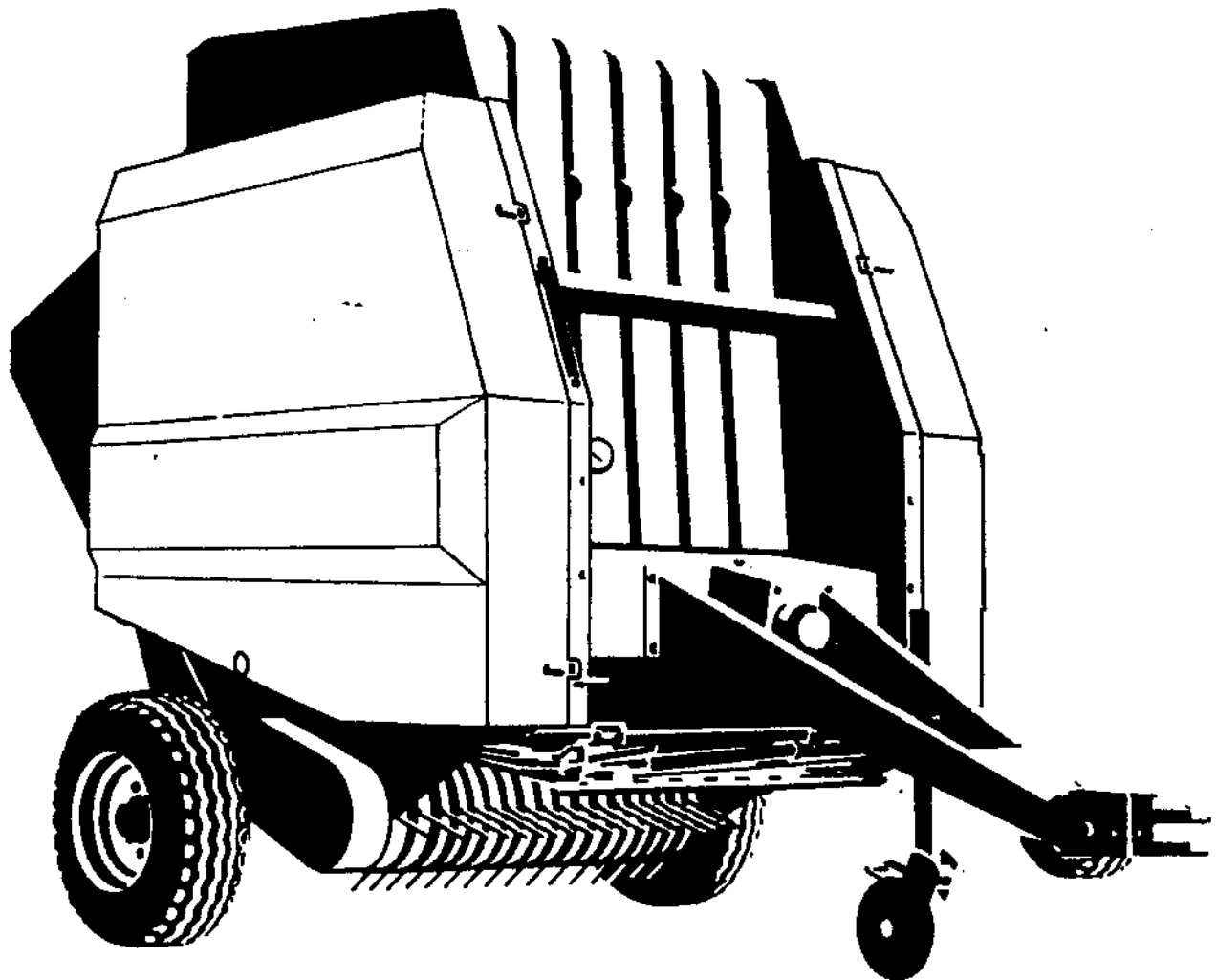




a GREENLAND product

RP 1582 | OPERATION MANUAL

Effectivity:
PIN: BY000151 & up





Issue G9111BY-EN(3)

Operation manual pages
Illustrations of decals at the end of this book and in the IPL
Illustrated spare parts lists (IPL) see separate manual P9204BY(3)

Note: The abbreviation "EN" indicates English text; in some other manuals this may also be marked by the international car sign "GB".

Enter here the product identification number (PIN) of your machine:

BY

INTRODUCTION

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INTRODUCTION

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Introduction

This manual contains information on the operation, lubrication, maintenance and safety precautions of your round baler.

The **RP 1582** Round Balers have been designed with ease of operation and reliability foremost to meet the needs of a discerning agricultural industry.

Safe, efficient and trouble free operation of your round baler requires that you or anyone else who will be operating or maintaining the equipment read and understand all safety, operation, maintenance and troubleshooting information contained within this operation manual.

Read this manual carefully before starting to work and ensure that it is available for the person who operates the machine.

Note: For Liability and Warranty Rules see chapter X.

If you have any questions or suggestions regarding the machine, you should consult your dealer who is kept expertly informed by our staff.

We stock genuine parts and the correct tools and equipment and will be glad to help you quickly and efficiently. You will find further information on spare parts in the illustrated spare parts manual.

A metal plate bearing the Product Identification Number (PIN) and the Production Series Number (PSN) of your round baler is fitted to the machine.

Please note these numbers, together with the date of purchase, in the spaces provided on page 0 of this manual.

This information will be of assistance in any future correspondence and when ordering spare parts for your machine.

'GREENLAND GELDROP B.V.' manufacturers of farm machinery reserve the right to change design and/or specifications without notice. This does not include an obligation to make changes to machines previously supplied.

I. DESTINATION AND INTENDED USE OF ROUND BALERS

This machine is exclusively appropriate-designed for collecting of cut non or insignificantly ligneous plants, mainly grasses, from the ground, feeding them through the pick-up and consequently forming a round bale inside the baling chamber, taking into account all prescriptions, procedures, etc. as stated herein and/or through decals or other signs on the machine.

This machine shall be exclusively used for the normal agricultural work.

Attention: *Any use beyond the one stipulated above requires written authorization of the manufacturer, this may be required for baling unusual, non-grass plants as well; refer also to the reliability and warranty chapter X in this manual.*
Always ask if in doubt.

INTRODUCTION

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II. TECHNICAL SPECIFICATIONS

RP 1582

Machine Dimensions:

| | |
|--------------------|----------------------------|
| Weight (mass) | 21.4 kN (2175 kg; 4792 lb) |
| Length | 4.1 m (13'6") |
| Width with pick-up | 2.8 m (9'3") |
| Height | 2.8 m (9'3") |

Tyres:

| | |
|----------------------|------------------|
| Europe | 10.0/75-15.3 6PR |
| North America | 10.5/65-16 6PR |
| Extra wide tyres | 15.0/55-17 10PR |
| Max. transport speed | 30 km/h (18 mph) |

Bale dimensions:

| | |
|---------------|--------------|
| Width | 1.2 m (4') |
| Diameter, max | 1.3 m (4'3") |

Pick-up:

| | |
|--------------------|---------------------|
| Speed (rpm) | 90 |
| Gathering width | 1.4 m (4'7") |
| Bars / tines | 4 / 72 |
| Tine spacing | 6.6 cm (2.5") |
| Drive / protection | chain / slip clutch |
| Lift | hydraulic |
| Gauge wheel | optional |

Bale Formation:

| | |
|-------------------------|--|
| Number of belts per set | 8 |
| Chamber Type | variable, open throat |
| Density control | hydraulic pressure, preset by operator |
| Density Indicator | pressure gauge |
| Size Indicator | on machine |
| Bale shape indicator | on machine & monitor |

Belt lengths:

| | |
|-----------|------------------|
| Front set | 5.37 m (17.6 ft) |
| Rear set | 7.78 m (25.5 ft) |

Bale Wrapping:

| | |
|----------------|-------------------------------|
| Twine Type | sisal or plastic |
| Wrap Control | electronic (programmable) |
| Activation | automatic or operator |
| Bale discharge | hydraulic tailgate/bale ramps |

Tractor Requirements

| | |
|-------------------|---|
| Power-minimum | 44 kW (60 hp) |
| Pto Speed | 540 rpm (1000 rpm) |
| Electrical system | 12 VDC* |
| Hydraulics | 1 double acting valve + 1 single acting valve |

- Notes:**
1. *Neg. (-) ground
 2. intentionally left blank

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- Notes:**
3. Specifications are subject to change without previous notice.
 4. Directional indications such as 'right', 'left', 'front' and 'rear', etc. are to be interpreted when facing in direction of travel; parts are numbered from left to right.
This is also the basic position for defining the direction in connexion with which:
 - rh (rotation) = clockwise rotation
 - lh (rotation) = counter or anti-clockwise rotation
 - rotation around a vertical axis is defined when looking from top to bottom;
 - rotation around a horizontal axis almost perpendicular to the direction of travel is defined when looking from the left to the right;
 - rotation of bolts, nuts, hand cranks, etc. is defined when looking from the position of operation.
 5. Units of measurement are given both in Imperial/US and international metric units; the metric value shall be decisive (conversion table at the end of the book).
 6. Abbreviations used are: lh = left hand side; rh = right hand side; pto = power take off (output stub shaft); cw = clockwise; ccw = counter-clockwise, anti clockwise; IPL = illustrated spare parts lists; PIN* = Product Identification No. (= machine serial no.); PSN* = Production Series Number.
* = you can find this number on the identity plate of the machine.



DANGER: *When you see this safety alert symbol and heading be alert to the danger of injury of death of men and animals.*

Attention: *When you see this heading, be alert to the possibility of damage to equipment, crop, buildings, etc., but to financial and/or juridical problems (warranty, product liability) as well.*

Note: This heading indicates a remark to make a job easier, better and safer.



III. SAFETY INSTRUCTIONS ROUND BALERS

Avoid accidents! Don't learn safety the hard way! Stay alert!

Think SAFETY! Work SAFELY!

Prior to operating the machine read and observe this operation manual and all safety instructions and decals.

Note: Everyone must be given operating instructions before starting to operate the equipment. Pass on all safety advices also to other users!

General

You are responsible for the SAFE operation and maintenance of your equipment. It is the operator's responsibility to read and understand ALL safety and operating instructions in the manual and to follow these. You must ensure that you and anyone else who is going to operate, maintain or work around the unit be familiar with the operating and maintenance procedures and related **safety** information contained in this manual. The manual will take you step-by-step through your working day and alert you to all good safety practices that should be adhered to while operating this equipment.

Remember, you are the key to safety. Good safety practices not only protect you but also the people around you. Make these practices a working part of your safety programme. Be certain **everyone** operating this equipment is familiar with the recommended operating and maintenance procedures and follow all safety precautions. Most accidents can be prevented. Do not risk injury or death by ignoring good safety practices.

1. Machine must never be tested on a tractor in an enclosed space because of the danger from exhaust fumes!
2. Always check traffic and operational safety before any putting the machine into operation.
3. Adhere to the general rules of health and safety precautions besides the advice of this manual!
4. The installed warning and advisory signs give important hints for a safe operation; adhering to serves your own safety!
Keep safety decals and signs clean and legible at all times.
Replace safety decals and signs that are missing or have become illegible.
If original parts on which a safety decal or sign was installed are replaced, be sure that the replacement part also displays the current decal or sign.
5. When making use of public roads adhere to applicable traffic rules!
6. Become acquainted with all installations and control devices as well as with their function before beginning the operation!
Doing this during operation would be too late!
7. The clothing of the operator should be tight. Avoid wearing any loose clothing!
8. Before starting up, maintaining, and moving and/or operating: check surrounding area (bystanders, especially children!). Ensure sufficient visibility during all operation and transport!
9. Nobody shall ride on the machine during transport and/or field operation!
10. Attach accessories in accordance with mounting instructions and only to the appropriate attaching points!
11. Special care shall be taken when (un)hitching the baler on/off the tractor. Hitch and unhitch the unit from the tractor on a firm, dry and level area. This will lessen the possibility of tipping and/or sinking into soft ground or mud!
12. When (un)hitching the baler from the tractor place the jack stand into the corresponding position!
13. Make certain the tractor is in safe operating condition with adequate braking capabilities for an implement of this weight!
14. Adhere to maximum permissible axle loads, total weights and transport dimensions!
15. Install and check transport equipment, e.g. lighting, warning devices, guards: ensure visibility and proper functioning!
16. Control devices, e.g. ropes, hoses, etc. for remote actuation of devices such as cylinders, shall be guided and positioned in a way they never inadvertently release nor block desired movements/actuations!
17. For road transport bring baler in a transport position and secure it!
18. Never leave the operator's seat during operation or transport.
19. Moving behaviour, steerability and braking performance are influenced by trailed! Ensure sufficient braking effect and safe manageability!
20. Always adapt the speed to the local conditions! When making short turns note the larger radius because of increased width and/or length of the combination as well as mass and inertia changes due to the other center of gravity position!
21. Do not operate a machine unless all protection is installed and in functional position!
22. Never stay or allow anyone to stay within the operating area (also refer 28)!
23. Never stay or allow anyone to stay within the turning and slewing area!

SAFETY INSTRUCTIONS

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24. Before leaving the tractor apply the parking brake, shut down the engine and remove the ignition key!
25. Allow nobody to stay between tractor and baler unless the tractor is prevented from inadvertent rolling away by applied parking brake and or placed chocks!
26. Before (un)hitching the baler set the controls in a position that prevents from inadvertent actuation of any function!
27. When making any field adjustments or carrying out maintenance, make sure the tractor and implement are positioned on a firm and level area.
28. Keep clear of tail gate linkage area: danger of crushing and scissoring!
29. Stay clear of high risk areas like the pick-up tailgate and belts while the machine is in operation. If the intake area should plug, stop the tractor and shut off the engine, then remove the material only after all parts have stopped moving!



DANGER: Do not attempt to push or pull the material into or out of the machine while it is operating.

30. Regularly remove accumulated materials from haytool machinery to reduce fire hazard and interference with the operating parts.
31. Carry a fire extinguisher at all times, especially when operating in dry crop materials. This should be a multi-purpose ABC rated extinguisher with a 5 kg (10 lb) capacity, approved by the appropriate authority.
32. The protection of the baler, e.g. shields and guards, protects from penetrating into danger areas! Therefore all protection must be kept in optimal condition and moved into the functional position prior to starting to work!
33. Before performing any work on the baler ensure the pick-up and the belts have stopped all rotation, shut down the engine and remove the ignition key!



DANGER: Machine continues rotation due to inertia: wait until pick-up and belts really stand still (also see 44)!

34. Drive very carefully when negotiating hilly or uneven terrain. Special care shall be taken when discharging the bale: ensure it cannot move uncontrollably!
35. Do not allow anyone else in the tractor driver's area unless specific provision is made by the tractor manufacturer to accommodate a passenger. Even if such is the case, travel with extreme caution!
36. Do not modify the equipment in any way. Unauthorised modifications may impair the function and/or safety and could affect the life of the equipment!
37. Repair damages prior to next operation!

Drive through Universal Joint Drive Shafts

Note: The rules of this section apply to all universal joint drive shafts whether they are coupled to a tractor pto or other power output shafts!

38. Only use univ. joint drive shafts complying with the manufacturer's specification for that specific use!
39. Externally accessible univ. joint drive shafts (e.g. pto drive shafts) as well as tractor pto and machine input shaft must be equipped with appropriate guards and cones!
All the parts shall be kept in a proper condition! Lubricate in accordance with the instructions!
40. Univ. joint drive shaft guard tubes shall overlap sufficiently (and as safely advised) in all transport and working positions!
41. Do not (dis)connect or work on a univ. joint drive shaft unless the engine has been shut down and stopped and the ignition key has been removed!
42. Ensure univ. joint drive shaft is connected correctly and safetied by the lock!
43. Prevent shaft guard from spinning by attaching the safety chain(s) to a static part (e.g. not used top link hole).
44. Prior to engaging or switching on the pto ensure nobody stays in the danger area of the machine!
45. Do not engage or switch-on the pto while engine is stopped!
46. Prior to engaging or switching on the pto ensure the pto speed cannot exceed 540 rpm!
47. When working with pto drive do not allow anyone to stay near any spinning univ. joint drive shaft!
Do not reach across or under a rotating drive shaft to make adjustments or retrieve tools or equipment!
48. Always stop pto when it is not needed and when the max. universal joint angle might be exceeded!



49. **DANGER: After disengaging or switching off the pto, the pto driven machine will continue running because of inertia!**
Keep a safe distance to the machine until the pick-up and the belts really stand still!

SAFETY INSTRUCTIONS

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50. Do not clean and/or grease the pto driven machine and univ. joint drive shafts unless pto and engine have stopped and the ignition key has been removed!
51. Lubricate and maintain shaft guard tube so it does not bind on the inner rotating shaft!
52. Place the uncoupled pto drive shaft on the retaining device provided (1, fig. 0)!
53. After removal of pto drive shaft place protective cover/cap over pto!

Hydraulics

54. The hydraulic system is under high pressure!
55. Never attempt to find or even to stop a hydr. leakage with your hands! High pressure fluid easily penetrates skin and clothes, causing severe injuries: see a doctor immediately when injured!
When inspecting always use appropriate aid (e.g. a piece of wood or strong and thick cardboard) and wear safety goggles and gloves!
56. Regularly inspect hydraulic lines (hoses, tubes, connections) and renew when found defective or aged! Replacement parts shall at least meet the appropriate technical manufacturer's specifications!
57. When plugging in the hydr. quick-disconnect plug of a hose always ensure the hydr. socket is not pressurized! Ensure sockets are clean!
58. Before starting to perform any work at the hydraulic system, stop the tractor engine (safely the tail gate cylinders as required) and depressurize the system by repeatedly actuating a hydraulic device!
59. Safety shut-off valve(s) must be closed in transport!
60. Properly guide hydr. hoses (2,fig. 0); position an uncoupled hydr. hose to ensure coupling plugs stay clean!

Wheels / Tyres

61. When working on the wheels make sure that the machine has been placed on the ground safely (jack stand) and that it is secured by chocks against unintentional rolling!
62. Mounting wheels and tyres requires sufficient knowledge and availability of prescribed tools and equipment being in perfect condition; repairs on tyres may only be performed by trained staff with suitable tools!



DANGER: Do not fit other tyre dimensions as prescribed! Severe injury can occur! Trailed machines having 15.3" tyres, do not substitute by 15" tyres when replacing.

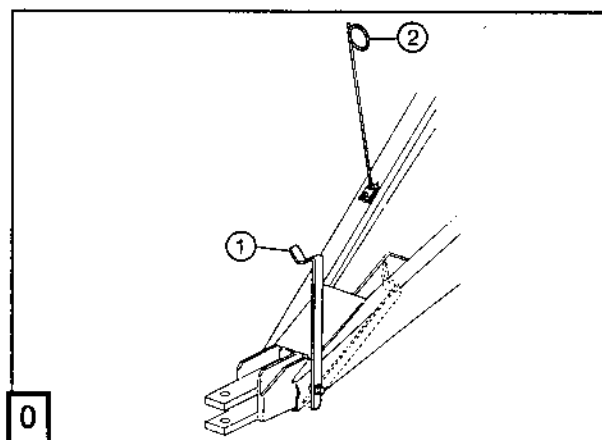
63. Check air pressure regularly: ensure prescribed value!
63. Max. speed of travel is 30 km/h (18 mph)!

Safety Decals

Attention: Good safety practice requires that you become familiar with the various safety decals; the type of warning and the area, or particular function related to that area, requiring your SAFETY AWARENESS.

Storage Safety

64. Store the unit in an area away from human activity.
65. Do not permit children to play on or around the stored unit.
66. Use the provided jack stand supports, store in stable machine mode (always use the stand provided).



IV. PRE-OPERATION

1. Hitching the Baler (fig. 1)

Baler Hitch

Use jack stand mounted on the hitch frame to level unit to the fixed drawbar of the tractor by rotating the crank handle to adjust the baler hitch to the drawbar height.

After connecting the baler hitch to the tractor drawbar, raise jack stand with the ground wheel folded up and positioned rearward. Secure in storage position.

DANGER

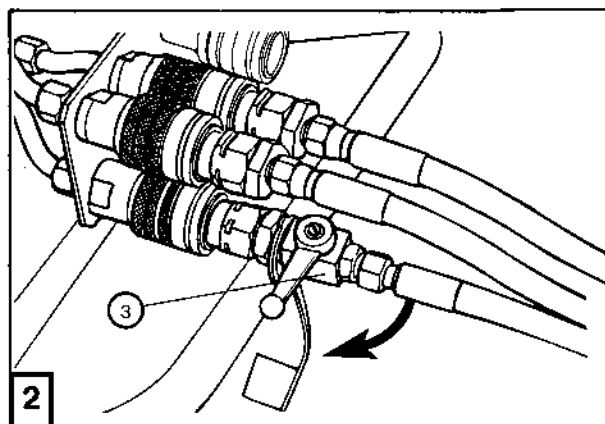
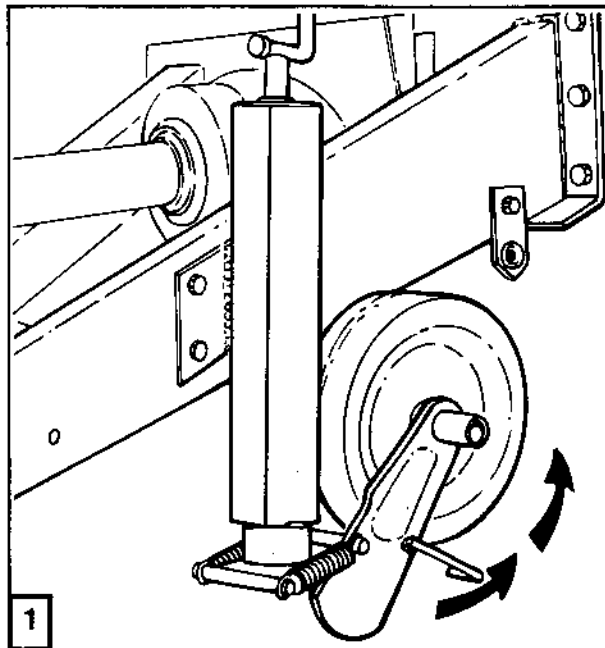
Do not stand between the tractor and the implement while hooking or unhooking it. If it is necessary to work from this position, make absolutely sure that you completely shut down ALL the tractor systems and that ALL rotating and moving parts have totally stopped.

2. Tractor Hydraulics (fig. 2)

The baler hydraulic system is operated by the tractor. A double acting hydraulic flow control valve is required to allow opening and closing of the rear door and to activate the bale density hydraulic cylinders. When the rear door is closed the control lever should be in the neutral position.

An additional single (or double) acting hydraulic valve (preferably with float position) is required to activate the hydraulic pick-up. To lock the pick-up for transportation, a quarter turn valve is incorporated in the hydraulic line (3).

Connect the hydraulic hoses to the tractor, cleaning the quick couplers thoroughly before plugging in.



PRE-OPERATION

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3. Tractor Pto Speed (fig. 3)

The baler is delivered as standard with the *540 rpm* pto gear box setting. To convert to a *1000 rpm* pto system, the main gear box has to be inverted, so that the output shaft becomes the input shaft.

In this case interchange position of breather and plug in such a way that the breather is always on top.

4. Levelling the Baler (figs 4 and 5)

Note:

Fig. 4A shows the situation of the std. pick-up, whereas fig. 4B shows the, optional, wide pick-up.

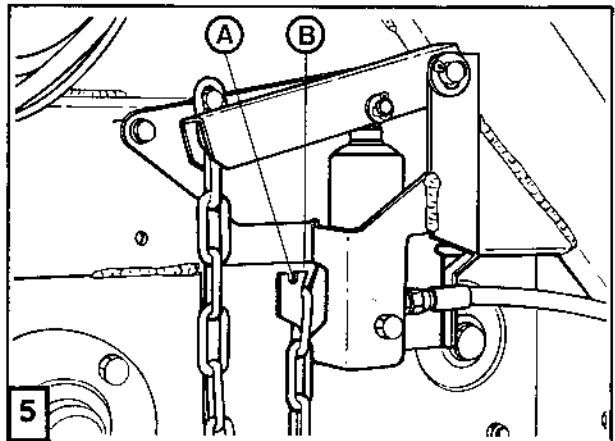
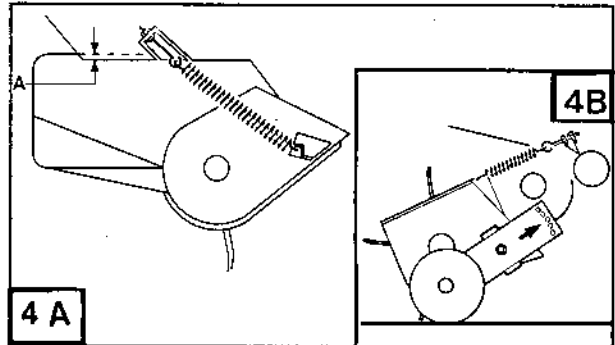
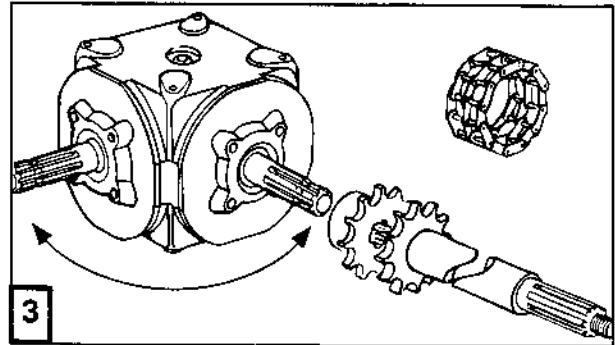
Standard pick-up (fig. 4A):

For maximum capacity and optimum bale starting, it is important to position the pick-up height relative to the baler frame correctly, there should be an overlap (A, fig. 4) of approximately *25 mm (1")* between the pick-up flare and the baler frame.

Lower the hydraulic pick-up and secure the pick-up height in this position with the chain (fig. 5). If necessary, open up the lock valve in the hydraulic line. Two positions are available (A & B, fig. 5).

Wide pick-up (fig. 4B):

A baler with a wide pick-up shall be positioned horizontally behind the tractor. Then adjust the pick-up using the gauge wheels.



PRE-OPERATION

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To obtain the proper height of pick-up tines above the stubble, raise or lower the baler by adjusting the rear axle stubs (A, figs 6A & 6B), and/or adjust the drawbar hitch height in relation to the tractor drawbar. This can be adjusted into 4 positions as required (fig. 7). Only clevis hitch is shown although the same applies to the ring hitch.

Note:

Figs 6A and 6B show different executions; please check which is on your machine.

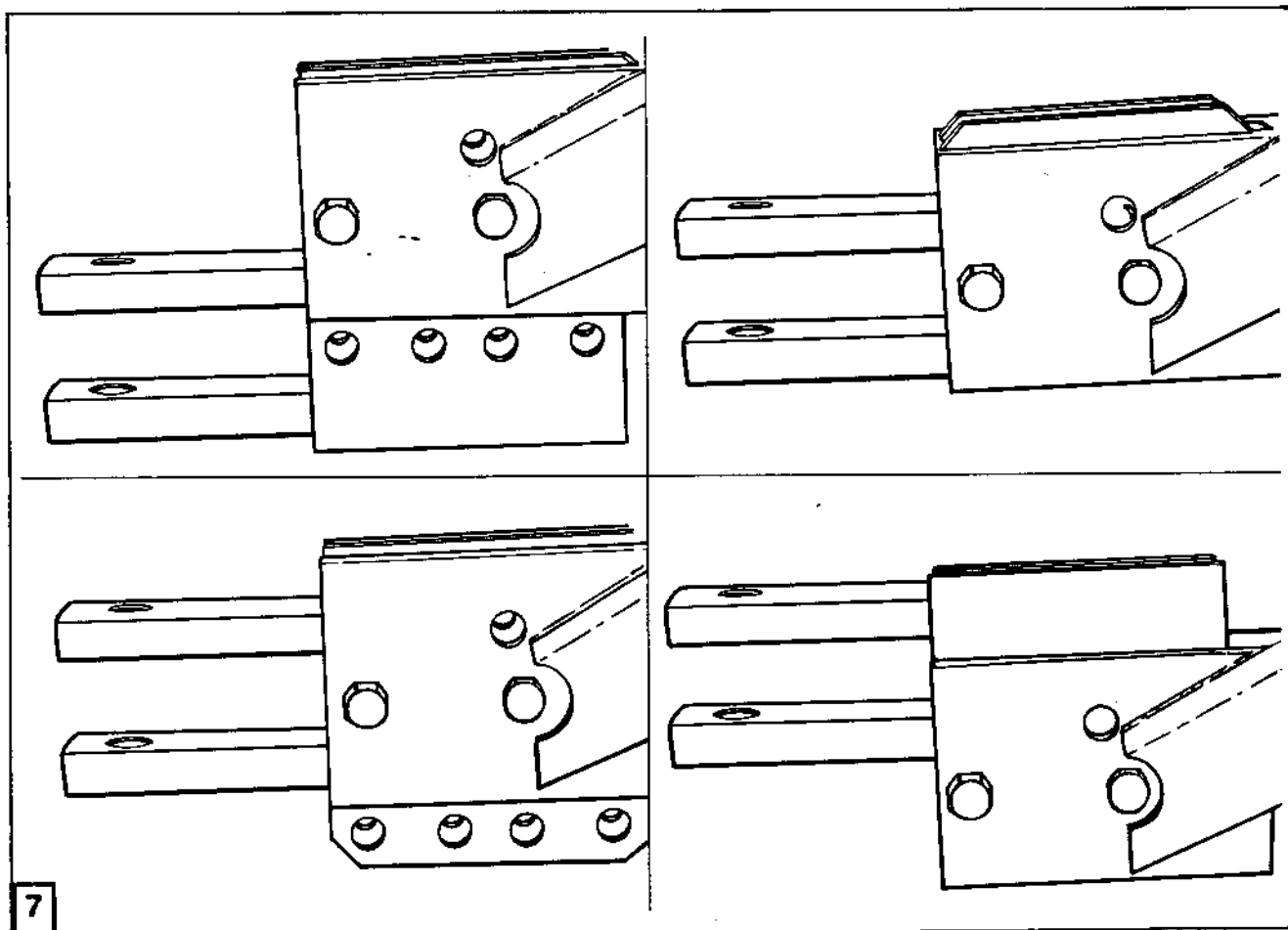
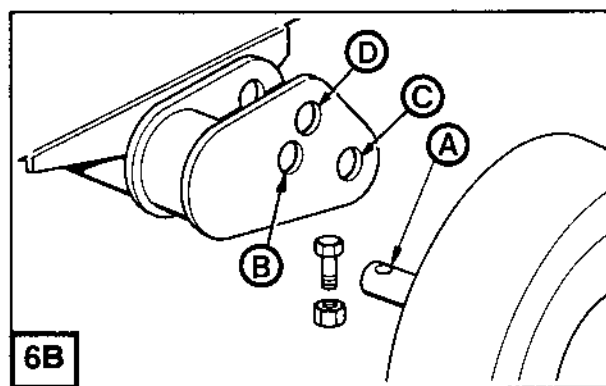
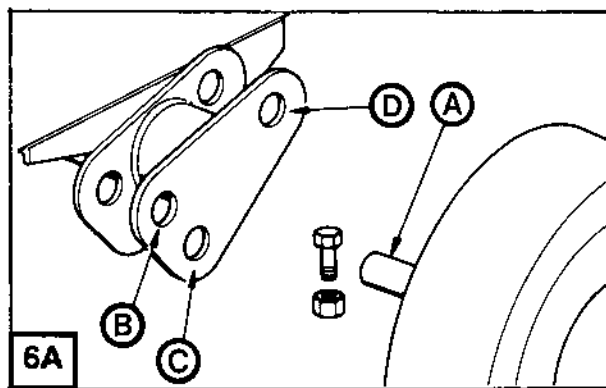
The baler should be horizontal or slightly tipped backwards, but in all cases the proper pick-up height relative to the baler frame should be observed as near as possible.

Position B (fig. 6A & 6B) shows the standard setting whereas position C is recommended for soft soils. Using wide pick-up you only can work in position C (fig. 6B).

For flax, use position D (fig. 6A & 6B).

DANGER

Ensure that the draw pin is of proper size and that a spring clip is inserted.



PRE-OPERATION

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5. Pto Drive Shaft Installation (figs 8 - 10)

Mount the two shaft halves side by side, not joining, and check length.

Tubes shall overlap each other allowing at least *25 mm* clearance, minimum overlap is *370 mm*.

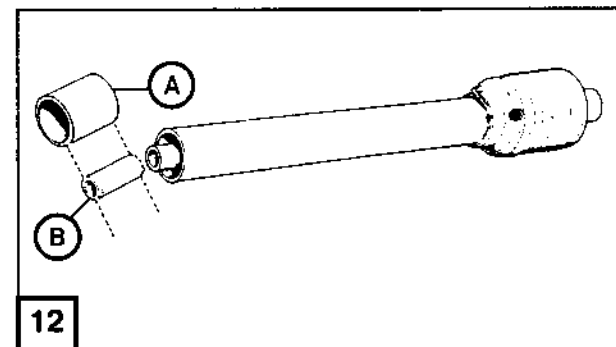
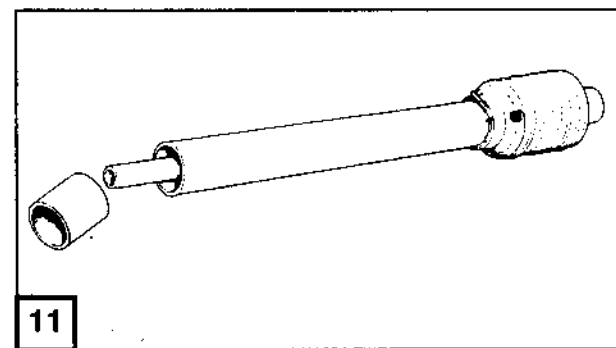
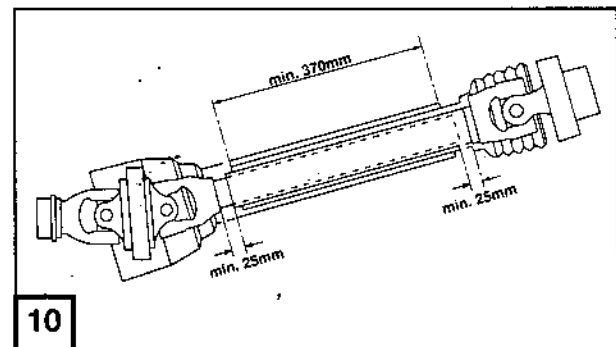
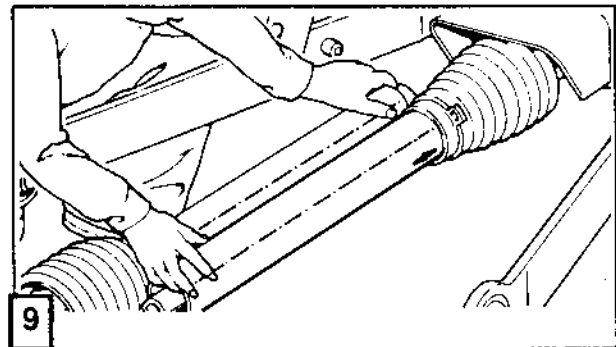
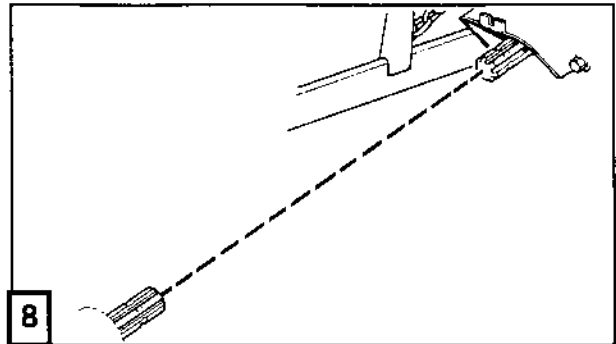
Note:

A pto drive shaft that is too long can cause severe damage to the bearings of both the implement drive and the tractor pto system. Such damage will void the warranty for these components and other affected systems. In most cases the shaft will be of correct length and should not have to be shortened.

6. Shortening (figs 11 and 12)

If shaft is too long, first cut guard tubes to correct length.

Then cut the same length (A) from the profile tubes (B).



PRE-OPERATION

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File the cut area to remove any metal burrs (fig. 13) and wipe off any metal filings. Also trim any plastic burrs from the inside of the guard tubes to ensure that these will slide easily, and wipe away any plastic filings or dust. Apply a good coat of grease to the surface of the inner profile tube from the outside (fig. 14).

The univ. joint drive shaft (the pto drive shaft) on your round baler has a wide angle universal joint at the tractor end which allows a sharper turn of up to 80°. Ensure that the drive shaft halves do not bottom during such sharp turns.

Note:

When the quick disconnect pin is released, the pto drive shaft coupling yoke should firmly, but easily, slide off the tractor output shaft. Do not use a hammer to drive the coupling yoke on or off the splined pto (A, fig. 15). You will damage the pto drive shaft coupling yoke and the splined tractor pto. Keep the tractor splined pto, the pto drive shaft coupling yoke and quick disconnect pin well lubricated (B, fig. 15).

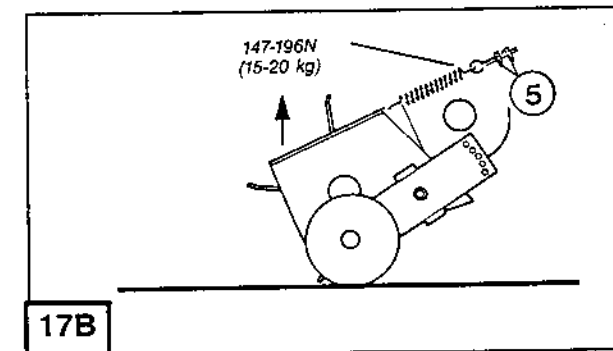
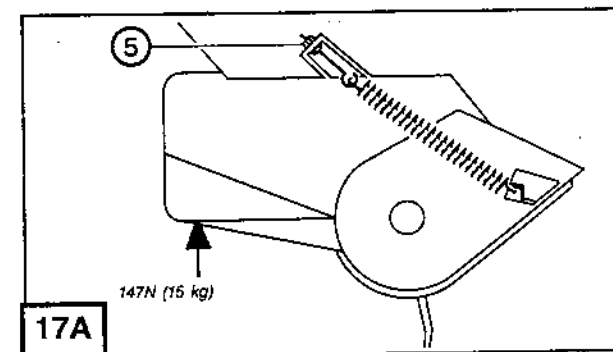
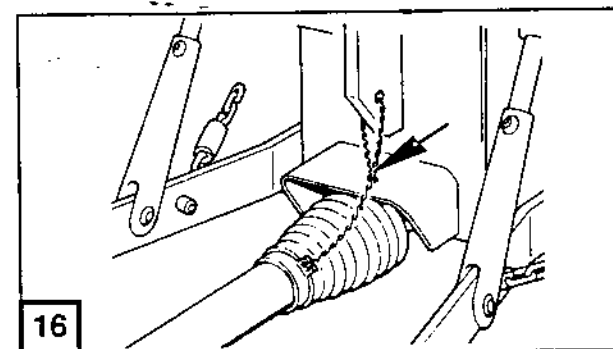
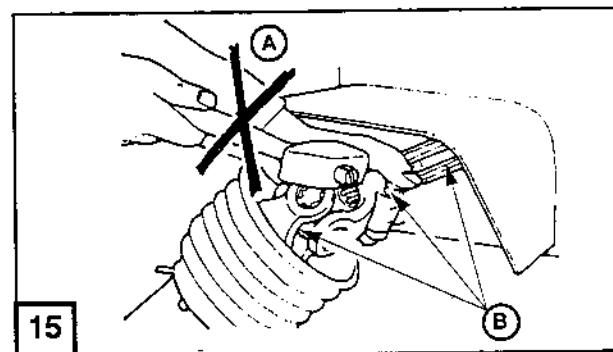
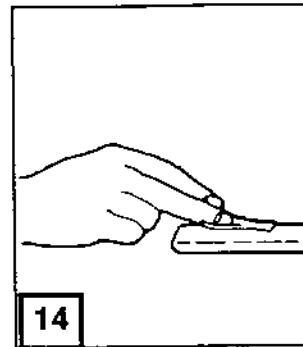
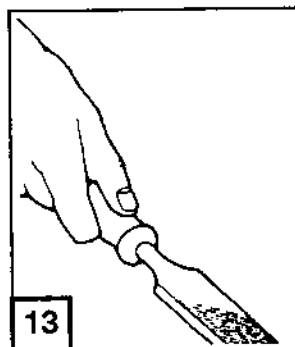
Connect the guard tube safety chain(s) securely to a stationary point on the tractor and the machine (arrow, fig. 16).

7. Pick-up Flotation Adjustment (figs 17)

Adjust pick-up flotation spring tension to support 147 - 196 N (15-20 kg; 33-44 lb) at the front of the pick-up end plate. Turn adjusting nut (5, fig. 17A & 17B) to obtain desired flotation.

Note:

Fig. 17A shows the situation of the std. pick-up, whereas fig. 17B shows the, optional, wide pick-up.



8. Wind Guard Adjustment (figs 18 and 19)

The wind guard gently compresses the crop on the pick-up reel to provide even and consistent feeding of the crop into the baler. It aids greatly in picking up light crops or when baling in windy conditions.

The wind guard should be adjusted (fig. 18A) to provide a *minimum clearance* of 25 mm (1 in) between the stripper plates and wind guard tines. A clearance of 110 mm (4.3 in) should be allowed between wind guard tines and drive roller.

To adjust wind guard height (fig. 19), loosen the lock nuts (8) on the adjusting bolts (6 and 7) located at the front and on each end of the wind guard mounting bracket and adjust the length of the bolts to limit or increase travel of wind guard.

9. Wind Guard Adjustment Wide Pick-up

Wind guard should be adjusted as follows (fig. 18B):

- 1) Lower position: *min. 25 mm* clearance between tine tip of wind guard and cams of auger roller;
- 2) Highest position: minimum clearance shall be 110 mm (4.3 in) from drive roller of front belt section.

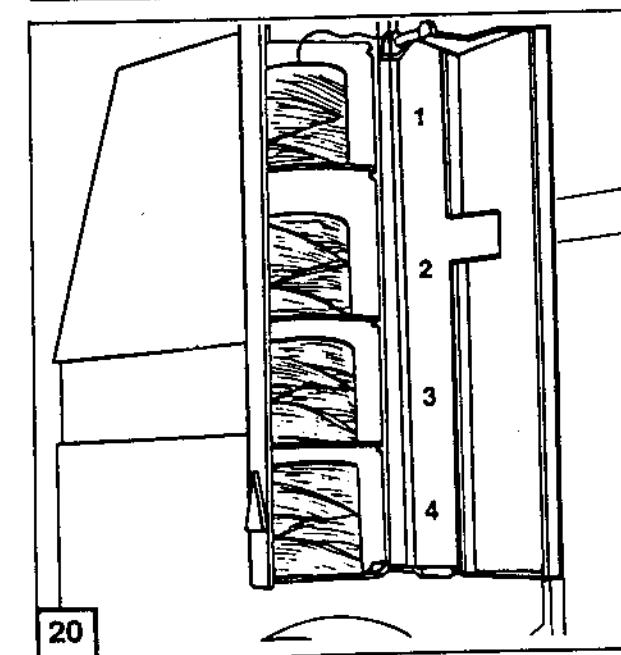
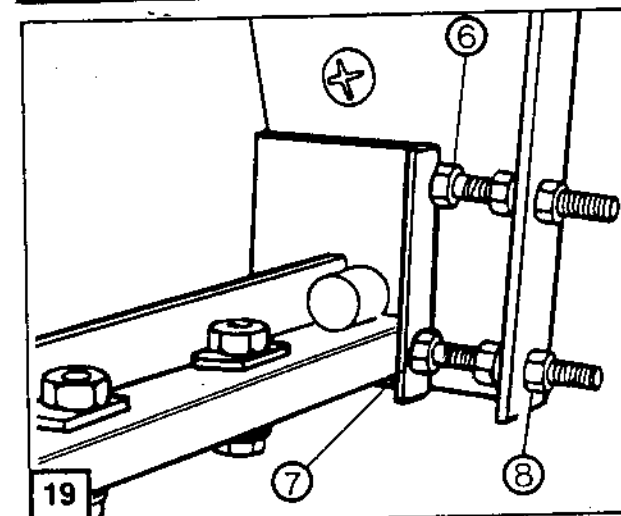
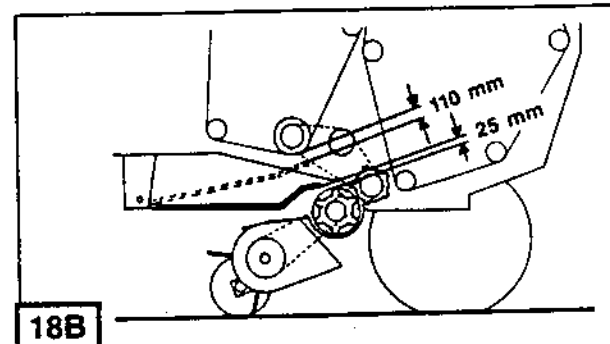
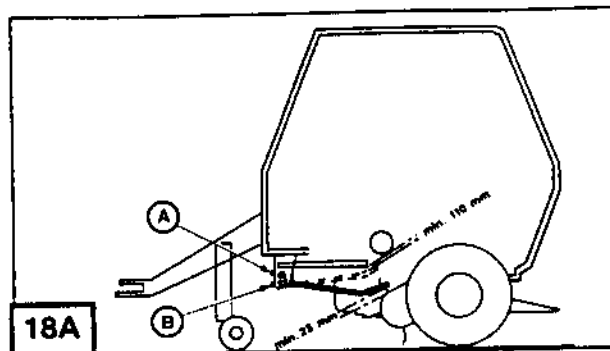
10. Adaptation to Different Crop Conditions (Wide Pick-up)

Refer to chap. IX.4.B.

11. Twine Loading and Routing

A. Twine Loading (fig. 20)

Each twine bin holds a total of 4 spools of either plastic or sisal twine. Connect these together from spool 4 on the bottom through to spool 1 on the top and feed the twine up through the guide holes in the compartment partition and out of the top of the twine storage bins, then through the twine tensioner located at the top of the bins.



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Put the twine through the twine brakes and attach to the eyelet. Then use the wire to pull the twine down through the tubes.

Note:

An electrical wire with an eyelet is supplied with each baler to assist threading twine through the tubes.

The brake on the twine compartments should allow the twine to slip through unobstructed but **have just enough tension to take twists out.**

Adjust the spring tension if required.

Note:

To obtain better access for threading the twine tubes, move the tying arm *15 cm (6 in)* from the parked position. This is achieved by setting the control box to **MAN** and by using the manual control switch (see fig. 23).

B. Twine Threading (left side)(fig. 22)

Insert the wire through the front left side eyelet and then through the draw bar holes. Next, insert it through the front twine brake and into the front twine tube and on all the way through the twine tube. Pull the twine through this routing by pulling the wire.

C. Twine Threading (right side)(fig. 22)

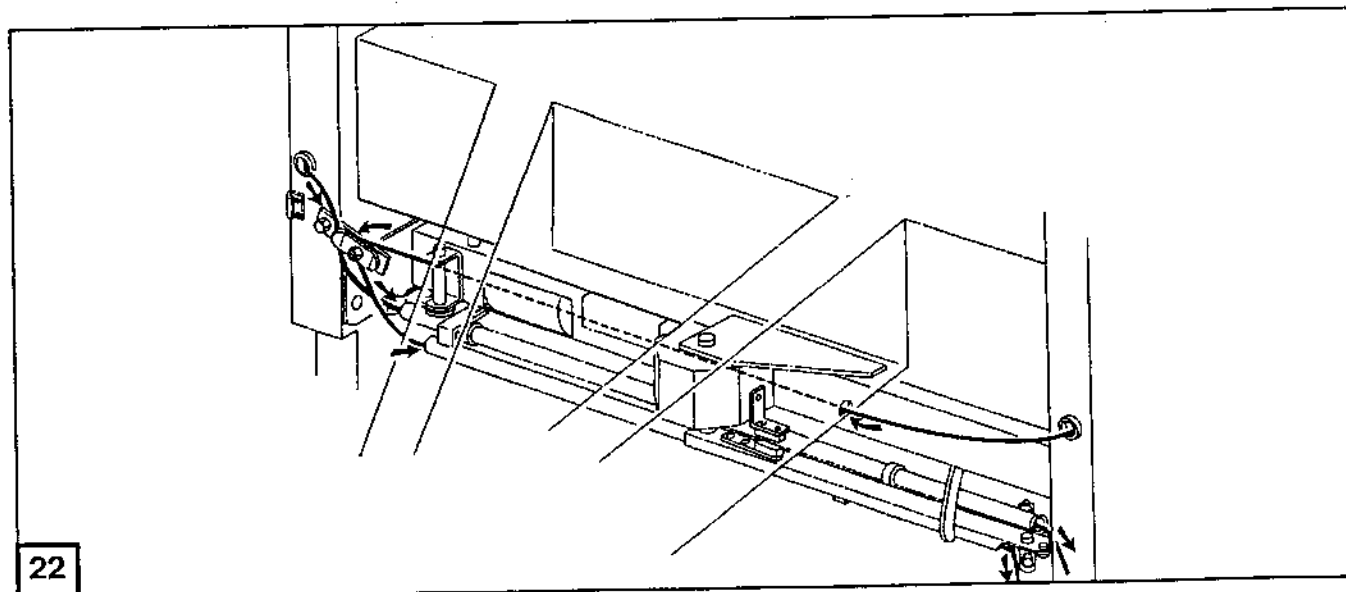
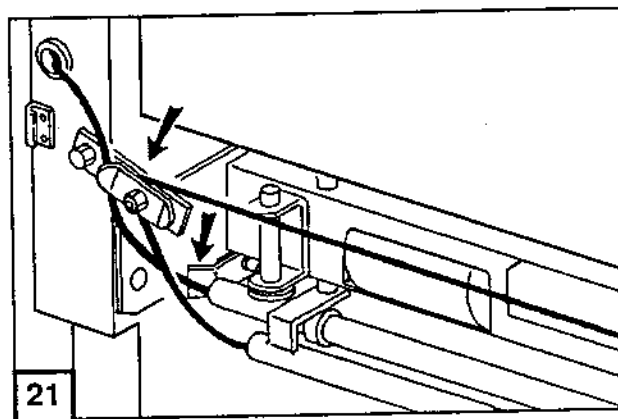
Insert the twine and wire through the right hand twine guide and through the right hand side of the brake, then through the rear most twine tube.

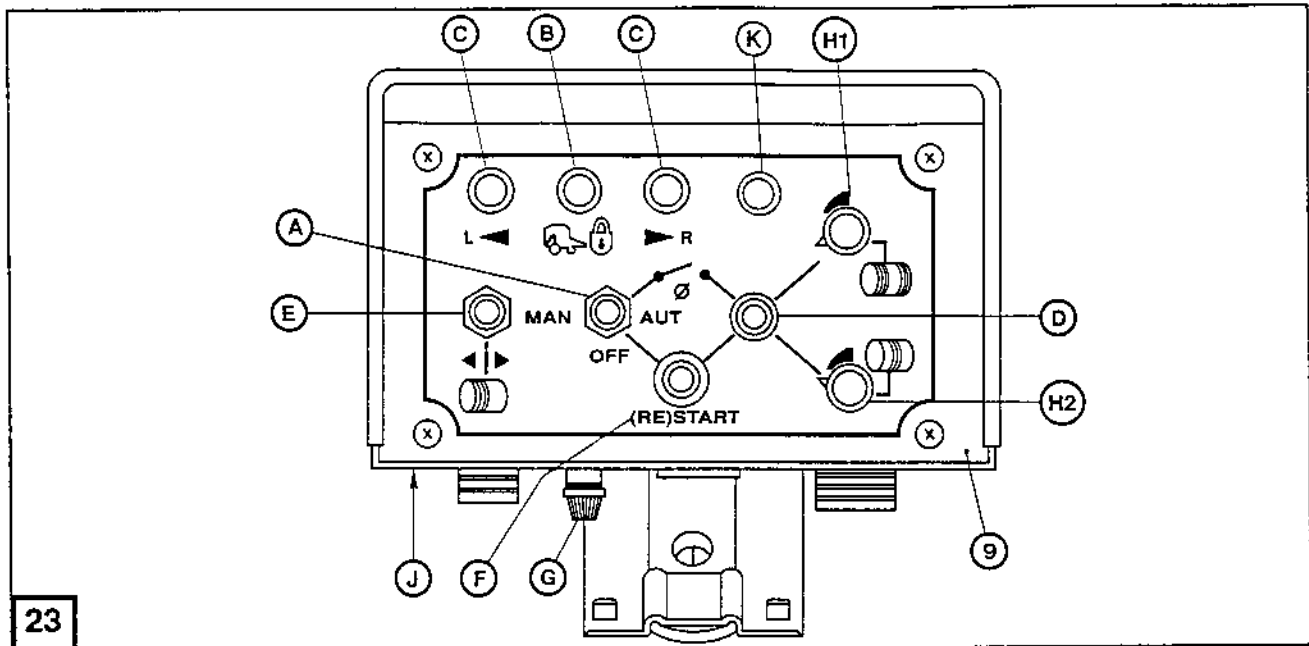
A spring blade twine brake is installed on the rear twine brake to prevent the twine from jumping back into the tube when the twine is cut (fig. 21).

Ensure that the twine protrudes about *100 mm (4 in)* out of the end of the twine tubes. Check that a blade is fitted to the knife arm, and that any protection tape fitted to it is removed.

D. Adjustable Twine Brake

The adjustable twine brake (upper arrow, fig. 21) should be slack when the tubes are in the rh position and twine has to be caught by the bale: also see V.8.A.





23

12. Functioning of the Electronic Control Box (fig. 23)

Tying Procedure

As soon as the bale inside the baler reaches the preset diameter, a switch on the bale diameter mechanism will activate the electronic control box (9).

The control box will emit a buzzer sound, the signal for the driver to stop feeding the baler. The control box will then perform the automatic tying cycle.

Fig. 23 explains the various functions and settings for the electronic control box.

(A) Main Control Switch

The operating mode of the baler is determined by setting this 3-position (toggle) switch. Moving the switch to **AUT** position sets the baler for automatic bale tying. Flipping the switch to the **MAN** position provides manual override for tying bales. Always switch to **AUT** in normal conditions.

In the **OFF** position all electric circuits are cut off.

(B) Locked Tailgate Indicator

A green light illuminates when the tailgate is closed and the latch is secure when the main control switch is on either **MAN** or **AUT** setting. Opening the tailgate to eject the bale causes the light to go out.

(C) Bale Shape Indicators

Indicate the variances in bale size on either side (see V.4.).

(D) Tying Cycle Indicator

This red light comes on to indicate the tying cycle mechanism is activated.

(E) Manual Operation Switch

The manual (toggle) switch is used in conjunction with the main control switch

when set in **MAN**. Activating the manual operation switch extends or retracts the twine tubes when manually tying a bale. This switch by-passes the automatic circuit. If it is not working, check the battery connections.

(F) (RE)START Button

Pushing this button restarts the twine tying cycle. This will be necessary if part of the cycle is missed because a twine is not picked up by the bale or to tie a bale before the pre-set size is reached.

(G) Fuse

The 12V 25 A fuse is located in the fuse housing.

(H) Twine Wrap Control Knobs

(H1) This knob controls the variation of the amount of twine being wrapped around the outside edges of the bale (waiting time).

(H2) This knob controls the speed at which the twine tubes move across the face of the bale, and thus the quantity of twine being wrapped in between the end wraps (see page 23).

(J) Audio Buzzer

The buzzer sounds when the twine tubes almost reach the bale (it doesnot work when you use the (RE)START-button).

(K) Net-Wrap Indicator

Since the net-wrap system is optional equipment refer to the description in the appropriate system documentation.

If the system is not installed, the indicator is not used at all.

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13. Initial Control Box Checks (fig. 24)

- 1) Flip the main control switch to **AUT**, the automatic mode. The green tailgate indicator light should come on.
- 2) Fully open the baler tailgate and then close it, the light will come on again.

Note:

If the light does not come on again, check the tailgate latches (see VI.6.).

It is very important to open and close the tailgate to make sure that the belts are completely tensioned by the fully retracted tensioner cylinders. If not, the twine tubes may be caught in the loose hanging belts.

- 3) Tying Procedure:

To initiate this cycle, press the **(RE)START** button and observe the swinging of the twine tubes to the right.

After a waiting period at the right hand side of the baler, the twine tubes will cross to the left where they will wait an equally long time before they return to their original position. This final movement to the parked position causes the knife to be pressed down.

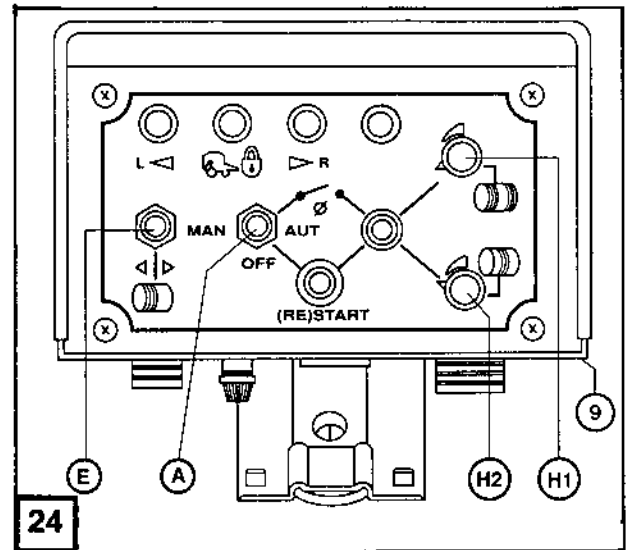
Initially set the waiting time and the crossing time to approx. 5 seconds by setting knobs H1 and H2 (fig. 24).

Note:

- A) There is a time delay of 15 seconds between each activation of the automatic tying cycle, except when **(RE)START** has been activated.
 - B) The buzzer will not sound when activating the control box using the **(RE)START** button.
- 4) Check function of switches 55 and 57 (figs 68 and 70) by activating them by bringing a piece of iron close to them; the Main Control Switch must be in **AUT**.
 - 5) Bale shape indicator
To check the electronic bale shape indicator move the gauge by hand, ensuring the Main Control Switch is in the **MAN** or **AUT** position. The warning lights should come on.

14. Control Box Installation

Choose a location in the tractor cab to mount the baler control box so that it can be easily seen and reached from the driver's seat. The chosen location should provide a secure, vibration free mounting area and be relatively dust-free. Use four bolts to attach the mounting bracket to the tractor.



15. Electrical Connection (fig. 25)

Connect the baler control box (9) to the tractor electrical system using the power cable provided for that purpose. The connector end plugs into the control box power input connection.

The red positive (+) lead connects to the positive (+) side of the tractor 12 VDC system battery.

The blue ground (-) lead shall connect directly to the tractor negative (-) battery post.

Note:

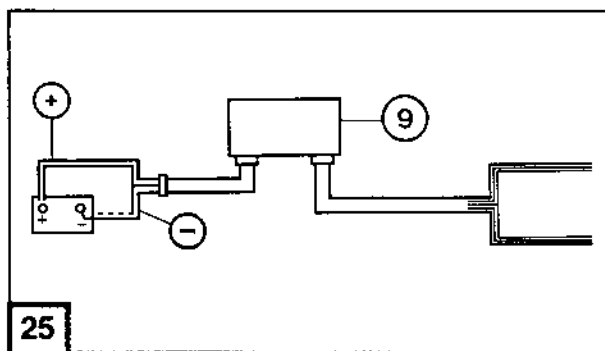
Ensure that the leads are connected to their proper polarity as the monitor will not function if the leads are connected incorrectly. Scrape away paint, rust and dirt and remove grease and oil from electrical connection points. Firmly tighten all connections to ensure a good electrical contact.

Attention:

Connect straight to the battery only. The electrical control box may be damaged by some tractor systems when the tractor engine is stopped!

Note:

Do not subject the control monitor to severe impacts or vibration, excessive dust, moisture or extreme cold temperatures. Remove from the tractor during the off-season and pack in an air tight container that will protect from dust, moisture and rodents. Failure to protect the control monitor as outlined will void the warranty (also refer to chapter X.).

**16. Bale Diameter Adjustment** (fig. 26)

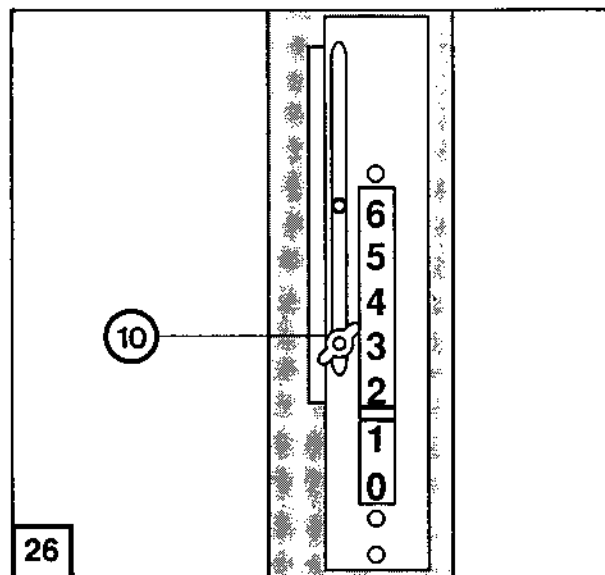
The bale diameter sensor switch activates, the visual red light indicating the bale is formed to size and that the wrapping cycle has begun. After a few seconds the audio buzzer will come on indicating the driver has to stop.

The bale diameter can be adjusted by setting the bale size indicator located on the right front panel of the baler. Loosen the adjusting wing nut (10), slide up or down for desired diameter; retighten wing nut.

Note:

The max diameter figures in the techn. specs. (chapter III) do not refer to specific metric or Imperial / US measurements and serve only as general points of reference.

To check correct functioning of the bale diameter switch, for the first bale set the adjustment at only 3/4 of the maximum diameter and note that the tying mechanism is tripped when this diameter is reached.



17. Hydraulic Connection (fig. 29)

Connect the two high pressure hoses which operate the opening and closing of the tailgate to a double acting selector valve, and the hydraulic pick-up lift to a single acting selector valve.

18. Pressure Setting (figs 27 through 29)

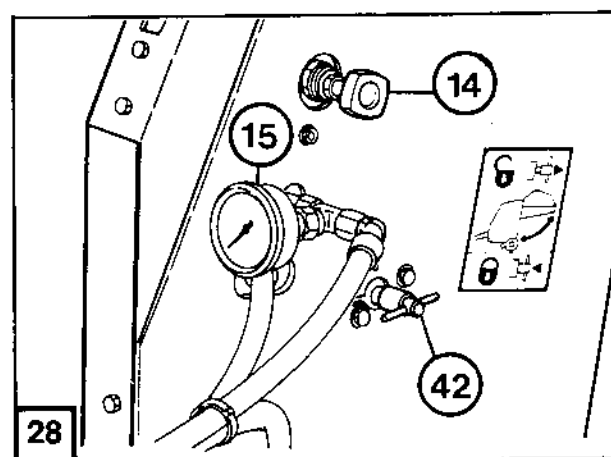
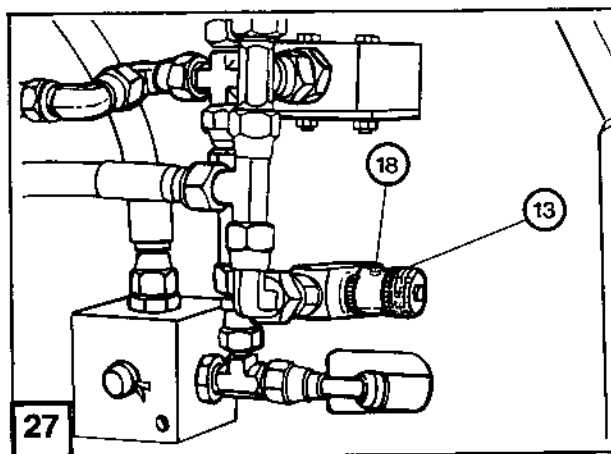
The baler hydraulic system contains an adjustable density control valve (14) with a pressure gauge (15) which regulates the hydraulic pressure needed to produce a bale of specific density.

The density control valve can be adjusted to vary pressure at the density cylinders to control bale density. The density control knob (14, fig. 28) is located at the inside right front panel of the baler.

- To increase density, rotate knob clockwise
- To decrease density, rotate knob anti-clockwise.

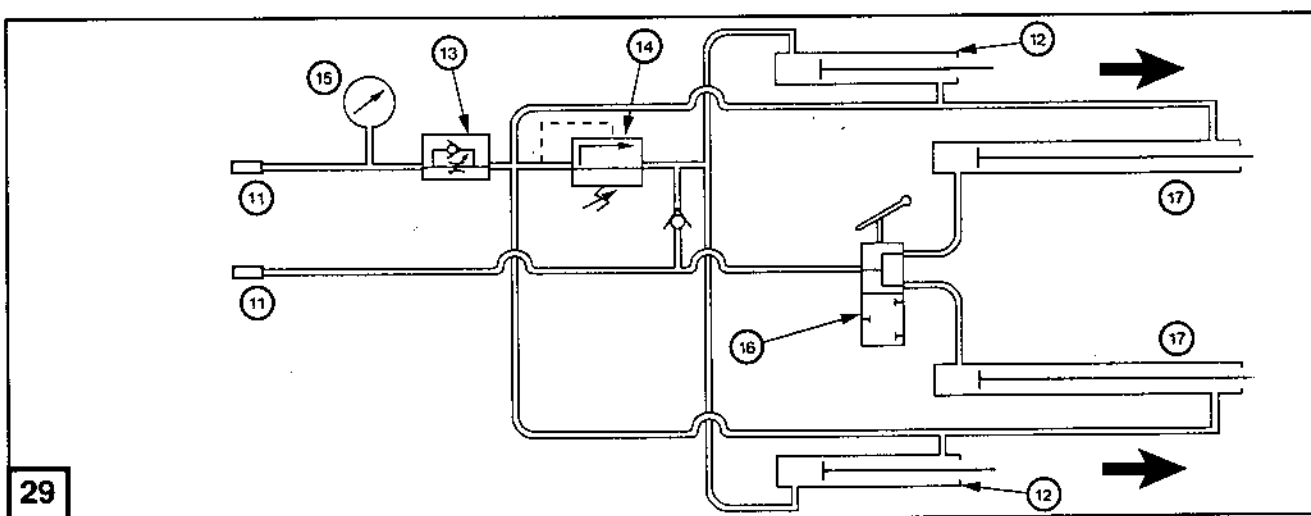
Restrictor (13) should be set on blue coloured ring. Valve setting is locked in position by an Allen screw (18).

Fig. 29 shows the hydraulic diagram of the baler. The growing bale is extending the tensioning cylinders, the density control valve (14) determines when oil will by-pass from the tensioning cylinders (12), thus determining the density of the bale.



Legend to the hydraulic diagram fig. 29:

- 11 = Supply plugs from the tractor hydraulic system double acting control valve
- 12 = Density control cylinders
- 13 = Restrictor to limit output of large capacity hydr. pumps
- 14 = Density control valve
- 15 = Pressure gauge
- 16 = Tailgate safety valve
- 17 = Tailgate cylinders



19. Sample Density Gauge Settings (fig.30)

These suggested bale density pressure settings are approximate and will be greatly influenced by your particular crop conditions. Some variation in pressure settings may be necessary to produce bales to meet your specific requirements. Generally, you will need to produce a couple of bales to arrive at a workable density gauge setting.

To achieve a setting, operate the tractor selector valve to close the tailgate. When the tailgate is fully closed, the pressure gauge will start to register the set pressure. This can then be adjusted with the control knob. Return the tractor selector valve to neutral position before commencing baling. This operation should be done at low tractor engine rpm.

Extremely dry hay and straw will require a maximum density setting of up to a **180 bar (2600 psi)** reading on the density gauge.

Normally dry hay will require a density gauge reading of approx. **150 bar (2200 psi)**.

Silage is normally baled at **80-120 bar (1200-1800 psi)**, depending on the moisture content.

Note:

On tractors providing a pressure less than 180 bar the set density can be checked whilst the first bale is being made.

Attention:

The baler must not be operated at pressures exceeding 180 bar (2600 psi). Any modification of the systems to obtain higher pressures will cause serious damage to the machine. Even at the attempt of such a modification all liability and warranty become extinct (also refer chapter X.).

20. Bale Counter (fig. 31)

The bale counter is located on the left hand side of the baler, below the top tensioner arm connected to the inside flange. Set the counter to zero by turning the reset knob backwards to reset.

21. Transport

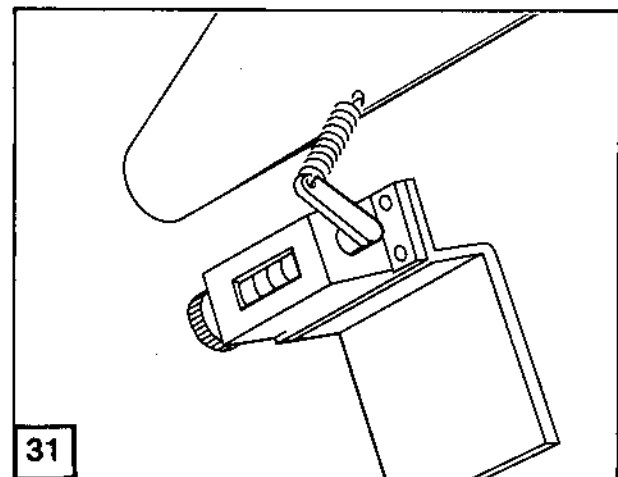
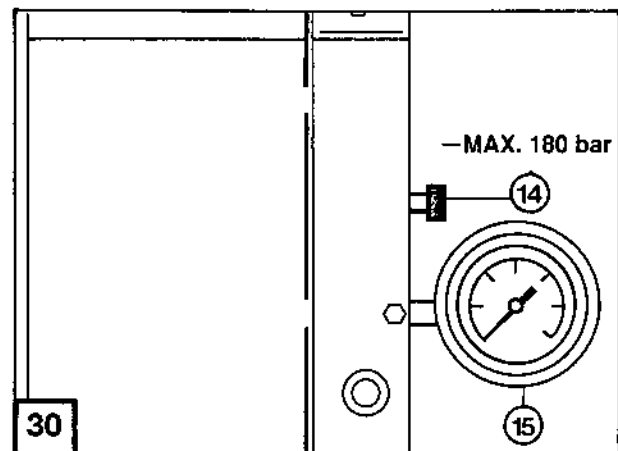
Before driving to the field please observe the traffic regulations of your country.

Raise the pick-up to the maximum position by actuating the hydraulic tractor valve.

Close the cock in the hydraulic line of the pick-up 1/4 turn.

Use a tractor of sufficient capacity (including braking capacity!) to tow the baler safely.

Make sure that the baler hitch tongue is securely pinned to the tractor clevis-type drawbar and the clip pin is inserted in the hitch pin.

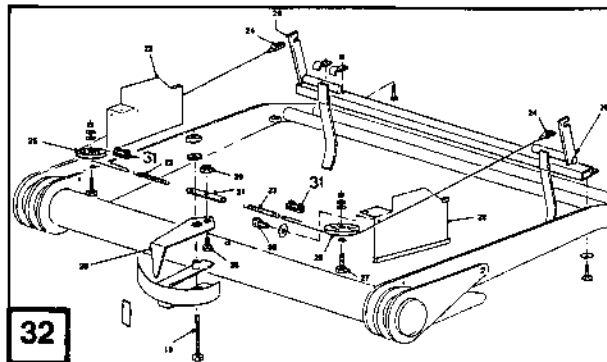


22. Installation of Bale Shape Indicator

A. Mechanical system (fig. 32)

Proceed as follows:

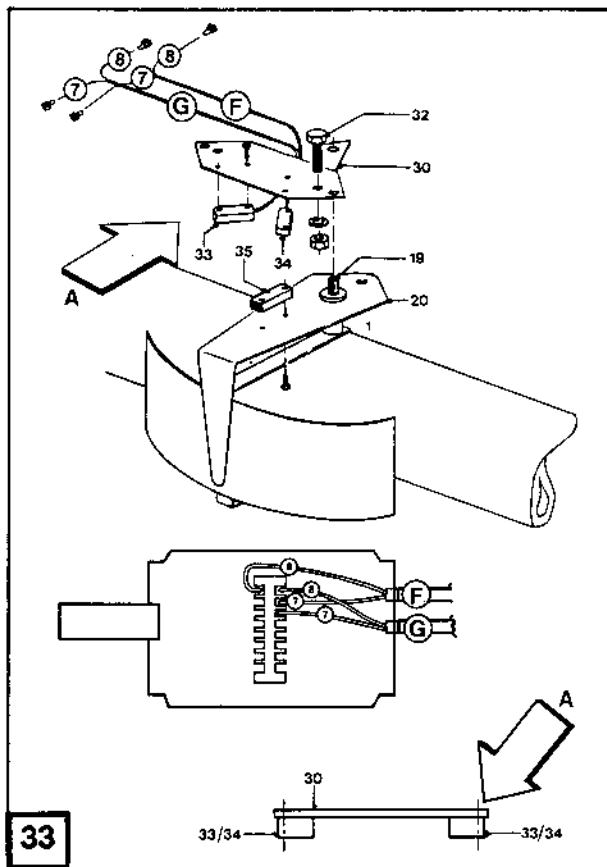
- 1) Install the quadrant on the tensioner assembly with bolt (19), fix in place with plain nuts and washer. The pointer (20) should be able to move freely on the quadrant sleeve. Install strip (21) using M10x20-bolt (28) and M10-lock nut (29), ensuring strip (21) is free to move.
- 2) Fit brackets to the tensioner arm by sliding the brackets (22) over the tensioner arm until holes align. Install pulleys (25) using the washers and bolts as shown.
- 3) Hook cables onto arms (26) using eyelets (24). Attach springs (23) to strip (21) and fit cable with clamps so that the springs are slightly tensioned with the baler empty. Adjust length of cable using clamps (31) to make sure tension is equal and the pointer is in the centre of the quadrant.
- 4) Fine adjustment to centralise the pointer can be made by unhooking the cable that requires shortening and twisting it several turns in the same direction as the basic winding of the strands. This will shorten the cable slightly.



B. Electrical system (fig. 33)

Proceed as follows:

- 1) Install switch (35) in the center of the pointer (20) using the screws provided.
- 2) Install switches (33 and 34) onto plate (30). Note that the holes are off-center. Assemble as shown in detail A.
- 3) Install plate (30) on bolt (19). Limit the stroke of the pointer (20) through fitting screws (32).
- 4) Connect cables F and G (figs 33 and 71), each consisting of two wires (7 and 8), into the central wiring box located near the electric actuator tying mechanism as indicated using the plug sleeve connectors supplied (double connectors to the black wires). Route wires properly using the cable ties supplied.
- 5) Check for proper function via control box (fig. 23), moving the pointer manually.



V. OPERATION

Upon arrival in the field, observe the following initial checks:

1. Pick-up Height (figs 4, 34, 35A and 35B)

- 1) Lower the pick-up of the baler by opening the cock valve and engaging the tractor valve into float position.
- 2) Check that the pick-up height is correctly set. Two positions per chain link are available (A and B, fig. 34). Note overlap distance of 25 mm as fig. 4 shows.
Check that the tines have sufficient clearance with the stubble.
- 3) Change the drawbar clevis, hitch ring or the axle stubs as required.

A pick-up gauge wheel (fig. 35A) may be used to improve pick-up ground contour adaptation. In normal conditions use lower and in rough conditions use higher position.

Note:

Fig. 35A shows std. pick-up optional gauge wheel setting, whereas fig. 35B shows the setting of the gauge wheels of the optional wide pick-up.

2. Windrow Preparation

Windrows should be no higher than 40 cm (16 in) so that adequate clearance will be provided for the baler hitch and jack stand.

The windrow should be no wider than the width of the pick-up which is standard: 140 cm (55 in); wide pick-up: 200 cm (79 in).

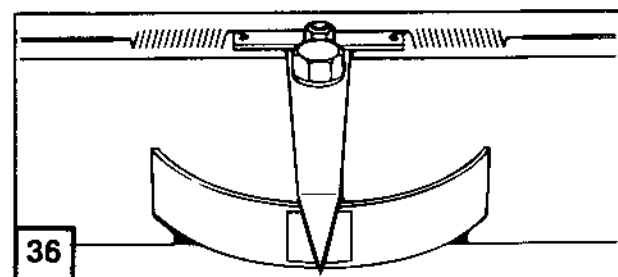
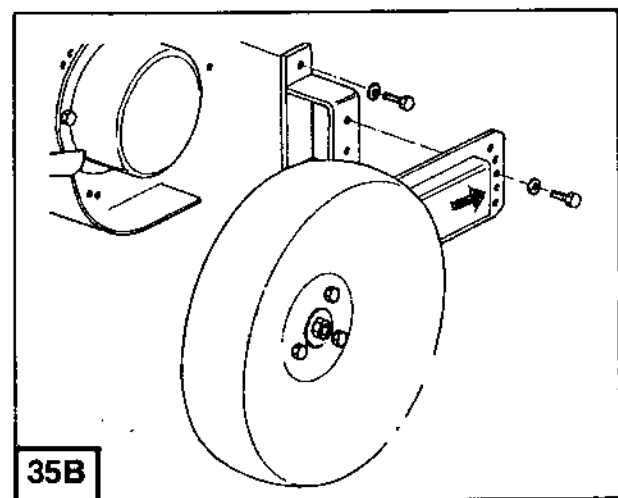
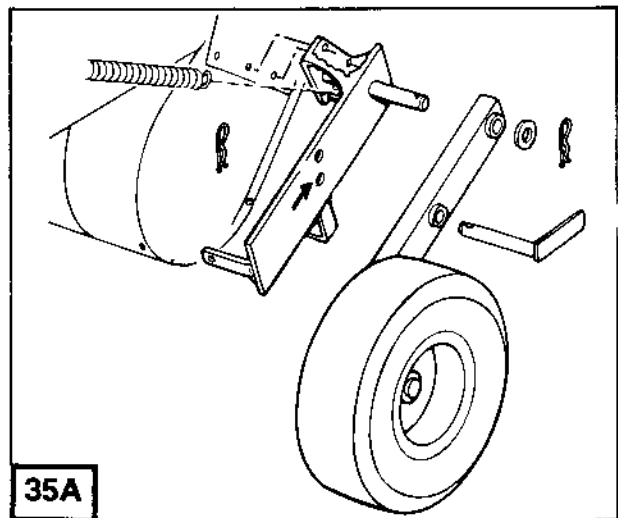
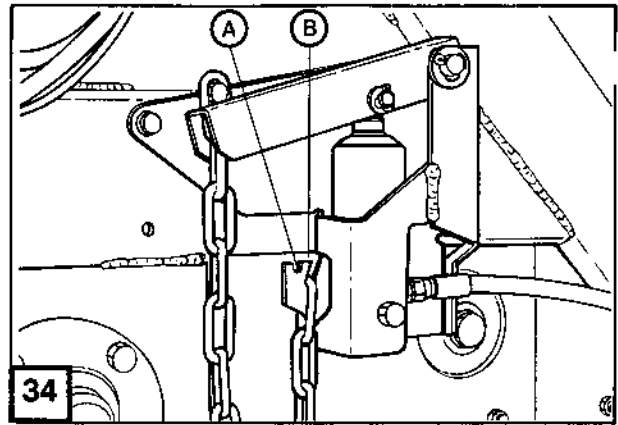
If the windrow is wider, the optional gathering wheels can be used on a standard pick-up to narrow the windrow into a workable size. Avoid narrow windrows because they make it difficult to feed the baler evenly.

3. Baling Speed

Speed of travel when baling may vary from 4 - 15 km/h (2.5 - 9 mph). Choose a speed that matches the crop and field conditions to provide even feeding of the crop into the pick-up at a constant rate.

4. Bale Shape Indicator (figs 23, 36 and 37)

This indicator and the bale shape check lights on the monitor (C, fig.23) tell you how the bale is forming in the bale chamber. It is important that you continually check the indicator or the monitor so that you can guide (fig. 37) the baler pick-up into the windrow to move the crop evenly into the bale chamber. This is especially critical if the crop windrow is narrower than the pick-up.



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The bale shape indicator system consists of two skids connected with left and right hand cables, guided over pulleys and connected to a pointer at the front by a bell crank which sweeps the pointer across the quadrant face when the cables are pulled in either direction (also refer to IV.22.).

If the pointer is on the right, or the right hand light is illuminated, the baler needs more material feeding into the right hand side and vice versa.

The type of windrow will determine the approximate distance that should be travelled while feeding each side of the pick-up.

Bigger windrows will require less frequent alternate side to side feeding.

Baling wet silage in small "lumpy" windrows is a situation where correct feeding requires the most attention (fig. 37). A good, well shaped "fluffy" windrow is advised for this kind of crop.

5. Pto Speed

Ensure that the tractor pto speed is adjusted in accordance with the prescribed max. speed (540 or 1000 rpm) and that the pto drive is smoothly engaged.

The pto speed should be set according to the crop conditions. Short, dry and brittle crops require lower pto speeds, while short, thin wet crops require high pto speeds (although not exceeding 540 or 1000 pto rpm). Generally the higher the pto speeds, the denser the bale with the same density setting.

Note:

Balers with a silage kit installed have a bigger pick-up drive sprocket to increase pick-up reel speed from 90 to 120 rpm (std pick-up).

6. Baling (figs 23, 37 through 43)

- 1) Set the bale diameter (see also IV.16.) to about 3/4 of maximum diameter for the first bale, to check correct functioning of the switches.
- 2) Set the density to desired value.
- 3) Switch the main control switch (A, fig.23) to **AUT**.

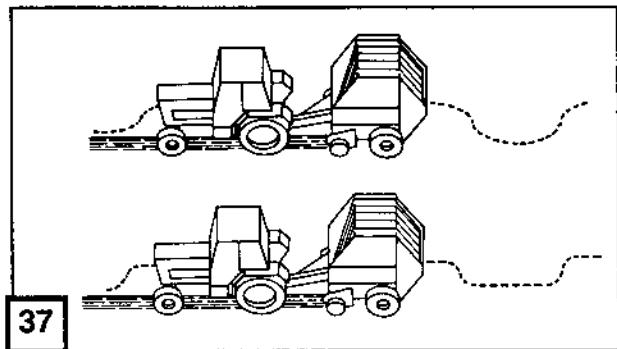
Note:

Always switch the main control switch (A, fig.23) to the **AUT** position. When baling on the **MAN** position the maximum diameter switch is by-passed so it will not protect the baler systems.

- 4) Operate the tractor double acting valve to close the tailgate. Ensure that the "tailgate locked" light (B, fig.23) is illuminated and observe the density pressure on the gauge is at the desired level (15, fig. 30). Return the tractor selector valve lever to neutral position.
- 5) Feed the baler evenly, noticing the size indicator and the bale shape indicator (fig. 36). As soon as the set diameter is reached, the red control light (D, fig.23) will come on, then the buzzer (J, fig.23) will sound. Stop driving immediately but leave

the pto speed at the same level.

- 6) Wait until the tying cycle is completed and the red light (D, fig.23) has gone off again, stop pto rotation and eject the bale by hydraulically opening the tailgate. The bale ramps will then roll the bale from the baler. Close the tailgate until the green check light on the control box comes on, then the baler is ready to bale again.



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DANGER:

- 1) **Fig. 38:** Stay clear of the pick-up area while the baler is in operation. If the pick-up area should plug, stop the tractor and shut-off the engine. Remove material only after all parts have stopped moving. **DO NOT** attempt to push material into the baler while it is operating. Doing so could result in serious injury or death.
- 2) **Fig. 39:** Do not eject a bale from the bale chamber when the baler is on an incline.
- 3) **Fig.40:** Ensure that the tailgate area is free of any bystanders when closing or opening the tailgate . Always close tailgate lock when working under opened tailgate (see V.9.).

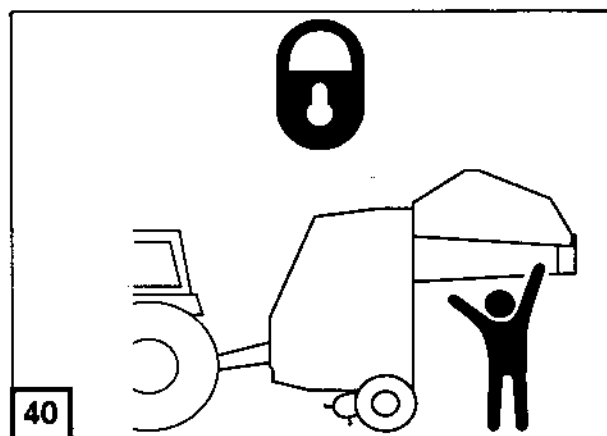
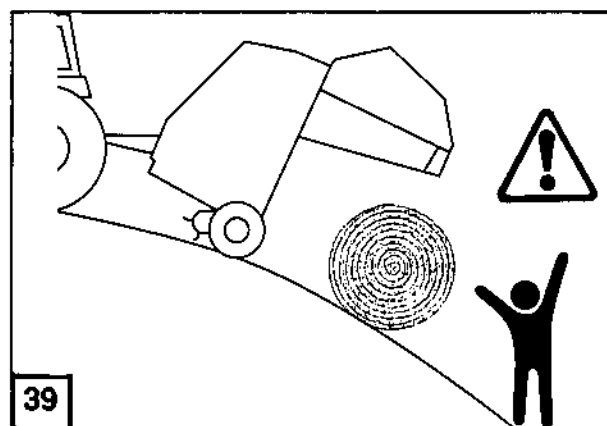
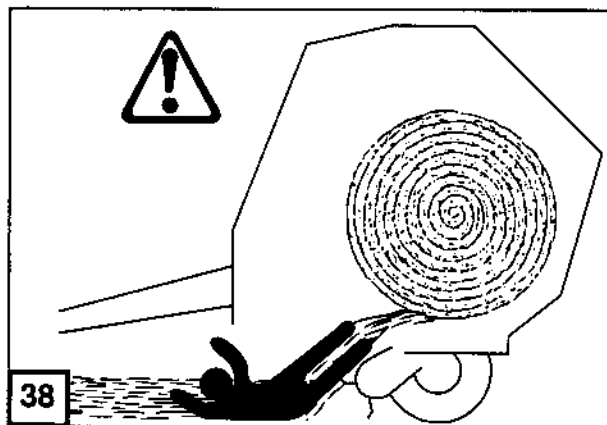


7. After the First Bale

- 1) Check that the bale is the preset size. Adjust to desired size (if the size varies from the preset value, check the switch setting, see IV.16.).
- 2) Check that the bale is of proper density. Adjust if necessary. Refer IV.18.
- 3) Check the twine quantity of the outside and inside wraps. Adjust by rotating the yellow knobs (H1 and H2, fig.23) on the control box (more twine = turn clockwise).

Note:

Remember that the changes in pto speed and the adjustment to the bale size already made will effect the twine quantity.



OPERATION

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- 4) Check on the proper twine positioning at the outside of the bale (fig.41).

The movable collar (36, fig.42), located on the front twine wrap tube, can be positioned on the tube to determine extended travel limit of the twine tubes to the right hand edge of the bale, and the start of the twine wrapping cycle.

To adjust, loosen the locking nut (37) and set screw on the collar and slide the collar (36) along the tube.

To adjust the left side, a magnetic proximity switch determines the final end wrap position. One element (38, fig.43) of the switch is mounted on a bracket fitted on the tying mechanism arm. You can:

- Swivel the switch bracket out, or forward from the activator arm, to signal the electric actuator to stop the twine wrap tubes and finishing twine wrap further from the edge of the bale (fig. 43).
- Move the switch bracket in, or rearward to the activator arm, to signal the electric actuator to move the twine wrap tubes and the finishing twine wrap closer to the edge of the bale.

Note:

There are two holes in the bracket. Use the rear hole Y (fig.43) when in dry material the twine needs to be positioned far from the outside of the bale.

- 5) If the bale is not properly shaped, check if the bale shape indicator (fig. 36) is in the middle position and can move freely. Also check that the spring tension on either side is the same. Minor adjustments can be made by adjusting the cable clamps.

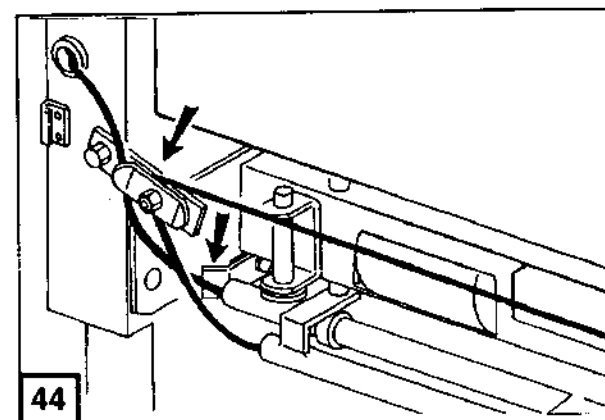
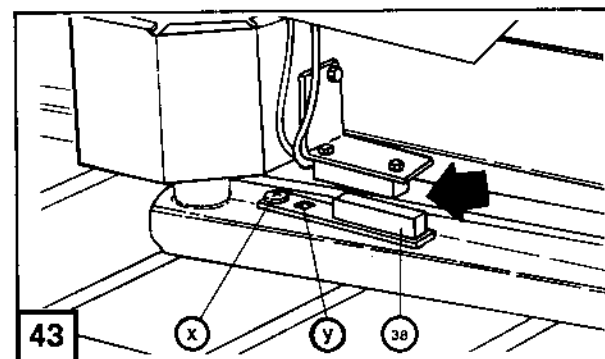
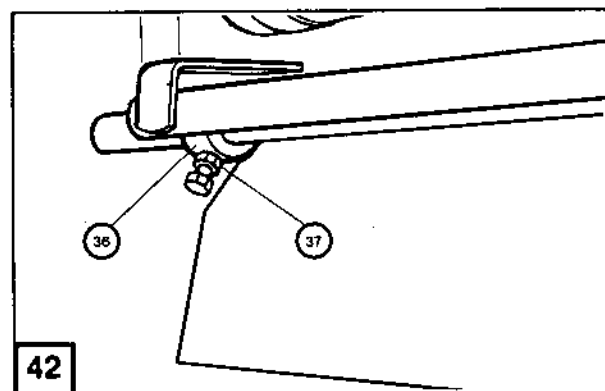
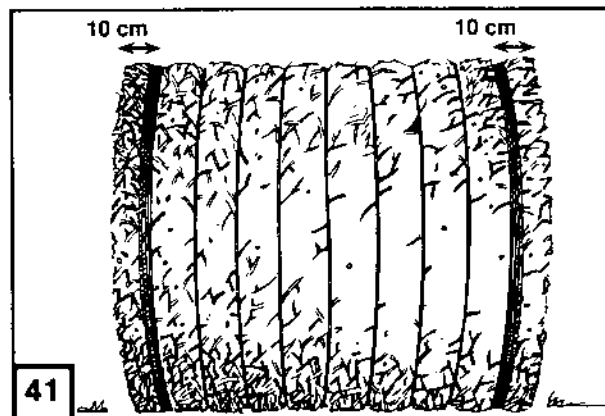
To check the correct setting of the indicator, fill the baler with a bale just upto the set diameter. Then, stop the tractor engine and look into the rear section (through the gaps between the belts), where the shape of the bale can be seen, and compare with the position of the indicator.

8. Further Adjustments

A. Twine Brakes (fig.44)

If the bale is not catching the twine, then the twine brakes are set too tight. First check the twine brakes on the twine boxes and reduce tension as much as possible. If the twine still does not catch, slacken the lower twine brake.

The lowerspring blade should be set in such a way that after cutting the twine does not jump back into the tube.



Note:

- 1) The twine is pulled to the bale by the baled crop. In narrow windrows drive to the left side of the windrow when the red light comes on (stop when the buzzer sounds).
- 2) If a lot of twine is hanging from the bale then the twine brakes should be set tighter (fig.44).
- 3) If the twine brake is set extremely tight then the force of the electric actuator may be insufficient to move the twine tubes to the left, across the bale and to activate the knife.

B. Scraper Adjustment

(figs 45 through 48)

* **In dry material** (e.g. hay) the scraper spacing should be **2 mm (0.08 in = 5/64 in)** (fig.47).

* **In silage**, special silage scrapers are needed on four locations (39, fig. 46) (factory fitted or accessory) to prevent build up. A different roller (fig. 45) is fitted in position 40 (fig.46).

Adjust the scraper (41) on this roller to a spacing of **0.5 mm (0.02 in)**; adjust the other four silage scrapers (39) to a distance of **0 - 0.5 mm (0 - 0.02 in)**.

If crop starts to build up on the rollers in silage, then move the scrapers closer to the roller.

Adjust the scrapers at once if in dry material the roller is touching the scraper.

If hay and silage are being baled alternately, all the scraper spacings must be adjusted accordingly; silage scrapers need not to be removed for baling dry material.

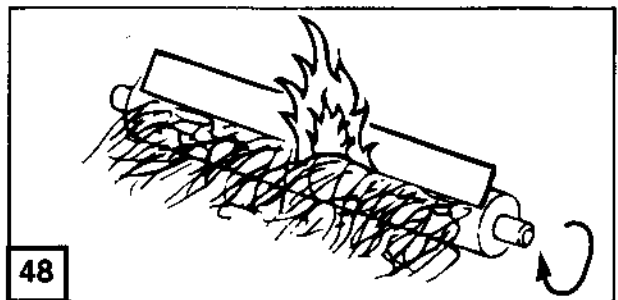
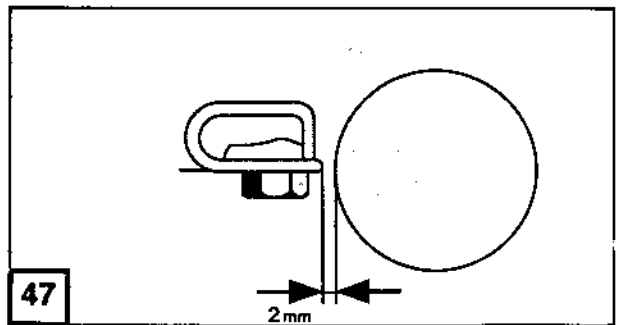
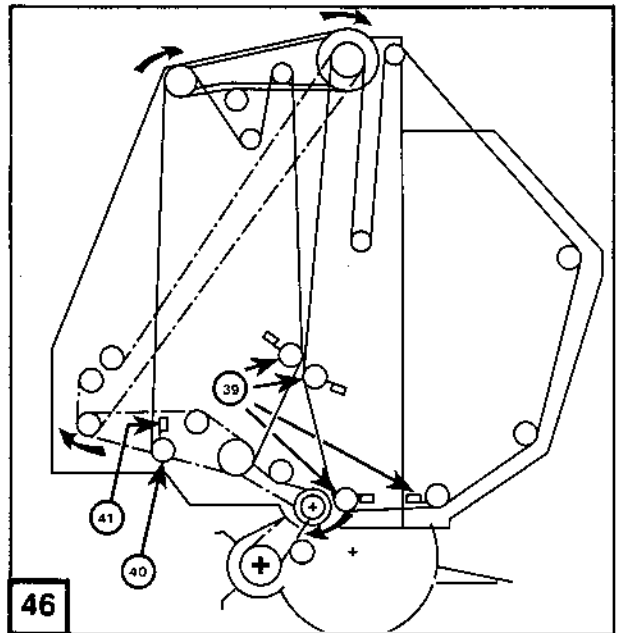
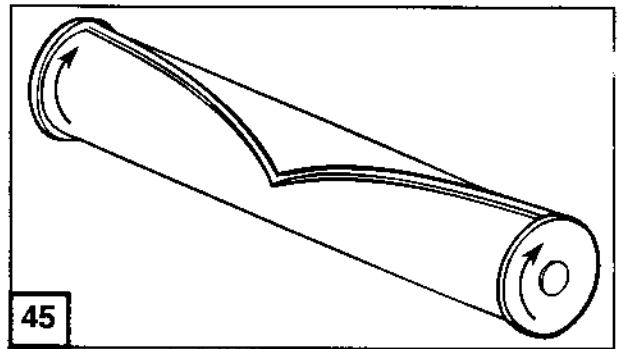
It is advisable to carry a fire extinguisher close at hand in your tractor.

Note:

The fire extinguisher should be at least a **5 kg (10 lb)** unit rated as ABC multi-purpose and approved by the appropriate authority. Have the extinguisher inspected annually and re-charged as required.

DANGER:

Always readjust the silage scrapers to work in dry material as hay or straw!



9. Tailgate Safety Lock

DANGER:

Fig. 49: Always close the tailgate security valve (42) when working under an opened tailgate. This is located immediately behind the control knob:

** Push in to lock.*

** Pull out to work.*

10. Before Leaving the Field

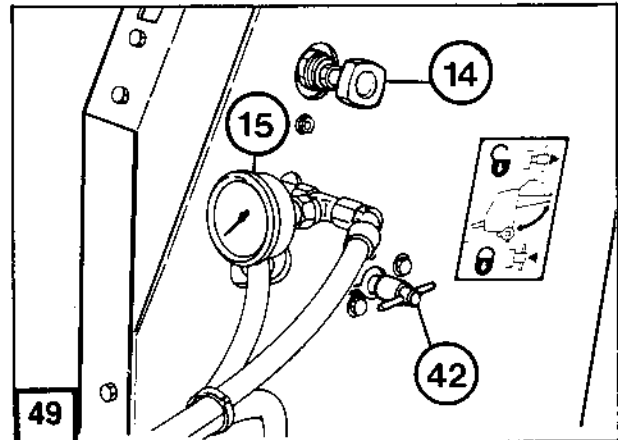
Shut down the tractor engine and remove all accumulated material from the pick-up, wind guard, tailgate and drive systems.

Make sure that the drawbar hitch pin is securely in place and secured by the linch pin and that the pick-up is raised and locked in the highest position using the valve.

11. Transport and Storage Safety of Bales:

Think SAFETY! Work SAFELY!

- 1) Use only approved equipment designed for bale lifting and handling.
- 2) Operate your bale handling and transport equipment according to all local laws and regulations covering the movement and operation of farm equipment on public roads and highways.
- 3) Do not stack bales carelessly off-centre or positioned so that they may tip over.
- 4) Do not stack bales too high and also keep children and unauthorised personnel away from the bale storage area.
- 5) Have a **5 kg (10 lb)** ABC rated ULC approved fire extinguisher near at hand because of the flammable nature of the baled material.
- 6) If bales are plastic wrapped or stored in plastic bags, ensure covering material is not damaged by puncturing or cutting. This will cause either complete or partial spoilage of the bales.
- 7) The storage area should have good drainage for efficient run-off of moisture with a good firm base so the stacked bales will not sink into soft ground and then tip over and fall. The area should also provide easy and safe access for the bale handling and transport vehicles.



VI. MAINTENANCE

The following baler parts need regular maintenance.

Attention:

Always ensure environmental pollution is avoided!

1. Drive Chain Tension (fig. 50)

If in the first hours of operation the main drive chains are stretching considerably then check them every four hours and adjust to the proper deflection as indicated in figure:

A = 2 cm (0.8 in);

B = 1 cm (0.4 in).

Note:

Do not forget to check the pick-up drive chain at the rh side of the baler.

2. V-Belt

Check the V-belt drive tension and adjust if necessary.

3. Chain Maintenance

Note:

Consult your dealer for advice regarding recommended chain lubricants and their safe and correct application:

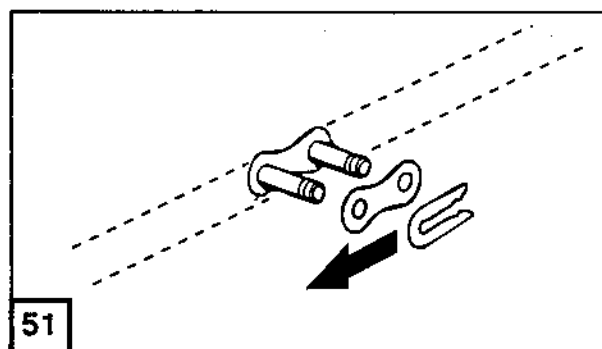
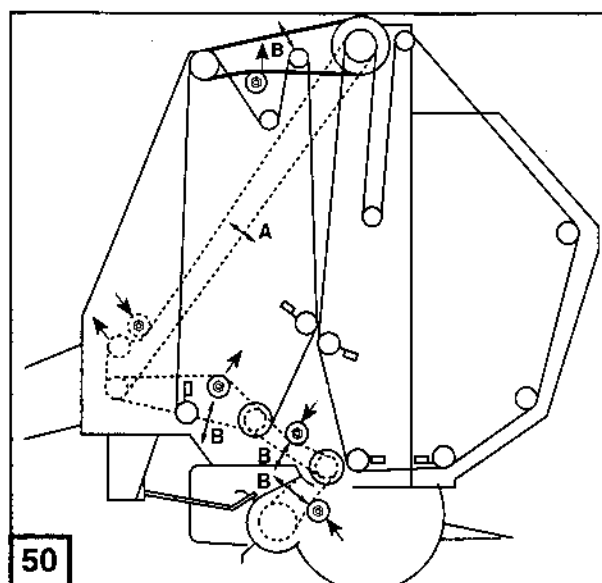
DANGER

Be very careful when working with or around solvents which are flammable, toxic and caustic. Exercise care to keep them from being taken internally and from burning the eyes and skin. Always read manufacturer's precautions and instructions on the label before using any industrial solvent, degreasing or cleaning agent.

During the season oil the chains at 10 hour intervals with oil or liquid grease.

After every season, all drive chains should be maintained as follows:

- 1) Slacken off all tensioning idlers, remove chains from the sprockets and thoroughly clean using a general purpose industrial degreasing agent or diesel fuel or kerosene, avoiding pollution.
- 2) Lubricate the chains with a good grade of roller chain lubricant (available at your dealer). Lubricate the chains when they are warm after a warming-up period after starting the baler. Follow procedure given by lubricant manufacturer.
- 3) Install chains on the sprockets, ensuring that the closed end of the link coupler faces in the direction of chain travel (fig.51). Adjust idlers to provide adequate tension, then tighten idler and lock nuts.



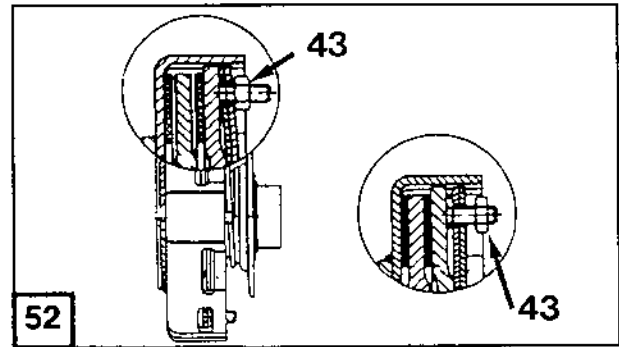
4. Slip Clutch in Pto Drive Shaft (fig.52)

This slip clutch should be checked for proper functioning and tested when new or at the beginning of each baling season.

Proceed as follows:

- 1) Thread tension nuts (43) in to release the clutch facing.
- 2) Rotate pto shaft by hand to ensure that the clutch is rotating, then unscrew the tension nuts (43) completely to seat the clutch plates and discs.

If the friction discs and clutch plates do not release and the clutch does not turn freely (or at all), the slip clutch assembly requires servicing.



5. Pick-up Slip Clutch (fig.53)

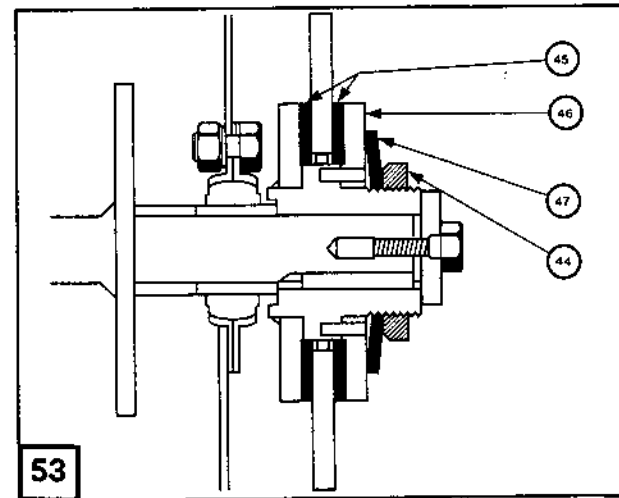
Pick-up drives are also protected from torque overloads by a slip clutch located on the pick-up input drive socket.

By tightening nut (44), the Belleville washer (47) will apply more pressure to the friction discs (45) on the drive sprocket.

Torque nut (44) to 400 Nm (30 ft-lb).

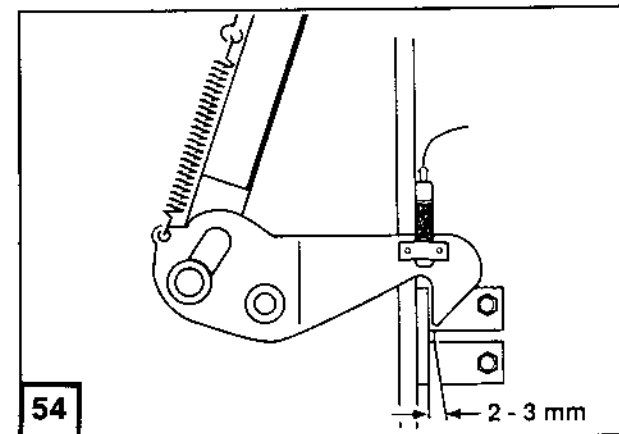
Note:

After several re-adjustments it may be necessary to remove the unworn outside edge of the friction discs.



6. Tailgate Latches (fig. 54)

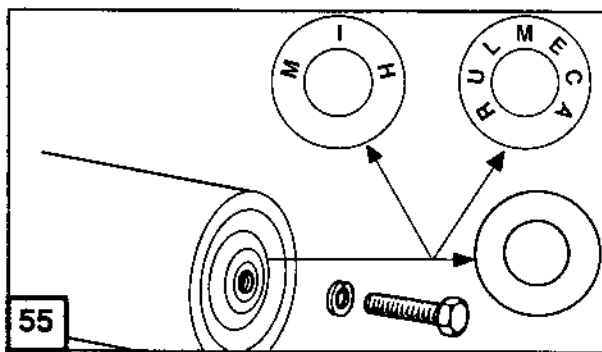
Adjust the tailgate latches to 2 mm (0.08 in) spacing. Incorrect setting may influence belt tracking.



7. **Idler Rollers** (Abb. 55)

Check all the idler rollers every *2,500 bales* for the presence of material between bearing caps. Replace seals and caps using the Roller repair kit (specify roller type in acc. with side views of fig. 55, refer to IPL for part no.).

If there is any resistance or abnormal noise from the bearings or rollers, these must be inspected to determine the cause and then replaced immediately.



8. **Wheels**

Make sure that the wheel rims are evenly seated on the hubs and that the wheel nuts are 'snugly' torqued down on the studs, and check that the nuts are torqued to *150 Nm (110 lb-ft)*.

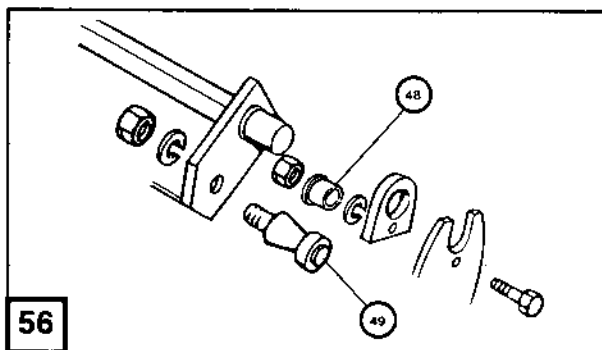
Check tyre pressures frequently:

| | | | |
|----------|------|-------|---------|
| 10.0/75- | 15.3 | 6PR: | 2.5 bar |
| 10.5/65- | 16 | 6PR: | 2.5 bar |
| 11.5/80- | 15.3 | 8PR: | 2.5 bar |
| 11L- | 16SL | 10PR: | 2.5 bar |
| 15.0/55- | 17 | 10PR: | 2.0 bar |

Periodically inspect the tyre treads and sidewalls for damage such as cuts or abrasions that could expose and weaken the sidewall or tread cord construction.

Attention:

Do not run tyres at a pressure that is above the maximum or lower than the minimum recommended tyre pressure.



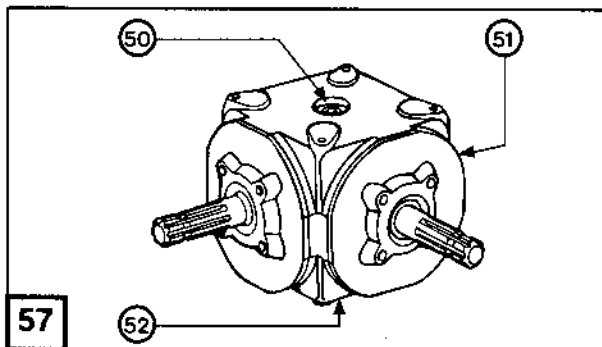
9. **Rollers Pick-up** (fig.56)

Wear parts on the pick-up are bushing (48, fig.56), guide roller (49) and the cam. Check the condition of these parts before every season.

10. **Main Drive Gear Box** (fig.57)

The main drive gear boxes are factory filled with *2 litres (4.2 US pt = 3.5 Imp.pt.)* of a Grade *80 or 90 EP*-gear oil in acc. with *API GL4* or *MIL-L-2105*. This oil should be drained (plug 52) and replaced after 50 hours in the first year, then checked *annually* and changed every *two years* or *20,000 bales*.

Oil can be filled through plug (50) or plug (51).



11. Belts (figs 58 through 64)

The round baler uses two sets of bale forming belts with two different lengths (belt length only without lacing).

Refer to technical specification for correct values.

If lacing failure occurs, a new lacing can be installed on the belts.

The following procedure should be followed for the "Asgor Titan" type (fig.58):

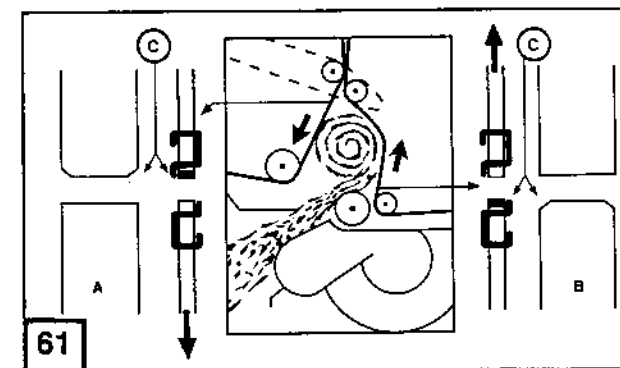
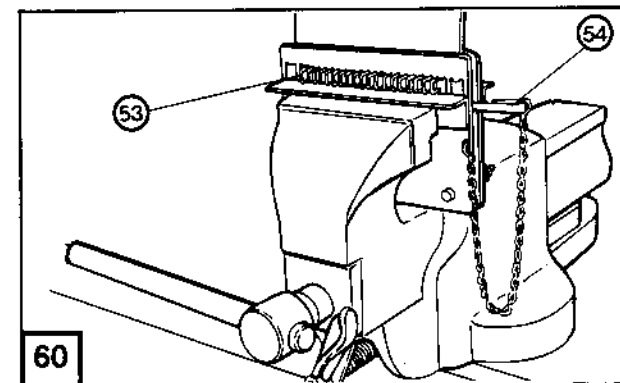
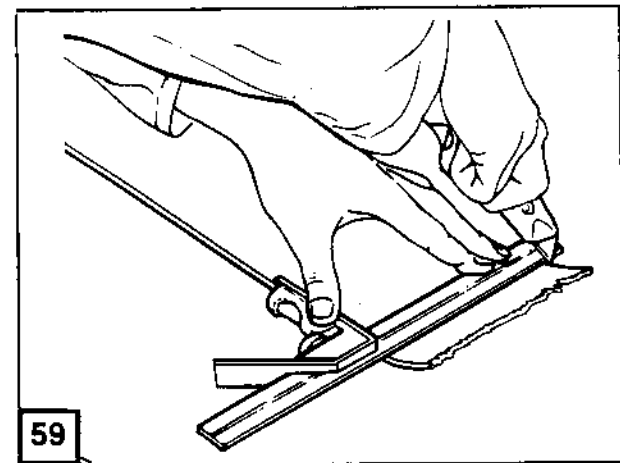
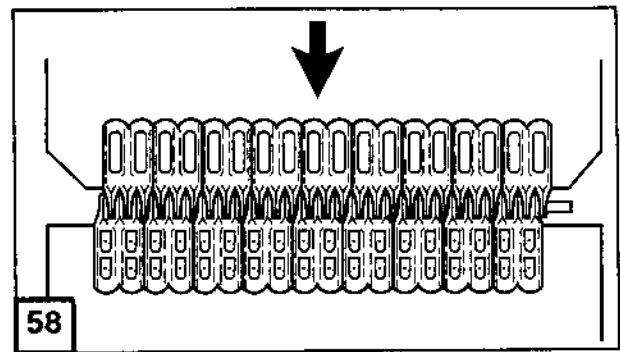
- 1) Cut off the old lacing, ensuring that the end of the belt is square (fig.59).
- 2) Place lacing tool 'BR 00120' in a vice. Insert the lacing with the nails coming out to the front side (53, fig.60).
- 3) Put pin (54, fig.60) into the lacer and insert belt straight into the tool up to the pin.

Note:

Arrows in figs 58 and 61 indicate direction of belt travel.

If fitting the lacing to the second end of the belt, ensure that it is slightly offset to the first end (fig.58).

Leave pin(54, fig. 60) inserted during the complete procedure.



- 4) Now close the vice to clamp the lacing onto the belt. Insert nails using the hammer and punch (fig.62) until all nails are flush with the tool.
- 5) Take the belt with the lacing out of the tool, leaving the pin inserted and on a block of wood, hammer the nails all the way through (fig.63).
- 6) Put the belt back in the vice, pinching the lacing between the two strips of metal, preventing the nails from moving backwards (fig.64). Bend the nails over with a punch according to the direction shown in fig. 61. Then, take the belt out, support the nails from underneath and bend them completely over. Remove the pin from the lacings.
- 7) Trim the corners of the leading edge (the end of the belt that faces the direction of running) (fig.58).

Attention:

Fig. 61: Put the belt into the baler in the correct direction, i.e. the belt end with the corners removed should be the leading edge.

A = front belts

B = rear belts

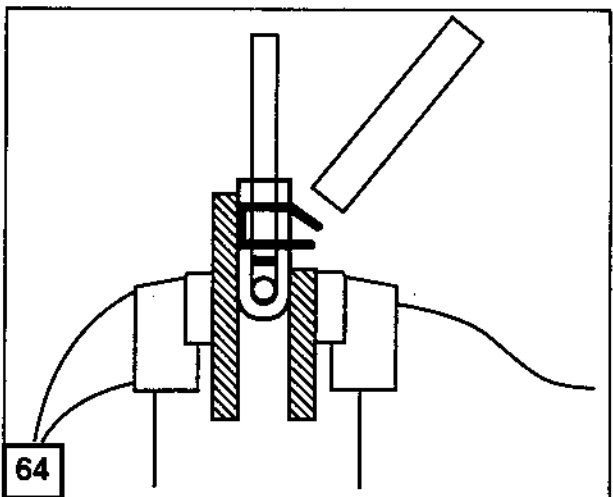
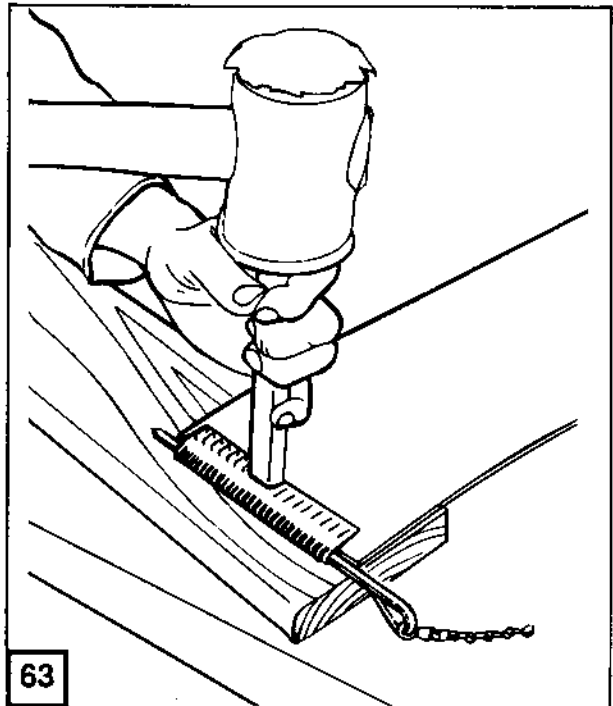
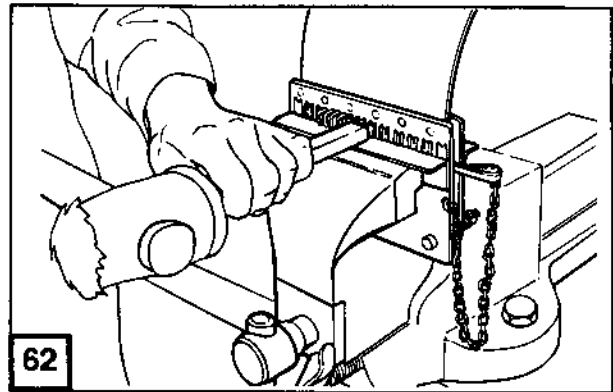
C = trimmed corners on leading edge

Note:

1. The pins should be replaced **every 2500 bales**. If this is not done then the pins are very difficult to replace.
2. The pins will normally break into approximately 3 pieces due to running around the convex drive rollers. This is acceptable providing all parts of the pin remain within the lacing.

12. Guide Lines for Belt Length

After 10,000 bales it is advisable to check the length of the belts as a result of stretching. The difference in length between the longest and the shortest belt in a set of belts, should not exceed 5 cm (2 in).



13. Belt Alignment (figs 65 and 66)

Alignment of the belts is adjusted by loosening the retaining bolts in the ends of the rollers and moving the bolts up or down in the slotted holes.

Adjust the roller alignment one end at a time. Loosen the bolt at one end and adjust the belt tracking alignment. If further adjustment is required, loosen the bolt at the other end and align the roller.

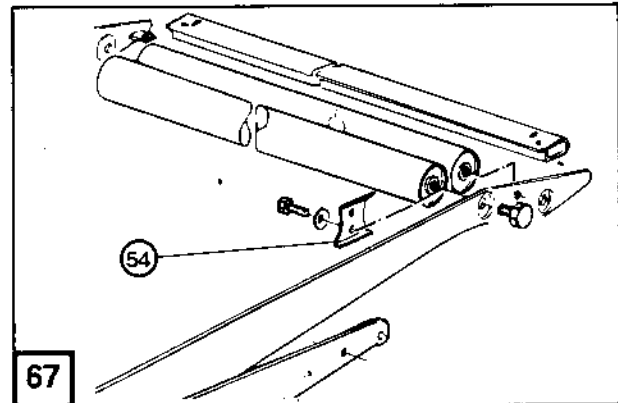
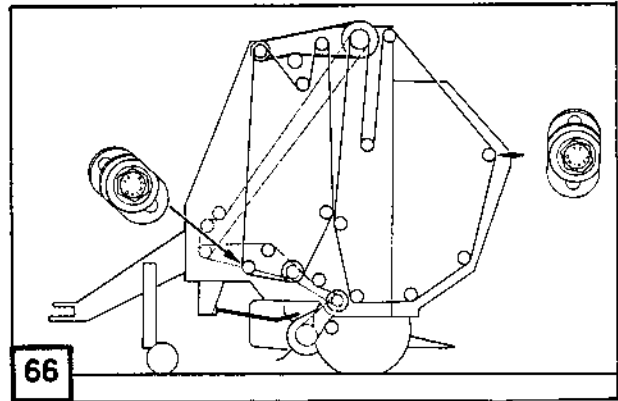
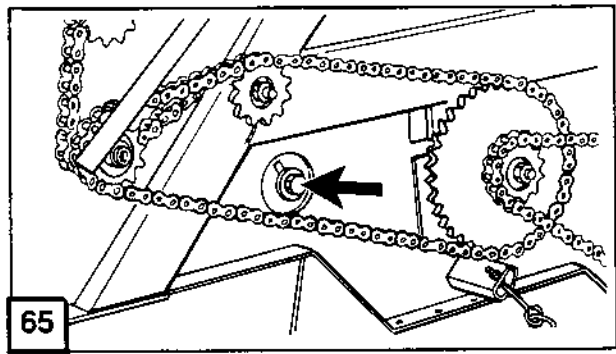
Fig. 65 shows the location of the adjustable roller for the front set of belts.

Fig. 66 shows the location for both front and rear set of belts.

14. Wear Plates (fig. 67)

Between the two idler rollers on the lower tensioner frame there is a wear plate (54) to prevent the tension frame being cut by the belts.

Check the condition of the wear plates regularly and replace or change from left to right side as required.



15. Electrical System (figs 68 through 71)

Fig 71 shows the electrical components and their layout on the baler; colour coding for the wiring can be found in the legend at the bottom of this page.

Figures 68, 69 and 70 show the individual locations and settings of the various proximity switches.

Switch (55, figs 68 and 71) initiates the bale wrapping cycle, activated by the bale diameter setting.

Switches (56, figs 69 and 71) on the tailgate latches activate the tailgate closed warning light.

Switch (57, figs 70 and 71) is the Maximum Diameter Switch which prevents an oversized bale in case switch (55) has become defective.

Switch (58, fig 71) determines the position of the *left hand* outside wrap: also refer V.7.4).

(9) = Control Box.

(F and G) = Electronic Bale Shape Indicator sensors with cables (also refer IV.22.B.)

16. Adjustment of Switches

(figs 68 through 70)

The switches (55, 56 and 57) are so called proximity switches and function within reach of **10 mm (3/8")** of a steel object. A warning light at the top of the switch shows when the switch is connecting (making).

For optimum functioning, a distance of **3 - 5 mm (1/8 - 3/16")** should be observed.

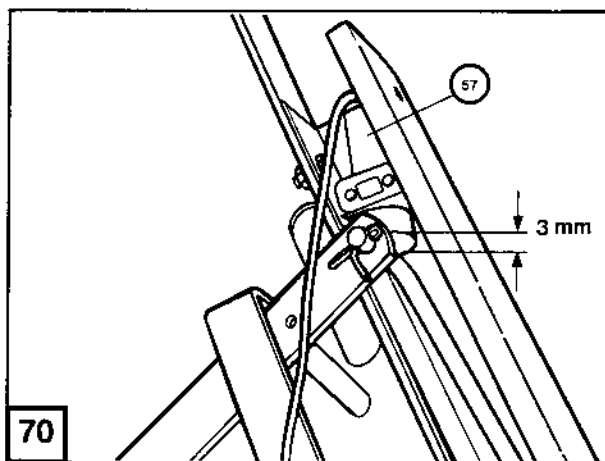
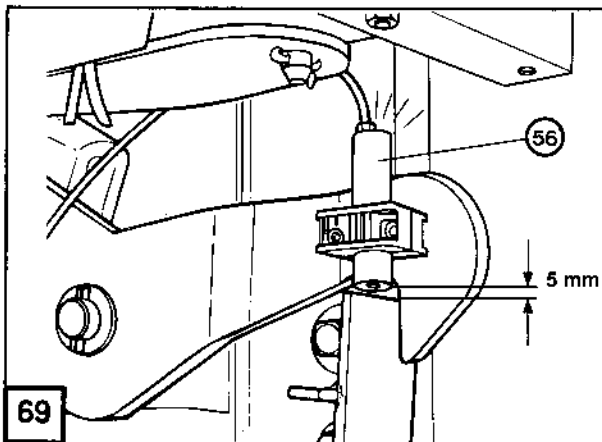
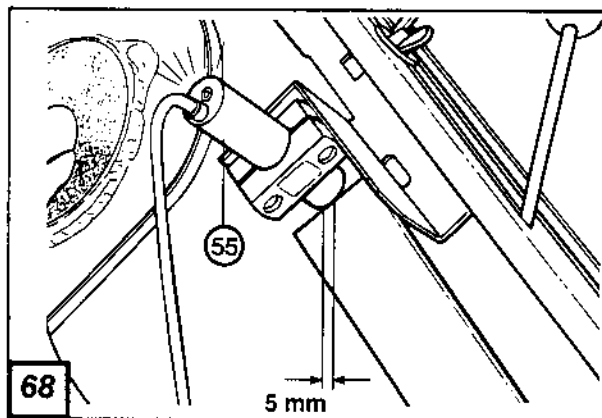
Figures 68, 69 and 70 show the settings of the various switches.

Legend to colour codes of the electric cable wires (fig. 71):

- 6 = orange
- 7 = red*
- 8 = black
- 9 = white
- 10 = yellow
- 11 = brown
- 12 = grey
- 13 = violet
- 14 = green
- 16 = blue
- 17 = yellow + green

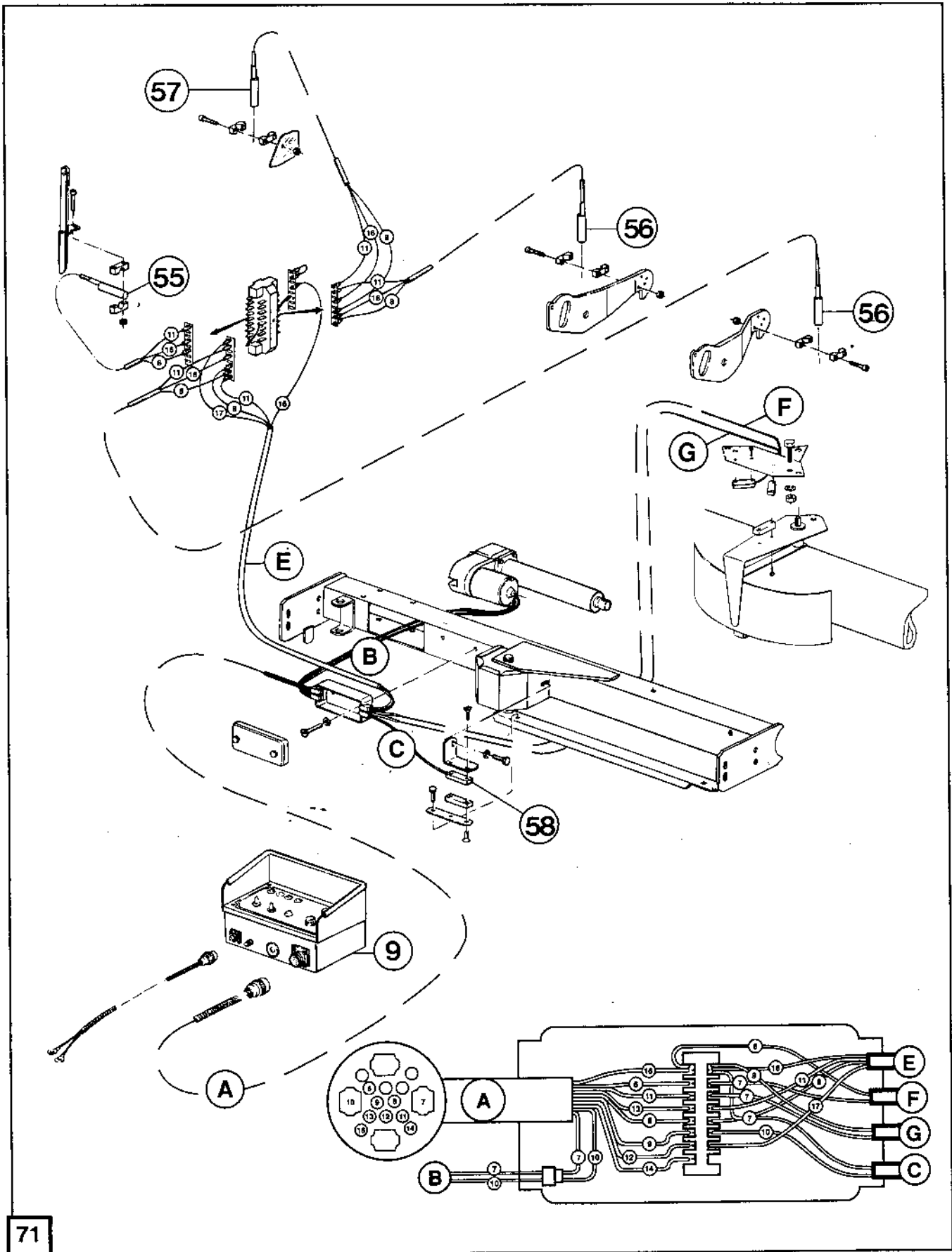
Note:

In cable 'C' the red and yellow wires may be both black as well.



MAINTENANCE

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17. Hydraulic Circuit (figs 29 and 72)

Figure 72 shows operation diagrams of the hydraulic circuit (fig. 29).

Note:

A, fig. 72 = tailgate opening

B, fig. 72 = tailgate closing

C, fig. 72 = bale formation

If the baler fails to build up pressure the tractor valves may be leaking (more than 1 litre per minute (1/4 pint per minute) or the cylinder seals could be leaking. In this case the tailgate will open itself while baling.

If the closed tailgate latches unlock just after closing the tractor valve, reduce the oil flow from the tractor by adjusting the adjustable restrictor (11, fig. 27).

Maximum allowable system pressure is 180 bar (2600 psi).

DANGER:

When the hydraulic system is under repair, always block opened tailgate with supports to prevent it from coming down.

Note:

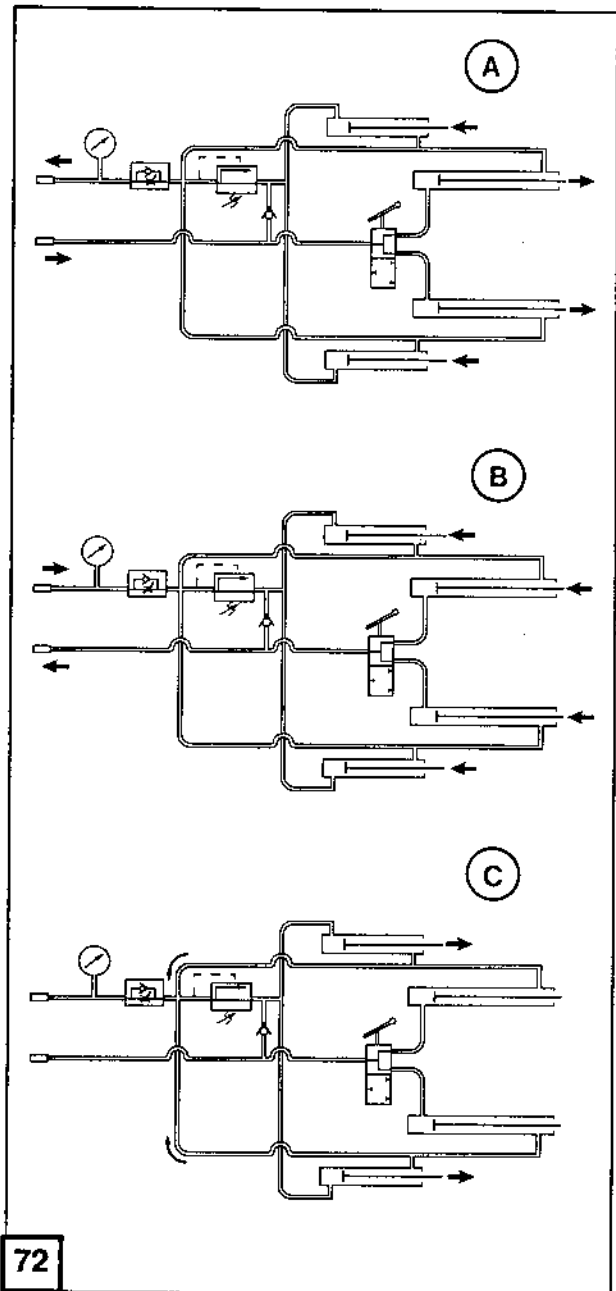
Make sure that all components in the hydraulic system are kept in good condition and are clean and tight.

Replace any worn, cut, abraded, flattened or crimped hoses and metal lines.

DANGER

Never attempt to find or stop a hydraulic leak with your fingers. High pressure hydraulic fluid will easily penetrate skin and clothing, causing sever injuries. Always use a piece of wood or metal when searching a leak! -

If you are injured by a high pressure stream of hydraulic fluid piercing the skin, seek medical attention immediately.



18. Bale Shape Indicator

A. Mechanical system

Ensure the mechanical bale shape indicator is installed correctly in acc. with IV. 22.A. Check pointer centralising as well as free movability of parts.

B. Electronic system

(fig. 73)

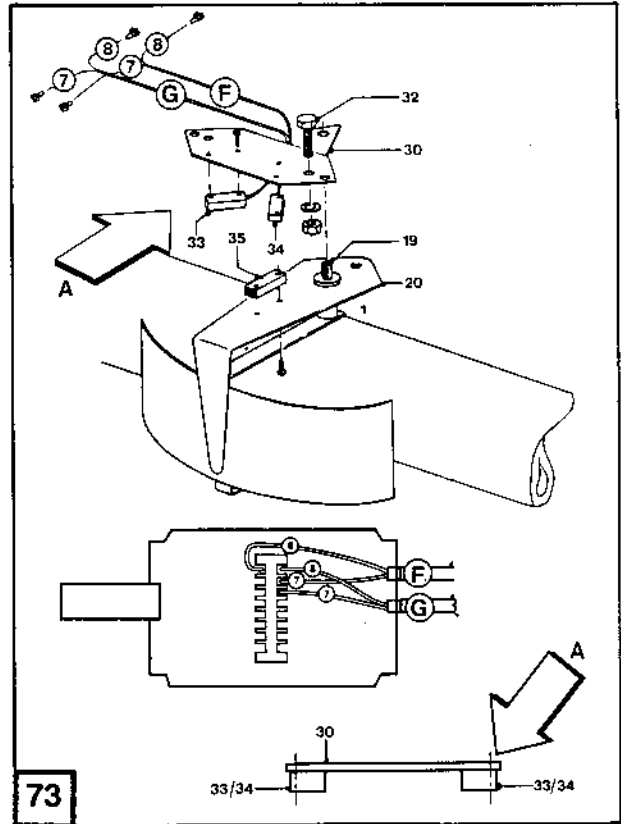
Ensure the electrical bale shape indicator is installed correctly in acc. with IV. 22.B. Check cable routing and pointer centralising as well as free movability of parts.

Fig. 73 shows the installation of the Electronic Bale Shape Indicator and connections to the junction box located near the actuator of the tying mechanism.

To limit the stroke of the gauge, bolts (32) are to be inserted. These prevent the gauge travelling beyond the switches, thus giving false readings.

Note:

Fig. 73 = fig. 33; for wire colour codes refer to IV.22.B.



19. Lubrication (figs 74 through 76)

DANGER



Never lubricate the machine while it is running. Never oil the rollers, belts, pto driveshaft slip clutch or pick-up slip clutch.

Lubrication of the pto drive shaft: fig. 74.

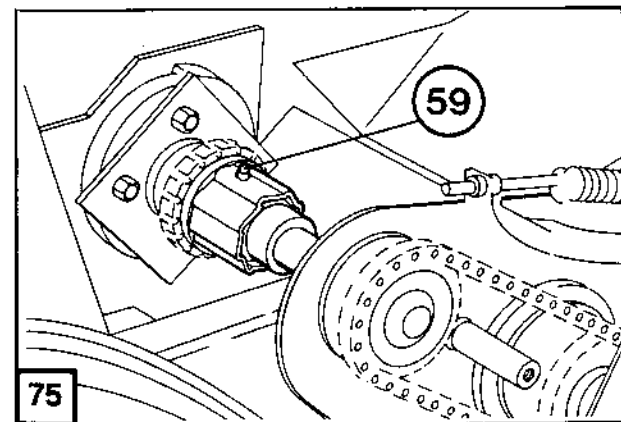
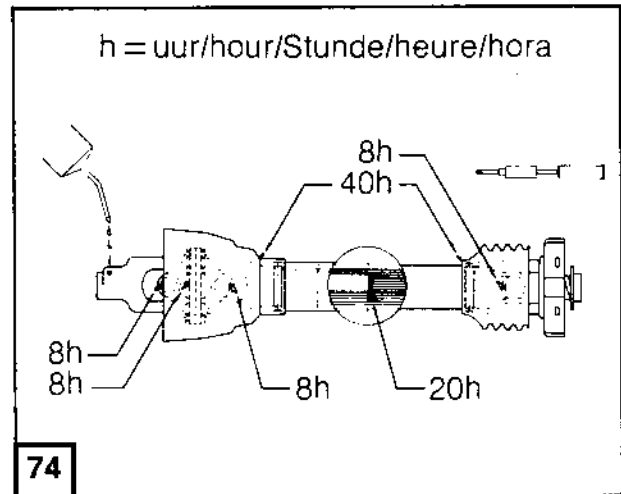
Attention:

Always apply a good and adhesive multi-purpose NLGI2 grease when lubricating machine and pto drive shaft.

Ensure profile tubes of pto shafts are well greased at all times. Check this on a new or repaired machine or drive shaft prior to first run and then every 20 working hours.

Also ensure sliding surfaces of the protection tubes are slightly greased.

Dispose of old oils and grease as prescribed in order not to pollute the environment.



MAINTENANCE

G9111BRW-EN

Lubricate with oil or grease every 10 working hours (see fig. 76):

- 1) Pivot points (60)
- 2) Chains (when they are hot) (61)
- 3) Cylinder pivot points (62)
- 4) Tailgate hinges (grease) (63)
- 5) Pick-up gauge wheel (wide pick-up only) (grease) (not shown)
- 6) Slip clutch of wide pick-up (grease) (59, fig. 75).

20. End of Season Storage

A. Twine arm actuator

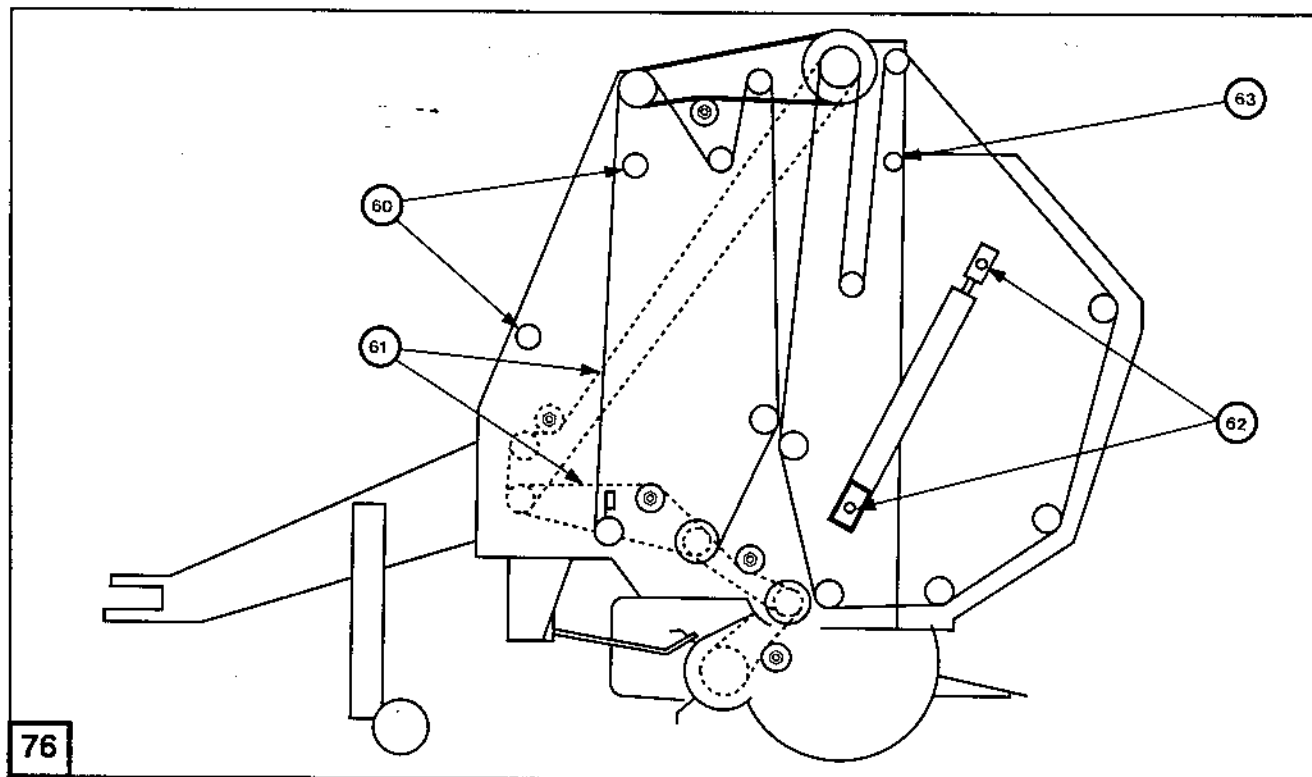
After every season, clean out the sliding mechanism rail and the space behind the actuator.

B. Electronic control box

Store the electronic box in a dry and safe environment that is free from rodents and insects.

C. Complete baler

- 1) Clean the baler thoroughly before storage, removing all hay or straw residues.
- 2) Loosen the pick-up flotation spring and lower the hydraulic pick-up.
- 3) Protect all bright parts with oil or other anti-rust protections, e.g. rollers, scrapers, pick-up strippers pick-up cam track, etc.
- 4) Remove all twine.
- 5) Store the baler in a safe place that is free from rodents.



TROUBLE SHOOTING

G9111BRW-EN

VII. TROUBLE SHOOTING

Some of the more common or probable causes of malfunctions or problems that may occur when starting up or operating the baler are presented in this section. If problems occur beyond the situations outlined, or if after attempting to correct a problem by following the recommended procedure, a solution cannot be attained, please consult your baler dealer. Trained personnel are available who will be able to offer expertise and technical advice to solve your problem.

| PROBLEM | CAUSE | SOLUTION |
|---|---|--|
| Flattened crop windrow not picked up. | Pick-up working height set too high. Pick-up safety clutch is slipping. | Unhook chain and lower pick-up. Adjust pick-up height by changing gauge wheel* setting. (* = gauge wheel is std. on wide pick-up but option on std. pick-up.) Adjust clutch |
| Windrow material not gathered by baler pick-up. | Windrow is too wide for the pick-up | Install optional windrow gathering wheels. Reform windrow to a narrower width. |
| Material projects forward and does not lay back onto the pick-up. | Short material. | Install optional short crop guard. |
| Material is wrapping on rollers. | Material is wet and sticky. | Check roller scraper clearance adjustment. Install optional silage kit with scrapers. |
| Improperly formed bale. | Material is not feeding into baler correctly. | Use proper driving technique matching type of crop to feed material evenly into the bale chamber (refer V.6. and fig. 37). Adjust left/right indicator properly (IV.22.). Check spring tension, free movement of pointer and bale skids in the bale forming chamber. |
| Material rises up with the belts. | Conical bale formation, pushing belts together. | Use proper driving technique (refer to V.6. and fig. 37). Adjust left/right indicator properly (IV.22.). Check free movement of pointer and bale skids in the bale forming chamber. |
| Improper belt tracking. | Conical bale. Idler roller may need adjusting. Unequal belt length or twisted lacings. Twisted tailgate. | Feed baler correctly. Correct idler roller position. Check and maintain belts. Straighten tailgate and adjust tailgate latches to 2 mm clearance. |

trouble shooting table

TROUBLE SHOOTING

G9111BRW-EN

| PROBLEM | CAUSE | SOLUTION |
|---|--|---|
| Belts break. | <p>Maximum bale diameter is exceeded.</p> <p>Different belt lengths.</p> | <p>Check control box main power switch and make sure it is positioned on Automatic (AUT) setting.</p> <p>Check the bale diameter switch is functioning properly.</p> <p>Check and adjust bale diameter gauge system</p> <p>Check maximum bale diameter sensor/microswitch for function (refer to VI.15.).</p> <p>Check audio buzzer for malfunction. Inspect electrical connections and circuitry.</p> <p>Check all forming belts for proper length. Repair or replace as required.</p> |
| Twine not gripping properly. | <p>Twine brakes are too tight.</p> <p>Twine is catching and not running smoothly in the tubes.</p> <p>Crop accumulating on wind guard</p> | <p>Adjust twine tensioners to provide adequate drag on the twine.</p> <p>Check twine guides and twine.</p> <p>Ensure twine tubes move to rightside of pick-up to feed twine at the beginning of the wrapping cycle.</p> <p>Check material has not built up behind activating arm, thus restricting movement.</p> <p>Feed material onto baler at the right hand side so that the twine is brought to the bale by the material.</p> <p>Remove every other tine on the wind guard.</p> |
| Twine not cutting properly. | <p>Knife blade is dull or gone and twine tensioners are too loose.</p> <p>Twine tensioner too tight (causing actuator to cut out too early).</p> | <p>Replace knife blade and properly tension twine tensioners.</p> <p>Reduce twine tension.</p> |
| Twine tube electronic actuator is not functioning properly. | <p>Faulty electronic circuitry.</p> <p>Discharged or weak battery.</p> <p>Accumulation of dirt</p> <p>Twine tube movement is obstructed.</p> | <p>Inspect electrical connections. Check fuse and battery connections.</p> <p>Check battery condition and recharge or replace as required. Note: At least 8 A of battery power is needed to move twine tubes through a left/right cycle.</p> <p>Clean away all accumulated dirt and material residue from around actuator, sliding rail and all components and connections.</p> <p>Check movement of tubes, proper wind guard setting and return spring on knife arm assembly.</p> |

trouble shooting table

TROUBLE SHOOTING

G9111BRW-EN

| PROBLEM | CAUSE | SOLUTION |
|---|--|--|
| Twine slides off the side of the bale. | Twine gets too close to the edges. | Readjust stop collar at first waiting period and readjust switch at second waiting time period. |
| Twine tube moves slowly. | Insufficient voltage. Dirt. | Connect supply lead directly to the battery. Clean out sliding rail of electrical actuator. |
| Bale does not discharge , freely. | Baler is tilted too far forward. | Check hitch height and adjust accordingly. |
| Rear gate opens during baling. | Rear gate is not locking correctly. | Restroke rear gate cylinders to positively seat the latches and adjust lower latch plate. If rear gate locks and green light doesn't come on, check circuitry. Adjust flow limiter in the main hydraulic circuit. Tailgate cylinder seals are leaking internally. Clean tailgate closing area. |
| Insufficient bale density. | Irregular material feed into the pick-up. Tractor valves leaking. Belt length. Relief valve. Tensioning cylinder seals are leaking. Too high a forward speed. | Keep compression chamber fed consistently by using a proper driving technique to match type of crop. Disconnect hose to check; stop the leaking or fit a check valve. Difference in belt length. Relief valve malfunction. Replace seals. Reduce speed |
| Red warning light doesn't come on and buzzer doesn't sound. | Monitor main power switch is on Manual (MAN.) or OFF setting. | Flip switch to Automatic (AUT) position to provide automatic audio (buzzer) and visual (red light) warning of bale forming completion and start of twine wrapping. Check multi plug connection of lead to control box. Check power supply. |
| Dirt builds up on wind guard. | Wind guard has not been set right. Crop guard tines accumulating excessive crop residue. | Set wind guard properly. Remove every second tine from the wind guard and/or two left ones. |
| Bale starting bad with wide pick-up | Swath is entering too much into one side of the baler. Too low a rpm. | Adapt driving pattern. Increase engine rpm. |

trouble shooting table

VIII. INSTRUCTIONS FOR ORDERING SPARE PARTS

Your order for spare parts should contain the following information:

1. machine type and prod.ident. no. (PIN), or the prod. series no. (PSN),
2. description, part number (see IPL) and quantity in question.

If in doubt send a rough sketch of the part clearly marked with your name and address.

IX. OPTIONAL EQUIPMENT

Note:

For break down and part numbers refer to IPL.

1. Converging Wheels (fig. 77)

Converging wheels gather a windrow that is wider than the maximum pick-up width of 140 cm (55 in) and form it into a workable size that can efficiently feed into the pick-up.

Converging wheels can be adjusted in working angle by repositioning the wheel arm (64) on the main tube.

The wheels are ground driven and can be adjusted in height using the chain.

Note:

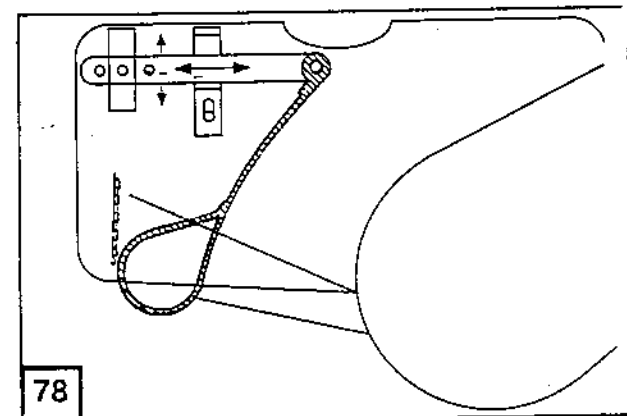
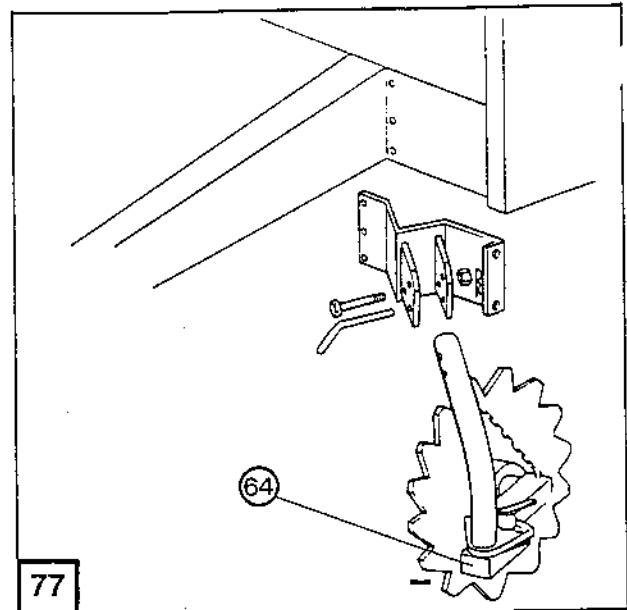
Observe the opposite way of mounting to ensure correct rotation direction of the wheels.

2. Short Crop Guard (fig. 78)

The short hay guard is used for short, wet silage or short straw. A small windrow will require the guard to be adjusted closer to the pick-up tines.

The position of the guard is adjustable with the various brackets and chain.

3.



4.

5. Standard-Pick-up Gauge Wheel (refer to V.1.)

Pick-up gauge wheels provide better ground following capability of a pick-up.

Set the pick-up gauge wheels to the proper height setting so that the tines are just free of the stubble.

6. Road Light Kit (fig. 83)

A Road light kit is available as an accessory.

7. Safety and other Spare Decals

Safety and other spare decals or signs are available from your dealer's parts department (IPL and fig. 85).

Note:

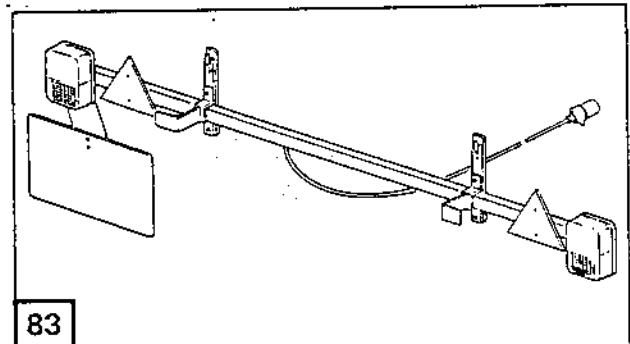
Fig. 85 does not show the brand striping and other "decoration" decals, etc.

8. Extra-wide Tyre Set (no fig.)

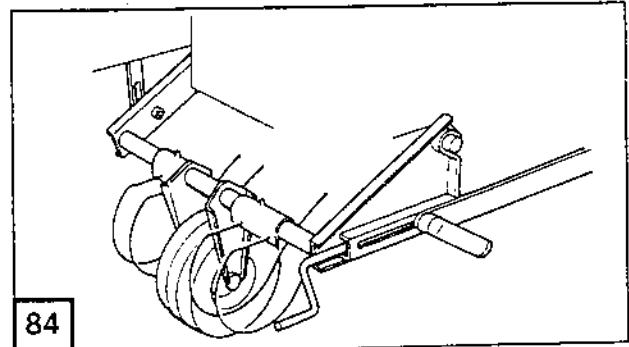
Refer to techn. specification for correct values.

9. Flax Kit (fig. 84)

Special equipment for baling flax.



83



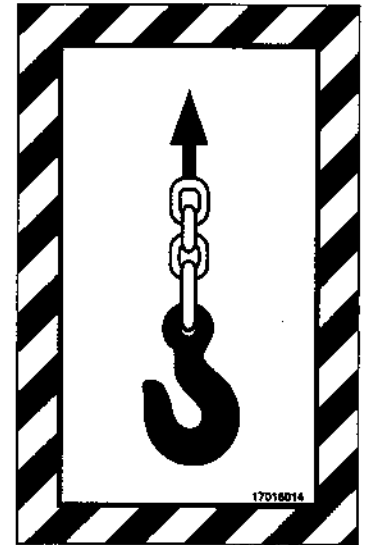
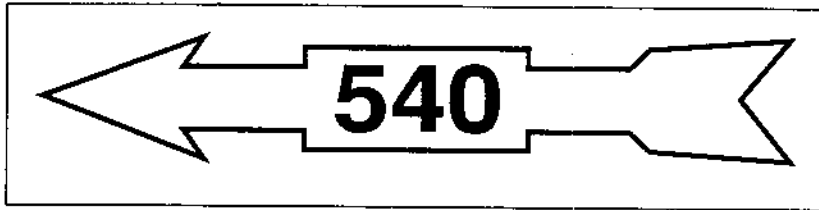
84

X. LIABILITY AND WARRANTY

In order to ensure safety all persons working at and/or with this machine must read and understand this operation manual. Furthermore this machine shall always be used, handled and stored in accordance with the design and construction destination (declined use) which also means:

- 1) Exclusively work in accordance with the instructions given in the appropriate Assembly, Operation and Repair Instructions (manuals) including all valid Errata and Supplements as well as taking into account the relevant Service Bulletins; exclusively use correct tools and equipment being in a perfect condition.
- 2) Strictly observe the applicable local regulations concerning safety and accident prevention, generally acknowledged and approved technical, medical and traffic rules as well as the functional limitations and safety instructions stated in above mentioned technical documentation.
- 3) Electric/electronic equipment (e.g. control boxes, indicators, etc.) including their accessories (e.g. cables, sensors, etc.) must be handled, treated and stored in accordance with the general accepted standard rules for non-water-proof electric and electronic equipment (e.g. wireless sets), i.e. among others:
 - a) clean and dry storage
 - b) inaccessibility for rodents, martens, insects, etc.
 - c) prevent exposure to rain and undampened shocks
- 4) Do not use any parts (spares, accessories, lubricants) other than those complying with the manufacturer's requirements. A part complies with the manufacturer's requirements when either genuine or approved by the manufacturer or when all its properties can be proven to meet with the appropriate manufacturer requirements for that very use/function.
- 5) Only well instructed people being familiar with all possible danger shall work with or at the machine
- 6) Unauthorized modification of or arbitrary changes on the machine or parts of it exclude any responsibility and reliability of the manufacturer for the consequences of that operation.

Attention: *Those disregarding above mentioned rules act grossly negligent (careless) through which all the manufacturer's warranty and reliability for damages and all other consequences become extinct. The negligent person carries all risks.*



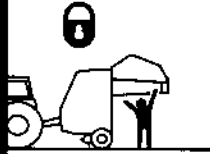
| | |
|--|--|
| <h2>WARNING</h2> | <h2>PRUDENCE</h2> |
| <p>ROTATING DRIVE LINE - KEEP AWAY</p> <p>JOINT YOKER MUST BE LOCKED IN PLACE. ADJUST TRACTOR DRAWBAR AND IMPLEMENT HITCH TO PROPER DIMENSIONS. KEEP TRACTOR MASTER SHIELD, PTO GUARDS AND IMPLEMENT GUARDS IN PLACE.</p> | <p>SE TENIR ELOIGNÉ DE LA TRANSMISSION EN MOUVEMENT</p> <p>LES MACHOIRES DE TRANSMISSION DOIVENT ÊTRE VERROUILLÉES. RÉGLER L'ATTACHE DU TRACTEUR DE LA MACHINE SUIVANT LES DIMENSIONS APPROPRIÉES. TOUJOURS MAINTENIR EN PLACE LES CARTERS DE PROTECTION DE LA PRISE DE FORCE DU TRACTEUR ET DE LA MACHINE.</p> |
| <p>FREQUENCY OF LUBRICATION</p> <p><i>h = hours/heures</i></p> | <p>FREQUENCE DE GRAISSAGE</p> <p><i>h = heures/heurees</i></p> |
| <p><small>*When used in winter the outer tube must be greased to prevent it freezing solid*</small></p> | <p><small>*En cas d'utilisation en hiver, le tube extérieur de la protection doit être graissé pour éviter le durcissement dû au gel.</small></p> |

| | |
|---|---|
| <h2>CAUTION</h2> | <h2>PRUDENCE</h2> |
| <p>FOR YOUR PROTECTION AND THE PROTECTION OF OTHERS, PRACTICE THE FOLLOWING SAFETY RULES:</p> <ol style="list-style-type: none"> 1. READ OPERATOR'S MANUAL BEFORE OPERATING MACHINE. 2. CONSULT OPERATOR'S MANUAL FOR TRACTOR WEIGHT REQUIREMENTS. 3. KEEP ALL SHIELDS IN PLACE WHEN MACHINE IS OPERATING. 4. SHUT OFF TRACTOR ENGINE, DISCONNECT POWER TAKEOFF AND WAIT FOR ROTATION TO STOP BEFORE WORKING ON OR NEAR MACHINE FOR ANY REASON INCLUDING INSPECTING, CLEANING OR SERVICING MACHINE. 5. KEEP ONLOOKERS AND OTHER WORKERS AWAY FROM AREA WHERE MACHINE IS OPERATING. 6. NEVER ALLOW PNEUMATIC TIRE TO OPERATE WITH AIR IN POWER TAKE OFF. 7. UNIT MUST BE LOCKED IN TRANSPORT POSITION BEFORE TRANSPORTING. | <p>POUR VOTRE SÉCURITÉ ET LA SÉCURITÉ DES AUTRES, SURVEZ LES CONSIGNES SUIVANTES:</p> <ol style="list-style-type: none"> 1. LIRE LES INSTRUCTIONS OU MANUEL D'UTILISATION AVANT DE COMMENCER À UTILISER LA MACHINE. 2. CONSULTER LE MANUEL D'UTILISATION POUR LES CARACTÉRISTIQUES DU TRACTEUR. 3. NE JAMAIS UTILISER LA MACHINE SAUF QUE LES DISPOSITIFS DE PROTECTION SONT MIS EN PLACE. 4. ARRÊTER LE MOTEUR DU TRACTEUR, DÉBRAYER LA PRISE DE FORCE, ET ATTENDRE L'ARRÊT COMPLET DE LA MACHINE, AVANT TOUTE INTERVENTION POUR CONTRÔLE, NETTOYAGE OU ENTRETIEN DE LA MACHINE. 5. S'ASSURER QU'IL N'Y AIT PERSONNE PRÈS DE LA MACHINE LORSQU'ELLE EST EN MARCHE. 6. NE JAMAIS ACCEPTER DE PASSAGERS SUR LE TRACTEUR OU SUR LA MACHINE. 7. TRAVAILLER AVEC UN RÉGIME DE PRISE DE FORCE DE SAISON. 8. AVANT TOUT DÉPLACEMENT S'ASSURER QUE LA MACHINE SOIT VERROUILLÉE EN POSITION TRANSPORT. |

2,5 bar

max. 30 km/h

⚠ ATTENTION



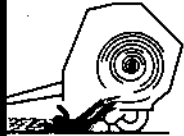
Lock tail gate when working under an open tail gate or inside the baler!

Mettre en place la sécurité du hayon avant l'intervention sous le hayon ou à l'intérieur de la machine!



Always readjust scraper to work in dry hay!

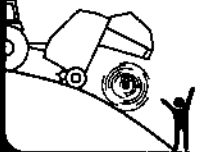
Avant de travailler en récolte sèche, vérifier le réglage des racleurs des rouleaux ensilage!



Do not push crop, feed twine or unplug with feet or hands with baler running!

Lorsque la presse tourne, ne jamais:

- pousser la récolte
- mettre en place la ficelle
- déboucher la machine avec les mains ou les pieds!

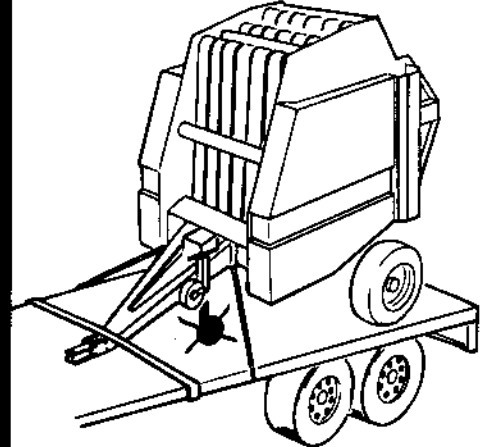


Do not release bale in uneven terrain!

Ne pas éjecter de balles dans un terrain trop en pente!

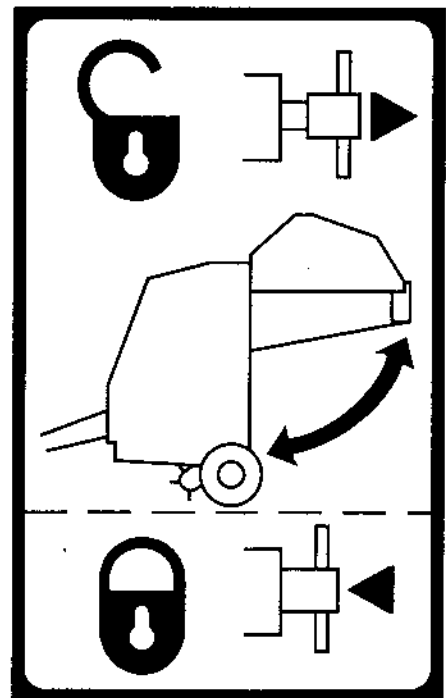
TR 479

⚠ ATTENTION



Transport of machine
Transportation de la machine

TR 472



**OMREKENTABEL/CONVERSION TABLE/UMRECHNUNGSTABELLE/TABLEAU DE CONVERSION/
TABLA DE CONVERSIÓN**

Lengte/length/Länge/longueur/longitud

$1\text{ m} = 100\text{ cm} = 1000\text{ mm} = 39.4\text{ in} = 3.28\text{ ft}$

$1\text{ ft} = 12\text{ in} = 30,48\text{ cm}$

$1\text{ in} = 25,4\text{ mm}$

Oppervlak/area/Fläche/superficie/área

$1\text{ a} = 100\text{ m}^2$

$1\text{ ha} = 100\text{ a} = 2.47\text{ acre}$

$1\text{ m}^2 = 10.764\text{ sq.ft.}$

$1\text{ acre} = .1\text{ dt. Morgen} = 0,4\text{ ha}$

Inhoud/volume/Inhalt/volume/contenido

$1\text{ m}^3 = 1000\text{ dm}^3 = 35.3\text{ cu.ft.}$

$1\text{ dm}^3 = 1\text{ l} = 1.057\text{ USqt(fl)} = 0.88\text{ Imp.qt.}$

$1\text{ US bu} = 9.308\text{ US gal(fl)} = 8\text{ US gal (dry)} = 35,232\text{ l}$

$1\text{ Imp.bu.} = 8\text{ Imp.gal.} = 36,368\text{ l}$

$1\text{ cu.ft.} = 28,317\text{ dm}^3$

Kracht en gewicht/force and weight/Kraft und Gewicht/force et poids/fuerza y peso

$1\text{ kg(f)} = 1\text{ kp} = 9,8\text{ N} = 2.2046\text{ lb(f)}$

$1\text{ N} = 0,102\text{ kg(f)} = 0.22487\text{ lb(f)}$

$1\text{ lb(f)} = 4,4447\text{ N}$

Druk en spanning/pressure and tension/Druck und Spannung/pression et tension/presión y tensión

$1\text{ bar} = 1,02\text{ at} = 0,987\text{ atm} = 14.5\text{ psi} = 100\text{ kPa}$

$1\text{ psi} = 0,0689\text{ bar}$

Arbeid en draaimoment/work and torque/Arbeit und Drehmoment/travall et moment/trabajo y par

$1\text{ Nm} = 1\text{ J} = 0,102\text{ kg(f)m} = 1\text{ Ws} = 0.738\text{ ft-lb}$

$1\text{ ft-lb} = 1,356\text{ Nm}$

$1\text{ in-lb} = 0,113\text{ Nm}$

Vermogen/power/Leistung/puissance/potencia

$1\text{ kW} = 1000\text{ W} = 0.738\text{ ft-lb/s} = 1,36\text{ pk} = 1.34\text{ hp}$

$1\text{ pk} = 1\text{ PS} = 1\text{ cv} = 1\text{ cf} = 0,7355\text{ kW} = 0.986\text{ hp}$

$1\text{ hp} = 0,7457\text{ kW} = 1,01\text{ pk}$

$1\text{ Btu/h} = 0,2930\text{ W}$

Toerental/speed of rotation/Umdrehungszahl/régime de rotation/velocidad rotativa

$1\text{ omw./min} = 1\text{ rpm} = 1\text{ U/min} = 1\text{ tr/mn} = 1/\text{min} = 1\text{ min}^{-1} = 1/60\text{ Hz}$

$1\text{ Hz} = 1\text{ cps} = 1\text{ omw./s} = 1/\text{s} = 1\text{ s}^{-1} = 60\text{ omw./min} = 60\text{ rpm} = 60\text{ U/min} = 60\text{ tr/mn.}$

Rijsnelheid/speed of travel/Fahrgeschwindigkeit/vitesse d'avancement/velocidad de avance

$1\text{ km/h} = 0,27778\text{ m/s} = 0.6214\text{ mph} = 0.9113\text{ fps}$

$1\text{ mph} = 1,609\text{ km/h} = 0,4470\text{ m/s} = 1.466\text{ fps}$

AANHAALMOMENTEN VOOR SCHROEFVERBINDINGEN

Alle schroefverbindingen moeten volgens onderstaande tabel worden vastgetrokken, indien niet anders aangegeven (b.v. in onderdelenlijst).

De standaard en minimale kwaliteit van bouten op machines is '8.8'.

N.B.: De waarde van de tabel moet met 10% worden verhoogd bij gebruik van een borgbout of -moer.

De waarde van de tabel moet met 10% worden verminderd bij gebruik van dik vet. Gebruik bouten/moeren met een beschermlaag (verzinkt, gepassiveerd, enz.) uitsluitend met vet.

TORQUE VALUES FOR INTERNATIONAL METRIC THREAD JOINTS

All bolted joints on machines must be torqued in accordance with the values given in this table unless indicated otherwise (e.g. IPL).

On all machines '8.8' is both standard and minimum quality used.

Note: In case lock bolts or lock nuts are used the given value must be increased by 10%.

The given value must be decreased by 10% when a stiff grease is applied. Do not use plated bolts/nuts without grease.

ANZUGSMOMENTE FÜR SCHRAUBENVERBINDUNGEN

Alle Schraubenverbindungen müssen gemäß untenstehender Tabelle festgezogen werden, wenn nicht anders angegeben (z.B. ET-Liste). Bei dieser Maschine ist '8.8' sowohl Standard- als auch Mindestqualität.

Anmerkung: Bei Sicherungsschrauben oder -mutter muss der aufgeführte Wert um 10% erhöht werden.

Der aufgeführte Wert muss um 10% vermindert werden, wenn ein dickes Fett verwendet wird. Beschichtete Schrauben/Muttern müssen immer mit Fett eingesetzt werden.

VALEURS DE COUPLES DE SERRAGE POUR FILETAGE SI

Tous les assemblages par vis doivent être serrés conformément au tableau ci-joint, sauf avis contraire (par. ex.: dans les illustrations du livret de pièces de rechange). Pour cette machine '8.8' représenté à la fois le standard et la qualité minimum utilisé.

Remarque: Lorsque des vis autofreinées ou des écrous autofreinés sont utilisés, la valeur indiquée doit être augmentée de 10%. La valeur indiquée doit être diminuée de 10% en cas d'application de la graisse non liquide. Toujours monter les vis et écrous platés avec de la graisse.

PARES DE APRIETE PARA UNIONES CON ROSCA INTERNACIONAL MÉTRICA

Todas uniones roscadas deben ser apretadas según los valores en la tabla abajo, salvo especificación contraria. En esta máquina '8.8' es a la vez la cualidad estándar y mínima.

Nota: Al emplear tornillos o tuercas autoblocantes se debe aumentar el valor de la tabla por un 10%.

El valor indicado debe ser bajado por un 10% al emplear una grasa gruesa. Solamente montar tornillos/tuercas recubiertos con grasa.

| draad thread Gewinde filetage rosca | moment bij materiaalkwaliteit vlg. DIN ISO 898 — (droog of met olie) torque value for material quality codes in acc. with DIN ISO 898 — (dry or oiled) Anzugsmomente für Materialqualitäten nach DIN ISO 898 — (trocken oder mit Öl) couples pour les qualités de matériaux selon DIN ISO 898 — (sèche ou avec huile) pares para las cualidades de material según DIN ISO 898 — (seco o con aceite) | | | | | | sleutelwijdte size of jaw Schlüsselweite ouverture de la clé anchura entre caras | | opmerkingen remarks Bemerkungen remarques notas |
|---|---|--------------|-----------------|--------|-----------------|--------|--|----------|---|
| | 8.8 | | 10.9 | | 12.9 | | mm | inch | |
| | Nm | ft-lb* | Nm | ft-lb* | Nm | ft-lb* | | | |
| M 3 | 1.3 | (11.5) | 1.8 | (16) | 2.1 | (18.6) | 6 | 7/32 | * value in brackets = in-lb |
| M 4 | 2.9 | (25.5) | 4.1 | (36.5) | 4.9 | (43.5) | 7 | 9/32 | |
| M 5 | 5.7 | (50.5) | 8.1 | (71.5) | 9.7 | (86) | 8 | 5/16 | |
| M 6 | 9.9 | 7.3 | 14 | 10.3 | 17 | 12.5 | 10 | 13/32 | |
| M 8 | 24 | 17.7 | 34 | 25 | 41 | 30.3 | 13 | 33/64 | |
| M 10 | 48 | 35.4 | 68 | 50.2 | 81 | 59.8 | 17 | 11/16 | |
| M 12 | 85 | 62.7 | 120 | 88.6 | 145 | 107 | 19 | 3/4 | |
| M 14 | 135 | 99.6 | 190 | 140 | 225 | 166 | 22 | 7/8 | |
| M 16 | 210 | 155 | 290 | 214 | 350 | 258 | 24 | 121/128 | |
| M 18 | 290 | 214 | 400 | 295 | 480 | 354 | 27 | 1 9/128 | |
| M 20 | 400 | 295 | 570 | 421 | 680 | 502 | 30 | 1 3/16 | |
| M 22 | 550 | 406 | 770 | 568 | 920 | 679 | 32 | 1 17/64 | |
| M 24 | 700 | 517 | 980 | 723 | 1180 | 871 | 36 | 1 27/64 | |
| M 27 | 1040 | 767 | 1460 | 1077 | 1750 | 1291 | 41 | 1 79/128 | |
| M 30 | 1410 | 1041 | 1980 | 1461 | 2350 | 1734 | 46 | 1 13/16 | |
| M 33 | 1910 | 1410 | 2700 | 1996 | 3200 | 2362 | 50 | 1 31/32 | |
| M 36 | 2450 | 1808 | 3450 | 2546 | 4150 | 3063 | 55 | 2 11/64 | |
| M 39 | 3200 | 2362 | 4500 | 3321 | 5400 | 3985 | 60 | 2 3/8 | |
| treksterkte tensile strength Zugfestigkeit résist. à la traction resist. a tracción | 8.8 | | 10.9 | | 12.9 | | | | |
| N/mm² lb/sq.in. | ≤M 16 808 | >M 16 830 | 1040 150,880 | | 1220 176,994 | | | | |