



SWE140S

SWE145

SWE145L

SWE160

SWE160L

SWE200

SWE200L

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1 General introduction

1.1 How to use this manual

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

- **General safety rules.**
- **Operating principle**
This chapter provides a basic description of the main functions of the truck and their interdependencies.
- **Parameters**
This chapter provides a basic description of the truck parameters.
- **Installation**
This chapter describes the preparatory work that is to be done before the truck is used for the first time
- **Maintenance**
This chapter provides an overview of periodic maintenance.
- **Troubleshooting**
The chapter describes the action you should take when the truck is completely or partially out of function. It also describes the cause of the problem together with suggested remedies.
- **C codes**
This chapter describes the various truck systems, e.g. the hydraulic system and includes descriptions of system parts and the necessary service procedures. These descriptions are divided according to the manufacturer's C code system.
- **Instructions for disposal**
This chapter specifies the proper sorting categories for the materials used in the various truck components.
- **Wiring diagram**
This chapter provides information on electrical components and wiring diagrams.
- **Hydraulics schematics**
This chapter provides information on hydraulic components and diagrams.
- **Tools**
This chapter provides a list of the special tools required.
- **Service data and grease specifications**
This chapter contains information on general tightening torques and specifications for lubricants.
- **Technical data.**

1.2 Warning levels and symbols

The following warning levels and symbols are used in the repair manual:

 **DANGER**

Indicates a dangerous situation that – if not avoided – will cause death or serious bodily injury.

 **WARNING**

Indicates a dangerous situation that – if not avoided – could possibly cause death or serious bodily injury.

 **CAUTION**

Indicates a dangerous situation that – if not avoided – will cause a slight or minor bodily injury.

NOTICE























Used in connection with actions that can cause material damage but not bodily injury.

Used to attract attention and to give information about various actions.

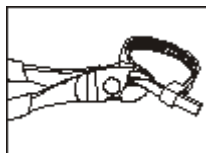
1 General introduction

Pictograms

1.3 Pictograms

Symbol	Measure	Symbol	Measure
	Visual inspection of condition, wear and loose connections.		Component replacement.
	Cleaning		Measurement
	Checks for leaks.		Check that bolts, nuts, etc. are tightened to torque.
	Listening for noise.		Lubrication, application.
	Check of functions.		Calibration
	Adjustment		Welding
	Disassembly/removal		Assembly/installation
	Open		Close
	Refilling		Emptying
	Update		Charging
	Lift		Lowering

An example of 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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2 General safety rules

2.1 Authorised personnel

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

2.2 Work safety

For safe work with the truck, always remember:

- ▷ Always disconnect the battery when carrying out maintenance or repair work on the truck unless otherwise stated in this repair manual.
- ▷ Make sure that the place where service work is performed is a safe place. Follow the regulations.
- ▷ Keep the maintenance work site clean. Oil and water on the floor will make it slippery.
- ▷ Use the correct working posture. Service work often involves sitting on your knees or bending over forwards. Try sitting on a toolbox, for example, to relieve the strain on your knees and back.
- ▷ Loose items and jewellery can get caught in moving parts of the truck. So never wear loose articles or jewellery while working on the truck.
- ▷ Exercise caution and always follow applicable local regulations when working at high heights.
- ▷ Use the correct tools for the work you are carrying out.
- ▷ Keep all tools well maintained.
- ▷ Make sure that all safety equipment including guards and covers are properly secured and that they work as intended before starting the repair work. If a guard or cover must be removed in order to perform the repair work, extra care must be taken, and when the repair work is finished the guard or cover must be refitted.
- ▷ Use paper or a stiff piece of cardboard when checking for possible oil leaks. Do not use your hands.
- ▷ The drive unit oil may be hot.
- ▷ Use only new and clean oil for the drive gear.
- ▷ Store and transport changed oil according to applicable local directions.
- ▷ Do not flush solvents, etc. down the drain unless they are intended to be disposed of in this way. Follow local disposal regulations.
- ▷ Disconnect the battery prior to performing any welding work on the truck.
- ▷ Prior to welding or grinding on painted surfaces, be sure to remove the paint at least 100 mm around the welding/grinding area by using sandblasting equipment or paint remover.
- ▷ To maintain a high level of truck safety and to minimise downtime, all current maintenance instructions must be carried out.
- ▷ Always keep fire-fighting equipment close at hand, and do not use an open fire to check fluid levels or when searching for leaks

2.3 Electrical system

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

2 General safety rules

Electrical system

- ▷ Never wear loose items or jewellery when working with the truck.

WARNING Short-circuiting/Burn injuries

Short circuits and burn injuries can occur if metal objects come into contact with live electrical connections when working on the truck's electrical system.

- ▶ Remove any jewellery and loose items before starting work on the truck.
- ▷ Always use insulated tools when working on the electrical system.
- ▷ Always disconnect the battery before opening any covers to drive units or the electrical system.
- ▷ Always disconnect the battery prior to welding work using an electric welding unit. The welding current may damage the battery.
- ▷ Never remove the warranty seals on the electronic cards.

2.3.1 Electrostatic risks

Purpose

These work instructions describe how to work in a safe manner with components that are sensitive to electrostatic chocks.

Scope

These work instructions apply to all that work with component or units that are sensitive to electrostatic chocks.

Procedure

Electrostatic discharges from people may destroy sensitive equipment. For this reason, one must follow the instructions for packaging and earthing. Always pay attention to these precautionary instructions.

Electronic card are supplied in electrostatically protected packages or envelopes.

These packages carry the following symbol:



- ▷ Leave electrostatically sensitive equipment in their respective packaging until you can place them on an electrostatically protected work area.
- ▷ Electrostatically sensitive equipment should only be handled when they are properly earthed.
- ▷ Use electrostatically protected footwear!
- ▷ Store electrostatically sensitive equipment in their protective packaging or on electrostatically protected surfaces.
- ▷ Use an antistatic surface:

2.3.2 Battery handling

Working with and charging batteries should always be performed in accordance with the safety instructions provided by the battery manufacturer.

- Always use safety equipment to protect the eyes, face and skin while checking or handling batteries.
- Do not place any electrically conductive items on the battery terminals or their connections.
- Ensure there is a shower and an eye bath nearby in case an accident happens.
- Batteries generate explosive gases. Never use an open flame or other sources of ignition in close vicinity to a battery.

- Do not place tools or other metal objects on the battery. This can cause a short-circuit and even an explosion.
- The battery must be used according to the battery manufacturer's instructions regarding ambient and working temperatures. Otherwise there is a large risk that the battery is damaged and that it will soon have to be replaced.
- Spilled electrolyte must be neutralised at once using a lot of water.

NOTICE Changing to the correct battery type

Only change to a battery that complies with the data given on the truck identification plate. The weight of the battery affects the stability and braking capacity of the truck. Information on the minimum permitted battery weight is on the truck identification plate.

⚠ WARNING Risk of centre of gravity shifting

Battery weight that is too low results in a deterioration in stability and braking capacity.

- ▶ The battery weight must conform to the details specified on the truck identification plate.

⚠ WARNING Battery acid may cause burns

Battery acid may cause burns.

- ▶ If battery acid gets onto your skin or clothes, flush immediately with cold water.
- ▶ If you get battery acid in the face or in the eyes, immediately flush the area with cold water and seek medical assistance.

2.4 Safe lifting

All lifting must be carried out on a level, non-slip and stable surface. Asphalt surfaces should 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 wheels must be chocked to stop the truck from 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 must be used to ensure balanced lifting.

Make sure the surface where the jack is placed is clean and free of oil and grease.

Make sure your hands and the jack lever are free of grease and oil.

Only use the lever supplied with the jack. If the lever is too short, more exertion than is necessary will be required. If the lever is too long, there is a risk that the jack will be overloaded.

Never work under a truck that is not supported by trestles and secured by a lifting device.

Support the truck:

- ▶ as close to the lifted part of the chassis as possible in order to reduce the falling height if the truck should collapse
- ▶ so the truck cannot move.

Never support the jack on trestles to achieve a higher lift.

Never work under a raised truck without it being properly supported on trestles.

2.5 Truck modifications

Any modification of the truck must be approved beforehand. No modification of truck may be performed that may influence the capacity, stability and safety of the truck without prior written approval from the manufacturer, its representative or successor.

In the case of the manufacturer no longer being in business and there being no successor, the user of the truck may arrange for modifications on the precondition that the user:

- ▶ makes sure that an engineer with expert knowledge of industrial trucks and their safety designs, tests and implements the modification,

2 General safety rules

Software

- ▷ files all documentation of the designs, tests and implementation of the modification,
- ▷ approves and makes the applicable changes to the capacity plate, adhesive labels, markings and operator's manual,
- ▷ affixes a permanent and well visible sign to the truck stating how the truck has been modified, together with the date of the modification and the name and address of the company that carried out the modification work.

2.6 Software

Erroneous handling of the truck systems and/or the external systems of the truck may affect the safety of the truck and the environment.

- Always make sure that the correct software is downloaded to the truck.
- In case of parameter adjustments, the recommended values must be respected.
- Only adjust one parameter at the time when performing changes to the truck. Check the function after each adjustment.
- Change the parameters in small increments.

2.7 Hydraulic system

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

- ▷ Lower the forks completely and keep pressing the button for another 5 - 10 seconds to relieve system pressure.
- ▷ The hydraulic oil may be hot.
- ▷ Only fill the hydraulic system with new and clean oil.

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3 Operating principle

3.1 Description

The Operating principle section provides a general description on how truck functions work and how they are interdependent.

Because the control structure of the truck is so complex, it is not possible to describe all combinations. Similarly, it is not possible to describe all influencing factors. Only a selection of such factors are indicated. A good aid is found in the descriptive sections of the repair manual and in the parameter descriptions in particular.

3.1.1 Battery is connected

Event:	1 Battery is connected
Previous event	-
Action(s)	Battery [G1], page 19 - 2 is connected
Influencing elements	Main fuse OK Power circuit fuse [F50], page 19 - 2 [F51], page 19 - 2 [F52], page 19 - 2 OK
Resulting conditions	Login possible

3.1.2 Login via keypad

Event:	2 Login via keypad
Previous event	<i>Battery is connected</i> , page 3 - 1
Action(s)	Log in with a PIN code and press the ON button [S223], page 19 - 3
Influencing elements	Emergency stop Nödstopp not activated Drive mode sensor [B60], page 19 - 2 deactivated Input T1:INP TILL. ARM IN DRIV. POS is {low}
Resulting conditions	Battery indicator lamp is lit. The display [P6], page 19 - 3 shows the hour counter for 5 seconds, followed by battery status (% of full charge) The mechanical brake must remain actuated T1:OUT.BRAKE RELEASE {high}

3.1.3 Login via "ID key" option

Event:	3 Login via "ID key" option
Previous event	<i>Battery is connected</i> , page 3 - 1
Action(s)	Log in with an ID key and press the ON button [S223], page 19 - 3
Influencing elements	Emergency stop Nödstopp not activated Drive mode sensor [B60], page 19 - 2 deactivated Input T1:INP TILL. ARM IN DRIV. POS is {low}
Resulting conditions	Battery indicator lamp is lit. The display [P6], page 19 - 3 shows the hour counter for 5 seconds, followed by battery status (% of full charge) The mechanical brake must remain actuated T1:OUT.BRAKE RELEASE {high}

3 Operating principle

Description

3.1.4 Tiller arm lowered for driving

Event:	4 Tiller arm lowered for driving
Previous event	<i>Login via keypad, page 3 - 1</i> <i>Login via "ID key" option, page 3 - 1</i>
Action(s)	Lower tiller arm
Influencing elements	Sensor [B60], page 19 - 2 for tiller arm in drive mode
Resulting conditions	Sensor [B60], page 19 - 2 for tiller arm in drive mode activated T1:INP.TILLER ARM IN DRIVE POS {high} Main contactor output goes {low} T1:OUT.MAIN CONTACTOR. Main contactor closes

3.1.5 Driving in fork direction

Event:	5 Driving in fork direction
Previous event	<i>Tiller arm lowered for driving, page 3 - 2</i>
Action(s)	Move the speed control [L1] in the fork direction
Influencing elements	Hall element in speed control [A5:S310-S318] Parameter settings
Resulting conditions	T1:OUT.BRAKE RELEASE goes {low} Brake coil is energised, mechanical brake is released Pulsed current is fed to the drive motor in proportion to the position of the speed control

3.1.6 Driving in the drive wheel direction

Event:	6 Driving in the drive wheel direction
Previous event	<i>Tiller arm lowered for driving, page 3 - 2</i>
Action(s)	Move the speed control [L1] in the drive wheel direction
Influencing elements	Direction indicator's Hall element [A5:S300-S308] Parameter settings
Resulting conditions	T1:OUT.BRAKE RELEASE goes {low} Brake coil is energised, mechanical brake released Pulsed current is fed to the drive motor proportionally to the position of the speed control [L1]

3.1.7 Braking in neutral

Event:	7 Braking in neutral
Previous event	<i>Driving in fork direction, page 3 - 2</i> <i>Driving in the drive wheel direction, page 3 - 2</i>
Action(s)	Allow the speed control [L1] to return to the neutral position
Influencing elements	Parameter settings ⁴ , page 4 - 2

Event:	7 Braking in neutral
Resulting conditions	<p>The drive motor works as a generator and converts the kinetic energy of the truck into electrical energy via the transistor regulator [T1], page 19 - 4. This reduces the speed of the truck.</p> <p>The excess energy is fed back to the battery [G1], page 19 - 2</p> <p>The mechanical brake is activated when the truck comes to a complete stop</p> <p>T1:OUT.BRAKE RELEASE goes {high}</p>

3.1.8 Reverse braking

Event:	8 Reverse braking
Previous event	<p><i>Driving in fork direction</i>, page 3 - 2</p> <p><i>Driving in the drive wheel direction</i>, page 3 - 2</p>
Action(s)	The speed control [L1] is moved to the opposite driving direction
Influencing elements	Parameter settings201, page 4 - 5
Resulting conditions	<p>The drive motor works as a generator and converts the kinetic energy of the truck into electrical energy via the transistor regulator [T1], page 19 - 4. This reduces the speed of the truck.</p> <p>The excess energy is fed back to the battery [G1], page 19 - 2</p> <p>The mechanical brake is activated when the truck comes to a complete stop</p> <p>T1:OUT.BRAKE RELEASE goes {high}</p>

3.1.9 Mechanical braking

Event:	9 Mechanical braking
Previous event	<p><i>Driving in fork direction</i>, page 3 - 2</p> <p><i>Driving in the drive wheel direction</i>, page 3 - 2</p>
Action(s)	Raise or lower the tiller arm
Influencing elements	Sensor [B60], page 19 - 2 for tiller arm in drive mode
Resulting conditions	<p>Input T1:INP TILL. ARM IN DRIV. POS goes {low}</p> <p>Brake reduction until the truck is stationary</p> <p>Brake coil is deactivated, mechanical brake is applied</p> <p>T1:OUT.BRAKE RELEASE goes {high}</p>

3.1.10 Emergency reversal

Event:	10 Emergency reversal
Previous event	<i>Driving in the drive wheel direction</i> , page 3 - 2
Action(s)	When driving in the drive wheel direction, the emergency reversal button is pressed
Influencing elements	Emergency reversal
Resulting conditions	The Hall sensor [A5:S317] is immediately activated. The card [A5], page 19 - 1 interprets this signal as a command to the transistor regulator [T1], page 19 - 4 to run the drive motor at a reduced speed in the fork direction as long as the button is pressed. The normal drive command signal received from [L1] is blocked until [L1] is released and returns to neutral position.

3 Operating principle

Description

3.1.11 Fork lowering

Event:	11 Fork lowering
--------	------------------

Previous event

Action(s)

Influencing elements

Resulting conditions

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4 Parameters

4.1 Display/change parameters

CAN key 7516708, page - 000

1. Ensure that the truck is switched off. Connect the CAN key or enter the PIN code.

Do not press the ON switch.

Before any service parameter can be changed, the CAN service key must be connected to the contact [X41].

2. Press and then release the horn button. "Info" is shown on the display.

3. Move between menus by turning the speed control several times.

4. "Par" is shown on the display.

5. Press the horn button to select. The parameter symbol lights up.

6. You move along in the parameter list by pressing the speed control repeatedly.

To show a parameter, release the speed control when the required parameter is shown on the display. Press the horn button to change the parameter.

4.2 Parameters in general

The truck's control system can store a number of different parameters. These are used to configure the truck according to the task to be performed. The parameters are divided into groups:

- **Operator parameters** – The driver parameters (range 1-100) are used to adapt the truck's characteristics to a specific driver or task. Up to 10 operator parameter profiles can be stored.

- **Service parameters** – The service parameters (range 101–1000) are used to adapt the truck's performance/response and include all other parameters not among the operator parameters.

- **Factory parameters** – (range 1001-1250). Truck-specific parameters.

- **Calibration parameters** – (range 1251-1300) store the value generated on the calibration of valves, weight indication, etc. These must not be changed manually.

Operator parameters are displayed and changed only for a selected operator, but if a CAN service key is connected, the parameters for all operators can be displayed and changed. Operator parameters can be changed by the operator if the truck's program is set up for this.

The service parameters can be changed once a suitable CAN service key or PDA/PC has been connected to the truck.

Factory parameters can only be changed using the TruckCom software application.

4 Parameters

Parameter list

4.3 Parameter list

4.4 Parameter list

Software: 7528678

4.4.1 Operator parameters

No.	Parameter type	Min	Std.	Max	Step	Unit
1	Max. speed, in fork direction	30	100	100	5	%
2	Maximum speed, in drive wheel direction	30	100	100	5	%
3	Acceleration	10	100	100	5	%
4	Automatic speed reduction	40	100	100	5	%
5	Maximum speed, gates are down	30	100	100	5	%
6	Max. speed, walk-along mode	30	100	100	5	%
7	Maximum speed, forks above 1.8 m	30	100	100	5	%

Overview

Par.	Description
1	Max. speed in fork direction
2	Maximum speed in drive wheel direction
3	Acceleration
4	Deceleration
5	Maximum speed, platform loaded, safety gate lowered
6	Maximum speed, platform not loaded
7	Maximum speed, forks above 1.8 m

The operator parameters can be adjusted individually to the available log-in profiles. The parameter's connection to the operator is done by a combination of operator and parameter numbers where the single digit always corresponds to the parameter.

Operator profile	Parameter range
1	1-7
2	11-17
3	21-27
4	31-37
5	41-47
6	51-57
7	61-67
8	71-77
9	81-87
10	91-97

Tab. 1: Connection to logged-in operator

4.4.1.1 Maximum travel speed

No.	Parameter type	Min	Std.	Max	Step	Unit
1	Max. speed, in fork direction	30	100	100	5	%
2	Maximum speed, in drive wheel direction	30	100	100	5	%
5	Maximum speed, gates are down	30	100	100	5	%
6	Max. speed, walk-along mode	30	100	100	5	%
7	Maximum speed, forks above 1.8 m	30	100	100	5	%

These parameters are used to limit the maximum travel speed for the operator profile that is logged on.

The maximum travel speed can also be limited by factory parameter 1044, page 4 - 22 and it is always the lowest speed for a parameter that is the limiting one.

Maximum travel speed" forks above 1.8 m is set as a % of the value of service parameter 203, page 4 - 5

1 Max. speed, in fork direction

No.	Parameter type	Min	Std.	Max	Step	Unit
1	Max. speed, in fork direction	30	100	100	5	%

Adjusts the maximum speed of the truck in the fork wheel direction, with gates up and operator on the platform

2 Maximum speed, in drive wheel direction

No.	Parameter type	Min	Std.	Max	Step	Unit
2	Maximum speed, in drive wheel direction	30	100	100	5	%

Adjusts the maximum speed of the truck in the drive wheel direction, with gates up and operator on the platform

5 Maximum speed, gates are down

No.	Parameter type	Min	Std.	Max	Step	Unit
5	Maximum speed, gates are down	30	100	100	5	%

Adjusts the maximum speed of the truck for this application, with gates down and operator on the platform

6 Max. speed, walk-along mode

No.	Parameter type	Min	Std.	Max	Step	Unit
6	Max. speed, walk-along mode	30	100	100	5	%

Adjusts the truck's maximum speed when the operator is not on the platform, platform is up and the gates down, i.e. when the operator walks alongside the truck.

7 Maximum speed, forks above 1.8 m

No.	Parameter type	Min	Std.	Max	Step	Unit
7	Maximum speed, forks above 1.8 m	30	100	100	5	%

Adjusts the maximum speed of the truck when the forks are above 1.8 m

4 Parameters

Parameter list

4.4.1.2 Acceleration/Deceleration

No.	Parameter type	Min	Std.	Max	Step	Unit
3	Acceleration	10	100	100	5	%
4	Automatic speed reduction	40	100	100	5	%

3 Acceleration

No.	Parameter type	Min	Std.	Max	Step	Unit
3	Acceleration	10	100	100	5	%

The lower the parameter value, the more time is needed to accelerate to the maximum speed.

4 Automatic speed reduction

No.	Parameter type	Min	Std.	Max	Step	Unit
4	Automatic speed reduction	40	100	100	5	%

Defines plug braking force when the operating control [L1] returns to the neutral position. The lower the value of parameter, the longer it takes to reduce speed.

4.4.2 Service

No.	Parameter type	Min	Std.	Max	Step	Unit
101	Service intervals	0	0	2000	50	h
102	Operator access	1	3	10	1	
103	Start-up display	1	2	5	1	
104	Time to automatic log-out	0	20	20	1	min.
105	Collision sensor sensitivity in X	0	0	100	1	
106	Collision sensor sensitivity in Y	0	0	100	1	
107	Battery size	1	12	27	1	
109	Battery type, built-in charger	0	0	3	1	
110	Battery size, built-in charger	100	100	350	1	Ah
111	Resetting procedure after collision	0	0	3	1	
112	Erase application data	0	0	2	1	
201	Deceleration when reversing	70	100	100	5	%
202	Maximum speed Turtle mode activated	0.5	4.0	6.0	0.5	km/h
203	Maximum speed, forks above 1.8 m	0.5	6.0	6.0	0.5	km/h
204	Maximum acceleration, forks above 1.8 m	10	50	60	5	%
205	Maximum reversing, forks above 1.8 m	45	80	80	5	%
206	Automatic speed reduction, forks above 1.8 m	45	60	80	5	%
207	Deactivate the possibility to control the truck when walking alongside it.	0	0	1	1	
208	Reduction of maximum speed with support arms fully lowered	0.5	12.5	12.5	0.5	km/h
208	Reduction of max. speed with forks fully lowered	0.5	12.5	12.5	0.5	km/h
209	Minimum fork/support arm lifting height to exit reduced speed set with parameter 208	10	10	50	1	ms
211	Automatic speed reduction (Built-in)	25	25	100	5	%
220	Min. steering angle for initiation of speed limitation	1	5	10	1	°
222	Max. speed at full speed limitation	2.5	See the table	6.3	1	km/h
223	Max. steering angle for full speed limitation	30	60	75	1	°
250	Min. steering resistance (TFD) in drive wheel direction	0	20	100	5	%
251	Max. steering resistance (TFD) in drive wheel direction	0	100	100	5	%
252	Min. steering resistance (TFD) in fork direction	0	20	100	5	%
253	Max. steering resistance (TFD) in fork direction	0	100	100	5	%
304	Support arm lowering speed	10	45	60	5	%
307	Automatic support arm lowering (On/Off)	0	2	3	1	
311	Load weight	0	0	1	1	Kg
312	Pressure equalization	0	0	5	1	ms
313	Support arm lift speed	10	40	40	5	%
314	Deactivate lifting above 1.8 m	0	0	1	1	
499	License key					



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4 Parameters

Parameter list

Before any service parameter can be changed, the CAN service key must be connected to the contact [X41].

Changing specific truck parameters changes the truck's driving properties. Do not change any parameter values without the necessary know-how.

Par.	Description
101	Service intervals
102	Operator access
103	Start-up - alternative
104	Automatic logout/min
105	Collision sensor X-level
106	Collision sensor Y-level
107	Battery adjustment, Ah
109	Battery type, built-in charger
110	Battery size, built-in charger
111	Reset following a collision
112	Clear application data

4.4.2.1 General service parameters

No.	Parameter type	Min	Std.	Max	Step	Unit
101	Service intervals	0	0	2000	50	h
102	Operator access	1	3	10	1	
103	Start-up display	1	2	5	1	
104	Time to automatic log-out	0	20	20	1	min.
105	Collision sensor sensitivity in X	0	0	100	1	
106	Collision sensor sensitivity in Y	0	0	100	1	
107	Battery size	1	12	27	1	
109	Battery type, built-in charger	0	0	3	1	
110	Battery size, built-in charger	100	100	350	1	Ah
111	Resetting procedure after collision	0	0	3	1	
112	Erase application data	0	0	2	1	

102 Operator access

No.	Parameter type	Min	Std.	Max	Step	Unit
102	Operator access	1	3	10	1	

Specifies which login method should be used and if the operator will have the possibility of changing the operator parameter settings.

Values 1 and 2 = Key

Values 3 and 4 = Keypad with up to 100 PIN codes.

Values 5 and 6 = Keypad with DHU

Values 7 and 8 = ID unit

Values 9 and 10 = SA2

Odd values = Operator parameters are open and can be changed by the operator.

Even values = Operator parameters can only be changed with a CAN key connected.

103 Start-up display

No.	Parameter type	Min	Std.	Max	Step	Unit
103	Start-up display	1	2	5	1	

Sets which value is shown on the display when the truck is started.

When the truck is started, one of the truck's 5 values is shown on the hour meter display "H" (hour meter display) for 5 seconds. After the menu has disappeared, the battery capacity is continuously shown in the numeric field at the same time as the battery indicator is lit.

The truck control system stores five different time values. "Value 2 - Operating time" is the default value on the start-up display.

Hour meter values	Display
Value 1 = (A) Key time The total time the truck has been in use.	
Value 2 = (B) Operating time Combined time during which the pump or drive motor has been in operation. Default display.	
Value 3 = (C) Drive motor time The total time the drive motor has been in operation.	
Value 4 = (D) Pump motor time Total time the pump motor has been in operation.	
Value 5 = (S) Remaining time until next service. Parameter 101 controls the initial value.	

4.4.2.1.1 Service/log-out

No.	Parameter type	Min	Std.	Max	Step	Unit
101	Service intervals	0	0	2000	50	h
104	Time to automatic log-out	0	20	20	1	min.

101 Service intervals

No.	Parameter type	Min	Std.	Max	Step	Unit
101	Service intervals	0	0	2000	50	h

This parameter determines the time value (in hours) to the next service from 0 to 2000 hours in increments of 50 hours. Whenever this value is changed, the timer is reset and will start to count the truck activity time. On reaching the set value, code "S - 0h" is shown on the display and the red LED flashes.

If the value is set as '0', no service interval is given.

104 Time to automatic log-out

No.	Parameter type	Min	Std.	Max	Step	Unit
104	Time to automatic log-out	0	20	20	1	min.

Gives the time, in minutes, before automatic log-out if the truck is inactive.

If the value is set as '0', logout takes place after 4 hours.

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