

Repair manual en

RRE140/160/180/200/250

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2012-09-03	7510399-040	Update: Chapter 4.3.2 has been updated. Chapter: 5 New parameters have been added. Chapter: 20.1 (columns added referring to schematic pages), 20.6, 20.7, 21.2.3 Chapter: 8 Troubleshooting with new error codes. Chapter: 7.4.2 Maintenance, checking fork yoke 1 item added, updated items for checking for cracks. Added replacing oil in gears at 1000h. Chapter: 7.4.1 Maintenance, checking parking brake every 500 b-hour. Chapter: 15.2 Instructions for replacing the filter has been added Chapter: 15.3 Instructions for replacing the valves has been added Chapter: 15.7, Free lift cylinder has been updated Chapter: 22.4, Service instrument (CASTOR USB) for programming has been added Chapter: 11.3.2 oil change has been updated. Chapter: 16.5 Fork carriage

This manual contains information on the following trucks:

T-Code	Model:	Serial number
815	RRE140, RRE140C, RRE140CC, RRE140E, RRE140EC, RRE140ECC, RRE160, RRE160C, RRE160CC, RRE160E, RRE160EC, RRE160ECC	6070557-
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2 – General introduction

2.1 How to use the manual

The service manual is divided into chapters containing the following information:

- Safety regulations – This chapter includes general safety regulations regarding working with the truck.
- Function – This chapter provides a basic description of the main functions of the truck.
- Parameters – This chapter contains a basic description of the steering system's parameters.
- Installation – This chapter describes the work that needs to be done before the truck is used for the first time.
- Maintenance – the chapter contains a general periodic maintenance schedule and a detailed description of the maintenance to be carried out.
- Troubleshooting – This chapter describes the error codes that appear in the display when the truck completely or partly stops working. The chapter also describes the reason why the errors occur and suggested remedies.
- Actions chapter – This chapter describes the various parts of the truck, what the parts look like and the service actions that need to be carried out. The various chapters are organised according to BT's C-code system.
- Appendixes – The appendixes contain:
 - instructions for disposal
 - information about electrical components and wiring diagrams
 - hydraulics diagrams
 - list of required tools
 - information about general tightening torques
 - oil and grease specifications
 - technical data.

General introduction

Warning symbols

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2.2 Warning symbols

The following warning symbols are used in the repair manual:



DANGER!

DANGER! means there is a risk of accident potentially leading to death or serious injury and material loss or damage. Always accompanied by the warning symbol.



WARNING!

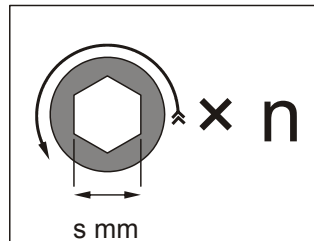
WARNING! means that there is a risk of damage to components that are sensitive to electro static discharge. Follow the ESD-protection regulations.

Note!

NOTE! means there is a risk of material loss or damage if the instructions are not followed. Also used to draw attention to a non-standard torque.

2.3 Pictogram

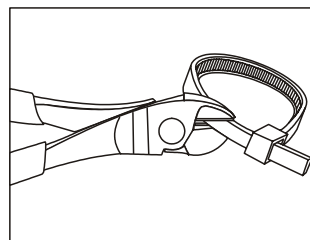
Pictograms are used, where possible, to describe certain elements. Pictograms are mainly used at moments requiring the loosening or tightening of screws:



A pictogram contains information about the type of screw head and an arrow shows whether the screw should be loosened or tightened.

Text beneath the pictogram provides additional information about 's': key size, 'n': the number of screws as well as the recommended torque where necessary.

Another type of Pictogram is "Cut cable ties":



Additional information under the Pictogram can, for example, indicate the number of cable ties to be cut.

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3 – General safety rules

Only personnel trained in servicing and repairing this type of truck are authorised to carry out service and repair activities.

3.1 Safety while working

To ensure that you work safely and to prevent accidents while working on a truck, remember the following:

- keep the area where servicing activities are performed clean. Oil or water will make the floor slippery.
- use the correct working position. Service activities often involve kneeling or bending forward. Try sitting on a toolbox, for example, to relieve the strain on your knees and back.
- loose articles and jewellery may become trapped in the moving parts of the truck. So never wear loose articles or jewellery while working on the truck.
- use the correct tools for the work you are carrying out.
- keep all tools well maintained.
- store and transport old oil according to applicable local regulations.
- do not flush solvents, etc. down the drain unless they are intended to be disposed of in this way.

Follow the local disposal regulations.

- heated paint gives off harmful gases. So use sanding or a paint stripper to remove the paint at least 100 mm around an area where any welding/grinding is to take place.

General safety rules

Electrical system

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3.2 Electrical system

When working on the electrical system of the truck, remember the following:

- a short circuit may occur if metal objects come into contact with live connections. This can result in burns. So remove watches, rings and other metal jewellery before starting work.
- always use insulated tools while working on the electrical system.
- always switch off the truck's power supply before opening the hoods to the drive assembly and the electrical system.
- disconnect the battery when using electric welding equipment. The welding current may damage the battery.
- always remove the battery plug when carrying out maintenance on the truck, unless the instructions in this service manual state otherwise.
- blow electric motors clean using compressed air.
- clean electrical panels, electronic cards, connectors, contactors, solenoid valves, etc. with a moist cloth and a cleaning agent that will not damage the part.

IMPORTANT

***Risk of short-circuiting that may damage electrical components.
Do not break the warranty seal on the electronic cards.***

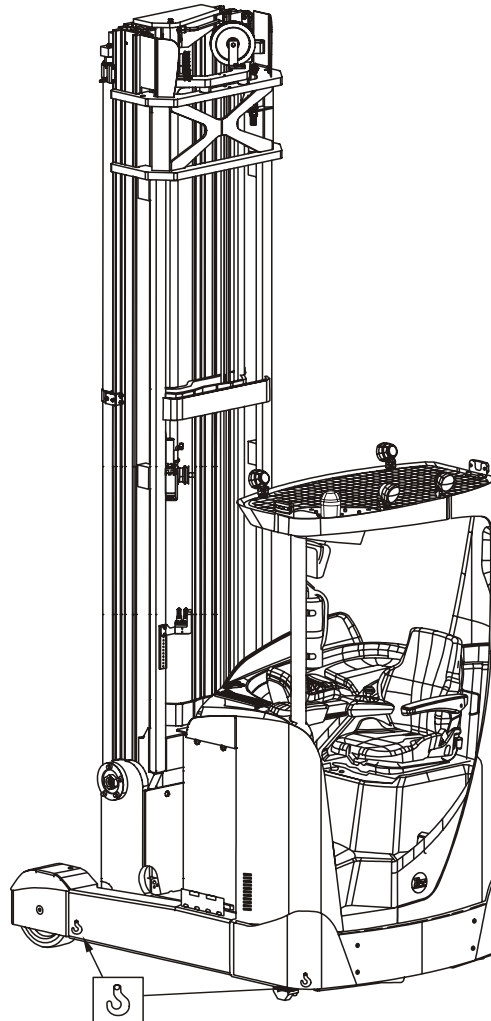
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3.3 Safe lifting



All lifting must be carried out on a flat, nonslip and stable surface. Asphalt floors must be avoided if possible.

- To prevent the truck moving while it is being lifted, it must not be lifted with anyone on the platform or with the tiller arm in the lowered position.
- If the drive wheel, which is braked, is being lifted the other wheel must be chocked to stop the truck moving.
- Select the lifting point so that the lift is as light as possible, for example one corner at a time. If the truck has marked lifting points on the lower part of the chassis, these should be used for a well-balanced lift.
- Ensure the area where you place the jack is clean and free of oil and grease.
- Ensure there is no grease or oil on your hands or the jack lever.

General safety rules

Safe lifting

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- Use the lever supplied with the jack. If the lever is too short, it will require more effort than is necessary. If the lever is too long there is a risk that the jack will be overloaded.



DANGER!

Risk of crushing – a poorly chocked truck may fall.

- **Never work under a truck that is not blocked with supports or secured by a lifting device.**
- Place supports:
 - as close to the raised part of the chassis as possible to reduce the falling height if the truck tips over
 - so that the truck cannot roll.
- **Never** place a support under the jack to increase the lifting height.
- **Never** work under a lifted truck without appropriate supports.

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4 – Descriptions of functions

4.1 Chassis 0000

4.1.1 Operator's cabin (0500)

Versions for cold-store cabs

Both the standard and the tilting cabs are available to cold-store specifications with or without a heated cab. They are all designed for use in temperatures down to -35°C.

Properties

- All switches and electrical components are designed for use in cold stores.
- The air supply to the hydraulic system is filtered to prevent accumulation of air.
- The hydraulic system uses a special oil that withstands cold temperatures.
- All exposed axles are manufactured in stainless steel.
- Exposed parts have been rust-protected with Tectyl ®



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