Model 190
Operator Instruction Book

OPERATION

Make sure the tractor is in the proper operating condition as stated in the tractor operator's manual, with enough weight and braking capacity, especially when operating on uneven terrain.

FIG. 3: Wear all protective clothing and personal protective equipment issued to you or called for by job conditions.

Wear approved hearing protection whenever operating when required by country/local regulations.

DO NOT wear loose clothing, jewelry or other items, and tie up long hair, which could entangle in moving parts.

Always keep hands, feet, hair and clothing away from moving parts.

All shields and guards must be in position before operating the machine.

DO NOT permit children or unqualified persons to operate your machine.

Keep others away from your area of work.

DO NOT permit others to ride on the machine.

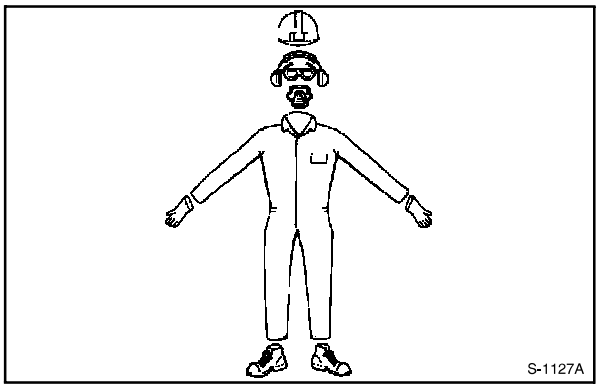

FIG. 3

FIG. 4: Securely fasten your seat belt before operating the machine

Where possible avoid operating the machine near ditches, embankments and holes. Reduce speed when turning, crossing slopes, and on rough, slippery, or muddy surfaces.

Stay off slopes too steep for proper operation.

Be aware of the baler size and have enough space available to allow for operation.

DO NOT use attachments unless they are approved optional equipment.

Keep a first aid kit handy for treatment for minor cuts and scratches.

Always remain seated when operating the machine.

Make sure all persons are clear of the rear of the bale chute when ejecting a bale.

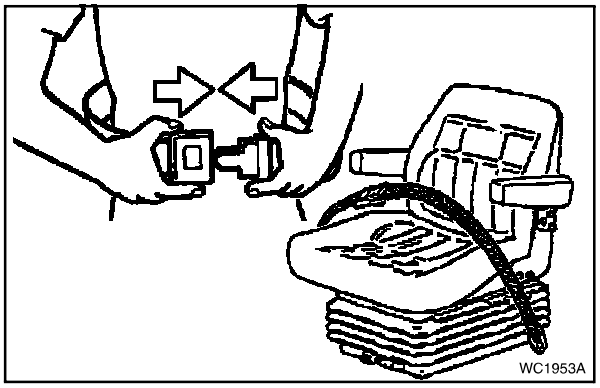

FIG. 4

INTRODUCTION

The operating and maintenance instructions included in this manual are assembled from field testing and other data. The information is written for general conditions. Make adjustments as necessary for specific conditions.

Right-hand and left-hand, as used in this manual, is determined by facing the direction the machine will travel when in use.

UNITS OF MEASUREMENT

Measurements are given in metric units. Hardware sizes are given in millimeters for metric hardware and inches for U.S. hardware.

REPLACEMENT PARTS

To receive efficient service, always remember to give the dealer the following information:

- Correct part description or part number.
- Model number of your machine.
- Serial number of your machine.

PREPARATION

Contents

FIG. 15: Plug in the baler controller harness plug to the tractor plug (1) for the monitor.

Make sure the baler hydraulic system has been set up correctly for the tractor system being used. See Hydraulic System on page 3 in this section.

Make sure the connectors on the hydraulic lines are clean.

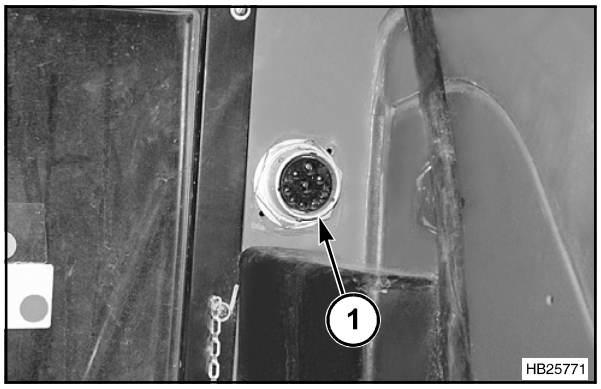

FIG. 15

FIG. 16: If the tractor connections have symbols like the symbols on the identification plate (1), use the symbols as a guide to connect the hoses.

- Connect the hoses for the pickup lift to a tractor remote valve that has a float position.
- Determine which way the tractor remote lever will be locked in the ON position for pressure to the baler control valve. Connect the hoses for the baler control valve to the tractor remote valve. If the tractor has a low pressure or hydraulic motor return line, connect the return hose to this coupling.

NOTE: The pressure line is connected to the PRESS port on the baler control valve.

NOTE: If the bale density pressure does not change while operating the baler. Reverse the hose connections or move the tractor remote lever to the opposite position. DO NOT continue to operate the baler until the problem has been corrected.

Adjust the tractor hydraulic flow control. For balers without an accumulator adjust the flow to 15 to 30 lpm. For balers with an accumulator adjust the flow to 30 to 45 lpm.

Remove or adjust the tractor three point hitch arms to prevent interference with the baler hitch or the IDL. If the arms contact the baler tongue or the IDL (implement driveline) severe damage will occur.

Remove the brake line from the storage position. Connect the brake line to the trailer brake coupler at the back of the tractor.

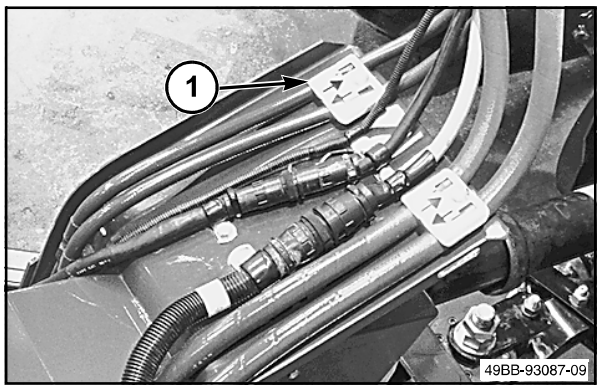

FIG. 16

Right-Hand Twine Box

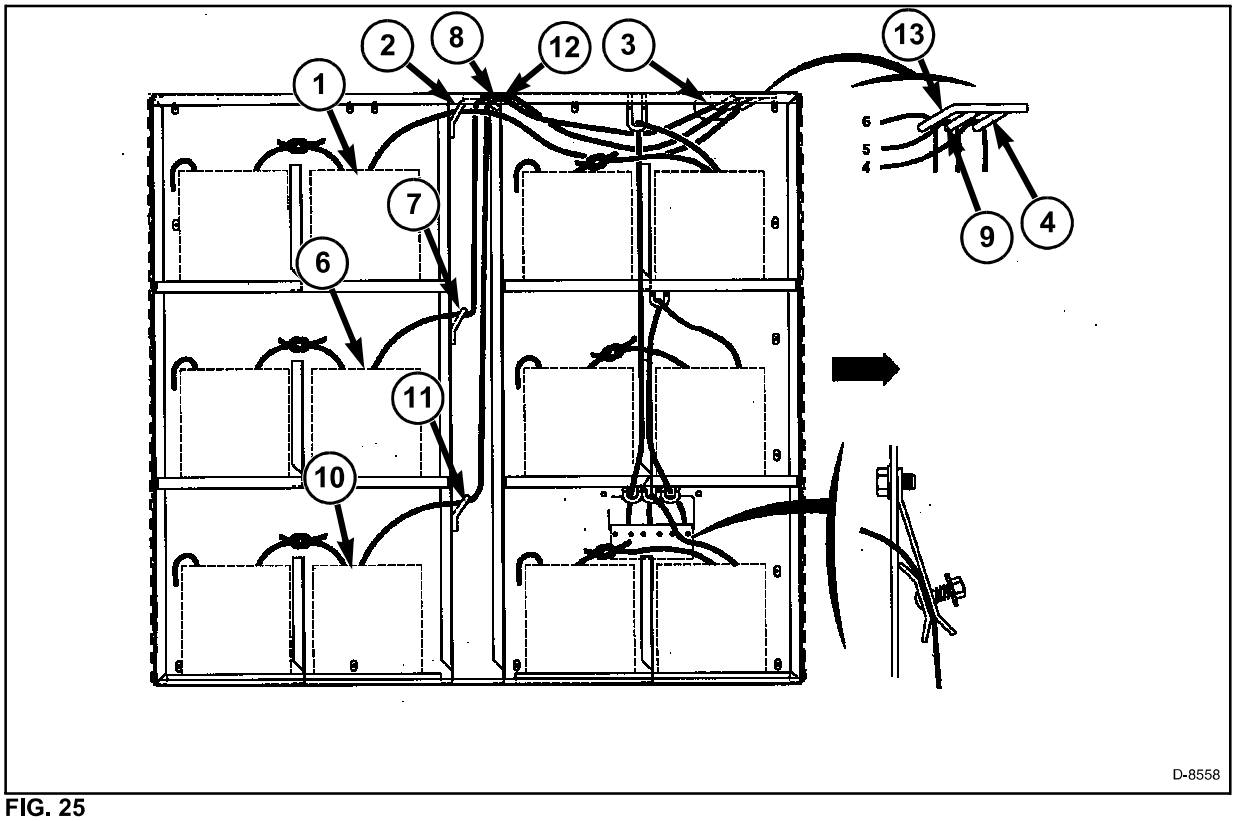

FIG. 25

FIGS. 25–26: Knotter 4. Twine storage is in the top rear two compartments.

Pull the twine from the front twine ball (1) and label the twine number 4. Thread the twine through the hole in the dividers and through the top loop (2) between the dividers.

Thread out through the opening (3) in the top front corner of the twine box.

Thread the twine through the front loop (4) on the back of the twine box.

Pull the twine through the loop (5) right end of the knotter frame. Pull the twine toward the center of the baler.

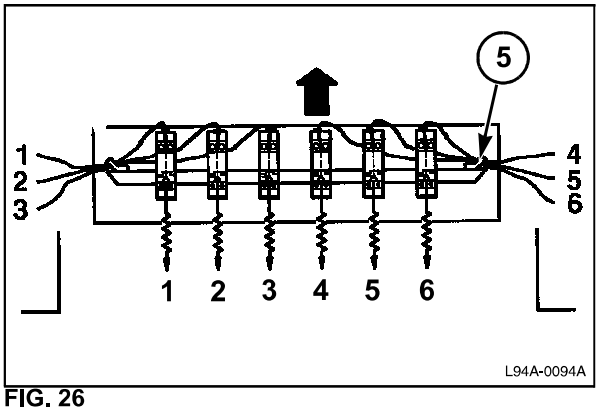

FIG. 26

FLYWHEEL BRAKE

The flywheel brake is used to prevent the flywheel from turning so the baler will not operate.

NOTE: Before doing any work on the baler, always apply the flywheel brake to prevent the baler from being started.

Because of the size and speed of the flywheel, the flywheel brake is used to stop the flywheel only after the shear bolt has been broken or any other time the baler must stop quickly.

FIGS. 2–3: Apply the flywheel brake by pulling the handle all the way down (1). Release the flywheel brake by pulling the handle all the way up (2).

Make sure the flywheel brake is properly adjusted before baling or doing any service work. See Adjustment section for information on adjusting the flywheel brake. When the PTO is engaged while the flywheel brake is applied, the baler must stall and the main drive clutch must slip.

Before operating the baler, always make sure the flywheel brake has been released before engaging the PTO.

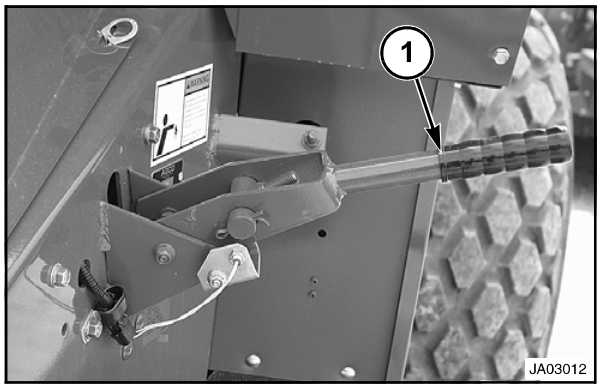

FIG. 2

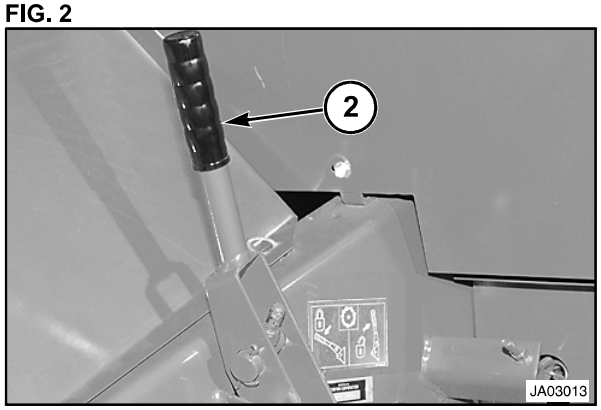

FIG. 3

NEEDLE LOCKOUT

The needle lockout is located on the left side of the baler near the ladder and metering wheel.

FIGS. 4–5: Lift up the needle lockout handle (1). Move the handle right to unlock the needles or left to lock the needles.

NOTE: Arrows on the decal (2) show the direction to lock or unlock.

WARNING: Always engage the needle lockout when working with or around the needles.

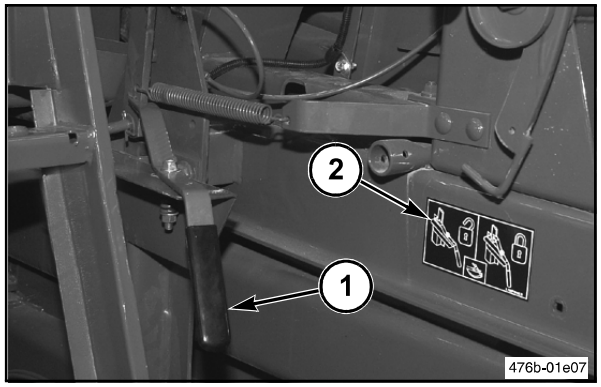

FIG. 4

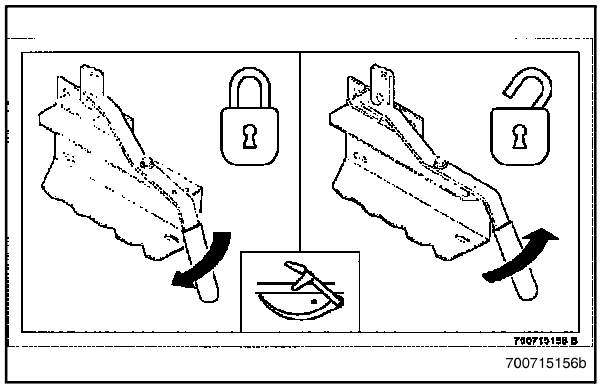

FIG. 5

Bale Density Cylinder Pressure

The pressure in the bale density cylinders will be displayed on the monitor. This reading can be used to help determine the crop condition and moisture content.

- The lower the pressure reading, the higher the crop moisture content.
- Pressure reading for stem moisture can be higher than for dew moisture for the same total crop moisture content.

The pressure is determined by the plunger load setting and the resistance of the crop. In some crop conditions, a lower load setting will be required to prevent repeated over pressure conditions.

The pressure limit is set at the factory and is not adjustable. When the pressure reaches the limit, an alarm will be shown on the monitor. The decrease pressure solenoid will energize for a set amount of time to decrease the pressure.

NOTE: If the bale in the bale chamber is poor quality (very soft or low density), a hydraulic system malfunction can be indicated.

Stuffer Brake

FIG. 20: The stuffer brake (1) holds the stuffer fingers in the home position when the stuffer clutch is disengaged. The stuffer brake must slip during each stuffer cycle. If adjusted too tight, the stuffer brake will become hot.

NOTE: If the stuffer brake becomes too hot, crop coming in contact with the stuffer brake can catch on fire.

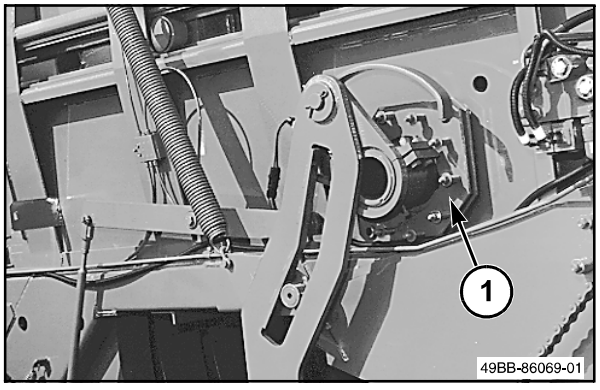

FIG. 20

ACLS (AUTOMATIC CENTRALIZED LUBRICATION SYSTEM)

FIG. 40: The electric lubrication pump is electrically operated to supply grease to the centralized lubrication system. This pump consists of a pump housing, electric gear motor, and a plastic reservoir with stirring paddle. The high operating pressure permits the pump to supply lubricant up to NLGI 2 grease.

The lubrication pump supplies grease to the primary divider valve mounted on the left side of the baler frame. The primary divider valve supplies grease to the front and rear divider valves. The packer bearings receive grease from the primary divider valve to make sure the packer bearings receive proper lubrication. Some ports are plugged to permits the port directly below the plugged port to receive double the amount of grease. This is to make sure the bearings receive the proper amount of grease.

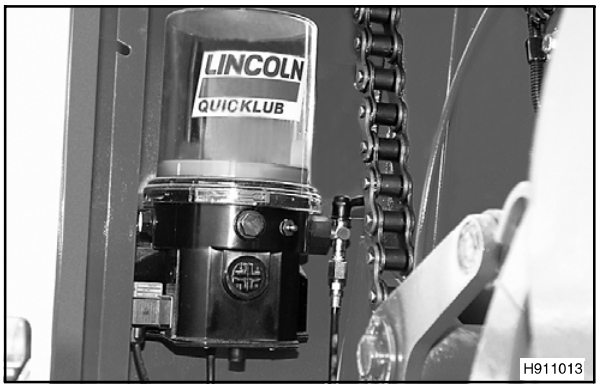

FIG. 40

FIG. 41: The divider valve uses automatic divider pistons to send grease equally to each lubrication line before supplying grease to the next lubrication line. The divider valve continues to cycle to each lubrication line when the grease is being applied. An indicator pin on the side of the divider valve moves in and out for each complete cycle of the divider valve. The indicator pin helps the operator determine if one of the lubrication lines is not receiving grease.

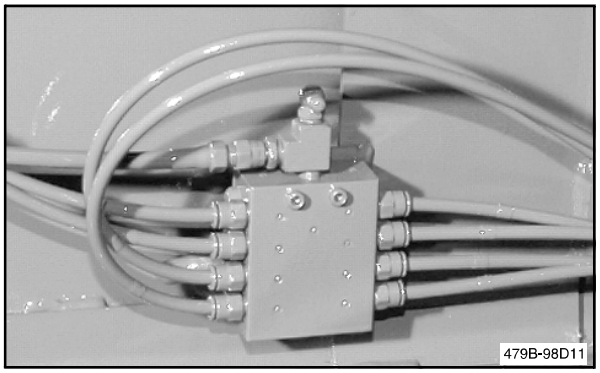

FIG. 41

FLYWHEEL BRAKE

FIG. 1: When the flywheel brake is applied, the flywheel must stop within several seconds. When the flywheel is properly adjusted and power is applied through the PTO, the main drive clutch (1) must slip without the flywheel rotating.

To check the flywheel adjustment, move the plunger away from the crop. Apply the flywheel brake by pulling the handle all the way down. Open the flywheel shield. With the tractor engine at about 1/2 throttle, engage the PTO for three seconds. The main drive clutch must slip and the flywheel MUST NOT rotate. If the flywheel rotates, adjust the flywheel brake and check the adjustment again.

Adjust the flywheel brake by loosening the inner lock nut on the eyebolt at the handle (2). Tighten the outer lock nut to get the correct adjustment. Then tighten the inner lock nut.

NOTE: The flywheel brake must always be adjusted to keep the flywheel from turning when the flywheel brake is applied. Periodically check the flywheel brake adjustment. If the adjustment is not correct, adjust the flywheel brake before using the baler. If the flywheel brake cannot be adjusted, do not use the baler until the problem has been corrected.

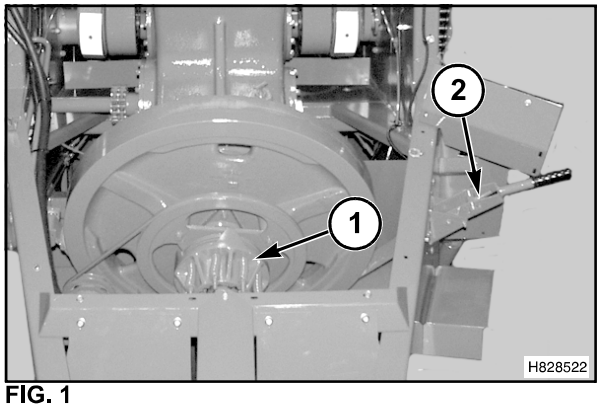

FIG. 1

SLIP CLUTCHES

Main Drive Slip Clutch

FIG. 2: When properly adjusted, the main drive slip clutch will slip slightly as the plunger goes over the extreme back position during a compaction stroke. The clutch springs must be adjusted to 73 mm (1). After one hour of continuous operation, the clutch housing (2) will be warm (not hot) to the touch. The clutch springs must be adjusted if the clutch housing is not warm. DO NOT completely compress the clutch springs.

The springs must be tightened if the clutch housing is hot. The spring must be loosened if the clutch housing is cold. A slight adjustment to the springs makes a major difference. Turn the nuts no more than 1/4 turn on each nut. Then operate the baler for several bales and check the clutch again. If the clutch is not warm, repeat the adjustment procedure.

NOTE: If the clutch springs were tightened, check the flywheel brake adjustment.

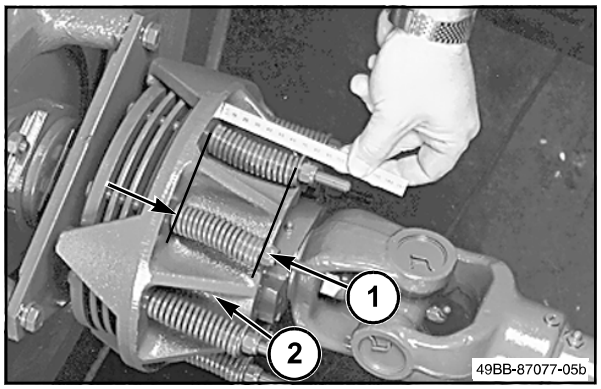

FIG. 2

BALER TIMING

The operation of the needles, knotters and stuffer drive are timed to the operation of the plunger. Timing of each of these drives has been set at the factory. Timing marks are found on the sprockets, drive arm, and mounting structure. The baler will not need to be timed unless the drive chain breaks or has been removed. If timing becomes necessary, follow these steps.

FIGS. 23–24: With the drive chain (1) removed, rotate the flywheel until the timing marks (2) on the stuffer/knotter drive sprocket (3) (under the shearbolt) are aligned with the timing marks on the structure (4).

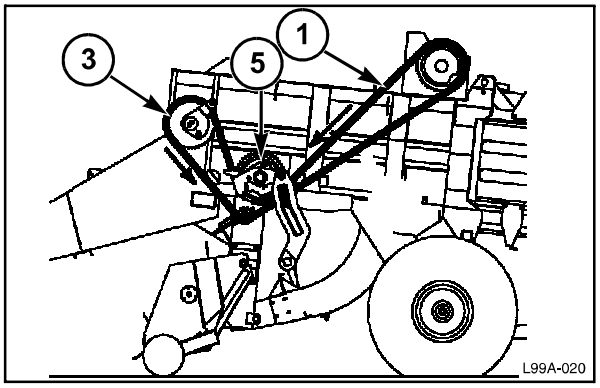

FIG. 23

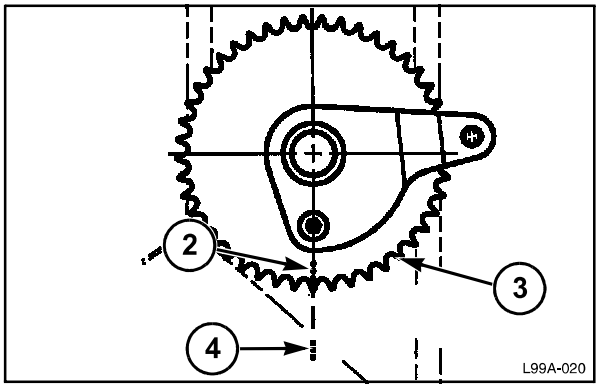

FIG. 24

FIG. 25: Rotate the stuffer drive sprocket (1) to align the marks on the sprocket (2) with the timing marks on the structure (3).

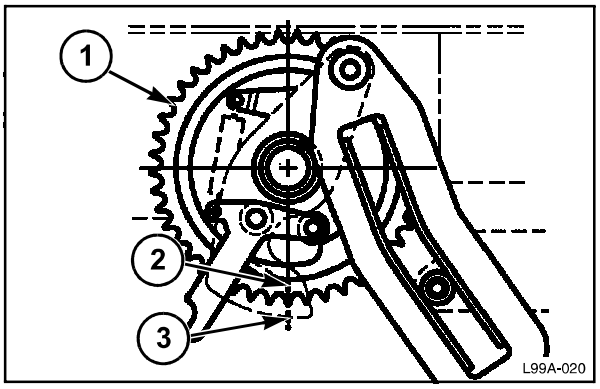

FIG. 25

SENSORS

FIG. 47: The PTO, shearbolt, packer slip, baler timing, feeder slip, and cutter inductive sensors are actuated by sprocket teeth. Align a sprocket tooth with the sensor (1). The gap between the sensor and sprocket tooth must be 0,50 to 0,75 mm. Adjust the sensor by loosening one nut on the sensor and tightening the other. Do not tighten the nuts to more than 7 Nm.

NOTE: Tightening the nuts too much will damage the threads on the sensor.

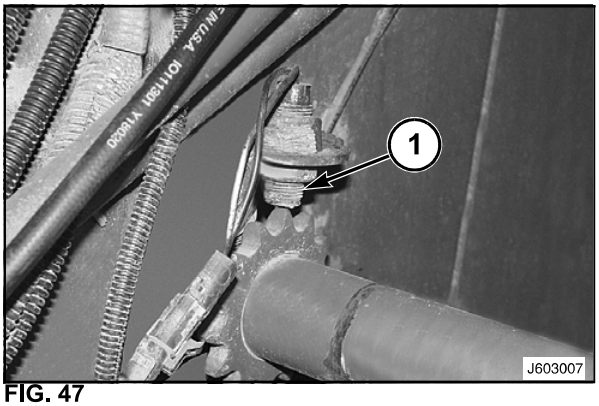

FIG. 47

FIG. 48: If adjusting the stuffer shearbolt sensor, rotate the stuffer/knotter drive sprocket and visually check the gap between the inductive sensor and each of the teeth on the stuffer/knotter drive sprocket. All of the teeth must have some gap, but no more than 1 mm gap.

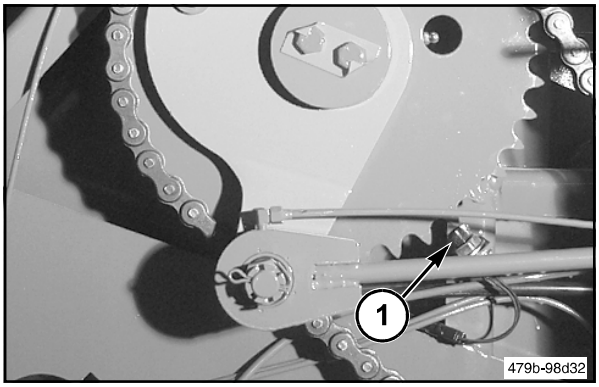

FIG. 48

FIG. 49: The stuffer cycle sensor (1) is actuated by a cam tab on the stuffer crank cam (2). Rotate the stuffer crank cam to align the cam tab (3) with the sensor. The clearance must be 0,25 to 0,50 mm (4). Adjust the sensor by loosening one nut on the inductive sensor and tightening the other. Do not tighten the nuts to more than 7 Nm.

NOTE: Tightening the nuts too much will damage the threads on the sensor.

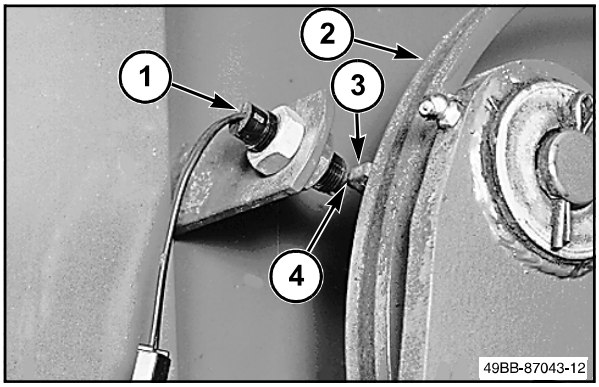

FIG. 49

KNOTTER & KNOTTER CLUTCH ADJUSTMENTS

See Lubrication & Maintenance section.

GEARBOX - MAIN

To check or change the main gearbox oil, the baler tongue must be at the correct ISO drawbar height. See the Preparations section for drawbar height.

Check Oil

FIG. 3: Oil level must be to the full level shown on the dipstick (1). Check with the baler parked on a level surface. Add oil as needed. See the Specification section for the correct type and quantity of lubricant.

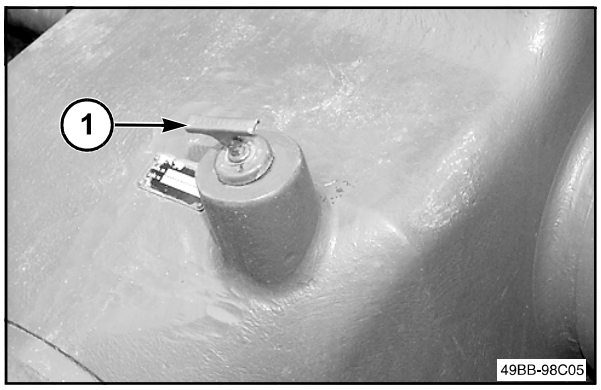

FIG. 3

Change Oil

Remove the drain plug at the bottom of the gearbox. Clean the threads on the drain plug and gearbox. Apply thread sealant to the drain plug and install.

FIG. 4: Remove the level check plug and gearbox breather (1).

Add lubricant through the gearbox breather opening. Fill to the level of the opening of the level check plug. See Specifications for the correct lubricant. DO NOT use a different lubricant than specified.

Inspect the o-ring on the level check plug and replace as necessary. Install the level check plug and gearbox breather.

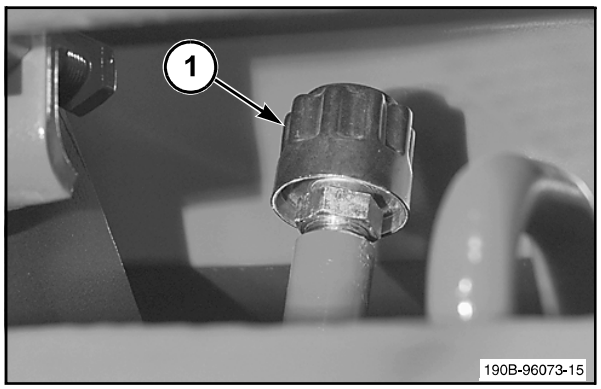

FIG. 4

GREASE FITTINGS

The best time to lubricate the baler is at the end of a baling day when the baler is still warm. A lighter weight of lubricant can be used in cool temperatures for the CLS. See Specifications for the correct lubricant.

Do not let excessive grease get on or around parts, especially in sandy soil. Be sure to clean the grease fitting completely before using the grease gun. Make sure each lubrication point is receiving lubrication. Check for loose, missing, and worn parts when lubricating the baler. Check for broken lubrication lines.

Some operating conditions, such as extremely dry, sandy, or light hay conditions, will require more frequent lubrication.

Brakes

FIG. 28: Cam rod (1), (50 000 km /10 weeks).

Cam bracket (2), (25 000 km/4 weeks).

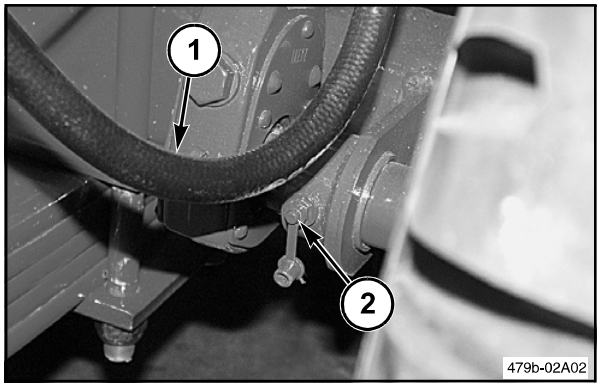

FIG. 28

TIRES AND WHEELS

Tires

FIG. 29: During the baling season, check the tire pressure in the baler tires and gauge wheel tires at least once a week. Always check the tire pressure during the coolest part of the day. Because of the size and weight on the baler, it is important that tire pressure be kept as specified. Refer to the Specifications section for correct tire pressures.

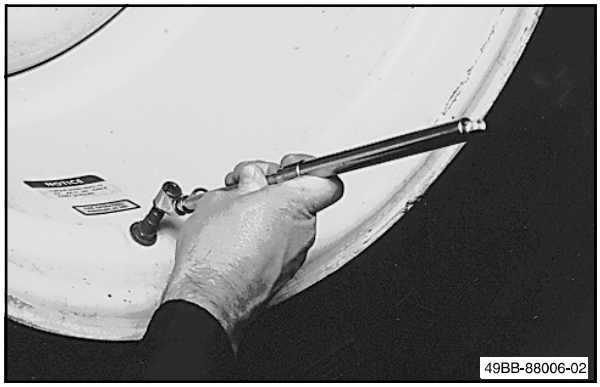

FIG. 29

Wheel Hardware

FIG. 30: Tighten wheel nuts:

- After 1 hour of operation on a new machine or after wheel replacement.
- Every 10 hours for the next 50 hours.
- Every 50 hours from then on.

When installing a wheel, inspect the wheel for any damage, clean the lug bolt threads with a steel brush and oil very lightly to retard corrosion. See the Specification section for the correct torque.

Torque sequence is as important as wheel torque. Use the alternating torque sequence shown when tightening the wheel hardware.

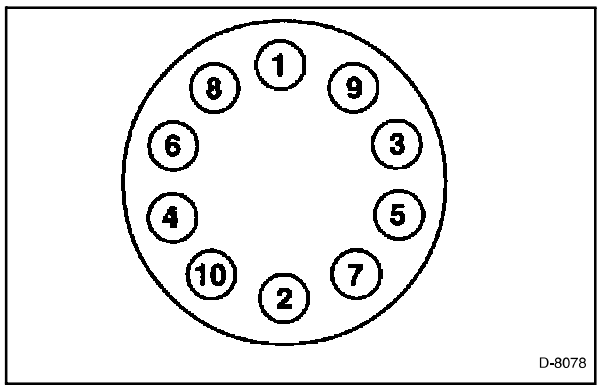

FIG. 30

AXLES

Axle Inspection

Remove the wheel drums every 20 000 to 25 000 bales. Clean the axle shaft surface to check for cracks. If any cracks are found, replace the axle with hardened factory replacement parts.

FIG. 40: Adjust the twine guides (1) so the twine goes through the center of the tensioner rolls. Remove the snap ring (2) and put the guide in either the right-hand or the left-hand hole. The side of the guide the twine is following around must be to the center of the bracket (3). Install snap ring.

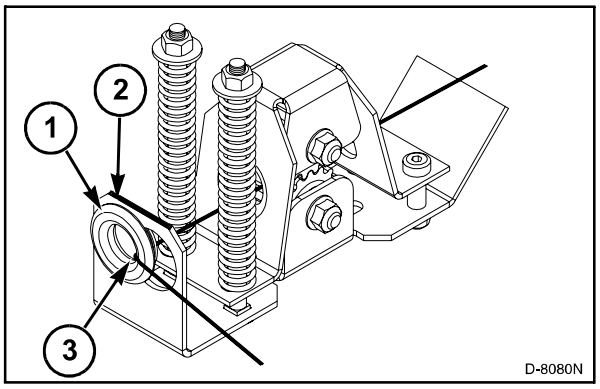

FIG. 40

FIG. 41: The lower twines pass between tension clips (1) when leaving the twine box. Use the adjusting nut on the mounting bolt (2) to adjust the spring for a very slight tension to prevent free fall of the twine. Too much tension can cause excessive wear and cause knotter malfunction.

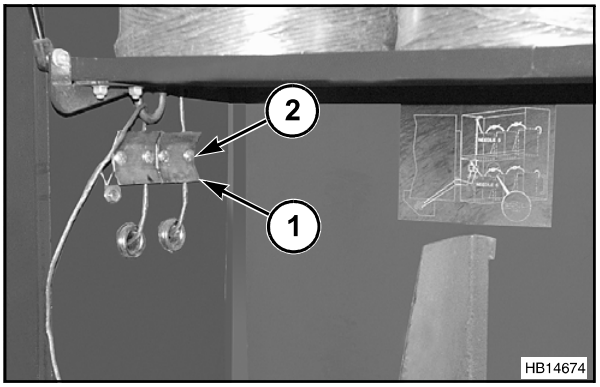

FIG. 41

Needle Penetration Adjustment

FIG. 56: Rotate the flywheel until the needles are at the top of the stroke. Measure the gap between the bottom of the needle guide plate (1) on the saw tooth hay dogs and the top of the needle mounting plates (2). The gap must be 8 to 14 mm (3). If the gap is not correct, adjust the bottom clevis on both needle adjusting rods. Check the gap again.

Make sure the needles are at the top of the stroke. Measure the distance from the back of the twine disc (4) to the center of the lower roller (5) on the needles. The minimum measurement must be 120 mm (6) on all needles.

If the distance is not correct on only one needle, change the position of the needle using the adjustment bolts. Raise the needle by loosening the top adjustment bolts (7) and tightening the bottom adjustment bolts (8). Lower the needle by loosening the bottom adjustment bolts and tightening the top adjustment bolts. Tighten the nuts and jam nuts on the adjustment bolts. If the alignment cannot be made, make sure the needle is not bent or damaged. Lay a straight edge across several of the needles and compare the curves.

If the distance is not correct on all of the needles, adjust the position of the needle carriage by adjusting the bottom clevis (9) on both of the needle actuating rods (10). Check the gap between the bottom of the saw tooth hay dog (11) and the top of the needle mounting plates again.

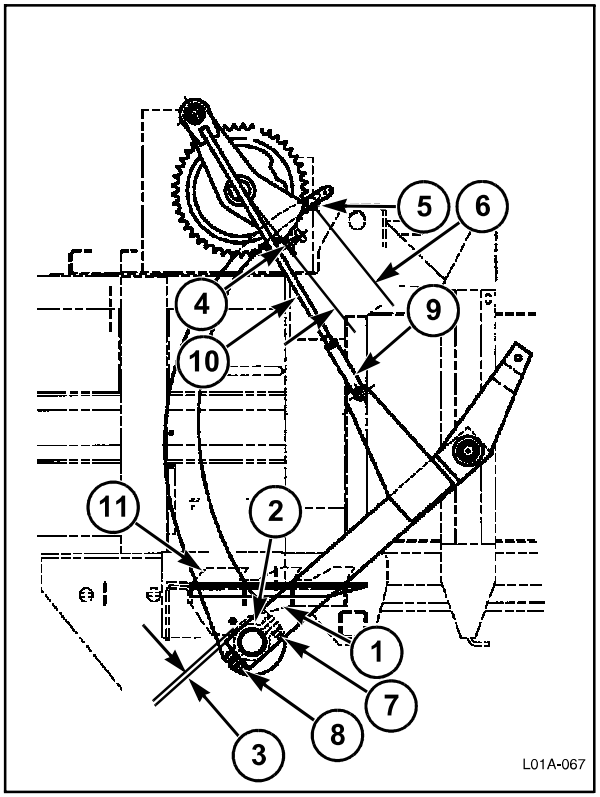

FIG. 56

KNOTTER BLOWER

Checking and Adding Hydraulic Oil

FIG. 71: The level of the hydraulic oil must be in the correct range specified on the dipstick (1). Add oil as necessary through the filler opening of the dipstick. DO NOT fill the hydraulic reservoir above the top mark on the dipstick. See Specifications for the correct type of lubricant.

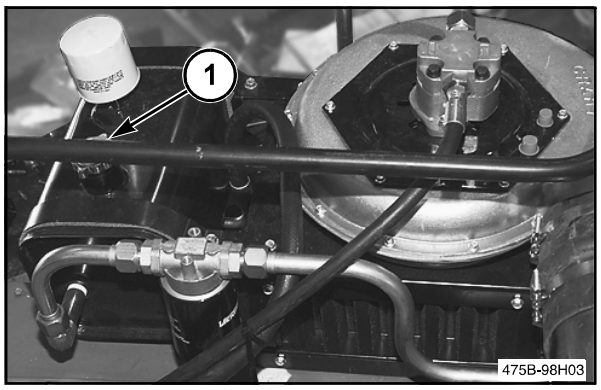

FIG. 71

Changing Hydraulic Oil

FIG. 72: Remove the dipstick from the filler opening.

Disconnect the hydraulic hose from the fitting (1) at the bottom of the reservoir.

When the oil is completely drained, connect the hydraulic hose.

Add oil through the filler opening. See Specifications for the correct type and quantity of lubricant. DO NOT fill the hydraulic reservoir above the top mark on the dipstick.

Install the dipstick.

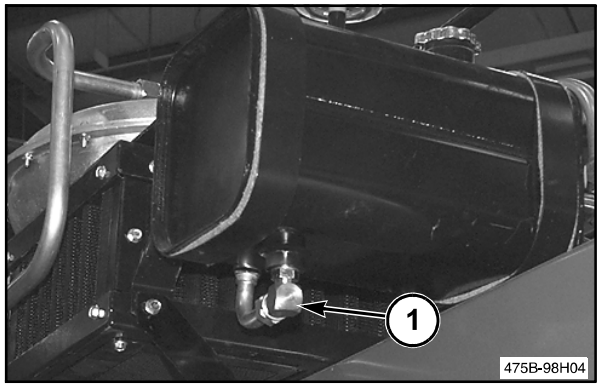

FIG. 72

FIG. 73: Replace the oil filter (1).

Start the tractor and operate the baler for 30 seconds.

Shut off the tractor.

Check the oil level in the hydraulic reservoir. Add oil as necessary.

Check the knotter blower system for leaks.

Changing Breather Air Filter

Remove and discard the breather air filter (2). Install a new breather air filter on the hydraulic reservoir.

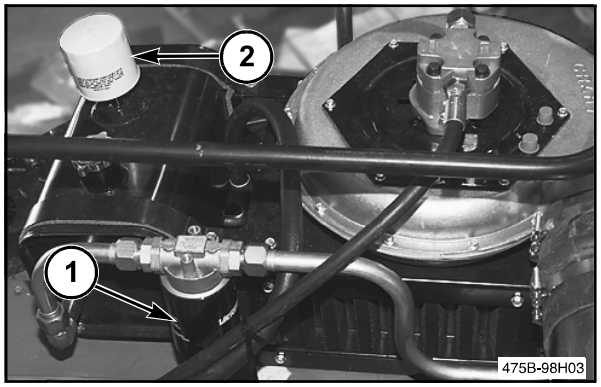

FIG. 73

PLUNGER - MAIN ROLLER AND BEARING

FIG. 92: The front plunger rollers (1) and rear plunger rollers (2) can be removed from the plunger (3) from the side of the baler. Remove only one roller at a time, except when removing the plunger.

Loosen the 1/2-13 x 1-1/4 bolts (4) and the pusher bolt (5) that holds the plunger roller shaft retainer (6) in position.

Remove the shaft retainer and hardware.

With a prybar, carefully pry between the plunger and back side of the roller. Be careful to not damage the seal on the back side of the roller. On the front roller, use a jack to remove the roller shaft from the adjustable eccentric.

With the roller removed from the plunger, use a punch to straighten out the staking in the stake nut flange. Remove the stake nut (7) and bearing (8).

NOTE: The clearances in this bearing assembly are determined by the manufacturer. DO NOT use parts from other bearing assemblies. Replace the bearing as a complete assembly, including the center ID spacer and center OD retaining ring.

Pack the bearing cones by machine or by hand. Force heavy duty wheel bearing grease between the rollers, cone, and cage. Lubricate the seals with oil.

After replacing the complete bearing assembly, install the washer and nut. Tighten the nut to 203 to 237 Nm. Stake the flange into the groove to lock in position. Refer to Stake Nut Installation.

Apply 1 drop of 290 Loctite to the threads of the roller in two locations 180 degrees apart.

Rotate the slot in the roller shaft for alignment with the shaft retainer. Install the roller into the plunger.

Install the shaft retainer and hardware. Lightly tighten the hardware.

Tighten the pusher plate or the pusher bolt to push the shaft retainer into the slot in the roller shaft. Tighten the jam nut.

Tighten the cap screws in the shaft retainer.

NOTE: Periodically inspect the plunger roller to make sure the plunger roller shaft is held tight by the shaft retainer. Damage to the plunger can result if the plunger roller shaft is loose.

See Plunger in the Adjustment section and check the adjustment.

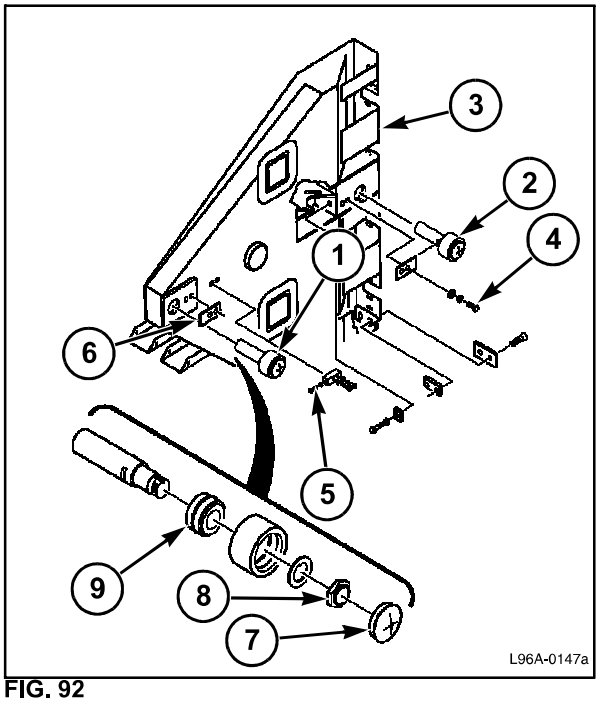

FIG. 92

Lighting System

Most problems with the lighting system are caused by loose or dirty connections and broken wires. Visually check for these conditions before doing any other checks. Make sure the connections are good at the tractor and the lamp.

Connect the baler lamp wiring harness to the tractor. Make sure the tractor lighting system is working correctly before testing the baler lighting system.

Turn off the tractor lamps. Remove the lens from the lamp to be tested on the baler. Remove the bulb from the socket, and inspect the bulb and socket for corrosion. Clean as necessary. Visually inspect the bulb for damage, and replace if needed. Check the lamp operation again.

The most common problem with lamps is a bad ground connection. To check the ground connection, adjust the multimeter to indicate ohms. Connect one lead of the multimeter to the wall of the bulb socket. Connect the other lead to a good ground connection on the baler mainframe. Polarity identification (+ and-) of the leads is not necessary. The multimeter must indicate little or no resistance. If the indication is more than 1 ohm, there is a bad ground connection. Repair the connection. If the indication is correct, continue on.

Turn on the baler lamps. Adjust the multimeter to indicate volts DC. Connect the positive (+) lead of the multimeter to the center terminal in the socket. Connect the negative (-) lead to the wall of the socket. The indication must be approximately 12 volts.

NOTE: If you are checking a turn signal lamp, the multimeter will show a repeating pattern between 12 volts and zero volts.

If the voltage indication is correct, the problem is in the bulb. Replace the bulb.

If the indication is not correct, check the wire between the socket and the connector at the front of the baler. Check the wire for continuity and for a short to ground. If the wire is good, the problem is in the tractor electrical system. For more information, see the tractor service manual and check the voltage at the auxiliary lighting connector on the tractor.

Electrical Service Parts

Included with this baler from the factory is a box with replacement parts for proper operation of the baler electrical system. Keep this box and the contents with the baler at all times. Replace parts when used.

Open Center System

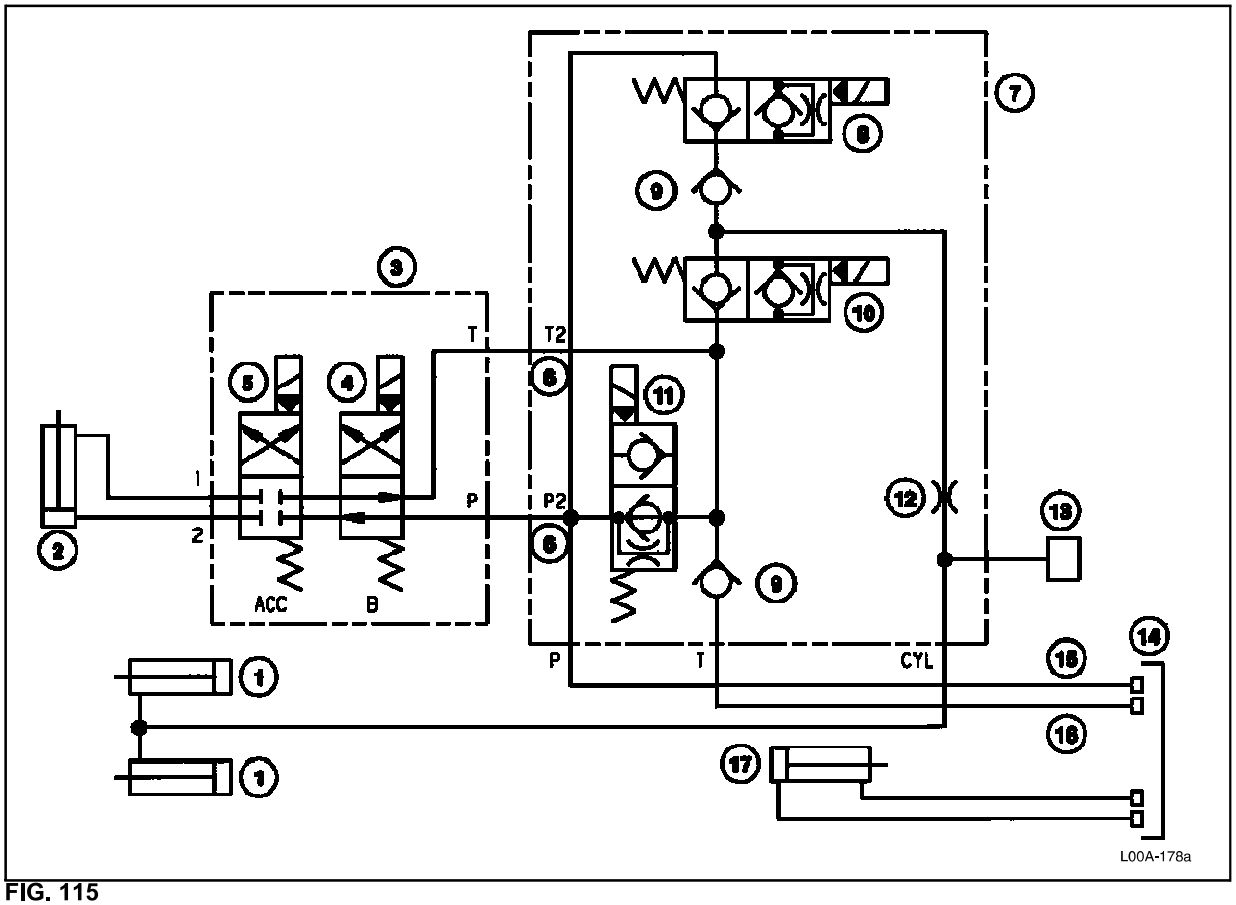

FIG. 115

FIG. 115: Open Center System

(1) Bale density cylinder, two
(2) Bale shift cylinder
(3) Auxiliary control valve
(4) Left bale shift solenoid valve
(5) Right bale shift solenoid valve
(6) Ports plugged when auxiliary valve not used
(7) Baler control valve
(8) Pressure increase solenoid valve
(9) Check valve
(10) Pressure decrease solenoid valve
(11) Open center solenoid valve
(12) Orifice
(13) Pressure transducer
(14) Tractor remote valves
(15) Pressure line
(16) Return line
(17) Pickup lift cylinder

Connector A Pin Number	Wire Gauge	Wire Color	Function	End Connector (Connector-Pin)
A1	18	Red	+12 VDC - Solenoid at ACC port	L-1
A2	18	Black	Ground-Baler Lube	G-2, G-3
A3	18	Black	Ground-Knotter Lube	E-2, E-3
B1	18	White	Open Center Solenoid Signal	R-2
B2	18	Red	+12 VDC – Increase, Decrease and Open Center Solenoids	R-1, S-1, T-1
B3	18	Red	+12 VDC - Solenoid at B port	M-1
C1	18	Brown	+12 VDC-Knotter Lube Signal	E-1
C2	18	Dark Green	Decrease Solenoid Signal	S-2
C3	18	Yellow	Increase Solenoid Signal	T-2
D1	18	Lt Blue	+12 VDC – Baler Lube Signal	G-1
D2			Not Used	
D3	18	Gray	Solenoid at ACC Port Signal	L-2
E1			Not Used	
E2			Not Used	
E3	18	Orange	Solenoid at B Port Signal	M-2
F1	18	Brown/White	Bale Weight Ground	B-2
F2	18	Red/White	Bottom Slacker Arm Signal	D-B
F3	18	Dk Blue/White	Needles Home Signal	P-B
G1	18	Gray	=12 VDC - Baler Weight Power	B-1
G2			Not Used	
G3			Not Used	
H1	18	Black	Ground-Switches: Flywheel Brake, Top Slacker Arm, Bottom Slacker Arm, Needles Home, Parking Brake	F-A, C-A, D-A, P-A, J-A
H2	18	Pink/Black	Parking Brake Signal	J-B
H3	18	Orange/Black	Flywheel Brake Signal	F-B
J1			Not Used	
J2	18	Gray/Black	Top Slacker Arm Signal	C-B
J3			Not Used	
K1	18	Yellow/Black	Bale Weight Data TXD	B-5
K2	18	Dk Grn/White	Bale Weight Data RXD	B-6
K3	18	White/Lt Grn	Bale Weight Data Ground	B-4

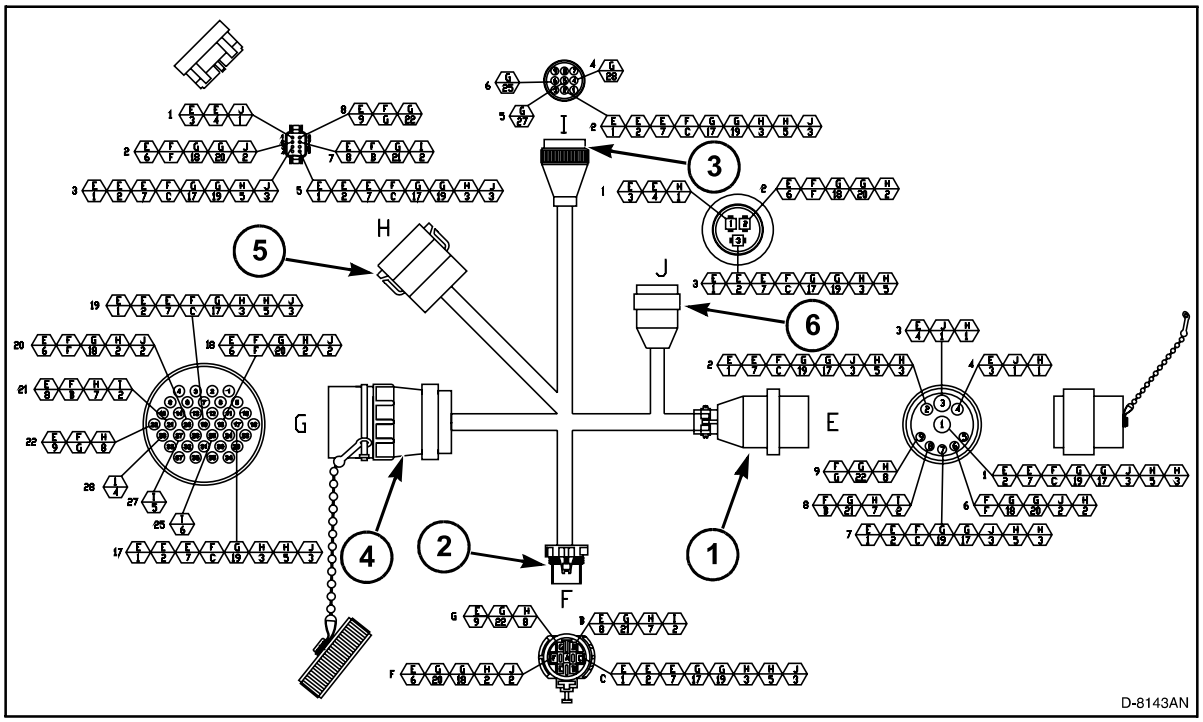

FIG. 130

FIG. 130: Tractor wiring harness diagram.

(1) Tractor plug for monitor to Baler (E)

(2) CAN terminator (F)

(3) RS 232 port (not used) (I)

(4) To Fieldstar (G)

(5) To Vario terminal (H)

(6) To Tractor power port (J)

Connector E Pin Number	Wire Gauge	Wire Color	Function	End Connector (Connector Pin)
1	10	Black	Ground	E-2, E-7, F-C, G-19, G-17, J-3, H-5, H-3, I-2
2	12	Black	Ground	E-1, E-7, F-C, G-19, G-17, J-3, H-5, H-3, I-2
3	10	Red	60 AMP Power	E-4, J-1, H-1
4	12	Red	ECU Power	E-3, J-1, H-1
5			Not Used	
6	16	Blue	CAN Enabled, switched	F-F, G-20, G-18, J-2, H-2, I-1
7	16	Black	CAN Ground	E-1, E-2, F-C, G-19, G-17, J-3, H-5, H-3, I-2
8	16	Yellow	CAN High	F-B, G-21, H-7
9	16	Green	CAN Low	F-G, G-22, H-8

FEED SYSTEM (CONT'D)

Problem	Possible Cause	Correction
Feeder clutch slip alarm displayed	Feeder system plugged	Remove the crop.
	Feeding crop too fast	Reduce the ground speed by shifting the tractor down one or two gears.
	Not feeding crop equally to both sides of bale chamber	Correct the driving pattern to feed the crop properly.
	Broken drive chain or drive part	Replace the broken parts.
	Pickup hitting ground excessively	Raise the pickup and adjust the pickup height control.
	Open circuit caused by faulty connection or broken wire	Repair and replace the broken parts.
	Faulty feeder clutch slip sensor	Test feeder clutch slip sensor. Replace if necessary.
	Feeder clutch slip sensor not adjusted correctly	Adjust the feeder clutch slip sensor.
	Dirt built up on end of the sensor	Clean sensor.
	Drive pins stuck in overrunning clutch	Disassemble and repair overrunning clutch.

Tying Problems (cont'd)

Problem	Possible Cause	Correction
Short ends (tails) of knot frequently pull apart (normally second knot)	Twine holder spring set too tight	Decrease the tension on the twine holder springs.
	Twine tension not correct	Check the twine tension at both the top and bottom twine tensioners. Increasing the twine tension will normally increase the length of the short ends (tails) of knots.
	Not enough tension on billhook cam	Adjust the billhook cam.
Twine discs do not stay in time	Groove pin sheared in worm drive gear	Replace the groove pin.
	Worm gear slips on worm shaft	Tighten the nut on the worm shaft.
		Remove the shims to let the worm gear set on the tapered area of the worm shaft. Measure the end play for the worm gear shaft and adjust as necessary.
		Check for cracks in the worm gear and replace if cracks are present.
	Worn or broken worm gear or worm drive gear	Replace the worm gear or the worm drive gear.
Failure to apply enough tension on twine with twine tensioner	Adjustment bolt threads worn	Replace the adjustment bolt.
	Groove worn in tension gears	Replace the tensioner or remove the tensioner assembly and install from the opposite side of the baler.
	No travel left in springs	Replace the bad parts. Straighten the gear mounting bracket or shorten the rear spacers.

HYDRAULICS (CONT'D)

Problem	Possible Cause	Correction
Overload alarm	Large change in crop conditions (dry to wet, straw to hay, etc.)	Reduce the ground speed until the load control catches up. Check the crop conditions.
	Crop too wet	Wait for the crop to dry.
	Hydraulic system malfunction	Check that the tractor hydraulic remote connections are correctly connected.
	Monitor in manual pressure control mode	Put the monitor in automatic mode. Operate the baler to find if the problem has been corrected.
	Faulty pressure decrease solenoid valve	Replace the pressure decrease solenoid valve.
	Stuffer not working correctly	Adjust the stuffer sensor door and stuffer clutch linkage.
	Bale chamber tension doors not functioning correctly	Inspect the tension cylinder, bellcrank, and bale tension door hinge. Replace broken or bent parts.
	Crop deposits in the bale chamber from crop baled too wet or other obstruction in the bale chamber	Wait for the crop to dry. Remove paint or other obstruction from the bale chamber.
Other possible hydraulic malfunction	Problem with tractor hydraulic system	See the tractor Operator's Manual or Service Manual. Make sure the tractor is being used according to specifications.
Load and pressure varies excessively	Tractor hydraulic flow set too high	Adjust tractor hydraulic flow control to 15 to 30 l/min for balers not equipped with an accumulator.
		Adjust tractor hydraulic flow control to 30 to 45 l/min for balers equipped with an accumulator.

BALE CHAMBER FEEDING SYSTEM

Packers ..... fork type with 6 hard surfaced tines
- drive - early production ..... RC80 roller chain
- drive - late production ..... RC100 roller chain
- drive protection ..... splined slip clutch

Charge chamber volume ..... 0,354 cubic meter

Windrow size compensation ..... automatic charge sensor engages stuffer clutch

Stuffer
- type ..... fork
- drive ..... RC100 roller chain
- drive protection ..... shearbolt

PLUNGER

Speed ..... 25,4 strokes/min

Length of stroke ..... 780 mm

Mounting ..... 4 tapered roller bearings (sealed), 2 ball bearing rollers (sealed)

BALE CHAMBER TENSION SYSTEM

Type ..... electronic controlled hydraulics

Valve ..... solenoid poppet type

System supply ..... tractor hydraulics
- standard ..... open center
- optional conversion ..... closed center

TYING MECHANISM

Knotters ..... (6) double knot type

Spacing ..... 172 mm

Type tie ..... twine only

Twine storage capacity ..... 24 balls

Type twine ..... high quality split film polypropylene or sisal, 1330 N minimum knot strength

ELECTRICAL

Work lamps ..... three halogen bulbs

Service lamps ..... three halogen bulbs

Rear lamps ..... two amber flashing and turn signal, two red tail lights

Power and control
- work and service lamps ..... tractor 12v by using in-cab power plug and switch in harness
- rear lamps ..... tractor 12v by using ISO 7-pin connector

FIG. 9: Install the rail support (1) to the lower rear rail and the metering wheel guard (2). The wiring harness clamp (3) goes under the 5/16-18 flange nut.

Tighten all the hardware for the handrails.

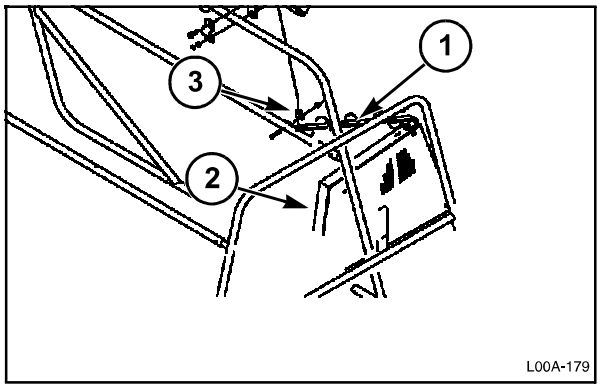

FIG. 9

FIG. 10: Install the two working lamps (1) on the top rear handrail. Install the lamps below the bar to prevent damage from low objects

Position the right-hand lamp behind knotter #5 and the left-hand lamp behind knotter #2. Use the existing lamp hardware plus one 3/8-16 x 1 flange head bolt and 3/8-16 flange nut on each clamp

Wrap the wire (2) around the handrails and rail support.

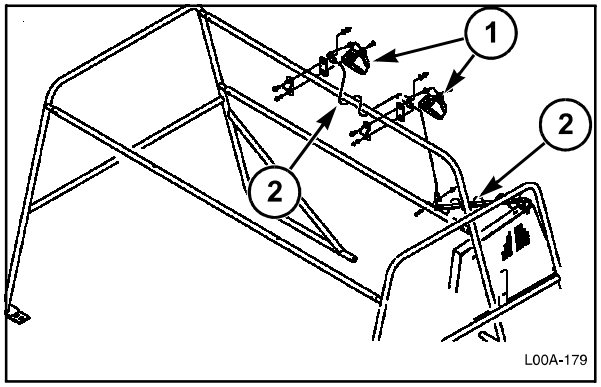

FIG. 10

ACCESSORIES AND OPTIONS

Contents