

## 4900 RECTANGULAR BALER

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# GENERAL MACHINE SPECIFICATIONS

**MODEL** ..... 4900 Large Rectangular Baler  
and Optional Bale Accumulator

## **WEIGHT** (*approx.*)

Baler, empty ..... 18 600 LB (8440 kg)  
Tongue, empty ..... 2900 LB (1315 kg)  
Bale chute ..... 250 LB (115 kg)  
Baler and accumulator, empty ... 21850 LB (9911 kg)

## **LENGTH**

Without bale chute ..... 284.5 IN (7230 mm)  
With bale chute ..... 350.5 IN (8900 mm)  
With accumulator ..... 409 IN (10 390 mm)

## **WIDTH** (*overall*)

Shipping, less tires ..... 103 IN (2615 mm)  
With 28L x 26 tires ..... 125.5 IN (3190 mm)  
With accumulator ..... 156 IN (3960 mm)

## **HEIGHT**

Top of knottter shielding ..... 124 IN (3150 mm)  
Top of hand railing ..... 145 IN (3680 mm)

## **BALE CHAMBER**

Width ..... 46.5 IN (1180 mm)  
Height ..... 50 IN (1270 mm)

## **BALE LENGTH**

Adjustable ..... up to 108 IN (2743 mm)

## **TIRE SIZE**

Baler ..... 28L x 26, 12 ply  
Pickup Gauge Wheel ..... 4.00 x 16 (2) pneumatic  
w/inner tube  
Accumulator ..... 9.5L x 14, 6 ply (4) w/inner tube

## **TIRE PRESSURE**

Baler  
28L x 26, 12 ply ..... 22 psi / 152 kPa  
23.1 X 26, 10 ply ..... 26 psi / 158 kPa  
Pickup Gauge Wheels ..... 40 psi / 276 kPa  
Accumulator ..... 32 psi (193 kPa)

## **WHEEL NUTS / BOLTS**

Baler  
size ..... 3/4-16 UNF-2B nuts with  
hardened washers (10)  
bolt circle diameter ..... 13.19 IN (335 mm)  
torque ..... 425 to 450 LB·FT  
(575 to 610 N·m)  
Accumulator  
size ..... 9/16-18 UNF-2A bolt  
torque ..... 120 LB·FT (165 N·m)

## **MAIN DRIVE**

Standard PTO speed ..... 1000 rpm (*r/rim*)  
PTO optional ..... ASAE type 2, 1-3/8 IN, 21 teeth  
PTO optional ..... ASAE type 3, 1-3/4 IN, 20 teeth  
Drive line category ..... ASAE 6  
Drive protection ..... overrunning and slip  
clutches, and shearbolt  
Flywheel brake ..... direct acting  
Flywheel bearings ..... taper roller (2)  
Flywheel diameter ..... 34.0 IN (864 mm)  
Flywheel weight ..... 460 LBS (209 kg)  
Gearbox  
type ..... enclosed triple reduction  
gears ..... spiral bevel (1st set)  
spur (2nd & 3rd set)  
Bearings ..... taper roller, and spherical  
Lubrication ..... oil bath  
Temperature switch setting ..... 160° to 175° F  
(71° to 80° C)

## **PICKUP ASSEMBLY**

Pickup outside width ..... 97.5 IN (2475 mm)  
Width tine to tine ..... 77.9 IN (1978 mm)  
Width inside ..... 83.6 IN (2125 mm)  
Overall width incl. tires ..... 110.5 IN (2810 mm)  
Number of bars ..... 5  
Number of tines ..... 120  
Tine spacing ..... 3.375 IN (86 mm)  
Tine bar bearings ..... sealed ball  
Drive ..... RC50 roller chain  
Protection ..... slip and overrunning clutches  
Height control ..... gauge wheels (2) and  
adjustable control arm  
Pickup lift (standard) ..... hydraulic cylinder

## **BALE CHAMBER FEEDING SYSTEM**

Packers ..... fork type with 6 hard surfaced tines  
crank ..... heavy duty  
drive ..... RC80 roller chain  
protection ..... splined slip clutch  
Charge chamber volume ..... 12.5 FT<sup>3</sup> (.354 m<sup>3</sup>)  
Windrow size compensation ..... automatic charge  
sensor engages stuffer clutch  
Stuffer ..... fork type with 6 tines  
drive ..... RC100 roller chain  
drive protection ..... shearbolt

## **PLUNGER**

Speed ..... 25.4 strokes/min  
Length of stroke ..... 30.7 IN (780 mm)  
Mounting ..... 4 tapered roller bearings  
(sealed); 2 ball bearing rollers (sealed)

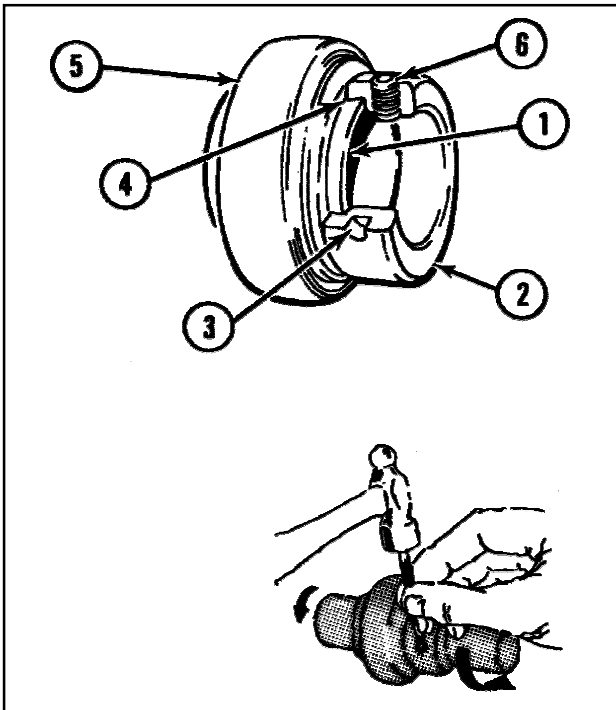
## General Service Procedures

See the safety warnings at the beginning of this section and follow the procedures.

## Bearing Replacement

Sealed ball bearings are used on several shafts and are held in position in the structure with bearing flanges. The bearings are held in position on the shaft by a locking collar. The locking collar has an eccentric counterbore. This counterbore engages the eccentric end of the bearing inner ring when the bearing is assembled. The locking collar is rotated on the bearing to lock the assembly on the shaft. The assembly grips the shaft tightly with a positive locking action that increases with use. A set screw in the locking collar applies additional locking pressure.

1. Loosen the set screw.



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**NOTE:** Always tighten the lock collars in the direction that the shaft is rotating.

1. Bearing Inner Ring
2. Locking Collar
3. Drift Pin Hole
4. Collar Cam
5. Bearing
6. Set Screw

2. Use a drift punch inserted in the drift pin hole to rotate and loosen the locking collar. Rotate the locking collar opposite the direction of normal shaft rotation.

3. Remove the locking collar.
4. Support the shaft.
5. Remove the bolts for the bearing flanges.

6. Slide the bearing and the bearing flanges from the shaft.

**NOTE:** Removing paint and corrosion from the shaft will make removal easier.

7. Put the bearing and the bearing flanges on the shaft. Make sure that the bearing inner ring is turned the correct direction.

8. Install the bolts for the bearing flanges. Make sure that the bearing is straight within the bearing flanges. Tighten the bolts evenly.

9. If a bearing is being installed on the other end of the shaft, repeat steps 7 and 8 for the other bearing.

10. Put the locking collar on the bearing inner ring.

11. Push the locking collar against the bearing inner ring and turn the locking collar in the direction of normal shaft rotation until tightly engaged. Tighten the locking collar by hitting with a drift punch inserted in the drift pin hole.

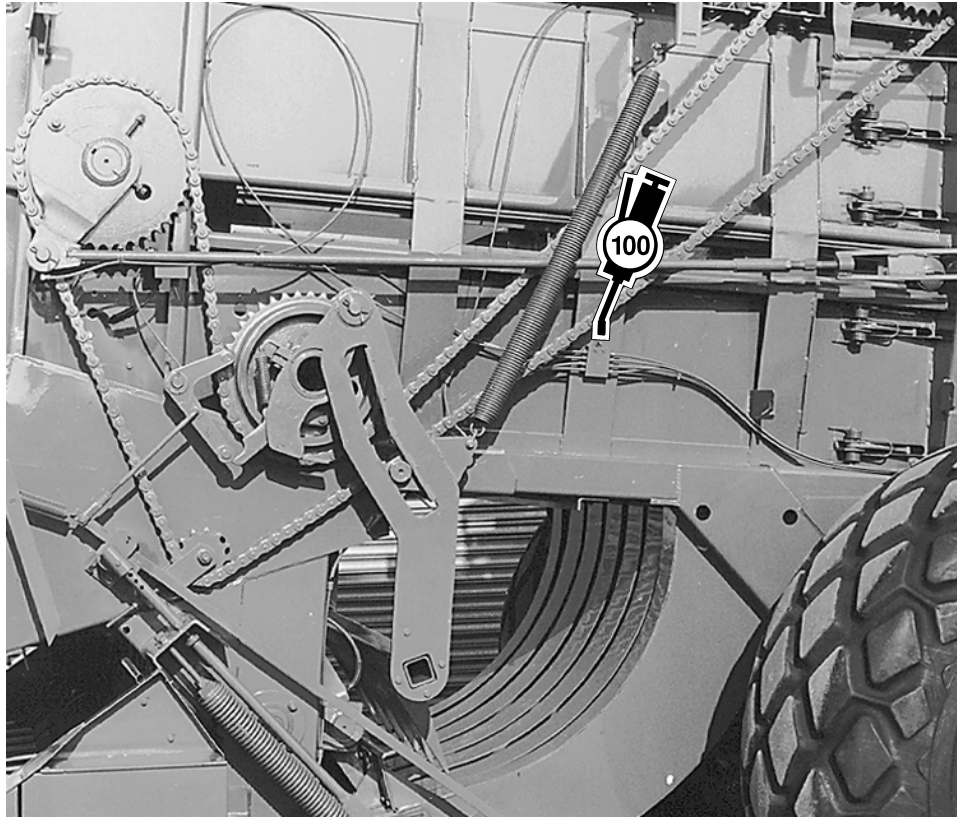
12. Tighten the set screw in the locking collar.

Set Screw Size	LB-INCHES	N·m
1/4-20	78	4.8
5/16-18	156	18
3/8-16	273	31
7/16-14	428	49

13. If a bearing is installed on the other end of the shaft, repeat steps 10 through 12 for the other bearing.

## 100 Bales (cont.)

### Balers With CLS (cont.)



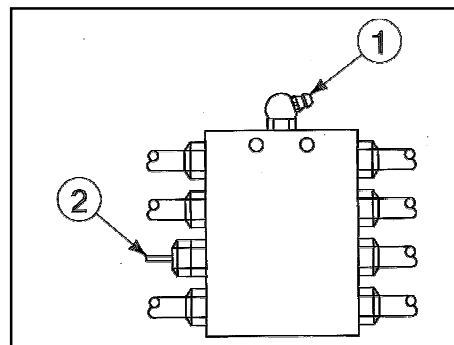
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#### LEFT HAND CLS VALVE

Pump the grease gun slowly eight to twelve times. The CLS valve lubricates the left-hand pivot for the pickup, the pickup flotation linkage, the bearing in the needle protection rod, the stuffer clutch trip linkage, the knotter trip linkage, the metering wheel shaft, the left-hand needle carriage pivot, and the top bearing in the left-hand needle actuating rod.

When the grease is pumped into the CLS valve, the indicator pin will move in and out, indicating the correct distribution of grease to each lubrication line. DO NOT use a power grease gun. If extra force is required to operate the grease gun or if the indicator pin will not move, see Section 9001.

Check the lubrication points every 1000 bales to make sure each lubrication point is receiving grease. See Section 9001 for the location of the lubrication points.

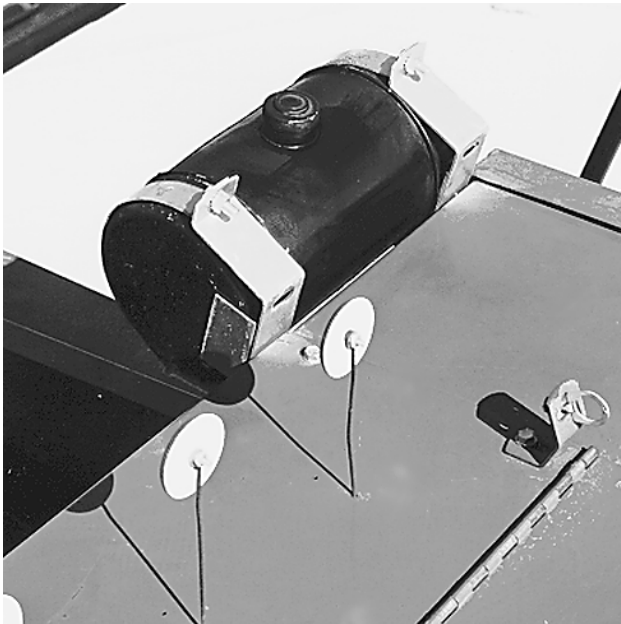


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1. Grease Fitting
2. Indicator Pin

## 2500 Bales (cont.)

### Balers with CLS



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### KNOTTER CLS OIL RESERVOIR

## 10 000 TO 15 000 Bales

### Baler Wheel Bearings

See Section 7003.

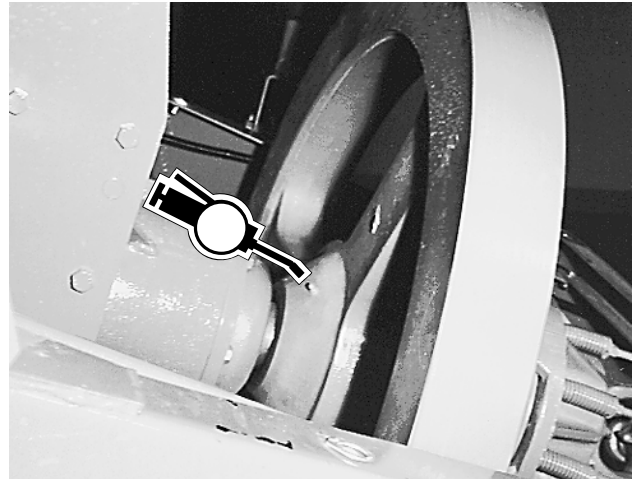
*NOTE: Baler axles must be magnafluxed at this time. See Section 7003.*

### Accumulator Wheel Bearings

See Section 9002.

## Each Season

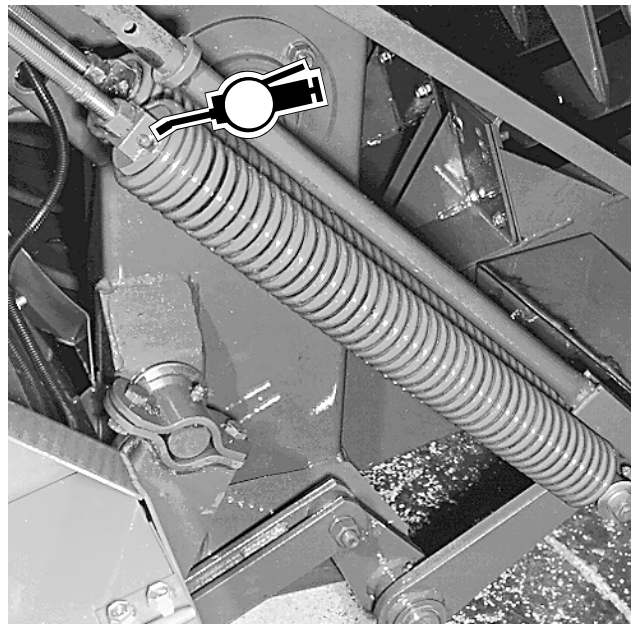
### All Balers



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### FLYWHEEL

*NOTE: Do not apply too much lubricant. The bearings are only used when the shear bolt breaks. Apply the lubricant slowly to prevent damage to the seals.*



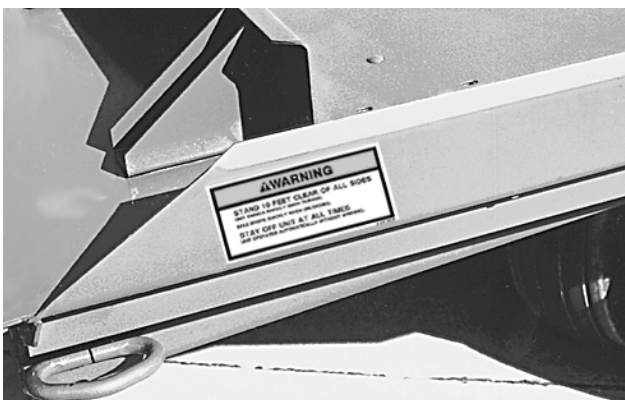
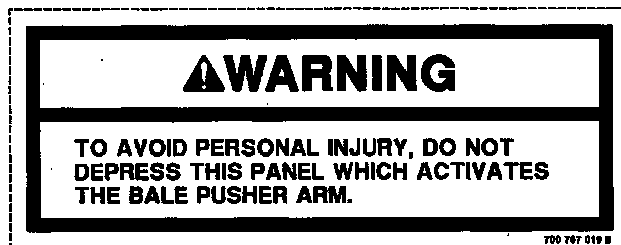
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### PICKUP



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10. ACCUMULATOR CENTER PANEL



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11. ACCUMULATOR DECAL (5 PLACES)

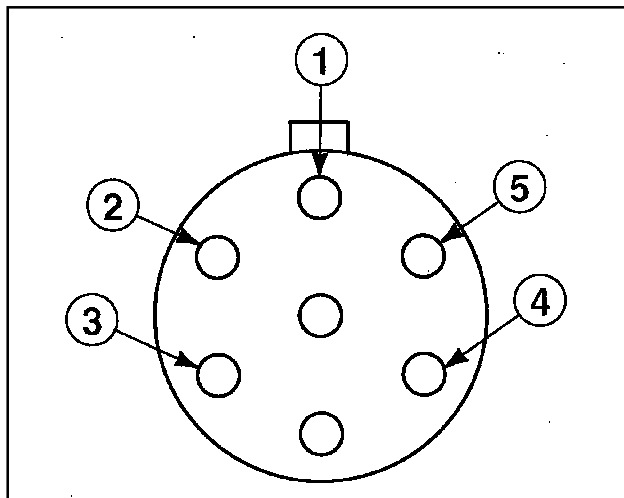


6. Remove the jack from the jack support post. Attach the jack to the storage post on the front side of the knottter ladder.

7. Connect the light wiring harness plug to the tractor ASAE 7-pin plug. Make sure the safety lights and the working lights operate properly from the tractor light controls.

*NOTE: The left turn signal must flash and right turn signal must be on continuously for a left turn indication. The right turn signal must flash and left turn signal must be on continuously for a right turn indication.*

*NOTE: For a connector to match European-designed tractors, see your dealer. Wire per tractor manual instructions.*



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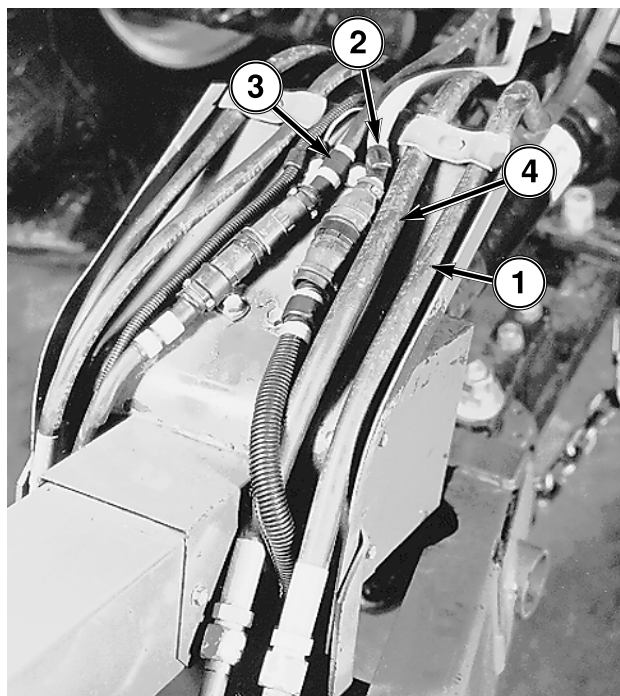
**LIGHT CONTROL PLUG VIEWED FROM THE CONNECTING SIDE**

- 1. Ground (white)
- 2. Working Lights (black)
- 3. Left Signal (yellow)
- 4. Right Signal (green)
- 5. Tail Light (brown)

8. Connect the hydraulic hoses for the pickup lift and baler control valve. Connect the pickup lift to a hydraulic circuit with a FLOAT position. See the decal on the left side of the tongue. The pressure line for the baler control valve is the outer (right-hand side) hose as shown in the photograph. On late production balers, the identification plates on the hoses show the direction of flow. Connect the pressure line to the correct outlet according to which way the hydraulic control lever is going to be locked for the ON position.

*NOTE: See Section 8001 and make sure the baler hydraulic system has been set up correctly for the tractor system being used.*

*NOTE: If the tractor has a low pressure or hydraulic motor return line, always attach the baler density control return hose to this return coupling.*

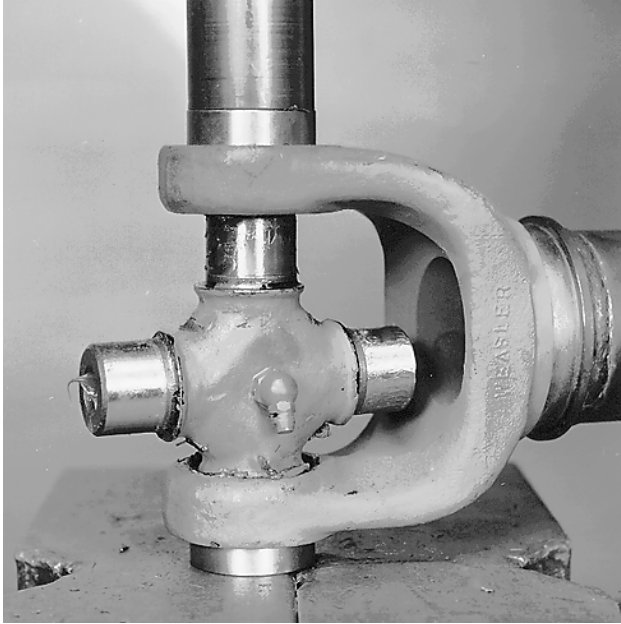


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- 1. Pressure Hose for Baler Control Valve
- 2. Main Control Cable Clamp
- 3. Bale Unload Control Cable Clamp (If equipped with an accumulator)
- 4. Return Hose for Baler Control Valve

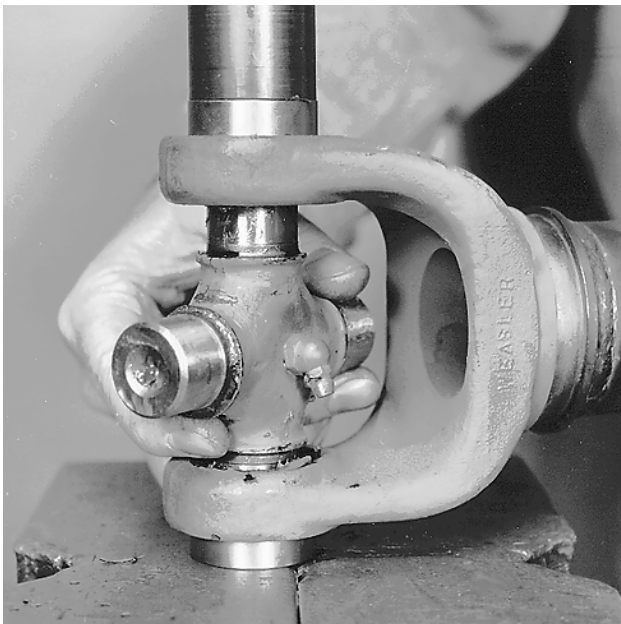
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19. Press the opposite bearing cap into the yoke approximately half the length of the bearing cap.



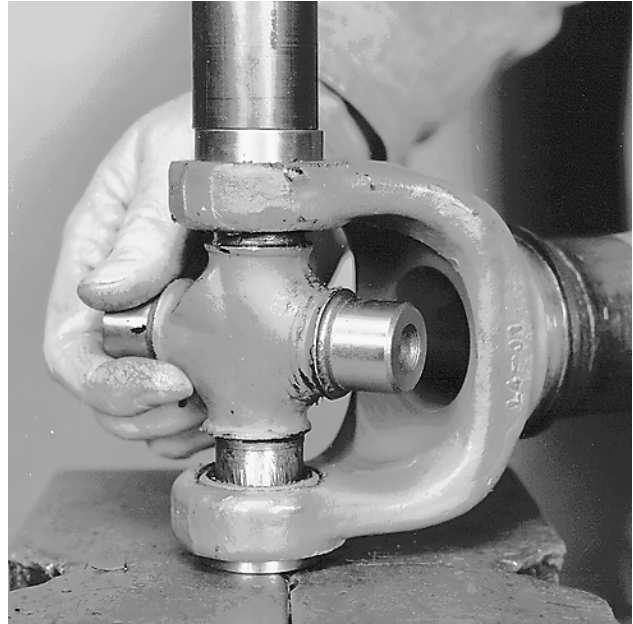
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20. Carefully raise the cross until the cross is centered in both bearing caps. Make sure all of the needle bearings remain in position in the bearing caps.



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21. Press the bearing caps into the yoke.



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22. Press a bearing cap into the yoke until the groove for the snap ring can be seen and install the snap ring. Make sure the snap ring is seated in the groove.



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## Troubleshooting

PROBLEM	POSSIBLE CAUSE	CORRECTION
Excessive slippage of main drive clutch	<p>Baler not operating at full speed</p> <p>Clutch adjustment not correct</p> <p>Excessive load setting and/or feed rate for crop condition</p> <p>Foreign object in hay</p>	<p>Operate baler at 1000 rpm (r/min) PTO speed minimum.</p> <p>Adjust main drive clutch.</p> <p>Reduce plunger load setting and/or ground speed.</p> <p>Remove foreign object.</p>
Excessive noise in baler IDL drive shaft	<p>Hitch points not properly located</p> <p>Angles at universal joints not equal</p> <p>IDL slip tube dry</p> <p>Bent shielding</p> <p>Universal joints worn</p> <p>Worn splines on shaft or universal joint</p>	<p>Adjust the hitch according to specification.</p> <p>Adjust support for carrier bearing to make universal joint angles equal. Check drawbar dimensions and implement drive line alignment. See Connecting The Tractor in this section.</p> <p>Lubricate IDL slip tube. See Lubrication in Section 1003.</p> <p>Straighten or replace bent unit.</p> <p>Replace joints.</p> <p>Replace worn parts. If the splines on the PTO shaft or in the yoke at the front of the IDL have excessive wear, a special bolt clamp yoke can be installed on the IDL. The bolt clamp yoke is available from your dealer.</p>

## Troubleshooting

PROBLEM	POSSIBLE CAUSE	CORRECTION
Excessive shearing of flywheel shearbolt	<p>Too few flakes per bale</p> <p>Flakes too large</p> <p>Load setting too high for crop conditions</p> <p>Electronic plunger load control not functioning properly</p> <p>Foreign object lodged between plunger and bale chamber</p> <p>Not using correct shear bolt</p> <p>Shearbolt nut loosening causing premature failure</p> <p>Main drive slip clutch setting too tight</p> <p>Paint or rust in bale chamber.</p> <p>Excessive clearance between plunger knives and ledger knife.</p> <p>Shearbolt bushing in flywheel not flush with contacting face</p> <p>Worn or broken shear system parts</p> <p>Knives crossing</p>	<p>Reduce ground speed.</p> <p>Check stuffer sensor door adjustment.</p> <p>Check stuffer sensor door adjustment.</p> <p>Reduce plunger load setting and/or ground speed.</p> <p>Make sure tractor hydraulic remote lever is engaged and held on.</p> <p>Make sure baler-to-tractor hydraulic connection is correct. See Tractor Connections in Section 2001.</p> <p>Do Manual Load Control Test in Section 4001 or 4010. See Baler Control Console Identification in either section and identify which baler control console is used on your baler.</p> <p>Remove foreign object.</p> <p>Use only genuine factory shearbolt and nut. Using other than Grade 5 bolt can cause poor performance or damage to baler.</p> <p>Tighten shearbolt nut to correct torque. Use genuine factory shearbolt and nut.</p> <p>Clutch must slip slightly with each plunger stroke. Adjust the clutch. See Main Drive Clutch in Section 2001.</p> <p>Remove paint or rust.</p> <p>Adjust plunger knives to proper clearance. See Plunger Knives, Side Face Angles, and Top Adjustable Plates Adjustments in Section 5003.</p> <p>Set shearbolt bushing tight and flush.</p> <p>Replace worn or broken parts.</p> <p>Knives not adjusted properly or crop buildup on rails when knife adjustment was made. Broken or missing plunger roller(s).</p>

## GEARBOX REMOVAL AND INSTALLATION

### Removal

See the safety warnings at the beginning of this section and follow the procedures.

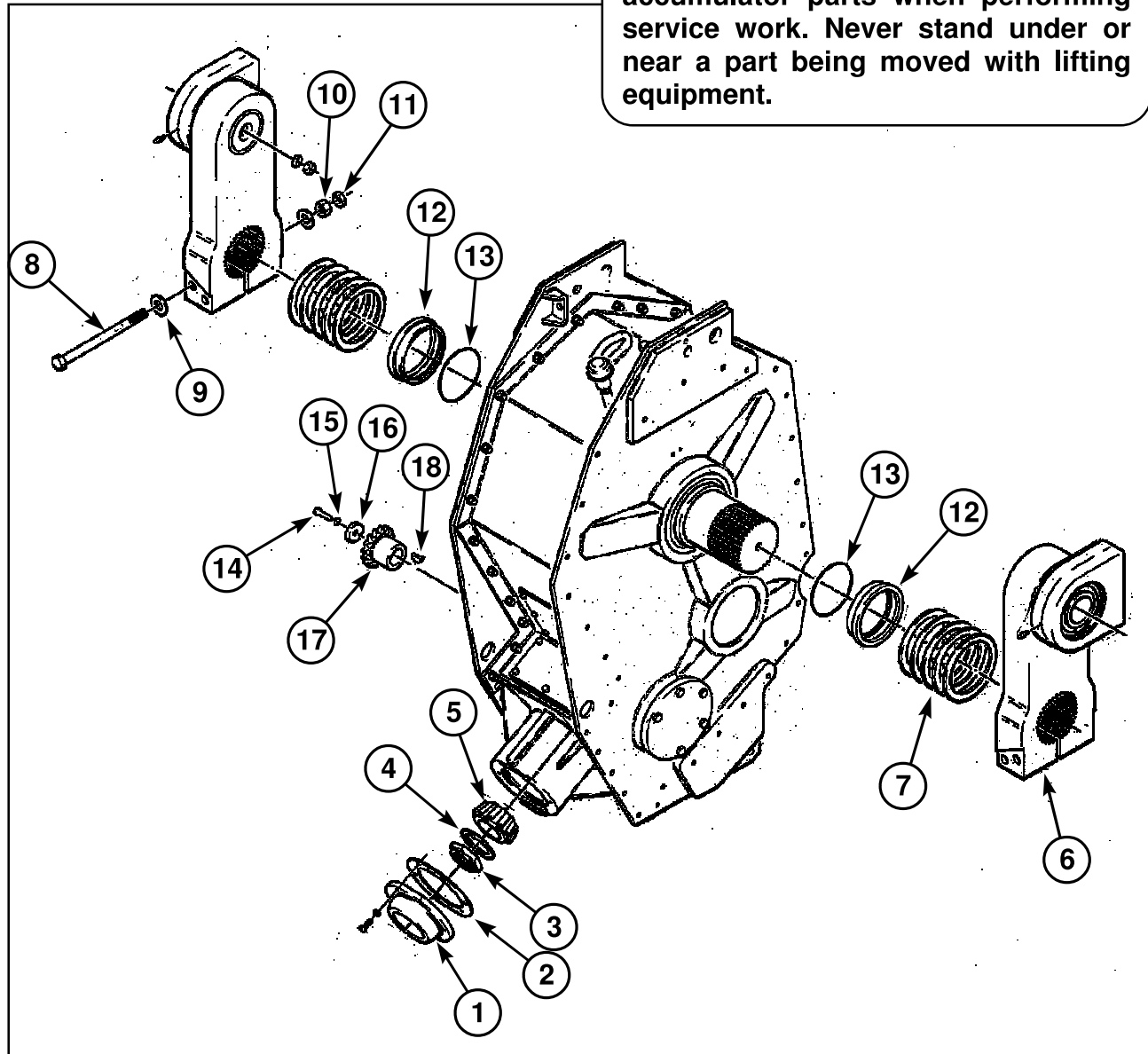
*NOTE: If the baler is not connected to a tractor, make sure all the hay has been removed from the bale chamber so the baler will not tip when the gearbox is removed. See Removing A Bale From The Bale Chamber in Section 1003.*

1. Disconnect the implement drive line from the tractor.
2. Remove the drive shaft shield and the flywheel cover.
3. Hold the carrier bearing at the bottom of the main drive shaft. Remove the bolts, lock washers, and nuts that fasten the carrier bearing to the bearing support. Lower the carrier bearing to remove the main drive shaft from the main drive clutch.
4. Connect lifting equipment to the main drive clutch. Remove the cap screws that fasten the main drive clutch to the flywheel and remove the main drive clutch.
5. To get access to the gearbox, remove the front shield from the baler. Remove the top shield from the top of the baler.
6. Manually rotate the flywheel until the plunger is as far to the rear as possible. Apply the flywheel brake.
7. Remove the master link from the roller chain on the sprocket on the right hand side of the gearbox. Remove the roller chain.
8. Remove the special nut, bolt, flat washers, and bushing that fasten the auxiliary drive arm to the left hand plunger crank.
9. Hold the connecting rods and remove the grade 8 cap screws and lock washers that fasten the connecting rods to the bearing housing on the crank arms. Lower the connecting rods. Remove the shims and use a piece of wire to fasten the shims to the connecting rods.
10. Connect lifting equipment to the gearbox lifting ring. The weight of the gearbox and flywheel is approximately 3000 LBS (1362 kg).

## Disassembly

### **WARNING**

Be aware of the size of the baler and accumulator parts when performing service work. Never stand under or near a part being moved with lifting equipment.



- 1. Front Cover
- 2. Gasket
- 3. Pinion Nut
- 4. Tab Washer
- 5. Outer Bearing Cone
- 6. Plunger Crank

- 7. Shims
- 8. Cap Screw, Grade 8
- 9. Flat Washer
- 10. Nut
- 11. Jam Nut
- 12. Outer Spacer

- 13. O-Ring
- 14. Cap Screw
- 15. Lock Washer
- 16. Special Washer
- 17. Sprocket
- 18. Woodruff Key

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32. Install the retaining ring for the output cap.

33. Apply sealant to the cap screws for the upper flange and the lower flange in the housing. Install the cap screws, and tighten the cap screws to 29 LB·FT (39 N·m).

34. Make sure the bearing cups for the ring gear assembly are installed in the housing and the cover plate.

35. Put the left-hand cap on the housing and install the cap screws. Do not install the shims at this time. Tighten the cap screws to 50 LB·FT (69 N·m).

36. Apply EP 90 oil to the bearings on the ring gear assembly. Use lifting equipment to install the ring gear assembly in the housing. There is an alignment mark (X) stamped on the end of one of the teeth on the pinion shaft and on the ends of two of the teeth on the ring gear. Align the tooth on the pinion shaft with the teeth on the ring gear. The tooth on the pinion shaft must be within one tooth of either of the teeth on the ring gear.

*NOTE: The marks must be in alignment when you adjust the backlash. When you rotate the pinion shaft, always return the pinion shaft to this position until after the backlash is adjusted.*

37. Put the upper flange and a new gasket on the cover plate and install a cap screw in one end of the upper flange. Do not tighten the cap screw. Move the upper flange away from the bore so the upper flange will not contact the bearing.

38. Put the scraper on the cover plate. Apply sealant to the threads of the cap screws, and install the cap screws.

39. Apply sealant to the sealing surface of the housing. Make sure there is sealant between each of the holes for the bolts and the inside edge of the housing.

40. Use lifting equipment to put the cover plate in position and start the cover plate onto the bearings. Use a hammer and a brass drift to keep the outer race of the spherical bearings straight in the bores.

41. Install the bolts, lock washers, and nuts that fasten the cover plate to the housing. Tighten the nuts to 67 LB·FT (91 N·m). Make sure the head of the bolts are toward the outside of the gearbox except at the three holes marked at disassembly.

42. Install the right-hand cap on the cover plate and install two of the cap screws. Do not install the seal or the shims at this time. Tighten the two cap screws to 25 LB·FT (34 N·m).

43. Turn the pinion shaft five turns clockwise.

44. Loosen the cap screws in the right-hand cap.

45. Turn the pinion shaft five turns counterclockwise.

46. Tighten the cap screws in the right-hand cap to 105 LB·INCHES (12 N·m).

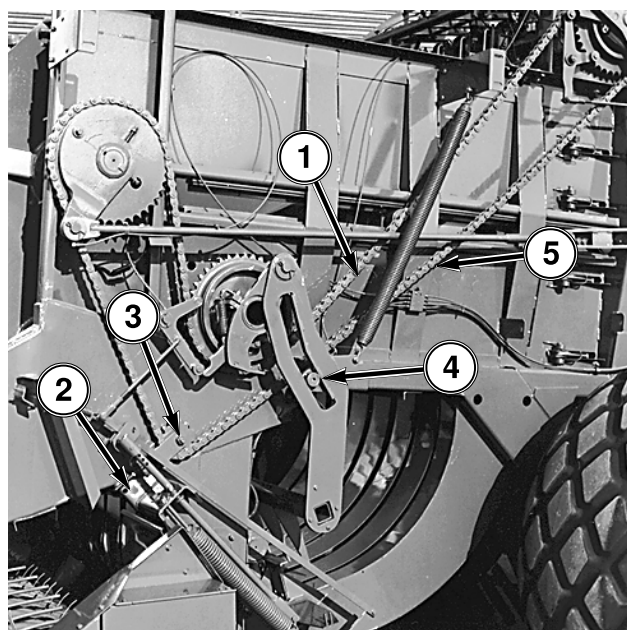
47. Turn the pinion shaft five turns clockwise.

48. Tighten the cap screws in the right-hand cap to 210 LB·INCHES (24 N·m).

49. Turn the pinion shaft five turns counterclockwise. The alignment marks on the pinion shaft and the ring gear must be in alignment.

4. Check the tension of the stuffer/knotter drive chain. If the tension is not correct, loosen the bolt in the center of the adjustable tensioner. Adjust the adjustment bolt to get 2 IN (51 mm) deflection with 40 LB (174 N) force. Tighten the bolt in the adjustable tensioner.

*NOTE: If the adjustment is too tight, the stuffer/knotter sprocket will be difficult move when installing a shearbolt. If the adjustment is too loose, the stuffer/knotter drive chain will rub on the stuffer pivot bearing support.*

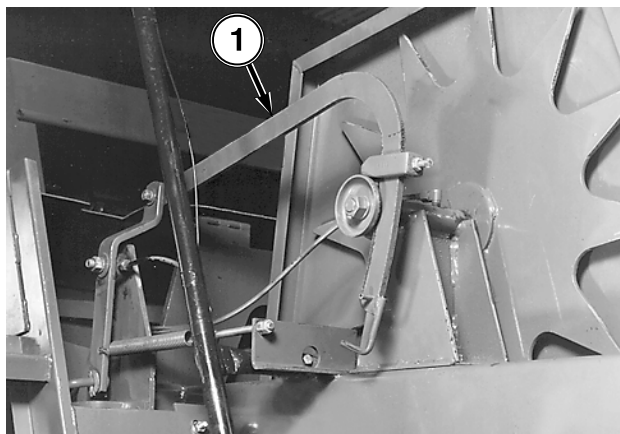


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1. Stuffer/Knotter Drive Chain
2. Adjusting Bolt
3. Tensioner Sprocket
4. Stuffer Pivot Bearing Support
5. Chain Deflection At This Point

5. Check the alignment of the timing marks again. If adjusting the tension of the stuffer/knotter drive chain caused the timing marks to move, release the tension on the stuffer/knotter drive chain. Make the necessary adjustments to get the correct timing. Adjust the tension of the stuffer/knotter drive chain.

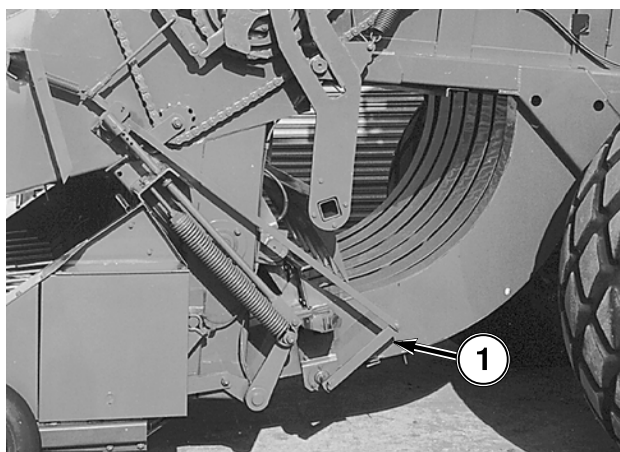
6. Pull the trip arm all the way up to trip the knotter clutch.



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1. Trip Arm

7. Push the trip linkage down to trip the stuffer clutch.



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1. Trip Linkage

## Troubleshooting

PROBLEM	POSSIBLE CAUSE	CORRECTION
Excessive shearing of stuffer / knotter shearbolt	Crop moisture is too high	Allow crop to dry.
	Paint or rust in charge chamber area	Remove rust or paint.
	Sensor door adjustment too tight	Adjust sensor door spring. See Section 5002. Adjust arm stop to allow door to trip. See Section 5002. Make sure material is not preventing door from tripping.
	Driving speed too fast, causing too few flakes per bale	Decrease driving speed.
	Stuffer brake too tight	Adjust the stuffer brake. See Section 5002.
	Stuffer charge holding fingers not retracting	Adjust holding fingers. See Section 5002.
	Not using correct shear bolt	Use only genuine Grade 8 shearbolt and nut
	Shearbolt nut loosening causing premature failure	Tighten nut and make sure shearbolt is Grade 8. Make sure the nut is a good quality self-locking nut.
	Stuffer timing relation to plunger incorrect	Check baler timing. See Baler Timing in this section.
	Excessive load on knotter/needle drive	Determine cause of overload in knotter/needle area, such as knotter brake too tight, needle interferences, etc.
	Knotter needle hit foreign object or bent needle	Remove the foreign object from the needle slot. Repair or replace broken or bent needles and other damaged knotter parts.
	Worn or broken shear system parts	Replace worn or broken parts.
	Stuffer timing not correct	Check baler timing. See Baler Timing in this section.
Shearbolt fatigue because of slow PTO speed	Replace shearbolt and increase PTO speed to 1000 rpm (r/min).	

## Assembly

*NOTE: If the auxiliary shaft was removed, start with the next step.*

*If you are only replacing the bearing and the auxiliary shaft was not removed, start the procedure at Step 4.*

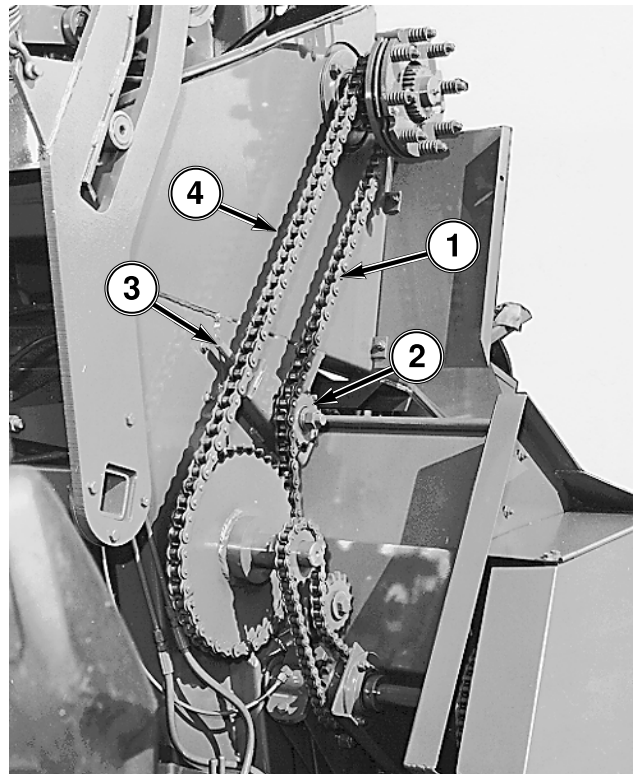
See the safety warnings at the beginning of this section and follow the procedures.

1. Install the inner bearing flange on the auxiliary drive shaft.
2. Install the auxiliary drive shaft.
3. Install the chain at the inner end of the auxiliary drive shaft and install the connector link.
4. Install the bearing and the outer bearing flange.
5. Install the carriage bolts, lock washers, and nuts for the bearing flanges. Tighten the nuts.
6. Install and tighten the bearing locking collar. See Bearing Replacement in Section 1003 for more information about bearings with locking collars.
7. Install the machinery bushing.
8. Install the repair washer.
9. Install the sprocket plate.
10. Install the machinery bushing.
11. Install the splined hub. Install and tighten a new gib key. See Gib Key Removal and Installation in Section 1003 for more information about gib keys.
12. Install a friction disc, the clutch plate, the other friction disc, and the end plate.
13. Install the clutch bolts with the head of the bolt toward the baler. Install the springs, flat washers, and self-locking nuts. Tighten the self-locking nuts until the length of each springs is 1-11/32 IN (34 mm).

14. Install the packer drive chain and install the connector link.

15. Turn the nuts on the adjusting bolt to adjust the tension on the packer drive chain. Tighten the bolt in the tensioner sprocket.

*NOTE: If the control console displays FEEDER SLIP CLUTCH while operating in light crop, check both the packer and the pickup clutches for correct adjustment.*



49BB-86068-8

1. Packer Drive Chain
2. Tensioner Sprocket
3. Adjustment Bolt
4. 1 IN Deflection with 30 LBS (133 N) force

16. If the baler timing sensor was removed, install the sensor in the mounting bracket. Adjust the nuts so there is .020 to .030 IN (.5 to .75 mm) gap between the sensor and the teeth on the auxiliary drive shaft.

## Bearing Removal And Installation

See the safety warnings at the beginning of this section and follow the procedures.

1. Raise the pickup assembly so the gauge wheel is off the ground.
2. Pull the hub cap out of the hub on the wheel assembly.
3. Remove the cotter pin and the slotted nut.
4. Slide the wheel assembly from the axle. Use a hub puller if necessary.
5. Remove and discard the grease seal.
6. Remove and discard the bearing cups. Clean and dry the hub.
7. Press the new bearing cups into the hub. The thickest edge of the bearing cups must be toward the center of the hub.
8. Completely fill the bearing cones with heavy duty wheel bearing grease. Use a machine or your hand to force the grease between the rollers, the cone, and the cage. Fill the space between the bearing cups in the hub with grease to inside diameter of the cups.
9. Install the inner bearing cone and press the new grease seal into the hub. The lip of the grease seal must be toward the bearing.
10. Clean the axle and install the wheel assembly.
11. Install the outer bearing cone and the slotted nut.
12. Adjust the gauge wheel bearings. See Bearing Adjustment in this section.
13. Fill the hub cap 1/4 full of wheel bearing grease and install in the hub.

## Disassembly

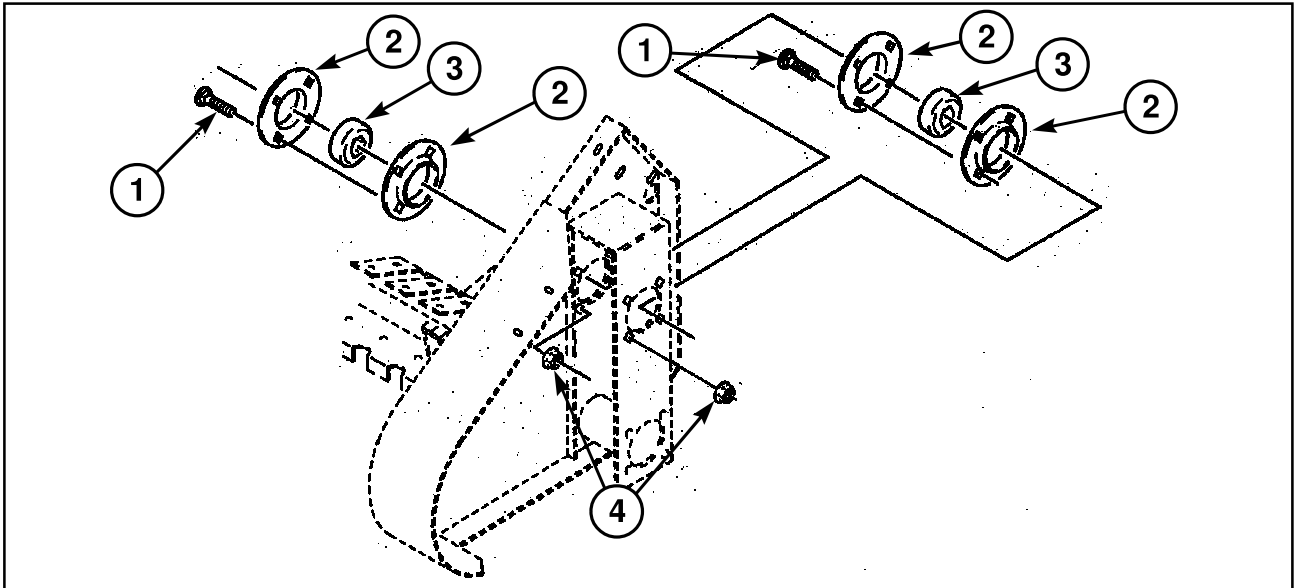
1. Remove the nuts from the eight bolts that clamp the slip clutch together. Remove the washer and springs.
2. Disassemble the sprocket, friction discs, and pressure plates. Discard the friction discs.

## Inspection

1. Clean all parts and dry.
2. Inspect the bushings in the sprocket and the center pressure plate for wear and damage. Replace as necessary.
3. Inspect the sprocket teeth for wear and damage. Replace as necessary.

## Assembly

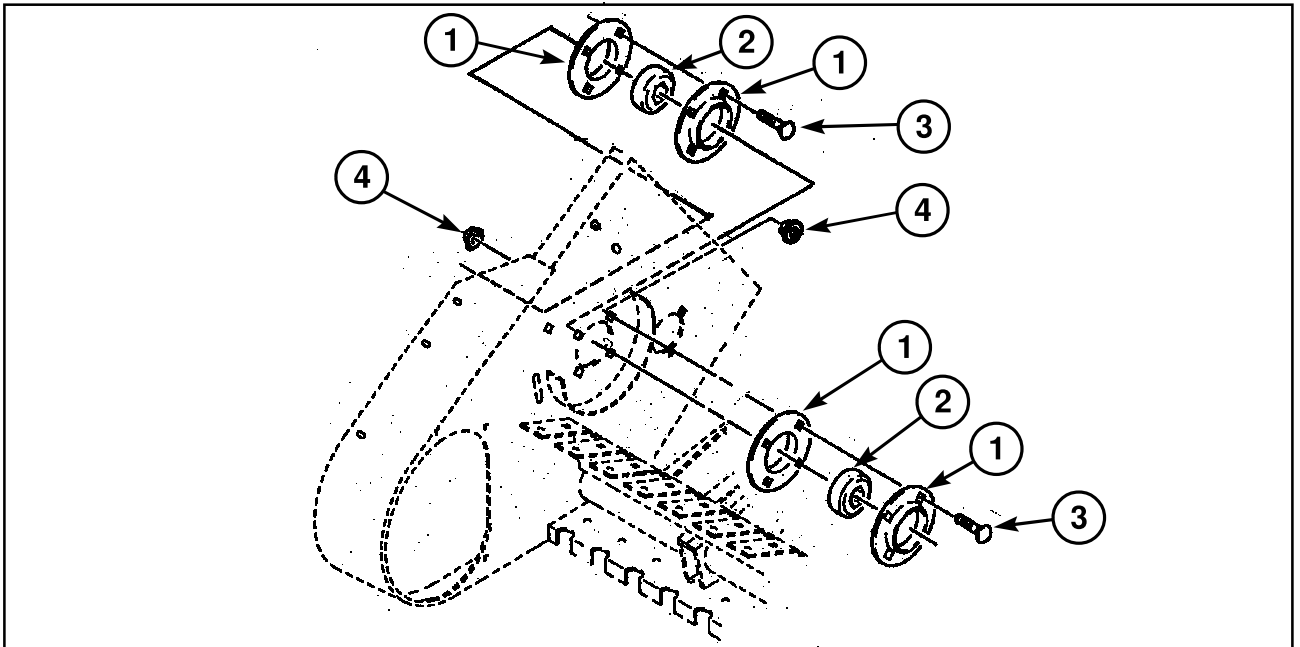
1. If the bushing was removed, install the new bushing into the hub of the sprocket or center pressure plate.
2. Assemble the sprocket, new friction discs, and pressure plates in order shown.
3. Install eight bolts, springs, washers, and new lock nuts as shown to fasten the clutch together.
4. Adjust the spring length on the slip clutch. See Adjustment in this section.



L90A -0113

**LEFT AUGER BEARING**

- |                   |                     |
|-------------------|---------------------|
| 1. Carriage Bolt  | 3. Bearing          |
| 2. Bearing Flange | 4. Flanged Lock Nut |



L90A -0114

**RIGHT AUGER BEARING**

- |                   |                     |
|-------------------|---------------------|
| 1. Bearing Flange | 3. Carriage Bolt    |
| 2. Bearing        | 4. Flanged Lock Nut |

## Installation

See the safety warnings at the beginning of this section and follow the procedures.

1. Install the tine channel bearing and the bearing flange on the left end of the tine channel. Install a new cotter pin into the hole and bend the ends over against the bearing.

2. Install the bearing flange and the tine channel bearing on the crank arm shaft. Install a new cotter pin into the hole and bend the ends over against the bearing.

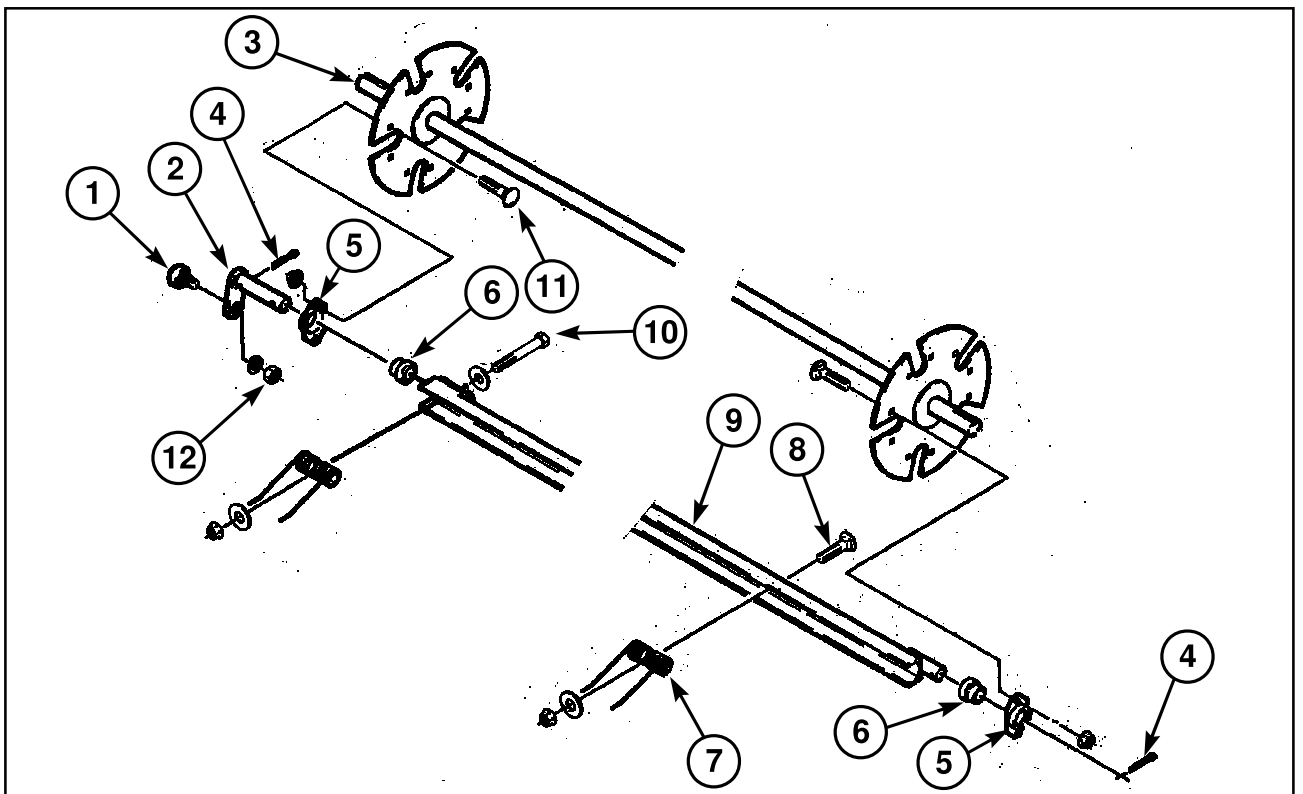
3. Install the tine channel crank arm into the end of the tine channel.

*NOTE: The tine channel crank arms must trail the direction of rotation.*

4. Install the bolt through the crank arm and the tine channel. Put the tine in position on the bolt and install the flat washer.

5. Apply two or three drops of Loctite No. 242 or equivalent to the threads of the bolt. Install and tighten the flanged lock nut to 44 LB·FT (59 N·m).

6. Install the tine channel(s) into the pickup reel. See Tine Channel in this section.



L90A-0117

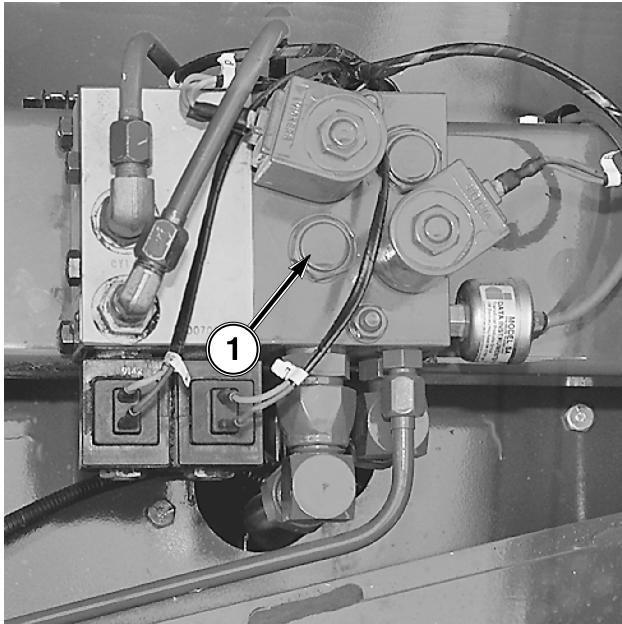
### TINE CHANNEL BEARING

- |                   |   |   |
|-------------------|---|---|
| 1. Cam Bearing    | 6. Tine Channel Bearing                         | 10. Bolt, Flat Washer, Flanged Lock Nut |
| 2. Crank Arm      | 7. Tine   | 11. Carriage Bolt and Flanged Lock Nut  |
| 3. Reel Shaft     | 8. Carriage Bolt, Flat Washer, Flanged Lock Nut | 12. Lock Washer, Lock Nut               |
| 4. Cotter Pin     | 9. Tine Channel                                 |   |
| 5. Bearing Flange |   |   |

## BALER HYDRAULIC SYSTEM IDENTIFICATION

To find if the baler hydraulic system is a closed center system or an open center system, look at the baler control valve. A closed center system will have a closed center plug in the opening as shown in the Closed Center System photo. An open center system will have a solenoid valve in the opening as shown in the Open Center System photo.

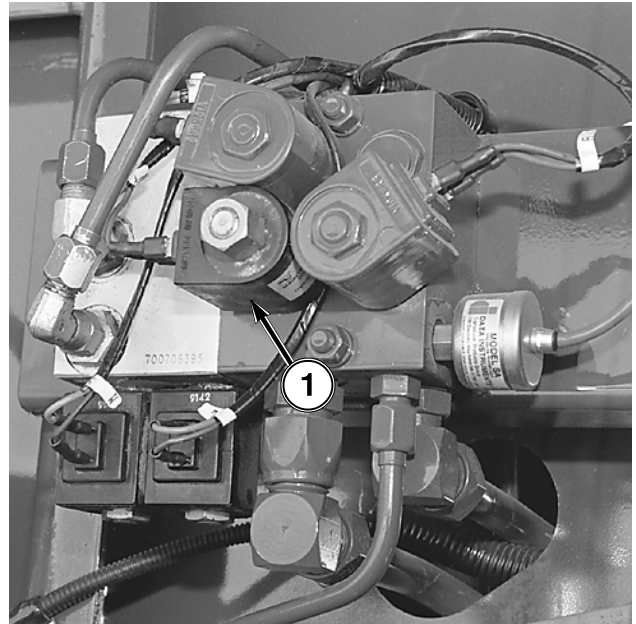
*NOTE: The photos show a baler control valve with an accumulator control valve installed.*



49BB-96017-09

### CLOSED CENTER SYSTEM

1. Closed Center Plug



49BB-96017-22

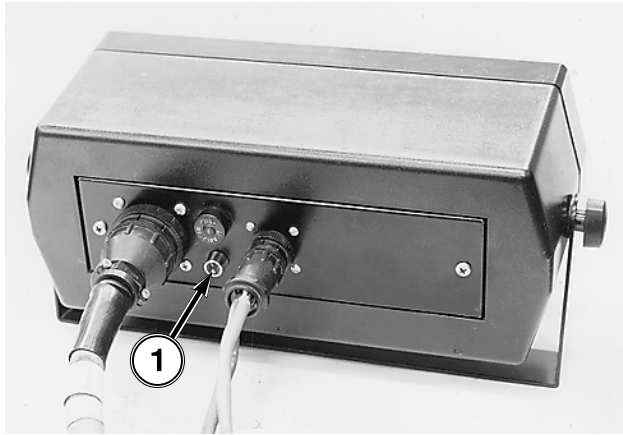
### OPEN CENTER SYSTEM

1. Open Center Solenoid Valve

## Manual Pressure Control

A manual pressure control is provided for emergency use only. To change the baler control console to the manual baler control mode, push the switch on the rear of the baler control console down. When the baler control console is in the scan mode, the top screen will display OFF. The manual pressure control will then let the operator increase or decrease the pressure in the bale density cylinders.

*NOTE: In the manual baler control mode the baler control console CANNOT control the baler. Overload can occur and result in damage to the baler and the main drive system. In the manual baler control mode it is the operators responsibility not to let the baler be overloaded.*



49BB-87037-12

1. Auto-Manual Load Control Switch: up for Auto, Down for Manual



49BB-87037-11

1. Remote Load Control
2. Top screen will display OFF and automatic plunger load control will not work.

## Accumulator

The accumulator is controlled and monitored by the baler control console. When the accumulator control is in the auto mode, the baler control console will automatically shift the bales from the center of the accumulator to one of the side carts.

*NOTE: The accumulator will not automatically shift a bale if the center panel is pressed down during the start-up procedure. If a bale is on the center panel of the accumulator, the bale can be shifted manually.*

Bales are unloaded by pressing and holding the switch on the bale unload control box for three to five seconds. When properly installed in the tractor cab, the left switch will unload the left side cart and the right switch will unload the right side cart.

The bale direction arrow and the bale shift bar indicator will indicate to the operator the direction the next bale will be moved.

*NOTE: If a side cart continually takes longer than five seconds to unload, stop the baler and check for loose wiring connections. Make sure the wiring is properly installed and is not damaged. Check adjustment of the latches and the bale stops. See Section 9002.*



49Bb-87038-4

1. Bale Direction Arrow
2. Bale Shift Bar Indicator

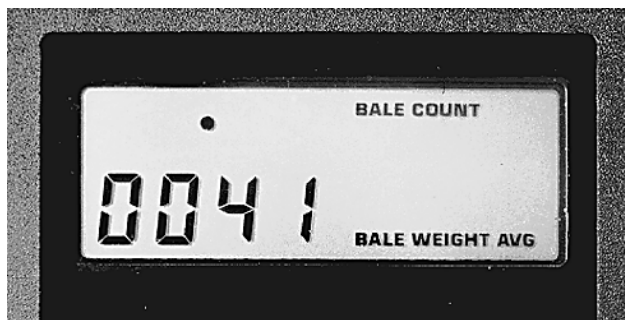
## Bale Weight Average

Each new bale weight read by the baler control console is automatically added to the bale weight average memory. The bale weight average bale count is also increased by one. The operator can display the data by pressing the WEIGHT AVG switch. First the baler control console displays the average bale weight and the words BALE WEIGHT AVERAGE for approximately three seconds.



49BB-87061-8

The baler control console will then automatically display the number of bales included in the bale weight average and the words BALE COUNT. The words BALE WEIGHT AVERAGE will still be displayed. In this example, the 41 bales weighed an average of 1850 LBS (840 kg). The approximate crop production for these bales was 75 850 LBS (34 436 kg).



49BB-87061-9

## Reset Bale Weight Average

Reset the bale weight average by pressing and holding the COUNT / WEIGHT and the WEIGHT AVG switch at the same time. The alarm will sound and the current bale weight average and the words RESET and BALE WEIGHT AVERAGE will flash on the top screen. The words RESET BALE WEIGHT AVG and the number 0000 will be displayed when the reset is complete. The bale weight average bale count will automatically zero. If the switches are released while the display is flashing, the baler control console will retain the current bale weight average and the bale count for the bale weight average. The field or total bale count memories will not change when the bale weight average is reset.

The maximum number of bales that can be averaged is 300 to 350 bales. At that amount, the register will automatically reset to zero and start a new bale weight average.

### Packard Connector

1. Release the cover at the rear of the connector.
2. Install the sleeve of the tool over the end of the pin or the socket. Slowly push the sleeve all the way into the connector to push the fingers away from the body of the connector.
3. Rotate the sleeve to make sure the fingers are released from the body.
4. Slowly pull the wire to remove the pin or the socket from the rear of the connector. Do not use excessive force.
5. Remove the tool from the connector.
6. Cut the wire at the end of the pin or socket.
7. Strip the correct amount of insulation from the wire for the pin or socket being installed.
8. Install the new seal on the wire.
9. Put the new pin or socket on the wire and the seal. Crimp the new pin or socket onto the wire and the seal.
10. Slowly push the pin or socket into the connector to the correct depth. Pull the wire a small amount to make sure the fingers are engaged in the body of the connector.
11. Close the cover at the rear of the connector. Make sure the locks on the cover are engaged.

### AMP Connector

1. Remove the strain relief from the cover at the rear of the connector.
2. Disconnect the cover from the connector and slide the cover away from the connector.
3. Install the sleeve of the tool over the pin or the socket. Slowly push the tool all the way into the connector to push the fingers away from the body of the connector. Do not push the plunger into the tool.
4. Rotate the sleeve to make sure the fingers are released from the body.
5. Slowly push in on the plunger to push the pin or the socket out of the connector.
6. Slowly pull the wire to remove the pin or the socket from the rear of the connector.
7. Remove the tool from the connector.
8. Cut the wire at the end of the pin or socket.
9. Strip the correct amount of insulation from the wire for the pin or socket being installed.
10. Put the new pin or socket on the wire. Crimp the new pin or socket onto the wire.
11. Slowly push the pin or socket into the connector to the correct depth. Pull the wire a small amount to make sure the fingers are engaged in the body of the connector.
12. Install the cover on the connector.
13. Install the strain relief.

## Checking Power Circuits From The Baler Control Console

*NOTE: The Solenoid Energizing Tests in this section can be used for a quick check of the circuits that have a solenoid. The Manual Load Control Tests in this section can also be used to check the pressure increase and the pressure decrease circuits.*

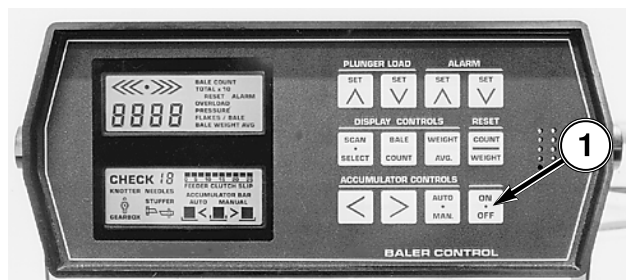
1. Make sure the correct voltage is being supplied to the baler control console. See Checking Supply Voltage To The Baler Control Console in this section.
2. Disconnect the baler control harness from the baler control console.



49BB-87037-12

1. Baler Control Harness

3. Press the ON•OFF switch on the baler control console to turn the baler control console on.



49BB-87039-1

1. ON•OFF Switch

4. Adjust a multimeter to indicate volts DC.

5. Check the voltage between the pins in the rear of the baler control console as shown in the chart. The voltage must be system voltage. If the voltage indication is not correct, there is a problem in the baler control console.

Function	Console Pins	
	Positive (+)	Ground (-)
Load Arm - Right	11	10
Load Arm - Left	11	10
Pressure Transducer	11	15
Bale Weight Kit	22	10
Decrease Solenoid	29	32 *
Increase Solenoid	30	33 *
Open Center Solenoid	29	34 *
Left Accum. Solenoid	30	35 *
Right Accum. Solenoid	31	36 *

\* NOTE: The baler control console closes the ground line of the circuit to actuate the solenoid. Because the function is not actuated, the ground line is open. To check these pins in the baler control console, the negative lead of the multimeter must be connected to pin 10.

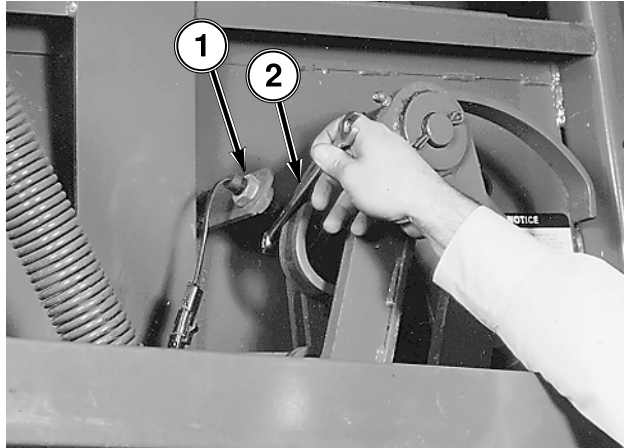
6. Connect the baler control harness to the baler control console.

7. Press the ON•OFF switch on the baler control console to turn the baler control console on.

8. Adjust a multimeter to indicate volts DC.

10. Move a metal object such as a wrench or a knife blade across the end of the stuffer cycle inductive sensor approximately every two seconds. Have another person look at the pressure reading shown on the baler control console.

*NOTE: Do not use a metal object that is made of stainless steel.*



49BB-87061-6

- 1. Stuffer Cycle Inductive Sensor
- 2. Metal Object

If the pressure reading increases, the system is good. Continue the procedure at step 14.

If the pressure reading does not increase, do the next step.

11. Move the metal object across the end of the stuffer cycle inductive sensor approximately every two seconds. Have another person look at the baler control console. The stuffer dot “•” must flash each time the metal object is moved across the end of the stuffer cycle inductive sensor.

If the stuffer dot “•” flashes, do the next step.

If the stuffer dot “•” does not flash, there is a problem in the electrical system. See the correct troubleshooting procedure in this section.

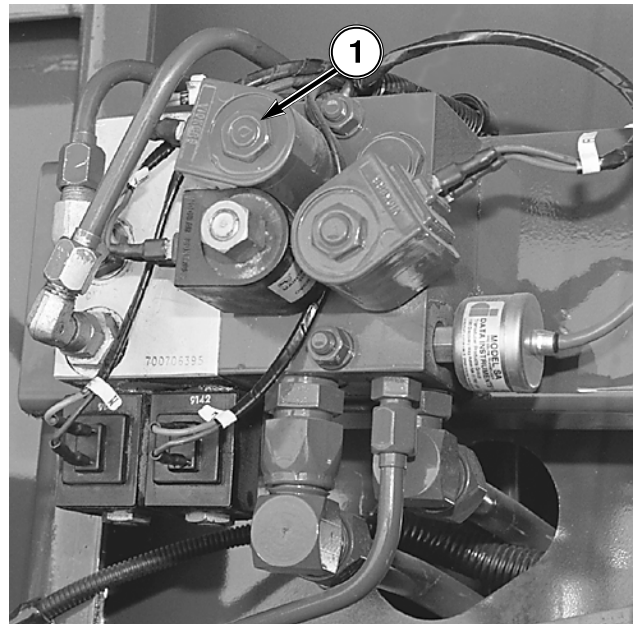
12. Have another person hold the metal object near the end of the pressure increase solenoid valve. When you move the metal object across the end of the stuffer cycle inductive sensor, the coil must pull the metal object toward the pressure increase solenoid valve.

*NOTE: Do not use a metal object that is made of stainless steel.*

If the coil pulls the metal object, do the next step.

If the coil does not pull the metal object, check for a bad coil or circuit for the coil. See Coil Test and Circuit Test in this section. Correct the electrical problem and repeat this step.

*NOTE: If the cartridge or the nut for the coil are tightened to the wrong torque, the spool in the solenoid valve will not move freely. This condition can cause problems in the hydraulic system. See Replacing A Cartridge in Section 8001 and check the torque of the cartridge and the nut.*



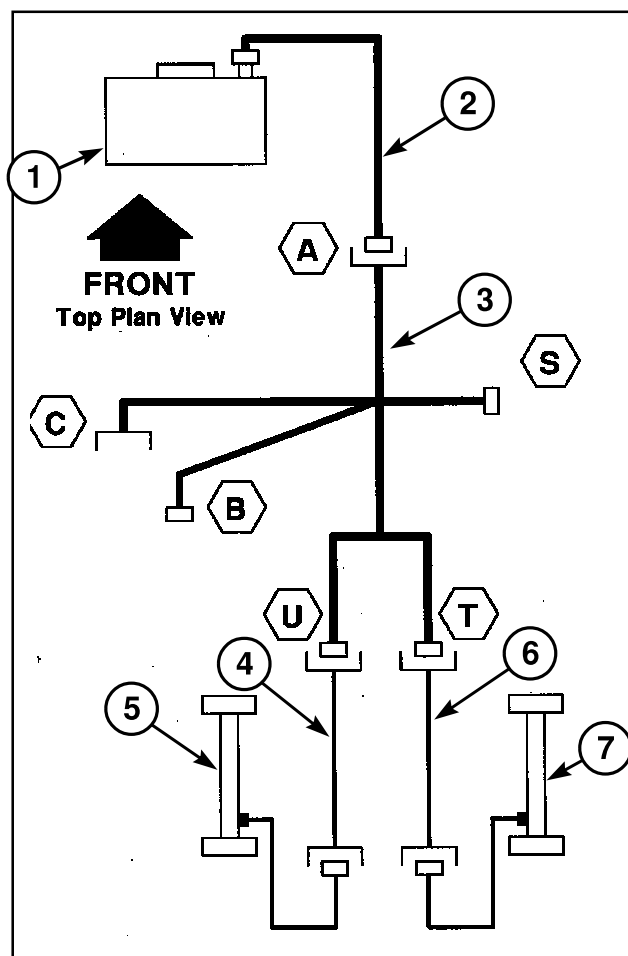
49BB-96017-22

- 1. Pressure Increase Solenoid Valve

## CHECK 7 Test

See the safety warnings at the beginning of this section and follow the procedures.

1. Make sure the baler control console is turned off.
2. Disconnect the implement drive line from the tractor PTO shaft.
3. Fasten identification tags to both the left-hand and the right-hand load arm harnesses.



L96A-0183

1. Baler Control Console
2. Baler Control Harness
3. Baler Wiring Harness
4. Left-Hand Load Arm Harness
5. Left-Hand Load Arm
6. Right-Hand Load Arm Harness
7. Right-Hand Load Arm

4. Disconnect both load arm harnesses from the load arms. Connect the load arm harnesses to the opposite load arms.

5. Push the ON•OFF switch on the baler control console to turn the baler control console on.

If CHECK 7 is shown on the baler control console, turn the baler control console off and do the next step.

If CHECK 8 is shown on the baler control console, the left-hand load arm is bad and must be replaced. Connect the rear of the load arm harnesses to the correct load arms.

6. Disconnect both load arm harnesses from the load arms. Connect the load arm harnesses to the original load arms.

7. Disconnect both load arm harnesses from the connectors at the rear of the baler wiring harness. Connect the load arm harnesses to the opposite connectors.

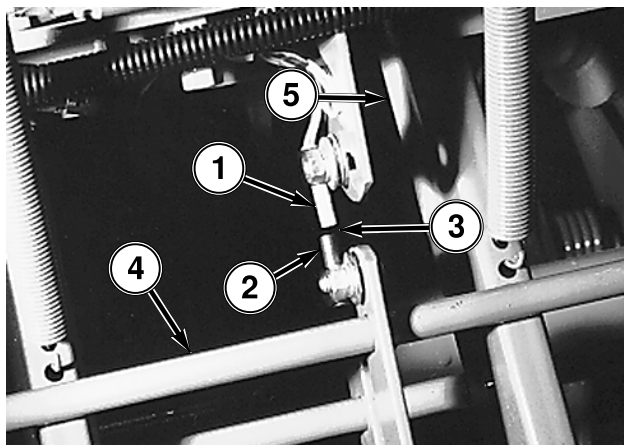
8. Push the ON•OFF switch on the baler control console to turn the baler control console on.

If CHECK 8 is shown on the baler control console, the left-hand load arm harness is bad and must be replaced. Disconnect the left-hand load arm harness from the left-hand load arm and connector T. Discard the left-hand load arm harness. Connect the front of the right-hand load arm harness to connector T. Install a new left-hand load arm harness.

If CHECK 7 is shown on the baler control console, do the next step.

### Top Knotter Slacker Switch

The top knotter slacker switch is located near the right end of the knotter assembly. Pull twine through one of the top twine tensioners until the slacker arm is all the way up. The top knotter slacker switch and the actuator must be in alignment and there must be a .125 to .200 IN (3 to 5 mm) gap. If adjustment is necessary, loosen the bolt and slide the top knotter slacker switch or the actuator in the clamp as necessary. Make sure there are flat washers on the bolt to help hold the top knotter slacker switch or the actuator in the clamp.

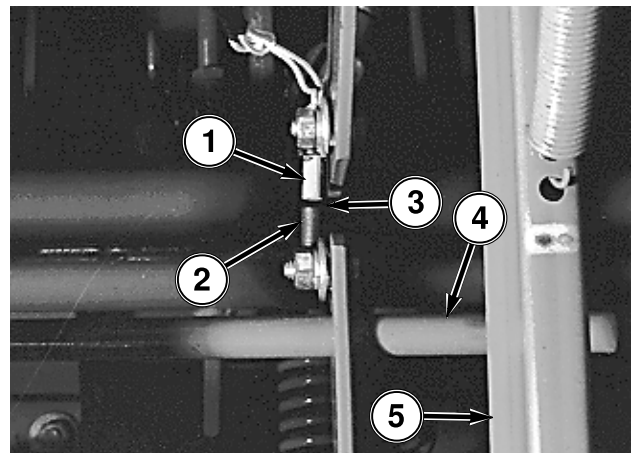


49BB-86079-15

1. Switch
2. Actuator (Magnet)
3. Gap
4. Top Actuating Rod
5. Slacker Arm

### Bottom Knotter Slacker Switch

The bottom knotter slacker switch is located near the left end of the knotter assembly. Pull twine through all of the bottom twine tensioners until all of the slacker arms are at least half way up. Lift the bottom actuating rod until the actuator is aligned with the switch. The bottom knotter slacker switch and the actuator must be in alignment and there must be a .125 to .200 IN (3 to 5 mm) gap. If adjustment is necessary, loosen the bolt and slide the bottom knotter slacker switch or the actuator in the clamp as necessary. Make sure there are flat washers on the bolt to help hold the bottom knotter slacker switch or the actuator in the clamp.



49BB-86078-3

1. Switch
2. Actuator (Magnet)
3. Gap
4. Bottom Actuating Rod
5. Slacker Arm

PROBLEM	POSSIBLE CAUSE	CORRECTION
CHECK KNOTTER not displayed with top slacker arm up	<p>Five stuffer cycles have not occurred since last tie</p> <p>Knotter has not cycled one time since baler control console start-up</p> <p>Open circuit to top knotter slacker switch from faulty connection or broken wire</p> <p>Top knotter slacker switch not adjusted correctly</p> <p>Faulty top knotter slacker switch or actuator</p>	<p>Normal condition; wait for five stuffer cycles to be completed.</p> <p>Normal condition; wait for knotter to cycle.</p> <p>See Switches in this section and check the circuit.</p> <p>See Switches in this section.</p> <p>Replace bad switch and / or actuator. See Switches in this section.</p>
CHECK NEEDLE	<p>Knotter drive malfunction</p> <p>Open circuit to needle switch from faulty connection or broken wire</p> <p>Needle switch not adjusted correctly</p> <p>Faulty needle switch or actuator</p>	<p>Inspect knotter drive for worn, twisted, bent, or broken parts. See Section 6001.</p> <p>See Switches in this section, and check the circuit.</p> <p>See Switches in this section, and adjust the needle switch. Check needle carriage actuator and switch alignment with baler running. Adjust as required for correct alignment.</p> <p>Replace switch or actuator. See Switches in this section.</p>
Pressure reading increases when tractor hydraulic remote is engaged	Hydraulic line connected backwards for direction tractor remote lever is engaged	Reverse hoses on remote outlets or engage remote lever in the opposite direction.
0000 Pressure reading with pressure on bale chamber		See Check 9 later in this Chart.
Pressure reading fluctuating	Load control system working correctly; crop conditions varying	No correction necessary.

## SAFETY WARNINGS



### WARNING

Before doing any maintenance or service work on the baler, you must:

- Park machine on a solid level surface.
- Disengage the PTO.
- Put the tractor transmission in PARK or apply the tractor parking brake.
- Turn off the baler control console.
- Stop the tractor engine and take the key with you.
- Apply the baler flywheel brake.
- Look and Listen! Make sure all moving parts have stopped.



### WARNING

After lubricating, servicing, or adjusting the machine, make sure all tools and equipment have been removed.

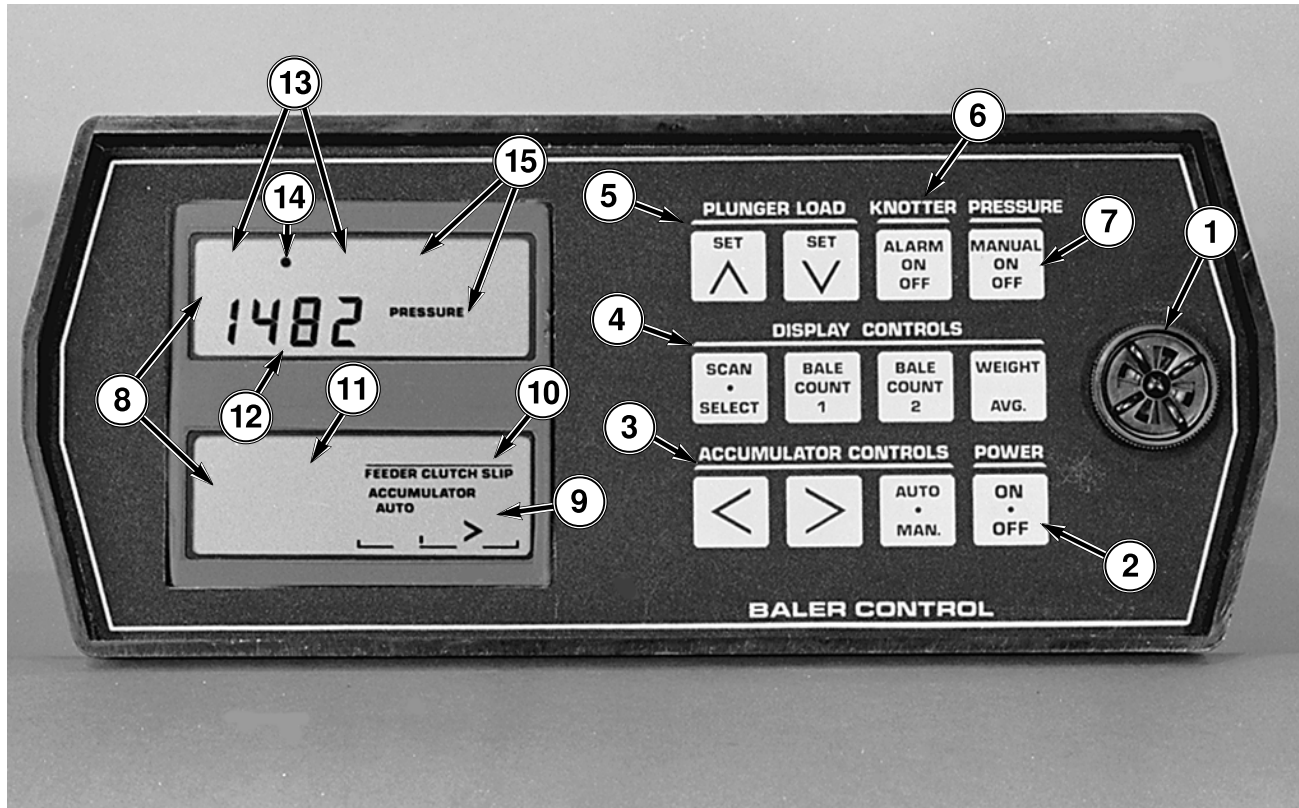


### WARNING

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

# OPERATION

## Baler Control Console

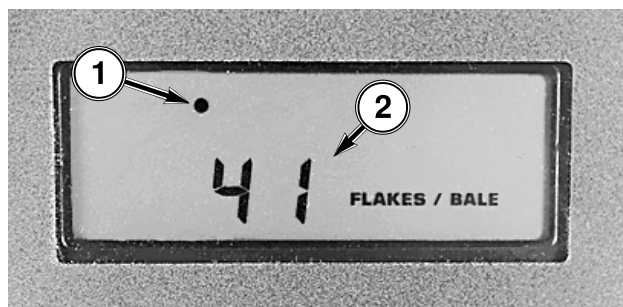


49BB-93034-1

- |  |  |
|--|--|
| <ol style="list-style-type: none"> <li>1. Audible Alarm</li> <li>2. Power ON•OFF Switch</li> <li>3. Accumulator Control Switches (3)</li> <li>4. Display Control Switches (4)</li> <li>5. Set Plunger Load Switches (2)</li> <li>6. Knotter Alarm Switch</li> <li>7. Manual Pressure Control Switch</li> <li>8. LCD Display Screens</li> </ol> | <ol style="list-style-type: none"> <li>9. Accumulator Monitor Display Area</li> <li>10. Feeder Monitor Display Area</li> <li>11. Check Function Display Area</li> <li>12. Digital Display Area</li> <li>13. Driving Arrow Display Area</li> <li>14. Stuffer Cycle Dot</li> <li>15. Communicator for Digital Display Area (tells the operator what is being displayed in the Digital Display Area)</li> </ol> |
|--|--|

## Flakes / Bale Count

The baler control console counts the number of stuffer cycles between each knotter cycle. The words FLAKES / BALE and the number of flakes in the last bale will be shown on the screen. The number is always a two digit number to help the operator identify the number as the number of flakes per bale. The other numbers that are shown for other readings are three and four digit numbers.



475B-92029-9

1. Stuffer Cycle Dot
2. Flakes / Bale Count Indicator

The normal number of flakes per bale is 33 to 55, depending on the type of crop, crop condition, and bale length. When operating below or at the bottom end of this range in springy crop such as straw, it is best to reduce the plunger load setting. **IMPORTANT: If the number of flakes is more than 60 for several bales, check the stuffer clutch. See section 5002 and make sure the stuffer clutch is adjusted correctly and is disengaging properly.**

The approximate size of each flake can be determined by dividing the length of the bale by the number of flakes per bale.

## Driving Arrows

The baler control console compares the load differences between the two load arm load transducers. If the load is not equal between the load arm load transducers, the baler control console indicates to the operator that a driving correction is needed.



49BB-87075-7

1. Driving Correction Arrows, indicating to drive left

When an arrow is displayed to the left of the stuffer cycle dot "•", the operator must steer to the left and drive the tractor and the baler a small amount to the left of center of the windrow to fill the bale chamber equally. If the arrow is displayed to the right of the stuffer cycle dot "•", the operator must make the correction to the right. More driving correction is needed if two arrows are displayed. Three arrows indicate an even greater amount of correction is needed. When two or three arrows are displayed, a short period of over correction can be required before centering over the windrow. When windrows are raked together, each side of the windrow can have a different amount of hay. By using the driving correction arrows, the operator can correct for variations in the windrow that cannot be seen.

*NOTE: If only one arrow is displayed periodically, no driving correction is usually required. Weaving on the windrow is not required.*

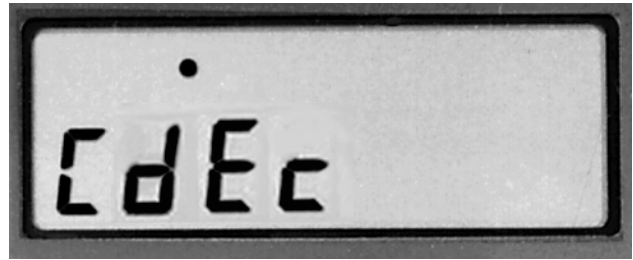
When baling in an irrigation circle and moving toward the center, the tractor will need to be corrected to the outside of the windrow. The driving correction arrows will help in determining the proper correction.

## Hydraulic Pressure Response Warning

The baler control console reads the pressure transducer before and after the solenoids are energized. If the solenoid was energized for longer than a preset time, the baler control console measures the pressure difference. The pressure difference must be more than a preset minimum amount. If the pressure difference is NOT more than the preset amount, the baler control console will alert the operator of a possible hydraulic system malfunction.

*NOTE: If the bale in the bale chamber is of poor quality (very soft or low density), the baler control console can indicate a hydraulic system malfunction. The poor quality bale can cause pressure differences that do not meet the preset requirements of the hydraulic pressure response test.*

**Decrease Pressure Response Test** – The baler control console will alternately display CdEc and StoP. The word PRESSURE will flash on the top screen and an intermittent eight-second alarm will sound if the decrease pressure test fails.



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49BB-93039-2

Several possible causes for the hydraulic system malfunction are:

- tractor remote NOT engaged to supply hydraulic power correctly to the baler;
- hydraulic hose disconnected or connected incorrectly to tractor hydraulic remote outlet;
- other hydraulic system malfunction; see section 8001 for more information. Also see Manual Pressure Control Test in this section for a test procedure to determine that the hydraulic system is functioning properly.

When the baler control console is on and more than one check number is active (more than one component failure), the CHECK display will scan all active numbers. When the word StoP is also shown with a check number (CHECK 3, CHECK 5, CHECK 6, CHECK 12, and CHECK d), the check scan will select the highest priority and display only that number or letter.

The check numbers help to remind the operator of the items that need repair before the baler is used again. The check numbers will be useful in determining what area of the baler and wiring harness need maintenance.

*NOTE: Although the baler can be operated when certain check numbers are activated, it is the operator's responsibility to make sure the baler is functioning properly and within the baler's capabilities for these alarms.*

**CHECK 2: Open Center Solenoid Open Circuit.** If the tractor has an open center hydraulic system, do not engage the hydraulic power until the baler and the baler control console are set for an open center system. See Baler Hydraulic System Identification in this section to find what type of hydraulic system the baler has. See Changing the Baler Control Console to Open Center or Closed Center System as required by the tractor hydraulic system, and make sure the baler control console is set for the correct hydraulic system type.

**CHECK 3: Decrease Solenoid Open Circuit.** The word StoP will also show on the top screen. **DO NOT operate the baler until the problem is corrected.** The baler can be overloaded, causing damage to the baler.

**CHECK 4: Increase Solenoid Open Circuit.** The baler can be operated, but if the pressure increase solenoid does not operate properly, hydraulic pressure cannot be added to the bale density cylinders, resulting in poor bale density.

*NOTE: CHECK 5, CHECK 10, CHECK 11 and CHECK 12 will not be tested or displayed if the baler control console starts up in the automatic start-up mode.*

**CHECK 5: Stuffer Cycle Sensor.** The word StoP will also show on the top screen. Turn the baler control console off and then back on. If the check is no longer displayed, start baling and make sure the stuffer cycle dot "." flashes with each stuffer cycle.

*NOTE: Always make sure the stuffer cycle dot "." flashes as crop is fed into the baler. If the stuffer cycle dot does not flash, the plunger load control system will not work properly and damage will result to the baler and the baler drive system. **DO NOT operate the baler until the problem has been corrected.***

**CHECK 6: Failure in Both Load Arm Load Transducers.** The word StoP will also show on the top screen. **DO NOT operate the baler until the problem has been corrected.** See Malfunction in Load Control System or Driving Arrows in this section. Also see CHECK 6 Test in this section. The automatic plunger load control cannot operate without the data from the load arm load transducers.

*NOTE: The baler can be overloaded if the automatic load control is not functioning properly. An overload will result in damage to the baler and the baler drive system. **DO NOT operate the baler until the problem has been corrected.***

**CHECK 7: Left Load Arm Load Transducer.** The baler can be operated in this mode. Determine the cause and repair the problem before the next baling period. See Malfunction in Load Control System or Driving Arrows in this section. Also see CHECK 7 Test in this section. In this mode, the baler control console automatically doubles the load reading from the other load transducer and makes the load corrections according to that data. In this mode the stuffer cycle dot "." will be on only momentarily during each stuffer cycle.

*NOTE: In this mode, the driving arrows will not function and unbalanced loads can be applied to the gearbox.*

**CHECK 8: Right Load Arm Load Transducer.** See CHECK 7.

## Baler Control Console Check Numbers Chart

*NOTE: The check number does not always mean the component listed has failed. The failure can be in the wiring, the connections, or the baler control console. Problems occur most frequently in the wiring and the connections. Check the wiring and connections before replacing any components. See Baler Control Console Performance Checks in this section for a description of the operation of the baler control console self checking function. The following chart can be used for troubleshooting the system. Also see Schematics in this section.*

Check Number	Check Function	Main Conn. Pin	Wire Color / Size	Wire Function	End Connector and Pins	Test and Checks to be Performed		Comments
CHECK 2	Open Center Solenoid Open Circuit	29	Red, 16 gauge	+12 Volts	N	Voltage & Coil	Manual Pressure Control Test	See Note at beginning of Chart  <i>To identify the solenoid and wires, see Wiring Connections At The Control Valves in this section.</i>
		34	Gray, 16 gauge	Ground Switching	N	Continuity & Connector		
CHECK 3	Decrease Solenoid Open Circuit	29	Red, 16 gauge	+12 Volts	R	Voltage & Coil	Manual Pressure Control Test	
		32	Green, 16 gauge	Ground Switching	R	Continuity & Connector		
CHECK 4	Increase Solenoid Open Circuit	30	Pink, 16 gauge	+12 Volts	P	Voltage & Coil	Manual Pressure Control Test	
		33	Yellow, 16 gauge	Ground Switching	P	Continuity & Connector		
CHECK 5	Stuffer Cycle Inductive Sensor	1	Black, 18 gauge	Common (ground)	H	Continuity, Connector, and Inductive Sensor and Inductive Sensor Circuit		See Note at beginning of Chart
		13	Red/Green, 18 gauge	Stuffer Signal	H			
CHECK 6	Both Load Arm Transducers	10	Gray, 18 gauge	Ground	T(A) & U(A)	Voltage Across These Pins	Malfunction in Load Control or Driving Arrows	See Note at beginning of Chart <i>Also Check items in CHECK 7 &amp; CHECK 8</i>
		12	Red, 18 gauge	+12 Volts	T(D) & U(D)			
CHECK 7	Left Load Arm Transducer	8	Yellow, 18 gauge	Load Arm Load Signal/Clock	U (B)	Continuity, Connector, & Voltage	Malfunction in Load Control System or Driving Arrows	See Note at beginning of Chart  <i>Also Check Items in CHECK 6</i>
		6	Blue, 18 gauge	Load Arm Calibration Data	U (C)	Continuity & Connector <i>NOTE: This circuit used only during start-up.</i>		
CHECK 8	Right Load Arm Transducer	9	Purple, 18 gauge	Load Arm Load Signal/Clock	T (B)	Continuity, Connector & Voltage	Malfunction in Load Control System or Driving Arrows	
		7	Pink, 18 gauge	Load Arm Calibration Data	T (C)	Continuity & Connector <i>NOTE: This circuit used only during start-up.</i>		
CHECK 9 with  ---- or 9999 on screen	Pressure Transducer	11	Red, 18 gauge	+12 Volts	S(C)	Voltage Across Pin 15 or S(A)		See Note at beginning of Chart See Pressure Transducer Data Voltage
		14	Red/Yellow, 18 gauge	Pressure Data	S(B)	Pressure Transducer (1 to 5 volts) across pin 15 or S(C)		
		15	Red/Black, 18 gauge	Ground	S(A)	Voltage Across Pin 11 or S(C)		

2. To check the terminals in the connector at the rear of the baler control harness, disconnect the baler control harness from the baler wiring harness. Make sure the baler control console is on and the baler control harness is connected to the baler control console. Refer to the two columns under Baler Control Console and Baler Control Harness Terminals in the table. Connect the positive (+) lead of the multimeter to the terminals in the Positive (+) column. Connect the negative (-) lead to the terminals in the Negative (-) column. The system voltage reading must be approximately the voltage recorded in the System Voltage Test without the tractor running. If the reading is not correct, there is a problem in the baler control harness.

3. To check the terminals in the connectors on the baler wiring harness, refer to the three columns under Baler Wiring Harness Terminals in the table. Make sure the baler wiring harness is connected to the baler control harness. Make sure the baler control harness is connected to the baler control console. Turn the baler control console on. See Schematics in this section to find the letters for the connectors. Find the connector letter in the Baler Wiring Harness Terminals column of the table. Connect the positive (+) lead of the multimeter to the terminals in the Positive (+) column. Connect the negative (-) lead to the terminals in the Negative (-) column. The system voltage reading must be approximately the voltage recorded in the System Voltage Test without the tractor running. If the reading is not correct, there is a problem in the baler control harness.

## Malfunction in Load Control System or Driving Arrows

See the safety warnings at the beginning of this section and follow the procedures.

An erratic load reading or erratic driving arrows can be caused by an open circuit in a wire or by a bad load arm.

During baling, the load reading is erratic if the load reading changes more than 40 between each stuffer cycle. During this test, the load reading is erratic if the load reading changes more than 5 between each stuffer cycle.

If at any time, CHECK 6, CHECK 7, or CHECK 8 are shown on the baler control console, stop this test. Connect all of the connectors and do the specific test for the check number shown.

1. Make sure the bale chamber is filled with a good bale.
2. Disconnect the tractor hydraulics by putting the tractor remote lever in the NEUTRAL position.
3. Install locking pliers on the stuffer sensor door to engage the stuffer clutch. DO NOT feed crop into the baler during this test.



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### LOCKING PLIERS ON STUFFER SENSOR DOOR

4. Disconnect the load arm harness from one of the load arms.

5. Turn on the baler control console. Press the SCAN•SELECT switch and select the LOAD mode.

6. Start the tractor. Engage the tractor PTO and operate the baler at full speed. Watch the load reading for at least 5 stuffer cycles. The load reading is stable if the LOAD reading changes less than 5 between each stuffer cycle. Determine if the load reading is stable and make a record.

*NOTE: It is normal for the load reading to drop some as the baler continues to run.*

Disengage the tractor PTO. Stop the tractor. Apply the flywheel brake on the baler.

7. Connect the load arm harness to the load arm. Disconnect the load arm harness from the other load arm.

8. Start the tractor. Engage the tractor PTO and operate the baler at full speed. Watch the load reading for at least 5 stuffer cycles. The load reading is stable if the LOAD reading changes less than 5 between each stuffer cycle. Determine if the load reading is stable and make a record.

*NOTE: It is normal for the load reading to drop some as the baler continues to run.*

Stop the tractor. Disengage the tractor PTO. Apply the flywheel brake on the baler.

## Pressure Transducer Data Voltage

See the safety warnings at the beginning of this section and follow the procedures.

The hydraulic pressure transducer data line must be between 1 and 5 volts when correctly attached to a 12-volt supply or to the baler control console. The signal line is terminal B (red/yellow) at transducer connector and terminal 14 at the main connector. The pressure transducer data line will read approximately 1 volt with zero pressure on the transducer. At 1000 psi, the signal voltage from the transducer will be 2 volts.

If the signal voltage from the pressure transducer is less than .8 volts, the baler control console will show ---- and the words PRESSURE and CHECK 9. A four second alarm will also sound. See Manual Pressure Control in this section to increase the pressure in the bale tension cylinders. Make sure the tractor hydraulic system is connected and working correctly. Make sure the baler hydraulic system is pressurized. If the baler control console continues to show ---- and the words PRESSURE and CHECK 9, check for a disconnected connector or a broken wire from the pressure transducer.

If the signal voltage from the pressure transducer is more than 4.6 volts, the baler control console will show 9999. The words PRESSURE and CHECK 9 will also be shown and a four second alarm will sound. See Manual Pressure Control in this section to decrease the pressure in the bale tension cylinders. Make sure the tractor hydraulic system is connected and working correctly. If the baler control console continues to show 9999 and the words PRESSURE and CHECK 9, make sure there are no restrictions in the hydraulic return circuit to the tractor. See Checking the Return Pressure in Section 8001.

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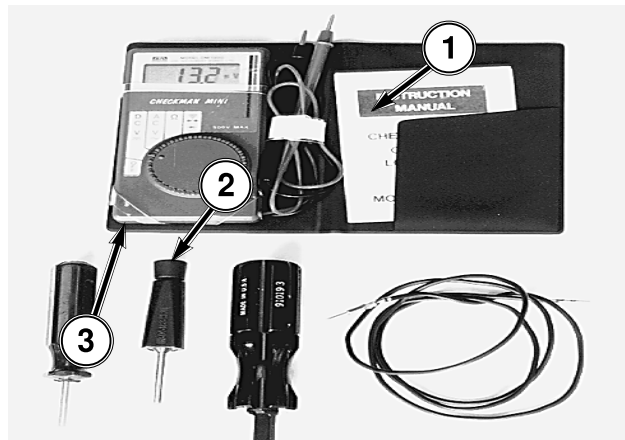
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### Testing a Switch Using a Multimeter

See the safety warnings at the beginning of this section and follow the procedures.

Disconnect the switch from the wiring harness. Adjust a multimeter to indicate continuity. If the multimeter does not have a continuity function, adjust the multimeter to indicate ohms ( $\Omega$ ). See General Testing Procedures; Continuity Check in this section. Connect the leads of the multimeter to the terminals in the connector. Make sure the test leads make good connection with the terminals. Make sure the two test leads do not touch each other. Move an actuator (magnet) near the end of the switch as shown. The multimeter must indicate continuity. If the multimeter does not indicate continuity, replace the switch.

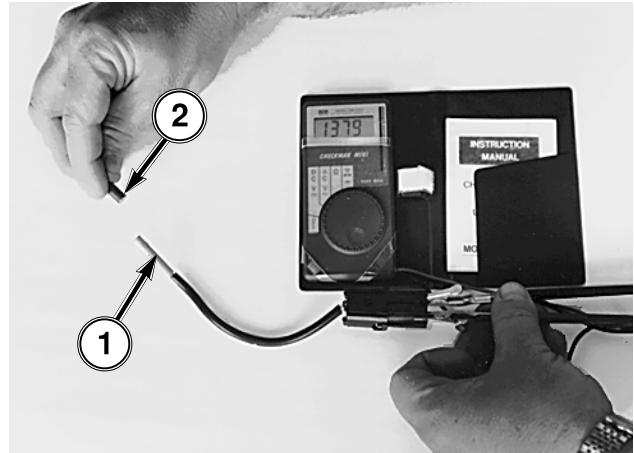
*NOTE: The switch does not have to be removed from the baler to do the test.*



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1. Multimeter
2. Switch
3. Switch Actuator (Magnet) Close to Switch

Move the actuator away from the end of the switch as shown. The multimeter must not indicate continuity. If the multimeter indicates continuity, replace the switch.




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1. Switch
2. Switch Actuator (Magnet) Away from Switch

### Testing a Switch Circuit Using a Multimeter

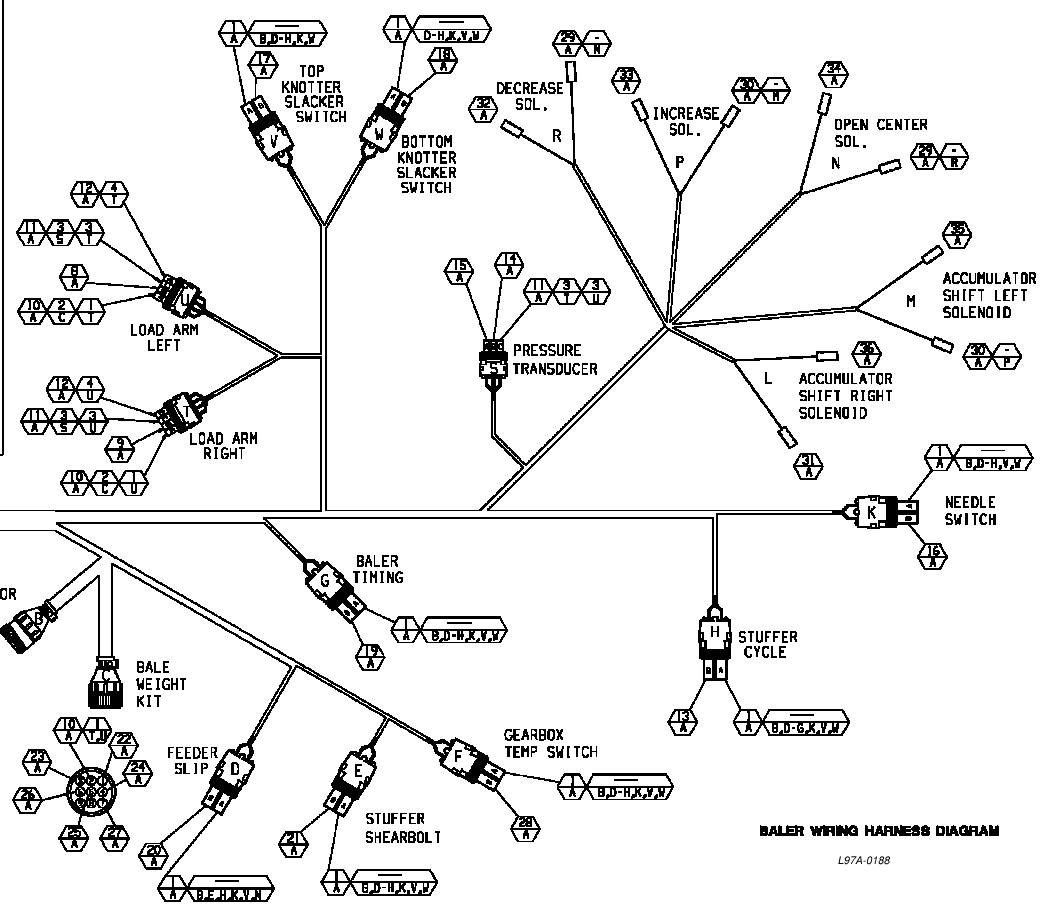
See the safety warnings at the beginning of this section and follow the procedures.

Make sure the baler control console is on. Disconnect the connector at the switch. Adjust a multimeter to indicate volts DC. Connect the negative lead of the multimeter to the terminal for the black wire in the connector on the baler or accumulator wiring harness. Connect the positive lead to the other terminal in the same connector. The multimeter must indicate approximately 5 volts. If the multimeter does not indicate approximately 5 volts, there is an open in the circuit or the baler control console is bad.

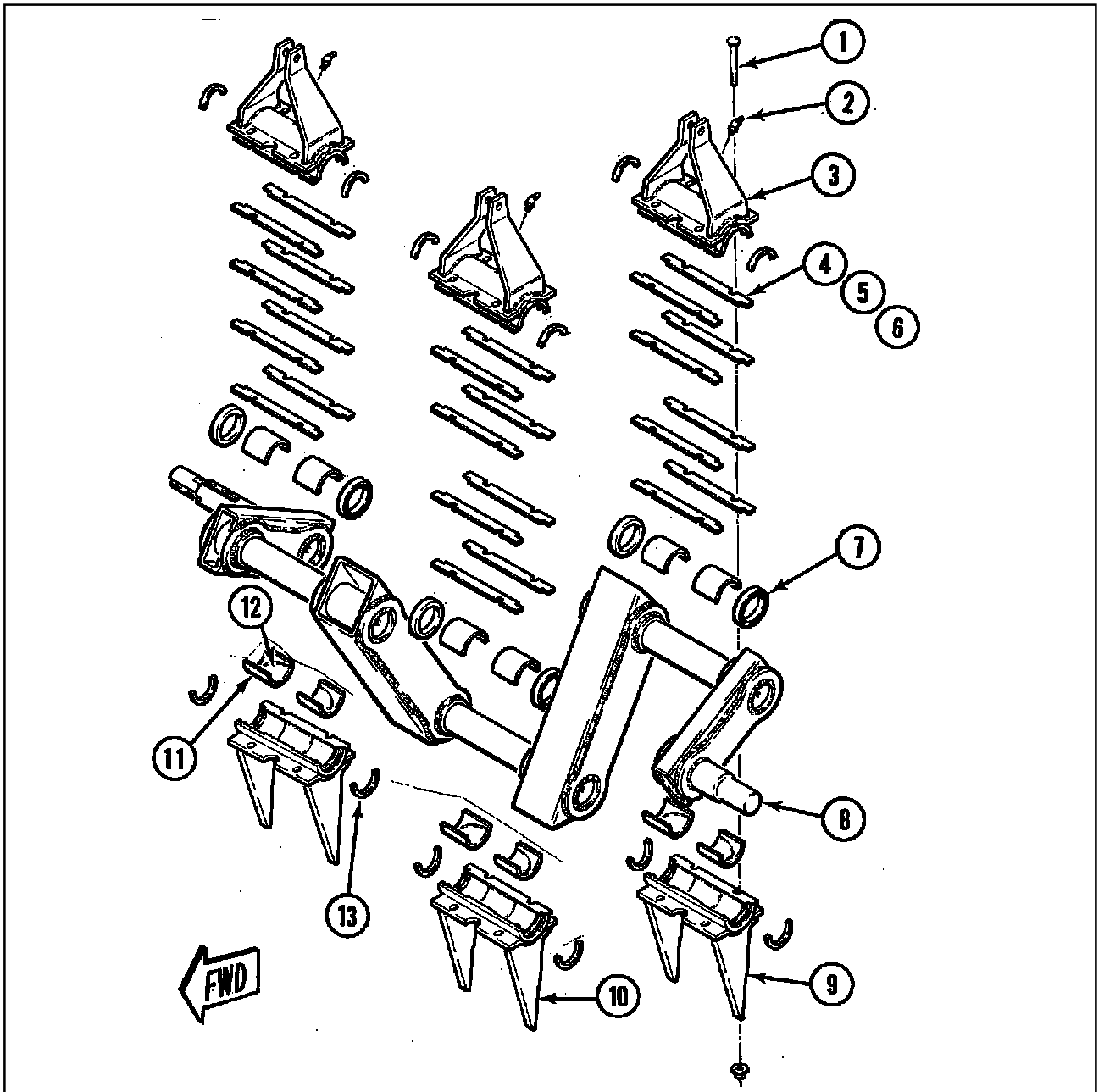
PROBLEM	POSSIBLE CAUSE	CORRECTION
<p><b>BALER PERFORMANCE CHECKS</b></p> <p>CHECK STUFFER shearbolt indicator shown in LCD display</p> 	<p>Broken shearbolt</p> <p>Open circuit caused by faulty connection or broken wire</p> <p>Stuffer shearbolt inductive sensor not adjusted correctly</p> <p>Faulty stuffer shearbolt inductive sensor</p> <p>Broken auxiliary drive arm bolt or other drive parts</p>	<p>Stop the baler immediately and replace shearbolt. See Stuffer/Knotter Shearbolt in section 2003.</p> <p>Repair or replace bad parts.</p> <p>Adjust stuffer shearbolt inductive sensor. See Inductive Sensors; Inductive Sensor Adjustments in this section.</p> <p>Test stuffer shearbolt inductive sensor. See Inductive Sensors; Checking an Inductive Sensor in this section.</p> <p>Replace broken parts.</p>
<p>Feeder clutch slip indicated in LCD display</p>	<p>Feeder system plugged</p> <p>Feeding crop too fast</p> <p>Not feeding crop equally to both sides of bale chamber</p> <p>Broken drive chain or drive part</p> <p>Pickup hitting ground excessively</p> <p>Open circuit caused by faulty connection or broken wire</p> <p>Faulty feeder slip inductive sensor</p> <p>Feeder slip inductive sensor not adjusted correctly</p>	<p>Remove crop.</p> <p>Reduce ground speed by shifting tractor down one or two gears.</p> <p>Correct driving to feed crop correctly. See Driving Arrows in this section.</p> <p>Replace broken parts.</p> <p>Raise pickup and adjust pickup height control linkage rod.</p> <p>Repair or replace broken parts.</p> <p>Test feeder slip inductive sensor. See Inductive Sensors; Checking an Inductive Sensor in this section.</p> <p>Adjust feeder slip inductive sensor. See Inductive Sensors; Inductive Sensor Adjustments in this section.</p>
<p>No knotter indication when baler ties</p>	<p>Faulty needle switch</p>	<p>Replace needle switch.</p>

PROBLEM	POSSIBLE CAUSE	CORRECTION
<p>CHECK 9: Pressure Transducer</p> <p><i>NOTE: Pressure will be ---- or 9999.</i></p>	<p>Open circuit caused by a faulty connector or broken wire</p> <p>Pressure transducer not receiving 12 volts</p> <p>12 volt power supply wire shorted to pressure transducer data wire</p> <p>Faulty pressure transducer</p> <p>Faulty baler control console</p>	<p>Repair or replace bad parts.</p> <p>See Pressure Transducer Data Voltage in this section.</p> <p>Find the cause of short in wiring harness and repair or replace</p> <p>Replace pressure transducer.</p> <p>Repair baler control console.</p>
<p>CHECK 10: Stuffer Drive Inductive Sensor</p>	<p>See all items under CHECK 5.</p>	
<p>CHECK 11: Feeder Clutch Slip Inductive Sensor</p>	<p>See all items under CHECK 5.</p>	
<p>CHECK 12: Baler Timing Inductive Sensor</p> <p><b>DO NOT OPERATE BALER UNTIL PROBLEM HAS BEEN CORRECTED.</b></p>	<p>Incorrect test by baler control console at start-up. PTO engaged at about the same time as the baler control console.</p> <p>Open circuit caused by faulty connection or broken wire</p> <p>See items 2 and 3 under CHECK 5.</p>	<p>Disengage tractor PTO. Make sure all moving parts have stopped. Turn baler control console off and then on with baler NOT running.</p> <p>Do Automatic Start-up Test to check circuit. If the baler control console starts automatically, the circuit is good and the baler control console must be replaced. If the baler control console does not start-up, see the next item under possible cause.</p>
<p>CHECK 13 Left (rear) Accumulator Solenoid Circuit Open</p>	<p>Ground (switching) wire shorted to baler or tractor frame</p> <p>See item 3 through 6 under Check 2 in this section</p>	<p>Check wire for short to ground. Terminal 35, 16 gauge brown wire. Repair or replace the wiring harness.</p>

WIRE NO.	WIRE COLOR	FUNCTION	END CONNECTOR AND PIN NO.
1	BLACK	GROUND-SWITCHES,INDUCTIVE SENSOR	S-1,4,E,F,A,H,A,M
2	WHITE	SOLE LAMPOLEFT SWITCH	B-2
3	ORANGE	SOLE LAMPORIGHT SWITCH	B-3
4	ORANGE	SOLE LAMPORIGHT SWITCH	B-3
5	BROWN	SOLE LAMPOLEFT SWITCH	B-4
6	BLUE	SOLE LAMPOLEFT SWITCH	B-4
7	PINK	ACCUMULATOR PRESENT	B-7
8	YELLOW	LEFT LOAD ARM DATA	L-10(B)3
9	BROWN	RIGHT LOAD ARM DATA	T-10(B)3
10	GRAY	GROUND-LOAD ARM,SOLE WEIGHT KIT	C-6,T-11(A)3-11(A)3
11	RED	-12V-PRES. TRANSDUCER, LOAD ARM	S-2,C1, T-2(C)3-2(C)3
12	RED	LOAD ARM TRIGGER SIGNAL	T-2(C)3-4(D)1
13	BROWN	STUFFER CYCLE INDUCTIVE SENSOR	H
14	RED/YELLOW	PRESSURE TRANSDUCER DATA	S-2(B)1
15	RED/BLACK	GROUND-PRESSURE TRANSDUCER	S-1(A)1
16	RED	NEEDLE SWITCH	H
17	RED/BROWN	TOP SWITCH SLACKER SWITCH	T
18	RED/PURPLE	BOTTOM SWITCH SLACKER SWITCH	M
19	WHITE/PURPLE	SOLE TIPPING INDUCTIVE SENSOR	C-1
20	WHITE/BLACK	FEEDER SLIP INDUCTIVE SENSOR	C-3
21	WHITE/GRAY	STUFFER SHEAROLT INDUCTIVE SENSOR	E
22	WHITE/PINK	-12V SOLE WEIGHT KIT	C-4
23	WHITE/YELLOW	SOLE WEIGHT DATA	C-5
24	WHITE/BROWN	GROUND-SOLE WEIGHT DATA	C-4
25	WHITE/PURPLE	SOLE WEIGHT CLOCK DATA	C-6
26	WHITE/PURPLE	SOLE WEIGHT HORNTIC DATA (4wires)	C-6
27	ORANGE/BLACK	SOLE WEIGHT DEVICE PRESENT	C-7
28	WHITE/PURPLE	GEARBOX TEMP SWITCH	F
29	RED	-12V SOLENOID	R,N
30	PINK	-12V SOLENOID	P,N
31	ORANGE	-12V SOLENOID	L
32	GREEN	DECREASE SOLENOID	R
33	YELLOW	INCREASE SOLENOID	P
34	GRAY	OPEN CENTER SOLENOID	N
35	BROWN	ACCUMULATOR SHIFT LEFT SOLENOID	M
36	BROWN	ACCUMULATOR SHIFT LEFT SOLENOID	M
37	BLUE	ACCUMULATOR SHIFT RIGHT SOLENOID	L



**BALER WIRING HARNESS DIAGRAM**  
L97A-0188



- |                                   |                           |
|-----------------------------------|---------------------------|
| 1. Carriage Bolt Flanged Lock Nut | 8. Packer Shaft           |
| 2. Grease Fitting                 | 9. Packer Finger          |
| 3. Packer Finger Arm              | 10. Hard Surface Rearward |
| 4. Shim 0.005 IN (0.13 mm)        | 11. Bearing               |
| 5. Shim 0.010 IN (0.25 mm)        | 12. Grease Groove         |
| 6. Shim 0.020 IN (0.51 mm)        | 13. Wear Ring             |
| 7. Grease Seal - Split            |                           |

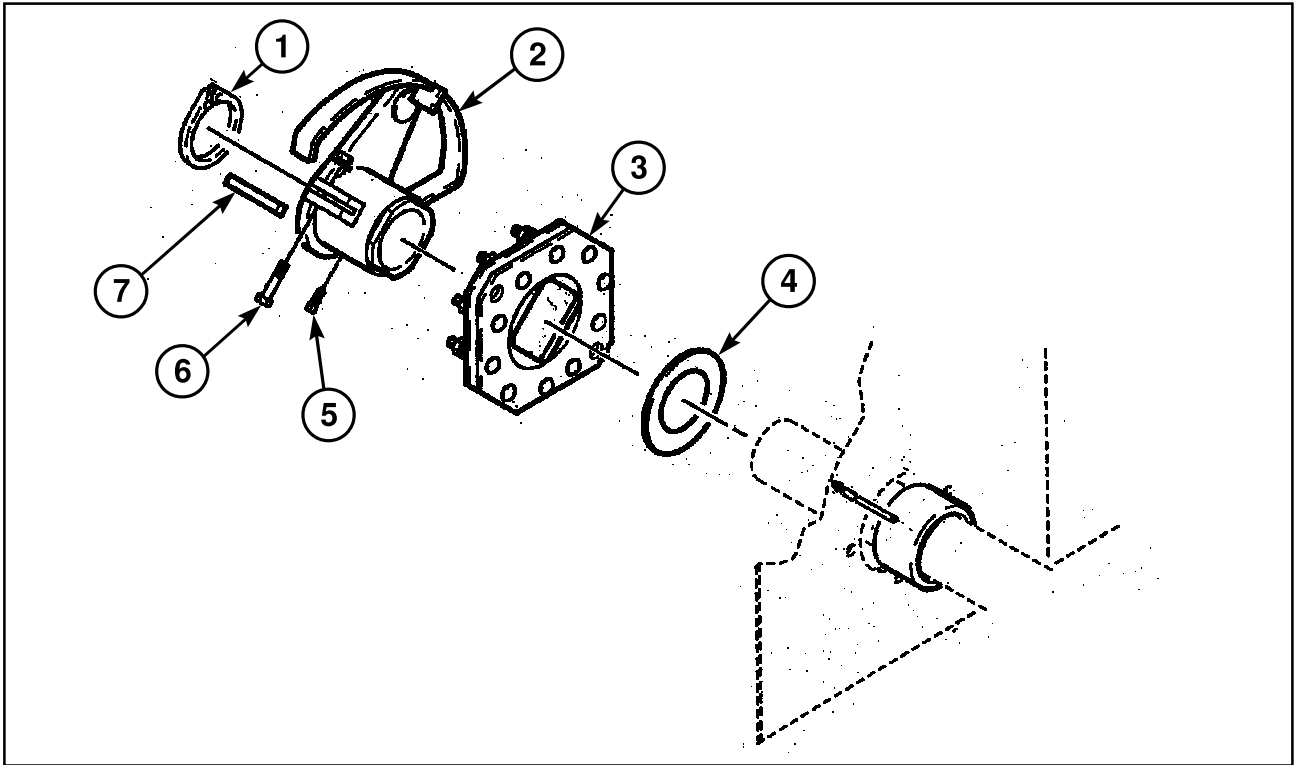
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# Section 5002

## STUFFER AND CHARGE CHAMBER

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1. Snap Ring
2. Stuffer Crank
3. Stuffer Brake
4. Spacer

5. Cup Point Set Screw
6. Clamping Bolt, Lock Washer, Nut
7. Key

## Removal

See the safety warnings at the beginning of this section and follow the procedures.

1. Remove the right stuffer arm. See Stuffer Arm in this section.
2. Remove the snap ring from the end of the shaft.
3. Loosen the clamping bolt from the stuffer crank.
4. Remove the cup point set screw.
5. Remove the stuffer crank and the key from the shaft.
6. Remove the stuffer brake from the shaft.
7. Remove the spacer from the shaft.

## Installation

See the safety warnings at the beginning of this section and follow the procedures.

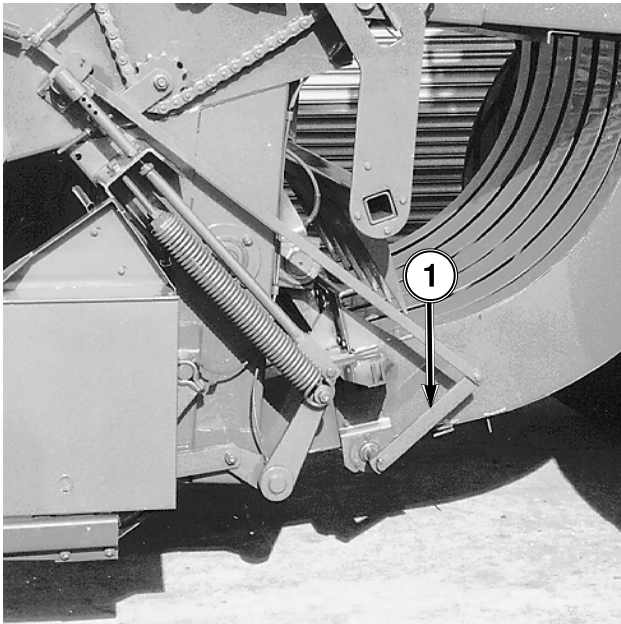
1. Install the spacer on the shaft.
2. Install the stuffer brake on the shaft with the bolt heads nearest the baler.
3. Install the key in the keyway of the shaft.
4. Install the stuffer crank and engage with the stuffer brake.
5. Install the snap ring on the end of the shaft.
6. Tighten the clamping bolt in the stuffer crank.
7. Install and tighten the cup point set screw.
8. Install the right stuffer arm. See Stuffer Arm in this section.
9. Check the gap for the stuffer cycle inductive sensor. See Inductive Sensors in Section 4001 or 4010.

## HOLDING FINGERS

### Adjustment

See the safety warnings at the beginning of this section and follow the procedures.

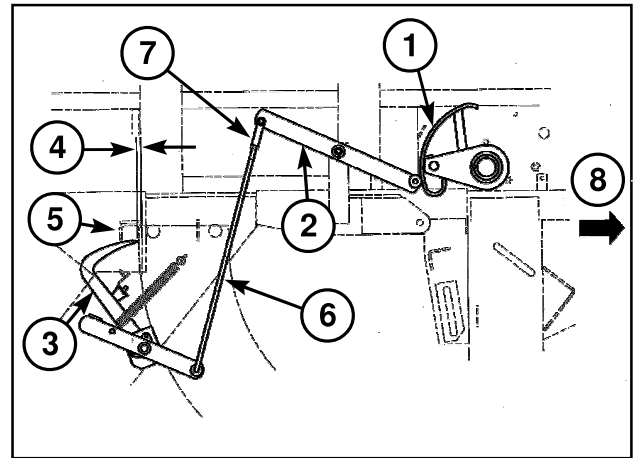
1. Push down on the stuffer trip linkage to engage the stuffer clutch.



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1. Stuffer Trip Linkage

2. Release the flywheel brake. Rotate the flywheel counterclockwise as viewed from the front until the holding finger cam actuates the cam lever. This will pull the holding fingers out of the charge chamber. Apply the flywheel brake.



L96A-0054

1. Holding Finger Cam
2. Cam Lever
3. Holding Finger
4. Gap
5. Knife Support
6. Control Linkage Rod
7. Clevis
8. Forward Direction

3. There must be a gap of 3/8 to 1/2 IN (10 to 13 mm) between the front of the knife support and the tips of the holding fingers.

4. If the gap is not correct, loosen the jam nut on the clevis end of the control linkage rod. Remove the clevis pin. Rotate the clevis to shorten or lengthen the control linkage rod to get the correct gap. Install the clevis pin into the clevis and install the cotter pin. Tighten the jam nut.

5. Make sure the holding fingers are in alignment with the holes in the charge chamber. If necessary, bend the holding fingers to get the correct alignment.

6. Make sure the holding finger shaft operates freely without any binding. Make sure the spring applies enough tension to pull the holding fingers all the way into the charge chamber.

## REMOVING A BALE FROM THE BALE CHAMBER

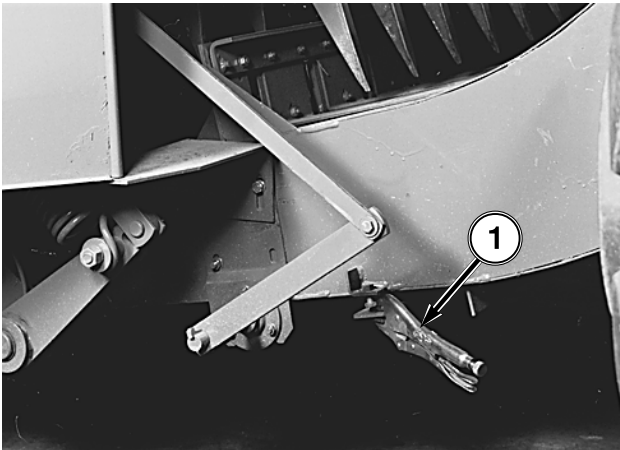
See the safety warnings at the beginning of this section and follow the procedures.

1. Before starting this procedure, make sure there is enough hay in the windrow to complete the procedure. There must be enough hay to make a minimum of 1 to 1-1/2 bales of hay. Very dry crop is best for this procedure.

2. Manually trip the knotter, and tie off the bale in the chamber.

3. Press and hold the PLUNGER SET v switch until a 000 SET LOAD is displayed on the baler control console.

4. Lock the stuffer door in the tripped position. It is necessary to hold the stuffer door in the tripped position manually so the stuffer will run continually during this procedure. Fasten locking type pliers on the tab of the sensor door arm to hold the tab away from the adjusting bolt as shown.



49BB-87060-04

1. Locking Pliers clamped on Tab of Stuffer Sensor Door

If locking pliers are not available, the adjusting bolt can be adjusted to hold the stuffer door in the tripped position. Make sure the adjustment bolt is returned to the original adjustment when the procedure is complete.

5. Removing the hay from the bale chamber will be easier if several short bales are made. To make short bales, loosen the bale length adjustment collar on the knotter trip arm. Adjust the collar downward to make approximately 2 1/2 to 3 FT (760 to 915 mm) long bales. Make sure the bale length adjustment collar is put back to the original position when the procedure is complete.

6. Begin baling at a slow PTO speed (approximately 1/3 normal speed) and select the lowest tractor gear range for the ground speed. Pick up all the remaining windrow or when enough hay has been fed into the bale chamber to push out the tight bale. Manually trip the knotter and tie off the loose hay in the bale chamber.

*NOTE: When baling in this mode, the operator must make sure the load and pressure decrease. If the load and the pressure do not decrease, the baler frame can be easily damaged.*



### WARNING

**Be sure to put the accumulator electronics in MANUAL mode before removing bales from the accumulator.**

7. Remove the tight bale from the bale chute or accumulator. Then manually pull the loose bale(s) out of the bale chamber.

*NOTE: If necessary, insert an iron bar under the twines on the end of the bale and pull the bale out with a log chain and a pickup or tractor.*

8. Remove the locking pliers from the tab of the stuffer sensor door.

*NOTE: If the sensor door adjustment bolt was adjusted downward, adjust the bolt to the correct specifications. See Stuffer Sensor Door in section 5002.*

9. Make sure the bale length adjustment collar on the knotter trip arm is put back to the original position.

11. Use the lifting equipment to remove the plunger through the opening in the top of the mainframe.

12. Remove the cap screws, lock washers, and cap plates that fasten the pivot shafts to the old plunger. Remove the pivot shafts and the bearing assemblies. Inspect the pivot shafts and bearings and replace if damaged.

13. Install the bearing assemblies and the pivot shafts in the new plunger. Install the cap plates, cap screws, and lock washers.

14. Remove the side rollers from the old plunger. Inspect the side rollers and replace if necessary. Install the side rollers on the new plunger. Push the side rollers all the way in toward the plunger and tighten the carriage bolts.

15. Remove the roller adjustment eccentrics for the front main rollers from the old plunger. Install the roller adjustment eccentrics in the new plunger. Do not tighten the cap screws at this time.

16. Remove the plunger knives, the side face angles, and the top adjustable plates from the old plunger. Inspect all of the parts and replace as required. Install the parts on the new plunger and adjust all of the parts toward the center of the plunger. Do not install the two middle side face angles on the plunger at this time.

17. Connect the lifting equipment to the new plunger and install the plunger in the baler.

18. Install the main roller assemblies in the plunger. See Main Roller Bearing Replacement in this section.

19. Install the load arms. See Load Arms in this section.

20. Manually rotate the flywheel to move the plunger all the way to the front and then all the way to the rear. Check the plunger in both positions to make sure the plunger is parallel with the mainframe. Install or remove shims at the front end of the load arms to adjust the plunger. Tighten the cap screws to 375 LB·FT (510 N·m).

21. Adjust the front main rollers and the side rollers. See Front Main Roller Adjustment and Side Roller Adjustment in this section.

22. Install the two middle side face angles on the plunger. Adjust the plunger knives, side face angles, and the top adjustable plates. See Plunger Knives, Side Face Angles, and Top Adjustable Plates Adjustments in this section.

23. Install the top shield.

24. Connect the IDL (implement drive line) to the tractor PTO shaft.

If the IDL has a quick disconnect yoke, make sure the locking pins are engaged in the notch of the PTO shaft.

If the IDL has a clamp yoke with one 5/8 bolt, tighten the bolt to 150 LB·FT (205 N·m).

If the IDL has a clamp yoke with two 1/2 bolts, tighten the bolts to 76 LB·FT (105 N·m).

## **WARNING**

**A loose yoke can slip off a shaft and result in injury to personnel or damage to the machine.**

**When installing a quick disconnect yoke, make sure the spring activated locking pins slide freely and are seated in the groove in the shaft.**

**When installing a clamp yoke, tighten the bolt(s) to the correct torque.**

## SAFETY WARNINGS



### WARNING

Before doing any maintenance or service work on the baler, you must:

- Park machine on a solid level surface.
- Disengage the PTO.
- Put the tractor transmission in PARK or apply the tractor parking brake.
- Turn off the baler control console.
- Stop the tractor engine and take the key with you.
- Apply the baler flywheel brake.
- Look and Listen! Make sure all moving parts have stopped.



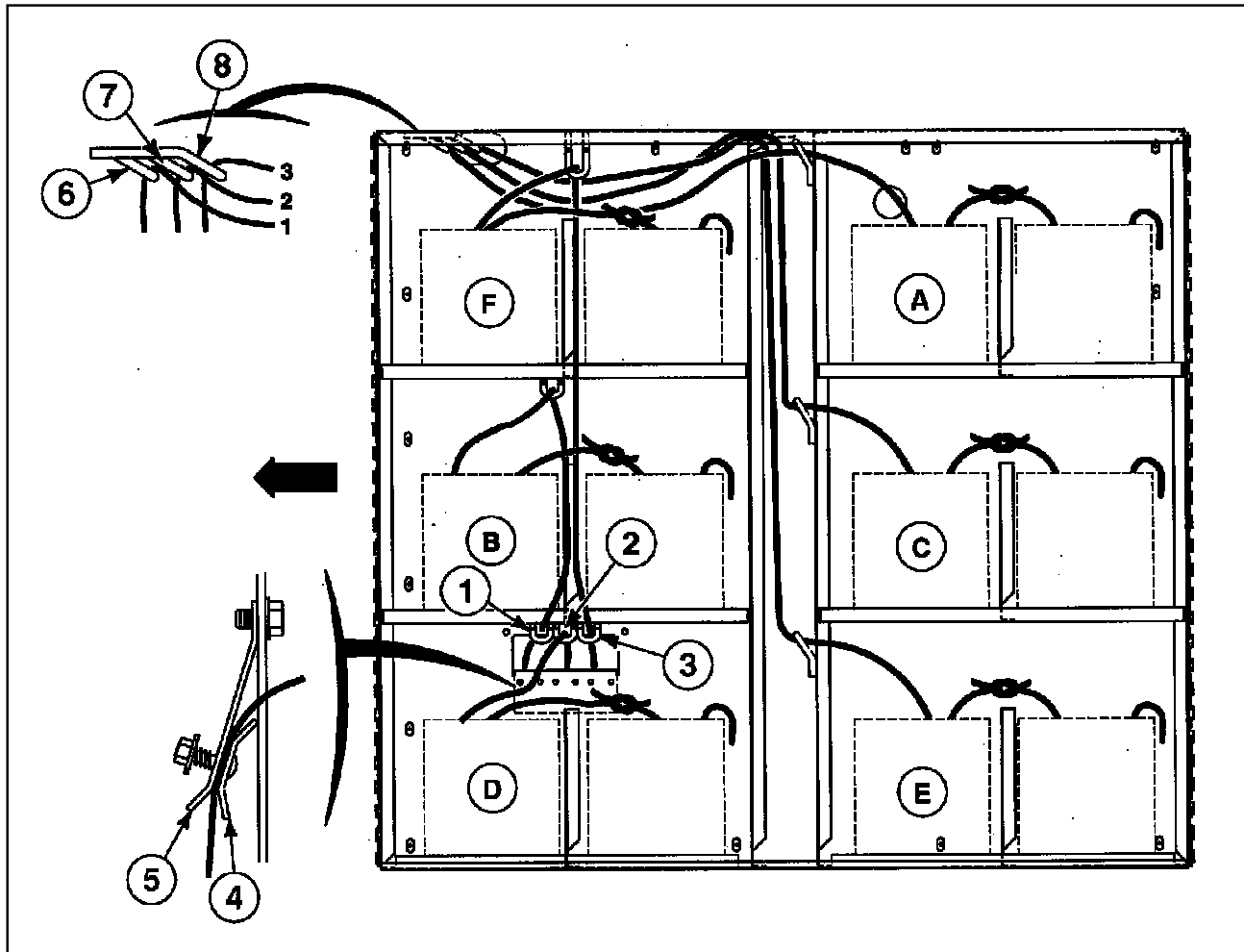
### WARNING

After lubricating, servicing, or adjusting the machine, make sure all tools and equipment have been removed.



### WARNING

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



L94A-0096

**LEFT-HAND TWINE STORAGE BOX**

- |                               |              |
|-------------------------------|--------------|
| 1. Front Guide Loop - Bottom  | A. Knotter 1 |
| 2. Center Guide Loop - Bottom | B. Needle 1  |
| 3. Rear Guide Loop - Bottom   | C. Knotter 2 |
| 4. Tension Clip               | D. Needle 2  |
| 5. Tension Plate              | E. Knotter 3 |
| 6. Front Guide Loop - Top     | F. Needle 3  |
| 7. Center Guide Loop - Top    |              |
| 8. Rear Guide Loop - Top      |              |

### **No. 5 Knotter**

*NOTE: Refer to the illustration Threading the Right-Hand Side of the Baler for a view of the needles and knotters on the right-hand side of the baler.*

The No. 5 knotter is the second knotter from the right-hand side of the baler. Pull the twine from one of the two middle twine balls at the rear of the right-hand twine storage box. Thread the twine through the opening in the wall and then through the loop. Thread the twine through the inner loop at the top of the twine storage box and then through the opening in the wall. Thread the twine through the middle loop near the front of the twine storage box.

Pull the twine through the opening in the back of the right-hand twine storage box. Thread the twine through the guide loop at the right-hand end of the knotter frame. The twine **MUST** go through the guide loop. Thread the twine under the tensioner assembly for knotter No. 6. Pull the twine past the front of the twine centering rod for the No. 5 knotter. Make sure you have the correct twine for the No. 5 knotter. Pull the twine past the left-hand side of the twine centering rod so the twine will be in alignment with the center of the twine tension rollers. Check to make sure the twine is not wrapped around another twine between the twine storage box and the twine centering rod. Thread the twine between the twine tension rollers. Thread the twine **UNDER** the twine finger shaft and then over the upper slacker arm roller. Thread the twine along the front of the tucker arm roller. Pull the twine into the bale chamber and tie the twine to the twine from the No. 5 needle.

*NOTE: If the knotters have lubrication lines, make sure the lubrication lines are adjusted so the twine will not rub the lubrication lines. Make sure the twine is not routed around the lubrication lines.*

### **No. 4 Knotter**

*NOTE: Refer to the illustration Threading the Right-Hand Side of the Baler for a view of the needles and knotters on the right-hand side of the baler.*

The No. 4 knotter is the third knotter on the right-hand side of the baler. Pull the twine from one of the two lower twine balls at the rear of the right-hand twine storage box. Thread the twine through the opening in the wall and then through the loop. Thread the twine through the outer loop at the top of the twine storage box and then through the opening in the wall. Thread the twine through the rear loop near the front of the twine storage box.

Pull the twine through the opening in the back of the right-hand twine storage box. Thread the twine through the guide loop at the right-hand end of the knotter frame. The twine **MUST** go through the guide loop. Thread the twine under the tensioner assemblies for knotter No. 6 and knotter No. 5. Pull the twine past the front of the twine centering rod for the No. 4 knotter. Make sure you have the correct twine for the No. 4 knotter. Pull the twine along the left-hand side of the twine centering rod so the twine will be in alignment with the twine tension rollers. Check to make sure the twine is not wrapped around another twine between the twine storage box and the twine centering rod. Thread the twine between the twine tension rollers. Thread the twine **UNDER** the twine finger shaft and then over the upper slacker arm roller. Thread the twine along the front of the tucker arm roller. Pull the twine into the bale chamber and tie the twine to the twine from the No. 4 needle.

*NOTE: If the knotters have lubrication lines, make sure the lubrication lines are adjusted so the twine will not rub the lubrication lines. Make sure the twine is not routed around the lubrication lines.*

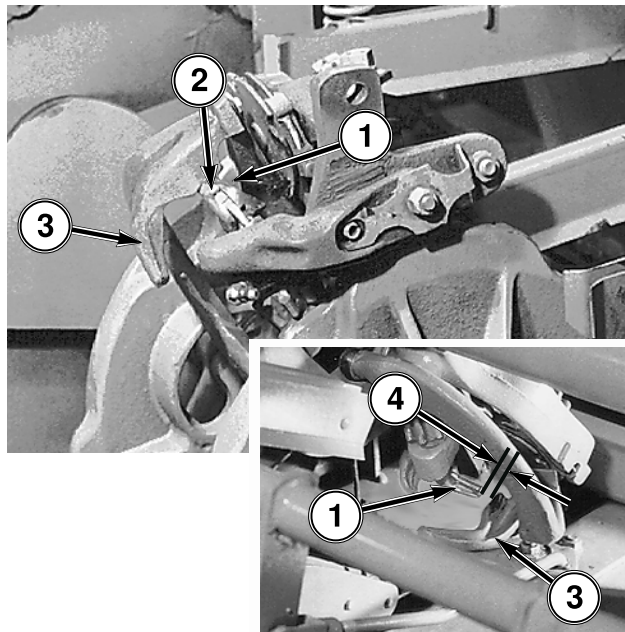
**General**

<b>PROBLEM</b>	<b>POSSIBLE CAUSE</b>	<b>CORRECTION</b>
Twine discs do not stay in time	<p>Groove pin broken in worm drive gear</p> <p>Worm gear slips on worm shaft</p> <p>Worn or broken worm gear or worm drive gear</p>	<p>Replace the groove pin.</p> <p>Tighten the nut on the worm shaft.</p> <p>Remove the shims to let the worm gear set on the tapered area of the worm shaft. See Twine Disc Adjustment to measure the end play for the worm gear shaft.</p> <p>Check for cracks in the worm gear and replace if cracks are present.</p> <p>Replace the worm gear or the worm drive gear.</p>
Knotter clutch will not engage	<p>Knotter clutch arm does not rotate freely on shaft</p> <p>Metering wheel and knotter trip arm out of adjustment</p>	<p>Clean the knotter clutch arm and shaft. Lubricate the knotter clutch arm. Lubricate the knotter clutch arm every 250 bales.</p> <p>Adjust the metering wheel and the knotter trip arm. See Knotter Trip Arm Linkage Adjustment.</p>
Failure to apply enough tension on twine with twine tensioner	<p>Adjustment bolt threads worn</p> <p>Groove worn in tension gears</p> <p>No travel left in springs</p>	<p>Replace the adjustment bolt.</p> <p>Replace the tensioner or remove the tensioner assembly and install the tensioner assembly from the opposite side of baler.</p> <p>Replace the bad parts. Straighten the gear mounting bracket or shorten the rear spacers.</p>

## Stripper Arm Adjustment

See the safety warnings at the beginning of this section and follow the procedures.

When the stripper arm is actuated, the half circle shape notch in the stripper arm flange will rub against the heel of the billhook. The stripper arm removes the twine loops from the billhook, while the billhook tongue is holding the two ends of twine in forming the knot. When the notch does not rub against the heel of the billhook, the twine loops will not be removed correctly and a bad knot is made.



48BB-86064-23

### STRIPPER ARM ADJUSTMENTS

1. Billhook
2. Half circle shape notch in Stripper Arm Flange
3. Stripper Arm
4. Minimum travel

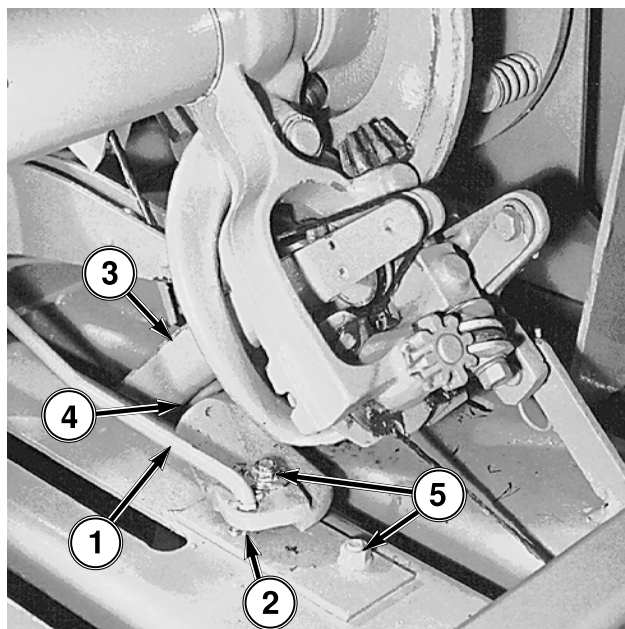
To check the stripper arm travel and fit with the billhook, remove the clevis pin, and swing the knotter head up. The force needed to swing the knotter head will increase slightly as the stripper arm rubs tightly across the billhook.

The half circle shape notch must be centered over the billhook. If adjustment is necessary, bend the stripper arm with a hammer, prybar, or wrench. The stripper arm can also be removed and bent in a vise that has wide jaws.

Adjust the stripper arm to rub tightly across the billhook by bending the stripper arm. The adjustment is correct when 8 to 12 LB (36 to 54 N) is required to move the stripper arm across the billhook. If only a slight adjustment is necessary, it is possible to bend the stripper arm with a hammer, prybar, or adjustable wrench without removing any parts of the knotter. When more adjustment is required, it is necessary to completely remove the stripper arm from the knotter and bend the stripper arm with a wide jaw vise. The stripper arm can be removed by removing the nut, lock washer and machinery bushing and pulling the arm from the stripper arm shaft. See the Knotter Head Assembly illustration.

2. Disconnect the clevis at the front of the twine finger rod. Rotate the twine finger to check the clearance between the twine finger and the needle. The clearance must be 1/32 to 1/8 IN (1 to 3 mm). To adjust the clearance, loosen the attachment bolts and move the mounting bracket. Tighten the mounting bolts. Connect the clevis. Repeat the procedure for each of the twine fingers.

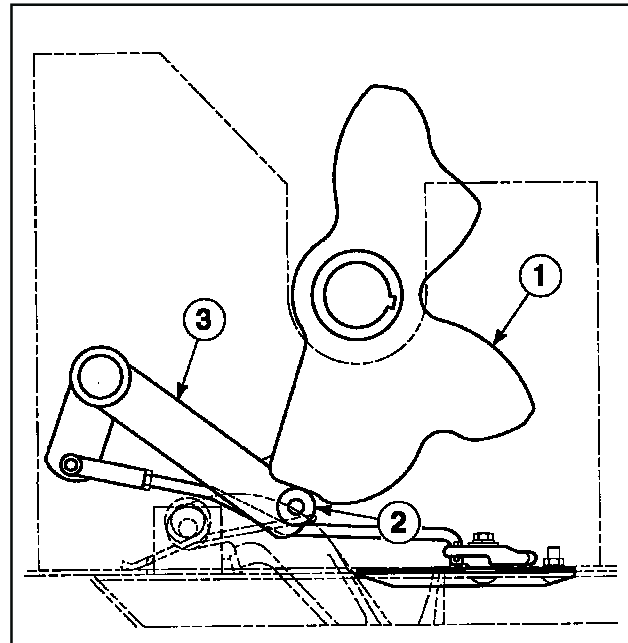
*NOTE: Always check the twine finger and needle clearance on the needle return stroke or with loose twine around the needle rollers.*



48BB-86064-17

1. Twine Finger Rod
2. Twine Finger
3. Needle
4. Clearance - Between Twine Finger and Needle
5. Attachment Bolts

3. Rotate the flywheel until the knotter is in the home position. The twine finger cam roller must be in the notch on twine finger cam as shown.



L90A-0029

1. Twine Finger Cam
2. Twine Finger Cam Roller
3. Twine Finger Arm

6001-62

4. Apply the flywheel brake. The plunger must not move while the stuffer/knotter drive chain is removed.

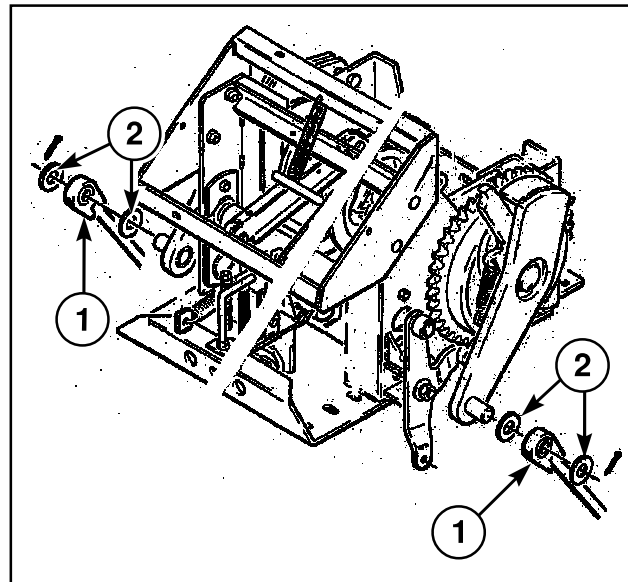
5. Mark the location of the knotter frame on the mainframe.

6. Cut each of the twines at the upper slacker arms and remove the twines from the upper twine tensioners.

7. Fasten the needle carriage to the main frame with a chain so the needle carriage cannot move forward.

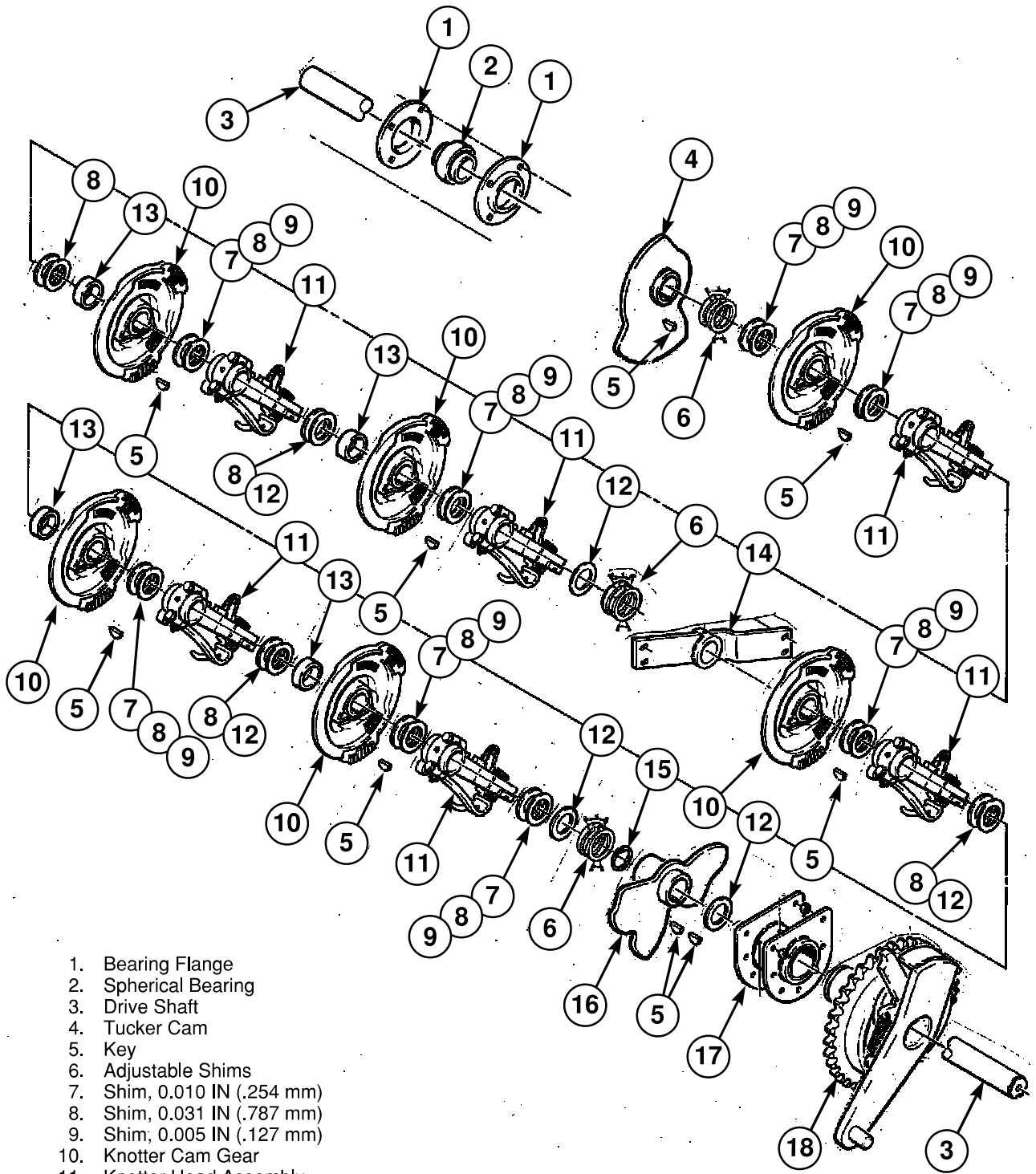
8. Remove the connector link from the stuffer/knotter drive chain. Remove the stuffer/knotter drive chain from the knotter drive sprocket.

9. Disconnect the needle actuating rods from both sides of the knotter. If the baler has a CLS (Centralized Lubrication System), use twine or wire to fasten the needle actuating rods to the side of the baler to prevent damage to the lubrication lines.



L90A-0038

1. Needle Actuating Rod
2. Machinery Bushings



- 1. Bearing Flange
- 2. Spherical Bearing
- 3. Drive Shaft
- 4. Tucker Cam
- 5. Key
- 6. Adjustable Shims
- 7. Shim, 0.010 IN (.254 mm)
- 8. Shim, 0.031 IN (.787 mm)
- 9. Shim, 0.005 IN (.127 mm)
- 10. Knotter Cam Gear
- 11. Knotter Head Assembly
- 12. Bushing, 0.071 IN (1.803 mm)
- 13. Spacer
- 14. Center Mounting Bracket
- 15. Snap Ring
- 16. Twine Finger Cam
- 17. Bearing Bracket
- 18. Knotter Clutch Assembly

## Installation

See the safety warnings at the beginning of this section and follow the procedures.

1. Make sure the keys are in the keyway on the drive shaft. Align the keyway in the twine finger cam with the keys and install the twine finger cam. Make sure the twine finger cam is against the snap ring.

2. Install the bushing.

3. Install the bearing bracket.

4. Push down on the bearing bracket and measure the distance between the bearing bracket and the nearest knotter cam gear. The measurement must be 11.5 IN (292 mm). If the measurement is not correct, remove the bushing and install shims to get the correct measurement.

5. Install the knotter drive sprocket.

6. Install the three bushings.

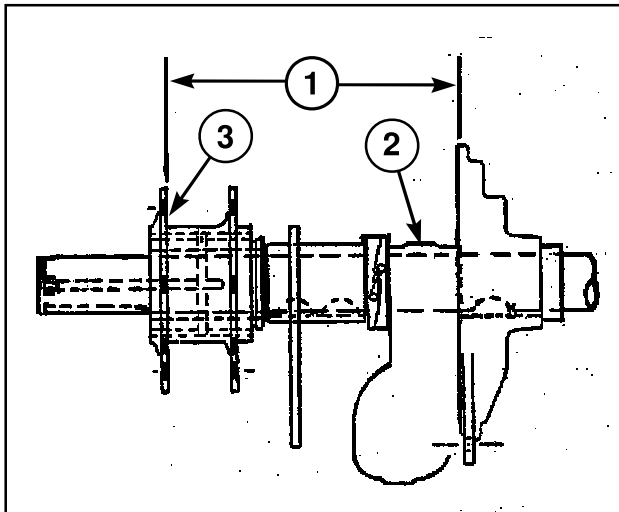
7. Align the keyway in the left-hand needle arm with the key on the drive shaft and install the left-hand needle arm.

8. Install the shims.

9. Install the snap ring.

10. Measure the end play of the knotter drive sprocket. The end play must be .005 to .015 IN (.127 to .381 mm). If the end play is not correct, remove or install shims between the snap ring and the left-hand needle arm.

11. Install the knotter assembly in the knotter frame. See Knotter Assembly in this section.



L90A-0049

1. 11.5 IN (292 mm)
2. Knotter Head Assembly
3. Measure from Inner Face of Flange

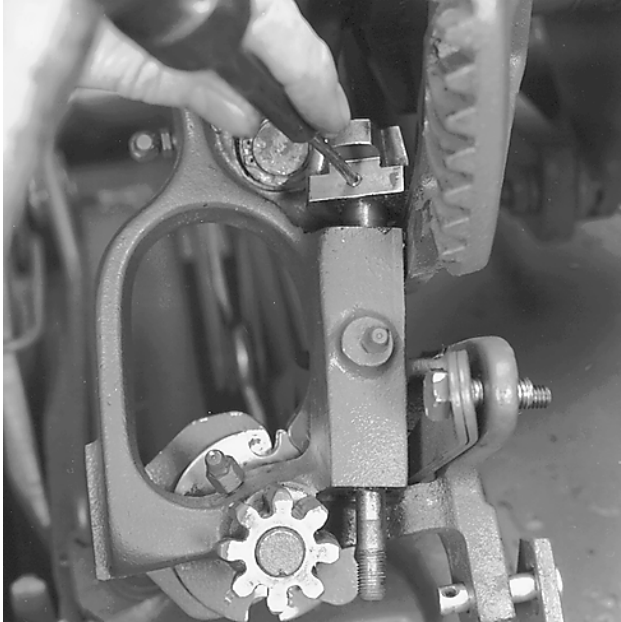
## **KNOTTER HEAD ASSEMBLY**

### **Disassembly**

See the safety warnings at the beginning of this section and follow the procedures.

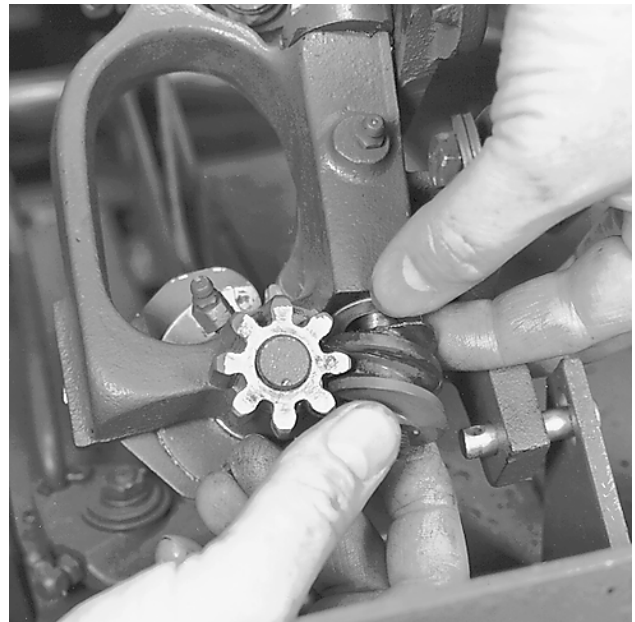
1. Make sure the knotters are in the home position.
2. Disconnect the implement drive line from the tractor.
3. Apply the flywheel brake.
4. If the knotter has a Centralized Lubrication System, fasten identification tags on the lubrication lines and disconnect the lubrication lines from the knotter.

8. Drive the groove pin into the worm pinion gear. Make sure the groove pin is flush with the face of the worm pinion gear.



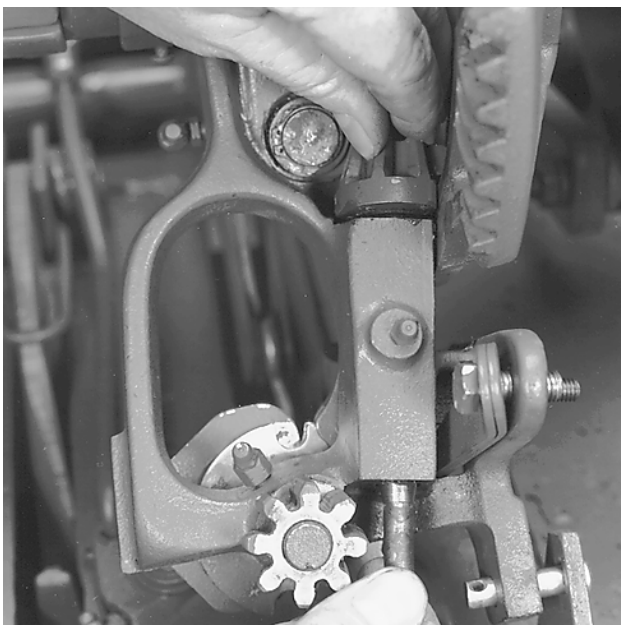
49BB-90027-07

10. Install the shims and the worm gear on the worm gear shaft. The end of the worm gear that has the largest bore must be installed first.



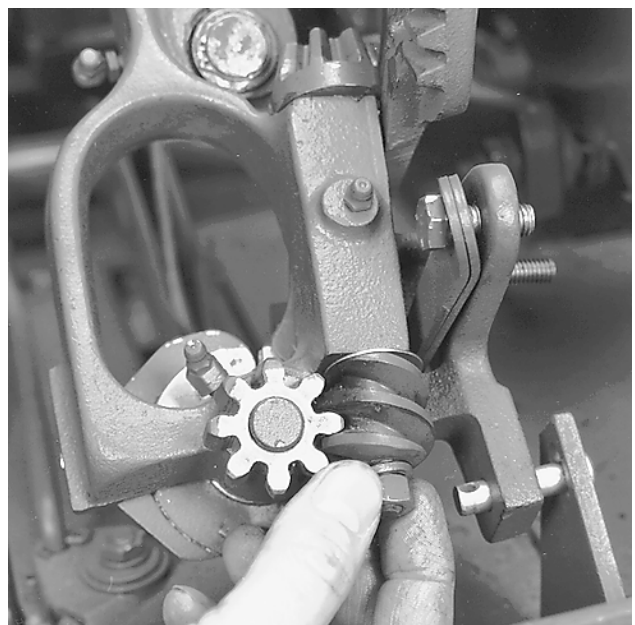
49BB-90027-09

9. Rotate the worm pinion gear so the flat side is toward the cam gear.



49BB-90025-08

11. Start the lock washer and the nut on the worm gear shaft. Do not tighten the nut this time.



49BB-90027-10

## **BALE TENSION SYSTEM**

The baler hydraulic system is used to control bale density and consists of a baler control valve and two bale density cylinders. The baler control valve is connected to a tractor remote circuit. The operator selects the desired bale density by selecting the plunger load setting on the baler control console. The baler control console monitors the load being applied to the bale at each plunger stroke. The baler control console then operates the baler control valve to increase or decrease the pressure at the bale density cylinders to

keep the selected plunger load setting. The bale density cylinders move the baler chamber doors to apply or relieve pressure on the bale to keep the correct plunger load setting.

See Section 4001 or 4010 for information about the electrical system. See Section 8001 for information about the hydraulic system. See Section 8003 for information about the bale density cylinders.

## **REMOVING A BALE FROM THE BALE CHAMBER**

See Removing a Bale from the Bale Chamber in section 5003.

## BALE TENSION ARMS

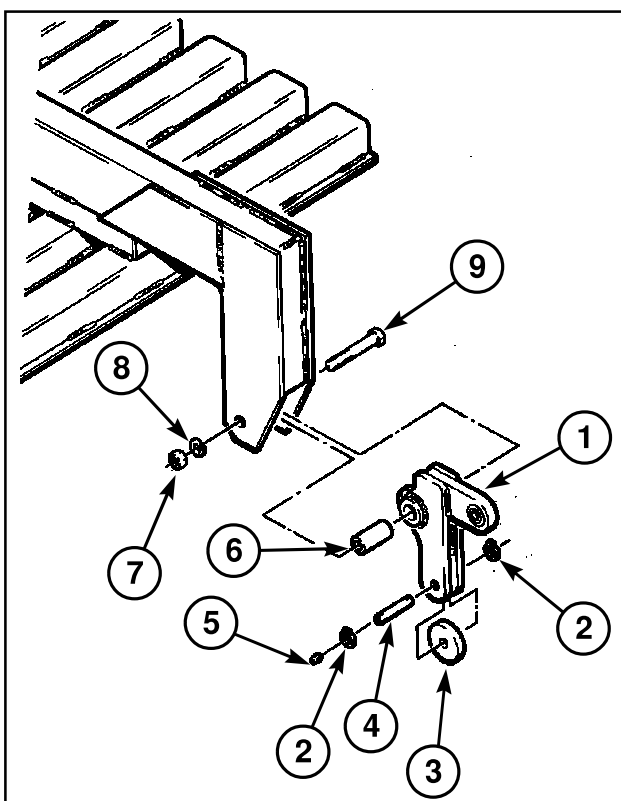
### Removal

See the safety warnings at the beginning of this section and follow the procedures.

1. Relieve the hydraulic pressure in the bale tension system. See Relieving Pressure In The Bale Tension System in this section.

2. If the top bale tension arm is being removed, fasten the top of the bale density cylinder to the mainframe to keep the cylinder in position when the clevis pin is removed.

3. Remove the hair pin and the clevis pin from the bale tension cylinder.



L90A -0135

1. Bale Tension Arm
2. Retaining Ring
3. Bale Tension Roller
4. Pin
5. Grease Fitting
6. Bushing
7. Nut
8. Lock Washer
9. Bolt

4. If you are removing any of the bale tension arms, connect lifting equipment to the arms.

5. Remove the nut, lock washer, and bolt from the bale tension arm pivot. Remove the bale tension arm.

### Inspection

1. Inspect the bushing. If the bushing is worn or damaged, replace the bushing.

2. Inspect the bearing. If the bearing is damaged or does not turn freely, press the bearing from the bale tension arm. Press the new bearing into the bore until the bearing is centered in the bale tension arm. Stake the bearing into the bale tension arm in five places on each side.

3. Remove the retaining ring from the pin for the roller. Remove the pin and the roller. Inspect the pin and the bore of the roller for wear and damage. Replace as necessary. Inspect the outer surface of the roller. If the roller is damaged or worn, replace the roller.

### Installation

See the safety warnings at the beginning of this section and follow the procedures.

1. Connect lifting equipment to the bale tension arm.

2. Put the bale tension arm in position. Install and tighten the bolt, lock washer, and nut.

3. Remove the lifting equipment.

4. Put the bale density cylinder in position on the bale tension arm. Install the clevis pin and the hair pin.

5. Lubricate the pin for the roller, the bearing, and the bushing in the bale tension arm.

## Installation

See the safety warnings at the beginning of this section and follow the procedures.

1. Inspect the bushings in the accumulator frame. If the bushings are worn or damaged, replace the bushings as follows:
  - a. Use a puller to remove the bushings. There are two bushings in the top of the tube and two bushings in the bottom of the tube.
  - b. Use a driver to install an inner bushing. Drive the inner bushing into the tube until the inner bushing is seated against the shoulder in the tube.
  - c. Use a driver to install an outer bushing. Drive the outer bushing into the tube until the top of the outer bushing is even with the top of the tube.
  - d. When an inner and an outer bushing are installed correctly, there will be a grease groove between the two bushings. Check the bushings to make sure the installation is correct.
2. Install the washer on the axle.
3. Use a jack to install the axle assembly into the accumulator frame.
4. Put the brake assembly on the axle.
5. Install and tighten the three cap screws and lock washers that fasten the brake assembly to the top of the axle.
6. Clean the threads of the wheel bolts with a wire brush. Apply a small amount of oil to the threads to prevent corrosion.
7. Install the wheels on the hubs.
8. Install the wheel bolts. Tighten the wheel bolts with a hand wrench to make sure the wheels are centered on the taper of the wheel bolts. Do not use an impact wrench to tighten the wheel bolts.
9. Lower the accumulator and remove the jack.
10. Tighten the wheel bolts to the correct torque. See General Machine Specifications in Section 1002 for the correct torque.
11. Check the torque of the wheel bolts after the first 3 to 5 hours of operation and again after every 50 hours of operation.
12. Lubricate the axle bushing.

8001-6

2. If the baler control valve has a closed center plug installed, the baler control console must be in the closed center mode.

If the baler control valve has an open center solenoid valve installed, the baler control console must be in the open center mode.

To check the mode, press the Power ON·OFF switch to turn the baler control console on. All the segments will be shown on the screens for four seconds.

If the baler control console is in the correct mode for the type of hydraulic system being used, the baler control console will continue normal operations.

If the baler control console is not in the correct mode for the type of hydraulic system being used, the horn will sound. The top screen will display an OC (open center) or CC (closed center), whichever mode the baler control console is in.

3. Before changing the hydraulic mode on the baler control console, you must determine if the baler has early production electronics or late production electronics.

If the baler control console has a RESET switch, the electronics system is early production. Do Step 4 to change the hydraulic mode of the baler control console.



4900-87038-01s

1. RESET switch

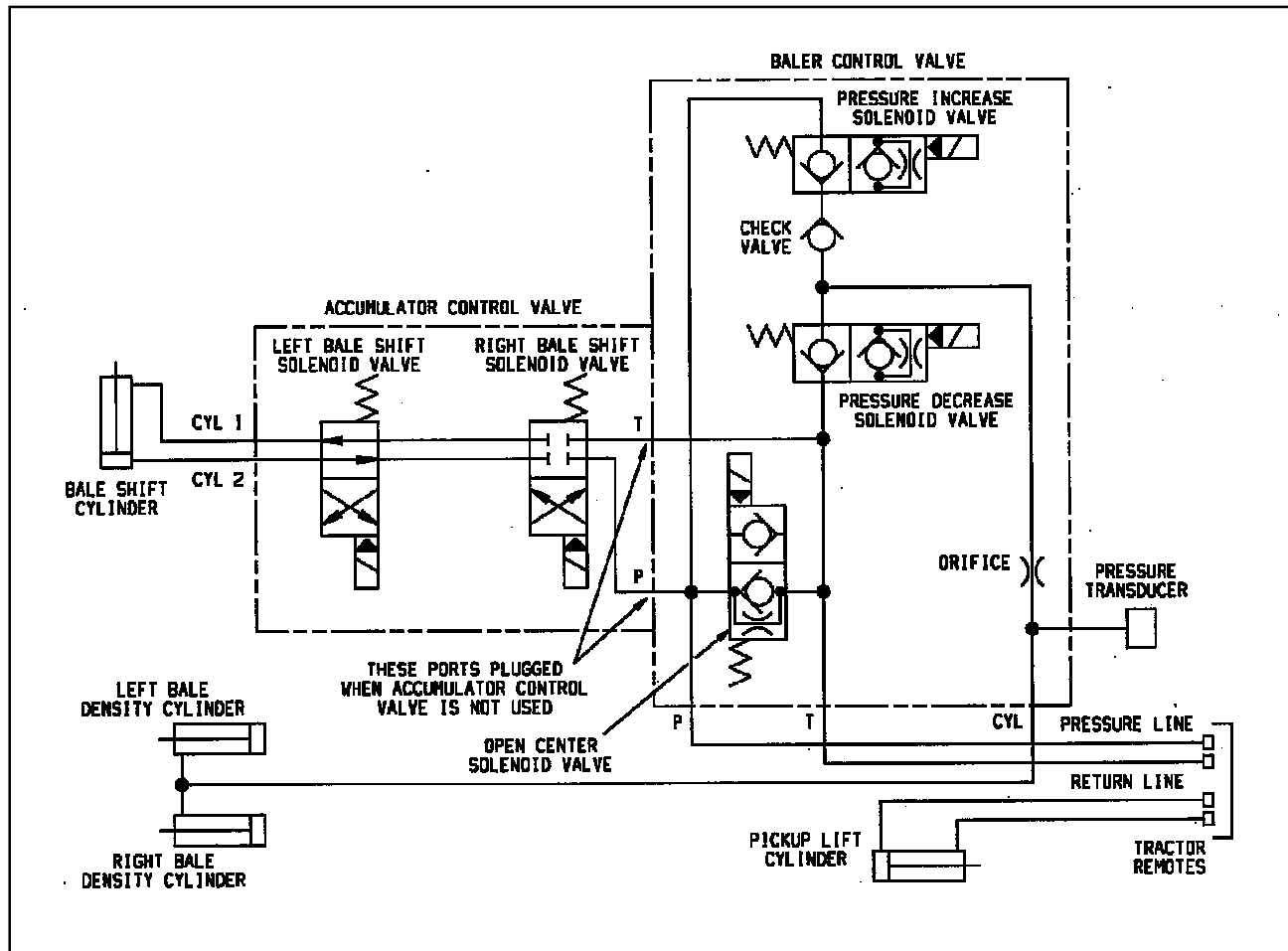
If the baler control console has a PRESSURE MANUAL ON·OFF switch, the electronics system is late production. Do Step 5 to change the hydraulic mode of the baler control console.



49BB-93034-01s

1. PRESSURE MANUAL ON·OFF switch

# SCHEMATICS



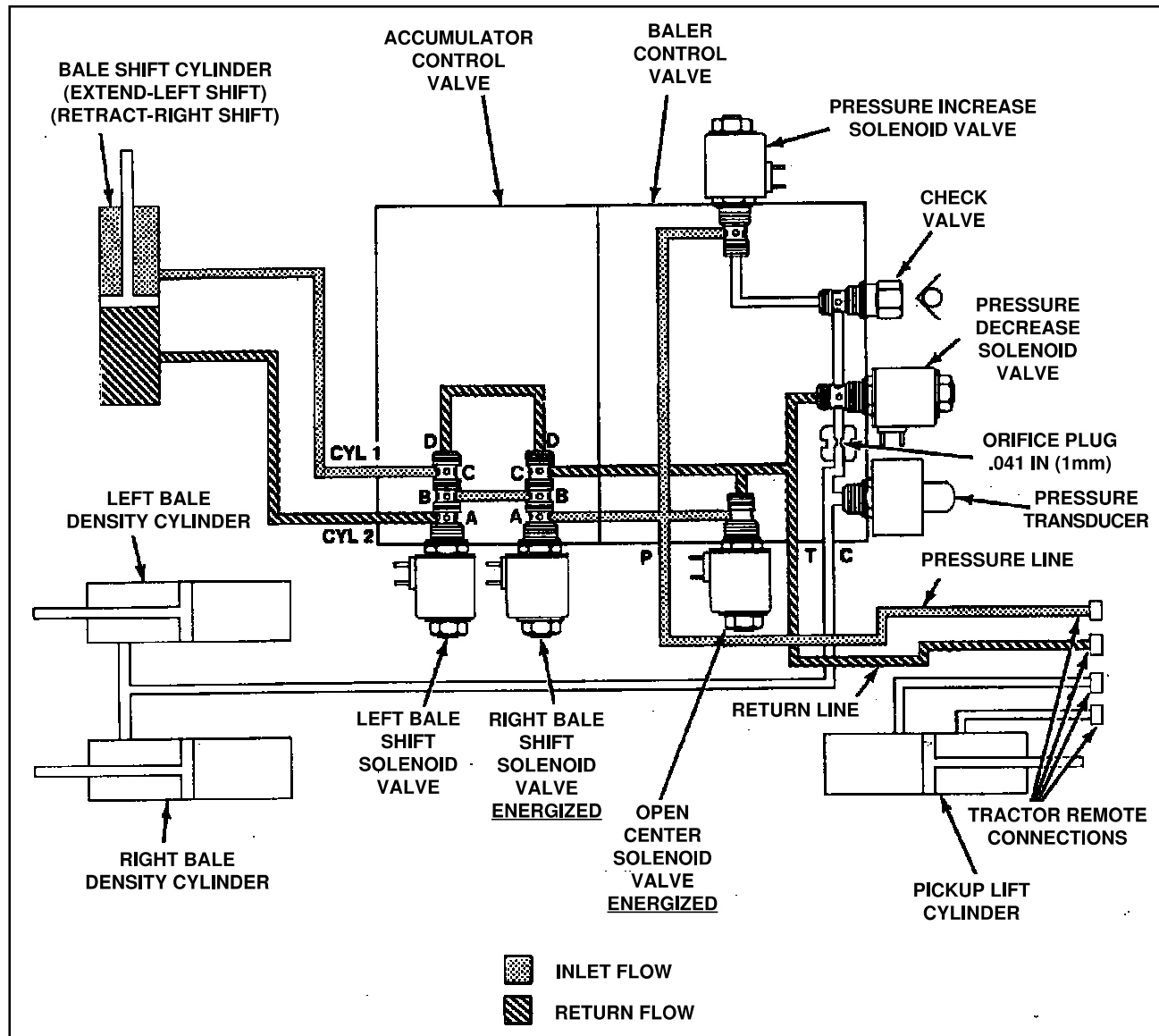
L90A-0099

OPEN CENTER SYSTEM

## **Pickup Lift Circuit**

The pickup is raised and lowered by the pickup cylinder which is controlled by one of the tractor's remote circuits. Extending the pickup cylinder raises the pickup. Retracting the pickup cylinder lowers the pickup. During baling, the pickup is lowered and the control lever is moved to the FLOAT position. An orifice is installed in one of the hydraulic lines for the pickup cylinder. The orifice works as a shock absorber to slow the bouncing of the pickup caused by rough ground.

**Right Shift**



L90A-0095, RA-585D

**OPEN CENTER SYSTEM HYDRAULIC SCHEMATIC – RIGHT SHIFT**

To operate the bale shift cylinder, the baler control console must energize the open center solenoid valve. The open center solenoid valve closes the passage to port T. Pressurized oil is now available at port A of the right bale shift solenoid.

To shift the bale to the right, the right bale shift solenoid valve is energized. The oil flows from port A to port B inside the right bale shift solenoid valve. The oil then goes through the passage to the left bale shift solenoid valve. The oil flows from port B to port C inside the left bale shift solenoid valve. The oil then goes out port CYL 1 to the rod end of the bale shift cylinder to retract the

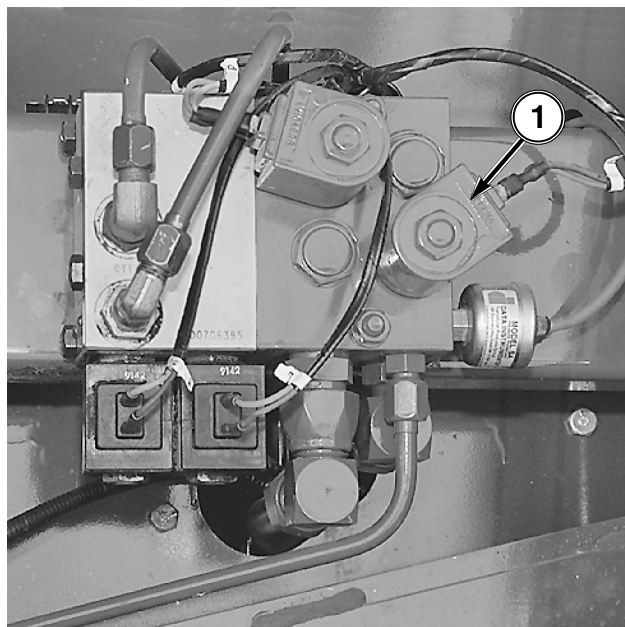
bale shift cylinder. Retracting the bale shift cylinder moves the bale from the center of the accumulator to the right side of the accumulator.

Return oil from the base end of the bale shift cylinder goes through port CYL 2 to the left bale shift solenoid valve. The oil flows from port A to port D inside the left bale shift solenoid valve. The oil then goes through the passage to the right bale shift solenoid valve. The oil flows from port D to port C inside the right bale shift solenoid valve. The oil then goes out port T of the baler control valve and on to the tractor hydraulic reservoir.

18. Slowly loosen the hose on the fitting of the bale density cylinder to relieve pressure in the system. Tighten the hose on the fitting.

*NOTE: If there is a bale in the bale chamber, the pressure in the bale density cylinders can continue to increase after the fitting is tightened. The bale can continue to expand, pushing out on the bale chamber doors.*

19. Disconnect the two wires from the coil on the pressure decrease solenoid valve.



49BB-96017-09

1. Pressure Decrease Solenoid Valve

20. Remove the nut from the top of the pressure decrease solenoid valve and remove the coil.

21. Use a deep well socket to remove the cartridge from the baler control valve. Be careful not to bend the stem of the cartridge.

22. Clean the cartridge with cleaning solvent. Use a brass rod to move the spool in the bore and check the bore for foreign particles. If there are foreign particles in the bore that cannot be removed, replace the cartridge.

23. Insert the brass rod into the end of the cartridge until the end of the brass rod is against the end of the spool. Slowly push the spool in until the spool will not move. The spool must move smoothly approximately 3/16 IN (4.8 mm). Quickly pull the brass rod from the cartridge. The spring in the cartridge must push the spool to the end of the cartridge quickly and smoothly. The spool must seat firmly at the end of the stroke. If the spool does not work correctly, replace the cartridge. Replace any O-ring or backup rings that are cut or damaged. See section 8002 for the location of the O-rings and backup rings. The backup ring is split for easy installation. If an O-ring or a backup ring is cut, check the bore in the valve body for damage.

16. Move the switch on the remote load control to the INCREASE position to increase the pressure. The pressure reading must be at least 200 less than the tractor relief pressure to check the increase.

*NOTE: If there is not a bale in the bale chamber, the cylinders must be completely retracted before the pressure will increase.*

If the pressure reading increased, the load increase system is good. Continue the procedure at Step 37.

If the pressure did not increase, do the next step.

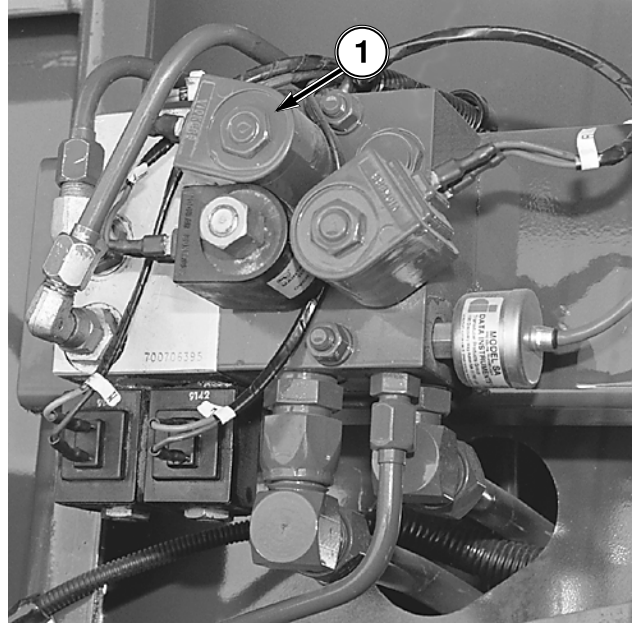
17. Stop the tractor engine.

18. Clean the area around the fitting on one of the bale density cylinders.

19. Slowly loosen the hose on the fitting of the bale density cylinder to relieve pressure in the system. Tighten the hose on the fitting.

*NOTE: If there is a bale in the bale chamber, the pressure in the bale density cylinders can continue to increase after the fitting is tightened. The bale can continue to expand, pushing out on the bale chamber doors.*

20. Disconnect the two wires from the coil on the pressure increase solenoid valve.



49BB-96017-22

1. Pressure Increase Solenoid Valve

21. Remove the nut from the top of the pressure increase solenoid valve and remove the coil.

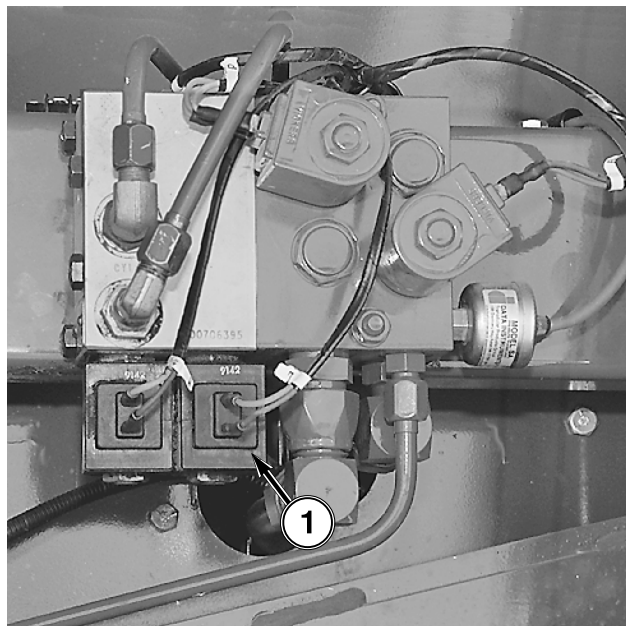
22. Use a deep well socket to remove the cartridge from the baler control valve. Be careful not to bend the stem of the cartridge.

23. Clean the cartridge with cleaning solvent. Use a brass rod to move the spool in the bore and check the bore for foreign particles. If there are foreign particles in the bore that cannot be removed, replace the cartridge.

24. Insert the brass rod into the end of the cartridge until the end of the brass rod is against the end of the spool. Slowly push the spool in until the spool will not move. The spool must move smoothly approximately 3/16 IN (4.8 mm). Quickly pull the brass rod from the cartridge. The spring in the cartridge must push the spool to the end of the cartridge quickly and smoothly. The spool must seat firmly at the end of the stroke. If the spool does not work correctly, replace the cartridge. Replace any O-ring or backup rings that are cut or damaged. See section 8002 for the location of the O-rings and backup rings. If an O-ring or a backup ring is cut, check the bore in the valve body for damage.

12. Press the ON-OFF switch on the baler control console to turn the baler control console off.

13. Disconnect the two wires from the coil on the right bale shift solenoid valve.



49BB-96017-09

1. Right Bale Shift Solenoid Valve

14. Remove the nut from the top of the right bale shift solenoid valve and remove the coil.

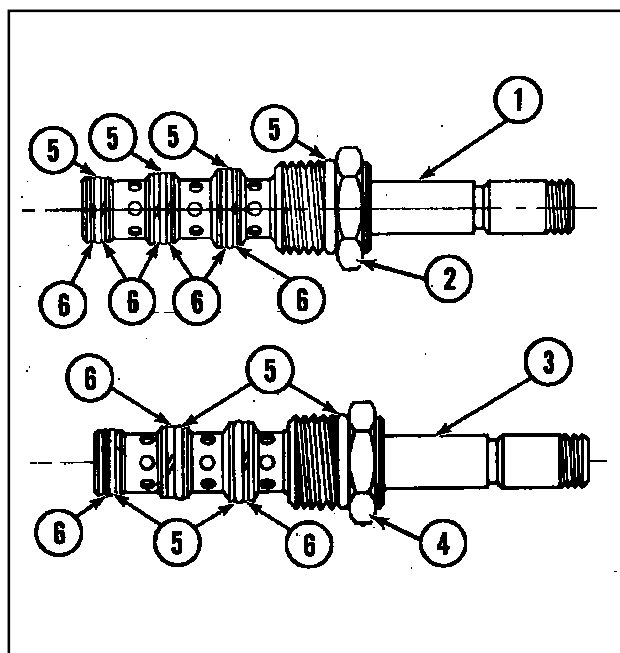
15. Use a deep well socket to remove the cartridge from the baler control valve. Be careful not to bend the stem of the cartridge.

16. Clean the cartridge with cleaning solvent. Use a brass rod to move the spool in the bore and check the bore for foreign particles. If there are foreign particles in the bore that cannot be removed, replace the cartridge.

17. Insert the brass rod into the end of the cartridge until the end of the brass rod is against the end of the spool. Slowly push the spool in until the spool will not move. The spool must move smoothly approximately 3/16 IN (4.8 mm). Quickly pull the brass rod from the cartridge. The spring in the cartridge must push the spool to the end of the cartridge quickly and smoothly. The spool must seat firmly at the end of the stroke. If the spool does not work correctly, replace the cartridge.

18. Compare the cartridge you removed to the cartridges in the drawing. Make sure the cartridge you removed is the correct cartridge. The cartridges will fit in either opening, but the cartridges are NOT interchangeable. The cartridge for the right bale shift solenoid valve must be installed in the opening nearest the front of the baler. The cartridge for the left bale shift solenoid valve must be installed in the opening nearest the rear of the baler.

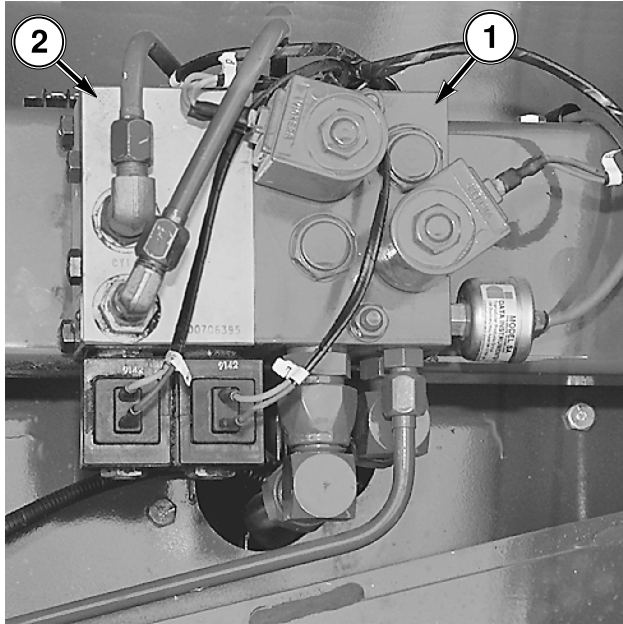
Inspect the O-rings and the backup rings for damage and replace as necessary. Make sure the O-rings and the backup rings are installed correctly. If an O-ring or a backup ring is cut or damaged, inspect the bore in the accumulator control valve for damage.



L90A-0105

1. Cartridge for Right Bale Shift Solenoid Valve
2. SV2-10-4 Stamped on Wrench Flat
3. Cartridge for Left Bale Shift Solenoid Valve
4. SV1-10-4 Stamped on Wrench Flat
5. O-Ring
6. Backup Ring

6. Clean the area around the baler control valve. If the baler is equipped with an accumulator control valve, clean the area around the accumulator control valve.



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1. Baler Control Valve
2. Accumulator Control Valve

7. Fasten identification tags to the hydraulic lines and wires connected to the baler control valve and to the accumulator control valve if equipped.

8. Disconnect the wires from the solenoids on the baler control valve and from the accumulator control valve if equipped.

9. Slowly loosen the hydraulic lines on the fittings in the baler control valve and the accumulator control valve to relieve any pressure. Disconnect the hydraulic lines and install plugs in the hydraulic lines.

*NOTE: If there is a bale in the bale chamber, the bale can continue to expand after the baler has stopped. The pressure on the bale chamber doors will increase the pressure in the bale density cylinders.*

10. Remove the pressure transducer.

11. Remove the bolts, lock washers, and nuts that fasten the baler control valve to the mainframe. Remove the baler control valve and the accumulator control valve if equipped.

12. If the baler is equipped with an accumulator control valve, remove the cap screws or socket head allen screws from the accumulator control valve. Separate the accumulator control valve from the baler control valve.

## SAFETY WARNINGS



### WARNING

Before doing any maintenance or service work on the baler, you must:

- Park machine on a solid level surface.
- Disengage the PTO.
- Put the tractor transmission in PARK or apply the tractor parking brake.
- Turn off the baler control console.
- Stop the tractor engine and take the key with you.
- Apply the baler flywheel brake.
- Look and Listen! Make sure all moving parts have stopped.



### WARNING

After lubricating, servicing, or adjusting the machine, make sure all tools and equipment have been removed.

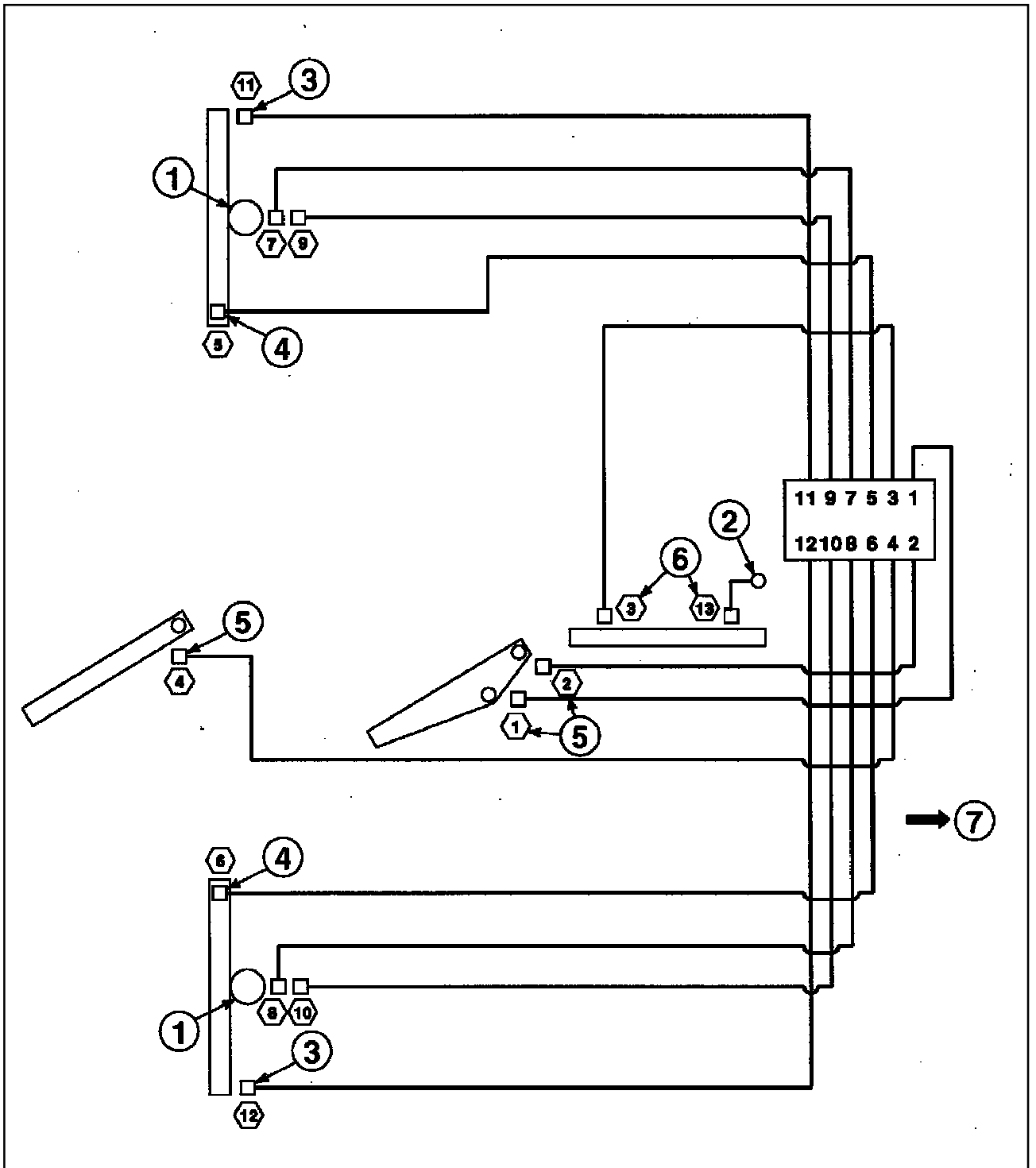


### WARNING

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

## Assembly

1. Install the new O-ring on the base end.
2. Install the new O-ring and the new backup ring in the groove on the inside of the gland. The backup ring must be between the O-ring and the outer end of the gland.
3. Install the new wiper in the gland. The lip of the wiper must be toward the outer end of the gland.
4. Install the new O-ring on the outside of the gland.
5. Install the seal on the piston. The lips of the seal must be away from the side of the piston that has the recess.
6. Fasten the clevis in the vise.
7. Lubricate the piston rod and the bore of the gland with clean oil. Push the gland onto the piston rod. If necessary, use a soft hammer to drive the gland onto the piston rod. Be careful not damage the wiper.
8. Put a support below and near the end of the piston rod. Use a shop cloth between the support and the piston rod to prevent damage to the piston rod.
9. Lubricate the new O-ring for the piston rod with clean oil. Install the O-ring on the piston rod.
10. Put the piston on the piston rod. The side of the piston that has the recess must be toward the threaded end of the piston rod.
11. Install the nut onto the piston rod and tighten the nut to 280 to 288 LB·FT (379 TO 390 N·m).
12. Fasten the tube in a vise or other holding equipment. Be careful not to damage the tube.
13. Lubricate the inside of the tube with clean oil. Push the piston straight onto the tube. Start the gland into the tube. Be careful not to damage the O-rings. Use a soft hammer to drive the gland into the tube.
14. Start the base end into the tube. Make sure the ports in the base end and the gland are aligned correctly. Be careful not to damage the O-ring. Use a soft hammer to drive the base end into the tube.
15. Install the studs. Install and tighten the nuts on the studs slowly and evenly to 125 LB·FT (169 N·m).



L96A-0142

**LUBRICATION SCHEMATIC - ACCUMULATOR**

- |                                    |                           |
|------------------------------------|---------------------------|
| 1. Caster Pivot                    | 5. Bale Shift Arm Linkage |
| 2. Grease Fitting                  | 6. Accumulator Tongue     |
| 3. Side Cart pivot Bearing (Outer) | 7. Forward                |
| 4. Side Cart Pivot Bearing (Inner) |                           |

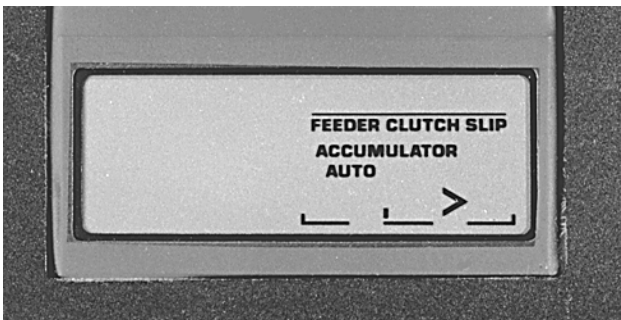
## Operation

See Section 4001 or 4010 for operating instructions for the accumulator.

## Accumulator Display

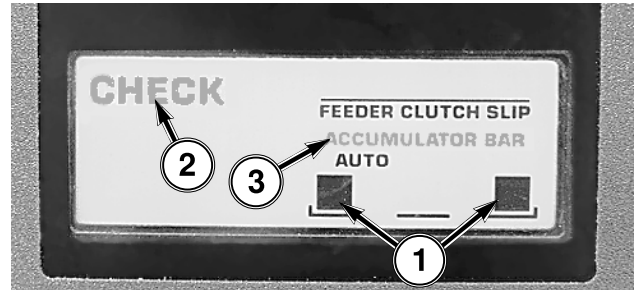
With the accumulator connected at start-up of the baler control console, the accumulator display will be as shown in the bottom screen on the baler control console.

*NOTE: If the accumulator monitor harness is connected after the baler control console is turned on, the accumulator display will not be shown. After the accumulator monitor harness is connected, turn the baler control console off and back on to show the accumulator display.*



49BB-93037-08

If the accumulator monitor harness is disconnected or a ground wire is broken after the baler control console is turned on, the display will be as shown. Note that the bale symbol will be shown on the side cart and the words CHECK and ACCUMULATOR BAR will flash. See Hardware And Electrical Connections; Electrical Connections in this section and check the electrical connections.



49BB-87039-10

1. Bale Symbols
2. Check (flashing)
3. Accumulator Bar (flashing)

7. Disconnect the connector for the bale unloading harness at the baler tongue.

8. Adjust the multimeter to indicate volts DC. Connect the negative lead of the multimeter to the terminal for the black wire in the connector on the wiring harness from the bale unload control box. If you are checking the circuit for the right solenoid, connect the positive lead to the terminal for the red wire. If you are checking the circuit for the left solenoid, connect the positive lead to the terminal for the green wire. Have another person press the switch on the bale unload control box for the solenoid you are checking. The multimeter must indicate system voltage.

If the multimeter indicates system voltage, there is a problem in the bale unloading harness. Check the continuity of each wire in the bale unloading harness. See the schematic in Section 4001 or 4010. Repair or replace the harness. If the multimeter does not indicate system voltage, do the next step.

9. Remove the negative lead of the multimeter from the connector. Connect the negative lead to a good ground connection on the tractor. If the multimeter indicates system voltage, there is a problem in the ground circuit. Check for an open circuit in the brown wire. If the multimeter does not indicate system voltage, there is an open circuit in the wire between the connector and the bale unload control box or there is a problem in the bale unload control box.

## Bale Shift Bar Adjustment

Because the bale shift bar is controlled by the baler control console, the only adjustment is to adjust the bale shift arm switches. The bale shift arm switches tell the baler control console the position of the bale shift bar so the baler control console can indicate the direction of the next bale. The bale shift arm switches also deenergize the bale shift solenoids at the end of the bale shift cycle. The bale shift switches must be adjusted so the front bale shift arm stops against the stop on the frame. See Section 4001 or 4010 for the adjustment procedure.

## Switch Adjustments

See Section 4001 or 4010 for the adjustment procedures for the switches.

## Checking The Bale Shift Control Solenoids

See Section 4001 or 4010 for information to check the bale shift solenoids.

10. Adjust the multimeter to indicate ohms ( $\Omega$ ) or continuity. Connect the positive (+) lead of the multimeter to terminal 1 in the connector at the end of the bale weight harness. Connect the negative (-) lead to a good ground on the baler frame. The multimeter must not indicate continuity.

*NOTE: Make sure the ground connection between the baler and tractor is good. If the test connection is made to the accumulator frame, also make sure the ground connection between the accumulator and baler is good.*

If the multimeter does not indicate continuity, the circuit is good. Do the next step.

If the multimeter indicates continuity, there is a short to ground. Repair the wire or replace the wiring harness. Do the next step.

11. Leave the multimeter connected to terminal 1 in the bale weight harness connector and to the baler frame. Connect a jumper wire to terminal 22 in the connector at the front of the baler control harness. Connect the other end of the jumper wire to a good ground on the tractor chassis.

If the multimeter indicates continuity, the power wire is good. Do the next step.

If the multimeter does not indicate continuity, there is a problem in the power wire. Check for an open circuit in the wiring harness between terminal 22 in the connector on the baler control harness and terminal 1 in the connector on the bale weight harness. Repair the wire or replace the wiring harness.

Connect the bale weight harness to the bale weight monitor. Connect the baler control harness to the rear of the baler control console. Repeat Step 1.

12. Adjust the multimeter to indicate ohms ( $\Omega$ ). Connect the positive (+) lead of the multimeter to terminal 2 in the connector at the end of the bale weight harness. Connect the negative (-) lead to a good ground on the baler frame. The multimeter must not indicate continuity.

*NOTE: Make sure the ground connection between the baler and tractor is good. If the test connection is made to the accumulator frame, also make sure the ground connection between the accumulator and baler is good.*

If the multimeter does not indicate continuity, the circuit is good. Do the next step.

If the multimeter indicates continuity, there is a short to ground. Repair the wire or replace the wiring harness. Do the next step.

13. Leave the multimeter connected to terminal 2 in the bale weight harness connector and to the baler frame. Connect a jumper wire to terminal 10 in the connector at the front of the baler control harness. Connect the other end of the jumper wire to a good ground on the tractor chassis.

If the multimeter indicates continuity, the ground wire is good. Do Step 16.

If the multimeter does not indicate continuity, there is a problem in the ground wire. Check for an open circuit in the wires between terminal 2 in the bale weight harness connector and terminal 10 in the connector at the front of the baler control harness. Repair the wire or replace the wiring harness.

Connect the bale weight harness to the bale weight monitor. Connect the baler control harness to the rear of the baler control console. Repeat Step 1.

14. Disconnect the bale weight harness from the bale weight monitor.

8. Use the SET v or SET ^ switch to change the weight on the screen to match the known weight. Each time the SET v or SET ^ switch is pressed, the displayed weight will change by units of 10. The word RESET will also be shown on the screen.

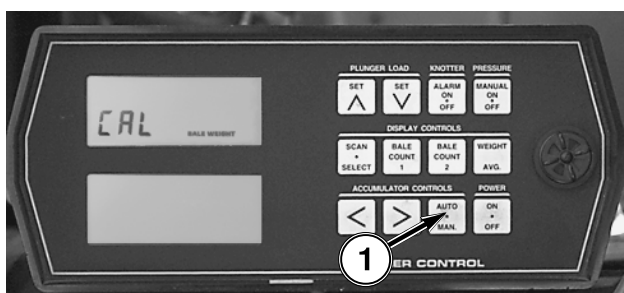
*NOTE: Round all figures up to the next unit of 10. Example: If the known weight is 1950 LBS, set the new value at 1950 LBS. If the known weight is 1952 LBS, set the new value at 1960 LBS.*

9. When the correct weight is displayed, press and hold the AUTO·MAN switch for at least two seconds. The baler control console will display the words CAL and BALE WEIGHT for four seconds. The baler control console will then return to the test mode. The new calibrated weight will be shown on the screen.

10. The calibration procedure must be performed a second time for the correct calibration value to be entered. Repeat Steps 6 through 10 to finish the calibration.

11. Turn the baler control console off.

12. Remove the weight from the accumulator.



49BB-96063-13a

#### 1. AUTO·MAN Switch

If the new weight shown on the screen is within + or - 10 LBS (4.5 kg) of the known weight, the calibration is finished. Do Step 11.

If the new weight shown on the screen is not within + or - 10 LBS of the known weight, do the next step.

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