MITSUBISHI FORKLIFT TRUCKS

SERVICE MANUAL

OPB

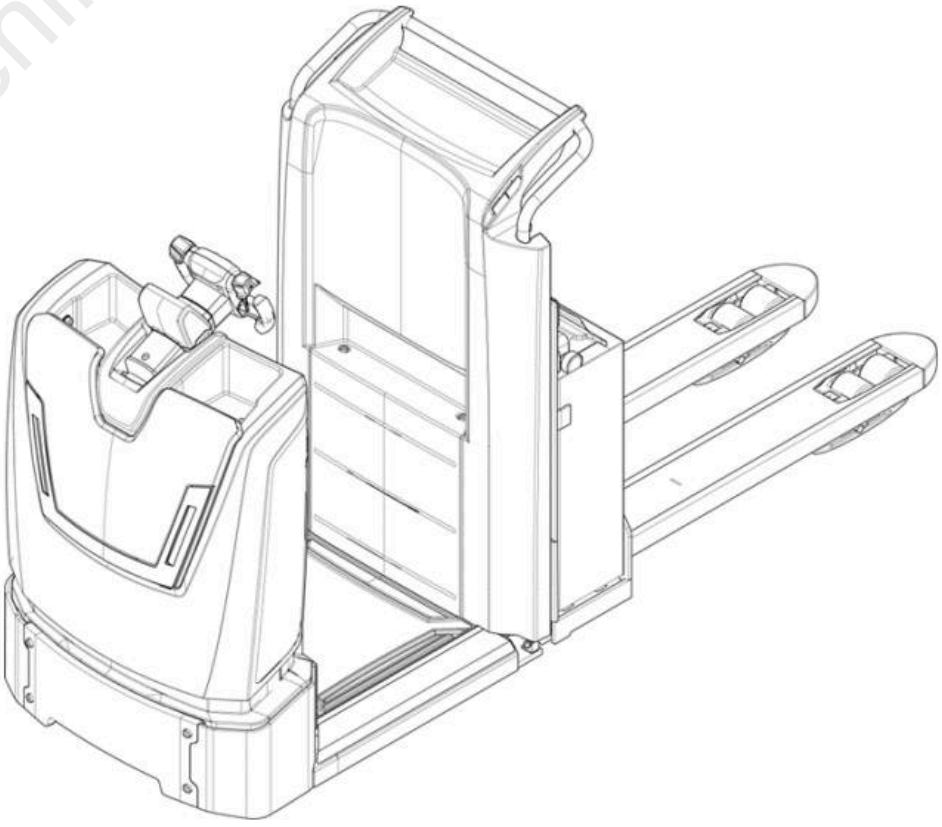
20NE/20NEP

10NEF/10NEFP

20NEX/20NEXP

TBR30N

624878



English 2015

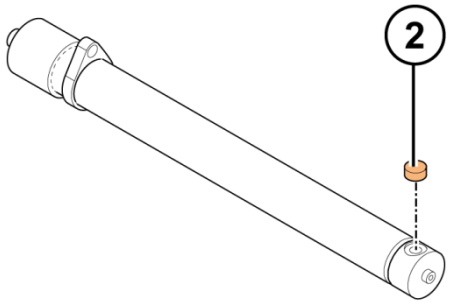
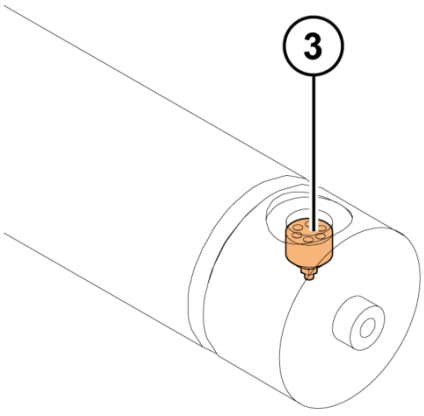
5.14.8.1 Replace the lifting cylinder

⚠ WARNING

During the removal of the lifting cylinder, mark down the direction of the different hydraulic connectors, the correct fastening points and the correct positioning of the hydraulic oil hoses and pipes.

During the installation of the new lifting cylinder, make sure that all the hydraulic connections, fastening points and hose and pipe positions are the same as before you disassembled the cylinder.

During the installation of the new lifting cylinder, make sure that the hose break valve is in the correct position. The hose break valve is a safety valve at the bottom of the lifting cylinder. It controls the oil flow so that the fork does not move down too quickly, if the piping between the lifting cylinder and lowering valve is broken or if the flow of return oil from the lifting cylinder becomes excessive because of an incorrectly adjusted proportional valve or a fault of another component.

1. Remove the lifting cylinder. For instructions, see the related steps in section 5.14.5.	
2. Remove the cap from the new lifting cylinder.	
3. Make sure that the hose break valve is in the correct position.	

9.2.2 Insulation tester check

Connect the test probe to the frame of the truck (for example, to a non-painted bolt or bracket) and the other test probe to another bolt or bracket. The tester must show a zero value.

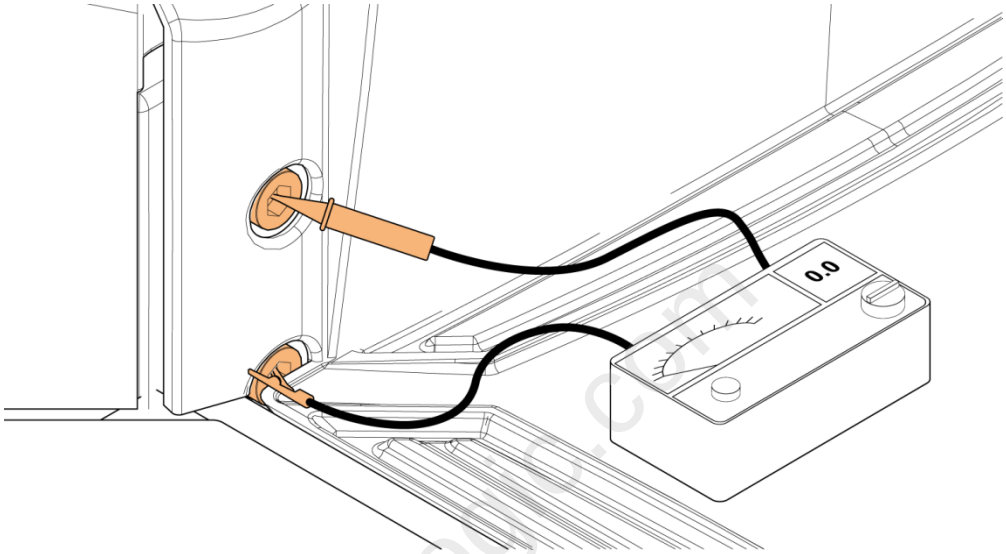


Figure 120. Insulation tester check

9.2.3 Measure the insulation resistance

The test is done with the battery disconnected from the truck. All the electrical components must be in place.

1. Release the emergency stop and set the key switch to the ON position.
2. Connect the test probe to the frame of the truck (for example, to a non-painted bolt or bracket) and the other test probe to the positive terminal of the battery connector.
3. Read the resistance value.
4. Measure and read the negative terminal of the battery connector in the same way.

	BEFORE DAILY USE (USER)	MONTHLY (OWNER)	600 h OR ONCE A YEAR (SERVICE)	1,200 h OR EVERY SECOND YEAR (SERVICE)
Lifting and lowering speed			C	C
Chain lubrication, clean and lubricate if needed			C	C
Lubrication of the mast contact surfaces			G	G
Functionality of the lift sensors in the mast, possible damages			C	C
Test lift with rated load, and with a customer specific load if needed			C	C
Cracking and welding in the mast			C	C
Mounting of any attachments and load carrying components			C	C
Cracking and wear in the fork base			C	C
Cracking in the welds of the masts			C	C
Cracking in the welds of the outer masts and cylinder support			C	C
Cracking in the lift bracket welds			C	C
Cracking and damage in the rollers, roller pins and welds			C	C
Fork carriage				
Cracking and welding in the fork carriage			C	C
Mounting, wear and damage of the forks and the load handling device			C	C
Fork thickness and locking			C	C
Linkage				
Bearings			C	C
Linkage			C	C
Wheels				
Damage and wear in the wheels			C	C
Traction wheel	C	C	C	C
Traction wheel has to be replaced when its diameter reaches 230 mm			C	C

- Is less likely to become damaged by corrosion or tracking currents.
- Has a long life and operating time.

The insulation resistance of traction batteries must be at least 50 Ω per each volt nominal voltage in accordance with EN 50272-3. The insulation resistance in batteries for electrical industrial trucks in accordance with EN 1175-1 must be at least 1,000 Ω.

Dust on batteries can cause tracking currents that can lead to self-discharge of the battery. If there is a flow of higher tracking currents, electrical sparking can occur and there is a risk of explosion of the charging gas.

General instructions for battery maintenance:

- Use protective eyewear and protective clothing.

  Make sure that the surface resistance of your safety clothes, boots and gloves is ≤ 10^8 Ω to prevent a build-up of static electricity.
- Do not use dry cleaning cloths to clean the battery.

Instructions for how to clean vehicle traction batteries:

- Before you clean the battery, remove the battery from the vehicle.
- Make sure that you collect the rinsing water that contains electrolyte and discard it in a correct procedure.

  When you discard used electrolyte water or rinsing water, refer to the instructions for health and safety at work, accident prevention and how to discard water and waste.
- Do not remove or open the cell plugs. See the instructions of the manufacturer.
- Clean the plastic parts of the battery, especially the cell containers, with a cleaning cloth and clean water. Do not use cleaning agents.
- After you have cleaned the battery, dry the battery with compressed air or damp antistatic cleaning cloth (cotton, for example). You can also use other applicable methods to dry the battery.
- If there is liquid in the battery tray, remove it by suction and obey an approved procedure to discard it. For details, see EN 50272-3 and the ZVEI information leaflet *Safety measures for the handling of electrolyte for lead-acid batteries*.
- You can also clean a vehicle traction battery with high pressure cleaning equipment. See the instructions of the high pressure cleaning equipment.

Instructions for how to avoid damage to the plastic parts of batteries:

- Make sure that you do not cause damage to the plastic parts of batteries, such as lids, the insulation of the intercell connectors and other connectors.
- Before you clean the battery, tighten the intercell connectors down or push them in tightly.
- Make sure that the connectors are in their correct position and closed.
- Do not use cleaning agents.

Full Version Available

Mitsubishi TBR30N Tow Tractor Service Manual (624878)

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