



Operating Instructions

150 000 050 02 US

Big Pack Baler

Big Pack 890 / XC

Big Pack 1270 / XC / MultiBale

Big Pack 1290 / XC

Big Pack 1290 HDP / XC

(Machine No.770 932 or higher)



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1 General Information

These operating instructions contain basic information that must be observed in mounting, operation and maintenance. Therefore these operating instructions must be read without fail by the personnel before use and start-up. They must also be accessible to the personnel.

Not only must the general safety instructions mentioned in Chapter 2 on safety be observed, but also the special safety instructions added to the other chapters.

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Heinrich-Krone-Str. 10
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All information, illustrations and technical data in these operating instructions correspond to the latest state at the time of publication. Design modifications at any time without statement of reason shall be reserved.

1.1 Purpose

The Big Pack 890/XC; Big Pack 1270/XC/MultiBale; Big Pack 1290/XC and BigPack 1290 HDP / XC Balers work with the "Variable Feeding System". They produce highly compacted and dimensionally stable big bales with a length of 1.0 to 2.7 m under all conditions.

These operating instructions apply to Big Pack Balers:
Big Pack 890/XC,
Big Pack 1270/XC/MultiBale,
Big Pack 1290/XC and
BigPack 1290 HDP / XC

1.2 Intended Use

The Big Pack 890/XC; Big Pack 1270/XC/MultiBale; Big Pack 1290/XC and BigPack 1290 HDP / XC Balers are built exclusively for customary use in agricultural work (use as intended).

Any use extending beyond this is considered as **not** as intended. The manufacturer is not liable for damage resulting from this, the user alone bears the risk for this.

The intended use shall also include the adherence to the operating, maintenance and repair conditions set by the manufacturer.

Permissible crops: Agricultural crops such as hay, straw and grass silage.



Collecting and baling materials that are not cited here is permitted only in agreement with the manufacturer. A basic prerequisite is in any event forming windrows of the baled product and independently collecting with the pick-up when driving over.

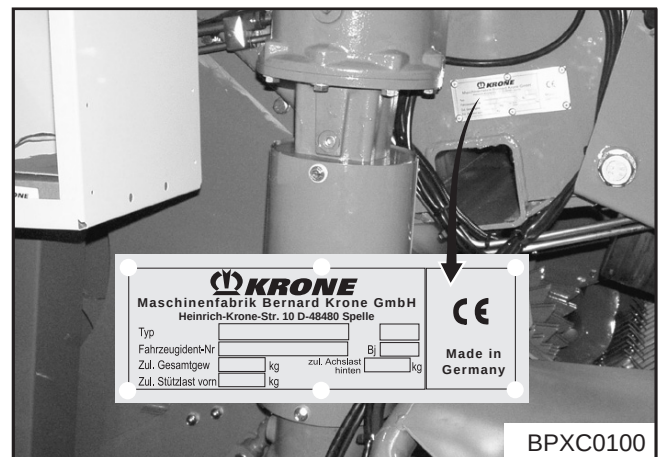
The EC Declaration of Conformity corresponding to the EC Directive is located on the inside of title page.

1.3 Information Required in Case of Questions and Orders



Original spare parts and accessories authorised by the manufacturer help to ensure safety. Use of other parts may void the liability for any resulting damage.

The machine data are rendered on the type plate (1), The type plate is on the right side of the machine. When enquiring about the machine and ordering spare parts, state the type designation, the vehicle ID No. and the year of construction of the machine (see below).



Type
Vehicle
ID No.
Year of
construction



The entire identification has the value of a certificate and may not be changed or made illegible!

1.4 Technical Data

1.4.1 Big Pack 890/XC

	Big Pack 890		Big Pack 890 XC	
	Single-axle	Tandem	Single-axle	Tandem
Permissible maximum speed	40 km/h	50km/h*³	40 km/h	50km/h*³
Length of working position (mm)	9180			
Length of transport position (mm)	7930			
Height [mm]	3075			
Weight [kg])	6580	6950	7480	7850
Tyres	700/45-22.5	500/50-17 500/55-20 620/40 R22,5	700/45-22.5	500/50-17 500/55-20 620/40 R22,5
Width [mm]	2600	2550/2560/2670	2600	2550/2560/2670
Track width [mm]	1820	2040	1820	2040
Baling channe Height (mm) Width (mm)	900 800			
Baling length [mm]	from 1000 to 2700 (continuously adjustable)			
Scattering width [mm]	1950			
Number of knotter devices	4			
Power requirement	75 KW (102 PS)		90 KW (122 PS)	
Cutting system (number of blades)	-		16	
Friction clutch drive	1800 Nm			
Flywheel overload coupling	Wedge switch 4500 Nm			
Pick-up overload coupling	Star ratchet 800 Nm		Star ratchet 1000 Nm	
Cam-type cut-out clutch for cutting system	-		7000 Nm	
Packer overload coupling	Cam-type cut-out clutch 14500 Nm			
Needle connecting rod	Shear screw M 10 x 55 DIN 931-10.9			

*³ 50 km/h with tandem axle braked
40 km/h with tandem axle unbraked



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.

1.4.2 Big Pack 1270/XC/MultiBale

	Big Pack 1270			Big Pack 1270 XC		
	Single-axle	Tandem		Single-axle	Tandem	
Permissible maximum speed	40 km/h	50km/h*3		40 km/h	50km/h*3	
Length of working position (mm)	9180					
Length of transport position (mm)	7930					
Height (mm)	2875					
Weight (kg)	7240	7610		8430	8800	
Tyres	700/45-22.5	500/50-17 500/55-20 620/40 R22,5		700/45-22.5	500/50-17 500/55-20 620/40 R22,5	
Width (mm)	2995					
Track width (mm)	2200	2250*1	2350*2	2200	2250*1	2350*2
Baling channel	Height (mm)	700				
	Width (mm)	1200				
Baling length (mm)	from 1000 to2700 (continuously adjustable)					
Scattering width (mm)	2380					
Number of knotter devices	6					
Power requirement	80 KW (109 PS)			95 KW (129 PS)		
Cutting system (number of blades)	-			26		
Friction clutch drive	1800 Nm					
Flywheel overload coupling	Wedge switch 4500 Nm					
Pick-up overload coupling	Star ratchet 800 Nm			Star ratchet 1000 Nm		
Cam-type cut-out clutch for cutting system	-			7000 Nm		
Packer overload coupling	Cam-type cut-out clutch 14500 Nm					
Needle connecting rod	Shear screw M 10 x 55 DIN 931-10.9					

*¹ Rigid

*² Guided coast-down

*³ 50 km/h with tandem axle braked
40 km/h with tandem axle unbraked



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.

1.4.3 Big Pack 1290/XC

	Big Pack 1290			Big Pack 1290 XC		
	Single-axle	Tandem		Single-axle	Tandem	
Permissible maximum speed	40 km/h	50km/h*3		40 km/h	50km/h*3	
Length of working position (mm)	9180					
Length of transport position (mm)	7930					
Height (mm)	3075					
Weight (kg)	7860	8230		9050	9420	
Tyres	700/45-22.5	500/50-17 500/55-20 620/40 R22,5		700/45-22.5	500/50-17 500/55-20 620/40 R22,5	
Width (mm) *	2995					
Track width (mm)	2200	2250*1	2350*2	2200	2250*1	2350*2
Baling channel Height (mm) Width (mm)	900 1200					
Baling length (mm)	from 1000 to 2700 (continuously adjustable)					
Scattering width (mm)	2380					
Number of knotter devices	6					
Power requirement	90 KW (122 PS)			105 KW (143 PS)		
Cutting system (number of blades)	-			26		
Friction clutch drive	1800 Nm					
Flywheel overload coupling	Wedge switch 4500 Nm					
Pick-up overload coupling	Star ratchet 800 Nm			Star ratchet1000 Nm		
Cam-type cut-out clutch for cutting system	-			7000 Nm		
Packer overload coupling	Cam-type cut-out clutch 14500 Nm					
Needle connecting rod	Shear screw M 10 x 55 DIN 931-10.9					

*¹ Rigid

*² Guided coast-down

*³ 50 km/h with tandem axle braked
40 km/h with tandem axle unbraked



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.

1.4.4 Big Pack 1290 HDP / XC

	Big Pack 1290 HDP		Big Pack 1290 HDP XC	
	Tandem		Tandem	
Permissible maximum speed	50 km/h			
Length of working position (mm)	9940			
Length of transport position (mm)	8850			
Height (mm)	3110			
Weigh (kg)	10200		11500	
Tyres	500/55-20 620/40 R 22.5		500/55-20 620/50 R 22.5	
Width (mm)	2995			
Track width (mm)	2250*1	2350*2	2250*1	2350*2
Baling channel				
Height (mm)	900			
Width(mm)	1200			
Lenght (mm)	3500			
Baling length (mm)	from 1000 to 3200 (continuously adjustable)			
Scattering width (mm)	2380			
Number of knotter devices	6			
Power requirement	130 KW (177 PS)		145 KW (197 PS)	
Cutting system (number of blades)	-		26	
Friction clutch drive	3000 Nm			
Flywheel overload coupling	Wedge switch 8000 Nm			
Pick-up overload coupling	Star ratchet 800 Nm		Star ratchet 1000 Nm	
Cam-type cut-out clutch for cutting system	-		7000 Nm	
Packer overload coupling	Cam-type cut-out clutch 14500 Nm			
Needle connecting rod	Shear screw M 10 x 55 DIN 931-10.9			

*1 Rigid

*2 Guided coast-down

1.4.5 Lubricants

Lubricant quantities and designations for the gearboxes

	Quantity ltr.	Designation/brand	Bio-degradable lubricants
Main gearbox 890	15,5	SAE 90 GL 4 or Esso-Spartan EP 150 Shell Omala Oil 150 Fuchs - EP 85 W90 Castrol EPX 90	On request
Main gearbox 1270 / 1290	16,7		
Main gearbox 1290 HDP	35		
Packer gearbox	4		
Knotter/packer transfer gearbox	1		
Pick-up gearbox, upper	0.5		
Pick-up gearbox, lower	0.5		
Cutting system gearbox for XC, upper	2.8		
Cutting system gearbox for XC, lower	2.7		

Oil quantities and designations for the on-board hydraulic system

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

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



With bio-degradable oils the changing intervals must be complied with without fail because of ageing of the oils.

1.5 Connection Requirements, Tractor

Brake connections:

For Big Pack Baler with:

brake activated by compressed air
hydraulically activated brake (6)

Dual-line brake system required

Connection for hydraulic brake system required
(max. operating pressure 120 bar)

Electrical connections:

Lighting for the Big Pack Baler

7-pin socket DIN ISO 1124

Power supply for the electronic control system

2-pin socket
(direct battery connection required for continuous power)

Baler with 65 km/h approval

ABS socket



- The hydraulic connections 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“).

Hydraulic connections:

Depending of the design of your Big Pack Baler, the following connections are possible:

Depending on version:

Raising the pick-up (1)	Single-action control valve	(red 2)
Locking the steering axle (5)	Single-action control valve	(red 7)
Support base (hydraulic) (no illustration)	Double-action control valve	
• Raise support base		(red 6)
• Lower support base		(blue 6)

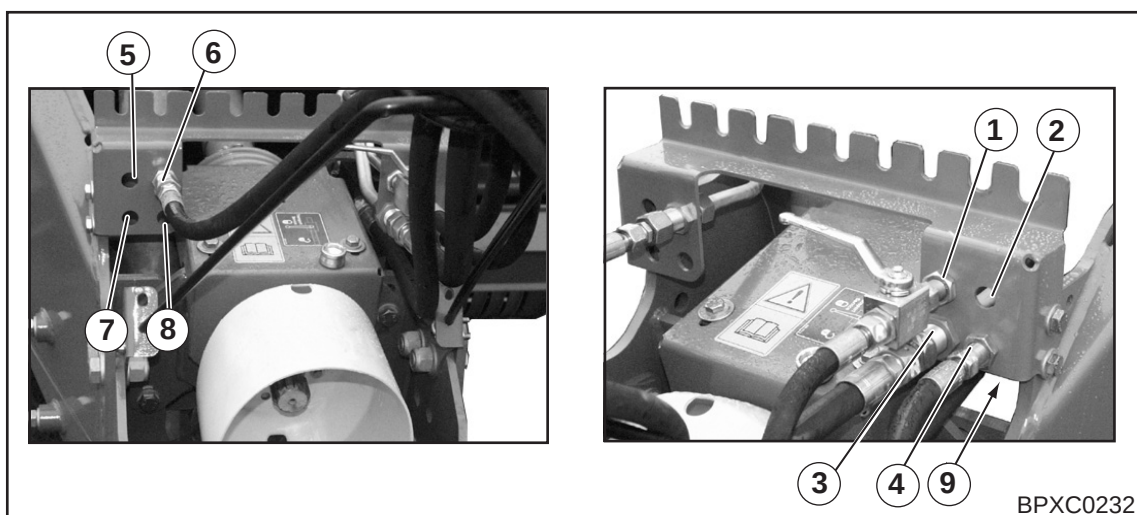
Basic electronics/medium electronics:

Hinging blade bar	Double-action control valve	
• retract blade bar (2)		(blue 5)
• extend blade bar (4)		(red 5)
Roller chute	Double-action control valve	
• Pressure (7)		(red 4)
• Return line (8)		(blue 4)

Comfort version electronics:

Valve block pressure (9)	Single-action control valve (NW 15)	(red 1)
Valve block return line (3)	Return tank (NW 18)	(blue 1)
Load sensing line *(4)	LS connection (NW 12)	(red 3)

* Only for tractors with load-sensing hydraulics

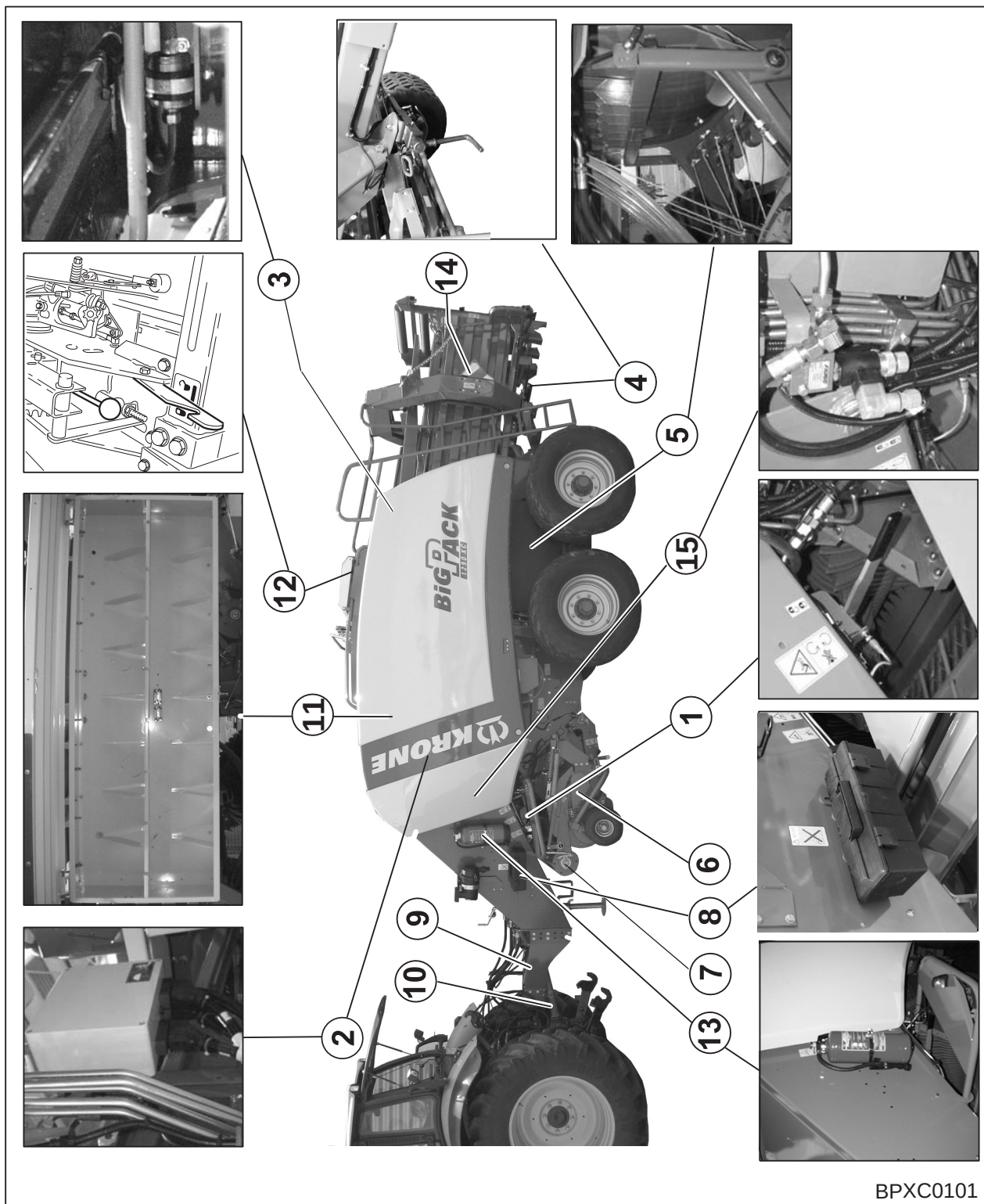


1.6 General Technical Description

PTO speed	1000 rpm
PTO shaft	Tractor side: Wide-angle Machine side: Free-wheeling clutch
Hitch	Ball head coupling hitch - Permissible noseweight: up to 2000 kg, Bottom attachment with ball head coupling - Permissible noseweight: up to 2500 kg (drawbar adjustable in height)  Caution! When an adjustment is made, the hexagon head screws must be tightened to the torque show in the "Tightening torques" table in Chapter 8.2.
Support	Support base, retractable - manually adjustable in height. Optional: Hydraulic support base
Uncontrolled pick-up (EasyFlow) drum wheel.	Hydraulic lift Height adjustment by perforated bar on the supporting
Lateral feed	Tine mounting: 5 Number of tines: 16 (20) double tines/tine mounting
Variable crop feed (VFS)	Right and left worm conveyor Forced intake by feed packer drum Feed packer drum with: 5 feed packers and 1 switching feeder packer With the XC design, there is also a cutting system up front.
Baling ram	Length of stroke 750 mm -50 strokes per minute (Big Pack 890) - 38.5 strokes per minute (Big Pack 1270 and 1290) The baling ram moves on 4 rollers 5/7 blades on the baling ram
Setting the baling density	Electronic/hydraulic force control (both adjustable from the tractor)
Twine box	on both sides, for a total of 32 balls of twine
Twine	Synthetic twine (110-130 m/kg)
For twine roll end and torn twine	Electrical twine control with acoustic and optical signal.
Bale ejector/bale unloading	One-part bale chute (must be folded up in transport). Operation according to Medium - Comfort version at the machine or from the tractor
Holding brake	Operation by hand crank at the rear left of the baler

1.7 Overviews

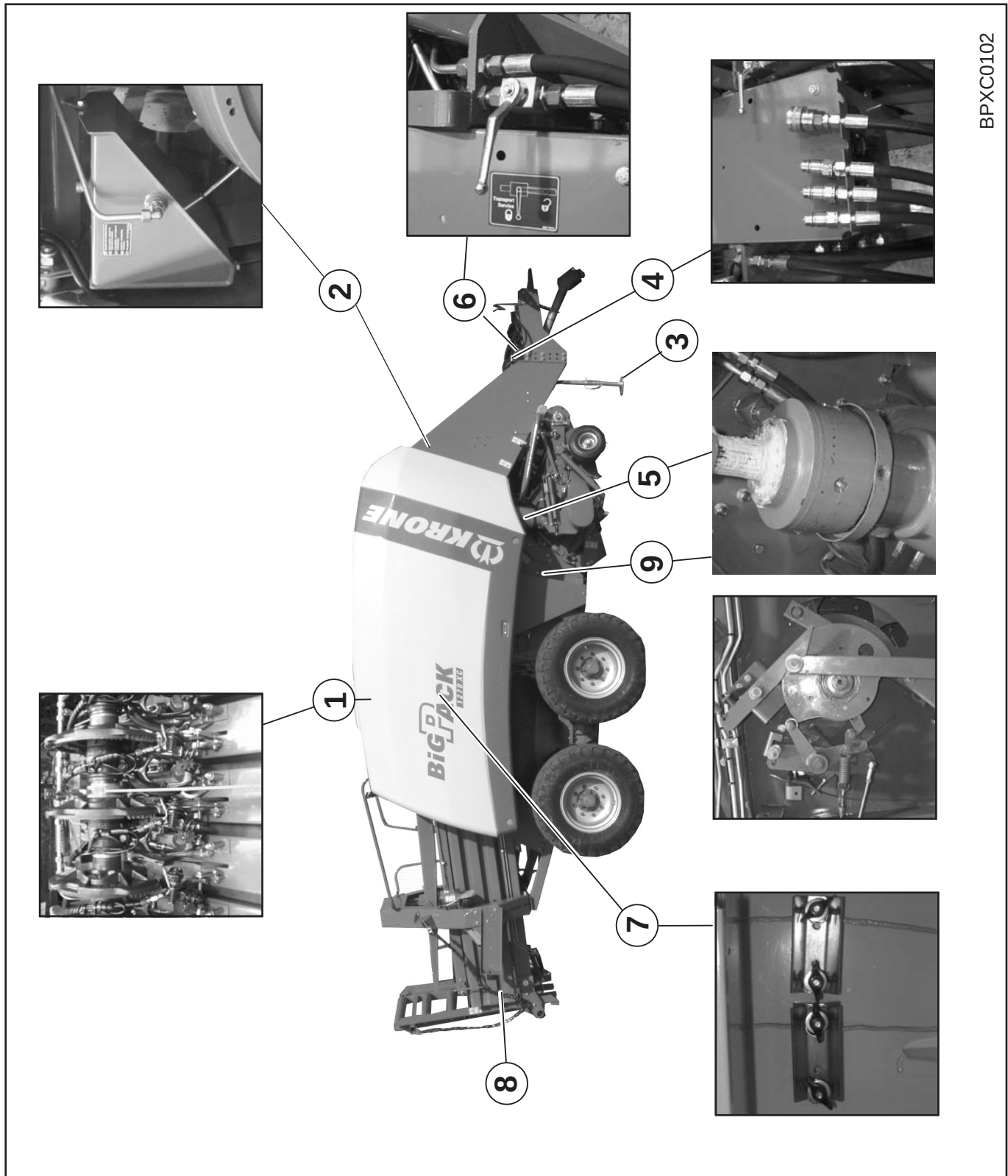
1.7.1 Left Side of the Big Pack Baler with Tandem Axle



BPXC0101

- | | |
|-------------------------------------|---|
| 1. Flywheel parking brake | 9. Drawbar with adjustable height |
| 2. On-board computer | 10. Wide-angle PTO shaft with overload protection and free-wheeling |
| 3. Length entry for packs | 11. Twine box |
| 4. Crank for parking brake | 12. Manual release of knotter and knotter shaft lock |
| 5. Twine control and tensing device | 13. Fire extinguisher |
| 6. Pick-up with feeler wheel | 14. Wheel chocks |
| 7. Roller-type crop guard | 15. Electronic control valve |
| 8. Tool tray | |

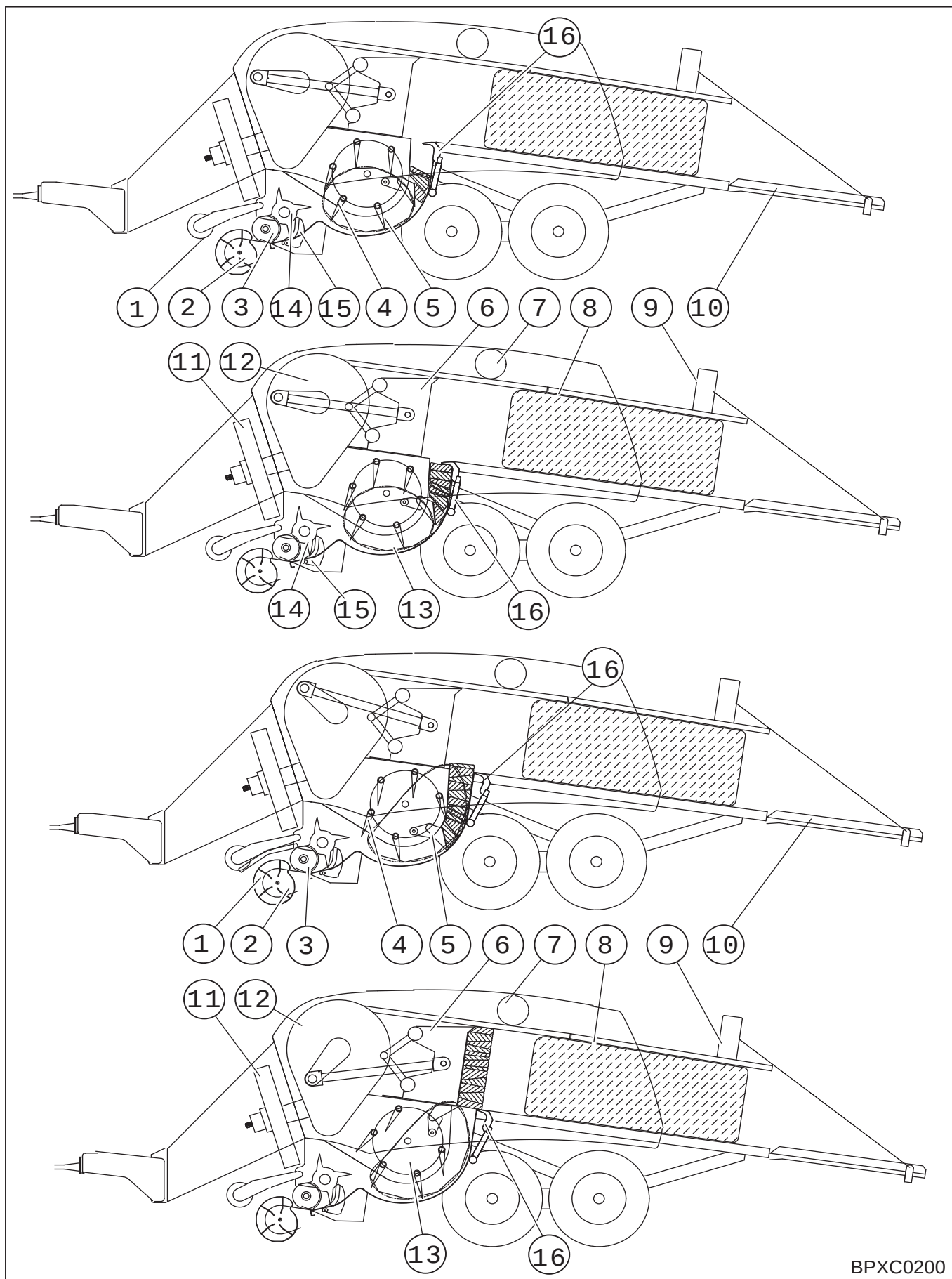
1.7.2 Right Side of the Big Pack Baler with Tandem Axle



BPXC0102

- | | |
|---|--------------------------------------|
| 1. Knotting area | 5. XC cutting system drive |
| 2. Hydraulic oil storage tank | 6. Pick-up hydraulics shut-off valve |
| 3. Jack | 7. Twine brake in the twine box |
| 4. Holder for fast-action couplings and plugs | 8. Bale chute |
| | 9. Variable filling system VFS |

1.7.3 How the VFS Conveyor System Works



BPXC0200

1.7.4 Functional Description of the Big Pack Baler

As a drive, the **BIG PACK** Baler requires a tractor with a power of 65 kW or higher.

The **BIG PACK** Baler is hooked into the hitch coupling or the swinging drawbar. The drawbar is provided with height adjustment so that the Big Pack Baler can work horizontally.

The drive of the **BIG PACK** is through a PTO shaft, which transmits the torque coming from the tractor through a flywheel (11) to a bevel spur gearbox (12). The maximum input speed of 1000 rpm must **not** be exceeded, because this could cause the machine to be damaged.

The PTO shaft is equipped at the tractor end with a wide-angle joint. The operating instructions intended for the PTO shaft are located on the PTO shaft.

Before the Big Pack Baler is started up, the operating instructions of the PTO shaft should also be read. Shortening the PTO shaft and any repair and maintenance work are discussed here.

The pick-up (2), which is 2 m (2.4 m) wide, picks up the crop cleanly. A height-adjustable roller-type crop guard (1) ensures trouble-free pick-up and helps to avoid clogging. The crop is conveyed by 2 worm conveyors (3), located on the left and right side of the pick-up, to the feed packer drum (13) or to the cutter rotor (14) and blades (15).

The pick-up can be raised and lowered by the tractor hydraulics. The feeler wheels of the pick-up are adjustable in height so that an optimum pick-up height can be achieved for the pick-up.

The feed packers (4) fill the conveyor channel. The crop is collected in the conveyor channel by the work of the feed packers. The filling level in the conveyor channel is sensed by the sensing rake (16). When a certain filling level is reached, the sensing rake is swung back and the feeder packer takes over the further transport of the crop into the baling channel.

The crop is pressed by the baling ram (6) in the baling channel to form a highly compacted big bale. The length and naturally also the density of the big bales can be adjusted continuously. Thus big bales 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 pack length is reached, the knotter mechanism is released by the star wheel projecting into the baling channel. The **Big Pack 890** is equipped with 4, the **Big Pack 1270 and 1290** with 6 knotters (7). The big bales are unloaded through a bale chute (10).

With the optional Multi Bale (**Big Pack 1270**) design, the bale can be separated into as many as six smaller bales.

2 Safety

2.1 Identifying Symbols in the Operating Instructions

The safety instructions in these operating instructions that in the case of non-compliance can give rise to danger for persons are identified with the general danger symbol:



Safety symbol as per DIN 4844 - W9

General functional instructions are indicated as follows:



Instructions which are affixed directly to the machine must be followed and be fully legible at all times.

2.2 Safety Instructions and Accident Prevention Regulations

2.2.1 Personnel Qualification and Training

The Big Pack Baler may only be used, maintained and repaired 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 arrange the monitoring of the personnel. Should personnel lack the required knowledge, they must receive the required training and instruction. It must furthermore be assured by the operator that the contents of the operating instructions are fully understood by the personnel.

Repair work not described in these operating instructions must only be carried out by authorised service centres.

2.2.2 Dangers in case of Non-Compliance with the Safety Instructions

Non-compliance with the safety instructions can result in both danger for persons and for the environment and the machine. If the safety instructions are not respected, this could result in the forfeiture of any claims for damages.

If the safety instructions are not respected, this may result, **for example**, in the following hazards:

- Danger to persons caused by unguarded working areas.
- Breakdown of important machine functions.
- Failure to implement the prescribed methods for repair and maintenance.
- Risk to persons due to mechanical and chemical effects.
- Danger to the environment due to leaking hydraulic oil.

2.2.3 Safety-Conscious Working

The safety instructions quoted in these operating instructions, the existing regulations for accident prevention as well as possible internal working, operating and safety instructions of the operator must be complied with.

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

The safety instructions of the vehicle manufacturer must be complied with.

Always observe the applicable traffic laws when using public roads (for example, in Germany, the Road Traffic Type Approval Law and Road Traffic Law).

2.2.4 Safety Instructions and Accident Prevention Regulations

1. In addition to the instructions in these operating instructions, you must comply with the generally applicable safety and accident prevention regulations!
2. The warning and safety signs affixed to the vehicle provide important information for safe operation. For your own safety always pay attention to these!
3. When using public roads, make sure that you observe the applicable traffic regulations!
4. Make sure that you are familiar with all equipment and controls as well as their functions before you begin working with the machine. It is too late to learn this when you are operating the machine!
5. Users must 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 out for children!) Pay attention to adequate vision!
8. Riding on the machine during working and transport is not permitted.
9. Attach implements correctly! Only attach and secure implements to the prescribed devices!
10. When attaching or removing implements, place the supporting devices in the correct positions!
11. Special care is required when coupling and uncoupling implements to/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. Operating devices (ropes, chains, rods, etc.) of remotely operated devices must be run so that they do not trigger unintended movements in all transport and working positions.
16. Ensure that implements are in the prescribed condition for road travel and lock them according to the instructions of the manufacturer!
17. Never leave the driver's seat when the vehicle is moving!
18. The driven speed must always be adapted to the ambient conditions! Avoid sudden changes in direction when travelling uphill or downhill or across a gradient!
19. The handling, steering and braking ability are influenced by the attached or suspended implements and ballast weights. For this reason, make sure that you are able to steer the machine and brake 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 protective devices have been attached and set in the required position!
22. Keep out of the working range of the machine at all times!
23. Do not stand within the turning and slewing range of the implement!
24. Never operate the hydraulic folding frames if anyone is inside the slewing range!
25. Parts operated by external power (e.g. hydraulics) can cause crushing and shearing injuries!
26. Before leaving the tractor turn off the engine and withdraw the ignition key!
27. No one may stay between the tractor and implement without the vehicle being secured against rolling away by the holding brake and/or by wheel chocks.

2.2.5 Hitched Implements

1. Secure implements against rolling away.
2. Observe the max. permissible supporting load of the hitch coupling, swinging drawbar or hitch!
3. In the case of drawbar coupling pay attention to sufficient mobility at the coupling point!

2.2.6 PTO Operation

1. Only PTO shafts specified by the manufacturer may be used!
2. The protective tube and protective funnel of the PTO shaft as well as the PTO shield - also on the implement end - must be attached and in proper condition!
3. Make sure that the required tube covers for PTO shafts are in place in transport and working position!
4. Before installing or removing PTO shafts, switch off the PTO shaft, turn the engine off and remove the ignition key!
5. When using PTO shafts with an overload or free-wheel coupling that is not covered by the protective equipment on the tractor, the overload or free-wheel couplings must be attached to the implement!
6. Always make sure that the PTO shafts are mounted correctly and secured properly!
7. Secure the PTO shaft guard against turning by hooking in the chains!
8. Before engaging the PTO make sure that the selected PTO speed of the tractor agrees with the permissible speed of the implement!
9. Before engaging the PTO make sure that no one is in the hazardous area of the implement!
10. Never switch on the PTO with the engine turned off!
11. While working with the PTO, nobody is permitted to stay in the range of the turning PTO or PTO shaft.
12. Always switch off the PTO in the case of excessive bending and if the PTO is not required!

13. **Caution!** After switching off the PTO, there is danger due to the inertia of the flywheel mass! 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 holding brake.
14. Cleaning, lubricating or adjusting PTO driven implements or the PTO shaft only with PTO disengaged, engine turned off and ignition key withdrawn! Apply the holding brake on the flywheel.
15. Place the uncoupled PTO shaft on the holder provided!
16. After removal of the PTO shaft, fit the protective sleeve on the PTO stump!
17. Immediately repair any damage before working with the implement.
18. Release the flywheel brake before the PTO is turned on.

2.2.7 Hydraulic System

1. The hydraulic system is pressurised!
2. When connecting hydraulic cylinders and motors pay attention to the specified connection of the hydraulic hoses!
3. When connecting the hydraulic hoses to the tractor hydraulics take care that the hydraulics are pressureless both on the tractor side and on the implement side!
4. In case of hydraulic function connections between tractor and machine coupling sleeves and plugs should be marked so that faulty operation is excluded! On changeover of the connections reversed function (e.g. raising/lowering) - **Danger of accident!**
5. Check the hydraulic hose lines at regular intervals and replace them if damaged or worn! The new hoses must comply with the technical requirements set by the manufacturer of the implement!
6. When searching for leaks, use suitable aids to avoid the risk of injuries!

7. Liquids escaping under high pressure (hydraulic oil) can penetrate the skin and cause serious injury! In the case of injuries, seek medical assistance immediately. Risk of infection!
8. Before working on the hydraulic system, depressurise the system and turn off the engine!

2.2.8 Tyres

1. When working on the tyres make sure that the implement is safely shut down and has been secured against rolling away (wheel chocks).
2. You must have adequate knowledge and the proper tools to undertake the work of fitting wheels and tyres.
3. Repair work on the tyres and wheels should only be carried out by specially trained personnel and only tools appropriate to the job should be used!
4. Check tyre pressure regularly! Inflate the tyres to the recommended pressures!

2.2.9 Maintenance

1. Always perform repair, maintenance and cleaning work as well as troubleshooting only when the drive is switched off and the engine stopped!
- Remove the ignition key! Apply the holding brake of the flywheel.
2. Regularly check that nuts and bolts are properly seated and tighten if necessary!
3. When performing maintenance work with the implement raised, always secure it with suitable supporting elements!
4. When replacing working tools with cutting edges, use suitable tools and gloves!
5. **Dispose of oils, greases and filters according to the regulations!**
6. Always disconnect the power supply before working on the electrical system!

7. If protective devices and guards are subject to wear, check them regularly and replace them in good time!
8. When performing electric welding work on the tractor and mounted implements, disconnect cables at the generator and battery!
9. Replacement parts must, as a minimum, comply with the technical requirements set by the manufacturer of the implements!
This is guaranteed by original KRONE spare parts!
10. Only use nitrogen to fill gas reservoirs -
Risk of explosion!

2.2.10 Unauthorised Modifications and Spare Parts Production

Modifications to the machine are permitted only with the prior approval of the manufacturer. Original spare parts and accessories authorised by the manufacturer ensure safe use. Use of other parts may void the liability for any resulting damage.

2.2.11 Non-Permissible Modes of Operation

The operational safety of the machine is only guaranteed if it is used for its intended purpose in accordance with the Chapter "General Information" of these operating instructions. The limit values stated in the data sheets must not be exceeded under any circumstances.

2.3 Introduction

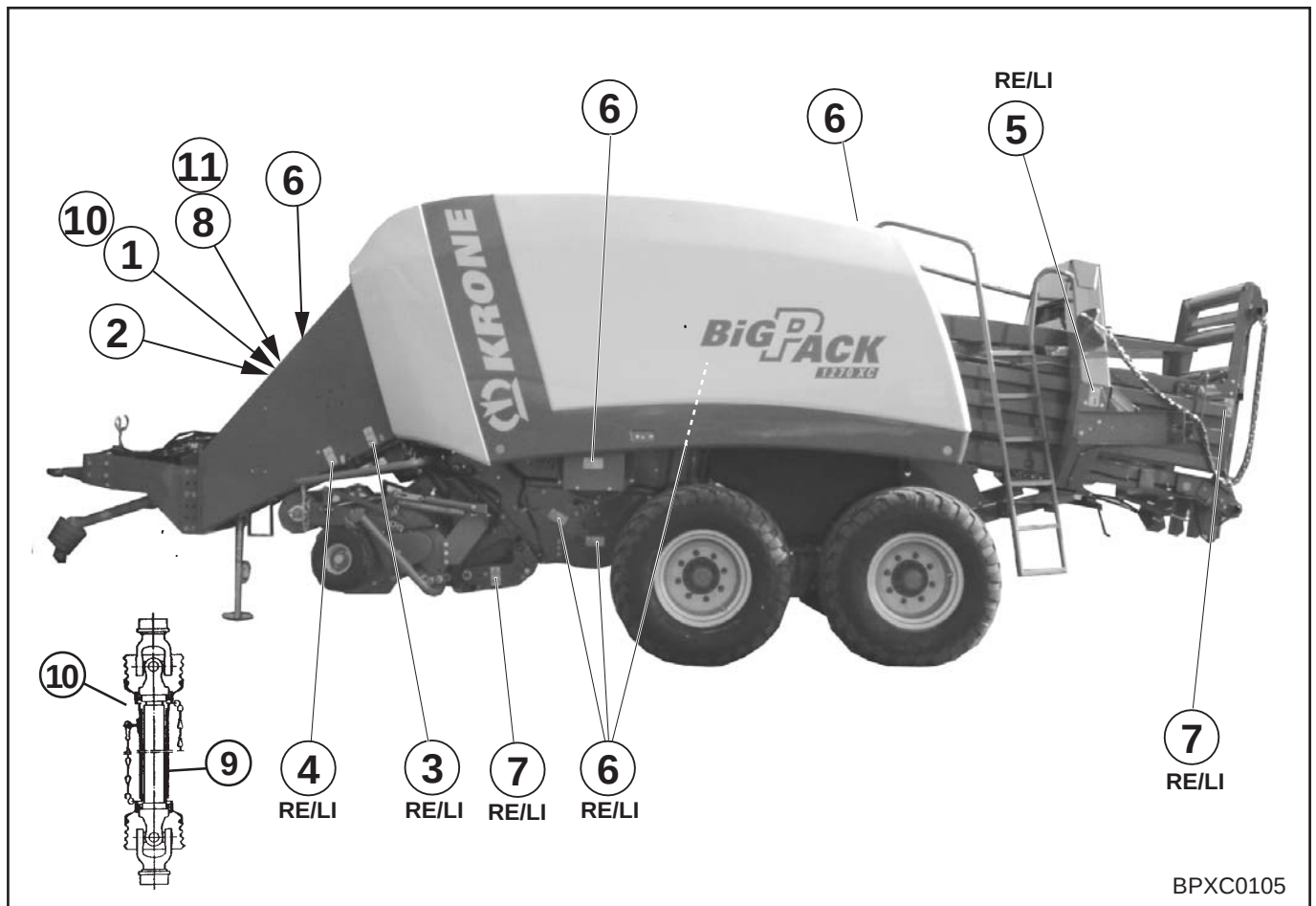
The KRONE Big Pack Baler is equipped with all safety devices (protective devices). However, it is not possible to eliminate all potential hazards on this machine since to do so would impair its full functional capability. You will find corresponding danger warnings on the machine that indicate the remaining residual risks.

The safety instructions are provided in the form of what are known as 'warning pictograms'. Below you will find important information on the position of these signs and their meaning!



Familiarise yourself with the meaning of the adjacent warning symbols. The adjacent text and the selected application site on the machine provide information about the special dangerous spots on the machine.

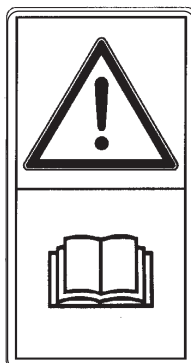
2.3.1 Location of Safety Stickers on the Machine



①

Before placing the machine in operation, read the operating instructions and the safety instructions and observe them.

Order No. 939 471-1 (1x)

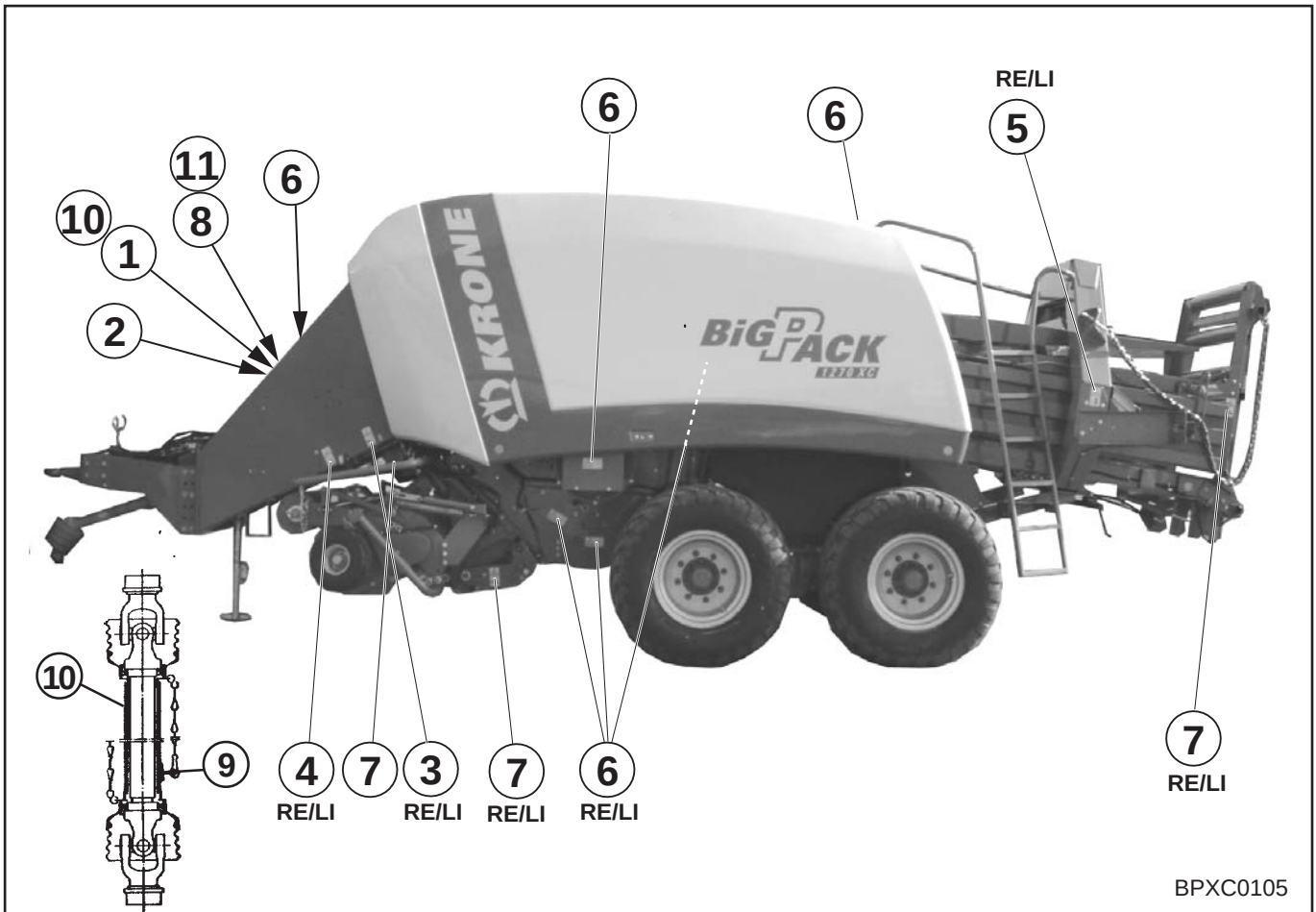


②



**The PTO shaft speed may not exceed 1000 rpm!
The hydraulics system operating pressure may not exceed 200 bar!**

Order No.: 27 002 053 0 (1x)



BPXC0105

③

Danger due to rotating worm.

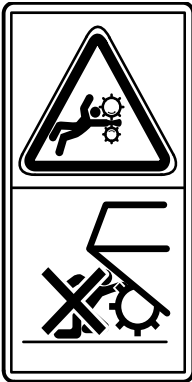
Order No. 939 520-1 (2x)



④

Never reach into the working area of the pick-up while the machine is running.
There is one label each on the left and right side of the machine.

Order No. 939 407-1 (2x)



⑤

Do not climb onto the machine if the PTO is connected and the engine is running.
There is one label each on the left and right side ladder to the working platform.

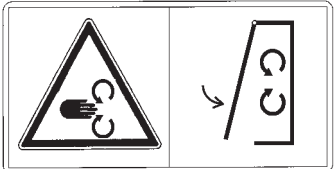
Order No. 939 408-2 (1x)



⑥

Before start-up, close the protective equipment!

Order No. 942 002-4 (14x)



7

Never reach into the area where there is danger of crushing as long as parts could be moving.

(only for roller chute and XC cutting system)

Order No. 942 196-1 (5x)

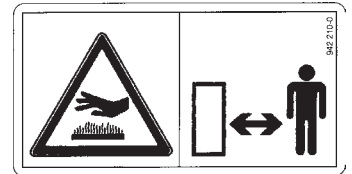


8

Maintain a safe distance from hot surfaces.

(optional)

Order No. 942 210-0 (1x)



9



Order No.: 949 228-0 (2x)

10



Order No.: 949 229-0 (2x)

11

CAUTION

- High pressure oil leaks can penetrate skin causing serious injury and gangrene. (See operators manual & consult a physician immediately.)
- Do not use finger or other skin to check for leaks.
- Lower load, release pressure, and be sure oil is cool before loosening fitting.

942 050-0

Order No.: 27 002 059 0 (1x)

12

CAUTION

TO AVOID SERIOUS INJURY OR DEATH

- Read and understand operator's manual before operating equipment.
- Stop tractor engine and remove key before leaving operator's platform.
- Keep shields and guards in place.
- Keep hands, feet and clothing away from moving parts.
- Keep riders off the machine.
- Make certain every one is clear of the machine before starting tractor engine and operating.
- Do not allow unqualified operator to run equipment.
- Never lubricate, adjust, undo or service the machine with tractor engine is running.
- Wait for all movement to stop before opening shields or servicing machine.
- Never work underneath equipment without securely supporting.
- Use flashing warning lights when operating on highways except when prohibited by law.

942 050-0

Order No.: 27 002 054 0 (1x)

2.3.2 Position of the General Information Labels on the Machine



BPXC0105

27 002 746 0	
	X
	1
	1
	3
	2
	4
	5
	6
	7

① 27 002 746 0 (1x)

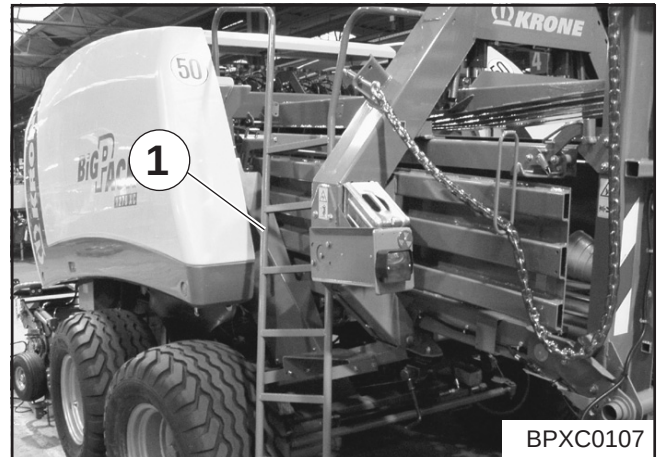
2.4 Special Safety Instructions

2.4.1 Ladder



- Climb on the ladder only with PTO shaft switched off, engine turned off and ignition key withdrawn!
- Riding on the Big Pack Baler or on the ladder is not permitted.

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.

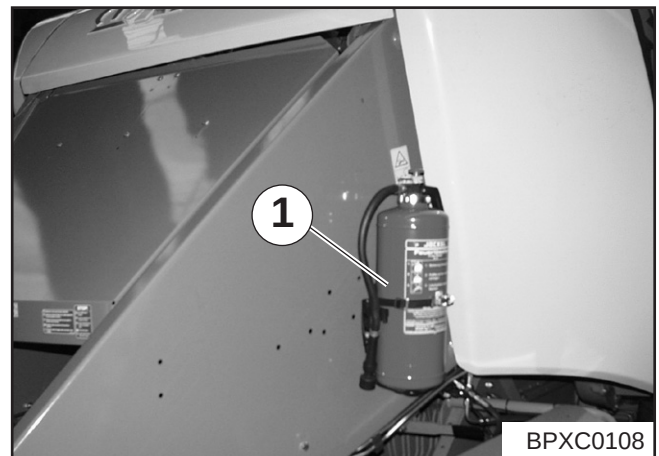


2.4.2 Fire Extinguisher

The fire extinguisher (1) is at the front of the drawbar on the left when facing in the direction of travel.



Please have the fire extinguisher registered. This is the only way to ensure that all the required inspections will be performed.





3. Start-up and Transport

3.1 Safety Instructions



- Special caution is required when mounting and detaching the Big Pack Baler on and from the tractor. No one may stay between the tractor and Big Pack Baler. 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 Big Pack baler always switch the PTO shaft off, turn off the engine and pull out the ignition key.
- Put the Big Pack Baler into operation only if all protective devices are attached and in protective position!
- The Big Pack Baler may be operated with a maximum PTO shaft speed of 1000 rpm.
- Only the PTO shaft specified by the manufacturer with corresponding overload coupling and free motion may be used.
- Mounting and detaching the PTO shaft only with the PTO 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 pressureless both on the tractor side and the machine side!

3.2 General Operation

3.2.1 Parking Support

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

To raise the parking support:

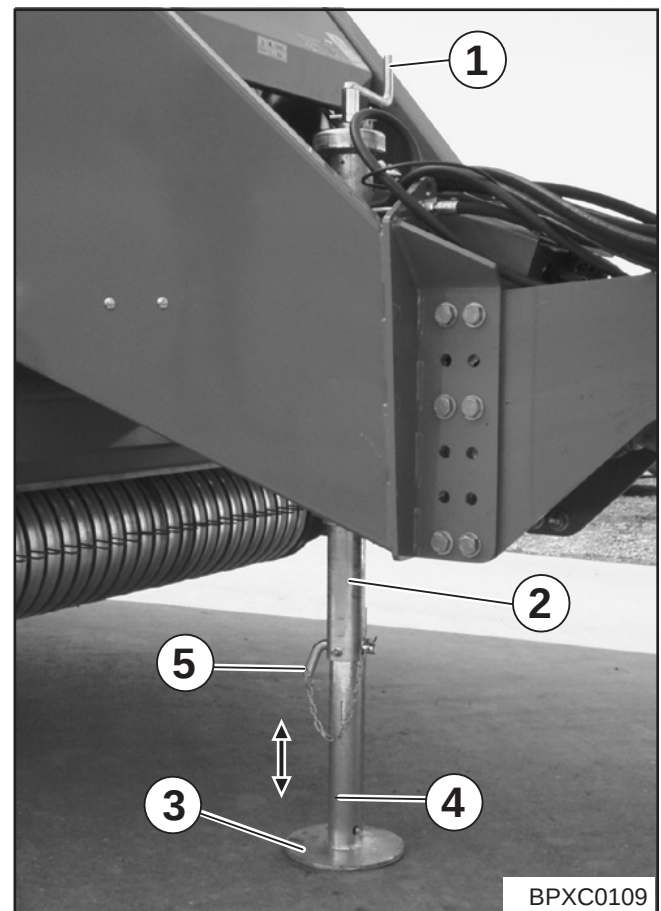
- As soon as the Big Pack Baler is connected to the tractor, turn the crank (1) several revolutions clockwise until there is no more weight on the support base (3).
- Withdraw the locking bolt (5) on the lower part of the parking support (2), push in the parking support and secure it in position (4)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

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

- To disconnect the Big Pack Baler 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).



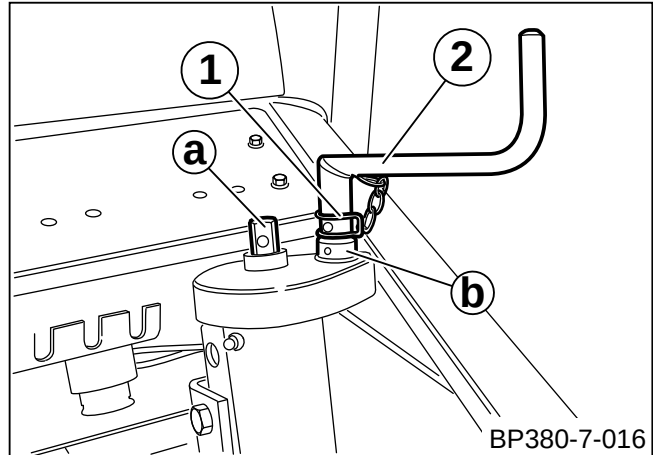
If the ground is soft, enlarge the footprint of the support base (3) by placing a wooden plank underneath.



Crank gear on the parking support:

The crank (2) can be attached to the head of the parking support in both positions, (a) and (b).

- Position a) Direct transmission ratio 1:1 for quickly cranking the parking support up and down.
- Position b) Gear reduction for cranking the Big Pack Baler up and down if the Big Pack Baler is resting on the support base.



3.2.2 Hydraulic Support Base (Optional)

It is also possible to park the Big Pack Baler with a hydraulic support base. The hydraulic support base can be extended and retracted with the corresponding valve on the tractor.

To extend the support base:

- From the driver's cab on the tractor, extend the support base until it is resting firmly on the ground.
- It is absolutely essential then to close the ball valve (1) on the head of the support base.



If the ground is soft, enlarge the footprint of the support base (3) by placing a wooden plank underneath.

Retracting the support base:

- First, open the ball valve (1) on the head of the support base.
- Then retract the support base from the driver's cab on the tractor.

3.2.3 Parking Brake

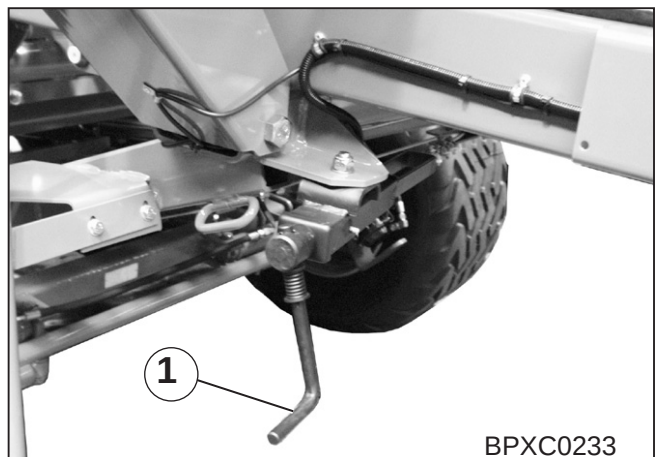
The parking brake is used to secure the Big Pack Baler from rolling away accidentally, especially when the Big Pack Baler is disconnected from the tractor. The crank (1) of the parking brake is located at the left side of the Big Pack Baler under the baling channel.

Set the parking brake:

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

Release the parking brake:

- Turn the crank anticlockwise until the brake cable is slightly slack.



3.2.4 Holding Brake for Flywheel

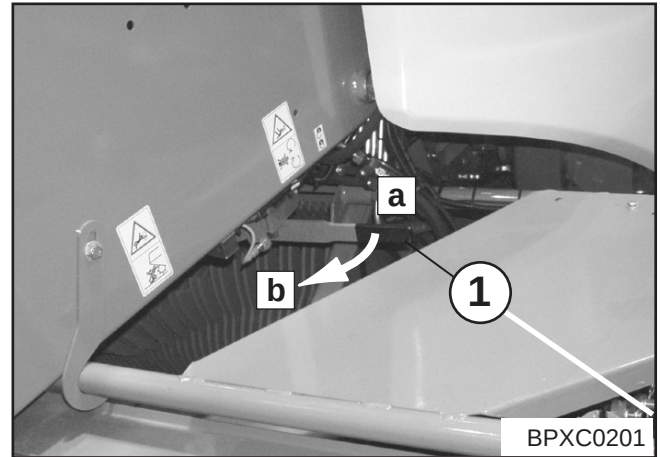
The flywheel holding brake (belt brake) is located on the left side on the machine on the drawbar.

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

When the electronics are turned on, the Big Pack Baler emits a horn signal.



Caution! Before engaging the PTO always release the holding brake first.



3.2.5 Adjusting the Drawbar Height

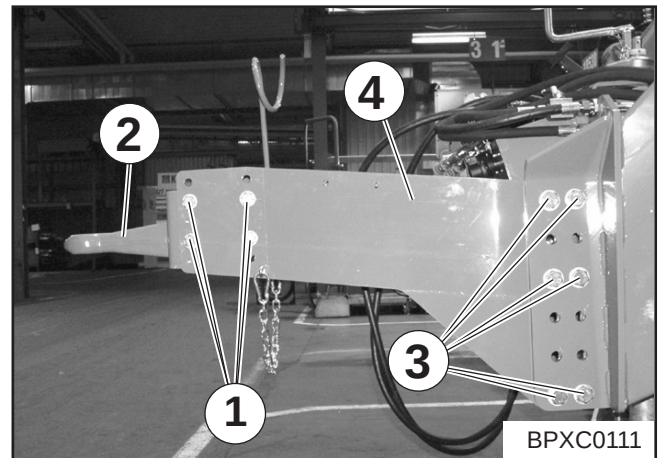


- Secure the Big Pack Baler against rolling away with wheel chocks and by applying the parking brake.
- Use suitable supporting blocks for supporting the Big Pack Baler.
- There is a risk of crushing one's feet when cranking down the parking support.

The drawbar can be adjusted optionally for top or bottom attachment.

Both in the "top attachment" position and in the "bottom attachment" position the Big Pack Baler can still be adapted in height to the hitching height of the tractor (hitch or swinging drawbar).

To guarantee optimum working, the Big Pack Baler must be hitched horizontally. The cross member onto which the axle is bolted serves as a reference edge.

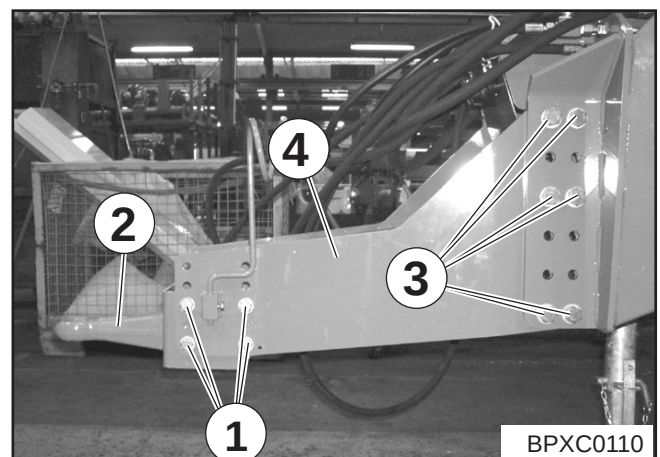


Before starting the adjustment set the Big Pack Baler on the parking support and uncouple the tractor.

Setting the hitching height:

- For the adjustment of the drawbar height the hitch (2) can be adjusted in height by loosening the screws (1).
- If this is not sufficient the side parts (4) can be adjusted in height by additionally loosening the screws (3).
- For adjusting to bottom attachment the two side parts (4) are turned round.

For the tightening torques, see Chapter 9.2.1.



3.3 Connecting to the Tractor

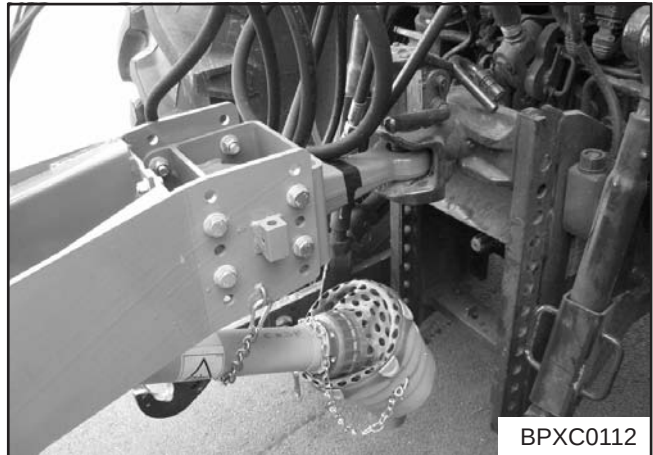


- The Big Pack Baler must only be connected to tractors that are equipped with a matching hitch.
- When the tractor is put back in front of the Big Pack Baler, there must be no one between the tractor and the baler.
- Observe the maximum supporting and tensile load of the hitch on the tractor.

- Hitch and secure the Big Pack Baler according to the regulations on the hitch of the tractor.

The Big Pack Baler 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 hitch hole
- Hitch connection (export only).



3.4 Main PTO Shaft

3.4.1 Adapting the Main PTO Shaft

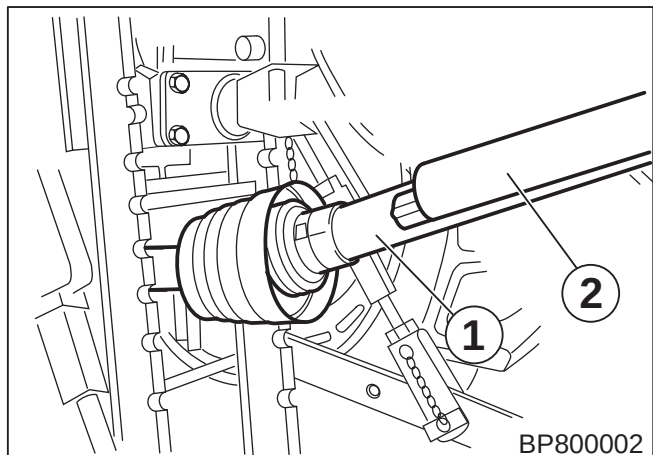


- Before pushing the PTO shaft onto the PTO of the tractor, disengage the PTO, turn off the engine and pull out the ignition key. Apply the flywheel brake.
- Secure the tractor and Big Pack Baler against unintentionally rolling away.
- In the cornering movements required for adapting the length of the PTO shaft no one may stand between the baler and the tractor.

To adapt the length of the PTO shaft hitch the Big Pack Baler onto the tractor. The shortest position of the PTO shaft is reached in close cornering.

- For measuring pull the PTO shaft apart and push one half each (1) and (2) onto the baler and the tractor.

Please refer to the operating instructions of the PTO shaft manufacturer for the exact procedure for adapting the length.



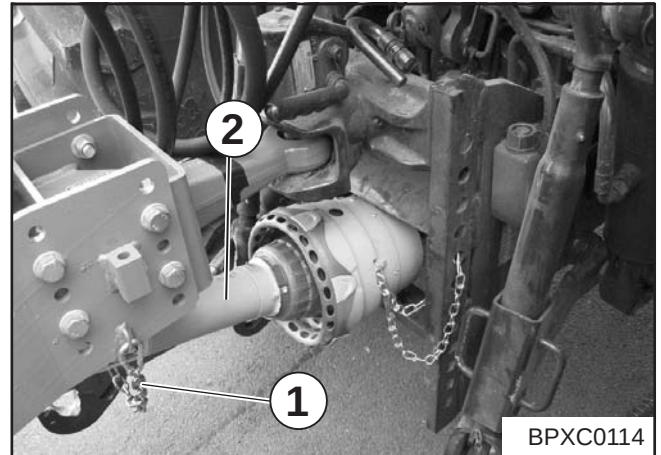
3.4.2 Mounting on the tractor side



Before pushing the PTO shaft onto the tractor PTO, do not fail to set the flywheel with its holding brake.

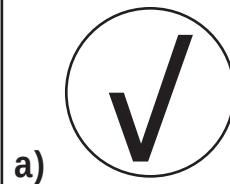
Tractor side

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

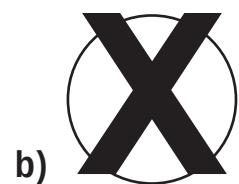


- Make certain that the PTO shaft is properly secured after installation and locked into place.
- Use only the PTO shaft included with delivery from the factory.
- Before engaging the PTO always release the flywheel holding brake first.

ZX400040



a)



b)

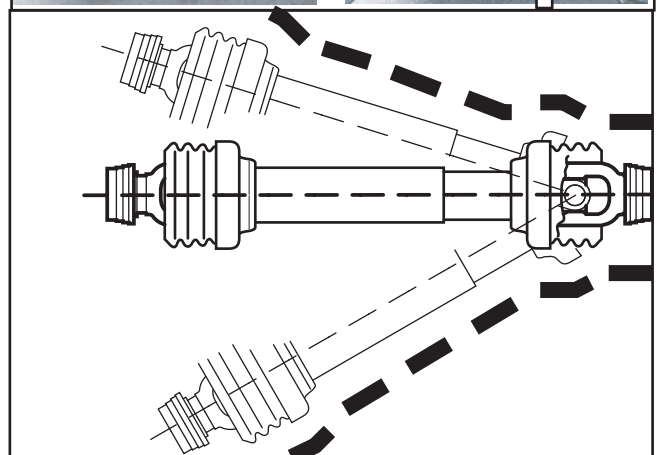
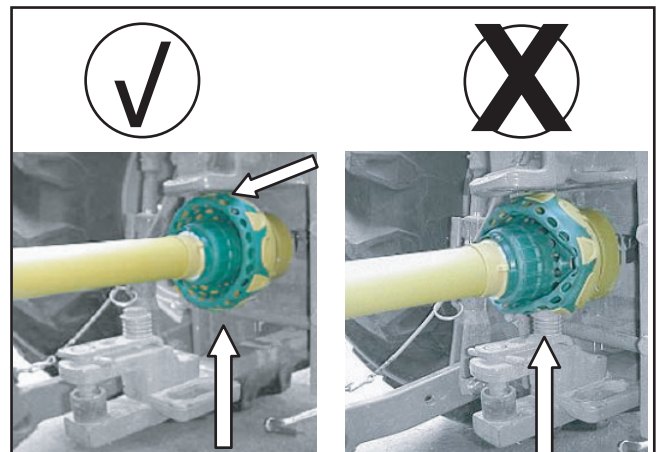


Make certain the chain connection is ideal:

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



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



3.5 Hydraulic, Compressed Air and Electrical Connections

For the BigPack depending upon execution a different number of hydraulic control valves at the tractor is needed.

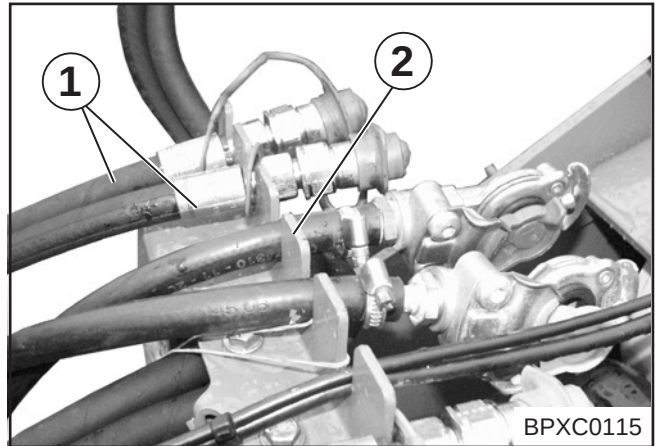


The hydraulic connections are identified by coloured hose clips. (see Chap. 1 "Connection Requirements, Tractor").



When connecting the hydraulic hoses, make certain there is no pressure in the hydraulic system either on the tractor or machine side.

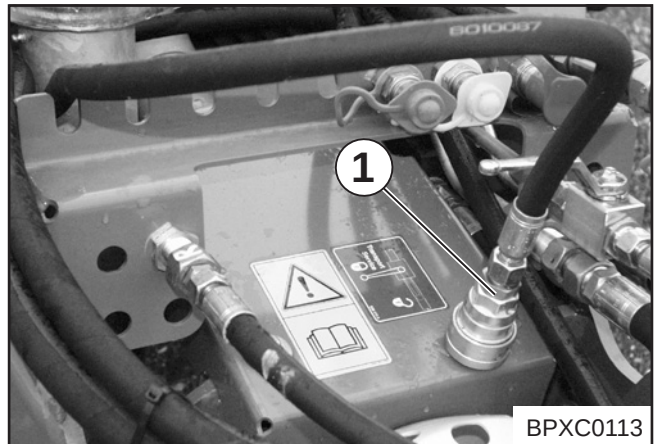
- Remove the hydraulic hoses from their holder on the drawbar.
- Remove the cover caps on the connections of the hoses.
- Thoroughly clean the plug-in connections of the hydraulic hoses before plugging them in.



3.5.1 Hydraulic Brake (country-specific)

A hydraulic brake is provided for certain Big Pack Baler (export machines). In this version a hydraulic brake valve on the tractor is required.

The corresponding hydraulic hose is connected with the control valve on the tractor side. Activating the control valve causes the brake to be activated.



3.5.2 Hydraulic Connection for Locking the Coaster Axle (Optional)

Connect the separate hydraulic hose from the locking cylinder of the steering axle (green protective cap) onto the single-action connection of the tractor hydraulics.



Observe the user instructions of the tractor manufacturer on parallel operation of the tractor control devices!
Connecting the locking cylinder of the steering axle must take place before or at the same time as the other hydraulic supply elements of the Big Pack Baler!

3.5.3 Load-Sensing Connection (optional)

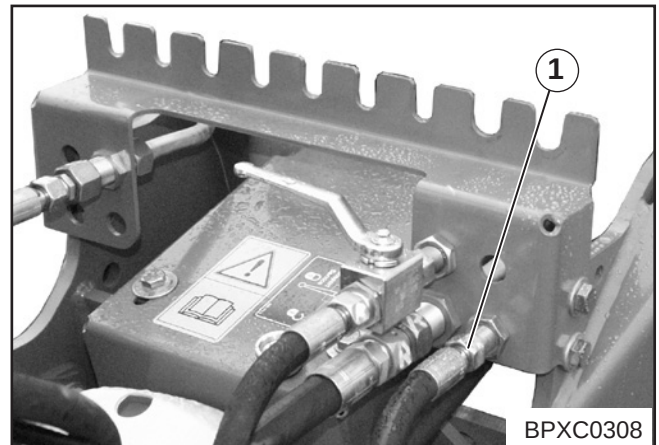
A Big Pack Baler with Comfort electronics or **Comfort hydraulics** is capable of load sensing. The advantage of using a tractor equipped for this is the lower output that is required because of less oil heating.

The oil supply comes through the Power-Beyond of the tractor hydraulics for use of the load-sensing system.

The message line must be connected between the message connection (LS) on the control block and the message connection of the tractor. The message line (1) (red 3) on the Big Pack with Comfort hydraulics is located directly under the pick-up connection on the front of the drawbar.

Adjusting the hydraulic system

The **Comfort hydraulics** system is designed for continuous circulation. It must be adapted to the hydraulics of the tractor. The adjustment is made by adjusting the hydraulic system screw on the control valve block of the Big Pack Baler. The control valve block is located at the front left under the side hood next to the electronics box.



The setting for the hydraulic system must be made when the system is depressurised!

The hydraulic system screw (1) on the control valve block must be unscrewed when the message line is connected.

The hydraulic system screw (1) is held in place by a counter nut (2). This nut must first be loosened by adjusting the system screw. Then the counter nut must be tightened on the housing again (manually).

Version I:

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

- Tractors with normal hydraulic system (constant pump).
- Tractors with LS pump and message line that is **not** connected.

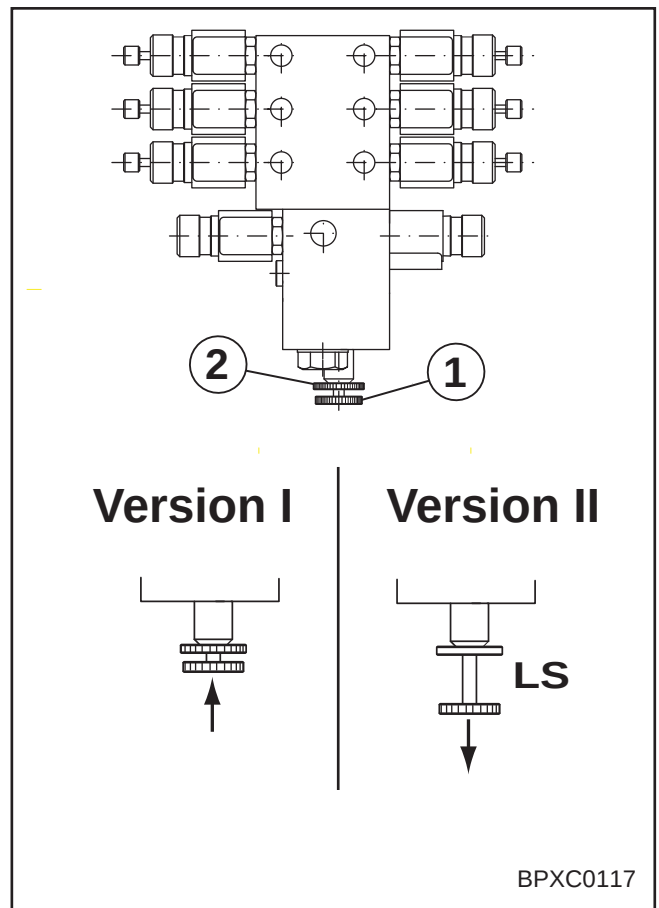


This adjustment is set when the unit leaves the factory.

Version II:

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

- Tractors with a closed hydraulic system (for example John Deere).
- Tractors with LS pump and message line that is simultaneously connected.

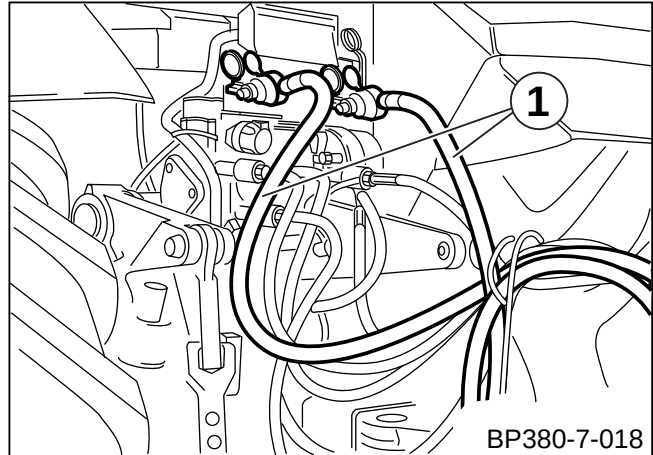


3.5.4 Compressed Air Brake

Snap the coloured coupling heads of the compressed air hoses (1) into the correspondingly coloured couplings on the tractor.

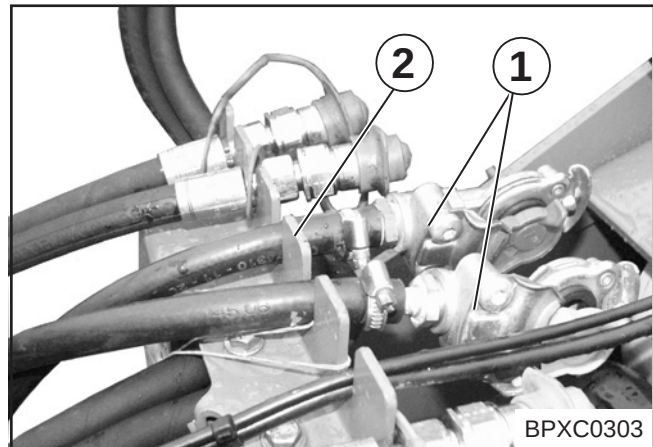


First let the yellow coupling head snap in and then the red coupling head. Uncoupling is in reverse order.



3.5.5 Holders for the Compressed Air Hoses

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



3.5.6 Electrical Connection Cables

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

- The socket included with delivery can be connected directly to the 12-V 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.

Socket 1: Connection cable between on-board computer and control panel on the tractor.

Socket 2: Power supply of the on-board computer.



Connect the connection on the plug side with the mounted socket.

Socket 3: 7-pin standard socket for lighting (working floodlights (4), option)



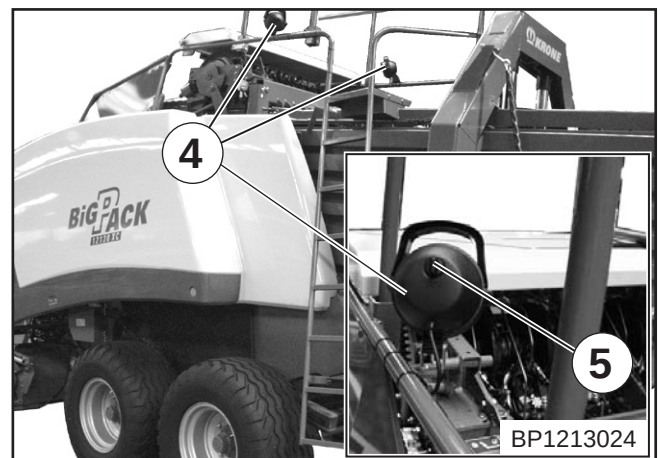
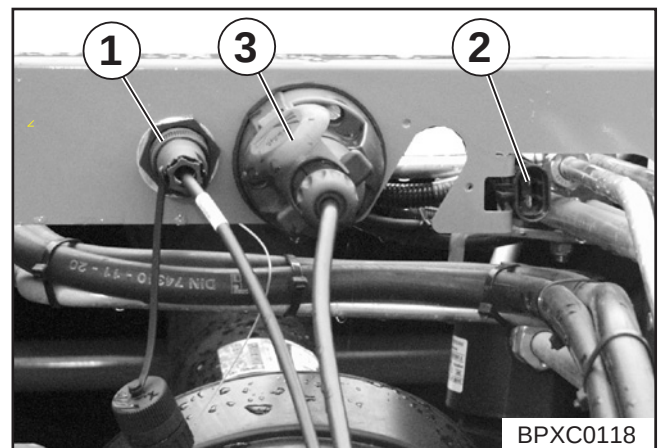
As soon as the plug of the continuous current supply is plugged in and the control and display unit is switched on and there is no twine in the needles, the acoustic signal of the twine control sounds.

The working floodlights (option) (4) are supplied with power through the parking light of the tractor.

- They are switched on or off by actuating the rotary switch (5) of the working floodlights.



The working floodlights (4) only work when the parking light is turned on



3.6 Placing in Operation again after an Extended Standstill Time

3.6.1 Safety Instructions



- The following is a basic rule for all maintenance, mounting, repair and adjustment tasks: Bring the machine to a stop. Switch off the engine. Remove the ignition key. Tighten the flywheel brake.
- Secure the tractor and Big Pack Baler against rolling.
- Avoid skin contact with oils, greases, cleaning agents and solvents.
- In the event of injuries or burns caused by oils, cleaning agents or solvents, contact a physician immediately.
- After the upkeep and maintenance tasks are complete, mount all protective coverings and protective mechanisms properly again.
- Please observe all additional safety instructions as well.

3.6.2 General Information

- Before placing the machine in service again, initiate the knotting process manually and run through the Big Pack 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 driver disk 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 gear boxes.
- Check hydraulic hoses and lines for leaks and replace them where 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 cables and the lighting. Repair or replace it if necessary.
- Check all settings on the Big Pack Baler and correct if necessary.
- Check the operating functions.
- Check the functionality of the knotter shaft brake (to the right on the knotter shaft).

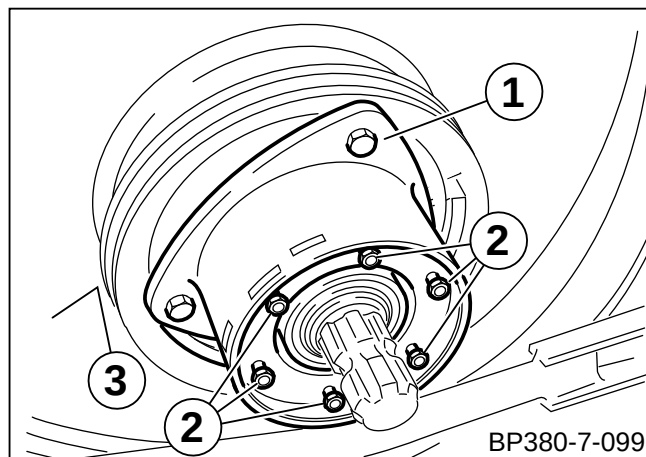
3.6.3 Overload Coupling on the Flywheel



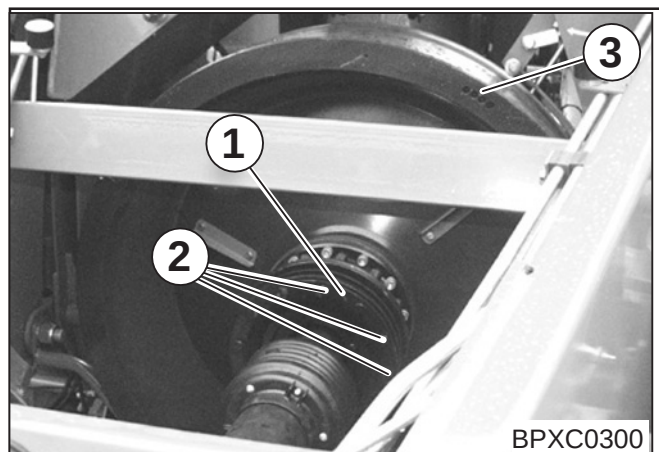
After the machine has been idle for long periods of time, the linings of the overload coupling (1) may adhere to friction surfaces. Vent the overload coupling before use.

- The overload coupling is on the flywheel (3).
- To vent it, tighten the nuts (2) on the overload coupling (1) crosswise.
- Turn the PTO shaft around once manually.
- After that, loosen the nuts crosswise again.

Big Pack 890/1270/1290



Big Pack 1290 HDP/XC



3.6.4 Storage for Winter



- Commissioning, upkeep, maintenance and cleaning tasks must only be performed when the machine is at a standstill. Turn off the engine and remove the ignition key. Apply the flywheel brake.
- Secure the Big Pack Baler and tractor against rolling.
- After the upkeep and maintenance tasks are complete, mount all protective coverings and protective mechanisms properly again.
- Avoid skin contact with oils, greases, cleaning agents and solvents.
- In the event of injuries or burns caused by oils, cleaning agents or solvents, contact a physician immediately.
- You should also follow all additional safety instructions to avoid injuries and accidents.

Before placing the Big Pack Baler in winter storage, clean the outside thoroughly. If you use a high-pressure cleaner, do not hold the stream of water directly on bearing points. After cleaning is completed, grease 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 chain couplings (**after that check the packer adjustment**) 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 dismount, 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 nipples on the cross joint and grease on the bearing rings of the guard tube.

Park the Big Pack Baler in a dry location, but not in the vicinity of artificial fertilisers or livestock buildings.

Repair damage to the paint. Thoroughly coat bare metal spots, especially twine eyes, knotters (knotter hook and twine support disc) and the baling channel with vegetable oils to protect them.



The Big Pack Baler 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 relieve the load on the tyres (leaving the baler in one spot for a long time may cause damage to the tyres) place the Big Pack Baler on blocks. Protect the tyres against external influences such as oil, grease, direct sunlight, etc.

Release the parking brake and flywheel brake. Drain out condensed water from the compressed air container.

Perform the necessary repair tasks 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.

3.7 Transport

3.7.1 Preparations for Road Travel



- Travelling on public roads is only allowed with empty baling channel, bale chute folded in and the pick-up is raised.
- To prevent functions from being triggered accidentally, it is essential to turn off the control unit when the machine is being transported.
- The maximum permissible speed must be observed (see Chapter 1, Technical Data).
- Riding on the Big Pack Baler is not permitted.
- Observe the maximum supporting and tensile load of the hitch on the tractor.
- The traffic safety of the Big Pack Baler, especially the lighting, locked protective covers and twine box flaps, raised and secure pick-up must be checked and guaranteed.
- Before starting, ensure perfect sight conditions on and around the tractor as well as towards the Big Pack Baler.
- In the case of machines with operating permission, observe the requirements in the operating permission!

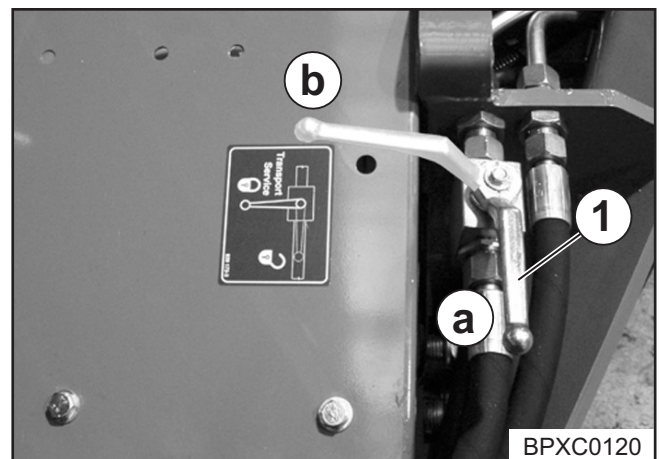
The following tasks must be performed on the Big Pack Baler and tractor before road travel:

Raise the pick-up

- Raise 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.

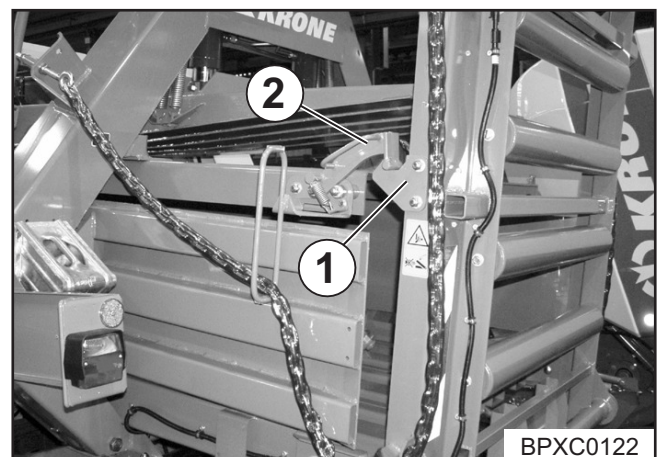
- The lever must be moved from position (a) to position (b) to raise the pick-up.



Hydraulically activated roller chute (optional):

- Fold up the hydraulically activated roller chute (1) hydraulically.

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

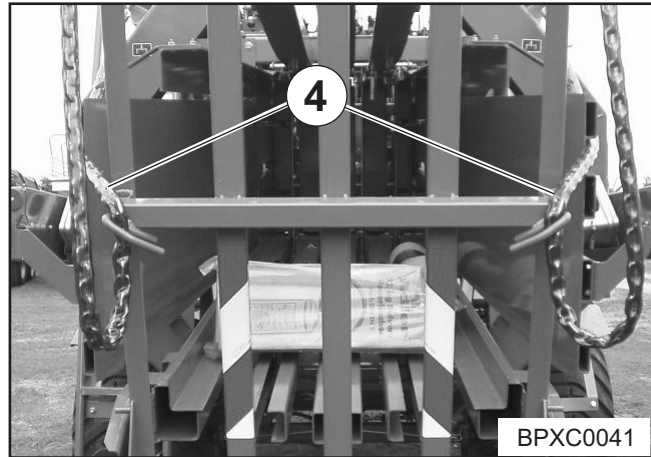


Release the parking brake (see also Chapter 3.2.3)

- Turn the parking brake crank anticlockwise until the brake cable is slightly slack.

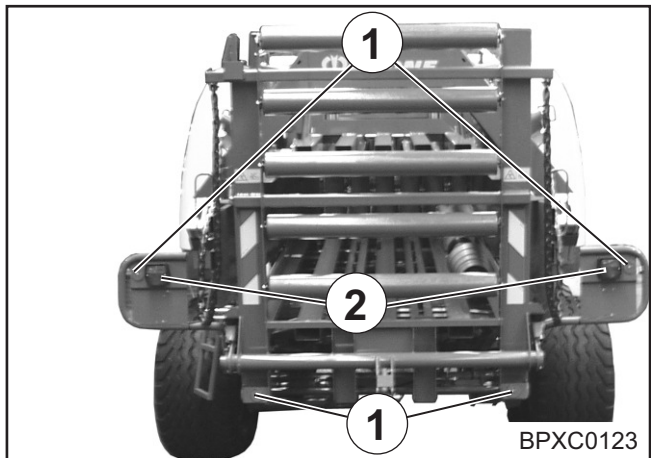
Bale chute in transport position (optional):

- To bring the bale chute into the transport position, the unfolded chute must be folded up and secured with the retaining chains (4).



Check the lighting system:

- Check the rear lights (2) and reflectors (1) for proper functionality and clean them.
- The same applies to the yellow reflectors located on the sides of the Big Pack Baler and the front white side lights.



3.7.2 Moving

If the hoses of the compressed air brake are not connected to a brake system, then the Big Pack Baler cannot easily be moved.



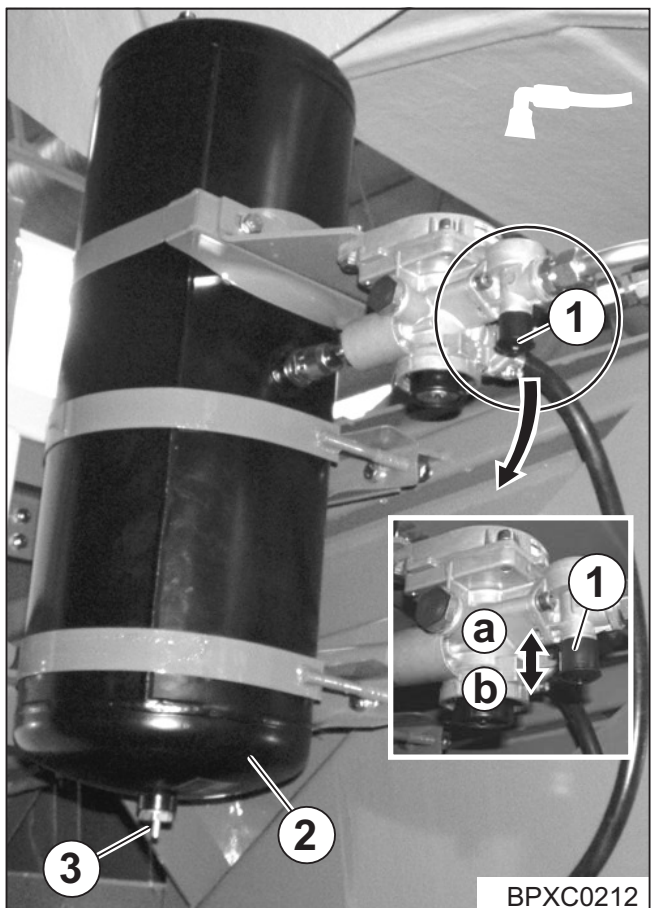
Moving the Big Pack Baler in public road traffic without the compressed air brake connected is prohibited!



Secure the machine against rolling away before operating the release valve or letting off the air pressure from the storage tank.

The release valve is on the front right under the side hood. If a minimum pressure of 4 bar is available in the storage tank (2) of the brake system of the Big Pack Baler, 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 connected to a compressed air brake system again, 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, the residual pressure must also be let off by operating the drain valve (3). Only now can the Big Pack Baler be moved.



3.7.3 Coaster/Steering Axle (Optional)

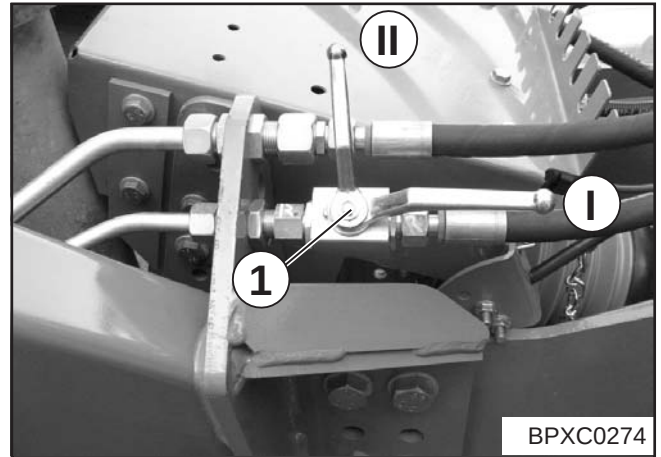


Make certain the shut-off valve (1) is in position (I) (opened) when the machine is in use.

Before moving backward first move the rear axle wheels to a straight position if they are turned. Then charge the locking cylinder with air. It may be necessary to drive straight forward a short distance.

While driving in reverse leave the pressure on the hydraulic connection.

While driving forward, set the tractor valve for the steering axle to "Lower" so that the wheels can freely adjust to the trajectory of the curve.



It may be useful to lock the steering axle if the lateral guiding of the non-steered front axle is no longer sufficient, for example

- on a slope
- on soil that is not solid enough
- for fast travel over an uneven course.

To do this, charge the locking cylinder until the steered wheels are in position for driving straight ahead. During forward travel with the steering axle locked, leave the pressure on the hydraulic connection.

3.7.3.1 Moving the machine without hydraulic connection

To ensure that the machine can be moved even without connecting the hydraulic line, the locking cylinders must be charged with pressure and the shut-off valve must be closed.

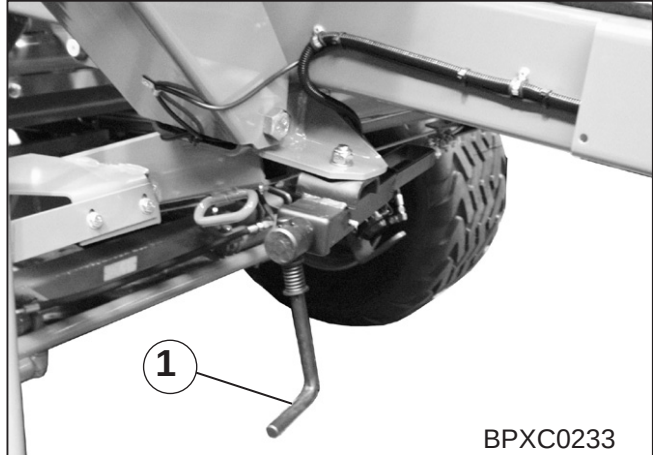
3.8 Parking the Big Pack Baler



- Park the Big Pack Baler 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 Big Pack Baler 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!
- Before uncoupling the hydraulic hoses, make the hydraulic system on the tractor and machine side pressureless.
- Remove the PTO shaft only with the PTO disengaged and the engine turned off and the ignition key withdrawn. Apply the flywheel brake.

Parking brake:

- Apply the parking brake of the Big Pack Baler with the crank (1).



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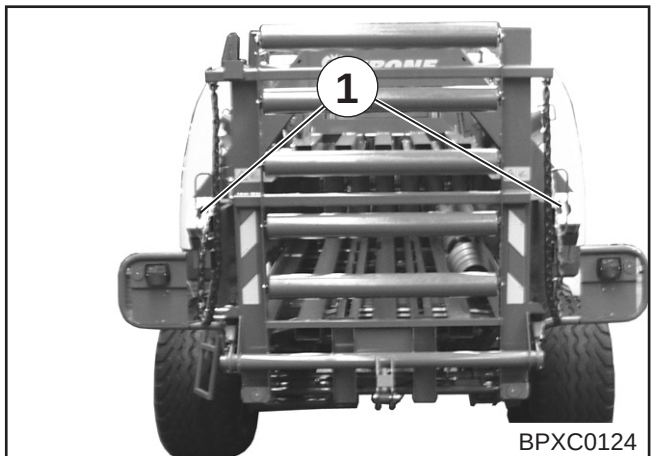
Wheel chocks:

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

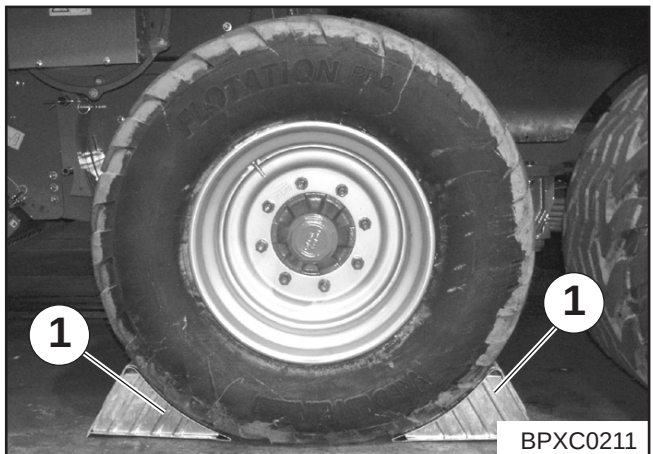
- Place the wheel chocks in front of and behind the tyres. This will prevent the machine from rolling away.



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.



BPXC0124



BPXC0211

4 Comfort Control Unit/ Medium/comfort version machine

4.1 General Description

The electronic equipment of the Big Pack Baler consists essentially of the job computer, the control unit 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/actuator diagnostics

The control unit (2) communicates information to the driver and performs settings to operate the Big Pack Baler. This information is received and further processed by the job computer.

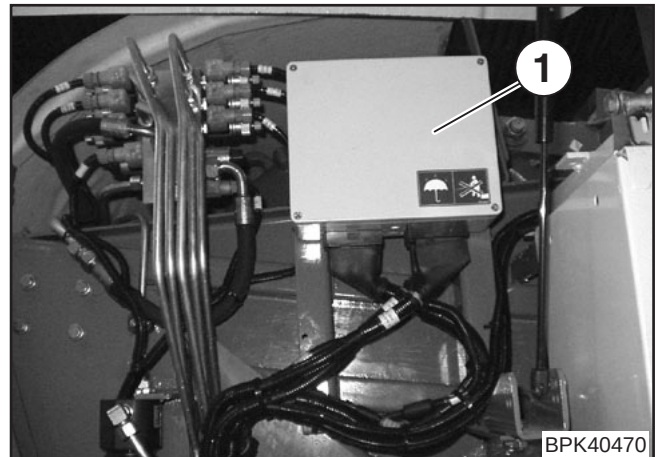


The control unit (2) must be protected from water.

If the Big Pack Baler will not be used for an extended period (as in winter, for example), the control unit (2) must be stored in a dry place.



**For mounting and repair jobs, especially for welding jobs on the Big Pack Baler, disconnect the power supply from the control unit (2).
Overvoltage can damage the electronics of the control unit.**

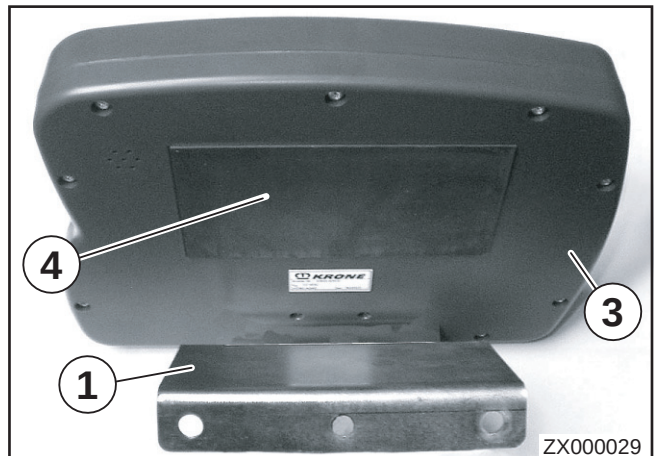
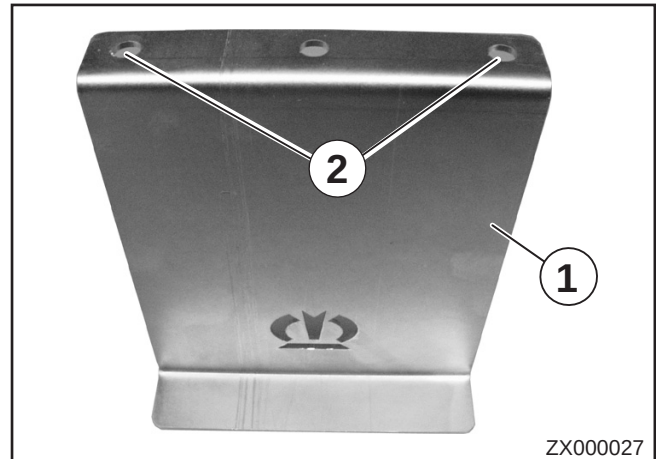


4.2 Mounting

Mount the control unit with its support (1) where it can be seen by the driver. The support (1) can optionally be fastened directly in the cab or, using the suction base, on the front or side pane.

Direct fastening

- Fasten the support (1) using the drill holes (2) already present.
For information on mounting the control unit, see below.



Electrical power supply



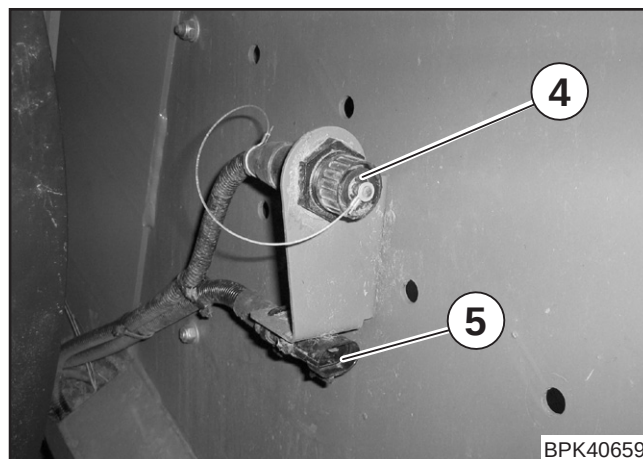
When installing, take care that the connecting cables are not stretched and cannot come in contact with the tractor wheels.

- Connect the power supply cable (12 V) on the tractor side to the 3-prong power outlet (DIN 9680) and on the machine side with the Delphi plug (5).
- The Delphi plug (5) is located on the left-hand side of the machine (in the direction of travel) on the metal cover close to the flywheel.



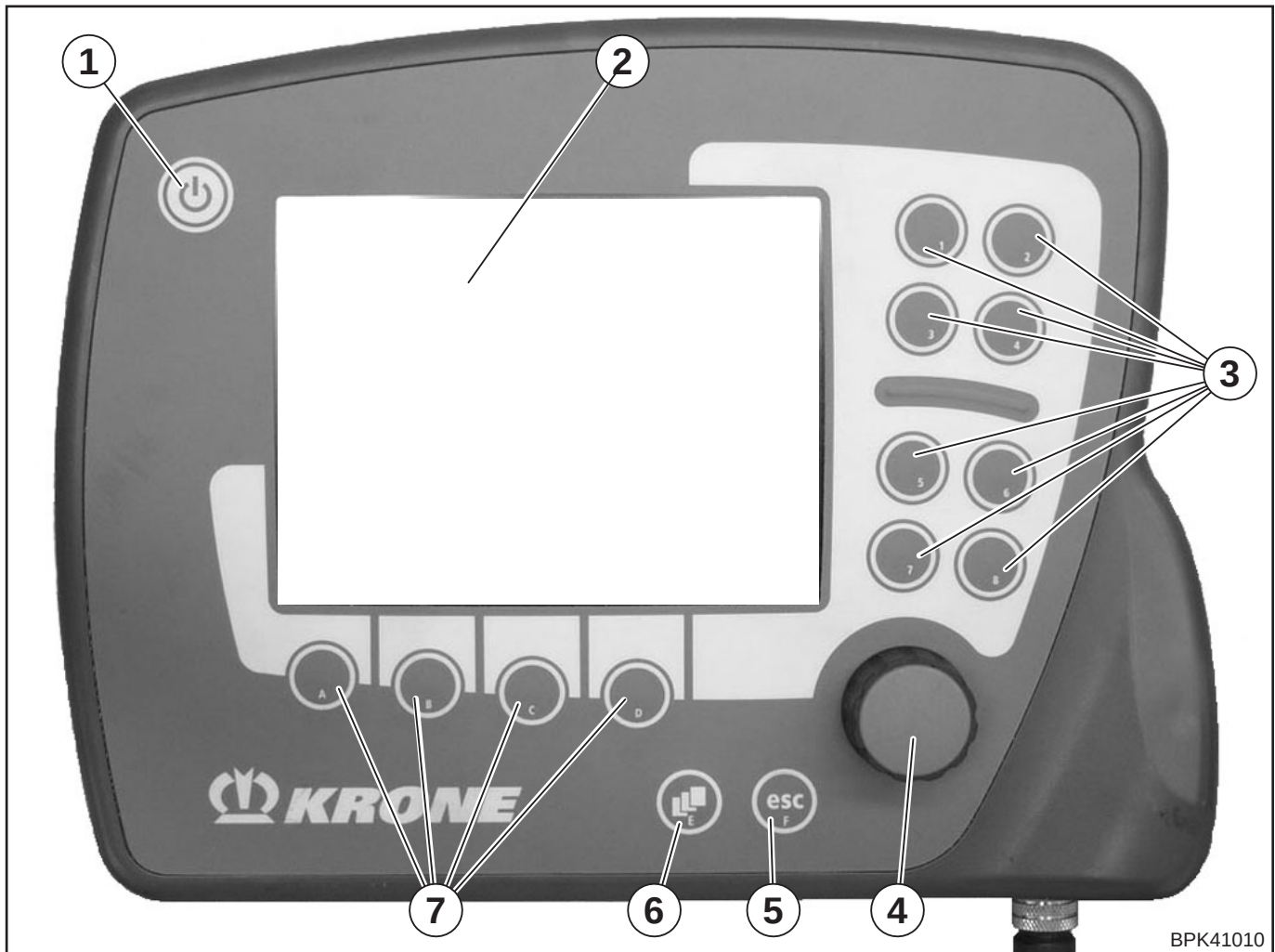
Control unit

- Connect the cable included with delivery to the socket (4) on the metal cover on the left-hand side (in the direction of travel) close to the flywheel. Also connect with the socket (3) of the control unit.



4.3 Control Unit

Overview



- 1 On/Off key
- 2 Display
- 3 Keys (1 - 8)
- 4 Rotary potentiometer
- 5 Esc key (F)
- 6 Menu key (E)
- 7 A - D keys

Description of the keys

Keys 1-8

The keys 1-8 are used to activate the softkeys located in the right column. For the assignment of the keys, see the illustration.

If there is no softkey next to the key, it has no function.

Rotary potentiometer

The rotary potentiometer has two functions:

1. The rotary potentiometer can be turned to change settings and to select the desired menu in the menu level.
2. Pressing the rotary potentiometer saves settings. If a number of settings are possible in the display, the

 icon jumps to the next setting possibility.

During ongoing operation, the  icon should be in the parking position to prevent settings from being changed accidentally.  automatically jumps to parking position after about 15 seconds without activation.

A - D keys

The A - D keys are used to activate the softkeys located in the line just above them. For the assignment of the keys, see the illustration. If there is no softkey above the key, the key has no function.

Key E

The  key can be used to bring up the menu.

Key F

You can use the  key to go to the previous screen or the menu level above the current one. Holding the key down slightly longer takes you back to the main screen.

4.4 Operational Readiness

Switching on

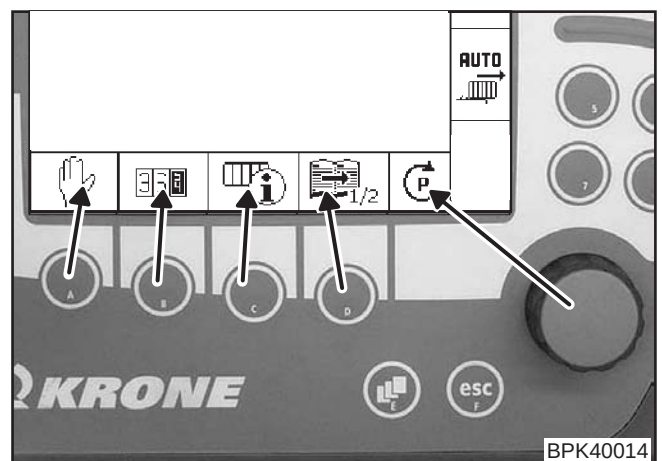
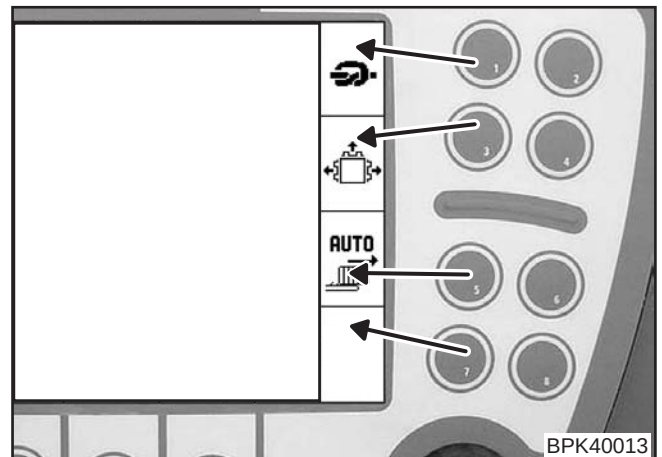
- Activate the  key.

After you have turned the unit on, the connection to the job computer is established.

If it is not possible to set up a connection, the message shown on the side here appears in the display.

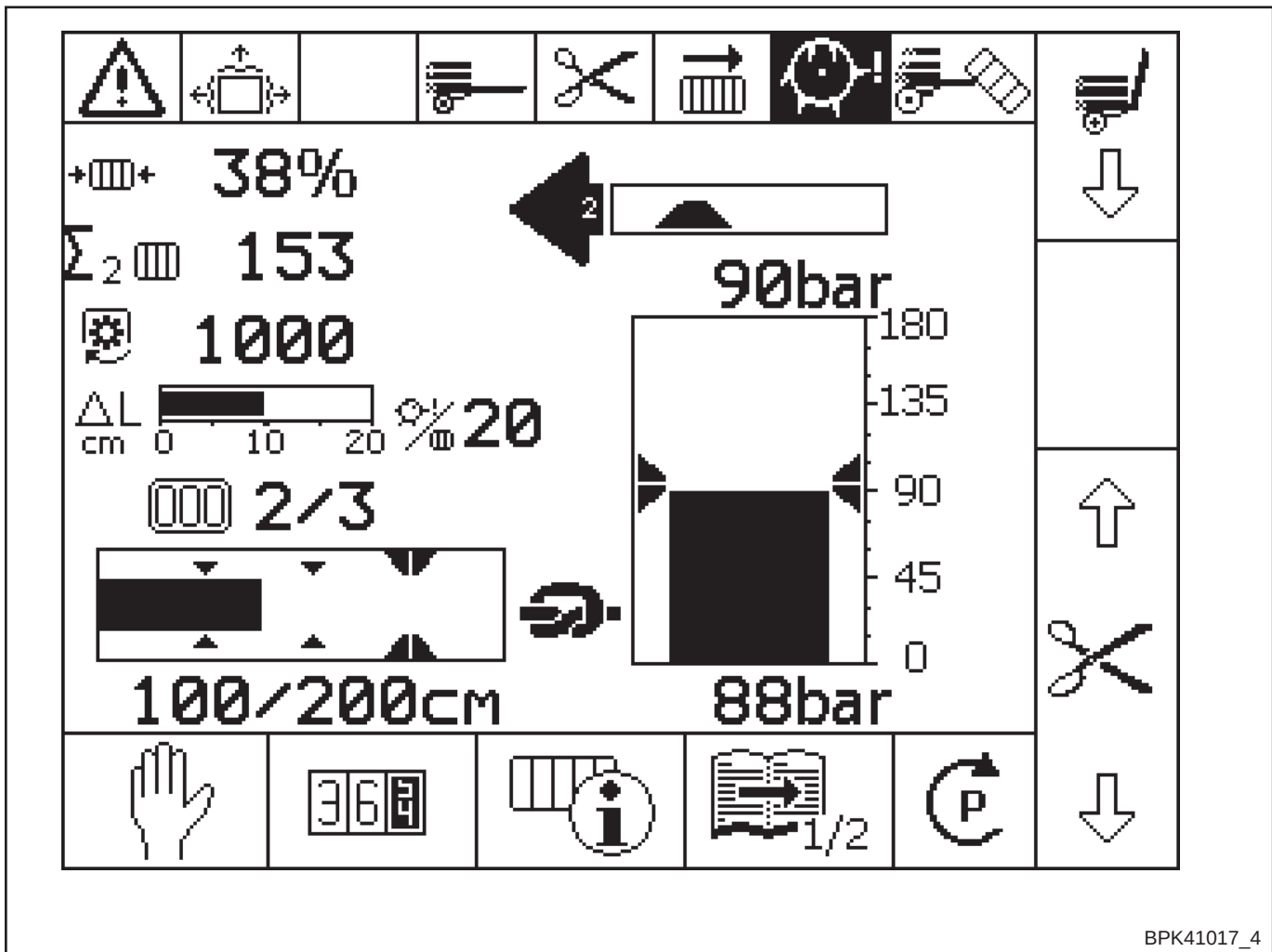
The CAN connections and the job computer should be checked.

If the connection is established, the basic screen "Manual" appears after a brief time (see Chapter 4.5.1).



4.5 Manual Mode

4.5.1 Basic Screen for Manual Mode 1/2



BPK41017_4

Status line

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

-  Alarm message is pending
-  Bale channel flaps open; if the PTO is turning the icon is flashing
-  Bale channel flaps closed
-  Bale chute up
-  Bale chute down
-  Blade bar up or blades are active: cutting in progress
-  Blade bar down or blades are passive: no cutting in progress
-  Bale ejector out
-  Bale ejector in

-  Machine duty
Max. duty if continuously inverted.
Flashing at lower loads.
If not inverted when baling => check the packer feed sensor.
-  Bale(s) being set down

Softkeys:

The following softkeys are found in the bottom line:

-  Switching between Manual/Automatic mode Activated operation is shown.

Switching to Automatic mode

Press the  key for softkey 

-  Set customer counter
Press  key for softkey .
Menu 2-1 "Customer counters" is displayed (for Settings, see Chapter 4.9.9).

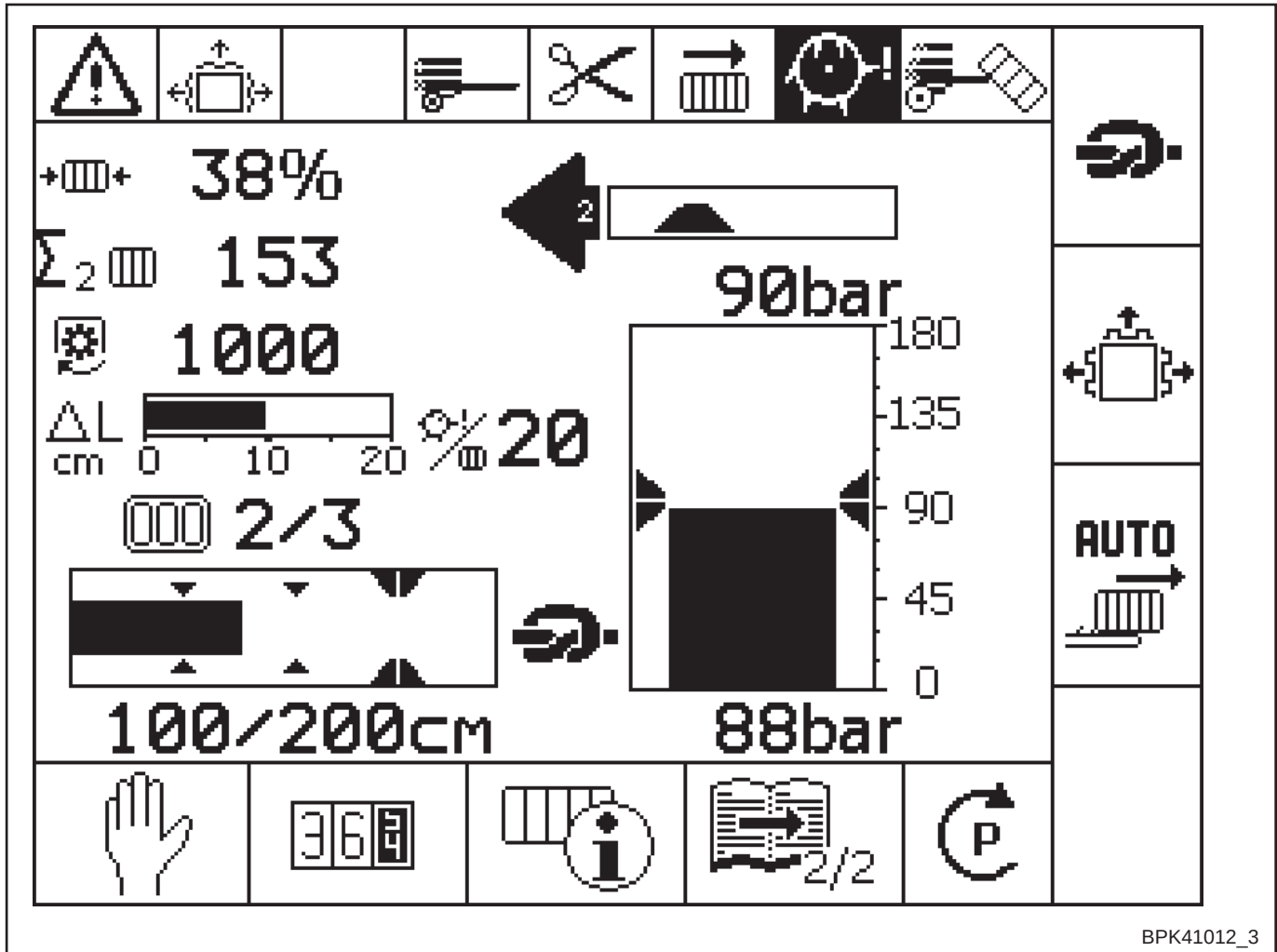
-  Baling information
Press the  key for softkey 
(See Sect. 4.9.16 for a description)

-  Switching the basic menu page 1/2 to page 2/2
The activated page is shown.

Switching to page 2/2

Press the  key for softkey 

4.5.2 Basic Screen for Manual Mode 2/2



BPK41012_3

Softkeys:

The following softkeys are located in the right column of page 1/2:

-  Lower bale chute.
Lower bale chute.
Press the  key for softkey 
-  Raise/lower blade bar
The activated mode is shown.
Raise the blade bar
Press the  key for softkey 
- Lower the blade bar
Press the  key for softkey 

The following softkeys are located in the right column of page 2/2:

-  To trigger the knotter
Press the  key for softkey 
-  To open the bale channel flaps
Press the  key for softkey 
-  Automatic bale ejector

Bale ejector

Press the  key for softkey 
Bale channel flaps are opened.

Press the  key for softkey  again.
The icon is shown in reverse colours.
10 bale ejections are performed.

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

-  Current baling force as a %
(100% = max.)
-  Total number of bales, current customer counter
-  Current layer thickness (only for electrical bale length setting)
-  Current PTO speed (min⁻¹)
-  Appears briefly after a knot is tied;
if activated (see Chapter 4.9.4) an audio signal is heard (horn sound for
-  Direction of motion display

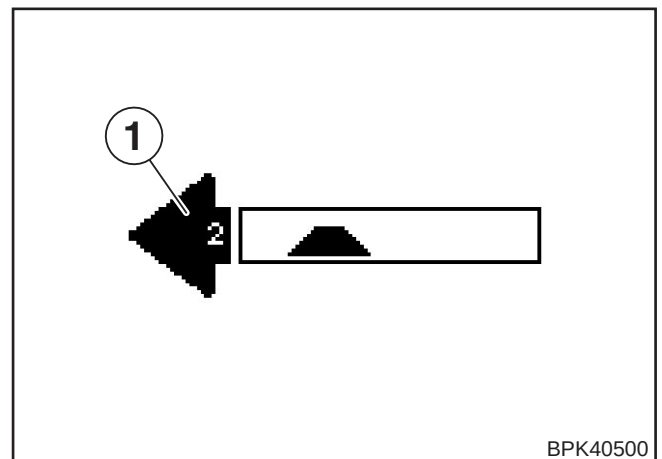
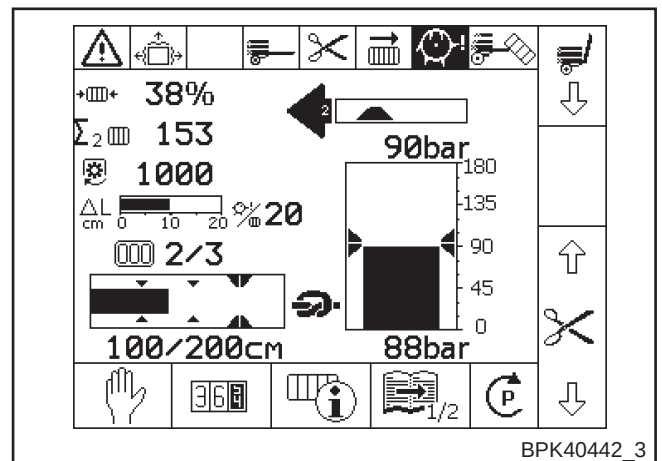
Arrows (1) left/right from the display.

The arrows (1) have three different sizes, numbered 1-3.

They show the driver the side to which he must correct and how far when driving over a windrow to ensure the bale chamber is filled evenly.



If the indications for the direction of motion are too strong or too weak, they can still be adjusted (see Sect. 4.9.5)

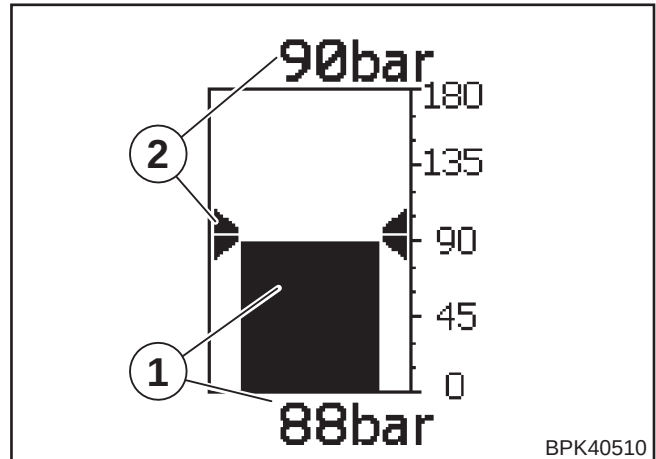


Comfort Control Unit

- Bale channel flap pressure (in bar)

The value under the bar display and the height of the bar (1) indicate the current actual value of the bale channel flap pressure.

The value above the bar display and the arrows in the bar display (2) indicate the set target bale channel flap pressure in bar.



- Multi-bale (optional)

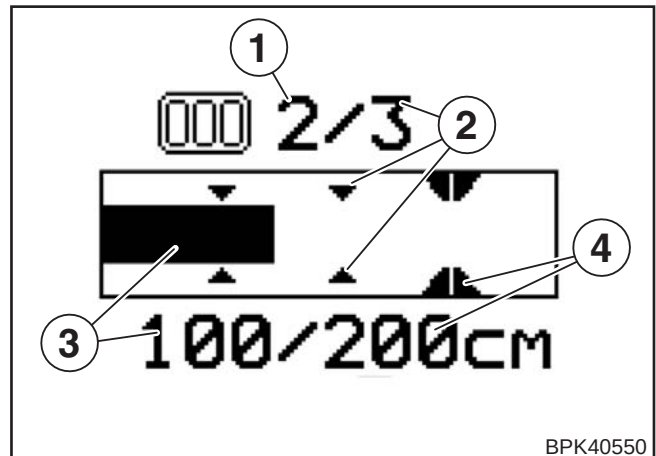
The first value (1) shows the multi-bales currently baled. The second value and the small arrows (2) indicate the target number of multi-bales per total bales.

A short horn sound is heard after each multi-bale. If the bale is ready, a longer and louder horn tone is heard.

- Bale length display
(only for electrical bale length setting)

The first value in the bar display and the length of the bar (3) indicate the actual status of the bale length.

The second value and the large arrows (4) indicate the set target bale length.



Setting the target bale channel flap pressure

The pressure is specified by the user in manual mode.

The pressure is built up immediately if the PTO is running and the machine is stopped. The pressure display barely fluctuates in the display.



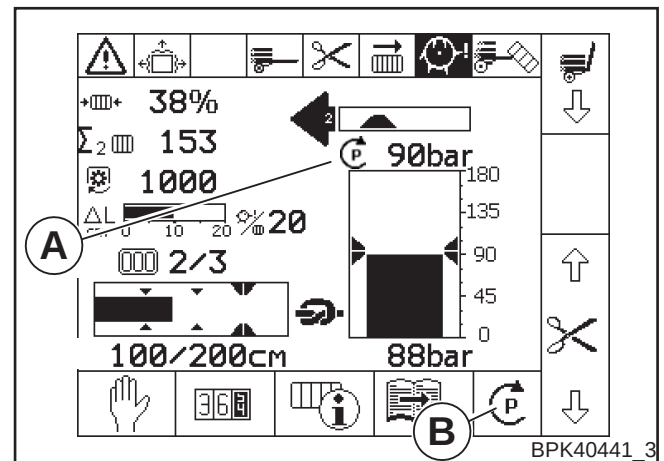
If the pressure is set too high, the machine may be exposed to mechanical overload during baling, which can cause it to be destroyed. To prevent this, the bale channel flap pressure must be reduced to a non-critical level just before overload occurs. After a few seconds, it is possible to return to the pressure set by the user.



If overload occurs, the target bale channel flap pressure must be reduced.

Setting the target bale channel flap pressure

- Press the rotary potentiometer until the  icon is in front of the target bale channel flap pressure value (A).
- Turn the rotary potentiometer to set the desired target bale channel flap pressure.
- Press the rotary potentiometer until the  icon is in parking position (B).



BPK40441_3

Setting the bale length (only for electrical bale length setting)



(BP 890; 1270; 1290)

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

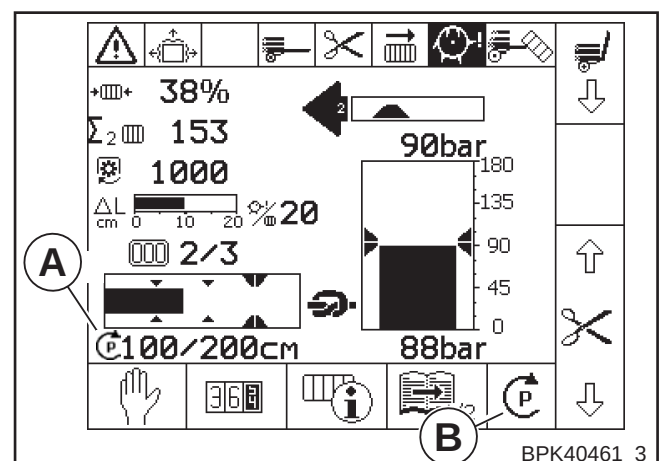
(BP 1290 HDP; BP 12130)

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



The bale length should only be adjusted at the start of a bale. Otherwise there could be a transitional length.

- Press the rotary potentiometer until the  icon is in front of the target bale length (A).
- Turn the rotary potentiometer to set the desired bale length.
- Press the rotary potentiometer until the  icon is in parking position (B).



BPK40461_3

Comfort Control Unit

Setting the number of multi-bales (Multi-bale only)

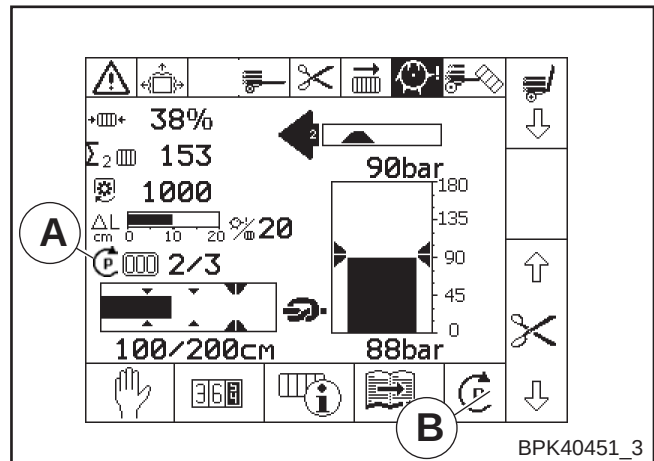


First set the bale length.
Minimum length of the multi-bale:
45 cm (17,7 inch).

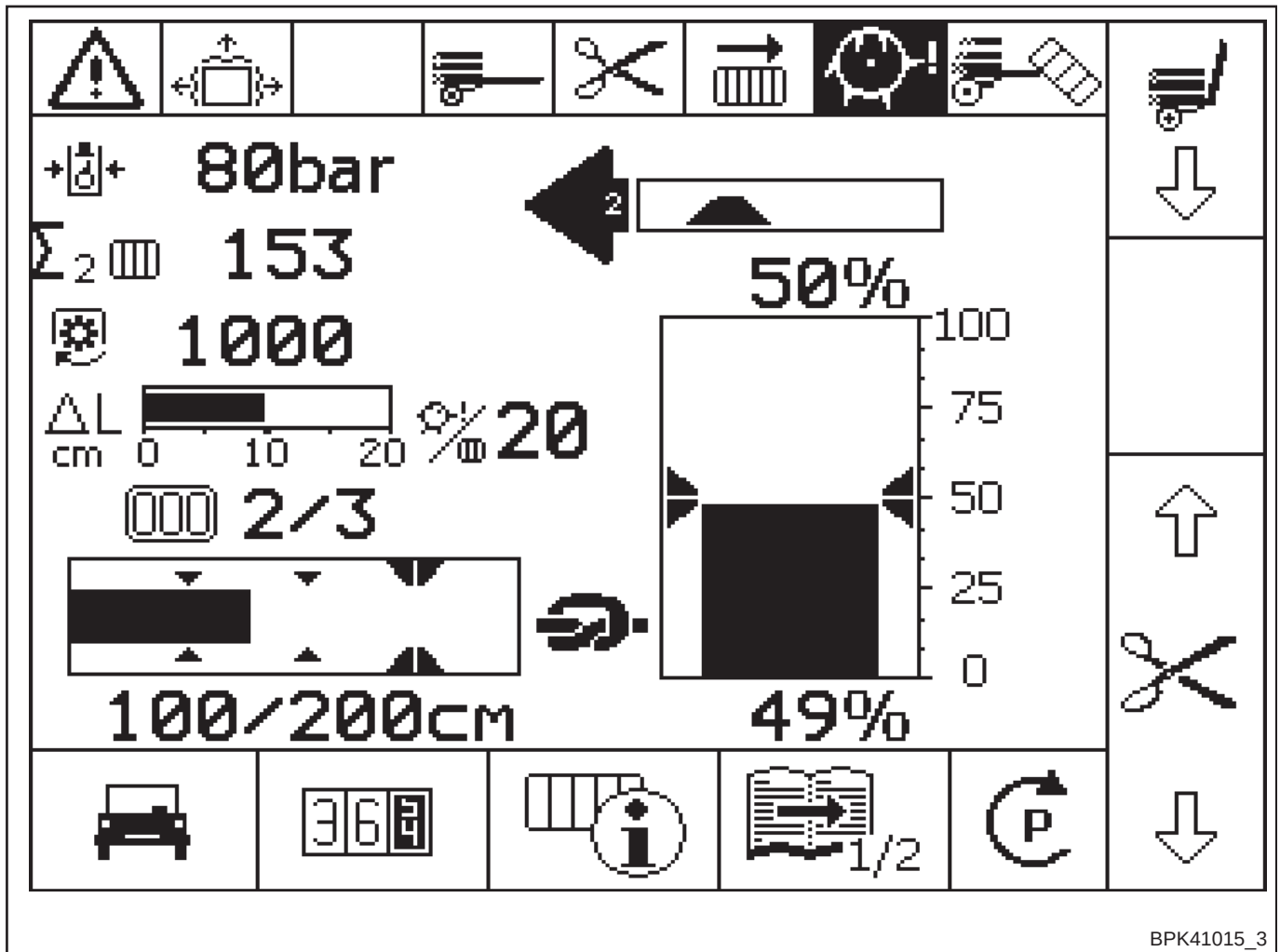


The multi-bale number should only be changed at the start of a bale. Doing so could result in a mixture of total bale and multi-bale.

- Press the rotary potentiometer until the  icon is in front of the  icon (A).
- Turn the rotary potentiometer to set the desired number of multi-bales.
- Press the rotary potentiometer until the  icon is in parking position (B).



4.6 Automatic Mode



For a general description, see Chapter 4.5, Manual mode

Differences compared to manual mode

Softkeys:

-  Switching between Manual/Automatic mode. Activated operation is shown.

Switching to Manual mode

Press  key for softkey 

Displays in the main window:

-  The current bale channel flap pressure in bar
- Baling force (in %)

The value under the bar display and the height of the bar (1) indicate the current actual baling force as a percentage rate.

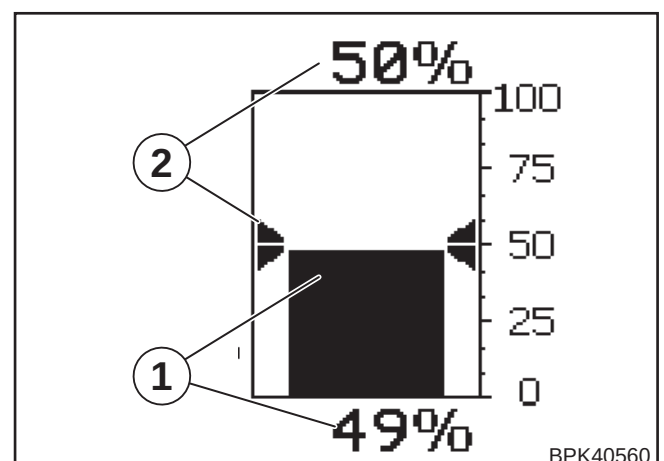
The value above the bar display and the arrows in the bar display (2) indicate the set target baling force as a percentage rate.

Setting the target baling force

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



The pressure display may deviate significantly in the display. The control only works if the packer is supplying fodder to the plunger.



4.7 Buttons on the Machine

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

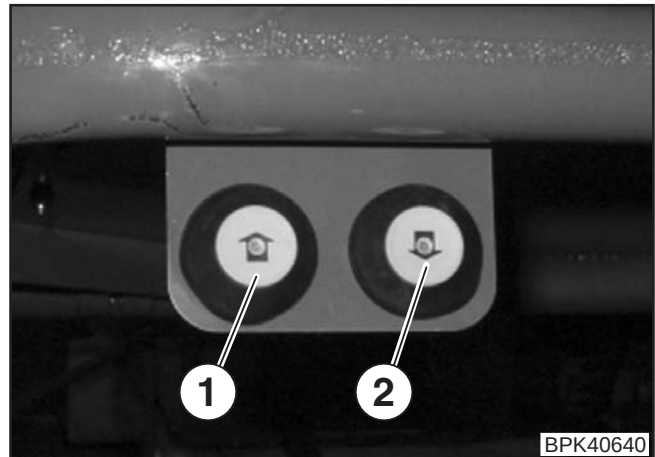
1. There are two buttons on the left front part of the machine on the front part of the twine box with the following functions:



(1) Raise blade bar



(2) Lower blade bar



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



(1) Move bale ejector forward.



(2) Move bale ejector back

Press the  key; bale channel flaps are opened.

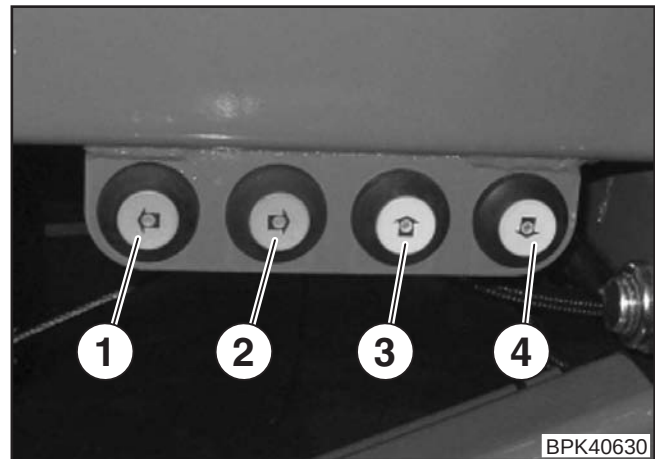
Press the  key briefly. The machine performs 10 bale ejections or press the  key and hold it. The bale ejector moves back.



(3) Raise bale chute



(4) Lower bale chute



4.8 Description of the Baling Process

4.8.1 Bale Channel is Empty

When the control unit is turned on, the display is always in **Manual mode**.



With this setting, the bale channel must first be filled to a pressure of about 50 bar (for straw) and 25 bar (for silage) 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 automatically with materials of different properties (for example with differing moisture content of materials on the same field), you should then switch into **Automatic mode**.

The program will then use the baling force that was previously reached from Manual mode.

The contact pressure of the bale channel flaps is controlled automatically by the job computer so that the selected force of pressure is achieved.

As the material becomes moister, it becomes more difficult to compress the bales. Because of this, the bale channel flap pressure is slightly reduced. As the material becomes drier, the bale channel flap pressure increases again.

The pressure that is shown in the display may deviate considerably because of this.

Bale quality and solidity remain constant.

Additional information:

The baling 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 by the control unit to display the direction of motion.

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 motion indications are too strong or too weak, they can still be adjusted (see Sect. 4.9.5)

4.8.2 Bale Channel is Full

Same as Chapter 4.8.1 with the following difference:

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.

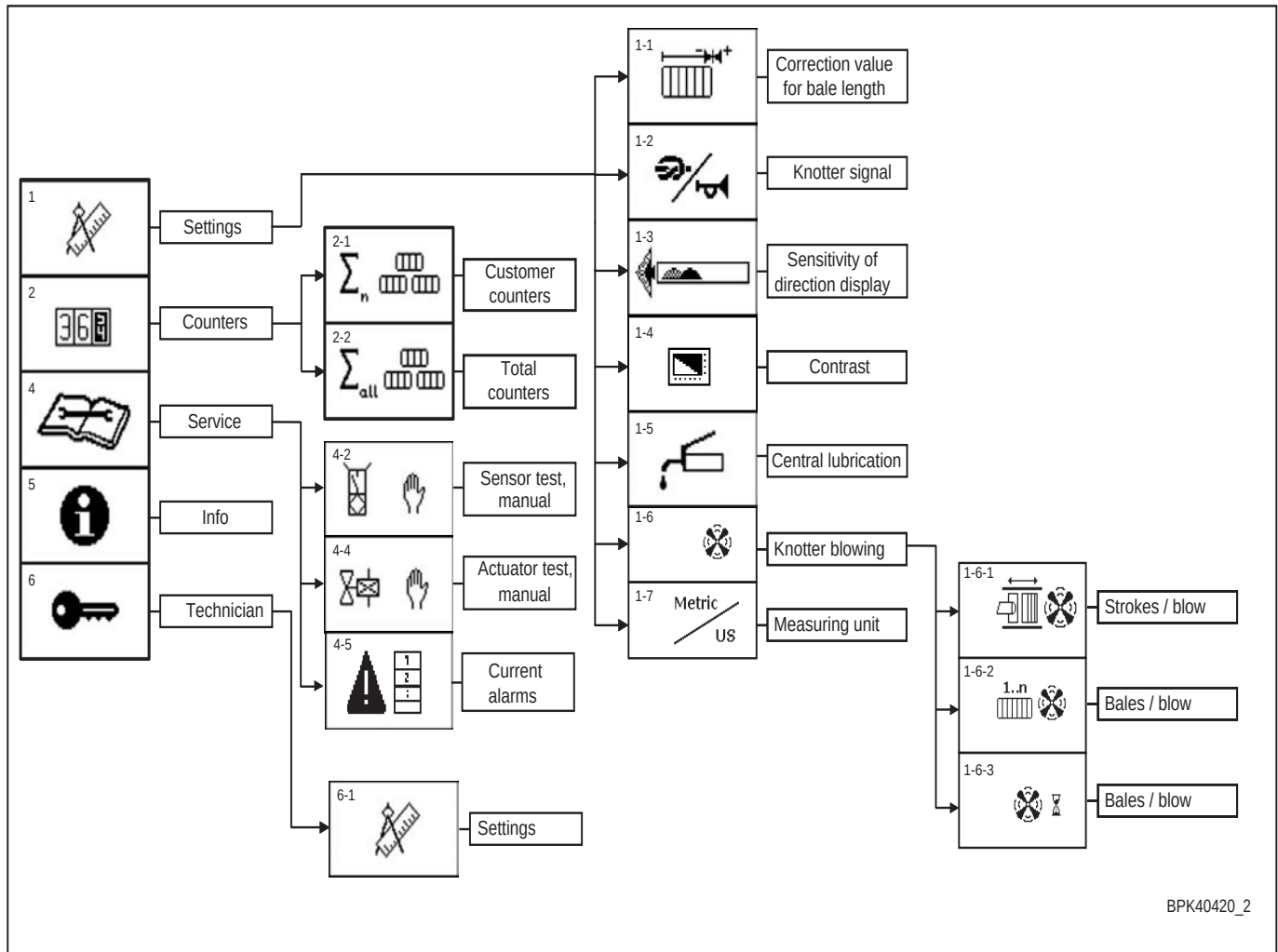


The force of pressure setting should not have been adjusted after the control system is turned on in manual mode, because the control system then “forgets” the last settings.

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

4.9 Menu Level

Overview



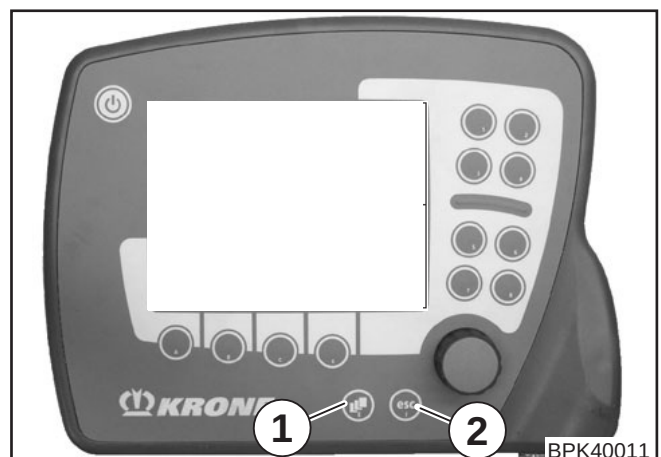
4.9.1 Bringing up a Menu Level

- Press the  key (1).

The menu level is shown in the display.

You can exit the menu level again with the

- the  key (2).



The menu level is divided into five main menus:

-  = main menu 1 "Settings"
-  = main menu 2 "Counters"
-  = main menu 4 "Service"
-  = main menu 5 "Info"
-  = main menu 6 "Technician"
- You can use the rotary potentiometer to select the main menus. The selected icon is shown in reverse colours.
- Pressing the rotary potentiometer brings up the menu level of the main menu that is selected.
- You can use the  key to close the menu currently displayed.

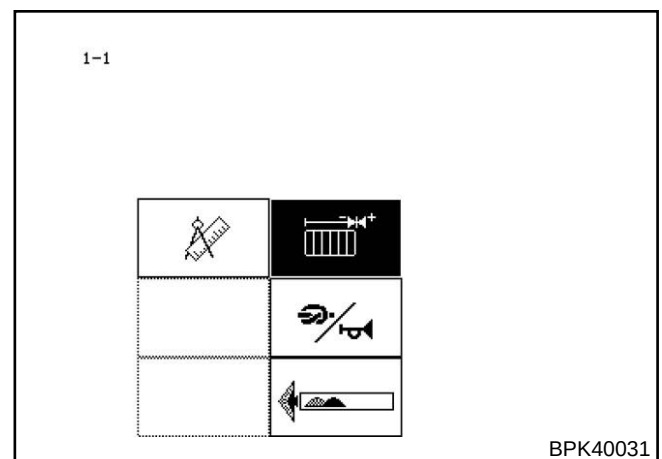
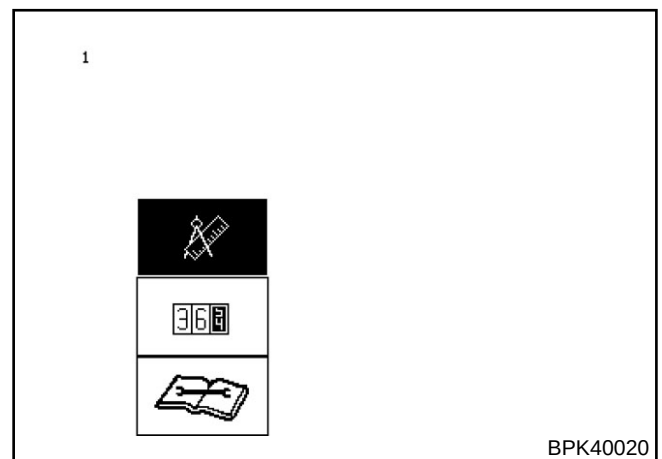
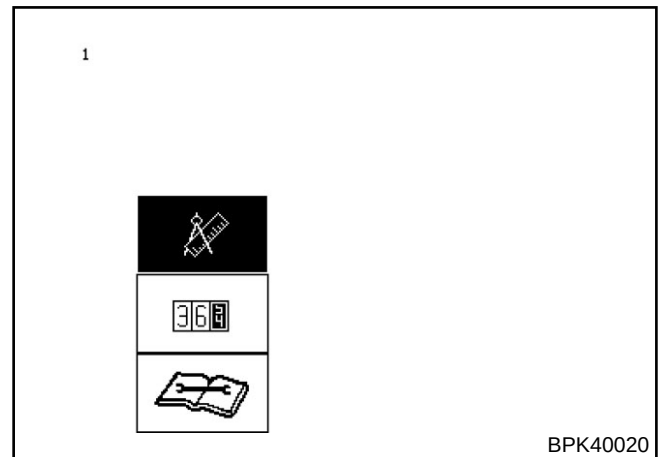
4.9.2 Main Menu 1 "Settings"

Calling the main menu

- Call the main menu with the  key.
- You can select main menu 1  with the rotary potentiometer. The icon is shown in reverse colours.
- Press the rotary potentiometer.

The display shows menu level 1 "Settings". Menu level 1 "settings" is divided into five menus, depending on how the machine is equipped:

-  = menu 1-1 "Correction value for bale length"
-  = Menu 1-2 "Knotter signal"
-  = Menu 1-3 "Sensitivity of direction display"
-  = Menu 1-4 "Contrast"
-  = Menu 1-5 "Central lubrication"
-  = Menu 1-6 "Knotter blowing"
-  = Menu 1-7 "Measuring unit"



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

(for machines with electr. bale length adjustment)

Because of different properties of materials (for example straw, silage) the actual bale length may differ from the pre-set target value.

The correction value can be used to correct this deviation.

Factory setting: 100%

Calling the menu

Main menu 1 “Settings” is displayed

- You can select menu 1-1  with the rotary potentiometer. The icon is shown in reverse colours.

- Press the rotary potentiometer.

The display shows menu 1-1 “Correction value for bale length”.

The bar display and the percentage value show the set contrast value.

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

Setting and saving the correction value

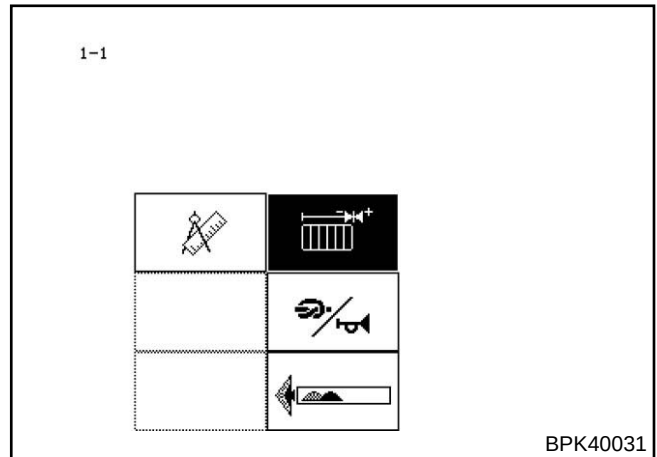


If the bale is too long, reduce the correction value. If the bale is too short, increase the correction value.

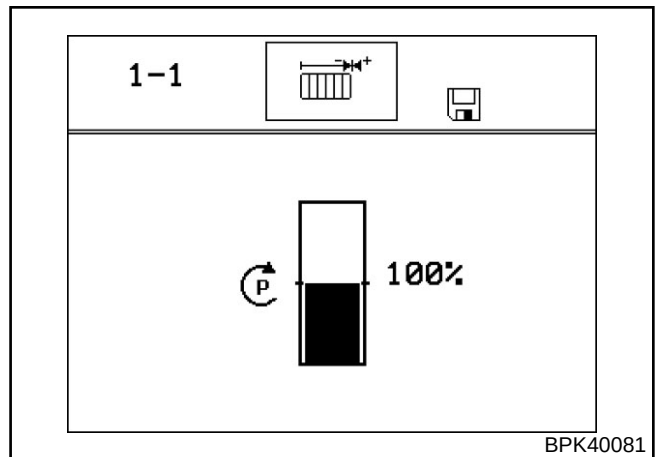
- Set the desired correction value with the rotary potentiometer. The  icon in the top line goes out.
- Press the rotary potentiometer. The set correction value is saved and the  icon appears in the upper line.
- You can use the  key to close the menu currently displayed.

The display shows menu level 1 “Settings”.

- Pressing the  twice brings up the basic screen.



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4.9.4 Menu 1-2 “Knotter signal”

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

Calling the menu

Main menu 1 “Settings” is displayed

- You can select menu 1-2  with the rotary potentiometer. The icon is shown in reverse colours.
- Press the rotary potentiometer.

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

The current status is displayed as an icon:

-  = Knotter signal activated
-  = Knotter signal deactivated

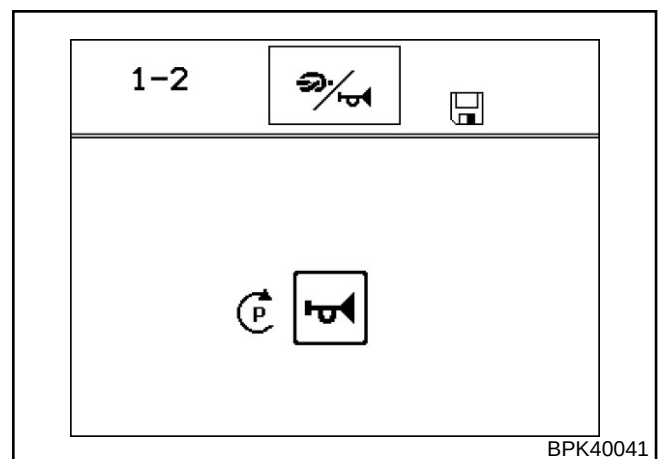
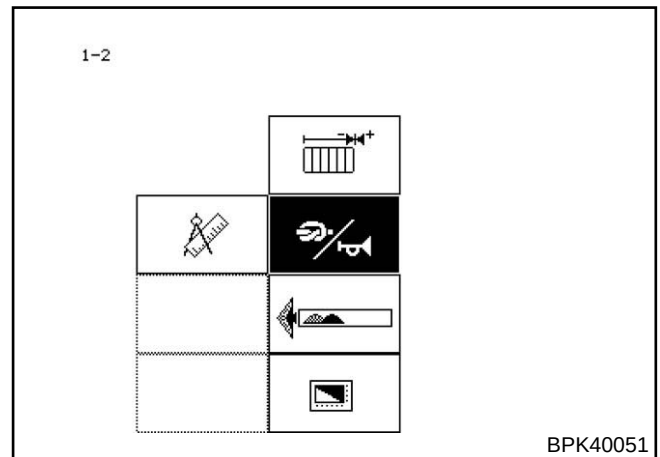
The  icon in the upper line indicates that the displayed status is saved.

Change and save status

- Set the desired status with the rotary potentiometer. The  icon in the top line goes out.
- Press the rotary potentiometer. The set status is saved and the  icon appears in the upper line.
- You can use the  key to close the menu currently displayed.

The display shows menu level 1 “Settings”.

- Pressing the  key twice brings up the basic screen.



4.9.5 Menu 1-3 “Sensitivity of direction display”

Setting the sensitivity of the direction display.

Calling the menu

Main menu 1 “Settings” is displayed

- You can select menu 1-3  with the rotary potentiometer. The icon is shown in reverse colours.
- Press the rotary potentiometer.

The display shows menu 1-3 “Sensitivity of direction display”.

The bar display indicates the set sensitivity. The higher the bar, the more sensitive the direction display.

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

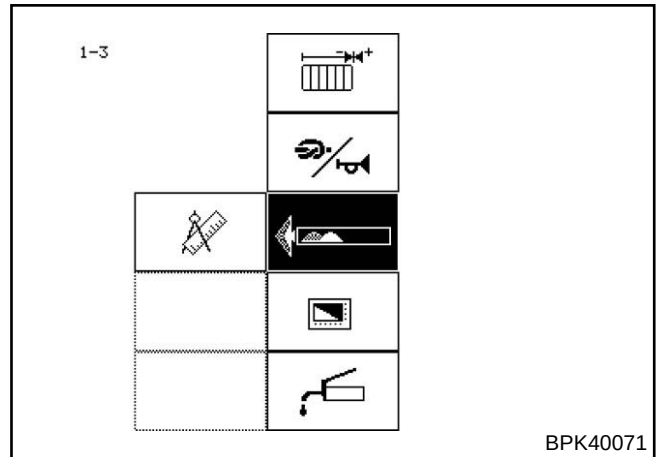
Setting and saving the sensitivity of direction display

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

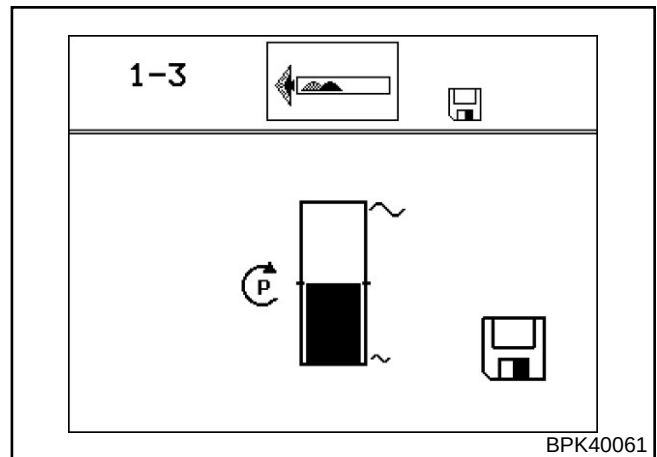
- Set the sensitivity with the rotary potentiometer. The  icon in the top line goes out.
- Press the rotary potentiometer. The set sensitivity is saved and the  icon appears in the upper line.
- You can use the  key to close the menu currently displayed.

The display shows menu level 1 “Settings”.

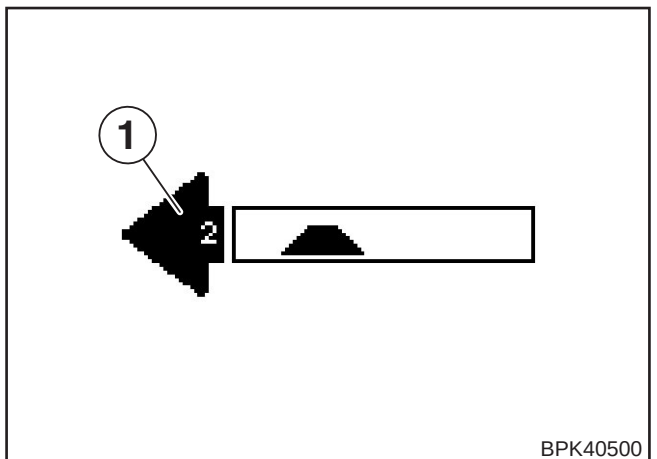
- Pressing the  key twice brings up the basic screen.



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BPK40500

4.9.6 Menu 1-4 "Contrast"

Setting the display contrast.

Calling the menu

Main menu 1 "Settings" is displayed

- You can select menu 1-4  with the rotary potentiometer. The icon is shown in reverse colours.
- Press the rotary potentiometer.

The display shows menu 1-4 "Contrast".

The bar display shows the set contrast value.

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

Setting and saving the contrast

The higher the bar, the stronger the contrast in the display.

- Set the contrast with the rotary potentiometer. The  icon in the top line goes out.
- Press the rotary potentiometer. The set contrast value is saved and the  icon appears in the upper line.
- You can use the  key to close the menu currently displayed.

The display shows menu level 1 "Settings".

- Pressing the  key twice brings up the basic screen.

Day/night design

Switching the day/night design makes it possible to show the display in reverse video.

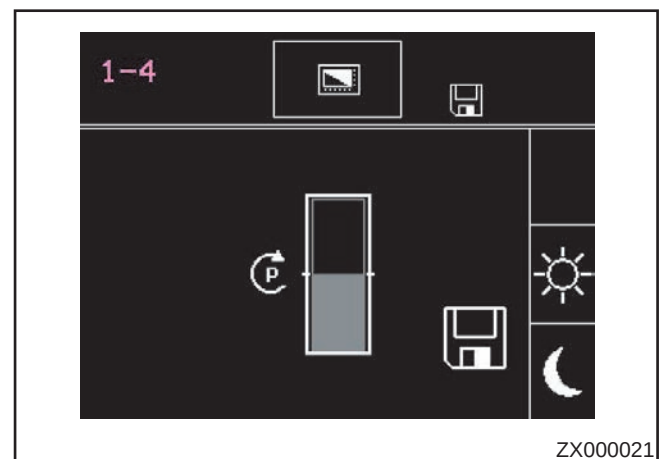
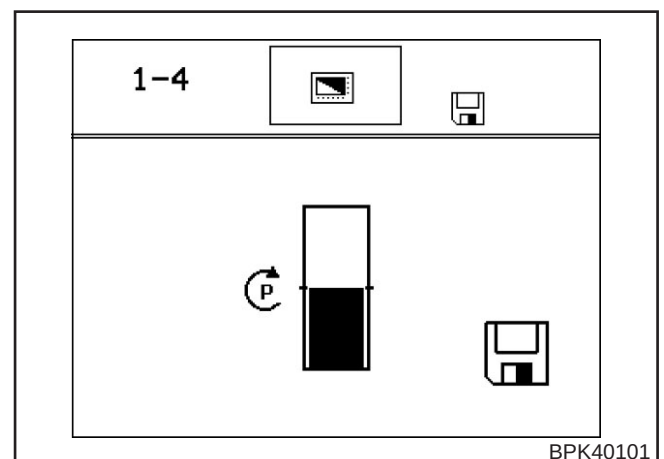
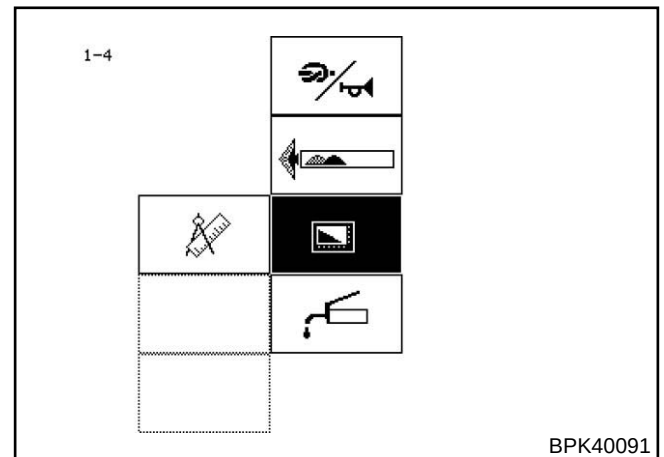
- Press the  key for softkey .

The display appears in reverse video.

To reset the display:

- Press the  key for softkey .

The display is reset:



- You can use the  key to close the menu currently displayed.
- Pressing the  key and holding it down brings up the basic screen.

4.9.7 Menu 1-5 “Central lubrication” (for machines with central lubrication)

Setting lubrication intervals and lubrication duration.

Calling the menu

Main menu 1 “Settings” is displayed

- You can select menu 1-5  with the rotary potentiometer. The icon is shown in reverse colours.
- Press the rotary potentiometer.

The display shows menu 1-5 “Central lubrication”.

The upper value (A) shows the time for the lubrication process. The lower value (B) shows the time for the lubrication pause.

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

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

For balers up to machine number 770 299:

Setting ex works:	Without packer lubrication	With packer lubrication
Lubrication duration	16 min (A)	22 min (A)
Lubrication pause	30 min (B)	30 min (B)



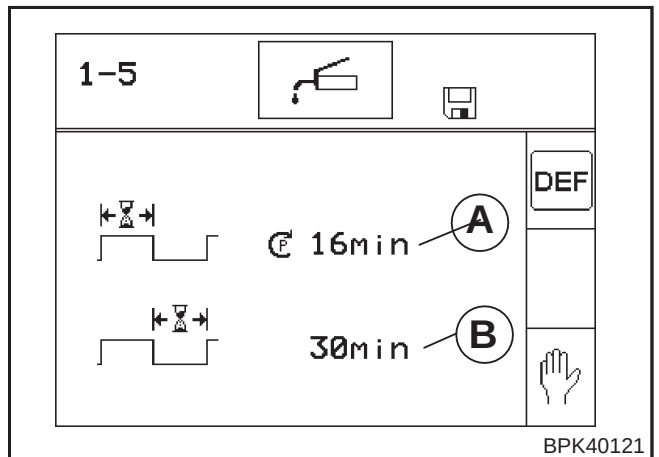
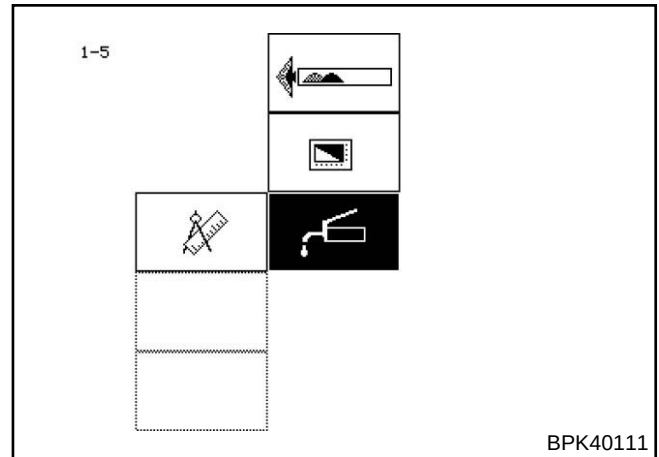
The container of the central lubrication system for balers starting at machine number 770 299 holds 2.5 kg.

For balers starting at machine number 770 300:

Lubrication duration: 20 min (A)
Lubrication pause: 5 min (B)



The container of the central lubrication system for balers starting at machine number 770 300 holds 4.5 kg.



- Press the  key for softkey DEF. The factory setting values are accepted. The  icon in the upper line may go out.
- Set the lubrication duration with the rotary potentiometer. The  icon in the top line goes out.
- Press the rotary potentiometer. The set time is saved and the  icon appears in the upper line.

Initiate the lubrication process manually

- Press the  key for softkey .

The lubrication process is started for the set duration of lubrication.

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

The display shows menu level 1 “Settings”.

- Pressing the  key twice brings up the basic screen.

4.9.8 Menu 1-6 "Knotter blowing"

Displaying the menu

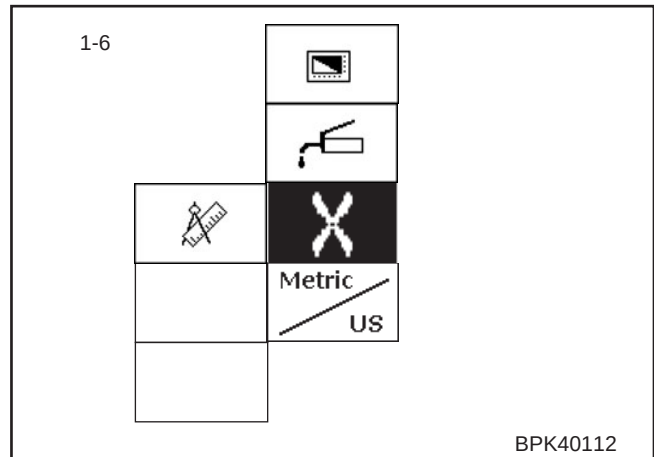
Main menu 1 "Settings" appears

- You can select menu 1-6  with the rotary potentiometer. The icon is shown in reverse video.
- Press the rotary potentiometer.

The display shows menu 1-6 "Knotter blowing".

Menu level 1-6 "Knotter blowing" is divided into two menus, depending on how the machine is equipped:

-  = Menu 1-6-1 "Strokes / blow" (without electronic knotter triggering)
-  = Menu 1-6-2 "Bales / blow" (with electronic knotter triggering)
-  = Menu 1-6-3 "Blow time"



BPK40112

4.9.8.1 Menu 1-6-1 "Strokes / blow" (for machines without electronic knotter triggering)

Dust and accumulated crop material is removed from the knotters by compressed air at regular intervals (depending on the number of piston strokes completed).

Adjusting the number of piston strokes

Displaying the menu

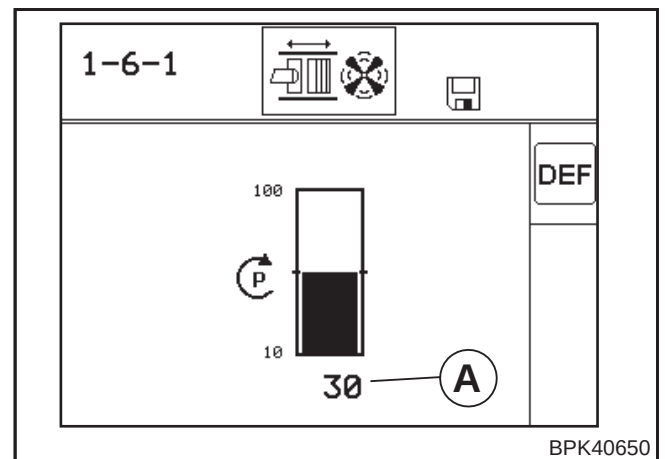
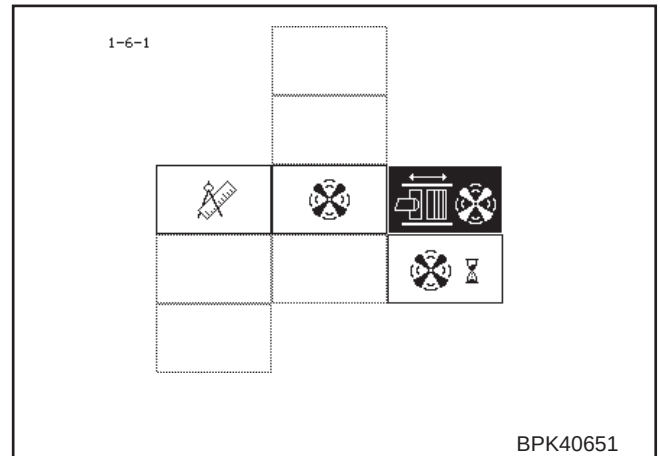
Menu 1-6 "Knotter blowing" appears

- You can select menu 1-6-1  with the rotary potentiometer. The icon is shown in reverse video.
- Press the rotary potentiometer.

The display shows menu 1-6-1 "Strokes / blow". The bar display and value (A) indicate the number of piston strokes completed.

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

- Press the  key for softkey DEF. The factory setting value is accepted. The  icon in the upper line may disappear.
 - Set the desired number of strokes with the rotary potentiometer. The  icon in the top line disappears.
 - Press the rotary potentiometer. The set value is saved and the  icon appears in the upper line.
 - You can use the  key to close the menu that is displayed.
- The display shows menu level 1-6 "Knotter blowing".
- Pressing the  key several times brings up the basic screen.



4.9.8.2 Menu 1-6-2 "Bales / blow" (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). Settings from 0.5 to 3 bales are possible. If you select a setting of 0.5, half of the bale is blown out at the end of the bale.

Adjusting the number of bales

Displaying the menu

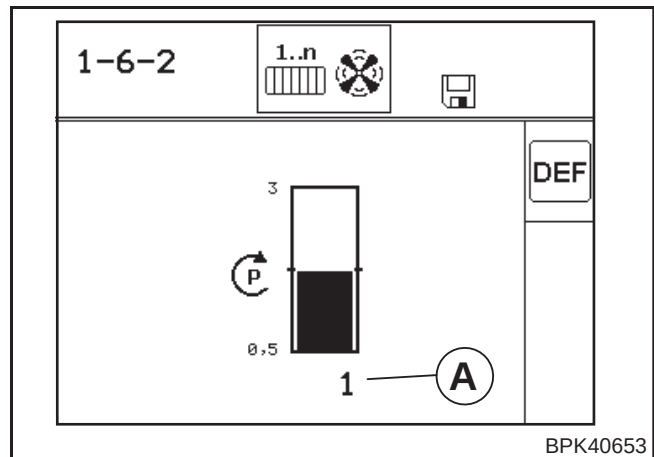
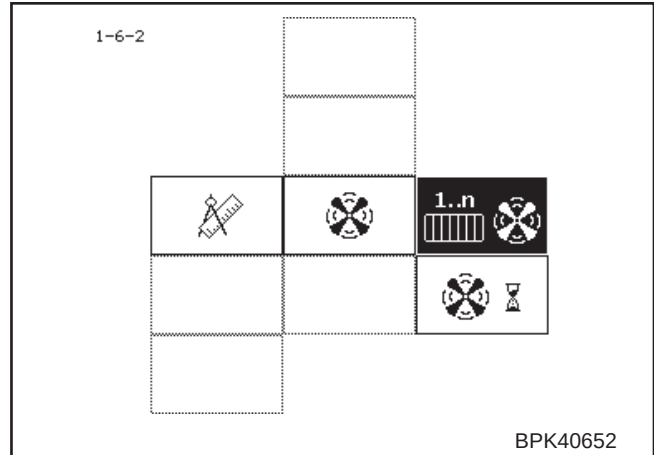
Menu 1-6 "Knotter blowing" appears

- You can select menu 1-6-2  with the rotary potentiometer. The icon is shown in reverse video.
- Press the rotary potentiometer.

The display shows menu 1-6-2 "Bales / blow". The bar display and value (A) indicate the preselected number of bales.

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

- Press the  key for softkey DEF. The factory setting value is accepted. The  icon in the upper line may disappear.
 - Set the desired number of bales with the rotary potentiometer. The  icon in the top line disappears.
 - Press the rotary potentiometer. The set value is saved and the  icon appears in the upper line.
 - You can use the  key to close the menu that is displayed.
- The display shows menu level 1-6 "Knotter blowing".
- Pressing the  key several times brings up the basic screen.



4.9.8.3 Menu 1-6-3 "Blow time"

You can adjust the blowing time on the knotter in this menu.

Displaying the menu

Menu 1-6 "Knotter blowing" appears

- You can select menu 1-6-3  with the rotary potentiometer. The icon is shown in reverse video.
- Press the rotary potentiometer.

The display shows menu 1-6-3 "Blow time".

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

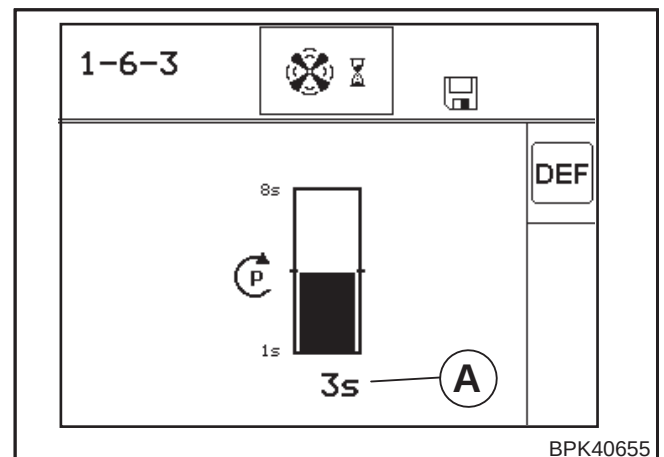
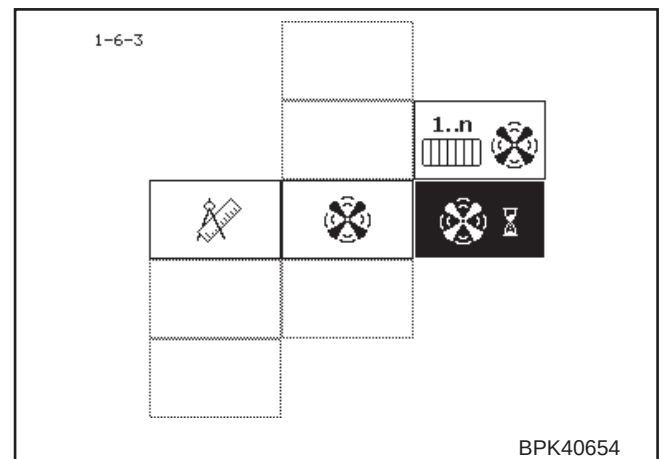
The  icon in the upper line indicates that the displayed value is saved.

- Press the  key for softkey DEF. The factory setting value is accepted. The  icon in the upper line may disappear.
- Set the desired blow time with the rotary potentiometer. The  icon in the top line disappears.
- Press the rotary potentiometer. The set value is saved and the  icon appears in the upper line.

- You can use the  key to close the menu that is displayed.

The display shows menu level 1-6 "Knotter blowing".

- Pressing the  key several times brings up the basic screen.



4.9.9 Menu 1-7 "Unit of measure" (for machines with electronic knotter triggering)

Switch the unit of measure from Metric to US or vice versa.

Meaning of the icons:

	Unit of measure Metric
	Unit of measure US

Displaying the menu

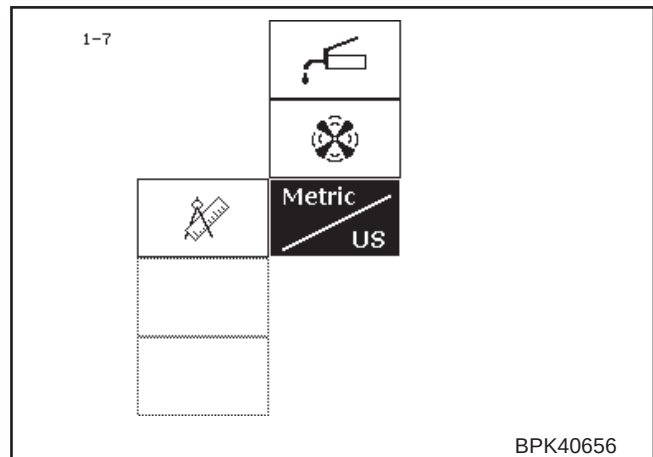
Main menu 1 "Settings" appears

- You can select menu 1-7  with the rotary potentiometer. The icon is shown in reverse video.
- Press the rotary potentiometer.

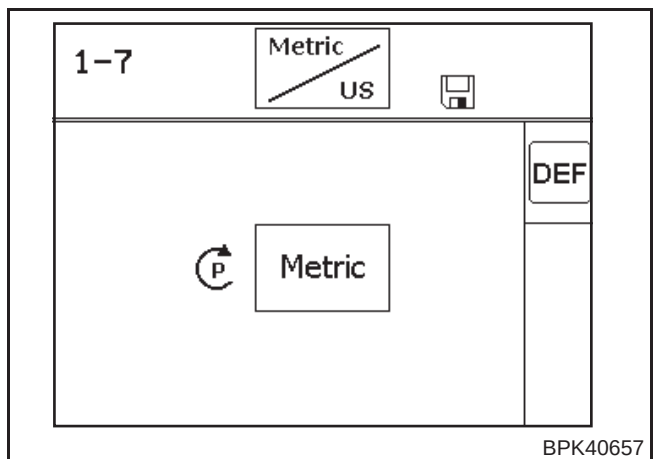
The display shows menu 1-7 "Unit of measure".

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

- Press the  key for softkey DEF. The factory setting value is accepted. The  icon in the upper line may disappear.
 - Set the desired unit of measure with the rotary potentiometer. The  icon in the top line disappears.
 - Press the rotary potentiometer. The set status is saved and the  icon appears in the upper line.
 - You can use the  key to close the menu that is displayed.
- The display shows menu level 1 "Setting".
- Pressing the  key several times brings up the basic screen.



BPK40656

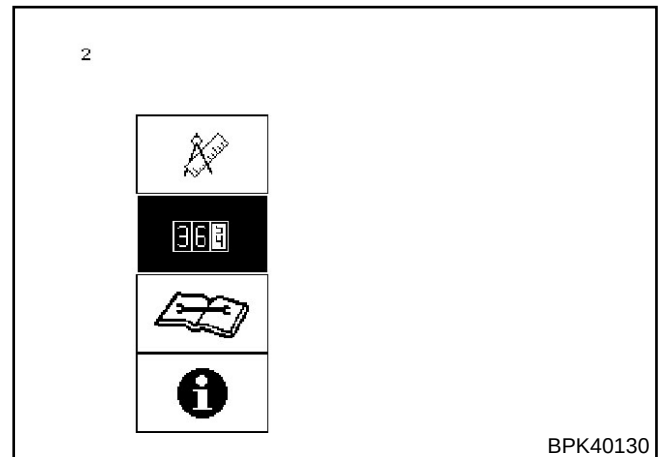


BPK40657

4.9.10 Main Menu 2 “Counters”

Calling the main menu

- Call the main menu with the  key.
- You can select main menu 2  with the rotary potentiometer. The icon is shown in reverse colours.
- Press the rotary potentiometer.



BPK40130

The display shows menu level 2 “Counters”.
Menu level 2 “Counters” is divided into two menus:

-  = menu 2-1 “Customer counters”
-  = menu 2-2 “Total counters”

4.9.11 Menu 2-1 “Customer counters”

Calling the menu

Main menu 2 “Counters” is displayed

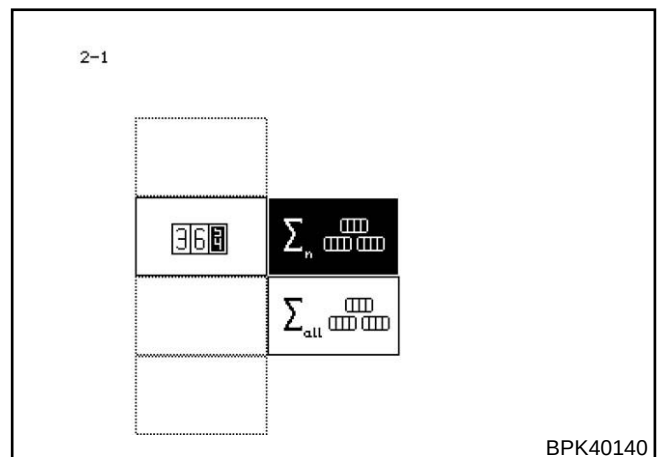
- You can select menu 2-1  with the rotary potentiometer. The icon is shown in reverse colours.
- Press the rotary potentiometer.

The display shows menu 2-1 “Customer counters”.

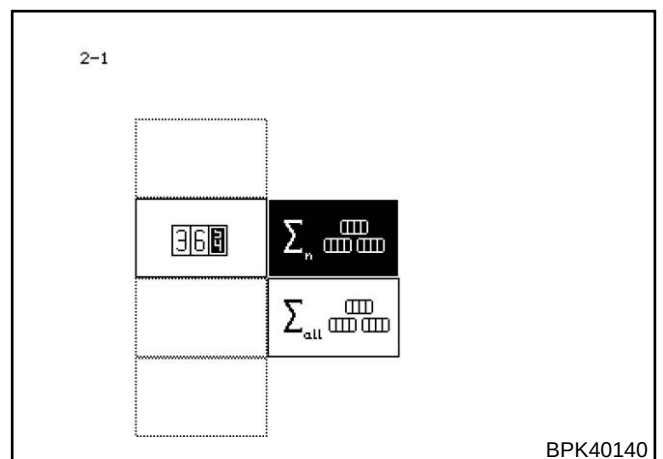
Meaning of the icons:

-  = Total number of bales
-  = Number of uncut bales
-  = Number of cut bales
(only for machines with X-Cut)
-  = Operating hours counter
(counts only when PTO is running)
-  = customer counter (1 - 20)
-  = Bale length counter (metric in metres)
-  = Bale length counter (US unit of measure in feet)
-  = Knot counter (incl. multibale knot)

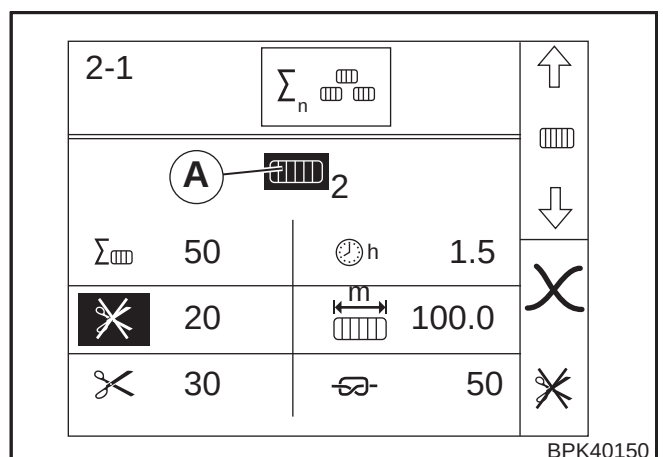
The activated customer counter (A) is shown in reverse colours.



BPK40140



BPK40140



BPK40150

Activating customer counters

- Turn the rotary potentiometer to select the desired customer counter (A). Then press the rotary potentiometer to activate.

The desired customer counter (in this case customer counter 2) is shown in reverse colours ( 2).

Activating the bale counter (cut / uncut bales)

The activated counter is shown in reverse „“ (in this case the counter for uncut bales) and as a softkey.

Press the key  for softkey  to activate the „Cut bales“ counter.

Changing the number of bales

- Turn the rotary potentiometer to select the desired customer counter (A). Then press the rotary potentiometer to activate.
- Select the counter you want to change (cut bales, uncut bales)
- Press the  key for softkey  to increase the number of bales.
- Press the  key for softkey  to reduce the number of bales.

At the same time, the season and daily counters in Menu 2-2 „Total bale counter“ (see Chapter 4.9.10) as well as the length counter and knot counter are also changed.

Deleting the customer counter

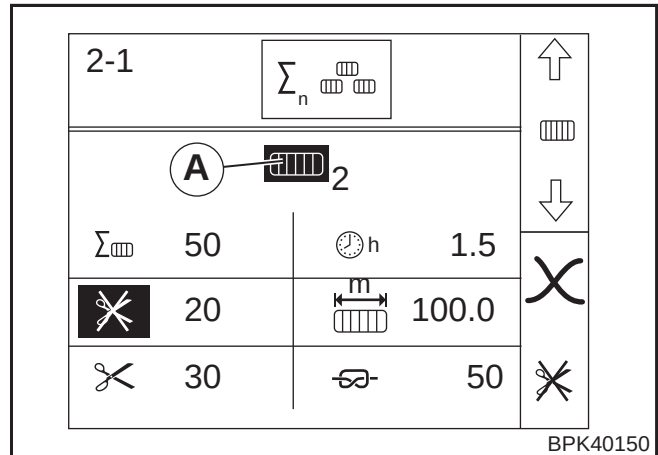
- Use the rotary potentiometer to place the customer counter to be deleted between the two crossbars (A).
- Press the  key for softkey .

The selected customer counter is set to zero.

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

The display shows menu level 2 “Counters”.

- Pressing the  key twice brings up the basic screen.



4.9.12 Menu 2-2 “Total counters”

Calling the menu

Main menu 2 “Counters” is displayed

- You can select menu 2-2  with the rotary potentiometer. The icon is shown in reverse colours.
- Press the rotary potentiometer.

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

Meaning of the icons:

-  = Total number of bales
-  = Number of uncut bales
-  = Number of cut bales
(only for machines with X-Cut)
-  h = Operating hours counter
-  = Bale counters (cannot be deleted)
-  ₁ = Season counter 1 (can be deleted)
-  ₂ = Daily counter 2 (can be deleted)

Deleting season counter 1, or daily counter 2

- Press the  key for softkey .

Season counter 1 is set to zero.

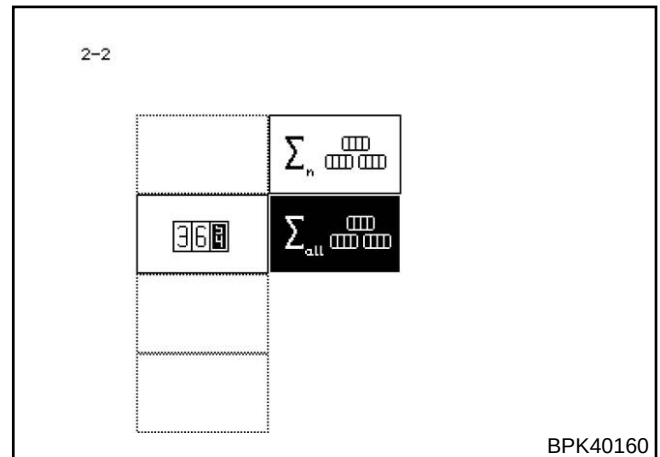
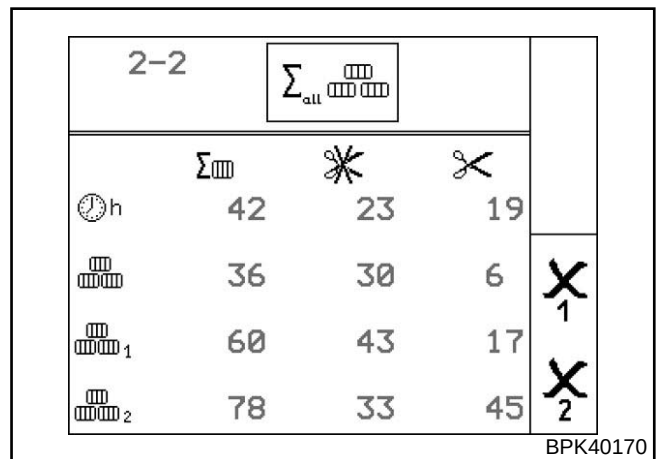
- Press the  key for softkey .

Daily counter 2 is set to zero.

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

The display shows menu level 2 “Counters”.

- Pressing the  key twice brings up the basic screen.

2-2			
 h	 42	 23	 19
	36	30	6
 ₁	60	43	17
 ₂	78	33	45

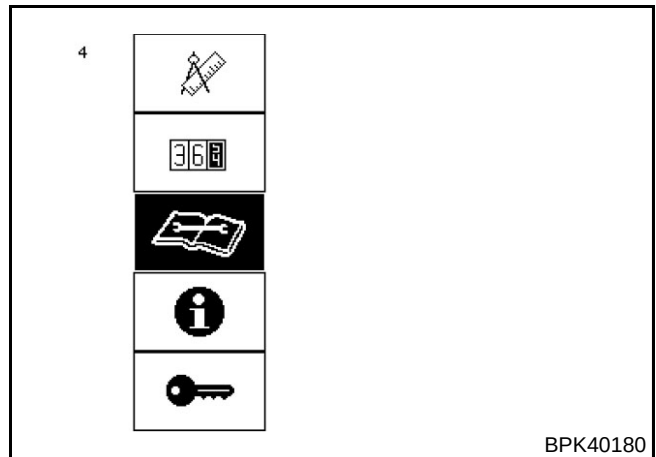
BPK40170

4.9.13 Main Menu 4 “Service”

Calling the main menu

- Call the main menu with the  key.
- You can select main menu 4  with the rotary potentiometer. The icon is shown in reverse colours.
- Press the rotary potentiometer.

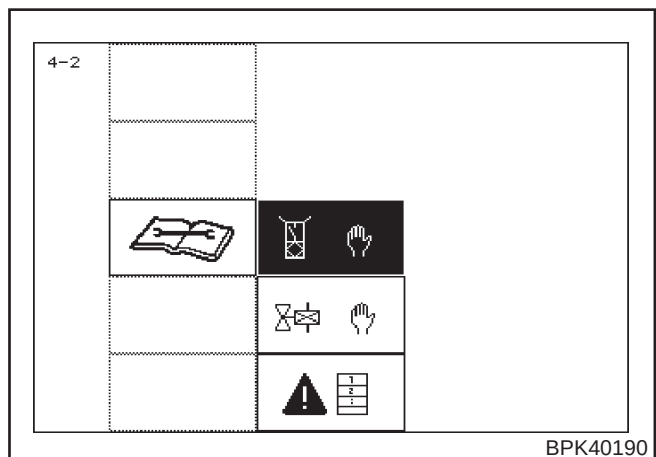
The display shows menu level 4 “Service”.



BPK40180

Menu level 4 “Service” is divided into two menus:

-  = menu 4-2 “Sensor test, manual”
-  = menu 4-4 “Actuator test, manual”
-  = menu 4-5 “Current alarms”



BPK40190

4.9.14 Menu 4-2 “Sensor test, manual”

In the manual sensor test, the sensors are checked for errors. In addition, the sensor type 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.



The PTO must not be turning during the sensor test.

Calling the menu

Main menu 4 “Service” is displayed.

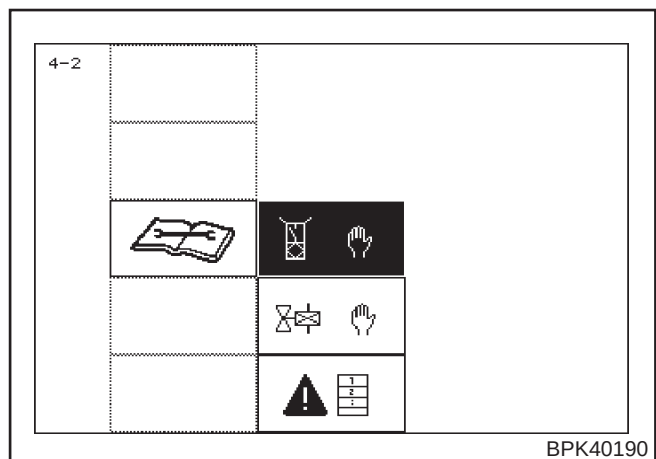
- You can select menu 4-2  with the rotary potentiometer. The icon is shown in reverse colours.
- Press the rotary potentiometer.

The display shows menu 4-2 “Sensor test, manual”.

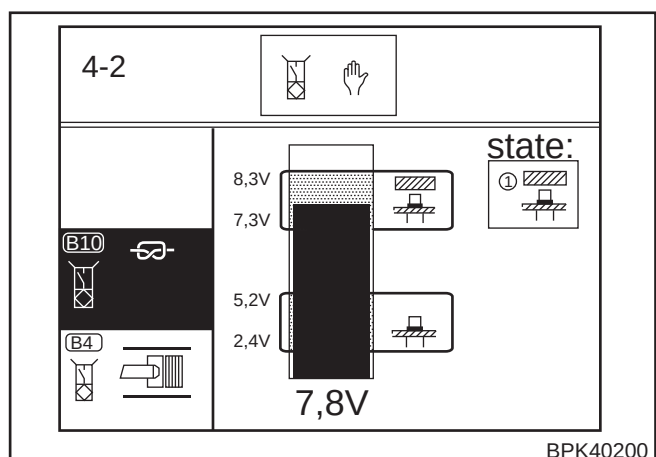
Selecting the sensor

- Select the sensor with the rotary potentiometer.

The selected sensor is shown in reverse colours and is tested.



BPK40190



BPK40200

Diagnostics – Namur sensors

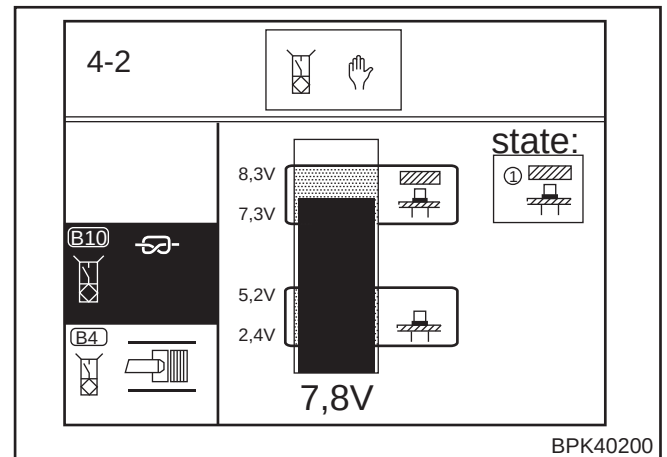
State:

- ①  Alive (iron)
- ②  Not alive (no iron)
- ③  Broken cable
- ④  Short circuit

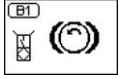
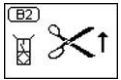
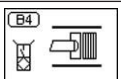
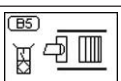
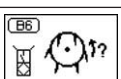
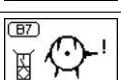
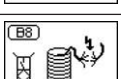
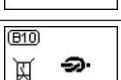
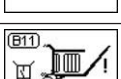
Setting values:

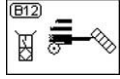
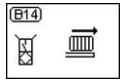
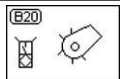
The minimum and maximum setting value with the sensor alive (metal in front of the sensor) are shown in the upper part of the bar display.
The current setting value (actual value) is displayed under the bar display.

The distance from the sensor to the metal must be adjusted so that in the alive state, the bar lies in the upper marked area.
Then check whether the bar is in the alive state in the lower marked area.



Possible sensors (depending on the design of the machine)

No.	Sensor icon	Description
B1		Flywheel brake
B2		Upper blade bar
B3		Central lubrication
B4		Measuring
B5		Calibration
B6		Packer monitoring
B7		Packer feed
B8		Twine monitoring
B9		Needle connecting rod
B10		Knotter monitoring
B11		Bale chute

Nr.	Sensor-Symbol	Beschreibung
B12		Setting down bales
B14		Bale ejector
B20		Pickup

* Enumeration of sensors from left to right (in the direction of travel)

Comfort Control Unit

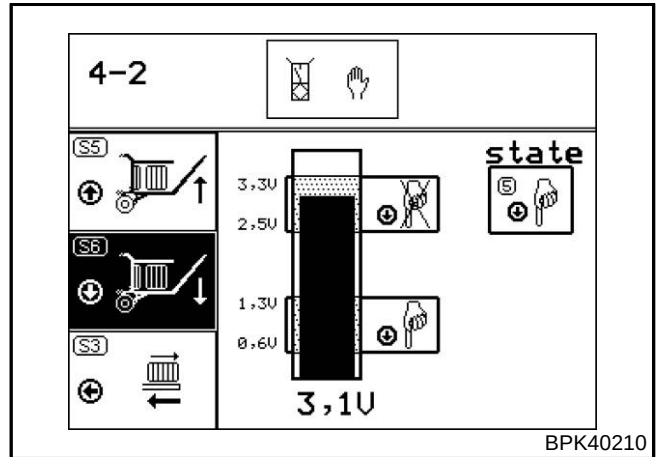
Diagnostics button

State:

- ③  Broken cable
- ④  Short circuit
- ⑤  Pressed
- ⑥  Not pressed

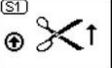
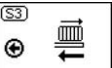
Setting values:

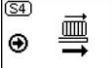
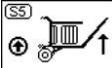
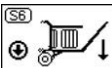
When the button is held down, the bar must be in the lower marked area of the bar display. When the button is released, it should be in the upper area.



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Possible buttons (depending on the design of the machine)

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

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

Diagnostics – analog sensors

State:

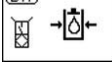
- ⑦  Broken cable or short circuit
- ⑧  Error Defect in the sensor or job computer

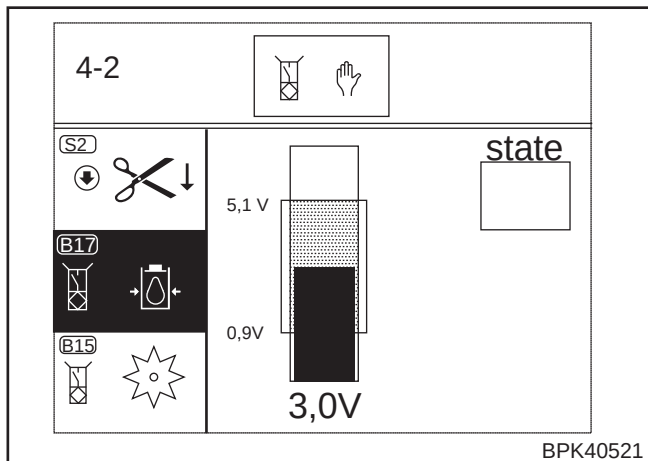
Setting values:

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

Possible analog sensors

(depending on the design of the machine)

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



BPK40521

Diagnostics – Force sensors



Status messages are only valid if force sensors have already been adjusted correctly once.

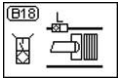
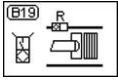
State:

-  Broken cable or short circuit
-  Error Defect in the sensor/force measurement amplifier or job computer

Setting values:

If a sensor has been changed or the bar is outside the outer mark, the force measurement amplifier must be adjusted (with the potentiometer) so that it is inside the inner mark.

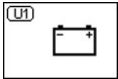
Force sensors

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

Diagnostics – power supply voltages

Nominal voltages:

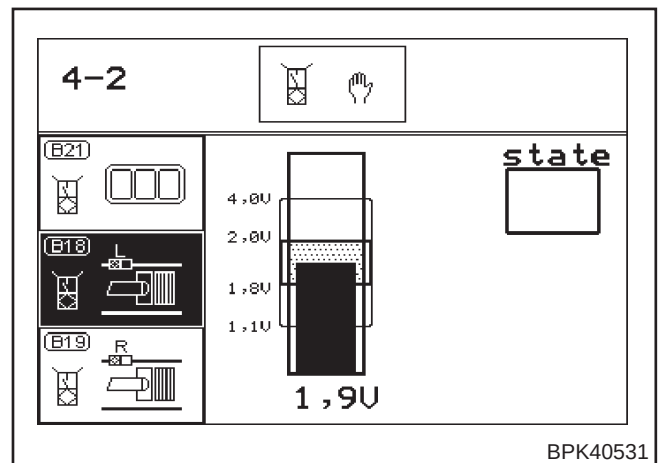
- 12 V tot.: 12 - 14.5 V
- 12 V Term: 12 - 14.5 V
- SS_5V: 4.5 - 5.5 V
- 8 V ana: 8.5 - 9.1 V
- 8 V dig: 8.5 - 9.1 V
- 12 V Pow2: 12 - 14.5 V
- 12 V Pow3: 12 - 14.5 V

No.	Icon	Description
U1		Power supply voltage

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

The display shows menu level 4 “Service”.

- Pressing the  key twice brings up the basic screen.

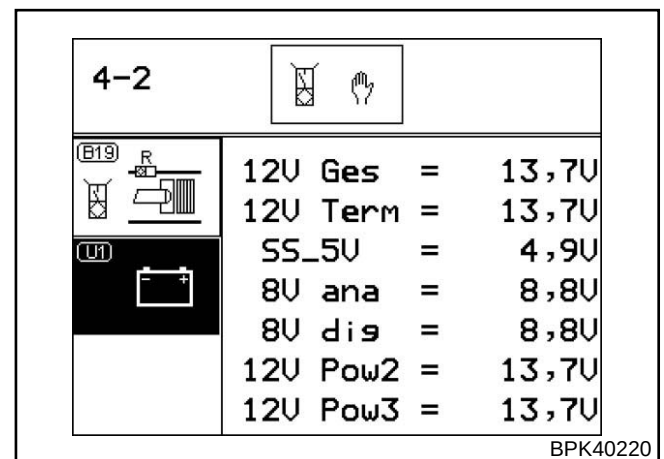


Inner marking:

The bar must be between 1.8 V and 2.0 V

Outer marking:

The bar must be between 1.1 V and 4.0 V



4.9.15 Menu 4-4 “Actuator test, manual”

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, on the other hand, the actuator must be controlled manually for a short time to be able to determine if there are any errors in the actuator system.



During the actuator test, the PTO must not be turning.
During the actuator test, the actuators are controlled by the system. This may result in the machine performing unexpected actions. Because of this, the test must only be performed from a safe position outside the area that is affected by machine parts moved by the actuators.

Calling the menu

Main menu 4 “Service” is displayed.

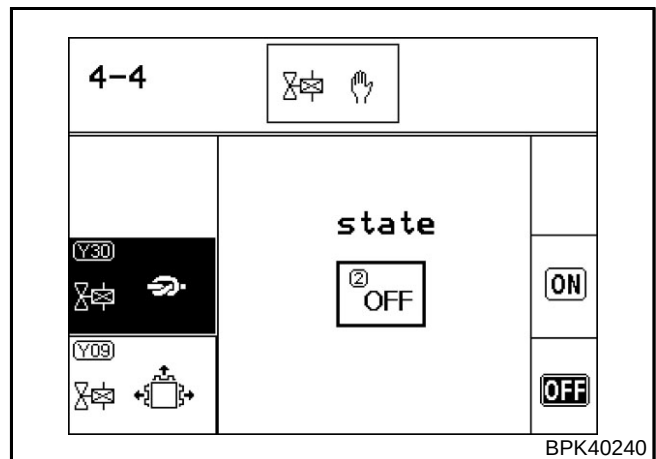
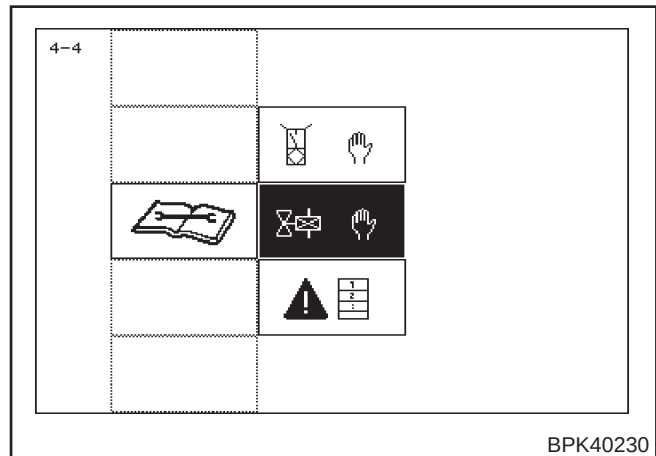
- You can select menu 4-4  with the rotary potentiometer. The icon is shown in reverse colours.
- Press the rotary potentiometer.

The display shows menu 4-4 “Actuator test, manual”.

Selecting the actuator

- Select the actuator with the rotary potentiometer.

The selected actuator is shown in reverse colours.



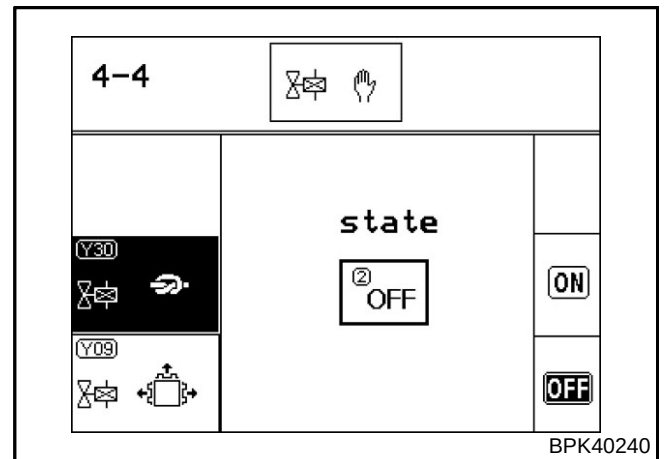
Diagnostics – digital actuators

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”). If necessary, the LED on the plug right on the actuator can be used for monitoring.

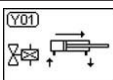
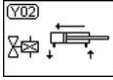
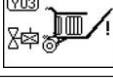
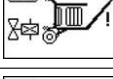
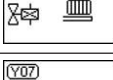
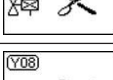
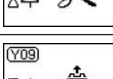
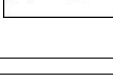
- Press the  key for softkey **ON**.

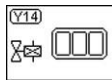
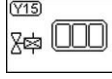
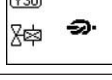
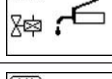
State:

-  **ON** Actuator on
-  **OFF** Actuator off
-  **General actuator error**
-  **No power supply;**
fuse is probably defective



Possible digital actuators (depending on the design of the machine)

No.	Icon	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
Y09		Open valve for bale channel flaps

No.	Icon	Description
Y14		Big-bale (error detection is not possible)
Y15		Multi-bale (error detection is not possible)
Y30		Knotter cleaning (error detection is not possible)
Y31		Central lubrication
M1		Knotter triggering (error detection is not possible)

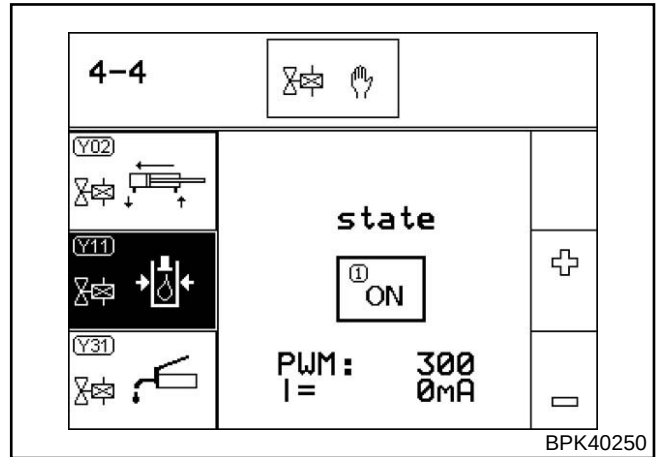
Comfort Control Unit

Diagnostics – analog actuators (for example pressure limiting valve)

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 1000 mA and 3000 mA (depending on the valve that is used and the operating temperature)

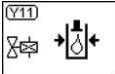
- Press the  key for Softkey ; PWM is increased.
- Press the  key for Softkey ; PWM is reduced.



State:

-  Actuator on
-  Actuator off
-  No power supply;
fuse is probably defective

Possible analog actuators

No.	Icon	Description
Y11		Control valve

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

The display shows menu level 4 "Service".

- Pressing the  key twice brings up the basic screen.

4.9.16 Menu 4-5 “Current alarms”

Currently pending errors are displayed in “Current alarms”.

Calling the menu

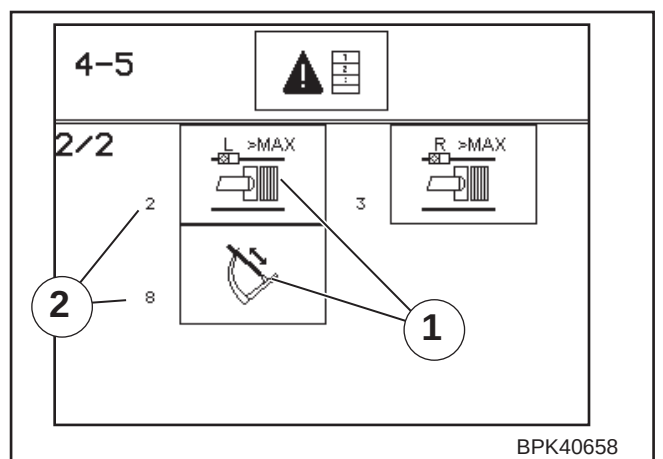
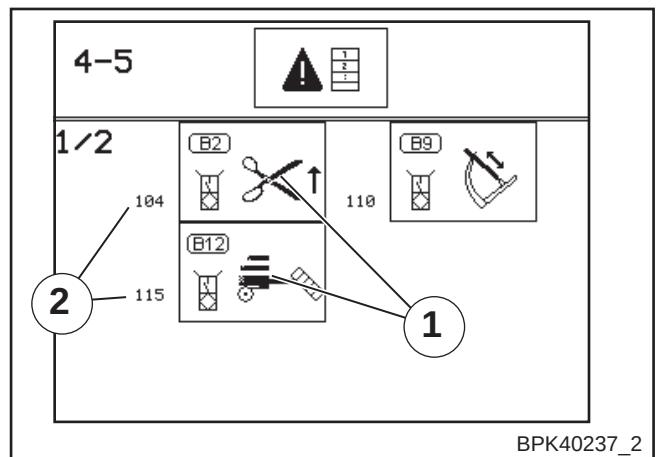
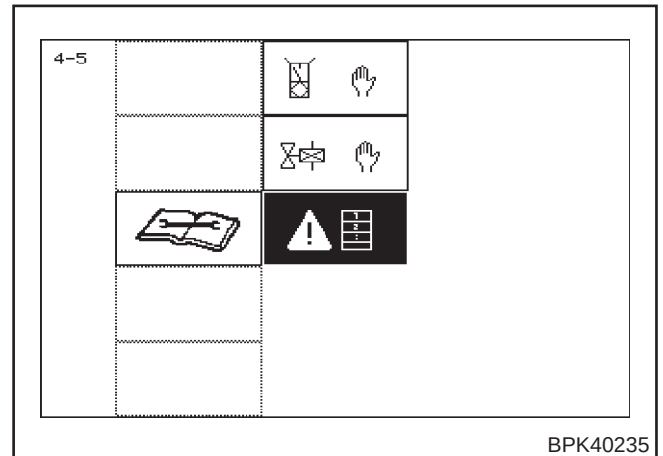
Main menu 4 “Service” is called.

- You can select menu 4-5  with the rotary potentiometer. The icon is shown in reverse colours.
- Press the rotary potentiometer.

The display shows menu 4-5 “Current alarms”.

Currently pending alarms are displayed in the lower part (1) with the corresponding alarm number (2).

- Switch to another window with the rotary potentiometer.
(only possible if there are more than three errors present at the same time)



4.9.17 Main Menu 5 “Info”

Calling the main menu

- Call the main menu with the  key.
- You can select main menu 5  with the rotary potentiometer. The icon is shown in reverse colours.
- Press the rotary potentiometer.

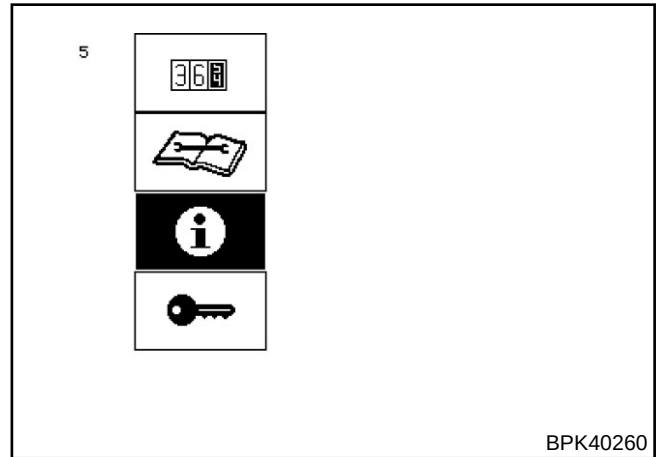
The display shows menu 5 “Info”.

Page 5-1:

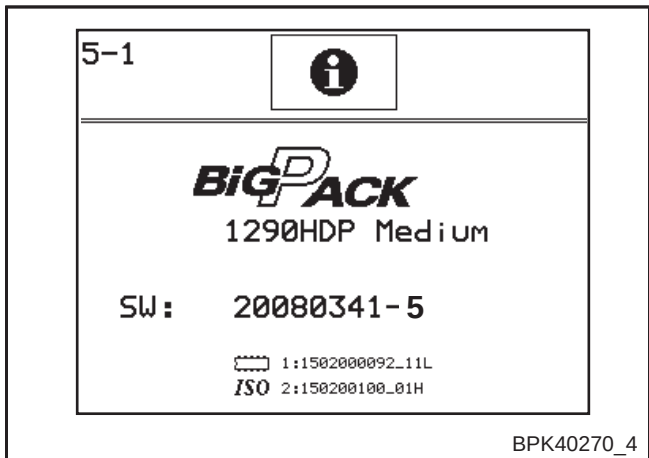
- 1290HDP = machine type
- Medium = machine version
- SW = complete software version of the machine
-  = Version of the job computer
- ISO = ISO software version
- You can use the  key to close the menu currently displayed.

The display shows main menu 5 “Info”.

- Pressing the  key brings up the basic screen.



BPK40260

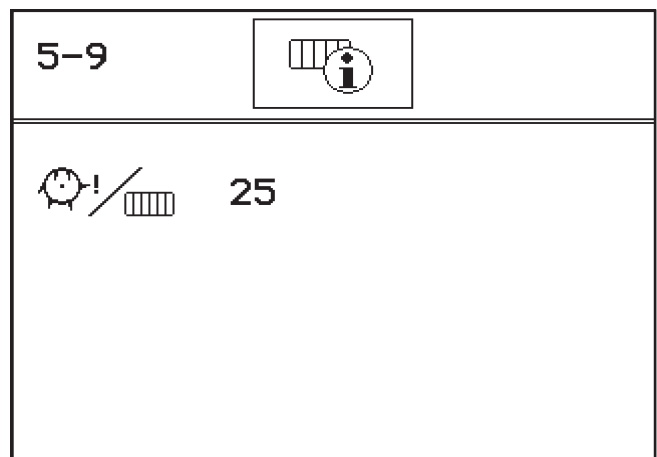


BPK40270_4

4.9.18 Info window

The display shows menu 5-9 “Number of layers per bale”.

- You can use the  or  key to close whatever menu you have called and return to the basic screen.



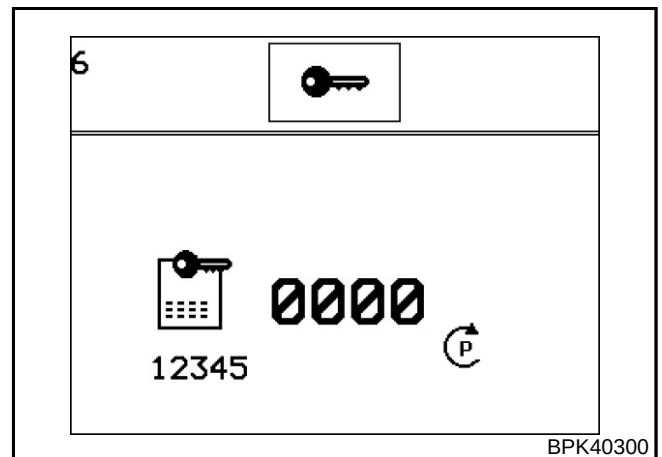
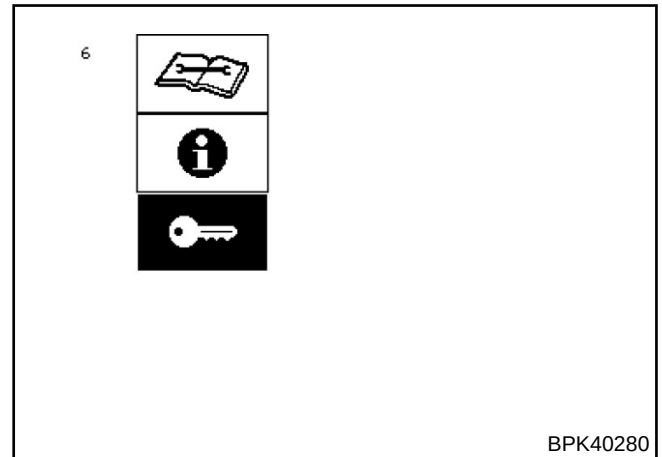
4.9.19 Main Menu 6 “Technician”

Calling the main menu

- Call the main menu with the  key.
- You can select main menu 6  with the rotary potentiometer. The icon is shown in reverse colours.
- Press the rotary potentiometer.

Main menu 6 “Technician” is password-protected.

The display shows the password query.



4.10 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 (rapid-interval horn sound). Description, possible cause and remedy are shown in Chapter 4.11.



All functions of the covered menu are still active.
The softkeys hidden by the alarm message are deactivated.

Stop audio signal:

- Press the  key for softkey .

To reset alarm:

- Press the  key for softkey . The alarm is reset and the audio signal stops.

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

To delete an alarm:

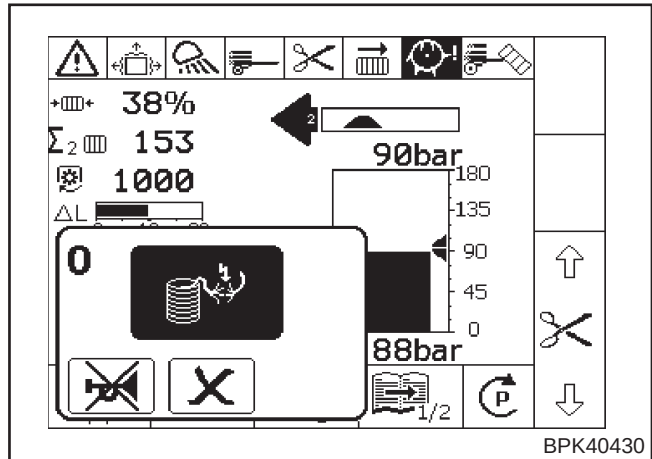


The option for deleting the alarm should only be used in emergency situations.

- Press the  key for softkey  and hold it down 5 seconds. The alarm is deleted.

If the malfunction occurs again, no alarm message will appear.

The alarm message does not appear when the malfunction occurs until after the control unit is turned off and back on.



4.11 Alarm messages

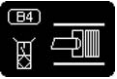
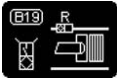
No.		Description	Possible cause	Remedy
A01		Fuse 2 defective	Short circuit at the outputs	Replace the fuse and then test all actuators in the actuator test to determine whether an actuator has a short circuit.
A02		Fuse 3 defective (self-repairing)	Short circuit in electrical power supply for sensors.	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		Wrong Display	Medium display is attached to comfort machine.	Comfort display attach.
A14		Undervoltage	- Tractor battery defective - Tractor light machine too weak 12 V power supply cable on the tractor side too thin or not connected directly with the battery	Connect the Krone connection cable directly to the battery
A15		Overvoltage	Tractor light machine defective	Check the dynamo

No.		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 travel drive immediately - Reduce PTO speed until the blockage is cleared
2		Baling force exceeded, left sensor	Baling 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 baling force setting slightly
3		Baling force 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 brake
8		Needle connecting rod	Shear screw ruptured	- Replace the shear screw - Check the needles - Check the rotation area of the needles - Check the twine guide
9		Bale chute	Bale chute up and PTO is turning	- Lower the bale chute
10		Baling pressure exceeded	Error on the pressure limiting valve - The pressure sensor could be defective	- Stop the PTO - 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 the PTO immediately - Perform diagnostics with the PTO stopped
12		Blade bar down	- Blade bar is down during baling	- Raise the blade bar

No.		Description	Possible cause	Remedy
16		Pick-up	Pick-up or cutting system is not turning Blockage	- 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 was 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	- Adjust the sensor correctly
20		Error – bale ejector activation	Bale ejector was activated, even though the bale chute is still up	- 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

Comfort Control Unit

No.		Description	Possible cause	Remedy
28		Central lubrication monitoring	No grease Blockage Pump not running	- Add grease - Clean central lubrication - Check electrical system and pump
101		Twine monitoring sensor	Sensor or line defective	- Perform a sensor test - Check the sensor and line for damage
102		Packer monitoring sensors	Sensor or line defective	- Perform a sensor test - Check the sensor and line for damage
103		Packer feed sensor	Sensor or line defective	- Perform a sensor test - Check the sensor and line for damage
104		Blade bar sensor, top	Sensor or line defective	- Perform a sensor test - Check the sensor and line for damage
105		Blade sensor active	Sensor or line defective	- Perform a sensor test - Check the sensor and line for damage

No.		Description	Possible cause	Remedy
106		Knotter monitoring sensor	Sensor or line defective	- Perform a sensor test - Check the sensor and line for damage
107		Measuring force sensor	Sensor or line defective	- Perform a sensor test - Check the sensor and line for damage
108		Calibration force sensor	Sensor or line defective	- Perform a sensor test - Check the sensor and line for damage
109		Flywheel brake sensor	Sensor or line defective	- Perform a sensor test - Check the sensor and line for damage
110		Needle connecting rod sensor	Sensor or line defective	- Perform a sensor test - Check the sensor and line for damage
111		Bale chute sensor	Sensor or line defective	- Perform a sensor test - Check the sensor and line for damage
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
114		Hydraulic pressure sensor	Sensor or line defective	- Perform a sensor test - Check the sensor and line for damage
115		Sensor for setting down bales	Sensor or line defective	- Perform a sensor test - Check the sensor and line for damage
116		Bale ejector sensor	Sensor or 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 line defective	- Perform a sensor test - Check the sensor and line for damage
119		Bale chute up button	Button or line defective	- Perform a sensor test - Check the button and line for damage
120		Bale chute down button	Button or line defective	- Perform a sensor test - Check the button and line for damage

Comfort Control Unit

No.		Description	Possible cause	Remedy
121		Bale ejector out button	Button or line defective	- Perform a sensor test - Check the button and line for damage
122		Bale ejector in button	Button or line defective	- Perform a sensor test - Check the button and line for damage
123		Blade bar up button	Button or line defective	- Perform a sensor test - Check the button and line for damage
124		Blade bar down button	Button or line defective	- Perform a sensor test - Check the button and line for damage
125		Multi-bale sensor	Sensor (rotary potentiometer) or line defective	- Perform a sensor test - Check the sensor and line for damage
132		Sensor - central lubrication	Sensor or supply line defective	- Perform a sensor test - Check the sensor and line for damage

4.12 ISO Control

4.12.1 Working Principle

ISO control is used exclusively for machines and systems that are compliant with Application Level 1 of International Standards Organisation (ISO) 11783. The purpose of ISO 11783 is to provide a complete uniform system for electronic systems in the vehicle. The uniform, easy to understand system required by ISO 11783 is intended to facilitate communication between the different electronic control units. The purpose of simple adjustable control elements that are separate from the actual display is to make it possible to use the display as a performance monitor for the tractor and as a monitor for an ISO-11783 attached device.

4.12.2 Mounting

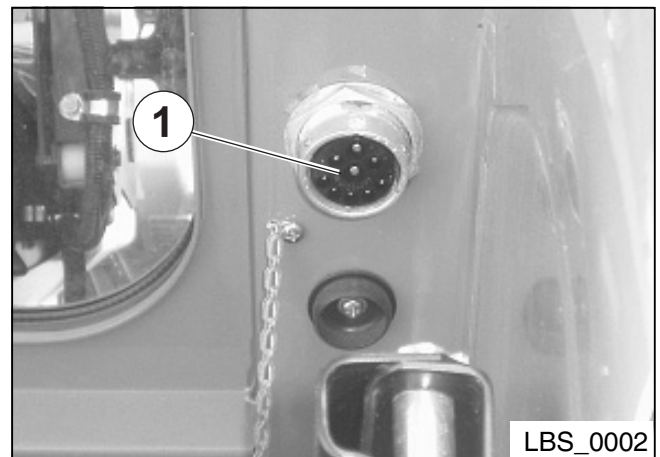
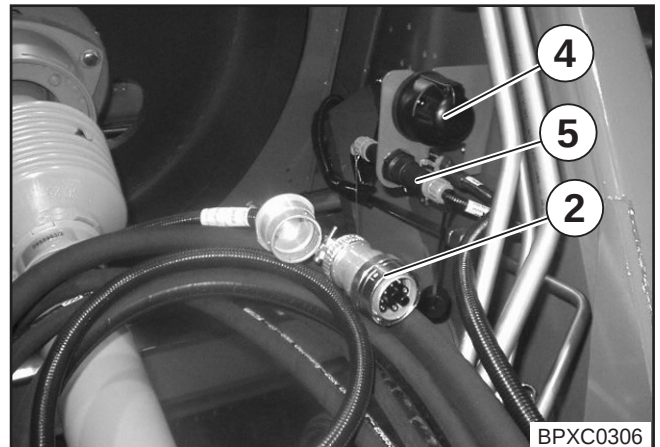


When mounting the control unit, make certain the connection cables are not stretched and cannot come in contact with the tractor wheels.

Install the cable harness included with delivery.

To do this:

- Connect the power supply cable (12 V) on the tractor side to the 3-prong power outlet (DIN 9680) and on the machine side with the Delphi plug (5).
- The Delphi plug (5) is located on the left-hand side of the machine (in the direction of travel) on the metal cover close to the flywheel.
- Connect the cable included with delivery to the socket (4) on the metal cover on the left-hand side (in the direction of travel) close to the flywheel. Also connect with the socket of the control unit.
- Attach the 9-pin ISO plug (2) to the ISO bus socket (1) on the tractor.



4.12.3 Functions that Differ from the KRONE In-cab Comfort Kit

The ISO control unit provides information and control functions in the ISO terminal display via the attached device.

The ISO terminal operates in a manner similar to the KRONE in-cab Comfort kit. Before starting the system up for the first time, please read the section on KRONE in-cab Comfort kit in the operating instructions.

One important difference compared to KRONE in-cab Comfort kit is the arrangement of softkeys, determined by the ISO terminal that is selected.

Functions that differ from the in-cab Comfort kit are described below.

One significant difference compared to the KRONE in-cab Comfort kit is that the functions of the rotary potentiometer (clockwise rotation, anticlockwise rotation, and pressing the rotary potentiometer) are replaced by the softkeys below.

KRONE in-cab Comfort kit	Corresponds to softkey \$\$\$ for the ISO terminal
„Clockwise rotation“ and „anticlockwise rotation“ of the rotary potentiometer to scroll forward and backward respectively.	 Scroll forward and backward
„Clockwise rotation“ and „anticlockwise rotation“ of the rotary potentiometer to increase and decrease values respectively.	 Increase value Reduce value Accept value Closes the menu
Pressing the rotary potentiometer to accept the value	OK that had been opened
You can use the  key to go to the previous screen or the menu level above the current one.	ESC Bring up a menu level
The  key can be used to bring up the menu.	



The values for the „Bale channel flaps, pressure / force“, „Bale length“ and „Number of multibales“ that are set with the rotary potentiometer in the basic screen of the KRONE in-cab Comfort kit are set instead on the ISO terminal with the Selection key assigned by the ISO terminal. (See operating instructions of the ISO terminal manufacturer.)



Menu item 1-4 "Contrast" of the KRO-NE in-cab Comfort kit cannot be brought up on the ISO terminal. Instead the setting is made directly with the ISO terminal (if available). See operating instructions of the ISO terminal manufacturer.



Menu item 1-7 "Unit of measure" of the KRONE In-cab Comfort kit cannot be displayed on the ISO terminal. A setting is made directly via the ISO terminal. (if available) (refer to the operating instructions of the ISO terminal manufacturer)



Audio signals must be enabled from the terminal if necessary (see operating instructions of the ISO terminal manufacturer).



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blank intentionally!!**



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Working with the Big Pack Baler

7 Working with the Big Pack Baler

7.1 Safety Instructions



- The following is a basic rule for all maintenance, mounting, repair and adjustment tasks: Turn off the PTO. Turn off the engine and remove the ignition key. Apply the flywheel brake.
- During operation, maintain an adequate safety distance from all movable parts of the Big Pack Baler. This applies especially to the collecting mechanism (pick-up) of the crop.
- Put the Big Pack Baler only into operation if all protective devices are attached and in proper working order!
- Eliminate blockages only when the machine is stopped. Turn off the engine and remove the ignition key. Apply the flywheel brake.
- If dangerous situations arise, turn off the PTO immediately and bring the Big Pack Baler to a stop.
- Never allow the Big Pack Baler to run without operating personnel on the tractor.

7.2 Pick-up



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

Adjusting the working height

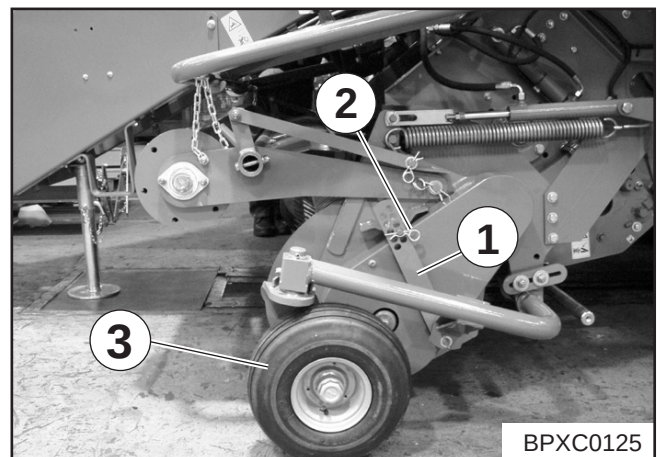


To adjust the height of the pick-up, raise it and secure it against unintentional lowering by moving the shut-off valve on the left side of the machine.

The working height can be adjusted on the feeler 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 feeler wheels into the desired position on the perforated bar (1). Secure the feeler wheels in place with the spring cotter pin.



Make certain that the feeler wheels on either side of the pick-up are in the same position on the perforated bar.



Working with the Big Pack Baler

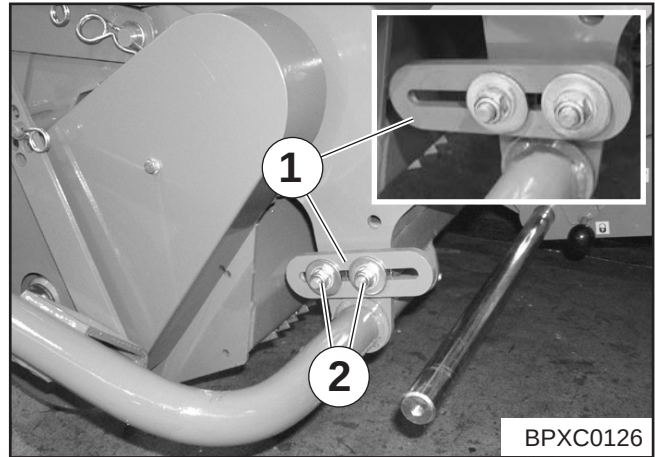
Determining the working height of the pick-up

The working height of the pick-up can be adjusted by manually moving the stoppers (1) on either side of the machine. This makes it possible to drive the machine without feeler wheels with the pick-up in fixed position.

To make the adjustment, loosen the screws (2) and move the depth limiter in the oblong hole to the desired position. Then tighten the screws again.



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



Adjusting the roller crop guide



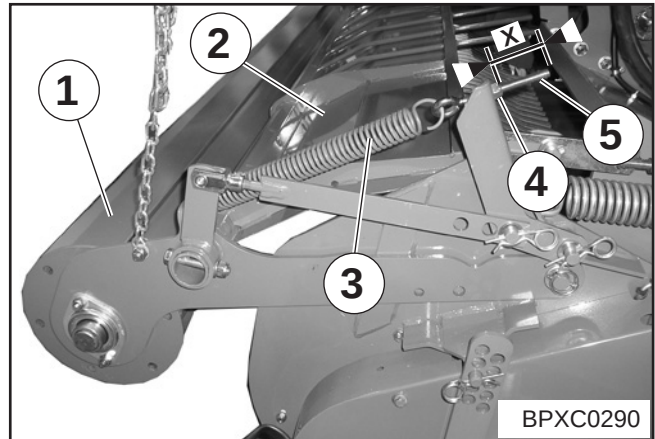
The roller crop guide is used for accident protection and must not be removed during operation.

- Tighten the nut (4) on the eye screw (5) to pre-tension the spring (3) until length $X = 55 \text{ mm}$.



When adjusting the holding-down device plate (2), select an angle that ensures the forage channel becomes slightly larger towards the back on the pick-up.

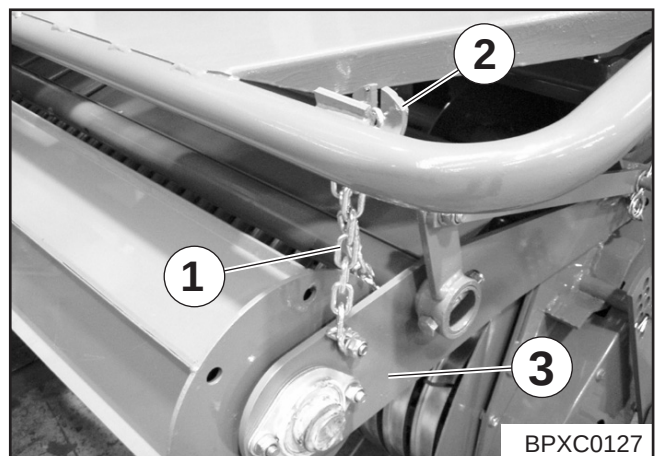
The holding-down device plate (2) must not constrict the forage channel to the cutting system or the packer.



The height adjustment of the roller-type crop guard (3) can be made on the retaining chains (2) that are suspended on the bracket (1) on either side of the machine.



Make certain that the chains on the suspensions are of the same length. Set the height of the crop guard roller (1) in a way that it permanently runs over the swathe.



7.3 Cutting system XC

Safety instructions



The following is a basic rule for all maintenance, mounting, repair and adjustment tasks on the cutting system:

- Bring the Big Pack Baler to a stop.
- Turn off the engine and remove the ignition key.
- Secure the tractor and Big Pack Baler against rolling.
- Secure the pick-up against being lowered unintentionally.
- There is great danger of injury while the blades are being mounted and dismounted. The blades should only be touched with suitable gloves.
- Apply the flywheel brake.

General information

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.

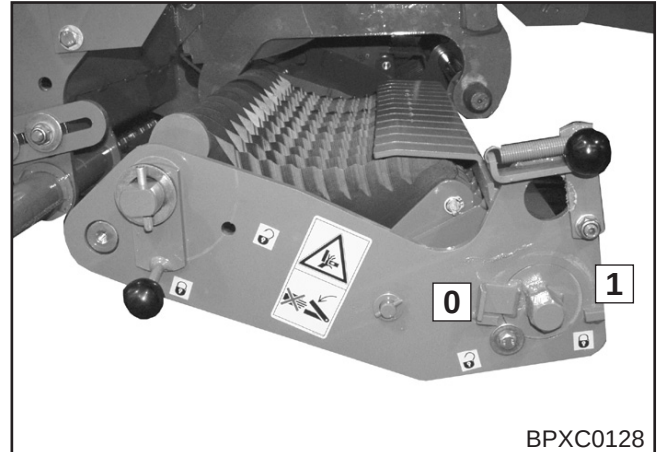
The machine can also be used without blades. In this case, blind blades should be used. The cutting cylinder then takes over the function of a conveyor between the pick-up and the pre-baling channel.

Cutting length

The cutting system of the Big Pack 890 XC can be fitted with a maximum of 16 blades, that of the Big Pack 1270 XC/1290 XC with a maximum of 26 blades. The theoretical cutting length is then 44 mm.

The cutting length is determined by the number of blades used.

To activate the cutting mechanism, the blade control (position 1) is turned on and the cutting system is moved up hydraulically as far as it will go.



BPXC0128

Cutting length mm	Number of blades		Used blade compartment	Setting
	BP 890	BP1270 BP1290		
-	0	0	Any one	0
44	16	26	Each one	1
88	8	13	Every 2nd	1
132	4	6	Every 3rd	1

Changing blades

Blades are changed on the right and left side of the machine.

Jobs on the left side of the machine are described below.

The same applies for the right side of the machine.

Lower the cutting system:



Before lowering, the knife selection system must be in position (1) for the blades to be drawn actively from the chamber.

- 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 electronics on the control unit

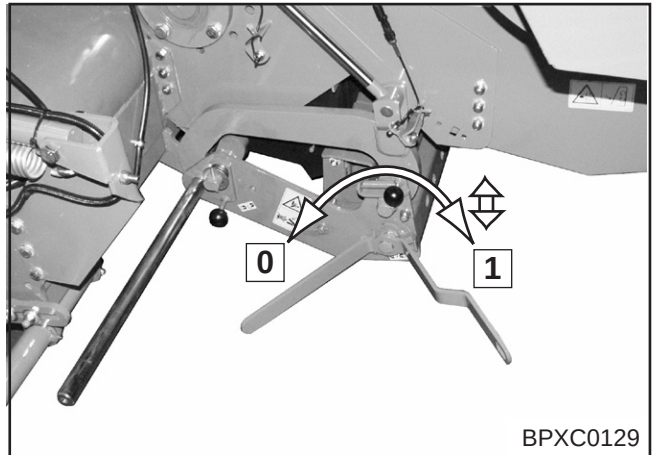


The cutting system must not be started up again until both halves of the cutting system are retracted and locked on the side.

Move the blade control from position (1) to position (0) with a key (SW30).

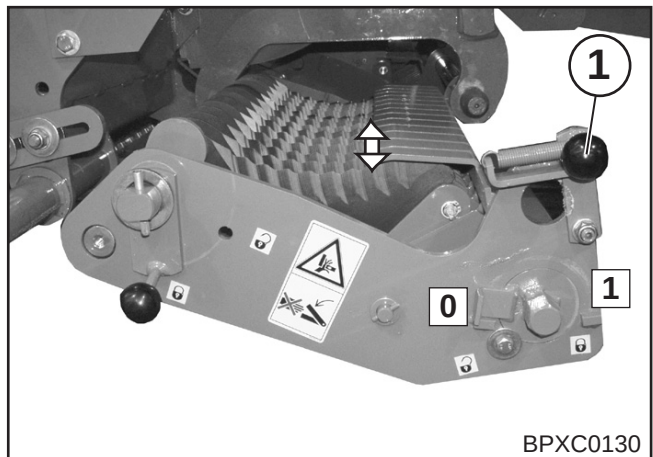


When shifting positions, be careful that the spring pressure takes effect on the key (danger of injury!).



BPXC0129

Unlock the cutting system inlet tray by activating the lever (1) and remove it as far as the stopper.



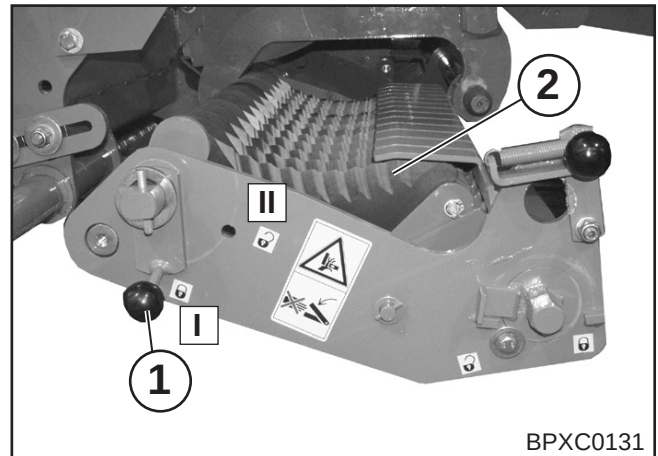
BPXC0130

Unlocking the blade shaft

- Unlock the locking lever (1) (Pos. II).
- The blades (2) can now be removed vertically upward
- Set the new blades in place.
- Set the blind blades in the positions where no blades are required.
- Secure the blade shaft with the locking lever (1) (Pos. I).

Position I = blade shaft locked

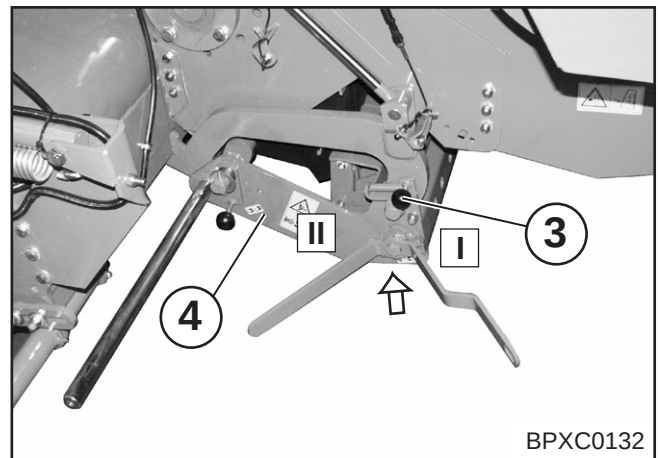
Position II = blade shaft unlocked



- Push in the half of the cutting system (4) on the side until the locking lever (3) snaps into place by itself.
- Move the knife selection system from position (II) to position (I) with a key (SW30).
- Raise the cutting system hydraulically.



The cutting system must not be started up again until both halves of the cutting system are retracted and locked on the side.



To turn off the blades hydraulically:



The purpose of the hydraulic zero position of the blades is to make it possible to eliminate any blockages. If you are working without blades, they must be replaced by blind blades.

Because there is not enough free area on the ground, the cutting system must be raised immediately again after the blockage has been eliminated. If they are not, the cutting system inlet tray will be damaged.

If the cutting system inlet trays are very dirty, they should be cleaned before starting up.

7.4 Baling Force Regulation

The baling force in the baling channel is regulated by an electronic/hydraulic system. The force of pressure can be adjusted from the tractor controls.

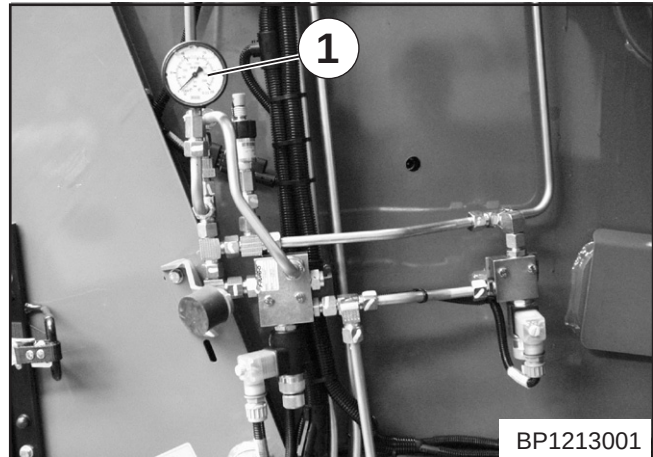
The pressure can be read directly on the control unit (see Chapter 4 and 5).

An additional pressure gauge (1) is located on the left side of the machine under the side hood on the pressure limiting valve.

Retaining the baling pressure when the electronics (medium/comfort) are switched off



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



BP1213001

Shut-off valve for releasing the baling channel

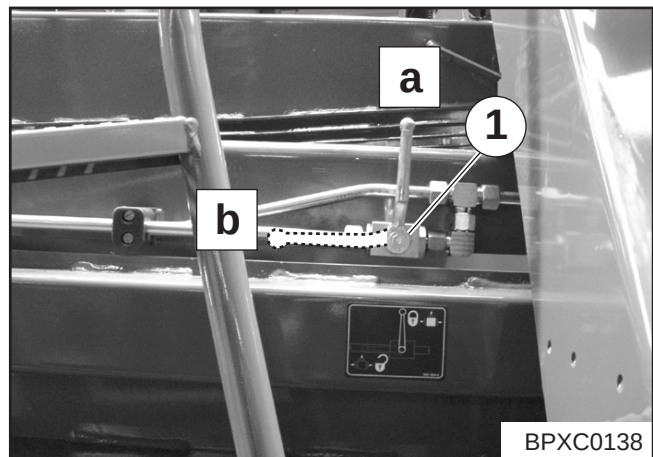
For the Medium designs:



The shut-off valve (1) is used to release the baling channel. The machine is in the working position in setting (a). To release the baling channel, use position (b) (tank return)



If the shut-off valve is in position (b), it is not possible to build up pressure.



BPXC0138

Comfort design:

In the case of the Comfort design, this function can be switched from the control unit or on the machine buttons (see Chapter 4).

7.5 Emptying the Baling Channel

Before the baling channel is emptied, any baling material that is in the baling channel should be tied up. To do this, trigger the tying process manually (see Chapter "Triggering the tying process manually").

Then open the baling channel (shut-off valve for releasing the baling channel; see Chapter 7.4).



Do not eject the bale until the tension flaps have opened completely.

In the Medium design, the remaining bale ejector is activated with the upper control lever on the rear left of the machine.

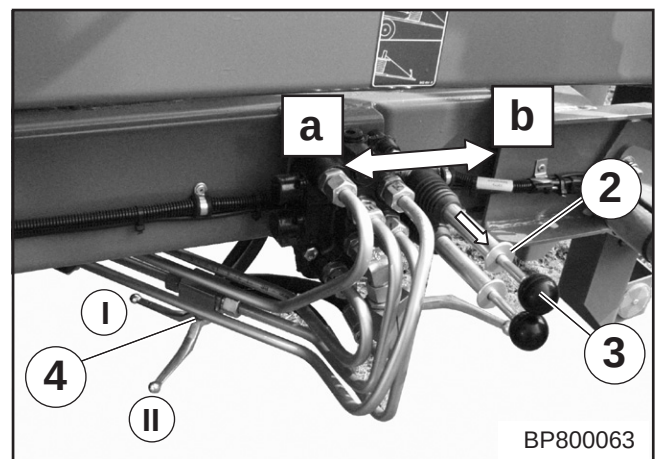
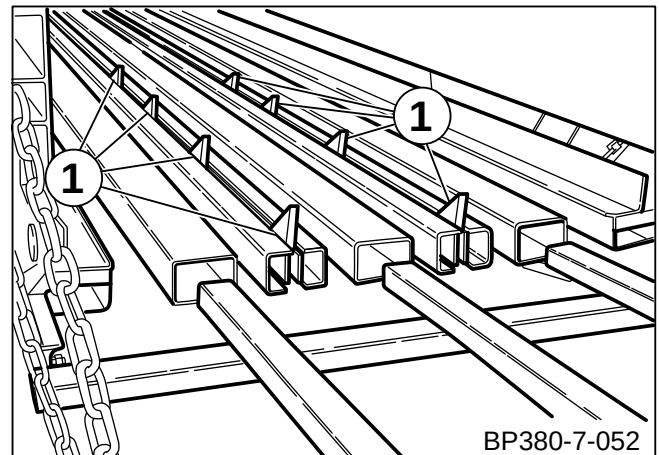
- Open the shut-off valve (4) (position I)
- Raise the safety sleeve (2) and move the control lever (3) to position (a) or (b).

Position **a** = The remaining bale ejector moves forward.

Position **b** = The remaining bale ejector moves back.



After ejection of the big bale it is absolutely essential to move the bale ejector to the forward position. To do this, move the control lever (3) to position (a) as described above. Then close the shut-off valve (4) (position II)



7.6 Hydraulically folding roller chute



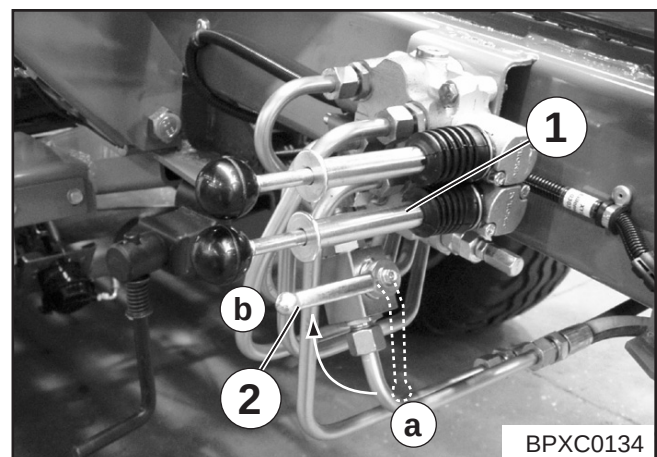
Secure the vehicle and machine against rolling. Make certain everyone leaves the dangerous area when the roller chute is being retracted or extended. The machine must only be driven on public highways with the roller chute retracted.

The operation of the roller chute depends on the version you have. For the version with Medium control unit, the control device must be activated on the tractor. The operating control device (1) for the hydraulically folding roller chute and the remaining bale ejector is located at the rear left next to the parking brake.

Position a = shut-off valve open

Position b = shut-off valve closed

- Release the mechanical lock on the roller chute.
- Open the shut-off valve (1).



Working with the Big Pack Baler

- To extend the bale chute (2), raise the safety sleeve (3) and move the lower control lever (4) into position (b).
- To retract the bale chute (2), raise the safety sleeve (3), activate the control lever (4) and move it to position (a).

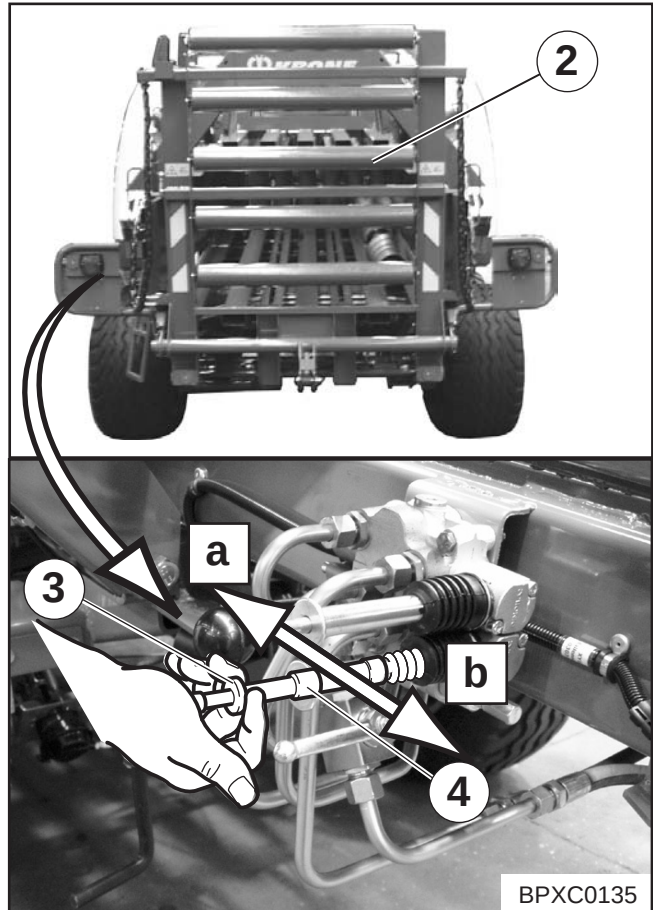
Position a = fold the bale chute up.

Position b = fold the bale chute down.



For travel on public highways, the roller chute must always be folded in and the shut-off valve must be snapped in place.

Operation with the Comfort version is described in Chapter 4!

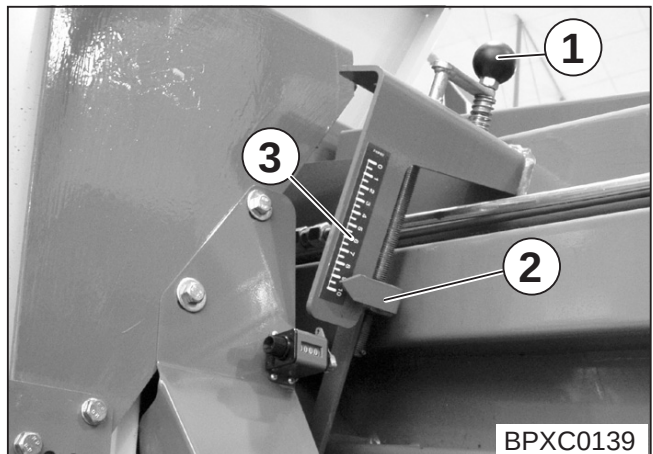


7.7 Length Adjustment of Big Bales

7.7.1 Manual Length Adjustment

The length adjustment for big bales can be made on the left side of the machine from the ladder.

Turning the crank (1) selects the length of big bales. The pointer (2) on the scale (3) is meant as an adjustment aid.



7.7.2 Electrical Length Adjustment (Optional)

When the bale length is electrically adjusted, the bale length can be selected with the control unit on the tractor (see Chapter 4 and/or 5).

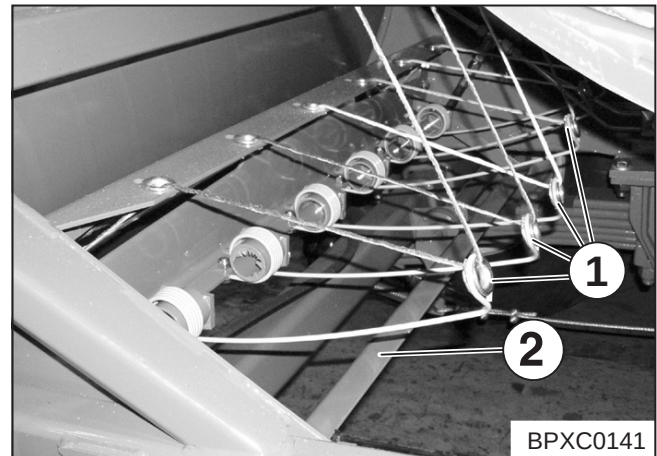
7.8 Twine

7.8.1 Electrical Twine Empty Display

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.



To turn off the audio warning signal while twine is being fed in, follow the instructions that describe Comfort operation in the Chapter “Alarm messages”.



7.8.2 Twine Motion Display, Upper Thread (Double Knotter)

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.



7.8.3 Initiate the Tying Process Manually

For the tying twine to reach the baling channel and be grasped by the knoter, the tying process must be triggered manually.

To do this:

- Swivel the safety lever (2) down.

With mechanical triggering:

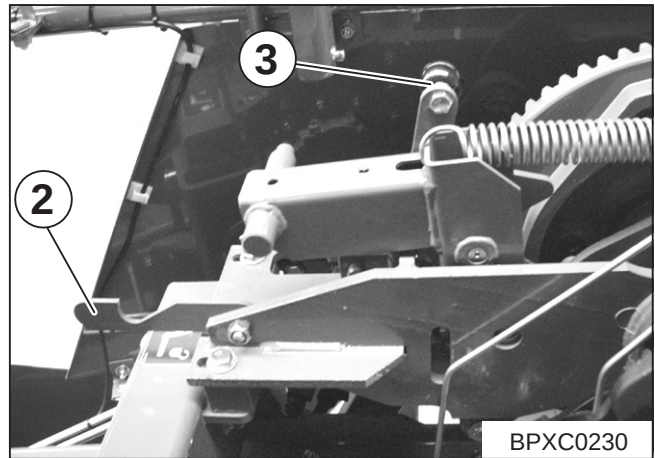
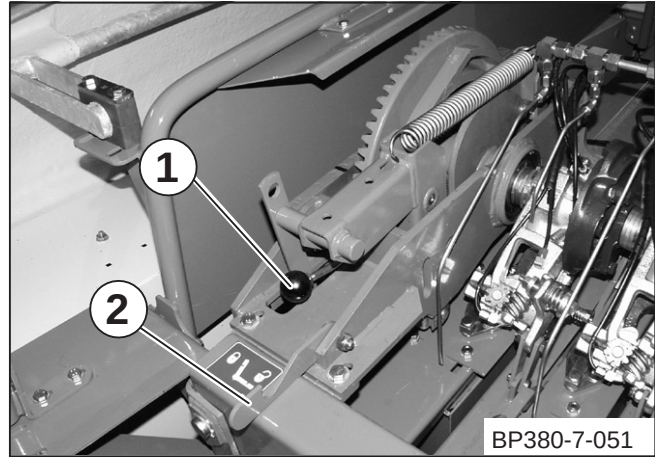
- Move the lever (1) up to trigger the tying process.

With electrical triggering (optional):

- Move the lever (3) back to trigger the tying process.
- Then move the needles upward to the knoter and back manually on the flywheel (in the working direction) or by turning on the PTO. The tying twine is now in the baling channel.



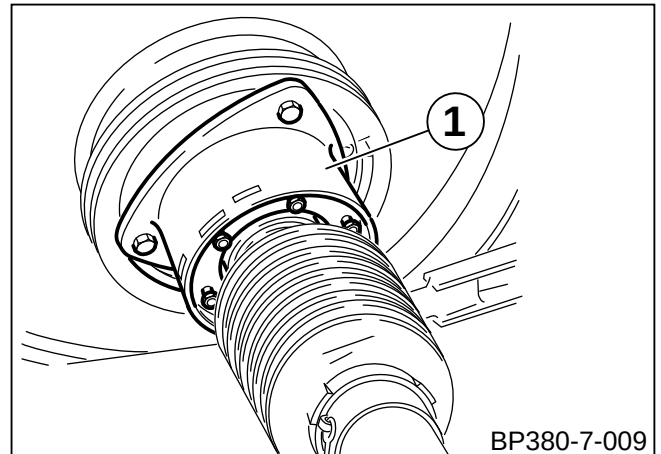
In the case of the single knoter, make certain that the twines are pulled back after the last tie. Otherwise the thread may unravel the next time a knot is tied.



7.9 Gears

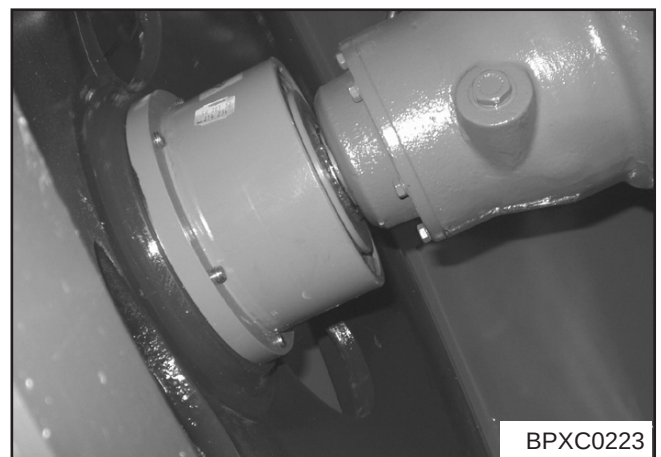
Main drive

A bevel spur gear serves as main drive. The necessary torque is transmitted through the PTO shaft and a generously dimensioned flywheel. The maximum drive speed must not exceed 1000 rpm. The PTO shaft is protected on the machine side by a friction clutch (1). There is a cam-controlled gearbox or a shear screw on the back of the flywheel.



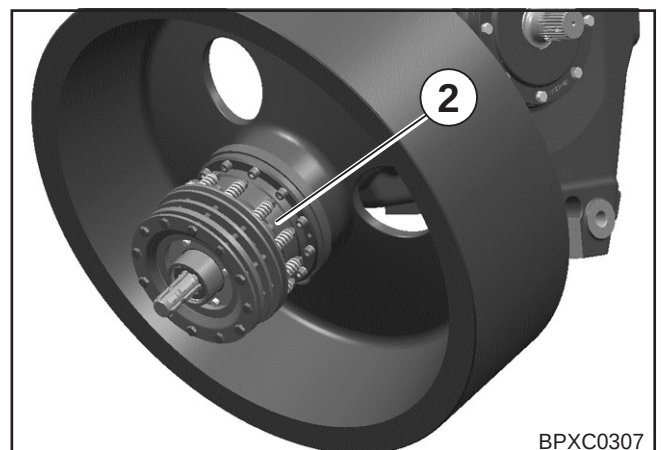
As soon as the clutch responds, stop the tractor, disengage the PTO without delay and brake the flywheel. After the fault is rectified, the cam-controlled gearbox engages again automatically.

Big Pack 890/1270/1290



The cam-type cut-out clutch (2) in the Big Pack 1290 HDP/CX is located between the friction clutch and the flywheel.

Big Pack 1290 HDP/XC

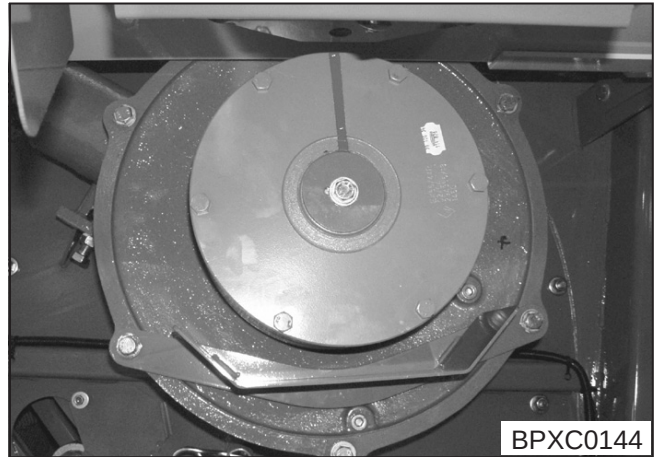


Feed packer drum drive

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 or by a shear screw.



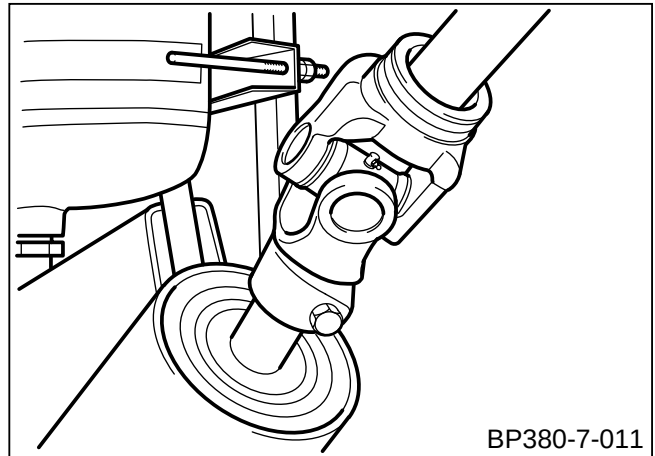
As soon as the ratchet clutch responds, stop the tractor and reduce the speed until the machine has cleared itself again. After the fault is rectified, the ratchet clutch automatically resumes its work.



An error message appears on the control unit display.

Knotter shaft drive

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

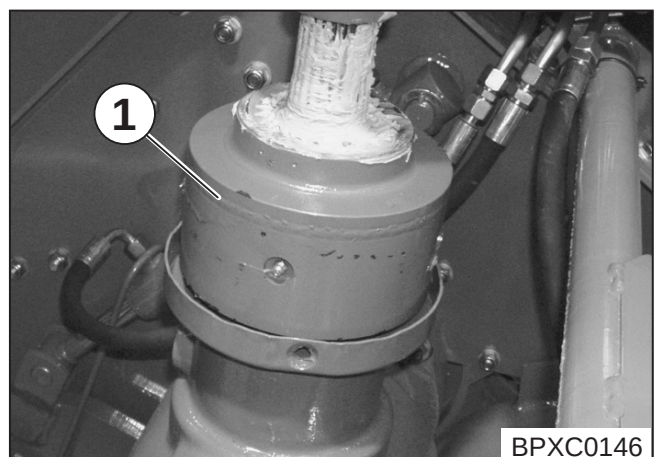


XC cutting system drive

The cutting rotor is driven by an upper angular gearbox. An intermediate shaft transmits the torque through a cam-type cut-out clutch onto a lower angular gearbox.



As soon as the cam-type cut-out clutch responds, stop the tractor and reduce the speed until the machine has cleared itself again. The cam-controlled gearbox now automatically resumes its work.



An error message appears on the control unit display.

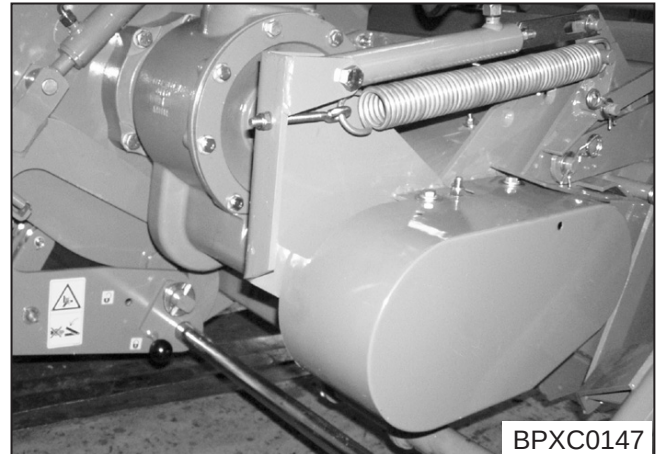
Pick-up drive for XC cutting system

The torque is transmitted through a star ratchet to the drive chain of the pick-up from the output of the lower angular gear of the cutting system.



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

An error message appears on the control unit display.



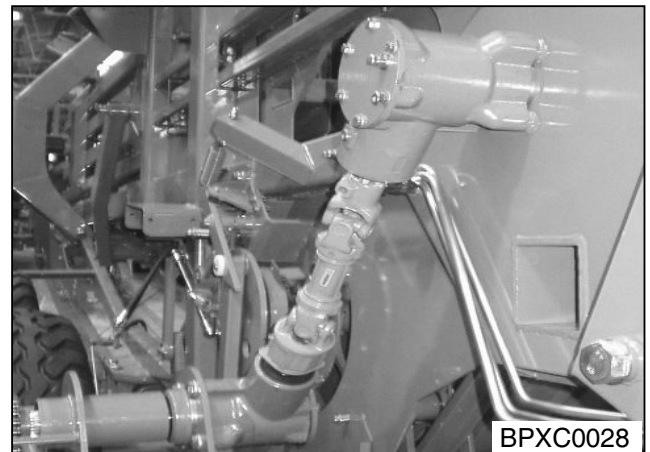
Pick-up drive through gear (without XC cutting system)

The torque is transmitted by an angular gearbox from above through a PTO shaft with overload protection (star ratchet) downwards onto an angular gearbox.



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

An error message appears on the control unit display.



7.10 Multi-Bale Device(optional)

In the Multi-Bale design, the entire big bale can be divided up into as many as 6 small bales.

The complete bale is held together by 4 twines, while small bales are held together by 2 twines each. If the Multi-Bale function is turned off, the conventional big bale is still bound up by 6 twines.

The number of small bales selected can be 2-6 (depending on the length of the total bale).

This results in a variable length of the small bale of from 0.45 m to 1.35 m.

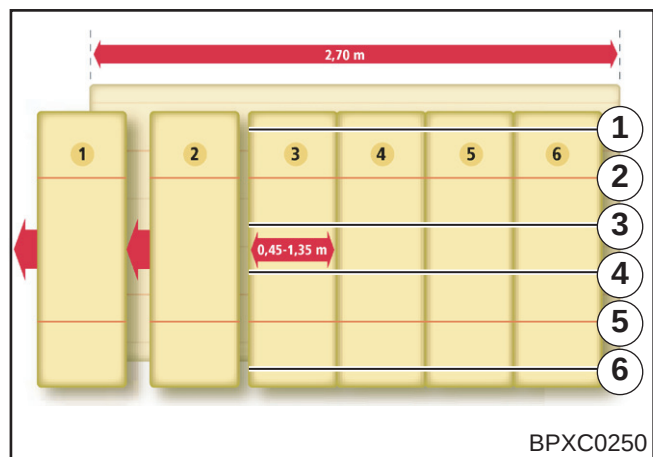
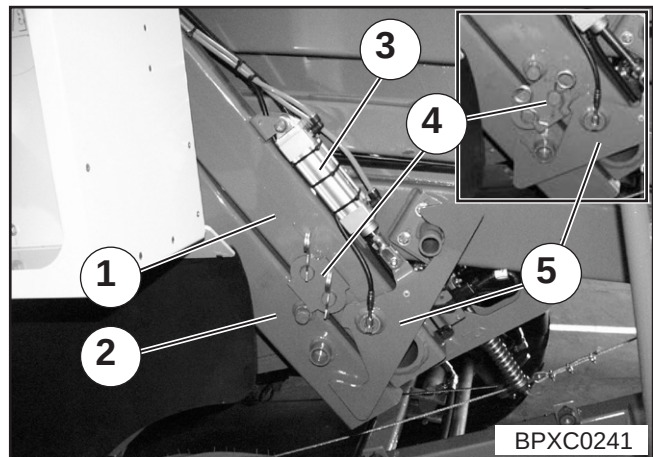
The parameters can be set from the control panel on the tractor (refer to Chapter "Setting the number of Multi-Bales" on page IV-11)

If the Multi-Bale function has been previously selected, the small bales are tied with the front needle yoke (1). The entire bale is tied with the needle yoke (2) that is connected in the rear.

A pneumatic cylinder (3) is used to couple the individual needle yokes. The cylinder activates the interlock ratchet mechanism (5). The control block of the pneumatic cylinder (3) is controlled directly by the Comfort electronics.



- If the Multi-Bale function is not needed for an extended period of time, the two needle yokes can be locked in place with the perforated bar (4). This reduces wear in the individual components.
- If the Multi-Bale function is selected with the control unit when the needle yoke is locked, this function will not be executed. An error message appears in the control unit display.
- If you are using the machine with Multi-Bale, make certain to use a high-quality twine (110-130m/kg) at higher bale densities for the 4 twines. The entire bale is supported by just 4 twines.
- To break up the entire bale into small bales, untie the twines (1, 3, 4, 6).



8. Settings

8.1 Safety Instructions



- The following is a basic rule for all maintenance, mounting, repair and adjustment tasks: Turn off the PTO. Turn off the engine and remove the ignition key. Apply the flywheel brake.
- Put the Big Pack Baler into operation only if all protective devices are attached and in proper working order!
- If dangerous situations arise, turn off the PTO immediately and bring the Big Pack Baler to a stop.
- Never allow the Big Pack Baler to run without operating personnel on the tractor.
- If you are working under the machine and there are needles in the baling channel, it is imperative to secure the needle support against falling down. Risk of injury!

8.2 Tying Unit

8.2.1 Twine

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.

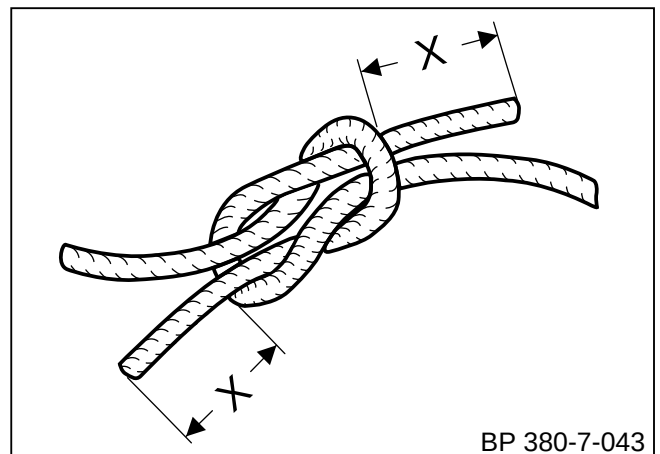
Connect the tying rolls with the cross knotter next to them.

Shorten the ends of the knot to $x = 15 - 20 \text{ mm}$.

Each time before you insert new tying twine, you should perform these steps:



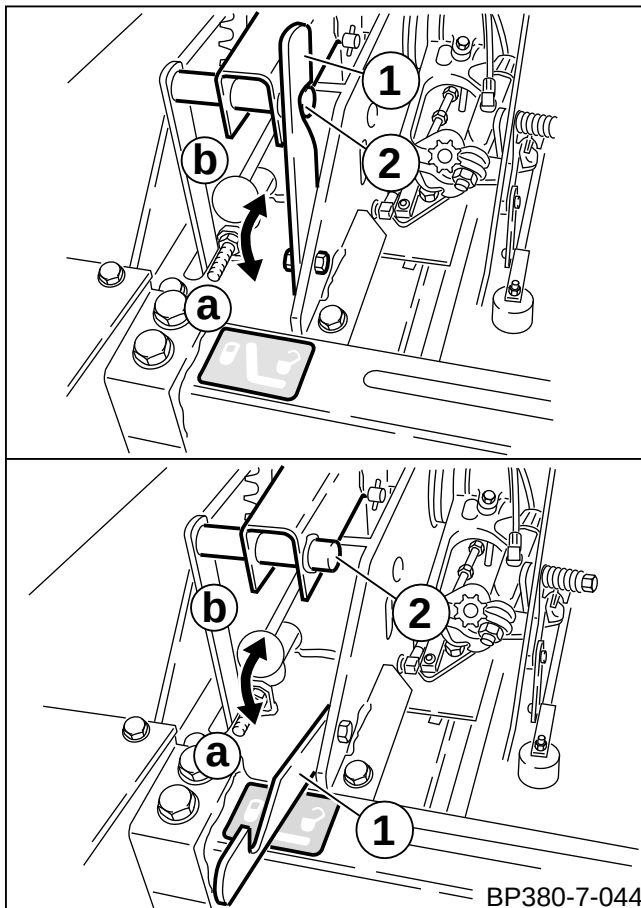
- Turn off the tractor PTO.
- Turn off the tractor engine.
- Secure the flywheel in place mechanically.
- Secure the knotter shaft by moving the safety lever.



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Setting the tying twine in place

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

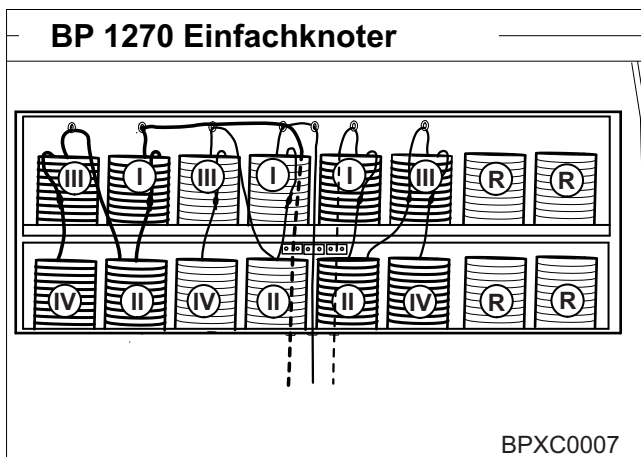


Single knotter:



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

Machine type	Number of knotters	Number of rollers Tying twine/knotter	Reserve
Big Pack 1270	6	4	8



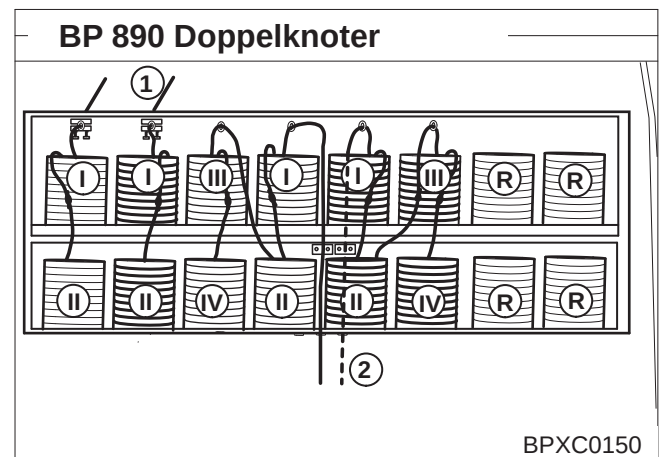
Double knotter:

Machine type	Number of knotters	Number of rollers Tying twine/knotter (twine below)	Number of rollers Tying twine/knotter (twine above)	Reserve
Big Pack 890	4	4	2	8
Big Pack 1270 Big Pack 1290	6	2	2	8



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

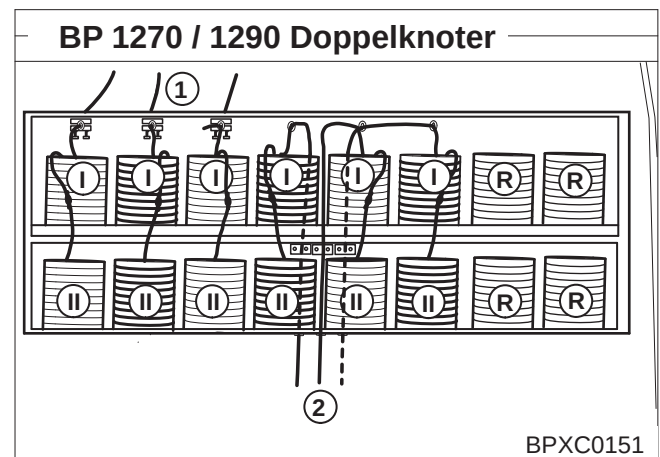
During the bale tying circuit, two twine strands are guided to each of the 6 or 4 knotters. The first is guided in from below through the needles (2) and the second is guided in directly to the bale (1) from above.



The forward twine rolls (in the direction of travel) adjust the upper twine and lead to the knotters (1). The rear twine rolls (in the direction of travel) adjust the lower twine and lead to the needles (2).



In the case of the double knotter, the brakes should only be tensioned in the twine box until the thread is just tight (i. e. not drooping)!

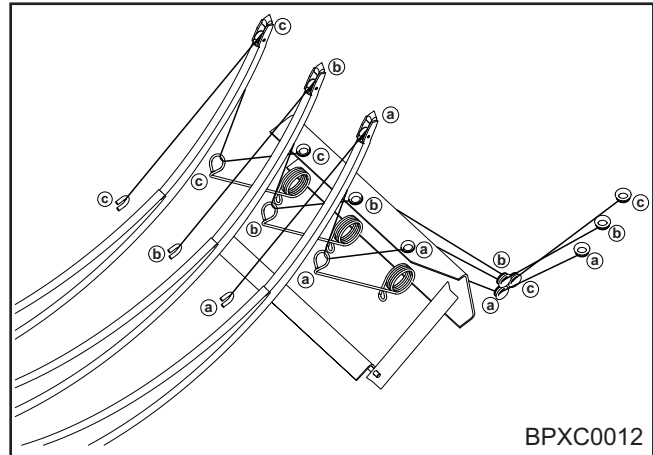


Threading the tying twine

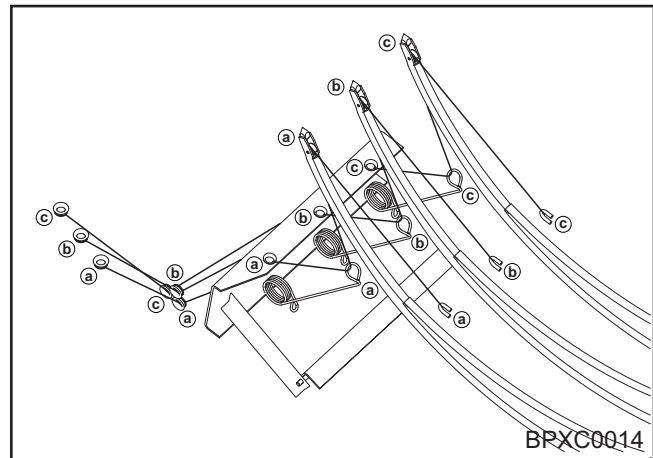
Single knotter

Thread the tying twine coming through the lower twine openings of the twine box through the outer twine guide and into the eyes. From here, thread them through the twine tension springs into the tying needles and knot them on the corresponding eyes on the frame.

Big Pack 1270 right side



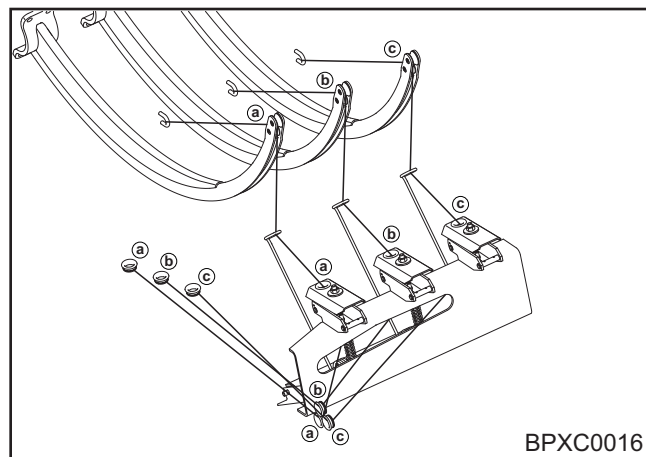
Big Pack 1270 left side



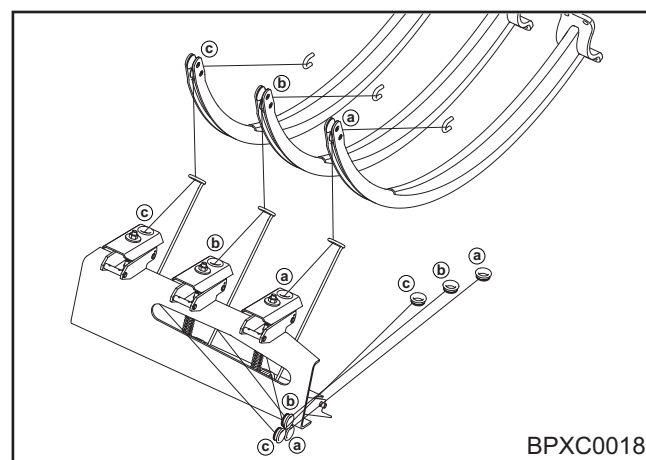
Double knotter for lower twine strand:

Thread the tying twine coming through the lower twine openings of the twine box through the outer twine guide and into the brakes. From here, thread them through the twine tension springs into the tying needles and knot them on the corresponding eyes on the frame.

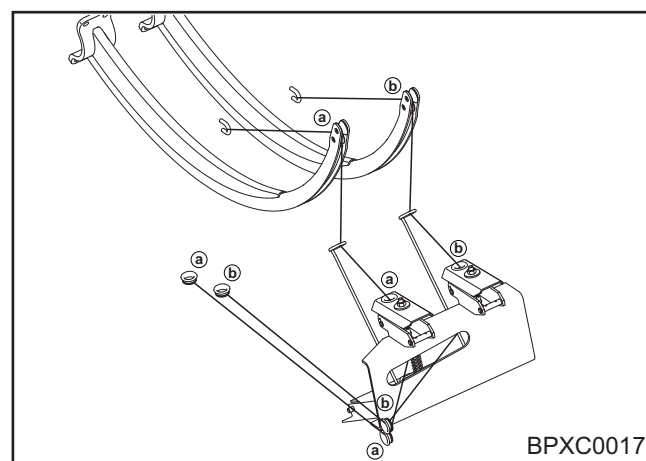
Big Pack 1270/1290 right side



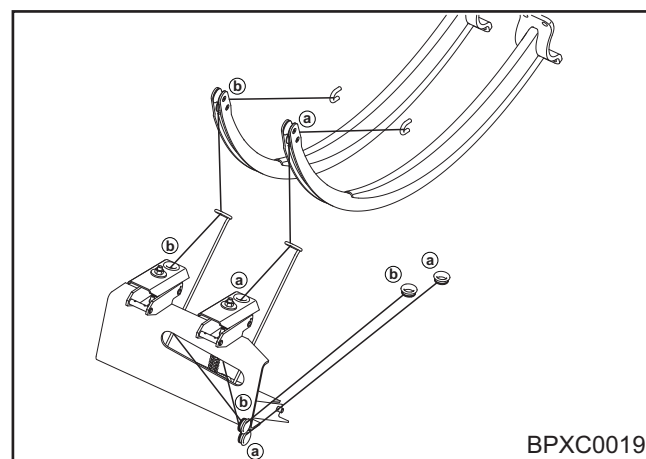
Big Pack 1270/1290 left side



Big Pack 890 right side



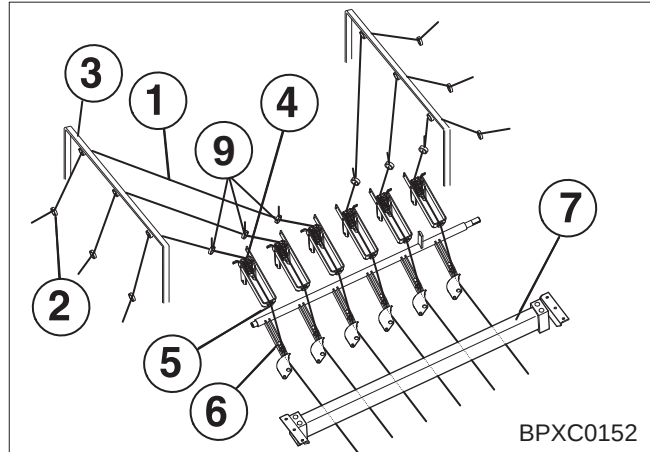
Big Pack 890 left side



Double knotter for the upper twine strand:

The twine (1) is fed in through the eyes (2) of the twine box through the twine guide (3) and through the eyes (9) into the brake (4). From there it goes through the eyes of the tension arm (5) and through the upper needle rollers (6) onto the upper side of the bale.

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.

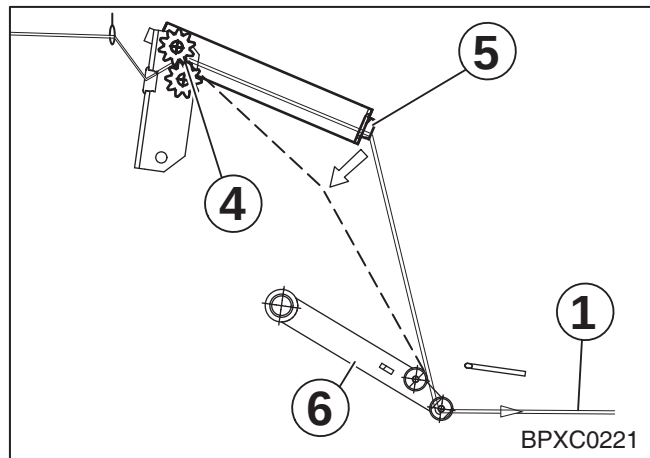


The upper twine strand is guided in from under the rear cross beam (7) of the knotting table and fastened onto the frame at a suitable point. This could be the hinge bolt (8) of the upper tension flap, for example.

The thread should be fastened so that there is tension on the tension arm (5). After the next tying process is complete, cut it off from the hinge bolt.

If the bale channel is filled, it is also possible to push the loose end of the upper twine into the bale. To do this, guide the twine through the rollers of the upper needle (6) and put about 50 cm of twine down into the baling channel.

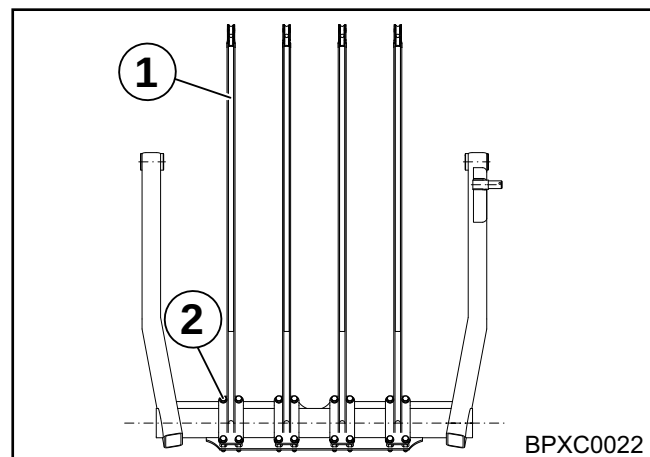
For subsequent baling, the thread is jammed in the fodder, thereby pulling the tension arm downward. It is important for tension to be on the tension arm just before the tying process is triggered.



8.2.2 Needle Adjustment

Lateral adjustment of the needles

Place the needles (1) so they are centred in the oblong holes of the needle yoke, align them with the needle slots and fasten them in place with the screws (2). To be able to make an adjustment, trigger the tying process manually and rotate the needle yoke upwards manually on the flywheel in the working direction. The needles must be positioned slightly to the right on the knotter blocks in the direction of travel when they rise up. To correct the lateral distance, loosen the screws (2) and align the needle laterally. In this position of the needle, move the plunger to the side with a mounting lever to check whether the needle may possibly be touching on the side (see Chapter 8.4). After making the adjustment, it is essential to make certain that all screws are tight.



The needles must be unobstructed along the entire path they follow. They must not come in contact with any other elements (frame, plunger, etc.)!



Only make adjustments with the twine threaded in!

Height of the needles on the knotter

To adjust the height of the needles (4) when they enter into the knotter, after initiating the tying process by turning the flywheel manually, turn the needle yoke upwards in the working direction until the lower roller is on the needle point above the cleaners (6) of the driver (2) (I).

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 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.

Upper dead point of the needles

After the tying process has been initiated, the needle yoke is set in motion by the needle connecting rod (3). 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 tying needles (4) protrude out from the knotter. The distance "b" between the upper edge of the driver disc (2) and the mid-point of the lower roller on the needle point should be at least **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 driver (2) in their highest position.

Single knotter:

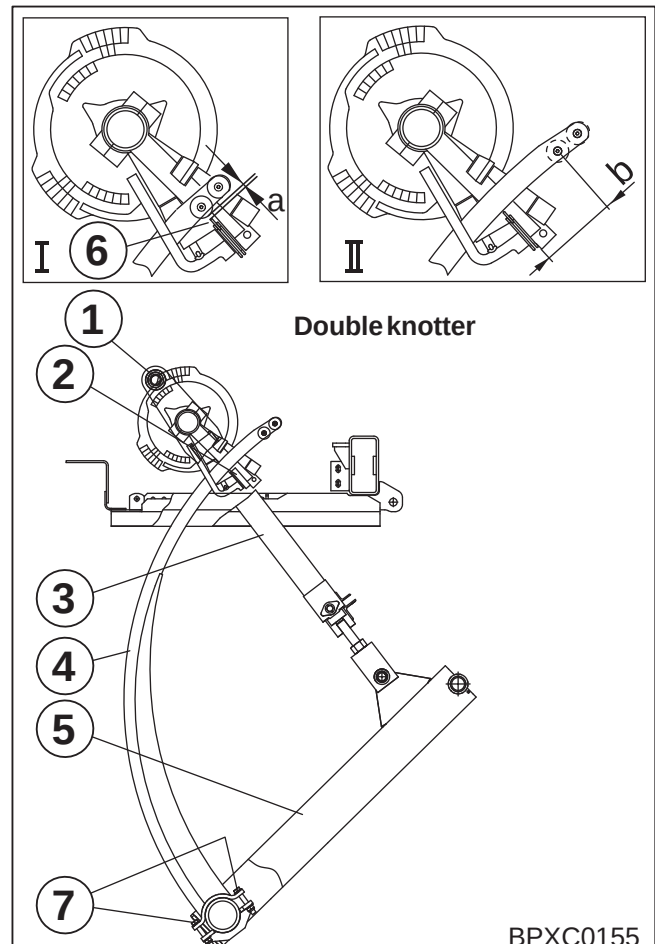
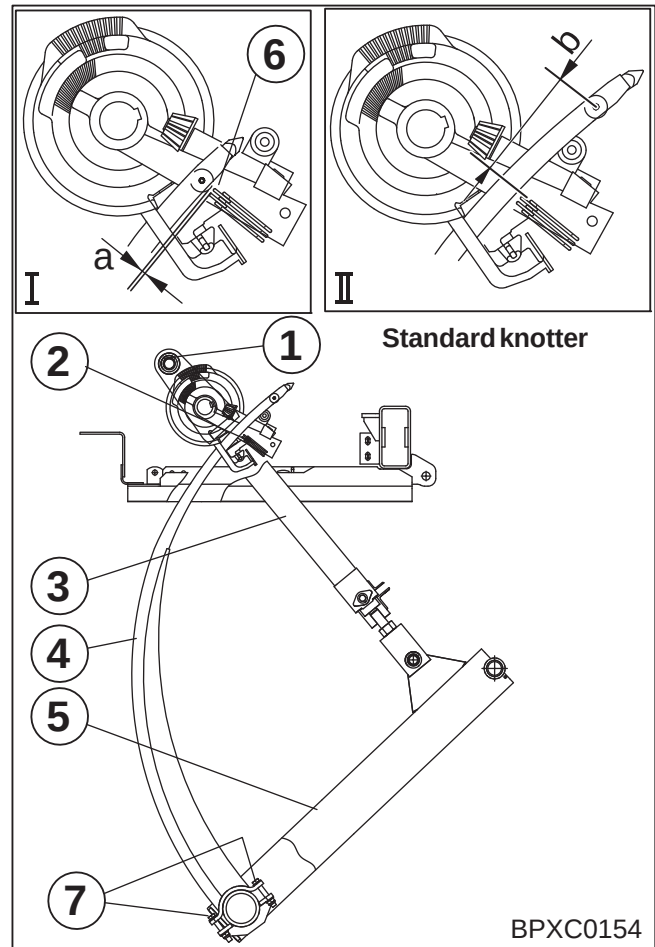
b = 120 - 130 mm

Double knotter:

b = 105 - 115 mm



The needles and needle yoke must not come in contact with the frame, plunger or other parts during the upward or downward motion



Adjustment of the needle yoke brake



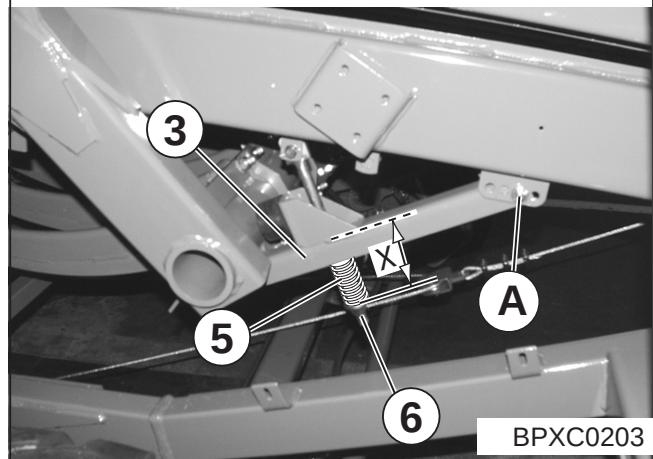
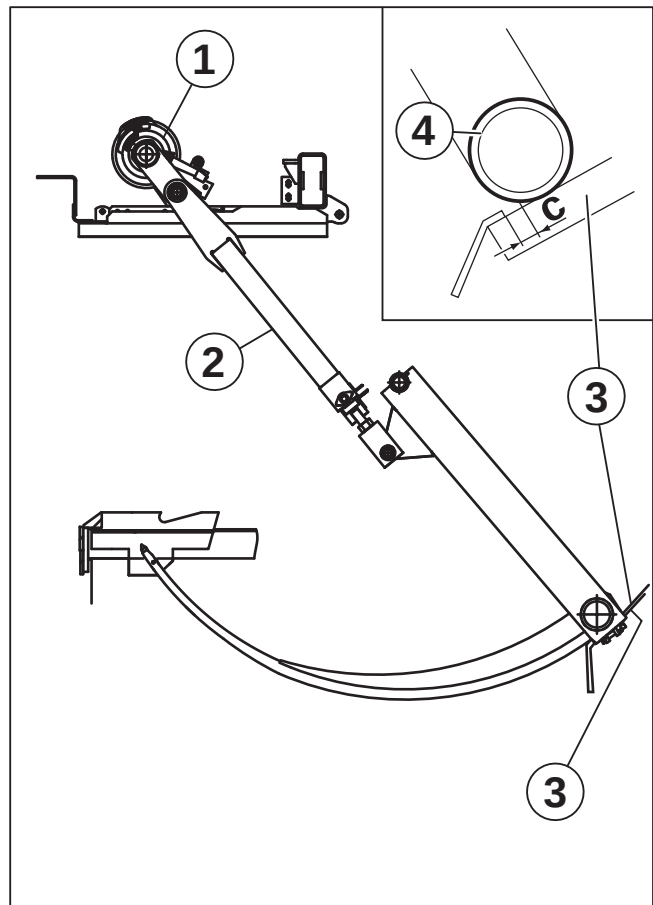
The needle yoke brake should not be set until the height of the needle on the knotter and the upper dead point of the needle have previously been set!

When the needle yoke is in the idle position, i.e. the crank arm (1) and the needle connecting rod (2) are extended, the distance between the cross tube of the needle yoke (4) and the brake (3) must be "**c**" = 0 - 20 mm.

If dimension **c** is not reached, dimension **c** can be corrected by moving the brake (3) in the oblong hole (A).

If dimension **c** cannot be achieved even after moving the brake, check the position of the needles relative to the knotter.

- Pretension the spring (5) by tightening the nut (6) until the **spring length X**:
Double Knotter X = 110 mm
Single Knotter X = 120 mm

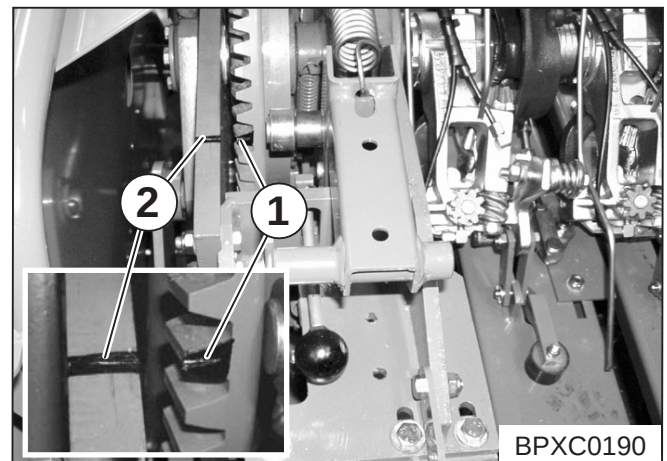
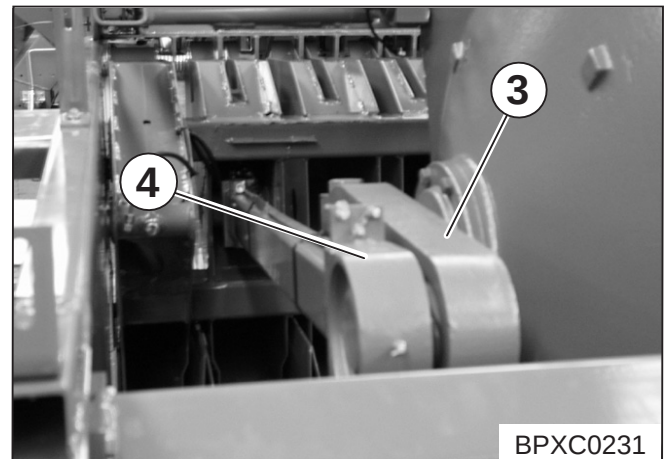


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Needles to the baling ram

To adjust the needles to the baling ram, first dismount the drive PTO shaft of the knotter shaft. After that, turn the baling ram on the flywheel manually in its running direction until the crank arms (3) and the connecting rod (4) are perfectly aligned (i.e. the baling ram is at the forward dead point).

Then the knotter gear should be turned until the **coloured mark (1)** is aligned on the **knotter shaft crown wheel** with the rear upper edge of the knotter gearbox (2). After this setting is made, reattach the PTO shaft of the knotter drive and secure it in place again. Check the setting as described in the following chapter.

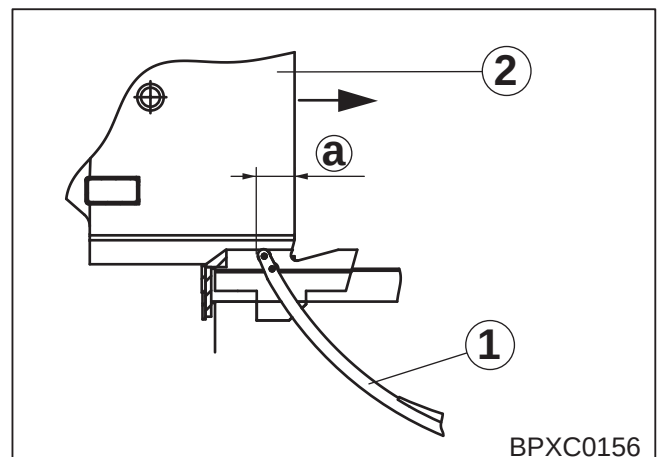


Checking the needle setting to the baling ram



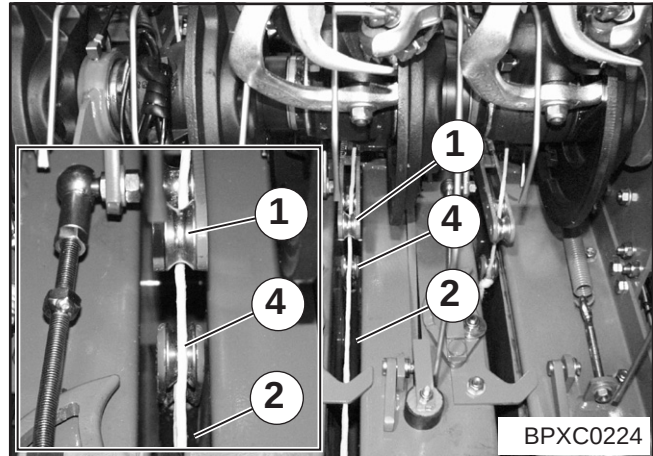
To check the needle setting to the plunger, loosen the needle yoke brake completely

The tying process is initiated to be able to check the needle setting to the baling ram. The baling ram (2) on the flywheel should be turned in the working direction manually until the tying needle points (1) are at the height of the upper edge of the retainer in the bale channel floor. The needle point must be covered in this position by the forward edge of the baling ram with a dimension of $a = 60-90 \text{ mm}$. If this is not the case, the setting can be corrected by removing and reinstalling the PTO shaft of the knotter drive.



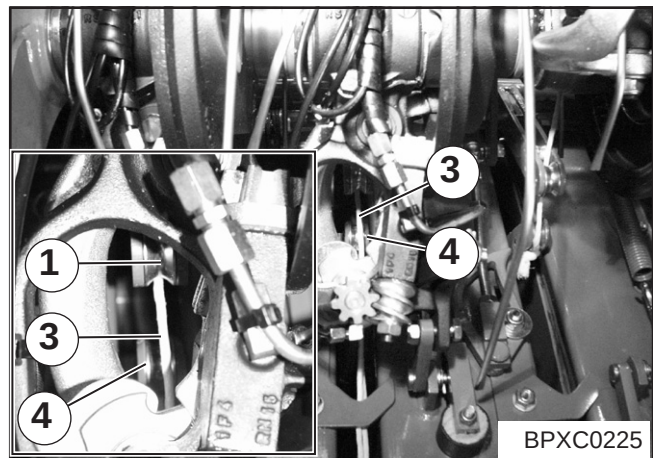
Setting of the Upper Needle

The upper needle should 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.



Checking the Setting

The thread is tightened towards the back and the tying process is triggered. Now turn the flywheel manually until the arms of the upper needle (1) are raised. Just before the knotter needle catches the upper twine (3), the flywheel brake is engaged. At this point in time, the upper twine should be centred in front of the upper roller (4) of the knotter needle. If this is not the case, the individual arm of the upper needle (1) must be corrected.



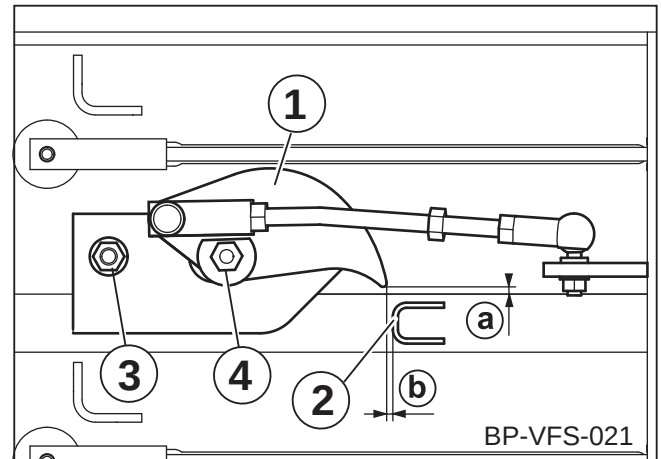
8.2.3 Twine Bar

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.

8.2.3.1 Setting of the Twine Bar (Single Knotter)

Initiating the tying process. Turn the flywheel in the working direction. The needles move upwards. At the same time the twine bars rotate over the openings through which the needles transport the tying twine to the knotter.

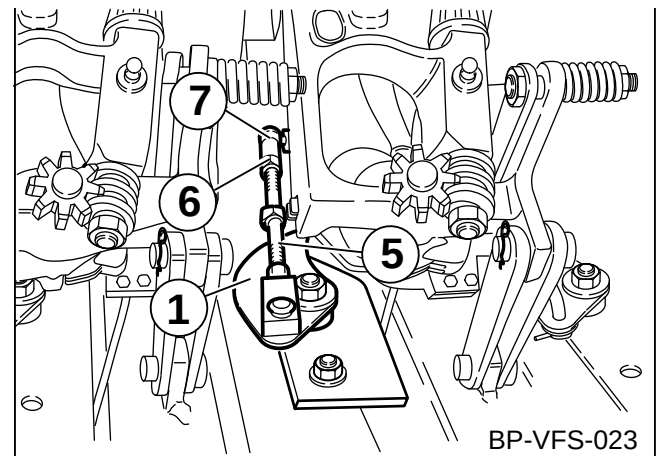
If the twine bars (1) are in the middle of the openings, the distance between the tip of the twine bar and the inside of the needle must be (2) **"b" = 2 - 5 mm**. The setting is made by loosening the screws (4) and (3) of the twine bar (1).



The setting of the lateral distance **"a"** is made on the control linkage assembly (5) of the twine bar (1). To make the setting, loosen the counter nuts (6) and remove the ball end (7). Turn the control assembly linkage until the dimension is set to **"a" = 0 - 5 mm**. If the twine bar is pressed in the direction of the channel slot, the dimension **"a"** must still be maintained. Then tighten the counter nuts again. During assembly, make certain that the crease (5) in the control linkage is facing up and left.



During assembly, make certain that the crease (5) in the control linkage is facing up and left.



8.2.3.2 Setting of the Twine Bar (Double Knotter)

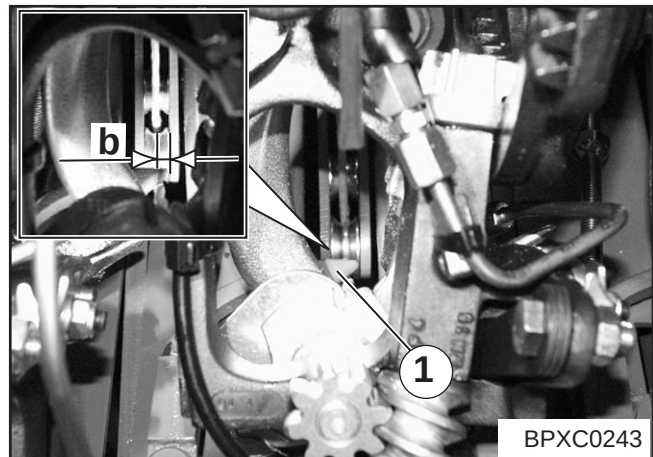
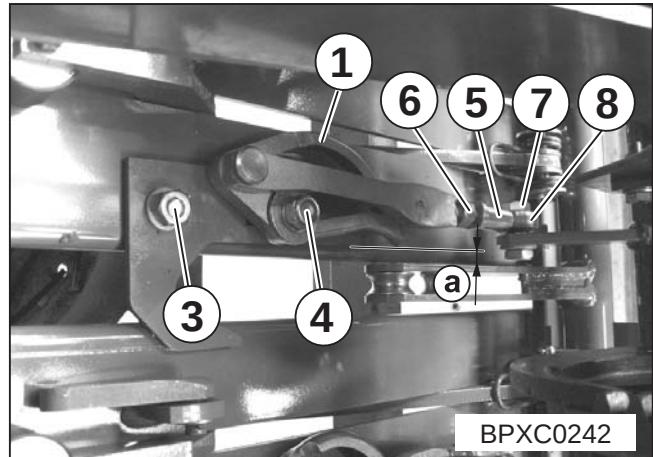
For the double knotter, the setting of the twine bar should be made with the second knot. To do this, continue tying by turning the flywheel. After the first knot (closing knot) is complete, the needle moves back down again and the upper needle enters into the channel slot to its deepest point. Then the twine bars move over the openings a second time.

If the twine bars grasp the twine now, they must have an overreach of at least **b = 5 - 10 mm** (twine must be securely grasped at least 5 - 10 mm away from the tip of the twine bar).

The setting is made by loosening the screws (3) and (4) of the twine bar (1).

The setting of the lateral distance "a" is made on the control linkage assembly (5) of the twine bar (1). To adjust, loosen the counter nuts (6) and screw (7) of the joint bearing (8). Turn the control assembly linkage until the dimension is set to "a" = 5 - 12 mm. If the twine bar is pressed in the direction of the channel slot, the dimension "a" must still be maintained. Then tighten the counter nuts again. The twine bars must be freely movable in this position.

During assembly, make certain that the crease (5) in the control linkage is facing up and left.

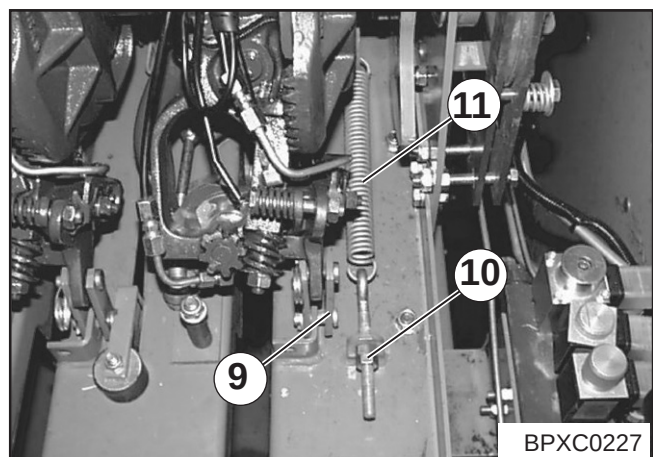
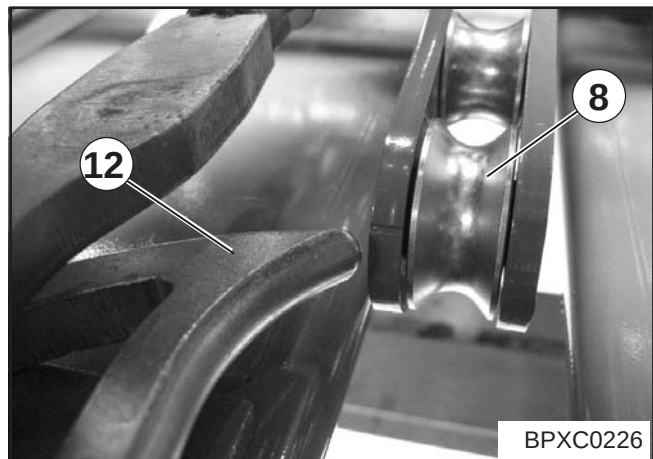


Checking the Setting of the Twine Bar (Double Knotter)

- Initiate the tying process (refer to Chapter "Triggering the Tying Process Manually")
- Turn the flywheel in the direction of operation until the arms of the upper needle (8) are raised a little.
- Loosen the screw (9) on the knotter and swing the knotter up.
- Loosen nut (10) completely so that there is no tension on the spring (11).
- Rotate the twine bar (12) back and forth manually. The tip of the twine bar (12) must not collide with the arms of the upper needle (8). If necessary, move the twine bar (12) back by loosening screws (3) and (4) so that the twine bar (12) does not collide with the arms of the upper needle (8).

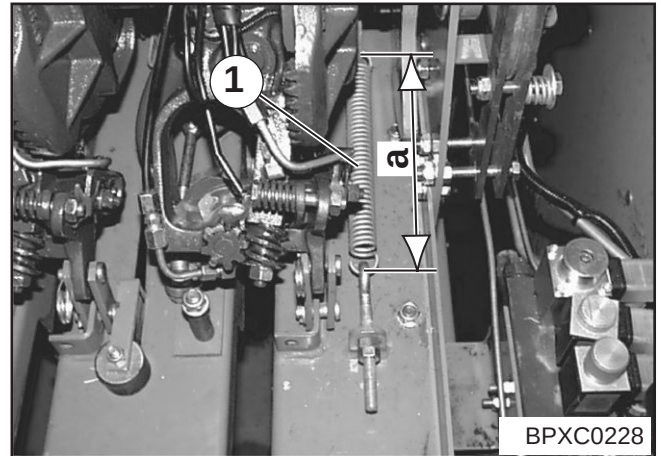


If the twine bar (1) has been moved out of adjustment, dimension "a" must be checked.



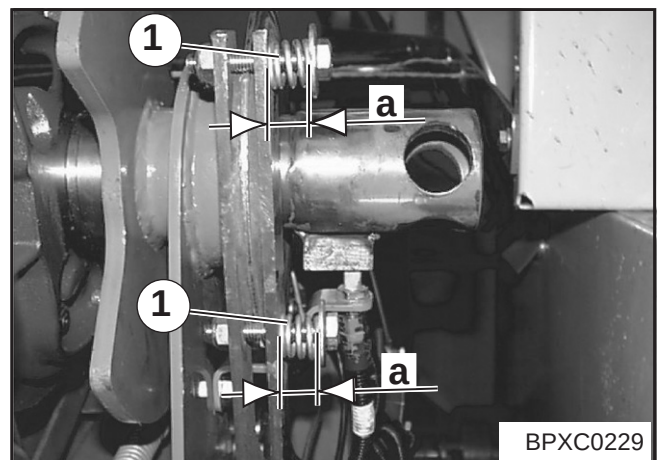
Pretension on the Twine Bar Shaft

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



Setting the Knotter Shaft Brake

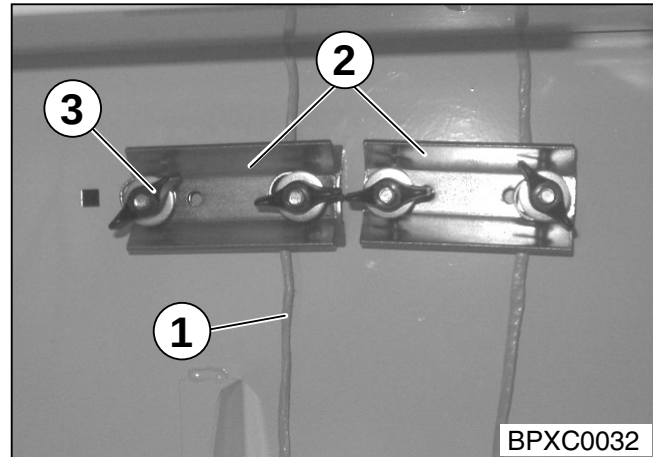
Pre-tension the springs (1) on the knotter shaft brake until **dimension a= approx. 22 mm**.



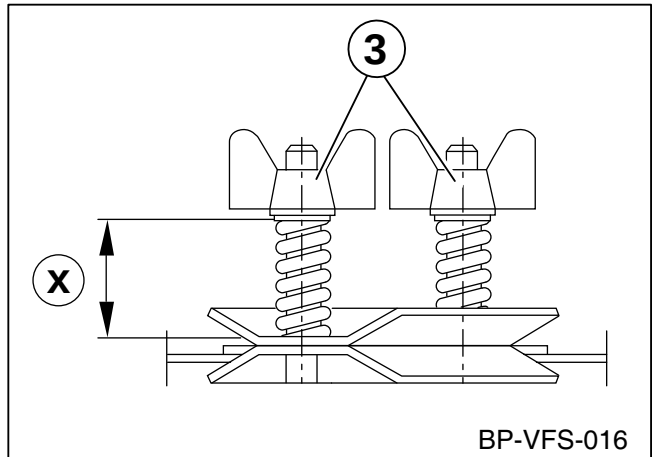
8.2.4 Twine Brake

Single knotter

The twine brakes (2) are located in the twine box. The tying twine (1) is held under tension by the setting 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 knotting errors and place too heavy a load on the components involved.



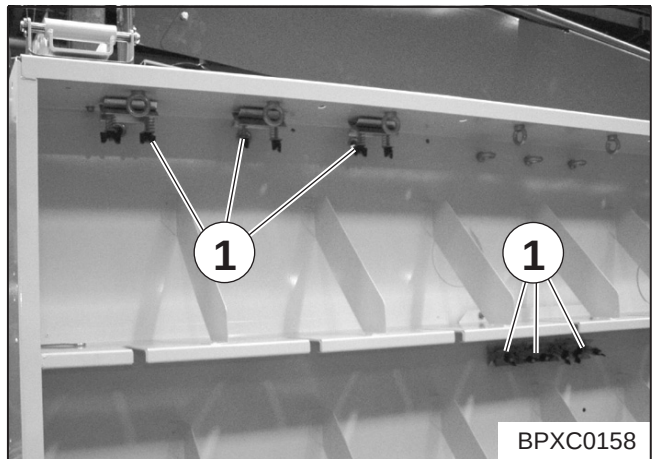
Pre-setting X= 30 - 35 mm



Double knotter

In the double knotter design, the twine brakes (1) in the twine box serve simply to keep the twine tight. A pre-tension of the twine strand that is too high may cause knotting errors and place too heavy a load on the components involved.

Pre-setting X= 30-35 mm



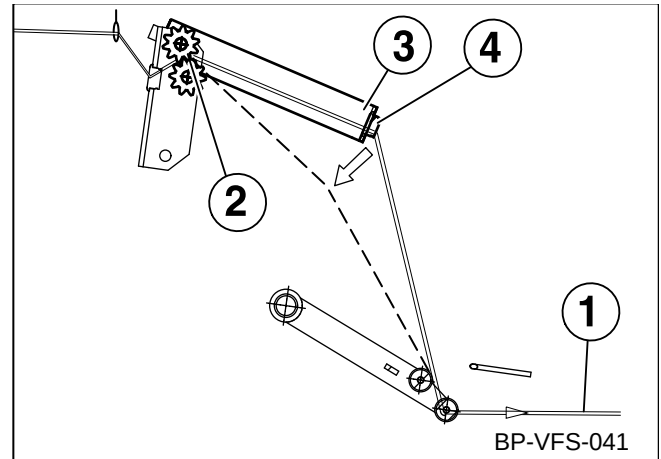
Twine tension on the upper twine strand

The upper strands of twine (1) should be held by the brakes (2) up to a drawing 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:

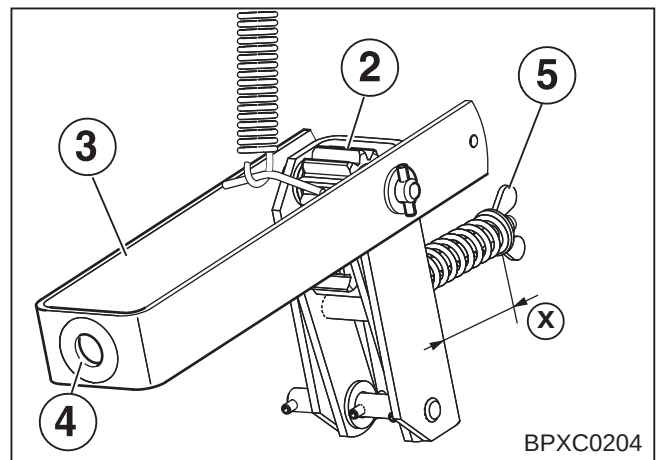
Tie the cord (1) onto a spring balance. The spring balance must indicate **100 - 120 N** shortly before the cord slips through.

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 knotting errors and place too heavy a load on the components involved.

Pre-setting X= 65 mm



Twine tension on the lower twine strand

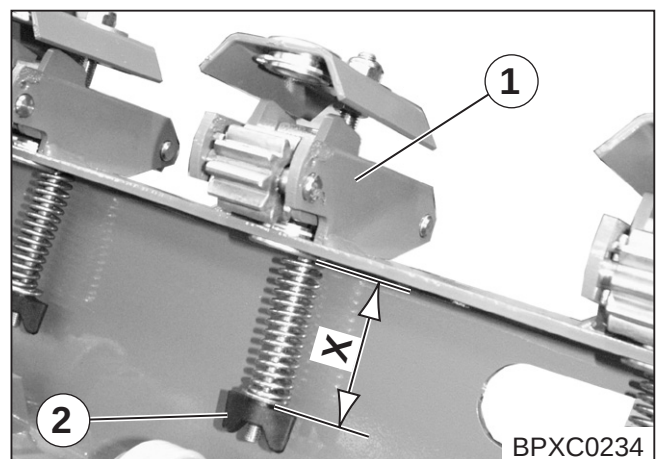
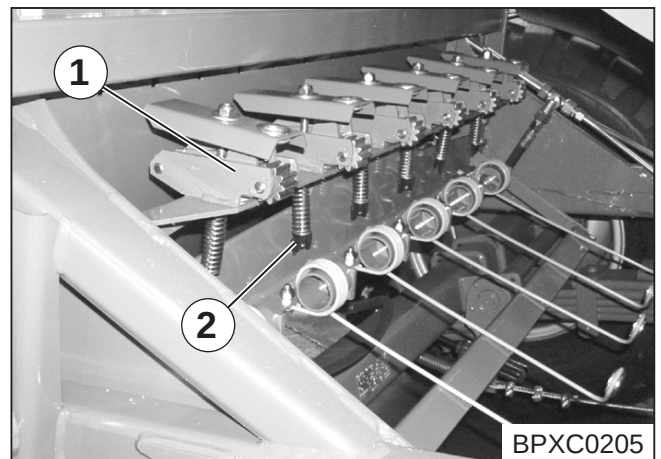
The twine brakes (1) for the lower twine strand are behind the packer under the bale channel chamber.

You can increase the tension by turning the wing nut (5) 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. Initiate the knotting process manually.
3. Move the flywheel in the working direction manually until the tying needles have reached their upper dead point.
4. Pull the tying twine about 200 mm out of the needle and cut it.
5. Pull the strand of twine slowly and evenly until the twine tension springs have reached their highest position under the channel.
6. 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.
7. The brake must allow twine to slip through if there is a slight increase in the pulling force.



8.3 Knotter

Safety instructions



- All maintenance, adjustment and repair tasks on knotters must only be performed when the machine is at a standstill. Turn off the engine and remove the ignition key.
- Apply the flywheel brake.
- Secure the knotter against being triggered unintentionally by moving the lock bar.

Start-up

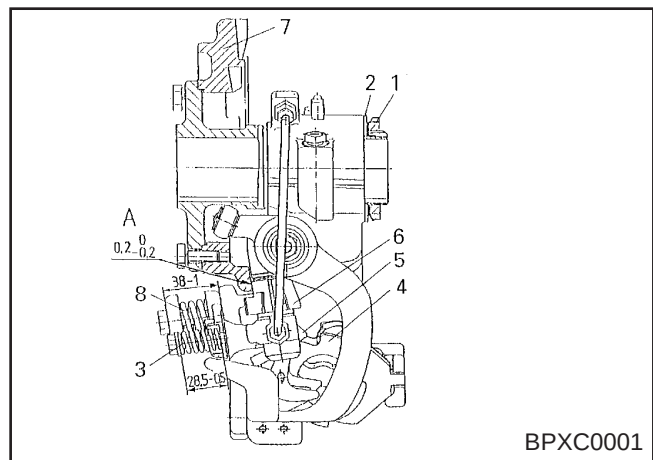
The knotter has been adjusted and tested by the manufacturer. It should work properly without requiring any further adjustments. If there are problems with tying when it is placed in service for the first time, the mechanisms should not be adjusted immediately, since this is usually caused by errors 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 placing the machine in service the first time.

8.3.1 Single Knotter

Knotter unit

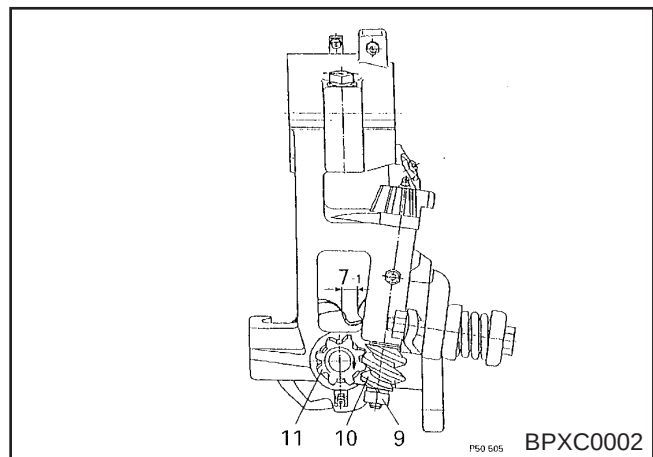
- A** = axial play to the knotter disc
1 = groove nut
2 = tab washer
3 = compression spring
4 = twine driver
5 = clamp segment
6 = linker pinion
7 = knotter disc
8 = compression spring for twine retainer
9 = hexagonal nut
10 = auger gear
11 = diagonal spur gear
- tightening torque **M = 25⁺⁵ Nm**



Check the axial play (A) of the knotter unit and adjust as necessary. This prevents breaks with knotter discs and knotter blocks.

Check the maximum distance of **0.2 mm** between where the knotter disc gliding ring rests and the sliding surfaces of the knotter and driver pinion and adjust it with the groove nut (1) if necessary. After that, secure the groove nut with the tab washer (2)!

After that, secure the groove nut with the tab washer (2)!

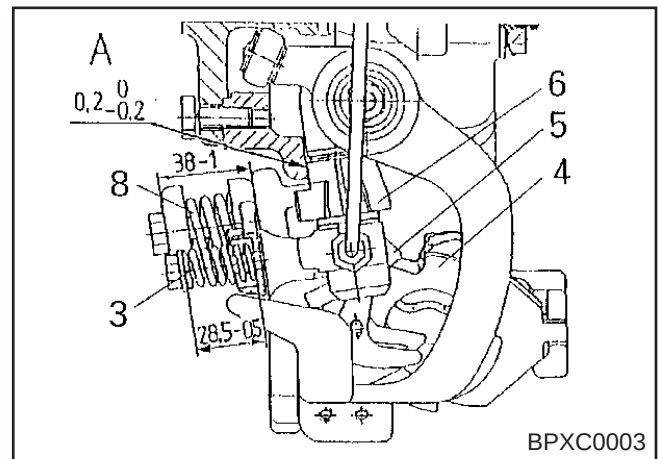


Knotter hook

The closer is held under tension by the compression spring (3) and presses on the knotter tongue roller. The spring is set in zero position (refer to Chapter „Setting the zero position“).

The setting dimension of the compression spring is **28.5_{-0.5} mm**.

Not enough contact pressure results in ties not being made (and in some cases tying in cord ends); too much contact pressure increases the wear on the tongue roller, closer and cam.

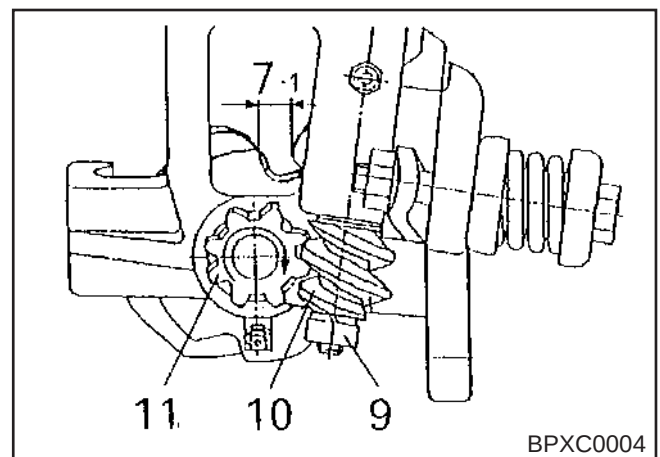


Twine retainer

Monitor the separation dimension of **7₋₁ mm** between the left corners of the cord grabber driver grooves (4) and the hooks of the clamp segment (5).

- Conditions:**
1. No twine in the twine retainer
 2. Clamp segment is located at the base of the cord driver.
 3. Sliding surface A of the driver or knotter pinion (6) makes contact to the sliding surface of the knotter disc (7).

- Setting:**
1. Unscrew the hexagonal nut (9).
 2. Unscrew the auger gear (10) from the cone of the shaft (by giving it a light tap) and turn until the setting dimension is reached. Prerequisite: the tooth edges of the auger gear and diagonal spur gear (11) must lie one against the other in the drive direction!
 3. Tighten the hexagonal nut to a tightening torque of **25⁺⁵ Nm**.



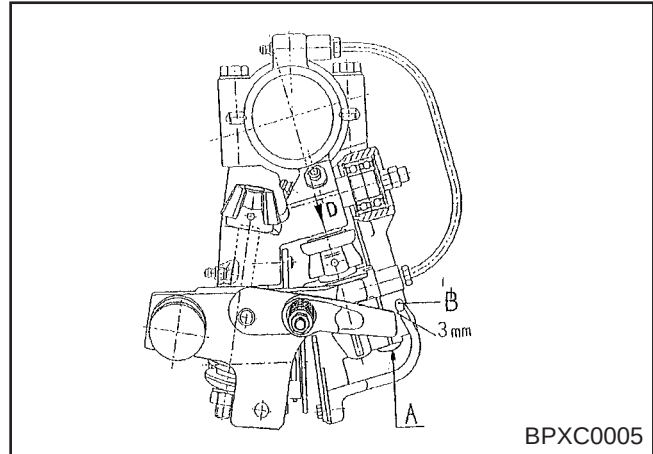
Check the clamping power on the twine retainer - compression spring (8) for dimension **38₋₁ mm**, measured over the external surfaces, and adjust (as you make the setting, observe conditions 1 and 2 mentioned above).

Blade lever

Ensure that the extractor comb on the blade lever glides lightly along the back of the knotter hook in the middle. Adjusting the blade lever too closely will cause wear on the control cams of the knotter disc and on the blade lever. When the knotter hook is turned by about 180°, the distance from the back of the hook in the area of the tip to the blade lever has to be at least **3 mm**!

If the distance is too small, the cord will be damaged.

Remedy: Replace the knot extractor



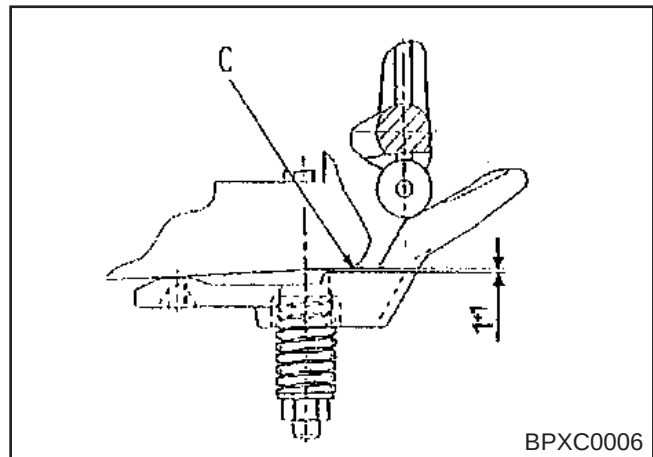
BPXC0005

Note on eliminating the tying malfunction

Single knot on the twine retainer - twine end.

One possible cause may be that the closer is bumping up against the blade lever or is resting against the knotter block. In both cases it will prevent the knotter tongue roller from taking the load from the spring compression.

Remedy: In area (A) of the blade lever, unloop the extraction comb for ease of movement and align the twine deflector (B). You should work with the knotter block in area (C) so that there is a distance of about **1⁺¹ mm** between the closer and knotter block in the knotter position that is shown.



BPXC0006

8.3.2 Double knotter

8.3.2.1 The knotter hook

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

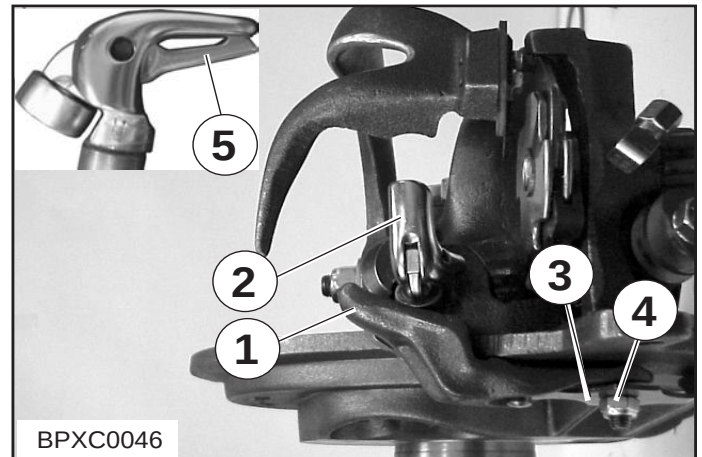


- If the clamping effect on the knotter tongue (5) is too big, the knot will be left hanging in the knotter tongue. The twine strand will rip.
- If the clamping effect is too low, either no knot or a loose knot will form.

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.



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

8.3.2.2 Twine retainer

Adjustment of 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 $a = 0-2 \text{ mm}$ as a default setting in the works of the manufacturer.



- 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.

Adjusting the twine driver (5)

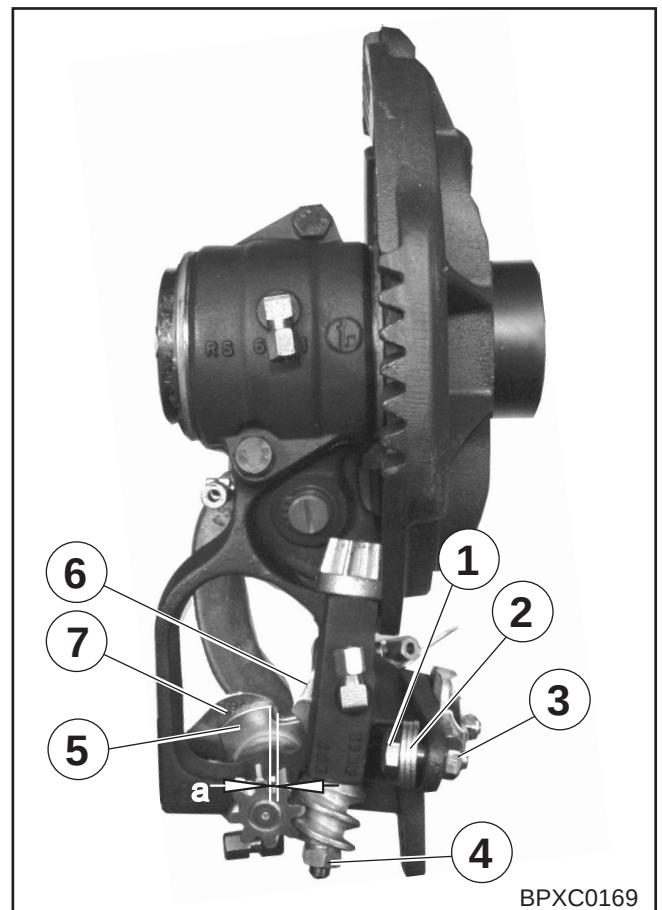
The indentation of the twine driver (5) has to be located at the position shown.

Subsequently:

- 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 $a = 0-2 \text{ mm}$ by turning the auger.
- Tighten nut (4).



At least two tying processes must be performed to check for the correct position of the indentation.



Setting the holding force of the twine retainer (6)

The holding force has been preset in the works of the manufacturer.



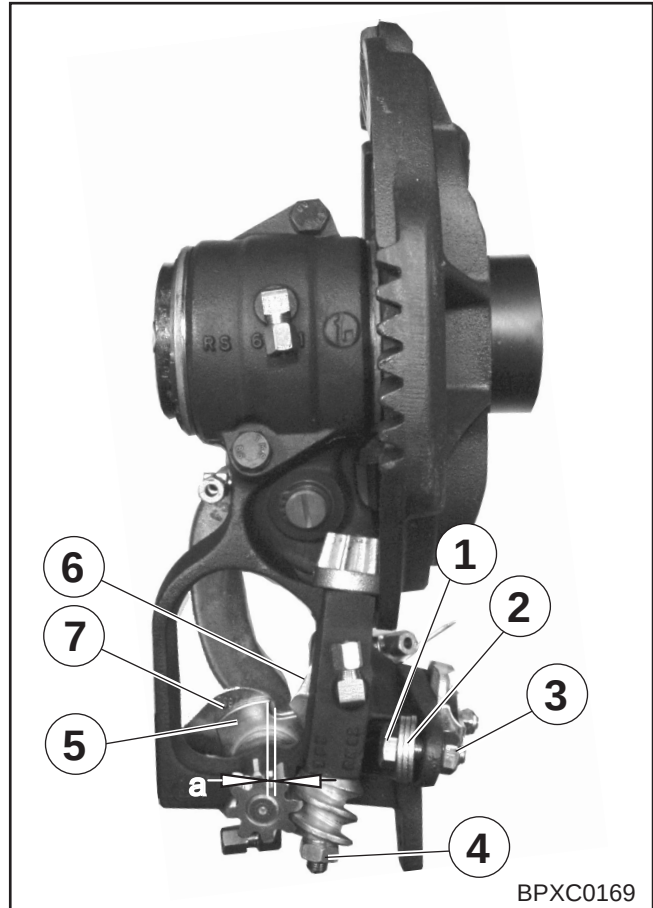
The type and moisture content of baling material and its baling density as well as the tying twine that is selected all require different settings, which have to be determined by trial and error under actual working conditions.

To do this:

- Loosen the counter nut (3)
- Ensure stronger or weaker pre-tensioning of the twine retainer spring (2) by means of screw (1) (approx. half a turn).
- Tighten the counter nut (3).



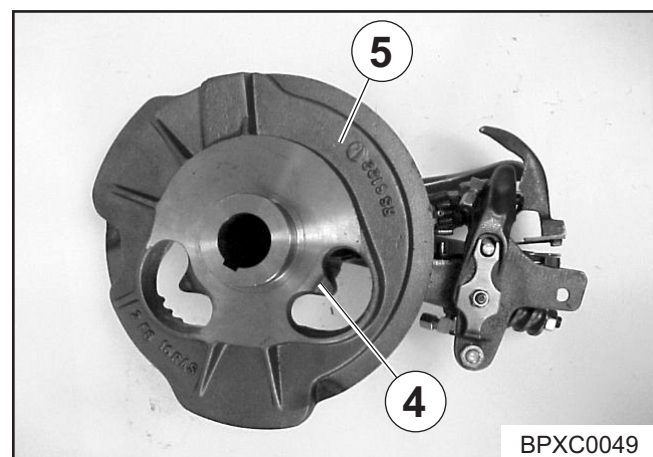
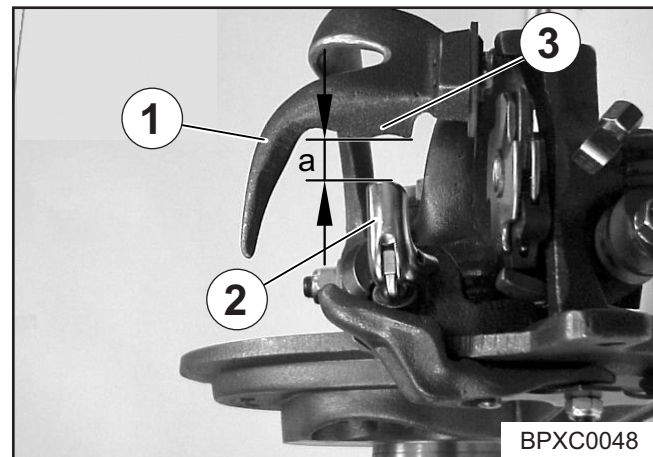
The twine retainer should only clamp the twine securely enough so that it is not pulled out of the twine retainer mechanism during the tying process. If the clamping effect is too big, it will tear the twine into shreds.



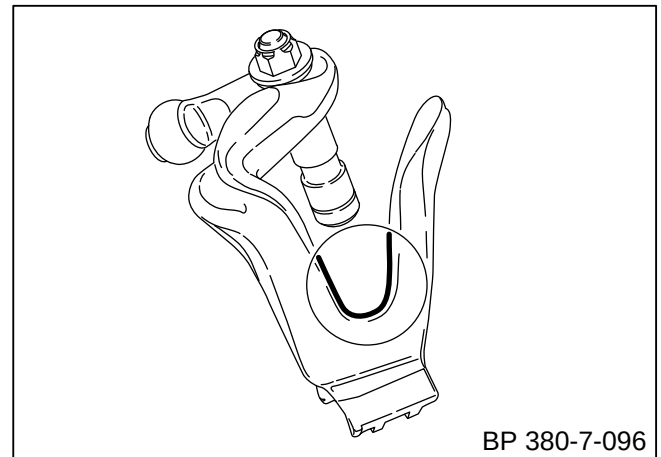
The blade lever

The blade lever (1) must be aligned so that the knotter hook (2) can turn freely without touching the blade lever at any point.

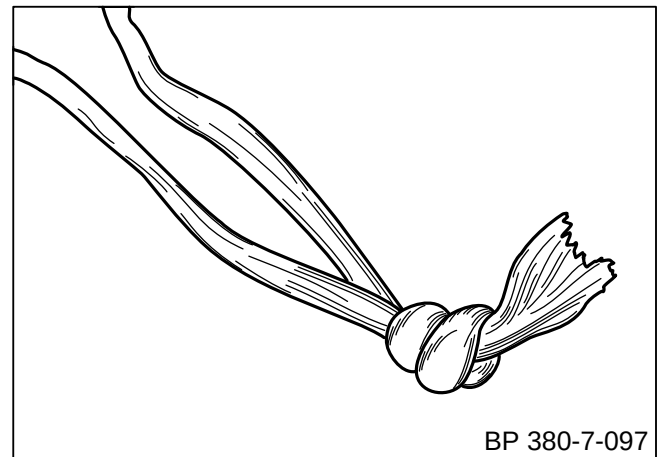
However at the same time, the extractor comb (3) of the blade lever must evenly touch the back of the knotter hook (2). The distance between the extractor comb of the blade lever and the knotter hook tip should be $a = 15 \text{ to } 18 \text{ mm}$ in the blade lever dead centre point. The blade lever 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 (marked area) 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.



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.



8.4 Baling Ram Setting



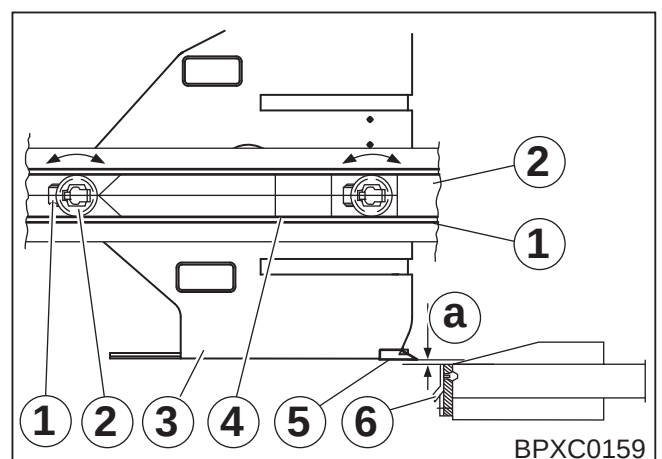
- The Rollers of the baling ram must bear weight equally.
- The gap between the baling ram blades and the blades in the baling channel must be the same over the entire width of the plunger.

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

- The baling ram (3) of the Big Pack 1270/1290 is equipped with seven blades.
- The baling ram (3) of the Big Pack 890 is only equipped with 5 blades (5) because of the small width of the baling channel.

Setting of the baling channel blades

A precise setting of the baling channel blades is necessary for the underside of the big bales to have a smooth surface. 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. Make certain that the guide rails (4) and the rollers are not dirty. This can result in increased wear and a height setting for the baling ram that is not sufficiently precise.



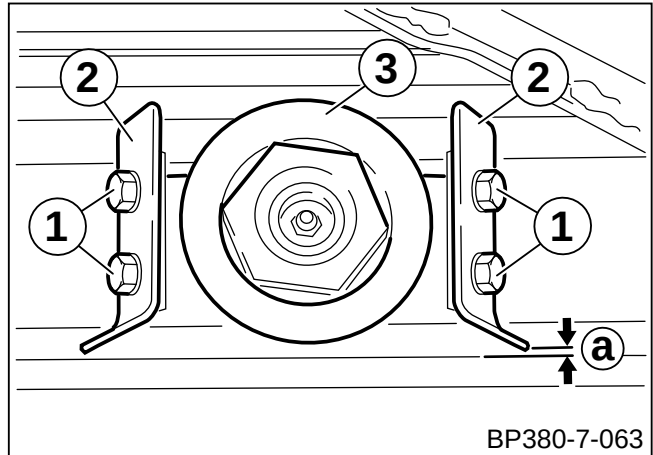
Cleaning the running rails

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 $a = 1 - 2 \text{ mm}$. Tighten the screws again.



The cleaning rails (2) must be able to tilt easily on the roller axis!



Lateral adjustment of the plunger

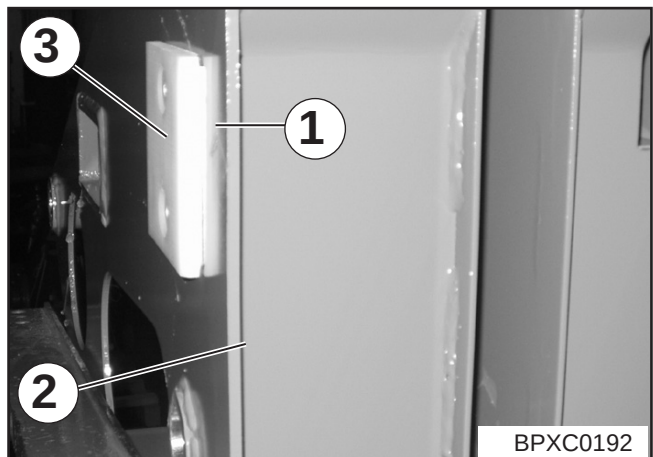
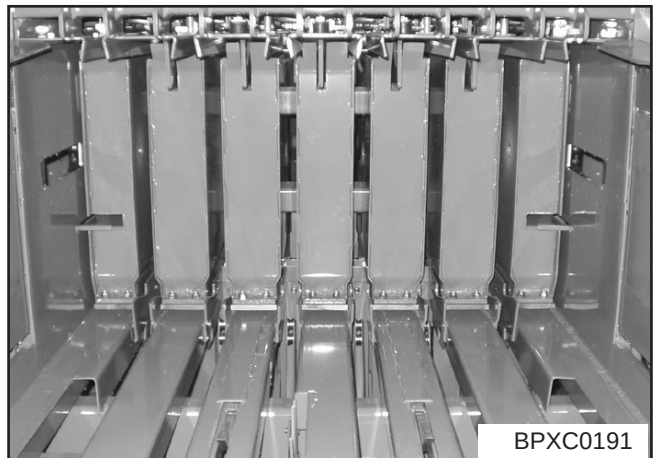
The baling ram should be aligned in the centre of the bale channel.

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 $a = 1 - 2 \text{ mm}$ at the narrowest point of the bale channel.



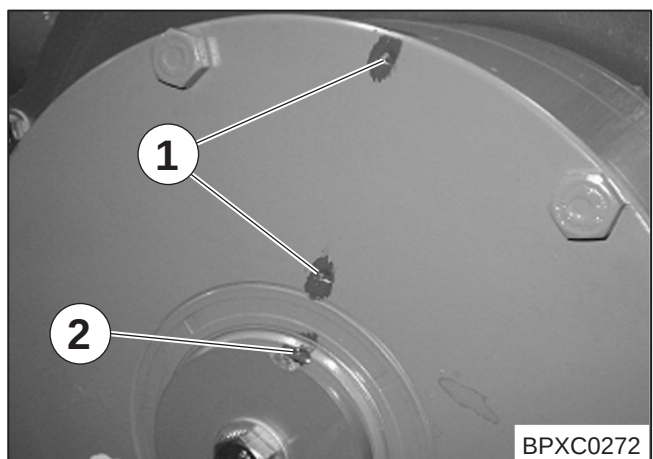
8.5 Adjusting the Packer Relative to the Baling Ram

8.5.1 Checking the engaging of the packer coupling



The packers only need to be adjusted when the packer gearbox or the chain coupling connection chains have been loosened.

- The packer coupling has engaged correctly if the two outer marks (1) on the packer coupling match the mark (2) on the inner ring of the packer coupling.





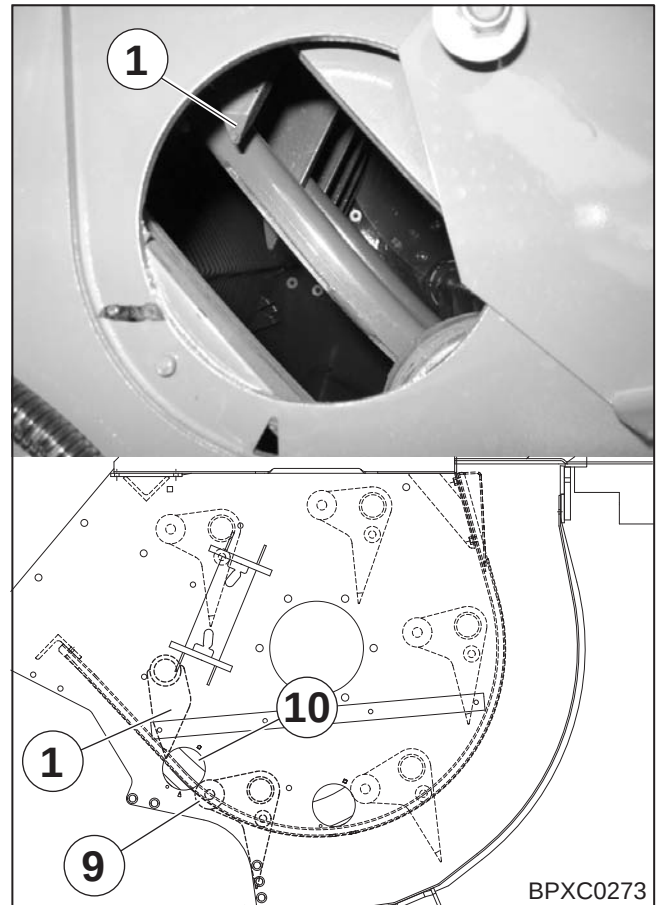
Ensure that the VFS system is located in zero position (refer to Chapter „Setting the zero position“).

8.5.2 Setting the packer

BigPack 890/1290/1290 HDP:

Turn the packer manually in the working direction by turning the flywheel until the large packer strip roller (9) running **in front of** the feeder strip is located directly behind the viewing window (10).

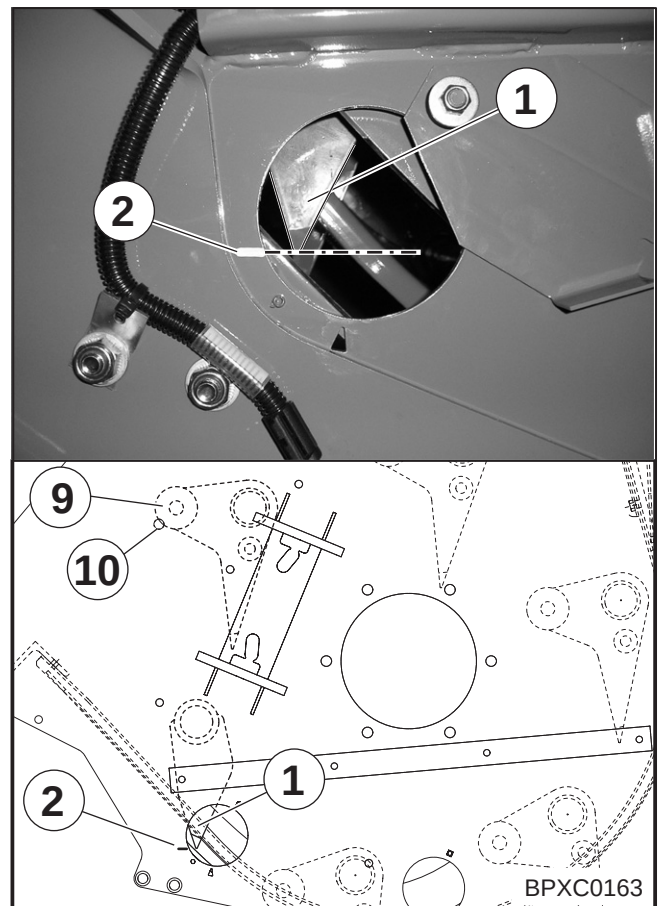
In this position, the tine tip (1) of the feeder strip is directly in front of the viewing window (10) in the working direction.



BigPack 1270:

Turn the packer manually in the working direction by turning the flywheel until the large packer strip roller (9) is behind the feeder strip and directly in front of the hole (10).

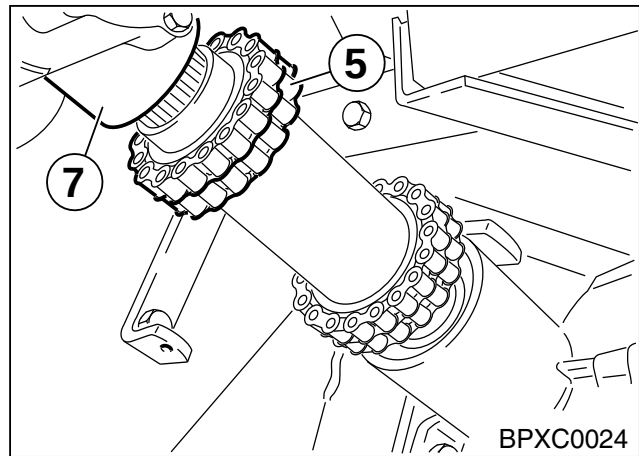
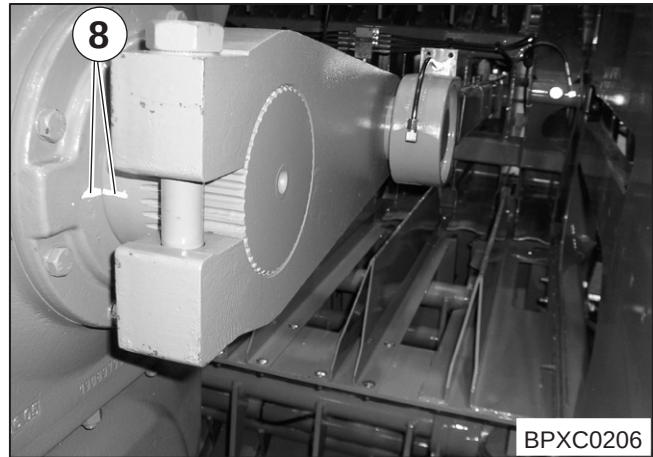
In this position, the tine tip (1) of the feeder bar must match the setting mark (2).



- Secure the packer in this position with a mounting lever.
- Remove the roller chain (5) from the packer gearbox drive shaft (7).
- Move the plunger rod to the extended position (rear dead point) until the marks (8) on the main gearbox match.

The packer (fixed in position by the mounting lever) and the plunger are now positioned as required.

- Position the chain coupling roller chain (5) and secure it. Set the safety covering in place and remove the mounting lever.
- Turn through the machine manually in the working direction one complete time on the flywheel.
- Then check the setting one more time.

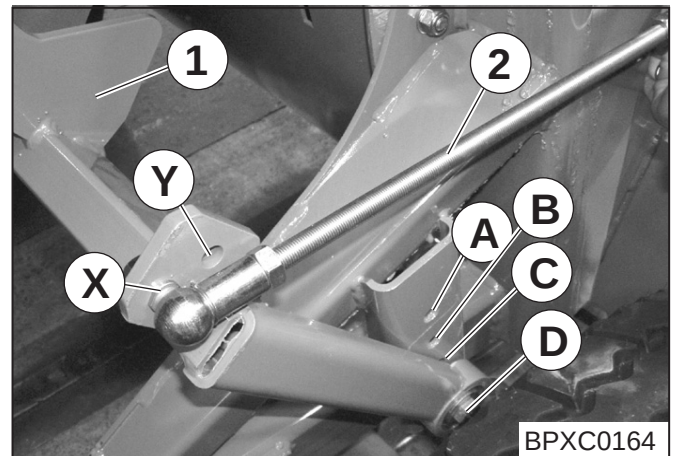


8.6 Variable filling system VFS

8.6.1 Installing the Feeler Rocker

The feeler rocker (1) and threaded rod (2) must be mounted in different positions according to machine type (Pre-setting).

	Position of feeler rocker	Position of threaded rod
BP 1270	D	X
BP 890/1290	C	X



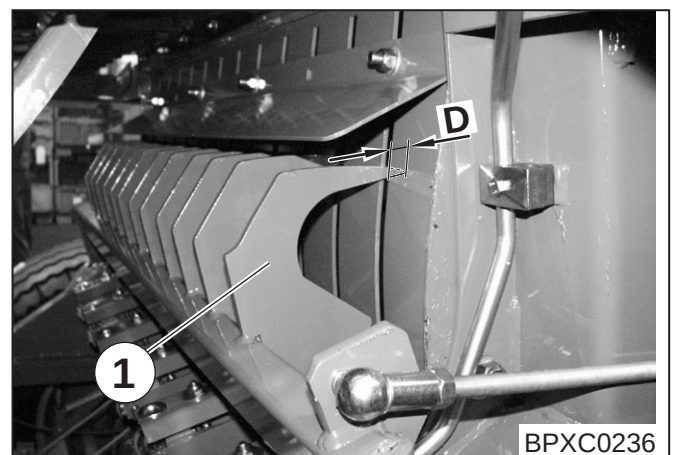
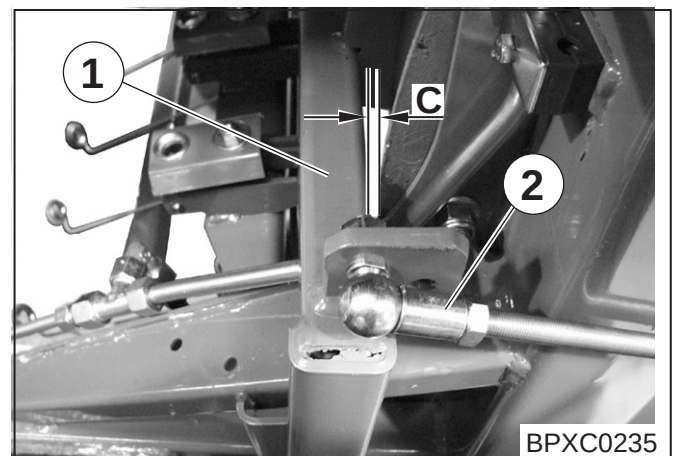
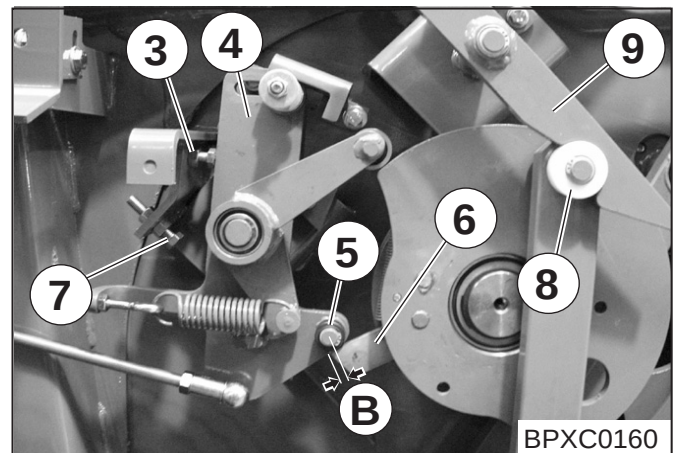
8.6.2 Adjusting the Clutch

8.6.2.1 Setting the zero position

Turn the packer by rotating the flywheel manually in the working direction until the roller (8) locks into the zeroizing device (9).

Subsequently:

- Adjust the set screw (2) so that when the clutch is completely disengaged and the anvil (5) is lying flush, the middle of the roller (7) is lying **B = 5 - 8 mm** on the trigger cam disc (6).
- In this position of the anvil (4), adjust the threaded rod (2) until the feeler rocker (1) holds a distance of **C = 5 - 10 mm** from the edge of the packer tray.
- Now draw the feeler rocker (1) into its rear position. The tips of the tines of the feeler rocker can now protrude **D = 0 - 5 mm** into the packer tray. Fix this position with the set screw (7).



If values C and D are not reached, it may be because the absorbing mechanism is impeding the rotating path of the feeler rocker. Next readjust the slotted brake jaw of the absorbing mechanism. (see 8.6.4)

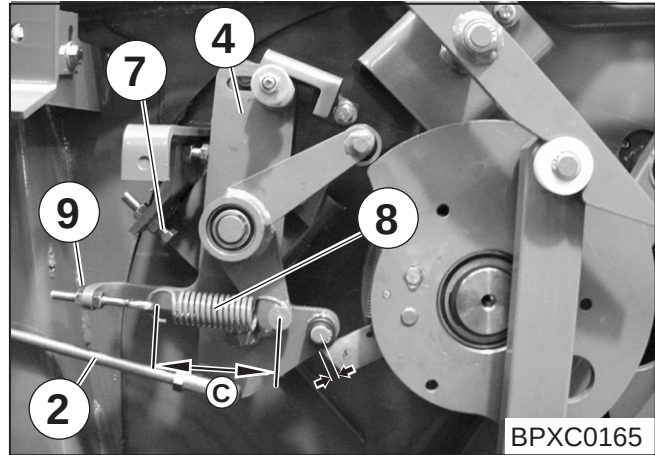
8.6.3 Adjusting the Triggering Sensitivity

The purpose of the spring (8) is to pretension the feeler rocker through the anvil (4) and the threaded rod (2) and to move it into the position it swings back into after the fodder has been pushed in. The anvil (2) must come up to touch the set screw (4) for this to happen.

As a rough guide, the spring should be pre-tensioned to a length of **C = 205 - 210 mm**.

To do this:

- Loosen the screw connection (9) and retighten it after setting it to the dimension.



The spring tension should be increased if the baling channel does not fill up sufficiently to its full height.

-> Poorly filled out bale corners are generally the result of unfavourable windrow shapes or driving to one side.

The spring tension should be reduced as soon as the packer overload coupling is engaging frequently!

-> If the spring tension is too high, the result may be a blocked packer and thus a reduced throughput.

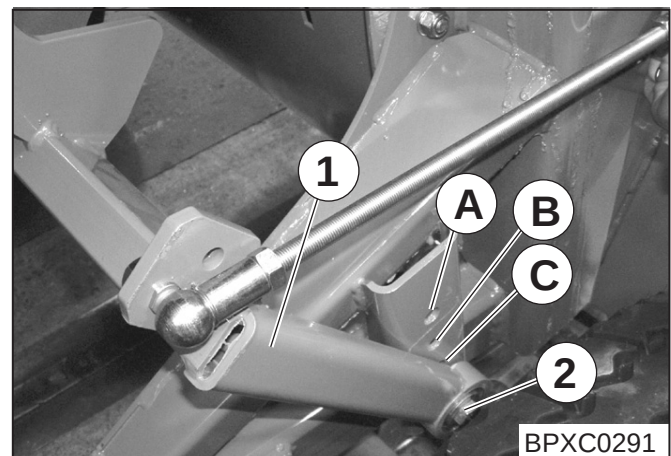


If the bale shape is still not satisfactory after tensioning the spring, the feeler rocker (1) should be installed in a higher hole.

- Loosen hexagon head screw (2) on the feeler rocker (1).
- Swivel the feeler rocker (1) into the desired position (A, B or C) and fasten it in place with the hexagon head screw (2).



If the feeler rocker is too high, the result may be a block up of the packer, thus reducing throughput.

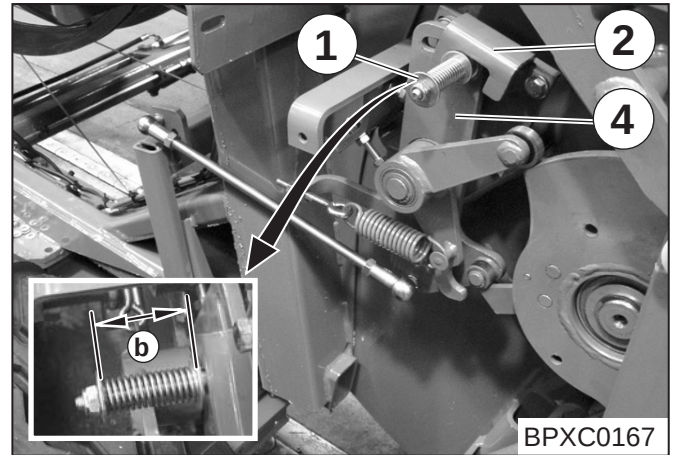


- Adjust the settings of the variable filling system (VFS) to the feeler rocker setting (see chapter Variable Filling System VFS).

8.6.4 Absorbing Mechanism

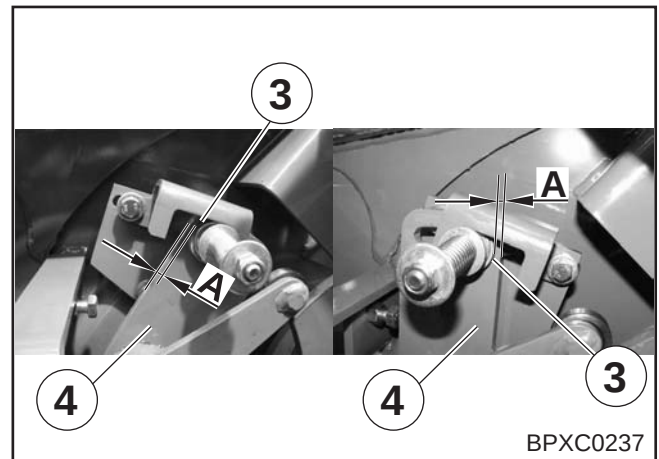
The purpose of the absorbing mechanism is to prevent the feeler rocker from triggering the VFS clutch unintentionally by recoiling back against it. The length of the braking path in the two stop positions can be adjusted with the slotted brake jaw (2). Adjust the slotted brake jaw (2) so that the distance from the brake plate (3) in the respective end settings of the feeler rocker to the two outer edges of the anvil (4) is the same. Otherwise the slotted brake jaw (2) could restrict the rotating path of the feeler rocker. The spring (1) on the brake should be pre-tensioned to a dimension of **B = 60 mm** (simple spring length).

The spring (1) on the brake should be pre-tensioned to a dimension of **B = 60 mm** (simple spring length).



Testing the setting

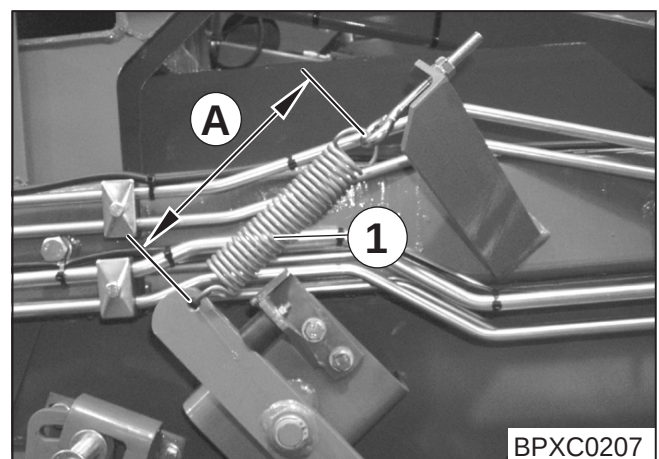
Pull the anvil (4) through the feeler rocker into the rear position. Measure dimension A between the edge of the anvil and the brake disc (3). Now pull the anvil (4) through the feeler rocker into the forwardmost position. Dimension A on the other side of the anvil must be the same size. Otherwise it can be set by moving the slotted brake jaw (2).



8.6.5 Setting of the Spring of the Zeroizing Device

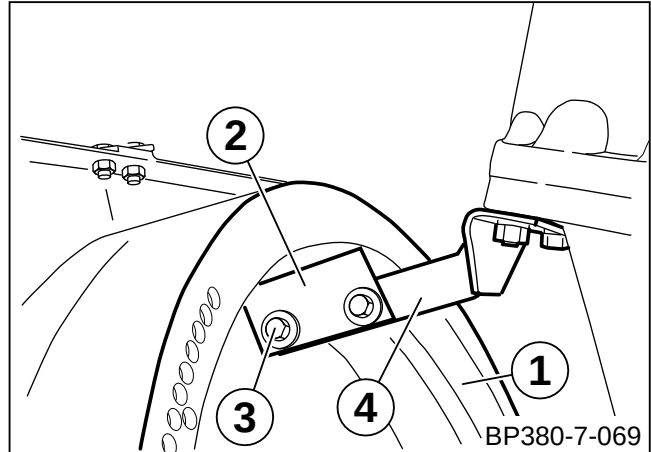
The spring is set in zero position (refer to Chapter „Setting the zero position“).

- When the zeroizing device is in its locked state, the spring should be tensioned to a dimension of **“A” = 185 mm**.



8.7 Adjusting the Flywheel Cleaning (Only for Big Pack 890)

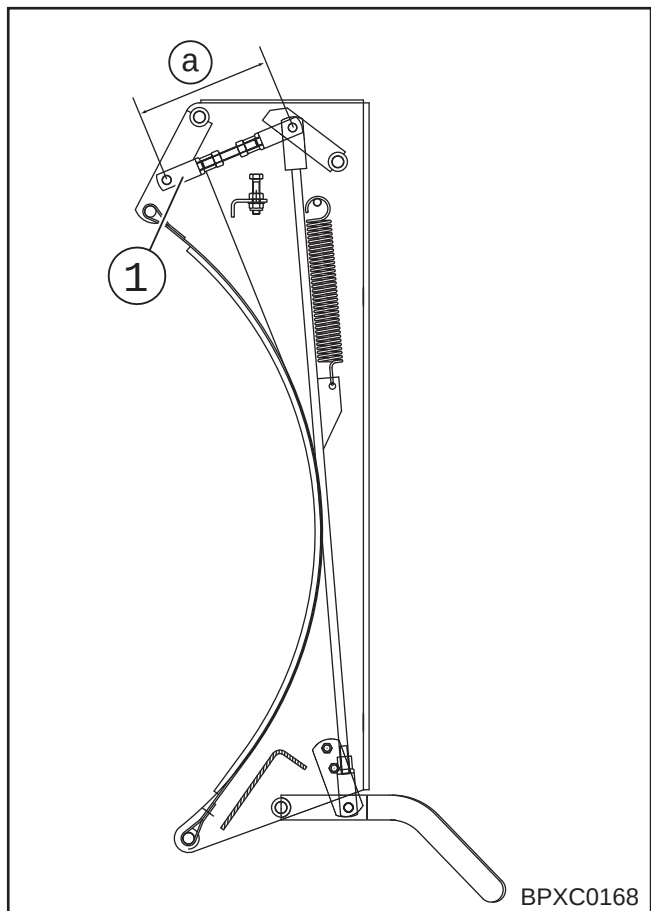
Even minor accumulations of dirt inside the flywheel (1) can result in imbalances. For this reason, you should regularly check the setting of the plastic rail (2). If the gap between the flywheel and the plastic rail is too big, loosen the nuts (5) on the support (4) and push the plastic rail in the oblong holes (1) up to the flywheel. Tighten the nuts again.



8.8 Basic Setting of the Flywheel Belt Brake

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

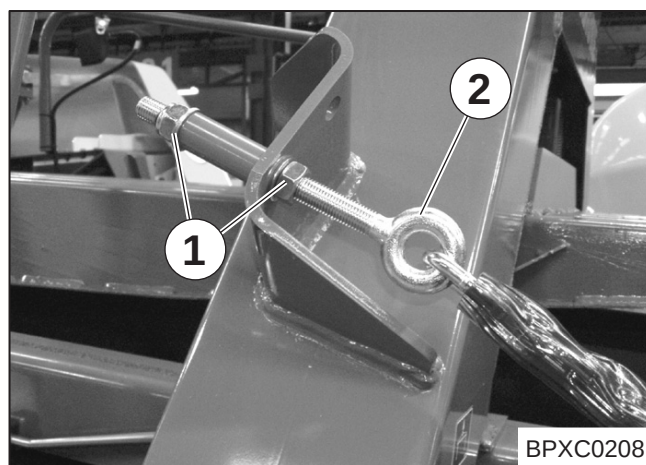
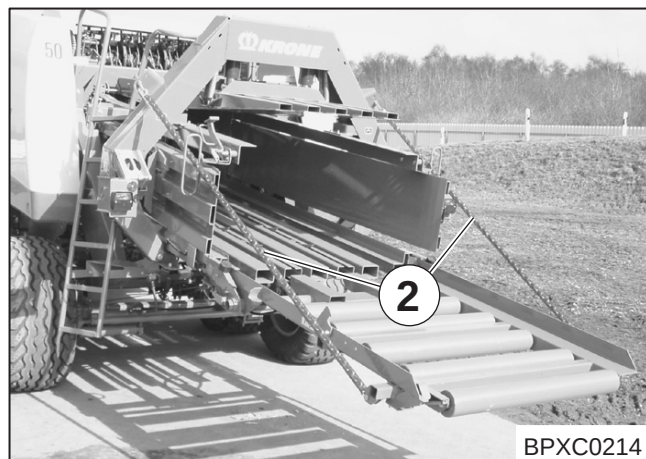
Basic setting: **Dimension a = 182 mm**



8.9 Adjusting the Baling Chute

When it is unfolded, the bale chute represents an extension of the baling channel. For big bales to be set down on the ground correctly, the back edge of the baling 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 baling chute to the ground can be sued to adjust the length of the support chain (2) of the baling chute.
- To do this, adjust the nut (1) on either side of the baling channel.

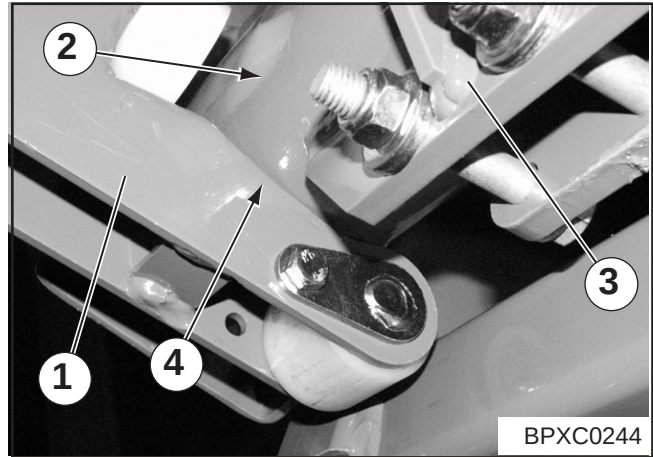


8.10 Multi-Bale Setting

8.10.1 Setting the position of the second needle yoke

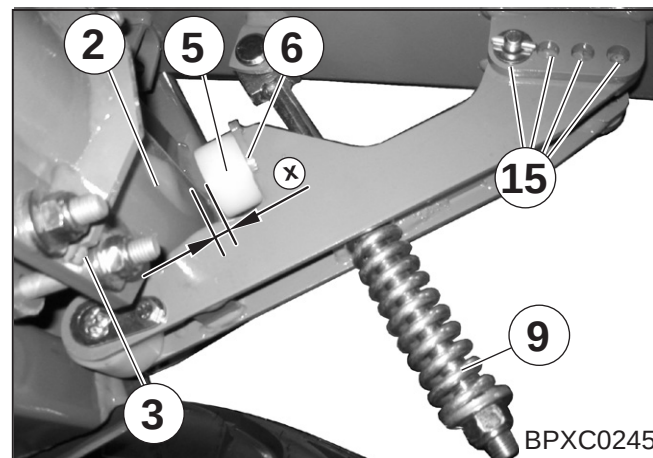
The tube (2) of the needle yoke (3) has to be located in the trough (4). If this is not the case, please proceed as follows:

- Check the knotter needle setting relative to the knotter, and adjust, if and when necessary (refer to Chapter „Needle Setting“).
- Adjust the needle yoke brake (1) in longitudinal position in the oblong hole (15) so that the tube (2) of the needle yoke (3) is in the end setting of the tie immediately after the trough (4) of the needle yoke brake (1).



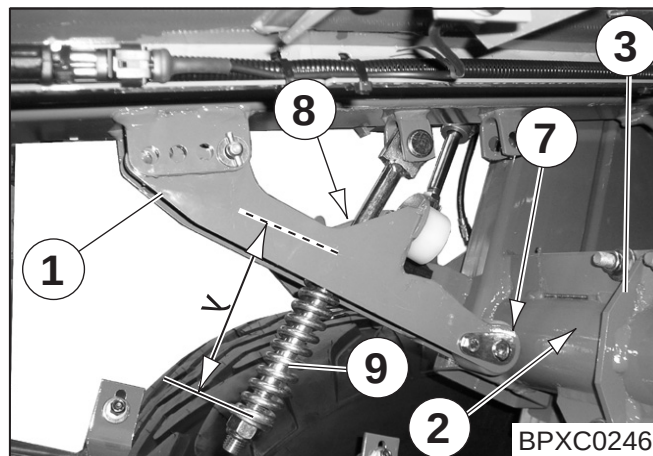
8.10.2 Setting the obstruction

- In this setting the distance between the tube (2) of the needle yoke (3) and the obstruction (5) should be $x = 8 - 15 \text{ mm}$. Adjust the obstruction (5) if necessary using washers (6).



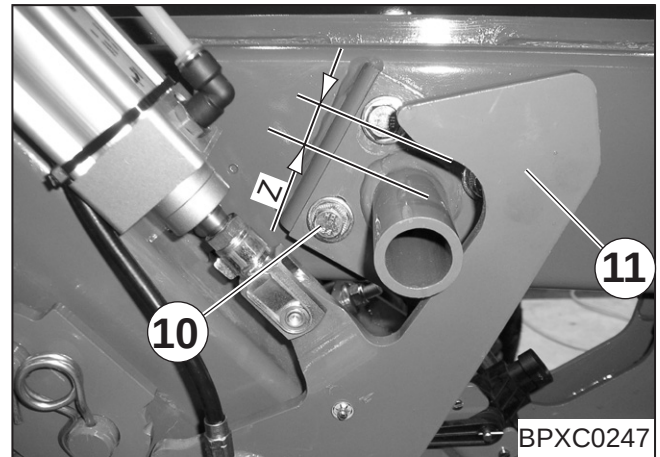
8.10.3 Adjusting the height of the needle yoke brake

- During the infeed of the needle yoke (3), the roller (7) of the needle yoke brake (1) has to make contact with the lower third of the tube (2). The height of the needle yoke brake (1) can be changed by placing washers under the clamping screw stop (8).
- Pre-tension the spring (9) of the needle yoke brake (1) to a dimension $y = 115 - 120 \text{ mm}$.



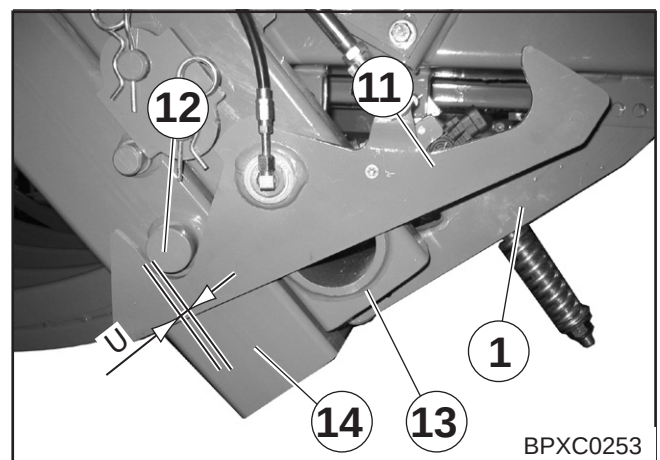
8.10.4 Setting the lock (frame)

- Adjust the support tube (10) so that the distance between the interlocking (11) and the support tube (10) is $Z = 15-35 \text{ mm}$.



8.10.5 Setting the locks of the needle yoke

In order to ensure a safe lock of the second needle yoke (13), the lock (11) (as shown in the adjacent illustration) has to have a **space of $U = 3 - 7 \text{ mm}$** to the pin (12) of the needle yoke (14).



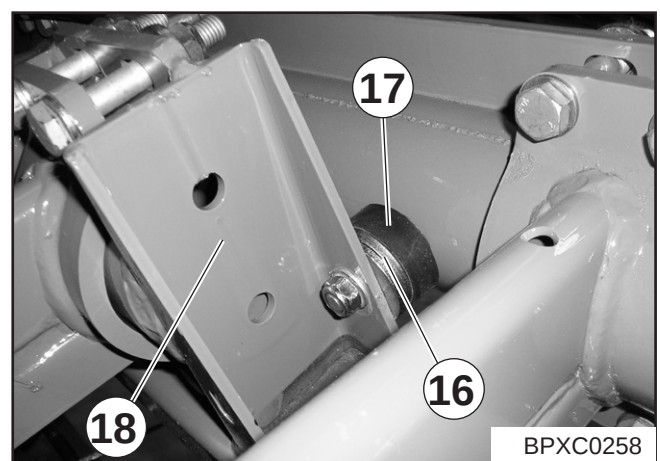
8.10.6 Setting the rubber buffer between the needle yokes

Setting the **spacing U**

By adding or removing washers (16) between the rubber buffer (17) and the needle yoke (18) the spacing is increased or decreased.



After having set the rubber buffers, the setting of the obstruction has to be checked (refer to Chapter „Setting the obstruction“.)

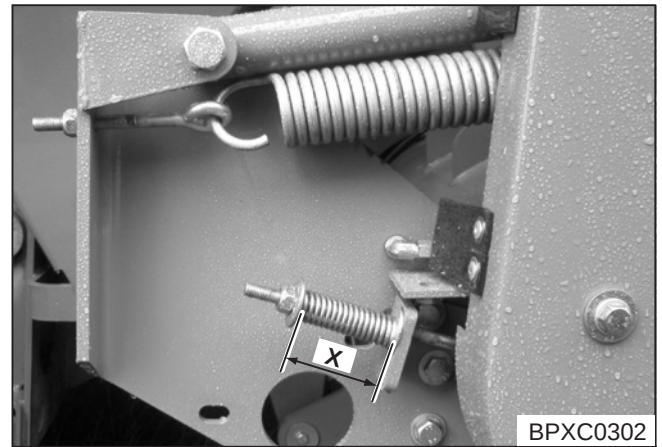


8.10.7 Possible setting errors and how to eliminate them

Malfunction	Possible cause	Remedy
Needle yoke (2) recoils back out forward from the needle yoke brake (1).	Needle yoke brake (1) is mounted too far forward in the direction of travel. The rubber pad (5) of the needle yoke brake (1) is mounted too far forward. The obstruction (5) of the needle yoke brake (1) is mounted too far forward.	Mount the needle yoke brake further to the rear. Mount the rubber pad further to the rear Mount the obstruction (5) further to the rear
The tube (2) of the needle yoke (3) is not running over the infeed surface (7) into the needle yoke brake (1).	Needle yoke brake (1) is mounted too far back in the direction of travel. The spring (9) of the needle yoke brake (1) is tightened too tightly.	Mount the needle yoke brake further forward. Tighten spring less tightly
The journal (12) of the needle yoke (14) is not reliably seized by the interlock (11).	The needle yoke brake (1) or the obstruction (5) is mounted too far back in the direction of travel. Setting of needle connecting rod not correct.	Mount the needle yoke brake (1) or the obstruction (5) further forward Correct the setting of the needle connecting rod.

8.11 Adjusting the chain spring of the chain tensioner on the pick-up (for design without cutting system)

- Tighten the nut (2) to pre-tension the spring (1) until the spring length $X=62$ mm.





9 Care, Maintenance and Lubrication

9.1 Safety Instructions



- Commissioning, upkeep, maintenance and cleaning tasks must only be performed when the machine is at a standstill. Turn off the engine and remove the ignition key. Apply the flywheel brake.
- Secure the Big Pack Baler and tractor against rolling.
- After the upkeep and maintenance tasks are complete, mount all protective coverings and protective mechanisms properly again.
- Avoid skin contact with oils and greases.
- Hydraulic liquids escaping under high pressure can cause severe injuries. In case of injuries contact a doctor immediately! There is a danger of infection.
- You should also follow all additional safety instructions to avoid injuries and accidents.

9.2 General Information



To ensure problem-free operation of the Big Pack Baler and to reduce wear and tear, specific maintenance and upkeep intervals must be observed. These include cleaning, greasing, lubricating and oiling parts and components.

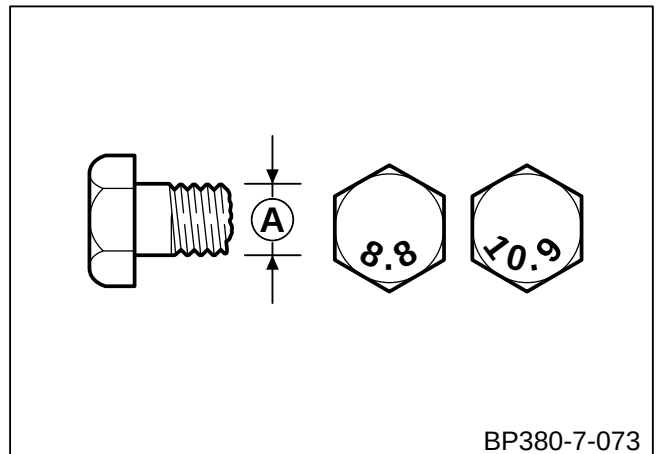
9.2.1 Tightening Torques

Tightening torque M_A (if not specified otherwise).

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 = threading size

(the stability class can be seen on the head of the screw).



Test nuts and screws regularly (about every 50 hours) for firm seat and tighten if necessary!

9.2.2 Cleaning

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.

9.2.3 Tyres

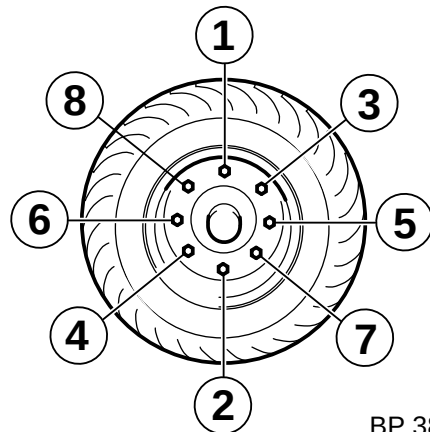


- Repair jobs on the tyres must be performed only by trained professionals and with suitable mounting tools.
- Park the Big Pack Baler on a solid and even surface. Use wheel chocks and set the parking brake to secure it from rolling unintentionally.
- Regularly check the wheel nut to make certain it is tight and tighten it if necessary.
- When filling the tyres with compressed air, do not stand in front of the tyres. If the pressure in the tyre is too high, it may burst. Danger of injury!
- Check the air pressure regularly.

When loosening and tightening the wheel nuts, observe the order indicated in the illustration to the side.

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.

Threading	Key size	Tightening torques: M _A (Nm)	
		Greased wheel bolts	Ungreased wheel bolts
M20 x 1,5	27	360	380



BP 380-7-074

Tyre air pressure

Check the tyre pressure at regular intervals and refill if necessary. The tyre pressure depends on the size of the tyres

See the table below for the values.

BP 890/1270/1290/1290HDP (XC)

Tyre identification	Machine type	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	alle Big Pack		3,7	1,5
Single axle:				
700/45-22,5 12 PR	BP 890/1270/1290 (XC)	1,0	2,5	1,8
Tandem axle:				
500/50-17 14 PR	BP 890/1270/1290 (XC)	1,2	3,75	3,5
500/55-20 150 A8	BP 890/1270/1290 (XC)	1,0	3,0	3,0
500/55-20 150 A8	BP 1290 HDP	1,2	3,0	3,0
500/55-20 150 A8	BP 1290 HDP XC	1,6	3,0	3,0
620/40 R 22,5 148 D	BP 890/1270 (XC)	1,0	3,2	1,8
620/40 R 22,5 148 D	BP 1290 (XC)	1,0	3,2	2,0
620/40 R 22,5 148 D	BP 1290 HDP	1,2	3,2	2,4
620/50 R 22,5 154 D	BP 1290 HDPXC	1,2	3,2	2,4

- *) 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.

9.3 Hydraulics

9.3.1 Special Safety Instructions



- Before working on the hydraulic system of the Big Pack Baler, reduce the pressure on the hydraulic cylinders of the baling channel flaps.
- Check the hydraulic hoses and lines regularly and replace them if they are damaged.
- Spare parts must correspond to the technical requirements of the machine manufacturer. For this reason, use KRONE original spare parts only.
- Repair jobs on the hydraulic system should only be performed by trained and authorised professionals.



- 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.
- Dispose of old oil properly.

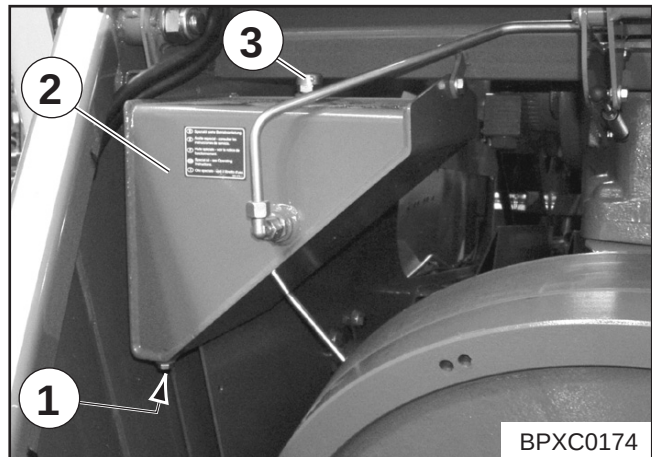
9.3.2 On-board Hydraulic System



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

Pressure is supplied to the on-board hydraulic system of the Big Pack Baler through its own hydraulic pump. It is connected to the main gearbox by a flange and does not require any maintenance.

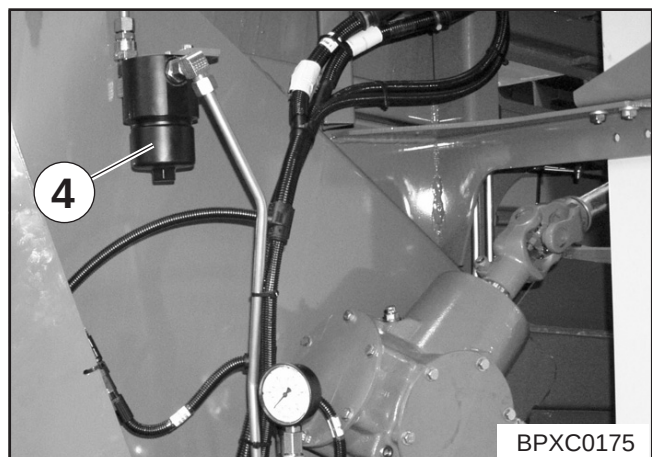
The on-board hydraulic oil and the hydraulic oil filter must be replaced at least once a year before the beginning of the season. Have a suitable container on hand to collect old oil when changing the oil. Loosen the drain screw (1) on the storage tank (2) and unscrew it. After the oil has drained out, screw in the drain screw again. Unscrew the dipstick (3) and add an appropriate amount of hydraulic fluid. Check the oil level with the dipstick (3). The specifications of the hydraulic fluid are listed in the Chapter “**Technical data**”.



The hydraulic filter (4) is located in front of the twine box on the left side of the machine.

Filter replacement interval

- Before every season (at least once year)
- Relieve all pressure from the on-board hydraulic system.
- Unscrew the filter housing.
- Replace the filter element.
- Screw on the filter housing.
- Check for leaks.



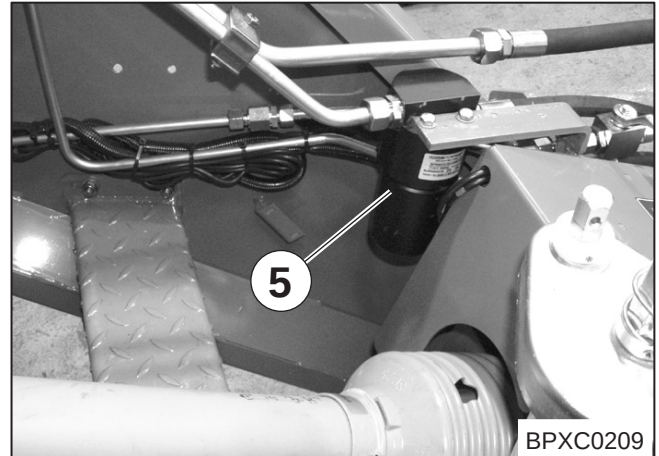
9.3.3 Work Hydraulics (Comfort)

Changing the filter:

The hydraulic filter (1) is located in the front part of the drawbar and must also be replaced once a year. On the process for changing the filter, see Chapter “On-board hydraulics”.

Emergency manual activation:

For the event that the electronic system should fail completely, the valves are equipped with an “emergency manual activation”.

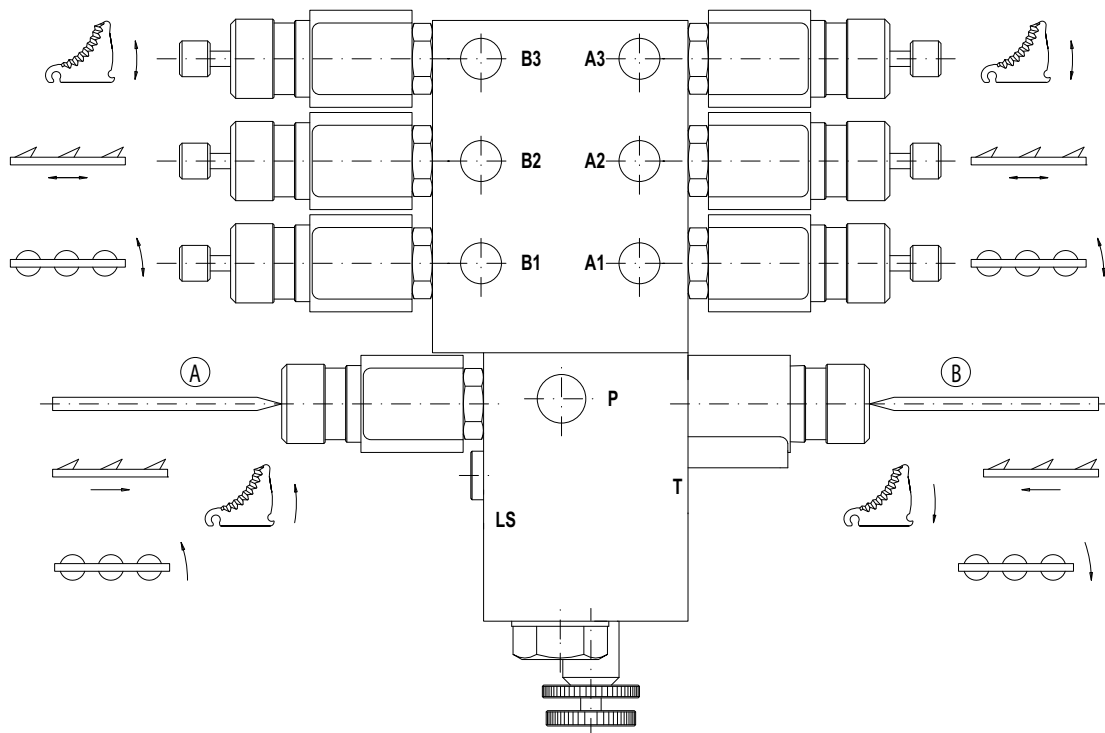


Example: Roller chute

1. Turn in the knurled head screw on seat valves A1 and B1.
2. Press in the magnetic plunger of the way valve with a sharp object (A). The roller chute is raised.
3. Hold the magnetic plunger pressed in and unscrew the two knurled head screws again as far as they will go.



After emergency manual activation has been performed, the knurled head screws of the seat valves must all be completely screwed out again.



9.3.4 Emergency Manual Activation

9.3.4.1 Controlling the Baling Force



- The pressure adjustment of the bale channel flaps can be made in Emergency mode while the machine is running. Special caution must be exercised when making the adjustment. There is great danger of injury!
- Make certain that the machine can be turned off again immediately if there is any danger.



- If the electronics system fails, you can continue to work with the Big Pack Baler for a short time in emergency mode.
- The maximum baling force can be exceeded without electronic control. This can result in significant damage. Never work for a long time without the electronic control system.

The baling pressure on the baling channel 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).
- Read the pressure on the pressure gauge (4).



After emergency manual activation has been performed, the knurled head screw (2) must be completely screwed out again.

9.3.4.2 Releasing the Bale Channel (Comfort)

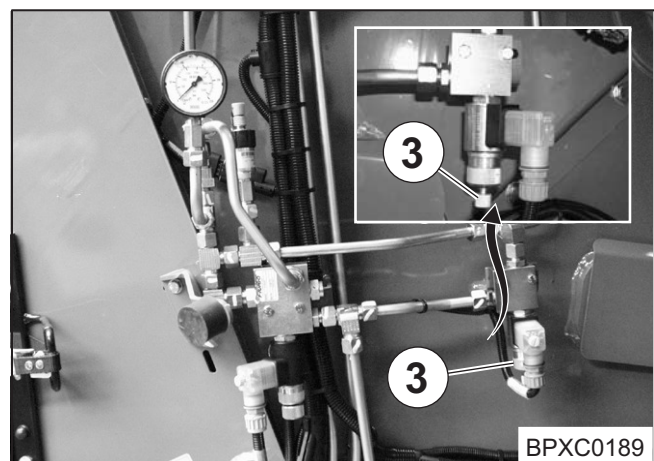
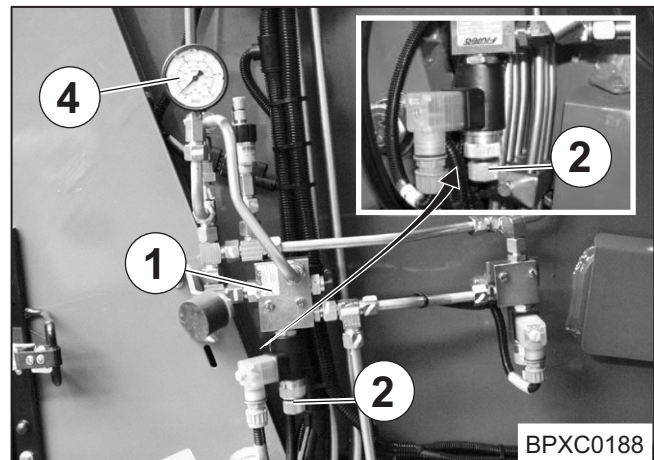
The "Release bale channel flaps" seat valve is located on the right next to the hydraulic control block for baling force control on the left side of the machine under the side hood.

To perform a setting:

- Loosen the baling channel flaps by slowly screwing in the knurled head screw (3) as far as it will go.



After emergency manual activation has been performed, the knurled head screw (3) must be completely screwed out again.



9.4 Checking and Changing the Oil on the Gearboxes

9.4.1 General Information



- When checking the oil level on the gearboxes, care must be taken that the Big Pack Baler is in a horizontal position. Use the lower edges of the twine boxes as a reference surface.
- The oils and filling quantities to be used for the respective gear boxes are listed in the "Technical data".
- During the season, check all gearbox oil levels daily before using the machine and top off if necessary.

9.4.2 Main Gearbox

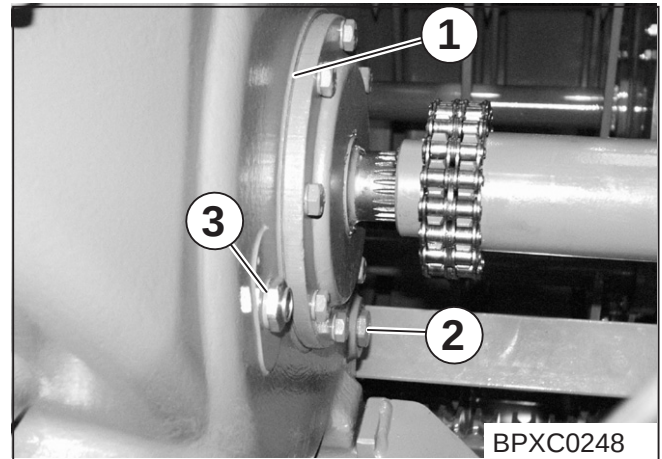
The oil viewing glass (3) and drain screws (2) are located on the left side of the main gearbox (1).

Checking the oil level

Check the oil level in the main gearbox each time before using the machine. The oil level must be visible in the oil viewing glass (3).

Changing the oil

Replace the oil after every season. To do this, remove the control screw (3) and the oil drain screw (2). Capture the oil in a suitable container as it drains out. Screw in the oil drain screw again and refill with fresh oil up to the control drill hole. Screw in the control screw again.



9.4.3 Packer Gearbox

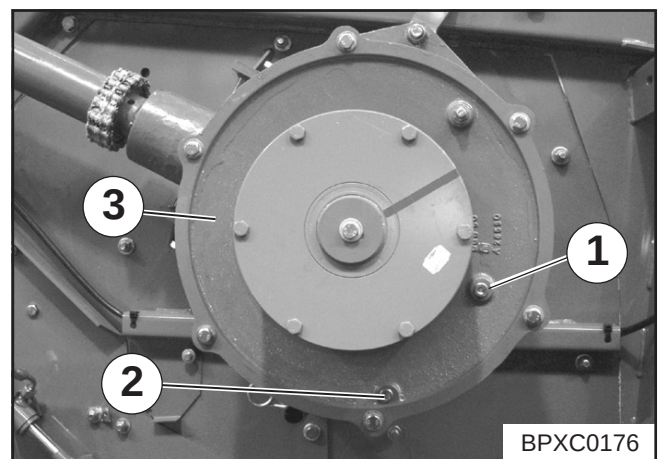
The packer gearbox (3) is located on the left side of the machine.

Checking the oil level

Check the oil level in the packer gearbox (3) each time before using the machine. To do this, screw out the control screw (1). The oil level must reach up to the control drill hole. If necessary, top off the oil. After you have checked, screw in the control screw again.

Changing the oil

Replace the oil after every season. To do this, remove the control screw (1) and the oil drain screw (2). Capture the oil in a suitable container as it drains out. Screw in the oil drain screw again and refill with fresh oil up to the control drill hole. Screw in the control screw again.



9.4.4 Distributor Gearbox

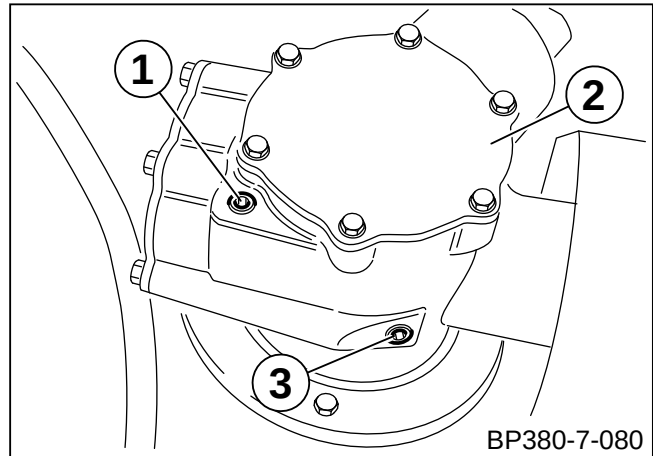
The distributor gearbox (2) is located on the left side of the machine.

Checking the oil level

Check the oil level in the distributor gearbox (2) each time before using the machine. To do this, screw out the control screw (1). The oil level must reach up to the control drill hole. If necessary, top off the oil. After you have checked, screw in the control screw again.

Changing the oil

Replace the oil after every season. To do this, remove the control screw (1) and the oil drain screw (3). Capture the oil in a suitable container as it drains out. Screw in the oil drain screw again and refill with fresh oil up to the control drill hole. Screw in the control screw again.



9.4.5 Upper and Lower Pick-up Gearbox

The upper and lower pick-up gearboxes (3) are located on the right side of the machine.

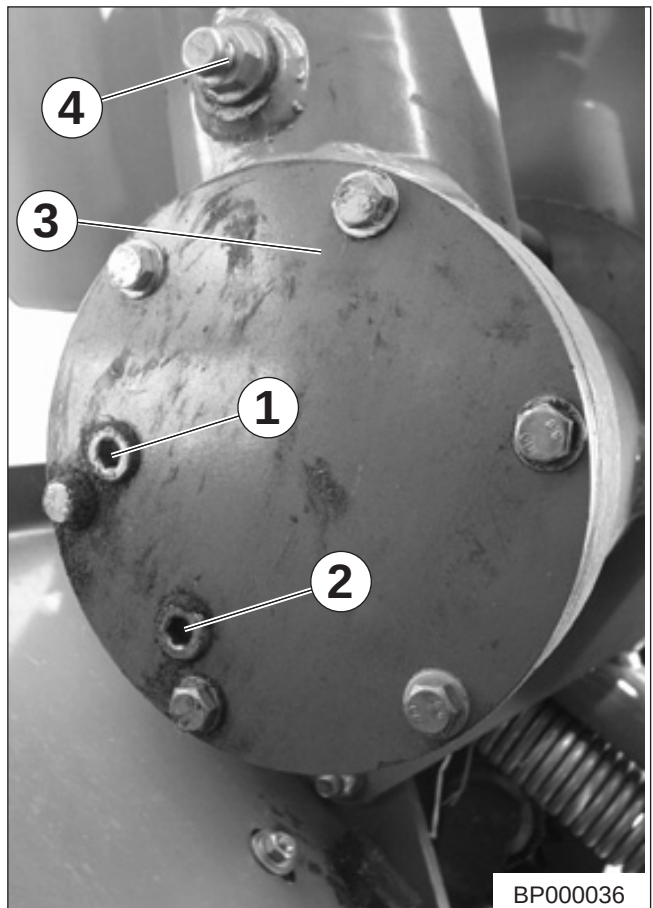
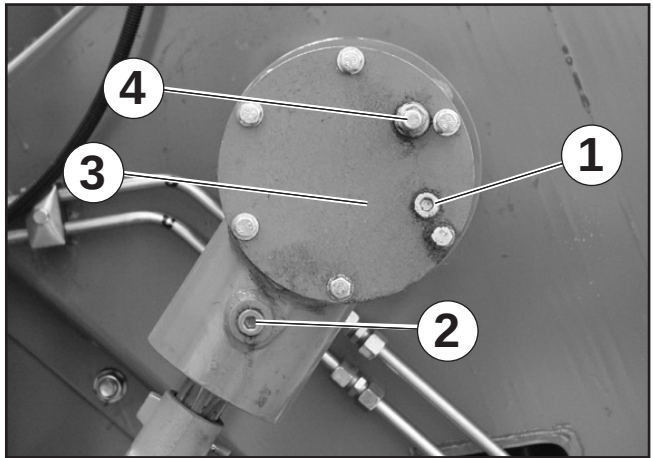
Checking the oil level

Check the oil level in the pick-up gearbox (3) each time before using the machine. To do this, screw out the control screw (1). The oil level must reach up to the control drill hole (1). If necessary, top off the oil. After you have checked, screw in the control screw again.

Changing the oil

Replace the oil after every season. To do this, unscrew the control screw (1) of the upper gearbox as well as the venting screw (4) and drain screw (2) for the gears. Capture the oil in a suitable container as it drains out. Screw in the drain screw again.

Screw in the control and venting screw again.



9.4.6 Cutting System Drive Gearbox for the Big Pack XC, Upper and Lower

On the right side of the machine there is an angular gearbox (upper) and a pick-up/cutting system distributor gearbox (lower).

Checking the oil level

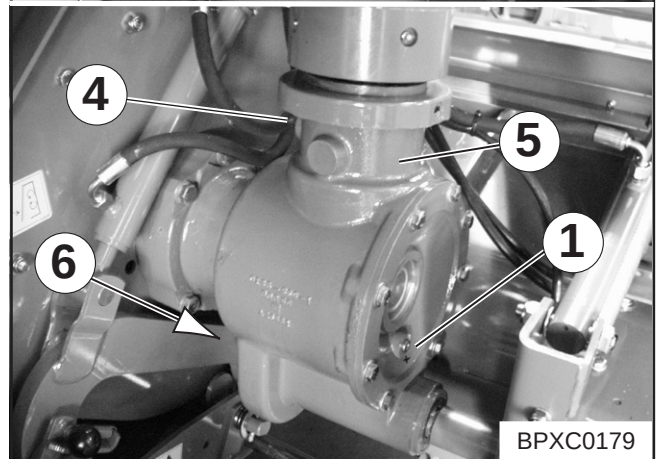
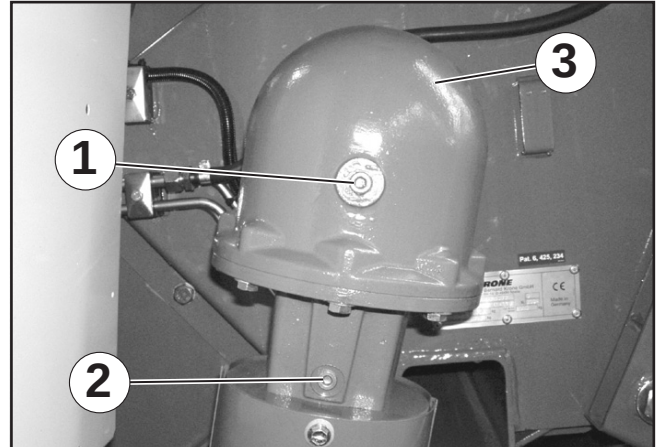
Check the oil level in the upper angular gearbox (3) each time before using the machine.

To do this, screw out the control screw (1). The oil level must reach up to the lower side of the control drill hole. If necessary, top off the oil.

Changing the oil

You should change the oil after every season.

To change the oil, unscrew the drain screw (2) and the control screw (1). Capture the oil in suitable containers as it pours out and dispose of it in an environmentally proper manner. Screw in the oil drain screw (2) and fill with oil until the oil level reaches the control drill hole. Screw in the control screw (2).



Checking the oil level

Check the oil level of the lower distributor gearbox (5) pick-up/cutting system each time before using the machine.

To do this, screw out the control screw (1). The oil level must reach up to the lower side of the control drill hole. If necessary, top off the oil above through the venting drill hole (4).

Changing the oil

You should change the oil after every season.

To change the oil, unscrew the venting screw (4), the drain screw (6) and the control screw (1). Capture the oil in suitable containers as it pours out and dispose of it in an environmentally proper manner. Screw in the oil drain screw (6) and fill with oil until the oil level reaches the control drill hole. Screw in the control screw (1) and venting screw (4).

9.5 Brake System

9.5.1 Special Safety Instructions



- Work on the brake system should only be performed by trained professionals or by suitable workshops.
- KRONE is not responsible for natural wear, defects caused by overload or changes made to the brake system.
- No changes may be made to the brake system without the approval of KRONE.
- Irregularities or malfunctions in the brake system must be eliminated immediately.
- Only an Big Pack Baler with an intact brake system may be used for work in the field or for travelling on roads.

9.5.2 Compressed Air Storage Tank



Before draining out water from condensation from the compressed air storage tanks make certain that the machine is secured to prevent it from rolling. Engage the parking brake and secure the wheels with chocks.

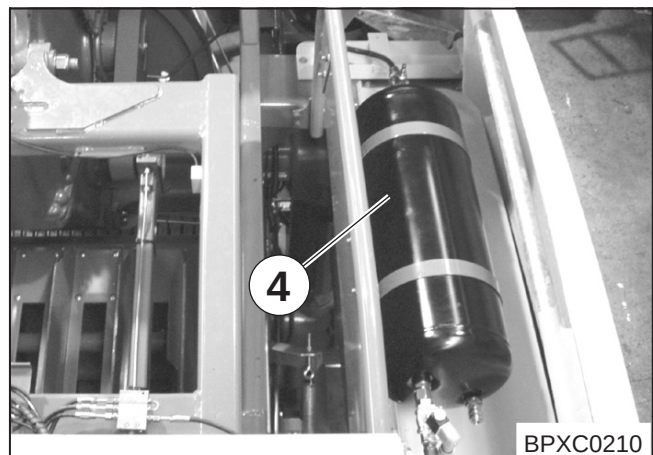
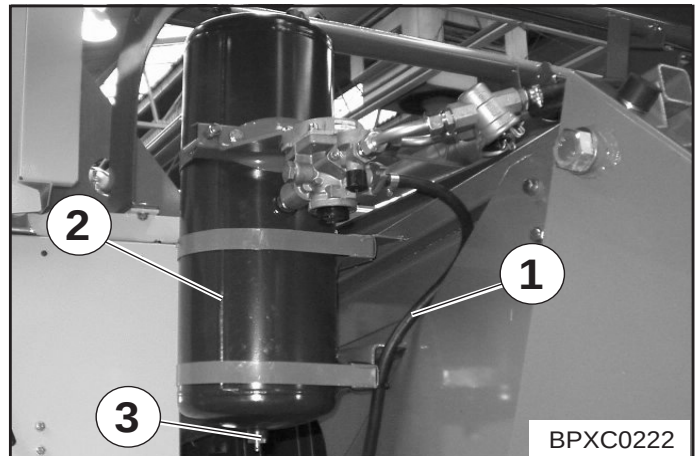
Big Pack Balers that are equipped with a compressed air brake have two compressed air storage tanks as well as pneumatic brake cylinders. Water from condensation settles in the compressed air storage tanks. The condensation water may cause malfunctions. Because of this, it must be drained once a week. Water from condensation can be drained out through the water discharge valve (3).



For hydraulically activated brakes only one compressed air storage tank is present for knotter cleaning.

The brake system's compressed air storage tank (2) for Big Pack Balers with compressed air brakes is on the right side of the machine. It is connected with the compressed air storage tank for knotter cleaning through a compressed air line (1).

The compressed air storage tank for knotter cleaning is located on the right side on the twine box. The water from condensation must also be drained out here through the water discharge valve.



9.5.3 Adjusting the Transfer Mechanism

Brake setting

Depending on how the machine is used, the wear on and proper functionality of the brakes must be checked regularly and reset if necessary.

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.

Adjusting the linkage setter

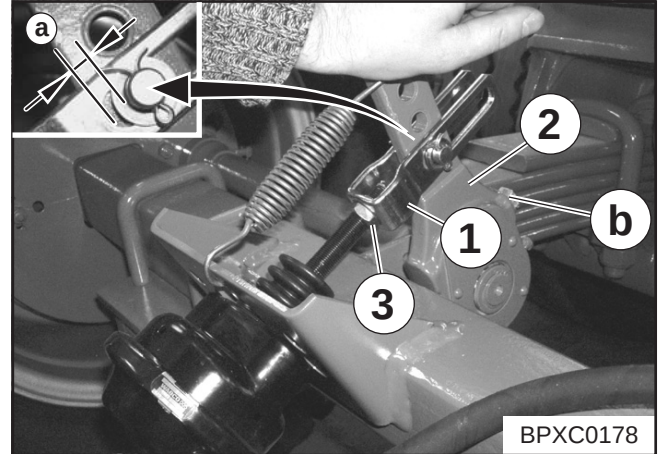
- Every 200 hours of operation -

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 is made with the adjustment screw (b) on the linkage setter.

Set the clear path "a" to **10 - 12 %** of the connected brake lever length "B",

For example, lever length 125 mm = clear path 12 - 15 mm.

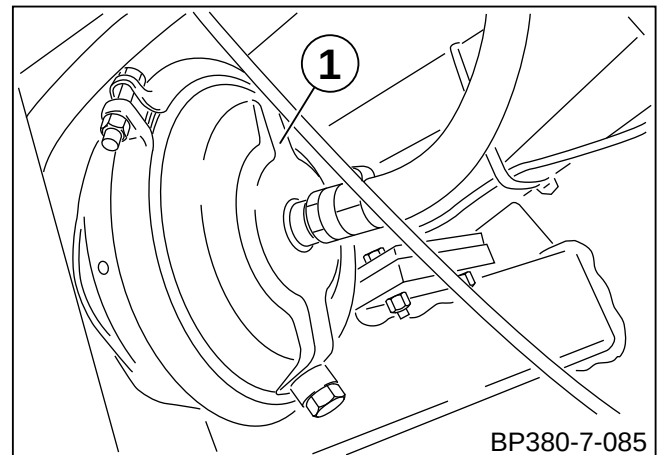


9.5.4 Brake Cylinders



There is danger of injury!
Before disassembling the membrane brake cylinder, bleed the excess pressure out of the compressed air system.

No special maintenance is required for the brake cylinder (1). At least once every two years the membrane brake cylinders should be removed, disassembled, cleaned, fitted with new wear parts and reassembled.



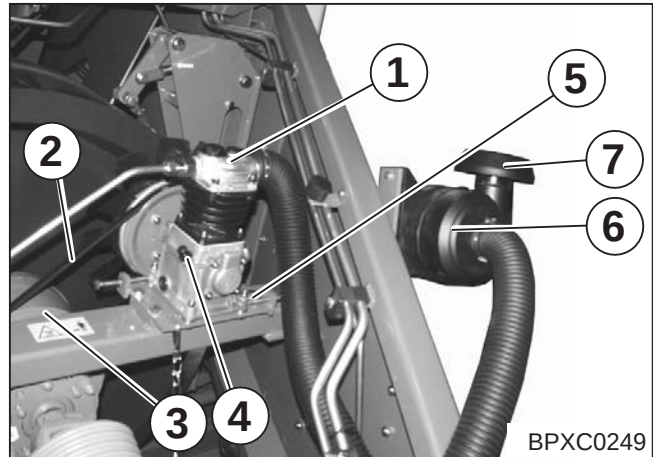
9.6 Compressor

If the Big Pack Baler is equipped with hydraulic brakes the supply of compressed air for knotter cleaning is provided through a compressor (1) mounted between the drawbar beams. It 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). If necessary, refill oil (SAE 20 engine oil). The specification of the oil that is required is listed in the "Technical data".



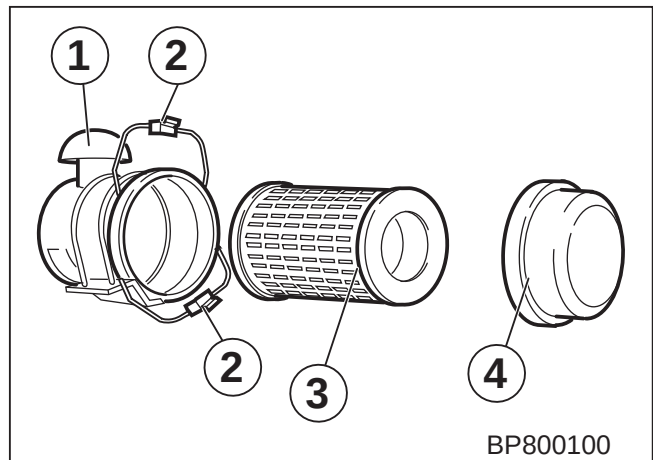
The suction air filter (6) must be cleaned at least once a day or several times a day in case of high dust load. For heavy accumulations of dirt in the filter, the aspiration attachment (7) can be placed directly on the cab roof of the tractor using a retrofitting kit (order no 287 363).



BPXC0249

Filter cleaning

- Move the retaining clip (2) on the air filter (1) up/down.
- Remove the cover (4).
- Remove the filter cartridge (3), shake it out and clean it from the inside to the outside with an air jet.
- Further disassemble the cover (4) and drive it out.
- Install the filter cartridge
- Place the cover on the filter and secure it in place with support clips.



BP800100



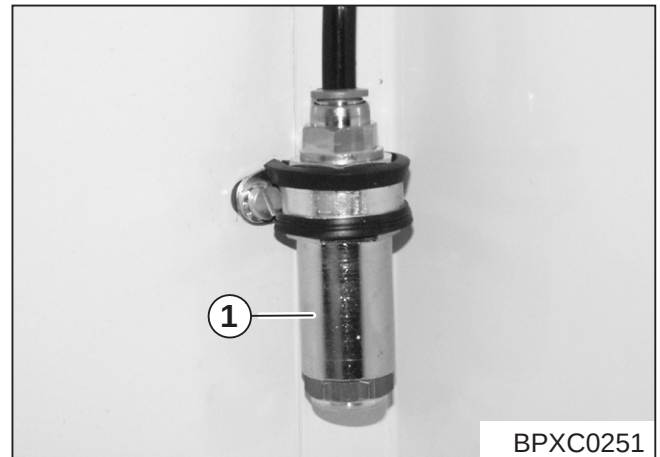
Make certain the filter pan is tightly sealed with the air filter.

9.7 Air Filter for Pneumatic Cylinders (only Multibale)

The air filter (1) for pneumatic cylinders is on the left in the twine box (as seen facing direction of travel).



Clean the air filter (1) once a year



9.8 Replacing Rollers/Cam Follower Rollers

Rollers/cam follower rollers are subject to high mechanical stress in the feed packer drum. Because of this, they must be replaced when there is increased wear (bearing play).

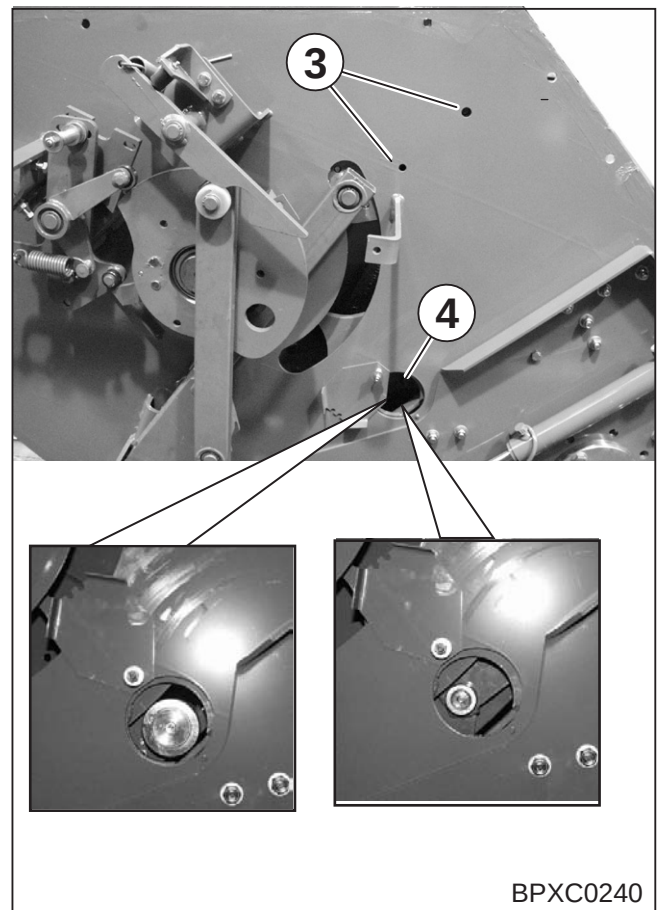
To do this:

- Turn the packer manually until the roller or cam follower roller to be replaced can be loosened through the opening (3) with an Allen wrench.
- Loosen the roller/cam follower roller
- Turn the packer further until the loosened roller/cam follower roller can be removed through the opening (4).
- Remove the roller/cam follower roller from the opening (4) and install a new roller/cam follower roller in the opposite order.

Torque moment:

Large guide rollers: NukR 72 (M24 x 1,5) = 250 Nm

Small guide rollers: NukR 40 (M18 x 1,5) = 120 Nm



9.8 Lubrication

9.8.1 Special Safety Instructions



- Commissioning, upkeep, maintenance and cleaning tasks must only be performed when the machine is at a standstill. Turn off the engine and remove the ignition key. Apply the flywheel brake.
- Secure the Big Pack Baler and tractor against rolling.
- After the upkeep and maintenance tasks are complete, mount all protective coverings and protective mechanisms properly again.
- Avoid skin contact with oils and greases.
- In the event of injuries or burns caused by oils escaping, consult a physician immediately.

9.8.2 General Information

Depending on the design, the Big Pack Baler 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.



Do not use greases containing graphite!
There may be problems when different greases are mixed together!

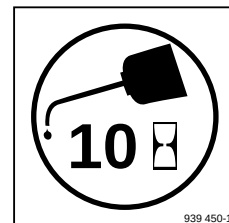
Manu- facturer	Lubricants based on mineral oil	Bio-lubricants
ARAL	Long-term grease H	On request
BP	Energrease LS-EP2	
DEA	Glissando EP2	
FINA	Marson EPL 2A	
Shell	Alvania Ep2	
ESSO	EGL 3144	

9.8.3 Lubrication

Lubrication points on the Big Pack Baler 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.

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

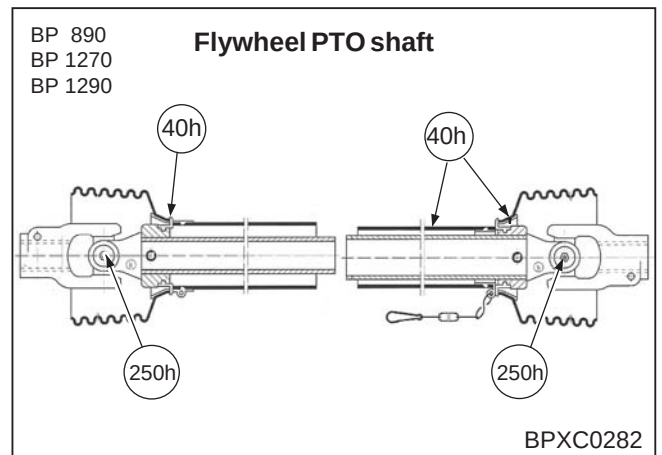
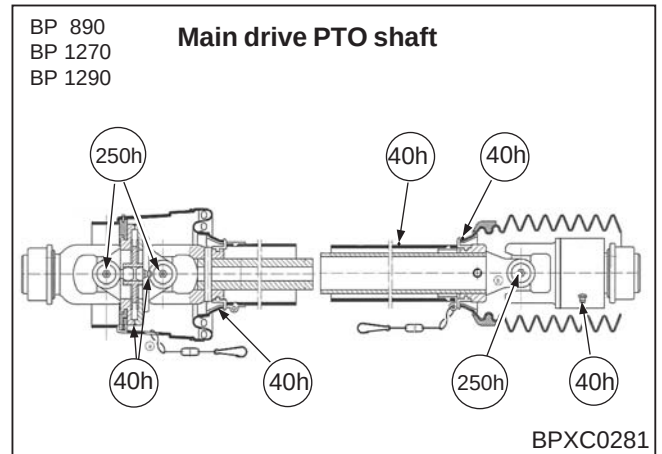


BP 380-7-088

9.9.3.1 PTO shafts BP 890/BP 1270/BP 1290

The lubrication intervals for the PTO shafts of BP 890 / BP 1270/BP 1290 are indicated in figures BPXC0281 and BPXC0282.

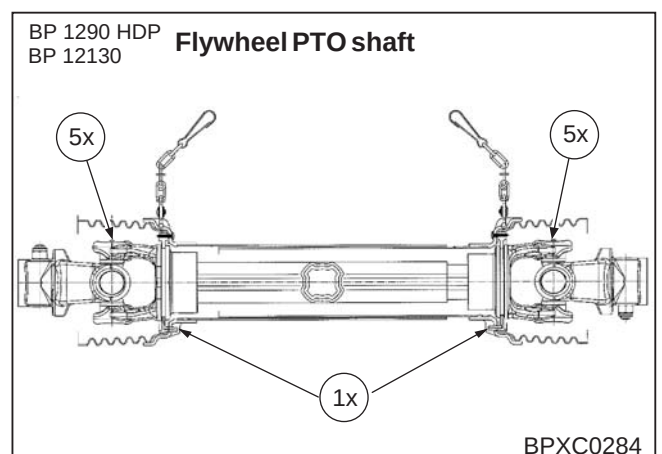
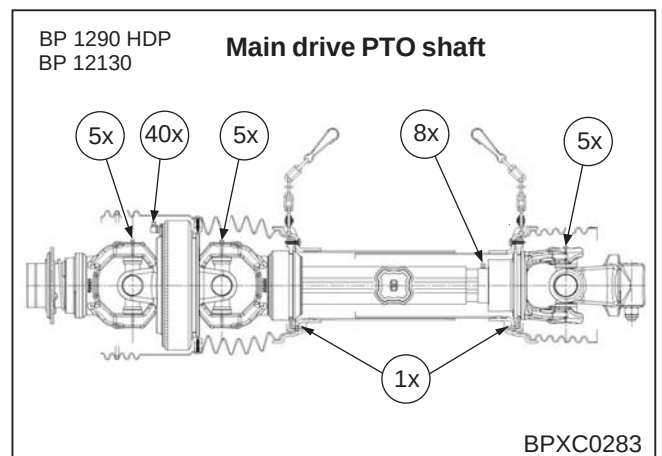
For additional information, please refer to the operating instructions of the PTO shaft manufacturer.



9.9.3.2 PTO shafts BP 1290 HDP

PTO shafts BP 1290 HDP must be lubricated every 50 hours at the designated lubrication points. Figures BPXC0283 and BPXC0284 show the number of pump pulses per lubrication point.

For additional information, please refer to the operating instructions of the PTO shaft manufacturer.



9.8.3.3 Rollers and Cam Follower Rollers on the Packer Strips (Design without automatic central lubrication)

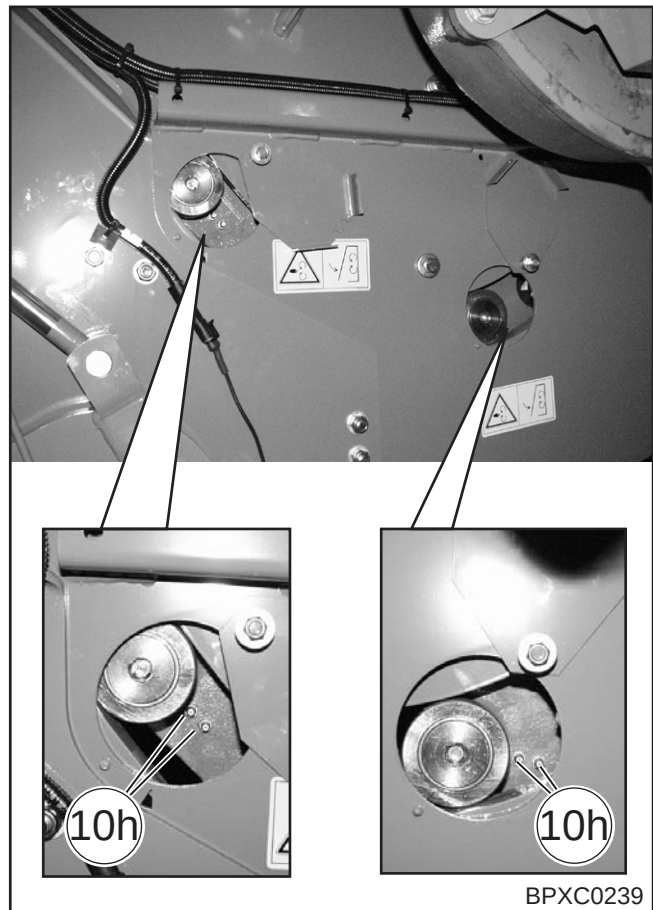
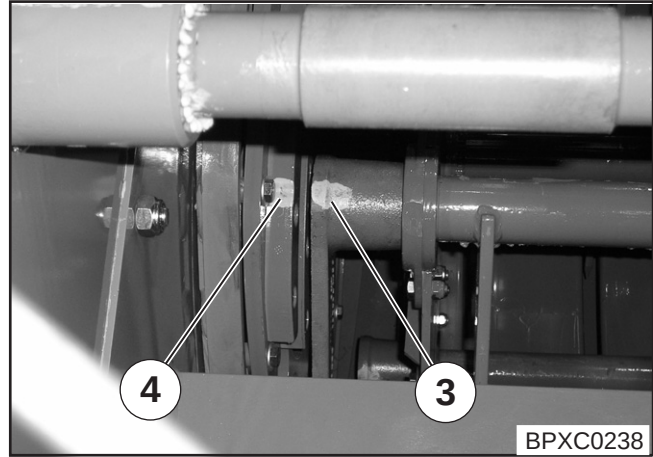
Packer strips can be lubricated through the openings (5) on the left side of the machine.

To do this:

- Go to the platform (2) on the drawbar and turn the flywheel (1) far enough in the work direction so that the mark (3) (on the packer lever) matches the mark (4) (on the cam disc).
- Lubricate the first 2 packer strips
- Repeat the process 2 more times

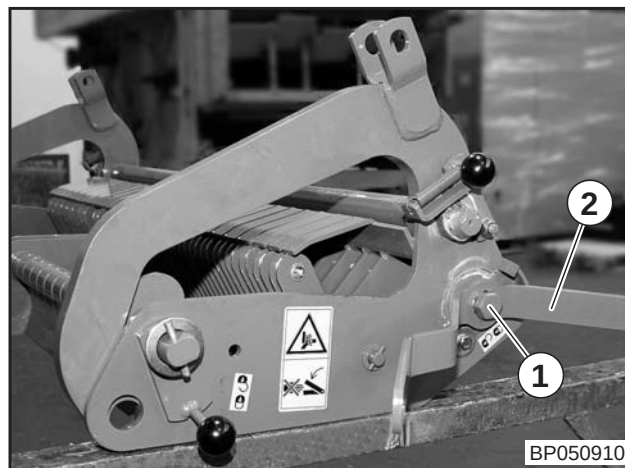


There is a setting in which only one packer strip can be detected on the left side of the machine. In this case, the feeder strip on the right side of the machine must be lubricated.

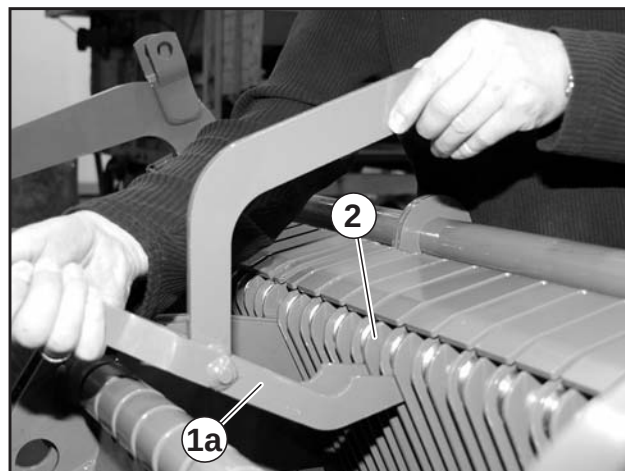


9.9.3.4 Lubricating the blade lever rollers

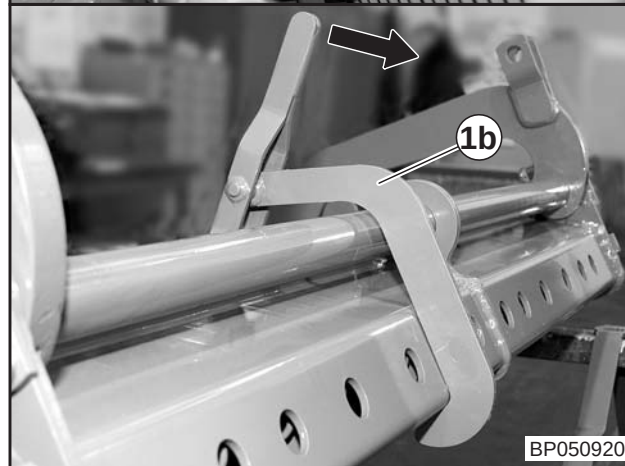
- Lower the cutting system and pull the drawer off to the side (see chapter "XC Cutting System").
- Lock the selector shaft (1) with blade control lever (2)



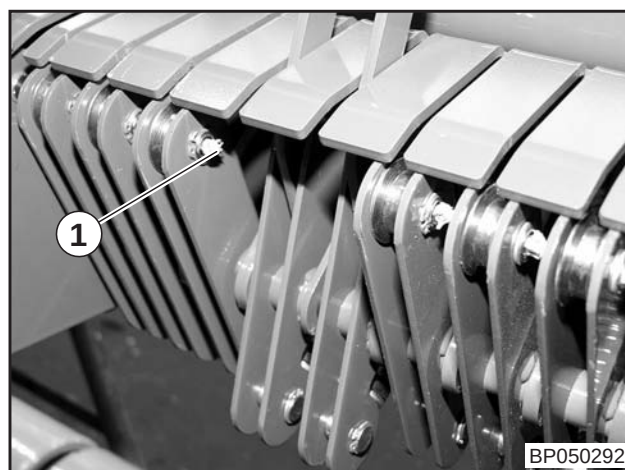
- Place the lubrication tool lever (1 a) on the bearing of booth levers (2) on the cutting system.



- Apply the lever on the lubrication tool (1 a).
- Hook the lubrication tool support (1 b) onto the frame of the cutting system.



- Lubricate the lubrication point (1) next to the two levers that have been drawn back.



9.9.4 Lubricating Points

The following table contains a list of lubrication points on the Big Pack Baler and the number of lubrication nipples.

9.9.4.1 Lubricating Points Big Pack 890 (XC), 1270 (XC), 1290 (XC)

Big Pack 890 (XC), 1270 (XC), 1290 (XC) Lubrication points (Automatic central lubrication system)		Left	Left	Interval	Central lubrication
Crank journal, baling ram drive		1	1		Autom. central lub.
Plunger bolt, baling ram drive		1	1		Autom. central lub.
Bearing rollers on plunger		2	2		Autom. central lub.
Packer:	Packer lever Feeder lever	10	2		Autom. central lub.
XC cutting system: (optional)	vertical drive shaft		1	50 h	No
	Wedge release clutch		5	50 h	No
	Individual knife retention	13	13	200 h	No
Pick-up:	Cam track Lubrication of right and left chain, lubrication of drive chain Free-wheel	Oil	1 Oil Oil 1	10 h 10 h 50 h	Autom. central lub. Autom. central lub. Autom. central lub. No
Feeler wheels, floating		1	1		Autom. central lub.
Parking support		1		50 h	No
Parking brake		1		200 h	No
Single axle: (optional)	Brake lever adjustment bearing*	1	1	50 h	No
Tandem axle: Rigid (optional)	Full floating axle bearing	1	1		Autom. central lub.
	Brake shaft bearing*	4	4	50 h	No
	Brake lever adjustment bearing*	2	2	50 h	No
Tandem axle: Guided coast-down: (optional)	Full floating axle bearing	1	1		Autom. central lube.
	Coast-down joint bearing	2	2	50 h	No
	Brake shaft bearing	4	4	50 h	No
	Brake lever adjustment bearing	2	2	50 h	No
PTO shaft:	Main drive PTO shafts	9		50 h	No
	Main drive joints	5		200 h	No
	Pick-up drive (optional)	2		200 h	No
	Knotter drive	3		200 h	No

Big Pack 890 (XC), 1270 (XC), 1290 (XC) Lubrication points (Automatic central lubrication system)		Left	Right	Interval	Central lubrication
Double knotter: (optional)	Needle yoke	1	1		Autom. central lub.
	Knotter bearing on hub		6		Autom. central lub.
	Blade lever bearing		6		Autom. central lub.
	Knotter hook bearing		6		Autom. central lub.
	Twine retainer bearing		6		Autom. central lub.
	Twine retainer drive shaft bearing		6		Autom. central lub.
	Knotter shaft centre bearing		1		Autom. central lub.
Single knotter**: (optional)	Needle yoke	1	1		Autom. central lub.
	Knotter bearing on hub		6		Autom. central lub.
	Blade lever bearing		6		Autom. central lub.
	Knotter hook bearing		6		Autom. central lub.
	Twine retainer bearing		6		Autom. central lub.
	Twine retainer drive shaft bearing		6		Autom. central lub.
Multi-bale coupling of needle yokes **: (optional)		1			Autom. central lub.

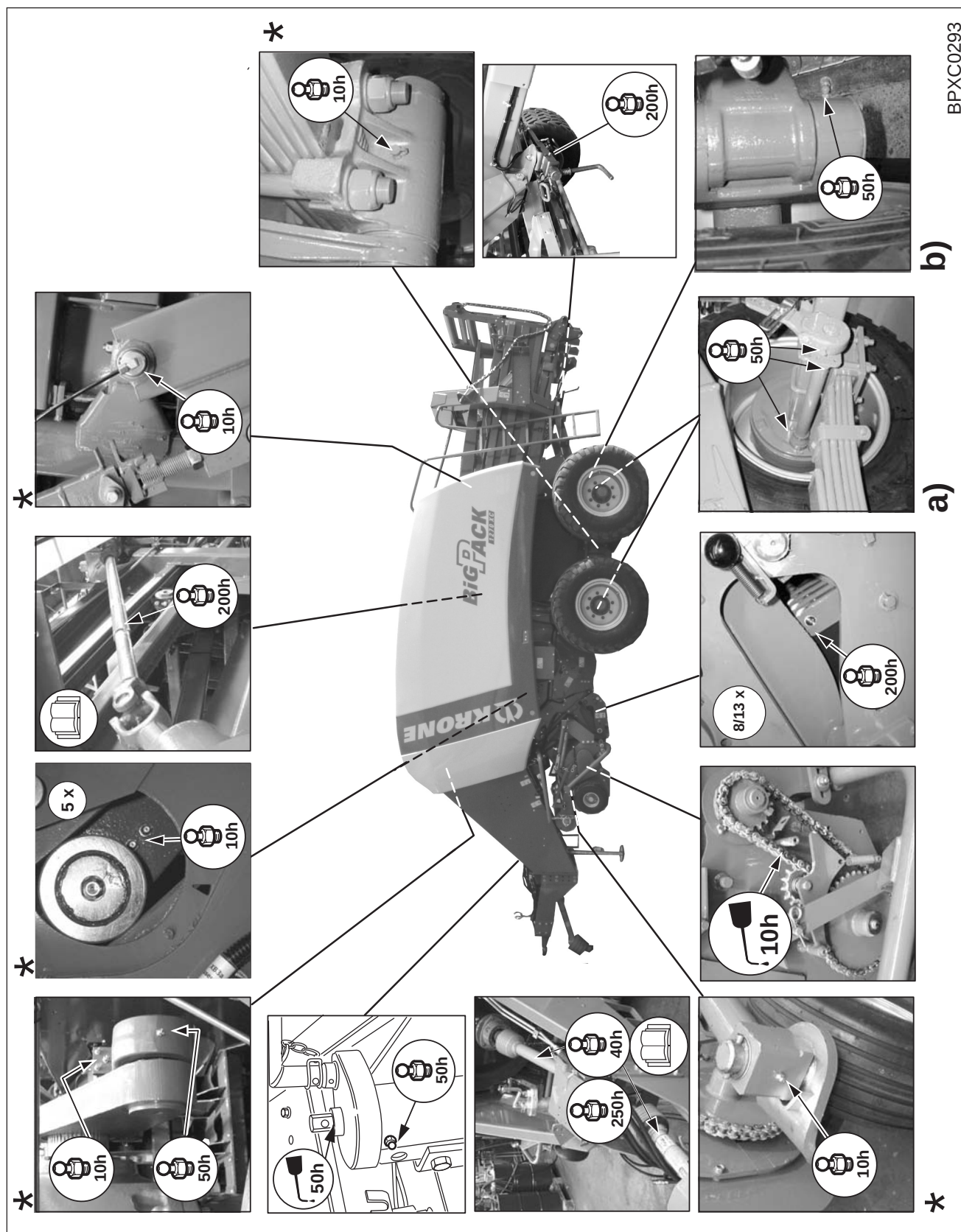
* : Only with braked axle

** : Optional, only possible with 1270

9.9.4.2 Lubricating Points Big Pack 1290 HDP (XC)

Big Pack 1290 HDP (XC) lubrication points (Automatic central lubrication system)		Left	Right	Interval	Central lubrication
Crank journal, baling ram drive		1	1		Autom. central lub.
Plunger bolt, baling ram drive		1	1		Autom. central lub.
Bearing rollers on plunger		2	2		Autom. central lub.
Packer:	Packer lever Feeder lever	10	2		Autom. central lub.
XC cutting system: (optional)	Vertical drive shaft		1	50 h	No
	Wedge release clutch		5	50 h	No
	Individual knife retention	13	13	200 h	No
Pick-up	Cam track Lubrication of right and left chain, lubrication of drive chain Free-wheel	Oil	1 Oil Oil 1	10 h 10 h 50 h	Autom. central lub. Autom. central lub. Autom. central lub. No
Feeler wheels, Floating		1	1		Autom. central lub.
Parking brake		1		200 h	No
Tandem axle Guided coast-down: (opt.)	Full floating axle bearing	1	1		Autom. central lube.
	Coast-down joint bearing,	2	2	50 h	No
	Brake shaft bearing,	4	4	50 h	No
	Brake lever adjustment bearing	2	2	50 h	No
PTO shaft	Main drive	11		50 h	No
	Pick-up drive (optional) Knotter	2		200 h	No
	drive	3		200 h	No
Double knotter:	Needle yoke Knotter bearing on hub Blade lever bearing Knotter hook bearing Twine retainer bearing Twine retainer drive shaft bearing Knotter shaft centre bearing	1 1	1		Autom. central lubric. Autom. central lubric. Autom. central lubric. Autom. central lubric. Autom. central lubric. Autom. central lubric. Autom. central lubric.

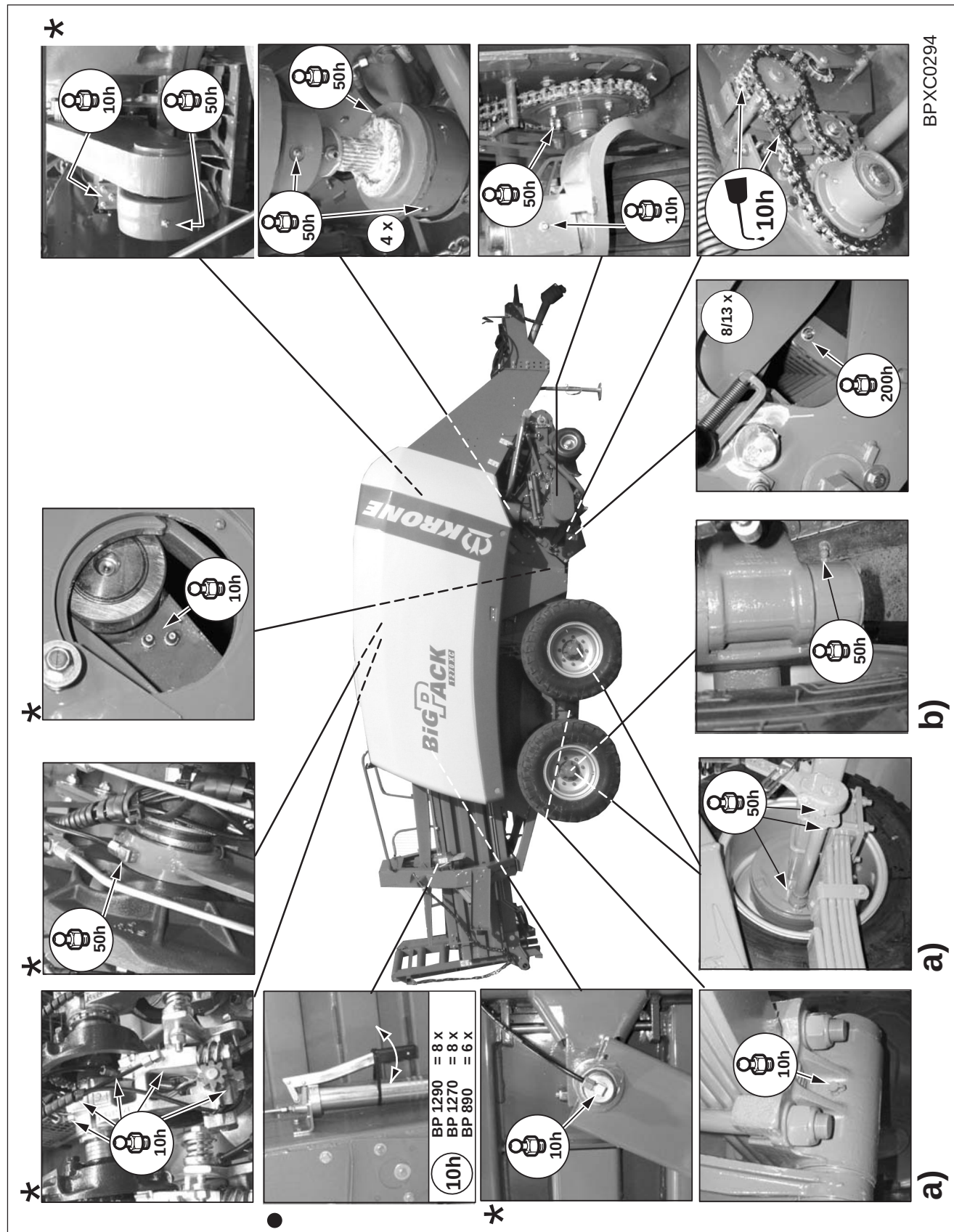
Design with XC cutting system and tandem axle



b) steering control for tandem axle

Lubrication points on the Big Pack Baler (right side of the machine)

Design with XC cutting system and tandem axle



* Automatic central lubrication cpl.

● Knotter central lubrication

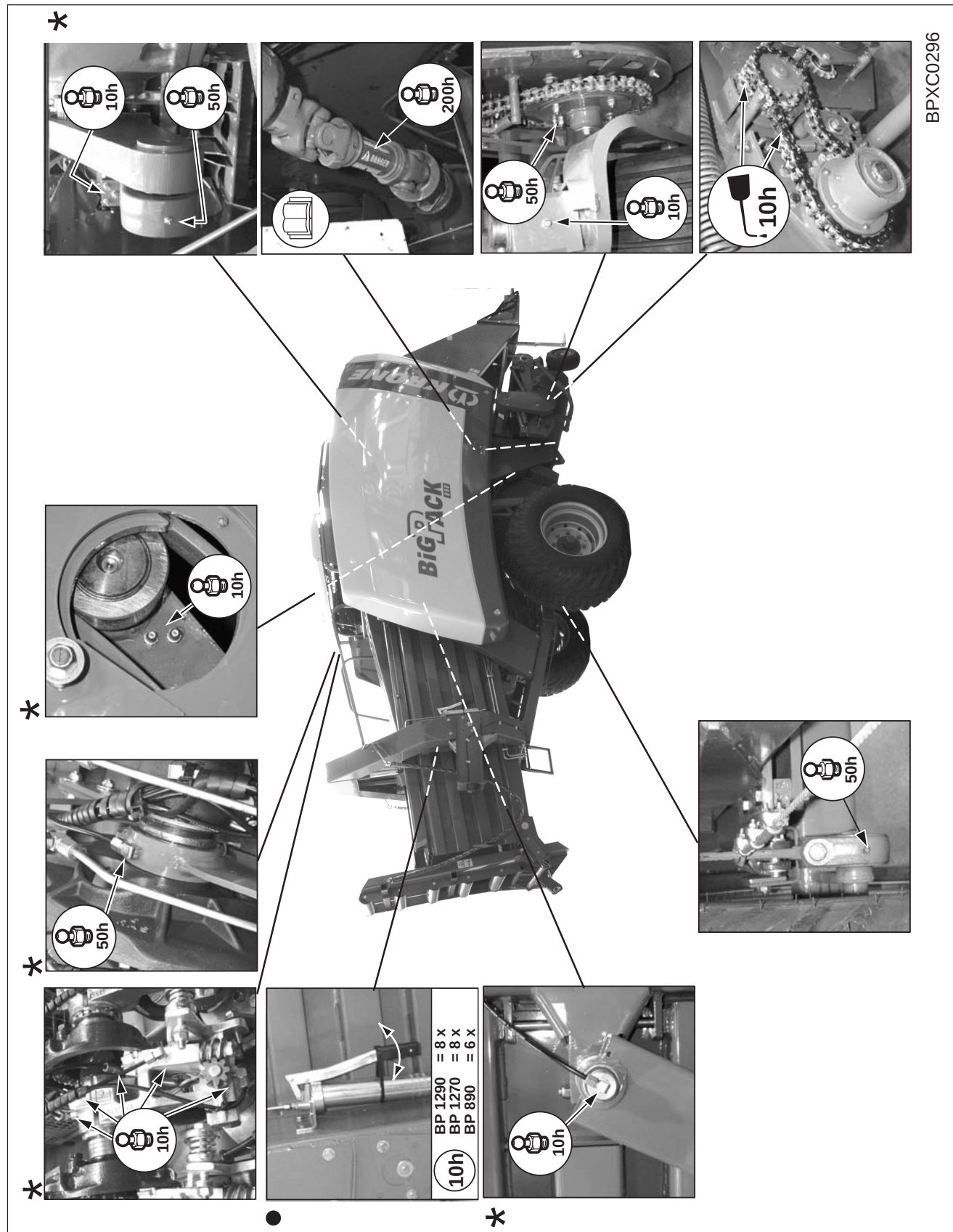
a) for tandem axle

b) steering control for tandem axle

[illegible]

IX- 23

Lubrication points on the Big Pack Baler with XC cutting system (right side of the machine) Design without XC cutting system, with single axle



* Automatic central lubrication cpl.

● Knotter central lubrication

9.9.5 Automatic Central Lubrication (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 lubricating 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 over-pressure valve. If a lubricating point does not take any grease from the distributor, the progressive distributor is blocked and a pressure of 280 bar builds up in the central lubrication system. A blockage can be detected on the over-pressure valve of the pump element when grease emerges. Grease emerging on the over-pressure valve of the pump element indicates a blockage.

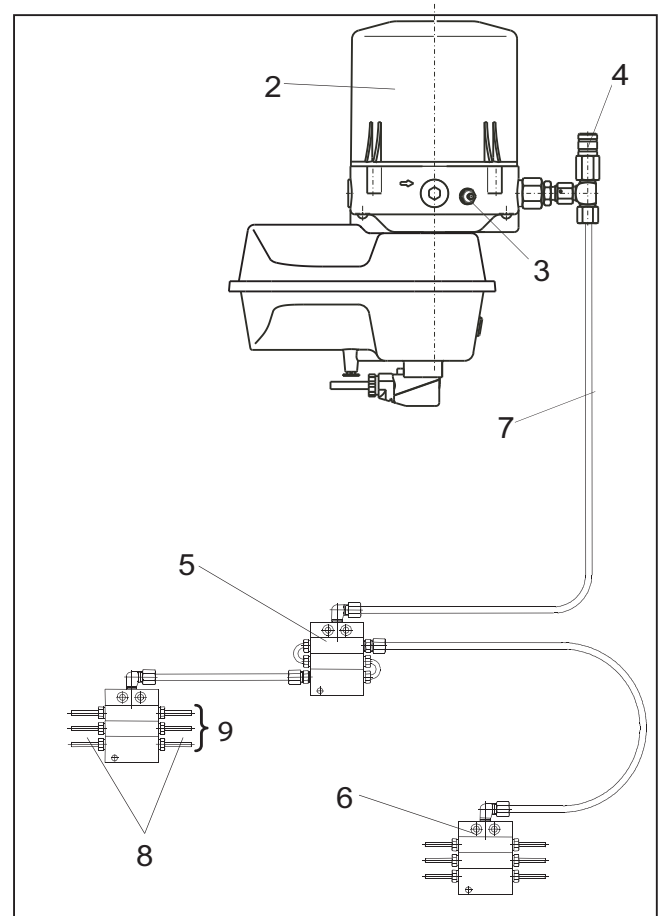


Additionally an error message will appear in the display of the operation.

Layout of the BEKA-MAX grease central lubrication system

An electrically driven EP-1 piston 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 lubricating points.

- 2 See-through storage tank
- 3 Filling nipple
- 4 Over-pressure valve
- 5 Main progressive distributor
- 6 Auxiliary progressive distributor
- 7 Main line
- 8 Lubricant lines
- 9 Lubricating points



Description of the control system

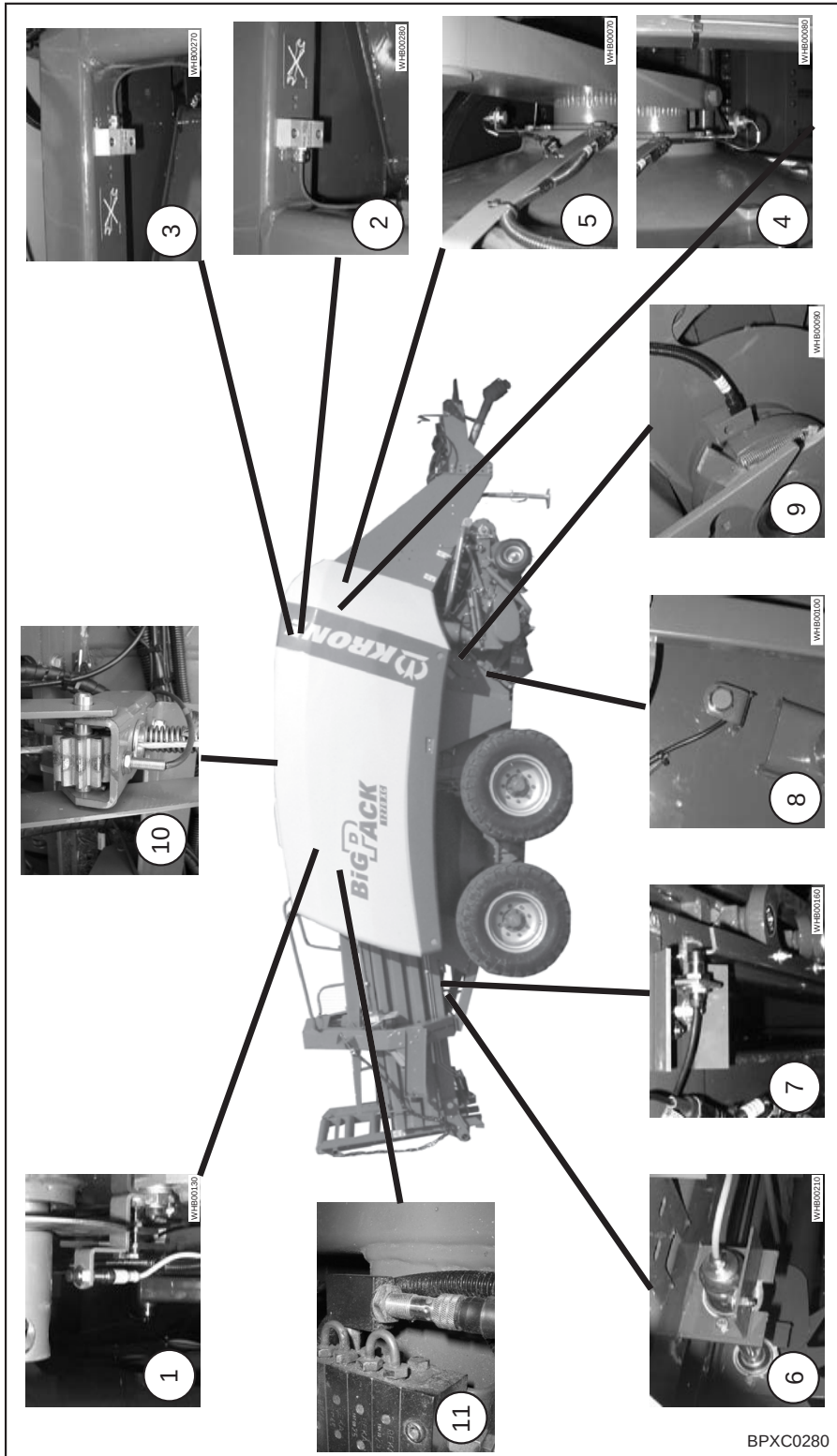
Lubricating and pause times are regulated by the control unit in the driver's cab of the tractor (see Chapters 4 and 5).

9.10 Position of the Sensors



Depending on how the Big Pack Baler is equipped, the sensors that are shown below may not be present in all cases!

Right side of the machine

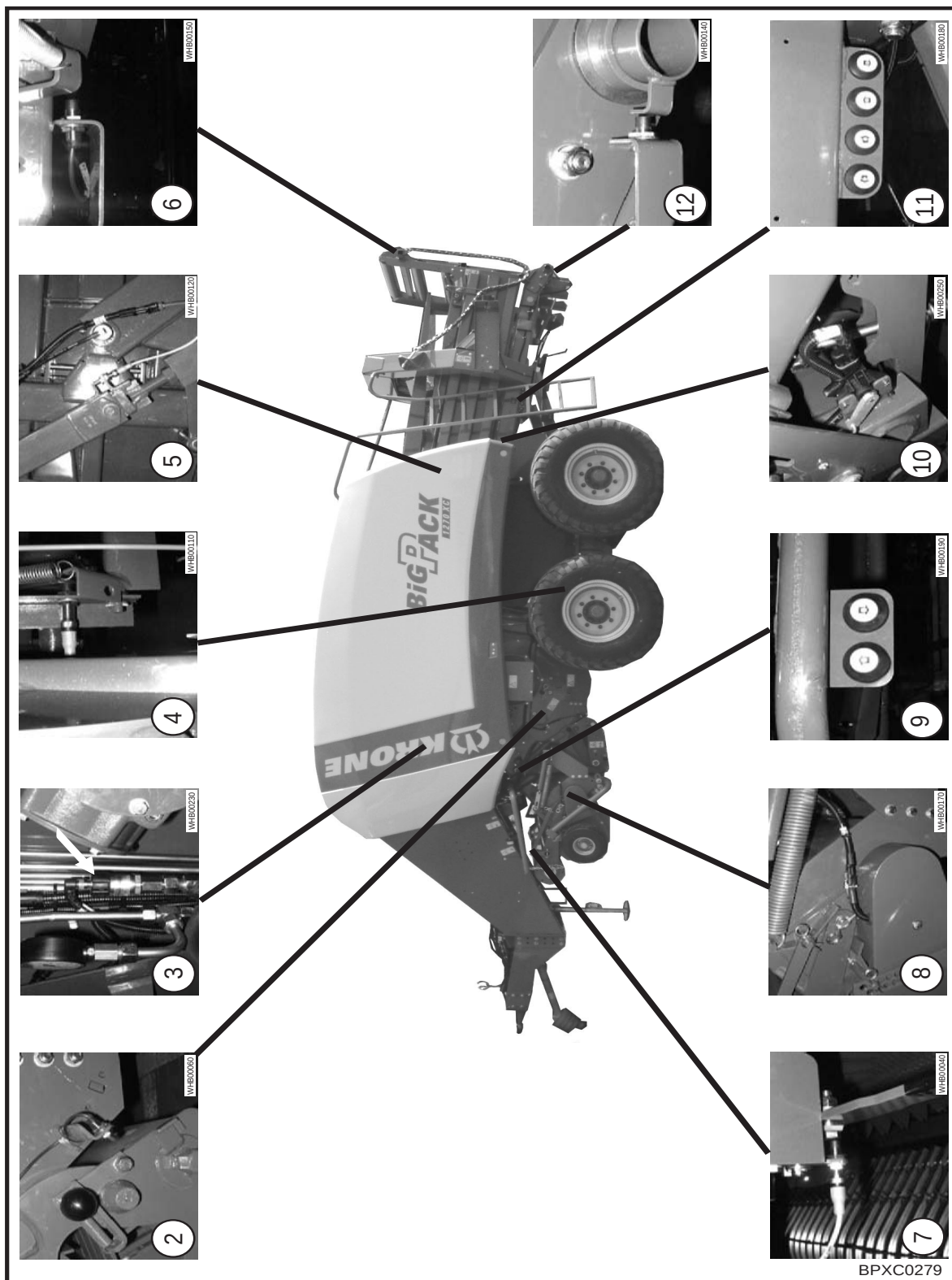


BPXC0280

- 1 Knotter monitoring
- 2 Force sensors right
- 3 Force sensor left
- 4 Calibration
- 5 Measuring
- 6 Star wheel

- 7 Bale ejector
- 8 Packer feed
- 9 Packer monitoring
- 10 Knotter monitoring
- 11 Central lubrication

Left side of the machine



- 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 Pickup

- 9 Blade bar up button
- Blade bar down button
- 10 Multibale
- 11 Bale ejector in button
- Bale ejector out button
- Bale chute up button
- Bale chute down button
- 12 Bale chute

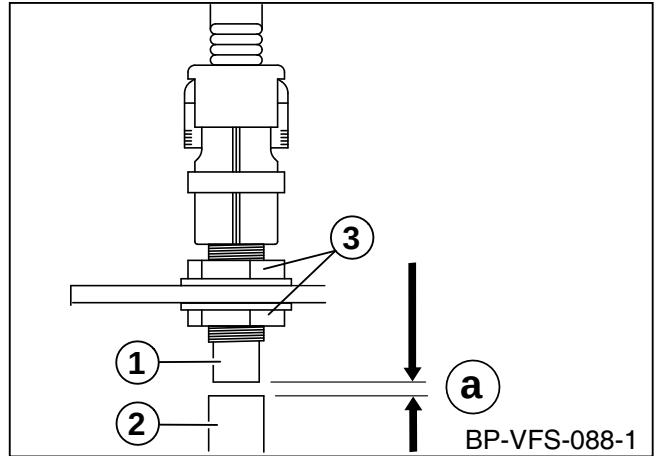
9.11 Adjusting the Sensors

Namur sensor d = 8 mm

The dimension between the encoder (2) and the sensor (1) must be “a” = 0.5 mm.

Setting

- Loosen the nuts on either side of the sensor.
- Turn the nuts until dimension “a” = 0.5 mm is reached.
- Tighten the nuts again.

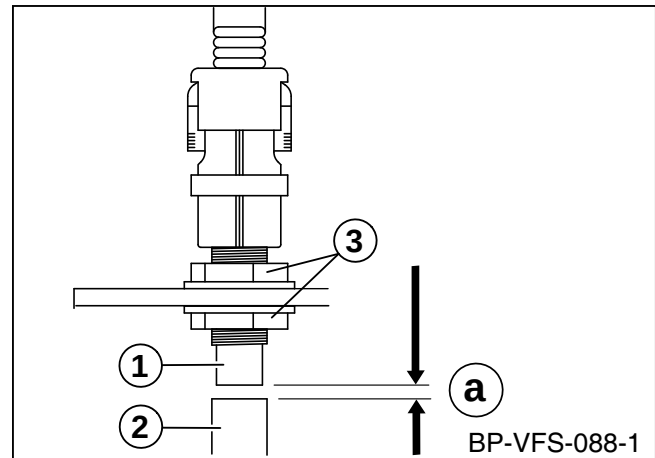


Namur sensor d = 12 mm

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.

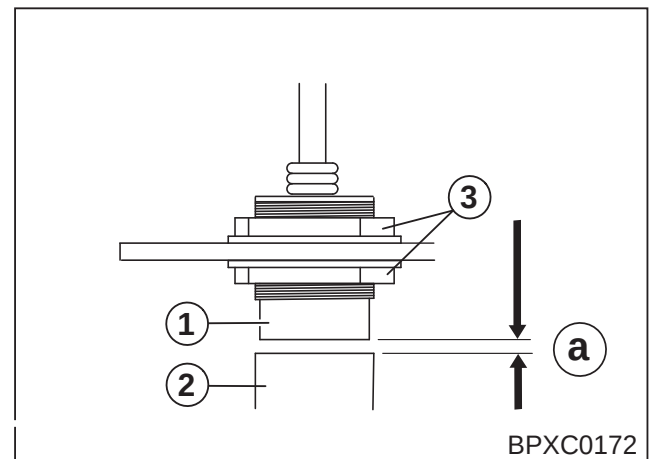


Namur sensor d = 30 mm

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.



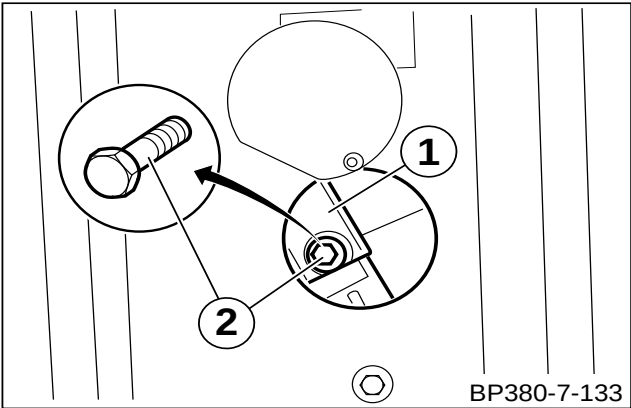
10 Malfuncions, Causes and Remedies

10.1 Safety Instructions



- The following is a basic rule for all maintenance, mounting, repair and adjustment tasks: Bring the machine to a stop. Switch off the engine. Remove the ignition key. Tighten the flywheel brake.
- Secure the tractor and Big Pack Baler against rolling.
- Secure the knotter against being activated unintentionally with the knotter fuse.
- Activate the flywheel brake and fasten the flywheel in place.
- Avoid skin contact with oils, greases, cleaning agents and solvents.
- In the event of injuries or burns caused by oils, cleaning agents or solvents, contact a physician immediately.
- After the upkeep and maintenance tasks are complete, mount all protective coverings and protective mechanisms properly again.
- Please observe all additional safety instructions as well.

10.2 General Malfunctions

Fault	Cause and/or remedy
Baling ram/tying unit does not move.	1. Bring the tractor to a stop immediately. 2. The cam-type cut-out clutch is engaging again at a low speed. 3. Decrease baling force. 4. Check the speed of the tractor PTO shaft. 5. Remove the needle from the baling channel and replace the shear screw in the knotter and needle drive if necessary
Needles fall back.	1. Apply the knotter shaft brake securely.
Baling too loose.	1. Increase baling force. <
Baling too tight.	1. Decrease baling force.
Packer does not move.	1. Overload coupling slips - reduce engine speed. 2. Bring the tractor and machine to a stop and clear the blockage. 3. Reduce the travel speed.
Pick-up does not move.	1. Overload coupling slips PTO shaft is switching speed - turn off PTO drive and clear blockage. 2. Reduce the travel speed. 3. Drive through the windrow in the centre.
Cutting rotor and pick-up do not move.	1. Blockage in the area of the rotor, cam-type cut-out clutch in the rotor drive rod is switching speed. 2. Reduce the engine speed. Clutch is engaging again at low speed. 3. Swing 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 the travel 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.

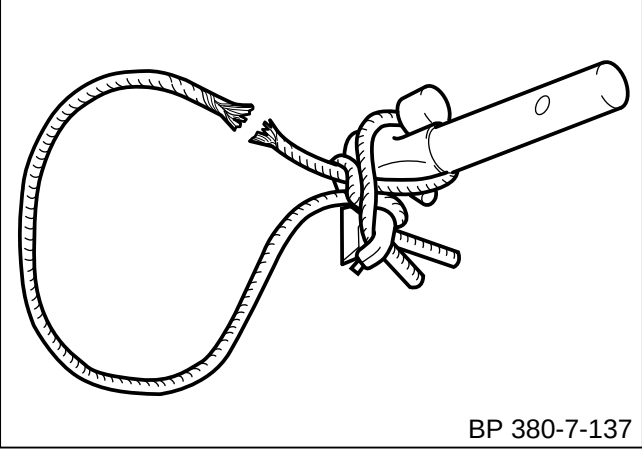
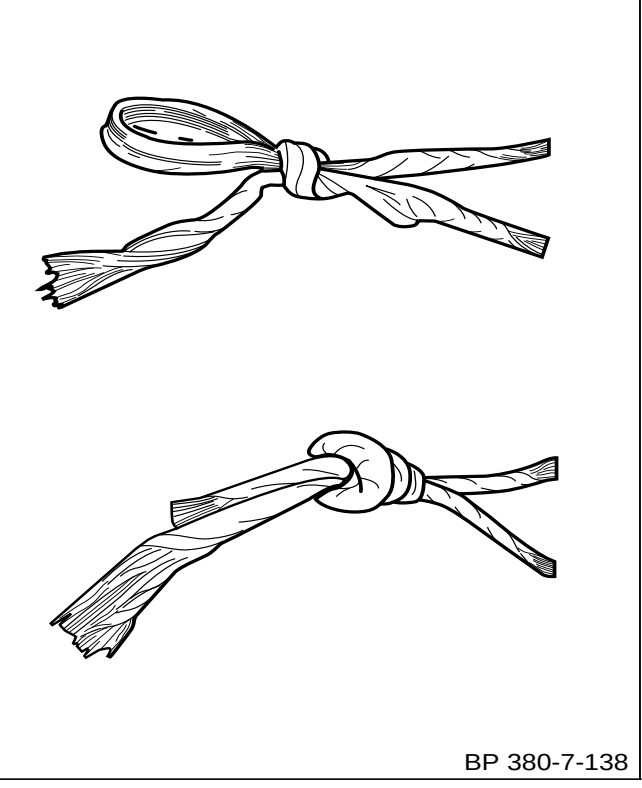
10.3 Malfunctions on the Knotter

10.3.1 Single Knotter

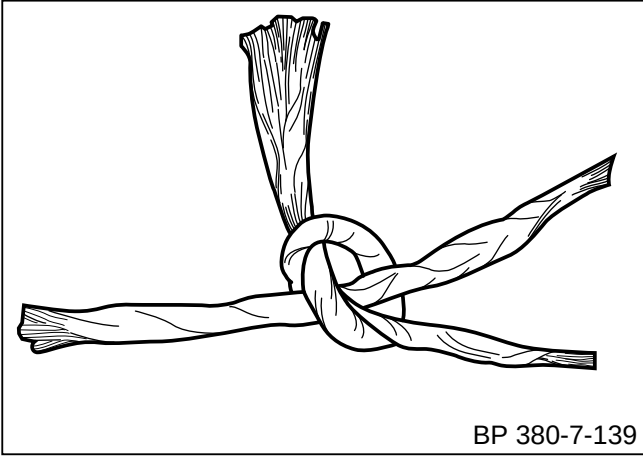
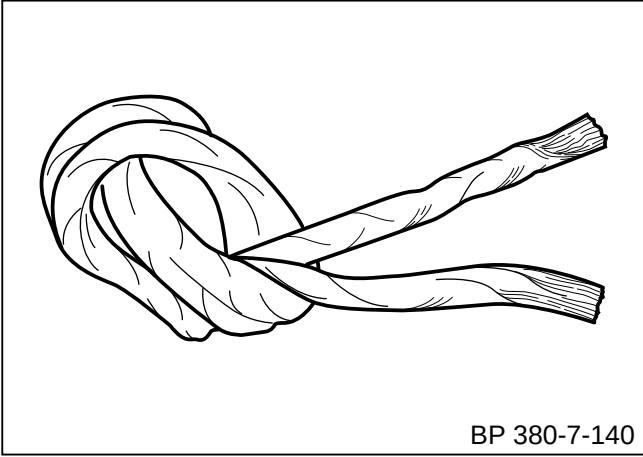


The most frequent knotter malfunctions are caused by minor problems that you can eliminate yourself in most cases. The errors may often be found in twine quality, twine guiding, twine tension, position of the tying needles or twine bar.

The following illustrations of faults are intended to help you recognise the causes of malfunctions.

Fault	Cause and/or remedy
 BP 380-7-137 Knotter coil (twine has wound around the knotter hook and is torn.)	1. Readjust the twine brake. Clean or replace if necessary. 2. Readjust the knotter shaft brake. 3. Remove wound up twine. 4. Align the baling trigger mechanism. 5. Check and readjust the twine bar.
 BP 380-7-138 Knot tied: one end of the knot is longer than the other or the longer end is tied into the knot.	1. Sharpen or replace dull or nicked twine blade. 2. Not enough tension on the closer — tension the spring with the hexagonal screw (do not tighten on block). 3. Not enough tension on the twine retainer — tension the spring with the hexagonal screw (do not tighten on block). 4. Replace worn twine drivers or twine retainer parts. 5. If the packing density is too great — reduce the baling pressure. 6. If twine tension is too great — loosen twine brake on the twine box.
Knot too loose with two cleanly cut ends.	1. Increase the tension on the knotter hook or replace it.

Malfunctions – Causes and Remedies

Malfunction	Cause and/or remedy
Ends of knots frayed. Knots only in the twine strand guided up by the needle.	1. Dull twine blade — sharpen the cutting edge of the twine blade or replace the blade. 2. Not enough tension on the twine retainer — tension the spring by tightening the hexagonal screw (do not tighten on block). 3. If the packing density is too great — reduce the baling pressure. 4. Worn twine driver or twine retainer — replace parts.
 BP 380-7-139 Knots only in the twine strand that runs over the upper bale side.	1. Incorrect position of tying needle — change seating of tying needle on the yoke. 2. Incorrect position of twine bar — adjust the position of the twine bar on the baling channel. 3. Incorrect swivel range — adjust the linkage to the twine bar. 4. Broken or deformed retainer springs in the upper channel covering — replace springs. 5. Not enough twine tension — tension the twine brake springs.
 BP 380-7-140 No knot or a knot with very short ends that usually slip through the knot loop.	1. Not enough tension on the knotter hook closer — tension closer for knotter hook. 2. Knotter hook worn — replace knotter hook. 3. Too much tension on the twine retainer — reduce tension on springs by loosening the hexagonal screws.
Knots are left hanging on the knotter hook.	1. Too much tension on the knotter hook closer — reduce tension on closer for the knotter hook. 2. Too much distance between the extractor comb on the blade lever and the back of the knotter hook — align the blade lever with a light tap of the hammer. 3. Surface of the knotter hook is rough — replace the knotter hook. 4. Incorrect setting for the twine bar — correct.

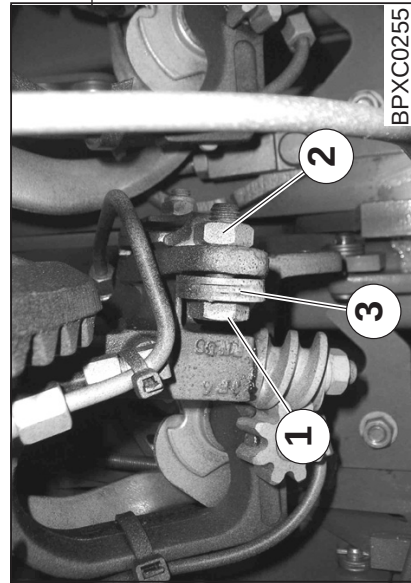
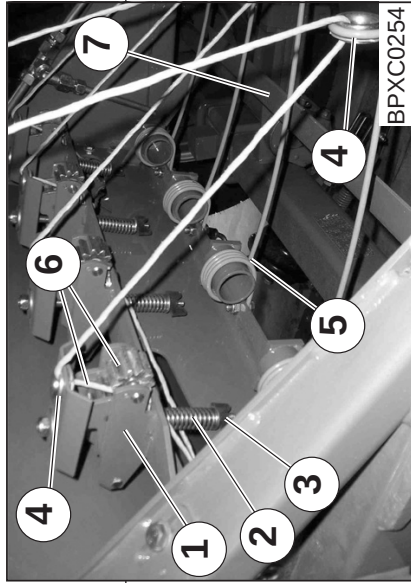
Malfunction	Cause and/or remedy
Knots are left hanging on the knotter hook.	- If the scraper path of the blade lever is not long enough (the blade lever can be deformed by a dull twine blade) — remove the blade lever and align it, or replace it if necessary. Check the cams on the knotter disc for wear and replace the disc if necessary. - Twine tension too low — Increase the baling density. Set the twine brakes on the twine box (1 - 2 revolutions), increase the baling length.
Twine is tearing or shows signs of abrasion in places: - right next to the knot. - at a distance of 40-50 mm from the knot. - at a distance of 60-80 mm from the knot. - at a distance of 800-1000 mm from the knot.	Rough twine guiding edges on the blade lever — smooth the edges. Rough twine guide edges. — Rough or worn eye in tying needle — smooth edges. — Smooth the rough rear side of the twine bar Rough twine guiding edges in the lower area of the baling needle — smooth edges.
Twine around an improperly tied bale is knotted around the twine strand of the bale that immediately preceded it.	- The twine has not been inserted in the twine retainer because the distance between the needle and twine driver is too great — correct the position of the tying needle. - The twine driver and twine retainer do not form an opening for receiving the twine — correct the position of the twine driver and replace the worn driver.
Twine is tearing inside the knot.	- Too big a gap between the extractor comb on the blade lever and the back of the knotter hook — align the blade lever with a light tap of the hammer. - Too much tension on the twine retainer — reduce tension on springs by loosening the hexagonal screw. - Too much force of pressure.

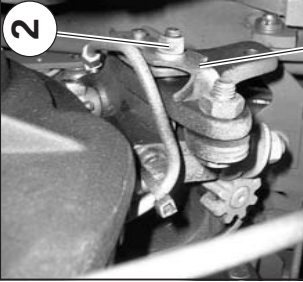
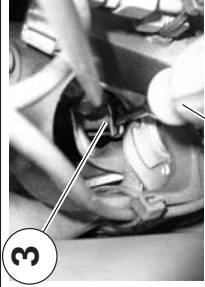
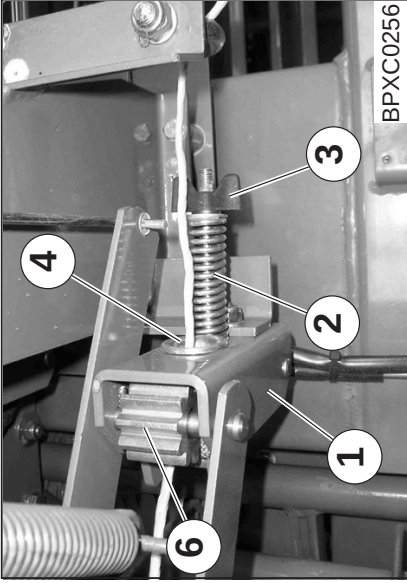
10.3.2 Double Knotter

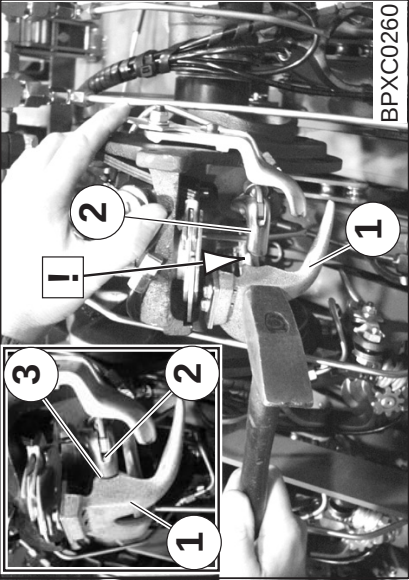
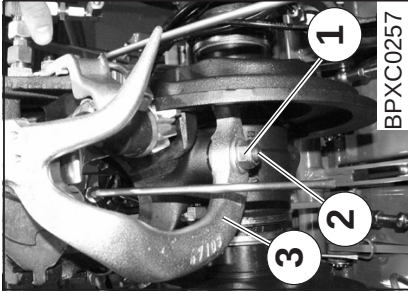
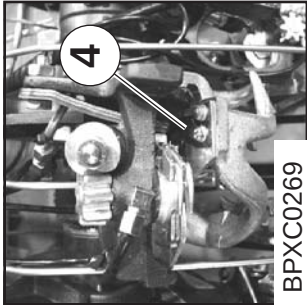
Experience has shown that a majority of tying problems are the result of insufficient twine tension. Check the twine path and twine tension before starting work.

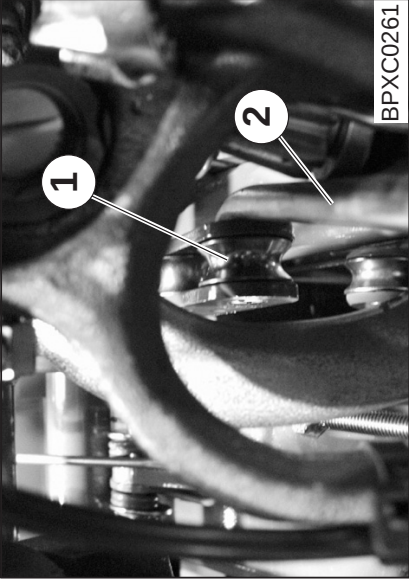
The following list shows the most frequent malfunctions, their cause and a note on how to eliminate them. Otherwise reference is made to the chapter in which the topic in question is explained in greater detail.

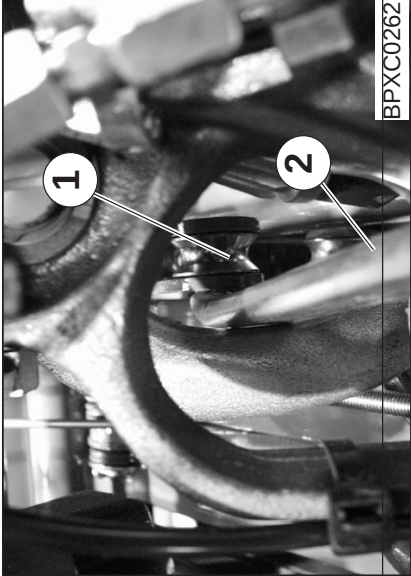
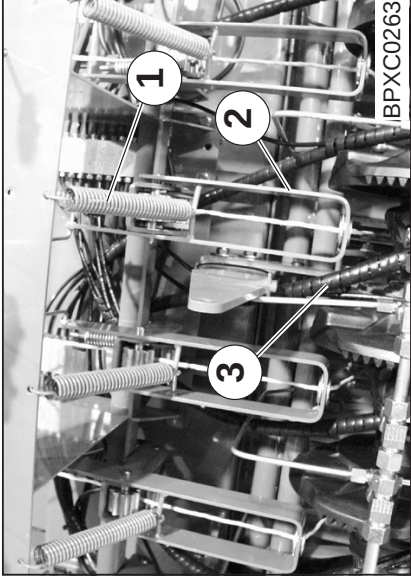
No.	Malfunction	Possible cause	Remedy
1	Knotter tongue bends or frequent rupture of the knotter tongue	1.1 Second knot remains hanging on the knotter tongue.	See No.2
2	Knot remains hanging on the knotter hook.	2.1 Worn or rough spots on the knotter hook or bent knotter hook or knotter tongue.	Remove rough spots; otherwise replace defective parts.
		2.2 Not enough twine tension on the lower twine strand.	Check lower twine path and correct, if and when necessary. Tighten the twine brake (1) by: • tightening the spring (2) by about one to two turn of the winged nut (3). • Remove 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 Holding force of the twine retainer is too low.	Readjust the twine retainer by: • undoing the counter nut (2) • ensuring stronger pre-tensioning of the twine retainer spring (3) by means of screw (1) (approx. half a turn) • tightening the counter nut (2). Degrease the twine retainer



No.	Malfunction	Possible cause	Remedy
2	Knot remains hanging on the knotter hook.	2.4 Excessive tension on the knotter tongue. 2.5 Not enough twine tension on the upper twine strand.	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.    BPXC0259
			 BPXC0256 Tighten the twine brake (1) by: - tightening the spring (2) by about one to two turn of the winged nut (3). - removing any dirt deposits in all twine eyes (4) and the twine brake (1). - Replace broken springs (2) or worn twine eyes (4). - Replace broken or worn brake wheels (6) - Check the free movement of the tensioning arm (5) (cf. malfunction No. 6.3, picture BPXC0263)

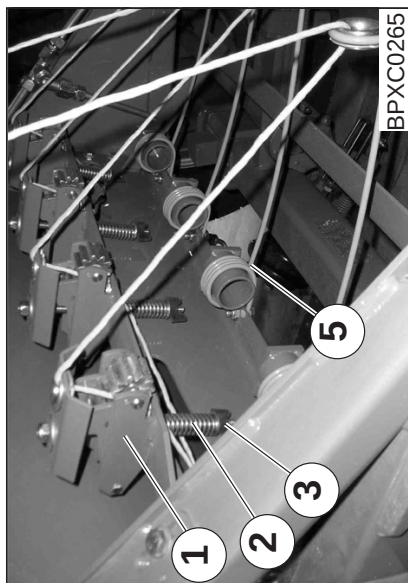
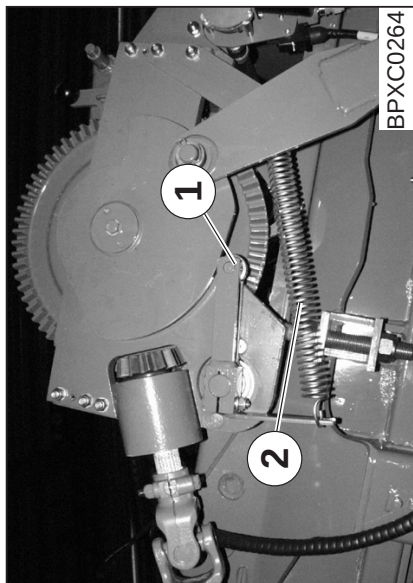
No.	Malfunction	Possible cause	Remedy
2	Knot remains hanging on the knotter hook.	2.6 Blade lever too far away from the knotter hook. 2.7 Blade lever has axial play. 2.8 The extractor comb of the blade lever does not run over the centre of the knotter hook. 2.9 Blunt extractor blade of the blade lever. 2.10 Twine driver disc set too far ahead.	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 swivelling the knotter up, a slight resistance has to be noticeable when the blade lever passes over the knotter nib  BPXC0260 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. Adjust blade lever: (cf. malfunction No. 2.5; picture BPXC0260) - Replace the blade lever  BPXC0257 Adjust or sharpen the cutting blade (4) or replace the blade, if and when necessary.  BPXC0269 Check the setting and readjust, if necessary. (refer to Chapter Setting the double knotter "twine retainer")

No.	Malfunction	Possible cause	Remedy
3	First knot: (closing knot): Present only in the upper twine strand.	3.1 The twine bar has not caught the lower twine strand.	Readjust the twine bar. (refer to Chapter "Setting the twine bar (double knoter)") Check the needle setting (refer to Chapter "Needle setting")
4	First knot: (closing knot) Twine winds around the knoter hook.	4.1 The lower needle grasps to the left of the upper twine. 4.2 Twine driver disc starts working too late.	Align the upper needle slightly to the left: • Release the knoter 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. Put the twine driver disc forward by turning clockwise. (refer to Chapter Setting the double knoter "twine retainer")  Please ensure that the knoter needle makes contact to the knoter in the topmost position. (refer to Chapter "Setting the upper dead centre of the needles (double knoter)")  BPXC0261

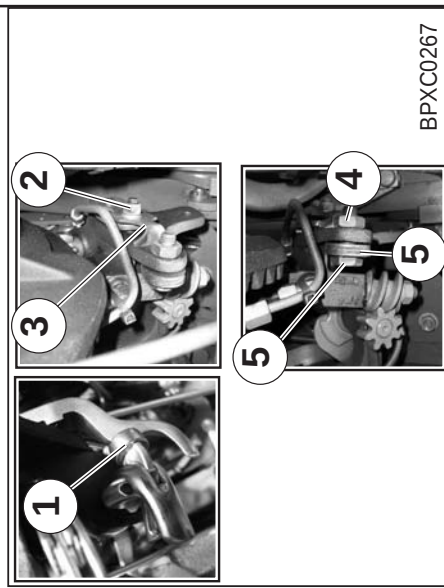
No.	Malfunction	Possible cause	Remedy
5	First knot: (closing knot) Upper twine is running through from one. knot in the lower twine strand	The lower needle grasps to the right of the upper twine	 Align the upper needle slightly to the right: • Release the knotter and turn the flywheel until the upper needle lifts. • Use a mounting lever (2) to align the upper needle (1) to the right by about 1 - 2 mm.
6	Second knot: (starting knot) Knot is present only on the lower twine strand (no knot on the upper twine strand).	6.1 The twine bar is adjusted too far away from the upper needle and was unable to catch the upper twine strand. 6.2 Spring of the upper tensioning arm broken or disconnected. 6.3 The tensioning arm does not work correctly.	Adjust the twine bar in the direction of the upper needle. CAUTION: When settings the twine bar, check for collision with the upper needle and the knotter needle (refer to Chapter "Setting the twine bar (double knotter)") Replace the spring (1) or fasten it in place again. 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. 

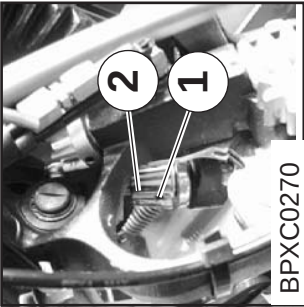
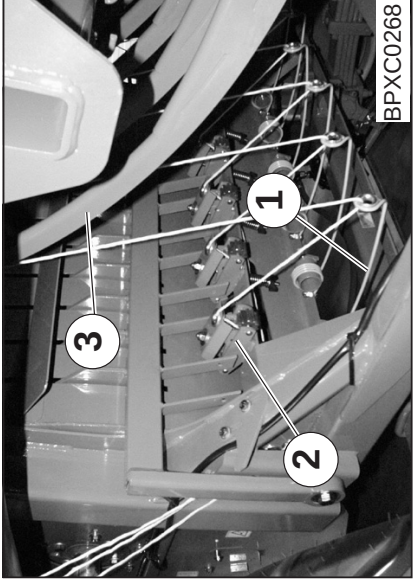
Malfunctions – Causes and Remedies

No.	Malfunction	Possible cause	Remedy
6	Second knot: (starting knot) Knot is present only on the lower twine strand (no knot on the upper twine strand).	6.4 Control in upper needle defective. Roller is not following the cam disc. The upper needle does not move down far enough.	Replace the roller (1) or ensure the upper needle is running easily. Check the spring (2).
		6.5 Blockage of the upper twine run.	Check the twine run from the knotter to the twine roller in the twine box inclusively
		6.6 Undo excessive twine tension on the upper twine strand	Loosen twine brake (1) by: • undoing the spring (2) by about one to two turn of the winged nut (3) (cf. malfunction No. 2.4)
		6.7 Holding force of the twine retainer is too low.	Readjust the twine retainer (cf. malfunction No. 2.2)
7	Second knot: (starting knot) Knot is present only on the upper twine strand (no knot on the lower twine strand).	7.1 The lower twine tension springs are not working properly.	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 turn of the winged nut (3).
		7.2 Not enough needle overrun in the upper dead point.	Check the needle setting. (refer to Chapter "Needle settings")
		7.3 The twine bar is not working precisely or is adjusted incorrectly.	Check the twine bar settings (refer to Chapter "Setting the twine bar (double knotter)")
		8.1 The upper tensioning arms are not working properly. • Tension path is blocked • Tension is not sufficient.	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	Second knot: (starting knot) Twine winds around the knotter hook.		



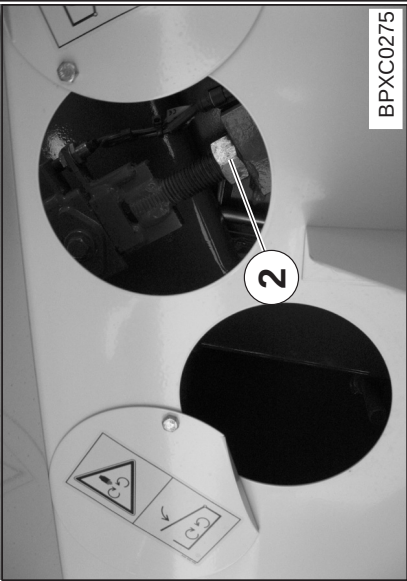
No.	Malfunction	Possible cause	Remedy
8	Second knot: (starting knot) Twine winds around the knotter hook.	8.2 Lower twine tension spring is broken or released.	Replace the spring or mount it securely again. (cf. malfunction No. 2.1; picture BPXC0254)
		8.3 Insufficient twine tension on the lower twine strand.	• Increase the tension (cf. malfunction No. 2.1; picture BPXC0254)
		8.4 Twine driver disc starts working too late.	Put the twine driver disc forward by turning clockwise. (refer to Chapter Setting the double knotter "twine retainer")
		8.5 Needle overrun in the upper dead point is too big	Check the needle settings (refer to Chapter "Setting the upper dead centre of the needles (double knotter)")
		9.1 Twine bar is not actuated.	Check the twine bar mechanism and its setting. (refer to Chapter "Setting the twine bar (double knotter)")
9	No knot present, neither on the upper nor on the lower twine strand.	9.2 Damaged knotter tongue.	Replace the knotter tongue (1).
		9.3 Insufficient tension on the knotter tongue.	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 Twine retainer springs too tight.	Loosen the twine retainer spring setting. To do this: • Undo the counter nut (4) • Ensure weaker pre-tensioning of the twine retainer spring (5) by means of screw (6) (approx. half a turn)
		or	
		Twine strands are cut through in the twine retainer.	Remove accumulations of dirt or chaff under the twine retainer springs (5).



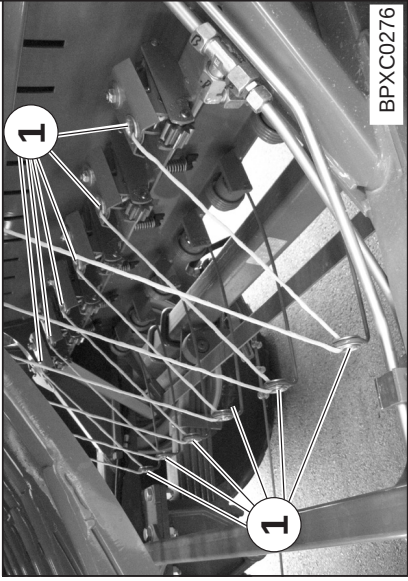
No.	Malfunction	Possible cause	Remedy
9	No knot present, neither on the upper nor on the lower twine strand	9.5 The knotter hook is not turning.	Replace the pin (1) of the knotter hook drive wheel (2).  BPXC0270
10	Knot ends too short. The knot often gets wound up (generally the second knot).	10.1 Insufficient tension on the knotter tongue. 10.2 Incorrect twine tension.	Increase the tension on the knotter tongue (1) (cf. malfunction No. 9, picture BPXC0267) 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) If this is not sufficient, the upper twine tension has to be increased.
11	The twine is no longer threaded through the knotter needle, but is tied to the last bale.	The twine tensioning spring has been bent.	Align the twine spring (1) in the middle between the twine brake (2) and the knotter needle (3).  BPXC0268



Nr	Malfuction	Possiblecause	Remedy
12	The shear screw on the needle connecting rod breaks frequently. This causes the needle yoke to stop.	Heavy wear on the twine guide eyes.	Replace the twine guide eyes (1) and install a new shear screw (2) on the needle connecting rod.

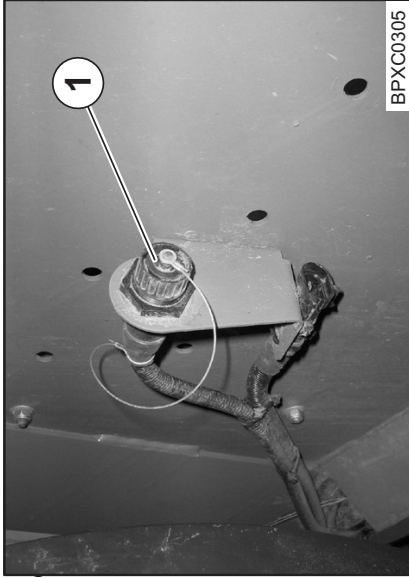


BPXC0275



BPXC0276

No.	Malfunction	Possible cause	Remedy
13	Big Pack Baler can no longer be operated via the terminal.	Faulty operation or faulty connection for operation.	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 set-point length, • Automatic mode, • Last target force to be set.



10.4 Troubleshooting in the Central Lubrication System

Fault	Eliminating Malfunctions
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. If the pump is working properly, connected 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 sub-distributors 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 sub-distributors, 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 in spite of all your efforts, the distributor should be replaced.



Malfunctions – Causes and Remedies

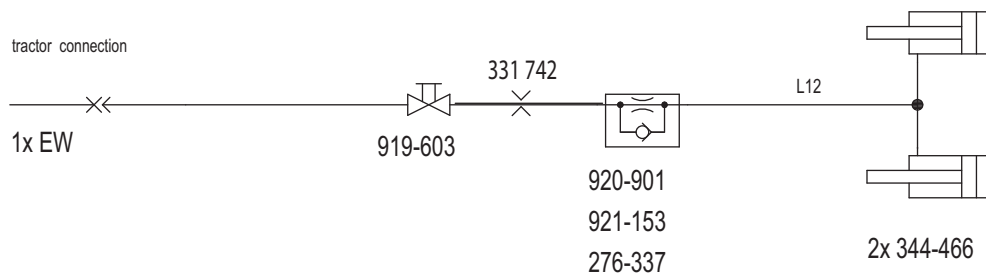
A1 Circuit Diagrams of the Hydraulic System

A1.1 Work Hydraulics Part I for Medium and Comfort Version Electronics

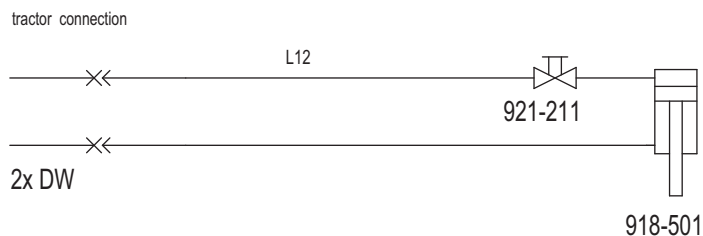
Connection to tractor hydraulics:

- 1x EW Pick-up
- 2x DW support foot
- 1x EW steering axle

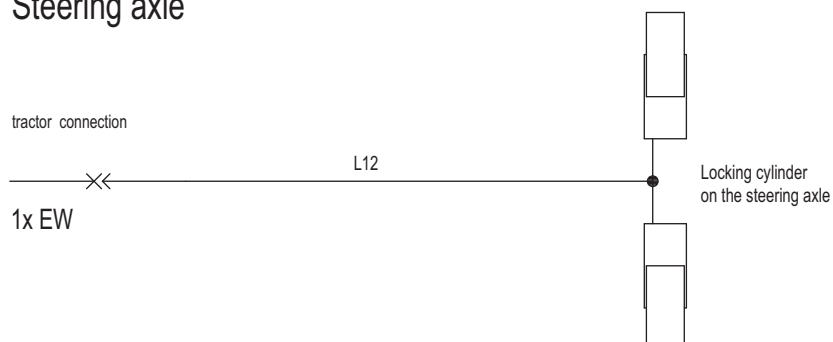
Pickup



Support foot



Steering axle



A1.2 Work Hydraulics Part II for Comfort Version Electronics

Connection to tractor hydraulics:

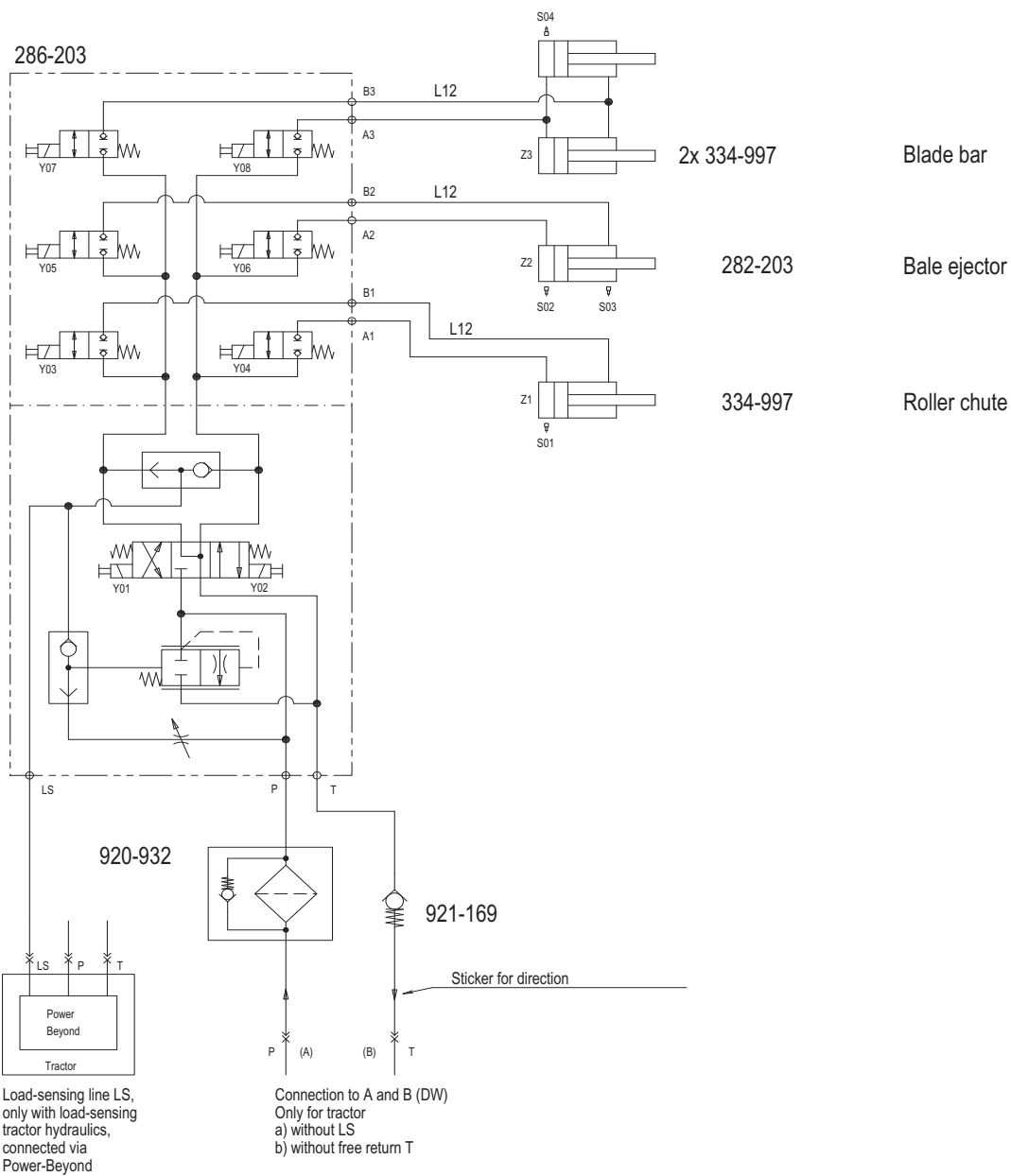
1 x EX / (DW) forward / pressure

1 x T / (DW) reverse / tank

1 x LS load-sensing line

For Comfort control block:

Blade bar, bale ejector and roller chute

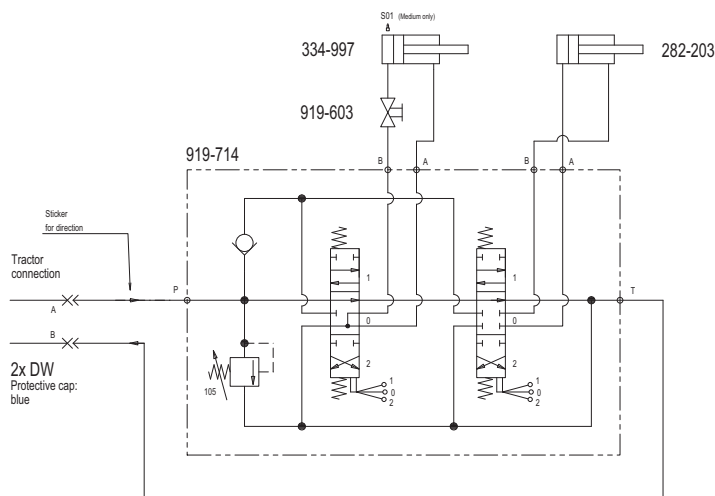


A1.3 Work Hydraulics Part II for Medium Version Electronics

Connection to tractor hydraulics:
2x DW blade bars
2x DW bale ejector/roller chute

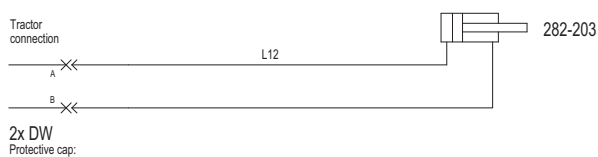
Roller chute and bale ejector

(Version 1)

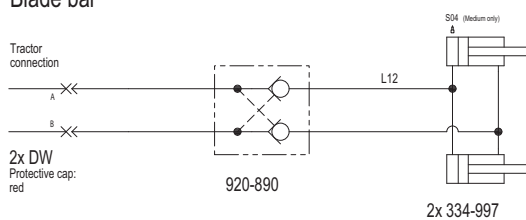


Bale ejector
(without roller chute)

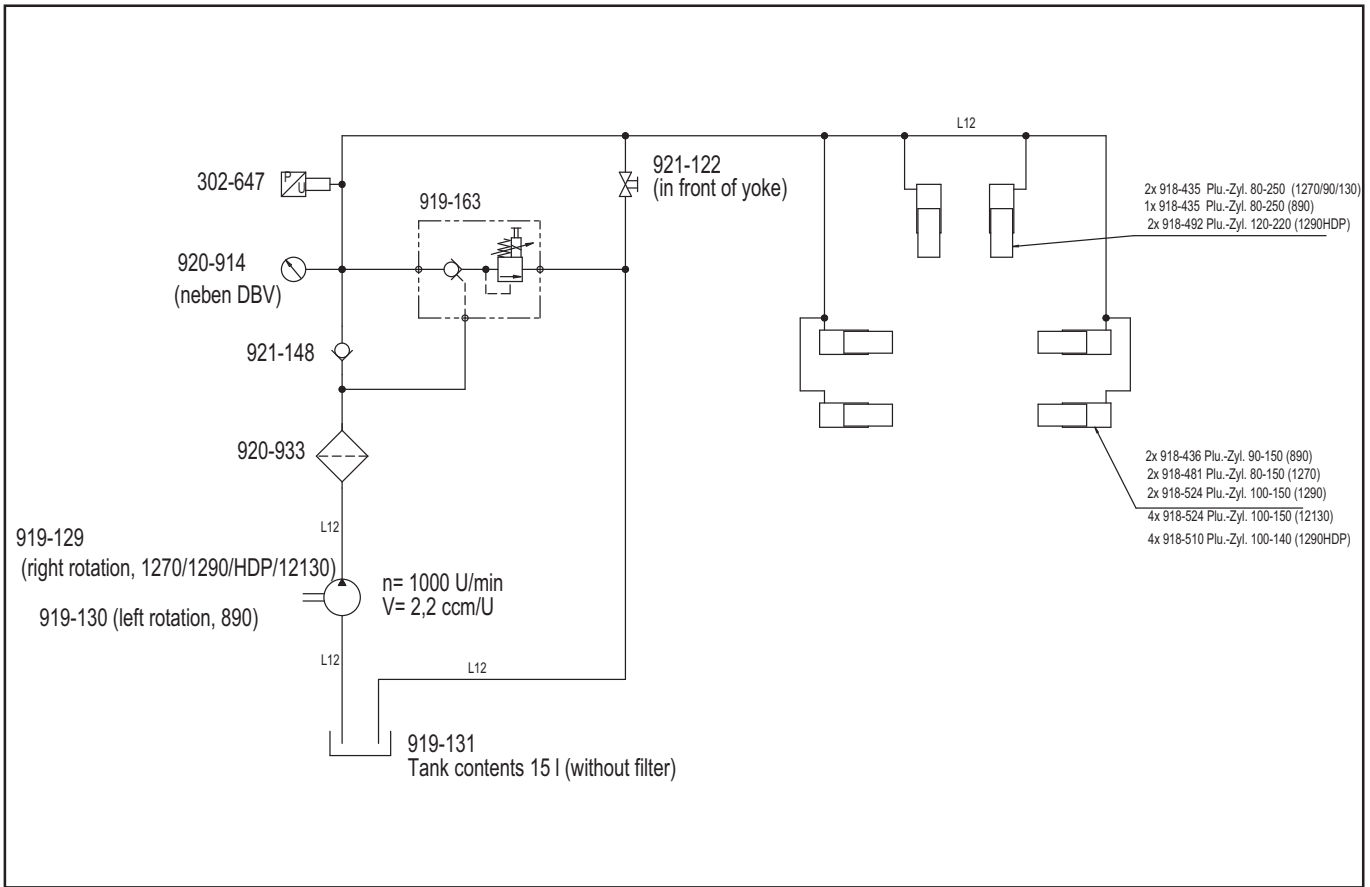
(Version 2)



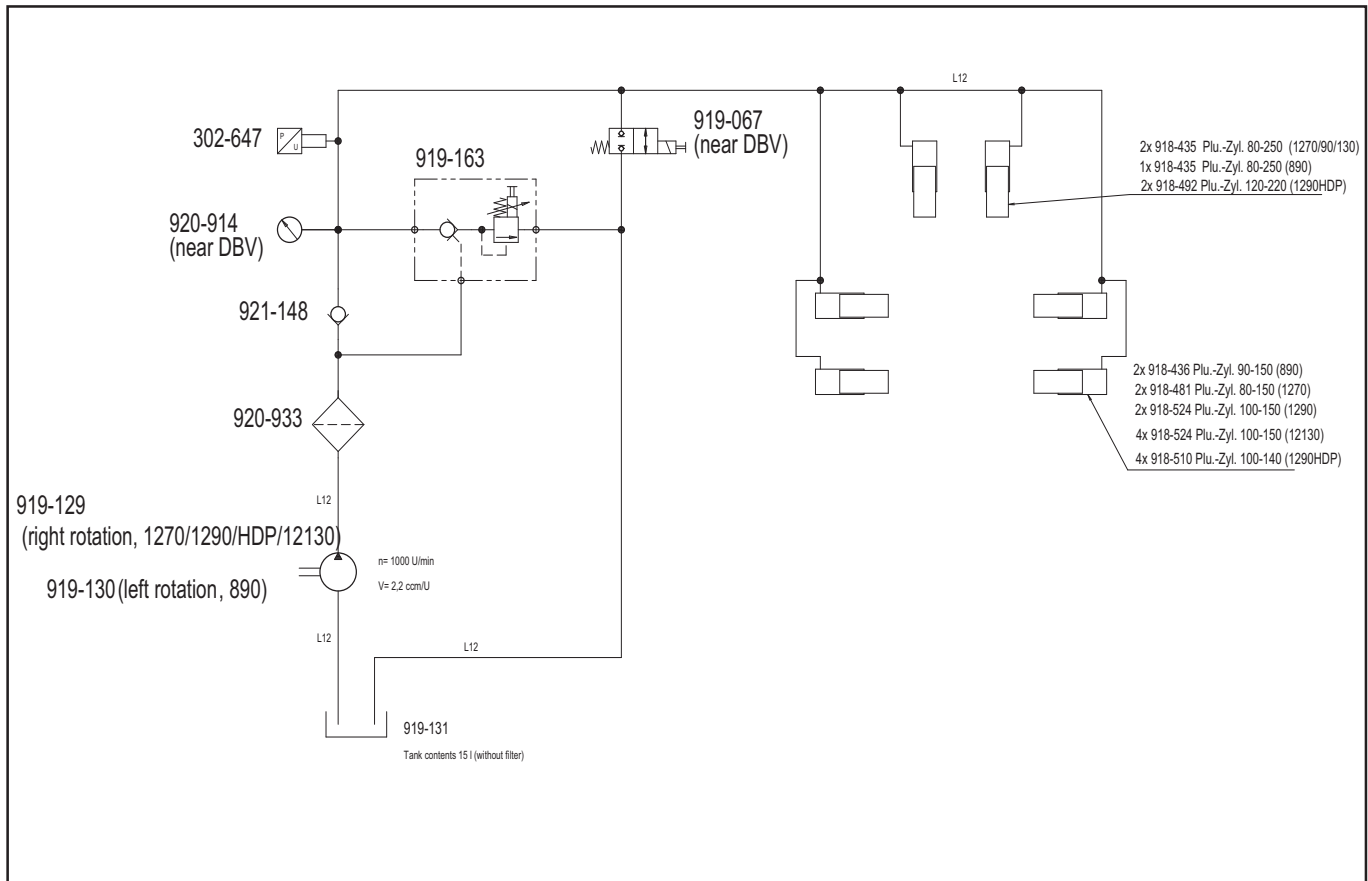
Blade bar



A1.4 On-board Hydraulics for Medium Version Electronics

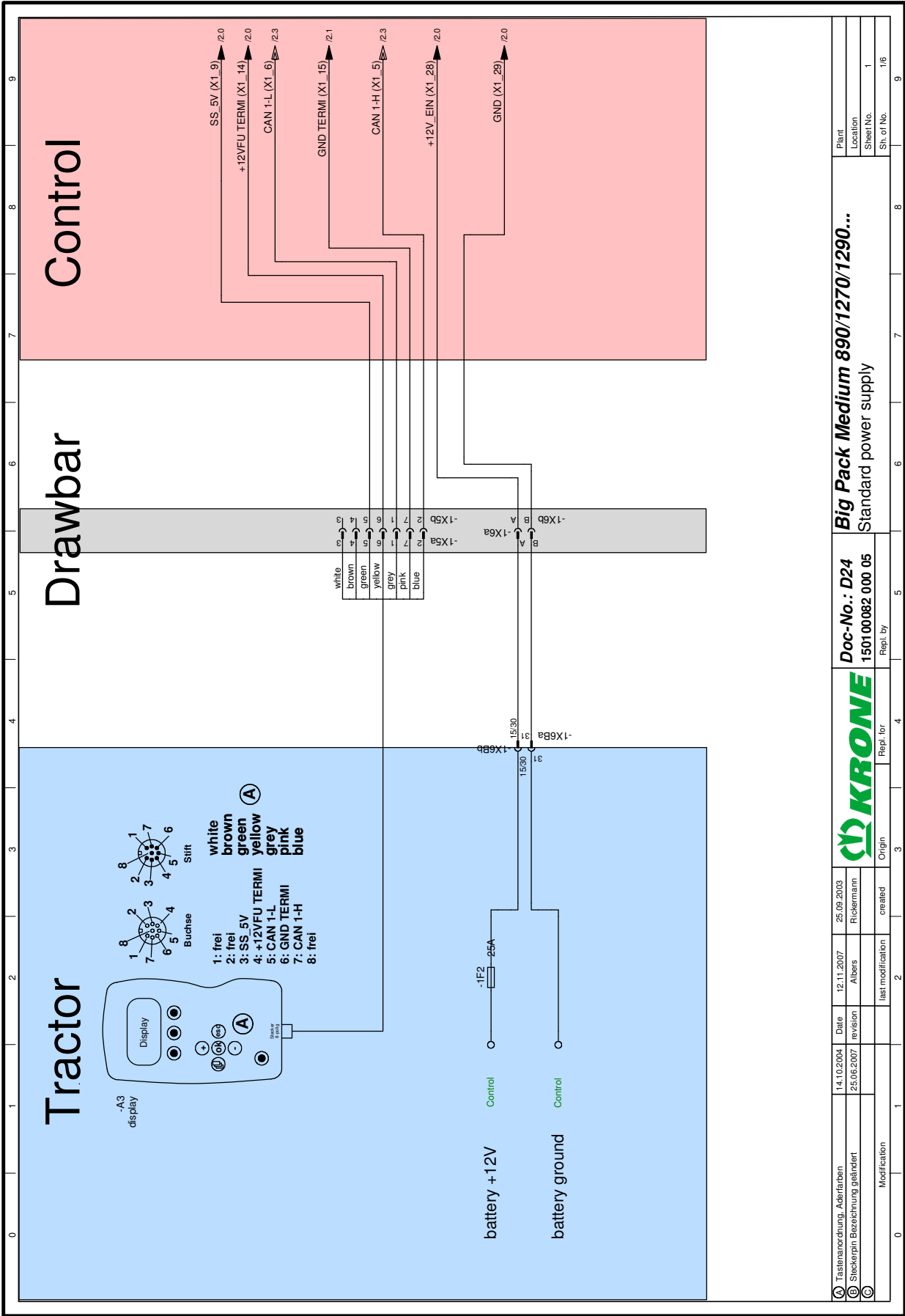


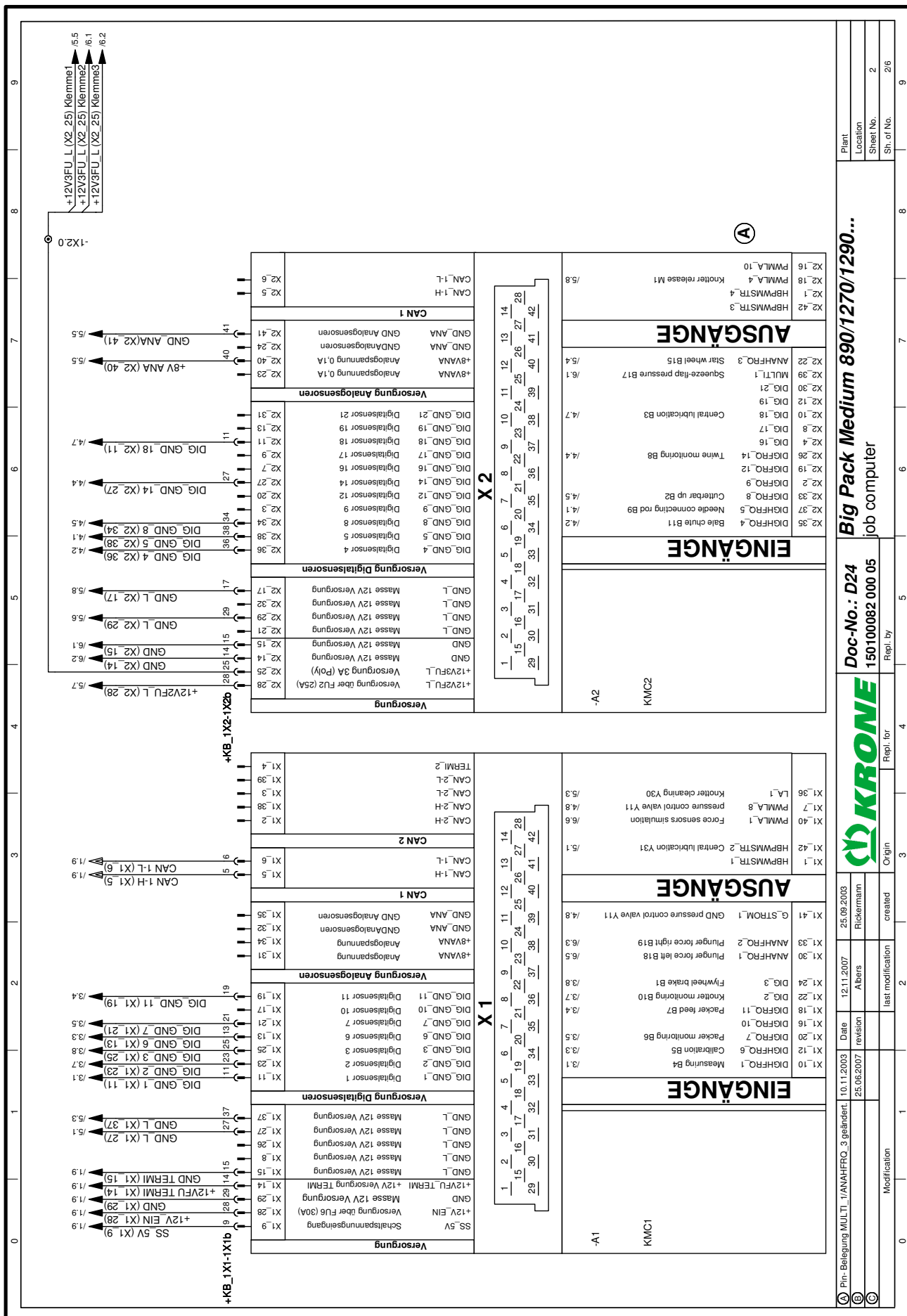
A1.5 On-board Hydraulics for Comfort Version Electronics

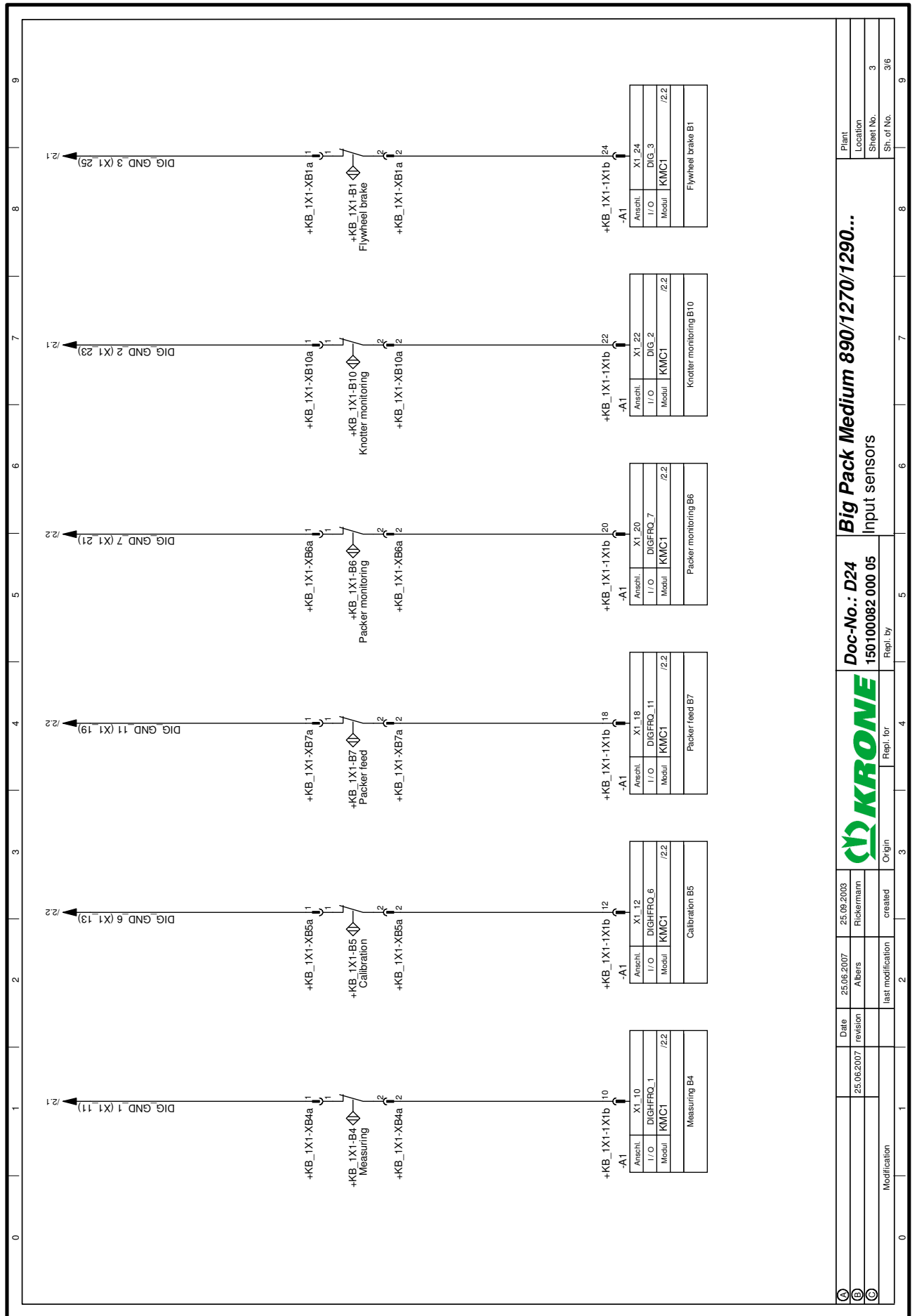


A2 Electrical Circuit Diagrams

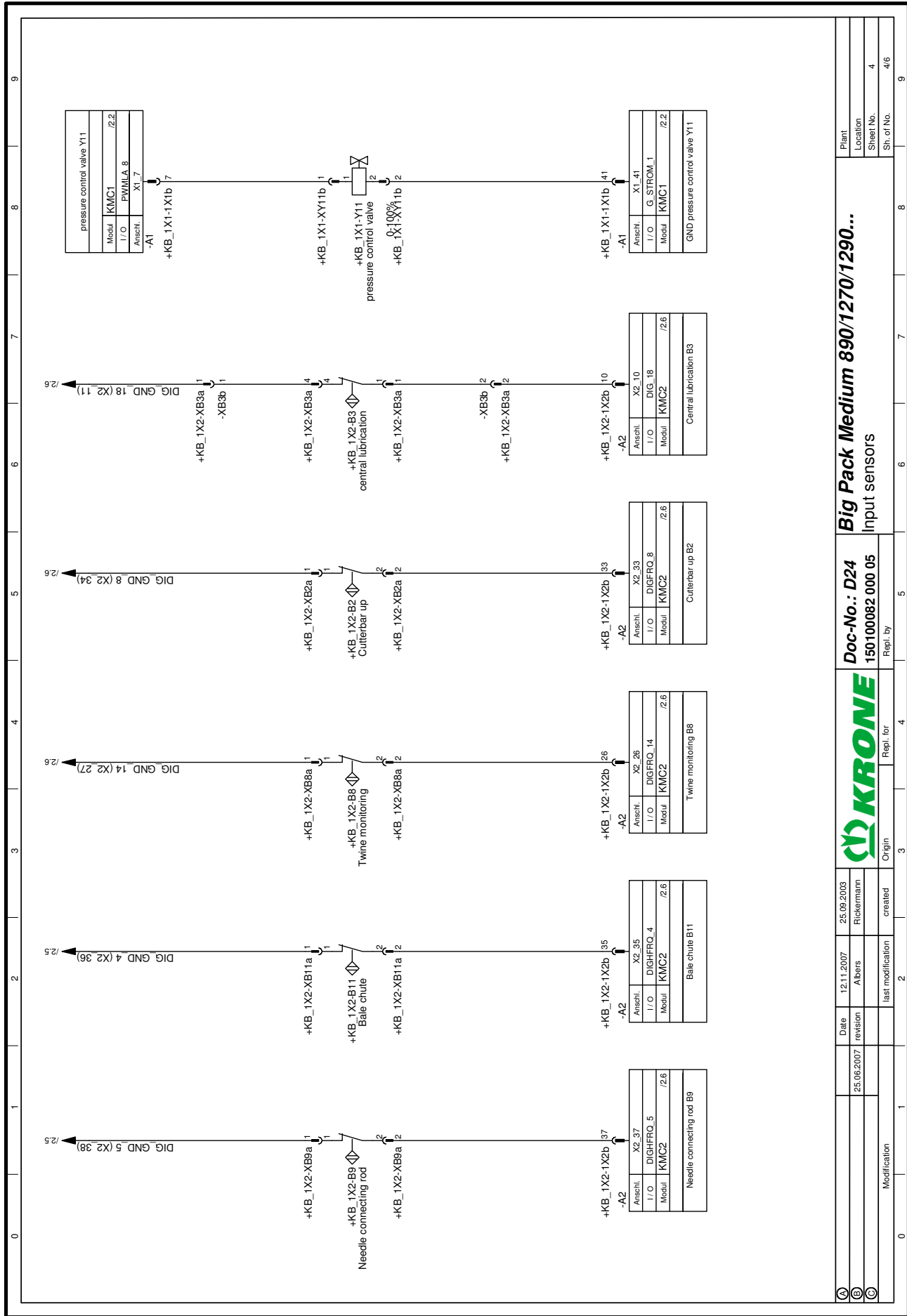
A2.1 Medium Control Unit



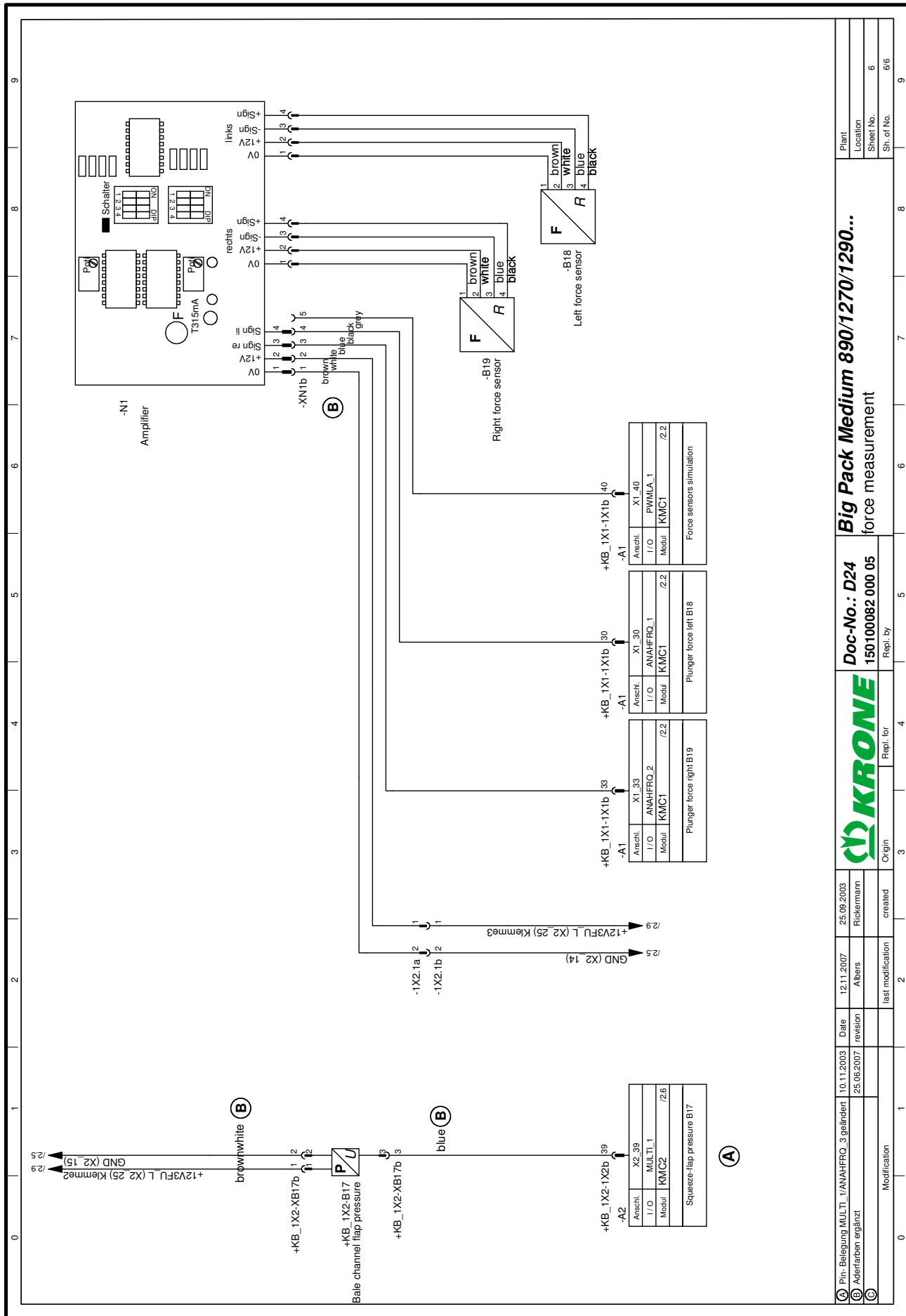




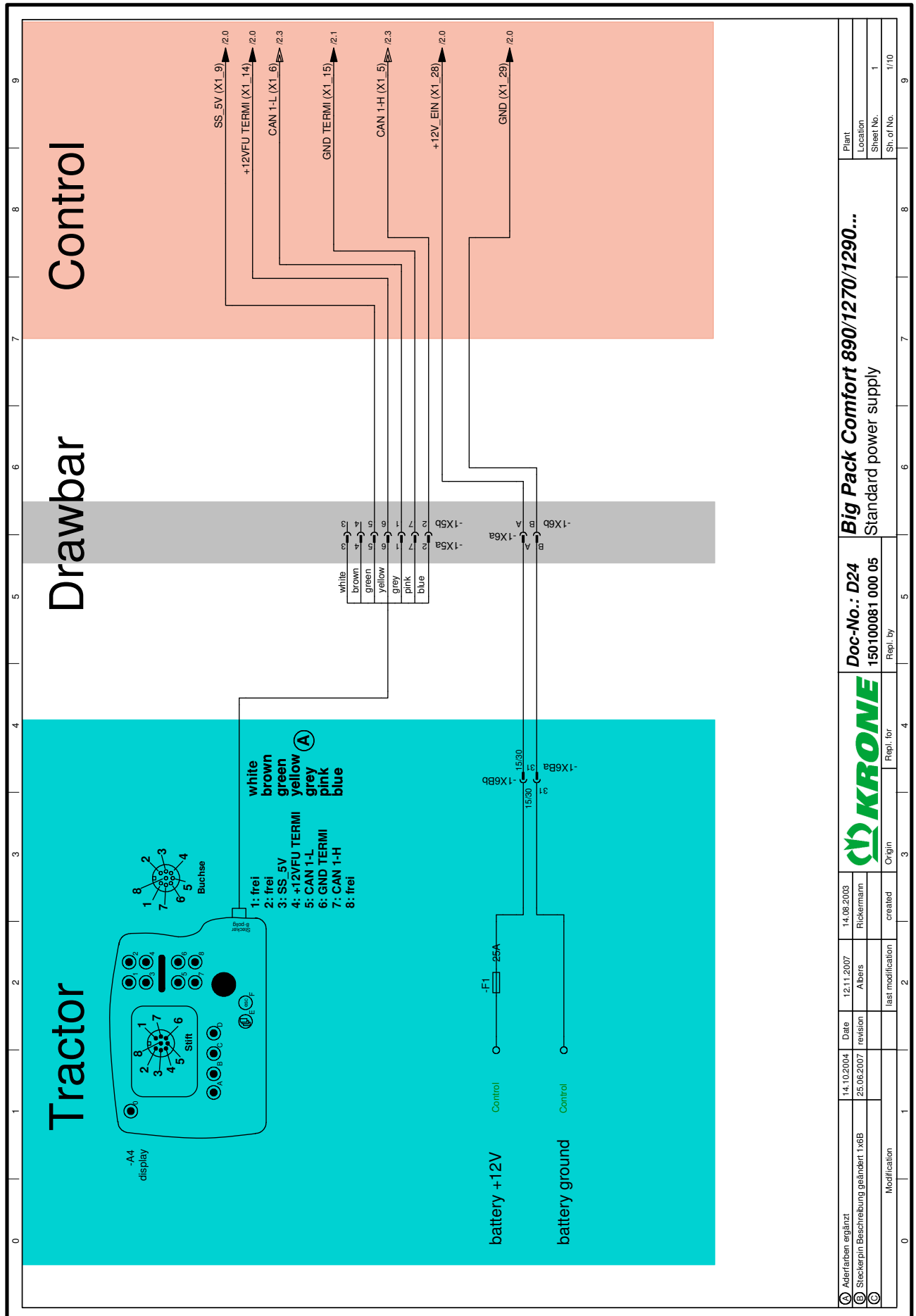
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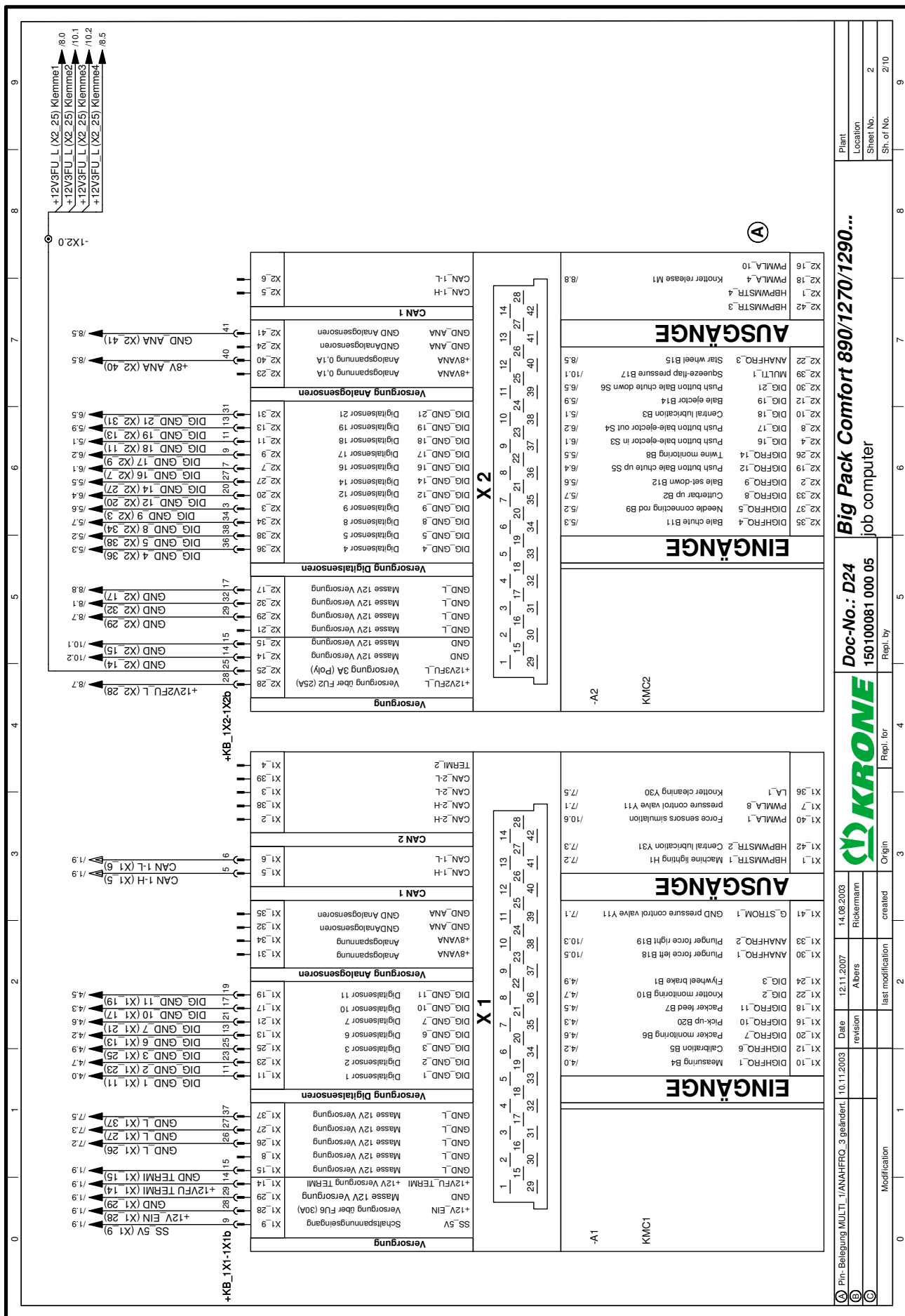




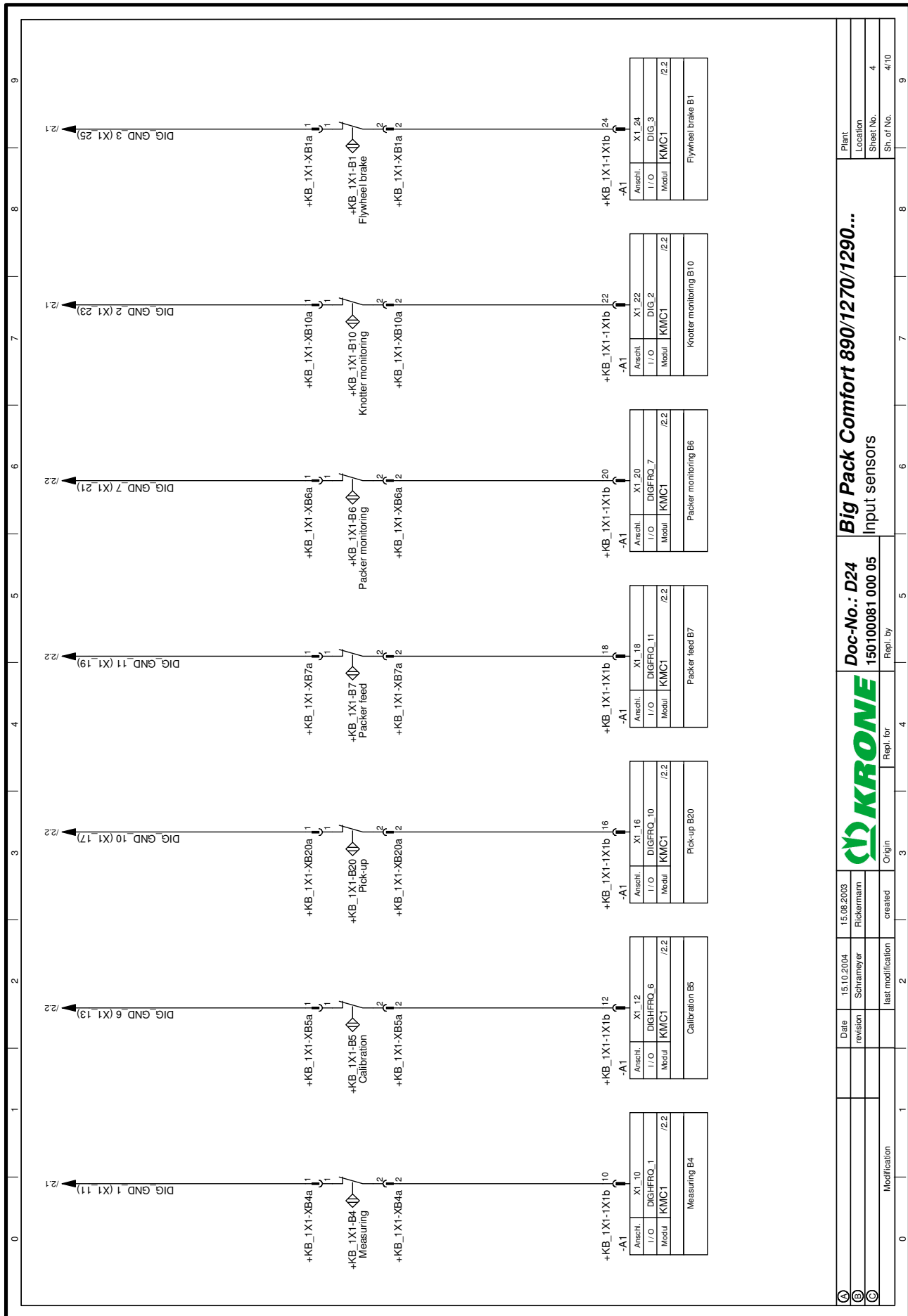


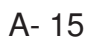
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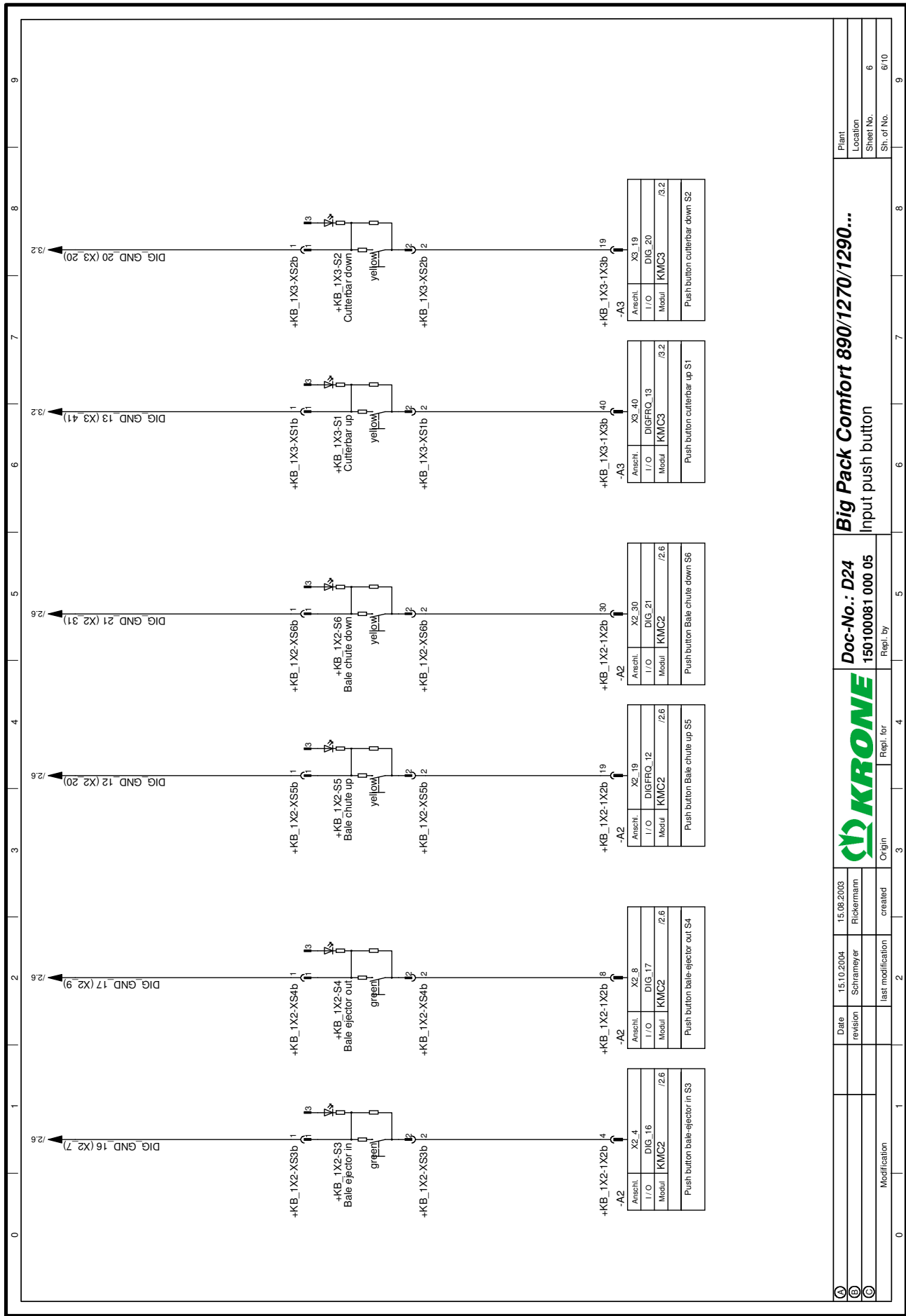


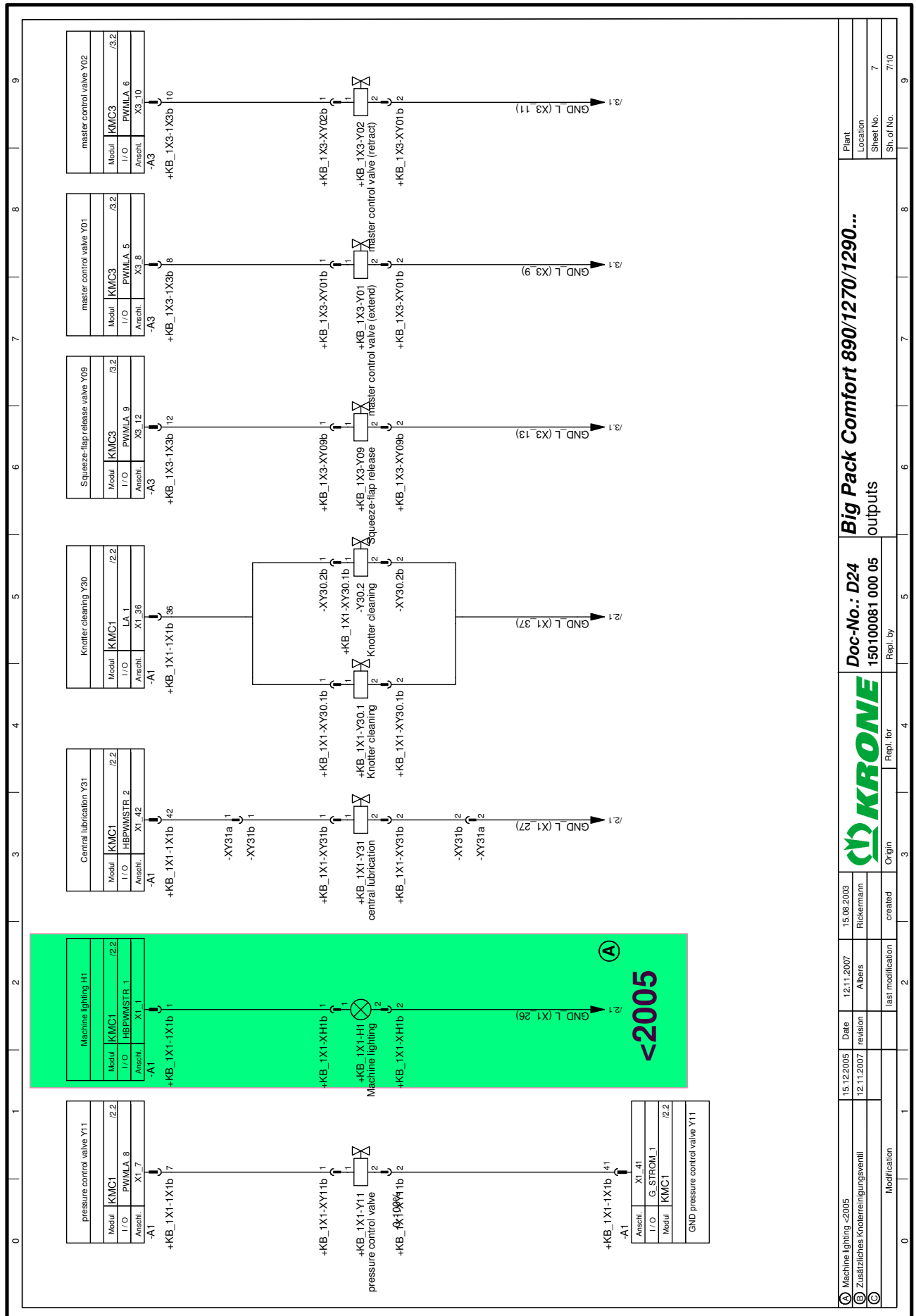


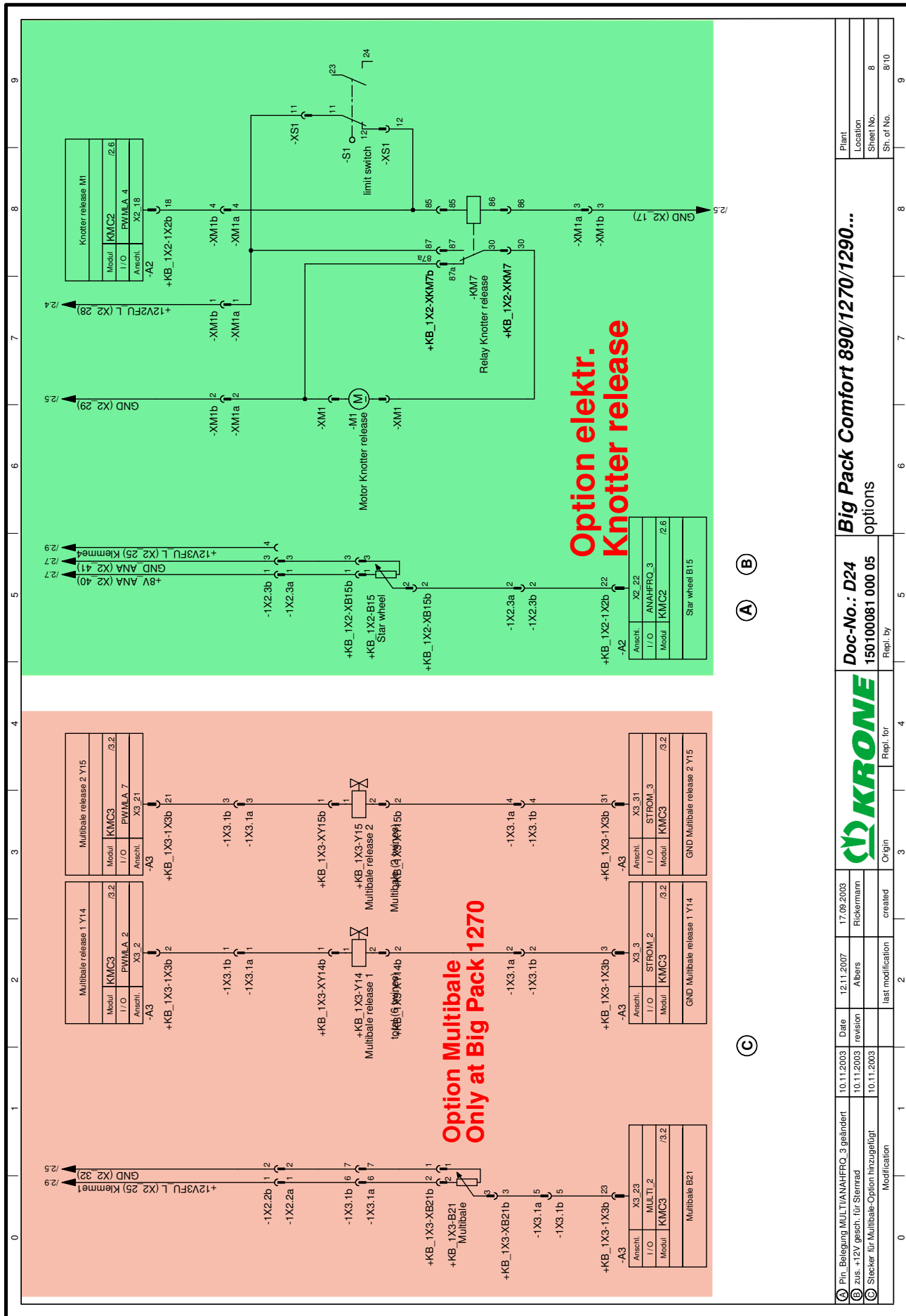
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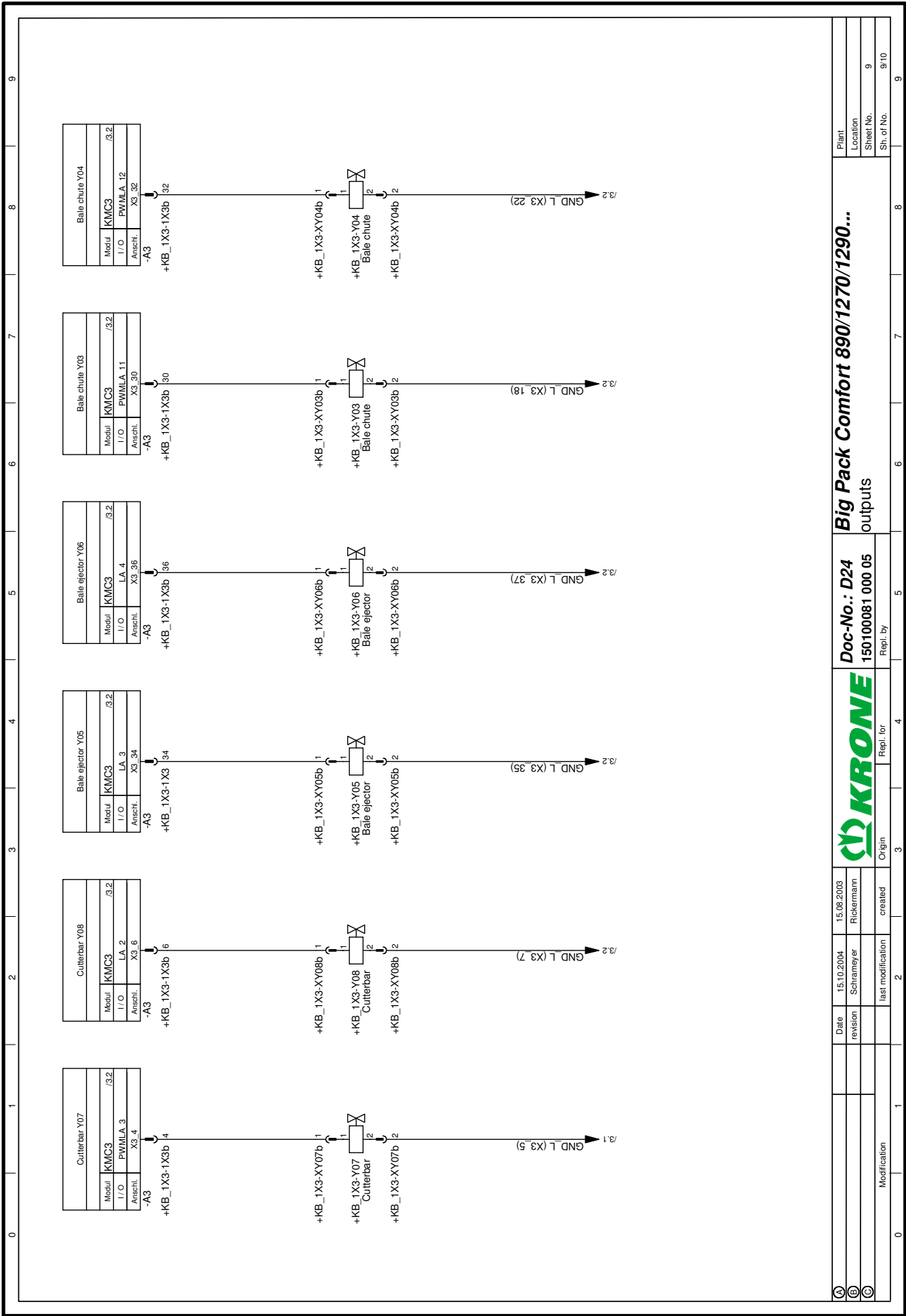


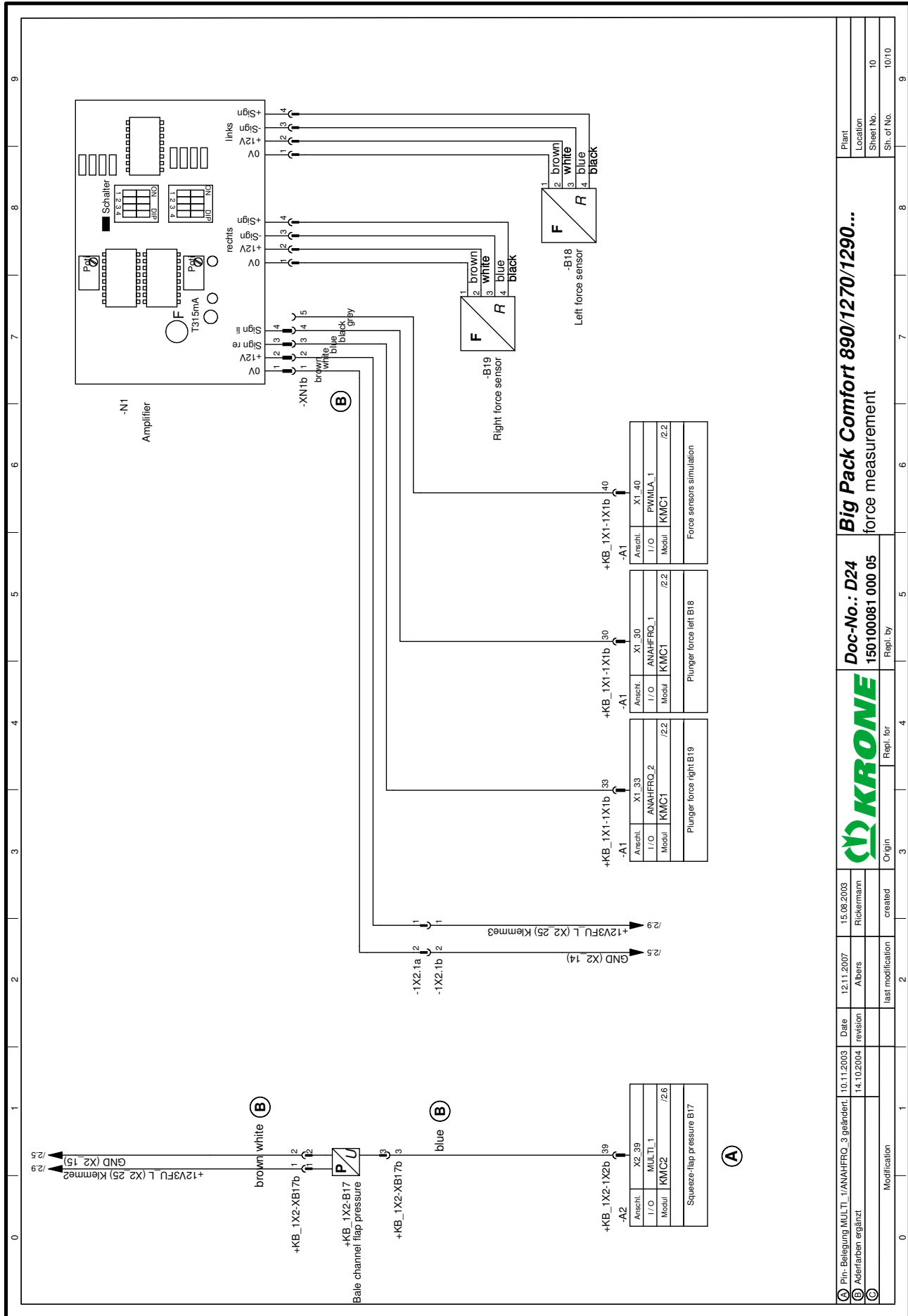












Big Pack Comfort 890/1270/1290...
force measurement

Doc-No.: D24
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KRONE

Pin-Belegung MUL.TI.: 1/ANAHFRQ_3 geändert.	10.11.2003	12.11.2007	15.08.2003
Aderfarben ergänzt	14.10.2004	revison	revison
Modifikation		last modification	created
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		last modification	created



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