



## Machine Controls

**BCT20**



Software:	-
Product:	Silage trailers
Type of document:	Original operating instructions
As of:	201803 en
Document number	BTA_Maschinensteuerung_SL_BCT20_201803_en

# 1 General

## 1.1 Identification

BCT20

Type: \_\_\_\_\_

Vehicle identification number (VIN): \_\_\_\_\_

Delivery date: \_\_\_\_\_

## 1.2 Manufacturer

<b>Ludwig Bergmann GmbH</b>	 +49 (0)4444 - 2008-0
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	 -
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## 1.4 Customer Service Management

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## **1.5 Preface**

Dear customer,

You have made a good choice! We would like to thank you for placing your trust in us by purchasing a BERGMANN Product.

The Ludwig Bergmann GmbH, 49424 Goldenstedt (Lower Saxony) - a medium sized family business in its third generation - has been successfully active in the manufacturing of agricultural machinery and transport equipment for over one hundred years. It is one of the major manufacturers and providers of adapted technology for professional farming operations and farm contractors.

The combination of experience and a contemporary, innovative technology is one of our greatest strengths. Constant alignment with the needs and desires of customers, adapting to changing technical requirements, the continual development and improvement of our products and not to forget the "feel" for the customer, have made BERGMANN a reliable worldwide farming partner.

With our wide range of products, consisting of manure spreaders, universal spreaders, forage transport trailers, silage trailers, transfer trailers, and special bodies, we offer economical solutions that prove themselves in the field day after day.

Please check the product for possible shipping damage upon receipt. Check the product against the delivery note to ensure that no parts or special equipment are missing. In order to reimburse you for damages, we need your complaint immediately.

Read these operating instructions and all other supplied operating instructions carefully before using the product for the first time. Follow the instructions for proper operation, care and maintenance in order to ensure that your product is always ready for use and has a long service life. It is important that the safety notices listed in these operating instructions are observed. All product operators must have read these operating instructions prior to operation and must be familiar with the product functions.

We wish you every success with your BERGMANN product.

Ludwig Bergmann GmbH – Maschinenfabrik  
Goldenstedt

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## 1.9 Using These Operating Instructions

### 1.9.1 Indexes and References

#### Table of contents / Headings

The table of contents and the headings in these operating instructions provide for quick orientation in the chapters.

#### Table of Figures:

The table of figures in these operating instructions makes it possible to scroll directly to the desired images using the respective name

#### Index of Technical Terms:

In the index of technical terms it is possible to find specific topics in the operating instructions using keywords which are listed in alphabetical order. The index of technical terms can be found at the end of these operating instructions.

#### Cross References:

For further information on a topic in these operating instructions or another document, a cross-reference to the relevant section can be found at the end of the section. Chapters, subchapters and sections are enclosed in quotation marks.

#### Example:



BERGMANN contact information can be found in the chapter "Contact Info & Contact Persons".

The page number of the respective chapter, subchapter or section can be found in the table of contents or in the index of technical terms.

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### 1.9.2 Depiction of Action Instructions and Listings

#### Action Step:

A dot (•) in front of the sentence defines an action step which must be carried out.

#### Example:

- Carry out action.

#### Action Sequences:

Multiple dots (••) in front of the sentence define an action sequence which must be carried out.

#### Example:

- Carry out action 1.
- Carry out action 2.
- Carry out action 2.

#### Listings:

Multiple dashes (-) before each sentence define listings.

#### Example:

- Listings 1
  - Listings 2
  - Listings 3.
-

**1.9.3 Depiction of Action-Related Warning Symbols**

1.9.3.1 Design of warning symbols

	<b>SIGNAL WORDS!</b>
	<p><b>Type and source of danger</b> Possible result(s) of the danger</p> <ul style="list-style-type: none"> <li>• Measures to avoid the danger</li> </ul>

1.9.3.2 Signal words and colouring

	<b>DANGER!</b>
	<p>The signal word "Danger" identifies a hazard with a high degree of risk. Failure to avoid the hazard will result in death or serious injury.</p>

	<b>WARNING!</b>
	<p>This signal word identifies a hazard with a moderate degree of risk. Failure to avoid the hazard can result in death or serious injury.</p>

	<b>CAUTION!</b>
	<p>This signal word identifies a hazard with a low degree of risk. Failure to avoid the hazard can result in minor or moderate injury.</p>

**1.9.4 Depiction of Important Notices**

	<b>NOTICE</b>
	<p>Indicates a requirement for particular behaviour or an action, as well as tips for use and particularly useful information for proper use of the machine. This information will help you to make optimum use of all machine functions. Failure to observe these notices can lead to machine malfunctions or damage to the environment.</p>

**1.9.5 Definition of Terms**

Term	Explanation
Machine	<b>SILAGE TRAILERS</b> is referred to using the term machine in this document.
Danger	Danger is a condition or situation in which the possibility of a health risk exists. The danger arises from a possible injury or disease-causing spatial and/or temporal coincidence from a source of danger.
Manufacturer	Ludwig Bergmann GmbH
Adjustment elements	Adjustment elements are parts of the controller that detect operator input signals, usually made by hand or foot. There are many different adjustment elements, such as buttons, levers, switches, knobs, slide controllers, joysticks, handwheels, pedals, keyboards, and tactile screens. Adjustment elements may be located on the machine itself or, as with remote controls, at a certain distance from the machine and connected to the machine for example by cable or by radio, optical or acoustic signals.
Third persons	Third persons are all other persons other than the operator themselves.

**1.9.6 Directional References**

Directional references such as

- front
- rear
- left
- right
- etc.

Are always indicated in the direction of travel. (see Image 1).

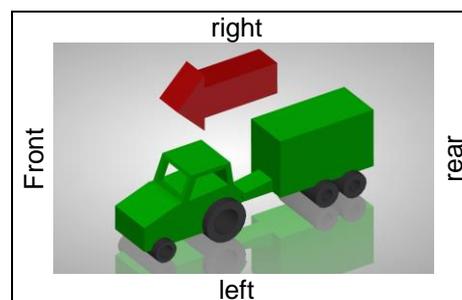


Image 1: Directional references

## 2 Safety

This chapter contains important information for the owner and the operator to ensure safe and trouble-free operation of the machine.

	<b>NOTICE</b>
	<p>Observe all safety instructions in these operating instructions and in the supplementary documents!</p> <p>Most accidents happen when the simplest safety regulations are not observed. By observing all safety instructions in these operating instructions, you will help to prevent accidents.</p>

### 2.1 Intended Use

The terminal

- is intended exclusively for use on approved compatible machines and equipment for agricultural applications.

Intended use also includes:

- observing all notices and instructions in these operating instructions,
- compliance with the operating, maintenance and repair conditions prescribed by the manufacturer,
- the exclusive use of original spare parts.

All other uses are not permitted and are therefore considered improper.

The owner bears sole responsibility for damages resulting from improper use

- and
- the manufacturer assumes no liability whatsoever.

## 2.2 Basic Safety Instructions

Basic safety instructions always apply to the safe operation of the machine and are summarized in the following sections.

	<b>NOTICE</b>
	<p>Failure to observe the safety instructions may endanger persons, the environment or property.</p> <ul style="list-style-type: none"> <li>• In addition to the basic safety instructions, also observe the special safety instructions listed in the other chapters of these operating instructions as well as the machine specific safety instructions.</li> </ul>

### 2.2.1 Electric System

- Always disconnect the negative battery terminal before working on the machine's electrical system.
- All work on the machine's electrical system must be carried out by trained electricians.
- Touching damaged live parts can cause serious electric shock, injury or death. Damaged insulation and electrical system components must be repaired immediately by qualified personnel.
- Check electrical equipment regularly: Retighten loose connections and replace damaged lines or cables immediately.
- Only use prescribed fuses. The system could be destroyed if stronger fuses are used! Fire hazard!
- Be sure to follow the correct sequence when connecting and disconnecting the battery!
  - Connecting: first connect the positive terminal, then the negative terminal.
  - Disconnecting: first disconnect the negative terminal, then the positive terminal.
- The positive terminal must always be covered with the provided protective cover.
- Avoid sparks and open flames near the battery. There is a risk of explosion!
- The machine is equipped with electronic components and assemblies whose function may be affected by electromagnetic emissions from other devices. Such affects can be hazardous to personnel if the following precautions are not followed.
  - If electrical and electronic equipment and / or components are subsequently installed in the vehicle with a connection to the electrical system, the user must independently verify whether the installation causes disturbances to the vehicle electronics or other components.
  - It is important to ensure that subsequently installed electrical and electronic components meet the requirements of the EMV - Directive 89/336/EEG in accordance with the current version and that they bear the CE symbol.
  - For wiring and installation as well as the max. allowable power use the machine manufacturer's installation instructions must be followed.
- Never equip the machine with unauthorised work lights. The manufacturer assumes no responsibility or liability for consequential damage to the electrical system.
- Learn to operate the terminals properly.
- Press the terminal keys with your fingertip. Avoid using your fingernails.
- Keep the terminals and accessories in good condition.
- Only clean the terminals with a soft cloth moistened with clear water or a bit of glass cleaner.

### 3 Operation

The "Operation" chapter contains information on the possible machine controls. It describes the individual functions, the handling and the procedure for operating the machine using a terminal.

The components and machine functions listed in the operating instructions may differ from the machine standard equipment and are available as optional equipment in some cases. Since these operating instructions are general, various equipment options can be listed that are not available for your trailer. This also applies to the images. Images, drawings and 3D illustrations in these operating instructions do not always represent the exact machine type. However, the information which refers to the illustrations always corresponds to the machine type in this document.

	<b>WARNING!</b>
	<p><b>Failure to observe the safety instructions may result in serious injury or death.</b></p> <ul style="list-style-type: none"> <li>• In order to prevent accidents, the operator of the machine must read and observe the safety instructions in the "Safety" chapter.</li> </ul>

	<b>WARNING!</b>
	<p><b>Reaching into the machine can cause crushing, shearing, cutting, severing, being caught, entangled, pulled in and struck in the machine.</b></p> <p>These hazards may arise when</p> <ul style="list-style-type: none"> <li>- the unsecured tractor and the trailer unintentionally roll,</li> <li>- power driven tools are not switched off,</li> <li>- hydraulic functions are activated unintentionally,</li> <li>- tools or machine components are in operation,</li> <li>- the tractor engine is switched on inadvertently,</li> <li>- raised machine components are lowered inadvertently.</li> </ul> <p>All machine operations are dangerous due to possible unintentional contact with driven, unsecured parts and raised, unsecured machine components.</p> <ul style="list-style-type: none"> <li>• Therefore the machine must be secured against unintentional rolling and starting before any work is done on the machine, e.g. Making adjustments or correcting malfunctions.</li> </ul> <p>          For this, the notices and instructions in the operating instructions in section "Commissioning" under "Securing vehicle against unintentional rolling and starting" are to be observed.       </p>

### 3.1 Terminal BCT20

The hydraulic functions are operated using the BCT20 terminal. The terminal is characterized by

- ON/OFF for terminal,
- rotary / push button,
- ergonomically arranged keys,
- back-lit membrane keypad,
- backlit display,
- freely programmable sequence control of individual functions,
- trip counter,
- a variety of functions.



Fig. 2: Terminal BCT20

Additional hydraulic functions without control block connection have no terminal functionality. Such functions can be operated directly by the tractor control units according to the hydraulic system manual control after coupling the supply lines to the tractor.



For this, observe the notices and instructions in the operating instructions in chapter "Functions and Settings" in the "Hydraulics" section.

	<b>NOTICE</b>
	<ul style="list-style-type: none"> <li>• Protect the terminal from water.</li> <li>• Store the terminal in a dry room if it is not used for a long period (e.g. in winter).</li> <li>• Disconnect the power supply during installation and repair work. Remove all electronic components (terminal, BSG, ISO-Gate, etc.) during welding work. Overvoltage can damage the terminal's electronics.</li> </ul>

#### 3.1.1 Emergency Control

	<b>WARNING!</b>
	<p><b>Danger due to moving components during emergency control!</b></p> <ul style="list-style-type: none"> <li>• Ensure third persons leave the vehicle danger area before using the emergency control on the control block.</li> </ul>

	<b>NOTICE</b>
	<p>In case of a power failure, check the fuses in the tractor and control unit (supply line). Check cables and connections.</p>

Electrically controlled hydraulic valves which are used for "Emergency control" can be controlled manually.



For this, observe the notices and instructions in the operating instructions in chapter "Functions and Settings" in the "Hydraulics" section.

### 3.1.2 Installing the BCT20 Terminal

	<b>NOTICE</b>
	The terminal must be mounted in the driver's field of vision and reach so that it is easy to read and operate. It must not obstruct the view of the tractor's controls or to the surrounding area.

To install the terminal (Fig. 3 / Pos.1) proceed as follows:

- Select a suitable position in the tractor cab where you would like to mount the terminal (Fig. 3 / Pos.1).
- Loosen the eyebolts (Fig. 3 / Pos.4) on the bracket (Fig. 3 / Pos.3) on the back of the terminal (Fig. 3 / Pos.1).
- Guide the rod (Fig. 3 / Pos.2) through the holes in the bracket (Fig. 3 / Pos.3) (the rod is not included,  $\varnothing 22\text{mm}$ ).
- If the terminal (Fig. 3 / Pos.1) collides with the rod (Fig. 3 / Pos.2) when moved, the position of the bracket (Fig. 3 / Pos.3) must be adapted to the terminal (Fig. 3 / Pos.1). For this, loosen the nuts (Fig. 3 / Pos.5), adjust the terminal (Fig. 3 / Pos.1) and retighten the nuts (Fig. 3 / Pos.5).
- Position the terminal (Fig. 3 / Pos.1) in the desired height. Ensure that the rod (Fig. 3 / Pos.2) protrudes at least 2cm above the bracket (Fig. 3 / Pos.3).
- Fasten the terminal (Fig. 3 / Pos.1) by tightening the eyebolts (Fig. 3 / Pos.4) on the rod (Fig. 3 / Pos.2).

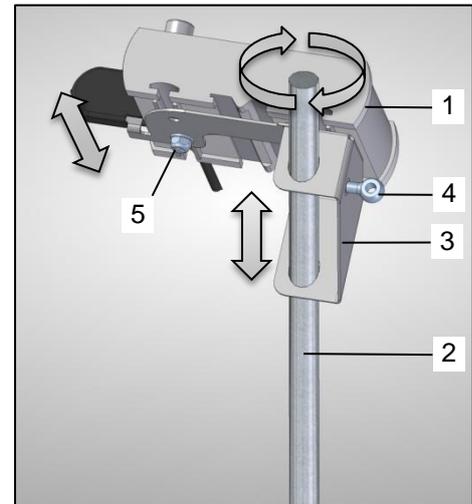


Fig. 3: Installation

	<b>NOTICE</b>
	Ensure that all screws are tightened firmly and that the terminal position cannot change.

### 3.1.3 Connecting the Terminal



**WARNING!**

**Danger due to incorrect system and supply line connection**

Incorrect connection of the supply lines can lead to considerable hazards for persons due to machine malfunctions.

- Before commissioning, check for proper supply line connection.
- When connecting the supply lines, ensure that both plugs and sockets are clean and dry. Dirt and moisture can lead to a short circuits!
- Supply lines between tractor and trailer must be laid in such a way that they cannot be rubbed, clamped, crushed, bent or rub against foreign parts during trailer movement (e.g. cornering).

#### 3.1.3.1 BCT20 Terminal Connection Diagram

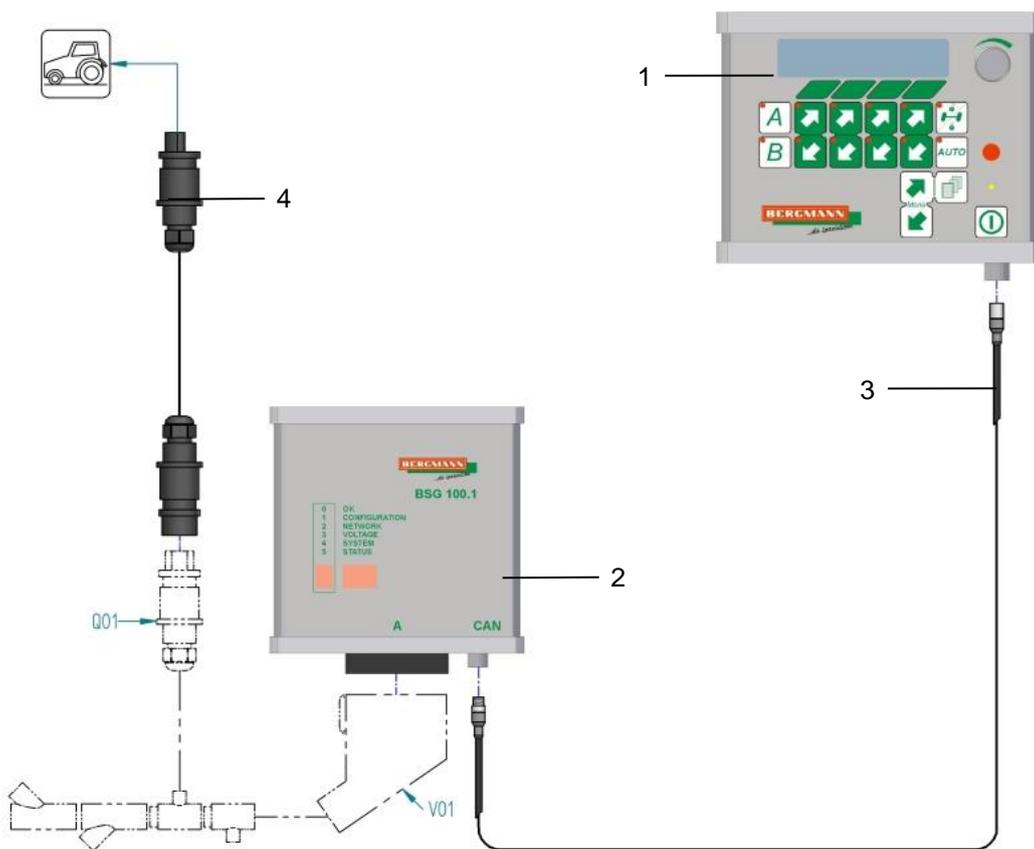


Fig. 4: BCT20 terminal connection diagram

18-14-0709-BTA

Pos.	Name	Design
1	Terminal	BCT20
2	Controller	BSG100 / BSG200
3	Connection line	CAN-BUS
4	Terminal power cable	BCT20

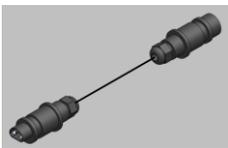
3.1.3.1.1 Connection line CAN-BUS

- Connect the terminal (Fig. 4 / Pos.1) to the SG100 / BSG200 controller (Fig. 4 / Pos.2) using the CAN-BUS connection line (Fig. 4 / Pos.3) while taking the following data into consideration:

	<b>Connection line CAN-BUS</b>		B10-0237
	Plug / CAN, M12, 8 pin	Connect with:	BSG controller
		Connections:	CAN
	Socket / CAN, M12, 8 pin	Connect with:	Terminal BCT20
		Connections:	-

3.1.3.1.2 BCT20 terminal connection line

- Connect the power supply cable (Fig. 4 / Pos.4) to the corresponding connections on the wiring harness and the power supply on the tractor, while taking the following data into consideration:

	<b>BCT20 Terminal Power Supply Cable</b>		18-14-0621
	Socket / 2 pin (DIN 9680)	Connect with:	Wiring harness
		Connections:	Q01
	Socket / 2 pin (DIN 9680)	Connect with:	Tractor
		Voltage:	12 V DC
		Fuse:	25 Amp

3.1.4 BCT20 Terminal User Surface

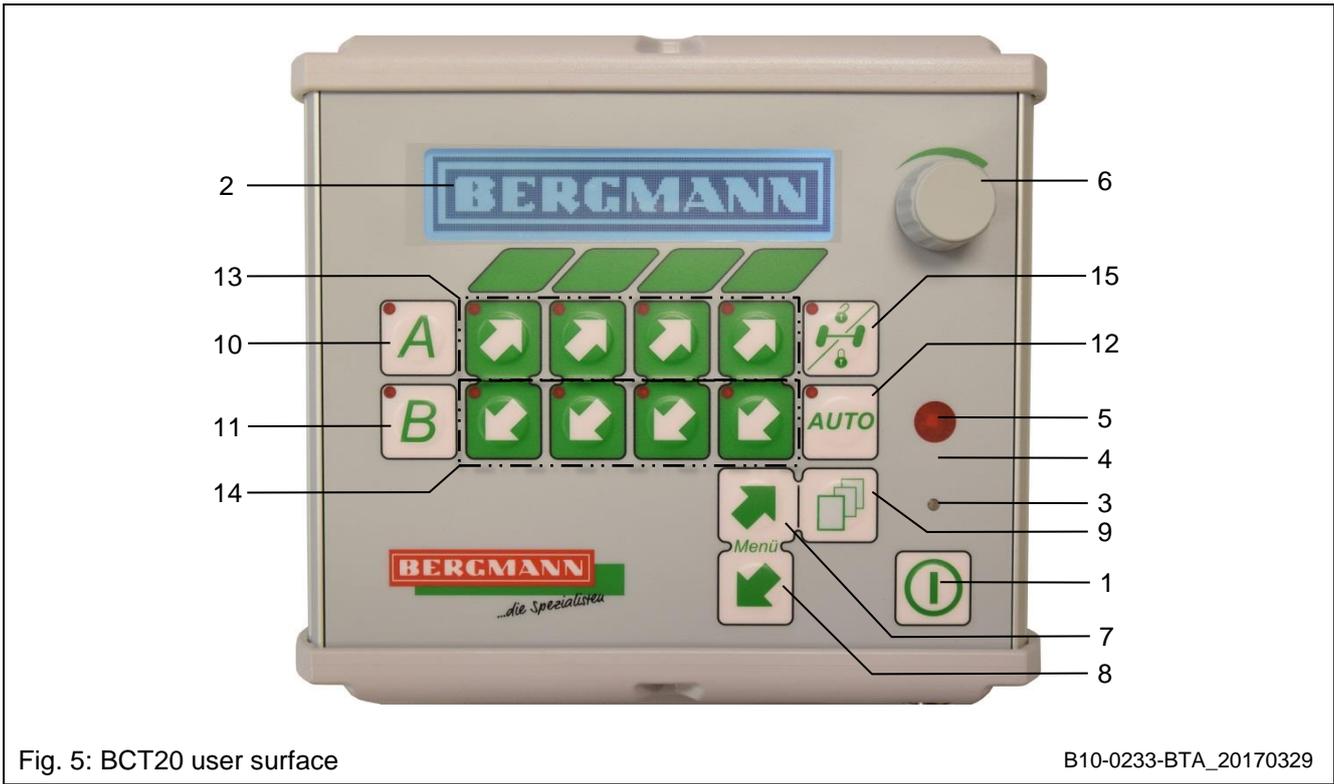


Fig. 5: BCT20 user surface

B10-0233-BTA\_20170329

1	Main switch		Switching the terminal On / Off
2	Display		Menu display with the respective functions
3	Light sensor		Controls the back lighting.
4	Signal horn		Signals e.g. "FULL" or "Scraper floor stop" (In combination with the light)
5	Indicator light		Signals e.g. "FULL" or "Scraper floor stop" (In combination with the signal horn)
6	Rotary / push button		For changing and confirming settings such as the transport floor speed.
7	Next menu		For changing the menu.
8	Previous menu		For changing the menu.
9	Shift key		For calling up further functions within a menu.

10	Function memory "A"		<p>Programmable sequence of different functions</p> <ul style="list-style-type: none"> <li>- Press and hold the key: Functions are called up.</li> <li>- Release the key: Stop function sequence.</li> <li>- Pressing and holding the key again within 2 seconds: Function continues.</li> </ul>
11	Function memory "B"		<ul style="list-style-type: none"> <li>- Pressing and holding the key again after 2 seconds: Restarts functions from the beginning.</li> </ul> <p><u>Setting Mode:</u></p> <ul style="list-style-type: none"> <li>- Press briefly: Setting mode opens.</li> <li>- Press briefly: The setting mode is closed and settings are saved.</li> </ul>
12	Auto key		To activate automatic functions, e.g. permanent activation of the transport floor or automatic filling system (depending on machine type and menu level)
13	Function keys forward / up		Operating the functions shown in the display
14	Function key back / down		Operating the functions shown in the display
15	Steering axle Lock / Unlock:		<p>Operating the steering axle function</p> <p> <b>Unlock:</b> Press key once briefly (Unlocked: red LED lights up)</p>
			<p> <b>Lock:</b> Press key once briefly (Blinking LED: Controller closes steering axle Locked: red LED off,)</p>

Other machine functions (e.g. work light, tailgate, jack stand, etc.) can be called up by pressing the shift key (Fig. 5 / Pos.9) and can be operated using the function keys (Fig. 5 / Pos.13+14).

**3.1.5 Switching the BCT20 Terminal On and Off**

	<p>Main switch</p>	<p>The terminal is switched on and off by pressing the main switch. Pressing the switch once switches the device on and pressing it a second time switches it off again. When the terminal is switched on, the initial "Road travel" menu is displayed.</p>
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**3.1.6 Select Function**

	<p>Function key forward / up</p>	<p>By pressing the "Function keys forward/up" and "Function keys back/down", the function displayed above the key is activated, but the function is only carried out as long as the key is pressed. As long as the key is pressed, the key LED lights up. The scraper floor and the pick-up (silage trailer) are special functions. These are explained in the following sections</p>
	<p>Function key back/down</p>	

**3.1.7 Change Settings**

	<p>Rotary/push button</p>	<p>The rotary/push button is used to change the settings.</p> <p>When in the respective adjustment mask, the frame is shifted to the setting to be adjusted by turning the button. Pressing the button once causes the frame to start blinking. While the frame is blinking, turn the button to reach the desired setting. After the setting has been made, the frame stops blinking either when the rotary/push button is pressed or automatically after two seconds. The value setting is automatically saved and the frame can be moved to the next field to be set.</p>
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### 3.1.8 BCT20 Terminal Display

The display is divided into the following areas:

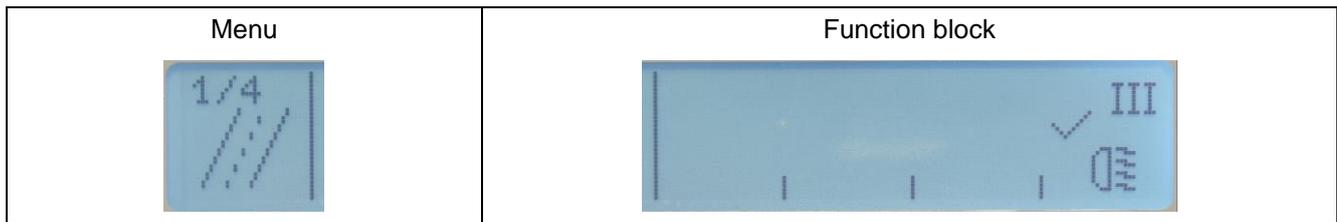


Fig. 6: Display

To navigate between the menus and switch between the function blocks within the menu, proceed as follows:

	Use the "Menu forward / up" keys to scroll forward to the corresponding menu.
	Use the "Menu back / down" keys to scroll forward to the corresponding menu.
	Use the "Shift" key to change the function blocks within the selected menu.

	<b>NOTICE</b>
	If the menu is changed while the functions are active, the active functions will be deactivated. The operator is notified of this by a warning signal with an indicator light. Only then will the menu change. When the function block is changed within the menu, active functions remain active.

### 3.1.9 BCT20 Terminal Menu Structure

The individual menus are structured as follows:

1/4		Driving on Roads
2/4		Unloading
3/4		Trip counter
4/4		Loading

3.1.9.1 Menu 1/4: Driving on roads

Menu 1/4 / Function block 1:				
-	-	-		
-	-	-		
-	-	-		
	Work light III / All-round lighting		On	III 
			Off	III 

3.1.9.2 Menu 2/4: Unloading

Menu 2/4 / Function block 1:				
	Pick-up		Raise	
			Float position:	Press key once briefly
	Drawbar		Raise	
			Lower	
	Scrapper Floor		Switch scrapper floor on permanently The LED lights when the scrapper floor is switched on.	
			Adjust scrapper floor speed The set speed is displayed above the transport floor pictogram.	
			Back	
			Forward (reverse)	
	Tailgate		Raise	0%: Tailgate is completely closed. <hr/> 1 - 10% Tailgate is raised and in locked / unlocked position. <hr/> 11 - 99% Tailgate is partially open. <hr/> 100 %: Tailgate is completely closed.
			Lower	

Menu 2/4 / Function block 2:				
				
	Light VI	 	On	
			Off	
	Light III	 	On	
			Off	
	Light II	 	On	
			Off	
	Light I	 	On	
			Off	

Menu 2/4 / Function block 3:				
				
-	-	-	-	-
-	-	-	-	-
	Front wall bottom element	 	Back	0%: Front wall completely in cargo space <hr/> 100%: Front wall moved completely toward tractor
			Forward	
	Front wall top element:	 	Raise	
			Lower	

3.1.9.3 Menu 3/4: Trip counter

Menu 3/4 / Function block 1:			
	Memory 1 - 10		Trip counter up
			Trip counter down
	= Trip counter off AUTO = Trip counter on		Activate / Deactivate
			Activate / Deactivate
	Time		-
			Activate / Deactivate: timed Press and hold for 2 seconds and release again to delete the value.
Example: 8.4 h = 8 hours and 24 min. (4 x 6 min = 24 min)			
	Number of trips		Increase the number of trips step by step.
			Decrease the number of trips step by step. Press and hold for 2 seconds and release again to delete the value.
1 trip = 0.5 min. transport floor on + 4 min. transport floor paused			

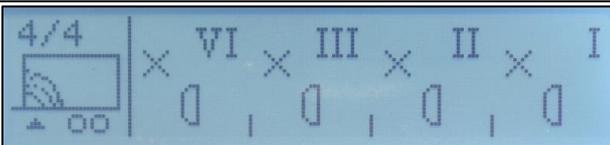
Menu 3/4 / Function block 2:			
	Memory 1 - 10		Trip counter up
			Trip counter down
	Load capacity		Increase load capacity
			Decrease load capacity
	Delivered volume		Increase value step by step
			Decrease value step by step Press and hold for 2 seconds and release again to delete the value.
	Loading time		Increase value step by step
			Decrease value step by step Press and hold for 2 seconds and release again to delete the value.

Menu 3/4 / Function block 3:	
	Total time
	Total trips
$\Sigma m^3$	Total delivered volume
	Total loading time

3.1.9.4 Menu 4/4: Loading

Menu 4/4 / Function block 1:				
	Cutting unit completely retracted		Raise	
	Cutting unit not completely retracted			Lower
	Cutting unit completely extended			
	Drawbar		Raise	
			Lower	
	Scraper Floor		Switch scraper floor on permanently The LED lights when the scraper floor is switched on.	
			Adjust scraper floor speed The set speed is displayed above the transport floor pictogram.	
			Back	
			Forward (reverse)	
	Pick-up		Raise	
			Float position: <span style="float: right;">Press key once briefly</span>	

Menu 4/4 / Function block 2:



	Light VI		On	
			Off	
	Light III		On	
			Off	
	Light II		On	
			Off	
	Light I		On	
			Off	

Menu 4/4 / Function block 3:



-	-	-		
-	-	-		
	Front wall bottom element		Back	0%: Front wall completely in cargo space
			Forward	100%: Front wall moved completely toward tractor
	Front wall top element:		Raise	
			Lower	

**3.1.10 Quick Start with BCT20 Terminal**

1.	Switch the terminal on.	Press main switch
2.	Select menu	- 2/4: Unloading - 4/4: Loading
3	Switch PTO shaft on	Observe the speed depending on equipment and type!
4.	Switch oil supply on.	Not necessary with load sensing
5.	Select function	e.g. Lower pick-up etc.
6.	Switch scraper floor on	Press the Auto key
7.	Set scraper floor speed	Turn only: - Changes the current scraper floor speed Turn and press once: - Changes the saved scraper floor start speed

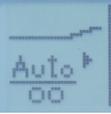
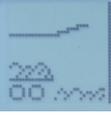
### 3.1.11 Adjusting Scraper Floor

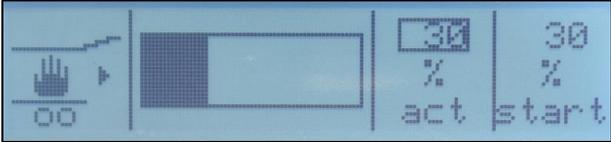
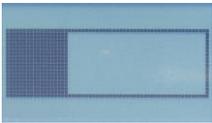
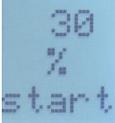
The scraper floor is equipped with diverse adjustment possibilities.

	<p>The rotary/push button is used to change the settings and values. When the button is turned, a submenu opens, in which the scraper floor can be adjusted.</p>
	<p>When the submenu is open use the "Shift" key to switch between the submenus. Up to four submenus are available, depending on the machine equipment.</p>

The submenu closes automatically after 2 seconds and saves the changed values. The scraper floor speed is always controlled using the active submenu. The other scraper floor submenu adjustments are then inactive.

The individual scraper floor adjustment submenus are structured as follows:

1		Manual settings
2		Scraper floor speed control
3		Unload length control

Submenu 1: Manual settings		
		
	Bar chart	Graphically displays the currently set value.
	Current value (e.g. 30%)	The current value is the value with which the scraper floor runs or, if it is not switched on, starts the next time it is switched on.
	Start value (e.g. 30%)	When the scraper floor is switched off, the start value is entered as the current value.

For example, the current value can be turned up for residual emptying when the scraper floor is running, and when it is switched off, the starting value representing the "normal speed" is resumed. If the rotary/push button is pressed within 2 seconds after the current value has been changed, the current value is stored as the start value. The submenu closes again after 2 seconds.

Machine without overdrive:

The speed of the scraper floor is controlled from 0 - 100% using the manual adjustment. At 0% it just starts to run and at 100% the scraper floor is at full speed.

Machine with overdrive:

The first stage of the scraper floor speed is controlled from 0 - 65% using the manual adjustment. At 0% it just starts to run and at 65% the scraper floor is at full speed. At 70% overdrive is engaged and at 100% the scraper floor has full speed in the second stage. A double arrow in the scraper floor symbol indicates that overdrive is engaged.

Submenu 2: Scrapper floor speed control

	Bar chart	Graphically displays the currently set value.
	Current value (e.g. 1,00 m/min)	The current value is the value with which the scrapper floor runs or, if it is not switched on, starts the next time it is switched on.
	Start value (e.g. 1,0 m/min)	When the scrapper floor is switched off, the start value is entered as the current value.

The submenu "Scrapper floor scrapper floor speed control" works in the same way as the submenu "Manual adjustment", but the scrapper floor speed can be set in "m/min". The controls always regulate the selected speed. If it is not possible to adjust the speed, a visual warning appears. Two "!!" in the scrapper floor symbol indicate this.

With the "Scrapper floor scrapper floor speed control", overdrive is automatically engaged when a set speed is exceeded. A double arrow in the scrapper floor symbol indicates that overdrive is engaged.

Submenu 3: Unload length control

	Bar chart	Graphically displays the currently set value.
	Unloading speed (e.g. 45 m)	The desired unloading length (= swath length) can be set in "m" using the rotary/push button.
	Driving speed (e.g. 1.8 km/h)	The desired driving speed can be set in "km/h" using the rotary/push button.

When all values have been set and confirmed by pressing the button, the submenu closes after seconds and the functions are displayed again.

**3.1.12 Lock / Unlock Steering Axle**

	Steering axle Lock / Unlock:	Operating the steering axle function	
			Unlock: Press key once briefly (Unlocked: red LED lights up)
			Lock: Press key once briefly (Blinking LED: Controller closes steering axle Locked: red LED off,)

On older machines it may be necessary to press the "Lock / Unlock Steering Axle" key for at least 4 seconds to lock the steering axle. Only then does the LED go out when the key is released.

	<b>WARNING!</b>
	<p><b>Damage can be caused to the vehicle or accidents can occur if the steering adjustment instructions are not observed!</b></p> <p>A unlit steering axle key LED does not necessarily mean that the steering axle is locked. If, for example, a wheel is blocked (e.g. by a curb) when the axle is locked and cannot move into the locked position, the steering axle is not completely locked.</p> <ul style="list-style-type: none"> <li>• It is the driver's responsibility to ensure that the steering axle is completely locked.</li> <li>• The axle should always be locked while moving in a straight forward direction.</li> </ul>

### 3.1.13 Function Memory A + B

Function sequences can be programmed with the both memory keys "Function memory A" and "Function memory B". The stored sequences in function memory "A" and "B" are independent of each other. To start a function sequence, the respective function memory key ("A" or "B") must be pressed and held. When the button is released again, the function sequence stops. Holding the button down again within 2 seconds keeps the functions running, Pressing and holding the button again after 2 seconds restarts the functions.

Function memory A + B:			
1	Sequence number (Steps 1 - 8)		Change sequence number (up)
			Change sequence number (down)
	Function e.g. drawbar		Change the possible function (up)
			Change the possible function (down)
	Direction of action: Forward / Lower		Change direction of action
	Back / Raise		
	Switch off		Change direction of action
AUTO	Automatic		
3.0 sec	Time (e.g. 3.0 sec)		Increase the time in 0.25 sec steps
			Decrease the time in 0.25 sec steps

3.1.13.1 Setting Mode:

Briefly pressing the "Function memory A" or "Function memory B" keys opens the setting mode. When pressed again, the setting mode is exited and settings are saved.

Various function sequences are listed below. The possible functions depend on the machine equipment.

Drawbar

Function:		Drawbar
Direction of action:		The drawbar is raised by pressing "Arrow up" in combination with a time of at least 0.1 sec.
		The drawbar is lowered by pressing "Arrow down" in combination with a time of at least 0.1 sec.
		If an "X" is set in combination with a time for the "drawbar" function, this represents a blank step. During this time nothing will be carried out.

Pick-up

Function:		Pick-up
Direction of action:	AUTO	The pick-up floating position is activated by pressing "Auto" in combination with a time of at least 0.1 sec.
		The pick-up floating position is deactivated by pressing "X" in combination with a time of at least 0.1 sec.

Cutting Unit

Function:		Cutting Unit
Direction of action:		The cutting unit is raised by pressing "Arrow up" in combination with a time of at least 0.1 sec.
		The cutting unit is raised by pressing "Arrow down" in combination with a time of at least 0.1 sec.

Front wall bottom element

Function:		Front wall bottom element
Direction of action:		The front Wall bottom element is raised by pressing "Arrow up" in combination with a time of least 0.1 sec.
		The front Wall bottom element is lowered by pressing "Arrow down" in combination with a time of least 0.1 sec.

Front wall top element:

Function:		Front wall top element:
Direction of action:		The front Wall top element is raised by pressing "Arrow up" in combination with a time of least 0.1 sec.
		The front Wall top element is lowered by pressing "Arrow down" in combination with a time of least 0.1 sec.

Steering axle

Function:		steering axle
Direction of action:	AUTO	The steering axle floating position is activated by pressing "Auto" in combination with a time of at least 0.1 sec.
		The steering axle is locked by pressing "X" in combination with a time of at least 5 sec.

	<b>WARNING!</b>
	<p><b>Damage can be caused to the vehicle or accidents can occur if the steering adjustment instructions are not observed!</b></p> <p>A unlit steering axle key LED does not necessarily mean that the steering axle is locked. If, for example, a wheel is blocked (e.g. By a curb) when the axle is locked and cannot move into the locked position, the steering axle is not completely locked.</p> <ul style="list-style-type: none"> <li>• It is the driver's responsibility to ensure that the steering axle is completely locked.</li> <li>• The axle should always be locked while moving in a straight forward direction.</li> </ul>

Scrapper Floor

Function:		Scrapper Floor
Direction of action:		The scrapper floor is switched on towards the rear (unload) by pressing "Arrow up" in combination with a time of least 0.1 sec.
		The scrapper floor is switched on towards the front (reverse) by pressing "Arrow down" in combination with a time of least 0.1 sec.
	AUTO	The scrapper floor is switched on continuous operation by pressing "Auto" in combination with a time of least 0.1 sec.
		Press "X" to switch the scrapper floor off.

Tailgate

Function:		Tailgate
Direction of action:		The tailgate is opened by pressing "Arrow up" in combination with a time of least 0.1 sec.
		The tailgate is closed by pressing "Arrow down" in combination with a time of least 0.1 sec.
		If an "X" is set in combination with a time for the "tailgate" function, this represents a blank step. During this time nothing will be carried out.

Spotlight

Function:		Work light 1 - 4
Direction of action:		The work light is switched on by pressing "Arrow up" in combination with a time of least 0.1 sec.
		The work light is switched off by pressing "Arrow down" in combination with a time of least 0.1 sec.

## 4 Index of Technical Terms

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