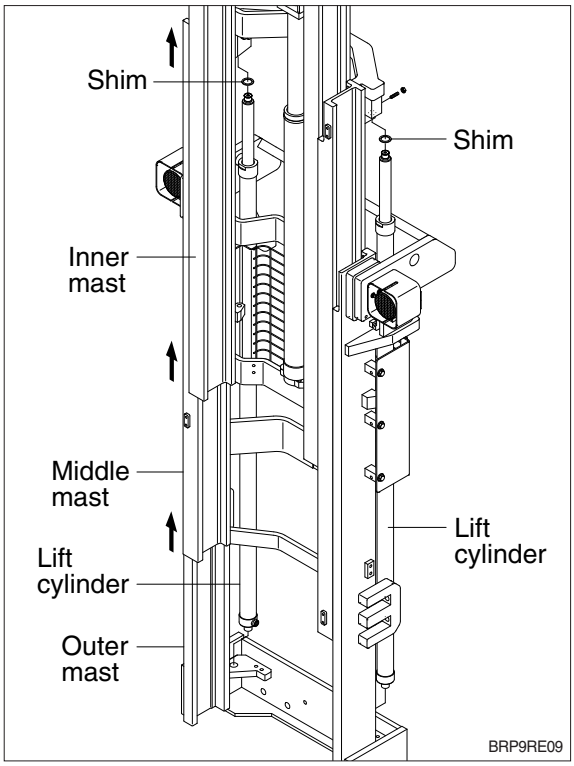


(5) Lift cylinder

① Loosen hexagonal bolts and remove washers securing the lift cylinders to inner mast.
② Bind the lift cylinder with overhead hoist rope and pull up so that the rope has no slack or binding.

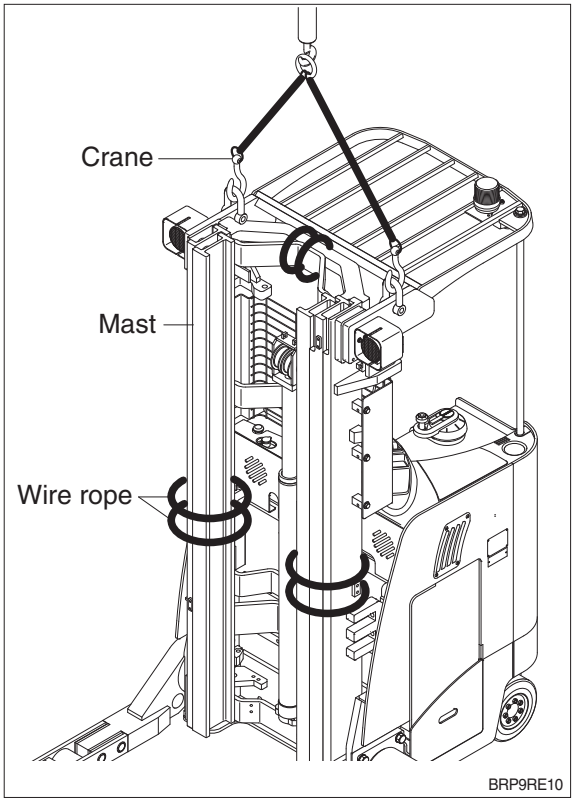
⚠ Make sure that the lift cylinder be tightened firmly for safety.

③ Loosen and remove hexagon nuts and cylinder band securing cylinder to 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 Pass wire rope around the inner and outer masts to allow lifting them out with a hoist.
② Remove the stopper pin at the end of reach cylinder and then remove the stopper bolt at the end of guide rail.
③ Draw out the mast from the guide rail with lifting up.
④ Lower the mast and place it on stand.

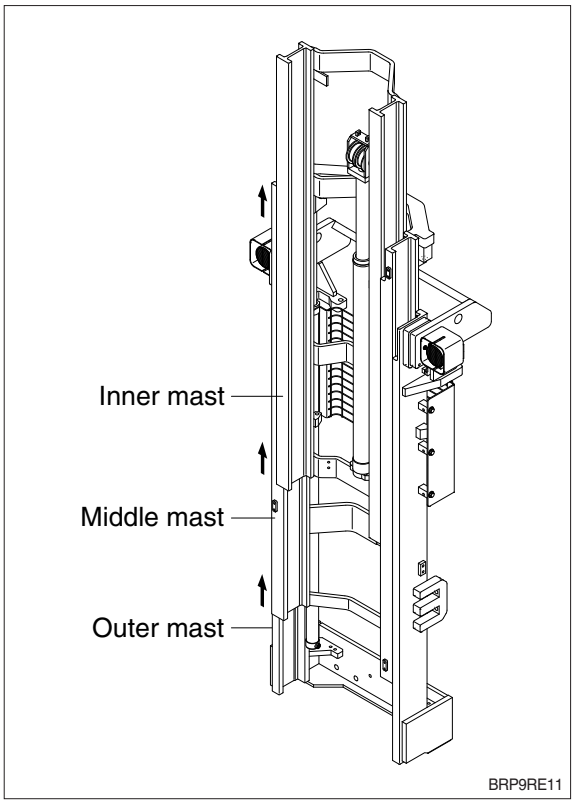


(7) Inner mast

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 Using an universal puller, remove the load rollers.



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) LIFT CYLINDER INSTALLATION AND ADJUSTMENT

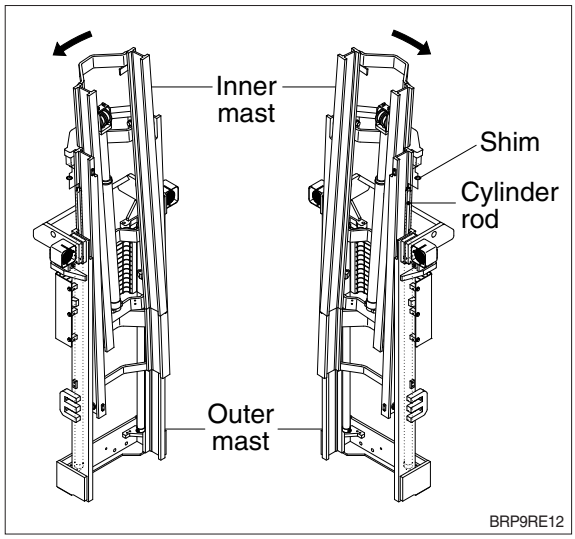
① Assemble the lift cylinder inside the outer mast, then tighten the stopper bolt. If the cylinder assembly has been replaced, adjust as follows so that the left and right cylinders are synchronized at the maximum lifting height.

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)



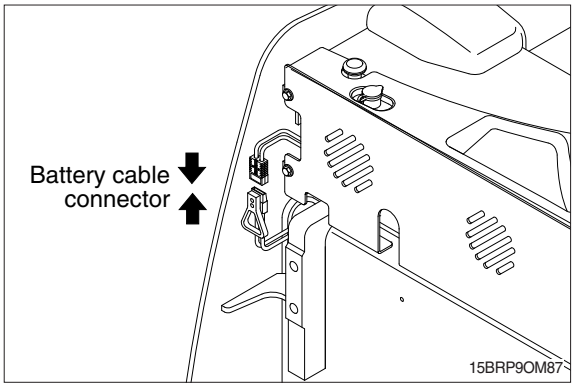
2. POWER TRAIN ASSEMBLY

1) REMOVAL

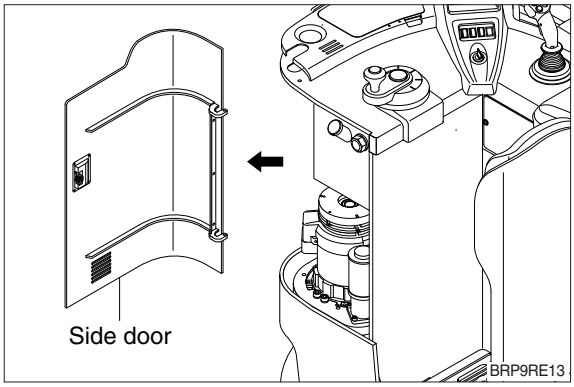
Battery disconnector — Seat & hood — Pump & pump motor — EPS motor and drive motor — Drive unit assembly

BRP9RE001

(1) Disconnect the battery cable.

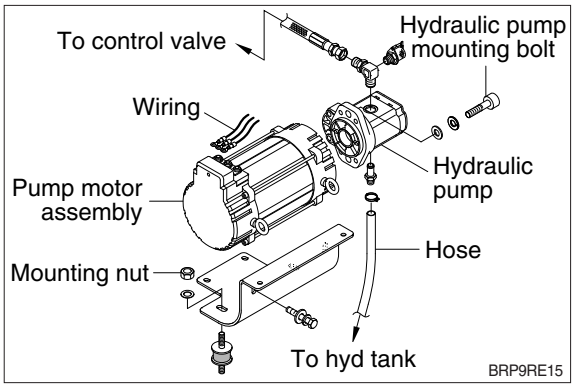


(2) Remove side door.



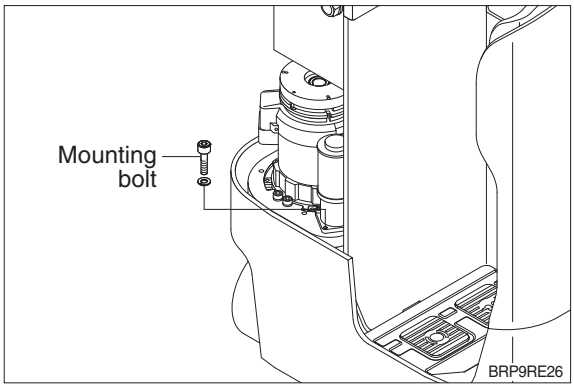
(3) Remove the pump and motor.

※ For details, see page 2-12.



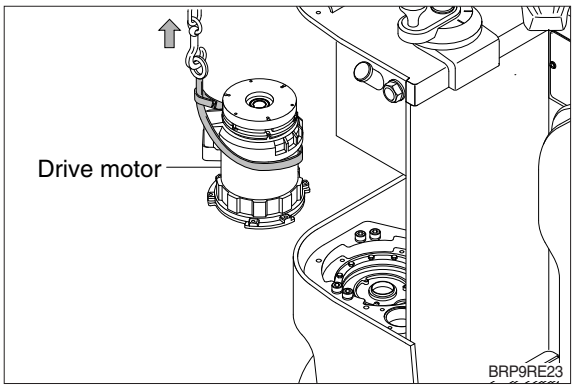
(4) Remove the EPS motor.

※ For details, see page 2-14.

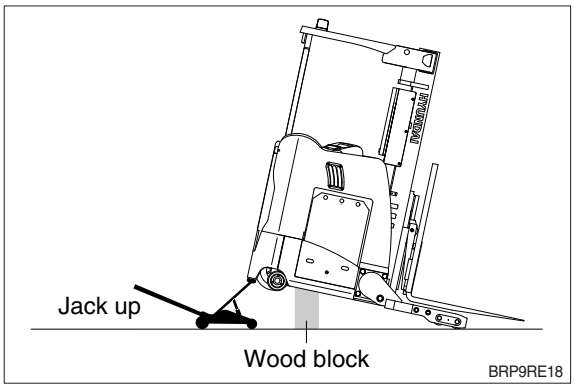


(5) Remove the drive motor.

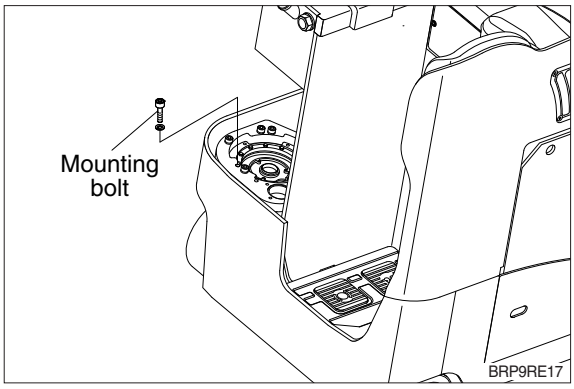
※ For details, see page 2-12.



(6) Lift up the frame and support both side of frame on wood block.

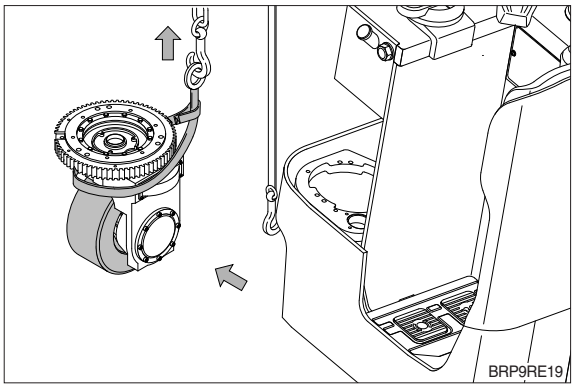


(7) Loosen mounting bolts from frame and then take out drive unit assembly.



(8) Remove drive unit assembly from frame.

※ Be careful the drive unit does not hit the body.



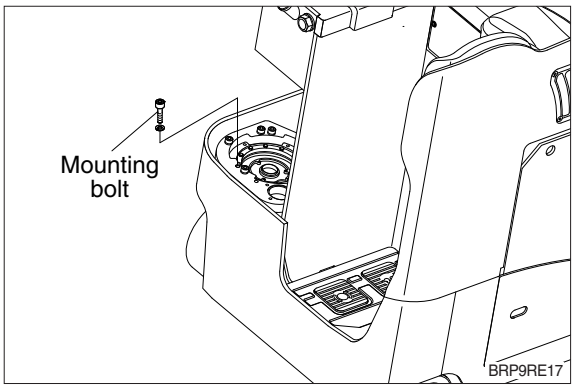
2) INSTALLATION

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

(1) Drive unit mounting bolts : 6EA

· Tightening torque : 13.3~15.3 kgf · m (96.2~110.1 lbf · ft)

※ Apply the loctite #277 above item (1, 2, 3) before tightening.



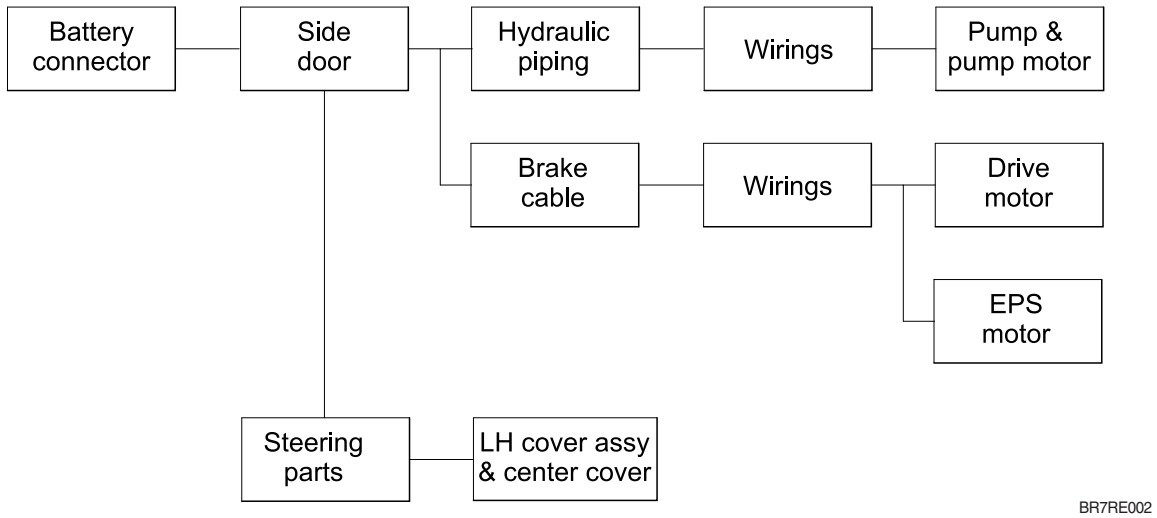
(2) Pump motor, drive motor and EPS motor mounting bolts and nuts tightening torque.

※ For details, see page 2-16.

3. ELECTRICAL COMPONENTS

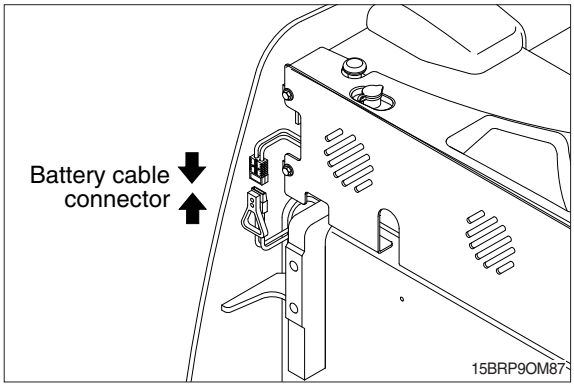
Before removing each component, disconnect cables and earth lines attached to the component.

1) REMOVAL

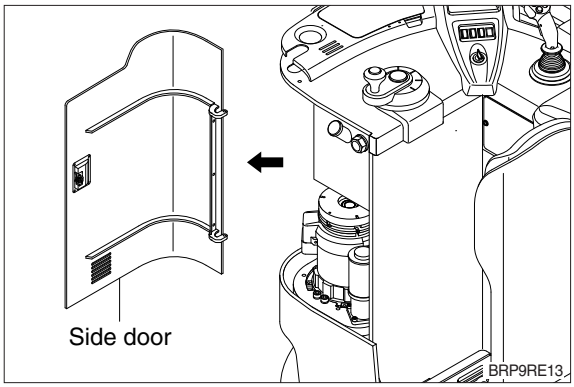


(1) PUMP MOTOR

① Disconnect the battery cable.

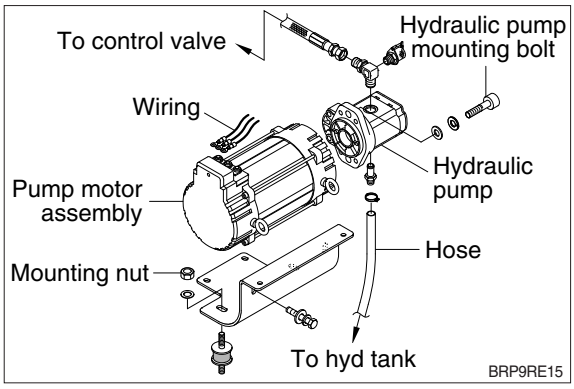


② Remove side door.



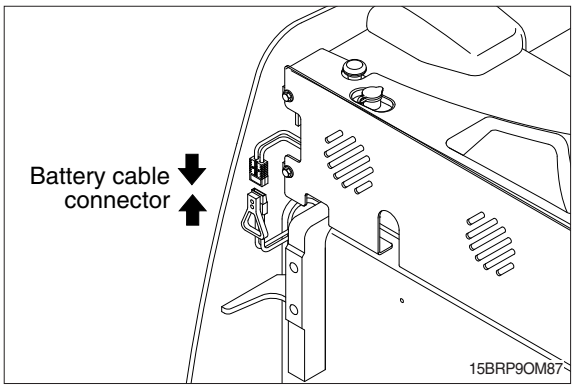
③ Disconnect the hose, pipe and wiring from pump & motor assembly.
Loosen mounting nuts from frame and then take out the assembly.

④ Remove 2 mounting bolts fastening the pump & motor and then disengage the pump from motor.

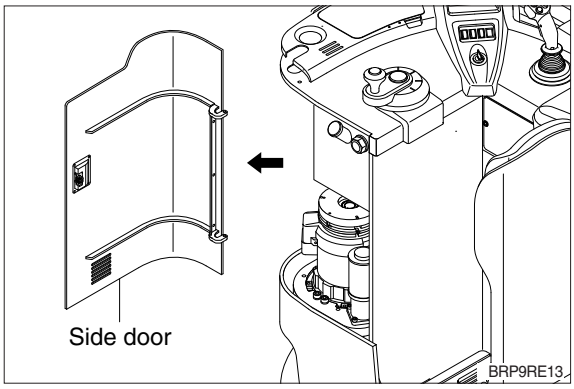


(2) DRIVE MOTOR

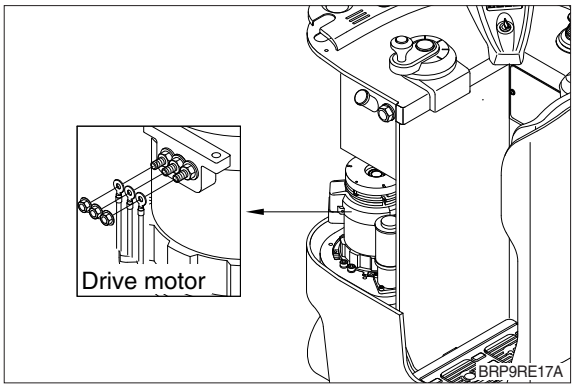
① Disconnect the battery cable.



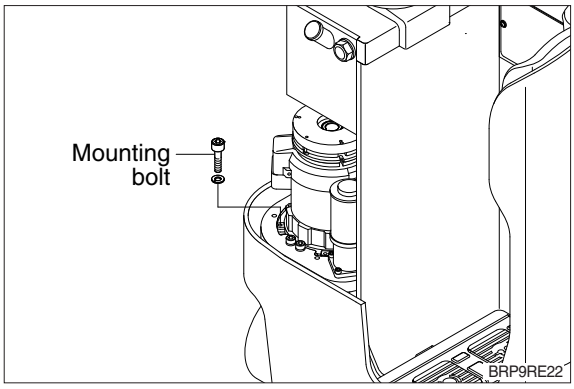
② Remove side door.



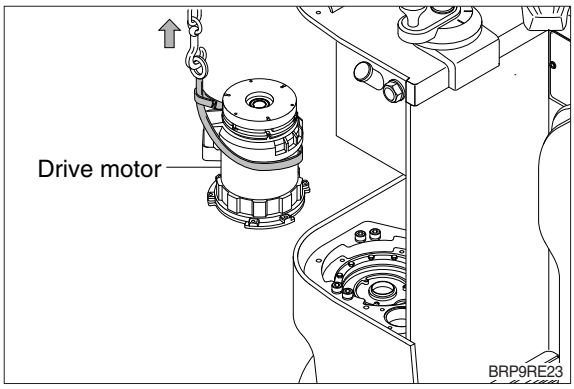
③ Disconnect wirings.
a. Drive motor wiring
b. EPS motor wiring



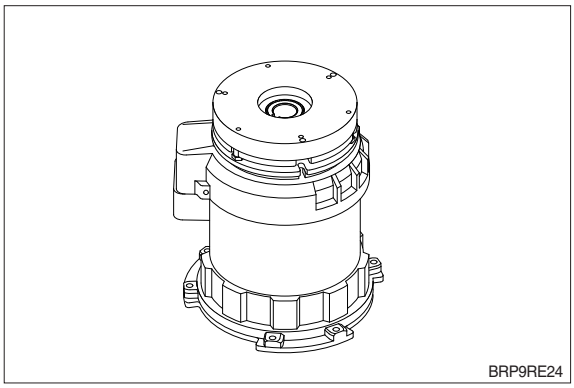
④ Remove bolts connecting the motor and drive unit.



⑤ Tie wire rope around the drive motor and lift up slowly.

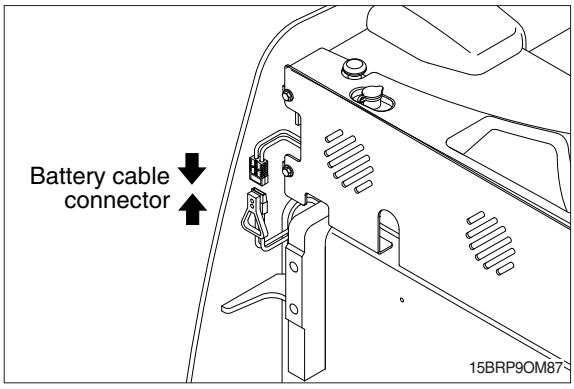


⑥ Put the motor on the clean work bench.

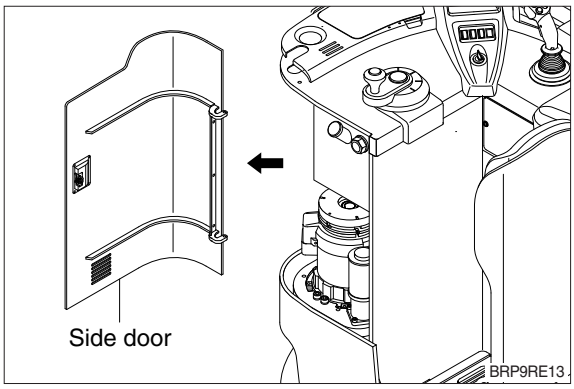


(3) EPS MOTOR

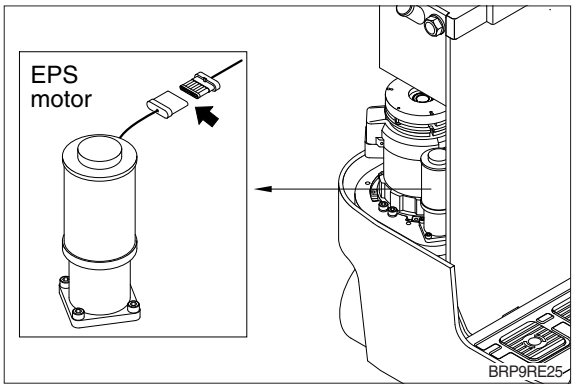
① Disconnect the battery cable.



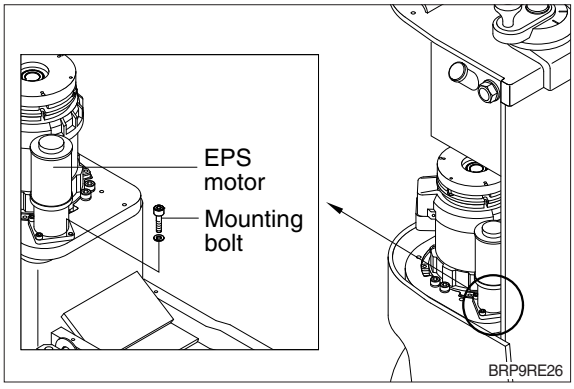
② Remove side door.



③ Disconnect wirings.



④ Loosen bolts and remove EPS motor assembly.



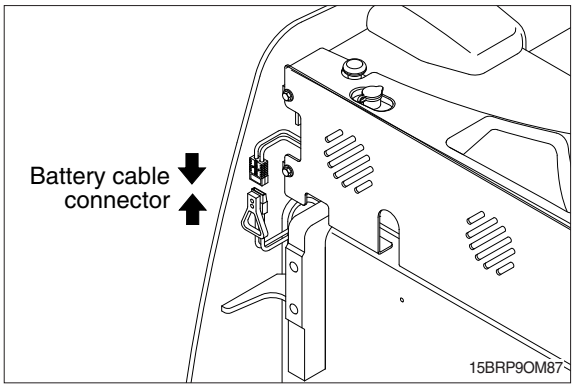
(4) BATTERY REMOVAL

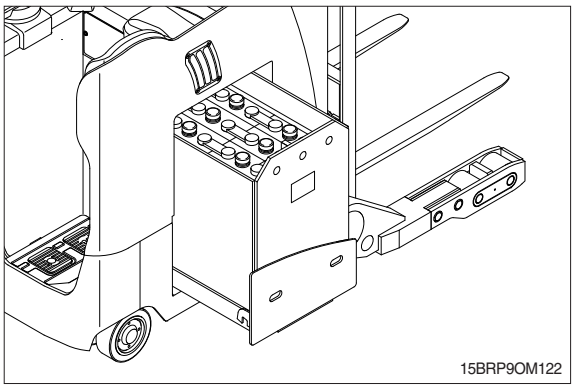
① Turn off the key.

② Release the lock screw of side support in frame.

③ Disconnect the battery connector.

④ Pull out the battery and using a battery hanger, carefully raise the battery assembly.





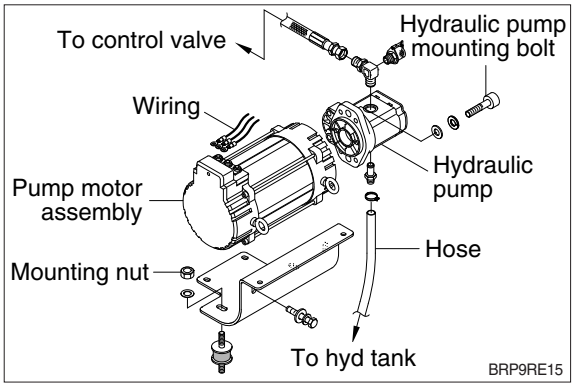
2) INSTALLATION

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

(1) PUMP MOTOR

① Pump motor mounting nut.
- Tightening torque : 2.0~3.0 kgf · m (14.5~21.7 lbf · ft)

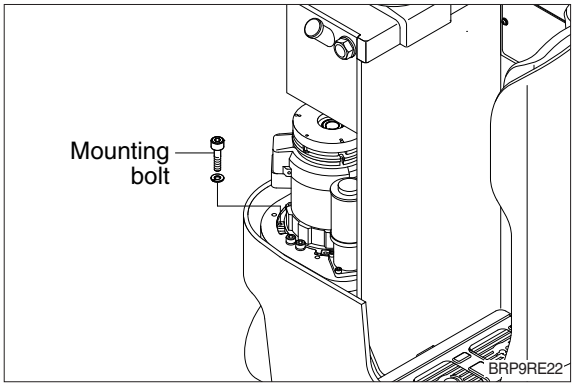
② Hydraulic pump mounting bolt
- Tightening torque : 4.5~5.5 kgf · m (32.5~39.8 lbf · ft)



(2) DRIVE MOTOR

① Connection bolts between drive motor and drive unit.
- Tightening torque : 6~8 kgf · m (43.4~57.8 lbf · ft)

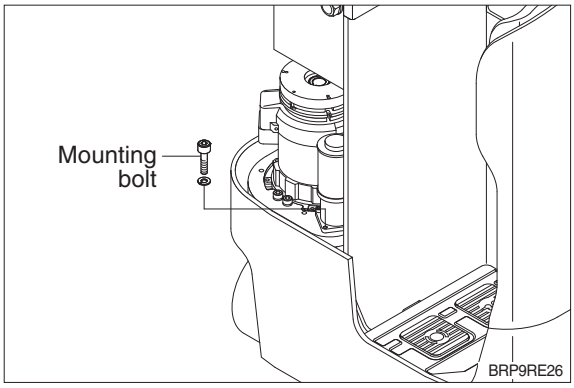
※ Apply the loctite #277 before tightening.



(3) EPS MOTOR

① EPS motor mounting bolts.
- Tightening torque : 3.2~4.8 kgf · m (23.1~34.7 lbf · ft)

※ Apply the loctite #277 before tightening.



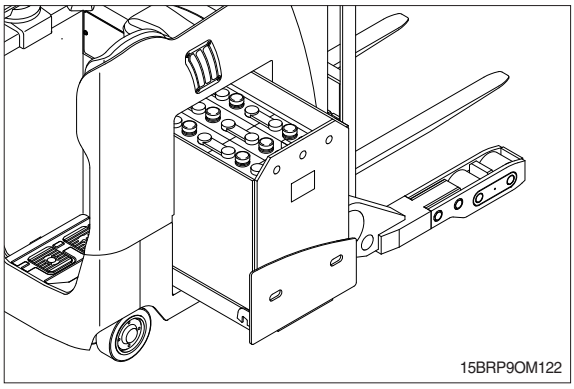
(4) BATTERY INSTALLATION

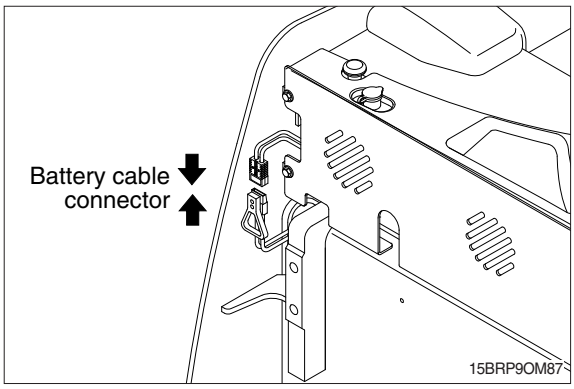
① Using a battery hanger, carefully put the battery assembly compartment push the battery assembly to the frame.

② Adjust the lock screw of side support in frame.

③ Connect the battery connector.

④ Complete installation.





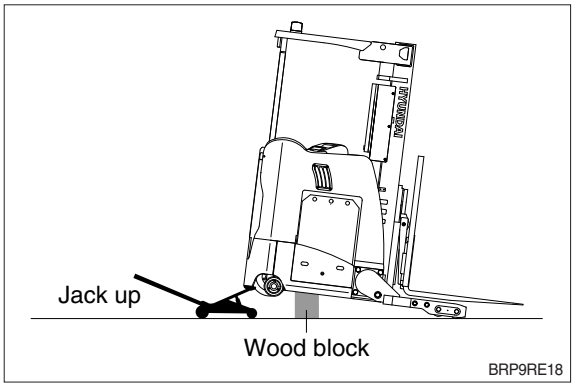
4. TIRE & WHEEL ASSEMBLY

1) REMOVAL

(1) Drive tire & wheel assembly

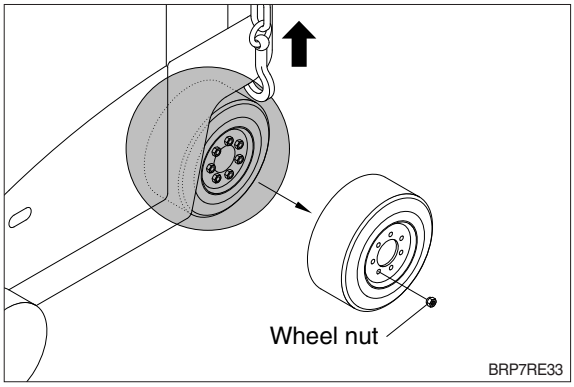
① Lift up the frame

※ Lift up until the tire clear off the ground.



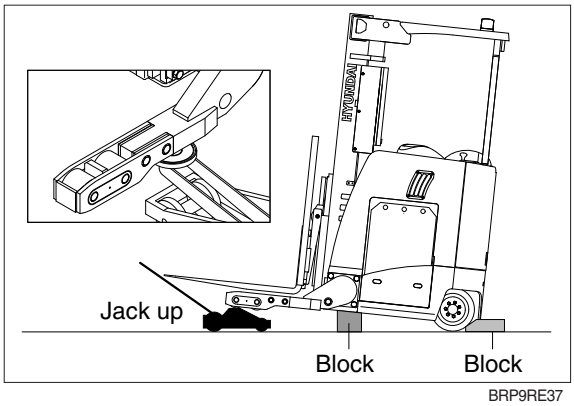
② Remove wheel nuts attaching the drive wheel and take off the drive wheel assembly.

· Wheel nuts : 7EA



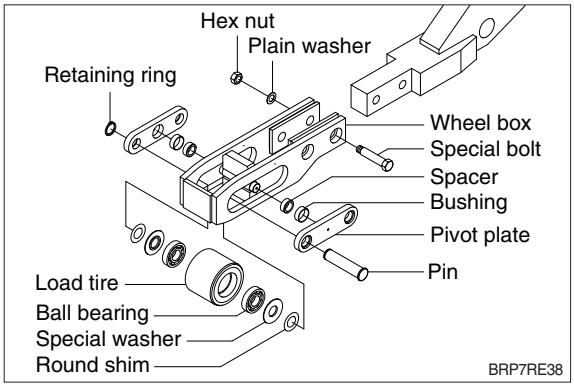
(2) Load wheel assembly

① Lift up wheel box assy and fix the machine with blocks.



② Disassemble load tire assy

- After removing retaining ring, pin, washers and shims, take out load tire assy.
- Remove ball bearings from load tire assy if necessary and replace with new bearings.

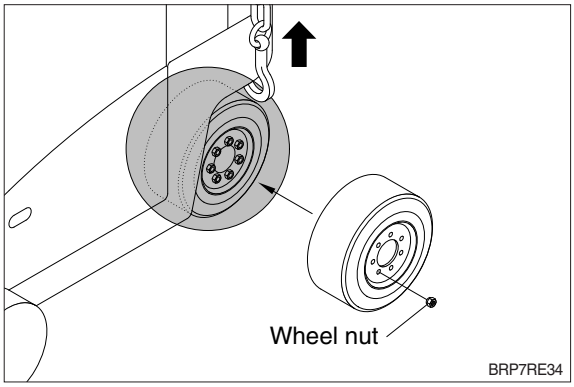


2) INSTALLATION

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

(1) Drive wheel nuts

· Tightening torque : 13.4~18.0 kgf · m
(96.9~130 lbf · ft)



(2) When assembling bearings in the wheel box assembly, it should be cleaned on the pin and in the bore of the load tire assy in order to prevent it from scratch or damage.

(3) When inserting shims between wheel box assy and special washer, it should be kept clearance within 0.5 ㎜.