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Original operating instructions

BiG Pack Baler

BiG Pack 1290 HDP II
BiG Pack 1290 HDP II (XC)

(from serial no.: 945 088)

Order no.: 150 000 152 02 us

02.05.2016

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2 To this Document

2.1 Validity

These operating instructions apply to BiG Pack balers of the types:
BiG Pack 1290 HDP II and BiG Pack 1290 HDP II XC.

2.2 Re-Ordering

If this document should become wholly or partially unusable, you can request a replacement document by stating the order number mentioned on the cover sheet.

2.3 Further applicable documents

To ensure that the machine is used safely and as intended, observe the following further applicable documents:

– Operating instructions of universal shaft(s)

2.4 Target group of this document

This document aims at the operators of the machine fulfilling the minimum requirements of personnel qualification; refer to chapter entitled Safety “Personnel Qualification”.

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2.5 How to use this document

2.5.1 Directories and References

Table of contents/headers:

The table of contents as well as the headers in this instruction are used for quick navigation in the chapters.

Index directory:

In the index directory, you can find information on the desired subject via catchwords which are in alphabetical order. The index directory can be found on the last page of this instruction.

Cross references:

Cross references to another place in the operating instructions or to another document are in the text and specify the chapter and subchapter or section. The designation of subchapters or sections is presented in quotation marks.

Example:

Check that all screws on the machine are tight, refer to chapter Maintenance, “Tightening Torques”.

The subchapter or the section can be found via an entry in the table of contents and in the index directory.

2.5.2 Direction Information

Direction information in this document such as front, rear, right and left always applies in the direction of travel.

2.5.3 Term “Machine”

Throughout the rest of this document, the “large square baler” will also be referred to as the “machine”.

2.5.4 Figures

The figures in this document do not always represent the exact machine type. The information which refers to the figure always corresponds to the machine type of this document.

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2.5.5 Scope of Document

In addition to standard equipment, accessories kits and versions of the machine are described in this document. Your machine may deviate from this document.

2.5.6 Means of representation

Icons in the text

In this document, the following means of representation are used:

Action step

A bullet point (•) designates an action step you have to perform, as for example:

- Set the left outside mirror.

Sequence of actions

Several bullet points (•) located in front of a sequence of action steps identify a sequence of actions to be performed step by step, as for example:

- Loosen counter nut.
- Set the screw.
- Tighten counter nut.

List

Dashes (-) identify lists such as, for example:

– Brakes
– Steering
– Lighting

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Symbols in figures

To visualize parts and actions steps, the following icons are used:

Icon	Explanation
	Reference sign for part
	Position of a part (e.g. move from pos. I to pos. II)
	Dimensions (e.g. B = width, H = height, L = length)
	Action step: Tighten screws with torque key with specified tightening torque
	Direction of motion
	Direction of travel
	opened
	closed
	enlargement of display detail
	Framings, dimension line, dimension line limitation, reference line for visible parts or visible mounting material
	Framings, dimension line, dimension line limitation, reference line for covered parts or covered mounting material
	Laying routes
	Left-hand machine side
	Right-hand machine side

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Warning signs

Warning

WARNING! - Type and source of hazard!

Effect: Injuries, serious material damage.

- Measures for hazard prevention.

Caution

CAUTION! - Type and source of hazard!

Effect: Damage to property.

- Measures for risk prevention.

Notes with information and recommendations

Note

Note

Effect: Economic benefit of the machine.

- Measures to be performed.

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2.5.7 Conversion table

By means of the following table, metric units can be converted into US units.

Quantity	SI Units (Metric)		Factor	Inch-Pound Units	
	Unit Name	Abbreviation		Unit Name	Abbreviation
Area	hectare	ha	2.47105	acre	acres
Flow	liters per minute	L/min	0.2642	US gallon per minute	gpm
	cubic meter per hour	m^3/h	4.4029		
Force	newton	N	0.2248	pound-force	lbf
Length	millimeter	mm	0.03937	inch	in.
	meter	m	3.2808	foot	ft.
Power	kilowatt	kW	1.3410	horsepower	hp
Pressure	kilopascal	kPa	0.1450	pound per square inch	psi
	megapascal	MPa	145.0377		
	bar (non-SI)	bar	14.5038		
Torque	newton meter	Nm	0.7376	pound-foot or foot-pound	ft·lbf
			8.8507	pound-inch or inch-pound	in·lbf
Temperature	degree Celsius	°C	°Cx1.8+32	degree Fahrenheit	°F
Velocity	meter per minute	m/min	3.2808	foot per minute	ft/min
	meter per second	m/s	3.2808	foot per second	ft/s
	kilometer per hour	km/h	0.6215	miles per hour	mph
Volume	liter	L	0.2642	US gallon	US gal.
	milliliter	ml	0.0338	US ounce	US oz.
	cubic centimeter	cm^3	0.0610	cubic inch	in^3
Weight	kilogram	kg	2.2046	pound	lbs

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3 Safety

3.1 Purpose of Use

KRONE Big Pack square balers are machines for collecting and baling cut crops (grass, hay, leguminous vegetation and straw, etc.) on farms. They are towed behind agricultural tractors of sufficient power that are also equipped with suitable interfaces for the installation and operation of the machine (see the introductory chapter "Technical Data" / "General Technical Description). The crop must be set down in rows on the field to be collected. Then it must only be collected with the pick-up by driving over the swath.

WARNING! – Intake and baling of crops not mentioned!

Effect: Damage to the machine

Collecting and baling materials that are not cited here is permitted only in agreement with the manufacturer. The basic requirements in any case are swathing of the crops and automatic intake by the pick-up as it passes over them.

3.2 Intended Use

The Big Pack square baler is built exclusively for customary use in agricultural work (see the introduction "Intended Use").

The machine must only be used by persons who meet the requirements listed in the chapter on safety "Personnel Qualifications and Training".

These operating instructions are part of the machine. The machine is designed exclusively for use in accordance with these operating instructions.

Using the machine for work or applications that are not described in these operating instructions can lead to severe injuries or death of persons and damage to the machine and other property. Such work and applications are prohibited.

Unauthorised modifications to the machine may have a negative effect on the machine characteristics or safe and reliable use of the machine or may interfere with proper operation. Unauthorised modifications shall therefore release the manufacturer of any liability for consequential damage.

3.3 Service life of the machine

- The service life of this machine strongly depends on proper use and maintenance as well as the operating conditions.
- Permanent operational readiness as well as long service life of the machine can be achieved by observing the instructions and notes of these operating instructions.
- After each season of use, the machine must be checked thoroughly for wear and other damage.
- Damaged and worn parts must be replaced before placing the machine into service again.
- After the machine has been used for five years, carry out full technical inspection of the machine. According to the results of this inspection, a decision concerning the possibility of reuse of the machine should be taken.
- Theoretically, the service life of this machine is unlimited as all worn or damaged parts can be replaced.

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3.4 Basic safety instructions

Non-compliance with the safety instructions and warnings

Non-compliance with the safety instructions and warnings may result in injuries and damage to the environment and property.

3.4.1 Importance of the operating instructions

The operating instructions are an important document and a part of the machine. They are intended for the user and contain information relevant to safety.
Only the procedures indicated in the operating instructions are reliable. If the operating instructions are not followed, people may be seriously injured or killed.

- Before using the machine for the first time, read and follow all the "Basic safety instructions" in the chapter Safety.
- Before working, also read and observe the respective sections in the operating instructions.
- Retain the operating instructions and ensure that they are always available.
- Hand over the operating instructions to subsequent users.

3.4.2 Personnel qualification

If the machine is not used properly, people may be seriously injured or killed. To avoid accidents, each person who works with the machine must satisfy the following minimum requirements:

– He is physically capable of controlling the machine.
– He can work safely with the machine in accordance with these operating instructions.
– He understands the method of operation of the machine within the scope of his work and can identify and avoid the dangers associated with the work.
– He has read the operating instructions and can implement the information in the operating instructions accordingly.
– He is familiar with driving vehicles safely.
– For road travel he has adequate knowledge of the highway code and has the stipulated driving licence.

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3.4.3 Children in danger

Children cannot assess danger and behave unpredictably.
As a result, children are especially at risk.

- Keep children away from the machine.
- Keep children away from consumables.
- Especially before starting up and moving the machine, ensure that there are no children in the danger zone.

3.4.4 Connect the machine to the tractor

If the tractor and the machine are not correctly connected, there is a risk of causing serious accidents.

- When connecting front attachments or trailers, follow all operating instructions:
  - The operating instructions for the tractor
  - The operating instructions for the machine
  - The operating instructions for the universal shaft
- Follow the coupling instructions, see chapter on starting up "Connect the machine to the tractor".
- Note the modified driving behaviour of the combination.

3.4.5 Structural changes to the machine

Structural changes and enhancements may impair the functionality and operational safety of the machine. As a result, people may be seriously injured or killed.

- Have structural changes and enhancements performed by an authorised service centre only.

3.4.6 Additional equipment and spare parts

Additional equipment and spare parts, which do not comply with the requirements of the manufacturer, may impair the operational safety of the machine and cause accidents.

- To ensure operational safety, use original or standard parts which comply with the requirements of the manufacturer. If in doubt, have parts verified by the dealer or manufacturer.

3.4.7 Workstations and passengers

Control of the moving machine

The moving machine requires the driver to react quickly at any time. Otherwise, the machine may move in an uncontrolled manner and seriously injure or kill people.

- Start the engine from the driver's seat only.
- Never leave the driver's seat while the machine is moving.
- Never climb in or out of the machine while it is moving.

Passengers

Passengers may be seriously injured by the machine or fall off the machine and get run over. Ejected objects may strike and injure passengers.

- Never let people ride on the machine.

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3.4.8 Operational safety: Technically perfect condition

Operation only when the machine has been started up correctly

If the machine is not started up correctly according to these operating instructions, the operational safety of the machine is not ensured. As a result, accidents may occur and people may be seriously injured or killed.

- Do not use the machine unless it has been started up correctly, see chapter Start-up.

Technically perfect condition of the machine

Improper maintenance and adjustment may affect the operational safety of the machine and cause accidents. As a result, people may be seriously injured or killed.

- Perform all maintenance and adjustment work according to the chapters Maintenance and Adjustment.
- Before performing any maintenance or adjustment work, shut down and safeguard the machine, see chapter Safety "Shutting down and safeguarding the machine".

Danger resulting from damage to the machine

Damage to the machine may impair the operational safety of the machine and cause accidents. As a result, people may be seriously injured or killed. The following parts of the machine are particularly important for safety:

– Brakes
– Steering
– Safety devices
– Connecting devices
– Lighting
– Hydraulic system
– Tyres
– Universal shaft

If there are doubts about the operational safety of the machine, for example due to leaking consumables, visible damage or an unexpected change to the driving behaviour:

- Shut down and safeguard the machine, see chapter Safety, "Shutting down and safeguarding the machine".
- Immediately eliminate potential causes of damage, for example heavy soiling, or tighten slack screws.
- Determine the cause of damage according to these operating instructions, see chapter Malfunctions – Cause and remedy.
- If possible, repair the damage according to these operating instructions.
- In the case of damage which may affect operational safety and cannot be repaired according to these operating instructions: Have damage repaired by a qualified service centre.

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Technical limit values

If the technical limit values of the machine are not observed, the machine may be damaged. As a result, accidents may occur and people may be seriously injured or killed. Observance of the following technical limit values is particularly important for safety:

– Permitted gross weight
– Maximum axle loads
– Maximum payloads
– Maximum trailer load
– Maximum bearing load
– Maximum transport height
– Maximum speed

• Observe limit values, see chapter Description of machine, "Technical data".

3.4.9 Danger zones

Danger zones on the tractor and the machine

The area around the tractor and the machine is a danger zone.
There are the following hazards in this danger zone:

– The tractor and the machine may start moving or rolling away and run over people.
– If the power lifter is unintentionally actuated, the machine may make hazardous movements.
– Defective or insecurely attached electrical cables may cause fatal electric shocks.
– Defective or insecurely attached hydraulic or pneumatic lines may become detached and flail around. Hydraulic oil may escape under high pressure and cause serious injuries to the skin or face.
– Clothing may become caught and wrapped around an exposed PTO shaft or a damaged or incorrectly installed universal shaft.
– When the drive is switched on, machine parts may rotate or swivel.
– Hydraulically raised machine parts may descend unnoticed and slowly.

If the danger zone is not observed, people may be seriously injured or killed.

• Keep people away from the danger zone of the tractor and the machine.
• Do not switch on the drives and engine until there is nobody in the danger zone.

The safety clearance is:

– 3 metres on either side of the machine.
– 5 metres behind the machine.

• Before working in front of and behind the tractor and in the danger zone of the machine: • Shut down and safeguard the machine, see chapter Safety, "Shutting down and safeguarding the machine". This also applies to brief inspection work. Many serious accidents in front of and behind the tractor and the machine occur due to negligence and running machines.
• Consider the information in all relevant operating instructions.
  – The operating instructions for the tractor
  – The operating instructions for the machine
  – The operating instructions for the universal shaft

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Danger zone between tractor and machine

People standing between the tractor and machine may be seriously injured or killed if the tractor rolls away or by machine movements:

- Before starting all work between the tractor and machine: • Shut down and safeguard the machine, see chapter Safety, "Shutting down and safeguarding the machine". This also applies to brief inspection work. Many serious accidents occur due to negligence and running machines.
- If the power lifter has to be actuated, keep all people away from the area of movement of the power lifter.

Danger zone when drive switched on

When the drive is switched on, there is a danger to life from rotating and swivelling machine parts. There must be nobody in the danger zone of the machine.

- Before starting the machine, direct all people out of the danger zone of the machine.
- If a hazardous situation arises, switch off drives and diesel engine immediately.

Danger zone of the P.T.O. shaft

People may be caught, pulled in and seriously injured by the PTO shaft and the driven components.
Before engaging the PTO shaft:

- Make sure that all safety devices are fitted and in the protection position.
- Ensure that the selected speed and direction of rotation of the PTO shaft match the permitted speed and direction of rotation of the machine.
- Ensure that nobody is in the danger zone of the PTO shaft or the universal shaft.
- If the angles are too large, switch off the PTO shaft. The machine may be damaged. Parts may be flung out and cause injury to persons.
- If the PTO shaft is not required, switch off the PTO shaft.

Danger zone universal shaft

People may become caught by the universal shaft, pulled in and seriously injured.

- Ensure that the universal shaft guards are attached and functional.
- Ensure that nobody is in the danger zone of the PTO shaft or the universal shaft.
- Provide the section tube and universal shaft guards with adequate cover.
- Allow the universal shaft locks to engage.
- Attach the chains to prevent the universal shaft guards from rotating with the shaft.
- Follow the operating instructions for the universal shaft.

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Danger zone due to coasting machine parts

When the drives have been switched off, the following machine parts will coast:

– Universal shaft
– Flywheel
– Baling ram
– Pick-up
– Packer
– Cutting system
– Main gearbox
– Tying
– Drive chains

When machine parts are coasting, people may be seriously injured or killed.

- Shut down and safeguard the machine, see chapter Safety, "Shutting down and safeguarding the machine".
- Do not touch machine parts until they have come to a standstill.

3.4.10 Keeping safety devices functional

If safety devices are missing or damaged, people may be seriously injured or killed by moving machine parts.

- Replace damaged safety devices.
- Re-install all removed safety devices and all other parts and move them into protective position before starting up the machine.
- If it is doubtful whether all safety devices have been correctly installed and are functional, have a service centre check them.

3.4.11 Personal protective equipment

The wearing of personal protective equipment is an important safety measure. Missing or unsuitable personal protective equipment increases health risks and injuries.
Personal protective equipment is for example:

– Work gloves
– Safety boots
– Close-fitting protective clothing
– Hearing protection
– Safety glasses

- Specify and provide personal protective equipment for the particular job.
- Use only personal protective equipment which is in proper condition and offers effective protection.
- Adjust personal protective equipment to the person, for example the size.

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Wear suitable clothing

Loose clothing increases the risk of it becoming caught or wrapped around rotating parts and of it becoming caught on protruding parts. As a result, people may be seriously injured or killed.

- Wear tight-fitting clothing.
- Never wear rings, chains or other items of jewellery.
- Cover long hair with a hairnet.
- Wear sturdy shoes or protective work boots.

3.4.12 Safety signs on the machine

Safety stickers on the machine warn of hazards in danger areas and are an important component of the safety equipment of the machine. Missing safety stickers increase the risk of serious and fatal injuries.

- Clean dirty safety stickers.
- After cleaning, always check that safety stickers are complete and legible.
- Immediately replace missing, damaged and unrecognisable safety stickers.
- Provide spare parts with the designated safety stickers.

Description, explanation and order numbers of the safety stickers, see chapter Safety, "Safety stickers on the machine".

3.4.13 Traffic safety

Dangers when driving on roads and in fields

The attached or coupled work machine changes the handling characteristics of the tractor. The handling characteristics are also dependent on the operational state, the filling or loading and on the ground condition. If the driver does not consider changed handling characteristics, he may cause accidents.

- Observe procedures for driving on roads and in fields, see chapter "Driving and transportation".

Prepare the machine for road travel

If the machine is not prepared properly for road travel, serious accidents may occur with traffic.

- Before travelling on the road, always prepare the machine for road travel, see chapter Driving and transportation, "Preparations for road travel".

Danger of overturning

The machine may overturn when driving on slopes. As a result, accidents may occur and people may be seriously injured or killed. The risk of overturning depends on many factors.

- Observe procedures for driving, see chapter Driving and transportation.

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3.4.14 Parking the machine safely

The parked machine may overturn. People may be crushed and killed.

- Park the machine on a stable and even surface.
- Before adjusting, repairing, servicing or cleaning the machine, ensure that it is securely positioned. If in doubt, support the machine.
- In the chapter Driving and transportation note the section "Parking the machine".

Unattended parking

Adults and children are at risk from an inadequately secured and unattended parked machine with or without a connected front attachment or trailer.

- Before leaving the machine: Shut down and safeguard the machine, see chapter Safety, "Shutting down and safeguarding the machine".

3.4.15 Consumables

Unsuitable consumables

Consumables which do not comply with the requirements of the manufacturer, may impair the operational safety of the machine and cause accidents.

- Use only consumables which comply with the requirements.

For the requirements of fuels, see chapter Description of machine, "Consumables".

Protection of the environment and disposal

Consumables such as diesel fuel, brake fluid, antifreeze and lubricants may damage the environment and the health of people.

- Do not release consumables into the environment.
- Absorb leaked consumables with an absorbent material or with sand, place in a liquid-tight labelled container and dispose of according to the official regulations.

3.4.16 Dangers associated with the operational environment

Danger of fire

Combustible materials can accumulate in the machine due to operation or animals such as rodents or nesting birds. The danger of soiling applies in particular when working in dry or turbulent conditions.

Dust, soiling and harvest residues can ignite on hot parts and cause fires that can seriously injure or kill persons.

- Check and clean the machine every day before using it for the first time.
- Regularly check and clean the machine during the working day.
- Keep the fire extinguisher ready to use at all times.

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3.4.17 Sources of danger on the machine

Noise may lead to health problems

When working with the machine for a longer time, serious health damage may result such as hearing loss, deafness or tinnitus. When using the machine at high speed the noise level increases, as well.

- Before start-up of tractor/machine combination, evaluate the hazard caused by noise. Determine and use hearing protection that is suitable depending on environmental conditions, working hours as well as working conditions and operating conditions of the machine. In this process, consider airborne acoustical noise, refer to chapter Technical Data.
- Define rules for the utilization of hearing protection and for working time.
- When the machine is in operation, keep windows and doors of the cabin closed.
- Remove hearing protection for road travel.

Liquids under pressure

The following liquids are under high pressure:

– Hydraulic oil

Liquids under high pressure may penetrate the body through the skin and cause serious injuries.

- If a damaged pressure system is suspected, immediately contact a qualified service centre.
- Never search for leaks with bare hands. Even a pin-sized hole may cause serious injuries.
- Keep body and face away from leaks.
- If liquids penetrate the body, immediately consult a doctor. The liquid must be removed from the body as quickly as possible. Danger of infection!

Hot liquids

Risk of burns and scalding from hot liquids!

- When draining hot consumables, wear protective gloves.
- If required, leave liquids and machine parts to cool down before performing repair, maintenance and cleaning work.

A damaged compressed air system may damage your health

Damaged compressed air hoses in the compressed air system may cause hoses to tear off. Flailing hoses may cause serious injuries.

- If it is suspected that the compressed air system is damaged, immediately contact a service centre.

Toxic exhaust gases

Exhaust gases may seriously damage your health or be fatal.

- While the engine is running, provide adequate ventilation to prevent prolonged exposure to exhaust gases.
- Do not leave the engine running in a closed room unless there is a suitable exhaust gas extraction system.

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3.4.18 Dangers associated with certain activities: Climbing up and down

Climbing up and down safely

People who behave carelessly when climbing up and down may fall off the ladder. People, who climb onto the machine without using the designated ladders, may slip, fall and seriously injure themselves.

Dirt as well as operating fluids and lubricants may cause you to lose your footing.

- Always keep the steps and platforms clean and in a proper condition to prevent people from losing their footing.
- Never climb up and down while the machine is moving.
- Face the machine when climbing up and down.
- When climbing up and down, maintain a three-point contact with the steps and hand rails (always two hands and one foot or two feet and one hand on the machine).
- When climbing up and down, never use the controls as handles. Inadvertent activation of the controls may cause functions to be unintentionally actuated which could be hazardous.
- When climbing down, never jump off the machine.
- Climb up and down using only the steps and platforms designated in these operating instructions, see chapter Description of machine, "Ladders".

3.4.19 Dangers associated with certain activities: Work on the machine

Work on the machine only when it has been shut down

If the machine has not been shut down and safeguarded, parts may move unintentionally or the machine may start moving. As a result, people may be seriously injured or killed.

- Before performing any work on the machine, such as making adjustments, cleaning, preparing for road travel, preparing for work, servicing or rectifying malfunctions, shut down and safeguard the machine, see chapter Safety "Shutting down and safeguarding the machine".

Maintenance and repair work

Incorrect maintenance and repair work will endanger operational safety. As a result, accidents may occur and people may be seriously injured or killed.

- Only perform work which is described in these operating instructions. Before performing any work, shut down and safeguard the machine, see chapter Safety, "Shutting down and safeguarding the machine".
- All other maintenance and repair work may be performed by a qualified service centre only.

Raised machine and machine parts

The raised machine may accidentally drop, roll away or overturn and crush or kill people.

- Do not stand under the raised machine. First put the machine down.
- Before performing any work under the machine, securely support the machine, see chapter Safety "Securely supporting the raised machine and machine parts".
- Before performing any work on or under raised machine parts, lower the machine parts or secure them mechanically with rigid safety supports or with a hydraulic shut-off device to prevent them from dropping.

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Danger associated with welding work

Improper welding work will endanger the operational safety of the machine. As a result, accidents may occur and people may be seriously injured or killed.

- Before performing welding work on the machine, obtain the consent of KRONE customer service and, if required, identify alternatives.
- Have welding work performed by experienced technicians only.

3.4.20 Dangers associated with certain activities: Working on wheels and tyres

Fitting/removing wheels and tyres

Improper fitting or removal will endanger operational safety. As a result, accidents may occur and people may be seriously injured or killed.
The fitting of wheels and tyres requires adequate knowledge and approved tools.

- If there is a lack of knowledge, have the wheels and tyres fitted by the KRONE dealer or by a qualified tyre service.
- When fitting tyres on the wheel rims, never exceed the maximum permitted pressure specified by the tyre manufacturers, otherwise the tyre or even the wheel rim may explode.
- When fitting the wheels, tighten the wheel nuts to the stipulated torque, see chapter Maintenance "Tyres".

3.4.21 Behaviour in hazardous situations and when accidents occur

Neglected or incorrect procedures in hazardous situations may obstruct or prevent the rescue of people in danger. Difficult rescue conditions will impair the chances of helping and healing the injured.

- In principle: Switch off the machine.
- Gain an overview of the hazardous situation and identify the cause of the hazard.
- Safeguard the accident location.
- Rescue people from the danger zone.
- Withdraw from the danger zone and do not enter again.
- Alert rescue teams and, if possible, fetch help.
- Take immediate life-saving measures.

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3.5 Safety routines

3.5.1 Stopping and securing the machine

WARNING!

Crush hazard due to movement of the machine or machine parts!

If the machine has not been shut down, the machine or machine parts may move unintentionally. As a result, people may be seriously injured or killed.

- Before and after leaving the tractor cab: Shut down and secure the machine and tractor.

To park the machine safely:

- Park the machine on a stable and even surface.
- Switch off the drives and wait until coasting parts have come to a standstill.
- Turn off the tractor engine, remove the ignition key and take it with you.
- Use the parking brakes to secure the machine and tractor from rolling away.
- Apply the flywheel brake at the machine.

3.5.2 Supporting lifted machine and machine parts securely

WARNING!

Risk of injury due to movement of the machine or machine parts

If the machine is not supported securely, the machine or machine parts may roll, fall or drop. As a result, people may be seriously injured or killed.

- Before working on or under raised components: Securely support machine or machine parts.

To securely support the machine or machine parts:

- Shut down and safeguard the machine, see chapter Safety, "Shutting down and safeguarding the machine".
- Before performing any work on or under raised machine parts, lower the machine parts or secure them mechanically with rigid safety supports (e.g. support stand, crane) or with a hydraulic shut-off device (e.g. stop cock) to prevent them from dropping.
- Never support the machine or machine parts with materials which can buckle.
- Never support the machine or machine parts with hollow blocks or bricks. Hollow blocks or bricks may break under continuous load.
- Never work under the machine or machine parts which are held up by a car jack.

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3.5.3 Coupling the machine safely

WARNING!
Risk of injury when coupling the machine
The machine or machine parts may move unintentionally while the machine is coupled to the tractor. As a result, people may be seriously injured or killed.
- When coupling the machine, perform the following steps:

- Never stand between the tractor and the machine while coupling the machine to the tractor.
- Depressurise the tractor hydraulics.
- Switch off the electronic systems.
- Shut down and safeguard the machine, see chapter Safety, "Shutting down and safeguarding the machine".
- Only couple the hydraulic hoses if the hydraulic systems on the tractor and the machine are depressurised.
- Couple the compressed air braking system, depending on the version of the machine.
- Couple the hydraulic brake, depending on the version of the machine.
- Couple and secure the universal shaft.
- Connect the lighting cable.
- Connect the power cable.
- Connect the terminal.

3.5.4 Uncoupling the machine safely

WARNING!
Risk of injury when uncoupling the machine
The machine or machine parts may move unintentionally while the machine is being uncoupled. As a result, people may be seriously injured or killed.
- When uncoupling the machine, perform the following steps:

- Shut down and safeguard the machine, see chapter Safety, "Shutting down and safeguarding the machine".
- Lower the support jack.
- Depressurise the tractor hydraulics.
- Switch off the electronic systems.
- Only uncouple the hydraulic hoses if the hydraulic systems on the tractor and the machine are depressurised.
- Uncouple the compressed air brake, depending on the version of the machine.
- Uncouple the hydraulic brake, depending on the version of the machine.
- Disconnect the lighting cable from the tractor.
- Disconnect the power cable from the tractor.
- Uncouple the universal shaft and place it on the holder provided.
- Never stand between the tractor and the machine when uncoupling the machine from the tractor.

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3.5.5 Preparing the machine for repair, maintenance and adjustment work

WARNING!

Risk of injury during repair, maintenance and adjustment work on the machine.

If the machine has not been shut down, the machine or machine parts may move unintentionally. As a result, people may be seriously injured or killed.

If the machine is not supported securely, the machine or machine parts may roll, fall or drop. As a result, people may be seriously injured or killed.

- Before starting repair, maintenance and adjustment work, perform the following steps:

- Shut down and safeguard the machine, see chapter Safety, "Shutting down and safeguarding the machine".
- The raised machine or machine parts must be securely supported, see chapter Safety "Securely supporting the raised machine and machine parts".

3.5.6 Starting the machine safely

WARNING!

Risk of injury when starting up the machine

If the machine is not started safely, the machine or machine parts may move unintentionally. As a result, people may be seriously injured or killed.

- Before starting up the machine, ensure that the following prerequisites are met:

– The hydraulic lines are coupled.
– The compressed air brake is coupled (depending on equipment).
– The hydraulic brake is connected (depending on equipment).
– The universal shaft is coupled and secured.
– The lighting system is connected.
– The terminal is connected.
– The safety chain is attached (not stipulated in all countries).
– All safety devices are fitted, in proper condition and in the protection position.
– The PTO speed of 1000 rpm is not exceeded.
– The universal shaft prescribed by the manufacturer is used.
– The hoses, cables and ropes are laid out so that they do not chafe, are not under tension, pinched or come into contact with other components (e.g. tractor tyres).
– The flywheel brake is released.
– Machine parts of the tractor do not come into contact with parts of the machine (especially when turning).
– No persons are standing in the danger zone of the machine.

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3.6 Safety stickers on the machine

WARNING!

Danger of injury on machine parts if danger zones have not been marked when warning pictograms are missing, damaged or illegible.

Danger of injury due to dangerous parts and other residual risks as users or third parties enter the danger area or reach into it as they are not aware of the danger.

- Immediately replace damaged or illegible labels.
- Following repair work, always attach appropriate adhesive safety labels to all the replaced, modified or repaired components.
- Never clean areas carrying an adhesive safety label using a high-pressure cleaner.

  Familiarise yourself with the statement of the warning pictograms. The adjacent text and the selected location on the machine provide information on the special danger spots on the machine.

The KRONE BiG PACK baler is equipped with all safety devices (protective equipment). However, it is not possible to eliminate all potential hazards on this machine as this would impair its full functional capability. Hazard warnings are attached to the machine in the relevant areas to warn against any dangers. The safety instructions are provided in the form of so-called warning pictograms. Important information on the position of these safety signs and what they mean is given below!

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Design without cutting system

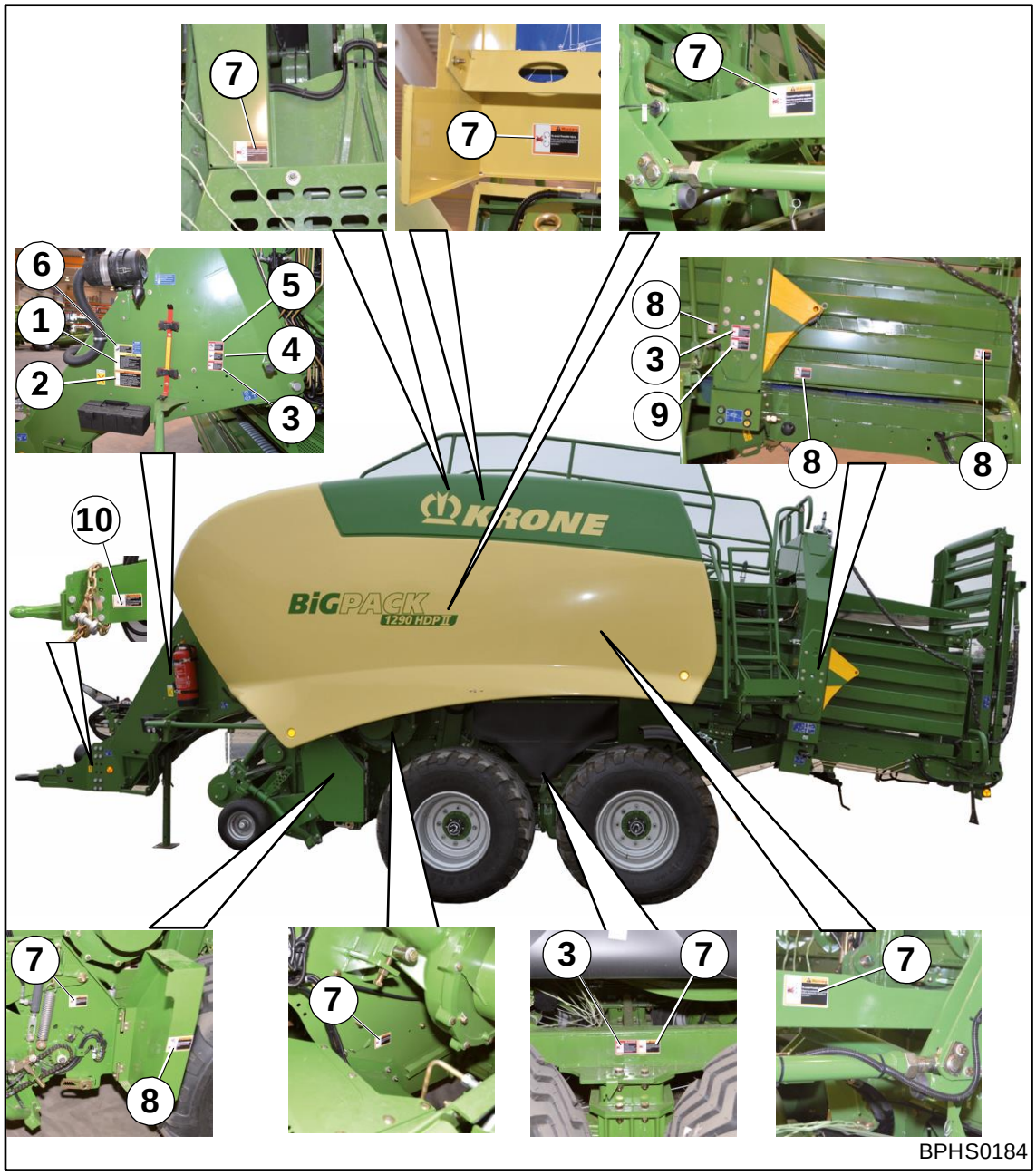

Fig. 1 Left-hand side of the machine

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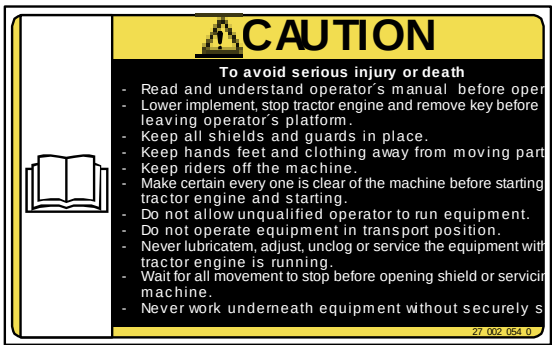
1)



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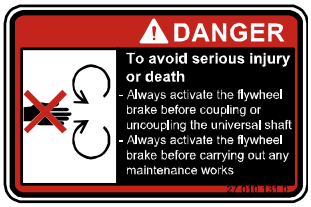
2)

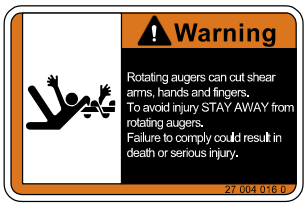
Order No. 27 008 200 0 (1x)

3)



Order No. 27 010 131 0 (3x)

4)



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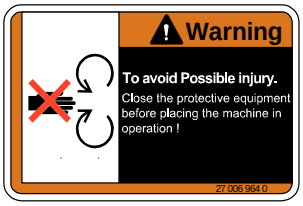
5)

Order No. 27 008 199 0 (1x)

6)

Order No. 27 002 059 0 (1x)

7)



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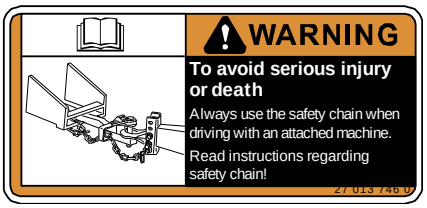
8)

Order No. 27 002 057 0 (4x)

9)

Order No. 27 010 132 0 (1x)

10)



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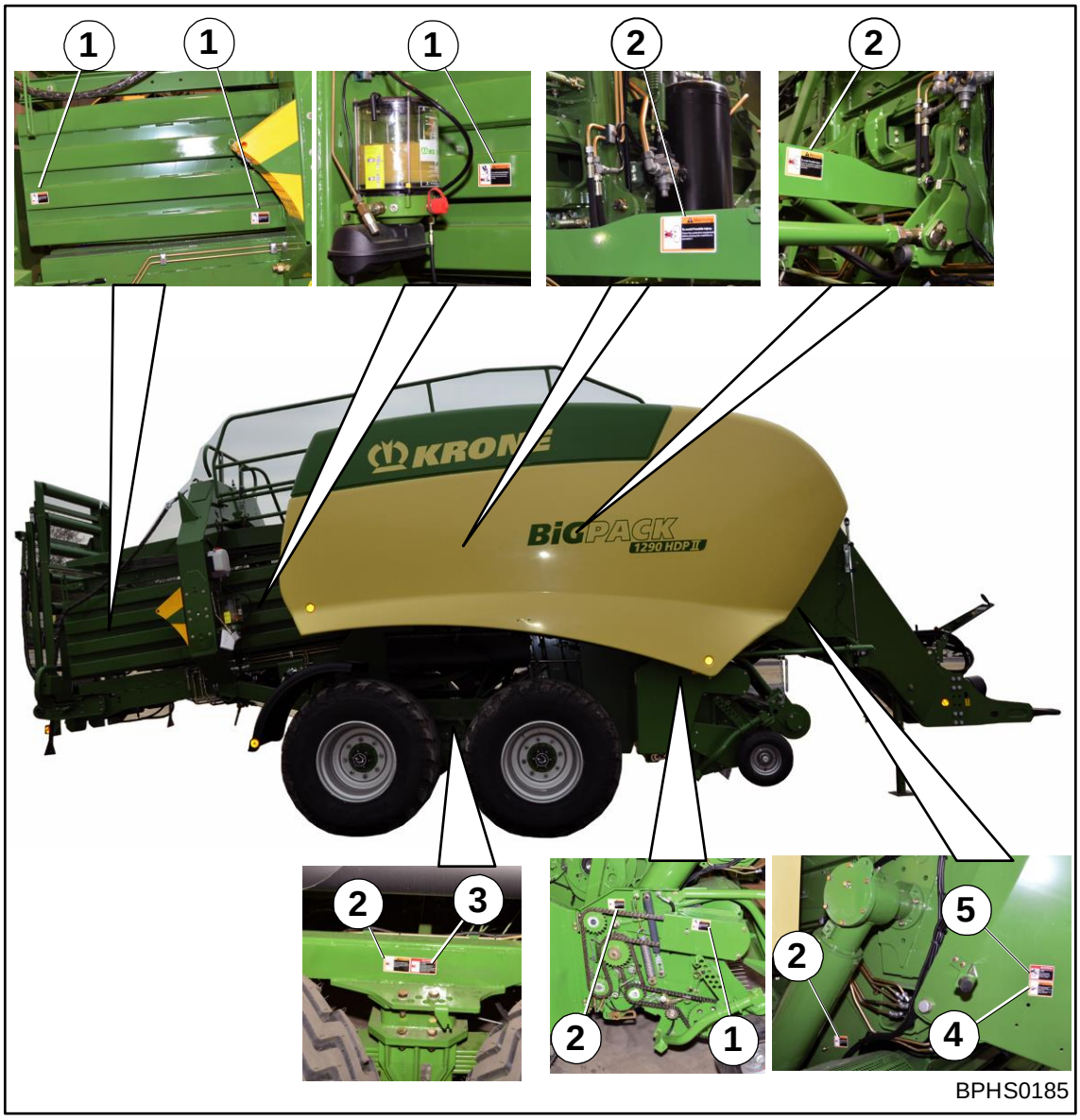

Fig. 2 Right-hand side of the machine

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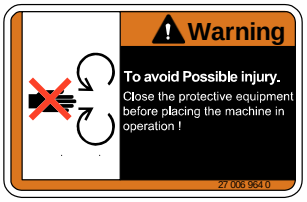
1)

Order No. 27 002 057 0 (4x)

2)



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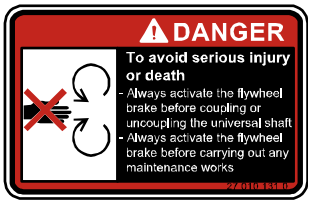
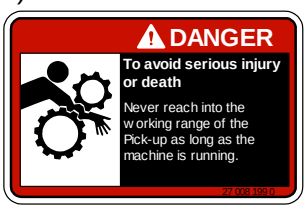


Order No. 27 010 131 0 (1x)

4)

Order No. 27 004 016 0 (1x)

5)



Order No. 27 008 199 0 (1x)

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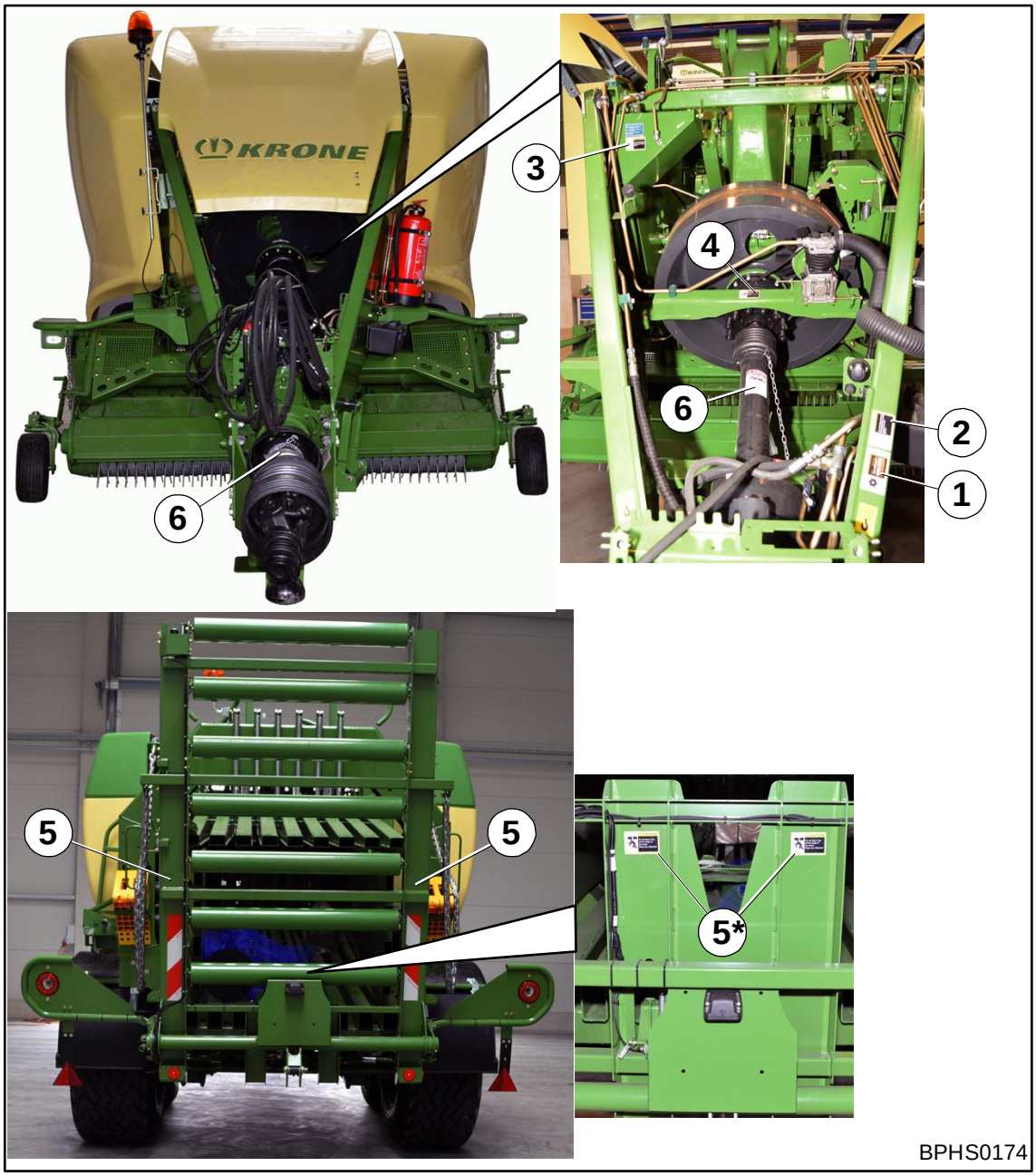

Fig. 3 View front / rear

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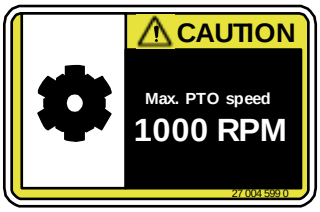
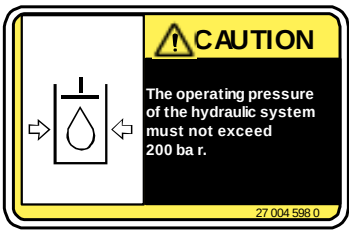
1)



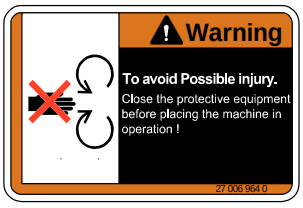
Order No. 27 004 599 0 (1x)

2)



Order No. 27 004 598 0 (1x)

3)



Order No. 27 006 964 0 (1x)

4)

Order No. 27 010 133 0 (1x)

5)

5*) for the bale balance option

Order No. 27 010 252 0 (2x)

6)

Order No. 949 228 0 (2x)

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3.7 Position of the Adhesive Safety Stickers on the Machine

Design with cutting system

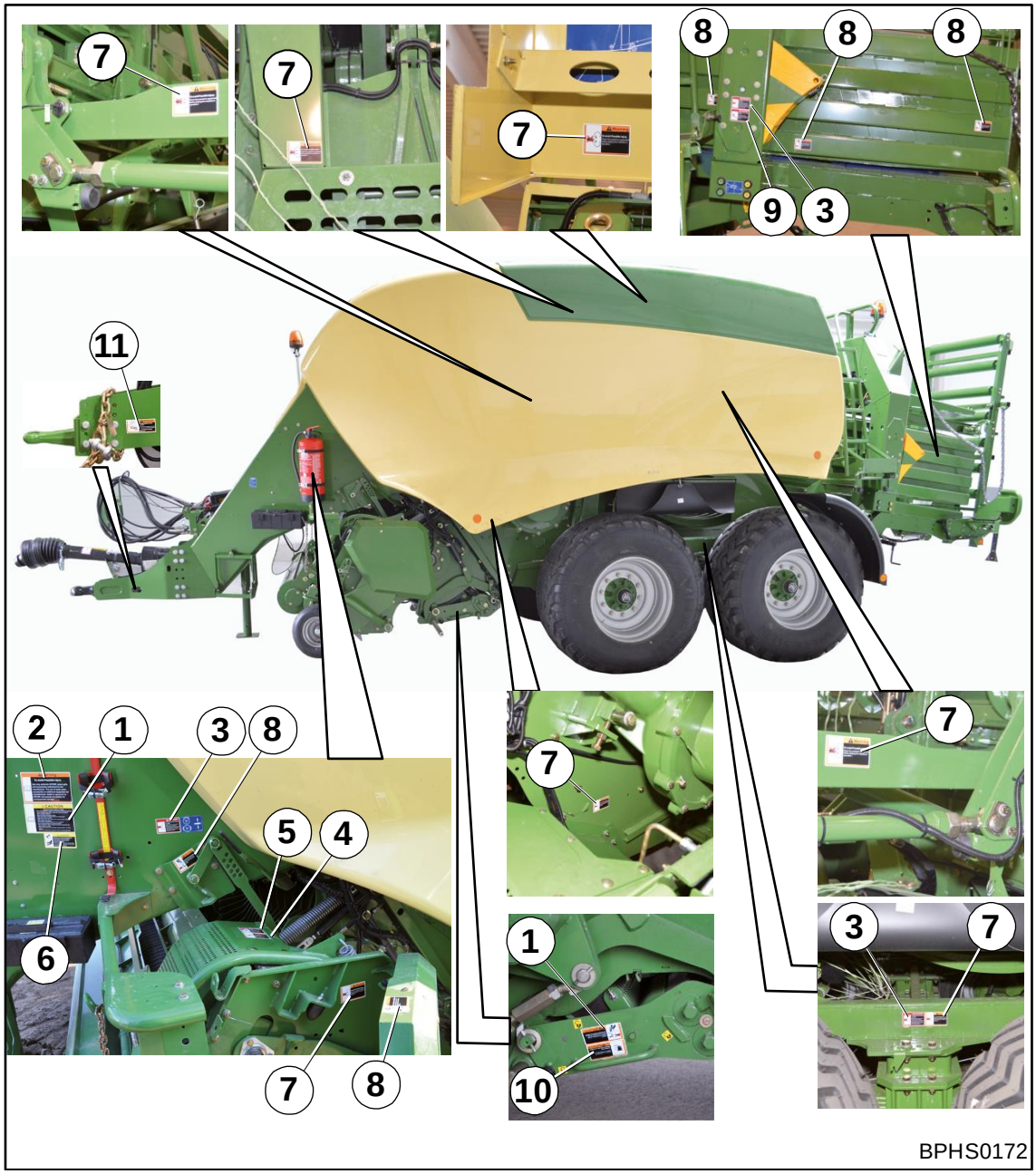
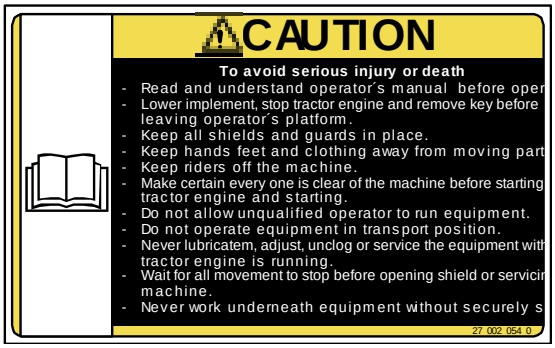


Fig. 4 Left-hand side of the machine

1)



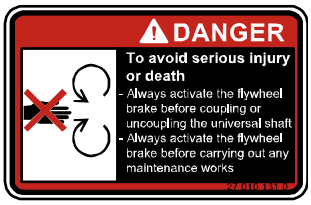
Order No. 27 002 054 0 (1x)

2)

Order No. 27 008 200 0 (1x)

https://truckmanualshub.com/

3)



Order No. 27 010 131 0 (3x)

4)

Order No. 27 004 016 0 (1x)

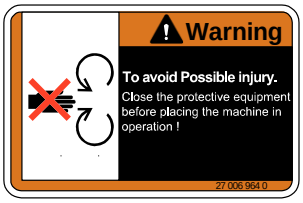
5)

Order No. 27 008 199 0 (1x)

6)

Order No. 27 002 059 0 (1x)

7)



Order No. 27 006 964 0 (7x)

8)

Order No. 27 002 057 0 (5x)

9)

Order No. 27 010 132 0 (1x)

10)

Order No. 27 001 201 0 (1x)

11)

Order No. 27 013 746 0 (1x)

https://truckmanualshub.com/

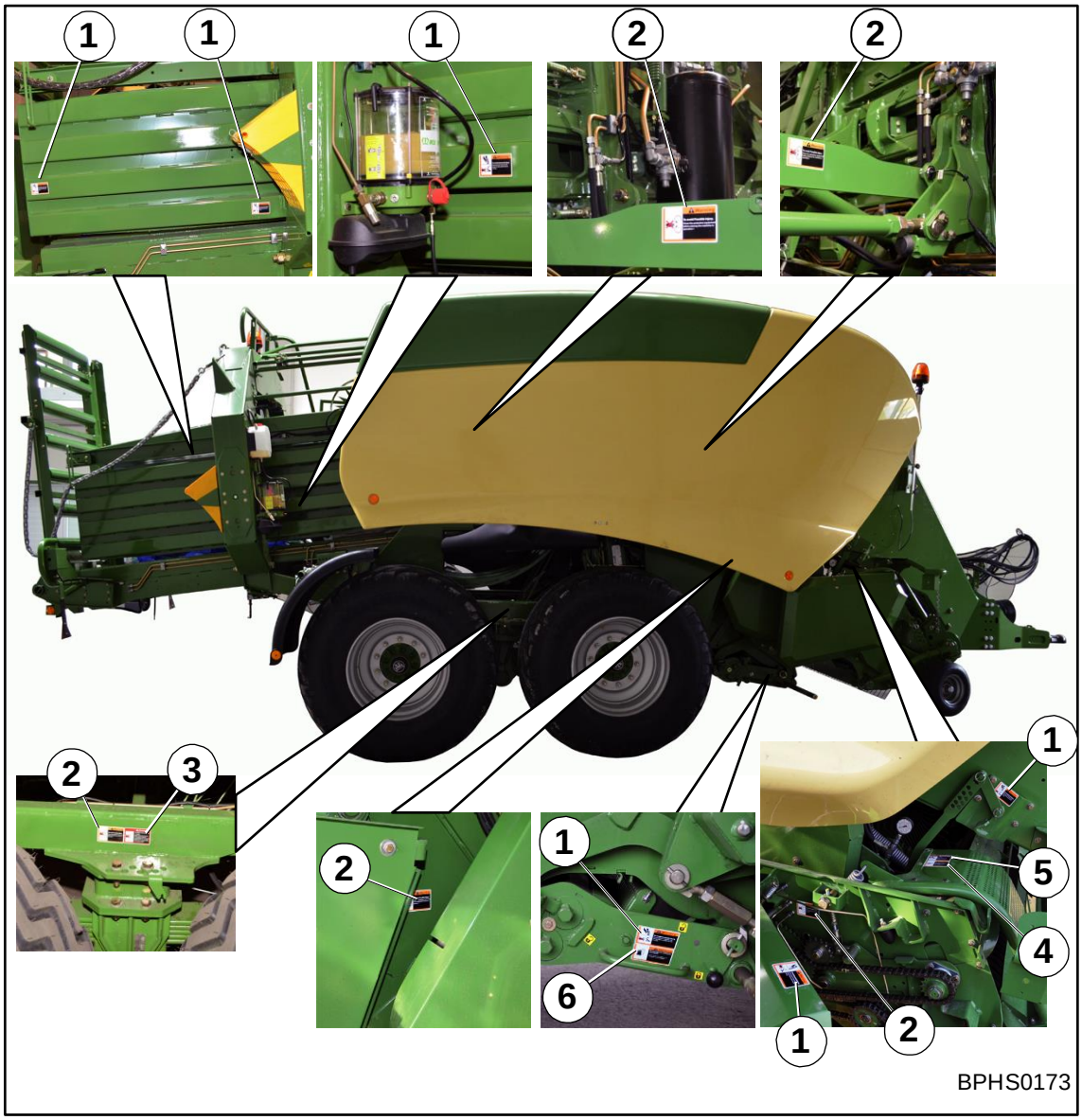


Fig. 5 Right-hand side of the machine

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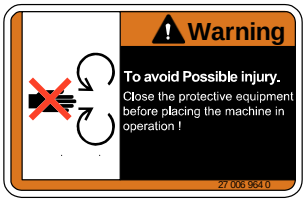
1)

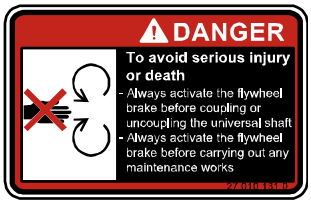
Order No. 27 002 057 0 (6x)

2)



Order No. 27 006 964 0 (5x)

3)



Order No. 27 010 131 0 (1x)

4)

Order No. 27 004 016 0 (1x)

5)

Order No. 27 008 199 0 (1x)

6)

Order No. 27 008 201 0 (1x)

https://truckmanualshub.com/

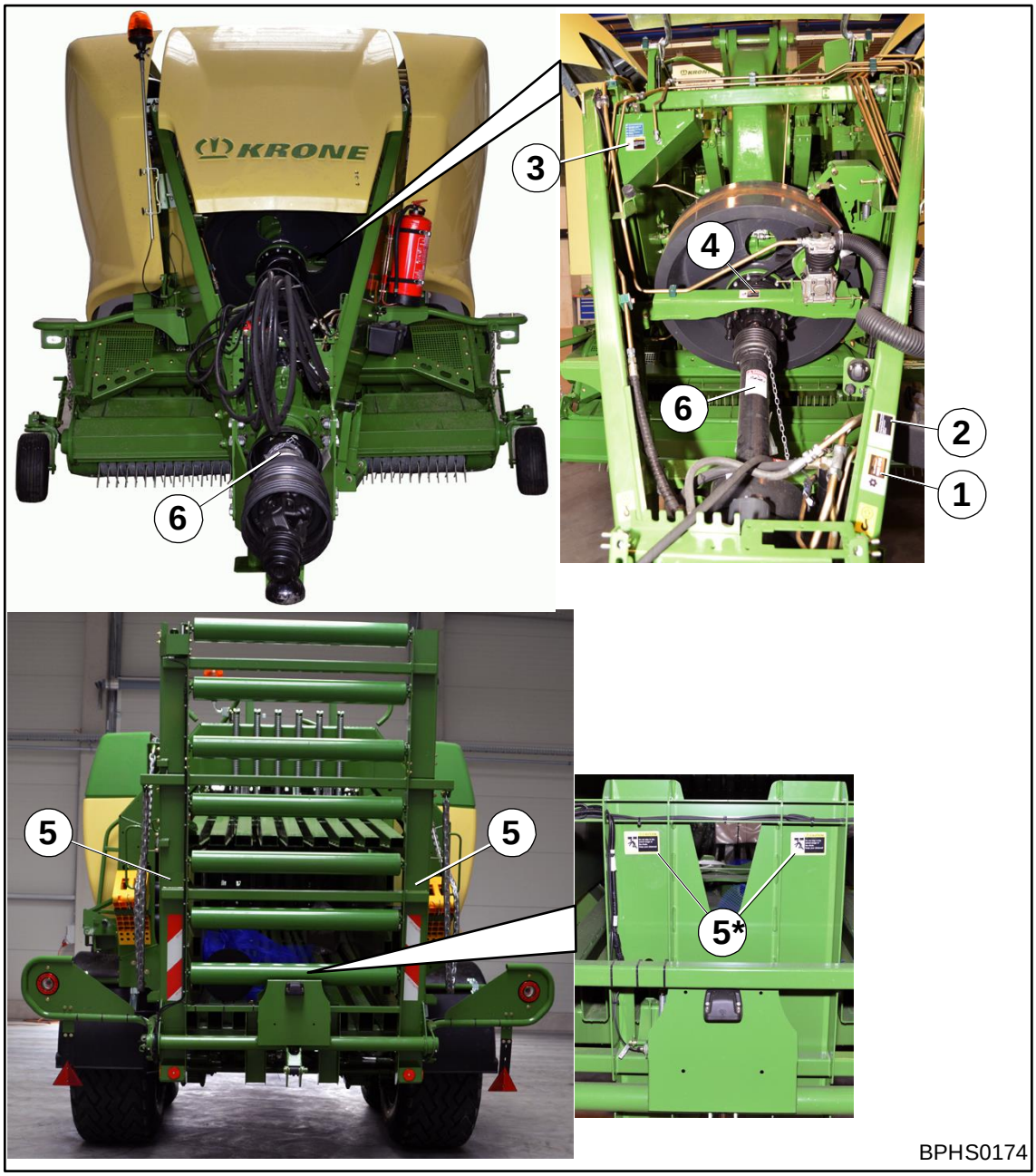


Fig. 6 View front / rear

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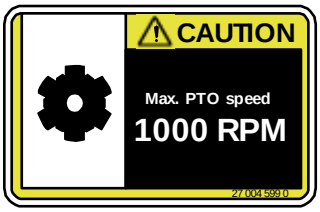
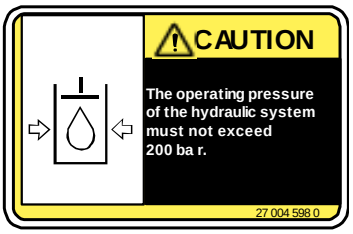
1)



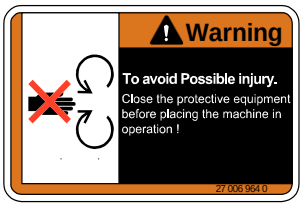
Order No. 27 004 599 0 (1x)

2)



Order No. 27 004 598 0 (1x)

3)



Order No. 27 006 964 0 (1x)

4)

Order No. 27 010 133 0 (1x)

5)

5*) for the bale balance option

Order No. 27 010 252 0 (2x)

6)

Order No. 949 228 0 (2x)

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3.7.1 Re-Ordering Safety Labels and Information Labels

Note

Each safety and information label is provided with an order number and can be ordered directly from the manufacturer or from authorised dealer (refer to chapter “Contact Person”).

3.7.2 Attaching Safety Labels and Information Labels

Note - Attaching a label

Effect: Adhesion of label

- The attachment area must be clean, dry and free from dirt, oil and grease.

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3.7.3 Contact

Mailing address Krone North America, Inc. P.O. Box 18880 Memphis, TN 38181-0880 USA	**Physical address** Krone North America, Inc. 3363 Miac Cove Memphis, TN 38118 USA
Phone	+1 901 842-6011
Fax	+1 901 842-6016
E-mail	info@krone-northamerica.com
Internet	www.krone-northamerica.com

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3.8 Safety Equipment

3.8.1 Ladder

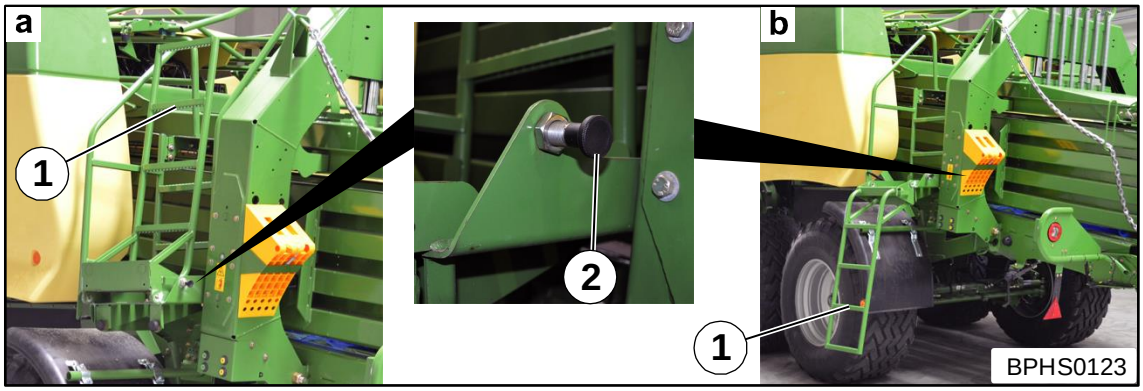

Fig. 7

a) = Road position

b) = Ascending / descending position

There is a ladder (1) on the left side of the machine at the rear next to the baling channel that can be used, among other things, for maintenance work on the knotting mechanism.

Ladder

The ladder (1) must be folded down for the ladder to the top of the machine.

- Pull the locking lever (2) and fold down the ladder.

Road transport / field work

When the machine is travelling on the road and working in the field, the ladder to the driver's cab (1) must be folded into the road position (a) and secured.

- Release lock (2) and fold in ladder (a) until lock (2) engages

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3.8.2 Safety railing

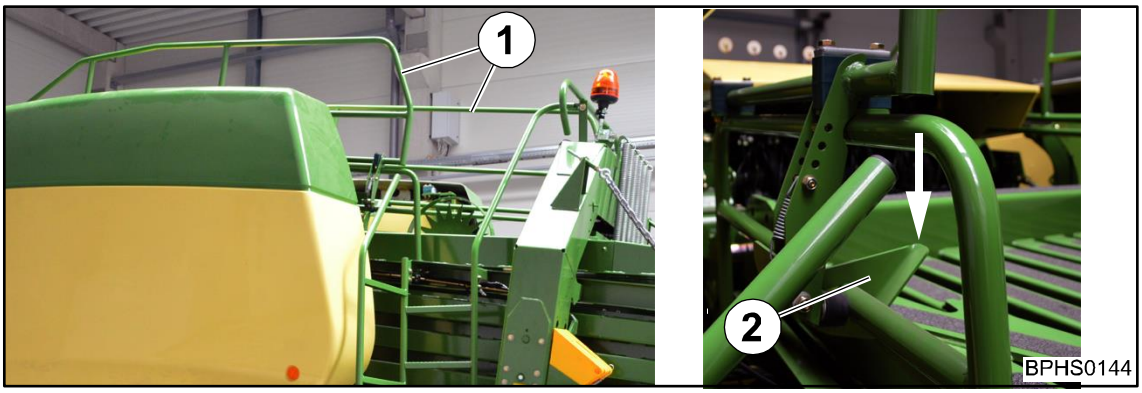

Fig. 8

The safety railing protects persons when performing work in the upper area of the machine.
Every time the platform is used, the safety railing (1) must be swivelled up.

To do this:

- Swivel up the safety railing (1) manually until the locking (2) engages.

When leaving the platform, swivel down the safety railing (1).

To do this:

- Release locking (2) with the foot and swivel down the safety railing.

3.8.3 Fire extinguisher

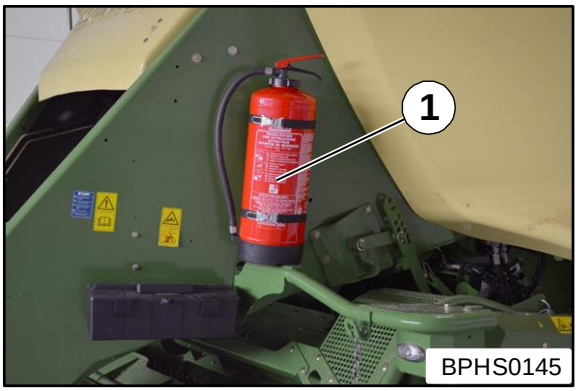

Fig. 9

The machine is equipped with a fire distinguisher (1) ex works.
The fire extinguisher (1) is at the front of the drawbar on the left when facing in the direction of travel.

- Place the fire extinguisher (1) in the provided position on the machine before start-up

Have the fire extinguisher registered. This is the only way to ensure that all the required inspections (every two years) will be performed.

The inspection intervals may differ from one country to another. In this case, the instructions on the fire extinguisher of the respective countries shall be applicable.

- Follow the instructions of the respective countries

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3.8.4 Wheel chocks

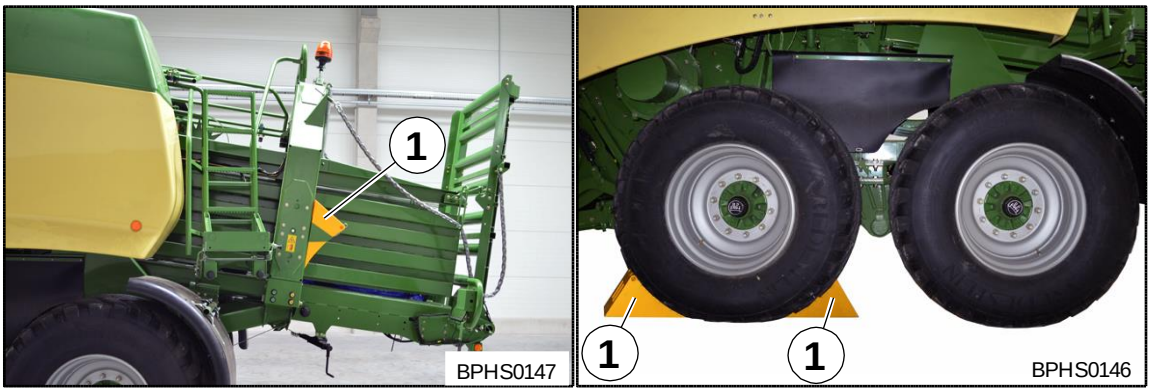

Fig. 10

The wheel chocks (1) are located rear right and left next to the bale channel.

- Place one wheel chock in front of the wheel and one behind the wheel of the front axle to secure the machine against rolling.

3.9 Parking Brake

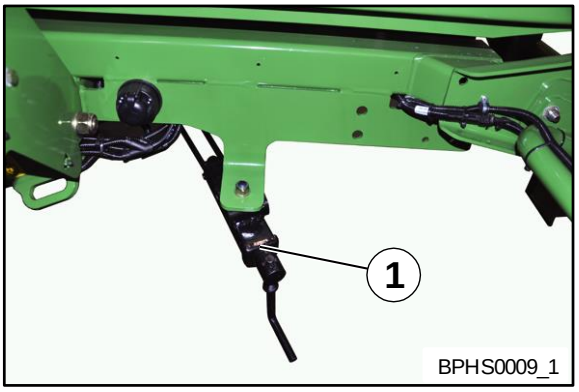

Fig. 11

The crank handle (1) of the parking brake is located at the left rear side of the large square baler under the bale channel.

The parking brake is used to secure the machine from rolling away accidentally, especially when the machine is disconnected from the tractor.

To apply the parking brake:

- Turn the crank handle clockwise until the resistance grows noticeably greater.

To release the parking brake:

- Turn the crank handle anti-clockwise until the brake cable is slightly slack.

Note

To prevent the machine from rolling away, use the wheel chocks in addition to the parking brake.

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3.10 Flywheel brake

CAUTION! - Flywheel brake not released!
Effect: Damage to the machine
Before engaging the P.T.O. shaft always release the flywheel brake first.

Fig. 12
Pos. a = flywheel unbraked Pos. b = flywheel braked

The flywheel brake of the flywheel is located on left-hand machine side on the drawbar.
The flywheel brake (1) prevents unexpected start-up of mobile parts of the baler when eliminating malfunctions, carrying out setting work, cleaning work, repair work or maintenance work. The flywheel is held by means of brake strap.

- **To activate the flywheel brake, move brake lever (1) on the flywheel from position (a = unbraked) to position (b = braked). The flywheel is now braked.**

When the electronics of the machine is turned on, a hoot will sound.

If the flywheel is braked, no pressure builds up in the bale channel.

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3.11 Hydraulic parking jack

Note
In order to increase the base of the support jack when the ground is soft, use a suitable support.

Fig. 13

As long as the machine is not connected to the tractor, the drawbar is supported on the parking support.

Medium Version Electronics

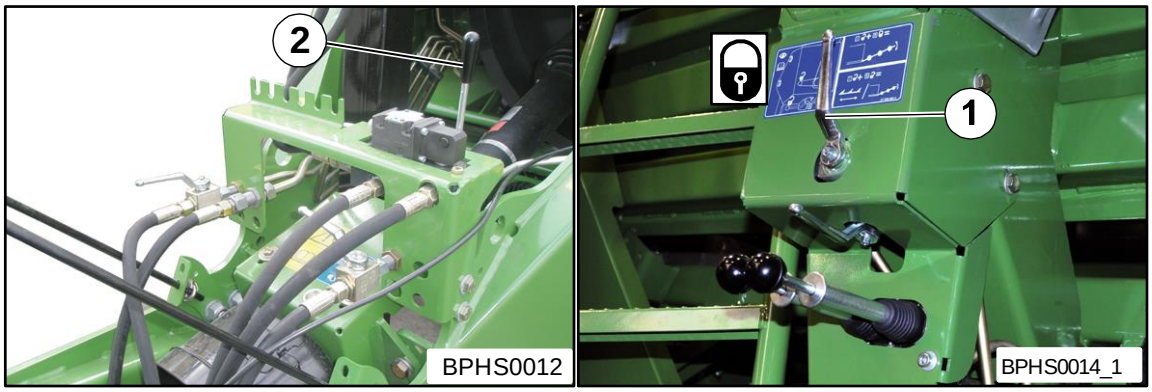

Fig.14

In order to deploy the hydraulic parking jack the shut-off valve at the rear of the machine must first be closed.
The hydraulic parking jack is retracted and extended via lever (2).

Comfort - Electronic

The hydraulic support jack is actuated from the double-acting control unit (blue 2+/blue 2-).

Stop cock on the support jack

The stop cock on the support jack is designed as a safety component to prevent the unintentional actuation of the support jack. Always close the stop cock when transporting the machine; the lever points in the direction of the line.

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3.12 Shut-Off Valve Pick-up

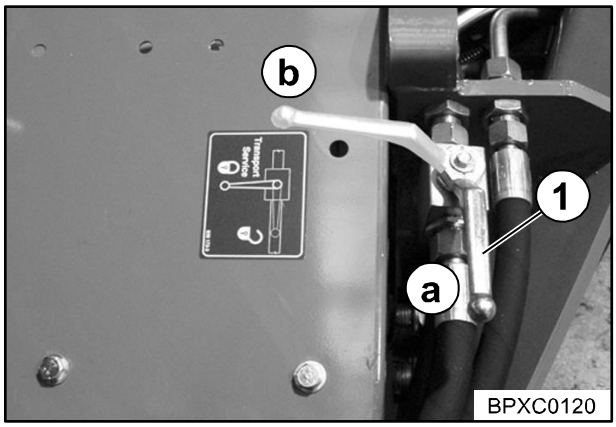

Fig. 15

Position (a) pick-up released Position (b) pick-up locked

Always lock the pick-up via shut-off valve (1) when transporting the machine or when working under the baler.

The shut-off valve is located on the left front machine side on the drawbar.

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3.13 Twine Boxes

Comfort - Electronic

The twine boxes protect persons against the access to moveable machine parts of the machine. When driving on the road or when working on the field, always make certain that the twine boxes are raised.

Medium Version Electronics

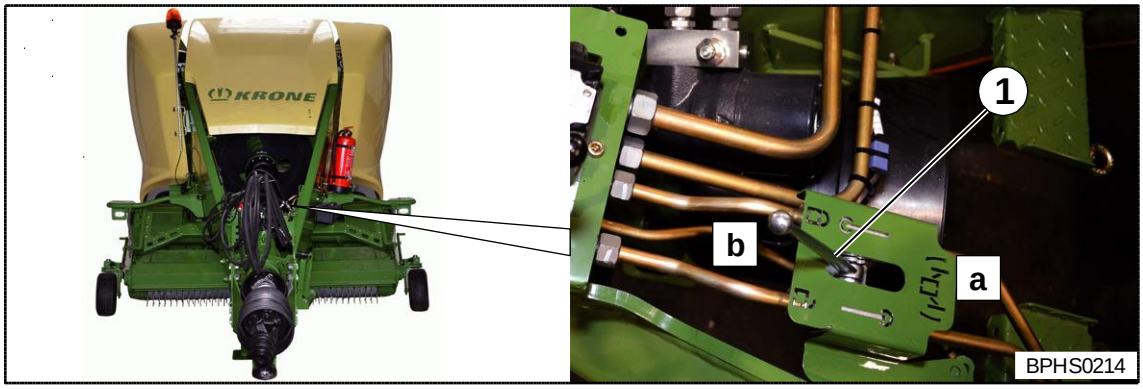

Fig. 16

Position (a) twine boxes released Position (b) twine boxes locked

The twine boxes protect persons against the access to moveable machine parts of the machine. When driving on the road or when working on the field, always make sure that the twine boxes are raised and that they are secured by shut-off valve (1).

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4 Data memory

A variety of electronic components of the machine contains data memories that save temporarily and permanently technical information on machine condition, events and errors. This technical information generally documents the condition of a part, module, system or of the environment:

– Operating states of system components (e.g. filling levels)

– Status messages of the machine and its single components (e.g. number of revolutions of wheel, wheel speed, retardation of movements, lateral acceleration)

– Malfunctions and defects in important system components (e.g. light and brakes)

– Reactions of machine in special driving situations (e.g. actuation of airbag, installing stability control systems)

– Ambient conditions (e.g. temperature)

These data are exclusively of a technical nature. They are used to detect and remedy errors as well as to optimize machine functions. There is no possibility to create motion profiles on driven routes from these data.

If services are occupied (e.g. repair services, service processes, warranty cases, quality assurance), this technical information can be read by employees of service network (including manufacturer) from the event and error data memory by means of special diagnostic units. There you receive further information, if necessary. After the error has been remedied, the information in the error storage is either deleted or overwritten continuously.

When using the machine, situations are possible in which these technical data in connection with other information (accident protocol, damage to the machine, testimonies etc.) could become transferable to people - if applicable in consultation with an expert.

Additional functions regulated by a contractual agreement with the customer (e.g. remote maintenance) permit the transmission of certain machine data from the machine.

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5 Machine Description

5.1 Machine overview

Left-hand side of the machine

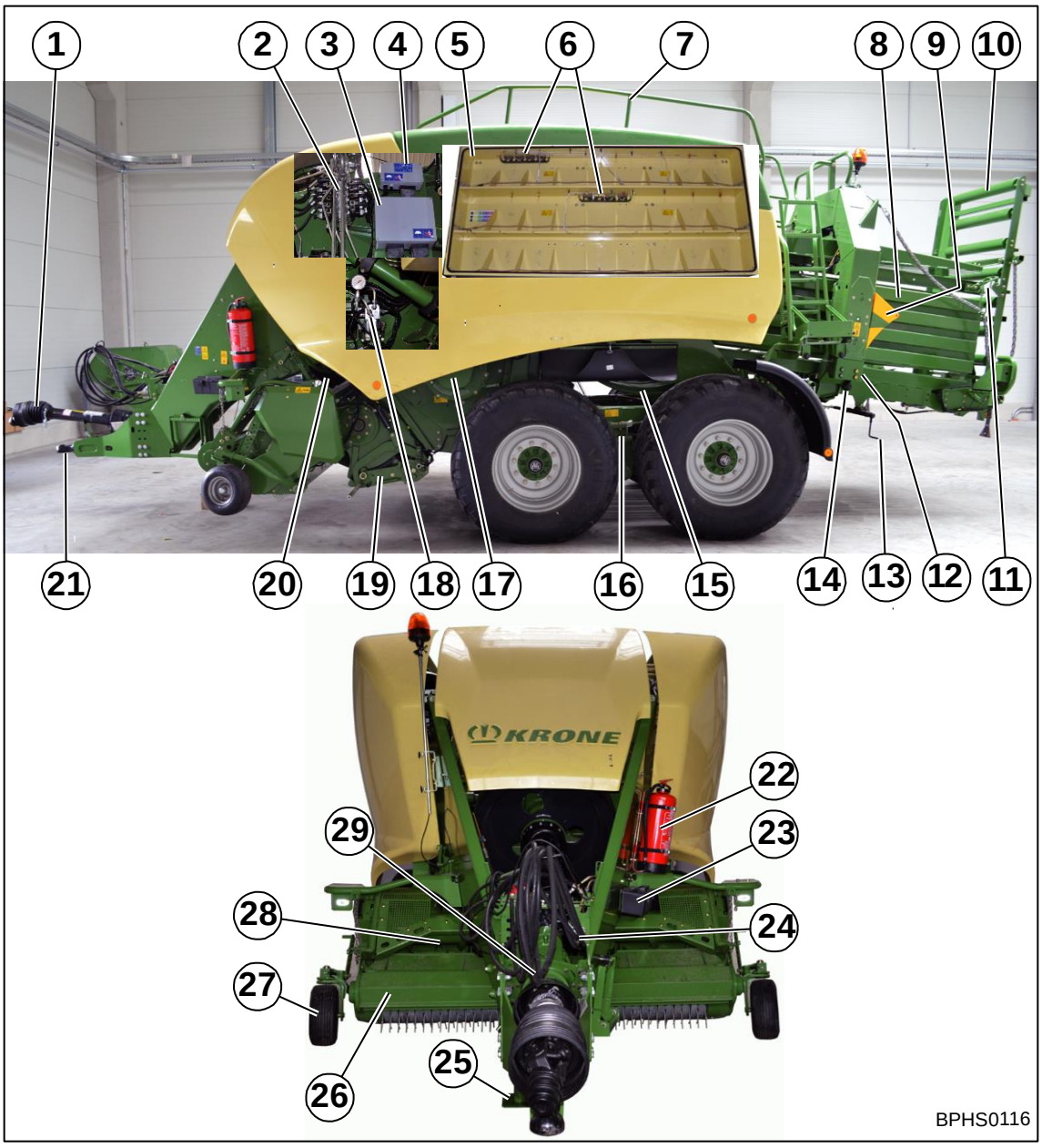

Fig. 17

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1)	Wide-angle universal shaft	2)	Control valve block (work hydraulics) only for comfort version electronics design
3)	Job computer 1	4)	Job computer 2
5)	Twine box left	6)	Twine brake
7)	Safety railing	8)	Moisture measurement (optional)
9)	Wheel chock	10)	Bale chute (optionally fitted with bale balance)
11)	Mechanical locking of the roller chute	12)	Manual operation: **Comfort version electronics:** Roller chute and bale ejector **Medium version electronics:** Bale chute, bale ejector and parking jack
13)	Crank for parking brake	14)	12V socket
15)	Twine control and tensioning device (lower twine)	16)	Tandem unit coaster/steering axle
17)	Packer drum drive	18)	Pressure limiting valve on-board hydraulic system
19)	Cutting system (optional)	20)	“Flywheel” parking brake
21)	Towing eye	22)	Fire extinguisher
23	Tool box	24)	Shut-off valve for pick-up
25)	Parking jack	26)	Roller crop guide
27)	Pick-up jockey wheel	28)	Feed drive roller
29)	Angular gear with starting aid		

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Right-hand side of the machine

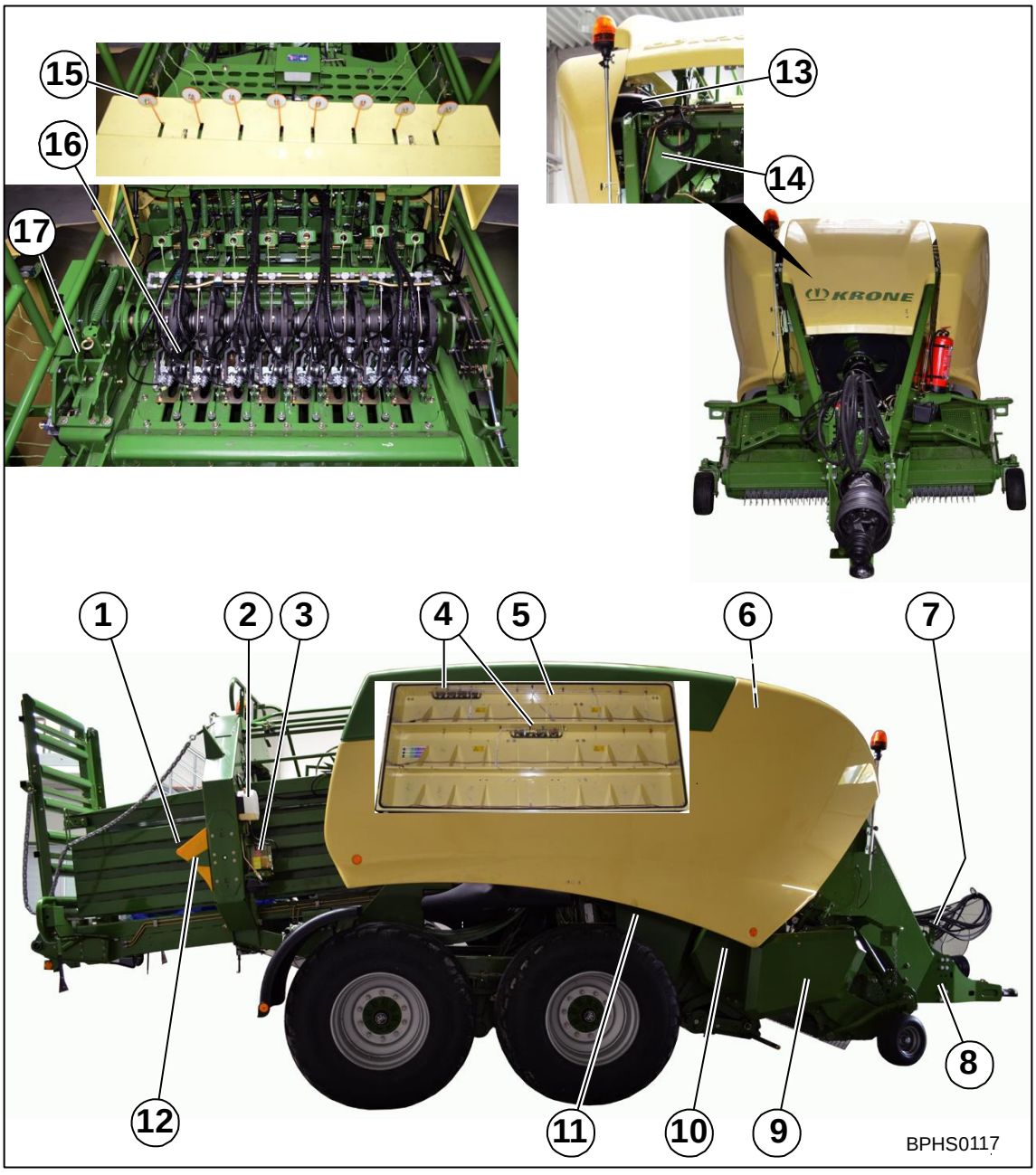

Fig. 18

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1)	Moisture measurement (optional)	2)	Chain lubricator
3)	Central lubrication (grease)	4)	Twine brake
5)	Twine box right	6)	Compressed air reservoir (knotter cleaning)
7)	Support for quick couplings and plug	8)	Drawbar
9)	Pick-up drive	10)	Cutting system drive
11)	Variable Filling System (VFS)	12)	Wheel chock
13)	Compressed air reservoir for the compressed air brake version	14)	Hydraulic oil storage tank
15)	Twine motion indicator (upper twine)	16)	Tying unit (double knotter)
17)	Manual release knotter and knotter shaft lock		

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5.2 Identification Plate

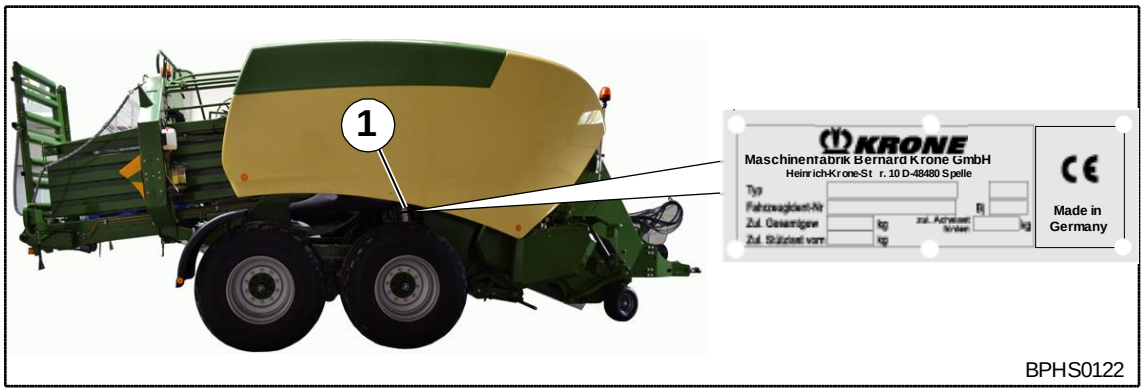

Fig. 19

The machine data can be seen on a type plate (1). It is located centred on the right-hand side of the machine below the twine box.

5.3 Information Required for Questions and Orders

Type	
Year of manufacture	
Vehicle ID number	

Note

The entire identification plate represents a legal document and should not be altered or rendered illegible!

When asking questions concerning the machine or ordering spare parts, be sure to provide type designation, vehicle ID number and the year of manufacture : To ensure that these data are always available, we recommend that you enter them in the fields above.

Note

Authentic KRONE spare parts and accessories authorised by the manufacturer help to ensure safety. The use of spare parts, accessories and other devices which are not manufactured, tested or approved by KRONE will result in the revoking of the liability for damages resulting thereof.

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5.4 Description of the Baling Process

When switching on the terminal, the terminal shows at first the manual mode basic screen.

Starting with an empty bale channel

In manual mode, pre-set the target bale channel flap pressure to 50 bar / 725 PSI (in case of dry crops, e. g. straw) and to 25 bar / 362 PSI (in case of silage). Do not pick up the swath until the set target bale channel flap pressure is reached in the terminal to ensure that the bale is complete and to prevent the bale channel flaps from bending out of shape.
Press two bales in manual mode to fill the bale channel completely.

To always achieve the same solidity of bales automatically with materials of different properties (for example with differing moisture content of materials on the same field), you should then switch into Automatic mode.

In automatic mode, the target force of pressure must be set to a high enough level so that the bale has the desired bale firmness.

The contact pressure of the bale channel flaps in the bale channel is controlled automatically by the job computer so that the pre-selected baling force is reached.

As the material becomes moister, it becomes more difficult to compress the bales. Because of this, the bale channel flap pressure is reduced somewhat. As the material becomes drier, the bale channel flap pressure increases again. Thus the pressure display may deviate significantly in the display. Bale quality and bale firmness remain constant.

Starting with full bale channel

Do not switch to automatic mode until the target bale channel flap pressure has been reached in manual mode.

If baling should be done in manual mode, do only pick up the swath if the target bale channel flap pressure has been reached.

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5.5 Compacting the BiG Bale

The machine enables pressing hay and straw to a highly compacted big bale (square balers). The square baler is compacted in eight steps.

1. The crop is picked up by the pick-up.
2. The roller crop guide with the feed drive roller behind ensures a trouble-free pick-up of the crop.

   Design without cutting system:

   - The integrated feed drive roller conveys the crop to the packer drum.

   Design with cutting system:

   - The integrated feed drive roller conveys the crop to the cutting rotor and then further to the packer drum.
3. The packer drum fills the packer channel as well as the conveyor channel.
4. When a determined filling level has been reached, the feeler rocker is swung back and the bale channel is filled via the feeder packer with the crop.
5. The crop is pressed in the bale channel to a highly compacted big bale.
6. The knotting mechanism is triggered and the big bale is tied after the set bale length has been reached.
7. The next big bale conveys the big bale further to the bale chute. From the bale chute, the big bale is laid down on the field.
8. The last big bale is conveyed to the bale chute via the bale ejector.

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5.6 Drives

5.6.1 Main drive

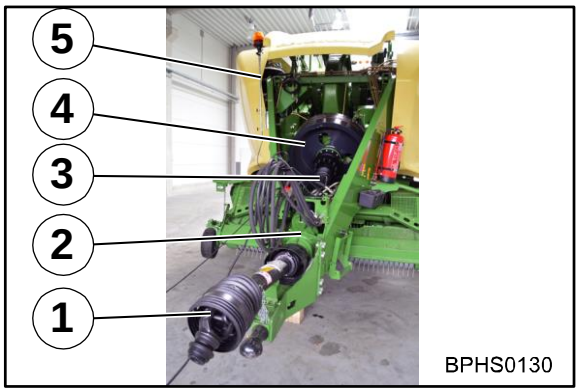

Fig. 20

The drive PTO shaft (1) transmits the drive output of the tractor further to the angular gear (2). The angular gear increases the drive speed from 1000 rpm to 1160 rpm.
Additionally, a start-up device is integrated in the angular gear. The angular gear transmits the force further to the intermediate universal shaft (3). The intermediate universal shaft drives the flywheel (4). The flywheel drives the main gearbox (5).

The main gearbox

The main gearbox distributes the force further to the right and left and drives the following gearboxes:

Left-hand side of the machine:

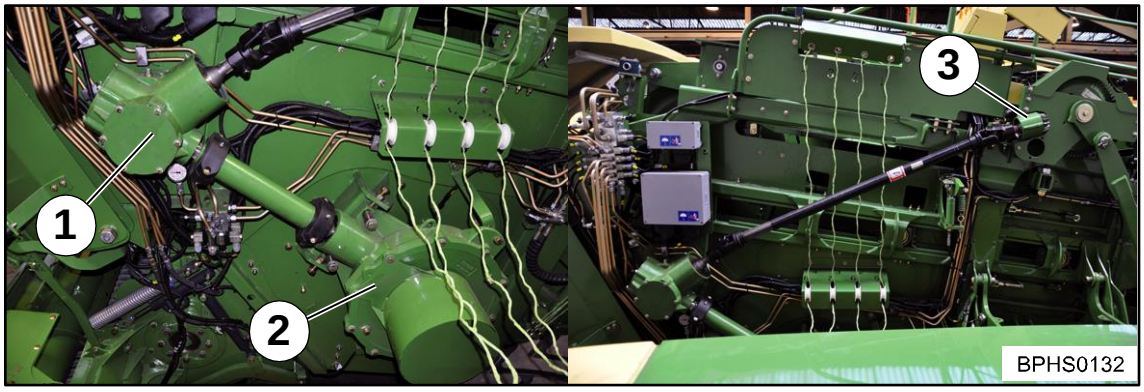

Fig. 21

The main gearbox drives the transfer gearbox (1). The transfer gearbox drives the packer gearbox (2) and the knotter gear (3).

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Right-hand side of the machine, depending on the version of the machine:

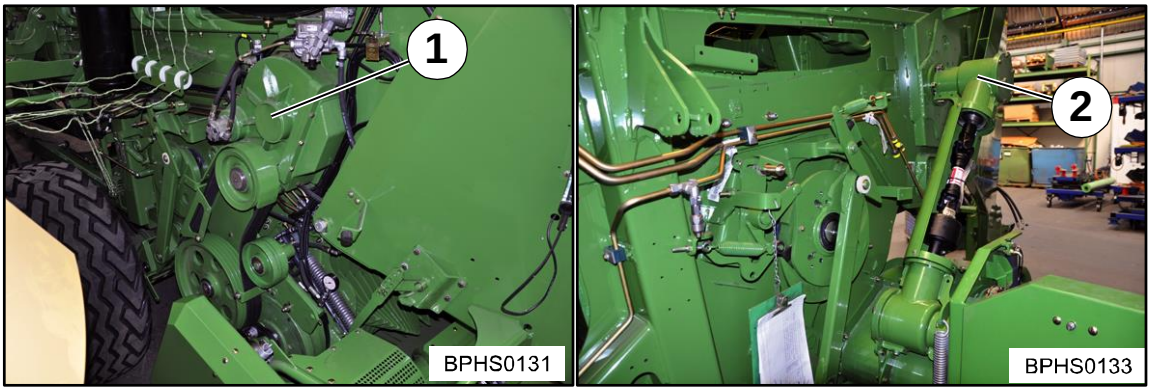

Fig. 22

The main gearbox drives the cutting system gear (1) (on machines with cutting system).
The main gearbox drives the upper pick-up gearbox (2) (on machines without cutting system).

5.7 Overload Protections on the Machine

The following components are protected by overload protections against damages.

5.7.1 Main drive

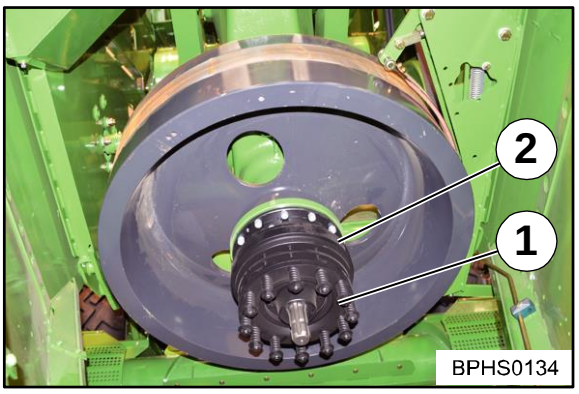

Fig. 23

A friction clutch (1) and a cam-type clutch (2) are located on the flywheel.

The friction clutch (1) protects the tractor, the drive PTO shaft and the intermediate universal shaft against load peaks.

The cam-type clutch (2) protects the machine against load peaks.

Note

As soon as the coupling responds, stop the tractor, disengage the P.T.O. shaft without delay and brake the flywheel. After the fault is rectified, the cam-type clutch engages again automatically.

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5.7.2 Feeder Packer

Fig. 24

A cam-type clutch is located on the packer gearbox.
The cam-type clutch protects the packer gearbox against load peaks.

Note
As soon as the overload coupling responds, stop the tractor and reduce the speed until the machine has cleared itself again. The overload coupling now automatically resumes its work.
An error message appears in the display of the control unit.

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5.7.3 Pick-up Drive

Fig. 25

Design with cutting system — Design without cutting system

For design with cutting system:

A cam-type clutch, star ratchet (1) design, can be found on the chain drive of the pick-up.

The cam-type clutch protects the chain drive of the pick-up against load peaks.

For design without cutting system

A cam-type clutch, star ratchet (1) design, is located on the lower pick-up gearbox on the lower end of the drive PTO shaft.

The cam-type clutch protects the pick-up drive against load peaks.

Note

As soon as the overload coupling responds, stop the tractor and reduce the speed until the machine has cleared itself again. The overload coupling now automatically resumes its work.

An error message appears in the display of the control unit.

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5.7.4 Needle Yoke

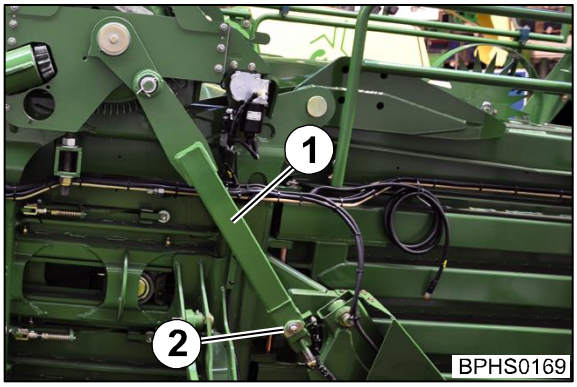

Fig. 26

Shear screw

The connecting rod (1) of the needle yoke is secured by a shear screw, right and left machine side.

The shear screw protects the needle yoke against load peaks.

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5.8 Pick-up

Design with cutting system

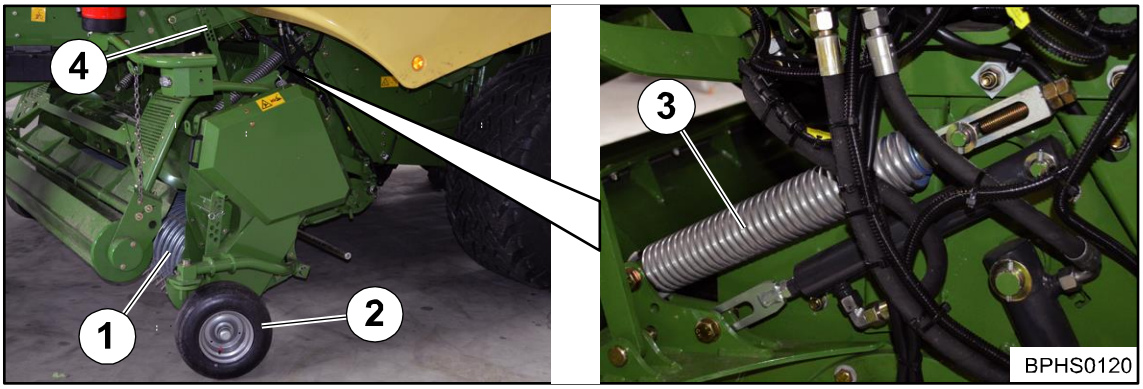

Fig. 27

1) Pick-up
2) Guide wheel
3) Spring
4) Depth limiter

The pick-up is used to pick up the crop.

The pick-up starts to rotate by turning on the cutting system on the terminal.

The pick-up (1) is raised and lowered via the single-acting control unit ( ) on the tractor. The pick-up is equipped with guide wheels (2). The guide wheels are used to adjust the working height of the pick-up.

The working height of the pick-up can be manually limited downwards by moving the depth limiter (4) on both sides of the machine. This makes it possible to drive the machine without guide wheels with the pick-up in fixed position.

The bearing pressure of the guide wheels can be adjusted to the ground conditions via the spring (3).

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Design without cutting system

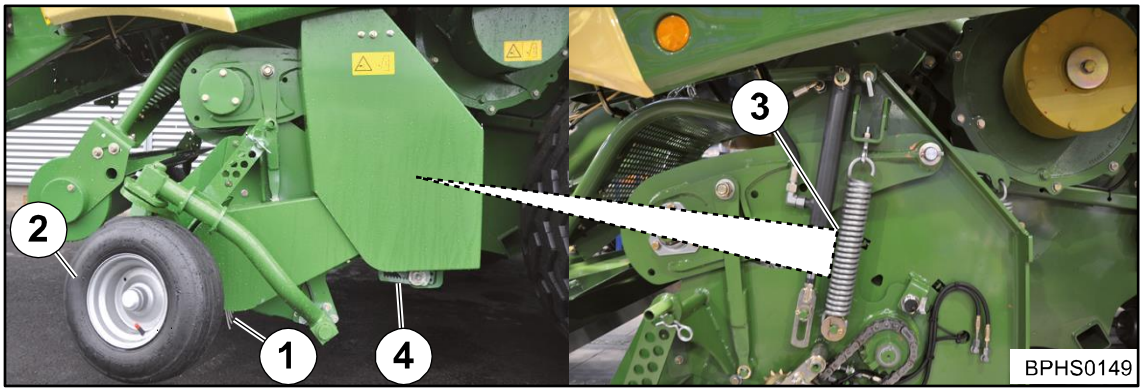

Fig. 28

1)	Pick-up	2)	Guide wheel
3)	Spring	4)	Depth limiter

The pick-up is used to pick up the crop.

The pick-up starts to rotate by turning on the PTO shaft.

The pick-up (1) is raised and lowered via the single-acting control unit ( ) on the tractor. The pick-up is equipped with guide wheels (2). The guide wheels are used to adjust the working height of the pick-up.

The working height of the pick-up can be manually limited downwards by moving the depth limiter (4) on both sides of the machine. This makes it possible to drive the machine without guide wheels with the pick-up in fixed position.

The bearing pressure of the guide wheels can be adjusted to the ground conditions via the spring (3).

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5.9 Roller crop guide

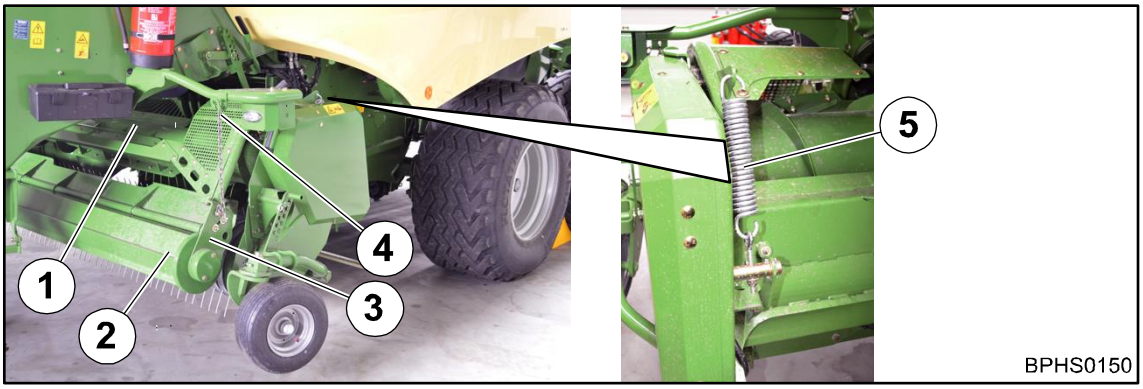

Fig. 29

1) Feed drive roller
2) Holding-down device roller
3) Roller crop guide
4) Retaining chain
5) Spring

The roller crop guide and the feed drive roller ensure the regulation when conveying the crop. They ensure a continuous crop collection by the pick-up. The height of the roller crop guide can be adjusted via retaining chain (height of the swath).

Much crops: **Hook in roller crop guide higher**

Less crops: **Hook in roller crop guide lower**

The ground pressure of the holding-down device roller on the swath is set by the spring.

Dry crops: **Increase ground pressure**

Moist crops: **Reduce ground pressure**

5.10 Cutting system

5.10.1 General

The Big Pack XC has a cutting system with a cutting cylinder and fixed blades. Cutting allows for improved further processing of the big pack and makes it possible to increase the density of baled material. The blades can be swivelled out of the conveyor channel from the tractor hydraulically if there are blockages. Each blade is separately protected against overload. The machine can also be used without blades. The cutting cylinder then takes over the function of a conveyor between the pick-up and the pre-baling channel.

Table cutting length depending on blade fitting

Cutting length mm	Number of blades	Used blade compartment
-	0	Any one
44	26	each
88	13	each second
176	6	each third

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5.11 Hydraulic system

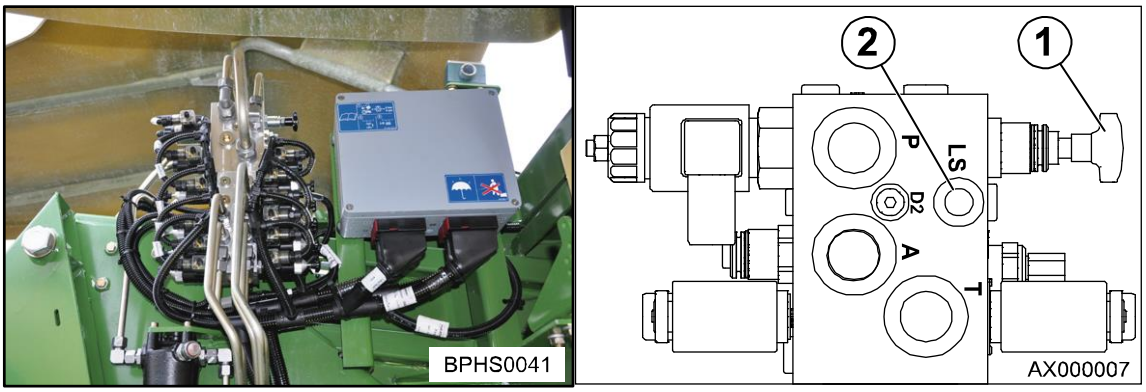

Fig.30

The hydraulic system of the machine is designed ex works for continuous circulation (the system screw (1) is completely screwed out).

The hydraulic system of the machine is Load-Sensing capable.

When using the Load Sensing system, oil is supplied via the Power Beyond system of the tractor hydraulics (further information can be obtained from the operating instructions provided by the manufacturer of the tractor).

When operating the machine via the Load Sensing system, the message line must be connected between message connection (LS) on the control valve block of the machine and the message line of the tractor. Moreover, the system screw (1) must be screwed in until the stop is reached.

The adaption of the hydraulic system to the tractor hydraulics is made via the system screw (1) on the control valve block of the machine. The control valve block is located front left under the side hood next to the electronics box.

Note

The system screw (1) must only be set when the machine is depressurized and the tractor engine is switched off.

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5.12 Pressure Limiting Valve Block (on-board hydraulic system)

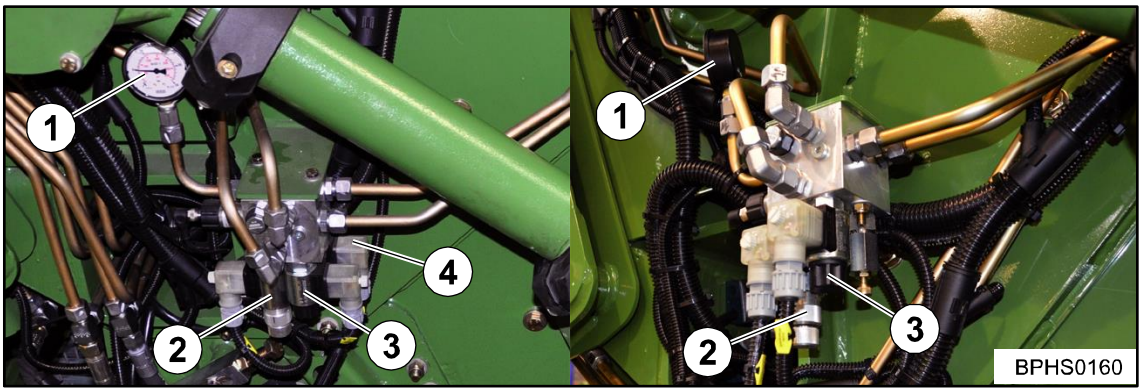

Fig. 31 Comfort version electronics design Medium version electronics design

Depending on the equipment of the machine, the following valves are located on the pressure limiting valve block:

1) Pressure gauge
2) Pressure limiting valve for setting the baling pressure.
3) Rapid traverse valve
4) Valve for loosening the bale channel flaps

The baling force in the baling channel is regulated by an electronic/hydraulic system. The baling force is set directly by the terminal from the tractor.

The pressure can be read directly via the display of the terminal.

A further pressure gauge (1) for reading the baling pressure can be found on the pressure limiting valve block.

Note

In order to conserve the baling pressure in the bale channel with machine switched off, the terminal may be switched off only after the machine or the flywheel has come to a complete standstill.

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5.13 Hydraulic Twine Boxes

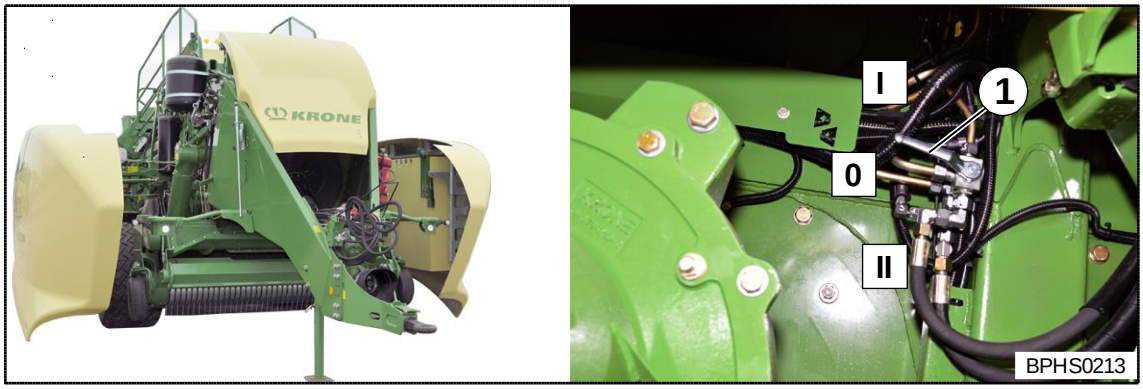

Fig. 32

The twine boxes can be lowered or lifted hydraulically. The switching valve (1) is used to preset if the right or the left twine box or both twine boxes should be lowered or lifted. The switching valve (I) is located on the left machine side near the packer gearbox.

Position “0” = Lifting / lowering the right and the left twine box simultaneously
Position “I” = Lowering / lifting the right twine box
Position “II” = Lowering / lifting the left twine box

With comfort version electronics design

The function for lowering / lifting the twine boxes is carried out via the terminal; refer to chapter Operation “Lowering / Lifting Twine Boxes”.

For medium version electronics design

The function for lowering / lifting the twine boxes is carried out via the double-acting control unit (red4 / blue4), refer to chapter Operation “Lowering / Lifting Twine Boxes”.

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5.14 Twine

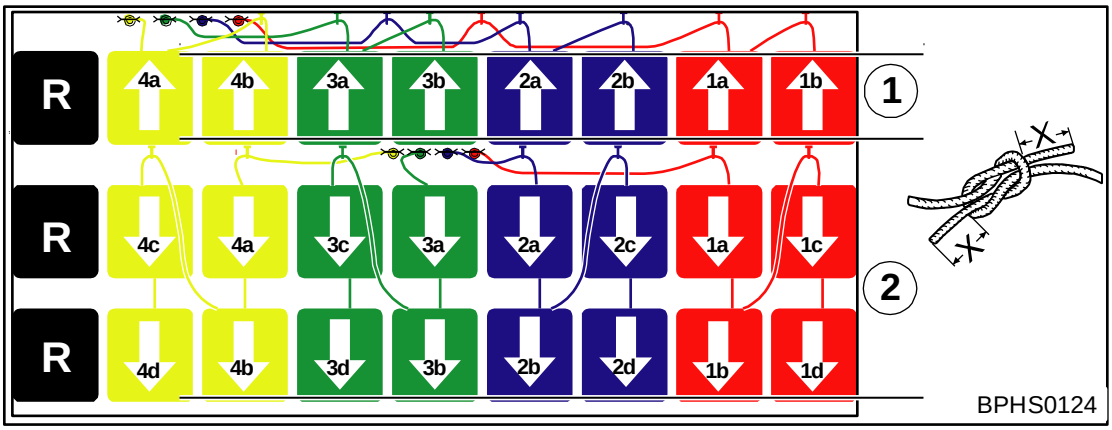

Fig. 33

1) Twine rolls for upper twine
2) Twine rolls for lower twine

The big pack baler is equipped on both sides of the machine with twine boxes to be folded down hydraulically. Each twine box is capable of holding 27 rolls of twine. The three front twine rolls are reserve rollers. They are marked with (R).

An upper twine and a lower twine are fed to each of the eight knotters. On each side, four upper twines as well as four lower twines are guided to the knotters.

Twice as many twine rolls are provided for the lower twine as the lower twine approximately needs the double twine quantity to encompass the underside and the both ends of the bale. The upper twine, however, merely encompasses the upperside of the bale.

To ensure sufficient tying safety, you must be careful only to use synthetic twine that has a running length of 130-150 m/kg.

Note

Only use original KRONE twine

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5.14.1 Electrical twine empty display for lower thread

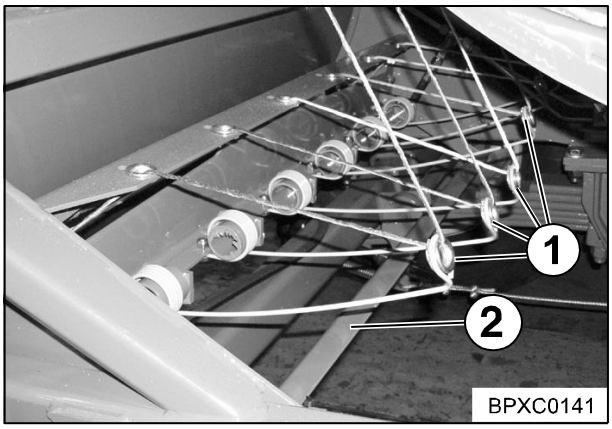

Fig. 34

If the end of the lower twine is reached or has been torn, the stretching twine tensioners (1) come to rest on the pivoting angle (2). An acoustic warning signal sounds on the terminal. An error message will appear in the display.

Note

The acoustic warning signal can be switched off while the twine is threaded in, see chapter KRONE ISOBUS Terminal "Alarm message".

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5.14.2 Twine motion indicator upper twine (double knotter)

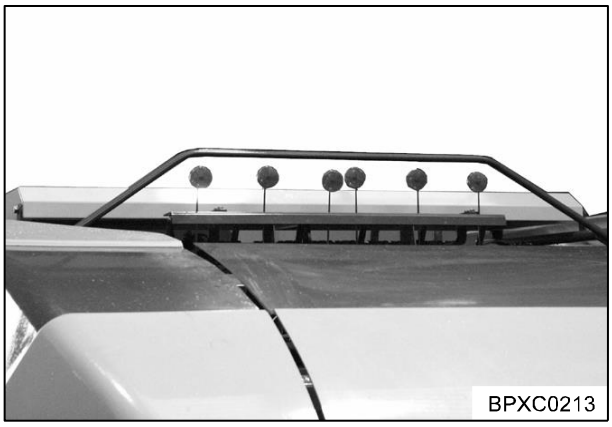

Fig. 35

The upper twine motion is monitored by reflectors (twine motion indicator) positioned above the machine. While the bale is being formed, the twine motion indicator should move back and forth in a pulsing cycle. All indicators generally rise and lower at the same time except in the event of a malfunction. A malfunction of this nature is indicated by the fact that the twine motion indicator that is featuring a malfunction will not be in the same position as the other indicators.

The following malfunctions can be indicated:

The twine motion indicators are staying up:

- Twine has wound around the knotter hook
- The needle has not caught the upper strand of twine (twine will not be cut through)
- The knot has been left hanging on the knotter hook (after the tying is complete, one twine motion indicator remains down longer than the other)

The twine motion indicators are staying down:

- Twine tension is too low
- The upper twine strand is torn
- The knotter hook has not tied a knot

5.14.3 Electrical Knotter Monitoring

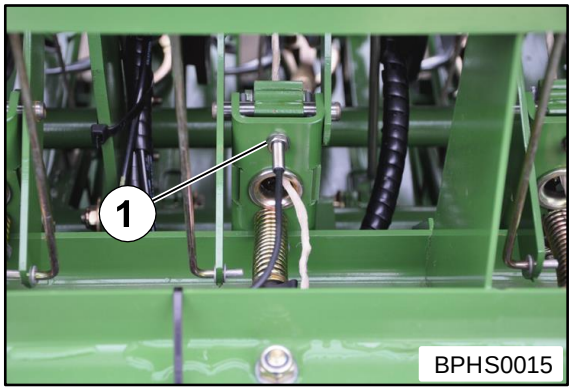

Fig. 36

The machine is equipped with an electrical knotter monitoring. In this process, each knotter is monitored individually by a sensor (1). If an error occurs on the knotter, the appropriate error message appears in the display of the operation terminal.
The knotters are numbered in direction of travel from the left to the right from 1 to 8.

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5.15 Knotter Gear

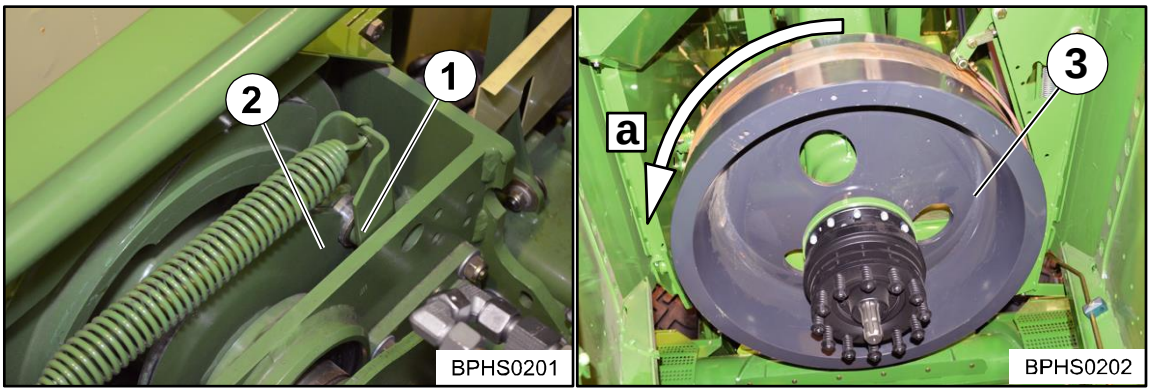

Fig. 37

Knotter gear in idle position

The knotter gear is in idle position if the trigger roller (1) is located in the recess of the cam disc (2) of the knotter gear.

The tying process

The tying process consists of a rotation of the cam disc (2).

The system automatically triggers the knotting mechanism after the set bale length has been reached. In this process, the cam disc rotates, presses the trigger roller out of the recess and continues to rotate until the trigger roller slides into the recess again. While the cam disc rotates, the first knot (closing knot) is tied at first and immediately after that, the second knot (starting knot) is tied.

First knot = closing knot, ties the pressed bale

Second knot = starting knot, ties the starting knot for the next bale

Initiating the tying process manually

In case of maintenance, setting or repair work, the tying process can be manually initiated when the tractor is not connected. The tying process is carried out by manually turning the flywheel (3) in the direction of working (a); refer to chapter Operation “Initiating Tying Process Manually”.

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5.16 Bale Ejector / Bale Chute

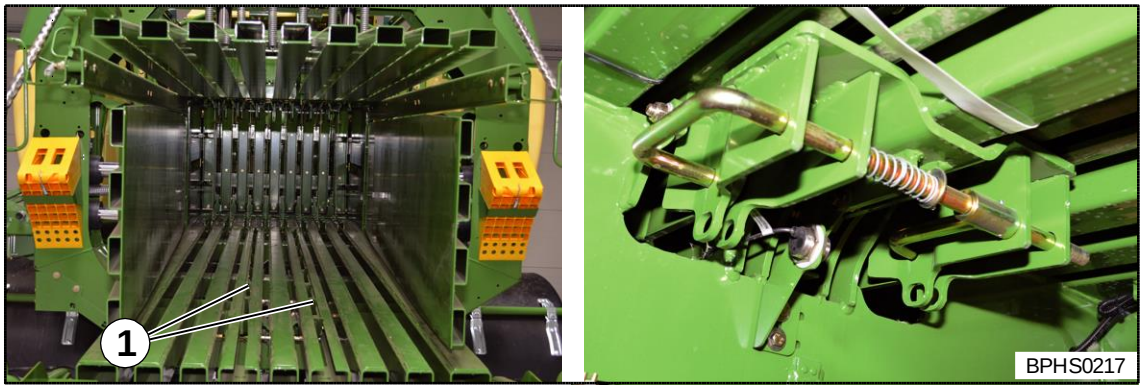

Fig. 38

The bale ejector (1) can be divided now.

To only transport the last bale on the roller chute, the rear part of the bale ejector can be uncoupled from the front part.

To empty the bale channel, the front and the rear part of the bale ejector must be linked with each other.

The operation of bale ejector or bale chute depends on the design of the machine (medium version electronics or comfort version electronics); refer to chapter Operation “Operating the Bale Chute”.

5.16.1 Medium Version Electronics Design

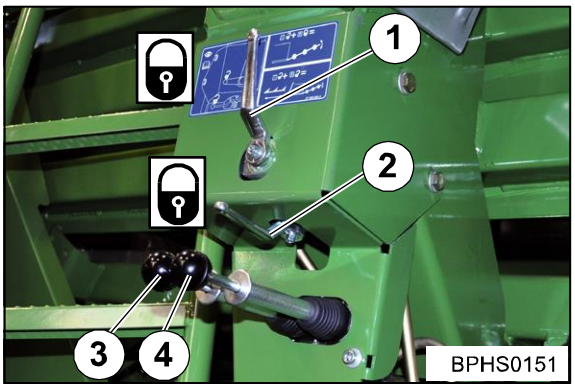

Fig. 39

The operating control device is located on the rear left machine side on the yoke.

The control levers (3, 4) are released or locked via shut-off valves (1, 2).

The bale chute is lowered or lifted via control lever (3).

The bale ejector is moved to the rear or to the front via control lever (4).

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5.16.2 For Comfort Version Electronics Design:

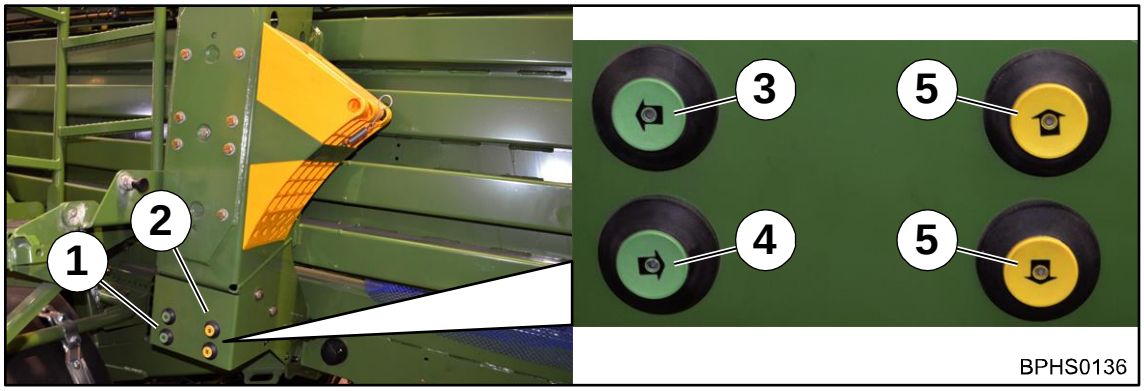

Fig. 40

On machines with comfort version electronics, external buttons (1, 2) are installed on the rear left machine side. The bale ejector is manually actuated via the buttons (3, 4). The bale chute is, however, manually actuated via the buttons (5, 6).

Actuating the bale ejector

The bale ejector is moved to the front via button (3).

Button (4) has several functions.

If the bale channel flaps have not been released, then they can be released now by pressing the button.

If the bale channel flaps have been released, 10 bale ejection processes are carried out by pressing the button.

The bale ejector moves backward when the bale channel flaps are released and the button is pressed and held.

Activating bale chute

The bale chute is lifted to transport position via button (5).

The bale chute is lowered into working position via button (6).

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5.17 Compressed-air reservoir

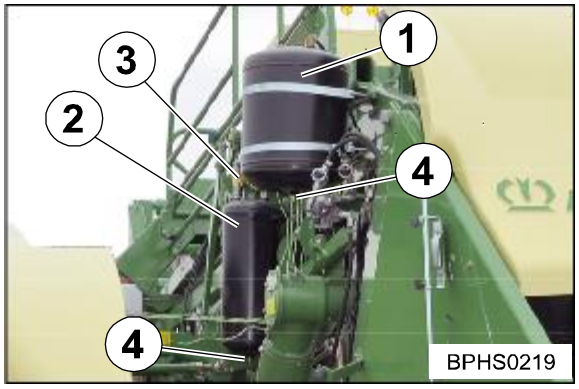

Fig. 41

1)	Compressed air reservoir, for compressed air brake version	2)	Compressed air reservoir for knotter cleaning
3)	Pressure line	4)	Drain valve

Machines with compressed air brake

Machines that are equipped with a compressed air brake have two compressed air reservoirs: compressed air reservoir “compressed air brake” and compressed air reservoir “knotter cleaning”.

The both compressed air reservoirs are located on the right machine side behind the twine box on the frame. They are connected with each other via a pressure line (1).

Machines with hydraulic brake

Machines that are equipped with a hydraulic brake have a compressed air reservoir “knotter cleaning”.

The compressed air reservoir “knotter cleaning” is located on the right side behind the twine box on the frame.

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6 Technical data

All information, illustrations and technical data in these operating instructions correspond to the latest state at the time of publication. We reserve the right to make design changes at any time and without notification of reasons.

Dimensions	
Height with terrain swivelled up without cutting system	3370 mm
Height with terrain swivelled down without cutting system	3470 mm
Height with terrain swivelled up with cutting system	3680 mm
Height with terrain swivelled down with cutting system	3780 mm
Length transport position	9050 mm
Length working position	1080 mm
Width with tyres 550/45-22.5 / 620/50- R22.5 / 620/50- R26.5	2990 mm
Width with tyres 710/50- R26.5	3180 mm

Weight*	
Tandem axle without cutting system	14000 kg to 14700 kg
Tandem axle with cutting system	15400 kg to 15800 kg
Max. permitted supported load without cutting system	2000 kg to 2500 kg*
Max. permitted supported load with cutting system	2500 kg to 3000 kg*

*) depending on how the machine is equipped

Track width	
Tandem axle	2370 mm

Maximum permissible speed *	
Tandem axle, compressed air brake	50 km/h ** / 60 km/h

*) The maximum permissible speed depends on legal regulations in the countries.

**) in case of tandem axle with 550/45 -22.5 tyres.

Active pick-up	
Scattering width	2350 mm
Tine carrier	5 units
Number of tines (double tines per tine carrier)	20 units
Feed	Roller crop guide and intake roller
Feed lateral (right / left)	Conveyor auger
Height adjustment via perforated bar on the supporting wheel	

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XC cutting system	
Number of blades	26 units
Blade group circuit	0, 13, 13, 26 units
Minimum cutting length	44 mm
Single blade locking device	Standard
Fitting via lateral extendible cutting system inlet trays	Standard

Crop Feed / Variable Filling System (VFS)	
Self-feed	Through packer drum
Packer drum	3x feed packer 1x feeder packer switchable
With the XC design, a cutting system is also connected ahead.	

Baling Ram Technical Data Baling Ram	
Stroke length	800 mm
Strokes per minute	45
Storage	4 rollers
Blades	9 blades on the plunger
Setting the baling density	Electronic-hydraulic force control (adjustable from the tractor).

Bale channel / bale dimensions	
Height	900 mm
Width	1200 mm
Bale length (continuously adjustable)	1000 to 3200 mm

Tying unit	
Twine boxes right and left (can be folded down hydraulically)	A twine box offers space for 24 twine rolls and 3 reserve rolls
Twine (synthetic twines)	100-130 m/kg
Knotter monitoring Twine empty display (lower twine / upper twine)	Electrical control with acoustic signal.
Twine motion indicator upper twine	Visual via reflectors
Starting the tying process	Automatically, manually or via the terminal
Number of knotter devices	8 units
Knotter cleaning	Compressed air

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Overload protection	
Friction clutch drive	3,000 Nm
Flywheel overload clutch	10,000 Nm
Overload clutch pick-up without cutting unit	1,500 Nm
Overload clutch pick-up with cutting unit	2,500 Nm
Overload clutch packer	19,000 Nm
Shear bolt on needle connecting rod right/left	M10 x 60 12.9, DIN ISO EN 4014

Universal shaft	
Wide-angle (mount on tractor side) series	1 3/8“, Z=6
	1 3/8“, Z=21
Wide-angle (mount on tractor side) optional	1 3/4“, Z=6
	1 3/4“, Z=20

Hitch	Permissible supported load
Towing eye Ø 40 mm ISO 5692-2 / like DIN 11026	2500 kg
Ball head hitch (K80)	3000 kg
Turnable towing eye Ø 76.2 mm CUNA F3 (only export)	2500 kg
Hitch connection Ø 50 mm ISO 20019 / like DIN 9678 (only export)	3000 kg
Ball Hitch (only export)	

Brakes	
Hydraulic brake (depending on country)	Connection for hydraulic brake system required (max. operating pressure 120 bar / 1740 PSI)
Compressed air brake	Dual-line brake system
Parking brake	Operation by hand crank

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Minimum tractor requirements	
Power requirement without cutting system	170/230 kW/HP
Power requirement with cutting system	190/260 kW/HP
P.T.O. speed	max. 1000 r.p.m.
Max. operating pressure of hydraulic system	200 bar

Electrical connections	
Lighting	12 V 7-pin socket
Power supply of the machine	12 V 3-pin socket
ISOBUS capable	yes

Hydraulic Connections for Medium Version Electronics	
Control valve block	1x double-action control unit
With start-up device	1x double-action control unit
or	1x single-action control unit 1x depressurised return in the tank
Pick-up lifting	1x Single-action control unit
With coaster/steering axle	1x single-action control unit

Hydraulic connections for comfort version electronics	
Control valve block	1x double-action control unit
alternatively	1x single-action control unit 1x depressurised return in the tank
Pick-up lifting	1x single-action control unit
Load Sensing connection on machine side	Standard
With hydraulic support jack design	1x double-action control unit

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Equipment of the Maschine (Optional)
Additional working floodlights
Moisture measurement
Integrated knotter fan (2 rotors)
Special marking (France)
ISOBUS cable
Video system
Second camera
CCI terminal 100
Cable set for CCI terminal 100
Additional twine boxes
Multi-function lever ISOBUS AUX

Machine equipment (country-specific requirement)	
Safety chain	min. 178 kN (40.000 lbf)

Tyre designation	Minimum pressure [bar] Vmax <= 10km/h	Maximum pressure [bar]	Recommended tyre pressure* (bar)
Guide wheels:			
15x6.00 - 6 10 PR		3.7	1.5
Single axle:			
710/45-22.5 162 A8	1.0	2.5	1.8
Tandem axle:			
500/50-17 14 PR	1.2	3.75	3.5
550/45-22.5 16 PR	1.2	2.8	2.8
620/40 R 22.5 148 D	1.0	3.2	1.8

*) This recommendation applies especially to the typical mixture of operation (field/road) at the maximum permitted machine speed.
If necessary, the tyre air pressure can be reduced to the minimum air pressure. However, the associated maximum speed must then be observed.

Airborne Sound Emission	
Equivalent continuous pneumatic level recorder	less than 70 d B(A)

Ambient temperature	
Temperature range for machine operation	-5 to +45°C

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6.1 Consumables

6.1.1 Filling Quantities and Lubrication Designations for Gearboxes

CAUTION!
Environmental damage caused by incorrect storage and dispose of consumables!
- Store consumables in suitable containers according to statutory provisions.
- Dispose of used consumables according to statutory provisions.

Designation		Filling quantity	Specification	Initial filling ex works
Main gearbox		35 l	Mobilgear 600XP 150	ExxonMobil Mobilgear 600XP 150
Packer gearbox		4.5 l	SAE 90 GL 4	Wiolin ML 4 SAE 90
Transfer gearbox knotter/packer		2.0 l		
Pick-up gearbox	top bottom	1.6 l 1.6 l		
Cutting unit gearbox	top bottom	1.2 l 2.2 l		
Angular gearbox (Drawbar)	front rear	0,8 l 1,2 l	Mobil SHC 630	Mobil SHC 630

Biodegradable consumables on request.

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6.1.2 Oil quantities and designations for the on-board hydraulic system

ENVIRONMENT! - Disposal and storage of used lubricants and oil filters
Effect: Environmental damage
Store or dispose used oil and oil filters according to statutory provisions.

Note - Observe maintenance intervals
Effect: Long expected service life of machine
- With bio-degradable oils always observe the change intervals because of the ageing of the oils.

Designation	Filling quantity	Specification	Initial filling ex works
Oil Tank	15 l	HVLP 46 (ISO VG 46) DIN 51524	SRS Wiolan HS 46 AZOLLA ZS 46 Total

Biological consumables on request.

6.1.3 Oil quantities and designations for the compressor

Designation	Filling quantity	Specification	Initial filling ex works
Compressor between the drawbar bars	0.2 l	Engine oil SAE 10W-40	SRS Cargolub TLA 10W-40

Biological consumables on request.

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7 Control and Display Elements

7.1 Control units of the tractor

Medium Version Electronics

Icon	Designation
Connection for control block	
	• Lower twine box • Raise/lower support jack • Bale chute open/closed • Retract/extend bale ejector
	• Raise twine box
Single-acting control unit	
	• Pressure: Raise pick-up • Float position: Lower pick-up
Single-acting control unit	
	• Pressure: Lock steering axle • Float position: Release steering axle
Connection for starter aid	
	• P: Single-acting control unit
	• T: Return

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Comfort - Electronic

Symbol	Designation
Connection for control block	
	• P: Pressure line
	• T: Return line
	• LS: Load-sensing line For more detailed information see operating instructions of the tractor manufacturer.
Single-acting control unit	
	• Pressure: Raise the pick-up • Float position: Lower the pick-up
Double-acting control unit	
	• Raise the support jack
	• Lower the support jack

7.2 Operation Terminal

See chapter on the KRONE ISOBUS-Terminal.

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8 Commissioning

WARNING!

Risk of accident or damage to the machine due to an incorrect initial operation!

Only an authorized service technician is permitted to carry out the initial operation.

WARNING!

If the basic safety instructions are not followed, people may be seriously injured or killed.

- To avoid accidents, the basic safety instructions in the chapter Safety must have been read and followed, see chapter Safety "Basic safety instructions".

WARNING!

If the safety routines are not adhered to, people may be seriously injured or killed.

- To avoid accidents, the safety routines in the chapter Safety must be read and followed, see chapter Safety "Safety routines".

WARNING!

Risk of injury due to the unsecured machine rolling away!

If the machine is not secured against rolling away when it has been switched off, there is a risk of people being injured by the machine rolling away in an uncontrolled manner.

- Secure the machine against rolling away with the parking brake and wheel chocks.
- Apply the flywheel brake at the machine.

WARNING!

There is an increased risk of injury if the flywheel brake is not applied.

If the flywheel brake is not applied, parts may start to move unexpectedly. As a result, people may be seriously injured or killed.

Always apply the flywheel brake before

- coupling or uncoupling the universal shaft.
- carrying out maintenance, adjustment or repair work.
- rectifying malfunctions.

The following work steps are described in this chapter:

– Attaching the hydraulic parking jack.
– Attaching the power supply to the tractor.
– Height adaption of the drawbar.
– Height adaption of the drive train.
– Length adaption of the universal shaft to the tractor.
– Adapting the hydraulic system.
– Setting the bale chute.

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8.1 Attaching Hydraulic Parking Jack

With hydraulic parking jack design.

- Attach the crane to the suspension point (I) on the drawbar.
- To raise the support jack (2), slightly raise the drawbar, shift support jack entirely upward and secure with socket pin (3).
- To lower the drawbar on the ground, place sufficiently dimensioned square blocks under the front drawbar beam (4) and lower the drawbar.
- Lay the hydraulic hoses (5) to the outside.
- To remove the support jack, screw out the four screws (6), remove the support jack and put it down to the side.
- Insert the hydraulic support jack (7) at the same position.
- To raise the hydraulic support jack, attach the support jack using the crane (II) and raise it.
- Mount screws (6) and detent edged washers and secure with detent edged washers and nuts.

Tighten the screws with corresponding tightening torque.

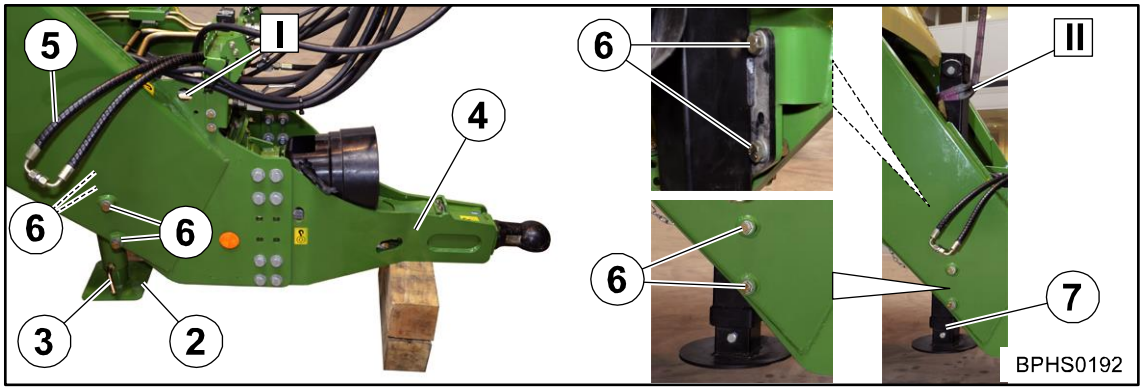

Fig. 42

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Attaching hydraulic hoses.

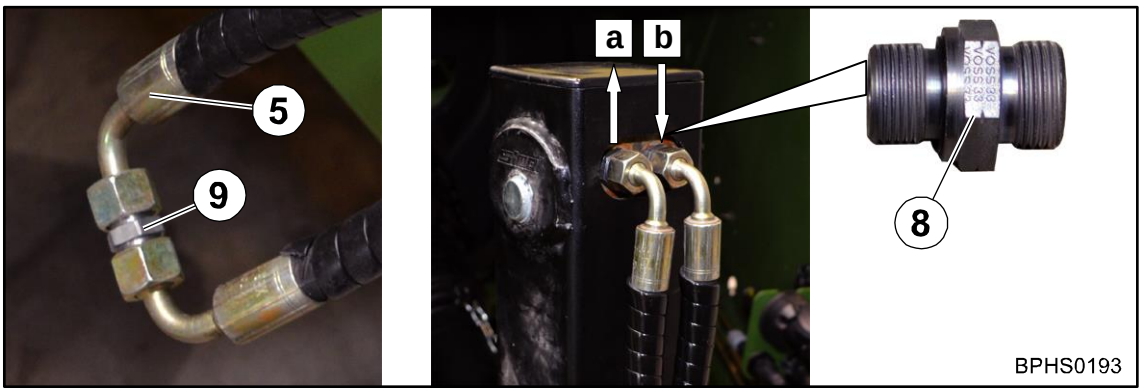

Fig. 43

a) Retracting parking jack connection b) Extending parking jack connection

Collect escaping oil in a suitable container.

- Screw provided unions (8) in the parking jack.
- Unscrew the hydraulic hoses from the double nipple (9).

Note

With comfort version electronics design

The upper line is screwed on connection “a”.

The lower line is screwed on connection “b”.

For medium version electronics design

The hydraulic line marked with S1 on the hydraulic block is screwed on connection “a”.

The hydraulic line marked with S2 on the hydraulic block is screwed on connection “a”.

- Screw the hydraulic hoses (5) on the unions (8).
- Connect the hydraulic hoses on tractor side.

Checking the “Lifting / lowering drawbar” function. The hydraulic hoses (5) on the parking jack must be replaced if the “Lifting /lowering” functions are interchanged.

- Lower the parking jack until the machine is in horizontal position.

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8.2 Electrical power supply

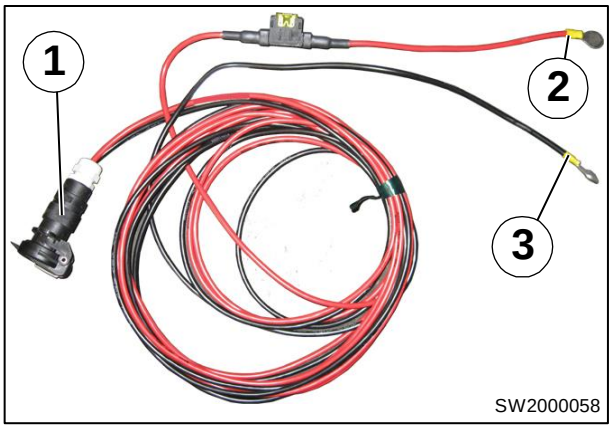

Fig. 44

The machine requires a voltage source for the power supplyof the on-board computer (control unit). A socket (12V DIN 9680) for installation on the tractor is part of the scope of supply. The socket has to be attached in order to provide the machine with the required electricity for start-up.

Connect the socket included with delivery (1) directly to the 12V battery of the tractor

- Connect the connector terminal (2) of the red cable (+) directly to the “+” terminal of the tractor battery.
- Connect the connector terminal (3) of the black cable (-) directly to the “-” terminal of the tractor battery.

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8.3 Adjusting the drawbar height

Fig. 45

Always adapt the hitching device of the machine to the used tractor.Always connect the machine horizontally. This ensures the continuous pick up of crops by the pick-up. In this case, the cross-member (1) is used as a reference edge to the align the machine.

If the height of the hitching device of the machine does not correspond to the hitching height of the tractor, adapt the hitching height by moving the front part of the drawbar.

To do this:

- Secure the machine against the possibility of rolling back.
- Align the machine horizontally by using a spirit level.
- Place the machine onto the parking support in horizontal position.

Adjusting the front part of the drawbar

Use an eligible tool to support the front part of the drawbar during the entire adjustment process.

- Screw out the screws (3).
- Move the front part of the drawbar in the hole pattern until the height of the front parts of the drawbar (2) corresponds to the height of the trailer coupling of the tractor.
- Assemble and tighten screws (3).

Note

Observe tightening torques (refer to chapter Maintenance “Tightening Torques”).

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8.4 Height Adaption of the Drive Train

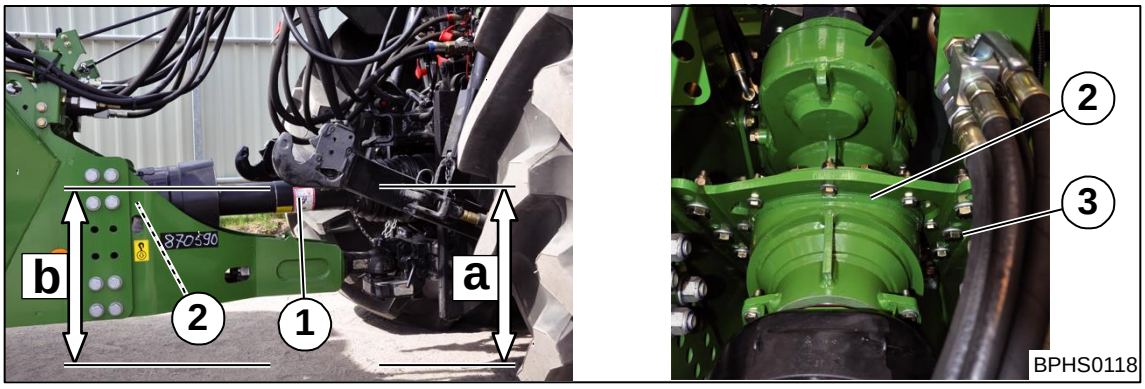

Fig. 46

The drive PTO shaft (1) transmits the drive output of the tractor to the intermediate gear (2). The articulation angle of the drive PTO shaft must be as small as possible to ensure an optimum power transmission. The optimum is if the PTO shaft end of the tractor and the drive shaft of the intermediate gear are on the same height.

Checking articulation angle

As a pre-condition, the height of the drawbar must have been adapted; refer to chapter entitled Initial Operation „Height Adaption of the Drawbar“.

- Measure dimension “a”, distance PTO shaft end of the tractor to the ground.
- Measure dimension “b”, distance drive shaft of the intermediate gear to the ground.

Dimension a and dimension b must have the same value.

If the dimensions “a” and “b” are different, the intermediate gear must be moved in the hole pattern.

To do this:

Use an eligible tool to support the intermediate gear during the entire adjustment process.

- Unscrew the screws (3) of the intermediate gear and remove them.
- Move the intermediate bearing (2) in the hole pattern until the drive shaft is on the same height as the PTO shaft end of the tractor.
- Assemble and tighten the screws (3).

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8.5 Shortening Universal Shaft

It must be possible to push together the both universal shaft halves in the narrowest position (cornering with maximum steering angle and simultaneously driving a slope up or down) without any contact of the both section tube ends. In this process, the displacement path (overlap) must be at least 220 mm, both in straight-ahead driving and when cornering.

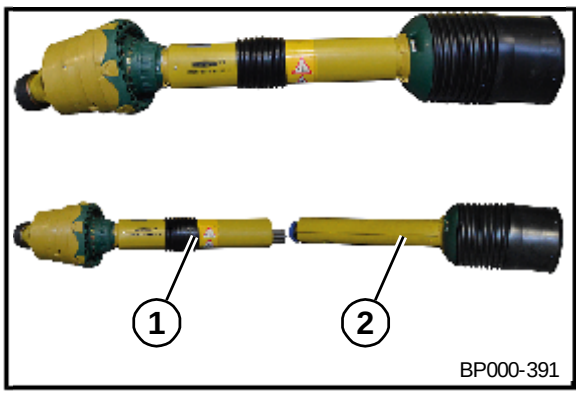

Fig. 47

- Disassemble the universal shaft halves (1,2).

Dismounting guard cup

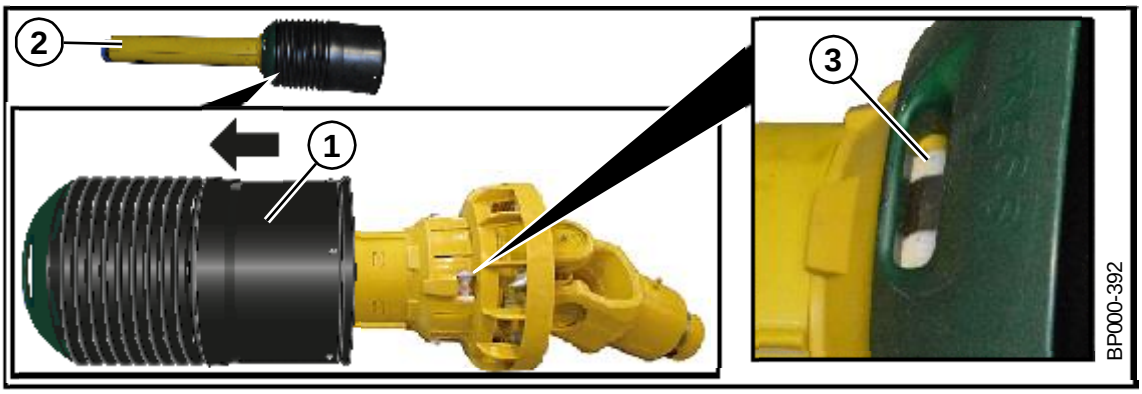

Fig. 48

- To remove the guard cup (1) from the universal shaft half (2), push in the both locks (3) by using a screwdriver and push back the guard cup (1).
- Put aside the guard cup (1) for later reinstallation.

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Determining overlap

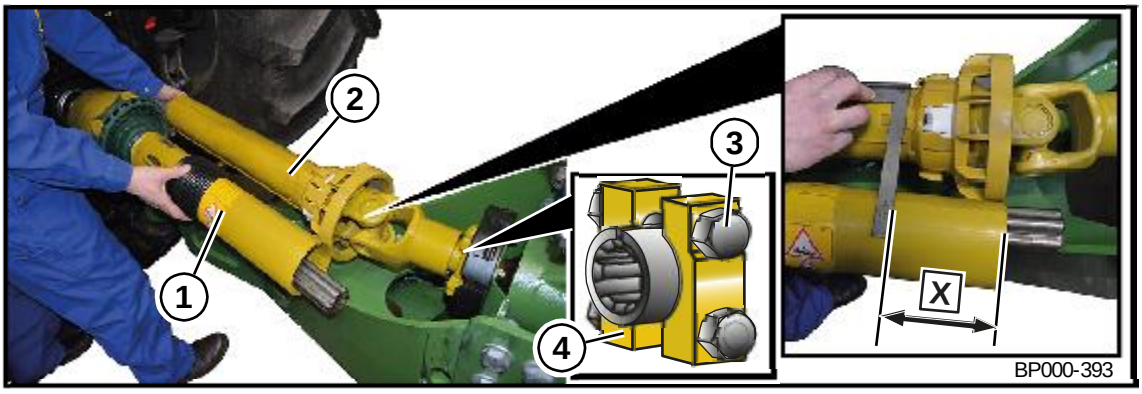

Fig. 49

- Connect the machine without universal shaft to the tractor.
- Shutdown and safeguard the machine, refer to chapter Safety “Shutting Down and Safeguarding the Machine”.
- Slide the universal shaft half (1) on the tractor PTO shaft until the lock snaps into place automatically.
- Dismount the clamping bridge (4).
- Slide the universal shaft half (2) on the machine PTO shaft until the boreholes of the clamping bridge (4) protrude beyond the annular groove.
- Mount the clamping bridge (4) by using the screws (3).
- Determine dimension X and mark it on the outer guard tube (1).
- Remove the universal shaft halves (1,2) on tractor and machine side.

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Dismounting outer guard tube

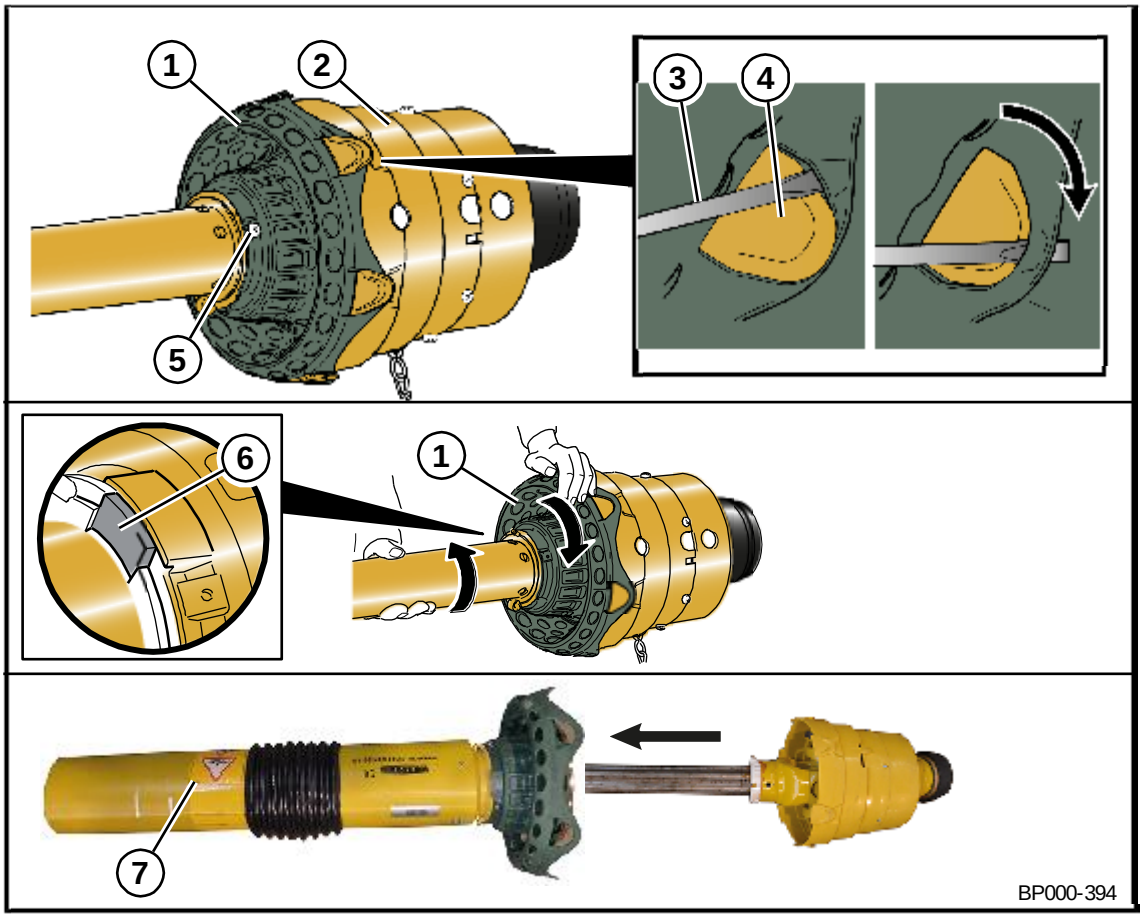

Fig. 50

- Use a screwdriver (3) to pull the collar (1) over the locks (4) of the guard funnel (2).
- Screw out the three screws (5).
- Turn the collar (1) until you can feel a stop (6) and push back the outer guard tube (7).

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Dismounting inner guard tube

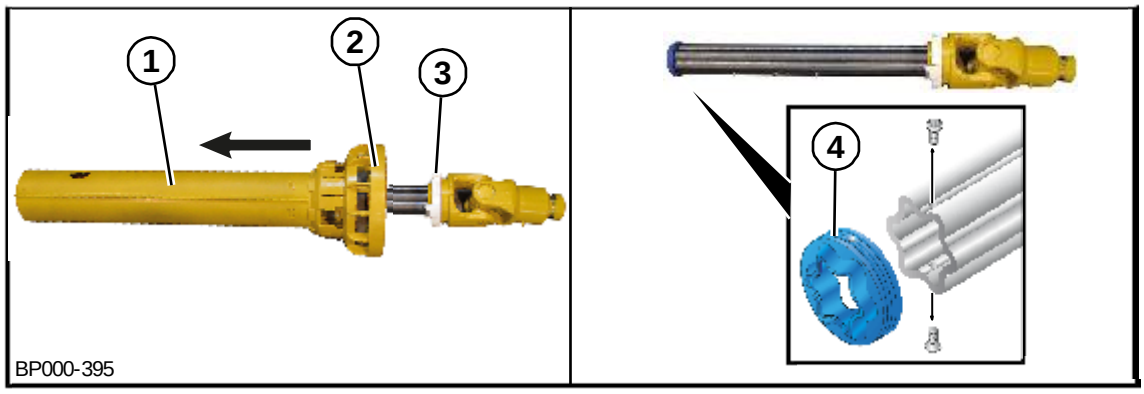

Fig. 51

- Loosen the inner guard tube (1) from the slide ring (3) by lightly tapping the cap (2) and push it back.
- Dismount the seal (4).

Shortening guard tubes and section tubes

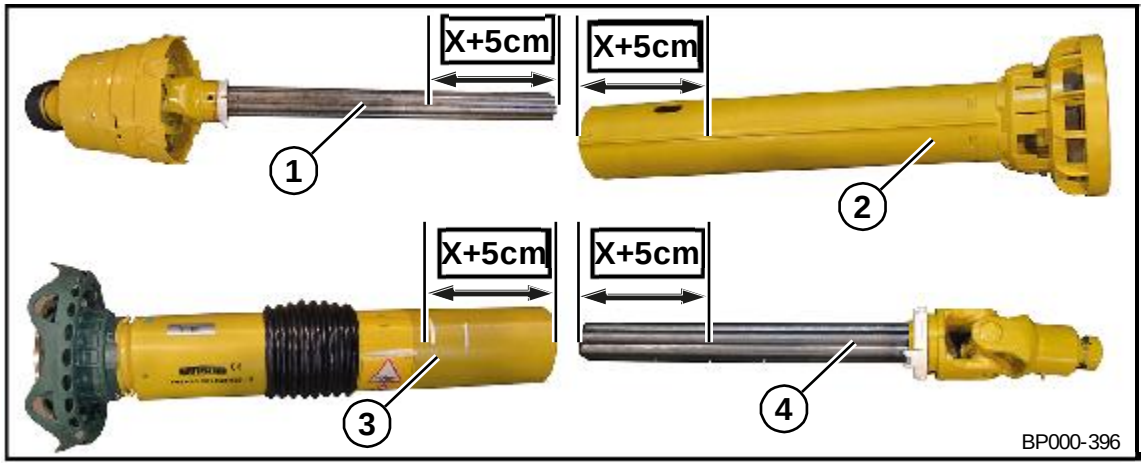

Fig. 52

- Mark the determined dimension X plus 5 cm on the guard tubes (2,3) and on the section tubes (1,4).

NOTE: To protect the section tube from chips, stuff a damp cloth in the section tube when using an angle grinder.

- Shorten the guard tubes (2,3) and the section tubes (1,4) at right angles on the placed markings, deburr from outside and inside and remove the chips.

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Mounting seal

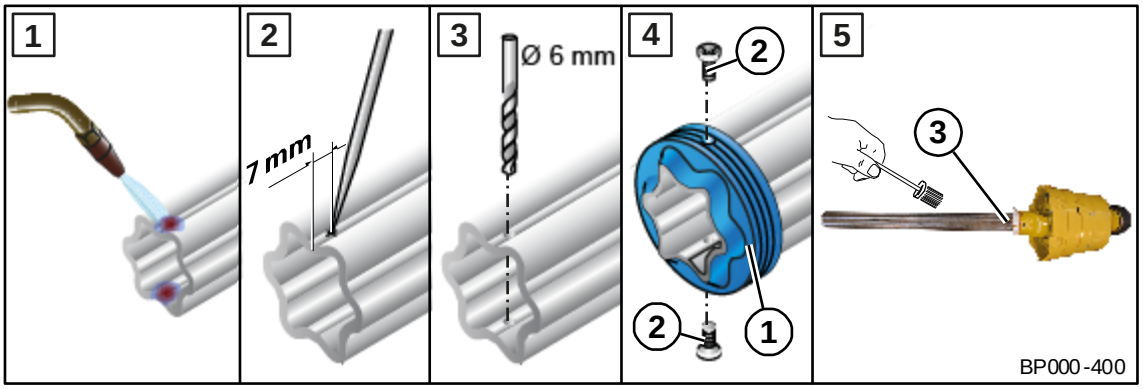

Fig. 53

INFORMATION: Ensure that the borehole for the seal (1) is in alignment with the existing grease nipples.

- Heat the outer section tube at one point and at the point on the opposite side (as shown in figure 1)).
- Mark out the borehole for the seal (1) 7 mm away from the end of the tube.
- Drill a borehole Ø 6 mm into the section tube through both walls and deburr from inside and outside.
- Slide the seal (1) onto the section tube and mount with two screws (2).
  The screws must not protrude.
- Grease the inner section tube (3) from the outside.

Drilling lubrication borehole into guard tube inside

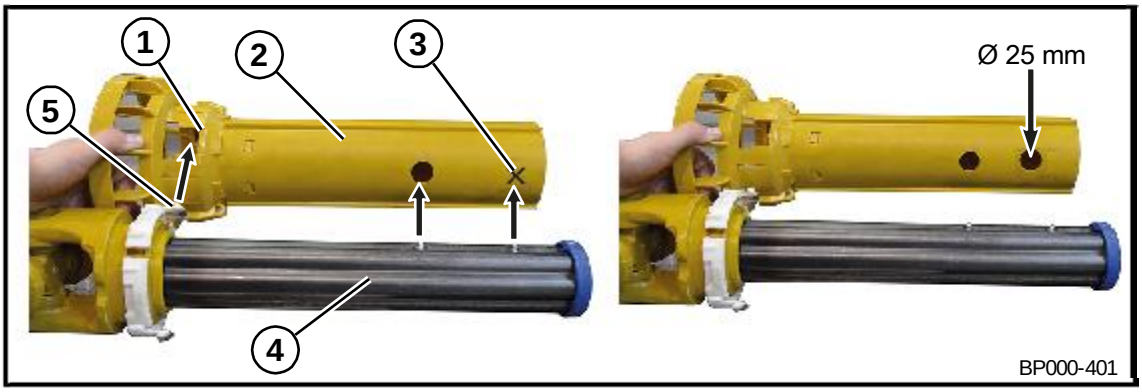

Fig. 54

- Place the inner guard tube (2) next to the outer section tube (4) so that the slide ring lock (5) is in alignment with the opening (1).
- Mark the position (3) of the grease nipples on the inner guard tube (2).
- Drill a borehole Ø 25 mm in the inner guard tube (2) and deburr it.

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Mounting outer guard tube

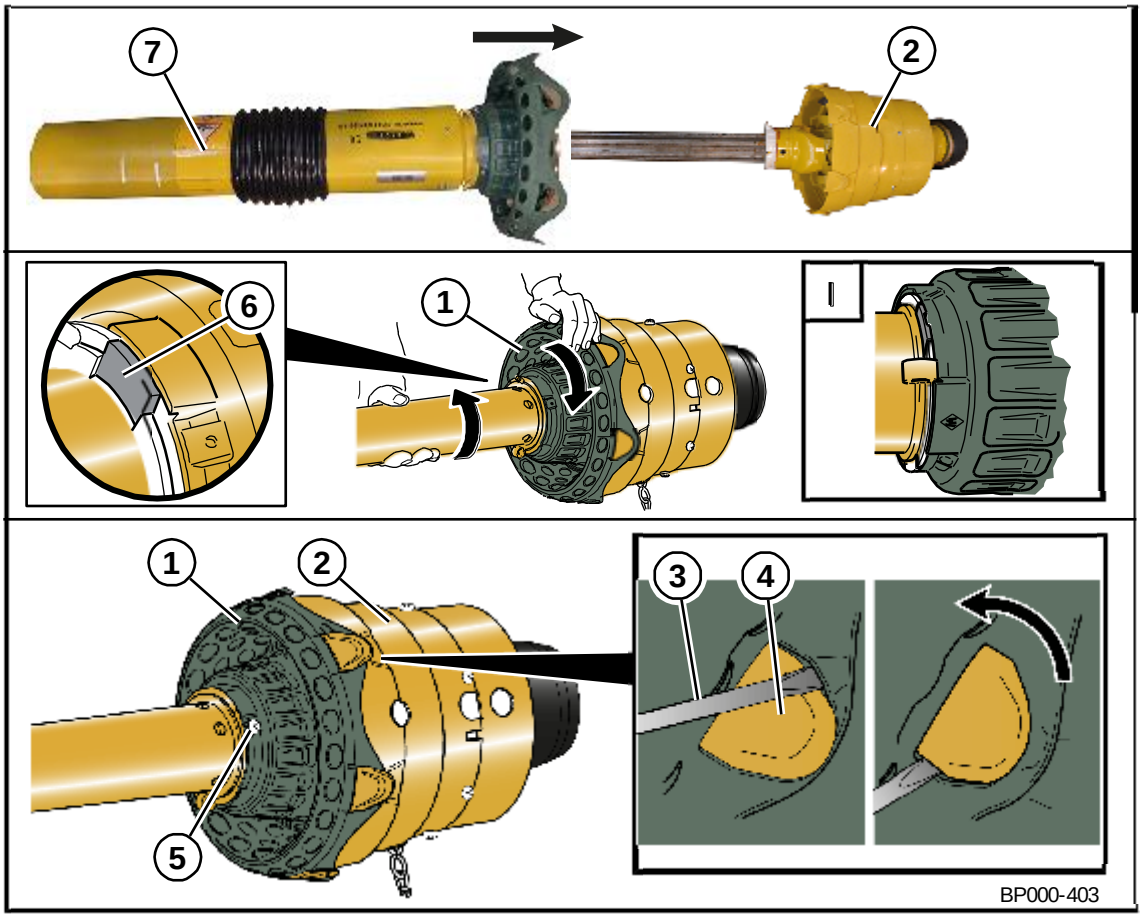

Fig. 55

- Push the outer guard tube (7) onto the inner section tube and align it so that the stop (6) of the slide ring and the opening of the guard funnel (2) are in alignment.
- Turn the collar (1) until you can feel a stop, refer to detail (I).
- Mount the three screws (5).
- Use a screwdriver (3) to pull the collar (1) over the locks (4) of the guard funnel (2).

Mounting inner guard tube

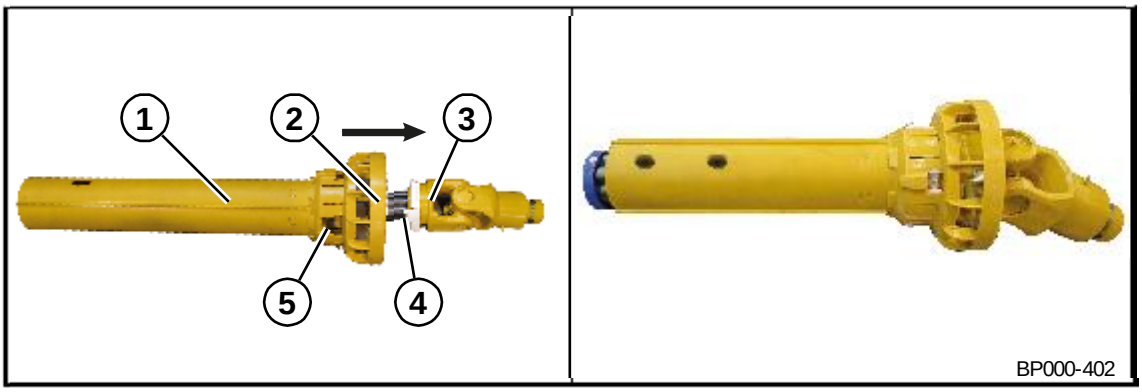

Fig. 56

- Slide the inner guard tube (1) on the outer section tube (3) and align so that the opening (5) of the cap (2) and the slide ring lock (4) are in alignment.
- Slide on the inner guard tube (1) until the slide ring lock (4) engages audibly in the opening (5).

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Drilling lubrication borehole into guard tube

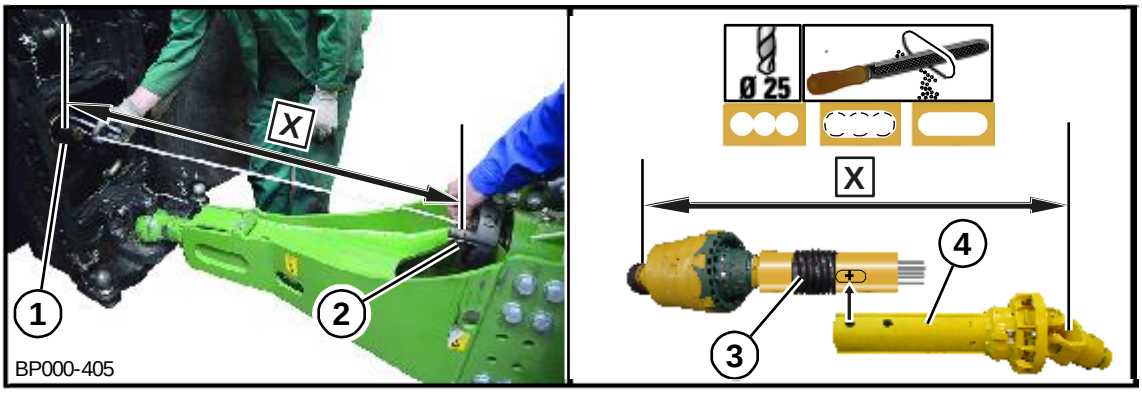

Fig. 57

- Bring the machine into the widest position (straight-ahead driving).
- To determine dimension X, measure the distance between the centre of the annular groove (1) (tractor PTO shaft) and the centre of the annular groove (2) (machine PTO shaft).
- Lay the universal shaft half (3) and the inner guard tube (4) next to each other so that the determined dimension X is reached.
- Mark the position of the lubrication borehole of the inner guard tube (4) on the outer guard tube (3).
- Dismount the outer guard tube (3).
- Drill three boreholes Ø 25 mm into the outer guard tube (3), file them to an oblong hole and deburr.
- Mount the outer guard tube (3).

Mounting guard cup

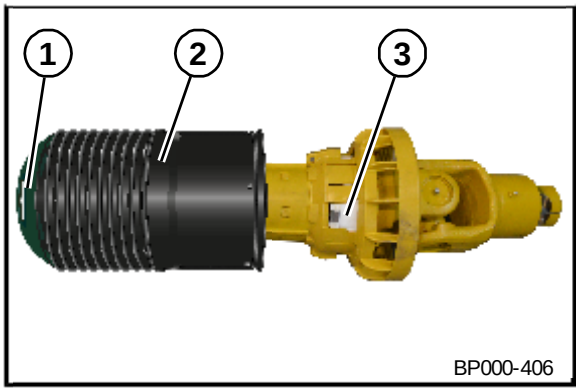

Fig. 58

- Slide on the guard cup (2) and align it so that the both openings (1) are in alignment with the slide ring locks (3).
- Slide on the guard cup (2) until both slide ring locks (3) engage audibly in the openings (1).

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Determining displacement path (overlap)

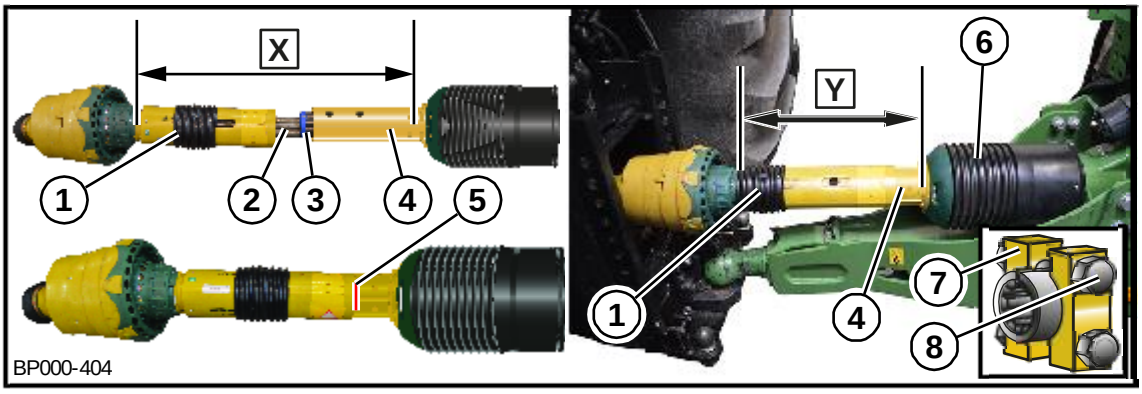

Fig. 59

- Position the universal shaft halves (1,4) so that the outer section tube (3) is located in front of the inner section tube (2).
- Determine dimension X.
- Assemble the universal shaft halves (1,4) until the stop is reached.
- At the end of the outer guard tube, draw a marking (5) on the inner guard tube.
- To facilitate assembly of universal shaft half (4), push back the guard cup (6), refer to “Dismounting Guard Cup”.
- Slide the universal shaft half (1) on the tractor PTO shaft until the lock snaps into place automatically.
- Dismount the clamping bridge (7).
- Slide the universal shaft half (4) on the machine PTO shaft until the boreholes of the clamping bridge (7) protrude beyond the annular groove.
- Mount the clamping bridge (7) by means of the screws (8).
  Tightening torque: M12=80 Nm, M14=130 Nm, M16= 200 Nm.
- Bring the machine into the widest position (straight-ahead driving).
- Shutdown and safeguard the machine, refer to chapter Safety “Shutting Down and Safeguarding the Machine”.
- Determine the dimension Y.

Calculating displacement path

- Calculate the displacement path “V” (overlap): V=X-Y.
  The displacement path (overlap) must be at least V≥220 mm.

Checking shortened universal shaft when driving around curves

- Drive a right or left curve with the tractor. In doing so, observe the marking (5).
  The outer guard tube must not touch the marking (5) in the narrowest position (cornering with maximum steering angle and simultaneous driving up and driving down a slope).
- If the outer guard tube touches the marking (5), shorten the both universal shaft halves by the same length as described above until the outer guard tube does no longer touch the marking.

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8.6 Adjusting the hydraulic system

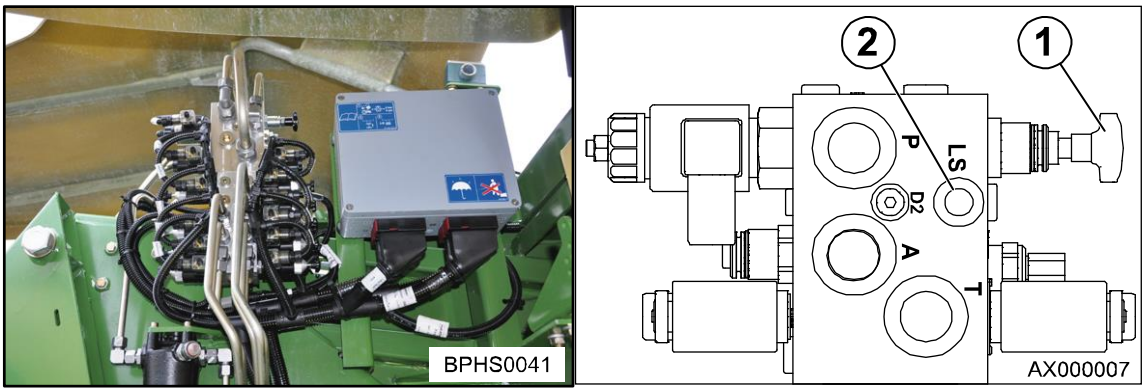

Fig.60

- Switch the control units on the tractor to float position.
- Depressurise the hydraulic system on the tractor and the machine.
- Shut down and safeguard the machine, see chapter Safety -> Safety routines, "Shutting down and safeguarding the machine".

8.6.1 Operating the Machine without LS (Load-Sensing Connection)

Unscrew the system screw (1) as far as it will go for:

- Tractor with an open (constant-current) hydraulic system (for additional information, please refer to the tractor manufacturer's operating instructions)
- Tractors with LS pump and non-activated load-sensing system

Note

This adjustment is set when the unit leaves the factory.

8.6.2 Operating the Machine via LS (Load-Sensing Connection)

Screw the system screw (1) as far as it will go for:

- Tractors with closed (constant pressure or load sensing) Hydraulic system (For more information, please refer to the tractor manufacturer's operating instructions)
- Tractors with LS pump and message line that is connected

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8.7 Setting the bale chute

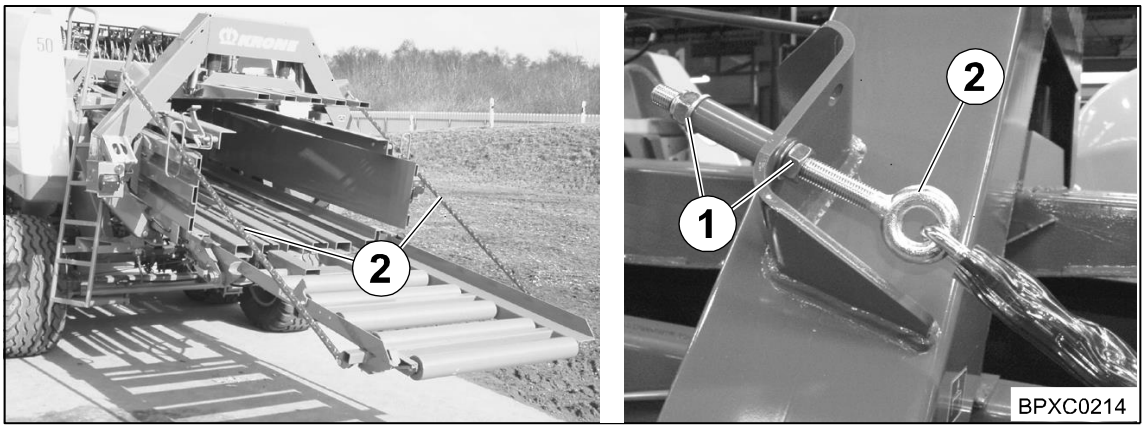

Fig. 61

When it is unfolded, the bale chute represents an extension of the bale channel chamber. For big bales to be set down on the ground correctly, the back edge of the bale chute must not be too high above the ground. Otherwise the bales will be damaged when they are placed on the ground.

- The inclination of the bale chute to the ground can be sued to adjust the length of the retaining chain (2) of the bale chute
- To do this, adjust the nut (1) on either side of the baling channel

8.7.1 With Bale Scale Design

The setting of the inclination of the normal chute to the bale scale is different. In case of the normal chute, the bale should leave the chute quickly. In case of bale scale (optional), the bale should remain on the chute for weighing for a short time.

- Reduce the inclination of the bale chute to the ground by means of the length of the bale chute supporting chain (2).
- To do this, adjust the nut (1) on both sides of the bale channel.

Note

If the inclination of the bale chute is changed, the bale scale must be recalibrated if the machine has one (see chapter on KRONE ISOBUS terminal CCI "Calibrating the Bale Scale").

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8.7.1.1 Bale Brake

Only in combination with bale scale

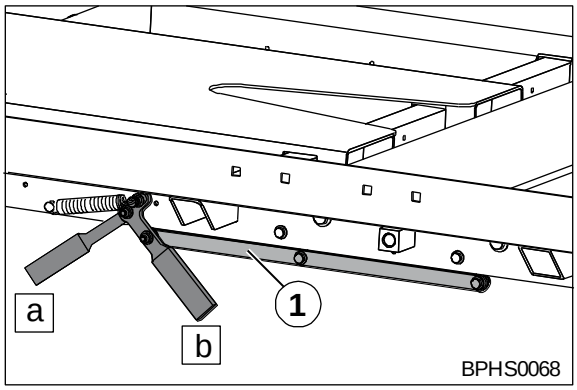

Fig. 62

The first two rolls of the bale chute are locked via bale brake (1). This is necessary to reach an exact weight control of the bales.

Lever in position a = rolls blocked

Lever in position b = rolls can be freely rotated

Note

To ensure that the last bale can be put down properly, the bale brake must be released for the last bale.

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9 Start-up

WARNING!

If the basic safety instructions are not followed, people may be seriously injured or killed.

- To avoid accidents, the basic safety instructions in the chapter Safety must have been read and followed, see chapter Safety "Basic safety instructions".

WARNING!

If the safety routines are not adhered to, people may be seriously injured or killed.

- To avoid accidents, the safety routines in the chapter Safety must be read and followed, see chapter Safety "Safety routines".

The following work steps are described in this chapter:

– Mounting onto the tractor.
– Installing PTO shaft.
– Connecting the hydraulic lines.
– Connecting the hydraulic brake, export
– Connecting the hydraulic brake, export France
– Connecting the hydraulic connection for locking the coaster/steering axle.
– Connecting the compressed air connections for the compressed air brake.
– Connecting the terminal.
– Connecting the lighting.

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9.1 Connect the machine to the tractor

Fig. 63

Prerequisite:

– The hitching device of the machine is adapted to the hitching device of the tractor; refer to chapter Initial Operation „Height Adaption of the Drawbar“.
– The height of the drive train of the machine to the tractor is adapted; refer to chapter Initial Operation “Height Adaption of the Drive Train”.
– The universal shaft is adapted to the tractor; refer to chapter Initial Operation “Universal Shaft”.
– The hydraulic system is adapted to the tractor; refer to chapter Initial Operation “Adapting the Hydraulic System”.
– The machine is in horizontal position.

• Hitch and secure the machine according to the operating instructions of the tractor manufacturer to the hitching device of the tractor.

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9.1.1 Install the PTO shaft

WARNING!
There is an increased risk of injury if the flywheel brake is not applied.
If the flywheel brake is not applied, parts may start to move unexpectedly. As a result, people may be seriously injured or killed.
Always apply the flywheel brake before
- coupling or uncoupling the universal shaft.
- carrying out maintenance, adjustment or repair work.
- rectifying malfunctions.

- Shut down and safeguard the machine, see chapter Safety -> Safety routines, "Shutting down and safeguarding the machine".

Caution! - Changing the tractor
Effect: Damage to the machine
When using the machine for the first time and whenever changing the tractor Check PTO shaft for the correct length. If the length of the PTO shaft does not match the tractor, always observe the chapter entitled "Adjusting the length of the PTO shaft".

CAUTION! - The universal shaft is not put on correctly.
Effect: Damage to the universal shaft or the machine
- Make certain that the universal shaft is properly secured after installation and locked into place
- Use only the universal shaft included with delivery from the factory
- Before engaging the P.T.O always release the flywheel parking brake first

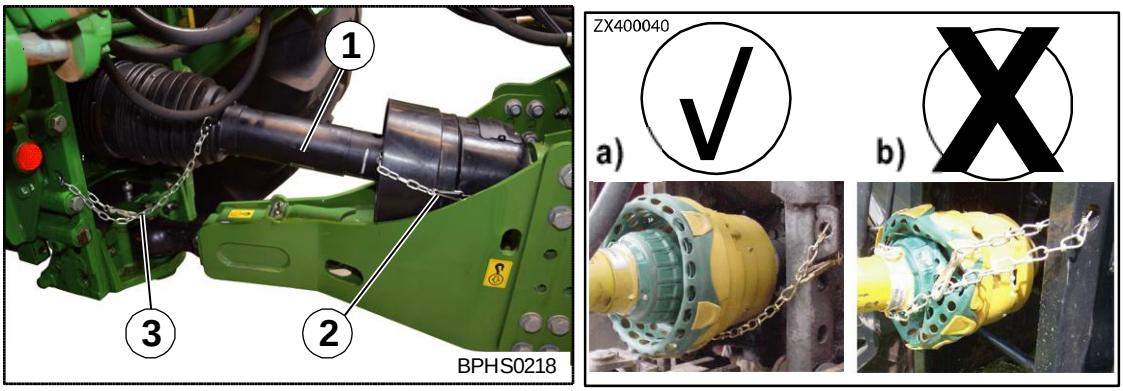

Fig. 64

The wide-angle coupling is attached on tractor side.
On machine side
- Install the universal shaft (1) on the drive journal of the angular gear.
- Fasten the retaining chain (2) on the guard cup.

On tractor side
- Slide the wide-angle coupling onto the tractor PTO shaft and secure it.
- Fasten the retaining chain (3) on the tractor.

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CAUTION!

Material damages if the retaining chain coils up.

Fasten the retaining chain so that it surrounds the guard funnel in each working position by maximum 90°.

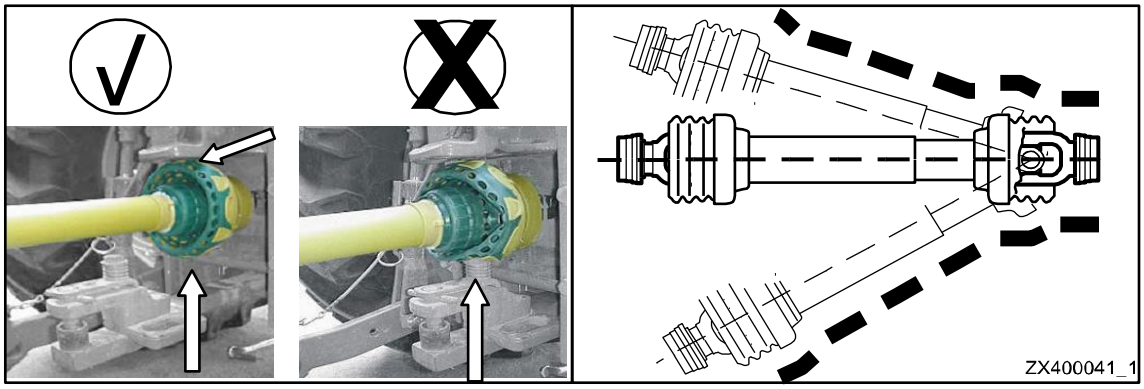

Fig. 65

- Make certain there is sufficient free room in the swivel range of the universal shaft in all operating states. Contact with parts of the tractor or device may result in destruction.

Caution! - Swivel range of the PTO shaft

Effect: Damage to the tractor or the machine

- Check the swivel range and clearance of the PTO shaft!

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9.2 Hydraulics

WARNING! - If the hydraulic hoses are interchanged when connecting them to the hydraulic system of the tractor, the functions will be interchanged as well.

Effect: Injuries, serious damage to the machine

- Identify the hydraulic connections.
- Always ensure correct connection between the machine and the tractor.
- When connecting and removing the hydraulic hoses to and from the tractor hydraulics take care that the hydraulics are pressureless both on the tractor side and the machine side.

Caution! - Soiling of the hydraulic system

Effect: Damages to the machine

- When connecting the quick couplings, ensure that these are clean and dry.
- Note chafing areas or points of contact.

Note

Connect the hydraulic lines correctly

- The hydraulic hoses are identified by coloured hose clips.

9.2.1 Connecting the hydraulic lines

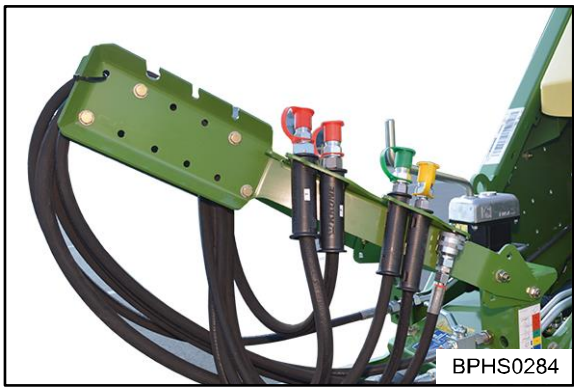

Fig. 66

Comfort - Electronic

- Switch the control units on the tractor to float position.
- Depressurise the hydraulic system on the tractor and the machine.
- Shut down and safeguard the machine, see chapter Safety -> Safety routines, "Shutting down and safeguarding the machine".

Tractor with load-sensing pump and connected signal line (LS):

- Connect the pressure line (P) to the Power Beyond system on the tractor.
- Connect the return-flow line (T) to the depressurised return flow on the tractor.
- Tighten the system screw on the control-valve block all the way.
- Connect the signal line (LS) to the load-sensing connection on the tractor.

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Tractor with constant pressure pump:

- Connect the pressure line ( ) to a single-acting control unit on the tractor.
- Connect the return-flow line ( ) to the depressurised return flow on the tractor.

Alternatively, the pressure line and the return-flow line can be connected to a double-acting control unit.

- Unscrew the system screw on the control-valve block all the way.
- Place the signal line ( ) in the holder on the machine.

Tractor with constant flow pump:

- Connect the pressure line ( ) to a single-acting control unit on the tractor.
- Connect the return-flow line ( ) to the depressurised return flow on the tractor.

Alternatively, the pressure line and the return-flow line can be connected to a double-acting control unit.

- Unscrew the system screw on the control-valve block all the way.
- Place the signal line ( ) in the holder on the machine.

- Connect the hydraulic coupling ( ) on the machine to a single-acting control unit on the tractor.
- Connect the hydraulic couplings (blue 2+ / blue 2-) of the machine to a double-action control unit of the tractor.

Medium Version Electronics

- Switch the control units on the tractor to float position.
- Depressurise the hydraulic system on the tractor and the machine.
- Shut down and safeguard the machine, see chapter Safety -> Safety routines, "Shutting down and safeguarding the machine".

- Connect the hydraulic couplings (/) of the machine to a double-acting control unit of the tractor.
- Connect the hydraulic coupling ( ) on the machine to a single-acting control unit on the tractor.
- Connect the hydraulic coupling ( ) on the machine to a single-acting control unit on the tractor.
- Connect the hydraulic coupling ( ) to a single-acting control unit on the tractor.

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- Connect the hydraulic line ( ) to the depressurised return flow on the tractor.

Alternatively, the hydraulic couplings can be connected to a double-acting control unit.

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9.3 Hydraulic brake (Export)

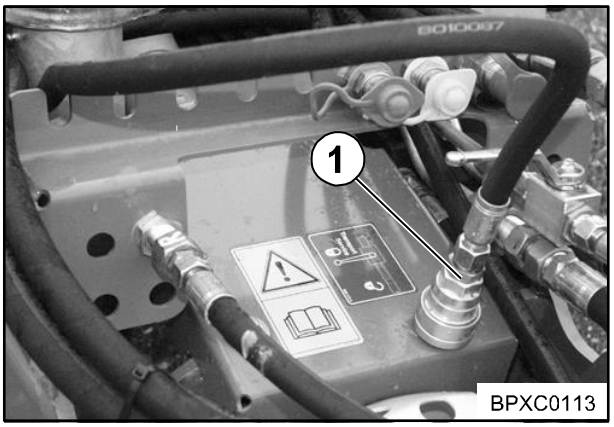

Fig. 67

- Shut down and safeguard the machine, see chapter Safety -> Safety routines, "Shutting down and safeguarding the machine".

A hydraulic brake is provided for certain export versions. In this version, the corresponding hydraulic hose is connected with the control valve on the tractor side. The brake is activated by actuating the tractor brake pedal.

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9.4 Hydraulic Brake (Export France)

WARNING!
Risk of injury and serious material damages due to unintentional braking of the machine.
If the safety chain is too short, it may tear off and lead to an emergency braking.

- Make sure that the length of the safety chain is adapted to the tractor.
- Consult a specialist workshop (service technician) for the adjustment of the safety chain length.
- When changing the tractor, make sure that the length of the safety chain remains appropriate.

WARNING!
When the safety valve of the hydraulic brake is not functioning, there is a risk of injury and serious property damage.
To ensure the function of the safety valve for the hydraulic emergency brake,

- the safety chain must be fastened on the tractor so that it is free of tension. A safety chain that is wrapped too strong around the hydraulic hose prevents the function of the safety valve.
- the brake pedal of the service brake must be actuated completely once before starting to drive. The pressure accumulator on the safety valve is pressurised by actuating the service brake.

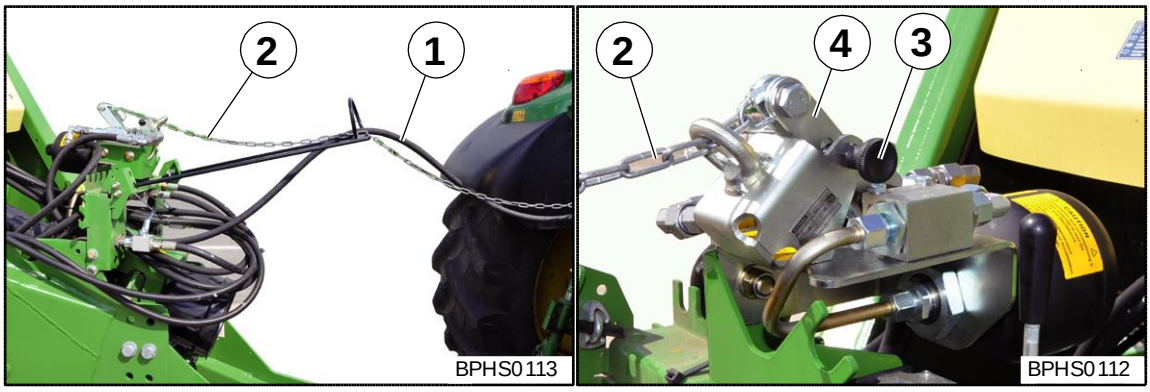

Fig. 68

- Shut down and safeguard the machine, see chapter Safety -> Safety routines, "Shutting down and safeguarding the machine".
- Connect the hydraulic hose (1) of the hydraulic brake to the connection for the hydraulic brake on the tractor.
- Fasten the safety chain (2) securely on the tractor.

The safety chain contains a predetermined breaking point (weaker chain link). If the machine detaches unintentionally, the safety valve triggers the emergency brake and the safety chain tears off on the weaker chain link. The chain link is destroyed in this process and must be replaced.

Unlocking the safety valve:

- Keep the safety chain (2) under tension and release the safety valve by pulling on the locking bolt (3). In this process, move the locking lever (4) slowly in its initial position by means of spring force.

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9.5 Compressed Air Connections for the Compressed Air Brake

The machine features a dual-line compressed-air braking system.

- The coupling heads are connected to the machine for attachment of the reservoir (red) and brake line (yellow) of the tractor.
- Shut down and safeguard the machine, see chapter Safety -> Safety routines, "Shutting down and safeguarding the machine".

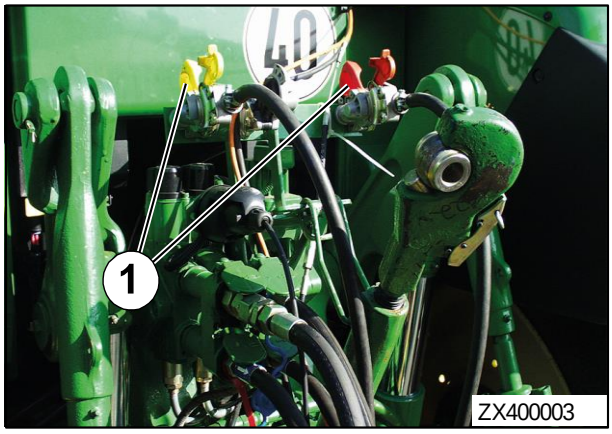

Figure 69

Insert the coloured compressed air hose couplings (1) into the correspondingly coloured couplings on the tractor.

Note

Always connect the yellow coupling head first, then the red one. Detach the couplings in reverse order.

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9.6 Connecting KRONE ISOBUS-Terminal

Caution! - Connecting the electrical controls

Effect: Damage to the control unit

Before inserting the plugs, make certain the plugs and sockets are clean and dry. Dirt and moisture may result in short circuits!

Note

For the installation of the terminal in the tractor cabin, observe the provided operating instructions of the terminal.

Note

Failure of terminal.

If the connection cables of the terminal are tensioned or if they touch the tractor wheels, then they could tear off. Therefore the terminal may fail and the machine can no longer be operated.

- Lay the connection cables so that they are not tensioned and do not touch the tractor wheels.

Tractors with integrated ISOBUS system

Prerequisite:

– Shut down and safeguard the machine, see chapter Safety, "Shutting down and safeguarding the machine".

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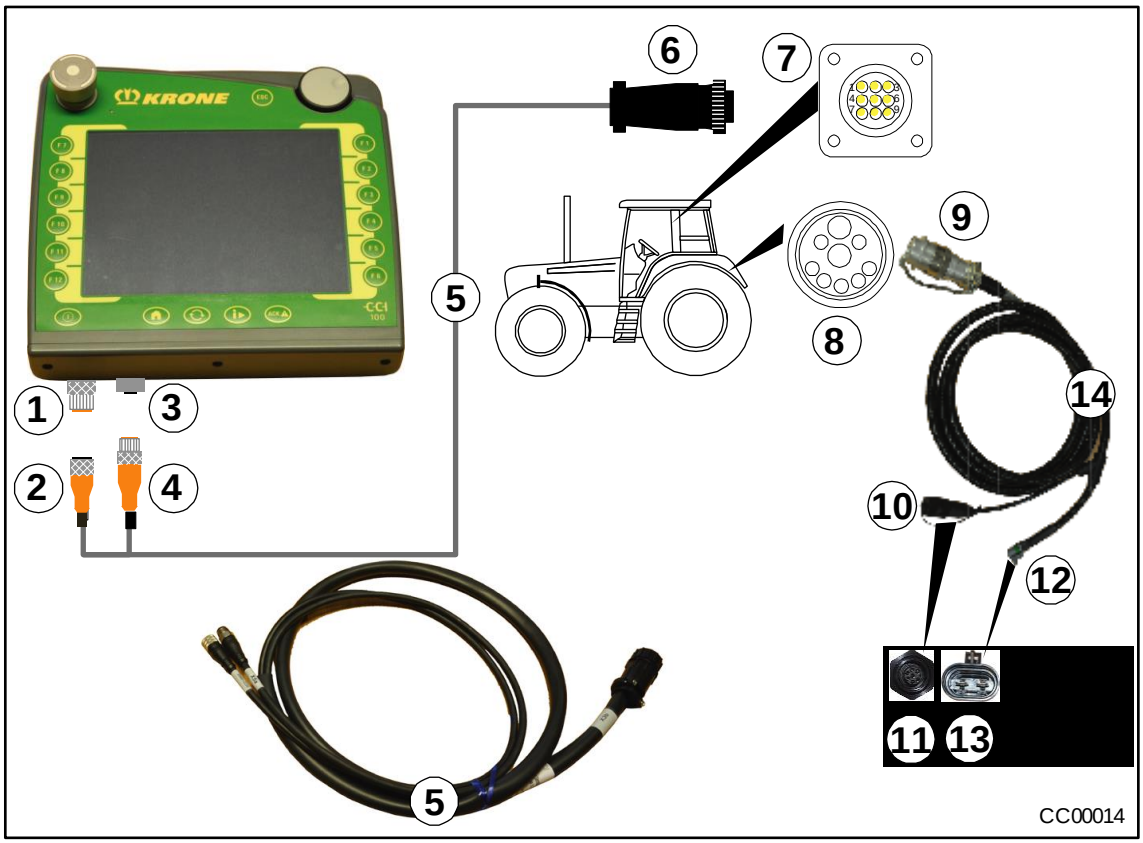

Fig. 70

Connecting terminal to tractor

Note

The terminal is connected to the tractor via a special cable set (5) which can be ordered by stating the KRONE article no. 20 081 223 0.

- Connect the plug (2) of the cable set (5) with the socket (1) (CAN1-IN) of the terminal.
- Connect the plug (4) of the cable set (5) with the socket (3) (CAN1-out) of the terminal.
- Connect ISOBUS plug (6) (9-pole) of cable set (5) with the ISOBUS socket (7) (9-pole) located in the tractor cabin.

Connecting tractor to machine

Note

The tractor is connected to the machine via cable set (14) which can be ordered by stating KRONE article no. 20 080 384 0.

- Connect ISOBUS plug (9) (9-pole) of cable set (14) with the outer ISOBUS socket (8) (9-pole) on tractor side.
- Connect plug (10) (7-pole) of cable set (14) with socket (11) (7-pole) of the machine.
- Connect plug (12) (2-pole) of cable set (14) with socket (13) (2-pole) of the machine.

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Tractors without ISOBUS system

Prerequisite:

– Shut down and safeguard the machine, see chapter Safety, "Shutting down and safeguarding the machine".

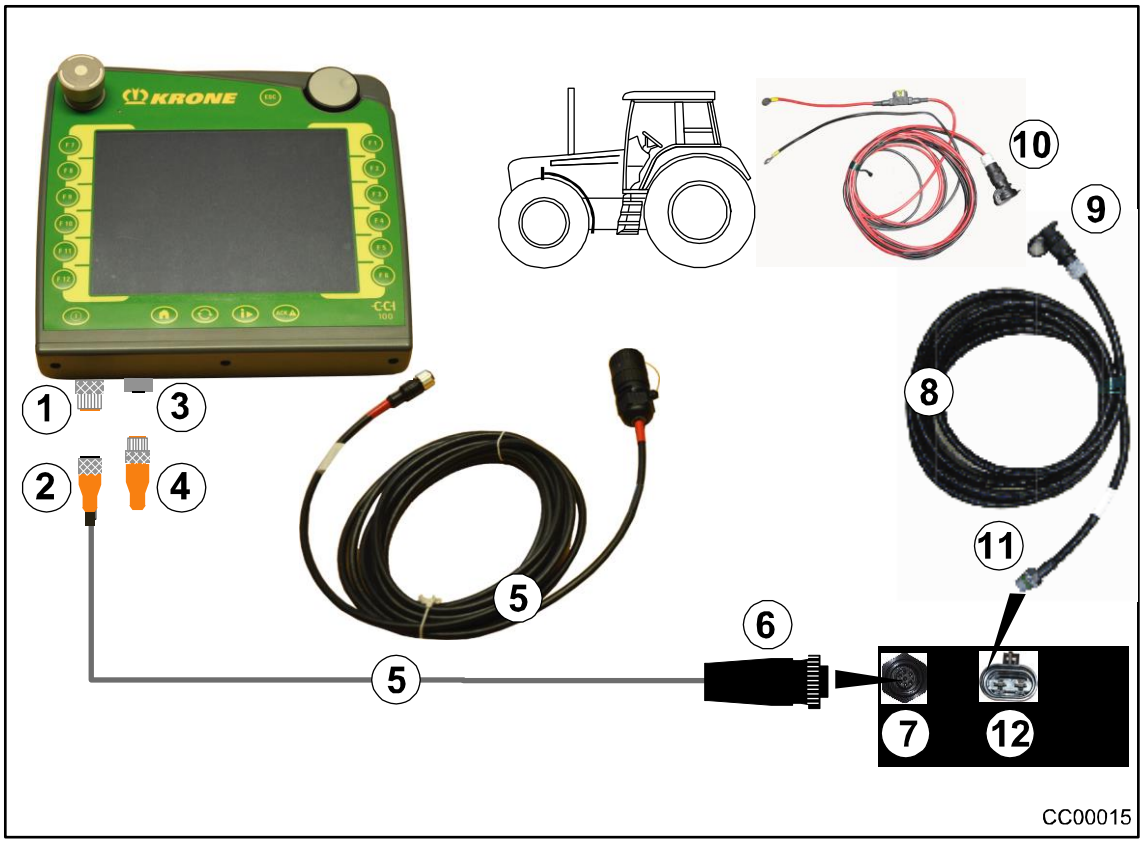

Fig. 71

Connection terminal to machine

Note

The connection of terminal to machine takes place via a provided cable set (5) (article no. 20 081 224 0).

- Connect plug (2) of cable set (5) with socket (1) (CAN1-IN) of the terminal
- Connect plug (6) (7-pole) of cable set (5) with socket (7) (7-pole) of the machine
- Connect connector plug (4) (article no. 00 302 300 0 included in scope of delivery) with socket (3) (CAN1-OUT) of the terminal

2-pole) of the machine

Connection tractor to machine

Note

The connection of tractor to machine takes place via a provided power cable (8) (article no. 20 080 601 0).

- Connect plug (9) of power cable (8) with continuous current socket (10) of the tractor
- Connect plug (11) (2-pole) of power cable (8) with socket (12) (2-pole) of the machine

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9.7 Connecting External ISOBUS-Terminal

Caution! - Connecting the electrical controls

Effect: Damage to the control unit

Before inserting the plugs, make certain the plugs and sockets are clean and dry. Dirt and moisture may result in short circuits!

Note

For the installation of the terminal in the tractor cabin, observe the provided operating instructions of the terminal.

Prerequisite:

– Shut down and safeguard the machine, see chapter Safety, "Shutting down and safeguarding the machine".

Connection terminal to tractor

To get information as to how to connect terminal to tractor, please refer to the enclosed operating instructions of the terminal.

Connection tractor to machine

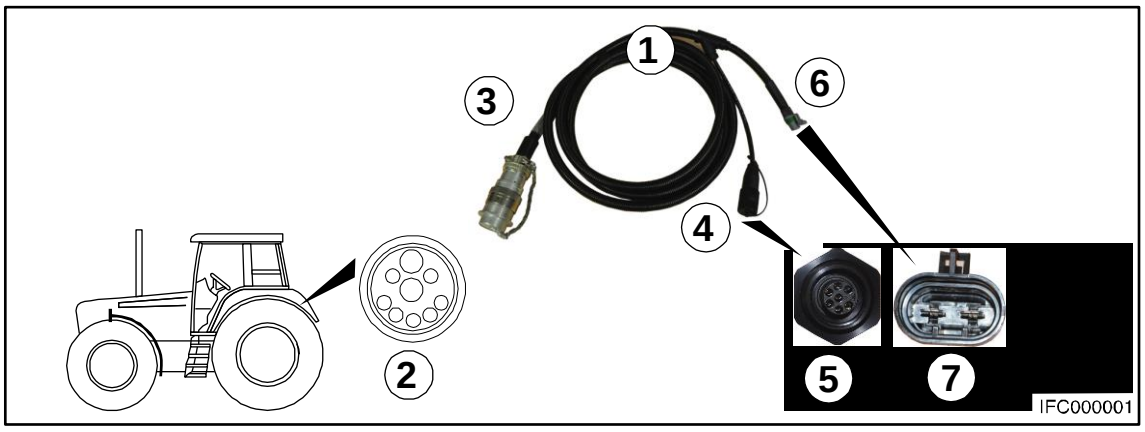

Fig. 72

- Connect ISO-plug (3) (9-pole) of cable set (1) with outer ISO-socket (2) (9-pole) on tractor side
- Connect plug (4) (7-pole) of cable set (1) with socket (5) (7-pole) of the machine
- Connect plug (6) (2-pole) of cable set (1) with socket (7) (2-pole) of the machine

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9.8 Connecting the Joystick

Note

Observe the provided operating instructions of the joystick for the installation of the joystick in the tractor cabin.

KRONE ISOBUS-Terminal for tractors with integrated ISOBUS system

Prerequisite:

– Shut down and safeguard the machine, see chapter Safety, "Shutting down and safeguarding the machine".

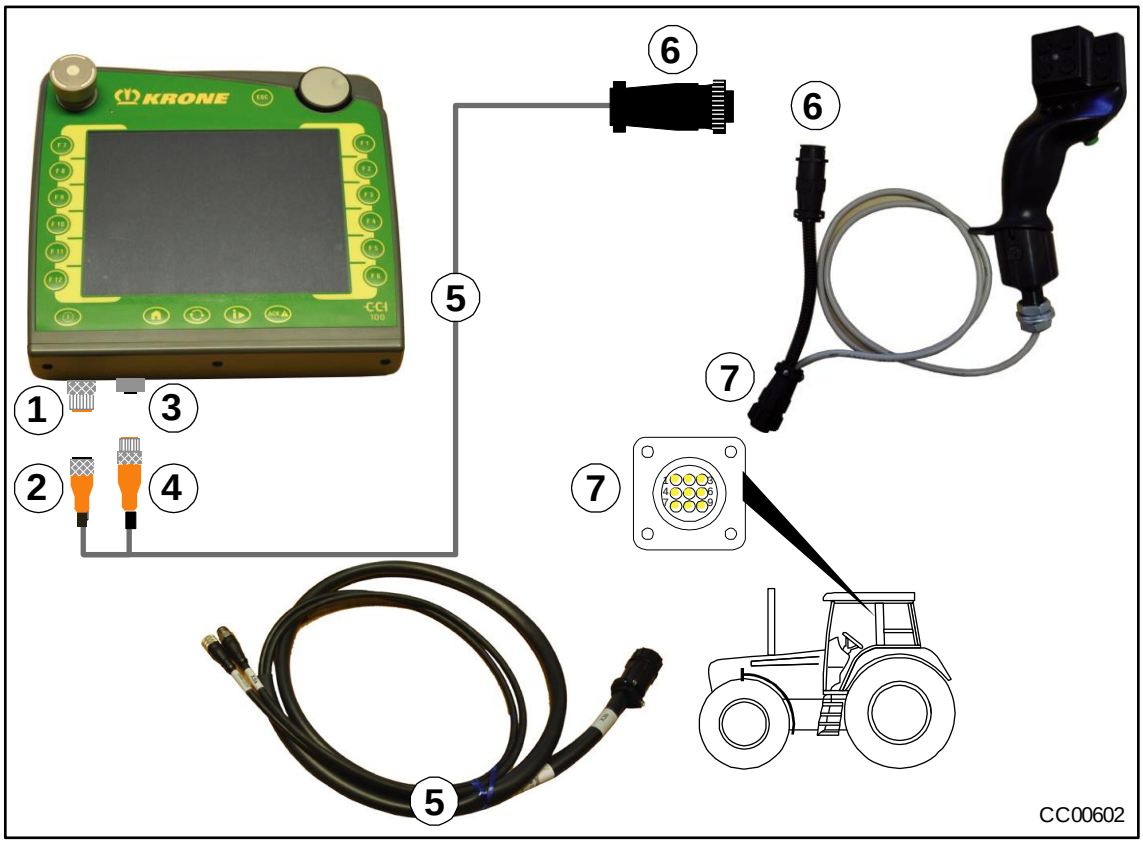

Fig. 73

Note

The terminal is connected to the tractor via a special cable set (5) which can be ordered by stating the KRONE article no. 20 081 223 0.

- Connect the plug (2) of the cable set (5) with the socket (1) (CAN1-IN) of the terminal.
- Connect the plug (4) of the cable set (5) with the socket (3) (CAN1-out) of the terminal.
- Connect the ISO plug (6) (9-pole) of the cable set (5) with the ISO socket (6) (9-pole) of the joystick.
- Connect the ISO plug (7) (9-pole) of the joystick with the ISO socket (7) (9 pole) located in the cabin.

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KRONE ISOBUS-Terminal for tractors without ISOBUS system

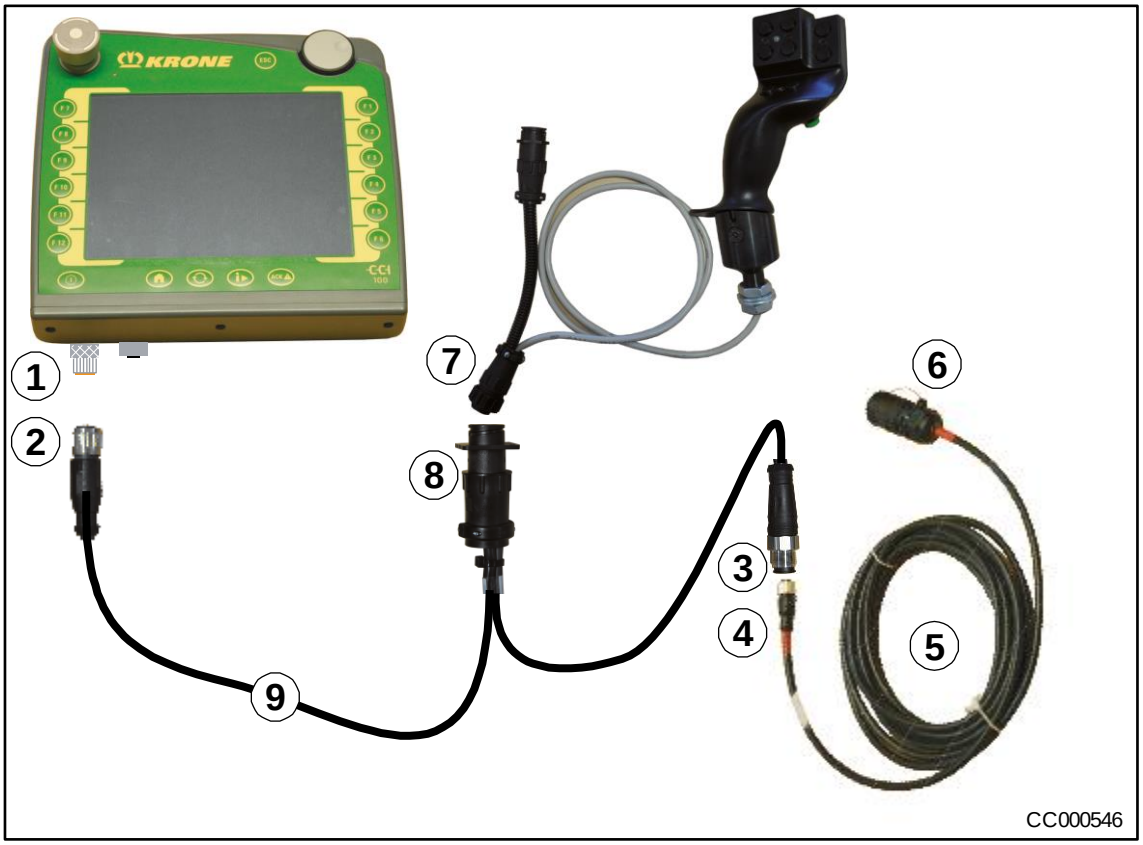

Fig. 74

Note

The terminal is connected to the multi-function lever via a special cable set (9) which can be ordered by stating the Krone product no. 20 081 676 0.

Prerequisite:

– Shut down and safeguard the machine, see chapter Safety, "Shutting down and safeguarding the machine".

- Connect plug (2) of cable set (9) with the socket (1) (CAN1-IN) of the terminal
- Connect socket (3) of cable set (9) with the plug (4) of the cable set (5)
- Connect ISO plug (8) (9-pole) of cable set (9) with the ISO socket (7) (9-pole) of the multi-function lever
- Connect plug (6) (7-pole) of cable set (5) with the socket (7) (7-pole) of the machine

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KRONE BETA II-Terminal

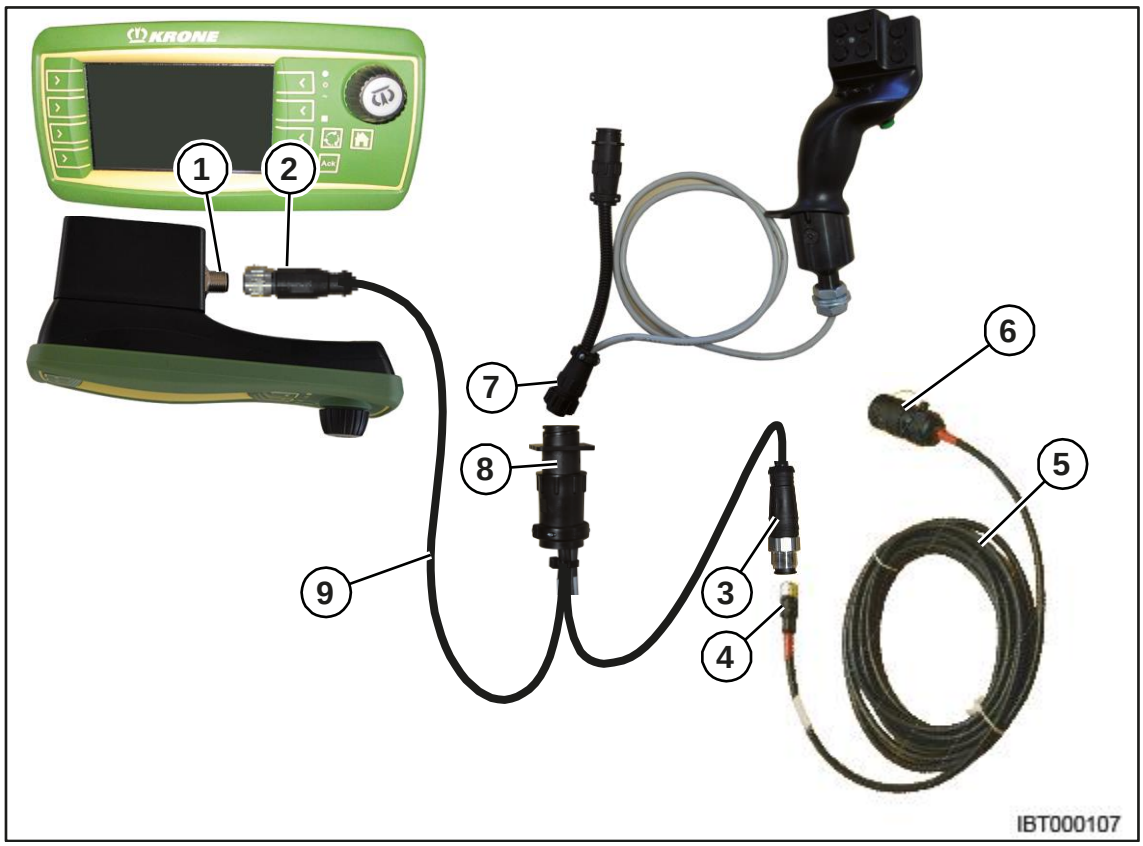

Fig. 75

Note

The terminal is connected to the multi-function lever via a special cable set (9) which can be ordered by stating the Krone product no. 20 081 676 0.

Prerequisite:

– Shut down and safeguard the machine, see chapter Safety, "Shutting down and safeguarding the machine".

- Connect the plug (2) of the cable set (9) with the socket (1) (CAN1-IN) of the terminal.
- Connect the socket (3) of the cable set (9) with the plug (4) of the cable set (5).
- Connect the 9-pole plug (8) of the cable set (9) with the 9-pole socket (7) of the joystick.
- Connect the 7-pole plug (6) of the cable set (5) with the 7-pole socket (7) of the machine.

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9.9 Lighting

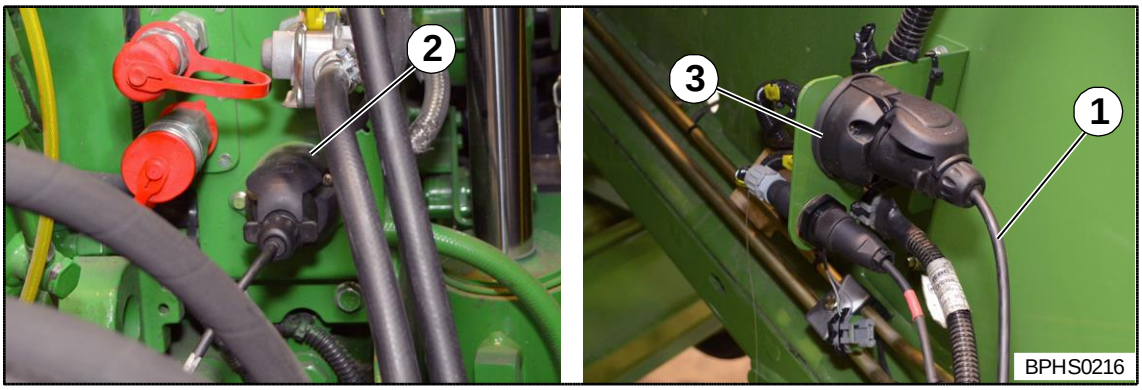

Fig. 76

- Shut down and safeguard the machine, see chapter Safety -> Safety routines, "Shutting down and safeguarding the machine".

The lighting system is connected via the 7-pin connection cable (1).

To do this:

- Insert the 7-pin plug of the connection cable (1) into the relevant socket (2) of the tractor.
- Insert the 7-pin connection cable plug (1) into the appropriate socket (3) of the machine.
- Position the cable so that it will not come in contact with the wheels.

Note

Before inserting the plugs, make certain the plugs and sockets are clean and dry. Dirt and moisture may result in short circuits!

9.10 Using the safety chain

WARNING!

When using a wrongly dimensioned safety chain, the safety chain may tear if the machine loosens unintentionally. This can result in serious accidents.

- Always use a safety chain with a minimum tensile strength of 178 kN (40.000 lbf).

Note

Using the safety chain

Attachment of the safety chain is not stipulated in all countries.

The safety chain is used as an additional safety precaution for trailed devices, should they become detached from the drawbar during transport. Attach the safety chain with the respective mounting parts to the hitching device on the tractor or to another specified connection point. The safety chain should have just enough play to be able to go around curves.

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Fig. 77

- Shut down and safeguard the machine, see chapter Safety -> Safety routines, "Shutting down and safeguarding the machine".
- Install safety chain (1) with shackle (2) on the big pack baler.

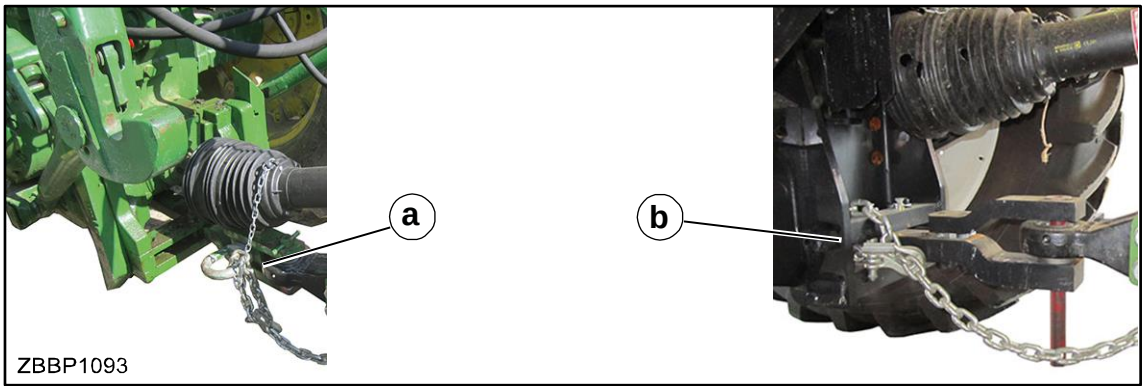

Fig. 78

- Install safety chain (1) on an eligible position (for example: a or b) on the tractor.

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10 Operation

WARNING!

If the basic safety instructions are not followed, people may be seriously injured or killed.

- To avoid accidents, the basic safety instructions in the chapter Safety must have been read and followed, see chapter Safety "Basic safety instructions".

WARNING!

If the safety routines are not adhered to, people may be seriously injured or killed.

- To avoid accidents, the safety routines in the chapter Safety must be read and followed, see chapter Safety "Safety routines".

ATTENTION! – Machine may be damaged if the baling process is started at maximum baling pressure.

If the baling process is started at maximum baling pressure, the friction clutch on the flywheel may be damaged.

- Do not start the baling process at maximum baling pressure.

10.1 Preparation for baling

Before you start baling, check to make certain

– the bale ejector is in the front position.
– the bale brake is locked.
– the tying twine reserves are adequate.
– the correct cutting length is set, for the cutting system version.
– the working height of the pick-up is set.
– the correct bale length is set via the terminal.
– the knotter shaft is unlocked as otherwise an endless bale will be pressed.
– the flywheel brake is released.

- Lower bale chute into working position.
- Lower pick-up into working position.
- Set bale length and baling pressure via terminal.

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Starting baling

Prerequisite:

– The conditions mentioned in “Preparation for Baling” and “Before starting baling, check to make certain ...” are fulfilled.

Baling

- Turn on the P.T.O. shaft at minimum speed.
- Slowly increase the P.T.O. speed to 1000 min^{-1}.
- Wait until the pre-selected bale channel flap pressure is reached in the terminal before driving up into the swath for the first time.

The bale channel must be completely filled in order to bale in automatic mode. This is best accomplished by baling the first two bales in manual mode.

- Switch to automatic mode in the terminal after the second bale has been baled.
- Adjust the baling force in automatic mode.

After baling

- Release the bale brake on the bale chute for the bales which have been tied at last, optional.
- Lay down the bales being tied at last on the field.
- Clean the machine.
- Prepare the machine for road travel.

10.2 Lowering / Lifting Twine Boxes

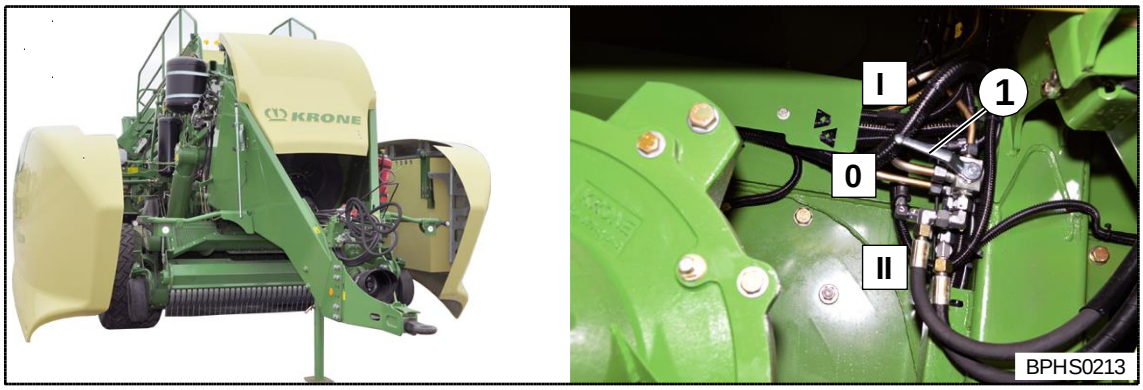

Fig. 79

Lowering / lifting both twine boxes

- Move the switching valve (1) to position (0).

Lowering / lifting the right twine box

- Move the switching valve (1) to position (I).

Lowering / lifting the left twine box

- Move the switching valve (1) to position (II).

Comfort - Electronic

Lowering / lifting

- Press function key to release the “Lifting / Lowering” functions.

Lowering

- Press function key.

Lifting

- Press function key.

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Medium Version Electronics

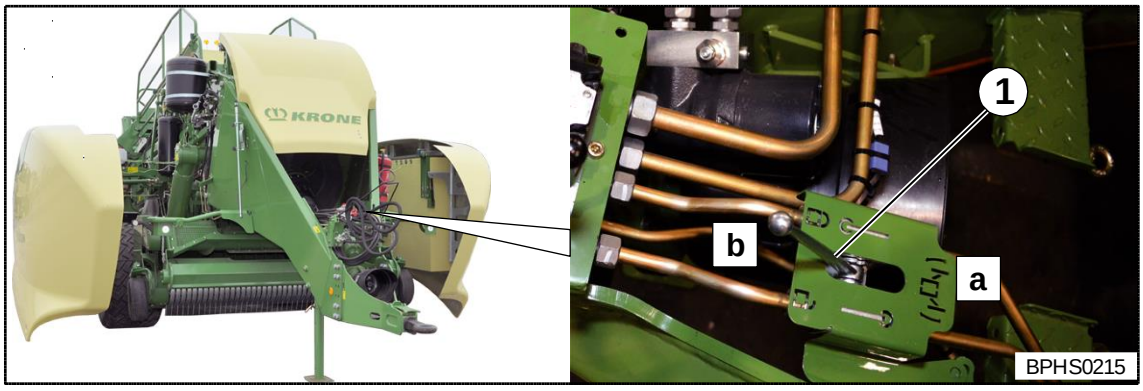

Fig. 80

Position (a) twine boxes released

Position (b) twine boxes locked

Releasing twine boxes

- Move the shut-off valve (1) to position (a).

Lowering

- Activate the control unit (red 4) for lowering.

Lifting

- Activate the control unit (blue 4) for lifting.

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10.3 Tying unit

10.3.1 Inserting the Twine

Insertion of the twine is identical for the left and the right side of the baler. The procedure of insertion of the twines described in the following therefore applies for both sides of the baler.

The preparation and insertion of the twine must be made with machine at standstill:

- Lower the twine boxes via the terminal.
- Switch off the P.T.O. shaft of the tractor.
- Switch off the tractor engine and remove the ignition key.
- Fix the flywheel in place mechanically.
- Secure the knotter shaft by moving the safety lever (1).

Secure knotter shaft

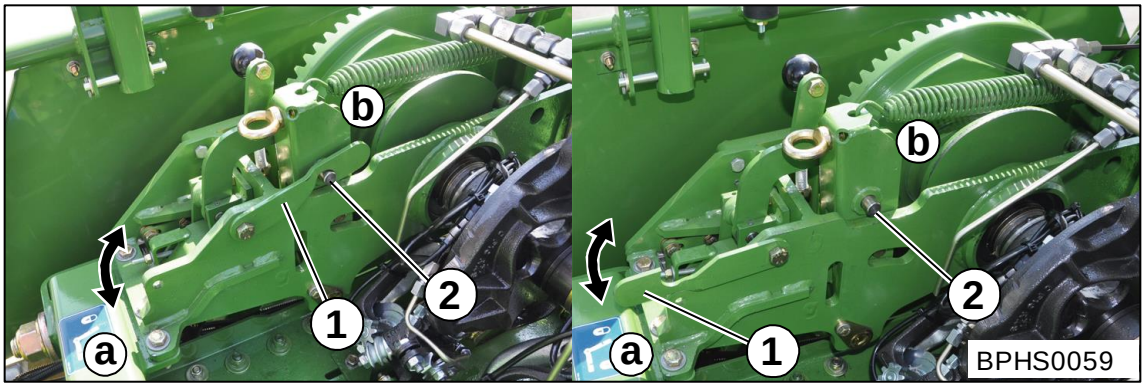

Fig. 81

Each time before you set new tying twine in place, the knotter shaft must be secured so that the needle yoke cannot be put in motion.

To do this:

- To do this, move the safety lever (1) from position (a) to position (b) and set it down on the journal (2)

Note

When placing the tying twine in the twine box, make certain that the labeling on the rolls can be read. Make certain the side marked "Up" is facing up.

Note

The safety lever (2) must be in position (a) for the baling process! Otherwise an endless bale will be formed when the knotter shaft is secured.

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Connecting twine

The upper eight twine rolls (1) provide the four upper twines.
The lower 16 twine rolls (2) provide the four lower twines.
During baling process, one upper twine and one lower twine are lead to each knotter.

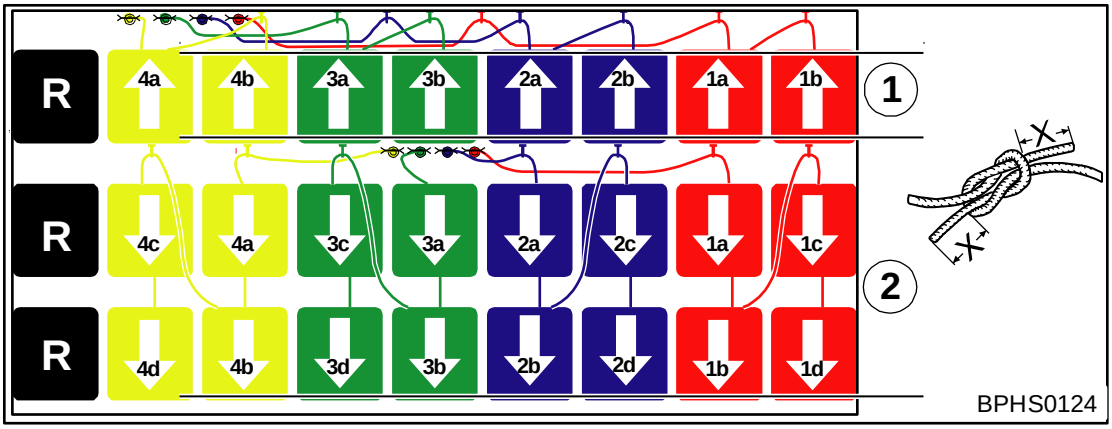

Fig. 82

1) Twine rolls for upper twine
2) Twine rolls for lower twine

Connecting upper twine (1)

Make certain all four upper twines never cross.

Connecting twine roll 4a with twine roll 4b

1 Guide the beginning of the twine of the twine roll (4a) through the upper yellow twine brake out of the twine box.
2 Guide the beginning of the twine of the twine roll (4b) through the yellow eye above and connect it with the end of the twine of the twine roll (4a) by a reef knot.
3 Shorten the ends of the reef knot to x = 15 - 20 mm.

Connecting twine roll 3a with twine roll 3b

1 Guide the beginning of the twine of the twine roll (3a) through the green eye above and then further through the upper green twine brake out of the twine box.
2 Guide the beginning of the twine of the twine roll (3b) through the green eye above and connect it with the end of the twine of the twine roll (3a) by a reef knot.
3 Shorten the ends of the reef knot to x = 15 - 20 mm.

Connecting twine roll 2a with twine roll 2b

1 Guide the beginning of the twine of the twine roll (2a) through the blue eye above and then to the front to the next blue eye. From the blue eye, guide the twine through the upper blue twine brake out of the twine box.
2 Guide the beginning of the twine of the twine roll (2b) through the blue eye above and connect it with the end of the twine of the twine roll (2a) by a reef knot.
3 Shorten the ends of the reef knot to x = 15 - 20 mm.

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Connecting twine roll 1a with twine roll 1b

1 Guide the beginning of the twine of the twine roll (1a) through the red eye above and then further forward to the next red eye. From the red eye, guide the twine through the upper red twine brake out of the twine box.

2 Guide the beginning of the twine of the twine roll (1b) through the red eye above and connect it with the end of the twine of the twine roller (1a) by a reef knot.

3 Shorten the ends of the reef knot to x = 15 - 20 mm.

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Connecting lower twine (2)

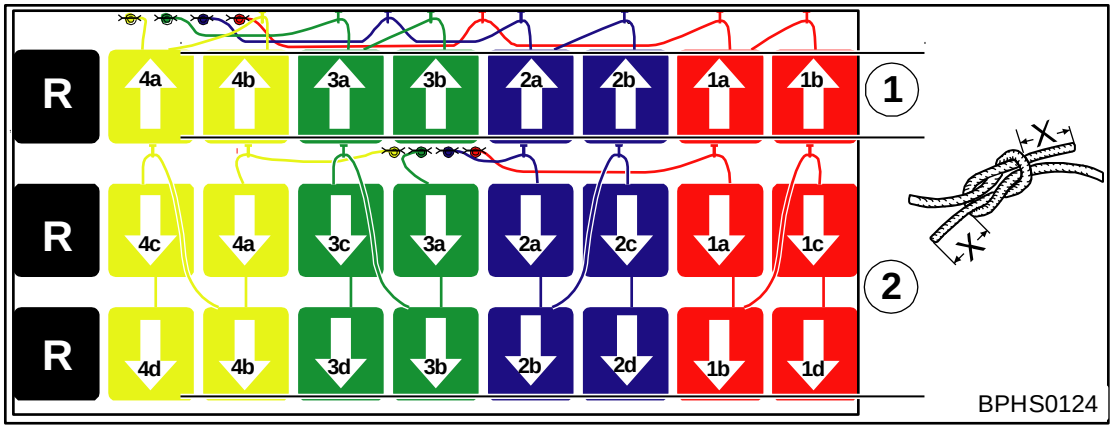

Fig. 83

1) Twine rolls for upper twine 2) Twine rolls for lower twine

Connecting twine rolls 4a, 4b, 4c and 4d with each other

1 Guide the beginning of the twine of the twine roll (4a) over the yellow eye above through the lower yellow twine brake out of the twine box.

2 Connect the beginning of the twine of the twine roll (4b) with the end of the twine of the twine roll (4a) by a reef knot.

SEQ figure \s Guide the beginning of the twine of the twine roll (4c) through the yellow eye above and connect it with the end of the twine of the twine roll (4b) by a reef knot.

3 Connect the beginning of the twine of the twine roll (4d) with the end of the twine of the twine roll (4c) by a reef knot.

4 Shorten the ends of all reef knots to x = 15 - 20 mm.

Connecting twine rolls 3a, 3b, 3c and 3d with each other

1 Guide the beginning of the twine of the twine roll (3a) via the green eye above through the lower green twine brake out of the twine box.

2 Connect the beginning of the twine of the twine roll (3b) with the end of the twine of the twine roll (3a) by a reef knot.

3 Guide the beginning of the twine of the twine roll (3c) through the green eye above and connect it with the end of the twine of the twine roll (3b) by a reef knot.

4 Connect the beginning of the twine of the twine roll (3d) with the end of the twine of the twine roll (3c) by a reef knot.

5 Shorten the ends of all reef knots to x = 15 - 20 mm.

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Connecting twine rolls 2a, 2b, 2c and 2d with each other

1 Guide the beginning of the twine of the twine roll (2a) over the upper blue eye through the lower blue twine brake out of the twine box.
2 Connect the beginning of the twine of the twine roll (2b) with the end of the twine of the twine roll (2a) by a reef knot.
3 Guide the beginning of the twine of the twine roll (2c) through the blue eye above and connect it with the end of the twine of the twine roll (2b) by a reef knot.
4 Connect the beginning of the twine of the twine roll (2d) with the end of the twine of the twine roll (2c) by a reef knot.
5 Shorten the ends of all reef knots to x = 15 - 20 mm.

Connecting twine rolls 1a, 1b, 1c and 1d with each other

1 Guide the beginning of the twine of the twine roll (1a) via the red eye above and through the lower red twine brake out of the twine box.
2 Connect the beginning of the twine of the twine roll (1b) with the end of the twine of the twine roll (1a) by a reef knot.
3 Guide the beginning of the twine of the twine roll (1c) through the red eye above and connect it with the end of the twine of the twine roll (1b) by a reef knot.
4 Connect the beginning of the twine of the twine roll (1d) with the end of the twine of the twine roll (1c) by a reef knot.
5 Shorten the ends of all reef knots to x = 15 - 20 mm.

Note

The twine rolls (R) are auxiliary rolls. They must not be connected with other rolls.

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10.3.2 Threading in the Lower Twine

Then guide the lower twine from the twine box to the lower twine guide.

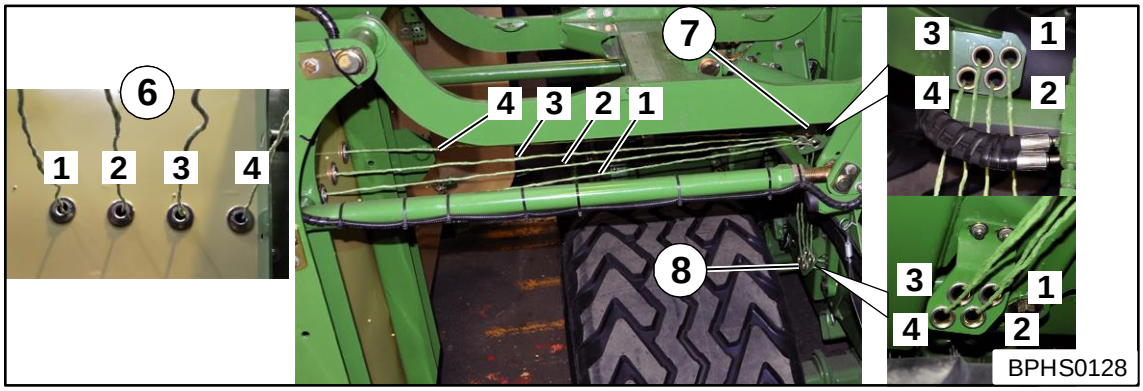

Fig. 84

Make certain the lower twines never cross.

- Guide the four lower twines (1,2,3,4) coming from the twine box (6) to the twine guide top (7).
- Guide the four lower twines from the top through the eyes of the twine guide top and guide them further to the twine guide bottom (8).
- Guide the four lower twines from the outside through the eyes of the twine guide bottom and then further to the lower twine brakes.

Then guide the lower twine from the lower twine guide to the needles.

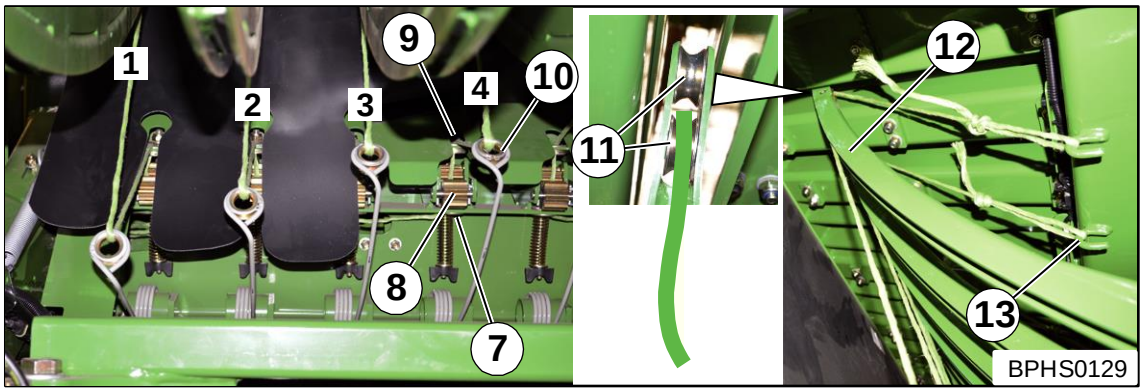

Fig. 85

- Guide the lower twine coming from the lower twine guide through the lower eye (7) of the twine brake (8) through the twine brake and further to the upper eye (9) of the twine brake.
- Guide the lower twine further through the eye of the twine tension springs (10).
- Pull the lower twine upwards and guide it between the rollers (11) of the needles (12).
- Pull the lower twine down towards the frame (14) and knot it on the frame.

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10.3.3 Threading in the Upper Twine

Then guide the upper twine from the twine box to the upper twine guide.

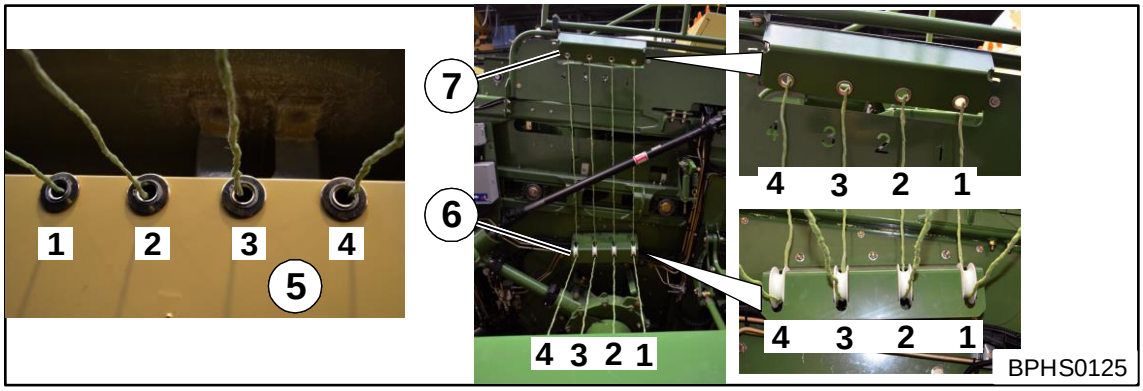

Fig. 86

Make certain the upper twines never cross.

- Guide the four upper twines (1,2,3,4) coming from the twine box (5) to the deflection pulleys (6).
- Guide the four upper twines around the deflection pulley and guide them further to the upper twine guide (7).
- Guide the four upper twines through the eyes of the upper twine guide and guide them further to the twine brakes on the knotters.

Guide the upper twine from the upper twine guide to the upper needles

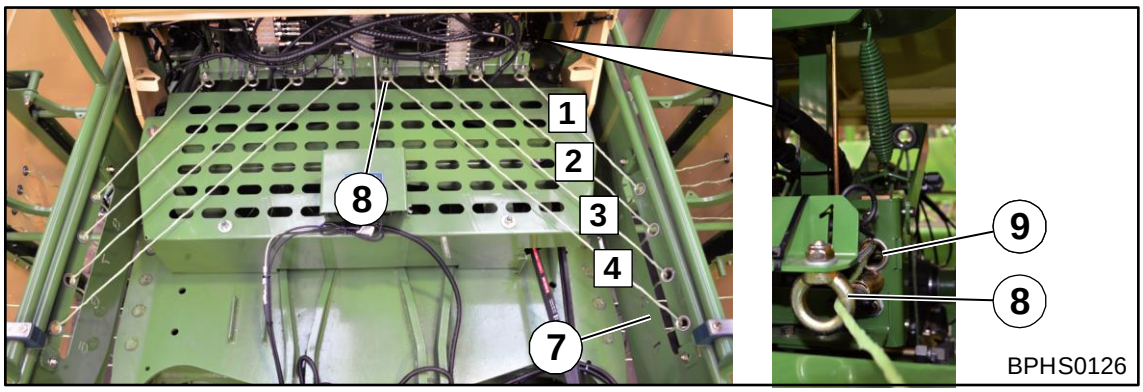

Fig. 87

- Guide the four upper twines coming from the upper twine guide (7) through the rear eyes (8) and guide them further through the twine brake (9).

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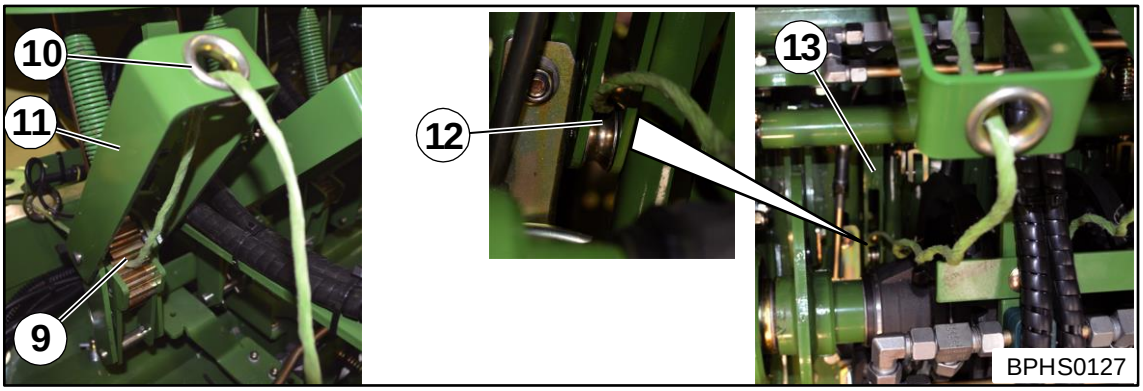

Fig. 88

- Guide the upper twine from the twine brake (9) through the eye (10) of the tensioning arm (11).
- Pull the upper twine towards the bottom and guide it between the rollers (12) of the upper needle (13).

If the bale channel is empty

- Knot the upper twine with the lower twine in the middle of the bale chamber.

Or

- Guide the upper twine under the crossbeam of the knotting mechanism and knot it on the crossbeam of the upper bale channel flap.
- To tension the tensioning arm (11), pull back the upper twine in front of the twine eye (8).

If the bale channel is filled

- Read the actual bale length on the terminal.

If the difference between actual bale length and target bale length is > 50 cm

- Let the loose twine end of the upper twine hang down approx. 50cm in the bale channel.

The tensioning arm (11) is tensioned when the twine is caught in the crop at subsequent baling.

If the difference between actual bale length and target bale length is < 50 cm

- Guide the upper twine under the crossbeam of the knotting mechanism and knot it on the crossbeam of the upper bale channel flap.
- To tension the tensioning arm (11), pull back the upper twine in front of the twine eye (8).

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10.4 Pick-up

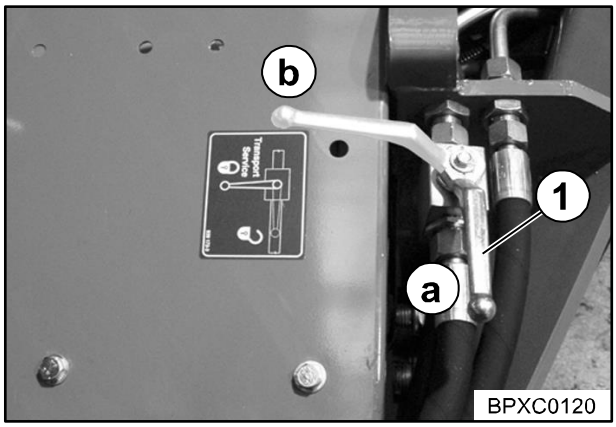

Fig. 89

Position (a) pick-up released Position (b) pick-up locked

- Shut down and safeguard the machine, see chapter Safety -> Safety routines, "Shutting down and safeguarding the machine".
- To release the pick-up, open the stop cock (1) (position a).
- To lock the pick-up, close the stop cock (1) (position b).

Lower the pick-up

- To move the pick-up into the working position, move the single-acting control unit ( ) into the float position.

Raise the pick-up

- To move the pick-up into the transport position, actuate the single-acting control unit ( ).

Note

Lift the Pick-up for driving in the headland or when driving backward!

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10.5 Lifting / Lowering Bale Chute

WARNING!

There is an increased risk of injury if functions are performed directly at the machine while the tractor engine is running.

If functions are performed directly at the machine while the tractor engine is running, people standing in the danger zone can be crushed or killed.

- Only operate the machine while the tractor engine is running if
  - The PTO shaft is switched off and coasting machine parts have come to a standstill.
  - The tractor is secured to prevent it rolling away.
  - The parking brake and the flywheel brake on the machine are applied.
  - The person operating the machine knows which functions are executed by the various operations.
  - The person operating the machine is standing outside the radius of action of the moving parts of the machine.
  - No other persons are standing in the danger zone.

The operation of the bale chute (1) depends on the version you have (medium version electronics or comfort version electronics).

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10.5.1 Medium Electronics Design

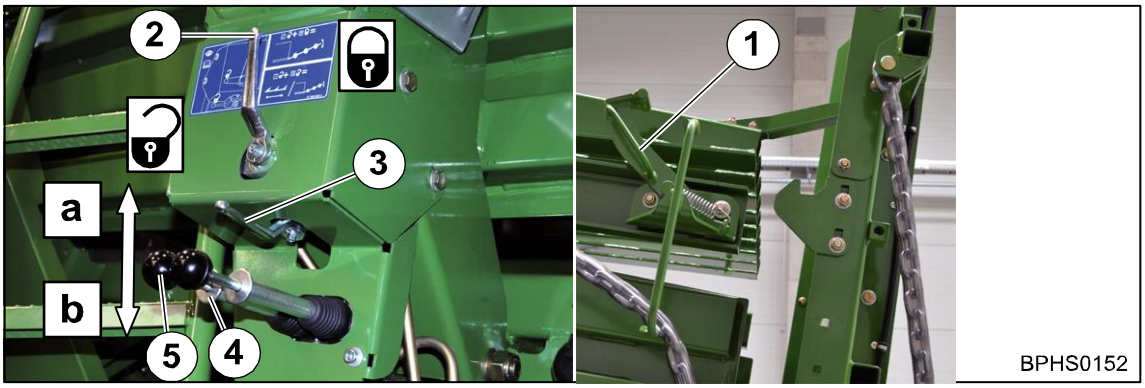

Fig. 90

Position a = fold up bale chute

Position b = fold down bale chute

- Close the stop cock (3).
- Actuate the control unit ( ).
- Unlock the mechanical locking (1) of the bale chute.
- Open the stop cock (2).

Lowering into working position

- Tighten the safety sleeve (4).
- Move the control lever (5) downward into position (b).

Lifting into transport position

- Tighten the safety sleeve (4).
- Move the control lever (5) up to position (a).
- Lock the mechanical locking (1) of the bale chute.

Note

The stop cock (2) must be closed during baling mode.

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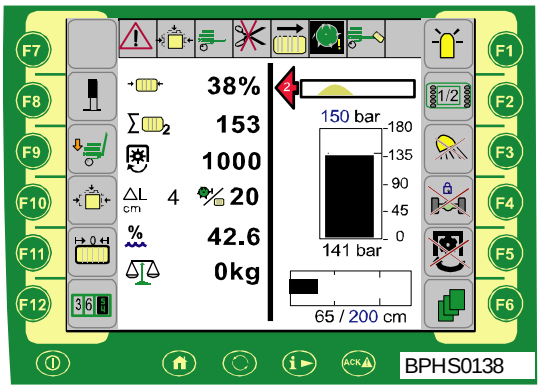
10.5.2 Comfort Version Electronics Design

Using the terminal



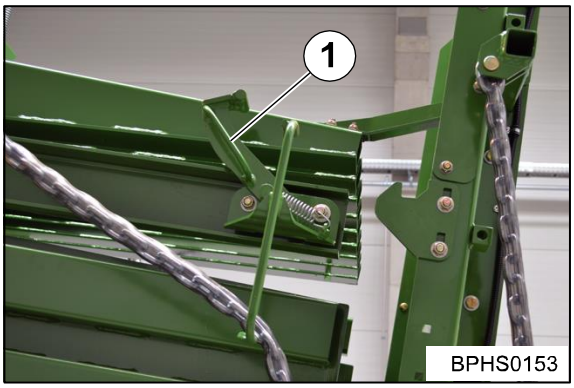


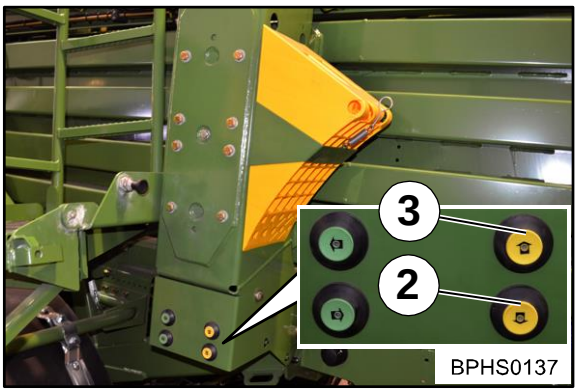
Fig. 91

The terminal can be used to lower the bale chute into the working position only.

- **For version without load sensing:** Actuate the control unit (P).
- Release the mechanical lock (1) on the bale chute.
- To lower the bale chute into the working position, press .

The bale chute is raised into the transport position using the external pushbutton only.

Raising the bale chute into the transport position using the external pushbutton



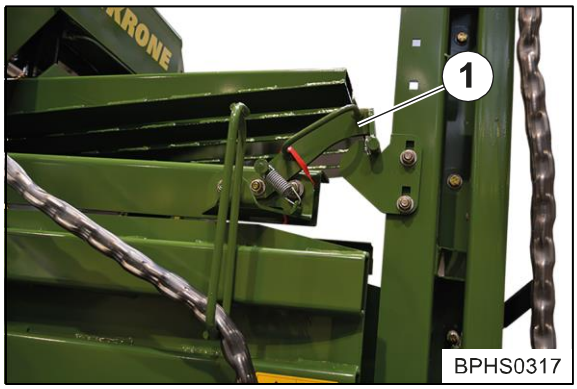


Fig. 92

- Actuate the control unit (P).
- Release the mechanical lock (1) on the bale chute.

Lowering into the working position

- To lower the bale chute into the working position, press the pushbutton (2).

Raising into the transport position

- Press the pushbutton (3) until the bale chute is at the very top.
- Close the mechanical lock (1) on the bale chute.

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10.6 Operating Bale Ejector

WARNING!

There is an increased risk of injury if functions are performed directly at the machine while the tractor engine is running.

If functions are performed directly at the machine while the tractor engine is running, people standing in the danger zone can be crushed or killed.

- Only operate the machine while the tractor engine is running if
  - The PTO shaft is switched off and coasting machine parts have come to a standstill.
  - The tractor is secured to prevent it rolling away.
  - The parking brake and the flywheel brake on the machine are applied.
  - The person operating the machine knows which functions are executed by the various operations.
  - The person operating the machine is standing outside the radius of action of the moving parts of the machine.
  - No other persons are standing in the danger zone.

Coupling / uncoupling the bale ejector

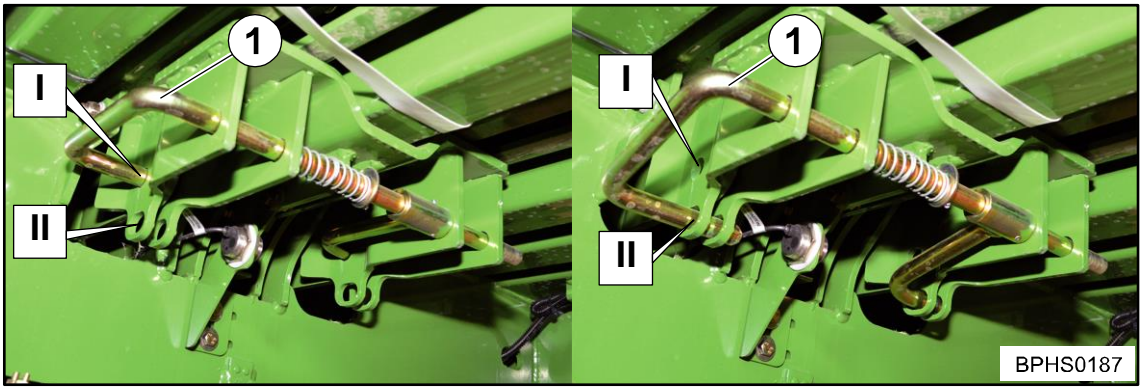

Fig. 93

Position I = bale ejector coupled

Position II = bale ejector uncoupled

Uncoupling or coupling bale ejector:

- Switch lever (1) from position I to position II to move only the last bale onto the bale chute.
- Switch lever (1) from position II to position I to empty the bale channel.

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Operating the bale ejector for version with medium electronics

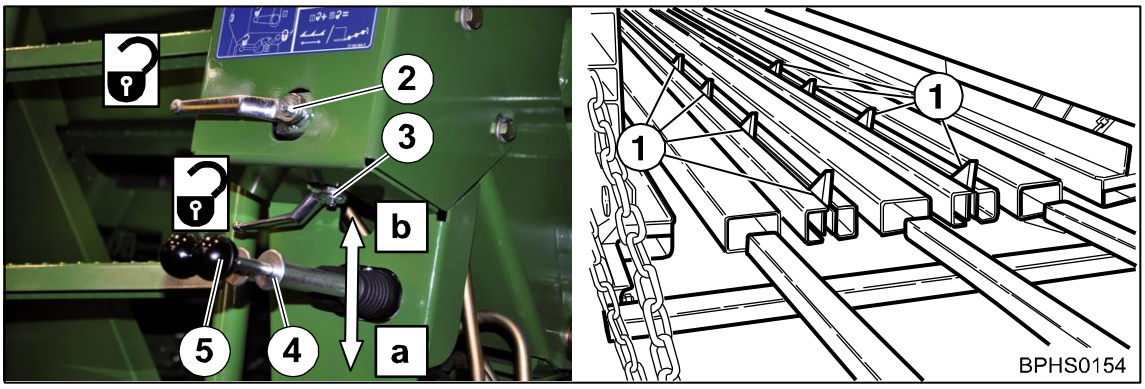

Fig. 94

Position a = move bale ejector forward

Position b = move bale ejector backward

- Actuate the control unit ( ).
- Open the stop cocks (2) and (3).

Moving bale ejector forward

- Tighten the safety sleeve (4) and move the control lever (5) upwards into position (a).

Moving bale ejector backward

- Tighten the safety sleeve (4) and move the control lever (5) downwards into position (b).

Note

After ejection of the bale it is absolutely essential to move the bale ejector to the forward position and to close the shut-off valves (2 and 3).

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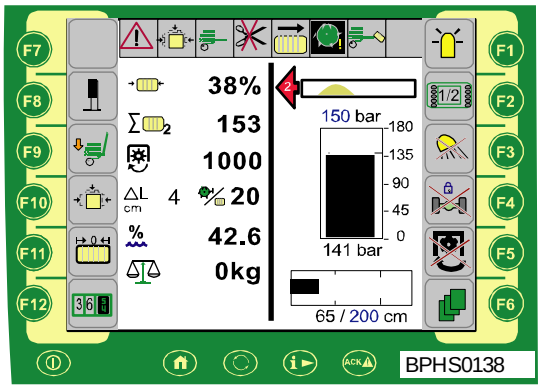
Operating the bale ejector via the operation terminal, for comfort version electronics design



When activating the bale ejector, 10 bales are always ejected via the terminal.

- Activate the control unit (red 1).

If the bale channel flaps are not released

- Press AUTO function key to release the bale channel flaps.

If the bale channel flaps are released

- Press AUTO function key to eject 10 bales.

Repeat the process until every tied bale is out of the bale channel.

Push the bale that has been tied at last manually from the bale chute.

Operate the bale ejector using the external pushbuttons.

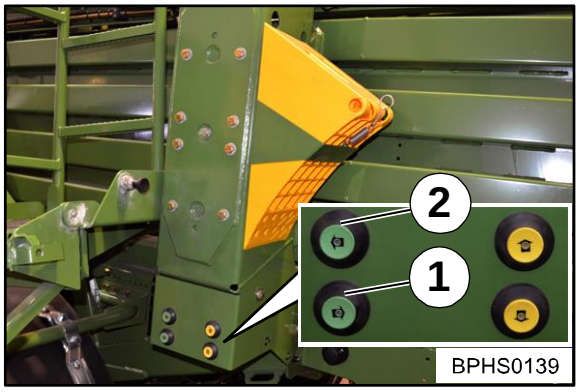


Fig. 95

- **For version without load sensing:** Actuate the control unit (P).

The pushbutton (1) has several functions.

If the bale channel flaps have not been actuated

- To loosen the bale channel flaps, press the pushbutton (1) once.

If the bale channel flaps have been actuated

- To execute 10 bale ejections, press the pushbutton (1).

Moving out bale ejector

- Hold down the pushbutton (1).

Moving in bale ejector

- Hold down the pushbutton (2).

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10.7 Hydraulic parking jack

Note
In order to increase the base of the support jack when the ground is soft, use a suitable support.

Comfort - Electronic

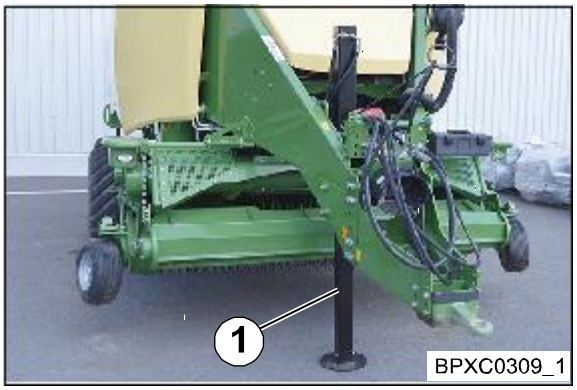

Fig. 96

Moving the support jack out/in:

Extend

- Actuate the double-acting control unit ( ) until the support jack is firmly on the floor.

Retract

- Actuate the double-acting control unit ( ) until the support jack has been moved in.

Medium Version Electronics

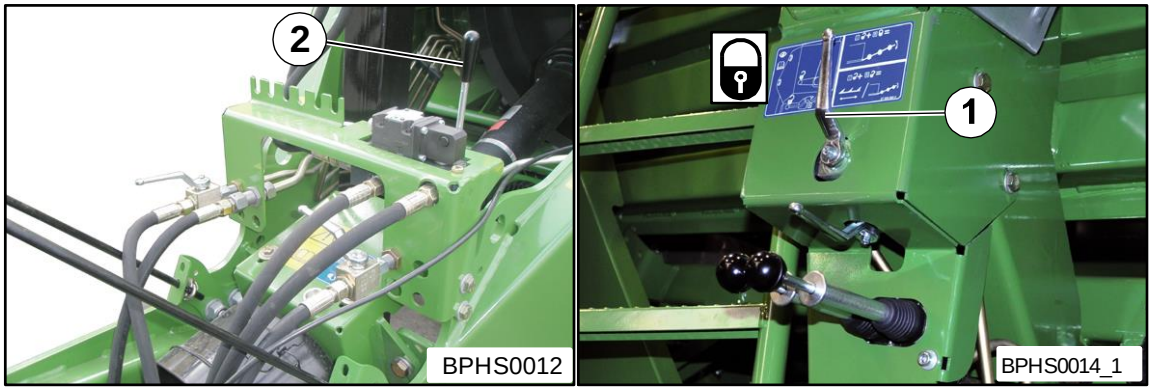

Fig.97

Extending/retracting support jack:

- Close the stop cock (1).
- To pressurize the control block, actuate the control unit ( ).

Extending

- Actuate the lever (2) until the support jack comes firmly to rest on the ground.

Retracting

- Actuate the lever (2) until the support jack is retracted.

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10.8 Bale Brake

Only in combination with bale scale

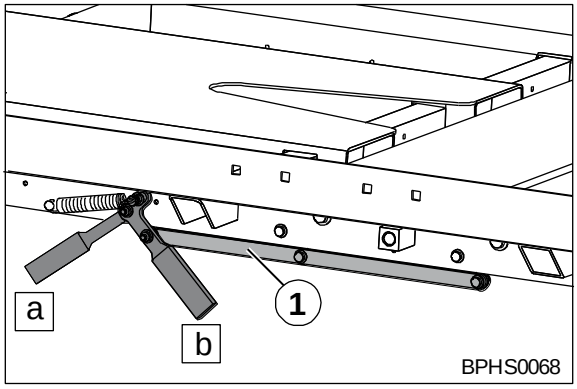

Fig. 98

The first two rolls of the bale chute are locked via bale brake (1). This is necessary to reach an exact weight control of the bales.

Lever in position a = rolls blocked
Lever in position b = rolls can be turned freely

Note
To ensure that the last bale can be put down properly, the bale brake must be released for the last bale.

10.8.1 Working floodlight

The working floodlight is switched on and off via the operating terminal. The activated state is indicated on the display.

Switching the working floodlight on

Press the function key for .

Switching the working floodlight off

Press the function key for .

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10.9 Initiating the Tying Process Manually

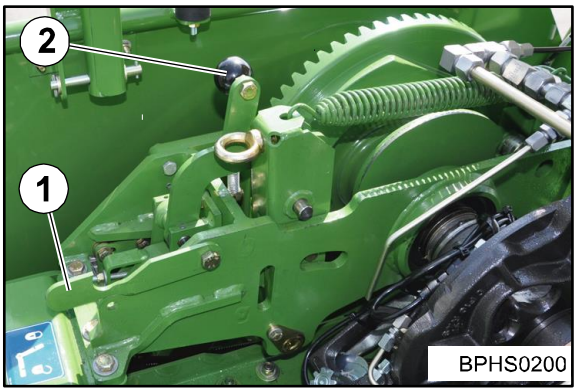

Fig. 99

It is only necessary to trigger the tying process manually when performing maintenance, adjustment and repair tasks.

Prerequisite:

– The tractor is disconnected.

Initiating the tying process:

- Swivel the safety lever (1) down.
- Move lever (2) to the rear to initiate the tying process.

10.10 Finishing Tying Process Manually

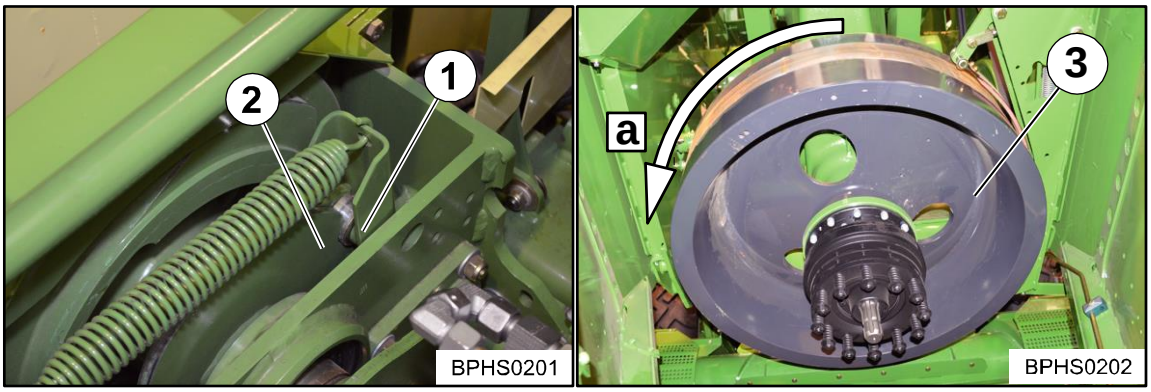

Fig. 100

Prerequisite:

– The tractor is disconnected.

– The tying process has been initiated; refer to chapter Operation “Initiating Tying Process Manually”.

A tying process consists of a rotation of the cam track.

- Turn the flywheel (3) manually in the working direction (a) until the trigger roller (1) slides in the recess of the cam disc (2).

Knotter gear in idle position

The knotter gear is in idle position if the trigger roller (1) is in the recess of the cam track (2) of the knotter gear.

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10.11 Removing blockages

- Wait until all moving components stop
- Apply the flywheel brake
- Lower the cutting system with the tractor hydraulics (with the Comfort electronics system: Activate the tractor hydraulics and hold down “Lower blade bar” on the control unit display or on the machine buttons until the cutting system is lowered all the way down)

CAUTION! - Sharp parts
Effect: severe risk of injury
Always wear protective gloves when removing blockages.

Note
Due to too low ground clearance, the cutting system must immediately be lifted after removal of the blockage, otherwise the cutting system inlet tray will be damaged. Should the cutting system inlet tray be extremely dirty, clean it before lifting.

- Remove blockage
- Raise the cutting system with the tractor hydraulics (with the comfort electronics system: Activate the tractor hydraulics and hold down “Lift blade bar” on the control unit display or on the machine buttons until the cutting system is lifted all the way).

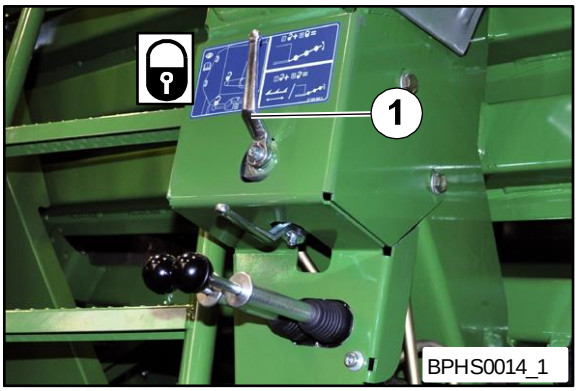

Fig. 101

Note
With the Medium electronics version the shut-off valve (1) must be closed so that the cutting system can be lowered or raised via the tractor's hydraulic system.
The shut-off valve is to be found on the rear left-hand side of the machine, near the parking brake.

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11 KRONE ISOBUS Terminal [Medium/Comfort Version Electronics]

CAUTION! Protect the terminal

Water, high air humidity and overvoltage can cause damage to the terminal.

- Protect the terminal from water.
- If the machine is not used for an extended period of time (for example in winter), the terminal must be stored in a dry place.
- For mounting and repair jobs, especially for welding jobs on the machine, disconnect the power supply to the terminal. The electronics of the terminal may be damaged due to overvoltage.

Note

KRONE ISOBUS systems are regularly subject to ISOBUS COMPATIBILITY TEST (AEF Conformance Test). The operation of this machine at least requires implementation level 3 of ISOBUS system.

The ISOBUS system is an internationally standardized communication system for agricultural machines and systems. The designation of the related series of standards is: ISO 11783. The agricultural ISOBUS system makes an information and data exchange between tractor and device of different manufacturers possible. To this end, both, the necessary plug connections and the signals are standardized which are necessary for the communication and command transmission. The system also enables the operation of machines with control units (terminal) which are already existent on the tractor or have been attached in the tractor cabin. The relevant details can be found in the technical documentation of the control unit or on the device itself.
Those KRONE machines which are ISOBUS equipped are adapted to this system.

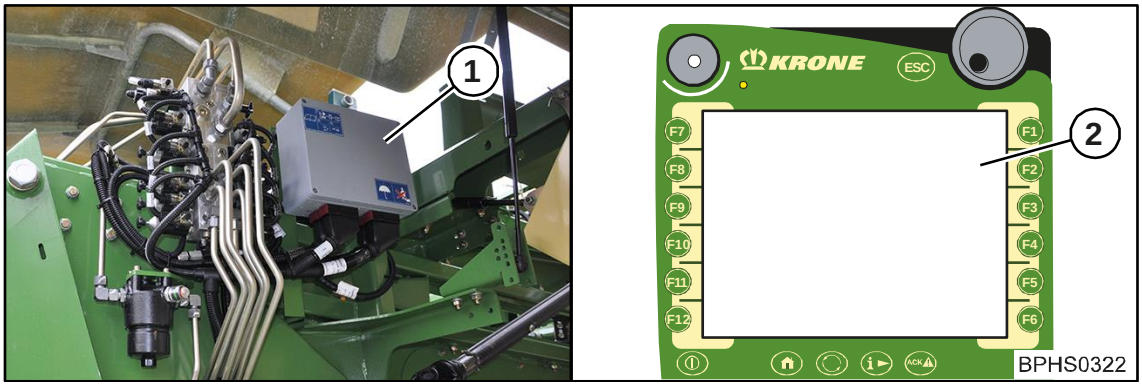

Fig. 102

The electronic equipment of the machine consists essentially of the job computer (1), the terminal (2) and the control and function elements.

The job computer (1) is located on the front left of the machine under the twine box.

Function of the job computer:

- Control of the actuators installed on the machine.
- Transfer of alarm messages.
- Evaluation of the sensors.
- Diagnostics of sensors and actuators.

The terminal (2) communicates information to the driver and performs settings to operate the machine. This information is received and further processed by the job computer.

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11.1 ISOBUS Shortcut Button

WARNING!

The ISOBUS Shortcut Button is not an EMERGENCY STOP switch. If the ISOBUS Shortcut Button is mistaked for the EMERGENCY STOP switch, there is danger to life.

When actuating the ISOBUS Shortcut Button, activated machine functions are deactivated. Process oriented procedures are executed until the end. Therefore machine parts may continue to run after ISOBUS Shortcut Button is actuated. This may lead to injuries.

In no event the ISOBUS Shortcut Button intervenes in tractor functions. This means that neither the universal shaft function nor the hydraulic function is affected. Therefore the machine can continue to run after ISOBUS Shortcut Button is actuated. This may lead to injuries.

- Never use the ISOBUS Shortcut Button as an EMERGENCY STOP switch.

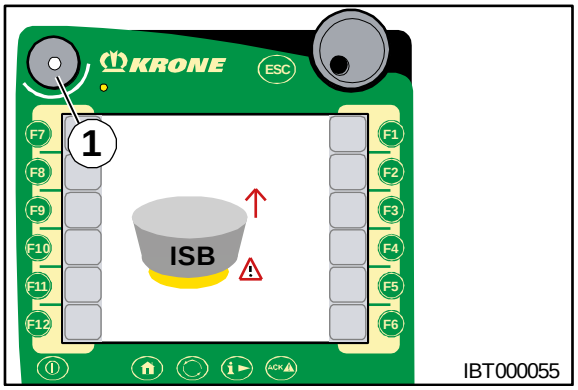

Fig. 103

When actuating the ISOBUS Shortcut Button (1) of the terminal which is of the pushbutton design, a stop command is sent to the ISOBUS. This instruction is evaluated by the connected ISOBUS machine in order to deactivate activated machine functions. Process oriented procedures are executed until the end.

Actuating ISOBUS Shortcut Button

- Press the ISOBUS Shortcut Button (1).

The above message appears in the display. The job computer blocks all hydraulic functions on machine side as well as the electronic tying device.

The job computer blocks the following functions on machine side:

- Start knotter motor.
- Start knotter cleaning.

Depending on how the machine is equipped:

- Raise/lower blade cassette.
- Move bale ejector forward/backward.
- Automatic bale ejector system.
- Raise/lower bale chute.
- Raise/lower twine boxes.
- Activate cutting unit.
- Switch to MultiBale.

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Releasing ISOBUS shortcut button

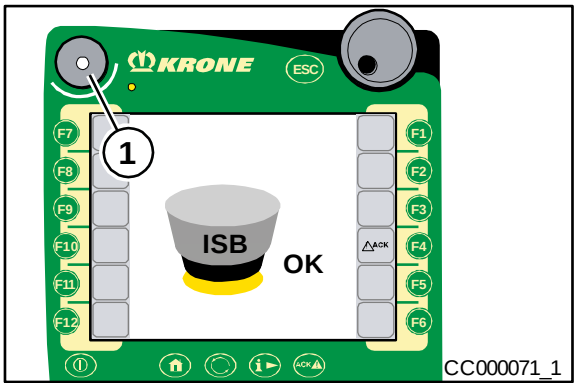

Fig. 104

- Turn the ISOBUS shortcut button (1) clockwise.

The display shows the above message.

- Press the ACK key.

  (Alternatively ⚠ACK or the adjacent key can be pressed.)

All functions of the machine are available again.

11.2 Touch Sensitive Display

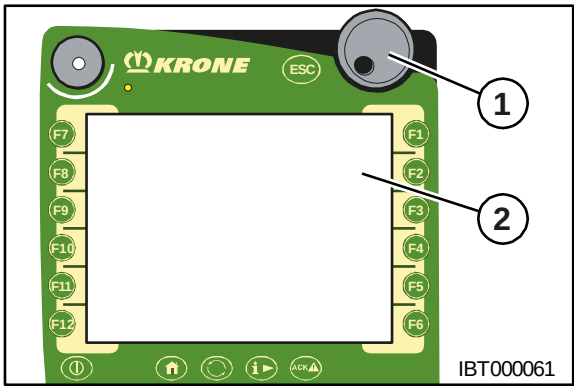

Fig. 105

The terminal is equipped with a touch screen (2) for menu guidance and entry of values/data. Functions can directly be called and values can be changed by touching the display.

Note

Use the scroll wheel (2) to execute the same functions as via the touchscreen.

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11.3 Switching Terminal On or Off

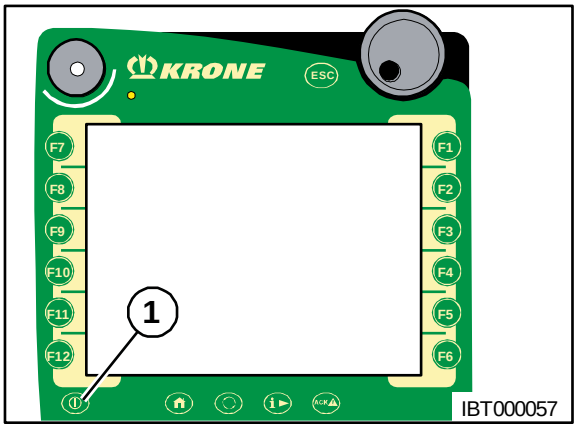
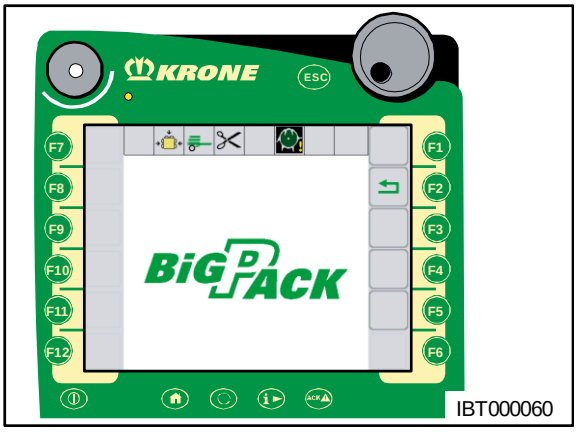


Fig. 106

- Before switching on for the first time, ensure that connections are correctly and firmly fitted.
- Press the key (1) and hold it down for approx. 2 seconds.

The terminal switches on or off. One of the following main windows appears after the terminal has been switched on.

When machine connected



When machine not connected (road travel)

Fig. 107

Note

For more details on how the terminal functions, please refer to the supplied terminal operating instructions.

Note - Before first use with connected machine

When switching on for the first time, the configuration of the specific menus of the machine is loaded onto the terminal. The loading process may take a few minutes. The configuration is saved in the memory of the terminal.

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11.4 Display Design

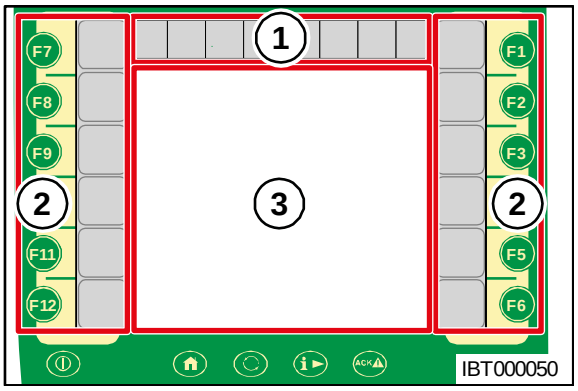

Fig. 108

The display of the terminal is divided into the following sections:

Status line (1)
The status line shows the current states of the machine (depending on how it is equipped).

Keys (2)
The machine is operated by actuating the keys (2) or by tipping on the adjacent icons.

Main window (3):
In the main window, blue displayed values (numbers) can be selected by using the touch function.
The main window contains the following screens:
– Road travel screen
– Working screen (see chapter (“Terminal - machine functions”)
– Menu level (see chapter “Terminal - Menus”)

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12 KRONE ISOBUS Terminal [Medium Plus/Comfort Plus Version Electronics]

For information on this matter refer to “Supplement to operating instructions” behind the index directory.

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13 External ISOBUS Terminal

13.1 General Information on ISOBUS

DANGER!

When using terminals and other operation units which have not been delivered by KRONE mind that the user:

- has to assume responsibility for use of KRONE machines when using the machine on operation units that have not been delivered by KRONE (terminal/other operating elements).
- must check before using the machine whether all machine functions are executed just like they are described in the enclosed operating instructions.
- connects if possible only those systems with each other that have passed AEF Conformance test (so-called ISOBUS COMPATIBILITY TEST) beforehand.
- has to follow the operating and safety instructions of the supplier of ISOBUS operation unit (e.g. terminal).
- must ensure that the used operating elements and machine controls concerning the IL ((IL = Implementations Level; describes compatibility levels of different software versions) are compatible with each other (condition: IL equal or greater).

Note

KRONE ISOBUS systems are regularly subject to ISOBUS COMPATIBILITY TEST (AEF Conformance Test). The operation of this machine at least requires implementation level 3 of ISOBUS system.

The ISOBUS system is an internationally standardized communication system for agricultural machines and systems. The designation of the related series of standards is: ISO 11783. The agricultural ISOBUS system makes an information and data exchange between tractor and device of different manufacturers possible. To this end, both, the necessary plug connections and the signals are standardized which are necessary for the communication and command transmission. The system also enables the operation of machines with control units (terminal) which are already existent on the tractor or have been attached in the tractor cabin. The relevant details can be found in the technical documentation of the control unit or on the device itself.
Those KRONE machines which are ISOBUS equipped are adapted to this system.

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13.2 ISOBUS Shortcut Button not Available

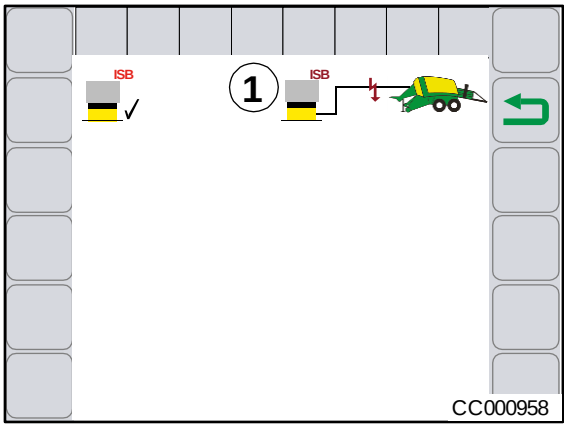

Fig. 109

The KRONE BETA II terminal does not feature an ISOBUS shortcut button. Symbol (1) is shown in the display. The machine functions cannot be switched off via the ISOBUS shortcut button.

13.3 Deviating Functions from KRONE ISOBUS Terminal

By means of ISOBUS operation unit, information and control functions of the machine are provided on the display of the external ISOBUS terminal. The operation with an external ISOBUS terminal is similar to the KRONE ISOBUS terminal. Before start-up, the functionality of KRONE ISOBUS terminal is to be read in the operating instructions.

A significant difference to the KRONE ISOBUS terminal is the arrangement of icons and the number of keys, which are determined by the selected external ISOBUS terminal.

The functions which deviate from KRONE ISOBUS terminal are described in the following.

Note

The contrast for the KRONE terminal cannot be called up on other ISO terminals. Adjustment is performed directly via the ISO terminal, see the operating instructions supplied by the manufacturer of the ISO terminal.
If necessary, acoustic signals must be enabled from the terminal, see the operating instructions supplied by the manufacturer of the ISO terminal.

Note

The values for “Bale channel flap pressure/force”, “Bale length” and “Number of MultiBales” which are set by the scroll wheel in the basic screen on the KRONE ISOBUS terminal CCI, are set on the ISO terminal with the selection key predetermined by the ISO terminal (refer to the operating instructions of the ISO terminal manufacturer).

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14 Terminal – Machine Functions [Medium/Comfort Version Electronics]

WARNING!

Personal injuries and/or machine damage caused by non-observance of alarm messages!

When alarm messages are ignored and the malfunction is not remedied, personal injuries and/or serious damage to the machine could result.

- When alarm message is displayed, remedy the malfunction.
  - For possible causes and how to remedy them, refer to chapter entitled “Alarm Messages”.
  - In case the malfunction cannot be remedied, contact KRONE customer service.

14.1 Status line

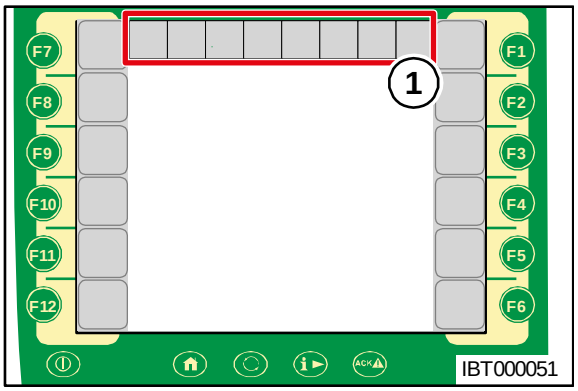

Fig. 110

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The status line (1) in the display shows current states of the machine (depending on equipment):

Symbol	Designation	Explanation
	Alarm message is pending	
	Bale chute up	
	Bale chute down	
	Blades are active:	Cutting in progress.
	Blades are inactive	No cutting in progress.
	Axle locked	
	Axle released	
	Bale ejector out	
	Bale ejector in	
	Machine duty	Flashing: low load Black background: max. load If the depressed symbol does not have a black background, check the "Packer feed" sensor.
	Setting down bales	
	Silage additive system OFF	
	Silage additive system ON	
	Bale channel flaps open	The symbol flashes.
	Bale channel flaps closed	

Icon	Designation	Explanation
	Close baling flaps in rapid traverse	

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14.2 Keys

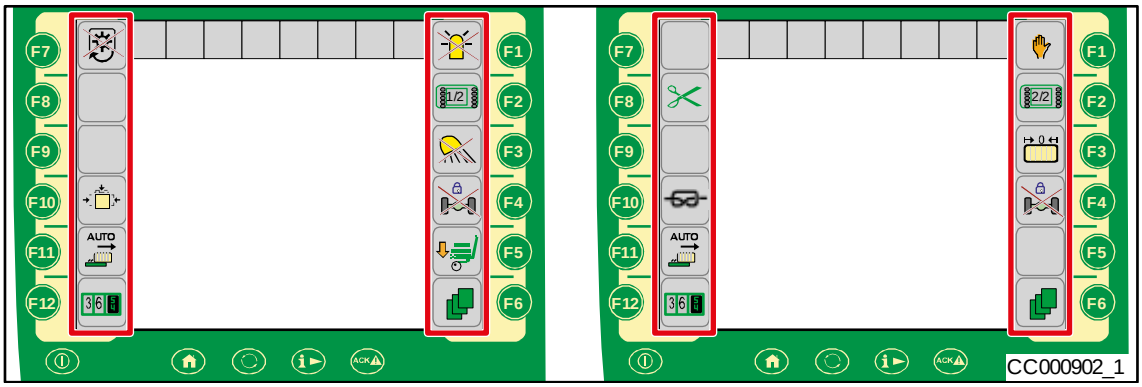

Fig. 111

Page 1/2 = keys for "Maintenance" Page 2/2 = keys for "Work"

Note

Which icons are available, depends on the equipment of the machine. The following represented icons are not always available.

Symbol	Designation	Explanation
	Switch off warning beacon	
	Switch on warning beacon	
	Scroll onto the second page	– Selects the second page of the keys. – When the PTO shaft is running at a rotational speed ≥ 600 min^{-1}, the display switches automatically to the second page to make the "Work" keys available.
	Scroll onto the first page	– Selects the first page of the keys. – When the PTO shaft is running at a rotational speed ≤ 600 min^{-1}, the display switches automatically to the first page to make the "Maintenance" keys available.
	Switch off working light	– Working lights are switched on.
	Switch on working light	– Working lights are switched off.
	Releasing the steering axle	– Key flashing: Steering axle will be locked. – Key fixed: Steering axle is locked.
	Locking the steering axle	– Key flashing: Steering axle will be released. – Key fixed: Steering axle is released.

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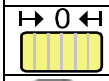
Symbol	Designation	Explanation
	Release starting aid	
	Activate starting aid	When the symbol is displayed continuously, the starting aid is released. If the released starting aid is not connected within five seconds, the system resets the release.
	Switch off starting aid	When the symbol flashes, the starting aid is running. When the speed of the starting aid is reached, the system switches off the starting aid.
	Select the machine menu level	
	Lower the bale chute	
	Automatic bale ejection	**If bale channel flaps opened** Implements ten bale ejections. **If bale channel flaps closed** Press once: Opens the bale channel flaps. Press twice: Implements ten bale ejections.
	Open the customer counter menu	
	Switch to automatic mode	The machine switches from manual mode to automatic mode.
	Switch to manual mode	The machine switches from automatic mode to manual mode.
	Reset current bale length to zero.	Hold down the key for two seconds.
	Trigger knotter	
	Release blade bar	The keys , are released on the display.
	Raise the blade bar	
	Lower the blade bar	
	Close bale channel flaps	
	Open bale channel flaps	

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Icon	Designation	Explanation
	Release function “Raise/lower twine boxes”	The keys and are released on the display.
	Lower twine boxes	
	Raising the twine boxes	
	Close function “Baling flaps in rapid traverse”	The system switches off the rapid traverse if: • The baling flap pressure exceeds 20 bar. • The PTO speed exceeds 600 rpm. • The bale length has increased by 1 metre.
	Release intake	
	Start intake	The icon flashes, the intake is released. If the released intake is not started within five seconds, the system resets the release.
	Stop intake	If the icon is permanently displayed, the intake runs.

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14.3 Displays in the working screen</dg_bm "text_mod_1443538650498_0001">

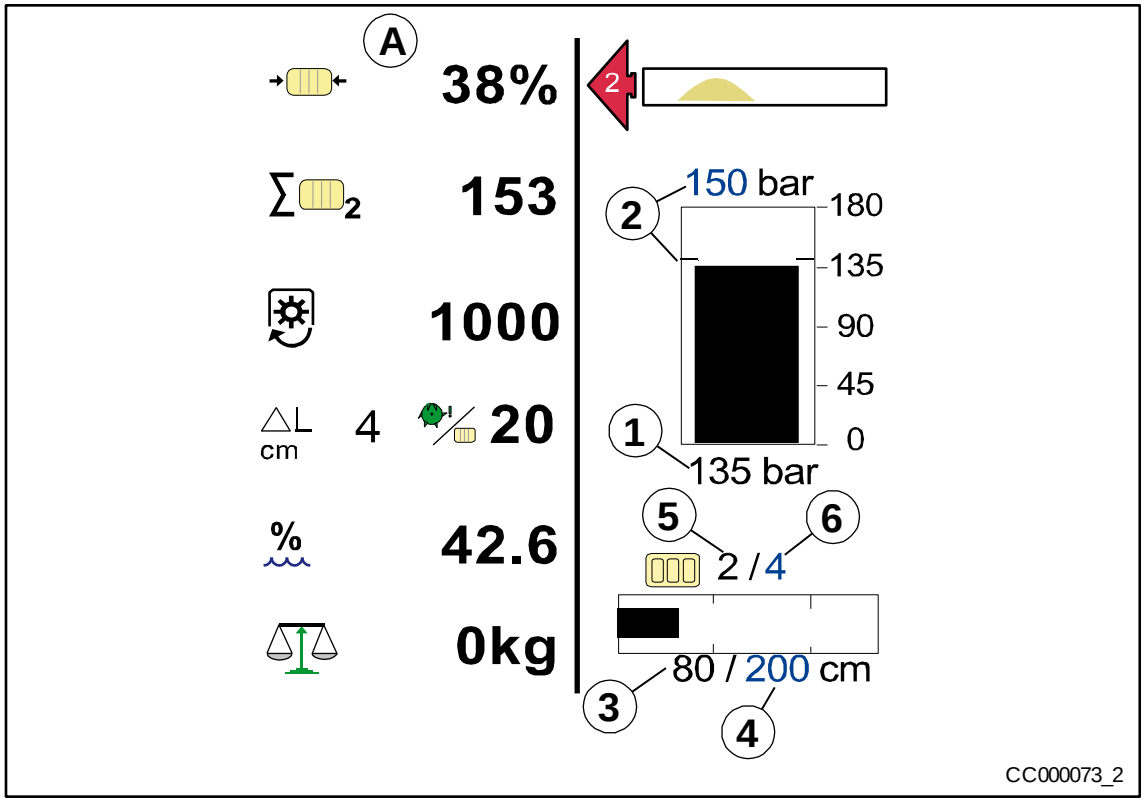

Fig. 112

Note

Which icons are available, depends on the equipment of the machine. The following represented icons are not always available.

The displays in the left column of the main window (Column (A)) can be individually configured, see chapter Terminal – Menus, Menu 14-8 "Configuring main window".

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Selectable display elements

Depending on the machine configuration, the following display elements can be positioned in the main window:

Symbol	Designation	Explanation
	Current baling force as %	In manual mode. Maximum 100 %
	Current bale channel flap pressure	In automatic mode. In bar or PSI (depending on selected system of units).
	Current total number of bales	The number indicates the selected customer counter.
	Current PTO speed	In min^{-1}
	Current layer thickness	In cm or inch (depending on selected system of units).
	Current number of layers of the last compressed bale	
	Current degree of moisture of the crops	
	Bale weight	Weight of the bale last weighed.
	Current average weight of the weighed bales	
	Current total weight of all bales	

Symbol	Designation	Explanation
	Total length of all compressed bales	In m or ft (depending on selected system of units)
	Current number of uncut bales	
	Current number of cut bales	For machines equipped with a cutting unit.
	Knot run	Is displayed briefly after a knot is tied. If activated, a horn sounds for approx. 1 second, see chapter Terminal – Menus "Menu 1-2, Knotter signal".
	Operating hours counter	Counts only when PTO shaft is running.

Icon	Designation	Explanation
	Display load of the intake (cutting rotor/pick-up)	

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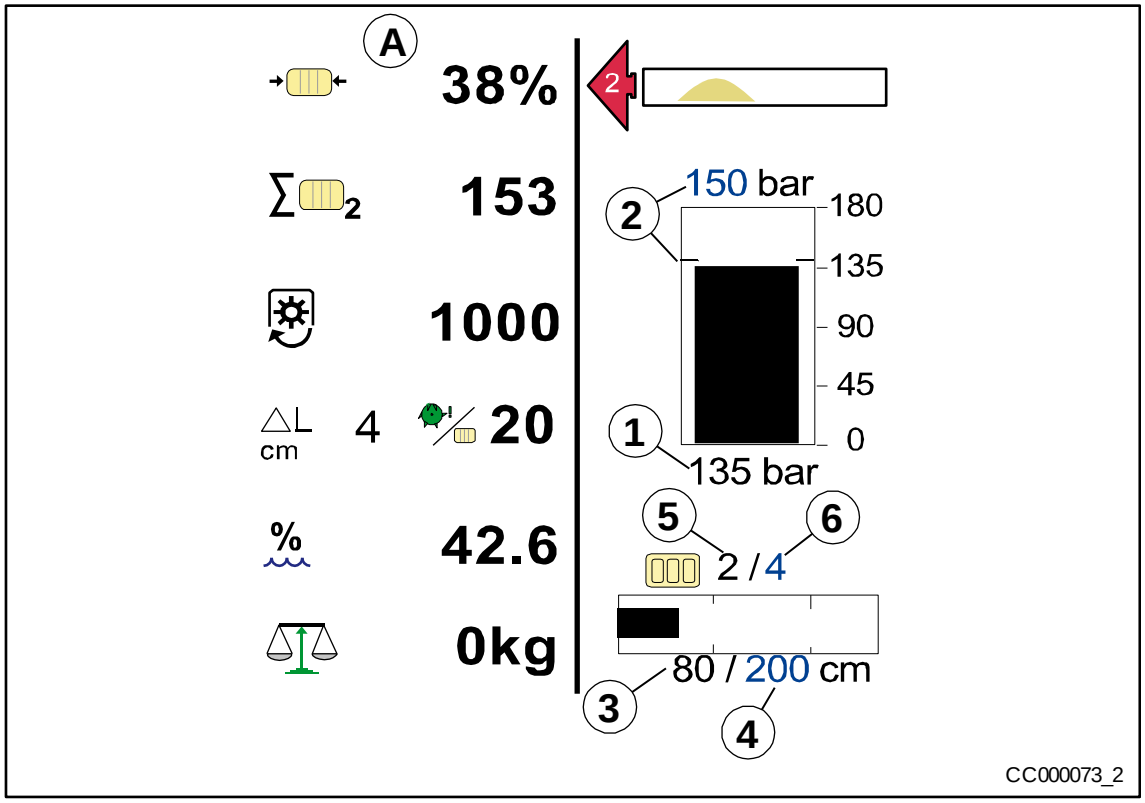

Fig. 113

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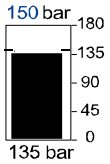
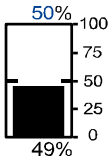
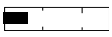
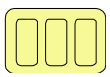
Right column

Symbol	Designation	Explanation
	Bale channel flap pressure in bar or PSI (depending on selected system of units)	In manual mode. • The value (1) in the bar display indicates the current bale channel flap pressure. • The value (2) in the bar display and the marks (2) in the bar display indicate the set target bale channel flap pressure. • The value (2) is touch-sensitive.
	Force of pressure as %	In automatic mode. • The value (1) in the bar display indicates the current force of pressure. • The value (2) in the bar display and the mark (2) in the bar display indicate the set target force of pressure. • The display may fluctuate considerably. The control only functions when the packer is supplying crops to the piston. • The bale channel flap pressure is automatically set by the system based on the measured plunger force. • The value (2) is touch-sensitive.
	Direction indicator	• The arrows have three different sizes, numbered from 1 to 3. • The arrows (left/right) indicate to the driver the side he/she should correct towards and by how much when driving over the swath to ensure that the bale chamber is evenly filled. • The direction indicator can be adjusted, see chapter Terminal – Menus, Menu 2 "Sensitivity of direction indicator".
 80 / 200 cm	Bale length display	• The value (3) indicates the current bale length. • The value (4) indicates the set target bale length. • The value (4) is touch-sensitive.
2/4 	MultiBale	• The value (5) indicates the current number of small bales. • The value (6) indicates the set target number of small bales. • The value (6) is touch-sensitive. • A horn sounds briefly after each small bale is bound. • When the entire bale is ready, the horn sounds longer and louder.

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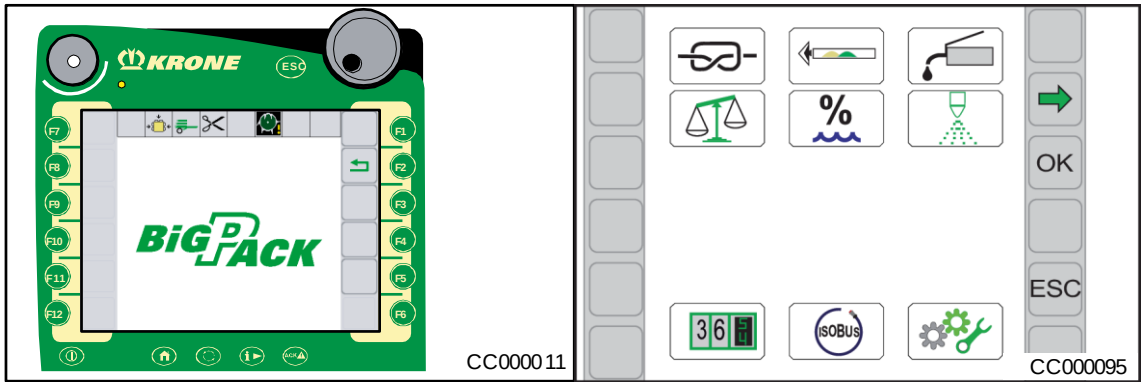
14.4 Selecting Working Screens



Road travel screen — Example menu

Fig. 114

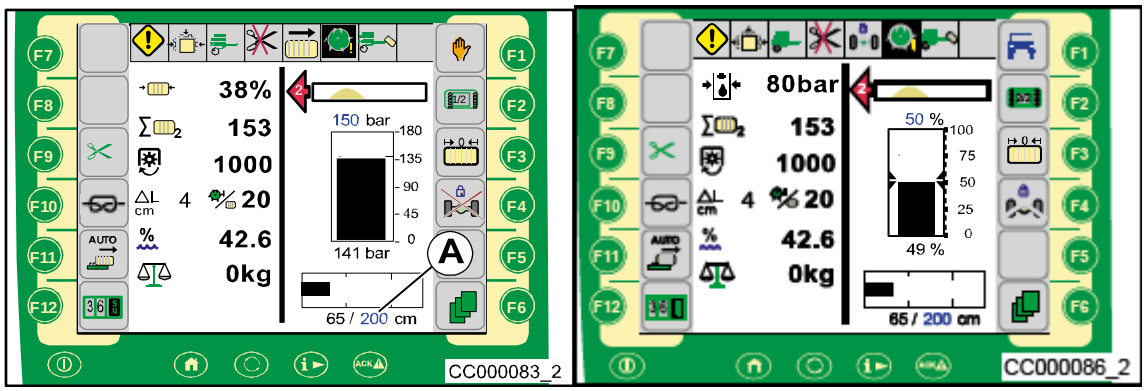
From each menu

- Press ESC longer.

From the road travel screen

- Press .

When the terminal is switched on, the machine starts in manual mode with a target bale channel flap pressure of 50 bar.



"Manual mode" work screen — "Automatic mode" work screen

Fig. 115

14.5 Changing to automatic mode

- To switch to "Automatic mode", press .

The display shows the symbol (automatic mode).

14.6 Changing to manual mode

- To switch to "Manual mode", press .

The display shows the symbol (manual mode).

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14.7 Selecting road travel screen

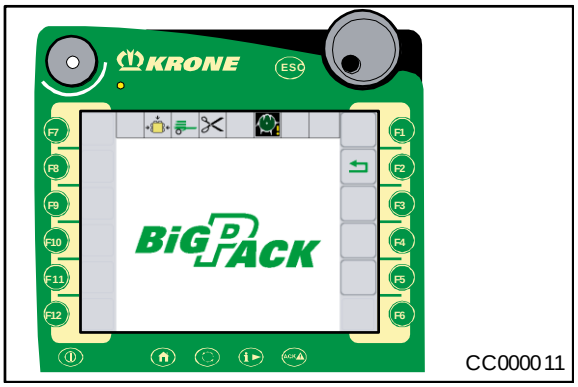

Fig. 116

To select the Start screen, the following conditions must be met:

- The bale chute must be raised and locked.
- Do not actuate any hydraulic functions via the keys of the terminal.
- The PTO shaft must be switched off.

When the above conditions have been met, the system automatically switches to the Start screen after approx. 60 seconds.

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14.8 Switching the warning beacon on/off

Switching ON

- To switch on the warning beacon, press .

The display switches from to .

Switching off

- To switch off the warning beacon, press .

The display switches from to .

14.9 Selecting other functions

Selecting second page

- To select other functions for the machine, press .

The display switches from to .

Selecting first page

- To select the previous functions for the machine, press .

The display switches from to .

14.10 Switching Working Floodlights On and Off

Switching ON

- To switch on the working lights, press .

The display switches from to .

Switching off

- To switch off the working lights, press .

The display switches from to .

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14.11 Locking / Releasing Steering Axle

Releasing

- To release the steering axle, press .

The symbol flashes until the steering axle is released.

The display switches from to .

Locking

- To lock the steering axle, press .

The symbol flashes until the steering axle is locked.

The display switches from to .

14.12 Switching the starting aid on/off

Release

- To release the starting aid, press .

The display switches from to and is released.

If the starting aid is not connected within five seconds, the system switches off the release.

Switching on

The starting aid is released.

- To switch on the starting aid, press .

The symbol flashes.

When the speed of the starting aid is reached, the system switches off the starting aid.

Switching off

- To switch off the starting aid, press .

The display switches from to .

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14.13 Opening/closing the bale channel flaps

Open

If the icon is shown on the display

- Press first.

The display changes from to .

- To open the baling flaps, press .

The display changes from to .

If the icon is shown on the display

- To open the baling flaps, press .

The display changes from to .

Closing/rapid traverse

If the icon is shown on the display

- To close the baling flaps, press .

The display changes from to .

If the icon is shown on the display

- To switch on the rapid traverse, press .

The display changes from to .

- To close the baling flaps, press .

The display changes from to .

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14.14 Starting/Stopping Intake

Releasing

- To release the intake, press .

The display changes from to . The icon flashes.

Start

- To start the intake, press .

The icon freezes.

Stop

- To stop the intake, press .

The display changes from to .

14.15 Raising/Lowering Twine Boxes

Releasing

- To release the twine boxes, press .

The icons , are shown on the display.

Lowering

- To lower the twine boxes, press and hold it down.

Lifting

- To raise the twine boxes, press and hold it down.

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14.16 Lower the bale chute

WARNING! – Increased risk of injury due to lowering the bale chute
If people are in the danger zone while the bale chute is being lowered, they may become caught by the bale chute and be seriously injured.
- While the bale chute is being lowered, ensure that there is nobody in the danger zone (particularly behind the machine).

The lock on the bale channel flaps is opened.

- To lower the bale chute, press and hold .

The bale chute is raised using the external pushbuttons.

14.17 Automatic bale ejection

Note
The automatic bale ejection is actuated differently depending on whether the bale channel flaps are opened/closed.
- If the bale channel flaps are opened, ten bale ejections are executed **immediately**
- If the bale channel flaps are closed, the bale channel flaps are opened.

- To execute bale ejections, press

once.
  – If the bale channel flaps are opened, ten bale ejections are executed immediately.
  – If the bale channel flaps are closed, the bale channel flaps are opened.
- To execute 10 bale ejections, press

again.
  The symbol is highlighted in grey.

14.18 Calling menu “Counter/Detail Couner”

- Press

for calling the menu “Detail Counter”.

The menu “Detail Counter” is displayed.

14.19 Changing to automatic mode

- To switch to "Automatic mode", press .

The display shows the symbol (automatic mode).

14.20 Changing to manual mode

- To switch to "Manual mode", press .

The display shows the symbol (manual mode).

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14.21 Reset bale length to zero

- To reset the bale length to zero, keep

pressed for approx. 2 seconds.

14.22 Trigger knotter

- To trigger the knotter, press .

14.23 Raising/lowering the blade bar

Release

- To release the blade bar, press .

The symbols , are shown on the display.

Raising

- To raise the blade bar, press and hold .

Lowering

- To lower the blade bar, press and hold .

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14.24 Setting the target bale channel flap pressure (manual mode)

WARNING! – Pressure too high!

Effect: Damage to the machine

- If the pressure is set too high, the machine could be subjected to a mechanical overload during baling that could result in destroying it To avoid this, the bale channel flap pressure should be reduced to a non-critical value just before the overload. After a few seconds, it is possible to return to the pressure set by the user.
- If overload occurs the target bale channel flap pressure must be reduced

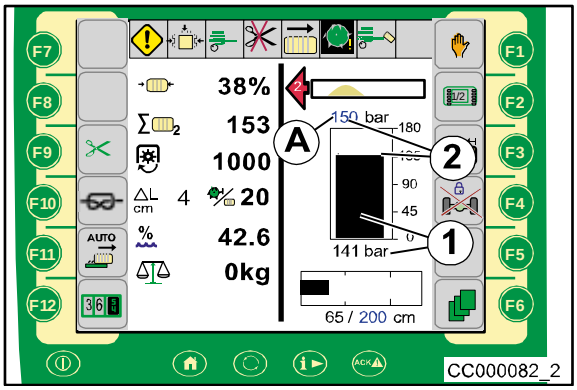

Fig.117

The pressure is specified by the user in manual mode. The pressure is built up immediately if the PTO shaft is running and the machine is stopped. The pressure display barely fluctuates in the display. To avoid damaging the machine, the bale channel flap pressure is reduced by the system to a non-critical value just before an overload. After several seconds, the pressure set by the user is built up again. The bale channel flap pressure is displayed in **bar or PSI** depending on the selected unit of measurement **Metric or US**.

Value (1) and the bar display = actual bale channel flap pressure

Value (2) and the marks in the bar display = set target bale channel flap pressure

Setting the target bale channel flap pressure

Manual mode has been selected.

- Change the value, see chapter Terminal – Menus, "Changing the value".

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14.25 Setting target force of pressure (automatic mode)

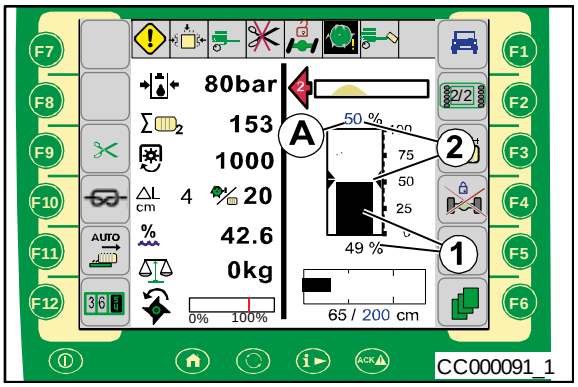

Fig. 118

Force of pressure (as %)

In Automatic mode, the pressure is automatically set based on the measured plunger force. The pressure indication on the display may fluctuate considerably. The control only functions when the packer is supplying forage to the piston.

Value (1) and the bar display = actual force of pressure as %.

Value (2) and the marks in the bar display = target force of pressure as %.

Setting the target force of pressure

Automatic mode has been selected.

- Change the value, see chapter Terminal – Menus, "Changing the value".

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14.26 Setting bale length (manual and automatic mode)

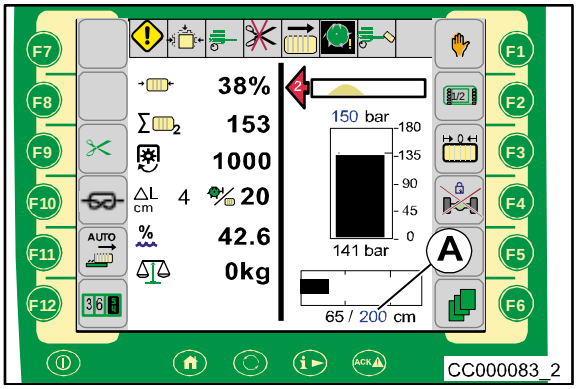

Fig.119

Note

(BP 890;1270;1290)

The bale length can be set in the range from 1000 - 2700 mm (39 - 106 inches).

(BP 1290 HDP; BP 4x4)

The bale length can be set in the range from 1000 - 3200 mm (39 - 126 inches).

Note

The bale length can be changed at any time. It is not recommended to change over the bale length at the end of the bale, as the knotter could then be actuated too late.

Setting the bale length

- Change the value, see chapter Terminal – Menus, "Changing the value".

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14.27 Setting the number of MultiBales

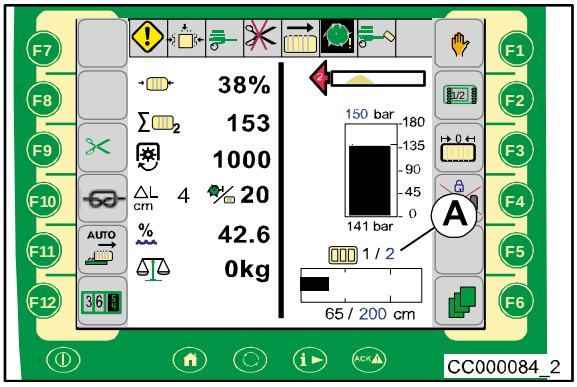

Fig. 120

CAUTION! - Mixture of total bale and MultiBale

The MultiBale number should only be changed at the beginning of a bale. Doing so could result in a mixture of total bale and MultiBale.

Note

First, set the bale length. Minimum length of the MultiBale: 45 cm (17.7 inches).

Setting the number

The bale length has been set, see chapter Terminal – Machine function "Setting bale length (manual and automatic mode)".

- Change the value, see chapter Terminal – Menus, "Changing the value".

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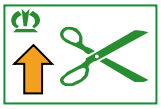
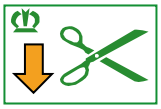
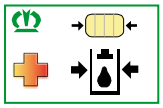
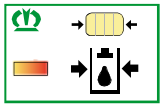
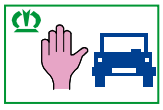
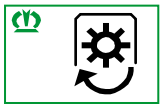
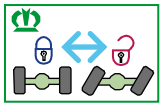
14.28 Operating Machine via Joystick

14.28.1 Auxiliary Functions (AUX)

There are terminals which support the additional function “Auxiliary” (AUX). By means of this function, programmable keys of peripheral equipment (e.g. joystick) can be assigned with functions of the connected job computers. A programmable key can be assigned with several different functions. If key assignments are saved, the display shows corresponding menus when switching on the terminal.

Depending on how the machine is fitted, the following functions are available in the Auxiliary menu (AUX):

Auxiliary functions: (Graphic display)	**Function:**
	Raise the blade bar
	Lower the blade bar
	Increase baling pressure / force of pressure
	Reduce baling pressure / force of pressure
	Switching to manual/automatic mode
	Start / Stop starting aid
	Lock / release steering axle

Note
For further guidelines, please refer to the operating instructions of the terminal being used.

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14.28.2 Example of a joystick assignment for Fendt (default setting)

Note
For further guidelines, please refer to the operating instructions of the terminal being used.

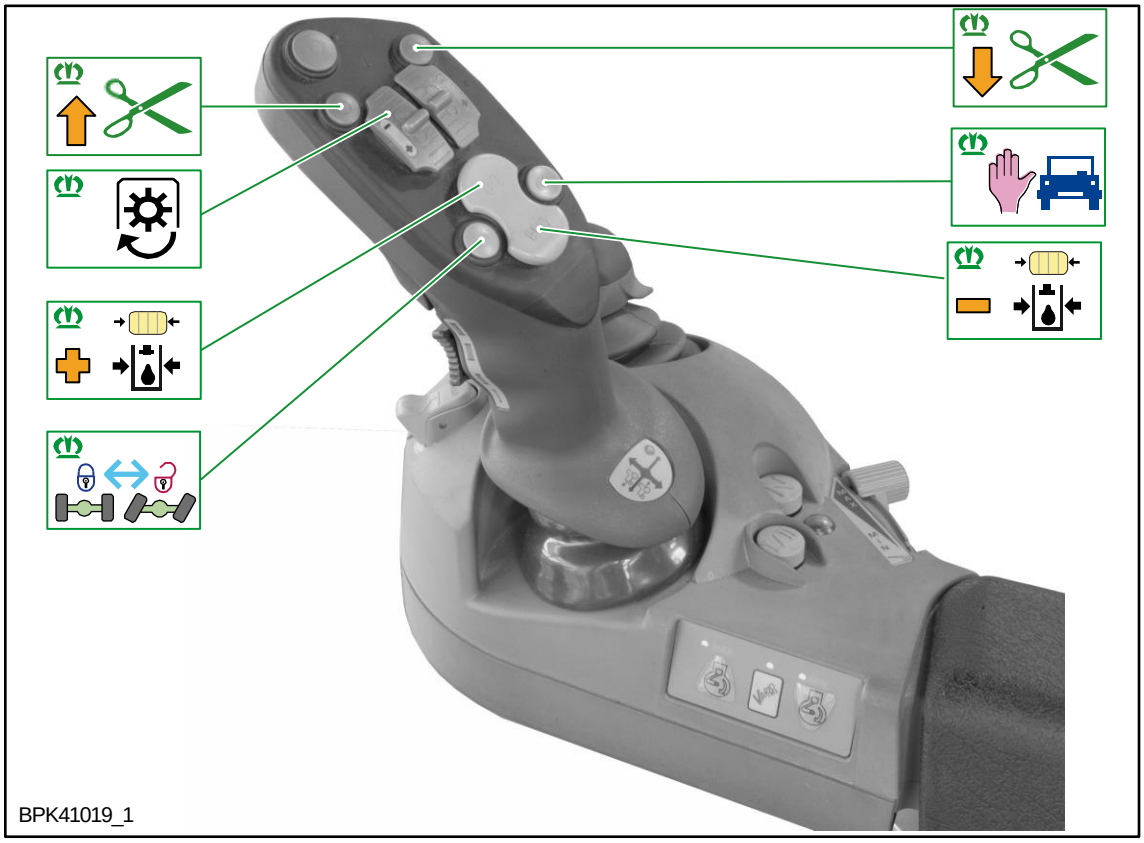

Fig. 121

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14.28.3 Recommended assignment of a WTK- multi-function lever

Note
For further guidelines, please refer to the operating instructions of the terminal being used.

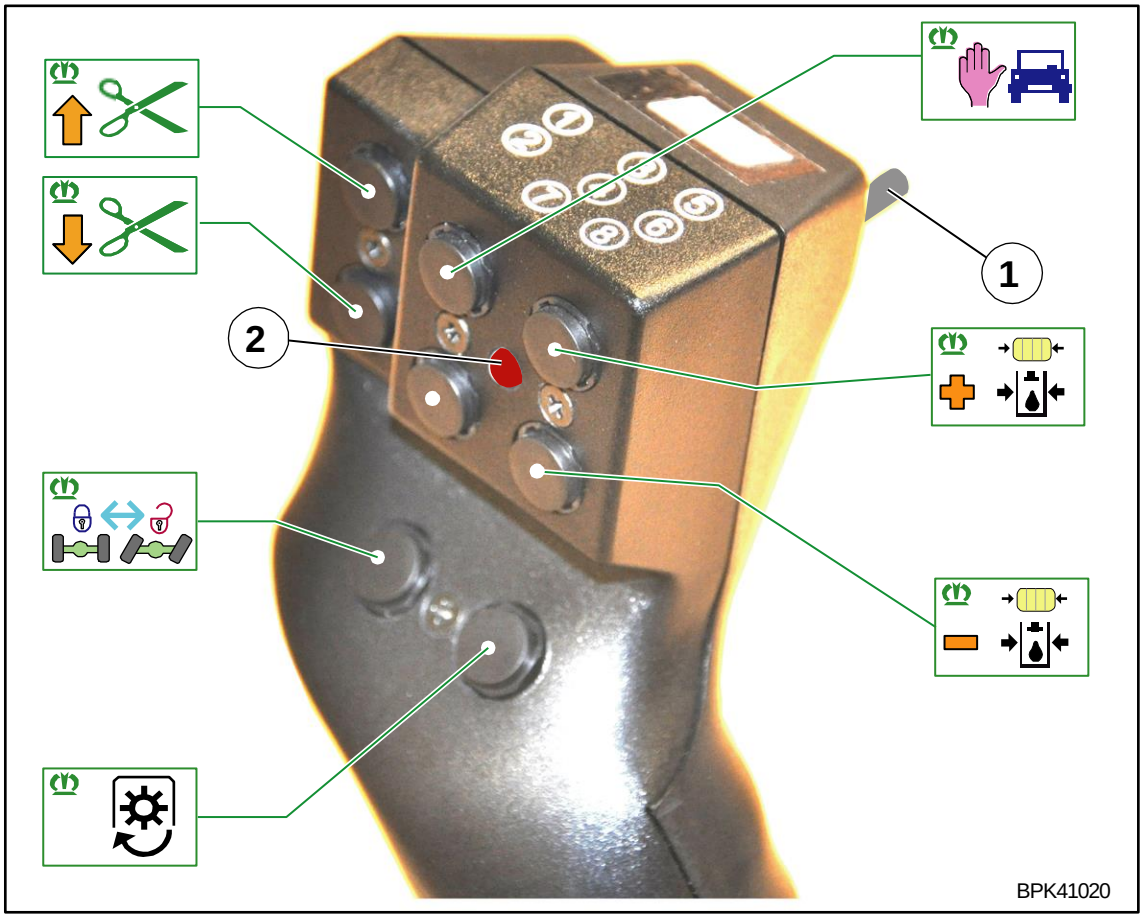

Fig. 122

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15 Terminal - Machine Functions [Medium Plus/Comfort Plus Version Electronics]

For information on this matter refer to “Supplement to operating instructions” behind the index directory.

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16 Terminal – Menus [Medium/Comfort Version Electronics]

16.1 Menu Structure

Main menu	Sub-menu	Designation
1		Knotter
	1-1	Bale length correction value
	1-2	Knotter signal
	1-3	Knotter monitoring
	1-4	Blow interval
	1-5	Blowing time
2		Sensitivity of direction indicator
3		Central lubrication system
4		Bale scales
5		Moisture measurement
	5-1	Set/switch off alarm message for moisture measurement
	5-2	Set correction value for moisture measurement
6		Silage additive system
13		Counter
	13-1	Customer counter
	13-2	Total counter

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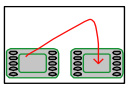
Main menu	Sub-menu	Designation
14		ISOBUS settings
	14-1	Auxiliary diagnostics (AUX)
	14-2	Diagnostics for driving speed / direction indicator
	14-8	Configure main window
	14-9 	Switching between terminals
15		Settings
	15-1	Sensor test
	15-2	Actuator test
	15-5	Software info
	15-6	Technician level

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16.2 Recurring Icons

Symbol	Designation	Explanation
	Up arrow	Move up to select something.
	Down arrow	Move down to select something.
	Right arrow	Move right to select something.
	Left arrow	Move left to select something.
	OK	Save the setting.
	ESC	Leave the menu without saving. The previously selected work screen is selected by holding down the key.
	DEF	Reset to factory setting.
	Plus	Increase the value. Display next mode.
	Minus	Reduce the value. Display previous mode.
	Sensor test	Quick access to the sensor test of the sensors responsible for this menu.
	Actuator test	Quick access to the actuator test of the actuators responsible for this menu.

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16.3 Calling up the menu level

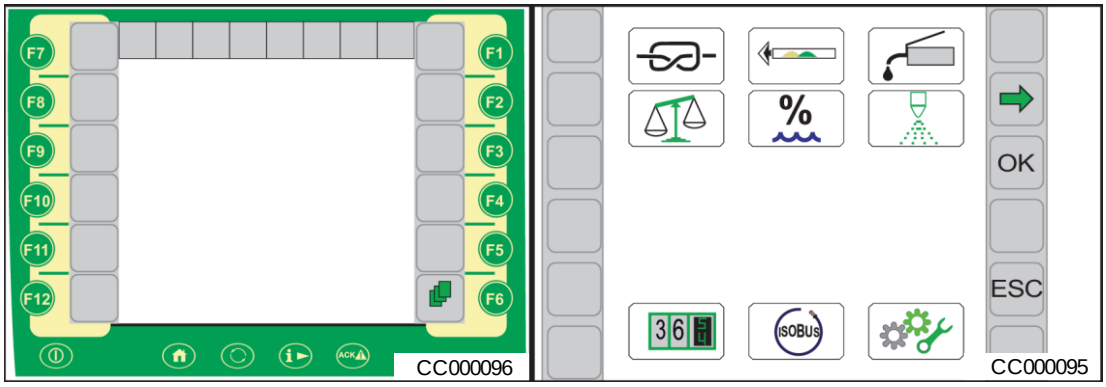

Fig. 123

- Press to bring up the menu level from the working screen.

Depending on how the machine is equipped, the menu level 4 is divided into the following menus:

Symbol	Designation
	Menu 1 "Knotter settings"
	Menu 2 "Sensitivity of direction indicator"
	Menu 3 "Central lubrication"
	Menu 4 "Bale scales"
	Menu 5 "Moisture measurement"
	Menu 6 "Silage additive system"
	Menu 13 "Counters"
	Menu 14 "ISOBUS settings"
	Menu 15 "Settings"

Symbol	Designation	Explanation
	Select previous menu	Touch-sensitive
	Select next menu	Touch-sensitive
OK	Open menu	Touch-sensitive
ESC	Exit menu	Touch-sensitive

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16.4 Changing the value

Values must be entered or changed for the settings in the menus.
There are three options for doing this:

- Using the scroll wheel.
- Press on or .
- By tapping on the blue value on the display.
  If a numerical value is tapped, an input mask opens. For further information on entering values see the supplied terminal operating instructions.

Examples:

Using the scroll wheel

- Select the required value using the scroll wheel.

The value is highlighted in colour.

- Press the scroll wheel.

An input mask opens.

- To increase or reduce the value, turn the scroll wheel.
- To save the value, press the scroll wheel.

The setting is saved and the input mask closes.

Using Plus/Minus

The symbol in the upper line indicates that the value has been saved.

- To increase the value, press .
- To reduce the value, press .

The symbol in the upper line disappears.

- To save the value, press .

The set value is saved.

The symbol is displayed in the upper line.

Using the value

- Tap the value.

An input mask opens.

- Increase or decrease the value.
- To save the value, press **OK**.

The setting is saved and the input mask closes.

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16.5 Changing mode

It is possible to select between different modes in individual menus.

The symbol in the upper line indicates that the displayed mode is saved.

- To open the next mode, press .
- To open the previous mode, press .

The symbol in the upper line disappears.

- To save the mode, press .

The set mode is saved and the symbol is displayed in the upper line.

- To leave the menu, press .

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16.6 Menu 1 "Knotter"

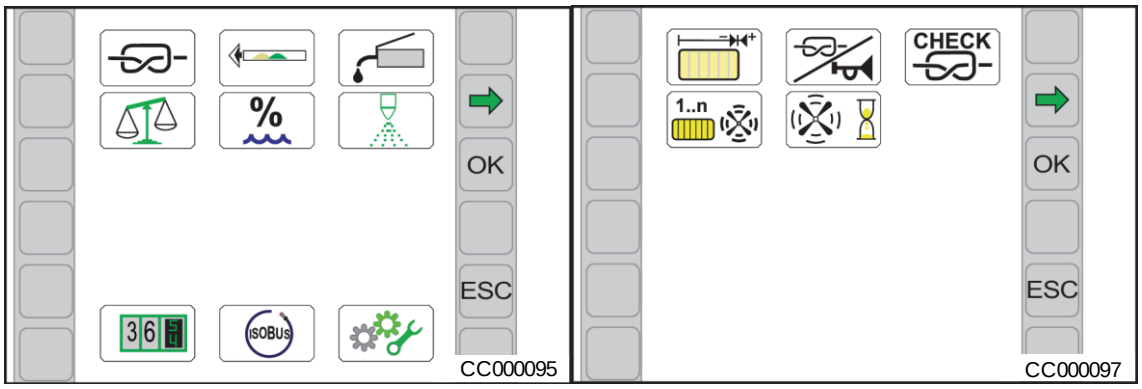

Fig. 124

The menu level has been selected, see chapter Terminal – Menus, "Selecting menu level".

- To open the menu, press .

The display shows the "Knotter" menu.

The main menu "Knotter settings" is divided into the following sub-menus depending on the machine configuration:

Symbol	Designation
	Menu 1-1 "Correction value for bale length"
	Menu 1-2 "Knotter signal"
CHECK	Menu 1-3 "Knotter monitoring"
1..n	Menu 1-4 "Blow interval"
	Menu 1-5 "Blowing time"

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16.6.1 Menu 1-1 "Correction value for bale length"

Because of the different properties of materials (e.g. straw, silage) the actual bale length may deviate from the set setpoint value. The correction value can be used to correct this deviation.

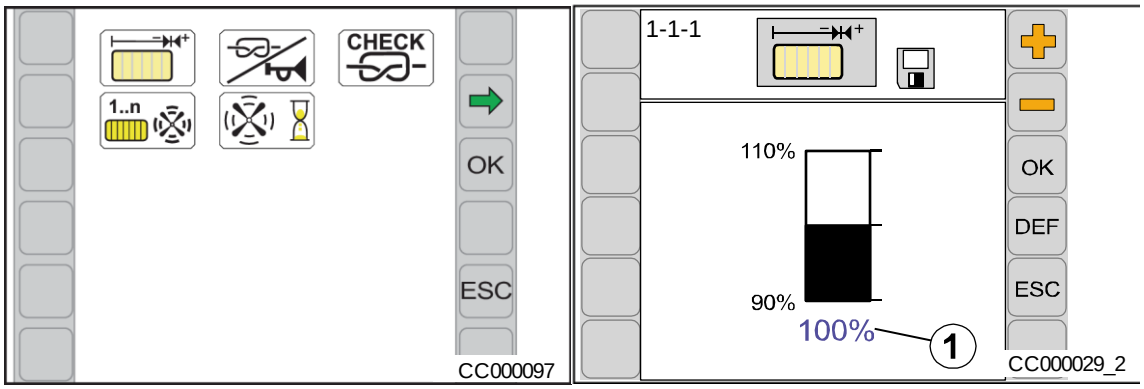
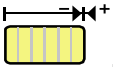


Fig. 125

Menu 1 "Knotter" has been selected, see chapter Terminal – Menus, "Menu 1 'Knotter'".

- To open the menu, press  .

The display shows the "Correction value for bale length" menu.

Display area

Item	Designation	Explanation
1	Correction value for bale length	• Adjustable value range: 90 – 110 % • If a correction value of e.g. 110 % is set, the bale will be 10 % longer. • Factory setting: 100 %

Changing the value

- Increase or reduce the value, see chapter Terminal – Menus, "Changing the value".

Recurring symbols

- See chapter Terminal – Menus, "Recurring symbols".

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16.6.2 Menu 1-2 "Knotter signal"

This menu can be used to set whether an acoustic signal is to sound after a knot is tied.

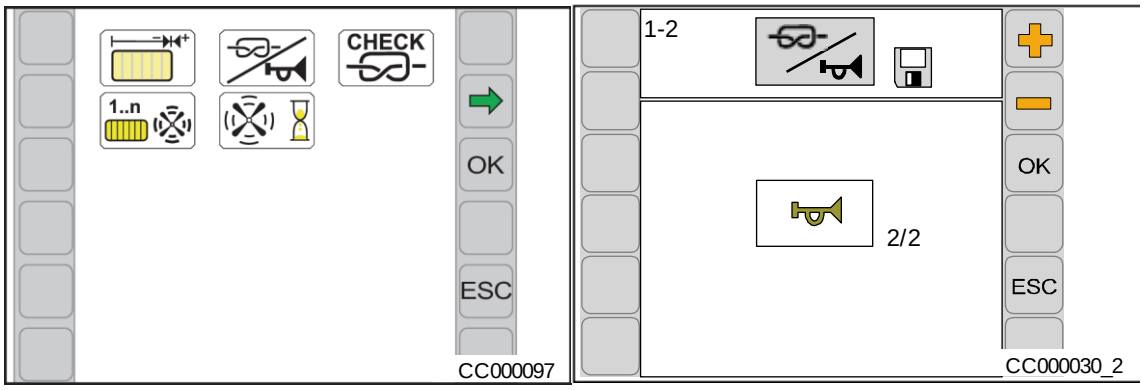

Fig. 126

Menu 1 "Knotter" has been selected, see chapter Terminal – Menus, "Menu 1 'Knotter'".

- To open the menu, press .

The display shows the "Knotter signal" menu.

These modes can be selected:

Symbol	Designation	Explanation
Mode 1/2	Knotter signal deactivated	After a knot is tied, an acoustic signal does not sound.
Mode 2/2	Knotter signal activated	After a knot is tied, an acoustic signal sounds.

Changing mode

- Select and save the mode, see chapter Terminal – Menus, "Changing value".

Recurring symbols

- See chapter Terminal – Menus, "Recurring symbols".

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16.6.3 Menu 1-3 "Knotter monitoring"

Fitted as standard only on the Comfort version electronics.

This menu is used to adjust whether the upper twines of the knotter should be monitored. The knotters are numbered in direction of travel from left to right: Knotters from 1 to 8.

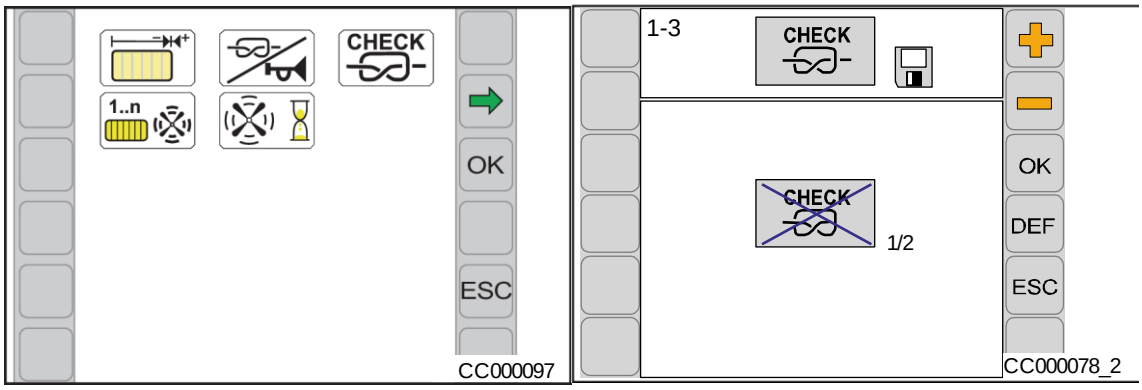

Fig. 127

Menu 1 "Knotter" has been selected, see chapter Terminal – Menus, "Menu 1 'Knotter'".

- To open the menu, press CHECK.

The display shows the "Knotter monitoring" menu.

Symbol	Designation	Explanation
CHECK Mode 1/2	Knotter monitoring deactivated	The upper twines are not monitored.
CHECK Mode 2/2	Knotter monitoring activated	The upper twines are individually monitored.

Changing mode

- Select and save the mode, see chapter Terminal – Menus, "Changing value".

Recurring symbols

- See chapter Terminal – Menus, "Recurring symbols".

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16.6.4 Menu 1-4 "Blow interval"

This menu can be used to set after how many bales the knotters are cleared ("blown free") of dust and accumulation of crops by compressed air.

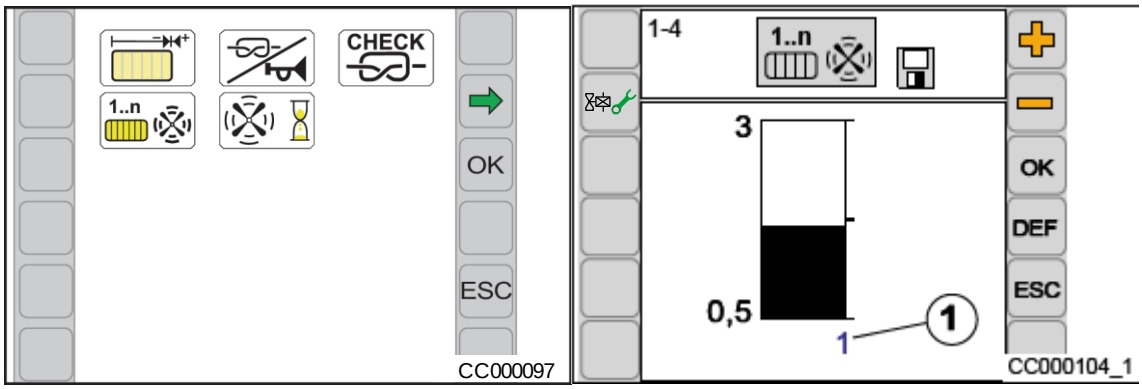

Fig. 128

Menu 1 "Knotter" has been selected, see chapter Terminal – Menus, "Menu 1 'Knotter'".

- To open the menu, press .

The display shows the "Blow interval" menu.

Display area

Item	Designation	Explanation
1	Number of bales	• Adjustable value range: 0.5 - 3 bales • If 0.5 is set, the knotters are blown off halfway along the bale and at the end of the bale.

Changing the value

- Increase or reduce the value, see chapter Terminal – Menus, "Changing the value".

Recurring symbols

- See chapter Terminal – Menus, "Recurring symbols".

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16.6.5 Menu 1-5 "Blowing time"

This menu can be used to set how long the knotters are blown.

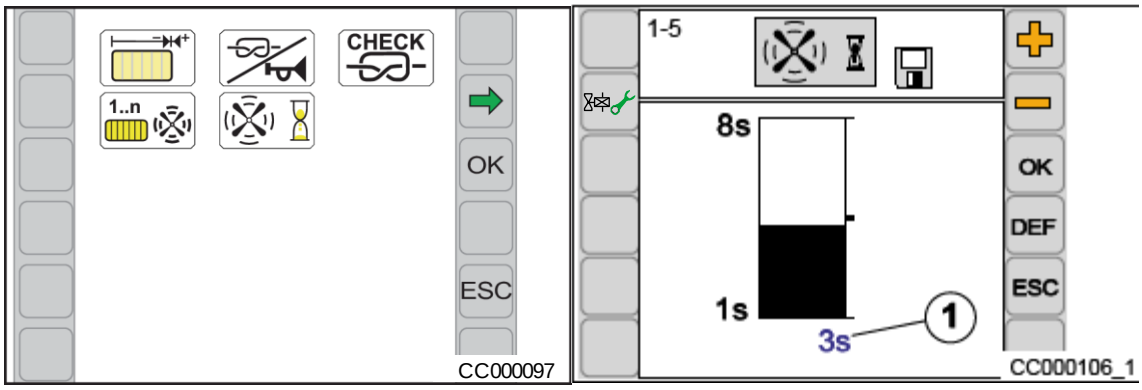

Fig. 129

Menu 1 "Knotter" has been selected, see chapter Terminal – Menus, "Menu 1 'Knotter'".

- To open the menu, press .

The display shows the "Blowing time" menu.

Display area

Item	Designation	Explanation
1	Blowing time	• In seconds. • Adjustable value range: 1 – 8 s

Changing the value

- Increase or reduce the value, see chapter Terminal – Menus, "Changing the value".

Recurring symbols

- See chapter Terminal – Menus, "Recurring symbols".

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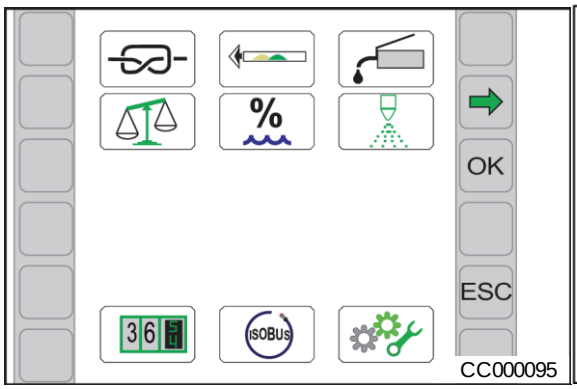
16.7 Menu 2 "Sensitivity of direction indicator"

The sensitivity of direction display is set in this menu.

The direction display indicates whether the swath is taken up in the centre by the pick-up and informs about the direction of travel. The higher the bar on the display, the more sensitive the direction displayis set. The higher the sensitivity of the direction display is set, the stronger the indications for the direction of motion in the form of arrows in the working screen.



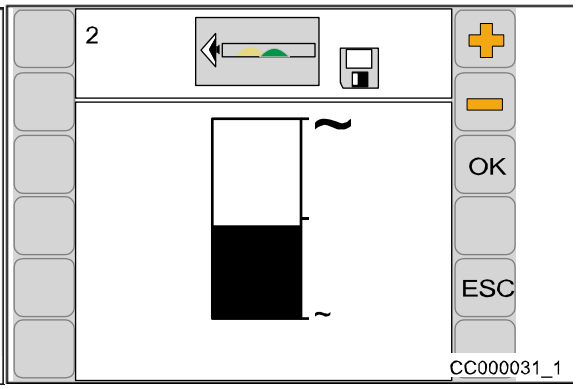


Fig. 130

The menu level has been selected, see chapter Terminal – Menus, "Selecting menu level".

- To open the menu, press .

The display shows the "Sensitivity of direction indicator" menu.

Changing the value

- Increase or reduce the value, see chapter Terminal – Menus, "Changing the value".

Recurring symbols

- See chapter Terminal – Menus, "Recurring symbols".

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16.8 Menu 3 "Central lubrication"

For the central lubrication version

This menu can be used to set the lubrication duration in the lubrication interval of the central lubrication. This menu can also be used to manually actuate the central lubrication.

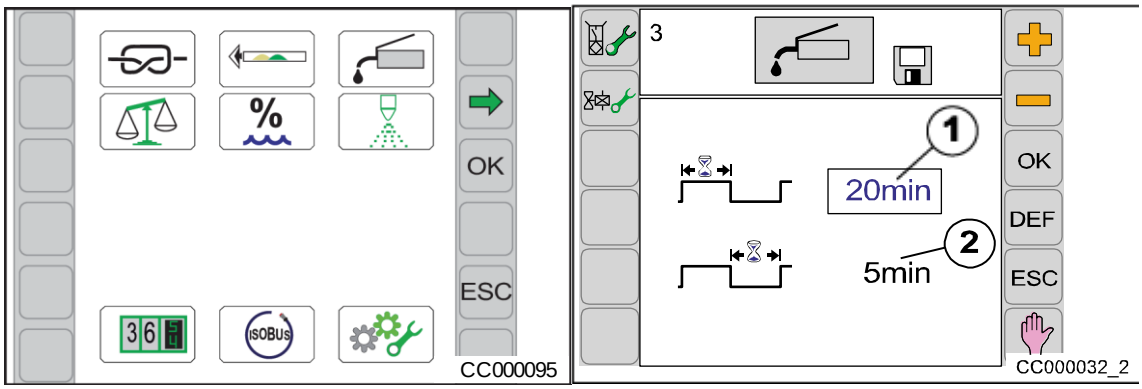


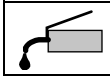
Fig. 131

The menu level has been selected, see chapter Terminal – Menus, "Selecting menu level".

- To open the menu, press .

The display shows the "Central lubrication" menu.

Display area

Graphic	Designation	Explanation
(1)	Lubrication duration	• Adjustable • Factory setting: 20 min
(2)	Lubrication pause	• Not adjustable • Factory setting: 5 min
	Manually actuate central lubrication	The central lubrication is switched off.
	End lubrication process	The central lubrication was manually actuated.

Changing the value

- Increase or reduce the value, see chapter Terminal – Menus, "Changing the value".

Recurring symbols

- See chapter Terminal – Menus, "Recurring symbols".

Manually actuating the lubrication process

- To manually actuate the lubrication process, press .

The display switches from to .

End lubrication process

- To end the lubrication process, press .

The display switches from to .

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16.9 Menu 4 "Bale scales"

For the bale scales version

This menu can be used to set a correction value for the bale scales if the displayed weight differs from the weight of external calibrated scales.

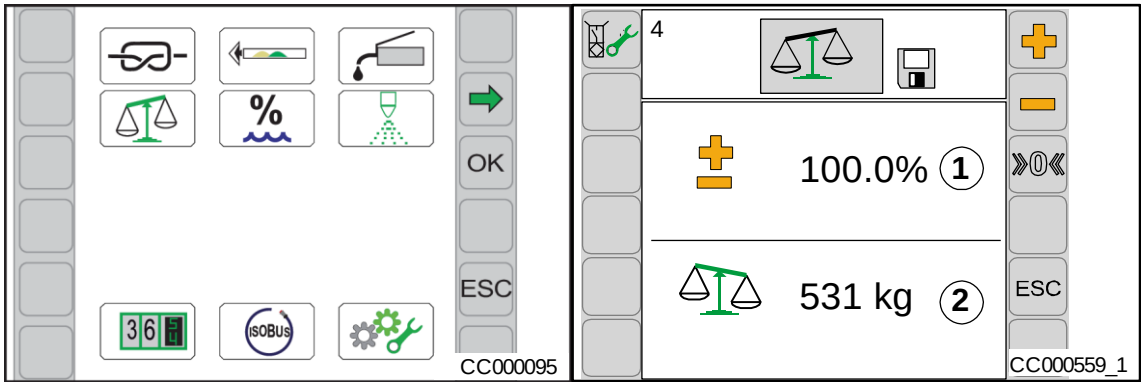

Fig. 132

The menu level has been selected, see chapter Terminal – Menus, "Selecting menu level".

- To open the menu, press .

The display shows the "Bale scales" menu.

Display area

Graphic	Designation	Explanation
(1)	Correction value	• Adjustable value range: 95 - 105 %. • Factory setting: 100 %
(2)	Value	• Weight which is on the bale scales. • Unit according to the set system of units
0	Zeroise	• Zeroise only when the bale scales are unloaded.

Recurring symbols

- See chapter Terminal – Menus, "Recurring symbols".

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Setting the bale scales

The machine has been shut down and safeguarded, see chapter Safety - "Shutting down and safeguarding the machine".

The bale chute has been lowered, see chapter ISOBUS terminal machine function - "Lowering the bale chute".

Check

- Place a **calibrated** test weight from **200 to 300 kg in the centre** of the bale scales.
- Read off the displayed weight.

If the displayed value corresponds to the weight of the test weight, it is not necessary to adjust the bale scales.

If the displayed value differs from the weight of the test weight, the bale scales must be readjusted.

Adjusting bale scales

- Press + or − until the value (2) corresponds to the weight of the test weight.

The symbol goes out.

- To save the value, press **OK**.

The symbol is displayed.

The value is saved.

Note

If the limit range is not reached to adjust the bale scales, contact KRONE customer service.

Zeroising bale scales

If there is no bale (weight) on the bale scales, but a value is displayed (2), when the bale chute is lowered, the sensors B55 "Bale chute at rear" and B56 "Bale chute at front" must be zeroised. During the zeroising process the acceleration sensor is calibrated.

The bale chute has been lowered, see chapter Terminal – machine functions, "Lowering the bale chute".

There is no bale (weight) on the bale scales.

- To zeroise the bale scales, press »0«.

The acceleration sensor has been calibrated.

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16.10 Menu 5 "Moisture measurement"

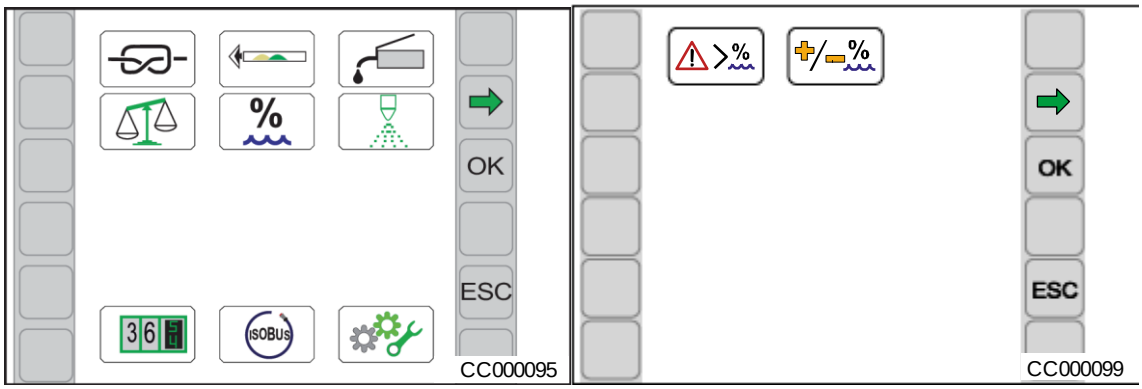

Fig. 133

The menu level has been selected, see chapter Terminal – Menus, "Selecting menu level".

- To open the menu, press %.

The display shows the "Moisture measurement" menu.

The "Moisture measurement" menu is divided into the following sub-menus depending on the machine configuration:

Symbol	Designation
⚠ > %	Menu 5-1 "Alarm message for moisture measurement"
+ / − %	Menu 5-2 "Correction value for moisture measurement"

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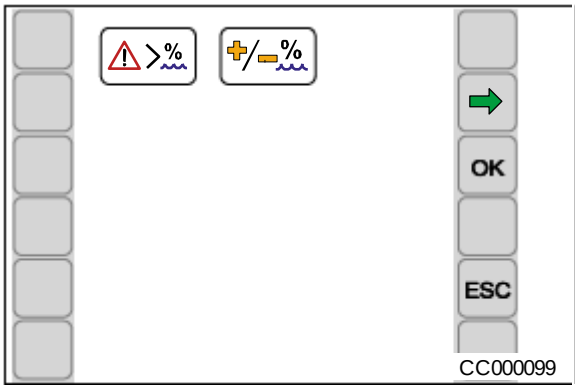
16.10.1 Menu 5-1 "Alarm message for moisture measurement"

In this menu the value is set from which the alarm message 36 "Crops too moist" appears on the display. The alarm message for the display can also be deactivated or activated.



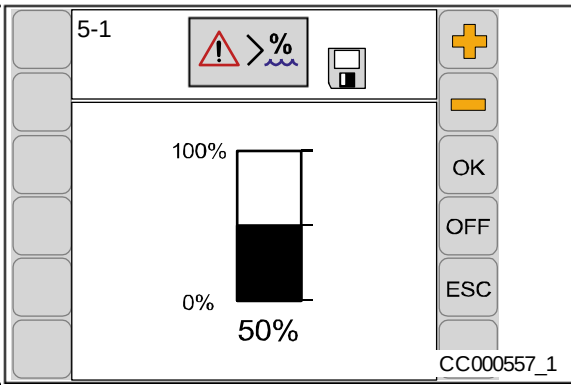


Fig. 134

Menu 5 "Moisture measurement" has been selected, see chapter Terminal – Menus, "Menu 5 'Moisture measurement'".

- To open the menu, press .

The display shows the "Alarm message for moisture measurement" menu.

Changing the value

- Increase or reduce the value, see chapter Terminal – Menus, "Changing the value".

Recurring symbols

- See chapter Terminal – Menus, "Recurring symbols".

Deactivating alarm message 36

- To deactivate the alarm message, press ON.

The display switches from ON to OFF.

Activating alarm message 36

- To activate the alarm message, press OFF.

The display switches from OFF to ON.

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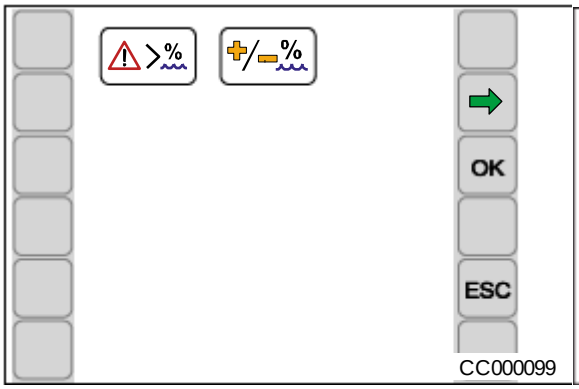
16.10.2 Menu 5-2 "Correction value for moisture measurement"

In this menu a correction value can be set for the moisture measurement if the displayed value deviates from the value of an external measuring system.



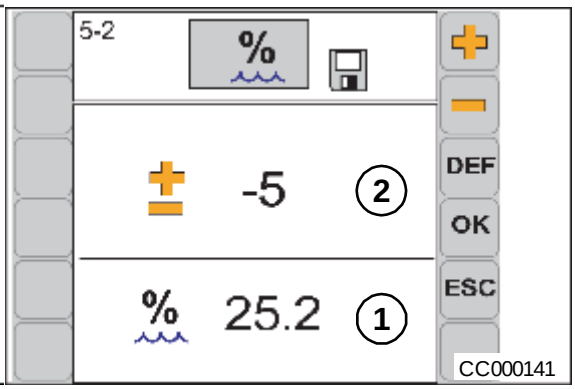


Fig. 135

Menu 5 "Moisture measurement" has been selected, see chapter Terminal – Menus, "Menu 5 'Moisture measurement'".

- To open the menu, press +/–%.

The display shows the "Correction value for moisture measurement" menu.

Display area

Graphic	Designation	Explanation
(1)	Value	Measured moisture
(2)	Correction value	Adjustable value range: +10 to -10

Determining the moisture

- Use an external system to determine the moisture.

If the measured value matches the value (1) on the display, everything is correct.

If the measured value does not match the value (1) on the display, correct the value on the display.

Setting the correction value

- Press + or – until the value (1) matches the measured value.

The symbol goes out.

- To save the value, press OK.

The symbol is displayed.

The value is saved.

Recurring symbols

- See chapter Terminal – Menus, "Recurring symbols".

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16.11 Menu 6 "Silage additive system"

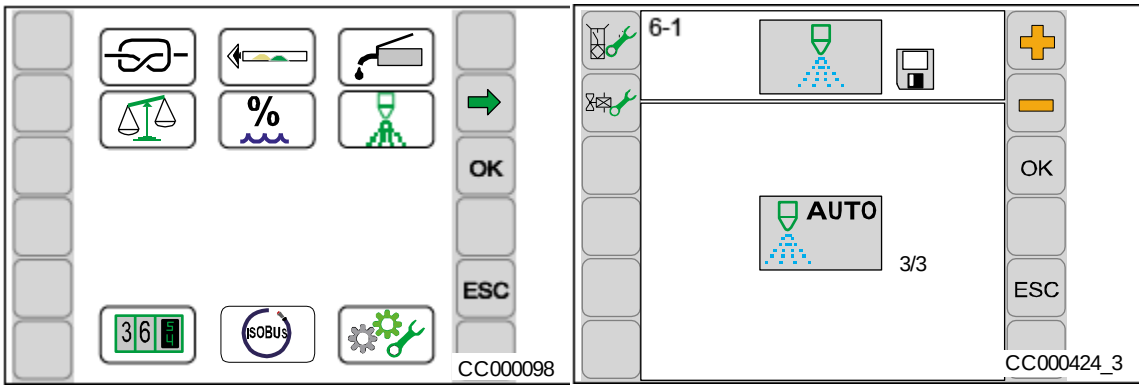


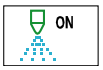
Fig. 136

The menu level has been selected, see chapter Terminal – Menus, "Selecting menu level".

- To open the menu, press .

The display shows the "Silage additive system" menu.

These modes can be selected:

Symbol	Meaning	Explanation
Mode 1/3	Silage additive system OFF	
 Mode 2/3	Silage additive system ON	• Continuous operation
Mode 3/3	Silage additive system automatic mode	• The silage additive system is switched on as soon as the pick-up is in the float position.

Changing mode

- Select and save the mode, see chapter Terminal – Menus, "Changing value".

Recurring symbols

- See chapter Terminal – Menus, "Recurring symbols".

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16.12 Menu 13 "Counters"

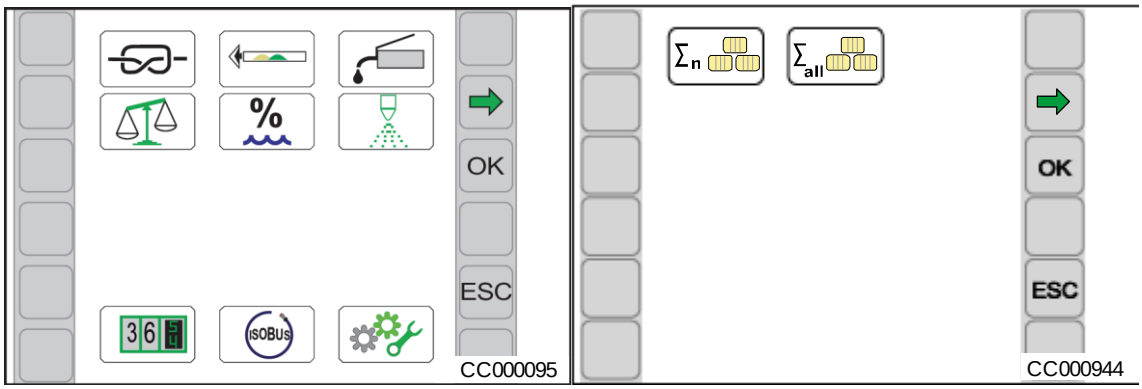

Fig. 137

The menu level has been selected, see chapter Terminal – Menus, "Selecting menu level".

- To open the menu, press .

The display shows the "Counter" menu.

The "Counter" menu is divided into the following sub-menus depending on the machine configuration:

Symbol	Designation
$\sum_n$	Menu 13-1 "Customer counter"
$\sum_{all}$	Menu 13-2 "Total counter"

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16.12.1 Menu 13-1 "Customer counter"

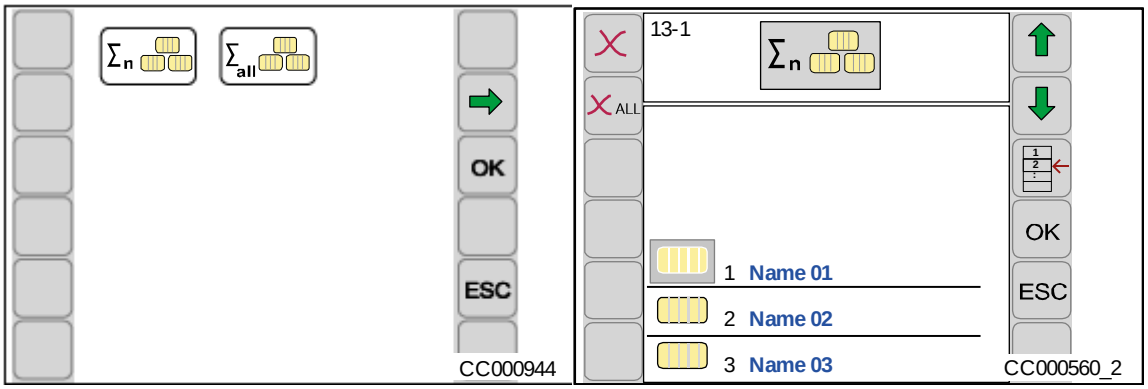

Fig. 138

Menu 13 "Counter" has been selected, see chapter Terminal – Menus, "Menu 13 'Counter'".

- To open the menu, press Σ_n.

The display shows the "Customer counter" menu.

Display area

Symbol	Designation	Explanation
	Customer counter	– Customer counter 1 to 20 – The activated customer counter is highlighted in grey. – The selected customer counter is the one between the lines. – The selected customer counter does not have to be activated. – The name next to the customer counter is touch-sensitive. The input mask opens. – Tap the symbol to open the detail counter.

Recurring symbols

- See chapter Terminal – Menus, "Recurring symbols".

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Keys

Symbol	Designation	Explanation
	Display detail counter	Displays additional counter information for the selected customer counter.
	Delete data records	Sets all data records for the selected customer counter to zero. The name is not deleted.
	Delete all data records	Sets all data records of all customer counters to zero. Press and hold down the key.

Changing the name of a customer counter

- Press on "Name".

An input mask opens.

- Enter the name via the keypad.
- To save the name, press OK.
- To leave the input mask without saving, press ESC.

Resetting the customer counter

The customer counter, which is to be reset, does not have to be activated.

- To select the customer counter, press ↑ or ↓.
- Press .

The selected customer counter is set to zero.
The name of the customer counter is not deleted.

Activating customer counter

The detail counter has been selected.

- To select the customer counter, press ↑ or ↓.
- To activate the customer counter, press **OK**.

The new activated customer counter is highlighted in grey.

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16.12.1.1 Menu 13-1 Selecting detail counter/customer counter

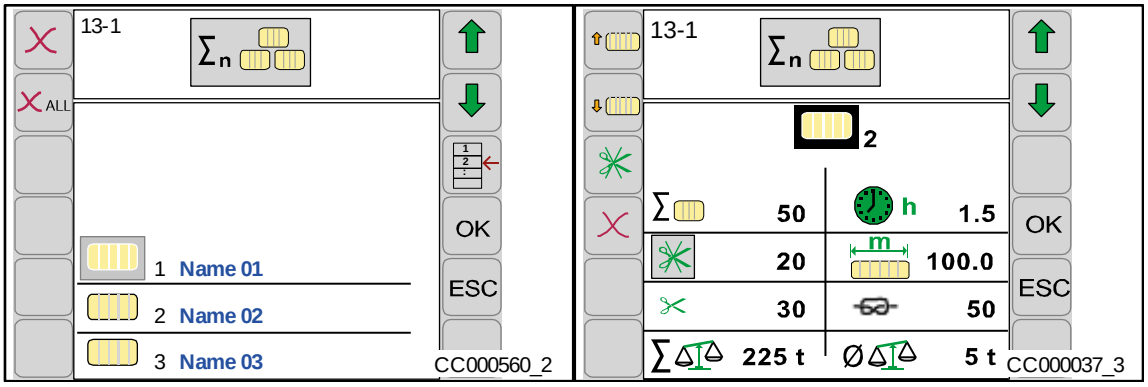

Fig. 139

Opening the detail counter

The menu 13-1 "Customer counter" is opened.

- To open the detail counter, press .

Selecting the customer counter

The detail counter has been selected.

- To return to the customer counter, press **ESC**.

Display range of detail counter

Symbol	Designation	Explanation
	Selected customer counter	– Here customer counter 2 – Further information, see chapter ISOBUS terminal – Menus, "Menu 13-1 'Customer counter'".
	"Total bales" counter	– Number of all bales.
	"Uncut bales" counter	– Number of uncut bales.
	"Cut bales" counter	– For machines with a cutting unit – Number of cut bales.
h	Operating hours counter	– Counts only when the PTO shaft is running.
m ft	"Total length" counter	– Total length of all bales for this customer – m or ft depending on selected system of units.
	Knot counter	– For the MultiBale version: incl. MultiBale knots.
	"Total weight" counter	– For the bale scales version – Total weight of all bales.
Ø	"Average weight" counter	– For the bale scales version – Average weight of the weighed bales.

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Keys

Symbol	Designation	Explanation
	Increase number of bales	
	Decrease number of bales	
	Select "Uncut bales" counter	
	Select "Cut bales" counter	

Recurring symbols

- See chapter Terminal – Menus, "Recurring symbols".

Activating customer counter

The detail counter has been selected.

- To select the customer counter, press or .
- To activate the customer counter, press .

The new activated customer counter is highlighted in grey.

Resetting the customer counter

The customer counter, which is to be reset, does not have to be activated.

- To select the customer counter, press or .
- Press .

The selected customer counter is set to zero.

The name of the customer counter is not deleted.

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Changing the number of bales

- Press ⬆ or ⬇ until the customer counter has been selected.

The selected customer counter does not have to be activated.

Changing the "Uncut bales" counter

- Press ✳.
- To increase the number of bales, press ⬆ ▭.
- To reduce the number of bales, press ⬇ ▭.

At the same time the following counters are changed:

– the season counter
– the day counter
– the "Bale length" counter
– the knot counter
– for the bale scales version: the "Total weight" counter
– for the bale scales version: the "Average weight" counter

Changing the "Cut bales" counter

- Press ✂.
- To increase the number of bales, press ⬆ ▭.
- To reduce the number of bales, press ⬇ ▭.

At the same time the following counters are changed:

– the season counter
– the day counter
– the "Total length" counter
– the knot counter
– for the bale scales version: the "Total weight" counter
– for the bale scales version: the "Average weight" counter

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16.12.2 Menu 13-2 "Total counter"

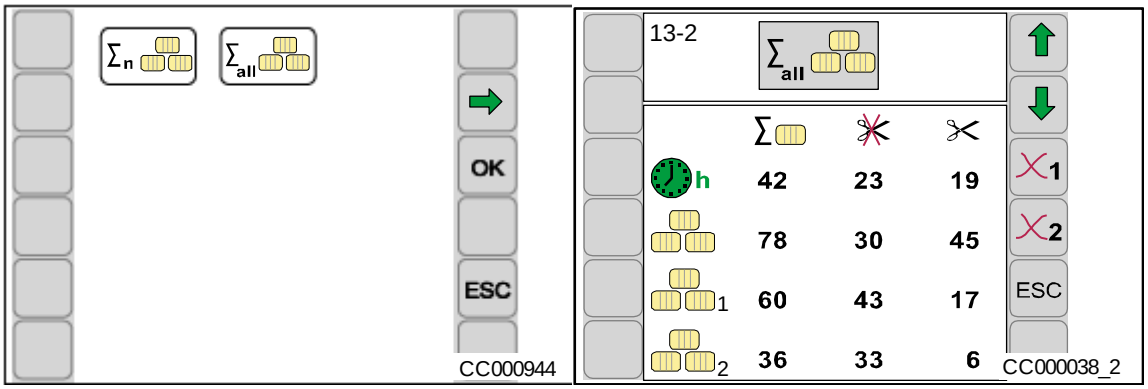

Fig. 140

Menu 13 "Counter" has been selected, see chapter Terminal – Menus, "Menu 13 'Counter'".

- To open the menu, press Σ_{all}.

The display shows the "Total counter" menu.

Symbol	Designation	Explanation
Σ	"Total number of bales" counter	
	"Uncut bales" counter	
	"Cut bales" counter	For machines equipped with a cutting unit.
h	Operating hours counter	Counts only when PTO shaft is running.
	Bale counter	Cannot be deleted
1	Season counter 1	Can be deleted
2	Season counter 2	Can be deleted

Symbol	Designation	Explanation
	"Total weight" counter	Total weight of all compressed bales. Cannot be deleted
1	Season counter 1	Can be deleted
2	Season counter 2	Can be deleted

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Recurring symbols

- See chapter Terminal – Menus, "Recurring symbols".

Resetting season counter 1

- Press 1.

Season counter 1 is set to zero.

Resetting season counter 2

- Press 2.

Season counter 2 is set to zero.

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16.13 Menu 14 "ISOBUS settings"

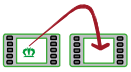
The menu level has been selected, see chapter Terminal – Menus, "Selecting menu level".

- To open the menu, press

.

The display shows the "ISOBUS settings" menu.

The "ISOBUS settings" menu is divided into the following sub-menus depending on the machine configuration:

Symbol	Designation
	Menu 14-1 "Auxiliary (AUX) diagnostics"
	Menu 14-2 "Diagnostics for driving speed / direction indicator"
	Menu 14-8 "Configuring main window"
	Menu 14-9 "Switching between terminals"

16.13.1 Menu 14-1 “Diagnostics Auxiliary (AUX)”

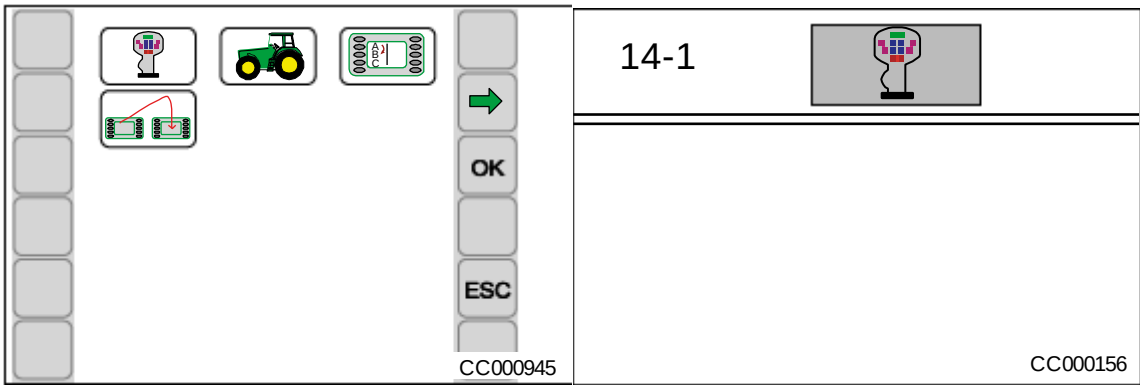


Fig. 141

Menu 14 "ISOBUS settings" has been selected, see chapter Terminal – Menus, "Menu 14 'ISOBUS settings'".

- To open the menu, press
.

The display shows the "Auxiliary (AUX) diagnostics" menu.

A representation of the joystick appears on the display. If functions are operated via a joystick, the display lists the symbols of these functions. The functions per se are not run in this menu.

Recurring symbols

- See chapter Terminal – Menus, "Recurring symbols".

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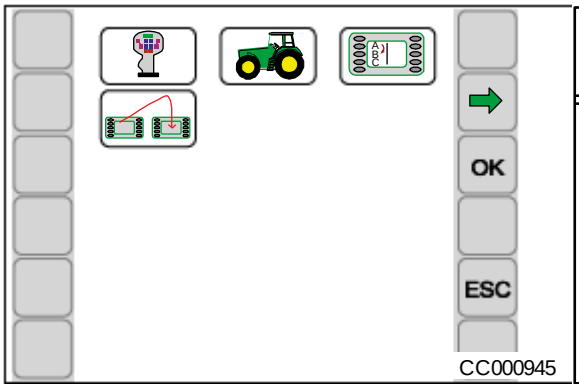
16.13.2 Menu 14-2 "Diagnostics for driving speed / direction indicator"



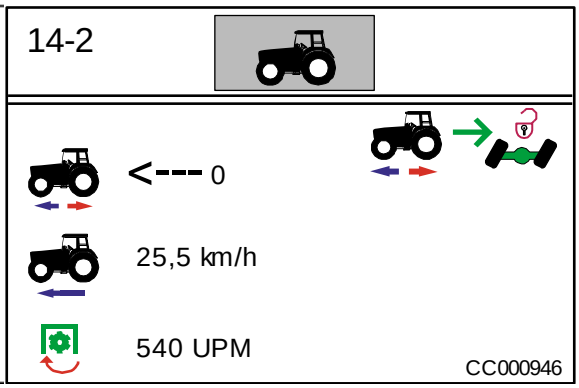


Fig. 142

Menu 14 "ISOBUS settings" has been selected, see chapter Terminal – Menus, "Menu 14 'ISOBUS settings'".

- To open the menu, press .

The display shows the "Diagnostics for driving speed / direction indicator" menu.

Display area

Symbol	Designation	Explanation
<--- 0	Driving forward	
0 --->	Reversing	
+25.5 km/h	Speed for forward travel	km/h or mph depending on selected system of units.
-25.5 km/h	Speed for reverse travel	
	PTO speed	Value is provided via ISOBUS from the tractor.
	The direction of travel of the tractor is evaluated for locking the steering axle.	If the evaluation of the ISOBUS data from the tractor has been activated.
	The direction of travel of the tractor is not evaluated for locking the steering axle.	If the evaluation of the ISOBUS data from the tractor has not been activated.

Recurring symbols

- See chapter Terminal – Menus, "Recurring symbols".

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16.13.3 Menu 14-8 "Configuring main window"

This menu can be used to set the information which is to be displayed in the left column of the main window. Up to 7 display elements can be displayed simultaneously in the main window.

Depending on the machine configuration, up to 13 display elements can be selected which 7 display elements are to be displayed in the main window. The main window can also be individually configured on 2 pages (for e.g. 2 drivers).

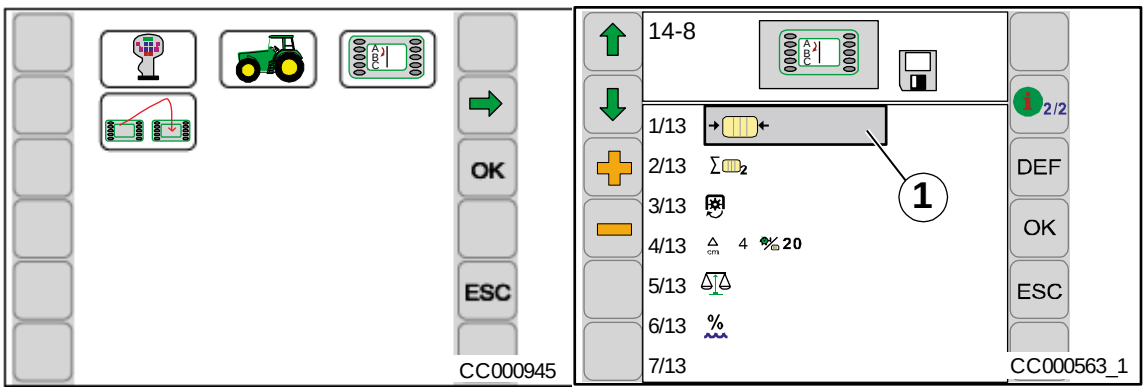

Fig. 143

Menu 14 "ISOBUS settings" has been selected, see chapter Terminal – Menus, "Menu 14 'ISOBUS settings'".

- To open the menu, press .

The display shows the "Configuring main window" menu.

Keys

Symbol	Designation	Explanation
	Scroll up	Moves the rectangle (1) up.
	Scroll down	Moves the rectangle (1) down.
	Show next display element	
	Show previous display element	
	Selecting second page	When the first page of the main window is configured.
	Select first page	When the second page of the main window is configured.

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Configuring

- To select the page to be configured, press 1/2 or 2/2.
- To select the required line of the main window, press ↑ or ↓.

The rectangle (1) moves into the corresponding line (one to seven).

- To select the required display element, press + or –.

The new display element appears on the display and the symbol goes out.

- To save the new display element, press **OK**.

The new display element is saved for the main window.

The symbol is displayed.

Selectable display elements

Depending on the machine configuration, the following display elements can be positioned in the main window:

Symbol	Designation	Explanation
	Current baling force as %	In manual mode. Maximum 100 %
	Current bale channel flap pressure	In automatic mode. In bar or PSI (depending on selected system of units).
	Current total number of bales	The number indicates the selected customer counter.
	Current PTO speed	In min^{-1}
cm	Current layer thickness	In cm or inch (depending on selected system of units).
20	Current number of layers of the last compressed bale	
%	Current degree of moisture of the crops	
	Bale weight	Weight of the bale last weighed.
Ø	Current average weight of the weighed bales	
	Current total weight of all bales	

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Symbol	Designation	Explanation
	Total length of all compressed bales	In m or ft (depending on selected system of units)
	Current number of uncut bales	
	Current number of cut bales	For machines equipped with a cutting unit.
	Knot run	Is displayed briefly after a knot is tied. If activated, a horn sounds for approx. 1 second, see chapter Terminal – Menus "Menu 1-2, Knotter signal".
	Operating hours counter	Counts only when PTO shaft is running.

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16.13.4 Menu 14-9 “Switching Between the Terminals”

Note
This menu is only available if several ISOBUS terminals are connected.

When the user switches terminals for the first time, the configuration of the machine is loaded into the next terminal. Loading may take a few minutes. The configuration is saved in the memory of the next terminal.

The next time a call is made, the machine is no longer available in the previous terminal.

When restarting, the system attempts to start the last terminal used. If the last terminal used is no longer available (e.g. because it was removed), the restart is delayed as the system looks for a new terminal and loads the specific menus to that terminal. Loading may take a few minutes.

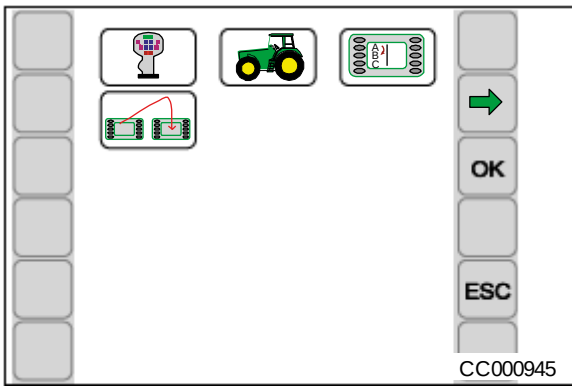
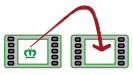


Fig. 144

Menu 14 "ISOBUS settings" has been selected, see chapter Terminal – Menus, "Menu 14 'ISOBUS settings'".

- To change to the next terminal, press  .

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16.14 Menu 15 "Settings"

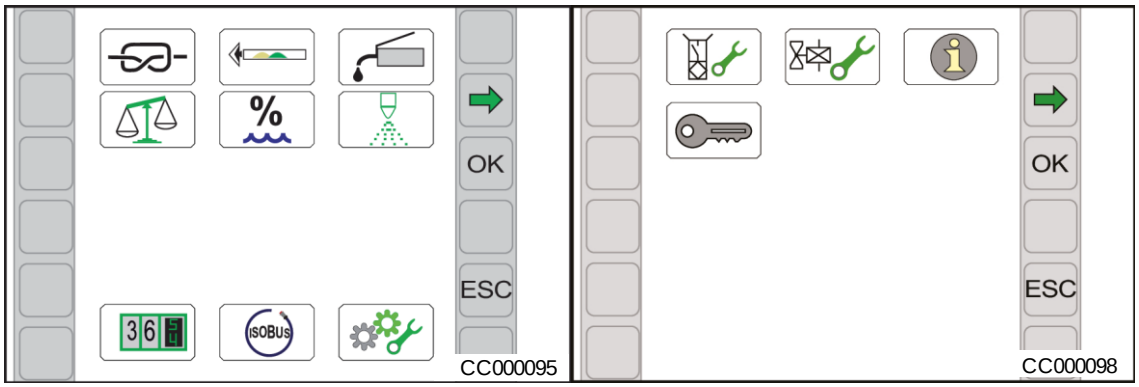


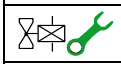
Fig. 145

The menu level has been selected, see chapter Terminal – Menus, "Selecting menu level".

- To open the menu, press .

The display shows the "Settings" menu.

The "Settings" menu is divided into the following sub-menus depending on the machine configuration:

Sub-menu	Designation
	Menu 15-1 "Sensor test"
	Menu 15-2 "Actuator test"
	Menu 15-5 "Software info"
	Menu 15-6 "Technician level"

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16.14.1 Menu 15-1 “Sensor Test”

WARNING!
Risk of injury in the danger zone of the machine
If the PTO shaft is running during the sensor test, machine parts may start moving unintentionally. As a result, people may be seriously or fatally injured.
- Switch off the PTO shaft.

In the sensor test the sensors installed on the machine are checked for faults. Also the sensors can be set correctly using the sensor test. There is no guarantee that the machine will work correctly until the sensors have been adjusted.

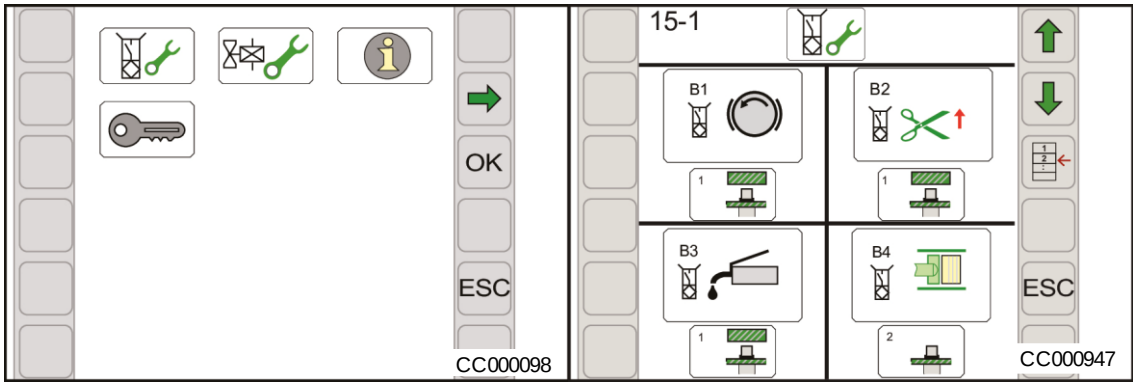

Fig. 146
Menu 15 "Settings" has been selected, see chapter Terminal – Menus, "Menu 15 'Settings'".

- To open the menu, press .

The display shows the "Sensor test" menu.

Keys

Symbol	Designation	Explanation
	Open "Sensor test" mask	The "Sensor test" mask opens.

Recurring symbols
- See chapter Terminal – Menus, "Recurring symbols".

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Testing sensor

- To test a sensor, press on the sensor symbol.

The "Sensor test" mask opens.

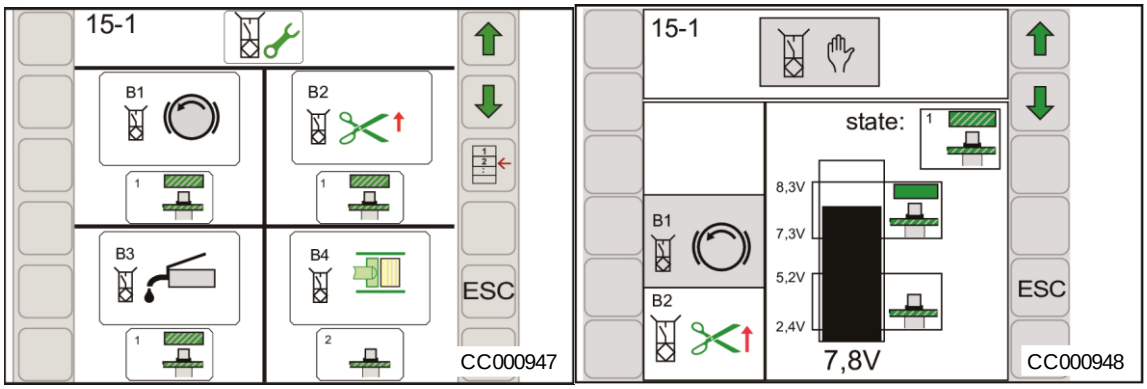

Fig. 147

Setting values:

The minimum and maximum setting values with the sensor alive (metal in front of the sensor) are shown in the upper part of the bar display. The current setting value (actual value) is displayed under the bar display.

The distance from the sensor to the metal must be adjusted so that in the alive state the bar is in the upper mark. Next check whether the bar is in non-alive state in the lower marked area.

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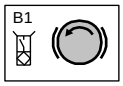
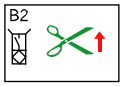
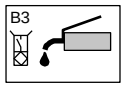
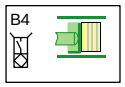
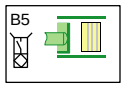
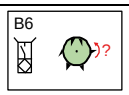
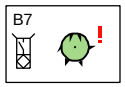
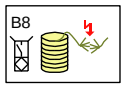
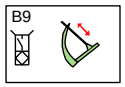
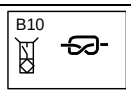
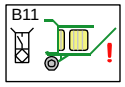
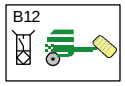
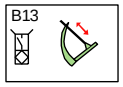
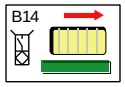
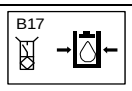
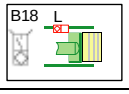
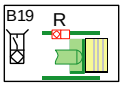
Possible sensors (depending on how the machine is equipped)

No.	Sensor	Designation	Explanation
B1		Flywheel brake	Digital sensor
B2		Blade bar up	Digital sensor
B3		Central lubrication	Digital sensor
B4		Measuring	Digital sensor
B5		Calibration	Digital sensor
B6		Packer monitoring	Digital sensor
B7		Packer feed	Digital sensor
B8		Twine monitoring	Digital sensor
B9		Needle connecting rod on left	Digital sensor
B10		Knotter monitoring	Digital sensor
B11		Bale chute	Digital sensor
B12		Setting down bales	Digital sensor
B13		Needle connecting rod on right	Digital sensor
B14		Bale ejector	Digital sensor
B15		Star wheel	Analogue sensor The bar must always be in the marked area when the star wheel rotates.
B17		Bale channel flap pressure	Analogue sensor At zero bar the bar must be in the lower marked area.
B18		Plunger force, left	Force sensor
B19		Plunger force, right	Force sensor

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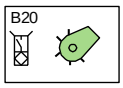
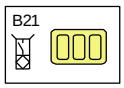
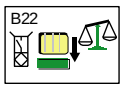
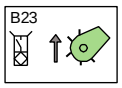
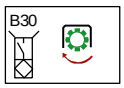
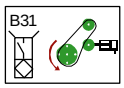
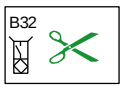
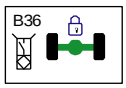
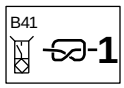
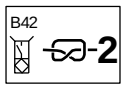
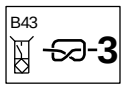
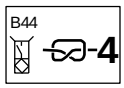
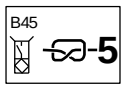
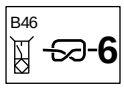
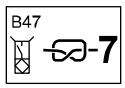
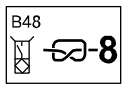
No.	Sensor	Designation	Explanation
B20		Pick-up	Digital sensor
B21		MultiBale	Analogue sensor Tests are made to check whether the sensor is defective. The setting can only be made in the “Technician Level” menu.
B22		Bale on chute	Digital sensor
B23		Pick-up position	Digital sensor
B30		PTO speed	Digital sensor
B31		Rotational speed of cutting rotor	Digital sensor
B32		Blade active	Digital sensor
B36		Axle locked	Pressure sensor
B38		Acceleration sensor	Analogue sensor To compensate for shocks.

No.	Sensor	Designation	Explanation
B41		Knotter 1	Digital sensor
B42		Knotter 2	Digital sensor
B43		Knotter 3	Digital sensor
B44		Knotter 4	Digital sensor
B45		Knotter 5	Digital sensor
B46		Knotter 6	Digital sensor
B47		Knotter 7	Digital sensor
B48		Knotter 8	Digital sensor

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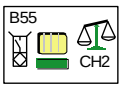
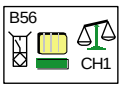
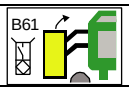
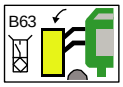
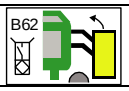
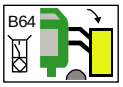
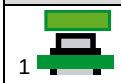
No.	Sensor	Designation	Explanation
B55		Rear bale chute	Force sensor
B56		Front bale chute	Force sensor

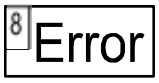
No.	Sensor symbol	Description
B61		Twine box on left in transport position
B63		Twine box on left in maintenance position

No.	Sensor symbol	Description
B62		Twine box on right in transport position
B64		Twine box on right in maintenance position

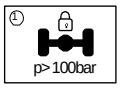
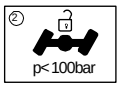
Status digital sensors

Symbol	Status (state)
	Alive (iron)
	Not alive (no iron)
	Cable break
	Short circuit

Status of analogue sensors/force sensors

Symbol	Status (state)
	Cable break or short circuit
	Defect in the sensor/force measurement amplifier or job computer

Status of pressure sensors

Symbol	Status (state)
	Axle locked
	Axle released

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Diagnostics pushbutton

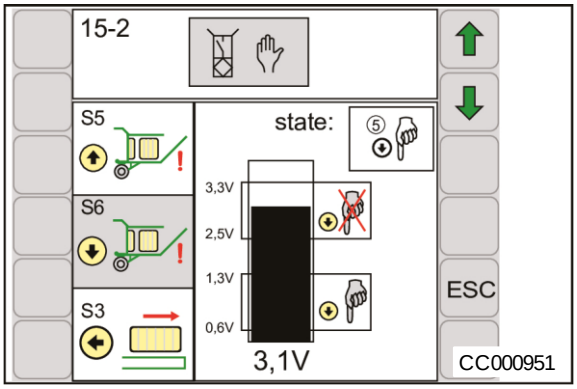
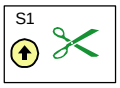
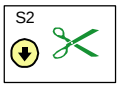
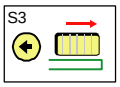
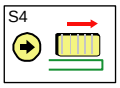
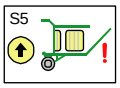
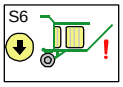


Fig. 148

When the pushbutton is pressed, the bar must be in the lower marked area of the bar display.

When the pushbutton is not pressed, the bar must be in the upper marked area of the bar display.

Possible pushbuttons (depending on the machine configuration)

No.	Pushbutton	Designation
S1		"Raise blade bar" pushbutton
S2		"Lower blade bar" pushbutton
S3		"Move in bale ejector" pushbutton
S4		"Move in bale ejector" pushbutton
S5		"Raise bale chute" pushbutton
S6		"Lower bale chute" pushbutton

Status pushbutton

Symbol	Status
③	Cable break
④	Short circuit
⑤	Pressed
⑥	Pressed

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Diagnostics supply voltages

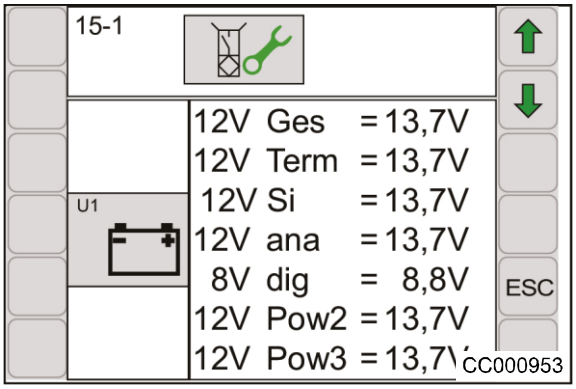
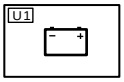


Fig. 149

No.	Icon	Designation
U1		Supply voltage

Nominal voltages

Display	Setting range
12 V tot.	12 - 14.5 V
12 V term	12 - 14.5 V
12V fuse	12 - 14.5 V
12V ana	12 - 14.5 V
8 V dig	8.5 - 9.1 V
12 V Pow2	12 - 14.5 V
12 V Pow3:	12 - 14.5 V

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16.14.1.1 Checking/adjusting sensor B22 "Bale on chute"

Sensor B22 has been preset in the works of the manufacturer. Due to high operational demands and component settings, the sensor might have to be adjusted.

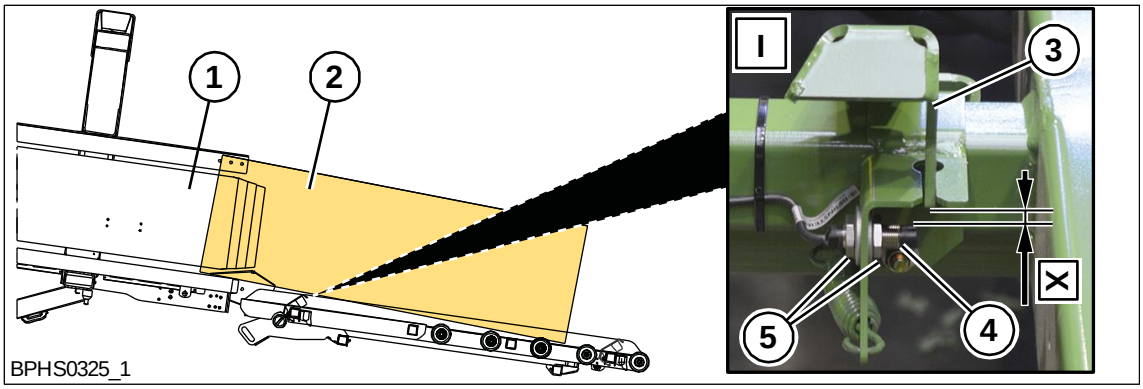

Fig. 150

- Press a bale (2) until ¾ of its length have exited the bale channel (1).

The signal sheet (3) does not cover the sensor (4). The sensor (4) is not alive (there is no iron in front of the sensor).

- Shut down and safeguard the machine, see chapter Safety, "Shutting down and safeguarding the machine".
- Check dimension X, measured between the upper edge of the sensor (4) and the edge of the signal sheet (3).

If dimension **X=5 mm**, the distance of the sensor is correct.

If dimension **X is not 5 mm**, adjust the sensor.

Adjustment

- Loosen the nuts (5) on both sides of the sensor (4).
- Push the sensor (4) upwards until dimension **X=5 mm**.

Measured between the upper edge of the sensor (4) and the edge of the signal sheet (3).

- Tighten the nuts (5) (tightening torque = 10 Nm).
- Use the sensor test to check whether the sensor (4) is still not alive, see Chapter Terminal – Menus, "Menu 15-1 'Sensor test'".

The sensor has been adjusted correctly if the sensor test shows that the sensor is not alive.

If the sensor test shows that the sensor is alive, adjust the sensor until the sensor test shows that the sensor is not alive.

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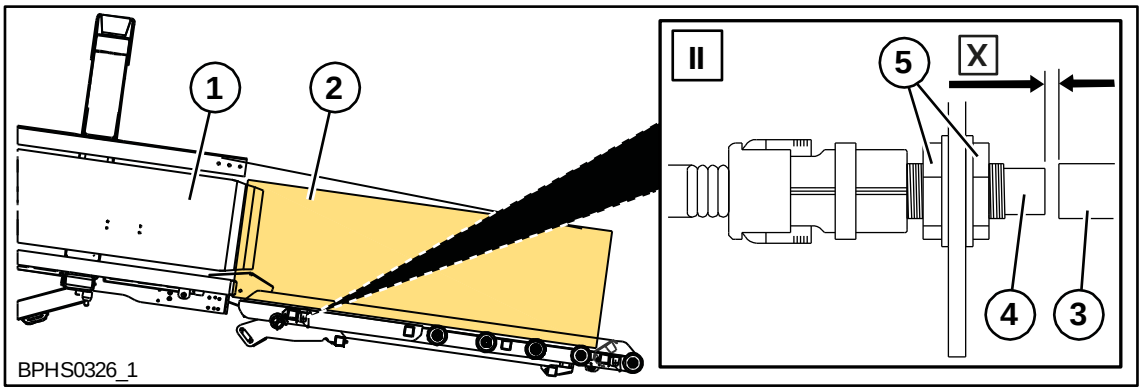

Fig. 151

- Continue pressing the bale (2) until it has exited the bale channel (1) completely.

The signal sheet (3) covers the sensor (4) fully. The sensor (4) is alive (iron).

- Shut down and safeguard the machine, see chapter Safety, "Shutting down and safeguarding the machine".
- Check dimension X, measured between the signal sheet (4) and the sensor (3).

If dimension **X=2-3 mm**, the sensor has been adjusted correctly.

If dimension **X is not 2-3 mm**, adjust the sensor.

Adjustment

- Loosen the nuts (5) on both sides of the sensor (4).
- Turn the nuts (5) until dimension **X=2-3 mm**.
- Tighten the nuts (5) (tightening torque = 10 Nm).
- Use the sensor test to check whether the sensor (4) is alive, see Chapter Terminal – Menus, "Menu 15-1 'Sensor test'".

The sensor has been adjusted correctly if the sensor test shows that the sensor is alive.

If the sensor test shows that the sensor is not alive, adjust the sensor until the sensor test shows that the sensor is alive.

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16.14.1.2 Setting sensor B38 "Acceleration sensor"

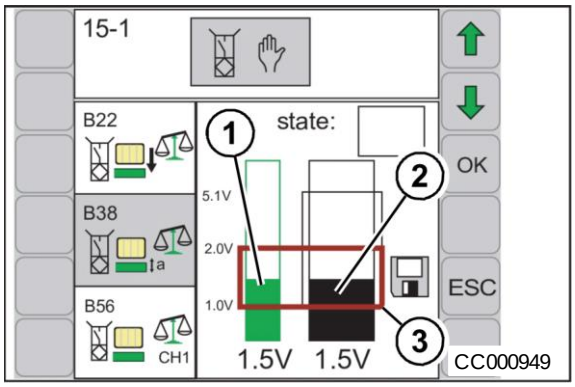

Fig. 152

The sensor B38 has been preset at the factory. The two bars (1,2) must be inside the marked area (3) of the bar display. Due to heavy loads and the settling of components, a calibration may be required if the bar (2) within the marked area (3) is larger or smaller than the bar (1) when the chute is lowered.

The bale chute has been lowered.
The sensor test has been selected and sensor B38 has been selected.

- Press **OK** until the left bar (1) has taken the value of the right bar (2).

The symbol shows that the value has been stored.

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16.14.1.3 Setting sensor B55 "Bale chute at rear"/sensor B56 "Bale chute at front"

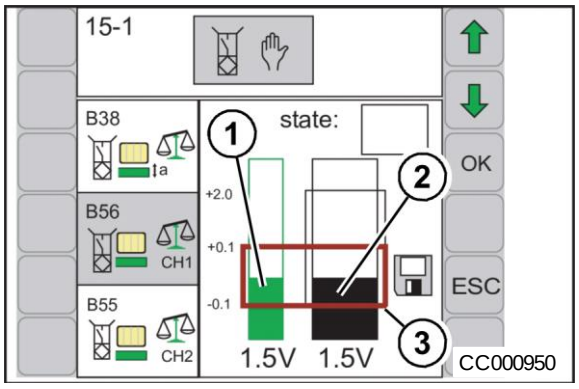

Fig. 153

The sensors B55 and B56 for recording the weight of the bale on the chute have been preset at the factory. The two bars (1,2) must be inside the marked area (3) of the bar display. Due to heavy loads and the settling of components, a recalibration may be required if the bar (2) within the marked area (3) is larger or smaller than the bar (1).

The sensor test has been selected and sensor B55 or B56 has been selected.

- Press **OK** until the left bar (1) has taken the value of the right bar (2).

The symbol shows that the value has been stored.

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16.14.2 Menu 15-2 “Actuator Test”

WARNING!
The functions are directly executed by energizing the actuators. As a result, machine parts may start to move unexpectedly, persons may be captured and seriously hurt.
- Switch off PTO shaft.
- Deactivate tractor hydraulics.
- Only persons familiar with the machine are permitted to perform the actuator test.
- The person performing the test must know the machine parts being actuated by controlling the actuators. If necessary, secure actuated machine components from unintentional lowering.
- Only perform the sensor test from a safe position outside the moving machine parts.
- Make sure that there is no one in the danger zone.

WARNING!
Functions are carried out directly when energising actuators. This can lead to the unintentional movement of machine parts, resulting in serious injuries.
- For the actuator test the machine must be in the working position.

The actuator test is used to test the actuators installed on the machine. An actuator can only be tested when it is powered. Therefore the actuator must be controlled manually for a short time in the actuator test in order to determine possible errors in the actuator system.

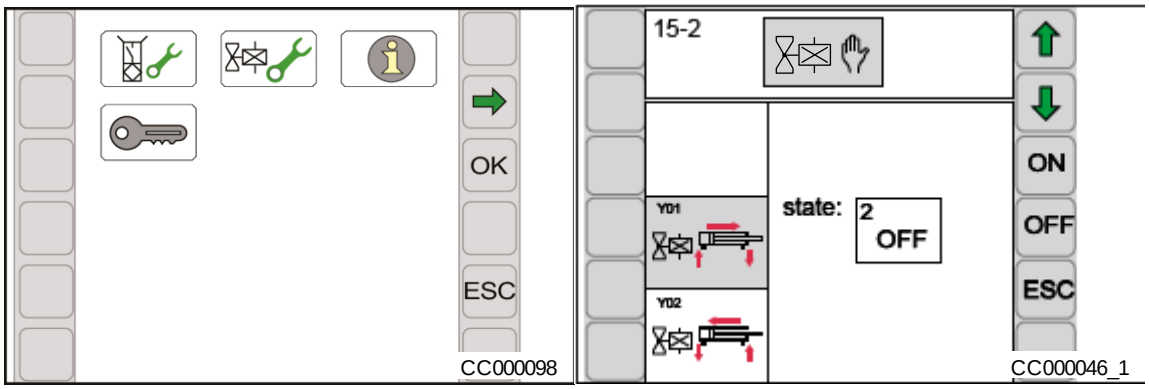

Fig. 154

Menu 15 "Settings" has been selected, see chapter Terminal – Menus, "Menu 15 'Settings'".

- To open the menu, press .

The display shows the "Actuator test" menu.

Recurring symbols
- See chapter Terminal – Menus, "Recurring symbols".

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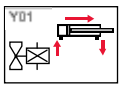
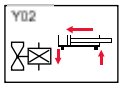
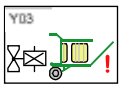
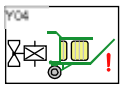
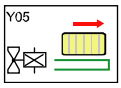
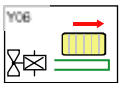
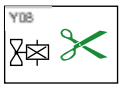
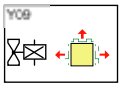
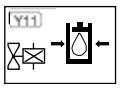
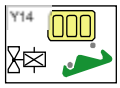
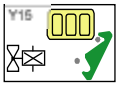
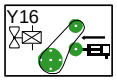
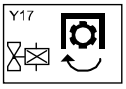
Possible digital actuators (depending on how the machine is equipped)

No.	Actuator	Designation	Explanation
Y01		Main valve	Digital actuator
Y02		Main valve	Digital actuator
Y03		Bale chute	Digital actuator
Y04		Bale chute	Digital actuator
Y05		Bale ejector	Digital actuator
Y06		Bale ejector	Digital actuator
Y07		Blade cassette	Digital actuator
Y08		Blade cassette	Digital actuator
Y09		Valve to release bale channel flaps	Digital actuator
Y11		Pressure limiting valve	Digital actuator
Y12		Feed rotor coupling	Digital actuator
Y14		Entire bale	Digital actuator It is not possible to detect the errors.
Y15		Entire bale	Digital actuator
Y16		Close feed rotor	Digital actuator
Y17		Starter aid	Digital actuator

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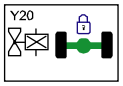
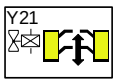
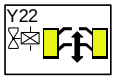
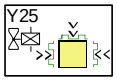
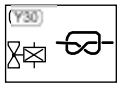
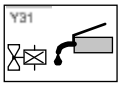
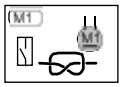
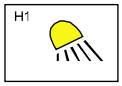
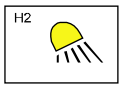
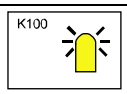
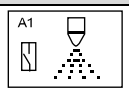
No.	Actuator	Designation	Explanation
Y20		Lock axle	Digital actuator
Y21		Twine box	Digital actuator
Y22		Twine box	Digital actuator
Y25		Rapid traverse	Digital actuator
Y30		Knotter cleaning	Digital actuator It is not possible to detect the errors.
Y31		Central lubrication	Digital actuator

No.	Actuator	Designation	Explanation
M1		Knotter triggering	Digital actuator Error detection is not possible.
H1		Working lights	Digital actuator in the area of the knotter table
H2		Working lights	Digital actuator in the area of the pick-up
K100		Warning beacon	Digital actuator

No.	Actuator	Designation	Explanation
A1		Silage additive system	Digital actuator

No.	Actuator	Designation	Explanation
H105		Horn twine box	Digital actuator

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Status of actuators

Symbol	Status
① ON	Actuator ON
② OFF	Actuator OFF
③ -/↯	General actuator error
④ FUSE ↯	No supply voltage Possible cause: Fuse defective.

Diagnostics of digital actuators

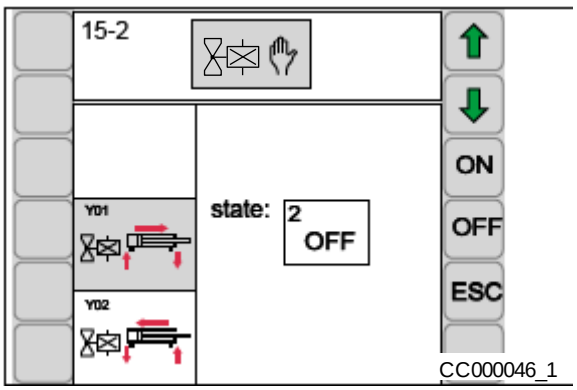

Fig. 155

Errors are only displayed when the actuator is switched on and a test is possible for the actuator. The LED on the plug can also be checked directly on the actuator.

- To switch on the actuator, press **ON**.
- To switch off the actuator, press **OFF**.

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Diagnostics of analogue actuators

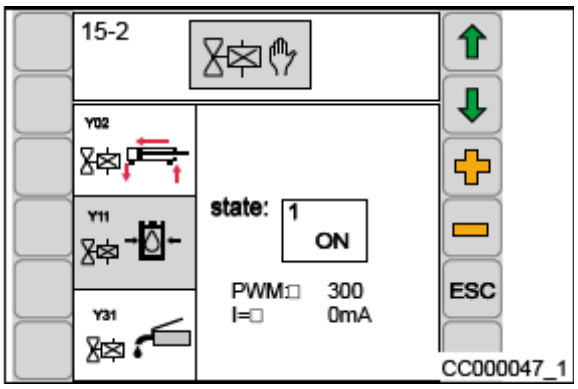

Fig. 156

A current (in mA) can be set with the PWM value (in parts per thousand).

With a value of PWM = 500, the current should be between 500 mA and 3000 mA (depending on the valve that is used and the operating temperature).

Engines

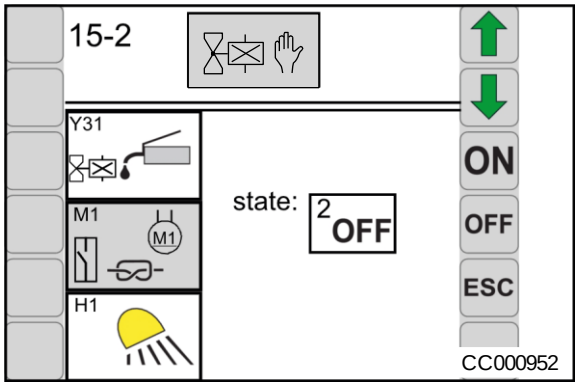

Fig. 157

- To execute the function, press **ON**.
- To execute the function, press **OFF**.

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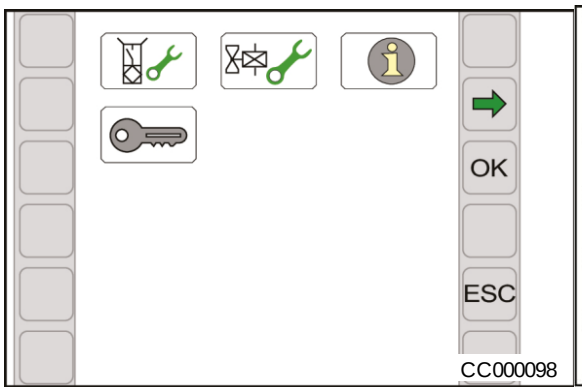
16.14.3 Menu 15-5 "Software info"



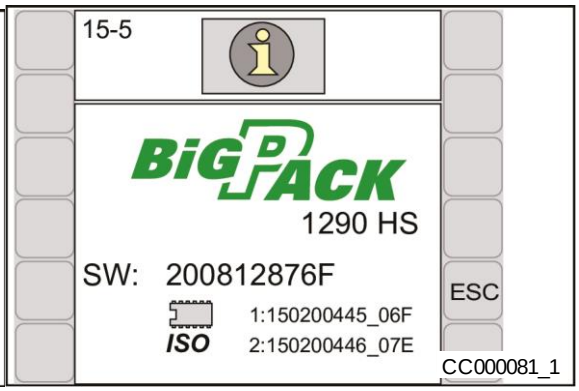


Fig. 158

Menu 15 "Settings" has been selected, see chapter Terminal – Menus, "Menu 15 'Settings'".

- To open the menu, press .

The display shows the "Software info" menu.

Display area

Symbol	Designation
SW	Total software version of the machine
	Version of the job computer
ISO	ISO software version

Recurring symbols

- See chapter Terminal – Menus, "Recurring symbols".

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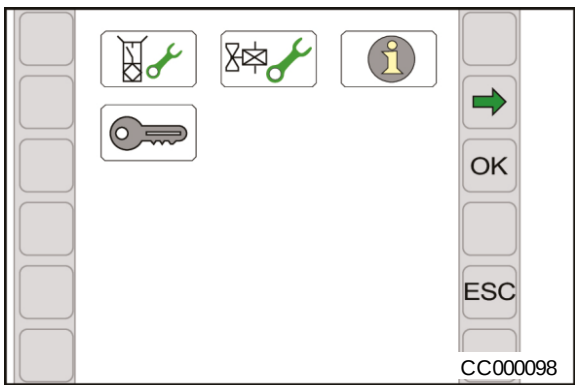
16.14.4 Menu 15-6 "Technician level"



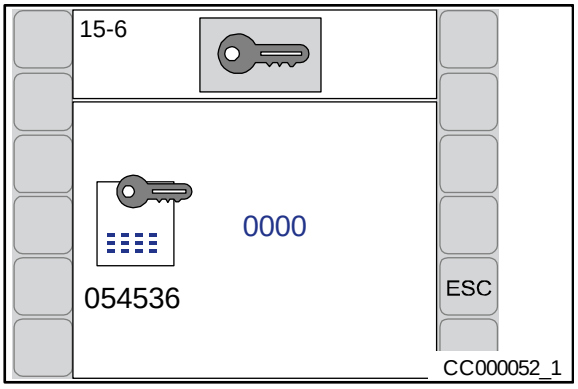


Fig. 159

Menu 15 "Settings" has been selected.

- To open the menu, press .

The display shows the "Technician level" menu.

The "Technician level" menu is password protected.
The display shows the password query.

Recurring symbols

- See chapter Terminal – Menus, "Recurring symbols".

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16.15 Alarm messages

WARNING!
Personal injuries and/or machine damage caused by non-observance of alarm messages!
When alarm messages are ignored and the malfunction is not remedied, personal injuries and/or serious damage to the machine could result.

- When alarm message is displayed, remedy the malfunction.
  - For possible causes and how to remedy them, refer to chapter entitled “Alarm Messages”.
  - In case the malfunction cannot be remedied, contact KRONE customer service.

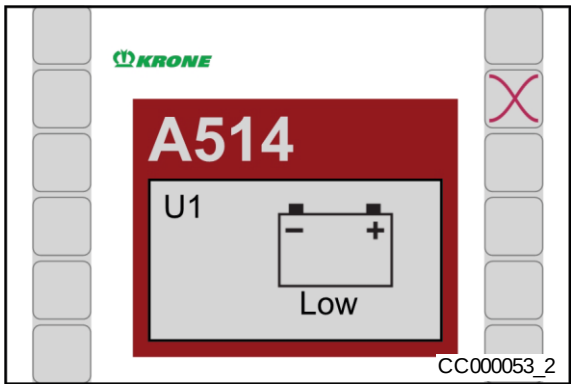

Fig. 160

The display shows an alarm message if a malfunction occurs on the machine. At the same time an audio signal will be heard (continuous horn sound). For description, possible cause and remedy, refer to chapter Terminal - Menus, “Alarms”.

Acknowledging the alarm:

- Press X in order to acknowledge the alarm.

The acoustic signal stops.

If the malfunction occurs again, the alarm message will also appear again.

Softkey	Description	Information
X	Acknowledge alarm	– The alarm message will appear again if the malfunction occurs again
	Delete message	– This message is not shown until the operation terminal is started the next time.

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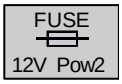
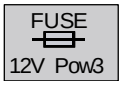
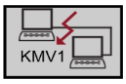
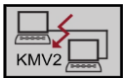
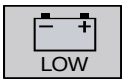
16.15.1 Alarms

No./symbol	Possible cause	Remedy
A01/501 	– The fuse in the job computer is defective. – Short circuit at voltage outputs +12V2FU_L	• Check the connection for short circuit. • The fuse regenerates itself after cooling.
A02/502 	– The fuse in the job computer is defective. – Short circuit at voltage outputs +12V3FU_L	
A04/504	– The job computer is defective.	• Replace the job computer.
A05/505	– The job computer is defective.	• Contact KRONE customer service.
A11/511 	– The CAN connection between the job computer and the KRONE measurement force computer (KMV1) is interrupted. – The CAN wiring is defective. – The KRONE measurement force computer is inactive.	• Check the CAN wiring. • Replace the KRONE measurement force computer (KMV1).
A12/512 	– The CAN connection between the job computer and the KRONE measurement force computer (KMV2) is interrupted. – The CAN wiring is defective. – The KRONE measurement force computer is inactive.	• Check the CAN wiring. • Replace the KRONE measurement force computer (KMV2).
A14/514 	– Undervoltage – Tractor battery is defective. – Tractor alternator is too weak. – The 12V supply on the tractor side is too weak or is not correctly connected to the battery.	• Connect the KRONE connector cable directly to the tractor battery.

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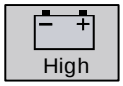
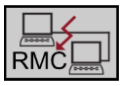
No./symbol	Possible cause	Remedy
A15/515 	– Overvoltage – Tractor alternator is defective.	• Check the tractor alternator.
A17/517 	– The CAN connection between the job computer and the KRONE measurement force computer (KMV2) is interrupted. – The CAN wiring is defective. – The KRONE moisture measurement computer is inactive.	• Check the CAN wiring. • Replace the KRONE moisture measurement computer (RMC).
A18/518	– The CAN connection between the job computer and the KRONE PIC-I01 computer is interrupted.	• Check the CAN wiring. • Replace the KRONE PIC-I01 computer.

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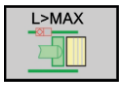
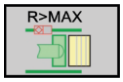
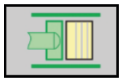
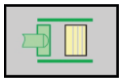
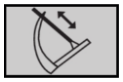
16.15.2 Logical Alarms

No./symbol	Possible cause	Remedy
0	– The twine is torn. – The twine end has been reached.	• Check the twine and the twine tensioner.
1	– Blockage in the intake area of the packer – The "Packer monitoring" sensor has been incorrectly set.	• Stop the travelling gear immediately. • Reduce the PTO speed until the blockage has been removed. • Correctly set the sensor.
2 	– The force of pressure on the left bale channel flap has been exceeded.	In manual mode: • Reduce the target bale channel flap pressure. In automatic mode: • If the alarm is actuated frequently, reduce the target force of pressure.
3 	– The force of pressure on the right bale channel flap has been exceeded.	
4	– The knotter is not functioning properly. – The "Knotter monitoring" sensor has been incorrectly set.	• Check the knotter and knotter triggering. • Correctly set the sensor.
5 	– The "Measure" sensor is defective or has been incorrectly set.	• Correctly set the sensor.
6 	– The "Calibrate" sensor is defective or has been incorrectly set.	• Correctly set the sensor.
7	– The flywheel brake is applied.	• Release the flywheel brake.
8 	– The shear screw is torn.	• Replace the shear screw. • Check the needles. • Check the swivel range of the needles. • Check the twine guide.
9	– The bale chute is raised and the PTO shaft is rotating.	• Lower the bale chute.

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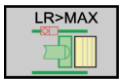
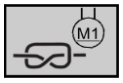
No./symbol	Possible cause	Remedy
10	– Error on the pressure limiting valve – The pressure sensor is defective.	• Switch off the PTO shaft. • Check the pressure limiting valve for blockage. • Replace the pressure sensor.
11	– The PTO shaft is rotating when entering sensor or actuator diagnostics or during diagnostics.	• Switch off the PTO shaft immediately. • Perform diagnostics when the PTO shaft is at a standstill.
12	– The blade bar is down during baling.	• Raise the blade bar.
13	– The shear screw is torn.	• Replace the shear screw. • Check the needles. • Check the swivel range of the needles. • Check the twine guide.
14	– The shear screw is torn.	
15 	– The total force of pressure on the machine has been exceeded.	In manual mode: • Reduce the target bale channel flap pressure. In automatic mode: • If the alarm is actuated frequently, reduce the target force of pressure.
16	– The pick-up or the cutting unit is not rotating. – There is a blockage.	• Check the mechanical system. • Remove the blockage.
17 	– The knotter motor has not actuated a knot. – The "Knotter" sensor has been incorrectly set.	• Check the electrical system of the knotter motor. • Check the mechanism in the area of the knotter triggering. • Correctly set the sensor.

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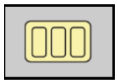
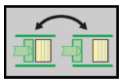
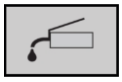
No./symbol	Possible cause	Remedy

18 	– The 2 positions of the MultiBale or total bales cannot be set.
	– The "MultiBale" sensor has been incorrectly set.
	– No compressed air available.
	– Fault on the "MultiBale" valve:
	  – Jams
	  – Coil defective
		• Correctly set the sensor.
		• Check the mechanism in the area of the knotter triggering.
		• Check the electronics in the area of the "MulitBale" lock.

19	– The "Packer feed" sensor has been incorrectly set.	• Correctly set the sensor.
20	– The bale ejector was triggered although the bale chute is still raised.	• Lower the bale chute. • Activate the bale ejector.
21 	– The "Measure" and "Calibrate" sensors have been mixed up.	• Swap the plugs of the "Measure" and "Calibrate" sensors.
22	– The knotter 1…6 is not functioning properly. – The "Knotter" sensor has been incorrectly set.	• Check the knotter and knotter triggering. • Correctly set the sensor-
23		
24		
25		
26		
27		
28 	– No grease in the container. – There is a blockage. – The pump is not running.	• Top up the grease. • Clean the central lubrication. • Check the electrical system and the pump.

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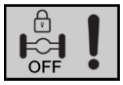
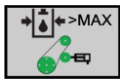
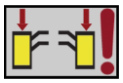
No./symbol	Possible cause	Remedy
29 	– The axle is not locked. – The "Lock axle" sensor is defective.	• Check the hydraulic connection. • Check the sensor and replace if required.
30	– The knotter 7 or 8 is not functioning properly. – The "Knotter" sensor has been incorrectly set.	• Check the knotter and knotter triggering. • Correctly set the sensor.
31		
32	– The slip is too great. – The "Knotter" sensor has been incorrectly set. – The cutting unit is blocked.	• Correctly set the sensor.
33 	– The pressure is too high. – The "Feed rotor" sensor is defective.	• Check the hydraulic system. • Check the sensor and replace if required.
34	– The "PTO speed" sensor has been incorrectly set.	• Correctly set the sensor.
35 	– The "Twine box" sensors have been incorrectly set. – The twine boxes have not been raised.	• Correctly set the sensors. • Raise the twine boxes.
36	– The crops are too moist.	• Check the setting and correct if required.
37	– The PTO speed is too high.	• Switch off the PTO shaft.

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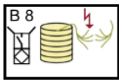
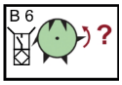
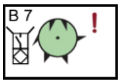
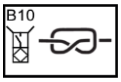
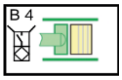
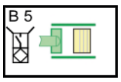
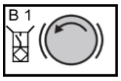
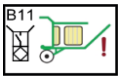
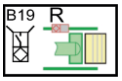
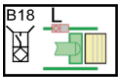
16.15.3 Physical Alarms

No./symbol	Sensor	Possible cause	Remedy
101 	Twine monitoring	– The sensor or supply line is defective.	• Perform a sensor test. • Check the sensor and supply line for damage.
102 	Packer monitoring		
103 	Packer feed		
104	Blade bar up		
105	Blade bar active		
106 	Knotter monitoring		
107 	Measuring		
108 	Calibration		
109 	Flywheel brake		
111 	Bale chute		
112 	Force on right	– The sensor of the force measurement amplifier or the supply line is defective.	• Check the sensor and supply line for damage.
113 	Force on left		

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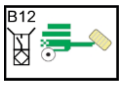
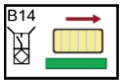
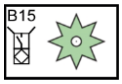
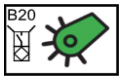
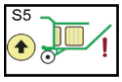
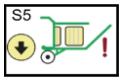
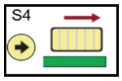
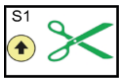
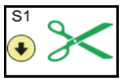
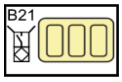
No./symbol	Sensor	Possible cause	Remedy
114	Hydraulic pressure	– The sensor or supply line is defective.	– Perform a sensor test. – Check the sensor and supply line for damage.
115 	Setting down bales		
116 	Bale ejector		
117 	Star wheel	– The sensor (rotary potentiometer) or supply line is defective.	– Perform a sensor test. – Check the sensor and supply line for damage.
118 	Pick-up	– The sensor or supply line is defective.	– Perform a sensor test. – Check the sensor and supply line for damage.
119 	Bale chute pushbutton open	– The pushbutton or supply line is defective.	– Perform a sensor test. – Check the pushbutton and supply line for damage.
120 	Bale chute pushbutton closed		
121 	Move out bale ejector pushbutton		
122	Move in bale ejector pushbutton		
123 	Raise blade bar pushbutton		
124 	Lower blade bar pushbutton		
125 	MultiBale	– The sensor (rotary potentiometer) or supply line is defective.	– Perform a sensor test. – Check the sensor and supply line for damage.

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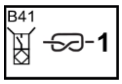
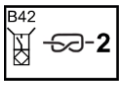
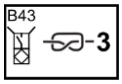
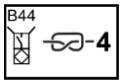
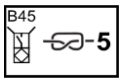
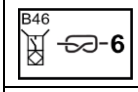
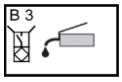
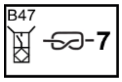
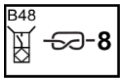
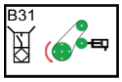
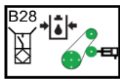
No./symbol	Sensor	Possible cause	Remedy
126 	Knotter 1	– The sensor or supply line is defective.	• Perform a sensor test. • Check the sensor and supply line for damage.
127 	Knotter 2		
128 	Knotter 3		
129 	Knotter 4		
130 	Knotter 5		
131 	Knotter 6		
132 	Central lubrication		
134 	Knotter 7		
135 	Knotter 8		
136	PTO speed		
137 	Cutting rotor speed		
138 	Feed rotor contact pressure		

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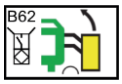
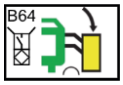
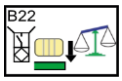
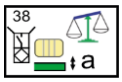
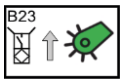
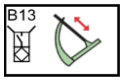
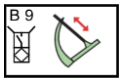
No./symbol	Sensor	Possible cause	Remedy
139 	Twine box on right in transport position	.	
140	Twine box on left in transport position		
141 	Twine box on right in maintenance position		
142	Twine box on left in maintenance position		
146 	Bale on chute		
147 	acceleration	– The sensor or supply line is defective.	• Perform a sensor test. • Check the sensor and supply line for damage.
148	Front bale chute		
149	Rear bale chute		
150 	Pick-up position		
156 	Needle connecting rod on right		
157 	Needle connecting rod on left		

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17 Terminal - Menus [Medium Plus/Comfort Plus Version Electronics]

For information on this matter refer to “Supplement to operating instructions” behind the index directory.

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18 Driving and Transport

WARNING!

If the basic safety instructions are not followed, people may be seriously injured or killed.

- To avoid accidents, the basic safety instructions in the chapter Safety must have been read and followed, see chapter Safety "Basic safety instructions".

WARNING!

If the safety routines are not adhered to, people may be seriously injured or killed.

- To avoid accidents, the safety routines in the chapter Safety must be read and followed, see chapter Safety "Safety routines".

WARNING!

There is a risk of accidents if the control valves on the tractor are not locked.

If the control valves are not locked, machine components may be activated unintentionally. This can result in serious accidents.

- To prevent functions being triggered accidentally, the control valves on the tractor must be switched to neutral and locked during road transport journeys.

WARNING!

Danger when cornering with a machine hitched

When cornering, the hitched machine swings out further than the tractor. This can lead to accidents.

- Take the greater swivel range into account.
- When turning, take account of people, oncoming traffic and obstacles.

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18.1 Preparations for road travel

Before road travel, make certain

- the PTO shaft is switched off.
- the machine is fully and correctly hitched to the tractor; refer to chapter “Start-Up”.
- all guards are closed and locked.
- the twine boxes have been lifted; refer to chapter Operation “Lowering / Lifting Twine Boxes”.
- the twine boxes are locked via the shut-off valve, only for medium version electronics design, refer to chapter Safety “Twine Boxes”.
- the folding ladder is folded in; refer to chapter Machine Description “Ladder”.
- the bale channel is empty.
- the pick-up is lifted and secured by the shut-off valve; refer to chapter Operation “Pick-up”.
- the bale chute is raised to transport position and is secured; refer to chapter Operation “Lifting / Lowering Bale Chute”.
- the parking jack is retracted; refer to chapter Operation “Hydraulic Parking Jack”.
- the parking brake is released; refer to chapter Driving and Transport “Parking Brake”.
- the control valve on the tractor are in neutral position and locked.
- the brake functions properly.
- the lighting is working properly; refer to chapter Driving and Transport “Checking Lighting System”.
- the tyres do not show any cuts or breaks.
- the tyres have the correct tyre pressure.

The following work steps are described in this chapter:

- Checking the lighting system.
- Releasing the parking brake.
- Handling of the trailing axle, medium electronics or comfort electronics.
- Moving the machine without hydraulic connection.
- Moving the machine without connected compressed air brake.
- Switching off the machine.
- Applying the parking brake.
- Fitting wheel chocks.

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18.1.1 Bale Chute Hydraulically Actuated

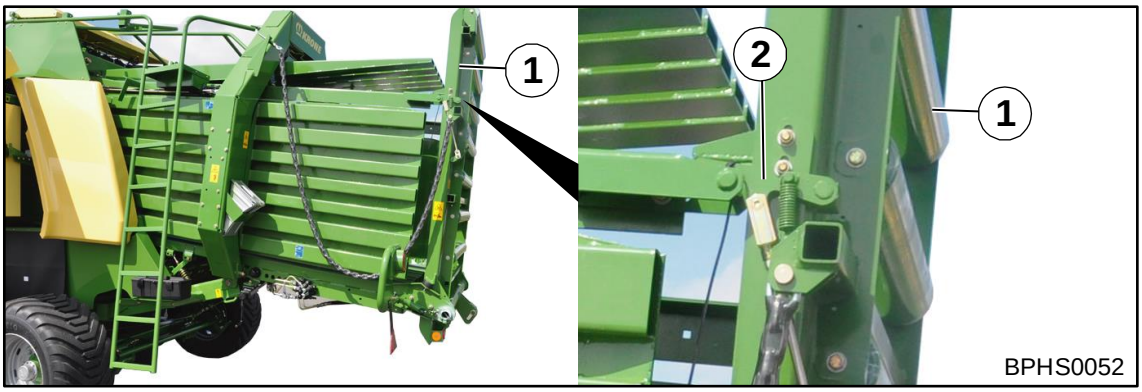

Fig. 161

- Fold in hydraulically the hydraulically actuated bale chute (1).

After folding in, make sure that the mechanical locking (2) has engaged.

18.1.2 Checking the lighting system

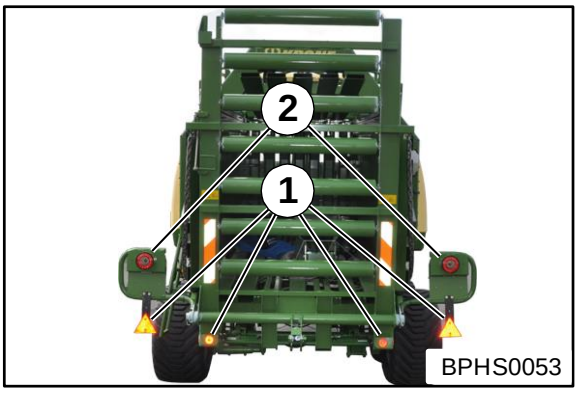

Fig. 162

- Check the function of the tail lights (2) and rear reflectors (1) and clean them
- The same applies to the yellow reflectors located on the sides of the machine and the front white side lights

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18.1.3 Parking Brake

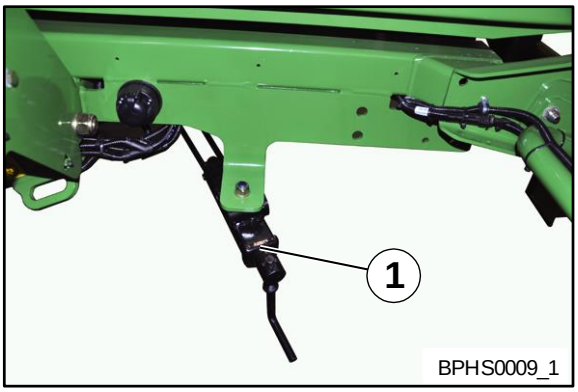

Fig. 163

To release the parking brake:

- Turn crank counter-clockwise until the brake cable sags slightly.

Road transport / field work

18.1.4 Ladder

WARNING! – Ladder not folded in!

Effect: Danger to life, serious injuries or serious damage to the machine.

- When travelling on the road or working in the field, always ensure that the ladders have been folded in (a) and secured by the lock (2).

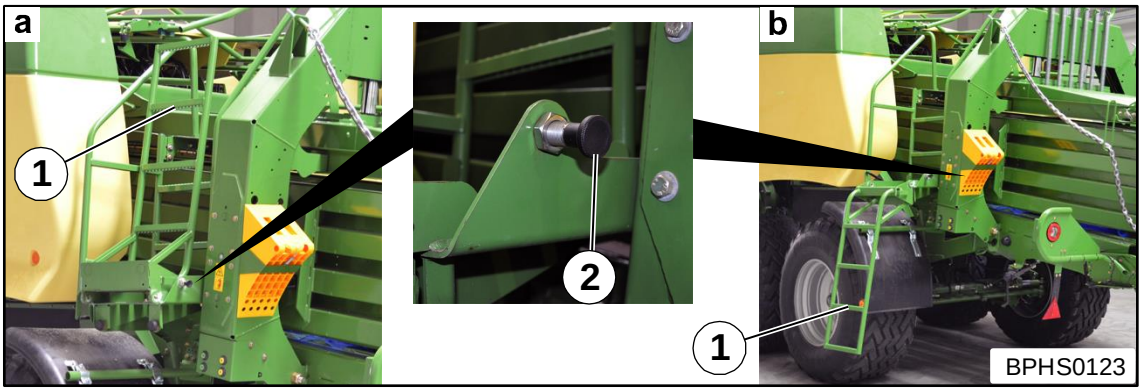

Fig. 164

a) = Road position

b) = Ascending / descending position

When the machine is travelling on the road and working in the field, the ladder to the driver's cab (1) must be folded into the road position (a) and secured.

- Release lock (2) and fold in ladder (a) until lock (2) engages

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18.2 Handling the Coaster/Steering Axle (Special Equipment)

Note

Observe the user instructions provided by the tractor manufacturer for parallel operation of the tractor control units! The locking cylinder of the steering axle must be connected before or at the same time as the other hydraulic supply elements of the machine!

Before reversing, move coaster/steering axle to a straight position and lock.

Note

On the coaster/steering axle, the rear wheels are turned in by friction between the wheels and the soil. In critical driving situations (e.g. driving over a bunker silo, reversing or driving on slopes) where a straight line cannot be maintained, the wheels must be prevented from turning in by locking the locking cylinder.

Critical driving situations could include:

- driving on steep slopes
- driving on soil that is not solid enough
- driving fast and straight ahead at speeds in excess of 30 km/h

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Locking the coaster/steering axle

To lock the coaster/steering axle:

Medium Version Electronics

With single action hydraulic connection

- Pressurise the single action control unit and drive the tractor a short distance straight forward until the steered wheels are straight
- Leave the single action control unit for the coaster/steering axle pressurised (the locking cylinder prevents the wheels from turning in)

Note

The current status is shown in the status line (I) of the display.

= Axle locked = Axle released

Unlocking the coaster/steering axle with a single action hydraulic connection

When driving forwards, the locking cylinder for the coaster/steering axle can be released:

- Depressurise the single action control unit for the coaster/steering axle (locking cylinder) and set the hydraulic control lever to "Lower"

This can largely prevent scraping of the tyres when cornering.

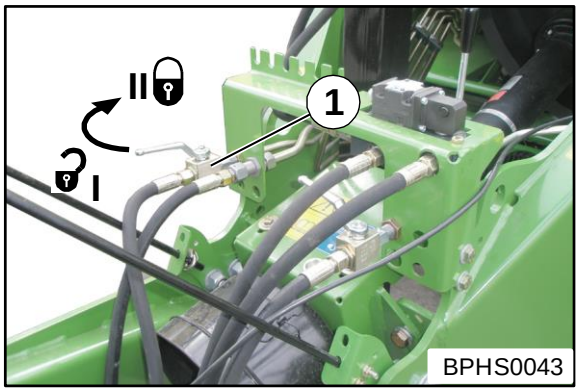

Fig.165

Note

Make certain, that the shut-off valve (1) is in position (I) (opened) during use of machine.

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Comfort - Electronic

18.2.1 Operating the Machine via LS (Load-Sensing Connection)

- Press the function key for and drive the tractor a short distance straight forward until the steered wheels are straight. The symbol appears on the display (coaster/steering axle locked).

Note
The current status is shown in the status line (I) of the display.

= Axle locked = Axle released

Note
While the pressure is increasing in the locking cylinders the softkey flashes. As soon as the pressure has built up the softkey freezes and the coaster/steering axle is locked.

18.2.2 Operating the Machine without LS (Load-Sensing Connection)

- Pressurise the pressure line.
- Press the function key for and drive the tractor a short distance straight forward until the steered wheels are straight. Leave the pressure on the pressure line until the icon appears in the display (coaster/steering axle locked)
- The hydraulic system (pressure line) can now be switched to depressurised

Note
The current status is shown in the status line (I) of the display.

= Axle locked = Axle released

Note
While the pressure is increasing in the locking cylinders the softkey flashes. As soon as the pressure has built up the softkey freezes and the coaster/steering axle is locked.

Unlocking the coaster/steering axle for Comfort version Electronics

- The coaster/steering axle is released by pressing the function key for . The symbol appears on the display (coaster/steering axle released).

Note
The current status is shown in the status line (I) of the display.

= Axle locked = Axle released

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18.2.3 Moving the machine without hydraulic connections

In order to be able to move the machine even when the hydraulic lines are not connected, the locking cylinder of the coaster/steering axle must be supplied with pressure before disconnection and the steered wheels aligned by driving straight ahead.

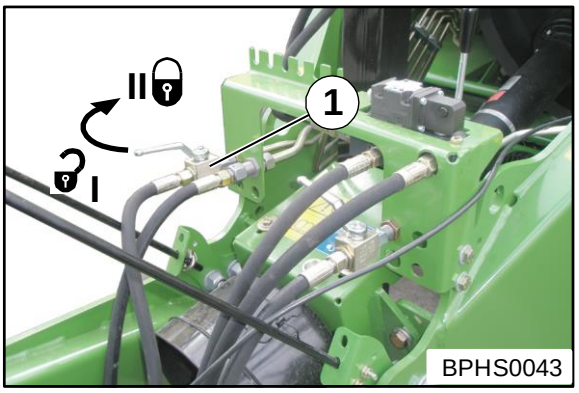

Fig.166

In addition for the Medium Electronics version, the shut-off valve (1) for the coaster/steering axle must be closed (setting II) before disconnection.

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18.3 Moving

With compressed air brake design

WARNING!

There is a risk of injury when manoeuvring the machine without the compressed air braking system connected.

A machine without a connected compressed air braking system loses its braking characteristics. As a result, people may be seriously injured or killed.

- Moving the machine in public road traffic without the compressed air braking system connected is prohibited.

It is not easy to move the machine if the hoses of the compressed air brake are not connected to a brake system.

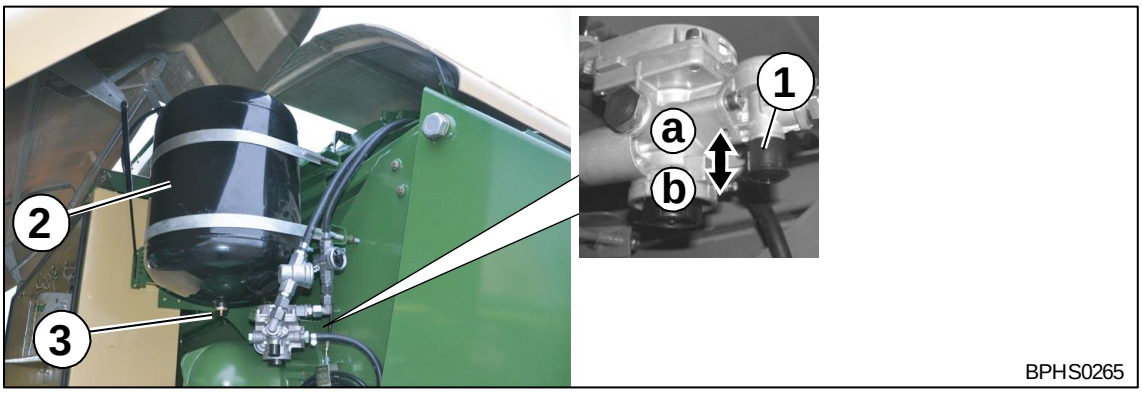

Fig. 167

The release valve is on the front right under the side hood. If a minimum pressure of 4 bar (58 PSI) is available in the reservoir (2) of the brake system of the machine, then the brake can be released by pressing the push button (1) on the release valve into the position (a). As soon as the hoses are again connected to a compressed air brake system, the push button is pushed back automatically into its starting position (b).
If the air pressure in the storage tank (2) has dropped below 4 bar (58 PSI) , the residual pressure must also be let off by operating the drain valve (3). Only now can the machine be moved.

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18.4 Switching off the machine

WARNING!
Risk of injury due to the unsecured machine rolling away!
If the machine is not secured against rolling away when it has been switched off, there is a risk of people being injured by the machine rolling away in an uncontrolled manner.
- Secure the machine against rolling away with the parking brake and wheel chocks.
- Apply the flywheel brake at the machine.

- Switch off the tractor engine, remove the ignition key and secure the tractor from rolling away.
- Wait until all moving parts stop.
- Apply the flywheel brake.
- Apply the parking brake.
- Fit the wheel chock.
- Parking jack has to be lowered until the towing eye of the ball attachment Ø80 does not rest on the hitch of the tractor any more.
- Loosen safety chains of the universal shaft on tractor side.
- Disconnect the universal shaft on tractor side and put it down on the holder provided for that purpose.
- Pull off the lighting cable.
- Remove the power supply cable for the terminal.
- Disconnect the hydraulic lines and attach them to the support of the machine.

With compressed air brake design:
- Disconnect the red coupling head and attach it to the support of the machine.
- Disconnect the yellow coupling head and attach it to the support of the machine.

With hydraulic brake design (export):
- Disconnect the connection for hydraulic brake and attach it to the support of the machine

With hydraulic brake design (export France):
- Loosen safety chain on tractor side.
- Disconnect the connection for the hydraulic brake and attach it to the support of the machine.

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18.4.1 Parking Brake

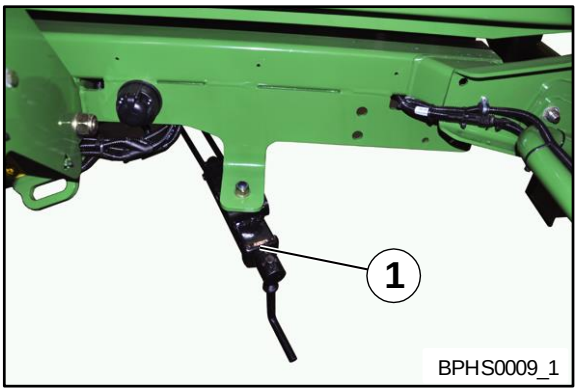


Fig. 168

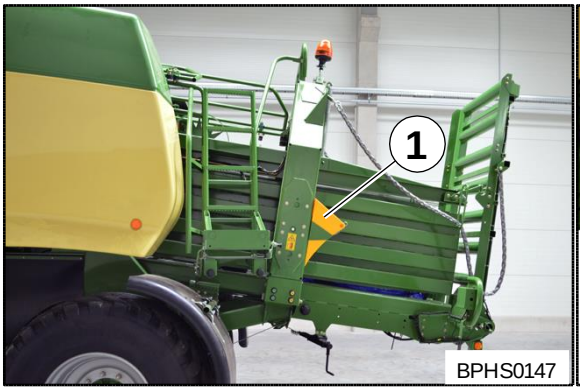
To apply the parking brake:

- Turn the crank clockwise until the resistance grows noticeably greater.

Note

To prevent the machine from rolling away, use the wheel chocks in addition to the parking brake.

18.4.2 Wheel chocks



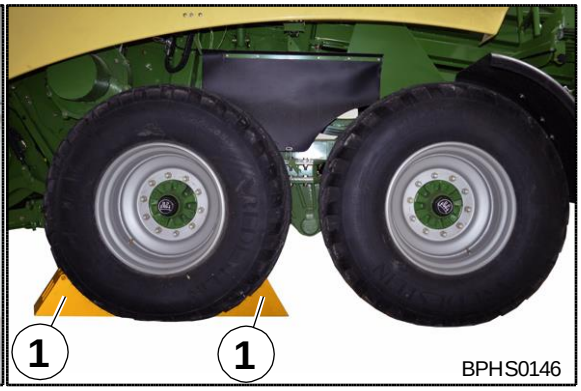


Fig. 169

The wheel chocks (1) are located rear right and left next to the bale channel.

- Place one wheel chock in front of the wheel and one behind the wheel of the front axle to secure the machine against rolling.

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18.4.3 Stowing the compressed air hoses

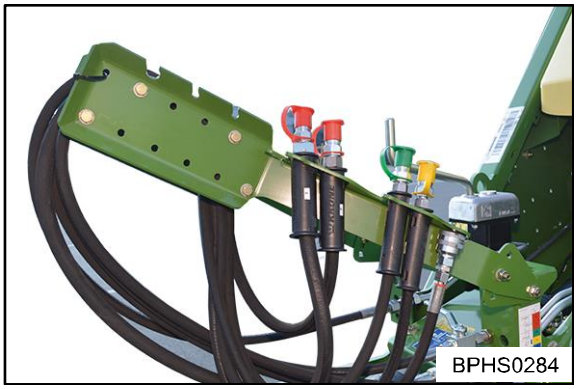

Fig. 170

- Hang the compressed air hose (1) onto the holder (2).

18.5 Preparing the machine for transportation

CAUTION!

Risk of machine damage due to unsecured moving machine parts

When transporting the machine on transportation vehicles (e.g. trucks or trains), excessive bursts of air may damage it.

- Carry out the following measures to secure moving machine parts.

18.5.1 Securing side guard

Fig. 171

On the right and left sides of the machine:

- Open the side guard (1).
- Feed a cable tie (2) through the openings of the flap lock (3).
- Close the side guard (1).
- Place the cable tie (2) around the lock (4) and tighten.

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18.5.2 Securing guide wheels

Fig. 172

On the right and left sides of the machine:

- Raise the pick-up (1).
- Feed a cable tie (4) through the borehole (2) and through the frame of the guide wheel (3).
- Tighten the cable tie (4).

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19 Settings

WARNING!

If the basic safety instructions are not followed, people may be seriously injured or killed.

- To avoid accidents, the basic safety instructions in the chapter Safety must have been read and followed, see chapter Safety "Basic safety instructions".

WARNING!

If the safety routines are not adhered to, people may be seriously injured or killed.

- To avoid accidents, the safety routines in the chapter Safety must be read and followed, see chapter Safety "Safety routines".

The following work steps are described in this chapter:

– Setting the working height of the pick-up.
– Setting the ground pressure of the guide wheels.
– Driving with fixed pick-up.
– Setting the holding-down device.
– Setting the lateral needles.
– Checking / setting the needle yoke brake.
– Checking / setting the position needles - baling ram.
– Checking / setting the upper needles.
– Checking / setting the twine bars.
– Checking / setting the twine bars to the channel slot.
– Checking the overreach of the twine bars at the second knot.
– Tensioning / releasing the upper needle.
– Tightening / releasing the twine bar shaft.
– Setting the knotter shaft brake.
– Setting the twine brake.
– Setting the knotters.
– Setting the baling ram.
– Setting the packer to the baling ram.
– Checking the packer coupling.
– Setting the Variable Filling System.
– The default setting of flywheel brake.
– Setting the cutting length, in case of full equipping of blade cassette
– Setting the cutting length, depending on the blade fitting in the blade cassettes.

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19.1 Pick-up

WARNING!
Risk of injury due to unintentional movement of the pick-up!
If the pick-up is not secured by the stop cock, the pick-up may move unintentionally. As a result, people may be seriously injured.

- When working on or under the pick-up, always secure the pick-up by moving the stop cock on the left side of the machine to prevent it from being unintentionally lowered, see chapter Safety "Stop cock for pick-up".

19.2 Default Setting (Working Height Setting)

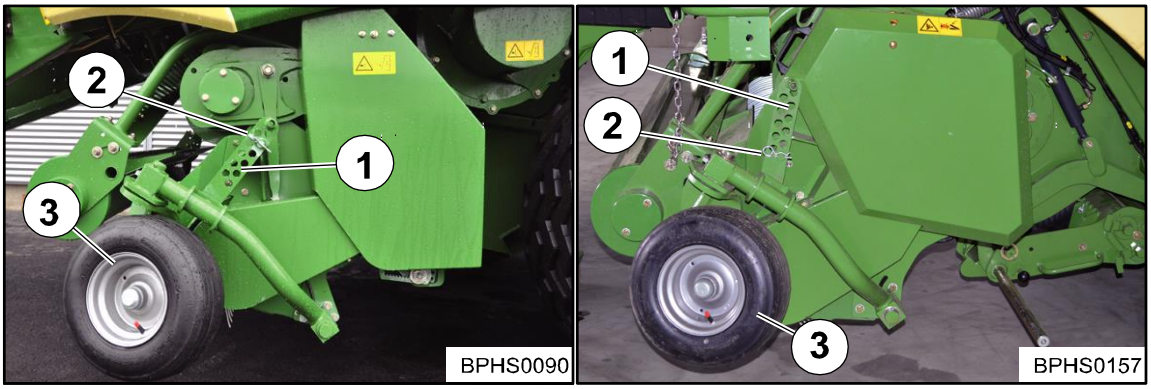

Fig. 173 Without cutting system With cutting system

- Shut down and safeguard the machine, see chapter Safety -> Safety routines, "Shutting down and safeguarding the machine".

The working height can be adjusted on the guide wheels (3) on either side of the pick-up. In order to carry out the adjustment, lift and secure the pick-up. Pull the spring cotter pin (2) and move the guide wheels into the desired position on the perforated bar (1). Secure the guide wheels in place with the spring cotter pin.

Note
Make certain that the guide wheels on either side of the pick-up are in the same position on the perforated bar.

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19.2.1 Setting the Ground Pressure of the Guide Wheels

Design without cutting system

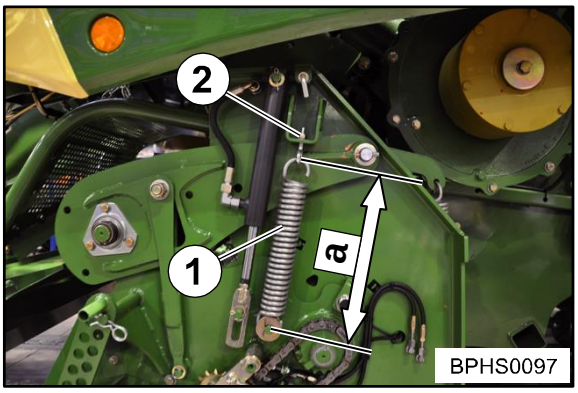

Fig. 174

- Shut down and safeguard the machine, see chapter Safety -> Safety routines, "Shutting down and safeguarding the machine".

Note

Increasing dimension a => Ground pressure of the guide wheels becomes less
Reducing dimension a => Ground pressure of the guide wheels becomes greater
Adjust dimension “a” equally for both springs (right and left sides of the machine).

- Open protective cover.
- Increase or reduce the dimension a via nut (2).
- Close protective cover.

Design with cutting system

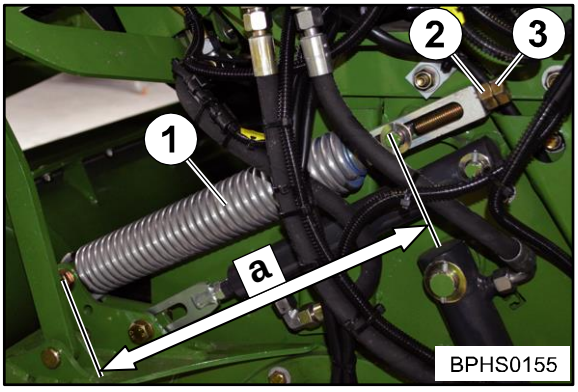

Fig. 175

- Shut down and safeguard the machine, see chapter Safety -> Safety routines, "Shutting down and safeguarding the machine".

Note

Increasing dimension a => Ground pressure of the guide wheels becomes less
Reducing dimension a => Ground pressure of the guide wheels becomes greater
Adjust dimension “a” equally for both springs (right and left sides of the machine).

- Loosen counter nut (2)
- Increase or reduce the dimension “a” via screw (3).
- Tighten counter nut.

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19.2.2 Driving with Pick-up in fixed position

Design without cutting system

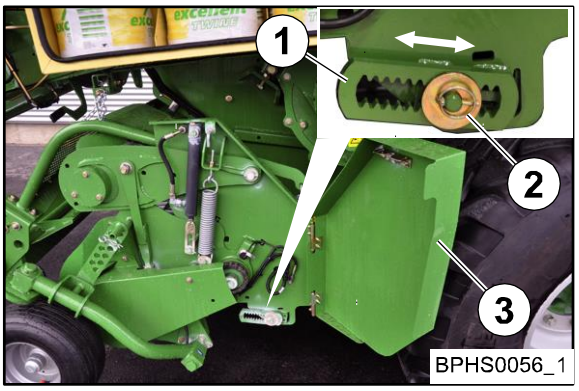

Fig. 176

- Shut down and safeguard the machine, see chapter Safety -> Safety routines, "Shutting down and safeguarding the machine".

The working height of the pick-up can be limited downward manually by moving the depth limiter (1) on both sides of the machine. This makes it possible to drive the machine without guide wheels with the pick-up in fixed position.

To perform setting:

- Open twine box (only for BiG Pack 4x4 version)
- Slightly raise the pick-up
- Open pick-up protection (3)
- Remove cotter pin (2) with disc
- Set the desired position by moving the depth limiter (1)
- Secure depth limiter by means of disc and cotter pin

Note

Make sure the depth limiter is in the same position on both sides of the pick-up.

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Design with cutting system

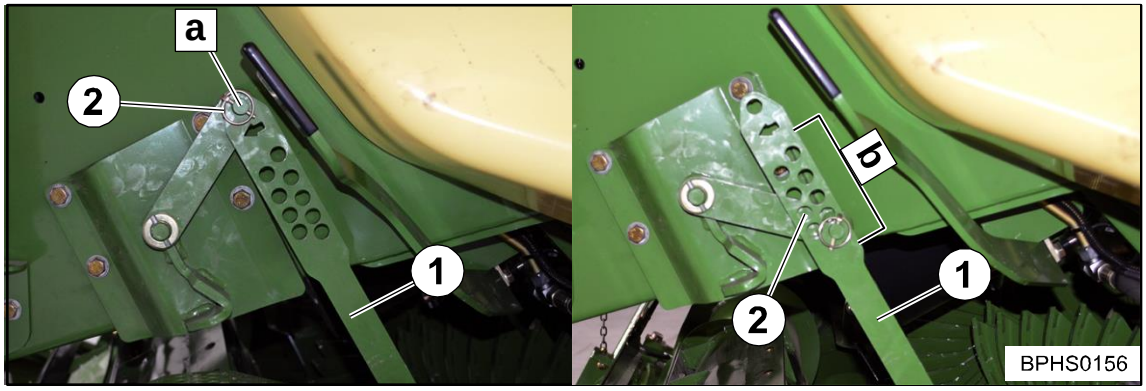

Fig. 177

- Shut down and safeguard the machine, see chapter Safety -> Safety routines, "Shutting down and safeguarding the machine".

A = The guide wheels are in use.

B= Area for setting the working height of the pick-up, the guide wheels are in use.

The working height of the pick-up can be limited downward manually by moving the depth limiter (1) on either side of the machine. This makes it possible to drive the machine without guide wheels with the pick-up in fixed position.

To perform a setting:

- Lift pick-up and secure it.
- Remove cotter pin (2).
- Set the height of the pick-up by moving the depth limiter (1) in the hole pattern (B).
- Secure the depth limiter with cotter pin.

Note

Make certain that the depth limiter is in the same position on both sides of the pick-up.

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19.3 Roller crop guide

WARNING!
Risk of injury if the machine is used without a roller crop guide!
If the machine is operated without a roller crop guide, people can be seriously injured or killed.
- The roller crop guide is used for accident protection and must not be removed during operation.

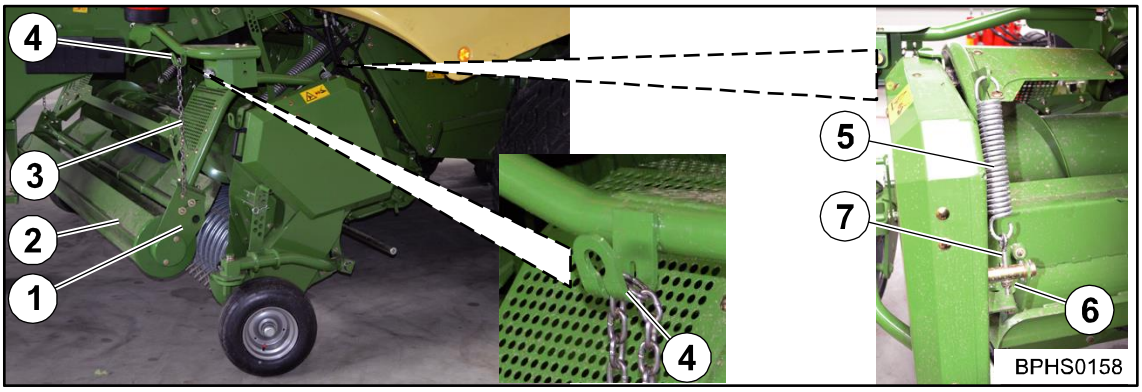

Fig. 178

- Shut down and safeguard the machine, see chapter Safety -> Safety routines, "Shutting down and safeguarding the machine".

The roller crop guide (1) provides for the regulation during conveyance of the crop. It provides for a continuous crop collection by the Pick-up.

Adjust the height of the roller crop guides (1) so that the roller of the holding-down device (2) continuously runs above the swath.

The height adjustment of the roller crop guide (1) can be made on the retaining chains (3) that are suspended on the support (4) on either side of the machine.

Note
Make certain that the chains in the supports are of the same length.

The spring (5) sets the ground pressure of the holding-down roller (2) to the swath.
- By tightening or loosening the nut (6) on the eye screw (7), set the required ground pressure

Dry forage: Increase ground pressure
Moist forage: Reduce ground pressure

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19.4 Setting the needles

19.4.1 Lateral setting of the needles

CAUTION! – After setting the needles / needle yoke not checked

Effect: Considerable damages to the machine

After setting the needles pass once manually through the tying process. In doing so, the needles and needle yoke must not come in contact with the frame, baling ram or other parts during the upward or downward motion.

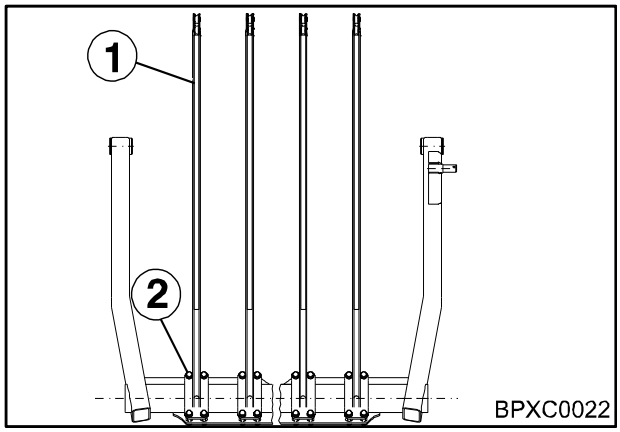

Fig. 179

Place the needles (1) so they are centered in the oblong holes of the needle yoke, align then with the needle slots in the bale channel chamber floor and fasten them in place with the screws (2).

- Trigger the tying process manually with machine at a standstill
- Turn the needle yoke manually on the flywheel in working direction upwards until the needles are taken up into the needle slots of the baling ram
- Tighten the flywheel brake to lock the needles in this position
- In this position move the baling ram to the side with a mounting lever to check whether the needle may possibly be touching the needle slots of the baling ram on the side
  - If necessary, loosen the screws (2)
  - Align the needles to the needle slots of the baling ram and tighten the screws (2)
- Loosen the flywheel and turn the needle yoke manually on the flywheel further upwards into working position (the needles must be taken up in the centre of the channel slots during rising and they must slightly be positioned on the knotter blocks in direction of travel lateral right)

If that is not the case:

- Tighten the flywheel brake to lock the needles in this position
- Loosen the screws (2)
- Align the needles to the channel slots and tighten the screws (2)

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19.4.2 Setting the height of the needles on the knotter

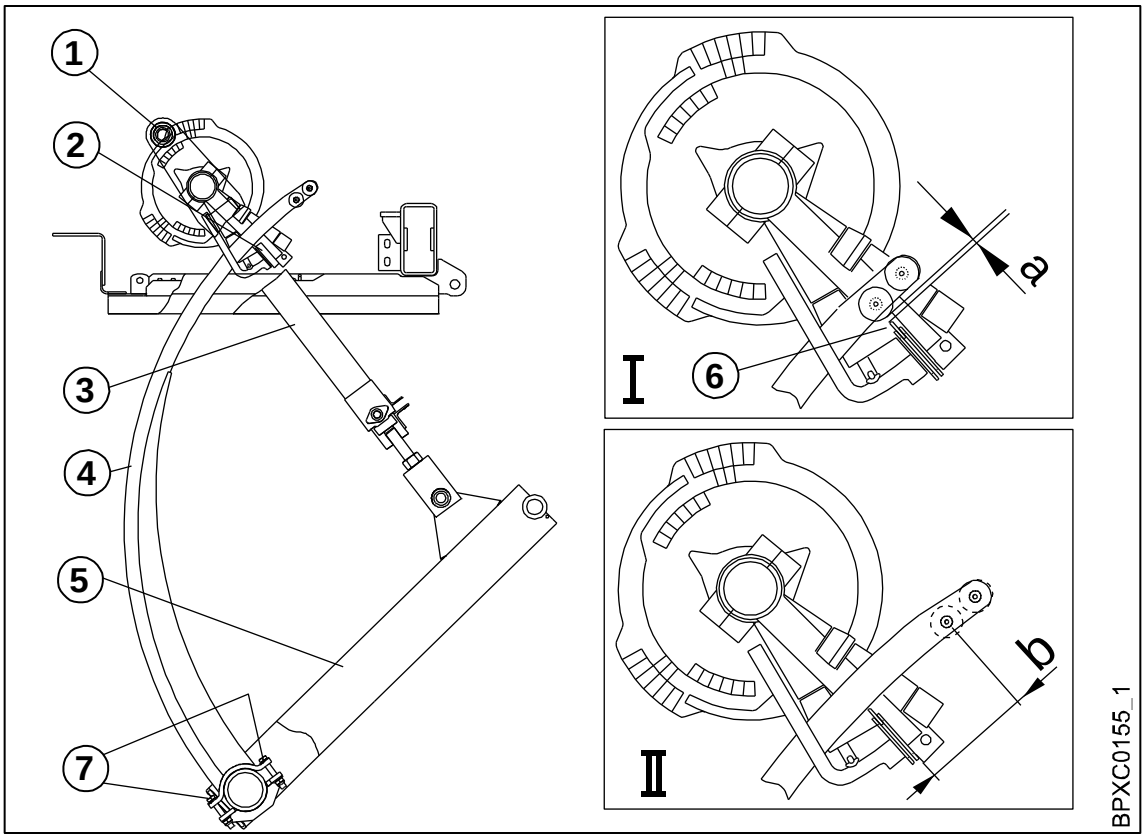

Fig. 180

Note
Only make adjustments with the twine threaded in!

- Trigger the tying process manually with machine at a standstill
- Turn the needle yoke on the flywheel manually upwards into working position until the lower roll in the needle tip is located above the cleaners (6) of the tappet (2) **(I)**
- Tighten the flywheel brake to lock the needles (4) in this position

Note
The distance "a" from the lower edge of the needle roll to the upper edge of the cleaning disc with twine must be between 1 and 3 mm.

If this dimension ”a” is not reached, it can be corrected by adjusting the screws (7). When the needles enter the knotter, they should touch the knotter on the right in the driving direction.

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19.4.3 Top dead centre of the needles

To be able to check the upper dead point of the needles, turn the needle yoke up to its highest position (dead centre point) (II). The needles (4) protrude out from the knotter. The distance "b" between the upper edge of the drive disc (2) and the mid-point of the lower roll on the needle point should be at least b = x mm with twine. If the setting is not correct, it should be corrected by shortening or lengthening the needle connecting rod (3). The needles should not touch the cleaners (6) of the tappet (2) in their highest position.

Double knotter: b = 105 - 115 mm

Checking the lower needle to the blade lever

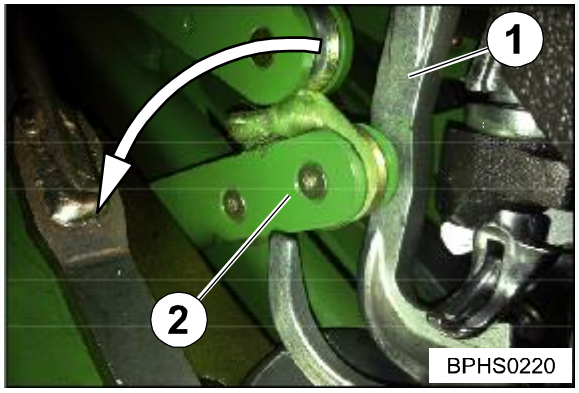

Fig. 181

After the upper dead point of the needles has been checked or set, make certain via visual inspection that the blade levers (1) do not collide with the needles (2) when they (2) move back.

To do this:

- Release the flywheel brake
- Observe the needles when they move back; in this process, turn the flywheel to working direction

If the blade levers touch the needles when they move back, the upper dead point of the needles must be readjusted, refer to chapter Settings “Upper Dead Point of the Needles”.

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19.5 Checking / Setting the Needle Yoke Brake

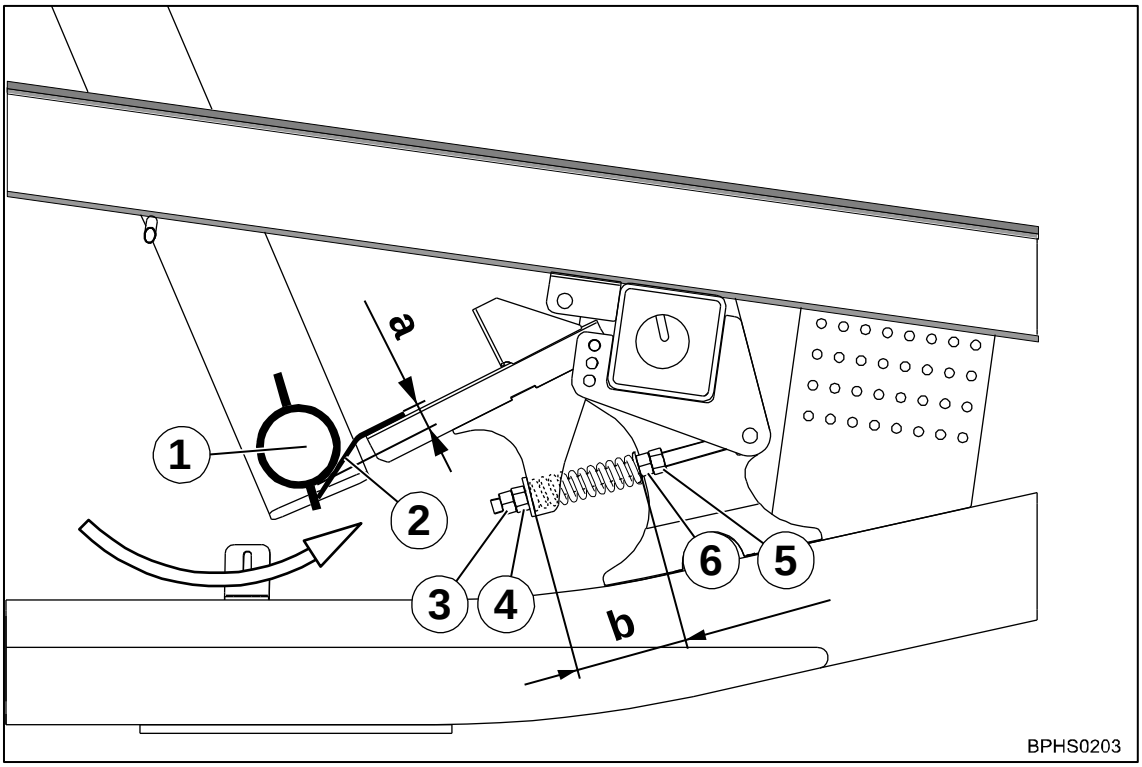

Fig. 182

Prerequisite:

– The machine is disconnected from the tractor.
– The upper dead point of the needles is checked or set, refer to chapter Settings “Checking / Setting Upper Dead Point of the Needles”.

Checking the needle yoke brake

- Initiate tying process manually, refer to chapter Operation “Initiating Tying Process Manually”.
- Turn flywheel manually to the working direction until the needle yoke (1) touches the flat bar (2) of the needle brake when moving back.
- Tighten the flywheel brake.
- Measure the dimension “a”

If the dimension “a” is 30 mm, the needle yoke brake is correctly set.

If the dimension “a” is not 30 mm, the needle yoke brake must be set.

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Setting the needle yoke brake

- Loosen the counter nut (3).
- Tighten or loosen nuts (4) until the dimension “a” is 30 mm.
- Tighten counter nut (3).
- Loosen counter nut (5).
- Tighten or loosen nuts (6) until the dimension “b” is 120 mm.
- Tighten counter nut (5).
- Move knotter gear to idle position; refer to chapter Operation “Finishing Tying Process Manually”.
- Measure dimension “b”

If dimension “b” is between 100 and 110 cm, the needle yoke brake is correctly set.

If the dimension “b” is not between 100 and 110 mm, the needle yoke brake must be readjusted, refer to “Setting Needle Yoke Brake”

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19.6 Checking / adjusting position of needles – baling ram

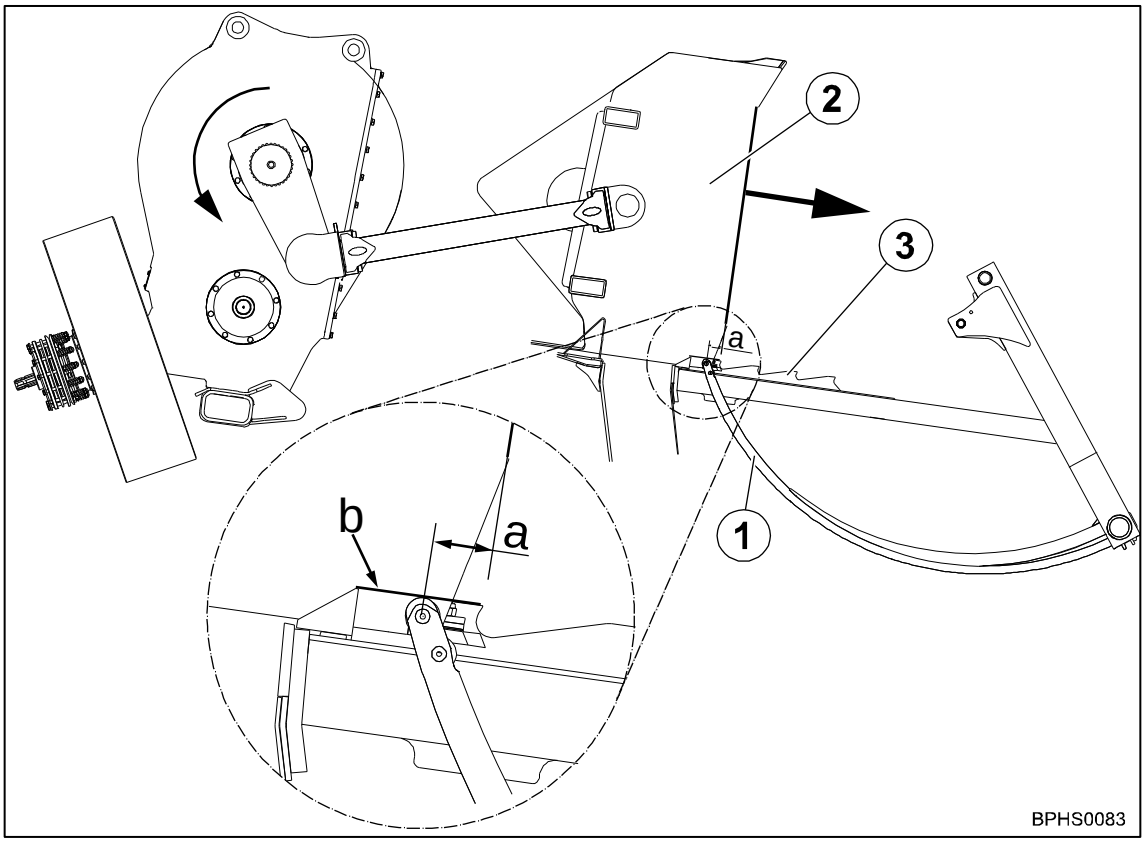

Fig. 183

Check:

- Completely release spring tension of the needle yoke brake
- Manually actuate the tying process while the machine is at a standstill
- Manually rotate flywheel mass until the needle points (1) have reached the upper edge (b) of the fixed retainers (3) in the bale channel floor
- Block the needles in this position and apply the flywheel brake
- The dimension “a” (baling ram front edge to needle tip) must be 60 – 90 mm

If this is not the case:

Note

Set dimension "a" only in baling direction of the baling ram (2) (see arrow in fig.).

- Remove drive cardan shaft from the knotter gear
- Manually rotate flywheel mass (baling ram moves in baling direction) until dimension a = 60 – 90 mm
- Attach drive cardan shaft to the knotter shaft and secure
- Manually actuate the tying process again while the machine is at a standstill
- Check position of needles – baling ram again
- Set spring tension of the needle yoke brake

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19.7 Checking / Setting Upper Needle

Prerequisite:

– The upper needle is tensioned, see chapter Settings "Tensioning/relieving the upper needle".
– The twine locking shaft is tensioned, see chapter Settings "Tensioning/relieving the twine locking shaft".

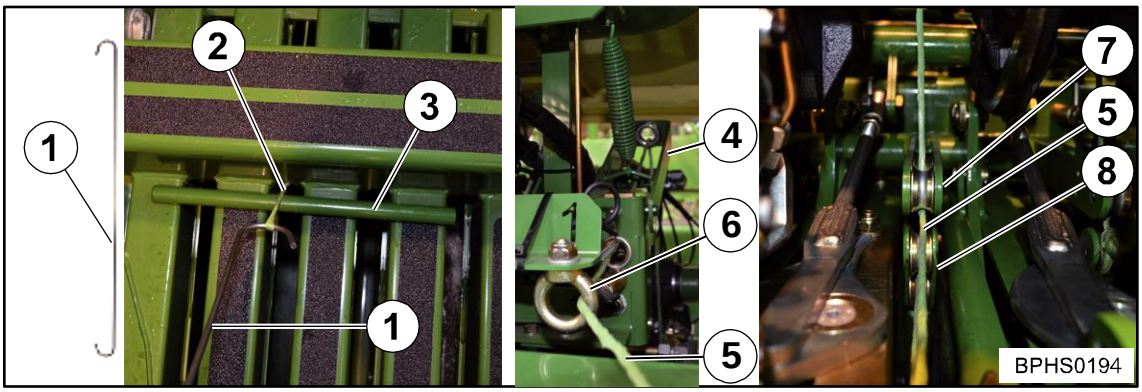

Fig. 184

- Make a catch hook (1).
- In order to simulate a tied bale, pull the twine (2) with the catch hook out of the bale channel and fix it on the top on the bale channel flap with a shaft (3) (screwdriver).
- To tighten the tensioning arm (4), pull back the upper twine (5) in front of the twine eye (6).
- Initiate the baling process manually when the machine is at a standstill.
- Turn the flywheel manually to the working direction until the upper needle (7) raises.
- Turn the flywheel manually in the direction of working until the needle (8) nearly touches the upper twine (5).

At this point in time, the upper twine (5) must be centred in front of the needle (8).

If the upper twine is not centred in front of the needle:

- If the upper twine is centred in front of the needle, align the upper needle by using a mounting lever.

If the upper twine is centred in front of the needle:

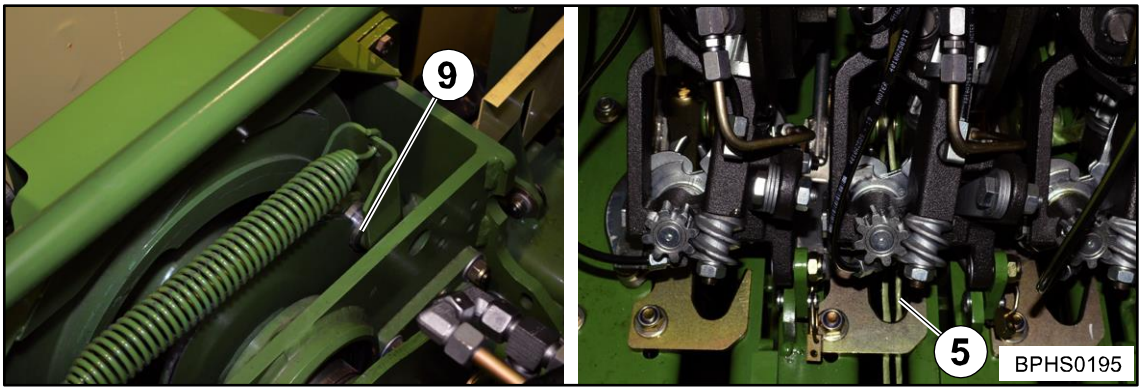

Fig. 185

- Turn the flywheel manually to the direction of working until the trigger roller (9) is in the recess of the knotter gear (idle position).

The knotting process is finished now. The upper twine moves slightly to the right while the flywheel continues to rotate. This is structurally determined as the needle guides the upper twine into the blade lever.

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19.8 Checking / Setting Twine Bar

The twine bar moves the twine away from the needle and pushes it against the knotter hook. If the twine is not grasped by the twine bar, the knotter hook cannot pick-up the twine.

19.8.1 Checking / Setting the Twine Bar to the Lower Needle (Needle Yoke)

If the twine bar to the lower needle is set, the settings described in chapter Settings “Checking / Setting Twine Bar to the Channel Slot” and “Checking Twine Bar Overreach on the Second Knot” must be performed.

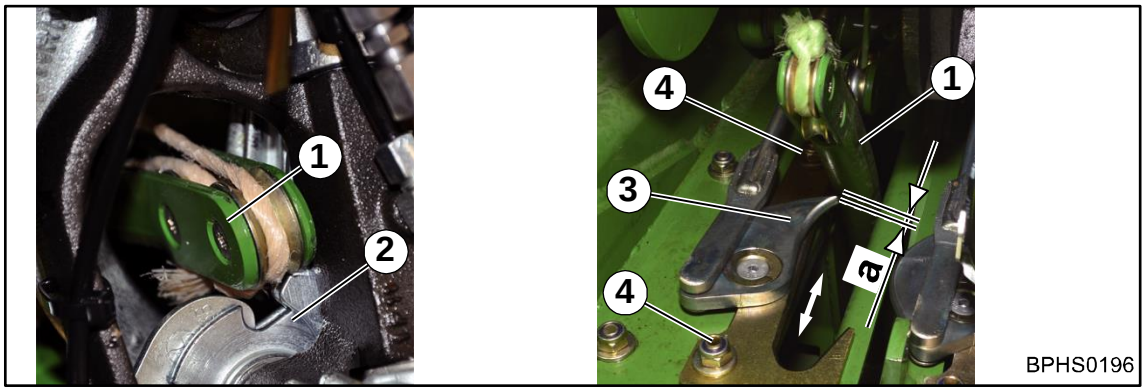

Fig. 186

Prerequisite:

– The twine shaft is released, refer to chapter Settings “Tensioning / Releasing Twine Bar Shaft”.

– The tying process is triggered manually; refer to chapter Operation “Triggering Tying Process Manually”.

Checking twine bar

- Turn the flywheel manually in the working direction until the lower needle (1) (needle yoke) is just in front of the twine driver (2).
- Tighten the flywheel brake.
- Pull the cotter pin and swing up the knotter, repeat the process for all knotters.
- Swivel the twine bar (3) to the middle of the lower needle (1) by turning the twine bar shaft and measure the dimension “a”.

If the dimension “a” is 2 - 4 mm, the twine bar is correctly set.

If the dimension “a” is not 2 - 4 mm, the twine bar must be set.

Setting twine bar

To do this:

- Loosen the nuts (4)
- Move the twine bar (3) until the dimension “a” is 2 to 4 mm.
- Tighten the nuts (4).
- Swivel the knotter down and secure with cotter pin.

Repeat this process for all twine bars.

- Release the flywheel brake.
- Finish the tying process manually; refer to chapter Operation “Finishing Tying Process Manually”.
- Tighten the flywheel brake.
- Tighten twine bar shaft, refer to chapter Settings “Tightening / Releasing Twine Bar Shaft”.

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19.9 Checking / Setting Twine Bar to the Channel Slot

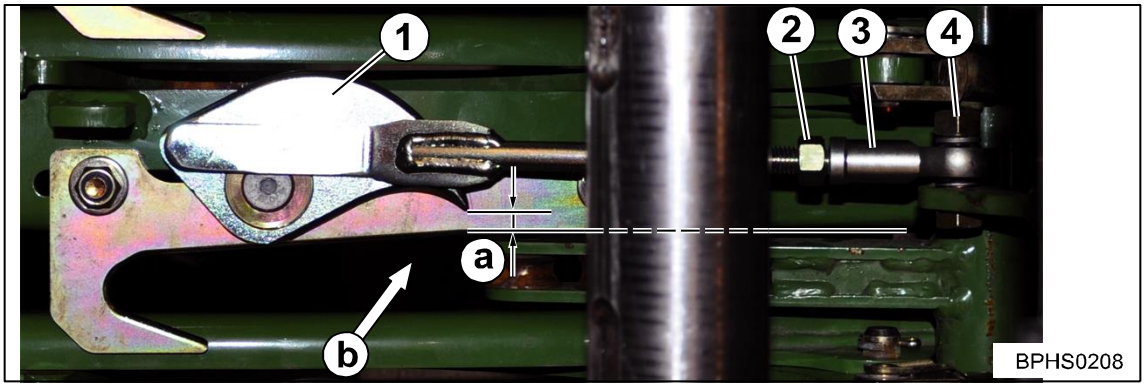

Fig. 187

Prerequisite:

– The machine is disconnected from the tractor.
– The flywheel brake is applied.
– The knotter gear is in idle position; refer to chapter Operation “Finishing Knotter Process Manually”.

Checking the twine bar to the channel slot

- Pull the cotter pin and swing up the knotter, repeat the process for all knotters.
- Press the twine bar (1) manually to the channel slot (b).
- Measure dimension “a”, measured between twine bar tip and channel slot.

If dimension “a” is 0 - 5 mm, the twine bar is correctly set.

If dimension “a” is not 0 - 5 mm, the twine bar must be set.

Setting twine bar

To do this:

- Unscrew counter nut (2) and screw (4) of the joint bearing.
- Turn joint head (3) until dimension “a” is 0 - 5 mm.
- Tighten counter nut (2) and screw (4).

Repeat this process for all twine bars.

Check that the twine bar moves easily.

- Release the twine bar shaft, refer to chapter Settings “Tensioning / Releasing Twine Bar Shaft”.
- Rotate the twine bar back and forth manually.

The twine bar is correctly set if it is easy to rotate the twine bar back and forth.

If it is hard to rotate the twine bar back and forth, there are several causes:

1. The control linkage is crooked, replace the control linkage.
2. The joint bearing is rusted, replace the joint bearing.
3. The axial play in the twine bar shaft is too low, remove the shim ring.

Remedy cause 1 to 3 and check or set the twine bar again, refer to chapter Settings “Checking / Setting the Twine Bar to the Lower Needle”.

- Swivel the knotter down and secure with cotter pin. Repeat this process for all knotters.

Repeat this process for all twine bars.

- Tighten twine bar shaft, refer to chapter Settings “Tightening / Releasing Twine Bar Shaft”.

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Checking the overreach of the twine bars on the second knot

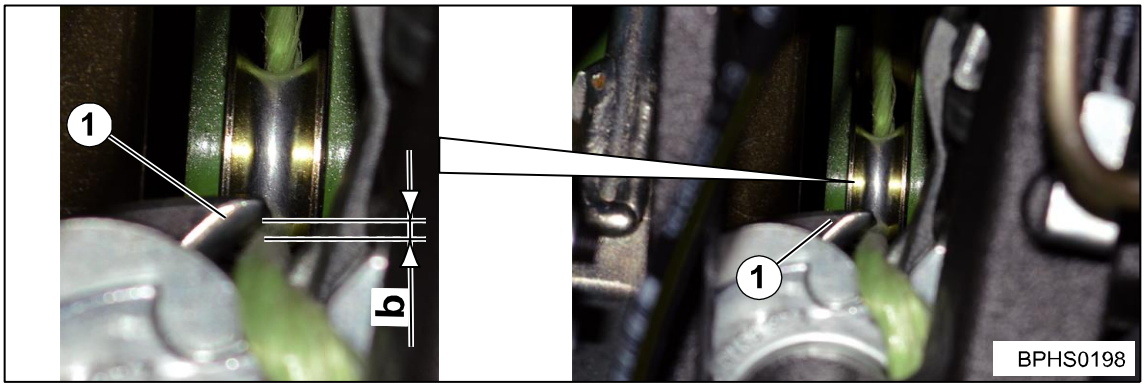

Fig. 188

Prerequisite:

– The first knot (closing knot) must have been made manually.

Checking

- Turn the flywheel manually in the working direction until the twine bar (1) swivels over the channel slots for the second time.
- As soon as the twine bar grasps the twine, tighten the flywheel brake to lock the needles in this position.

Measuring the overreach (distance twine tip to twine)

The twine bar is correctly adjusted if the dimension „a“ is between 5 and 10 mm.

If the dimension „a“ is not 5 - 10 mm, the twine bar must be re-adjusted; refer to chapter Settings “Setting Twine Bar to Lower Needle (needle yoke)”.

Check the overreach on all twine bars.

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19.10 Tightening / Releasing Twine Bar Shaft

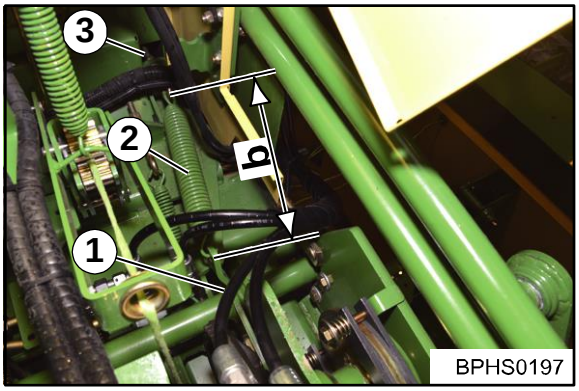

Fig. 189

The twine bar shaft (1) is tightened or released via spring (2).

Prerequisite:

The knotter gear is in idle position; refer to chapter Settings “Setting the Needle Yoke Brake”.
The flywheel brake is applied.

Tightening twine bar shaft

- To tension spring (2), tighten nut (3) until the dimension “b” is 220 mm, measured between eyes and spring.

Releasing the twine bar shaft

- To release spring (2), wind down nut (3) until the thread end of the eye screw is reached.

19.10.1 Setting the knotter shaft brake

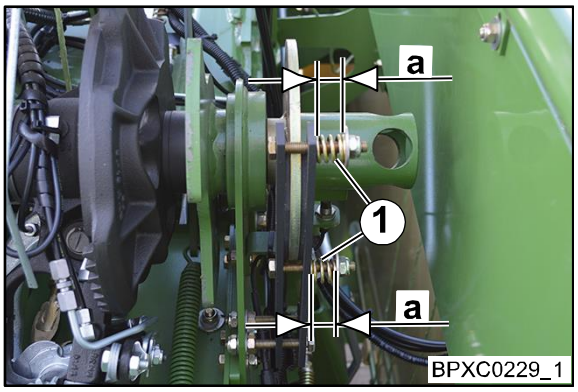

Fig. 190

Pre-tension the springs (1) on the knotter shaft brake until dimension a is = approx. 22 mm.

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19.11 Setting the Twine Brake

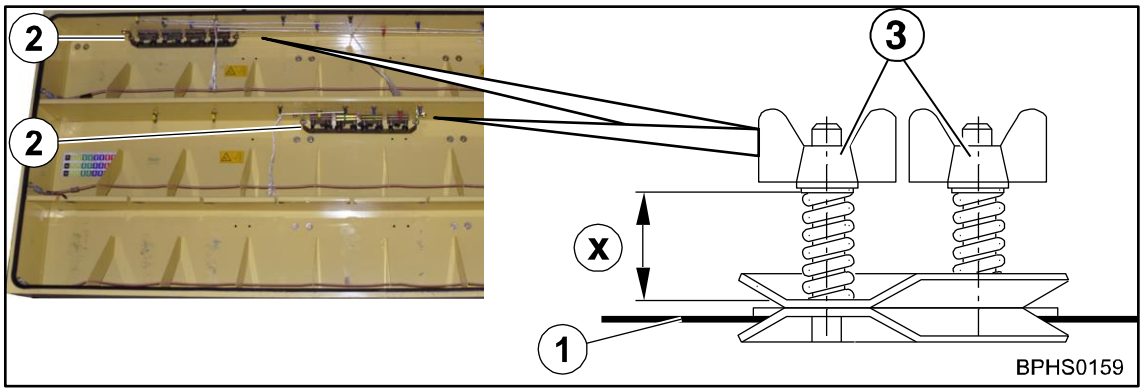

Fig. 191

The twine brakes (2) are located in the twine boxes. The twine brakes hold stiff the upper twines from the twine box to the upper twine brakes or the lower twines from the twine box to the lower twine brakes. The drawing tension of the twine brake should always only be set in such a way that the upper twines or the lower twines are stiff but that they can easily be pulled. Different types of twine may have different friction properties. Therefore the drawing tension of the twine strand must be checked when changing the type of twine.

Pre-setting X = 30 – 35 mm

- Increase or reduce dimension “X” to increase or reduce the drawing tension.

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19.11.1 Setting the twine tension on the upper twine strand (double knotter)

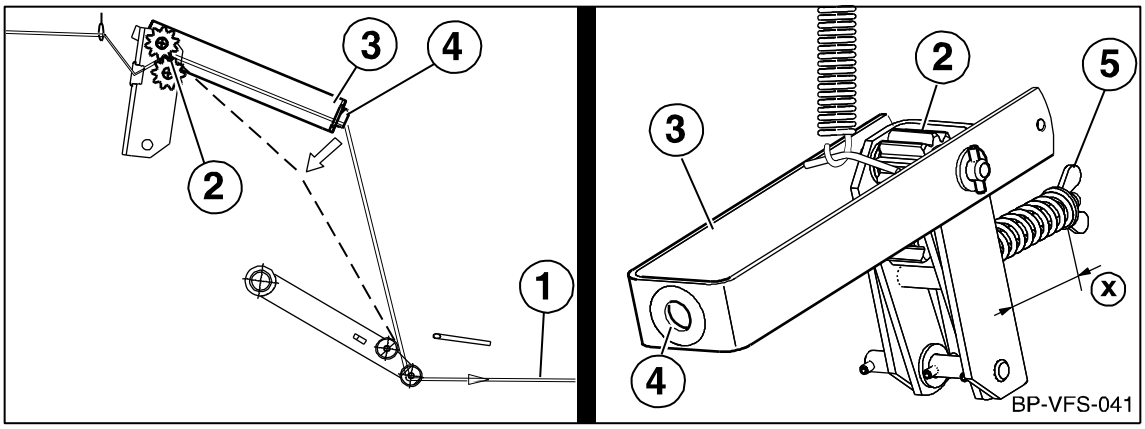

Fig. 192

The upper strands of twine (1) should be held by the brakes (2) up to a tensile force of 100 - 120 N.

Before the twine brakes will allow the twine to slip through, the twine tension arm (3) should move downward against the spring force until the twine (1) is guided through the eye of the tension arm (4) almost without moving to the side.

Testing the twine tension:

- Tie the cord (1) onto a spring balance The spring balance has to indicate 100 - 120 N shortly before the cord slips through.

You can increase the tension by turning the wing nut (5) tighter. To reduce the tension, loosen the wing nut.

The dimension "X" is based on the tying twine selected and must be determined in each individual case by testing in the twine strand. A pretension of the twine strand that is too high may cause knotter errors and place too heavy a load on the components involved.

Pre-setting X = 65 mm

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19.11.2 Setting the twine tension of the lower twine strand (double knotter)

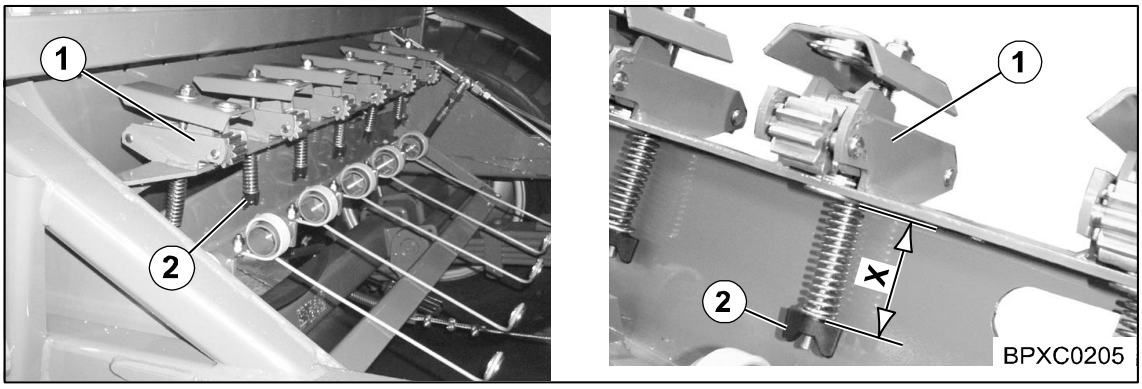

Fig. 193

The twine brakes (1) for the lower twine strand are behind the packer under the bale channel chamber.

You can increase the tension by turning the wing nut (2) tighter. To reduce the tension, loosen the wing nut.

Pre-setting X= 70 mm

Testing the drawing tension:

1. Thread in the twine according to instructions.
2. Trigger the tying process manually with machine at a standstill.
3. Turn the needle yoke manually on the flywheel in working direction upwards until the needles reached their upper dead point (refer to chapter “Upper dead point of the needles”).
4. Tighten the flywheel brake to lock the needles in this position.
5. Pull the twine about 200 mm out of the needle and cut it.
6. Pull the strand of twine slowly and evenly until the twine tension springs have reached their highest position under the channel.
7. As the twine is held, the twine tension springs must remain in this position without any twine being able to be pulled back by the brake.
8. The brake must allow twine to slip through if there is a slight increase in the tensile force.

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19.12 Knotter

WARNING!

Danger to life due to unintentional triggering of the twine tying device.

If the tying process is not locked to facilitate maintenance, adjustment and repair work on the knotter, the tying process may be triggered unintentionally. As a result, people may be seriously injured or killed.

- To facilitate maintenance, adjustment and repair work on the knotter, always secure the knotter shaft with the safety lever to prevent unintentional triggering of tying.

19.12.1 Locking/releasing the tying process

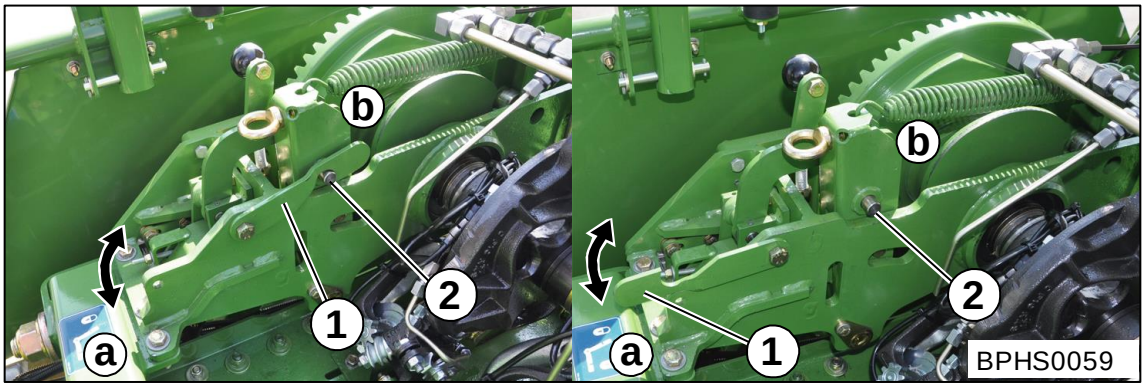

Fig. 194

To avoid unintentionally triggering the tying process during maintenance, adjustment and repair work on the knotter, the tying process must be locked.

Locking the tying process

- To lock the tying process, move the safety lever (1) from position (a) to position (b) and set it down on the journal (2).

Releasing the tying process

- To release the tying process, move the safety lever (1) from position (b) to position (a).

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19.12.2 Start-up

The knotter has been set and tested by the manufacturer. It should work properly without requiring any further settings. If there are problems with tying when it is placed in service for the first time, the mechanisms should not be set immediately, since this is usually caused by errors that are caused by paint, rust and bare spots. It is recommended to remove the rust protection grease from the twine retainer and knotter before start-up.

19.12.3 Double knotter

19.12.4 Setting the Knotter Hook

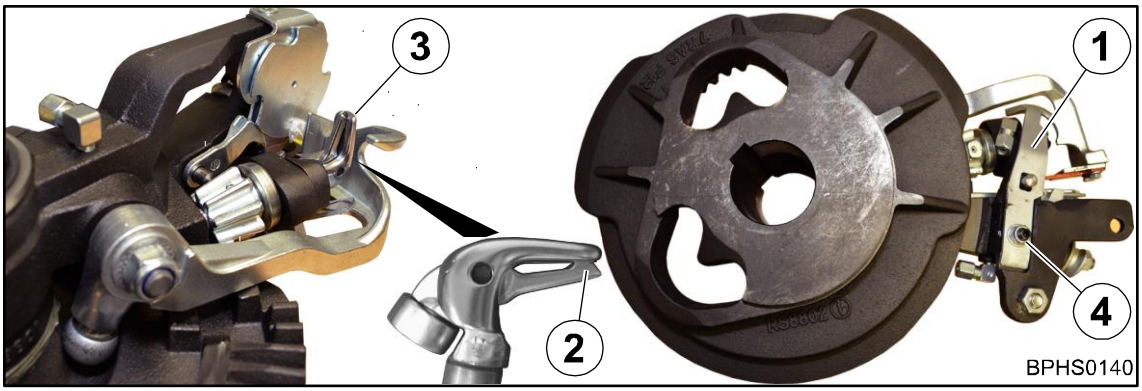

Fig. 195

The knotter tongue (2) of the knotter hook is tensioned by the closer (1).

If the clamping effect on the knotter tongue is too great, the knot will be left hanging on the knotter tongue. The twine strand will tear.

If there is not enough clamping effect on the knotter tongue, either no knot or a loose knot will form.

Set the clamping effect.

Reducing the clamping effect:

- Unscrew nut (4) on the closer by approx. 30°.

Increasing clamping effect:

- Unscrew nut (4) on the closer by approx. 30°.

Note

The knotter tongue needs a slight minimum tension. Therefore the clamping effect must never be loosened completely.

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19.12.5 Setting of twine retainer

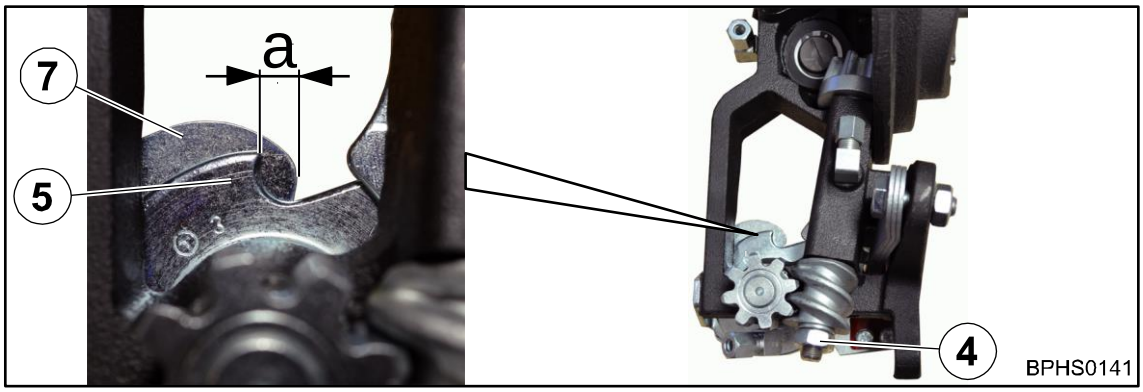

Fig. 196

Setting the twine driver

The function of the twine driver (5) depends on the position of its indentation opposite the twine disc cleaner (7). The twine driver (5) has been set to a = 0-2 mm as a default setting ex works.

- **If the indentation on the twine driver (5) is positioned too far forward (clockwise), the twine cannot be snagged by the twine driver as it is being guided along by the needle.**
- **On the other hand, if the indentation on the twine driver (5) is positioned too far back (anticlockwise), the twine strand may become wound up on the knotter hook or it may not be possible for it to be snagged by the knotter tongue.**

Setting the twine driver (5)

The indentation of the twine driver (5) has to be located at the position shown.

Then:

- Undo the nut (4) until the nut (4) is flush with the thread end of the auger
- Undo the auger by means of a slight knock against the nut (4)
- Adjust to a = 0-2 mm by turning the auger
- Tighten nut (4)

Note

At least two tying processes must be performed to check for the correct position of the indentation.

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19.12.6 Setting the Holding Force of the Twine Retainer

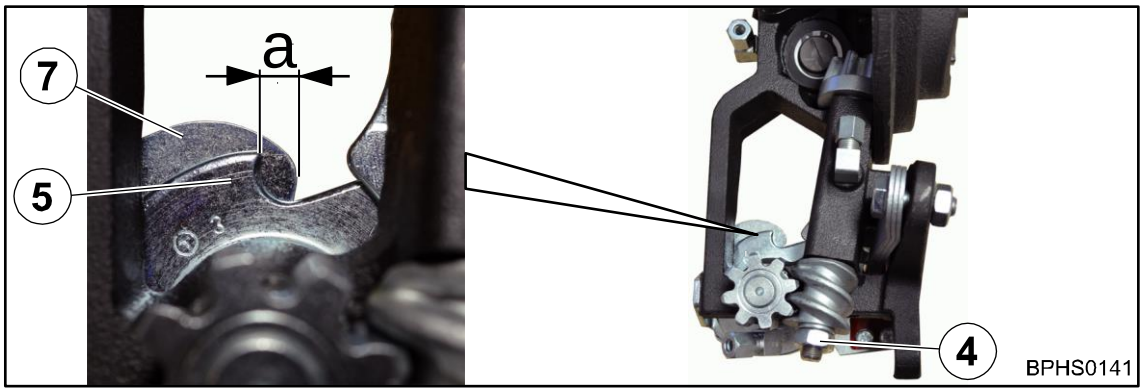

Fig. 197

The twine retainer (4) should only clamp the twine securely enough so that it is not pulled out of the twine retainer mechanism during the tying process. If the clamping effect is too great, it will tear the twine into shreds.

The setting of the holding force is preset in the factory.

The type and moisture content of baling material and its baling density as well as the tying twine that is selected all require different settings, which have to be determined by trial and error under actual working conditions.

To do this:

- Loosen the counter nut (3)
- Ensure stronger or weaker pre-tensioning of the twine retainer springs (2) via screw (1) (approx. half a turn)
- Tighten counter nut (3).

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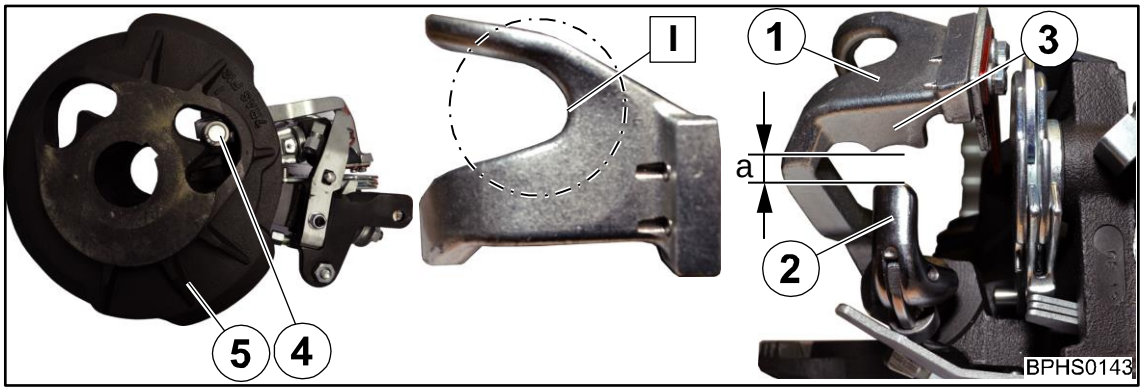

Fig. 198

The blade lever (1) must be aligned so that the knotter hook (2) can turn freely without touching the blade lever at any point on the blade lever.

However at the same time, the extractor comb (3) of the blade lever must evenly touch the back of the knotter hook (2). The distance between the extractor comb of the blade lever and the knotter hook tip should be a = 15 to 18 mm in the blade lever dead centre point.

The blade lever has reached the dead centre when the blade lever roller has reached the highest point on the cam (4) in the knotter disc (5).

The areas of the blade lever that guide the twine strands (the designated area (I)) must be smoothed and rounded to prevent the twine from tearing. The blade lever must be replaced as soon as there is wear (formation of grooves) on the marked area.

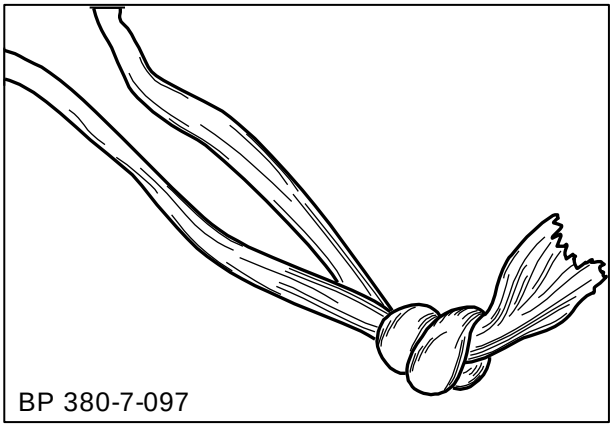

Fig. 199

It is essential to ensure that the cutting edge of the twine blade is regrounded as soon as the twine ends are being cut to unequal lengths or are frayed. The blade must be replaced if it is broken or worn too much.

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19.13 Adjusting the baling ram

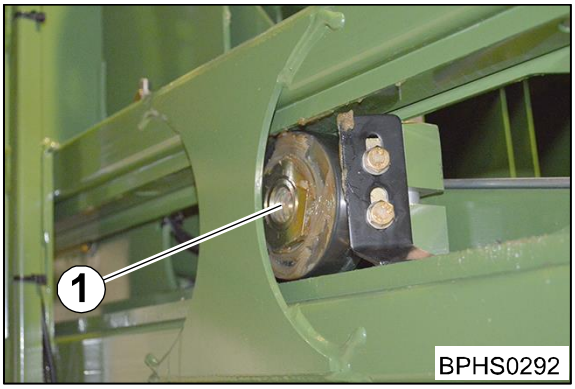

Fig. 200

The four cam rollers (1) in the baling ram must provide equal support.

19.13.1 Setting the baling ram blades

A precise setting of the baling ram blades is necessary for the underside of the big bales to have a smooth surface.

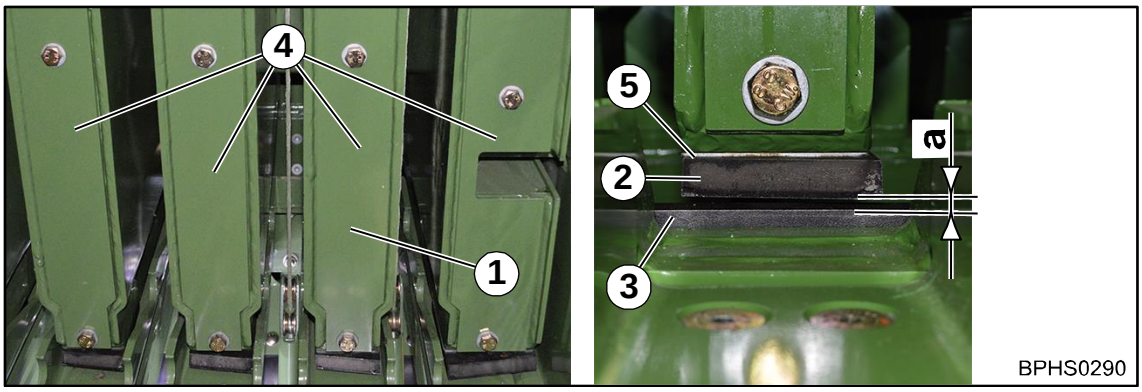

Fig. 201

1) Baling ram	2) Blades on the baling ram	3) Counterblade on the bale channel chamber
4) Front plate	5) Spacer washers	

– The bale channel chamber is equipped with two counterblades.
– The baling ram is equipped with nine blades.

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- Release the flywheel brake and turn the flywheel manually in the direction of operation until the blades are above the counterblade.
- To secure the baling ram, tighten the flywheel brake.
- Measure the dimension "a" between the blade and counterblade.

If the dimension "a" = 2 to 4 mm, the blades are correctly set.

If the dimension "a" is not 2 to 4 mm, spacer washers must be inserted or removed.

- Release the flywheel brake and turn the flywheel manually in the direction of operation until the blades are freely accessible.
- To secure the baling ram, tighten the flywheel brake.
- Unscrew the front plates.
- Loosen the bolts on the blade and add or remove spacer washers until the dimension "a" = 2 to 4 mm.
- Tighten the bolts and screw on the front plates.
- Release the flywheel brake and turn the flywheel manually in the direction of operation until the blades are above the counterblade.
- To secure the baling ram, tighten the flywheel brake.
- Measure the dimension "a" between the blade and counterblade.

If the dimension "a" = 2 to 4 mm, the blades are correctly set.

If the dimension "a" is not 2 to 4 mm, repeat the process until the dimension "a" = 2 to 4 mm.

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19.13.2 Setting the Lateral Plunger Blades

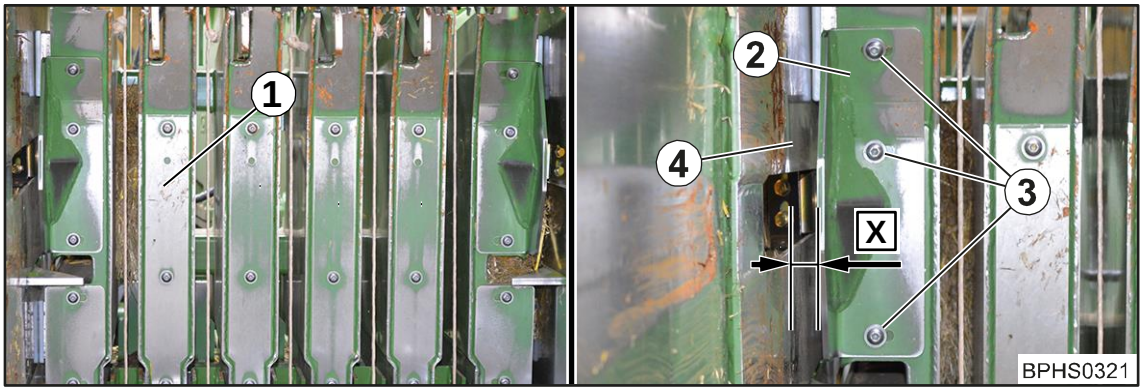

Fig. 202

1) Plungers
2) Lateral plunger blades
3) Screw
4) Bale channel wall

The lateral plunger blades are set equally for left-hand and right-hand side of plungers. The procedure described below to set the lateral plunger blades therefore applies to both sides of the plungers.

- To secure the plungers (1), tighten flywheel brake.
- Measure the dimension X between lateral plunger blades (2) and bale channel wall (4) at the narrowest point.

If the dimension is X=3-5 mm at the narrowest point, the lateral plunger blades (2) are correctly set.

If the dimension is not X=3-5 mm at the narrowest point, the lateral plunger blades (2) must be set.

- Loosen the screws (3).
- Set dimension **X=3-5 mm**.
- Tighten the screws (3).
- Loosen flywheel brake and turn flywheel manually in the working direction.
- To secure the plungers (1), tighten flywheel brake.

If the dimension is X=3-5 mm at the narrowest point, the lateral plunger blades (2) are correctly set.

If the dimension is not X=3-5 mm at the narrowest point, repeat the process until the dimension is X=3-5 mm.

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19.13.3 Cleaning the running rails

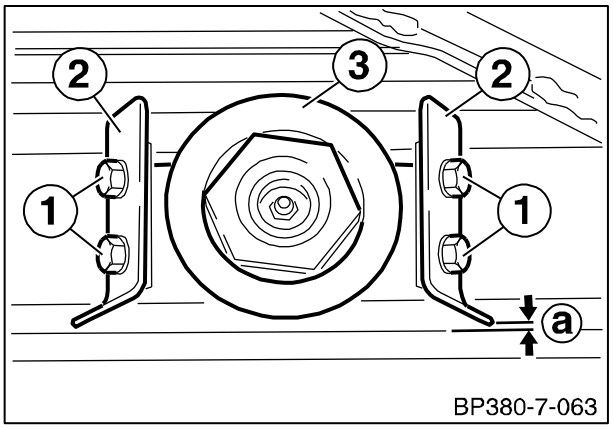

Fig. 203

The cleaning rails (2) are positioned on the four rollers (3). They remove dirt deposits from the running rails of the baling ram. To adjust, loosen the screws (1) and adjust the cleaning rails to the dimension a = 1 - 2 mm. Tighten the screws again.

Note

The cleaning rails (2) must be able to tilt easily on the roller axis!

19.13.4 Lateral setting of the plunger

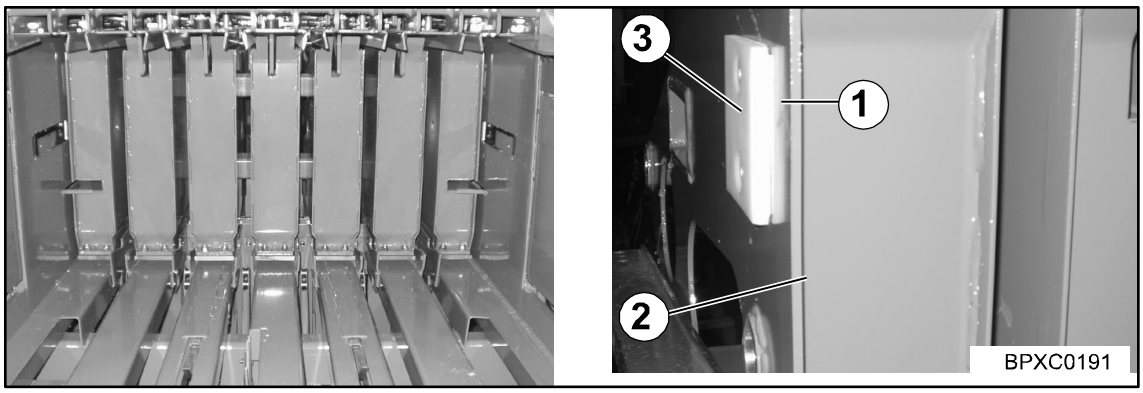

Fig. 204

The baling ram must be aligned in the centre of the bale channel chamber.
Make sure that the plunger moves freely and does not scrub against the fixed scrapers in the bottom of the channel and below the knotter mechanism.
To align the plunger laterally, the plunger (2) can be moved to its forward-most position by turning the flywheel.
The plunger (2) can be aligned laterally with compensating plates (1) (283-676-0) that are mounted between the plunger (2) and the sliding discs (3). The plunger should have a gap dimension of a = 1 - 2 mm at the narrowest point of the bale channel chamber.

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19.14 Adjusting the Packer Relative to the Plunger

19.14.1 Description of components

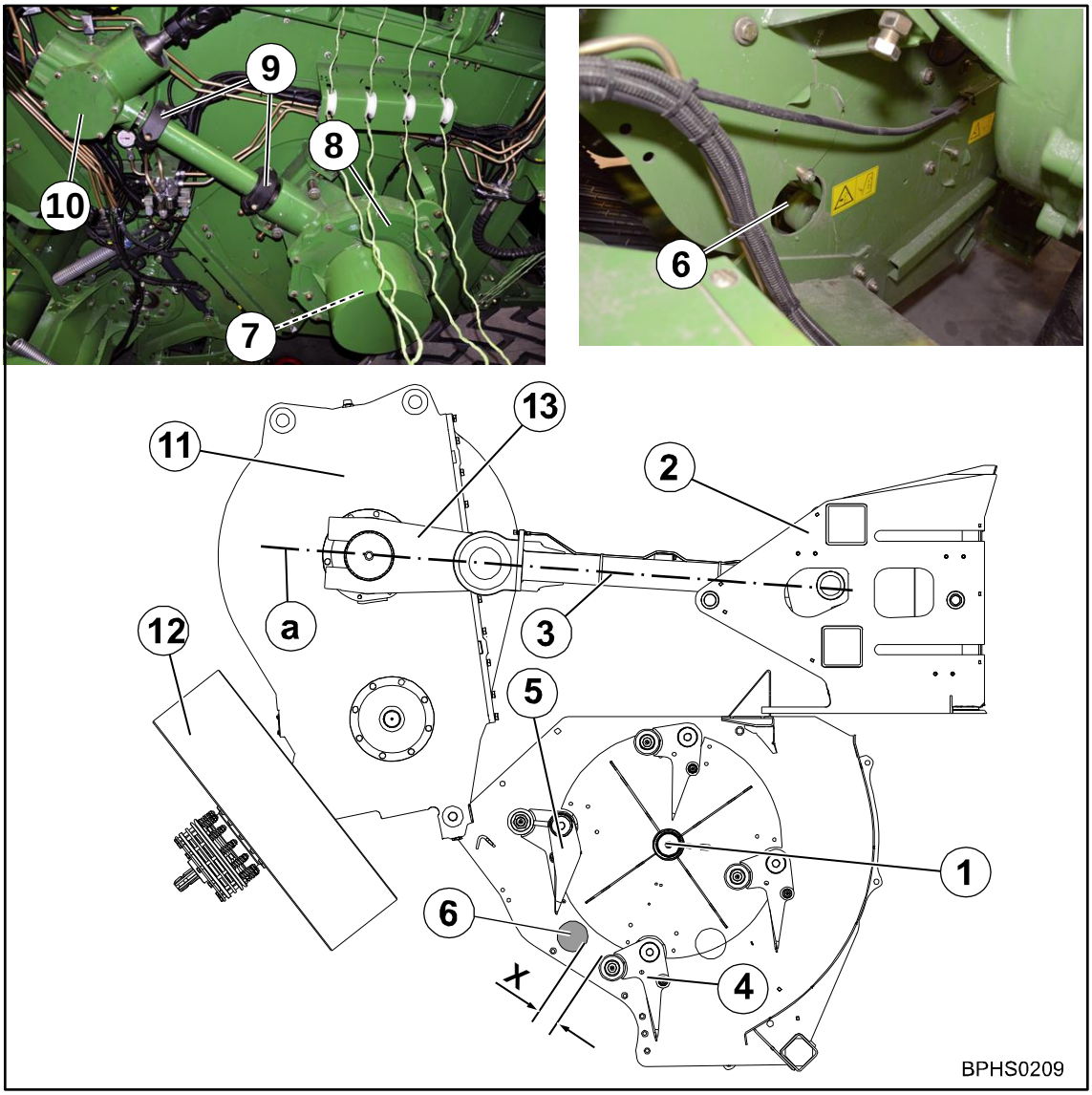

Fig. 205

1) Packer	2) Baling ram	3) Piston rod
4) Packer strip	5) Feeder strip	6) Control window
7) Packer coupling	8) Packer gearbox	9) Chain coupling
10) Transfer gearbox	11) Main gearbox	12) Flywheel
13) Crank arm		
a) Extended position (rear dead point)		

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Adjusting the packer to the baling ram is only necessary if the following components have been disassembled:

– Packer coupling (7), packer gearbox (8), chain coupling (9),
– Transfer gearbox (10) (or removal of the drive train transfer gearbox to main gearbox (11))
– Crank arm (13) of main gearbox

The packer (1) is correctly set to the baling ram if the piston rod (3) is in extended position (a) and the large roller of the packer strip (4) running in front of the feeder strip (5) is located X=7 cm below the control window (6).

Prerequisites:

– The packer coupling is locked in place, refer to chapter entitled “Checking Packer Coupling”.
– The VFS system is in zero position, refer to chapter entitled Settings “Zero Position”.
– Move packer strip (4) into position, refer to chapter Settings “Moving Packer Strip into Position”.
– Move the baling rams into position, refer to chapter Settings “Moving Baling Rams into Position”.

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19.14.2 Checking packer coupling

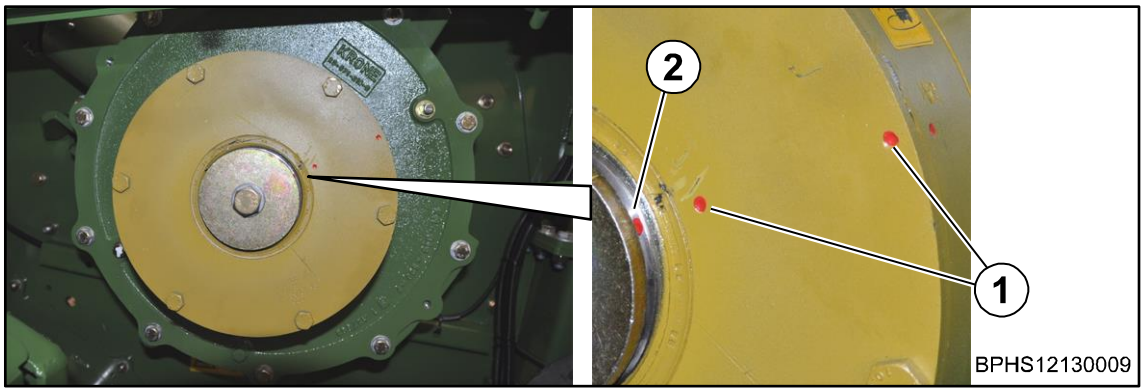

Fig. 206

Note
The packer coupling is correctly engaged when the outer marks (1) on the packer coupling are aligned with the mark (2) on the inner ring of the packer coupling.

19.14.3 Moving Packer Strip into Position

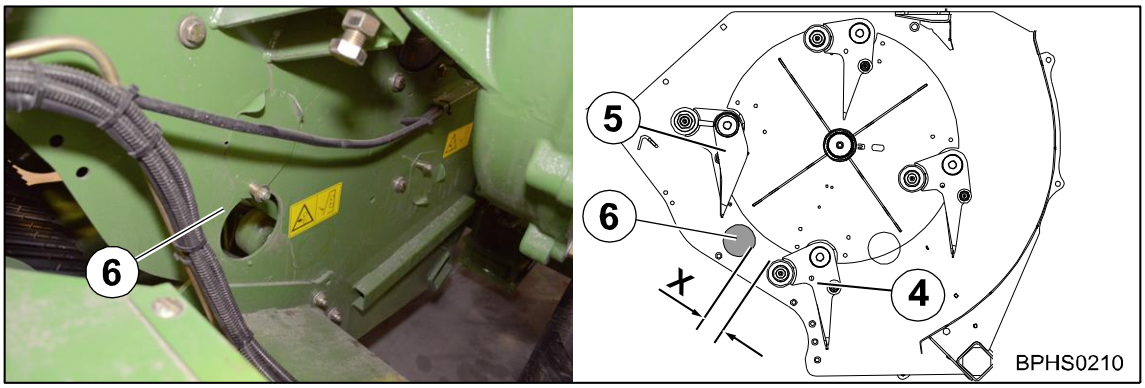

Fig. 207

- Turn the packer into working direction by turning the flywheel manually until the large packer strip roller (4) running in front of the feeder strip (5) is X=7cm below the control window (6).
- Secure the packer in this position with a mounting lever.
- Tighten the flywheel brake

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19.14.4 Moving Baling Rams into Position

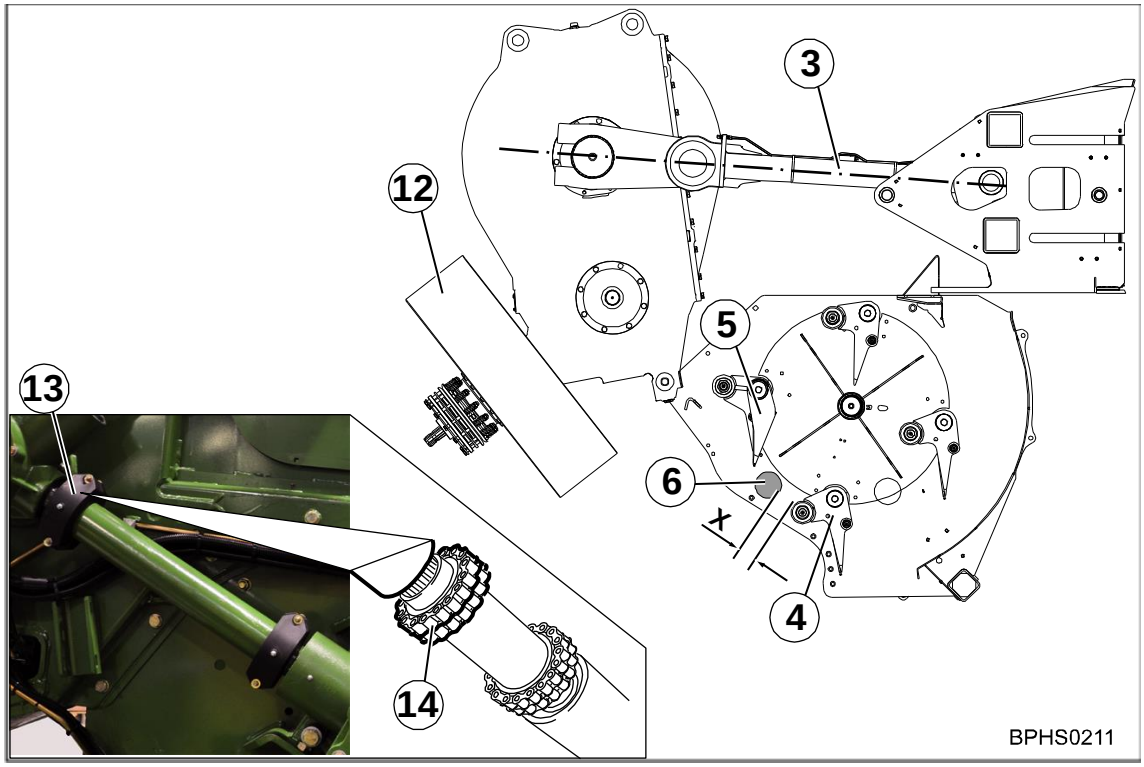

Fig. 208

Prerequisite:

– The packer strip is in position, refer to chapter Settings “Moving Packer Strip into Position”

Procedure

- Remove the protection (13) of the chain coupling.
- Remove the roller chain (14) from the chain coupling.
- Release the flywheel brake.
- Move the piston rod (3) to extended position (a) (rear dead point) by turning on the flywheel (12) in the working direction.
- Tighten the flywheel brake.
- Position the roller chain (14) of the chain coupling and secure it.
- Install the guard (13) on the chain coupling.
- Remove the mounting lever.

Checking the setting:

- Release the flywheel brake
- Turn through the machine manually in the working direction one complete time on the flywheel until the piston rod (3) is in its extended position (a) (rear dead point).

The packer (1) is correctly set to the baling ram if the piston rod (3) is in extended position (a) and the large roller of the packer strip (4) running in front of the feeder strip (5) is located X=7 cm below the control window (6). If this is not the case, start again with the settings (see chapter Settings “Adjusting the Packer to the Baling Ram”).

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19.15 Component Description Variable Filling System

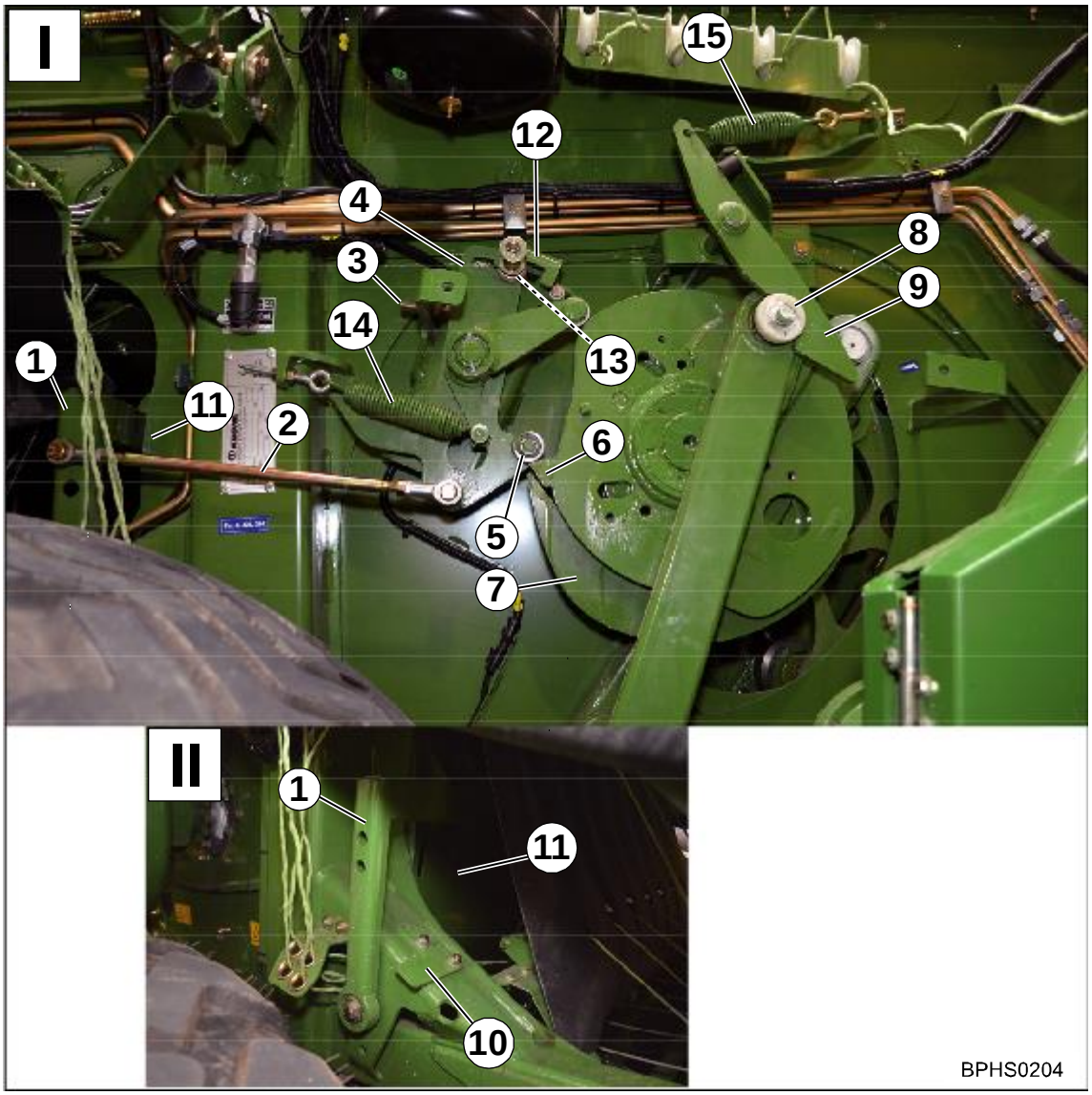

Fig. 209

I) Right-hand side of the machine

II) Left-hand side of the machine

1) Feeler rocker	2) Threaded rod	3) Set screw
4) Anvil	5) Grooved ball bearing	6) Trigger ratchet
7) Cam disc	8) Roller (zero adjuster)	9) Zero adjuster
10) Stop	11) Packer tray	12) Brake yoke
13) Brake plate	14) Spring (triggering sensitivity)	15) Spring (zero position)

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19.15.1 Presetting threaded rod / stop for the feeler rocker

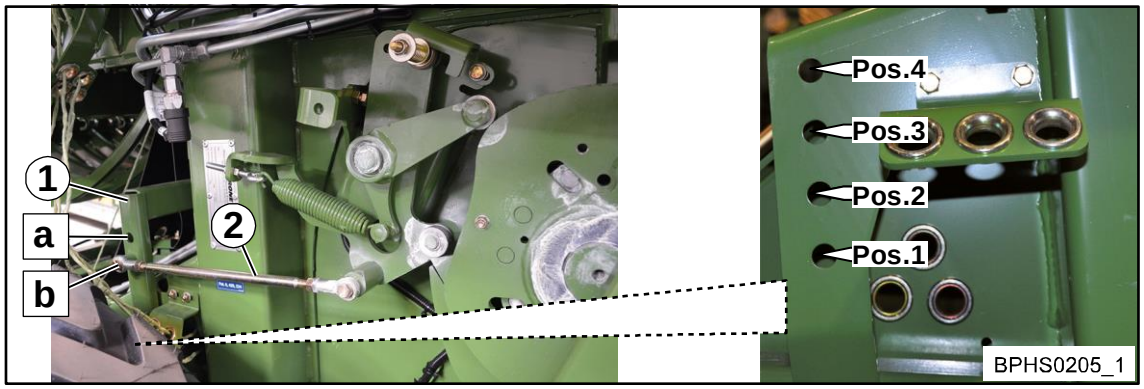

Fig. 210

Note
The feeler rocker (1) has been installed in position 2 at the factory.

The VFS system must be adjusted if

- the bale channel chamber does not fill up sufficiently (the filling of the bale upwards must be improved)
- the overload clutch of the packer responds too frequently

Procedure:

- Move VFS system to zero position and check settings (see chapter Settings "Zero position")
- Check and, if required, adjust triggering sensitivity (see chapter Settings "Adjusting triggering sensitivity")

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19.15.2 Zero position (VFS system)

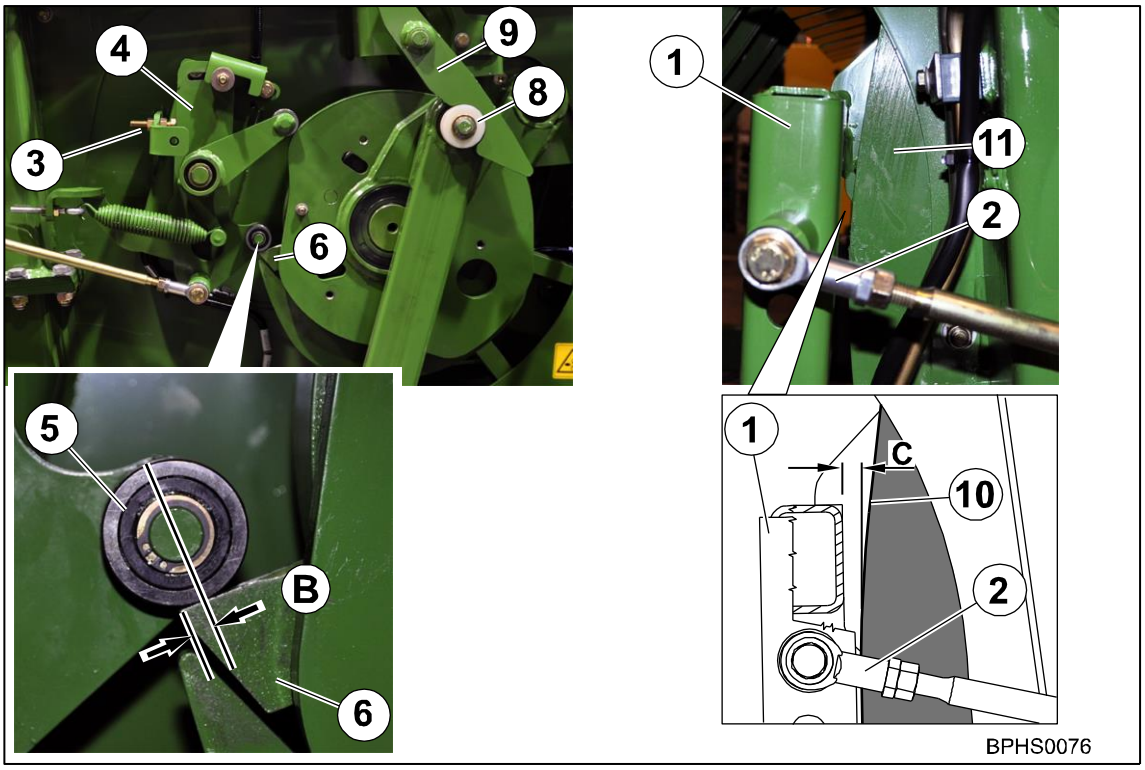

Fig. 211

Turn the packer manually in the working direction by rotating the flywheel until the roll (8) has engaged in the zero adjuster (9) (VFS is in the zero position now).

Note

The zero position is correctly set when

- the anvil (4) rests against the setting screw (3)
- the centre of the roll of the grooved ball bearing (5) rests on the trigger ratchet approx. B = 10 – 12 mm away from the tip of the trigger ratchet (6)
- the feeler rocker (1) shows a distance of C = 5 – 10 mm to the edge of the packer tray (11)

Check setting and correct it as follows, if necessary:

- Set the setting screw (3) until the centre of the roll of the grooved ball bearing (5) rests on the trigger ratchet approx. B = 10 – 12 mm away from the tip of the trigger ratchet (6)

Note

If dimension B cannot be set, check absorbing mechanism and set it, if necessary (refer to chapter Settings “Setting the Absorbing Mechanism”).

- Set threaded rod (2) until the feeler rocker (1) shows a distance of C = 5 – 10 mm to the edge of the packer tray (11)

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19.15.3 Adjusting the zeroizing device

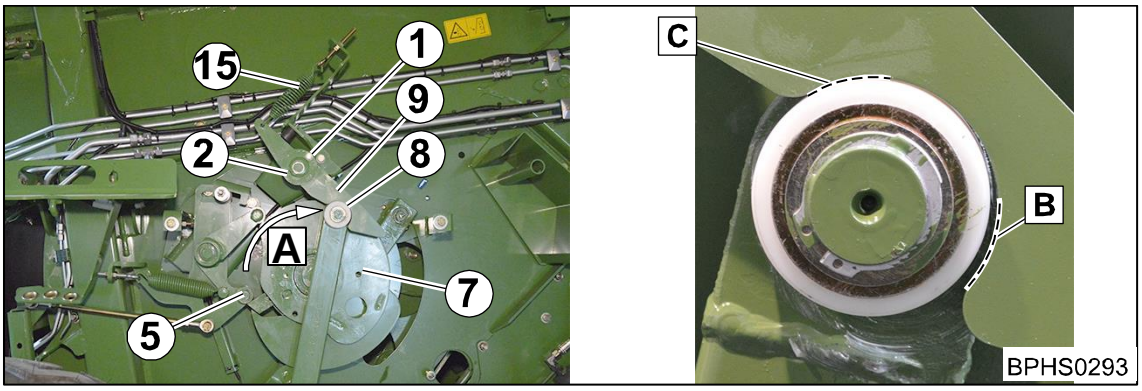

Fig. 212

Adjusting the zeroizing device

The zeroizing device is set to the zero position, see chapter Settings "Adjusting the Variable Fill System" ->"Zero position".

- Relieve the spring (15).
- Loosen the screw (1).
- Swivel the zeroizing device (9) up manually.
- Swivel the cam disc (7) manually as far as possible in direction A and hold it there.
- Swivel the zeroizing device (9) down and turn the eccentric plate (2) until the roller (8) is positioned in the lower area (B) of the zeroizing device.
- To secure the eccentric plate so that it cannot move, tighten the bolt (1).
- Release the cam disc.

The roller for the zeroizing device swivels into the upper area (C) of the zeroizing device.

- Tension the spring (15), see chapter Settings "Adjusting the spring of the zeroizing device".
- Adjust the rubber pad for the zeroizing device, see chapter Settings "Adjusting the rubber pad for the zeroizing device".

Checking the clearance of the ratchet

- Rotate the packer once completely by turning the flywheel manually in the direction of operation.

The ratchet must not move during the entire operation.

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19.15.4 Setting the Rubber Buffer on the Zero Adjuster

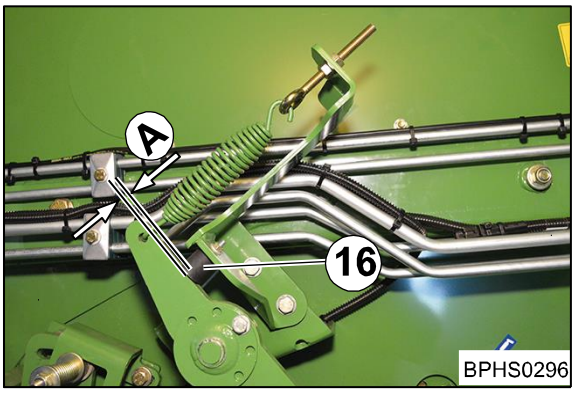

Fig. 213

Prerequisite:

– The zero adjuster is set in zero position, refer to chapter Settings “Setting the Variable Filling System” -> “Zero Position”.

Setting the rubber buffer on the zero adjuster

- Make sure that the dimension A is 0 to 2 mm. To do this, place or remove washers under the rubber buffers (16).

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19.15.5 Adjusting the spring in the zeroizing device

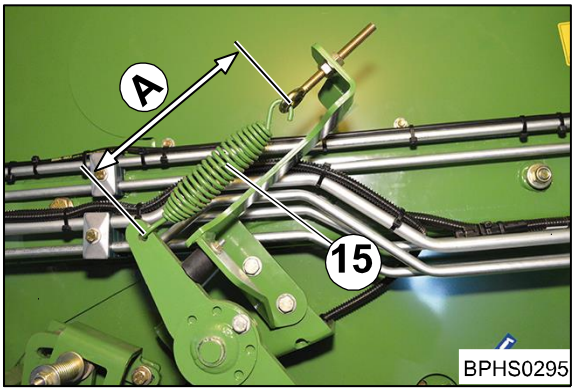

Fig. 214

The spring (15) is adjusted in the zero position (see Settings section “Zero position”).
The spring has been set to A = 185 mm at the factory.
Check and, if required, adjust dimension A:

- Pretension the spring (15) to a dimension of "A" = 185 mm

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19.15.6 Adjusting the triggering sensitivity

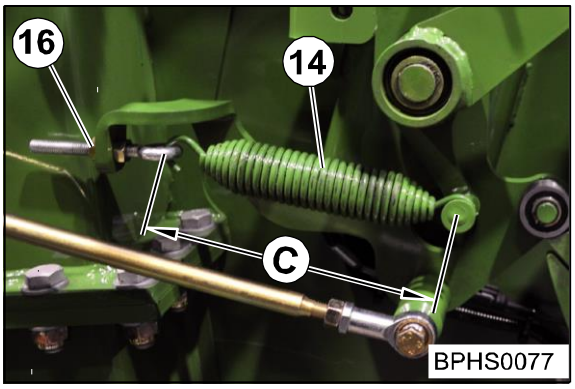

Fig. 215

The spring (14) is used to adjust the triggering sensitivity of the feeler rocker. When the feeler rocker has been swung out, the spring pulls the feeler rocker back again (zero position).
The spring length has been preset to C = 205 – 210 mm at the factory.
The higher the spring tension, the more forage is collected in the bale channel chamber.

Note

- Increase the spring tension if the bale channel chamber does not fill up sufficiently (the filling of the bale upwards must be improved)
- Reduce the spring tension if the overload coupling of the packer responds too frequently

Increasing / reducing the spring tension:

- Unscrew the screw joint (16).

Reduce dimension C (reduce spring tension)

Increase dimension C (increase spring tension)

- Tighten the screw connection (16)

hten the screw connection (16)

Note

If the bale shape is still not satisfactory after the spring has been tensioned to the maximum, install the feeler rocker in the next higher position (see Settings section “Adjusting the feeler rocker”)

If the overload protection still responds too frequently after the spring tension has been reduced to the maximum, install the feeler rocker in the next lower position (see Settings section “Adjusting the feeler rocker”)

Note

Poorly filled out bale corners are usually the result of unfavourable swath shapes or driving to one side.

If the spring tension is too high, the result may be blocking up the packer and thus reducing throughput.

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19.15.7 Adjusting the feeler rocker

Install the feeler rocker (1) into the positions (1-4) depending on the operating conditions.

hten the screw connection (16)

Note

If the bale shape is still not satisfactory after the spring has been tensioned to the maximum, install the feeler rocker in the next higher position (see Settings section “Adjusting the feeler rocker”)

If the overload protection still responds too frequently after the spring tension has been reduced to the maximum, install the feeler rocker in the next lower position (see Settings section “Adjusting the feeler rocker”)

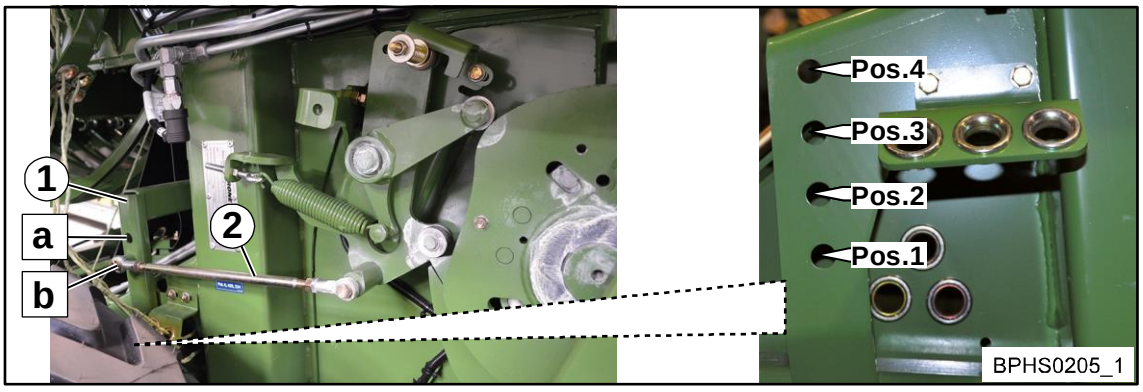

Fig. 216

Note

Only move the feeler rocker (1) if the triggering sensitivity can no longer be adjusted with the spring (14) (see Settings section “Adjusting the triggering sensitivity”).

- Loosen the hexagonal head screw (17)
- Move the feeler rocker (1) into the required position
- Tighten the hexagonal head screw (17)

Note

After moving the feeler rocker, check or if necessary adjust the following settings.

- Check the zero position (see chapter Settings “Zero Position”)
- Check the actuating sensitivity and adjust if, if necessary; refer to chapter Settings “Setting the Actuating Sensitivity”.
- Check the stop for feeler rocker and adjust it, if necessary; refer to chapter Settings “Setting Stop Feeler Rocker”.
- Check the absorbing mechanism and adjust it, if necessary, refer to chapter Settings „Setting the Absorbing Mechanism“.

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19.15.8 Adjusting the feeler rocker stop

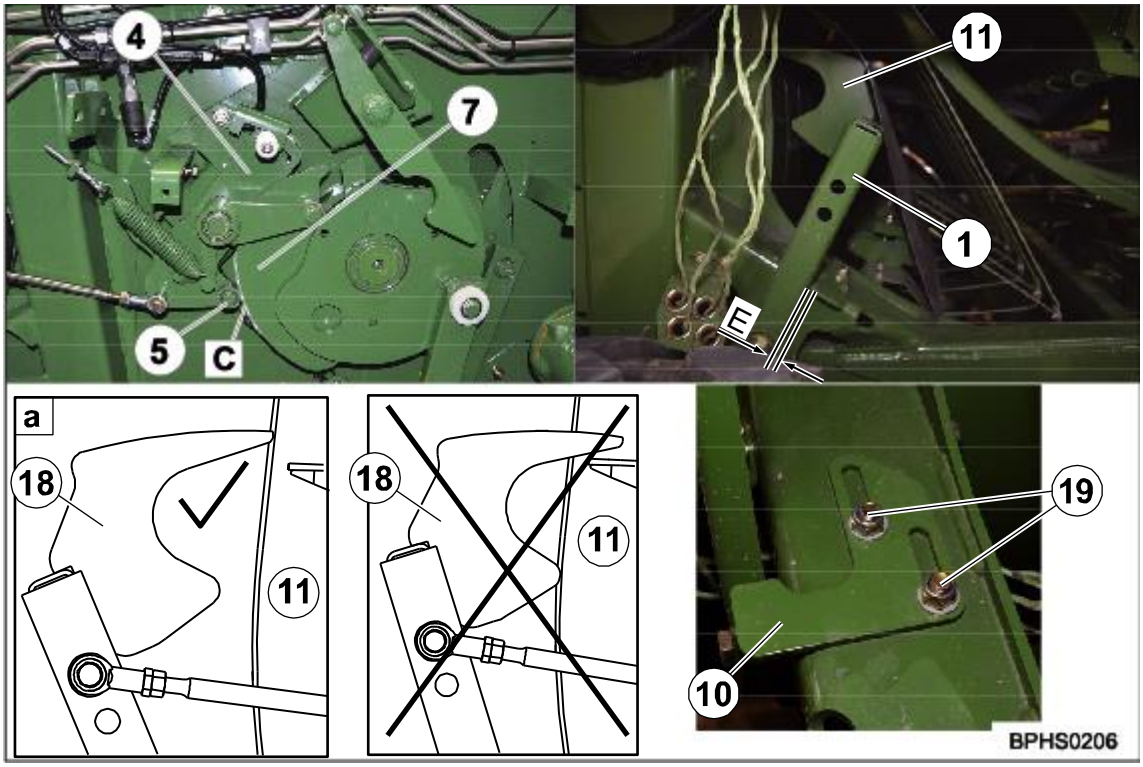

Fig. 217

- Loosen the nuts (19) and move the stop to the rear.
- Pull the feeler rocker (1) manually to the rear to initiate the VFS system.
- Turn the flywheel manually in the working direction until the grooved ball bearing (5) is on the highest position (area “C”).

In this position, the tines (18) of the feeler rocker must be outside (a) the packer tray (11).

- Check if the tines (18) are outside (a) the packer tray (11).

If the tines are not outside the packer tray:

- Correct the length of the threaded rod until the tines are outside the packer tray.

Setting the stop:

- Move the stop (10) until the dimension “E” is 2 mm.
- Tighten the nuts (19).

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Checking dimension „F“:

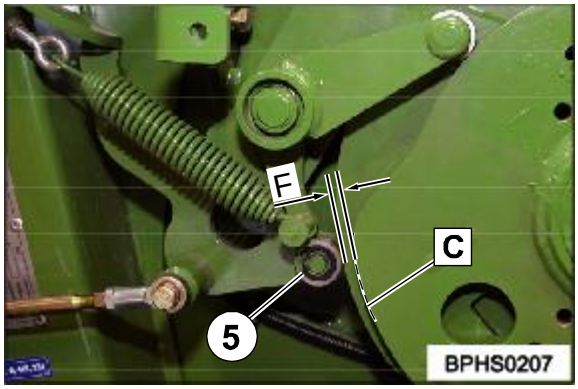

Fig. 218

- Pull the feeler rocker to the stop (10).
- Determine dimension „F“ in this position, measured between grooved ball bearing and cam disc.

The stop is adjusted properly if dimension „F“ is 5 mm.

If dimension „F“ is not 5 mm, move the stop.

If dimension “F” cannot be adjusted, the absorbing mechanism impedes the rotating path of the feeler rocker. Adjust the brake yoke of the absorbing mechanism; refer to chapter Settings “Absorbing Mechanism”.

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19.15.9 Absorbing mechanism

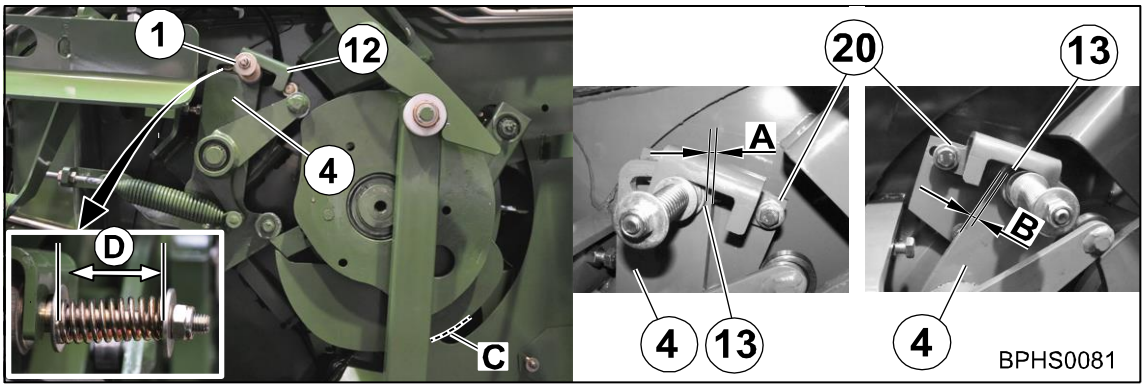

Fig. 219

The absorbing mechanism prevents the feeler rocker from triggering the VFS clutch unintentionally by recoiling back against it.

The slotted brake jaw (12) is used to adjust the length of the braking path in the two stop positions.

Stop positions mean:

Stop position A : VFS system is in zero position

Stop position B: VFS system has been actuated (the tines of the feeler rocker must be outside the packer tray).

Checking the absorbing mechanism:

- Manually move the packer to the zero position by rotating the flywheel (see Settings section “Zero position”).

Measure and note down dimension A between the edge of the anvil (4) and the brake plate (13).

- Pull the feeler rocker back, the VFS system actuates
- Rotate flywheel until the grooved ball bearing is at the highest position (area “C”) of the cam disc (see Settings section “Adjusting the feeler rocker stop”)

Measure and note down dimension B between the edge of the anvil (4) and the brake plate (13).

Dimension A and dimension B must be identical.

If dimension A and dimension B are not identical, adjust slotted brake jaw until the dimensions are identical.

To do this:

- Loosen the screw connection (20)
- Push slotted brake jaw
- Tighten screw connection

Pre-tension the spring (1) on the brake to a dimension of D = 50 mm (simple spring length).

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19.16 Default Setting of Belt Brake (Flywheel)

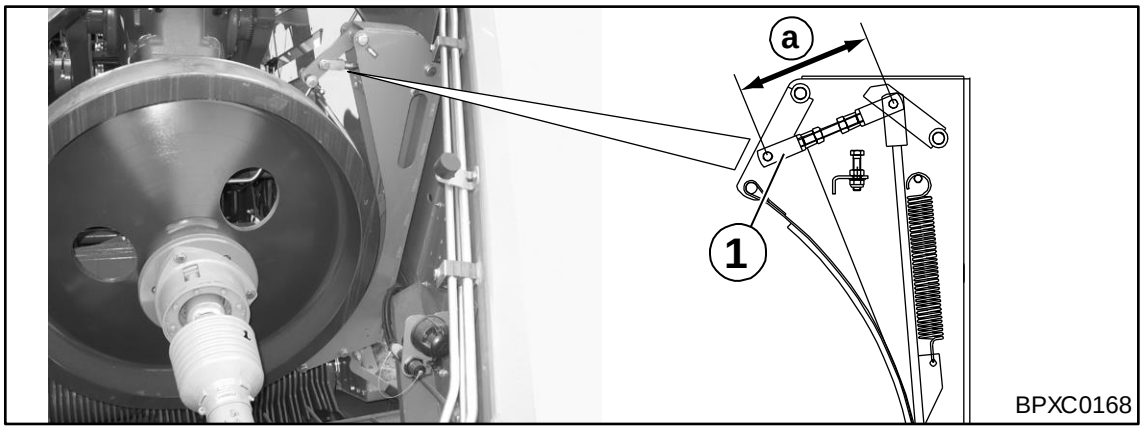

Fig. 220

The belt brake is mounted on the left-hand side of the flywheel. If the braking effect is no longer sufficient when actuating the belt brake, it can be readjusted by extending the spindle (1).

Basic setting:

Machine	Dimension a
870	335.6 mm
890, 1270, 1290, 4x4, 1290 HDP II	186 mm
1290 HDP:	195 mm

Setting the gap dimension

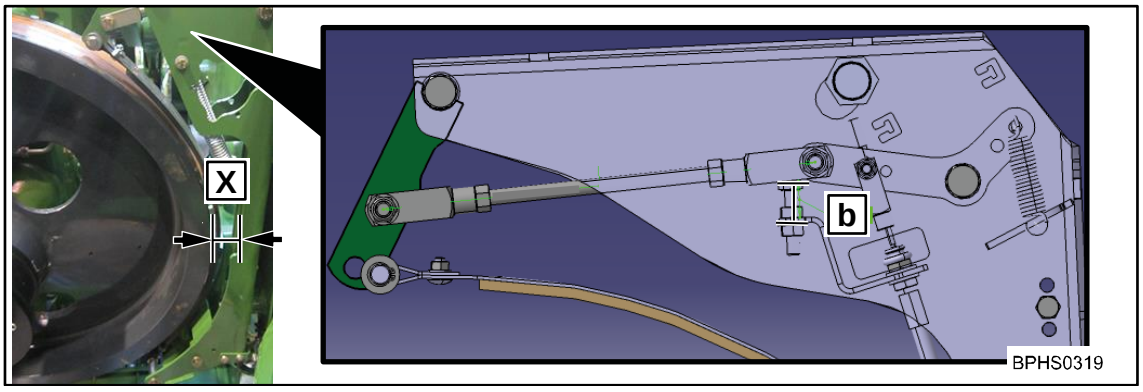

Fig. 221

The flywheel brake is mounted on the left-hand side of the flywheel.

The gap dimension must be **X = 12 mm**.

If the gap dimension X is not sufficient, it can be readjusted by increasing dimension (b).

Check the setting of the bowden cable, if necessary.

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19.17 Adjusting the chop length

The chop length is set in the same way on the right and left side of the machine. The setting procedure on the left side of the machine is described below. The same applies for the right side of the machine.

If the knife drawers are fully equipped

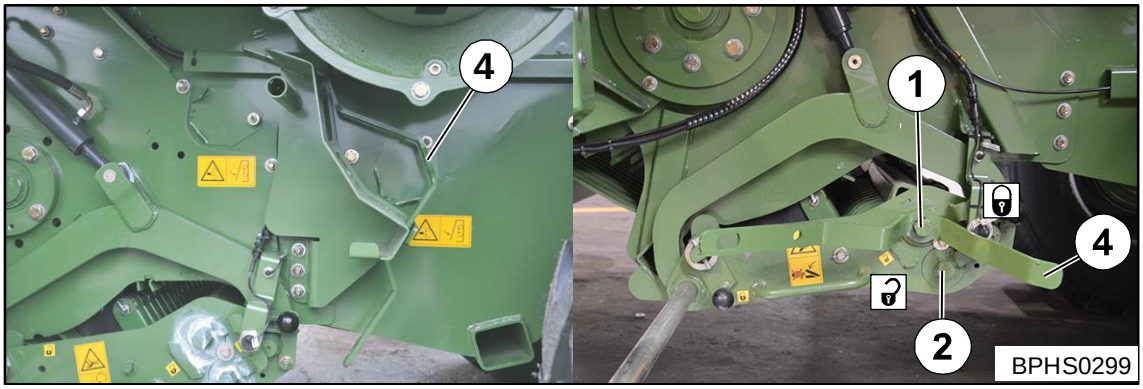

Fig. 222

The special tool (4) is to be found on the left-hand side of the machine, near the cutting system.

To set different chop lengths when the cutting system is fully equipped, the upper and lower knife selections (1, 2) must be in different positions (/) relative to one another. Chop length depending on the knife selection, see table.

- Shut down and safeguard the machine, see chapter Safety -> Safety routines "Shutting down and safeguarding the machine".
- Attach the special tool (4) to the upper or knife selection (1, 2).

CAUTION! Risk of injury due to spring pressure on the special tool. If you release it too soon, you can injure yourself.

- Turn the special tool (4) until the cams on the knife selection are either in the ( ) position or in the ( ) position.

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Depending on the number of knives in the drawers

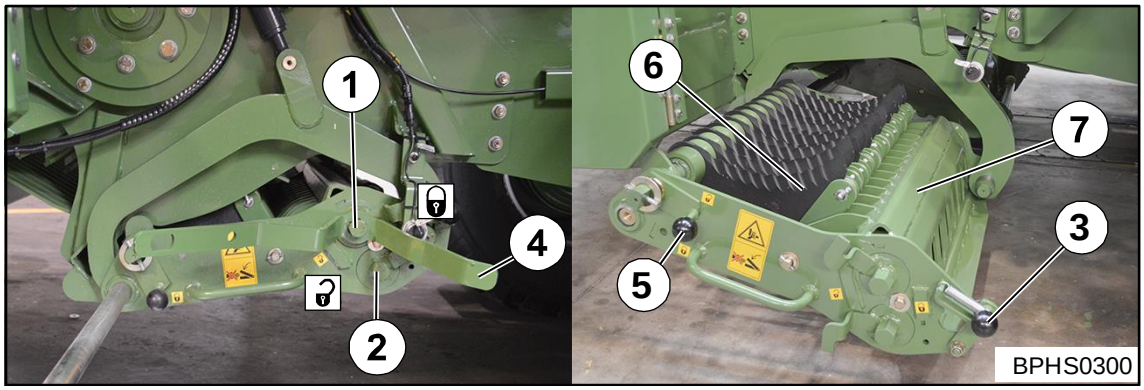

Fig. 223

To set different chop lengths using the number of knives in the drawers, a number of knives must be removed or inserted. Chop length depending on the number of knives in the drawers, see table.

Table cutting length depending on blade fitting

Cutting length mm	Number of blades	Used blade compartment
-	0	Any one
44	26	each
88	13	each second
176	6	each third

Lowering the cutting system

Medium electronics

- Actuate the control unit ( ) on the tractor until the cutting unit has been fully lowered.

Comfort - Electronic

Release

- To release the blade bar, press .

The symbols , are shown on the display.

Lowering

- To lower the blade bar, press and hold .

Using the pushbuttons on the machine

- To lower the blade bar, press the pushbutton until the blade bar is fully lowered.

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Releasing the single blade locking device

- Shut down and safeguard the machine, see chapter Safety -> Safety routines "Shutting down and safeguarding the machine".
- Attach the special tool (4) to the upper or knife selection (1, 2).

CAUTION! Risk of injury due to spring pressure on the special tool. If you release it too soon, you can injure yourself.

- Turn the special tool (4) until the cams on the upper and lower knife selection are in the ( ) position.

Removing the knife drawer (7)

- To remove the knife drawer, unlock the locking lever (3) and pull the knife drawer out sideways as far as the stop.

Unlocking the blade shaft

- To unlock the blade shaft, move the locking lever (5) to position ( ).

Removing/replacing blades

CAUTION! Danger from sharp blades. Wear gloves.

- Remove the blade (6) vertically upwards.
- Insert the new blade vertically from above.

Locking the blade shaft

- To lock the blade shaft, move the locking lever (5) to position ( ).
- Push in the knife drawer until the locking lever (3) automatically catches in place.
- Insert the special tool into the holder on the machine

Raising the cutting system

Medium electronics

- Actuate the control unit ( ) on the tractor until the cutting unit has been fully raised.

Comfort - Electronic

Release

- To release the blade bar, press .

The symbols , are shown on the display.

Raising

- To raise the blade bar, press and hold .

Using the pushbuttons on the machine

- To raise the blade bar, press the pushbutton until the blade bar is fully raised.

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20 Maintenance

WARNING!

If the basic safety instructions are not followed, people may be seriously injured or killed.

- To avoid accidents, the basic safety instructions in the chapter Safety must have been read and followed, see chapter Safety "Basic safety instructions".

WARNING!

If the safety routines are not adhered to, people may be seriously injured or killed.

- To avoid accidents, the safety routines in the chapter Safety must be read and followed, see chapter Safety "Safety routines".

20.1 Spare Parts

Warning! - Using non-approved spare parts.

Effect: Danger to life, serious injuries or loss of warranty claims as well as exclusion of liability

- Use only authentic KRONE spare parts and accessories authorised by the manufacturer. The use of spare parts, accessories or additional equipment not manufactured, tested or approved by KRONE will exclude any liability for consequential damage.

Note

To ensure problem-free operation of the machine and to reduce wear and tear, specific maintenance and upkeep intervals must be observed. These include cleaning, greasing, lubricating and oiling parts and components.

ENVIRONMENT! - Disposal and storage of used lubricants and oil filters

Effect: Environmental damage

Store or dispose used oil and oil filters according to statutory provisions.

CAUTION!

Environmental damage caused by incorrect storage and dispose of consumables!

- Store consumables in suitable containers according to statutory provisions.
- Dispose of used consumables according to statutory provisions.

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20.2 Maintenance table

Maintenance work	Maintenance interval							
	Once after 10 hours	Before the beginning of the season	Every 10 hours but at least 1x daily	Once after 50 hours	Every 50 hours	Every 200 hours	Every 500 hours	After every season
Tighten screws / nuts								
All screws		X			X			
Main gearbox								
Oil level check		X	X					
Oil change				X		X		
Packer gearbox								
Oil level check		X	X					
Oil change				X		X		
Transfer gearbox								
Oil level check		X	X					
Oil change				X		X		
Pick-up gearbox top / bottom (version without cutting system)								
Oil level check		X	X					
Oil change				X		X		
Cutting system gearbox top / bottom (version with cutting system)								
Oil level check		X	X					
Oil change				X		X		
Angular gearbox on the drawbar front / rear								
Oil level check		X	X					
Oil change				X		X		
Fan gearbox						X		
On-board hydraulic system								
Change the hydraulic oil								X
Replace the filter element of the high-pressure filter								X

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Maintenance work	Maintenance interval							
	Once after 10 hours	Before the beginning of the season	Every 10 hours but at least 1x daily	Once after 50 hours	Every 50 hours	Every 200 hours	Every 500 hours	After every season
Tyres								
Tighten wheel nuts	X	X			X			
Check tyre pressure	X	X			X			
Check tyres visually for cuts and breaks		X						
Compressor								
Clean suction air filter			X					
Oil level check			X					
Oil change				X		X		
Brake								
Check the functionality of the brake system			X					
Drain the compressed air reservoir		X			X			
Check the linkage setter	X					X		
Pneumatic brake cylinders	**Every two years**							
Have brake pads checked by a specialist workshop		X						
Check air filter for pipes		X						
Hydraulics								
Check hydraulic hoses	X							
Change high-pressure filter filter insert								X
Checking / retightening drive chains								
Conveyor roller		X						
Pick-up drive		X						
Checking / changing blades		X	X					
Checking parts								
Check the bearing play of the rollers/cam follower rollers		X						X
Check the functionality of the central lubrication		X						X
Cleaning the machine								
Knotter, packer control system, flywheel			X					
Belt drives								
Check belts visually for cracks		X						

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20.3 Tightening torques

20.3.1 Metric Thread Screws with Control Thread

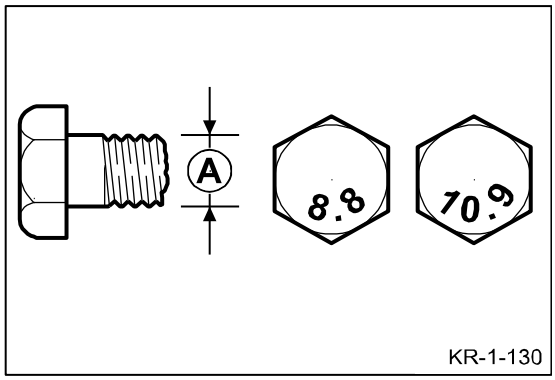
NOTICE

The table does not apply to countersunk screws with hexagonal socket in case the countersunk screw is tightened via hexagonal socket.

Tightening torque in Nm (unless otherwise stated)

A	Stability class			
	5.6	8.8	10.9	12.9
	Tightening torque (Nm)			
M4		3.0	4.4	5.1
M5		5.9	8.7	10
M6		10	15	18
M8		25	36	43
M10	29	49	72	84
M12	42	85	125	145
M14		135	200	235
M16		210	310	365
M20		425	610	710
M22		571	832	972
M24		730	1050	1220
M27		1100	1550	1800
M30		1450	2100	2450

A = thread size
(stability class can be seen on screw head)



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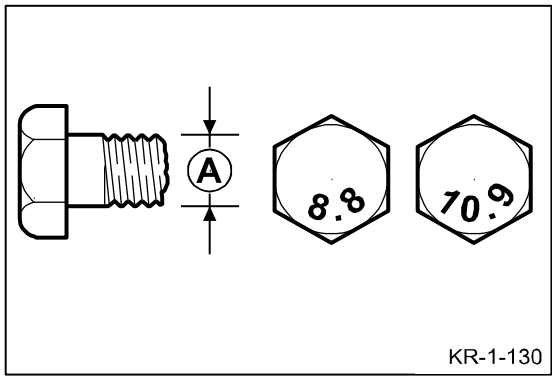
20.3.2 Metric Thread Screws with Fine Thread

Tightening torque in Nm (unless otherwise stated)

A	Stability class			
	5.6	8.8	10.9	12.9
	Tightening torque (Nm)			
M12 x 1.5:		88	130	152
M14 x 1.5		145	213	249
M16 x 1.5		222	327	382
M18 x 1.5		368	525	614
M20 x 1.5		465	662	775
M24 x 2		787	1121	1312
M27 x 2		1148	1635	1914
M30 x 1.5		800	2100	2650

A = thread size
(stability class can be seen on screw head)



20.3.3 Metric Thread Screws with Countersunk Head and Hexagonal Socket

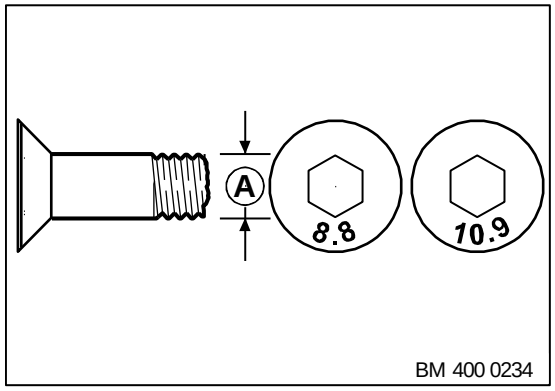
NOTICE

The table applies only to countersunk screws with hexagonal socket and metric thread which are tightened via hexagonal socket.

Tightening torque in Nm (unless otherwise stated)

A	Stability class			
	5.6	8.8	10.9	12.9
	Tightening torque (Nm)			
M4		2.5	3.5	4.1
M5		4.7	7	8
M6		8	12	15
M8		20	29	35
M10	23	39	58	67
M12	34	68	100	116
M14		108	160	188
M16		168	248	292
M20		340	488	568

A = thread size
(stability class can be seen on screw head)



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20.4 Blade Changing

Blades are changed in the same way on the right and left side of the machine. The procedure used on the left side of the machine is described below. The same applies for the right side of the machine.

ATTENTION!

You many damage the cutting system if you raise it without first retracting and locking the knife drawers.

- Ensure that both knife drawers are properly pushed in and locked before the cutting system is raised.

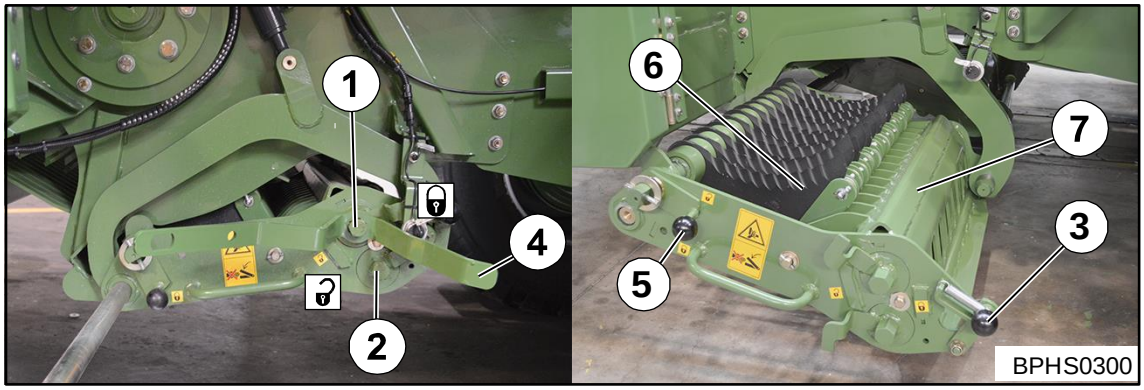

Fig. 224

Lowering the cutting system

Medium electronics

- Actuate the control unit ( ) on the tractor until the cutting unit has been fully lowered.

Comfort - Electronic

Release

- To release the blade bar, press .

The symbols , are shown on the display.

Lowering

- To lower the blade bar, press and hold .

Using the pushbuttons on the machine

- To lower the blade bar, press the pushbutton until the blade bar is fully lowered.

Releasing the single blade locking device

- Shut down and safeguard the machine, see chapter Safety -> Safety routines "Shutting down and safeguarding the machine".
- Attach the special tool (4) to the upper or knife selection (1, 2).

CAUTION! Risk of injury due to spring pressure on the special tool. If you release it too soon, you can injure yourself.

- Turn the special tool (4) until the cams on the upper and lower knife selection are in the ( ) position.

Removing the knife drawer (7)

- To remove the knife drawer, unlock the locking lever (3) and pull the knife drawer out sideways as far as the stop.

Unlocking the blade shaft

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- To unlock the blade shaft, move the locking lever (5) to position ( ).

Removing/replacing blades

CAUTION! Danger from sharp blades. Wear gloves.

- Remove the blade (6) vertically upwards.
- Insert the new blade vertically from above.

Locking the blade shaft

- To lock the blade shaft, move the locking lever (5) to position ( ).
- Push in the knife drawer until the locking lever (3) automatically catches in place.
- Insert the special tool into the holder on the machine

Raising the cutting system

Medium electronics

- Actuate the control unit ( ) on the tractor until the cutting unit has been fully raised.

Comfort - Electronic

Release

- To release the blade bar, press .

The symbols , are shown on the display.

Raising

- To raise the blade bar, press and hold .

Using the pushbuttons on the machine

- To raise the blade bar, press the pushbutton until the blade bar is fully raised.

Adjusting the chop length

To adjust the chop length, see chapter Settings "Adjusting the chop length".

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20.5 Lifting

- Shut down and safeguard the machine, see chapter Safety -> Safety routines, "Shutting down and safeguarding the machine".

20.5.1 Eyebolts for lifting

The baler is fitted with four eyebolts for lifting:

– Two eyebolts are located in the front area of the drawbar (1), on the right and left side of the machine.
– Two eyebolts are located at the rear at the yoke (2), on the right and left side of the machine.

20.5.2 Lifting

Before lifting, make sure that

– the flywheel brake is applied.
– the parking support (support jack) is in the transport position.
– the roller chute (bale chute) is folded in.
– the pick-up is raised
– the self-steering axle is locked, optional.
– all safety devices are locked.
– the lifting beams have a minimum load-bearing capacity, depending on the permitted gross weight of the machine.

Weight of the machine, see chapter Description of machine "Technical Data".

- Attach the chains on the lifting beams to the four eyebolts on the baler.

Make sure that the chain hooks are correctly placed on the stop points.

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20.6 Cleaning

Warning! - `Cleaning with compressed air!`
Effect: Loss of eyesight!

- Keep people well away from the working area.
- Wear suitable work clothes to perform cleaning jobs with compressed air (for example eye protection).

The BiG PACK baler, especially the knotter, must be cleaned of chaff and dust after every use. Under very dry working conditions, the cleaning must be repeated several times a day. The packer control system and the flywheel must also be cleaned daily of chaff and dust.

- Shut down and safeguard the machine, see chapter Safety -> Safety routines, "Shutting down and safeguarding the machine".

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20.7 Drive chains

- Regularly check the pretension of the drive chains (especially on new drive chains)
- Shorten chains which have become too long by taking out a chain link

Design without cutting system

- Shut down and safeguard the machine, see chapter Safety -> Safety routines, "Shutting down and safeguarding the machine".

20.7.1 Conveyor roller (I)

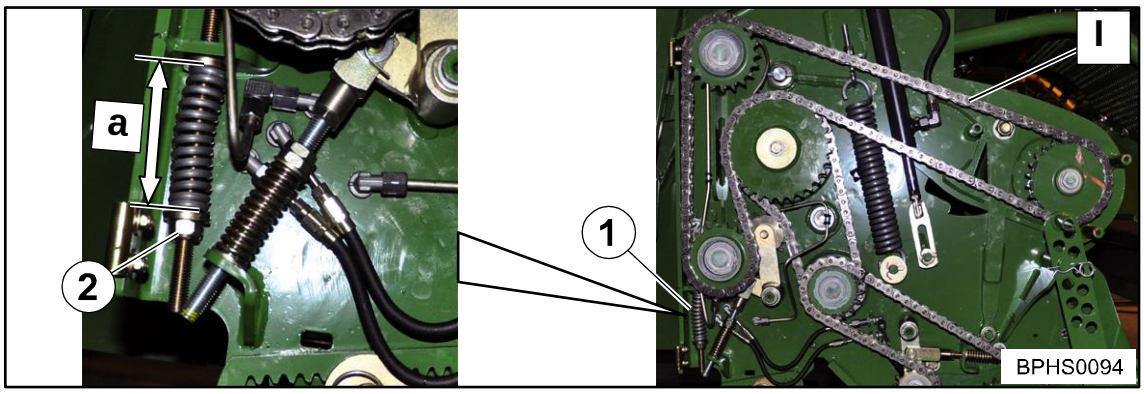

Fig. 225

Right-hand side of the machine

At the factory the spring has been preset (1) to a = 100 mm.

- Open the protective cover on the right side of the machine
- By tightening the nut (2), increase the tension of the spring (1)
- Close protective cover

20.7.2 Pick-up drive (II)

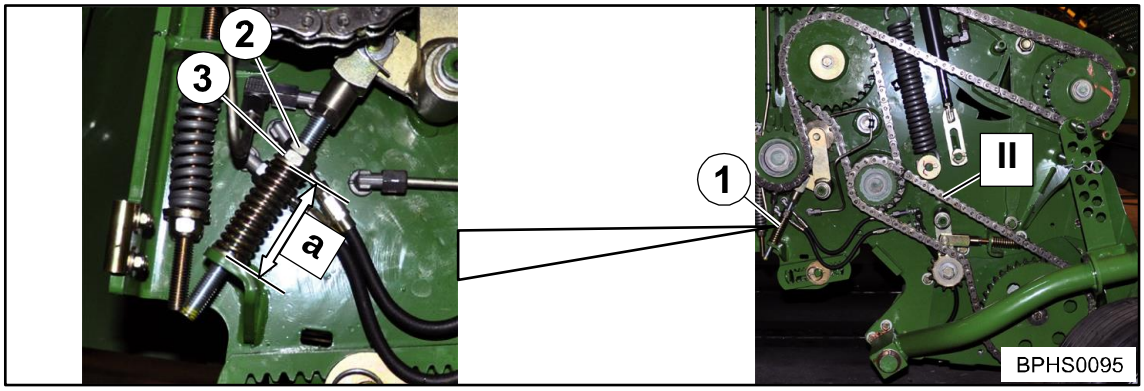

Fig. 226

Right-hand side of the machine

At the factory the spring has been preset (1) to a = 60 mm.

- Open the protective cover on the right side of the machine
- Unscrew the counter nut (2)
- By tightening the nut (3), increase the tension of the spring (1)
- Secure the nut (3) with the counter nut (2)
- Close protective cover

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20.7.3 Pick-up drive (III)

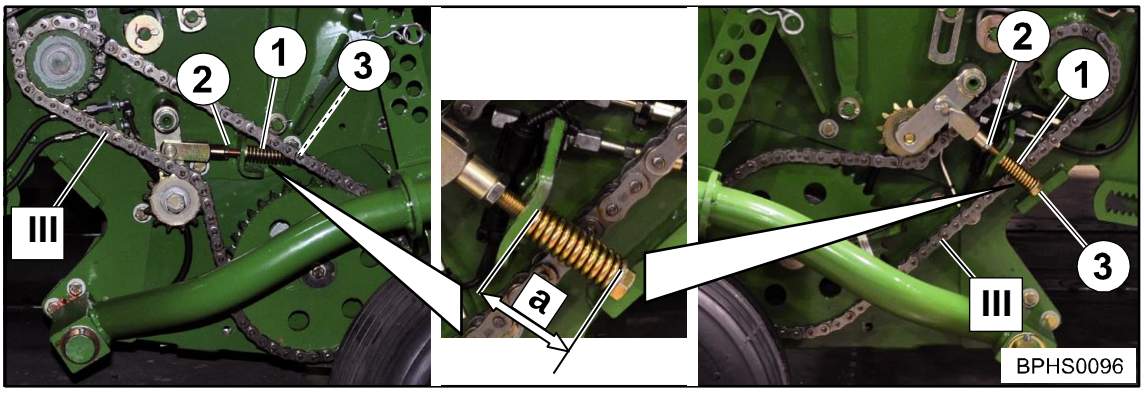

Fig. 227

Right and left sides of the machine

At the factory the spring has been preset (1) to a = 60 mm.

- Open the protective cover on the right or left side of the machine
- Unscrew the counter nut (2)
- By screwing in the bolt (3), increase the tension of the spring (1)
- Secure the bolt (3) with the counter nut (2)
- Close protective cover

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Design with cutting system

- Shut down and safeguard the machine, see chapter Safety -> Safety routines, "Shutting down and safeguarding the machine".

20.7.4 Conveyor Roller (I)

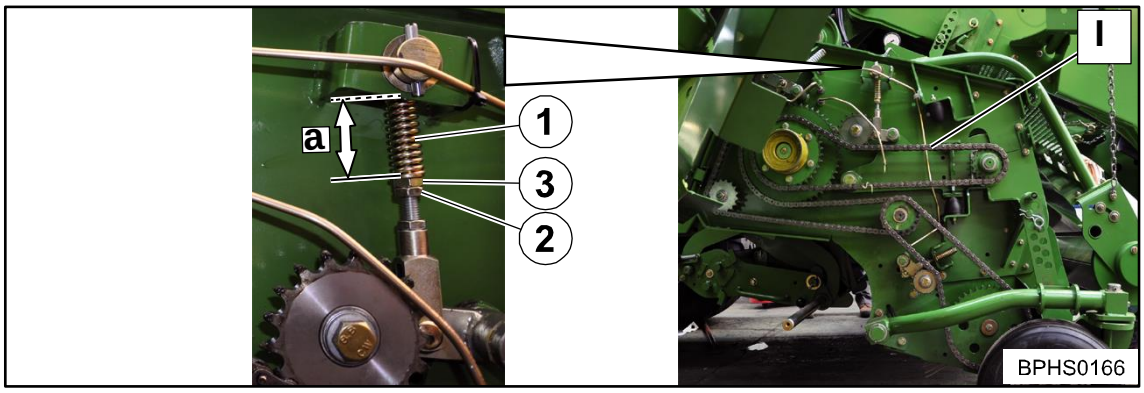

Fig. 228

Right-hand side of the machine

The spring (1) is preset to a = 60 mm in the factory.

- Open the protective cover on the right-hand side of the machine.
- Loosen the counter nut (2).
- Increase the tension of the spring (1) by tightening screw (3).
- Secure screw (3) with counter nut (2).
- Close the protective cover.

20.7.5 Pick-up Drive (II)

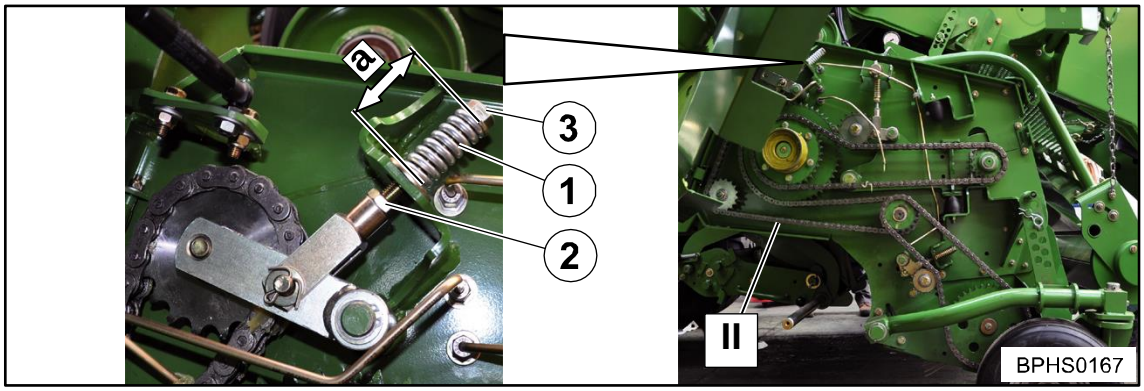

Fig. 229

Right-hand side of the machine

The spring (1) is preset to a = 50 mm in the factory.

- Open the protective cover on the right machine side.
- Loosen the counter nut (2).
- Increase the tension of the spring (1) by screwing in screw (3).
- Secure screw (3) with counter nut (2).
- Close protective cover.

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20.7.6 Pick-up Drive (III)

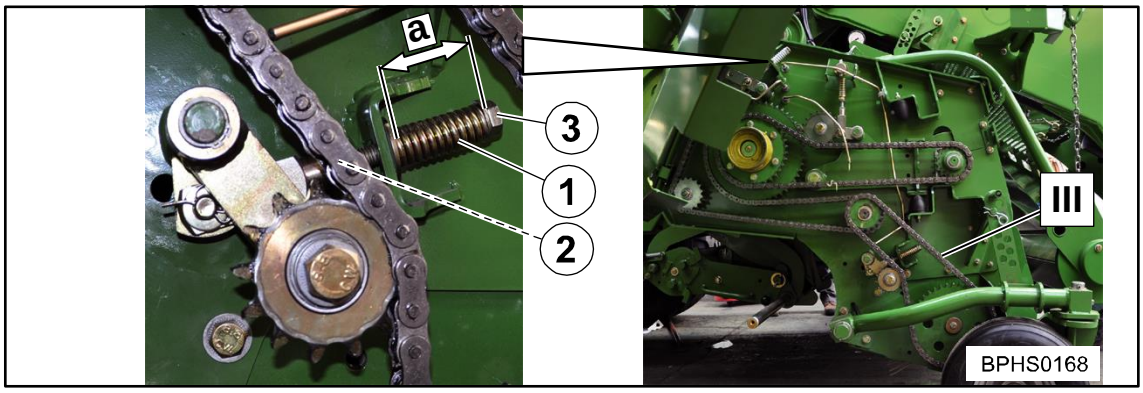

Fig. 230

Right and left sides of the machine

The spring (1) is preset to a = 60 mm in the factory.

- Open the protective cover on the right or left machine side.
- Loosen counter nut (2).
- Increase the tension of spring (1) by screwing in screw (3).
- Secure screw (3) with counter nut (2).
- Close protective cover.

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20.8 Tyres

Warning! - Tyre fitting incorrect

Effect: Injuries or damage to the machine

- Fitting tyres requires sufficient knowledge and the availability of proper tools!
- If tyres are not correctly fitted, it could explode when pumped up. This can cause serious injury. If you do not have sufficient experience of fitting tyres, have tyres fitted by the KRONE dealer or a qualified tyre specialist.
- When fitting tyres on the wheel rims, the maximum pressure given by the tyre manufacturer must not be exceeded. The tyre or even the wheel rim could explode and/or burst.
- If the tyre heels do not fit properly when the maximum permitted pressure is reached, let out the air, align tyres, lubricate the tyre heels and pump up the tyre again.
- Detailed information about how to fit tyres onto agricultural machinery can be obtained from the tyre manufacturers.

Tightening Torque

Threading	Key size in mm	Number of bolts per hub - pieces	Max. tightening torque	
			black	galvan.
M12 x 1.5	19	4/5	95 Nm	95 Nm
M14 x 1.5	22	5	125 Nm	125 Nm
M18 x 1.5	24	6	290 Nm	320 Nm
M20 x 1.5	27	8	380 Nm	420 Nm
M20 x 1,5	30	8	380 Nm	420 Nm
M22 x 1.5	32	8/10	510 Nm	560 Nm
M22 x 2	32	10	460 Nm	505 Nm

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20.8.1 Checking and maintaining tyres

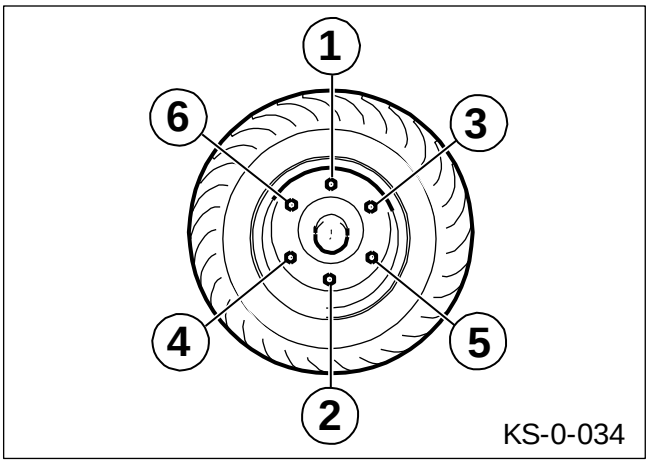

Fig. 231

- Shut down and safeguard the machine, see chapter Safety -> Safety routines, "Shutting down and safeguarding the machine".

When loosening and tightening the wheel nuts, observe the order indicated in the illustration.

Check the wheel nuts: According to the maintenance table

Check the tyre air pressure: According to the maintenance table

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21 Maintenance - hydraulic system

WARNING!

Risk of injury as a result of incorrect handling of liquids under high pressure.

Effect: Escaping high-pressure liquids can penetrate the skin and cause serious injury.

Repair work on the hydraulic system may only be performed by authorised KRONE professional workshops.

- Depressurise the system before disconnecting lines.
- When searching for leaks, use suitable aids and wear protective goggles.
- High-pressure liquid that is escaping from a small opening is virtually invisible. Therefore, you should use a piece of cardboard or something similar when searching for leaks. Protect your hands and body.
- If liquid penetrates the skin, consult a doctor immediately. The liquid must be removed from the body as quickly as possible. Danger of infection! Physicians who are not familiar with this area must consult appropriate information from a competent medical source.
- Check hydraulic hoses regularly and replace if there are any signs of damage or ageing! The replacement lines must comply with the requirements of the device manufacturer.
- Ensure that all line connections are tight before the pressure in the system builds up again.

WARNING! – Hydraulic hose lines are subject to ageing

Effect: Danger to life or serious injuries

The characteristics of the lines change depending on pressure, heat load and the effect of UV rays.

The date of manufacture appears on the hydraulic hoses. This way the age can be ascertained quickly.

By law the hydraulic lines must be replaced after six years.

Use original spare parts when replacing hydraulic hoses!

Note

- When working on the hydraulic system, absolute cleanliness is essential
- Check the hydraulic oil level each time before placing the machine in operation
- Observe the intervals for replacing the hydraulic oil and hydraulic oil filter
- The used oil must be disposed of correctly

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21.1.1 On-board hydraulic system

ENVIRONMENT! - Disposal and storage of used lubricants and oil filters
Effect: Environmental damage
Store or dispose used oil and oil filters according to statutory provisions.

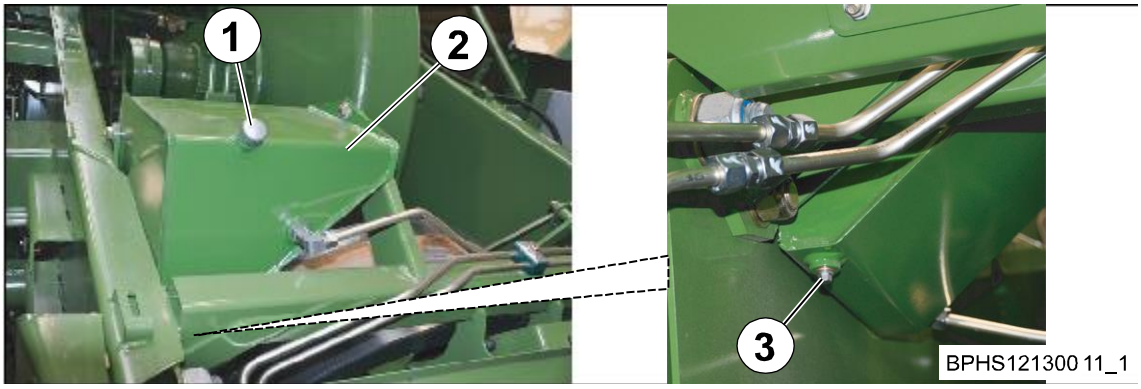

Fig. 232

1) Dipstick/oil filling hole
2) Hydraulic tank
3) Drain screw

To do this:
- Stop the machine.
- Apply the flywheel brake.
- Open bale channel flaps.

The hydraulic cylinders of the bale channel flaps must be completely retracted.
- Provide a suitable container for oil change.
- Unscrew the drain plug.
- Collect the oil in a suitable container.
- Screw in drain plug.
- Screw out dipstick and fill in hydraulic oil.
- Check the oil level with dipstick.

Oil quality/amount of oil: refer to chapter entitled Technical Data of Machine “Operating Materials”

Oil level check:
- Screw out inspection screw.
- Oil level up to control hole.

If the oil reaches the control hole:
- Screw in the inspection screw and tighten it securely.

If the oil does not reach the control hole:
- Screw out filler plug.
- Top up oil via oil filling hole until the control hole is reached.
- Screw in the inspection screw and the filler plug and tighten them securely.

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21.2 High-pressure filter

The filter takes up depositions of solid particles of the hydraulic system. The filtering of the hydraulic circuit serves as a prevention of damages on components of the circuit. The filter is equipped with an optical contamination indicator (7). The contamination indicator (7) informs optical about the degree of contamination of the filter

Note

Check the contamination indicator before the machine is used and exchange the contaminated filter element if necessary.

When starting in cold condition the button on the contamination indicator (7) could hop out. Only press the button back in after achieving the operating temperature. In case it immediately hops out again, the filter element needs to be changed.

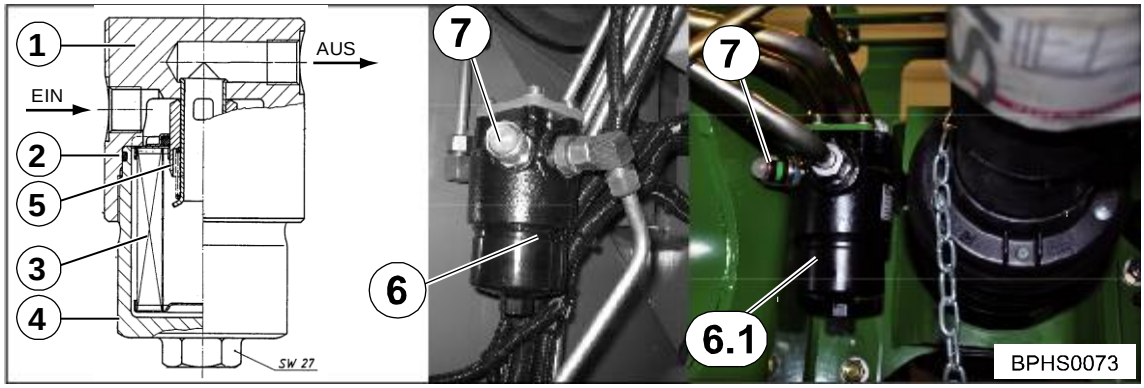

Fig. 233

Replacing the Filter Element

The filter (6) of the on-board hydraulic system is located in front of the twine box on the left side of the machine.
The filter (6.1) for the work hydraulics is located in the front area of the drawbar.

ENVIRONMENT! - Disposal and storage of used lubricants and oil filters

Effect: Environmental damage

Store or dispose used oil and oil filters according to statutory provisions.

Collect escaping oil in a suitable container.

- Relieve all pressure from the hydraulic system.
- Unscrew the bottom part of the filter (4) from the top part of the filter (1), clean it and make certain that it is not damaged.•
- Remove the filter element (3) and replace it by a new one with identical properties.
- Push a new filter element (3) onto the valve sleeve (5).
- Check the O-ring seal (2) and, if necessary, replace it by a new one with identical properties.
- Screw the bottom part of the filter (4) onto the top part of the filter until the stop is reached and turn it back one quarter of a revolution.
- Charge the hydraulic system with pressure and check it for leaks.

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21.3 Emergency Manual Activation

In the event the electrical system should fail completely, the valves on the control valve block (work hydraulics) are equipped with an <<emergency manual activation>>.

Comfort version electronics:

Valves (Y3 to Y8 and Y18 to Y22) are activated by screwing in the star screw.

Valves (Y1,Y2 and Y17) can be activated by depressing on the valve with a pointed object.

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21.4 Comfort Hydraulic Bloc Diagram

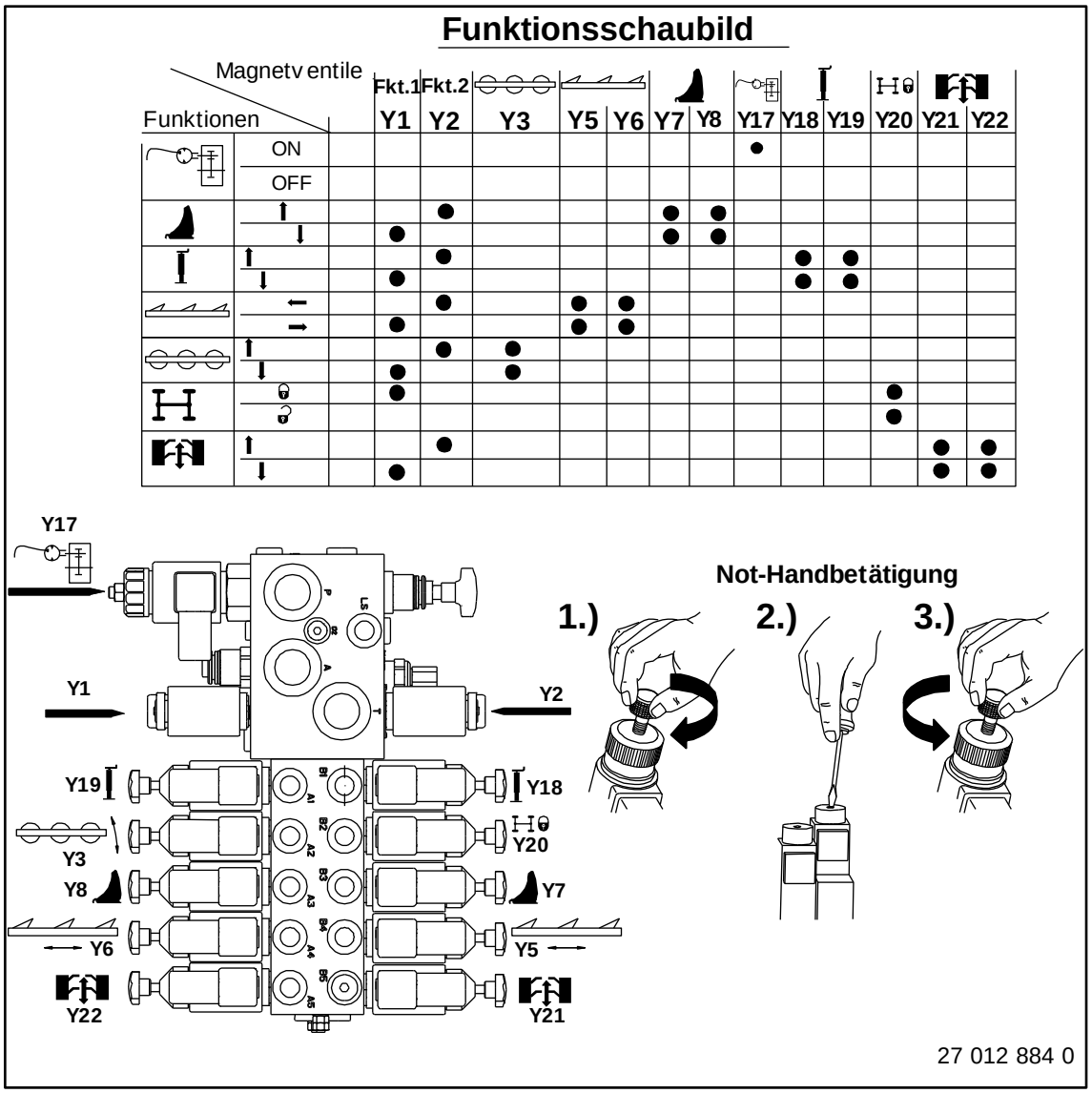

Fig. 234

Y1	Lifting / lowering	Y7,Y8	Cutting system
Y2	Lifting / lowering	Y17	Starting aid
Y3	Roller chute	Y18/Y19	Parking jack
Y5/Y6	Bale ejector	Y20	Steering axle locked
Y21/Y22	Twine boxes		

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21.5 Examples of Emergency Manual Activation

WARNING!

There is an increased risk of injury if you operate the machine using the emergency manual activation.

When the machine is operated using the emergency manual activation, functions are executed immediately without safety prompts. This means there is an increased risk of injury.

- Only persons who are familiar with the machine are permitted to perform an emergency manual activation.
- The person performing the test must know which machine parts are moved by controlling the valves.
- The manipulation of the valves must only be carried out from a safe position outside the range of the machine parts which are moved by the actuators.
- Make certain there are no persons, animals or objects in the danger zone.

The appropriate valves must be activated to carry out a function (e. g. lifting /lowering roller chute). The diagram shows the valves to be switched (comfort hydraulic block). In the following, an example on the basis of the comfort version is described.

21.5.1 Lifting/Lowering Roller Chute

- Screw in the star wheel screw on valve (Y03) “Roller chute”.

To lift:

- Using a pointed object, press in the magnetic plunger of valve (Y1) "Control valve" and hold it pressed in.

To lower:

- Using a pointed object, press in the magnetic plunger of valve (Y2) "Control valve" and hold it pressed in.

Note

After emergency manual activation has been performed, the knurled head screws for emergency manual activation must all be completely screwed out again!

Note

When running the “lifting” function (cutting system/parking jack/roller chute), the control valve must be kept pressed after running the function until the knurled head screws for releasing the valves are entirely screwed out again.

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21.6 Pressing force control (with emergency manual activation)

Warning!
There is an increased risk of injury if adjust the force of pressure in emergency mode.
The force of pressure can be adjusted in emergency mode while the machine is running. As a result, people may be caught by machine components and seriously injured or killed.
- Ensure that the machine can be turned off immediately if there is danger.
- Special caution must be exercised when making the adjustment.

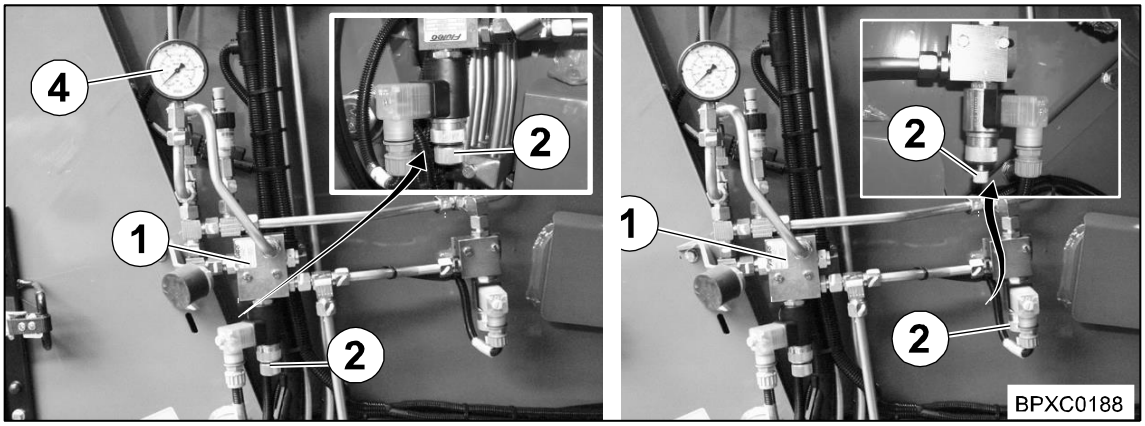

Fig. 235

Setting the baling pressure

Releasing the bale channel chamber

If the electronics fail, you can continue to work with the machine for a short time in emergency mode. The force of pressure is adjusted while the machine is running.

ATTENTION!
Exceeding the force of pressure may damage the machine.
Without electronic control, the maximum force of pressure can be exceeded. This can lead to significant damage to the machine.
- Never work for a long time without the electronic control system.

21.6.1 Setting the baling pressure

The baling pressure on the bale channel chamber flaps can be adjusted on the hydraulic control block (1) on the left side of the machine under the side hood.
To perform a setting:
- Set the desired pressure by slowly screwing in the knurled head screw (2) (the pressure is limited to a maximum of about 100 bar / 1450 PSI)
- Read the pressure on the pressure gauge (4)

Note
After emergency manual activation has been performed, the knurled head screw (2) must be completely screwed out again.

21.6.2 Releasing the bale channel chamber (comfort)

The "Release bale channel flaps" seat valve is located on the right next to the hydraulic control block (1) for pressing force control on the left side of the machine under the side hood.
To perform a setting:
- The bale channel chamber flaps loosen by slowly screwing in the knurled head screw (2) as far as it will go

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22 Maintenance - Gearbox

Note
When checking the oil level on the gearboxes, make sure that the big pack baler is in horizontal position. Use the lower edges of the cross-members as a reference edge.

22.1 Main gearbox

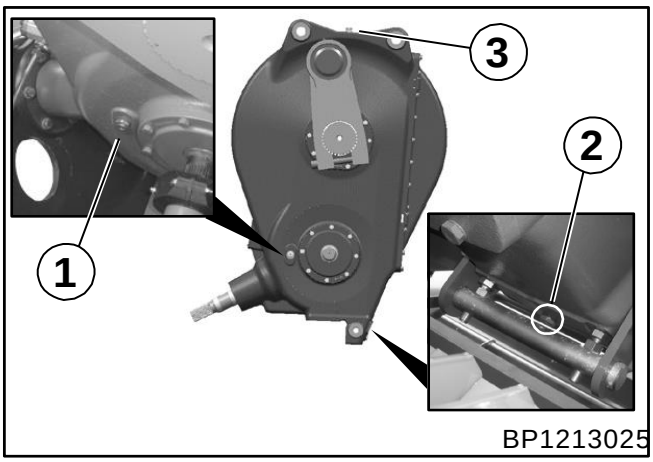

Fig. 236

1) Viewing glass
2) Drain plug
3) Filler plug / oil filling hole

Interval for oil level check and oil change: refer to chapter Maintenance “Maintenance Table”

Oil quality/amount of oil: refer to chapter entitled Technical Data of Machine “Operating Materials”

Used oil disposal: see chapter Safety "Consumables"

- Shut down and safeguard the machine, see chapter Safety -> Safety routines, "Shutting down and safeguarding the machine".

Oil level check:

- Oil level to the centre of the viewing glass.

If the oil does not reach the centre of the viewing glass:

- Screw out filler plug.
- Top up oil via oil filling hole until the centre of the viewing glass is reached.
- Screw in filler plug and tighten it securely.

Oil change:

Collect escaping oil in a suitable container.

- Screw out filler plug.
- Screw out oil drain plug and drain the oil.
- Screw in oil drain plug and tighten it securely.
- Top up new oil via oil filling hole until the centre of the viewing glass is reached.
- Screw in filler plug and tighten it securely.

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22.2 Packer gearbox

The packer gearbox (3) is located on the left side of the machine.

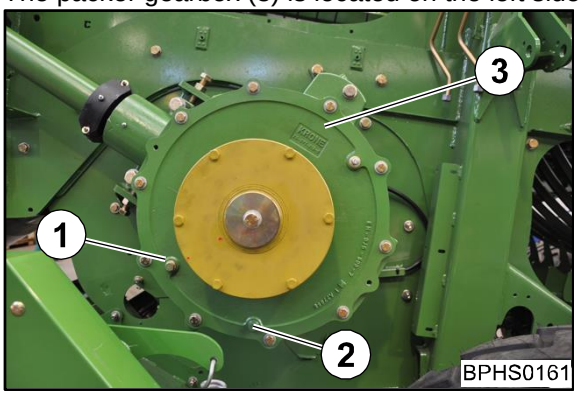

Fig. 237

1) Inspection screw / control hole
2) Drain plug

Interval for oil level check and oil change: refer to chapter Maintenance “Maintenance Table”

Oil quality/amount of oil: refer to chapter entitled Technical Data of Machine “Operating Materials”

Used oil disposal: see chapter Safety "Consumables"

- Shut down and safeguard the machine, see chapter Safety -> Safety routines, "Shutting down and safeguarding the machine".

Oil level check:

- Screw out inspection screw.
- Oil level up to control hole.

If the oil reaches the control hole:

- Screw in the inspection screw and tighten it securely.

If the oil does not reach the control hole:

- Top up oil via control hole until the control hole is reached.
- Screw in the inspection screw and tighten it securely.

Oil change:

Collect escaping oil in a suitable container.

- Screw out oil drain plug and drain the oil.
- Screw out inspection screw.
- Screw in oil drain plug and tighten it securely.
- Top up new oil via control hole until the control hole is reached.
- Screw in the inspection screw and tighten it securely.

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22.3 Transfer gearbox

The transfer gearbox (3) is located on the left side of the machine.

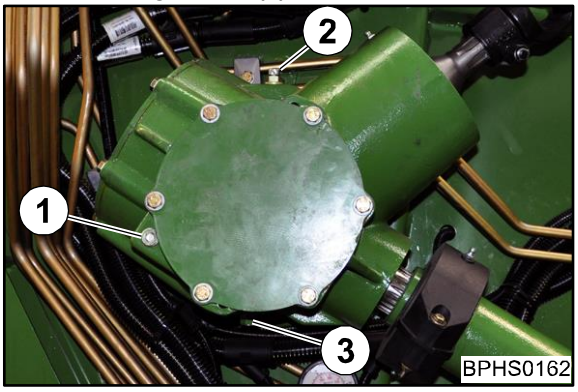

Fig. 238

1) Inspection screw / control hole
2) Filler plug / filling hole
3) Drain plug

Interval for oil level check and oil change: refer to chapter Maintenance “Maintenance Table”

Oil quality/amount of oil: refer to chapter entitled Technical Data of Machine “Operating Materials”

Used oil disposal: see chapter Safety "Consumables"

- Shut down and safeguard the machine, see chapter Safety -> Safety routines, "Shutting down and safeguarding the machine".

Oil level check:

- Screw out inspection screw.
- Oil level up to control hole.

If the oil reaches the control hole:

- Screw in the inspection screw and tighten it securely.

If the oil does not reach the control hole:

- Screw out filler plug.
- Top up oil via oil filling hole until the control hole is reached.
- Screw in the inspection screw and the filler plug and tighten them securely.

Oil change:

Collect escaping oil in a suitable container.

- Screw out oil drain plug and drain the oil.
- Screw out inspection screw and filler plug.
- Screw in oil drain plug and tighten it securely.
- Top up new oil via oil filling hole until the control hole is reached.
- Screw in the inspection screw and the filler plug and tighten them securely.

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22.4 Pick-up gearbox

Design without cutting system

The upper (4a) and lower (4b) Pick-up gearboxes are located on the right side of the machine.

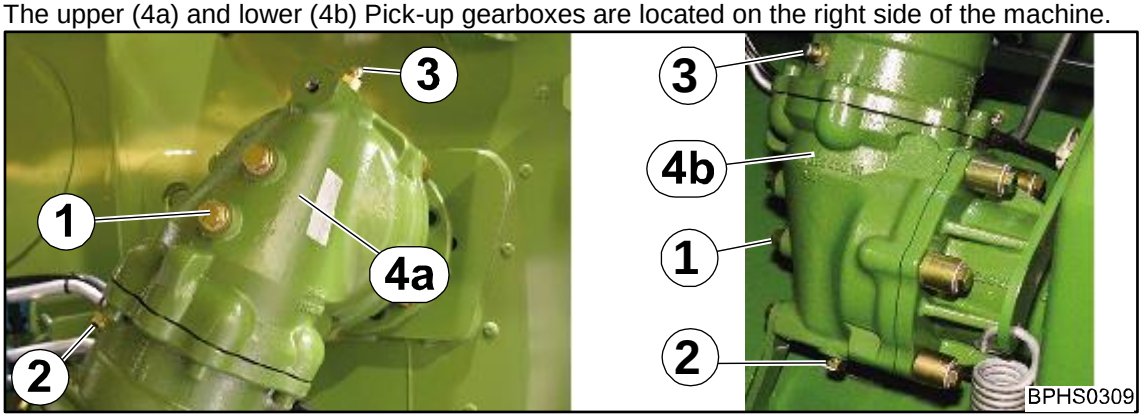

Fig. 239

1) Inspection screw / inspection hole
2) Drain plug
3) Filler plug / filling hole
4a) Pick-up gearbox top
4b) Pick-up gearbox bottom

Interval for oil level check and oil change: refer to chapter Maintenance “Maintenance Table”

Oil quality/amount of oil: refer to chapter entitled Technical Data of Machine “Operating Materials”

Used oil disposal: see chapter Safety "Consumables"

- Shut down and safeguard the machine, see chapter Safety -> Safety routines, "Shutting down and safeguarding the machine".

Oil level check:

- Screw out inspection screw.
- Oil level up to control hole.

If the oil reaches the control hole:

- Screw in the inspection screw and tighten it securely.

If the oil does not reach the control hole:

- Screw out filler plug.
- Top up oil via oil filling hole until the control hole is reached.
- Screw in the inspection screw and the filler plug and tighten them securely.

Oil change:

Collect escaping oil in a suitable container.

- Screw out oil drain plug and drain the oil.
- Screw out inspection screw and filler plug.
- Screw in oil drain plug and tighten it securely.
- Top up new oil via oil filling hole until the control hole is reached.
- Screw in the inspection screw and the filler plug and tighten them securely.

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22.5 Cutting System Gear

Design with cutting system

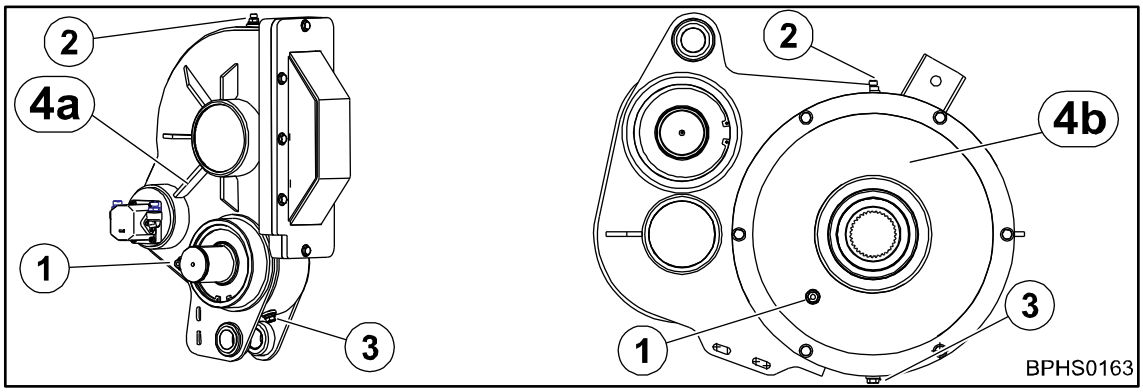

Fig. 240

1) Inspection screw / control hole
2) Filler plug / filling hole
3) Drain plug
4a) Cutting system gear front
4b) Cutting system gear rear

Interval for oil level check and oil change: refer to chapter Maintenance “Maintenance Table”

Oil quality/amount of oil: refer to chapter entitled Technical Data of Machine “Operating Materials”

Used oil disposal: see chapter Safety "Consumables"

- Shut down and safeguard the machine, see chapter Safety -> Safety routines, "Shutting down and safeguarding the machine".

Oil level check:

- Screw out inspection screw.
- Oil level up to control hole.

If the oil reaches the control hole:

- Screw in the inspection screw and tighten it securely.

If the oil does not reach the control hole:

- Screw out filler plug.
- Top up oil via oil filling hole until the control hole is reached.
- Screw in the inspection screw and the filler plug and tighten them securely.

Oil change:

Collect escaping oil in a suitable container.

- Screw out oil drain plug and drain the oil.
- Screw out inspection screw and filler plug.
- Screw in oil drain plug and tighten it securely.
- Top up new oil via oil filling hole until the control hole is reached.
- Screw in the inspection screw and the filler plug and tighten them securely.

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22.6 Angular gearbox

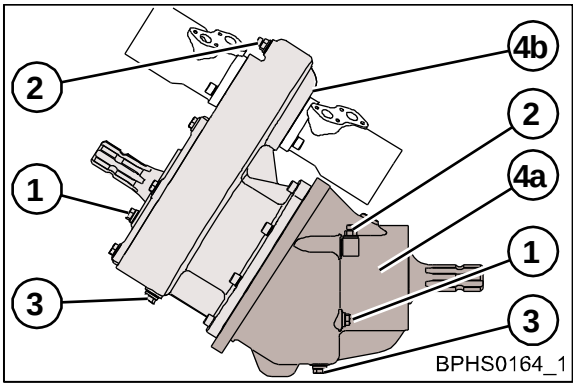

Fig. 241

1) Inspection screw / control hole
2) Filler plug / filling hole
3) Drain plug
4a) Angular gear front
4b) Angular gear rear

Interval for oil level check and oil change: refer to chapter Maintenance “Maintenance Table”

Oil quality/amount of oil: refer to chapter entitled Technical Data of Machine “Operating Materials”

Used oil disposal: see chapter Safety "Consumables"

- Shut down and safeguard the machine, see chapter Safety -> Safety routines, "Shutting down and safeguarding the machine".

Oil level check:

- Screw out inspection screw.
- Oil level up to control hole.

If the oil reaches the control hole:

- Screw in the inspection screw and tighten it securely.

If the oil does not reach the control hole:

- Screw out filler plug.
- Top up oil via oil filling hole until the control hole is reached.
- Screw in the inspection screw and the filler plug and tighten them securely.

Oil change:

Collect escaping oil in a suitable container.

- Screw out oil drain plug and drain the oil.
- Screw out inspection screw and filler plug.
- Screw in oil drain plug and tighten it securely.
- Top up new oil via oil filling hole until the control hole is reached.
- Screw in the inspection screw and the filler plug and tighten them securely.

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23 Maintenance - Brake System

WARNING!

If the basic safety instructions are not followed, people may be seriously injured or killed.

- To avoid accidents, the basic safety instructions in the chapter Safety must have been read and followed, see chapter Safety "Basic safety instructions".

WARNING!

If the safety routines are not adhered to, people may be seriously injured or killed.

- To avoid accidents, the safety routines in the chapter Safety must be read and followed, see chapter Safety "Safety routines".

WARNING!

Risk of injury resulting from damage to the brake system

Damage to the brake system may impair the operational safety of the machine and cause accidents. As a result, people may be seriously injured or killed.

- Adjustment and repair work on the brake system must only be performed by authorised professional workshops or recognised brake services.
- Have the brakes checked regularly by a specialist workshop.
- Have damaged or worn brake hoses replaced immediately by a specialist workshop.
- Irregularities or malfunctions in the brake system must be rectified immediately by a specialist workshop.
- Only a machine with an intact brake system may be used for work in the field or for travelling on roads.
- No changes may be made to the brake system without the approval of KRONE.
- KRONE is not responsible for natural wear, defects caused by overload or changes made to the brake system.

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23.1 Compressed-air reservoir

WARNING!
Risk of injury from corroded or damaged compressed air reservoirs.
Damaged or corroded compressed air reservoirs may burst and cause serious injuries.
- Observe the inspection intervals according to the maintenance table, see chapter Maintenance Engine "Maintenance table".
- Have damaged or corroded compressed air reservoirs replaced immediately by a service centre.

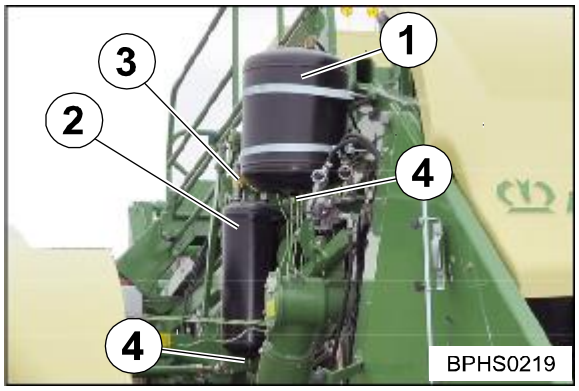

Fig. 242

1)	Compressed air reservoir, for compressed air brake version	2)	Compressed air reservoir for knotter cleaning
3)	Pressure line	4)	Drain valve

Reducing the pressure

- Shut down and safeguard the machine, see chapter Safety -> Safety routines, "Shutting down and safeguarding the machine".
- Activate the drain valve on the compressed air reservoir until the excess pressure is reduced.

Checking the compressed air reservoir

Have the interior area of the compressed air reservoir checked in accordance with national requirements. A check is recommended at intervals of 2 years.

23.1.1 Checking the drain valve

ATTENTION!
Water in the plant will cause corrosion damage.
- Check and clean the drain valve according to the maintenance table, see chapter Maintenance "Maintenance table".
- Immediately replace a defective drain valve.

- Shut down and safeguard the machine, see chapter Safety -> Safety routines, "Shutting down and safeguarding the machine".
- Open the drain valve and allow the condensation to run out.
- Check the drain valve, clean it and screw it back in.

23.1.2 Retighten tensioning belts

- Check the tensioning belts (3) of the compressed air reservoir to ensure they are properly seated
- If necessary, retighten the tensioning belts with the nuts (4)

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23.2 Adjusting the transfer mechanism

WARNING!

Insufficient technical knowledge to carry out adjustment and repair work poses an increased risk of injury.

Insufficient knowledge of the brake system may impair the operational safety of the machine and cause accidents. As a result, people may be seriously injured or killed.

- Adjustment and repair work on the brake system must only be performed by authorised professional workshops.

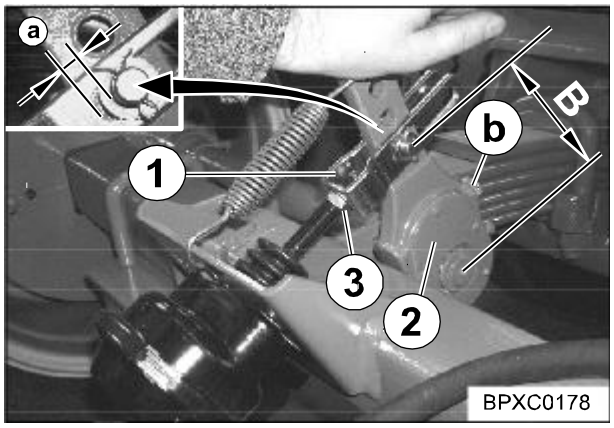

Fig. 243

After the first few kilometres of driving, the transfer mechanisms and the brake linings of the brake drum will have adjusted. The play resulting from this must be compensated for.

The setting may only be performed by authorised professional workshops.

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23.2.1 Pneumatic brake cylinders

WARNING!

Insufficient technical knowledge to carry out adjustment and repair work poses an increased risk of injury.

Insufficient knowledge of the brake system may impair the operational safety of the machine and cause accidents. As a result, people may be seriously injured or killed.

- Adjustment and repair work on the brake system must only be performed by authorised professional workshops.

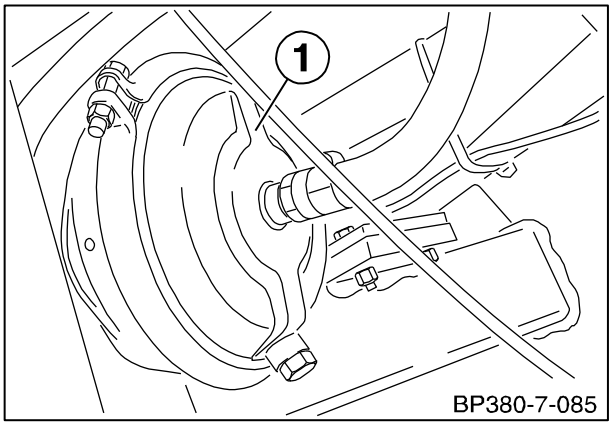

Fig. 244

No special maintenance is required for the brake cylinders (1). At least once every two years the membrane brake cylinders should be removed, disassembled, cleaned, fitted with new wear parts and reassembled.

The setting may only be performed by authorised professional workshops.

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24 Maintenance Compressor

24.1 Compressor

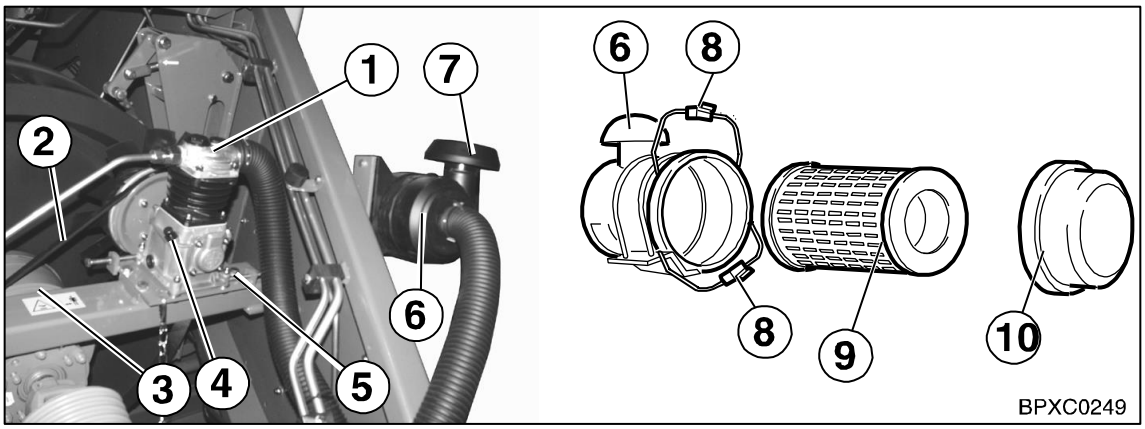

Fig. 245

The compressed air for cleaning the knotter is supplied via a compressor (1) which is installed between the drawbar bars (except for large square balers which are fitted with pneumatic brakes).

Note

If balers are fitted with a pneumatic brake, the pneumatic connection on the tractor is used to fill the compressed air reservoir for cleaning the knotter.

The compressor is driven via a V-belt pulley (3) mounted on the flywheel and a V-belt (2). The tension on the V-belt can be changed by moving the compressor in the oblong holes (5).

Before using the compressor check its oil level daily with the oil dipstick (4). If required, top up the oil (engine oil SAE 10W-40). The specification of the required oil is listed in the "Technical Data", see chapter Technical data of the machine "Technical Data".

Note

The suction air filter (6) must be cleaned at least once a day or several times a day in case of high dust load. For heavy accumulations of dirt in the filter, the intake manifold (7) can be attached directly to the cabin roof of the tractor using a retrofit kit (order No 287 363).

Filter cleaning

- Swivel the retaining clip (8) on the air filter (6) up/down.
- Remove the cover (10).
- Remove the filter cartridge (9), knock out the dirt and blow it out from the inside to the outside with an air jet.
- Remove the cover (10) and knock out the dirt.
- Install the filter cartridge.
- Place the cover on the filter and secure it in place with retaining clips.

Note

Ensure that the filter pan is tightly closed with the air filter.

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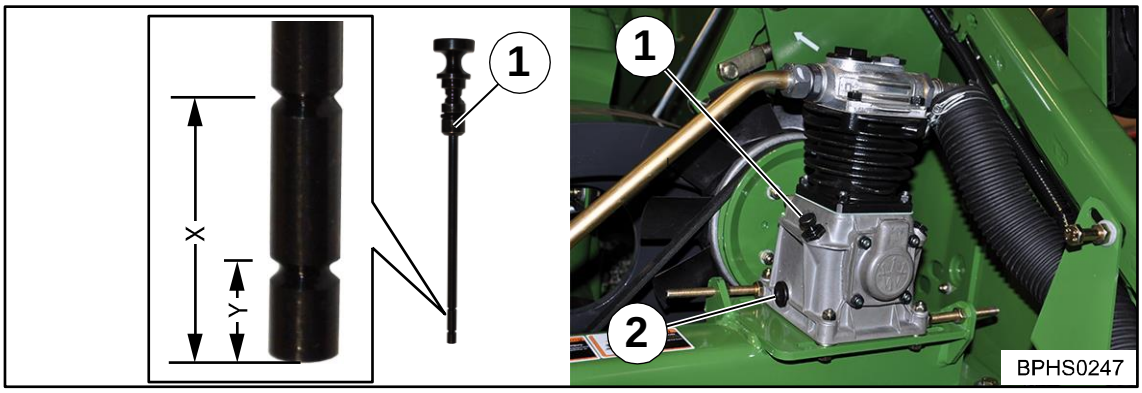

Fig. 246

1) Oil dip stick / oil filling hole
2) Drain plug

Interval for oil level check and oil change: refer to chapter Maintenance “Maintenance Table”

Oil quality/amount of oil: refer to chapter entitled Technical Data of Machine “Operating Materials”

Clean the oil dip stick with a non-fibrous cloth.

Oil level check:

- Thoroughly clean the area around the oil dip stick.
- Pull out the oil dip stick, clean it and insert it completely.
- Pull out the oil dip stick and check the oil level.

The oil level is OK if it is between the markings „(Y)“ and „(X)“.

- Insert the oil dip stick.

Top up oil if the oil level is below the marking “(Y)”.

To do this:

- Top up the oil via filling hole until the marking “(X)” is reached.
- Insert the oil dip stick.

Oil change:

Collect escaping oil in a suitable container.

- Pull out the oil dip stick and clean it.
- Screw out oil drain plug and drain the oil.
- Screw in oil drain plug and tighten it securely.
- Top up new oil via oil filling hole until the marking “(X)” is reached.
- Insert the oil dip stick.

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25 Maintenance – lubrication

WARNING!

If the basic safety instructions are not followed, people may be seriously injured or killed.

- To avoid accidents, the basic safety instructions in the chapter Safety must have been read and followed, see chapter Safety "Basic safety instructions".

WARNING!

If the safety routines are not adhered to, people may be seriously injured or killed.

- To avoid accidents, the safety routines in the chapter Safety must be read and followed, see chapter Safety "Safety routines".

CAUTION!

Environmental damage caused by incorrect storage and dispose of consumables!

- Store consumables in suitable containers according to statutory provisions.
- Dispose of used consumables according to statutory provisions.

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25.1 Lubricants

Depending on the version, the machine is equipped with different lubrication systems.
Soft, supple NLGI Class 2 lithium soap greases in accordance with DIN 51825 with EP additives should be used as lubricating greases. KRONE recommends not using lubricating greases with any other base material.

Manufacturer	based on mineral oil
ARAL	Long-term grease H
BP	Energrease LS-EP2
DEA	Glissando EP2
FINA	Marson EPL 2A
Shell	Alvania Ep2
ESSO	EGL 3144

Lubrication points on the machine must be lubricated at regular intervals. The position of the lubrication points and the lubrication intervals can be seen in the lubrication plans in the operating instructions. Remove the grease that comes out of the bearing points after lubrication.

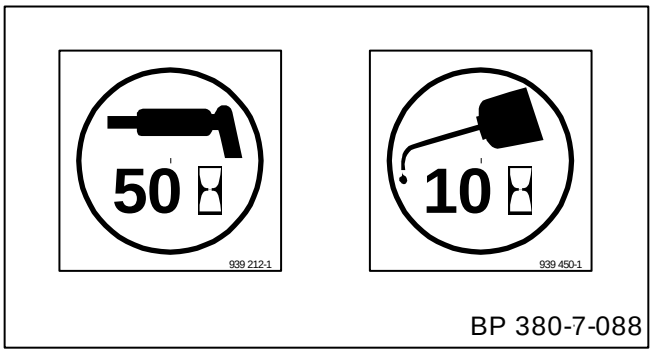

Fig. 247

Lubrication intervals:

10 h corresponds to about once a day
50 h corresponds to about once a week
200 h corresponds to about once a year

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25.2 Lubricating the cardan shaft

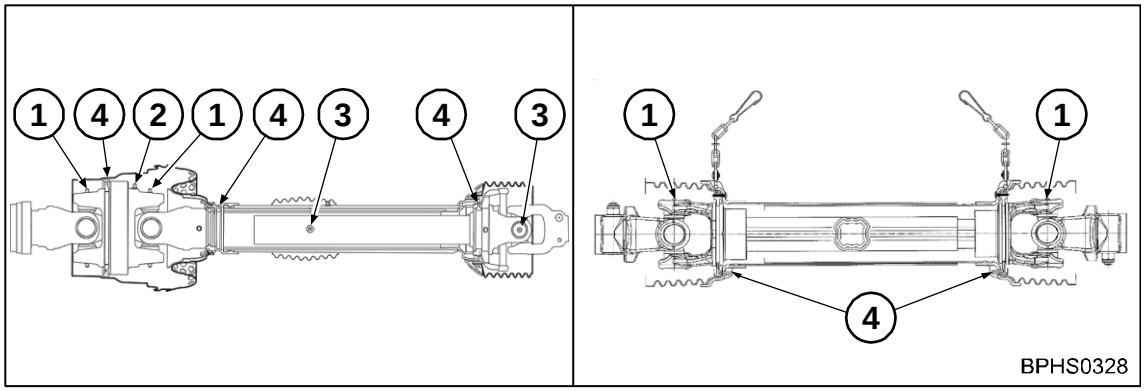

Fig. 248

Main drive universal shaft — Flywheel universal shaft

Lubricate the universal shafts at the marked lubrication points by means of multi-purpose grease. The following table provides information on lubrication interval and gram number per lubrication point. Observe operating instructions of universal shaft manufacturer.

Pos.	BiG Pack 1290 HDP II	Lubrication interval
1	30 g	40 h
2	75 g	
3	15 g	
4	6 g	

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25.3 Lubricating the rollers for the blade lever

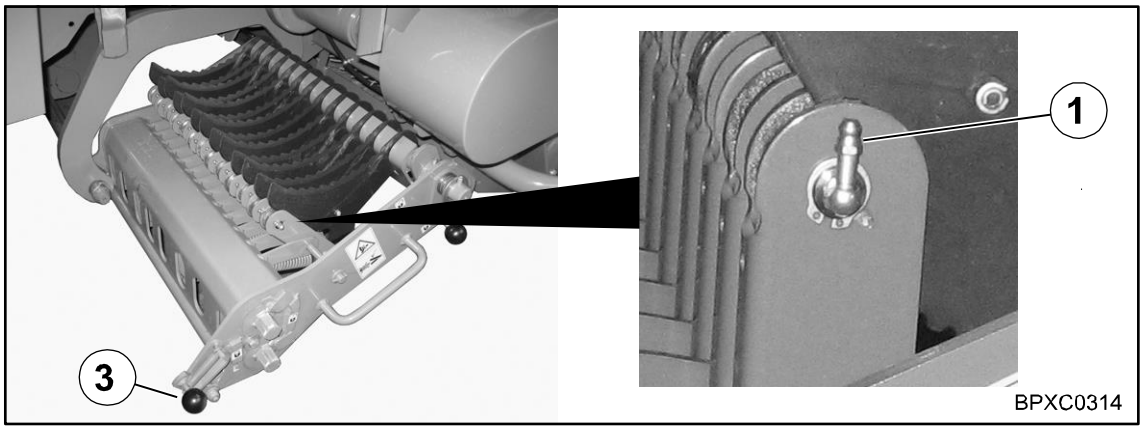

Fig. 249

- Lower the cutting system with the tractor hydraulics (with the comfort electronics system: Activate the tractor hydraulics and hold down “Lower blade bar” on the control unit display or on the machine buttons until the cutting system is lowered all the way down)
- Remove the ignition key and turn off the electrical system on the control unit
- Apply the flywheel brake
- Secure the tractor and machine against rolling
- Unlock the cutting system half and remove it as far as the stop (right hand and left hand machine side)
- Lubricate all grease nipples for the rollers of the blade levers
- Push in the half of the cutting system on the side (right hand and left hand side of the machine) until the locking lever (3) snaps into place by itself
- Raise the cutting system hydraulically

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25.4 Manual lubrication points on the machine

Left-hand Side of the Machine

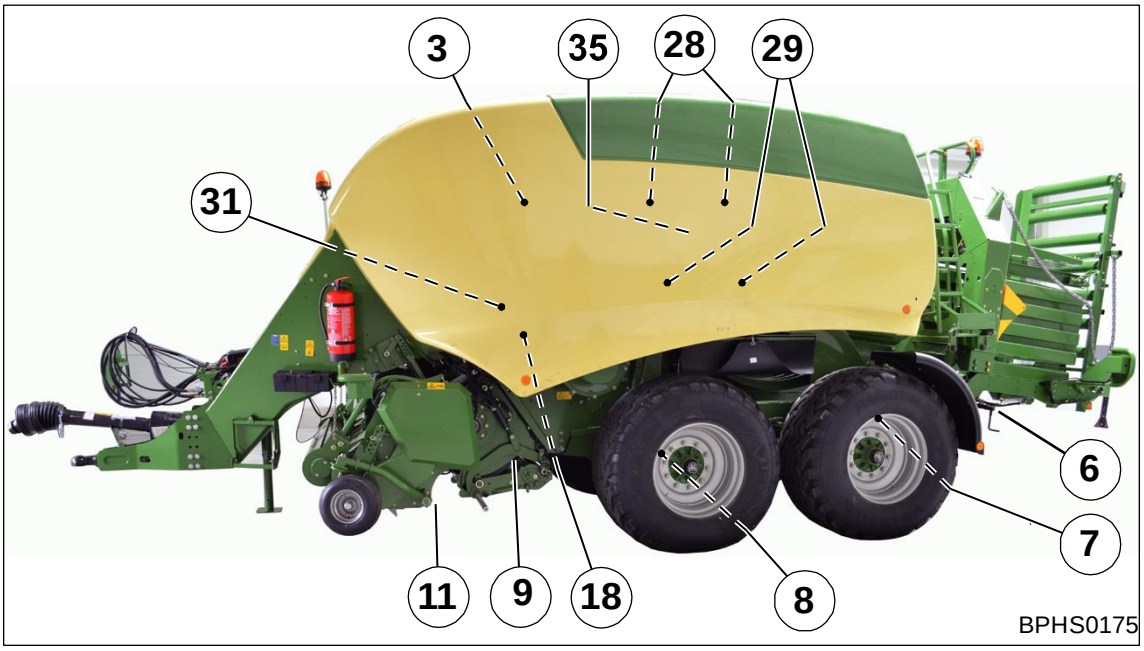
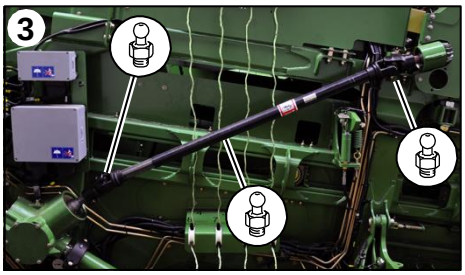
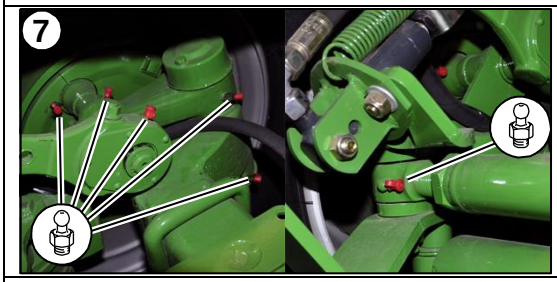
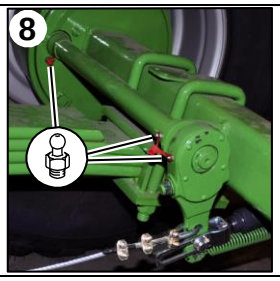
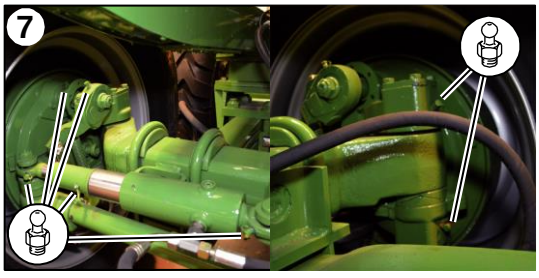
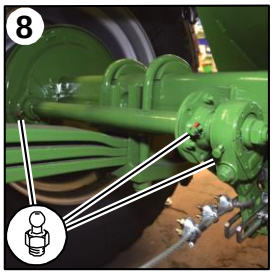


Fig. 250Left-hand side of the machine

Every 50 hours

		
		COLAERT unit
		BPW unit

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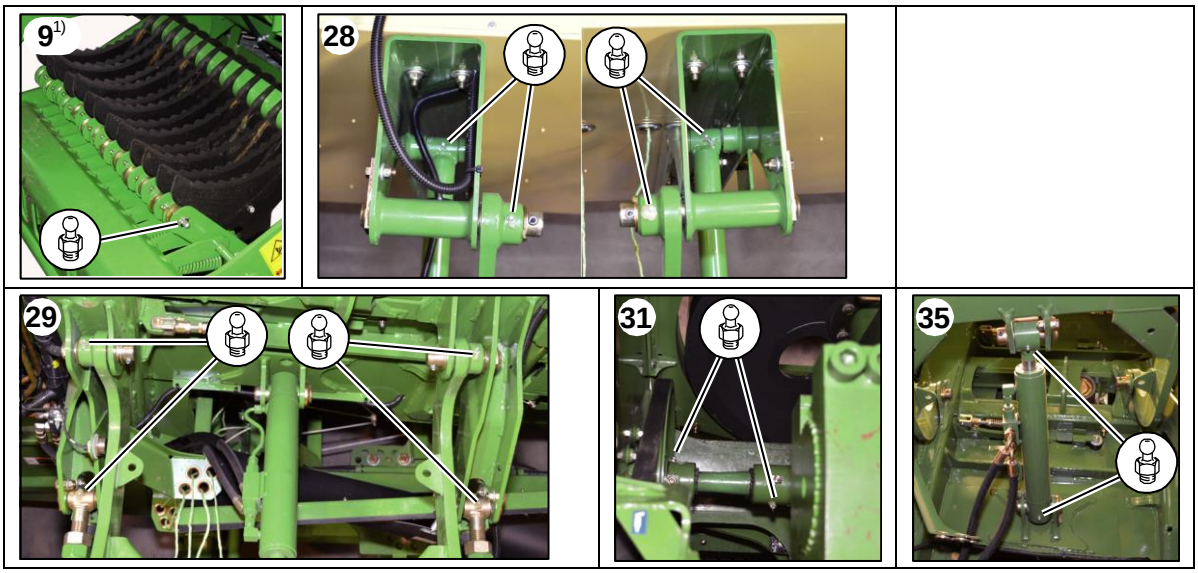
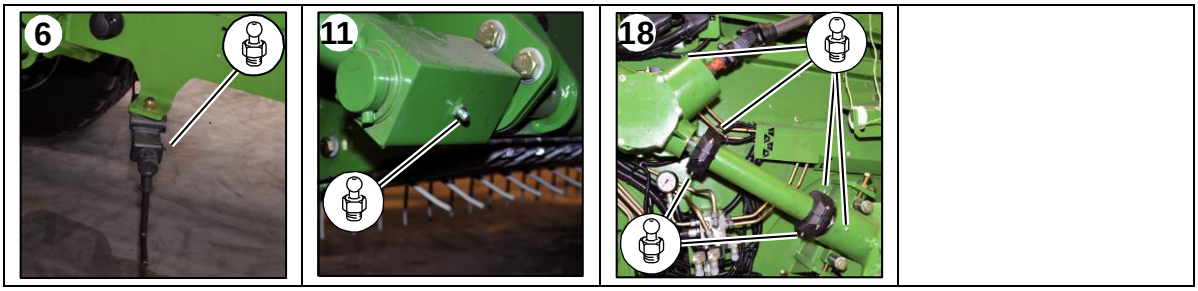


Every 200 hours



[1]) for design with cutting system only

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Right-hand Side of the Machine

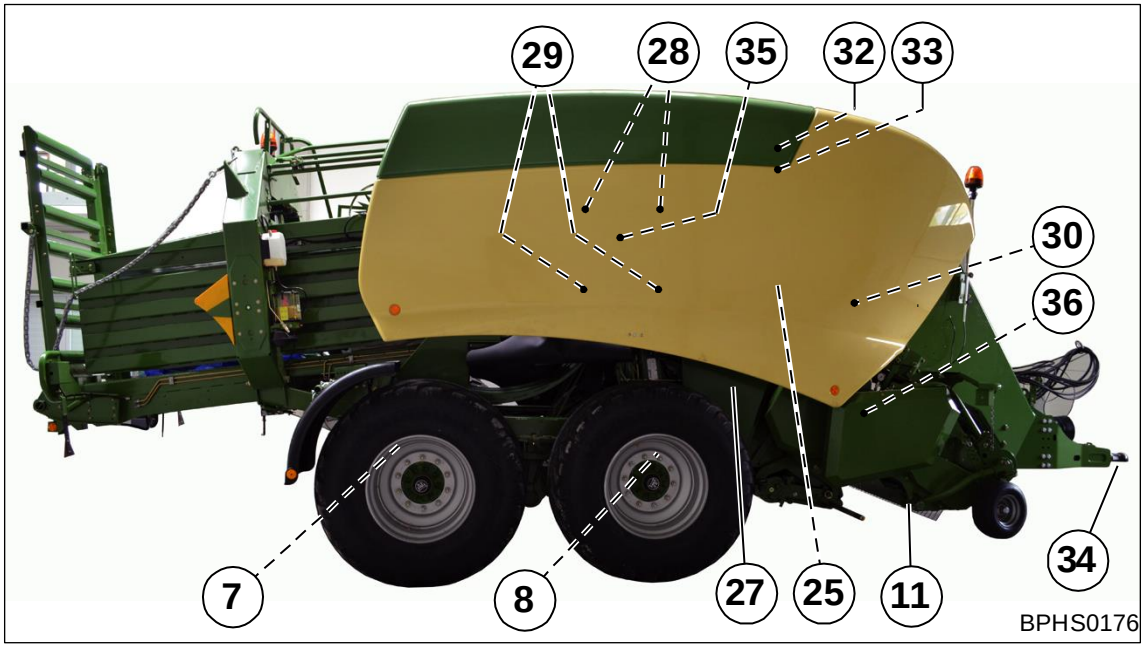
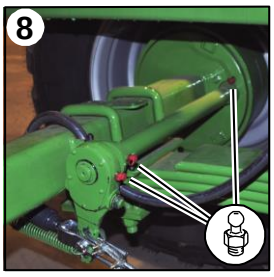
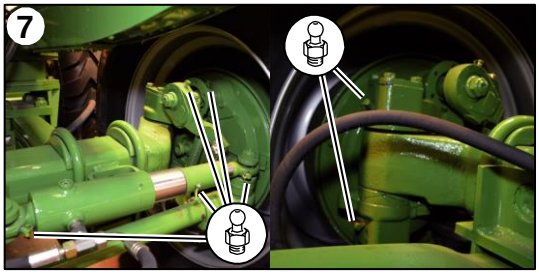
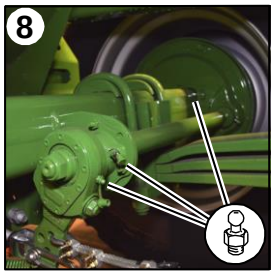
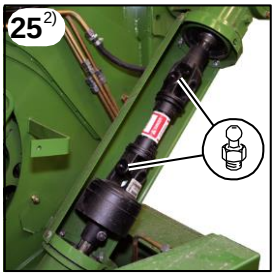
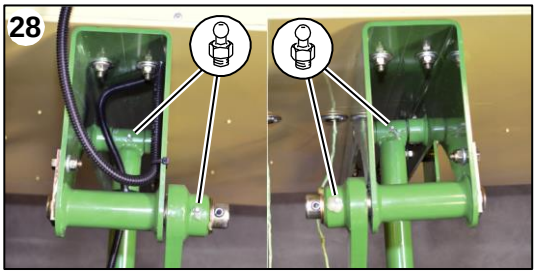


Fig. 251Right-hand side of the machine

Every 50 hours

		COLAERT unit
		BPW unit
 		

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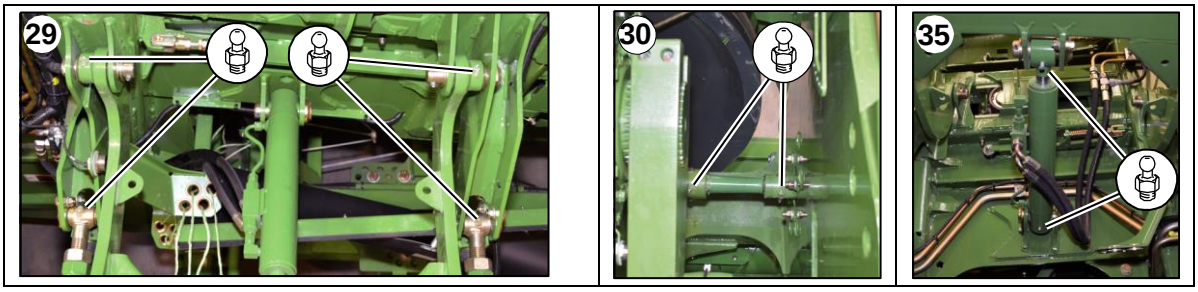
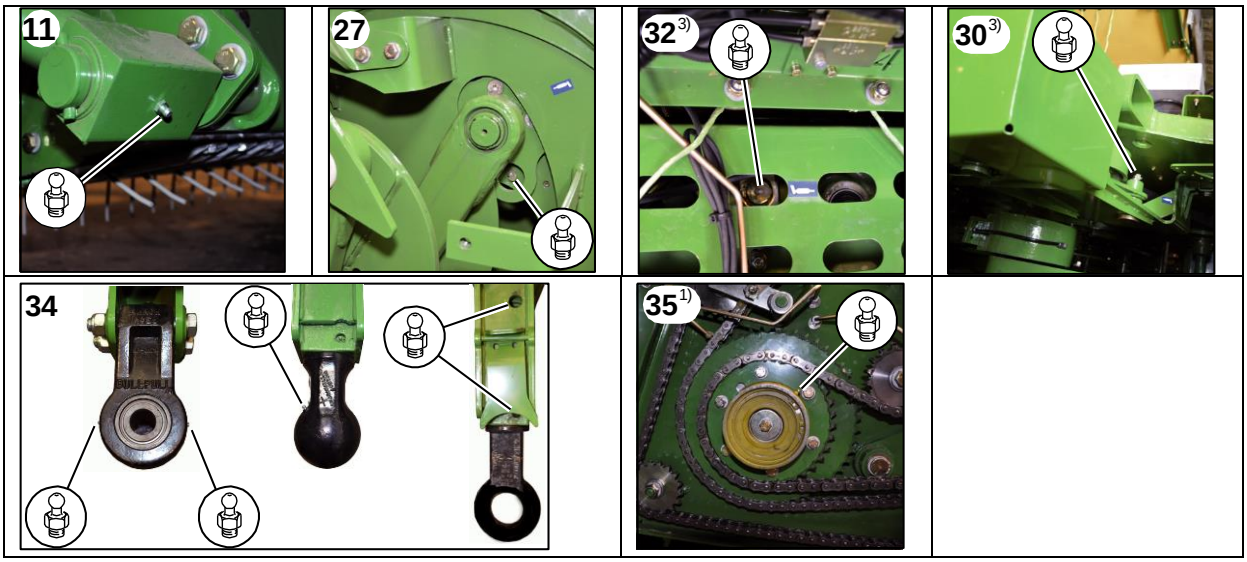


Every 200 hours



[1]) for design with cutting system only
[2]) for design without cutting system only
[3]) for design with knotter fan only

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26 Maintenance – Central Lubrication

26.1.1 Automatic centralised lubrication system (optional)

Functional description of the BEKA-MAX grease central lubrication system

The BEKA-MAX grease central lubrication system is a progressive system. Progressive means that all lubrication points included in the central lubricating system are lubricated one after the other. Lubricating the lubrication points one after the other makes it very easy to monitor a progressive central lubrication system with an excess pressure valve. If a lubrication point does not take any grease from the distributor, the progressive distributor is blocked and a pressure of 280 bar /4060 PSI builds up in the central lubrication system. Grease emerging on the excess pressure valve of the pump element indicates a blockage.

Note

An error message will appear in the display.

Layout of the BEKA-MAX grease central lubrication system

An electrically driven EP-1 plunger pump pumps lubricant to the main progressive distributor. The task of this element is to distribute grease to the sub-progressive distributors at the correct ratio. The sub-progressive distributors then pump the grease to the individual lubrication points.

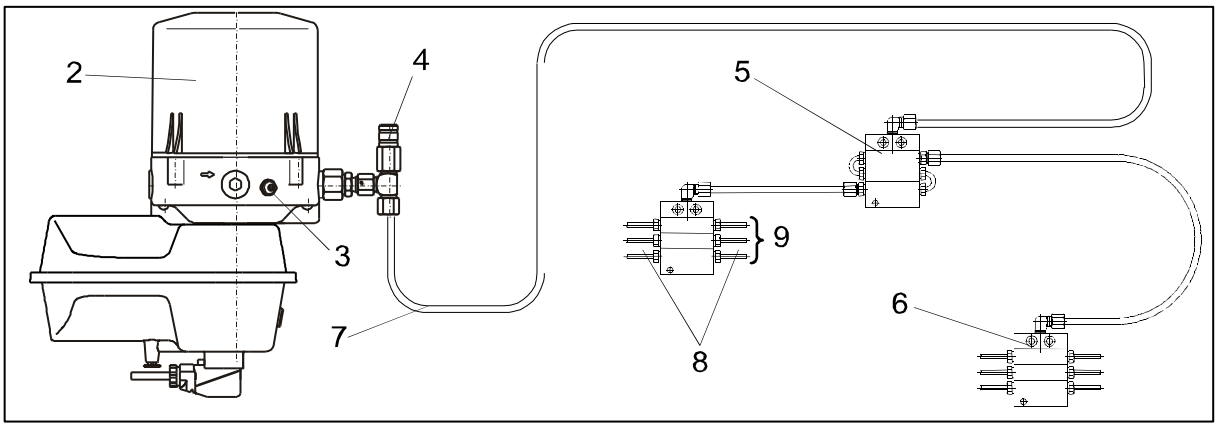

Fig. 252

2) See-through reservoir
3) Filling nipple
4) Excess pressure valve
5) Main progressive distributor
6) Auxiliary progressive distributor
7) Main line
8) Lubrication lines
9) Lubrication points

Description of the control unit

Lubricating and pause times are regulated by the control unit in the driver's cab of the tractor (refer to chapter Info-Center “Menu 1-5 central lubrication”).

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27 Maintenance – electrical system

27.1 Position of the Sensors (left-hand side of the machine)

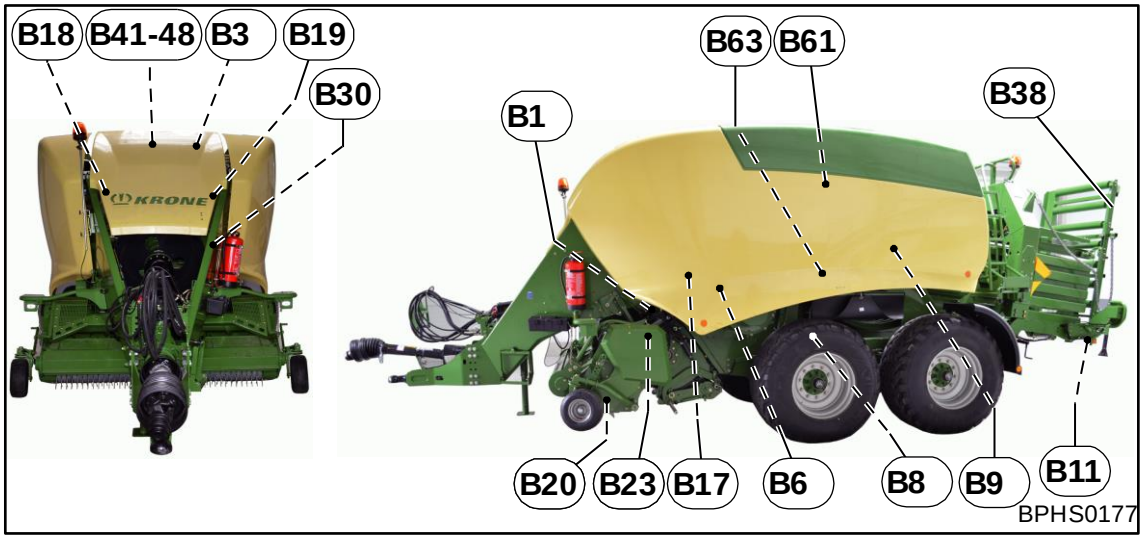
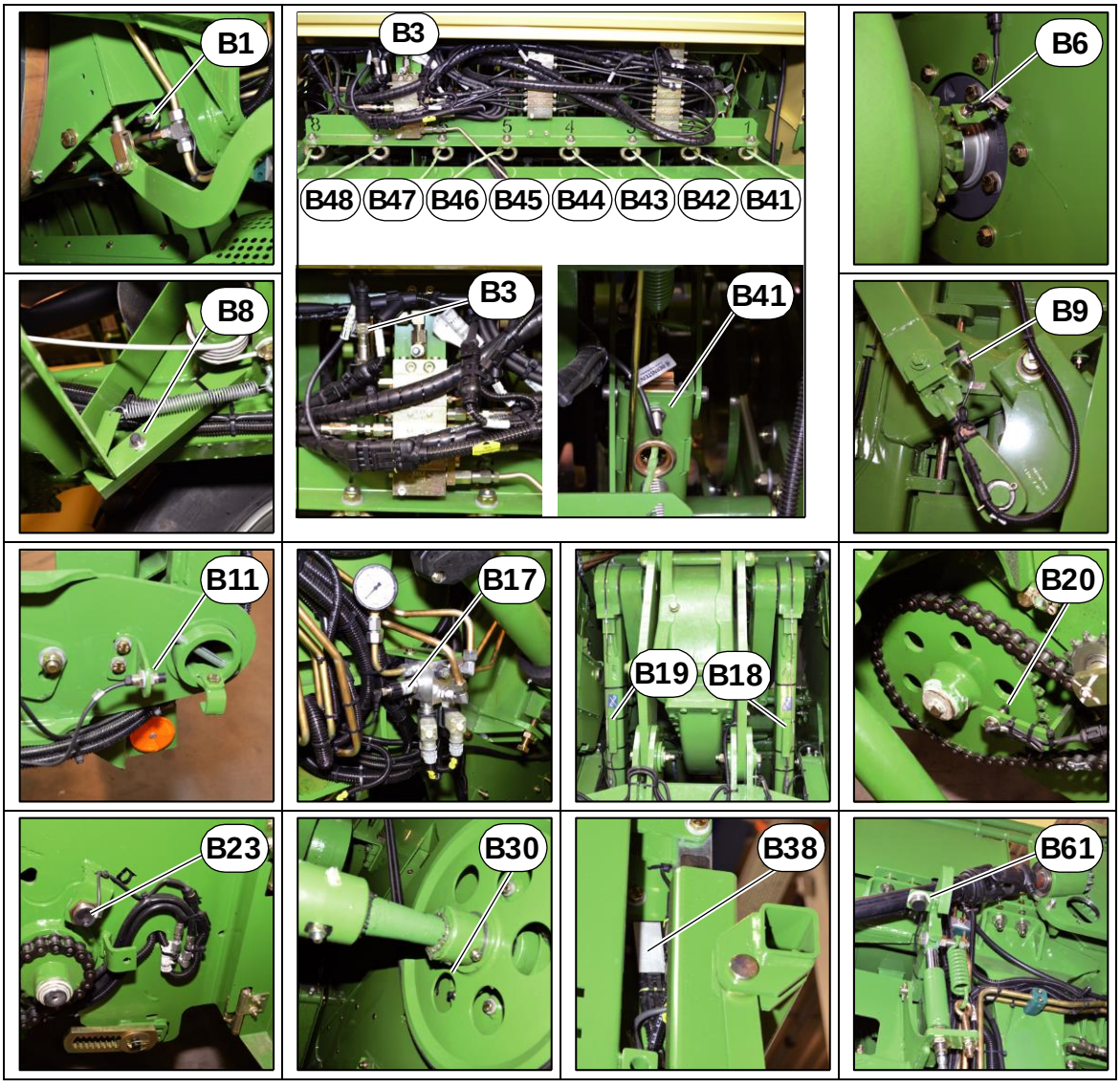


Fig. 253



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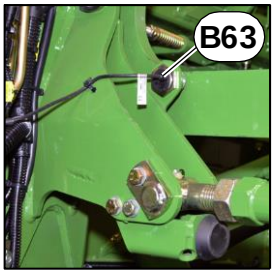

No.	Sensor designation	No.	Sensor designation
B1	Flywheel brake	B3	Central lubrication
B6	Packer monitoring	B8	Twine monitoring
B9	Needle connecting rod left	B11	Bale chute
B17	Bale channel flap pressure	B18	Plunger force right
B19	Plunger force left	B20	Pick-up
B23	Position of pick-up	B30	P.T.O. speed
B38	Acceleration sensor	B41 to B48	Upper twine monitoring
B61	Twine box left in transport position	B63	Twine box left in maintenance position

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27.2 Position of the Sensors (right-hand side of the machine)

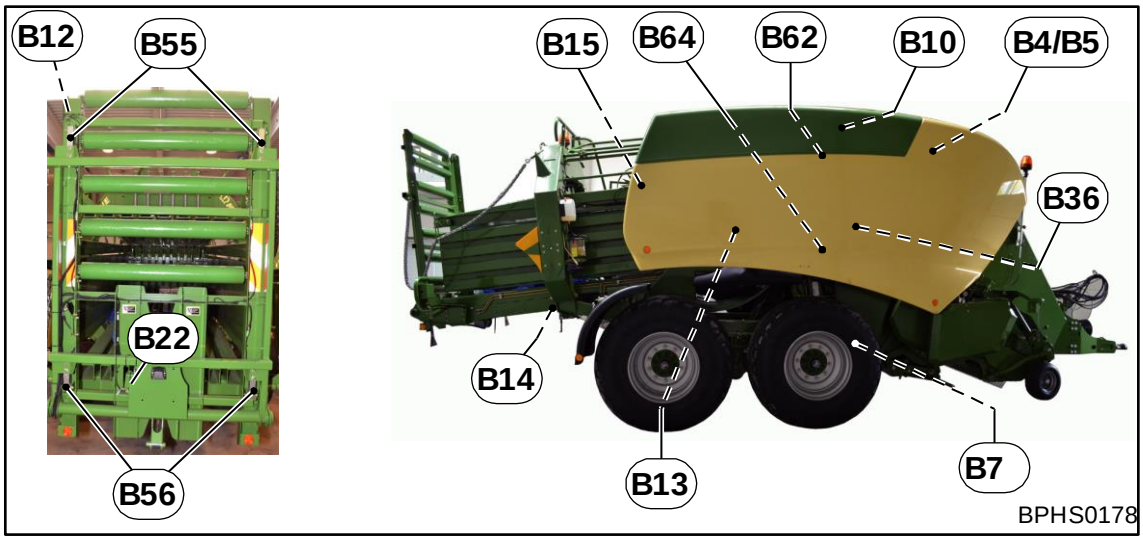
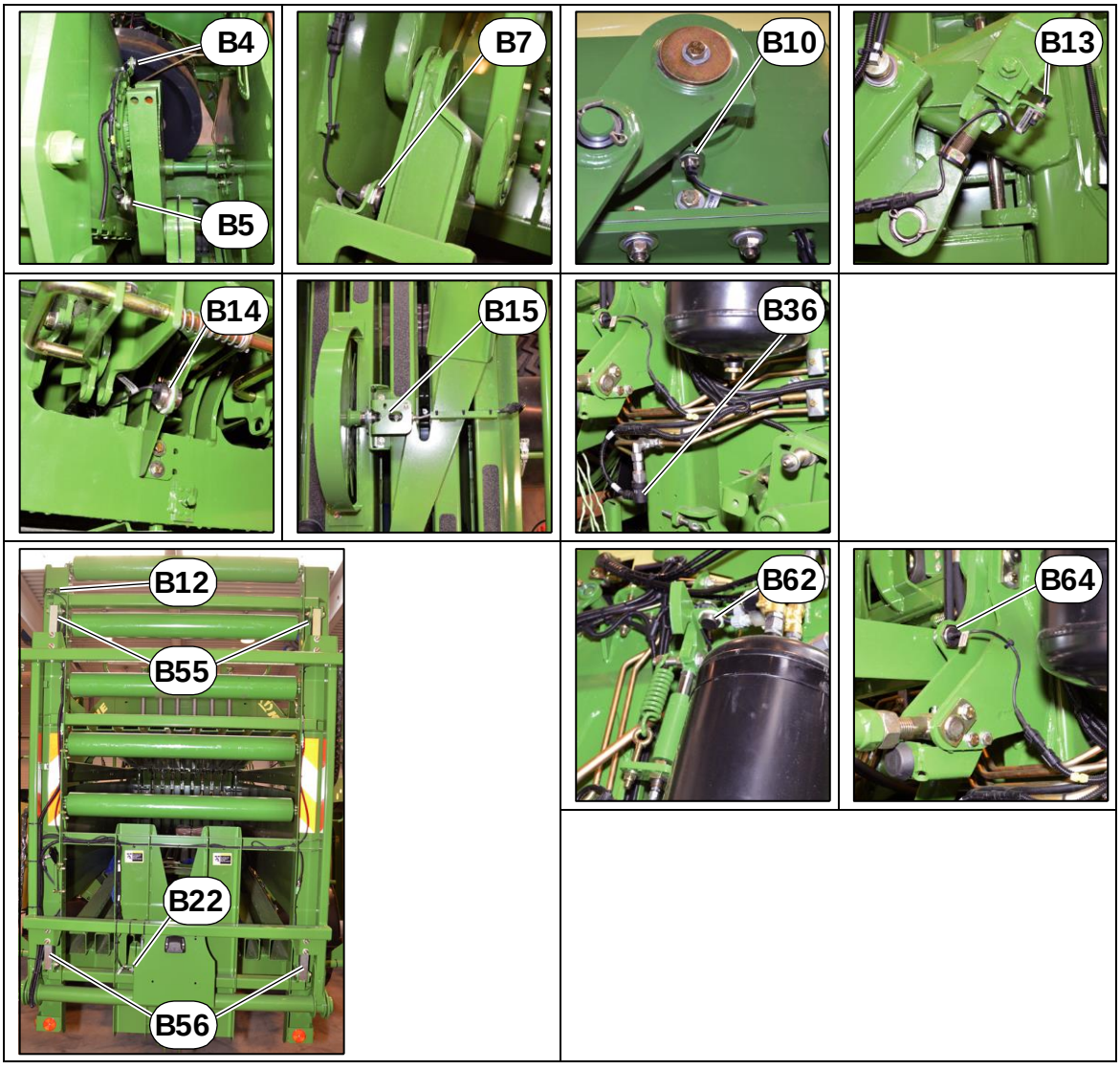


Fig. 254



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No.	Sensor designation	No.	Sensor designation
B4	Measuring	B5	Calibrating
B7	Packer feed	B10	Knotter monitoring
B12	Setting down bales	B13	Needle connecting rod right
B14	Bale ejector	B15	Star wheel
B22	Bale on chute	B36	Steering axle
B55	Bale chute rear	B56	Bale chute front
B62	Twine box right in transport position	B64	Twine box right in maintenance position

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27.2.1 Adjusting the Sensors

Namur sensor d = 12 mm

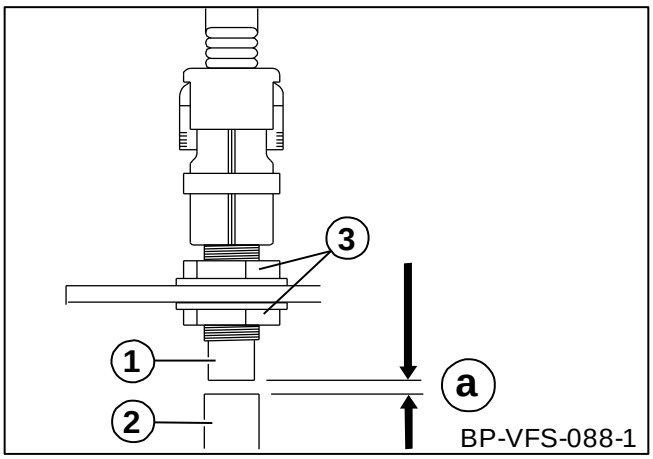

Figure 255

The dimension between the encoder (2) and the sensor (1) must be "a" = 2 mm .

Setting

- Loosen the nuts on either side of the sensor.
- Turn the nuts until dimension "a" = 2 mm is reached.
- Tighten the nuts again.

27.2.1.1 Namur sensor d = 30 mm

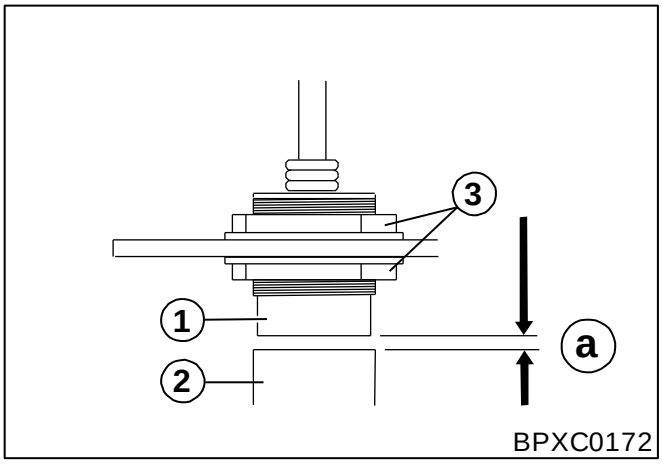

Figure 256

The dimension between the encoder (2) and the sensor (1) must be "a" = 5 mm .

Setting

- Loosen the nuts on either side of the sensor.
- Turn the nuts until dimension "a" = 5 mm is reached.
- Tighten the nuts again.

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28 Malfunctions - Causes and Remedies

WARNING!

If the basic safety instructions are not followed, people may be seriously injured or killed.

- To avoid accidents, the basic safety instructions in the chapter Safety must have been read and followed, see chapter Safety "Basic safety instructions".

WARNING!

If the safety routines are not adhered to, people may be seriously injured or killed.

- To avoid accidents, the safety routines in the chapter Safety must be read and followed, see chapter Safety "Safety routines".

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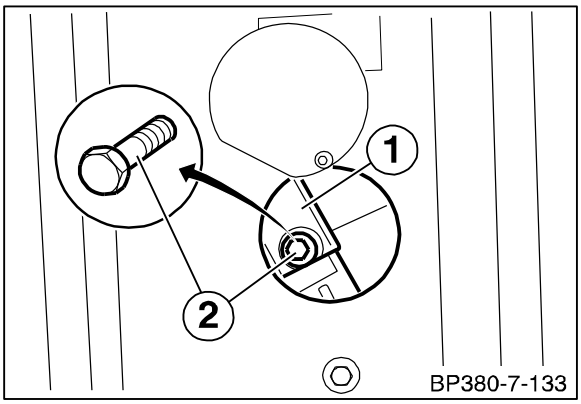
28.1 General malfunctions

Malfunction	Cause and/or remedy
Plunger/twine tying device stops.	1. Bring the tractor to a stop immediately. 2. The cam clutch in the flywheel is engaging again at a low speed. 3. Reduce the baling force. 4. Check the rotational speed of universally-jointed drive shaft. 5. Remove the knotter needles from the bale channel and replace the shear bolt in the knotter and needle drive if necessary.
Knotter needles fall back.	1. Apply the knotter shaft brake more tightly.
Bale is too loose.	1. Increase the baling force.
Bale is too tight.	1. Reduce the baling force.
Packer does not move.	1. Overload clutch engages - reduce the engine speed. 2. Shut down tractor and machine and remove the crop blockage. 3. Reduce driving speed.
Pick-up does not move.	1. The overload clutch engages - switch off PTO shaft drive and remove the crop blockage. 2. Reduce driving speed. 3. Drive over the swath in the centre.
Cutting rotor and pick-up do not move.	1. Crop blockage in the area of the rotor, cam clutch in the drive train of the rotor engages. 2. Reduce the engine speed. Coupling is engaging again at low speed. 3. The blades swivel out. 4. If the rotor does not start running free by itself, shut down tractor and machine and remove the crop blockage. 5. Reduce driving speed.
Needle yoke does not move. 	1. The connecting rod (1) of the needle yoke is secured by a shear bolt (2). 2. Check whether the shear screw is broken. 3. Replace by screw M10 x 60-12.9, DIN EN ISO 4014, if necessary.

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Fault:

– If load-sensing line is connected, the tractor does not start properly or not at all.
– Flywheel starts turning when the tractor starts and with starting aid attached.

Possible cause	Remedy
Air in the hydraulic system of the machine	• Vent the comfort hydraulic block.

Prerequisite:

- Switch off the PTO shaft.
- Secure the machine and tractor against rolling away.
- Apply the flywheel brake.

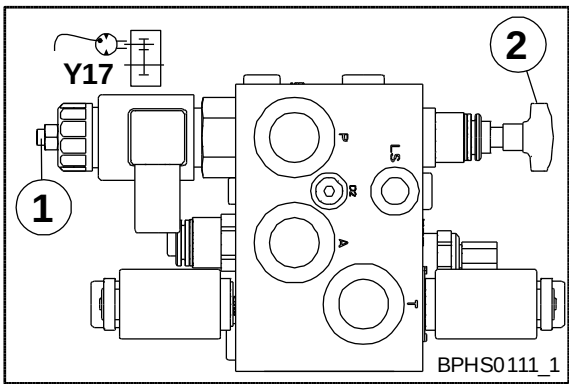
If the tractor does not start properly or not at all

To do this:

- To flush all trapped air out of the hydraulic system, actuate all working functions of the BiG Pack (bale ejector, bale chute, blade cassette, steering axle, starting aid) several times.

Note

If work is performed subsequently on the hydraulic system, all trapped air must b of the hydraulic system.



- Unscrew the load-sensing valve (2).
- If required, remove the plastic cover (1) from the valve (Y17).
- Place an Allen key (2 mm) on the face of the valve (Y17).
- Pressurise the hydraulic system.
- Loosen the inner hexagon socket-head screw by one turn.
- Collect escaping hydraulic oil in a suitable container and dispose of properly.
- Actuate a function (e.g. bale ejector) several times.
- If a starting aid is installed, the starting aid must be activated several times via the terminal.
- When hydraulic oil runs out without any bubbles, tighten the hexagon socket-head screw.
- Depressurise the system and screw in the load-sensing valve (2).
- Pressurise the hydraulic system.
- Loosen the inner hexagon socket-head screw by one turn.
- Collect escaping hydraulic oil in a suitable container and dispose of properly.
- Actuate a function (e.g. bale ejector) several times.
- If a starting aid is installed, the starting aid must be activated several times via the terminal.
- When hydraulic oil runs out without any bubbles, tighten the hexagon socket-head screw.

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- Depressurise the system and unscrew the load-sensing valve.
- If required, attach the plastic cover to the valve (Y17).

Test run:

Note

On the test bench the correct ventilation can be checked only on machines with a connected starting aid. In both cases this can be tested on the tractor.

The comfort hydraulic block has been correctly vented when

Test bench (check possible only when starting aid installed):

- The connection P of the comfort preliminary valve block is pressurised and depressurised several times. In doing so, the flywheel must not start turning.

Tractor and BiG Pack with starting aid:

- The tractor can be started in LS mode!
- When starting the tractor in LS mode, the flywheel does not start turning!
- When the tractor is running at constant pressure and in constant flow mode, connection P is pressurised and depressurised several times. In doing so, the flywheel does not start turning!

Tractor and BiG Pack without starting aid:

- The tractor can be started in LS mode!

– The engine will take longer to start on some tractors if the block is not correctly vented!

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Malfunction	Cause and/or remedy
Hydraulic functions do not move up to the final position (for example hydraulic parking jack, bale ejector etc.)	**Cause:** Some tractors have a compensation bore hole on tractor side for Load Sensing function. In combination with the comfort hydraulic block, the tractor cannot build up the required hydraulic pressure. **Remedy:** Contact an authorized service technician as the compensation drill hole must be locked on tractor side to solve this problem.

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28.2 Malfunctions on the knotter

28.2.1 Double knotter

Experience has shown that a majority of tying problems are the result of insufficient twine tension. Check the twine path and twine tension before starting work.

The following list shows the most frequent malfunctions, their cause and a note on how to eliminate them. Otherwise reference is made to the chapter in which the topic in question is explained in greater detail.

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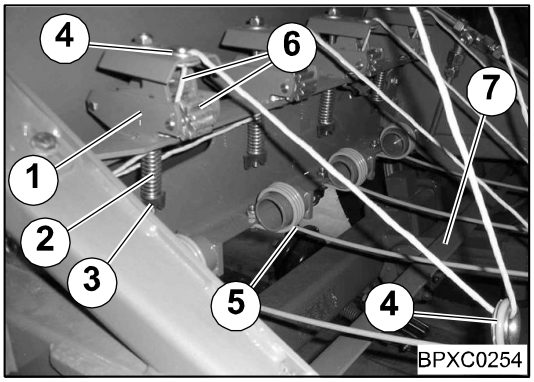
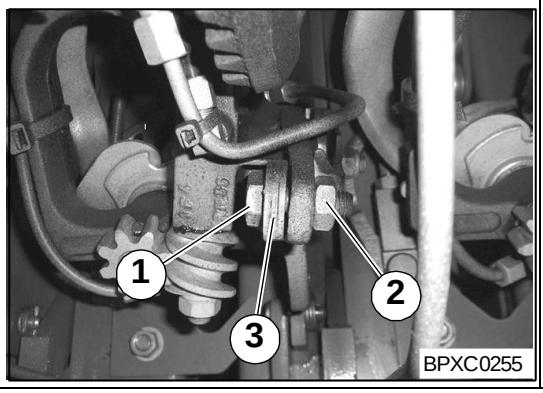
No.	Malfunction	Cause and/or remedy
1	Knotter tongue bends or frequent rupture of the knotter tongue.	1.1 **Cause:** Second knot remains hanging on the knotter tongue. **Remedy:** See no.2
2	Knot remains hanging on the knotter hook.	2.1 **Cause:** Worn or rough spots on the knotter hook or bent knotter hook or knotter tongue. **Remedy:** Check lower twine path and correct, if and when necessary.
		2.2 **Cause:** Not enough twine tension on the lower twine strand. **Remedy:** Tighten the twine brake (1) by: • tightening the spring (2) by about one to two turns of the winged nut (3) • removing any dirt deposits in all twine eyes (4), the twine brake (1) and on the swing angle (7) • replace broken springs (2), twine tension springs (5) or worn twine eyes (4) • replace broken or worn brake wheels (6)
		2.3 **Cause:** Holding force of the twine retainer is too low. **Remedy:** Readjust the twine retainer: • Undo the counter nut (2) • Ensure stronger pre-tensioning of the twine retainer spring (3) with the screw (1) (approx. half a turn) • Tightening the counter nut (2) Degrease the twine retainer

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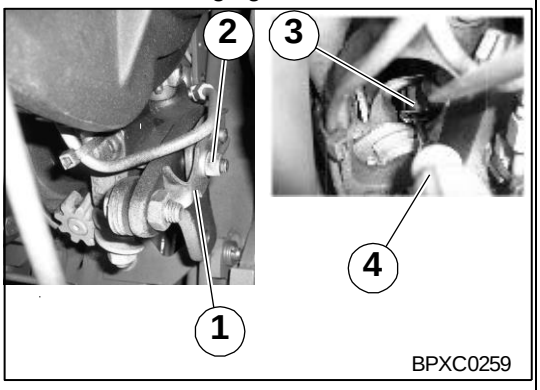
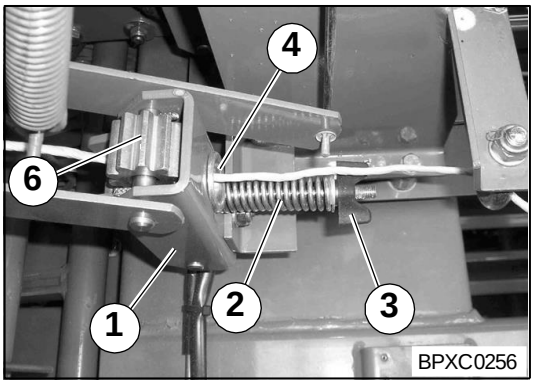
No.	Malfunction	Cause and/or remedy
2	Knot remains hanging on the knotter hook.  	2.4 **Cause:** Excessive tension on the knotter tongue. **Remedy:** Undo the knotter tongue (3) in the following way: • First use a screwdriver to get a feel for the pretensioning force present Place the screwdriver (4) below the knotter tongue (3) and determine the tension present by turning the screwdriver). • Undo nut (2) on the leaf spring (1) by about 60° • Place the screwdriver (4) below the knotter tongue (3) and determine the newly set tension present by turning the screwdriver ⚠ The knotter tongue (3) needs a slight minimum tension, for this reason never undo completely.
	 	2.5 **Cause:** Not enough twine tension on the upper twine strand. **Remedy:** Tighten the twine brake (1) by: • tightening the spring (2) by about one to two turns of the winged nut (3) • removing any dirt deposits in all twine eyes (4) and the twine brake (1) • replacing broken springs (2) or worn twine eyes (4) • replacing broken or worn brake wheels (6) • checking the free movement of the tensioning arm (5) (cf. malfunction No. 6.3, picture BPXC0263)

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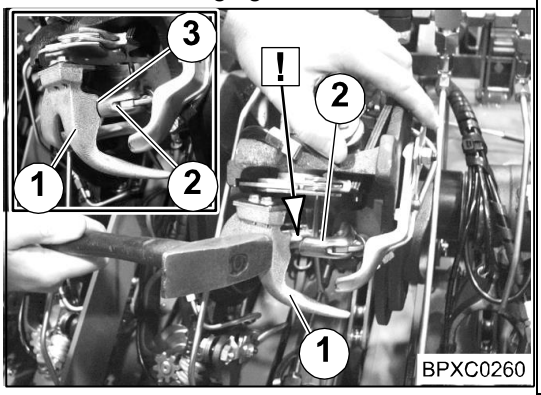
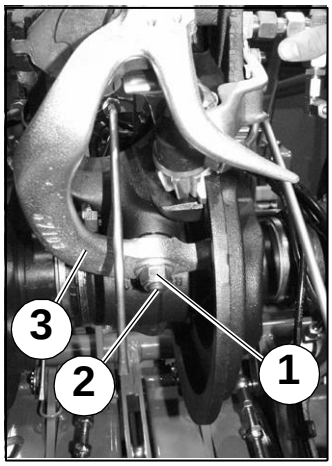
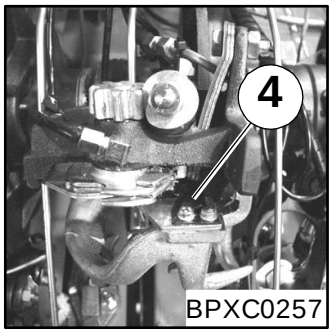
No.	Malfunction	Cause and/or remedy
2	Knot remains hanging on the knotter hook.  	2.6 **Cause:** Blade lever too far away from the knotter hook. **Remedy:** Adjusting the blade lever: • Swivel the knotter block up until the blade lever (1) passes beyond the knotter hook (2) • Use a hammer to carefully set the blade lever (1) so that the extractor comb (3) of the blade lever evenly touches the back of the knotter hook (2) **When swinging the knotter up, a slight resistance has to be noticeable when the blade lever passes over the knotter nib**
	 	2.7 **Cause:** Blade lever has axial play. **Remedy:** Tighten the nut (1) of the blade lever bolt (2); otherwise replace the blade lever (3) or the bearing sleeve of the blade lever bolt.
		2.8 **Cause:** The extractor comb of the blade lever does not run over the centre of the knotter hook. **Remedy:** Adjusting the blade lever: (cf. malfunction no. 2.5; picture BPXC0260) • Replace the blade lever
	 	2.9 **Cause:** Blunt extractor blade of the blade lever. **Remedy:** Adjust or sharpen the cutting blade (4) or replace the blade, if and when necessary.
		2.10 **Cause:** Twine driver disc set to far ahead. Check the setting and readjust it if necessary (refer to chapter Settings double knotter “Twine retainer”).

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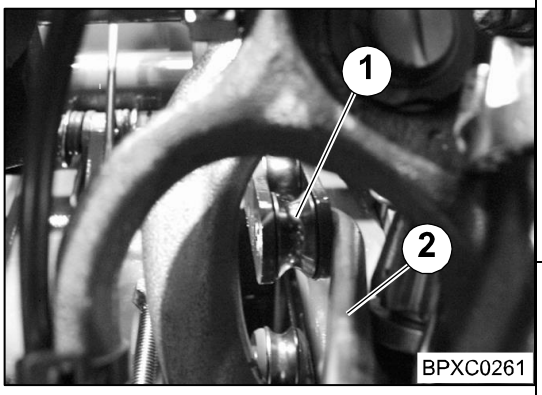
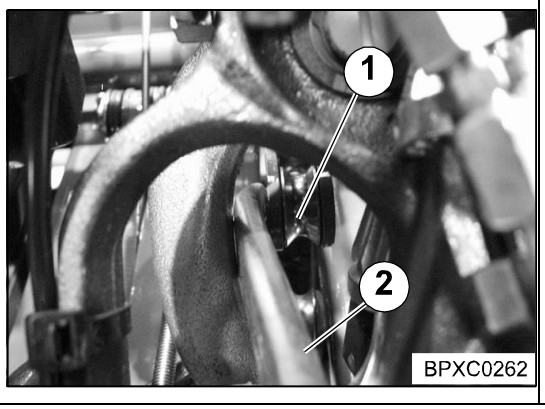
No.	Malfunction	Cause and/or remedy
3	First knot: (closing knot): Present only in the upper twine strand.	3.1 **Cause:** The twine bar has not caught the lower twine strand. **Remedy:** Readjust the twine bar(refer to chapter "Setting the twine bar (double knotter)") Checking the needle setting (refer to chapter settings "Needle setting").
4	First knot: (closing knot) twine winds around the knotter hook.  	4.1 **Cause:** The lower needle grasps to the left on the upper twine. **Remedy:** Align the upper needle slightly to the left: • Release the knotter and turn the flywheel until the upper needle lifts • Use a mounting lever (2) to align the upper needle (1) to the left by about 1 - 2 mm
		4.2 **Cause:** Twine driver disc starts working too late. **Remedy:** Put the twine driver disc forward by turning clockwise (see chapter Settings double knotter "Twine retainer"). **Please ensure that the knotter needle makes contact to the knotter in the topmost position (refer to chapter Settings "Upper dead point of the needles" (double knotter))**
5	First knot: (Schließknoten) Upper twine is running through from one bale to the next. Knot in the lower twine strand  	5.1 **Cause:** The lower needle grasps to the right on the upper twine: **Remedy:** Align the upper needle slightly to the right: • Release the knotter and turn the flywheel until the upper needle lifts • Use a mounting lever (2) to align the upper needle (1) to the right by about 1 - 2 mm

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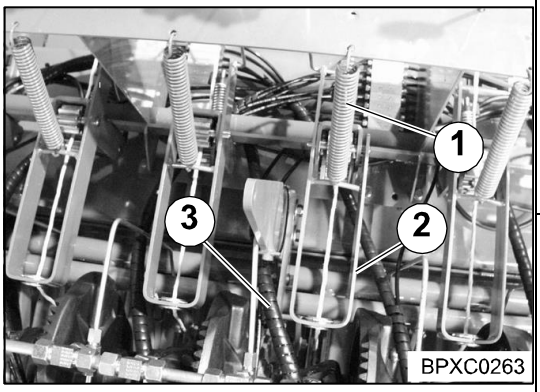
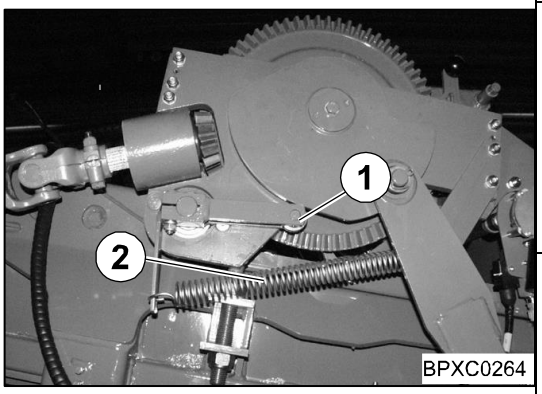
No.	Malfunction	Cause and/or remedy
6	Second knot: (Starting knot) Knot is present only on the lower twine strand (no knot on the upper twine strand).  	6.1 **Cause:** The twine bar is adjusted too far away from the upper needle and was unable to catch the upper twine strand. **Remedy:** Set the twine bar in the direction of the upper needle. **CAUTION:** When setting the twine bar, check for collision with the upper needle and the knotter needle (refer to chapter "Setting the twine bar (double knotter)").
		6.2 **Cause:** Spring of the upper tensioning arm broken or disconnected. **Remedy:** Replace the spring (1) or fasten it in place again.
		6.3 **Cause:** The tensioning arm does not work correctly. **Remedy:** Check the tensioning arm (2) for free space from top to bottom, and align, if and when necessary or place the central lubrication line (3) elsewhere.
	 	6.4 **Cause:** Control unit in upper needle defective. Roller is not following the cam disc. The upper needle does not move down far enough. **Remedy:** Replace the roller (1) or ensure the upper needle is running easily. Check the spring (2).
		6.5 **Cause:** Blockage of the upper twine run. **Remedy:** Check the twine run from the knotter to the twine roller in the twine box inclusively.
		6.6 **Cause:** Twine tension on the upper twine strand **Remedy:** Undo the twine brake (1) in the following way: • undoing the spring (2) by about one to two turns of the winged nut (3) (cf. malfunction no. 2.2.)
		6.7. **Cause:** Holding force of the twine retainer is too low. **Remedy:** Readjust the twine retainer (cf. malfunction no. 2.2).

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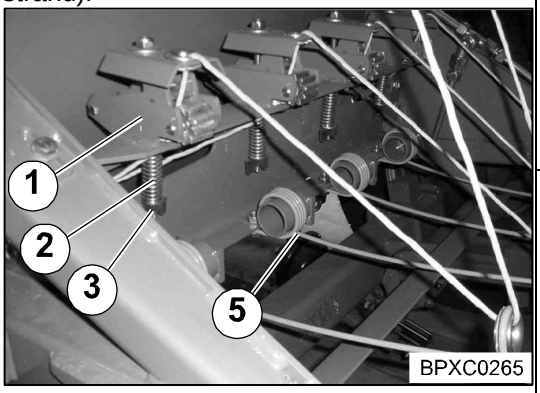
No.	Malfunction	Cause and/or remedy
7	Second knot: (Starting knot) Knot is present only on the upper twine strand (no knot on the lower twine strand).  	7.1 **Cause:** The lower twine tension springs are not working properly. **Remedy:** Ensure free room for the lower twine tension springs (5). Tighten the twine brake (1) by: • tightening the spring (2) by about one to two turns of the winged nut (3)
		7.2 **Cause:** Not enough needle overrun in the upper dead point. **Remedy:** Check the needle setting (refer to chapter settings "Needle setting").
		7.3 **Cause:** The twine bar is not working precisely or is adjusted incorrectly. **Remedy:** Check the twine bar settings (refer to chapter "Setting the twine bar (double knotter)").

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No.	Malfunction	Cause and/or remedy
8	Second knot: (Starting knot) Twine winds around the knotter hook.	8.1 **Cause:** The upper tensioning arms are not working properly. • Tension path is blocked • Tension is not sufficient **Remedy:** Check the upper tensioning arms for easy running. • Clear the tension path (cf. malfunction no. 6; picture BPXC0263) • Increase the tension (cf. malfunction No. 2; picture BPXC0256)
		8.2 **Cause:** Lower twine tension spring broken or released. **Remedy:** Replace the spring or mount it securely again (cf. malfunction no. 2.1; picture BPXC0254).
		8.3 **Cause:** Insufficient twine tension on the lower twine strand. **Remedy:** Increase the tension (cf. malfunction no. 2.1; picture BPXC0254).
		8.4 **Cause:** Twine driver disc starts working too late. **Remedy:** Put the twine driver disc forward by turning clockwise (refer to chapter Settings double knotter “Twine retainer”).
		8.5 **Cause:** Needle overrun in the upper dead point is too big. **Remedy:** Check the needle settings (refer to chapter Settings "Setting the upper dead centre of the needles (double knotter)").

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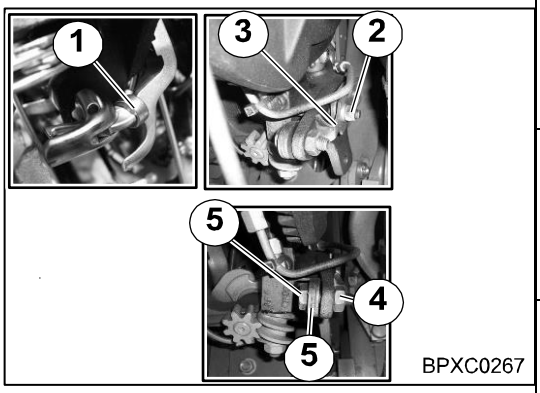
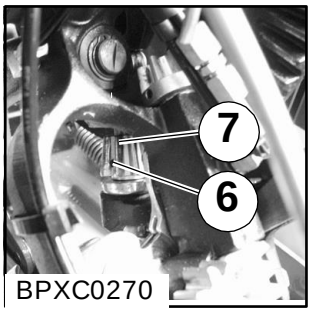
No.	Malfunction	Cause and/or remedy
9	No knot present, neither on the upper nor on the lower twine strand.  BPXC0267  BPXC0270	9.1 **Cause:** Twine bar is not activated. **Remedy:** Check the twine bar mechanism and its settings (refer to chapter Settings "Setting the twine bar (double knotter)”).
		9.2 **Cause:** Damaged knotter tongue. **Remedy:** Replace the knotter tongue (1).
		9.3 **Cause:** Insufficient tension on the knotter tongue. **Remedy:** Increase the tension on the knotter tongue (1). To do this: • Tighten nut (2) on the leaf spring (3) by about 60° (cf. malfunction no. 2.3)
		9.4 **Cause:** Twine retainer springs too tight or Twine strands are cut through in the twine retainer **Remedy:** Loosen the twine retainer spring setting. To do this: • Undo the counter nut (4) • Ensure weaker pre-tensioning of the twine retainer spring (5) with the screw (6) (approx. half a turn) Remove accumulations of dirt or chaff under the twine retainer springs (5).
		9.5 **Cause:** The knotter hook is not turning. **Remedy:** Exchange the pin (6) of the knotter hook drive wheel (7).

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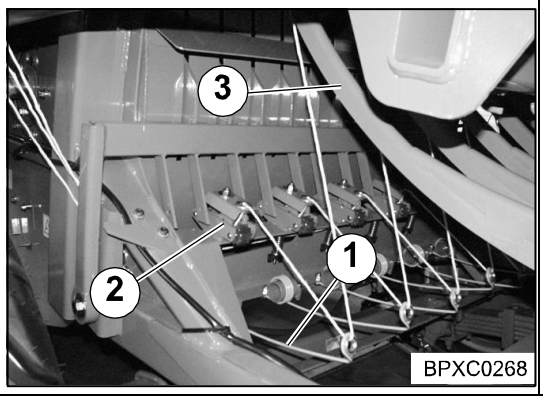
No.	Malfunction	Cause and/or remedy
10	Knot ends too short. The knot often gets wound up (generally the second knot).	10.1 **Cause:** Insufficient tension on the knotter tongue. **Remedy:** Increase the tension on the knotter tongue (1) (cf. malfunction no. 9 picture BPXC0267).
		10.2 **Cause:** Incorrect twine tension. **Remedy:** • Check the twine path To make the knot ends longer, the lower twine tension should generally be increased first (cf. malfunction no. 2 picture BPXC0254). • In case this is not enough the upper twine tension must be increased
11	Twine is no longer threaded through the knotter needle, but it is tied to the last bale. 	11.1 **Cause:** Twine tension spring is bent **Remedy:** Align the twine spring (1) centrically to the twine brake (2) and the knotter needle (3).

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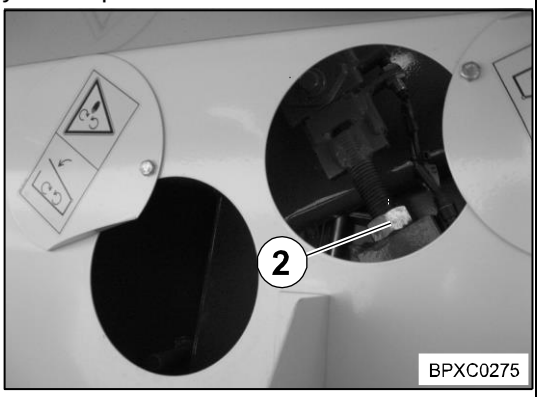
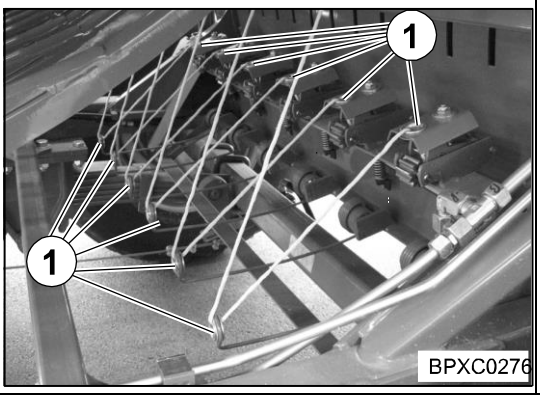
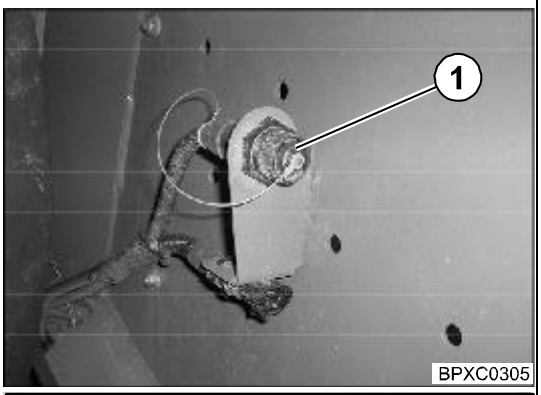
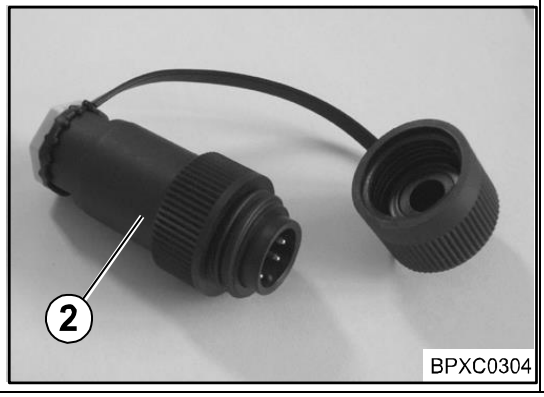
No.	Malfunction	Cause and/or remedy
12	Shear screw on the needle connecting rod breaks frequently. As a result the needle yoke stops.   	**Cause:** Strong wear of the twine guide eyes. **Remedy:** Exchange the twine guide eyes (1) and replace the shear screw (2) on the needle connecting rod.
13	The baler can no longer be operated via the terminal.   	**Cause:** Faulty operation or faulty connection for operation. **Remedy:** Unscrew the terminal cable from the socket (1) located to the left (as seen in direction of travel) on the metal cover close to the flywheel. Connect the plug for emergency mode (2) to the socket (1). After 10 seconds, emergency mode is activated with the following settings: • Old nominal length • Automatic mode • Last target force to be set

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28.3 Troubleshooting in the central lubrication

Malfunction	Cause and/or remedy
Blockage in the system or in any bearing connected to it. Manually activated systems. The hand lever cannot be moved or is hard to move.	**Find out what is causing the blockage and eliminate the cause.** **PROCEDURE** First check whether the conveyor pump is working and is supplying lubricant to the main distributor. To do this, loosen the pump outlet and activate the pump. When the pump is working properly, connect the pump outlet again. (Conclusion: there is no problem with the pump). Let the pump work until the next blockage or until the next time the pressure rises inadmissibly. Leave the pressure level as is. One after the other, loosen the threaded input connections on the subdistributors or on the main distributor, and for single-level systems the threaded input connections. The distributor from which lubricant suddenly leaks when the threaded input connection is loosened under pressure will lead to the source of the fault. The threaded input connections have to be screwed tight again. The corresponding threaded bearing input connections should be loosened one after the other. The bearing from which lubricant suddenly leaks when its threaded input connection is loosened under pressure is the blocked bearing. Eliminate the blockage on the bearing.
Blockage in the distributor After you have loosened all outlets of the main distributor and/or the subdistributors, no lubricant leaks from the outlets. The distributor is blocked.	Replace the blocked distributor. If necessary, the distributor can be cleaned if the following conditions are met. The workplace must be clean. Remove all tube end screwed pieces. Remove the plunger lock screws with a strong screwdriver. If necessary loosen them by tapping with a hammer. Drive out the plungers with a soft mandrel (with a diameter of less than 6 mm, if possible made of plastic). **Very important:** You must keep a record of which plunger belongs in which drill hole, since the plungers must not be interchanged. Thoroughly rinse the distributor body several times in grease-dissolving agent and blow it out with compressed air. There are diagonal channels with a diameter of 1.5 mm on the ends of the threading. You can press through them with a wire or pin. Rinse and blow out the distributor several times. There could be hardened grease in the plunger lock screws. This must be removed. Assemble the distributor. All the copper discs must be replaced. Before screwing in the tube outlet threaded pieces, you should pump out the distributor with a hand pump or similar tool, if possible pumping oil through it several times. The counter pressure in the distributor should not be any greater than 25 bar as you do this. Any higher counter pressure means that the distributor is not clean or than the plunger drill hole is damaged. If the operating pressure of the distributor does not sink below 25 bar / 362,5 PSI in spite of all your efforts, the distributor should be replaced.

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29 Placing in Storage

WARNING!

If the basic safety instructions are not followed, people may be seriously injured or killed.

- To avoid accidents, the basic safety instructions in the chapter Safety must have been read and followed, see chapter Safety "Basic safety instructions".

WARNING!

If the safety routines are not adhered to, people may be seriously injured or killed.

- To avoid accidents, the safety routines in the chapter Safety must be read and followed, see chapter Safety "Safety routines".

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29.1 At the End of the Harvest Season

Release the parking brake and flywheel brake. Drain out condensed water from the compressed air reservoir.

Before placing the machine in winter storage, clean it inside and outside thoroughly. To do this, use a high-pressure cleaner. Do not hold the stream of water directly on the bearing points. After cleaning is completed, lubricate all grease nipples. Do not wipe off any grease that comes out of bearing points. The hardened grease will provide additional protection against moisture.

Check chains and sprocket wheels for wear. Oil and tighten cleaned chains.

Check all movable parts such as deflection rolls, joints, tensioning rolls, etc. to make certain they move easily. If necessary, dismount, clean, grease and remount. If necessary, replace with new parts.

Only use original KRONE spare parts.

Disassemble the universal shaft. Lubricate the inner tubes and the guard tubes with grease. Grease the lubrication nipples on the universal joint and grease the bearing rings of the protective tubes.

Park the machine in a dry location, but not in the vicinity of artificial fertilisers or livestock buildings. Repair places with damaged paint and preserve all bare metal places thoroughly with rust protection agent.

Caution!

The machine should only be placed on blocks with a suitable vehicle lifting device. Make certain that the machine is stable and safe when it is on blocks.

To remove load from the tyres, set the machine on blocks. Protect the tyres against external influences such as oil, grease and direct sunlight, etc.

Perform the necessary repair tasks during the time immediately after the harvest season. Draw up a list of all spare parts you will need. This will make it easier for your KRONE dealer to process your orders and you will be certain that your machine will be ready for use at the beginning of the next season.

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29.2 Before the Start of the New Season

WARNING!
If the basic safety instructions are not followed, people may be seriously injured or killed.
- To avoid accidents, the basic safety instructions in the chapter Safety must have been read and followed, see chapter Safety "Basic safety instructions".

WARNING!
If the safety routines are not adhered to, people may be seriously injured or killed.
- To avoid accidents, the safety routines in the chapter Safety must be read and followed, see chapter Safety "Safety routines".

- Before placing the machine into service again, initiate the knotting process manually and run through the baler manually. As you do so, check the functionality of the knotter and the needles
- Clean the knotter of materials used to preserve it during storage (vegetable oils)
- Remove the grease from the twine retainer drive disc and clean
- Grease all lubrication points and oil the chains. Wipe away grease that has come out of lubrication points
- Replace the oil in all gearboxes
- Check hydraulic hoses and lines for leaks and replace them if necessary
- Check the air pressure in the tyres and refill if necessary.
- Check all screws to make certain they are tight or retighten them if necessary
- Check all electrical connection cables and the lighting. Repair or replace if necessary
- Check the entire setting of the machine and correct if necessary
- Check the operating functions
- Check the functionality of the knotter shaft brake (to the right on the knotter shaft)
- Re-read the operating instructions thoroughly

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29.2.1 Overload coupling on flywheel

Note

After the machine has been idle for long periods of time, the linings of the overload coupling (1) may adhere to friction surfaces. Vent the overload coupling before use.

Venting the friction clutch

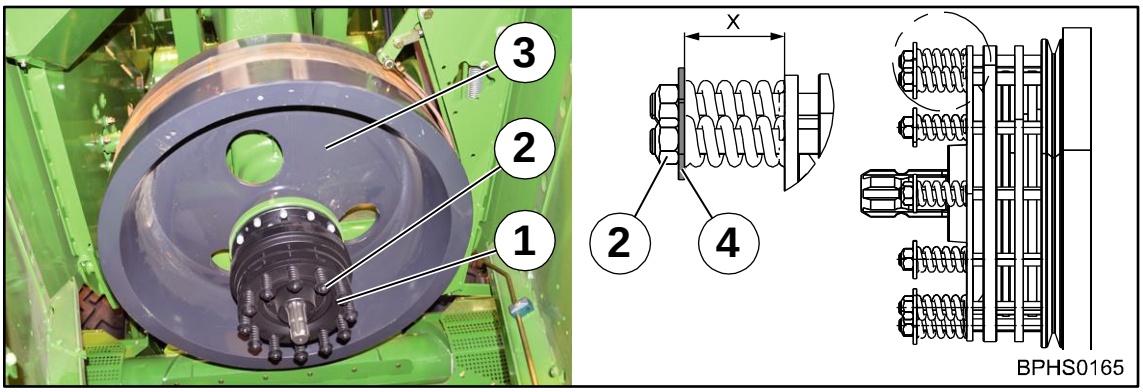

Fig. 257

- Loosen the nuts (2) until the compression springs are slack.
- Turn the universal shaft around manually.
- Then tighten the nuts crosswise until the setting dimension X = 47.2 mm is set.

Dimension X measured up to the inside of washer (4).

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30 Disposal of the machine

30.1 Disposal of the machine

After the service life of the machine has expired, the individual components of the machine must be disposed of properly. The applicable country-specific, current waste disposal guidelines and the legal laws must be observed.

Metal parts

All metal parts must be brought to a metal recycling centre.

The components must be freed from operating fluids and lubricants (gear oil, oil from hydraulic system, ...) before being scrapped.

The operating fluids and lubricants must be brought separately to an environmentally friendly disposal point or recycling centre.

Operating fluids and lubricants

Operating fluids and lubricants (diesel fuel, coolant, gear oil, oil from hydraulic system, ...) must be brought to a disposal point for waste oil.

Synthetic materials

All synthetic materials must be brought to a recycling centre for synthetic materials.

Rubber

Rubber parts (hoses, tyres, …) must be brought to a rubber recycling centre.

Electronic scrap

Electronic parts must be brought to a disposal point for electronic scrap.

https://truckmanualshub.com/

31 Appendix

31.1 Circuit Diagrams of the Hydraulic System

31.2 On-Board Hydraulic System for Medium Version Electronics

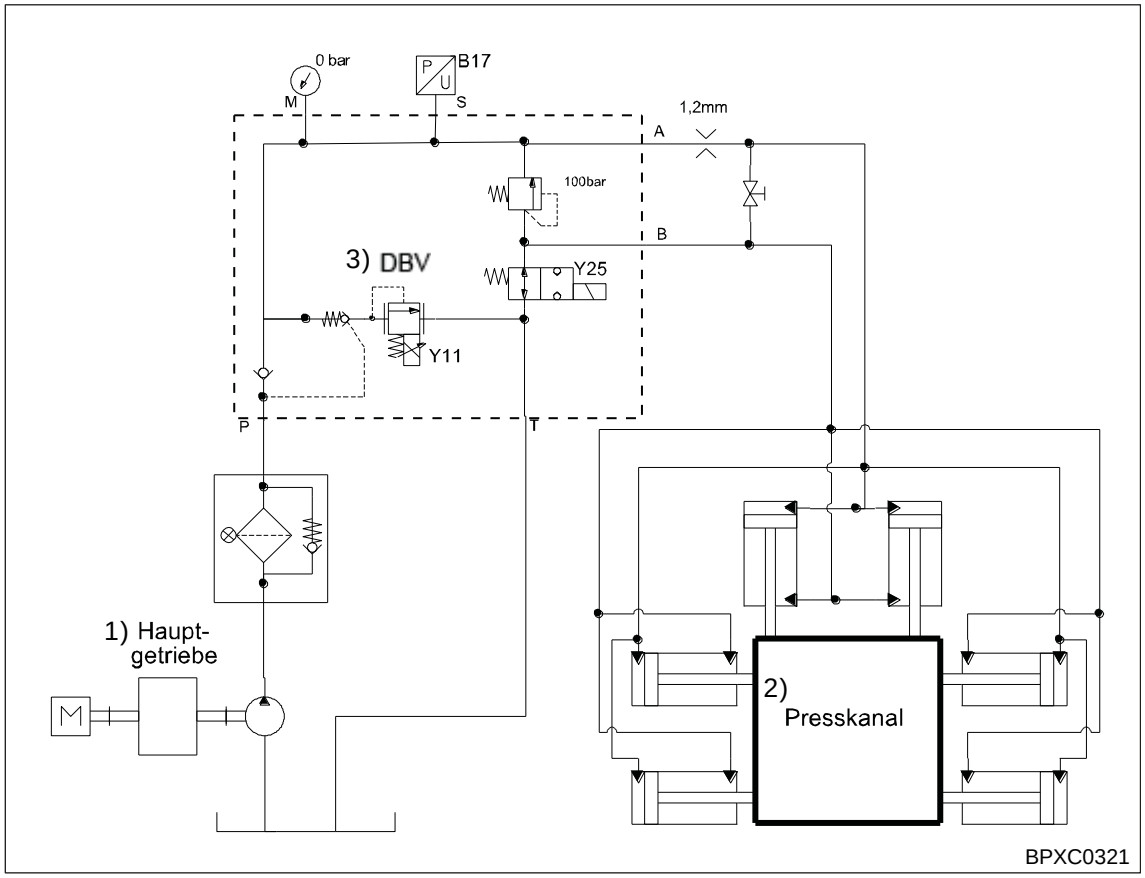

Fig. 258

1. Main gearbox	2. Bale channel
3. Pressure limiting valve	

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31.3 On-Board Hydraulic System for Comfort Version Electronics

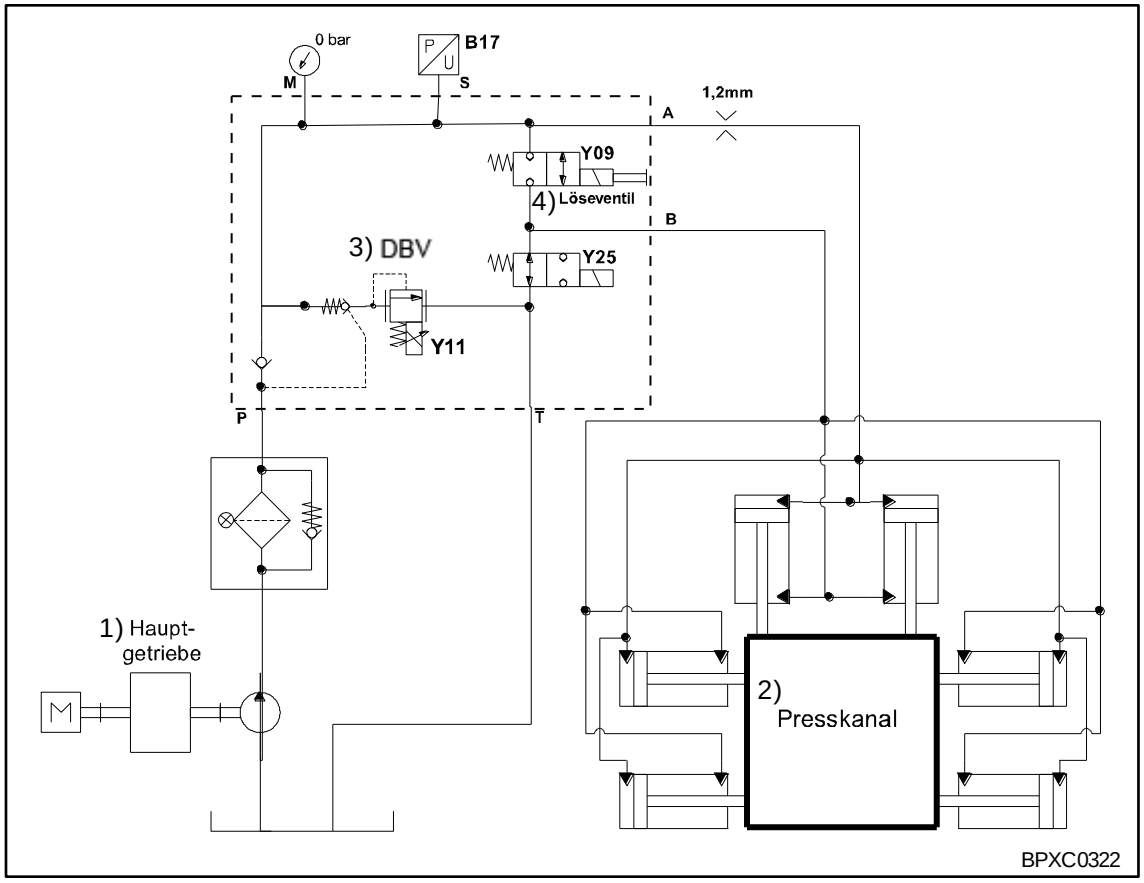

Fig. 259

1. Main gearbox	2. Bale channel
3. Pressure limiting valve	4. Release valve

https://truckmanualshub.com/

31.4 On-board Hydraulic System for Comfort Version Electronics

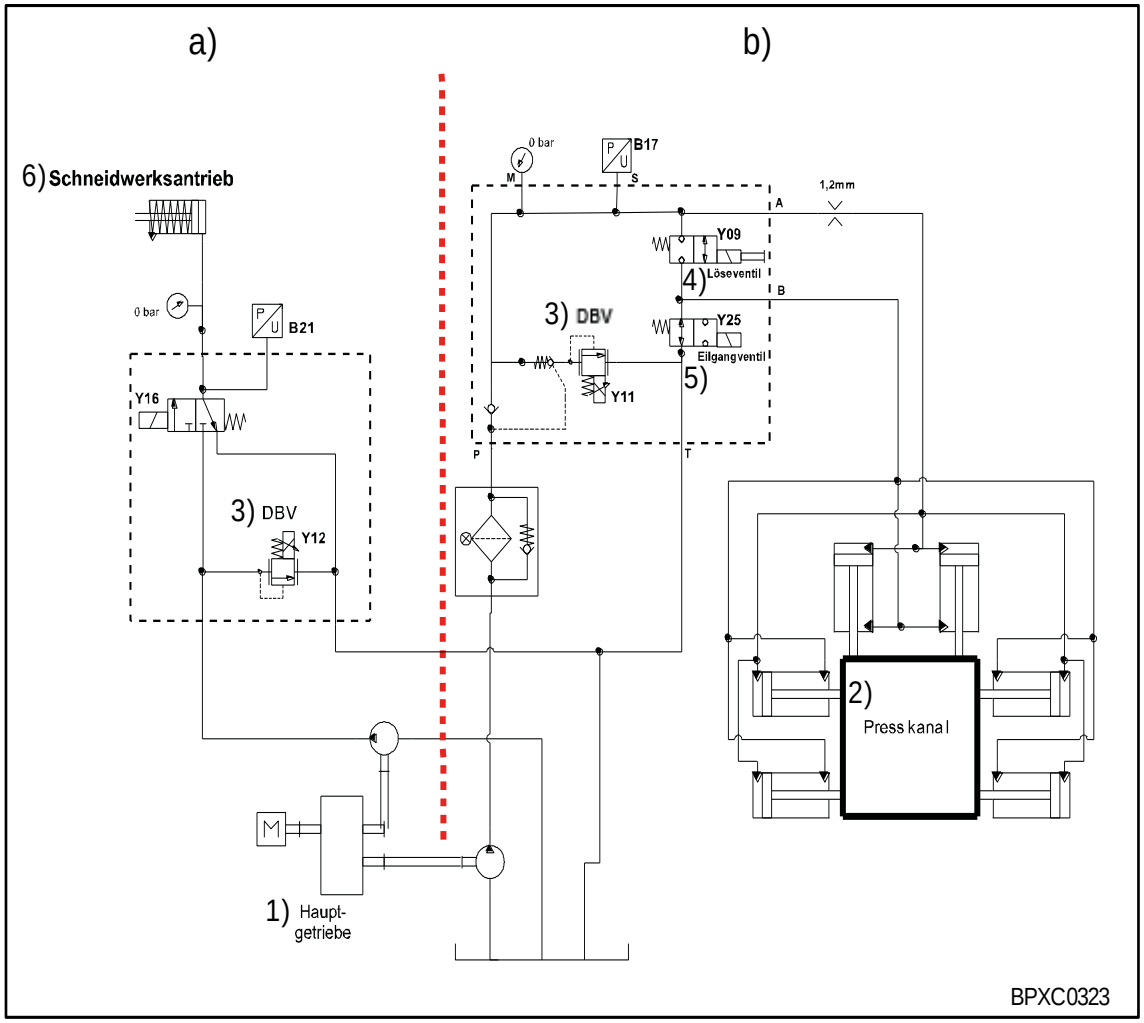

Fig. 260

a) Circuit clamping cylinder b) Circuit clamping channel

1. Main gearbox	2. Bale channel
3. PLV (pressure limiting valve)	4. Release valve
5. Rapid traverse valve	6. Cutting system drive

https://truckmanualshub.com/

31.5 Work Hydraulics Medium Version Electronics

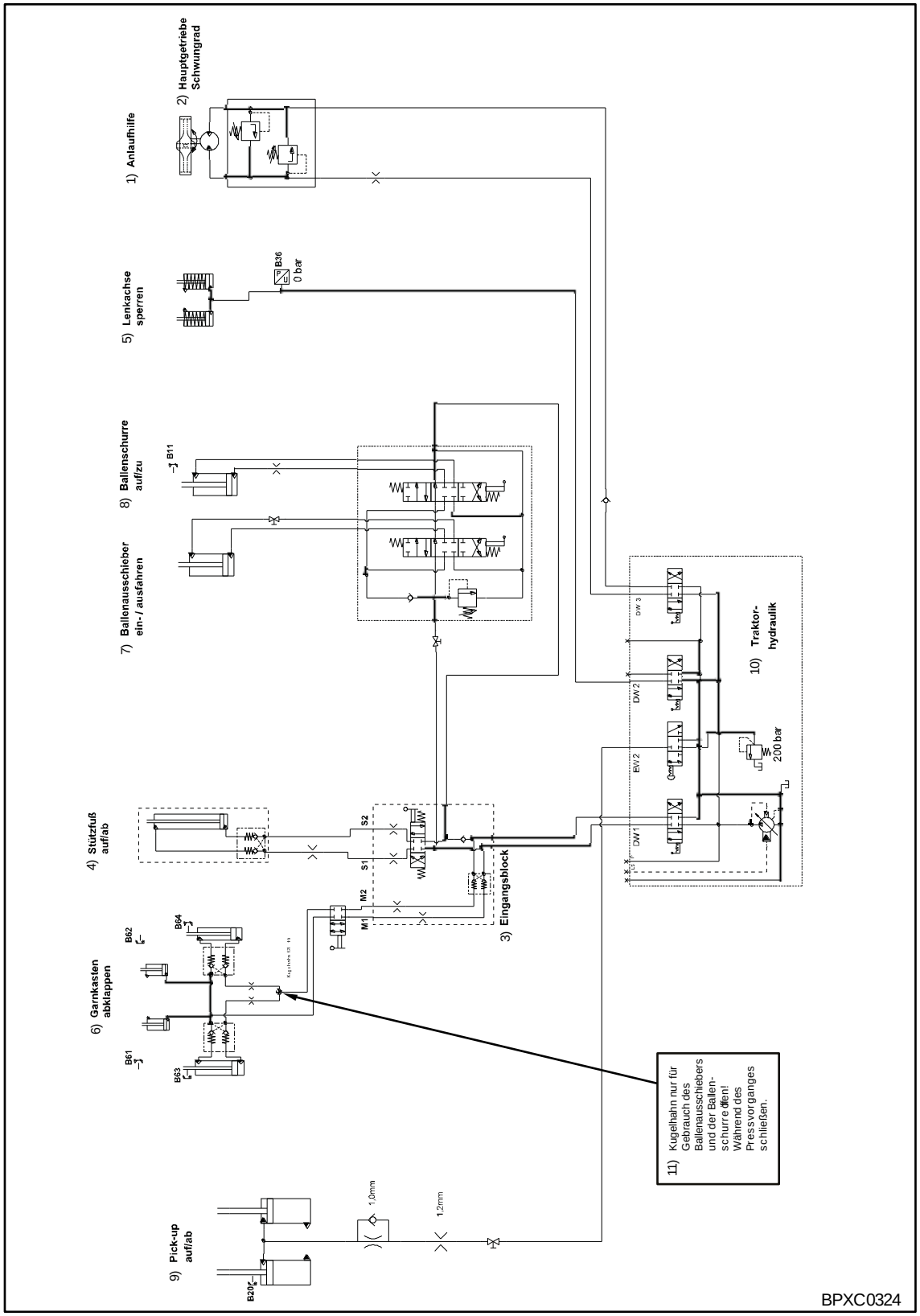

Fig. 261

https://truckmanualshub.com/

1. Pick-up up / down	2. Fold down twine box
3. Support jack up /down	4. Retract / extend bale ejector
5. Bale chute open / closed	6. Lock steering axle
7. Start-up device	8. Main gearbox flywheel
9. Input block	10. Tractor hydraulics
11. Open the ball valve only for using the bale ejector and the bale chute! Close it during baling process.	

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31.6 Work Hydraulics Comfort Version Electronics

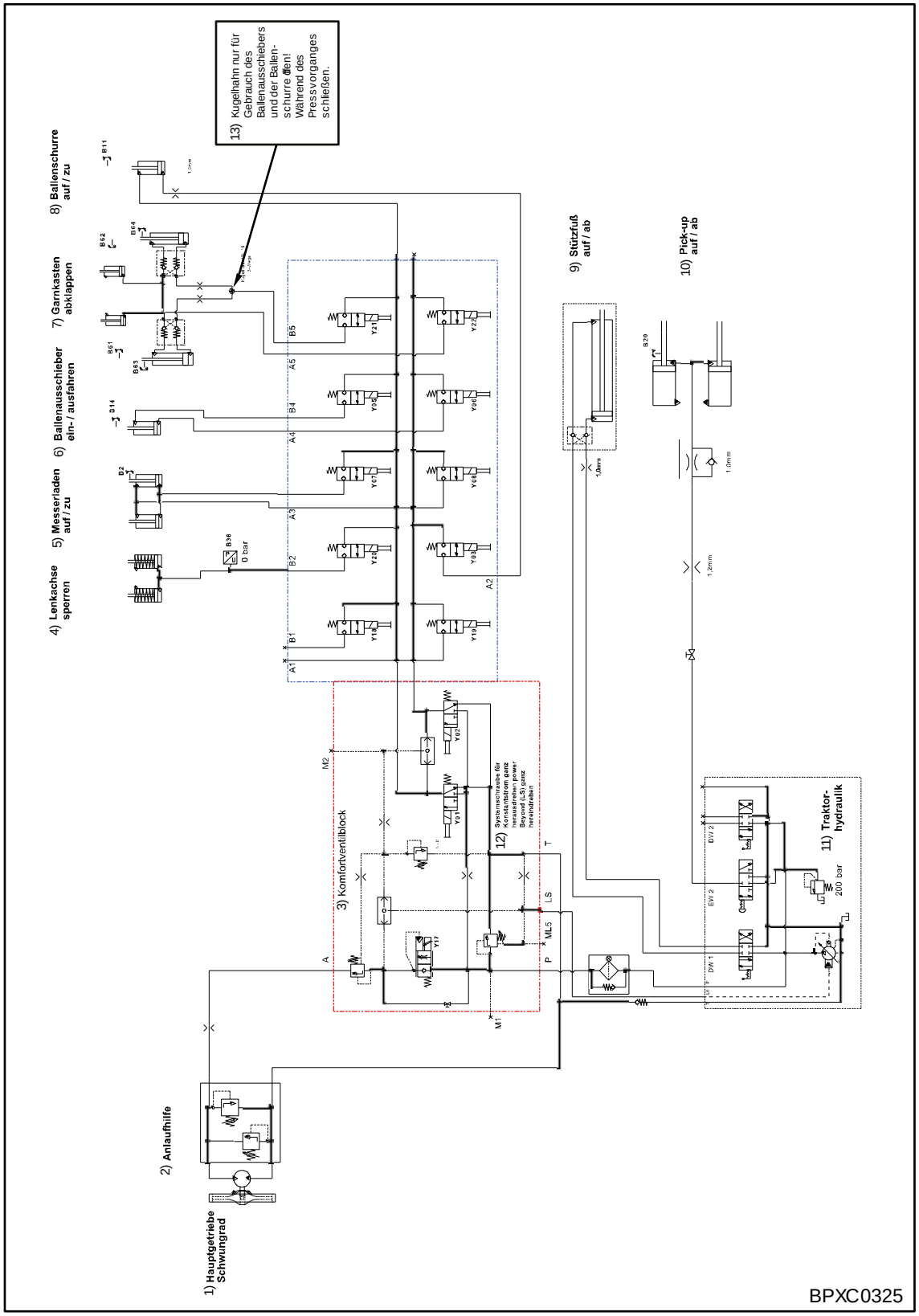

Fig. 262

https://truckmanualshub.com/

1. Main gearbox flywheel	2. Start-up device
3. Comfort valve block	4. Lock steering axle
5. Blade bar open / closed	6. Retract / extend bale ejector
7. Fold down twine box	8. Bale chute open / closed
9. Support jack up /down	10. Pick-up up / down
11. Tractor hydraulics	12. Completely screw out the system screw for constant flow. Completely screw in Power Beyond and (LS).
13. Open the ball valve only for using the bale ejector and the bale chute! Close it during baling process.	

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31.7 Circuit Diagram [Medium/Comfort Version Electronics]

https://truckmanualshub.com/

circuit diagram	150100584 - 07 EN

BigPack baler

BiG PACK High Speed

HDP II

28.08.2015

sheet	title
0	BigPack baler
1	Terminal CCI 200
2	terminal Delta
3	terminal / power supply
4	KMC: supply overview; connector X1 / X2
5	KMC: supply overview; connector X3 / X4
6	KMC: inputs: button: blade bar, bale ejector, bale chute
7	KMC: inputs: sensors: measure, calibrate, packer feed, packer monitoring, flywheel brake
8	KMC: inputs: sensors: twine monitoring, knotter monitoring, bale chute, setting down bales, bale ejector,
9	KMC: inputs: sensors: pick-up, blade bar active, blade bar at the top
10	KMC: inputs: sensors: upper twine 1 to 8
11	KMC: inputs / outputs: valves: starting aid, Knotter cleaning, parking support, silage agent
12	KMC: inputs / outputs: sensors / valves: star wheel, knotter triggering
13	KMC: inputs / outputs: sensors / valves: feed rotor contact pressure, feed rotor rotational speed, coupling feed rotor, feed rotor close
14	KMC: inputs / outputs: steering axle, central lubrication
15	KMC: inputs / outputs: bale channel flap pressure, pressure limitation valve, bale channel flap release valve, rapid traverse, force measurement amplifier
16	KMC: outputs: valves: main valve, bale chute, bale ejector, blade bar
17	lighting: position lamps, tail-/brake light, flashers, sockets, number plate lamps
18	working lighting and maintenance lighting
19	options: humidity measurement
20	options: warning beacons, clearance lamps rear
21	options: bale balance
22	KMC twine box: supply overview;
23	KMC twine box: inputs / outputs: horn twine box, valves twine box, transport position twine box, maintenance twine box, terminator
24	KMC twine box: inputs: sensors: pick-up positionneedle connecting rod

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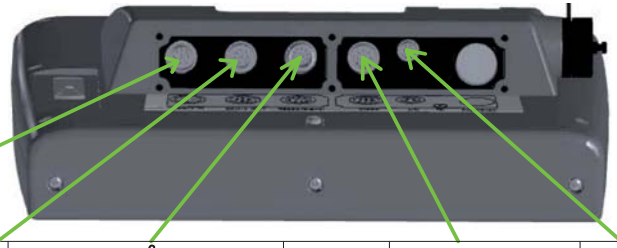
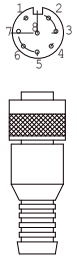
-8
terminal CCI200
8,4 " TFT
640 x 480(VGA)

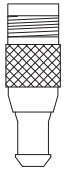


	CAN-1 IN	CAN-1 OUT	RS232/Signal		Video	LIN	(Bluetooth)	(Ethernet)	(WLAN)	(USB)
1	+Ub power supply voltage	+Ub power supply voltage	+Ub sw power supply voltage interconnected		Video_IN video signal	+Ub sw power supply voltage interconnected				
2	emergency stop-B emergency stop-input	emergency stop-B emergency stop-output	GND ground		RS485_B EIA RS-485 B	N.C. not assigned				
3	+Uon ECU or extern switch-on / switch-off signal	+Uon ECU or extern switch-on / switch-off signal	SMFQ_IN 2 ISO11769 "PTO shaft speed"		RS485_A EIA RS-485 A	GND ground				
4	emergency stop-V emergency stop-supply	emergency stop-V emergency stop-supply	SAN_IN0 ISO11786 "Lifting gear position"		+Ub sw power supply voltage interconnected	LIN LIN-bus				
5	CAN0L CAN1-L	CAN0L CAN1-L	SMFQ_IN 3 ISO11786 "Wheel speed"		RS485_A EIA RS-485 A					
6	GND ground	GND ground	SMFQ_IN 4 direction of travel		+Ub sw power supply voltage interconnected					
7	CAN0H CAN1-H	CAN0H CAN1-H	SMFQ_IN 1 ISO11786 "Speed slip free"		VGND video ground					
8	shield shield disconnected to earth	shield shield disconnected to earth	COM0_RxD_IN RS232 1 RxD (input)		shield shield disconnected to earth					
9			COM0_TxD_OUT RS232 1 TxD (output)							
10			IGN ignition signal / terminal 15							
11			COM1_RxD_IN RS232 2 RxD							
12			COM1_TxD_OUT RS232 2 TxD							

-X5.1Bb1

120 Ohm





WS BR GN GE GR RS BL RT

-X5.1a1 -X5.1b

2	CAN 1 H	/4.A4
7	GND Termi	/4.A2
1	CAN 1 L	/4.A4
5	SS_5V	/4.A1
6	+12VFU_Term	/4.A1

connection cable

A

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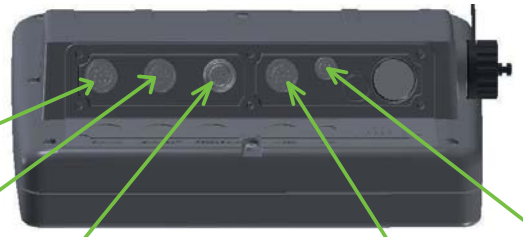
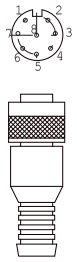
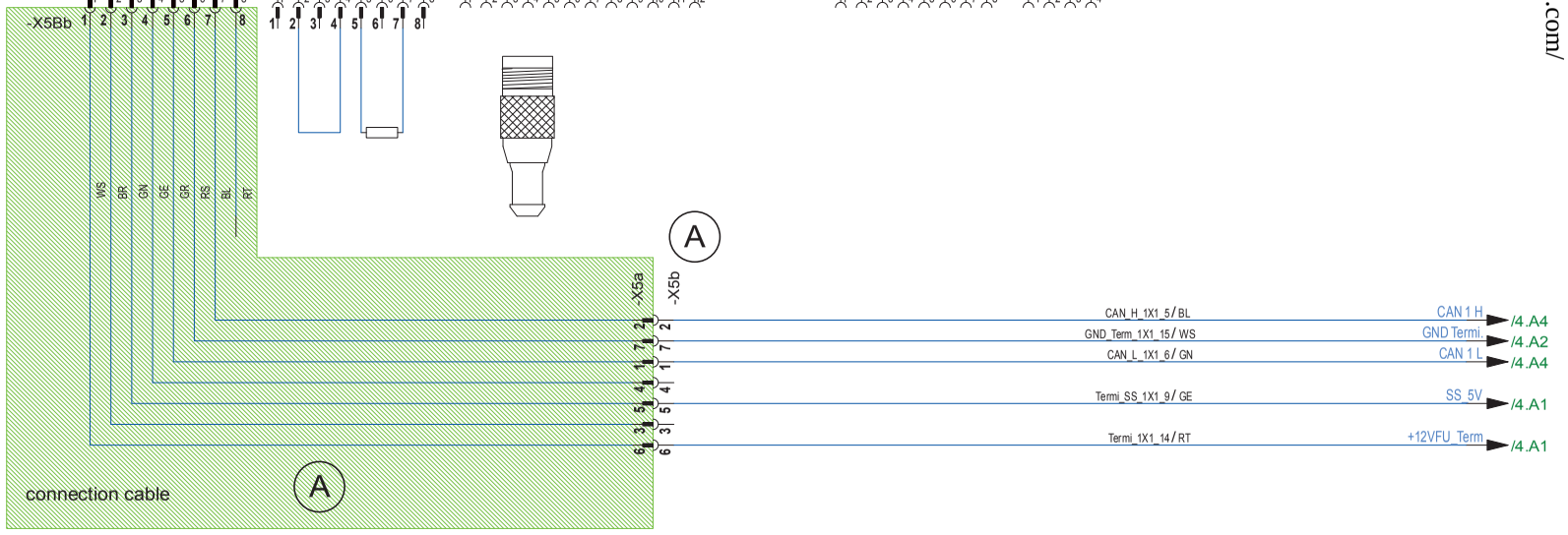
C				Created	KRONE	document-no.: D24 150100584 - 07	BiG PACK High Speed HDP II Terminal CCI 200	plant
B				date 10.11.2010				location
A	Kennzeichnungen hinzu	07.08.2015	Jansen	User Wesselkämper				sheet 1
change		date	name	Proved	Origin	Repl. f.	Repl. by	from Sh.

-7
terminal Delta
5,6 " TFT
640 x 480(VGA)



CAN-1 IN	CAN-1 OUT	RS232/Signal		Video	LIN	(USB)	(Ethernet)
+Ub power supply voltage	+Ub power supply voltage	+Ub sw power supply voltage interconnected		Video_IN video signal	+Ub sw power supply voltage interconnected		
emergency stop-B emergency stop-input	emergency stop-B emergency stop-output	GND ground		RS485_B EIA RS-485 B	N.C. not assigned		
+Uon ECU or extern switch-on / switch-off signal	+Uon ECU or extern switch-on / switch-off signal	SMFQ_IN 2 ISO11786 "PTO shaft speed"		RS485_A EIA RS-485 A	GND ground		
emergency stop-V emergency stop-supply	emergency stop-V emergency stop-supply	SAN_IN0 ISO11786 "Lifting gear position"		+Ub sw power supply voltage interconnected	LIN LIN-bus		
CAN0L CAN1-L	CAN0L CAN1-L	SMFQ_IN 3 ISO11786 "Wheel speed"		RS485_A EIA RS-485 A			
GND ground	GND ground	SMFQ_IN 4 direction of travel		+Ub sw power supply voltage interconnected			
CAN0H CAN1-H	CAN0H CAN1-H	SMFQ_IN 1 ISO11786 "Speed slip free"		VGND video ground			
shield shield disconnected to earth	shield shield disconnected to earth	COM0_RxD_IN RS232 1 RxD (input)		shield shield disconnected to earth			
		COM0_TxD_OUT RS232 1 TxD (output)					
		IGN ignition signal / terminal 15					
		COM1_RxD_IN RS232 2 RxD					
		COM1_TxD_OUT RS232 2 TxD					





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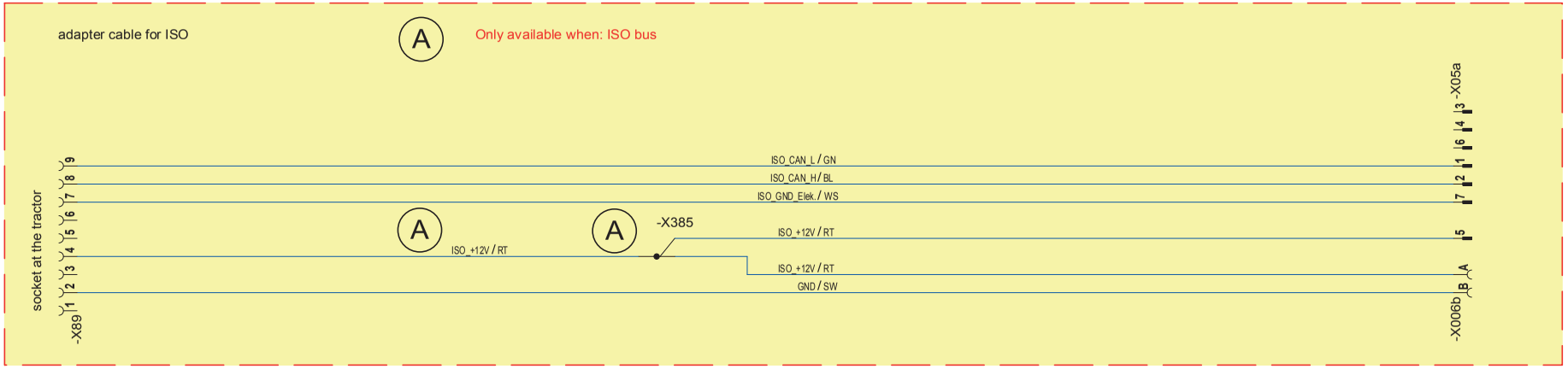
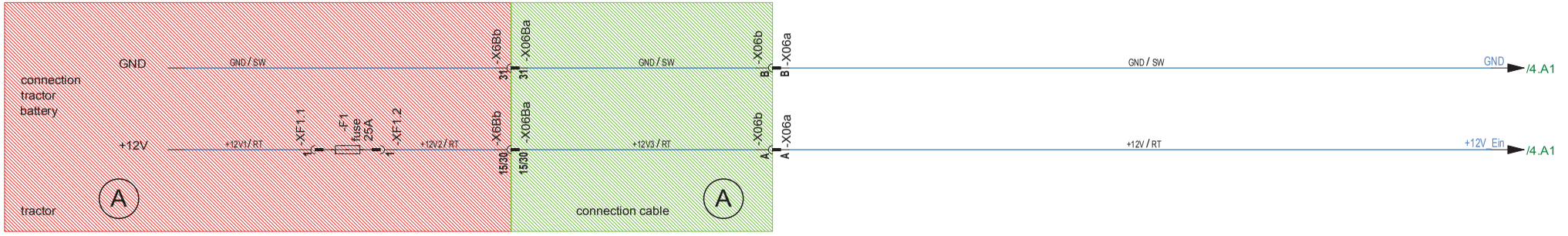
B				date	10.11.2010				location
A	Kennzeichnungen hinzu	07.08.2015	Jansen	User	Wesselkämper				sheet 2
change		date	name	Proved		Origin	Repl. f.	Repl. by	from Sh.





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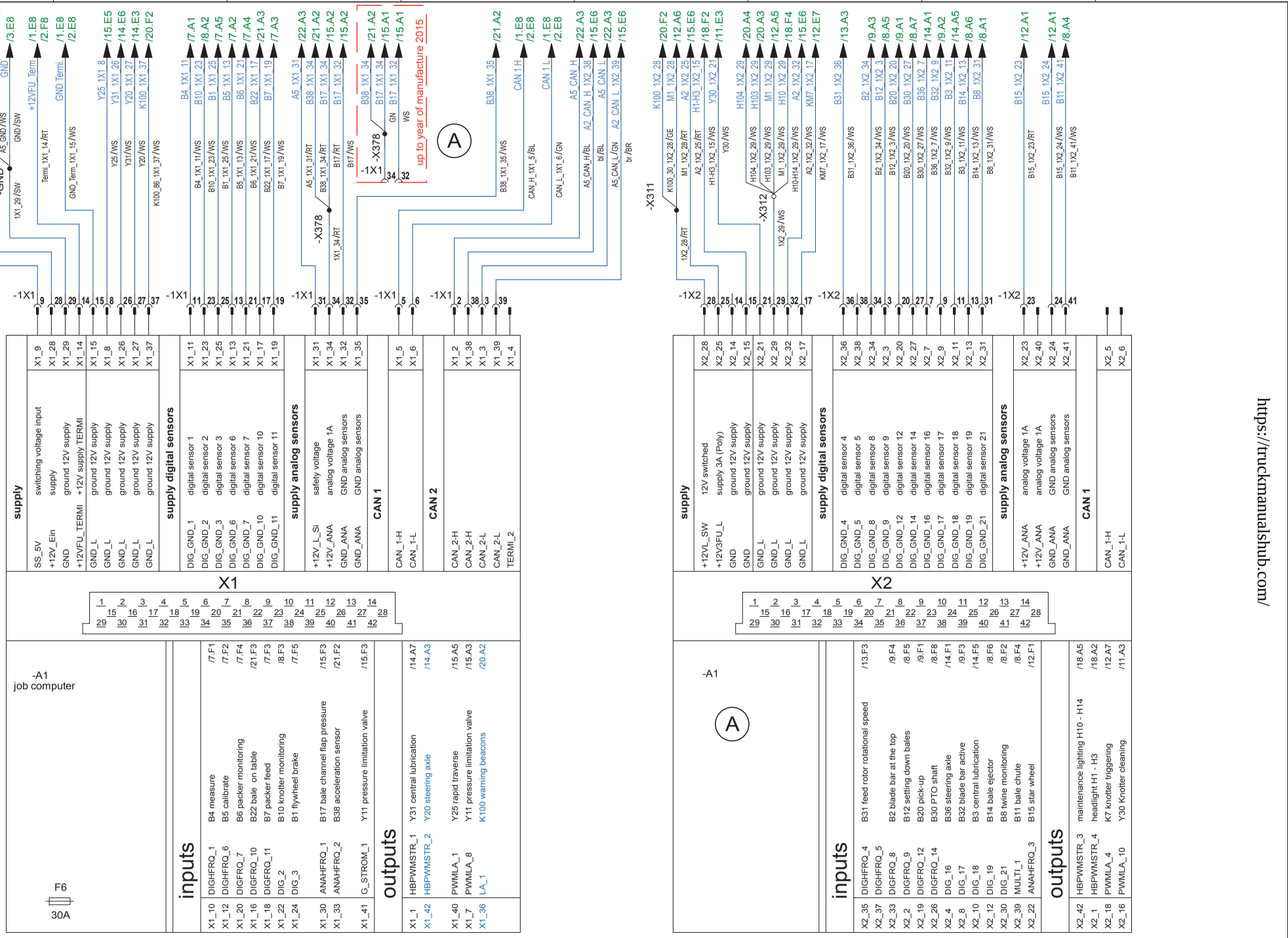
C				Created			
B			date				
A			User	Loeckenr			

KRONE

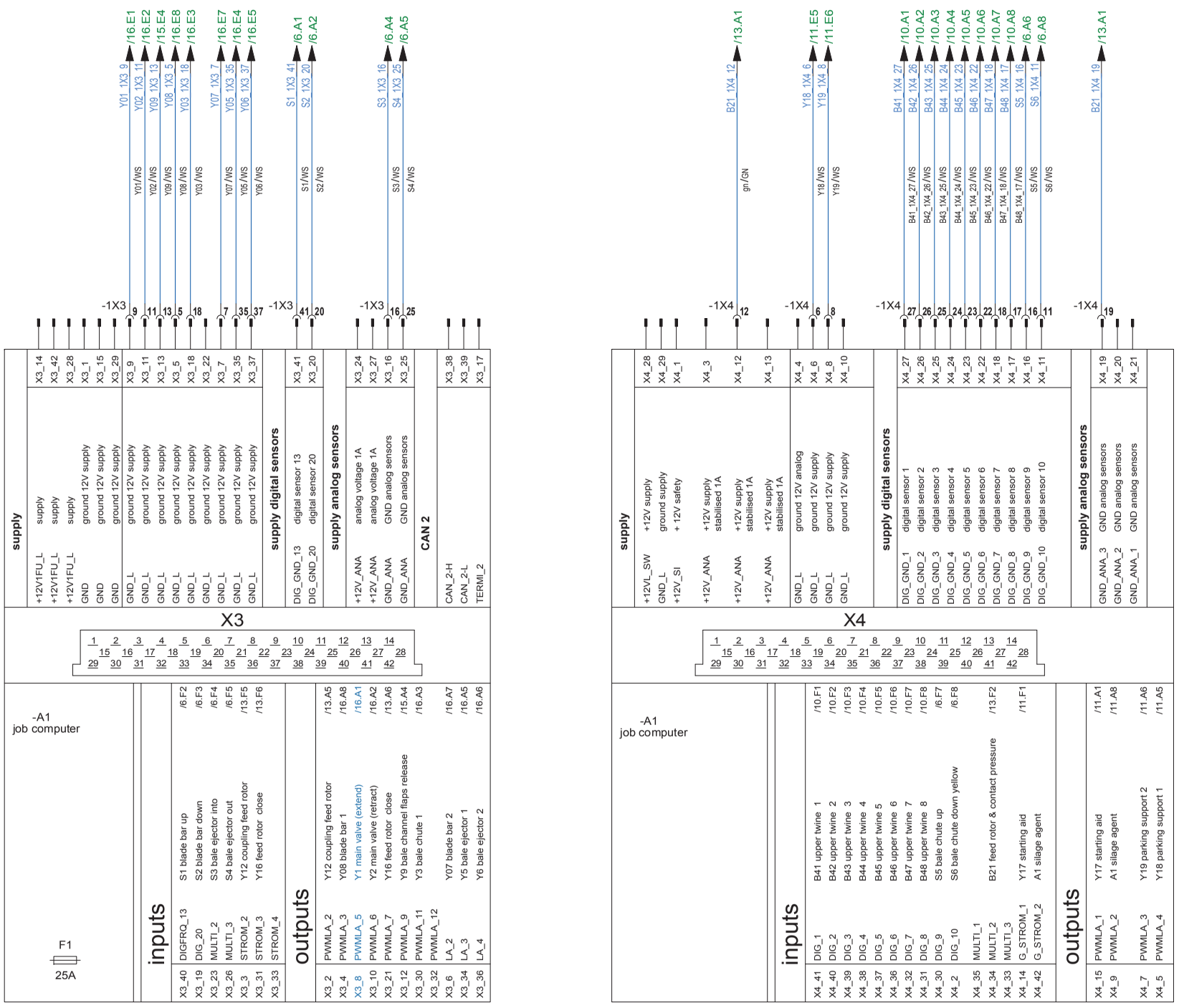
document-no.: D24
150100584 - 07

BiG PACK High Speed HDP II
terminal / power supply

plant	
location	
sheet	3
from	Sh.



C				Created	KRONE	document-no.: D24 150100584 - 07	BiG PACK High Speed HDP II	plant
B				date			KMC: supply overview: connector X1 / X2	location
A	Kennzeichnung korrigiert/hinzugefügt. B17 hinzugefügt.	07.08.2015	Jansen	User albers				sheet 4
	change	date	name	Proved	Origin	Repl. f.	Repl. by	from Sh.



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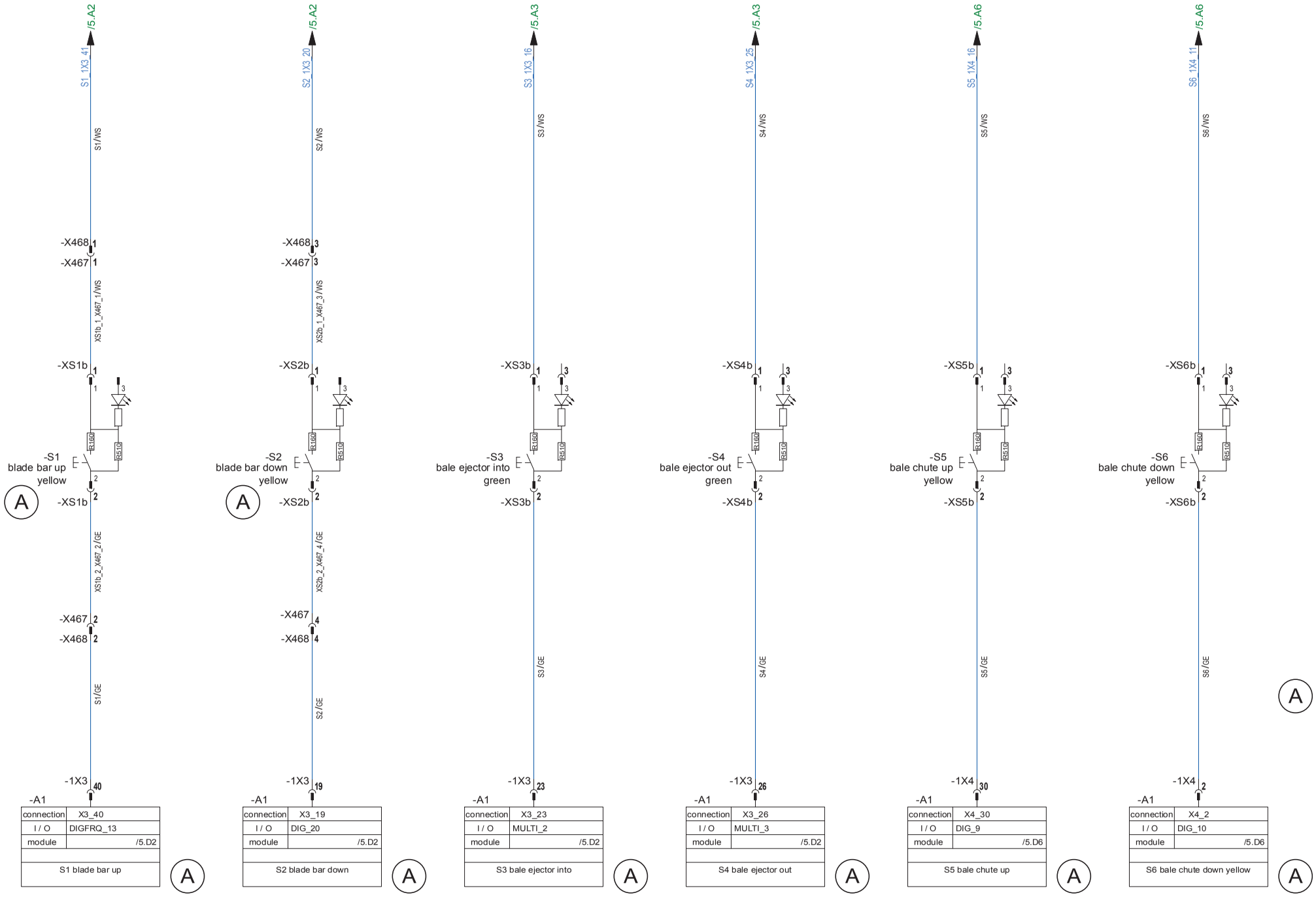
C					Created	KRONE	document-no.: D24 150100584 - 07	BiG PACK High Speed HDP II	plant
B				date				KMC: supply overview: connector X3 / X4	location
A				User	albers				sheet 5
change	date	name	Proved		Origin	Repl. f.	Repl. by		from Sh.



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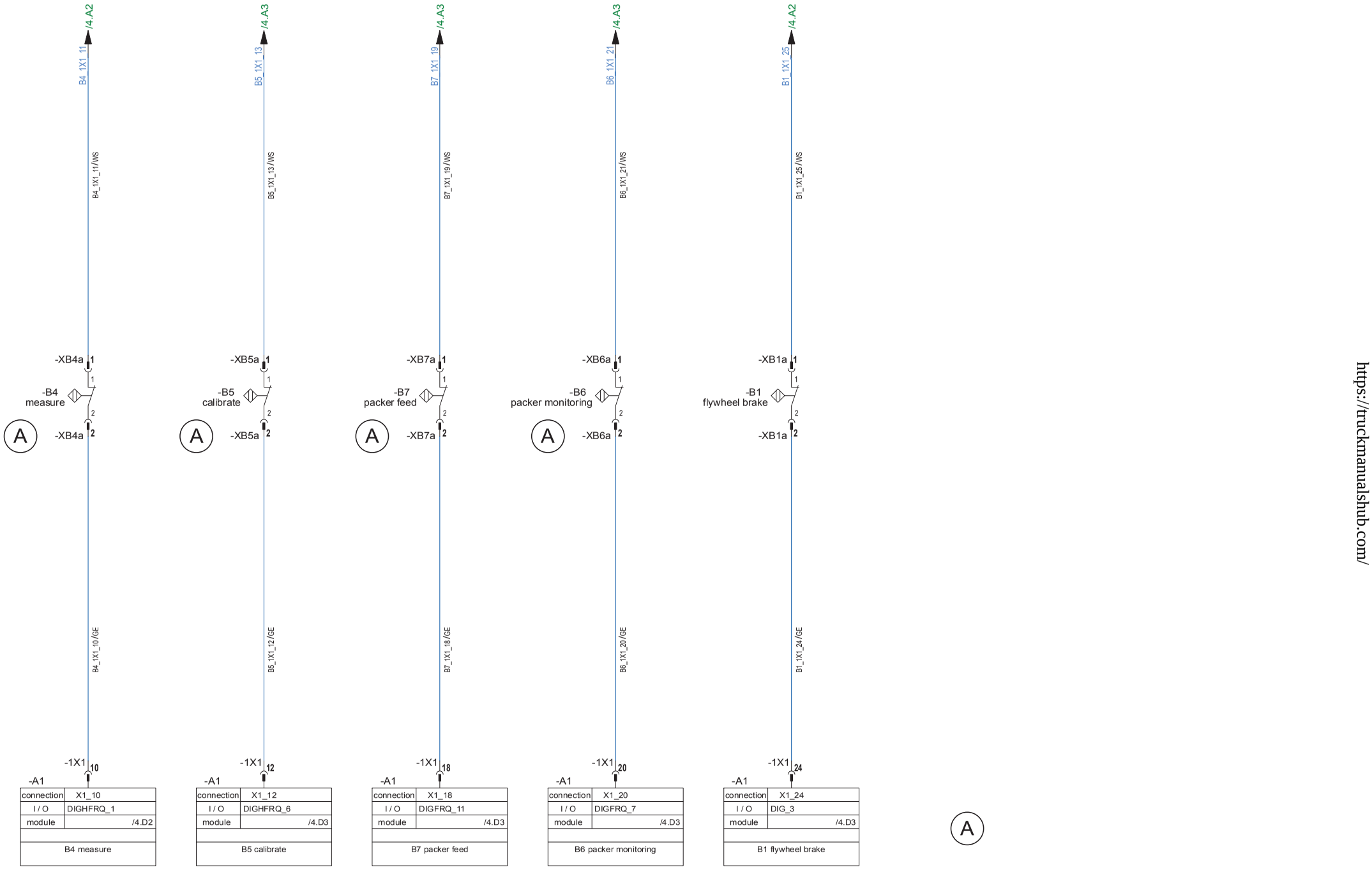
Only available when: comfort

C					Created	KRONE	document-no.: D24 150100584 - 07	BiG PACK High Speed HDP II KMC: inputs: button: blade bar, bale ejector, bale chute	plant location sheet 6 from Sh.
B				date					
A	Anordnung geändert. Kennzeichnung korrigiert / hinzu.	28.08.2015	Jansen	User	Albers				
	change	date	name	Proved		Origin	Repl. f.	Repl. by	



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change	date	name	Proved		Origin	Repl. f.	Repl. by
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B				date			
A	Eingang entfernt. Kennzeichnungen korrigiert	10.08.2015	Jansen	User	Albers		

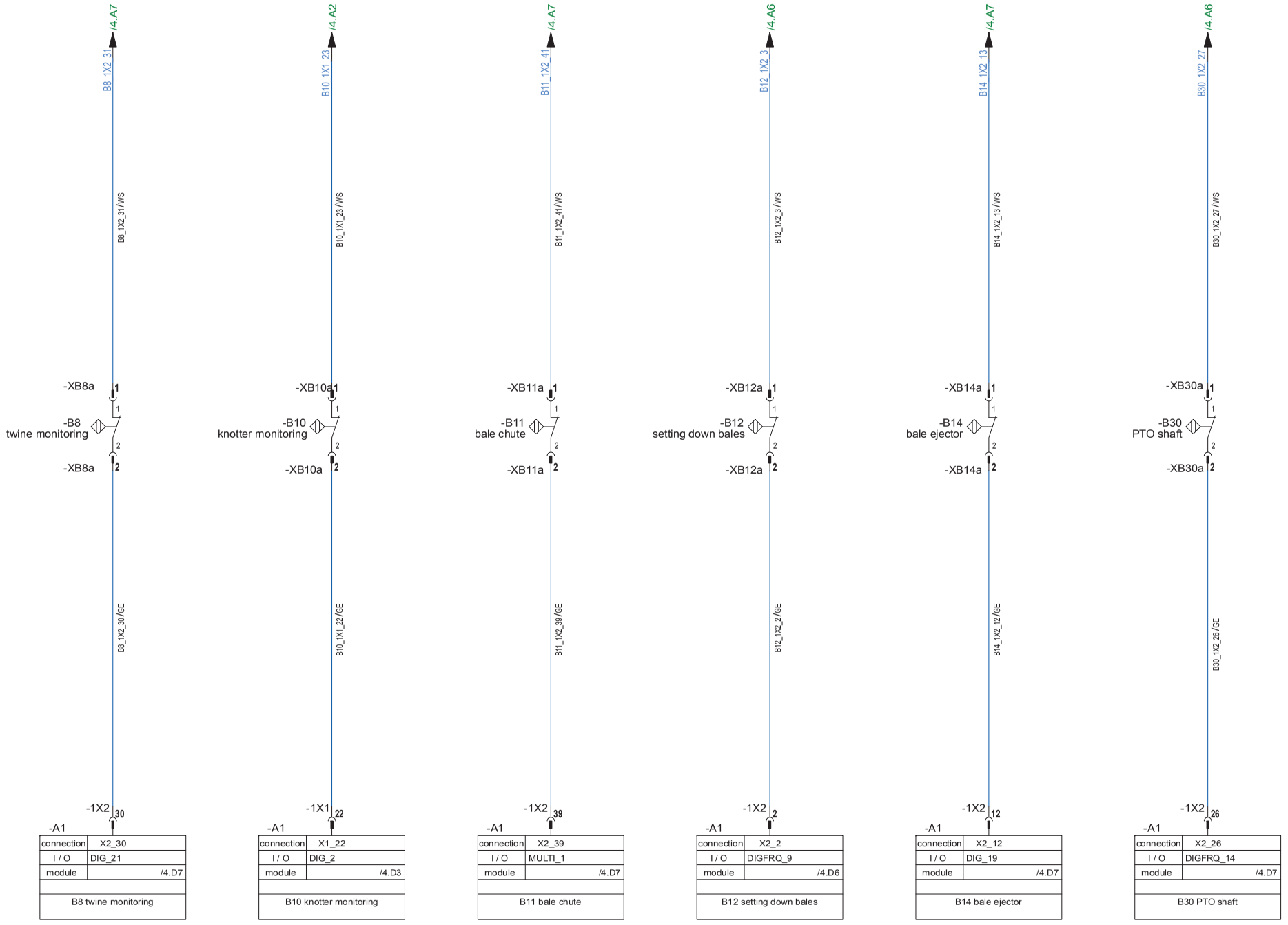
KRONE

document-no.: D24
150100584 - 07

BiG PACK High Speed HDP II

KMC: inputs: sensors: measure, calibrate, packer feed, packer monitoring, flywheel brake

plant	
location	
sheet	7
from	Sh.



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C				Created			
B			date				
A			User	Albers			

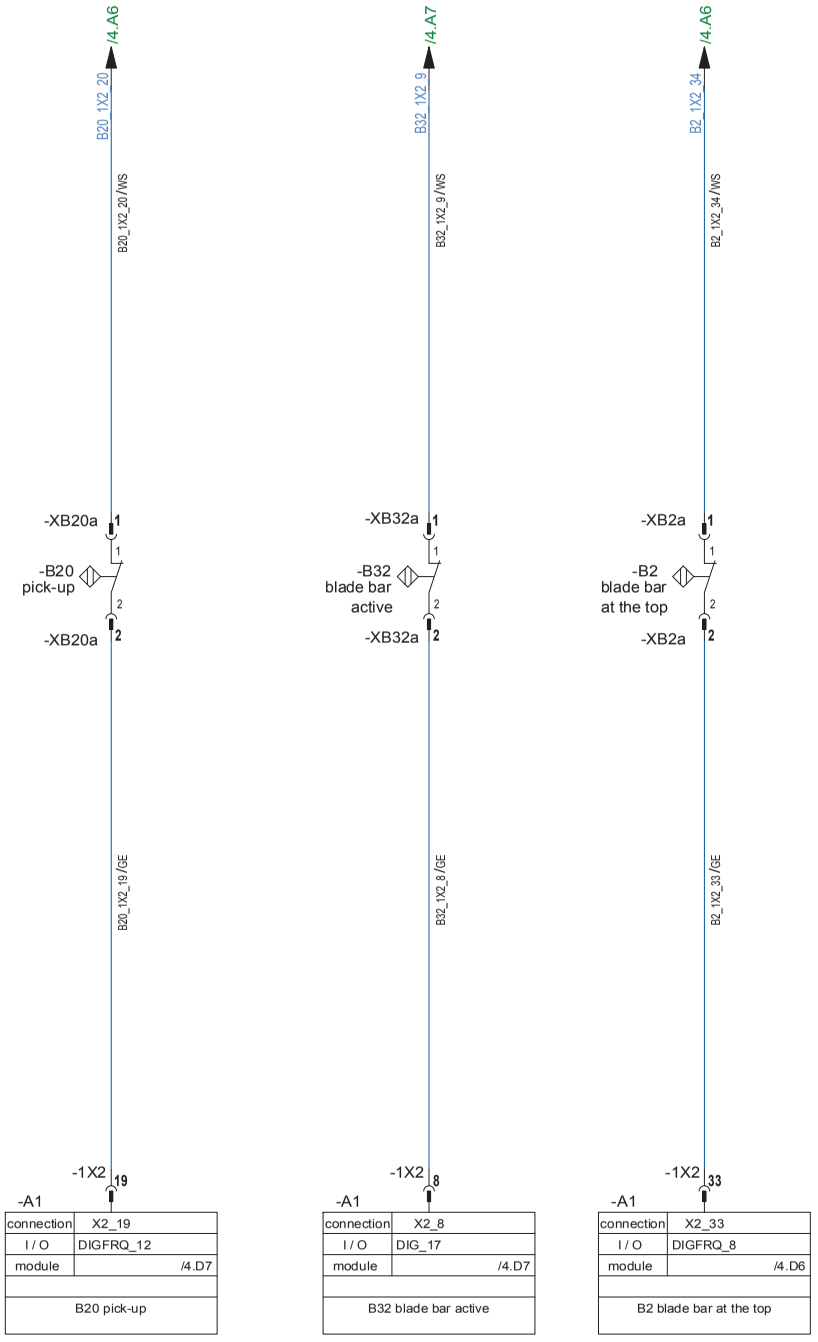
KRONE

document-no.: D24
150100584 - 07

BiG PACK High Speed HDP II

KMC: inputs: sensors: twine monitoring, knotter monitoring, bale chute, setting down bales, bale ejector,

plant	
location	
sheet	8
from	Sh.



connection	X2_19
I / O	DIGFRQ_12
module	/4.D7
B20 pick-up	

connection	X2_8
I / O	DIG_17
module	/4.D7
B32 blade bar active	

connection	X2_33
I / O	DIGFRQ_8
module	/4.D6
B2 blade bar at the top	

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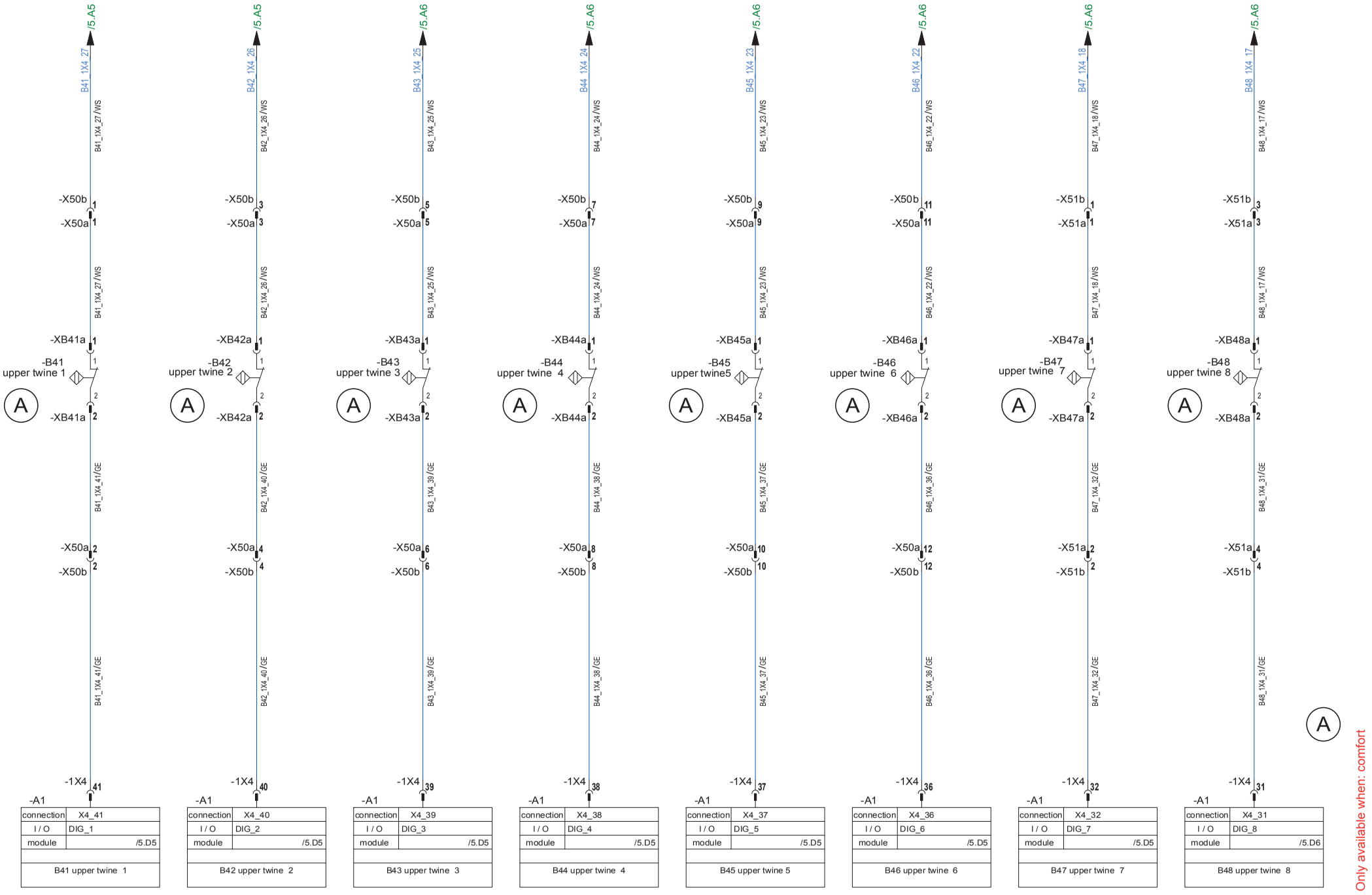
C					Created	KRONE	document-no.: D24	BiG PACK High Speed HDP II
B				date			150100584 - 07	KMC: inputs: sensors: pick-up, blade bar active, blade bar at the top
A				User	albers			
change	date	name	Proved		Origin	Repl. f.	Repl. by	

plant
location
sheet 9
from Sh.



change	date	name	
C			Created
B		date	
A	Funktionen und Kennzeichnungen korrigiert, ausgeblendet.	User	Albers
		Proved	

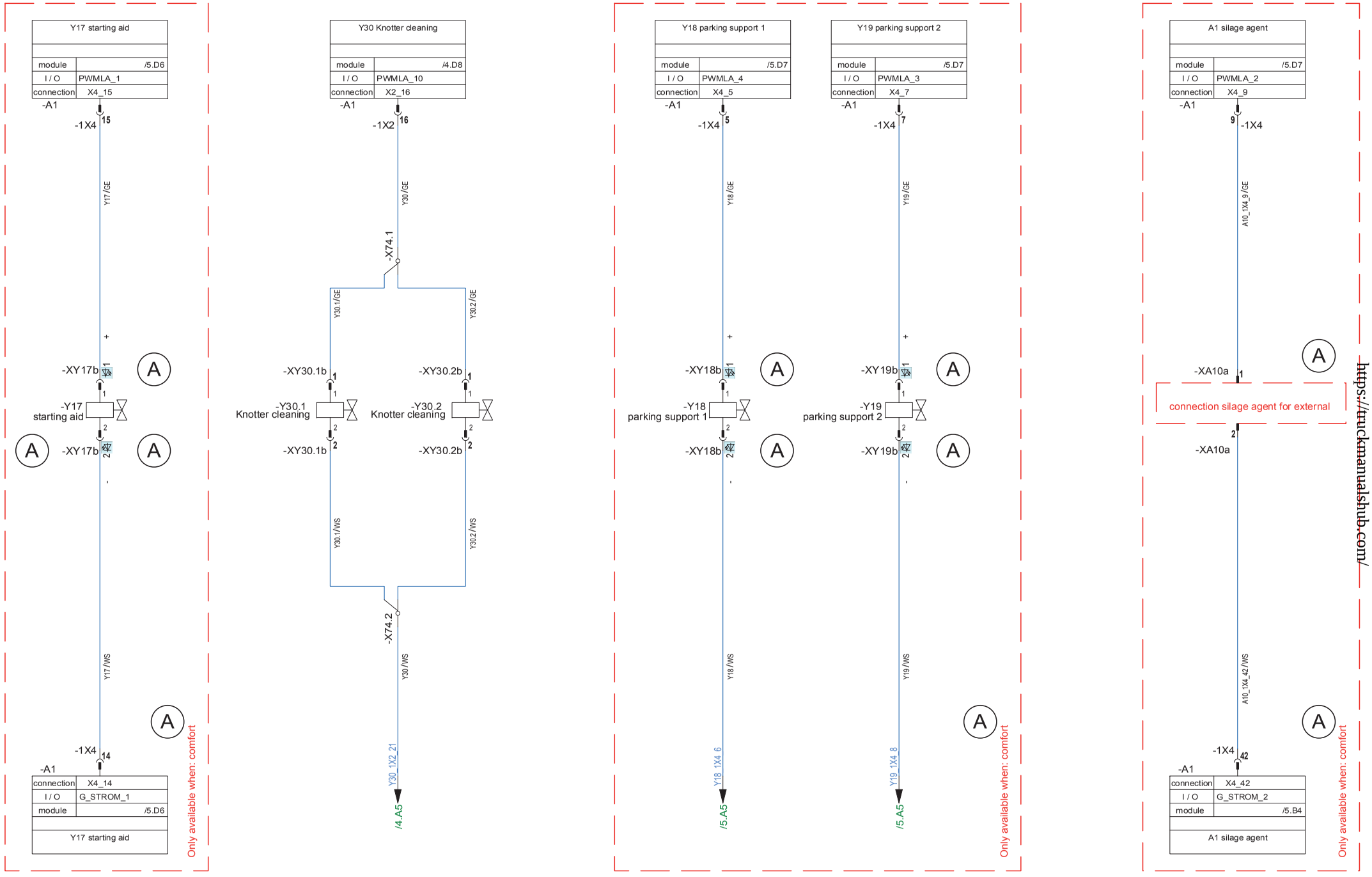
KRONE

Origin	Repl. f.	Repl. by

document-no.: D24
150100584 - 07

BiG PACK High Speed HDP II
KMC: inputs: sensors: upper twine 1 to 8

plant
location
sheet 10
from Sh.



change	date	name		
C				Created
B				date
A Kennzeichnung hinzu/korrigiert. Bauteil geändert.	10.08.2015	Jansen	User	Albers
			Proved	

KRONE

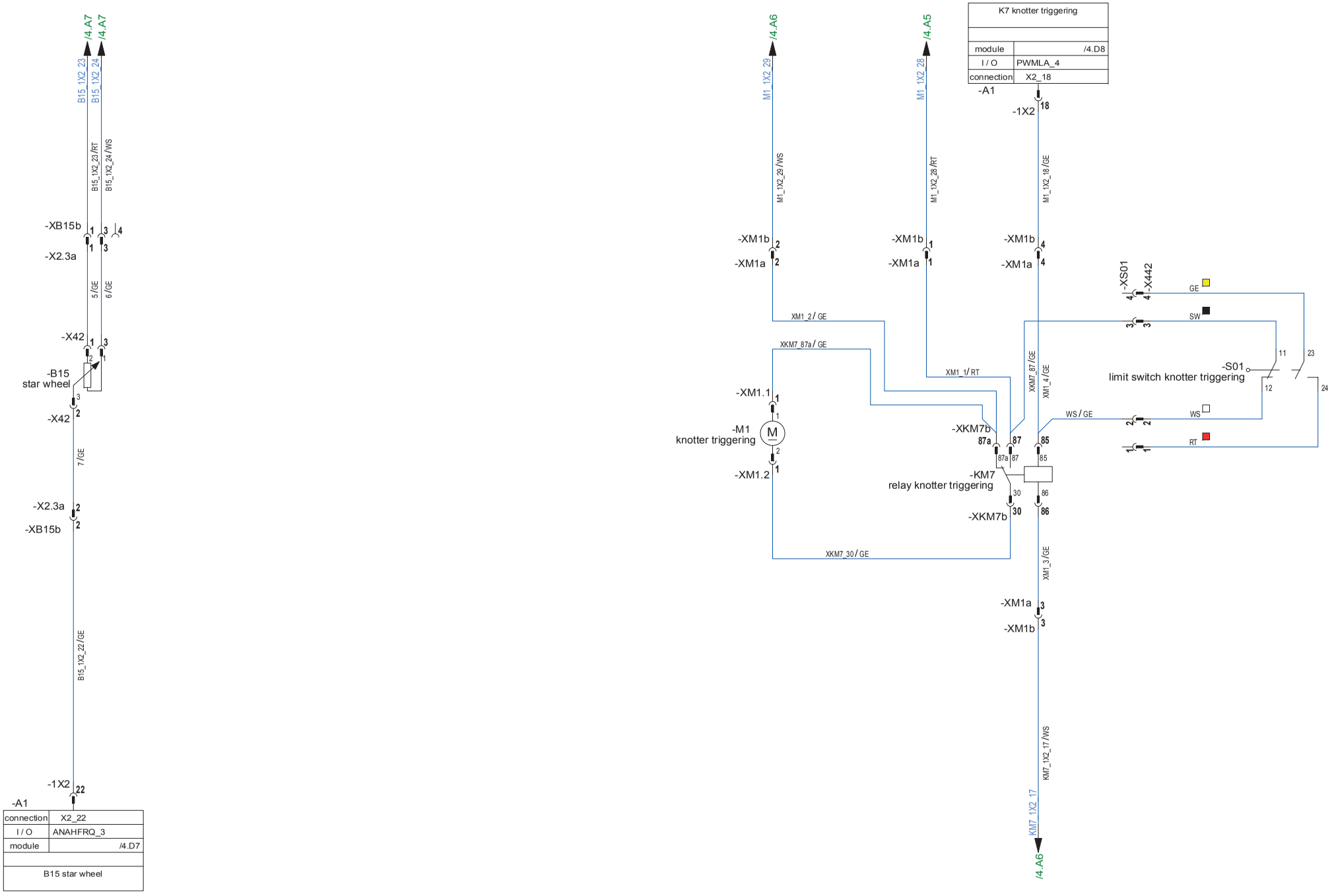
Origin | Repl. f. | Repl. by

document-no.: D24
150100584 - 07

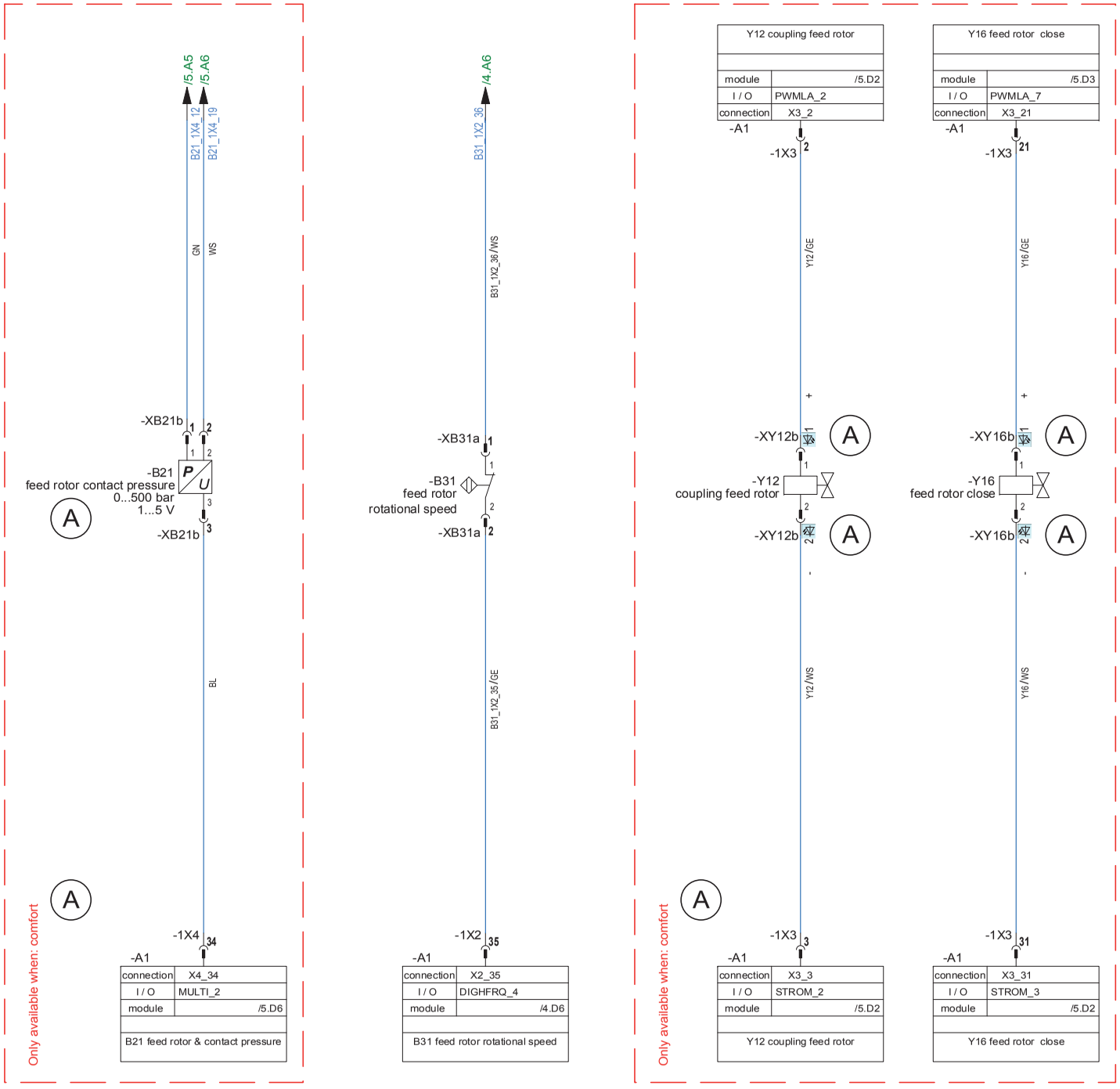
BiG PACK High Speed HDP II

KMC: inputs / outputs: valves: starting aid, Knotter cleaning, parking support, silage agent

plant
location
sheet 11
from Sh.



C					Created	KRONE	document-no.: D24 150100584 - 07	BiG PACK High Speed HDP II KMC: inputs / outputs: sensors / valves: star wheel, knotter triggering	plant location sheet 12 from Sh.
B				date					
A				User	Albers				
change		date	name	Proved		Origin	Repl. f.	Repl. by	



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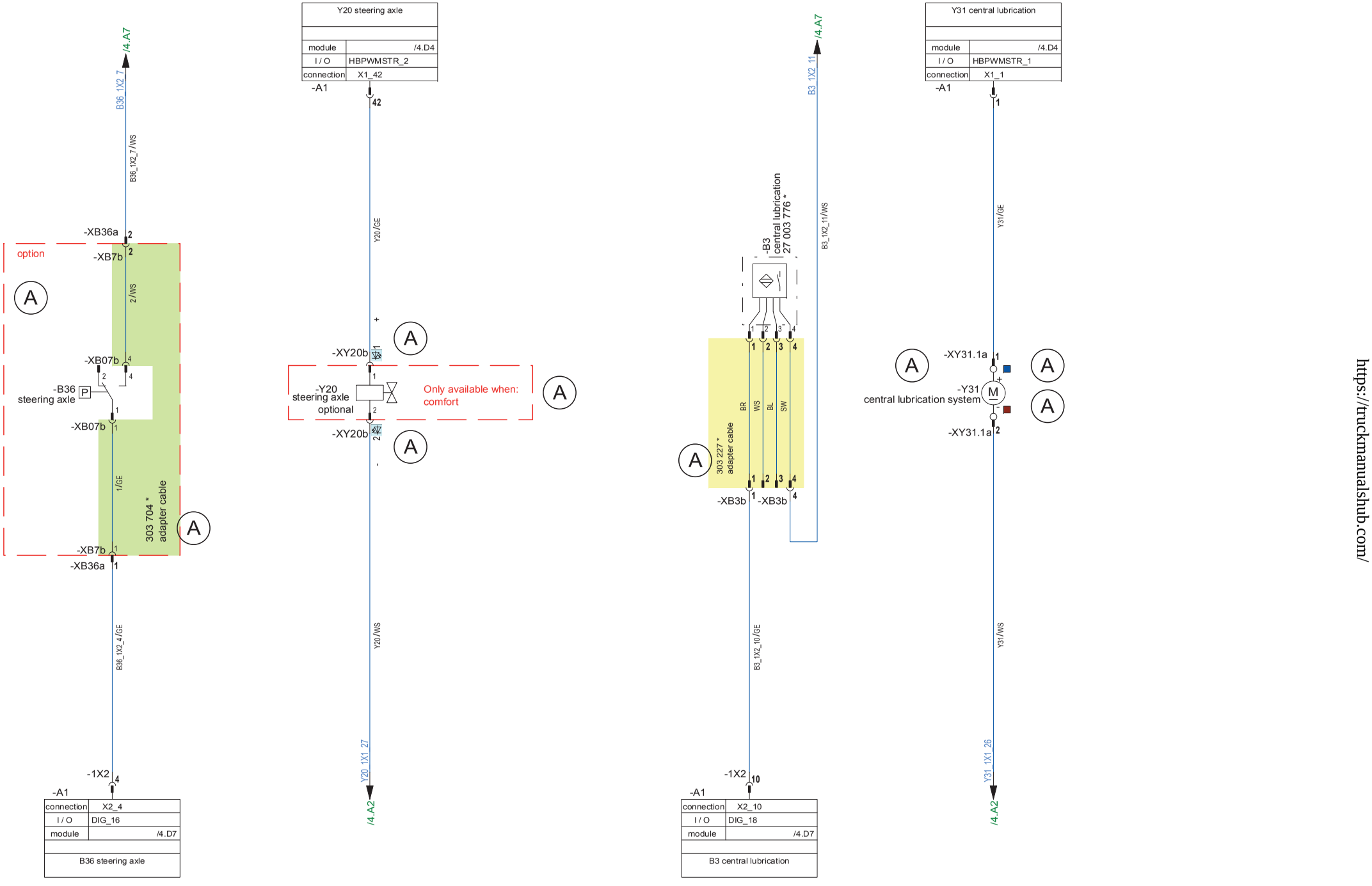
C					Created	KRONE	document-no.: D24 150100584 - 07	BiG PACK High Speed HDP II KMC: inputs / outputs: sensors / valves: feed rotor contact pressure, feed rotor rotational speed, coupling feed rotor, feed rotor close
B				date				
A	Kennzeichnungen hinzu. Bauteil aktualisiert/geändert.	11.08.2015	Jansen	User	Albers			
	change	date	name	Proved		Origin	Repl. f.	Repl. by

plant
location
sheet 13
from Sh.



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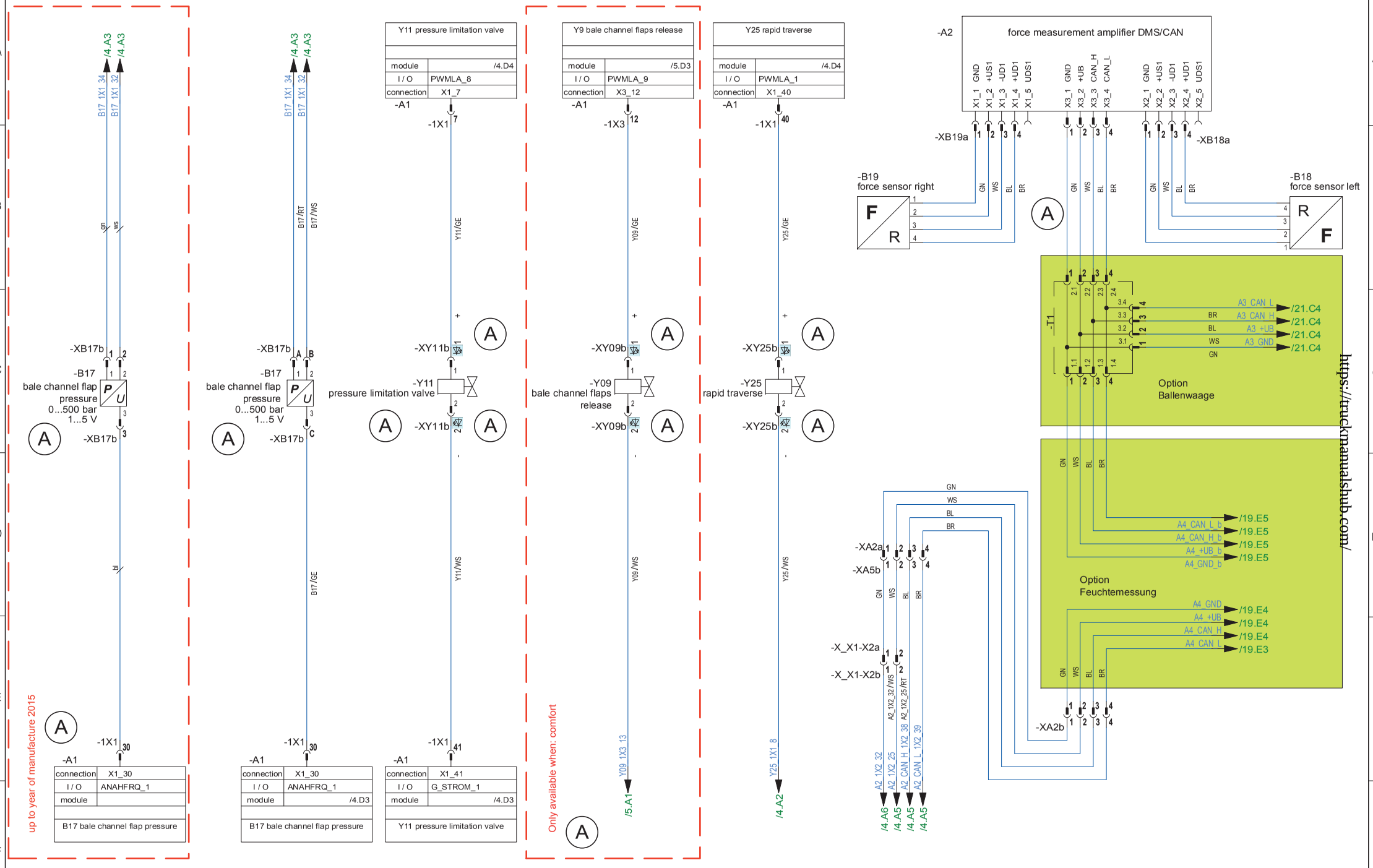
C					Created	KRONE	document-no.: D24 150100584 - 07	BiG PACK High Speed HDP II	plant
B				date				KMC: inputs / outputs: steering axle, central lubrication	location
A	Funktionen, Kennzeichnungen u. Aderfarben hinzu/korrigiert.	11.08.2015	Jansen	User	albers				sheet 14
	change	date	name	Proved		Origin	Repl. f.	Repl. by	from Sh.



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C					Created	KRONE	document-no.: D24	BiG PACK High Speed HDP II
B				date			150100584 - 07	KMC: inputs / outputs: bale channel flap pressure, pressure limitation valve, bale channel flap release valve, rapid traverse, force measurement amplifier
A	B17 hinzu. Kennz. hinzu/entfernt. Bauteile akt./geändert.	10.08.2015	Jansen	User	Albers			plant
	change	date	name	Proved		Origin / Repl. f.	Repl. by	location / sheet 15 / from Sh.

change	date	name		
C				Created
B			date	
A			User	Albers
			Proved	

KRONE

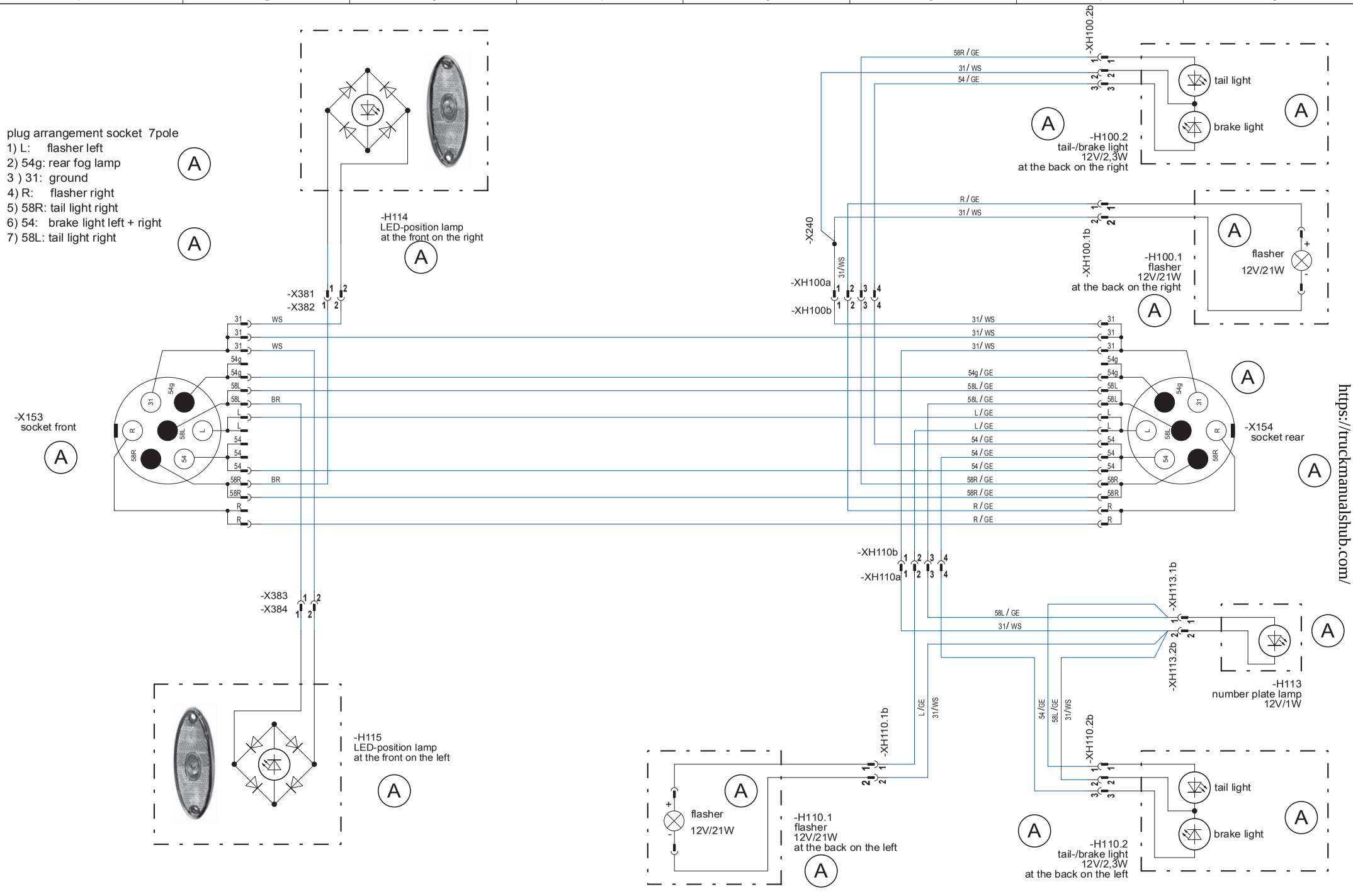
Origin	Repl. f.	Repl. by

document-no.: D24
150100584 - 07

BiG PACK High Speed HDP II

KMC: outputs: valves: main valve, bale chute, bale ejector, blade bar

plant	
location	
sheet	16
from	Sh.



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B				date				plant
A	Bauteile akt., Kennzeichnungen hinzu / entf. / korrigiert.	24.08.2015	Jansen	User	Albers			location
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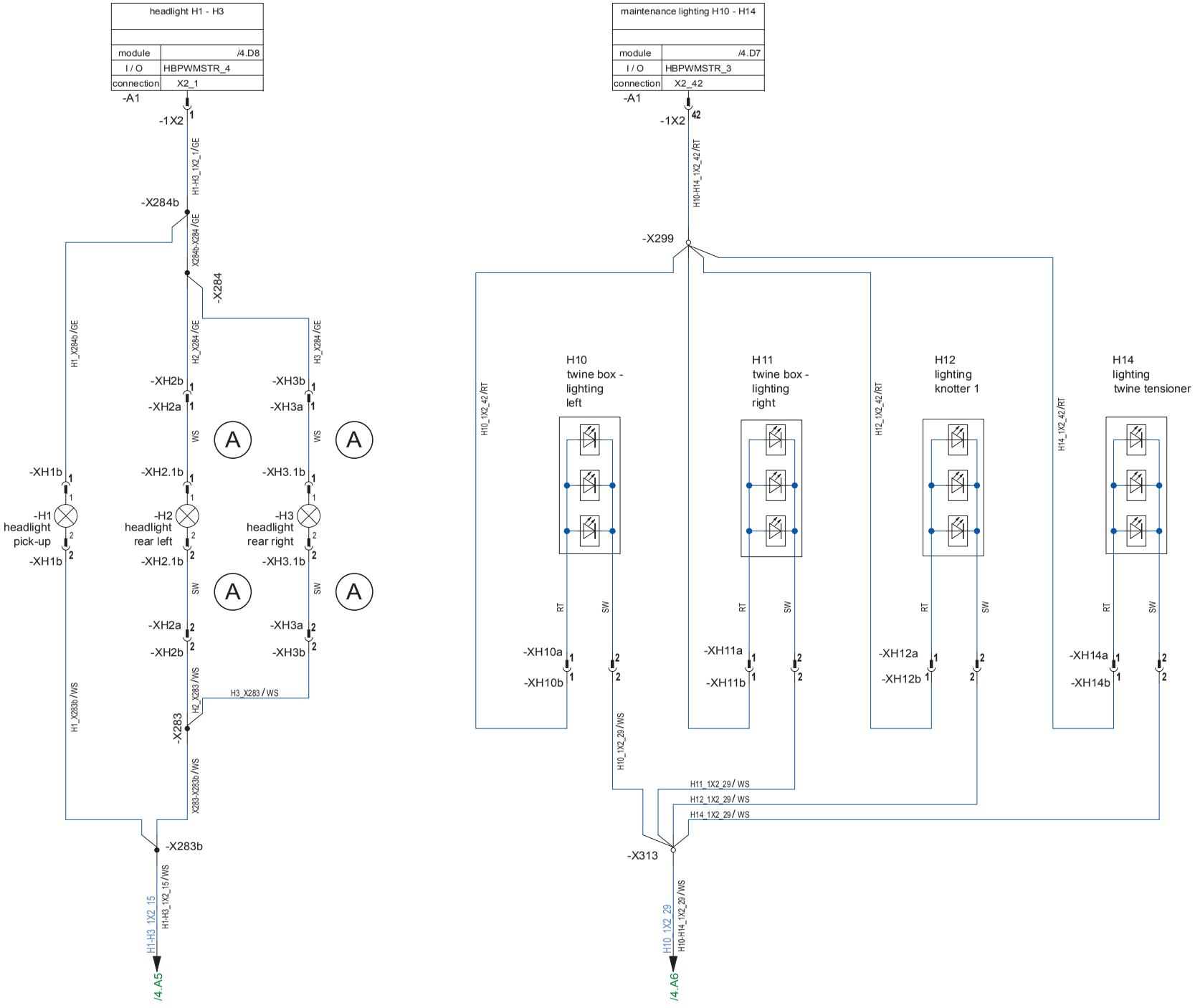

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BiG PACK High Speed HDP II
working lighting and maintenance lighting

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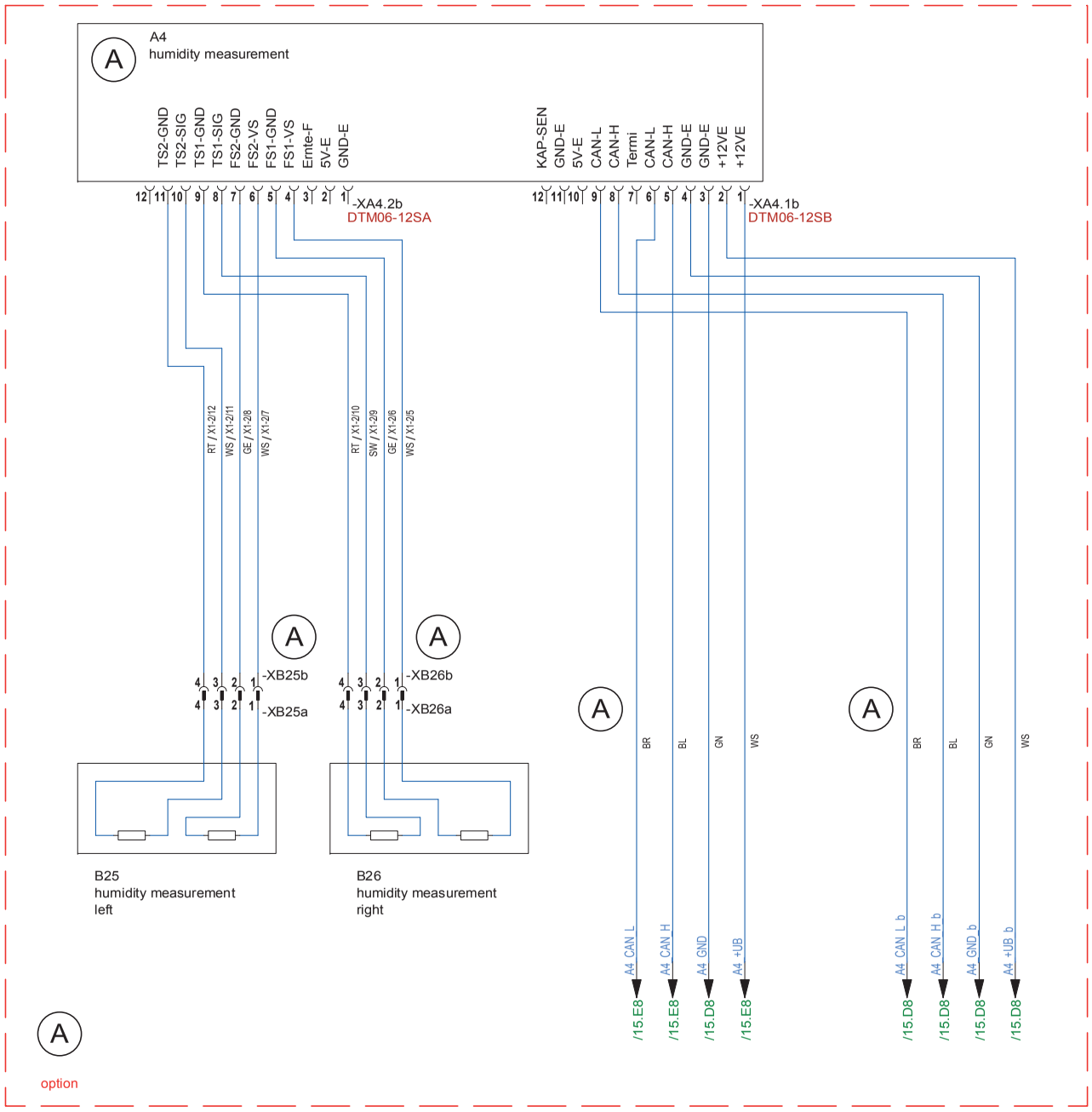

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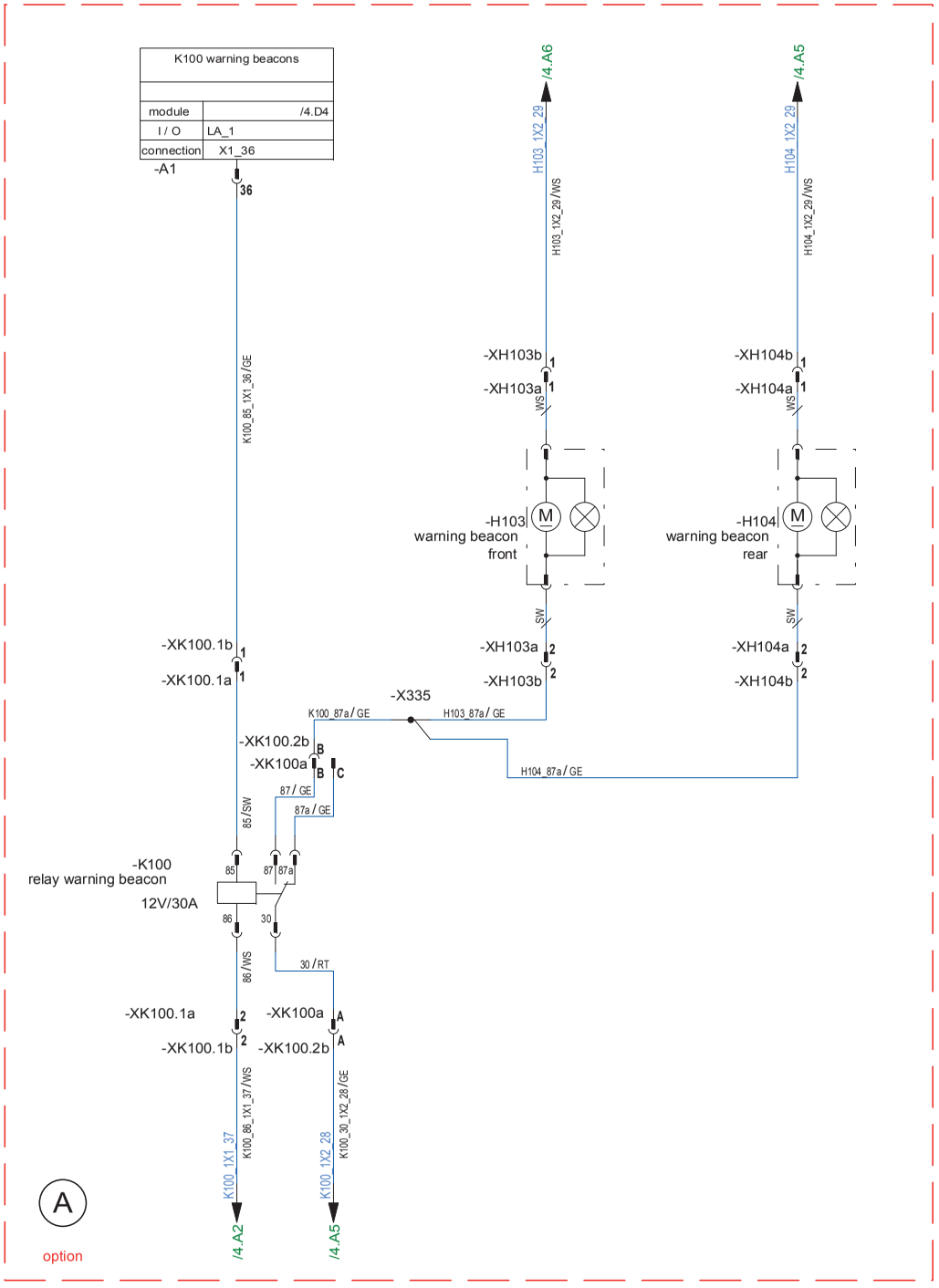

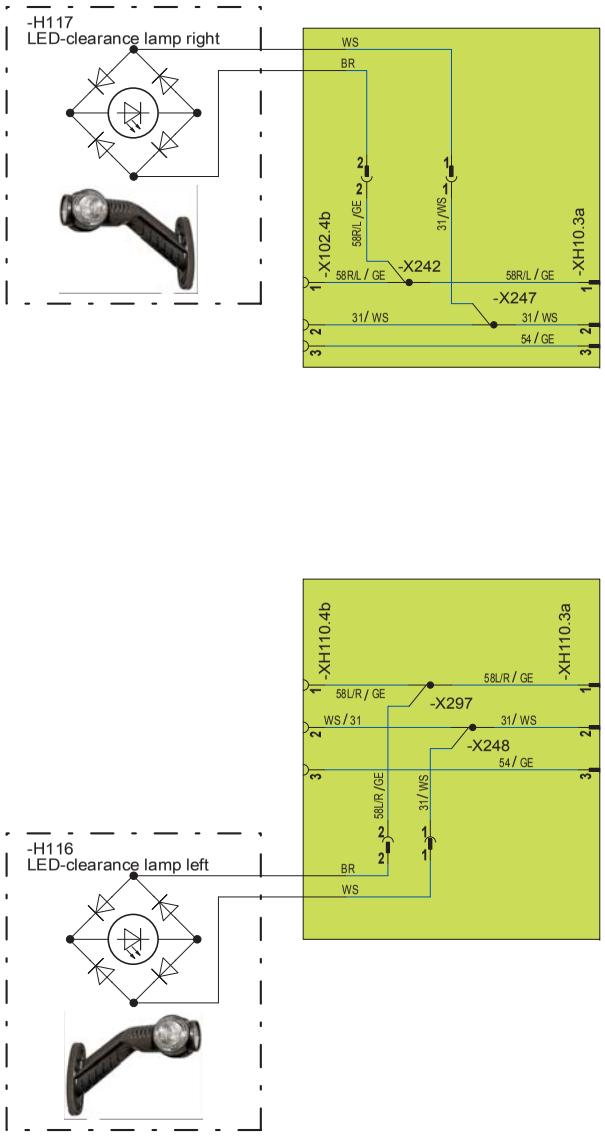

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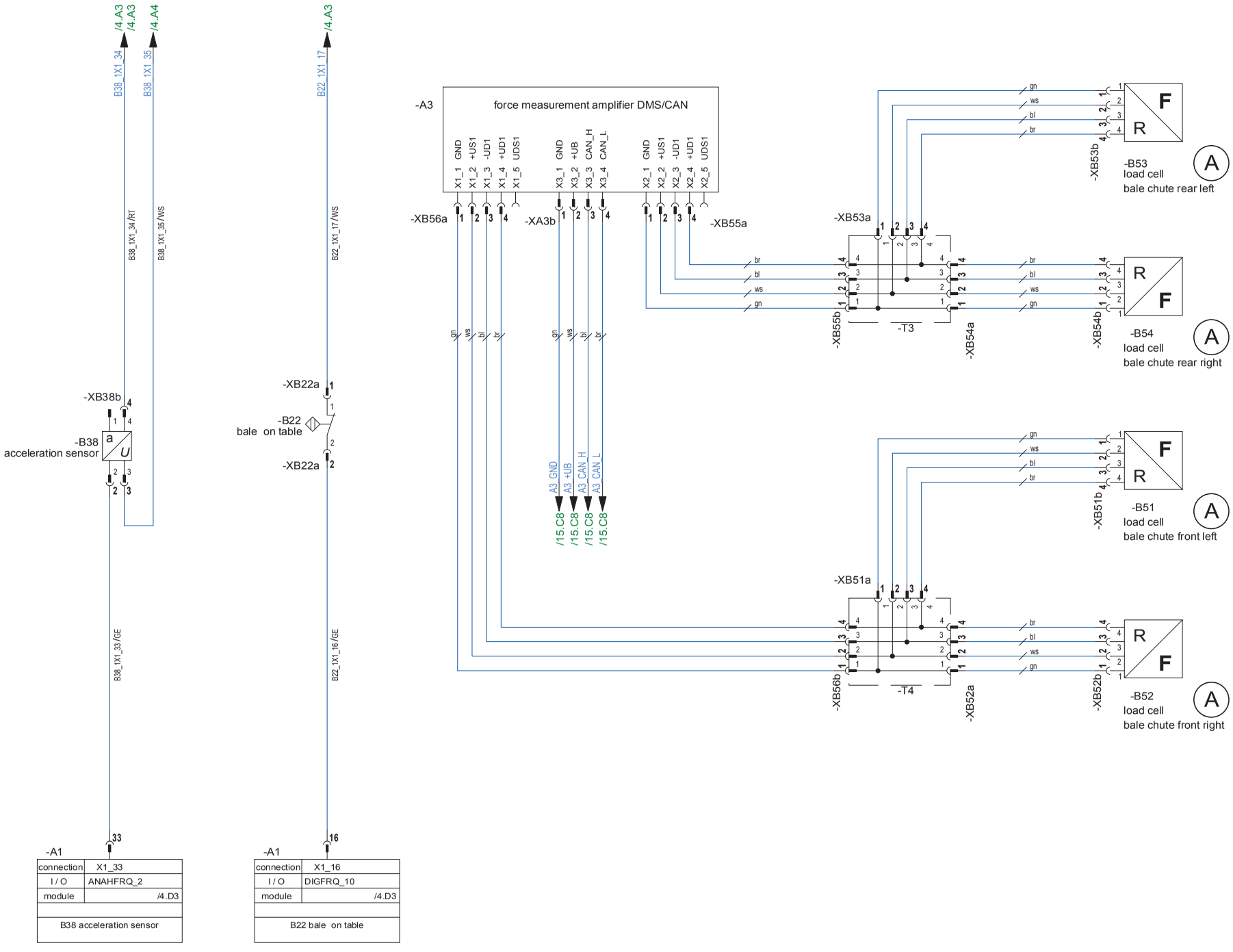

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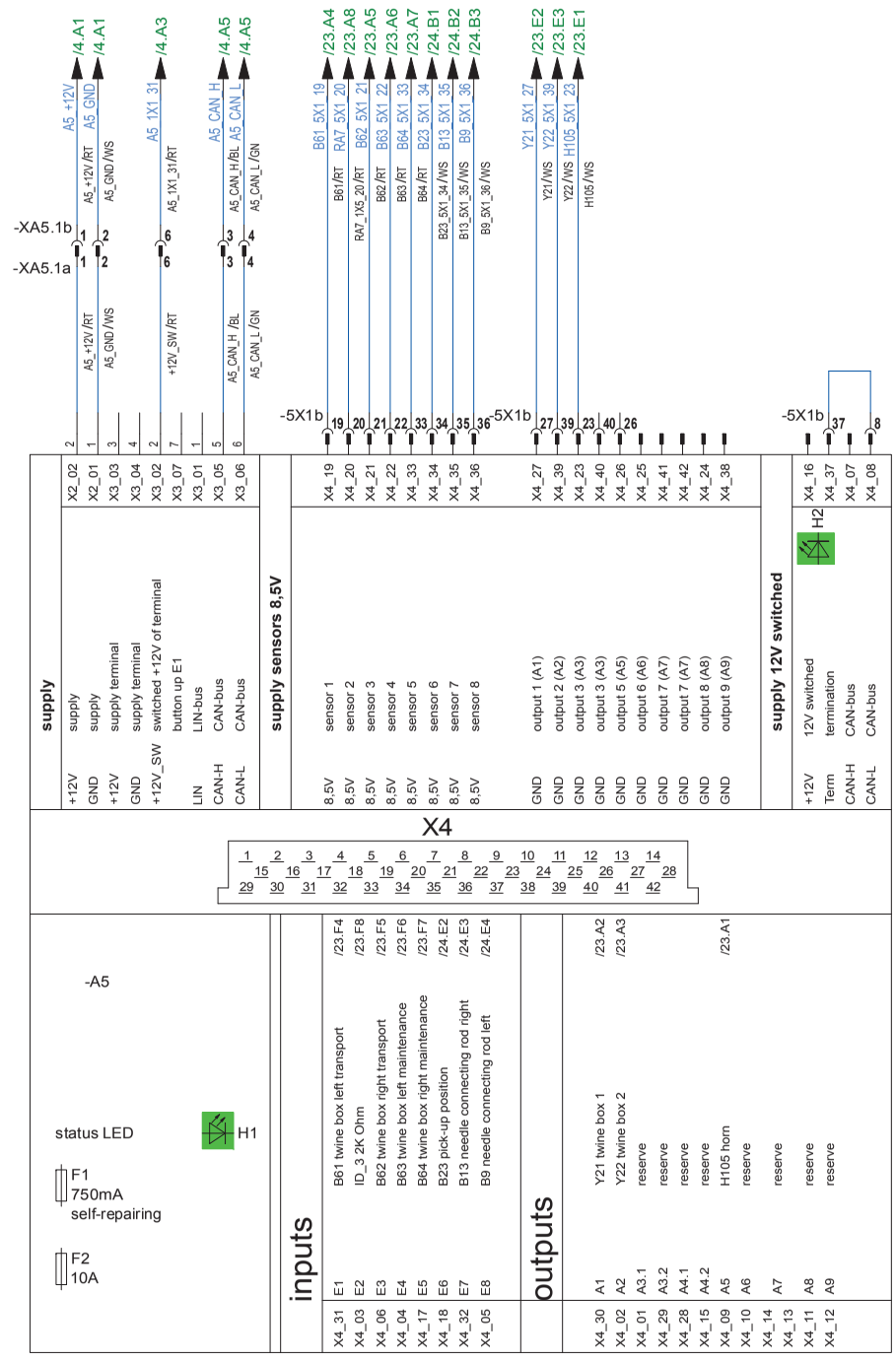

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BiG PACK High Speed HDP II
KMC twine box: supply overview;

plant
location
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BiG PACK High Speed HDP II

KMC twine box: inputs / outputs: horn twine box, valves twine box, transport position twine box, maintenance twine box, terminator

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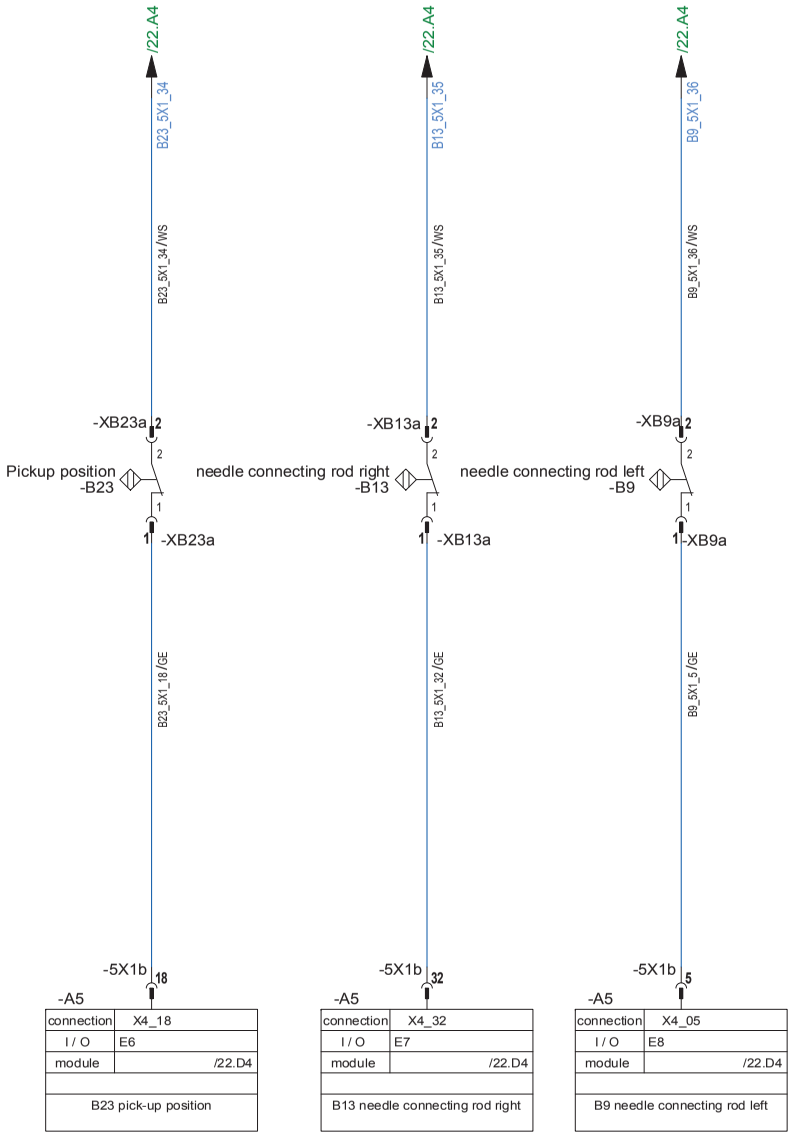

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BiG PACK High Speed HDP II
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Supplement to Operating Instructions

Document no.: 150000775_00 _en V.2

Large Square Baler

BiG Pack 1290 HDP II, BiG Pack 1290 HDP II XC

From machine no.: 940085

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1 Information on This Document

1.1 Validity

This document is valid for machines of type:
SelbstfahrerKreiselzettwenderScheibenmähwerkKreiselschwaderLadewagenRundballenpressenGroßpackenpressenVorsätze FeldhäckslerSoftware

BiG Pack 1290 HDP II
BiG Pack 1290 HDP II XC
All information, illustrations and technical data in this document correspond to the latest state at the time of publication.

We reserve the right to make design changes at any time and without notification of reasons.

1.2 Re-ordering

If this document should become wholly or partially unusable, you can request a replacement document by stating the document number mentioned on the cover sheet.

1.3 Applicable documents

To ensure that the machine is used safely and as intended, observe the following further applicable documents:

1.4 Target group of this document

This document aims at the operators of the machine who fulfill the minimum requirements of personnel qualification,*refer to page 11*.

1.5 How to use this document

1.5.1 Directories and references

Contents/headers

The contents and headers in this document ensure quick orientation in the chapters.

Index

The index contains catchwords in alphabetical order which enable to find information on a desired topic easily. The index can be found on the last pages of this document.

Cross references

Cross references to another place in the document or to another document are in the text with page number.

Examples:

- Check all screws on the machine for firm attachment, *refer to page 6*. (**INFORMATION**: If you use this document in electronic form, you get to the stated page by clicking on the link.)
- For further information, please refer to the operating instructions of the universal shaft manufacturer.

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1.5.2 Information on direction

Information on direction in this document such as front, rear, right and left always applies in direction of travel of the machine.

1.5.3 Term “machine”

Throughout the rest of this document, the “large square baler” will also be referred to as the “machine”.

1.5.4 Figures

The figures in this document do not always represent the exact machine type. The information which refers to the figure always corresponds to the machine type of this document.

1.5.5 Scope of the document

In addition to standard equipment, accessories kits and versions of the machine are described in this document. Your machine may deviate from this document.

1.5.6 Means of representation

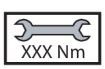
Icons in the text

The following means of representation (icons) are used to present the text more clearly:

- ▶ This arrow characterizes an **action step**. Several arrows in a row identify a sequence of actions to be performed step by step.
- ✓ This icon identifies a **prerequisite** that has to be fulfilled to perform an action step or a sequence of actions.
- ⇨ This arrow marks the **intermediate result** of an action step.
- ➡ This arrow identifies the **result** of an action step or sequence of actions.
- ● This bullet point identifies an enumeration. If the bullet point is intended, it identifies the second level of the enumeration.

Icons in figures

The following icons can be used in the figures:

Icon	Explanation
	Reference sign for parts
	Position of a part (e.g. move from pos. I to pos. II)
	Dimensions (e.g. B = width, H = height, L = length)
	Tighten screws with specified tightening torque using torque wrench.

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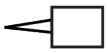
Icon	Explanation
	Direction of motion
	Direction of travel
	open
	closed
	Magnification of display detail
	Framings, dimension line, dimension line limitation, reference line for visible parts or visible mounting material
	Framings, dimension line, dimension line limitation, reference line for covered parts or covered mounting material
	Screen area to which is specifically pointed
	Left-hand side of the machine
	Right-hand side of the machine

Warning signs

Warnings of dangers are separated from the remaining text as warning signs and are identified with a danger sign and signal words.

The warning signs must be read and the measures must be observed in order to prevent personal injury.

Explanation of danger sign

This is the danger sign that warns of a risk of injury.

Please observe all notes marked with the danger sign in order to avoid injuries or death.

Explanation of signal words

⚠ *DANGER*
The signal word DANGER warns of a hazardous situation which will result in serious injuries or death if the warning sign is ignored.

⚠ *WARNING*
The signal word WARNING warns of a hazardous situation which will result in serious injuries or death if the warning sign is ignored.

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⚠ CAUTION
The signal word CAUTION warns of a hazardous situation which will result in minor to moderate injuries if the warning sign is ignored.

Example of a warning sign:

⚠ WARNING
Eye damage caused by flying dirt particles When cleaning with compressed air, dirt particles are ejected at high speed and could get into the eyes. Therefore eyes could be hurt. ▶ Keep people away from the working area. ▶ Wear suitable work clothes when performing cleaning work with compressed air (e.g. eye protection).

Warnings of property damage and environmental damage

Warnings of property damage or environmental damage are separated from the remaining text and marked with “Notice”.

Example:

NOTICE
Gearbox damage due to low oil level The gearboxes could be damaged when the oil level is too low. ▶ Check gearbox oil level at regular intervals and top up oil, if necessary. ▶ Check gearbox oil level approx. 3 to 4 hours after the machine has been switched off. Check oil level only when machine is in horizontal position.

Notices with information and recommendations

Additional information and recommendations for trouble-free and productive operation of the machine are separated from the remaining text and marked with “Information”.

Example:

INFORMATION
Each safety label is provided with an order number and can be ordered directly from the manufacturer or from the authorized specialist dealer.

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2 Intended use

This machine is used to bale crops.

The crops designated for the intended use of this machine are cut stalk and leaf crops.

The machine is designed exclusively for use in agriculture and may only be used when

- all safety equipment is available according to the operating instructions and is in the protective position.
- all safety instructions of the operating instructions are observed and complied with.

The machine must only be used by people who satisfy the personnel qualification requirements designated by the machine manufacturer. *refer to page 11*.

These operating instructions are part of the machine and must therefore be carried along while the machine is used. The machine may be operated only when the operator has received training and in compliance with these operating instructions.

If the machine is used for applications which are not described in these operating instructions, this may result in serious injuries or death and damage to the machine and other property.

Unauthorized modifications to the machine may affect the properties of the machine or disrupt the proper operation. For this reason, unauthorized modifications shall exclude any liability of the manufacturer for consequential damage.

The intended use shall also include the adherence to the operating, maintenance and repair conditions set by the manufacturer.

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3 Service life of the machine

- The service life of this machine depends on appropriate operation and maintenance as well as on operating conditions.
- Permanent operational readiness as well as long service life of the machine can be achieved by following the instructions and notes of these operating instructions.
- After each season of use, the machine must be checked completely for wear and other damage.
- Replace damaged and worn parts before placing the machine into service again.
- After the machine has been used for five years, carry out full technical inspection of the machine. According to the results of this inspection, a decision concerning the possibility of reuse of the machine should be taken.
- Theoretically, the service life of this machine is unlimited as all worn or damaged parts can be replaced.

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4 Basic safety instructions

Non-observance of safety instructions and warning signs

Failure to comply with the safety instructions and warning signs can lead to risk for people, environment and property.

4.1 Importance of operating instructions

The operating instructions are an important document and a part of the machine. They are aimed at the user and they contain safety-relevant information.

Only the procedures stated in the operating instructions are safe. If the operating instructions are not observed, persons could be seriously injured or killed.

- ▶ Read in full and observe the “Basic Safety Instructions” before the machine is used for the first time.
- ▶ Prior to work, read and observe the respective sections of the operating instructions.
- ▶ Store the operating instructions and keep it ready.
- ▶ Hand operating instructions on to following users.

4.2 Staff qualification

If the machine is improperly used, there is a risk of serious injuries or death. In order to avoid accidents, each person working with the machine must fulfill the following minimum requirements:

- The person is physically able to control the machine.
- The person is able to perform work with the machine safely which is explained within these operating instructions.
- The person understands the functionality of the machine within the work to be performed and is able to recognize and prevent the dangers of the work.
- The person has read the operating instructions and is able to implement accordingly the information explained in the operating instructions.
- The person is familiar with the guidance of the vehicle.
- For road travel, the person has sufficient knowledge regarding road traffic rules as well as regarding the prescribed driver’s license.

4.3 Children in danger

Children are not in a position to assess dangers and behave unpredictably.

Thus children are particularly at risk.

- ▶ Keep children away from the machine.
- ▶ Keep children away from consumables.
- ▶ Make sure that there are no children in the danger zone, especially when starting and triggering machine movements.

4.4 Connecting the machine

When tractor and machine are connected incorrectly, dangers are caused which could lead to severe accidents.

- ▶ When connecting, observe all the operating instructions:
- The operating instructions of the tractor
- The operating instructions of the machine,

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- The operating instructions of the universal shaft

▶ Observe the changed driving behaviour of the combination.

4.5 Structural modifications on the machine

Unauthorized structural changes and expansions could affect both functionality and operational safety of the machine. Thus there is a risk of serious injuries or death.

▶ Structural changes and expansions are not permitted.

4.6 Additional equipment and spare parts

Additional equipment and spare parts that do not correspond to the requirements of the manufacturer may affect the operational safety of the machine and cause accidents.

▶ To ensure operational safety, use original parts or standard parts which correspond to the requirements of the manufacturer.

4.7 Jobs on the machine

Accompanying persons

Accompanying persons can be seriously injured by the machine or fall from the machine and be overrun. Objects flying upward may hit accompanying persons and injure them.

▶ As a result, make sure that no one except the operator is on the machine.

4.8 Operational safety: Technically sound condition

Operation is only allowed after proper start-up

The operational safety of the machine is not ensured when it is not started up properly according to these operating instructions. Thus accidents may be caused and persons may be seriously injured and killed.

▶ Only use the machine after proper start-up, .

Technically sound state of the machine

Improper maintenance and setting could influence the operational safety of the machine and cause accidents. Thus there is a risk of serious injuries or death.

▶ All maintenance and setting work must be performed according to the chapters “Maintenance and Setting”.

▶ Before performing any maintenance and setting work, shut down and safeguard the machine, *refer to page 21*.

Danger from damage to the machine

Damage to the machine may affect the operational safety of the machine and cause accidents. Thus there is a risk of serious injuries or death. The following parts of the machine are of special importance for safety:

- Brakes
- Steering
- Safety devices
- Connection fittings

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- Lighting
- Hydraulics
- Tyres
- Universal shaft

If there are doubts about the operational safety of the machine, for example unexpected change to driving behaviour, visible damage or leaking consumables:

▶ Shut down and safeguard the machine, *refer to page 21*.

▶ Immediately eliminate potential causes for damage, for example heavy soiling, or tighten slack screws.

▶ Determine the cause of damage according to these operating instructions and repair the damage, if possible, Dummy für Störung-Ursache-Behebung.

▶ In case of damage which may affect operational safety and cannot be repaired on your own according to these operating instructions: Damage must be repaired or eliminated by qualified specialist workshop.

Technical limit values

If the technical limit values of the machine are not met, the machine could be damaged. Thus there is a risk of accidents, serious injuries or death. With regard to safety, it is of special importance to comply with the following technical limit values:

- Maximum permitted operating pressure of the hydraulics
- Maximum permitted drive speed
- Maximum permitted total weight
- Maximum permitted axle load/axle loads
- Maximum permitted drawbar load
- Maximum permitted axle loads of the tractor
- Maximum permitted transport height and width
- Maximum speed

▶ Comply with limit values, .

4.9 Danger zones

Danger zones on tractor and machine

The zone around tractor and machine is a danger zone.

In this danger zone, the hazards are as follows:

- Tractor and machine may start moving or roll away and overrun persons.
- Due to unintentional actuation of lifting device, dangerous machine movements may be triggered.
- Defective hydraulic or pneumatic lines or lines which are not fastened securely may loosen or move back back and forth. Hydraulic oil may escape at high pressure and cause serious injuries to skin or face.
- An exposed PTO shaft or a damaged or incorrectly mounted universal shaft could capture clothes and/or body parts and draw them in.
- When the drive is switched on, machine parts may rotate or swivel.
- Hydraulically raised machine parts may descend unnoticed and slowly.

If the danger zone is not observed, people may be seriously injured or killed.

▶ Keep people away from the danger zone of the tractor and the machine.

▶ Do not switch on the drives and engine until there is nobody in the danger zone.

The safety clearance is:

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- 3 m on either side of the machine.
- 5 m behind the machine.

▶ Before working in front of and behind the tractor and in the danger zone of the machine: Shut down and secure the machine, *refer to page 21*. This also applies to brief inspection work. Many serious accidents in front of and behind the tractor and the machine occur due to negligence and running machines.

▶ Consider the information in all relevant operating instructions.

- The operating instructions for the tractor
- The operating instructions for the machine
- The operating instructions for the cardan shaft

Danger zone universal shaft

Persons may be caught by universal shaft, drawn in and seriously injured.

▶ Make sure that the universal shaft guards are mounted and that they are fully functional.

▶ Make sure that there is no one in the danger zone of PTO shaft and universal shaft.

▶ Ensure that the selected speed and direction of rotation of PTO shaft of tractor agree with the permitted speed and direction of rotation of the machine.

▶ Ensure sufficient overlap of section tube and universal shaft guards.

▶ Allow the universal shaft locks to engage.

▶ Attach chains to prevent the universal shaft guards from rotating with the shaft.

▶ Switch off PTO shaft if the angular deflections between universal shaft and PTO shaft are too big. The machine could be damaged. Parts may be shot out and injure people.

▶ Observe operating instructions of universal shaft.

Danger zone PTO shaft

People may be caught, pulled in and seriously injured by the PTO shaft and driven parts.

Before switching on the PTO shaft:

▶ Ensure that all protective equipment is mounted and brought into protective position.

▶ Make sure that there is no one in the danger zone of PTO shaft and universal shaft.

▶ Switch off drives in case they are not needed.

Danger zone between tractor and machine

Persons staying between tractor and machine can be seriously hurt or killed as the tractor may roll away or the machine may move:

▶ Before working between tractor and machine: Shut down and safeguard the machine, *refer to page 21*. This also applies to short-term control work.

▶ If the lifting device must be actuated, instruct all persons to keep away from the range of movement of the lifting device.

Danger zone when drive is switched on

When drive is switched on, there is danger to life caused by moving machine parts. People must not stay in the danger zone of the machine.

▶ Before starting the machine, instruct all persons to leave the danger zone of the machine.

▶ In case of dangerous situations, immediately switch off drives and instruct persons to leave the danger zone.

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Danger zone due to coasting machine parts

If machine parts coast, people could be seriously injured or killed.

After the drives have been switched off, the following machine parts will continue to run:

- Universal shaft
- Drive chains
- Pick-up
- Cutting rotor
- Tying
- Flywheel
- Plunger
- Packer
- Main gearbox

▶ Shut down and safeguard the machine, *refer to page 21*.

▶ Do not approach the machine until all machines parts have come to a complete stop.

4.10 Ensuring functionality of safety devices

If safety devices are missing or damaged, moving machine parts could seriously hurt or kill persons.

▶ Replace damaged safety devices.

▶ Mount dismounted safety devices and machine parts again before start-up and move them to protective position.

▶ When there are doubts whether all safety devices are functional and have been correctly installed, instruct a specialist workshop to check this.

4.11 Personal protective equipment

A very important safety measure is to wear personal protective equipment. Missing or inappropriate personal protective equipment could be harmful to health and lead to injuries.

Personal protective equipment is for example:

- Work gloves
- Safety shoes
- Tight protective clothing
- Hearing protection
- Protective goggles

▶ Determine and provide personal protective equipment for the respective work.

▶ Only use personal protective equipment which is in proper condition and offers effective protection.

▶ Adapt personal protective equipment to the person, for example the size.

4.12 Safety markings on the machine

Safety labels on the machine caution against dangers at danger areas and represent an important part of the safety equipment of the machine. Missing or unsuitable personal protective equipment increases health risks and injures.

▶ Clean dirty safety labels.

▶ Make sure every time after cleaning the safety labels that they are complete and legible.

▶ Immediately replace missing, damaged and unrecognizable safety labels.

▶ Provide spare parts with intended safety labels.

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Description, declaration and order numbers of safety labels, .

4.13 Road safety

Dangers in road traffic

If the machine exceeds maximum dimension and weights specified by national law and if it is not properly lit, other road users could be endangered when driving on public highways.

- Before road travel, ensure that the maximum permissible dimensions, weights and axle loads, supported loads and hitching loads which apply according to national law for driving on public roads are not exceeded.
- Before road travel, switch on lighting and ensure the proper function.

Danger when driving on road and field

Hitched and mounted machines change the handling characteristics of the tractor. The handling characteristics depend for instance on operating state and ground. If changed handling characteristics are not considered, the driver may cause accidents.

- Observe measures for driving on road and field,.

Danger due to machine which is not prepared properly for road travel

If the machine is not prepared properly for road travel, serious accidents may occur on the roads.

- Before driving on roads, prepare the machine for road travel,.

Danger of tipping over on slopes

The machine may tip over when driving on slopes. Thus there is a risk of accidents, serious injuries or death. The risk of tipping over depends on many factors.

- Observe measures for driving,.

Dangers when cornering with trailed trailer

When cornering, the trailer swivels out more than the self-propelled machine. This may result in accidents.

- Consider the larger swivel range.
- Consider people, oncoming traffic and obstacles when turning.

4.14 Parking the machine safely

An improperly parked machine may move uncontrollably or overturn. People may be injured or killed.

- Put machine down on firm and level ground.
- Before adjusting, repairing, servicing and cleaning the machine, ensure that it is securely positioned.
- Note section “Parking the machine” in chapter Driving and Transport, .

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Unattended parking

Adults and especially children are at risk from an inadequately secured and unattended parked machine.

- Before parking it: Shut down and safeguard the machine, *refer to page 21*.

4.15 Consumables

Unsuitable consumables

Consumables which do not comply with the requirements of the manufacturer may impair the operational safety of the machine and cause accidents.

- Use only consumables which comply with the requirements of the manufacturer.

For requirements on consumables, .

Environmental protection and disposal

Consumables such as diesel fuel, brake fluid, antifreeze and lubricants (e.g. gearbox oil, hydraulic oil) may damage the environment and the health of people.

- Do not release consumables into the environment.
- Fill consumables in a liquid-tight labelled container and dispose of according to the official regulations.
- Absorb leaked consumables with an absorbent material, fill them in a liquid-tight labelled container and dispose of according to the official regulations.

4.16 Dangers arising from environment

Danger of fire

Flammable materials may accumulate in the machine due to operation or animals, for example rodents or nesting birds.

In case of dry usage conditions, dust, impurities and crop residues may inflame on hot parts and the resulting fire could seriously hurt people or kill them.

- Check and clean the machine every day before using it for the first time.
- Check and clean the machine regularly during the working day.

Behaviour in case of voltage flashover of overhead lines

Electroconductive parts of the machine could be subject to high electrical voltage caused by voltage flashover. A voltage drop where major voltage differences are present is created on the ground around the machine in case of voltage flashover. Due to major voltage differences in the ground, you could be killed by electric shocks when you make big steps, lay on the ground or support yourself with your hands.

- Do not leave the cabin.
- Do not touch any metal parts.
- Do not establish any conductive connection to the ground.
- Warn persons: Do not approach the machine. Electrical voltage on the ground may lead to severe electric shocks.
- Wait for help from professional rescue teams. The overhead line must be switched off.

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If people have to leave the cabin despite the voltage flashover, for example because there is an imminent threat to life due to fire:

- ▶ Avoid simultaneous contact with machine and ground.
- ▶ Jump away from the machine. Jump into a safe standing position. Do not touch the machine from the outside.
- ▶ Move away from the machine with very small steps. In doing so, make sure that your feet are close to one another.

4.17 Sources of danger on the machine

Liquids under pressure

The following liquids are under high pressure:

- Hydraulic oil

Liquids escaping under high pressure may penetrate through the skin and cause severe injuries.

- ▶ Shut down and safeguard the machine and contact qualified specialist workshop upon suspicion of damaged pressure system.
- ▶ When searching for leaks, use suitable aids, e.g. a piece of cardboard to avoid injuries.
- ▶ Never detect leaks with bare hands. Even a very small hole may lead to serious injuries.
- ▶ Keep body and face away from leaks. Danger of infection!
- ▶ Consult a doctor immediately if liquid has penetrated in the body. The liquid must be flushed out of the body as soon as possible.

Hot liquids

If hot liquids are drained, people can scald or burn themselves.

- ▶ When draining hot consumables, wear personal protective equipment.
- ▶ Before performing any repair, maintenance or cleaning work, allow liquids and machine parts to cool off, if necessary.

Damaged compressor unit

Damaged compressed air hoses of compressor unit may tear off. Hoses that move uncontrollably may hurt persons seriously.

- ▶ If it is suspected that the compressor unit is damaged, contact specialist workshop immediately.
- ▶ Shut down and safeguard the machine, *refer to page 21*.

Hot surfaces

The following components may become hot during operation:

- Capacitor (optional)
- ▶ Maintain a sufficient distance from hot surfaces.
- ▶ Allow machine parts to cool down and wear protective gloves.

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4.18 Dangers in connection with certain activities: climbing up and down

Climbing up and down safely

People who behave carelessly when climbing up an down may fall off the ladder. People, who climb onto the machine without using the designated ladders, may slip, fall and seriously injure themselves.

Dirt as well as operating fluids and lubricants may impair surefootedness and stability.

- Always keep ladder steps and platforms clean and in proper condition so that you can step and stay safely.
- Never climb up and down while the machine is moving.
- Always climb up and down with the face towards the machine.
- When climbing up and down, maintain a three-point contact with the steps and hand rails (always two hands and one foot or two feet and one hand on the machine).
- When climbing up and down, never use operating elements as handles. Inadvertent activation of the operating elements may cause functions to be unintentionally actuated which could be hazardous.
- When climbing down, never jump off the machine.
- Climb up and down using only the steps and platforms designated in these operating instructions, .

4.19 Dangers in connection with certain activities: Working on the machine

Only perform work when the machine is at standstill

If the machine is not shut down and safeguarded, parts may move unintentionally or the machine may start moving. Thus there is a risk of serious injuries or death.

- Before carrying out any repair, maintenance and cleaning work on the machine, shutdown and safeguard it, *refer to page 21*.

Maintenance and repair work

Improper maintenance and repair work endanger operational safety. Thus there is a risk of accidents, serious injuries or death.

- Only perform work which is described in this operating instructions. Prior to any work, stop and safeguard the machine, *refer to page 21*.
- All other maintenance and repair work must only be performed by qualified specialist workshop.

Raised machine and machine parts

The raised machine or machine parts may drop or tilt unintentionally. Thus there is a risk of serious injuries or death.

- Do not stay under the raised machine or machine parts which have not been securely supported, *refer to page 21*.
- Prior to all work on raised machines or machine parts, lower the machine or machine parts.
- Before performing any work on or under the raised machine or machine parts, secure the machine or machine parts with rigid safety support or with hydraulic shut-off device or by supporting against lowering.

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Danger from welding work

Improper welding work endangers the operational safety of the machine. As a result, accidents may occur and people may be seriously injured or killed.

- ▶ Never perform welding work on the following parts:
- Gearboxes
- Parts of hydraulics
- Parts of electronics
- Frame or supporting component groups
- ▶ Before carrying out welding work on the machine, obtain permission by KRONE customer service and let you show alternatives, if necessary.
- ▶ Welding work must only be performed by experienced qualified personnel.

4.20 Dangers in connection with certain activities: working on wheels and tyres

Incorrect assembly or disassembly of wheels and tyres endangers operational safety. As a result, accidents may be caused and people may be seriously injured or killed.

Wheel assembly and tyre assembly require sufficient knowledge and prescribed mounting tool.

- ▶ If there is a lack of knowledge, have the wheels and tyres fitted by the KRONE dealer or by a qualified tyre service.
- ▶ When fitting tyres on the rims, never exceed the maximum permitted pressure specified by KRONE, otherwise the tyre or even the rim may explode, .
- ▶ When mounting the wheels, mount the wheel nuts to the prescribed torque, .

4.21 Behaviour in dangerous situations and in case of accidents

Any measures not taken or incorrect measures in dangerous situations can make it difficult or impossible to rescue exposed persons. Due to the impeded conditions of rescue, the chances to help and heal injured people deteriorate.

- ▶ As a matter of principle: Park the machine.
- ▶ Get an overview of the existing danger and identify the reason.
- ▶ Secure the accident site.
- ▶ Save persons from the danger zone.
- ▶ Leave danger zone and do not enter it again.
- ▶ Alarm rescue workers and seek help, if possible.
- ▶ Carry out immediate lifesaving actions.

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5 Safety routines

5.1 Shutting down and safeguarding the machine

⚠ WARNING

Crushing hazard due to movement of machine or machine parts

If the machine is not stopped, machine or machine parts may move unintentionally. Thus there is a risk of serious injuries or death.

- ▶ Before leaving the cabin: Shut down and safeguard the machine.

To shut down and safeguard the machine:

- ▶ Put machine down on a firm, fixed and level ground.
- ▶ Switch off the drives and wait until the trailing parts have come to standstill.
- ▶ Switch off the tractor engine, remove the ignition key and take it with you.
- ▶ Secure the tractor against rolling away with wheel chocks.
- ▶ Secure the machine against rolling away with the parking brake and wheel chocks.
- ▶ Using the flywheel brake, secure the machine to prevent unpredictable movements of machine parts.

5.2 Securing raised machine and machine parts against lowering

⚠ WARNING

Crushing hazard due to movement of machine or machine parts

If the machine or machine parts are not secured against lowering, the machine or machine parts may roll, fall or sag. Thus people could be squeezed or killed.

- ▶ Lower the raised machine parts.
- ▶ Shut down and safeguard the machine, *refer to page 21*.
- ▶ Before working on or under raised machine parts: Secure machine or machine parts against lowering by means of hydraulic shut-off device (e.g. stop cock) on machine side.
- ▶ Before working on or under raised machine parts: Safely support machine or machine parts.

In order to safely support the machine or machine parts:

- ▶ To support, only use suitable and sufficiently dimensioned materials that do not break or yield.
- ▶ Bricks and hollow blocks are not suitable for safely supporting the machine and machine parts. Therefore they must not be used.
- ▶ Car jacks are also not suitable for safely supporting the machine and machine parts. They must not be used, as well.

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5.3 Safely perform oil level check, oil and filter element change.

⚠ WARNING

Safely perform oil level check, oil and filter element change.

The operational safety of the machine can be affected if oil level check, oil and filter element change are not performed safely. This may result in accidents.

Safely perform oil level check, oil and filter element change.

In order to check the oil level and change oil and filter element safely:

- Lower raised machine parts and secure them against lowering,*refer to page 21*.
- Shut down and safeguard the machine, *refer to page 21*.
- Observe the intervals to check oil and change oil and filter elements, .
- Only use oil quality/amount of oil mentioned in the fuel table, .
- Clean the area around the parts (e.g. gearbox, high-pressure filter) and make sure that no foreign bodies get into the parts or hydraulic system.
- Check existing seal ring for damage and replace it, if necessary.
- Collect leaking oil or waste oil in a special container and dispose of it properly, *refer to page 17*.

5.4 Running actuator test

⚠ WARNING

Run actuator test safely

When actuators are energised, functions are carried out directly and without a safety prompt. This may cause the unintentional movement of machine parts, trapping and seriously or fatally injuring persons.

- ✓ Only persons familiar with the machine are permitted to perform the actuator test.
- ✓ The person performing the test must know which machine parts are activated by controlling the actuators.
- ▶ Run the actuator test safely.

To run the actuator test safely:

- Lower raised machine parts or secure them against falling, *refer to page 21*.
- Shut down and secure the machine, *refer to page 21*.
- Cordon off the danger zone of the actuated moving machine parts in a clearly visible manner.
- Ensure that there is nobody in the danger zone of the actuated moving machine parts.
- Switch on the ignition.
- The actuator test must only be performed from a safe position outside the area that is affected by machine parts moved by the actuators.

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6 KRONE ISOBUS Terminal

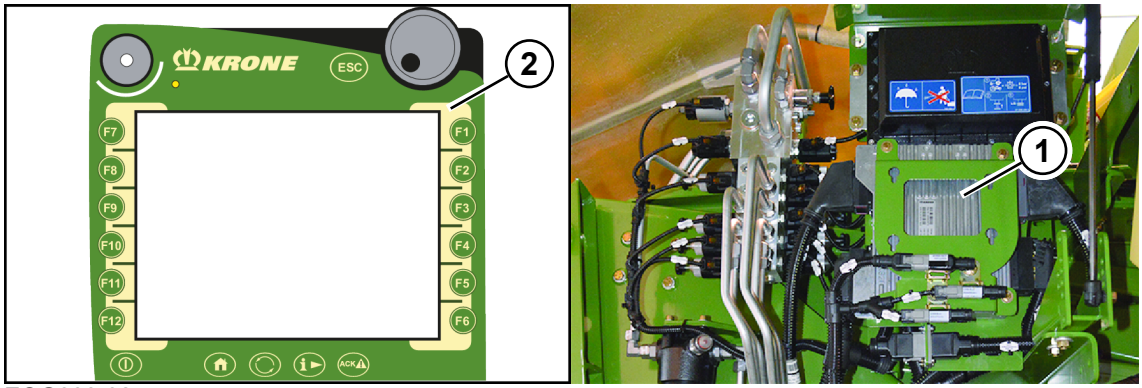
NOTICE

Penetration of water in the terminal could lead to malfunction. As a result, the machine can no longer be operated safely.

- ▶ Protect the terminal from water.
- ▶ If the machine is not used for an extended period of time (for example in winter), the terminal must be stored in a dry place.
- ▶ For mounting and repair jobs, especially for welding jobs on the machine, disconnect the power supply to the terminal.

INFORMATION

KRONE ISOBUS systems regularly pass the ISOBUS COMPATIBILITY TEST (AEF/DLG/VDMA test). The operation of this machine at least requires implementation level 3 of ISOBUS system.



EQG000-024

The electronic equipment of the machine consists essentially of the job computer (1), the terminal (2) and the control and function elements.

The job computer (1) is located on the front left of the machine under the side hood.

The driver gets information by means of the terminal (2) and settings for the operation of the machine are performed which are gathered by the job computer and further processed.

6.1 ISOBUS Shortcut Button (ISB)

⚠ WARNING

The ISOBUS Shortcut Button is not an EMERGENCY STOP switch. If the ISOBUS Shortcut Button is confused with the EMERGENCY STOP switch, there is danger to life.

When actuating the ISOBUS Shortcut Button, activated machine functions are deactivated. Process oriented procedures perform to the end. Therefore machine parts can continue to run after actuating the ISOBUS Shortcut Button. This may lead to injuries.

The ISOBUS Shortcut Button does in no case intervene in the tractor functions, i.e. neither the universal shaft function nor the hydraulic function is affected. Therefore, the machine can continue to run after actuating the ISOBUS Shortcut Button. This may lead to injuries.

- ▶ Never use the ISOBUS Shortcut Button as an EMERGENCY STOP switch.

When actuating the ISOBUS Shortcut Button (1) of the terminal which is of the pushbutton design, a stop command is sent to the ISOBUS. This instruction is evaluated by the connected ISOBUS machine in order to deactivate activated machine functions. Process oriented procedures are executed until the end. When the ISOBUS Shortcut Button is actuated, the display shows a corresponding alarm mask:

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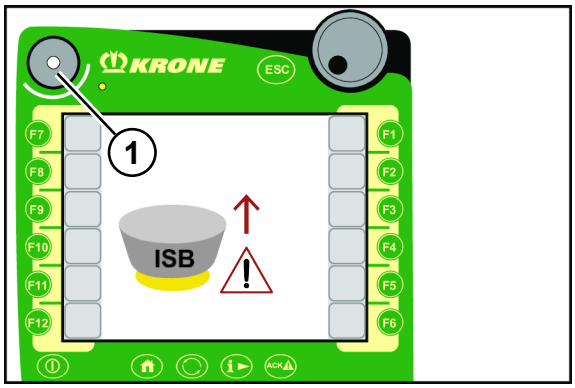


EQ000-070

Actuating ISOBUS Shortcut Button

▶ Press ISOBUS Shortcut Button (1).

➡ The message above appears in the display.

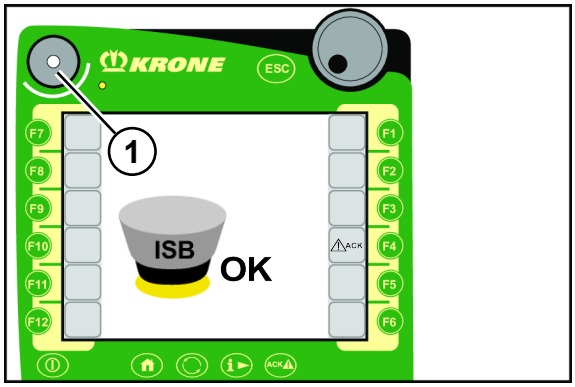
The job computer blocks the following functions on machine side:

- Start the knotter motor.
- Start knotter cleaning.

Depending on the machine configuration:

- Raise/lower blade cassette.
- Move the bale ejector forwards/backwards.
- The automatic bale ejection.
- Raise/lower the bale chute.
- Switch to MultiBale.

Releasing ISOBUS Shortcut Button



EQ000-071

▶ Turn the ISOBUS Shortcut Button (1) in the clockwise direction.

⇨ The display shows the message above.

▶ Press the ACK key.

⇨ Alternatively, you can press ACK or the adjacent key.

➡ All functions of the machine are available again.

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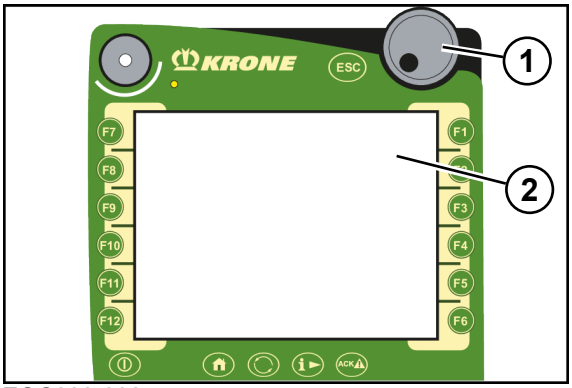
6.2 Touchable display



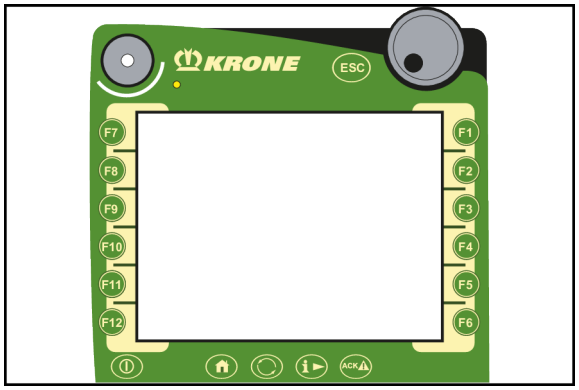
EQC000-002

The terminal is equipped with a touch sensitive display (2) for menu guidance and to enter values/data. Functions can be called up and values in blue lettering can be changed by touching the display.

INFORMATION

To execute functions, either use scroll wheel (1) or touch screen.

6.3 Switching terminal on/off



EQ000-013

- ▶ Before switching on the terminal for the first time, check that the connections are correct and tight.

Switching on

- ▶ Press and hold down .
  - ⇨ If the machine is not connected, the display shows the main menu after it was switched on.
  - ⇨ If the machine is connected, the display shows the road travel screen after it was switched on.
- ➡ The terminal is ready for use.

If machine is not connected "Main menu" If machine is connected "Road travel"

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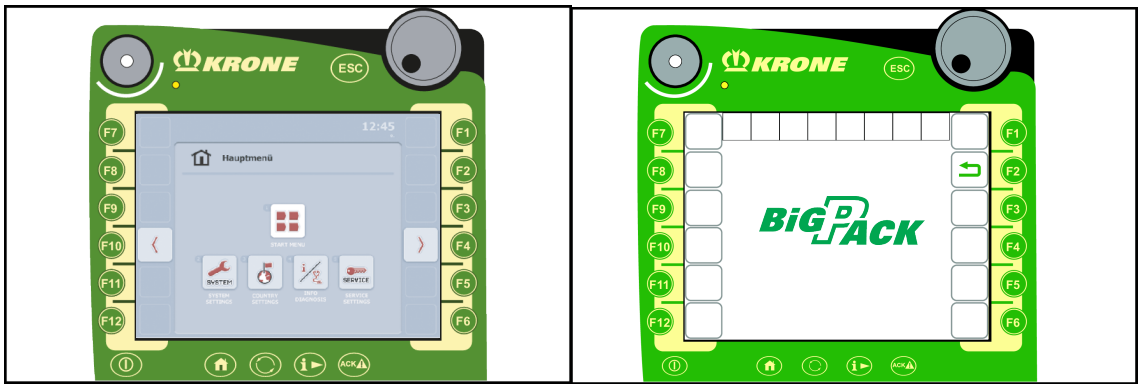


EQG000-025

Switching off

- Press and hold down .

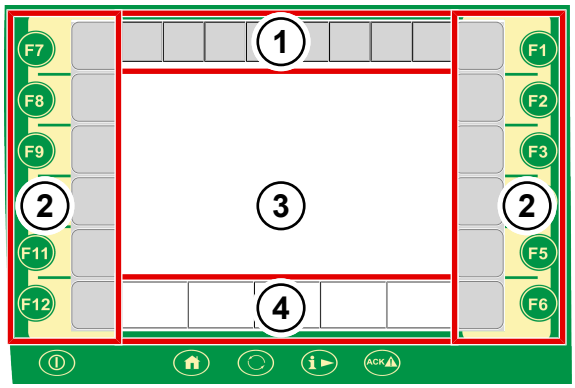
INFORMATION

- For further information on functionality of terminal, observe the provided operating instructions of the terminal.

INFORMATION

When switching the terminal on for the first time, the configuration of the machine is loaded into the terminal and stored in the memory of the terminal. The loading process may take a few minutes.

6.4 Design of display



EQG000-033

The display on the terminal is divided into the following areas:

Status line (1)

The status line (1) indicates current states of the machine (depending on how it is equipped), *refer to page 30*.

Keys (2)

The machine is operated by actuating the keys (F1 to F12) or by pressing the adjacent icons, *refer to page 31*.

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Main window (3)

Values (figures) shown in colour in the main window can be selected using the touch function.

There are the following main window views:

- Road travel screen, *refer to page 38*
- Working screen/s, *refer to page 37*
- Menu level, *refer to page 50*

Information bar (4)

The information bar shows information about the working screen, *refer to page 36*, and can be configured individually, *refer to page 70*.

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7 Foreign ISOBUS terminal

⚠ *WARNING*

Risk of injury caused by utilization of foreign terminal or other operation units

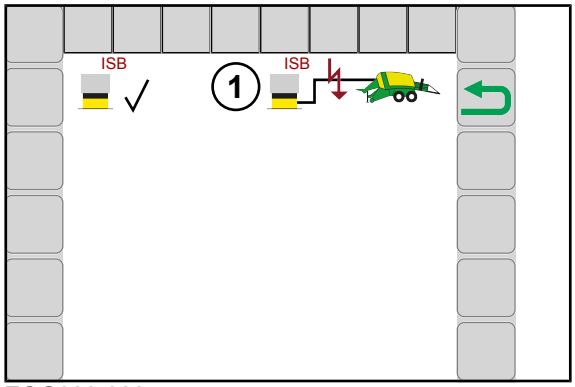
When using terminals and other operation units which have not been delivered by KRONE mind that the user:

- ✓ assumes the responsibility for the use of KRONE machines when using the machine on operation units (terminal / other operating elements) which have not been delivered by KRONE.
- ✓ only connects such systems (if possible) which have passed a AEF/DLG/VDMA test (so-called ISOBUS COMPATIBILITY TEST).
- ✓ has to follow the operating and safety instructions of the supplier of ISOBUS operation unit (e.g. terminal).
- ✓ must ensure that the used operating elements and machine controls concerning IL (IL = Implementation Level; describes compatibility levels of different software versions) must fit together (condition: IL same or higher).
- ▶ Before using the machine, make sure that all machine functions are performed according to the enclosed operating instructions.

INFORMATION

KRONE ISOBUS systems regularly pass the ISOBUS COMPATIBILITY TEST (AEF/DLG/VDMA test). The operation of this machine at least requires implementation level 3 of ISOBUS system.

7.1 ISOBUS Shortcut Button not available



EQG000-022

INFORMATION

No ISOBUS Shortcut Button available

If no ISOBUS Shortcut Button is available on ISOBUS terminals of other manufacturers, the icon (1) is shown in the display. It is not possible to switch off machine functions via ISOBUS Shortcut Button.

7.2 Varying functions to KRONE ISOBUS terminal

The job computer provides information and control functions of the machine on the display of the external ISOBUS terminal. Operation with an external ISO terminal is similar to the KRONE ISOBUS terminal. Prior to start-up, refer to the mode of operation of the KRONE ISOBUS terminal in the operating instructions.

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One major difference from the KRONE ISOBUS terminal is the arrangement and number of keys with functions which are specified by the selected external ISOBUS terminal.

Only the functions which differ from the KRONE ISOBUS terminal are described below.

7.2.1 Scroll wheel

The **scroll wheel** is used to set the following values on the KRONE ISOBUS terminal

- Target bale channel flap pressure/target bale channel flap force
- Bale length
- Number of MultiBales

In the case of ISOBUS terminals these values are set via a specified **selection key** (see operating instructions of the terminal manufacturer).

7.2.2 Background colour/acoustic signals

Background colour

The "Background colour" menu is not called on external ISOBUS terminals. If such a setting option is available, it is carried out directly on the external ISOBUS terminal (see operating instructions of the terminal manufacturer).

Audio signals

If necessary, acoustic signals must be released on the external ISOBUS terminal (see operating instructions of the terminal manufacturer).

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8 Terminal – machine functions [Medium Plus/Comfort Plus Electronics]

⚠ WARNING

Personal injuries and/or machine damage caused by non-observance of alarm messages

When alarm messages are ignored and the malfunction is not remedied, personal injuries and/or serious damage to the machine could result.

- ▶ When alarm message is displayed, remedy the malfunction, *refer to page 84*.
- ▶ If the malfunction cannot be remedied, contact KRONE customer service.

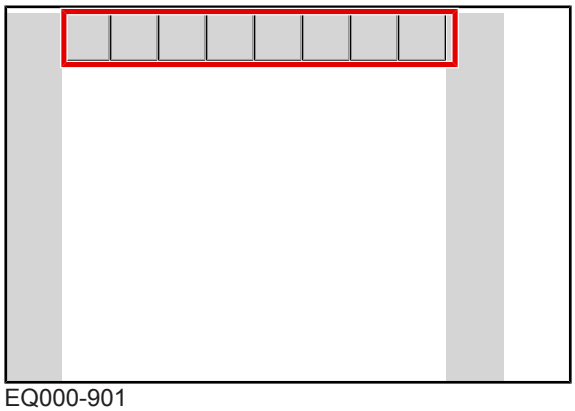
8.1 Status line

INFORMATION

Using a terminal with a resolution of less than 480x480 pixels.

On terminals with a resolution of less than 480x480 pixels, only 7 fields are displayed in the status line. Thus, not all icons for the status line are shown.

On terminal with a resolution of more than/equal to 480x480 pixels, 8 fields are shown in the status line.



EQ000-901

Icons displayed with shading ( ) can be selected. If an icon with shading is selected:

- a window with further information opens or
- a function is activated or deactivated.

The status line shows the current states of the machine (depending on how it is equipped):

Icon	Designation	Explanation
	Alarm message is pending	*refer to page 84*
	Packer is conveying	• The packer fills the bale channel with crops. • If the icon is displayed continuously, the packer is being optimally utilised. • If the depressed icon does not have a black background, check the "Packer feed" sensor.

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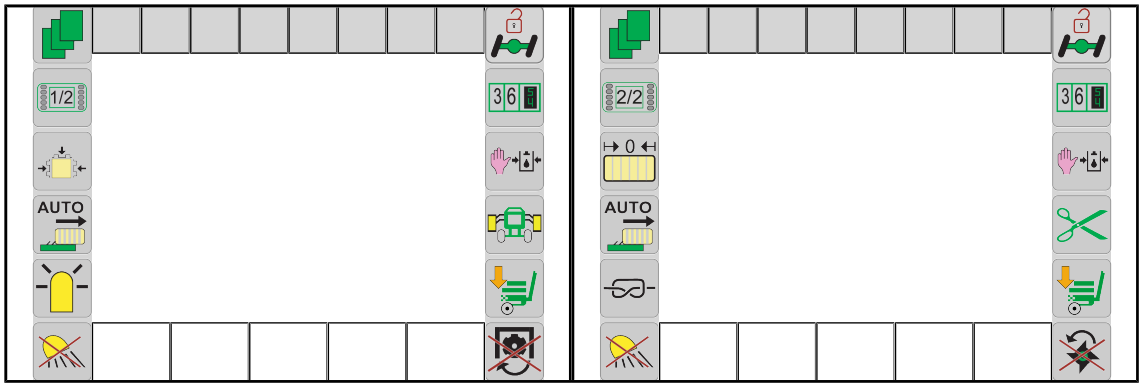
Icon	Designation	Explanation
	Packer is collecting	• The packer collects crops and fills only the packer channel and the conveyor channel. • Low packer utilisation. • Increase the driving speed until the icon is continuously displayed.
	Silage additive system switched off	
	Silage additive system switched on	
	Bale channel flaps opened	The symbol flashes.
	Bale channel flaps closed	
	Bale channel flaps closed in rapid traverse mode	

Icon	Designation	Explanation
	Cutter active	Cutting in progress.
	Blades inactive	No cutting in progress.

8.2 Keys

Page 1/2 = keys for "Maintenance" Page 2/2 = keys for "Work"



EQG000-027

The available icons comply with the equipment of the machine. The following represented icons are not always available.

Icon	Designation	Explanation
	Switch off warning beacon	*refer to page 39*
	Switch on warning beacon	*refer to page 39*

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Icon	Designation	Explanation
	Selecting second page	Selects the second page of the keys, *refer to page 39*. When the PTO shaft is running at a rotational speed ≥ 600 min^{-1}, the display switches automatically to the second page to make the "Work" keys available.
	Select first page	Selects the first page of the keys, *refer to page 39*. When the PTO shaft is running at a rotational speed < 600 min^{-1}, the display switches automatically to the first page to make the "Maintenance" keys available.
	Switch off working light	*refer to page 39*
	Switch on working light	*refer to page 39*
	Releasing self-steering axle	Releases the self-steering axle. When the symbol flashes, the self-steering axle is released. When the symbol is displayed continuously, the self-steering axle is locked. *refer to page 40*
	Locking self-steering axle	Locks the self-steering axle. When the symbol flashes, the self-steering axle is locked. When the symbol is displayed continuously, the self-steering axle is released. *refer to page 40*

Icon	Designation	Explanation
	Release starting aid	To release the starting aid, the PTO speed must be <150 min^{-1}. *refer to page 40*
	Switch on starting aid	When the symbol is displayed continuously, the starting aid is released. If the released starting aid is not switched on within five seconds, the system resets the release. *refer to page 40*
	Switch off starting aid	When the symbol flashes, the starting aid is running. When the speed of the starting aid is reached, the system switches off the starting aid. *refer to page 40*
	Select the machine menu level	*refer to page 42*

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Icon	Designation	Explanation
	Lower the bale chute	*refer to page 41*
	Automatic bale ejection	**When the bale channel flaps are open** Implements 10 bale ejections. **When the bale channel flaps are closed** Opens the bale channel flaps and implements 10 bale ejections. *refer to page 42*
	Select detail counter	The detail counter for the selected customer counter is selected. *refer to page 65*.
	Switch to automatic mode	The machine switches from manual mode to automatic mode. Changing to automatic mode.
	Switch to manual mode	The machine switches from automatic mode to manual mode. Changing to manual mode
	Reset current bale length to zero	Hold down the key for 2 s. *refer to page 42*
	Trigger knotter	*refer to page 42*
	Release blade cassette	The and icons are released on the display. *refer to page 42*
	Raise blade cassette	*refer to page 42*
	Lower blade cassette	*refer to page 42*
	Close bale channel flaps	
	Open bale channel flaps	

Icon	Designation	Explanation
	Release "Raise/lower twine boxes" function	The and icons are released on the display. *refer to page 43*
	Lower twine boxes	*refer to page 43*
	Raise twine boxes	*refer to page 43*

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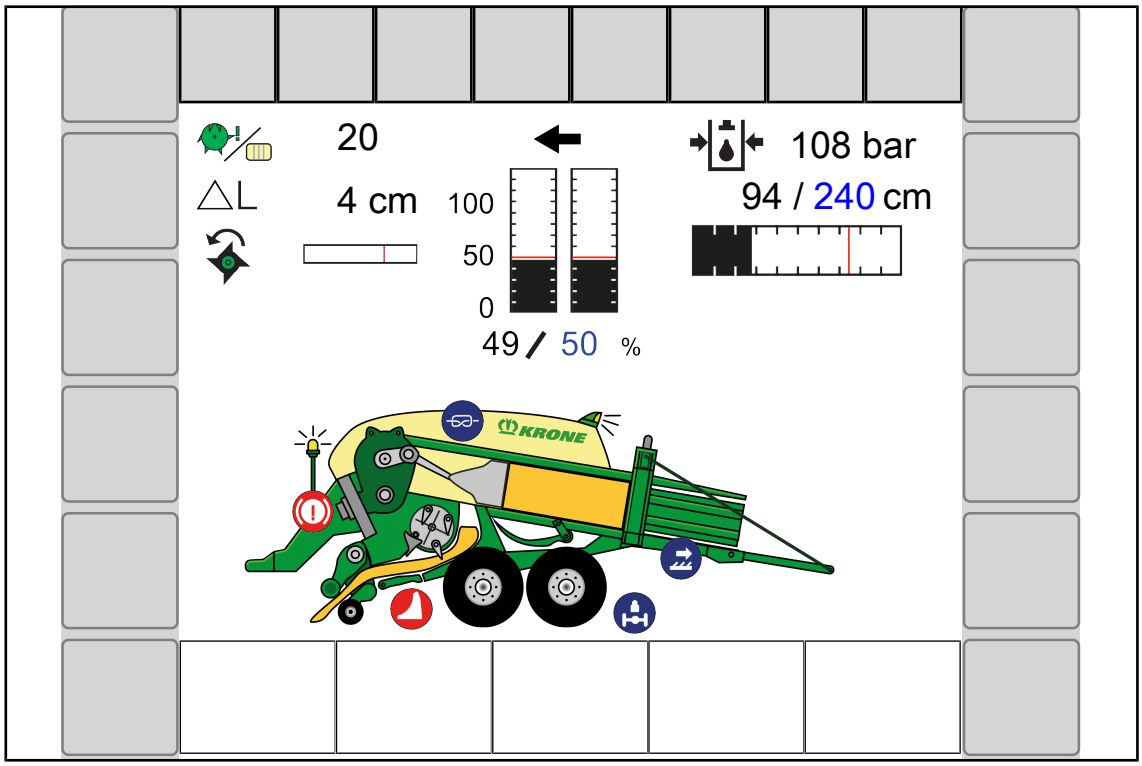
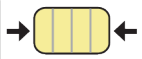
Icon	Designation	Explanation
	End "Bale channel flaps in rapid traverse mode" function	The system switches off rapid traverse mode if: • the bale channel flap pressure is greater than 20 bar. • the PTO speed is greater than 600 min^{-1}. • the bale length has increased by 1 m. *refer to page 41*
	Release intake	*refer to page 43*
	Activate intake	When the icon flashes, the intake has been released. If the released intake is not started within 5 s, the system resets the release. *refer to page 43*
	Stop intake	When the icon is displayed continuously, the intake is released. *refer to page 43*

8.3 Displays on the working screen



EQG000-028

The available icons comply with the equipment of the machine. The following represented icons are not always available.

Icon	Designation	Explanation
	Current baling force as %	• In manual mode. • Maximum 100 %.

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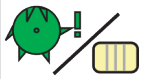
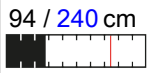
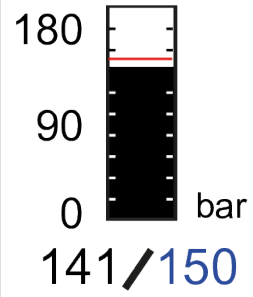
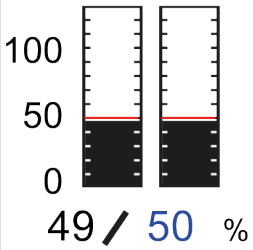
Icon	Designation	Explanation
	Current bale channel flap pressure	• In automatic mode. • In bar or PSI (depending on selected system of units).
	Current number of layers of the last compressed bale	
	Current layer thickness	• In cm or inch (depending on selected system of units).
	Direction display	• The arrows (left/right) indicate to the driver the side he/she should correct towards and by how much when driving over the swath to ensure that the bale chamber is evenly filled. • Up to 3 arrows can be displayed. • 1 arrow: Low change in direction required. • 3 flashing arrows: Greater change in direction required. • The direction display can be set, *refer to page 57*
	Bale length display	• The black value and the bar indicate the current bale length. • The blue value and the red mark indicate the set target bale length. • The blue value is touch-sensitive.

Icon	Designation	Explanation
	Bale channel flap pressure in bar or PSI (depending on selected system of units)	In manual mode • The black value under the bar display and the bar indicate the current bale channel flap pressure. • The blue value under the bar display and the red mark indicate the set target bale channel flap pressure. • The blue value is touch-sensitive.
	Force of pressure as %	In automatic mode • Display for the baling force on the right and left in the bale channel. • The black value under the bar display and the bar indicate the current baling force. • The blue value under the bar display and the red mark indicate the set target baling force. • The display may fluctuate considerably. The control only functions when the packer is supplying crops to the piston. • The bale channel flap pressure is automatically set by the system based on the measured plunger force. • The blue value is touch-sensitive.

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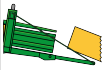
Icon	Designation	Explanation
	Flywheel brake applied	
	Blade cassette not up	
	Knot run	Is displayed briefly after a knot is tied. When the knotter signal is activated, a horn sounds for approx. 1 s, *refer to page 54*.
	Bale ejector active	
	Self-steering axle locked	
	Warning beacon switched on	
	Warning beacon switched off	
	Working light switched on	
	Working light switched off	
	Bale chute up	
	Bale chute down	
	Bale is deposited	

Icon	Designation	Explanation
	Utilisation of the intake	Cutting rotor/pick-up

8.4 Displays on the information bar

INFORMATION

The information bar on the working screen can be individually configured, *refer to page 70*.

The available icons comply with the equipment of the machine. The following represented icons are not always available.

Icon	Designation	Explanation
	Current PTO speed	In min^{-1}
	Operating hours counter	Counts only when PTO shaft is running. The adjacent number indicates the selected customer counter (customer counter 19 in the example).

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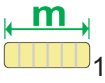
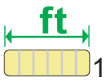
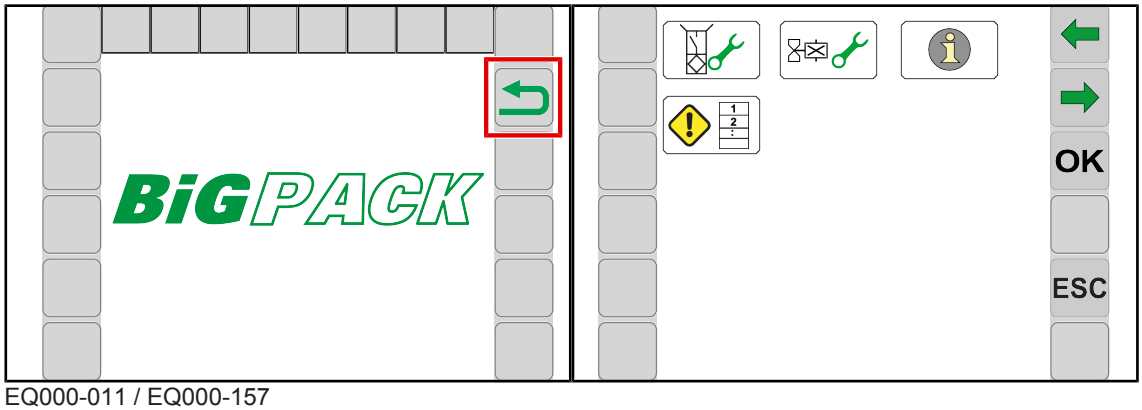
Icon	Designation	Explanation
	Current total number of bales	The adjacent number indicates the selected customer counter (customer counter 19 in the example).
	Current degree of moisture of the crops	
	Bale weight	Weight of the bale last weighed
	Current average weight of the weighed bales	The adjacent number indicates the selected customer counter (customer counter 19 in the example).
	Current total weight of all bales	The adjacent number indicates the selected customer counter (customer counter 19 in the example).
	Total length of all compressed bales	In m or ft (depending on selected system of units). The adjacent number indicates the selected customer counter (customer counter 19 in the example).
		
	Current number of uncut bales	The adjacent number indicates the selected customer counter (customer counter 19 in the example).
	Current number of cut bales	**For the "cutting unit" version:** The adjacent number indicates the selected customer counter (customer counter 19 in the example).

8.5 Selecting working screens

Road travel screen



Example menu

EQ000-011 / EQ000-157

From each menu

✓ A menu has been selected.

▶ Press ESC longer.

From the road travel screen

▶ Press .

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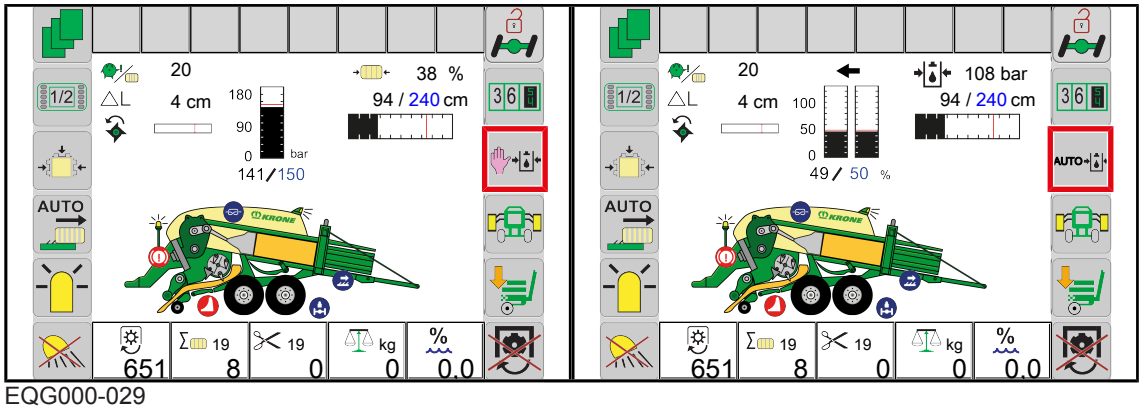
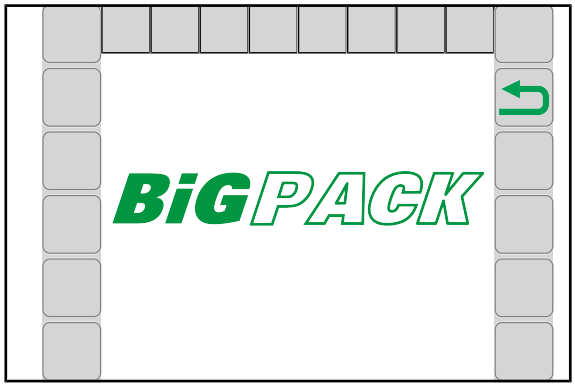
➡ When the terminal is switched on, the machine starts in manual mode with a target bale channel flap pressure of 50 bar.



EQG000-029

8.6 Calling up road travel screen



EQG000-026

To call up the road travel screen, the following preconditions must be fulfilled:

✓ The bale chute has been raised.
✓ None of the hydraulic functions, which are operated via the terminal, is actuated.
✓ The PTO shaft is switched off.

If the above mentioned preconditions are not fulfilled, the terminal changes automatically to road travel screen after approx. 60 seconds.

8.7 Changing to automatic mode

▶ Press .

➡ The display shows the icon (automatic mode).

8.8 Changing to manual mode

▶ Press .

➡ The display shows the icon (manual mode).

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8.9 Switching the warning beacon on/off

Switching ON

▶ Press .

➡ The display switches from to .

Switching off

▶ Press .

➡ The display switches from to .

8.10 Selecting other functions

Selecting second page

▶ Press .

➡ The display switches from to .

Select first page

▶ To select the previous functions for the machine, press .

➡ The display switches from to .

8.11 Switching the working light on/off

Switching ON

▶ Press .

➡ The display switches from to .

Switching off

▶ Press .

➡ The display switches from to .

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8.12 Releasing/locking self-steering axle

Releasing

▶ Press .

⇨ The icon flashes until the self-steering axle is released.

➡ The display switches from to .

Lock

▶ Press .

⇨ The icon flashes until the self-steering axle is locked.

➡ The display switches from to .

8.13 Switching the starting aid on/off

Release

▶ To release the starting aid, press .

⇨ The display switches from to .

⇨ The starting aid is released.

If the released starting aid is not switched on within five seconds, the system resets the release.

Switching on

✓ The starting aid is released.

▶ To switch on the starting aid, press .

➡ The symbol flashes.

When the speed of the starting aid is reached, the system switches off the starting aid.

Switching off

▶ To switch off the starting aid, press .

➡ The display switches from to .

➡ The starting aid is switched off.

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8.14 Opening/closing bale channel flaps

Opening (rapid traverse mode)

When the icon is indicated on the display

▶ Press .

➡ The display switches from to .

▶ To open the bale channel flaps, press .

➡ The display switches from to .

When the icon is indicated on the display

▶ To open the bale channel flaps, press .

➡ The display switches from to .

Closing (rapid traverse mode)

When the icon is indicated on the display

Close the bale channel flaps in rapid traverse mode at double the speed but with reduced force.

▶ To close the bale channel flaps, press .

➡ The display switches from to .

When the icon is indicated on the display

▶ To switch on rapid traverse mode, press .

➡ The display switches from to .

▶ To close the bale channel flaps, press .

➡ The display switches from to .

8.15 Lower the bale chute

✓ The lock on the bale channel flaps is opened.

WARNING! Increased risk of injury! While the bale chute is being lowered, ensure that there is nobody in the danger zone (particularly behind the machine).

▶ Press and hold .

The bale chute is raised by pressing the external pushbuttons, (for "Medium Electronics" version ;for "Comfort Electronics" version).

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8.16 Automatic bale ejection

- ▶ To execute 10 bale ejections, press

again.
- ➡ When the bale channel flaps are opened, 10 bale ejections are executed immediately.
- ➡ When the bale channel flaps are closed, first the bale channel flaps are opened and then 10 bale ejections are executed.

8.17 Selecting "Counter/Detail counter" menu

- ▶ Press

.
- ➡ The "Detail counter" menu is displayed, *refer to page 65*.

8.18 Selecting a menu Level

- ▶ To bring up the menu level from the working screen, press
.
- ➡ The display indicates the menu level.

8.19 Reset bale length to zero

- ▶ Press

for approx 2 s.

8.20 Trigger knotter

- ▶ Press
.

8.21 Raising/lowering blade cassette

Release

- ▶ Press
.
  - ⇨ The and icons are displayed.

Raising

- ▶ Press and hold
.

Lowering

- ▶ Press and hold
.

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8.22 Starting/stopping intake

Release

▶ Press .

⇨ The display switches from to .

⇨ The symbol flashes.

Starting

▶ Press .

➡ The icon is displayed continuously.

Stopping

▶ Press .

➡ The display switches from to .

8.23 Raising/lowering twine boxes

Release

▶ Press .

⇨ The and icons are displayed.

Lowering

▶ Press and hold .

Raising

▶ Press and hold .

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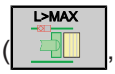
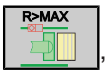
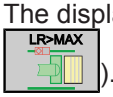
8.24 Setting the target bale channel flap pressure (manual mode)

NOTICE

If an excessively high target bale channel flap pressure is set, the machine may be mechanically overloaded during baling. This may damage the machine.

The display shows one of the alarm messages "Baling force exceeded" (

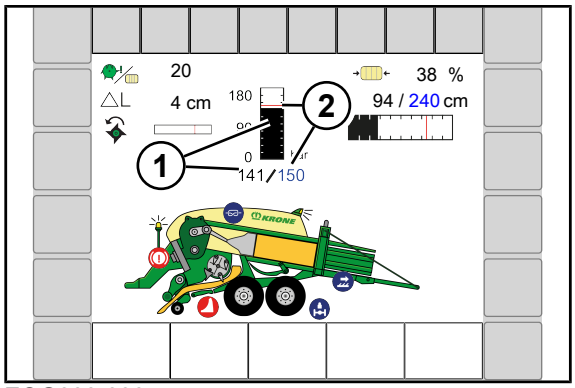
, 

, 

).

- ▶ To prevent damage to the machine, if the alarm message "Baling force exceeded" occurs more frequently, reduce the target bale channel flap pressure.

The bale channel flap pressure is entered by the user in manual mode. The pressure is built up immediately if the PTO shaft is running and the machine is stopped. The pressure display barely fluctuates on the display. To prevent damage to the machine, the bale channel flap pressure is reduced to a non-critical value just before the system overloads. After several seconds, the pressure set by the user is built up again. The bale channel flap pressure is displayed in **bar** or **PSI** depending on selected system of units.



EQG000-030

Value (1) and the bar display = actual bale channel flap pressure

Value (2) and the red mark on the bar display = set target bale channel flap pressure

Setting the target bale channel flap pressure

- ✓ Manual mode has been selected, *refer to page 38*.
- ▶ Change value, *refer to page 52*.

8.25 Setting target baling force (automatic mode)

In Automatic mode, the pressure is automatically set based on the measured plunger force. The pressure indication on the display may fluctuate considerably. The control functions only when the packer is supplying forage to the piston. The baling force is displayed as a precentage.

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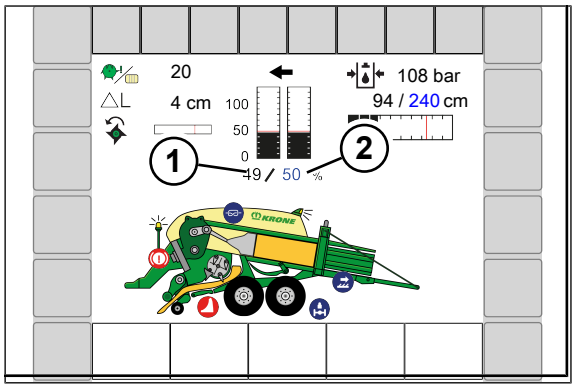


EQG000-031

Value (1) and the bar displays on right/left = actual baling force as %.

Value (2) and the red marks on the bar displays = target baling force as %.

Setting the target force of pressure

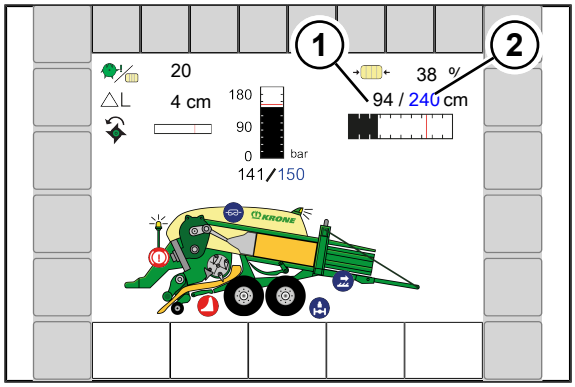
✓ Automatic mode has been selected, *refer to page 38*.

▶ Change value, *refer to page 52*.

8.26 Setting target bale length

INFORMATION

The target bale length (2) can be changed steplessly at any time. It is not recommended to switch over the target bale length at the end of the bale, as the knotter could actuate too late.



EQG000-032

Value (1) and the bar display = actual bale length

Value (2) and the red mark on the bar display = set target bale length

Setting target bale length

Setting range: 1,000 - 2,700 mm / 39 - 106 inch

▶ Change value, *refer to page 52*.

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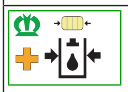
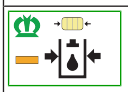
8.27 Operating machine via joystick

8.27.1 Auxiliary functions (AUX)

There are terminals which support the additional function “Auxiliary” (AUX). By means of this function, programmable keys of peripheral equipment (e.g. joystick) can be assigned with functions of the connected job computers. A programmable key can be assigned with several different functions. If key assignments are saved, the display shows corresponding menus when switching on the terminal.

The following functions are available in the “Auxiliary” (AUX) menu:

auxiliary	Function
	Raise blade cassette
	Lower blade cassette
	Increase baling pressure/baling force
	Reduce baling pressure/baling force
	Switching to manual/automatic mode
	Start/stop starting aid
	Lock/release self-steering axle

INFORMATION

For further information, please refer to the operating instructions of the used terminal.

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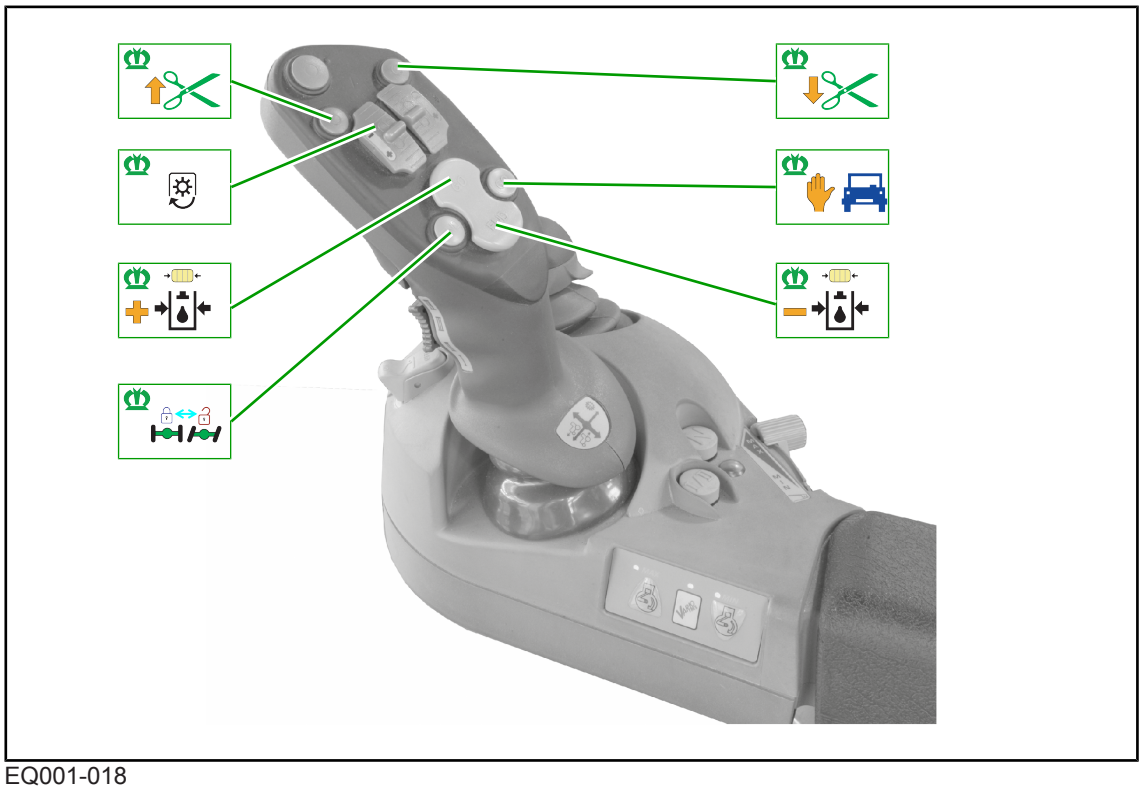
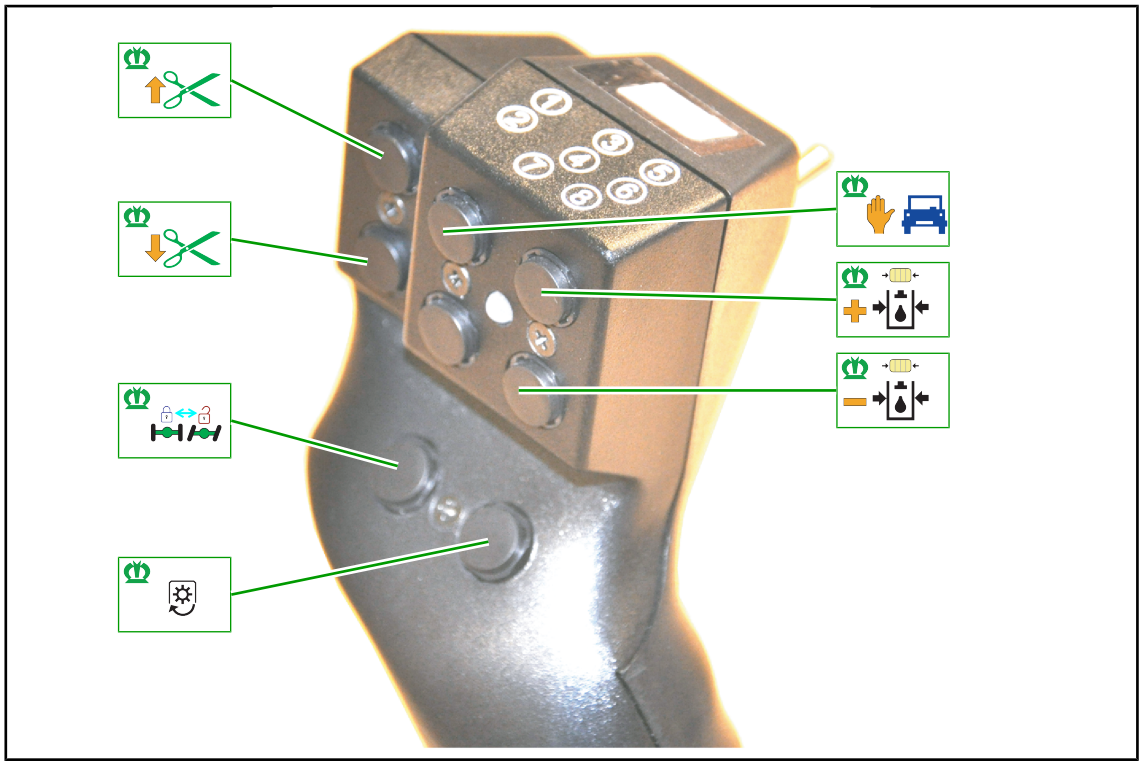
8.27.2 Auxiliary configuration of a joystick

Recommended configuration of a Fendt joystick



EQ001-018

Recommended configuration of a WTK joystick



EQ001-019

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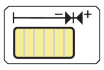
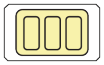
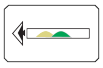
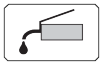
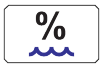
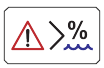
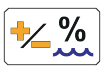
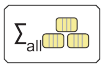
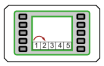
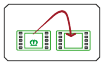
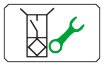
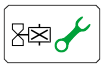
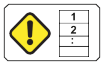
9 Terminal – menus [Medium Plus/Comfort Plus Electronics]

9.1 Menu Structure

The menu structure is divided into the following menus depending on the machine configuration.

Menu	Sub-menu	Designation
1		Knotter, *refer to page 53*
	1-1 	Bale length correction value, *refer to page 54*
	1-2	Knotter signal, *refer to page 54*
	1-3	Knotter monitoring, *refer to page 55*
	1-4	Blowing interval, *refer to page 56*
	1-5	Blowing time, *refer to page 56*
	1-9 	Calibrate MultiBale, Menu 1-9 "Calibrate MultiBale"
2 		Sensitivity of direction display, *refer to page 57*
3 		Central lubrication, *refer to page 57*
4		Bale scales, *refer to page 58*
5 		Moisture measurement, *refer to page 60*
	5-1 	Alarm message for moisture measurement, *refer to page 60*
	5-2 	Correction value for moisture measurement, *refer to page 61*
6		Silage additive system, *refer to page 62*
13		Counter, *refer to page 63*

Menu	Sub-menu	Designation
	13-1	Customer counter, *refer to page 63*
	13-2 	Total counter, *refer to page 67*
14		ISOBUS, *refer to page 68*
	14-1	Auxiliary diagnostics (AUX), *refer to page 69*
	14-2	Diagnostics of driving speedometer/direction display, *refer to page 70*
	14-3 	Configure main window, *refer to page 70*
	14-4	Set background colour, *refer to page 72*
	14-9 	Switching between terminals, *refer to page 73*
15		Settings, *refer to page 73*
	15-1 	Sensor test, *refer to page 74*
	15-2 	Actuator test, *refer to page 80*
	15-3	Software info, *refer to page 82*
	15-4 	Error list, *refer to page 83*

9.2 Recurring icons

To navigate in the menu level/menus, the following icons appear again and again.

Icon	Designation	Explanation
	Arrow pointing up	Move up in order to select something.
	Arrow pointing down	Move down in order to select something.
	Arrow pointing to the right	Move to the right in order to select something.

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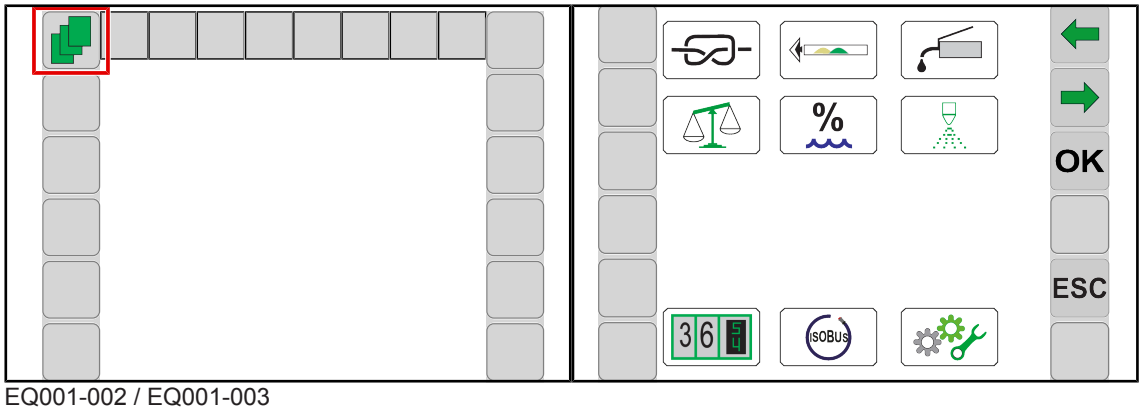
Icon	Designation	Explanation
	Arrow pointing to the left	Move to the left in order to select something.
	Disk	Save the setting.
	ESC	Leave menu without saving. By pressing the key longer, the previously viewed working screen is called up.
	DEF	Reset to factory setting.
	Sensor test	Quick access to sensor test (sensors relevant for this menu)
	Actuator test	Quick access to actuator test (actuators relevant for this menu)
	Disk	The mode or value is saved.
	Plus	Increase the value.
	Minus	Reduce the value.
	Arrow pointing to the right	Display next mode.
	Arrow pointing to the right	Display previous mode.

9.3 Bring up menu level



EQ001-002 / EQ001-003

- ▶ To bring up the menu level from the working screen, press .
- ➡ The display indicates the menu level.

Depending on how the machine is equipped, the menu level 4 is divided into the following menus:

Icon	Designation
	Menu 1 "Knotter", *refer to page 53*

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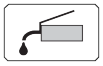
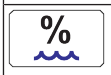
Icon	Designation
	Menu 2 "Sensitivity of direction display", *refer to page 57*
	Menu 3 "Central lubrication" , *refer to page 57*
	Menu 4 "Bale scales" , *refer to page 58*
	Menu 5 "Moisture measurement" , *refer to page 60*
	Menu 6 "Silage additive system", *refer to page 62*
	Menu 13 "Counters", *refer to page 63*
	Menu 14 "ISOBUS", *refer to page 68*
	Menu 15 "Settings", *refer to page 73*

9.4 Selecting menu

Calling up menu

The menus are selected depending on used terminal (touch sensitive or not touch sensitive).

For version with “Touch sensitive and not touch sensitive terminal”

By means of adjacent keys

- ▶ To select a menu, press the keys next to or until the desired menu is selected.
  - ⇨ The selected menu is highlighted in colour.
- ▶ To call up the menu, press the key next to .
- ➡ The menu opens.

> ***INFORMATION***
>
> When equipped with “touch sensitive terminal”, the icons can directly be pressed.

By means of the scroll wheel

- ▶ Select the desired menu by means of scroll wheel.
  - ⇨ The selected menu is highlighted in colour.
- ▶ To call up the menu, press the scroll wheel.
- ➡ The menu opens.

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For version with touch sensitive terminal

By pressing the icons

▶ To call up a menu, press the icon (e.g.) in the display.

➡ The menu opens.

Leaving menu

▶ Press ESC or adjacent key.

➡ The menu closes.

9.5 Changing value

For the settings in the menus, values must be entered or changed. The values are selected depending on used terminal (touch sensitive or not touch sensitive).

For version with touch sensitive or not touch sensitive terminal

- By means of the scroll wheel

Additionally for “Touch sensitive terminal” version

- By pressing or .
- By tipping the blue value on the display.

  If a numeric value is tipped, an input mask opens. For further information on entering values in the input mask, refer to the enclosed operating instructions of the terminal.

Examples:

By means of the scroll wheel

▶ Choose the desired value by using the scroll wheel.

⇨ The value is highlighted in colour.

▶ Press the scroll wheel.

⇨ An input mask opens.

▶ Turn the scroll wheel to increase or reduce the value.

▶ Press scroll wheel to save the value.

➡ The setting is saved and the input mask closes.

By means of value

▶ Tip the value.

⇨ An input mask opens.

▶ Increase or reduce value.

▶ Press OK to save the value.

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➡ The setting is saved and the input mask closes.

9.6 Changing mode

It is possible to select between different modes in individual menus.

▶ To select the next mode, press .

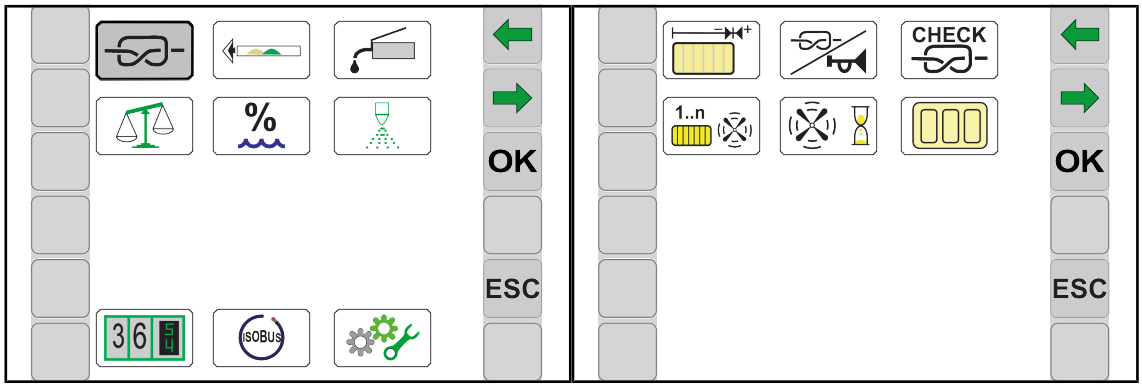
▶ To select the previous mode, press .

▶ To save, press .

➡ An acoustic signal sounds, the set mode is saved and the icon is briefly displayed in the upper line.

▶ To leave the menu, press ESC.

9.7 Menu 1 "Knotter"



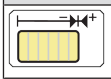
EQ001-003 / EQ001-005

✓ The menu level is called, *refer to page 50*.

▶ To open the menu, press .

➡ The display shows the "Knotter" menu.

The "Knotter" menu is divided into the following sub-menus depending on the machine configuration:

Icon	Designation
	Menu 1-1 "Correction value for bale length", *refer to page 54*
	Menu 1-2 "Knotter signal", *refer to page 54*
	Menu 1-3 "Knotter monitoring", *refer to page 55*
	Menu 1-4 "Blowing interval", *refer to page 56*
	Menu 1-5 "Blowing time", *refer to page 56*

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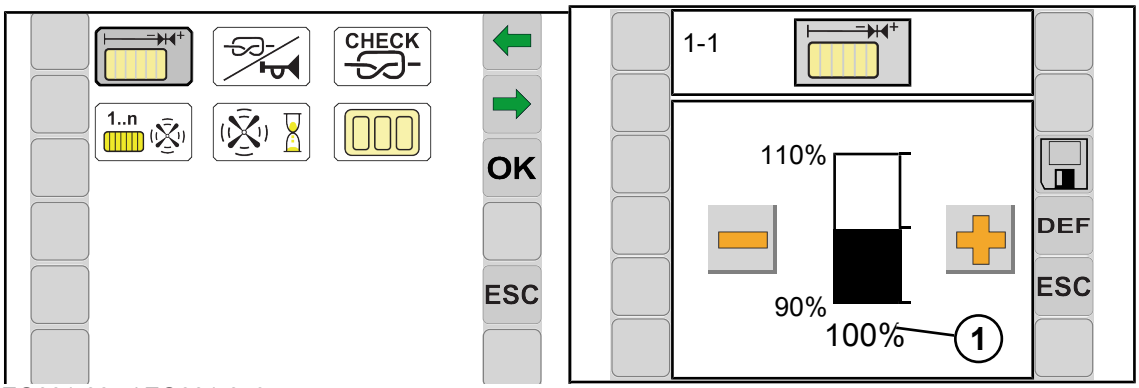
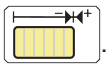
9.7.1 Menu 1-1 "Correction value for bale length"

Because of the different properties of materials (e.g. straw, silage) the actual bale length may deviate from the set setpoint value. The correction value can be used to correct this deviation.



EQ001-005 / EQ001-059

✓ Menu 1 "Knotter" has been selected, *refer to page 53*.

▶ To open the menu, press  .

➡ The display shows the "Correction value for bale length" menu.

Recurring icons *refer to page 49*.

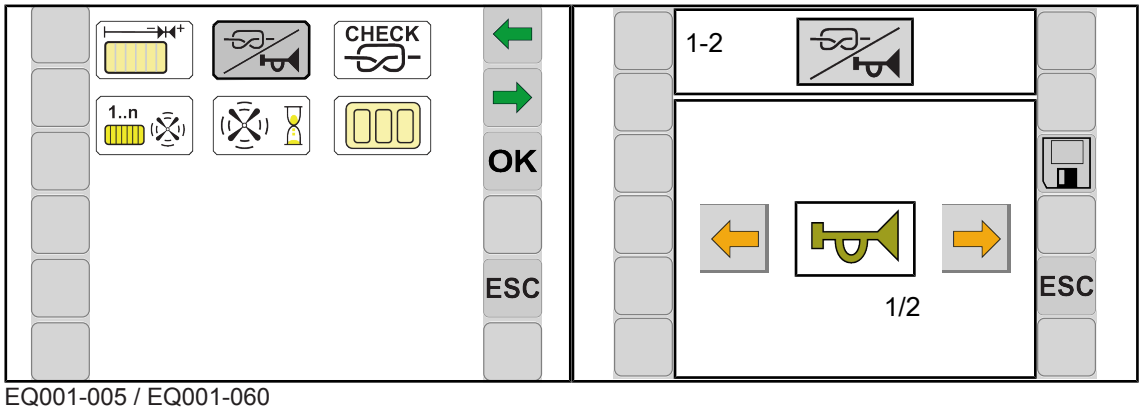
Display area

Item	Designation	Explanation
(1)	Correction value for bale length	• Adjustable value range: 90 - 110 % • If a correction value of e.g. 110 % is set, the bale will be 10 % longer. • Factory setting: 100 %

▶ Change value, *refer to page 52*.

9.7.2 Menu 1-2 "Knotter signal"

This menu can be used to set whether an acoustic signal is to sound after a knot is tied.



EQ001-005 / EQ001-060

✓ Menu 1 "Knotter" has been selected, *refer to page 53*.

▶ To open the menu, press .

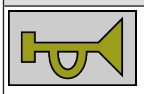
➡ The display shows the "Knotter signal" menu.

Recurring icons *refer to page 49*.

https://truckmanualshub.com/

Display range

One of two modes can be selected:

Icon	Designation	Explanation
 Mode 1/2	Knotter signal activated	After a knot is tied, an acoustic signal sounds.
Mode 2/2	Knotter signal deactivated	After a knot is tied, an acoustic signal does not sound.

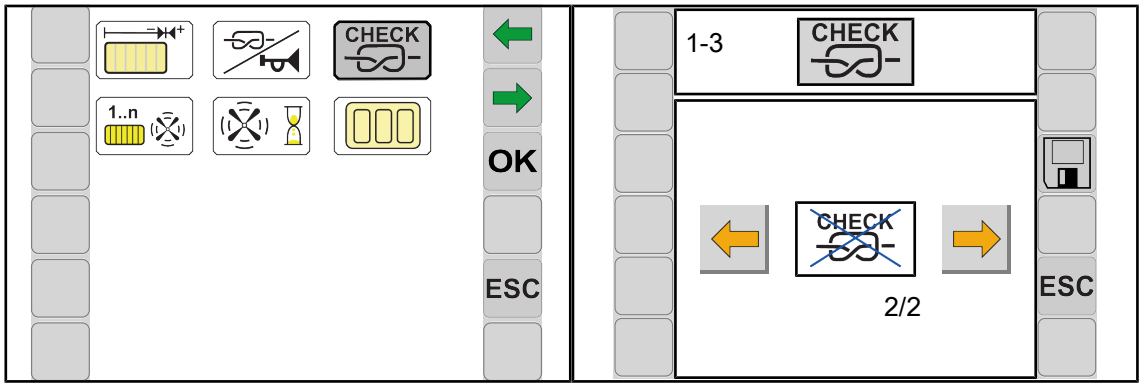
Changing mode

- ▶ Call up and save mode, *refer to page 53*.

9.7.3 Menu 1-3 "Knotter monitoring"

For the "Comfort Electronics" version

This menu can be used to set whether the upper twines of the knotters are to be monitored. The knotters are numbered from left to right as viewed in the direction of travel: Knotters from 1 to 6 .



EQ001-005 / EQ001-061

- ✓ Menu 1 "Knotter" has been selected, *refer to page 53*.
- ▶ To open the menu, press CHECK.
- ➡ The display shows the "Knotter monitoring" menu.

Recurring icons *refer to page 49*.

Display range

One of two modes can be selected:

Icon	Designation	Explanation
CHECK Mode 1/2	Knotter monitoring activated	The upper twines are individually monitored.
CHECK Mode 2/2	Knotter monitoring deactivated	The upper twines are not monitored.

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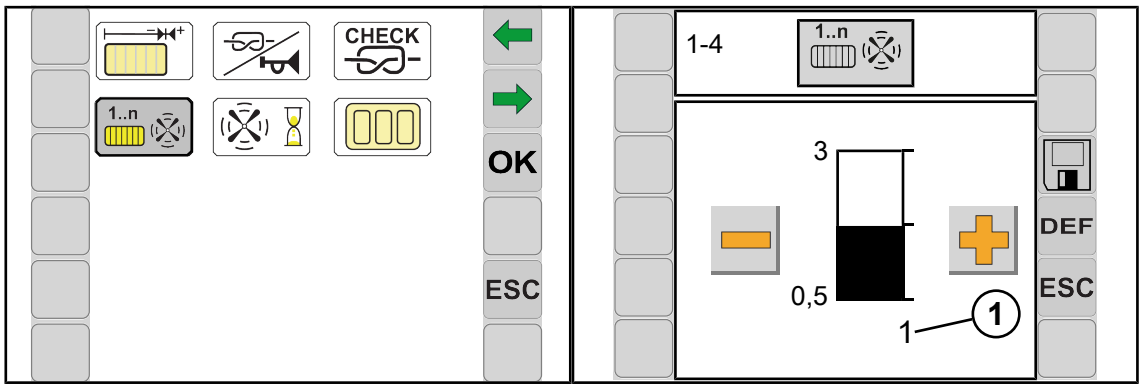
Changing mode

▶ Call up and save mode, *refer to page 53*.

9.7.4 Menu 1-4 "Blow interval"

This menu can be used to set after how many bales the knotters are blown off with compressed air to remove dust and accumulation of crops.



EQ001-005 / EQ001-062

✓ Menu 1 "Knotter" has been selected, *refer to page 53*.

▶ To open the menu, press .

➡ The display shows the "Blow interval" menu.

Recurring icons *refer to page 49*.

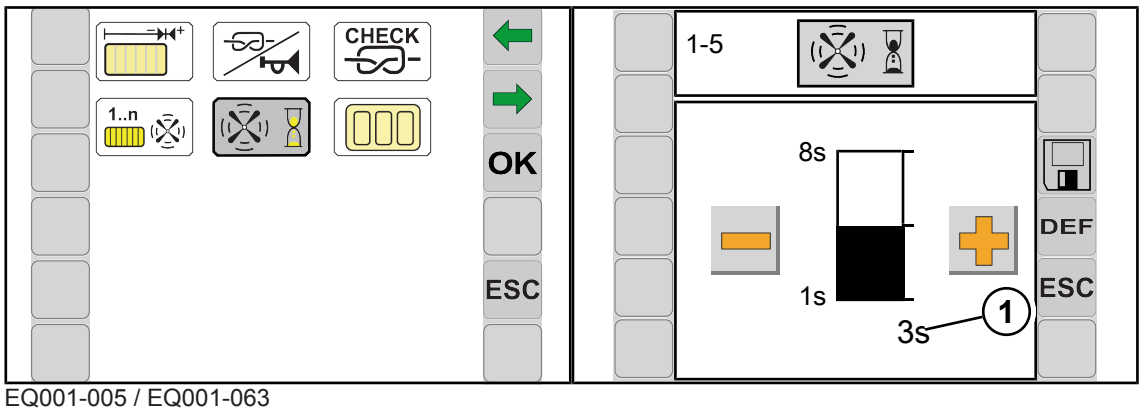
Display area

Item	Designation	Explanation
(1)	Number of bales	• Adjustable value range: 0.5 - 3 bales • If 0.5 is set, the knotters are blown off halfway along the bale and at the end of the bale.

▶ Change value, *refer to page 52*.

9.7.5 Menu 1-5 "Blowing time"

This menu can be used to set how long the knotters are blown.



EQ001-005 / EQ001-063

✓ Menu 1 "Knotter" has been selected, *refer to page 53*.

▶ To open the menu, press .

➡ The display shows the "Blowing time" menu.

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Recurring icons *refer to page 49*.

Display area

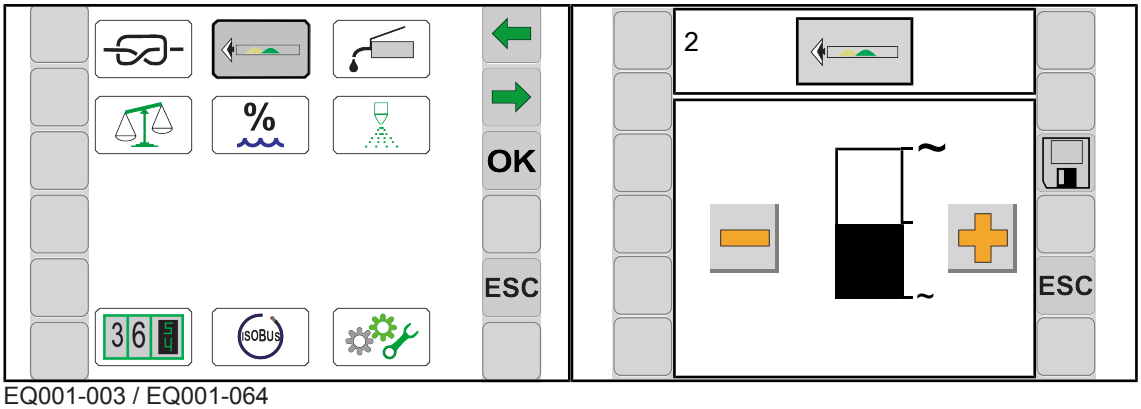
Item	Designation	Explanation
(1)	Blowing time	• In seconds. • Adjustable value range: 1 - 8 s **Info:** To prevent an excessive pressure drop on the pressure vessel, it is recommended first to shorten the blowing interval, *refer to page 56*.

▶ Change value, *refer to page 52*.

9.8 Menu 2 "Sensitivity of direction display"

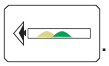
This menu is used to set the sensitivity of the direction display.

The direction display shows whether the swath is being picked up in the centre of the pick-up and provides information on the direction in which the tractor must travel. The higher the bar on the display, the more sensitive the direction display is set. The higher the sensitivity of the direction display is set, the stronger the motion indication appears in the form of arrows on the working screen.



EQ001-003 / EQ001-064

✓ The menu level is called, *refer to page 50*.

▶ To open the menu, press  .

➡ The display shows the "Sensitivity of direction display" menu.

Adjusting the sensitivity

▶ Change value, *refer to page 52*.

9.9 Menu 3 "Central lubrication"

For the "central lubrication" version

This menu can be used to manually actuate an intermediate lubrication.

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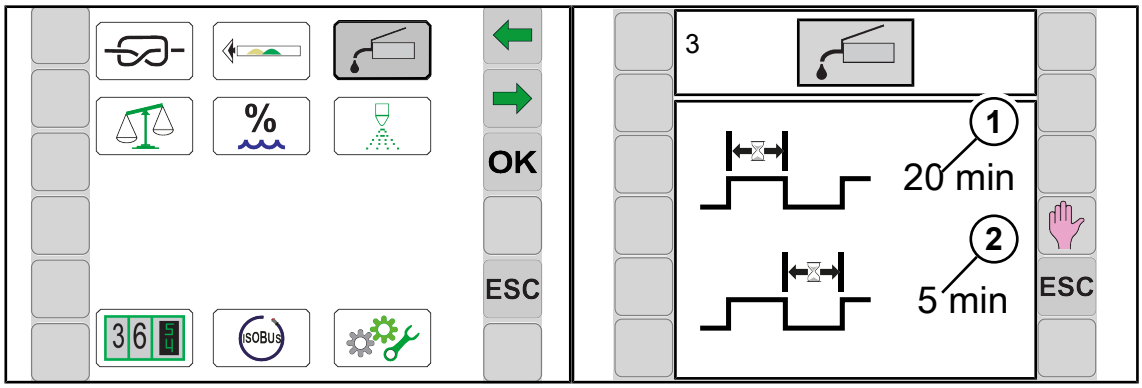
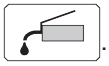


EQ001-003 / EQ001-065

✓ The menu level is called, *refer to page 50*.

▶ To open the menu, press  .

➡ The display shows the "Central lubrication" menu.

Recurring icons *refer to page 49*.

Display range

Icon	Designation	Explanation
(1)	Lubrication duration	• Not adjustable • Factory setting: 20 min
(2)	Lubrication pause	• Not adjustable • Factory setting: 5 min
	Manually actuate intermediate lubrication	The central lubrication is switched off.

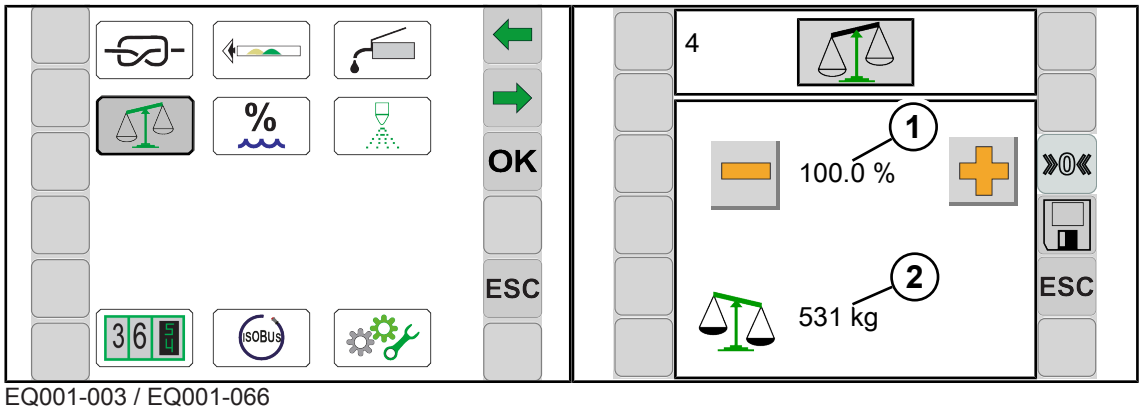
Actuating intermediate lubrication

▶ Press .

9.10 Menu 4 "Bale scales"

For the "bale scales" version

In this menu a correction value can be set for the bale scales if the calculated weight (2) deviates from the weight of external calibrated scales.



EQ001-003 / EQ001-066

✓ The menu level is called, *refer to page 50*.

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▶ To open the menu, press .

➡ The display shows the "Bale scales" menu.

Recurring icons *refer to page 49*.

Display range

Icon	Designation	Explanation
(1)	Correction value	• Adjustable value range: 90 - 105 % • Factory setting: 110 %
(2)	Value	• Calculated weight • Unit depending on selected system of units
	Zeroise	• Zeroise only when the bale scales are unloaded.

Setting the bale scales

✓ The machine is shut down and safeguarded, *refer to page 21*.

✓ The bale chute has been lowered *refer to page 41*.

Check

▶ Zeroise the bale scales, *refer to page 59*.

▶ Place a calibrated test weight from 200 - 300 kg in the centre of the bale scales.

▶ Read off the displayed weight.

➡ If the displayed value corresponds to the weight of the test weight, it is not necessary to adjust the bale scales.

➡ If the displayed value differs from the weight of the test weight, the bale scales must be adjusted.

Adjusting bale scales

▶ Press or until the value (2) corresponds to the weight of the test weight.

▶ To save the value, press .

➡ The icon is briefly displayed and the value is saved.

INFORMATION

▶ If the limit range is not adequate to adjust the bale scales, contact KRONE customer service.

Zeroising bale scales

If there is no bale (weight) on the bale scales, but a value (2) is displayed, when the bale chute is lowered, the sensors B55 "Bale chute at rear" and B56 "Bale chute at front" must be zeroised. During the zeroising process the acceleration sensor is calibrated.

✓ The bale chute has been lowered *refer to page 41*.

✓ There is no bale (weight) on the bale scales.

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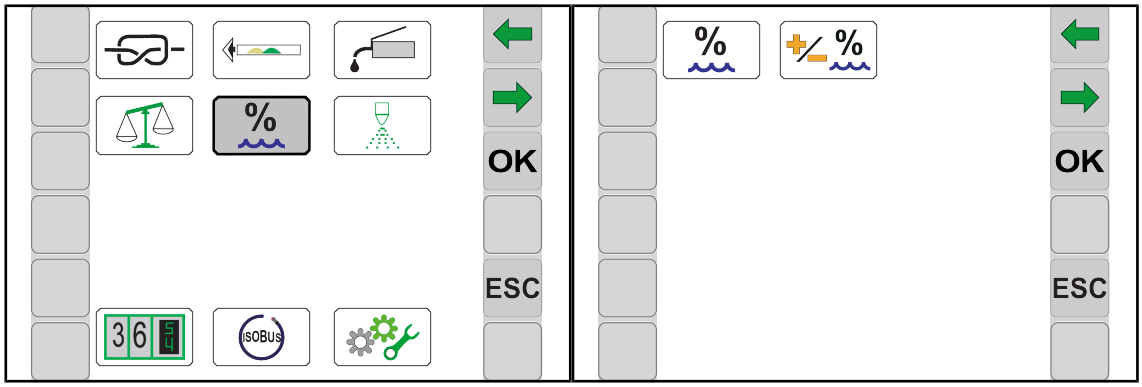
✓ The machine is shut down and safeguarded, *refer to page 21*.

▶ To zeroise the bale scales, press »0«.

⇨ The icon is briefly displayed and the acceleration sensor is calibrated.

9.11 Menu 5 "Moisture measurement"



EQ001-003 / EQ001-006

✓ The menu level is called, *refer to page 50*.

▶ To open the menu, press %.

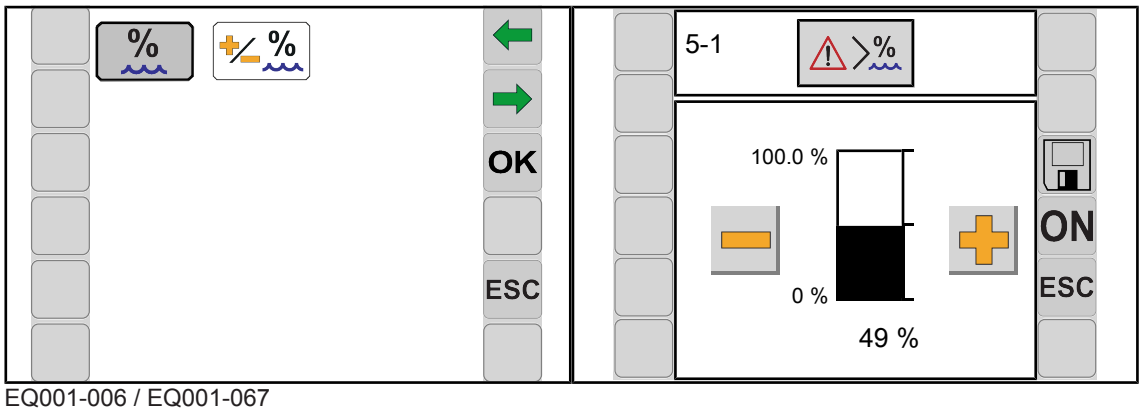
➡ The display shows the "Moisture measurement" menu.

The "Moisture measurement" menu is divided into the following sub-menus depending on the machine configuration:

Icon	Designation
⚠ > %	Menu 5-1 "Alarm message for moisture measurement", *refer to page 60*
± %	Menu 5-2 "Correction value for moisture measurement", *refer to page 61*

9.11.1 Menu 5-1 "Alarm message for moisture measurement"

In this menu the value is set from which the alarm message 36 "Crops too moist" appears on the display. The alarm message for the display can also be deactivated or activated.



EQ001-006 / EQ001-067

✓ Menu 5 "Moisture measurement" has been selected, *refer to page 60*.

▶ To open the menu, press ⚠ > %.

➡ The display shows the "Alarm message for moisture measurement" menu.

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Recurring icons *refer to page 49*.

Setting value for display

- Change value, *refer to page 52*.

Deactivating alarm message 36

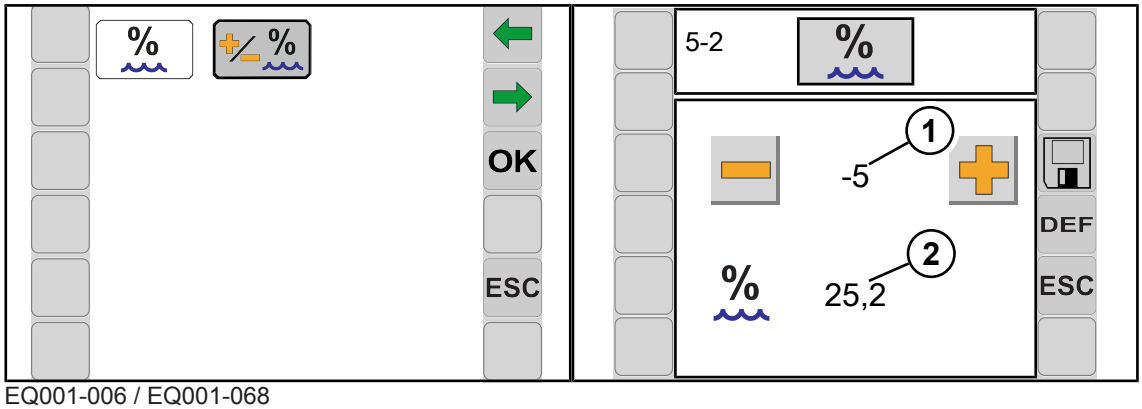
- To deactivate the alarm message, press ON.
- ➡ The display switches from ON to OFF.

Activating alarm message 36

- To activate the alarm message, press OFF.
- ➡ The display switches from OFF to ON.

9.11.2 Menu 5-2 "Correction value for moisture measurement"

In this menu a correction value can be set for the moisture measurement if the displayed value deviates from the value of an external measuring system.



EQ001-006 / EQ001-068

- ✓ Menu 5 "Moisture measurement" has been selected, *refer to page 60*.
- To open the menu, press %.
- ➡ The display shows the "Correction value for moisture measurement" menu.

Recurring icons *refer to page 49*.

Display area

Item	Designation	Explanation
(1)	Value	Measured moisture
(2)	Correction value	Adjustable value range: +10 to -10

Determining the moisture

- Use an external system to determine the moisture.
- ➡ If the measured value matches the value (1) on the display, everything is correct.

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➡ If the measured value does not match the value (1) on the display, correct the value on the display.

Setting the correction value

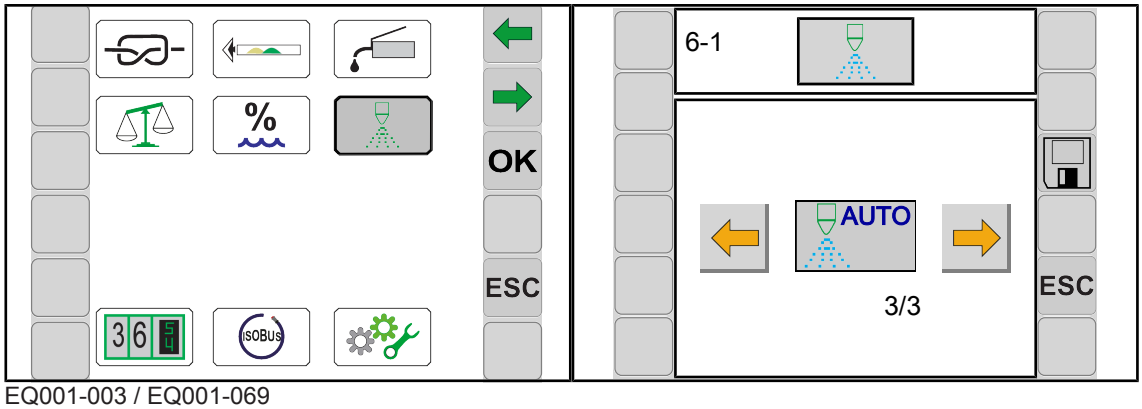
▶ Press or until the value (1) matches the measured value.

▶ To save the value, press .

➡ The icon is displayed briefly.

➡ The value is saved.

9.12 Menu 6 "Silage additive system"



EQ001-003 / EQ001-069

✓ The menu level is called, *refer to page 50*.

▶ To open the menu, press .

➡ The display shows the "Silage additive system" menu.

Recurring icons *refer to page 49*.

Display range

One of three modes can be selected:

Icon	Meaning	Explanation
Mode 1/3	Silage additive system switched off	
Mode 2/3	Silage additive system switched on	Continuous operation
Mode 3/3	Silage additive system automatic mode	The silage additive system is switched on as soon as the pick-up is in the float position.

Changing mode

▶ Call up and save mode, *refer to page 53*.

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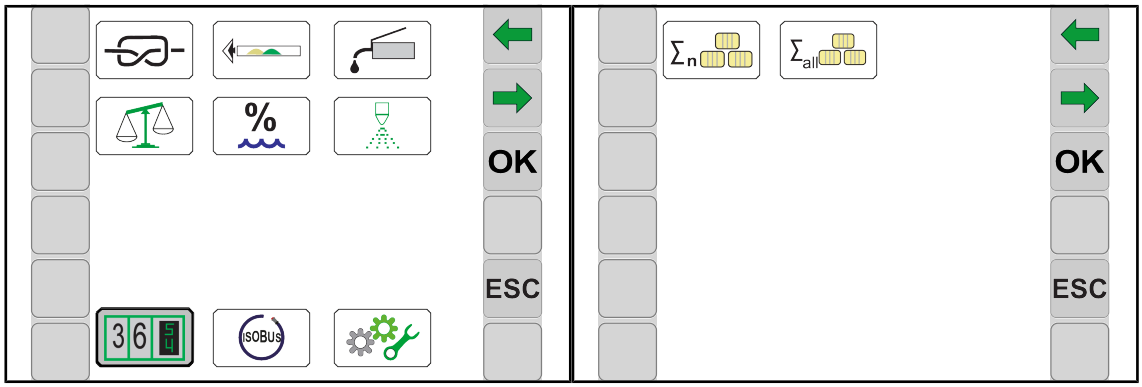
9.13 Menu 13 "Counters"



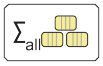
EQ001-003 / EQ001-008

✓ The menu level is called, *refer to page 50*.

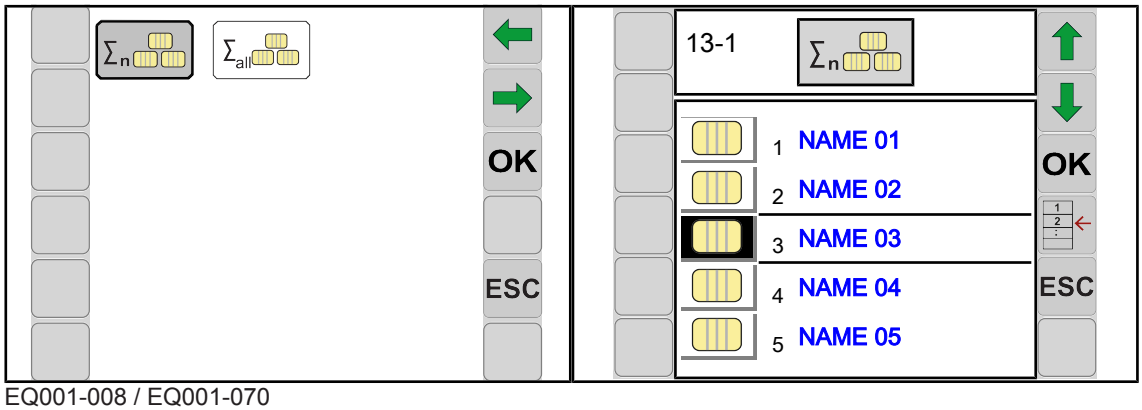
▶ Press to open the menu.

➡ The display shows “Counters” menu.

The "Counter" menu is divided into the following sub-menus depending on the machine configuration:

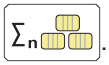
Icon	Designation
	Menu 13-1 "Customer counter" , *refer to page 63*
	Menu 13-2 "Total counter", *refer to page 67*

9.13.1 Menu 13-1 "Customer counter"



EQ001-008 / EQ001-070

✓ Menu 13 “Counter” is called.“ *refer to page 63*.

▶ To open the menu, press  .

➡ The display shows the "Customer counter" menu.

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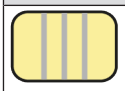
Display range

Icon	Designation	Explanation
	Customer counter	• Customer counter 1 to 20. • The activated customer counter is highlighted in grey. • The selected customer counter is the one between the lines. • The selected customer counter does not have to be activated. • The name next to the customer counter is touch-sensitive. An input mask opens. • Tap the icon to select the detail counter, *refer to page 65*.

Recurring icons *refer to page 49*.

Icon	Designation	Explanation
	Display detail counter	Displays counter information for the selected customer counter.

Changing the designation of a customer counter

▶ Press on “Designation”.

⇨ An input mask opens.

▶ Enter designation via keypad.

▶ Press OK to save the designation.

▶ In order to leave the input mask without saving, press ESC.

Activating customer counter

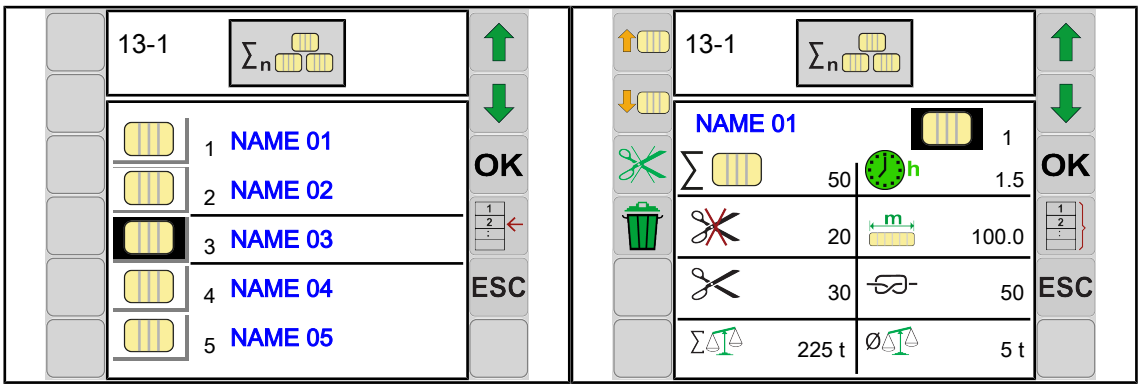
✓ The detail counter is called.

▶ To select the customer counter, press ↑ or ↓.

▶ To activate the customer counter, press OK.

➡ The new activated customer counter is highlighted in grey.

Detail counter



EQ001-070 / EQ001-0710

Select detail counter

✓ The menu 13-1 "Customer counter" is opened.

▶ To select the detail counter, press .

Selecting the customer counter

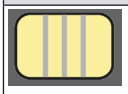
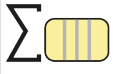
✓ The detail counter has been selected.

▶ To return to the customer counter, press .

Keys

Icon	Designation
	Increase number of bales
	Decrease number of bales
	Select "Uncut bales" counter
	Select "Cut bales" counter

Display range of detail counter

Icon	Designation	Explanation
	Selected customer counter	• Here customer counter 1 • Further information *refer to page 64*.
	"Total bales" counter	Number of all bales
	"Uncut bales" counter	**For the "cutting unit" version:** Number of uncut bales

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Icon	Designation	Explanation
	"Cut bales" counter	**For the "cutting unit" version:** Number of cut bales
	Operating hours counter	Counts only when the PTO shaft is running.
	"Total length" counter	• Total length of all bales for this customer. • In m or ft (depending on selected system of units).
	Knot counter	**For the "MultiBale" version:** Including the MultiBale knot
	"Total weight" counter	**For the "bale scales" version:** Total weight of all bales
	"Average weight" counter	**For the "bale scales" version:** Average weight of the weighed bales

Resetting customer counter

The customer counter to be reset must not be activated.

▶ To select the customer counter, press or .

▶ Press .

⇨ The selected customer counter is reset to zero.

⇨ The designation of the customer counter is not deleted.

Changing the number of bales

▶ Press or until the customer counter has been selected.

The selected customer counter does not have to be activated.

Changing the "Uncut bales" counter

▶ Press .

▶ To increase the number of bales, press .

▶ To reduce the number of bales, press .

➡ At the same time the following counters are changed:

- the season counter
- the day counter
- the "Total length" counter
- the knot counter
- **For the "bale scales" version**: the "Total weight" counter
- **For the "bale scales" version**: the "Average weight" counter

Changing the "Cut bales" counter

▶ Press .

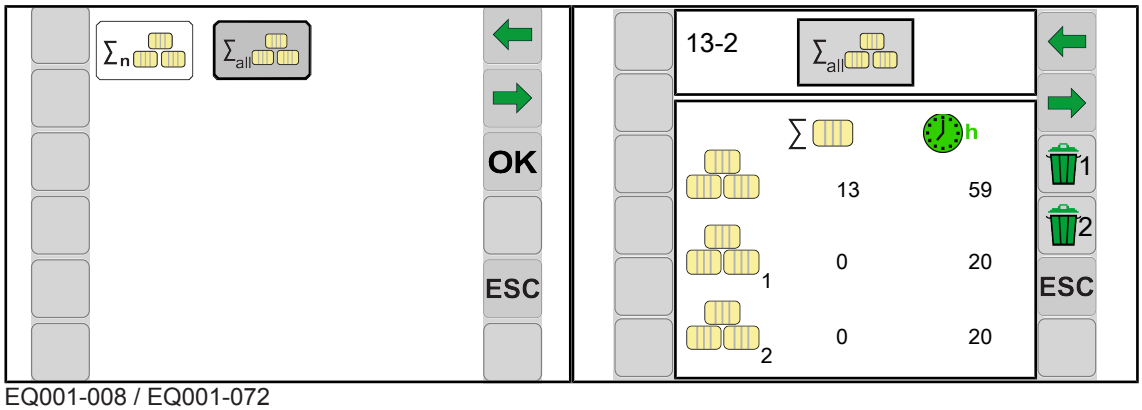
▶ To increase the number of bales, press .

▶ To reduce the number of bales, press .

➡ At the same time the following counters are changed:

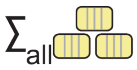
- the season counter
- the day counter
- the "Total length" counter
- the knot counter
- **For the "bale scales" version**: the "Total weight" counter
- **For the "bale scales" version**: the "Average weight" counter

9.13.2 Menu 13-2 "Total counter"



EQ001-008 / EQ001-072

✓ The main menu 13 "Counter" has been selected, Menu 13 “Counters”.

▶ To open the menu, press  .

⇨ The display shows the "Total counter" menu.

Display range

Icon	Designation	Explanation
	"Total number of bales" counter	
	"Uncut bales" counter	
	"Cut bales" counter	For the "cutting unit" version
	Operating hours counter	Counts only when PTO shaft is running.
	Bale counter	Cannot be deleted
	Season counter 1	Can be deleted

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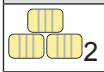
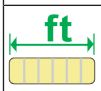
Icon	Designation	Explanation
	Season counter 2	Can be deleted
	"Number of knots" counter	
	"Total weight" counter	For the "bale scales" version
	"Bale length" counter	
		

For the "bale scales" version

Icon	Designation	Explanation
	"Total weight" counter	Total weight of all compressed bales. Cannot be deleted
	Season counter 1	Can be deleted
	Season counter 2	Can be deleted

Recurring icons *refer to page 49*.

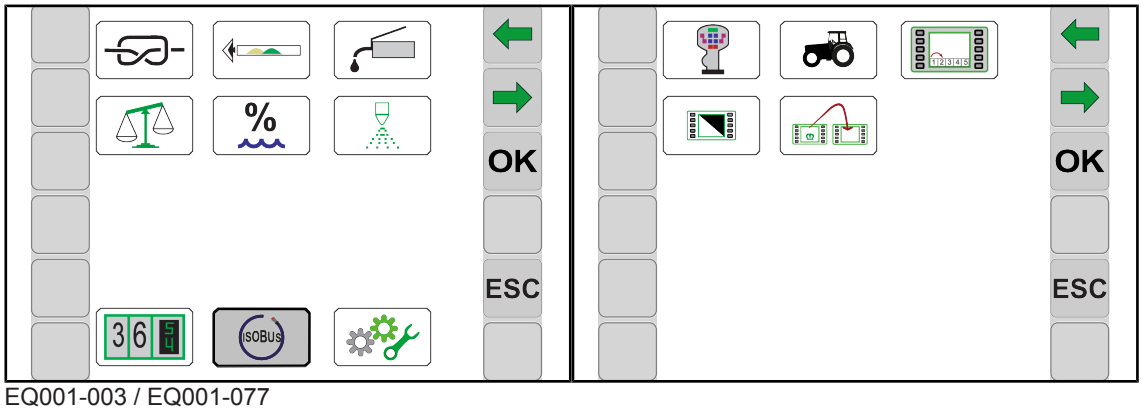
Resetting season counter

- ▶ Press .
- ➡ The season counter is reset to zero.

Resetting day counter

- ▶ Press .
- ➡ The day counter is reset to zero.

9.14 Menu 14 "ISOBUS"



EQ001-003 / EQ001-077

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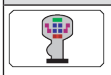
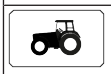
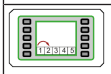
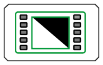
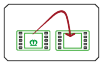
✓ The menu level has been selected, *refer to page 50*.

▶ To open the menu, press

.

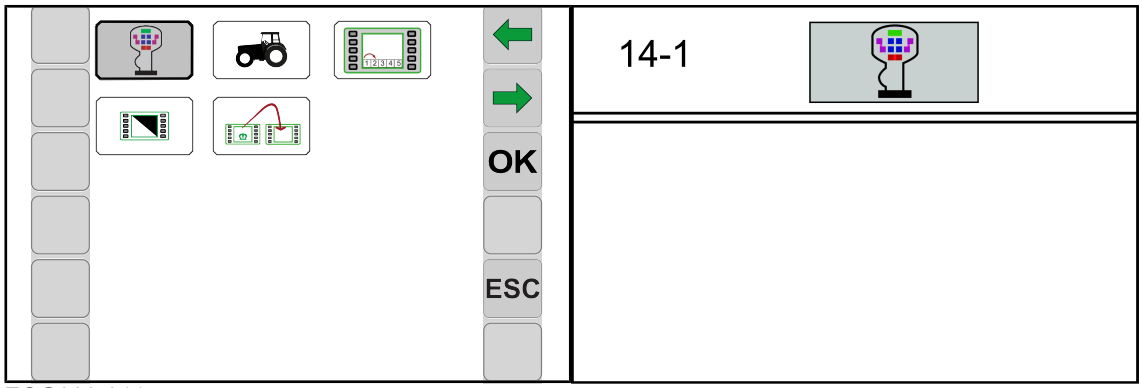
➡ The display shows the "ISOBUS" menu.

The "ISOBUS" menu is divided into the following sub-menus depending on the machine configuration:

Icon	Designation
	Menu 14-1 "Auxiliary (AUX) diagnostics", *refer to page 69*.
	Menu 14-2 "Driving speed display/direction display diagnostics", *refer to page 70*.
	Menu 14-3 "Configure main window", *refer to page 70*.
	Menu 14-4 "Set background colour", *refer to page 72*.
	Menu 14-9 "Switching between terminals", *refer to page 73*.

9.14.1 Menu 14-1 “Diagnostics Auxiliary (AUX)”

The joystick icon is shown in the display. When functions are operated via joystick, the display lists the icons of these functions. The functions are not executed in this menu.



EQG000-011

✓ Menu 14 “ISOBUS” is called, *refer to page 69*.

▶ Press to open the menu.

➡ The display shows the menu “Diagnostics Auxiliary (AUX)“

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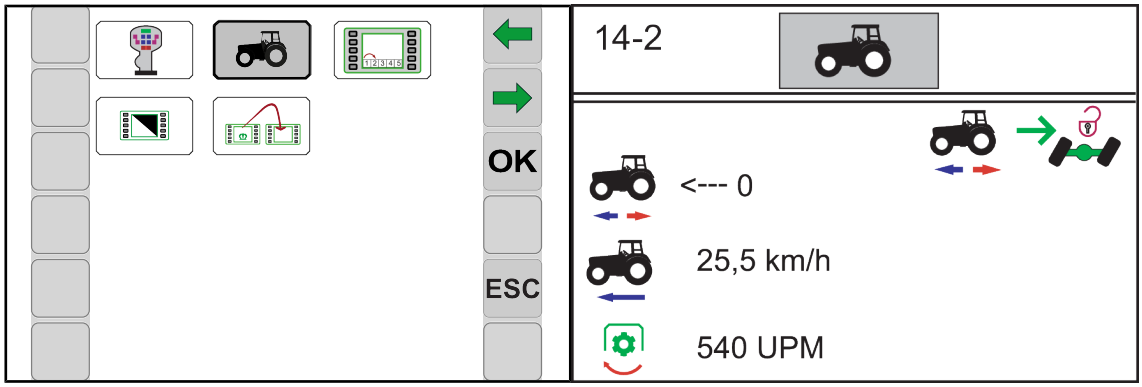
9.14.2 Menu 14-2 “Driving Speed Display Diagnostics/Direction Display Diagnostics”



EQG000-012

✓ Menu 14 “ISOBUS” is called, *refer to page 69*.

▶ Press to open the menu.

➡ The display shows “Driving Speed Indicator/Direction Display Diagnostics” menu.

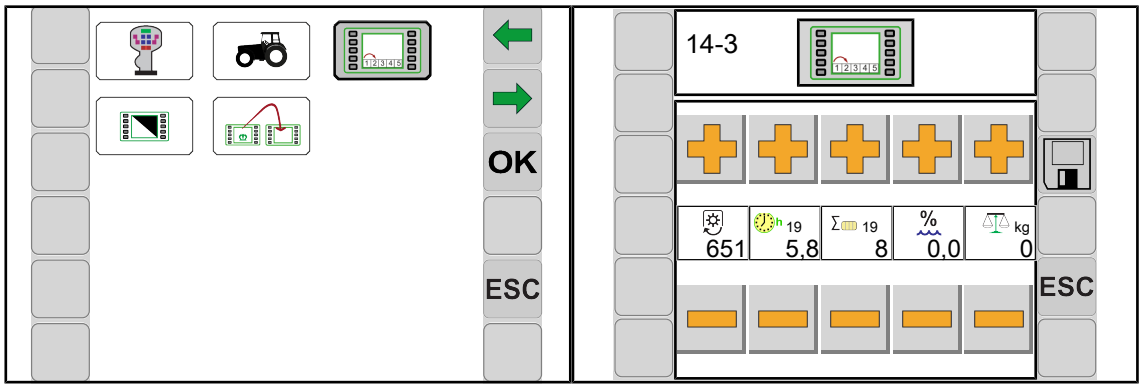
Display range

Icon	Designation	Explanation
<--- 0	Driving forward	
0 --->	Reversing	
+25.5 km/h	Speed for forward travel	km/h or mph depending on selected system of units.
-25.5 km/h	Speed for reverse travel	
	PTO speed	Value is provided via ISOBUS from the tractor.
	The direction of travel of the tractor is evaluated for locking the steering axle.	If the evaluation of the ISOBUS data from the tractor has been activated.
	The direction of travel of the tractor is not evaluated for locking the steering axle.	If the evaluation of the ISOBUS data from the tractor has not been activated.

9.14.3 Menu 14-3 "Configuring main window"

This menu can be used to set the information which is to be displayed in the lower information line of the main window. Up to 5 display elements can be displayed simultaneously in the main window. Each display element can be selected only once.

Depending on the machine configuration, up to 9 display elements can be selected which 5 display elements are to be displayed in the main window.



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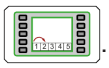
- To open the menu, press  .
- ➡ The display shows the "Configure main window" menu.

Recurring icons *refer to page 49*.

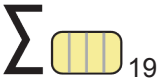
Display range

Icon	Designation	Explanation
	Show next display element	
	Show previous display element	

- To select the required display element, press or .
  - ⇨ The display shows the new display element.
- To save the new display element, press .
- ➡ The new display element is saved for the information bar of the main window.

Selectable display elements

Depending on the machine configuration, the following display elements can be positioned in the information bar of the main window, *refer to page 36*.

Icon	Designation	Explanation
	Current PTO speed	In min^{-1}
	Operating hours counter	Counts only when PTO shaft is running. The adjacent number indicates the selected customer counter (customer counter 19 in the example).
	Current total number of bales	The adjacent number indicates the selected customer counter (customer counter 19 in the example).
	Current degree of moisture of the crops	
	Bale weight	Weight of the bale last weighed

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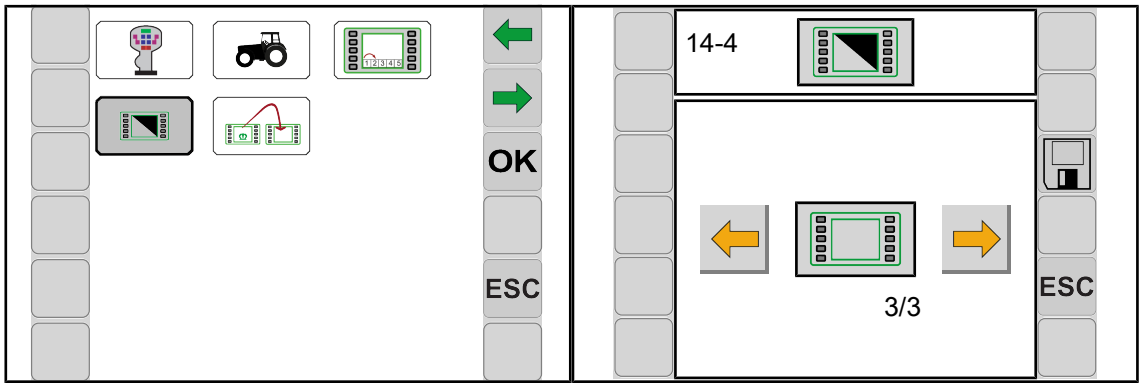
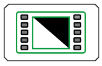
Icon	Designation	Explanation
Ø 19	Current average weight of the weighed bales	The adjacent number indicates the selected customer counter (customer counter 19 in the example).
Σ 19	Current total weight of all bales	The adjacent number indicates the selected customer counter (customer counter 19 in the example).
m 19	Total length of all compressed bales	In m or ft (depending on selected system of units). The adjacent number indicates the selected customer counter (customer counter 19 in the example).
ft 19		
19	Current number of uncut bales	The adjacent number indicates the selected customer counter (customer counter 19 in the example).
19	Current number of cut bales	**For the "cutting unit" version:** The adjacent number indicates the selected customer counter (customer counter 19 in the example).

9.14.4 Menu 14-4 "Set background colour"



EQG000-042

✓ Menu 14 “ISOBUS” is called, *refer to page 69*.

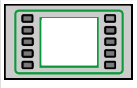
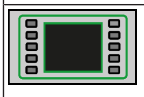
▶ Press  to open the menu.

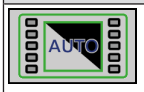
➡ The display shows menu “Background Colour “.

Recurring icons *refer to page 49*.

Display range

One of three modes can be selected.

Icon	Designation	Explanation
 Mode 1/3	Background colour white	Recommended for the day.
 Mode 2/3	Background colour grey	Recommended for the night.

Icon	Designation	Explanation
 Mode 3/3	Background colour automatic	The background colour is specified by the tractor via the parking light. • Tractor parking light on, background colour grey. • Tractor parking light off, background colour white.

Changing mode

▶ Call up and save mode, *refer to page 53*.

9.14.5 Menu 14-9 “Switching Between the Terminals”

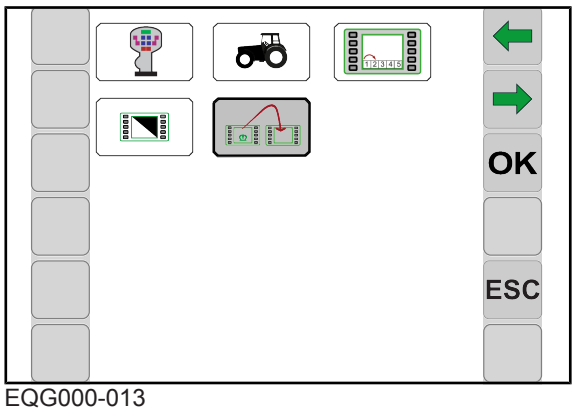
INFORMATION

This menu is only available if several ISOBUS terminal are connected.

When switching over for the first time, the configuration of the machine is loaded into the next terminal. The loading process may take a few minutes. The configuration is stored in the memory of the next terminal.

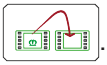
Up to the next call, the machine is no longer available in the previous terminal.

When restarting, the system makes attempts to start the last used terminal. If the last used terminal is no longer available (e.g. because it was dismounted), the restart is delayed as the system searches for a new terminal and loads the specific menus into the terminal. The loading process may take a few minutes.

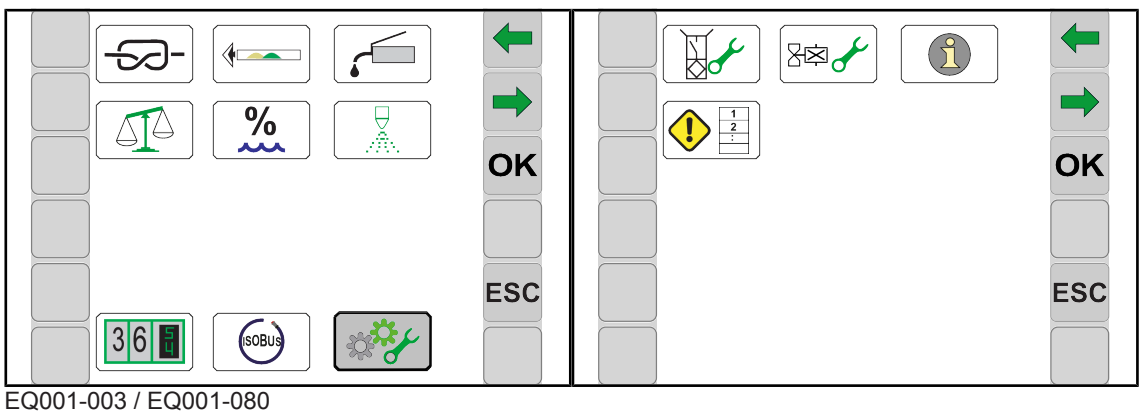


EQG000-013

✓ Menu 14 “ISOBUS” is called, *refer to page 69*.

▶ To change to the next terminal, press  .

9.15 Menu 15 "Settings"



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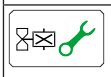
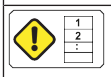
✓ The menu level is called, *refer to page 50*.

▶ Press to open the menu.

➡ The display shows the “Settings” menu.

The "Settings" menu is divided into the following sub-menus depending on the machine configuration:

Icon	Designation
	Menu 15-1 "Sensor test", *refer to page 74*
	Menu 15-2 "Actuator test", *refer to page 80*
	Menu 15-3 "Software info", *refer to page 82*
	Menu 15-4 "Error list", *refer to page 83*

9.15.1 Menu 15-1 “Sensor Test”

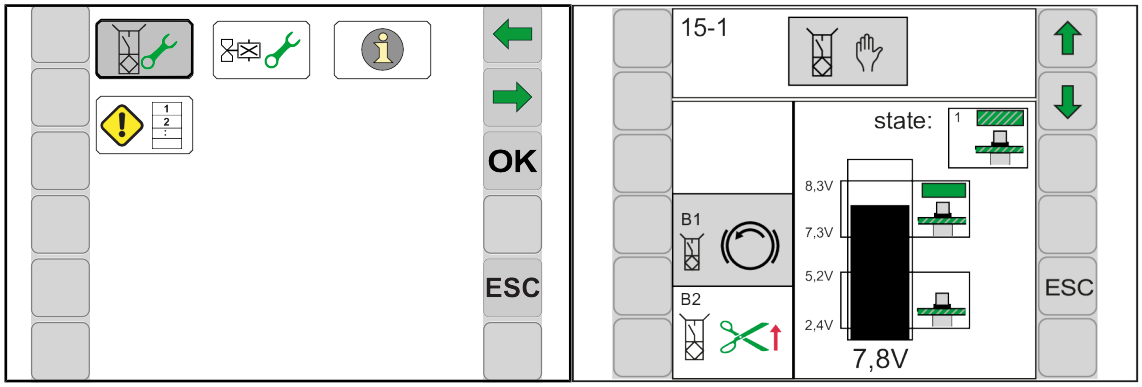
⚠ *WARNING*

Danger of injury in the danger zone of the machine

If the PTO shaft runs during the sensor test, machine parts may start to move unintentionally. Thus there is a risk of serious injuries or death.

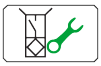
▶ Turn off PTO shaft.

In the sensor test, the sensors installed on the machine are checked for faults. Furthermore the sensors can be correctly set in the sensor test. There is no guarantee the machine is working correctly until after the sensors have been adjusted.



EQ001-080 / EQ001-012

✓ Menu 15 "Settings" has been selected, *refer to page 73*.

▶ Press  to open the menu.

➡ The display shows the “Sensor Test” menu.

Icon	Designation	Explanation
	Select previous sensor	
	Select next sensor	

Icon	Designation	Explanation
ESC	Exit menu	

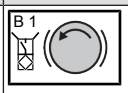
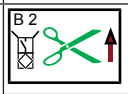
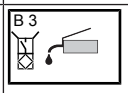
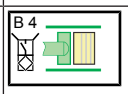
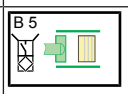
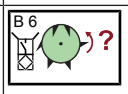
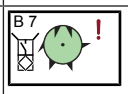
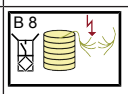
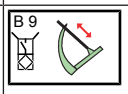
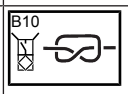
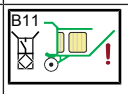
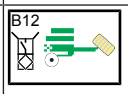
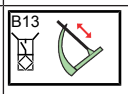
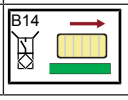
Setting values:

The minimum and maximum setting values with the sensor alive (metal in front of the sensor) are shown in the upper part of the bar display. The current setting value (actual value) is displayed under the bar display.

The distance from the sensor to the metal must be set so that the bar is within the upper marking in the alive state. Then check whether the bar is in non-alive state in the lower marked area.

Possible sensors (depending on the machine configuration)

An overview of the position of the sensors and actuators is in the circuit diagram, *refer to page 96*.

No.	Sensor	Designation
B1		Flywheel brake
B2		Blade cassette up
B3		Monitoring lubricant flow
B4		Baling ram at rear (measure)
B5		Baling ram at front (calibrate)
B6		Speed of packer
B7		Packer feeder strip actuated
B8		Lower twine
B9		Overload needle connecting rod on left
B10		Knotter monitoring
B11		Position of bale chute
B12		Bale has left bale chute
B13		Overload needle connecting rod on right
B14		Position of residual bale ejector

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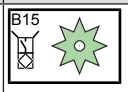
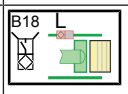
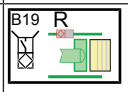
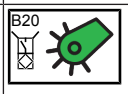
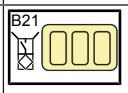
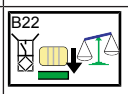
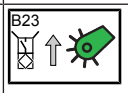
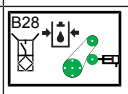
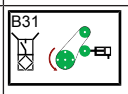
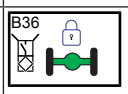
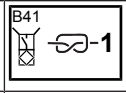
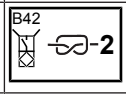
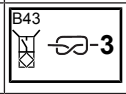
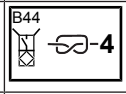
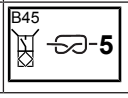
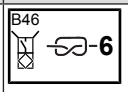
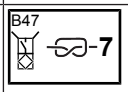
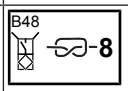
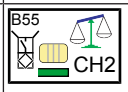
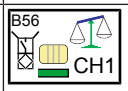
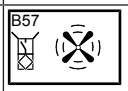
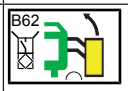
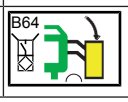
No.	Sensor	Designation
B15		Length measurement
B17		Pressure bale channel flaps
B18		Baling force measurement on left
B19		Baling force measurement on right
B20		Pick-up speed
B21		Position of needle connecting rod
B22		Bale on chute
B23		Pick-up position
B24		Blade cassette active
B28		Pressure sensor cutting rotor
B30		Speed sensor cardan shaft
B31		Cutting rotor speed
B32		Blade control shaft 1 active
B36		Self-steering axle locked
B38		Acceleration bale scales
B39		Position of cleaning fan
B41		Upper twine 1
B42		Upper twine 2
B43		Upper twine 3
B44		Upper twine 4
B45		Upper twine 5

No.	Sensor	Designation
B46		Upper twine 6
B47		Upper twine 7
B48		Upper twine 8
B55		Bale scales at rear
B56		Bale scales at front
B57		Speed of knotter cleaning
B61		Twine box on left locked
B62		Twine box on right locked
B63		Twine box on left maintenance
B64		Twine box on right maintenance

Possible status displays of the sensors

No.	Icon	Status (state)
1		Alive (iron)
2		Not alive (no iron)
5		Pressed
6		Not pressed
20		Cable break
21		Short circuit
		Self-steering axle locked
		Self-steering axle released

Diagnostics pushbutton

When the pushbutton is pressed, the bar must be in the lower marked area of the bar display.

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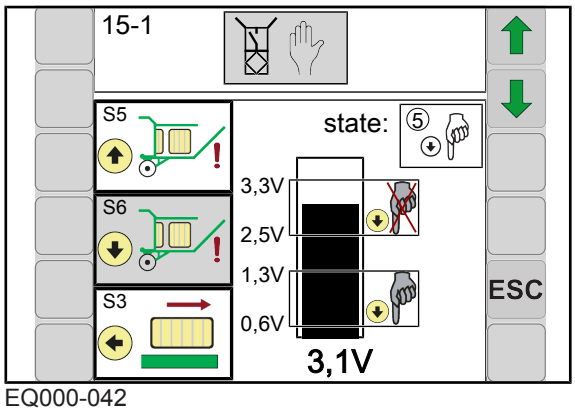
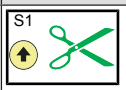
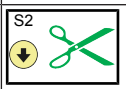
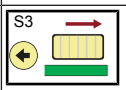
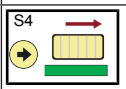
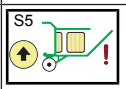
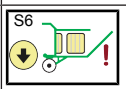
When the pushbutton is not pressed, the bar must be in the upper marked area of the bar display.

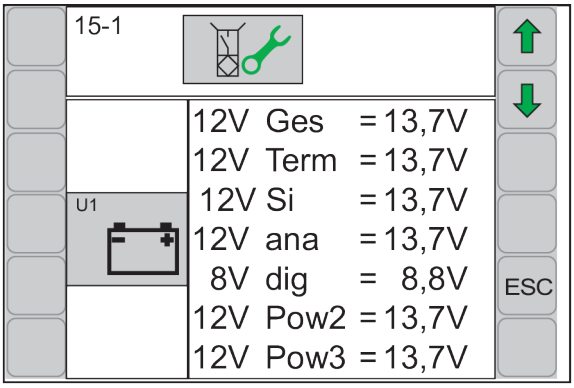


EQ000-042

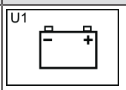
Possible pushbuttons (depending on the machine configuration)

No.	Pushbutton	Designation
S1		"Raise blade cassette" pushbutton
S2		"Lowerblade cassette" pushbutton
S3		"Move in residual bale ejector" pushbutton
S4		"Move out residual bale ejector" pushbutton
S5		"Raise bale chute" pushbutton
S6		"Lower bale chute" pushbutton

Diagnostics supply voltage



EQG000-017

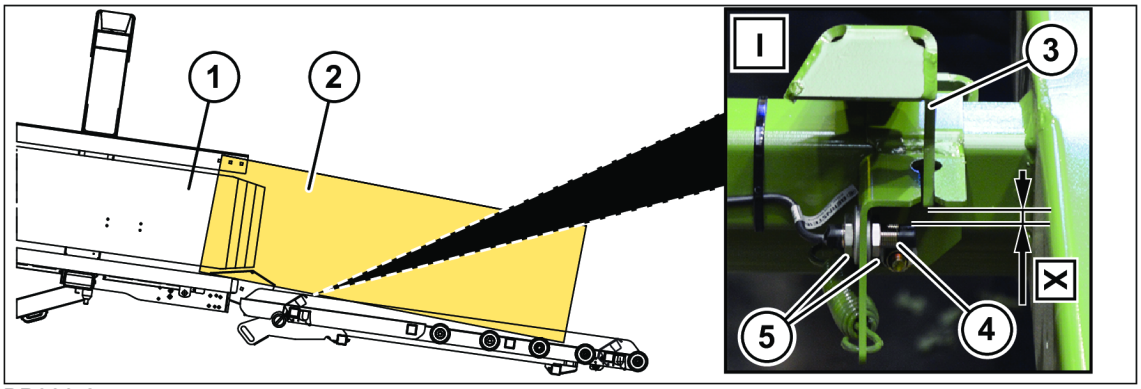
No.	Icon	Designation
U1		Supply voltage

Nominal voltages

Display	Setting range
12 V total	12 - 14.5 V
12 V term	12 - 14.5 V
12 VSi	12 - 14.5 V
12 V ana	12 - 14.5 V
8 V dig	8.5 - 9.1 V
12 V Pow2	12 - 14.5 V
12 V Pow3	12 - 14.5 V

9.15.1.1 Checking/adjusting sensor B22 "Bale on chute"

Sensor B22 has been preset in the works of the manufacturer. Due to high operational demands and settling of components, the sensor may have to be adjusted.



BP000-245

- ▶ Press a bale (2) until ¾ of its length have exited the bale channel (1).
- ➡ The signal sheet (3) does not cover the sensor (4). The sensor (4) is unattenuated (there is no iron in front of the sensor).
- ✓ The machine is shut down and safeguarded, *refer to page 21*.
- ▶ Check dimension X, measured between the upper edge of the sensor (4) and the edge of the signal sheet (3).
- ➡ If dimension **X=5 mm**, the distance of the sensor is correct.
- ➡ If dimension **X is not 5 mm**, adjust the sensor.

Adjustment

- ▶ Loosen the nuts (5) on both sides of the sensor (4).
- ▶ Push the sensor (4) upwards until dimension **X=5 mm**.

Measured between the upper edge of the sensor (4) and the edge of the signal sheet (3).

- ▶ Tighten the nuts (5) (tightening torque = 10 Nm).
- ▶ In the sensor test check that the sensor (4) is still unattenuated, *refer to page 74*.
- ➡ The sensor has been adjusted correctly if the sensor test shows that the sensor is not alive.
- ➡ If the sensor test shows that the sensor is attenuated, adjust the sensor until the sensor test shows that the sensor is unattenuated.

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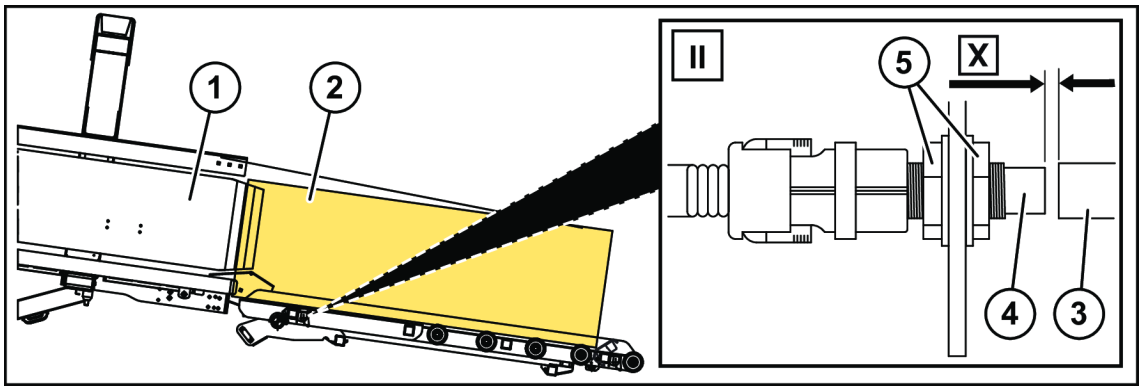


BP000-246

Check

- ▶ Continue pressing the bale (2) until it has completely left the bale channel (1).
- ➡ The signal sheet (3) completely covers the sensor (4). The sensor (4) is attenuated (iron).
- ✓ The machine is shut down and safeguarded, *refer to page 21*.
- ▶ Check dimension X, measured between the signal sheet (3) and the sensor (4).
- ➡ If dimension **X=2-3 mm**, the sensor has been correctly set.
- ➡ If dimension **X is not 2-3 mm**, set the sensor.

Adjustment

- ▶ Loosen the nuts (5) on both sides of the sensor (4).
- ▶ Turn the nuts (5) until dimension **X=2-3 mm**.
- ▶ Tighten the nuts (5) (tightening torque = 10 Nm).
- ▶ In the sensor test check whether the sensor (4) is attenuated, *refer to page 74*.
- ➡ The sensor has been adjusted correctly if the sensor test shows that the sensor is alive.
- ➡ If the sensor test shows that the sensor is not alive, adjust the sensor until the sensor test shows that the sensor is alive.

9.15.2 Menu 15-2 "Actuator test"

⚠ *WARNING*

Risk of injury due to non-observance of safety instructions

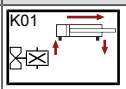
If the relevant safety routines are not observed, persons may be seriously injured or killed.

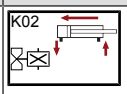
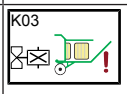
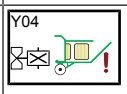
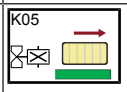
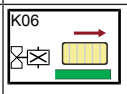
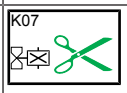
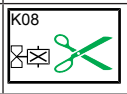
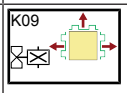
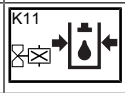
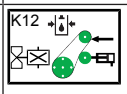
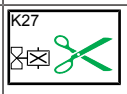
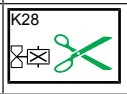
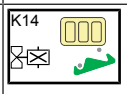
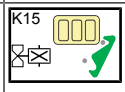
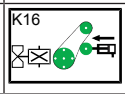
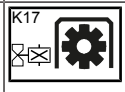
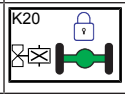
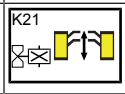
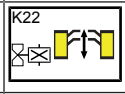
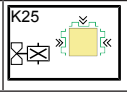
- ▶ The safety routines must be read and observed to avoid accidents, *refer to page 21*.

- ▶ Observe the safety routine "Run actuator test safely", *refer to page 22*.

Possible actuators (depending on how the machine is equipped)

An overview of the position of the sensors and actuators is in the circuit diagram, *refer to page 96*.

No.	Actuator	Designation
K01		Move in pilot valve

No.	Actuator	Designation
K02		Move out pilot valve
K03		Bale chute valve piston side
K04		Bale chute valve ring side
K05		Residual bale ejector piston side
K06		Residual bale ejector ring side
K07		Blade cassette valve ring side
K08		Blade cassette valve piston side
K09		Open bale channel flaps
K11		Pressure limiting valve bale channel flaps
K12		Pressure limiting valve cutting rotor
K27		Blade cassette valve active piston side
K28		Blade cassette valve active ring side
K14		Entire bale
K15		MultiBale
K16		Cutting rotor valve
K17		Starting aid valve
K20		Steering axle valve
K21		Twine box valve piston side
K22		Twine box valve ring side
K25		Bale channel flaps rapid traverse mode

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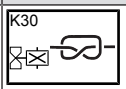
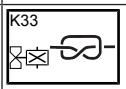
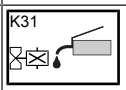
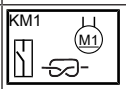
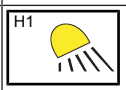
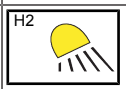
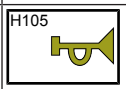
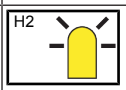
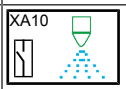
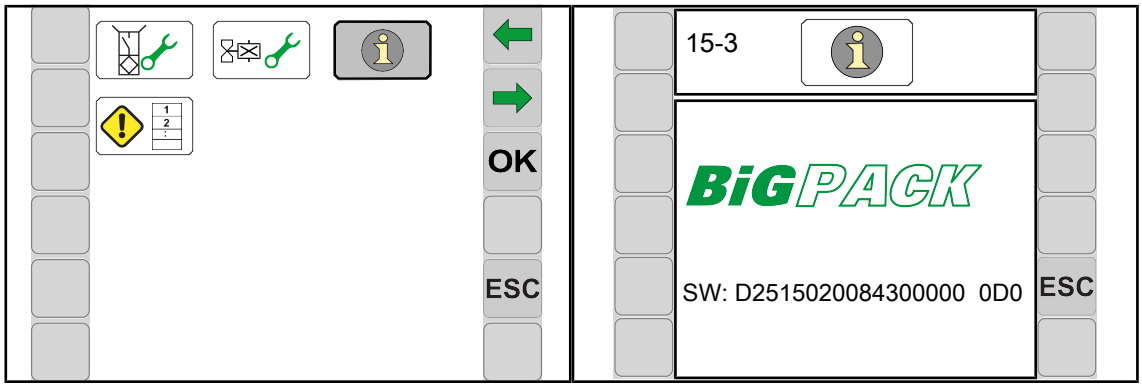
No.	Actuator	Designation
K30		Knotter cleaning valve 1
K33		Knotter cleaning valve 2
K31		Engine lubricants
KM7		Knotter triggering engine
H1		Working lights
H2		Working lights
H105		Twine box horn
K100		Warning beacon
XA1		Silage additive system

9.15.3 Menu 15-3 "Software info"



EQG000-016

✓ Menu 15 "Settings" has been selected, *refer to page 73*.

▶ Press to open the menu.

➡ The display shows menu “Software Information”.

Display range

Icon	Designation
SW	Total software version of the machine

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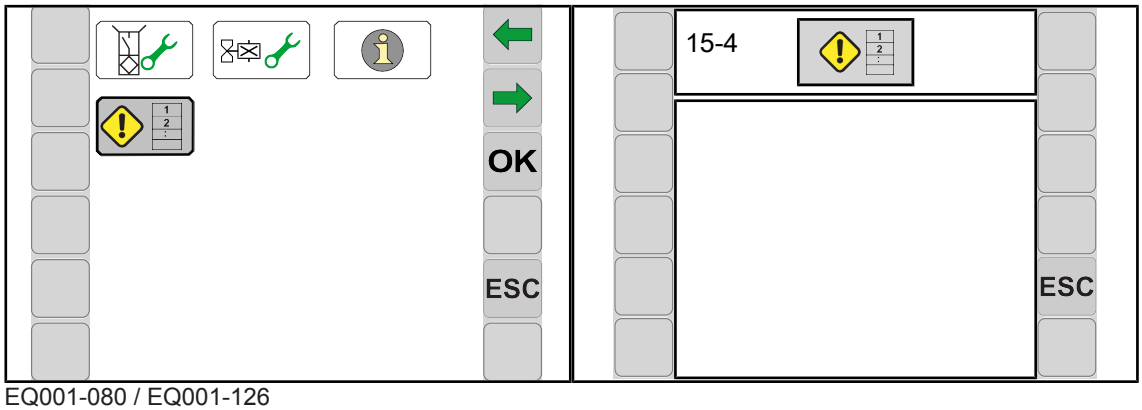
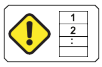
9.15.4 Menu 15-4 "Error list"



EQ001-080 / EQ001-126

✓ Menu 15 "Settings" has been selected, *refer to page 73*.

▶ Press  to open the menu.

➡ The display shows menu “Error List”.

Meaning, cause and elimination of error messages *refer to page 84*.

9.16 Alarm messages

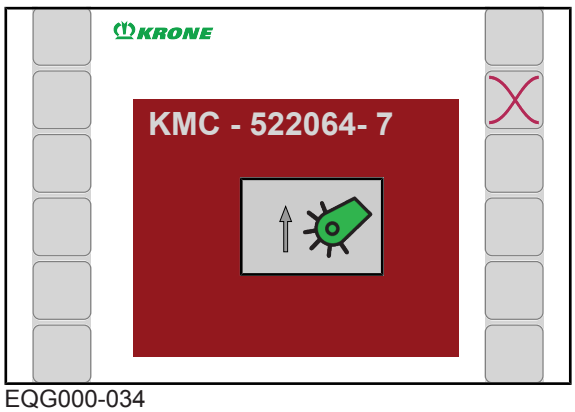
⚠ *WARNING*

Personal injuries and/or machine damage caused by non-observance of alarm messages

When alarm messages are ignored and the malfunction is not remedied, personal injuries and/or serious damage to the machine could result.

▶ When alarm message is displayed, remedy the malfunction, *refer to page 84*.

▶ If the malfunction cannot be remedied, contact KRONE customer service.



EQG000-034

The display shows an alarm message if a malfunction occurs on the machine. At the same time an audio signal will be heard (continuous horn sound). Description, possible cause and remedy, *refer to page 84*.

Acknowledging the alarm

▶ Press .

➡ The acoustic signal stops.

If the malfunction occurs again, the alarm message will also appear again.

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9.16.1 Error Messages

Components may be repaired or replaced by a qualified service centre only. Contact your dealer.

Before you contact your dealer, collect information about the error by

- noting down the error number.
- Visually check the sensor/actuator, *refer to page 84*
- If an actuator is defective, run an actuator test to identify the status of the actuator, *refer to page 80*.
- If a sensor is defective, run a sensor test to identify the status of the sensor, *refer to page 74*.

The more information you give your dealer, the easier it is to eliminate the cause of the error.

Performing visual inspection

✓ The machine is shut down and safeguarded, *refer to page 21*.

▶ Check sensor/actuator externally for damage.

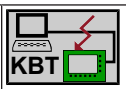
▶ Check connector cable and plug connection for damage and tight fit.

9.16.1.1 General information on error messages

Configuration of an error message

The error message is configured according to the following sample: e.g. error message "520192-19

"

520192	19	
SPN (Suspect Parameter Number) = error number	FMI=type of error, *refer to page 84*	Icon

Possible error types (FMI)

There are different types of errors which are shown under the term FMI (Failure Mode Identification) and with an appropriate code.

FMI	Meaning
0	The upper limit value was exceeded.
1	The lower limit value was not reached.
2	The data is defective or not plausible.
3	There is a short circuit or an overvoltage.
4	There is a cable break/short circuit, general error or undervoltage.
5	There is a cable break, general error or overload.
6	There is a short circuit or ground fault.
7	The mechanism does not respond.
8	The frequency is not permitted. The pulse width or period is wrong.
9	The update rate is outside the normal range. As a result, communication between sensor and control units is defective.
10	The response to an action (rate of change) is outside the normal range.
11	The cause of the error is unknown.
12	The logic in the control unit or in the component is defective.
13	The values of the calibration are outside the value range.

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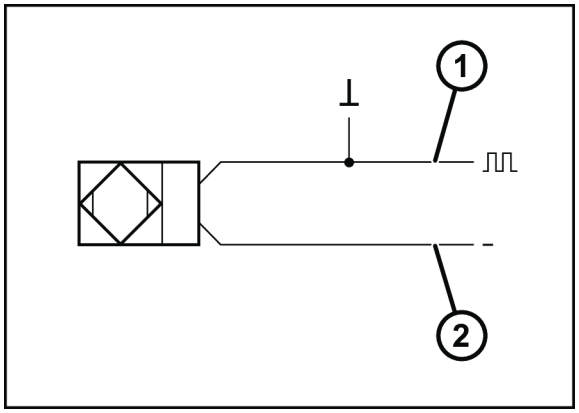
FMI	Meaning
14	Particular instructions are required.
15	The upper limit value has been exceeded.
16	The upper limit value has been exceeded.
17	The lower limit value has not been reached.
18	The lower limit value has not been reached.
19	There is a network/CAN error.
20	The data is not plausible or too high.
21	The data is not plausible or too low.
31	The conditions of the message have been met.

9.16.1.2 Cable break, short circuit

Short circuit to ground

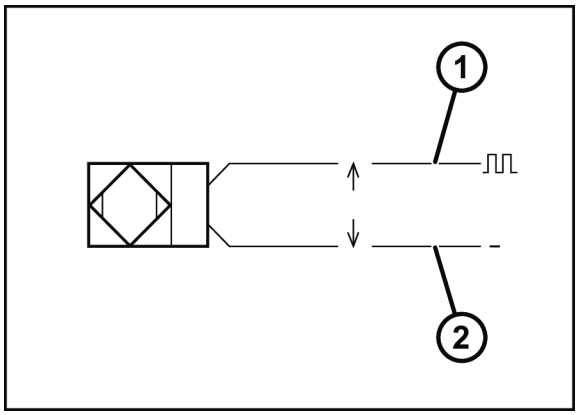


BX001-689

1 Signal line 2 Earth line

If the signal voltage is below the permitted value, short circuit to ground is present.
Possible cause: The cable is damaged and has made contact with the vehicle body.

Cable break



BX001-690

1 Signal line 2 Earth line

If the input signal has not been recorded, there is a broke cable.
Possible cause: The cable is not connected or it is damaged or severed (torn off).

Short circuit

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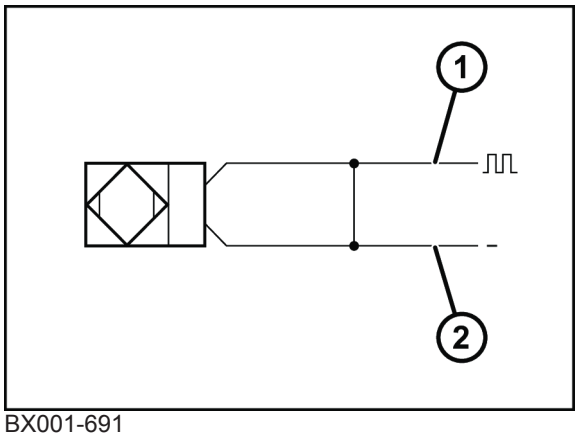
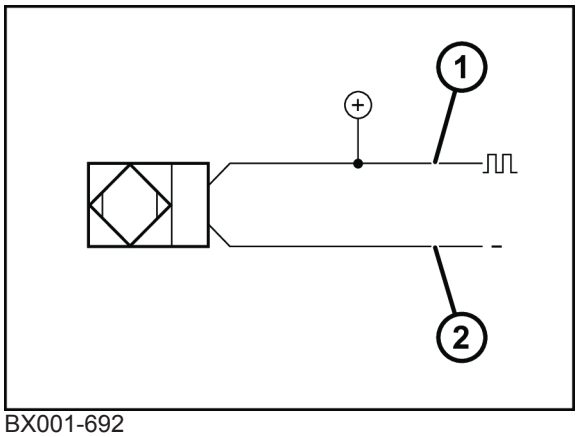


BX001-691

1 Signal line 2 Earth line

There is a connection between the power supply voltage (plus and minus) or the signal voltage and ground. There is a short circuit.
Possible cause: The cable is damaged and the supply lines to the sensors are connected to each other.

Short circuit to supply voltage



BX001-692

1 Signal line 2 Earth line

If the voltage on the signal line is above the value range that is valid for the sensor, there is a connection to another live line.
Possible cause: A supply line is connected to sensor supply line.

9.16.1.3 Error on the control units

FMI 0: The upper limit value was exceeded.

Error number	Designation	Icon
522322-0	Force measurement amplifier 2, channel 1	FMA2
522333-0	Force measurement amplifier 2, channel 2	

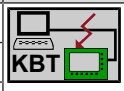
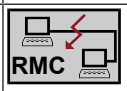
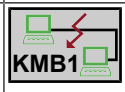
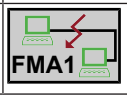
FMI 1: The lower limit value was not reached.

Error number	Designation	Icon
522322-1	Force measurement amplifier 2, channel 1	FMA2
522333-1	Force measurement amplifier 2, channel 2	

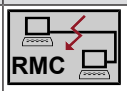
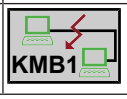
FMI 12: The logic in the control unit or in the component is defective.

Error number	Designation	Icon
520198-12	When writing to the EEPROM, an error has been detected.	

FMI 19: There is a network/CAN error.

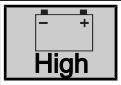
Error number	Designation	Icon
520192-19	BusOff on CAN 1	
520193-19	BusOff on CAN 2	
520194-19	BusOff on CAN 3	
520195-19	BusOff on CAN 4	
522535-19	Timeout for the RMC control unit detected.	
522540-19	Timeout of the CAN messages from KMB 1	
522560-19	Timeout of the CAN messages from force measurement amplifier 1 (FMA 1)	

FMI 31: The conditions of the message have been met.

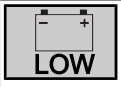
Error number	Designation	Icon
522536-31	Error from the RMC control unit	
522542-31	Error from KMB 1	

9.16.1.4 General input/output error 521100 - 521299

FMI 3: There is a short circuit or an overvoltage.

Error number	Designation	Icon
521100-3	Voltage group (UB1)	
521101-3	Voltage group (UB2)	
521102-3	Voltage group (UB3)	
521103-3	Voltage group (UB4)	
521104-3	Voltage group (UB5)	
521105-3	Voltage group (UB6)	
521107-3	The power supply of the KMC at the UE connection has an excessively high voltage.	

FMI 4: There is a cable break/short circuit, general error or undervoltage.

Error number	Designation	Icon
521100-4	Voltage group (UB1)	
521101-4	Voltage group (UB2)	

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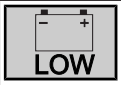
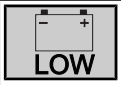
Error number	Designation	Icon
521102-4	Voltage group (UB3)	
521103-4	Voltage group (UB4)	
521104-4	Voltage group (UB5)	
521105-4	Voltage group (UB6)	
521107-4	The power supply of the KMC at the UE connection has an excessively low voltage.	

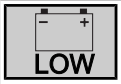
FMI 5: There is a cable break, general error or overload.

Error number	Designation	Icon
521100-5	Voltage group (UB1)	
521101-5	Voltage group (UB2)	
521102-5	Voltage group (UB3)	
521103-5	Voltage group (UB4)	
521104-5	Voltage group (UB5)	
521105-5	Voltage group (UB6)	

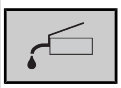
FMI 6: There is a short circuit or ground fault.

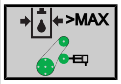
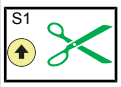
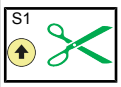
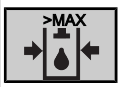
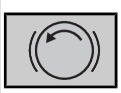
Error number	Designation	Icon
521100-6	Voltage group (UB1)	
521101-6	Voltage group (UB2)	
521102-6	Voltage group (UB3)	
521103-6	Voltage group (UB4)	
521104-6	Voltage group (UB5)	
521105-6	Voltage group (UB6)	

FMI 11: The cause of the error is unknown.

Error number	Designation	Remedy
521106-11	The supply voltage of the sensors could not be activated.	

9.16.1.5 Logical errors 522000 – 522099

Error number	Possible cause	Remedy
522000-7 	During active lubrication no lubrication flow was detected.	• Top up grease. • Clean the central lubrication. • Check the electrical system and the pump.
522001-7	The flywheel brake is engaged and the cardan shaft is rotating.	• Release the flywheel brake.
522002-7	The starting aid is active while the flywheel brake is engaged.	

Error number	Possible cause	Remedy
522003-0	The slip of the tensioning belt on the cutting rotor is too great.	• Remove the crop blockage. • Set the sensor.
522004-0 	The pressure on the belt drive for the cutting rotor is too great.	• Check the hydraulics. • Check the sensor and replace if required.
522005-2	The cardan shaft rotates in "road travel" mode.	• Switch off the PTO shaft. • Switch the operating mode
522006-0	The cardan shaft is rotating more quickly than permitted.	• Reduce cardan shaft speed.
522007-7	The shear screw on the right is torn.	• Replace the shear screw. • Check the needles. • Check the swivel range of the needles. • Check the twine guide.
522008-7	The shear screw on the left is torn.	
522010-7	When the cardan shaft is rotating, the blade cassette is down.	• Raise the blade cassette.
522011-2	In "road travel" mode the blade cassette is down.	
522012-2	When the machine is started up, the blade cassette is down.	
522013-2 	The "Raise blade cassette" pushbutton is sticking.	• Eliminate the cause of the pushbutton sticking. • Replace the pushbutton.
521014-2 	The "Lower blade cassette" pushbutton is sticking.	
522015-0 	The bale channel flap pressure is too high.	• Switch off the PTO shaft. • Check the pressure limiting valve for crop blockage. • Replace the pressure sensor.
522016-7 	The flywheel brake is engaged when the KMC starts.	• Release the flywheel brake.

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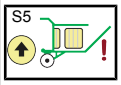
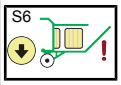
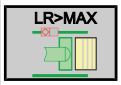
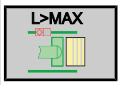
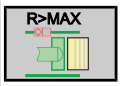
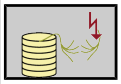
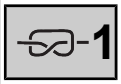
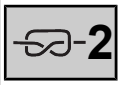
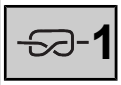
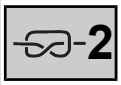
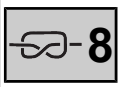
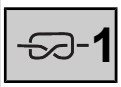
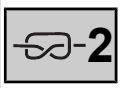
Error number	Possible cause	Remedy
522017-7	In "road travel" mode the bale chute is down.	• Raise the bale chute
522018-7	When the cardan shaft is rotating, the bale chute is up.	• Lower the bale chute.
522019-7 	The "Raise bale chute" pushbutton is sticking.	• Eliminate the cause of the pushbutton sticking. • Replace the pushbutton.
522020-7 	The "Lower bale chute" pushbutton is sticking.	
522021-0 	The total baling force on the machine has been exceeded	In manual mode: • Reduce the target bale channel flap pressure. In automatic mode: • If the alarm is actuated frequently, reduce the target baling force.
522022-0 	The baling force on the left bale channel flap has been exceeded.	
522023-0 	The baling force on the right bale channel flap has been exceeded.	
522024-7 	The lower twine is torn.	• Check the twine and the twine tensioner.
522025-1 	On the upper twine 1…8 the minimum twine length has not been reached during knotting.	• Check the knotter and knotter triggering. • Set the sensor.
522026-1 		
522027-1		
522028-1		
522029-1		

Error number	Possible cause	Remedy
522030-1		
522031-1		
522032-1		
522033-0 	On the upper twine 1…8 the maximum twine length has been exceeded during knotting.	• Check the knotter and knotter triggering. • Set the sensor.
522034-0 		
522035-0		
522036-0		
522037-0		
522038-8		
522039-0		
522040-0 		
522041-1 	On the upper twine 1…8 the minimum twine length for the packer feed has not been reached.	• Set the sensor.
522042-1 		

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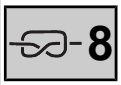
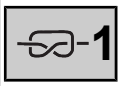
Error number	Possible cause	Remedy
522043-1		
522044-1		
522045-1		
522046-1		
522047-1		
522048-1 		
522049-0 	On the upper twine 1…8 the maximum twine length for the packer feed has been exceeded.	• Set the sensor.
522050-0		
522051-0		
522052-0		
522053-0		
522054-0		
522055-0		

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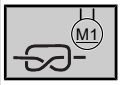
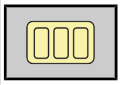
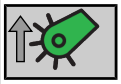
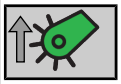
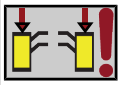
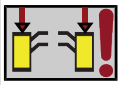
Error number	Possible cause	Remedy
522056-0		
522057-1	The knotter shaft has not rotated within one plunger stroke.	• Set the sensor.
522058-1 	The knotting process has not been concluded within 2 baling ram strokes.	• Check the electrical system of the knotter motor. • Check the mechanism in the area of the knotter triggering. • Set the sensor.
522059-1 	The entire bale/MultiBale switchover has not been concluded within 2 baling ram strokes.	• Check the mechanism in the area of the knotter triggering. • Check the electronics in the area of the "MulitBale" lock. • Set the sensor.
522060-7	The packer is blocked.	• Stop the travelling gear immediately. • Reduce the PTO speed until the crop blockage has been removed. • Set the sensor.
522061-7	Timeout for locking/releasing the self-steering axle	• Check the hydraulic connection. • Check the sensor and replace if required.
522062-7	The pick-up is blocked.	• Check the mechanism. • Remove the crop blockage.
522063-1	The pick-up speed is below the minimum speed.	• Set the sensor.
522064-7 	The pick-up has not been raised in road mode.	• Raise the pick-up.
522065-7 	The pick-up is not detected in road mode.	• Raise the pick-up.
522066-7 	The twine boxes were moved from the locked position without request.	• Raise the twine boxes.
522067-7 	The twine boxes are not in the locked position and the cardan shaft is active.	

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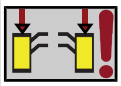
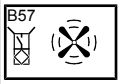
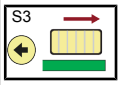
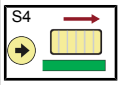
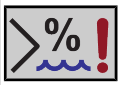
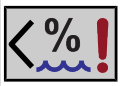
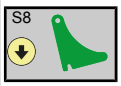
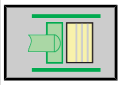
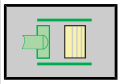
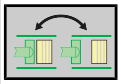
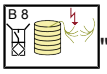
Error number	Possible cause	Remedy
522068-7 	The twine boxes are not in the locked position when the machine starts.	
522069-1 	The minimum speed for knotter cleaning was not reached.	• Increase the speed.
522071-7 	The "Move in residual bale ejector" pushbutton is sticking.	• Eliminate the cause of the pushbutton sticking. • Replace the pushbutton.
522072-7 	The "Move out residual bale ejector" pushbutton is sticking.	
522073-12	Automatic mode is not possible because the bale chute at top has been lowered.	• Lower the bale chute.
522078-15 	The upper limit value of the moisture measurement has been exceeded.	• Check the setting and correct if required.
522079-17 	The lower limit value of the moisture measurement has not been reached.	• Check the setting and correct if required.
522080-2	The "Switch on blade cassette" pushbutton is sticking.	• Eliminate the cause of the pushbutton sticking. • Replace the pushbutton.
522081-2 	The "Switch off blade cassette" pushbutton is sticking.	
522085-13 	The "Baling ram at rear" sensor is defective.	• Replace the sensor.
522086-13 	The "Baling ram at front" sensor is defective.	
522087-17 	The "Measure" sensor and the "Calibrate" sensor have been interchanged.	• Swap the plugs of the "Measure" and "Calibrate" sensors.
522088-7	"Packer feed (feeder strip)" sensor	• Set the sensor.

9.16.1.6 Error message from sensors 522100 – 522299

All error messages from sensors are configured according to the following sample:

e.g. error message "522101-6 

"

522101	6	
SPN (Suspect Parameter Number)	FMI	Icon

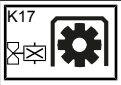
Designation	Explanation
SPN (Suspect Parameter Number)	Error number
FMI	Indicates the type of error, *refer to page 84*.
Icon	Meaning of the icons, *refer to page 75*

9.16.1.7 Error message from actuators 522300 – 522499

All error messages from actuators are configured according to the following sample:

e.g. error message "522301-6

"

522301-6	6	
SPN (Suspect Parameter Number)	FMI	Icon

Designation	Explanation
SPN (Suspect Parameter Number)	Error number
FMI	Indicates the type of error, *refer to page 84*.
Icon	Meaning of the icons, *refer to page 80*

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10 Circuit diagram [Medium Plus/Comfort Plus Electronics]

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150 101 580_en STW-Rechner Stromlaufplan [97]

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KRONE

Circuit diagram	document no.: D24 150101580 EN	version: 00

large square baler

BiG PACK High Speed (XCut + VariCut)

Medium Plus / Komfort Plus

870, 890, 1270, 1290, 1290 HDP, 4x4, HDP II
(from machine no. 847246)

02.05.2016

Document type	Sheet	description
Cover sheet	1	large square baler
Legend	1	list of abbreviations, colour identification
Equipment list	1	Equipment list
Equipment list	2	Equipment list
Location plan	1	job computers, Sensors
Location plan	2	traffic lighting, work lighting
Location plan	3	Valves
Location plan	4	RMS (Option moisture measurement)
Location plan	5	FMA2 (Option Bale scale)
Circuit diagram	1	overview distributor central electric: (basic equipment & full equipment): drawbar plug, Plug X2
Circuit diagram	2	overview distributor central electric: (only with full equipment): Plug X3
Circuit diagram	3	power supply: control terminal, interface machine
Circuit diagram	4	CAN bus: CAN1 - ISOBUS extension, terminating resistor 1 CAN1, active terminating resistor
Circuit diagram	5	power supply: CE switching voltage
Circuit diagram	6	power supply: main computer
Circuit diagram	7	power supply: main computer (comfort)
Circuit diagram	8	power supply: baling force control
Circuit diagram	9	power supply: KMB1 (twine boxes - HDP II), moisture measurement, Bale scale
Circuit diagram	10	power supply: comfort
Circuit diagram	11	power supply: distributor central electric: reserves (basic equipment)
Circuit diagram	12	power supply: distributor central electric: reserves (full equipment)
Circuit diagram	13	CAN bus: CAN2 - FMA 1 baling force control, terminating resistor 1 CAN2
Circuit diagram	14	CAN bus: CAN3 - FMA 2 Bale scale, terminating resistor 1 CAN3, ECU twine boxes, RMS moisture measurement, bale chute standard
Circuit diagram	15	KMC: plug overview KS1
Circuit diagram	16	KMC: plug overview KS2
Circuit diagram	17	KMC: plug overview KS3
Circuit diagram	18	KMC: plug overview KS4
Circuit diagram	19	KMC: Sensors: flywheel brake, rotational speed packer, packer feed active, lower twine monitoring, needle connecting rod left, needle connecting rod right
Circuit diagram	20	KMC: Sensors: Star wheel
Circuit diagram	21	KMC: Sensors: rotational speed pick-up, position pick-up
Circuit diagram	22	KMC: Sensors/actuators: knotter central lubrication active, central lubrication system, Bale chute, Bale discharge, Bale ejector, rotational speed PTO shaft
Circuit diagram	23	KMC: Sensors/actuators: pressure limitation valve baling flaps, baling flap pressure, Knotter cleaning 1+2, rotational speed feed rotor
Circuit diagram	24	KMC: Sensors/actuators: Knotter triggering, knotter motor
Circuit diagram	25	KMC: preparation silage additive system
Circuit diagram	26	KMC: maintenance lighting: lighting knotter table, lighting lower twine, lighting twine box right, lighting twine box left
Circuit diagram	27	KMC: work lighting: working light pick-up, working light rear left, working light rear right
Circuit diagram	28	KMC: Sensors/actuators (comfort): main valve, Bale chute, Bale ejector
Circuit diagram	29	KMC: Sensors/actuators (comfort): release baling flaps, Starting device, baling flaps rapid traverse
Circuit diagram	30	KMC: Sensors/actuators (comfort): Steering axle, condition steering
Circuit diagram	31	KMC: Sensors/actuators (comfort): control upper twine 1-6
Circuit diagram	32	KMC: Sensors/actuators (comfort): control upper twine 7-8
Circuit diagram	33	KMC: Sensors/actuators (comfort): Position MultiBale, triggering MultiBale
Circuit diagram	34	KMC: Sensors/actuators (comfort): switches / buttons Bale ejector, Bale chute
Circuit diagram	35	KMC: Cutting system (XCut & VariCut): Sensors/actuators (comfort): Sensors/Button blade cassette
Circuit diagram	36	KMC: Cutting system (XCut & VariCut): Sensors (comfort): contact pressure feed rotor, coupling feed rotor, close feed rotor
Circuit diagram	37	KMC: Cutting system (XCut): Sensors/actuators (comfort): Button lift blade cassette, Button lower blade cassette; Valves blade cassette
Circuit diagram	38	KMC: Cutting system (VariCut): Sensors (comfort): blade cassette: blade monitor, contact pressure feed rotor, blade cassette

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Document type	Sheet	description
Circuit diagram	39	KMC: Cutting system (VariCut): Sensors/actuators (comfort): Button blade cassette, Valves VariCut
Circuit diagram	40	FMA1 (baling force control): plug overview
Circuit diagram	41	FMA1 (baling force control): Sensors/actuators: Measure, calibrate, force sensors; address resistor FMA1
Circuit diagram	42	FMA2 (Option Bale scale): plug overview
Circuit diagram	43	FMA2 (Option Bale scale): Sensors: bale on table, acceleration sensor bale scale; address resistor FMA2
Circuit diagram	44	FMA2 (Option Bale scale): force sensor front left, force sensor front right, force sensor rear left, force sensor rear right
Circuit diagram	45	KMB1 (twine boxes - HDP II): plug overview
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Circuit diagram	47	KMB1 (twine boxes - HDP II): actuators: twine boxes, horn twine boxes
Circuit diagram	48	RMS (Option moisture measurement): plug overview
Circuit diagram	49	RMS (Option moisture measurement): Sensors: moisture measurement left, moisture measurement right
Circuit diagram	50	traffic lighting: socket lighting front, socket lighting rear, direction indicator left, direction indicator right, tail/brake lamp left, licence plate lamp,position lamp left, position lamp right
Circuit diagram	51	traffic lighting: warning beacons
label overview	1	distributor central electric: fuses, relays

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Document type	Sheet	description
Cover sheet	1	large square baler
Legend	1	list of abbreviations, colour identification
Equipment list	1	Equipment list
Equipment list	2	Equipment list
Location plan	1	job computers, Sensors
Location plan	2	traffic lighting, work lighting
Location plan	3	Valves
Location plan	4	RMS (Option moisture measurement)
Location plan	5	FMA2 (Option Bale scale)
Circuit diagram	1	overview distributor central electric: (basic equipment & full equipment): drawbar plug, Plug X2
Circuit diagram	2	overview distributor central electric: (only with full equipment): Plug X3
Circuit diagram	3	power supply: control terminal, interface machine
Circuit diagram	4	CAN bus: CAN1 - ISOBUS extension, terminating resistor 1 CAN1, active terminating resistor
Circuit diagram	5	power supply: CE switching voltage
Circuit diagram	6	power supply: main computer
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Circuit diagram	11	power supply: distributor central electric: reserves (basic equipment)
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Circuit diagram	13	CAN bus: CAN2 - FMA 1 baling force control, terminating resistor 1 CAN2
Circuit diagram	14	CAN bus: CAN3 - FMA 2 Bale scale, terminating resistor 1 CAN3, ECU twine boxes, RMS moisture measurement, bale chute standard
Circuit diagram	15	KMC: plug overview KS1
Circuit diagram	16	KMC: plug overview KS2
Circuit diagram	17	KMC: plug overview KS3
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Circuit diagram	19	KMC: Sensors: flywheel brake, rotational speed packer, packer feed active, lower twine monitoring, needle connecting rod left, needle connecting rod right
Circuit diagram	20	KMC: Sensors: Star wheel
Circuit diagram	21	KMC: Sensors: rotational speed pick-up, position pick-up
Circuit diagram	22	KMC: Sensors/actuators: knotter central lubrication active, central lubrication system, Bale chute, Bale discharge, Bale ejector, rotational speed PTO shaft
Circuit diagram	23	KMC: Sensors/actuators: pressure limitation valve baling flaps, baling flap pressure, Knotter cleaning 1+2, rotational speed feed rotor
Circuit diagram	24	KMC: Sensors/actuators: Knotter triggering, knotter motor
Circuit diagram	25	KMC: preparation silage additive system
Circuit diagram	26	KMC: maintenance lighting: lighting knotter table, lighting lower twine, lighting twine box right, lighting twine box left
Circuit diagram	27	KMC: work lighting: working light pick-up, working light rear left, working light rear right
Circuit diagram	28	KMC: Sensors/actuators (comfort): main valve, Bale chute, Bale ejector
Circuit diagram	29	KMC: Sensors/actuators (comfort): release baling flaps, Starting device, baling flaps rapid traverse
Circuit diagram	30	KMC: Sensors/actuators (comfort): Steering axle, condition steering
Circuit diagram	31	KMC: Sensors/actuators (comfort): control upper twine 1-6
Circuit diagram	32	KMC: Sensors/actuators (comfort): control upper twine 7-8
Circuit diagram	33	KMC: Sensors/actuators (comfort): Position MultiBale, triggering MultiBale
Circuit diagram	34	KMC: Sensors/actuators (comfort): switches / buttons Bale ejector, Bale chute
Circuit diagram	35	KMC: Cutting system (XCut & VariCut): Sensors/actuators (comfort): Sensors/Button blade cassette
Circuit diagram	36	KMC: Cutting system (XCut & VariCut): Sensors (comfort): contact pressure feed rotor, coupling feed rotor, close feed rotor
Circuit diagram	37	KMC: Cutting system (XCut): Sensors/actuators (comfort): Button lift blade cassette, Button lower blade cassette; Valves blade cassette
Circuit diagram	38	KMC: Cutting system (VariCut): Sensors (comfort): blade cassette: blade monitor, contact pressure feed rotor, blade cassette

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Document type	Sheet	description
Circuit diagram	39	KMC: Cutting system (VariCut): Sensors/actuators (comfort): Button blade cassette, Valves VariCut
Circuit diagram	40	FMA1 (baling force control): plug overview
Circuit diagram	41	FMA1 (baling force control): Sensors/actuators: Measure, calibrate, force sensors; address resistor FMA1
Circuit diagram	42	FMA2 (Option Bale scale): plug overview
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Circuit diagram	44	FMA2 (Option Bale scale): force sensor front left, force sensor front right, force sensor rear left, force sensor rear right
Circuit diagram	45	KMB1 (twine boxes - HDP II): plug overview
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Circuit diagram	48	RMS (Option moisture measurement): plug overview
Circuit diagram	49	RMS (Option moisture measurement): Sensors: moisture measurement left, moisture measurement right
Circuit diagram	50	traffic lighting: socket lighting front, socket lighting rear, direction indicator left, direction indicator right, tail/brake lamp left, licence plate lamp,position lamp left, position lamp right
Circuit diagram	51	traffic lighting: warning beacons
label overview	1	distributor central electric: fuses, relays

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list of abbreviations:

FM	function module
FMA	force measurement amplifier (force measurement amplifier)
KMB	KRONE Motor Bridge
KMC	KRONE Maschine Controller
RMS	moisture sensor (resitive moisture sensor)

colour identification (DIN IEC 60757)	
BK	black
BN	brown
RD	red
OG	orange
YE	yellow
GN	green
BU	blue
VT	violet
GY	gray
WH	white
PK	pink
TQ	turquoise

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operating equipment identification	function	Sheet/path	operating equipment identification	function	Sheet/path
-A1		/3.B5	-B23	position pick-up	/21.C3
-A10	KMC	/15.A1	-B24	blade cassette active	/35.C3
-A14	RMS (Option moisture measurement)	/48.A1	-B25	moisture measurement left	/49.A2
-A20	FMA1 (baling force control)	/40.A1	-B26	moisture measurement right	/49.A4
-A30	FMA2 (Option Bale scale)	/42.A1	-B28	contact pressure feed rotor	/36.C1
-A40.F1	KMC UB1	/6.A1	-B30	rotational speed PTO shaft	/22.C8
-A40.F10	KMC UB5	/7.A2	-B31	rotational speed feed rotor	/23.C8
-A40.F11	KMC UB4	/7.A1	-B32	blade cassette active	/38.C4
-A40.F12	KMC UB6	/7.A2	-B33	blade cassette inactive	/38.C5
-A40.F13	reserve	/12.A4	-B34	blade cassette together	/38.C6
-A40.F14	reserve	/12.A4	-B35	position blade cassette	/35.C5
-A40.F15	UE KMC, RMS, FMA1	/8.A2	-B36	condition steering	/30.C3
-A40.F16	KMB1 twine boxes UE, ISOBUS extension	/4.A2	-B38	acceleration sensor bale scale	/43.C3
-A40.F17	HMI_PWR	/3.E4	-B41	control upper twine 1	/31.C1
-A40.F2	KMC UB2	/6.A2	-B42	control upper twine 2	/31.C3
-A40.F3	KMC UB3	/6.A2	-B43	control upper twine 3	/31.C4
-A40.F4	ECU twine boxes UB1	/9.A2	-B44	control upper twine 4	/31.C5
-A40.F5	ECU twine boxes UB2	/9.A2	-B45	control upper twine 5	/31.C6
-A40.F6	knotter motor	/24.A3	-B46	control upper twine 6	/31.C8
-A40.F7	reserve	/11.A2	-B47	control upper twine 7	/32.C1
-A40.F8	reserve	/11.A2	-B48	control upper twine 68	/32.C3
-A40.F9	power supply	/10.A2	-B51	force sensor front left	/44.B1
-A40.K1	reserve	/12.B2	-B52	force sensor front right	/44.B3
-A40.K2	reserve	/12.B4	-B53	force sensor rear left	/44.B5
-A40.K3	reserve	/12.B6	-B54	force sensor rear right	/44.B7
-A40.K4	CE switching voltage	/4.B1	-B61	twine box transport position left	/46.C2
-A58	KMB1 (twine boxes - HDP II)	/45.A1	-B62	twine box transport position right	/46.C3
-B1	flywheel brake	/19.C1	-B63	twine box maintenance position left	/46.C4
-B2	blade cassette top	/35.C1	-B64	twine box maintenance position right	/46.C5
-B4	baling ram rear (Measure)	/41.C1	-B65	knotter motor zero position	/24.C2
-B5	baling ram forward (calibrate)	/41.C3	-E1	warning beacon front	/51.C2
-B6	rotational speed packer	/19.C3	-E2	warning beacon rear	/51.C3
-B7	packer feed active	/19.C4	-E3	working light pick-up	/27.C1
-B8	lower twine monitoring	/19.C5	-E4	working light rear left	/27.C3
-B9	needle connecting rod left	/19.C6	-E5	working light rear right	/27.C4
-B10	Knotter monitoring	/24.C8	-E6	lighting knotter table	/26.C1
-B11	Bale chute	/22.C5	-E7	lighting lower twine	/26.C2
-B12	Bale discharge	/22.C6	-E8	lighting twine box right	/26.C4
-B13	needle connecting rod right	/19.C8	-E9	lighting twine box left	/26.C5
-B14	Bale ejector	/22.C7	-E10.1	direction indicator right	/50.F8
-B15_1	star wheel bottom	/20.D2	-E10.2	tail/brake lamp right	/50.F7
-B15_2	star wheel top	/20.D4	-E20.1	direction indicator left	/50.F1
-B17	baling flap pressure	/23.C3	-E20.2	tail/brake lamp left	/50.F2
-B18	force sensor left	/41.B4	-E21	licence plate lamp	/50.D7
-B19	force sensor right	/41.B6	-E22	Kennzeichenleuchte	/50.E3
-B20	rotational speed pick-up	/21.C2	-H1	horn twine boxes	/47.C4
-B21	Position MultiBale	/33.C2	-K1	main valve (extend)	/28.C1
-B22	bale on table	/43.C1	-K2	main valve (retract)	/28.C3

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document no.: D24
150101580 EN - 00

BiG PACK High Speed (XCut + VariCut)
Equipment list

Equipment list	
plant	
location	
Sheet	1 / 2

operating equipment identification	function	Sheet/path
-K3	bale chute plunger surface	/28.C4
-K4	bale chute ring surface	/28.C5
-K5	bale ejector plunger surface	/28.C6
-K6	bale ejector ring surface	/28.C8
-K7	blade cassette plunger surface	/37.C4
-K8	blade cassette ring surface	/37.C6
-K9	release baling flaps	/29.C1
-K11	pressure limitation valve baling flaps	/23.C1
-K12	coupling feed rotor	/36.C5
-K14	triggering MultiBale 1 (entire bale)	/33.C4
-K15	triggering MultiBale 2 (MultiBale)	/33.C6
-K16	close feed rotor	/36.C6
-K17	Starting device	/29.C3
-K18	Parking jack 1	AP/3.C7
-K19	Parking jack 2	AP/3.C7
-K20	Steering axle	/30.C2
-K21	twine boxes 1	/47.C2
-K22	twine boxes 2	/47.C3
-K25	baling flaps rapid traverse	/29.C4
-K27	VariCut plunger surface	/39.C4
-K28	VariCut ring surface	/39.C6
-K29	cleaning 1	/23.C5
-K30	cleaning 2	/23.C6
-K31	central lubrication system	/22.C2
-K70	relay knotter triggering	/24.C1
-M1	knotter motor	/24.E3
-S1	lift blade cassette	/37.C1
-S2	lower blade cassette	/37.C3
-S3	retracting bale ejector	/34.C1
-S4	extending bale ejector	/34.C3
-S5	lift bale chute	/34.C4
-S6	lower bale chute	/34.C5
-S7	blade cassette active	/39.C1
-S8	blade cassette inactive	/39.C3

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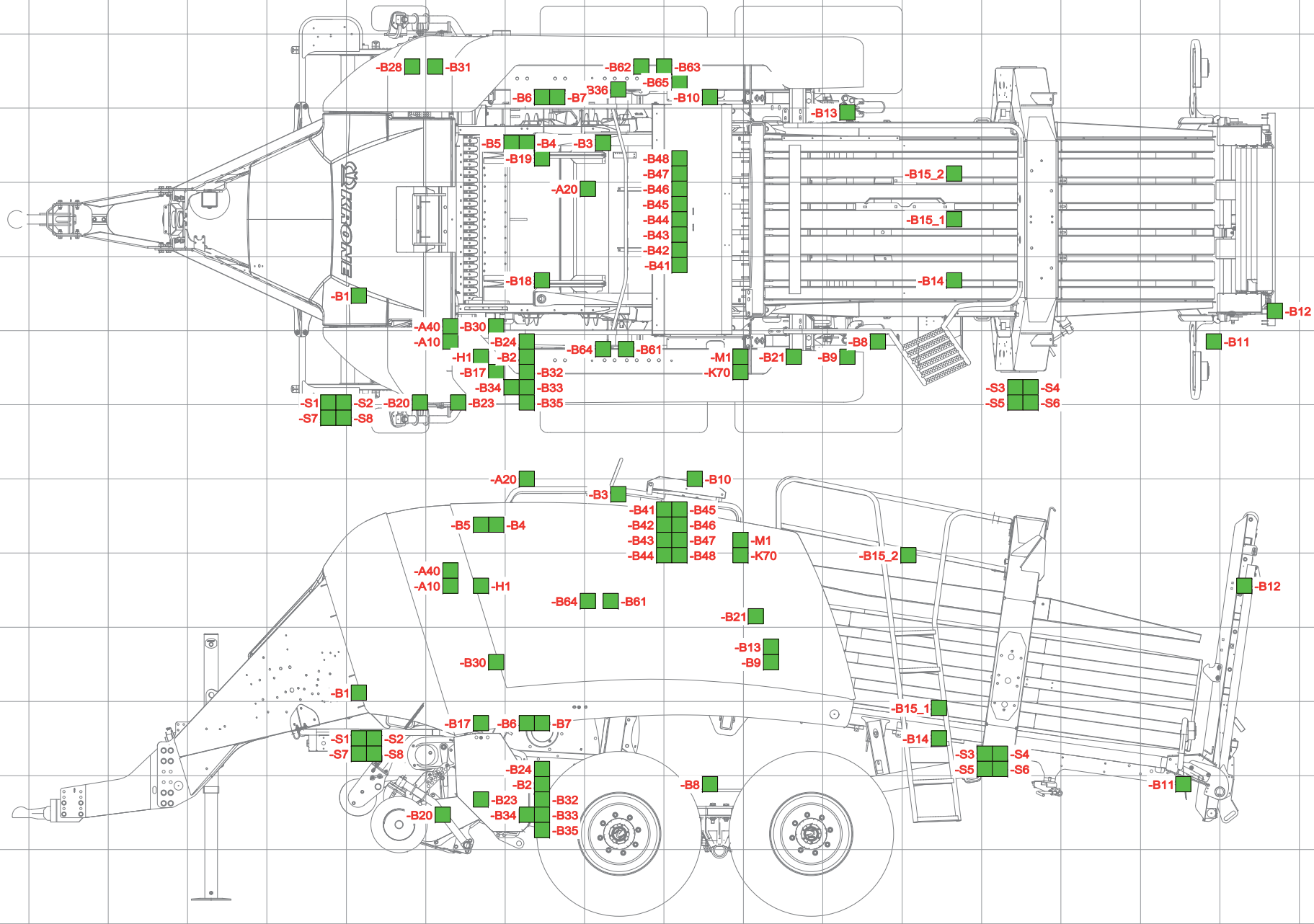

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B				date	02.05.2016		job computers, Sensors
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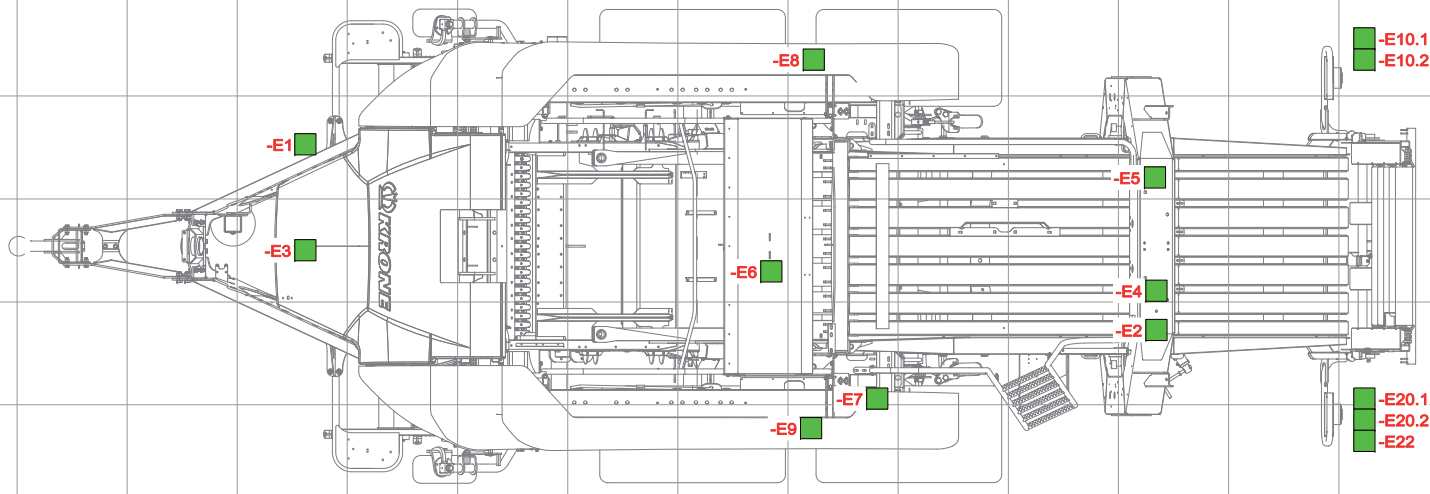
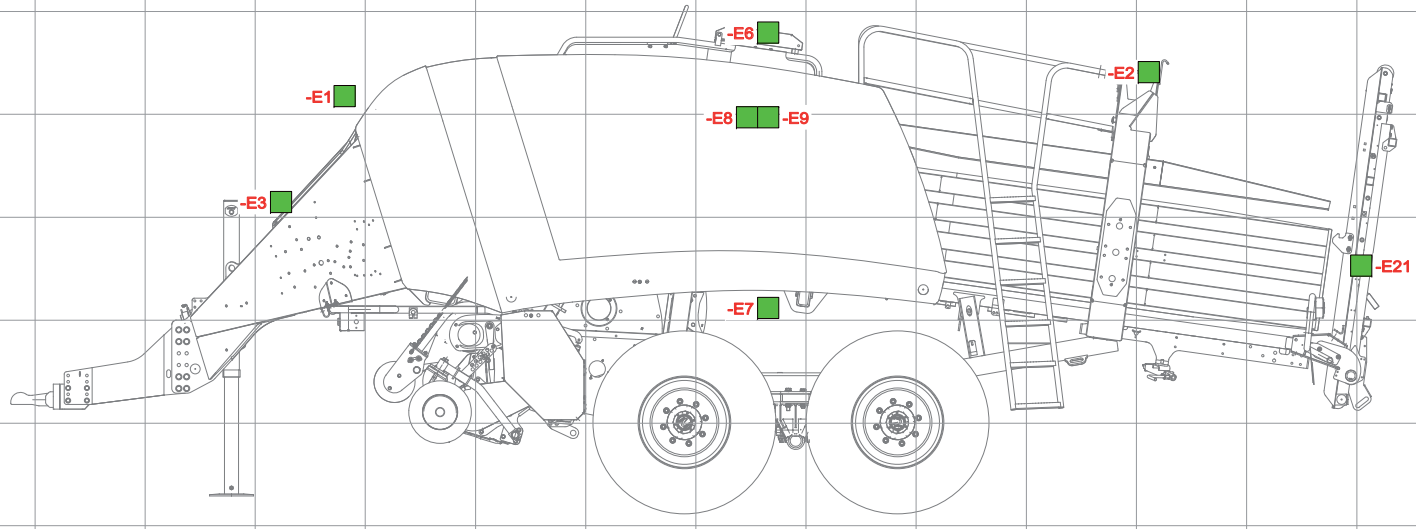
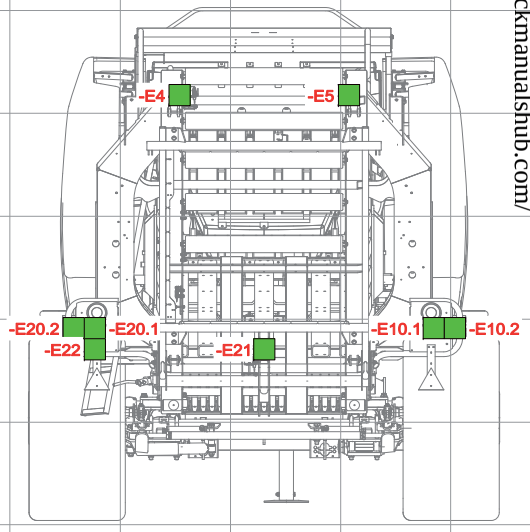
modification		date	name	date		Copyright reserved copyright ISO 16016 notice!	Location plan AP / plant / location / Sheet 1 / 5







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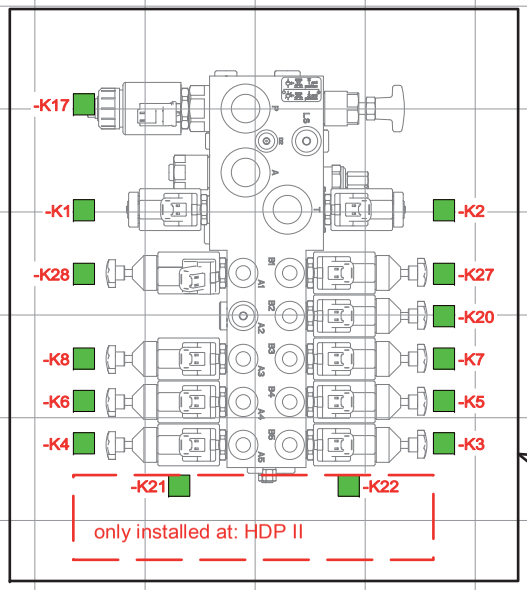
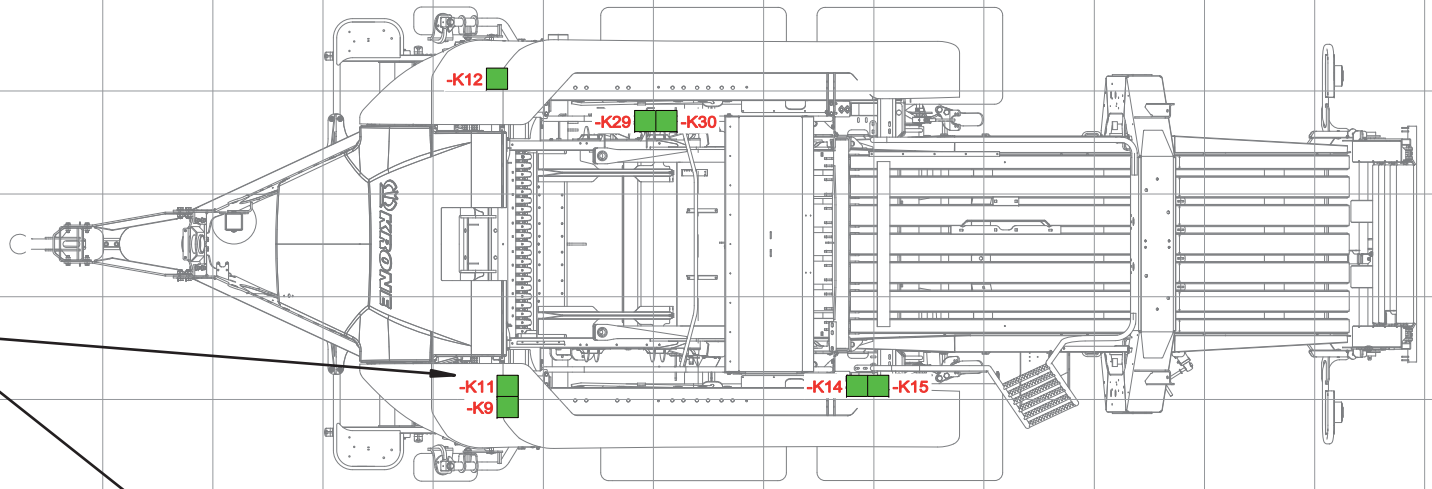
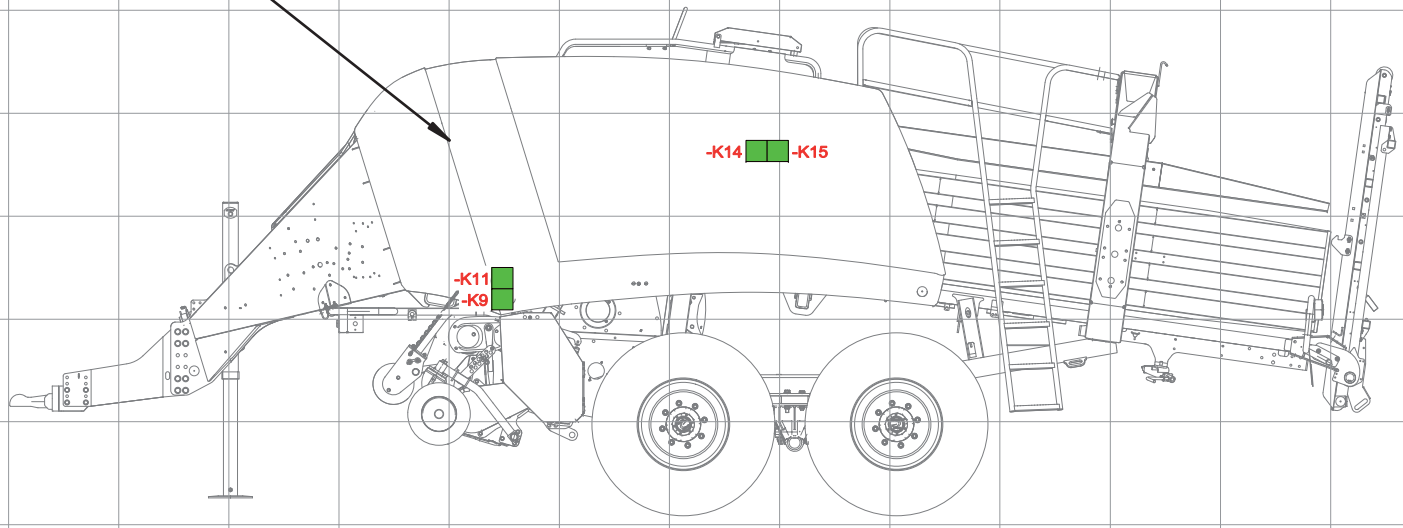
B				date	02.05.2016		traffic lighting, work lighting	plant
A				reviewed				location
modification		date	name	date		Copyright reserved copyright ISO 16016 notice!		Sheet 2 / 5







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B				date	02.05.2016		Valves	plant
A				reviewed				location
modification		date	name	date				Sheet 3 / 5

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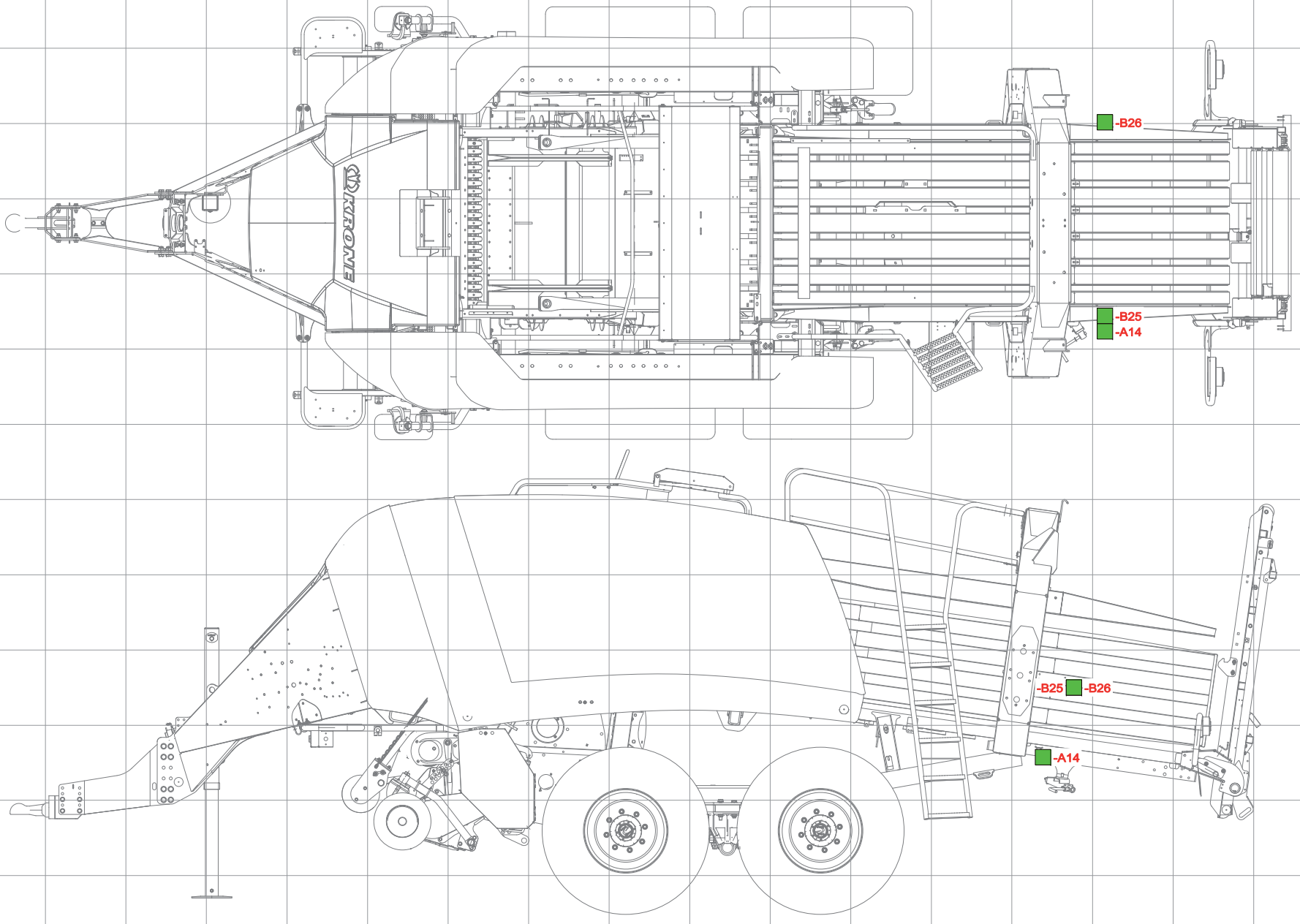

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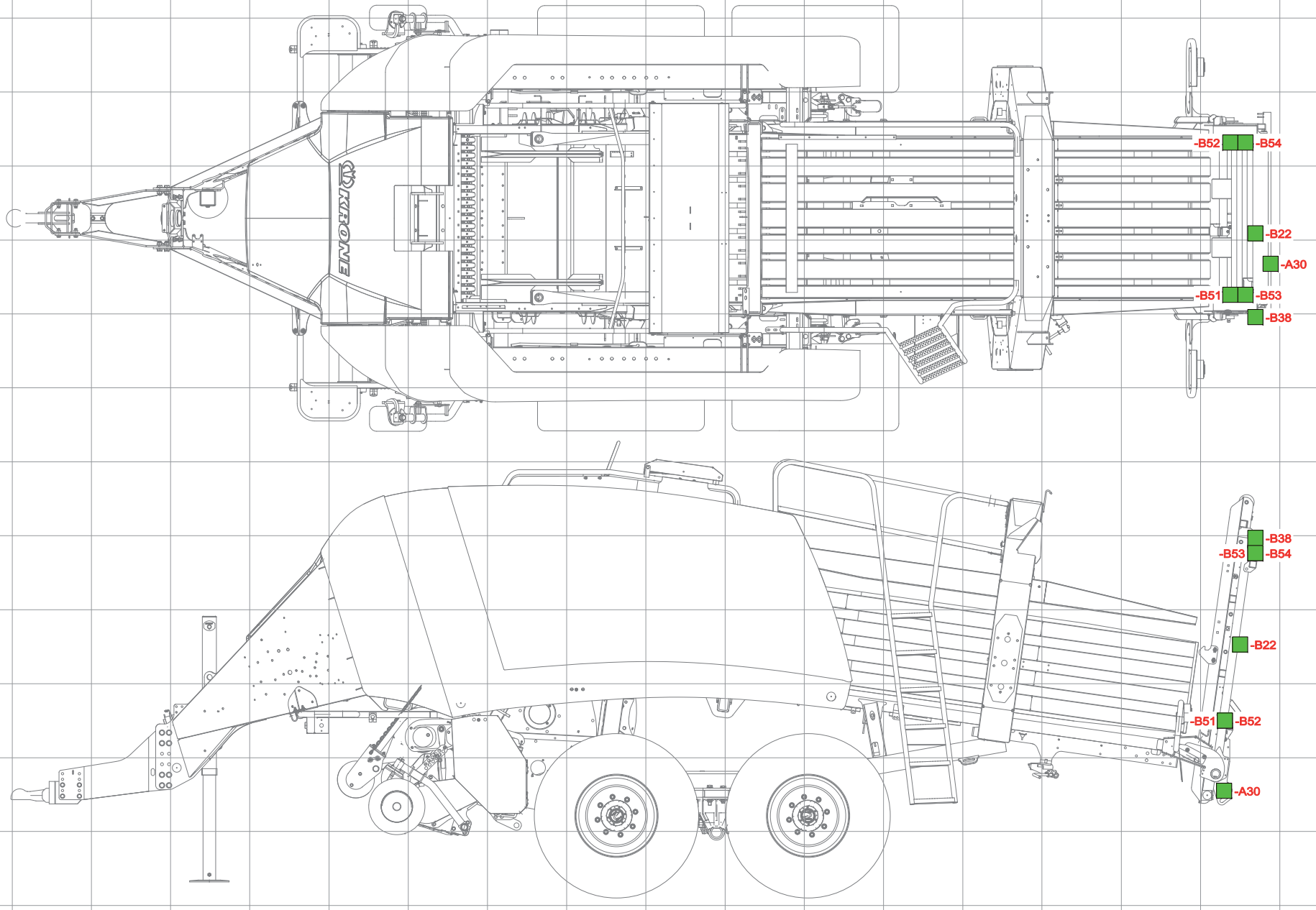
B				date	02.05.2016			RMS (Option moisture measurement)	plant
A				reviewed					location
modification	date	name	date			Copyright reserved	copyright ISO 16016 notice!		Sheet 4 / 5



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B				date	02.05.2016				plant
A				reviewed					location
modification	date	name	date						Sheet 5 / 5

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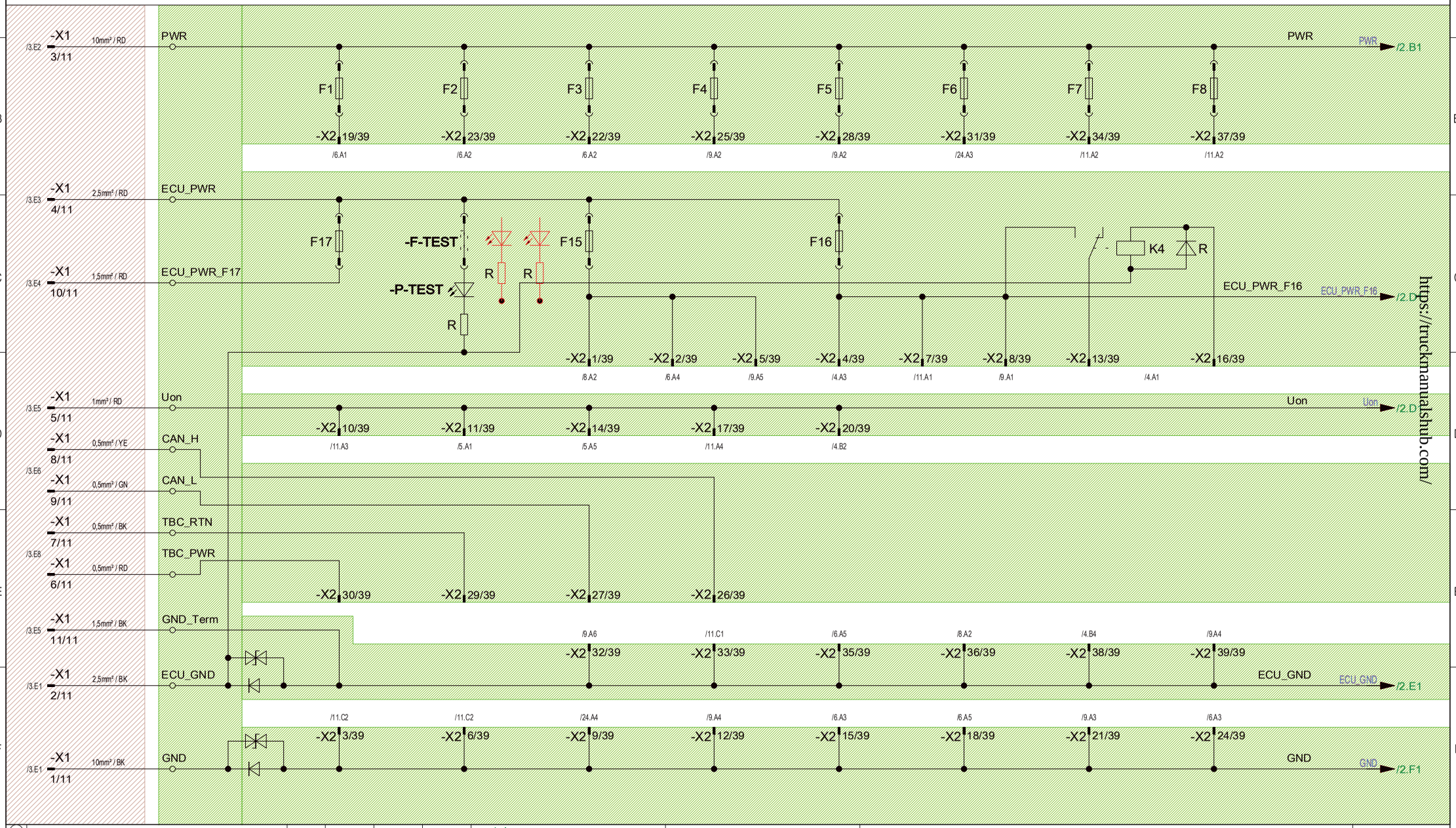
-A40

distributor central electric

AP/1.E8
AP/1.I8



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B				date	02.05.2016		150101580 EN - 00	overview distributor central electric: (basic equipment & full equipment): drawbar plug, Plug X2
A				reviewed				
	modification	date	name	date		Copyright reserved	copyright ISO 16016 notice!	

Circuit diagram
plant
location
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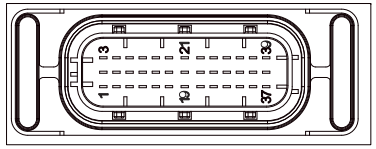
-A40

distributor central electric

-X3
(only with full equipment)



/1.B8 PWR — PWR

F9 F10 F11 F12 F13 F14

-X3 15/39 /10.A2
-X3 20/39 /7.A2
-X3 21/39 /7.A1
-X3 23/39 /7.A2
-X3 33/39 /12.A4
-X3 36/39 /12.A4

-X3 34/39 -X3 31/39 -X3 35/39 K1 R
-X3 38/39 /12.B1
-X3 32/39

-X3 19/39 -X3 16/39 -X3 11/39 K2 R
-X3 25/39 /12.B3
-X3 13/39

-X3 4/39 -X3 1/39 -X3 8/39 K3 R
-X3 10/39 /12.B5
-X3 7/39

/1.D8 Uon — Uon

/1.C8 ECU_PWR_F16 — ECU_PWR_F16

-X3 39/39 /12.D1
-X3 28/39 /12.C1

/12.E1
-X3 37/39

/1.F8 ECU_GND — ECU_GND

/7.A3 -X3 2/39
/7.A4 -X3 3/39
/12.F2 -X3 5/39
/12.F3 -X3 6/39
/10.A2 -X3 9/39
/12.F4 -X3 12/39
/12.F5 -X3 14/39
/7.A5 -X3 17/39
/7.A4 -X3 18/39

/1.F8 GND — GND

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BiG PACK High Speed (XCut + VariCut)
overview distributor central electric: (only with full equipment): Plug X3

Circuit diagram	
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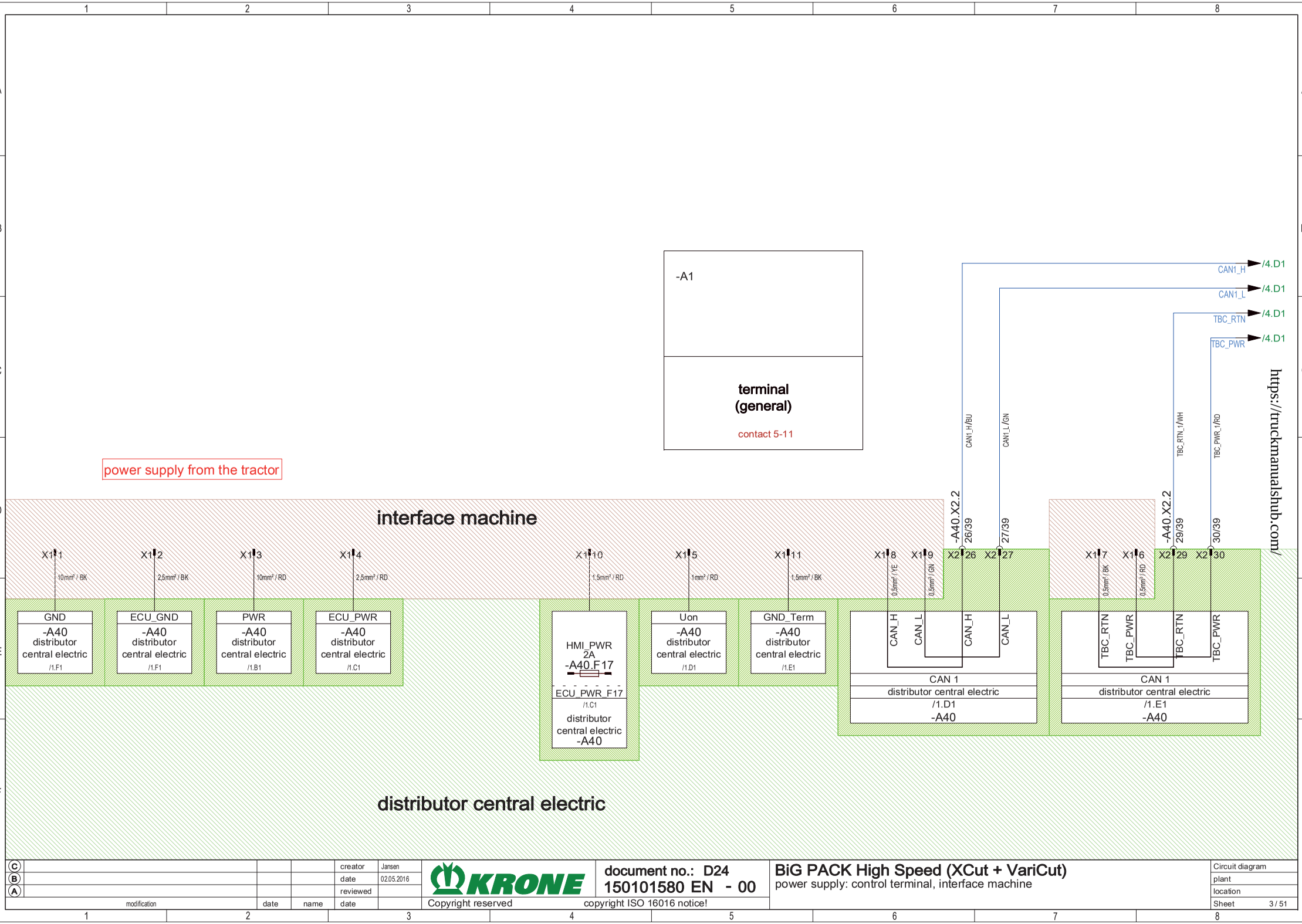

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BiG PACK High Speed (XCut + VariCut)
power supply: control terminal, interface machine

Circuit diagram	
plant	
location	
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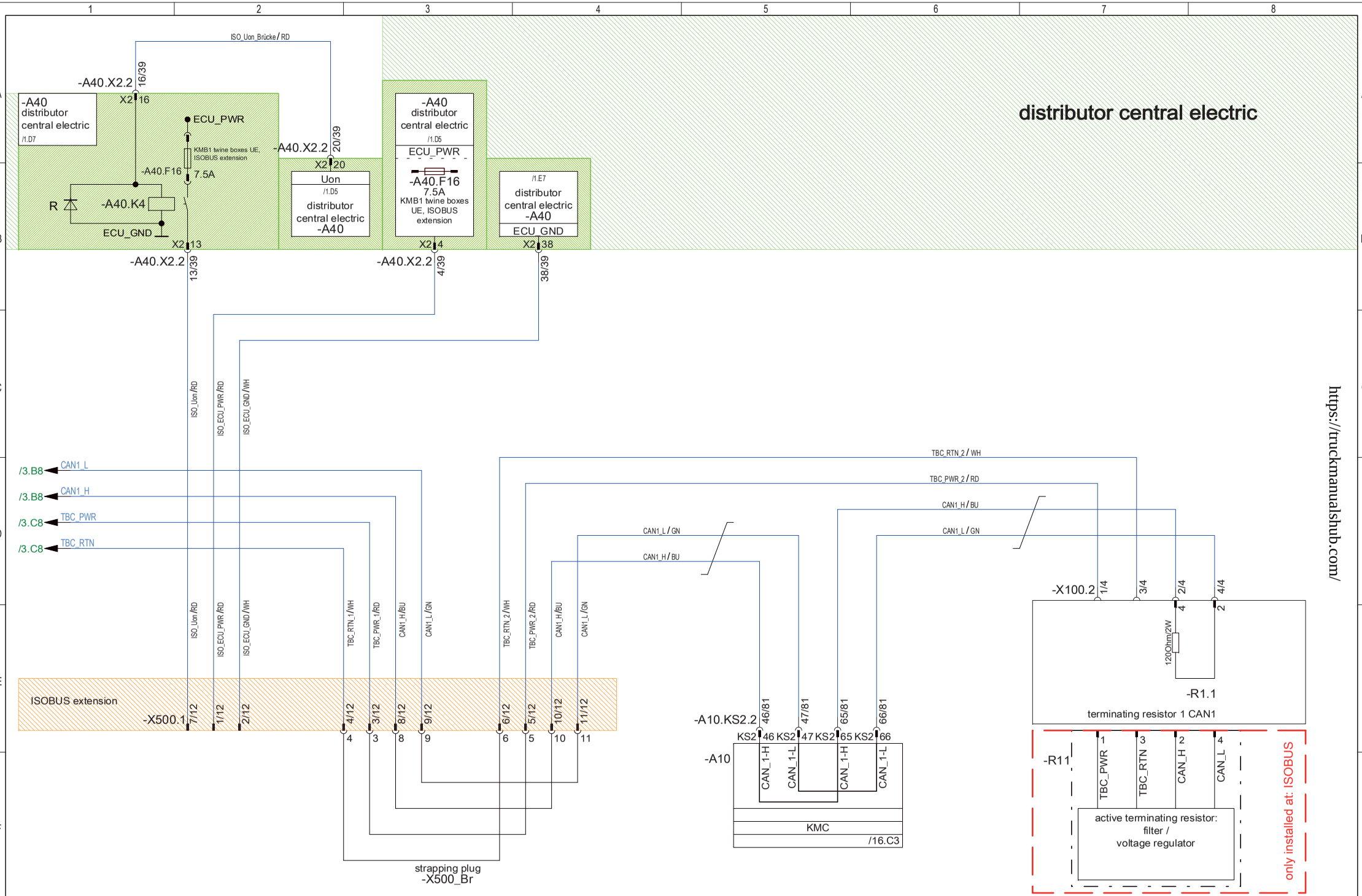

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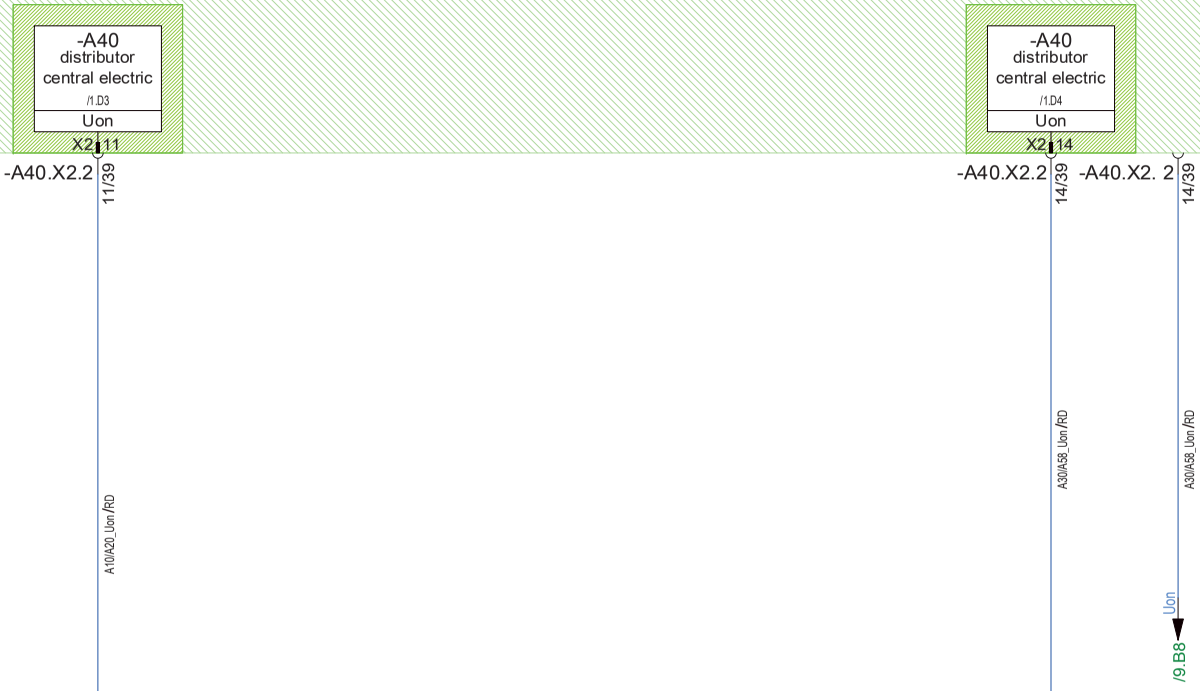
BiG PACK High Speed (XCut + VariCut)
CAN bus: CAN1 - ISOBUS extension, terminating resistor 1 CAN1, active terminating resistor

Circuit diagram	
plant	
location	
Sheet	4 / 51



-SPL15
Uon

description	cross-reference
central electric	/5.E1
KMC (main computer)	/6.C4
FMA1 (baling force control)	/8.C2

-SPL16
Uon

description	cross-reference
central electric	/5.E5
FMA2 (Bale scale)	/9.A8
KMB twine boxes	/9.B1

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BiG PACK High Speed (XCut + VariCut)
power supply: CE switching voltage

Circuit diagram	
plant	
location	
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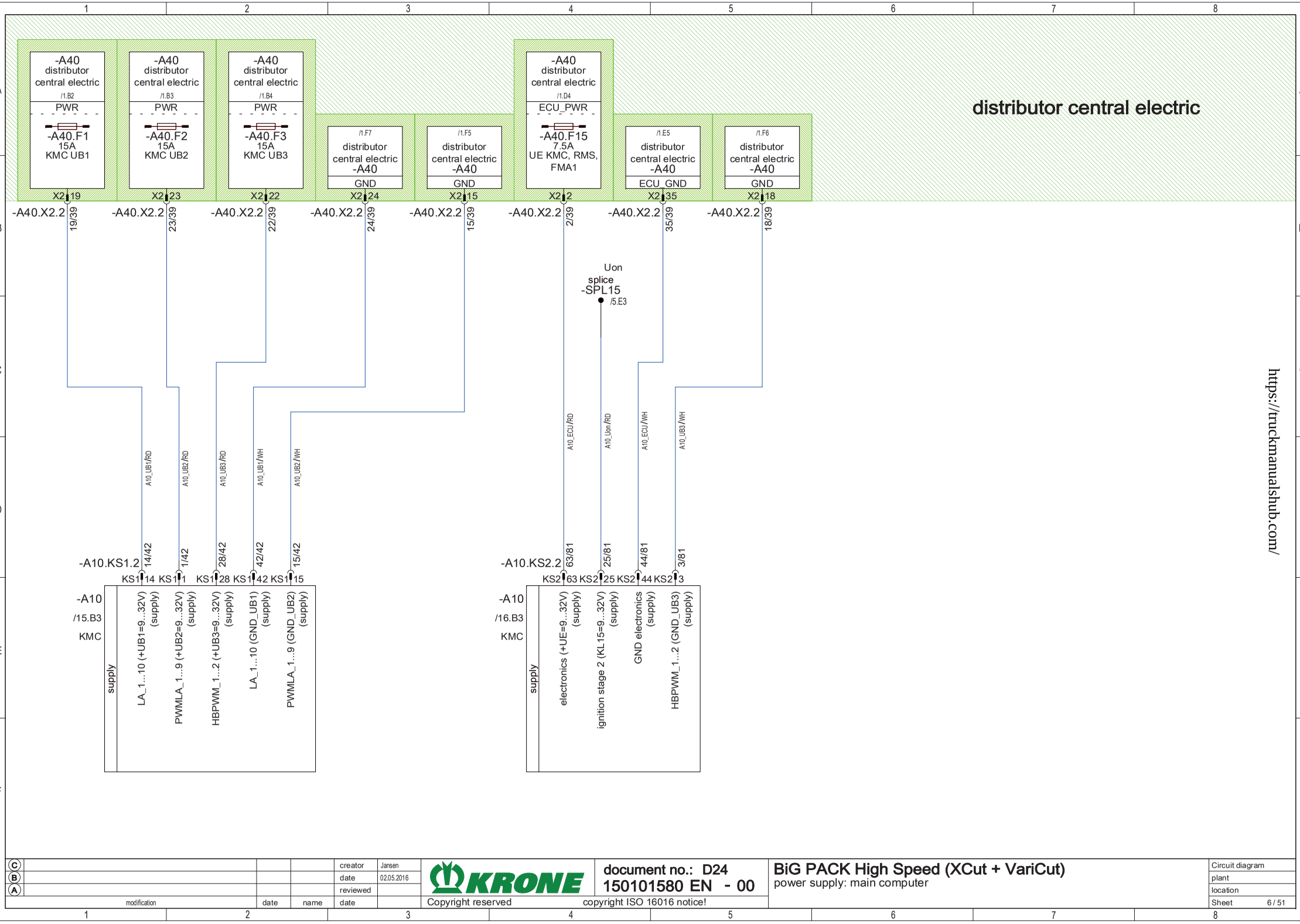

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B			date	02.05.2016	
A			reviewed		
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BiG PACK High Speed (XCut + VariCut)
power supply: main computer

Circuit diagram
plant
location
Sheet 6 / 51

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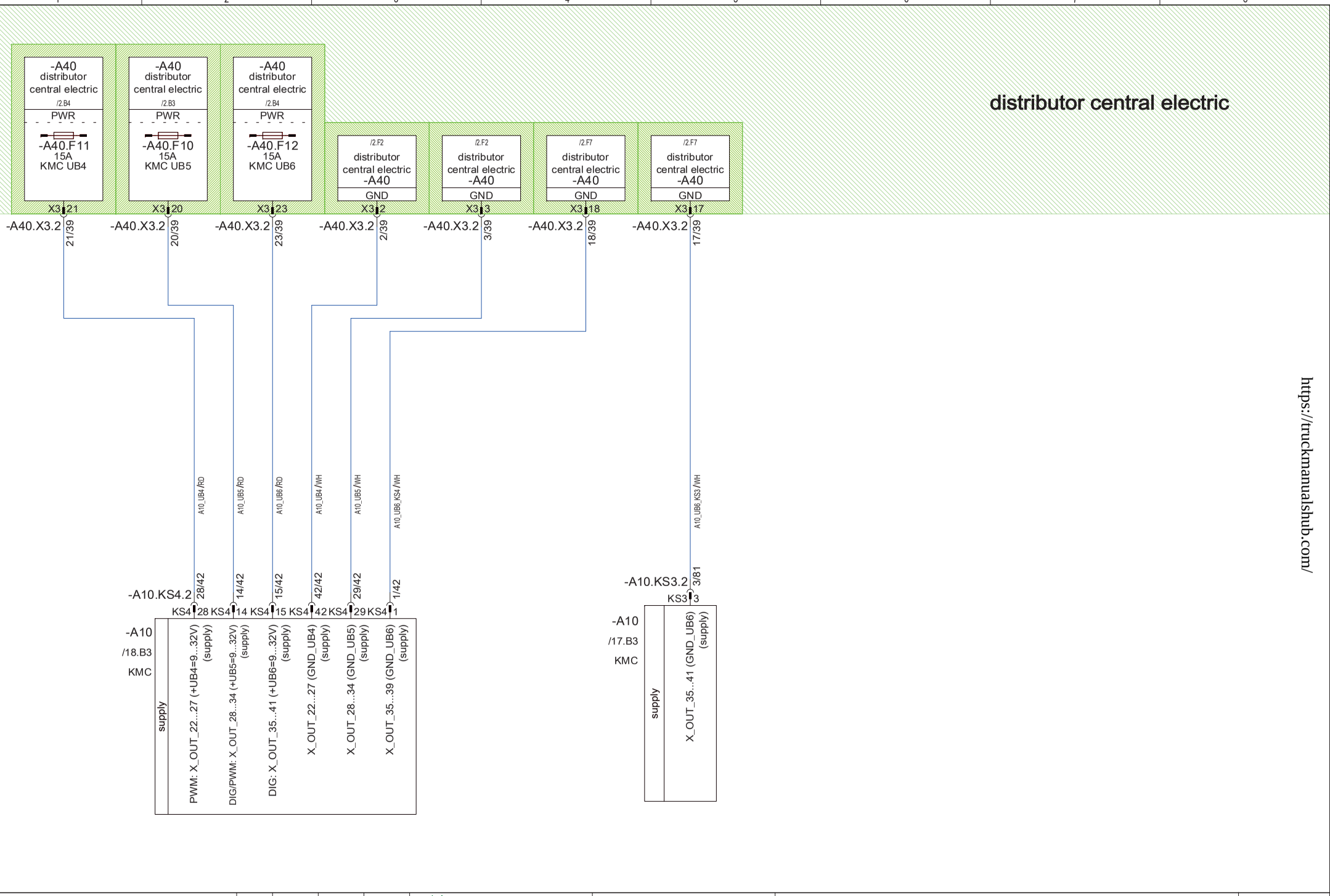

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C				creator	Jansen	document no.: D24 150101580 EN - 00	BiG PACK High Speed (XCut + VariCut) power supply: main computer (comfort)
B				date	02.05.2016		
A				reviewed			
modification		date	name	date		Copyright reserved copyright ISO 16016 notice!	Circuit diagram / plant / location / Sheet 7 / 51

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C				creator	Jansen	KRONE	document no.: D24	BiG PACK High Speed (XCut + VariCut)
B				date	02.05.2016		150101580 EN - 00	power supply: baling force control
A				reviewed				
	modification	date	name	date		Copyright reserved	copyright ISO 16016 notice!	

Circuit diagram
plant
location
Sheet 8 / 51

distributor central electric

-A40 distributor central electric /1.D6 — ECU_PWR — -A40.F16 7.5A KMB1 twine boxes UE, ISOBUS extension — X2:8 — -A40.X2.2 8/39

-A40 distributor central electric /1.B4 — PWR — -A40.F4 15A ECU twine boxes UB1 — X2:25 — -A40.X2.2 25/39

-A40 distributor central electric /1.B5 — PWR — -A40.F5 15A ECU twine boxes UB2 — X2:28 — -A40.X2.2 28/39

/1.F7 distributor central electric -A40 — GND — X2:21 — -A40.X2.2 21/39

/1.F4 distributor central electric -A40 — GND — X2:12 — -A40.X2.2 12/39

/1.E7 distributor central electric -A40 — ECU_GND — X2:39 — -A40.X2.2 39/39

-A40 distributor central electric /1.D5 — ECU_PWR — -A40.F15 7.5A UE KMC, RMS, FMA1 — X2:5 — -A40.X2.2 5/39

/1.E4 distributor central electric -A40 — ECU_GND — X2:32 — -A40.X2.2 32/39

Uon splice -SPL16 /5.E7

Uon splice -SPL16 /5.E7 — Uon /5.C5

A58_ECU/RD 1/12 — A58_Uon/RD 2/12 — A58_UB1/RD 4/12 — A58_UB2/RD 5/12 — A58_UB1/WH 6/12 — A58_UB2/WH 7/12 — A58_ECU/WH 3/12

-XA58.X1.2 1/12 2/12 4/12 5/12 6/12 7/12 3/12

-XA58.X1.1 1/12 2/12 4/12 5/12 6/12 7/12 3/12

RD/A58_ECU — RD/A58_Uon — RD/A58_UB1 — RD/A58_UB2 — WH/A58_UB1 — WH/A58_UB2 — WH/A58_ECU

-A58.X1.2 5/42 18/42 1/42 14/42 29/42 42/42 33/42

X1:5 X1:18 X1:1 X1:14 X1:29 X1:42 X1:33

-A58 /45.C3 KMB1 (twine boxes - HDP II)

supply: electronics (+UE=9...32V) (supply); ignition stage 2 (KL15=9...32V) (supply); LA_1/HBPWM1...2 (+UB1=9...32V) (supply); LA_2/HBPWM3...4 (+UB2=9...32V) (supply); LA_1/HBPWM1...2 (GND_UB1) (supply); LA_2/HBPWM3...4 (GND_UB2) (supply); GND electronics (supply)

only installed at: HDP II

-A14.X1.2 1/12 2/12 3/12 4/12

A14/A30_ECU/RD — A30_ECU/RD — A14/A30_ECU/WH — A30_ECU/WH

strapping plug -A14.X1_Br

strapping plug -A14.X1_Br

-A14 /48.B3 RMS (Option moisture measurement)

X1:1 X1:2 X1:3 X1:4

supply: +12V (supply); +12V (supply); GND (supply); GND (supply)

Option: moisture measurement

-X30.1 12/12 10/12 10/12 11/12

-X30.2 12/12 10/12 11/12

A30_ECU/RD — A30_Uon/RD — A30_ECU/WH

-A30.X1.2 1/42 18/42 6/42

X1:1 X1:18 X1:6

-A30 /42.B3 FMA2 (Option Bale scale)

supply: +12V continuous voltage (supply); +12V ignition stage 2 (supply); GND (supply)

Option: Bale scale

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BiG PACK High Speed (XCut + VariCut)

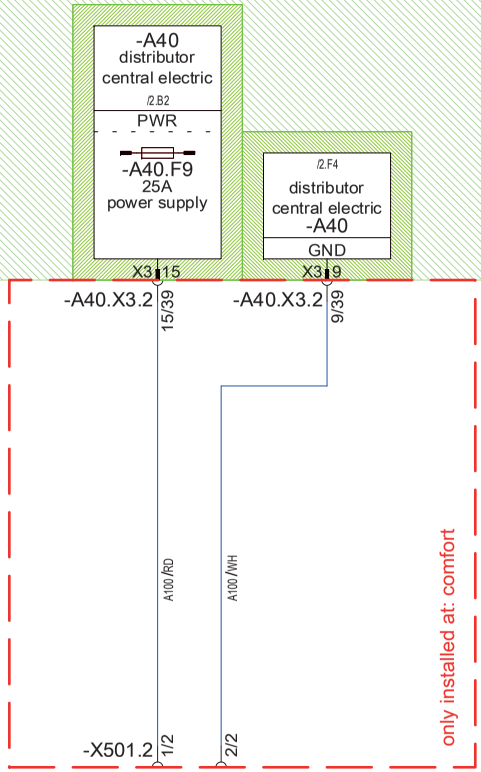
power supply: KMB1 (twine boxes - HDP II), moisture measurement, Bale scale

Circuit diagram

plant

location

distributor central electric



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BiG PACK High Speed (XCut + VariCut)
power supply: comfort

Circuit diagram	
plant	
location	
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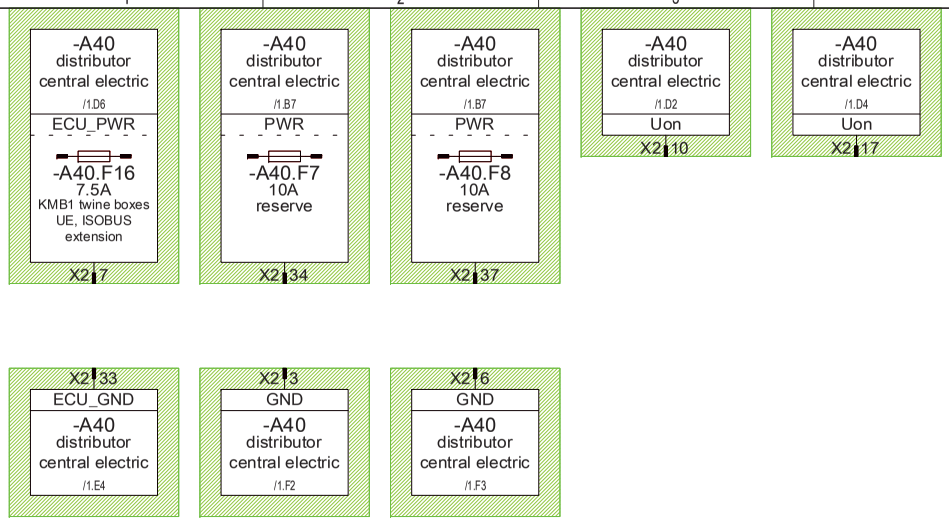

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modification		date	name	date	

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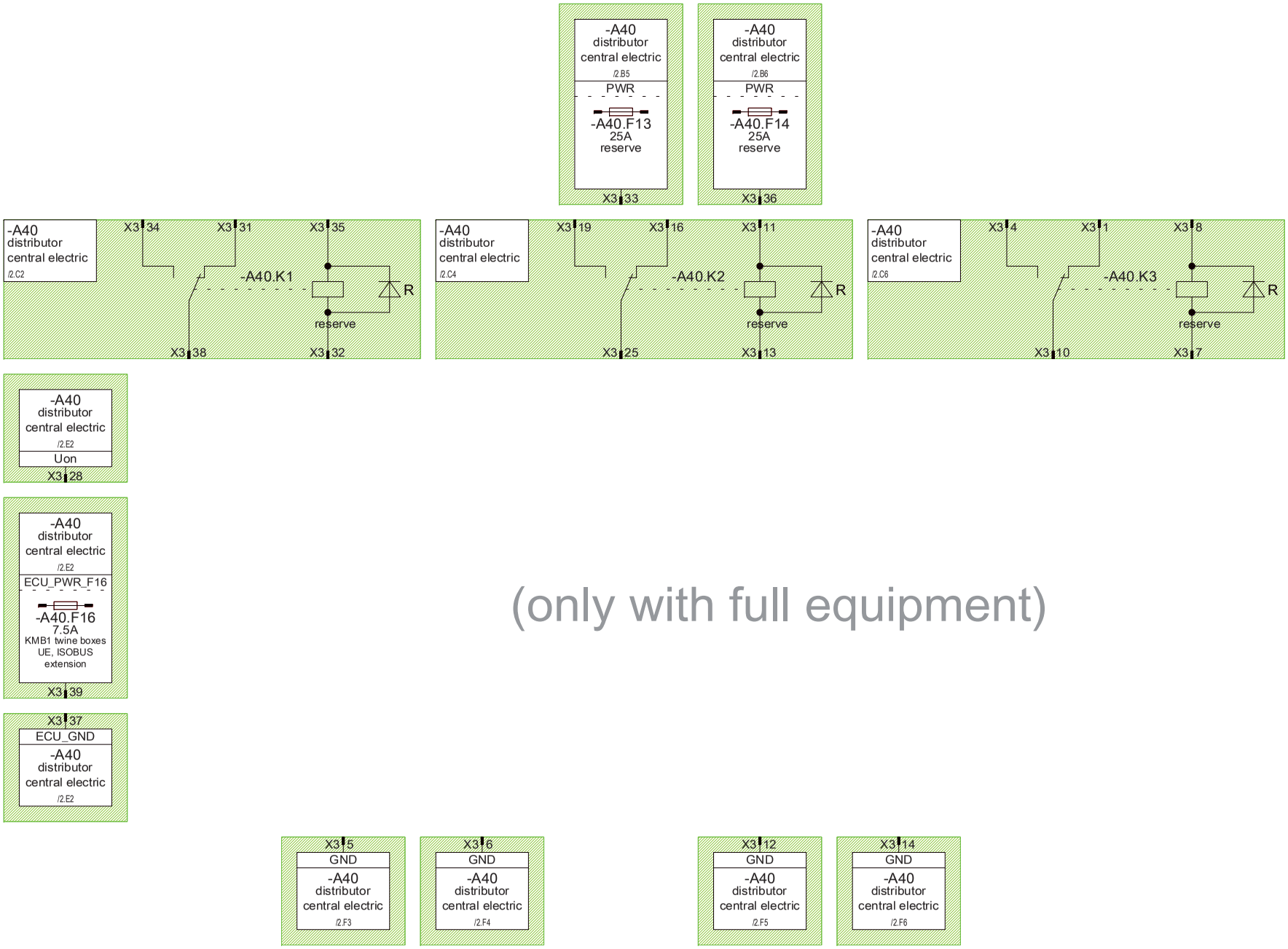
BiG PACK High Speed (XCut + VariCut)
power supply: distributor central electric: reserves (basic equipment)

Circuit diagram	
plant	
location	
Sheet	11 / 51



(only with full equipment)

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B				date	02.05.2016		power supply: distributor central electric: reserves (full equipment)
A				reviewed			
modification	date	name		date			

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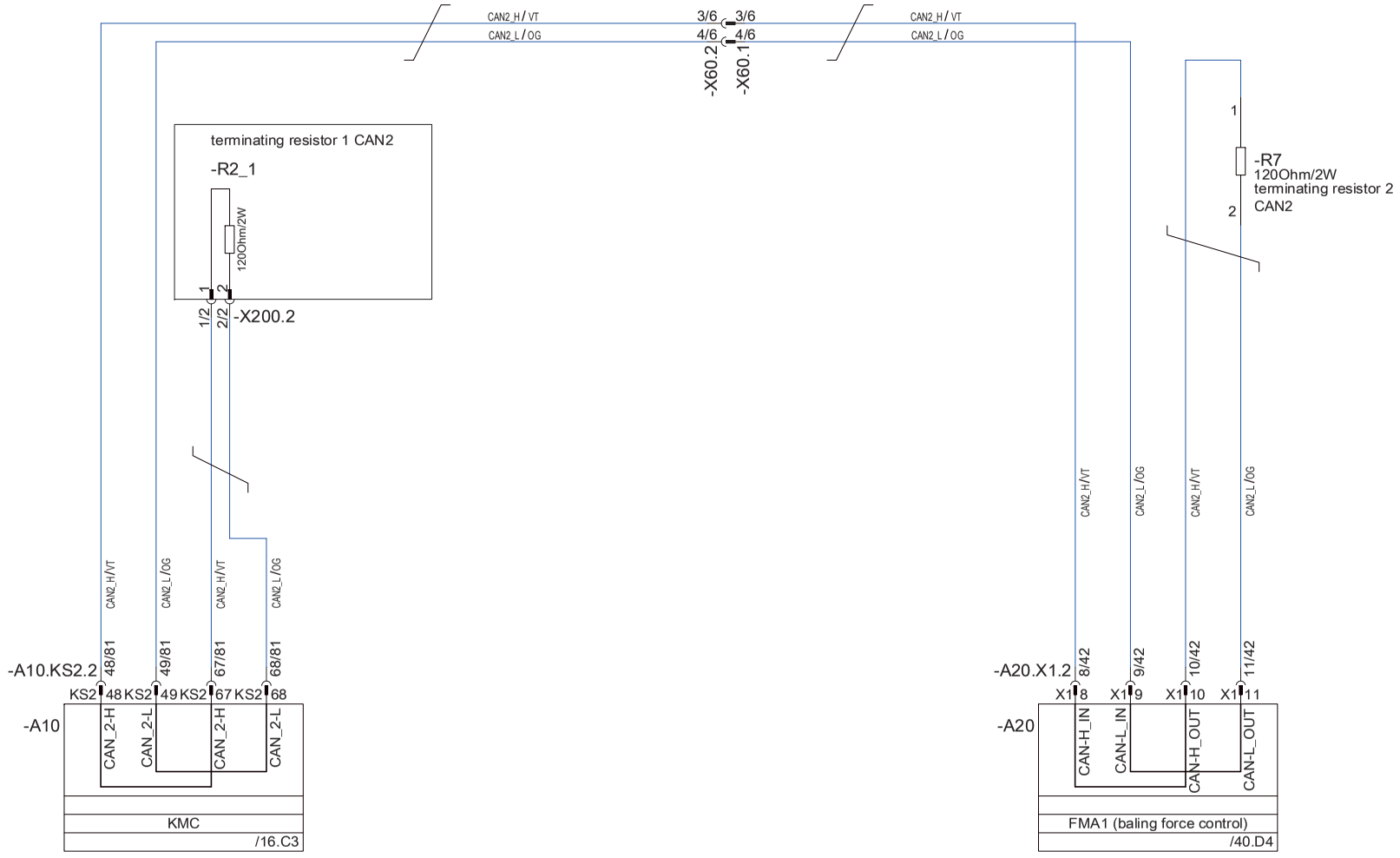
Circuit diagram	
plant	
location	
Sheet	12 / 51



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BiG PACK High Speed (XCut + VariCut)

CAN bus: CAN2 - FMA 1 baling force control, terminating resistor 1 CAN2

Circuit diagram
plant
location
Sheet 13 / 51

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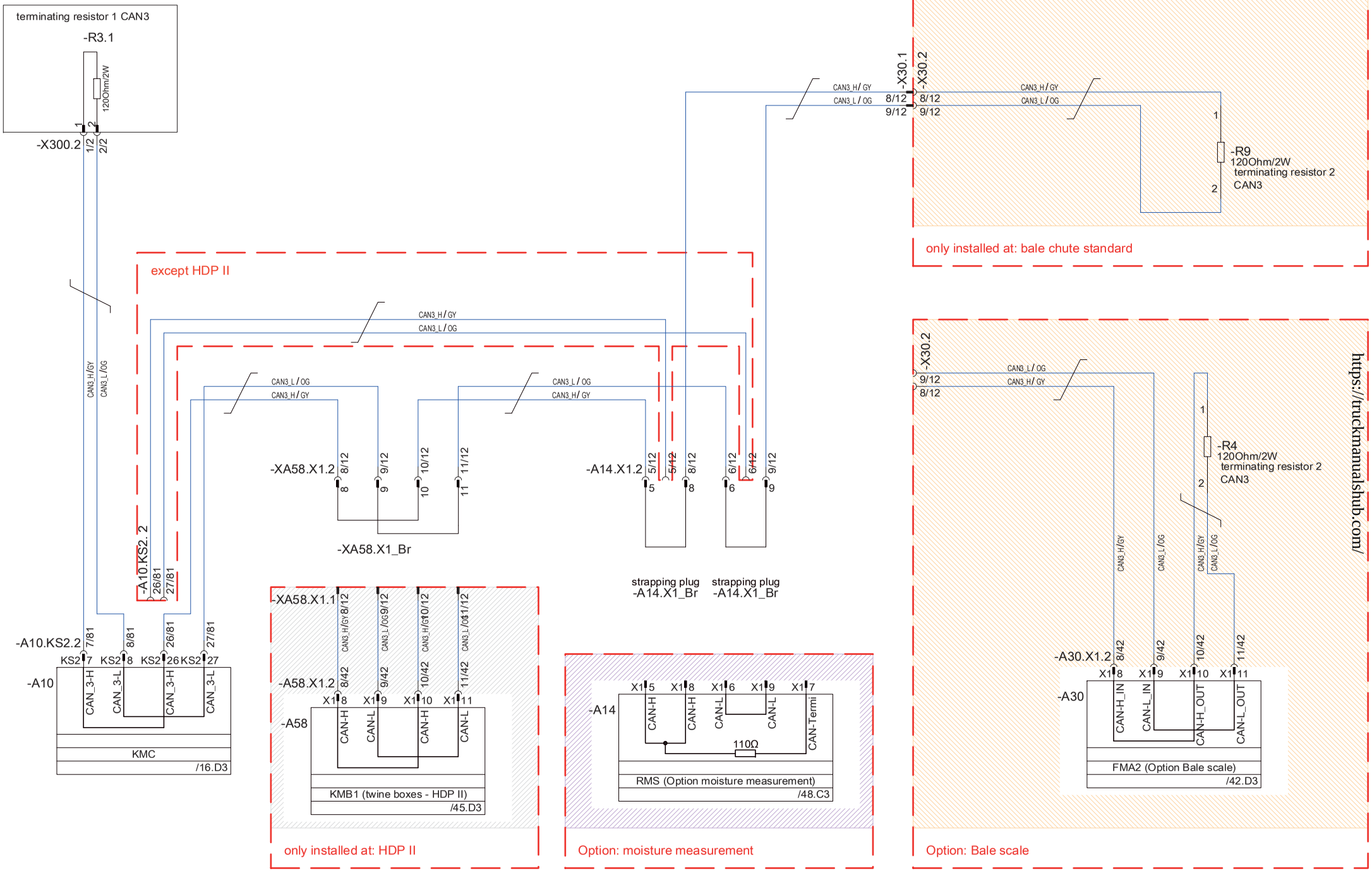

C				creator	Jansen	KRONE	document no.: D24 150101580 EN - 00	BiG PACK High Speed (XCut + VariCut)	Circuit diagram
B				date	02.05.2016			CAN bus: CAN3 - FMA 2 Bale scale, terminating resistor 1 CAN3, ECU twine boxes, RMS moisture measurement, bale chute standard	plant
A				reviewed					location
modification		date	name	date		Copyright reserved	copyright ISO 16016 notice!		Sheet 14 / 51

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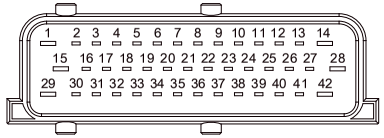
KMC

AP/1.I8
AP/1.F8

-KS1



Status

voltage ON

error

LED 1

programmable

LED 2

programmable

Plug	connection	description		cross-reference
supply in general				
-KS1	14	LA_1...10 (supply)	+UB1	/6.E1
-KS1	1	PWMLA_1...9 (supply)	+UB2	
-KS1	28	HBPWM_1...2 (supply)	+UB3	
-KS1	42	GND: LA_1...10 (supply)	GND_UB1	
-KS1	15	GND: PWMLA_1...9 (supply)	GND_UB2	
supply sensors				
internal supply		GND sensors	AGND	

functions of the status LEDs:

"power ON" LED: - voltages are stable

"error" LED:

- no error

- memory error (SSV ROM)

- voltage error (+U_E)

- watchdog error

- memory error (SSV EEPROM)

- voltage error (+U_SYS)

flash bootloader mode:

LED 1	LED 2	
		- waiting for "flash" command
		- sleep mode
		- active mode
		- "Flash CRC" error
		- reset / application start

Plug	connection	address	port	equipment	function	cross-reference
inputs						
-KS1	27	DIG_12	X_IN_46			
outputs						
-KS1	21	LA_1	X_OUT_01	E3	working light pick-up	/27.A2
-KS1	36	LA_1	X_OUT_01	E3	working light pick-up	/27.F2
-KS1	8	LA_2	X_OUT_02	E4	working light rear left	/27.A3
-KS1	22	LA_2	X_OUT_02	E4	working light rear left	/27.F3
-KS1	9	LA_3	X_OUT_03	E5	working light rear right	/27.A5
-KS1	37	LA_3	X_OUT_03	E5	working light rear right	/27.F5
-KS1	23	LA_4	X_OUT_04	E6/E7	lighting knotter table, lighting lower twine	/26.A2
-KS1	38	LA_4	X_OUT_04	E6/E7	lighting knotter table, lighting lower twine	/26.F2
-KS1	10	LA_5	X_OUT_05	E8/E9	lighting twine box right lighting twine box left	/26.A4
-KS1	24	LA_5	X_OUT_05	E8/E9	lighting twine box right lighting twine box left	/26.F4
-KS1	11	LA_6	X_OUT_06			
-KS1	39	LA_6	X_OUT_06			
-KS1	25	LA_7	X_OUT_07	K29	cleaning 1	/23.A5
-KS1	40	LA_7	X_OUT_07	K29	cleaning 1	/23.F5
-KS1	12	LA_8	X_OUT_08			
-KS1	26	LA_8	X_OUT_08			
-KS1	13	LA_9	X_OUT_09	K30	cleaning 2	/23.A7
-KS1	41	LA_9	X_OUT_09	K30	cleaning 2	/23.F7
-KS1	30	PWMLA_1	X_OUT_11	K11	pressure limitation valve baling flaps	/23.A2
-KS1	29	PWMLA_1	X_OUT_11	K11	pressure limitation valve baling flaps	/23.F2
-KS1	2	PWMLA_2	X_OUT_12	K25	baling flaps rapid traverse	/29.A4
-KS1	16	PWMLA_2	X_OUT_12	K25	baling flaps rapid traverse	/29.F4
-KS1	3	PWMLA_3	X_OUT_13	K70	Knotter triggering	/24.A2
-KS1	31	PWMLA_3	X_OUT_13	K70	Knotter triggering	/24.F2
-KS1	17	PWMLA_4	X_OUT_14			
-KS1	32	PWMLA_4	X_OUT_14			
-KS1	4	PWMLA_5	X_OUT_15			
-KS1	18	PWMLA_5	X_OUT_15			
-KS1	5	PWMLA_6	X_OUT_16	K31	central lubrication active	/22.A3
-KS1	33	PWMLA_6	X_OUT_16	K31	central lubrication active	/22.F3
-KS1	19	PWMLA_7	X_OUT_17	K35	silage additive system	/25.A2
-KS1	34	PWMLA_7	X_OUT_17	K35	silage additive system	/25.F2
-KS1	6	PWMLA_8	X_OUT_18			
-KS1	20	PWMLA_8	X_OUT_18			
-KS1	7	PWMLA_9	X_OUT_19			
-KS1	35	PWMLA_9	X_OUT_19			

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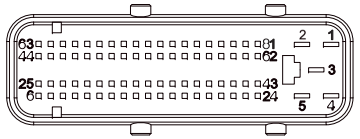
KMC

Status



-KS2

Plug	connection	description		cross-reference
supply in general				
-KS2	63	electronics (supply)	+UE	/6.E4
-KS2	25	ignition stage 2 (15) (supply)	KL15	
-KS2	44	GND electronics (supply)	GND	
-KS2	3	GND: HBPWM_1...2 (supply)	GND_UB3	
supply sensors				
internal supply		+2...12V (programmable)	Uext1	
		+2...12V (programmable)	Uext2	
		GND sensors	AGND	
CAN 1 - interface				
-KS2	46	CAN_1-H		/4.F6
-KS2	65	CAN_1-H		
-KS2	47	CAN_1-L		
-KS2	66	CAN_1-L		
CAN 2 - interface				
-KS2	48	CAN_2-H		/13.F3
-KS2	67	CAN_2-H		
-KS2	49	CAN_2-L		
-KS2	68	CAN_2-L		
CAN 3 - interface				
-KS2	7	CAN_3-H		/14.F2
-KS2	26	CAN_3-H		
-KS2	8	CAN_3-L		
-KS2	27	CAN_3-L		
CAN 4 - interface				
-KS2	9	CAN_4-H		
-KS2	28	CAN_4-H		
-KS2	10	CAN_4-L		
-KS2	29	CAN_4-L		

Plug	connection	address	port	equipment	function	cross-reference
outputs						
-KS2	45	LA_10	X_OUT_10			
-KS2	64	LA_10	X_OUT_10			
-KS2	1	HBPWM_1	X_OUT_20	E1	warning beacon front	/51.A2
-KS2	4	HBPWM_1	X_OUT_20	E1	warning beacon front	/51.F2
-KS2	2	HBPWM_2	X_OUT_21	E2	warning beacon rear	/51.A3
-KS2	5	HBPWM_2	X_OUT_21	E2	warning beacon rear	/51.F3

Plug	connection	address	port	equipment	function	cross-reference
inputs						
-KS2	30	MULTI_1	X_IN_01	B17	baling flap pressure	/23.A4
-KS2	31	MULTI_1	X_IN_01	B17	baling flap pressure	/23.F3
-KS2	11	MULTI_1	X_IN_01	B17	baling flap pressure	/23.A3
-KS2	32	MULTI_2	X_IN_02	B9	needle connecting rod left	/19.F7
-KS2	12	MULTI_2	X_IN_02	B9	needle connecting rod left	/19.A7
-KS2	13	MULTI_2	X_IN_02			
-KS2	33	MULTI_3	X_IN_03	B15	Star wheel	/20.A2
-KS2	34	MULTI_3	X_IN_03	B15	Star wheel	/20.A3
-KS2	14	MULTI_3	X_IN_03	B15	Star wheel	/20.F1
-KS2	35	MULTI_4	X_IN_04			
-KS2	15	MULTI_4	X_IN_04			
-KS2	16	MULTI_4	X_IN_04			
-KS2	36	MULTI_5	X_IN_05	B8	lower twine monitoring	/19.F5
-KS2	37	MULTI_5	X_IN_05	B8	lower twine monitoring	/19.A5
-KS2	17	MULTI_5	X_IN_05			
-KS2	75	MULTI_6	X_IN_06	B24	blade cassette active	/35.F3
-KS2	18	MULTI_6	X_IN_06	B24	blade cassette active	/35.A3
-KS2	56	MULTI_6	X_IN_06			
-KS2	69	MULTI_7	X_IN_07	B3	knotter central lubrication active	/22.F2
-KS2	70	MULTI_7	X_IN_07	B3	&Knoterzentralschmierung aktiv;	/22.A2
-KS2	50	MULTI_7	X_IN_07			
-KS2	71	MULTI_8	X_IN_08	B36	condition steering	/30.F4
-KS2	51	MULTI_8	X_IN_08	B36	condition steering	/30.A4
-KS2	52	MULTI_8	X_IN_08			
-KS2	72	MULTI_9	X_IN_09	B13	needle connecting rod right	/19.F8
-KS2	73	MULTI_9	X_IN_09	B13	needle connecting rod right	/19.A8
-KS2	53	MULTI_9	X_IN_09			
-KS2	74	MULTI_10	X_IN_10	B6	rotational speed packer	/19.F3
-KS2	54	MULTI_10	X_IN_10	B6	rotational speed packer	/19.A3
-KS2	55	MULTI_10	X_IN_10			
-KS2	76	DIG_1	X_IN_35	B23	position pick-up	/21.F4
-KS2	57	DIG_1	X_IN_35	B23	position pick-up	/21.A4
-KS2	19	DIG_2	X_IN_36	B12	Bale discharge	/22.F6
-KS2	38	DIG_2	X_IN_36	B12	Bale discharge	/22.A6
-KS2	77	DIG_3	X_IN_37			
-KS2	58	DIG_3	X_IN_37			
-KS2	20	DIG_4	X_IN_38	B7	packer feed active	/19.F4
-KS2	39	DIG_4	X_IN_38	B7	packer feed active	/19.A4
-KS2	78	DIG_5	X_IN_39	B1	flywheel brake	/19.F2
-KS2	59	DIG_5	X_IN_39	B1	flywheel brake	/19.A2
-KS2	21	DIG_6	X_IN_40	B10	Knotter monitoring	/24.F8
-KS2	40	DIG_6	X_IN_40	B10	Knotter monitoring	/24.A8
-KS2	79	DIG_7	X_IN_41	B11	Bale chute	/22.F5
-KS2	60	DIG_7	X_IN_41	B11	Bale chute	/22.A5
-KS2	22	DIG_8	X_IN_42	B14	Bale ejector	/22.F7
-KS2	41	DIG_8	X_IN_42	B14	Bale ejector	/22.A7
-KS2	80	DIG_9	X_IN_43	B2	blade cassette top	/35.F2
-KS2	61	DIG_9	X_IN_43	B2	blade cassette top	/35.A2
-KS2	23	DIG_10	X_IN_44	B20	rotational speed pick-up	/21.F3
-KS2	42	DIG_10	X_IN_44	B20	rotational speed pick-up	/21.A3
-KS2	81	DIG_11	X_IN_45	B30	rotational speed PTO shaft	/22.F8
-KS2	62	DIG_11	X_IN_45	B30	rotational speed PTO shaft	/22.A8
-KS2	6	DIG_12	X_IN_46			
-KS2	24	CODE				
-KS2	43	CODE				

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BiG PACK High Speed (XCut + VariCut)
KMC: plug overview KS2

Circuit diagram
plant
location
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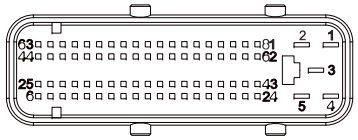
-A10

KMC

-KS3



Plug	connection	description		cross-reference
supply in general				
-KS3	3	GND: LA_14...20 (supply)	GND_UB6	/7.E4
supply sensors				
internal supply		+2...12V (programmable)	Uext2	
		+2...12V (programmable)	Uext3	
		+2...12V (programmable)	Uext4	
		GND sensors	AGND	

Plug	connection	address	port	equipment	function	cross-reference
outputs						
-KS3	1	LA_19	X_OUT_40	K14	triggering MultiBale 1	/33.A4
-KS3	4	LA_19	X_OUT_40	K14	triggering MultiBale 1	/33.F4
-KS3	2	LA_20	X_OUT_41	K15	triggering MultiBale 2	/33.A6
-KS3	5	LA_20	X_OUT_41	K15	triggering MultiBale 2	/33.F6
inputs						
-KS3	35	MULTI_26	X_IN_26	B46	control upper twine 6	/31.F8
-KS3	36	MULTI_26	X_IN_26	B46	control upper twine 6	/31.A8
-KS3	16	MULTI_26	X_IN_26			
-KS3	37	MULTI_27	X_IN_27	B47	control upper twine 7	/32.F2
-KS3	17	MULTI_27	X_IN_27	B47	control upper twine 7	/32.A2
-KS3	18	MULTI_27	X_IN_27			
-KS3	38	MULTI_28	X_IN_28	B48	control upper twine 8	/32.F3
-KS3	39	MULTI_28	X_IN_28	B48	control upper twine 8	/32.A3
-KS3	19	MULTI_28	X_IN_28			
-KS3	40	MULTI_29	X_IN_29	B34	blade cassette together	/38.F6
-KS3	20	MULTI_29	X_IN_29	B34	blade cassette together	/38.A6
-KS3	21	MULTI_29	X_IN_29			
-KS3	41	MULTI_30	X_IN_30	B32	blade cassette active	/38.F4
-KS3	42	MULTI_30	X_IN_30	B32	blade cassette active	/38.A4
-KS3	22	MULTI_30	X_IN_30			
-KS3	43	MULTI_31	X_IN_31	S7	blade cassette active	/39.F2
-KS3	23	MULTI_31	X_IN_31	S7	blade cassette active	/39.A2
-KS3	24	MULTI_31	X_IN_31			
-KS3	78	MULTI_32	X_IN_32	S8	blade cassette inactive	/39.F3
-KS3	58	MULTI_32	X_IN_32	S8	blade cassette inactive	/39.A3
-KS3	59	MULTI_32	X_IN_32			
-KS3	79	MULTI_33	X_IN_33	S1	lift blade cassette	/37.F2
-KS3	80	MULTI_33	X_IN_33	S1	lift blade cassette	/37.A2
-KS3	60	MULTI_33	X_IN_33			
-KS3	81	MULTI_34	X_IN_34	S2	lower blade cassette	/37.F3
-KS3	61	MULTI_34	X_IN_34	S2	lower blade cassette	/37.A3
-KS3	62	MULTI_34	X_IN_34			
-KS3	25	DIG_13	X_IN_47			
-KS3	6	DIG_13	X_IN_47			
-KS3	63	DIG_14	X_IN_48			
-KS3	44	DIG_14	X_IN_48			

Plug	connection	address	port	equipment	function	cross-reference
inputs						
-KS3	26	MULTI_11	X_IN_11	B35	position blade cassette	/35.F6
-KS3	27	MULTI_11	X_IN_11	B35	position blade cassette	/35.A5
-KS3	7	MULTI_11	X_IN_11	B35	position blade cassette	/35.F5
-KS3	28	MULTI_12	X_IN_12	B21	Position MultiBale	/33.F3
-KS3	8	MULTI_12	X_IN_12	B21	Position MultiBale	/33.A2
-KS3	9	MULTI_12	X_IN_12	B21	Position MultiBale	/33.F2
-KS3	29	MULTI_13	X_IN_13	S3	retracting bale ejector	/34.F2
-KS3	30	MULTI_13	X_IN_13	S3	retracting bale ejector	/34.A2
-KS3	10	MULTI_13	X_IN_13			
-KS3	31	MULTI_14	X_IN_14	S4	extending bale ejector	/34.F3
-KS3	11	MULTI_14	X_IN_14	S4	extending bale ejector	/34.A3
-KS3	12	MULTI_14	X_IN_14			
-KS3	32	MULTI_15	X_IN_15	S5	lift bale chute	/34.F4
-KS3	33	MULTI_15	X_IN_15	S5	lift bale chute	/34.A4
-KS3	13	MULTI_15	X_IN_15			
-KS3	34	MULTI_16	X_IN_16	S6	lower bale chute	/34.F6
-KS3	14	MULTI_16	X_IN_16	S6	lower bale chute	/34.A6
-KS3	15	MULTI_16	X_IN_16			
-KS3	64	MULTI_17	X_IN_17	B16	reserve	/38.F2
-KS3	65	MULTI_17	X_IN_17	B16	reserve	/38.A2
-KS3	45	MULTI_17	X_IN_17	B16	reserve	/38.A3
-KS3	66	MULTI_18	X_IN_18	B28	contact pressure feed rotor	/36.F2
-KS3	46	MULTI_18	X_IN_18	B28	contact pressure feed rotor	/36.A3
-KS3	47	MULTI_18	X_IN_18	B28	contact pressure feed rotor	/36.A2
-KS3	67	MULTI_19	X_IN_19	B31	rotational speed feed rotor	/23.F8
-KS3	68	MULTI_19	X_IN_19	B31	rotational speed feed rotor	/23.A8
-KS3	48	MULTI_19	X_IN_19			
-KS3	69	MULTI_20	X_IN_20	B33	blade cassette inactive	/38.F5
-KS3	49	MULTI_20	X_IN_20	B33	blade cassette inactive	/38.A5
-KS3	50	MULTI_20	X_IN_20			
-KS3	70	MULTI_21	X_IN_21	B41	control upper twine 1	/31.F2
-KS3	71	MULTI_21	X_IN_21	B41	control upper twine 1	/31.A2
-KS3	51	MULTI_21	X_IN_21			
-KS3	72	MULTI_22	X_IN_22	B42	control upper twine 2	/31.F3
-KS3	52	MULTI_22	X_IN_22	B42	control upper twine 2	/31.A3
-KS3	53	MULTI_22	X_IN_22			
-KS3	73	MULTI_23	X_IN_23	B43	control upper twine 3	/31.F4
-KS3	74	MULTI_23	X_IN_23	B43	control upper twine 3	/31.A4
-KS3	54	MULTI_23	X_IN_23			
-KS3	75	MULTI_24	X_IN_24	B44	control upper twine 4	/31.F5
-KS3	55	MULTI_24	X_IN_24	B44	control upper twine 4	/31.A5
-KS3	56	MULTI_24	X_IN_24			
-KS3	76	MULTI_25	X_IN_25	B45	control upper twine 5	/31.F7
-KS3	77	MULTI_25	X_IN_25	B45	control upper twine 5	/31.A7
-KS3	57	MULTI_25	X_IN_25			

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BiG PACK High Speed (XCut + VariCut)
KMC: plug overview KS3

Circuit diagram
plant
location
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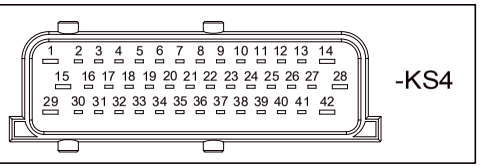
-A10

KMC



-KS4

Plug	connection	description		cross-reference
supply in general				
-KS4	28	PWMLA_10...15 (supply)	+UB4	/7.E2
-KS4	14	PWMLA_16...19/LA_11...13 (supply)	+UB5	
-KS4	15	LA_14...20 (supply)	+UB6	
-KS4	42	GND: PWMLA_10...15 (supply)	GND_UB4	
-KS4	29	GND: PWMLA_16...19/LA_11...13 (supply)	GND_UB5	
-KS4	1	GND: LA_14...20 (supply)	GND_UB6	

Plug	connection	address	port	equipment	function	cross-reference
outputs						
-KS4	27	PWMLA_10	X_OUT_22	K3	bale chute plunger surface	/28.A4
-KS4	41	PWMLA_10	X_OUT_22	K3	bale chute plunger surface	/28.F4
-KS4	13	PWMLA_11	X_OUT_23	K12	coupling feed rotor	/36.A5
-KS4	26	PWMLA_11	X_OUT_23	K12	coupling feed rotor	/36.F5
-KS4	12	PWMLA_12	X_OUT_24	K1	main valve (extend)	/28.A2
-KS4	40	PWMLA_12	X_OUT_24	K1	main valve (extend)	/28.F2
-KS4	25	PWMLA_13	X_OUT_25	K2	main valve (retract)	/28.A3
-KS4	39	PWMLA_13	X_OUT_25	K2	main valve (retract)	/28.F3
-KS4	11	PWMLA_14	X_OUT_26	K9	release baling flaps	/29.A2
-KS4	24	PWMLA_14	X_OUT_26	K9	release baling flaps	/29.F2
-KS4	10	PWMLA_15	X_OUT_27			
-KS4	38	PWMLA_15	X_OUT_27			
-KS4	23	PWMLA_16	X_OUT_28	K17	Starting device	/29.A3
-KS4	37	PWMLA_16	X_OUT_28	K17	Starting device	/29.F3
-KS4	9	PWMLA_17	X_OUT_29	K16	close feed rotor	/36.A6
-KS4	22	PWMLA_17	X_OUT_29	K16	close feed rotor	/36.F6
-KS4	8	PWMLA_18	X_OUT_30			
-KS4	36	PWMLA_18	X_OUT_30			
-KS4	21	PWMLA_19	X_OUT_31	K4	bale chute ring surface	/28.A5
-KS4	35	PWMLA_19	X_OUT_31	K4	bale chute ring surface	/28.F5
-KS4	7	LA_11	X_OUT_32	K27	VariCut plunger surface	/39.A5
-KS4	20	LA_11	X_OUT_32	K27	VariCut plunger surface	/39.F5
-KS4	6	LA_12	X_OUT_33	K28	VariCut ring surface	/39.A6
-KS4	34	LA_12	X_OUT_33	K28	VariCut ring surface	/39.F6
-KS4	19	LA_13	X_OUT_34	K20	Steering axle	/30.A2
-KS4	33	LA_13	X_OUT_34	K20	Steering axle	/30.F2
-KS4	5	LA_14	X_OUT_35	K6	Bale ejector Ringfläche	/28.A8
-KS4	18	LA_14	X_OUT_35	K6	Bale ejector Ringfläche	/28.F8
-KS4	4	LA_15	X_OUT_36	K5	bale ejector plunger surface	/28.A7
-KS4	32	LA_15	X_OUT_36	K5	bale ejector plunger surface	/28.F7
-KS4	17	LA_16	X_OUT_37			
-KS4	31	LA_16	X_OUT_37			
-KS4	3	LA_17	X_OUT_38	K7	blade cassette plunger surface	/37.A4
-KS4	16	LA_17	X_OUT_38	K7	blade cassette plunger surface	/37.F4
-KS4	2	LA_18	X_OUT_39	K8	blade cassette ring surface	/37.A6
-KS4	30	LA_18	X_OUT_39	K8	blade cassette ring surface	/37.F6

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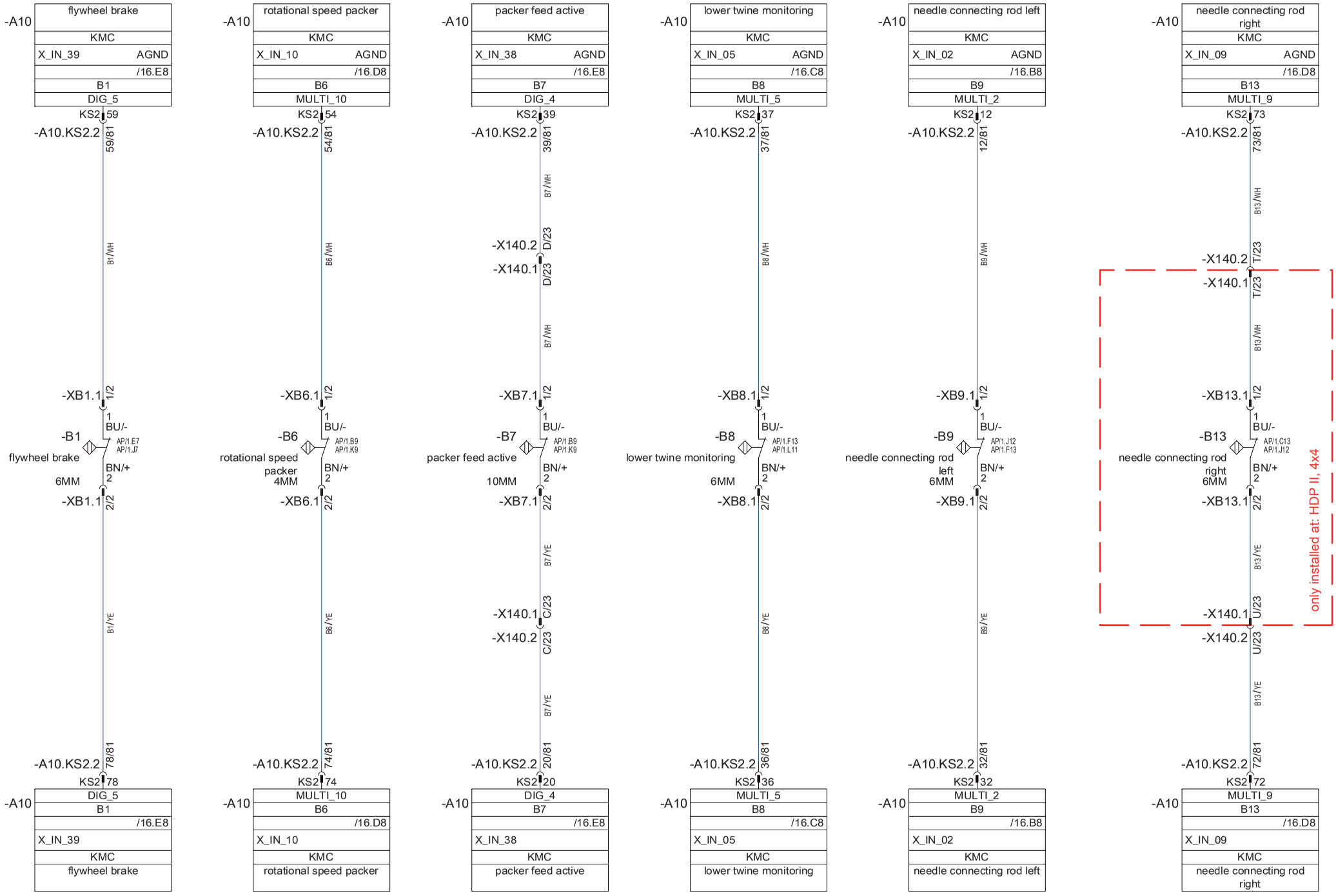

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BiG PACK High Speed (XCut + VariCut)

KMC: Sensors: flywheel brake, rotational speed packer, packer feed active, lower twine monitoring, needle connecting rod left, needle connecting rod right

Circuit diagram	
plant	
location	
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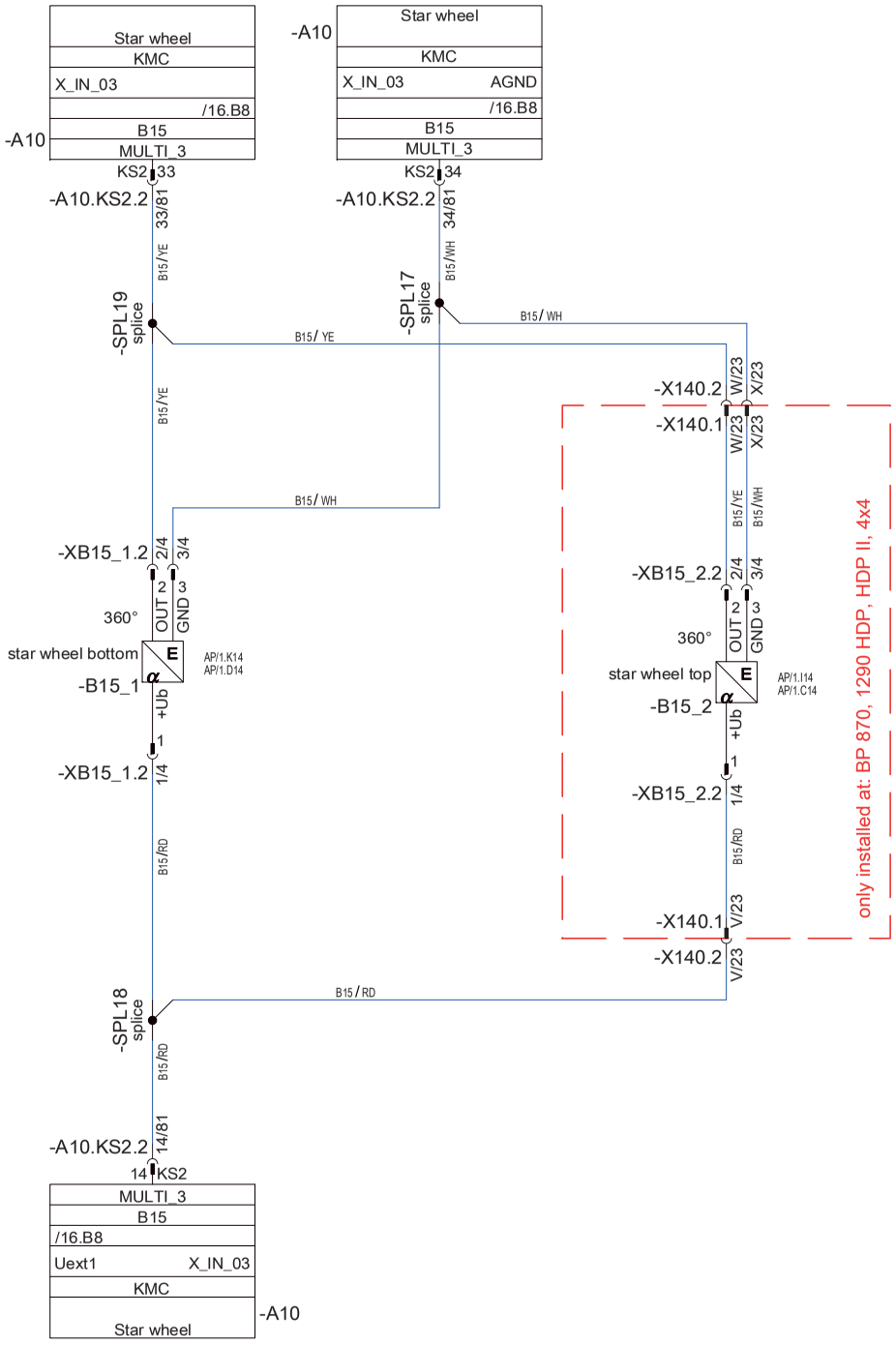

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BiG PACK High Speed (XCut + VariCut)
KMC: Sensors: Star wheel

Circuit diagram
plant
location
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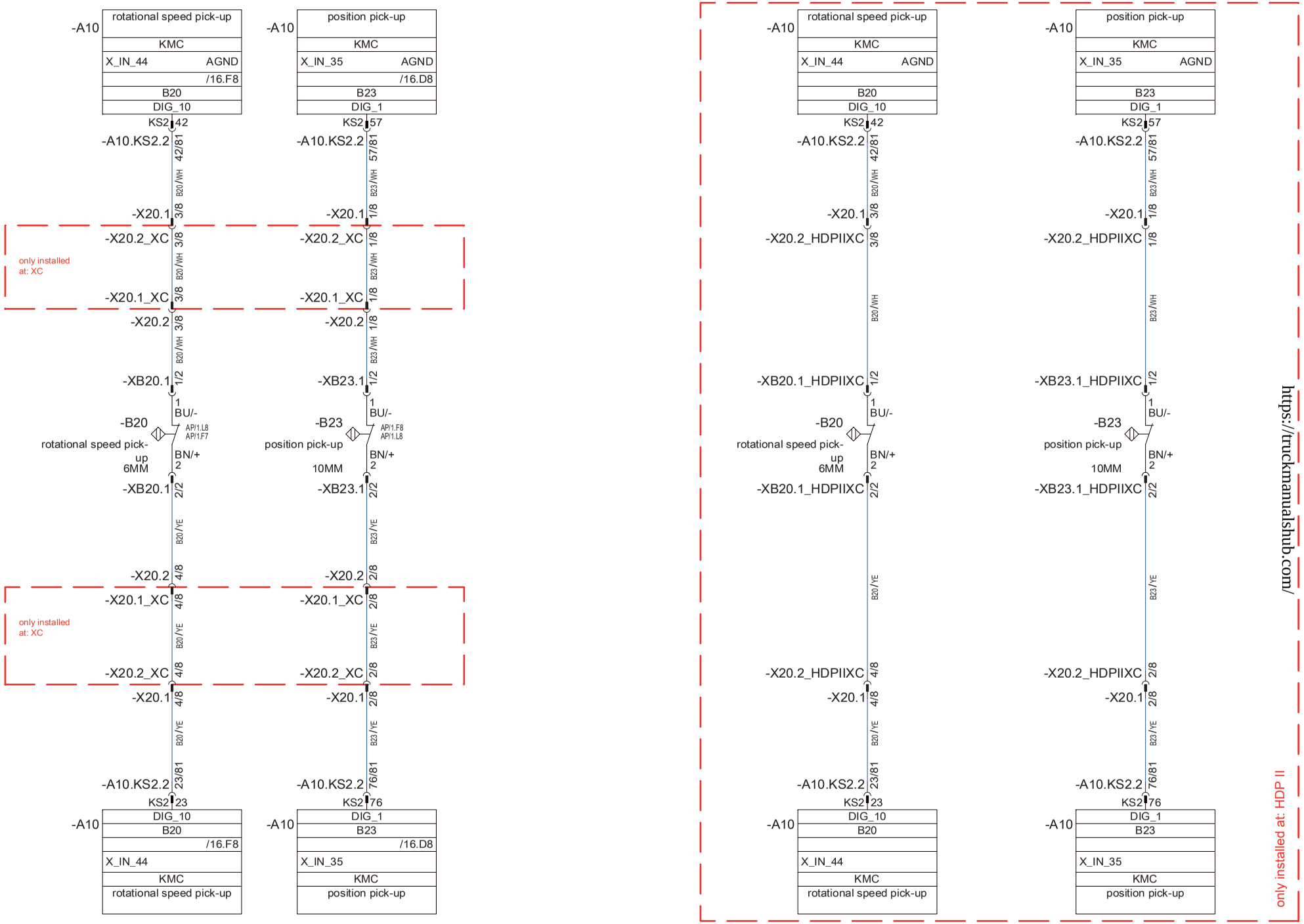

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B				date	02.05.2016		KMC: Sensors: rotational speed pick-up, position pick-up
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Circuit diagram	
plant	
location	
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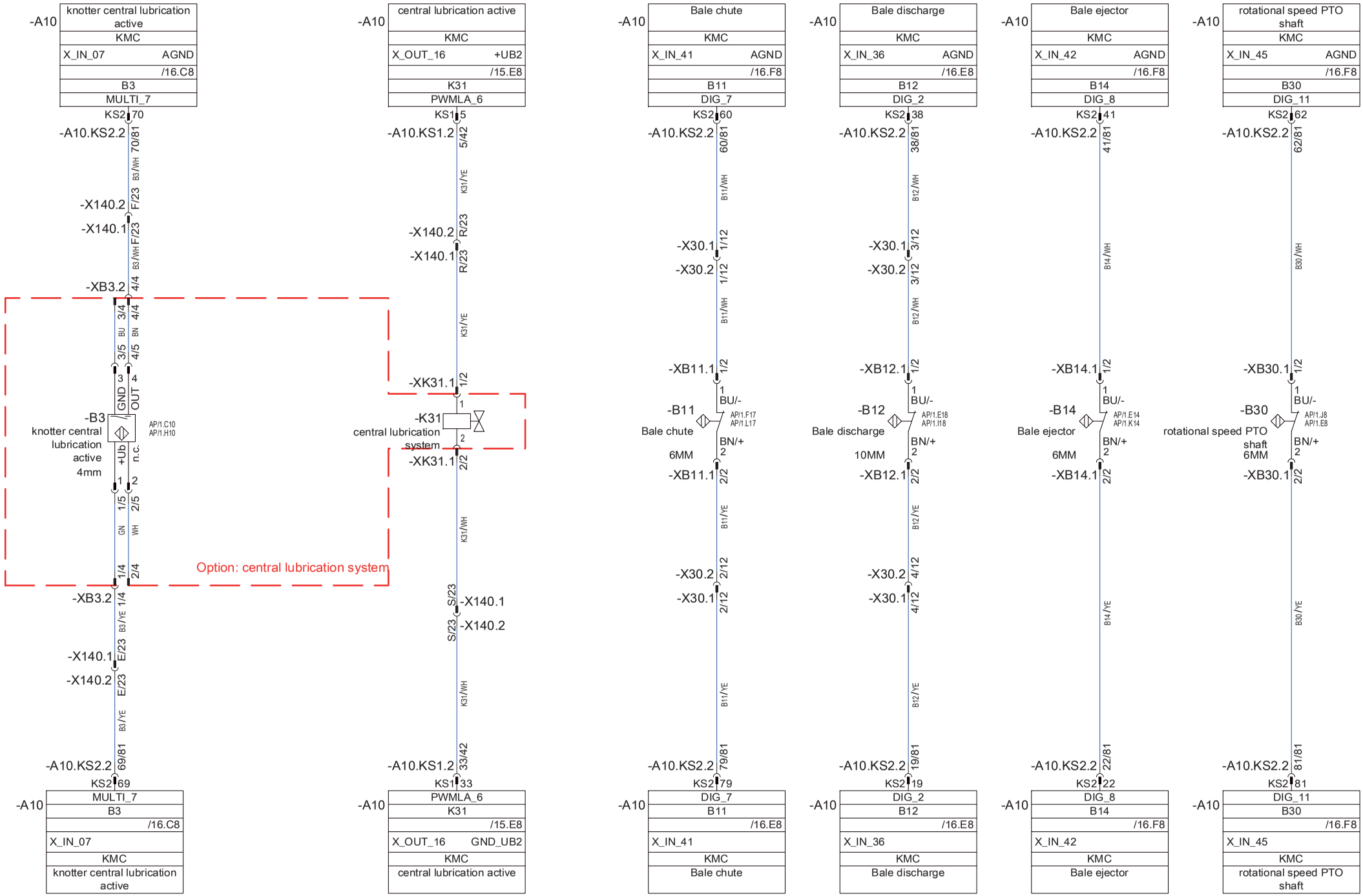

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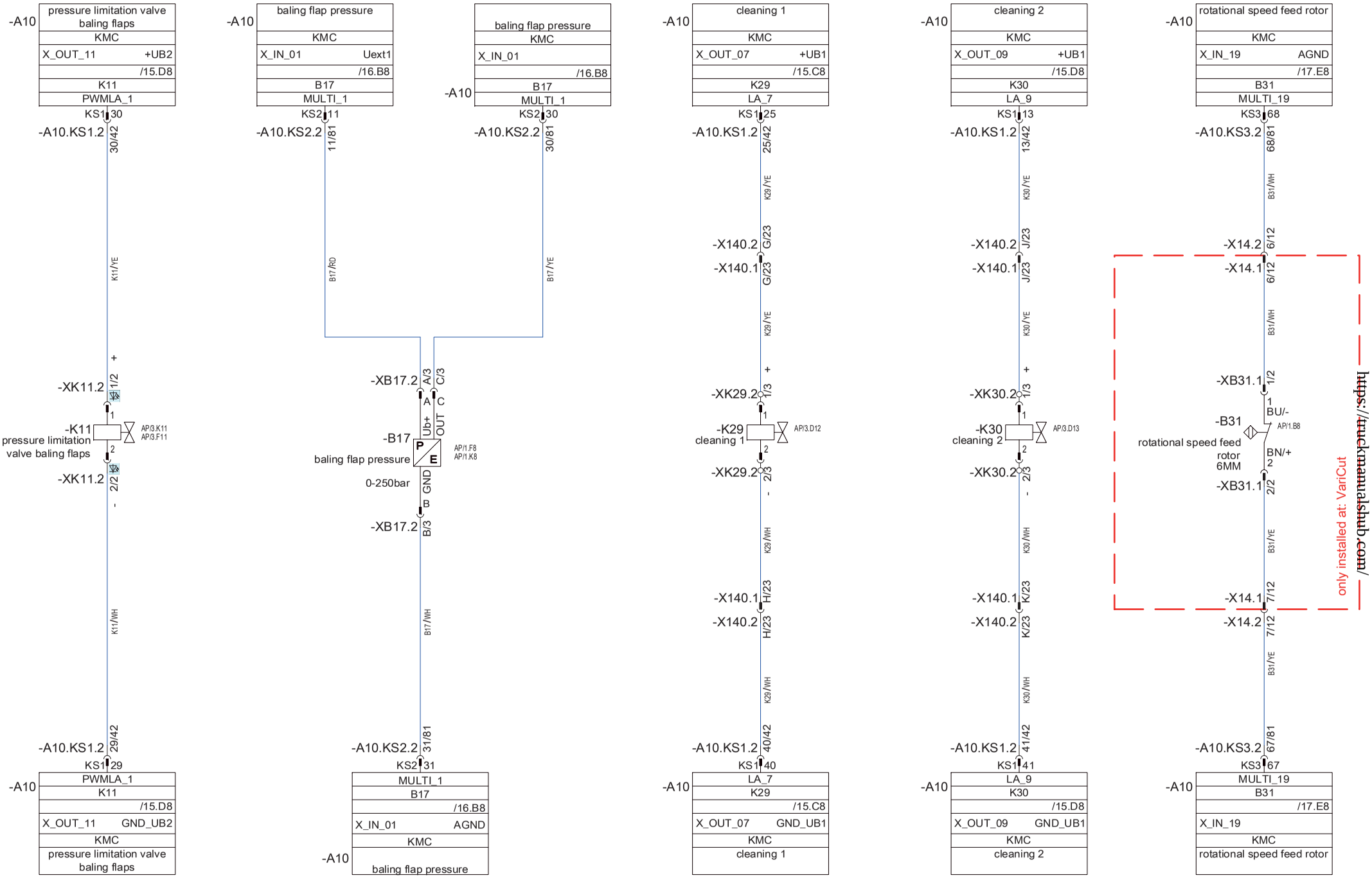
BiG PACK High Speed (XCut + VariCut)
KMC: Sensors/actuators: knotter central lubrication active, central lubrication system, Bale chute, Bale discharge, Bale ejector, rotational speed PTO shaft

Circuit diagram	
plant	
location	
Sheet	22 / 51



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B				date	02.05.2016		KMC: Sensors/actuators: pressure limitation valve baling flaps, baling flap pressure, Knotter cleaning 1+2, rotational speed feed rotor
A				reviewed			
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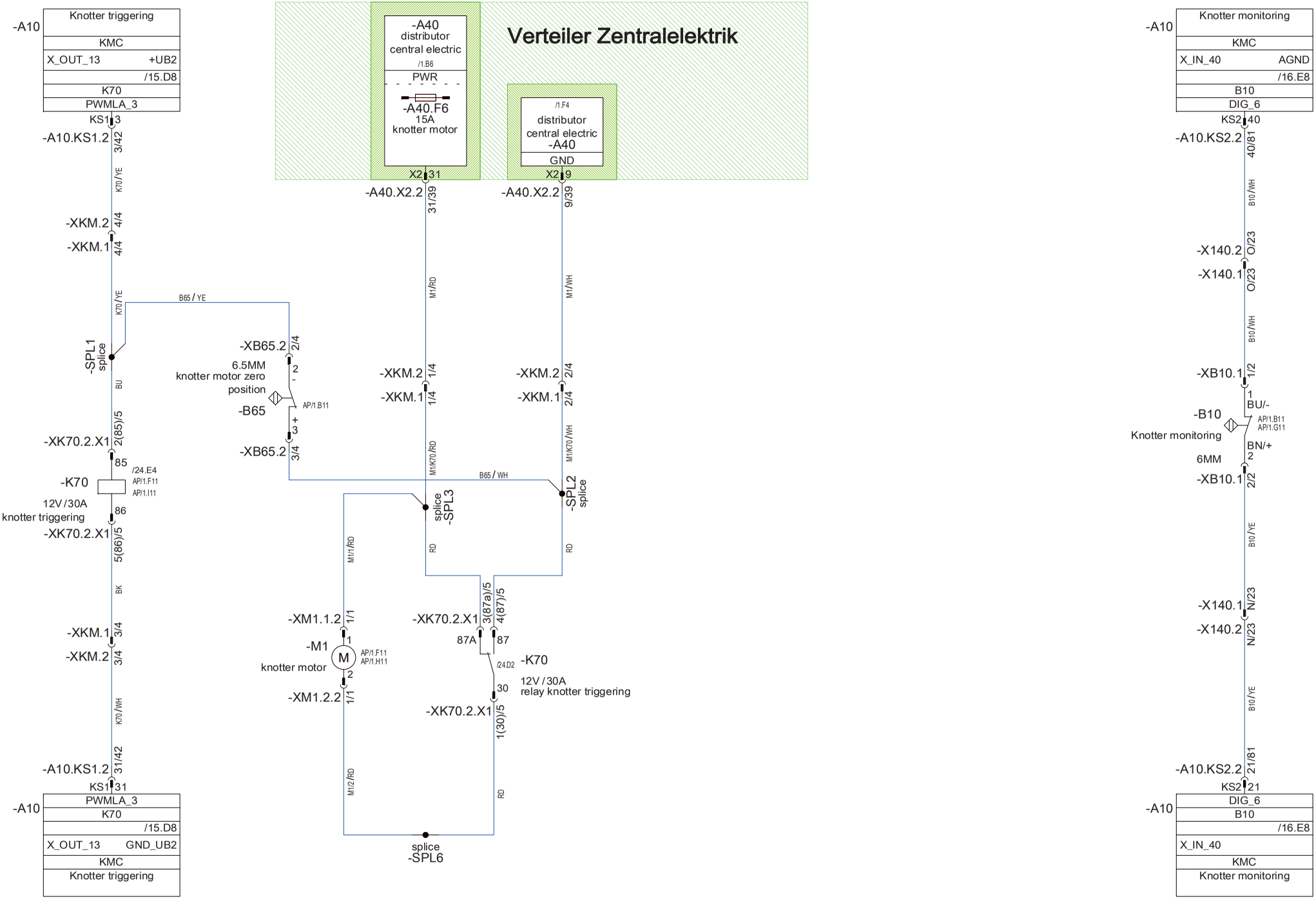
Circuit diagram	
plant	
location	
Sheet	23 / 51



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BiG PACK High Speed (XCut + VariCut)
KMC: Sensors/actuators: Knotter triggering, knotter motor

Circuit diagram
plant
location
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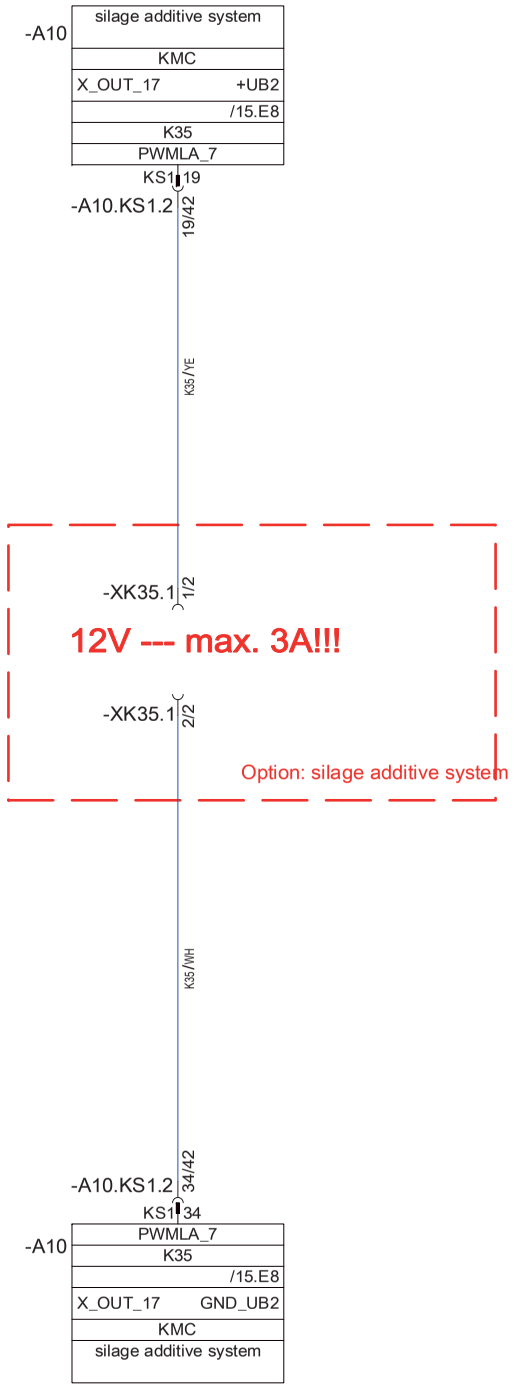

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BiG PACK High Speed (XCut + VariCut)
KMC: preparation silage additive system

Circuit diagram
plant
location
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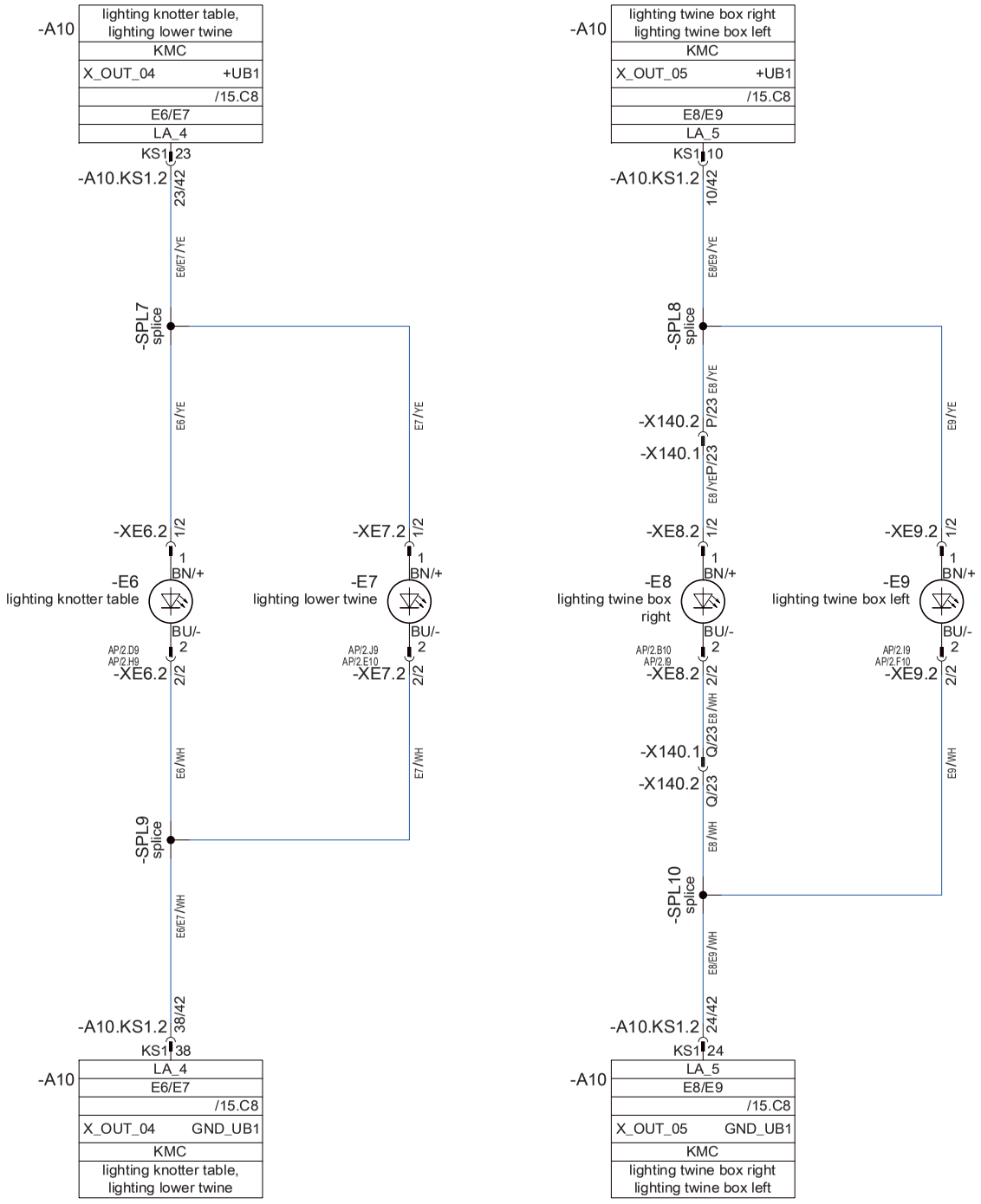

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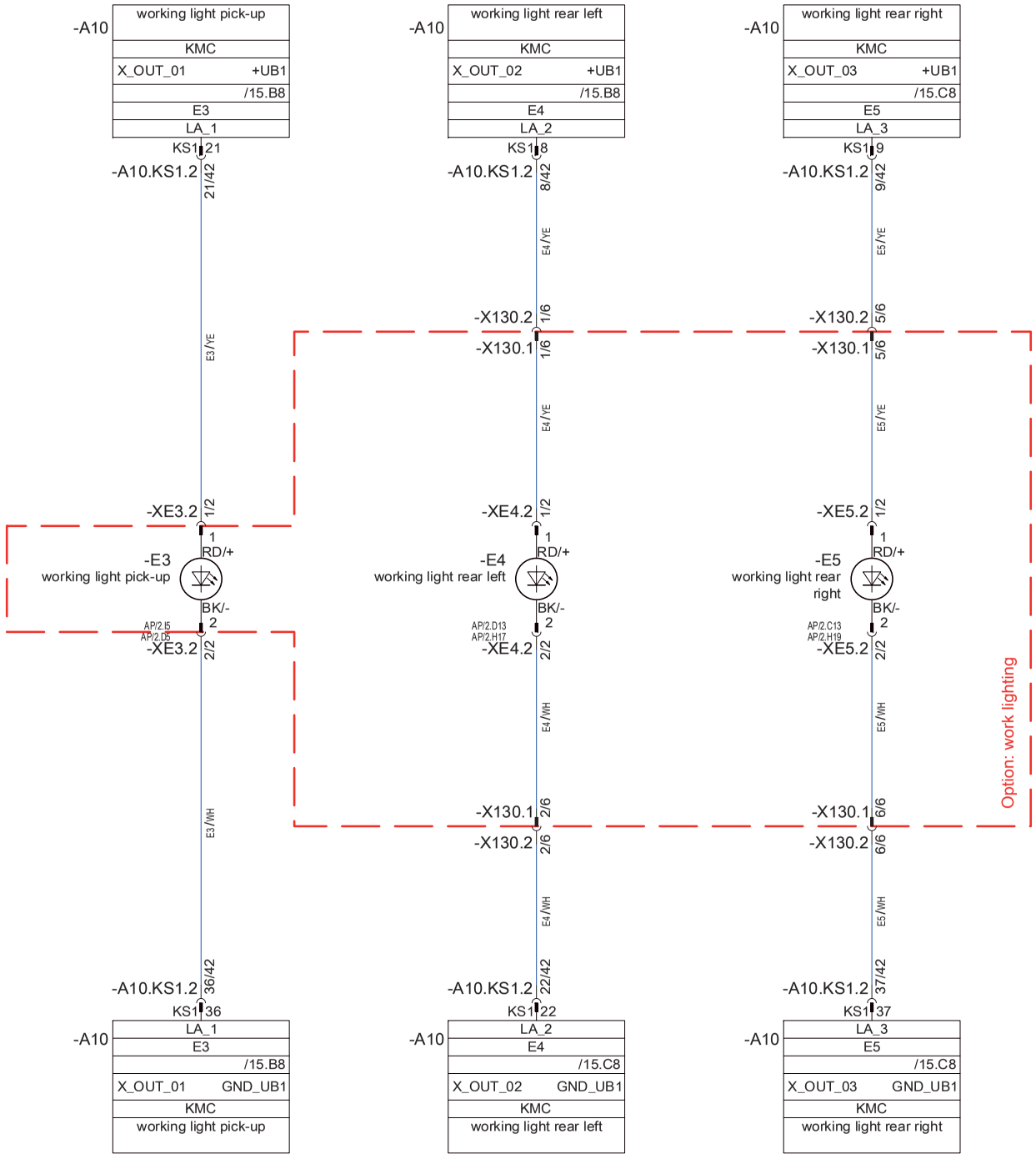
BiG PACK High Speed (XCut + VariCut)
KMC: maintenance lighting: lighting knotter table, lighting lower twine, lighting twine box right, lighting twine box left

Circuit diagram	
plant	
location	
Sheet	26 / 51



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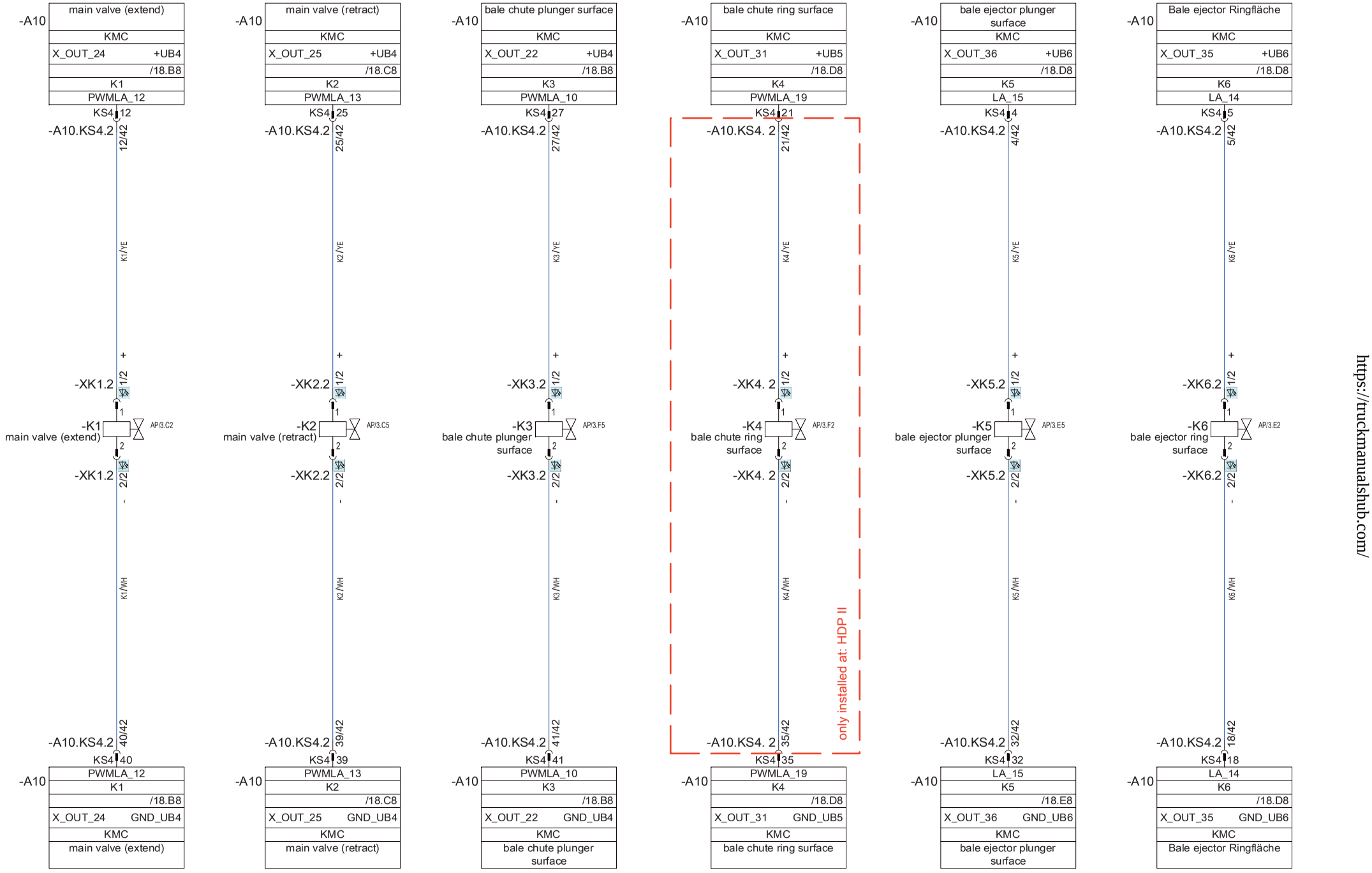
BiG PACK High Speed (XCut + VariCut)
KMC: work lighting: working light pick-up, working light rear left, working light rear right

Circuit diagram	
plant	
location	
Sheet	27 / 51



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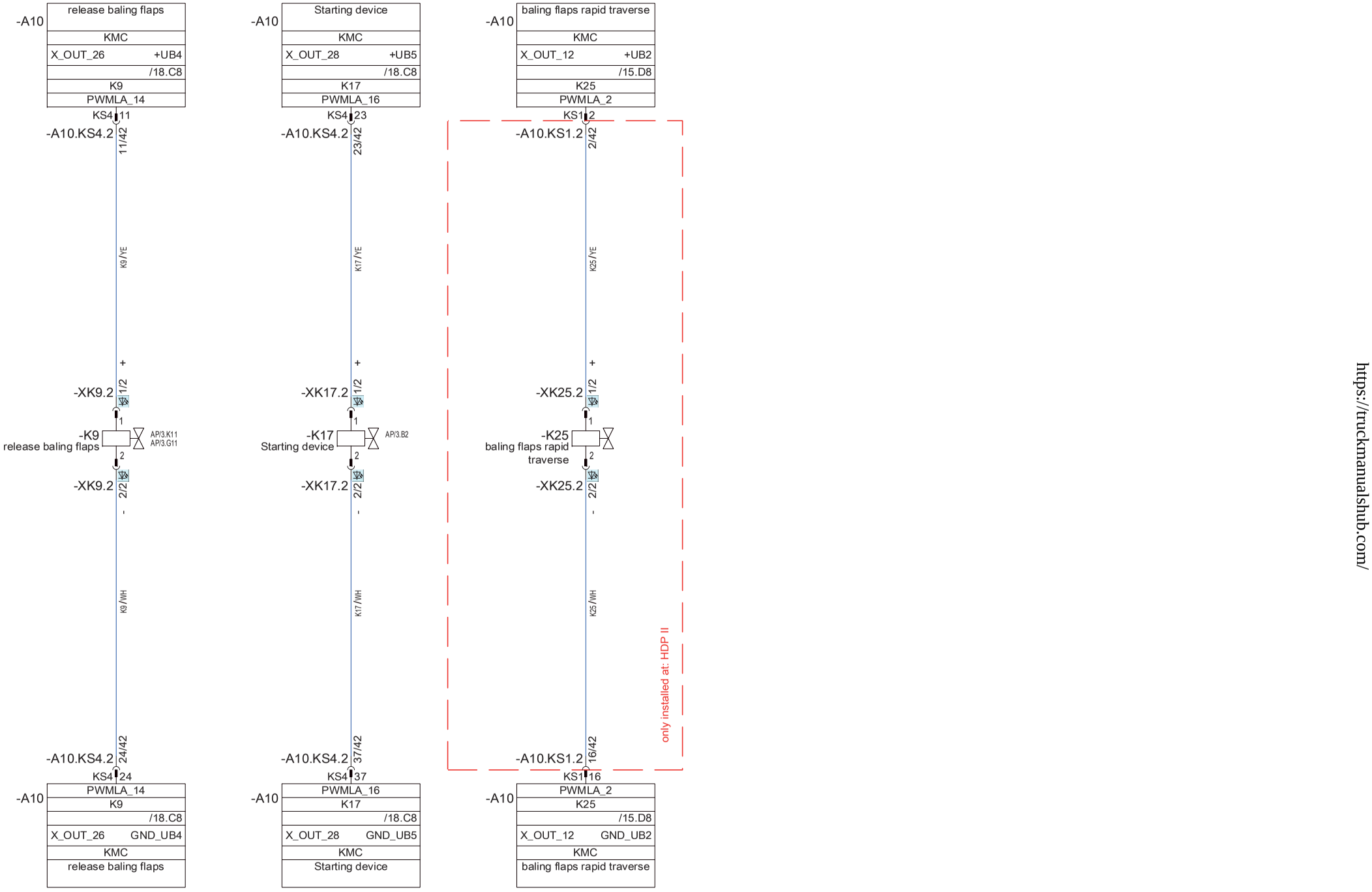
BiG PACK High Speed (XCut + VariCut)
KMC: Sensors/actuators (comfort): main valve, Bale chute, Bale ejector

Circuit diagram
plant
location
Sheet 28 / 51



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BiG PACK High Speed (XCut + VariCut)

KMC: Sensors/actuators (comfort): release baling flaps, Starting device, baling flaps rapid traverse

Circuit diagram	
plant	
location	
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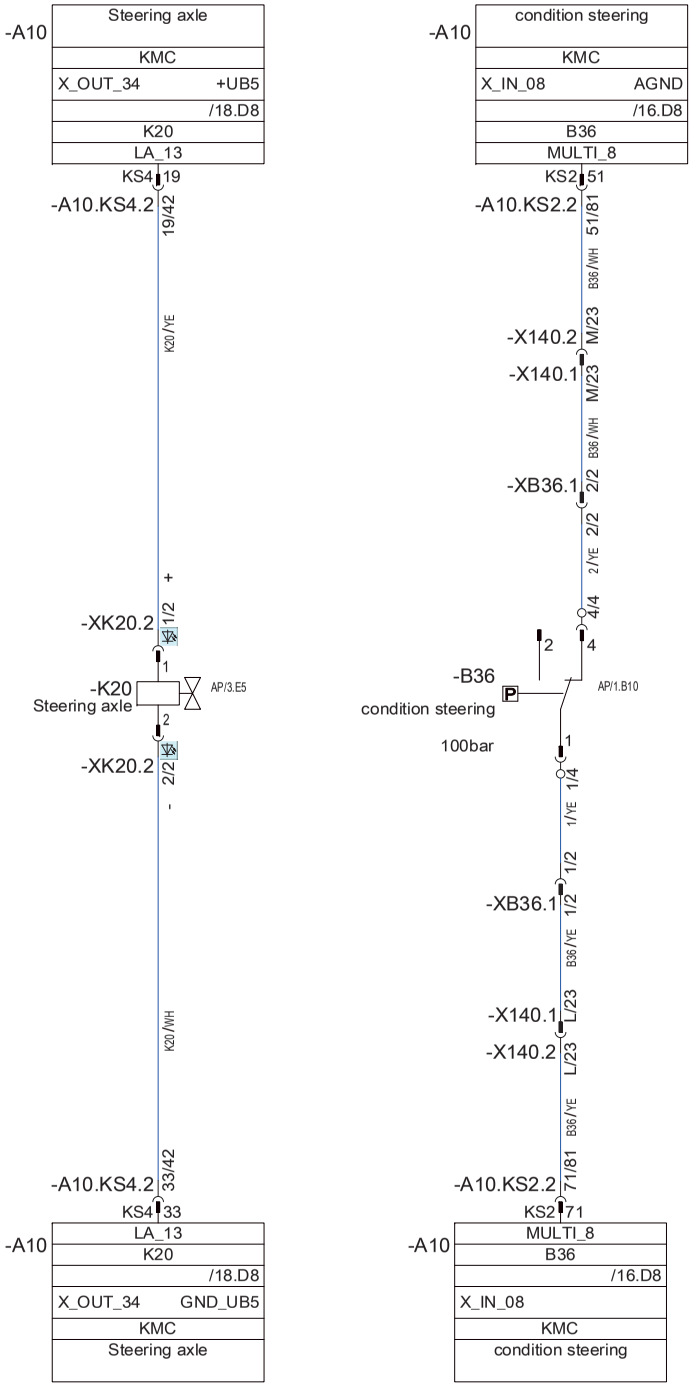

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BiG PACK High Speed (XCut + VariCut)
KMC: Sensors/actuators (comfort): Steering axle, condition steering

Circuit diagram	
plant	
location	
Sheet	30 / 51

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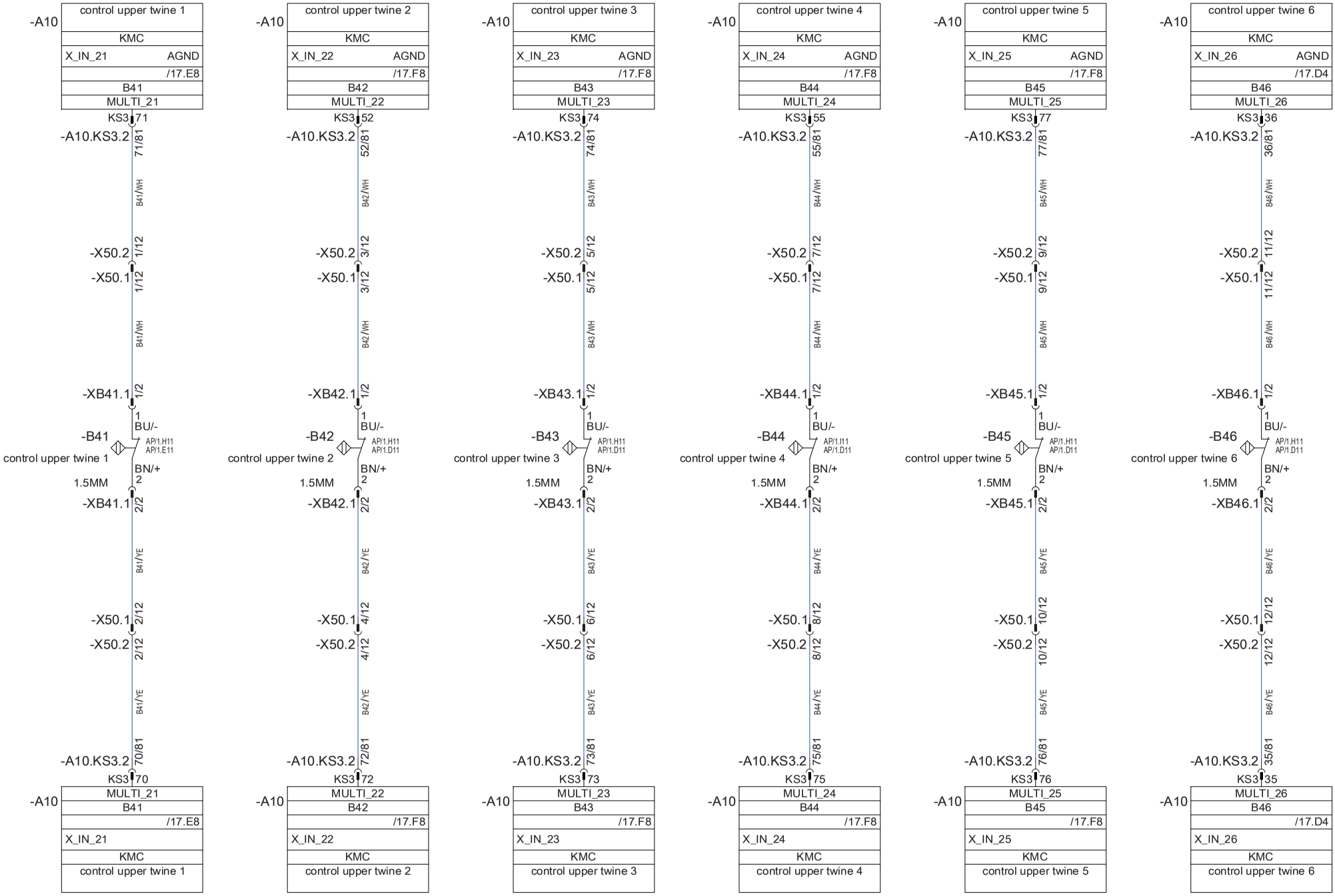

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BiG PACK High Speed (XCut + VariCut)
KMC: Sensors/actuators (comfort): control upper twine 1-6

Circuit diagram
plant
location
Sheet 31 / 51

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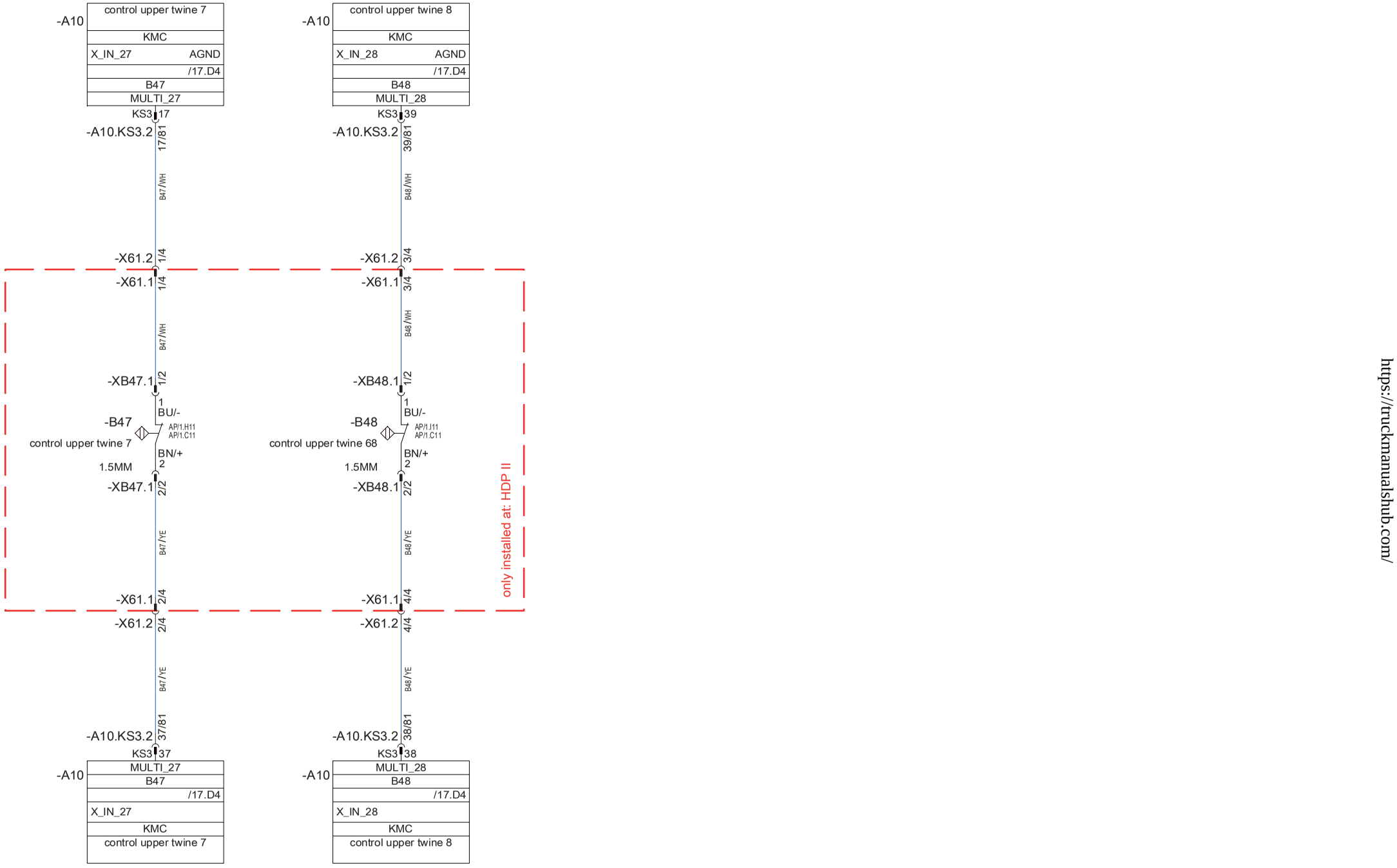

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BiG PACK High Speed (XCut + VariCut)
KMC: Sensors/actuators (comfort): control upper twine 7-8

Circuit diagram
plant
location
Sheet 32 / 51

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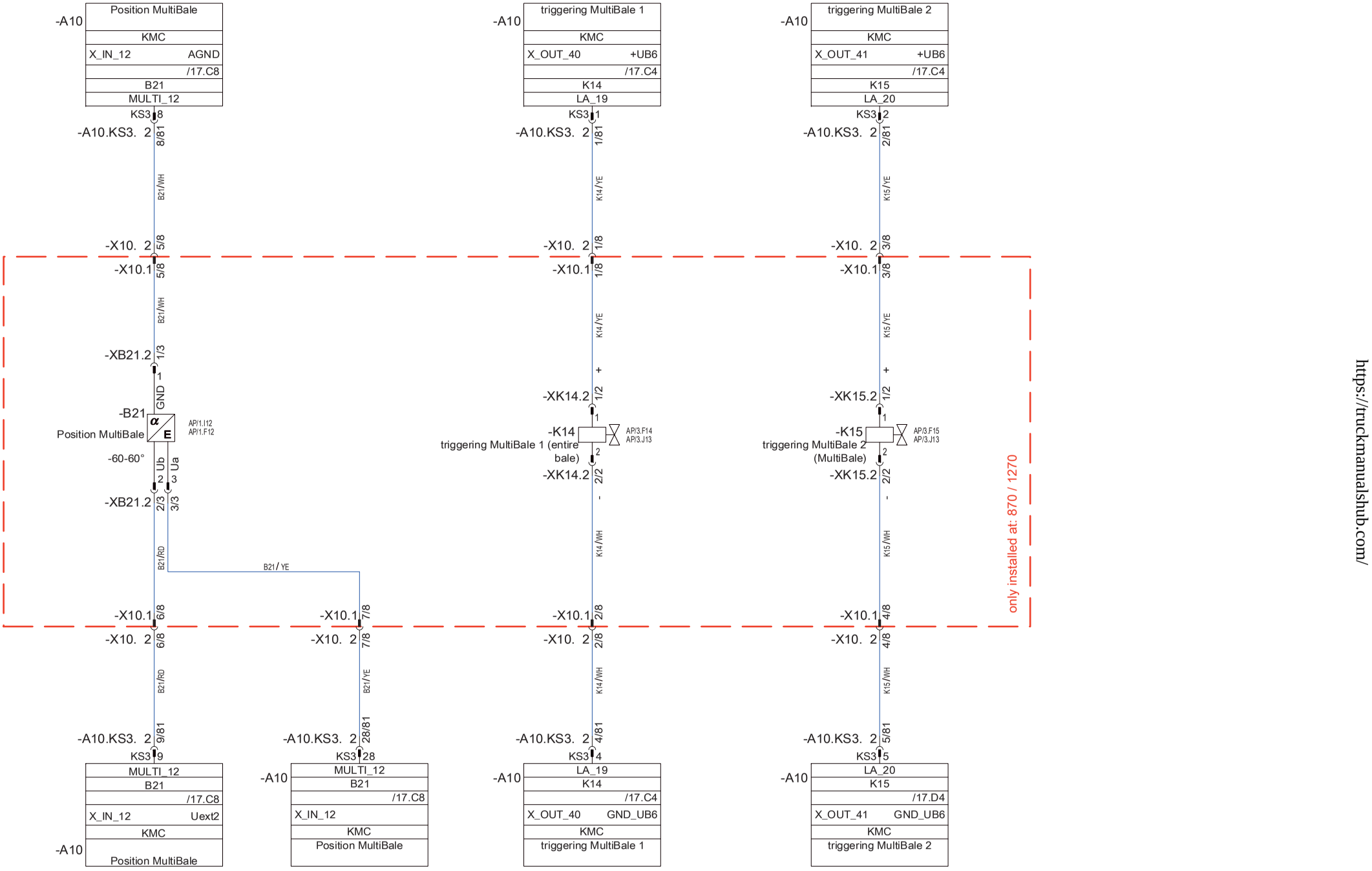

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BiG PACK High Speed (XCut + VariCut)

KMC: Sensors/actuators (comfort): Position MultiBale, triggering MultiBale

Circuit diagram	
plant	
location	
Sheet	33 / 51

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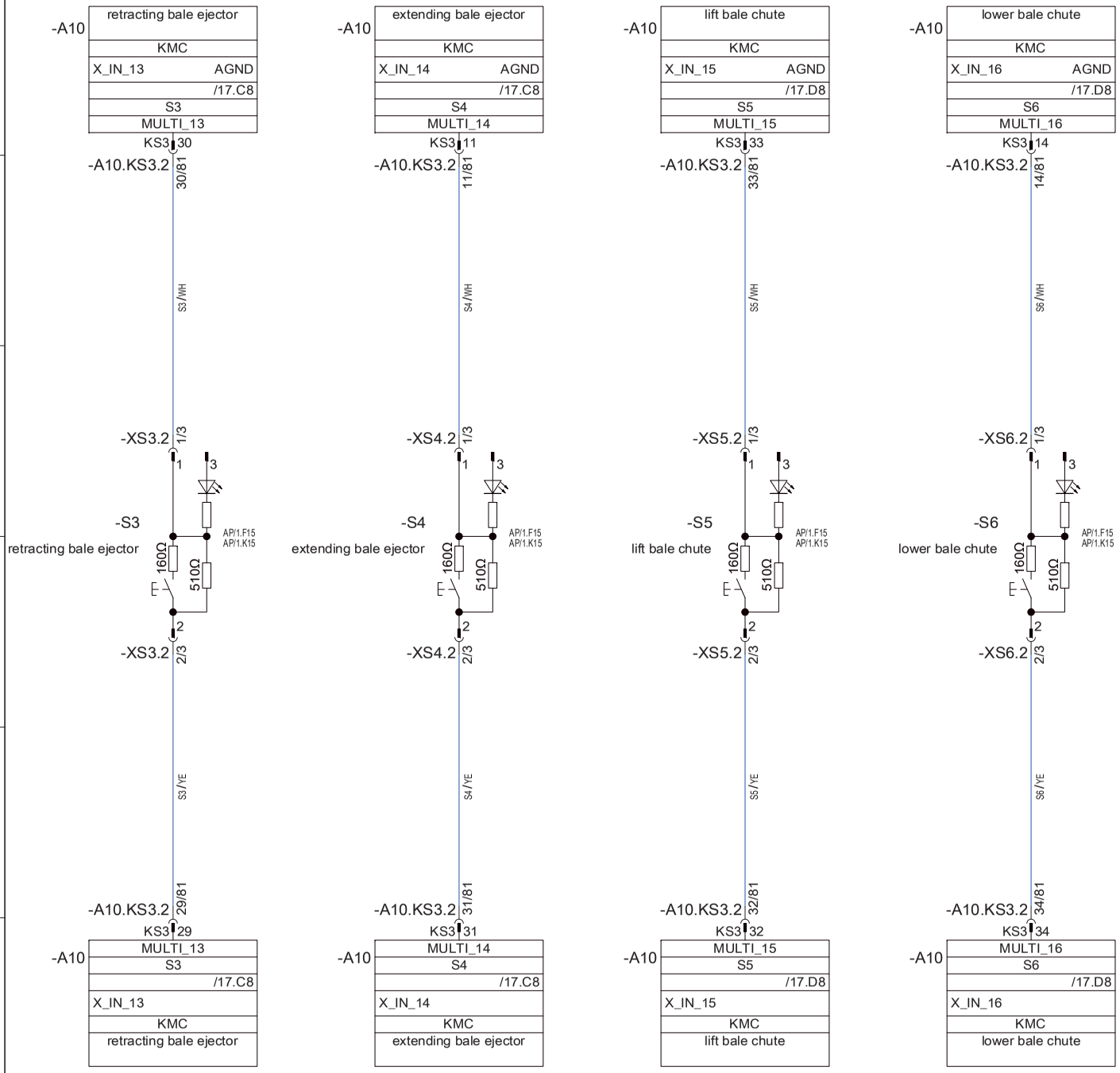

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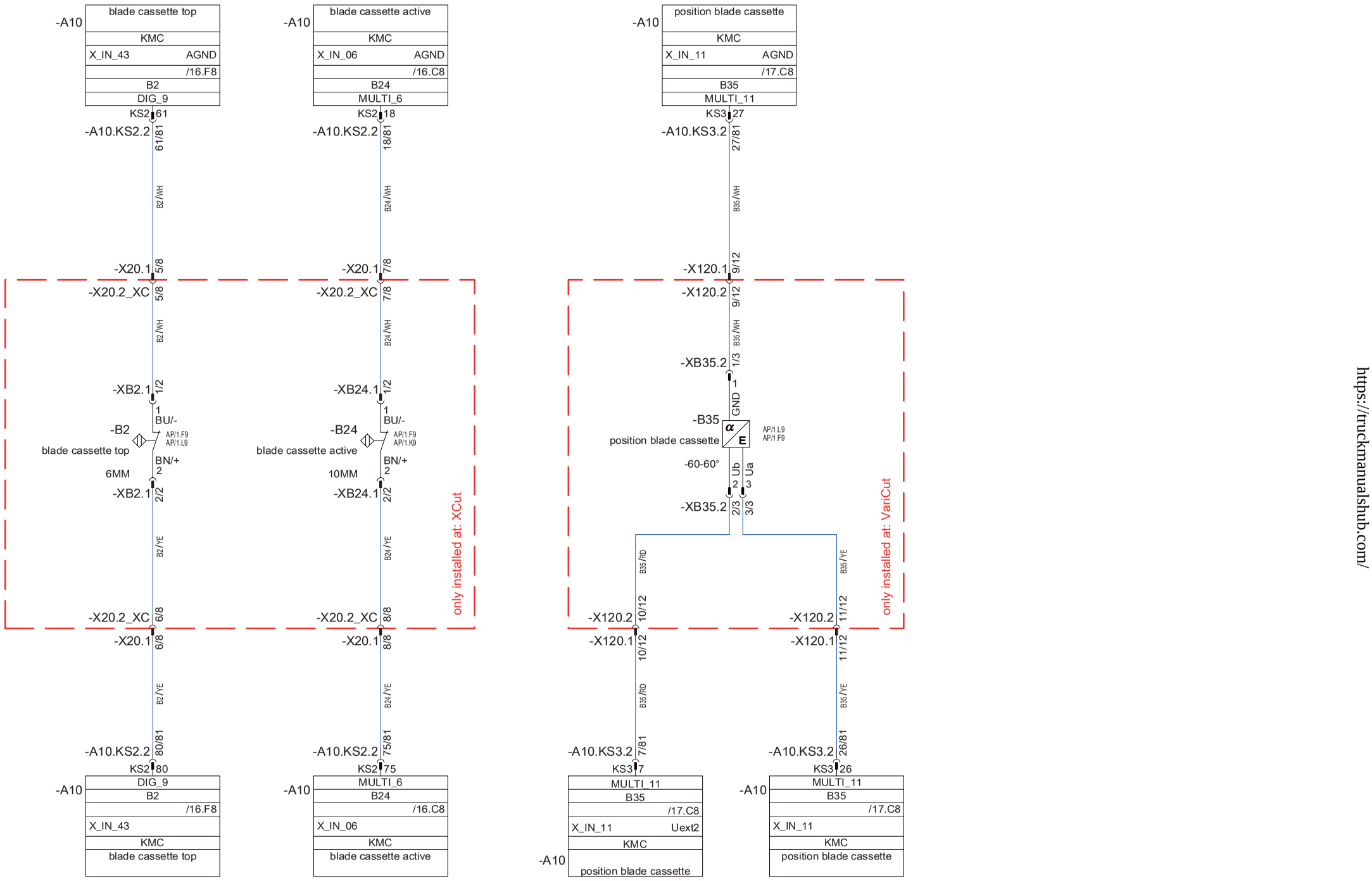
BiG PACK High Speed (XCut + VariCut)
KMC: Sensors/actuators (comfort): switches / buttons Bale ejector, Bale chute

Circuit diagram	
plant	
location	
Sheet	34 / 51



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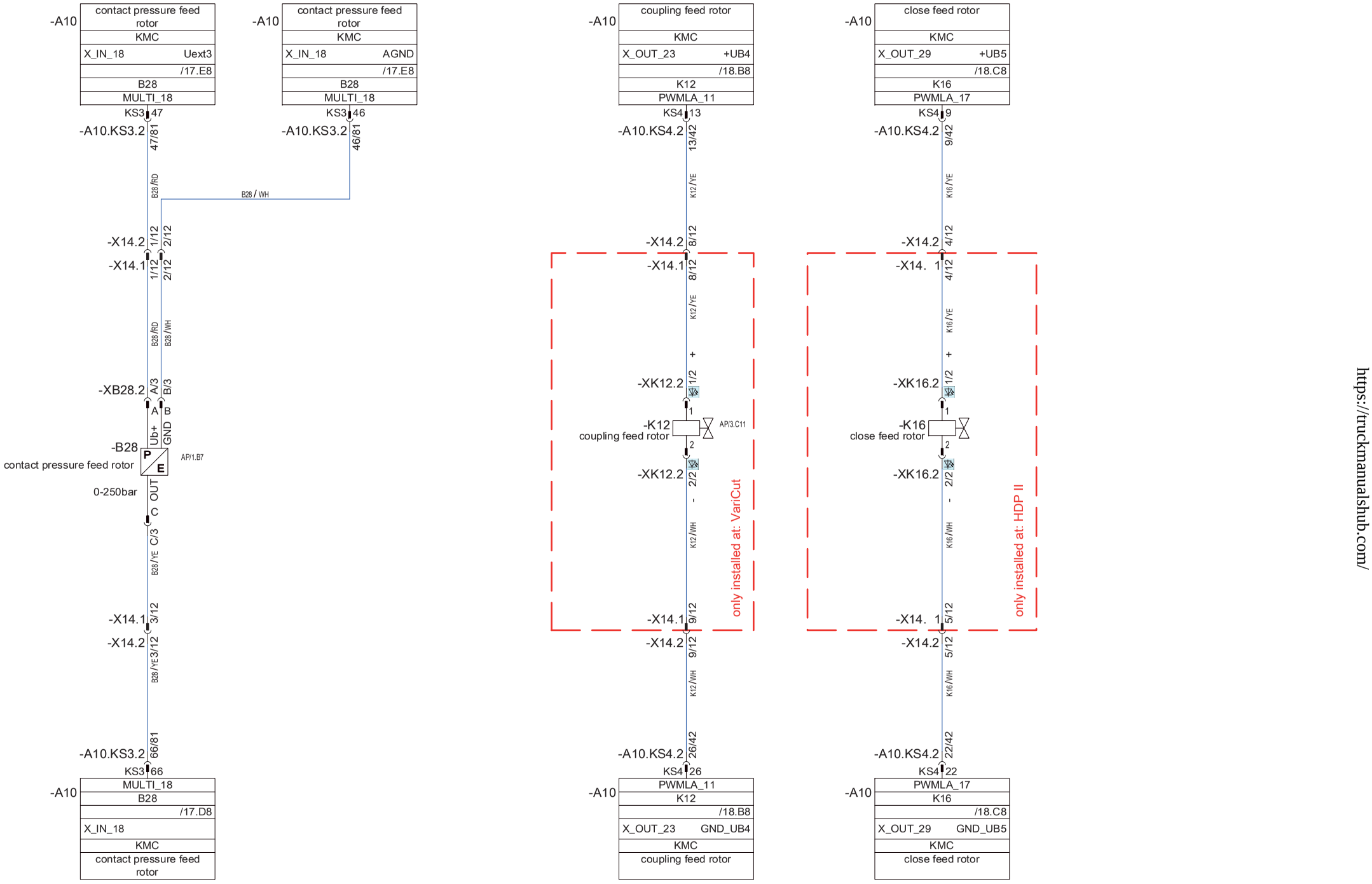
BiG PACK High Speed (XCut + VariCut)

KMC: Cutting system (XCut & VariCut): Sensors/actuators (comfort):
Sensors/Button blade cassette

Circuit diagram	
plant	
location	
Sheet	35 / 51



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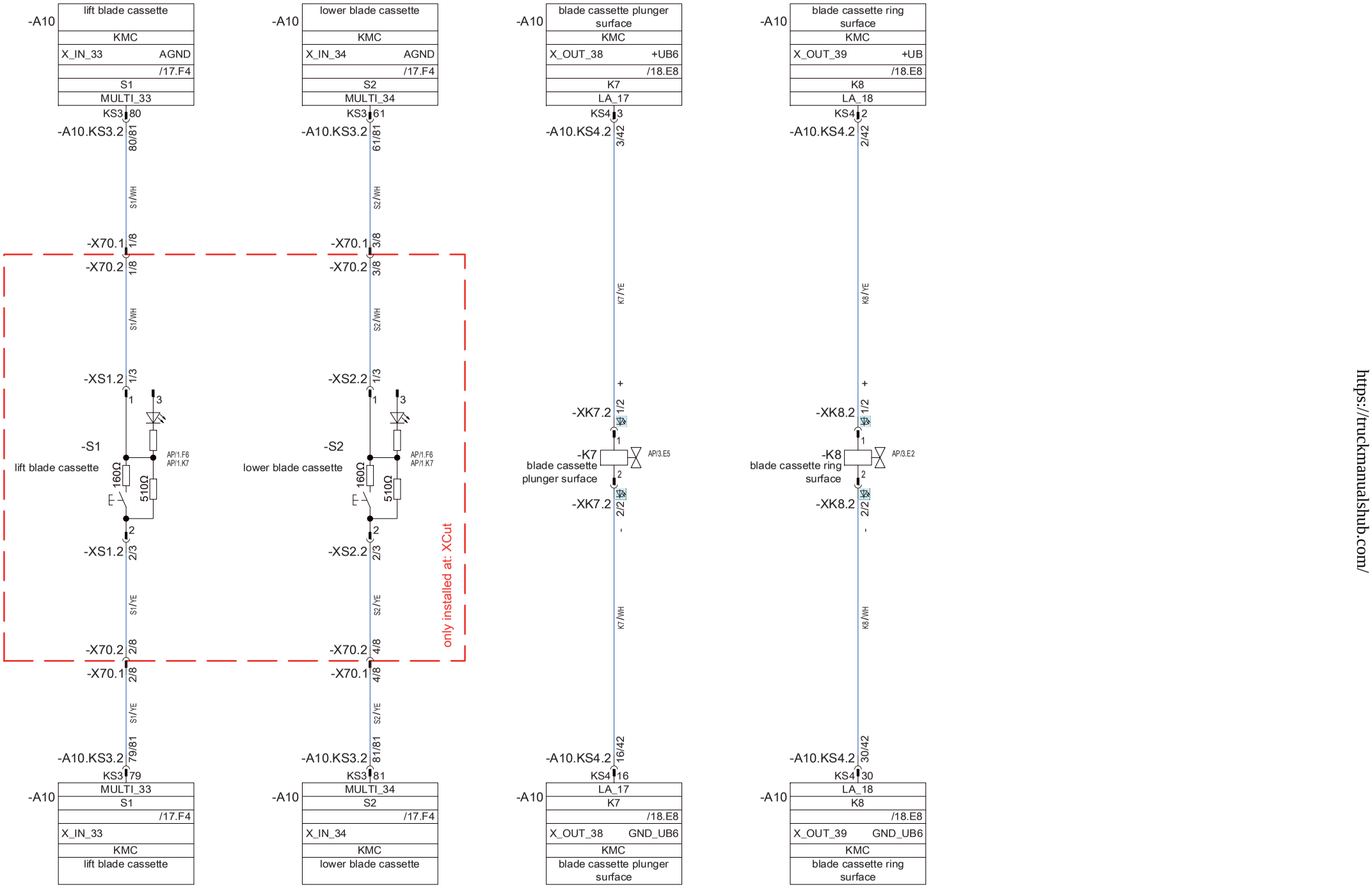
BiG PACK High Speed (XCut + VariCut)
KMC: Cutting system (XCut & VariCut): Sensors (comfort): contact pressure feed rotor, coupling feed rotor, close feed rotor

Circuit diagram	
plant	
location	
Sheet	36 / 51



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BiG PACK High Speed (XCut + VariCut)

KMC: Cutting system (XCut): Sensors/actuators (comfort): Button lift blade cassette, Button lower blade cassette; Valves blade cassette

Circuit diagram	
plant	
location	
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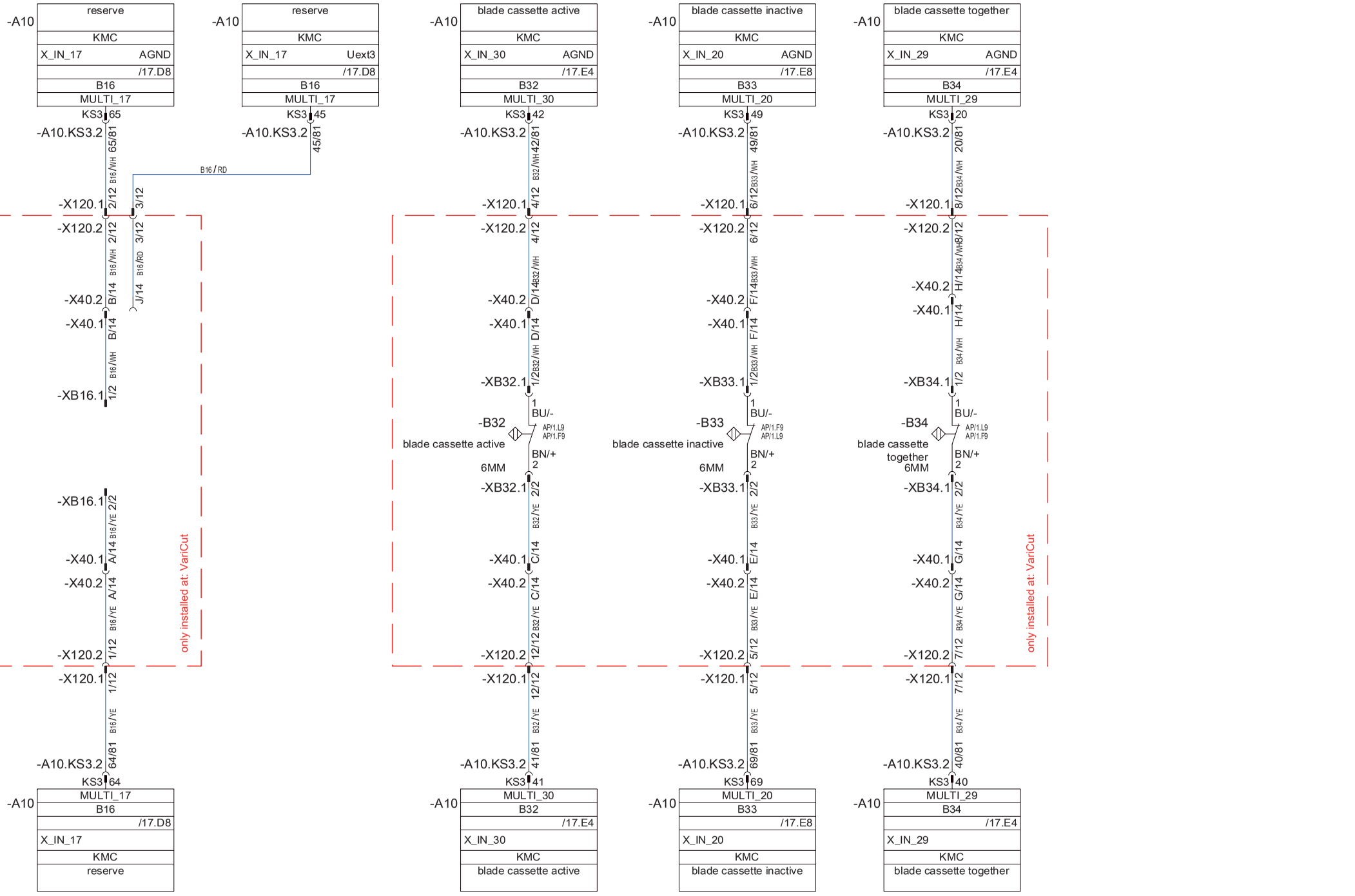

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BiG PACK High Speed (XCut + VariCut)

KMC: Cutting system (VariCut): Sensors (comfort): blade cassette: blade monitor, contact pressure feed rotor, blade cassette

Circuit diagram
plant
location
Sheet 38 / 51

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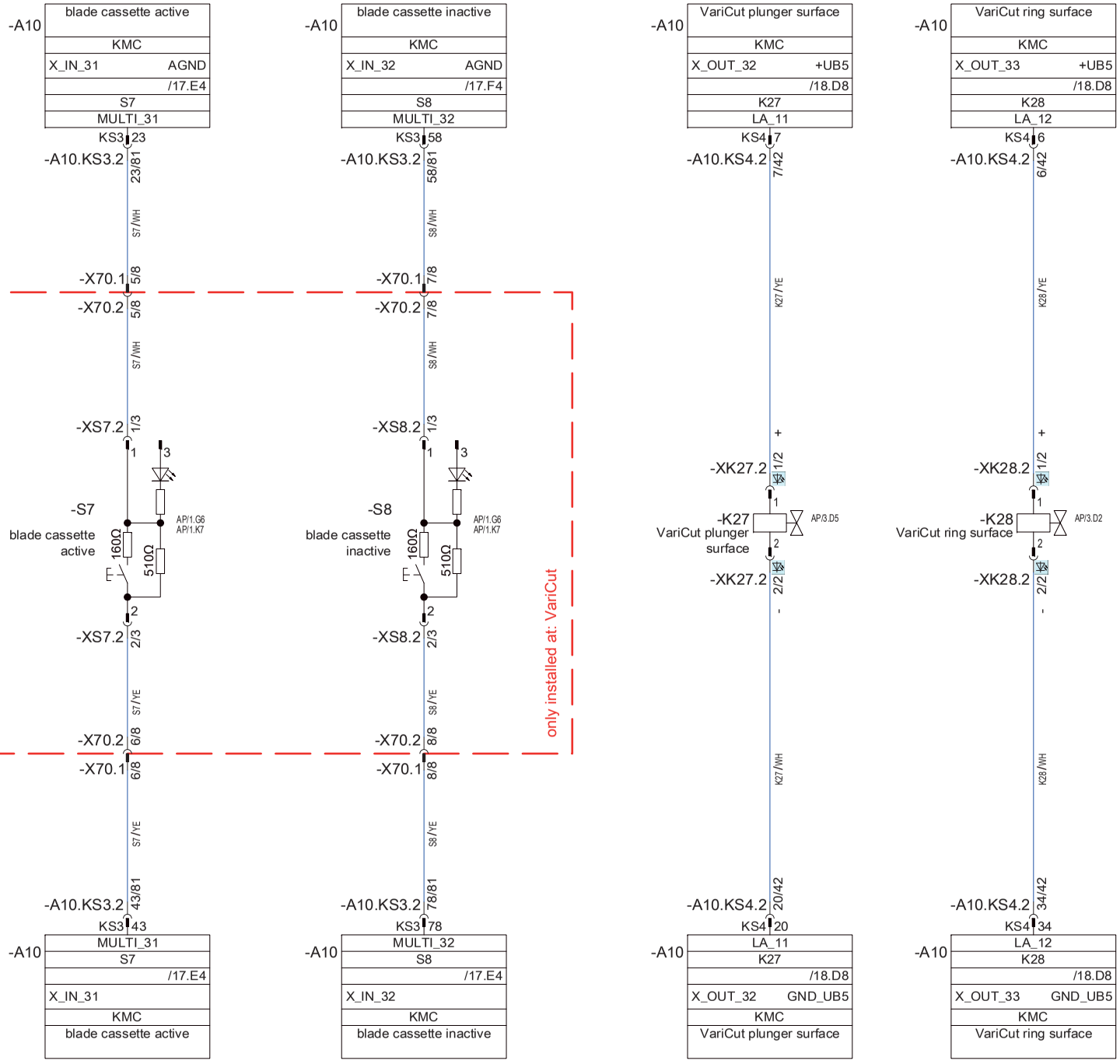

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BiG PACK High Speed (XCut + VariCut)

KMC: Cutting system (VariCut): Sensors/actuators (comfort): Button blade cassette, Valves VariCut

Circuit diagram
plant
location
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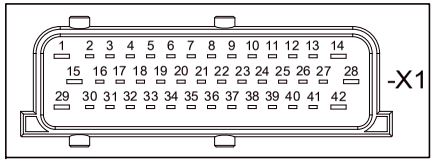
-A20

FMA1 (baling force control)

AP/1.D10
AP/1.G9



Plug	connection	description		cross-reference
supply in general				
-X1	1	continuous voltage (supply)	KL30_IN	/8.E1
-X1	18	ignition stage 2 (supply)	KL15_IN	
-X1	6	GND (supply)	GND_IN	
-X1	15	continuous voltage	KL30_OUT	
-X1	5	ignition stage 2	KL15_OUT	
-X1	7	GND	GND_OUT	
-X1	32	GND address resistor	GND_ADR	/41.B8
supply sensors				
-X1	2	+5...12V (programmable)	VCC_MULTI_1	
-X1	3	+5...12V (programmable)	VCC_MULTI_2	
-X1	4	+5...12V (programmable)	VCC_MULTI_3	
-X1	29	+5...12V (programmable)	VCC_SEN_2	
-X1	30	GND	GND_MULTI_1	/41.A2
-X1	31	GND	GND_MULTI_2	/41.A3
-X1	33	GND	GND_MULTI_3	
CAN - interface				
-X1	8	CAN-H_IN		/13.F7
-X1	10	CAN-H_OUT		
-X1	9	CAN-L_IN		
-X1	11	CAN-L_OUT		
strain gauge 1				
-X1	37	0V	AGND_DMS_1	/41.E4
-X1	35	+5V	VCC_DMS_1	
-X1	22	signal -	AI_DMS_1N	
-X1	20	signal +	AI_DMS_1P	
-X1	38	0V	AGND_DMS_1	
-X1	36	+5V	VCC_DMS_1	
-X1	23	signal -	AI_DMS_1N	
-X1	21	signal +	AI_DMS_1P	
-X1	34	shield strain gauge 1	S_DMS_1	
strain gauge 2				
-X1	40	0V	AGND_DMS_2	/41.E6
-X1	25	+5V	VCC_DMS_2	
-X1	27	signal -	AI_DMS_2N	
-X1	26	signal +	AI_DMS_2P	
-X1	41	0V	AGND_DMS_2	
-X1	39	+5V	VCC_DMS_2	
-X1	13	signal -	AI_DMS_2N	
-X1	12	signal +	AI_DMS_2P	
-X1	42	shield strain gauge 2	S_DMS_2	

Plug	connection	address	equipment	function	cross-reference
inputs					
-X1	16	AI_MULTI_1	B4	baling ram rear (Measure)	/41.F2
-X1	17	AI_MULTI_2	B5	baling ram forward (calibrate)	/41.F3
-X1	19	AI_MULTI_3			
-X1	24	ADR	R8	address resistor FMA1	/41.F8

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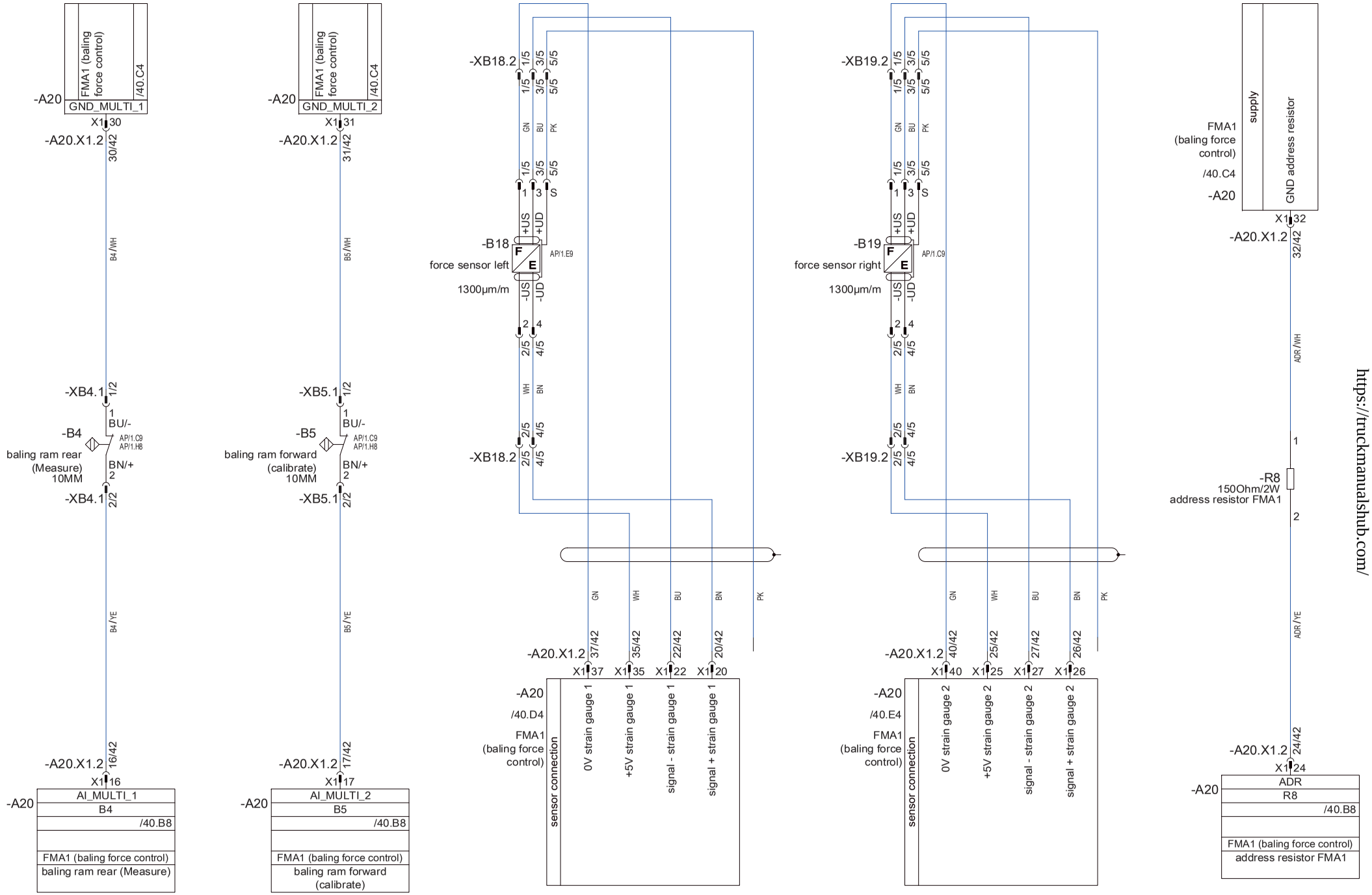

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BiG PACK High Speed (XCut + VariCut)

FMA1 (baling force control): Sensors/actuators: Measure, calibrate, force sensors; address resistor FMA1

Circuit diagram	
plant	
location	
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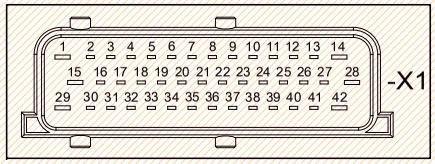
FMA2 (Option Bale scale)

AP/5.E18
AP/5.L18



Plug	connection	description		cross-reference
supply in general				
-X1	1	continuous voltage (supply)	KL30_IN	/9.E7
-X1	18	ignition stage 2 (supply)	KL15_IN	
-X1	6	GND (supply)	GND_IN	
-X1	15	continuous voltage	KL30_OUT	
-X1	5	ignition stage 2	KL15_OUT	
-X1	7	GND	GND_OUT	
-X1	32	GND address resistor	GND_ADR	/43.B7
supply sensors				
-X1	2	+5...12V (programmable)	VCC_MULTI_1	
-X1	3	+5...12V (programmable)	VCC_MULTI_2	/43.A3
-X1	4	+5...12V (programmable)	VCC_MULTI_3	
-X1	29	+5...12V (programmable)	VCC_SEN_2	
-X1	30	GND	GND_MULTI_1	/43.A2
-X1	31	GND	GND_MULTI_2	/43.F4
-X1	33	GND	GND_MULTI_3	
CAN - interface				
-X1	8	CAN-H_IN		/14.F8
-X1	10	CAN-H_OUT		
-X1	9	CAN-L_IN		
-X1	11	CAN-L_OUT		
strain gauge 1				
-X1	37	0V	AGND_DMS_1	/44.E1
-X1	35	+5V	VCC_DMS_1	
-X1	22	signal -	AI_DMS_1N	
-X1	20	signal +	AI_DMS_1P	
-X1	38	0V	AGND_DMS_1	/44.E3
-X1	36	+5V	VCC_DMS_1	
-X1	23	signal -	AI_DMS_1N	
-X1	21	signal +	AI_DMS_1P	
-X1	34	shield strain gauge 1	S_DMS_1	
strain gauge 2				
-X1	40	0V	AGND_DMS_2	/44.E5
-X1	25	+5V	VCC_DMS_2	
-X1	27	signal -	AI_DMS_2N	
-X1	26	signal +	AI_DMS_2P	
-X1	41	0V	AGND_DMS_2	/44.E7
-X1	39	+5V	VCC_DMS_2	
-X1	13	signal -	AI_DMS_2N	
-X1	12	signal +	AI_DMS_2P	
-X1	42	shield strain gauge 2	S_DMS_2	

Plug	connection	address	equipment	function	cross-reference
inputs					
-X1	16	AI_MULTI_1	B22	bale on table	/43.F2
-X1	17	AI_MULTI_2	B38	acceleration sensor bale scale	/43.F3
-X1	19	AI_MULTI_3			
-X1	24	ADR	R6	address resistor	/43.F7

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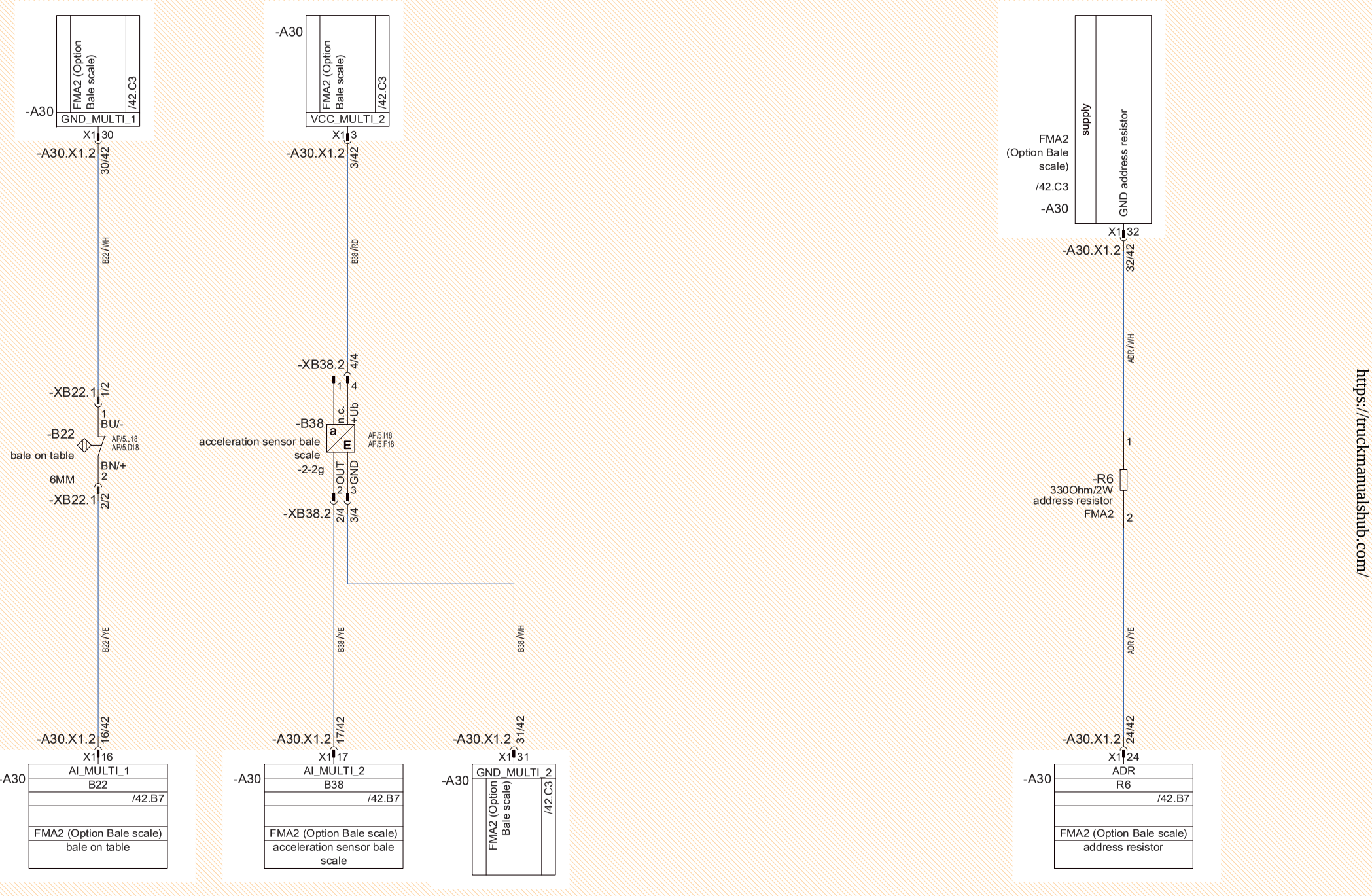

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BiG PACK High Speed (XCut + VariCut)

FMA2 (Option Bale scale): Sensors: bale on table, acceleration sensor bale scale; address resistor FMA2

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Circuit diagram	
plant	
location	
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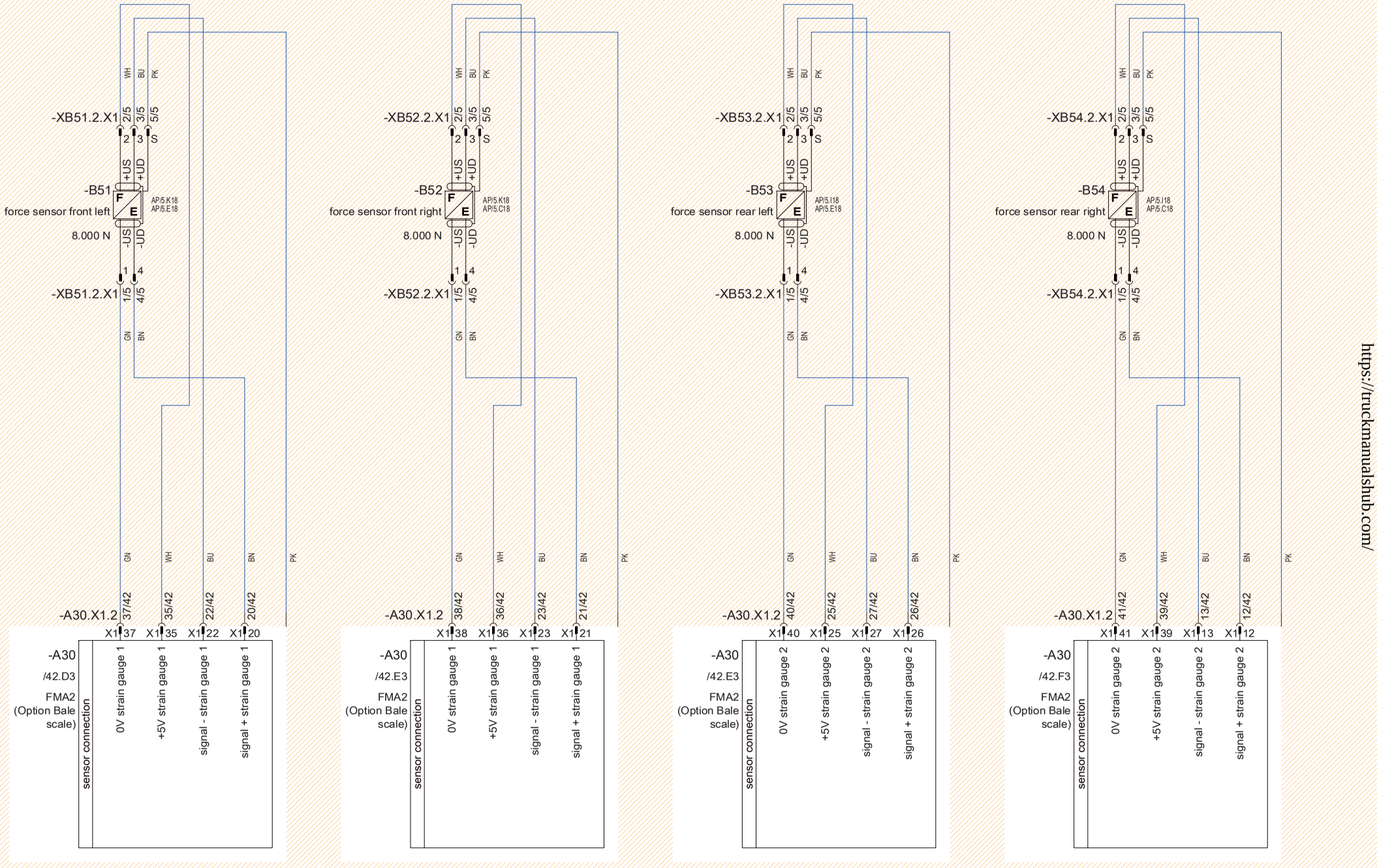

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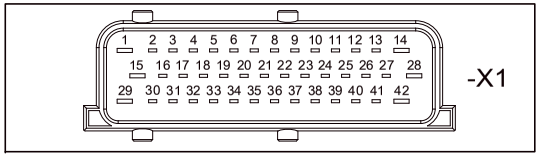
BiG PACK High Speed (XCut + VariCut)

FMA2 (Option Bale scale): force sensor front left, force sensor front right, force sensor rear left, force sensor rear right

Circuit diagram	
plant	
location	
Sheet	44 / 51

-A58

KMB1 (twine boxes - HDP II)



Plug	connection	description		cross-reference
supply in general				
-X1	5	electronics (supply)	+UE	/9.E1
-X1	18	ignition stage 2 (15) (supply)	KL15	
-X1	33	GND electronics (supply)	GND	
-X1	1	LA_1/HBPWM_1...2 (supply)	+UB1	
-X1	14	LA_2/HBPWM_3...4 (supply)	+UB2	
-X1	29	GND: LA_1/HBPWM_1...2 (supply)	GND_UB1	
-X1	42	GND: LA_2/HBPWM_3...4 (supply)	GND_UB2	
supply sensors				
-X1	6	+5...12V (programmable)	Uext	
-X1	7	+5...12V (programmable)	Uext	
internal supply		GND sensors	AGND	
CAN 1 - interface				
-X1	8	CAN_1-H		/14.F3
-X1	10	CAN_1-H		
-X1	9	CAN_1-L		
-X1	11	CAN_1-L		

Plug	connection	address	port	equipment	function	cross-reference
inputs						
-X1	20	MULTI_1	X_IN_01	B61	twine box transport position left	/46.F2
-X1	34	MULTI_1	X_IN_01	B61	twine box transport position left	/46.A2
-X1	21	MULTI_2	X_IN_02	B62	twine box transport position right	/46.F3
-X1	35	MULTI_2	X_IN_02	B62	twine box transport position right	/46.A3
-X1	22	MULTI_3	X_IN_03	B63	twine box maintenance position left	/46.F4
-X1	36	MULTI_3	X_IN_03	B63	twine box maintenance position left	/46.A4
-X1	23	MULTI_4	X_IN_04	B64	twine box maintenance position right	/46.F6
-X1	37	MULTI_4	X_IN_04	B64	twine box maintenance position right	/46.A6
-X1	24	CODE	X_IN_05	R10	address resistor	/46.F8
-X1	38	CODE	X_IN_05	R10	address resistor	/46.A8
outputs						
-X1	4	LA_1	X_OUT_05			
-X1	32	LA_1	X_OUT_05			
-X1	15	HBPWM_1	X_OUT_01	K21	twine boxes 1	/47.A2
-X1	30	HBPWM_1	X_OUT_01			
-X1	31	HBPWM_1	X_OUT_01	K21	twine boxes 1	/47.F2
-X1	2	HBPWM_2	X_OUT_02			
-X1	16	HBPWM_2	X_OUT_02	K22	twine boxes 2	/47.A3
-X1	3	HBPWM_2	X_OUT_02	K22	twine boxes 2	/47.F3
-X1	17	HBPWM_2	X_OUT_02			
-X1	25	LA_2	X_OUT_06			
-X1	39	LA_2	X_OUT_06			
-X1	28	HBPWM_3	X_OUT_03			
-X1	40	HBPWM_3	X_OUT_03			
-X1	41	HBPWM_3	X_OUT_03			
-X1	13	HBPWM_4	X_OUT_04			
-X1	27	HBPWM_4	X_OUT_04	H1	horn twine boxes	/47.A5
-X1	12	HBPWM_4	X_OUT_04			
-X1	26	HBPWM_4	X_OUT_04	H1	horn twine boxes	/47.F5
-X1	19	DIG_OUT_07	X_OUT_07			

only installed at: HDP II

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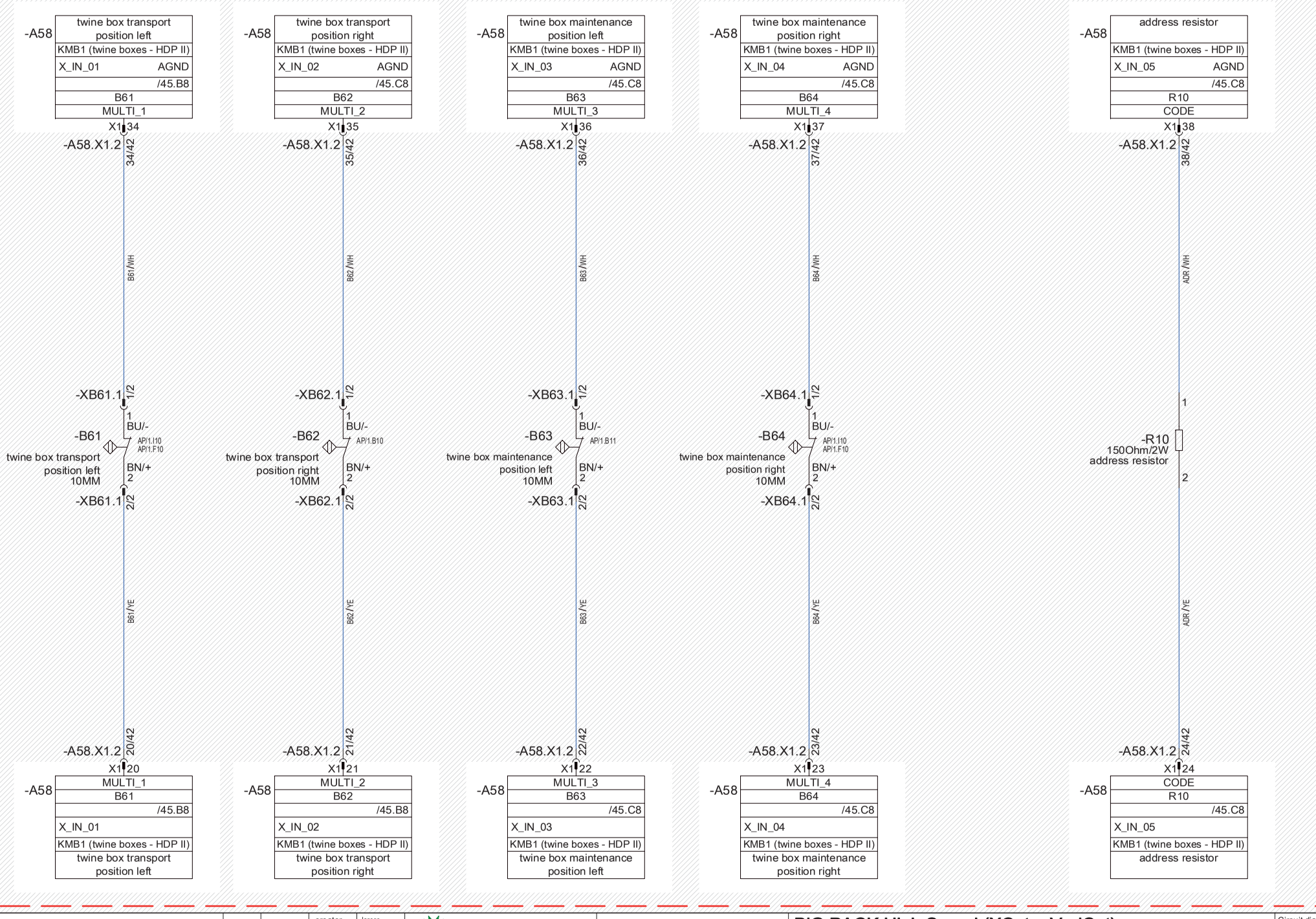

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BiG PACK High Speed (XCut + VariCut)

KMB1 (twine boxes - HDP II): Sensors: twine box transport position left, twine box transport position right, twine box maintenance position left, twine box maintenance position right; address resistor

Circuit diagram
plant
location
Sheet 46 / 51

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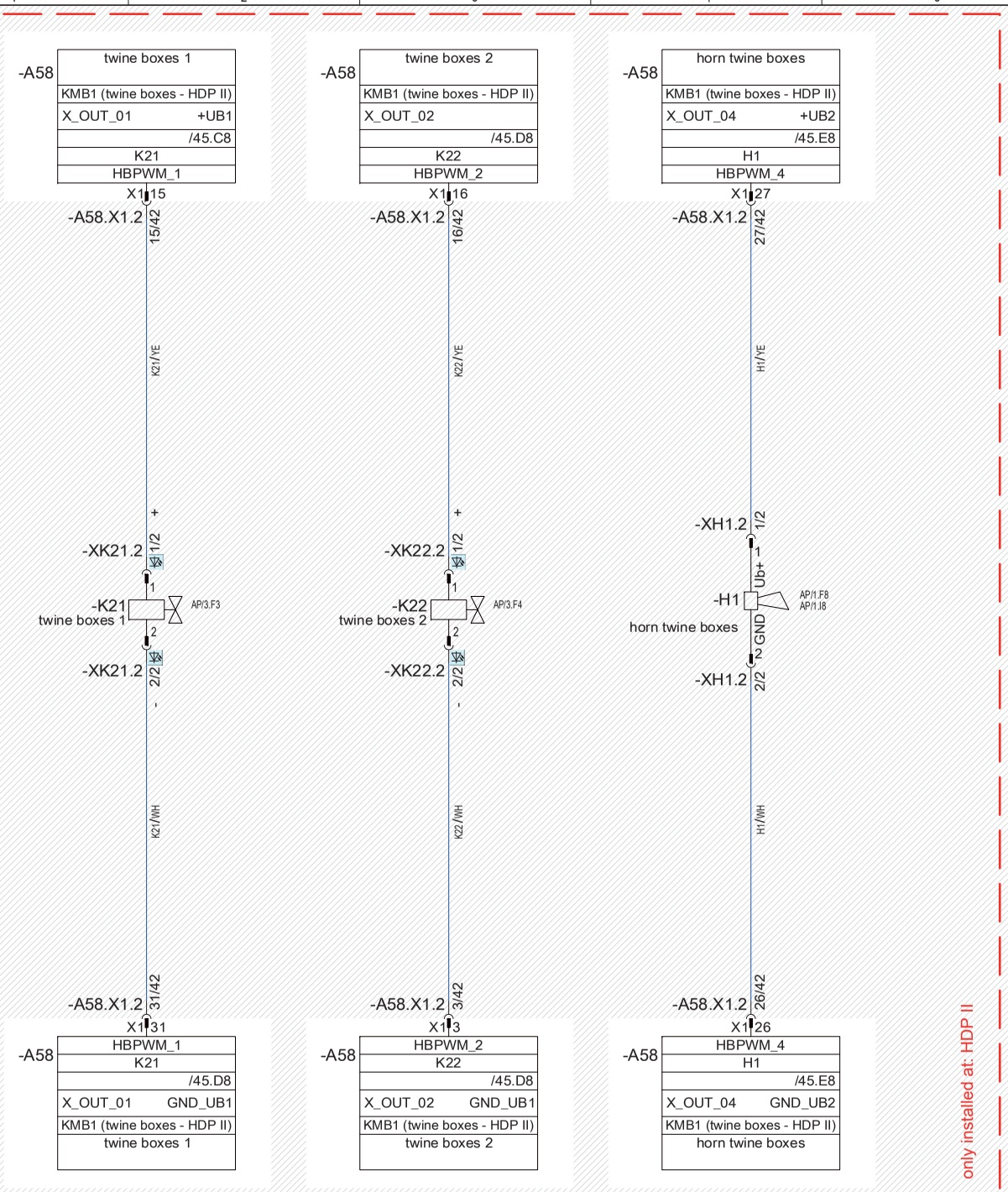

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BiG PACK High Speed (XCut + VariCut)

KMB1 (twine boxes - HDP II): actuators: twine boxes, horn twine boxes

Circuit diagram
plant
location
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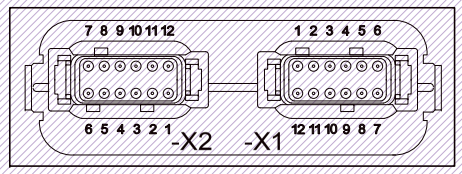
-A14

RMS (Option moisture measurement)

AP/4.F17
AP/4.L16



Plug	connection	description	cross-reference	
supply in general				
-X1	1	+12VE (supply)	/9.E5	F2 1,1A
-X1	2	+12VE (supply)		F2 1,1A
-X1	3	GND_E (supply)		
-X1	4	GND_E (supply)		
CAN - interface				
-X1	5	CAN-H	/14.F5	
-X1	6	CAN-L		
-X1	7	CAN-Termi		
-X1	8	CAN-H		
-X1	9	CAN-L		
moisture/temperature 1				
-X2	4	supply moisture sensor 1	/49.E1	
-X2	5	GND moisture sensor 1		
-X2	8	signal temperature sensor 1		
-X2	9	GND temperature sensor 1		
moisture/temperature 2				
-X2	6	supply moisture sensor 2	/49.E3	
-X2	7	GND moisture sensor 2		
-X2	10	signal temperature sensor 2		
-X2	11	GND temperature sensor 2		
KAP-SEN				
-X1	10	5V-E		
-X1	11	GND-E		
-X1	12	KAP-SEN		
ERNTE-F				
-X2	2	5V-E		
-X2	1	GND-E		
-X2	3	ERNTE-F		
output				
-X2	12	output 5		F1 0,5A

fuses

the fuses F1, F2 are self-resetting.

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BiG PACK High Speed (XCut + VariCut)
RMS (Option moisture measurement): plug overview

Circuit diagram
plant
location
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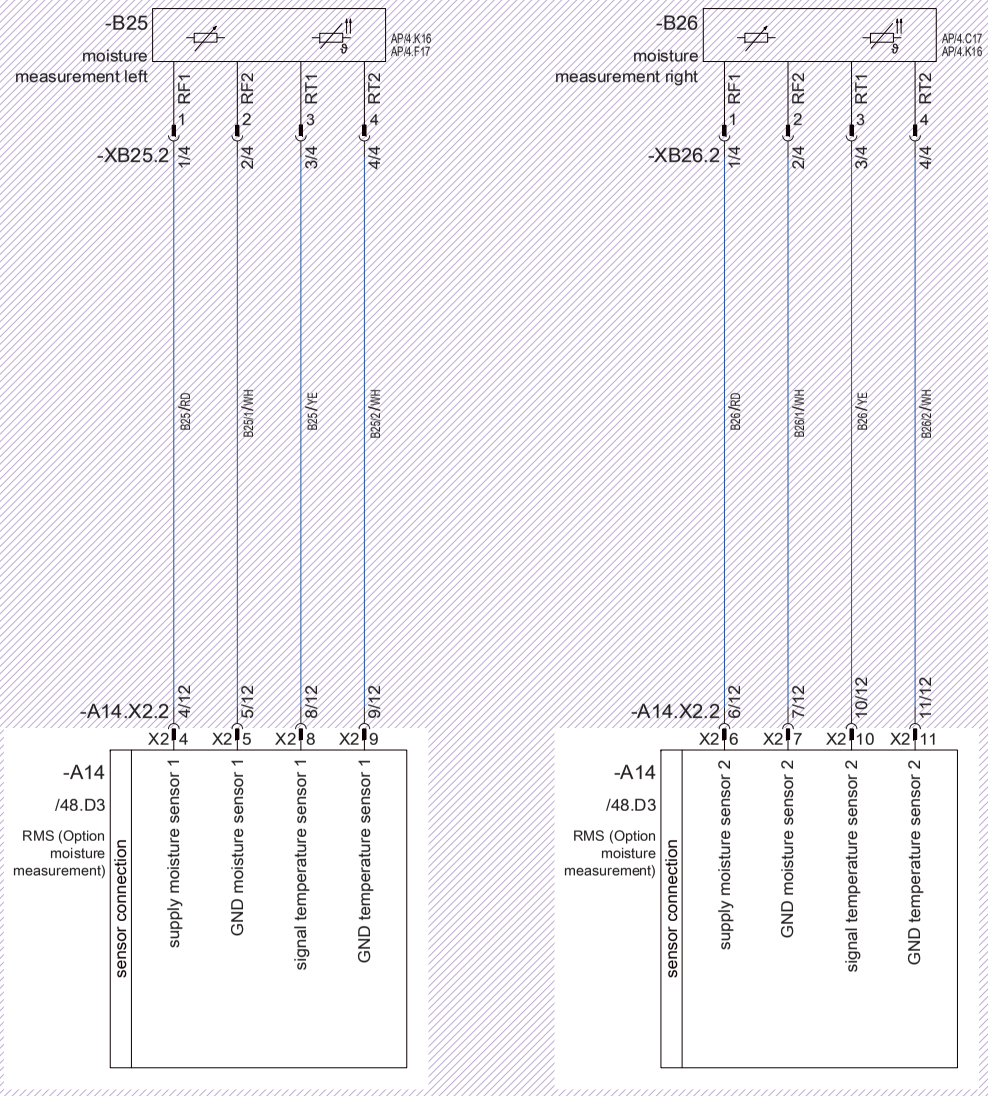

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BiG PACK High Speed (XCut + VariCut)

RMS (Option moisture measurement): Sensors: moisture measurement left, moisture measurement right

Circuit diagram	
plant	
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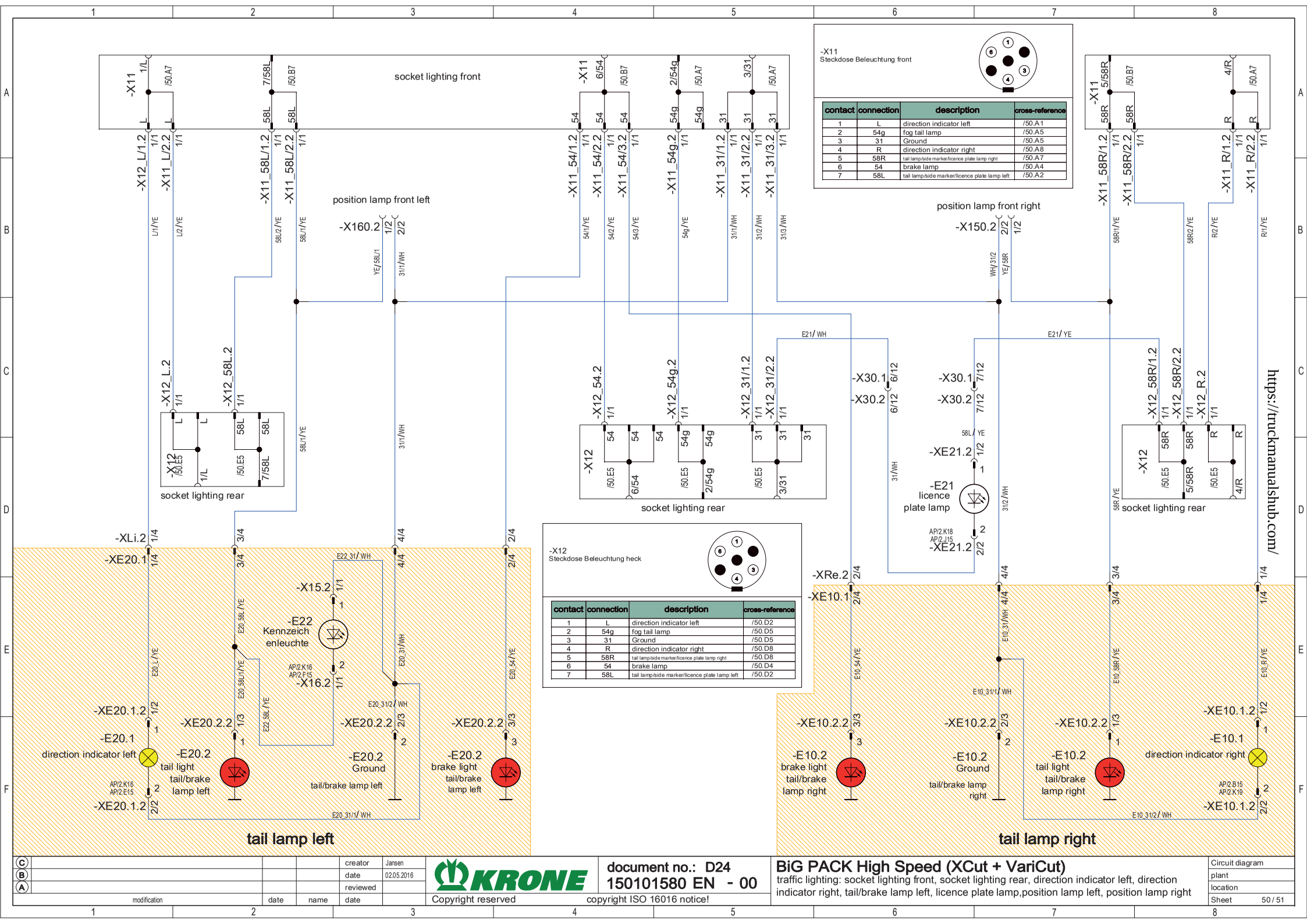

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BiG PACK High Speed (XCut + VariCut)

traffic lighting: socket lighting front, socket lighting rear, direction indicator left, direction indicator right, tail/brake lamp left, licence plate lamp,position lamp left, position lamp right

Circuit diagram	
plant	
location	
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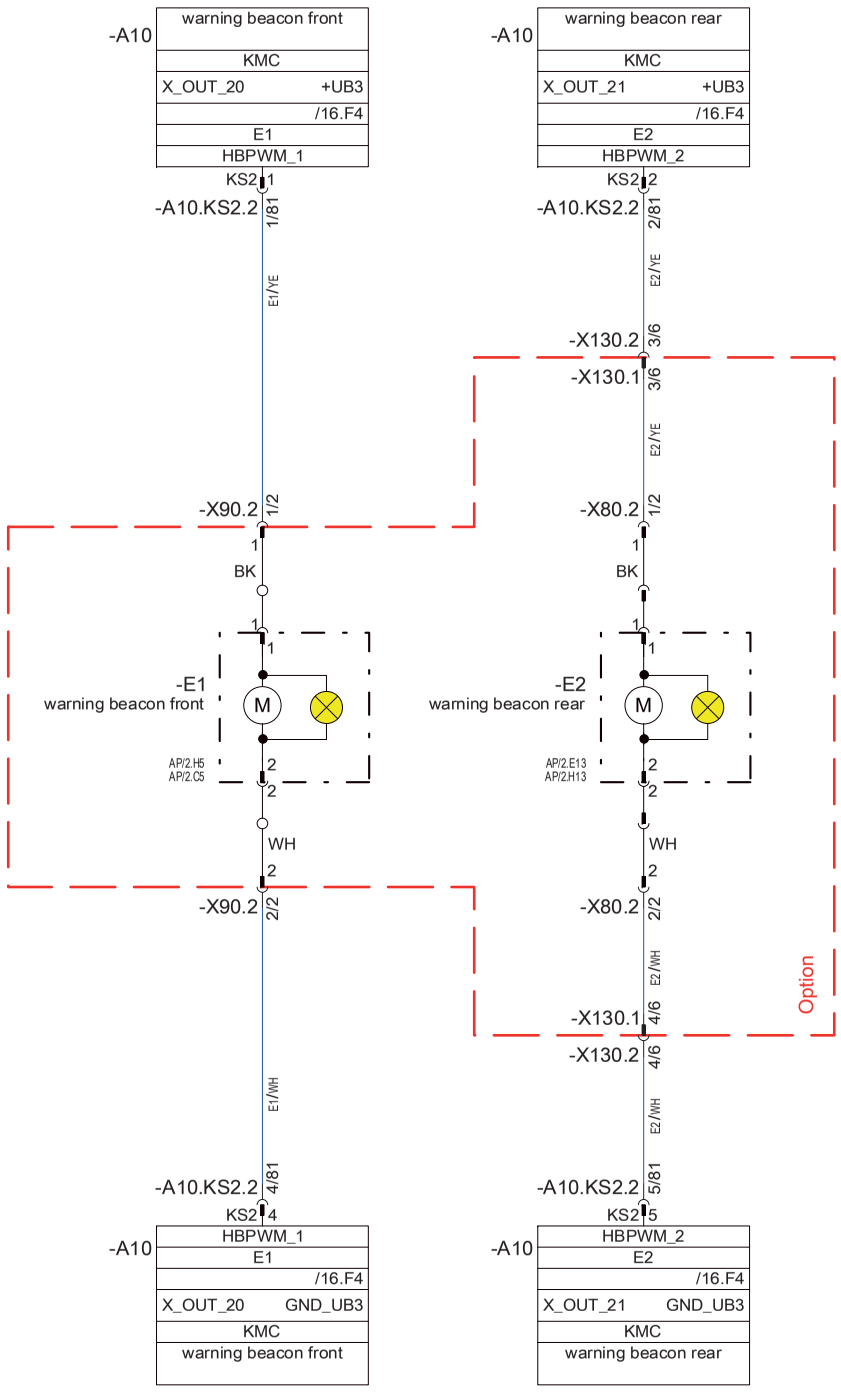

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BiG PACK High Speed (XCut + VariCut)
traffic lighting: warning beacons

Circuit diagram	
plant	
location	
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fuse	value	function
-A40.F1	15A	KMC UB1
-A40.F2	15A	KMC UB2
-A40.F3	15A	KMC UB3
-A40.F4	15A	ECU twine boxes UB1
-A40.F5	15A	ECU twine boxes UB2
-A40.F6	15A	knotter motor
-A40.F7	10A	reserve
-A40.F8	10A	reserve
-A40.F9	25A	power supply
-A40.F10	15A	KMC UB5
-A40.F11	15A	KMC UB4
-A40.F12	15A	KMC UB6
-A40.F13	25A	reserve
-A40.F14	25A	reserve
-A40.F15	7.5A	UE KMC, RMS, FMA1
-A40.F16	7.5A	KMB1 twine boxes UE, ISOBUS extension
-A40.F17	2A	HMI_PWR

relay		function
-A40.K1		reserve
-A40.K2		reserve
-A40.K3		reserve
-A40.K4		CE switching voltage

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BiG PACK High Speed (XCut + VariCut)
distributor central electric: fuses, relays

label overview
plant
location
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