



KRONE

Operating Manual

No. 382-5 GB

Big Baler

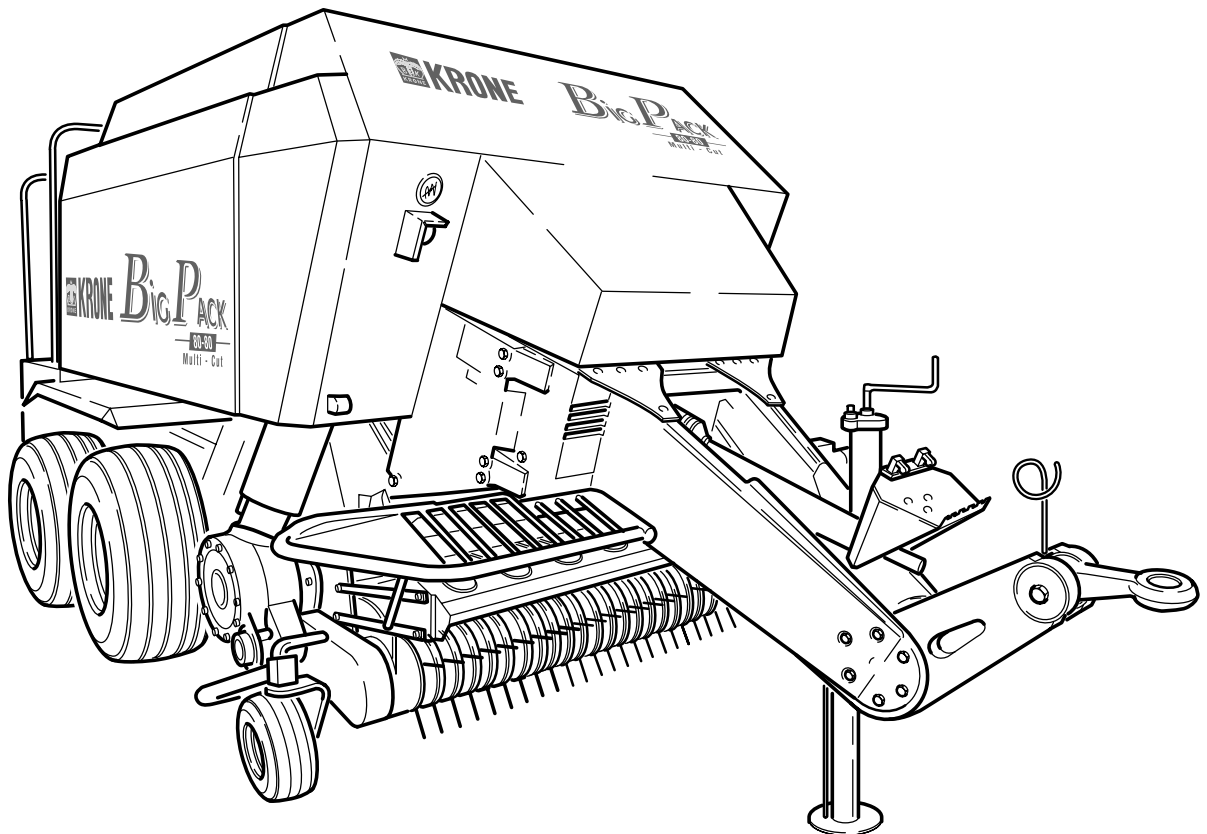
Big Pack 120 - 80

Big Pack 80 - 80

Big Pack 120 - 80 MultiCut

Big Pack 80 - 80 MultiCut

(from machine no. 423 887)



I. Foreword

Dear customer

Thank for the confidence you have placed in our company by buying this machine.

Upon delivery your Dealer will have given you a brief introduction to the operation, maintenance and adjustment of the machine.

However, these **basic instructions** are not a full substitute for a thorough study of the various tasks, functions and handling procedures for the machine.

The operating manual informs you in detail of the steps you must take, from commissioning, to operation, to care and maintenance. The layout of the individual chapters is designed so that the text and illustrations reflect the working procedures you need to follow when operating the machine.

Please read these operating instructions thoroughly before using the machine for the first time, and pay particularly close attention to the safety advice given.

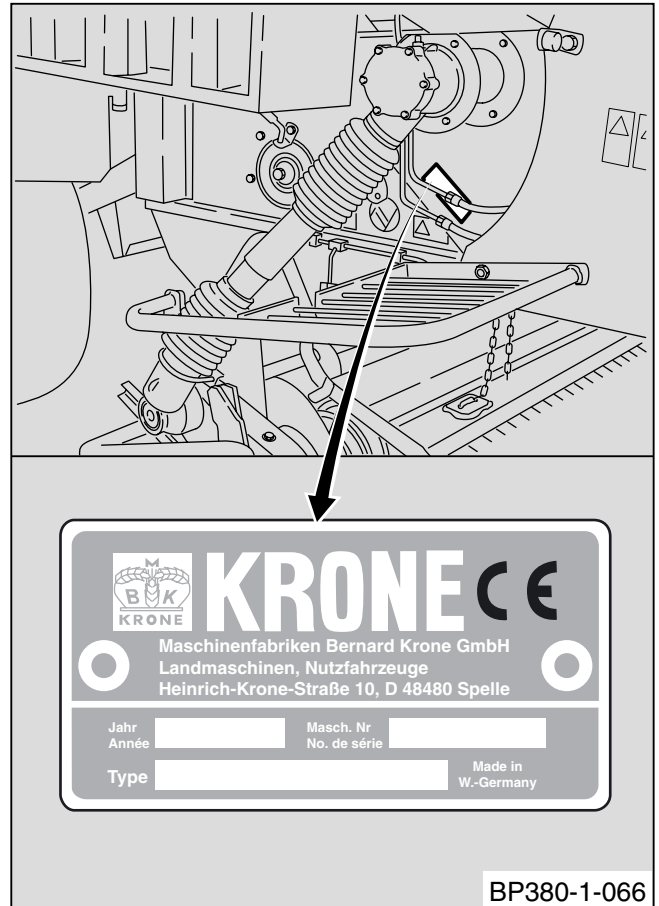
Important: To prevent accidents and achieve maximum performance, please refrain from making any changes or conversions to the machine without the manufacturer's permission, and only use the machine under the conditions specified by Krone.



This symbol draws your attention to safety advice in the operating manual. Please follow this advice to prevent accidents.

All information, illustrations and technical specifications in this manual were up to date when the manual went to press. We reserve the right to make design modifications at any time without notice or explanation.

Ordering spare parts



Type

Machine no.

Year of construction

When ordering spare parts please quote the machine type, machine number and year of construction. This information is provided on the nameplate.

We recommend that you enter these details in the boxes above so that it is at hand when you need it.

And please remember: Imitations and copies of parts, in particular wearing parts, are not as reliable as they might appear! Visual inspection of material quality is practically impossible, so be very careful with cheap offers and imitations!

Original KRONE spare parts are best by test!

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III. General

1. Using the machine for its intended purpose

The big baler was designed and built for standard agricultural use only (its intended purpose).

Any use over and beyond this is considered improper. The manufacturer shall not be held liable for damage resulting from such improper use, which is undertaken at the user's own risk.

Using the machine for its intended purpose includes following the operating, maintenance and repair instructions provided by the manufacturer.

Persons who use, service or repair the big baler must be familiar with the machine and must have been informed about the hazards involved.

Relevant accident prevention regulations and all other codes of good practice concerning technical safety, health at work, and the rules of the road, must be observed.

The manufacturer shall not be held liable for damage resulting from modifications made to the machine without the manufacturer's approval.

Basic rule:



Before driving on public roads or starting up the machine, make sure the big baler and tractor are roadworthy and safe for operation.

2. Safety and accident prevention regulations

1. Besides the safety advice in this manual, please follow all generally applicable safety and accident prevention regulations.
2. The attached warning signs and notices provide important information about safe operation; follow them for safety's sake!
3. Observe traffic laws when using public roads.
4. Before commencing work, familiarise yourself with all facilities and controls and their functions. There will be no time for that later!

5. The user should avoid wearing loose or baggy clothing.
6. Keep the machine clean to prevent the risk of fires.
7. Before starting the machine and commencing work, check the vicinity of the machine (children!). Make sure you have a clear view.
8. Riding on the implement during work and during transport trips is not allowed.
9. Attach implements correctly. Always attach and secure them to the specified devices.
10. When attaching or detaching an implement, use the parking stand in the appropriate position.
11. Exercise particular care when attaching and detaching implements to and from the tractor.
12. Always attach ballast weights correctly to the designated fixing points.
13. Observe the maximum axle loads, gross weight and transport dimensions.
14. Inspect and install transport equipment such as lighting, warning facilities and (if applicable) guards.
15. The actuating mechanisms (cables, chains, linkages etc.) of remotely actuated equipment must be positioned so that they cannot cause unintentional movements in any transport or working positions.
16. Keep public road driving equipment in good working condition and lock according to the manufacturer's instructions.
17. Never leave the cab while the machine is in motion.
18. Always drive at a speed appropriate to the prevailing conditions. When driving uphill or downhill, or across a gradient, avoid sudden changes of direction.
19. Mounted or trailed implements influence the driving, steering and braking response of the machine. Make sure you can steer and brake as required by the situation.
20. When turning corners, take account of the wide overhang and/or centrifugal force of the implement.
21. Do not operate implements unless all guards are mounted and in operating position.
22. Keep clear of the working area of the machine.
23. Keep clear of the turning and swivelling area of the implement.

24. Do not operate hydraulic folding frames when there are people in the swivel area of the machine.
25. Devices operated by separate sources of power (e.g. hydraulics) contain parts that can crush extremities.
26. Before leaving the tractor, lower the implement to the ground, turn off the engine and remove the ignition key.
27. Keep clear of the space between the tractor and the implement unless the vehicle has been secured against rolling by the handbrake and/or wedges under the wheels.

3. Trailer implements

1. Secure the implements against rolling.
2. Observe the maximum supported load of the coupling, swinging drawbar or hitch.
3. If a drawbar coupling is used, make sure there is enough freedom of movement at the coupling point.

4. Power take-off shaft (PTO) operation

1. Use only the PTO shafts specified by the manufacturer.
2. The guard tubes and cones of the PTO must be fitted and in good working condition.
3. Make sure the tube covers are in place for PTO shafts in transport and working positions.
4. To mount or remove the PTO shafts, the PTO shaft must be switched off, the engine turned off and the ignition key removed.
5. If using PTO shafts with an overload safety or overrunning coupling that is not covered by the guards on the tractor, mount the overload safety coupling or overrunning coupling on the implement side.
6. Always ensure that the PTO shaft is correctly mounted and secured.
7. Hook the chain in place to prevent the PTO shaft guard from rotating.
8. Before switching on the PTO shaft, make sure the chosen PTO shaft speed of the tractor matches the speed of the implement.

9. Before switching on the PTO shaft, make sure no one is in the hazard area of the implement.
10. Never switch on the PTO shaft when the engine is turned off.
11. When working on the PTO shaft, people must keep clear of the rotating PTO or jointed shaft.
12. Always switch off the PTO shaft if the angle becomes too sharp and it is not required.
13. **Caution:** After switching off the PTO shaft, the flywheel will continue to rotate and can be dangerous. Keep clear of the implement while the flywheel is still moving. Do not work on it until the machine has come to a complete standstill and the flywheel has been secured by the handbrake.
14. Before doing any cleaning, lubricating or adjustment work on PTO shaft-driven implements or the PTO shaft, switch off the PTO shaft, turn off the engine and remove the ignition key. Secure the flywheel with the handbrake.
15. Place the disconnected PTO shaft on the designated bracket.
16. After removing the PTO shaft, attach the protective sheath to the PTO shaft stub.
17. If damage occurs, repair it immediately before working with the implement again.

5. Hydraulic system

1. The hydraulic system is under pressure.
2. When connecting hydraulic cylinders and motors, make sure the hydraulic hoses are connected correctly.
3. When connecting the hydraulic hoses to the tractor hydraulics, make sure the hydraulics are free from pressure on both the tractor and the implement side.
4. It is important that hydraulic connectors are marked to prevent false operation. If the connections are swapped, the function will be reversed (e.g. raise/lower) and **can cause accidents**.
5. Check hydraulic hoses regularly and replace them if damaged or aged. The new hoses must meet the technical requirements of the machine manufacturer.
6. When looking for leaks, use appropriate means to avoid the risk of injury.

7. Fluids escaping under high pressure (hydraulic oil) can puncture the skin and cause serious accidents. If injured, seek medical help immediately. Infections are possible!
8. Before working on the hydraulic system, lower the machine to the ground, depressurize the system and turn off the engine.

10. If a gas accumulator is used, only use nitrogen for filling. **Other gases can cause explosions!**

6. Tyres

1. When working on the tyres, make sure the implement is lowered and secured against rolling (wedges).
2. Fitting wheels and tyres requires adequate knowledge and the right tools.
3. Repair work on the tyres and wheels must be conducted only by specialists with suitable tools.
4. Check the air pressure regularly and make sure it complies with specifications.

7. Maintenance

1. Always turn off the drive and make sure the engine is turned off before doing any repair, maintenance, cleaning or troubleshooting work. Remove the ignition key. Secure the flywheel with the handbrake.
2. Check nuts and bolts regularly for tightness, and tighten if necessary.
3. When performing maintenance on a raised implement, always use suitable means to secure it against dropping.
4. When replacing working parts with sharp edges, use suitable tools and wear gloves.
5. **Dispose of oil, grease and filters correctly.**
6. Always disconnect the power source before working on the electrical system.
7. If guards and protective equipment are subject to wear, check them regularly and replace them in time.
8. When doing electric welding work on the tractor or mounted equipment, disconnect the cable from the generator and battery.
9. Spare parts must at least satisfy the technical requirements specified by the equipment manufacturer.

This is guaranteed by original KRONE spare parts.

1. Introduction

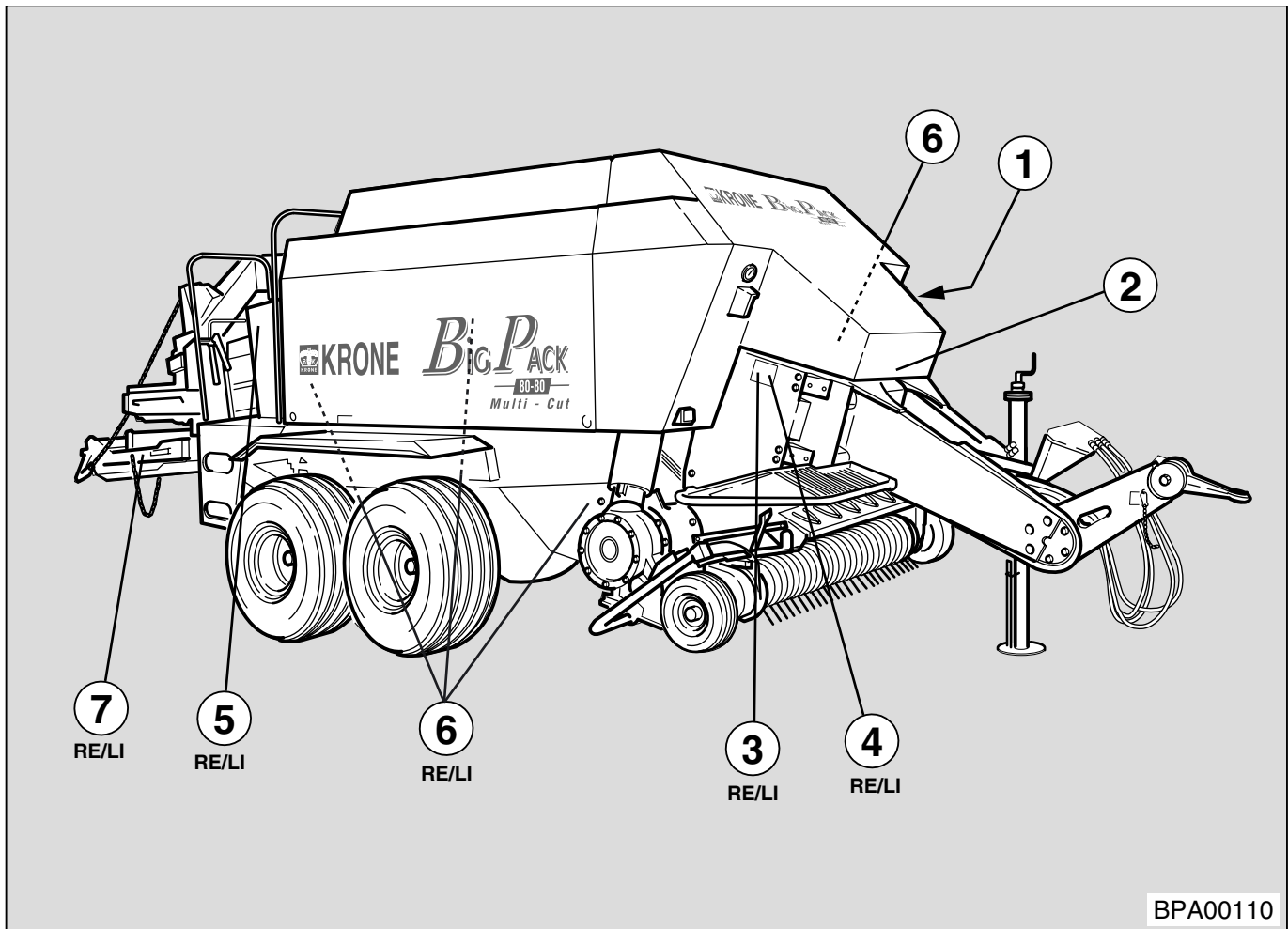
The KRONE Big Baler is equipped with all safety devices (guards) required. Not all danger areas in this machine can be rendered completely safe as the machine must remain functional. You will find corresponding danger signs on the machine which refer to the remaining danger.

We have represented the danger signs in the form of so-called warning symbols. You will find important notes on the positions of these danger signs as well as their meaning and supplementary information below!



Familiarise yourself with the meaning of the adjacent warning symbol. The adjacent text and the selected fixing point on the machine give information on the special danger areas in the machine.

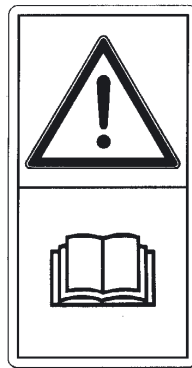
1.1 Positioning of the Warning Signs on the Big Pack Baler



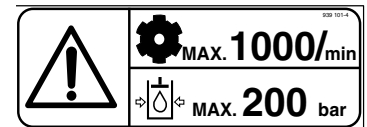
①

Before putting the machine into operation read and observe the operating instructions.

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.: 939 101-4 (1x)

③

Danger from rotating augers.

Order No.: 939 520-1 (2x)



④

Never reach into the pick up working area while the machine is running.

There are stickers located on both the left and right sides of the machine.

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



⑤

Do not mount the machine while the PTO shaft is connected and the engine is running.

There are stickers located on both the right and left hand step to the working platform.

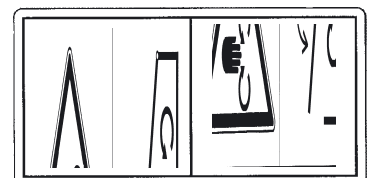
Order No.: 939 408-2 (2x)



⑥

Close the guard before putting into operation!

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



⑦

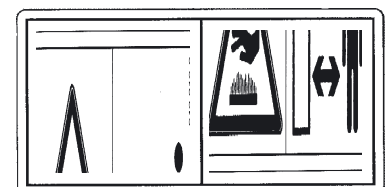
Never put your hand into the danger area as long as parts may be moving.

(only for pack chute with guide rollers)

Order No.: 942 196-1 (2x)



⑧

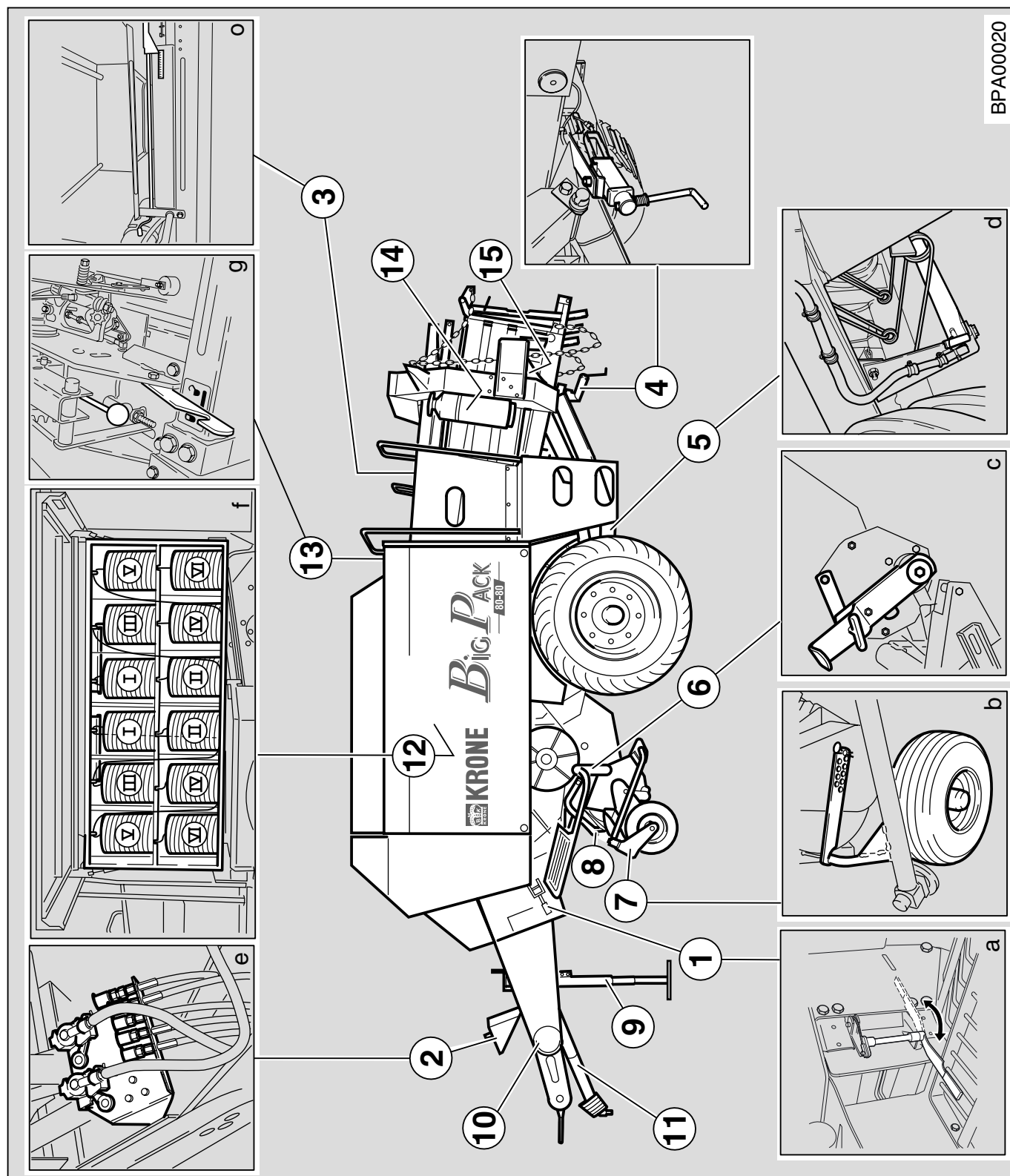


Genügend Abstand von heißen Flächen halten.

(only for Compressor)

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

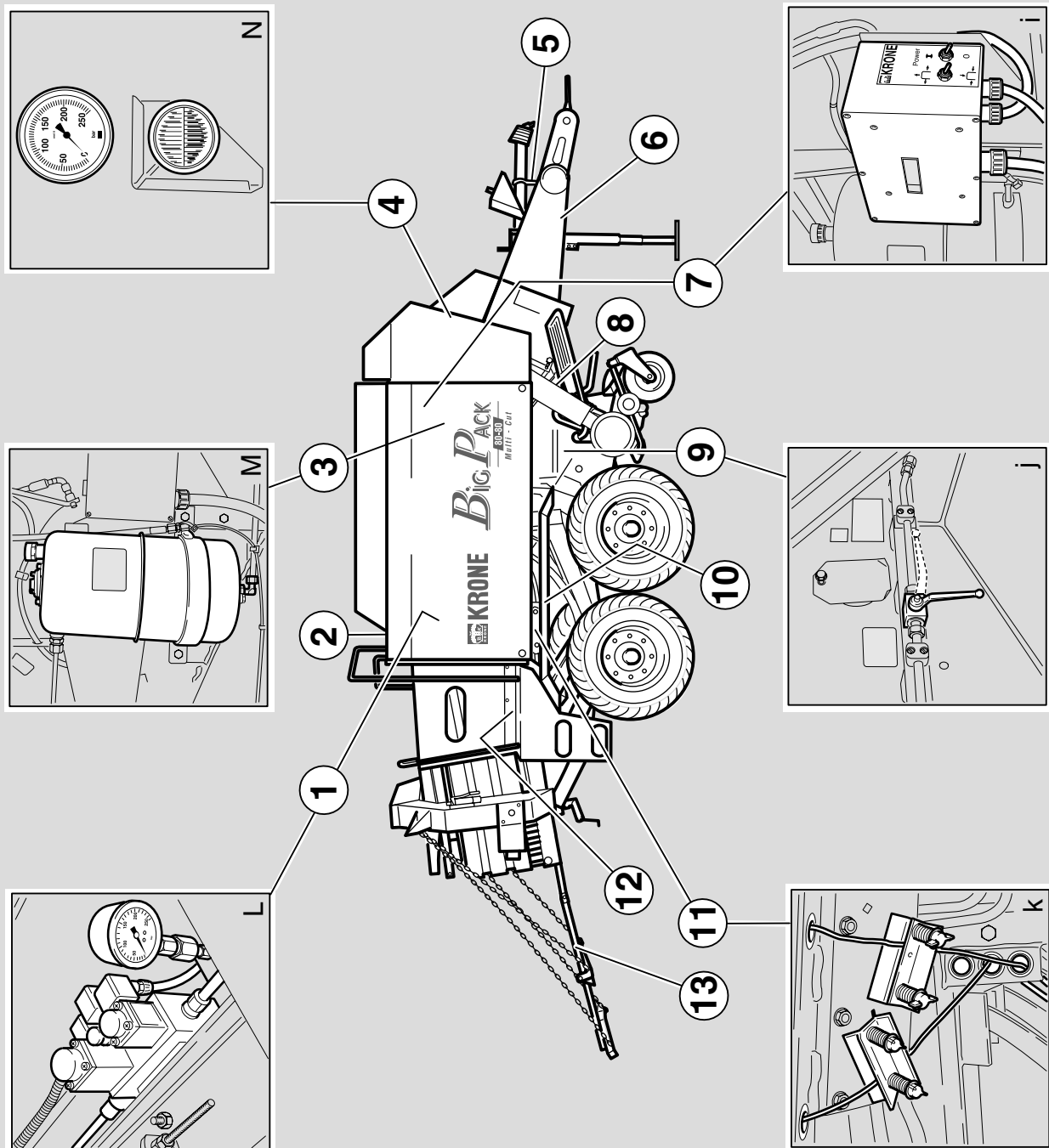
1.2 Overview of the Big Pack Baler with Individual Axle (Left Side)



- | | |
|--|---|
| 1. Mechanical Flywheel Holding Brake | 9. Jack Stand |
| 2. Bracket for Quick-Release Coupling and Plug | 10. Adjustable Swinging Drawbar |
| 3. Longitudinal Adjustment of Packs | 11. Wide Angle PTO Shaft with Overload Protection Mechanism and Free-Wheel Facility |
| 4. Crank for Parking Brake | |
| 5. Twine Controller and Tensioning Mechanism | |
| 6. Cutting Mechanism Switching Lever | 12. Twine Box |
| 7. Pick Up with Feeler Wheel | 13. Manual Actuation of Knotter and Knotter Shaft Lock |
| 8. Baffle Plate | 14. Fire Extinguisher |
| | 15. Wheel Chocks |

1.3 Overview of Big Pack Baler with Tandem Axle (Right Side)

BPA00030



1. Electronic Control Valves with Pressure Gauges
2. Knotter Shaft
3. Hydraulic Oil Reservoir Tank
4. Indicator Lamp and Front Pressure Gauge
5. PTO Shaft Jack Stand for Bottom Attachment
6. Adjustable Swinging Drawbar
7. On-Board Computer

8. PTO Shaft for MultiCut
9. Shut-Off Tap for Pick Up Hydraulics
10. Slewable Mudguard
11. Twine Brake beneath the Twine Box
12. Maintenance Platform
13. Folding Pack Chute

1.4 Technical Data

	Big Pack 80-80 (with BigCut cutting system)			Big Pack 120-80 (with BigCut cutting system)			Big Pack 80-80 with MultiCut cutting system			Big Pack 120-80 with MultiCut cutting system			Pick-up
	Individual Axle 40 km/h	Tandem 40 km/h/62 km/h	Individual Axle 40 km/h	Individual Axle 40 km/h	Tandem 40 km/h/62 km/h	Individual Axle 40 km/h	Individual Axle 40 km/h	Tandem 40 km/h/62 km/h	Individual Axle 40 km/h	Individual Axle 40 km/h	Tandem 40 km/h/62 km/h	Tandem 40 km/h/62 km/h	with roller feelers
Length in Working Position [mm]	8450 (Standard chute)												
Length in Transport Position [mm]	7350 (Standard chute)												
Height [mm]	2500						2600						
Weight [kg]	5980 (6010)		6400 (6430)		6600 (6630)		7020 (7050)		7380		7980		
Width [mm]	2420		2620		2860		2970		2620		2970		2600 (Standard) 2750 (MultiCut)
Tyres	600/50-22,5		500/50-R17		600/50-22,5		500/50-R17		600/50-22,5		500/50-R17		15x6.00-6
	1,5	1,0	1,5	2,0	1,5	1,5	1,0	2,0	1,5	1,0	1,5	2,0	
Tyre Pressure [bar]	1820		2065		2220		2465		1820		2065		2465
Track Width [mm]	800		800		800		800		800		800		2,5
Pack Channel Height [mm]	800		800		1200		1200		800		1200		
Width [mm]	von 1000 bis 2500 (infinitely variable)												
Pack Length [mm]	1950												1950
Pick Up Collection Width [mm]	1950												
Knötter (Raspe)	4												
Number of Knotters	6												6
Power Requirement	65 kW (85 PS)			69 kW (90 PS)			88 kW (115 PS)			92 kW (120 PS)			
Cutting mechanism (Nu. of blades)	(3)			(5)			15			25			
safety coupling:													
• Knötter shaft	Hex.shear bolt M8x50 DIN 931-8.8 (shorten to 38 mm)			Dowel screws M8x40 DIN 610-8.8			Hex.shear bolt M8x50 DIN 931-8.8 (shorten to 38 mm)			Dowel screws M8x40 DIN 610-8.8			
• Drive PTO shaft	Slip clutch Md = 1350 Nm with free wheel						Slip clutch Md = 1550 Nm with free wheel						
• Pick-up	Over-run clutch Md = 300 Nm						Over-run clutch Md = 450 Nm						
• Cutting system							4500 Nm						
• Fly wheel	cam-type cut-out Md = 3500 Nm												
• Needle yoke	Hex. shear bolt M 10x60 DIN 931-8.8												
• Feed rake	autom. ratchet clutch (Einstellung nur werkseitig möglich!)												

PTO Shaft Speed	1000 rpm
PTO Shaft	Tractor-wide angle Machine-free wheel slip clutch
Hitching	Trailer coupling; Swinging drawbar (permitted load min. 1200 kg; MultiCut = 1500 kg) (height of swinging drawbar variable)  Caution! When making an adjustment the hexagonal screws M16 must be tightened up to 210 Nm, M20 must be tightened up to 425 Nm and M24 with be tightened up to 710 Nm
Support	Support foot, retractable – variable height.
Pick up Drum	Hydraulic lifting Height adjustment via bar with holes on support wheel. Tine carrier 5 piece No. of tines 13 double tines/tine carrier
Lateral Feed	Right and left augers
Crop Feed	Forced entry via feed rake drum Feed rake drum with 5 conveyor feed rakes, 1 feeder rake A cutting drum is connected in series with MultiCut.
Baling ram	Hublänge 750 mm 50 ram strokes per minute for 80 - 80 type 38.5 ram strokes per minute for 120 - 80 type The baling ram moves on 4 guide rollers 5 blades on the type 80 - 80 ram 7 blades on the type 120 - 80 ram 2 blades in the bale channel for both types
Adjusting the baling pressure	electronic-hydraulic regulation via an adjustable pressure relief valve, adjustable from the tractor
Twine box	both sides, 12 rolls of twine for each
Twine	Synthetic fibre, 130–150 m/kg
In case of reaching end of roll and of broken twine	Electric twine control with acoustic and optical signal.
Ejecting residual packs	Standard Roller chute Mechanism via a twin action control valve, operated from the tractor. Double-acting control valve of the tractor operating valve for chute and remaining bale ejector at the rear right of the machine
Depositing packs	Two part pack chute (must be folded up during transport).
Holding brake	Operation by crank located on the left hand rear side of the baler

Brake Connections on the Tractor

Balers with compressed air actuated brake	Dual line brake system required
Balers with hydraulically actuated brake	Connection for hydraulic brake system required Max. operating pressure 120 bar

Hydraulic Connections on the Tractor

Pick up lifting
Residual pack ejection
Flywheel brake
Blade controle MultiCut
Swath Distributor

Single action control valve
Double action control valve
Single action control valve
Single action control valve
Double action control valve

Electrical Connections on the Tractor

Baler lighting
Constant current supply for the baler electrical control system (direct battery connection required)

7-pole socket
3-pole socket

Lubricant Quantities and Designations for the Gearboxes

Bio-Lubricants

	Quantity lit	Designation/Brand	Designation/Brand
Main gearbox	15	SAE 90 or Esso-Spartan EP 150 Shell Omala Öl 150 Fuchs - EP 85 W90 Castrol EPX 90	on request
Rake gearbox	2,5		
Transfer gearbox Knoter/Raffer	0,8		
Angular gearbox up to the pick-up	0,8		
Angular gearbox down to the pick-up	0,15		
Cutting system gearbox for MultiCut top	2,75		
Cutting system gearbox for MultiCut bottom	3,85		

Oil Quantities and Designations for the On-Board Hydraulics

	Quantity lit	Designation/Brand	Designation/Brand
Oil container on baler	10	Fuchs Renolin MR 46 MC BP Energol SHF 46 Shell Tellus 46 Esso Univis N 46 Aral Vitan VS 46	on request

Oil Quantities and Designations for the compressor

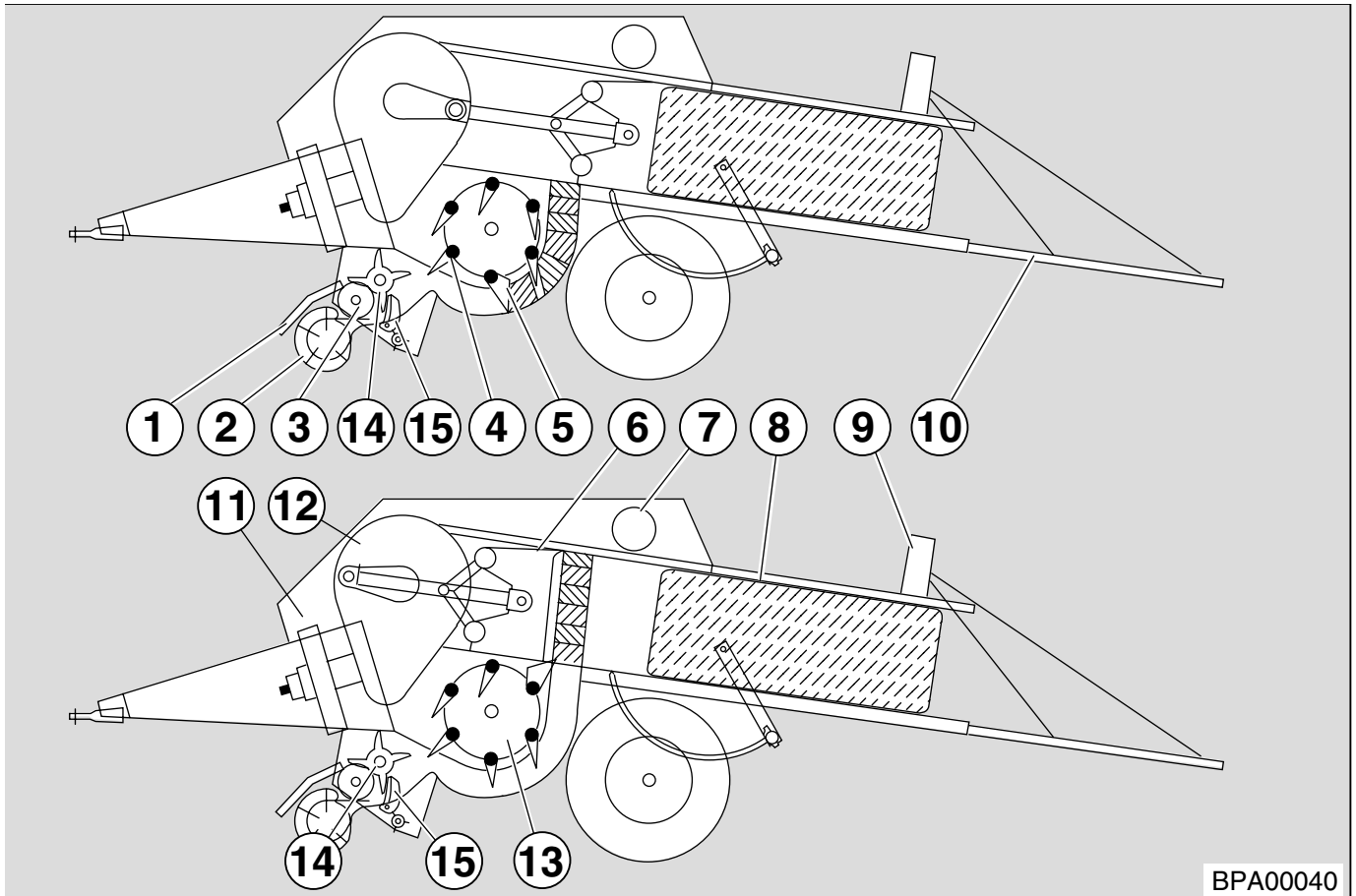
	Quantity lit	Designation/Brand	Designation/Brand
	up to the top dipstick marking	Standard engine oil SAE 20 or 20 W 40	on request
	0,2 l		



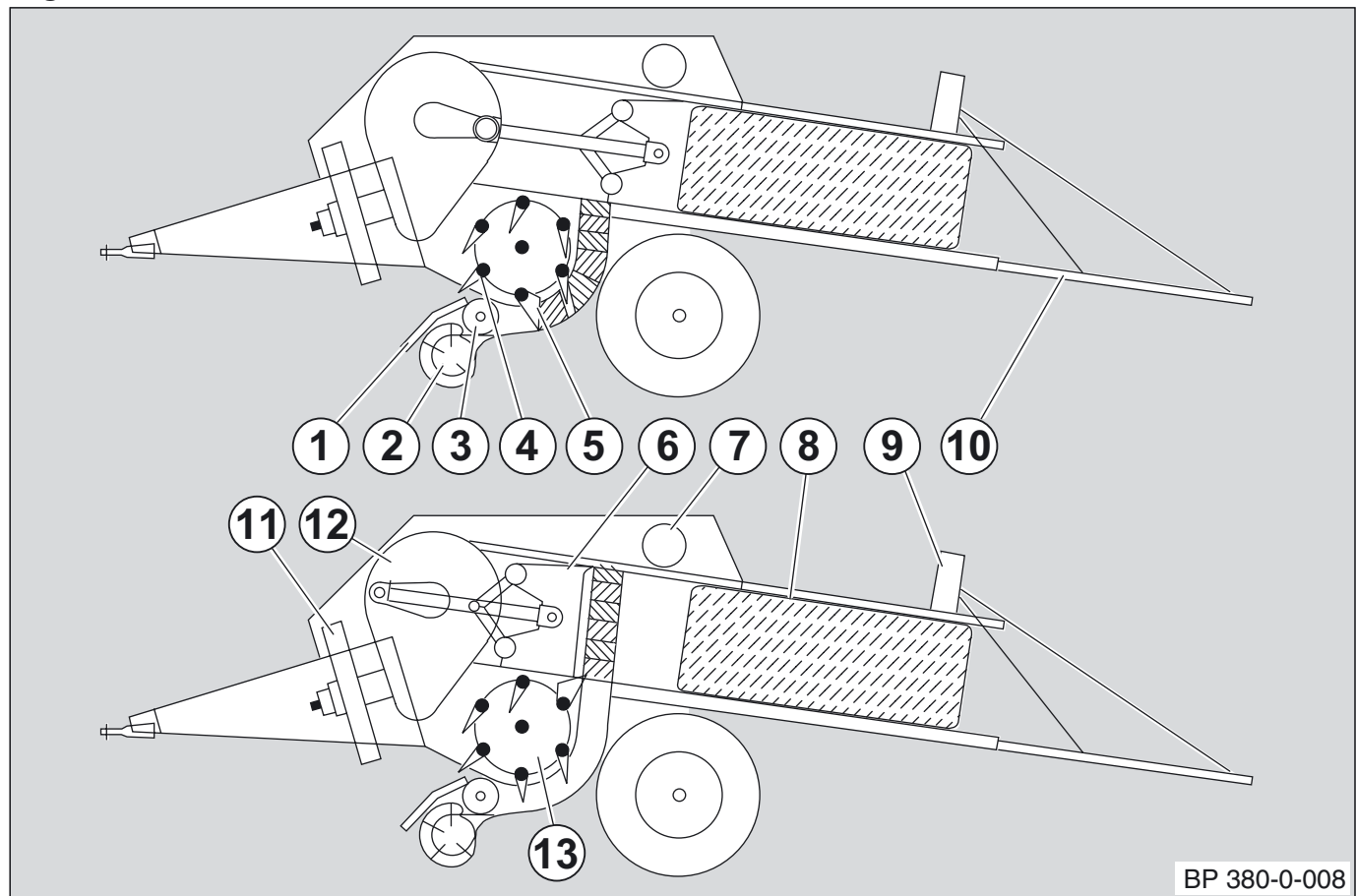
When using bio-oils, always change the oil at the specified intervals due to aging of the oils.

1.5 The BIG PACK Baler Working Method

Multi Cut



Big Cut



The **BIG PACK** Baler must be driven by a tractor with at least a 66 kW (90 bhp) power output.

The **BIG PACK** Baler is hitched to the trailer coupling or the swinging drawbar.

The swinging drawbar is fitted with a height adjustment feature so that the big pack baler can operate in a horizontal position.

The drive to the **BIG PACK** is via a PTO shaft which transmits the torque from the tractor via a flywheel mass (11) to a straight bevel gear pair (12). The maximum input speed of 1000 rpm may **not** be exceeded, as there is a risk of the machine being damaged.

The PTO shaft is equipped with a wide angle joint on the tractor side. The operating instructions for the PTO shaft are located at the PTO shaft. Before putting the big pack baler into operation, the operating instructions for the PTO shaft should also be read. These detail in particular the shortening of the PTO shaft as well as any repair and maintenance work.

The 2 m wide pick up (2) collects the crop cleanly. A height-adjustable baffle plate (1) ensures error-free collection and helps prevent blockages. The baling material is carried via 2 filling augers (3), which are on the left and right side of the pick-up, to the rake drum (13) or the cutting rotor (14) and blades (15).

The pick up can be raised and lowered with the tractor hydraulics. The feeler wheels on the pick up are height-adjustable so that the optimum pick up collection height is always reached.

The conveyor feed rakes (4) fill the conveyor channel. The crop is pre-compressed by the action of the rakes. A feeder rake transports the crop further into the bale channel.

In the bale channel the pre-compressed crop is pressed to a highly compressed big pack by the baling ram (6). The length and of course the density of the pack are infinitely variable.

Big packs can therefore be produced for the most varied of requirements.

The baling ram thrust is controlled automatically by the hydraulic cylinder (9) at the bale channel flaps. When the set pack length has been reached, the knotter mechanism star wheel projecting into the bale channel is actuated. The **Big Pack 120 - 80** is equipped with 6 knotters (7) and the **Big Pack 80 - 80** with 4 knotters (7). The packs are deposited by a two-part pack chute (10).

Special Equipment

Cutting system:

The Big Pack can optionally be fitted with a cutter mechanism in the conveyor channel. The cutter mechanism serves to chop up the crop, principally for silage. The big packs can also be better distributed again.

Swath distributor:

A swath distributor is available as an extra to ensure an even feed of the bale channel with narrow swathers.

Hydraulic folding bale chute with rollers:

Especially when using the big baler for baling grass silage, the rollers in the bale chute make it easier to deposit the bales.

Compressor:

If hydraulic brakes are used on the big baler, a compressor can be installed as an extra for knotting device cleaning.

2. Preparing the Big Pack Baler

2.1 Special Notes on Safety



- Particular care is required when attaching the big pack baler to or detaching it from the tractor. There must be nobody between the tractor and the big pack baler. After coupling, switch off the engine and remove the ignition key. Apply the flywheel brake.
- When carrying out care, maintenance, adjustment and repair work, always switch off the PTO shaft, switch off the engine and remove the ignition key.
- Only put the big pack baler into operation when all protective devices have been attached and are in the correct positions.
- The big pack baler may be operated with a maximum PTO shaft speed of 1000 rpm.
- Only PTO shafts specified by the manufacturer with the correct overload coupling and free wheel facility may be used.
- The PTO shaft may only be attached and detached when the tractor PTO shaft is switched off, the engine is switched off and the ignition key is removed.
- Lay hoses and connection cables in such a way that they are not under tension and do not come into contact with the tractor wheels when going round corners.
- Check hydraulic hose lines regularly and replace if damaged or aged.
- When connecting hydraulic hoses to and disconnecting them from the tractor hydraulics make sure that the hydraulics both in the tractor and in the machine are not pressurised.

2.2 Adjusting the Height of the Swinging Drawbar



- Secure the big pack baler from rolling away by using wheel chocks and putting on the parking brake.
- Use suitable parking stands to support the big pack baler.
- Risk of crushing feet when winding down the jack stands.

The drawbar can be set for either top or bottom attachment. The tractor attachment height can be adjusted in both the "top attachment" and the "bottom attachment" positions (three-point linkage or pending attachment).

The big baler must be attached horizontally to ensure an optimum working method. The bottom of the twine box is used as a match edge here.

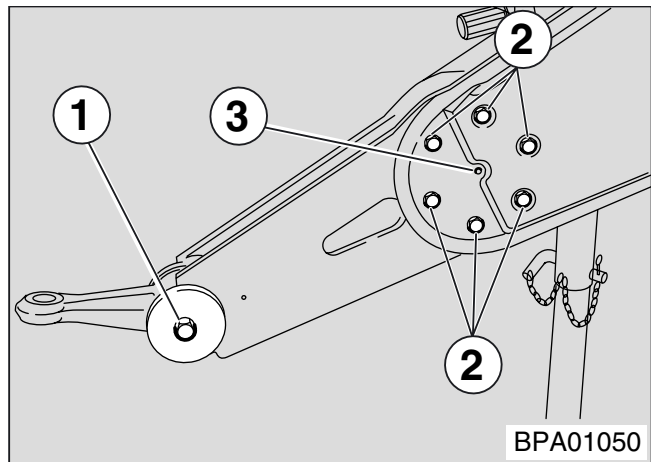
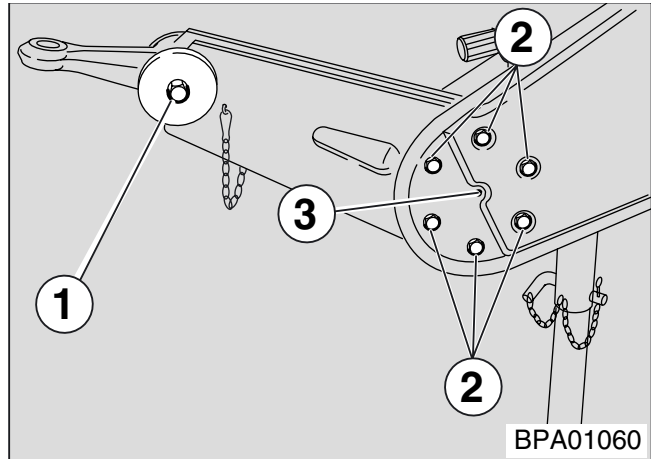


Before starting adjustment work, place the big baler on the parking leg and uncouple the tractor.

Adjusting the attachment height

To adjust the drawbar height unscrew the screws (2) on both sides. Screw in two of the screws (2) on both sides in the thread bore (3) until the drawbar can be turned. Insert the remaining screws (2) in the selected position. Remove screws from thread bore and tighten all screws (2). After loosening the screw (1) move the ring hitch into a position parallel to the ground. Tighten screw (1).

See page 59 for torque moments



The fastening screws for the PTO shaft spacer must be unscrewed. These may be retightened only after the screws (2) have been tightened. Make sure there is a non-distorted allocation of spacer and PTO shaft here.

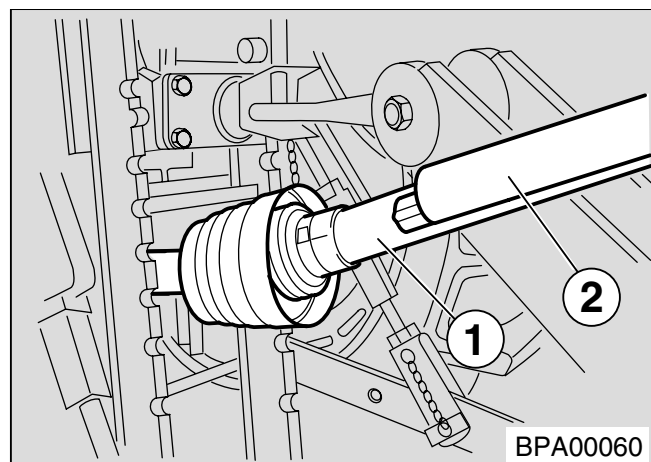
2.3 Adapting the Main PTO Shaft



- Before sliding the PTO shaft on to that on the tractor, switch off the tractor PTO shaft, switch off the engine and remove the ignition key. Apply the flywheel brake.
- Secure the big pack baler and the tractor from unintentional rolling away.
- Nobody may be between the tractor and the big pack baler when carrying out the cornering required for the adaption of the PTO shaft length.

To adapt the length of the PTO shaft attach the big pack baler to the tractor. The shortest PTO shaft position is reached when going round tight corners.

To measure, take the PTO shaft apart and slide each half (1) and (2) on to the baler and the tractor respectively. The exact procedure for the length adaption can be found in the PTO shaft manufacturer's operating instructions.



2.4 Putting the Big Pack Baler into Operation

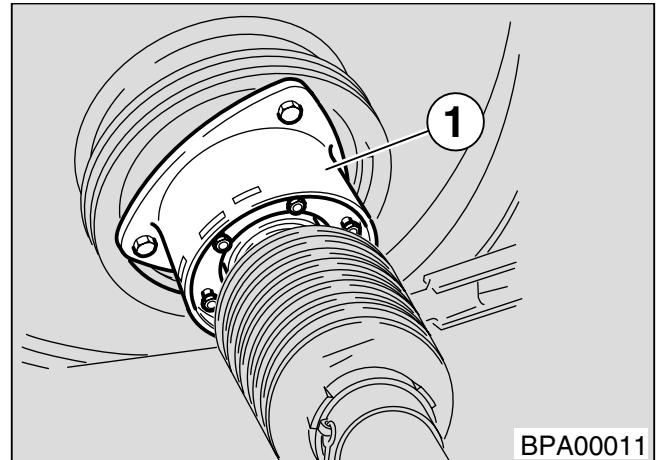
2.4.1 General

Main Drive

A straight bevel gear pair provides the main drive. The necessary torque is transmitted by the PTO shaft and a large flywheel mass. The maximum PTO shaft speed of 1000 rpm may not be exceeded. The PTO shaft on the machine is fitted with a slip clutch with a free wheel facility (1) as a safety measure.



There is a cam-type cut-out clutch located on the rear side of the flywheel mass. As soon as the clutch engages, stop the machine, turn off the PTO shaft immediately and brake the flywheel hydraulically or by hand. The cam-type cut-out clutch switches on again automatically once the fault has been eliminated.

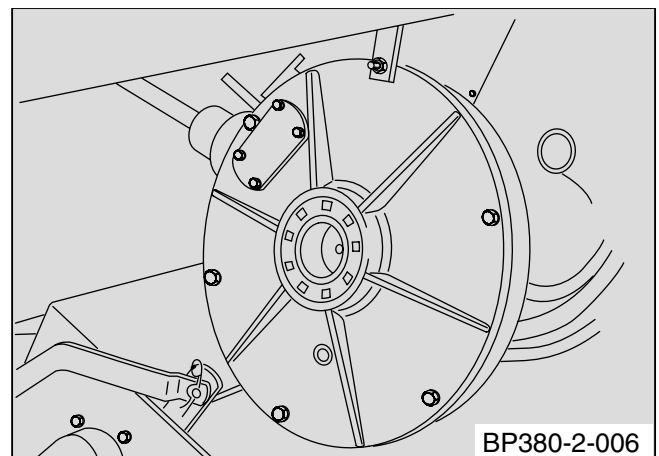


Feed Rake Drum Drive

The drive for the feed rake drum is located on the left hand side of the machine. The gearbox is fitted with a spring-loaded ratchet clutch as a safety measure.

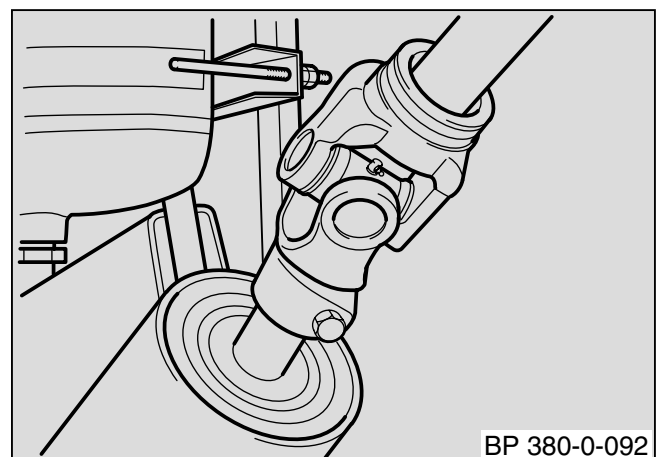


As soon as the ratched clutch engages, stop the machine, turn off the PTO shaft immediately. The ratchet clutch starts working again automatically once the fault has been eliminated.



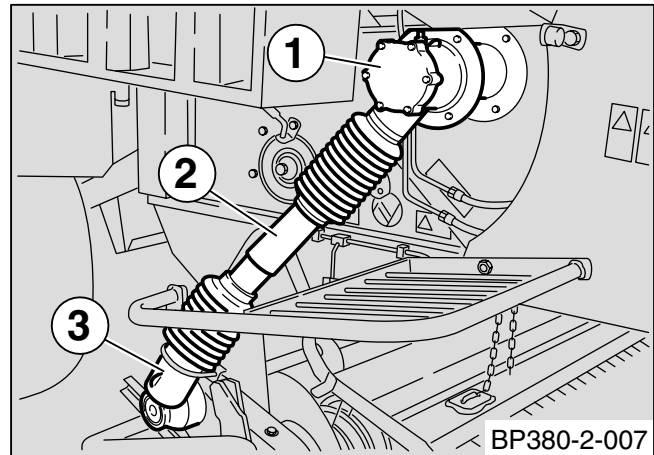
Knotter Shaft Drive

The drive for the knotter shaft is provided by an angular gear arrangement. A PTO shaft transmits the torque to the knotter shaft.



Pick Up Drive

The drive for the pick up is located on the right hand side of the machine. The torque is transmitted by a bevel gear arrangement (1) downwards through a PTO shaft (2) with an overload protection mechanism (over-run clutch) to an angular gear (3).



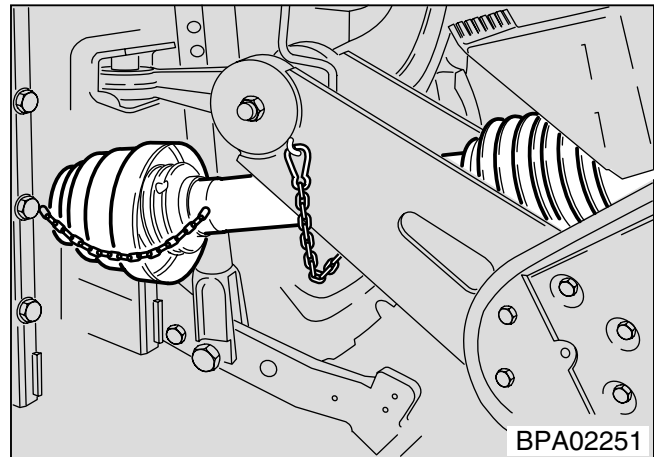
2.4.2 Attaching the Big Pack Baler to the Tractor

Hitching



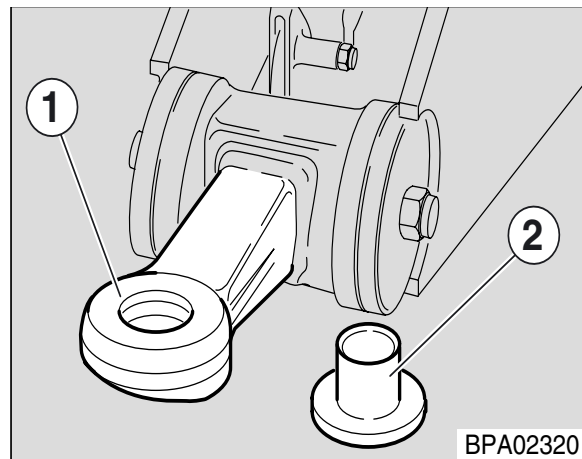
- Nobody may be between the tractor and the baler when reversing the tractor up to the big pack baler.
- Observe the maximum supported and towed loads for the hitching mechanism on the tractor.

Attach and secure the big pack baler to the tractor hitching mechanism as specified.



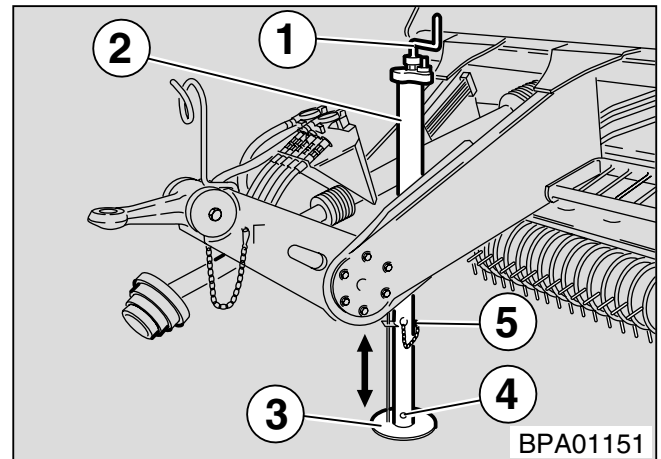
Spacer Bush for the Swinging Drawbar with Bottom Attachment

Swinging drawbars often have a retaining bolt with a diameter smaller than for the hitch. For this reason a spacer bush (2) is supplied along with big pack balers with bottom attachment, which can be used with the tractor hitch (1) when required.



Jack Stands

As soon as the big pack baler is hitched up, take the load off the support foot (3) by turning the crank (1). Pull out the retaining bolt (5) on the lower part of the jack stand (2), slide in the jack stand and secure in position (4) with the bolt. Wind up the jack stand completely.

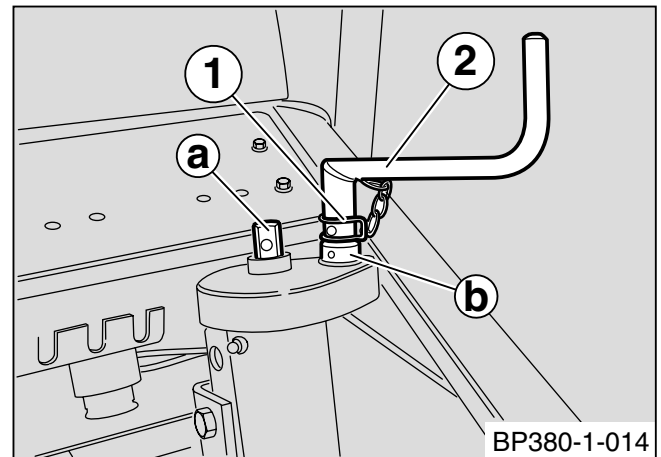


Crank on the Jack Stand

The crank (2) can be fitted on the head of the jack stand in two positions, (a) and (b).

Position a) direct 1:1 translation to wind the jack stand up and down quickly.

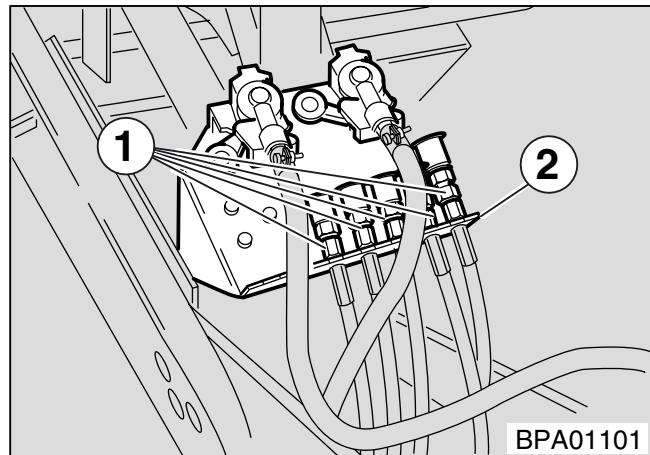
Position b) gear reduction for winding up and down when the big pack baler is resting on the support foot.



Hydraulic Connections

The big pack baler requires one double and two single action hydraulic control valves on the tractor. The protective caps on the hydraulic (1) hoses in the chute (2) are colour-coded. This means perfect identification of the necessary control valves is guaranteed:

- red = single-action control valve (flywheel brake)
- yellow = single-action control valve (pick up)
- blue = double-action control valve (pack ejector)
- yellow = single-action control valve (Blade control MultiCut)

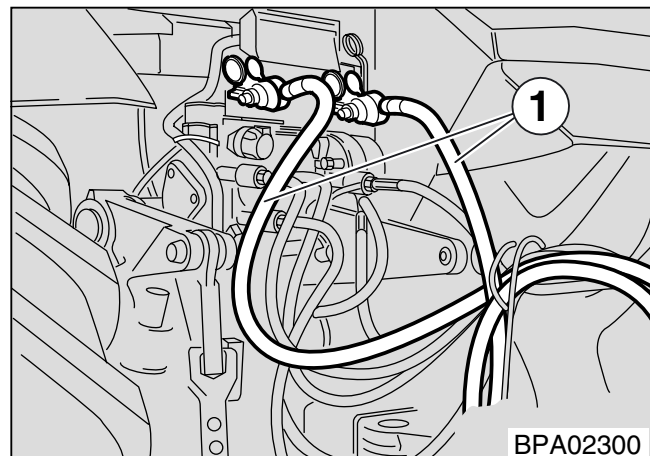


Compressed Air Connections for Air Brakes

Insert the coloured service line hose couplers on the compressed air hoses (1) into the fittings with the same colours on the tractor and let them lock into position.



First let the yellow and then the red connector head lock into position. When uncoupling proceed in the reverse order.



Hydraulic Brake

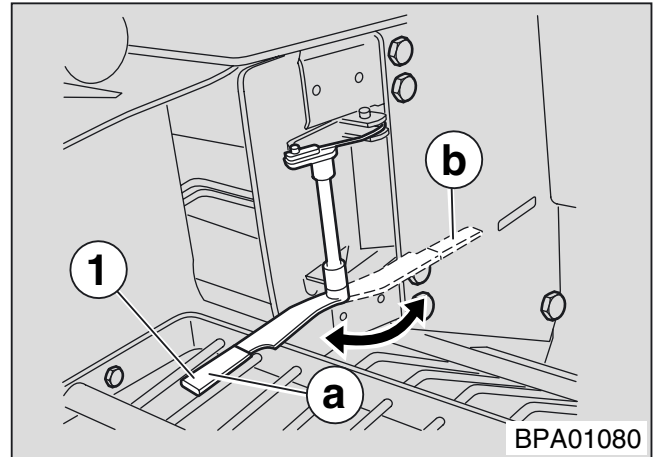
A hydraulic brake is provided for certain export models. A third single-action control valve is required for these models. The corresponding hydraulic hose is connected to the control valve on the tractor. The brake is activated by actuating the control valve.

PTO Shaft



Before sliding the PTO shaft on to the tractor PTO shaft, always secure with the mechanical or hydraulic holding brake.

To fix the flywheel mechanically turn the brake lever (1) on the left hand side of the swinging drawbar from position (a) to position (b). The flywheel is now braked.



Installing the PTO shaft

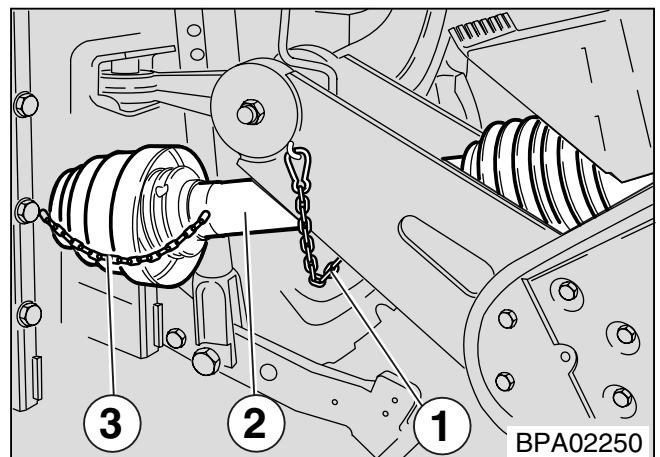
On the machine

- Slide the PTO shaft (2) on the PTO shaft end within the drawbar.



When sliding the PTO shaft look out for notching on the PTO shaft end and prevent sliding.

- Use the safety chain to secure the PTO shaft guard against turning as well.



On the tractor

- Remove the PTO shaft from the retaining chain (1) or support (fold in!)
- Slide the PTO shaft on the tractor PTO shaft with the engine shut off and the ignition key removed and then secure.
- Secure PTO shaft guard against turning as well by hanging up the safety chain (3).



- After mounting, ensure that the PTO shaft has locked into place.**
- Only use the PTO shaft supplied from the factory.**

Electrical Connection Cables

The big pack baler requires an electrical supply for the on-board computer. A socket to be mounted on the tractor is part of the scope of supply. Plug the connection cables into the corresponding sockets on the baler and secure them from coming loose.

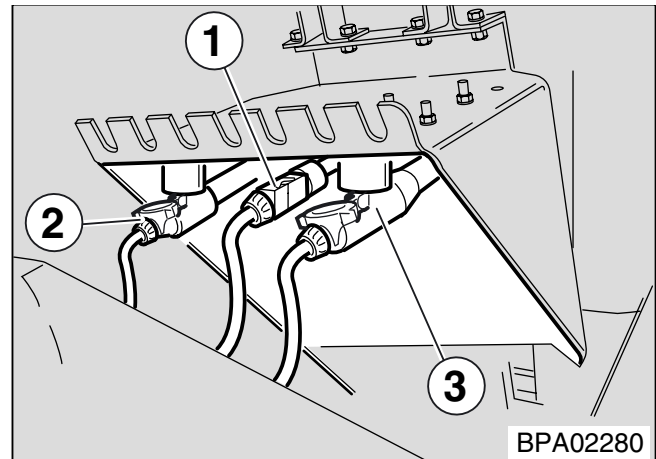
Socket 1: Connection cable between the on-board computer and the control and indicator box on the tractor. Remove the protective cap before plugging in.

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

Socket 3: Standard 7-pole socket for the lighting system.

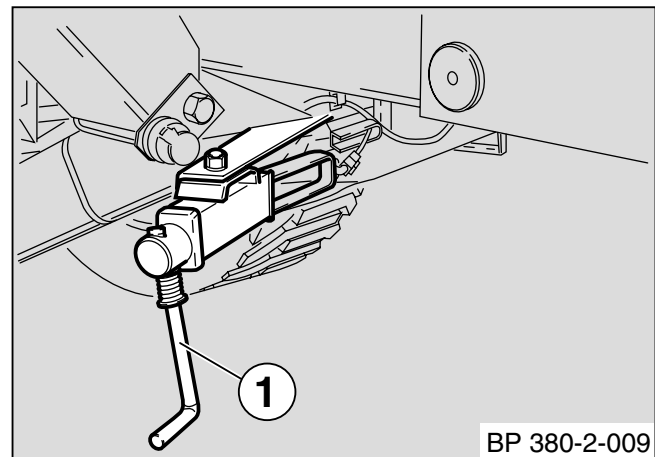


As soon as the constant current supply plug has been plugged in and the control and indicator box is switched on, and there is no twine in the needles, the acoustic signal for twine control sounds.



Parking Brake

The crank (1) for the parking brake is located on the left hand side of the big pack baler beneath the bale channel. Before unhitching the machine, it must be secured from unintentional rolling away using the parking brake.

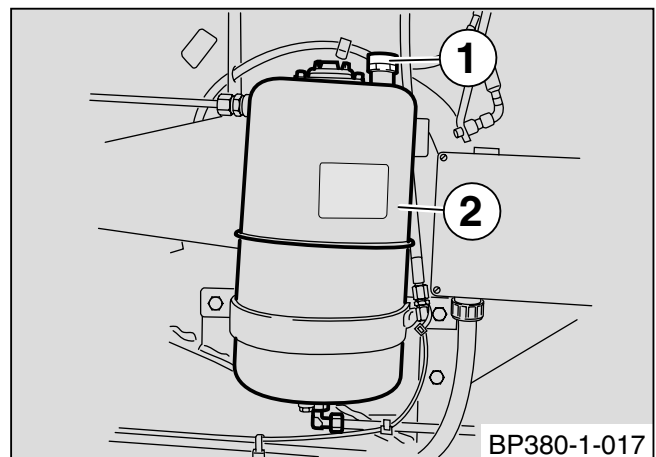


2.4.3 On-Board Hydraulics



- Repairs to the hydraulics system may only be carried out by trained specialists.
- High-pressure fluids from the hydraulics system can penetrate the skin and cause severe injuries! Seek immediate medical attention in case of injury! Risk of infection!

The big pack baler is equipped with its own on-board hydraulic pump. It is flanged on to the lower rear area of the main gearbox. The reservoir tank (2) is located on the right hand side of the machine. Check the oil level on the dip stick (1) every time before putting into operation.



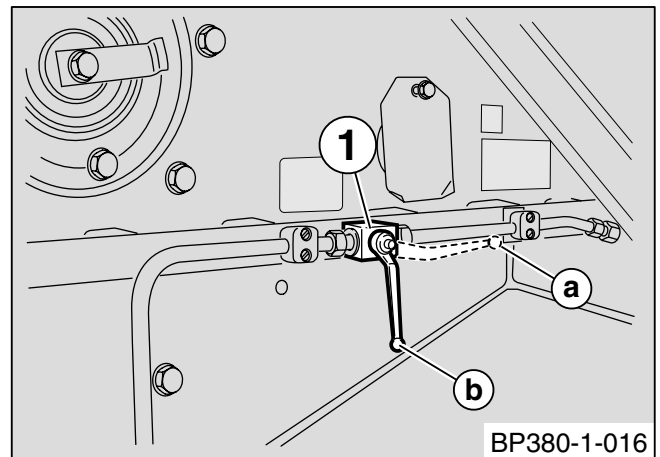
2.4.4 Road Journeys



- Driving on public highways is only permitted with the bale channel empty and the pack chute folded in.
- The maximum speed is 40 km/h.
- Carrying passengers on the big pack baler is not permitted.
- The big pack baler's roadworthiness must be checked and guaranteed, especially the lighting, the protective plates and twine box flaps must be locked, and the pick up must be raised and secured.
- Before setting off, ensure that you have perfect visibility on and around the tractor and the big pack baler.

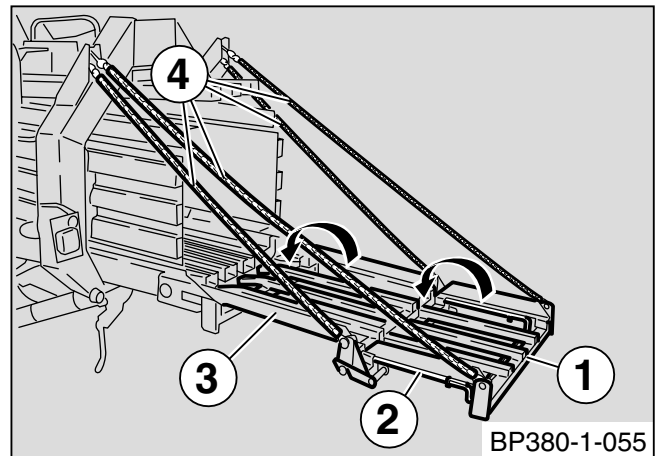
Pick Up

Raise the pick up and secure it from lowering with the shut-off tap (1). The lever located on the front right hand side of the machine must be turned from position (a) to position (b).

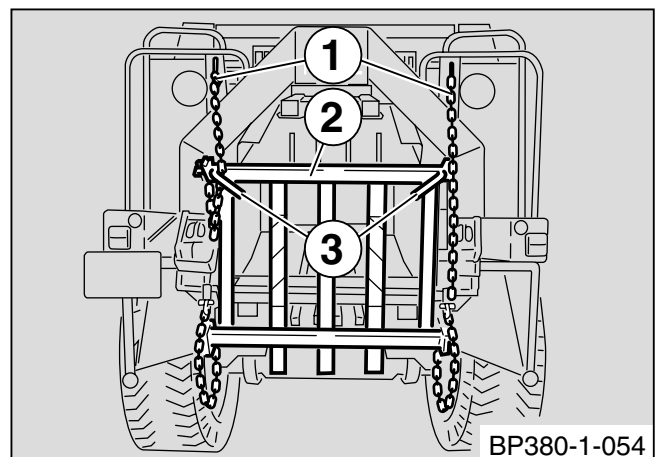


Pack Chute

The pack chute is divided into front (3) and rear (1) parts. To put the pack chute in the transport position, the lock (2) on the rear part must be actuated. Fold in the rear part and lift it together with the front part to just in front of the bale channel and secure with the retaining chains (4).

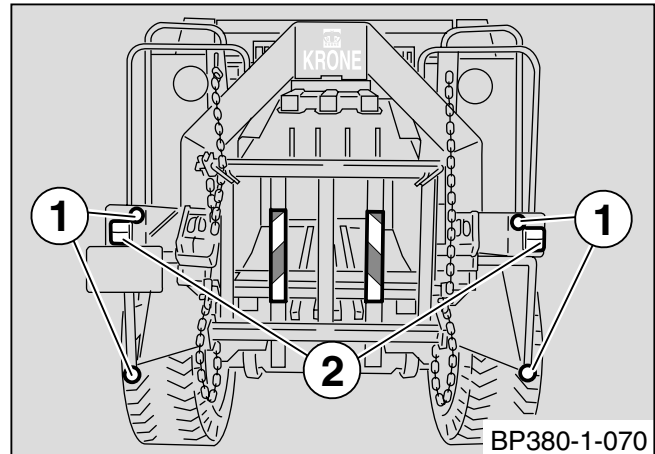


When the pack chute (2) is folded up, it should be secured in the brackets (3) with the retaining chains (1).



Lights

Connect the lighting unit to the tractor electrical system. Check and clean the tail lights (2) and the rear reflector (1). The same applies for the yellow reflectors on the sides of the big baler and the front white clearance lamps.



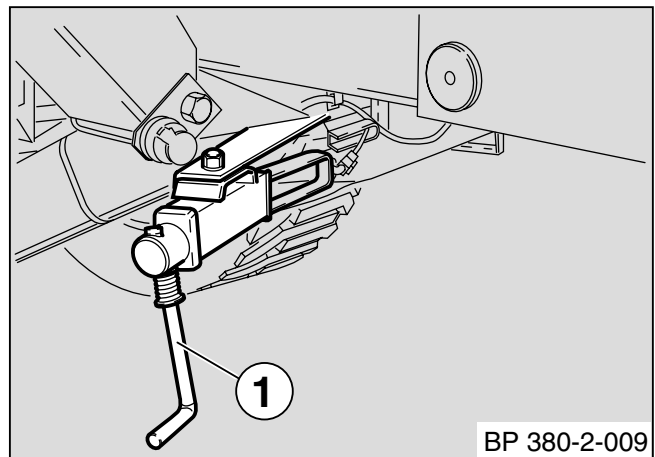
2.4.5 Detaching the Big Pack Baler



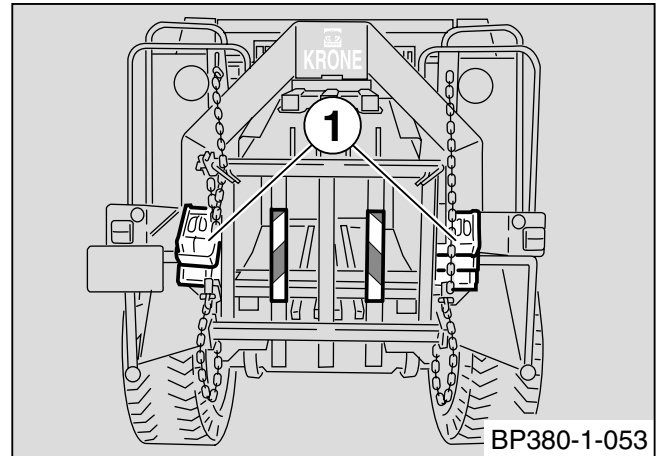
- Only park the big pack baler on firm level ground. When parking on less firm ground, increase the area of the pads on the jack stands.
- Secure the big pack baler from rolling away by applying the parking brake and placing wheel chocks under the wheels.
- Caution when winding down the jack stands. Risk of crushing feet!
- Depressurise the hydraulics systems on the tractor and on the machine.
- Only remove the PTO shaft when the tractor PTO shaft is switched off, the engine is switched off and the ignition key has been removed. Apply the flywheel brake.

Wheel Chocks and Parking Brake

Apply the big pack baler parking brake using the crank (1).

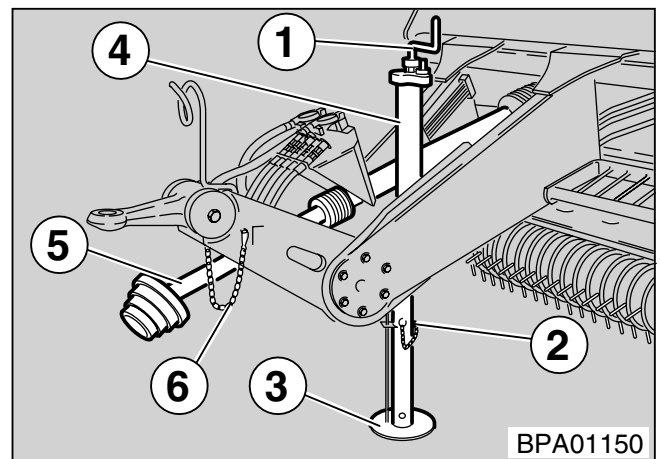


The wheel chocks (1) are located on the rear left and right hand sides beside the bale channel. Place the wheel chocks in front of and behind the wheels. The machine is thereby secured from rolling away.



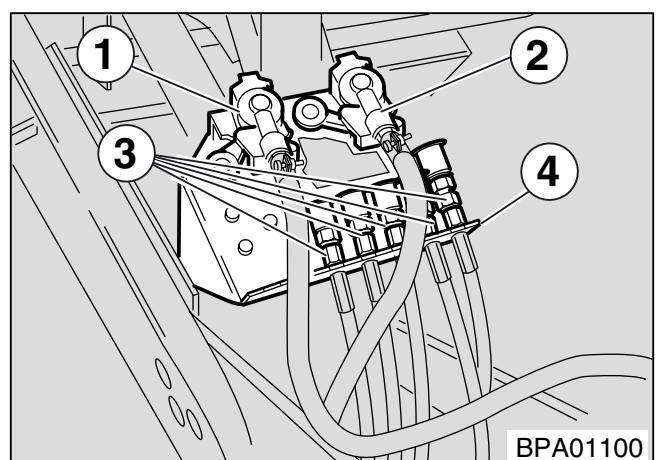
Jack Stand and PTO Shaft for Top Attachment

Gently wind down the raised jack stand (4) using crank (1). Pull out the bolt (2) and extend the lower part of the jack stand. Secure with the bolt. Increase the area of the pad on the support foot (3) where the ground is soft and place a wooden plank underneath. Remove the PTO shaft (5) and rest in the retaining chain (6).



Compressed Air and Hydraulic Hoses for Top Attachment

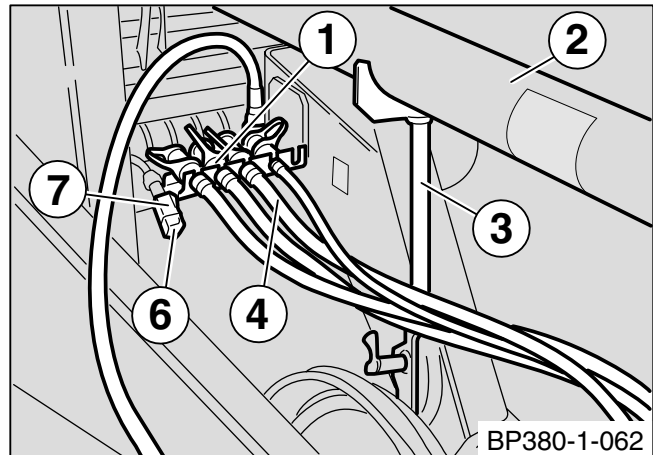
Fit the compressed air hoses (1) and (2) in the corresponding brackets on the top side of the swinging drawbar. Lay the hydraulic hoses (3) in the bracket (4).



Hydraulic Hoses and PTO Shaft Bottom Attachment

Lay the hydraulic hoses (4) in the bracket (1). Pull the connection cable for the comfort controls out of the plug (7) and seal the plug with a sealing cap (6). Swing the PTO shaft support (3) and lay the PTO shaft (2) on it.

Unlock the three-point linkage or pull out the bolt (same applies for the swinging drawbar) and carefully drive the tractor forwards.

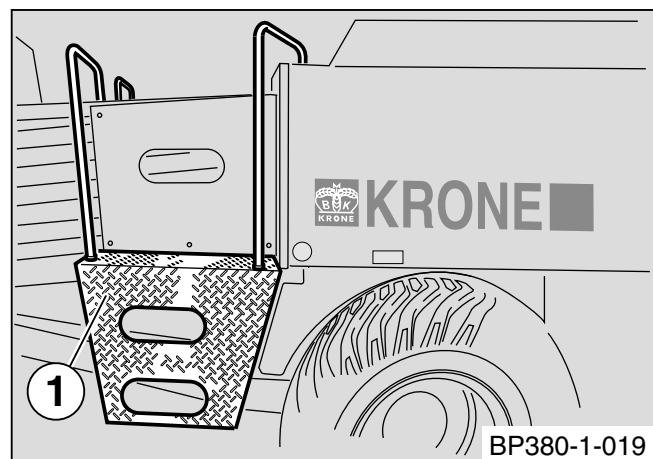


2.4.6 Maintenance Platform



- Only mount the maintenance platform when the PTO shaft is switched off, the engine is switched off and the ignition key has been removed.
- Carrying passengers on the maintenance platform is prohibited.

There is a maintenance platform (1) located on each of the left and right hand sides of the machine behind the bale channel, from which, amongst other things, work can be carried out on the knotter mechanism.

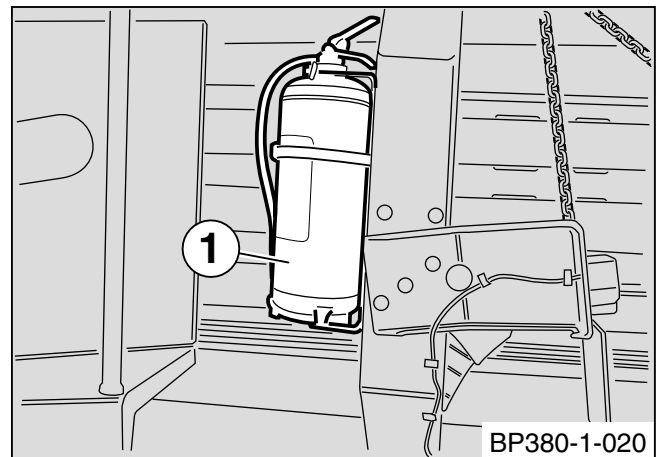


2.4.7 Fire Extinguisher

There is a fire extinguisher (1) mounted on the left hand side of the machine beside the bale channel.



Please have the fire extinguisher registered. This is the only way of guaranteeing that the necessary inspections are carried out.

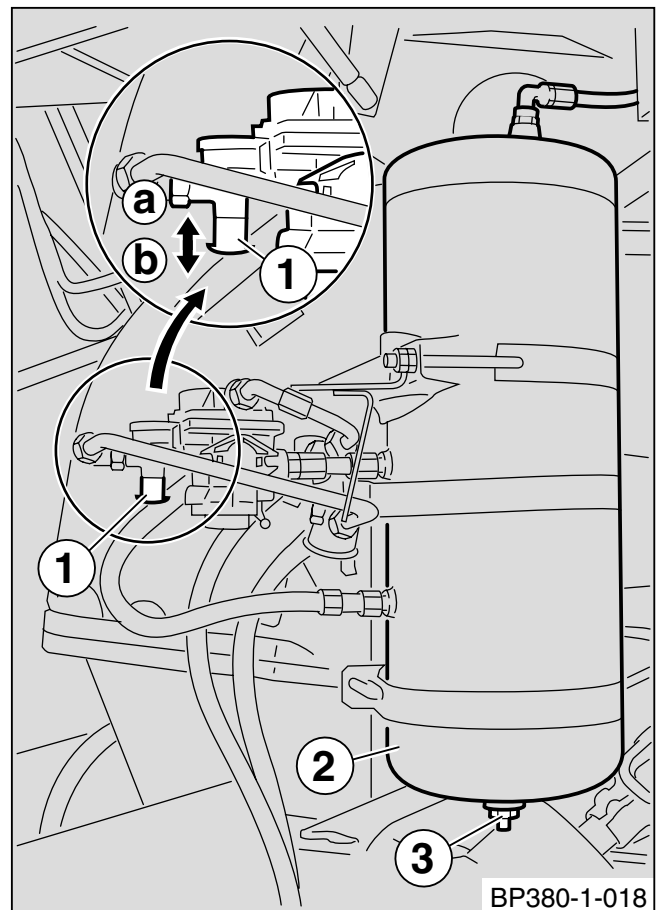


2.4.8 Shunting Without an Air Brake Connected

If the hoses for the air brake are not connected to a brake system, the big pack baler cannot be operated.

If a minimum pressure of 4 bar is present in the reservoir tank (2) for the big pack baler's brake system, the brakes can be freed by pressing the push button (1) to position (a). As soon as the hoses are connected up to an air brake system again the push button returns to its original position (b).

If the air pressure in the reservoir tank (2) falls below 4 bar, the remaining pressure must be released at the water evacuation valve (3). Only then can the big pack baler be operated again.



3. Comfort Controls

3.1 Special Notes on Safety



- Switch off the engine when carrying out assembly work on the tractor or the big pack baler. Remove the ignition key. Apply the flywheel brake.
- Secure the tractor and the big pack baler from rolling away.
- When mounting the control and indicator box on the tractor make sure that the connection cable to the big pack baler is not under tension and does not come into contact with the tractor wheels.



Disconnect the power supply to the electronic comfort controls when carrying out assembly and repair work, especially when welding on the big pack baler. Over-voltage can damage the comfort controls electronics.

3.2 General Description

The electronic unit for the Big Pack essentially consists of the control and indicator box, the on-board computer and the control and function elements. The control and indicator box provides the driver with information and makes adjustments for the operation of the big pack baler using information gathered and processed by the on-board computer.

The On-Board Computer

The on-board computer (1) is located on the right hand side of the big pack baler behind the protective plate.

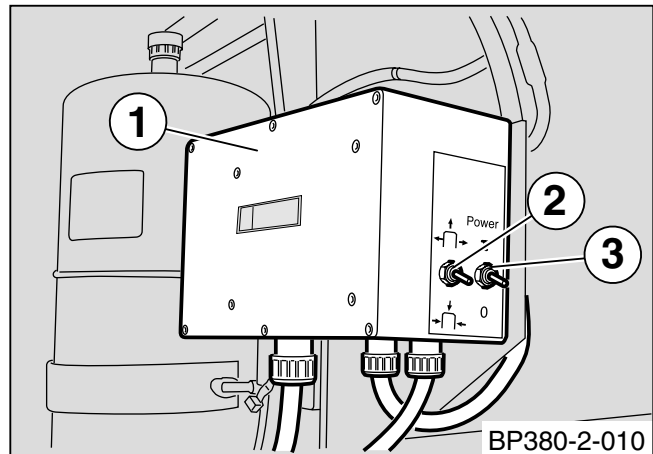
The following functions are monitored, regulated and carried out by the on-board computer:

- Regulation of the baling thrust
- Bale counter
- Control of knotter cleaning
- Transmission of alarm messages
- Provision of requested information

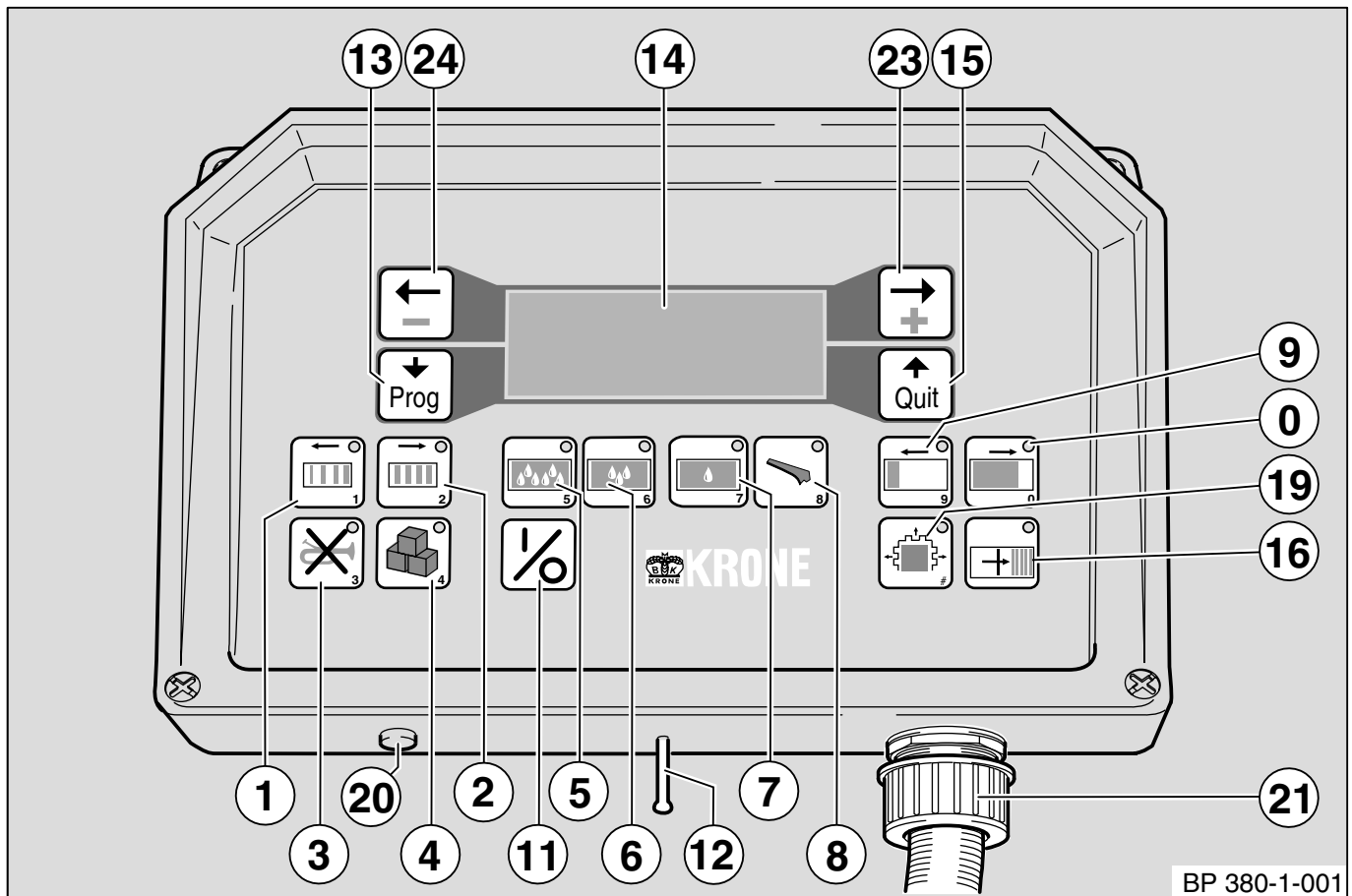
Switch (2) Open Bale Chamber

Switch (3) **Power ON / OFF**

During normal operation the switch (3) should be in position "0" (OFF). Switch (2) in position "**Close Bale Chamber**".



The Control and Indicator Box (Comfort Controls)



BP 380-1-001

- | | |
|---|---|
| 1. Reduce bale density (-) | 11. "ON/OFF" button |
| 2. Increase bale density (+) | 12. Main power supply switch |
| 3. "Alarm off" button | 13. Programme button |
| 4. "Bale counter" button | 14. Display |
| 5. Crop pre-selection damp crop (e.g. grass silage) | 15. Quit button |
| 6. Crop pre-selection wilted crop (e.g. wilted silage, hay) | 16. "Display information" button |
| 7. Crop pre-selection dry crop (e.g. straw) | 19. "Open bale chamber" button |
| 8. Blade check | 20. Buzzer (horn) |
| 9. "Reduce bale length" button (-) | 21. Control line and power supply (12 V) to the baler |
| 0. "Increase bale length" button (+) | 23. "+" button |
| | 24. "-" button |

All buttons located below the display have an LED in the top right hand corner. The LED indicates the operating status of the button (this is not the case for button "8", where the operating status of the cutter mechanism is indicated):

LED illuminated: operating
LED not illuminated: not operating

To provide the big pack baler with a constant current supply, connect the 3-pole connection cable to the tractor. Connect the on-board computer with the control and indicator box. Switch on the control and indicator box by switching on the main switch (12) and the **ON/OFF** button (11). A self-test follows with the following functions

- a) All LEDs are illuminated briefly
- b) The buzzer gives a brief test signal
- c) The following appears in the display:

```

---- K R O N E ----
  Comfort Electronics
- B I G - P A C K --
Version No.: x.x --
  
```

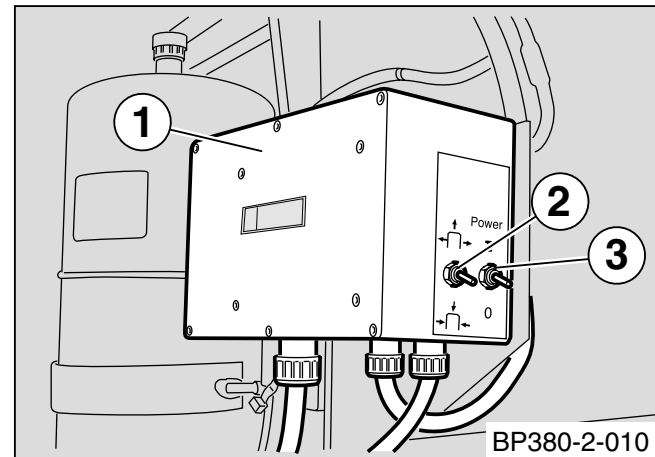
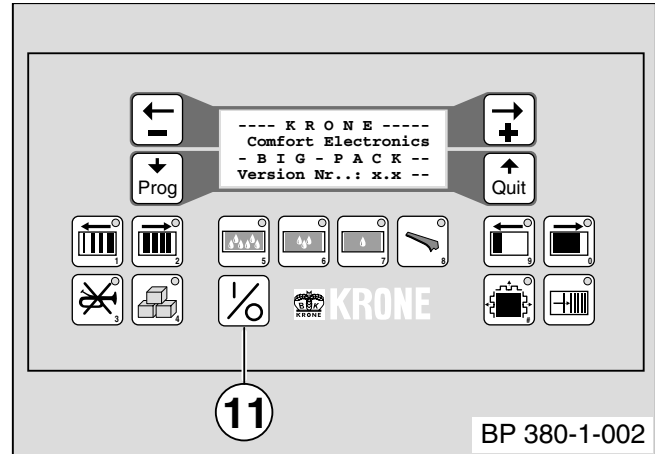
- d) The yellow operating status indicator lamp on the front right hand side of the big pack baler should light up.



If the yellow operating state indicator lamp does not light up, check the supply of constant current to the big pack baler.



Work can still be continued even if the control and indicator box fails. The on-board computer (1) must be switched on with switch (3). The big pack baler is controlled with the previously entered values. Other faults are now only displayed with the red indicator lamp on the front of the big pack baler.

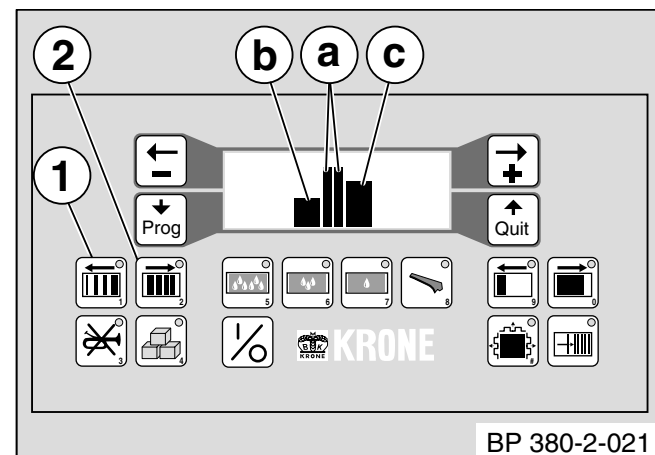


The bale chamber can be opened without the comfort control by moving the switch (2) to the position "Open Bale Chamber".

3.3 Comfort Control Functions

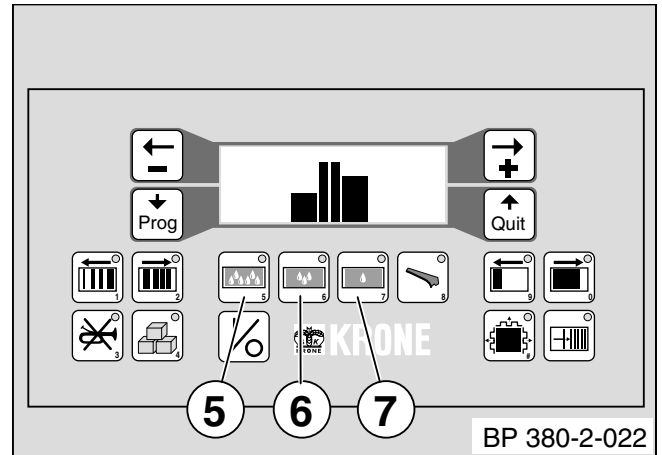
3.3.1 Adjusting the Bale Density

A bar chart display (a) appears just after the control and indicator box is switched on showing the set pack density. When the big pack baler is put into operation displays (b) and (c) appear in the display field showing the current density distribution on the right and left hand sides of the pack. The set density is pre-selected with buttons (1) and (2). The higher the set density, the longer the bars.



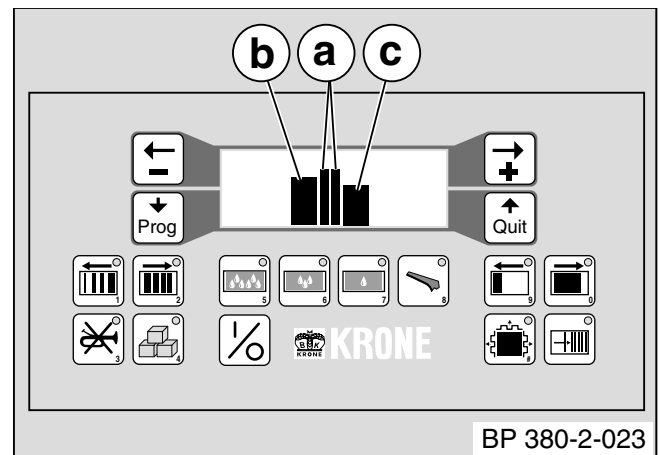
The maximum possible baling flap cylinder pressure is pre-selected for the crop to be baled with buttons (5), (6) and (7).

- Button "5" Damp crop , e.g. silage.
Max. pressure in the brake flap cylinders approx. 60 bar.
- Button "6" Mediumdamp crop, e.g. hay.
Max. pressure in the brake flap cylinders approx. 110 bar.
- Button "7" Dry crop, e.g. straw.
Max. pressure in the brake flap cylinders approx. 180 bar.



The pressures set using the buttons (5), (6) and (7) are displayed on the pressure gauge on the front when the big pack baler is idle. During operation the baling pressure of the brake flaps is set automatically by the comfort control. The pressure can vary greatly.

During the baling process the pack density is monitored, amplified and fed to the on-board computer by two sensors in the brace for the main gearbox. The on-board computer evaluates these signals and regulates the hydraulic cylinder pressure in the bale channel flaps. The signals are transmitted to the control and indicator box at the same time. Here the bar charts (b) and (c) appear, in various sizes according to the measured values, in the display field beside the digital display (a) for the left and right hand sides of the bale chamber.



When baling, make sure that the bar chart for the bale density (b) and (c) is at the level of the set density (a). If this is not the case the bale density setting must be corrected using buttons (1) or (2) or (5, 6, 7).

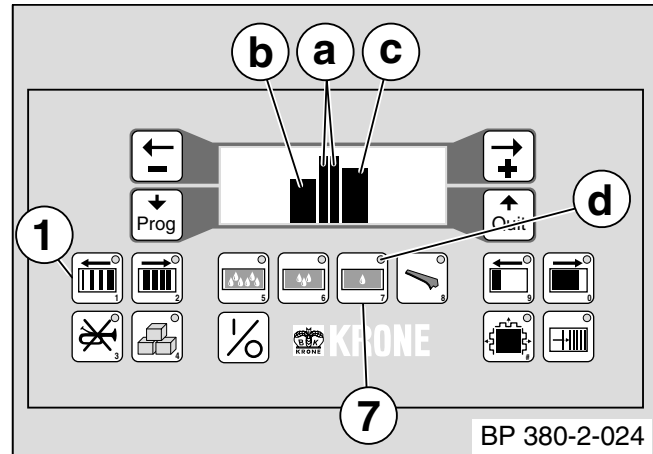
Correction measures for deviations

- 1.) The LED (d) on button (7) comes on. Displays (b) and (c) (current density) are significantly smaller than the nominal density (a).

The prescribed nominal density (a) can not be attained at the oil pressure and the previous conditions (baling material parameters and throughput) given by the on-board hydraulics.

Remedy

Reduce the nominal density (a) on button (1) to the level of the measured current density (b, c). The load is removed from the on-board machine hydraulics.

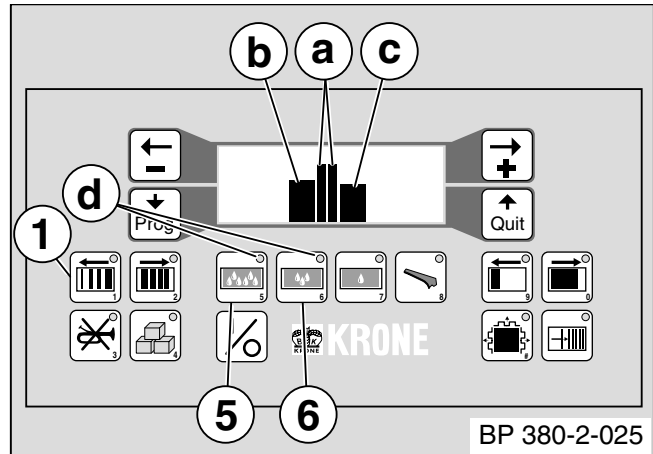


- 2.) LED (d) on button (5) or (6) come on. Displays (b) and (c) (current density) are considerably less than the nominal density (a).

The big pack baler is operated with a pre-set maximum pressure (pressure gauge shows approx. 60 bar when the LED on button (5) is on and approx. 110 bar when the LED on button (6) is on). Nominal density can not be achieved at this maximum pressure.

Remedy

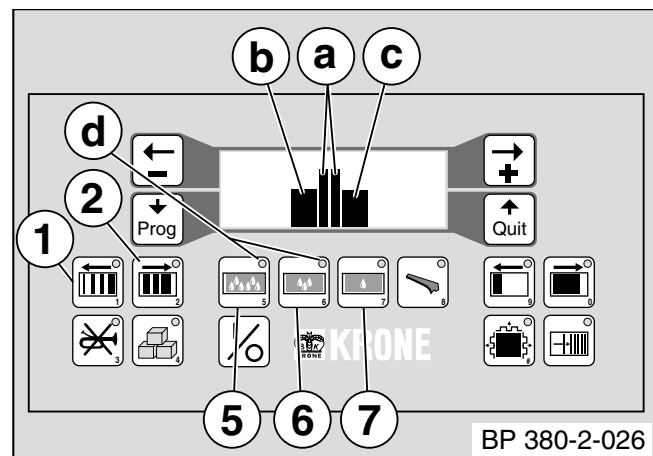
Reduce the nominal density (a) on button (1) to the level of the measured current density (b, c). The load is removed from the on-board machine hydraulics.



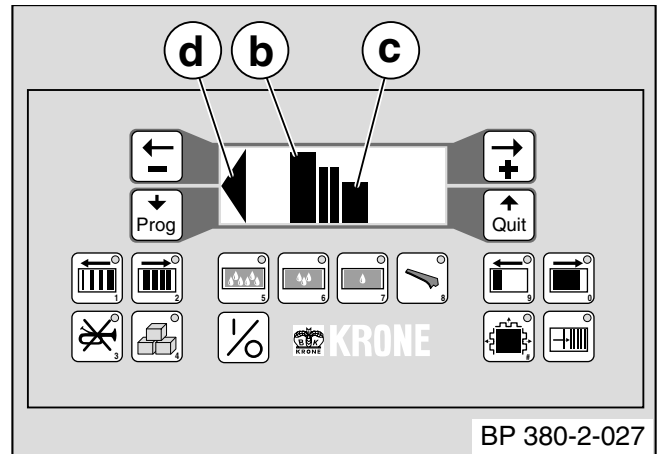
- 3.) LED (d) on button (5) or (6) come on. Displays (b) and (c) (current density) are considerably less than the nominal density (a).

Remedy

Increase the preselected maximum baling pressure. Switch from button (5) to button (6) or from button (6) to button (7). Adjust the nominal density (a) according to the desired pack density using button (1) or (2).



With significant deviations between the current density readings (b) and (c) an arrow (d) appears in the left or right-hand are of the display. It shows the driver which side of the swath he should drive along to correct this and fill the bale chamber evenly.



3.3.2 Open Bale Channel

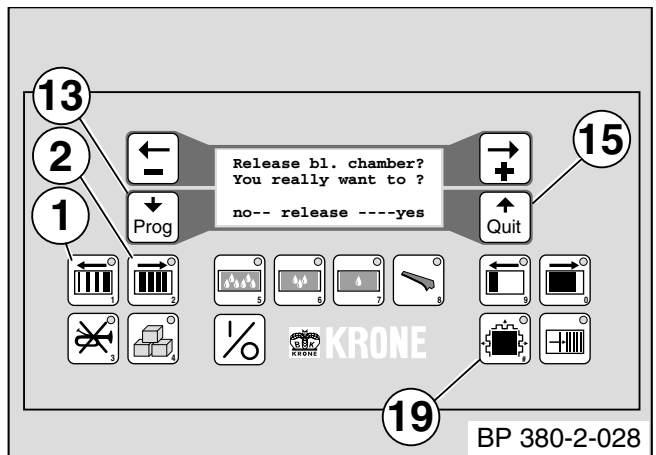
The display switches to another mode when button (19) is pressed. The following message appears:

```
Release bl. chamber?
You really want to ?
```

```
no-- release ----yes
```

The valve which opens the bale channel is actuated by pressing button (15). The LED on the button (19) is illuminated. The bale channel is open. After pressing button (13), the valve the bale channel is switched off again. The LED on the button (19) is extinguished.

Switch back to the bale display using button (1) or (2).



The bale channel can only be opened when the machine is at a standstill.

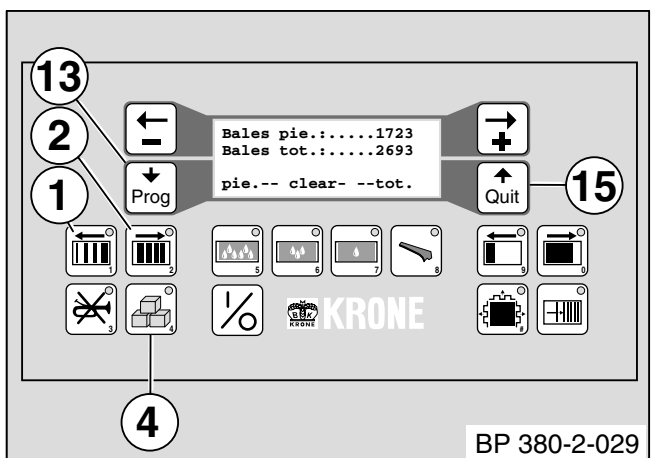
3.3.3 Bale Counter

The on-board computer on the big pack baler is equipped with an integral bale counter. When button (4) is pressed the following message appears in the display:

```
Bales pie.:.....1723
Bales tot.:.....2693

pie.-- clear- --tot.
```

The current number of big packs is shown in the upper line. The lower line indicates the total number of packs produced up to that point. Both counters are independent of each other and each can be reset without influencing the other.



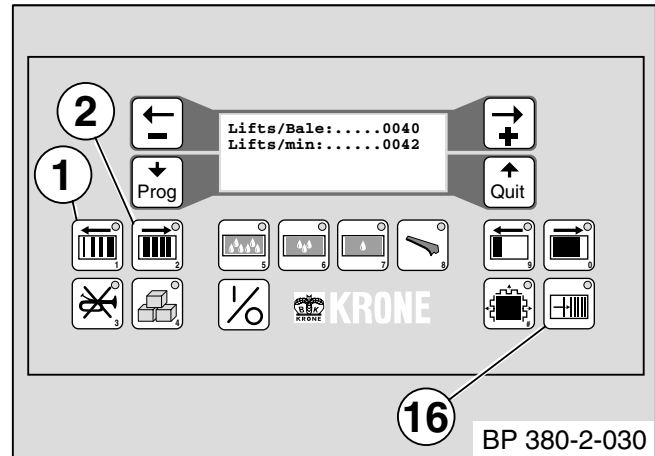
BALES CURRENT-reset	press button (13)
BALES TOTAL-reset	press button (15)

Switch back to the bale display using button (1) or (2).

3.3.4 Information

Information relating to the ram strokes per pack and per minute can be called up by pressing button (16). The following message appears in the display:

Lifts/Bale:.....0040
Lifts/min:.....0042

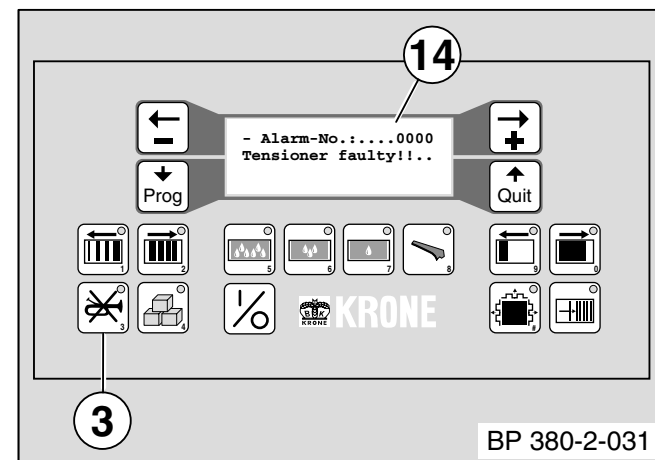


3.3.5 Alarm Messages

Alarm messages appear in the display when irregularities are picked up by the on-board computer. Alarm messages always take preference. They interrupt the current display immediately.

- Alarm-No.:.....0000
Tensioner faulty!!..

A buzzer sounds in the control and indicator box at the same time as the alarm message appears. The buzzer can be switched off using button (3). If button (3) is pressed again, the alarm message in the display disappears and the previously shown message reappears. The alarm lamp (red) on the front of the big pack baler is only extinguished when the fault has been eliminated. Some faults, e.g. **"BALING THRUST EXCEEDED"**, correct themselves.



Alarm No.:	Error display
0	Tensioner faulty!!
1	Gatherer crossed!! Stop the machine at once.
2	Pressing force too great!! Bale chamber open!!
3	Piston force sensor on right faulty!! Check!!
4	Piston force sensor on left faulty!! Check!!
5	Blades not engaged (LED on button (8) is flashing)
6	Knotter faulty ?!
7	Output Error Please controll !!
8	Measr.-Sensor check!
9	Calibr.Sensor check!

3.3.6 Blade Check on the Cutting Mechanism (Special Equipment)

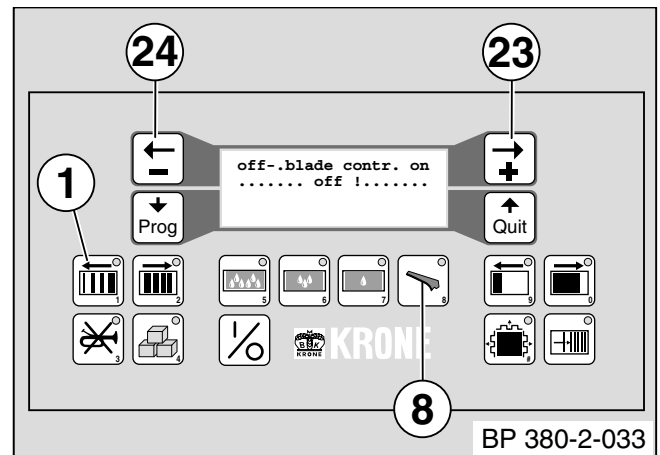
Depending on the operating status, the following messages appear in the display when button (8) is pressed:

```
off-.blade contr. on
..... off !.....
```

or

```
off-.blade contr. on
..... on !.....
```

You can switch from "ON" to "OFF" by pressing button (24) or by switching button (23) from "OFF" to "ON". You can return to the programme by pressing button (1). A flashing LED on button (8) indicates that the tension bolt in the blade safety mechanism is faulty.



3.3.7 Checking Sensors



All tests are carried out with the machine at a standstill.

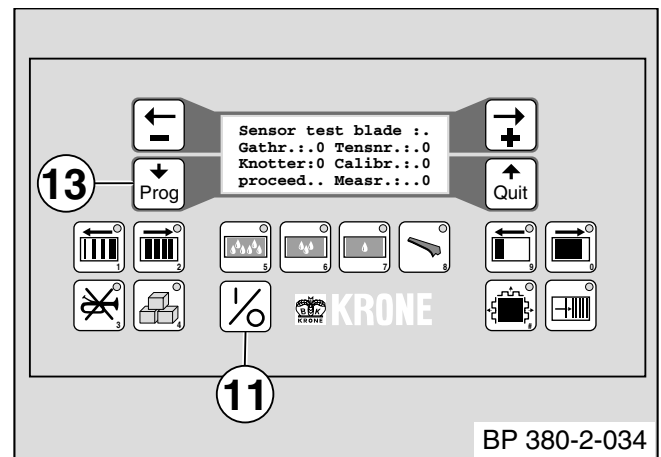
Switch on the control and indicator box with button (11). While the following message appears in the display:

```
---- K R O N E ----
  Comfort Electronics
- B I G - P A C K --
Version No.: x.x --
```

press the "PROG" button (13), until the message disappears. Actuate button (13). The following message appears in the display:

```
Sensor test blade :.
Gathr...0 Tensnr...0
Knotter:0 Calibr...0
proceed.. Measr...0
```

It is possible to switch to each test level by pressing button (13).



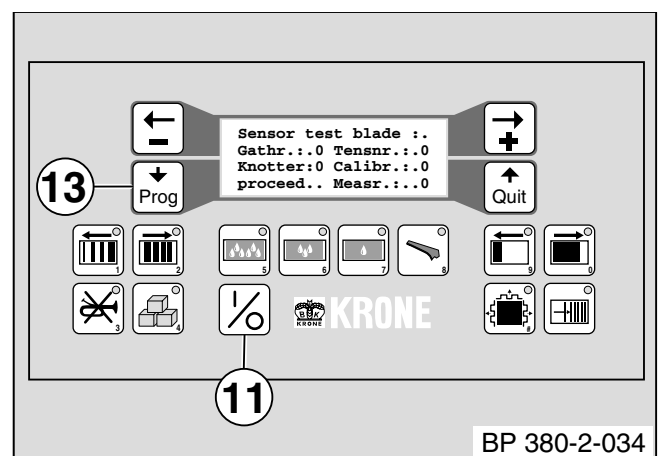
3.3.7.1 "Rake Sensor" Test

The sensor is located on the right hand side of the machine on the feed rake drive shaft. If the transmitter is in front of the sensor, the number "1" is displayed after the word "Gathr.:". If the flywheel is turned incorrectly, the number "0" should be displayed.

To test, hold a piece of metal (steel) at a distance of **approx. 3 mm** in front of the sensor.

The number after the word "Gathr.:" in the display switches to "1". As soon as the piece of metal is removed the number "0" appears in the display.

A description of how to adjust the sensors is given in chapter 5.7.1.

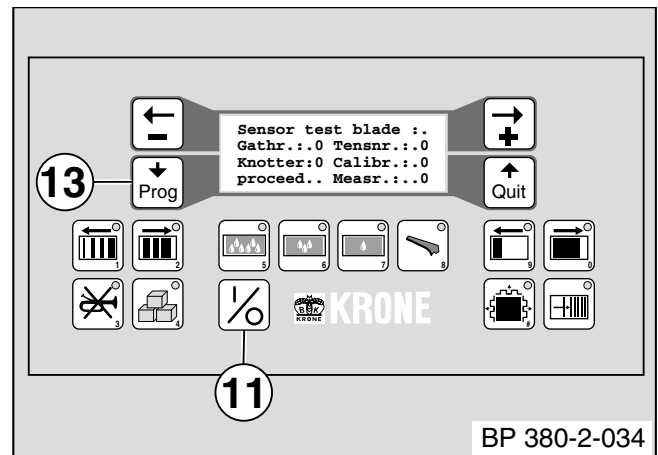


3.3.7.2 "Knotter Sensor" Test

The sensor is located on the right hand side of the knotter shaft.

To test, turn the twine retainer shaft. The display after the word "**Knotter**" changes from "0" to "1". If the twine retainer shaft is activated, the "0" reappears in the display.

A description of how to adjust the sensors is given in chapter 5.7.3.

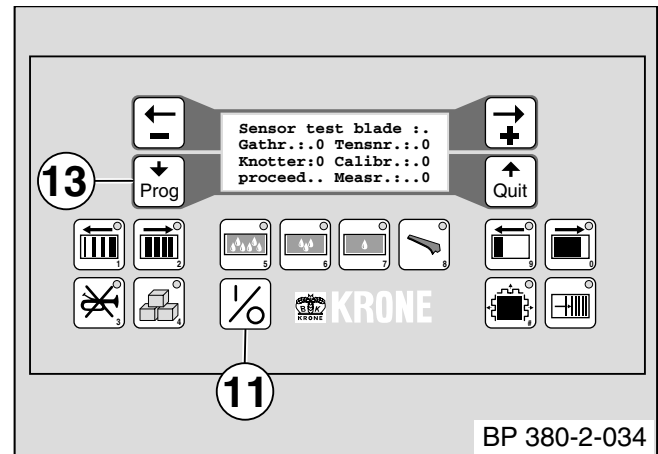


3.3.7.3 "Blade Sensor" Test

The sensor is located on the right hand side of the machine underneath the feed rake on the blade carrier. If the transmitter is in front of the sensor, the number "1" is displayed after the word "**blade** :".

To test, hold a piece of metal (steel) at a distance of **approx. 3 mm** in front of the sensor. The number after the word "**blade** :" in the display switched to "1". As soon as the piece of metal is removed the "0" appears in the display again.

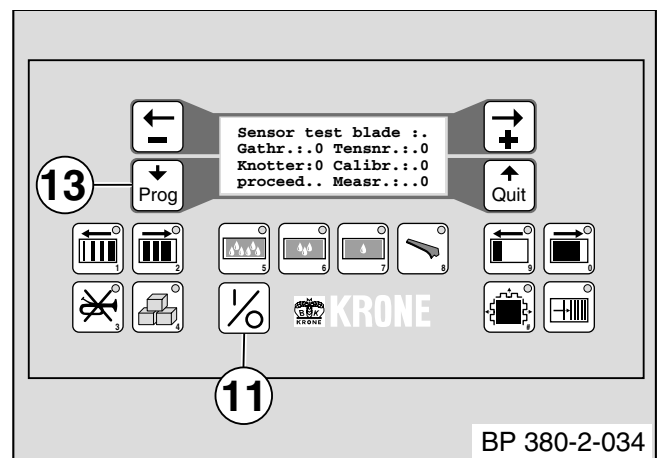
A description of how to adjust the sensors is given in chapter 11.1.



3.3.7.4 "Twine Sensor" Test

The sensor comprises a metal bar not connected to earth. As soon as the twine tensioner touches the metal bar the number after the word "**Tensnr** .:" changes from "1" to "0".

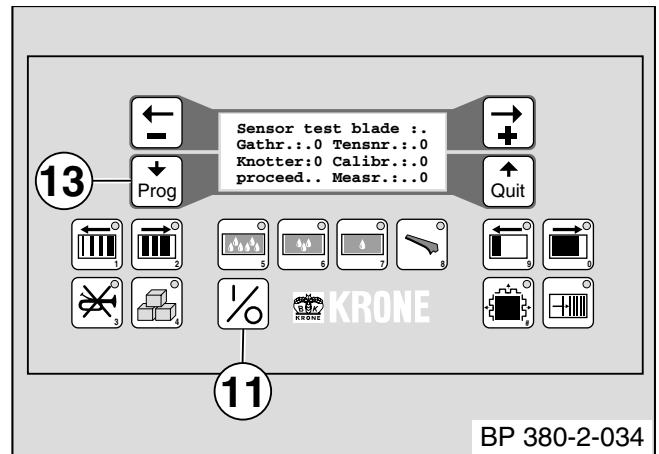
If all twine tensioners are raised the display switches back to "1" (also see chap. 4.4.2)



3.3.7.5 "Calibration Sensor" Test

The sensor is located on the right of the main gearbox towards the bale channel. To test, hold a piece of metal at a distance of **approx. 3 mm** in front of the sensor. The number after the word "**Calibr.:**" in the display changes to "**1**". As soon as the piece of metal is removed the "**0**" appears again in the display.

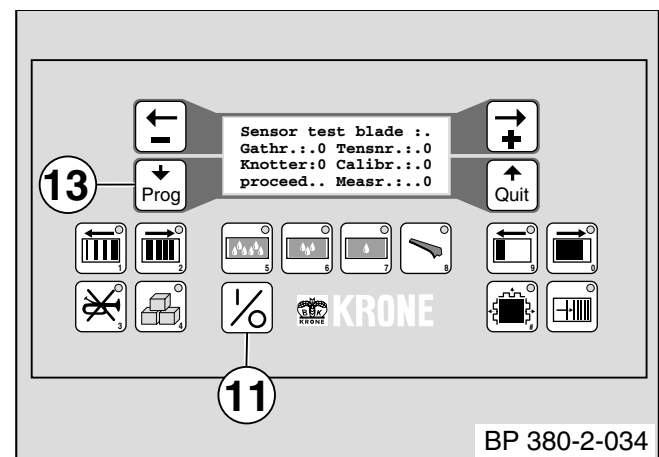
A description of how to adjust the sensor is given in chapter 5.7.2.



3.3.7.6 "Measurement Sensor" Test

The sensor is located on the right of the main gearbox towards the flywheel. To test, hold a piece of metal at a distance of **approx. 3 mm** in front of the sensor. The number after the word "**Measr.:**" in the display changes to "**1**". As soon as the piece of metal is removed the "**0**" appears again in the display.

A description of how to adjust the sensor is given in chapter 5.7.2.



3.3.7.7 General Test

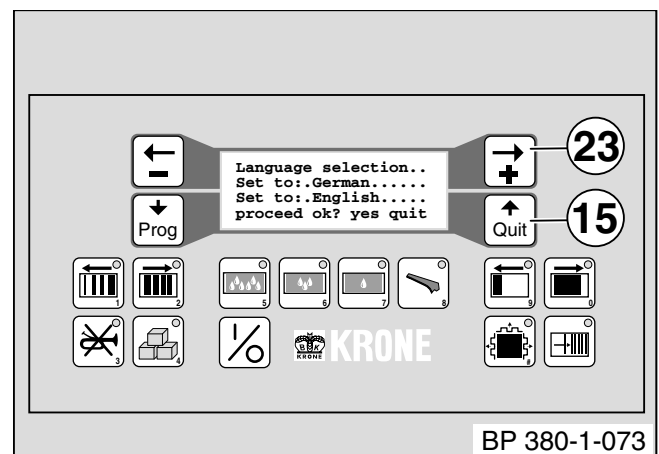
To check whether all the sensors are set at the required distance of **a = 3 mm** from the transmitter, turn the big pack baler through one complete revolution by hand in the working direction. The values after feed rake, measurement and calibration should all switch once.

3.3.8 Language Setting

In the "**Language selection..**" menu the language for use on the indicator box can be selected. The desired language is selected by pressing button (23). It appears in the 3. line after the word "**Set to:**". The desired language can be stored by pressing the Quit button (15).



The adjustment is actuated only after the confort control has been switched on again.

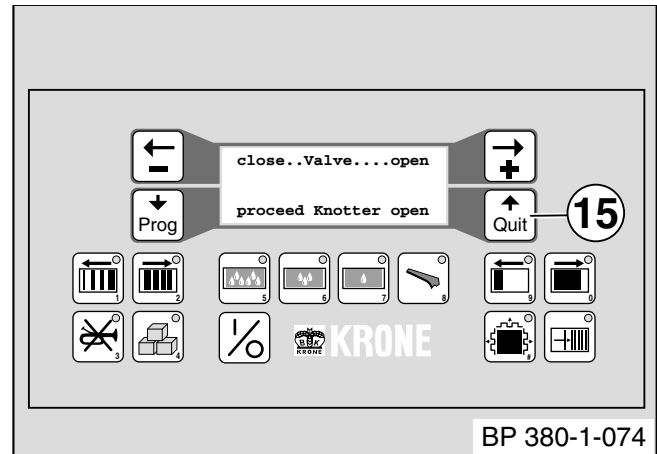


3.4 Checking the Valves

The operation of the valves used on this big pack baler can be checked in this menu field. This operational check can also be made with a voltmeter or an indicator lamp. The valves are supplied with a 12 V voltage.

Knotter Cleaning Valve

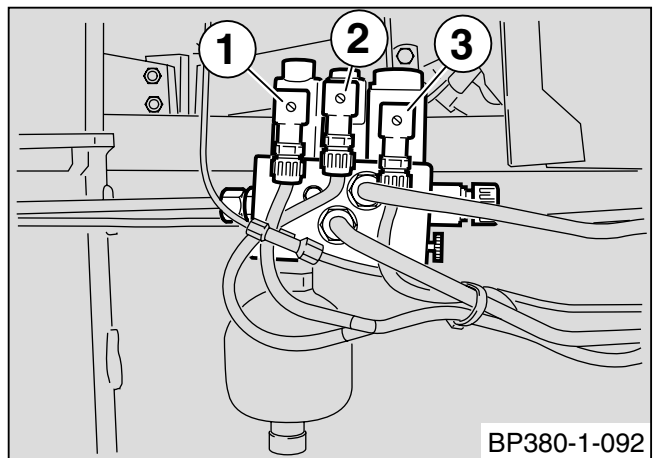
The compressed air valve for knotter cleaning is located on the front left hand side of the knotter board. The valve is opened by pressing the Quit button (15). If the knotter cleaning reservoir tank contains any compressed air, this is expelled. The valve is closed again by pressing the button (15) again.



Checking the baling power regulating valve

The electro-hydraulic control block is located underneath the knotter board on the right hand side of the machine. It comprises three valves:

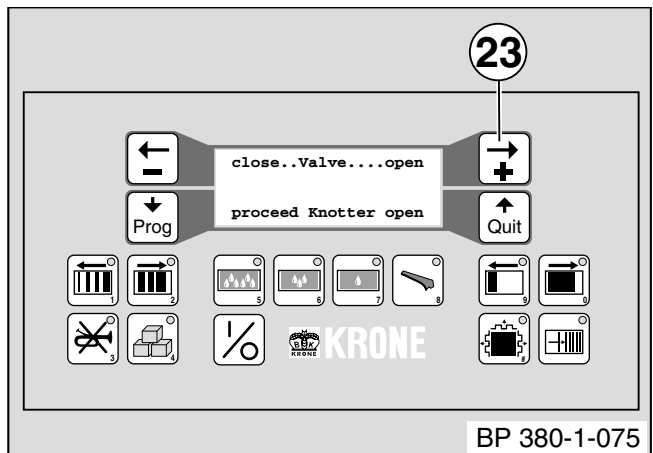
- "1" open baling power valve
- "2" valve for closing the bale channel
- "3" pressure regulating valve for the bale channel



"Open Bale Channel" Valve

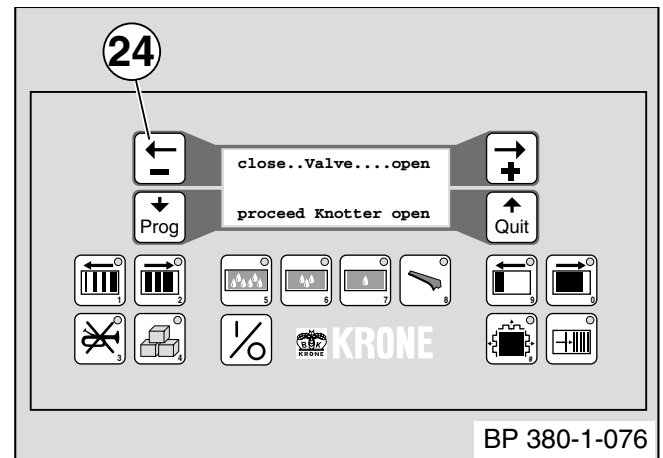
The "open bale channel" valve is actuated by pressing the button (23).

The valve is closed by pressing the button (23) again.



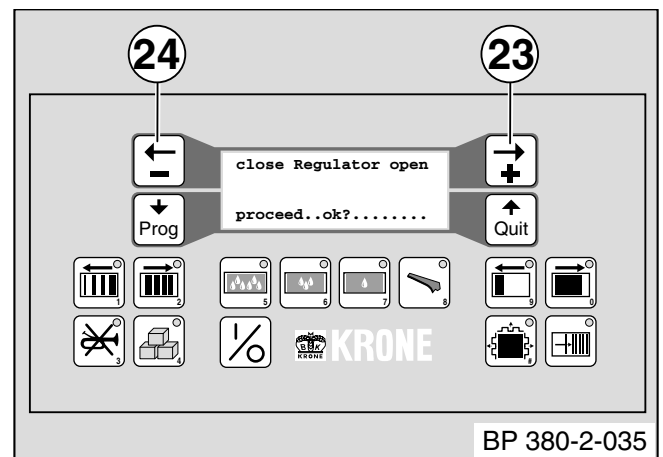
"Close Bale Channel" Valve

The **"Close Bale Channel"** valve is opened by pressing button (24). The valve is closed by pressing the button (24) again.



"Bale Chamber" Pressure Regulating Valve

The front valve in the hydraulic control block is the regulating valve for the baling thrust in the bale channel. It is supplied with a 12 V voltage. To test, attach an inspection lamp to the plug connection on the valve. When the button (23) is held down continuously the inspection lamp should become increasingly bright. Holding the button (24) down continuously causes the inspection lamp to be extinguished.



4. Working with the Big Pack Baler

4.1 Special Notes on Safety



- The following always applies for all maintenance, repair and adjustment work: switch off the PTO shaft, switch off the engine and remove the ignition key. Apply the flywheel brake.
- Keep a safe distance from all moving parts on the big pack baler during operation. This applies in particular to the crop collection mechanism.
- Only put the big pack baler into operation once all protective devices have been fitted and are in a proper operating condition.
- Only free blockages when the machine is at a standstill. Switch off the engine and remove the ignition key. Apply the flywheel brake.
- In dangerous situations switch off the PTO shaft and bring the big pack baler to a standstill immediately.
- Never run the big pack baler without an operator on the tractor.

4.2 Basic Setup for the Big Pack Baler

4.2.1 Pick Up



Raise the pick up when driving into a curve and when driving backwards!

Adjusting the Working Height

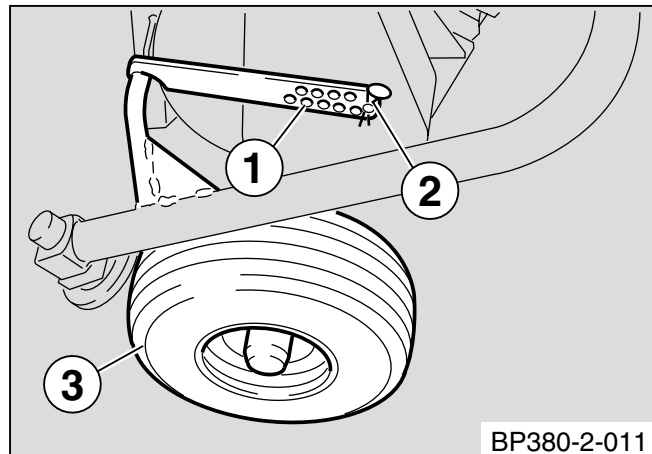


To adjust the height of the pick up, raise it and lock with the shut-off tap on the right hand side of the machine to secure it from unintentional rolling away.

The adjustment of the working height is made at the feeler wheels (3) on both sides of the pick up. To make the adjustment raise the pick up and secure. Pull out the spring pin (2) and set the feeler wheels in the desired position on the bar with holes (1). Secure the feeler wheels again using the spring pin.



Make sure that the feeler wheels on both sides of the pick up are in the same position on the bar with holes.

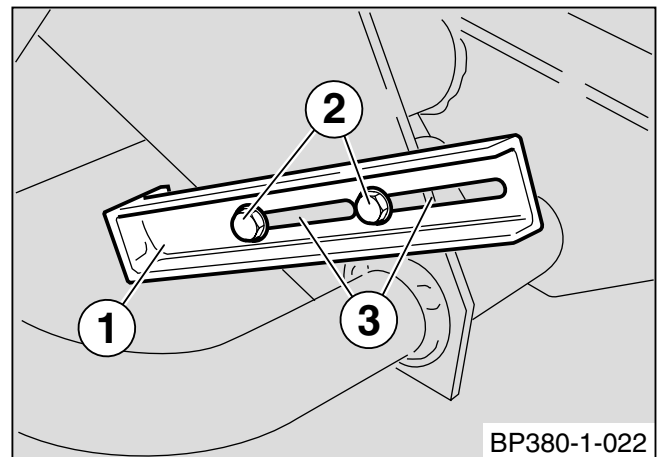


Adjusting the Low Limiter

To prevent the pick up from becoming buried in the ground, when for example driving over deep ruts, it is fitted on each side with a low limiter (1). To adjust, undo the screws (2) and set the low limiter to the desired position in the slot (3). Tighten up the screws again.



Make sure that the low limiter is in the same position on both sides of the pick up.



Adjusting the Height of the Baffle Plate

The height of the baffle plate is dependent on the following factors:

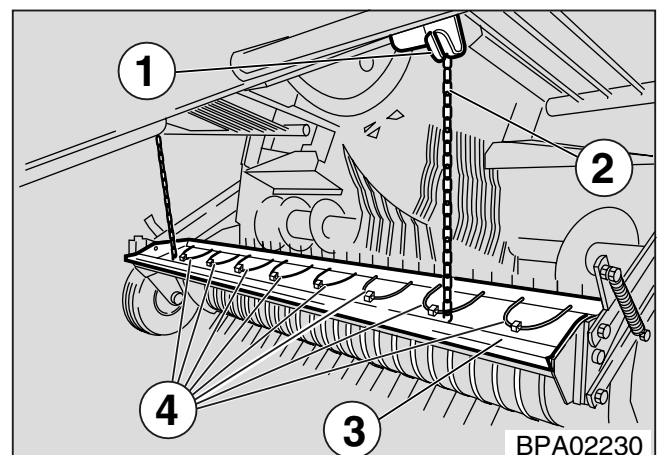
Crop	Length of Crop		Swath Size		Which Setting?
	long	short	large	small	
Straw / hay	X		X		Baffle plate high
Straw / hay	X			X	Baffle plate low
Straw / hay		X	X		Baffle plate high
Straw / hay		X		X	Baffle plate low
Silage			X		Baffle plate high
Silage				X	Baffle plate low

The adjustment of the height of the baffle plate (2) is made using the retaining chains (2) suspended from the brackets (1) on both sides of the machine.



Make sure that the same length of chain is in the bracket on each side.

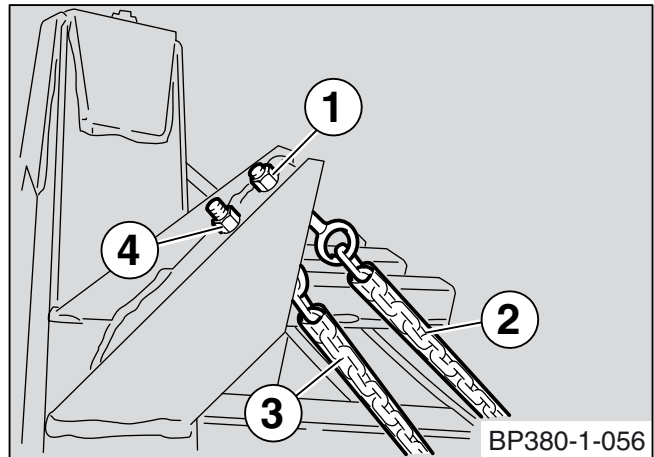
With MultiCut the side delivery of the feed is hindered in certain cases (e.g. silage, first cut) by the tines on the baffle plate. In this event dismantle the tines (4).



4.2.2 Pack Chute

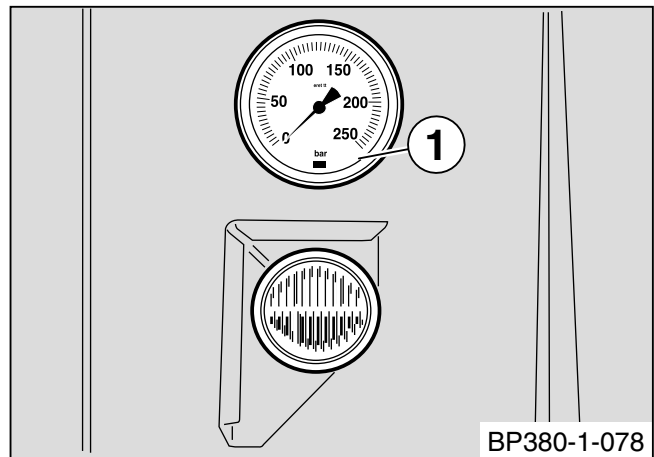
When folded out the pack chute is an extension of the bale channel. The pack chute must be at the same level as the bale channel so that the packs can be deposited properly.

An adjustment can be made using the nuts (1) and (4) on each side of the bale channel. This adjusts the length of the retaining chain (3) for the front section of the pack chute and the retaining chain (2) for the rear section.

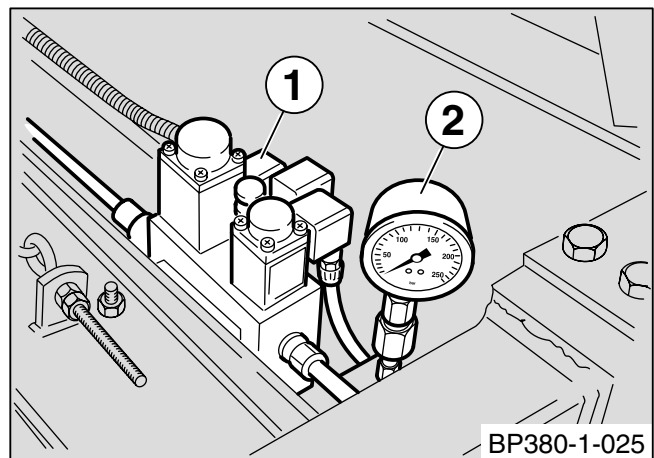


4.2.3 Regulation of the Baling Thrust

The baling thrust in the bale channel is regulated by an electronic-hydraulic system. The baling thrust is adjusted on the comfort control. The current pressure in the baling hydraulics can be read off the pressure gauge (1) on the front right hand side at any time.

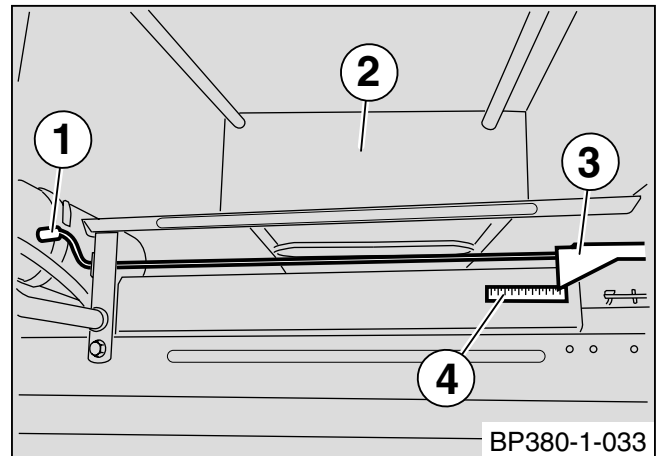


There is another pressure gauge (2) located on the right hand side of the machine near the knottter board beside the hydraulic control block (1).



4.3 Adjusting the Length of the Big Packs

The length of the big packs is adjusted on the left hand maintenance platform (2). The length of the big pack can be pre-selected by turning the crank (1). The indicator (3) on the scale (4) provides an aid for the adjustment.



4.4 Twine

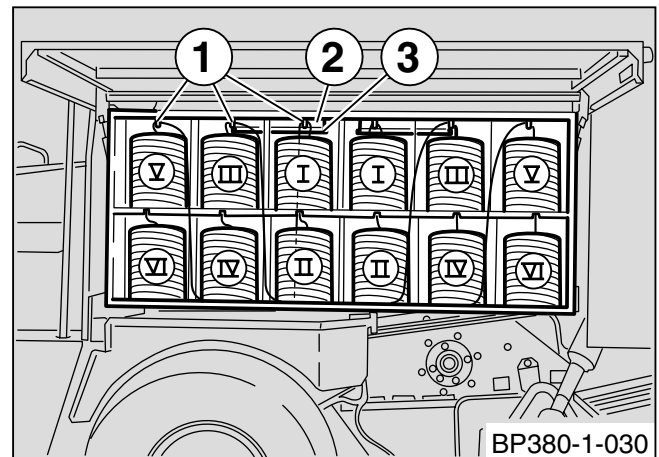


When placing the twine in the twine box make sure that the lettering on the rolls can be read. Observe the side identified with "top".

The big pack baler is equipped with twine boxes on both sides of the machine, each of which can hold 12 rolls of twine.

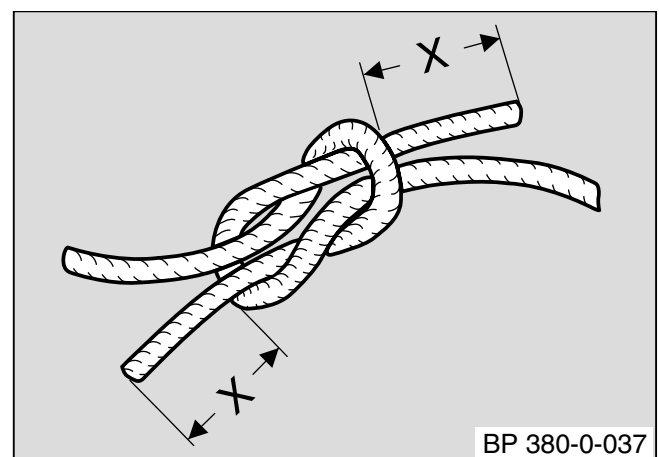
Machine Type	No. Knotters	No. Rolls of Twine per Knotter
Big Pack 80 - 80	4	6
Big Pack 120 - 80	6	4

The end of one roll must be fed through the twine lug (1) before being tied to the beginning of the next roll. The beginning of roll I is fed between rod stock (2) and the plastic bar (3) through to the twine brakes underneath the twine boxes.



		End Roll	Start Roll
BP 80-80	BP120-80	I	II
		II	III
		III	IV
		IV	V
		V	VI

Tie the rolls of twine together with the reef knots shown here. Reduce the ends by the knot down to $x = 15-20 \text{ mm}$.

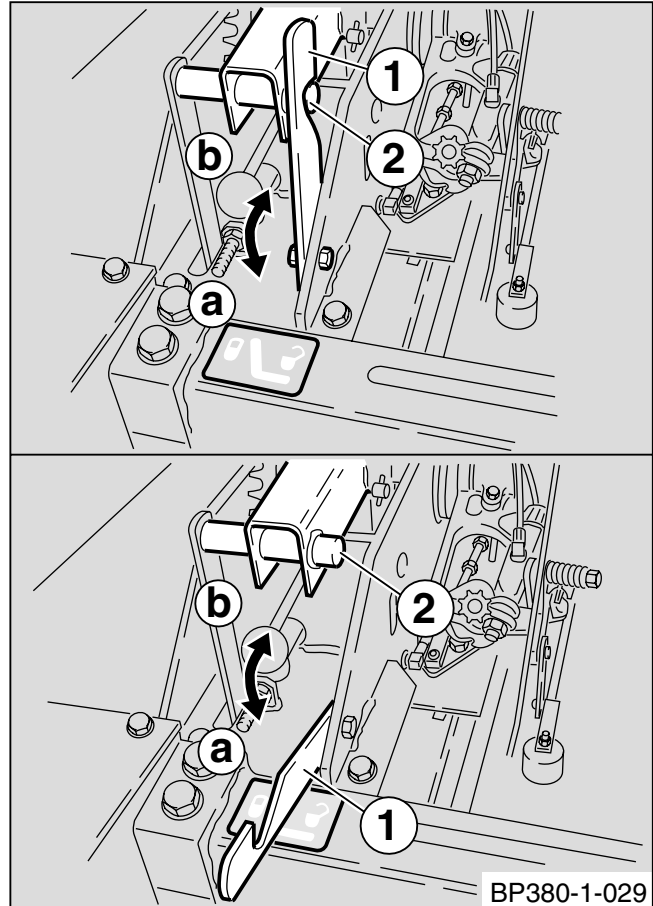


4.4.1 Inserting the Twine



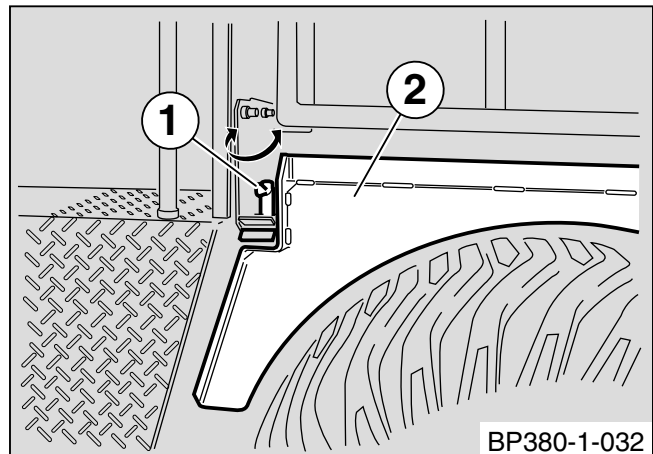
Lock the flywheel mechanically or hydraulically every time you insert new twine. Secure the knoter shaft by locking the safety lever.

The knoter shaft must be secured every time new twine is inserted, so that the needle yoke cannot move. To do this move the safety lever (1) from position (a) to position (b) and rest on shaft (2).



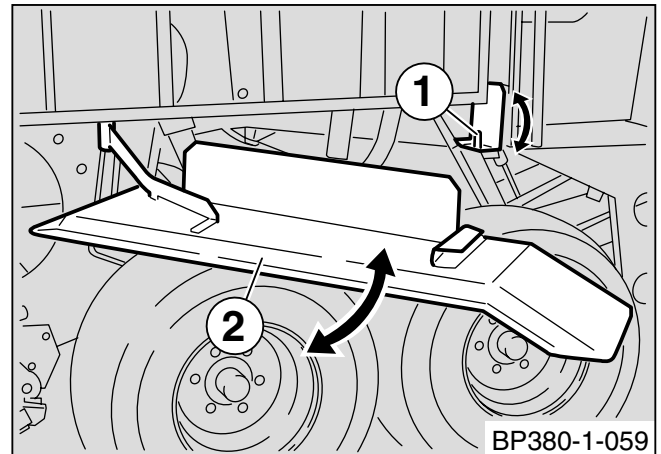
Individual Axle

To be able to feed the twine into the twine brake the wheel guards (2) on both sides of the big pack baler must be opened. To do this turn the lock (1) upwards and swing the wheel guard out of the way.



Tandem Axle

With the tandem axle the mudguard must be swung out of the way to be able to feed the twine into the twine brake. To do this turn the lock (1) upwards and swing the mudguard (2) out of the way.

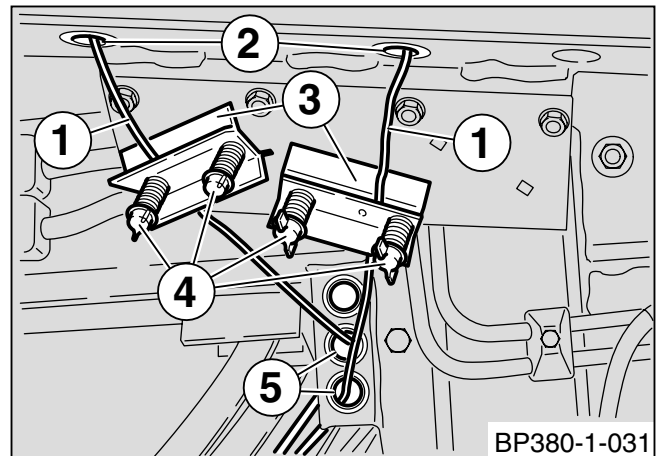


Feeding the Twine into the Twine Brake

Feed the twine (1) from the twine boxes through the lower twine lugs (2) into the twine brakes (3) and insert in the twine lugs (5). Then thread over the twine tensioning springs into the needles and tie on to the particular lug.

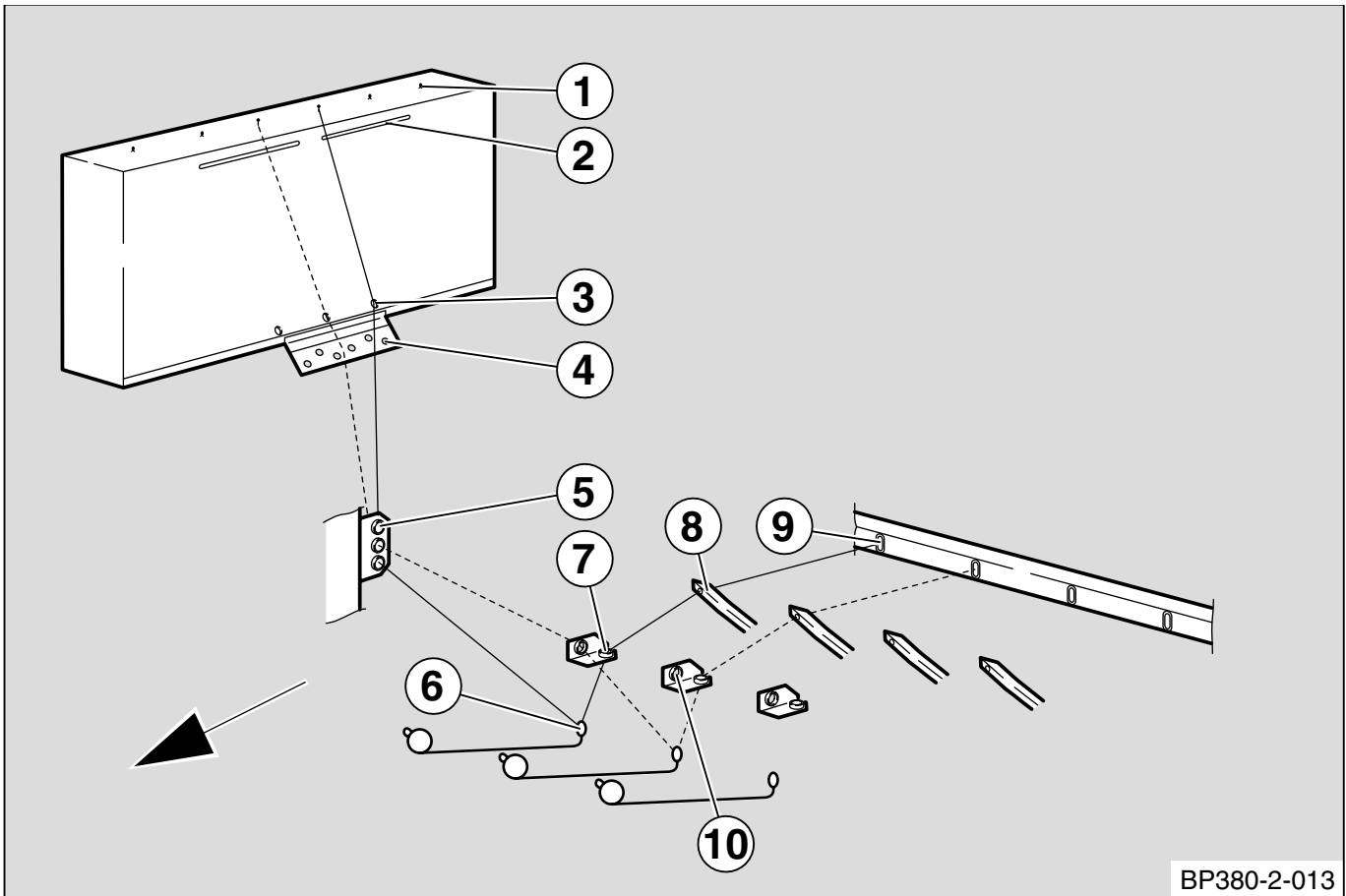


With the Big Pack 120 - 80 a third strand of twine is fed through another twine brake to the needles.



The twine brake is adjusted by twisting the adjusting screw (4).

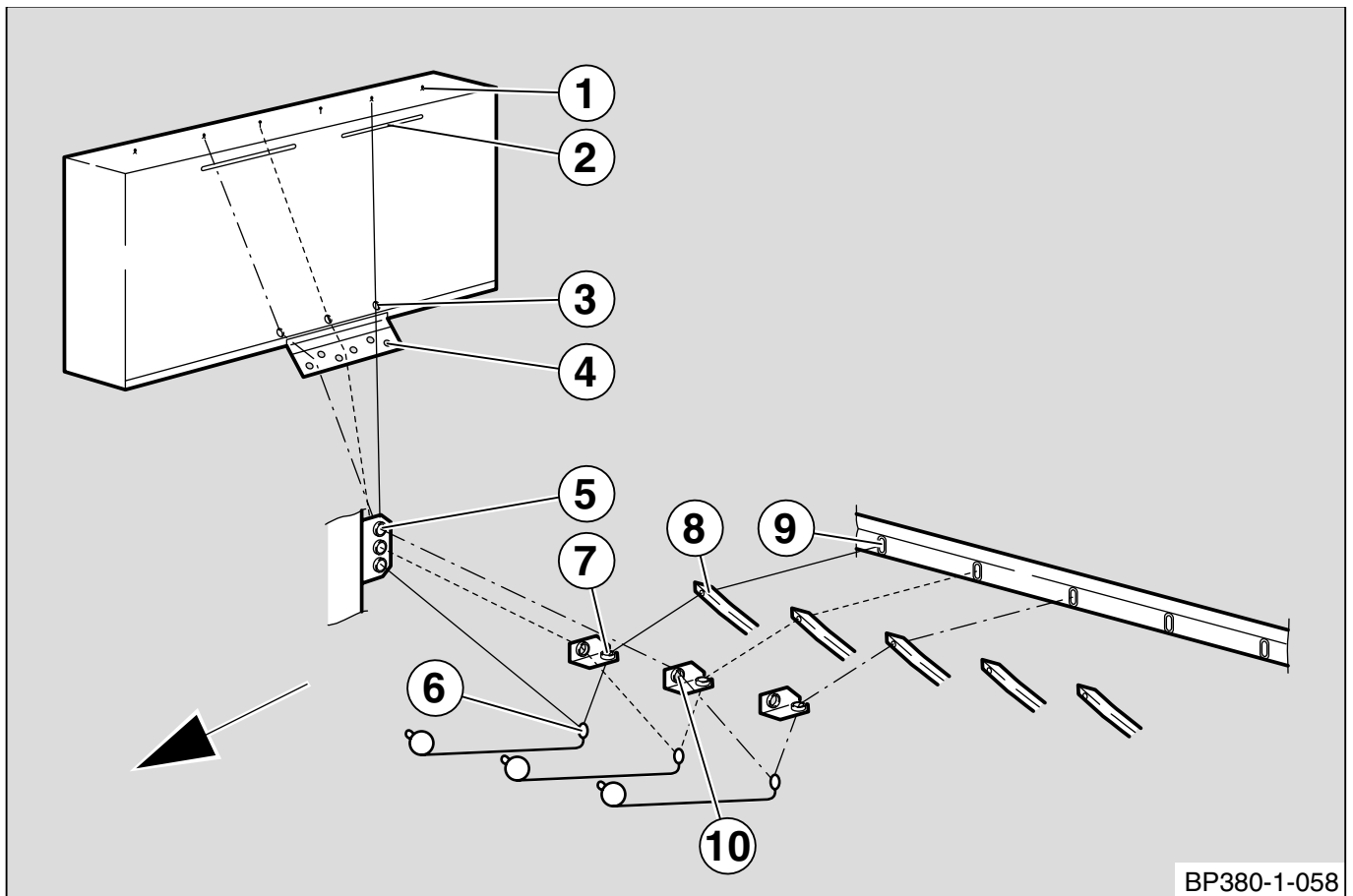
Twine Path on the Right Hand Side of the Big Pack 80-80



BP380-2-013

- | | |
|---|---|
| 1) Twine lugs in the twine box | 6) Twine tensioning spring |
| 2) Twine brake | 7) Twine lugs underneath the needles |
| 3) Twine lugs underneath the twine box | 8) Needle |
| 4) Twine brake underneath the twine box | 9) Lug for tying the twine when threading |
| 5) Twine lugs on the frame | 10) Twine lugs underneath the needles |

Twine Path on the Right Hand Side of the Big Pack 120-80



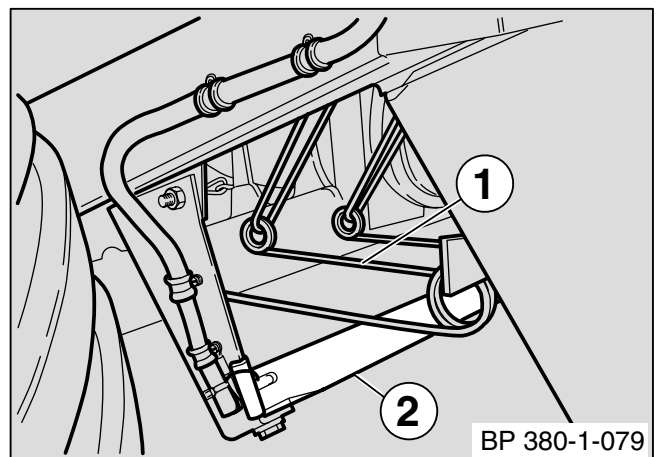
- | | |
|---|---|
| 1) Twine lugs in the twine box | 6) Twine tensioning spring |
| 2) Twine brake | 7) Twine lugs underneath the needles |
| 3) Twine lugs underneath the twine box | 8) Needle |
| 4) Twine brake underneath the twine box | 9) Lug for tying the twine when threading |
| 5) Twine lugs on the frame | 10) Twine lugs underneath the needles |

4.4.2 Electric Twine Fault Display

If the end of the twine has been reached or the twine is broken, the sprung twine tensioners (1) rest on the bar (2). This closes a contact for an electrical circuit and a warning lamp on the front right hand side lights up. At the same time an acoustic warning signal sounds on the control and indicator box. An error message appears in the display.

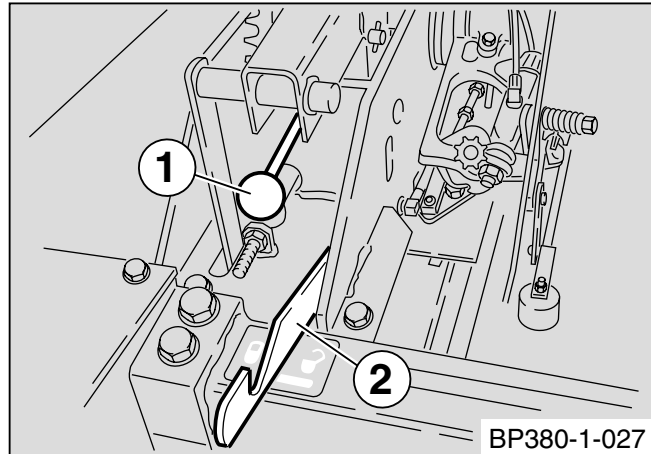


To switch off the acoustic warning signal while threading the twine, see Chapter 3.3.5 "Alarm Messages".



4.4.3 Initiating the Binding Process Manually

For the twine to enter the bale channel and to be taken by the knotter, the binding process must be initiated manually. To do this, first swing the safety lever (2) downwards. Move lever (1) upwards to initiate the binding process. Move the needles upwards to the knotters manually at the flywheel (in the working direction) or by switching on the PTO shaft. The binding twine is now in the bale channel.



4.5 Emptying the Bale Channel



The maintenance platform may only be mounted when the machine is at a standstill. Switch off the engine and remove the ignition key. Apply the flywheel brake.

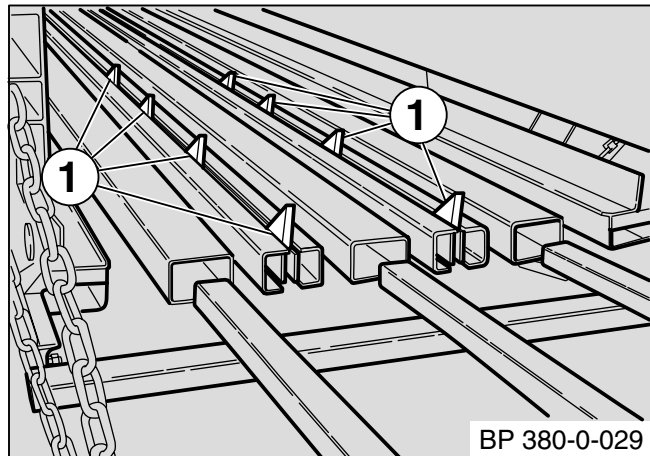
The packs in the bale channel should be bound before emptying the bale channel. To do this initiate the binding process manually (see chapter 4.4.3 "Initiating the Binding Process Manually").

Open the bale channel from the control and indicator box. The procedure is thoroughly described in chapter 3.5 "Opening the Bale Channel".

Actuate the pack ejector (1) with the double action control boxes and transport the big pack out of the bale channel.



Always return the bale ejector to the front position after ejecting the big pack.



5. Settings

5.1 Special Notes on Safety



- The following always applies for all maintenance, mounting, repair and adjustment work: switch off the PTO shaft. Switch off the engine and remove the ignition key. Apply the flywheel brake.
- Only put the big pack baler into operation when all protective devices have been attached and are in a proper operating condition.
- In dangerous situations stop the PTO shaft and bring the big pack baler to a standstill immediately.
- Never run the big pack baler without an operator on the tractor.
- When working under the machine or on the needles in the baling channel, the needle carrier must be secured against falling down. Danger of injury!

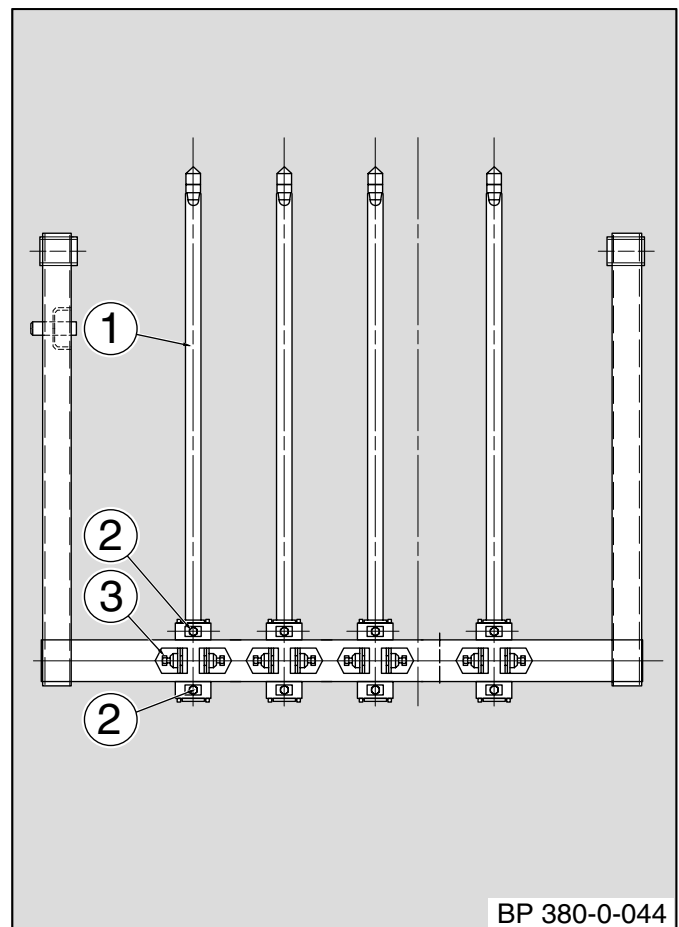
5.2 Adjusting the Needles



Carry out all adjustments to the needles without any twine threaded!

5.2.1 Lateral Adjustment of the Needles

Insert the needles (1) centrally between the clamping brackets and the needle yoke, turn them towards the needle slits and screw tight with screws (2). To be able to carry out the adjustment, the binding process is initiated manually and the needle yoke manually turned up in the working direction at the flywheel mass. When raised, the needles must just laterally touch the left and right hand sides of the knotter frames. To correct the lateral distance, the screws (2) are undone and the needles laterally positioned with the adjusting screws (3). Always make sure that the screws are all tightened up firmly again after making the adjustment.

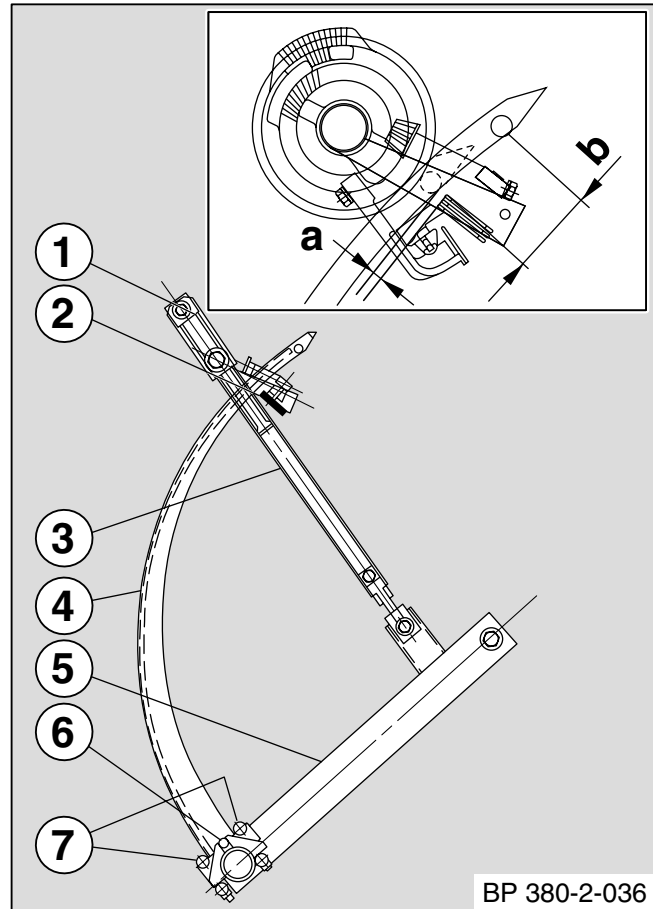


5.2.2 Height of the Needles on the Knotter

To set the height of the needles on entry into the knotter, the needle yoke is turned upwards at the flywheel mass after manually initiating the binding process. It is turned up in the working direction until the rollers in the needle tips are above the cleaning disc on the carrier (2). The distance "a" from the lower edges of the needles to the upper edge of the cleaning disc must be **1 to 3 mm**. This setting can be corrected with screw (7) after screw (6) has been undone. Always make sure that the screws are all tightened up firmly again after making the adjustment.

5.2.3 Needles' Upper Dead Centre

The needle yoke is set in motion by the needle drive connecting rod (3) after the binding process has been initiated. To be able to check the needles' dead centre, turn the needle yoke up to its highest position (dead centre). The needle drive connecting rod (3) and the crank arm (1) should then be overlap each other. The twine needles (4) project out of the knotter. The distance "b" between the upper edge of the carrier disc (2) and the midpoint of the roller in the needle tip must be at least **85 mm**. Should this setting be incorrect, it can be corrected by shortening or lengthening the needle drive connecting rod.

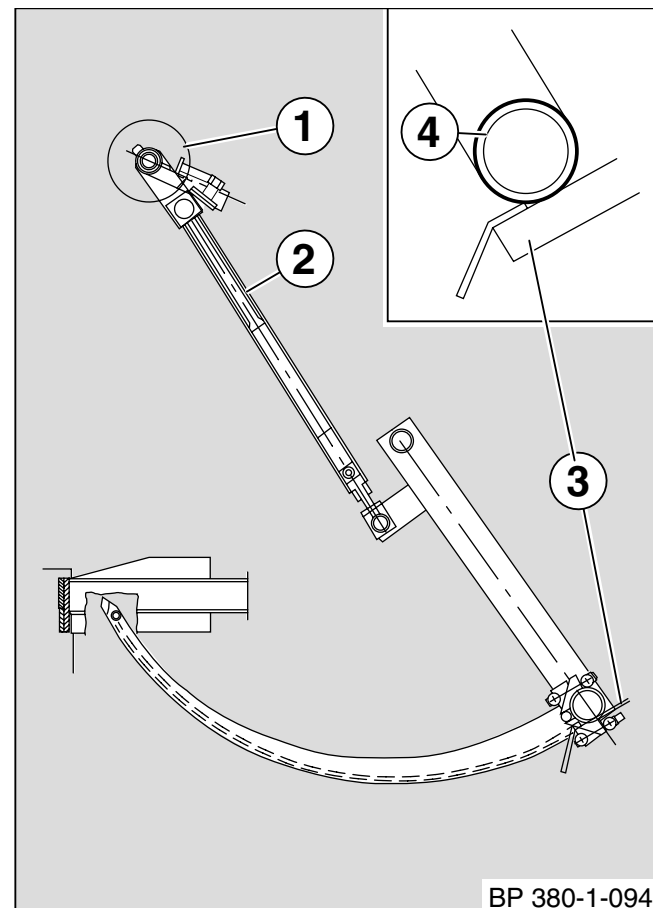


5.2.4 Needles in Idle Position

If the needle yoke is in the idle position, i.e. the crank arm (1) and the needle drive connecting rod (2) are extended, the cross pipe on the needle yoke (4) must be in the brake (3).

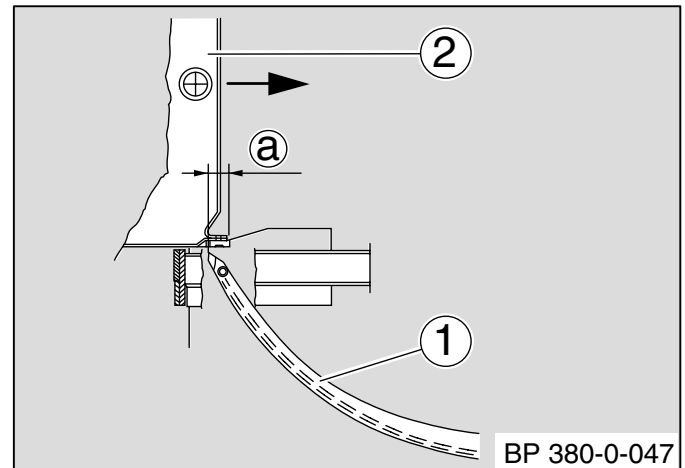
5.2.5 Needles Relative to the Baling Ram

To set the needles relative to the baling ram, the drive PTO shaft for the knotter shaft must first of all be dismantled. The baling ram is turned manually in the working direction at the flywheel mass until the crank arms and the piston rods are overlapping each other (i.e. the baling ram is at the front dead centre). The knotter gear is then turned until the **coloured marking** on the knotter shaft **crown wheel** is aligned with the upper rear edge of the knotter gearbox. After the adjustment has been made place the PTO shaft for the knotter shaft back in position and secure. Check the settings as described in the following chapter.



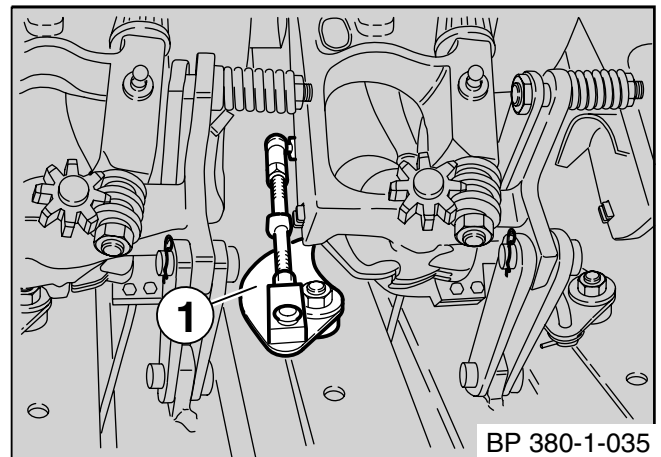
Checking the Setting of the Needles Relative to the Baling Ram

To be able to check the setting of the needles relative to the baling ram, the binding process is initiated. The baling ram (2) is manually turned in the working direction at the flywheel mass until the tips (1) of the binding needles are at the same height as the ram blade. In this position the needle tip must be covered by the baling ram, with the dimension **a** = **40–70 mm**. If this is not the case the setting must be corrected by altering the position of the knotter drive PTO shaft.



5.3 Twine Bar

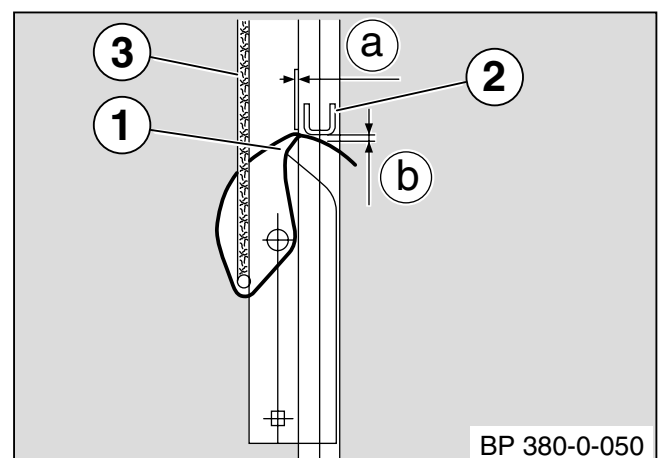
The twine bar (1) draws the twine down from the needle and presses it against the knotter hook. If the twine is not taken by the twine bars, the knotter hook cannot take up the twine.



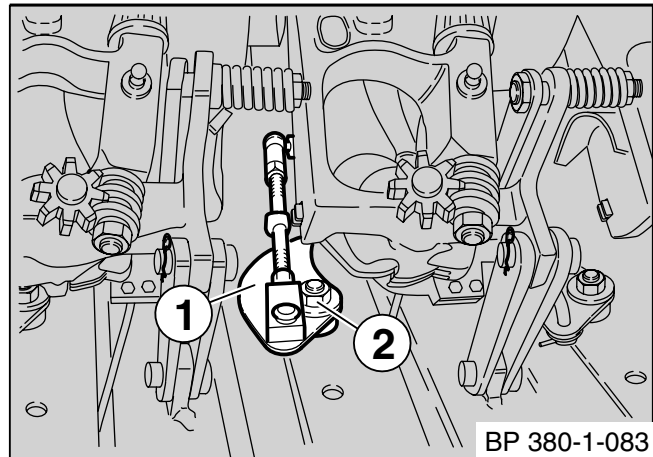
5.3.1 Adjusting the Twine Bar

Initiate the binding process manually (see chapter 4.4.3 "Initiating the Binding Process Manually"). Turn the flywheel in the working direction. The needles move upwards. At the same time move the twine bars over the openings through which the needles transport the twine to the knotter.

If the twine bars (1) are in the middle of the openings, the distance from the tip of the twine bar and the inner side of the needle (2) must be **"b" = 2–5 mm**.

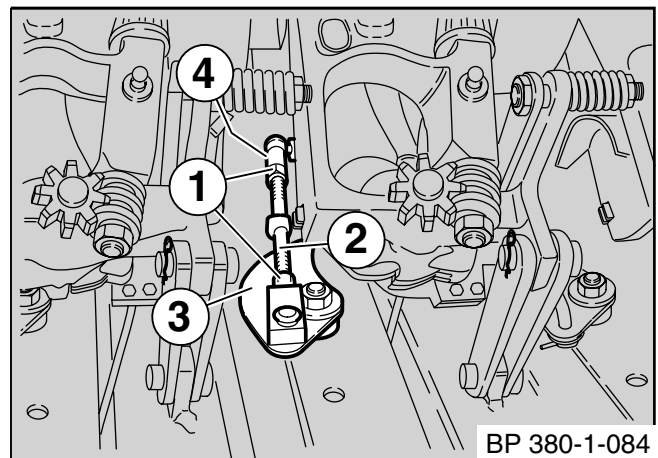


The adjustment is made by undoing the bearing screws (2) on the twine bar (1). Shift the twine bar in the slot until the dimension "b" = **2–5 mm** (see figure BP 380-0-050 - chapter 5.3.1).



BP 380-1-083

The setting for the distance at the side "a" (see figure BP 380-0-050, previous page) is adjusted at the control rod assembly (2) for the twine bar (3). To make the adjustment undo self-locking nuts (1) and take off the ball head (4). Twist the control rod until the dimension a is set at **a = 0–10 mm**. Tighten up the self-locking nuts again.



BP 380-1-084

5.4 Baling Ram Setting

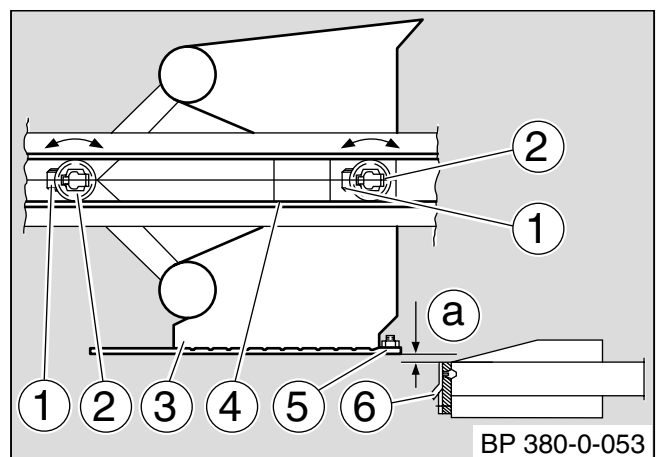


- The guide rollers for the baling ram must carry uniformly.
- The gap between the baling ram blade and the blades in the bale channel must be uniform over the whole width of the ram.

The baling ram (3) on the **Big Pack 120 - 80** is equipped with seven blades (5). The baling ram (3) on the **Big Pack 80 - 80** on the other hand is only fitted with five blades (5) due to the smaller width of the bale chamber. The bale chamber on both big pack balers are each fitted with two blades (6).

Adjusting the Baling Ram Blades

The baling ram blades must be set precisely to obtain a smooth surface on the underside of the pack. To adjust the distance to "a" = **2 mm** the height of the baling ram can be adjusted with the eccentric sleeves (2) on the guide rollers. After separating the two halves of the clamp bedding (1), the eccentric sleeves are turned to raise and lower the baling ram. After making the adjustment, the tighten the two halves of the clamp bedding again. Make sure that the guide rails (4) and the guide rollers do not become dirty. This can lead to increased wear and an imprecise height setting of the baling ram.

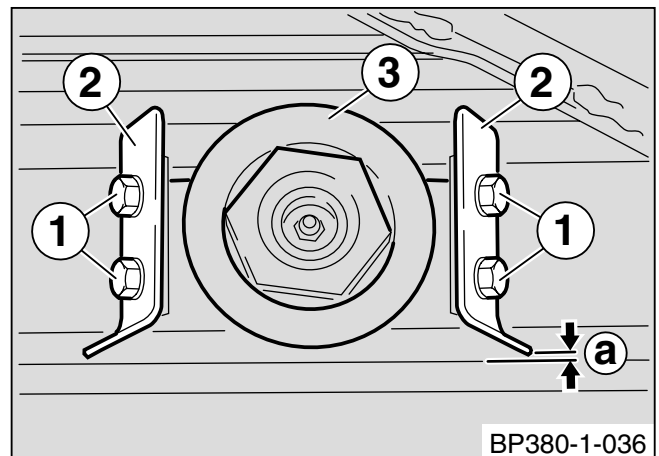


BP 380-0-053

5.5 Guide Rail Cleaning

There are cleaning rails attached to the four baling ram rollers (3), which clear the baling ram guide rails of deposits of dirt.

To make the adjustment undo screws (1) and set the cleaning rails to the dimension $a = 1-2 \text{ mm}$. Tighten up the screws again.

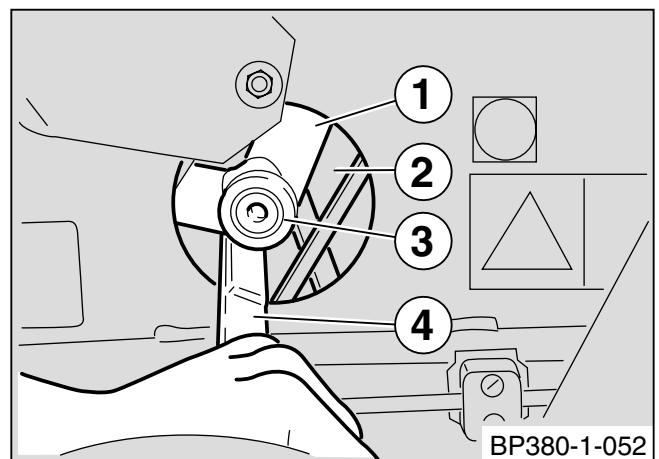


5.6 Setting the Rake Relative to the Baling Ram

Turn the rake manually in the working direction until the small guide roller (3) on the rake (1) is visible in window (2) on the right hand side of the machine. Lift up the guide roller with a mounting lever (4) so far that it meets resistance. Fasten in this position with the mounting lever in the window.

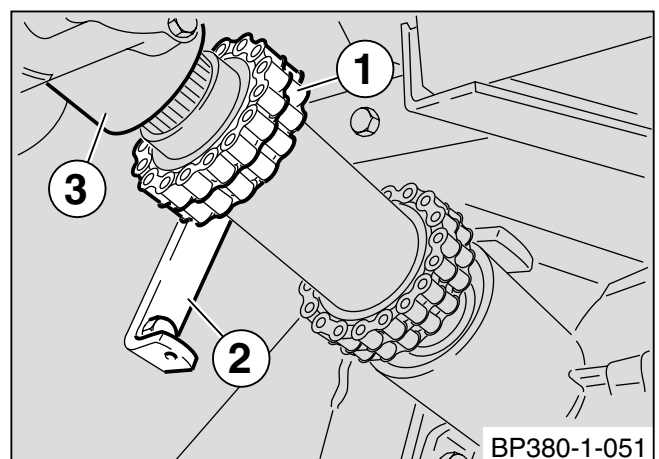


The rake must be adjusted when rake gearbox or the chain coupling connection chains are replaced.



Dismount the protective plate from the bracket (2) on the left hand side of the machine. Remove the roller chain (1) from the rake gearbox (3) drive shaft. Move the piston rods into the extended position (rear dead centre). The rake (fixed into position with the mounting lever) and the ram are now in position for the adjustment. Place the chain coupling roller chain (1) in position and secure. Attach protective plate.

Turn the machine manually through one entire revolution at the flywheel. If the piston rods are in the extended position, the small guide rollers on the rake must be in the centre of the window.

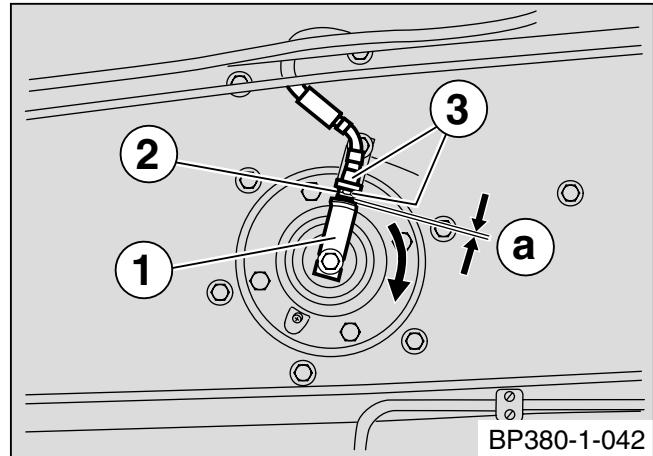


5.7 Adjusting the Sensors

5.7.1 Rake Drum

The sensor (2) for the rake drum is located on the rake shaft on the right hand side of the machine. The distance between the transmitter (metal bracket) (1) and the sensor must be **"a" = 3 mm**.

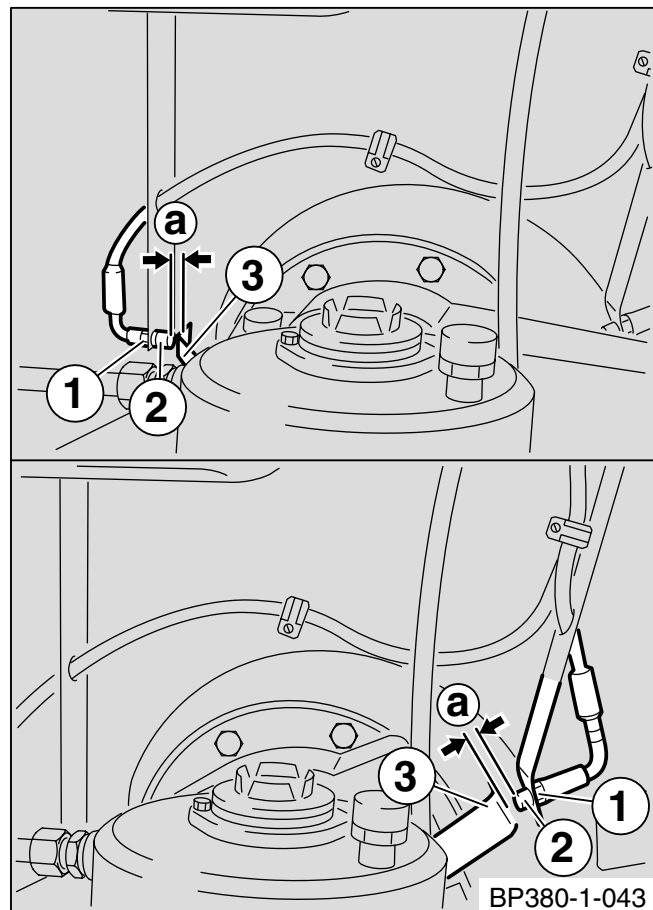
To make the adjustment undo nuts (3). Turn the nuts until the distance **"a" = 3 mm** has been reached. Tighten up the nuts again.



5.7.2 Piston Rod Sensors

Both of the piston rod sensors (2) are located on the right hand side of the main drive gearbox. The transmitter (3) is fastened to the gearbox output shaft. The distance between the transmitter and the sensors must be **"a" = 3 mm**.

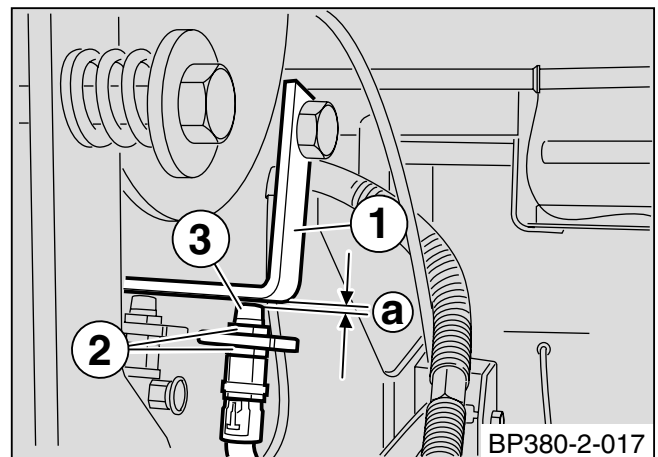
To make the adjustment, undo nuts (1) on both sides of the sensor. Turn the nuts until the distance **"a" = 3 mm** has been reached. Tighten up the nuts again.



5.7.3 Knotter sensor

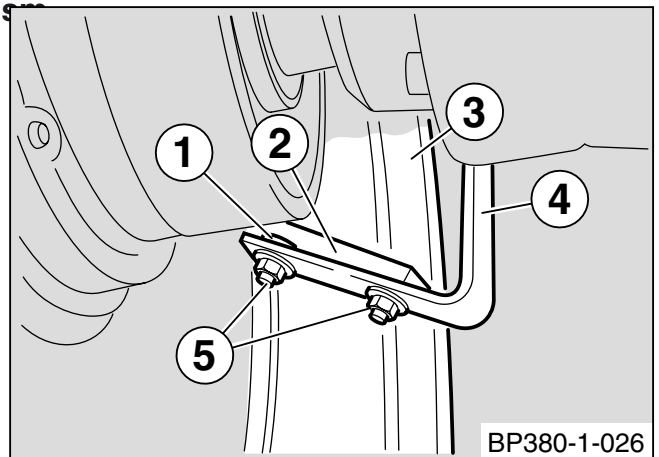
The knotter sensor (3) is mounted on the right-hand side, beneath the knotter shaft. The distance between the sensor (3) and the transmitter (1) should be **a = 3 mm**.

To adjust, undo the nuts (2) and turn until the measurement **a = 3 mm** has been set. Tighten the nuts up again.



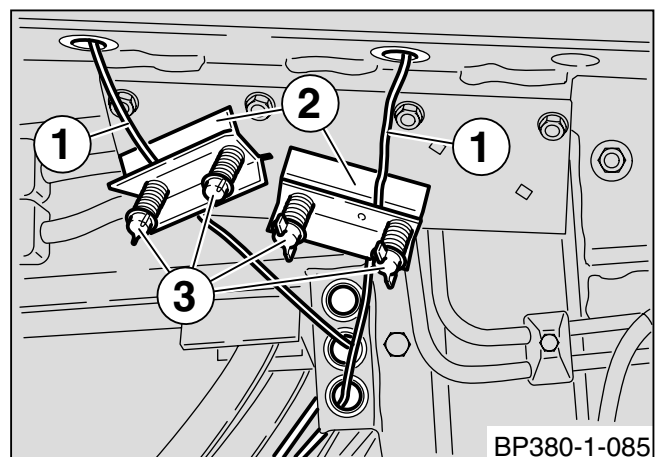
5.8 Adjusting the Flywheel Cleaning Mechanism

Even small deposits of dirt in the interior of the flywheel (3) can lead to imbalances. The setting of the plastic bar (2) should therefore be checked regularly. If the gap between the flywheel and the plastic bar is too large, undo the nuts (5) on the bracket (4) and slide the plastic bar in the slots up towards the flywheel mass. Tighten up the nuts again.

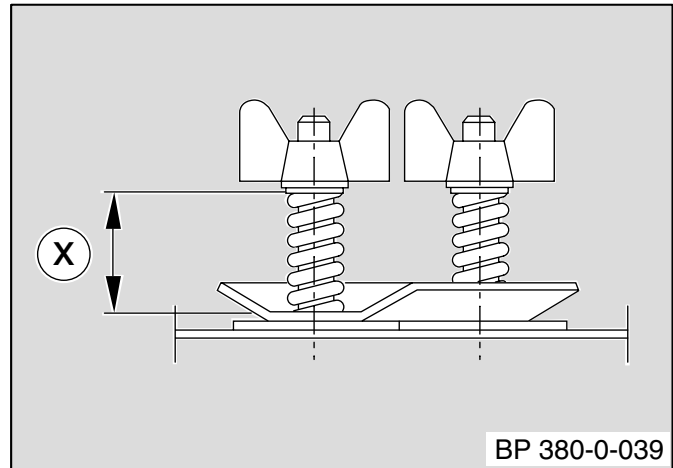


5.9 Adjusting the Twine Brake

The twine brakes (2) are located underneath the twine supply containers. The twine (1) can be kept under tension with the adjusting screws (3).

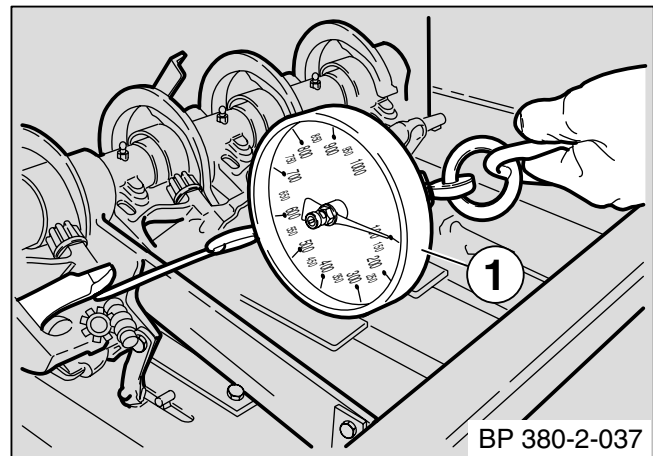


Different types of twine can have different frictional properties. The tension of the strand of twine must be checked when changing the type of twine. It should only be set high enough for the twine tensioning springs do not touch the contact rails. The distance "x" depends on the type of twine selected and must be established each time by checking the tension of the strand of twine.



Checking the Tension

1. Thread the twine as specified.
2. Initiate the knotting process manually.
3. Turn the big pack baler's flywheel manually in the working direction until the binding needle has reached its upper dead centre.
4. Draw out approx. 200 mm of twine and cut. Tie the twine from the needles to a spring balance. Pull the spring balance until the strand of twine starts to move. The value indicated on the spring balance must be between 50 and 100 N. If the value measured does not lie within this range, loosen or tighten up the adjusting screws on the twine brake.



6. Care and Maintenance

6.1 Special Notes on Safety



- Repair, care, maintenance and cleaning work may only be carried out with the machine at a standstill. Switch off the engine and remove the ignition key. Apply the flywheel brake.
- Secure the big pack baler and the tractor from rolling away.
- After completion of care and maintenance work replace all protective plates and protective devices properly.
- Avoid skin contact with oils and greases.
- High pressure hydraulic fluids can cause severe injuries. In case of injury seek immediate medical attention. Risk of infection.
- Follow all other notes on safety to prevent injury and accidents.

6.2 General



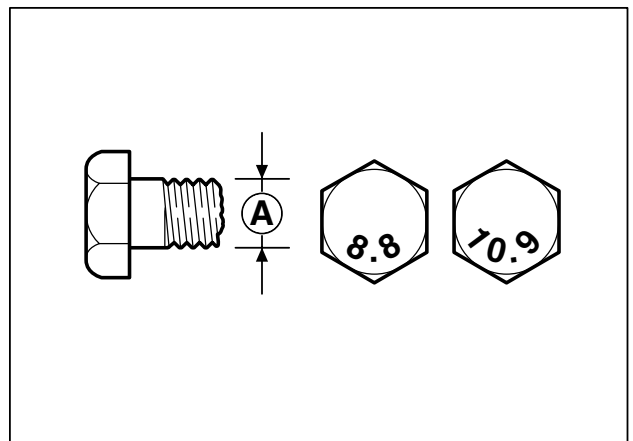
To guarantee perfect operation of the big pack baler and to reduce wear, maintenance and care work must be carried out at certain intervals. This includes amongst other things cleaning, greasing, lubricating and oiling of parts and components.

Torque moment M_A (if not otherwise specified).

A Ø	5.6	6.8	8.8	10.9	12.9
	M_A (Nm)				
M 4		2,2	3,0	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
M 12	42	64	85	125	145
M 14		100	135	200	235
M 14x1,5			145	215	255
M 16		160	210	310	365
M 16x1,5			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
M 30			1450	2100	2450

A = thread size

(Screw class visible on screw head.)



Check regularly (approx. every 50 hours) that nuts and screws are firmly tightened and tighten up if necessary!

6.3 Cleaning

The big pack baler, in particular the knotter, must be cleaned of chaff and dust every time it is used. Under very dry working conditions clean several times a day.

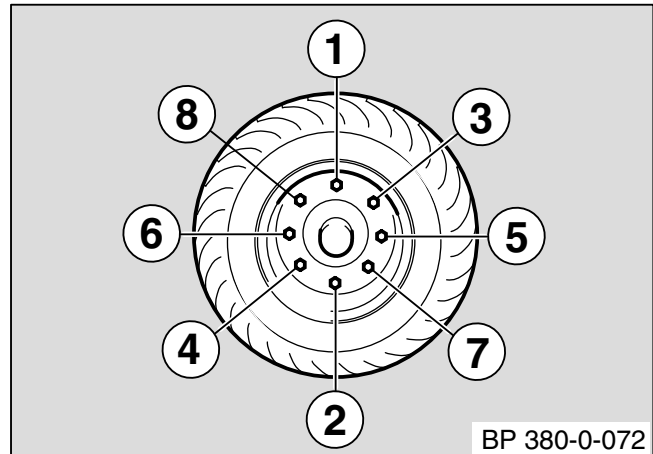
6.4 Tyres



- Repair work on the tyres may only be carried out by specialists with suitable mounting tools.
- Park the big pack baler on firm level ground. Secure from unintentional rolling away using wheel chocks and by applying the parking brake.
- Check regularly that the wheel nuts are fastened tightly and tighten up if necessary.
- Do not stand in front of the tyre when inflating with compressed air. The tyre can burst if the pressure becomes too high. Risk of injury!
- Check the tyre pressure regularly.

Observe the order of tightening and loosening wheel nuts shown in the adjacent diagram. Check the wheel nuts 10 operating hours after mounting and tighten up if necessary. Subsequently check every 50 operating hours that they are fastened tightly.

Thread	Spanner size	Max. torque black	M _A (Nm) zinc-plat.
M18 x 1,5	24	265	245
M20 x 1,5	27	343	294



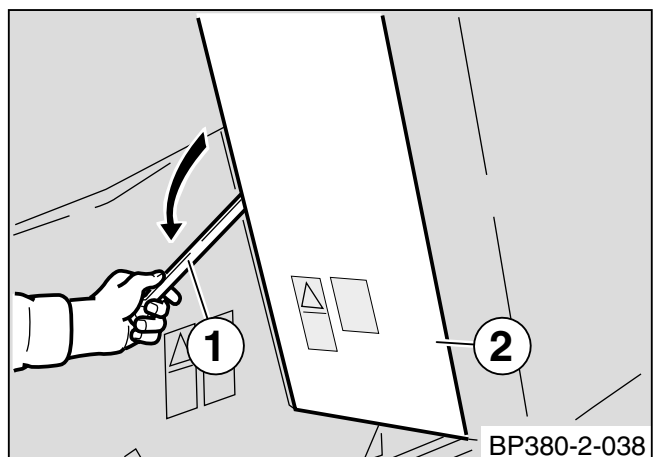
Check the tyre pressure at regular intervals and inflate if necessary. The tyre pressure is dependent on the tyre size. The values are listed in the section "**Technical Data**".

6.5 Opening the Front Guard Plate

The front guard plate (2) is unlocked using a 17 mm ring or open-ended spanner (1). Engage the flywheel brake. Place the ring or open-ended spanner between the swinging drawbar and the front guard plate on the safety mechanism as shown in the adjacent diagram and move upwards. As soon as the front guard plate is unlocked it can be swung upwards.



When opening the front guard plate make sure that it does not hit any part of the machine.
Move the lever of the flywheel brake to the stop position.



6.6 Hydraulics

6.6.1 Special Notes on Safety



- Before carrying out works on the big pack baler's hydraulics system, release the pressure in the hydraulic cylinders for the bale channel flaps.
- Check hydraulic hoses and lines regularly and replace any damaged ones.
- The replacement parts employed must comply with the technical requirements of the machine manufacturer. Only use genuine KRONE replacement parts.
- Repair work to the hydraulics system may only be carried out by qualified specialists.



- Ensure perfect cleanliness when working on the hydraulics system.
- Check the hydraulic oil level every time before putting into operation.
- Observe the intervals specified for changing the hydraulic oil and the hydraulic oil filters.
- Dispose of used oil properly.

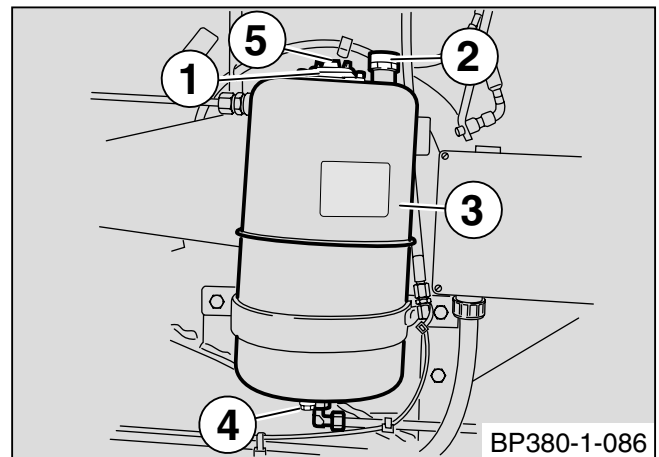
6.6.2 On-Board Hydraulics



The hydraulic cylinders for the bale channel flaps must be retracted when changing the hydraulic oil.

The big pack baler's on-board hydraulics system is pressurised by its own hydraulic pump. It is flanged on to the lower part of the main gearbox and requires no maintenance.

The on-board hydraulic oil and hydraulic oil filter must be changed annually before the start of the season. Have a suitable collection container ready when making the oil change. Take out the drain screw (4) in the reservoir tank (3). Take out the hydraulic oil filter attachment screws (1). Replace the filter and fasten with the screws again. Once all the oil has emptied, screw the drain screw back in. Unscrew screw plug (5) and fill in the required amount of hydraulic oil. Check oil level with using dipstick (2). The hydraulic oil specifications are listed in the section "**Technical Data**".



6.6.3 On-Board Hydraulic Circuit Diagram

Designations:

- a) Circuit diagram for the baler's internal hydraulics
- b) Circuit diagram for the pick up hydraulic cylinder
- c) Circuit diagram for the flywheel brake
- d) Circuit diagram for the pack ejector

Abbreviations:

- A = Outlet
- M = Pressure gauge
- P = Pump
- S = Accumulator
- T = Tank

Designations:

- I = Electro-hydraulic valve block
- II = Baling flap cylinder
- III = Pick-up hydraulic cylinder
- IV = Flywheel brake hydraulic cylinder
- V = Pack ejector hydraulic cylinder

6.7 Changing and Checking the Oil in the Gearboxes

6.7.1 General



- When checking the oil level in the gearboxes, make sure that the big pack baler is in a horizontal position. Use the underside of the twine box as a reference.
- The respective oils and quantities can be found in "Technical Data".
- Check all oil levels before using the machine every day during the season and fill up with oil if necessary.

6.7.2 Main Gearbox

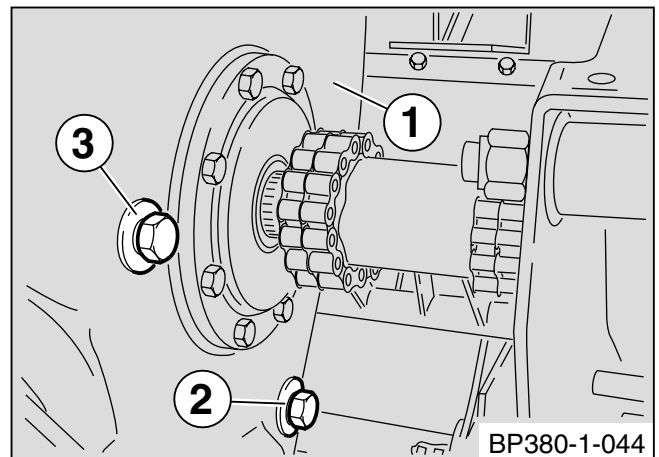
The oil check (3) and oil drain (2) screws are located on the left hand side of the main gearbox (1).

Checking the Oil

Check the oil level in the main gearbox every time before using the machine. To do this unscrew the oil check screw (3). The oil must come up to the oil check hole. Top up with oil if necessary. Screw the check screw in again after checking the level.

Changing the Oil

Change the oil after every season. To do this unscrew the oil check screw (3) and the oil drain screw (2). Collect oil discharged in a suitable collection container. Screw in the drain screw again and fill with new oil up to the checking hole. Screw the oil check screw back in again.



6.7.3 Feed Rake Gearbox

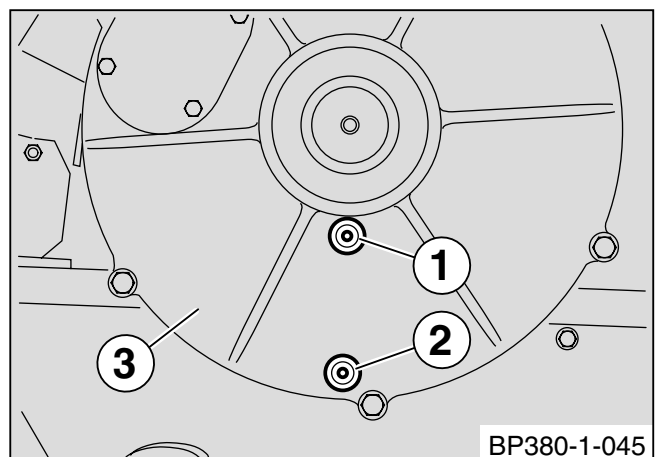
The feed rake gearbox (3) is located on the left hand side of the machine.

Checking the Oil

Check the oil level in the feed rake gearbox (3) every time before using the machine. To do this unscrew the oil check screw (1). The oil must come up to the oil check hole. Top up with oil if necessary. Screw the check screw in again after checking the level.

Changing the Oil

Change the oil after every season. To do this unscrew the oil check screw (1) and the oil drain screw (2). Collect oil discharged in a suitable collection container. Screw in the drain screw again and fill with new oil up to the checking hole. Screw the oil check screw back in again.



6.7.4 Transfer Gearbox

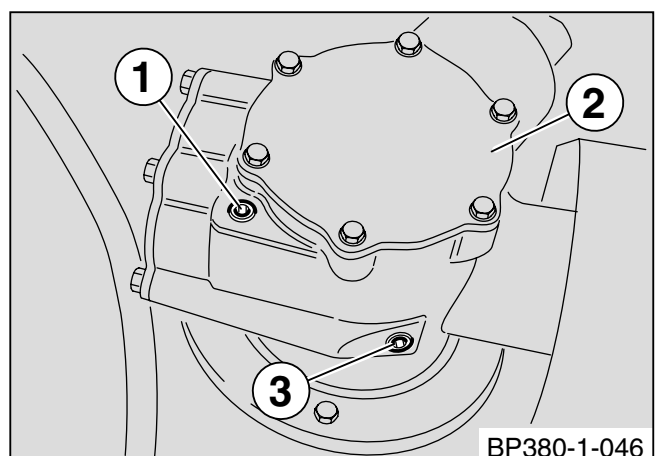
The transfer gearbox (2) is located on the left hand side of the machine.

Checking the Oil

Check the oil level in the transfer gearbox (2) every time before using the machine. To do this unscrew the oil check screw (1). The oil must come up to the oil check hole. Top up with oil if necessary. Screw the check screw in again after checking the level.

Changing the Oil

Change the oil after every season. To do this unscrew the oil check screw (1) and the oil drain screw (3). Collect oil discharged in a suitable collection container. Screw in the drain screw again and fill with new oil up to the checking hole. Screw the oil check screw back in again.



6.7.5 Pick Up Gearbox

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

Checking the Oil

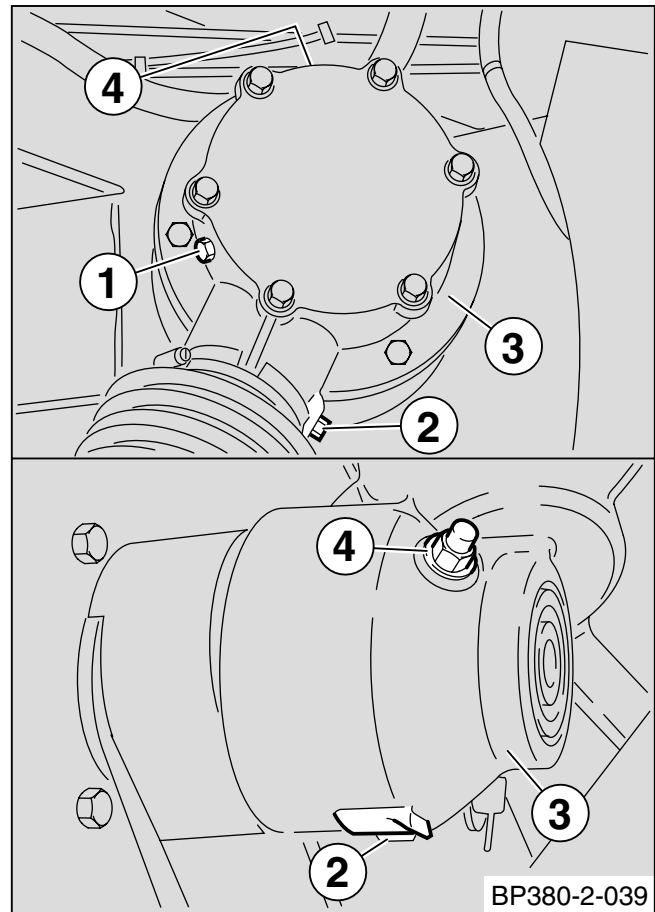
Check the oil level in the upper pick up gearboxes (3) every time before using the machine.

To do this unscrew the oil check screw (1). The oil must come up to the oil check hole. Top up with oil if necessary. Screw the check screw in again after checking the level.

Changing the Oil

Change the oil after every season. To do this unscrew and remove the check screw (1) on the upper gearbox and the ventilation screw (4) and the drain screw (2) from the gearbox. Collect oil discharged in a suitable collection container. Screw the drain screw in again.

Screw in the check and air evacuation screws again.



6.7.6 Cutting system gearbox for Big Pack MultiCut

On the right-hand side of the machine there is an angular gearbox at the top and a pick-up/cutting system transfer gearbox at the bottom.

Oil check

Check the oil level in the angular gearbox (1) before each operation.

To do this remove the check screw (2). The oil level must reach the lower edge of the check hole, if necessary top up the oil.

Oil change

The oil should be changed after every season.

To change the oil, remove the discharging screw (3) and the check screw (2). Collect the draining oil in a suitable container and dispose of it in an environmentally friendly manner. Fit the discharging screw (3) and fill in oil up to the check hole. Fit the check screw (2).

Oil check

Check the oil level in the angular gearbox (1) before each operation.

To do this remove the check screw (2). The oil level must reach the lower edge of the check hole, if necessary top up the oil through the breather hole (3).

Oil change

The oil should be changed after every season.

To change the oil, remove the breather screw (3) the discharging screw (4) and the check screw (2). Collect the draining oil in a suitable container and dispose of it in an environmentally friendly manner. Fit the discharging screw (4) and fill in oil up to the check hole. Fit the check screw (2) and breather screw (3).

6.8 Compressed Air Unit

6.8.1 General



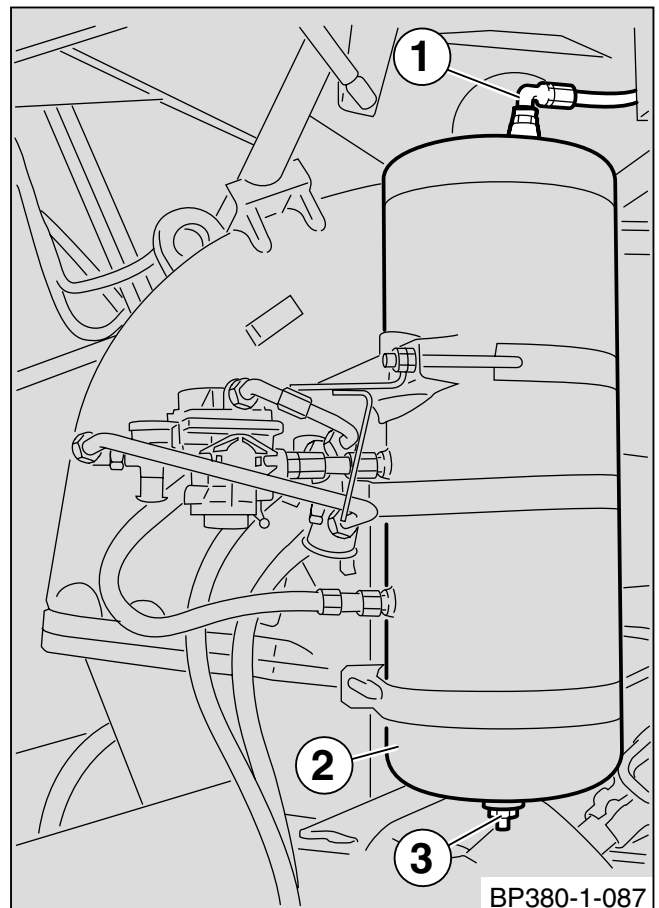
Before draining condensed water from the compressed air reservoir tank, make sure that the machine is secured from rolling away. Apply the parking brake and place wheel chocks under the wheels.

Big pack balers equipped with an air brake have two compressed air reservoir tanks and pneumatic brake cylinders. For hydraulically actuated brakes, only one compressed air reservoir tank is fitted for the knotter cleaning mechanism. Condensed water collects in the compressed air reservoir tanks. This condensation can lead to malfunctions. It must therefore be drained every week.

6.8.2 Compressed Air Reservoir Tank

On big pack balers with air brakes, the compressed air reservoir tank (2) is located on the left hand side of the machine. It is connected to the compressed air reservoir tank for the knotter cleaning mechanism by a pressure line (1). Condensed water can be drained at the water evacuation valve (3).

The compressed air reservoir tank for the knotter mechanism is located on the left hand side of the machine at the top beside the bale channel. Condensed water must also be drained here at the water evacuation valve.



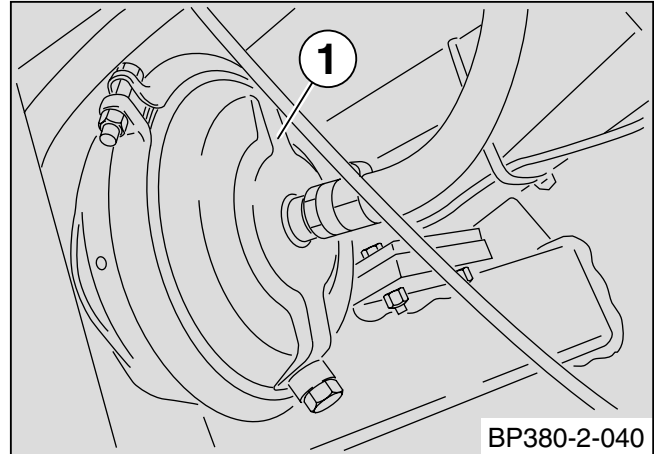
BP380-1-087

6.8.3 Brake Cylinders



**Excess pressure should be released from the compressed air system before disassembling the membrane brake cylinder.
There is a danger of injury!**

Special maintenance for the brake cylinders (1) is not necessary. The membrane cylinders should be removed, disassembled, cleaned, parts subject to wear replaced and reassembled at least every two years.



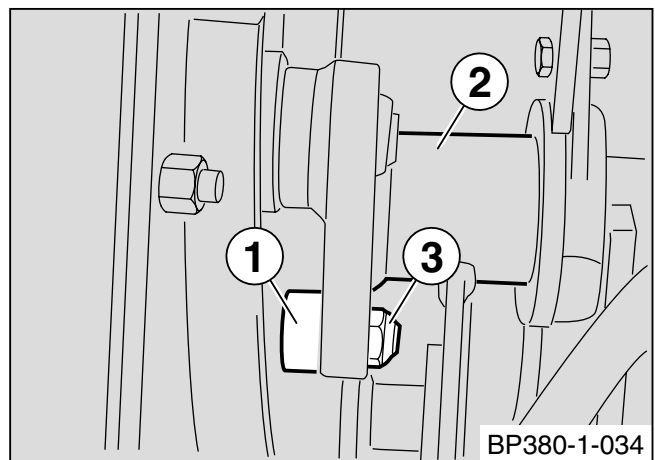
6.9 Replacing the Guide Rollers on the Rakes

The guide rollers (1) on the feed rake drum (2) are subject to heavy use. Undo the nuts (3) to replace the guide rollers. Pull the guide rollers out of the hole in the side wall of the rake housing. Insert new guide rollers and secure with the nuts.

Torque moment:

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

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



Explanation of circuit diagram

1 x 1/1

— Terminal connection
(no. on terminal strip)

— Terminal strip

— Location of terminal strip

Location:

1 = On-board computer

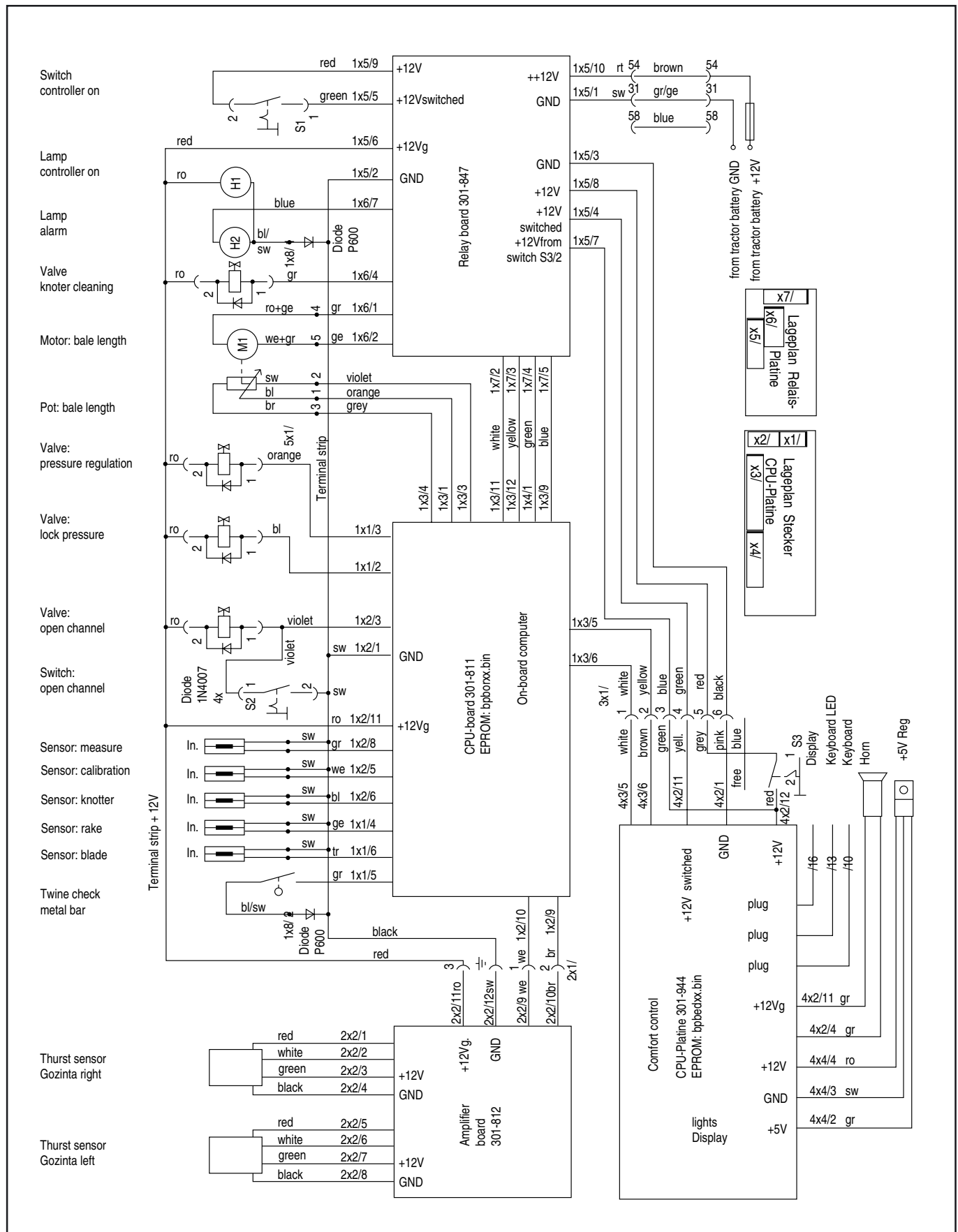
2 = Amplifier housing (tensioning element)

3 = Connector for comfort

4 = Comfort control

5 = Bale length adjustment housing
(not available)

6.10 Electrical Circuit Diagram



7 Lubrication

7.1 Special Notes on Safety



- Repair, care, maintenance and cleaning work may only be carried out with the machine at a standstill. Switch off the engine and remove the ignition key. Apply the flywheel brake.
- Secure the big pack baler and the tractor from rolling away.
- After completing care and maintenance work replace all protective plates and protective devices again properly.
- Avoid skin contact with oils and greases.
- In case of injury caused by discharged oil, seek immediate medical attention.

7.2 General

As a standard feature the big pack baler is fitted with a central lubrication system for the knoter area. The grease press for this system is located on the rear right hand bale channel at the same height as the maintenance platform.

Soft, smooth lithium NLGI grade 2 soap grease with E.P. additives in accordance with DIN 51825 are to be used as lubricating greases. We advise against using lubricating greases taking something else as a basis.

ARAL	Long-time grease H
BP	Energrease LS-EP2
DEA	Glissando EP2
FINA	Marson EPL 2A
Shell	Alvania Ep2
ESSO	EGL 3144

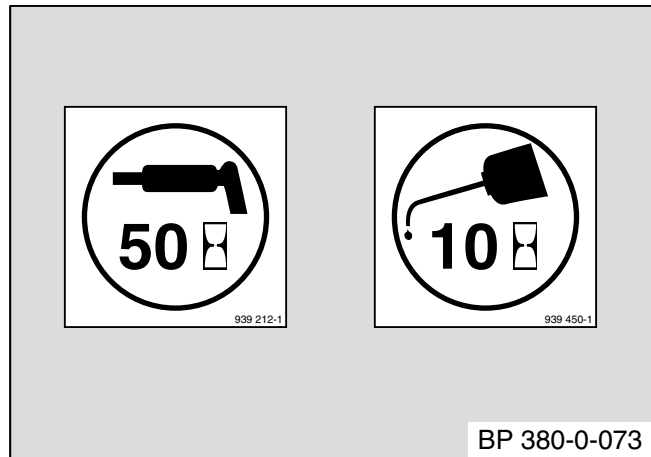
7.3 Lubrication

The lubrication points on the big baler should be lubricated regularly. The lubrication point positions and lubrication intervals can be found in the lubrication schedules in the operating manual or on the stickers on the front of the twine boxes. Remove the grease which escapes from the bearings after lubrication.

Lubrication intervals:

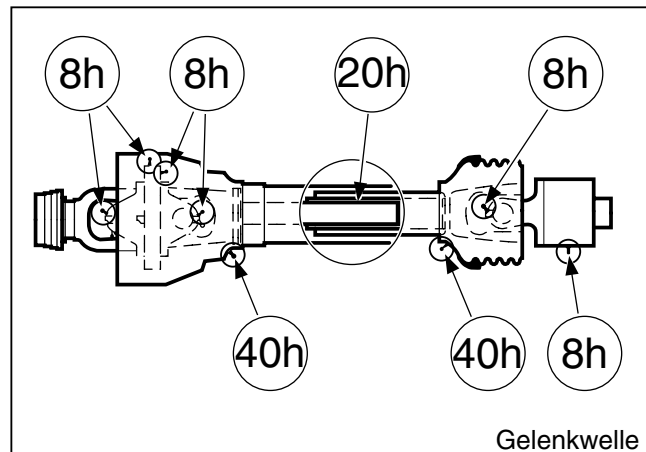
10 h corresponds with approx. daily

50 h corresponds with approx. weekly



Main PTO Shaft

The lubricating periods for the main PTO shaft are given in the adjacent diagram. Further information can be found in the PTO shaft manufacturer's operating instructions.

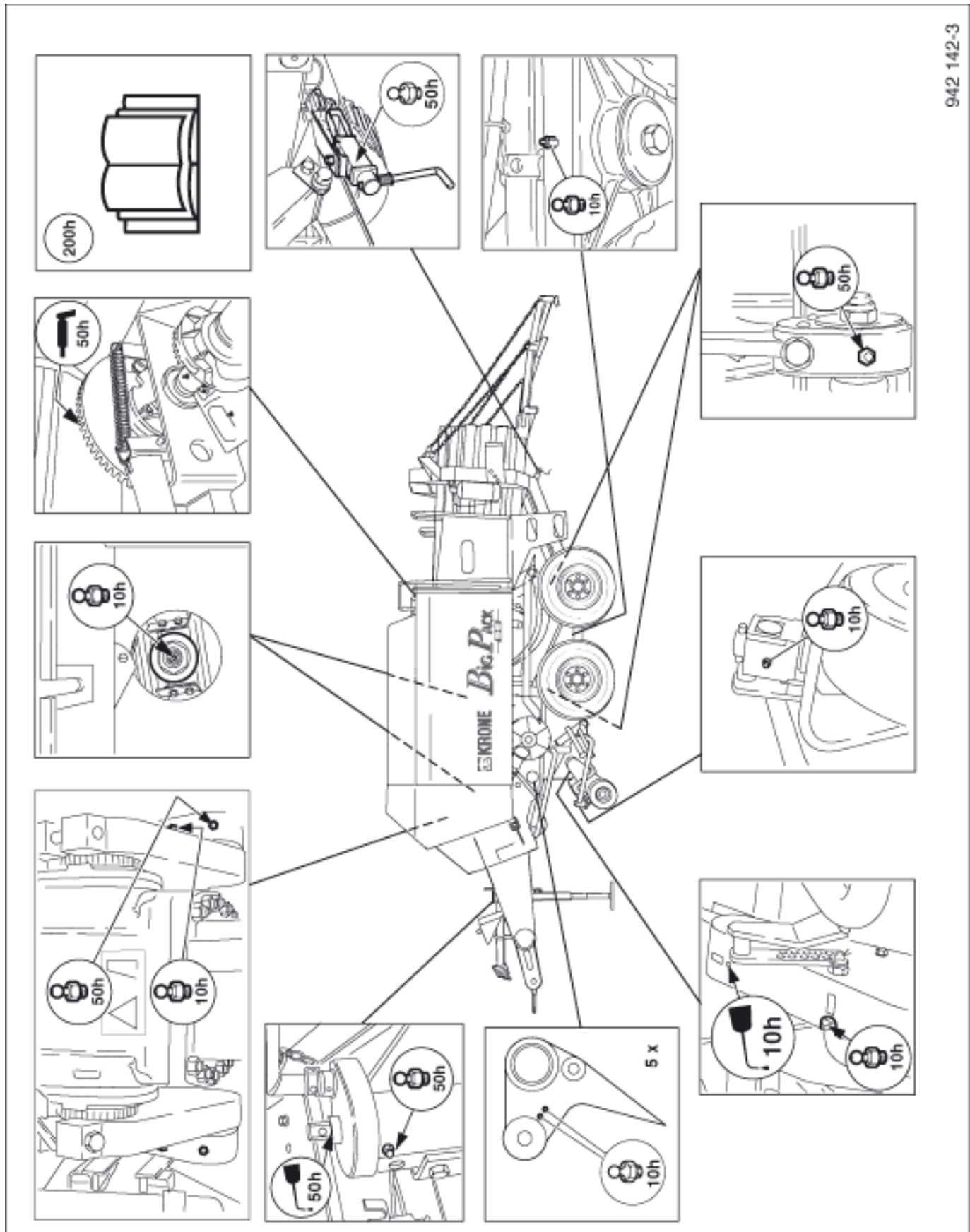


Lubrication Points

In the following table lists the most lubrication points on the big pack baler, as well as the number of lubricating nipples.

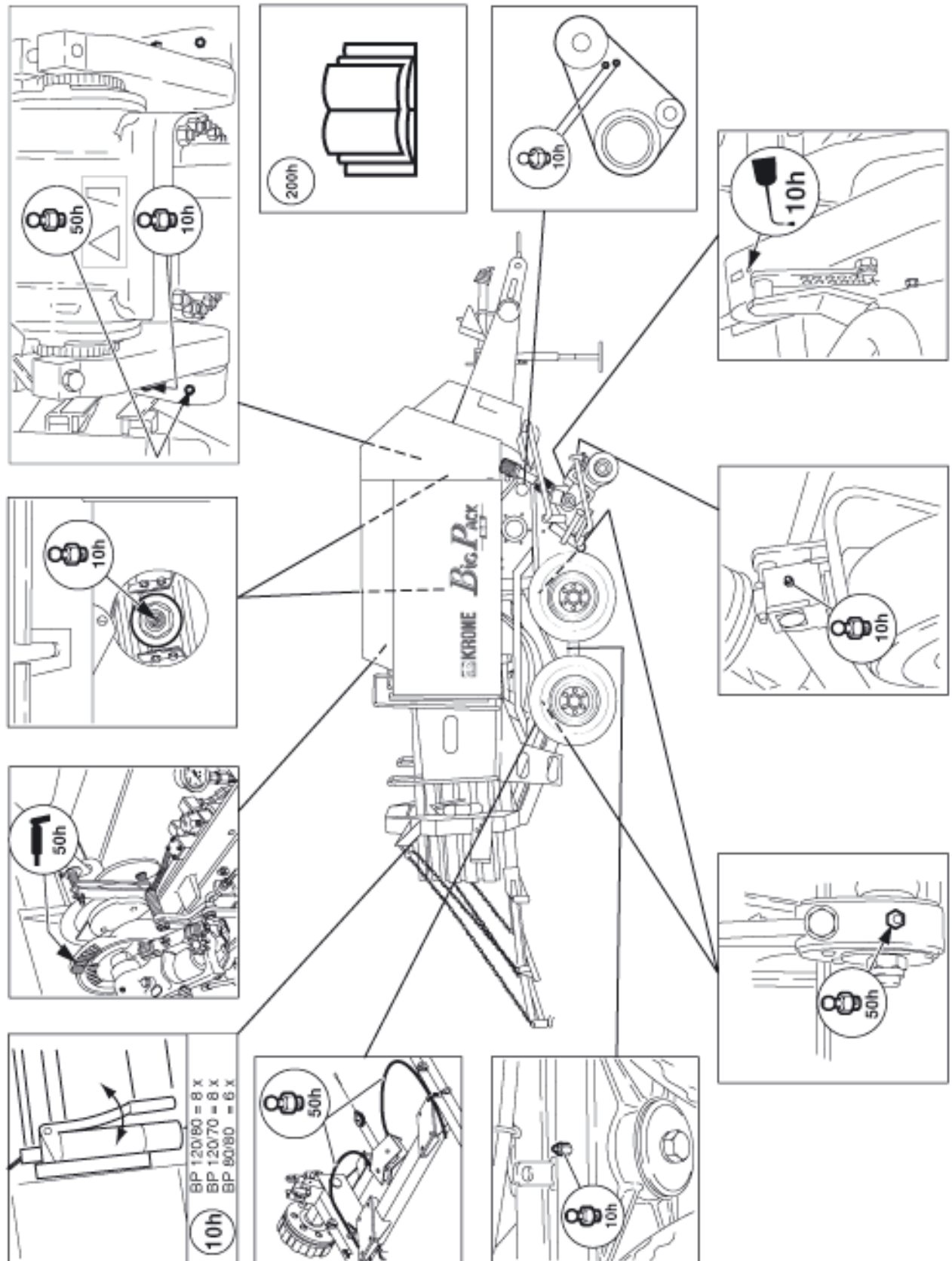
Lubrication Points	No. of Lubricating Nipples
Crank pin for bale ram drive right and left	2
Crank shaft bearings on the main gearbox	2
Piston pin for baling ram drive right and left	2
Bearing rollers on ram right and left	4
Guide rollers on conveyor and feeder rakes	12
Cam track pick up left	1
Feeler wheels	2
Jack stand	1
Parking brake	1
Bearings for the brake lever adjustment on individual axle right and left	2
Brake shaft right and left	2
Tandem axle: Brake lever bearings (right / left)	4
Brake shaft bearings (right / left)	4
Axle rocker arm (right / left)	2
Relieve the bearing when lubricating Bowden cable (right / left)	2
PTO shaft: Main drive	6
Pick up drive (low maintenance, 1/ year)	5
Knotter drive (low maintenance, 1/ year)	3
Knotter shaft support bearings	central lubrication
Knotter gear lever shaft left	central lubrication
Needle yoke right and left	central lubrication
Knotter	central lubrication
toothing of the knotter	apply grease or viscous oil
toothing inside the knotter drive gear	apply grease or viscous oil
Multi Cut drive diagonal shaft	3
Gearbox cutting rotor dumb-bell shaft	2
Star-shaped ratchet	1

Lubrication Points on the Big Pack Baler (left hand side)



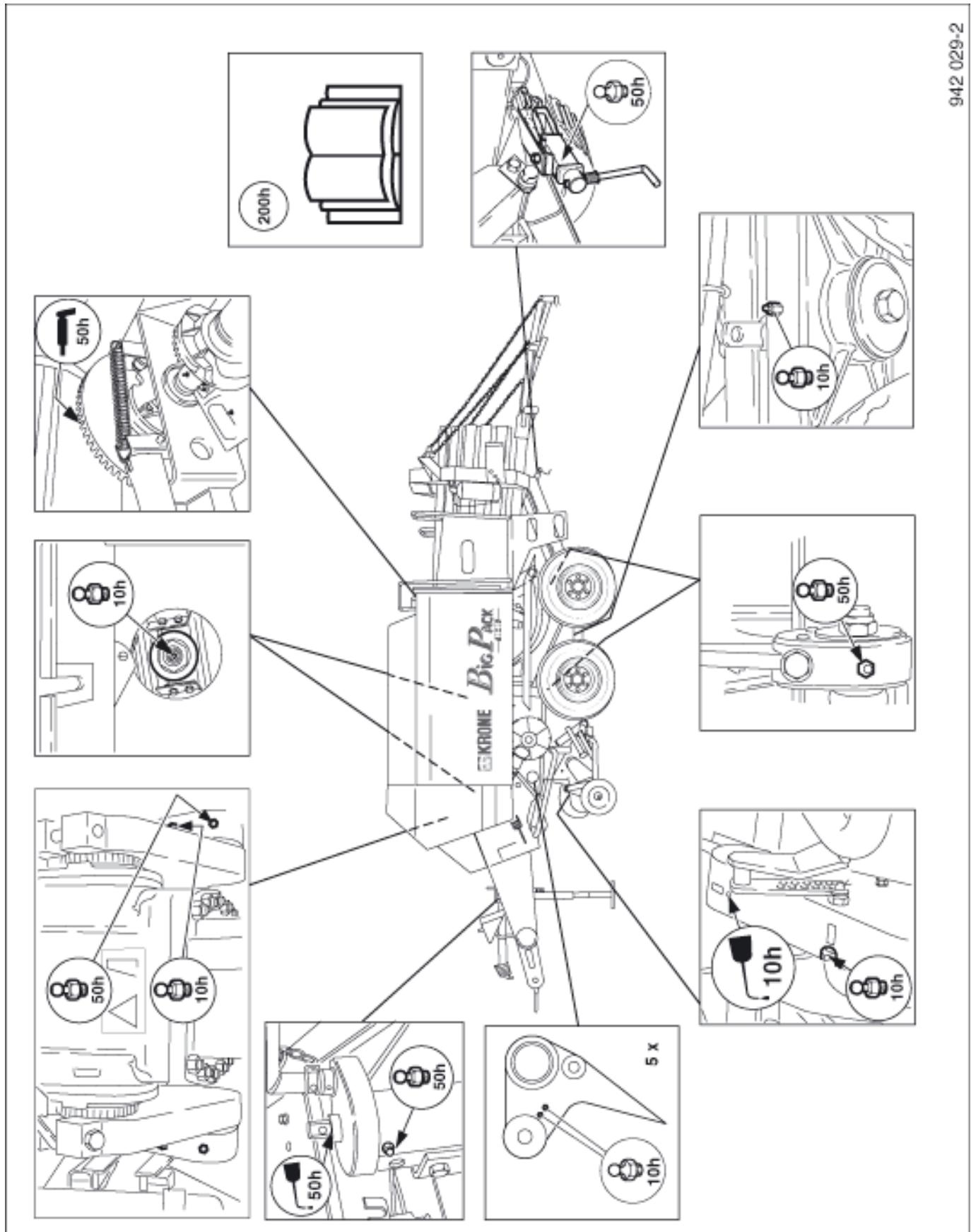
942 142-3

Lubrication Points on the Big Pack Baler (right hand side)

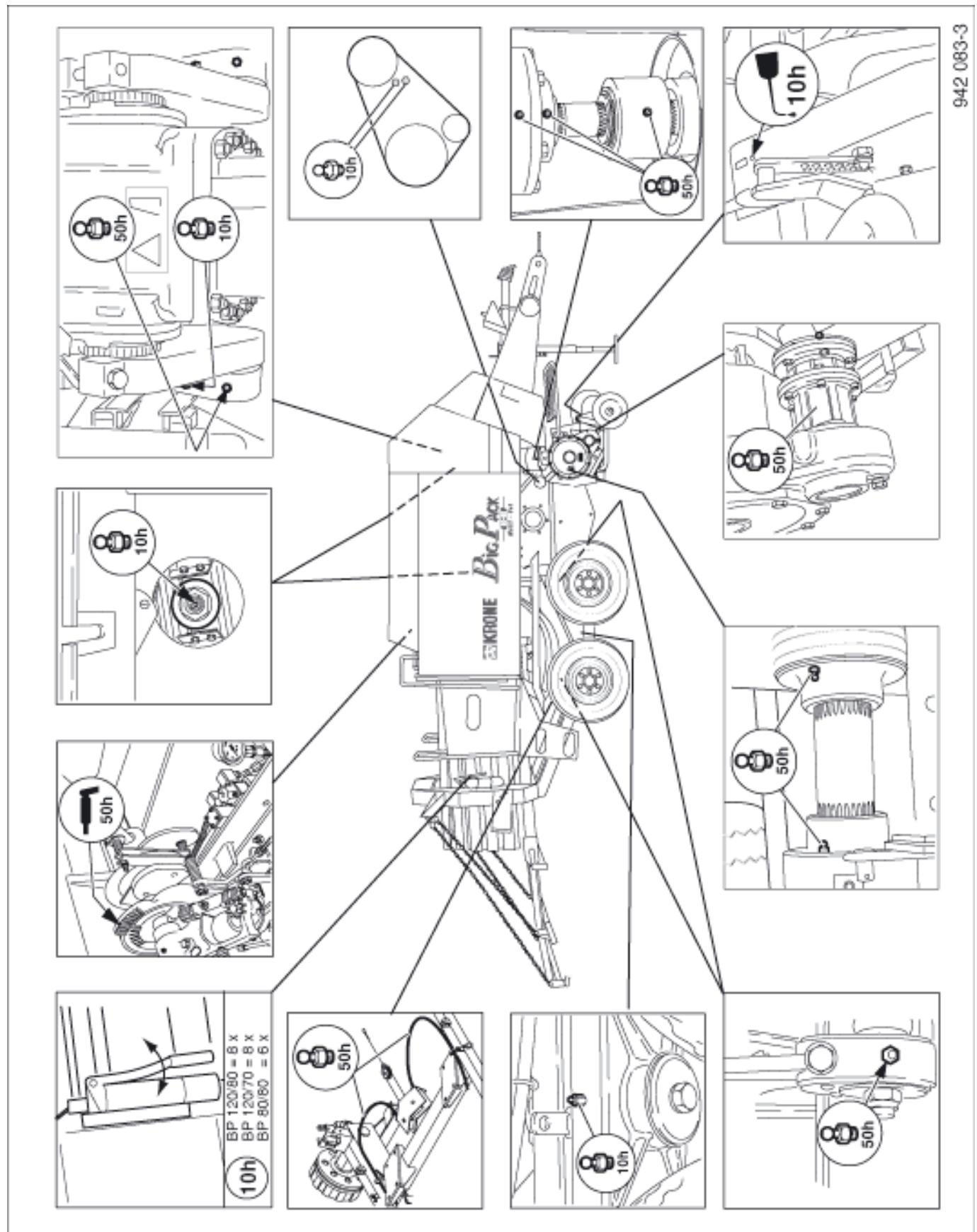


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Lubrication Points on the Big Pack Baler with MultiCut (left hand side)



Lubrication Points on the Big Pack Baler with MultiCut (right hand side)



8. Knotter

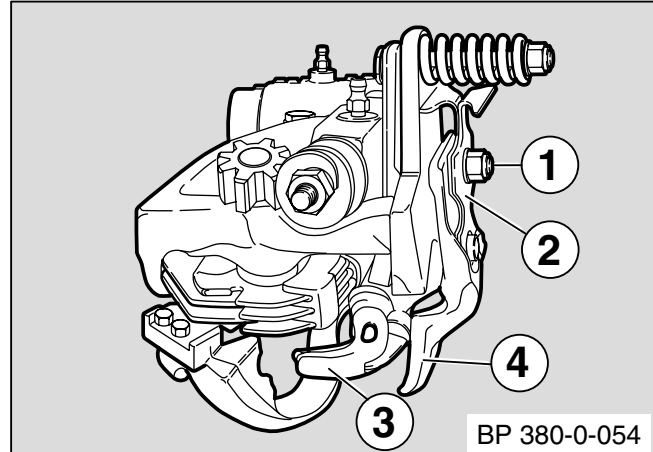
8.1 Special Notes on Safety



- All maintenance, adjustment and repair work on the knotter may only be carried out with the machine at a standstill. Switch off the engine and remove the ignition key.
- Lock the flywheel brake hydraulically or mechanically.
- Lock the knotting initiating mechanism by locking the safety catch to prevent unintentional initiation.

8.2 The Knotter Hook

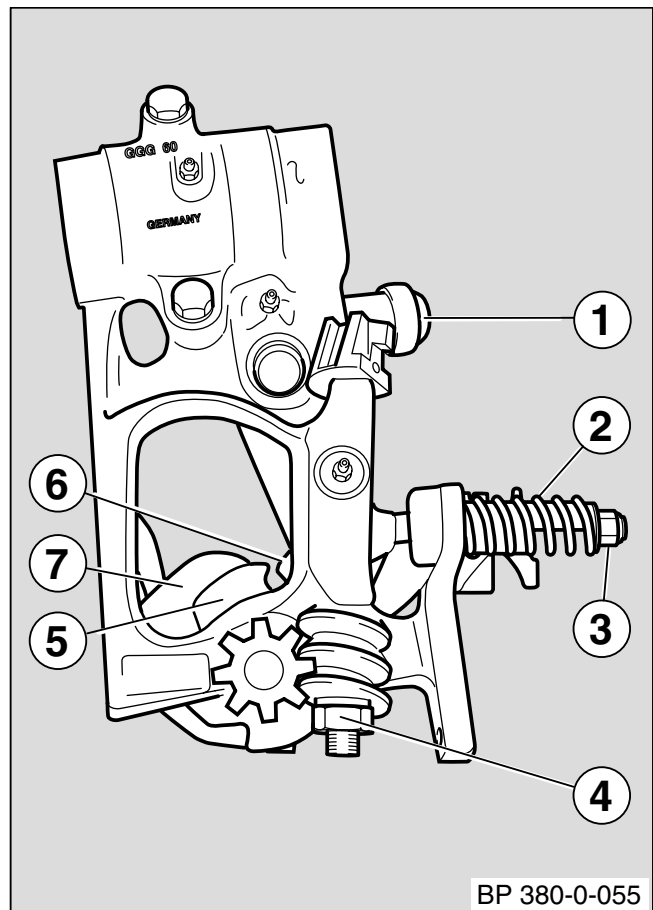
The closer (4) on the knotter hook (3) is tensioned with the spring (2). The spring pressure can be adjusted with a hexagonal nut (1). If the clamping action in the knotter mouth is too strong, the knot gets stuck in the mouth. The twine breaks. If the clamping action is too weak, either no knot or a loose knot is formed. These faults can be avoided by correcting the spring tension on the spring (2).



8.3 The Twine Mount

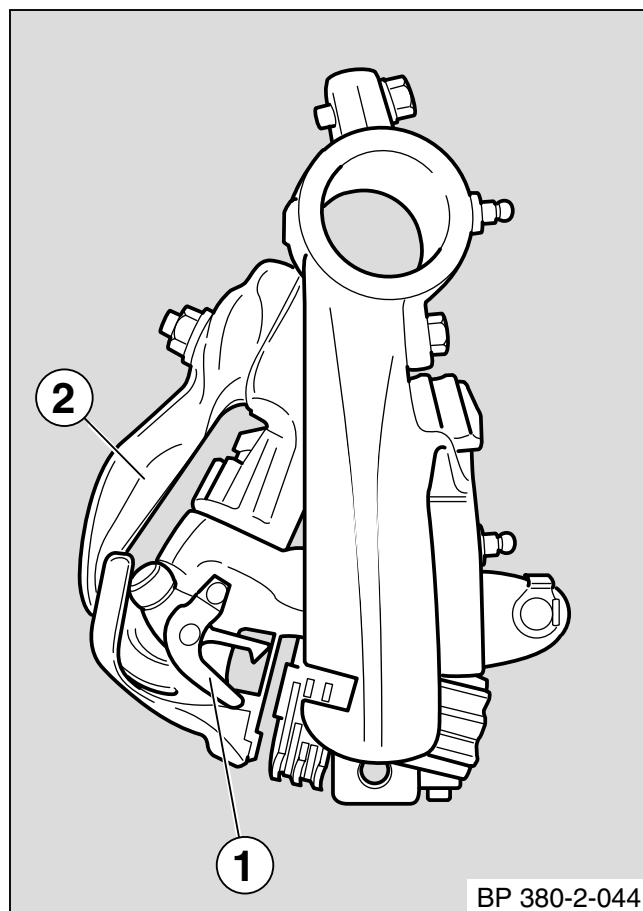
The groove for the carrier (5) (Fig. BP 380-0-055) must be positioned between the twine mount (6) tips and the rear halves of the cleaners (7) so that the strand of twine can be inserted properly. To check that the groove is positioned correctly at least two knotting cycles must be completed. The two leading edges of the twine mount tips must project into the groove slightly.

To adjust the carrier (5) the auger clamped on to one cone on the auger shaft must be loosened. To do this the hexagonal nut (4) is loosened to the point where one of its faces projects approx. 1 mm over the end of the shaft. The auger comes loose when tapped lightly against the hexagonal nut (4). The optimum position can be found by making a corresponding rotation. The auger can only be turned when there is no twine in the twine mount. The clamping strength is adjusted at the hexagonal nut (3) which tensions the helical spring (2) on the twine mount. The twine mount should clamp the twine just tightly enough for it not to be pulled out of the twine mount during the tying process. If the clamping action is too strong the twine is frayed. The clamping strength should be set proportionally to the increasing pack density. The type and moisture content of the crop as well as the choice of twine require different settings, which can be tried out under working conditions if necessary. The spring (2) must never be tensioned to the length of the block.

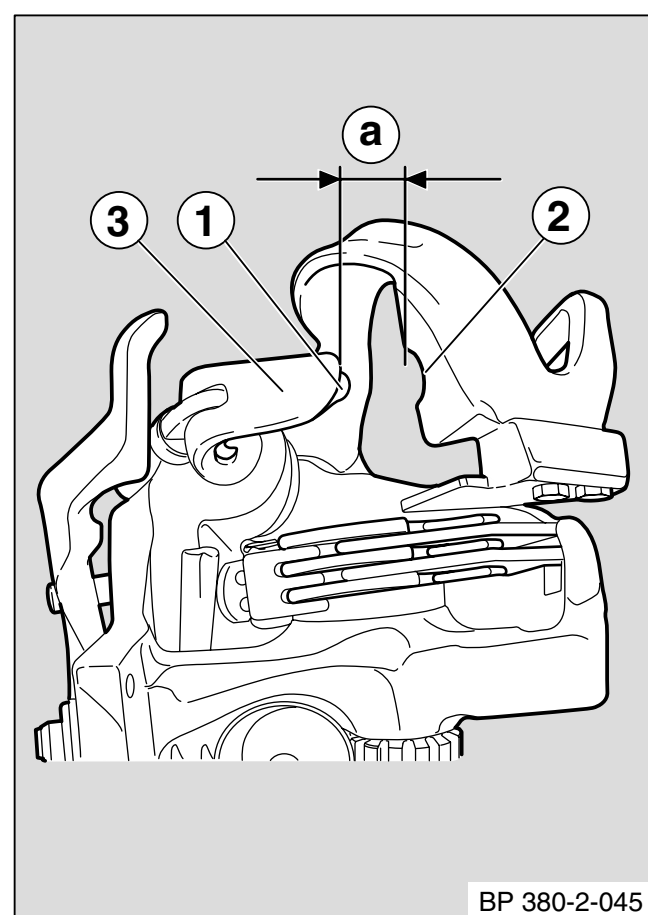


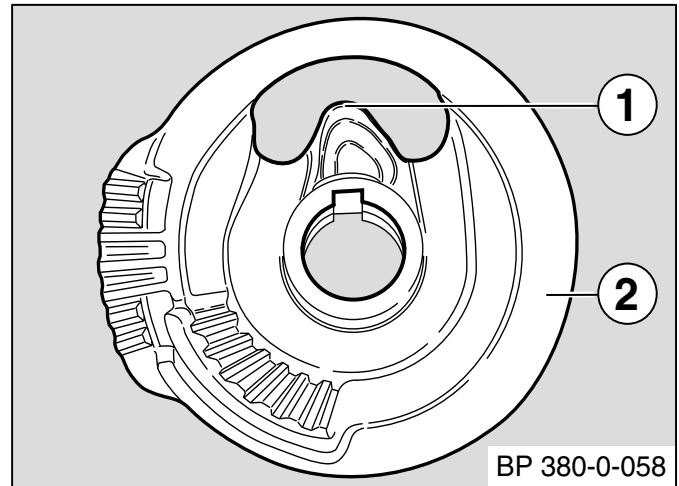
8.4 The Blade Lever

The blade lever (2) must be positioned such that the tying hook (1) can rotate freely without touching any part of the blade lever (2).



The stripping comb on the blade lever (2) must touch the rear of the knotter hook (3) lightly but uniformly. The distance between the stripping comb on the blade lever (2) and the tip of the knotter hook (1) should be "a" = 15 to 18 mm in the blade lever dead centre. The blade lever has reached the dead centre when the blade lever roller (1) (Fig. BP 380-0-055) is on the highest point on the cam (1) (Fig. BP 380-0-058, on following page) in the knotter disc (2) (Fig. BP 380-0-058, on the following page).

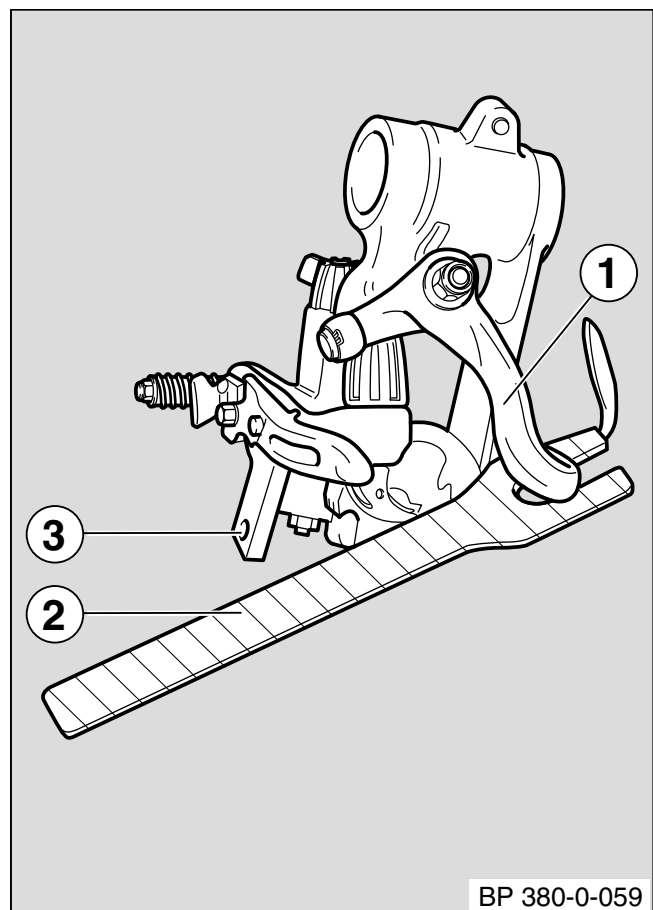




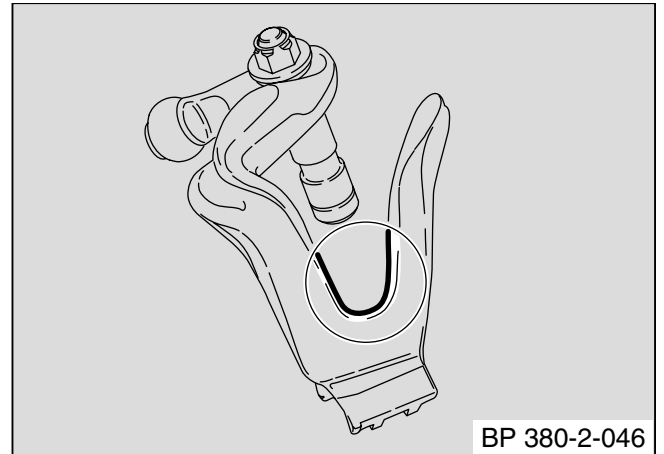
Adjusting the blade Lever

To adjust the blade lever (1), loosen the Knotting device's fixing device (3) on the bale channel and swing the frame around the knotting device drive shaft. For bending the blade lever (1) it is useful to make an approximately 400 mm long straightening lever (2) like in fig. BP 380-0-059.

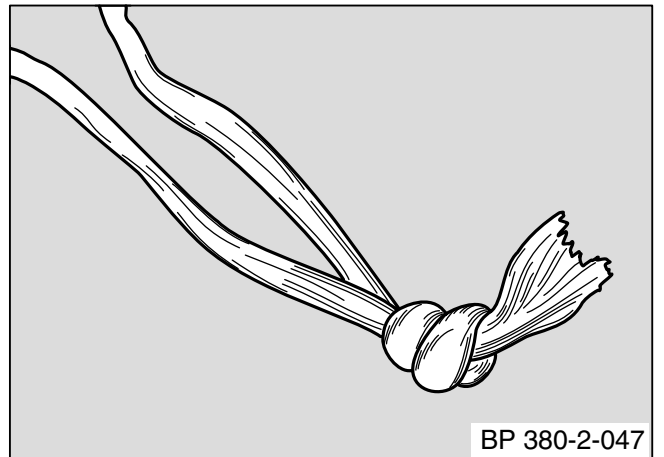
With heavy blade levers the lever must be removed and adjusted with a special tool in a specialist workshop.



The parts of the blade lever (highlighted area) which guide the strands of twine must be smoothed and rounded off to prevent the twine from being cut. The blade lever should be replaced when there is any wear (grooves) on the highlighted area.

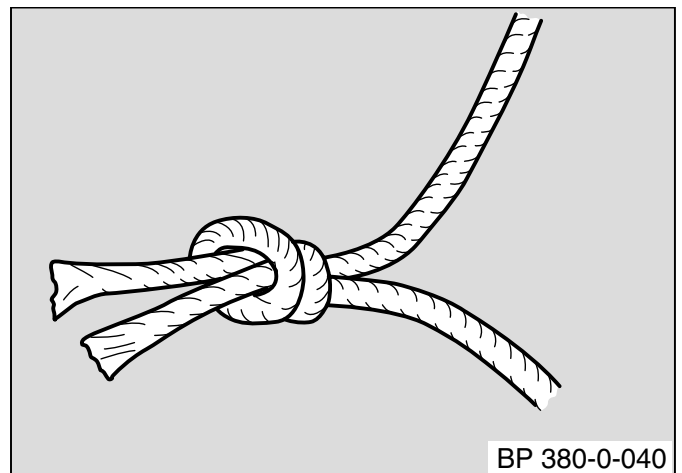


The cutting edge of the twine blade (1) must always be sharpened as soon as the twine ends are cut unevenly or become frayed.



8.5 Knotting

The binding mechanisms are set correctly when the knot tied has two equally long ends. Depending on the strength of the twine the ends are approx. 20 - 25 mm long.



9. Over the Winter

9.1 Special Notes on Safety



- Repair, care, maintenance and cleaning work may only be carried out with the machine at a standstill. Switch off the engine and remove the ignition key. Apply the flywheel brake.
- Secure the big pack baler and the tractor from rolling away.
- After completing care and maintenance work, replace all protective plates and protective devices again properly.
- Avoid skin contact with oils, greases, cleaning agents and solvents.
- In case of injuries or burns caused by oils, cleaning agents or solvents, seek immediate medical attention.
- Follow all other notes on safety to prevent injuries and accidents.

9.2. General

Before putting the big pack baler away for the winter, clean inside and outside thoroughly. If using a high-pressure cleaner, do not direct the water jet at the bearings. Lubricate all lubrication points after cleaning. **Do not** wipe away any grease coming out of the bearings. The grease ring provides additional protection against moisture.

Remove drive chains and chains for the chain coupling (**then check rake setting**) and wash in petroleum (do not use any other solvent). At the same time check for wear on the chains and chain wheels. Oil the chains once cleaned and then mount and tighten up again.

Check that all moving parts such as deflection rollers, joints, tensioning rollers etc. can be moved easily. If necessary dismount, clean, grease and remount. Replace with new parts if required. Only use genuine **KRONE replacement parts**.

Take the PTO shafts apart. Lubricate the inner tubes and the guard tubes. Grease the lubricating nipple on the universal joint as well as the bearing rings on the guard tubes.

Park the big pack baler in a dry place away from artificial fertilisers and animal stalls.

Touch up the paintwork where required. Protect bare spots, especially the twine lugs, the knotter (knotter clamp and the twine retaining disk) and the bale channel thoroughly with plant-based oils.



Only jack up the big pack baler with a suitable vehicle jack. Make sure that the machine is in a stable position when jacked up.

Jack up the round baler to prevent damage to the tyres (damage to the tyres can occur when the round baler stands in the same position for a long time). Protect the tyres from the effects of oil, direct sunshine etc.

Release the parking brake and the flywheel brake. Drain condensation from the compressed air reservoir tanks.

Have the necessary repair work carried out in the time directly after the harvest season. Prepare a list of all spare parts required. By doing this it is easier for your KRONE dealer to process your orders and you can be sure that your machine will be in top condition for the start of the next season.

10. Putting into Operation Again

10.1 Special Notes on Safety



- The following always applies for all maintenance, assembly, repair and adjustment work: bring the machine to a standstill. Switch off the engine. Remove the ignition key. Apply the flywheel brake.
- Secure the tractor and the big pack baler from rolling away.
- Avoid skin contact with oils greases, cleaning agents and solvents.
- In case of injuries or burns caused by oils, cleaning agents or solvents, seek immediate medical attention.
- After completing care and maintenance work replace all protective plates and protective devices properly.
- Observe all other specific notes on safety.

10.2 General

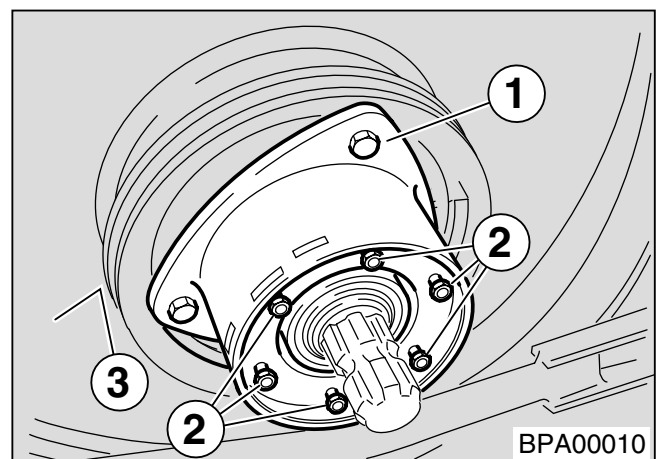
- Before putting into operation again initiate the knotting process manually and turn the big pack baler round by hand. Check knotter and needle functions while doing this.
- Clean the knotter of protective materials (plant-based oils).
- Grease all lubrication points and oil chains. Wipe away all excess grease from lubrication points.
- Change the oil in all gearboxes.
- Check for leaks in all hydraulic hoses and lines and replace if necessary.
- Check the air pressure in the tyres and pump up if necessary.
- Check all screws are fastened tight and tighten up if necessary.
- Check all electrical connection cables and repair or replace if necessary.
- Check all settings on the big pack baler and correct if necessary.
- Check the comfort control functions.
- Check the operation of the knotter shaft brake (to the right of the knotter shaft).

10.3 The Overload Coupling on the Flywheel



After long idle periods the surfaces in the overload coupling (1) can become stuck to the contacting surfaces. Free the overload coupling before use.

The overload coupling is located on the flywheel (3). To ventilate, tighten the nuts (2) on the overload coupling (1) diagonally. Turn the PTO shaft manually. Then loosen the nuts again diagonally.



11. Special Equipment

11.1 Cutting Mechanism

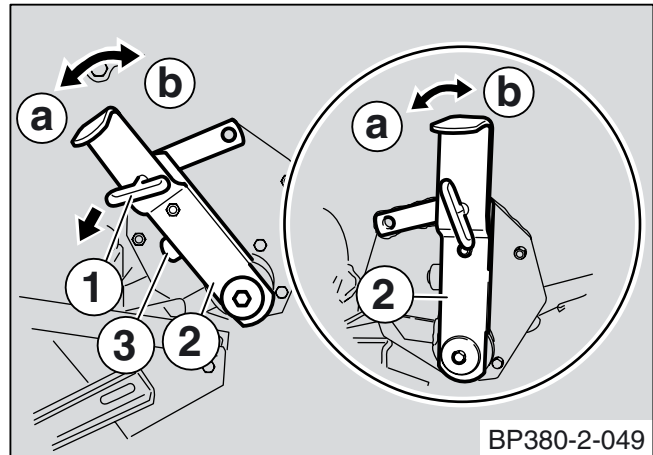
11.1.1 BigCut cutting system

The Big Pack can be fitted with a cutting mechanism as special equipment.

The switching mechanism is located on the left hand side of the machine.

The cutting mechanism is switched on by pulling the handle (1) and turning the lever (2) to position "a". The cutting mechanism is switched off in position "b".

If foreign bodies enter the cutting mechanism, blade safety screw (3) can be damaged. To replace the safety screw move the lever (2) to position "b" and replace the safety screw. Only use M 8x60 DIN 931-8.8 screws.

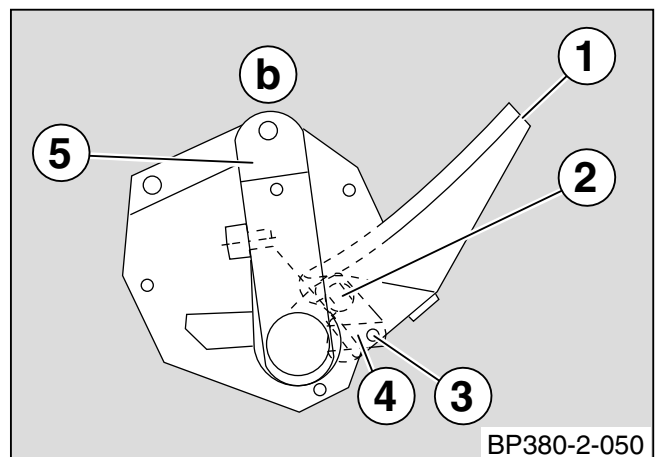


Mounting and Dismounting the Blades

Dismounting the Blades on the Cutting Mechanism:

- Move the blades (1) to position "b" with lever (5).
- Unscrew the safety screw (3) from the blade carrier (2).
- Rotate the blade carrier through 90 degrees with the retaining bracket. Remove blades.

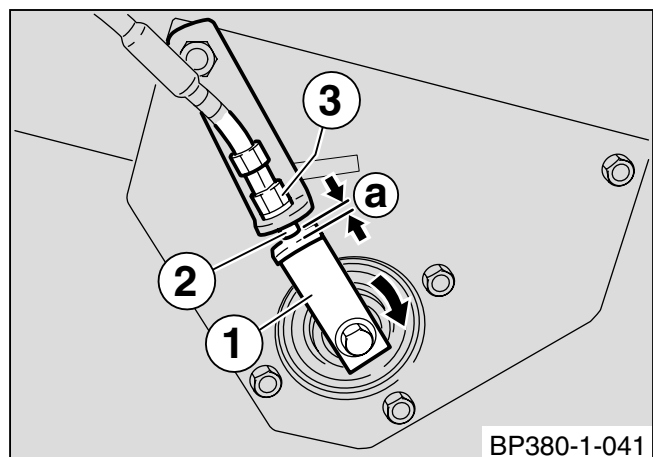
Blades are mounted in the reverse order.



Adjusting the Cutting Mechanism Sensor

The cutting mechanism sensor (2) is located on the blade shaft on the right hand side of the machine.

To adjust distance a, turn nuts (3) above and below the sensor bracket until the distance between the sensor and the transmitter (1) is $a = 1 \text{ mm}$. Tighten up the nuts again.



11.1.2 MultiCut cutting system

11.1.2.1 Special notes on safety



The following always applies for all maintenance, assembly, repair and adjustment work:

- Bring the machine to a standstill.
- Switch off the engine and remove the ignition key.
- Secure the tractor and the Big Pack baler from rolling away.
- Secure the pick-up against intentional lowering.
- There is a high risk of injury when fitting and removing the blades. Only touch blades with suitable gloves.
- Engage the flywheel brake.

11.1.2.2 General

The Big Pack MultiCut has a cutting system with a cutting roller and fixed blades.

Cutting allows better bale processing and increased bale density. The blades can be swung out of the conveyor channel hydraulically from the tractor if there are blockages. The machine can also be used without blades. The cutting roller then takes over the conveying function between the pick-up and pre-baling channel.

11.1.2.3 Setting the cutting length

The Big Pack MultiCut 80 - 80 cutting system can be equipped with a max. of 15 blades. The Big Pack MultiCut 120 - 80 cutting system can be equipped with a max. of 25 blades. A cutting length of "90 mm" can be achieved with two of the blade sets. The cutting length can be read off the selector disc (1).

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

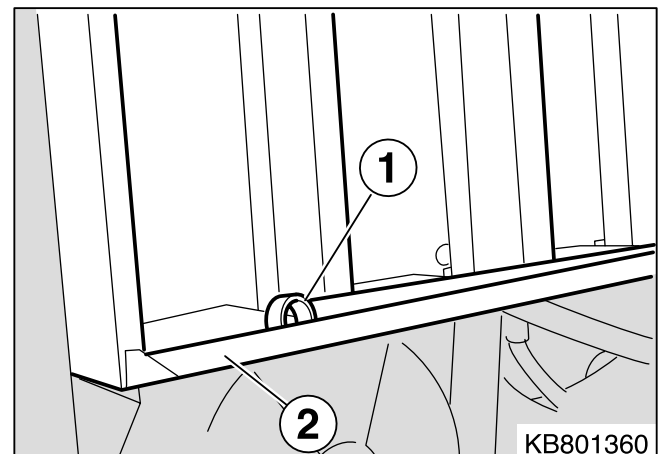
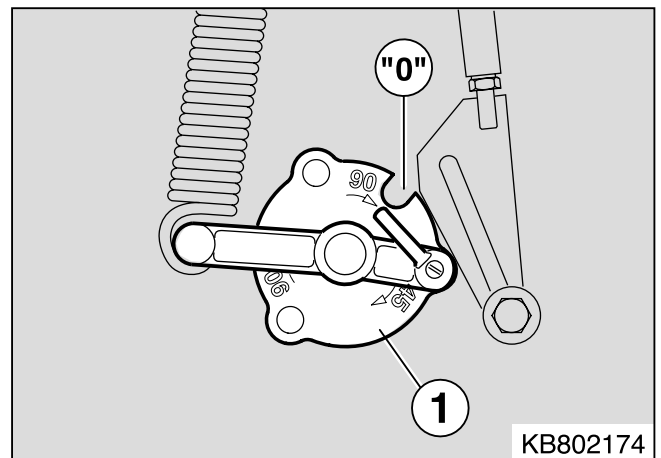
- Big Pack MultiCut 80 - 80:

Cutting length	Number of blades	Setting
–	0	"0"
45 mm	15	"45"
90 mm	8	"90"
90 mm	7	"90"

- Big Pack MultiCut 120 - 80:

Cutting length	Number of blades	Setting
–	0	"0"
45 mm	25	"45"
90 mm	13	"90"
90 mm	12	"90"

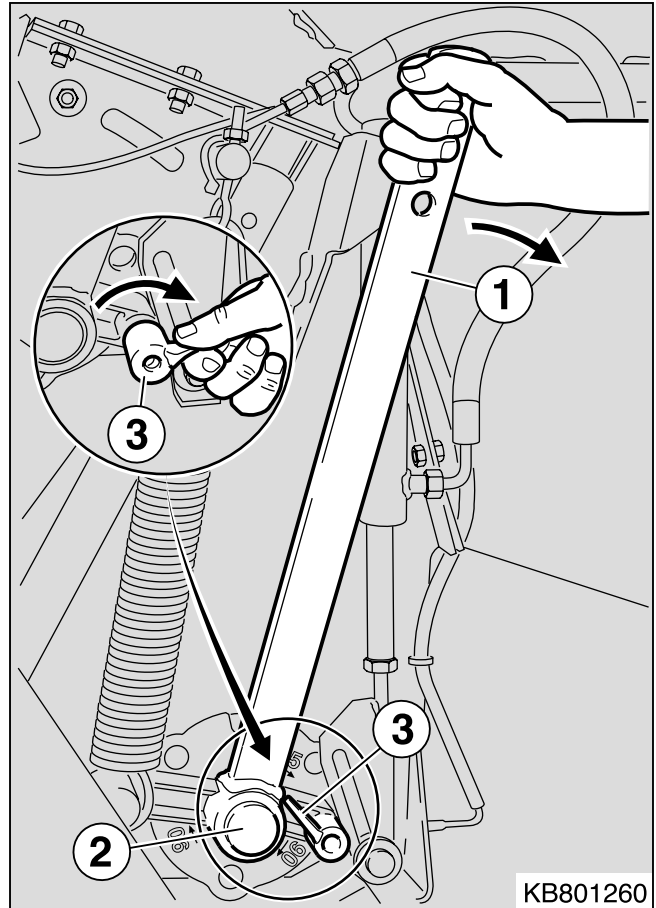
The setting is made on the left-hand side of the machine using a special spanner (1). The spanner is on the left-hand side of the machine in the twine box (2). Blades have to be removed for a greater cutting length (applies for 120 - 80 and 80 - 80).



Setting the cutting length

Turn the locking lever (3) to the right.
(selector disc unlocked.)

Fit the special spanner (1) onto the blade control shaft (2) and turn it in the direction of the arrow.



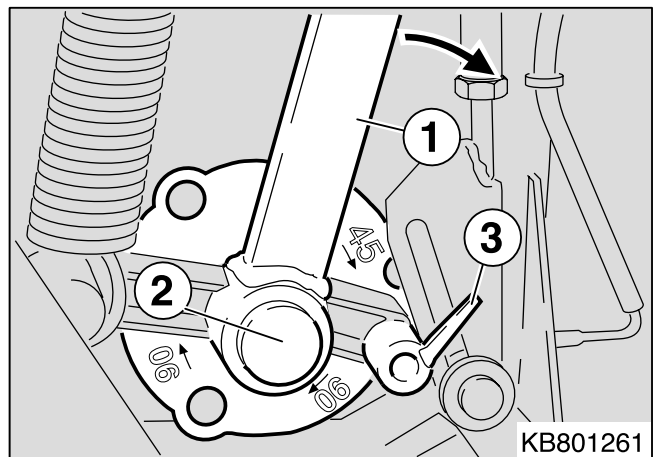
The blade control shaft must be secured using the locking lever once the setting has been made.

Turn the blade control shaft (2) to the desired position using the special spanner (1). (Here 45 mm cutting length)

The locking lever (3) must be turned to the left until it clicks in.



The outer blades must be removed the outer edges of the bales become unstable.



11.1.2.4 Changing blades

The cutter system blades can be reached from underneath the machine.



Clean the conveyor channel before changing the blade.

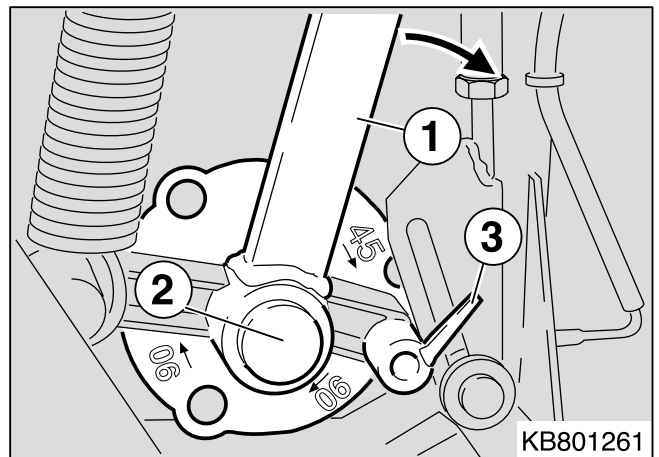
Put the blade control shaft into an intermediate position



An intermediate position is a setting between 2 control settings.

Turn the locking lever (3) to the right (selector disc unlocked).

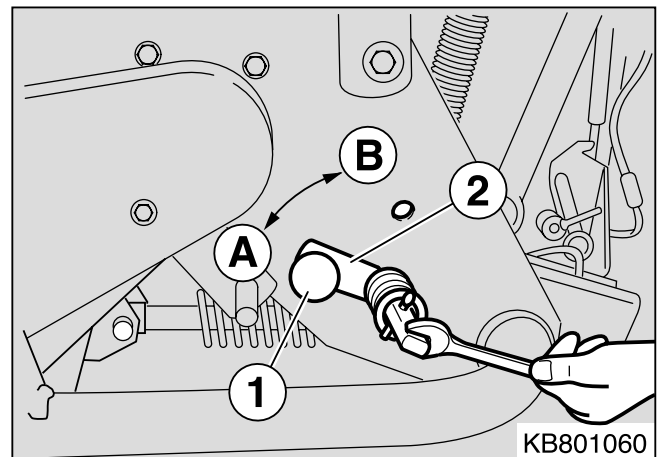
Turn the blade control shaft (2) to an intermediate position using the special spanner (1).



Unlocking the blade shaft

Pull out the retaining pin (1).

Swing the safety lever (2) to position "B" until the retaining pin (1) clicks in.



Position "A": knife shaft locked

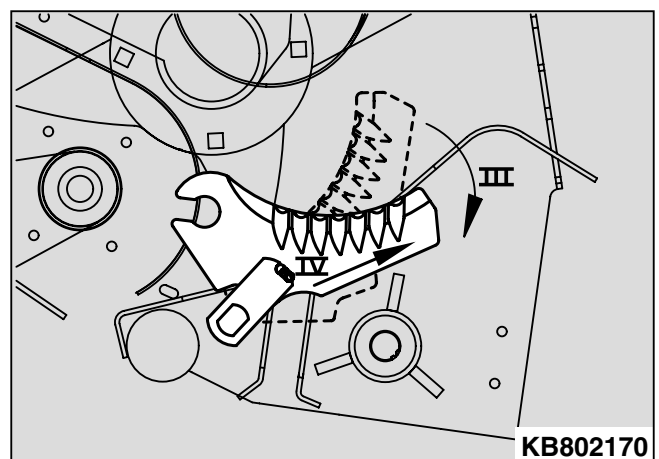
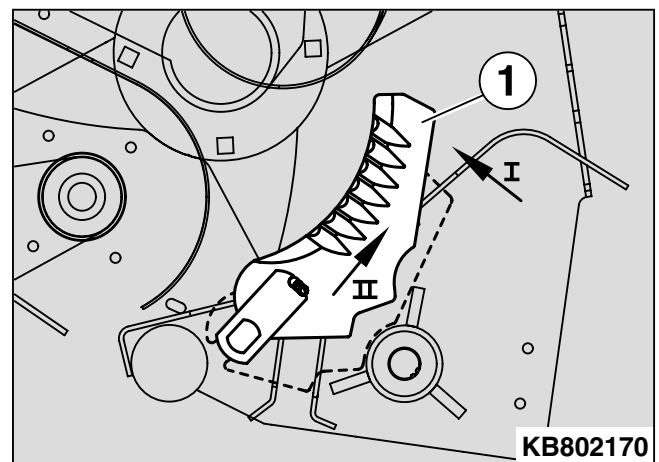
Position "B": knife shaft unlocked

If the knife shaft should be difficult to turn use open-ended wrench "24".

Changing blades

Lift knife (1) at the rear (I) and pull it to the top (II) until it comes clear of its mounting. Then swing knife to the bottom and to the front (III) and take it out of the rear (IV).

Install the new knife and secure the knife shaft again.



11.1.2.5 Blade stop

Switching blade control shaft off mechanically

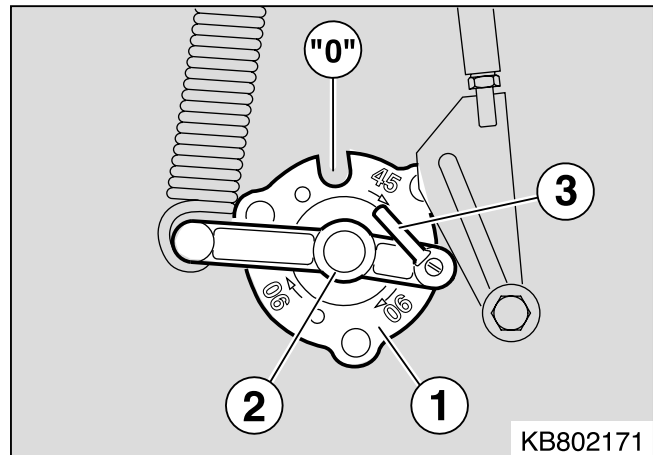
Unlock the locking lever (3).

The "0" position on the selector disc (1) must be set by turning the blade control shaft (2) under the locking lever (3).

The position is secured by clicking in the locking lever.



If the Big Pack MultiCut is to be operated for a long time without a cutting system, we recommend removing the blades. (see Chapter 11.1.2.4)



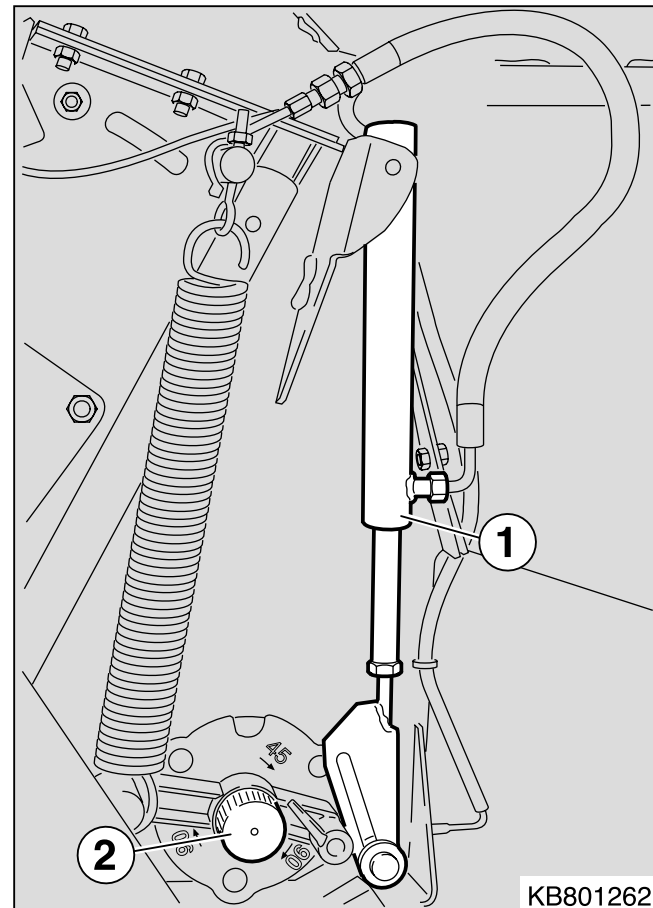
Switching blade control shaft off hydraulically

The blade control shaft (2) can be brought into the zero position using a hydraulic cylinder (1).

The hydraulic cylinder is operated from the tractor. The zero position is indicated on the comfort control.



The hydraulic blade stop is used, amongst other things, to eliminate any blockages.



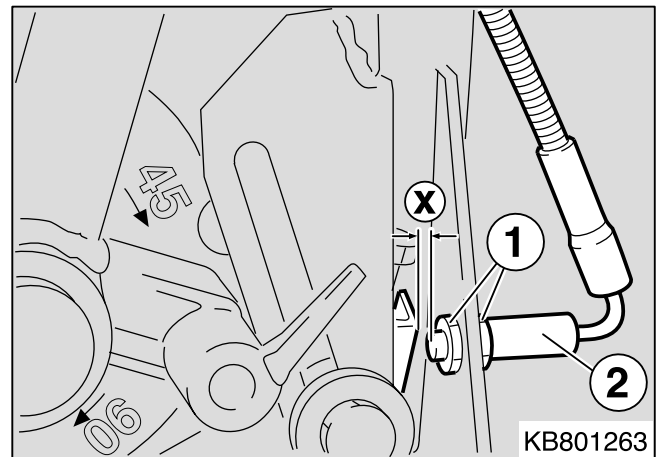
11.1.2.6 Setting the blade control shaft sensors

The sensor (2) is only used to send a signal to the comfort control. Blade operation is indicated on the comfort control.

The sensor (2) is on the left-hand side of the machine on the blade control shaft. Distance (x) should be 2 to 4 mm.

Loosen the lock nuts (1).

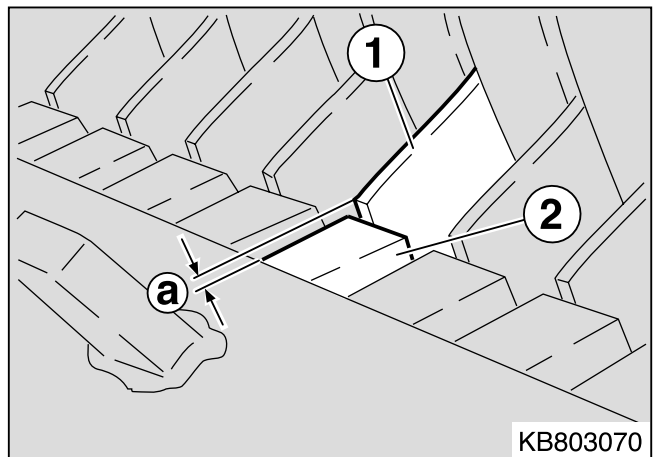
Set the sensor (2) so measurement (x) = 2 to 4 mm and tighten lock nuts (1).



11.1.2.7 Setting the blade protection system

The blade protection system should prevent the blades becoming damaged. To cut tough crop the blade protection system should be set harder. Set the blade protection system softer when there are a lot of stones in the crop.

The projection of the blade (1) over the blade control shaft cam (2) should be (a) = 15 to 18 mm.



The pretensioning of the blade protection system is set using the screw (2).

Loosen the lock nut (1).

Set the blade control shaft (3) so measurement (a) = 15 to 18 mm using the screw (2).

Tighten the lock nut (1).

Softer blade protection (a) = 18 mm.

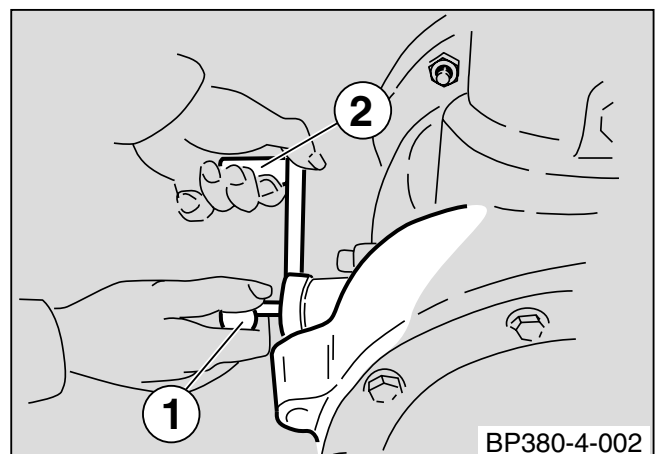
Harder blade protection (a) = 15 mm.

11.1.2.8 Locking the free-wheel

If the cutting rotor should become blocked with feed, this blockage can be removed by turning back the cutting rotor. Here the free-wheel must be locked in the cutting rotor gearbox.

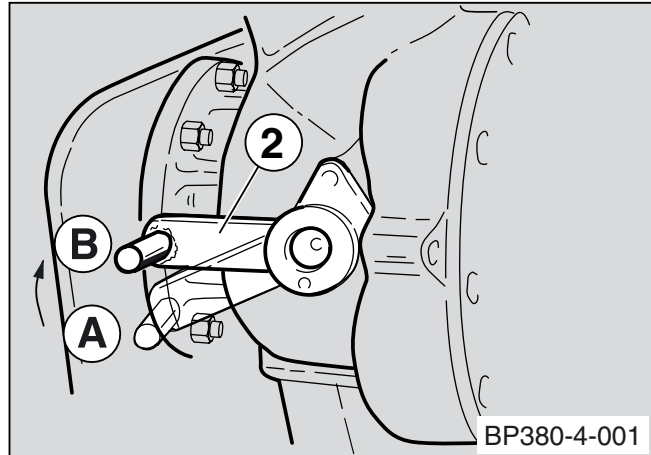
Procedure:

- Move all cutting blades to 0 position
- Shut down the engine - remove the ignition key
- The free-wheel of the cutting rotor becomes locked by pulling the handle (1) and simultaneously moving the control lever (2) from position A to position B on the cutting system gearbox.



- Let the control lever (2) engage in **position B**
- Turn back flywheel until the blockage is removed.

When you start up the machine again the free-wheel switches on automatically. The control lever (2) goes back into **basic position A**.



11.2 Compressor

If the big pack baler is fitted with hydraulic brakes, the compressed air for cleaning the knotter is supplied via a compressor (1) mounted between the hitch supports. It is driven by a V-belt disk (3) and V-belt (2) mounted on the flywheel. The tension of the V-belt can be adjusted by shifting the compressor in the slots (5).

The oil level must be checked at the dipstick (4) every day before use. Top up with oil (engine oil SAE 20) if necessary. The specifications for the oil required are listed in the section "Technical Data".



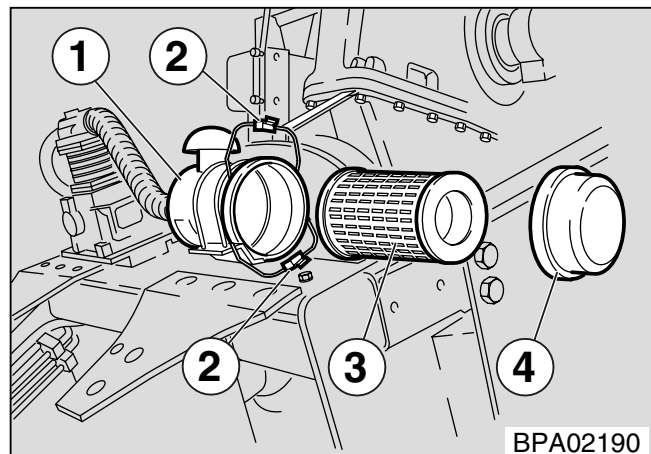
The air inlet filter (6) should be cleaned at least once a day and in case of heavy dust loads several times a day.

Filter cleaning

- Move the retaining clip (2) on the air filter (1) up/down
- Remove cover (4)
- Dismount filter cartridge (3), tap it and with blow through from the inside outwards with air jet
- Dismount cover (4) again and tap it
- Install filter cartridge
- Put cover on filter and secure with retaining clips



Make sure that the filter pot with the air filter locks tightly.

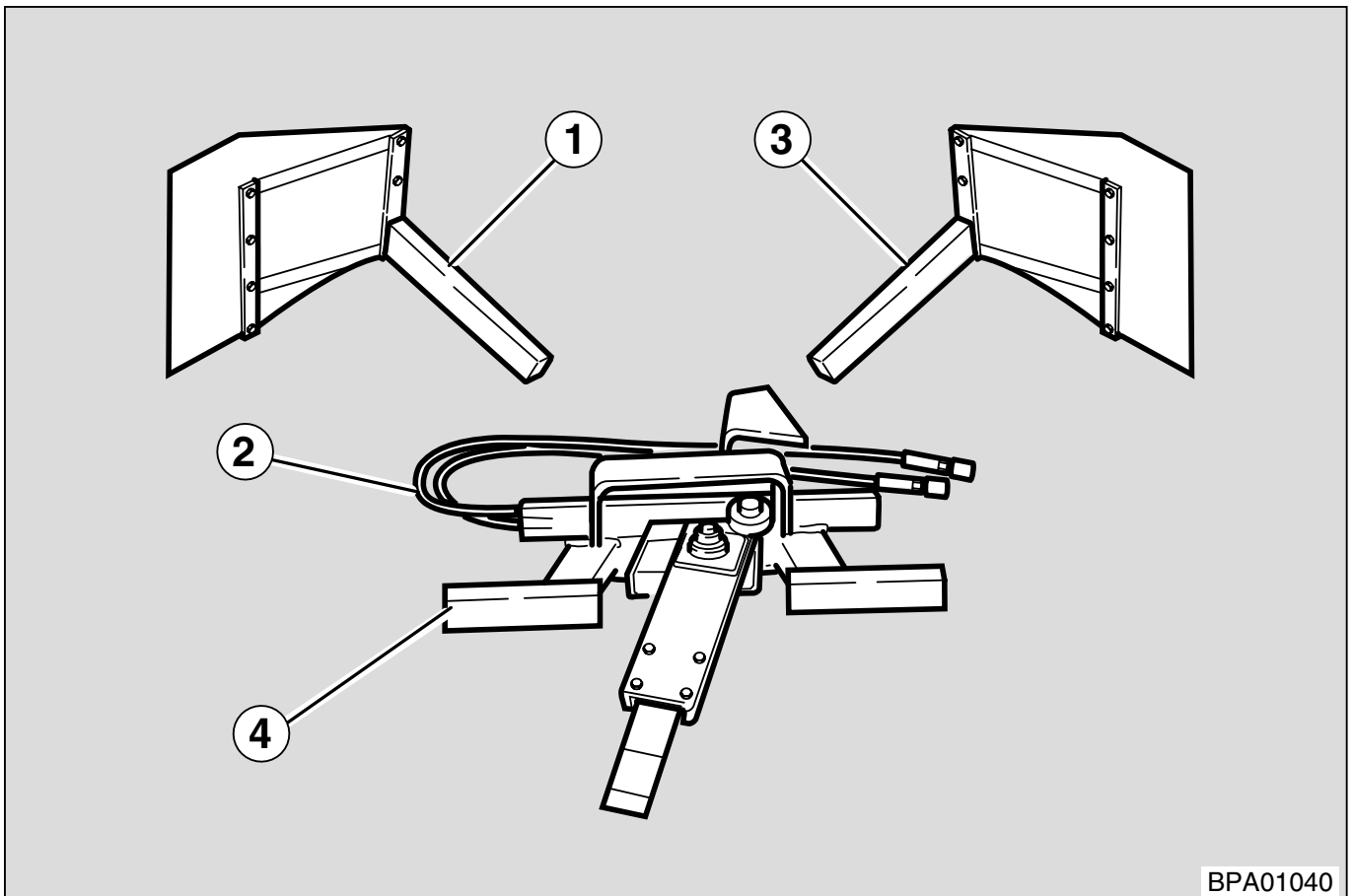


11.3 Swath Distributor

To be able to distribute narrow swaths along the total width of the pick-up, the hydraulically driven swath distributor is available as an accessory.

Swath distributor is not fitted at the factory.

11.3.1 Assembly Instructions



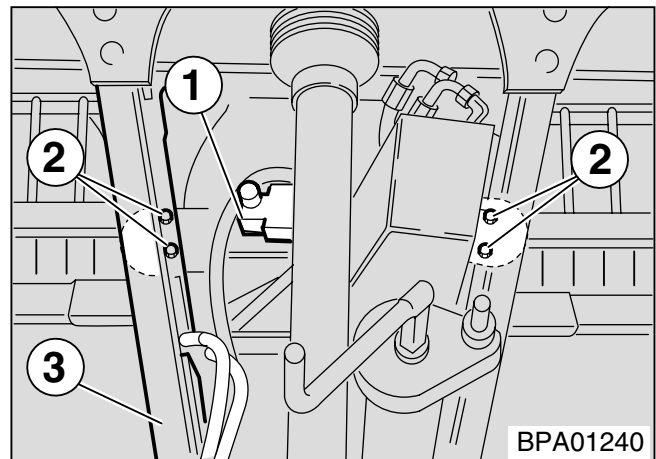
- 1) Lateral limiter (left)
- 2) Hydraulic hoses (pressure and reverse-flow hose)
- 3) Lateral limiter (right)
- 4) Hydraulically driven swath distributor



- Repair, care, maintenance and cleaning work may only be carried out with the machine at a standstill. Switch off the engine and remove the ignition key. Apply the flywheel brake.
- Only put the big pack into operation when all protective devices have been attached and are in a proper operating condition.

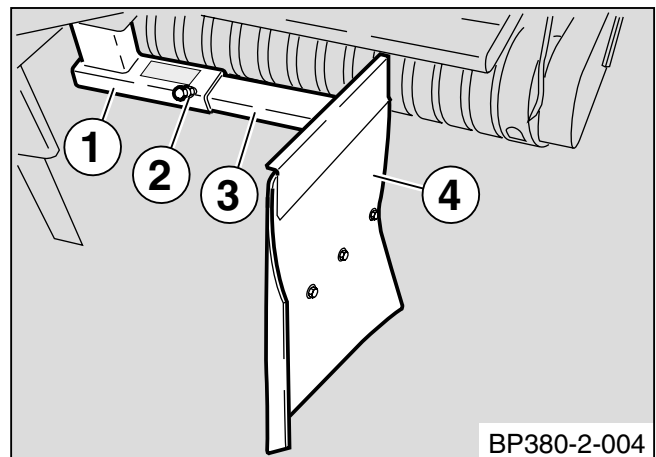
Installing swath distributor

- Lift the swath distributor (1) from below to the drawbar (3)
- Place swath distributor with screws (2) on drawbar (3)
- Line up the swath distributor in the centre in front of the pick-up
- Tighten the screws
- Install the protective plate above the drive



Lateral limitation

- Push in the lateral limiter (4) on both sides with the support (3) in the rectangular pipe (1)
- Adjust the range of the pick-up width and undo the screws (2)
- Set the lateral limiter according to the pick-up width
- Tighten the screws



Hydraulic hose connections

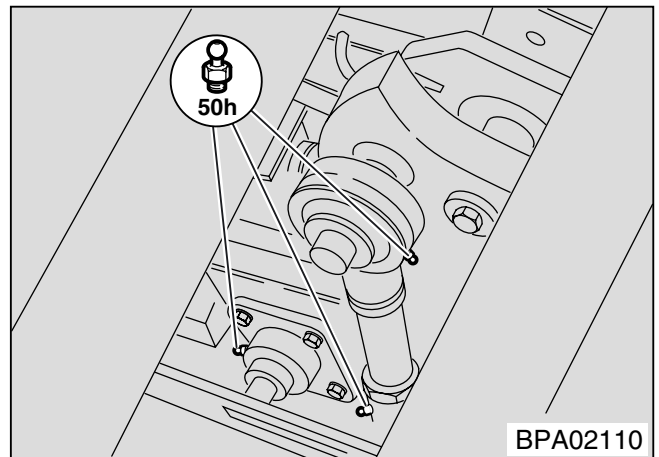
Connect the pressure connection to a single-action control device. Connect the reverse flow to a pressure-free reverse-flow connection.

A hydraulic connection with continuous oil supply and non-pressurised reverse-flow is required on the tractor. The amount of oil must not exceed **20 litres per minute**.

Lubrication points



All repair, maintenance, servicing and adjustment work may only be carried out when the machine is at a standstill. Switch off the engine and remove the ignition key. Engage the flywheel brake.

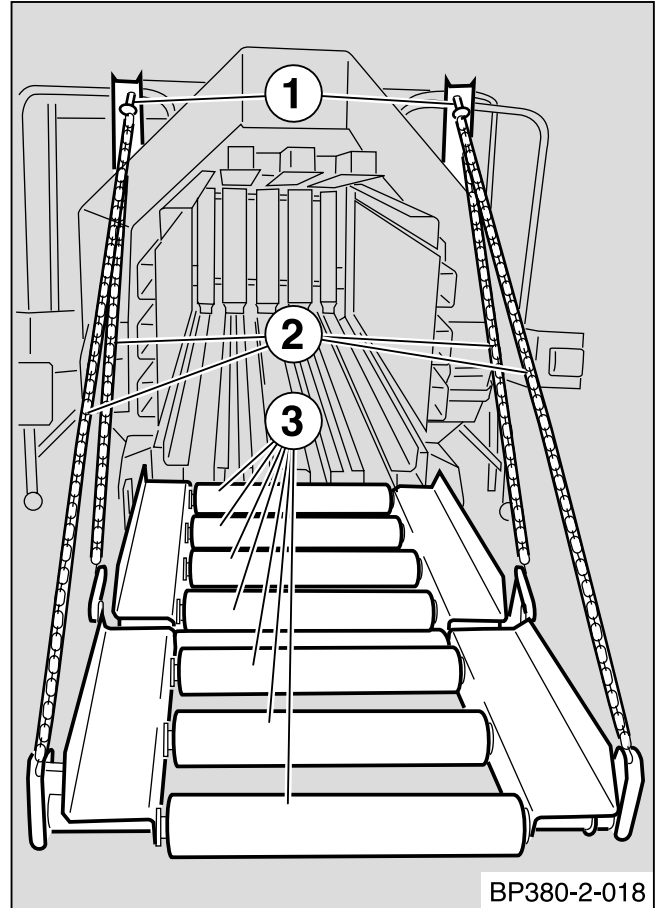


11.4 Hydraulic folding bale chute with rollers



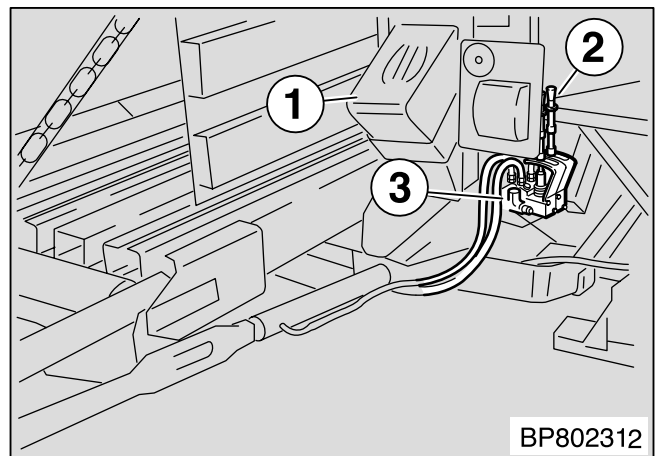
**Secure the vehicle and machine against rolling away.
Keep people clear of the danger zone when folding the bale chute in and out.
Only drive on public roads if the bale chute has been folded in.**

A hydraulic folding bale chute (4) with seven rollers (3) is available for the Big Pack as an optional extra. Operation of the residual bale ejector from the rear right-hand side of the machine is also part of this option. The bale chute is held in working position by retaining chains (2). The bale chute can be set using the adjusting screws (1) so that it is at the same level as the baling channel floor.



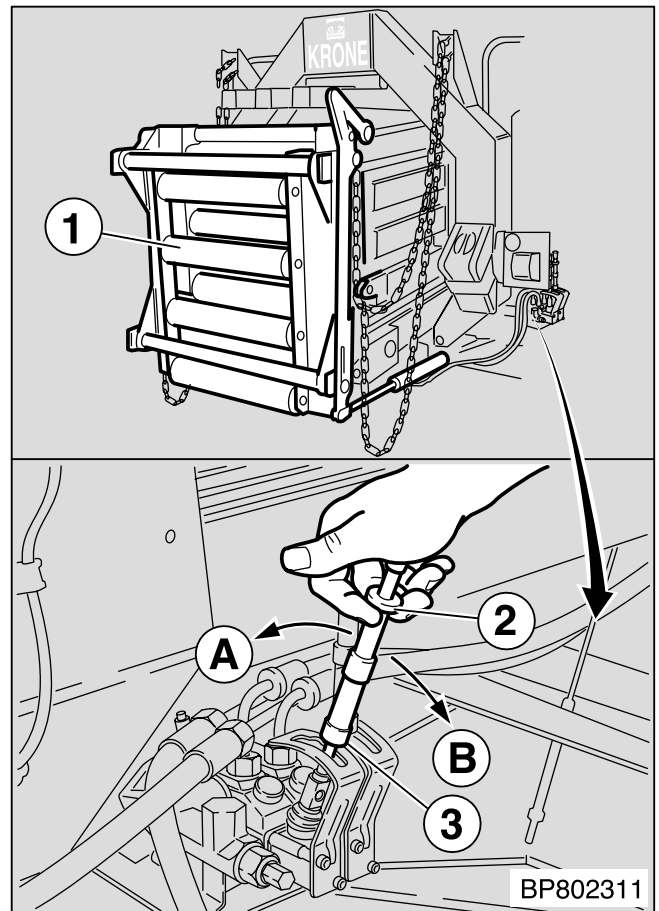
The hydraulic line control unit on the tractor must be set to lift so the bale chute and the residual bale ejector can be operated.

The control unit (3) for the hydraulic folding bale chute and the residual bale ejector is between the maintenance platform (2) and the wheel chock (1) on the right-hand side of the machine.



Folding the bale chute in and out

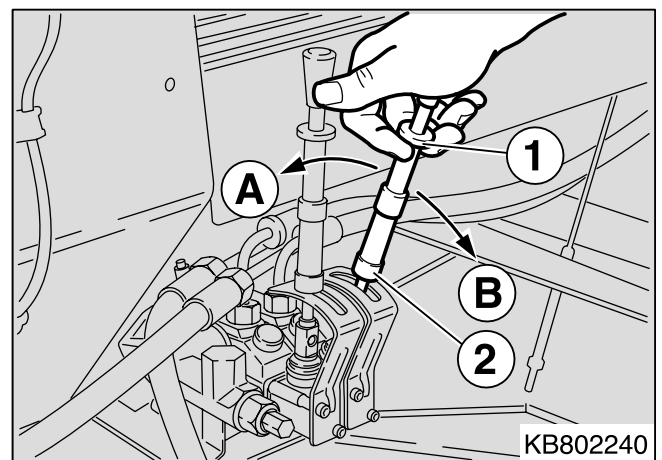
To fold out the bale chute (1), lift the safety collar (2) and move the operating lever (3) to position (B).
To fold in the bale chute (1), lift the safety collar (2) and move the operating lever (3) to position (A).



The residual bale ejector is operated using the right-hand operating lever.

Lift the safety collar (1) and move the operating lever (2) to position (A) or (B).

Position (A): residual bale ejector moves forwards
Position (B): residual bale ejector moves backwards



12. Faults, their Causes and Elimination

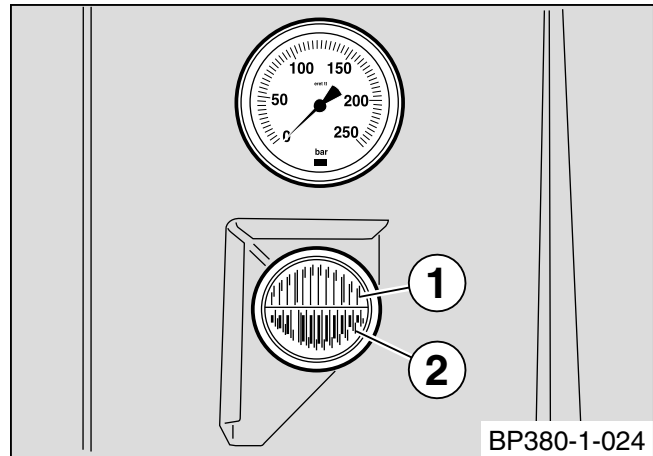
12.1 Special Notes on Safety



- The following always applies for all maintenance, assembly, repair and adjustment work: bring the machine to a standstill. Switch off the engine. Remove the ignition key. Apply the flywheel brake.
- Secure the tractor and the big pack baler from rolling away.
- Use the knotter safety mechanism to secure the knotter from being activated unintentionally.
- Lock the brake on the flywheel hydraulically or mechanically.
- Avoid skin contact with oils, greases, cleaning agents and solvents.
- In case of injuries or burns caused by oils, cleaning agents or solvents, seek immediate medical attention.
- After completing care and maintenance work replace all protective plates and protective devices properly.
- Observe all other specific notes on safety.

12.2 Warning and Indicator Lamp

There is a two unit lamp located on the front right hand side of the big pack baler. The upper yellow part (1) of the indicator lamp indicates the power supply to the big pack baler. The lower red part (2) lights up in the event of any faults.

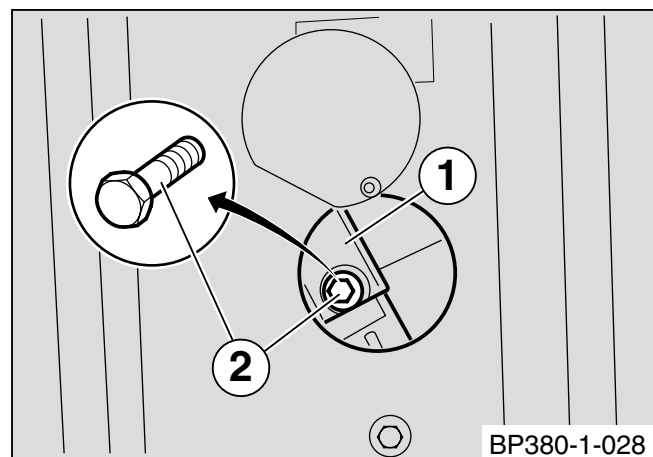


12.3 Needle Yoke Does Not Go Up

The connecting rod (1) for the needle yoke is secured with a shear bolt (2). Check whether the shear bolt is broken. If necessary replace with a M10 x 60, DIN 931-8.8 bolt.



Only use genuine KRONE replacement parts.



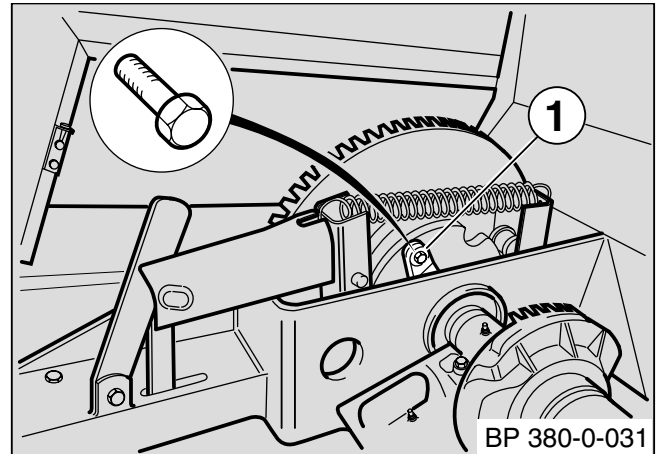
12.4 Knotter Mechanism Does Not Work

To prevent overloading the knotter shaft is protected with a shear bolt (1). In case of faults, check whether the shear bolt is broken.

Replace the shear bolt if necessary. Different shear bolts are required for each of the two Big Pack models:

Big Pack 80 - 80: M8 x 55, DIN 931-8.8 bolt, must be reduced to **38 mm**

Big Pack 120 - 80: M8 x 40, DIN 610-8.8 dowel screw

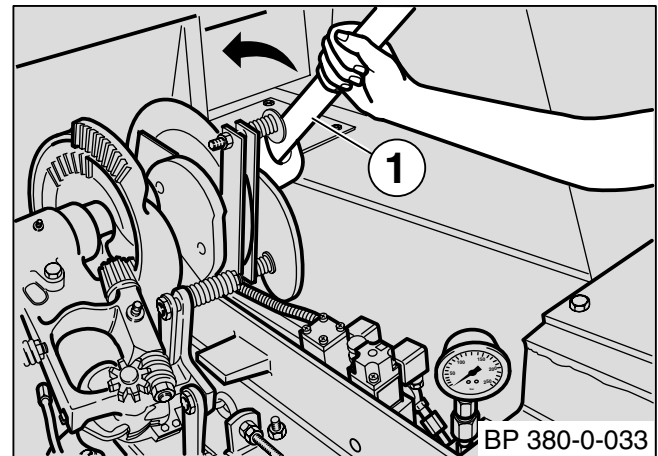


Should the knotter shaft be turned by hand, make sure to initiate the binding process manually.

To be able to insert the new shear bolt, the drillings in the curve disc and in the knotter shaft must be positioned over each other.

Use the lever (1) to turn the knotter shaft. It is located on the left-hand maintenance platform. It is attached to the knotter shaft cover plate. Only turn the knotter shaft in the working direction (see arrow).

Insert and secure the shear bolt.



**Remove the turning handle immediately from the knotting device shaft again!
Risk of injury!**

12.5 Rake Drum

The rake drive is protected from overloading with a spring-loaded ratchet clutch inside the gearbox. If the clutch is activated, switch off the PTO shaft immediately. Stop the tractor and the machine. Allow the big pack baler to come to a standstill. Do not brake the flywheel.

If the blockage has not cleared itself with the machine running on, turn the flywheel back by hand and remove the blockage or foreign body.

Work can be resumed once the blockage has been cleared completely. The ratchet clutch switches on again automatically.

12.6 Failure of Electronic Control



- In emergencies, the pressure adjustment for the bale channel flaps is made while the machine is running. Particular care is required when making the adjustment. High risk of injury! Make sure that the machine can be switched off immediately in case of danger.

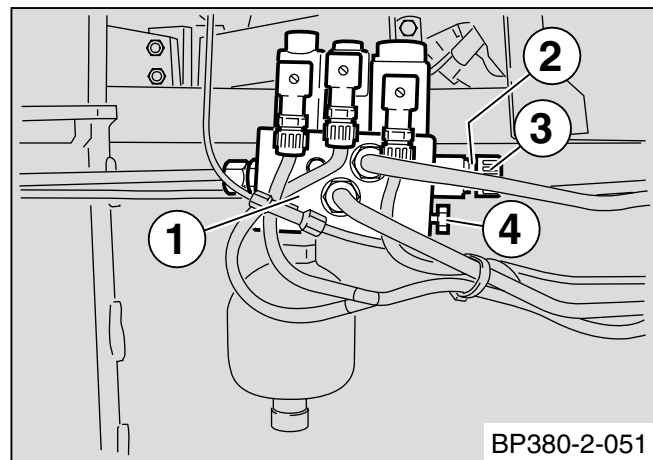


- The big pack baler can be operated temporarily in emergency mode if the electronic control should fail.
- Without electronic control, the maximum baling pressure may be exceeded. This can lead to serious damage. Never work for long periods without the electronic control.

The baling pressure of the bale channel flaps is adjusted at the hydraulic control block (1) on the right hand side of the machine underneath the knotter shaft.

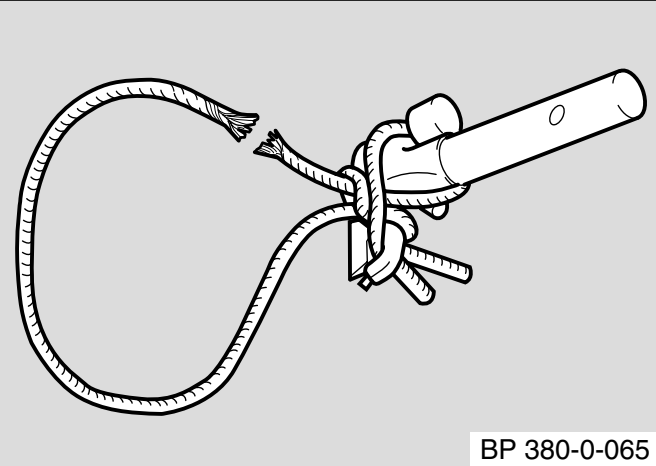
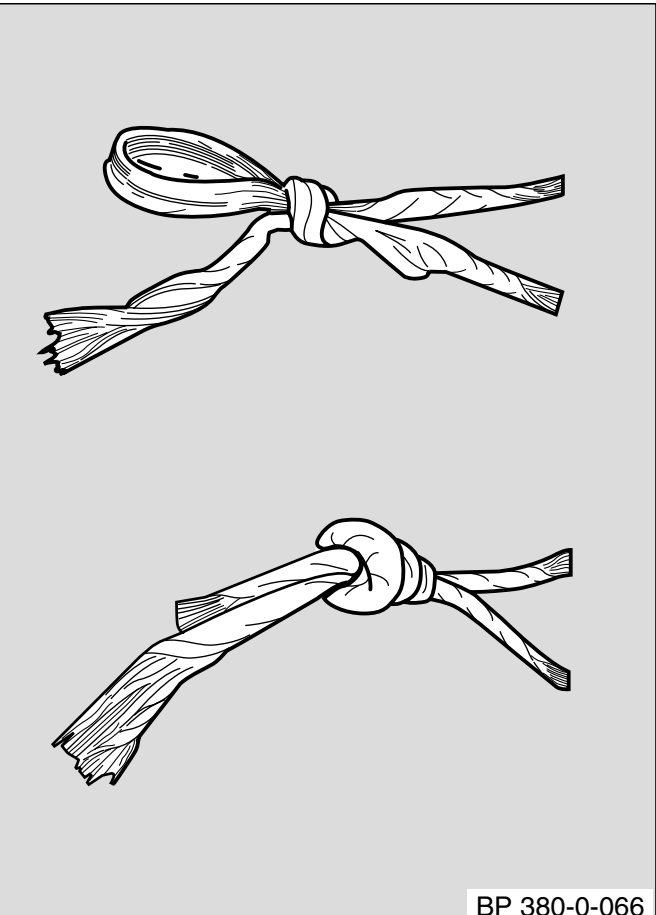
To adjust:

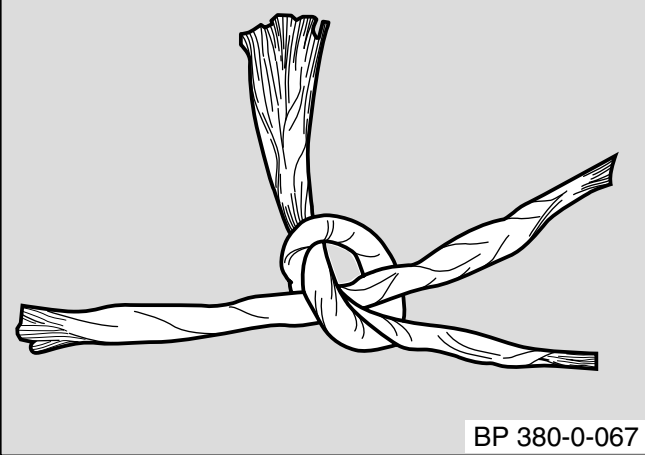
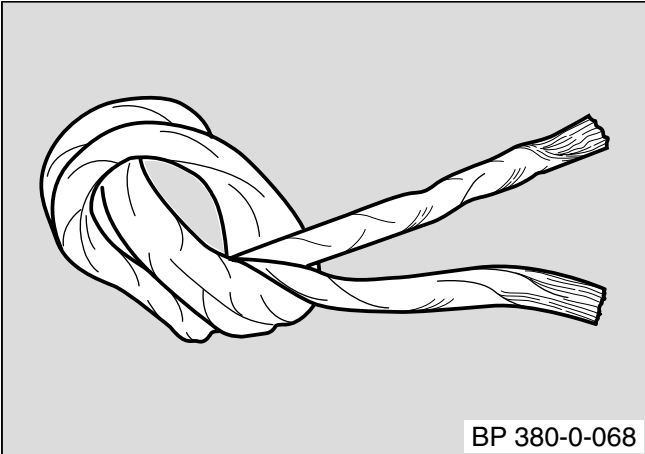
1. Loosen the self-locking nut (2) on the knurled screw (3).
2. Take out the knurled screw (3) completely.
3. Screw in screw (4) completely.
4. Set the desired pressure by slowly screwing in the knurled screw (3).
5. Read the pressure above the control block.
6. Tighten up the self-locking nut (2) again.



12.7 Further Faults

Fault	Cause / Remedy
Horn and indicator lamp for the twine error display not activated at end of twine or when twine broken.	1. Cable connection, 3-pole plug to tractor defective. 2. No earth connection on the angular rail - check earth connection.
Horn and indicator lamp for twine activated.	1. Twine broken, twine tensioner in contact with the angular rail. 2. Twine used up. Thread new twine.
Baling ram / binding mechanism jams.	1. Stop the tractor immediately. 2. The cam-type cut-out clutch in the flywheel disc locks into place at low speeds. 3. Reduce the baling pressure. 4. Check the tractor PTO shaft speed. 5. Pull the needles out of the bale channel, replace the shear bolt in the knotter and needle drive if necessary.
Needles fall back.	1. Tighten up the knotter shaft brake more firmly.
Packs too loose.	1. Increase the baling pressure.
Packs too firm.	1. Reduce the baling pressure.
Rake jams.	1. Ratchet clutch is slipping - reduce engine speed. 2. Stop the tractor and the machine and clear blockage. 3. Reduce forward driving speed.
Pick up jams.	1. Ratchet clutch in the drive PTO shaft disengages - switch off the PTO shaft drive and clear blockage. 2. Reduce forward driving speed. 3. Drive centrally over the swath.
Knotter jams.	1. Shear bolt in the knotter drive has sheared off - eliminate the cause - replace the shear bolt.
Needle yoke jams.	1. Shear bolt in the needle drive connecting rod has sheared off - eliminate the cause - replace the shear bolt.
The most frequent knotter faults have trivial causes and you can correct them yourself in many cases. The errors can often be found in the twine quality, twine guiding, twine tension, positions of the binding needles or twine bar. The following fault diagrams are intended to identify the cause of the fault.	
Too loose a knot with two cleanly cut ends.	1. Tighten the spring on the knotter hook or replace.

Fault	Cause / Remedy
 BP 380-0-065 Knot tying mechanism (twine has snagged on the knotter hook and is broken.)	1. Readjust the twine brake, clean or replace if necessary. 2. Readjust the knotter shaft brake. 3. Remove tangled twine. 4. Straighten the pack initiating mechanism. 5. Check the twine bar – readjust.
 BP 380-0-066 Knot tied: one knot end longer than the other or the longer of the two ends tied into the knot.	1. Sharpen or replace blunt or jagged twine blades. 2. Too little tension on the closer – tighten up spring with hexagonal screw (do not tighten up on block). 3. Too little tension on the twine retainer – tighten the springs by tightening up the hexagonal screw (do not tighten up on the block). 4. Worn twine carrier or twine retainer – replace parts. 5. For too great a pack density – reduce baling pressure. 6. For too great a twine tension – loosen the twine brake on the twine box.

Fault	Cause / Remedy
Knot ends frayed. Knot only in the strand of twine guided upwards by the needle.	1. Blunt twine blade – sharpen the cutting edge of the twine blade or replace blade. 2. Too little tension on the twine retainer – tighten the springs by tightening up the hexagonal screw (do not tighten up on the block). 3. For too great a pack density – reduce baling pressure. 4. Worn twine carrier or twine retainer – replace parts.
 BP 380-0-067 Knot only in the strand of twine running into the upper side of the pack.	1. Binding needle in wrong position – change the position of the binding needle on the yoke. 2. Twine bar in wrong position – adjust the position of the twine bar on the bale channel. 3. Wrong path of swinging twine bar – adjust the struts to the twine bar. 4. Broken or deformed retaining springs in the upper channel cover – replace springs. 5. Twine tension too low – tighten the springs on the twine brake.
 BP 380-0-068 No knot or a knot with very short ends which mostly slips through the knot loop.	1. Tension on the closer for the knotter hook too low – tighten up the closer for the knotter hook. 2. Worn knotter hook – replace knotter hook. 3. Tension on the twine holder too high – loosen the springs with the hexagonal screws.
Knots hanging on the knotter hook.	1. Tension on the closer for the knotter hook too high – loosen the closer for the knotter hook. 2. Too great a distance between the stripping comb on the blade lever and the back of the knotter hook – position the blade lever by hitting lightly with a hammer. 3. Rough surface on the knotter hook – replace the knotter hook. 4. Twine bar setting not correct – correct it.

Fault	Cause / Remedy
Knots hanging on the knotter hook.	5. Blade lever scraping distance too low (the blade lever can be deformed if the twine blade is blunt) – remove the blade lever and position, replace if necessary; check the cams on the knotter disc for wear, replace disc if necessary. 6. Twine tension too low – increase pack density. Tighten up the twine brake on the twine box (1–2 revolutions), increase the pack length.
Twine breaks or shows signs of chaffing: 1. directly beside the knot. 2. 40 - 50 mm from the knot. 3. 60 - 80 mm from the knot. 4. 800 - 1000 mm from the knot.	Twine guide edges on the blade level rough – smoothe edges. Twine guide edges rough. Eye of binding needle rough or worn – smoothe edges. Rough twine guide edges in the lower section of the baler needle – smoothen edges.
Twine round a wrongly tied pack knotted to the twine of the previous pack.	1. The twine was not inserted in the twine retainer as the distance between the needle and the twine carrier is too great – correct the position of the binding needle. 2. Twine carrier and twine retainer form no opening for the twine collection – correct the position of the twine carrier, replace worn carrier pin.
Twine breaks inside the knot.	1. Too large a gap between the stripping comb on the blade lever and the back of the knotter hook – position the blade lever by hitting lightly with a hammer. 2. Tension on the twine retainer too great – loosen the springs with the hexagonal screw.

12.8 Finding Errors in the Central Lubrication System

Fault	Eliminating the Fault
Blockage in the system or in any connected bearings. Hand-actuated systems. Hand lever cannot be moved or is hard to move.	Establishing the Causes of Blockages and Eliminating Them. PROCEDURE First check whether the transport pump is working and is providing the distributor with lubricant. To do this take off the pump outlet and switch on the pump. If the pump is working properly connect the pump outlet again. (Conclusion: the pump is in perfect condition.) Let pump run until the next blockage occurs or the next unacceptable pressure increase occurs. Let the pressure remain. Loosen the inlet screw fittings on the sub-distributor or the main distributor one after the other. For single-stage systems loosen the inlet screw fittings one after the other. The distributor which suddenly leaks lubricant when the screw fitting is loosened under pressure leads to the source of the fault. The screw fittings should then be tightened up again. The pertinent bearing inlet screw fittings should then be loosened one after the other. The bearing whose inlet screw fitting leaks lubricant when loosened under pressure is the bearing which is blocked. Clear the blockage.
Blockages in the Distributor If no lubricant comes out of the outlets after all the outlets on the main distributor and/or the sub-distributor have been taken off, the distributor is blocked.	Replace the blocked distributor. If necessary the distributor can be cleaned under the following conditions. A clean working area must be available. Remove all pipe connection screw fittings. Remove the piston screw plug with a strong screw driver. If loosen by striking the screw with a hammer. Die piston should be removed with a soft mandril (with less than 6 mm Ø, if possible plastic). Very important: A record should be kept of which piston belongs to which drilling so that the pistons cannot be mixed up. Clean the distributor body several times with grease-soluble cleaning agent and blow dry with compressed air. There are inclined channels with a diameter of 1.5 mm located at the ends of the thread on the piston screw openings, which should be cleared with a piece of wire or a pin. Clean and blow dry the distributor again. Congeaed grease may have formed in the piston screw plugs, which should be removed. Re-assemble the distributor, at the same time replacing all copper strips. Before screwing in the pipe outlet fittings, oil (if possible) should be pumped through the distributor several times with a hand pump or similar. The pressure in the distributor should not exceed 25 bar. A pressure higher than this means that the distributor was not cleaned properly or that the piston openings are damaged. If the distributor operating pressure does not fall below 25 bar in spite of remedial action, the distributor should be replaced.

12.9 Warning messages on the comfort control

Problem	Possible cause	Remedy
ALARM-NO.: 0 Tensioner faulty!!	Twine broken. End of twine	Check twine and twine tensioner.
ALARM-NO.: 1 Gatherer crossed!! Stop the machine at once.	Blockage in the feed area of the packer	Stop the machine immediately Switch off the drive shaft Allow the machine to run down
ALARM-NO.: 2 Pressing force too great!! Bale chamber open!!	Too high target density of the bales. chamber for one stroke. If problem should still exist check the hydro-	On-board computer opens the bale electronic pressure control system.
ALARM-NO.: 3 Piston force sensor on right faulty!! Check!	• Broken cable • Reinforcing board faulty • Set value in the electronics too low	• Carry out sensor test • Set correct values
ALARM-NO.: 4 Piston force sensor on left faulty!! Check!	• Broken cable, • Reinforcing board faulty • Set value in the electronics too low	• Carry out sensor test • Set correct values
ALARM-NO.: 5 Blades not engaged (LED on button (8) is flashing)	Blade protection has been initiated replace shear bolt, if necessary	• Check blade protection and • Sharpen blades
ALARM-NO.: 6 Knotter faulty ?!	• Shear bolt for knotter drive shaft broken • Twine locking pins are stuck	• Replace shear bolt • Adjust twine locking pins
ALARM-NO.: 7 OUTPUT ERROR PLEASE CONTROL	Short circuit of a solenoid valve	• Check the solenoid valve • Check supply connections
ALARM-NO.: 8 Measr.-Sensor check!	• Broken cable • Sensor not correctly adjusted	Carry out sensor test
ALARM-NO.: 9 Calibr.-Sensor check!	• Broken cable • Sensor not correctly adjusted	Carry out sensor test



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Maschinenfabrik Bernard Krone GmbH

Heinrich-Krone-Straße 10, D-48480 Spelle
Postfach 11 63, D-48478 Spelle

Phone +049 (0) 59 77/935-0
Fax +049 (0) 59 77/935-339
Internet: <http://www.krone.de>
eMail: info.idm@krone.de