Original operating instructions

BiG PACK Baler

BiG PACK 4x4
BiG PACK 4x4 XC

(from serial no.: 858 285)

Order no.: 150 000 143 01 en

06.12.2012

EC Declaration of Conformity

We **Maschinenfabrik Bernard Krone GmbH**

Heinrich-Krone-Str. 10, D-48480 Spelle

hereby declare as manufacturer of the product named below, on our sole responsibility, that the

Machine: **Krone Big Pack Baler**

Type / Types: **Big Pack 4x4, Big Pack 4x4 XC**

to which this declaration refers is in compliance with the relevant provisions of

EC Directive 2006/42/EC (Machinery) and EC Directive 2004/108/EC (EMC)

The signing Managing Director is authorised to compile the technical documents.

Spelle, 24.04.2012

Dr.-Ing. Josef Horstmann
(Managing Director, Design and Development)

Year of manufacture:	**Machine No.:**

Dear customer,
Dear customer,

You have now received the operating instructions for the KRONE product which you have purchased.

These operating instructions contain important information for the proper use and safe operation of the machine.

If these operating instructions should become wholly or partially unusable, you can obtain replacement operating instructions for your machine by stating the number given overleaf.

1 Foreword

Dear Customer!

By purchasing your BiG PACK baler, you have acquired a quality product from KRONE.

We are grateful for the confidence you have invested in us in buying this machine.

It is important to read the operating instructions very carefully before you start operating the machine to allow you to use the BiG PACK baler to its full capacity.

The contents of this manual are laid out in such a way that you should be able to perform any task by following the instructions step by step. It contains extensive notes and information about maintenance, how to use the machine safely, secure working methods, special precautionary measures and available accessories. This information and these instructions are essential, important and useful for the operational safety, reliability and durability of the BiG PACK baler.

Note

In the operating instructions which follow, the “BiG PACK baler“ will also be referred to as the "machine".

Please note:

The operating instructions are part of your machine.

Only operate this machine after you have been trained to do so and according to these instructions.

It is essential to observe the safety instructions!

It is also necessary to observe the relevant accident prevention regulations and other generally recognised regulations concerning safety, occupational health and road traffic.

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. Should you for any reason not be able to use these operating instructions either wholly or partially, you can receive a replacement set of operating instructions for your machine by quoting the number supplied overleaf.

We hope that you will be satisfied with your KRONE machine.

Maschinenfabrik Bernard Krone GmbH

Spelle

2 Table of Contents

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3 Introduction

These operating instructions contain fundamental instructions. These must be observed in operation and maintenance. For this reason, these operating instructions must be read by operating personnel before commissioning and use, and must be available for easy reference.

Follow both the general safety instructions contained in the section on safety and the specific safety instructions contained in the other sections.

3.1 Purpose of Use

The Big Pack Balers are pick-up balers with the "variable filling system". They produce highly compacted and dimensionally stable big bales with a length of 1.0 to 3.2 m under all conditions.

The baler serves for intake and pressing of agricultural crops formed in swathes such as hay, straw and grass silage.

WARNING! – Intake and baling of pressing material 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 swath form loading of the crops and automatic intake by the Pick-up as it passes over them.

3.2 Validity

These operating instructions apply to Big Pack Square Balers of the following types:
BiG PACK 4x4, BiG PACK 4x4 XC

3.2.1 Contact

Maschinenfabrik Bernard Krone GmbH
Heinrich-Krone-Strasse 10
D-48480 Spelle (Germany)

Telephone: + 49 (0) 59 77/935-0 (Head Office)
Fax.: + 49 (0) 59 77/935-339 (Head Office)
Fax.: + 49 (0) 59 77/935-239 (Spare parts - domestic)
Fax.: + 49 (0) 59 77/935-359 (Spare parts - export)
Email: info.ldm@krone.de

3.3 Identification Plate

Fig. 1

The machine data is on a rating plate (1). This is located on the right-hand side of the machine behind the drawbar.

3.4 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.

3.5 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.

Any use of the machine for other purposes is deemed not to be in accordance with intended use. The manufacturer shall not be liable for any resulting damage; the user alone shall bear the risk.

Operation in accordance with intended use also includes observing the operating, maintenance and service instructions specified by the manufacturer.

Unauthorised modifications to the machine may affect the properties of the machine or disrupt proper operation. For this reason, unauthorised modifications shall exclude any liability of the manufacturer for consequential damage.

3.6 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.

BiG PACK 4x4, BiG PACK 4x4 XC

		BiG PACK 4x4		BiG PACK 4x4 XC
		Single axle	Tandem	Tandem
Max. permissible speed [km/h]		40 km/h	50 km/h	50 km/h
Length of working position (mm)		10850		
Length of transport position (mm)		9100		
Height (mm)		3600		
Weight (kg)		11150		12340
Tyres		800/45 R26.5 TL	550/45-22.5 620/50 R 22.5 710/50-26.5*1)	
Width (mm)		3410	2995	
Track width (mm)		2500	2400	
Bale channel	Height (mm) Width (mm) Length (mm)	1300 1200 3200		
Baling length (mm)		From 1000 to 3200 (continuously adjustable)		
Scattering width (mm)		2380		
No. of knotter apparatuses		6		
Power consumption		130 KW (177 PS)		145 KW (197 PS)
Cutting system (number of blades)		-		26
Drive overload coupling		3000 Nm		
Flywheel overload coupling		9000 Nm		
Pick-up overload coupling		1500 Nm		
Cutting system overload coupling				7000 Nm
Packer overload coupling		19000 Nm		
Needle connecting rod		Shear screw M10 x 55 DIN 931-10.9		

*1) Width 3200 mm

Note

The technical data specified in the table refer to the basic version of the machine in each case. Deviations (e.g. due to additional attachments, etc.) are not included in this table.

3.7 Lubricants

3.7.1 Filling Quantities and Lubrication Designations for Gearboxes

ENVIRONMENT! - Disposal and storage of lubricants

Effect: Environmental damage

- Store lubricants in eligible containers according to statutory provisions
- Dispose used lubricants according to statutory provisions

	Amount [litres]	Designation/brand	Bio-degradable lubricants
Main gearbox	35	**SAE 90 GL 4 or** Esso-Spartan EP 150 Shell Omala Oil 150 Fuchs- EP 85 W90 Castrol EPX 90	**On request**
Packer gearbox	4		
Knotter/packer transfer gearbox	1		
Pick-up gearbox, upper	1.6		
Pick-up gearbox, lower	1.6		
Cutting system gearbox for XC, upper	2.8		
Cutting system gearbox for XC, lower	1.75		

3.7.2 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.

	Quantity ltr.	Designation/brand	Bio-degradable lubricants
Oil container on baler	15	Fuchs Renolin MR 46 MC BP Energol SHF 46 Shell Tellus 46 Esso Univis N 46 Aral Vitan VS 46	**on request**

3.7.3 Oil quantities and designations for the compressor

	Quantity ltr.	Designation/brand	Bio-degradable lubricants
	Up to the top dipstick marking (0.2)	Standard engine oil SAE 20 or 20 W 40	**on request**

3.8 General Technical Description

PTO speed	1000 rpm
Cardan shaft	Tractor side: Wide angle
	Towing ring ball head coupling - perm. supporting load: up to 2000 kg Bottom attachment with ball head coupling - perm. supporting load: up to 2500 kg **Caution! When an adjustment is made, the hexagon head screws must be tightened to a torque indicated in the "Tightening torques" table in the chapter "Maintenance".**
Support	Parking jack, retractable - manually adjustable in height. Optional: Hydraulic parking jack
Uncontrolled 'EasyFlow' pick-up drum	Hydraulic lift Height adjustment by perforated bar on the supporting wheel. Tine mounting: 5 pieces Number of tines: 20 double tines / tine mountings
Lateral feed	Right and left auger conveyor
Variable Feed System (VFS)	Forced intake by feed packer drum Feed packer drum with: 4 feed packers and 1 switchable feeder packer The XC version includes a cutting system placed in front.
Baling ram	Length of stroke 800 mm 38 strokes per minute The baling ram moves on 4 rollers (7 blades on plunger).
Setting the baling density	Electro-hydraulic power regulation (each adjustable from the tractor)
Twine box	on both sides, for altogether 32 balls of twine
Twine	Synthetic twine (100-130 m/kg)
For balls of twine end and torn twine	Electrical twine control with acoustic and optical signal.
Bale ejector/bale unloading	One-part bale chute (must be hinged up in transport). Operation according to version (Medium - Comfort) at the machine or from the tractor
Parking brake	Operation by hand crank at the rear left of the baler

Note
Only use original KRONE twine

3.9 Connection prerequisites on tractor

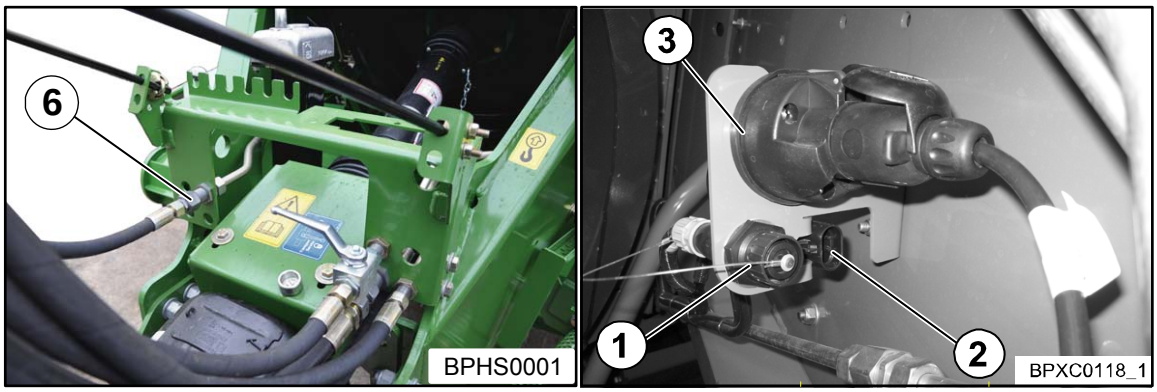


Fig.2

Brake connections:

For BiG PACK baler with:

Brake activated by compressed air	Dual-line brake system required
Hydraulically activated brake (6)	Connection for hydraulic brake system required **(max. working pressure 120 bar / 1740 PSI)**

3.10 Electrical connections

Socket (1):

7 pin socket for connection cable between terminal and machine

Socket (2):

2 pin socket for power supply cable between machine and permanent tractor socket (direct battery connection for permanent power supply needed).

Socket (3):

7-pin standard socket for lighting

3.10.1 Hydraulic connections

Note

Connect the hydraulic lines correctly

- The hydraulic hoses are identified by coloured hose clips.
- When connecting the hydraulic lines, observe the sticker for the tractor hydraulics (see the "Safety" chapter: "Position of the general information labels on the machine").

The following control units are required on the tractor to operate the machine (depending on the version supplied):

- Pick-up lift (1) single-action control valve (red 2)

Comfort - Electronic

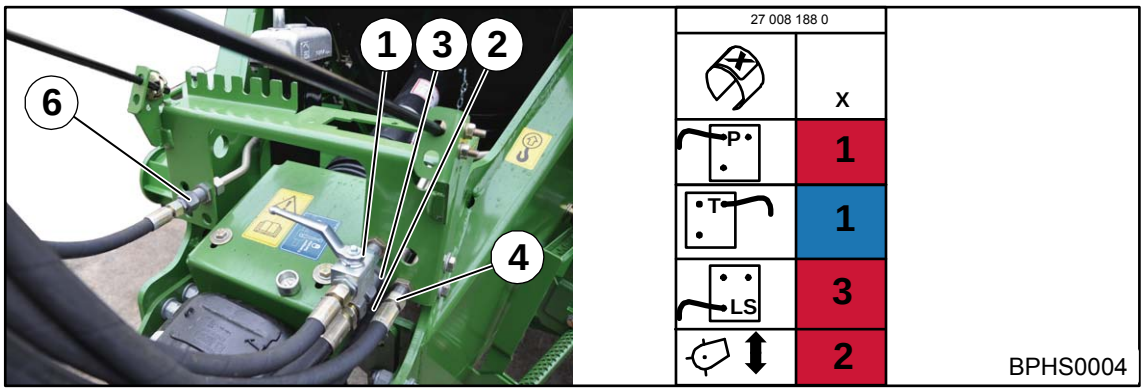


Fig.3

Double-action control unit with free return flow line or single-action control unit with free return flow line:

- Pressure line (2) (nominal gauge 15 (red 1))
- Return flow line (3) (nominal gauge 18 (blue 1))
- LS signal line (4) LS connection (nominal gauge 12 (red 3)) (only for tractors with Load Sensing hydraulics - for further information see tractor manufacturer's operating instructions)

Medium Version Electronics

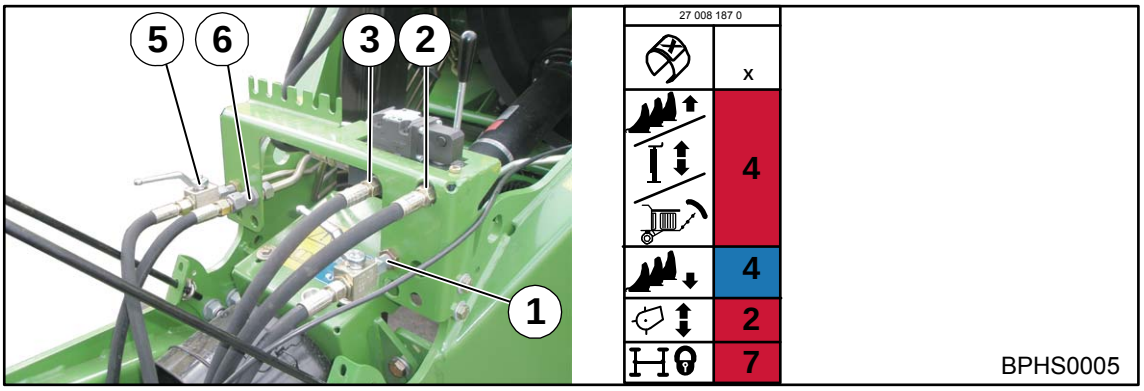


Fig.4

Double-action control unit for control block:

- Hydraulic line (red 4) (2) for the functions: close blade holder, parking jack (lift/lower), bale ejector (deploy/retract), roller chute (open/closed)
- Hydraulic line (blue 4) (3) for the function: open blade holder
- Lock / Release (5) steering axle single-action control valve (nominal gauge 15 (red 1))

Double-action control unit with free return flow line or single-action control unit with free return flow line as start-up aid:

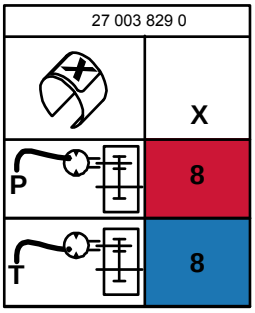


Fig.5

- Hydraulic line (red 8): Start-up aid pressure
- Hydraulic line (blue 8): Start-up aid return flow

3.11 Machine overview

3.11.1 Left Side of the Big Pack Baler with Tandem Axle

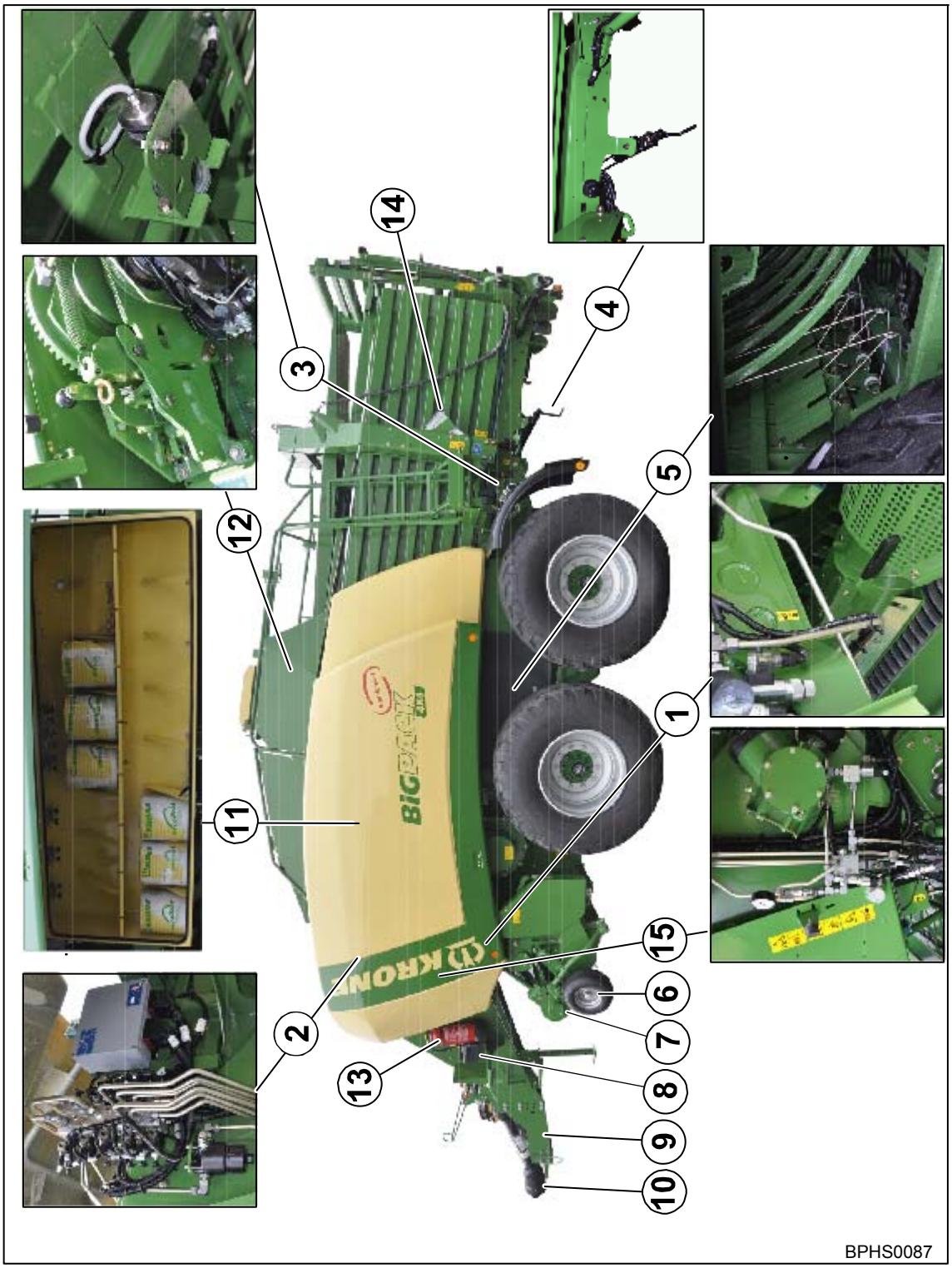


Fig. 6

1. Flywheel parking brake	9. Drawbar with adjustable height
2. On-board computer	10. Wide angle P.T.O. drive shaft with overload protection system and freewheel
3. Length registration of bales	11. Twine box
4. Crank for parking brake	12. Manual release of knotter and knotter shaft lock
5. Twine control and tensioning device	13. Fire extinguisher
6. Pick-up with jockey wheel	14. Wheel chocks
7. Roller crop guide	15. Electronic control valve
8. Tool tray	

3.11.2 Right Side of the Big Pack Square Baler with Tandem Axle

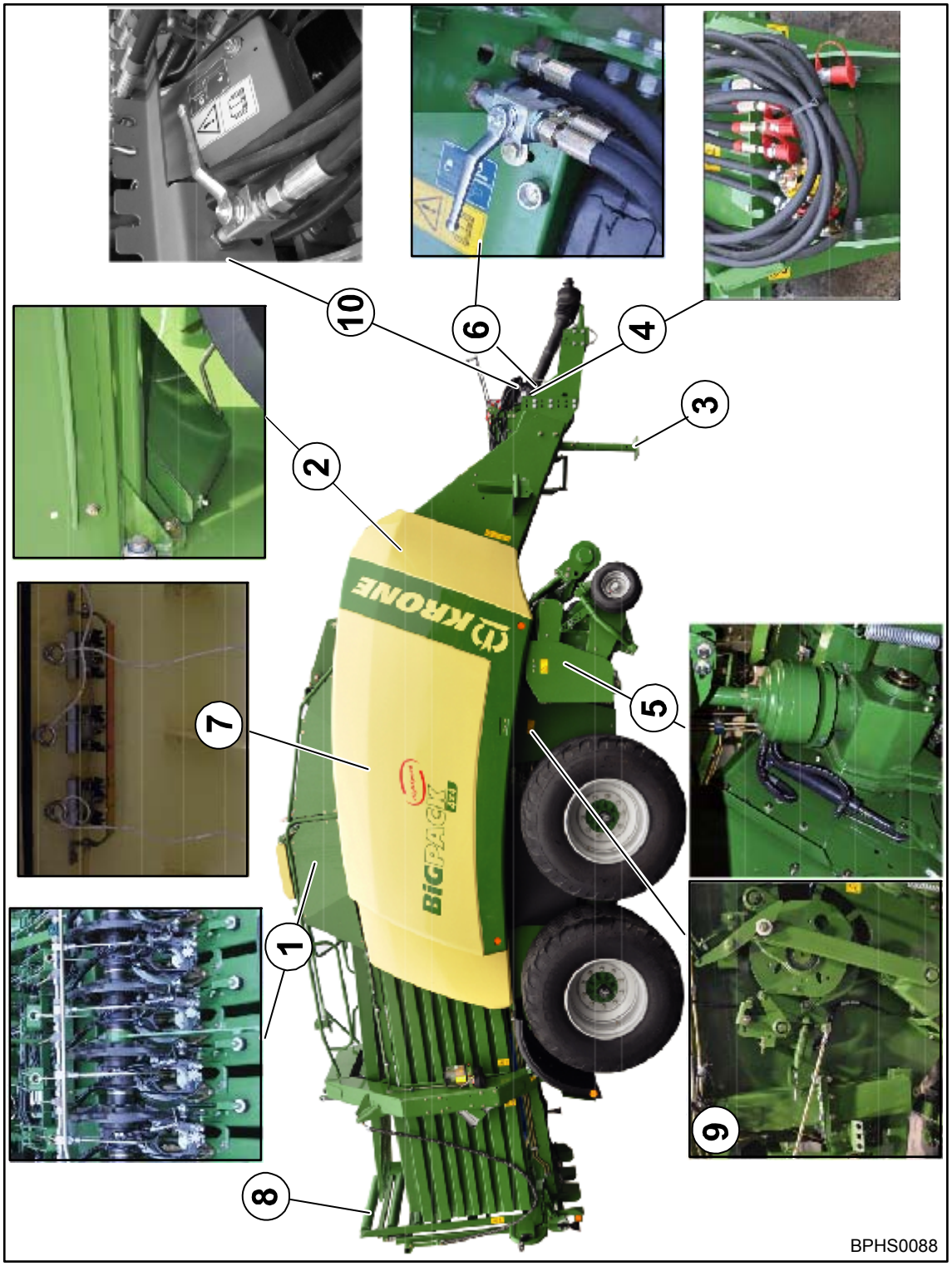


Fig. 7

1. Knotting area	6. Shut-off valve Pick-up hydraulics
2. Hydraulic oil storage tank	7. Twine brake in the twine box
3. Parking support	8. Bale chute
4. Support for fast-action couplings and plugs	9. Variable filling system VFS
5. XC cutting system drive	10. Shut-off valve caster axle

3.11.3 How the VFS Conveyor System Works

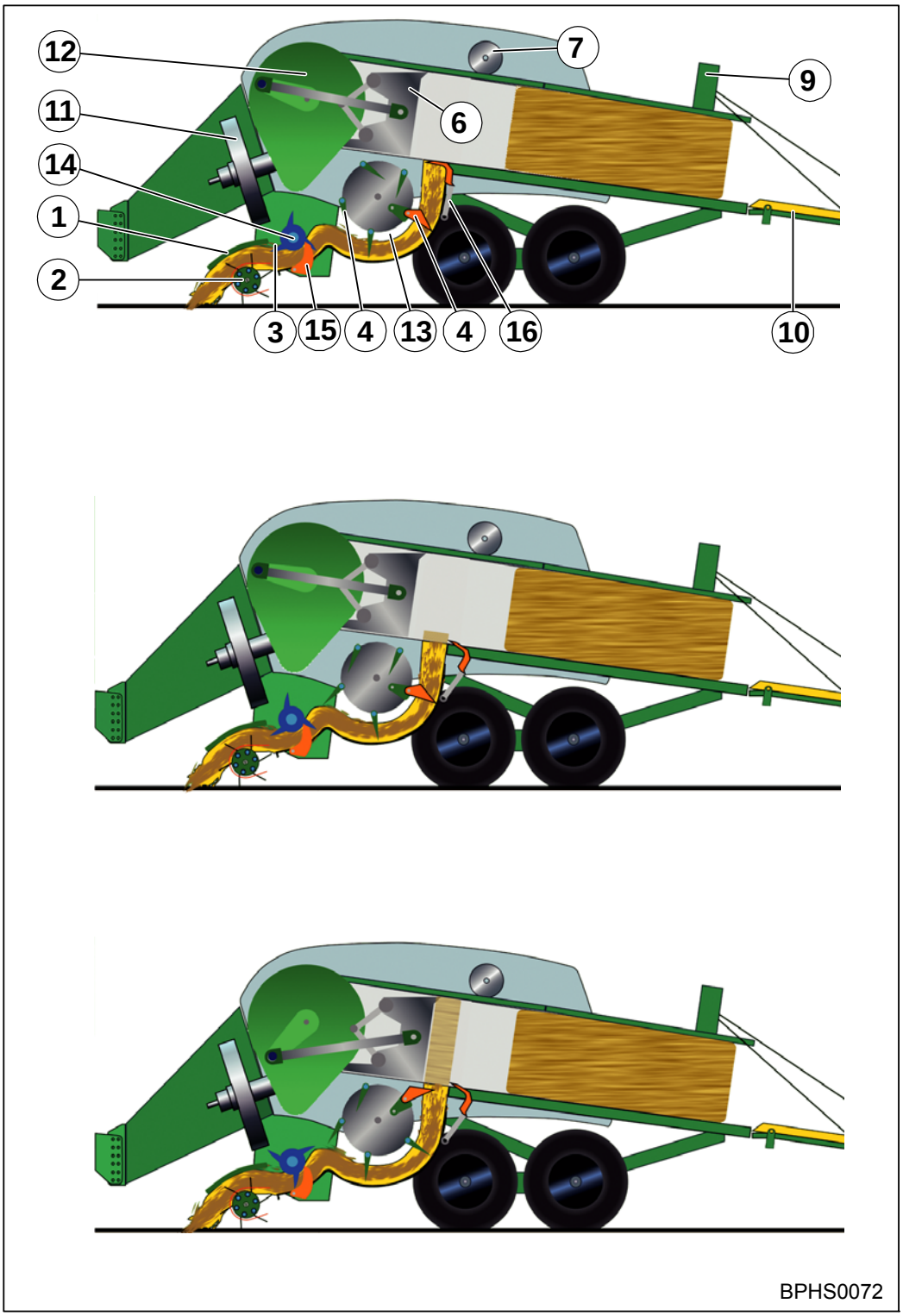


Fig. 8

3.11.4 Functional Description of the Big Pack Baler

As a drive, the BIG PACK square baler requires a tractor with a power of 130 kW or higher.

The BIG PACK square baler can be hooked into the hitch coupling or the swing drawbar. The height of the drawbar can be adjusted so that the Big Pack square baler can work horizontally.

The BIG PACK is driven by a cardan shaft which transmits the torque coming from the tractor via a flywheel (11) to the main gearbox (12). The maximum input speed of 1000 rpm must not be exceeded, because this could cause the machine to be damaged.

The cardan shaft has a wide-angle joint at the tractor end. The operating instructions intended for the cardan shaft are located on the cardan shaft.

Before the Big Pack square baler is started up, the operating instructions of the cardan shaft must also be read. This manual deals with shortening the cardan shaft and any repair and maintenance work.

The 2.4 m wide pick-up (2) picks up the crops. A height-adjustable roller crop guide (1) and the conveyor roller ensure trouble-free pick-up and help to avoid blockages. The crop is conveyed by 2 auger conveyors (3), located on the left and right side of the pick-up to the cutting rotor (14), through the blades (15) to the packer drum (13).

The pick-up can be raised and lowered by the tractor hydraulics. The height of the pick-up guide wheels can be adjusted to achieve an optimum pick-up height for the pick-up.

The feed packers (4) fill the feed channel chamber. The feed packers work to collect the crop in the conveyor channel. The filling level in the feed channel chamber is sensed by the sensing rake (16). When a certain filling level is reached, the sensing rake swings back and the feeder packer (5) takes over the process of moving the crop into the bale channel chamber.

The crop is compressed by the baling ram (6) in the bale channel chamber to form a highly compacted big bale. The length and naturally also the density of the big bales can be adjusted continuously. In this way big bales (8) can be generated according to widely differing requirements.

The baling ram force is controlled electronically by hydraulic cylinders (9) on the baling channel flaps. Once the set baling length is reached, the knotter mechanism is released by the star wheel projecting into the bale channel chamber.

The big pack square baler features 6 knotters (7). The big bales are unloaded through a bale chute (10).

4 Safety

4.1 Identifying Symbols in the Operating Instructions

The safety instructions contained in this manual which could result in personal injury if not followed are identified by the general danger sign:

4.2 Identification of the hazard warnings

Danger!

DANGER! - Type and source of the hazard!
Effect: Danger to life or serious injuries.
- Measures for hazard prevention

Warning !

WARNING! - Type and source of the hazard!
Effect: Injuries, serious material damage.
- Measures for hazard prevention

Caution!

CAUTION! - Type and source of the hazard!
Effect: Property damage
- Measures for risk prevention.

General function instructions are indicated as follows:
Note!

Note - Type and source of the note
Effect: Economic advantage of the machine
- Actions to be taken

Instructions which are attached to the machine need to be followed and kept fully legible.

4.2.1 Personnel Qualification and Training

The machine may be used, maintained and repaired only by persons who are familiar with it and have been instructed about the dangers connected with it. The operator must define areas of responsibility and monitoring of personnel. Should personnel lack the required knowledge, they must receive the required training and instruction. The operator must ensure that the contents of these operating instructions have been fully understood by personnel.

Repair work not described in these operating instructions should only be performed by authorised service centres.

4.2.2 Dangers in Case of Non-compliance with the Safety Instructions

Failure to follow the safety instructions could result in personal injury and environmental hazards as well as damage to the machine. If the safety instructions are not respected, this could result in the forfeiture of any claims for damages.

Failure to follow the safety instructions could result, **for example**, in the following hazards:

- Endangering of persons due to not protected working areas.
- Breakdown of important machine functions
- Failure of prescribed methods for repair and maintenance
- Endangering of persons due to mechanical and chemical effects
- Damage to the environment due to leaking hydraulic oil

4.2.3 Safety-conscious work practices

Always observe the safety instructions set out in these operating instructions, all existing accident prevention rules and any internal work, operating and safety rules issued by the operator.

The safety and accident prevention regulations of the responsible professional associations are binding.

The safety instructions provided by the vehicle manufacturer should also be observed.

Observe the applicable traffic laws when using public roads.

Be prepared for emergencies. Keep the fire extinguisher and first aid box within reach. Keep emergency numbers for doctors and fire brigade close to the telephone.

4.3 Safety Instructions and Accident Prevention Regulations

1. Please follow all generally applicable safety and accident prevention regulations in addition to the safety instructions contained in these operating instructions!
2. The attached warning and safety signs provide important information for safe operation. Pay attention to these for your own safety!
3. When using public roads, make sure to observe the applicable traffic regulations!
4. Make sure that you are familiar with all equipment and controls as well as with their functions before you begin working with the machine. It is too late to learn this when you are using the machine for work!
5. The user should wear close fitting clothes. Avoid wearing loose or baggy clothing.
6. Keep the machine clean to prevent the danger of fire!
7. Before starting or moving the machine, make certain that nobody is in the vicinity of the machine! (Watch for children!) Make sure that you have a clear view!
8. Carrying passengers during operation and transport on the working implement is not permitted.
9. Couple implements correctly! Attach and secure implements to specified devices only!
10. When attaching or detaching implements, place the supporting devices in the correct positions!
11. Use extreme caution when attaching or detaching implements onto or from the tractor!
12. Always attach ballast weights properly to the fixing points provided!
13. Observe permitted axle loads, gross weight and transport dimensions!
14. Check and attach transport equipment, such as lighting, warning devices and protective equipment!
15. Actuating mechanisms (cables, chains, linkages etc.) for remote controlled devices must be positioned in such a way that no movements are unintentionally triggered in any transport or working positions.
16. Ensure that implements are in the prescribed condition for on-road travel and lock them in place in accordance with the manufacturer's instructions!
17. Never leave the driver's seat when the vehicle is moving!
18. Always drive at the correct speed for the prevailing driving conditions! Avoid sudden changes in direction when travelling uphill or downhill or across a gradient!
19. Hitched implements and ballast weights affect the driving, steering and braking response of the machine. Make sure that you are able to brake and steer the machine as required!
20. Take into account the extension radius and/or inertia of an implement when turning corners!
21. Start up implements only when all safety devices have been attached and set in the required position!
22. Keep safety equipment in good condition. Replace missing or damaged parts.
23. Keep clear of the working range of the machine at all times!
24. Do not stand within the turning and swivel range of the implement!
25. Never operate the hydraulic folding frames if anyone is inside the swivel range!

26 Parts operated by external power (e.g. hydraulically) can cause crushing and shearing injuries!

27 Before leaving the tractor, lower the implement onto the ground, apply the parking brake, switch off the engine and remove the ignition key!

4.4 Hitched Implements

1 Secure implements against rolling.

2 Observe the maximum supported load on the trailer coupling, swing drawbar or hitch!

3 If a drawbar coupling is used, make certain that there is enough play at the coupling point.

4.5 PTO operation

1 Use only PTO shafts specified by the manufacturer!
2 The guard tube and guard cone of the PTO shaft and the PTO guard must be attached and in good working condition (on the implement side, too)!
3 Make sure that the required tube covers are in place for PTO shafts in transport and working position!
4 Before installing or detaching PTO shafts, disengage the PTO, switch off the engine and remove the ignition key!
5 When using PTO shafts with an overload safety or free-running coupling which are not shielded by the guard on the tractor, mount the overload safety or free-running coupling on the implement side!
6 Always make sure that the PTO shaft is properly installed and secured!
7 Attach chains to prevent the PTO shaft guard from rotating with the shaft!
8 Before switching on the PTO, make sure that the selected PTO speed of the tractor matches the permissible implement speed!
9 Before switching on the PTO shaft make sure that no person is in the danger zone of the device!
10 Never switch on the PTO if the engine is switched off!
11 No one should be in the vicinity of the rotating PTO or PTO shaft when the PTO is in use.
12 Always switch off the PTO shaft when the angle is too large or the PTO shaft is not required!
13 Caution! After disengaging the PTO danger due to the flywheel running on! Keep away from the implement during this time. The machine may be worked on only if it is completely at standstill and if the flywheel is secured by the parking brake.
14 Cleaning, lubricating or adjusting PTO driven implements or the PTO shaft only with PTO disengaged, engine switched off and ignition key withdrawn! Secure the fly-wheel with the parking brake.
15 Place the disconnected PTO shaft onto the support provided!
16 After detaching the PTO shaft, attach the protective cover to the PTO end!
17 If damage occurs, correct this immediately before using the implement!

18 Release the flywheel brake before the P.T.O. shaft is turned on.

Note

The instructions of the manufacturer must be observed with regard to the PTO shaft. (separate operating instructions)

4.6 Hydraulic system

1. The hydraulic system is pressurised!
2. When connecting hydraulic cylinders and motors, make sure the hydraulic hoses are connected as specified!
3. When connecting the hydraulic hoses to the tractor hydraulics, make sure that the hydraulics of both the tractor and the implement have been depressurized!
4. In the case of hydraulic connections between tractor and machine, the coupling sleeves and plugs should be marked to ensure a proper connection! If the connectors are interchanged, the function will be reversed (e. g. raising/lowering) - Risk of accident!
5. When searching for leaks, use suitable aids to avoid the risk of injury!
6. Liquids escaping under high pressure (hydraulic oil) can penetrate the skin and cause serious injury! Seek medical help immediately should injuries occur! Danger of infection!
7. Before working on the hydraulic system, depressurise the system and switch off the engine!
8. Check the hydraulic hose lines at regular intervals and replace them if damaged or worn! The new hoses must fulfill the technical requirements set by the manufacturer of the implement!

4.7 Tyres

1. When working on the tyres, make sure that the implement is safely lowered and secured against rolling (wheel chocks).
2. Installing wheels and tyres requires adequate knowledge and suitable tools!
3. Repair work on the tyres and wheels should be done by specially trained personnel using appropriate installation tools only!
4. Check tyre pressure regularly! Inflate the tyres to the recommended pressures!
5. Check the wheel nuts periodically! Missing wheel nuts can result in a wheel falling off and the machine tipping over.

4.8 Maintenance

1. Always make certain that the drive and the engine are switched off before doing any repairs, maintenance or cleaning! Remove ignition key! Secure the flywheel with the parking brake.
2. Regularly check that nuts and bolts are properly seated and tighten if necessary!
3. When performing maintenance work with the machine raised, always secure it with suitable supporting elements!
4. Oils, greases and filters must be disposed of correctly!
5. Always disconnect the power supply before working on the electrical system!
6. If protective devices and guards are subject to wear, check them regularly and replace them in good time!
7. When performing electrical welding work on the vehicle and mounted devices, turn power supply off at main battery switch or disconnect generator cable and battery!
8. Replacement parts must at least comply with the technical requirements set by the manufacturer of the implements! This is guaranteed by original KRONE spare parts!
9. Only use nitrogen for filling pneumatic accumulators - **Risk of explosion!**
10. When replacing working tools with cutting edges, use suitable tools and gloves!

4.9 Unauthorised Conversion/Modification and Spare Parts Production

Conversions or modifications of the machine are permitted only with prior consultation with the manufacturer. Original spare parts and accessories authorised by the manufacturer help to ensure safety. Use of other parts may void liability for resulting damage.

4.10 Inadmissible Modes of Operation

The operating safety of the delivered machine is guaranteed only when it is used as intended in compliance with the introductory section "Intended use" of the operating instructions. The limit values listed in the data charts should not be exceeded under any circumstances.

4.11 Safety Instructions on the Machine

The safety instructions on the machine warn of residual risks associated with the machine. They consist of warning pictograms and a work safety symbol. All safety instructions must be followed. Always keep the safety instructions clean and in clearly legible condition! If any safety instructions are damaged or missing, request them from your dealer and then put them in the places provided for them. Where these safety instructions are and what they mean will be described in the following chapters.

4.12 Introduction

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!

Danger! - Danger zone of the machine

Effect: Danger to life or serious injuries.

- Immediately replace damaged or illegible adhesive labels.
- Following repair work, always attach appropriate adhesive safety stickers 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.

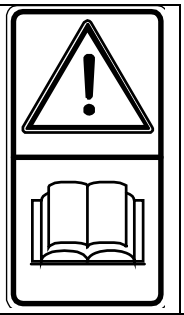
4.13 Position of the Adhesive Safety Stickers on the Machine

Fig. 9

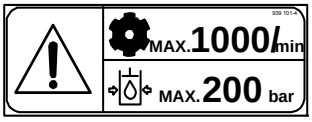
RH = right-hand side of the machine
LH = left-hand side of the machine

1)
Before starting the machine, read and observe the operating instructions and safety instructions.

Order No. 939 471-1 (1x)



2)
PTO speeds must not exceed 1000 rpm! The operating pressure of the hydraulic system must not exceed 200 bar!



Order No. 939 101-4 (1x)

3)
Danger from rotating auger.

Order No. 939 520 1 (2x)

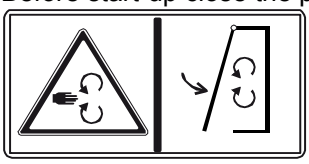
4)
Never reach into the working area of the Pick-up as long as the machine is running.

Order No.: 939 407-1 (2x)

5)
Do not climb onto the machine if the PTO is connected and the engine is running.

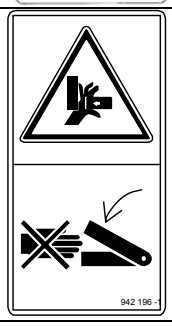
Order No.: 939 408-2 (2x)

6)
Before start-up close the protective equipment!

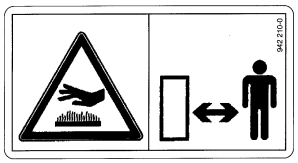


Order No.: 942 002-4 (7x)

7)
As long as parts may be moving, never reach into areas where there is a risk of being crushed.
(only for roller chute and XC cutting system)
Order No. 942 196 1 (9x)



8)
Maintain a sufficient distance from hot surfaces. (optional)



Order No.: 942 210-0 (1x)

9)

Do not stay in the swivel range of the chute. Keep your distance!
Order No. 939 469 1 (2x)

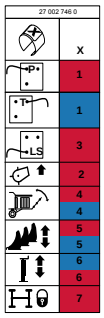
4.14 Position of the General Information Labels on the Machine

Fig. 10

RH = right-hand side of the machine

LH = left-hand side of the machine

1)

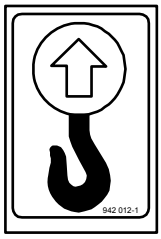


27 002 746 0 (1x)

2)

Stop points

Order no. 942 012 1 (4x)



4.14.1 Re-Ordering the Adhesive Safety and Information Labels

Note

Every adhesive safety and information label is assigned an order number and can be ordered directly from the manufacturer or from an authorized dealer (see Section "Contact").

4.14.2 Affixing the Adhesive Safety and Information Labels

Note - Affixing an adhesive label

Effect: Adhesion of the label

- The surface for affixing the adhesive label must be clean and free of dirt, oil and grease.

4.15 Special safety instructions

4.15.1 Ladder

DANGER! – Access to the machine!

Effect: Danger to life or serious injuries.

- Climb on the ladder only with P.T.O. shaft switched off, engine turned off and ignition key withdrawn
- Do not climb up or down the ladder while the mower is moving
- It is impermissible to carry passengers on ladder steps or platforms
- Always make certain the ladders are clean Take special care that no grease or other slippery materials accumulates on the ladders.

Fig. 11

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.

For version with retractable ladders

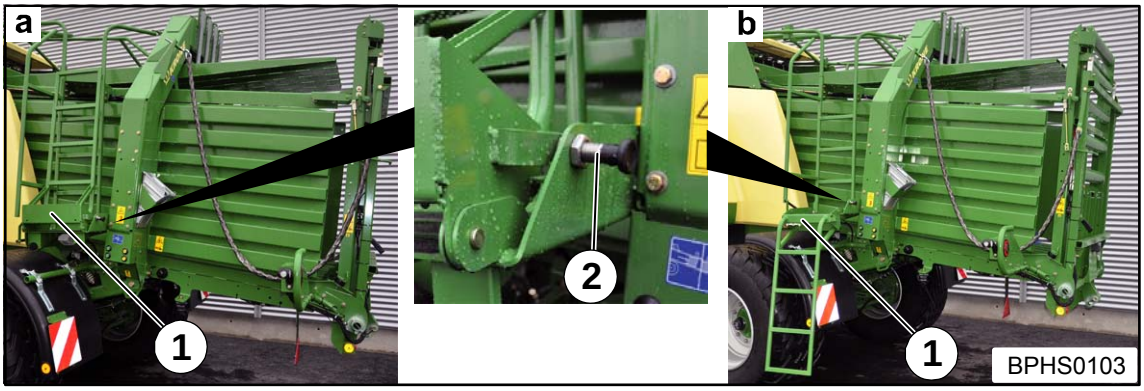


Fig. 12

a) = Road position b) = Ascending / descending position

Note

Make sure that the lock on the ladder is always properly engaged at every position (road/climbing/dismounting position).

Ladder

To climb onto the upper side of the machine, fold down the ladder (1).

- Pull locking lever (2) and fold down ladder until the lock (2) engages

Road transport / field work

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).

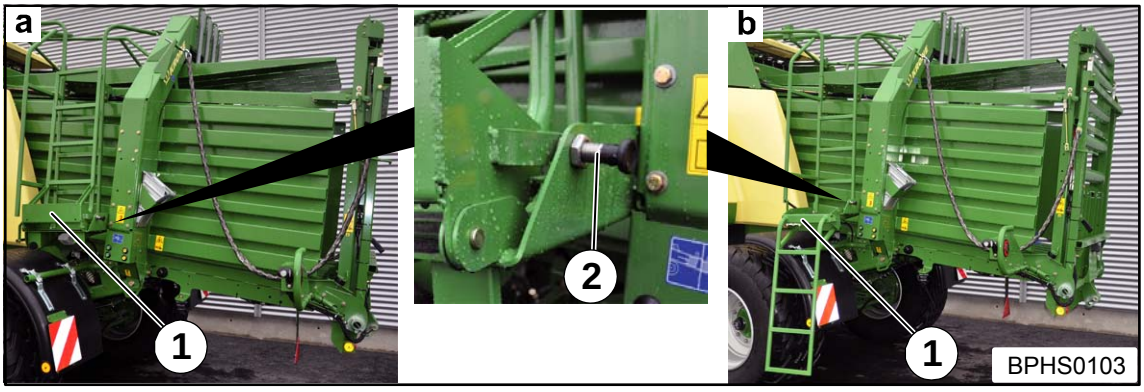


Fig. 13

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

4.16 Safety railing

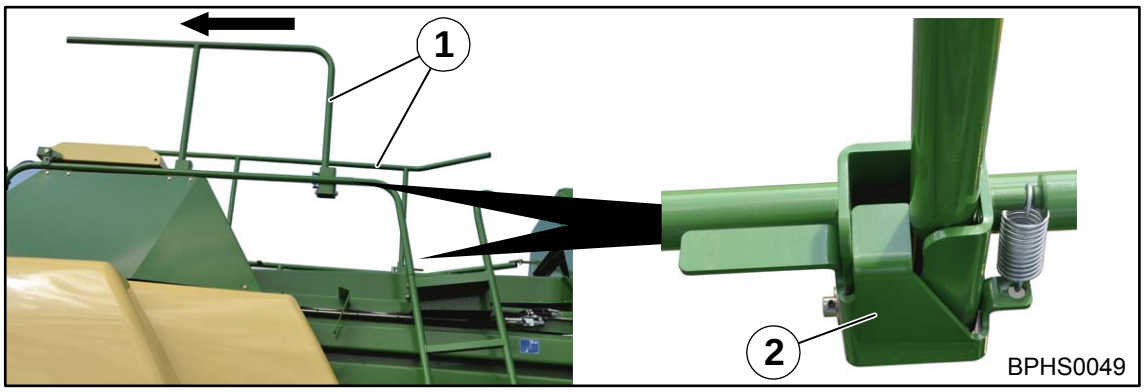


Fig. 14

Every time the platform is used, the safety railing (1) must be swivelled up.

To do this:

- Swing up the safety railing (1) and push it forwards until the lock (2) engages

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

To do this:

- Release the lock (2), push the safety railing back and swivel down.

Note

When driving on public roads, the safety railing (1) must be folded down.

4.16.1 Fire extinguisher

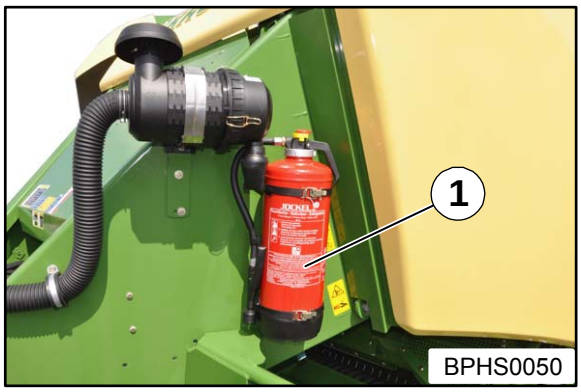


Fig. 15

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

4.17 Wheel chocks

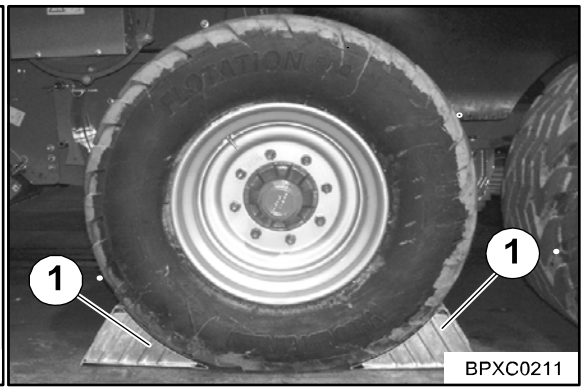


Fig. 16

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

- Always place the wheel chocks (1) in front of and behind the wheels (this will prevent the machine from rolling away).

Note

If the machine has a guided coast-down tandem axle (optional), it must be secured with wheel chocks on the front axle to prevent it from rolling away.

4.18 Parking brake

Danger! - Unexpected movements of the machine
Effect: Danger to life, serious injuries or damage to the machine
Always engage the parking brake as soon as the machine is disconnected from the tractor.

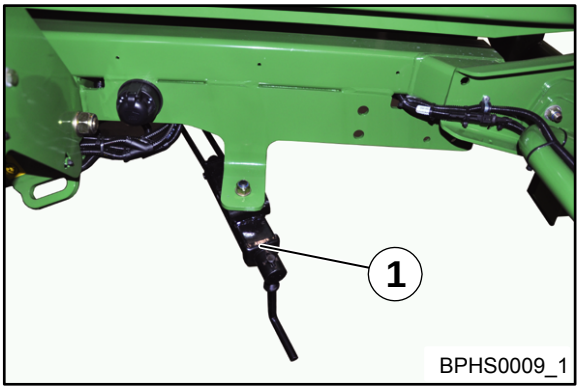


Fig. 17

The crank (1) of the parking brake is located at the rear side of the BiG PACK baler under the baling channel.

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

Set the parking brake:

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

Release the parking brake:

- Turn the crank 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.

4.19 Flywheel brake

WARNING! - Unexpected movements parts of the baler!

Effect: Danger to life or serious injuries

- Always activate the flywheel brake before coupling or uncoupling the universal shaft
- Always activate the flywheel brake before carrying out any maintenance works

CAUTION! - Flywheel brake not released!

Effect: Damage to the machine

Before engaging the P.T.O. shaft always release the flywheel brake first.

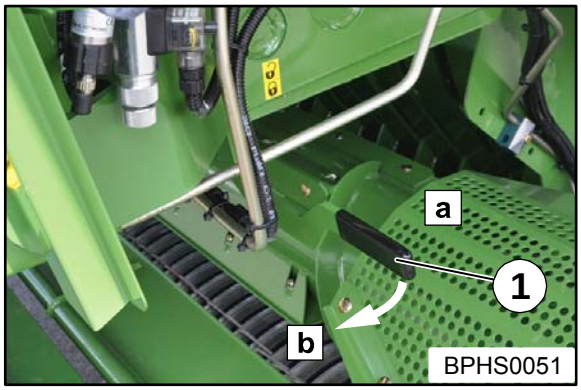


Fig. 18

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

The flywheel brake of the flywheel is located at the left side of the machine on the drawbar.

The flywheel brake (1) avoids an unexpected start-up of the movable parts of the baler during maintenance works. The flywheel is retained by a brake strap.

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

When the electronics are turned on, the machine emits a horn signal.

4.20 Parking support

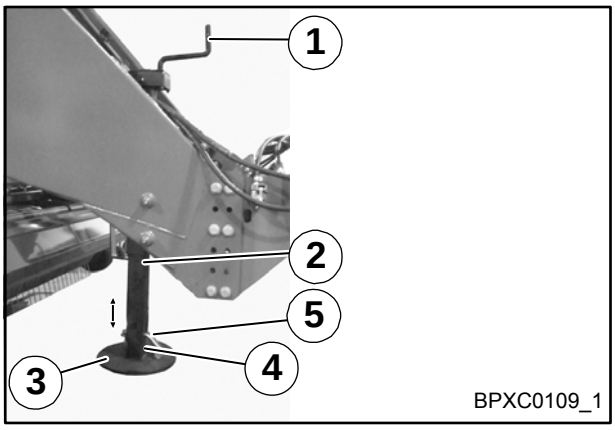


Fig. 19

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

To raise the parking support:

- As soon as the machine is connected to the tractor, turn the crank (1) several revolutions clockwise until there is no more weight on the parking jack (3)
- Withdraw the locking bolt (5) on the lower part of the parking support (2), push in the parking support and secure it in position (4) with the bolt
- Then crank the parking support up all the way

To lower the parking support (to support the drawbar):

- To disconnect the machine from the tractor, first lower the raised parking support (2) a few revolutions with the crank (1)
- Pull out the bolt (5) and extend the lower part of the parking support. Secure with the bolt (5)

Note

If the ground is soft, enlarge the footprint of the parking jack by placing a wooden plank underneath.

4.20.1 Hydraulic parking jack (optional)

Comfort - Electronic

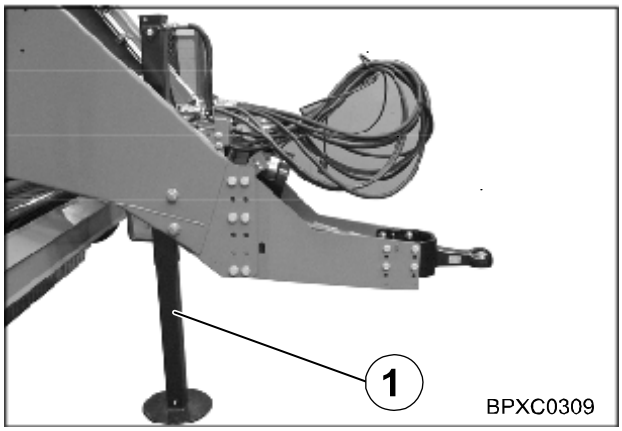


Fig. 20

As an option, the machine can be parked with a hydraulic parking jack. The hydraulic parking jack is deployed and retracted via the operating terminal.

Deploying / Retracting the parking jack:

- Release the parking jack by pressing the function key.
- By pressing the function key, extend the parking jack until it is resting firmly on the ground.
- Retract the parking jack by pressing the function key.

Note

If the ground is soft, enlarge the footprint of the parking jack by placing a wooden plank underneath.

Medium Version Electronics

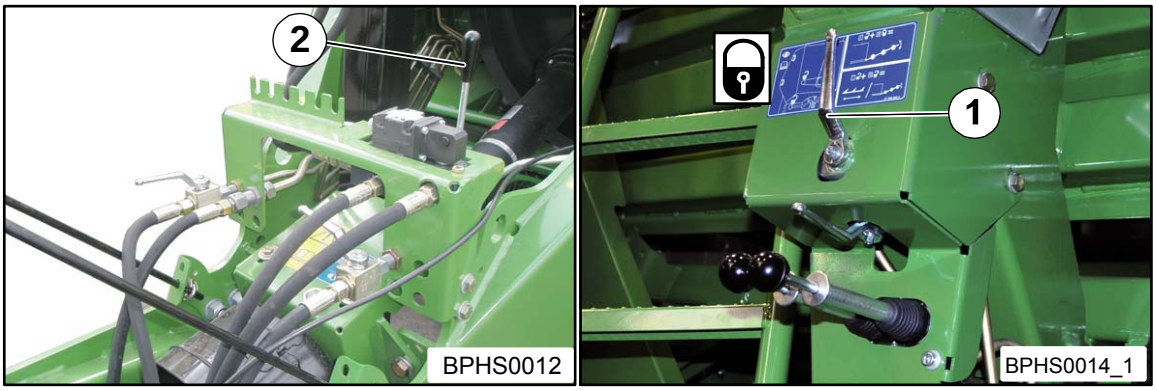


Fig.21

As an option, the machine can be parked with a hydraulic parking jack. In order to deploy the hydraulic parking jack the shut-off valve at the rear of the machine must first be closed.

Deploying / Retracting the parking jack:

- Shut-off valve (1) must be closed.
- Apply pressure to the hydraulic block (hydraulic line (red 4)).
- Using the lever (2), extend the parking jack until it is resting firmly on the ground.
- Use the lever (2) to retract the parking jack.

5 Commissioning

DANGER! - Accidental start-up of the machine, moving parts of the machine and / or unexpected movement of the machine!

Effect: Danger to life, injuries or damage to the machine.

- Special caution is required when mounting and detaching the machine on and from the tractor No one may stay between the tractor and machine. After successful coupling turn off the engine and pull out the ignition key. Apply the flywheel brake.
- In service, maintenance, adjustment and repair work on the machine always switch the P.T.O. shaft off, turn off the engine and pull out the ignition key
- Put the machine into operation only if all safety devices are attached and in protective position
- The machine may be operated with a maximum P.T.O. speed of 1000 rpm
- Only the universal shaft specified by the manufacturer with corresponding overload coupling and freewheel may be used
- Mounting and detaching the universal shaft only with the P.T.O. shaft disengaged, the engine turned off and the ignition key withdrawn
- Run hoses and connection cables so that they are not subject to tension when cornering or come into contact with the tractor wheels
- Check hydraulic hose lines regularly and replace them in the case of damage or ageing
- When connecting and removing the hydraulic hoses to and from the tractor hydraulics take care that the hydraulics are depressurised both on the tractor side and the machine side

5.1 Adjusting the drawbar height

DANGER! - Unexpected movements of the machine!

Effect: Danger to life, injuries or damage to the machine.

- Secure the machine against rolling away with wheel chocks and by applying the parking brake
- Use suitable supporting blocks for supporting the machine
- There is a risk of crushing one's feet when cranking down the parking support

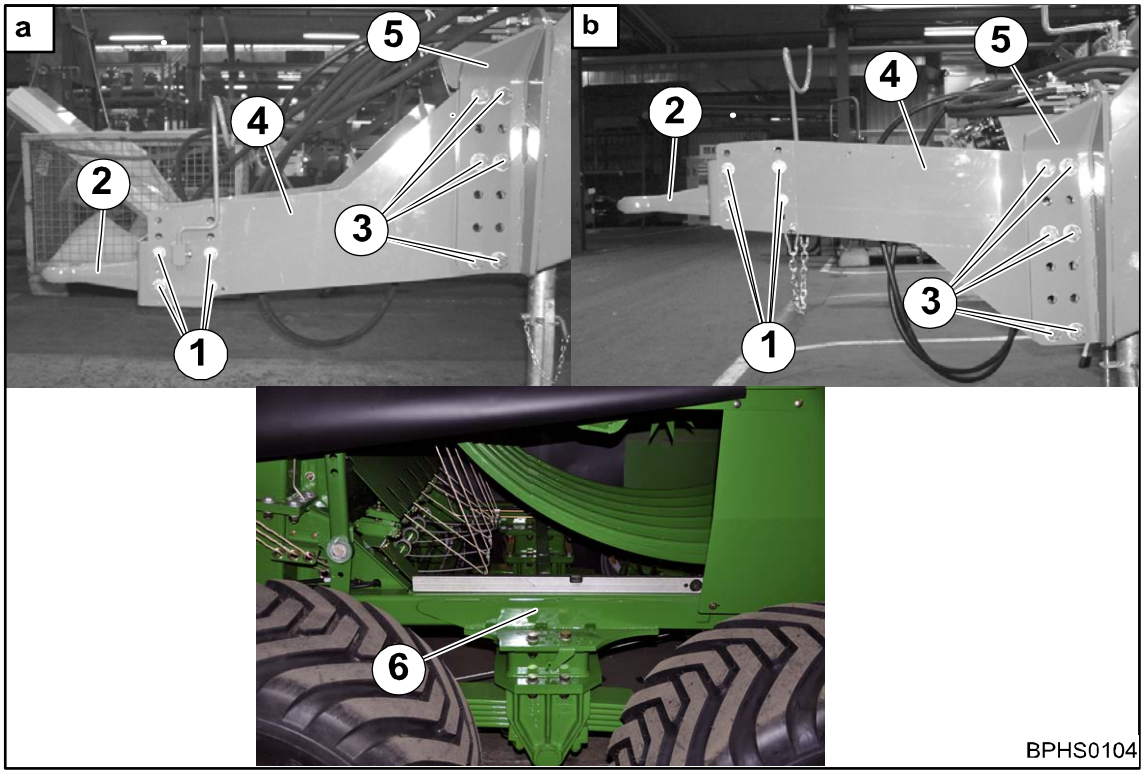


Fig. 22

Always adjust the hitching device of the machine to the tractor used. Always couple the machine horizontally to ensure that the pick-up collects the crop evenly. The cross-member is used as a reference edge to align the machine (6).

Before making the setting:

- Place the machine on the parking support
- Secure the machine against the possibility of rolling back.
- Uncouple the machine from the tractor
- Using a spirit level, align the machine horizontally

Setting the towing ring:

- Unscrew the screws (1)
- Adjust the height of the towing ring (2) to the height of the tractor hitch
- Fit and tighten the screws (1)

If the adjustment of the towing ring is not adequate, adjust the side parts (4).

To do this:

- Unscrew the screws (3)
- Adjust the height of the front parts of the drawbar (4) to the height of the tractor hitch
- Fit and tighten the screws (3)

Changing the drawbar hitch

The drawbar is set as standard as the bottom hitch (a). To set as top attachment (b), rotate both front parts of the drawbar (4) by 180 degrees.

To do this:

- Unscrew the screws (3)
- Remove the front parts of the drawbar (4) and rotate by 180 degrees
- Using the screws (3), attach the turned front parts of the drawbar between the drawbar (5) and tighten the screws

Note

Mind the tightening torques (refer to chapter Maintenance “Tightening torques”).

5.2 Adjusting the height of the drive train

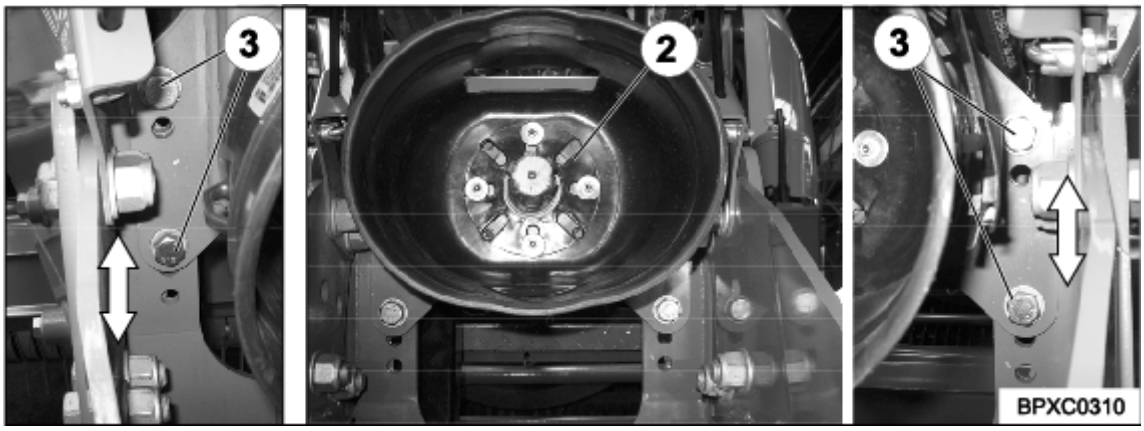


Fig. 23

The universally-jointed drive shaft (1) between the intermediate bearing (2) and the tractor transfuses the power of the tractor to the intermediate bearing. In order to have an ideal power transmission the articulation angle of the universally-jointed drive shaft must be as small as possible in the range of the intermediate bearing. After adjusting the height of the drawbar check the articulation angle of the universally-jointed drive shaft in the range of the intermediate bearing, and if necessary adapt it.

To do this:

- Use an eligible auxiliary means in order to support the intermediate bearing during the whole adjustment process
- Remove the screws (3) of the intermediate bearing
- Move intermediate bearing (2) in the hole pattern
- Assemble and tighten the screws (3)

5.3 Mounting onto the Tractor

DANGER! - Attaching / removing the machine

Effect: Danger to life or serious injuries.

- The machine must only be connected to tractors that are equipped with a matching hitch
- When the tractor is put back in front of the machine, there must be no one between the tractor and the machine
- Observe the maximum supporting and tensile load of the hitch on the tractor

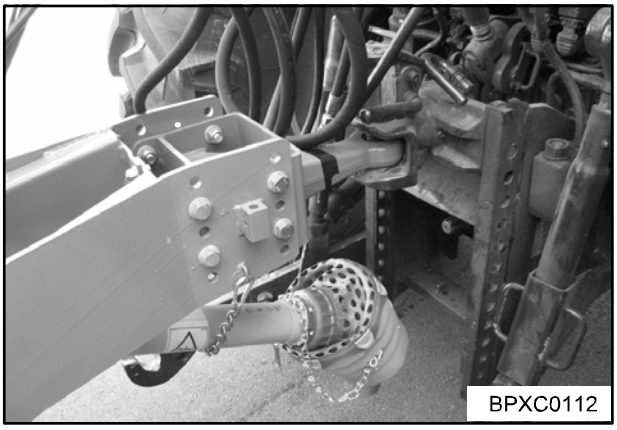


Fig. 24

The machine comes standard equipped with a ready-to-use hitch hole of Ø 40 mm (DIN 11 026). Depending on the specific requirement, the following hitches are also available:

- Ball-head hitch (K 80)
- Rotating towing eye
- Hitch connection (export only)
- Hitch and secure the machine according to the regulations on the hitch of the tractor

5.4 PTO shaft

5.4.1 Length adjustment

DANGER! - Rotating universal shaft!

Effect: Danger to life or serious injuries

- Before pushing the universal shaft onto the P.T.O. shaft of the tractor, disengage the P.T.O. shaft, turn off the engine and pull out the ignition key. Apply the flywheel brake
- Secure the tractor and machine against unintentional rolling
- In the cornering movements required for adapting the length of the universal shaft no one may stand between the machine and the tractor

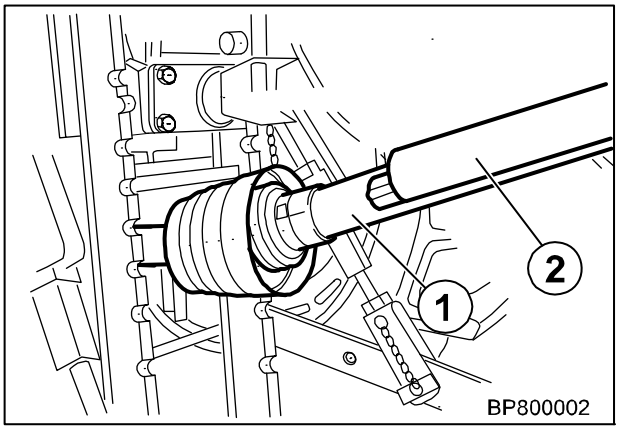


Fig. 25

To adapt the length of the universal shaft, hitch the machine onto the tractor. The shortest position of the universal shaft is reached in close cornering.

The length of the PTO shaft (1) must be adjusted.

- Disassemble the PTO shaft.
- Install each half (1) and (2) on the tractor and machine side respectively.
- Check the special section tubes and guard tubes.
- Shorten special section tubes and guard tubes to an extent that the PTO shaft can move freely in the shortest operating position.
- For additional operating instructions refer to the operating instructions of the PTO shaft manufacturer.

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6 KRONE ISOBUS-Terminal CCI 100

Note

In the operating instructions which follow, the terminal will also be referred to as the "control unit".

Caution! - Protect Control Unit.

Effect: Damage to the control unit

- The control unit must be protected against water.
- If the machine is not used for an extended period of time (for example during the winter), the control unit 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 control unit. Overvoltage can damage the control unit.

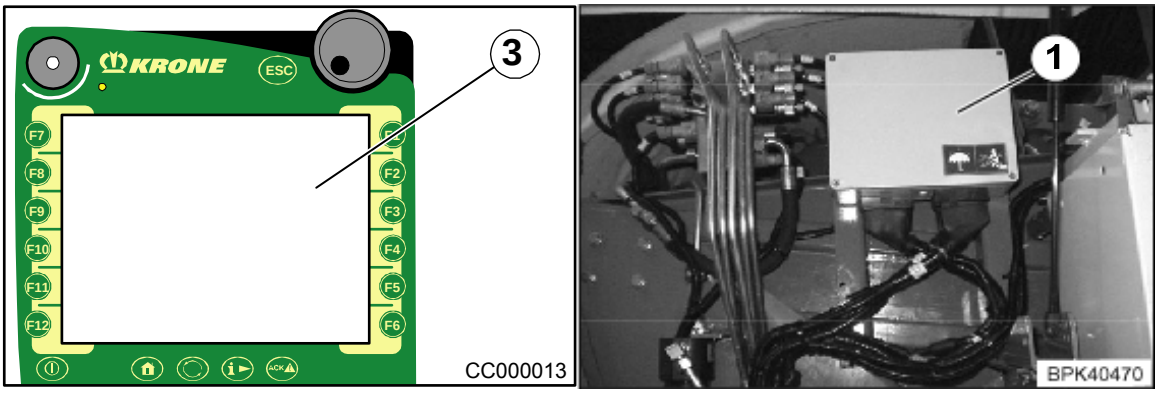

Fig. 26

The electronic equipment of the machine consists essentially of the job computer (1), the terminal (3) and the control and function elements.

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

Its functions are:

- Regulation of the baling density
- Bale counter
- Control of the actuators installed on the machine
- Transfer of alarm messages
- Sensor system/actuator diagnostics

The control unit (3) communicates information to the driver and performs settings to operate the machine. This information is received and further processed by the job computer.

6.1 Installing the terminal into cabin

Note

Please mind the terminal operating instructions included with delivery for the installation of the terminal into the tractor cabin.

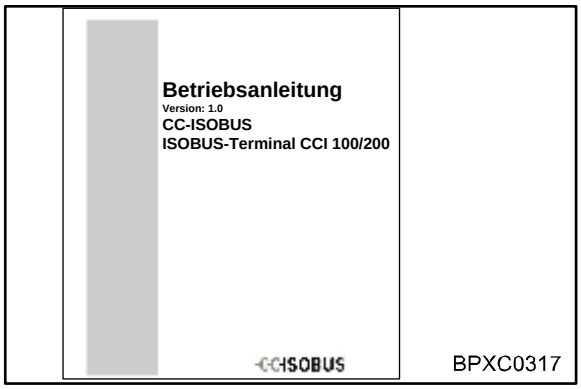

Fig. 27

6.2 ISOBUS Short Cut Button

DANGER! – risk of injury by running machine!

Your machine supports the ISOBUS short cut button.

- By actuation of the ISOBUS short cut button (1) the machine functions are switched off in order to be able to initiate a secure condition of the machine in hazardous situations. Process oriented procedures perform to the end. Therefore, machine parts continue to run after actuating the ISOBUS short cut button. This can lead to injuries
- The ISOBUS short cut button does in no case interfere with tractor functions, i.e. neither universal shaft functions nor hydraulic functions will be affected in any way! Therefore, the machine can continue to run after actuating the ISOBUS short cut button. This can lead to injuries

By hitting the ISOBUS Short Cut Button (as emergency pushbutton) (1) on the terminal a STOP signal is sent to the ISOBUS. This signal is evaluated by your connected ISOBUS machine in order to trigger automatic measures in a hazard situation.

Activating the ISOBUS Short Cut Button will call up the appropriate alarm screen on the display.

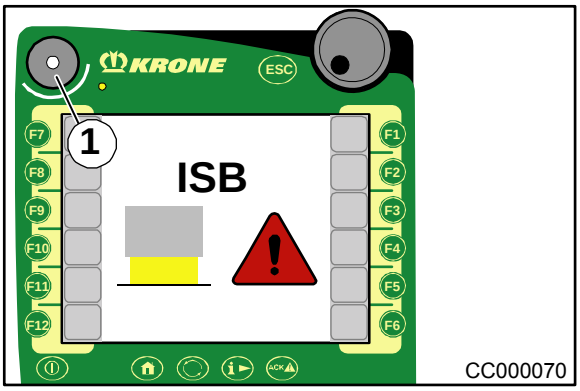

Fig.28

The job computer will then block the following functions on the machine side.

- Lift/Lower blade bar (depending on machine configuration)
- Retract/Extend/Automatic bale ejector (depending on machine configuration)
- Lift/Lower bale chute (depending on machine configuration)
- Trigger knotting motor
- MultiBale switchover (for MultiBale)
- Knotter cleaning mechanism

CAUTION!

Process oriented operations (e.g baling operation) run on until completed even when the ISOBUS Short Cut Button is hit. This is potentially hazardous.

If the ISOBUS short cut button is deactivated again, the following message will appear in the display:

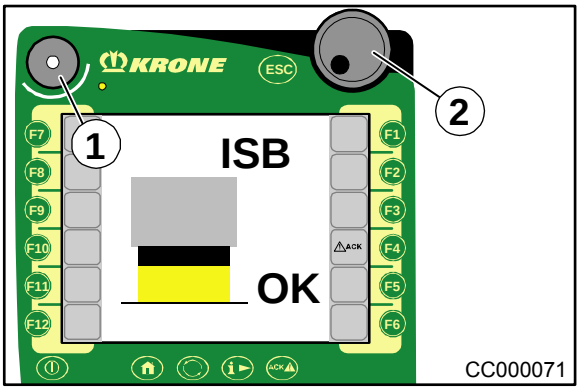

Fig. 29

The alarm mask is exited by actuating the function key 

. It is only now that all functions of the machine are available again.

6.2.1 Connecting the terminal (on tractors with integrated ISOBUS system)

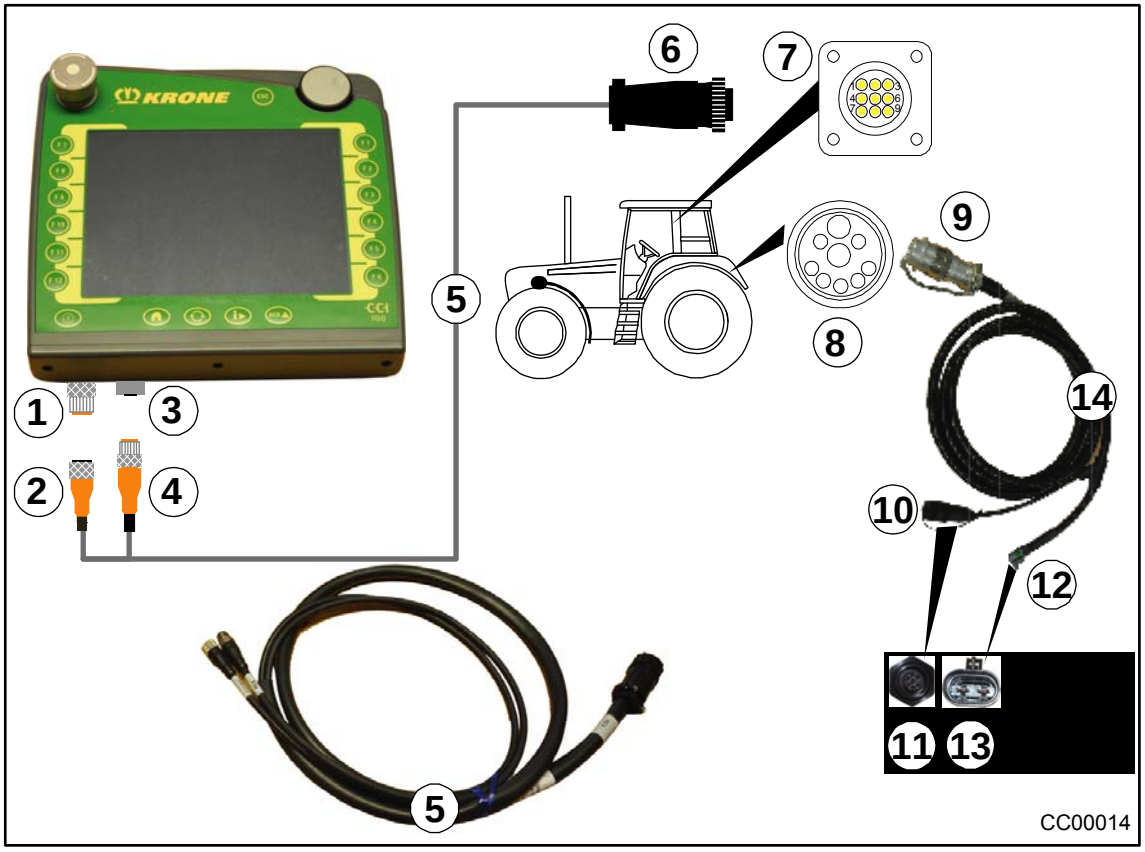

Fig. 30

Connection terminal to tractor

Note

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

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

Connection tractor to machine

Note

The connection of tractor to machine takes place via a provided cable set (14) (article no. 20 080 384 0).

- Connect ISO-plug (9) (9-pole) of cable set (14) with outer ISO-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

6.2.2 Connecting the terminal (on tractors without ISOBUS system)

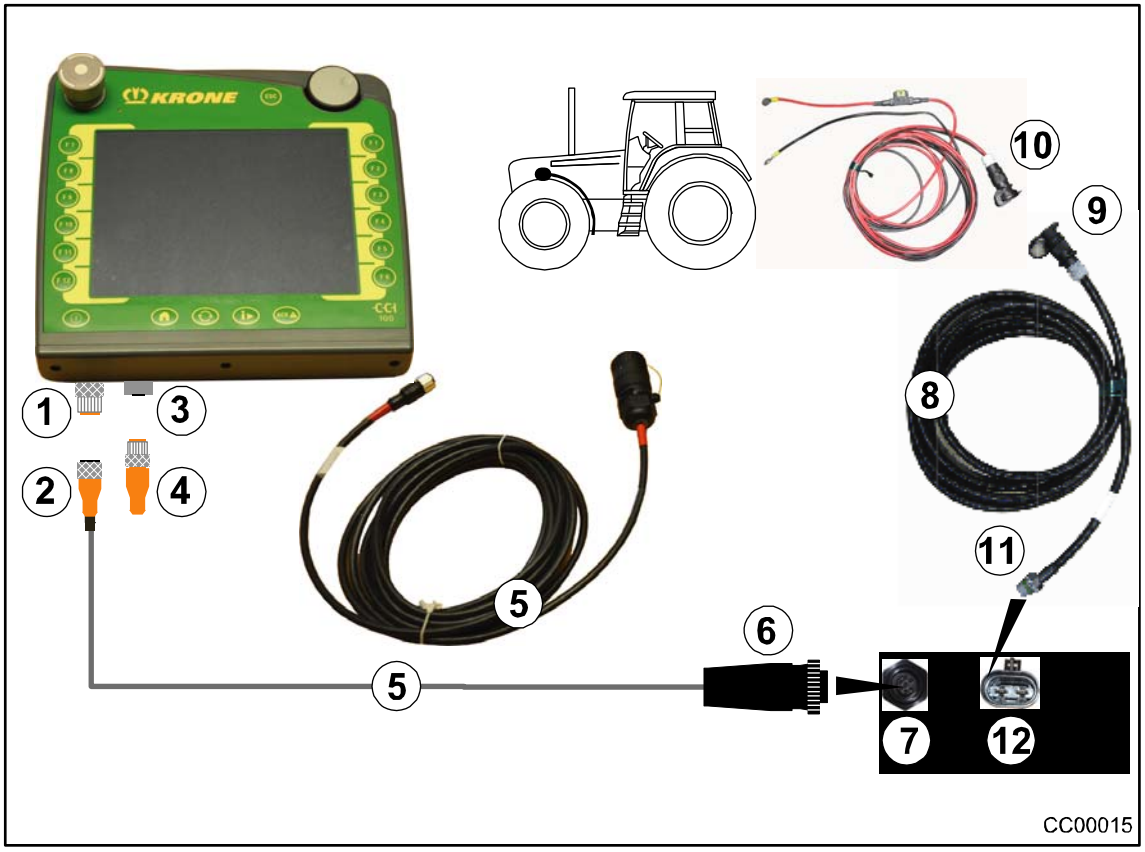

Fig. 31

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

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

6.2.3 Connecting the Multi-Function Lever to the CCI Terminal (on tractors without ISOBUS system)

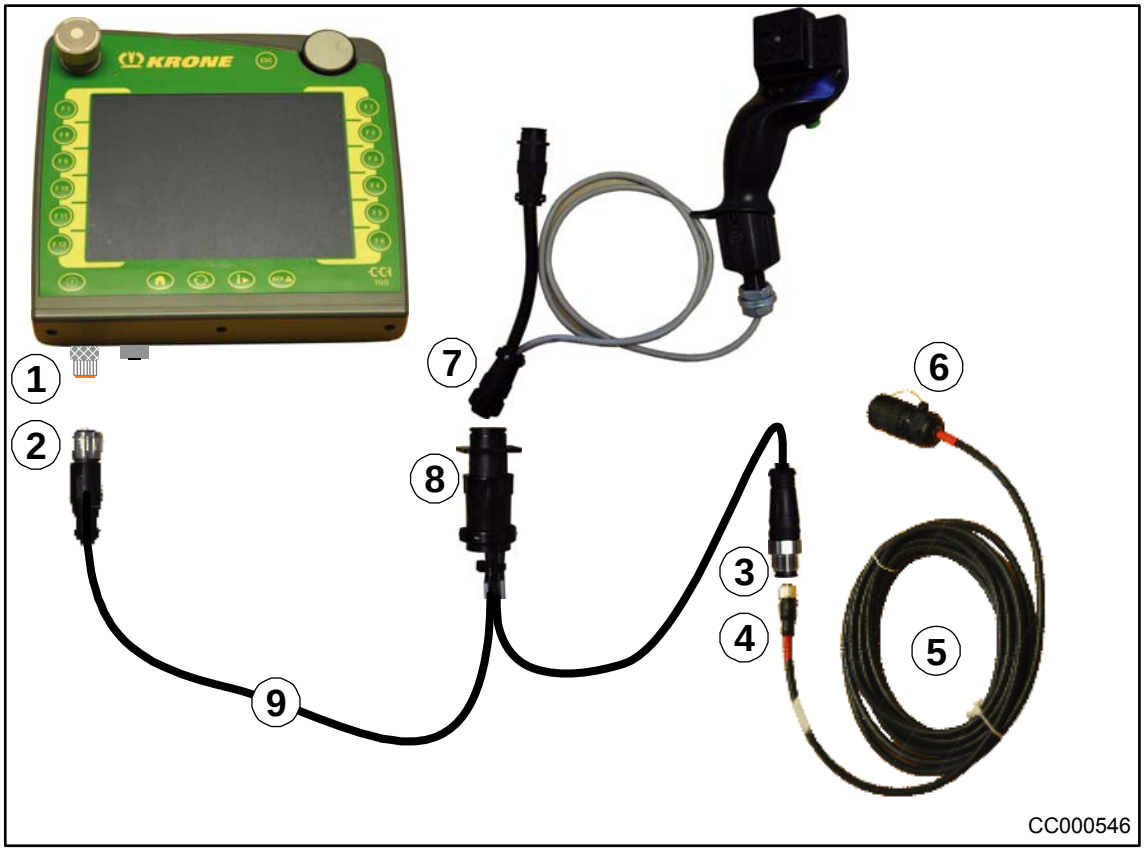

Fig. 32

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.

- 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

6.2.4 Switching the terminal on / off when the machine is not connected

Fig. 33

Note

Before switching the terminal on for the first time make sure that the connections on the device are fastened right and securely.

By pressing and holding (for approx. 2 sec.) the key (1)  (ON/OFF) the terminal will be switched on or off.

Note

For further information on the functioning of the ISOBUS terminal CCI refer to the terminal operating instructions included with delivery.

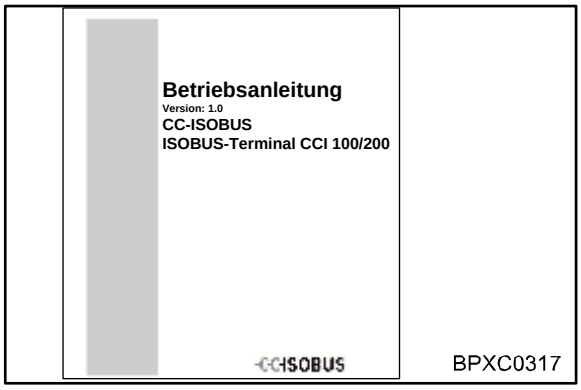

Fig. 34

6.2.5 Switching the terminal on / off when the machine is connected

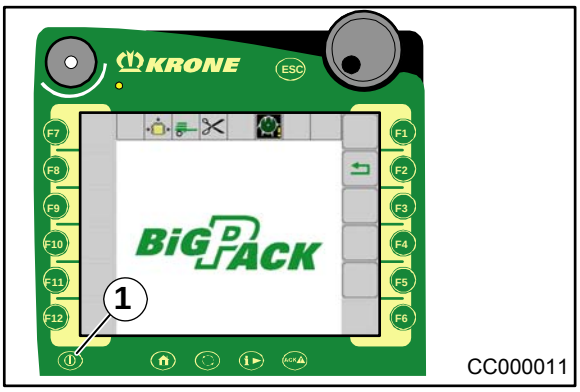

Fig. 35

Note
Before switching the terminal on for the first time make sure that the connections on the device are fastened right and securely.

By pressing and holding (for approx. 2 sec.) the key (1) (ON/OFF) the terminal will be switched on or off.

Note - Prior to first use
When switching on for the first time the configuration of the specific menu of the machine is uploaded into the terminal. The loading may take a few minutes. The configuration will be saved on the memory of the terminal.

Note
For further information on the functioning of the ISOBUS terminal CCI refer to the terminal operating instructions included with delivery.

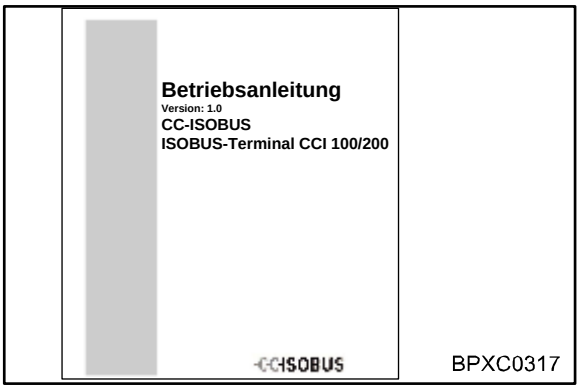

Fig. 36

- The “start-up screen” is shown in the display after the loading process
The terminal is now ready for operation.
- By pressing the function key the manual mode basic screen appears

This page has been left blank deliberately!!

6.3 Function keys

Various machine functions can be activated via the function keys F1 to F12. Each function is represented by a certain symbol.
Pressing a given function key (F1 to F12) activates or deactivates a function as shown in the adjacent image.

Note

By pressing the function key for 1/2 a second page appears from which additional functions (graphics) can be activated.

When the PTO is running the display switches automatically to the second page (2/2) to make the operational function keys available.
With the machine at a standstill (when the PTO is not running) the display switches automatically to the first page (1/2) to make the maintenance function keys available.

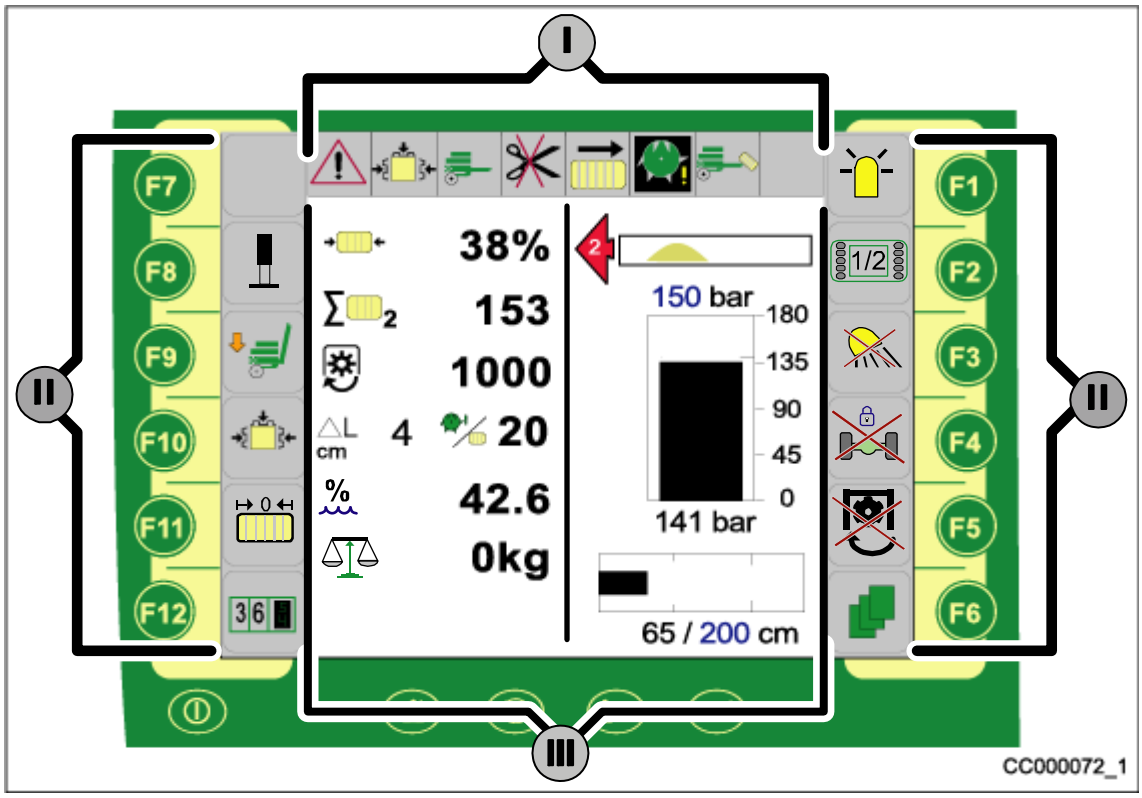

Fig.37

Description of the graphics (II) on the first page 1/2 of the function keys (F1 to F6)

Allround light ON / OFF The active status is displayed.

Allround light ON

Allround light OFF

1/2 Page 1/2 for the function keys

1/2 By pressing the function key for 1/2 a second page appears from which additional functions (graphics) can be activated.

Working floodlight ON / OFF. The current status is displayed.

Working floodlight ON

Working floodlight OFF

Start-up aid activated / deactivated The active status is displayed.

Start-up aid activated

Start-up aid deactivated

Calling up the machine menu level

Press the function key to display the 'Machine settings' menu level.

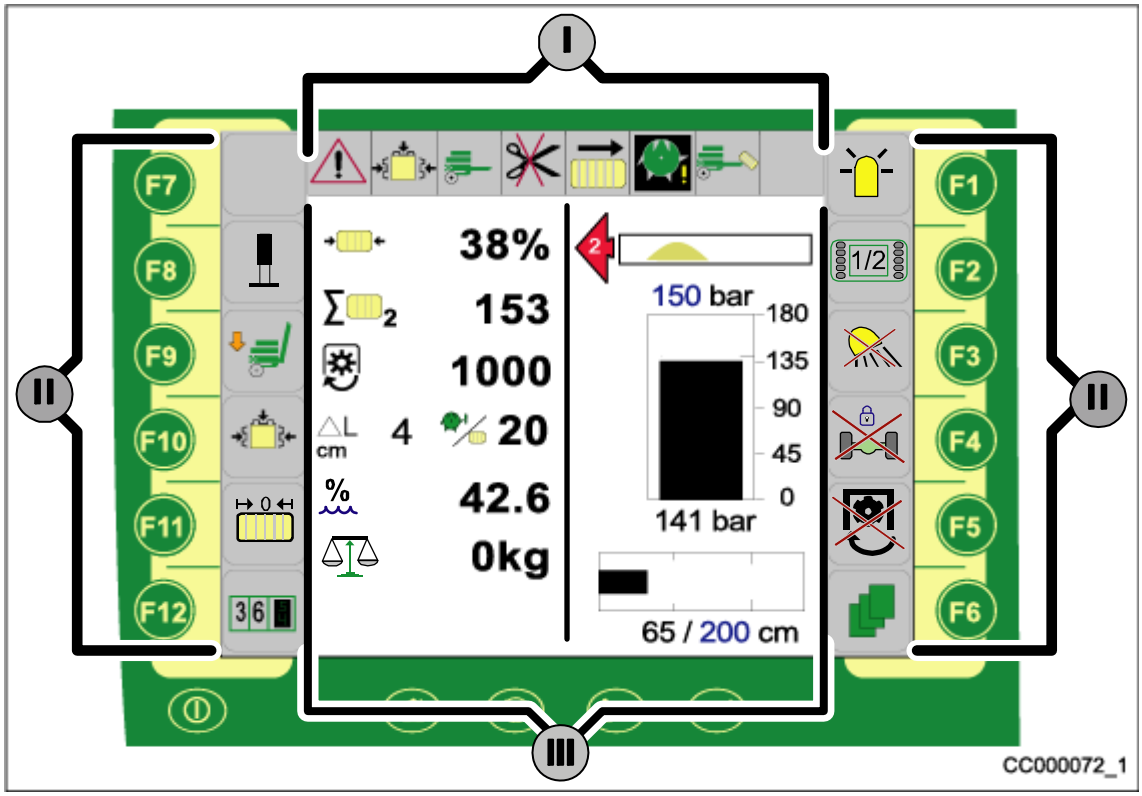

Fig.38

Description of the graphics (II) on the first page 1/2 of the function keys (F7 to F12)

Releasing the hydraulic parking jack (The functions (graphics) for the hydraulic parking jack are enabled on the display.)

- **Deploy parking jack**
  - Press function key .
- **Retract parking jack**
  - Press function key .

Lower bale chute.

- Press function key

/ Open / Close bale channel flaps The current status is displayed.

- Press function key .
- Press function key .

Automatic bale ejector

- Press function key (pressure flaps are released).
- Press function key again. The symbol is highlighted in grey. 10 bale ejection operations are carried out.

Setting the customer counter

Press function key The menu 2-1 'Customer counter' is displayed (for settings see menu 2-1 'Customer counter').

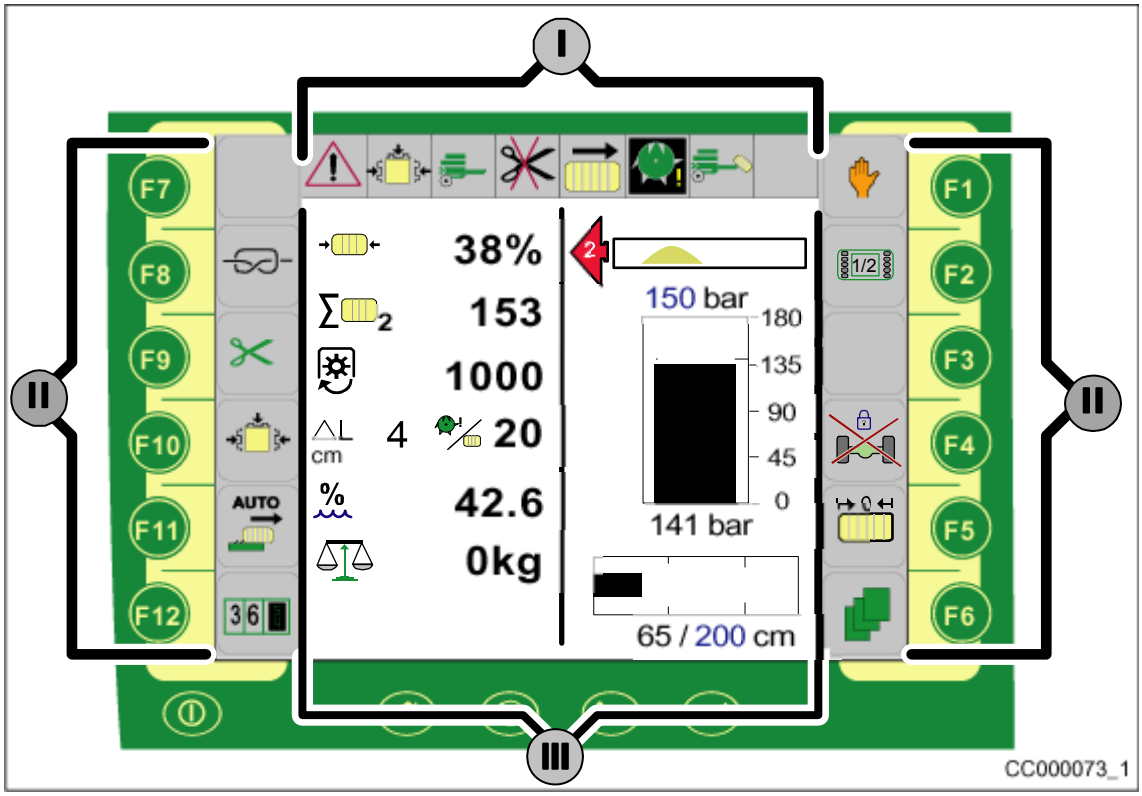

Fig.39

Description of the graphics (II) on the second page 2/2 of the function keys (F1 to F6)

Note

By pressing the function key for 1/2, call up the second page to release the additional functions (graphics) for page 2/2.

When the PTO is running the display switches automatically to the second page (2/2) to make the operational function keys available.
With the machine at a standstill (when the PTO is not running) the display switches automatically to the first page (1/2) to make the maintenance function keys available.

/ Manual / Automatic mode

Switching between manual/automatic mode (the activated mode / is displayed).

Switching to automatic mode:

Press function key . (The symbol (automatic mode) appears on the display.)

2/2 Page 2/2 for the function keys

- By pressing the function key for 2/2 the first page 1/2 of the function keys F1 to F12 is enabled.

Setting the current bale length to zero

- Keep function key pressed down for about 2 seconds.

Description of the graphics (II) on the second page 2/2 of the function keys (F7 to F12)

Trigger knotter

- Press function key .

Release blade bar. (The functions (graphics) for the blade bar are enabled on the display.)

- **Lift blade bar**
  - Press function key .
- **Lower blade bar**
  - Press function key .

6.4 Manual mode

6.4.1 Manual mode basic screen

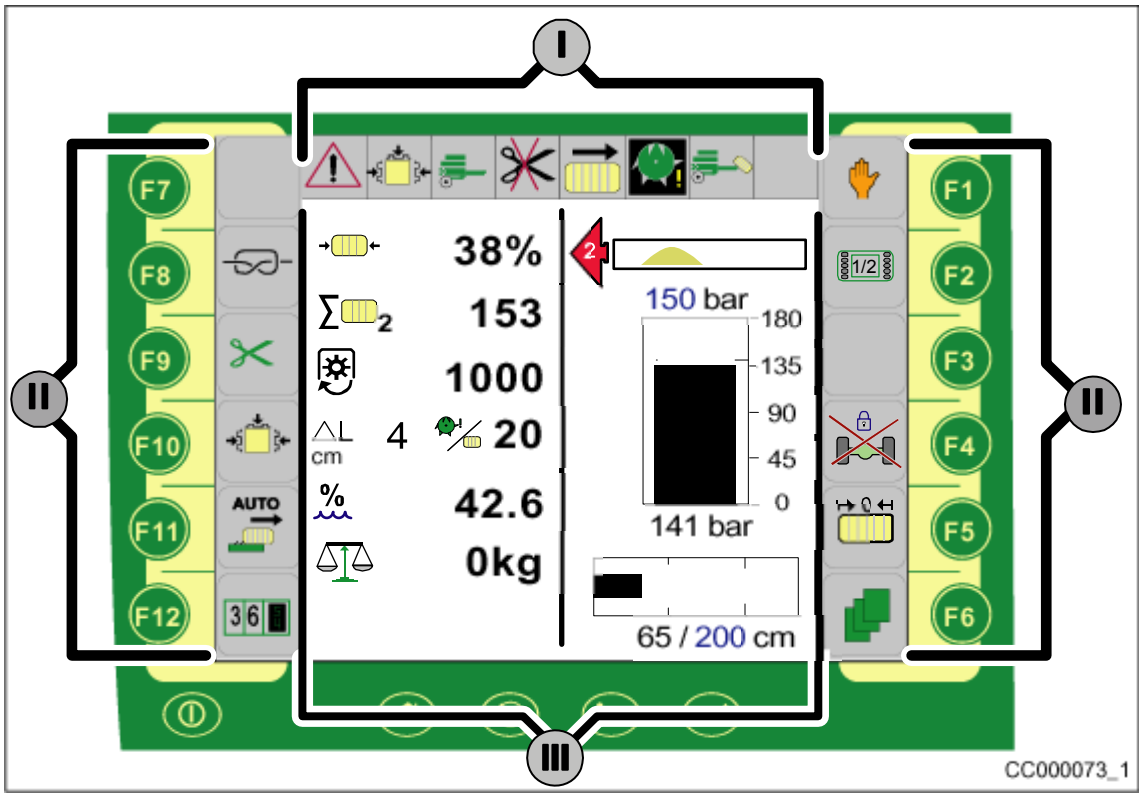

Fig.40

Status line (I)

Current states of the machine (depending on how it is equipped) are shown in the top line of the display:

- Alarm message is pending
- Bale channel flaps open (the symbol flashes)
- Bale channel flaps closed
- Bale chute open
- Bale chute down
- Blade bar up and blades are active: mowing in progress
- Blade bar down and blades are passive: mowing not in progress
- Axle locked
- Axle released
- Deploy bale ejector
- Retract bale ejector
- Machine load max. load, if permanently inverted. For lower loads flashing if not inverted during baling => check packer feed sensor.
- Bale(s) being set down

Displays in the main window (III) (depending on how the machine is equipped)

Left column (A):

	Current baling force as a % (100% = max.)
2	Total number of bales, current customer counter
	Current P.T.O. speed (min^{-1})
L cm	Current layer thickness in cm or inch (only for electrical bale length adjustment)
20	Number of layers per bale
	Bale weight (of the bale weighed at last)
%	Moisture degree of the crop
Ø	Average weight of the weighed bales
∑	Total weight of all bales
m	Bale length counter (metric in metres)
ft	Bale length counter (unit of measure US in feet)
	Number of uncut bales
	Number of cut bales (only for machines with X-Cut)
	Appears briefly after a knot is tied; if activated (see chapter menu 1-2 “Knotter Signal “), an audio signal is heard (horn sound for about 1 sec).
h	Operating hours counter (counts only when PTO is running)

Right column:

Motion direction display

Arrows (1) left/right from the display. The arrows (1) have three different sizes, numbered 1-3.
They show the driver to which side he must correct the direction and how far when driving over a swath, to ensure the bale chamber is filled evenly.

Note

If the indications for the direction of motion are too strong or too weak, they can still be adjusted (see chapter menu 1-3 “Sensitivity of direction display”).

The displays in the main window (left column (A)) can be arranged individually. The procedure is described in the chapter menu 9-3 “Configuration Main Window”.

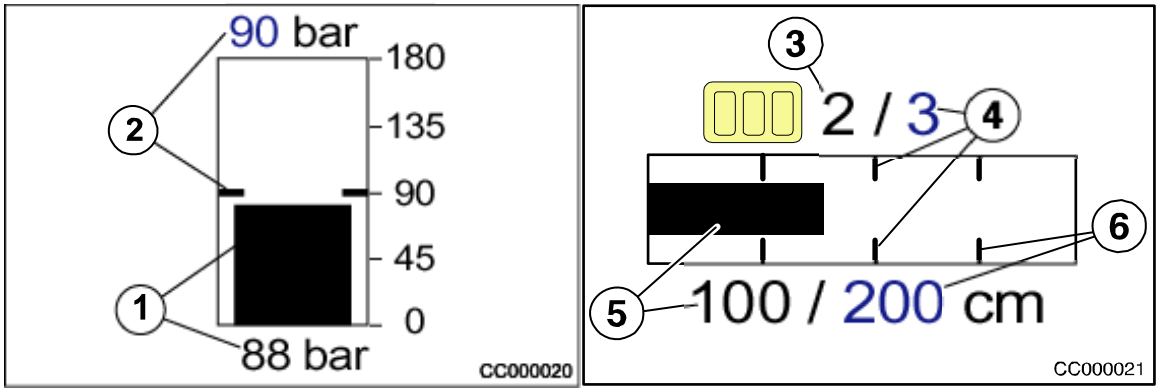

Fig. 41

Bale channel flap pressure (in bar or PSI according to unit of measurement Metric or US)

The value under the bar display and the height of the bar (1) show the current actual bale channel flap pressure. The value above the bar display and the markings in the bar display (2) show the set bale channel flap pressure in bar or PSI.

MultiBale (optional)

The first value (3) shows the MultiBales currently baled. The second value and the marking (4) shows the set MultiBale number per total bale. After each MultiBale there is a short horn sound. When the bale is complete a longer and louder horn sound is issued.

Bale length display

The current position of the bale length is shown by the first value below the bar display as well as the length of the bar (5). The second value and the marking (6) shows the set bale length.

6.4.2 Setting the target bale channel flap pressure

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

The user will give the pressure in the manual mode. The pressure is built up immediately if the P.T.O. shaft is running and the machine is stopped. The pressure display barely fluctuates in the display.

Setting the target bale channel flap pressure

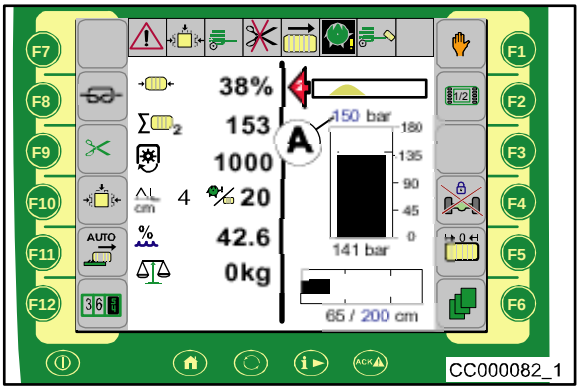

Fig.42

- You can use the scroll wheel to select the desired selection (A) (the selection box is highlighted in color)
- Pressing the scroll wheel allows you to jump to the selection box (the selection box is highlighted in color)
- Turning the scroll wheel increases or reduces the value
- Pressing the scroll wheel causes the setting to be applied and returns you from the selection box

Note

The values can also be set via the touchscreen.

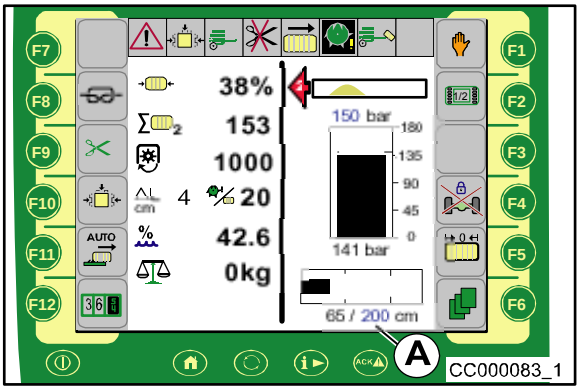

Fig.43

6.4.3 Setting the bale length

Note

(BP 890;1270;1290)

The bale length can be set in the range from 100 - 270 cm (39 - 106 inches).

(BP 1290 HDP; BP 4x4)

The bale length can be set in the range from 100 - 320 cm (39 - 126 inch).

Note

Only adjust the bale length at the start of a bale, otherwise in-between lengths could arise.

- You can use the scroll wheel to select the desired selection (A) (the selection box is highlighted in color)
- Pressing the scroll wheel allows you to jump to the selection box (the selection box is highlighted in color)
- Turning the scroll wheel increases or reduces the value
- Pressing the scroll wheel causes the setting to be applied and returns you from the selection box

Note

The values can also be set via the touchscreen.

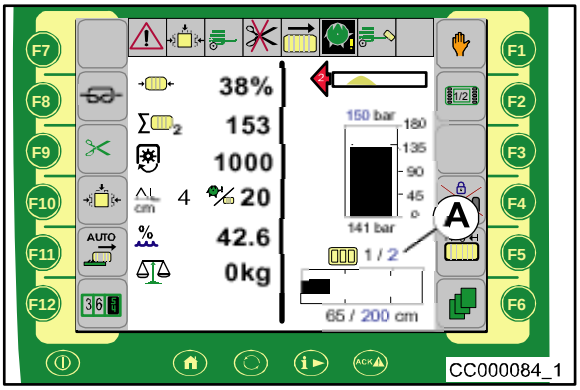

Fig.44

Setting the number of MultiBales (MultiBale only)

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).

- You can use the scroll wheel to select the desired selection (A) (the selection box is highlighted in color)
- Pressing the scroll wheel allows you to jump to the selection box (the selection box is highlighted in color)
- Turning the scroll wheel increases or reduces the value
- Pressing the scroll wheel causes the setting to be applied and returns you from the selection box

Note

The values can also be set via the touchscreen.

6.5 Automatic Mode

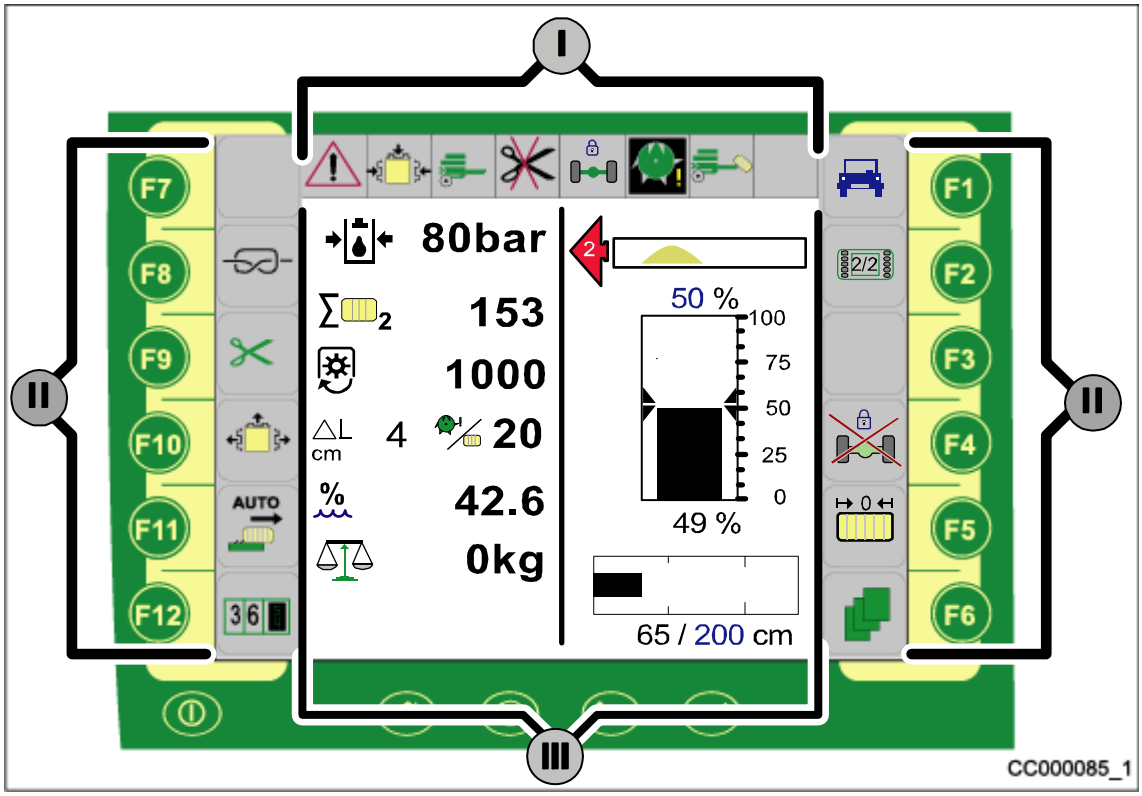

Fig.45

Note
For general description see chapter “Manual mode”

Differences compared to manual mode

Description of the symbols (II)

/ Manual / automatic mode

Switching between manual/automatic mode (the activated operation / is displayed).

Switching to manual mode:

Press function key. (The symbol will be indicated on the display (manual mode)).

Displays in the main window (III)

bale channel flap pressure (in bar or PSI according to unit of measurement Metric / US)

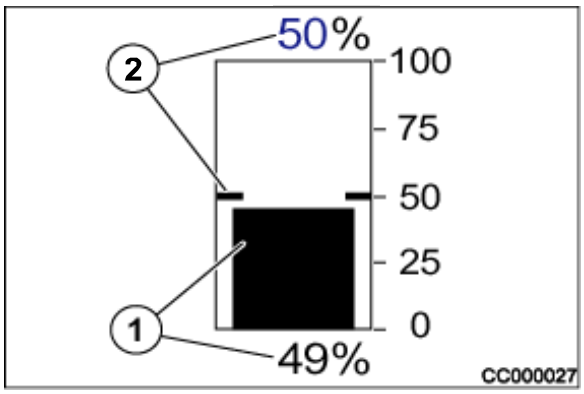

Fig. 46

Pressing force (in %)

The value under the bar display and the height of the bar (1) indicate the current target pressing force as a percentage rate. The value above the bar display and the arrows in the bar display (2) indicate the set target pressing force as a percentage rate.

Setting the target pressing force

In Automatic mode, the pressure is automatically set based on the measured plunger force.

Note

The pressure display may deviate significantly in the display. The control system will not work unless the packer is supplying forage to the plunger.

6.6 Buttons on the machine

WARNING! - Unexpected actions on the machine!

Effect: Injuries or damage to the machine.

- When activating the raise/lower blade bar button, make certain there is no one in the swivel range of the blade bar
- When activating the raise/lower bale chute button, make certain there is no one in the swivel range of the bale chute
- Repair, upkeep, maintenance and cleaning work may be performed only when the machine is at a standstill
- Switch off the engine, remove the ignition key and turn off the electrical system on the control box
- Secure the machine and tractor against the possibility of rolling back

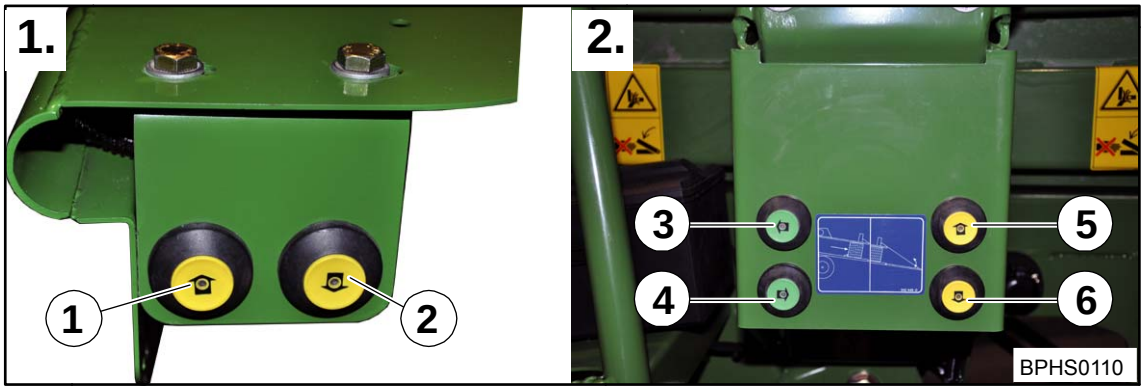

Fig. 47

The machine has a few buttons located externally on the machine that can be used to perform functions on the machine.

1. There are two buttons on the front left of the machine on the front side of the twine box with the following functions:

   (1) Raise blade bar

   (2) Lower blade bar

2. There are four buttons on the rear left of the machine with the following functions:

   (3) Move bale ejector forward

   (4) Move bale ejector backward

   - Press key , bale channel flaps will be opened
   - Press the key briefly, 10 bale ejections are performed
   - or press key permanently, the bale ejector goes backwards

   (5) Raise bale chute

   (6) Lower bale chute

6.7 Description of baling process

6.8 Bale channel chamber empty

When the control unit is switched on, the display remains in Manual Mode.

Note

The bale channel chamber must first be filled to a pressure of about 50 bar / 725 PSI for straw and 25 bar / 362,5 PSI for silage there to prevent the bale channel flaps from bending out of shape. When the bale channel is filled, the pressure must be set high enough so that the bale will be as solid as desired.

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

The program will then use the bale solidity that was previously reached from manual mode. The contact pressure of the bale channel flaps in the bale channel chamber is controlled independently by the job computer so that the preselected pressing force is achieved.

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. The pressure display may deviate significantly in the display. Bale quality and bale firmness stay constant.

For information:

The pressing force is recorded by two sensors on the inside of the front frame section. Then it is amplified and sent to the job computer.

The job computer evaluates the signals and then controls the pressure of the hydraulic cylinders of the bale channel flaps. The signals are also used on the control unit for the direction of motion display. The greater the difference between the measured forces of the left and right sensor, the stronger the indications for the direction of motion. If the indications for the direction of motion are too strong or too weak, they can still be adjusted (see chapter menu 1-3 “Sensitivity of direction display”).

6.8.1 Bale channel chamber full

Just like the chapter “Bale channel chamber empty” with the following differences:

1. If you will be baling in automatic mode, you can switch into automatic mode immediately after the machine starts. The last target force to be used will be used again in this case, i.e. you can continue baling with the same settings after turning the machine off and back on.

Note

The baling pressure setting should not have been adjusted after the control system is turned on in manual mode, because the control system then "forgets" the last settings.

2. If you will be baling in manual mode, the baling pressure should be adjusted to the desired value immediately after the control system is started.

6.9 Menu level

6.9.1 Short Overview

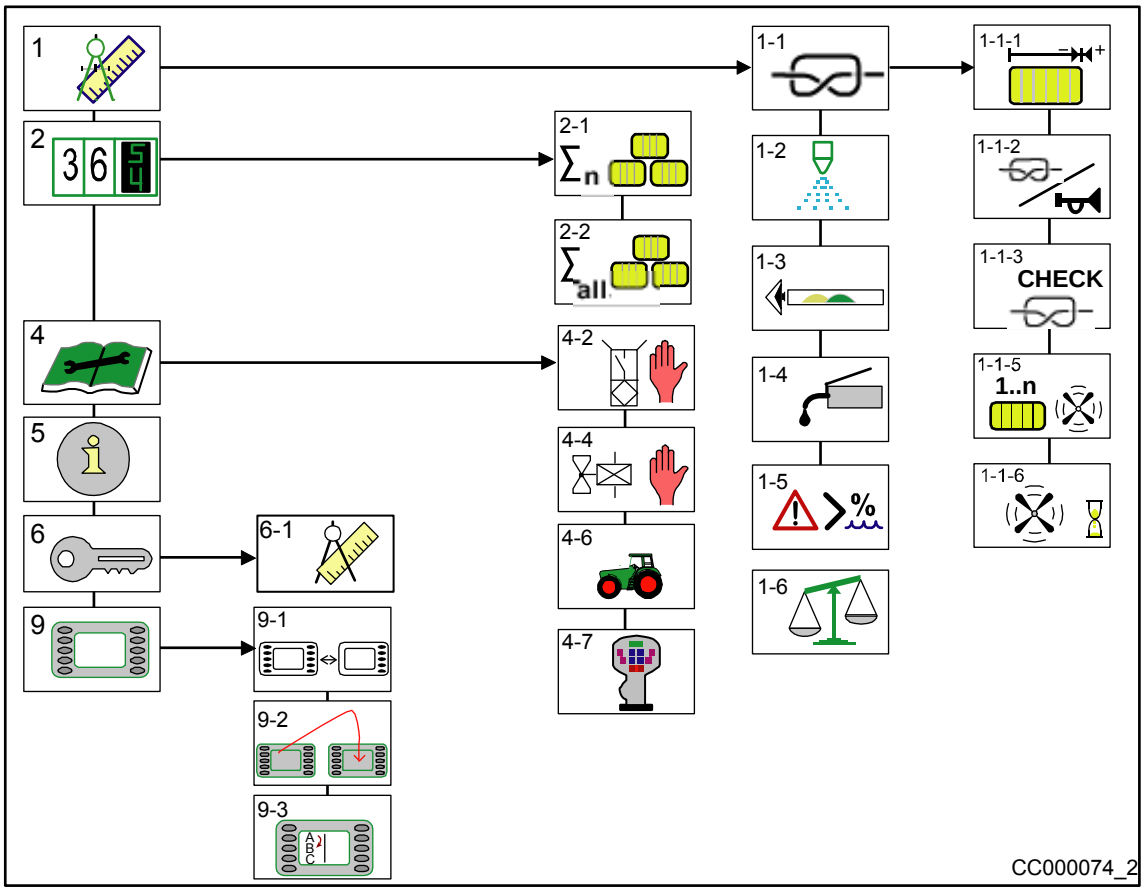

Fig. 48

1	**Settings**	2-2	Total counter
1-1	Knotter settings	**4**	**Service**
1-1-1	Bale length correction value	4-2	Manual sensor test
1-1-2	Knotter signal	4-4	Manual actuator test
1-1-3	Knotter monitoring	4-6	Diagnostics travelling speed display / motion direction display
1-1-5	Bales / blowing	4-7	Diagnostics Auxiliary (AUX)
1-1-6	Blow time	**5**	**Info**
1-2	Silage agents	**6**	**Technician**
1-3	Sensitivity of direction display	6-1	Settings
1-4	Central lubrication	**9**	**Virtual Terminal (VT)**
1-5	Moisture measuring	9-1	Softkeys ISO terminal
1-6	Bale balance	9-2	Switching between the terminals
2	**Counter**	9-3	Configuration main window
2-1	Customer counter		

6.9.2 Calling up the menu level

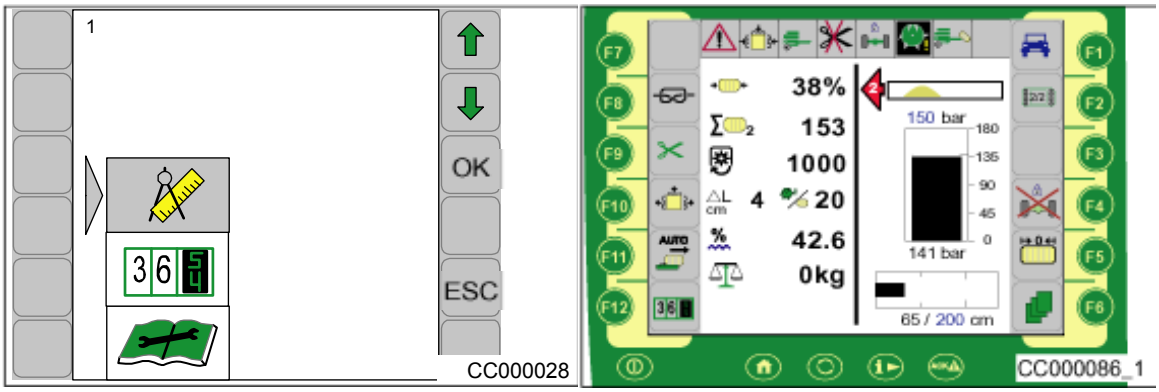

Fig.49

By pressing the function key in the main window you get into the menu level of the machine.

The menu level is shown in the display.

The menu level is divided into six main menus:

	= Main menu 1 "Settings"
	= Main menu 2 "Counter"
	= Main menu 4 "Service"
	= Main menu 5 "Info"
	= Main menu 6 “Technician"
	= Main menu 9 “ISO setting Information"

Select the desired main menu by pressing the function key or . The selected symbol is shown in reverse colours.

- Pressing the function key **OK** brings up the menu level of the selected main menu
- Pressing the function key **ESC** closes the called up menu
- Pressing the function key **ESC** and holding it down brings up the basic screen

6.10 Main Menu 1 „Settings“

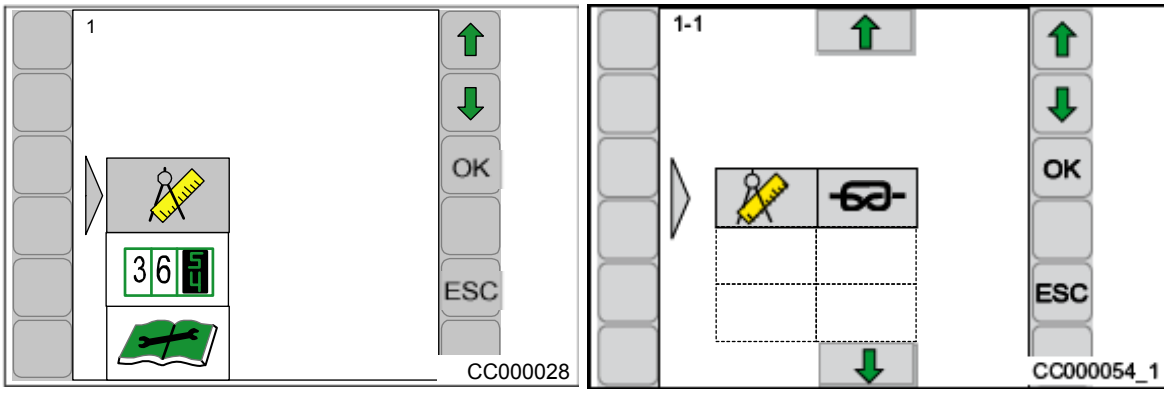

Fig. 50

- By pressing the function key from the basic screen you get into the menu level of the machine
- Select main menu 1 ( ) by pressing function key or , the symbol is highlighted in grey
- Press function key **OK**

The display shows menu level 1 "Settings". The menu level 1 "Settings" is divided into up to 5 menus, depending on how the machine is equipped:

= Menu 1-1 “Knotter settings"

= Menu 1-3 “Sensitivity of direction display”

= Menu 1-4 "Central lubrication"

= Menu 1-5 “Moisture measuring”

= Menu 1-6 “Bale balance”

6.10.1 Menu 1-1 „Knotter Settings“

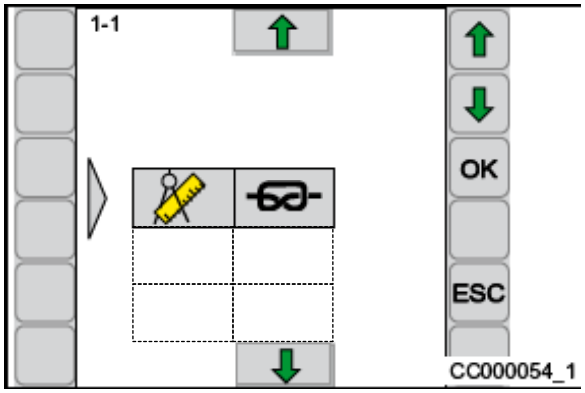

Fig. 51

Calling the Menu

Main menu 1 “Settings” is called.

- Select menu 1-1 by pressing function key or , the symbol is highlighted in grey
- Press function key **OK**

The display shows menu 1-1 “Knotter Settings”.

The menu level 1-1 “Knotter Settings" is divided into up to 5 menus, depending on how the machine is equipped:

Menu 1-1-1 “Correction value for bale length”

Menu 1-1-2 “Knotter signal”

Menu 1-1-3 “Knotter monitoring”

Menu 1-1-5 “Bales / blow” (with electronic knotter triggering)

Menu 1-1-6 "Blow time"

6.10.2 Menu 1-1-1 „Correction Value for Bale Length“

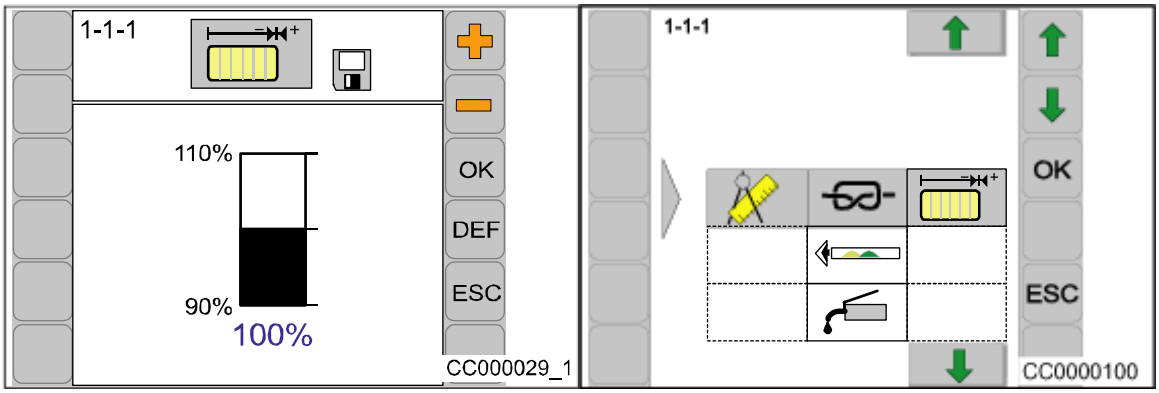

Fig. 52

Because of different properties of materials (for example straw or silage), the actual bale length can differ from the pre-set setpoint. The correction value can be used to correct this deviation.

Factory setting: 100%

Calling the Menu

The main menu 1-1 “Knotter Setting” is called.

- Select menu 1-1-1 by pressing function key or , the symbol is highlighted in grey
- Press function key **OK**

The display shows menu 1-1-1 “Correction Value Bale Length”.

The bar display and the percentage value show the set correction value. The symbol in the upper line indicates that the displayed value is saved.

Setting and Saving the Correction Value

If the bale is too long, reduce the correction value. If the bale is too short, increase the correction value.

- Set the desired correction value with the function key or . The symbol in the top line goes out
- Press the function key **OK**. The set correction value is saved and the symbol appears in the upper line
- By pressing the function key **DEF**, the value of the factory setting is displayed (press function key **OK**, the value of the factory setting is saved, the symbol in the upper line appears)
- Pressing the function key **ESC** closes the called up menu
- Pressing the function key **ESC** and holding it down brings up the basic screen

6.10.3 Menu 1-1-2 „Knotter Signal“

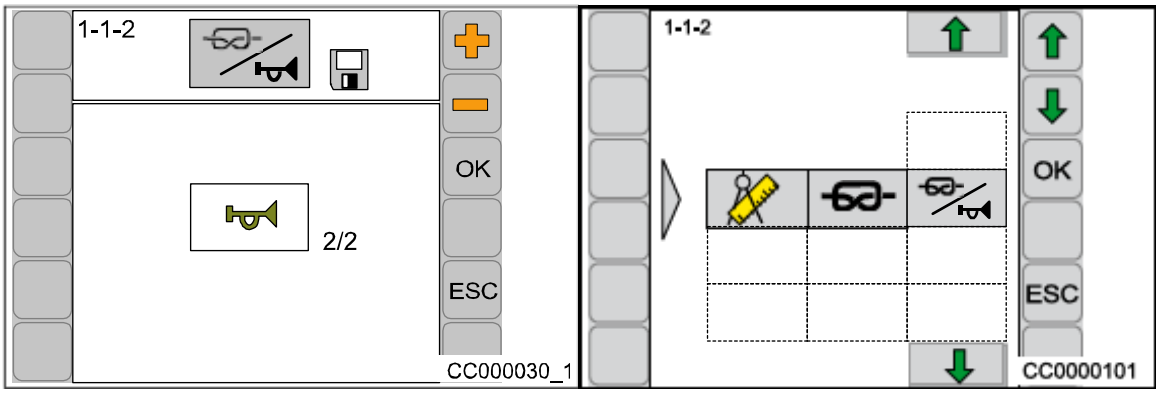

Fig. 53

Activation/deactivation of the audio signal when a knot has been completed.

Calling the Menu

The main menu 1-1 “Knotter Settings” is called up.

- Select menu 1-1-2 by pressing function key or , the symbol is highlighted in grey
- Press function key **OK**

The display shows menu 1-1-2 “Knotter signal".

The current status is displayed as an icon:

= Knotter signal activated

= Knotter signal deactivated

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

Changing and Saving Status

- Set the status accordingly via function key or , the symbol in the upper line goes out
- Press function key **OK**, the set status is saved, the symbol in the upper line appears
- The called up menu is closed by pressing function key **ESC**
- Pressing the **ESC** function key and holding it down brings up the basic screen

6.10.4 Menu 1-1-3 „Knotter Monitoring“

With comfort version electronics design, the machine is serially equipped with an electronic knotter monitoring. Each knotter is in this process monitored individually by one sensor. 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 left to right from 1 to 4 (BP 890) or from 1 to 6 (BP 1270/1290/4x4).

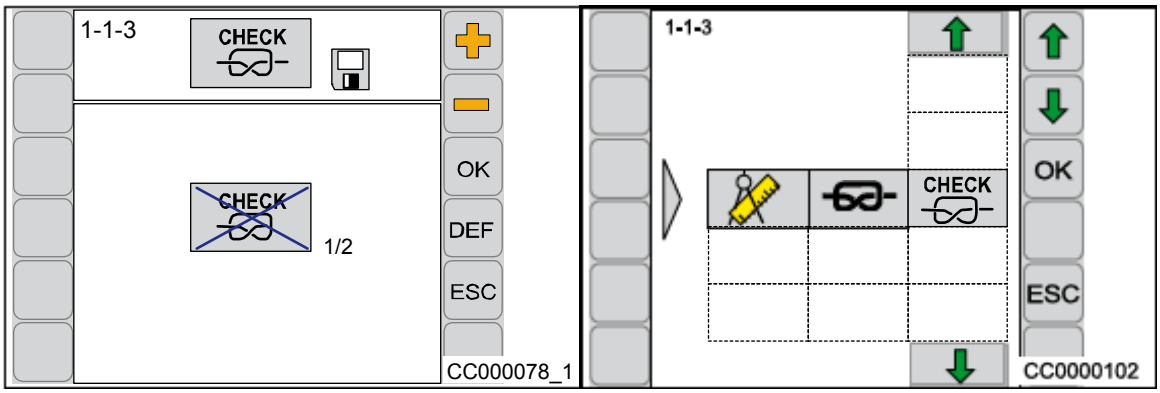

Fig. 54

Calling the Menu

The main menu 1-1 “Knotter Settings” is called up.

- By pressing function key ⬆ or ⬇, the menu 1-1-3 CHECK is selected, the symbol is highlighted in grey
- Press function key **OK**

The display shows menu 1-1-3 “Knotter monitoring".

The current status is displayed as an icon:

CHECK = Knotter monitoring activated

CHECK = Knotter monitoring deactivated

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

Changing and Saving Status

- Set the status accordingly with the function key or in a way that the symbol in the top line goes out
- Press function key **OK**, the set status is saved, the symbol in the upper line appears
- Pressing the function key **ESC** closes the called up menu
- Pressing the function key **ESC** and holding it down brings up the basic screen

6.10.4.1 Menu 1-1-5 „Bales / Blow“

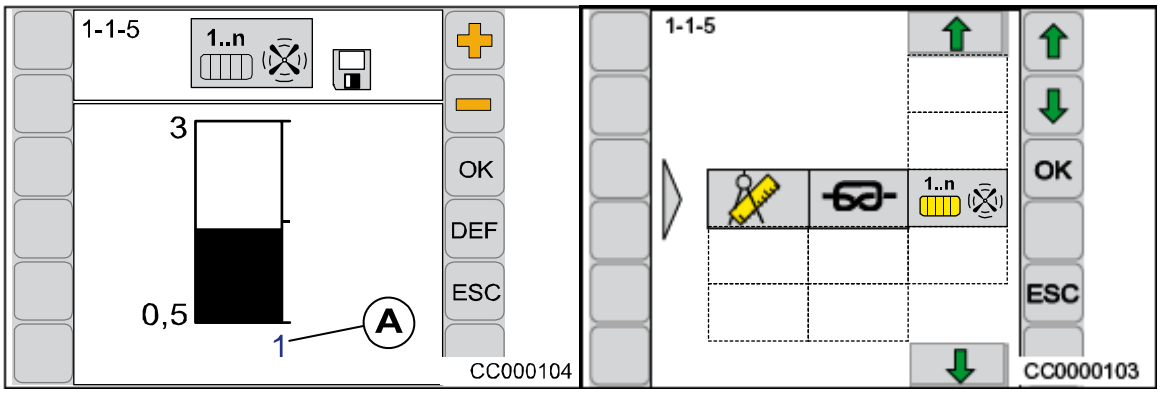

Fig. 55

(For machines with electronic knotter triggering)

Dust and accumulated crop material is removed from the knotters by compressed air at regular intervals (depending on the number of bales produced). 0.5 to 3 bales can be set. If the setting 0.5 is selected, blowing is carried out at the half of the bale and at the end of the bale.

Setting the Number of Bales

Calling the Menu

The main menu 1-1 “Knotter Settings” is called up.

- Select menu 1-1-5 by pressing function key or , the symbol is highlighted in grey
- Press function key **OK**

The display shows menu 1-1-5 "Bales / blow".

The bar display and the value (A) show the preselected bale number.

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

- Set the desired number of bales with function key or . The symbol in the top line disappears
- Press function key **OK**, the set value is saved, the symbol appears in the upper line
- By pressing the function key **DEF**, the value of the factory setting is displayed (press function key **OK**, the value of the factory setting is saved, the symbol in the upper line appears)
- Pressing the function key **ESC** closes the called up menu
- Pressing the **ESC** function key and holding it down brings up the basic screen

6.10.4.2 Menu 1-1-6 „Blow Time“

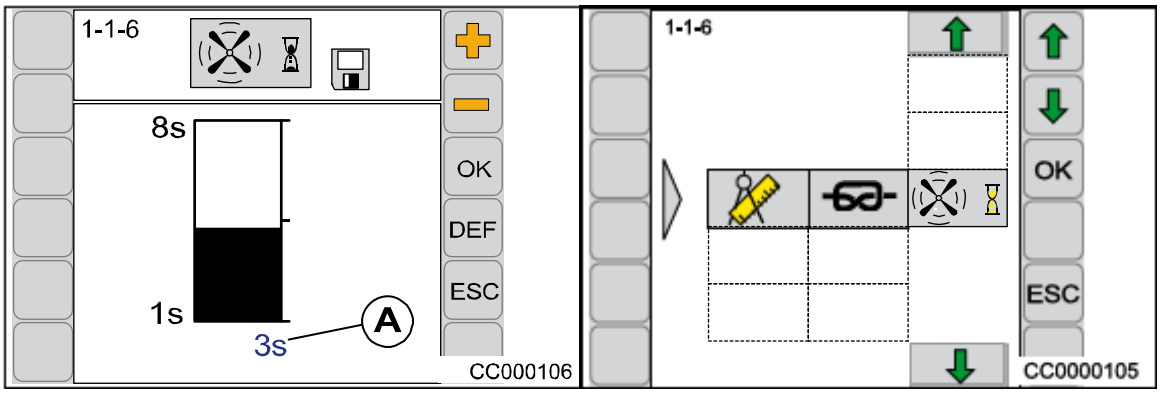

Fig. 56

The blowing time on the knotter is set in this menu.

Calling the Menu

The main menu 1-1 “Knotter Settings” is called up.

- Select menu 1-1-6 by pressing function key or , the symbol is highlighted in grey
- Press function key **OK**

The display shows menu 1-1-6 "Blow time".

The bar display and the value (A) show the preselected cleaning time (blow time) in seconds.

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

- Set the desired blow time with the function key or , the symbol in the top line goes out

  Press function key **OK**, the set correction value is saved, the symbol in the upper line appears
- By pressing the function key **DEF** the value of the factory setting appears (press function key **OK**, the value of the factory setting will be saved, the symbol appears in the upper line)
- Pressing the function key **ESC** closes the called up menu
- Pressing the function key **ESC** longer and holding it down brings up the basic screen

6.10.5 Menu 1-2 silage agents / optional

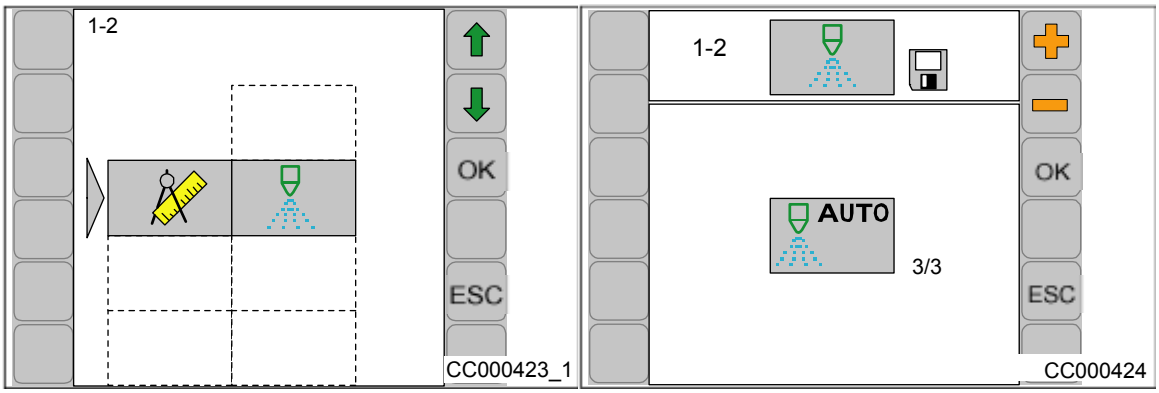

Fig. 57

Note
The connection (max. 2 amperes) for the silage agent device is located close to the job computer. (approx. 0.5 m in cable harness 1X1).

Displaying the menu

Main menu 1 “Settings” is displayed.

- You can select menu 1-2 with the function key or . The symbol is highlighted in grey.
- Press function key **OK**

The display shows menu 1-2 “Silage agents".

The current status is displayed as an icon:

OFF Silage agents off

ON Silage agents on (continuous operation)

AUTO Silage agents automatic mode (silage agents on if the pick-up is in float position)

The icon in the upper line indicates that the displayed status is saved.

Changing and saving status

- Set the status with the function key or in a way that the symbol in the top line goes out
- Press the function key **OK**. The set status is saved and the symbol appears in the upper line
- Pressing the function key **ESC** closes the called up menu
- Pressing the function key **ESC** and holding it down brings up the basic screen

6.10.6 Menu 1-3 „Sensitivity of the Direction Display“

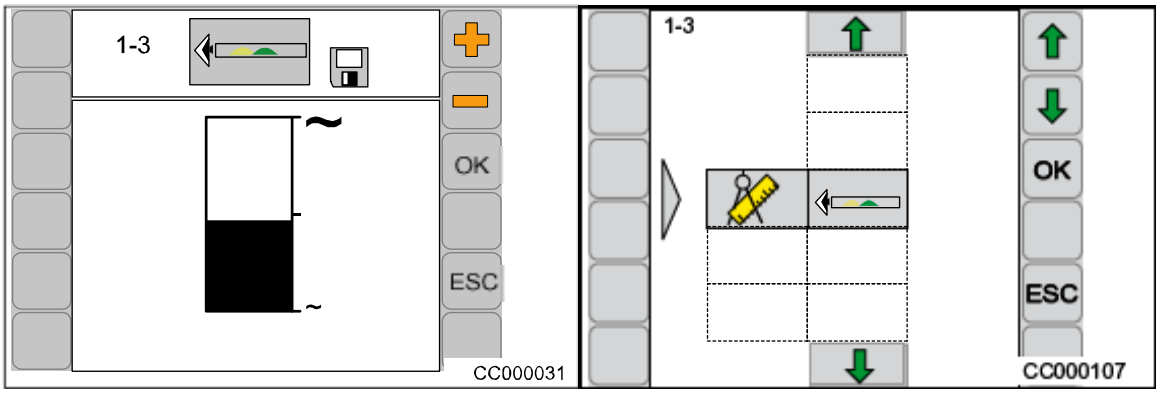

Fig. 58

Setting the sensitivity of the direction display.

Calling the Menu

Main menu 1 “Settings” is called.

- Select menu 1-3 by pressing function key or , the symbol is highlighted in grey
- Press function key **OK**

The display shows menu 1-3 “Sensitivity of the Direction Display”.

The bar display shows the set sensitivity. The higher the bar, the greater the sensitivity of the direction display. The symbol in the upper line indicates that the displayed value is saved.

Setting and saving the sensitivity of the direction display.

The higher the sensitivity of the direction display is set, the stronger the indications for the direction of motion in the form of arrows (1) ( ).

- Set the sensitivity by using function key or , the symbol in the upper line goes out
- Press function key **OK**, the set sensitivity is saved, the symbol in the upper line appears
- Pressing the function key **ESC** closes the called up menu
- Pressing the function key **ESC** longer and holding it down brings up the basic screen

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6.10.7 Menu 1-4 „Central Lubrication“

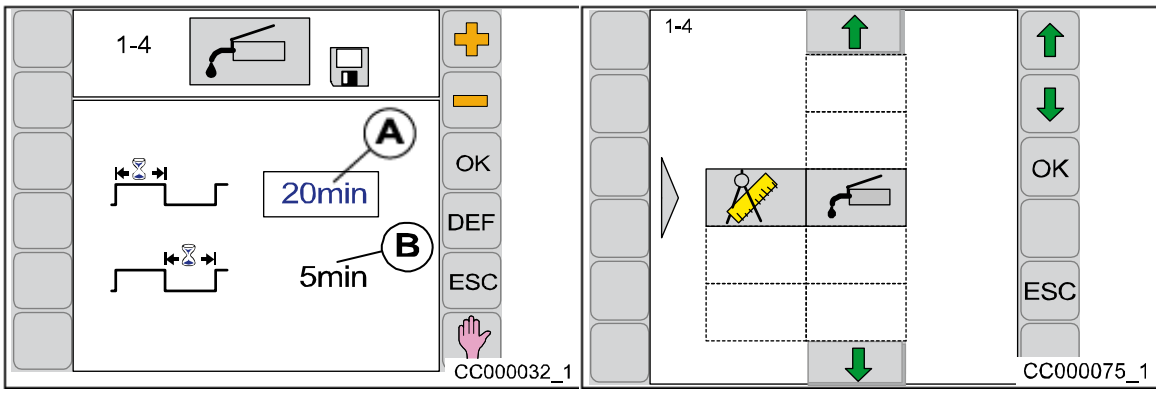


Fig. 59

(For machines with central lubrication)

Setting of the lubrication intervals and the lubrication duration.

Calling the Menu

Main menu 1 “Settings” is called.

- By pressing function key ⬆ or ⬇, select menu 1-4 , the symbol is highlighted in grey
- Press function key **OK**

The display shows menu 1-4 “Central Lubrication”.

The current status is displayed as an icon:

The display shows menu 1-4 “Central Lubrication”.

The upper value (A) indicates the time for the lubrication duration whereas the lower value (B) shows the time for the lubrication pause.

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

The lubrication duration can be increased by some minutes. Central lubrication is set to optimal levels at the factory.

Factory Setting:

Lubrication duration: 20 min (A)
Lubrication pause: 5 min (B)
Capacity of the container 4.5 kg

- Set the lubrication duration with the function key + or –, the symbol in the top line goes out
- Press the function key **OK**. The set time is saved and the symbol appears in the upper line
- By pressing the function key **DEF** the value of the factory setting appears (press function keyv, the value of the factory setting will be saved, the symbol appears in the upper line)

Initiate the lubrication process manually

- By pressing the function key the lubrication process is started for the set duration of lubrication
- Pressing the function key **ESC** closes the called up menu
- Pressing the function key **ESC** and holding it down brings up the basic screen

6.10.8 Menu 1-5 „Moisture Measuring“

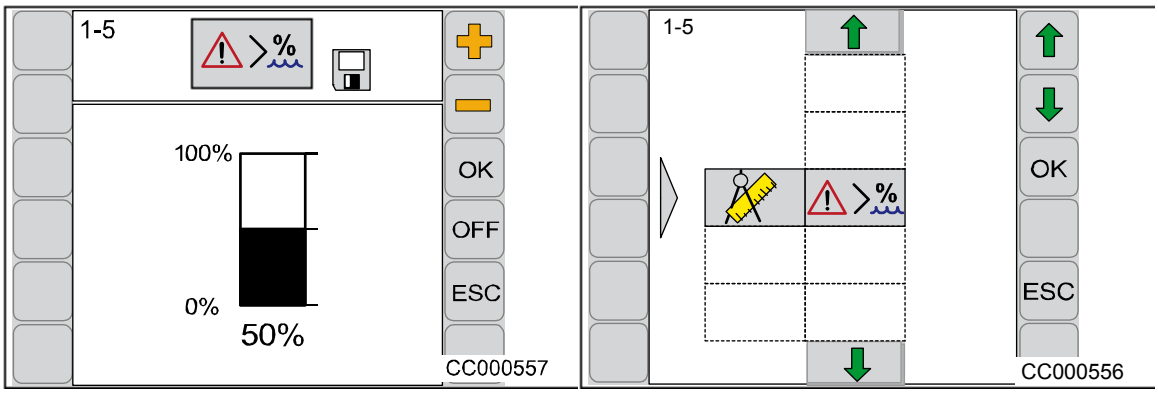


Fig. 60

In the menu 1-5 “Moisture Measuring” the value is set starting at which the message “136 crop too moist” appears in the display. Moreover the message for the display can be deactivated or activated in this menu.

Calling the Menu

Main menu 1 “Settings” is displayed.

- Select menu 1-5 by pressing function key or , the symbol is highlighted in grey
- Press function key **OK**

The display shows menu 1-5 “Moisture Measuring”.

The bar display and the percentage value show the set value. The symbol in the upper line indicates that the displayed value is saved.

Changing and Saving the Value

- Set the value via function key or , the symbol in the upper line goes out
- Press function key **OK**, the set value is saved, the symbol in the upper line appears
- Pressing the function key **ESC** closes the called up menu
- Pressing the function key **ESC** and holding it down brings up the basic screen

Activating / Deactivating Message “136 Crop Too Moist”

OFF / ON = Deactivating / Activating the Message

- Press function key ON to deactivate the message (the symbol OFF appears in the display)
- Press function key OFF to activate the message (the symbol ON appears in the display)

This page has been left blank deliberately!!

6.10.9 Menu 1-6 „Bale Balance“

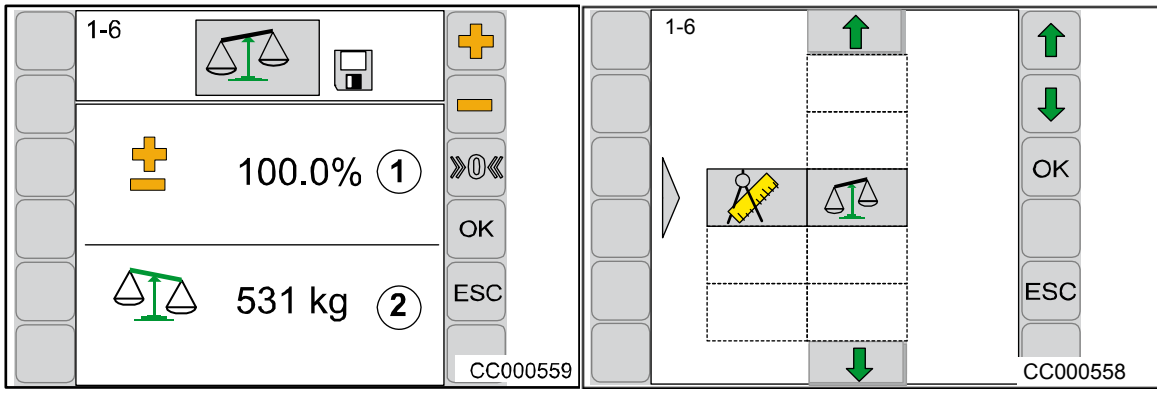


Fig. 61

Calling the Menu

Main menu 1 “Settings” is called.

- By pressing the function key ⬆ or ⬇, select menu 1-6 , the symbol is highlighted in grey
- Press function key **OK**

The display shows menu 1-6 “Bale Balance”.

The percentage value (1) shows the set limit range. The symbol in the upper line indicates that the displayed value is saved.

6.10.9.1 Adjusting the Bale Balance

The bale balance can be readjusted in the limit range from 95% to 105%

To do this:

- Stop the machine
- Fit a calibrated sample weight (250 to 300 kg) onto the empty bale balance

Readjust the bale balance if the display value (2) in the display deviates from the sample weight

To do this:

- Change value (1) via function key + or − until the value (2) corresponds to the weight of the sample weight (the symbol in the upper line goes out)

Note

If the limit range is not sufficient to adjust the bale balance, please contact the customer service.

- Press function key **OK**, the set value is saved, the symbol in the upper line appears
- Pressing the function key **ESC** closes the called up menu
- Pressing the function key **ESC** and holding it down brings up the basic screen

6.10.9.2 Zeros

“Zero” the force sensor if no bale (weight) is on the bale balance but a value is displayed in line (2)

Note

Resetting (zeros) may only be made if the bale balance is without load.

- Set the force sensor back to zero by pressing the function key »0«

This page has been left blank deliberately!!

6.11 main menu 2 „counters“

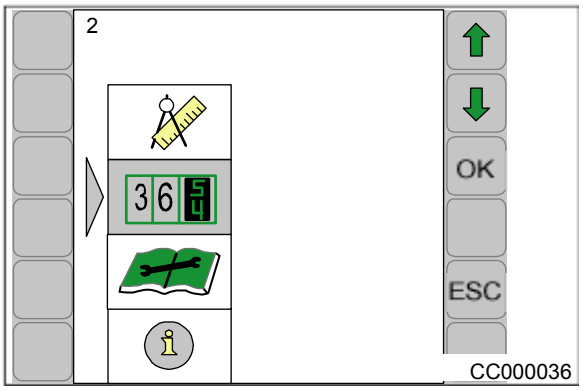


Fig. 62

Calling the main menu

- By pressing the function key in the basic screen you get into the menu level of the machine
- You can select main menu 2 ( ) with function key or . The symbol is highlighted in grey.
- Press function key **OK**

The display shows menu level 2 "Counters".

Menu level 2 "Counters" is divided into two menus:

$\sum_{n}$ = menu 2-1 "Customer counter"

$\sum_{all}$ = menu 2-2 "Total counter"

6.11.1 Menu 2-1 „Customer Counter“

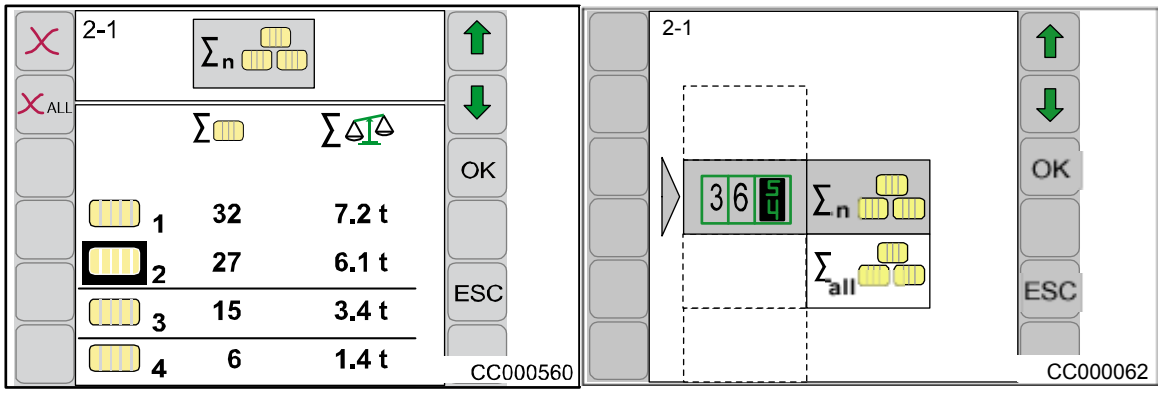


Fig. 63

Calling the Menu

Main menu 2 “Counter” is called

- Select menu 2-1 by pressing function key or , the symbol is highlighted in grey
- Press function key **OK**

The display shows menu 2-1 "Customer counter".

The activated customer counter (in this case customer counter 2) is highlighted in colour. The selected customer counter (in this case customer counter 3) is between the two crossbars).

Note

The customer counter is activated in menu 2-1-1. Further datasets regarding the customer counter can be found in menu 2-1-1.

Meaning of the Symbols:

= Total number of bales

= Total weight of all bales

Deleting the Customer Counter

The customer counter to be deleted must not be the activated customer counter.

- Press function key or to position the customer counter to be deleted between the two crossbars (in this case customer counter 3)
- By pressing function key, all datasets from the selected customer counter are set to 0

Deleting all Customer Counters

- By pressing function key (for approx. 2 sec.) for ALL, all datasets of all customer counters are set to zero

Calling the Menu 2-1-1 (activate further datasets or customer counters)

- Press function key or to position the desired customer counter between the crossbars and press function key **OK** to call up menu 2-1-1 of the customer counter

Leaving the Menu

- Pressing the function key **ESC** closes the called up menu
- Pressing the function key **ESC** and holding it down brings up the basic screen

6.11.1.1 Menu 2-1-1

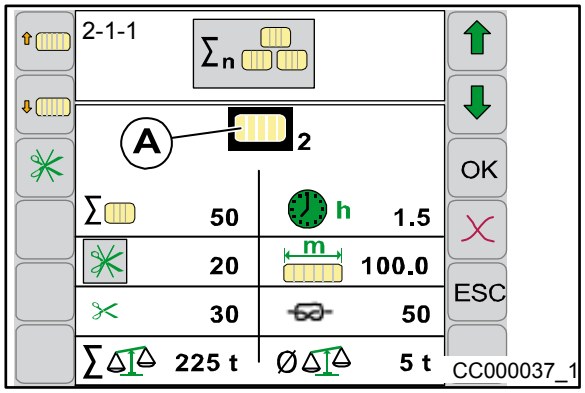


Fig. 64

Meaning of the Symbols Page 1:

= Total number of bales

= Number of uncut bales

= Number of cut bales (only for machines with X-Cut)

h = Operating hours counter (counts only when P.T.O. shaft is running)

2 = Customer counter (1 - 20 comfort)

m = Bale length counter (metric in metres)

ft = Bale length counter (unit of measure US in feet)

= Knot counter (incl. Multibale knot)

= Total weight of all bales (for bale balance design)

Ø = Average weight of the weighed bales (for bale balance design)

Activating Customer Counters

- Select the desired customer counter (A) by pressing function key or
- Activate the customer counter by pressing function key **OK**

The desired customer counter (in this case customer counter 2 2) is highlighted in colour.

Changing the Bale Number

- Press function key ⬆ or ⬇ to select the desired customer counter (A) (the customer counter must not be activated)
- Select the counter to be changed (cut bale, uncut bale) via function key ✳ or ✂
- Increase the number of bales by pressing function key ⬆
- Reduce the number of bales by pressing function key ⬇

At the same time, the season and daily counters are also changed in menu 2-2 "Total Bale Counter", as well as the length counter, the knot counter and the bale weight (for bale balance design).

Deleting the customer counter

- Press function key ⬆ or ⬇ to select the desired customer counter (A) (the customer counter must not be activated)
- By pressing the function key ✕ the selected customer counter is set to zero
- Pressing the function key **ESC** closes the called up menu
- Pressing the function key **ESC** and holding it down brings up the basic screen

6.11.2 Menu 2-2 „Total Bale Counter“

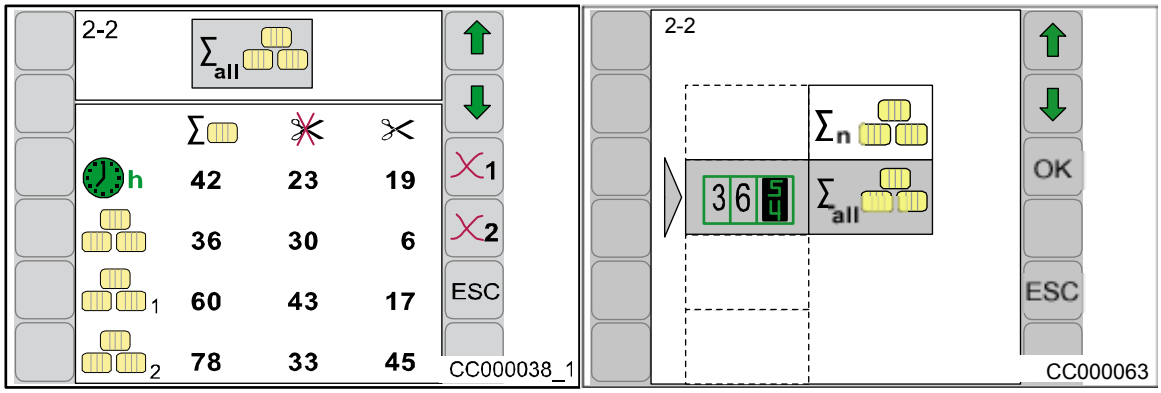


Fig. 65

Calling the Menu

Main menu 2 “Counter” is called

- By pressing function key ⬆ or ⬇, select menu 2-2 Σ_{all}, the symbol is highlighted in grey
- Press function key **OK**

The display shows menu 2-2 “Total Bale Counter”. The total number of bales is the sum of all pressed bales. They are not assigned to any customer counter.

Meaning of the Symbols:

Σ = Total number of bales

= Number of uncut bales

= Number of cut bales (only for machines with X-Cut)

h = Operating hours counter (counts only when P.T.O. shaft is running)

= Bale counter (cannot be deleted)

1 = Season counter 1 (can be deleted)

2 = Daily counter 2 (can be deleted)

Total Bale Counter for Bale Balance Design

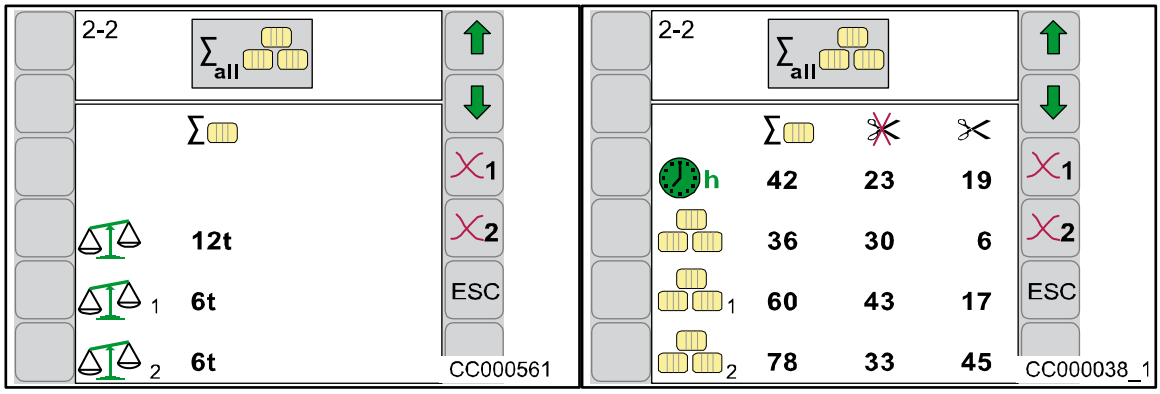


Fig. 66

For bale balance design, the total bale counter is divided into two pages. The second page of the total bale counter is displayed by pressing the function key for . You can get one page back by activating the function key .

Meaning of the Symbols Page 2 (Optional):

= Total counter (total weight of all pressed bales, cannot be deleted)

= Season counter 1 (can be deleted)

= Daily counter 2 (can be deleted)

Deleting season counter 1 or daily counter 2

- Pressing the function key 1 sets season counter 1 to zero
- Pressing the function key 2 sets season counter 2 to zero
- Pressing the function key **ESC** closes the called up menu
- Pressing the function key **ESC** and holding it down brings up the basic screen

6.12 Main menu 4 "Service"

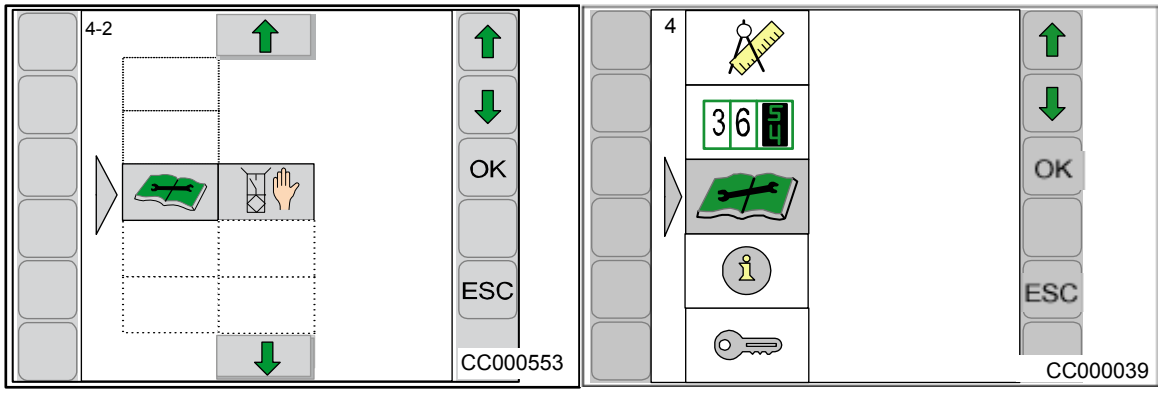


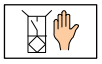
Fig. 67

Calling the Main Menu

- Call up menu level by pressing the function key in the basic screen
- By pressing function key or , select main menu 4 ( ), the symbol is highlighted in grey
- Press function key **OK**

The display shows menu level 4 “Service”.

Menu level 4 "Service" is divided into four menus:

 = Menu 4-2 “Manual sensor test”

 = Menu 4-4 “Manual actuator test”

 = Menu 4-6 "Diagnostics of driving speed/motion direction display"

 = Menu 4-7 “Diagnostics Auxiliary (AUX)“

6.12.1 Menu 4-2 „Manual sensor test“

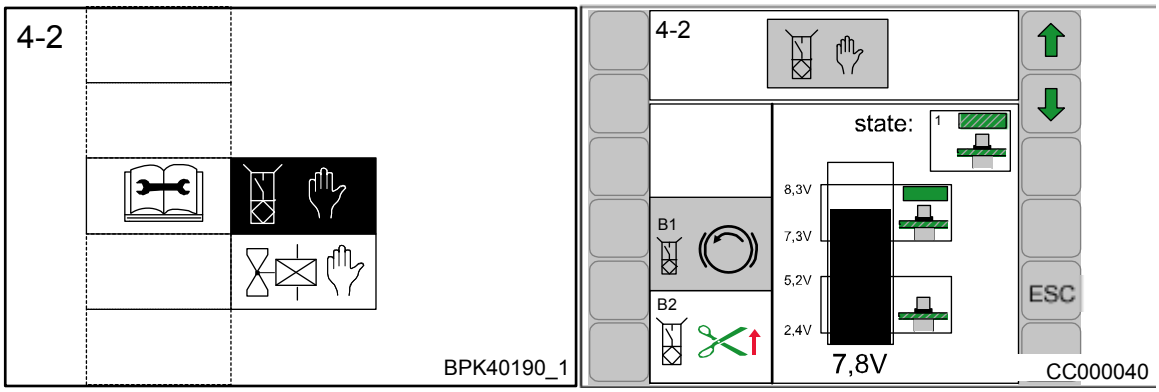


Fig. 68

In the manual sensor test, the sensors that are installed on the machine are checked for errors. In addition, the sensors can be correctly adjusted in the manual sensor test. There is no guarantee the machine is working correctly until after the sensors have been adjusted.

Caution!

The P.T.O. shaft must not be turning during the sensor test.

Calling the menu

Main menu 4 "Service" is called.

- You can select menu 4-2 by pressing function key or . The symbol is highlighted in grey.
- Press the rotary potentiometer
- Press function key **OK**

Selecting the sensor

- Select the sensor by pressing the function key or

The selected sensor is displayed inversely and is tested.

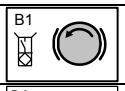
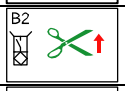
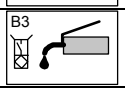
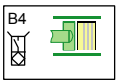
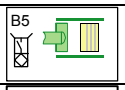
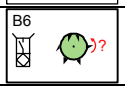
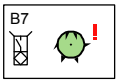
Setting values:

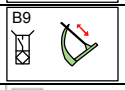
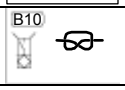
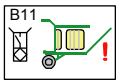
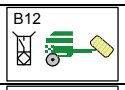
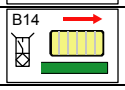
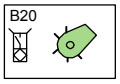
The minimum and maximum setting values with the sensor alive (metal in front of the sensor) are shown in the upper part of the bar display. The current setting value (actual value) is displayed under the bar display.

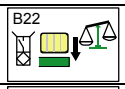
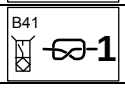
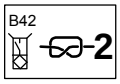
The distance from the sensor to the metal must be adjusted so that in the alive state the bar is in the upper mark. Next check whether the bar is in non-alive state in the lower marked area.

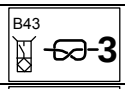
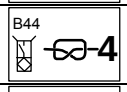
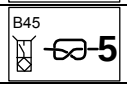
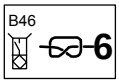
Diagnostics – Namur sensors

Possible sensors (depending on how the machine is equipped)

No.	Sensor symbol	Description
B1		Flywheel brake
B2		Upper blade bar
B3		Central lubrication
B4		Measurement
B5		Calibration
B6		Packer monitoring
B7		Packer feed

No.	Sensor symbol	Description
B8		Twine monitoring
B9		Needle connecting rod
B10		Knotter monitoring
B11		Bale chute
B12		Setting down bales
B14		Bale ejector
B20		Pick-up

No.	Sensor symbol	Description
B22		Bale on chute
B32		Blades active
B41		Knotter 1
B42		Knotter 2

No.	Sensor symbol	Description
B43		Knotter 3
B44		Knotter 4
B45		Knotter 5
B46		Knotter 6

State:

①  Alive (iron)

②  Not alive (no iron)

③ Broken cable

④ Short circuit

- Pressing the function key **ESC** closes the called up menu

The display shows menu level 4 "Service".

- Pressing the function key **ESC** and holding it down brings up the basic screen

Diagnostics for buttons

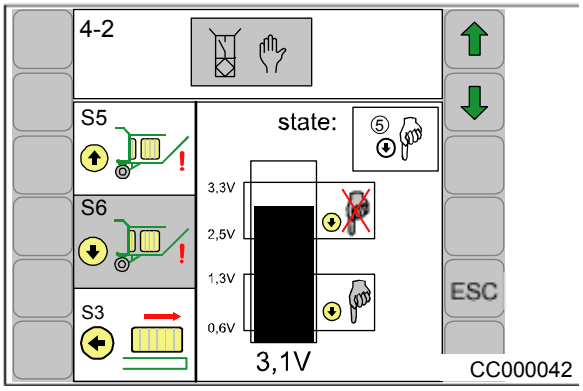


Fig. 69

Setting values:

When the button is pressed, the bar must be in the lower marked area of the bar display. When the button is released, it should be in the upper area.

Possible buttons (depending on how the machine is equipped)

No.	Symbol	Description
S1	S1	Blade bar up button
S2	S2	Blade bar down button
S3	S3	Bale ejector in button

No.	Symbol	Description
S4	S4	Bale ejector out button
S5	S5	Bale chute button up
S6	S6	Bale chute down button

State :

③	Cable brake	⑤	Pressed
④	Short circuit	⑥	Not pressed

- Pressing the function key **ESC** closes the called up menu

The display shows menu level 4 "Service".

- Pressing the function key **ESC** and holding it down brings up the basic screen

Diagnostics – analogue sensors

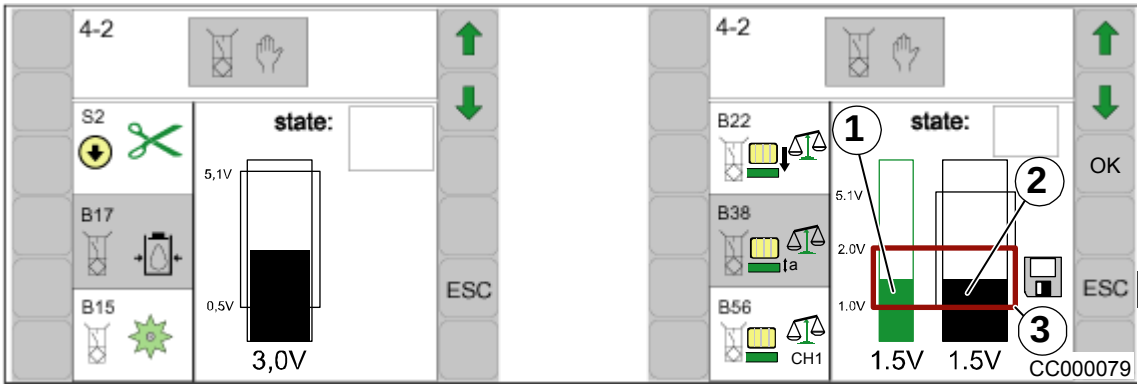


Fig.70

Setting values:

The bar must be inside the marked area of the bar display.

Possible analogue sensors (depending on how the machine is equipped)

No.	Symbol	Description
B15	B15	Star wheel (rotate star wheel: The bar must always be in the marked area for a full rotation)
B17	B17	Bale channel flap pressure (the bar must be in the lower marked area at 0 bar)
B21	B21	MultiBale (the system tests whether the sensor is defective. The setting must be made in the fitter settings)

No.	Symbol	Description
B38	B38	Acceleration sensor (to compensate for shocks)

Sensor B 38 (acceleration sensor)

The sensor B38 for detecting acceleration is pre-set in the factory. The two bars (1, 2) must be inside the marked area (3) of the bar display. Heavy loads and the settling of components may give rise to the need for subsequent calibration if the bar (2) within the marked area (3) is larger or smaller than the bar (1) while the chute is lowered.

To do this:

- Lower the bale chute.
- Keep function key **OK** pressed down for about 2 seconds.

The left hand bar (1) takes on the value of the right hand bar (2). The symbol shows that the value has been stored.

State:

⑦ --/ϟ Broken cable or short circuit

⑧ Error Defect in the sensor or job computer

- Pressing the function key **ESC** closes the called up menu

The display shows menu level 4 "Service".

- Pressing the function key **ESC** and holding it down brings up the basic screen

Diagnostics – force sensors

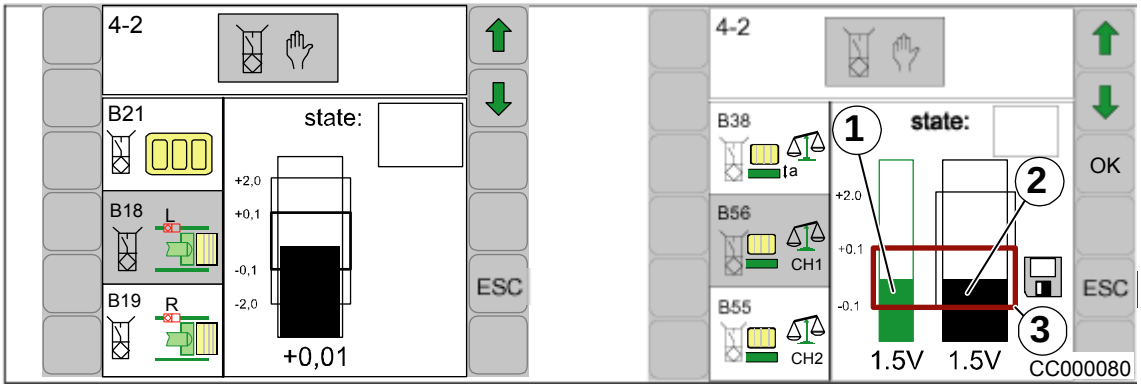
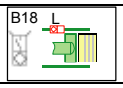
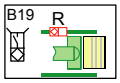


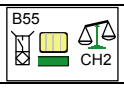
Fig.71

Setting values:

The bar must be inside the marked area of the bar display.

Force sensors (depending on machine configuration)

No.	Symbol	Description
B18		Plunger force, left
B19		Plunger force, right

No.	Symbol	Description
B55		Rear bale chute
B56		Front bale chute

Sensor B55 / B56

The sensors B55 / B56 for weighing the bale on the chute are pre-set in the factory. The two bars (1, 2) must be inside the marked area (3) of the bar display. Heavy loads and the settling of components may give rise to the need for subsequent calibration if the bar (2) within the marked area (3) is larger or smaller than the bar (1).

To do this:

- Keep function key **OK** pressed down for about 2 seconds.

The left hand bar (1) takes on the value of the right hand bar (2). The symbol shows that the value has been stored.

State:

⑦ --/↯ Broken cable or short circuit

⑧ Error Defect in the sensor / force measurement amplifier or job computer

- Pressing the function key **ESC** closes the called up menu

The display shows menu level 4 "Service".

- Pressing the function key **ESC** and holding it down brings up the basic screen

Diagnostics power supply voltages

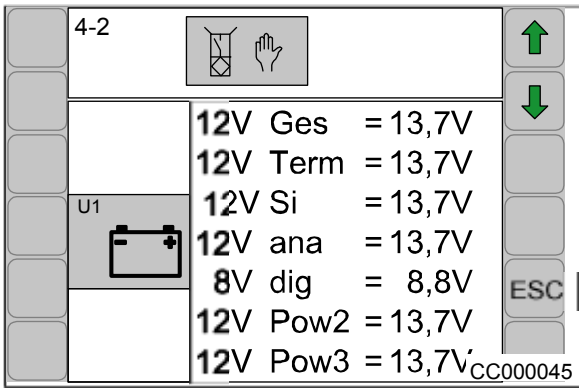


Fig. 72

No.	Sensor symbol	Description
U1	U1	**Supply voltage**

Nominal voltages:

- 12V Ges: 12 - 14.5 V
- 12V Term: 12 - 14.5 V
- 12V Si: 12 – 14.5 V
- 12V ana: 12 – 14.5 V
- 8V dig: 8.5 - 9.1 V
- 12V Pow2: 12 - 14.5 V
- 12V Pow3: 12 - 14.5 V

- Pressing the function key **ESC** closes the called up menu

The display shows menu level 4 "Service".

- Pressing the function key **ESC** and holding it down brings up the basic screen

6.12.2 Actuator test

Danger! - Unexpected actions on the machine.

Effect: Danger to life or serious injuries.

- Only persons familiar with the machine are permitted to perform the actuator test
- The person performing the test must know which machine parts are moved by actuating the actuators. If necessary, secure the actuated machine components against unintentional lowering
- The actuator test must only be performed from a safe position outside the area that is affected by machine parts moved by the actuators
- Make certain there are no persons, animals or objects in the danger zone

6.12.3 Menu 4-4 Manual actuator test

The actuator test is used to test the actuators installed on the machine. An actuator can only be tested if power is flowing through it. In the manual actuator test the actuator must therefore be controlled manually for a short time to be able to determine if there are any errors in the actuator system.

CAUTION! - Unexpected actions on the machine.

The P.T.O. shaft must not be turning during the actuator test. The tractor hydraulics must be deactivated.

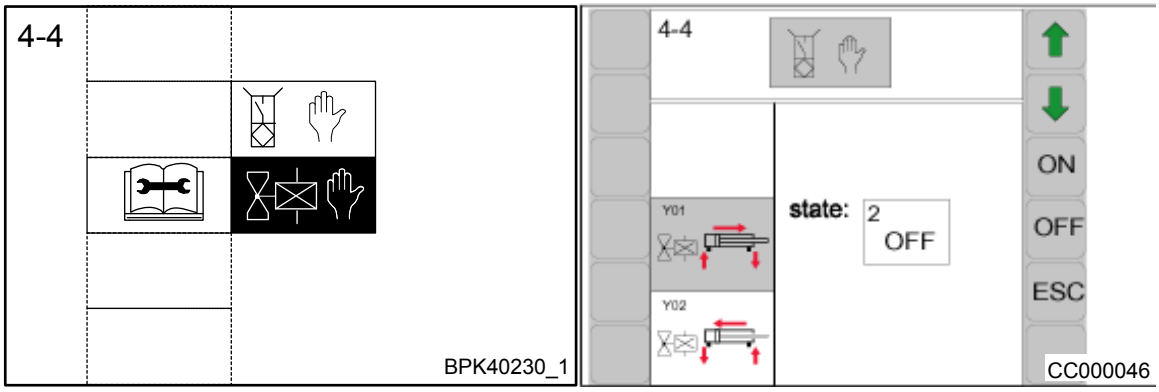


Fig. 73

Calling the menu

Main menu 4 "Service" is called.

- You can select menu 4-4 by pressing function key or . The symbol is highlighted in grey.
- Press function key **OK**

The display shows menu 4-4 "Manual actuator test".

Selecting the actuator

- Select the actuator by pressing the function key or

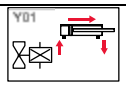
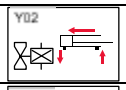
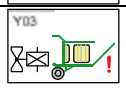
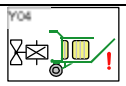
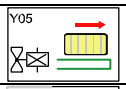
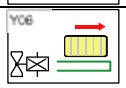
The symbol is highlighted in grey.

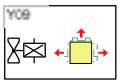
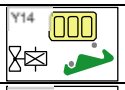
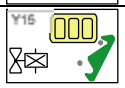
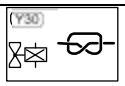
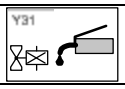
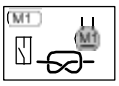
Diagnostics – digital actuators

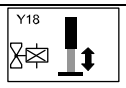
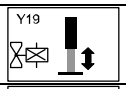
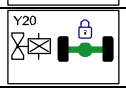
Errors are only displayed if the actuator is turned on and a test is possible for the actuator (see the table called "Possible digital actuators"). The actuators can also be checked on the LED at the plug, if necessary.

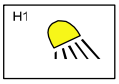
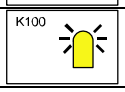
- Press function key **ON**

Possible digital actuators (depending on how the machine is equipped)

No.	Sensor symbol	Description
Y01		Main valve
Y02		Main valve
Y03		Bale chute
Y04		Bale chute
Y05		Bale ejector
Y06		Bale ejector
Y07		Blade bar
Y08		Blade bar

No.	Sensor symbol	Description
Y09		Valve to open bale channel flaps
Y14		BigBale (error detection is not possible)
Y15		MultiBale (error detection is not possible)
Y30		Knotter cleaning (error detection is not possible)
Y31		Central lubrication
M1		Knotter triggering (error detection is not possible)

No.	Actuator symbol	Description
Y18		Parking jack
Y19		Parking jack
Y20		Lock axle

No.	Actuator symbol	Description
H1		Working floodlight (pick-up area)
H2		Working floodlight (knotter area)
K100		

State:

① ON Actuator on

② OFF Actuator off

③ --/↯ General actuator error

④ FUSE ↯ No power supply; fuse is probably defective

- Pressing the function key **ESC** closes the called up menu

The display shows menu level 4 "Service".

- Pressing the function key **ESC** and holding it down brings up the basic screen

Diagnostics analogue actuators

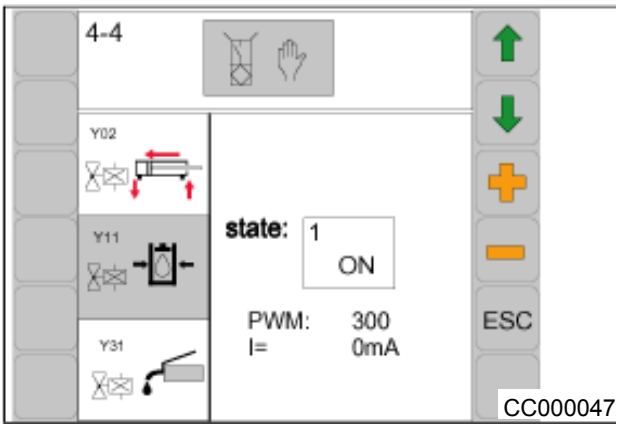


Fig.74

A current (in mA) can be created 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).

- Pressing the function key increases the PWM.
- Pressing the function key decreases the PWM.

Possible analogue actuators

No.	Symbol	Description
Y11		Pressure limitation valve
Y17		Start-up aid

State:

① ON actuator ON

② OFF actuator OFF

③ --/ No power supply; fuse is probably defective

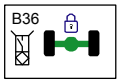
- Pressing the function key **ESC** closes the called up menu

The display shows menu level 4 "Service".

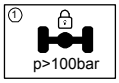
- Pressing the function key **ESC** and holding it down brings up the basic screen

Diagnostics Pressure Sensors

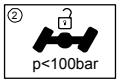
Possible sensors (depending on how the machine is equipped)

No.	Sensor symbol	Description
B36		Axle locked

State:



Axle locked



Axle released

6.12.4 Menu 4-6 „Diagnostics Driving Speed / Motion Direction Display“

The tractor must transfer the driving speed and the direction of travel onto the ISO-Bus.

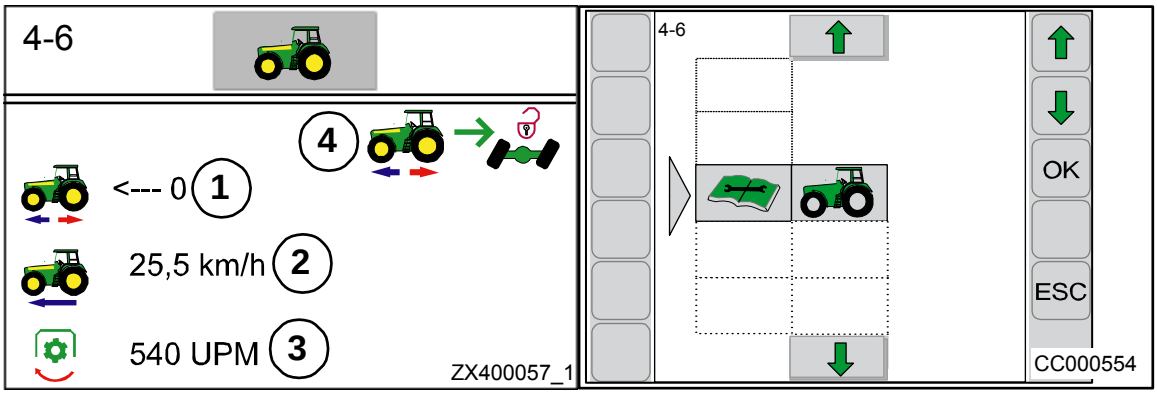


Fig. 75

Calling the Menu

Main menu 4 “Service” is called

- By pressing function key ⬆ or ⬇, select menu 4-6 , the symbol is highlighted in grey
- Press function key **OK**

The display shows menu 4-6 „Diagnostics Driving Speed/Motion Direction Display“.

Explanation of Symbols:

1)

<--- 0 = Forward travel

0 ---> = Reverse travel

2)

25.5 km/h= Speed when driving forward

-25.5 km/h= Speed when driving backward

3)

540 RPM = PTO speed

4)

→ Parameter (ISO-Bus evaluation) selected

Parameter (ISO-Bus evaluation) not selected

- Use the **ESC** key to close the menu currently displayed

The display shows menu level 4 “Service”.

6.12.5 Menu 4-7 „Diagnostics Auxiliary (AUX)“

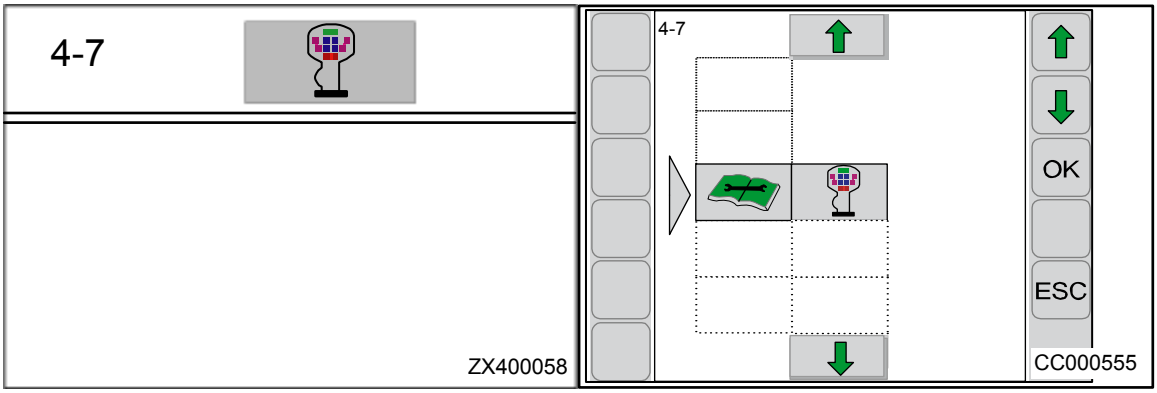


Fig. 76

Calling the Menu

Main menu 4 “Serice” is called

- By pressing function key ⬆ or ⬇, select menu 4-7 , the symbol is highlighted in grey
- Press function key **OK**

The display shows menu 4-7 “Diagnostics Auxiliary (AUX)”.

A figure of the multi-function lever appears in the display. When activating a function on the multi-function lever, only the assigned symbol will appear in the display. The function itself is not performed.

- Use the **ESC** key to close the menu currently displayed

The display shows menu level 4 “Service”.

6.13 Main menu 5 'Information'

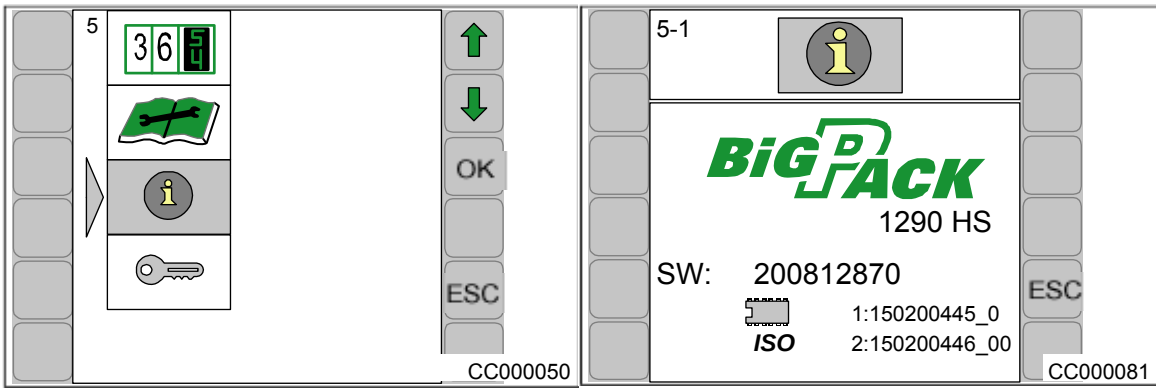


Fig.77

Calling the main menu

- Access the menu level by pressing the function key on the basic screen.
- Select the main menu 5 ( )by pressing the function key or . The symbol is highlighted in grey.
- Press function key **OK**.

The display shows menu 5 'Information'.

Page 5-1:

Complete software version of the machine

- 1290 HS = machine type
- SW = complete software version of the machine
- = job computer version
- ISO= ISO software version

- Pressing the function key **ESC** closes the called up menu

The display shows menu level 5 "Info".

- Pressing the function key **ESC** and holding it down brings up the basic screen

6.14 Main menu 6 „Fitter“

Calling the main menu

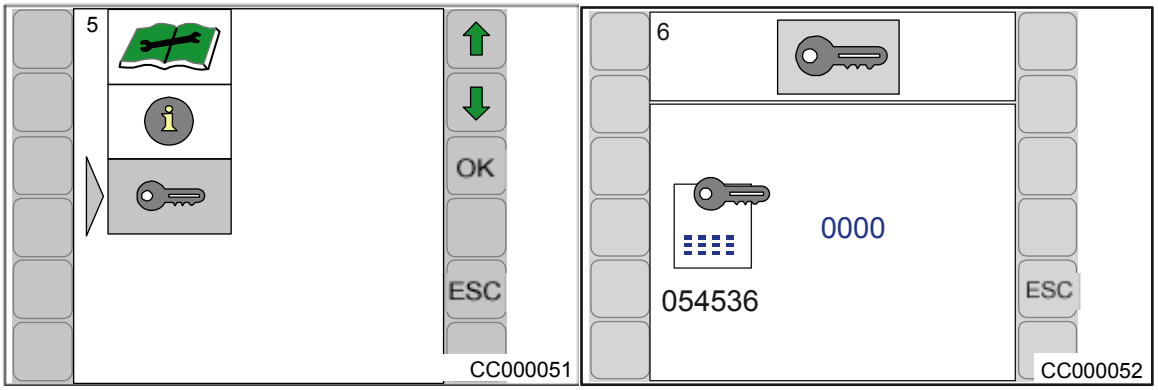


Fig. 78

- By pressing the function key in the basic screen you get into the menu level of the machine
- You can select main menu 6 ( ) with function key or . The symbol is shown in reverse colors
- Press function key **OK**

Main menu 6 “Fitter" is password-protected.

The display shows the password query.

6.15 Main menu 9 "Virtual Terminal (VT)"

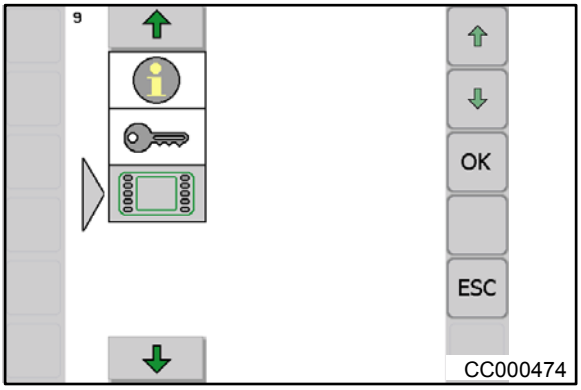


Fig. 79

Calling the main menu

- Press function key to access the menu level via the basic screen
- Press function key or to select main menu 9 ( ). The icon is colour highlighted
- Press function key **OK**

The display shows menu level 9 "Virtual Terminal (VT)".

The menu level 9 “Virtual Terminal (VT)„ shows the following menus depending on how the machine is equipped:

	= Menu 9-1	“Softkeys ISO Terminal” (appears only in case of terminals with less than 10 keys)
	= Menu 9-2	Switching between Terminals” (appears only if several ISO terminals are connected)
	= Menu 9-3	Configuration Basic Screen

6.15.1 Menu 9-2 „Switching Between the Terminals“

Note

- Menu 9-2 appears only if several ISO terminals are connected.
- Changing to the next connected terminal is possible via menu 9-2 (depending on how many terminals are connected).
- When switching 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 laid down in the accumulator of the next terminal.

Note

Up to the next call, the machine is no longer available in the previous terminal.

Note

In case of a restart, the system tries at first to start the last used terminal. If the last used terminal is not available any longer, the restart is delayed as the system is searching for a new terminal and loads the specific menus into the terminal. The loading process may take a few minutes.

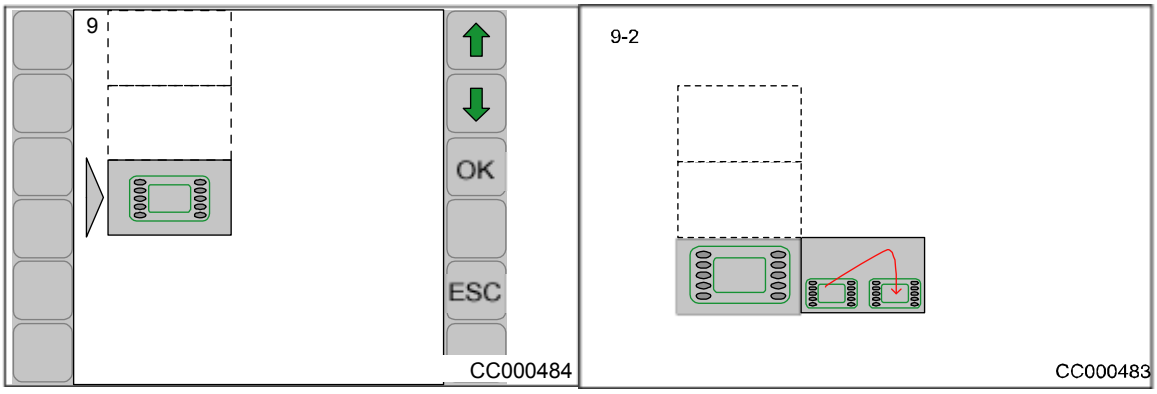


Fig. 80

- Bring up the menu level by pressing function key from the basic screen
- Select main menu 9 ( ) by pressing function key or , the symbol is highlighted in grey.
- Pressing the function key **OK** brings up the menu level 9-2 ( ) . The symbol is highlighted in grey.
- Changing to the next connected terminal is possible by pressing the key **OK** once again
- Pressing the function key **ESC** closes the menu currently displayed
- Pressing the function key **ESC** and holding it down brings up the basic screen

6.15.2 Menu 9-3 „Configuration Main Window“

In menu 9-3 you can determine which displays shall be shown in the main window (left column). Up to 7 display elements can be displayed at the same time in the main window. Depending on how the machine is equipped, you can select from up to 13 display elements which 7 display elements shall be shown in the main window.

Moreover you can configure the main window individually on 2 pages (for example for 2 drivers).

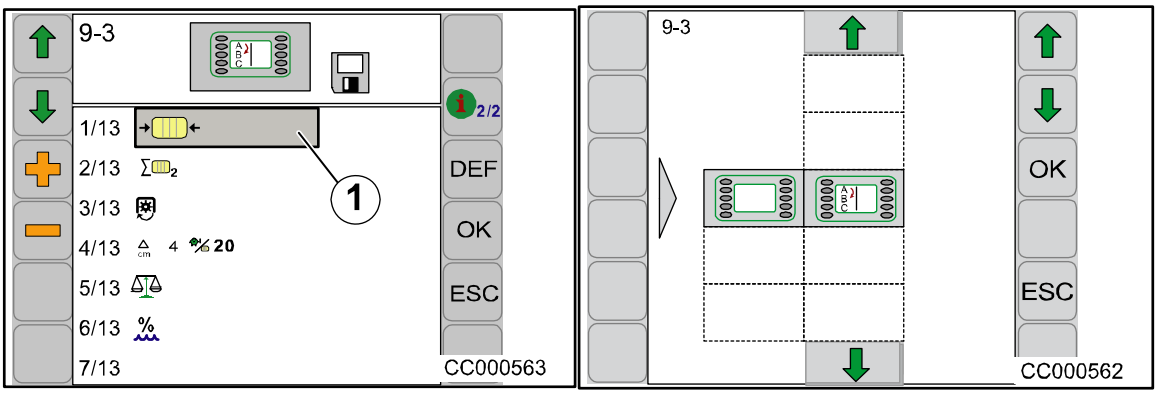


Fig. 81

The main menu 9 „Virtual Terminal (VT)“ is called

- Select menu 9-3 ( ) by pressing function key or , the symbol is highlighted in colour
- Press function key **OK**

The display shows menu 9-3 “Configuration Main Window”.

Possible selection elements for the main window (depending on how the machine is equipped)

Left column (A):

	Current baling force as a % (100% = max.)
2	Total number of bales, current customer counter
	Current P.T.O. speed (min^{-1})
cm	Current layer thickness in cm or inch (only for electrical bale length adjustment)
20	Number of layers per bale
	Bale weight (of the bale weighed at last)
%	Moisture degree of the crop
Ø	Average weight of the weighed bales
∑	Total weight of all bales
m	Bale length counter (metric in metres)
ft	Bale length counter (unit of measure US in feet)
	Number of uncut bales
	Number of cut bales (only for machines with X-Cut)

Appears briefly after a knot is tied; if activated (see chapter menu 1-2 “Knotter Signal “), an audio signal is heard (horn sound for about 1 sec).

h Operating hours counter (counts only when PTO is running)

Configuring Main Window:

- Call up the page to be configured by pressing function key 1/2 or 2/2
- By pressing function key or , move the rectangle (1) into the desired row (1-7)
- Select the desired selection element via function key or , the new display element appears in the display and the symbol in the upper line goes out
- Press function key **OK**, the display symbol is saved, the symbol in the upper line appears
- Pressing the function key **ESC** closes the called up menu
- Pressing the function key **ESC** and holding it down brings up the basic screen

Bringing up the Factory Setting:

- The factory setting is called up and saved by pressing and holding the function key **DEF** (for approx. 2 seconds)

6.16 Alarm message

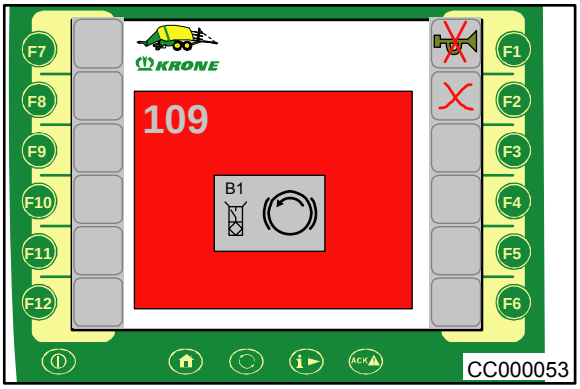


Fig. 82

Alarm message

If a malfunction occurs in the machine an alarm message appears in the display and an audio signal is heard at the same time (continuous acoustic alarm signal). Description, possible cause and remedy are shown in the chapter entitled "Alarm Messages".

Note

All functions in the menu that is covered over are still active. The softkeys that are covered by the alarm message are disabled.

Stop audio signal:

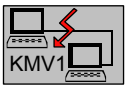
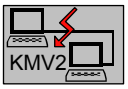
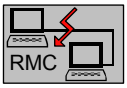
- Press function key

Resetting the alarm:

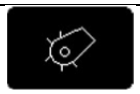
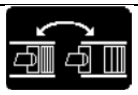
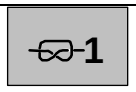
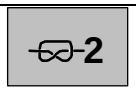
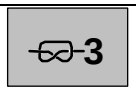
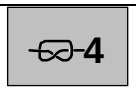
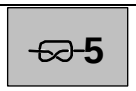
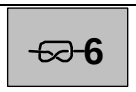
- Briefly press the function key. The alarm is reset and the audio signal stops

If the malfunction occurs again, the alarm message will appear again.

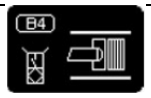
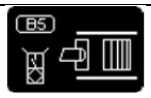
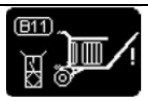
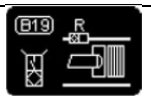
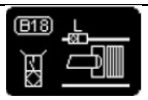
6.16.1 Alarm messages

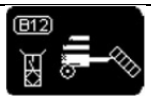
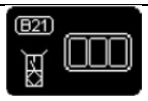
No.	Screen	Description	Possible cause	Remedy
A01		Fuse 2 defective	Short circuit at the outputs	Replace the fuse and then test all actuators in the actuator test to determine whether an actuator has a short circuit.
A02		Fuse 3 defective (self-repairing)	Short circuit in electrical power supply for sensors.	Check wiring to Multi-Bale potentiometer, star wheel, pressure sensor and force measurement amplifier.
A03		CAN connection between terminal and job computer interrupted	CAN wiring defective	Check the CAN wiring
A04		EEPROM error	Job computer defective	Replace the job computer
A05		CAN connection broken between job computer and Krone I/O computer	CAN wiring defective Krone I/O computer inactive	Check the CAN wiring Check the cables. Replace Krone I/O computer
A11		CAN connection broken between job computer and Krone measurement force computer (KMV1)	CAN wiring defective Krone measurement force computer (KMV1) inactive	Check the CAN wiring Check the cables. Replace Krone measurement force computer (KMV1).
A12		CAN connection broken between job computer and Krone measurement force computer (KMV2)	CAN wiring defective Krone measurement force computer (KMV2) inactive	Check the CAN wiring Check the cables. Replace Krone measurement force computer (KMV2).
A14		Undervoltage	- Tractor battery defective - Tractor dynamo too weak - 12-V power supply too weak on the tractor side or not correctly connected with the battery	Connect the KRONE connection cable directly to the tractor battery
A15		Overvoltage	Tractor dynamo defective	Check dynamo
A17		CAN connection broken between job computer and Krone humidity measurement computer (RMC)	CAN wiring defective Krone humidity measurement computer (RMC) inactive	Check the CAN wiring Check the cables. Replace Krone humidity measurement computer (RMC).

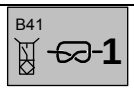
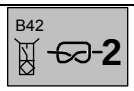
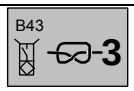
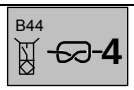
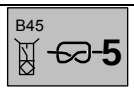
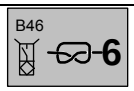
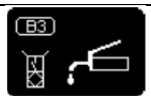
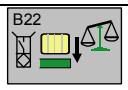
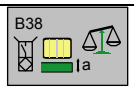
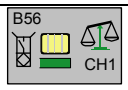
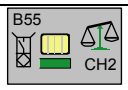
No.	Image	Description	Possible cause	Remedy
0		Twine monitoring	- Twine torn - Twine end	Checking the twine and twine tensioner
1		Packer monitoring	Blockage in the intake area of the packer	Stop the traction drive immediately Reduce P.T.O. speed until the blockage is cleared
2		Pressing force exceeded, left sensor	**Pressing force exceeded** If the machine could be subject to a mechanical overload because the pressure is too high, the bale channel flap pressure is lowered to a non-critical value just before the overload. The amount of reduction depends on the material being baled. The reduction is less for straw than for silage.	The following measures must be taken: 1**. In manual mode:** -Lower the pressure 2**. In Automatic mode:** If the alarm occurs quite frequently, reduce the pressing force setting slightly
3		Force of pressure exceeded, right sensor		
4		Knotter monitoring	- Knotter is not functioning properly - Sensor set incorrectly	- Check the knotter and knotter triggering - Set the knotter monitoring sensor correctly
5		Measurement monitoring	Sensor measuring defective or set incorrectly	Adjust the sensor correctly
6		Calibration monitoring	Sensor calibration defective or set incorrectly	Adjust the sensor correctly
7		Flywheel brake	Flywheel brake applied	Release the flywheel brake
8		Needle connecting rod	Shear screw ruptured	- Replace the shear screw - Check needles - Check the swivel range of the needles - Check the twine guide
9		Bale chute	Bale chute up and P.T.O. shaft is turning	- Lower bale chute

No.	Screen	Description	Possible cause	Remedy
10		Baling pressure exceeded	Error on the pressure limiting valve - The pressure sensor could be defective	- Stop PTO shaft. - Check the pressure limiting valve for blockage.
11		PTO is turning	PTO is turning upon entry into sensor or actuator diagnostics or during diagnostics	- Stop PTO shaft immediately. - Perform diagnostics with the PTO stopped.
12		Blade bar down	Blade bar is down during baling	- Raise blade bar.
16		Pick-up	Pick-up or cutting system is not turning (blocked).	- Check mechanics - Cleaning
17		Knotter motor	Knotter motor has not triggered any knots or the knotter sensor is not set correctly	-Check the knotter motor electrical system -Check the mechanics in the area of the knotter triggering -Adjust the knotter sensor correctly
18		Multi-Bale	It is not possible to set the 2 positions Multi-Bale or total bales	-No compressed air present -Adjust the Multi-Bale sensor correctly -Check the mechanics in the area of the knotter triggering -Fault in Multi-Bale valve (valve jammed, coil defective, etc.) -Check the electronics in the area of the Multi-Bale interlock
19		Packer feed	Packer feed sensor set incorrectly	-Reset the sensor correctly.
20		Error bale ejector activation	The bale ejector was triggered although the bale chute is still raised.	- Lower the bale chute and then activate the bale ejector
21		Measuring/Calibrating	The measuring and calibrating sensors are probably mixed up.	- Exchange the connectors for the measuring and calibrating sensors.
22		Knotter monitoring (Knotter 1)	Knotter is not functioning properly. - Sensor set incorrectly	- Check knotter and knotter triggering - Set knotter monitoring sensor correctly
23		Knotter monitoring (Knotter 2)		
24		Knotter monitoring (Knotter 3)		
25		Knotter monitoring (Knotter 4)		
26		Knotter monitoring (Knotter 5)		
27		Knotter monitoring (Knotter 6)		

28		Central lubrication monitoring	No grease Blockage Pump not running	- Add grease - Clean central lubrication - Check electrical system and pump

No.	Image	Description	Possible cause	Remedy
101		Twine monitoring sensor	Sensor or line defective	Perform a sensor test Check the sensor and line for damage -
102		Packer monitoring sensors		
103		Packer feed sensor		
104		Upper blade bar sensor, top		
105		Cutter sensor active		
106		Knotter monitoring sensor		
107		Measuring force sensor		
108		Calibration force sensor		
109		Sensor flywheel brake		
110		Needle connecting rod sensor		
111		Bale chute sensor		
112		Force sensor, right	Sensor, measurement amplifier or line defective	Check the sensor and line for damage
113		Force sensor, left	Sensor, measurement amplifier or line defective	Check the sensor and line for damage

No.	Screen	Description	Possible cause	Remedy
114		Hydraulic pressure sensor	Sensor or supply line defective	-Perform a sensor test -Check the sensor and line for damage.
115		Sensor for setting down bales	Sensor or supply line defective	-Perform a sensor test -Check the sensor and line for damage.
116		Sensor for bale ejector	Sensor or supply line defective	-Perform a sensor test -Check the sensor and line for damage.
117		Star wheel sensor	Sensor (rotary potentiometer) or line defective	-Perform a sensor test -Check the sensor and line for damage.
118		Pick-up sensor	Sensor or supply line defective	-Perform a sensor test -Check the sensor and line for damage.
119		Bale chute up feeler	Feeler or supply line defective	-Perform a sensor test -Check the feeler and line for damage.
120		Bale chute down feeler	Feeler or supply line defective	-Perform a sensor test -Check the feeler and line for damage.
121		Bale ejector feeler out	Feeler or supply line defective	-Perform a sensor test -Check the feeler and line for damage.
122		Bale ejector feeler in	Feeler or supply line defective	-Perform a sensor test -Check the feeler and line for damage.
123		Blade bar up feeler	Feeler or supply line defective	-Perform a sensor test -Check the feeler and line for damage.
124		Blade bar down feeler	Feeler or supply line defective	-Perform a sensor test -Check the feeler and line for damage.
125		MultiBale sensor	Sensor (rotary potentiometer) or line defective	-Perform a sensor test -Check the sensor and line for damage.

No.	Screen	Description	Possible cause	Remedy
126		Sensor knotter 1	Sensor or supply line defective	-Perform a sensor test -Check the sensor and line for damage.
127		Sensor knotter 2		
128		Sensor knotter 3		
129		Sensor knotter 4		
130		Sensor knotter 5		
131		Sensor knotter 6		
132		Sensor - central lubrication		
146		Sensor bale on chute		
147		Sensor acceleration		
148		Force sensor front bale chute		
149		Force sensor rear bale chute		

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7 ISOBUS operation

General aspects

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.

Note

The KRONE ISOBUS systems pass the ISOBUS COMPATIBILITY TEST (DLG/VDMA) on a regular basis. The operation of this machine requires at least implementation level 3 of the ISOBUS system.

DANGER!

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

- has to take the responsibility for the use of KRONE machines when using the machine on control units (terminal / other control elements) which have not been delivered by KRONE
- must check the machine before operation on all machine functions, if they are performed as described in the enclosed operating instructions
- as possible, should only couple those systems to each other which have passed a DLG/VDMA test (so called ISOBUS COMPATIBILITY TEST) before
- has to follow the operating and safety instructions of the supplier of the ISOBUS control unit (e.g. terminal)
- must guarantee that the control elements and machine control systems fit together according to the IL (IL= Implementation Level; describes the compatibility status of the different software versions) (requirement: IL same or higher)

7.1 Attaching the ISOBUS terminal

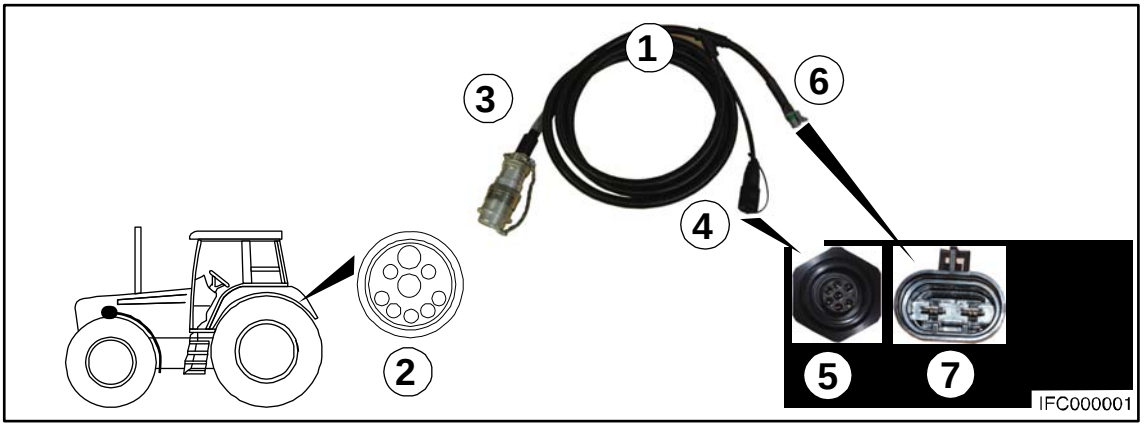


Fig. 83

CAUTION!

Failure of control unit.

When attaching the control unit, take care that the connection cables are not stretched and cannot come in contact with the tractor wheels.

7.1.1 Connection terminal to tractor

Note

For further details on the attachment consult the operating instructions of the ISOBUS terminal manufacturer.

7.1.2 Connection tractor to machine

- 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

7.2 Differing functions to KRONE ISOBUS terminal CCI

Via the accessory unit, the ISO control unit will provide information and control functions to the display of the ISO terminal. Operation with an ISO terminal is analogue to the KRONE ISOBUS terminal CCI. Prior to start-up, refer to the operating instructions for the method of operation of the KRONE ISOBUS terminal CCI.
A fundamental difference to the KRONE ISOBUS terminal CCI is the arrangement of the softkeys, which are determined by the selected ISO terminal.
Only the functions that differ from the KRONE ISOBUS terminal CCI are described in the following.

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).

Note

Menu item 1-4 "Contrast" of the KRONE control cannot be called up on the ISO terminal. A setting is performed directly via the ISO terminal (if applicable) (refer to operating instructions of the ISO terminal manufacturer).
If necessary, acoustic signals must be enabled from the terminal (refer to operating instructions of the ISO terminal manufacturer).

7.2.1 Menu 4-6 “Diagnostics driving speed display/direction of travel display”

The tractor must transfer the travelling speed and direction of travel on the ISO bus.

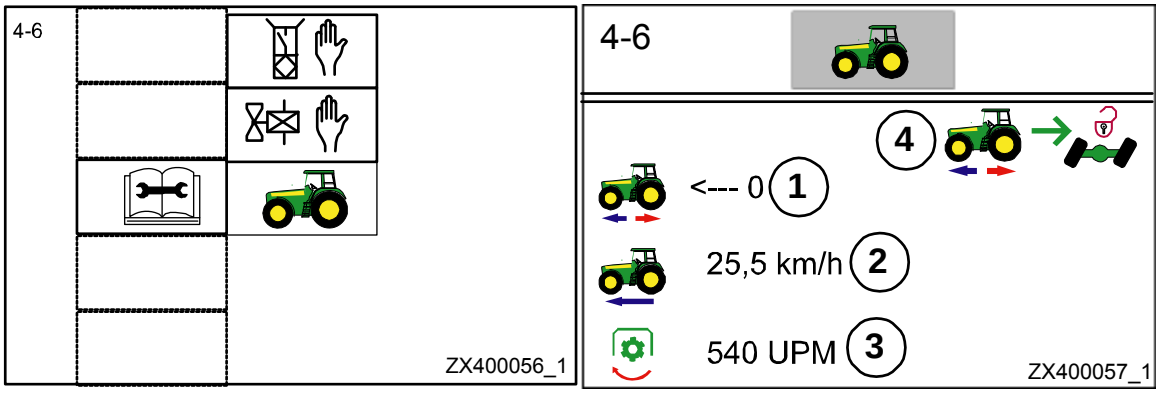


Fig. 84

Call up main menu "Maintenance" with the key

- You can select menu 4-6 with the keys . The symbol is highlighted in grey.
- Call up the menu with the **OK** key.

The display shows menu 4-6 "Driving speed display / direction of travel display".

Explanation of symbols:

1)
<--- 0 = Driving forward
0 ---> = Reversing
2)
25.5 km/h= Speed driving forward
-25.5 km/h= Reversing speed
3)
540 RPM= PTO speed
4)
Parameter (ISO-Bus Evaluation) selected
Parameter (ISO-Bus Evaluation) not selected

- You can use the key **ESC** to close the menu currently displayed.

The display shows menu level 4 "Service".

7.2.2 Menu 4-7 “Diagnostics Auxiliary (AUX)”

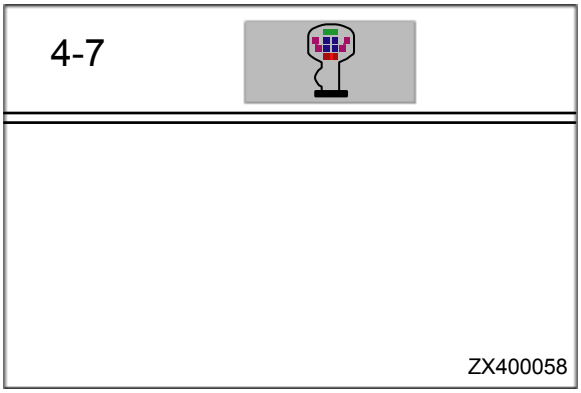


Fig. 85

Call up main menu "Maintenance" with the key

- You can select menu 4- by pressing the keys . The symbol is highlighted in grey.
- Call up the menu with the **OK** key.

The display shows menu 4-7 “Diagnostics Auxiliary (AUX)” .

A representation of the multi-function lever appears in the display. When activating a function on the multi-function lever, only the assigned symbol will appear in the display. The function itself is not performed.

- You can use the key **ESC** to close the menu currently displayed.

The display shows menu level 4 "Service".

7.3 Main menu 9 "ISO settings info"

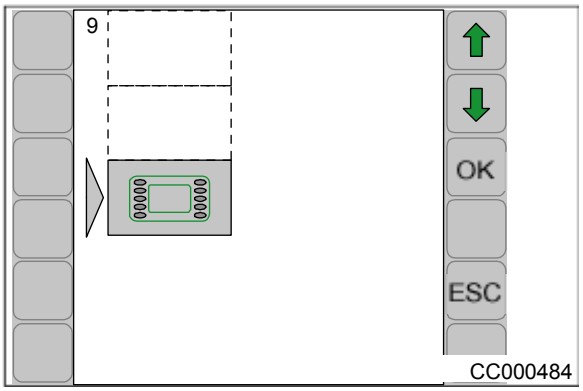


Fig. 86

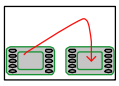
Calling the main menu

- Press function key to access the menu level via the basic screen
- Press function key or to select main menu 9 ( ).to σύμβολο επισημαίνεται με γκρι χρώμα.
- Press function key **OK**

The display shows menu level 9 "ISO settings". Menu level 9 "SO settings" optionally displays the following menus:

 = Menu 9-1 "Softkeys ISO terminal" (appears only on terminals with less than 10 keys"

or

 = Menu 9-2 Switching between terminals" (appears only when multiple ISO terminals are connected)

7.3.1 Menu 9-1 "Softkeys ISO terminal"

Note
The menu 9-1 only appears on ISO terminals with less than 10 keys

In menu 9-1, the basic screen (for ISO terminals with less than 10 keys) is set to 5 or 10 softkey buttons. During the change-over to 10 softkey buttons, additional softkeys will be virtually included and can be reached by scrolling.

Note
For ISO terminals with less than 10 keys, an additional ISO joystick is recommended for the convenient operation of the attached machines. For the assignment of the joystick, please refer to Section "Example of a joystick assignment".

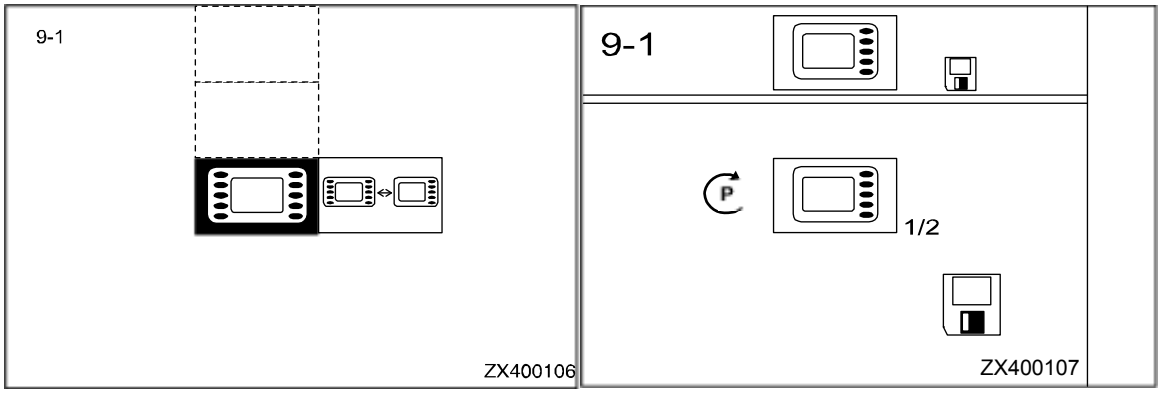


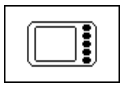
Fig. 87

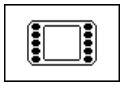
Main menu 9 "ISO Settings" appears.

- Press the **OK** key to open menu 9-1 ( )

The display shows menu 9-1 "Softkeys ISO terminal".

The current status is displayed as a symbol:

 Change the basic screen to 5 softkey buttons

 Change the basic screen to 10 softkey buttons

The icon in the upper line indicates that the displayed status is saved.

Change and save status

- Set the desired status with the or key. The icon in the top line goes out.
- Press the **OK** key. The set status is saved and the icon appears in the upper line.
- You can use the **ESC** key to close the menu currently displayed.
- Pressing the **ESC** key for a little longer calls up the basic screen

7.3.2 Menu 9-2 „Switching Between the Terminals“

Note

- Menu 9-2 appears only if several ISO terminals are connected.
- Changing to the next connected terminal is possible via menu 9-2 (depending on how many terminals are connected).
- When switching 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 laid down in the accumulator of the next terminal.

Note

Up to the next call, the machine is no longer available in the previous terminal.

Note

In case of a restart, the system tries at first to start the last used terminal. If the last used terminal is not available any longer, the restart is delayed as the system is searching for a new terminal and loads the specific menus into the terminal. The loading process may take a few minutes.

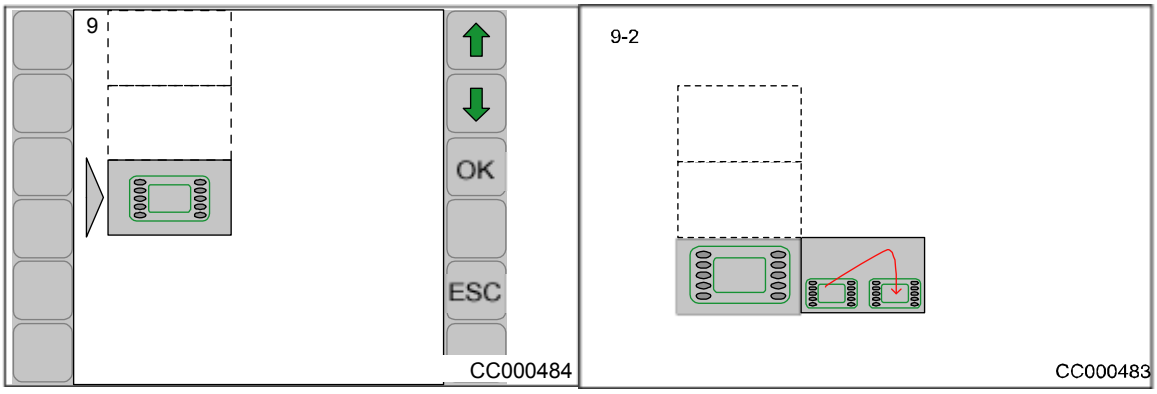


Fig. 88

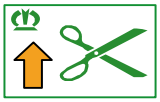
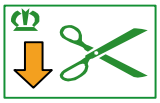
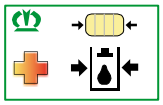
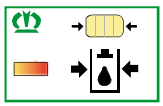
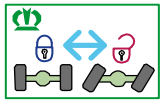
- Bring up the menu level by pressing function key from the basic screen
- Select main menu 9 ( ) by pressing function key or , the symbol is highlighted in grey.
- Pressing the function key **OK** brings up the menu level 9-2 ( ) . The symbol is highlighted in grey.
- Changing to the next connected terminal is possible by pressing the key **OK** once again
- Pressing the function key **ESC** closes the menu currently displayed
- Pressing the function key **ESC** and holding it down brings up the basic screen

7.4 ISOBUS „Auxiliary“-function (AUX)

Note

There are terminals which support the additional function “auxiliary” (AUX). With this function, programmable keys of the peripheral equipment (e.g. multi-function levers ...) can be assigned with functions of the connected job computers. A programmable key can also be assigned with several different functions. If key assignments are saved, accordant menus will appear on the screen 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:**
	Lift blade bar
	Lower blade bar
	Increase baling pressure / baling force
	Reduce baling pressure / baling force
	Switching between manual/automatic mode
	Starting aid start / stop
	Lock / release steering axle

Note

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

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

CAUTION!
For the remainder of the procedure, refer to the operating instructions of the operating terminal manufacturer.

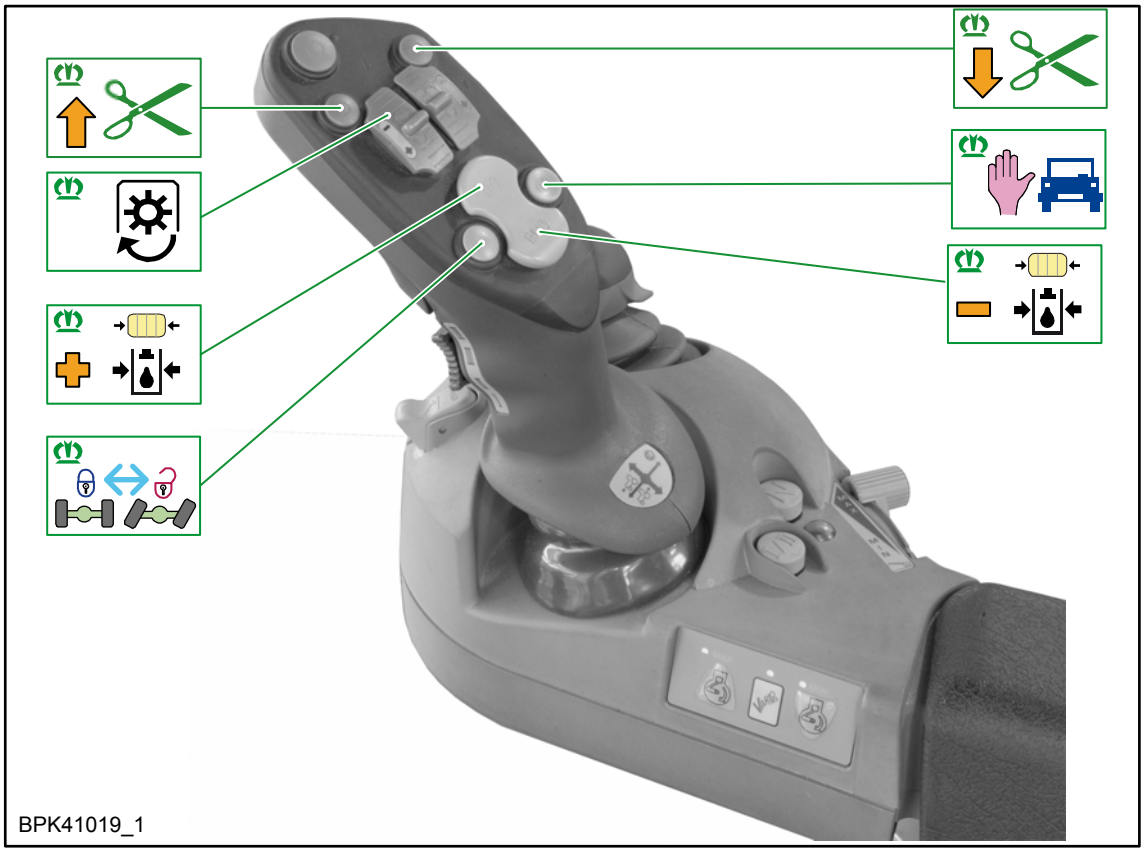


Fig. 89

7.4.2 Recommended assignment of a WTK- multi-function lever

CAUTION!
For the remainder of the procedure, refer to the operating instructions of the operating terminal manufacturer.

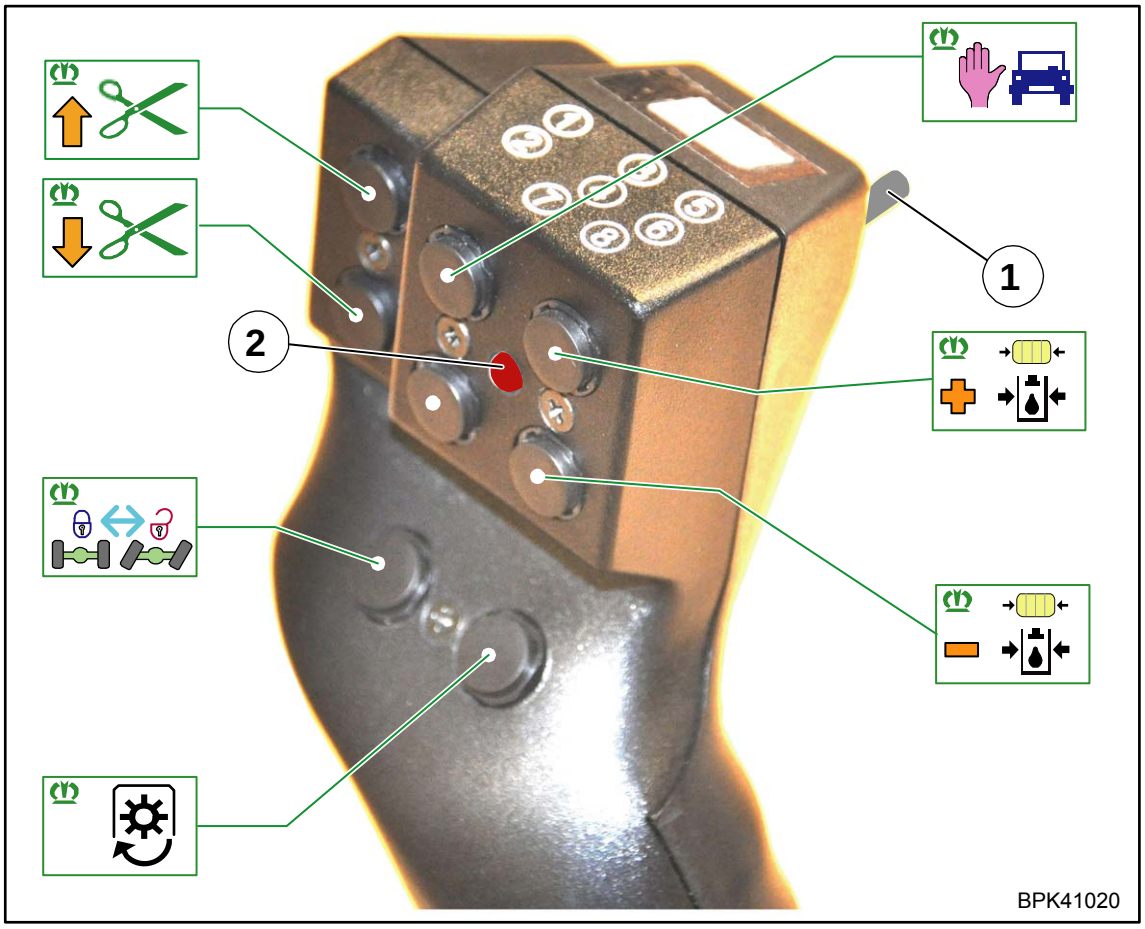


Fig. 90

8 Start-up

DANGER! - Accidental start-up of the machine, moving parts of the machine and / or unexpected movement of the machine!

Effect: Danger to life, injuries or damage to the machine.

- Special caution is required when mounting and detaching the machine on and from the tractor No one may stay between the tractor and machine. After successful coupling turn off the engine and pull out the ignition key. Apply the flywheel brake.
- In service, maintenance, adjustment and repair work on the machine always switch the P.T.O. shaft off, turn off the engine and pull out the ignition key
- Put the machine into operation only if all safety devices are attached and in protective position
- The machine may be operated with a maximum P.T.O. speed of 1000 rpm
- Only the universal shaft specified by the manufacturer with corresponding overload coupling and freewheel may be used
- Mounting and detaching the universal shaft only with the P.T.O. shaft disengaged, the engine turned off and the ignition key withdrawn
- Run hoses and connection cables so that they are not subject to tension when cornering or come into contact with the tractor wheels
- Check hydraulic hose lines regularly and replace them in the case of damage or ageing
- When connecting and removing the hydraulic hoses to and from the tractor hydraulics take care that the hydraulics are depressurised both on the tractor side and the machine side

8.1 Mounting onto the Tractor

DANGER! - Attaching / removing the machine

Effect: Danger to life or serious injuries.

- The machine must only be connected to tractors that are equipped with a matching hitch
- When the tractor is put back in front of the machine, there must be no one between the tractor and the machine
- Observe the maximum supporting and tensile load of the hitch on the tractor

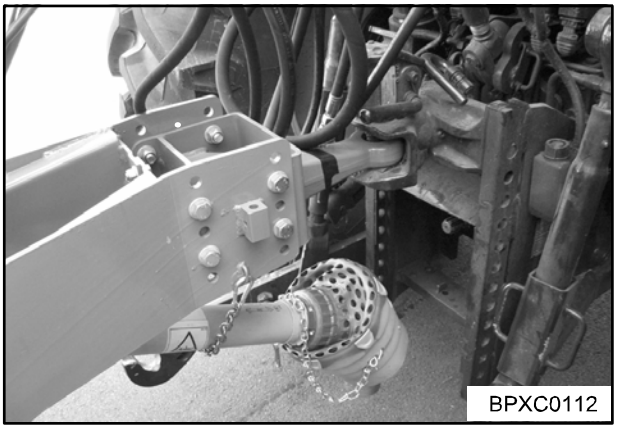


Fig. 91

The machine comes standard equipped with a ready-to-use hitch hole of Ø 40 mm (DIN 11 026). Depending on the specific requirement, the following hitches are also available:

- Ball-head hitch (K 80)
- Rotating towing eye
- Hitch connection (export only)
- Hitch and secure the machine according to the regulations on the hitch of the tractor

8.1.1 Install the PTO shaft

DANGER! - Rotating universal shaft!

Effect: Danger to life or serious injuries

- Before pushing the universal shaft onto the P.T.O. shaft of the tractor, disengage the P.T.O. shaft, turn off the engine and pull out the ignition key. Apply the flywheel brake
- Secure the tractor and machine against unintentional rolling

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! - Swivel range of the PTO shaft

Effect: Damage to the tractor or the machine

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

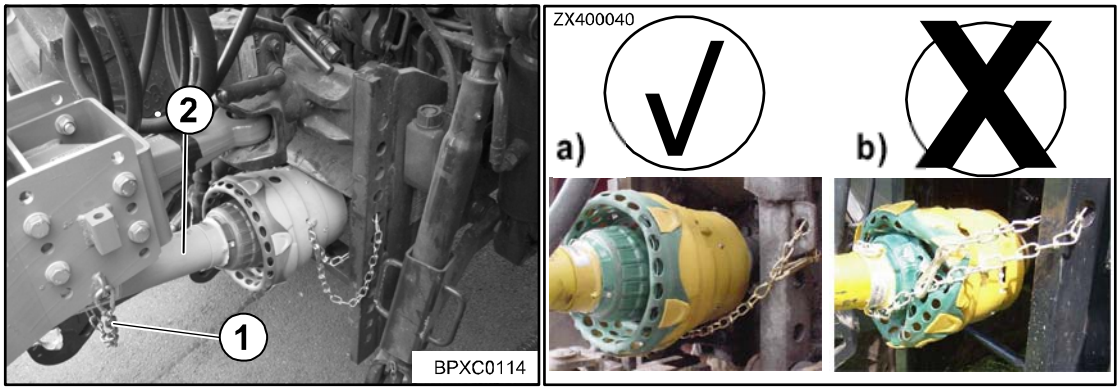


Fig. 92

Tractor side:

- Take the universal shaft (2) out from the retaining chain (1)
- With the engine turned off and the ignition key withdrawn, push the universal shaft onto the tractor P.T.O. and secure it
- Secure the universal shaft guard against turning by hooking in the locking chain

Make certain the chain connection is ideal:

- The chain guide should be as close as possible to perpendicular to the universal shaft (refer to fig. (a))
- The chain guide should never be diagonally connected via the guard cone (refer to fig. (b))

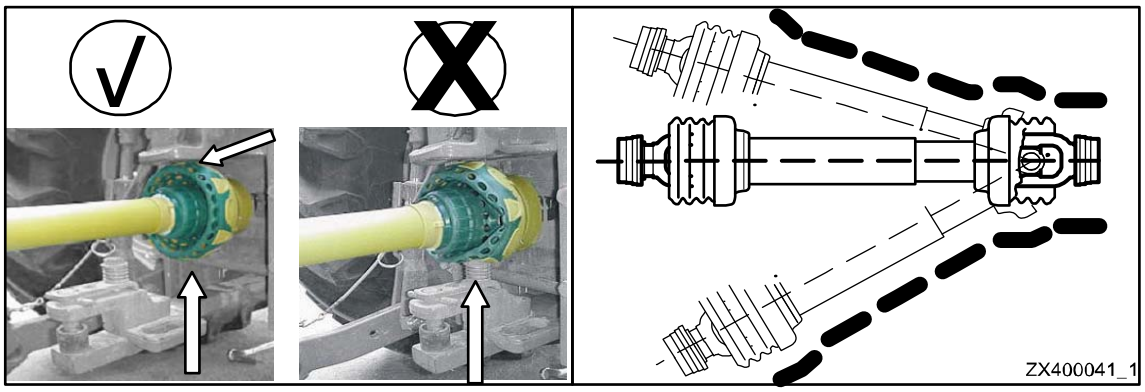


Fig. 93

- 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! - 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

8.2 Hydraulics

8.2.1 Special Safety Instructions

Warning ! - Connection of the hydraulic line

Effect: severe injuries due to penetration of hydraulic oil under the skin.

- When connecting the hydraulic hoses to the hydraulic system of the tractor, the system must be relieved of the pressure on either side.
- Due to the risk of injury when searching for leaks, always use suitable tools and wear protective goggles.
- Seek medical help immediately should injuries occur! Danger of infection.
- Depressurise prior to uncoupling the hydraulic hoses and working on the hydraulic system!
- Check the hydraulic hose lines at regular intervals and replace them if damaged or worn! The replacement hoses must fulfil the technical requirements set by the equipment manufacturer.

8.2.2 Connecting the hydraulic lines

Danger! - Hydraulic hose lines are subject to ageing

Effect:

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

Connect the hydraulic lines correctly

- The hydraulic hoses are identified by coloured hose clips.

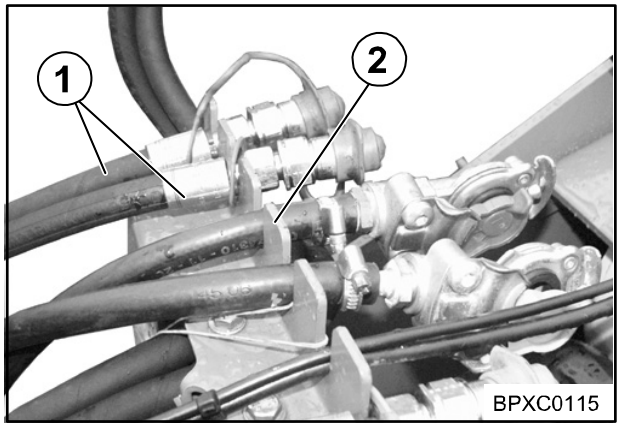


Fig. 94

Depending on the version supplied a varying number of control units are required on the tractor to operate the machine.

Comfort - Electronic

P 1	Connection for control block for Comfort version • Pressure line ((red 1) nominal width 15)
T 1	Connection for control block for Comfort version • Return flow line ((blue 1) nominal width 18)
LS 3	Connection for control block for Comfort version • If required, couple load-sensing line - nominal width 12 - (red 3) to the LS connection of the tractor (optional for Comfort version) (further information can be obtained from the operating instructions provided by the manufacturer of the tractor).
2	Single-action control unit (red 2): Lift pick-up

Medium Version Electronics

4	Connection for control block for Medium version • Close blade bar, lift/lower parking jack, open/close roller chute, deploy/retract bale ejector (red 4)
4	Connection for control block for Medium version • Open blade bar (blue 4)
2	Single-action control unit (red 2): • Lift pick-up
7	Single-action control unit (red 7): • Lock / Release steering axle
P 8	Connection for start-up aid • Pressure line (red 8)
T 8	Connection for start-up aid • Return flow line (blue 8)

- Take the hydraulic hoses (1) out of their support (2) on the drawbar
- Remove the cover caps on the couplings of the hoses
- Thoroughly clean the plug-in connections of the hydraulic hoses before plugging them in

8.3 Hydraulic brake (Export)

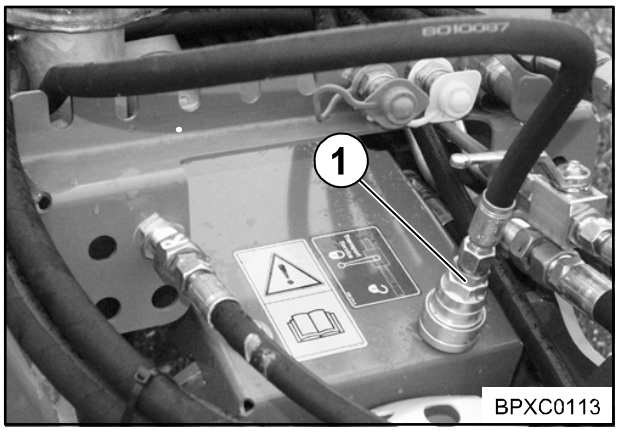


Fig. 95

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.

8.4 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 can tear off and lead to an emergency braking.

- Make certain that the length of the safety chain is adapted to the tractor.
- A specialist workshop (service technician) must adapt the length of the safety chain
- When changing the tractor, make certain that the safety chain has still the correct length

WARNING!

Risk of injury and serious material damages due to the safety valve of the hydraulic brake which is not functioning.

To guarantee the functionality of the safety valve for the hydraulic emergency brake,

- make certain that the safety chain is fastened free of tension on the tractor. A safety chain which is wrapped to strong around the hydraulic hose prevents the functionality of the safety valve
- the brake pedal of the service brake must be actuated completely once before starting driving. By activating the service brake, the accumulator on the safety valve is pressurised.

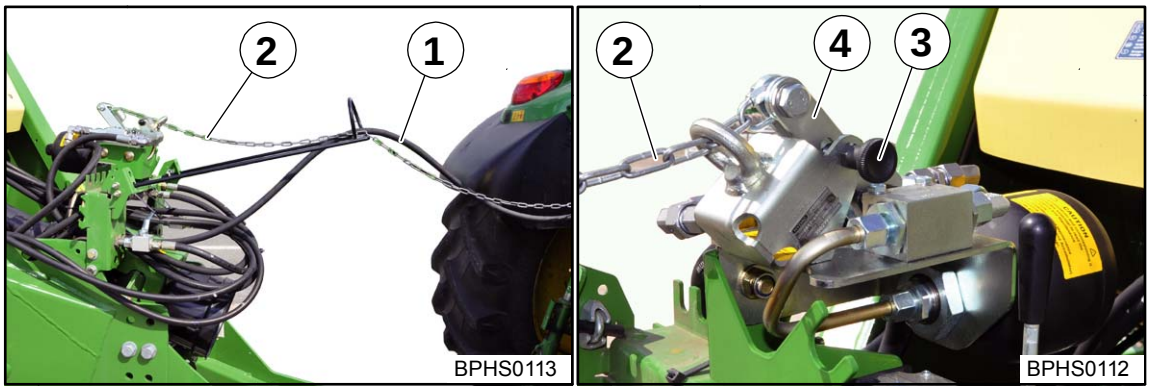


Fig. 96

- 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 is laid out with a set brake (weaker chain link). If the machine uncouples itself unintentionally, the safety valve triggers the emergency braking 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 with the help of the spring force.

8.5 Hydraulic connection to block the coaster/steering axle (special equipment)

Connect the separate hydraulic hose from the locking cylinder of the steering axle (red 7) onto the single-acting control unit on the tractor.

Note

Observe the user instructions of the tractor manufacturer on parallel operation of the tractor control devices! 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!

8.6 Load-sensing connection

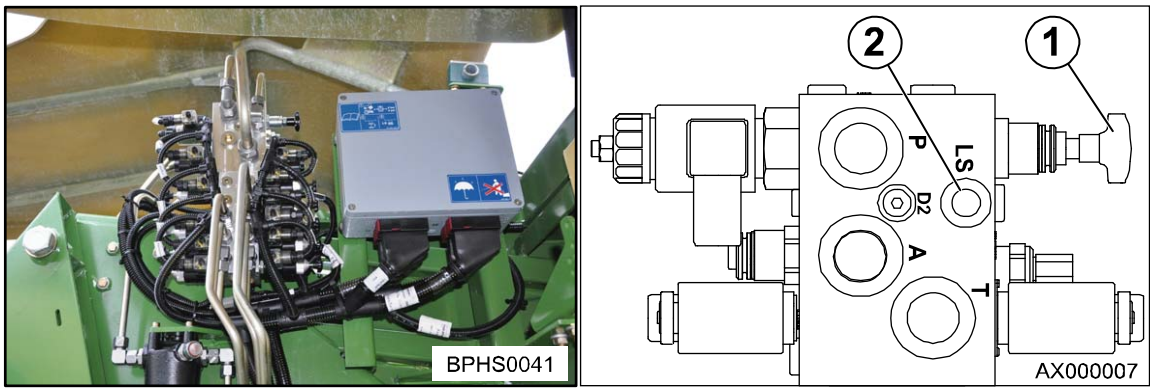


Fig.97

The Comfort hydraulic system is load-sensing-capable.

The oil supply comes through the Power-Beyond system of the tractor hydraulics for use of the load-sensing system (further information can be obtained from the operating instructions provided by the manufacturer of the tractor).

The comfort hydraulic system of the machine must be adjusted on the tractor. It is designed for continuous circulation. The adjustment is made by adjusting the hydraulic system screw on the control valve block of the machine. The control valve block is located at the front left under the side hood next to the electronics box.

Note

The adjustment depends on the hydraulic system of the tractor and must be made while there is no pressure in 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

Note

The connection (2) for the message line is under the hydraulic system screw.

8.7 Compressed Air Connections for the Compressed Air Brake

Danger! - Failure of the brake system
Effect: Danger to life, injuries or damage to the machine.
Hose lines which become detached will cause the machine brake system to fail.
After connecting the quick-release couplings , check that they are seated correctly.
Check hose installation to ensure that hose lines cannot be abraded or become trapped.

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.

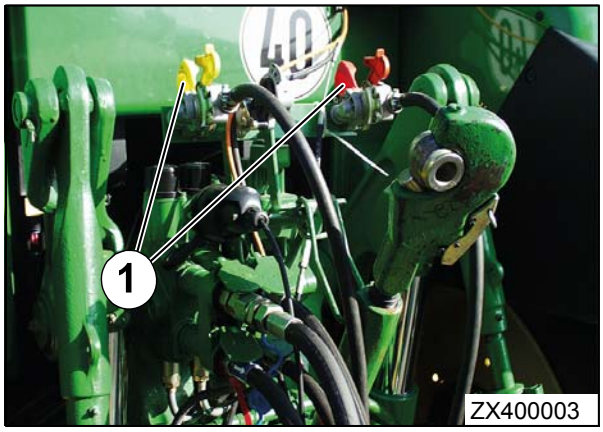


Figure 98
Insert the coloured compressed air hose couplings (1) into the correspondingly coloured couplings on the tractor.

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

8.7.1 Supports for compressed air hoses

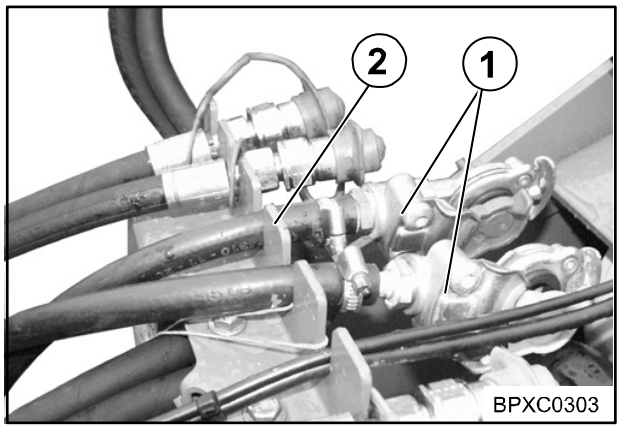


Fig. 99
Couple the compressed air hoses (1) into the corresponding supports (2) on the top of the drawbar.

8.8 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 serves as an additional safety precaution for trailed devices, should they come loose from the swing drawbar during transport. Attach the safety chain with the respective mounting parts to the swing drawbar holder of the tractor or to another specified coupling point. The safety chain should have enough play when driving around curves.

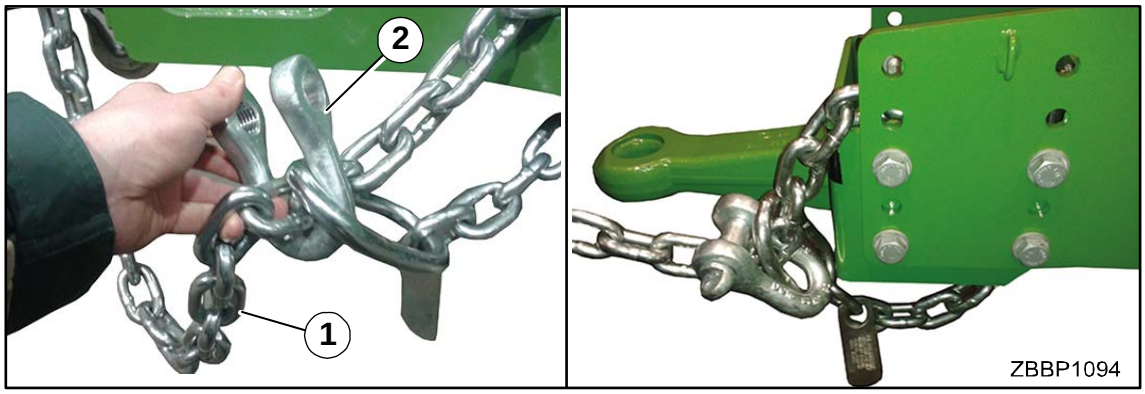


Fig. 100

- Install safety chain (1) with shackle (2) on the big pack baler.

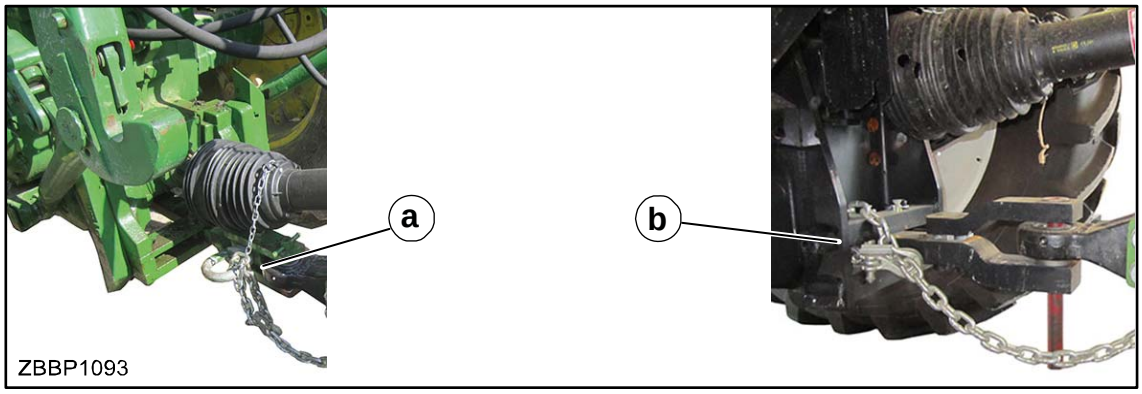


Fig. 101

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

8.9 Electrical connections

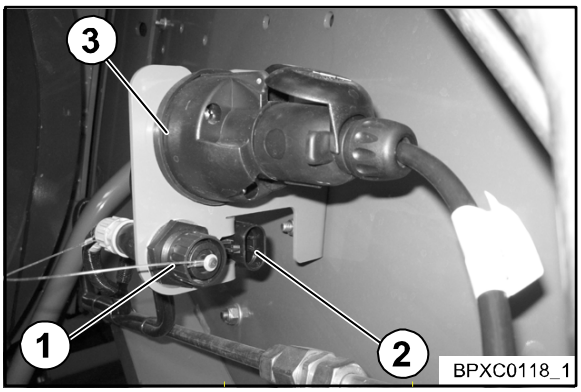


Fig.102

The machine requires a voltage source for supplying power to the on-board computer and lighting. A socket for installation on the tractor is part of the scope of supply.

- The socket supplied is to be connected directly to the 12V battery of the tractor.
- Plug in and secure the connection cables in the corresponding sockets on the baler.
- Remove the protective cap before plugging in if necessary.

Note

As soon as the plug of the continuous current supply is plugged in and the control and display unit is switched on and there is no twine in the needles, the acoustic signal for the twine control sounds.

Socket (1):

7 pin socket for connection cable between terminal and machine

Socket (2):

2 pin socket for power supply cable between machine and permanent tractor socket (direct battery connection for permanent power supply needed).

Socket (3):

7-pin standard socket for lighting

8.9.1 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  .

8.10 LED strips

The machine is equipped with LED strips as standard. The LED strips are switched on via contacts.

- Opening the right or left twine box switches on the LED strip in the twine box and the LED strip in the lower twine guide area.
- When the twine box is closed, the LED strips in the twine box and the LED strip in the lower twine guide area are switched off
- When the knotter hood is opened, the LED strip under the knotter hood is switched on.
- When the knotter hood is closed, the LED strips under the knotter hood are switched off.

9 Driving and Transport

9.1 Preparations for road travel

Warning! – Road travel, carrying passengers, driving conduct!
Effect: Danger to life, injuries or damage to the machine.
Before transporting the machine, ensure that

- the machine has been correctly hitched to the tractor
- all guards have been closed and locked
- the bale chamber is empty
- the pick-up has been lifted and secured via the shut-off valve
- the roller bale chute has been folded in
- the parking jack has been raised or retracted
- the parking brake has been released
- the control valves on the tractor are in the neutral position
- the ladder has been folded in for the version with the retractable ladder
- the maximum permitted speed (see rating plate) is not exceeded
- that nobody is being conveyed on the machine
- the maximum supporting and tensile load of the hitching device on the tractor is observed
- the lighting functions perfectly
- you have perfect visibility on and around the tractor and the machine
- for machines which have an operating permit the conditions in the operating permit are observed

The following tasks must be performed on the machine and tractor before road travel:

9.1.1 Lifting the Pick-up

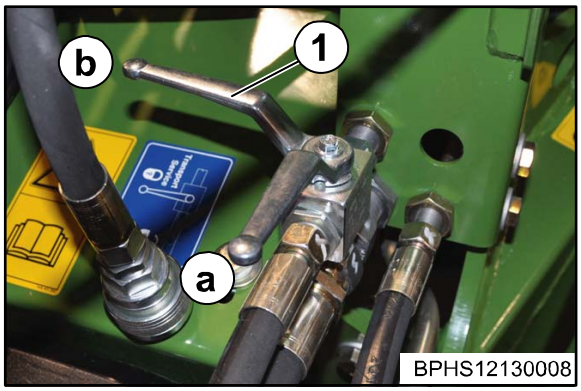


Fig. 103

- Lift the Pick-up and secure it against lowering at the shut-off valve (1)

The lever is located at the front left side of the machine on the drawbar.

- The lever must be moved from position (a) to position (b) to raise the Pick-up

9.1.2 Roller chute hydraulically activated

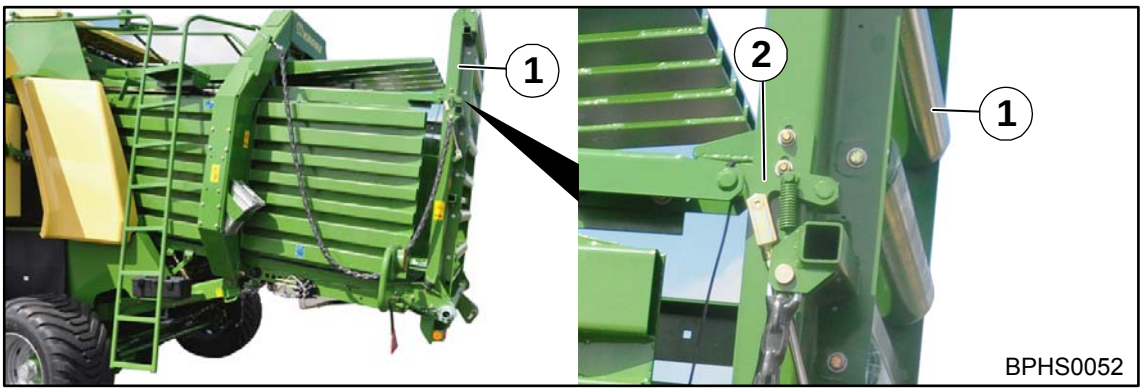


Fig. 104

- Fold in the hydraulically activated roller chute (1) hydraulically

After it is folded in, make certain that the mechanical lock (2) has snapped into place.

9.1.3 Checking the lighting system

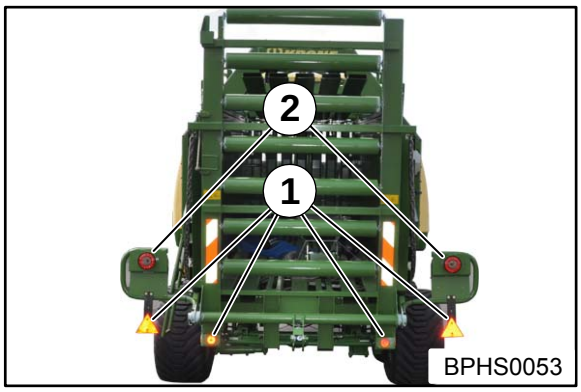


Fig. 105

- 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

9.1.4 Parking brake

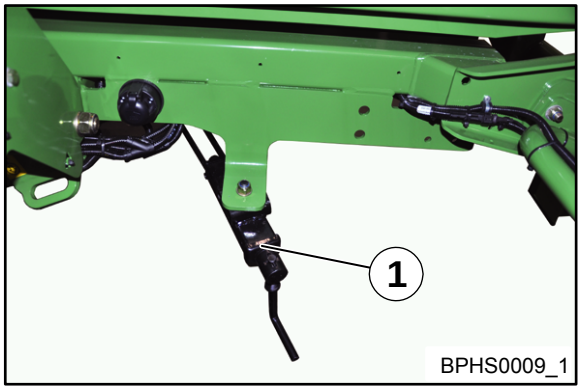


Fig. 106

Release the parking brake:

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

9.2 Moving

Danger! - Transport / road travel

Effect: Danger to life, serious injuries or serious damage to the machine.

Moving the machine in public road traffic without the compressed air brake connected is prohibited.

Danger! - Accidental start-up of machine and rolling.

Effect: Danger to life, injuries or damage to the machine.

- Switch off the engine and remove the ignition key.
- Secure the machine against the possibility of rolling back.

It is not easy to move the machine if the hoses of the compressed air brake are not connected to a brake system.

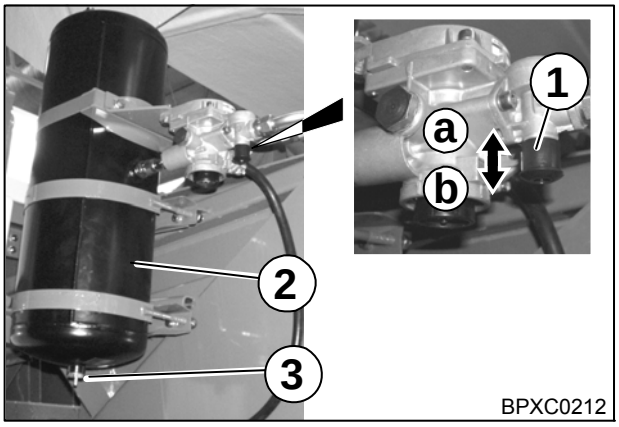


Fig. 107

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.

9.3 Handling the Coaster/Steering Axle (Special Equipment)

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

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.

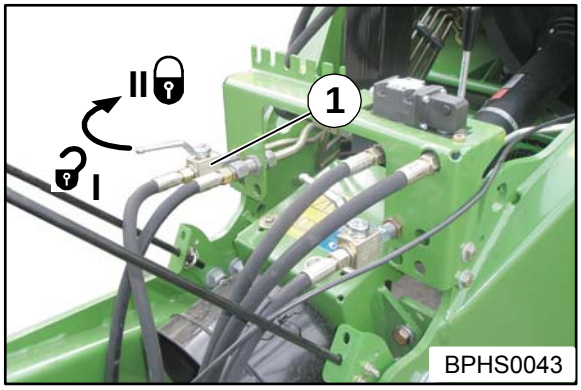


Fig.108

Note

Make certain, that the shut-off valve (1) is in position (I) (opened) during use of machine.

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)

Comfort - Electronic

- The coaster/steering axle is locked by pressing the function key for . 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.

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

Make certain, that the shut-off valve (1) is in position (I) (opened) during use of machine.

Note

The current status is shown in the status line (I) of the display.

= Axle locked = Axle released

9.3.1 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.

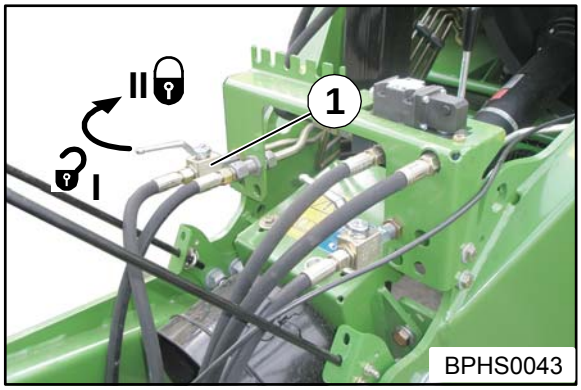


Fig.109

In addition for the Medium Electronics version, the shut-off valve (1) for the coaster/steering axle must be closed (setting II) before disconnection.

9.4 Parking

DANGER! - Unexpected movements of the machine

Effect: Danger to life, serious injuries

- No one is permitted inside the danger zone
- You should not unhitch the machine until the engine has been switched off and the ignition key has been removed
- Park the machine only on level and firm ground. If the Big Pack Baler is parked on soft ground, enlarge the base area of the parking support.
- Secure the machine against rolling away with wheel chocks and by applying the parking brake
- Take care when cranking down the parking support. There is danger of crushing your feet!
- Remove the universal shaft only with the P.T.O. shaft disengaged and the engine turned off and the ignition key withdrawn. Apply the flywheel brake.
- When connecting the hydraulic hose to and disconnecting it from the hydraulic system of the tractor, the tractor system as well as the machine system must be depressurised! Move the appropriate control valves into the flow position.

9.4.1 Parking brake

Danger! - Unexpected movements of the machine
Effect: Danger to life, serious injuries or damage to the machine
Always engage the parking brake as soon as the machine is disconnected from the tractor.

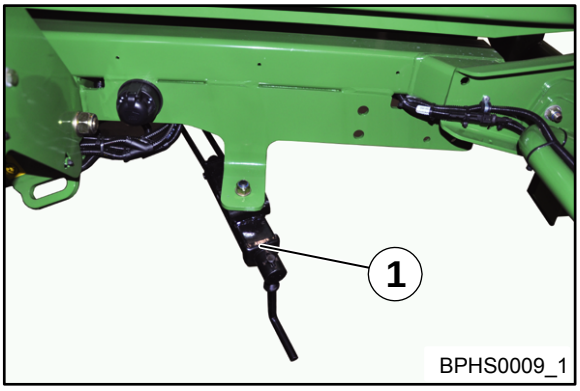


Fig. 110

Set 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.

9.4.2 Wheel chocks

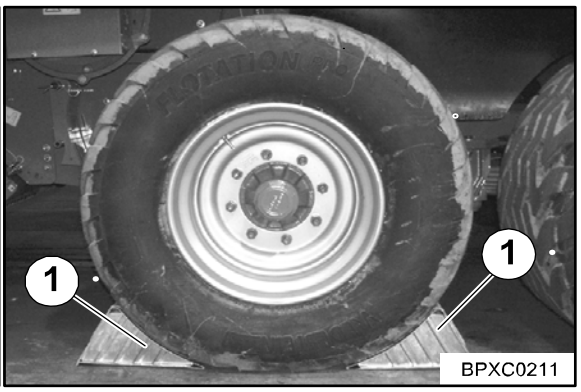


Fig. 111

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

- Always place the wheel chocks (1) in front of and behind the wheels (this will prevent the machine from rolling away).

Note

If the machine has a guided coast-down tandem axle (optional), it must be secured with wheel chocks on the front axle to prevent it from rolling away.

10 Operation

DANGER! - Maintenance, assembly, repair and adjustment work

Effect: Danger to life, injuries or damage to the machine.
The following general rules apply to all maintenance, assembly, repair and adjustment work:

- Switch off the P.T.O. shaft. Switch off the engine and remove the ignition key. Apply the flywheel brake
- Secure the machine against rolling away with wheel chocks and by applying the parking brake
- During operation, maintain an adequate safety distance from all movable parts of the machine. This applies especially to the collecting mechanism (Pick-up) of the crop
- Eliminate blockages only when the machine is stopped. Switch off the engine and remove the ignition key. Apply the flywheel brake
- Put the machine into operation only if all protective devices are attached and in proper working order
- If dangerous situations arise, switch off the P.T.O. shaft immediately and bring the machine to a stop
- Never allow the machine to run without operating personnel on the tractor

10.1 Pick-up

Note

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

10.2 Cutting system

DANGER! - Maintenance, assembly, repair and adjustment work

Effect: Danger to life, injuries or damage to the machine.
The following general rules apply to all maintenance, assembly, repair and adjustment work:

- Bring the machine to a complete stop.
- Switch off the P.T.O. shaft. Switch off the engine and remove the ignition key. Apply the flywheel brake
- Secure the tractor and machine against rolling
- Secure the Pick-up against unintentional lowering by moving the shut-off valve on the left side of the machine
- Risk of injury when attaching or removing the cutters. The blades should only be touched with suitable gloves

10.2.1 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.

10.2.2 Cutting length

The cutting system of the Big Pack 890 XC can be fitted with a maximum of 16 blades. The cutting system of the Big Pack 1270 XC / 1290 XC / 1290 HDP XC / 12130 XC / 4x4 can be fitted with a maximum of 26 blades.
The blades are separated in two groups (upper blade control system and lower blade control system).
The theoretical chop length is, with full equipping, 44 mm. The chop length is determined by the number of blades used and the position of the blade control system.
The following blades can be optionally operated via the upper and lower blade control system with full equipping on

Big Pack 890 XC 0, 8, 8 or 16 blades.

Big Pack 1270 XC / 1290 XC / 12130 XC / 4x4 0, 13, 13 or 26 blades.

Table cutting length depending on blade equipping

Cutting length mm	Number of blades		Deployed blade compartment
	BP 890	BP1270 / BP1290 / BP 4x4	
-	0	0	random
44	16	26	each
88	8	13	every 2nd
176	4	6	every 3rd

Table cutting length depending on blade control system (with full equipping)

Cutting length mm	Number of blades		Upper blade control system	Lower blade control system
	BP 890	BP1270 / BP1290 / BP 12130 / BP 4x4		
-	0	0	Off	Off
88	8	13	On	Off
88	8	13	Off	On
44	16	26	On	On

10.2.3 Activating the cutting system

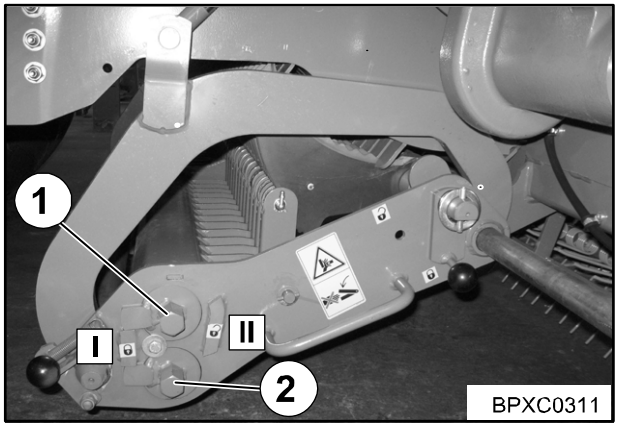


Fig. 112

To activate the cutting system, the upper (1) and lower (2) blade control systems must at least be switched on (position 1) and the cutting system is moved up hydraulically as far as it will go.

10.3 Blade Changing

WARNING! - Blade changing

Effect: Severe injuries to fingers and hands

- Wear protective gloves to remove / install blades!

Blades are changed on the right and left side of the machine. Jobs on the right hand side of the machine are described below. The same applies for the left hand side of the machine.

Warning! – Raising the cutting system without retracted and locked cutting system halves

Effect: Damage to the cutting system

- Make sure that both cutting system halves are orderly retracted and locked before raising the cutting system

Lowering the cutting system:

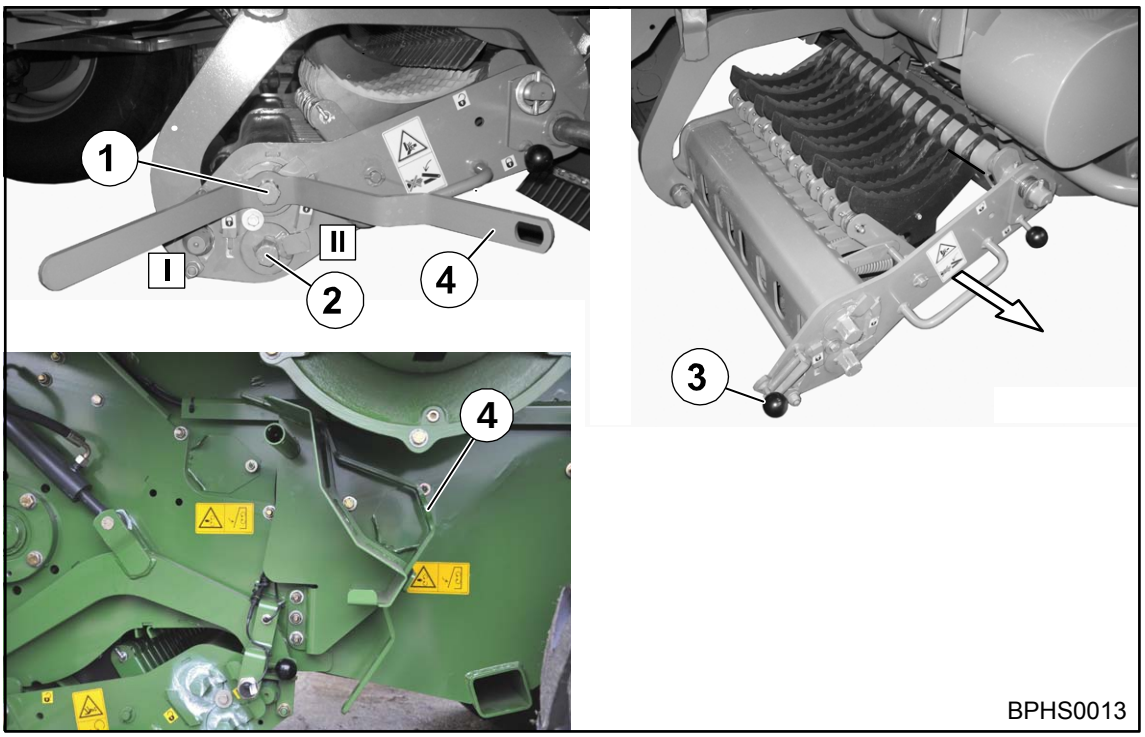


Fig. 113

- 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

CAUTION! - Spring pressure is acting upon the key

Effect: Risk of injury

When shifting the blade control system from position (II) to position (I), be careful of the spring pressure of the blades taking effect on the auxiliary tool (4) (risk of injury!).

Releasing the individual knife retention

- Use the special tool (4) to turn the upper (1) and the lower (2) blade control system far enough so that the cams of the blade control system move from position (I) to position (II).

Note

The special tool is to be found on the left hand side of the machine near the cutting system. Make sure to replace the special tool securely in its bracket after use.

- Unlock the cutting system inlet tray by moving the locking lever (3) and pull it sideways as far as the stopper.

Warning! – Raising the cutting system without retracted and locked cutting system halves

Effect: Damage to the cutting system

- Make sure that both cutting system halves are orderly retracted and locked before raising the cutting system

10.3.1 Unlocking the blade shaft

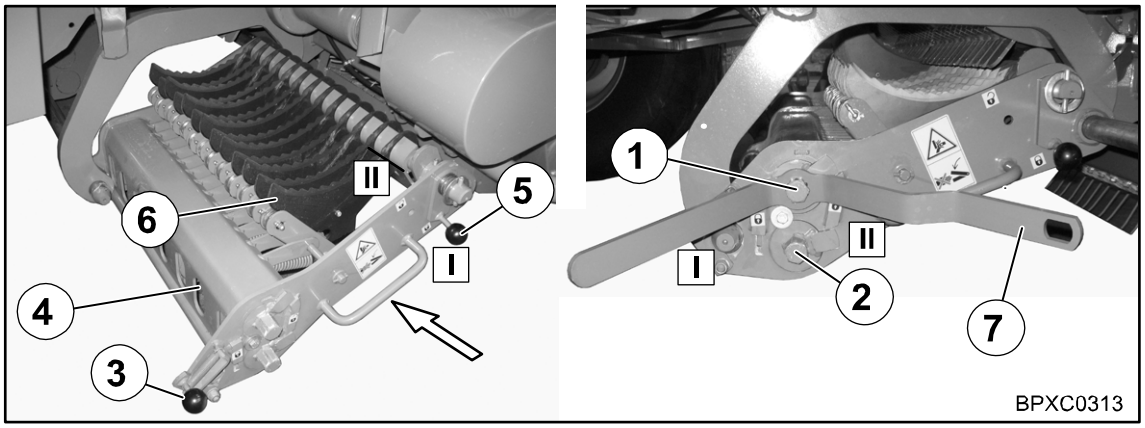


Fig.114

- Unlock the locking lever (5) (position II)
- The blades (6) can now be removed vertically upward (wear safety gloves)
- Insert new blades
- Secure the blade shaft with the locking lever (5) (position I)

Position I = blade shaft locked

Position II = blade shaft unlocked

- Push in the half of the cutting system (4) sideways (right and left hand machine sides) until the locking lever (3) snaps into place automatically

Activating individual knife retention

- Use the special tool (7) to turn the upper (1) and the lower (2) blade control system far enough so that the cams of the blade control system move from position (II) to position (I)
- Raise the cutting system hydraulically

10.4 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).

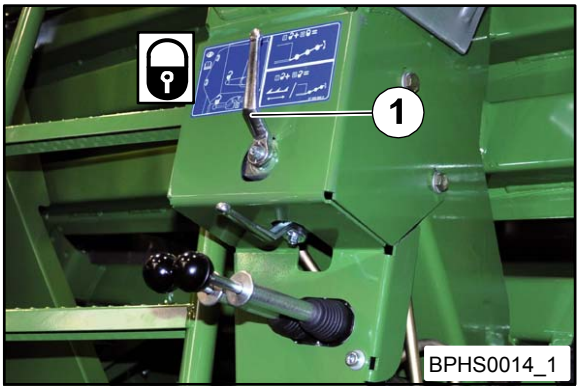


Fig. 115

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.

10.5 Baling Force Regulation

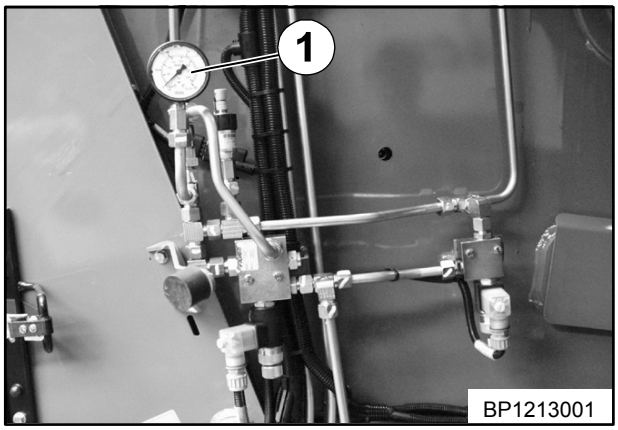


Fig. 116

The baling force in the baling channel is regulated by an electronic hydraulic system. The setting of the baling force is made by the control unit of the tractor (refer to chapter “Setting the target bale channel flap pressure”).

The pressure can be metered directly from the display of the control unit.

An additional pressure gauge (1) for metering the baling pressure is located on the left side of the machine under the side hood on the pressure limitation valve.

Note

Retaining the baling pressure when the control unit (medium/comfort) is switched off

In order to conserve the baling pressure in the bale channel chamber, the control unit may be switched off only after the machine or the flywheel have come to a complete standstill.

10.6 Ejection of the last bale

Before ejecting the last bale it should be tied up. To do this, initiate the tying process manually (refer to chapter “Initiating the tying process manually” with medium design) or (chapter Manual mode basic screen 2/2 “Knotter triggering”).

10.6.1 Opening the bale channel chamber

Afterwards, open the bale channel chamber.

To this:

10.6.1.1 Medium design:

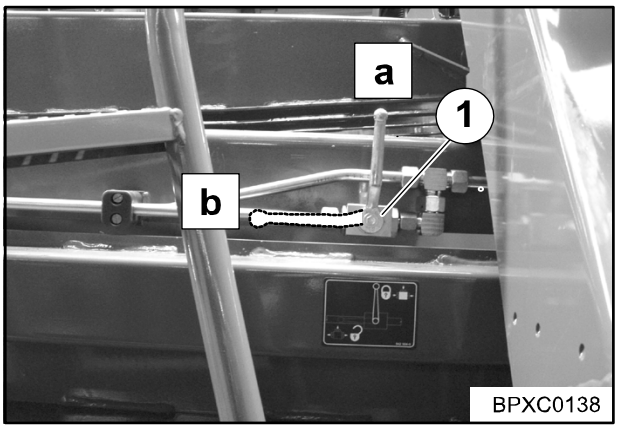


Fig. 117

Note

The shut-off valve (1) is used to release the bale channel chamber.

The machine is in the working position in setting (a). To release the bale channel chamber, use position (b) (tank return). If the shut-off valve is in position (b), it is not possible to build up pressure.

- Bring shut-off valve for releasing the bale channel chamber in position (b)

10.6.1.2 Comfort design:

In the case of the comfort design, this function can be switched from the control unit or on the machine keys (see chapter Manual mode basic screen 2/2).

10.6.2 Activating the bale ejector

The bale ejector depends on the variant (Medium / Comfort electronics).

10.6.2.1 Medium electronics design:

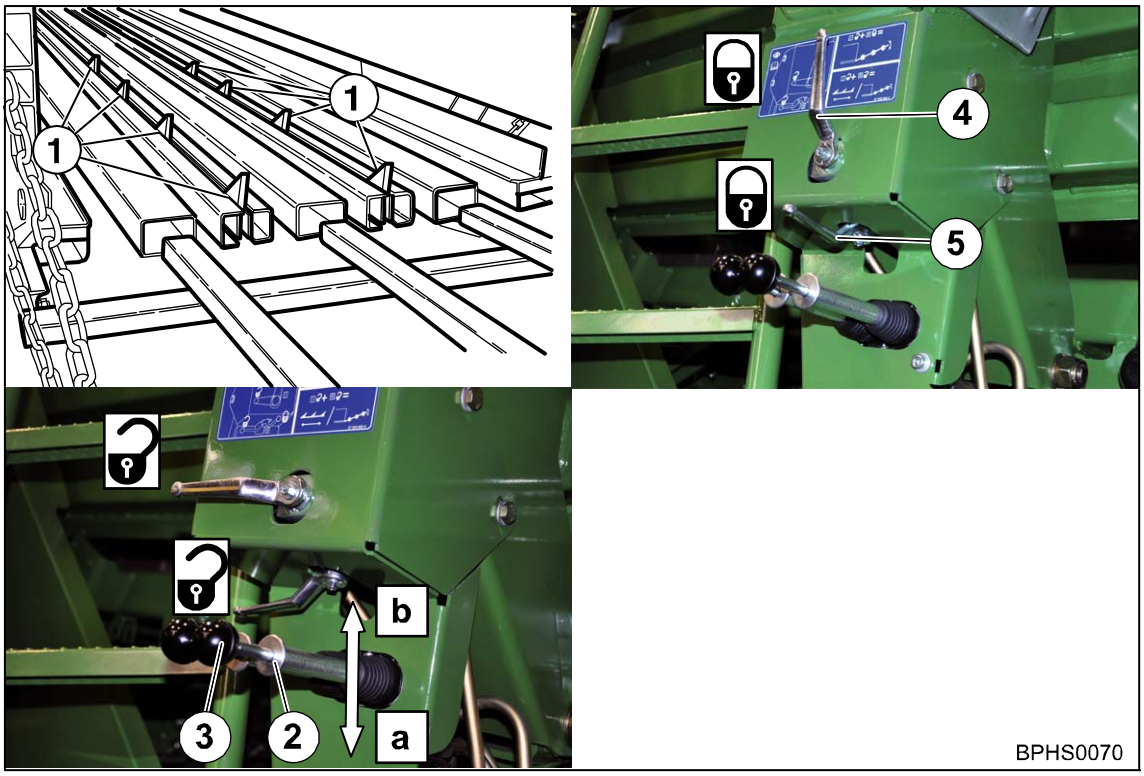


Fig. 118

The operating control device is located on the rear left side of the machine on the yoke.
The bale ejector (1) is activated by the rear control lever (3) in the Medium electronics design.

To do this:

- Activate the control unit (red4)
- Open shut-off valves (4) and (5)
- Tighten the safety sleeve (2) and move the control lever (3) to position (a) or (b)

Position (a): The bale ejector (1) moves forward.

Position (b): The bale ejector (1) moves back.

Note

After the bale is ejected, it is essential to move the bale ejector to the forward position again. To do this, move the control lever (3) to position (a) as described above. Finally, close the shut-off valves (4, 5).

10.6.3 Comfort electronics design:

In the Comfort electronics design, this function can be performed with the operator terminal (see chapter on KRONE ISOBUS terminal "Function Keys") or on the keys (see chapter on KRONE ISOBUS terminal "Keys on the Machine").

10.7 Hydraulically foldable roller chute

CAUTION! - Roller chute not folded in and secured

Effect: This machine must not be moved on public roads due to its extended length.
For travel on public roads, the roller chute must always be folded in and the mechanical locking must be snapped in place.

The operation of the roller chute depends on the version you have.

10.7.1 Medium design

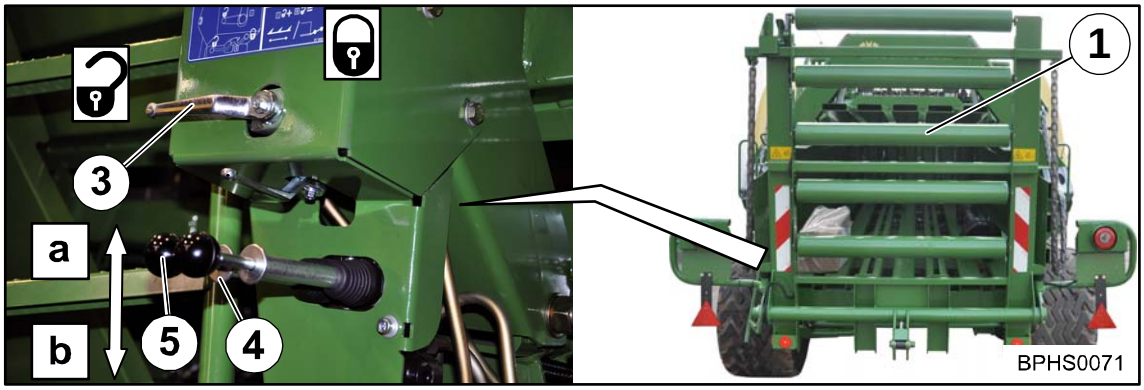


Fig. 119

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

The roller chute (1) is activated by the front control lever (5) in the Medium electronics design.

To do this:

- Activate the control unit (red 4)
- Release the mechanical lock on the roller chute
- Open the shut-off valve (3)
- To deploy the roller chute (1), tighten the safety sleeve (4) and move the lower control lever (5) down into position (b).
- To retract the bale chute (1), tighten the safety sleeve (4), activate the control lever (5) and move it up into position (a).

Position a = retract roller chute

Position b = deploy roller chute

10.7.2 Comfort version

In the Comfort electronics design, this function can be performed with the operator terminal (see chapter on KRONE ISOBUS terminal "Function Keys")

10.8 Length Adjustment of Big Bales

The machine is equipped with an electrical longitudinal adjustment device as standard.

10.8.1 Electrical longitudinal adjustment device

With the help of the electrical bale length adjustment device the bale length can be pre-set from the tractor control unit (see Section 'Adjusting the bale length').

10.9 Twine

10.9.1 Electrical twine empty display

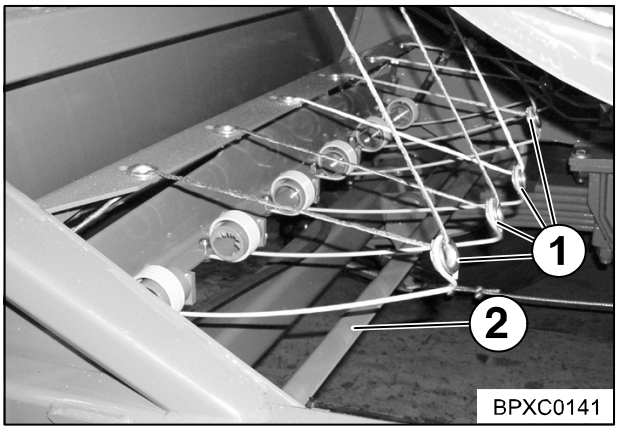


Fig. 120

When the end of the twine is reached or the twine has been torn, the stretching twine tensioners (1) come to rest on the rotation bracket (2). An audio warning signal is sounded on the control unit. An error message will appear in the display.

Note

To turn off the audio warning signal while twine is being fed in, follow the instructions describing comfort operation in the section entitled "Alarm messages".

10.9.2 Twine motion indicator upper twine (double knotter)

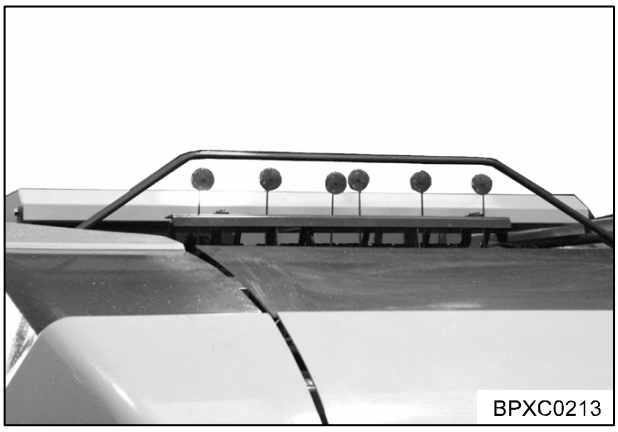


Fig. 121

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

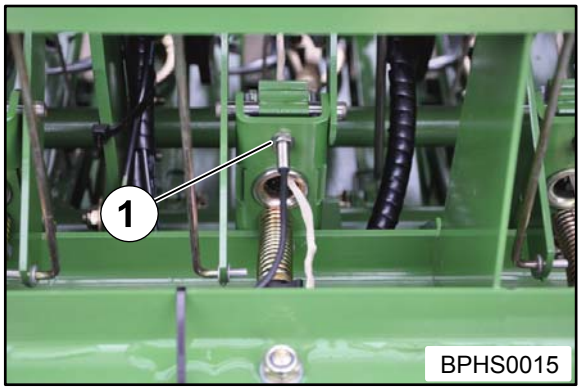


Fig.122

With the Comfort Electronics version the machine is also equipped with an electrical knotter monitor. In this case each knotter is monitored via a separate sensor (1).
If a knotter malfunction is detected a corresponding error message is displayed on the operating terminal.
The knotters are numbered from left to right as viewed in the direction of travel from 1 to 4 (BP 890) or from 1 to 6 (BP 1270/1290).

10.9.3 Initiate the tying process manually

When checking the needle setting (checking the needle height on the knotter) the baling process must be activated manually while the machine is at a standstill.

Or only for Medium version:

With the Medium version, the last bale must be baled manually before it is ejected while the machine is at a standstill.

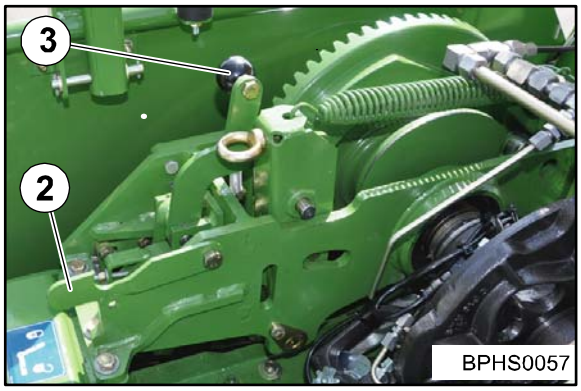


Fig.123

To do this:

- Swivel the safety lever (2) down.
- Move the lever (3) back to trigger the tying process.

Then move the needles upward to the knotter and back manually on the flywheel (in the working direction) or by turning on the PTO.

Note

In the case of the single knotter, make certain that the twines are pulled back after the last tie. Otherwise the thread may unravel the next time a knot is tied.

10.10 Drives

10.10.1 Main drive

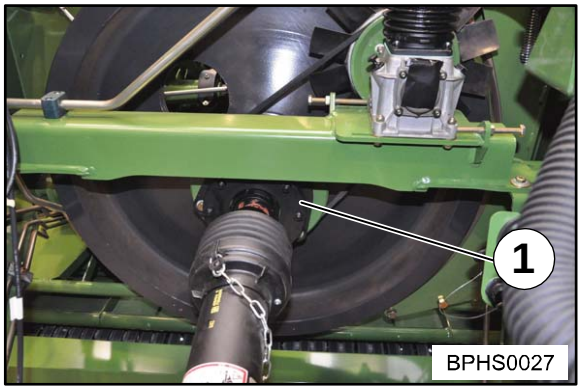


Fig.124

A bevel spur gear serves as main drive. The necessary torque is transmitted through the universal shaft and a generously dimensioned flywheel. The maximum drive speed must not exceed 1200 rpm. The universal shaft is protected on the machine side by a friction clutch (1).

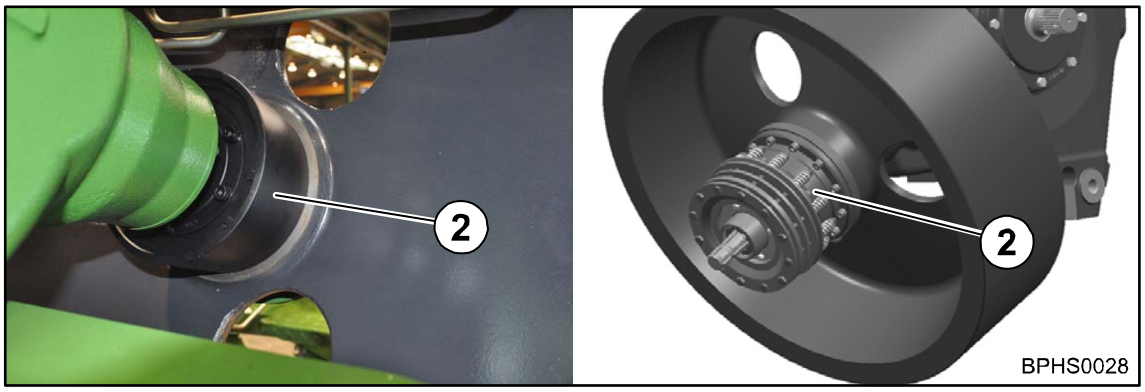


Fig.125

BiG PACK 890/1270/1290 BiG PACK 1290HDP/ BiG PACK 4x4

BiG PACK 890/1270/1290

There is a cam-type clutch (2) on the back of the flywheel.

BiG PACK 1290 HDP/XC / BiG PACK 4x4

The cam-type clutch (2) in the BiG PACK 1290 HDP/CX and on the BiG PACK 4x4 is located between the friction clutch and the flywheel.

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.

10.11 Knotter shaft drive

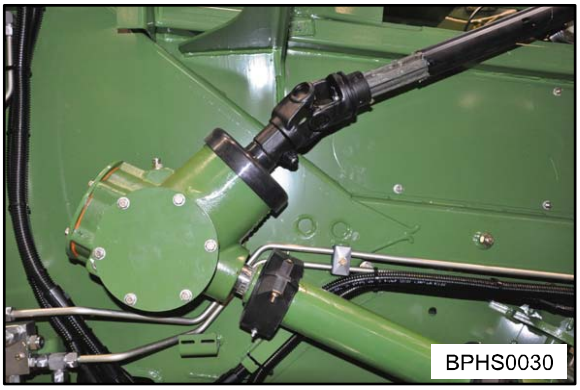
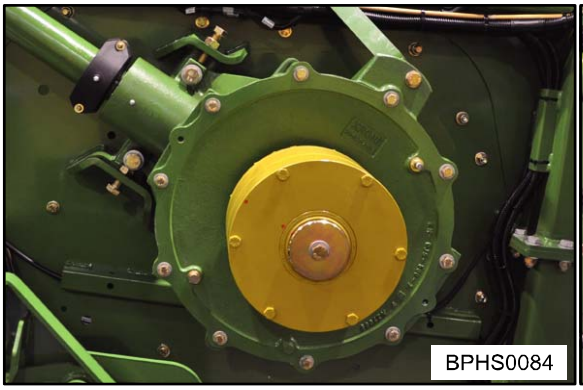


Fig.126

The knotter shaft is driven by an angular gearbox. A cardan shaft transmits the torque via the knotter gear to the knotter shaft.

10.12 Feed packer drum drive

The drive of the feed packer drum is located on the left side of the machine. The gearbox is protected by a spring-loaded ratchet clutch.



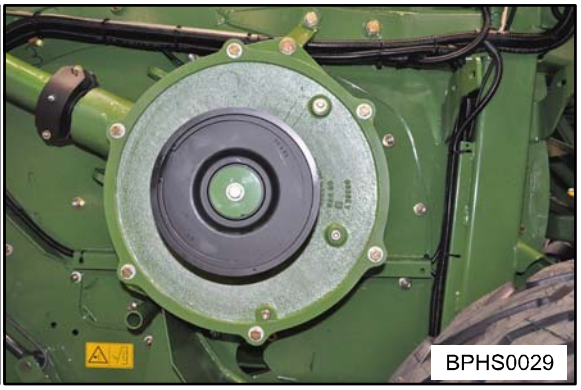


Fig.127

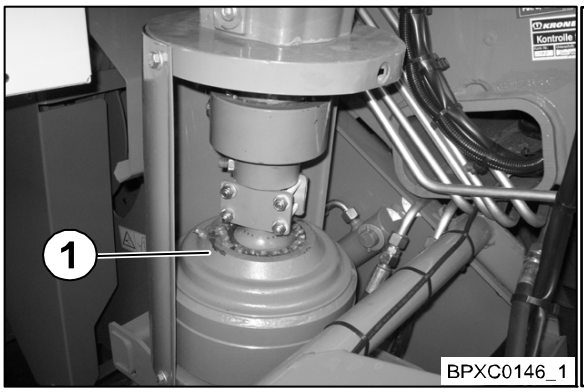
BiG PACK 890/1270/1290 BiG PACK 4x4

Note

As soon as the ratchet clutch responds, stop the tractor and reduce the speed until the machine has cleared itself again. After the fault is rectified, the ratchet clutch automatically resumes its work.

An error message appears on the control unit display.

10.13 XC Cutting System Drive



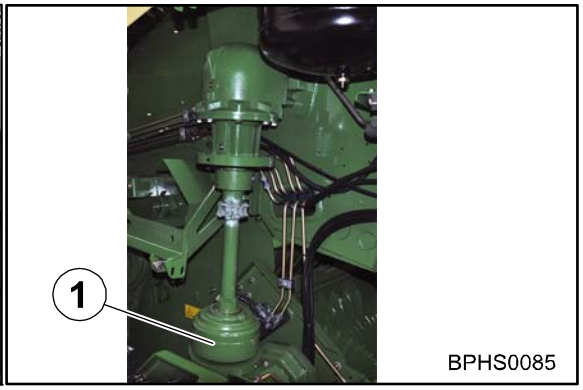


Fig. 128

BiG PACK 890 /1270 /1290 BiG PACK 4X4

The cutting rotor is driven via the upper angular gear. An intermediate shaft transmits the torque through an overload coupling (1) onto the lower angular gear.

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.

10.14 Pick-Up Drive (For the XC Cutting System Version)

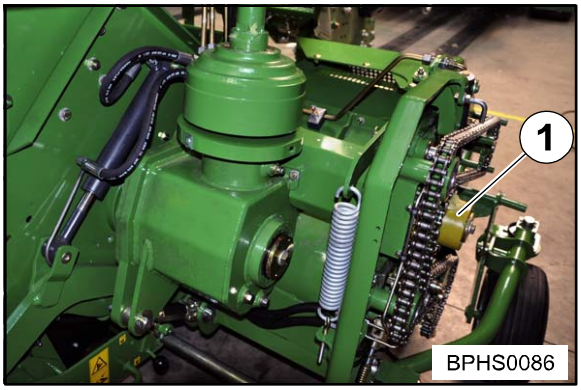


Fig. 129

The pick-up is driven on the right-hand side of the machine via the lower cutting system gearbox. A PTO shaft transmits the torque through an overload coupling (1) onto the drive chain of the pick-up.

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.

10.15 Pick-Up Drive Via Gearbox (Without Cutting System XC)

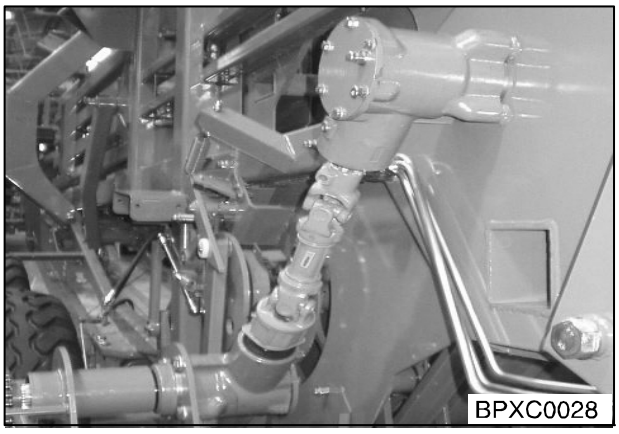


Fig. 130

The torque is transmitted by an angular gear from above through a PTO shaft with overload coupling downwards onto an angular gear.

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.

10.16 Bale brake

Only in connection with bale scale

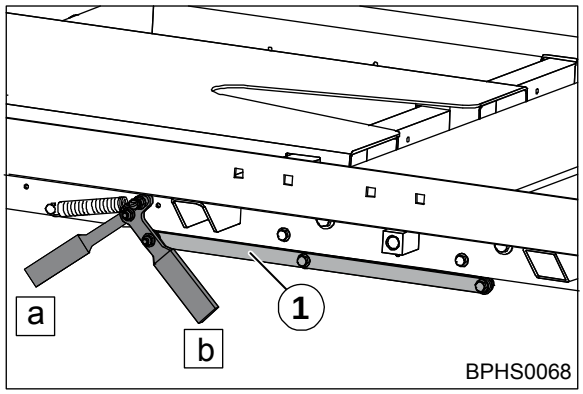


Fig. 131

The bale brake (1) is used to lock the first two rollers of the roller chute. This is necessary to achieve accurate weight recording of bales.

Lever in position a = rollers locked

Lever in position b = rollers rotate freely

Note

The bale brake must be released for the last bale to ensure it can be set down with no problems.

11 Settings

DANGER! - Maintenance, assembly, repair and adjustment work

Effect: Danger to life, injuries or damage to the machine.
The following general rules apply to all maintenance, assembly, repair and adjustment work:

- Switch off the P.T.O. shaft. Switch off the engine and remove the ignition key. Apply the flywheel brake
- Secure the machine against rolling away with wheel chocks and by applying the parking brake
- Put the machine into operation only if all protective devices are attached and in proper working order
- If dangerous situations arise, switch off the P.T.O. shaft immediately and bring the machine to a stop
- Never allow the machine to run without operating personnel on the tractor
- If you are working under the machine and there are needles in the bale channel chamber, it is imperative to secure the needle support against falling down

11.1 Tying unit

The BiG PACK baler is equipped with twine boxes on both sides of the machine. Each is capable of holding 16 rolls of tying twine.

To ensure sufficient tying safety, you must be careful only to use synthetic twine that has a running length of 110-130 m/kg.

11.1.1 Inserting the twine

Insertion of the twine is identical for the right hand and left hand sides of the baler. The procedure of insertion of the twines described in the following does apply for both sides of the baler.

The preparations and insertion of the twine must be accomplished with machine at standstill:

- Switch off tractor P.T.O. shaft
- Switch off tractor engine
- Fix the flywheel in place mechanically
- Secure the knotter shaft by moving the safety lever (1)

Secure knotter shaft

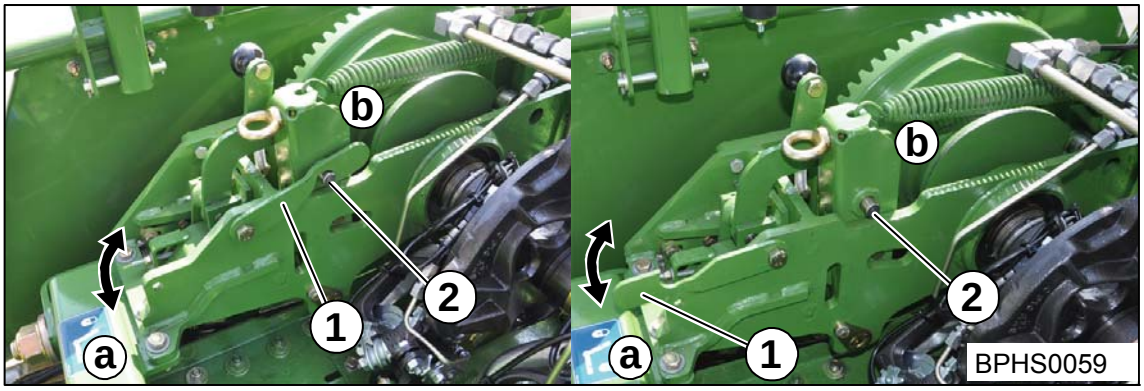


Fig. 132

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.

11.1.2 Interconnecting the twine (twine box)

The 6 rolls in driving direction front (right hand and left hand machine side) provide for the upper 3 twine strands (upper twine) and lead over the twine brakes (in the twine box) to the upper twine brakes.
The 6 following twine rolls provide for the 3 lower twine strands (lower twine) and lead over the twine brakes (in the twine box) to the lower twine brakes.
Each one upper twine and lower twine are lead to each knotter during the baling process.

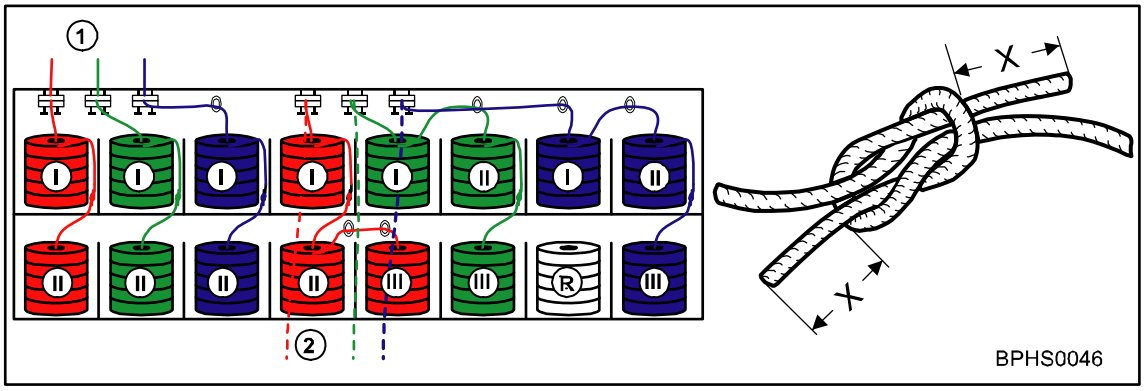


Fig.133

upper twine strand (1)

1 Lead the beginning of the twine of the twine roll (I) over the eye through the upper twine brake (in the twine box).
2 Connect the end of the twine of twine roll (I) and the beginning of the twine of twine roll (II) by a reef knot.

lower twine strand (2)

1 Lead the beginning of the twine of the twine roll (I) over the eye through the lower twine brake (in the twine box).
2 Connect the end of the twine of twine roll (I) and the beginning of the twine of twine roll (II) by a reef knot.
3 Shorten the ends of the reef knot to x = 15 - 20 mm

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

11.1.3 Threading the twine

11.1.3.1 Lower twine double knotter

Big Pack 1270 / 1290 / 4x4 right side **Big Pack 1270 / 1290 / 4x4 left side**

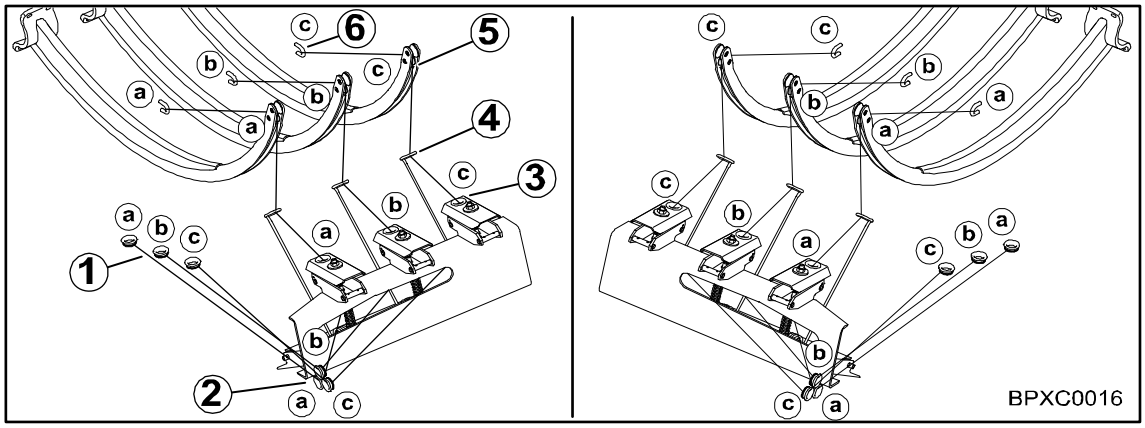


Fig. 134

Thread the lower twine coming through the lower twine eye (1) of the twine box through the eyes (2) on the frame. From there, thread the lower twine through the lower twine brake (3) over the twine tension springs (4) into the needles (5) (between the upper and lower roll) and knot them onto the according eyes (6) on the frame.

11.1.3.2 Upper twine

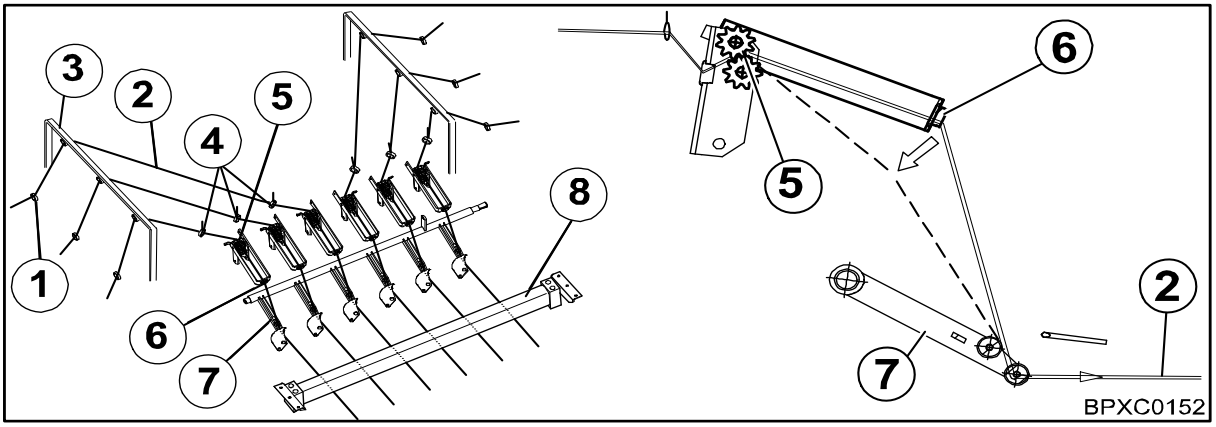


Fig. 135

Lead the upper thread (2) coming through the upper twine eyes (1) of the twine box over the twine guide (3) through the eyes (4) into the upper twine brake (5). From there, lead the upper twine over the eye of the tensioning arm (6), through the rolls of the upper needle (7) below the rear cross beam of the knotter table and fasten it onto frame at a suitable point (this could for example be the hinge pin of the upper tension flap).

Note

Attach the upper twine in a way that there is tension on the tension arm (6).

Note

If the bale compressor is empty, the upper and lower twine strands can be knotted with each other in the middle of the bale chamber (make sure, that the tension arm (6) is tensioned).

In case the bale channel chamber is filled, it is also possible to lop the loose end of the upper twine for about 50 cm into the bale channel chamber.

For subsequent baling, the twine is jammed in the forage, thereby pulling the tension arm (6) downward.

Note

When manually triggering the tying process, make sure that there is tension on the tension arm (6).

11.2 Setting the needles

11.2.1 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.

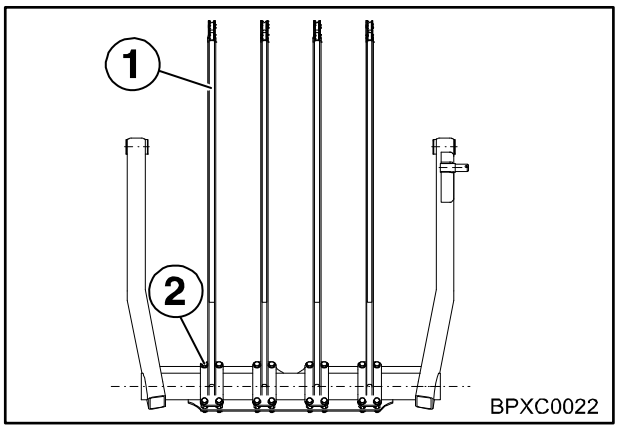


Fig. 136

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)

11.2.2 Setting the height of the needles on the knotter

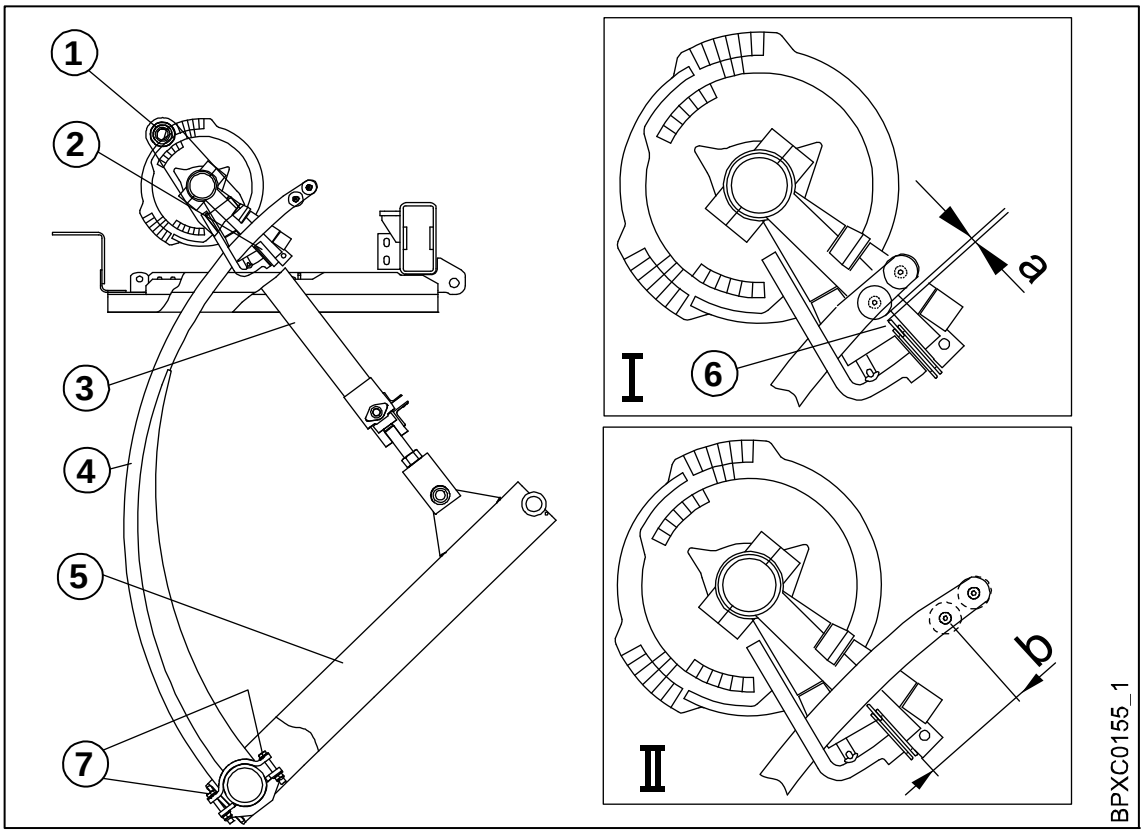


Fig. 137

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.

11.2.3 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

11.3 Adjusting the Needle Yoke Brake

Note

- First check the height of the needle on the knotter and the upper dead point of the needles and adjust if required (see Settings section “Adjusting height of the needles on the knotter” and “Upper dead point of the needles”)

Rest position

The crank arm (1) and the needle connecting rod (2) are aligned in the extended position (can be identified when the trigger roller (3) is in the recess in the knotter gear).

- Manually rotate the flywheel mass in the direction of operation until the needle yoke reaches the rest position

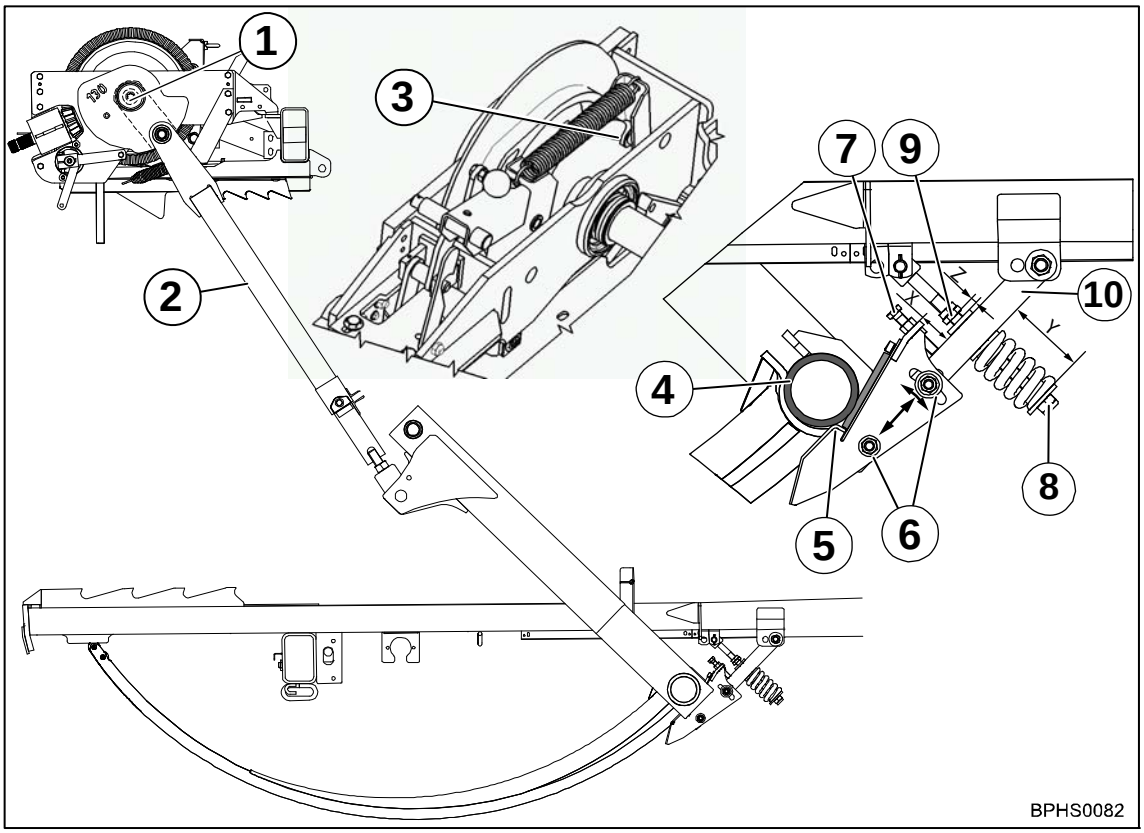


Fig. 138

Basic setting in rest position:

The needle yoke brake has been correctly set when the tube (4) of the needle yoke brake is directly behind the edge (5) of the overrun brake.

The dimensions are X= 45 mm, Y = 85 mm, and Z = 7 mm.

Adjusting the Needle Yoke Brake

To do this:

- Move needle yoke to rest position
- Loosen screw connections (6)
- Loosen the counter nut of the adjusting screw (7)
- Adjust adjusting screw until dimension X = 45 mm
- Tighten counter nut of the adjusting screw (7)
- If required, adjust overrun brake until the tube (4) of the needle yoke brake is directly behind the edge (5) of the overrun brake
- Tighten the screw connections (6)
- Tighten the nut (8) to pre-tension the spring until the spring length Y = 85 mm (length of spring alone, without washer)
- Set the counter nuts (9) of the clamping screw to a dimension of Z = 7 mm relative to the U-profile (10) and secure with the second nut

Note

Once the adjustment is complete, tighten all the screws again to prevent the overrun brake from being adjusted later on.

Note

If the needle yoke brake still vibrates after tying, increase setting dimension X.

11.4 Checking / adjusting position of needles – baling ram

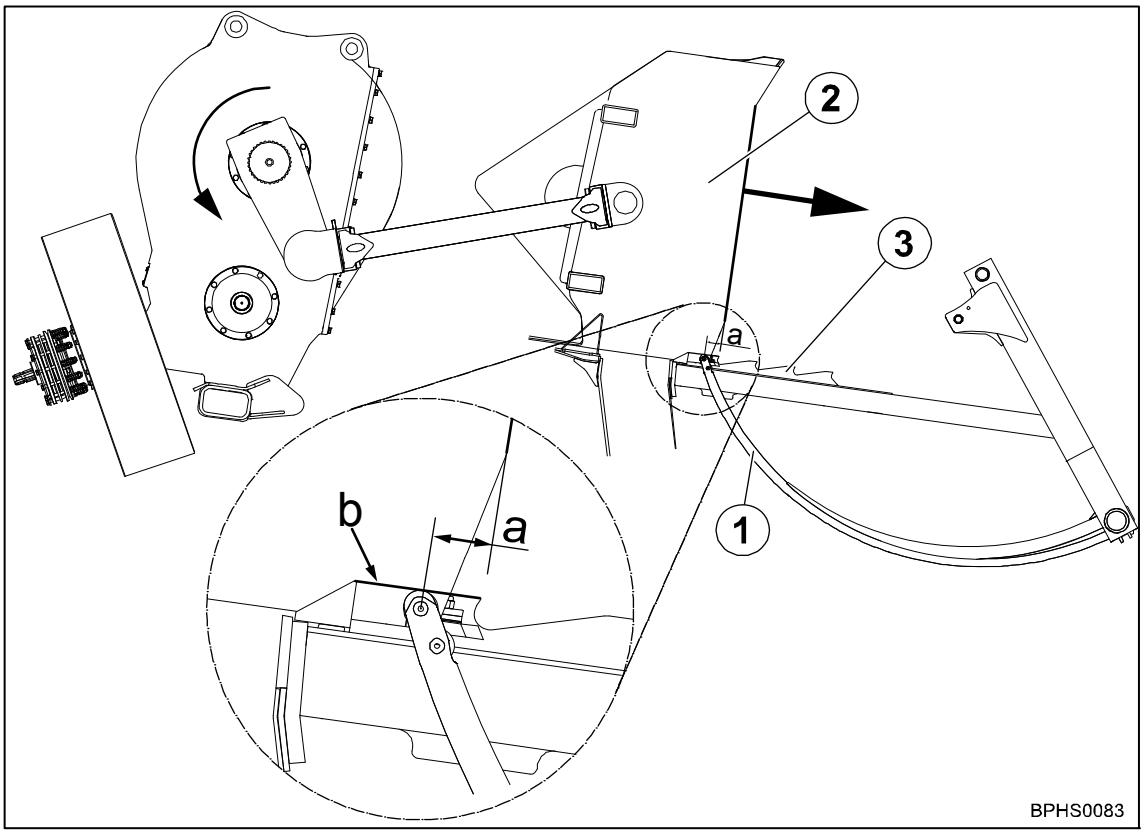


Fig. 139

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

11.5 Setting the upper needle

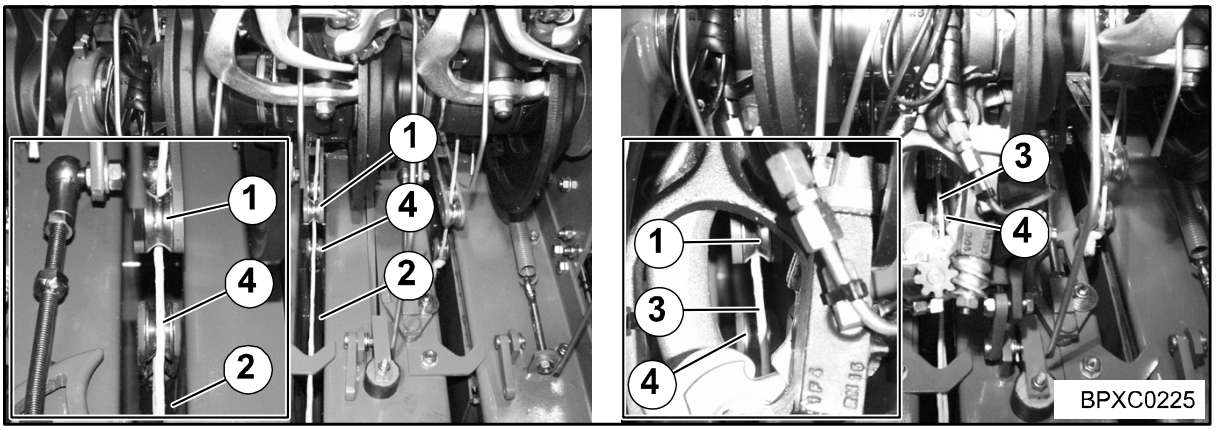


Fig. 140

The upper needle must be set so that the individual arms of the upper needles (1) are centred in the channel slot (2). This can be done by lining up on the ends of the upper needle shaft with shim rings.

11.5.1 Checking the setting of the upper needle

- Trigger the tying process manually with machine at a standstill

Note

When manually triggering the tying process, make sure that there is tension on the tension arm (6).

- Turn the flywheel manually until the upper needle (1) lifts
- Just before the needle (4) catches the upper twine (3) engage the flywheel brake

At this point in time, the upper twine should be centred in front of the needle (4). If this is not the case, the individual arm of the upper needle (1) must be corrected.

11.6 Twine bar

The twine bar (1) moves the tying twine away from the needle and pushes it against the knotter hook. If the tying twine is not grasped by the twine bars, the knotter hook cannot receive the tying twine.

11.6.1 Setting the twine bar (double knotter)

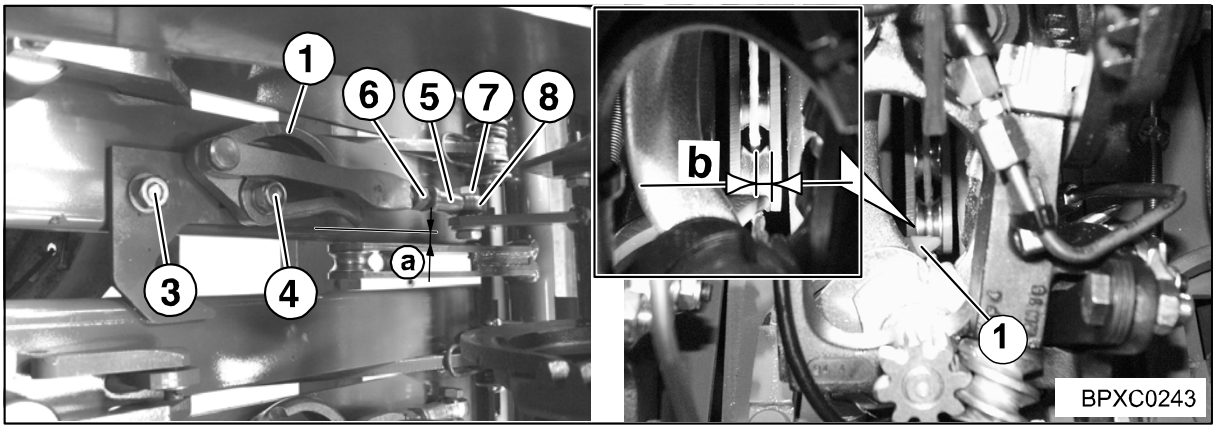


Fig. 141

For the double knotter, the setting of the twine bar should be made with the second knotting.

To do this:

- Trigger the tying process manually with machine at a standstill
- Turn the needle yoke manually on the flywheel in working direction upwards and complete the first knot (closing knot)
- Move the flywheel manually onwards until the twine bars swivel over the channel slots for the second time
- As soon as the twine bar grasps the twine, engage the flywheel brake to lock the needles in this position

In this position the overreach “b” (distance of twine tip to twine) must have 5 - 10 mm. The setting is made by loosening the screws (3) and (4) of the twine bar (1).

11.6.1.1 Checking twine bar

After setting the twine bar, check that the twine bar does not touch the upper needle or lower needle (needle yoke).

Checking the twine bar relative to the upper needle

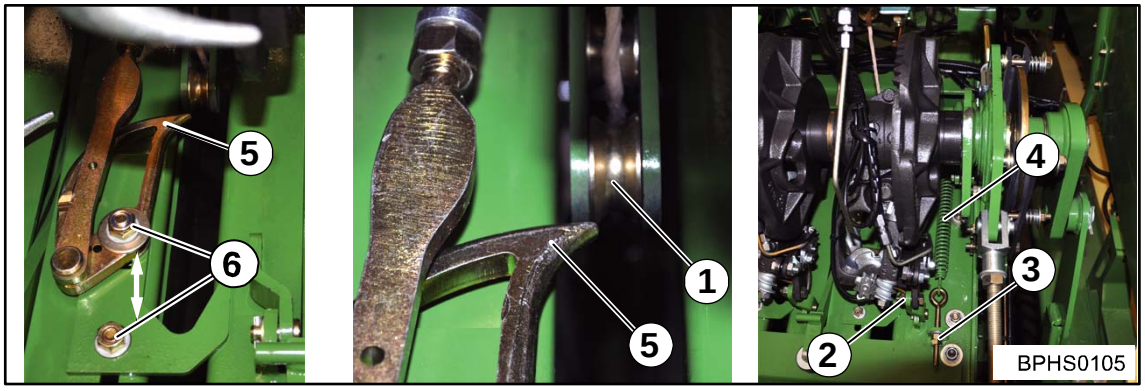


Fig. 142

- Manually actuate the tying process while the machine is at a standstill
- Manually rotate the needle yoke on the flywheel mass upwards in the direction of operation until the upper needle (1) lifts slightly
- Tighten flywheel brake, block the needles in this position
- Loosen the screw (2) on the knotter and swing the knotter up
- Loosen nut (3) completely to release the spring tension (4)
- Check that the tip of the twine bar (5), when swung to and fro (by hand), does not touch the upper needle (1)

If the tip of the twine bar touches the upper needle, re-adjust the twine bar

To do this:

- Loosen the screws (6)
- Adjust twine bar (5) so that it does not touch the upper needle (1)
- Tighten the screws (6)

Checking twine bar relative to the lower needle (needle yoke)

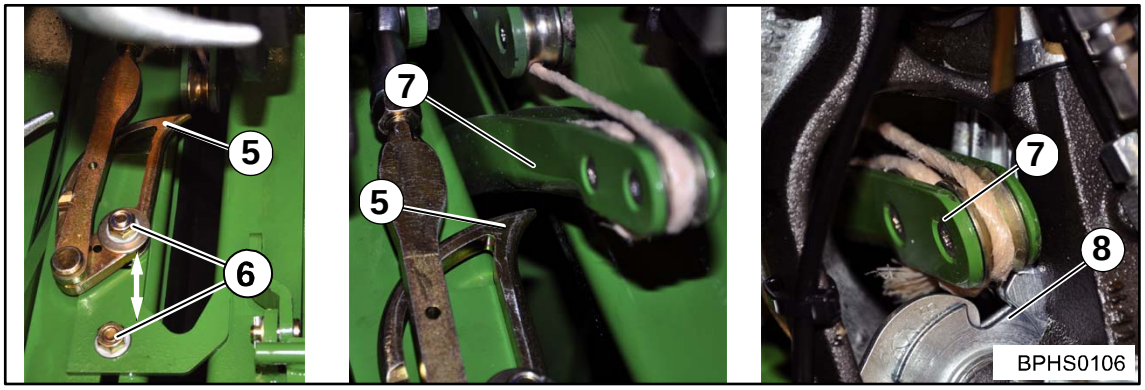


Fig. 143

- Swing knotter down and secure with screw (2)
- Release the flywheel brake
- Manually rotate the needle yoke on the flywheel mass upwards in the direction of operation until the lower needle (7) (needle yoke) is just in front of the twine driver (8) and the twine bar (5) switches
- Apply the flywheel brake
- Loosen the screw (2) on the knotter and swing the knotter up
- Check that the tip of the twine bar (5), when swung to and fro (by hand), does not touch the lower needle (7)

If the tip of the twine bar (5) touches the lower needle (7), re-adjust the twine bar

To do this:

- Loosen the screws (6)
- Adjust twine bar (5) so that it does not touch the lower needle (7)
- Tighten the screws (6)

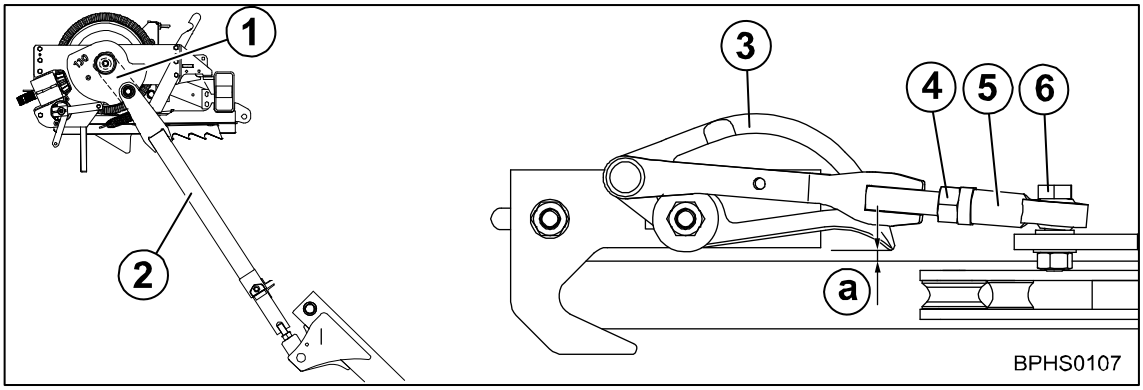


Fig. 144

Checking / setting dimension “a”

- Release the flywheel brake and manually rotate the needle yoke on the flywheel mass in the direction of rotation until the needle yoke is in the rest position (i.e. the crank arm (1) and the needle connecting rod (2) are in the extended position)
- Apply the flywheel brake to block tying in this position
- Manually press twine bar (3) on the tip towards the channel slot

In this position the side distance “a” between the tip of the twine bar and channel slot must be “a”= 7 – 12 mm.

If this is not the case:

- Loosen counter nuts (4) and screw (6) on the joint bearing
- Turn the control linkage assembly (5) until dimension "a"= 7 - 12 mm
- Tighten counter nuts (4) and screw (6).
- The twine bars must be freely movable in this position.
- Swing knotter down and secure with screw

11.6.2 Pretension of the twine bar shaft

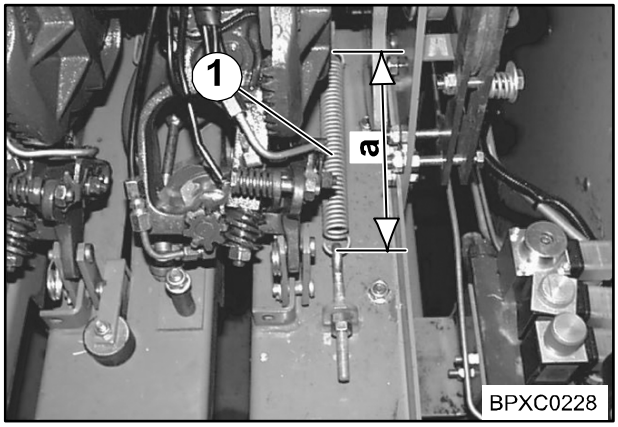


Fig. 145

Note
The setting of the pretension of the twine bar shaft must be in zero position for the tying.

Pre-tension the twine bar shaft spring (1) until dimension a is = 220 mm between the eyes of the spring (1).

11.6.3 Setting the knotter shaft brake

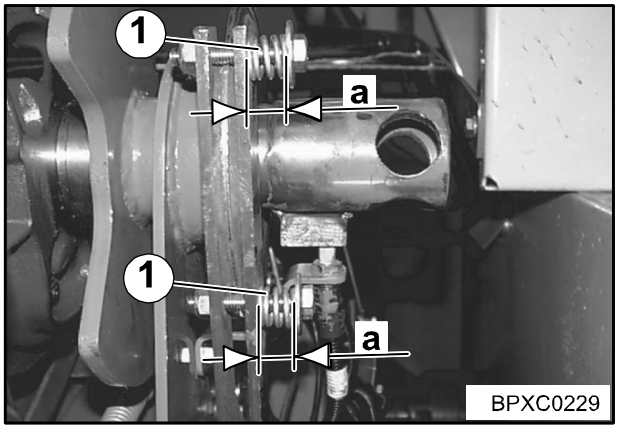


Fig. 146
Pre-tension the springs (1) on the knotter shaft brake until dimension a is = approx. 22 mm.

11.7 Twine brake Fehler! Textmarke nicht definiert.

Fig. 147

Single knotter **Double Knotter**

The twine brakes (2) are located in the twine box. The tying twine (1) is held under tension by the adjusting screws (3). Different types of tying twine may have different friction properties. The drawing tension of the tying strand must be checked when you start using a different type of tying twine. It should always be set to a high enough level so that the twine tension springs do not interfere with the swing angle. 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.

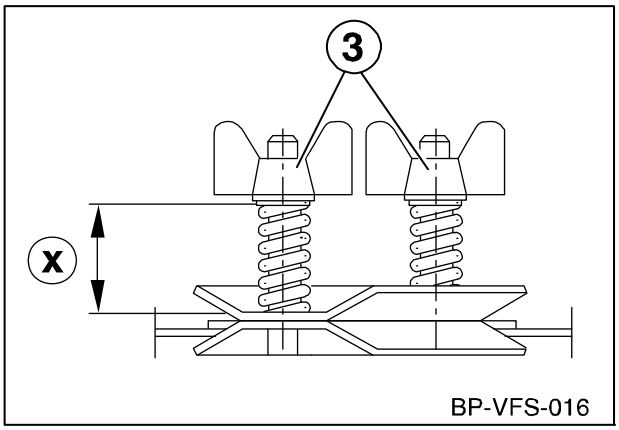


Fig. 148

Double knotter

In the double knotter design, the twine brakes (1) in the twine box serve simply to keep the twine tight.

Pre-setting X = 30 – 35 mm

11.7.1 Setting the twine tension on the upper twine strand (double knotter)

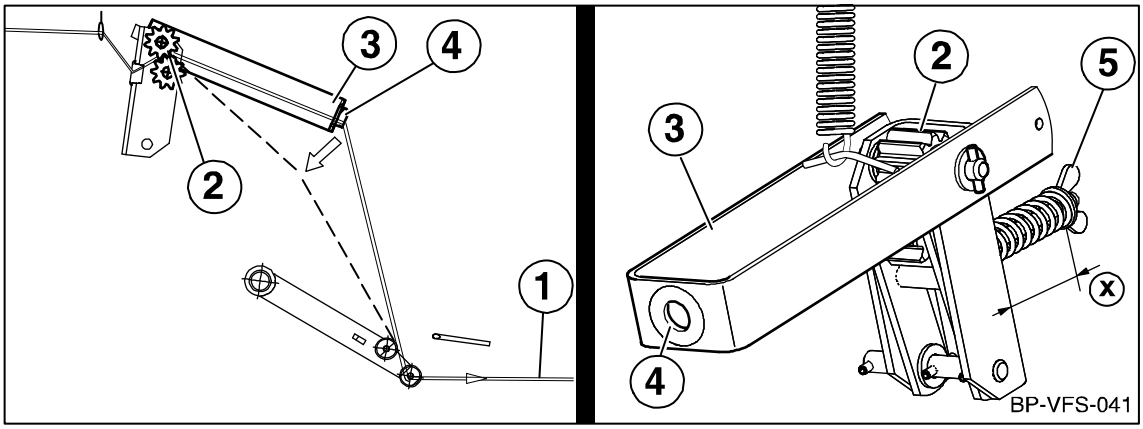


Fig. 149

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

11.7.2 Setting the twine tension of the lower twine strand (double knotter)

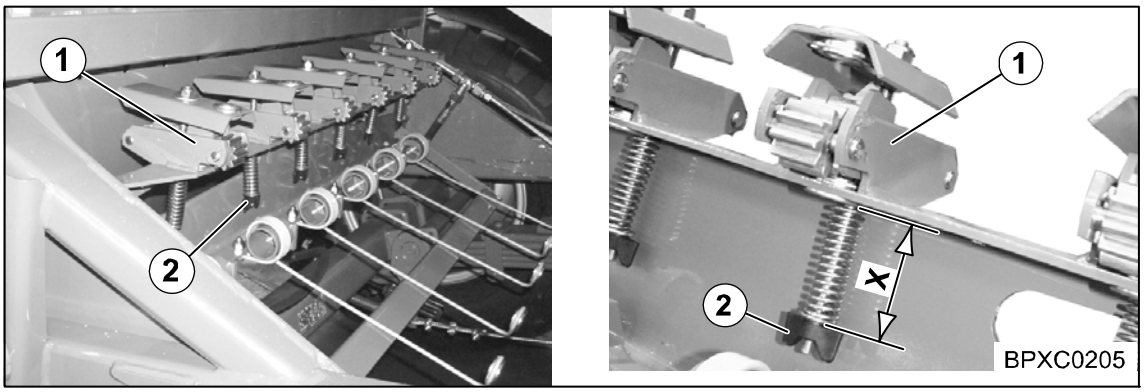


Fig. 150

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.

11.8 Knotter

DANGER! - Maintenance, setting and repair work on the knotter

Effect: Danger to life, serious injuries

- Switch off the P.T.O. shaft
- Switch off the tractor engine and remove the ignition key
- Wait until all moving components stop
- Apply the flywheel brake
- Engage parking brake
- Place wheel chocks under the wheels to block the machine
- Secure knotter shaft against unintentional release of the tying with the safety lever

11.8.1 Locking the tying process

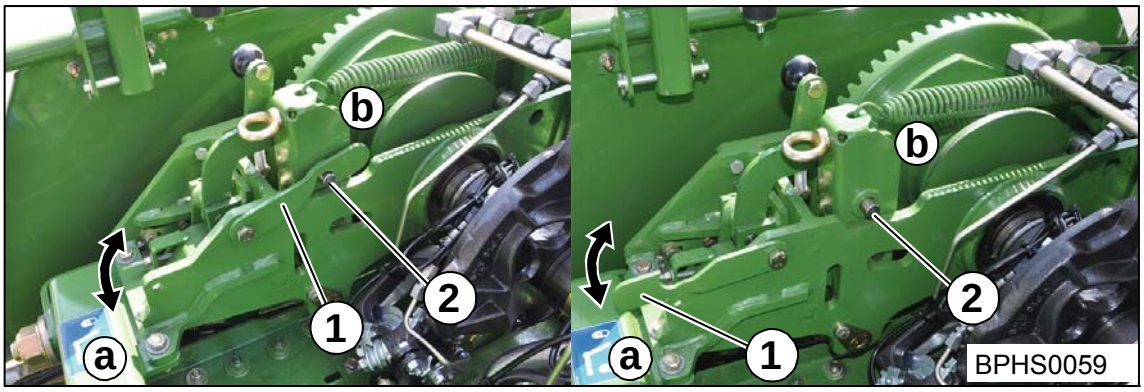


Fig. 151

The knotter shaft must be secured during maintenance, setting and repair works on the knotter in order that the tying process cannot be released unintentionally.

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)

11.8.2 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.

11.8.3 Double knotter

11.8.4 Knotter hook (double knotter)

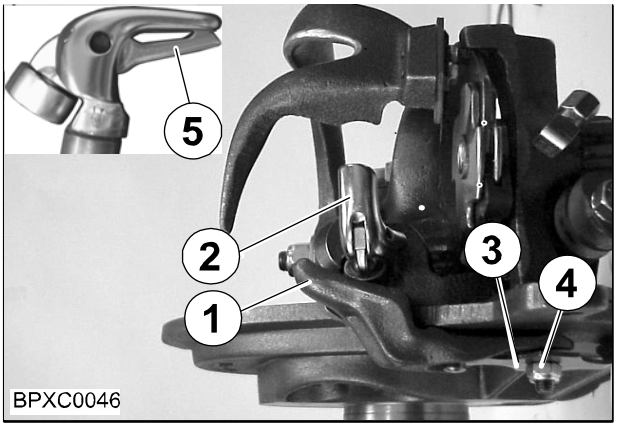


Fig. 152

The knotter tongue (5) of the knotter hook (2) is tensioned by the leaf spring (3) on the closer (1).

- **If the clamping effect on the knotter tongue (5) is too big, the knot will be left hanging in the knotter tongue. The twine strand will rip**
- **If the clamping effect is too low, either no knot or a loose knot will form. These faults can be avoided by correcting the spring tension on the leaf spring (3)**

To do this:

- Undo nut (4) on the leaf spring (3) by about 60° or remove

Note

The knotter tongue (5) needs a slight minimum tension, for this reason never undo completely.

11.8.5 Setting of twine retainer

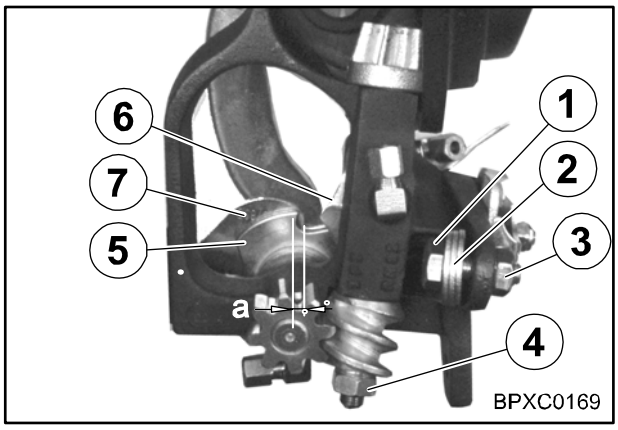


Fig. 153

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.

11.8.5.1 Setting the holding force of the twine retainer (6)

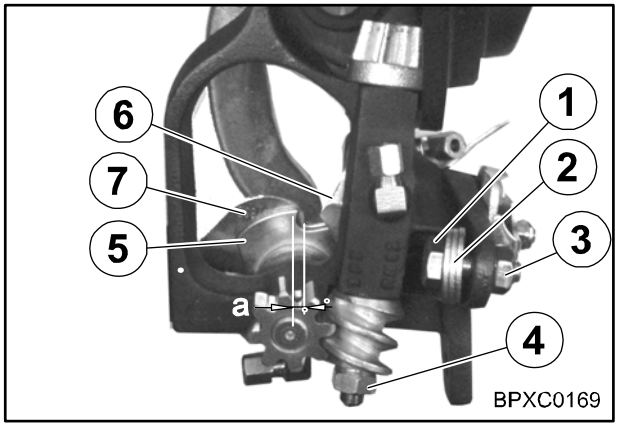


Fig. 154

The holding force has been preset ex works.

Note

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 spring (2) with screw (approx. half a turn)
- Tighten the counter nut (3)

Note

The twine retainer 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.

11.8.6 Setting the blade lever (double knotter)

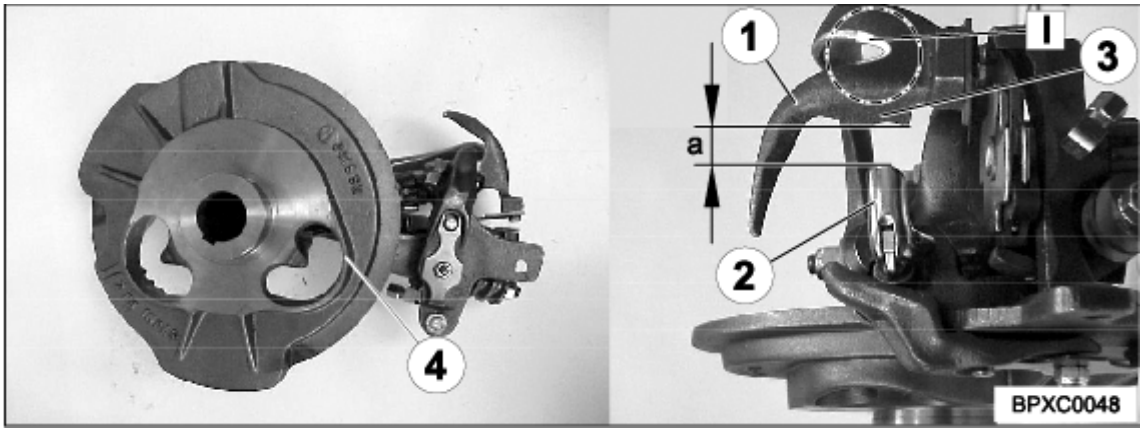


Fig. 155

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.

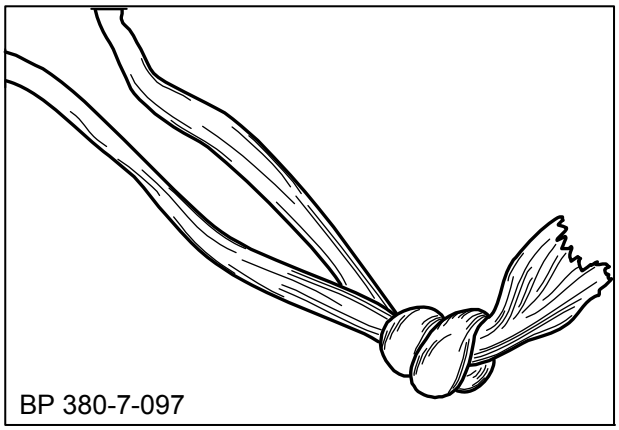


Fig. 156

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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11.9 Baling ram setting

Note

- The Rollers of the baling ram must bear weight equally
- The gap between the baling ram blades and the blades in the baling channel must be the same over the entire width of the plunger

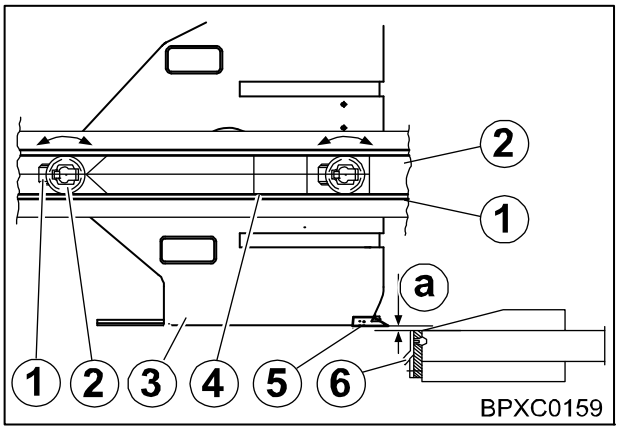

Fig. 157

The baling channel is equipped with two counterblades (6).

- The baling ram (3) of the BiG PACK 1270 / 1290 / 4x4 is equipped with seven blades (5)
- The baling ram (3) of the BiG PACK 890 is only equipped with 5 blades (5) because of the small width of the bale channel chamber

11.9.1 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.

BP 890 / BP 1270 / BP 1290

The height of the baling ram can be adjusted with the eccentric rollers (2) to adjust the distance "a" = 2 to 4 mm.
After you have loosened the clamp bearings (1) the eccentric rollers are turned to raise and lower the baling ram.
After the setting is made, the clamp bearing must be tightened again. Check that the guide rails (4) and the rollers do not become soiled. This can result in increased wear and a height adjustment for the baling ram that is not sufficiently precise.

Big Pack 4x4

For setting the distance “a” = 2 to 4 mm, spacer washers can be placed under the blades (5).

11.9.2 Cleaning the running rails

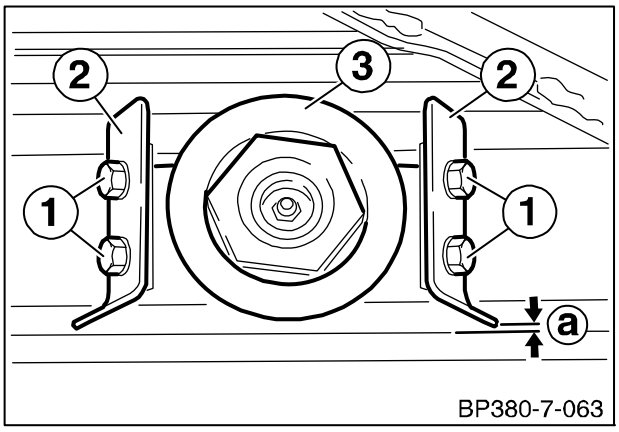

Fig. 158

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!

11.9.3 Lateral setting of the plunger

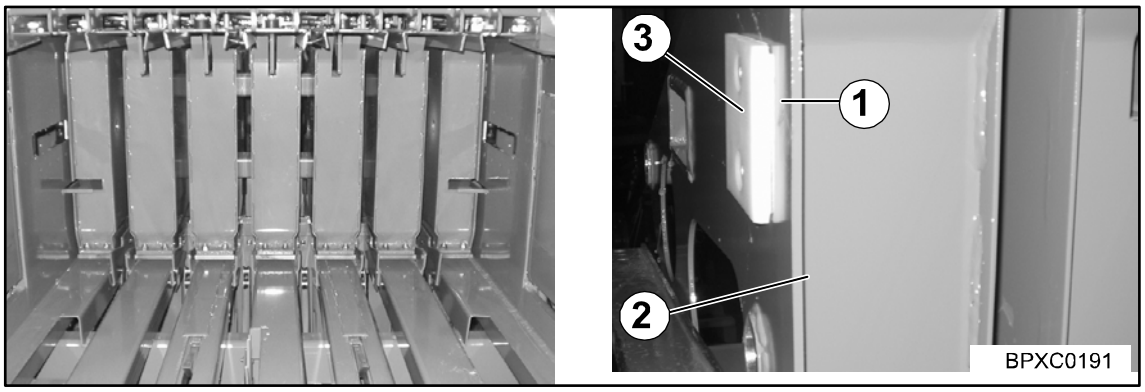

Fig. 159

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.

11.10 Adjusting the Packer Relative to the Plunger

11.10.1 Description of components

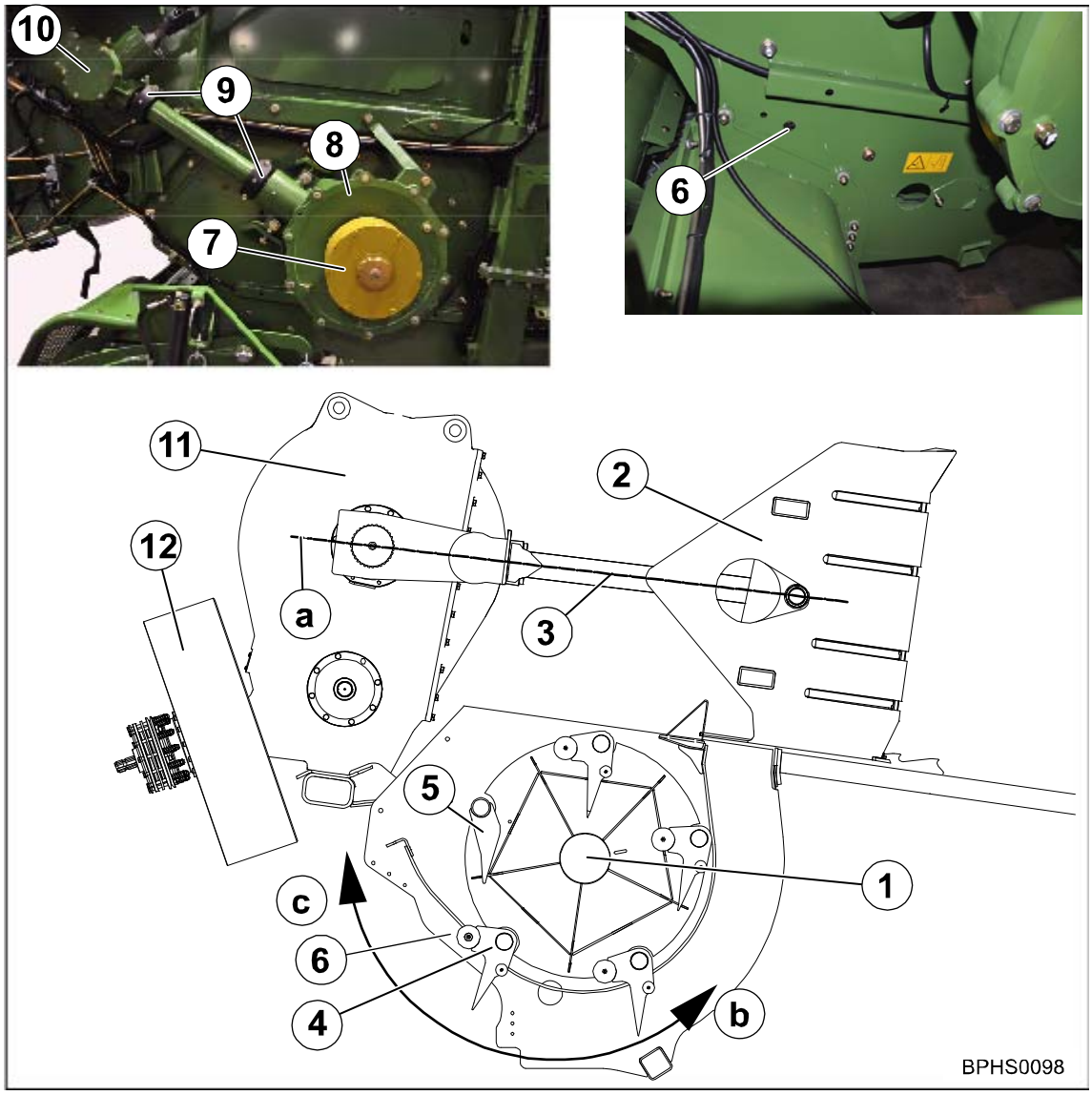

Fig. 160

1) Packer	2) Baling ram	3) Plunger rod
4) Packer strip	5) Feeder strip	6) Inspection window
7) Packer coupling	8) Packer gearbox	9) Chain coupling
10) Transfer gearbox	11) Main gearbox	12) Flywheel
a) Extended position (rear dead point)		

Note

The packer (1) has been set correctly relative to the baling ram (2) when

- the plunger rod (3) is in the extended position (a) and
- the large roller on the packer strip (4), which runs in front of the feeder strip (5), is in the centre of the inspection window (6)

Note

Put “advanced”(b) in front means:

The large roller on the packer strip (4), which runs in front of the feeder strip (5), is in front of the inspection window (6)

Put “retracted”(c) behind means:

The large roller on the packer strip (4), which runs in front of the feeder strip (5), is behind the inspection window (6)

It is not necessary to set the packer relative to the baling ram unless the following components have been removed:

- Packer coupling (7), packer gearbox (8), chain coupling (9)
- Transfer gearbox (10) (or removal of the drive train between transfer gearbox and main gearbox (11))

Procedure:

- Check that packer coupling has engaged
- Move VFS system to zero position (see Settings section “Zero position”)
- Move packer strip into position (see Settings section “Moving packer strip into position”)
- Move baling ram into position (see Settings section “Moving baling ram into position”)

11.10.2 Checking packer coupling

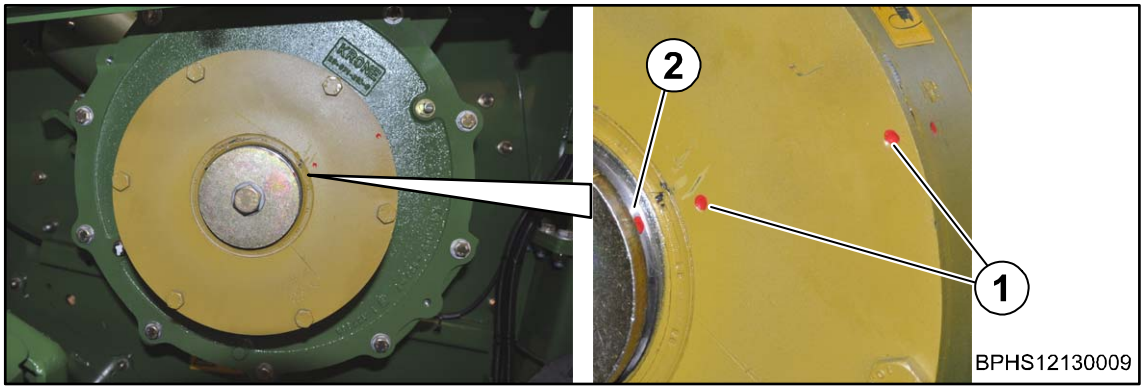

Fig. 161

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.

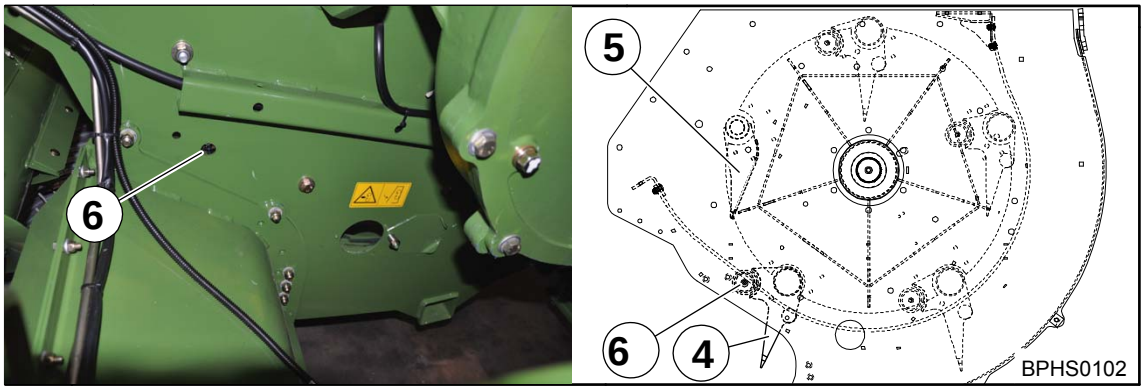

Fig. 162

11.10.3 Moving packer strip into position

- Manually rotate the packer in the direction of rotation by turning the flywheel until the large packer strip roller (4), which runs in front of the feeder strip (5), is in the centre of the inspection window (6)
- Secure the packer in this position with a mounting lever
- Apply the flywheel brake

11.10.4 Moving baling ram into position

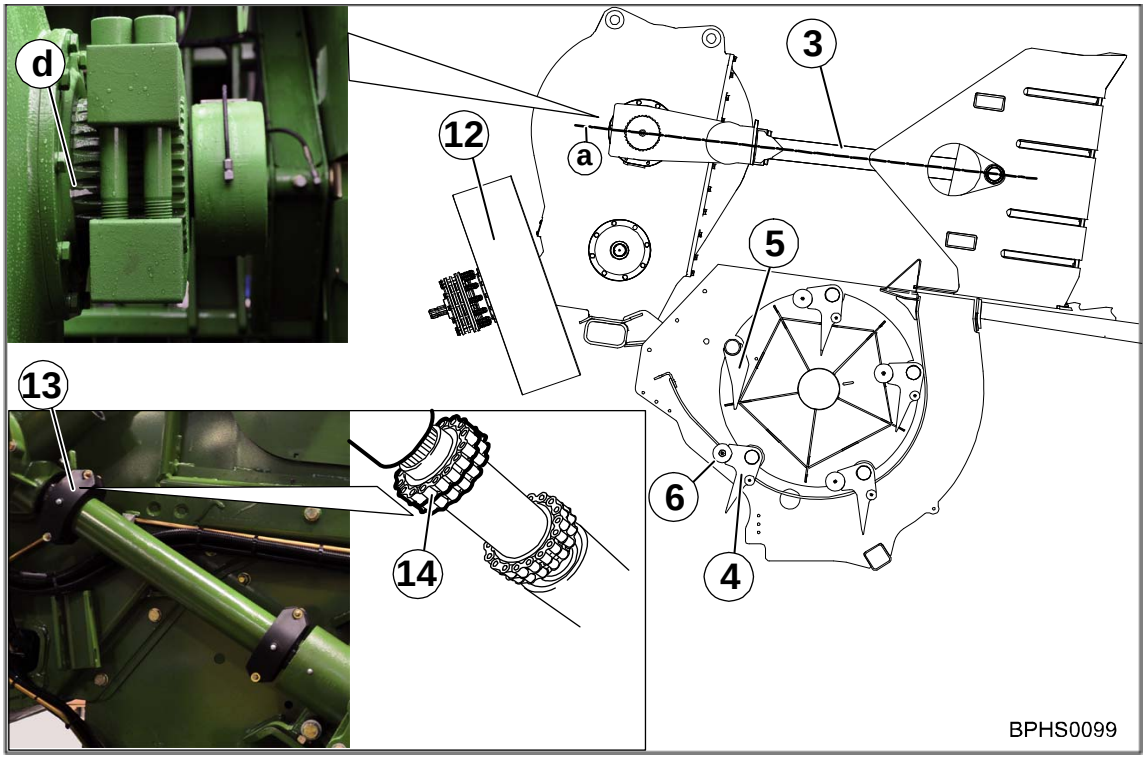

Fig. 163

- Remove guard (13) from the chain coupling
- Remove roller chain (14) from the chain coupling
- Release the flywheel brake
- By turning the flywheel (12) in the direction of operation, move the plunger rod (3) into the extended position (a) (rear dead centre point) (the marks (d) on the main gearbox are in alignment)
- Apply the flywheel brake
- Position the chain coupling roller chain (14) and secure it
- Attach guard (13) to the chain coupling
- Remove the mounting lever

Checking setting:

- Release the flywheel brake
- Using the flywheel, manually move machine through one complete revolution in the direction of operation until the plunger rod (3) is in the extended position (a) (rear dead point)

The large roller on the packer strip (4), which runs in front of the feeder strip (5), must be in the centre of the inspection window (6).
If this is not the case, start the settings all over again (see Settings section “Setting packer relative to the baling ram”).

11.10.5 Checking feeder strip relative to the baling ram

WARNING! – Unexpected movement of the packer

Effect: Injuries to hands or fingers or the machine cannot be operated perfectly.

- Do not make any settings, check dimension b only

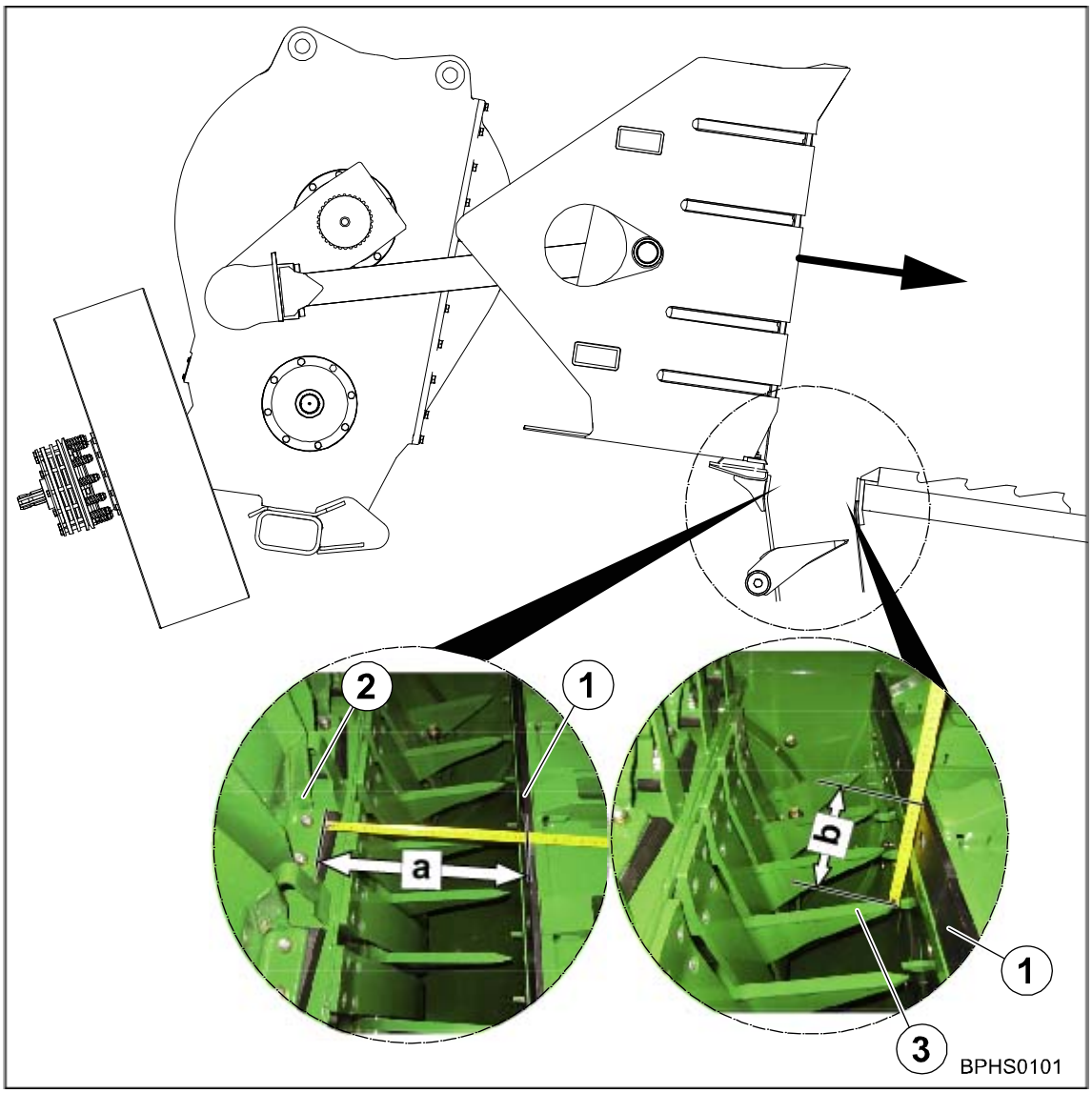

Fig. 164

- Secure the machine against the possibility of rolling back.
- Uncouple the machine from the tractor
- Manually pull the feeler rocker back, the VFS system actuates
- Turn flywheel in the direction of operation until the dimension a=300 mm (measured between counter blade edge (1) and baling ram (2))
- Apply the flywheel brake
- Measure dimension b (measured between counter blade edge (1) and tip of the feeder strip (3))

Dimension b must be between 175 and 205 mm.

If this is not the case, set the packer relative to the baling ram (see Settings section “Setting packer relative to the baling ram”)

11.11 Description of components VFS system (variable filling system)

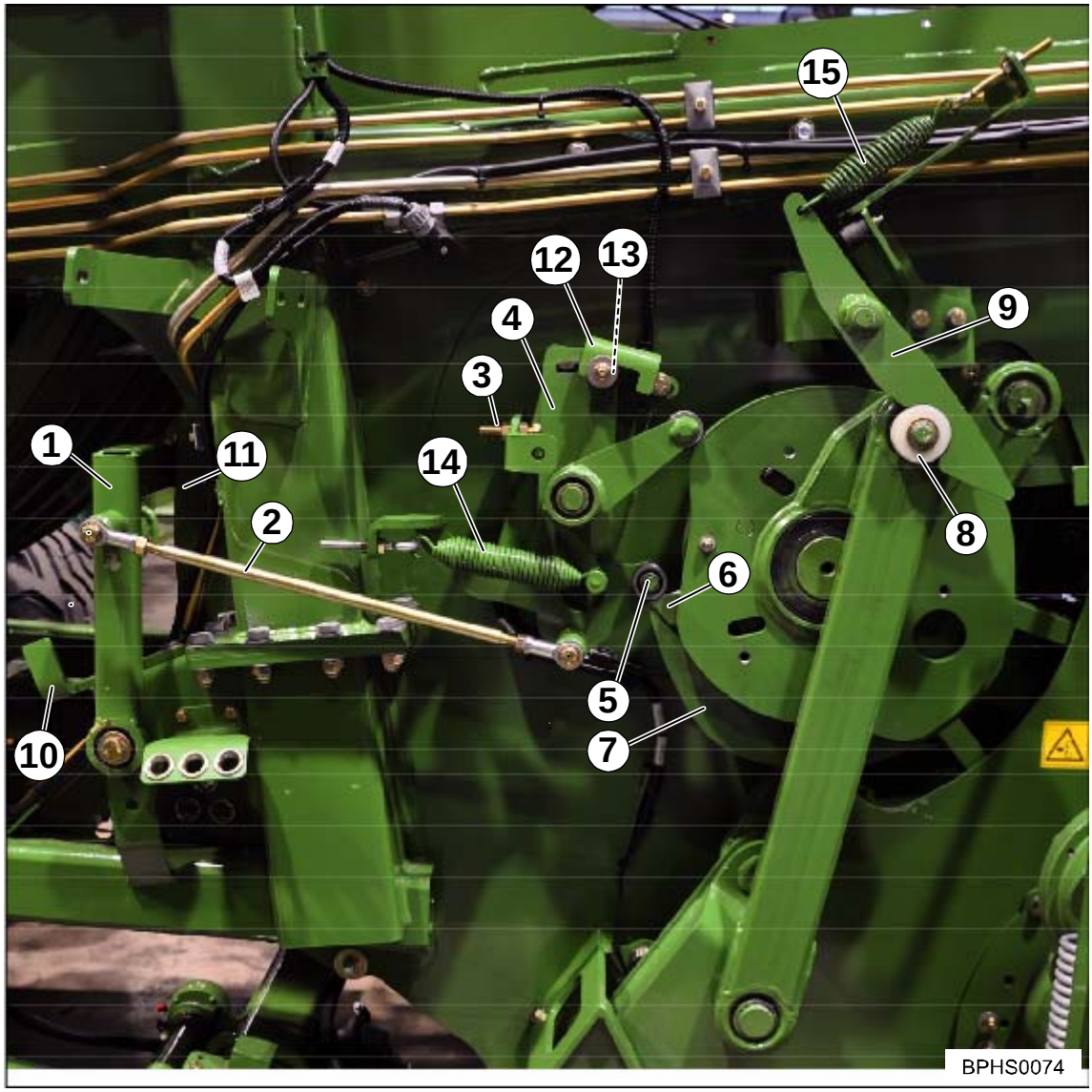

Fig. 165

1) Feeler rocker	2) Threaded rod	3) Set screw
4) Anvil	5) Grooved ball bearing	6) Trigger cam disc
7) Cam disc	8) Roller (zeroizing device)	9) Zeroizing device
10) Stop	11) Packer tray	12) Slotted brake jaw
13) Brake plate	14) Spring (triggering sensitivity)	15) Spring (zero position)

11.11.1 Presetting threaded rod / stop for the feeler rocker

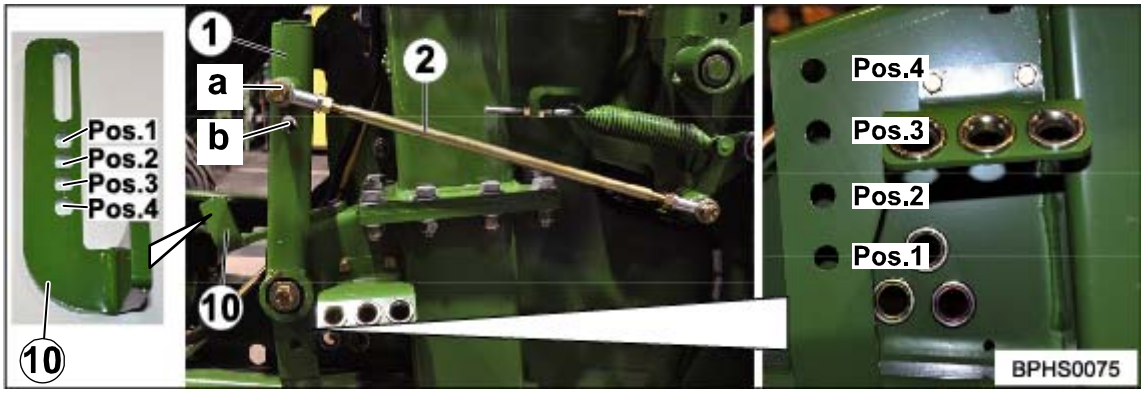

Fig. 166

Note

The feeler rocker (1) has been installed in position 3 at the factory.

CAUTION! Damage to the machine

Never move the threaded rod (2) into the bore (b), otherwise the machine will be damaged.

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 coupling of the packer responds too frequently

Procedure:

- Move VFS system to zero position and check settings (see Settings section “Zero position”)
- Check and, if required, adjust triggering sensitivity (see Settings section “Adjusting triggering sensitivity”)

11.11.2 Zero position (VFS system)

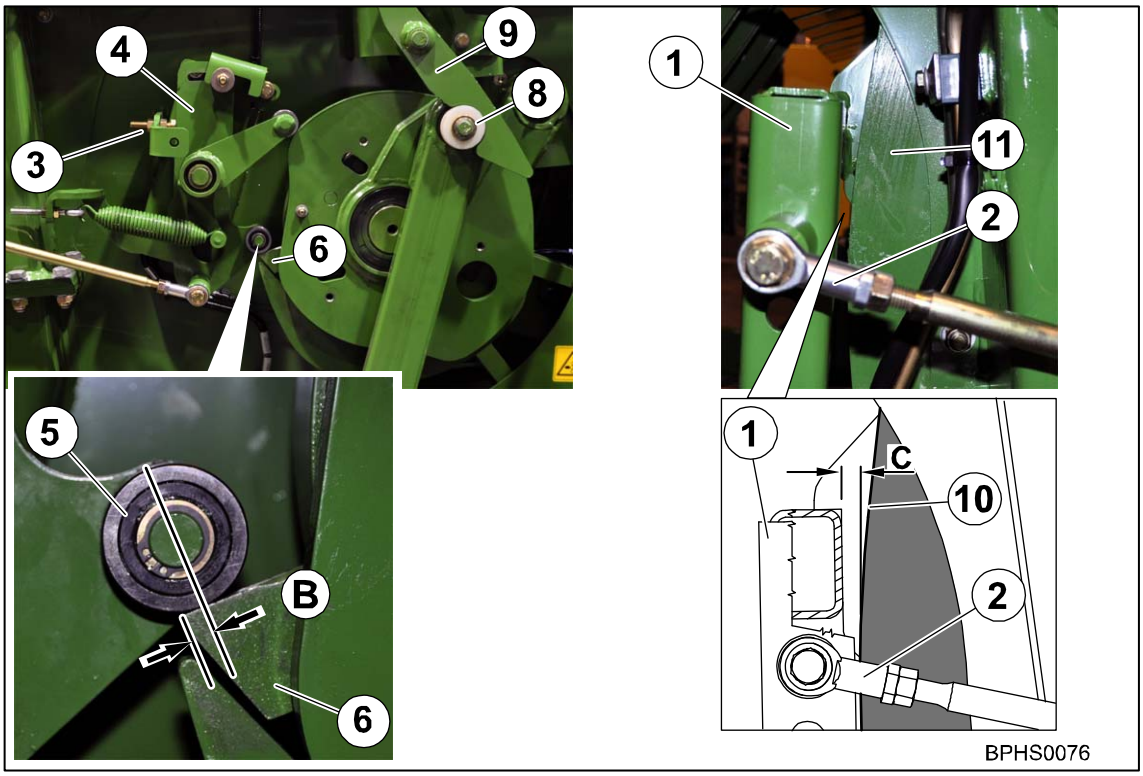

Fig. 167

Manually rotate the packer in the direction of operation by turning the flywheel until the roller (8) has engaged in the zeroizing device (9). (The VF system is now in the zero position.)

Note

The zero position has been correctly set when

- the anvil (4) is positioned on the set screw (3)
- the middle of the roller of the grooved ball bearing (5) is positioned B = 10 mm from the tip of the trigger cam disc (6) on the trigger cam disc
- the feeler rocker (1) is C = 10 – 15 mm from the edge of the packer tray (11)

Check settings and if required correct as follows:

- Adjust the set screw (3) until the middle of the roller of the grooved ball bearing (5) is positioned B = 10 mm from the tip of the trigger cam disc (6) on the trigger cam disc

Note

If dimension B cannot be set, check and, if required, adjust the absorbing mechanism (see Settings section “Adjusting the absorbing mechanism”).

- Adjust the threaded rod (2) until the feeler rocker (1) is C = 10 – 15 mm from the edge of the packer tray (11)

11.11.3 Adjusting the spring of the zeroizing device

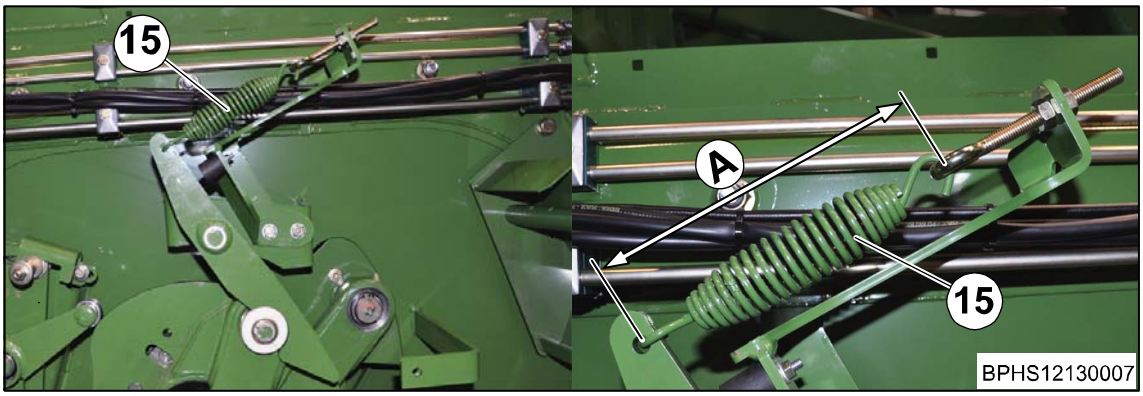

Fig. 168

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

11.11.4 Adjusting the triggering sensitivity

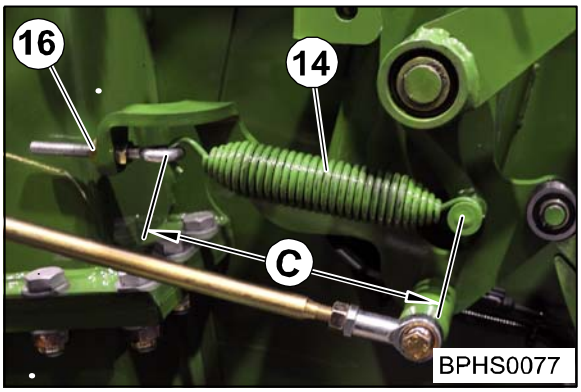

Fig. 169

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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11.11.5 Adjusting the feeler rocker

Install the feeler rocker (1) in positions (1-4) depending on the application conditions.

Preset the length of the threaded rod (2) depending on the position of the feeler rocker (see table).

CAUTION! Damage to the machine

Never move the threaded rod (2) into the bore (b), otherwise the machine will be damaged.

Move the stop (10) depending on the position of the feeler rocker (see table).

Position of feeler rocker	Length X (threaded rod)	Position of stop
1	535 mm	1
2	535 mm	2
3	539 mm	3
4	547 mm	4

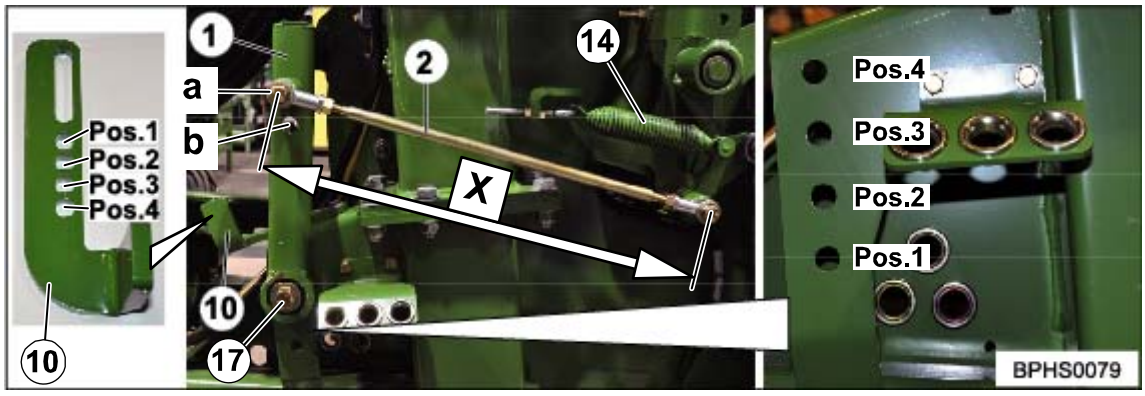


Fig. 170

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

When the feeler rocker has been moved, the following setting must be checked and, if required, adjusted.

- Preset threaded rod depending on the position of the feeler rocker (see table)
- Preset stop depending on the position of the feeler rocker (see table)
- Check zero position (see Settings section “Zero position”)
- Check spring of the zeroizing device and, if required, adjust (see Settings section “Adjusting spring of the zeroizing device”)
- Check and, if required, adjust triggering sensitivity (see Settings section “Adjusting triggering sensitivity”)
- Check stop for feeler rocker and, if required, adjust (see Settings section “Adjusting the feeler rocker stop”)
- Check and, if required, adjust absorbing mechanism (see Settings section “Adjusting absorbing mechanism”)

11.11.6 Adjusting the feeler rocker stop

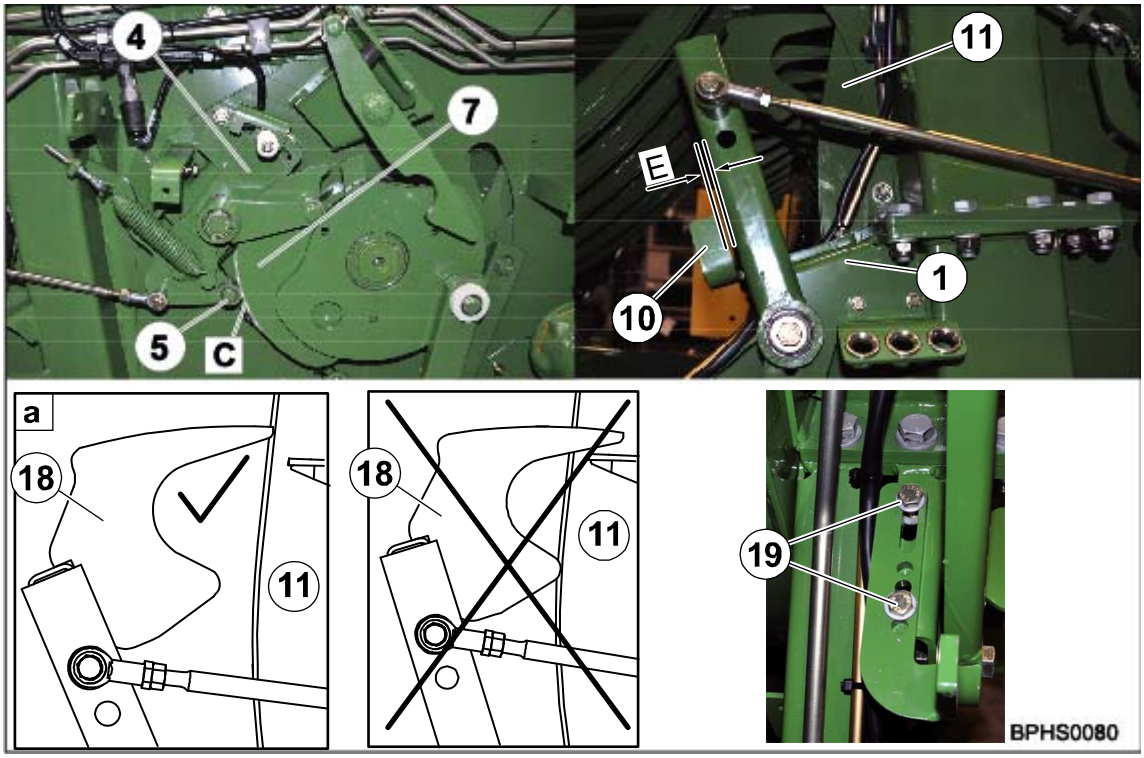


Fig. 171

- Manually pull the feeler rocker (1) back, the VFS system actuates
- Rotate flywheel until the grooved ball bearing (5) is at the highest position (area “C”) of the cam disc (7)
- Check that the tines (18) of the feeler rocker are outside (a) the packer tray (11)
- Check that the feeler rocker can still be pulled back manually by E= approx. 2 mm before the feeler rocker hits the stop (10)

Note

If the tines (18) penetrate the packer tray when the VFS system is actuated, correct the length of the threaded rod until the tines are outside the packer tray.

If the feeler rocker cannot be pulled back,

the stop (10) is blocking the rotating path of the feeler rocker or the absorbing mechanism is obstructing the rotating path of the feeler rocker.

- If the stop (10) is blocking the rotating path, adjust the stop (10)
- If the absorbing mechanism is obstructing the rotating path of the feeler rocker, adjust the slotted brake jaw of the absorbing mechanism (see Settings section “Absorbing mechanism”).

Adjusting the stop:

- Loosen the screws (19)
- Slide stop (10) until the dimension “E” = 3 – 8 mm.
- Tighten the screws (19)

11.11.7 Absorbing mechanism

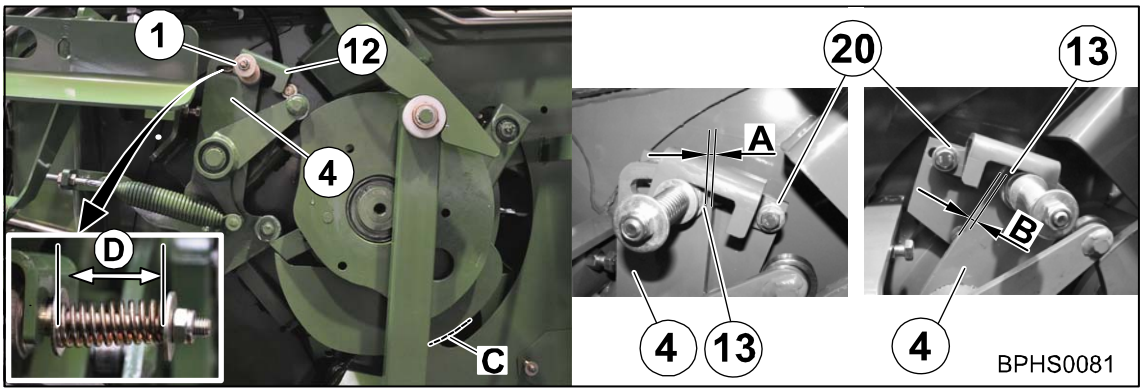


Fig. 172

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).

11.12 Basic setting of the band brake (flywheel)

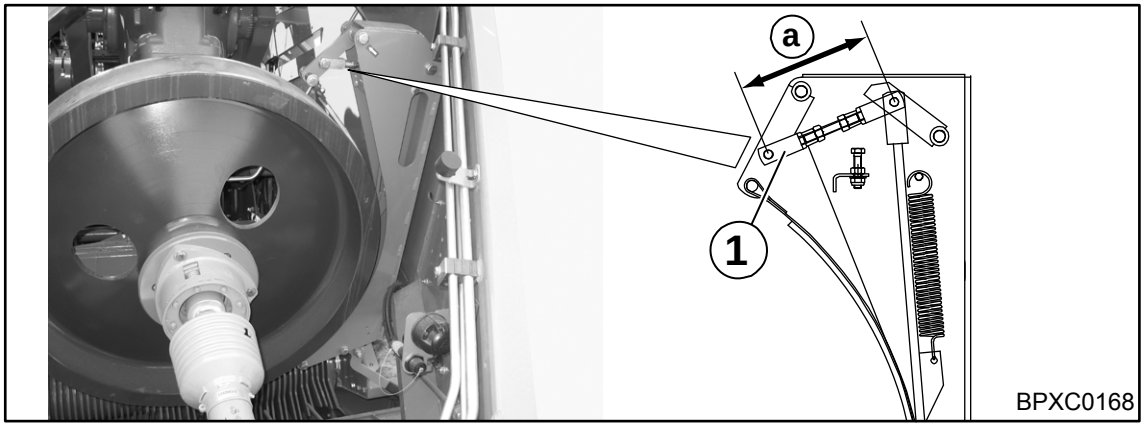


Fig. 173

The band brake is positioned on the left side of the flywheel. If the braking action is no longer adequate when the band brake is applied, it can be readjusted by lengthening the spindle (1).

Basic setting: Dimension a = 182 mm

11.13 Setting the bale chute

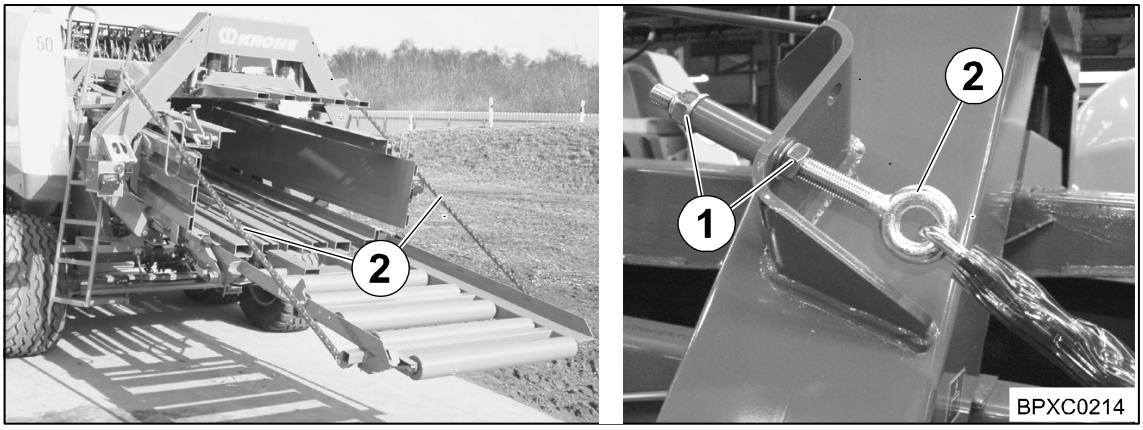


Fig. 174

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

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").

11.14 Pick-up

DANGER! - Working on or under the Pick-up!

Effect: Danger to life or serious injuries

To work on or under the Pick-up, always secure it against unintentional lowering by moving the shut-off valve on the left side of the machine.

11.15 Default Setting (Working Height Setting)

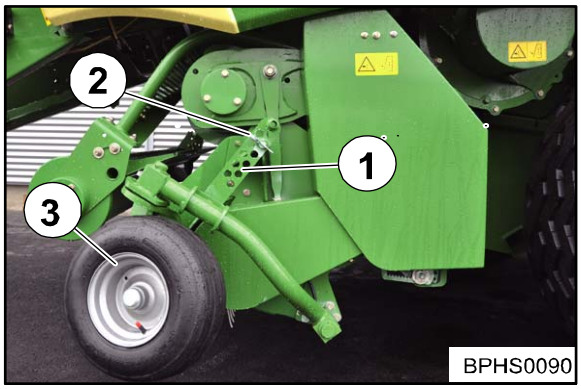


Fig. 175

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.

11.15.1 Ground pressure of the guide wheels

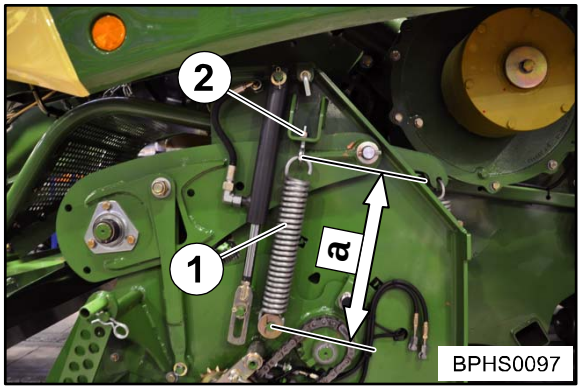


Fig. 176

Right and left side of the machine

The spring (1) adjusts the ground pressure of the guide wheels to the ground conditions.

Note

Increase dimension a => less ground pressure of the guide wheels

Reduce dimension a => more ground pressure of the guide wheels

Set dimension a for both springs equally (right and left sides of the machine).

To do this:

- Open protective cover
- Use the nut (2) to increase or reduce dimension X
- Close protective cover

11.15.2 Driving with Pick-up in fixed position

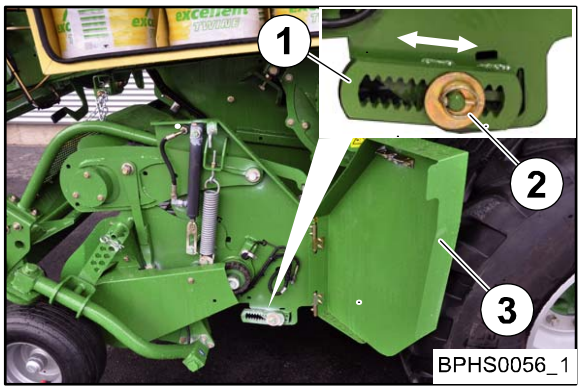


Fig. 177

The working height of the pick-up can be manually limited downwards by moving the depth limiters (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 a setting:

- Open twine box (only model BiG PACK 4x4)
- Open pick-up guard (3)
- Remove the cotter pin 2 with washer
- By moving the depth limiter (1), set the required position
- Secure depth limiter with washer and cotter pin

Note

Make certain that the depth limiter is in the same position on both sides of the pick-up.

11.16 Roller crop guide

DANGER! - Operation of the machine without roller crop guide!
Effect: Danger to life or serious injuries
The roller crop guide is used for accident protection and must not be removed during operation.

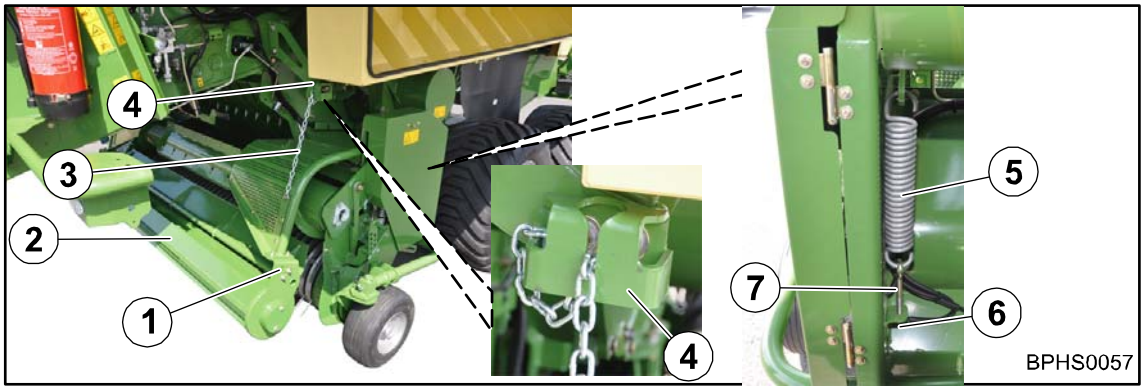


Fig. 178

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

12 Maintenance

12.1 Special Safety Instructions

DANGER! - When performing repair, maintenance or cleaning work on the machine, or in the case of technical intervention, drive elements may start moving.

Effect: Danger to life, injuries or damage to the machine.

- Switch off the tractor engine, remove the ignition key, and engage the flywheel brake
- Secure the machine and tractor against rolling
- Switch off the P.T.O. shaft and uncouple it
- After the repair, maintenance, cleaning work or technical modifications are completed, install all protective covers and safety devices properly again
- Avoid skin contact with oils, greases, cleaning agents and solvents
- Hydraulic liquids escaping under high pressure can cause severe injuries. In the event of injuries or burns due to oils, cleaning agents or solvents, contact a physician immediately
- All other safety instructions must also be followed to avoid injuries and accidents

12.2 Test run.

Danger! - 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.

ENVIRONMENT! - Disposal and storage of lubricants

Effect: Environmental damage

- Store lubricants in eligible containers according to statutory provisions
- Dispose used lubricants according to statutory provisions

12.3 Lifting

12.3.1 Lifting eyes

The baler is equipped with four suspension points:

- Two suspension points are located in the front area of the drawbar (1) (right and left side of the machine)
- Two suspension points are located in the rear area of the yoke (2) (right and left side of the machine)

12.3.2 Lifting

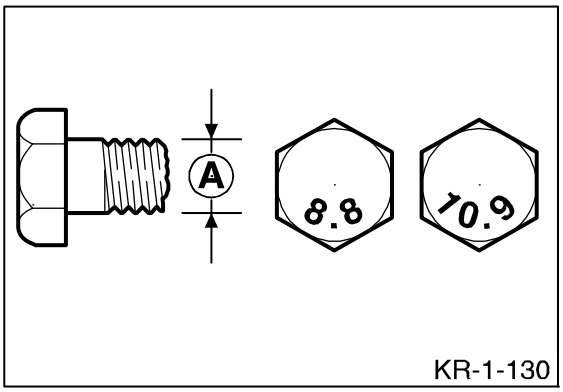
- Use a lifting traverse with a minimum load-bearing capacity (depending on the gross vehicle weight of the machine) (refer to chapter Introduction “Identification”)
- Apply the flywheel brake
- Swivel the parking support (parking jack) into transport position
- Fold in roller chute (bale chute)
- Lift the Pick-up
- Lock the coaster/steering axle (optional)
- Make sure, that all safety devices are locked
- Attach the chains of the lifting traverse on the four suspension points of the baler:
- Make sure, that the hooks of the chains are correctly attached to the suspension points

12.4 Tightening Torques

The tightening torque M_A is stated in Nm (unless otherwise indicated).

A Ø	5.6	6.8	8.8	10.9	12.9
	MA (Nm)				
M 4		2.2	3	4.4	5.1
M 5		4.5	5.9	8.7	10
M 6		7.6	10	15	18
M 8		18	25	36	43
M 10	29	37	49	72	84
M12	42	64	85	125	145
M14		100	135	200	235
M14x1.5			145	215	255
M 16		160	210	310	365
M16x1.5			225	330	390
M 20			425	610	710
M 24			730	1050	1220
M 24x1.5	350				
M 24x2			800	1150	1350
M 27			1100	1550	1800
M 27x2			1150	1650	1950
M30			1450	2100	2450

A = Thread size
(The stability class can be seen on the head of the screw.)



NOTE
The table above does not apply to countersunk screws with a hexagonal socket head if the countersunk screw is tightened with the hexagonal socket head.

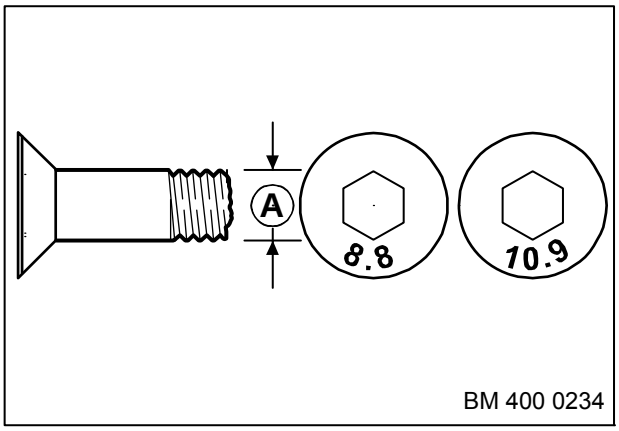
Note
Regularly check that nuts and bolts are tightly in place (approx. every 50 hours) and tighten them if necessary.

12.5 Tightening Torques (Countersunk Screws)

The tightening torque M_A is stated in Nm (unless otherwise indicated).

A Ø	5.6	8.8	10.9	12.9
	MA (Nm)			
M 4		2.5	3.5	4.1
M 5		4.7	7	8
M 6		8	12	15
M 8		20	29	35
M 10	23	39	58	67
M 12	34	68	100	116
M 14		108	160	188
M 16		168	248	292
M 20		340	488	568

A = Thread size
(The stability class can be seen on the head of the screw.)



NOTE
The table above applies only to countersunk screws with hexagonal socket heads and metric threading that are tightened by the hexagonal socket head.

Note
Regularly check that nuts and bolts are tightly in place (approx. every 50 hours) and tighten them if necessary.

12.6 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.

12.7 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

12.7.1 Conveyor roller (I)

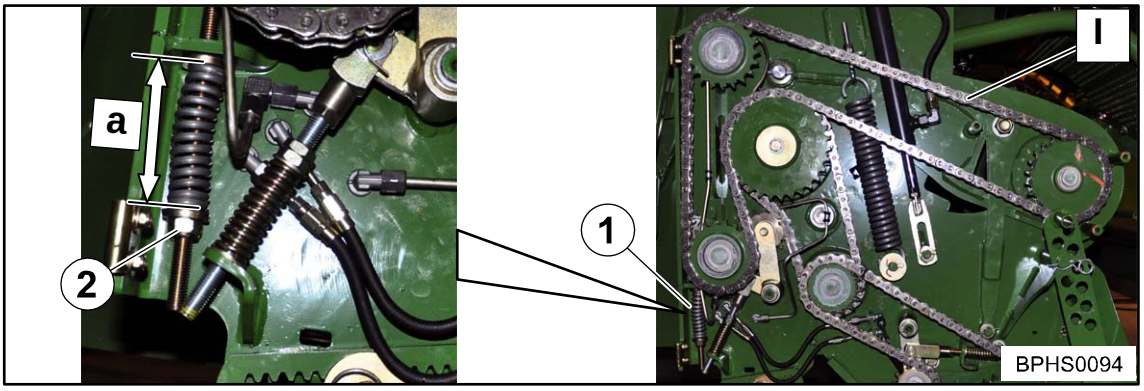


Fig. 179

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

12.7.2 Pick-up drive (II)

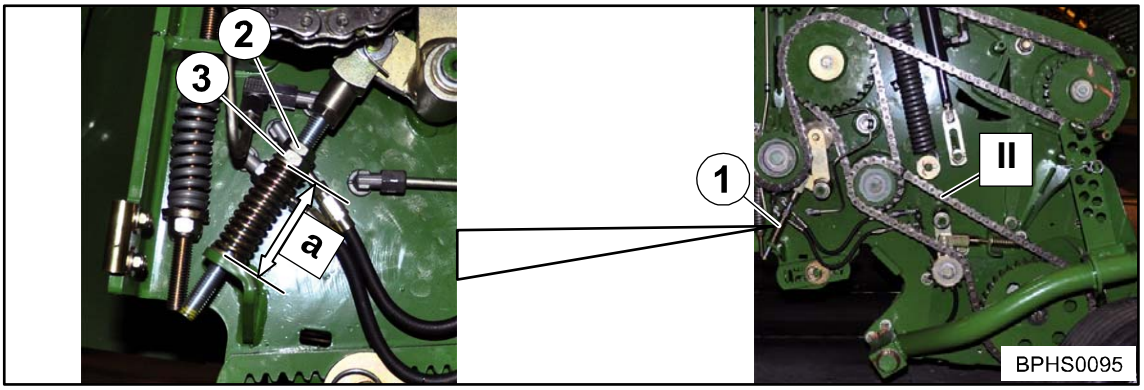


Fig. 180

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

12.7.3 Pick-up drive (III)

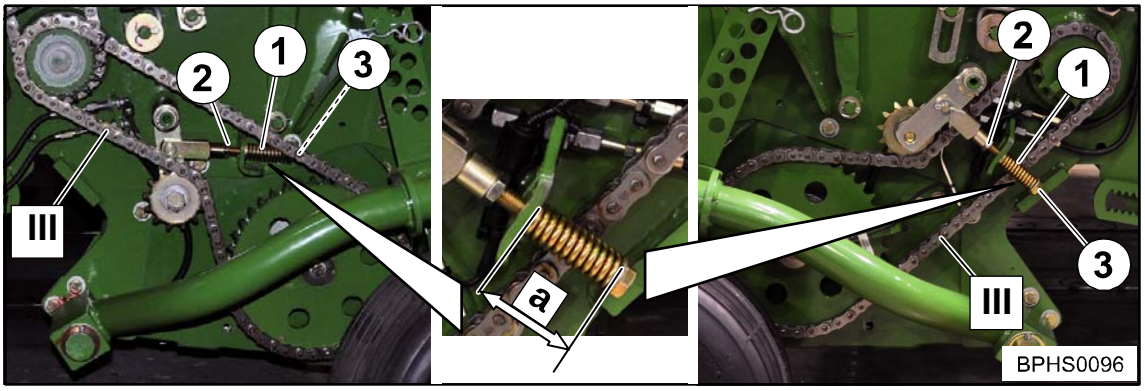


Fig. 181

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

12.8 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.

12.8.1 Checking and maintaining tyres

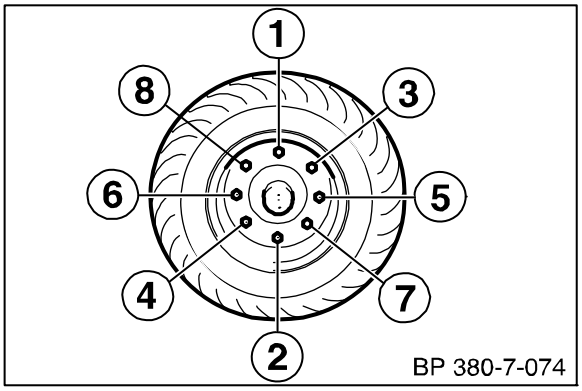


Fig. 182

When loosening and tightening the wheel nuts, observe the order indicated in the illustration. 10 operating hours after they have been mounted, check the wheel nuts and retighten them if necessary. After that, check them every 50 operating hours to make certain they are tight. Check the tyre pressure at regular intervals and refill if necessary. The tyre pressure depends on the size of the tyres. The values are listed in the table.

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

12.8.2 Tyre air pressure

Check the tyre pressure at regular intervals and refill if necessary. The tyre pressure depends on the size of the tyres. The values are listed in the table.

Tyre identification	Machine type BiG PACK	Minimum pressure [bar] Vmax<= 10 km/h	Maximum pressure [bar]	Recommended tyre pressure* (bar) Vmax<=40 km/h for single axle Vmax<=50 km/h for tandem axle
Feeler wheels:				
15x6.00 - 6 10 PR	All		3.7	1.5
Single Axle:				
800/45 R 26.5 174 D	4x4	1.2	4.0	2.4
Tandem Axle:				
500/55-20 150 A8	4x4 (XC)	1.6	3.0	3.0
550/45-22.5 20 PR	4x4 (XC)	1.2	4.0	3.5
620/50 R 22.5 154 D	4x4 (XC)	1.2	3.2	2.4
710/50-26.5	4x4 (XC)	1.2	4.0	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.

12.9 Hydraulics

Danger! - Caution with leaking lines

Effect: Danger to life, injuries or damage to the machine.

- When searching for leaks, use suitable aids, always use suitable tools and wear protective goggles to avoid the risk of injury!
- Escaping high-pressure fluids can penetrate the skin and cause serious injury. Therefore, you must depressurise the system before disconnecting lines.
- Hydraulic oil escaping from a small opening can barely be seen. Because of this you should use a piece of cardboard or something similar when searching for leaks. Protect your hands and body.
- If any fluid penetrates the skin, it must be removed immediately by a doctor who is familiar with this kind of injury; serious infections could otherwise result. Physicians who are not familiar with this area should consult appropriate information from a competent medical source.
- Check the hydraulic hose lines at regular intervals and replace them if damaged or worn! 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.
- Repair work on the hydraulic system must only be performed by authorised KRONE professional workshops.

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

12.9.1 On-board hydraulic system

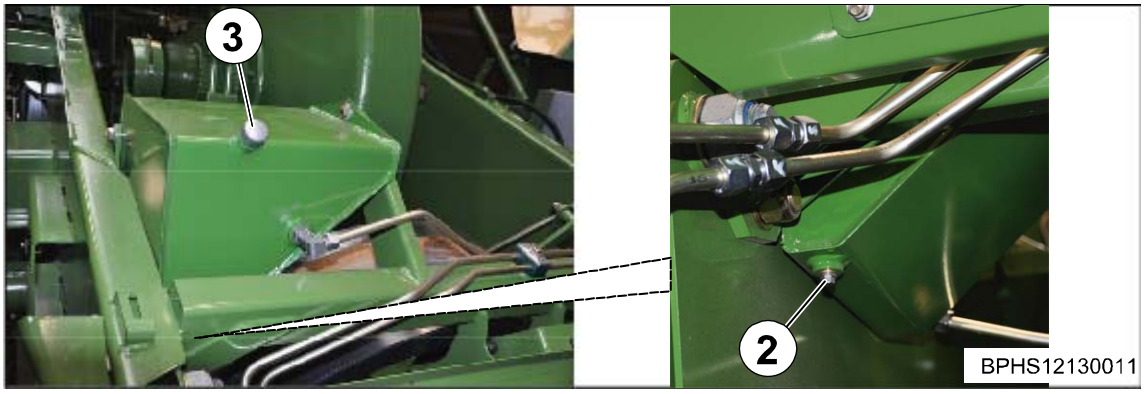


Fig. 183

Pressure is supplied to the on-board hydraulic system of the machine through its own hydraulic pump (1). It is connected to the main gearbox by a flange and does not require any maintenance. The on-board hydraulic oil and the hydraulic oil filter must be replaced at least once a year before the beginning of the season.

Note

When the hydraulic oil is replaced, the hydraulic cylinders must be retracted into the bale channel chamber flaps.

To do this:

- Stop the machine
- Apply the flywheel brake
- Release the bale channel flaps with the comfort operation or the buttons on the machine (make sure that the hydraulic cylinders of the bale channel flaps are completely retracted)
- Have a suitable container on hand to collect old fluid when changing the fluid
- Screw out the oil drain plug (2)
- Collect the used oil in a suitable drip pan
- Screw in the oil drain plug (2)
- Unscrew the dipstick (3) and add an appropriate amount of hydraulic fluid
- Check the oil level with the dipstick (3)

Oil quality / quantity: refer to Maintenance “Oil quantities and designations for the on-board hydraulic system"

12.10 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.

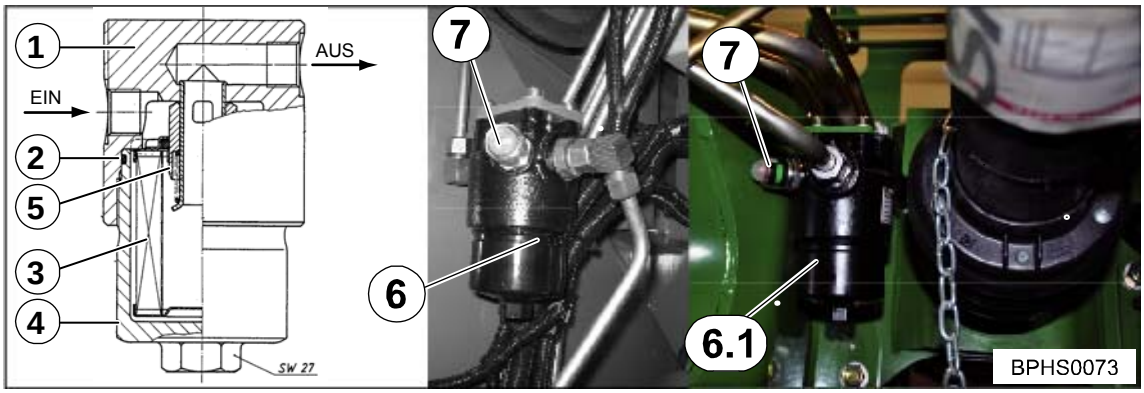


Fig. 184

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.

- Relieve all pressure from the hydraulic system.
- Screw bottom of the filter (4) off the filter head piece (1) and clean it
- Remove the filter element (3) and replace by a new filter element with identical characteristics
- Push a new filter element (3) onto the valve sleeve (5)
- Check the O-ring seal (2) and replace it, if necessary, by O-ring seal with identical characteristics
- Screw bottom of the filter (4) back onto the filter head piece
- Charge the hydraulic system with pressure and check for leaks

12.11 Adjusting the hydraulic system

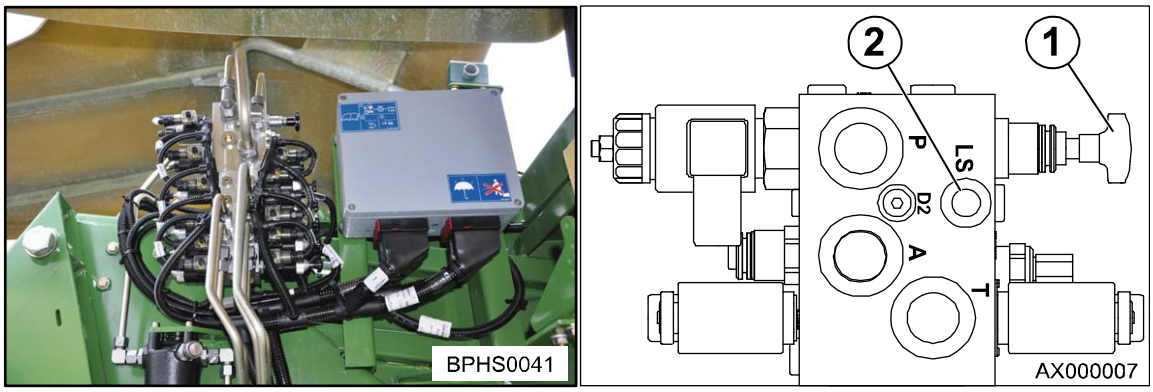


Fig.185

The Comfort hydraulic system is load-sensing-capable.

The oil supply comes through the Power-Beyond system of the tractor hydraulics for use of the load-sensing system (further information can be obtained from the operating instructions provided by the manufacturer of the tractor).

The comfort hydraulic system of the machine must be adjusted on the tractor. It is designed for continuous circulation. The adjustment is made by adjusting the hydraulic system screw on the control valve block of the machine. The control valve block is located at the front left under the side hood next to the electronics box.

Note

The adjustment depends on the hydraulic system of the tractor and must be made while there is no pressure in the machine!

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.

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

Note

The connection (2) for the message line is under the hydraulic system screw.

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12.12 Comfort Hydraulic Block Diagram

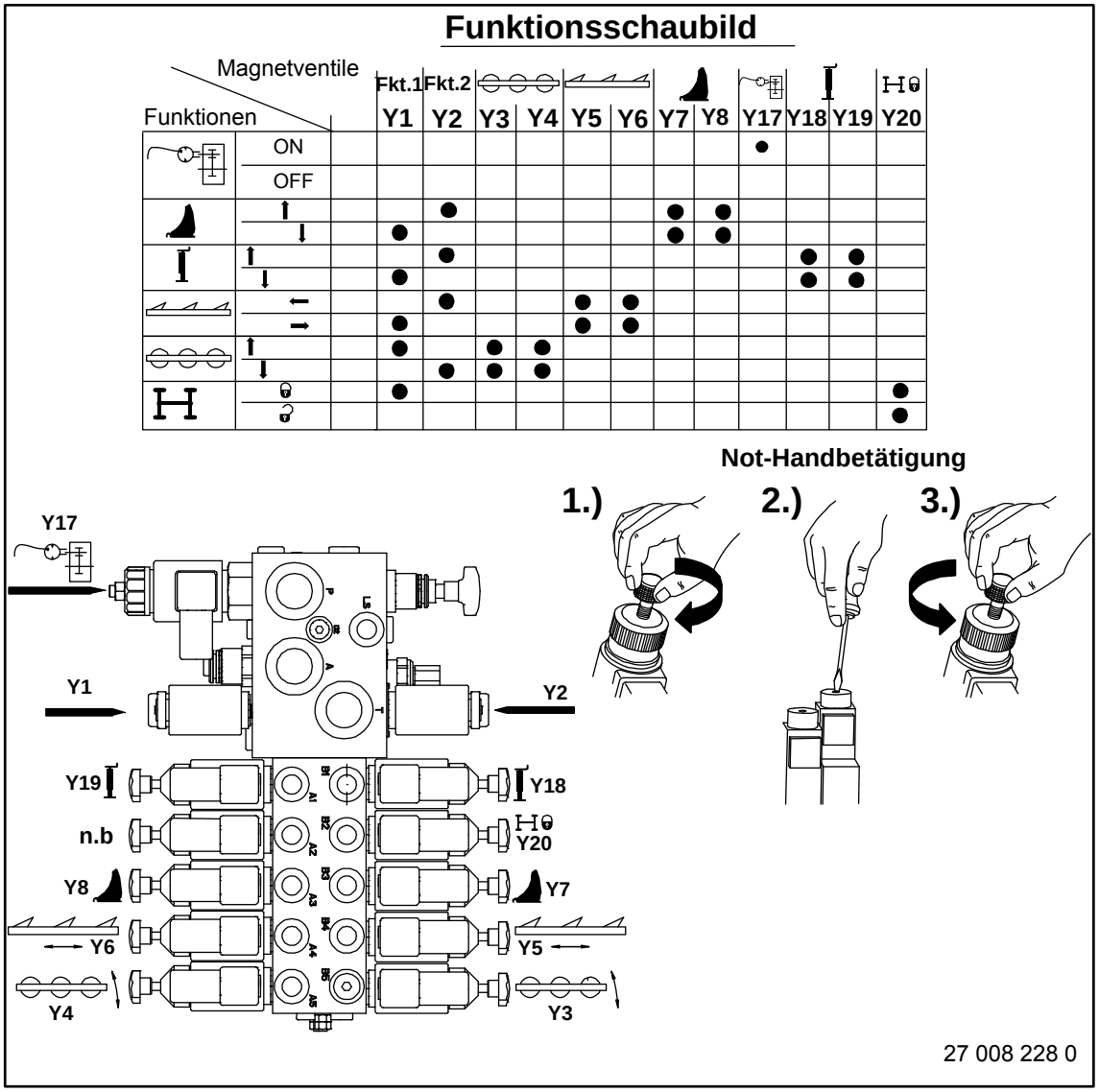


Fig.186

Y1	Raise/lower	Y7,Y8	Cutting system
Y2	Raise/lower	Y17	Start-up aid
Y3/Y4	Roller chute	Y18,Y19	Parking jack
Y5/Y6	Bale ejector	Y20	Steering axle locked
		n.a.	not assigned

12.13 Emergency Manual Activation

The electromagnetic valve block for the In-cab Comfort kitis located at the front on the left under the side cover next to the electronics box.

In the event the electrical system should fail completely, the valves are equipped with an <<Emergency manual activation>>.

Comfort Electronics:

- The valves (Y3 to Y8, Y18,Y19 and Y20) are activated by turning in the knurled head screw.
- The valves (Y1,Y2 and Y17) are be activated with the help of a pointed object by pressing in on the valve.

12.14 Examples of Emergency Manual Activation

Danger! - Unexpected actions on the machine.

Effect: Danger to life or serious injuries.

- Only persons who are confident with the machine may perform emergency manual activation.
- The person performing the activation must know which machine parts are affected 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.
- Ensure that no persons, animals or objects are within this danger zone.

To perform a function (for example raising/lowering the roller chute) the correct valves must be activated. For the valves to be switched, see diagram (Comfort hydraulic block). The following section contains a description of an example based on the Comfort version.

12.14.1 Raising / Lowering the roller chute

- Screw in the starwheel screw on valve (Y03, Y04) 'roller chute'.

To raise:

- Using a pointed object, press in the magnetic plunger of valve (Y1) 'Control valve' and keep it pressed in.

To lower:

- Using a pointed object, press in the magnetic plunger of valve (Y2) 'Control valve' and keep it pressed in.

Note

After emergency manual activation has been executed, the knurled head screws for emergency manual activation must be completely screwed out again!

Note

For lifting operations (cutting system / parking jack / roller chute) the control valve must be kept pressed in after the function is executed until the knurled head screws have been completely screwed out to release the valves.

12.15 Pressing force control (with emergency manual activation)

DANGER! – Pressing force control in emergency mode!

Effect: Danger to life, injuries or damage to the machine.

- If the electronics fails, you can continue to work with the baler for a short time in emergency mode
- The pressure adjustment of the bale channel chamber flaps can be made in emergency mode while the machine is running. Special caution must be exercised when making the adjustment. There is great risk of injury!
- Ensure that the machine can be turned off immediately in case of danger
- The maximum pressing force can be exceeded without an electronic control system. This can result in significant damage. Never work for a long time without the electronic control system

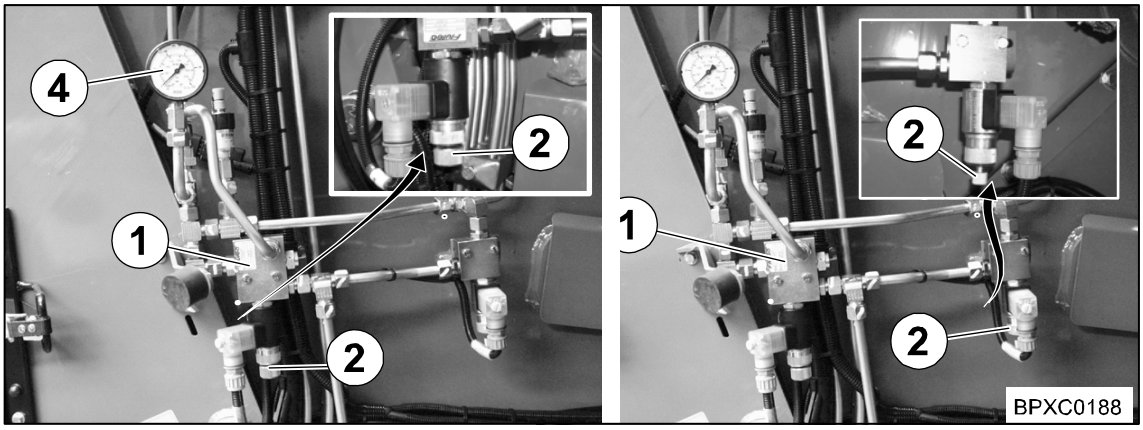


Fig. 187

Setting the baling pressure

Releasing the bale channel chamber

Note

After emergency manual activation has been performed, the knurled head screw (2) must be completely screwed out again.

12.15.1 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)

12.15.2 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

12.16 Filling Quantities and Lubrication Designations for Gearboxes

	Amount [litres]	Designation/brand	Bio-degradable lubricants
Main gearbox	35	**SAE 90 GL 4 or** Esso-Spartan EP 150 Shell Omala Oil 150 Fuchs- EP 85 W90 Castrol EPX 90	**On request**
Packer gearbox	4		
Knotter/packer transfer gearbox	1		
Pick-up gearbox, upper	1.6		
Pick-up gearbox, lower	1.6		
Cutting system gearbox for XC, upper	2.8		
Cutting system gearbox for XC, lower	1.75		

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

	Quantity ltr.	Designation/brand	Bio-degradable lubricants
Oil container on baler	15	Fuchs Renolin MR 46 MC BP Energol SHF 46 Shell Tellus 46 Esso Univis N 46 Aral Vitan VS 46	**on request**

12.16.2 Oil quantities and designations for the compressor

	Quantity ltr.	Designation/brand	Bio-degradable lubricants
	Up to the top dipstick marking (0.2)	Standard engine oil SAE 20 or 20 W 40	**on request**

12.16.3 Oil Level Check and Oil Change Intervals (Gearboxes)

Note - Oil level check and oil change (gearboxes) and lubricating the machine

Effect: Long expected service life of machine

- First oil change on all gearboxes after 50 operating hours, then every 200 operating hours (but at least once a year).
- Before using the machine always check the oil level.
- With bio-degradable oils the changing intervals must be complied with absolutely because of ageing of the oils.

Note

Make sure that the baler is in horizontal position during the oil level check. Use the lower edges of the twine boxes as a reference surface.

12.17 Main gearbox

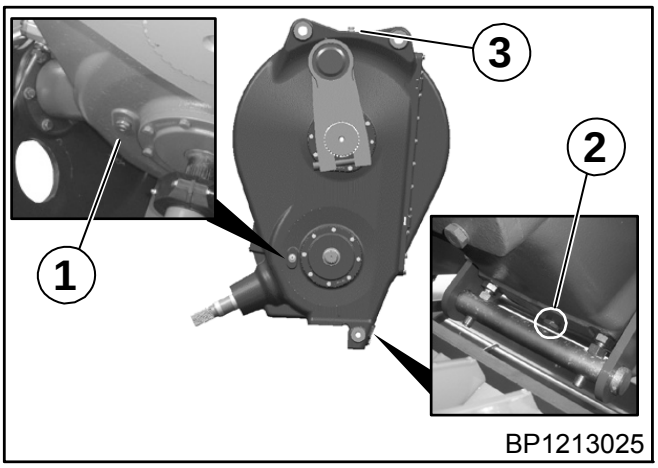


Fig. 188

Oil level check:

- For time intervals, see Chapter "Oil Level Check and Oil Change Intervals (Gearboxes)".
- Oil level up to inspection glass (1)
- If necessary, top up the oil (SAE 90)

Oil change:

- For time intervals, refer to chapter "Oil Level Check and Oil Change Intervals (Gearboxes)"
- Screw out the oil drain plug (2)
- Collect the used oil in a suitable drip pan
- Screw in the oil drain plug (2)
- Top up the oil (3) (oil level up to inspection glass (1))

Oil quality / oil quantity: see Chapter "Filling Quantities and Lubricant Designations for Gearboxes"

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.

12.18 Packer gearbox

The packer gearbox (3) is located on the left side of the machine.

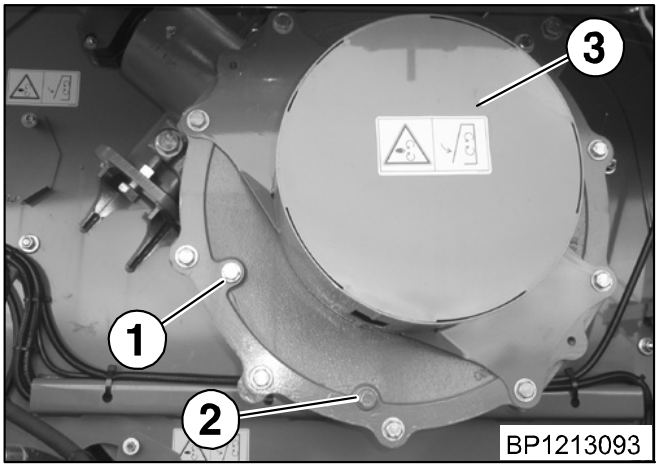


Fig. 189

Oil level check:

- For time intervals, see Chapter "Oil Level Check and Oil Change Intervals (Gearboxes)".
- Unscrew the inspection screw (1)
- Oil level up to bore hole (1)
- If necessary, top up the oil (SAE 90)
- Screw the check screw (1) back in.

Oil change:

- For time intervals, see Chapter "Oil Level Check and Oil Change Intervals (Gearboxes)".
- Screw out the screw plug (2).
- Collect the used oil in a suitable drip pan
- Screw in the screw plug (2)
- Fill oil (1) (oil level up to hole (1))

Oil quality / oil quantity: see Chapter "Filling Quantities and Lubricant Designations for Gearboxes"

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.

12.19 Transfer gearbox

The transfer gearbox (3) is located on the left side of the machine.

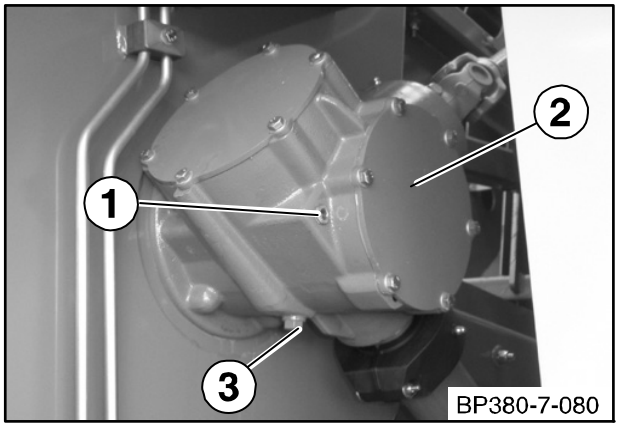


Fig. 190

Oil level check:

- For time intervals, see Chapter "Oil Level Check and Oil Change Intervals (Gearboxes)".
- Unscrew the inspection screw (1)
- Oil level up to bore hole (1)
- If necessary, top up the oil (SAE 90)
- Screw the check screw (1) back in.

Oil change:

- For time intervals, see Chapter "Oil Level Check and Oil Change Intervals (Gearboxes)".
- Screw out the screw plug (2).
- Collect the used oil in a suitable drip pan
- Screw in the screw plug (2)
- Fill oil (1) (oil level up to hole (1))

Oil quality / oil quantity: see Chapter "Filling Quantities and Lubricant Designations for Gearboxes"

Note

The used oil must be disposed of correctly

12.20 Pick-up gearbox

The upper (4a) and lower (4b) Pick-up gearboxes are located on the right side of the machine.

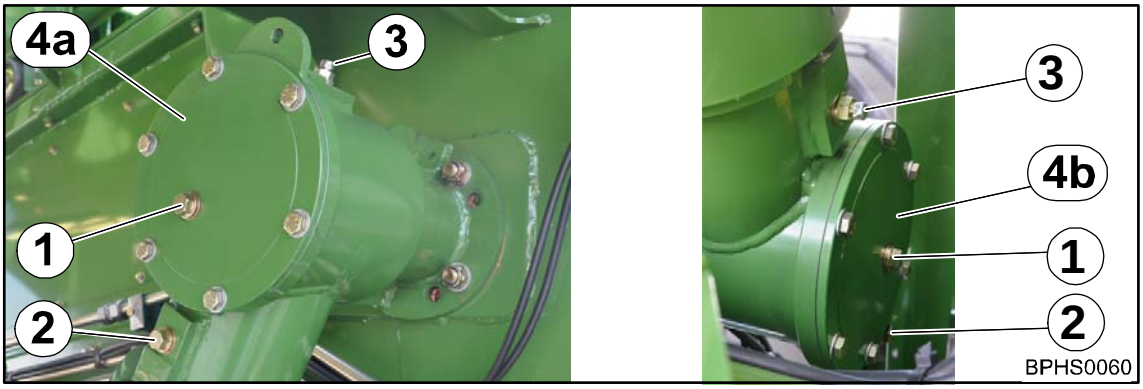


Fig. 191

Oil level check:

- For time intervals, see Chapter "Oil Level Check and Oil Change Intervals (Gearboxes)".
- Unscrew the inspection screw (1)
- Oil level up to bore hole (1)
- If necessary, top up the oil (SAE 90)
- Screw the check screw (1) back in.

Oil change:

- For time intervals, see Chapter "Oil Level Check and Oil Change Intervals (Gearboxes)".
- Screw out the screw plug (2).
- Collect the used oil in a suitable drip pan
- Screw in the screw plug (2)
- Fill oil (3) (oil level up to hole (1))
- Screw the inspection screw (1) and ventilation filter (3) back in.

Oil quality / oil quantity: see Chapter "Filling Quantities and Lubricant Designations for Gearboxes"

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.

12.21 Cutting system drive gear

For BiG PACK XC version

The cutting system is located on the right hand machine side. It consists of the upper angular gear (4a) and the lower transfer gearbox (4b) (Pick-up/cutting system).

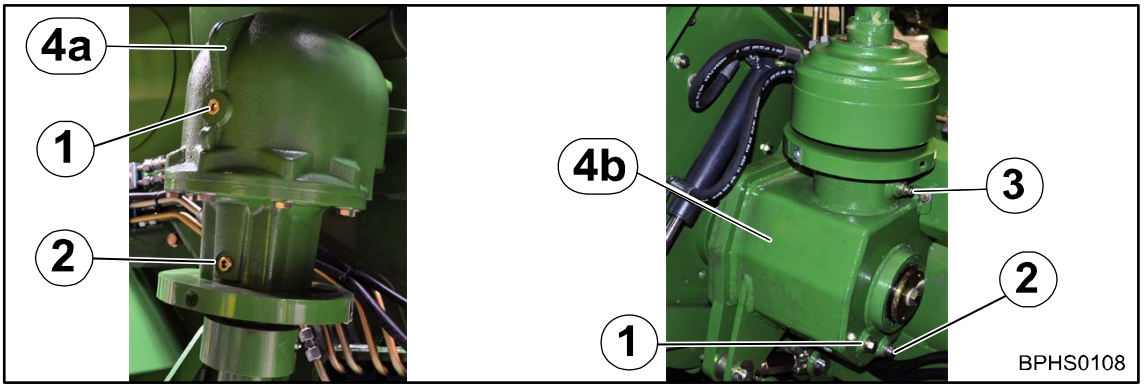


Fig. 192

Oil level check:

- For time intervals, see Chapter "Oil Level Check and Oil Change Intervals (Gearboxes)".
- Unscrew the inspection screw (1)
- Oil level up to bore hole (1)
- If necessary, top up the oil (SAE 90)
- Screw the check screw (1) back in.

Angular gear

Oil change:

- For time intervals, see Chapter "Oil Level Check and Oil Change Intervals (Gearboxes)".
- Screw out the screw plug (2).
- Collect the used oil in a suitable drip pan
- Screw in the screw plug (2)
- Fill oil (1) (oil level up to hole (1))

Transfer gearbox

Oil change:

- For time intervals, see Chapter "Oil Level Check and Oil Change Intervals (Gearboxes)".
- Screw out the screw plug (2).
- Collect the used oil in a suitable drip pan
- Screw in the screw plug (2)
- Fill oil (3) (oil level up to hole (1))
- Screw the inspection screw (1) and ventilation filter (3) back in.

Oil quality / oil quantity: see Chapter "Filling Quantities and Lubricant Designations for Gearboxes"

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.

13 Maintenance - Brake System

13.1 Special Safety Instructions

Danger! - Irregular maintenance of brakes

Effect: Danger to life, injuries or damage to the machine.

- Adjustment and repair work on the brake system must only be performed by authorised professional workshops or recognised brake services.
- Only a machine with an intact brake system may be used for work in the field or for travelling on roads.
- Irregularities or malfunctions in the brake system must be eliminated immediately.
- No changes may be made to the brake system without the approval of KRONE.
- Have the brakes checked regularly by a specialist workshop.
- Replace worn or damaged brake hoses immediately.
- KRONE is not responsible for natural wear, defects caused by overload or changes made to the brake system.

13.2 Compressed-air reservoir

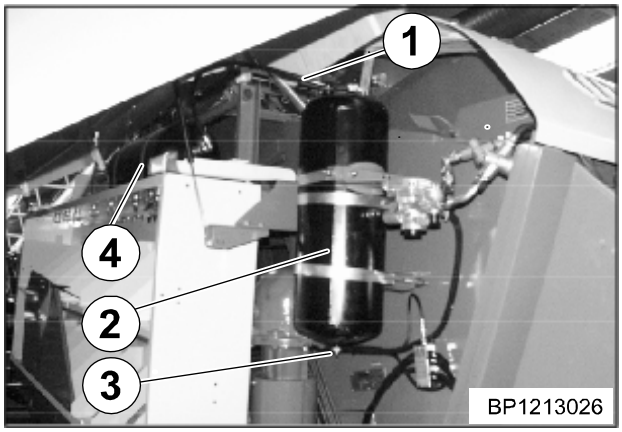


Fig. 193

- BiG PACK balers that are equipped with a compressed air brake have two compressed air reservoirs (1x compressed air reservoir (2) for the compressed air brake /1x compressed air reservoir (4) for the knotter cleaning)
- BiG PACK balers that are equipped with a hydraulic brake have one compressed air reservoir (4) (1x for knotter cleaning)

The brake system's compressed air reservoir (2) for BiG PACK balers with compressed air brakes is on the right side of the machine. It is connected with the compressed air reservoir (4) for knotter cleaning through a compressed air line (1).

The compressed air reservoir (4) for knotter cleaning (compressed air brake / hydraulic brake) is located on the right side on the twine box.

The compressed-air reservoir stores the compressed air that is pumped by the compressor. Therefore condensation water may settle in the compressed air reservoir during operation. The compressed-air reservoir must be emptied regularly. Specifically, it must be emptied:

- daily in winter (when being used),
- otherwise weekly and
- at least after 20 operating hours.

The drain valve on the bottom of the compressed-air reservoir is used for draining.

- Switch off and secure the machine.
- Open the drain valve and allow the condensation to run out.
- Check the drain valve, clean it and screw it back in.

Note

If the drain valve has a heavy accumulation of dirt or is leaking, it must be replaced by a new one.

Note

Have damaged compressed air reservoirs replaced by a specialist's workshop

13.2.1 Setting the Transfer Mechanism

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.

Checking the adjustments on the linkage setter

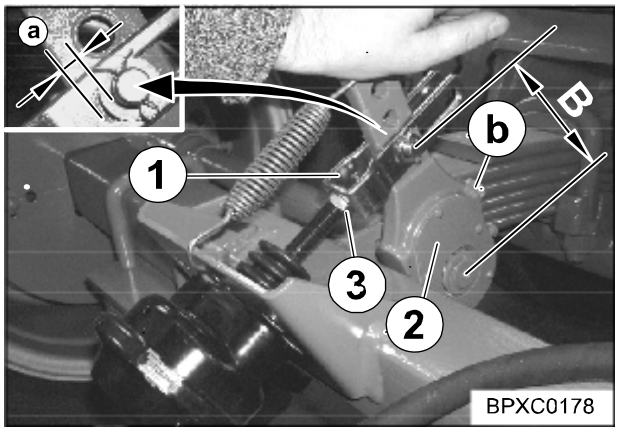


Fig. 194

- Every 200 operating hours

Activate the linkage setter manually in the pressure direction. The setting of the linkage setter must be changed if there is a clear path (a) of max. 35 mm.

The setting can be made with the adjusting screw (b) of the linkage setter.

Set clear path "a" to 10 - 12 % of the connected brake lever length "B", for example lever length B=125 mm = clear path 12 - 15 mm.

13.2.2 Pneumatic brake cylinders

WARNING! - Pneumatic system under pressure!

Effects: Serious injuries, serious material damages.

- Relieve the excess pressure from the pneumatic system before starting to work

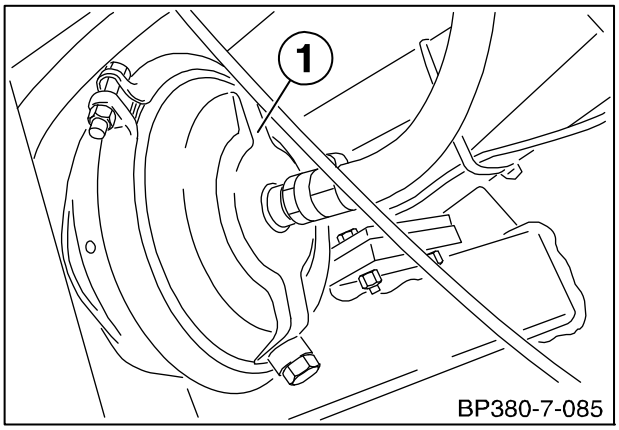


Fig. 195

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.

13.3 Compressor

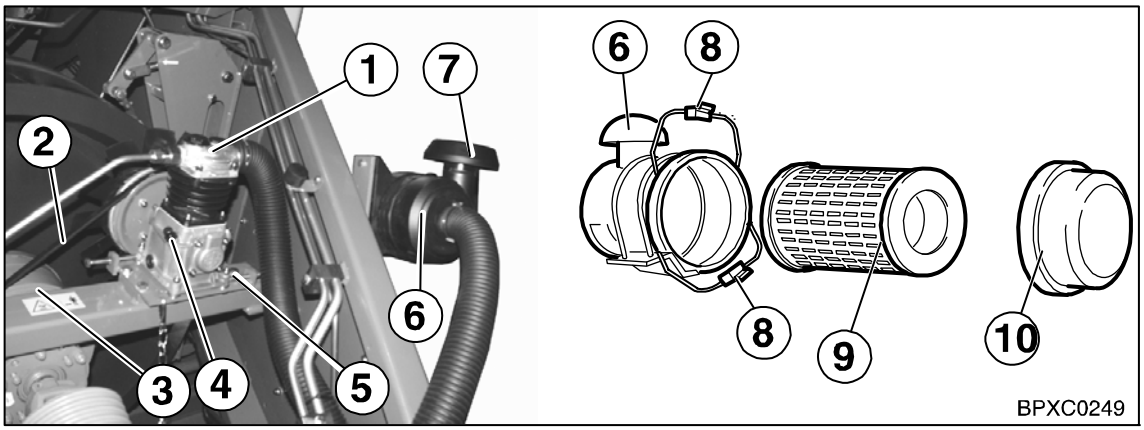


Fig. 196

The supply of compressed air for knotter cleaning is provided through a compressor (1) mounted between the drawbar beams (1) (except for balers equipped with pneumatic brakes)

Note

On balers with pneumatic brakes the pneumatic connection of the tractor undertakes the filling of the compressed air reservoir for the knotter cleaning.

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).

The oil level in the compressor must be checked daily prior to use by means of the dipstick (4). Top up with oil (engine oil SAE 20) if necessary. The specification of the oil that is required is listed in the "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 aspiration port (7) can be placed directly on the cabin roof of the tractor using a retrofit kit (order no. 287 363).

Filter cleaning

- Move the retaining bracket (8) on the air filter (6) up/down
- Remove the cover (10)
- Remove the filter cartridge (9), shake it out and blow it out from the inside to the outside with an air jet
- Further dismantle the cover (10) and shake it out
- Install the filter cartridge
- Place the cover on the filter and secure it in place with retaining brackets

Note

Make sure, that the filter housing seals tightly with the air filter.

14 Maintenance – lubrication

14.1 Special Safety Instructions

DANGER! - When performing repair, maintenance or cleaning work on the machine, or in the case of technical intervention, drive elements may start moving.

Effect: Danger to life, injuries or damage to the machine.

- Switch off the tractor engine, remove the ignition key, and engage the flywheel brake
- Secure the machine and tractor against rolling
- Switch off the P.T.O. shaft and uncouple it
- After the repair, maintenance, cleaning work or technical modifications are completed, install all protective covers and safety devices properly again
- Avoid skin contact with oils, greases, cleaning agents and solvents
- Hydraulic liquids escaping under high pressure can cause severe injuries. In the event of injuries or burns due to oils, cleaning agents or solvents, contact a physician immediately
- All other safety instructions must also be followed to avoid injuries and accidents

ENVIRONMENT! - Disposal and storage of lubricants

Effect: Environmental damage

- Store lubricants in eligible containers according to statutory provisions
- Dispose used lubricants according to statutory provisions

14.2 Lubricants

14.3 General aspects

Depending on the design, the machine may be equipped with different lubrication systems. Soft, supple NLGI Class 2 lithium soap greases in accordance with DIN 51825 should be used as lubricating greases. We recommend that you do not use lubricating greases with any other base material.

Note

Do not use greases containing graphite! There may be problems when different greases are mixed together!

Manufacturer	Lubricants based on mineral oil	Bio-lubricants
ARAL	Long-term grease H	On request
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.

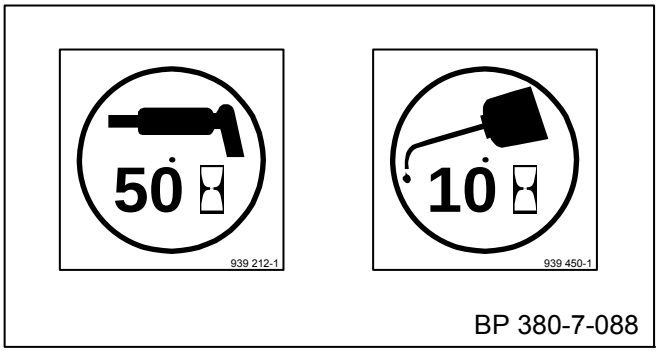


Fig. 197

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

14.4 Lubricating the PTO shaft

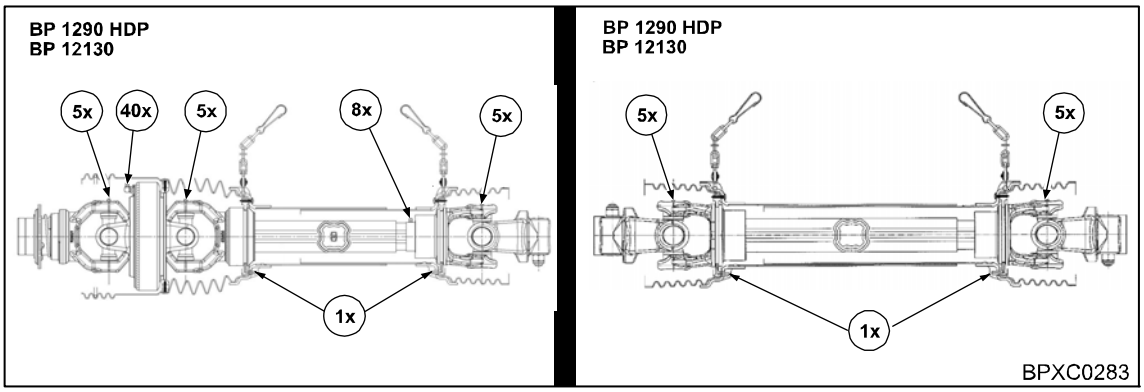


Fig. 198

Main drive universal shaft | Flywheel universal shaft

Universal shafts must be lubricated with multi-purpose grease every 50 hours at designated lubrication points. The figure above shows the number of pump pulses per lubrication point. Follow the operating instructions of the universal shaft manufacturer.

14.5 Lubricating the rollers for the blade lever

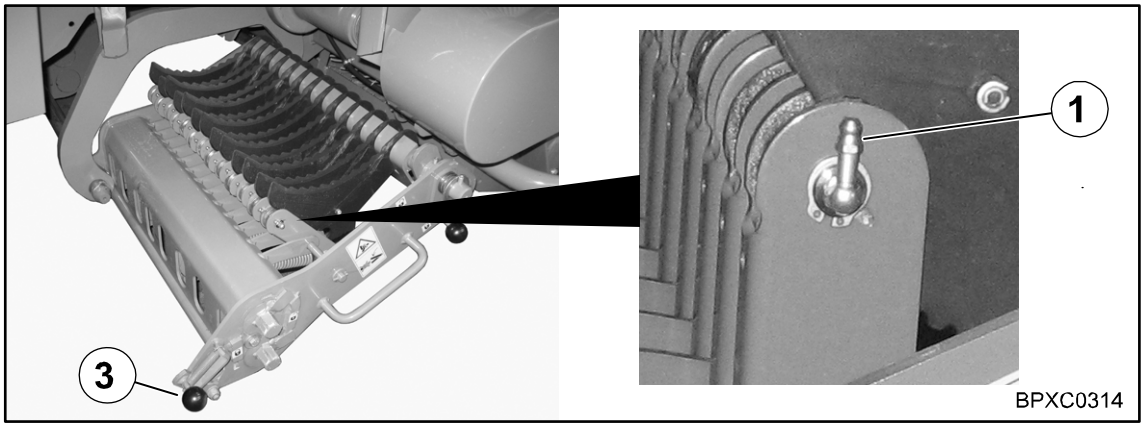


Fig. 199

- 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

14.6 Manual lubrication points on the machine

Left side of machine (version with cutting system XC)

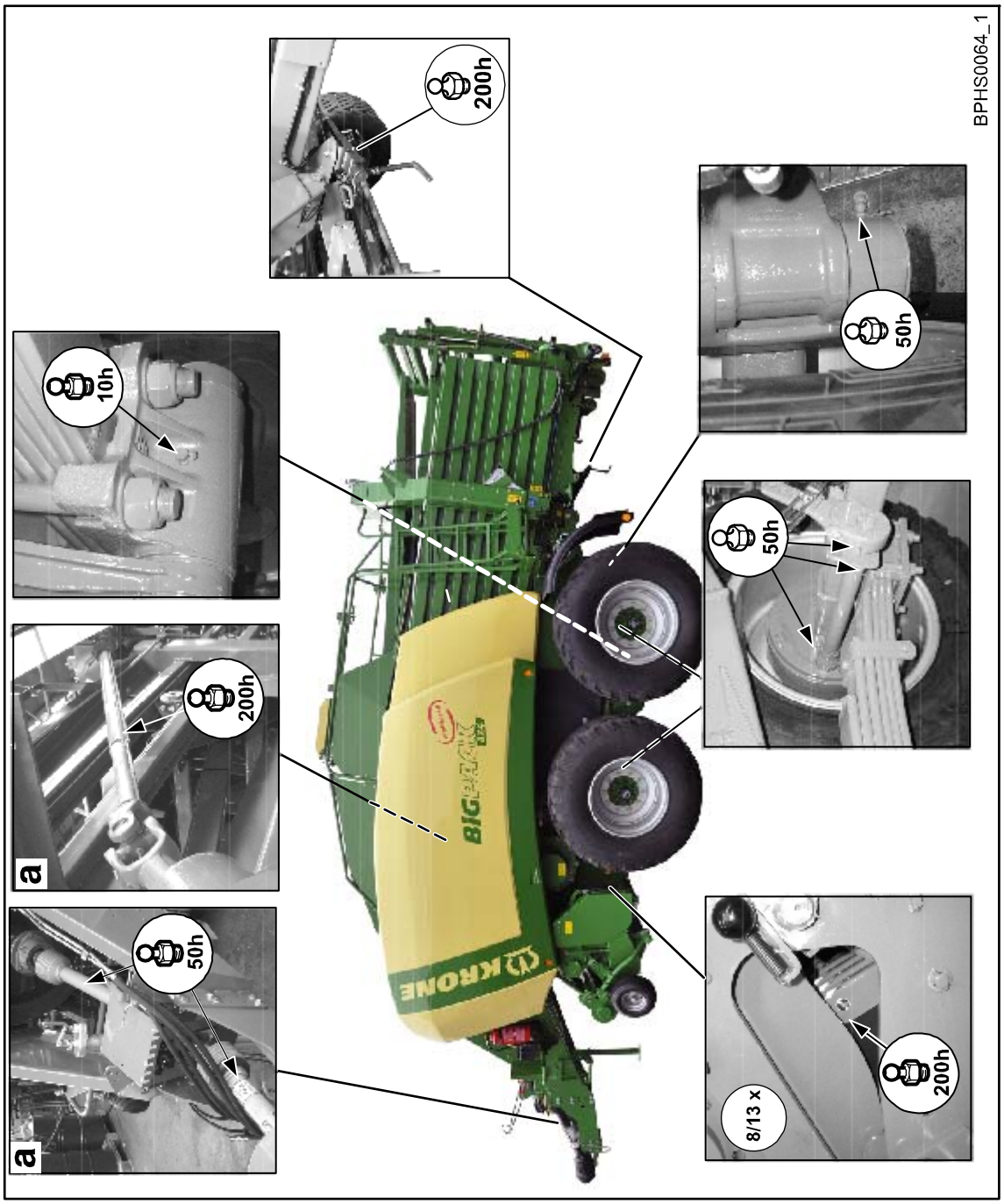


Fig. 200

a) For further information see chapter “Lubricating the cardan shaft”

Right side of machine (version with cutting system XC)

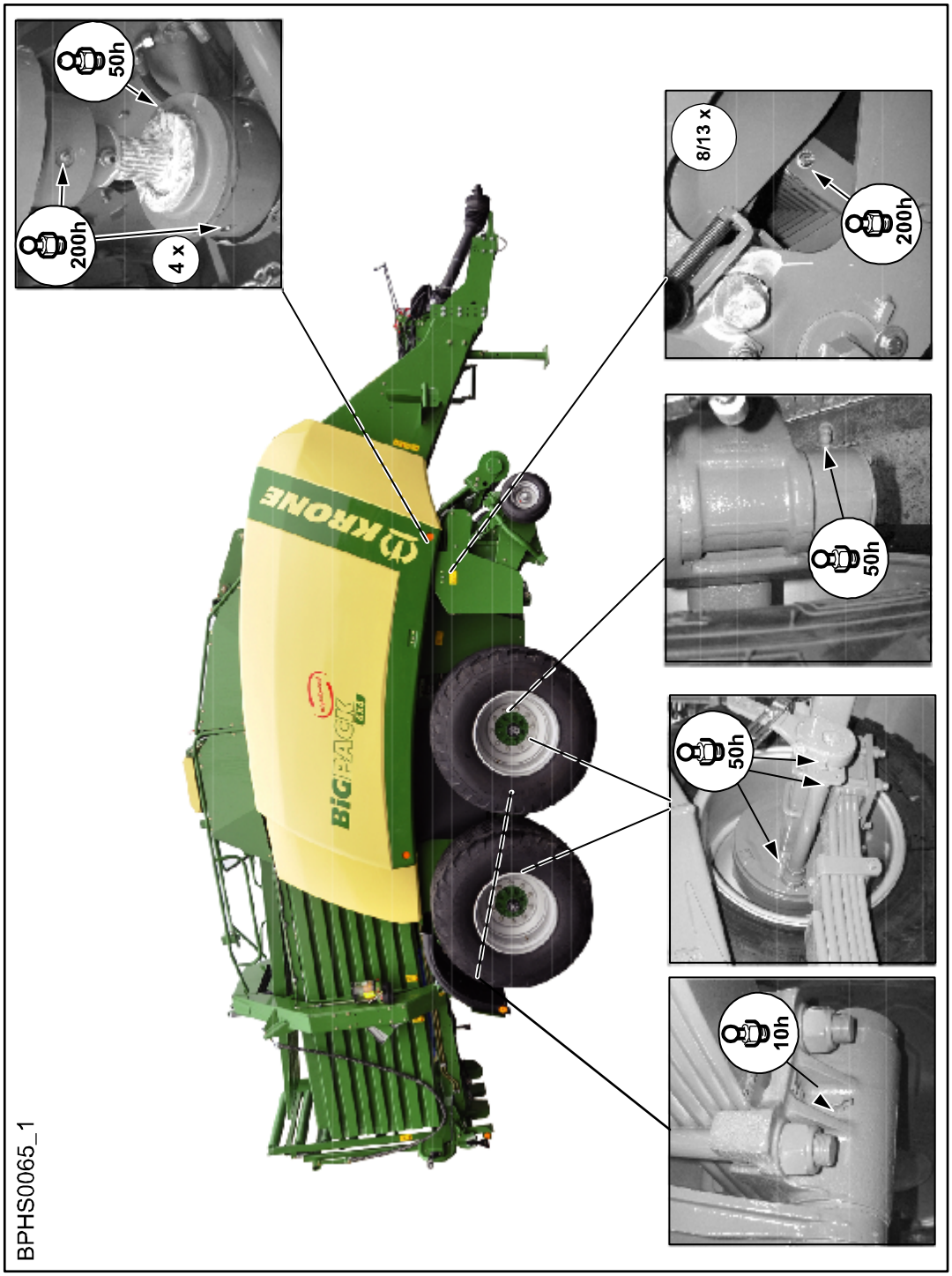


Fig. 201

Left side of machine (version without cutting system XC)

Fig. 202

a) For further information see chapter “Lubricating the cardan shaft”

Right side of machine (version without cutting system XC)

Fig. 203

a) For further information see chapter “Lubricating the cardan shaft”

14.6.1 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.

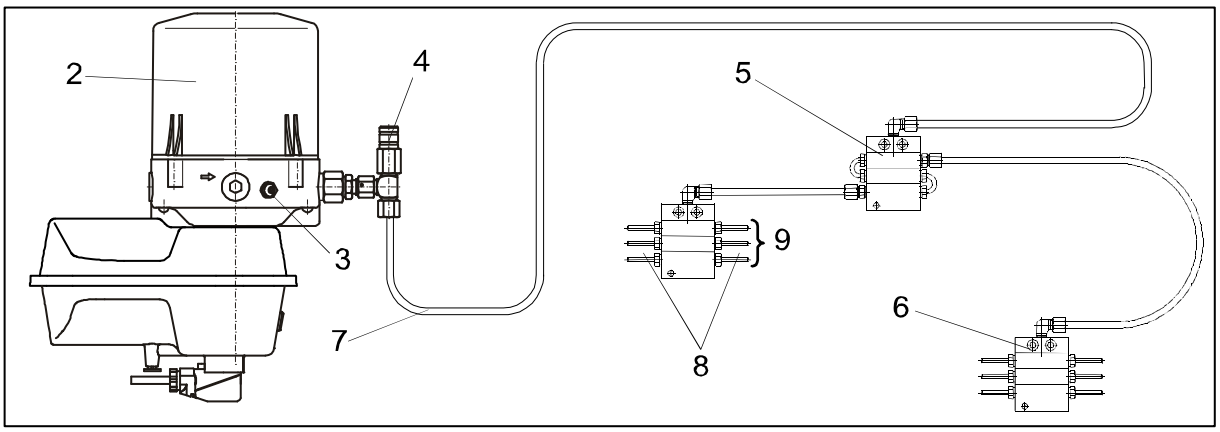


Fig. 204

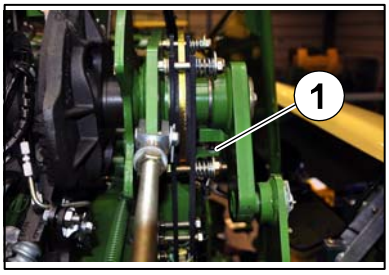
2) See-through reservoir
3) Filling nipple
4) Excess pressure valve
5) Main progressive distributor
6) Auxiliary progressive distributor
7) Main line
8) Lubrication lines
9) Lubrication points

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”).

14.7 Position of Sensors (Right-Hand Side of the Machine)

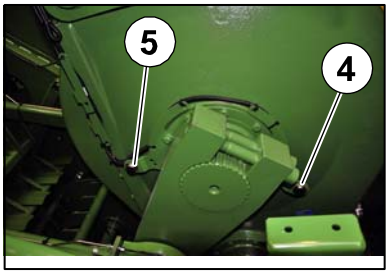
Fig. 205



1 Knotter monitoring

3 Force sensor on left

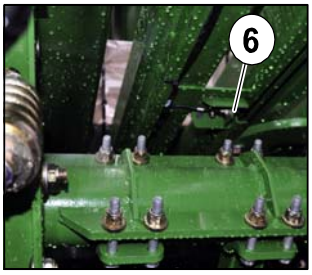
2 Force sensor on right



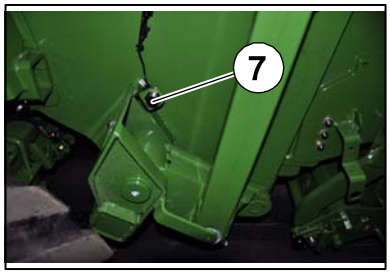
Controlling the force of pressure:

4 Calibrations

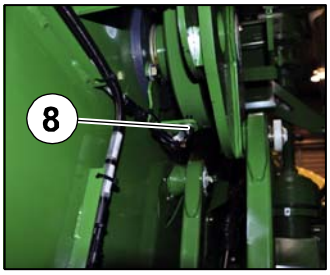
5 Measurement



6 Bale ejector



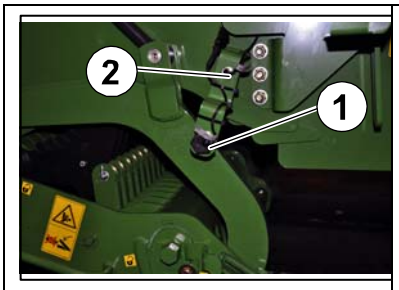
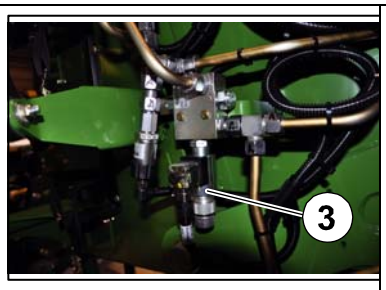
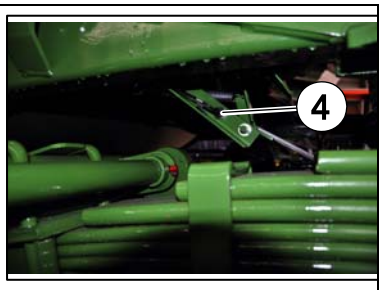
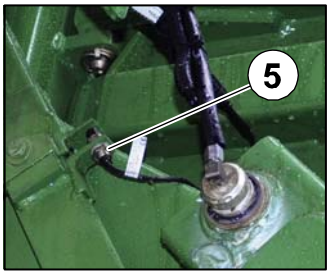
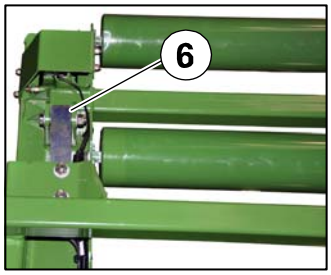
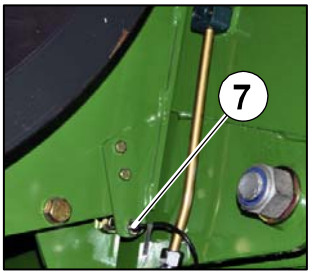
7 Packer feed

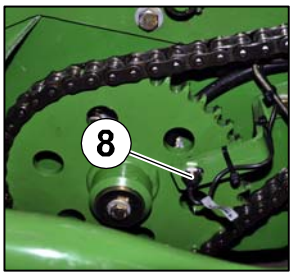
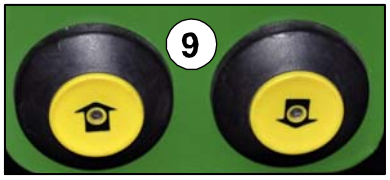
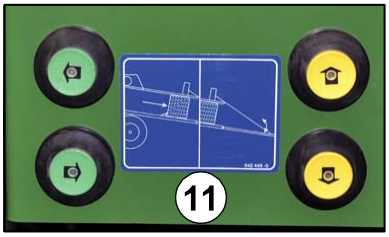


8 Packer monitoring

14.8 Position of Sensors (Left Side of Machine)

Fig. 206

		
1 Blade active 2 Upper blade bar	3 Bale channel flap pressure	4 Twine monitoring
		
5 Needle connecting rod	6 Setting down bales	7 Flywheel brake

 8 Pick-up	 9 Button • Blade bar up • Blade bar down	 11 Button • Bale ejector in • Bale ejector out • Bale chute up • Bale chute down
 12 Bale chute		

14.8.1 Adjusting the Sensors

14.8.1.1 Namur sensor d = 12 mm

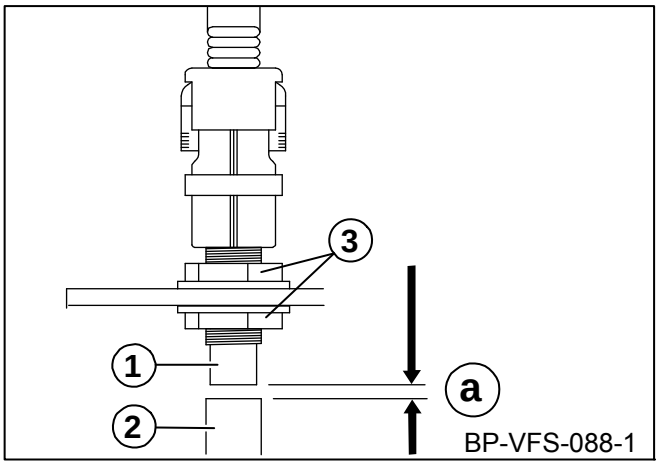


Figure 207

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.

14.8.1.2 Namur sensor d = 30 mm

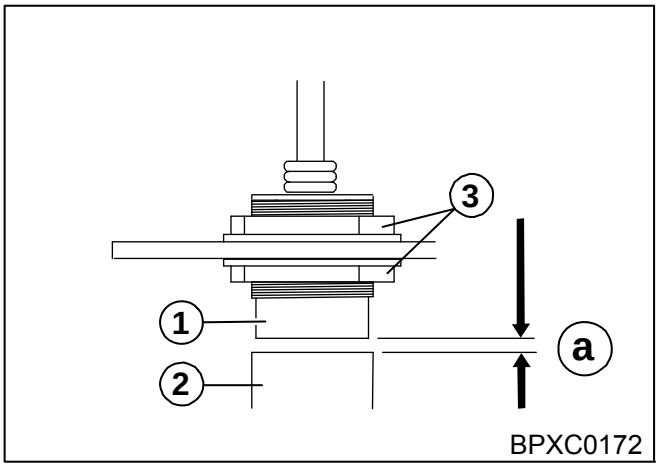


Figure 208

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.

15 Placing in Storage

15.1 Special Safety Instructions

DANGER! - When performing repair, maintenance or cleaning work on the machine, or in the case of technical intervention, drive elements may start moving.

Effect: Danger to life, injuries or damage to the machine.

- Switch off the tractor engine, remove the ignition key, and engage the flywheel brake
- Secure the machine and tractor against rolling
- Switch off the P.T.O. shaft and uncouple it
- After the repair, maintenance, cleaning work or technical modifications are completed, install all protective covers and safety devices properly again
- Avoid skin contact with oils, greases, cleaning agents and solvents
- Hydraulic liquids escaping under high pressure can cause severe injuries. In the event of injuries or burns due to oils, cleaning agents or solvents, contact a physician immediately
- All other safety instructions must also be followed to avoid injuries and accidents

15.2 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 inside and outside thoroughly. If you use a high-pressure cleaner to do this. do not keep a stream of water directed at bearing points. After cleaning is completed, lubricate all lubrication points. Do not wipe off any grease that comes out of bearing points. The hardened grease will provide additional protection against moisture.

Remove the drive chains and wash them out in petroleum (do not use any other solvent). At the same time, check the chains and chain wheels for wear. Oil the chains after they are cleaned, mount them and place them under tension.

Check all movable components such as deflector rollers, joints, tension rollers, etc. to make certain they move easily. If necessary remove, clean, grease and remount. If necessary, replace with new parts.

Use only original KRONE replacement parts.

Disassemble the PTO shaft. Lubricate the inner tubes and the guard tube with grease. Grease the lubrication points on the cross joint and grease the bearing rings of the guard tube.

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, direct sunlight, etc

Perform the necessary repair tasks during the time immediately after the harvest season. Draw up a list of all replacement 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.

15.3 Before the Start of the New Season

DANGER! - When performing repair, maintenance or cleaning work on the machine, or in the case of technical intervention, drive elements may start moving.

Effect: Danger to life, injuries or damage to the machine.

- Switch off the tractor engine, remove the ignition key, and engage the flywheel brake
- Secure the machine and tractor against rolling
- Switch off the P.T.O. shaft and uncouple it
- After the repair, maintenance, cleaning work or technical modifications are completed, install all protective covers and safety devices properly again
- Avoid skin contact with oils, greases, cleaning agents and solvents
- Hydraulic liquids escaping under high pressure can cause severe injuries. In the event of injuries or burns due to oils, cleaning agents or solvents, contact a physician immediately
- All other safety instructions must also be followed to avoid injuries and accidents

- 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

15.3.1 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.

Procedure for types BiG Pack 890 (XC) BiG Pack 1270 (XC) and BiG Pack 1290(XC)

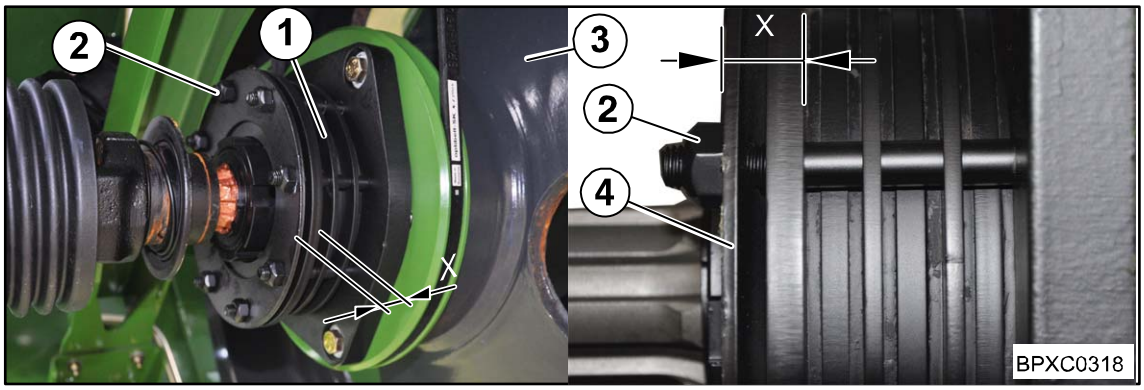


Fig. 209

- The overload coupling is on the flywheel (3)
- To vent it, release the nuts (2) on the overload coupling (1) until the disc spring (4) is released
- Turn the universal shaft manually around once
- Afterwards, retighten the nuts crosswise until the setting dimension X = 16,9 mm is set

Procedure for types BiG Pack 1290 HDP/XC / Big Pack 4x4 and BiG Pack 12130

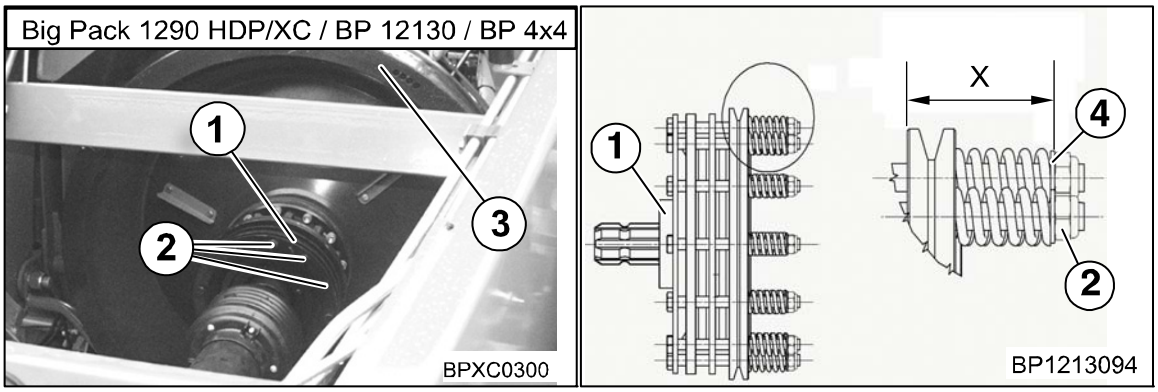


Fig. 210

- The overload coupling is located on the flywheel (3)
- To vent it, release the nuts (2) on the overload coupling (1) until the compression springs are released
- Turn the universal shaft manually around once
- Afterwards, retighten the nuts crosswise until the setting dimension X = 75.8 mm is set (measured from the outer edge of the disc (4))

16 Malfunctions - Causes and Remedies

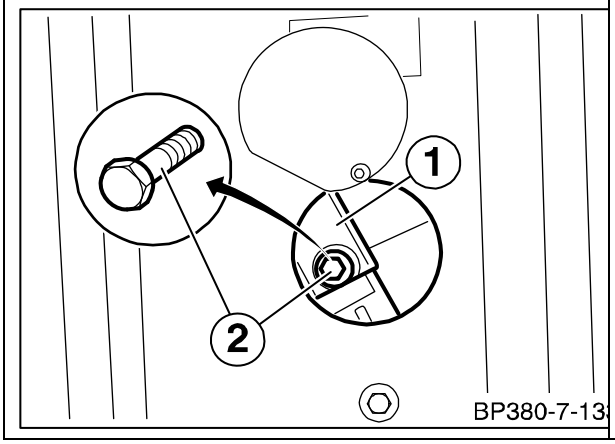
16.1 Special Safety Instructions

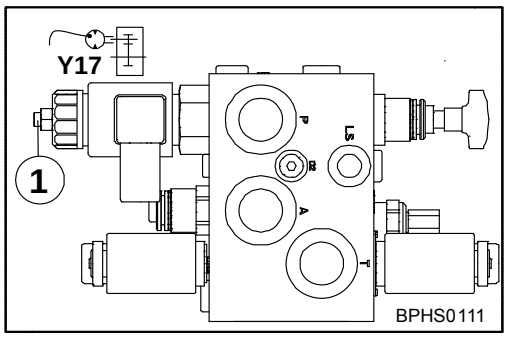
DANGER! - When performing repair, maintenance or cleaning work on the machine, or in the case of technical intervention, drive elements may start moving.

Effect: Danger to life, injuries or damage to the machine.

- Switch off the tractor engine, remove the ignition key, and engage the flywheel brake
- Secure the machine and tractor against rolling
- Switch off the P.T.O. shaft and uncouple it
- Secure knotter shaft against unintentional release of the tying with the safety lever
- Activate the flywheel brake and fasten the flywheel in place
- After the repair, maintenance, cleaning work or technical modifications are completed, install all protective covers and safety devices properly again
- Avoid skin contact with oils, greases, cleaning agents and solvents
- Hydraulic liquids escaping under high pressure can cause severe injuries. In the event of injuries or burns due to oils, cleaning agents or solvents, contact a physician immediately
- All other safety instructions must also be followed to avoid injuries and accidents

16.2 General malfunctions

Malfunction	Cause and/or remedy
Baling ram/tying unit does not move.	1. Bring the tractor to a stop immediately. 2. The cam-type clutch is engaging again at a low speed. 3. Reduce the pressing force. 4. Check the speed of the tractor universal shaft. 5. Remove the needle from the bale channel chamber and replace the shear screw in the knotter and needle drive if necessary.
Knotter needles fall back.	1. Apply the knotter shaft brake securely.
Bale too loose.	1. Increase the pressing force.
Bale too tight.	1. Reduce the pressing force.
Packer does not move.	1. Overload coupling slips - reduce the engine speed. 2. Bring the tractor and machine to a stop and clear the blockage. 3. Reduce travelling speed.
Pick-up does not move.	1. Overload coupling slips - turn off P.T.O. drive and clear blockage. 2. Reduce travelling speed. 3. Drive over the swath in the centre.
Cutting rotor and Pick-up do not move.	1. Blockage in the area of the rotor, cam-type clutch in the rotor drive train slips. 2. Reduce the engine speed. Coupling is engaging again at low speed. 3. Swivelling out the blades. 4. If the rotor does not start running free by itself, stop the tractor and machine and clear the blockage. 5. Reduce travelling speed.
Needle yoke does not move.  	1. The connecting rod (1) of the needle yoke is secured by a shear screw (2). 2. Check whether the shear screw is broken. 3. If necessary, replace with a M10 x 55, DIN 931-10.9 screw.

Malfunction	Cause and/or remedy
The tractor does not start or starts just badly if the Load Sensing line is connected.  	**Cause:** Air in the hydraulic system of the machine **Remedy:** Vent the hydraulic block comfort

Prerequisite:

- Turn off the PTO shaft
- Secure the machine and the tractor against rolling
- Apply the flywheel brake

If the tractor starts badly

To do this:

- Remove the plastic cover (1) on the valve (Y17)
- Loosen the inner threaded pin M4 with two revolutions
- Collect escaping hydraulic oil in a suitable container and dispose of it correctly
- Start the tractor engine and charge the hydraulic system with pressure
- Switch on the terminal and execute the function “remaining bale ejector” via the terminal until the escaping oil is free of bubbles
- Tighten the threaded pin M4 when the escaping oil is free of bubbles
- Attach plastic cover on the valve (Y17)

If the tractor does not start

To do this:

- Switch on the terminal
  - Execute several functions one after another (e.g. remaining bale ejector, chute) to release the hydraulic system
- Start the engine of the tractor
  - Should the tractor engine still not start yet, please contact your KRONE dealer or KRONE customer service
  - Charge the hydraulic system with pressure when the tractor engine starts
- Remove the plastic cover (1) on the valve (Y17)
- Loosen the inner threaded pin M4 with two revolutions
- Collect escaping hydraulic oil in a suitable container and dispose of it correctly
- Execute function “remaining bale ejector” via the terminal until the escaping hydraulic oil is free of bubbles
- Screw in the threaded pin M4 when the escaping hydraulic oil is free of bubbles
- Attach plastic cover on the valve (Y17)

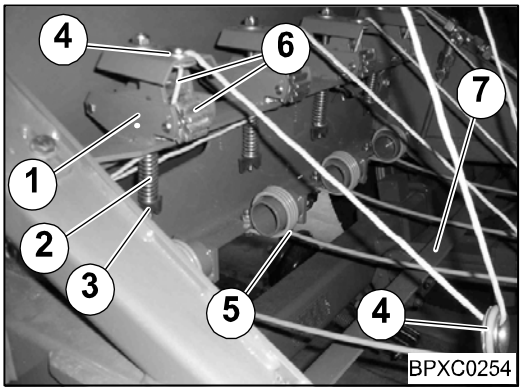
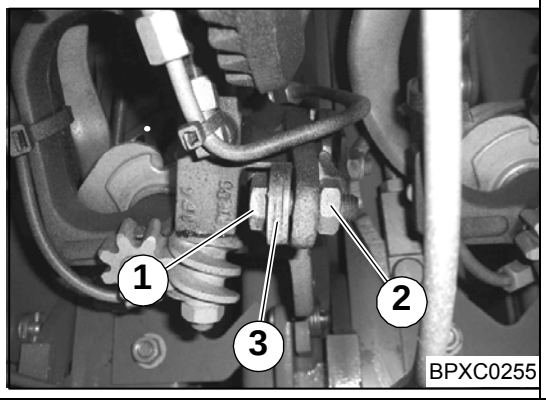
Malfunction	Cause and/or remedy
Hydraulic functions do not move up to the final position (for example hydraulic parking jack, bale ejector etc.)	**Cause:** Some tractors have a compensation bore hole on tractor side for Load Sensing function. In combination with the comfort hydraulic block, the tractor 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.

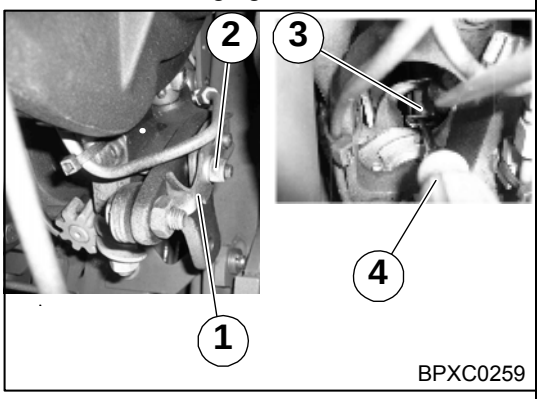
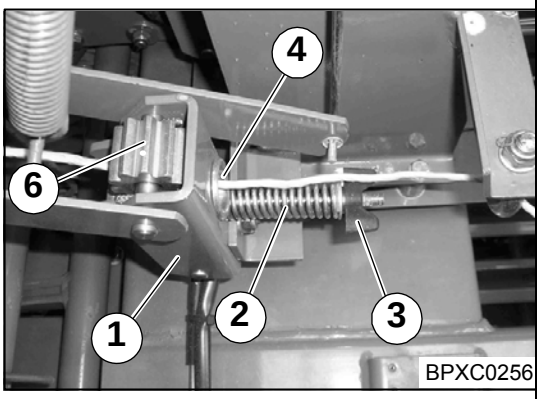
16.3 Malfunctions on the knotter

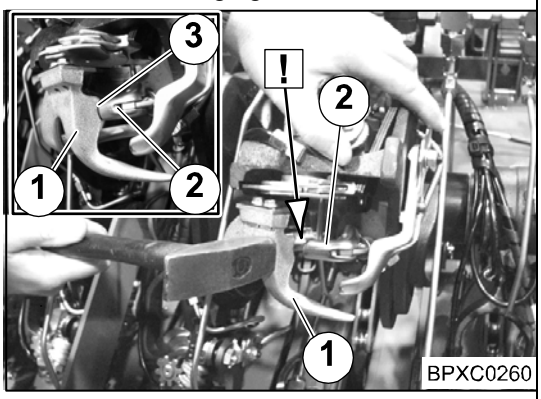
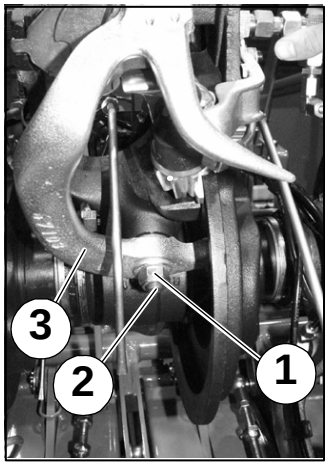
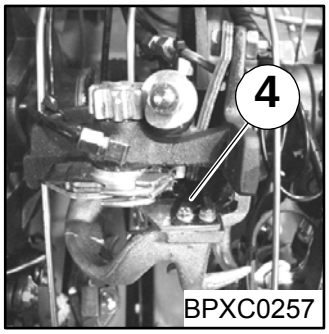
16.3.1 Double knotter

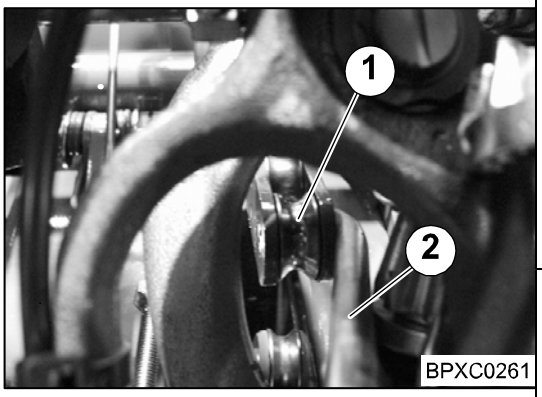
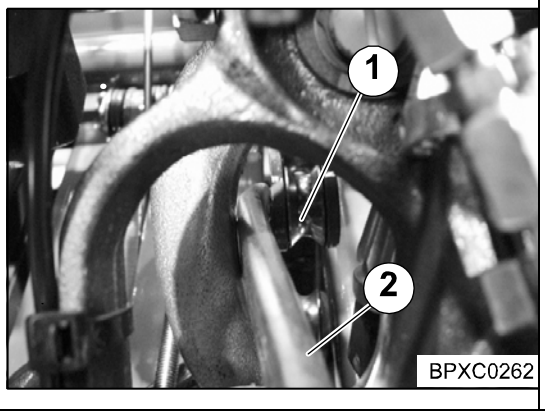
Experience has shown that a majority of tying problems are the result of insufficient twine tension. Check the twine path and twine tension before starting work.

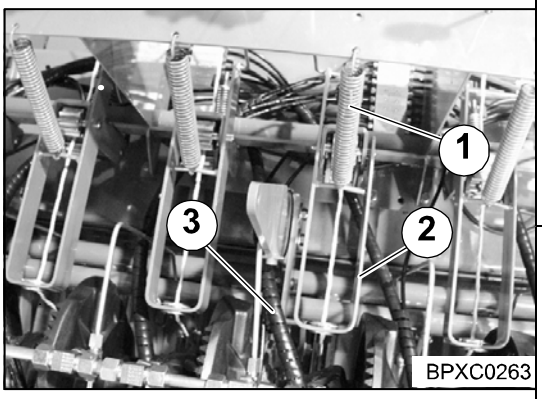
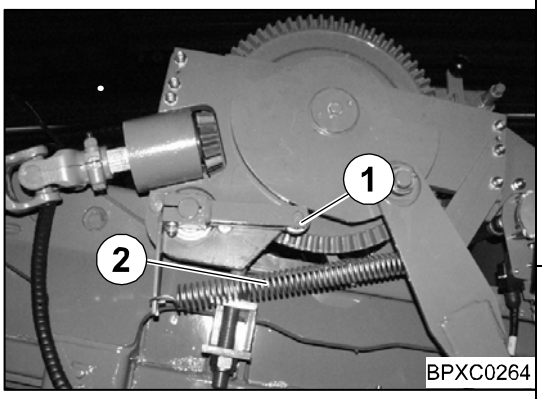
The following list shows the most frequent malfunctions, their cause and a note on how to eliminate them. Otherwise reference is made to the chapter in which the topic in question is explained in greater detail.

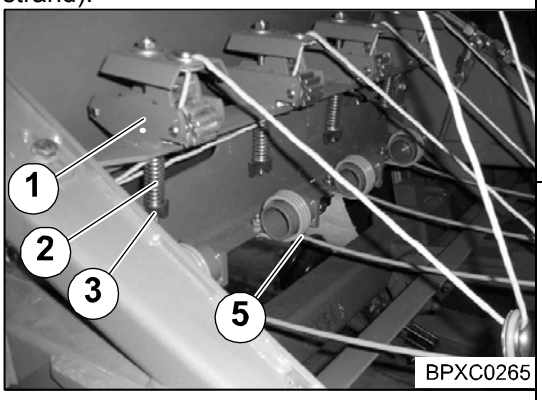
No.	Malfunction	Cause and/or remedy
1	Knotter tongue bends or frequent rupture of the knotter tongue.	1.1 **Cause:** Second knot remains hanging on the knotter tongue. **Remedy:** See no.2
2	Knot remains hanging on the knotter hook.	2.1 **Cause:** Worn or rough spots on the knotter hook or bent knotter 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

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)

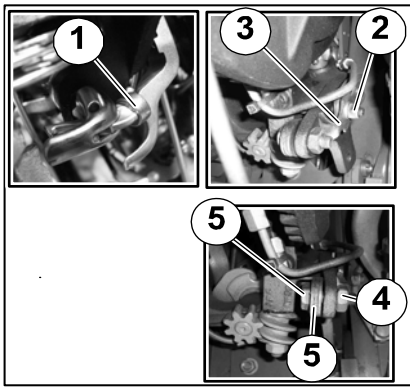
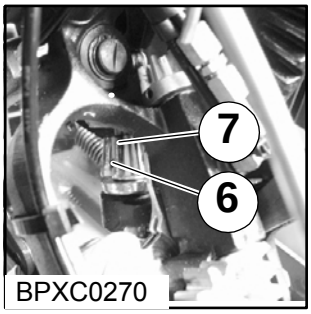
No.	Malfunction	Cause and/or remedy
2	Knot remains hanging on the knotter hook.  BPXC0260	2.6 **Cause:** Blade lever too far away from the knotter hook. **Remedy:** Adjusting the blade lever: • Swivel the knotter block up until the blade lever (1) passes beyond the knotter hook (2) • Use a hammer to 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
	 BPXC0257	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”).

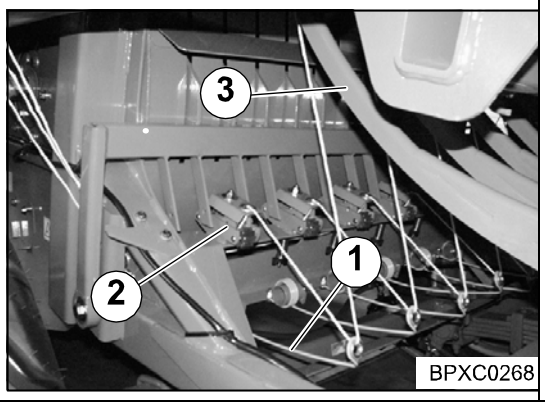
No.	Malfunction	Cause and/or remedy
3	First knot: (closing knot): Present only in the upper twine strand.	3.1 **Cause:** The twine bar has not caught the lower twine strand. **Remedy:** Readjust the twine bar(refer to chapter "Setting the twine bar (double knotter)”) Checking the needle setting (refer 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

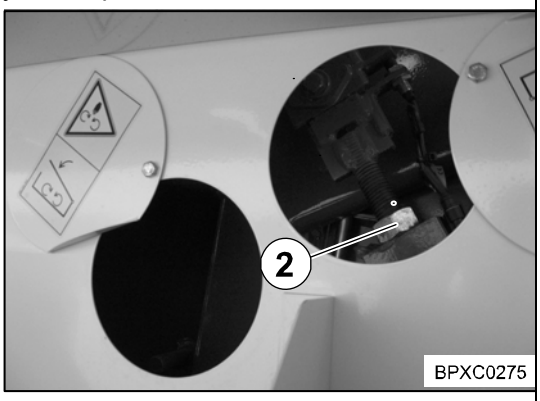
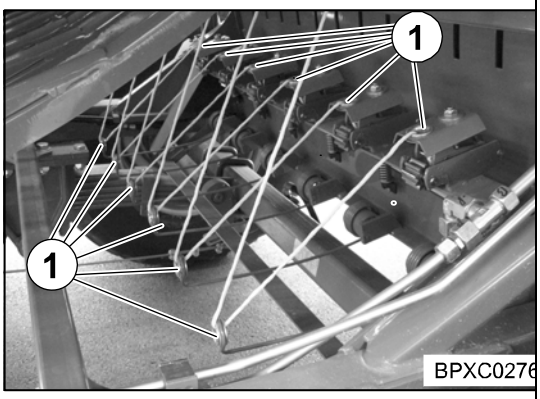
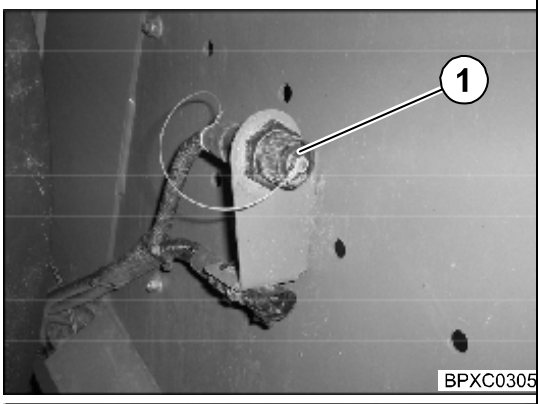
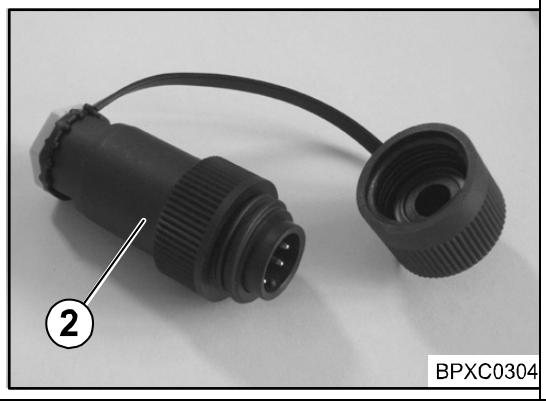
No.	Malfunction	Cause and/or remedy
6	Second knot: (Starting knot) Knot is present only on the lower twine strand (no knot on the upper twine strand).  	6.1 **Cause:** The twine bar is adjusted too far away from the upper needle and was unable to catch the upper twine strand. **Remedy:** Set the twine 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).

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)").

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)").

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).

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.  BPXC0268	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).

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

16.4 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.

17 Appendix

17.1 Hydraulic System Circuit Diagrams

17.2 On-board Hydraulics for Medium Version Electronics

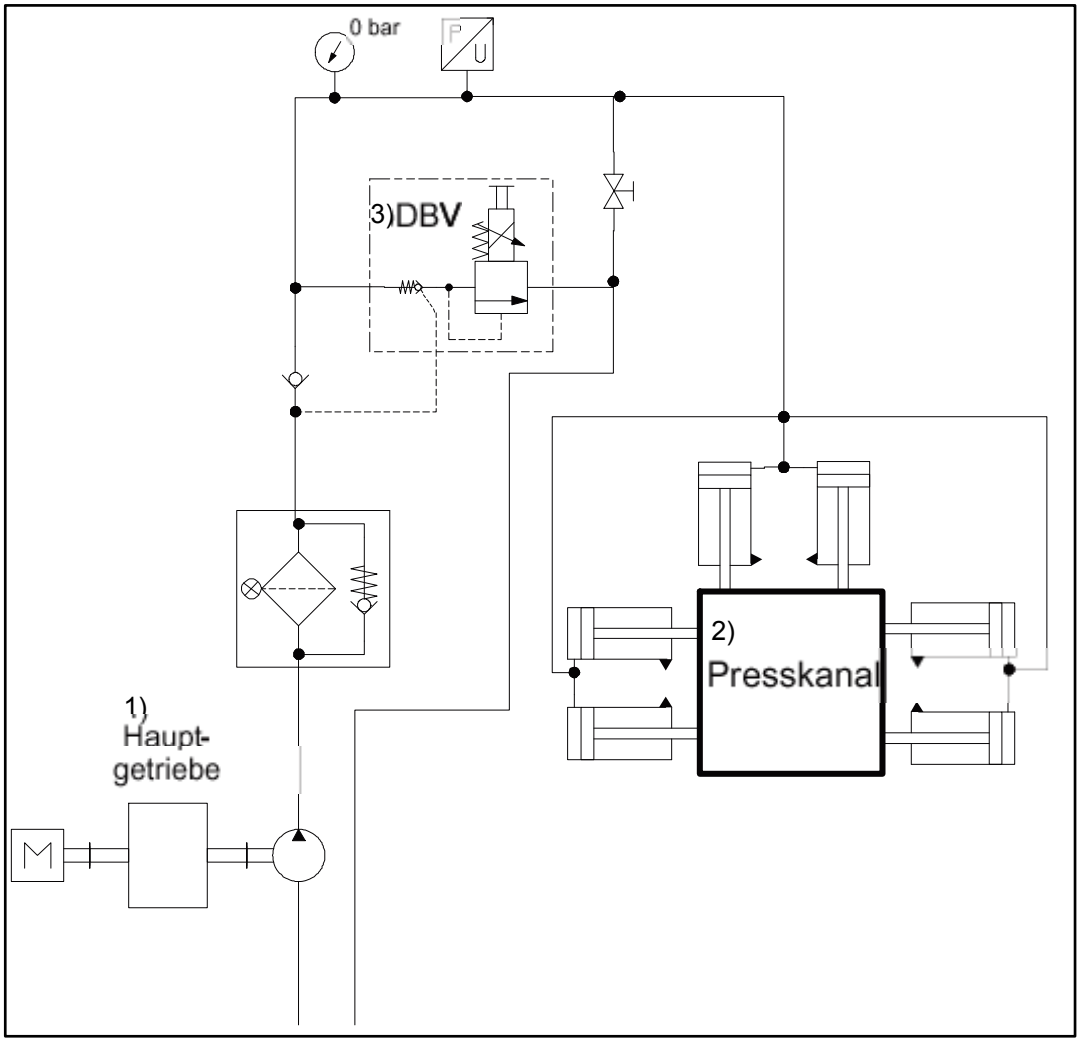


Fig.211

1. Main gearbox	2. Bale channel
3. Pressure limiting valve	

17.3 On-board Hydraulics for Comfort Version Electronics

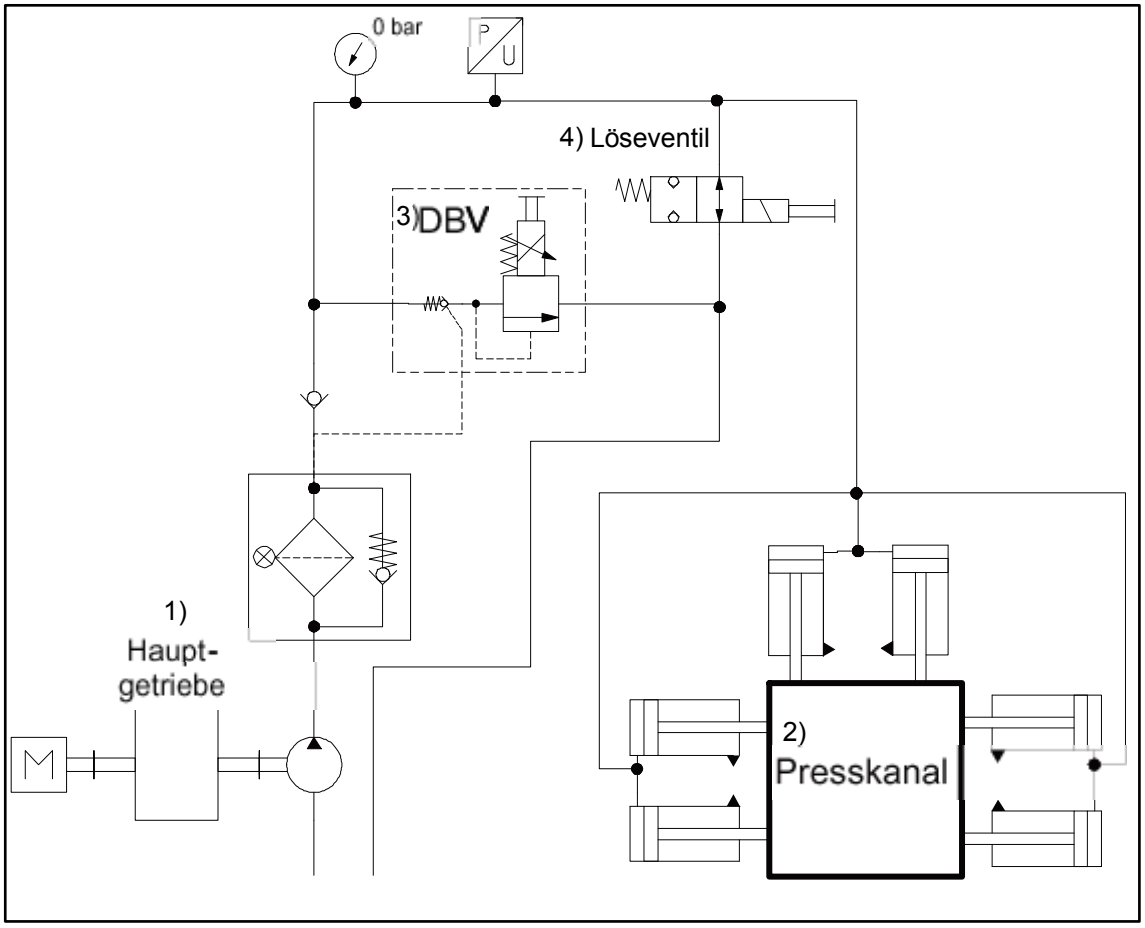


Fig.212

1.	Main gearbox	2.	Bale channel
3.	Pressure limiting valve	4.	Release valve

17.4 Working hydraulics for Medium Version Electronics

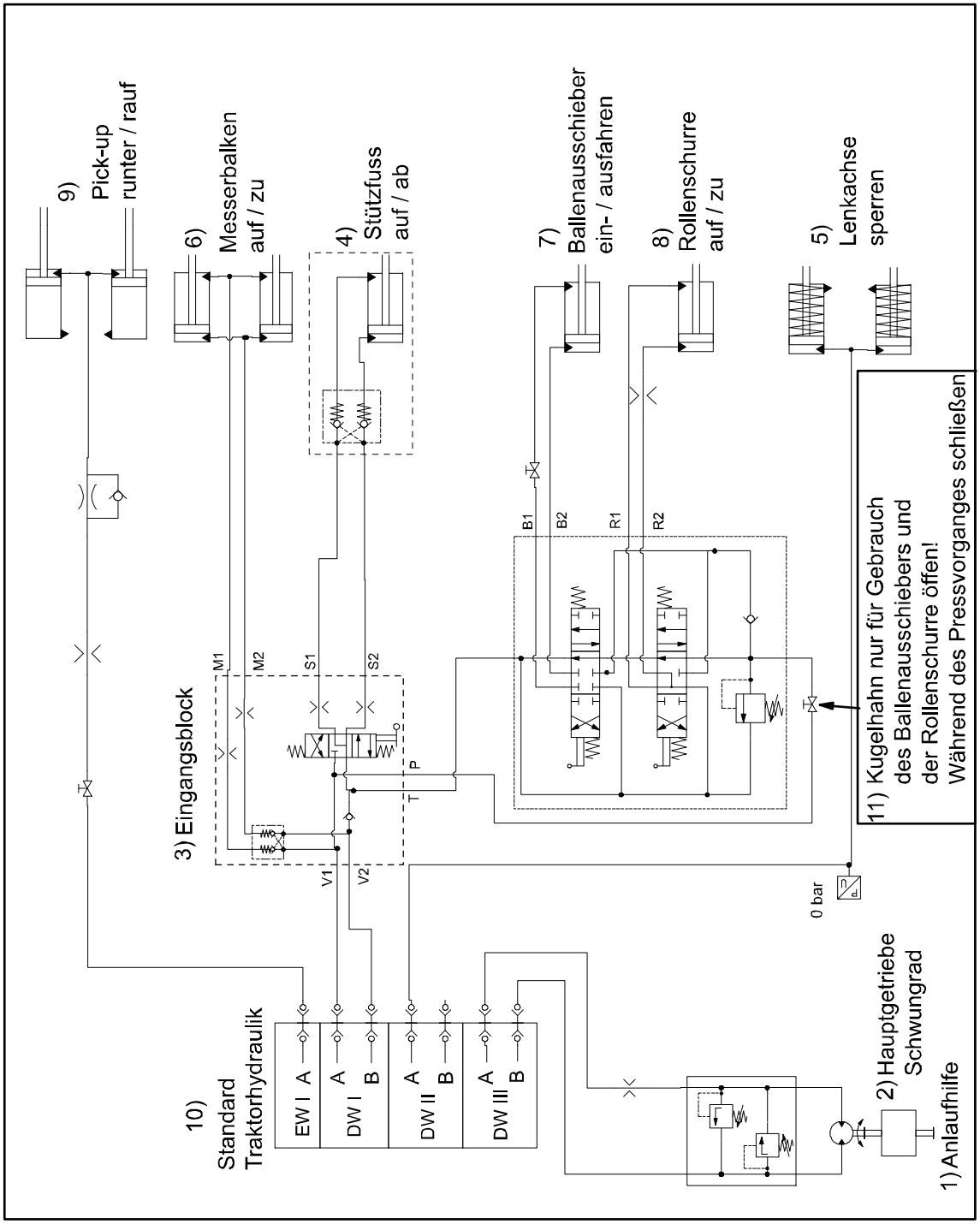


Fig.213

1.	Start-up aid	2.	Main gearbox flywheel
3.	Input block	4.	Parking jack up / down
5.	Locking the steering axle	6.	Blade bar open/closed
7.	Bale ejector deploy / retract	8.	Roller chute open / closed
9.	Pick-up down / up	10.	Standard tractor hydraulics
11.	Open ball valve only to use the bale ejector and the roller chute! Close during baling process.		

17.5 Working hydraulics for Comfort version electronics

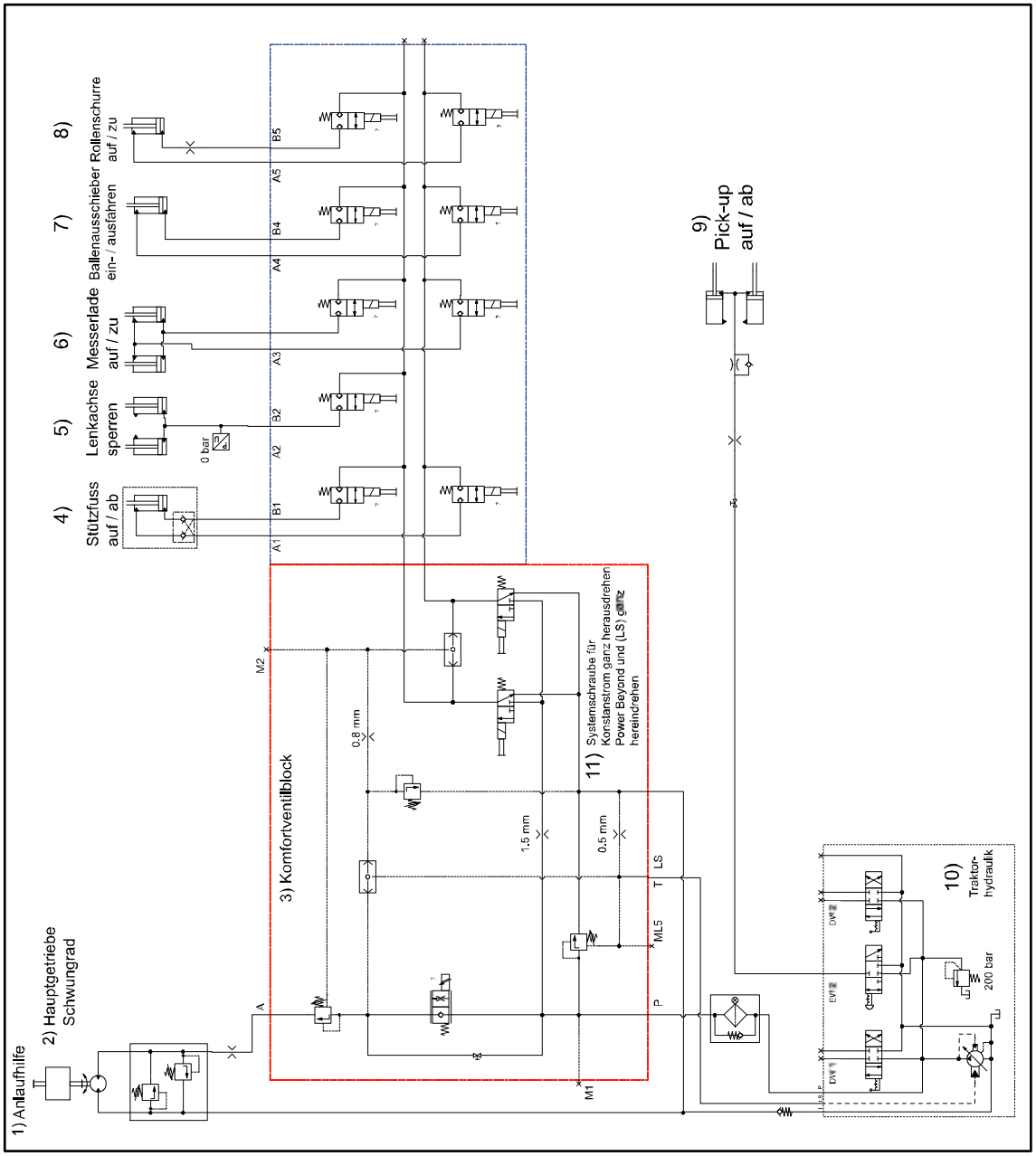


Fig.214

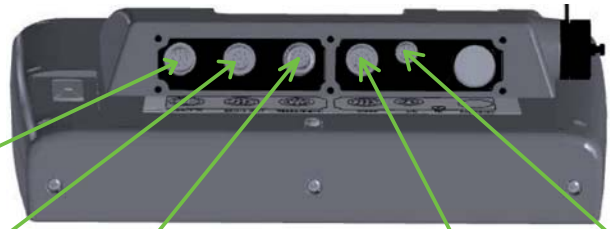
1.	Start-up aid	2.	Main gearbox flywheel
3.	Comfort block	4.	Parking jack up / down
5.	Locking the steering axle	6.	Blade bar open/closed
7.	Bale ejector deploy / retract	8.	Roller chute open / closed
9.	Pick-up down / up	10.	Standard tractor hydraulics
11.	Unscrew the system screw fully for constant flow. Turn Power Beyond and (LS) all the way in.		

17.6 Electrical circuit diagram

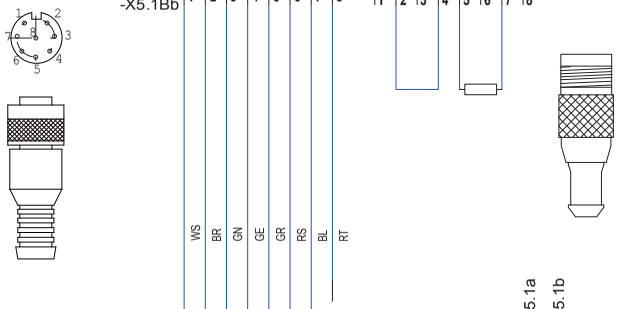
You will find the electrical circuit diagram for the machine in the appendix.

18 Index

-2
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	1	+Ub	power supply voltage	1	+Ub sw	power supply voltage interconnected	Video_IN	video signal	1	+Ub sw	power supply voltage interconnected	
2	emergency stop-B	emergency stop-input	2	emergency stop-B	emergency stop-output	2	GND	ground	RS485_B	EIA RS-485 B	2	N.C.	not assigned	
3	+Uon	ECU or extern switch-on / switch-off signal	3	+Uon	ECU or extern switch-on / switch-off signal	3	SMFQ_IN 2	ISO11869 "PTO shaft speed"	RS485_A	EIA RS-485 A	3	GND	ground	
4	emergency stop-V	emergency stop-supply	4	emergency stop-V	emergency stop-supply	4	SAN_IN0	ISO11786 "Lifting gear position"	+Ub sw	power supply voltage interconnected	4	LIN	LIN-bus	
5	CAN0L	CAN1-L	5	CAN0L	CAN1-L	5	SMFQ_IN 3	ISO11786 "Wheel speed"	RS485_A	EIA RS-485 A				
6	GND	ground	6	GND	ground	6	SMFQ_IN 4	direction of travel	+Ub sw	power supply voltage interconnected				
7	CAN0H	CAN1-H	7	CAN0H	CAN1-H	7	SMFQ_IN 1	ISO11786 "Speed slip free"	VGND	video ground				
8	shield	shield disconnected to earth	8	shield	shield disconnected to earth	8	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						



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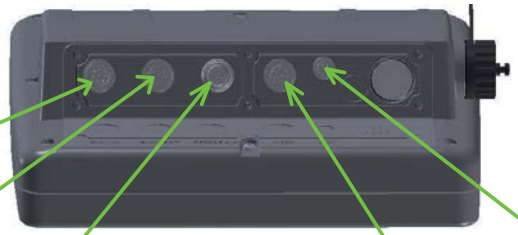
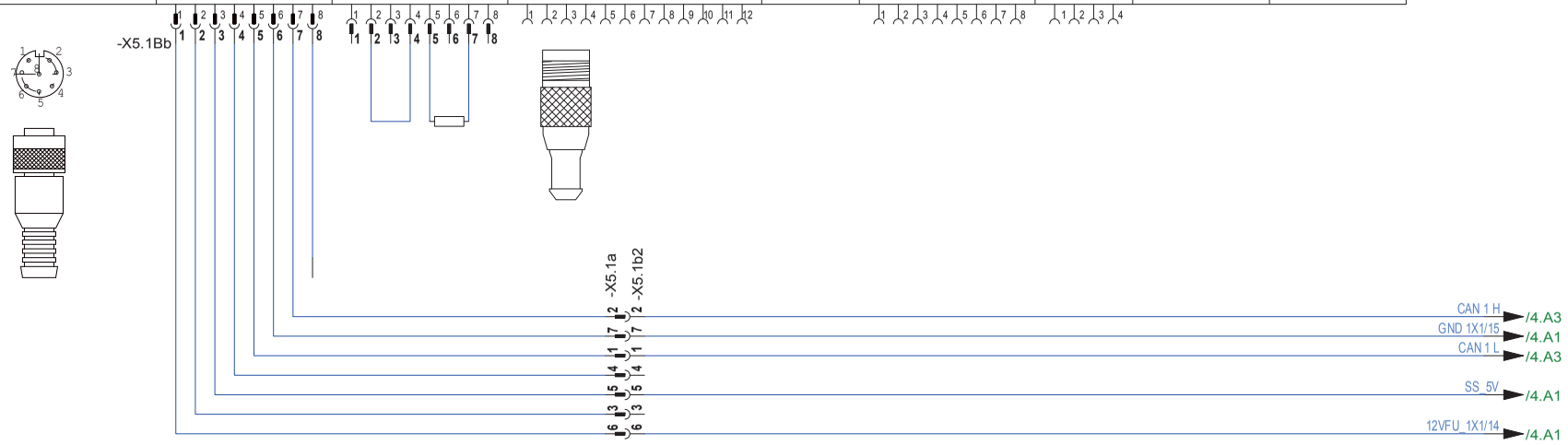
BiG Pack High Speed
Terminal CCI 200

plant
location
sheet 1
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"		RS485_A EIA RS-485 A			
shield shield disconnected to earth	shield shield disconnected to earth	COM0_RxD_IN RS232 1 RxD (input)		+Ub sw power supply voltage interconnected			
		COM0_TxD_OUT RS232 1 TxD (output)		VGND video ground			
		IGN ignition signal / terminal 15		shield shield disconnected to earth			
		COM1_RxD_IN RS232 2 RxD					
		COM1_TxD_OUT RS232 2 TxD					



C					Created		
B					date		
A					User	albers	
change	date	name	Proved				

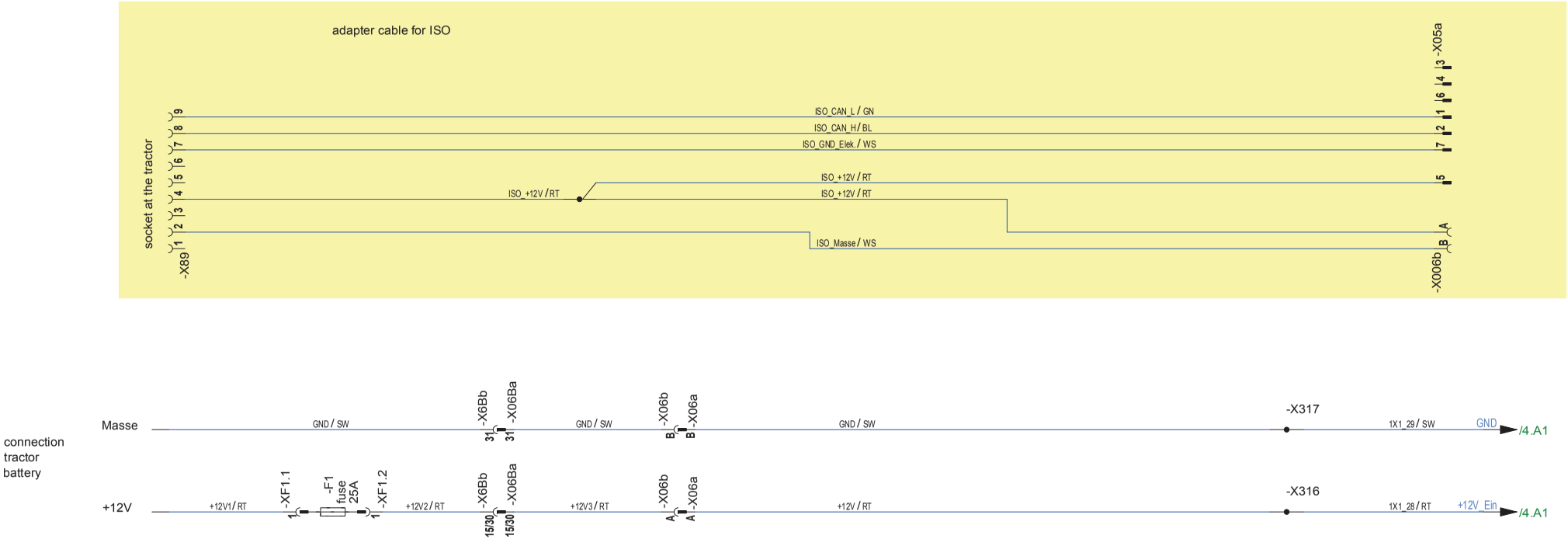
KRONE

Origin | Repl. f. | Repl. by

document-no.: D24 150100460 - 06

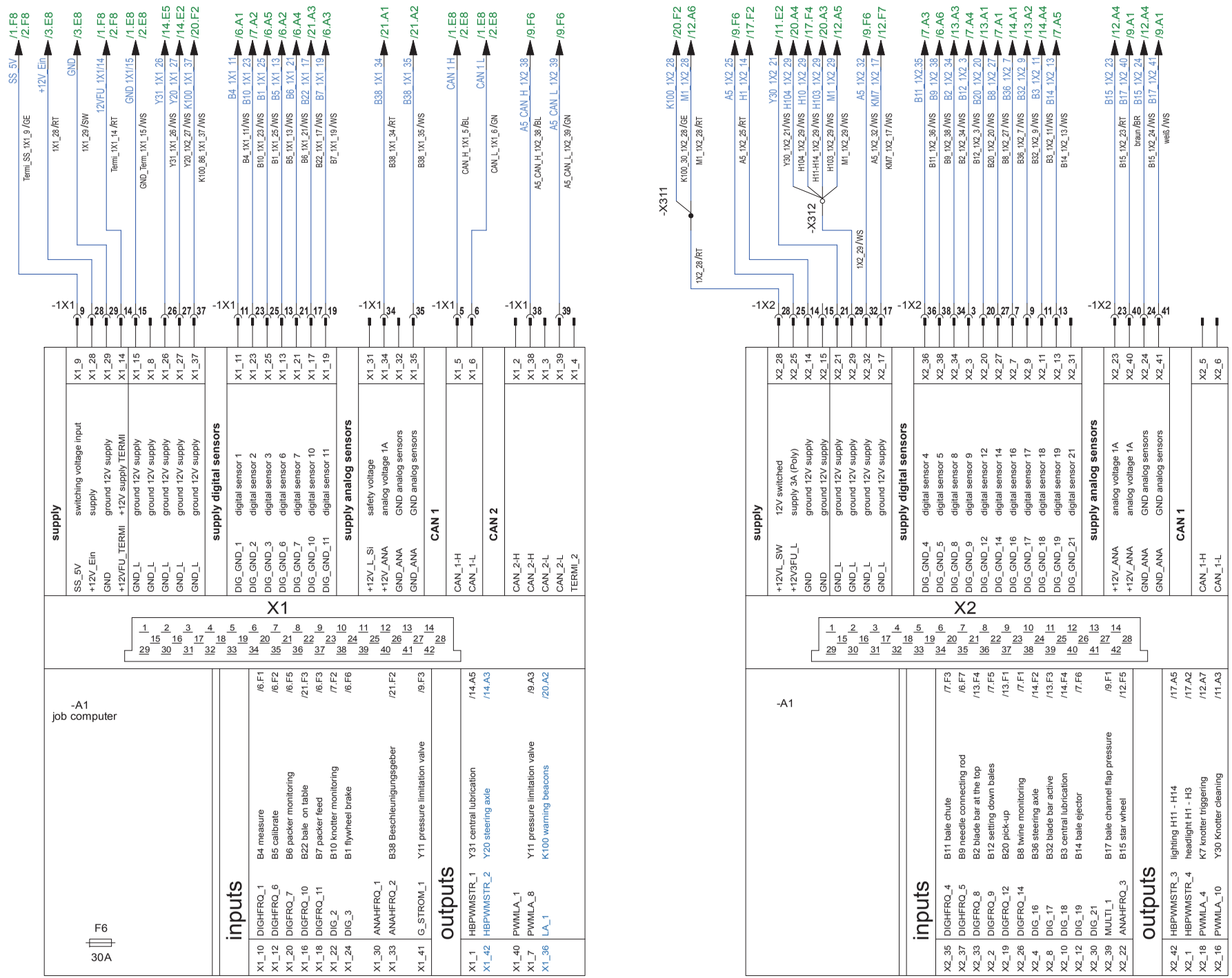
BiG Pack High Speed
terminal Delta

plant
location
sheet 2
from Sh.



C					Created	KRONE	document-no.: D24 150100460 - 06	BiG Pack High Speed
B				date				terminal / power supply
A				User				
change	date	name	Proved		Origin	Repl. f.	Repl. by	

plant
location
sheet 3
from Sh.



Created					
date					
User	albers				
Proved					
change	date	name			

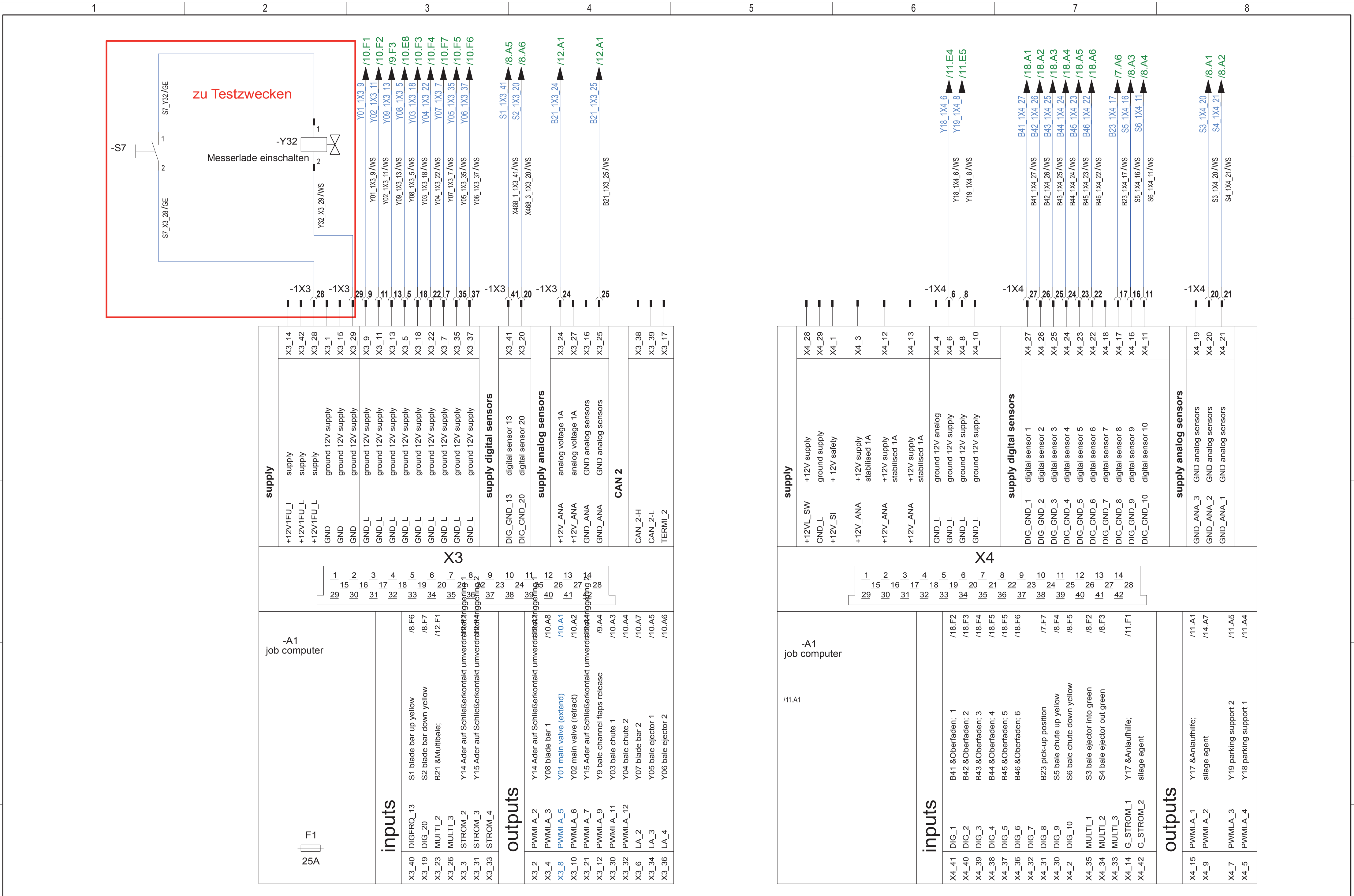
KRONE

Origin | Repl. f. | Repl. by

document-no.: D24
150100460 - 06

BiG Pack High Speed
job computer X1 / X2

plant
location
sheet 4
from Sh.



change	date	name		
Created				
date				
User	albers			
Proved				

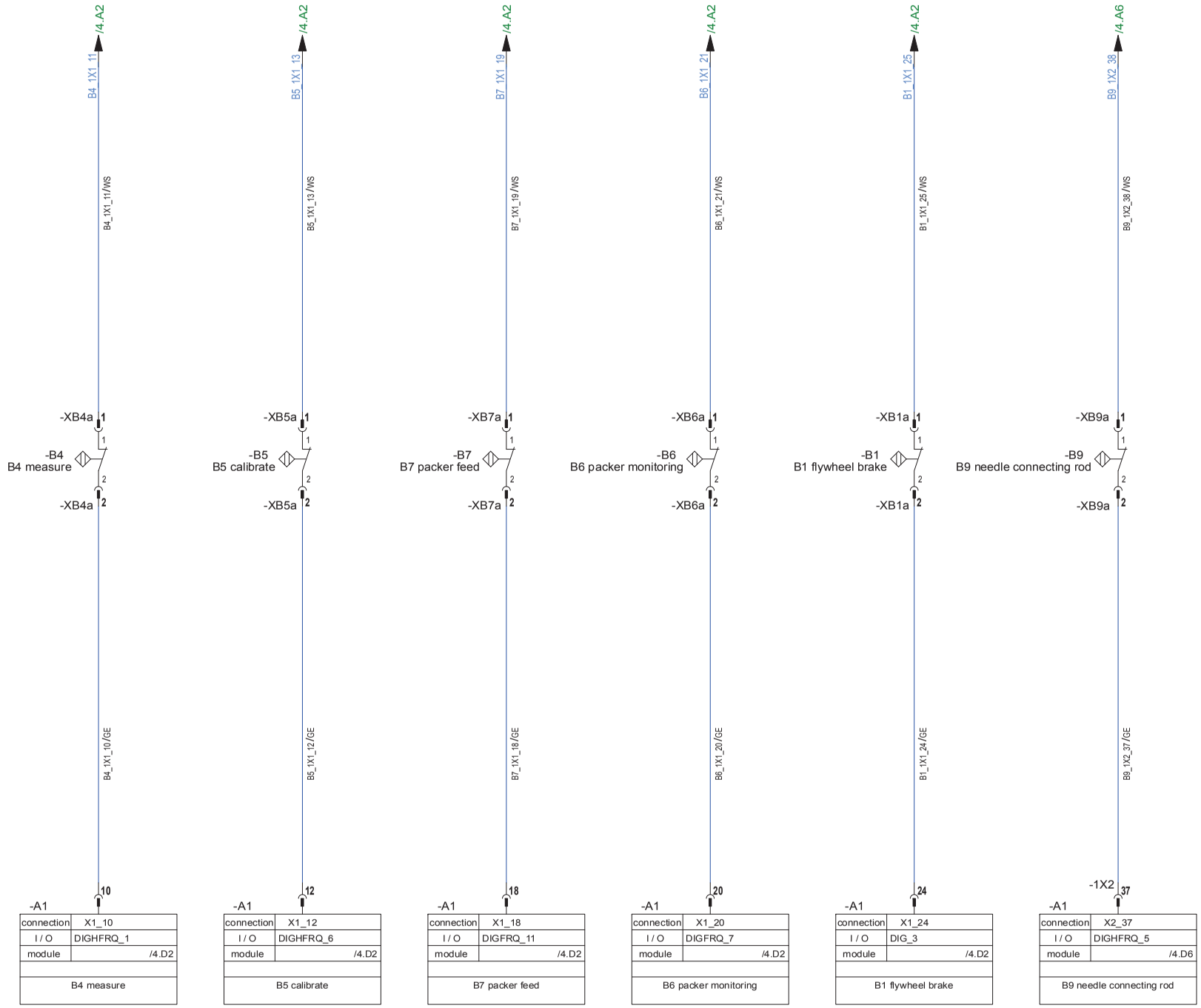
KRONE

Origin | Repl. f. | Repl. by

document-no.: D24
150100460 - 06

BiG Pack High Speed
job computer X3 / X4

plant
location
sheet 5
from
Sh.



change	date	name		
C				Created
B			date	
A			User	Albers
			Proved	

KRONE

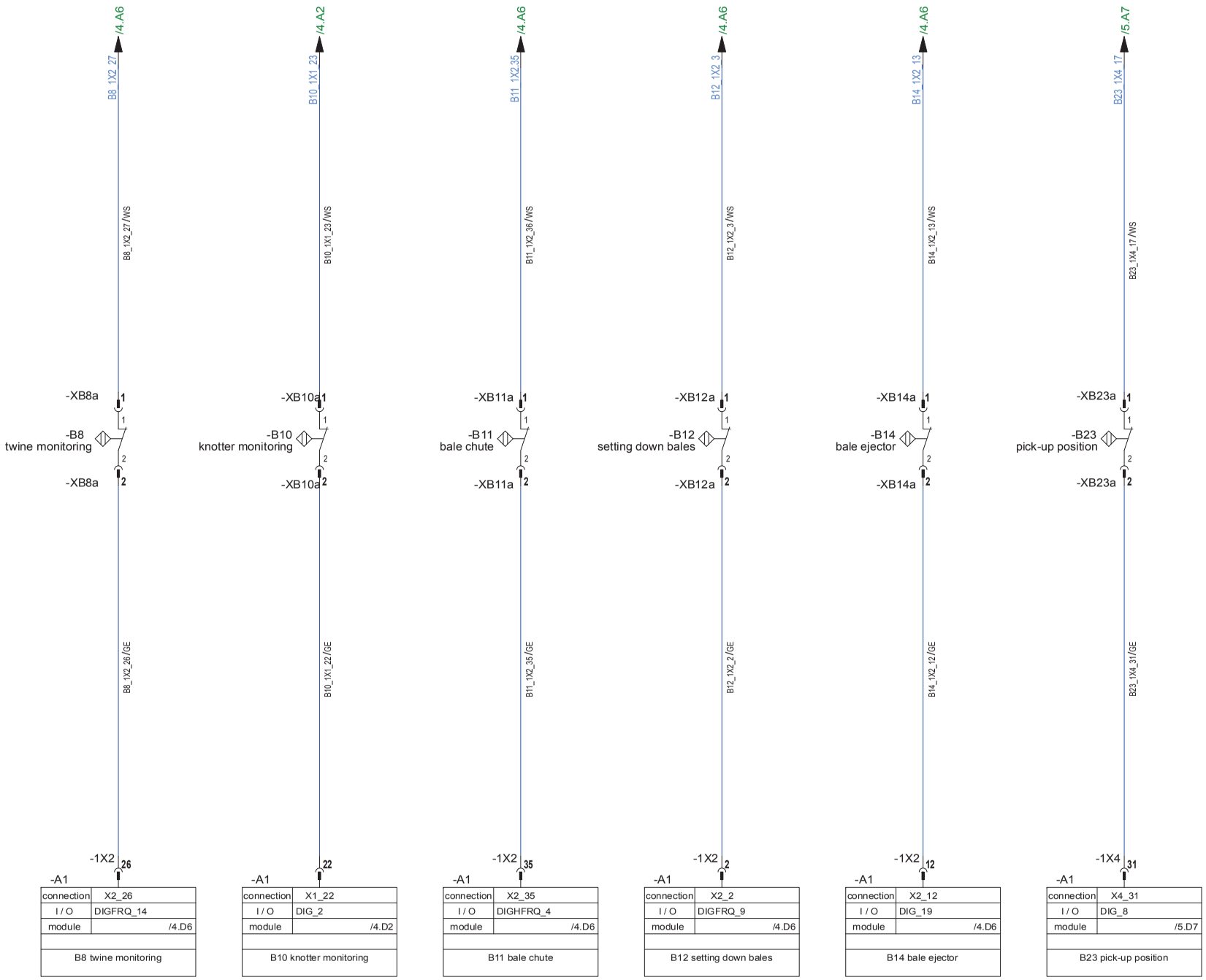
Origin | Repl. f. | Repl. by

document-no.: D24 150100460 - 06

BiG Pack High Speed

Sensoren allgemein 1

plant
location
sheet 6
from Sh.



change	date	name		
C				Created
B			date	
A			User	Albers
			Proved	

KRONE

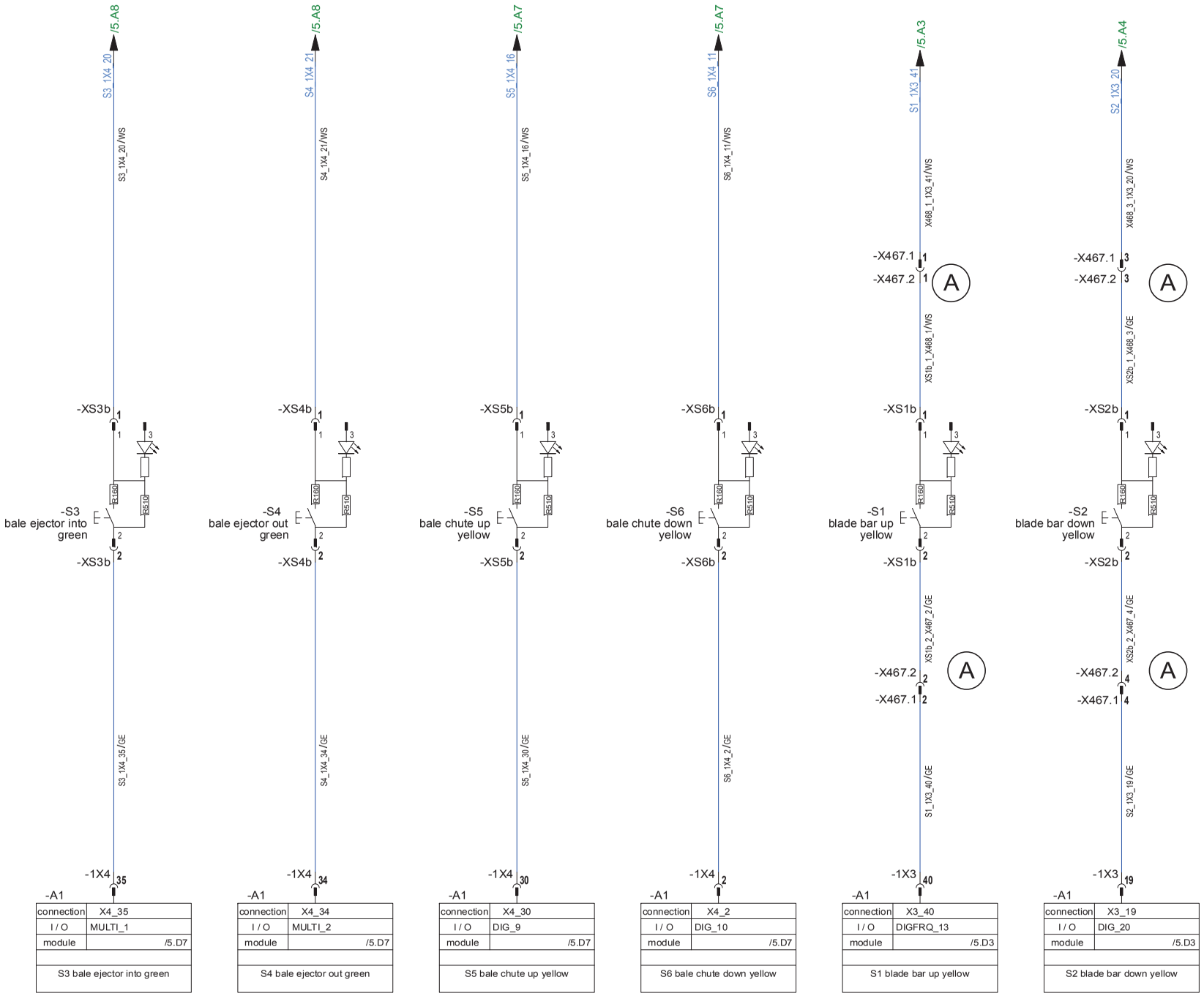
Origin | Repl. f. | Repl. by

document-no.: D24 150100460 - 06

BiG Pack High Speed

Sensoren allgemein 2

plant
location
sheet 7
from Sh.



change	date	name	Proved		Origin	Repl. f.	Repl. by
C				Created			
B			date				
A KB button blade bar added	12.09.2013	R. Löcken	User	Albers			

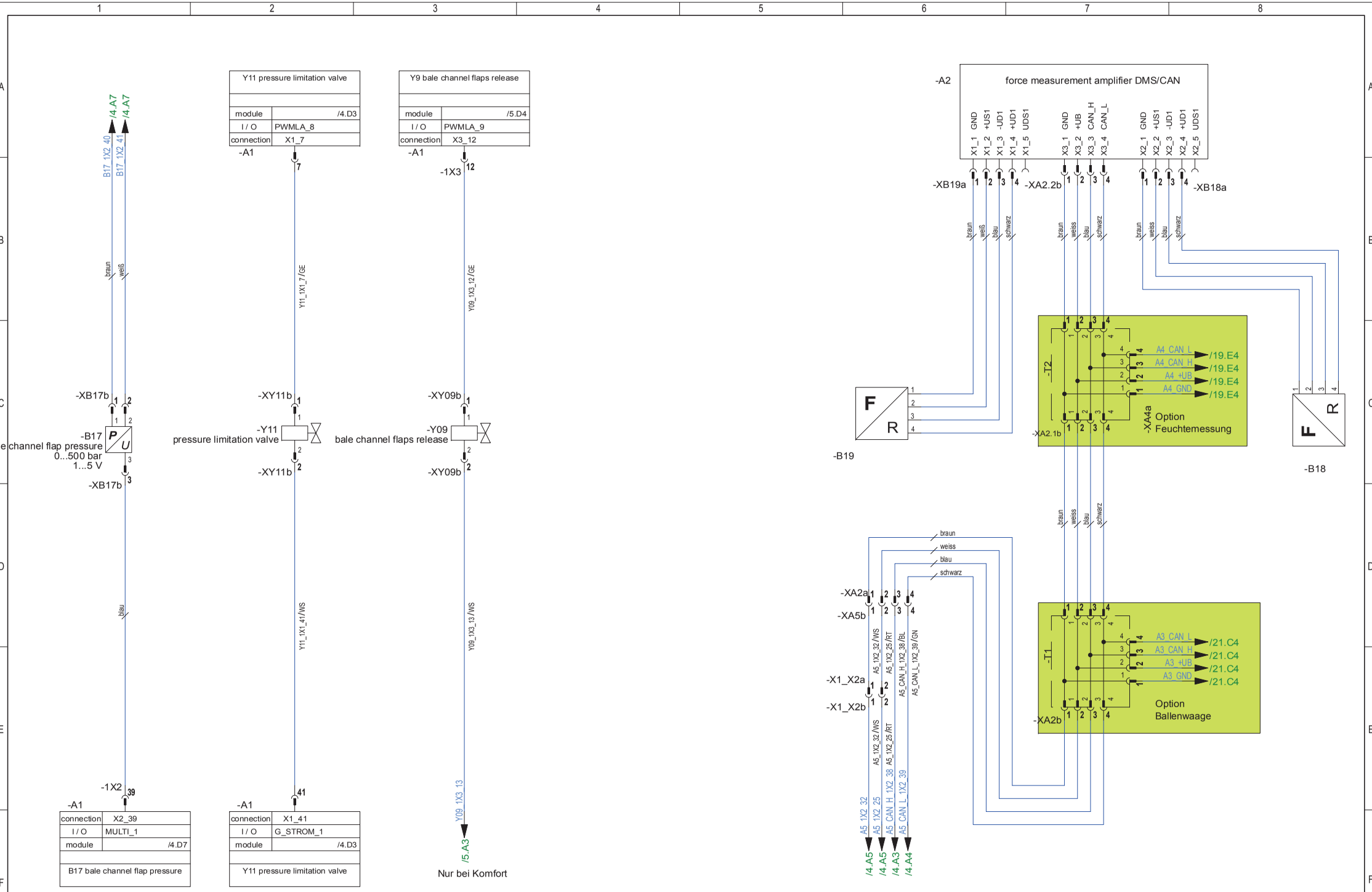
KRONE

document-no.: D24 150100460 - 06

BiG Pack High Speed

button only for comfort

plant	
location	
sheet	8
from	Sh.



change	date	name		
C				Created
B			date	
A			User	Albers
			Proved	

KRONE

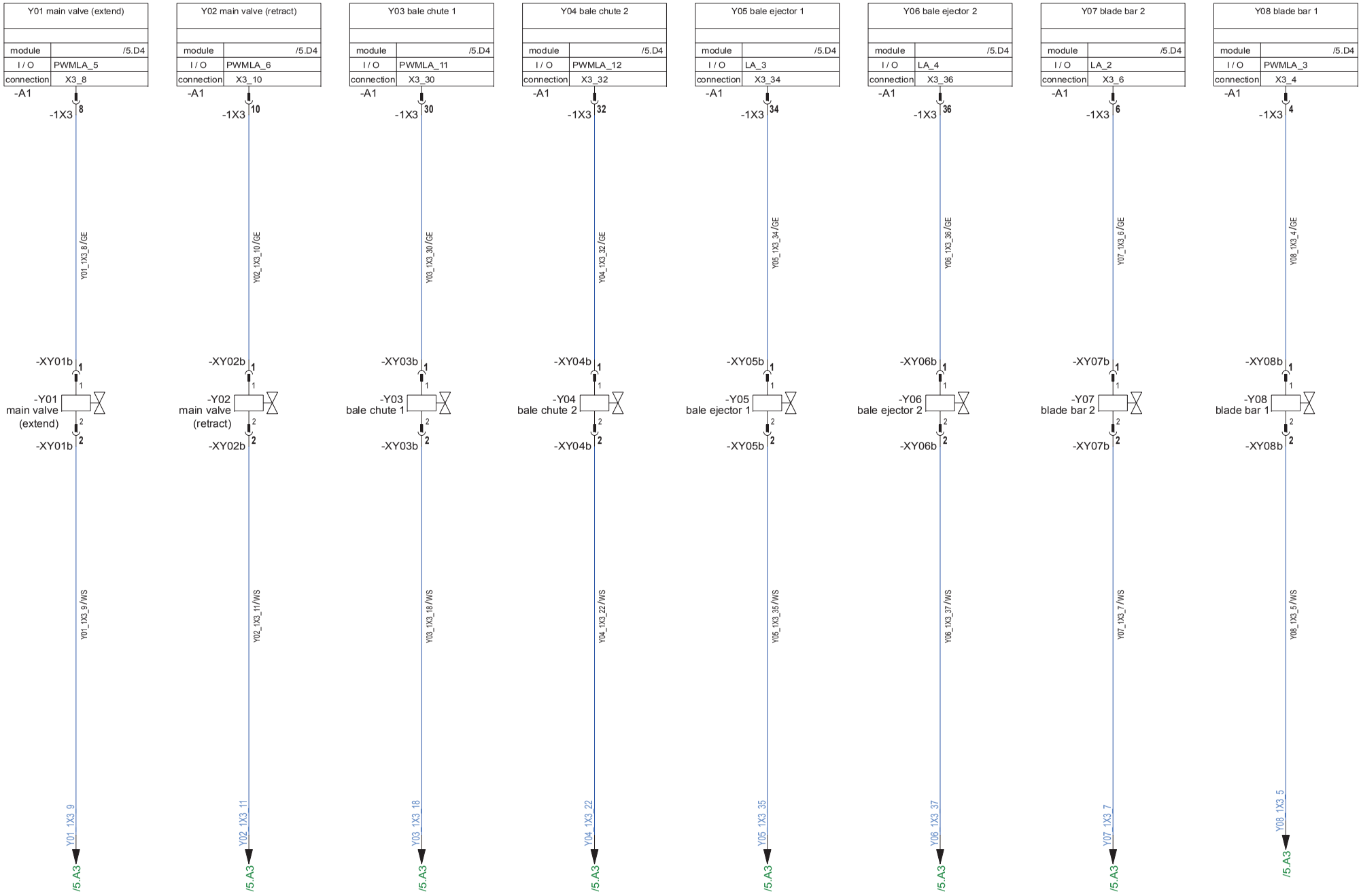
Origin | Repl. f. | Repl. by

document-no.: D24 150100460 - 06

BiG Pack High Speed

force measurement and regulation

plant
location
sheet 9
from Sh.



for comfort

change	date	name		
C				Created
B			date	
A			User	Albers
			Proved	

KRONE

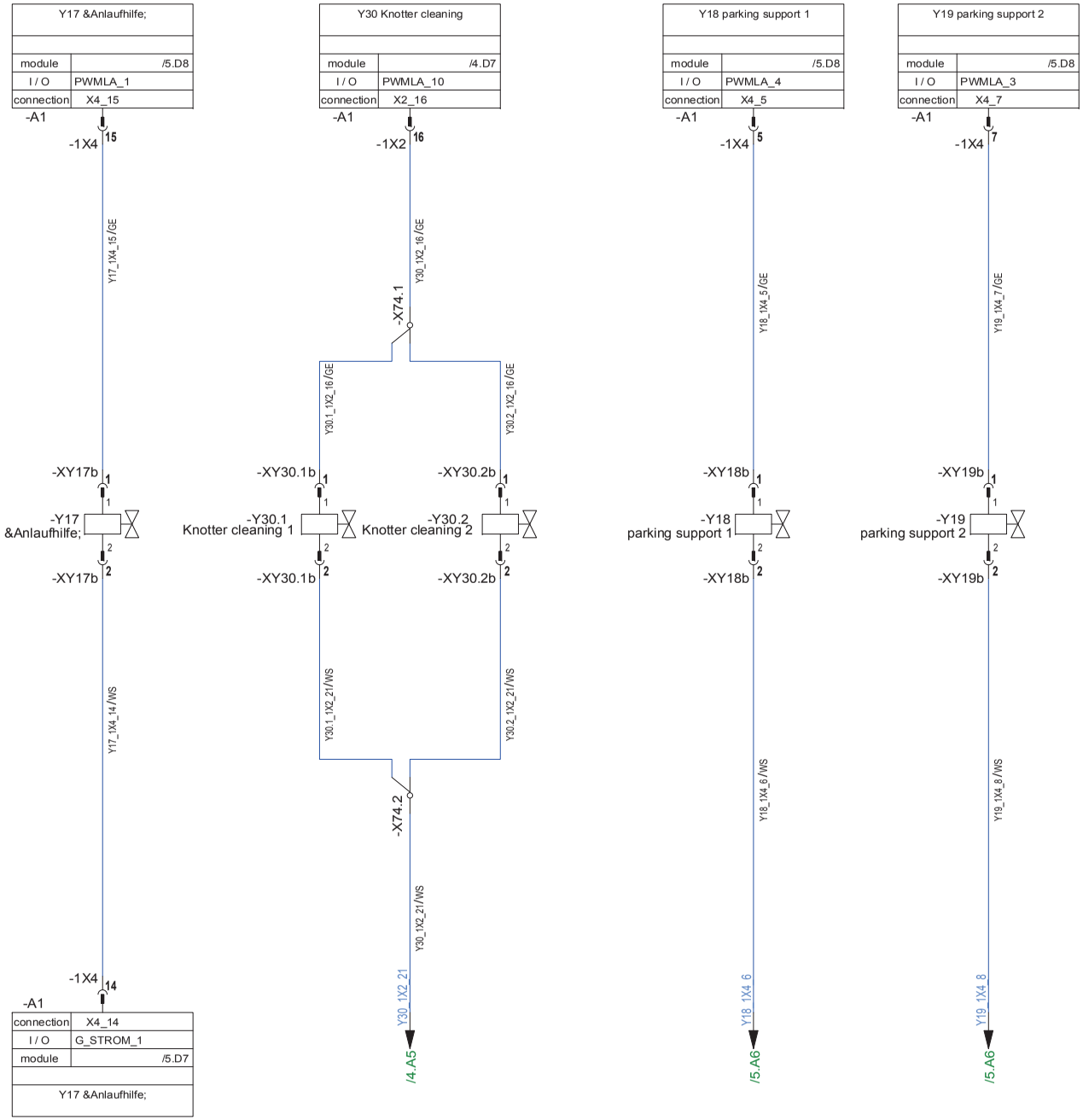
Origin | Repl. f. | Repl. by

document-no.: D24 150100460 - 06

BiG Pack High Speed

valve 1 (bei Komfort)

plant
location
sheet 10
from Sh.



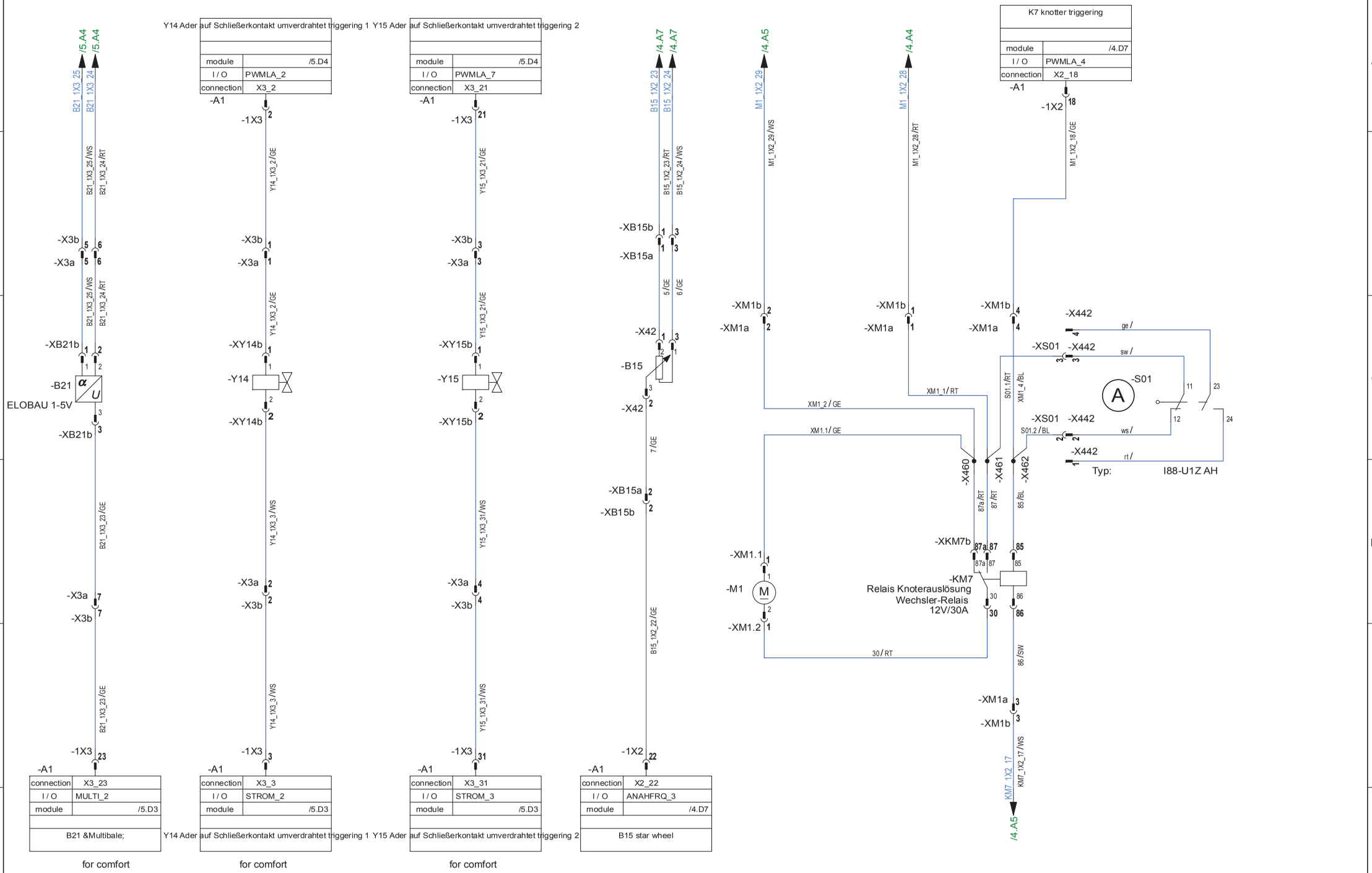
for comfort

for comfort

for comfort

C				Created	KRONE	document-no.: D24 150100460 - 06	BiG Pack High Speed valve 2
B				date			plant
A				User Albers			location
change	date	name	Proved		Origin	Repl. f.	Repl. by

sheet 11
from Sh.



change	date	name		
Ⓒ				Created
Ⓑ			date	
Ⓐ Endlagentaster mit Stecker geändert	12.09.2013	R. Löcken	User	Albers
			Proved	

KRONE

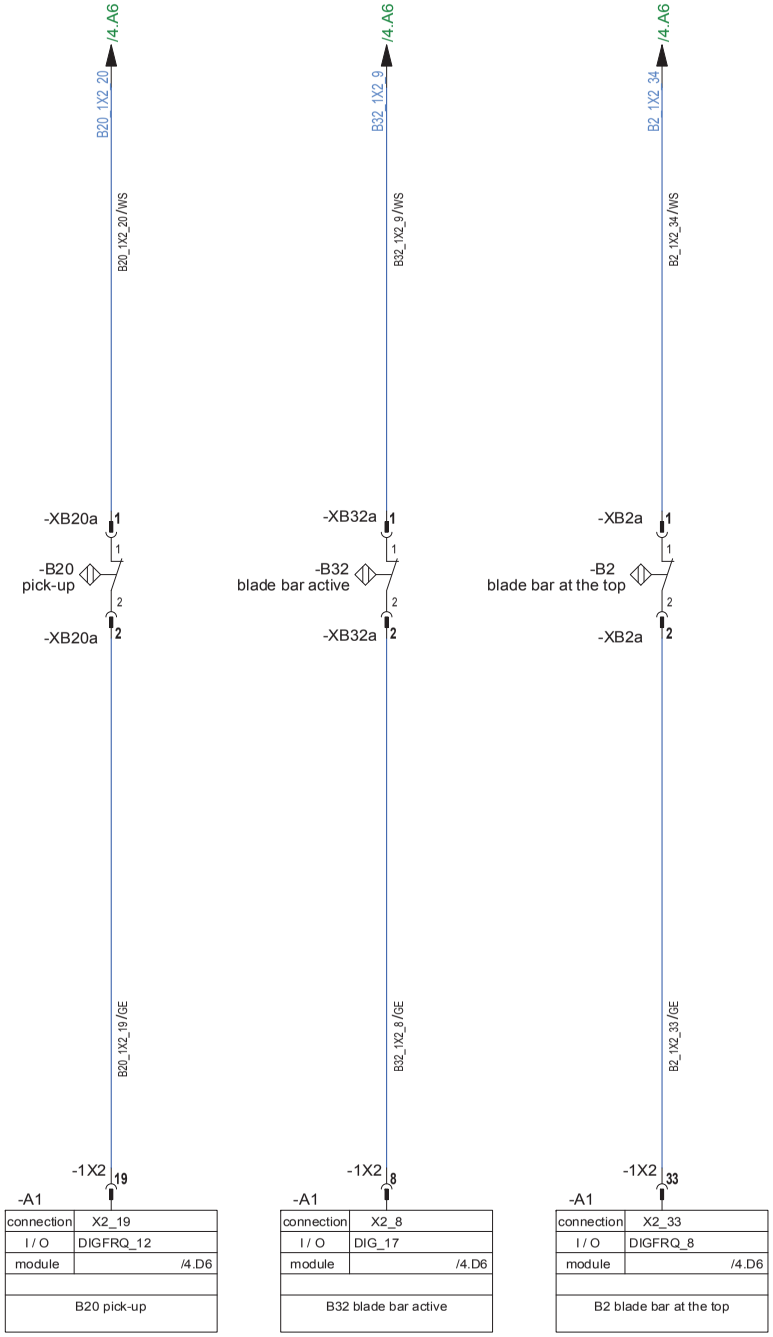
Origin | Repl. f. | Repl. by

document-no.: D24 150100460 - 06

BiG Pack High Speed

Ader auf Schließerkontakt umverdrahtet / knotter triggering

plant
location
sheet 12
from Sh.

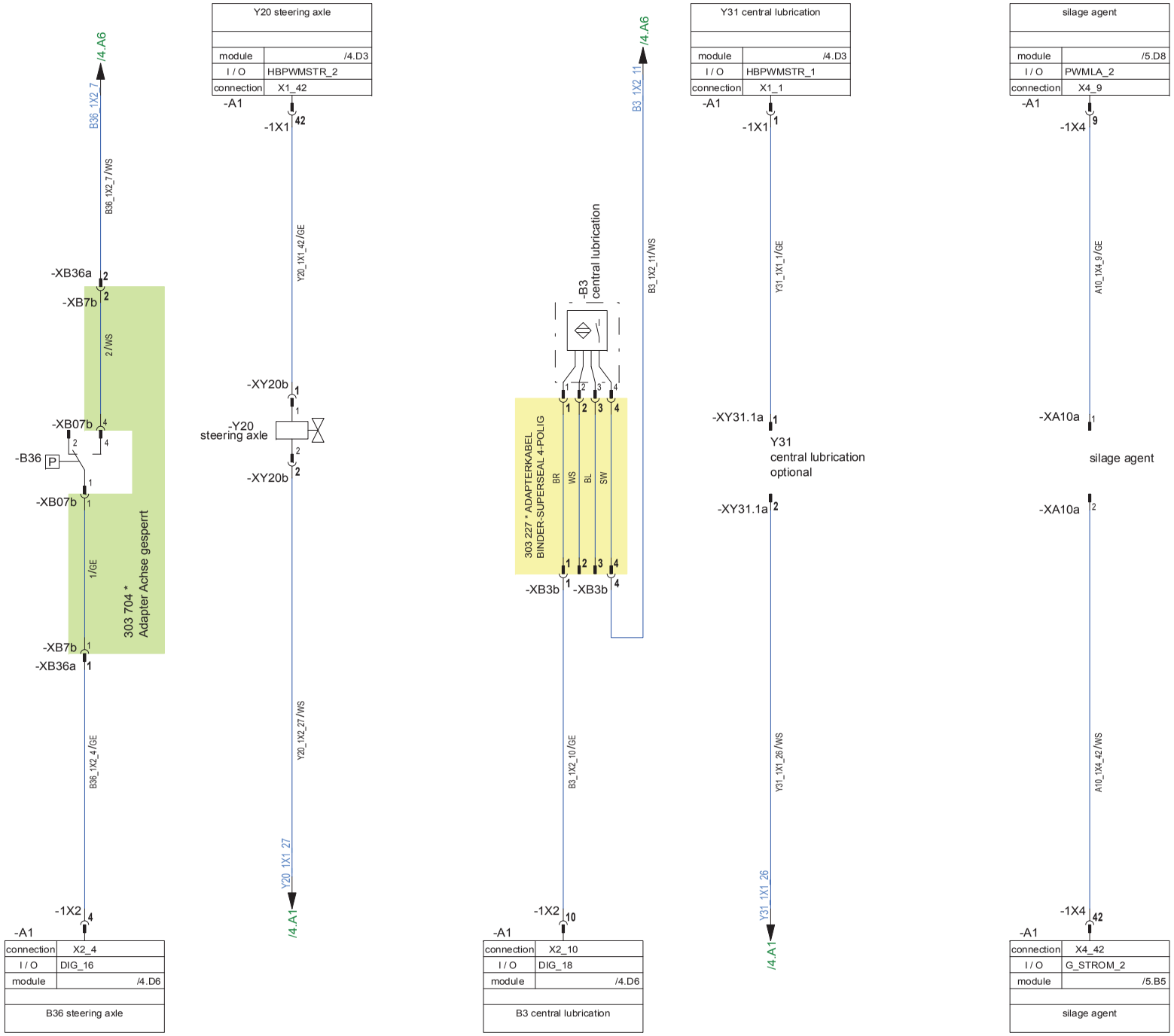


connection	X2_19
I / O	DIGFRQ_12
module	/4.D6
B20 pick-up	

connection	X2_8
I / O	DIG_17
module	/4.D6
B32 blade bar active	

connection	X2_33
I / O	DIGFRQ_8
module	/4.D6
B2 blade bar at the top	

C					Created	KRONE	document-no.: D24 150100460 - 06	BiG Pack High Speed cutting system	plant
B				date					location
A				User	albers				sheet 13
change		date	name	Proved		Origin	Repl. f.	Repl. by	from Sh.



change	date	name		
C				Created
B			date	
A			User	albers
			Proved	

KRONE

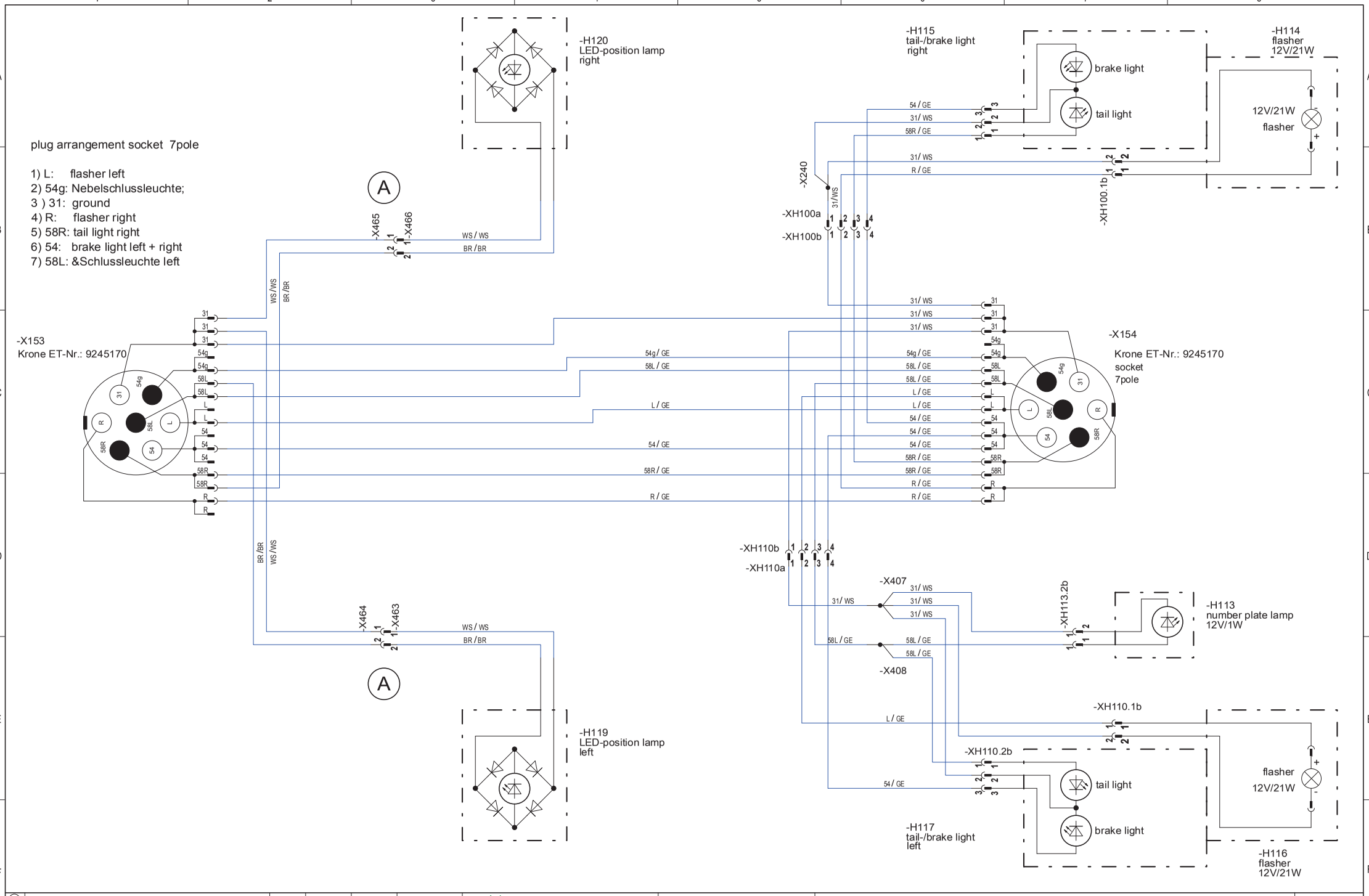
Origin | Repl. f. | Repl. by

document-no.: D24 150100460 - 06

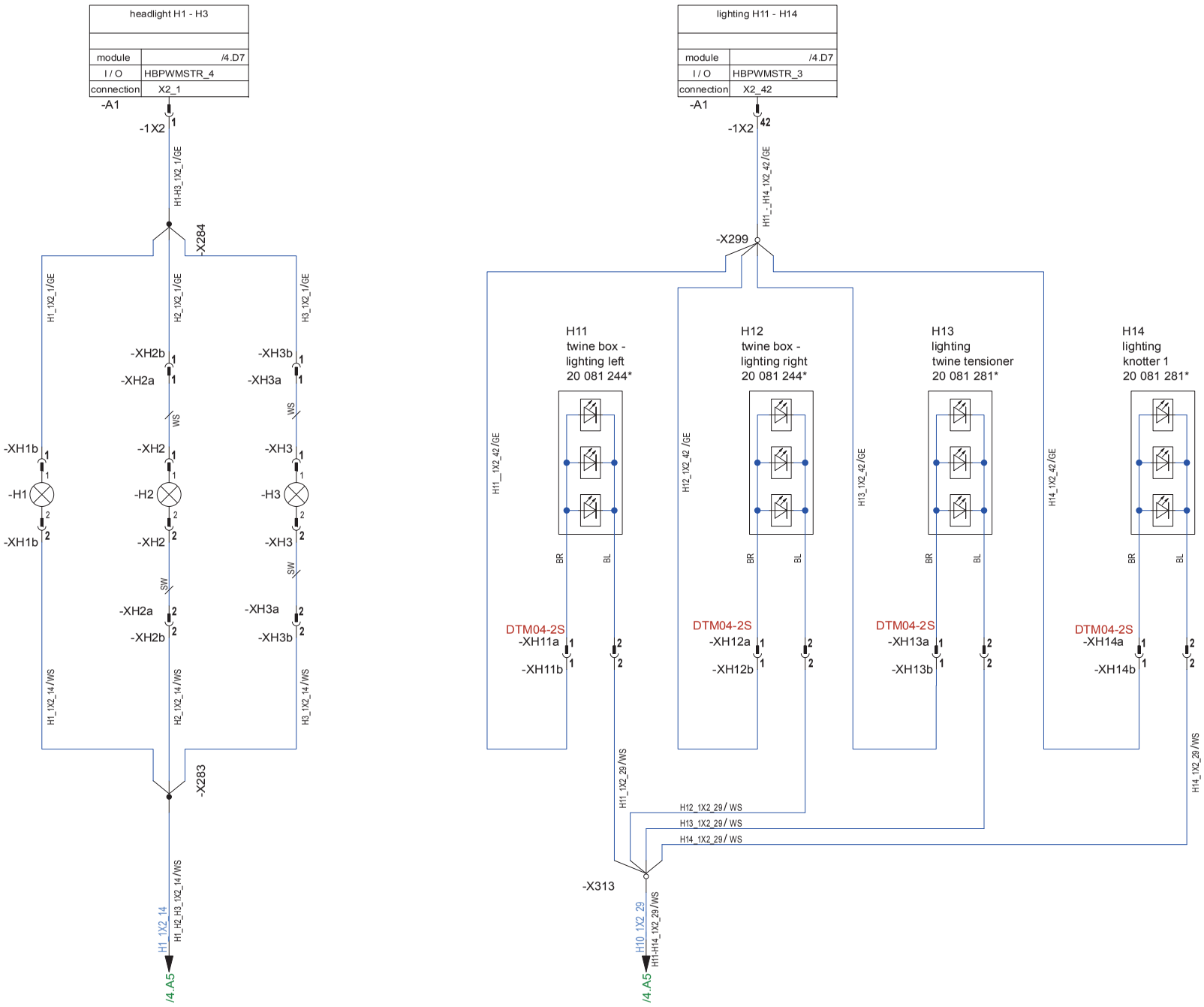
BiG Pack High Speed

steering axle / central lubrication

plant
location
sheet 14
from Sh.

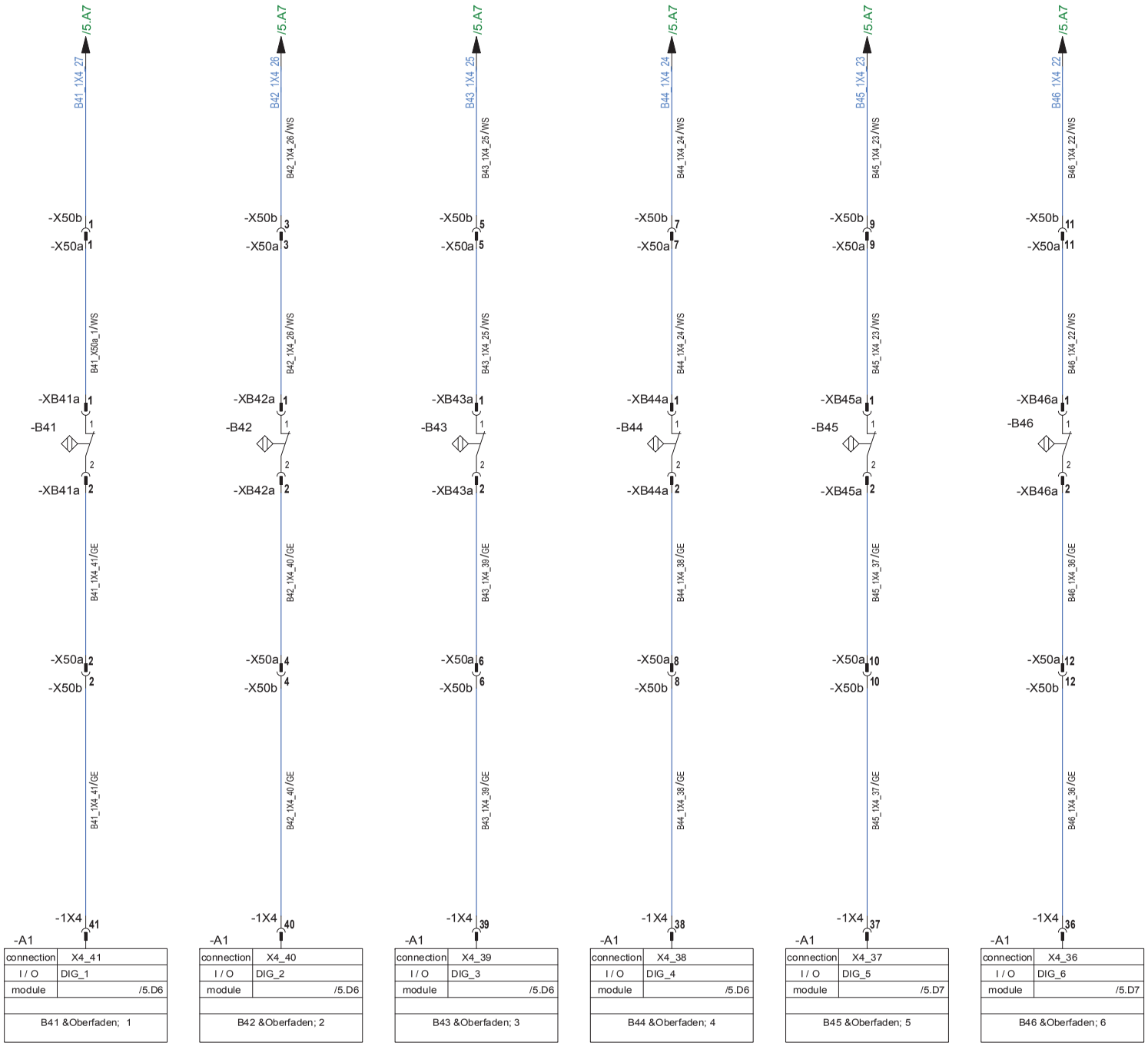


C					Created	KRONE	document-no.: D24 150100460 - 06	BiG Pack High Speed lighting
B				date				plant
A	Stecker für Positionsleuchten eingefügt	29.04.2013	R. Löcken	User	Albers			location
	change	date	name	Proved		Origin	Repl. f.	Repl. by
								sheet 15
								from Sh.



C					Created	KRONE	document-no.: D24 150100460 - 06	BiG Pack High Speed
B				date				working floodlights twine box / twine tensioner
A				User	Albers			
change	date	name	Proved			Origin	Repl. f.	Repl. by

plant
location
sheet 17
from Sh.



C					Created		
B					date		
A					User	Albers	
change		date	name	Proved		Origin	Repl. f.

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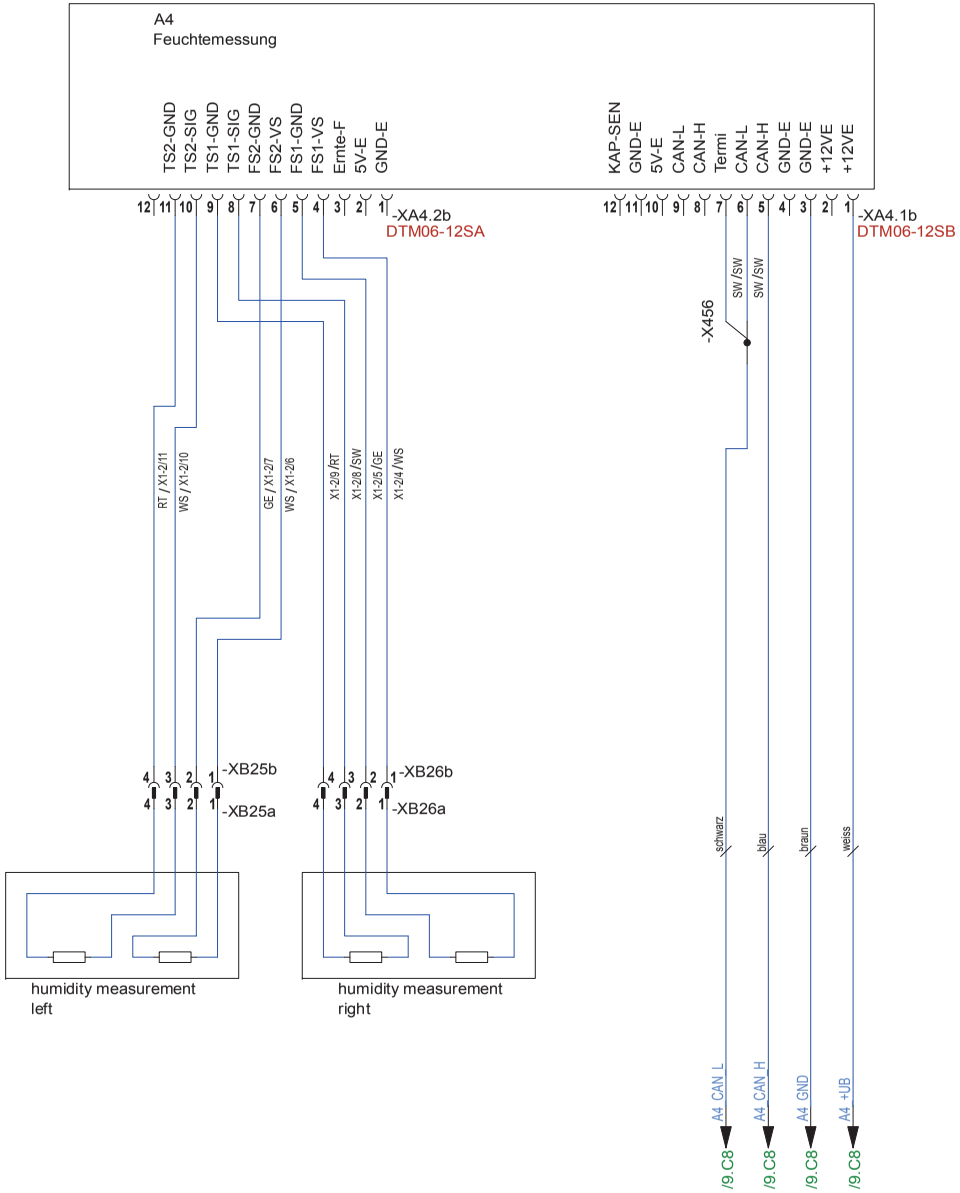
document-no.: D24
150100460 - 06

Repl. by

BiG Pack High Speed
knotter monitoring (bei Komfort)

plant
location
sheet 18
from Sh.



change	date	name		
C				Created
B			date	
A			User	Albers
			Proved	

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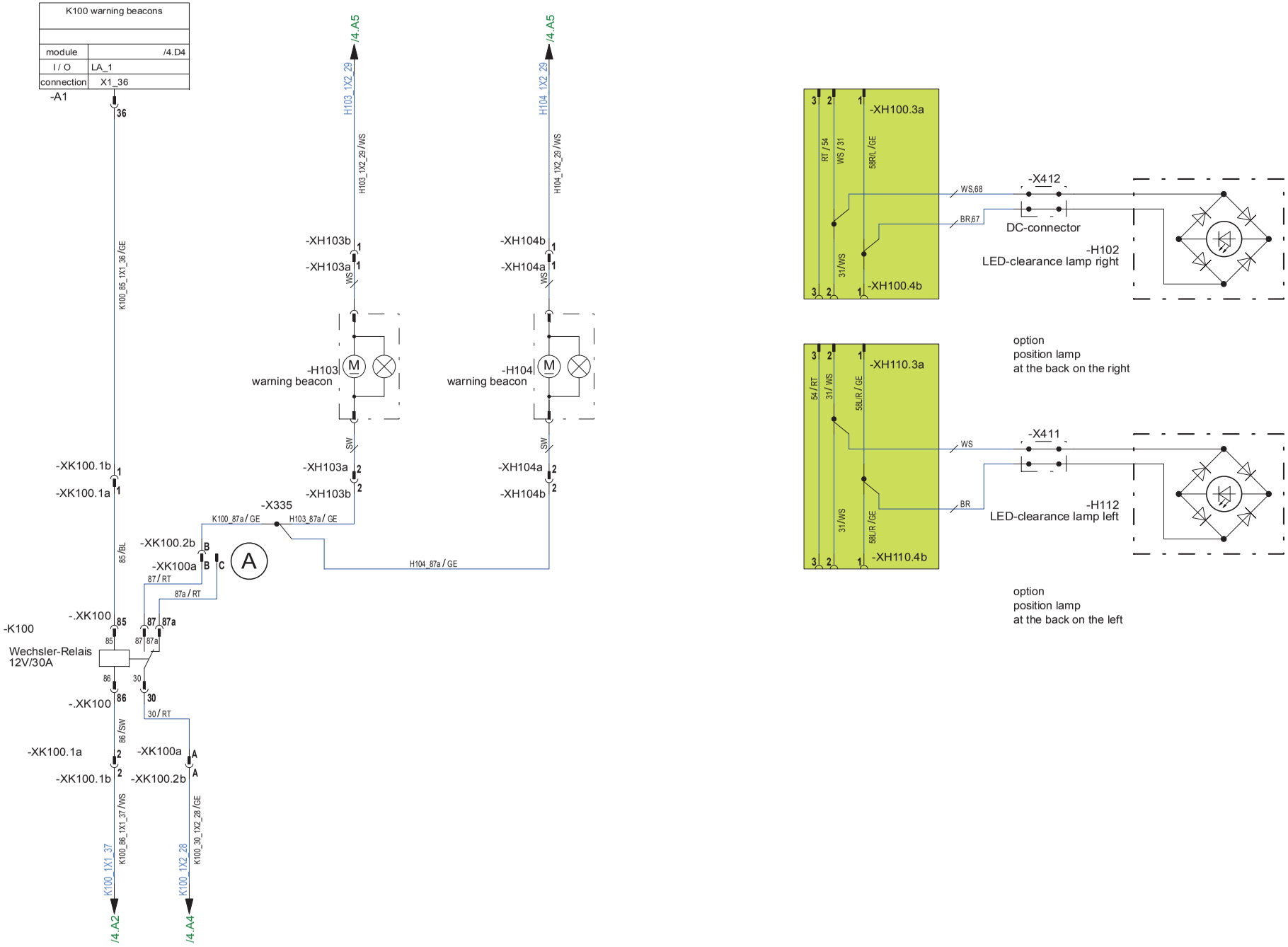
Origin | Repl. f. | Repl. by

document-no.: D24 150100460 - 06

BiG Pack High Speed

option humidity measurement

plant
location
sheet 19
from Sh.



C				Created			
B				date			
A	Ader auf Schliesserkontakt umverdrahtet	19. Juli	R. Löcken	User	Albers		
change		date	name	Proved		Origin	Repl. f.

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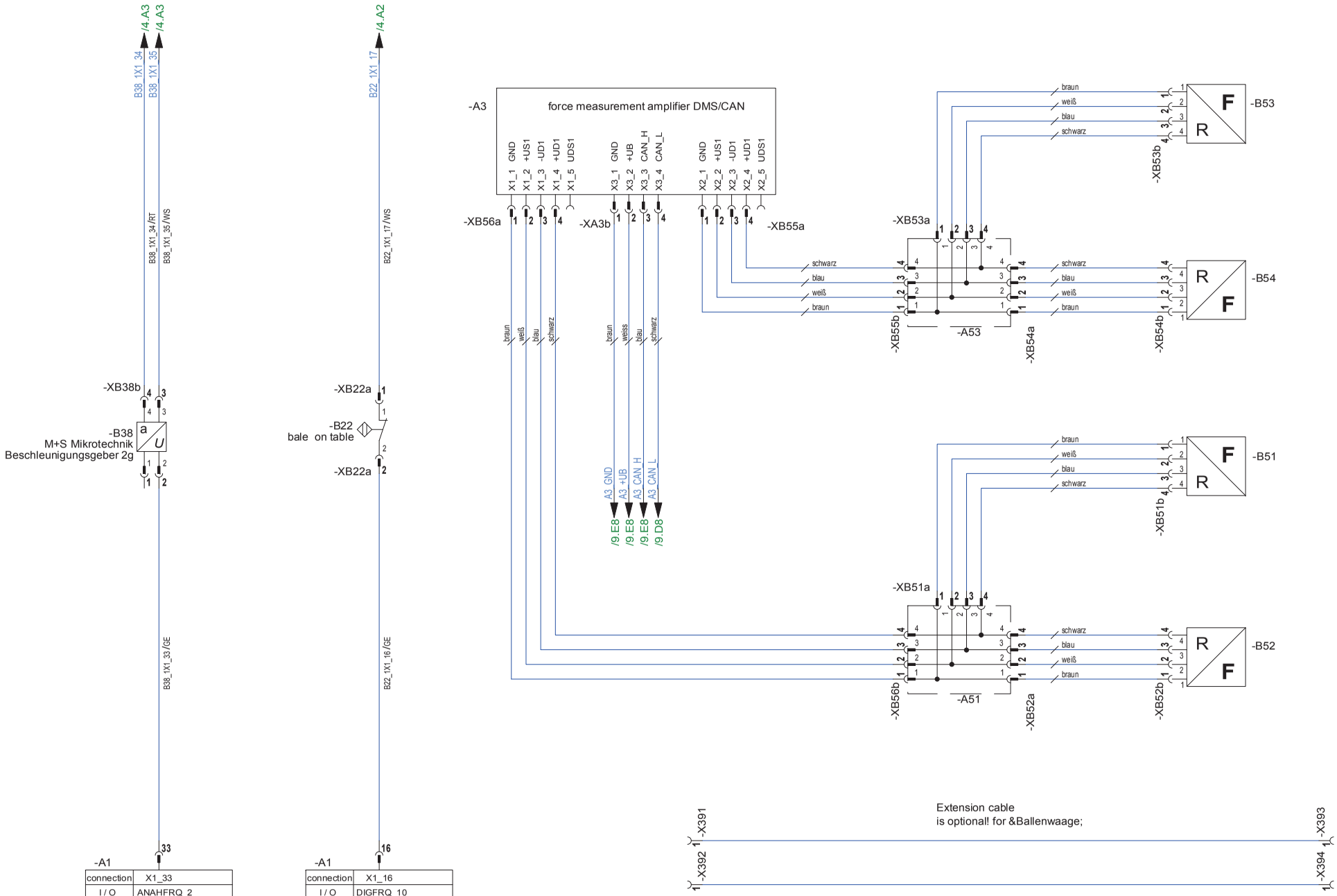
document-no.: D24
150100460 - 06

Repl. by

BiG Pack High Speed
option warning beacons / lighting

plant
location
sheet 20
from Sh.



C					Created	KRONE	document-no.: D24 150100460 - 06	BiG Pack High Speed
B				date				options Ballenwaage
A				User	Albers			
change	date	name	Proved			Origin	Repl. f.	Repl. by

plant
location
sheet 21
from Sh.

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. . . konsequent, kompetent

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