

**Operating Instructions  
Round Baler**

**DEUTZ  
FAHR**

**GP 220  
GP 520**

1986

1932

54

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### Safety Indications

The adjoining attention sign indicates important safety instructions in this operating manual. Please read the instructions carefully wherever you find this sign and use or operate the baler accordingly to avoid accidents. Please also inform your operating personnel.



The Machine Number of your baler is stamped into the model data plate shown in the adjoining illustration. As it is essential to quote this number in full in all your enquiries and spare parts orders, we recommend you to note it down in the space below:

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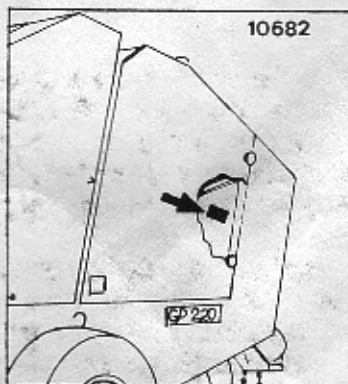
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## GENERAL SAFETY INSTRUCTIONS



Always stop baler first before carrying out repair or maintenance work.

Disconnect PTO shaft first before working on moving parts.

Disconnect PTO shaft before driving on open roads, fasten chain of PTO shaft through cross joint to avoid losing front half of PTO shaft.

Never remove material from the pick-up or feed opening while the machine is running, disengage PTO-first.

Only the tractor driver should be on the tractor during operation. Do not allow anyone to ride on the roll baler.

Do not step on to baler frame when machine is running. Keep-away from running pick-up and rollers.

All guards must be fitted in place and be in good condition.

Do not stay within reach of opening tailgate or underneath the tailgate, if it is not supported.

Secure tailgate support before entering compression chamber.

Release oil pressure out of hydraulic system before starting maintenance work.

Close tailgate before storing machine.

Block road wheels with two chocks when baler is parked. Always have two chocks on baler.

The roll baler may be employed only for its approved usage, otherwise no liability for resulting damage can be accepted. Approved usage includes strict adherence to the manufacturers' operating and maintenance instructions, as well as the exclusive fitting of Original Spare Parts.

The roll baler may be operated, serviced and repaired only by persons trained in these duties and instructed on the possible hazards. The ruling accident prevention code, as well as generally recognized rules on occupational safety and health and the local road traffic code should be observed at all times.

# TECHNICAL DATA

	GP 220	GP 520
Bale chamber size:	120 cm in diameter 120 cm in width	155 cm in diameter 120 cm in width
Bale weights: Straw:	120 - 160 kg	200 - 300 kg
Hay:	160 - 250 kg	300 - 500 kg
Wilted silage according to moisture contents	400 - 600 kg	600 - 1 000 kg
Bale density:	Variable over wide range, outer layers more firmly compacted than inner	Variable over wide range, outer layers more firmly compacted than inner
Tying material:		
a) Sisal twine runnage	200 or 330 m/kg	200 or 330 m/kg
b) Plastic twine runnage	400 - 700 m/kg	400 - 700 m/kg
Consumption per 10 bales approx.:	450 m by 12 wrappings	approx. 600 m by 12 wrappings
Tying:	Fully automatic, according to baling material 9 - 15 wrappings/bale	Fully automatic, according to baling material 9 - 15 wrappings/bale
Pick-up working width:	1 500 mm	1 500 mm
Pick-up lifting device:	Hydraulically	Hydraulically
Tyres:		
Standard:	10.0/75-15,3 Impl. 8 PR	10.0/75-15,3 Impl. 6 PR
Extra:	11.5/80-15,3 Impl. 8 PR	11.5/80-15,3 Impl. 6 PR
Hydraulic device:	2 one-way acting cyl. for tailgate 1 single acting cyl. for pick-up	2 one-way acting cyl. for tailgate 1 single acting cyl. for pick-up
Required tractor power:	according to bale density from 35 kW (47 hp)	according to bale density from 40 kW (55 hp)
PTO Speed:	540 rpm	540 rpm
Tractor hydraulic-connection:	1 or 2 single acting control valves with NW 10 push-in coupling	1 or 2 single acting control valves with NW 10 push-in coupling
Drawbar:	adjustable in height from 40 - 90 cm	adjustable from 40 - 90 cm
Baler capacity:	20 - 30 bales/h	15 - 25 bales/h
Dimension of roll baler:		
Length:	3 250 mm	3 600 mm
Width:	2 120 mm	2 120 mm
Height:	2 030 mm	2 440 mm
Weight of baler approx.:	1 590 kg	1 890 kg



## PREPARING FOR OPERATION

### Assembly of Baler

Mounting the drawbar, take the weight off the front of the baler, remove the retaining wire that holds the drawbar in position, swing the drawbar out to the height required (see "Attaching the Baler") so that this will pivot on the rear mountings. Place the adjusting stays (straight end) between the clevis bracket on the machine and locate with bolts provided using the same bolts, fasten the pick-up safety rail in position across the face of the machine, locate the other end of the adjusting stays between the clevis on the drawbar with the curves facing inwards (only way of fitting).

### Mounting Rear Lights and Reflectors

Mount the reflectors using the same bolts that hold the lights in place on the locating brackets provided.

Note: The lights are marked right and left with a "L" or "R" stamped on the lens.

### Wiring Diagram

Yellow - Earth point	Black - 21 W Bulb
Brown - 10 W Bulb	White - 21 W Bulb (Top Centre)

### Attaching the Baler

The baler should be so connected to the tractor that it is about parallel to the ground. To do this, adjust the baler drawbar to the height of the tractor attachment point by turning the threaded stays: first set baler by means of the supporting jack in position to have the bottom border of the red cladding parallel to the ground. Then release the threaded stays on both sides, set drawbar to the required height and support. Undo lock nuts, and slacken or tighten the bolts as required to allow the stays to be secured to the drawbar, making sure a minimum engagement of the bolts of 30 mm. After adjustment, all bolts and nuts have to be retightened. Attach the machine to the tractor, and raise the supporting jack until sufficient ground clearance is available. The towing eye can be used free turning or fixed, as required.

Remove M 10 x 55 bolt to DIN 912-8.8 if need be.

### Fitting Universal Drive Shaft

Clean PTO splines on tractor and baler. Push-in sliding pins and fit universal drive shaft, sliding pins must engage properly (wide angle joint on tractor side). Check tube length. Free telescoping length must not be less than 200 mm with driving straight ahead. Cut equal amounts from both profile tubes and guard tubes if necessary. Secure guard tube with chain to prevent turning.

IMPORTANT: Observe during driving of sharp curves, that wide angle joint of drive shaft (tractor side) is not running above 70° whether the PTO is rotating or not, otherwise danger of breakage.

### Coupling of Hydraulic Hoses

**GP 220:** A single-acting hydraulic connection with NW 10 plug-in connection is sufficient on the tractor. The operation to be carried out has to be selected by means of the three-way cock (lever in front position: tailgate operation; lever in rear position: pick-up operation). The three-way cock must be engaged into the special support supplied with the machine, which is to be secured to the tractor mudguard within the driver's reach. Before coupling or uncoupling the hydraulic hose, set three-way cock to "tailgate position", and the tractor hydraulic system to "lowering".

**GP 520:** Two hydraulic hoses are available: the first to open and close the tailgate, the second, with lock valve, to raise and lower the pick-up. The tractor must be equipped with two single-acting hydraulic connections with NW 10 plug-in connections. Be sure the lever of the two-way cock on the machine is turned to the right (when seen from the front). Should only one single-acting valve be available on the tractor, the hose has to be connected to the tractor without locking valve, the required function, either tailgate or pick-up operation, being adjusted as follows: Control lever turned to the right operates the tailgate, control lever turned to the left operates the pick-up.

### Electrical Connection

Connect cable for lights, indicators and brake lights into the socket on the baler and tractor. Check that lights work correctly. It is necessary to have the electrics connected and the lights turned on in order to operate the horn before tying (see page 7 tying the bale).

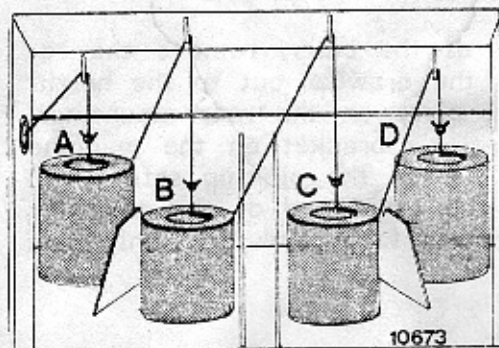


fig. 1

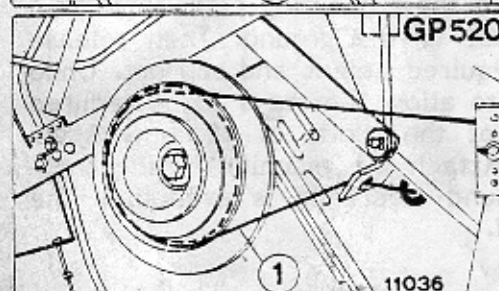
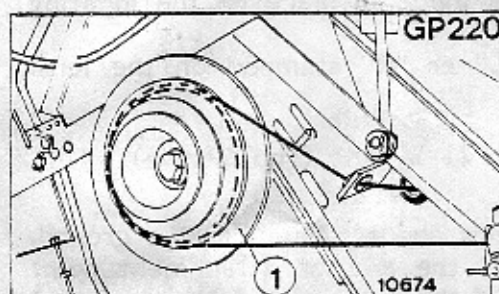


fig. 2

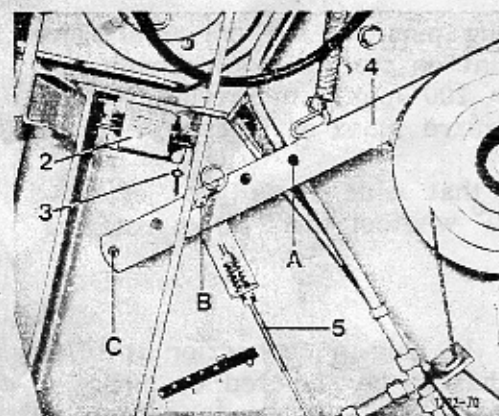


fig. 3

### Inserting Twine Spools



Insert and thread new twine spools only with the baler stationary! Use baler twine of good quality only, meeting the specification given under technical data (page 2). Where bales are to be stored outside, plastic twine is recommended. Place four spools upright, side by side (see fig. 1) into the twine box. Unless spools are inserted the right way round, the unreeling twine will tend to twist into loops and may tear. Pull twine end of spool A out of the wrapping to the top and tie it by simple knot to the start of spool B. Spool B and C are already be tied together as well as C and D.

### Threading the Twine

Proceed as shown in fig. 1, 2 and 4 also see respectiv transfer on baler. Pull twine out of ball A, through twine guide in top of twine box, through the side of twine box passing through twine tensioner. Set tensioner reasonably slack. Pull through twine guide in front of pulley 1 (fig. 2) sling 1 1/2 turns around stepped pulley 1.

**NOTE:** The wrapping distance of twine on the finished bale can be pre-selected. This is decided by the runnage of the twine around the stepped pulley 1 (fig. 2). Large pulley diameter to make narrow twine wrapping distance. Small pulley diameter to make wide wrapping distance of twine on the bale. Pull twine through the located eye, through side panel and second twine tensioner inside of panel, this tensioner should be set at approximately 30 kg.

Further threading behind the second tensioner is shown in fig. 4. Take the twine on around the small roller E. Tie a large loop on the end of the twine and locate over roller F. (Twine feeder x for GP 520 only).

**NOTE:** Move travelling arm 5 (fig. 10) to the first yellow mark on the left (in driving direction) by turning the pulley before threading the twine (starting position).

**IMPORTANT:** Do not turn the pulley assembly when treaded, for this will disturb the typing procedure.

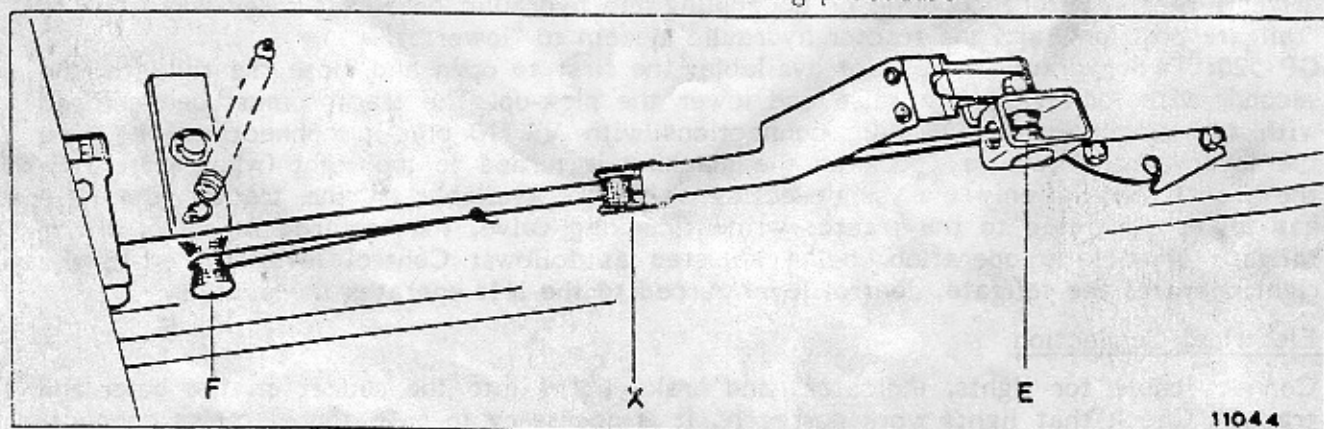


fig. 4




Setting the Bale Counter: To keep correct count on ejected bales, counter 2 must be set to zero with key 3 (fig. 3).

Pre-set Bale Density: The required bale density can be preselected or adjusted with lever 4 (fig. 3). Connecting tension rope 5 into hole C results in highest density, position b for medium and position A for low density.

Before Road Transport: Lift the pick-up by means of the tractor hydraulics into the highest position (transport position). On GP 520, close the lock valve on the hydraulic hose, and on GP 220 set the three-way cock to "tailgate position". The pick-up is now hydraulically locked and remains in transport position. The pick-up can be additionally secured by engaging the limitation chain between pick-up and sidewall so that it be as taut as possible.

Before baling: Lower the pick-up and set the control lever of the three-way cock (GP 220) or of the two-way cock (GP 220) to "tailgate position".

## FIELD OPERATION

 The roll baler is well guarded against possible accidents, even so it is important to operate the baler with care.

Check and keep all guards in place before starting to bale. Stop baler before adjustments and maintenance. Take great care when opening and closing tailgate! Nobody should stay in swinging reach of the tailgate. Use tailgate supports before entering roll chamber.

### Windrowing

The machine works fast and smoothly at high output, if windrows are uniform and not too thick. Width should not exceed 1,50 m.

### Setting Windguard

The windguard can be fixed according to shape and size of windrow into two positions. For big windrows fit the windguard tube in the highest position, for smaller windrows fit it, turned by 180°, in lowest position.

### Pick-up Cover Shield (Extra Equipment)

Pick-up cover shield 6 (fig. 5) prevents short stalk material from rolling away ahead of the pick-up. Fit cover shield 6, as shown in fig. 5 with both hooks on to cross tube of windguard and secure with safety clips. Connect chains to tube to have the cover shield in a favourable position to pick-up (fig. 5). Fit hook 8 to tension spring on both sides of pick-up side shields as shown.

### Pick-up Guide Wheel

To have optimum guidance of pick-up on uneven ground and ensure clean picking up of baling material, guide wheel 9 (fig. 6) is fitted. According to required pick-up clearance, guide wheel 9 can be mounted higher or lower. Normal setting is to have 2 cm ground clearance. (measurement G, fig. 5). Fix bolt 10 after adjustment of guide wheel 9 (fig. 6). Check for correct air pressure (1.5 bar)-(22 psi).

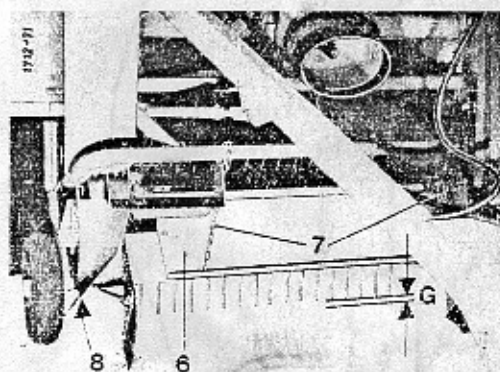


fig. 5

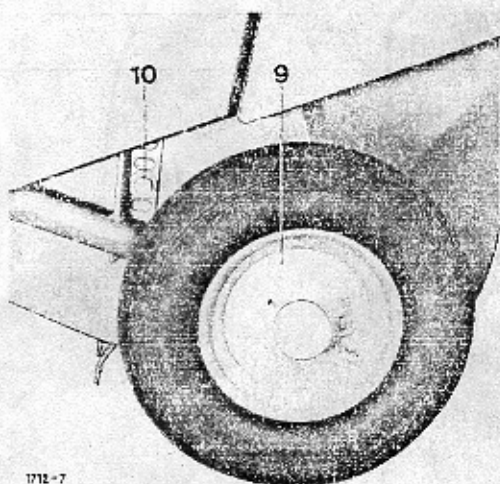


fig. 6

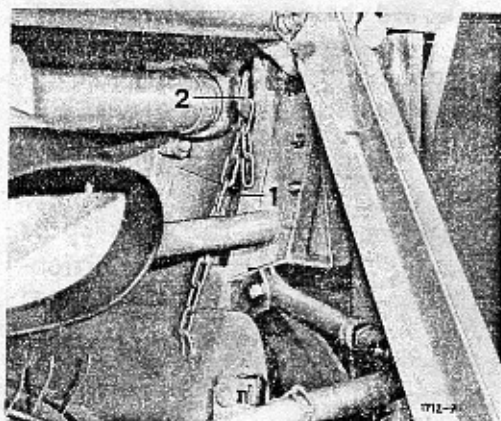


fig. 7

### Setting Pick-up Height

Lifting and lowering is operated by tractor hydraulics. Move the pick-up from transport to working position after getting to the field. Avoid ground contact of tines. Measurement G fig. 5, should be approx. 2 cm. Position chain 1 (fig. 7) into hook 2 to prevent pick-up from dropping into ditches. Do not remove cloggings by lifting the pick-up, see foulds an remedy.

### PTO Speed

Drive the baler only through the standard 540 rpm range. Some tractors with PTO speed of 1080 rpm should only be driven with half the motor rpm. If very dry and short material is baled, the PTO speed can be cut down to approximately 350 - 450 rpm. During baling short and damp material the PTO should not be stopped.

### Negotiating Curves

Never exceed more than 70° on wide angle joint of PTO drive shaft (tractor side) during driving of sharp curves whether the PTO is rotating or not, otherwise danger of breakage.

### Good Driving Practice

To obtain high outputs and well shaped round bales, the bale chamber should be fed evenly with material over the entire baler width. Good driving practice greatly contributes to steady, smooth feed. If windrows are narrower than pick-up width, drive alternatively along the right and left side of the windrow to ensure uniform chamber feeding (see fig. 8).

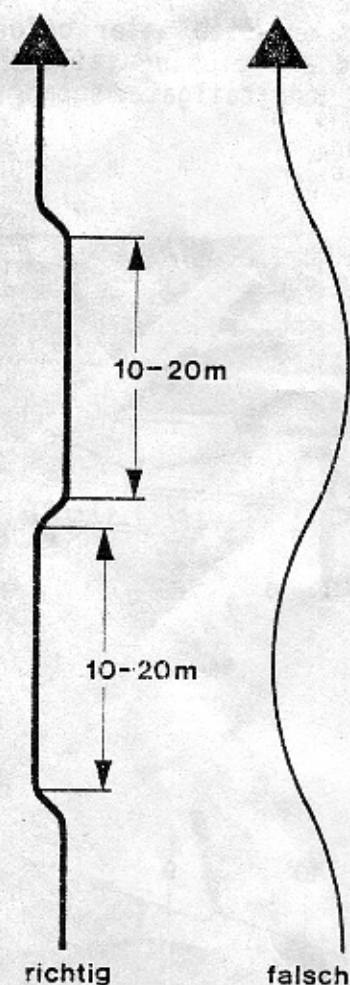


fig. 8

### Locking the Tailgate

Before picking-up the material and after each ejection of bale, the tailgate must be locked properly. Keep hydraulic valve on tractor in 'lower' for a short time. That way the tailgate will lock automatically. The tractor driver can see this as shown in figure 10. Locking lever indicator 3 is visible. With an open or not locked tailgate, the indicator 3 is not visible.



## Bale Density

The density of the round bale depends on the material and compaction pressure. The pressure is widely variable and can be pre-set on the baler (see page 5). Within the pre-set range, the filling indicator 4 fig. 9 will show the state of roll chamber filling.

## Tying the Bale

Tripping as well as the complete tying procedure is done fully automatically: As soon as the required bale density is reached (yellow respectively red section), the tying unit is automatically tripped, therefore, it is important that the twine must be threaded correctly as described on page 4. As the twine is pulled out a horn sounds (only with switched on side lamps and plug-in connection cable), at this the tractor driver must stop. The PTO must be kept running, but without material entering the baler. The tying procedure then runs automatically. During tying, the baler can be reversed or driven to the place of bale ejection.

Progress of tying can be observed at any stage by means of the twine runnage indicator 5 (fig. 10). The twine runnage indicator 5 moves during the whole tying process and shows the particular tying position.

The indicator is moving from the yellow starting mark to the right hand side (in driving direction) then back across to the left hand side, before travelling to the right to its finished position (starting point).

The twine guide shield below the tying unit assists the twine to fall into the roll chamber. It must be kept clean at all times.

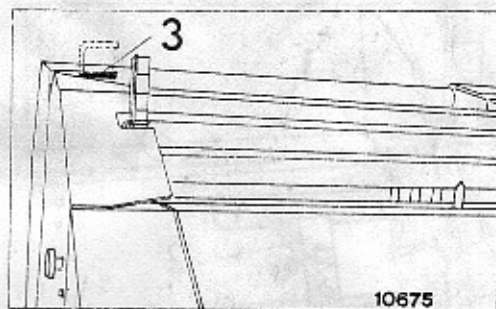


fig. 9

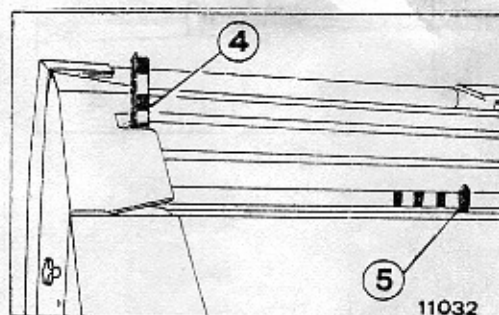


fig. 10

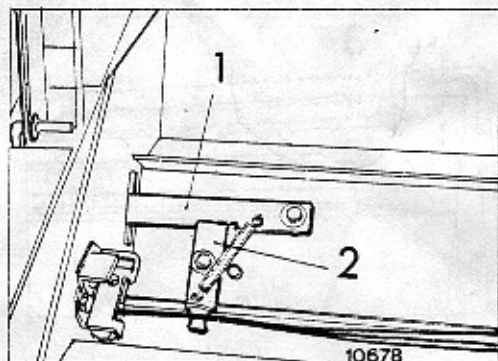


fig. 11

### Tying Unit - Hand Tripping

Roll bales which are not finished because not enough baling material is left to reach the pre-set density (rest bale) are not automatically tripped. In such cases the tractor driver has to trip the mechanism by hand. Stop driving and disengage PTO. Open cover of tying unit. Push lever 1 (fig. 11) upwards to allow roll lever to move sideways. Close cover of tying unit, start PTO and the complete tying procedure will run automatically until the twine is cut.

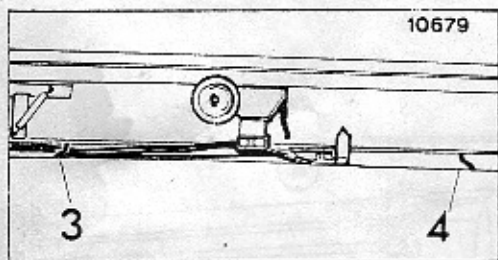


fig. 12

### Setting of End Wrappings

For setting the end wrappings on the roll bales, the distance holders 3 and 4 (fig. 12) are adjustable. When baling very dry material, distance holders 3 and 4 should be moved further inwards. Open tying unit cover, lift distance holders 3 and 4 and move them sideways by hand. Six different positions for each holder are possible. Close the cover after adjustment.

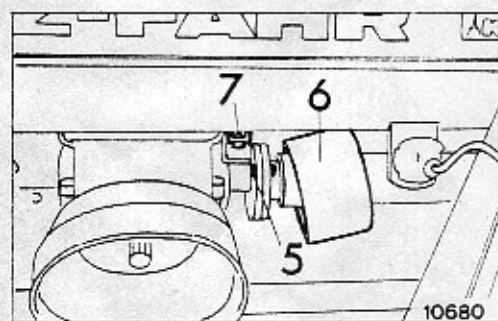


fig. 13

### Bale Ejection

Keep PTO running when bale has been tied, open the tailgate hydraulically for the bale to run out. Drive slightly forward before closing the tailgate, so that the tailgate does not close on to the deposited bale. Keep hydraulic valve at "lowering" until tailgate is completely closed and locked (indication see fig. 9). The next bale can then be started.

When using bale discharge extension (optional equipment, also for supplementary fitting) the bale rolls out of the baler far enough to eliminate driving forward before closing the tailgate.



When working on hilly ground, make sure to discharge the bale across the run of the slope. Nobody should stay within swinging reach of tailgate.

### Overloading Safety

Shear bolt 5 (fig. 13) is built in to the cross shaft to safeguard the main drive against overload. Shift guard 6 to the right after wing nut 7 has been loosened. Remove remains of old shear bolt and re-place by new one, use two nuts for tightening. Spare shear bolts with nuts are included with tool kit.



## SERVICING THE BALER



Never carry out adjustments, repairs and servicing work on running machine. Stop tractor and wait for standstill of baler. Shut off PTO-drive or remove universal drive shaft before carrying out repairs on drive parts. Use tailgate supports before entering roll chamber. Be careful when opening and closing tailgate! Nobody should stay in the tailgate's swinging reach.

Look after your baler with care and always observe the specified servicing intervals to ensure cost-efficient operation over a long life, prevent premature repairs and maintain the balers value.

### Tightening Bolts

After some 20 duty hours, firmly run down all nuts and bolts.

### Checking Road Wheels

At regular intervals, check that wheel nuts are firmly run down and wheel caps sit tight. Check stub axle bolts. Check tyre pressure which should be 2,3 bar. With 10,0/75-15,3 Impl. 6 ply tyres = 2,3 bar; with 10,0/75-15,3 Impl. 8 ply tyres = 3,0 bar, with 11,5/80-15,3 Impl. 6 ply tyres = 2,0 bar; with 11,5/80-15,3 Impl. 8 ply tyres = 2,75 bar. Inflation pressure of pick-up support wheel = 1,5 bar.

### Chain Lubrication

Lubricate all chains regularly. Use special chain lubricant. Stop baler. Open all side guards and lubricate chains, 0,5 kg chain lubricant is included in twine box. Use brush or oil can for lubrication. Close all side guards and secure.

Central lubrication for chains is available as optional equipment to reduce service cost. Check oil level of oil tank daily, add chain lubricant as required.

### PTO Shaft Lubrication

Clean grease nipples before lubrication. Clean und grease PTO shaft before storing baler.

### Guide Bar Lubrication

Guide bars are fitted for guiding the tailgate on both sides of the roll chamber, the inside face must be lubricated with multipurpose grease.

### Changing Gearbox Oil

After the first 50 duty hours approx. change the oil in gearbox: Take off filling plug with breather. Remove drain plug, drain out old oil into a container. Take out bolt of oil level inspection hole. Clean and re-fit plug tightly. Fill in 1,65 litres of gear oil SAE 90 until oil comes out of inspection hole. Re-fit bolt into inspection hole. Check oil level regularly. Change Oil after each season.

### Chain Tension

Chains for transmission, bottom section and pick-up drive must be checked and tensioned occasionally: Loosen chain tension blocks, re-tension in slots and re-tighten.

Chains for top section drive as well as drive for tailgate are tensioned with springs 8 (fig. 14). Top drive section: Tension spring and washer according to gauge indicator (measurement X). Tailgate drive: Tension spring and washer according to gauge indicator (measurement X).

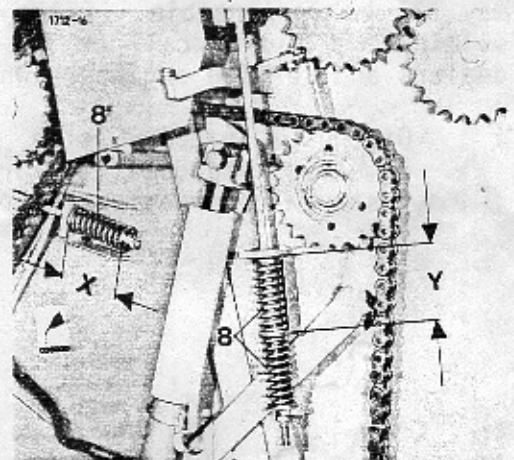


fig. 14

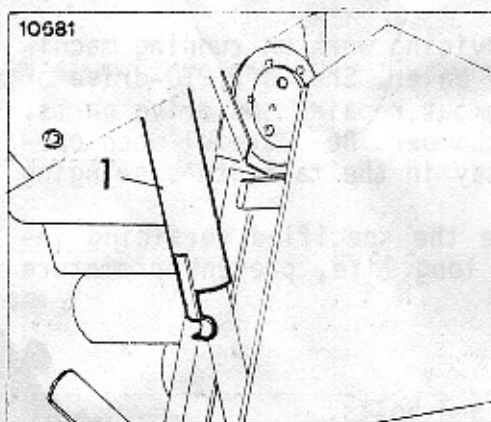


fig. 15

### Safety Arrangements



In the interest of your own safety and that of other traffic, keep flashing indicator and rear lights clean at all times and make sure that there are never obscured by overhanging material. Regularly check that all bulbs are alight. Always carry the 2 chocks supplied (stored in twine box). If maintenance work is done tailgate is opened, safety support I must be fitted between hydraulic cylinders (fig 15).

After maintenance or repair work, supports I are replaced into storing place on cylinder and secured.

### OUT OF SEASON STORAGE

Clean baler thoroughly.

Clean all chains and lubricate.

Soak sticky dirt on rollers with water and clean them afterwards by running machine with a strong water jet.

Do not clean rollers by mechanical means, otherwise coating on roller will be damaged.

Attention! Fit tailgate supports before stepping in reach of tailgate.

According to operation and wear, the plastic coating of rollers must be patched up or renewed. Attention! Rear bottom roller and bottom roller of tailgate should not be coated.

Note: Use only DEUTZ-FAHR Original 2 component coating, to be ordered to our Spare Parts Deptm.

Store baler in dry place.

### OPERATING FAULTS-QUICK REMEDY

Working conditions vary so widely that it is impossible to cover all causes which may lead to operating troubles. Soil properties, thickness of windrows, condition of crop, inexperienced handling or negligent servicing of the machine may all be responsible. If the following chart does not help you to trace and eliminate a fault, call on the expert advice of our appointed representative, dealers and service engineers who are always at your disposal.



Disengage p.t.o., stop tractor engine and wait until all moving parts come to a standstill before maintenance work is done. Never eliminate for instance obstructions near the intake while the machine is running.



No.	Fault	Possible cause	Remedy	Remarks
1	Baling material is not picked up cleanly	Pick-up not low enough	Adjust pick-up height	see page 6 Adjusting pick-up
		Wrong position of windguard	Turn windguard by 180° and re-fit	see page 5 Windguard adjustment
		Pick-up cover shield not used when baling short crop	Use cover shield when baling short crop	see page 5 Pick-up cover shield
		Insufficient pick-up guide on uneven ground	Correct setting of pick-up guide wheel	see page 5 Pick-up guide wheel
2	Baling material is clogging between pick-up and roll chamber	Wrong windguard setting	Turn windguard by 180° and re-fit	see page 5 Windguard adjustment
		Travelling speed too high	Slow down until bale is started	
3	Tailgate is opening and material is dropping out of roll chamber	Tailgate is not closed correctly	Observe mechanical closing device of tailgate. Hold tractor valve longer at "lowering" stage	see page 6 Locking of tailgate
4	Slippage between bale and roll chamber	Extreme dry or slippery	Reduce bale density.	see page 7 Bale density
5	Uneven bale shape	Improper driving	Drive according to instruction	see page 6 Good driving practice
6	Loss of short material	On very dry material PTO speed too high	Cut PTO speed to about 350-450 r.p.m. Avoid unnecessary running of baler	see page 6 PTO speed see also No. 4
		Travelling speed too slow	Stop up travelling speed	
		Windrows too small	Bigger size windrow	
7	Twine is slipping off bale	Uneven shape of bale	Drive according to instruction	see page 6 Good driving practice
		Incorrect tying of short material	Do not put twine wraps too close the ends of bale	see page 8 set end wrappings
8	Tying unit is tripped, but not starting. Twine is not pulled in.	Wrong setting of twine guide shield	Set twine guide shield: Distance to roller 3-5 mm. Distance between shield and range spacer outer setting 30 mm	
		Coating of top drive roller is worn	Re-coat roller	see page 10 out of season storage
9	Twine is running out of roll chamber	Slippery baling material, twine slips off	Let twine enter roll chamber before stop-baler travelling	see page 7 Tying of bale
10	Heavy going shear pin breakage in cross drive	Density too high	Change adjustment	see page 5 pre-select density
		Wrapping of material on rollers	Clean rollers	see page 10 out of season storage
		Start of slippage	Change density control.	see page 5 pre-select density
		Tripping mechanism not correctly set	Check tripping mechanism change if necessary	see page 7 Bale density
		Wrong quality shear bolt	Use original DEUTZ-FAHR shear bolt	To be ordered as per Spare Parts List

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