

SERVICE MANUAL

Electric AC-Powered Stand-Up Rider
Narrow Aisle Single & Double Reach

FR15K/18K/23K-3

S/N 169E00001 and up



WARNING

Read and observe all warnings on this unit before operating it.

DO NOT operate this equipment unless all factory-installed guards and shields are properly secured in place.

KOMATSU®

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■ Introduction

- ▶ Nearly all accidents result from a failure to observe basic safety rules and precautions. In order to prevent accidents, it is important to avoid in advance the factors that can cause accidents.



For this reason, be sure to read this manual carefully before beginning any repair or maintenance work, and to fully understand the safety precautions and the correct procedures for inspection and maintenance. Performing maintenance and repair without adequate knowledge may result in unexpected accidents.



- ▶ It is not possible to cover all of the potential risks involved with repair and maintenance work in this SHOP MANUAL. Therefore, sufficient attention must also be given to other elements of safety beyond the precautions listed in this SHOP MANUAL and indicated by ⚠ on the product. In particular, for safety precautions regarding repair and maintenance work not covered in this SHOP MANUAL, be sure to receive instruction from an instructor who understands the work involved before performing the work.

■ Models Covered In This Manual

Description	Model	Standard chassis	Large battery	UL-EE chassis	Serial number
48-volt Rider Double Reach, 3000 Lbs Capacity	FR15K-3	●	●	●	169E00001~
48-volt Rider Reach, 3500 Lbs Capacity	FR18K-3	●	—	●	
48-volt Rider Reach, 4500 Lbs Capacity	FR23K-3	●	●	●	

■ USING THE SHOP MANUAL

- The **SHOP MANUAL** contains the layout and names of primary components for electric forklift trucks as of April 2009. It also contains the procedures for disassembly, assembly, inspection, adjustment and maintenance of these trucks, as well as troubleshooting. The parts used in these trucks may be changed for the purpose of improving quality or performance, or for safety reasons. Please be aware that in these cases, some of the descriptions, illustrations and other contents of this manual may differ from the actual product.
- Text marked by  or  contains information with particular importance regarding safety. Be sure to always observe these instructions.

	DANGER	Indicates information that must be observed in order to prevent accidents with a high risk of death or injury.
	WARNING	Indicates information that must be observed in order to prevent accidents that may result in death or injury.
	CAUTION	Indicates information that must be observed in order to prevent injury or damage to the truck or property.
	NOTE	Indicates information that should be understood for the purpose of preventing accidents and malfunctions, and of extending the service life of the truck.

(1) Level of personnel for whom the SHOP MANUAL is intended

The SHOP MANUAL is created for use by persons who possess sufficient knowledge and technical expertise, and also by supervisors. If you do not understand the information presented in the SHOP MANUAL, be sure to receive instruction from an instructor who understands the information before beginning work.

(2) Maintenance facility requirements

The work conditions listed in the SHOP MANUAL are written on the assumption that the work is performed in a location where the standard equipment and tools for maintenance of electric forklift trucks are available.

For safe and effective maintenance, the work should be performed at a facility with equipment and tools equivalent to or better than those described in the SHOP MANUAL, and the instructions in this manual must be strictly observed.

SAFE WORK

1. Precautions for safe inspection and maintenance work

Maintenance workshop (location)



CAUTION

The location must be sufficiently large and flat.

- The floor space of the maintenance workshop (location) where inspections and maintenance are performed must be sufficiently large, and the floor surface must be flat and free of holes and other non-standard conditions.

➔ **Failure to observe this requirement may result in the forklift truck falling over or other unexpected accidents.**



CAUTION

The location must have sufficient ventilation.

- Work such as welding of coated components or sandpaper polishing of coatings must be performed in a location that is sufficiently well ventilated.

➔ **Failure to observe this requirement may result in inhalation of toxic gases or dusts that are extremely hazardous to human health.**



CAUTION

The location must be equipped with fire extinguishing equipment.

- Equipment such as first aid kits and fire extinguishers must be kept close at hand when working, for use in case of fire.



CAUTION

The location must have sufficient brightness and safety.

- The work location must have sufficient brightness and safety. Portable safety lamps must be used for work inside or underneath the trucks. Use safety lamps that have a wire cage covering the light bulb.



CAUTION

The location must be properly clean and organized.

- The work area must at all times be kept clean and well organized.
- In particular, disassembled parts must be kept clean and well organized.

Work clothing



CAUTION

The proper clothing for performing work safely must be worn.

- During work, a helmet, work clothing, safety boots and other safety equipment that is appropriate for the work must be worn. In particular, the work clothing that is worn must correctly fit the body.
- ➔ **Failure to observe this requirement may result in being caught in the machinery or other large accidents.**

Tools and gauges



CAUTION

- Tools that are appropriate for the work must be used. When loosening or tightening machine components, a tool of the correct size must be used.
- ➔ **Failure to observe this requirement may result in severe injuries or damage to the machine.**



CAUTION

Prepare the necessary tools and gauges before beginning the work.

Safe work



WARNING

- Hoisting of heavy items must be performed only by a person who has completed the slinging skills and hoisting skills training programs.
- When jacking up a truck, be sure to support the truck using a rigid rack (stand) or blocks that can fully support the weight.



WARNING

Always be sure to place wheel chocks at the tires.

Replacement parts



CAUTION

For replacement parts, be sure to use only genuine parts.



CAUTION

When replenishing the battery fluid, be sure to use purified or distilled water.

Repair of electrical components



CAUTION

Be sure to disconnect the battery plug before repairing any electrical components.



CAUTION

When repairing electrical components, be sure to remove any rings, necklaces, bracelets or other metal items from your body in order to avoid causing electrical short circuits during the work.



CAUTION

Discharge the control unit capacitor before starting work.

➔ See "<Capacitor discharge procedure>" on page 93.



CAUTION

When connecting the battery during/after troubleshooting, jack up the drive wheels before connecting it.



NOTE

When disconnecting a lead wire, make a note of the location where it was originally connected.



CAUTION

Battery charging

- Flammable gas is generated while the battery is charging. Keep all flame away from the battery.

➔ **Failure to observe this requirement may result in an explosion.**



CAUTION

Battery electrolyte

- The battery electrolyte is a dilute sulfuric acid. Do not allow it to contact clothing or skin.

➔ **Failure to observe this requirement may result in holes in the clothing or burns to the skin.**

Hydraulics



CAUTION

When disconnecting hydraulic pipes, cap them so that dust and dirt do not enter them.



CAUTION

When disassembling or reassembling hydraulic devices, use sufficient caution to prevent them from being damaged.



CAUTION

Before disconnecting a high-pressure pipe or high-pressure hose, be sure to operate the lever to lower the fork and release the pressure from inside the pipe/hose.

Tightening torque



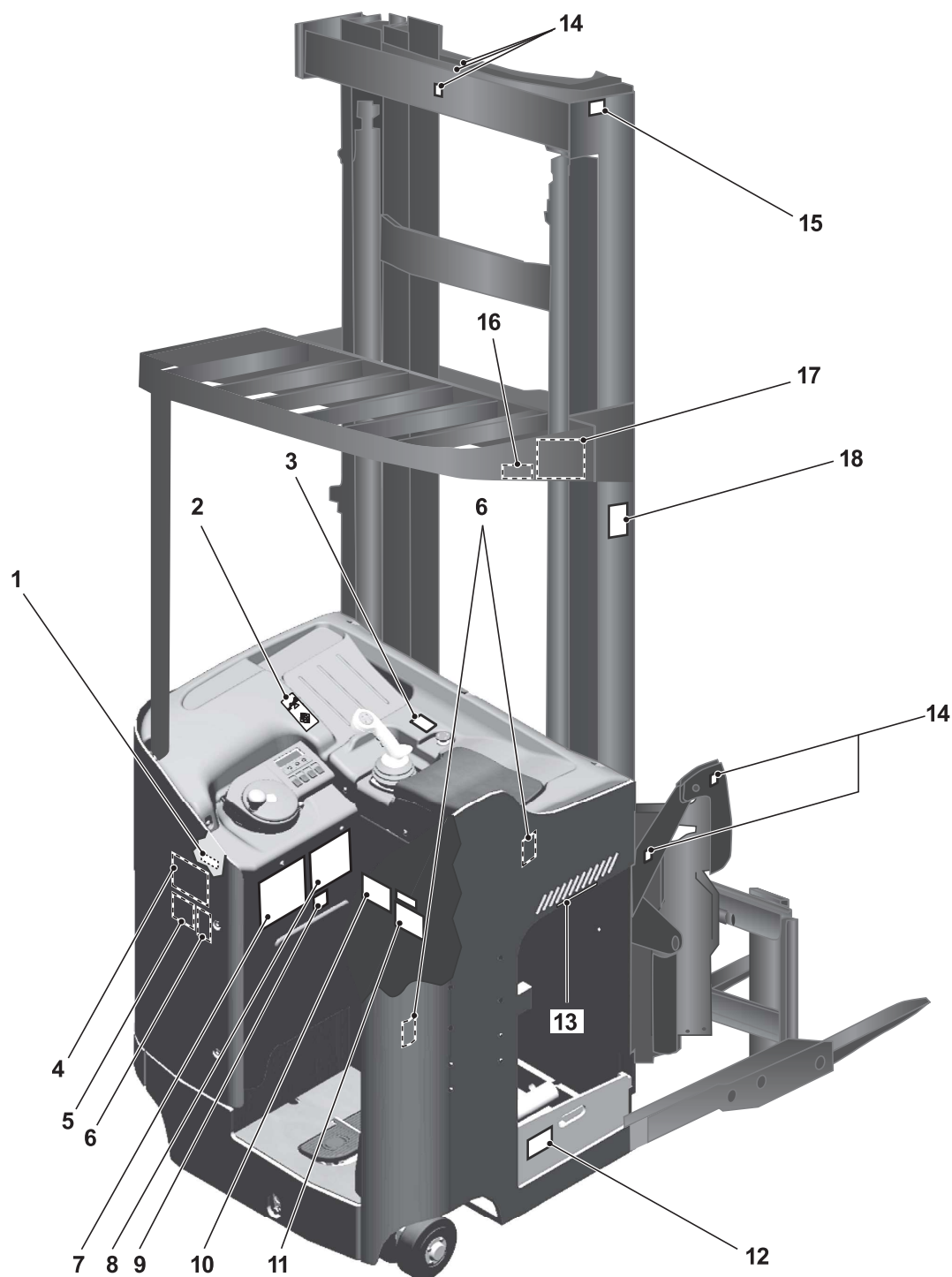
CAUTION

- Be sure to observe the tightening torques that are listed in this manual.

➔ **If the tightening torque is not listed in the manual, observe the value in the table "Bolt tightening torques" on page 11.**

2. Location of safety labels

Safety labels are located at the locations shown in the illustration below. Keep the safety labels free of dirt and damage at all times. If a safety label becomes damaged or lost, replace it with a new label.



1. HYDRAULIC OIL, 37A-2BS-1011
2. MULTI FUNCTION OPERATION, 3LK-96-A1210
3. EMERGENCY SWITCH, 3BA-96-72620
4. WIRING DIAGRAM, 54001-13252
5. LUBRICATION CHART, 50006-79890
6. ELECTRIC SHOCK CAUTION, 3BA-96-A5521
7. GENERAL OPERATING CAUTION, 3LK-96-A1110
8. MAINTENANCE CHART, 3LK-96-A1120
9. PROHIBIT STEAM WASH, 37B-1QC-5030
10. BATTERY INFORMATION, 37B-2BF-5040
11. BATTERY CAUTION, 3BB-96-A4120
12. BATTERY RESTRAINT (both sides), 3BB-96-A4130
13. BATTERY TYPE, 3BB-96-36730
14. PINCH POINT WARNING (10 total: upper cross members of mast (3), carriage (1), both sides of pantograph (4) and top of crosshead (2)), CC97E81-01600
15. HOOK (both sides), 3BA-96-59140
16. UL PLATE (see below - contact Komatsu Forklift)
17. DATA PLATE (see below - contact Komatsu Forklift)
18. FORK WARNING (both sides), CC91281-43100
19. (NOT SHOWN) WARNING (on front of carriage) , CC93181-12800