AGCO®

7423 / 7424 / 7433 / 7434 / 7444
Large Rectangular Baler

SERVICE MANUAL
79026363 D Rev.

CONTENTS

Part Number 79026363 D Rev. (English)

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A WORD TO THE OPERATOR

FIG. 9: It is YOUR responsibility to read and understand the safety section in this manual before operating this machine. This safety section is intended to point out some of the basic safety situations which may be encountered during the normal operation and maintenance of your machine, and to suggest possible ways of dealing with these situations. This section is NOT a replacement for other safety practices featured in other sections of this book.

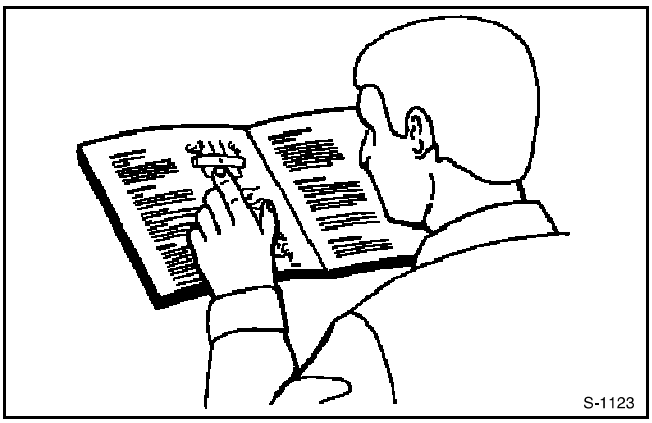

FIG. 9

Remember that YOU are the key to safety. Good safety practices not only protect you, but also the people around you. Study the features in this manual and make them a working part of your safety program. Keep in mind that this safety section is written only for this type of machine. Practice all other usual and customary safe working precautions, and above all REMEMBER – SAFETY IS YOUR RESPONSIBILITY. YOU CAN PREVENT SERIOUS INJURY OR DEATH.

WARNING: In some of the illustrations or photos used in this manual, panels or guards may have been removed for clarity. Never operate the machine with any panels or guards removed. If the removal of panels or guards is necessary to make a repair, they MUST be replaced before operation.

Make sure your machine has the correct equipment needed by the local regulations.

The photos, illustrations, and data used in this manual were current at the time of printing, but due to possible inline production changes, your machine can vary slightly in detail. The manufacturer reserves the right to redesign and change the machine as necessary without notification.

STUFFER CYCLE SENSOR

FIG. 29: Correct operation of the stuffer cycle is important for correct operation of the bale density circuit. A sensor (1) is mounted near the stuffer crank arm to monitor the stuffer cycle.

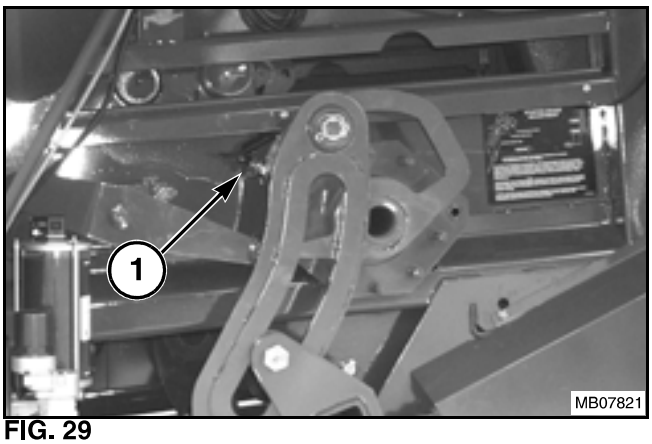

FIG. 29

STUFFER SHEARBOLT SENSOR

FIG. 30: The drive for the stuffer, knotter assemblies, and needle operation is protected by a shearbolt. If the stuffer/knotter drive sprocket (1) stops turning while the baler is running, the stuffer shearbolt sensor (2) signals the monitor to show an alarm.

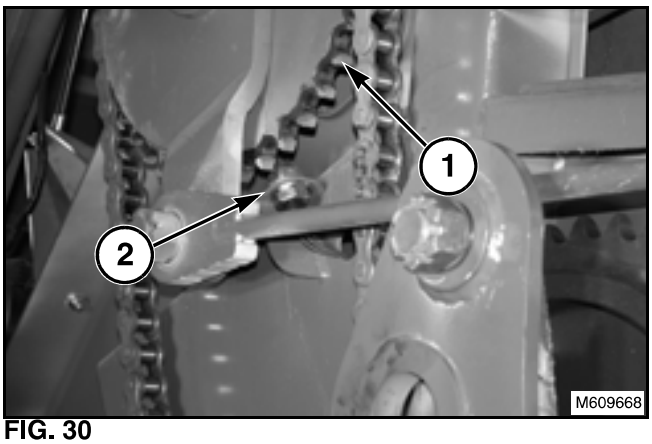

FIG. 30

FLYWHEEL BRAKE SWITCH

FIG. 31: The flywheel brake is used to prevent the flywheel from turning. The flywheel brake switch (1) monitors the position of the flywheel brake handle. If the flywheel brake handle is down (brake applied), an alarm will alert the operator.

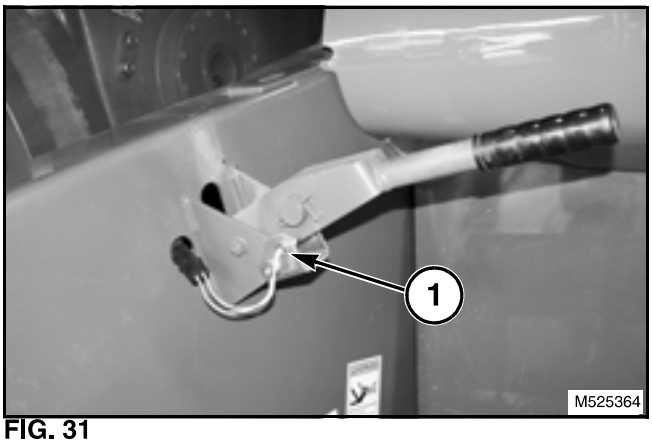

FIG. 31

Basic Troubleshooting Procedures

In troubleshooting electrical circuits, the first step is to familiarize yourself with the components, wire routing and connections of the circuit. This can be aided by studying the wiring diagrams in the operator's manual or service manual. Each electrical circuit on the baler is isolated to show the wire connections and components used. Most diagrams give a visual approximation of the components to aid in identifying unfamiliar parts.

If a module or other electrical component is completely dead, first check the diagram for the correct condition, i.e., clutches engaged, flywheel sensor on, etc. Check for obvious failure areas like unhooked connectors or broken wires. The ground circuit can also become defective because of a broken wire or poor connection too the frame. Most voltmeter probes are small enough to insert the back side of the electrical connector so the supply voltage to a module can be checked without disconnecting it from the harness.

The greatest percentage of defective connections occur at or near the connectors themselves. Visually check to see that terminals are completely inserted into the housing (no terminal should be exposed above the surface of the connector). This is difficult in some connectors that are positioned behind shields. If a locking tang on the terminal is damaged and will not retain the terminal in the connector, a new terminal from the electrical service kit will need to be installed. Some terminals may just require a locking tang on the terminal to be reformed so it will catch the appropriate step in the housing.

Immediately behind the connectors is another potential failure area. This is increased if the wires are flexed or sharply kinked. Moving the wires from side to side may produce intermittent contact and locate the general area of failure.

Corrosion of the terminals is possible as the baler ages. In some cases simply disconnecting and remating a connector will solve a poor connection problem. Heavy corrosion of terminals can occur if the baler is exposed to or stored with fertilizer or near concentrated feedlot operations. This will require replacement of the affected terminals to provide reliable connections over a long period of time.

In troubleshooting a new baler or an electrical system that that has never functioned correctly, check for the possibility that wires in the connector may be crossed or that wires in the connector may be inserted in an incorrect terminal where no continuity between harnesses exists. Wire colors, functions and terminal numbers (on numbered connectors) are listed in the operator' service manual. Wires that have been exposed to oil or sunlight may require some of the harness covering to be removed to aid in identifying the correct color.

Sensors

Low Hydraulic Oil Sensor

FIG. 16: The low hydraulic sensor (1) is located below the sight glass on the hydraulic oil reservior. The sensor sends a signal to the ISO SBC if the hydraulic oil lever is low.

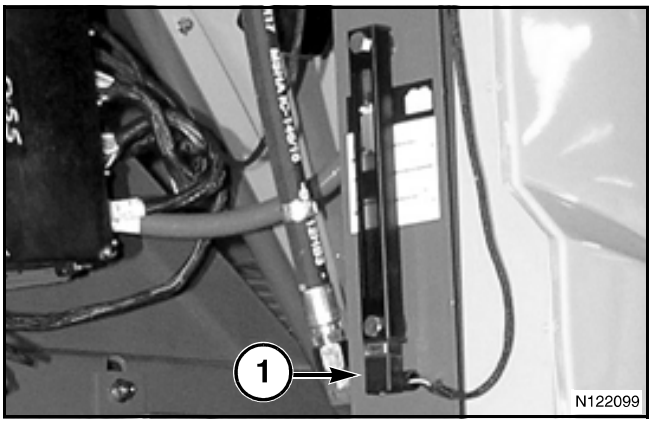

FIG. 16

Hot Oil Switch

The hot oil switch is located behind the sight glass on the hydraulic oil reservior. The switch is normally closed when the temo is acceptable, if the oil gets too hot, the switch will open, braking the circuit. Causing an alarm to show on the Console monitor in the form of “Hydraulic Fault.”

Adjustments

Baler Timing Sensor, Feeder Slip Sensor, Stuffer Shearbolt Sensor

FIG. 17:

(1) Clearance .50-.75 mm (.020-.030 in)

(2) Inductive Sensor

(3) Sprocket Teeth

(4) Nuts

1. Align the sprocket tooth with the inductive sensor as shown.
2. Adjust the clearance to be .50-.75 mm (.020-.030 in).
3. Tighten the nuts to a torque of 10 Nm (90 lbf in).
4. Rotate sprocket and check that all teeth have some clearance and that no teeth have more than 1 mm (.040 in) clearance.

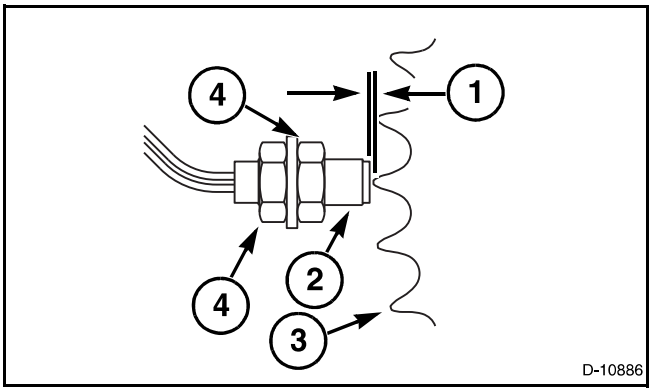

FIG. 17

Stuffer Cycle Inductive Sensor

FIG. 18:

(1) Clearance .25-.50 mm (.010-.020 in)

(2) Nuts

(3) Cam Tab

1. Rotate the stuffer arm to align the cam tab with the inductive sensor.
2. Adjust the clearance to be .25-.50 mm (.010-.020 in).
3. Tighten the nuts to a torque of 10 Nm (90 lbf in).

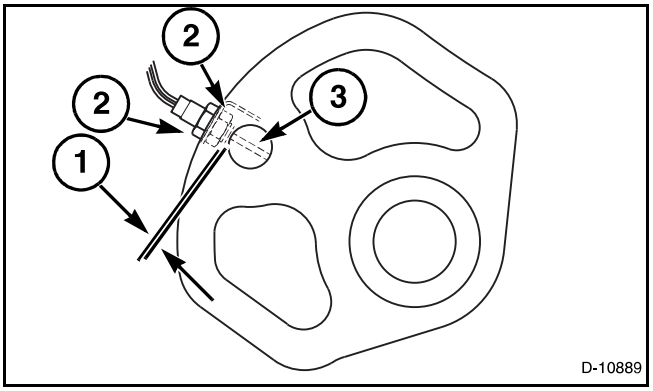

FIG. 18

The following legend refers to Fig. 24

Abbreviation	Description	Abbreviation	Description
1 BLK SENSOR GND	Wire 1 - black, sensor ground. Circuit details.	AXLE CENTER SWITCH	Axle center switch
18 BLK SWITCH GND	Wire 18 - black, switch ground. Circuit details.	BALE CHUTE DOWN (IF EQUIPPED)	Bale chute down (if equipped) sensor
19 DKGN GEARBOX TEMP	Wire 19 - dark green, gearbox temperature. Circuit details.	BALE DROP (IF EQUIPPED)	Bale drop (if equipped) sensor
22 PK/BK STUFFER SHEARBOLT	Wire 22 - pink/black, stuffer shearbolt. Circuit details.	BALER TIMING	Baler timing sensor
23 BK/GN STUFFER CYCLE	Wire 23 - black/green, stuffer cycle. Circuit details.	BOTTOM KNOTTER	Bottom knotter
24 GY/BK BALER TIMING	Wire 24 - grey/black, baler timing. Circuit details.	CONTROLLER HARNESS	Controller harness
25 LBL/BK BALE DROP	Wire 25 - light blue/black, bale drop. Circuit details.	CONTROLLER TO REAR, LOWER HARNESS CONNECTION	SBC to rear, lower harness connection
26 WH/RD PTO RPM	Wire 26 - white/red, PTO RPM. Circuit details.	CONTROLLER TO REAR, UPPER HARNESS CONNECTION	SBC to rear, upper harness connection
27 WH/YE FEEDER SLIP	Wire 27 - white/yellow, feeder slip. Circuit details.	FEEDER SLIP	Feeder slip sensor
29 PU/YE TANDEM AXLE HOME	Wire 29 - purple/yellow, tandem axle home. Circuit details.	CONTROLLER TO TAILLIGHT HARNESS CONNECTION	SBC to tail lamp harness connection
30 BLK SENSOR GND	Wire 30 - black, sensor ground. Circuit details.	FLYWHEEL BRAKE	Flywheel brake sensor
47 RD/WH BOTTOM KNOTTER SIG	Wire 47 - red/white, bottom knotter signal. Circuit details.	GEARBOX TEMP	Gearbox temperature sensor
48 DKBL/WH NEEDLES HOME SIG	Wire 48 - dark blue/white, needles home signal. Circuit details.	HYD OIL LEVEL	Hydraulic oil level
51 WH/BN HYD FAULT	Wire 51 - white/brown, hydraulic fault. Circuit details.	NEEDLES HOME	Needles home sensor
52 BLK SWITCH GND	Wire 52 - black, switch ground. Circuit details.	PRESSURE SWITCH	Pressure switch
53 PK/BK PARK BRAKE SIG	Wire 53 - pink/black park brake signal. Circuit details.	PARK BRAKE (IF EQUIPPED) JUMPER INSTALLED IF NOT	Park brake (if equipped). A jumper is installed if there is no park brake.
54 OR/BK FLYWHEEL BRAKE SIG	Wire 54 - orange/black, flywheel brake signal. Circuit details.	PTO SPEED	PTO speed sensor
56 GY/BK TOP KNOTTER SIG	Wire 56 - grey/black, top knotter signal. Circuit details.	STUFFER CYCLE	Stuffer cycle
STUFFER SHEAR BOLT	Stuffer shearbolt sensor	STUFFER LOCKOUT	Stuffer lockout sensor
TEMP SWITCH	Temperature switch	TOP KNOTTER	Top knotter

NOTES

MAIN WORK SCREEN

Overview

FIG. 37: The following are shown on the Main Work Screen:

(1) Operating Directional Arrows
(2) Current Flakes Per Bale
(3) Last Flakes Per Bale
(4) Bale Density Circuit Hydraulic Pressure
(5) Automatic/Manual Icon
(6) Feeder Slip
(7) Display Area
(8) Job Name Area
(9) Baler PTO Speed (with no accumulator)
(10) Scale Icon (with scale)
(11) Accumulator Indicator (with accumulator)
(12) Automatic/Manual Icon (with accumulator)
(13) Bale Weight (with scale)
(14) Plunger Load Setting
(15) Actual Plunger Load
(16) Plunger Load Mode Icon
(17) Plunger Strokes Per Flake

NOTE: 480 X 480 displays will have an extra row of information on each screen.

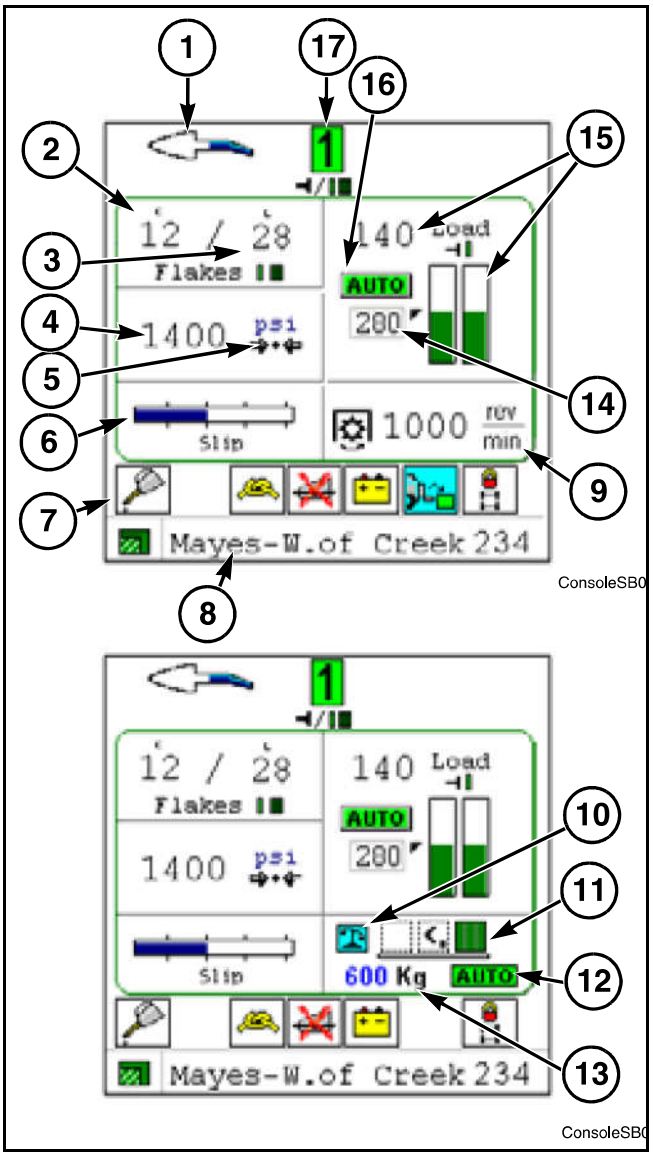

FIG. 37

Operating Directional Arrows

FIG. 38: Operating Directional Arrows (1) indicate the difference between the left-hand and right-hand plunger load.

The arrows are hidden when the plunger loads are equal. When an unequal load occurs, the arrow will show on the side with the most amount of load. As the difference increases, the arrow darkens. Steer in the direction of the arrow to feed more crop into the other side of the pickup.

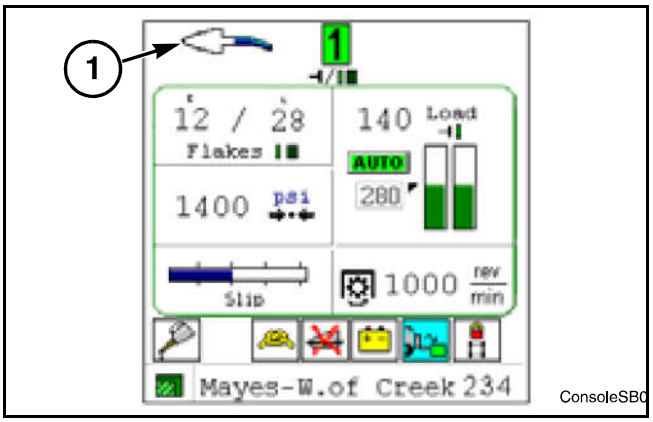

FIG. 38

Bale weight is complete with no errors.

Bale weight is complete and the bale is unloaded from the scale.

Average bale weight that is displayed at power up.

Scale Error

NOTE: Bale weight is displayed independently of the accumulator on 480 x 480 displays. Select an instrument container to display bale weight on the Main Work Configuration screen.

See Indicators in this section for more information.

Bale Weight

The weight (2) of the previous bale is displayed.

An audible alarm will sound when a bale is weighed. This alarm can be turned on or off. See Audio Setup in this section.

At startup the weight of the last weighed bale is displayed.

NOTE: The units of weight (kg or lbs) are set on the console. See the Operator Manual for your console.

Strokes Per Flake

FIG. 54: The strokes per flake icon (1) shows the number of plunger strokes per stuffer cycle (flake). In a good, even windrow, the stuffer will cycle with each plunger stroke and the strokes per flake will be 1. A reading of 1 indicates maximum baling efficiency.

In light crop the number will increase. If the strokes per flake reading is more than 1, increase the ground speed.

This location is also used to indicate the following stuffer errors:

No stuffer cycles

NOTE: This can indicate a problem or can illuminate when baling end rows or cleaning up a field.

Continuous stuffer cycle

NOTE: This can indicate a problem or can illuminate when baling for a long period of time at full capacity.

See Indicators for more information.

This icon is only shown when the baler is running.

The icon will change color when a stuffer cycle occurs.

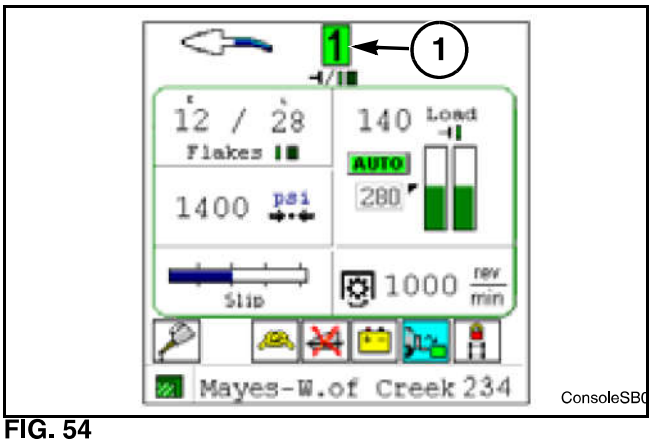

FIG. 54

Temperature Sensor

The value of the Temperature Sensor must change as the gearbox temperature changes.

The Temperature Sensor voltage will be within the range of 5 to 8 volts.

Load Arm Supply

Load Arm Supply indicates the voltage for the sensors in the plunger connecting rods.

The Load Arm Supply voltage will be within the range of 11.5 to 18 volts.

Load Arm Ground

Load Arm Ground indicates the voltage for the ground for the plunger connecting rods and the gearbox temperature.

This value must be within 0.25 volts of 0 volts.

Sensor Supply

Sensor Supply indicates the voltage for the cutter bed position sensor and the hydraulic pressure sensor.

The Sensor Supply voltage must be 4.75 to 5.25 volts.

Sensor Ground

Sensor Ground indicates the voltage for the ground for the sensors.

This value must be within 0.25 volts of 0 volts.

Solenoid Supply

Solenoid Supply indicates the voltage for the solenoid coils.

The Load Arm Supply voltage will be within the range of 11.5 to 18 volts.

Solenoid Ground

Solenoid Ground indicates the voltage for the ground for the solenoid coils.

This value must be within 0.25 volts of 0 volts.

Hardware Revision

Hardware Revision indicates the revision of the circuit board in the Square Baler Controller.

Job Record Screen

FIG. 81: Press the key on the Work Records Screen to enter the Job Record Screen.

Up to 99 Job records can be stored.

The following information is shown on the Job Record Screen.

(1) Job number

(2) Current record status

Record running.

Record not running.

(3) Job name

To change the current job, select the job name. Scroll through the job names and select the desired job name and job number.

(4) Total bales in this record

(5) Total hours in this record

(6) Number of cut bales in this record

NOTE: If the baler is not equipped with a cutter, a 0 will be displayed.

(7) Number of uncut bales in this record

(8) Average bale weight for this record

NOTE: If the baler is not equipped with a scale, a 0 will be displayed.

(9) Total bale weight for this record

NOTE: If the baler is not equipped with a scale, a 0 will be displayed.

(10) Record start and stop time

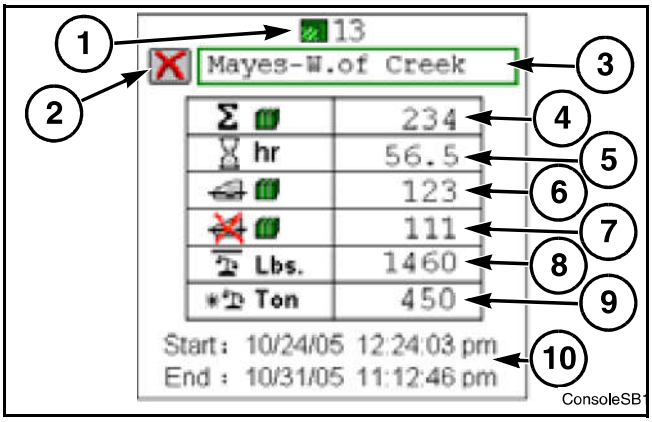

FIG. 81

ALARMS

Most audible alarms can be turned off by correcting the problem or by pressing a key to acknowledge the alarm. See the Operator Manual for the console for details on acknowledging an alarm.

See Alarm Log Screen in this section for information on seeing previous alarms and clearing the alarm log.

Alarm Priority

There are two levels of alarm priority. These icons will be shown on the console screen. Also see the Alarm Chart below.

Stop the baler immediately and correct the problem.

Stop the baler as soon as possible and correct the problem.

Audible Alarm Description

There are four levels of audible alarms: high, medium, low, and no alarm. See the Operator Manual for the console for a description of the levels of audible alarms.

Acknowledging the alarm will turn off most audible alarms. See the Operator Manual for your console for information on acknowledging alarms.

Alarm Chart

The following is a list of alarms that can be seen on the console.

The Alarm Number in the chart is the same as the number shown on the console. This number is for reference only.

Alarm Number	Display	Description	Priority	Audible Alarm
100	Baler Timing Sensor Not Detected	The electrical test for the presence of this sensor has failed.	STOP	Medium
101	Stuffer Cycle Sensor Not Detected	The electrical test for the presence of this sensor has failed.	STOP	Medium
102	Stuffer Bolt Sensor Not Detected	The electrical test for the presence of this sensor has failed.	STOP	Medium
103	Feeder Slip Sensor Not Detected	The electrical test for the presence of this sensor has failed.	STOP	Medium
104	Packer Slip Sensor Not Detected	The electrical test for the presence of this sensor has failed.	STOP	Medium
105	Baler PTO Sensor Not Detected	The electrical test for the presence of this sensor has failed.	STOP	Medium
106	Flywheel Shearbolt Fail	Check for a broken flywheel shear bolt. Determine the cause and repair before continuing to bale.	STOP	High

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BALE EJECTOR AND/OR ACCUMULATOR HYDRAULIC CONNECTIONS

Several problems can occur in the baler ejector and/or accumulator hydraulic system if the hydraulic connections are not correct.

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

FIG. 8: The CYL 1 port is the bottom port in the auxiliary valve. The CYL 2 port is the top port in the auxiliary port.

(1) Baler Control Valve

(2) Auxiliary Valve

(3) Bottom hydraulic Hose connected to port CYL 1

(4) Top Hydraulic Hose connected top port CYL 2

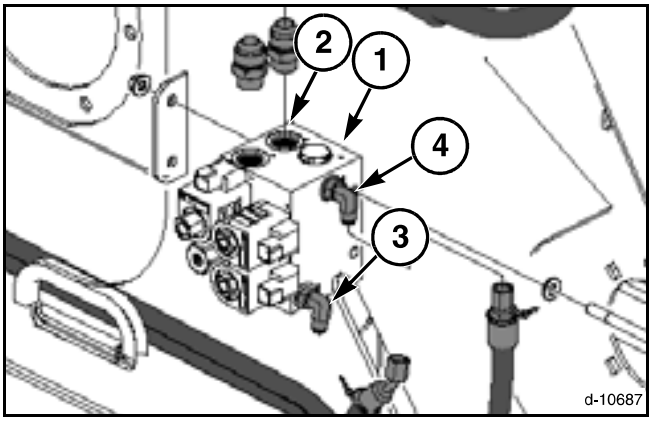

FIG. 8

FIG. 9: If the baler is equipped with a bale ejector only, connect the hoses to the bale ejector cylinder. The hose connected to port CYL 1 of the auxiliary valve must be connected to the base end of the bale ejector cylinder. The hose connected to port CYL 2 of the auxiliary valve must be connected to the rod end of the bale ejector.

(1) Bale Ejector Valve

(2) Hose from CYL 1 to Base End of Bale Ejector Cylinder

(3) Hose from port CYL 2 to Rod End of Bale Ejector Cylinder

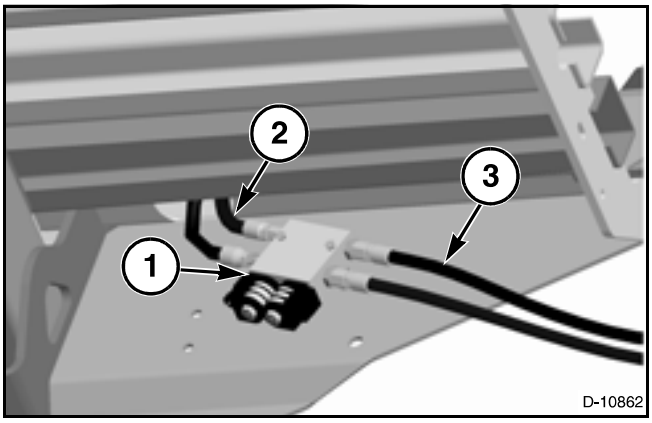

FIG. 9

FIG. 10: If the baler is equipped with a bale accumulator, the accumulator valve (1) controls the bale shift arm of the bale accumulator. The accumulator valve is located under the bale chamber on the right-hand side.

The hose from the pressure side connects to port P (2). The return hose to the tank connects to port T (3).

The solenoid (4) at the front has the mark SL, for shift left. The solenoid (5) at the rear has the mark SR, for shift right.

The hose on the bottom rear connects to the B port (6).

The hose on the top rear connects to the R port (7).

The SL solenoid on the accumulator valve must be connected to the SL harness connector. The SR on hte accumulator valve must be connected to the SR harness connector.

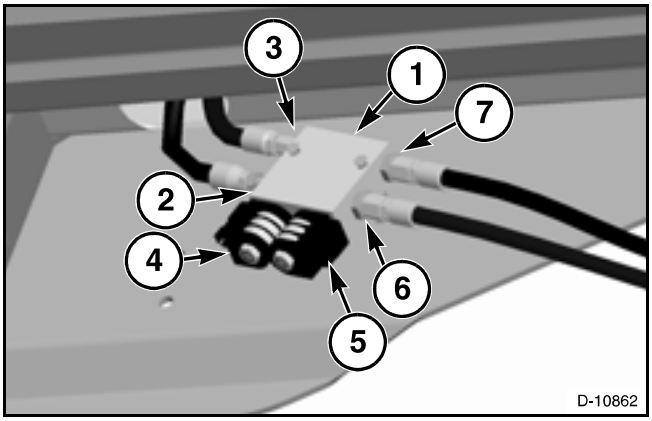

FIG. 10

FIG. 22: Connect the hydraulic lines to the selector valve.

(1) From CYL 1 Port on the Auxiliary Valve

(2) From CYL 2 Port on the Auxiliary Valve

(3) Ejector Valve

(4) Ejector Activator

(5) From Base End of Ejector Cylinder - long hose

(6) From Rod End of Ejector Cylinder - short hose

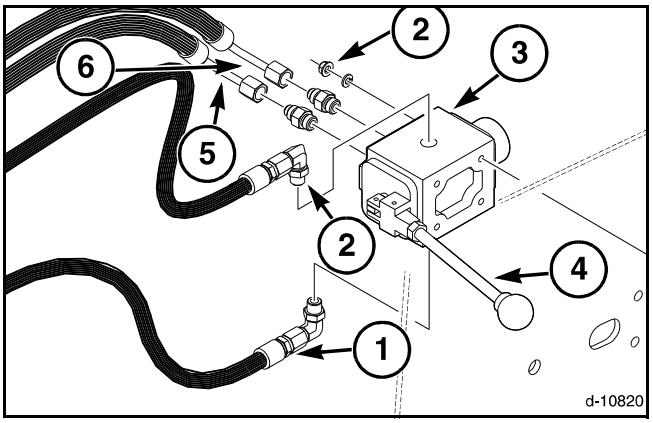

FIG. 22

Inspect the bores for the clevis pins in the clevis and the base end for damage and wear. If a new clevis must be installed, tighten the nut on the socket head cap screw to 59 Nm (44 lb ft)

Replace the breather.

Assembly

Install the new O-ring on the base end.

Install the new U-cup seal in the groove on the inside of the gland. The lip of the seal must be toward the inner end of the cylinder.

Install the new wiper in the gland. The lip of the wiper must be toward the outer end of the gland.

Install the new O-ring onto the outside of the gland.

Install the new O-ring and two new backup rings in the groove on the piston. The O-ring must be between the two backup rings.

Fasten the clevis in the vise.

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. The wiper must be toward the clevis. Careful not to damage the wiper.

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.

Make sure the inside of the piston and of the end of the piston rod are clean and dry. Apply Loctite or equivalent to the inside of the piston. 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. Rotate the piston several times to apply the loctite evenly between the piston and the piston rod.

Install and tighten the nut on the piston rod to 433 Nm (320 lb ft). Do not touch the piston for approximately 20 minutes to let the Loctite set.

Fasten the tube in a vise or other holding equipment. Be careful not to damage the tube.

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.

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.

Install the tie rods. Install and tighten the nuts on the tie rods slowly and evenly to 95 Nm (70 lb ft).

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 flywheel brake.
- Look and Listen! Make sure all moving parts have stopped.

WARNING: After lubrication, 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.

CONNECTING A BALER TO A TRACTOR - EUROPEAN TYPE OF CONNECTION

Do This First

The baler comes complete with all of the hardware to connect a European type of hitch bracket, or a Non-CE type of hitch to the baler tongue. Always use the specified grade of hardware.

To connect a European type of hitch to an ISO tractor, use the hardware that comes with the hitch and tractor. See the instructions with the hitch, or tractor for the correct torque and fastening specifications.

WARNING: Disengage the tractor PTO. Shift the transmission into park. Apply the tractor parking brake. Stop the tractor engine. Take the key with you before you get off the tractor. Apply the flywheel brake. Apply the baler parking brake.

Make sure the baler parking brake is engaged. Make sure the baler is on level ground. Block the tires to keep the tires from moving. Make sure the jack supports the tongue weight of the baler.

Make sure all of the tires on the baler and the tractor are at the correct pressure.

PTO Types

The baler can be driven by an ISO Type 2, or an ISO Type 3, PTO.

A CV driveline MUST be used with a European type of hitch bracket.

Installing a Hitch on a European Type of Hitch Bracket

FIG. 16: Determine the type of hitch to be used. A ring hitch is shown for illustration. Installation of other types of hitches is similar.

Install the hitch (1) on the European type of hitch bracket (2). Tighten the M16-2.0 x 60 mm class 8.8 bolts (3) that hold the hitch to the hitch bracket to 230 Nm of torque.

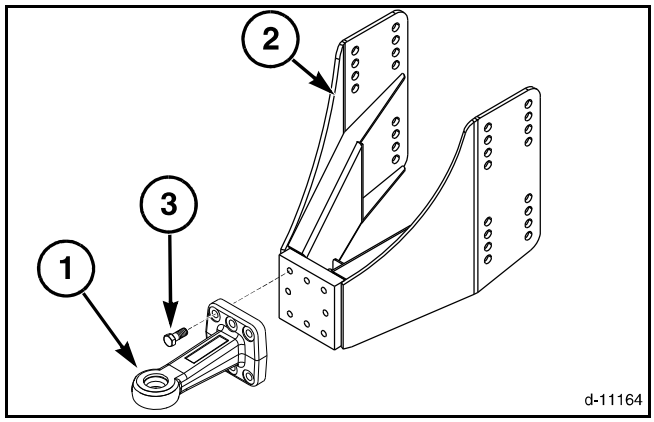

FIG. 16

INTERMEDIATE BEARING SUPPORT - CV DRIVELINE

Intermediate Bearing Support for European Type of installations

The hitch and hitch bracket must be installed and the baler must be connected to the tractor before this procedure can be done.

If the baler and tractor are not connected, see: **Tractors and Balers with European Hitch, ISO Setup Dimensions and CV Driveline**. Find your type of connection. Do the steps to connect the baler to the tractor.

FIG. 31: Make the angle of the U-joint (1) on the baler end of the CV driveline as straight as possible. If necessary, move the intermediate support (2).

In most applications the intermediate bearing support will be installed in the top position.

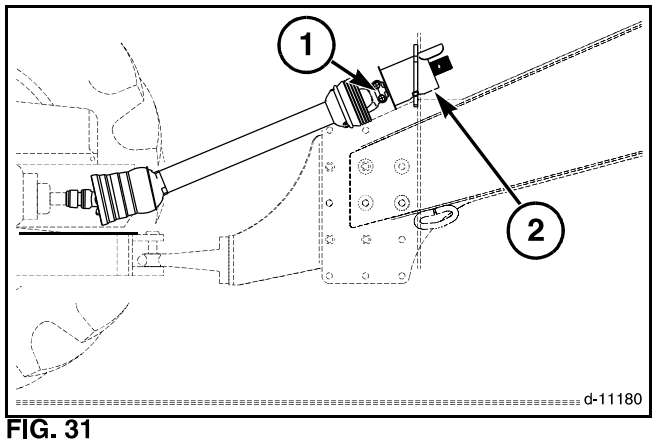

FIG. 31

FIG. 32: The intermediate bearing support (1) will not be installed in the top position if:

- The tractor PTO shaft is low enough that the U-joint (2) on the baler CV driveline has a downward angle. Lower the intermediate bearing support so that the U-joint is straight.
- The baler CV driveline will contact the hitch bracket in the high position (3). Lower the intermediate bearing support so the baler CV driveline will not contact the hitch bracket while operating.

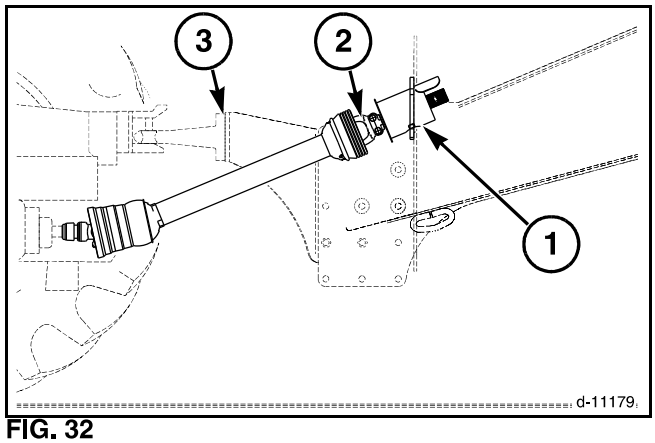

FIG. 32

FIG. 48: Remove the collar (1).

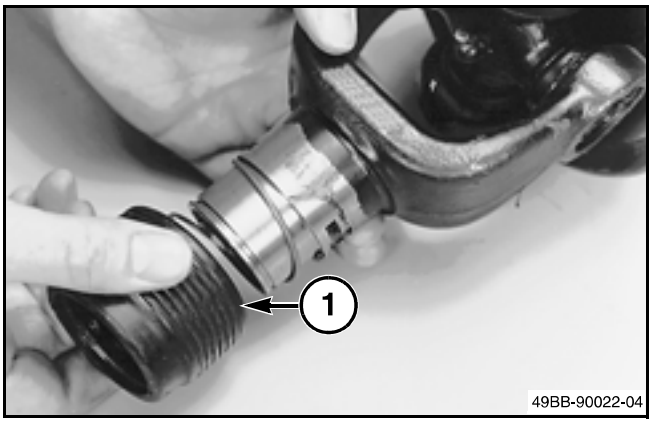

FIG. 48

FIG. 49: Remove the spring (1).

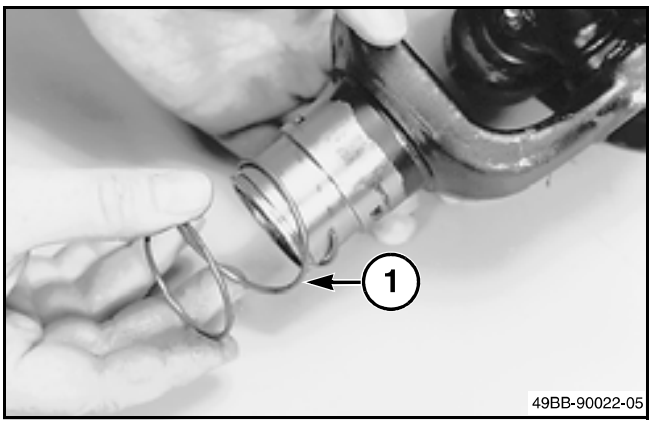

FIG. 49

FIG. 50: Remove the pawls (1) from the yoke.

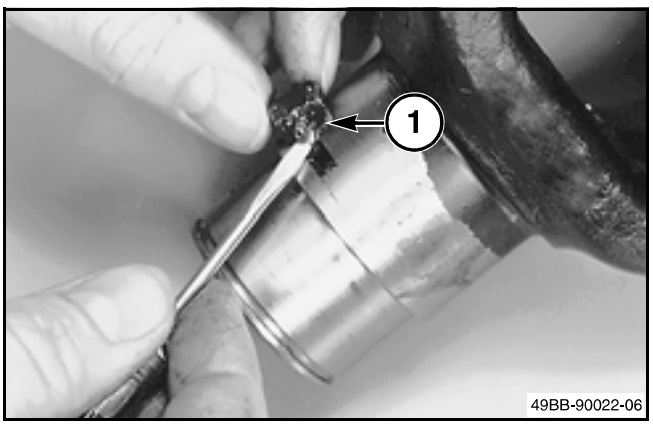

FIG. 50

FIG. 51: Apply grease to the new pawls and install the pawls (1) in the yoke.

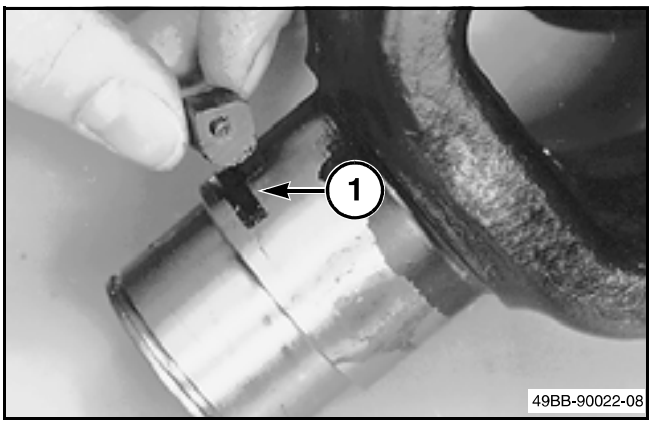

FIG. 51

If the IDL has a clamp yoke with two bolts, tighten the bolts to 105 Nm (76 lbf ft).

CAUTION: A yoke that is not installed correctly can slip off a shaft and result in injury to persons or damage to the machine.

When installing a quick disconnect yoke, the locking mechanism must be seated in the groove of the shaft.

When installing a clamp yoke, tighten the bolts) to the correct torque.

After installing a yoke, pull on the yoke to make sure the yoke cannot be pulled off the shaft.

Lubricate the IDL.

Refer to page 5 in this section for correct adjustment in IDL connection.

FIG. 80: Install the drive shaft shields (1) on the tongue. If equipped install and adjust the PTO sensor (2).

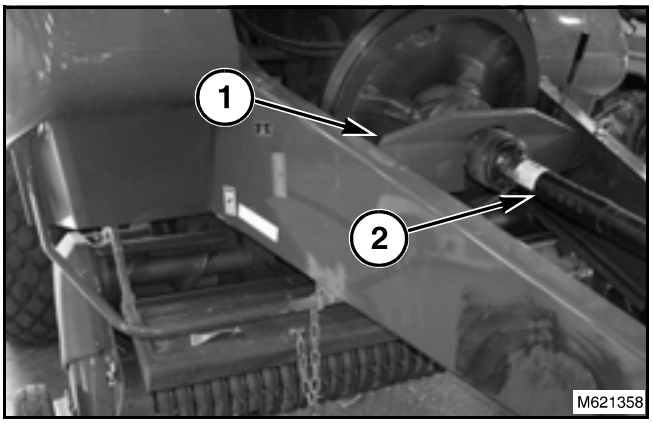

FIG. 80

FIG. 81: After the IDL has been connected, angles (1) and (2) must be equal. Refer to Table and Procedure in the Connect to Tractor Section. **THE ANGLES MUST BE CORRECT TO PREVENT NOISE, VIBRATION, AND DAMAGE TO THE BALER DRIVE LINE.**

NOTE: If the drive line makes noise during turns, check the angle adjustment for the IDL.

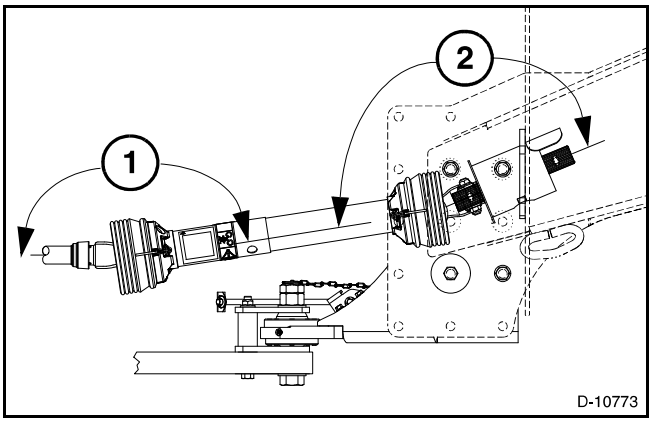

FIG. 81

Installation

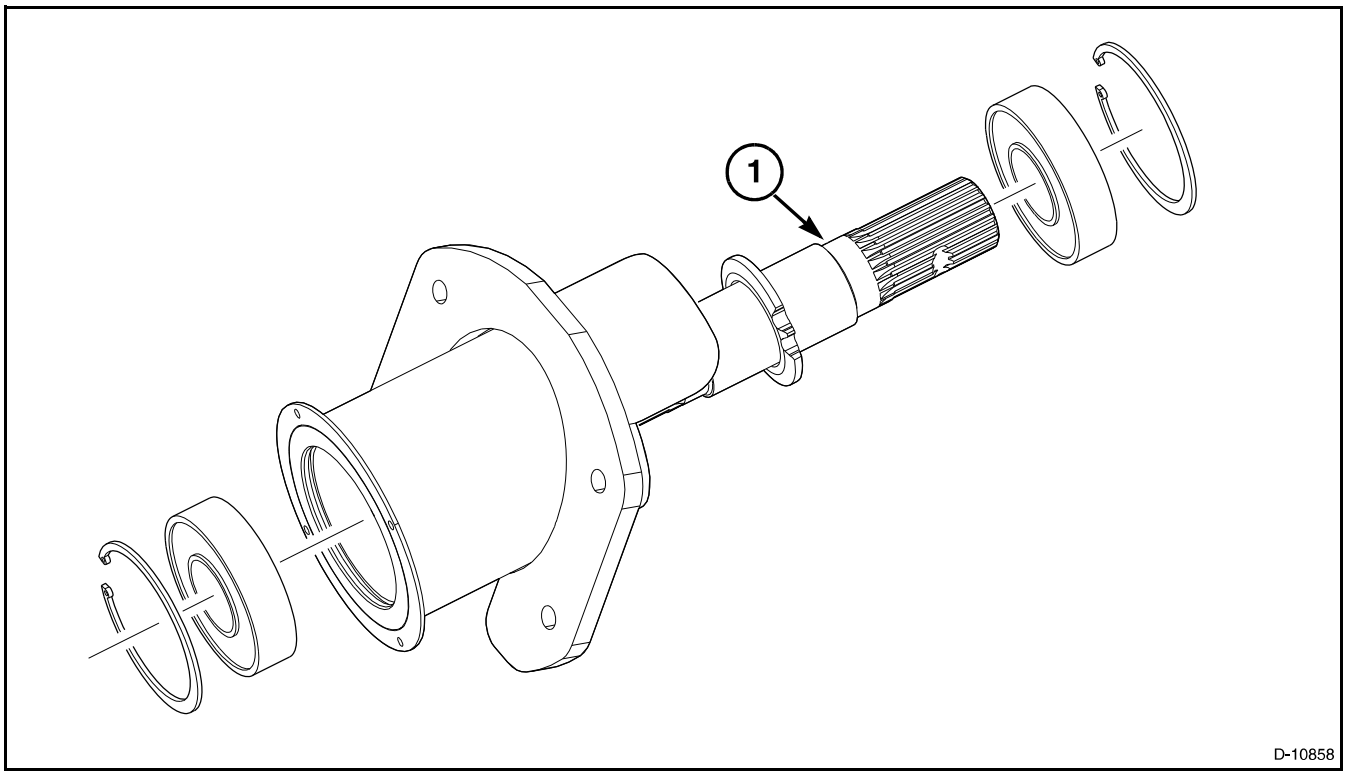

FIG. 90

FIGS. 90–91: Main Drive Shaft

Connect lifting equipment to the main drive clutch. Put the main drive clutch in position on the flywheel. Install and tighten the cap screws.

Install the main drive shaft (1) into the main drive clutch universal joint. Make sure the bolt groove in the bottom of the main drive shaft is in alignment with the cross in the universal joint, within one spline. This alignment keeps the universal joints in the IDL in phase with the universal joint in the main drive clutch.

Install the bolts, lock washers, and nuts for the carrier bearing. Make sure the carrier bearing is installed correctly. Tighten the bolts.

Install the drive shaft shield on the tongue.

Lubricate the splines of the tractor PTO shaft with oil or grease. Connect the IDL to the tractor PTO shaft.

If the IDL has a quick disconnect yoke, make sure the locking mechanism is seated in the groove on the shaft.

If the IDL has a clamp yoke, tighten the bolts to 105 Nm (76 lbf ft).

FIG. 91

FIG. 107: Keep the pinion shaft from turning by holding the shear hub. Install a torque wrench on the clutch pilot and turn the flywheel. The rolling torque must be 5.6 to 13.6 Nm (4 to 10 lbf ft). Tighten or loosen the two cap screws in the end of the pinion shaft to get the correct rolling torque.

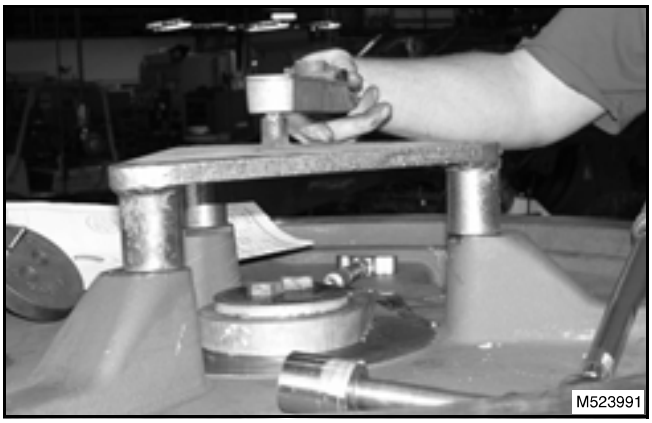

FIG. 107

FIG. 108: Insert a depth micrometer into the hole in the retainer cap. Measure the distance from the outer face of the retainer cap to the end of the pinion shaft. Insert the measurement in the following chart to determine the thickness of the outer shim pack.

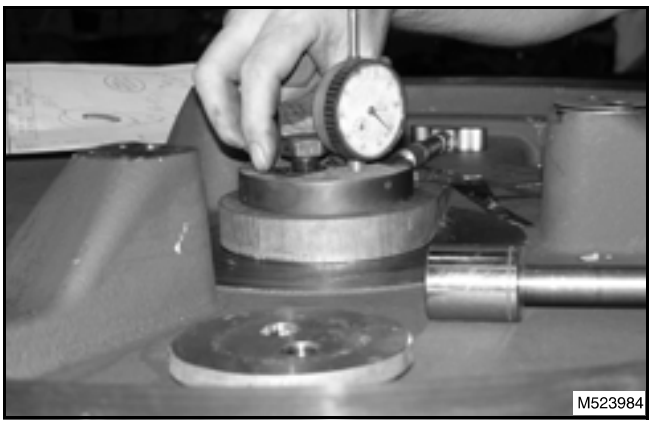

FIG. 108

TABLE 1 Shim Pack Thickness Chart		
		Measurement taken in this step
Subtract	-	Thickness of the retainer cap. (Measurement taken near the beginning of this procedure).
Equals	=	Thickness of outer shim pack

Remove the cap screws, the retainer cap, and the shear hub.

Install the outer shim pack.

Apply grease to the new O-ring, and install the O-ring in the shear hub.

Install the shear hub, the retainer cap, the lock plate, and the cap screws. Tighten the cap screws to 205 Nm (150 lbf ft).

Install the clutch pilot on the flywheel.

Keep the pinion shaft from turning by holding the shear hub. Install a torque wrench on the clutch pilot, and turn the flywheel. The rolling torque must be 5.6 to 16.9 Nm (4.1 to 12.5 lbf ft). If the rolling torque is not correct, tighten or loosen the two cap screws in the end of the pinion shaft.

Remove the clutch pilot.

Bend a corner of the lock plate over the head of each cap screw. Do not use any corner that has been used before.

Installation of Gearbox

FIG. 127: Rotate the flywheel until the crank arms (1) are in the down position.

Use the lifting equipment (2) to align the gearbox in the baler mainframe.

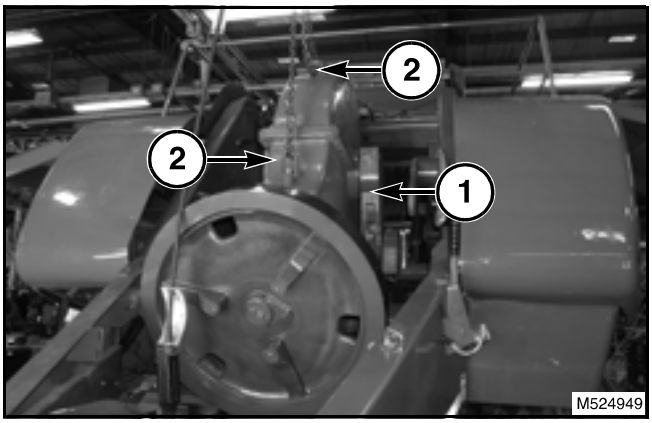

FIG. 127

FIG. 128: Install the upper mounting pin (1). Do not install the full threaded hex flange screw at this time.

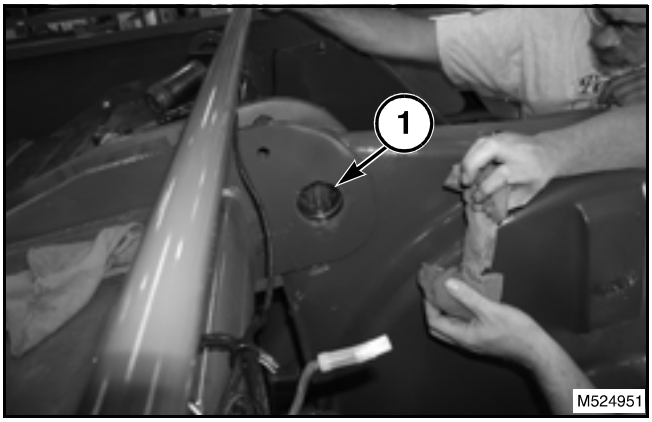

FIG. 128

FIG. 129: Install the two bottom mounting pins (1) into the gearbox.

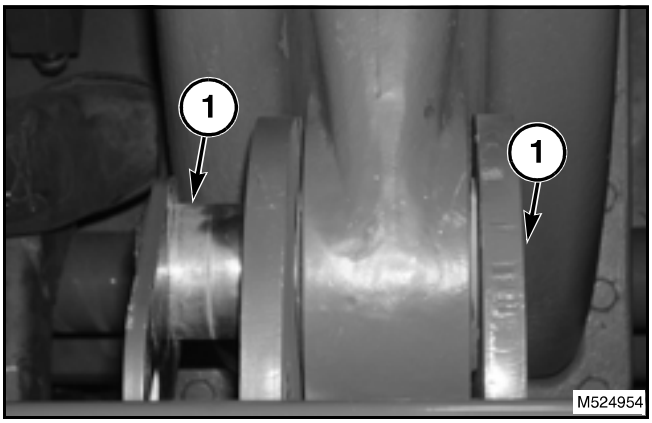

FIG. 129

DIAGRAMS OF POWER FLOW

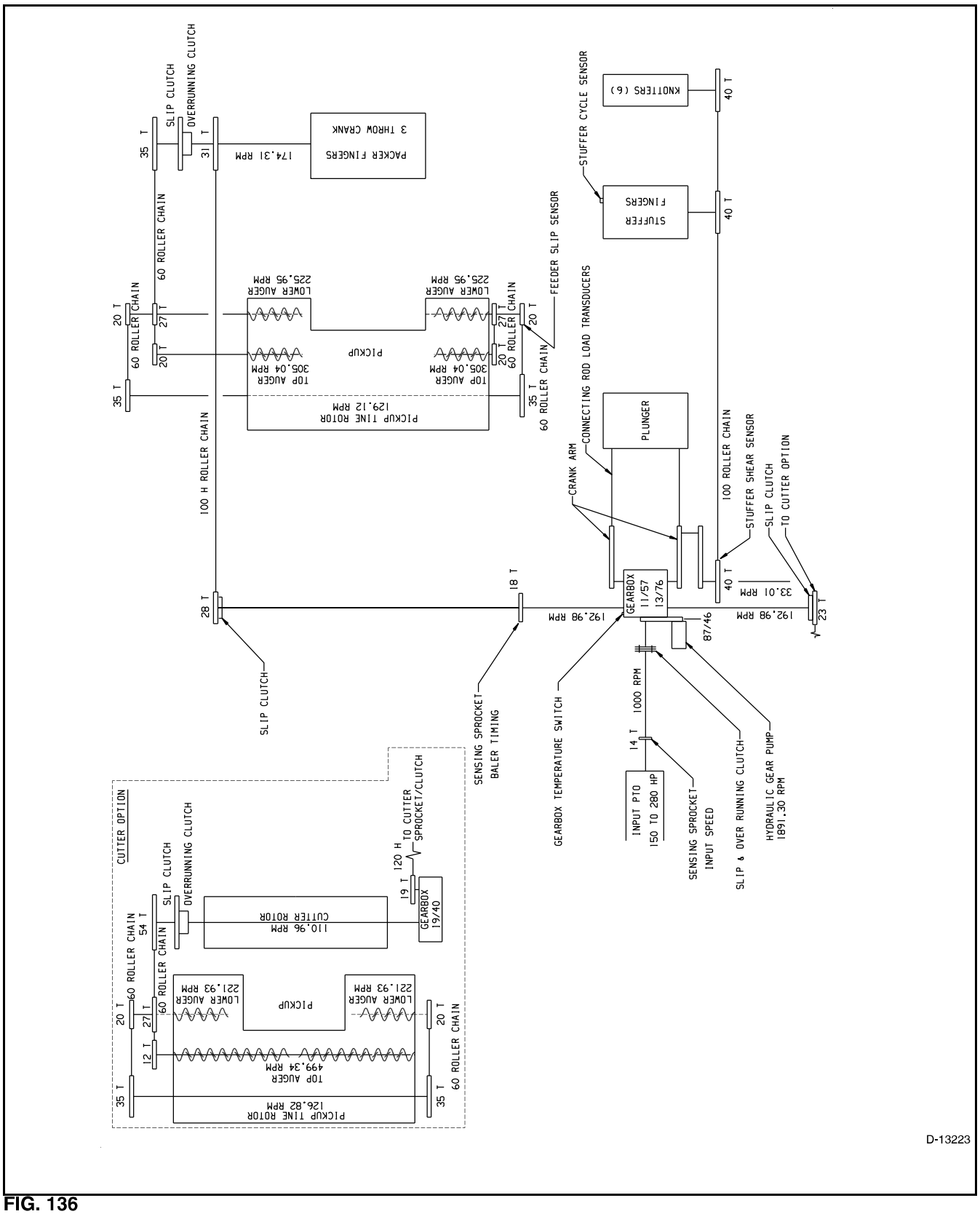

FIG. 136

FIG. 136: 4x4 Baler

GENERAL SPECIFICATIONS

The large square baler comes in either the single or tandem axle design.

Tire Pressure

Single Axle ..... 1.79 bar (26 psi)

Tandem Axle ..... 2.2 bar (32 psi)

INSTALLING A WHEEL

Clean the threads of the wheel studs with a wire brush. Apply a small amount of oil to the threads to prevent corrosion.

Install the wheel on the studs.

Install five hardened washers and wheel nuts evenly separated on the wheel. Make sure there are two hardened washers under each wheel nut.

Tighten the wheel nuts with a hand wrench to make sure the wheel is centered on the studs. Do not use an impact wrench to tighten the wheel nuts.

Install the remainder of the hardened washers and wheel nuts. Tighten the wheel nuts with a hand wrench.

Tighten the wheel nuts to 350 Nm (260 lbf ft).

Check the torque on the wheel nuts after the first 3 to 5 hours of operation and again every 50 hours of operation.

NOTES

NOTES

Pickup Clutch

General Information

The pickup is driven by the packer finger shaft. The pickup clutch shaft drives the reel and the two centering augers through chains. The pickup clutch shaft is connected to the packer finger shaft with a slip clutch and an overrunning clutch. The slip clutch is used to protect the pickup from damage by overloading when hitting objects in the field. The overrunning clutch lets the baler flywheel and drive components be reversed without operating the pickup assembly.

Adjustment

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

The slip clutch is adjusted by adjusting the length of the springs. In order to provide proper protection the slip clutch must be adjusted to slip at approximately 565 Nm (417 lbf ft).

FIG. 8: Check the torque by using a torque wrench to turn the outer end of the pickup clutch shaft. An approximate torque setting can be made by adjusting each spring to a length of 30 mm (1-1/8 in) (1). Make sure all of the springs are adjusted to the same length. DO NOT over torque the slip clutch.

NOTE: DO NOT completely compress the springs.

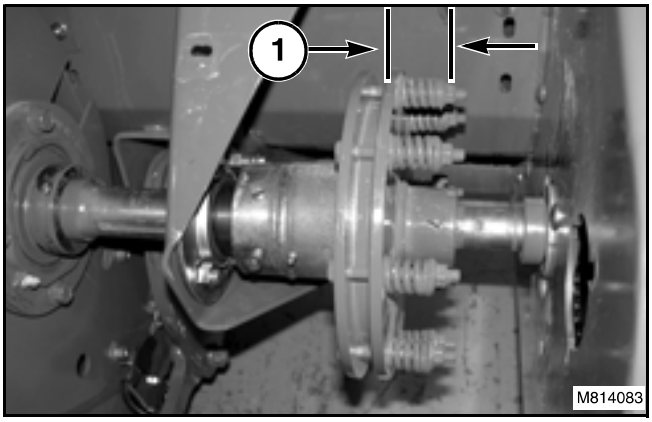

FIG. 8

FIG. 9: Clutch Assembly

(1) Compression Bolt

(2) Pressure Plate

(3) Clutch Disc

(4) Clutch Assembly

(5) Clutch Plate

(6) Gib Key

(7) Compression Spring

(8) Shaft

(9) Set Bolts

(10) Pickup Drive Coupler

The adjustment for the overrunning clutch is the gap between the coupler and the face of the overrunning cam. Before checking the adjustment, check the machinery bushing between the coupler and the bearing locking collar.

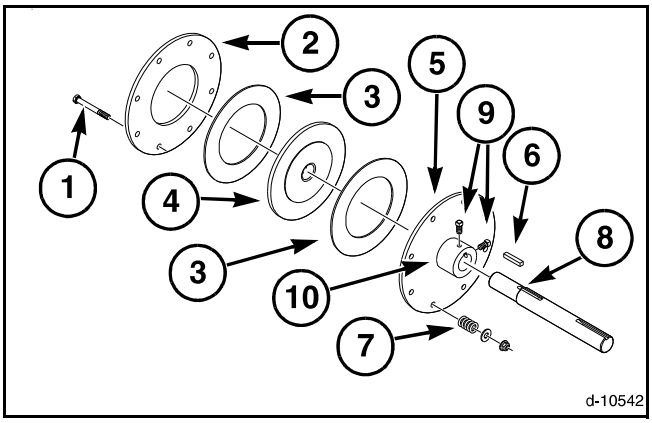

FIG. 9

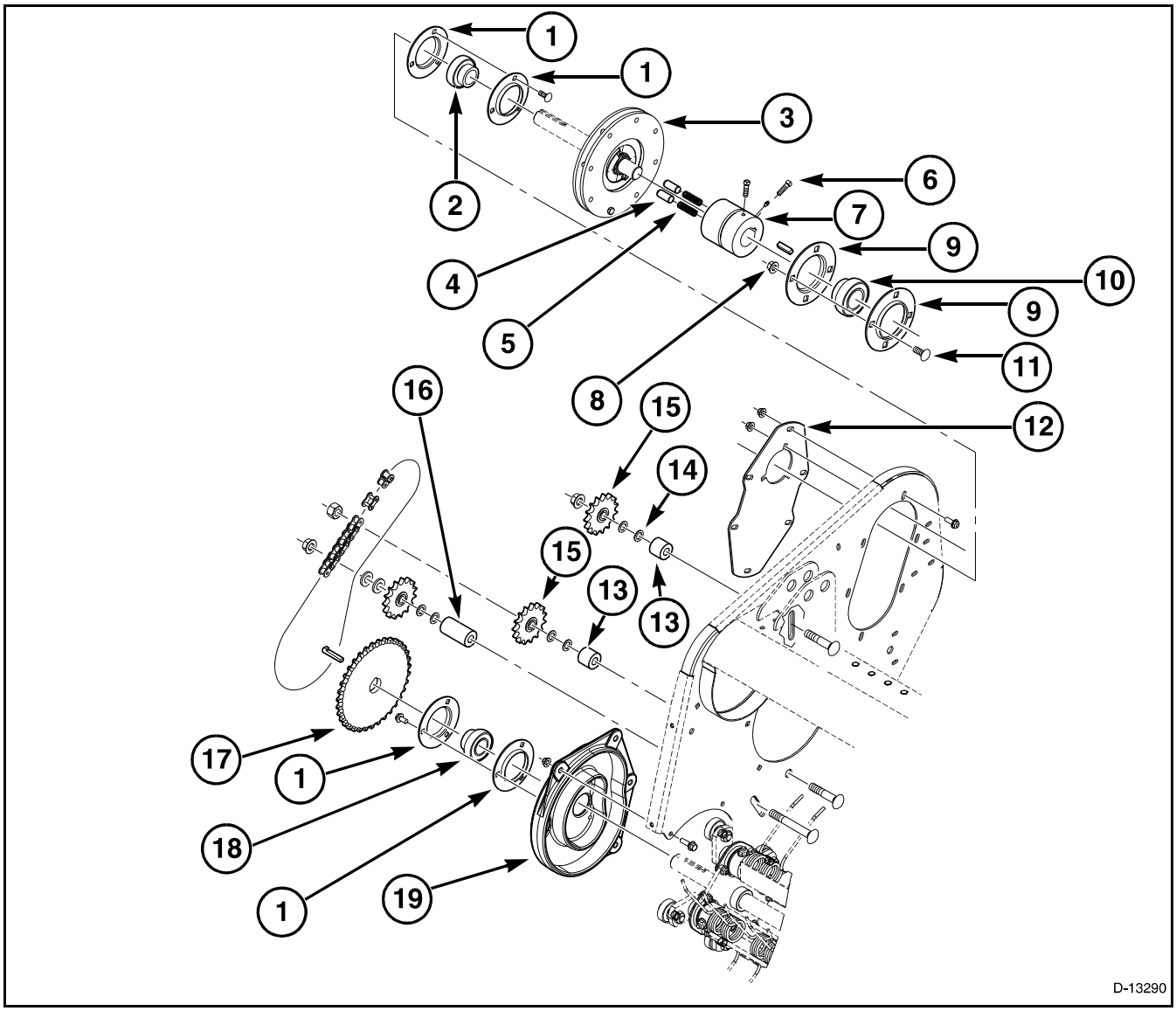

FIG. 19

FIG. 19: Right hand auger drive system for Serial numbers HT91101 and up.

(1) Bearing Flange (4)
(2) Spherical Bearing
(3) Clutch Assembly
(4) Dowel Pin, 5/8 X 1-1/2
(5) Compression Spring (2)
(6) Square Head Set Screw (2)
(7) Hub Assembly
(8) Flange Nut
(9) Bearing Flange (2)
(10) Spherical Bearing
(11) Carriage Bolt
(12) Bearing Support
(13) Spacer (2)
(14) Wide Rim Bushing (3)
(15) Idler Assembly
(16) Spacer
(17) Sprocket
(18) Spherical Bearing
(19) Camtrack Right

Installation

Install the bearing and bearing flange on the left-hand end of the tine bar as shown. Align the hole in the bearing with the hole in the tine bar shaft. Install a new cotter pin into the hole and bend the ends over against the bearing.

Install the bearing flange and the bearing on the shaft of the tine bar control arm as shown. Align the hole in the bearing with the hole in the shaft of the tine bar control arm. Install a new cotter pin into the hole and bend the ends over against the bearing.

Install the tine bar control arm into the end of the tine bar. Align the hole in the tine bar with the hole in the shaft of the tine bar control arm. Install the socket head cap screw.

NOTE: The tine bar control arms must trail the direction of rotation.

Apply two or three drops of Loctite No. 242 or equivalent to the threads of the socket head cap screw. Install and tighten the flanged lock nut to 59 Nm (44 lbf ft).

Install the tine bars into the reel.

Installation

FIG. 49: Install the new knife (1). Make sure that the mounting hole of each is over the knife mounting rod.

NOTE: Filler plates (2) can be inserted in the cutter bed if the operator does not want to cut the crop or increase the cut length.

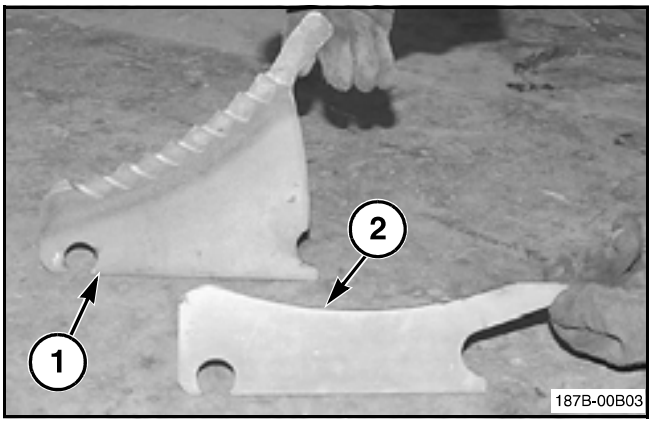

FIG. 49

FIG. 50: Pull the pin from the knife latch rod and rotate the knife latch rod up to the locked position (1).

IMPORTANT: Failure to rotate the knife latch rod back to the locked position will result in damage to the cutter, to the knives, and to the baler.

Lock the cutter bed latch.

Start the tractor and retract the hydraulic cylinders completely.

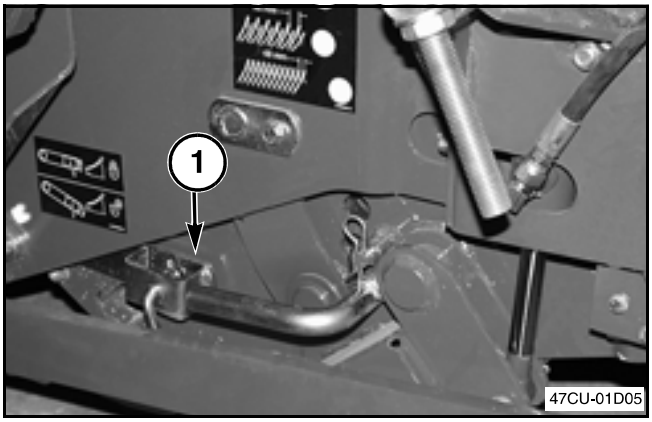

FIG. 50

Cutter Knife Sharpening

WARNING: The knives are extremely sharp. To avoid serious injury always wear gloves when working with the knives. Use caution when replacing the knives.

FIG. 51: When sharpening the knives (1), grind only on the side (2) opposite the serration. Always keep an angle (3) 20 degrees to 25 degrees from the surface. Grind slowly across the full knife edge.

NOTE: If the steel becomes tempered or changes color from excessive heat on the knife edge while grinding, a much shorter knife life will result.

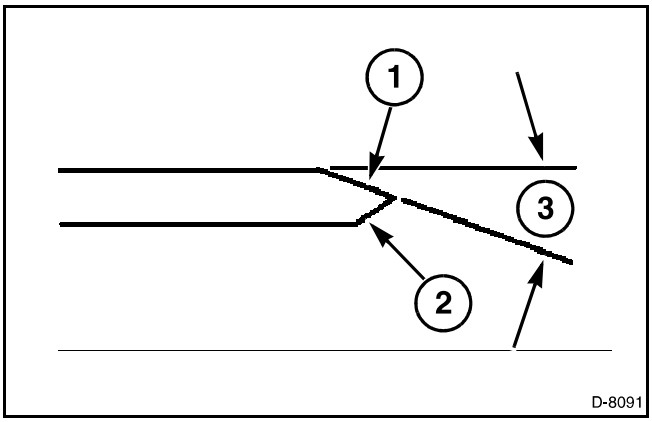

FIG. 51

Assembly

Follow the safety procedures listed at the beginning of this section.

NOTE: Do not use a metallic hammer for assembly.

FIG. 73: Prepare the surface by removing oil and applying Loctite Primer-N (1).

Apply a thin film of Loctite 515-74 to assembly surface. Going around the holes and dowel pins.

FIG. 73

FIG. 74: Position cutter pinion drive (1) into the opening.

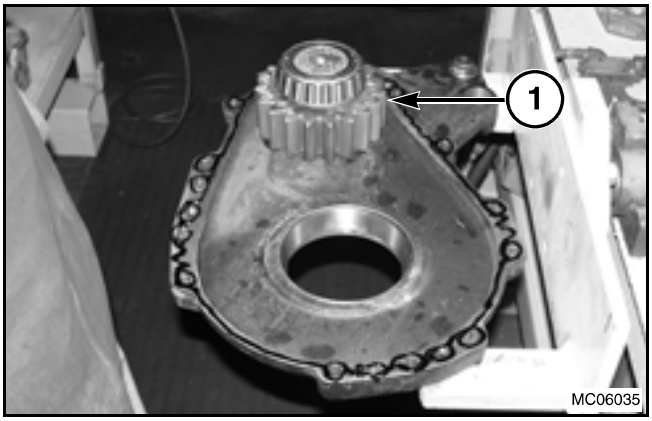

FIG. 74

FIG. 75: Position the cutter gear drive (1) into the opening.

FIG. 75

Installing the Cutter Slip Clutch Assembly and the Cutter Drive Chain

FIG. 99: Install the clutch assembly (1) on the shaft (2).

Install the stake nut (3) and stake in location. Do not use a chisel. Use a round end punch of the correct size. Stake the nut so the nut is securely fixed in location.

Inspect the staked area of the collar for cracks. Replace the stake nut if cracks are found.

Lubricate the bronze bushing. Use the grease fitting (4) on the end of the shaft. Do not over grease the bearing.

Install the chain (5). Install the connector link (6).

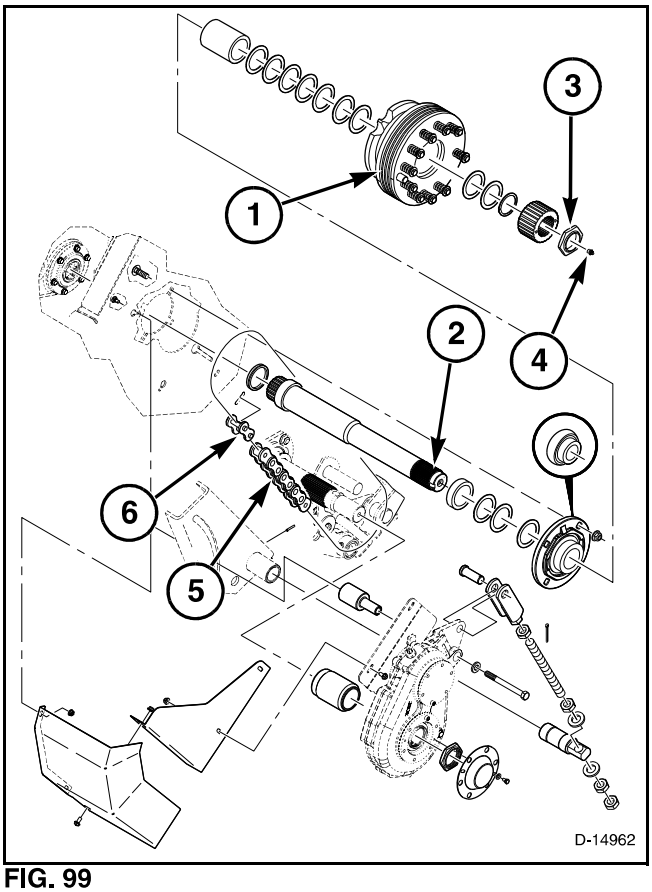

FIG. 99

FIG. 100: Adjust the clevis rod (1) to get 15.0 mm (0.63 in) deflection with 178 N (40 lbf) force at the middle of the chain (A).

Tighten the jam nuts (2) against the tension mounting (3). Tighten the gearbox anchor cap screw (4) to 205 Nm (150 lbf ft) of torque.

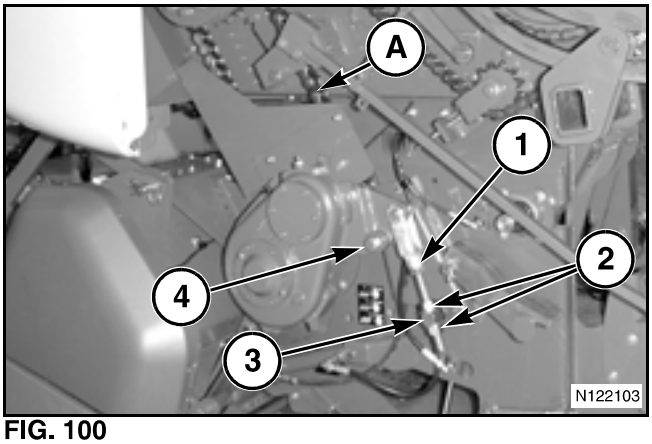

FIG. 100

Inspection

FIG. 4: Inspect the splines on the splined hub for wear and damage. Replace as necessary.

Inspect the faces of the friction discs (1), and the sprocket plate (2) for scoring and damage. Replace as necessary.

Inspect the splines (3) in the friction discs for damage. Replace as necessary.

Inspect the bushing in the sprocket plate for wear and damage if the bushing must be replaced, press the new bushing into the sprocket plate as shown.

Inspect the teeth on the sprocket plate for wear and damage. Replace as necessary.

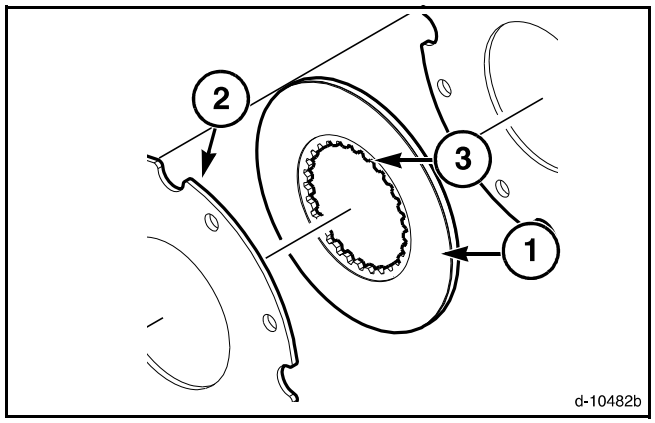

FIG. 4

Assembly

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

FIG. 5: Install a friction disc (1), the clutch plate (2), the other friction discs.

Install the clutch bolts (3) with the head of the bolt toward the baler. Install the springs (4), flat washers, and self-locking nuts until the length of each of the springs is 34 mm (1–11/32 in).

Install the packer drive chain and install the connector link.

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

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

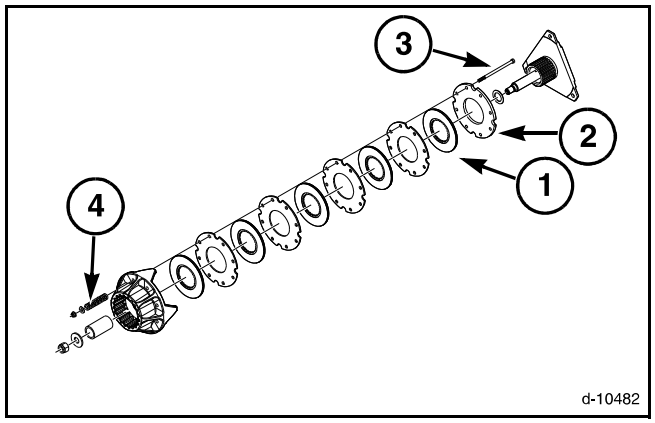

FIG. 5

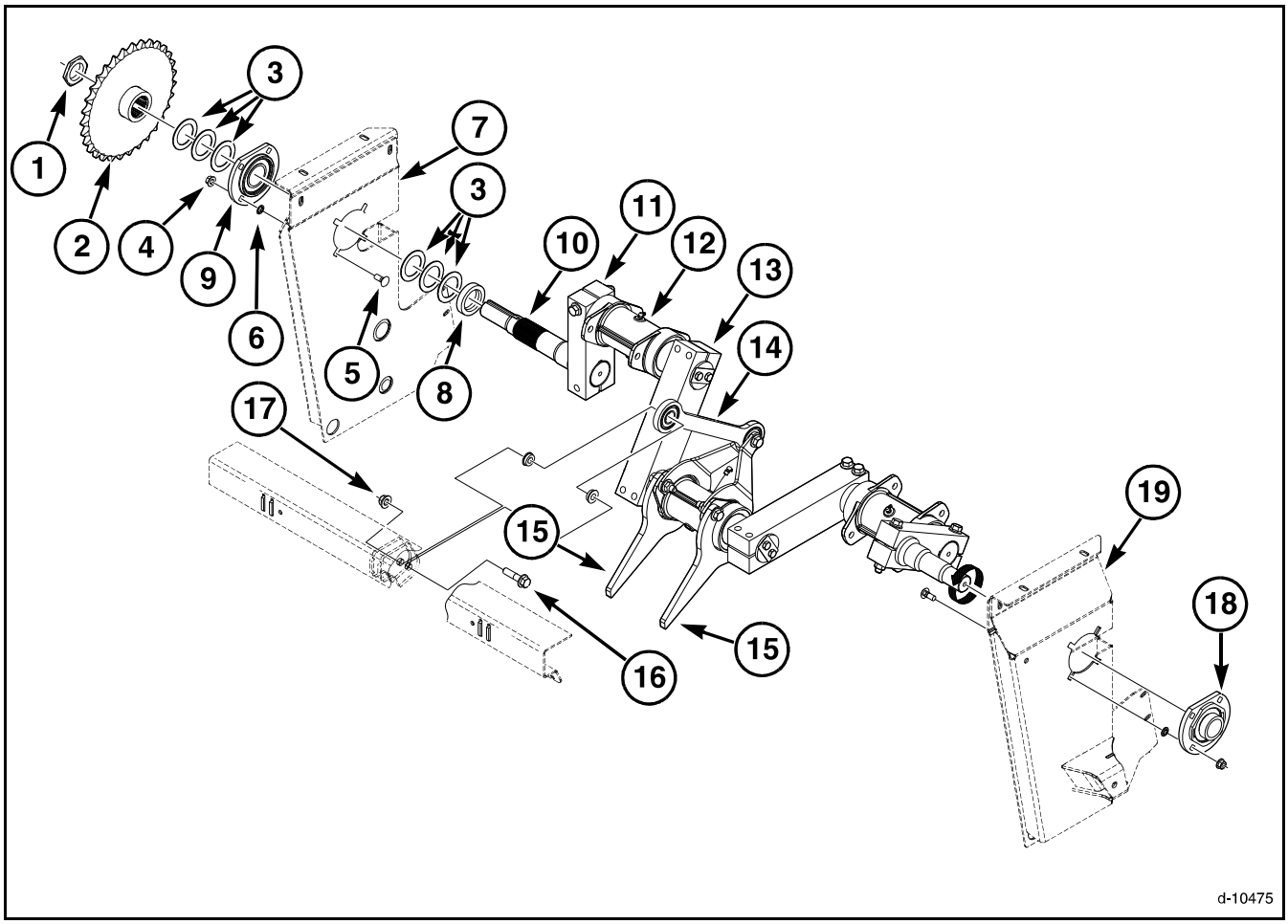

FIG. 14

FIG. 14: Packer Crank Shaft

(1) Stake nut
(2) Drive Sprocket
(3) Narrow Rim Bushing (6) 2-1/4 X 14
(4) Flanged Nut (8) 1/2-13
(5) Carriage Bolt (8) 1/2-13 X 1-1/4
(6) Push Nut (8) 1/2
(7) Bearing Support Right
(8) Spacer
(9) Flanged Bearing Assembly
(10) Packer Drive Shaft
(11) Outer Packer Arm
(12) Packer Crank Hub
(13) Center Packer Arm
(14) Link Finger
(15) Packer finger
(16) Hex Flange Screw (3) 5/8-11 X 2-1/2
(17) Hex Flange Lock Nut (3) 5/8-11
(18) Bearing Assembly
(19) Bearing Support Left

NOTES

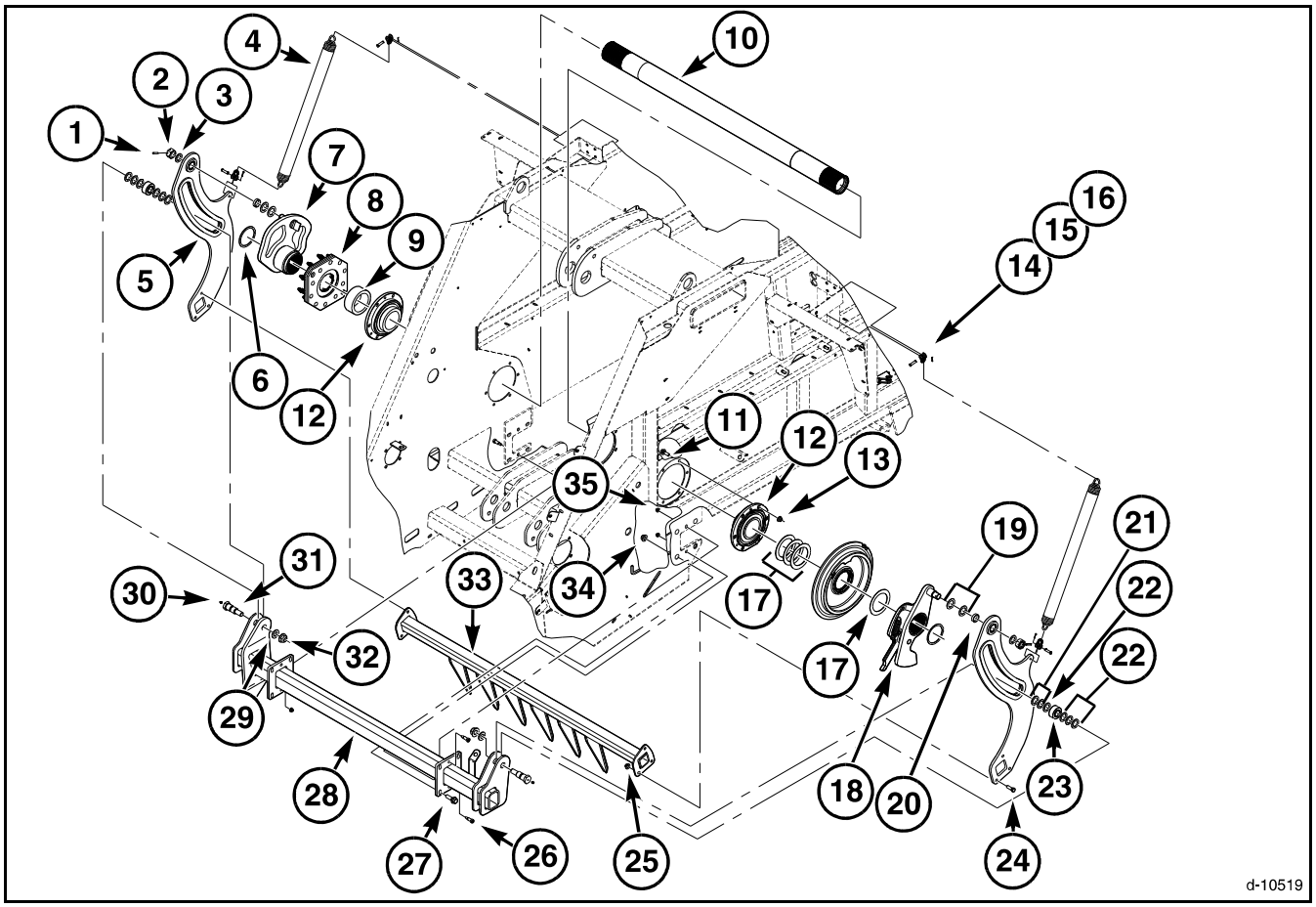

FIG. 39

FIG. 39: 3x4, 3x3, and 70x120

(1) Roll Pin (2)
(2) Nut (2)
(3) Machinery Bushing (2)
(4) Spring (2)
(5) Stuffer Arm
(6) Retaining Ring
(7) Crank
(8) Stuffer Brake
(9) Spacer
(10) Stuffer Shaft
(11) Carriage Bolt
(12) Bearing Assembly
(13) Locknut
(14) Clevis Pin
(15) Clevis
(16) Cotter Pin
(17) Washer (4) As needed
(18) Clutch Assembly
(19) Machinery Bushing (2)
(20) Spacer
(21) Machinery Bushing (4)
(22) Machinery Bushing (8)
(23) Bearing
(24) Cap Screw
(25) Locknut 1/2-13
(26) Shoulder screw
(27) Cap Screw
(28) Cam Roller Support
(29) Washer (2)
(30) Grease Fitting (2)
(31) Special Bolt (2)
(32) Locknut 7/8-9 (2)
(33) Stuffer Finger Bar
(34) Locknut 3/8-16 (3)
(35) Locknut 5/8-11 (8)

FIG. 59: Remove the three bolts that fasten one end of the stuffer finger bar to the stuffer arm.

Have another person hold the stuffer finger bar at the unfastened end. Remove the bolts that fasten the other end of the stuffer finger bar to the stuffer arm.

Remove the stuffer finger bar.

Remove the roll pin, nut, and machinery bushing from the right stuffer arm crank pivot.

Loosen the special bolt that attaches the stuffer arm to the cam roller support. Make note of the bushings on both sides of the bearing yoke.

Remove the special bolt, locknut, washer, bearing and machinery bushings.

Remove the right-hand stuffer arm, spacer, and the machinery bushing from stuffer arm crank pivot.

Check the baler timing to make sure the knotter drive and the stuffer drive timing is correct. See Baler Timing.

FIG. 59

FIG. 60: Remove the snap ring (1) from the end of the shaft.

Remove the stuffer crank (2) from the shaft.

Remove the stuffer brake (3) from the shaft.

Remove the spacer (4) from the shaft.

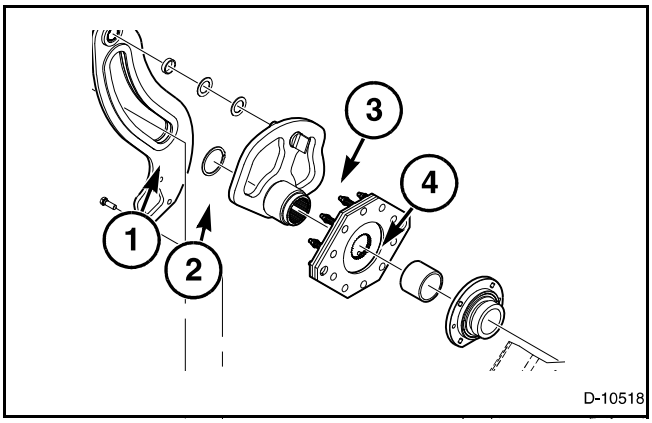

FIG. 60

FIG. 81: Remove the three bolts that fasten one end of the stuffer finger bar to the stuffer arm.

Have another person hold the stuffer finger bar at the unfastened end. Remove the bolts that fasten the other end of the stuffer finger bar to the stuffer arm.

Remove the stuffer finger bar.

Remove the roll pin, nut, and machinery bushing from stuffer arm crank pivot.

Loosen the special bolt that attaches the stuffer arm to the cam roller support. Make note of the bushings on both sides of the bearing yoke.

Remove the special bolt, locknut, washer, and machinery bushings and bearing.

Remove the stuffer arm, spacer, and the machinery bushing from stuffer arm crank pivot.

FIG. 81

FIG. 82: Remove the snap ring (1) from the end of the shaft.

Remove the stuffer crank (2) from the shaft.

Remove the stuffer brake (3) from the shaft.

Remove the spacer (4) from the shaft.

Support the shaft to prevent the shaft from dropping and damaging the left bearing.

Remove the bolts that fasten the bearing assembly (5) to the mainframe.

Pull the bearing assembly from the shaft.

Clean the bearing assembly and inspect for damage.

Install the bearing assembly onto the shaft. Fasten the bearing assembly to the mainframe.

Remove the support from the shaft.

Install the spacer.

Install the stuffer brake and the stuffer crank.

Install the stuffer arm, machinery bushing, and nut. DO NOT tighten.

Install bearing.

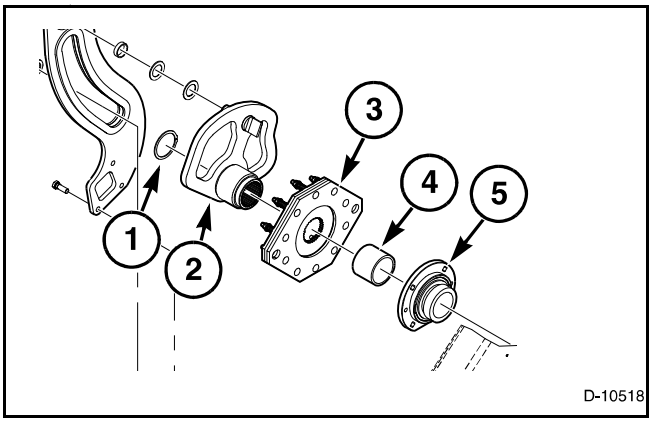

FIG. 82

FIG. 111: Install the stuffer clutch assembly.

Install retaining ring.

Remove the wire from the chain.

Install the stuffer/knotter drive chain onto the stuffer drive sprocket.

Tighten the tension on the stuffer/knotter drive chain.

Install the machinery bushing, spacer, and stuffer arm to the stuffer arm crank pivot.

Install the machinery bushing, spacer, and stuffer arm onto the crank pivot.

Install the machinery bushing and nut. Hand tighten.

Install the bearing.

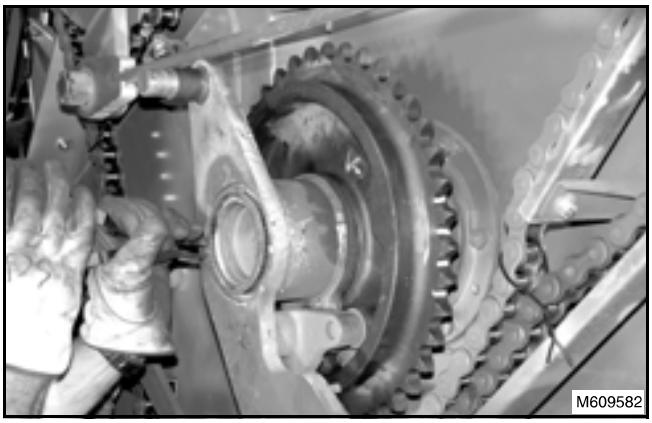

FIG. 111

FIG. 112: Install the machinery bushings to both sides of the stuffer arm bearing (1) as needed to center roller between the mounting ears of the cam roller support.

Install machinery bushings (2) to the stuffer arm pivot as needed to center arm on roller.

Install the special bolt, washer, and locknut. Torque to 360 Nm (265 lbf ft).

Tighten the stuffer arm crank pivot nut and install the roll pin.

Put a board on top of the charge chamber wrappers

Have another person hold one end of the stuffer finger bar and install the other end of the stuffer finger bar.

Install the unfastened end of the stuffer finger bar.

Remove the board.

Release the flywheel brake.

NOTE: On 3x3, 3x4, and 70x120 models skip.

Manually rotate the flywheel counterclockwise as viewed from the front of the baler, until the stuffer fingers are all the way up.

Install the stuffer springs

Manually rotate the flywheel counterclockwise as viewed from the front of the baler until the stuffer fingers are all the way forward.

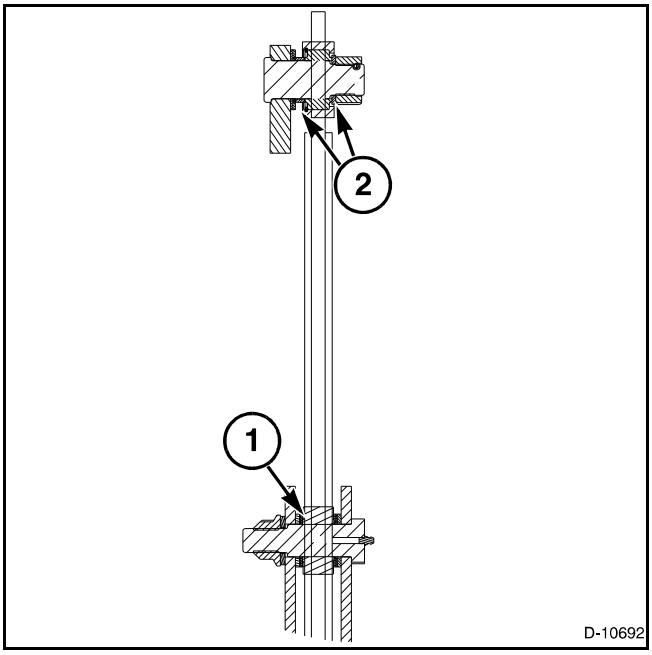

FIG. 112

Removing A Bale From The Bale Chamber

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

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.

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

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

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.

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.

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 760 to 915 mm (2 1/2 to 3 ft) long bales. Make sure the bale length adjustment collar is put back to the original position when the procedure is complete.

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.

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

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

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.

Installation

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

FIG. 145: Install the plunger roller assembly into the plunger.

Align the roller shaft holes with plunger mount holes.

Install the plunger roller cap screws.

FIG. 145

FIG. 146: Tighten the cap screws to 285 Nm (210 lbf ft).

FIG. 146

Disassembly

FIG. 147:

(1) Shaft

(2) Bearing Assembly

(3) Roller

(4) Tongued Washer

(5) Stake Nut

(6) Hub Cap

Remove the plunger roller. See Main Plunger Roller Removal in this section.

Remove the cap from the end of the roller shaft.

Use a 4.5 mm (3/16 in) wide chisel to straighten the stake nut flange.

Remove and discard the stake nut.

Remove the tongued washer. Remove the roller from the roller shaft.

Remove and discard the bearing.

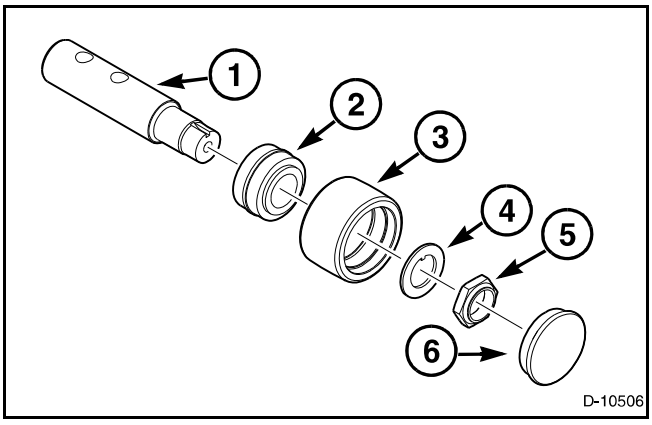

FIG. 147

Bale Tension Rollers

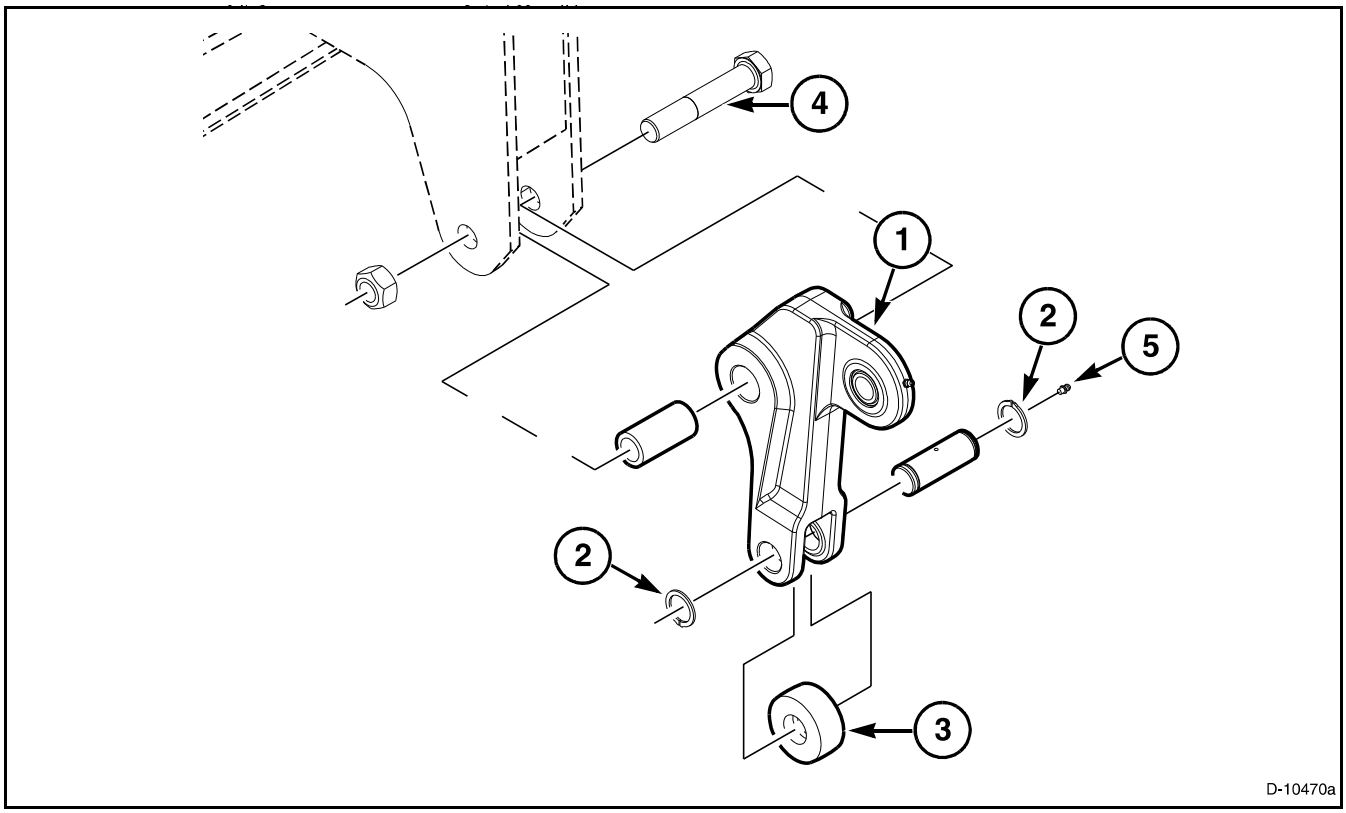

FIG. 161

FIG. 161: Bale Tension Roller

Removal

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

Relieve the hydraulic pressure in the bale tension system.

Remove a retaining ring from the pin for the bale tension roller.

(1) Bale Tension Arm

(2) Retaining Ring

(3) Bale Tension Roller

(4) Cap Screw 1-8 X 5-1/2 and Hex Top Lock Nut 1-8

(5) Grease Fitting (4) 1/4-28

Hold the bale tension roller and remove the pin.

Remove the bale tension roller.

Inspection

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.

Put the bale tension roller in the position and install the pin.

Install the retaining ring on the pin.

Lubricate the pin.

FIG. 4: Bottom Twine Tensioner

(1) Top Roller

(2) Bottom Roller

(3) Needles

(4) Roller

(5) Slacker Arm

(6) Twine Tension Rollers

(7) Twine Centering Rod

(8) Holding Finger Shaft

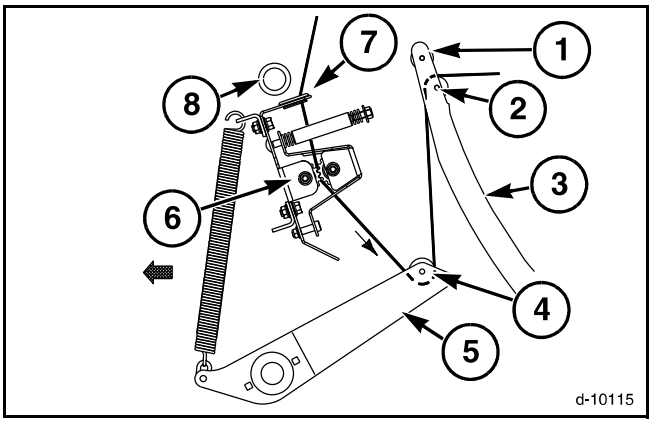

FIG. 4

FIG. 5: The needle (1) moves up through the bale chamber and plunger putting the bottom twine up across the front of the bale. The twine finger moves away from the needle slot. The tucker arm (2) moves up to get out of the way of the needle. The needle continues up, picking up the top twine (3) from the tucker arm roller so the top twine is on the tip roller of the needle. The needle then pushes the top twine into the slot in the stripper arm. The needle also pushes both twines across the billhook, and into the recess in the twine disc. The twine finger takes the bottom twine from the back of the needle and moves the bottom twine rearward into the slot in the stripper arm and into the route of the billhook.

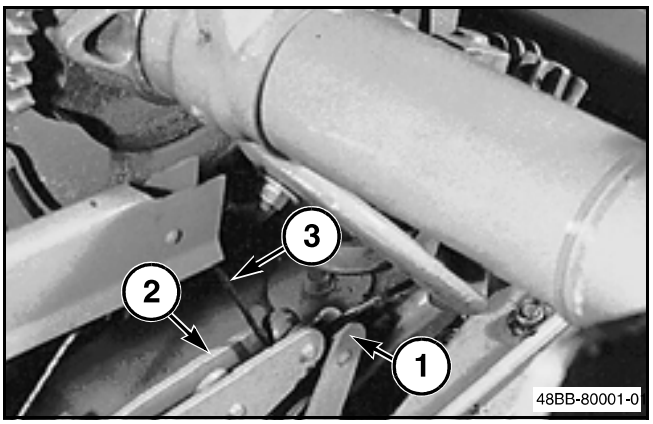

FIG. 5

FIG. 6: Needle

(1) Twine Disc

(2) Twine Finger

(3) Stripper Arm

(4) Billhook

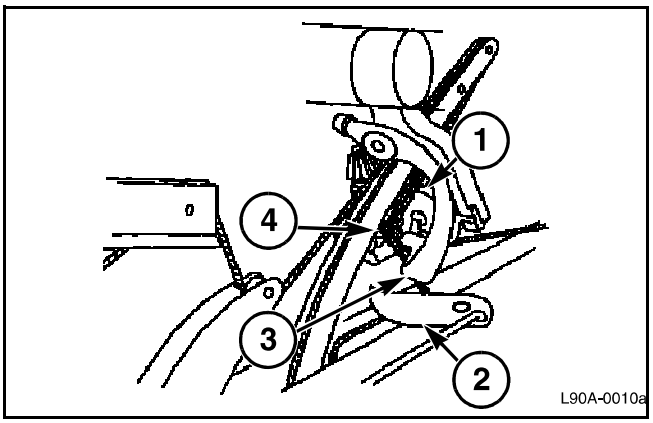

FIG. 6

FIG. 7: The top slot of the twine disc (1) starts to rotate down. The billhook (2) then starts turning, picking up the two twines.

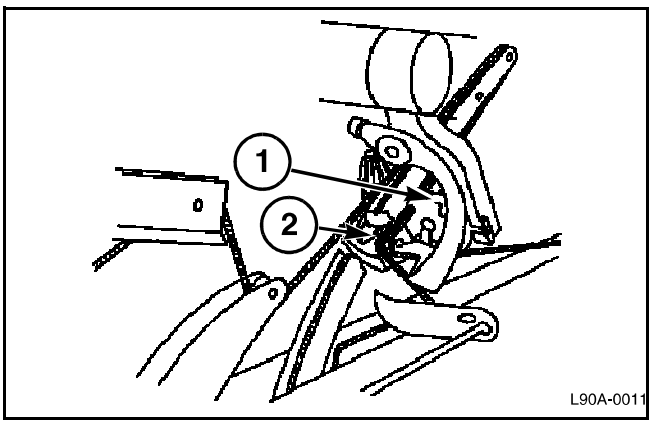

FIG. 7

Routing the Twines to the Needles

FIG. 31: Each twine goes up from a lower slacker arm (1), between tension springs (2), and to a needle (3). Each twine goes over a lower roller (4), through the tip of a needle, and on up into the bale chamber. The large arrow (A) points to the front of the baler.

Pull twine number 1 into the bale chamber and tie to the twine from knotter one.

See Threading the Knotters in this section for information on how to thread the twine through the knotters.

Check each twine label. Make sure the correct twine is threaded to the correct needle.

Repeat these steps to thread needles two through four. Make sure the twine is not wrapped around another twine between the twine boxes and the twine tensioner twine guide (4).

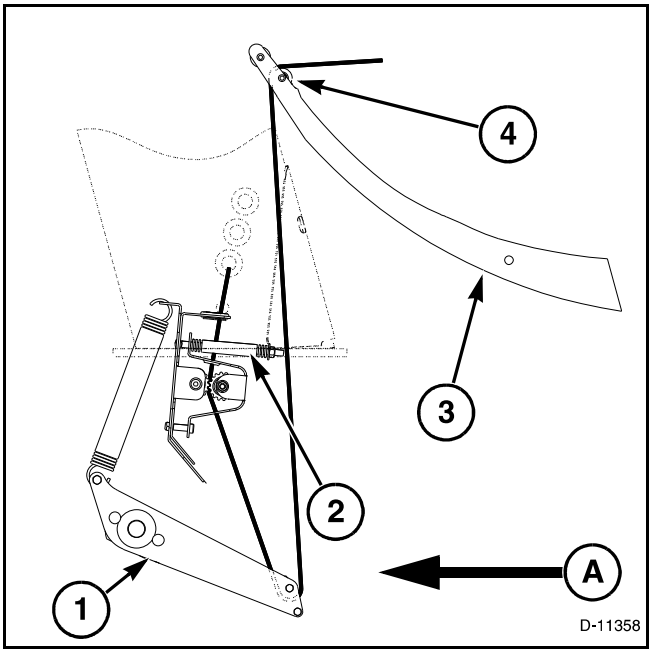

FIG. 31

FIG. 46: Upper Twine Routing-Top View

(1) Centering Rod
(2) Guide Loop
(3) Left Hand Twine Box
(4) Right Hand Twine Box
(5) No. 1 Knotter
(6) No. 2 Knotter
(7) No. 3 Knotter
(8) No. 4 Knotter
(9) No. 5 Knotter
(10) No. 6 Knotter

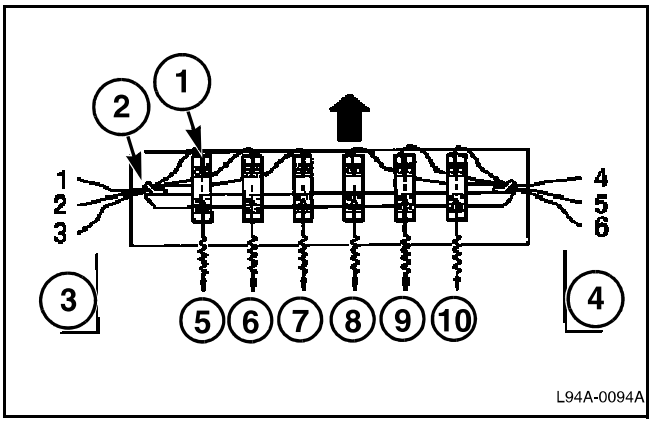

FIG. 46

FIG. 47: Upper Twine Tensioner

(1) Guide Loop
(2) Twine Centering Rod
(3) Twine Tension Roller
(4) Twine Finger Shaft
(5) Slacker Arm Roller
(6) Twine
(7) Tucker Arm Roller

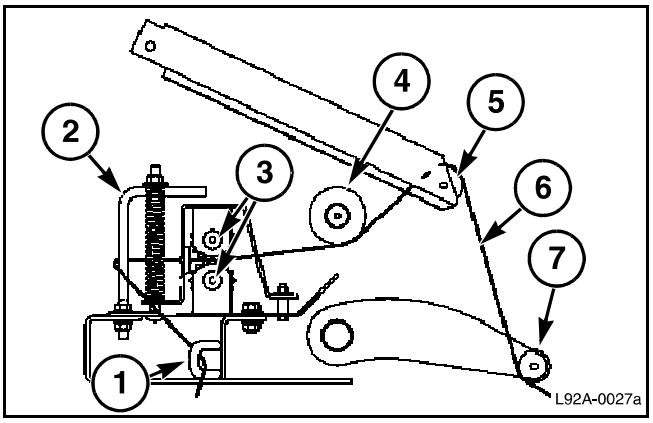

FIG. 47

FIG. 48: Lower Twine Tensioner

(1) Tip Needle Roller
(2) Bottom Needle Roller
(3) Needle
(4) Roller
(5) Slacker Arm
(6) Twine Tension Rollers
(7) Twine Centering Rod
(8) Holding Finger Shaft

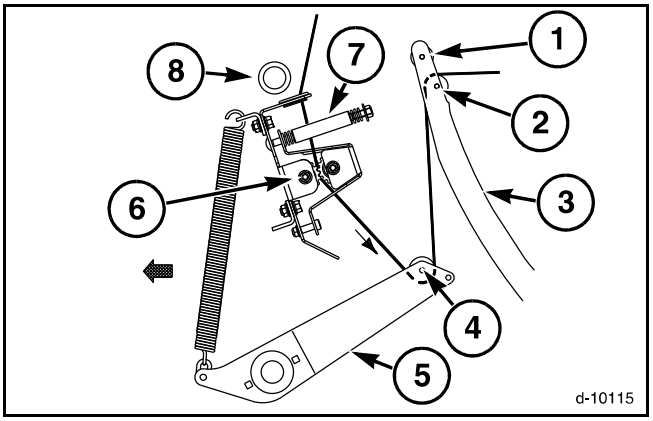

FIG. 48

NOTES

Causes of Tying Failure

The most common causes of tying failures are found below:

- Twine tensioners not adjusted correctly.
- Twine twisted in the twine storage compartment or the twine tensioner.
- Rough edges or rust on the billhook, stripper arm, or twine finger.
- Tucker arm adjustment not correct.
- Needle adjustment not correct.
- Twine finger adjustment not correct.
- Twine disc adjustment not correct.
- Twine finger shaft sticking.
- Tucker arm shaft sticking.
- Twine tensioners in bottom of twine box not adjusted correctly.
- No spring tension on slacker arms or crop deposit on lower slacker arms.
- Sticking in lower slacker arm from dirt deposit in slacker arm pivots.
- Worn, broken, or missing twine rollers and tensioners.
- Broken hay dog or hay dog spring.
- Top face brackets for plunger broken or not adjusted correctly.
- Dull, broken, or damaged twine knife.

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.

FIGS. 86–87: 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 36 to 54 N (8 to 12 lb) 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.

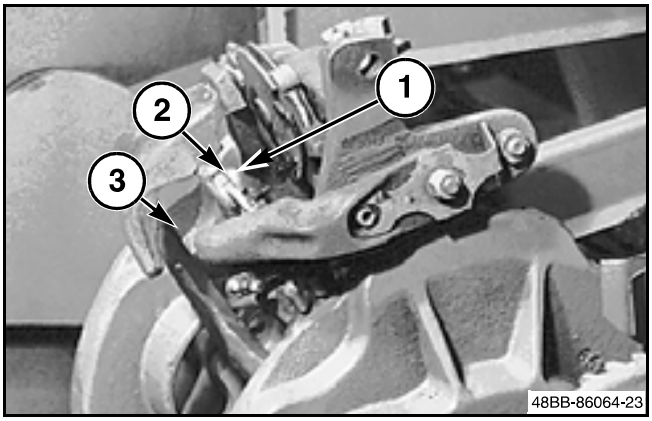

FIG. 86

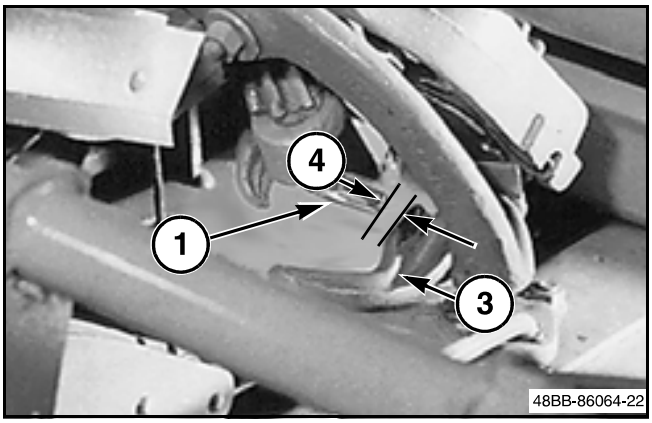

FIG. 87

FIG. 88: During the tying cycle, the flange of the stripper arm (3) must have a minimum travel (4) of 10 mm (.4 in) beyond the end of the billhook (1). The travel will normally be 20 to 22 mm (.79 to .87 in). If there is not enough travel, check for a worn or damaged roller on the stripper arm. Also check for a bent stripper arm. Check both lobes on the cam gear for wear and damage. Replace or repair the cam gear as necessary. The lobes can be repaired by filling the low areas with weld.

NOTE: If weld is added to the cam gear, make sure the roller has clearance in the groove of the cam gear. Maximum travel for the stripper arm is approximately 22 mm (.87 in) beyond the end of the billhook. Make sure there is clearance between the stripper arm and the other parts.

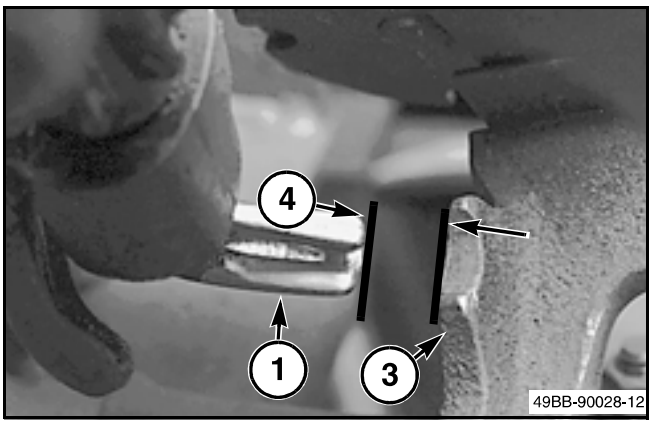

FIG. 88

FIG. 110: Knotter Head Structure

(1) Twine Finger Rod

(2) Twine Finger

(3) Needle

(4) Clearance - Between Twine Finger and Needle

(5) Attachment Bolts

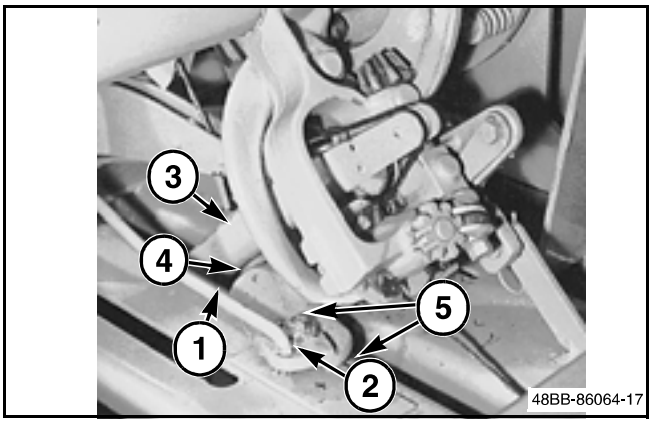

FIG. 110

FIG. 111: Knotter Head Structure

(1) Tip of Twine Finger

(2) Inner Face of Twine Finger

(3) Needle Slot

(4) Clevis

(5) Twine Finger Rod

(6) 90 Degree Angle (+/- 3 degrees)

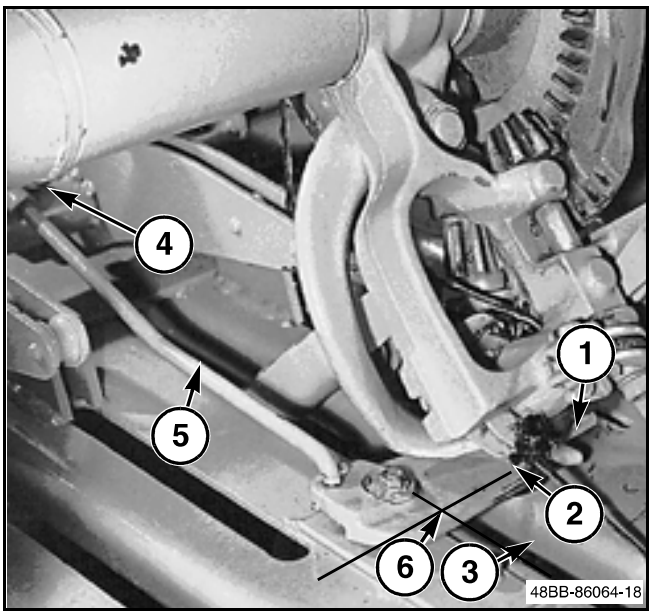

FIG. 111

NEEDLE PROTECTION LINKAGE ADJUSTMENT

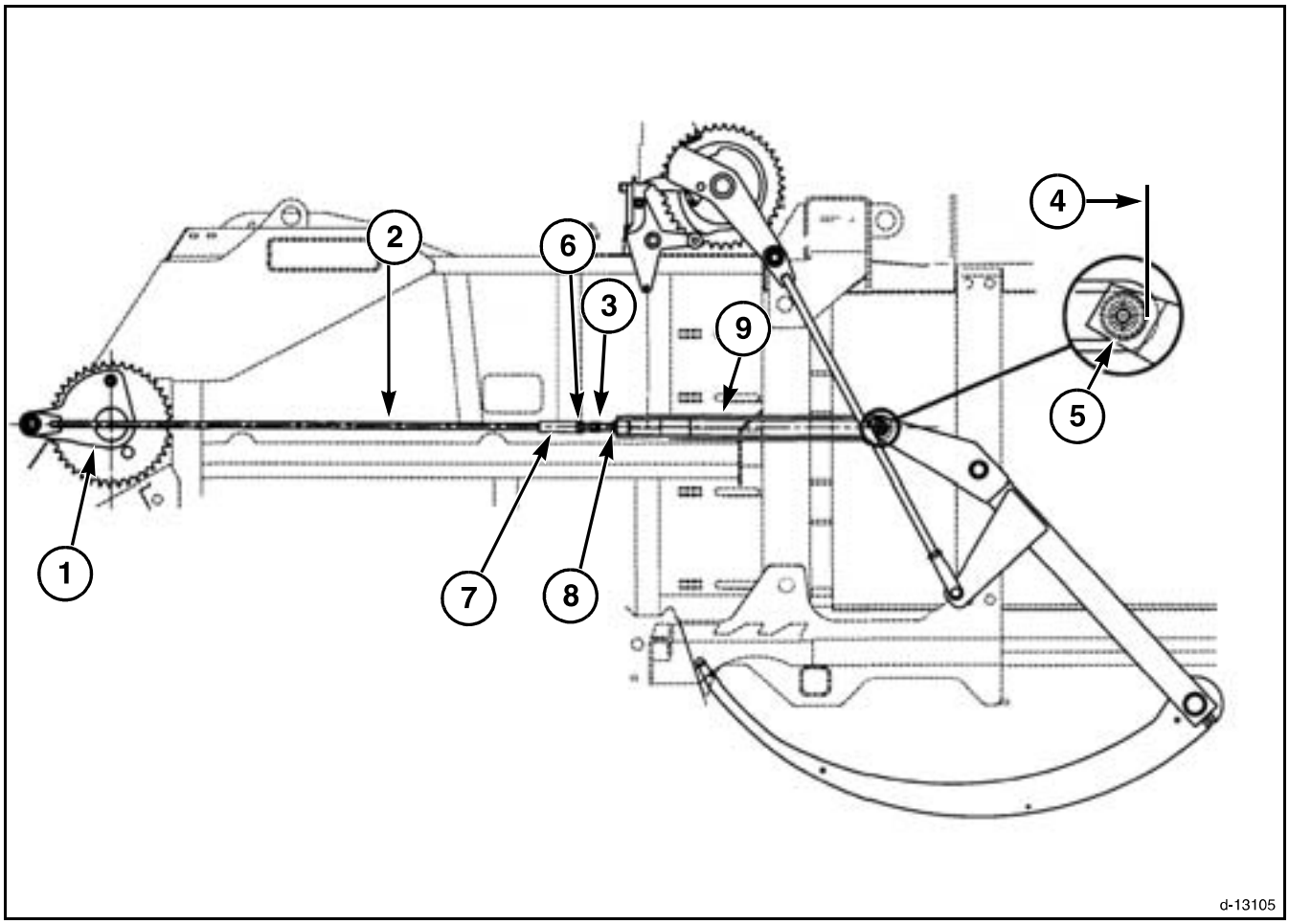

FIG. 128

FIG. 128: Needle Protection System

(1) Protection Linkage Drive Arm

(2) Protection Linkage

(3) Turnbuckle

(4) Preliminary Gap 0.5 to 1.5 mm (0.020 to 0.060 in)

(5) Bearing

(6) Jam Nut on Rod

(7) Rod

(8) Clevis Nut

(9) Clevis

Lower Twine Tensioner Assembly Installation

FIG. 138: Lower Twine Tensioner

Place tensioner assembly onto jack.

Position assembly under the baler mainframe.

Raise the jack to the correct position.

Install the cap screws and locknuts.

Install twine.

Release flywheel brake.

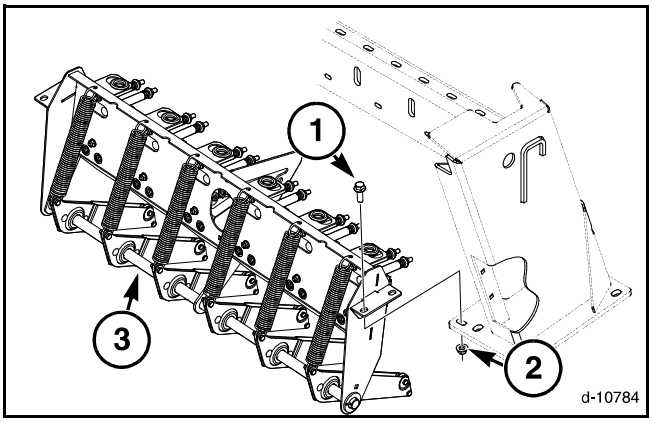

FIG. 138

Installation

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

Connect the lifting equipment to the knotter frame. Use the lifting equipment to put the knotter frame in position on the main frame. Align the knotter frame with the alignment marks on the mainframe.

Install the five bolts, lock washers, flat washers, and spacers that fasten the rear of the knotter frame to the main frame and tighten the nuts. MAKE SURE the spacers are installed between the knotter frame and the mainframe.

Install the two bolts, lock washers, and flat washers that fasten the rear corners of the knotter frame to the main frame. Do not tighten the bolts at this time.

Install the two bolts, lock washers, and flat washers that fasten the middle of the knotter frame to the main frame. Do not tighten the bolts at this time.

Install the six bolts, flat washers, lock washers, and nuts that fasten the front of the knotter frame to the main frame. Do not tighten the nuts at this time.

If necessary, move the knotter frame to align the needle slots in the knotter frame with the needle slots in the plunger.

Tighten the nuts on the bolts at the sides of the knotter frame to 366 Nm (270 lbf ft).

Tighten the nuts on the bolts at the front of the knotter frame to 203 Nm (150 lbf ft).

Install the lubrication lines.

Disassembly 3x3 and 70x80 Models

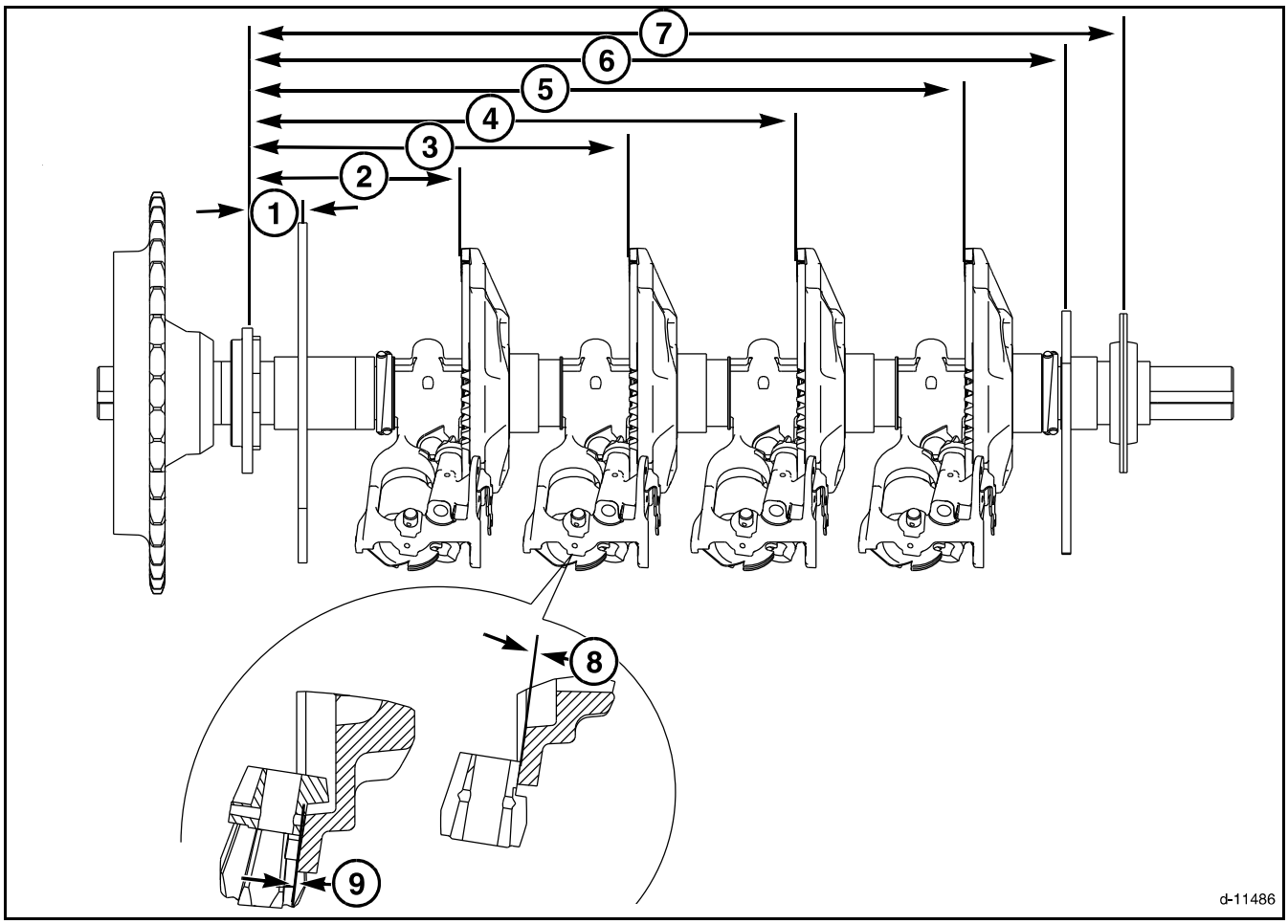

FIG. 173

FIG. 173: 3x3 and 70x80 Knotter

(1) 58.8 mm (2.314 in)

(2) 230.6 mm (9.078 in)

(3) 406.6 mm (16.007 in)

(4) 582.6 mm (22.936 in)

(5) 758.6 mm (29.865 in)

(6) 860 mm (33.858 in)

(7) 921 mm (36.259 in)

(8) .13 to .38 mm (.005 to .015 in)

(9) .13 to .38 mm (.005 to .015 in)

FIG. 186: Install spacer (6), bushing (5), and shim (4).

Put the key in the drive shaft and install the knotter cam gear (3).

Rotate the knotter head assembly so the flat on the billhook pinion gear and the flat area on the knotter cam gear are in alignment. The billhook pinion gear is the gear on the end of the billhook shaft. Hit the knotter cam gear with a soft hammer to make sure the parts are seated

Push down on the knotter cam gear and measure the distance between the flat on the billhook pinion gear and the flat area on the knotter cam gear. The distance must be 0.13 to 0.38 mm (0.005 to 0.015 in). If the distance is not correct, remove or install shims between the knotter cam gear and the knotter head assembly. Check the measurement again.

NOTE: A preload will be applied to all of the knotter cam gears when the right-hand needle arm is installed on the end of the drive shaft. A force approximately equal to the preload must be applied each time a measurement is taken during this procedure. Force can be applied by installing an additional knotter cam gear on the drive shaft and pushing down on the top knotter cam gear. Force can also be applied by installing a heavy piece of pipe over the drive shaft and pushing down on the pipe.

Push down on the knotter cam gear and measure the distance between the bearing bracket and the knotter cam gear. See the illustration at the beginning of this procedure for the correct dimension. If the distance is not correct, remove or install shims between the knotter head assembly and the bushing to make the adjustment as close as possible. Rotate the adjustable shims to complete the adjustment. Check the measurement again.

Install shims (2).

Install the knotter cam gear (1) and the key

FIG. 187: Install the shims (2) and adjustable shims (1).

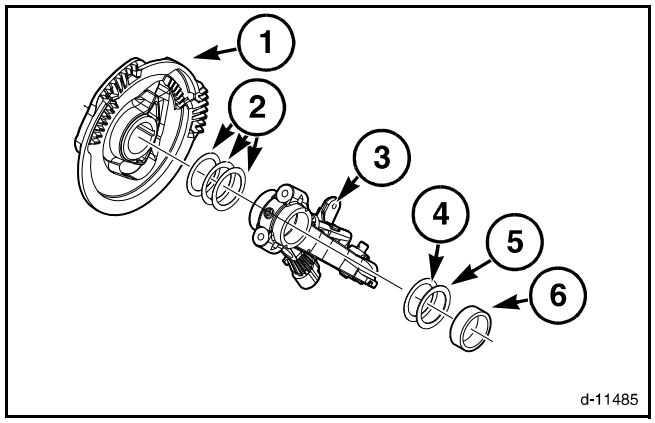

FIG. 186

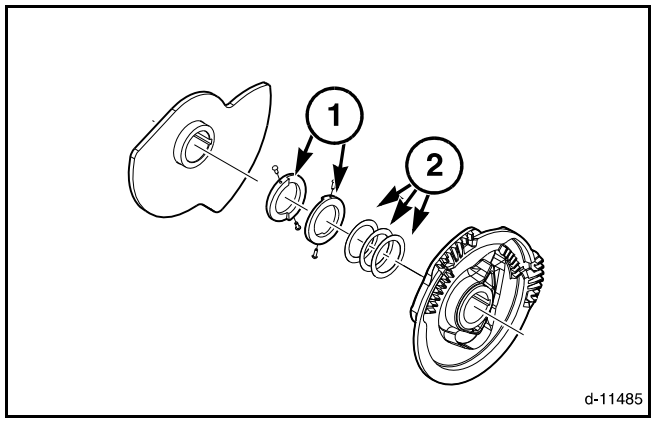

FIG. 187

FIG. 211: Install the shims (1).

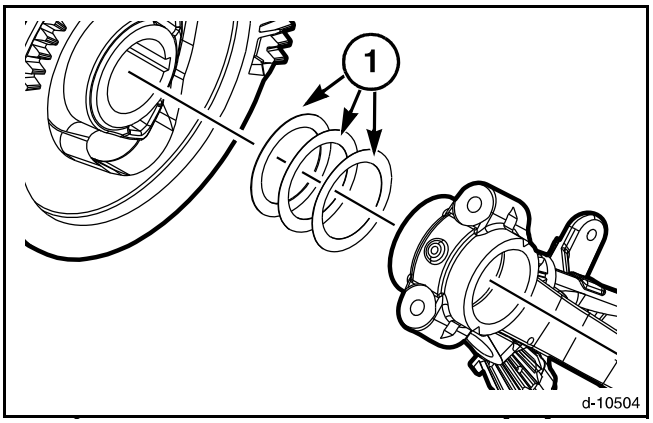

FIG. 211

FIG. 212: Put the key in the drive shaft and install the knotter cam gear. Rotate the knotter head assembly so the flat on the billhook pinion gear and the flat area on the knotter cam gear are in alignment. Hit the knotter cam gear with a soft hammer to make sure the parts are seated.

Push down on the knotter cam gear and measure the distance between the flat on the billhook pinion gear and the flat area on the knotter cam gear. The distance must be 0.13 to 0.38 mm (0.005 to 0.015 inch). If the distance is not correct, remove or install shims between the knotter cam gear and the knotter head assembly. Check the measurement again.

Push down on the knotter cam gear and measure the distance between the bearing bracket and the knotter cam gear. See the illustration at the beginning of this procedure for the correct dimension. If the distance is not correct, rotate the adjustable shims to make the adjustment. Check the measurement again.

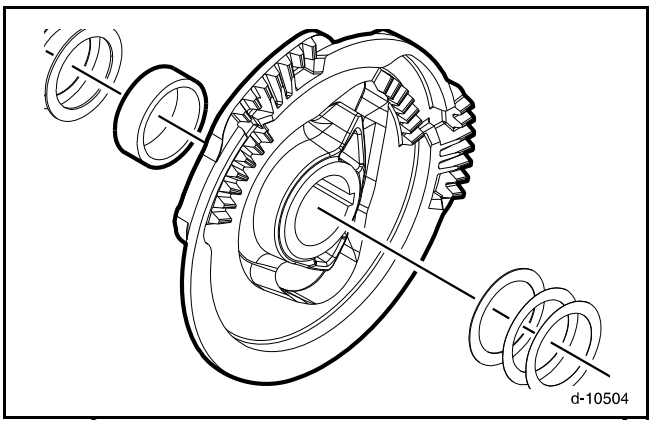

FIG. 212

FIG. 213: If the wires were removed from the adjustable shims, use two pieces of wire to connect one of the pins in one of the adjustable shims to both pins in the other adjustable shim.

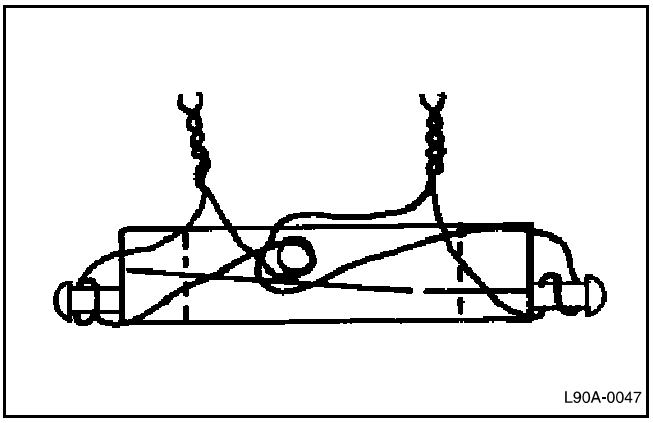

FIG. 213

Install the carriage bolts, flat washers, lock washers, and nuts that fasten the center bearing bracket to the knotter frame.

NOTE: If there is a gap between the center bearing bracket and the knotter frame, install washers to fill the gap.

FIG. 242: Install the clevis pins and hairpins that fasten the knotter heads to the knotter frame.

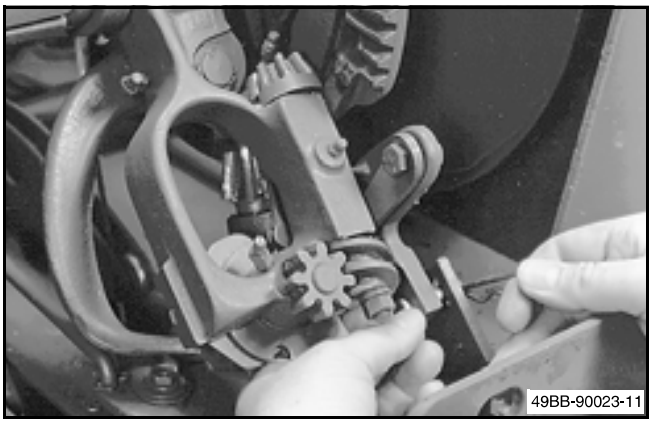

FIG. 242

FIG. 243: Tighten the set screws (1) in the right-hand needle arm.

Make sure the timing marks on the inside of the knotter drive sprocket are in alignment with the timing marks on the knotter frame.

If the knotter frame is mounted on the baler, do the remainder of the procedure.

If the knotter frame is not mounted on the baler, see Knotter Frame Assembly and install the knotter frame.

Connect the lubrication lines to the knotter assembly. Make sure the lubrication lines are adjusted so the twine will not rub the lubrication lines.

Install the stuffer/knotter drive chain on the knotter drive sprocket.

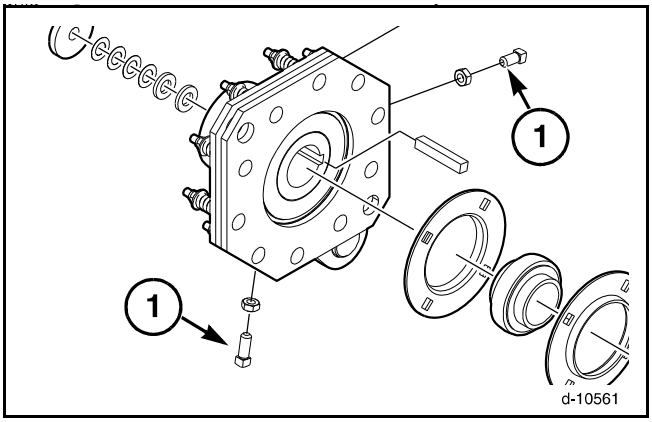

FIG. 243

FIG. 244: Install the needle actuating rods (1) on both sides of the knotter. Make sure there is a machinery bushing (2) on both sides of each needle actuating rod.

Remove the chain from the needle carriage.

Check the baler timing. See Checking The Baler Timing. The baler timing MUST be correct.

NOTE: The stuffer/knotter drive chain keeps the operation of the stuffer, the knotters, and the needles synchronized with the operation of the plunger. The baler timing must be correct for proper operation of the baler.

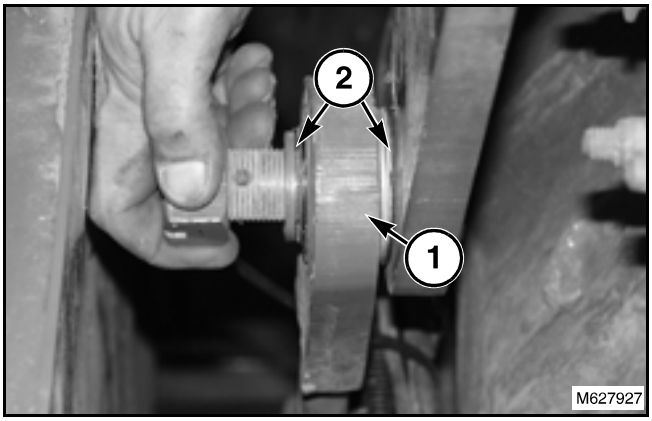

FIG. 244

Knotter Clutch

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

FIGS. 264–266: Manually turn the flywheel to align the timing marks at the stuffer drive sprocket, at the knotter drive sprocket, and at the stuffer/knotter drive sprocket.

Aligning the timing marks (1) will make checking the baler timing at assembly easier.

NOTE: If the timing marks cannot be aligned, see Baler Timing. The stuffer/knotter drive chain keeps the operation of the stuffer, the knotters, and the needles synchronized with the operation of the plunger. The baler timing must be correct for proper operation of the baler.

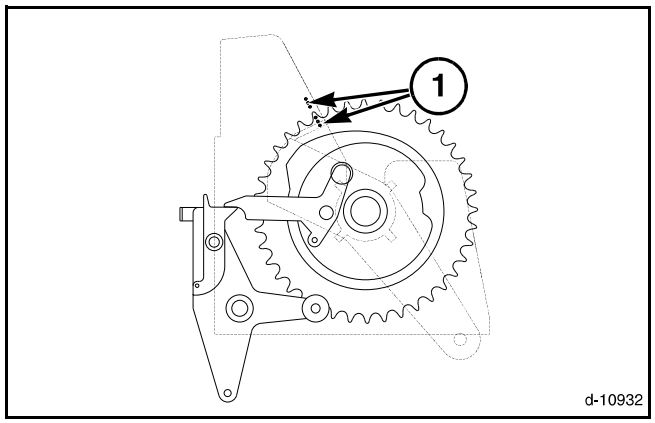

FIG. 264

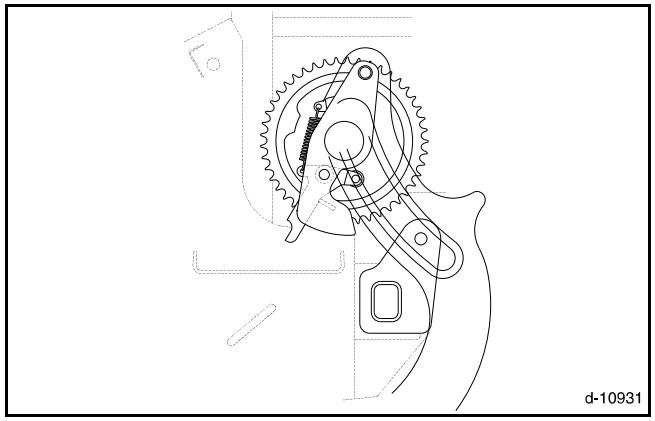

FIG. 265

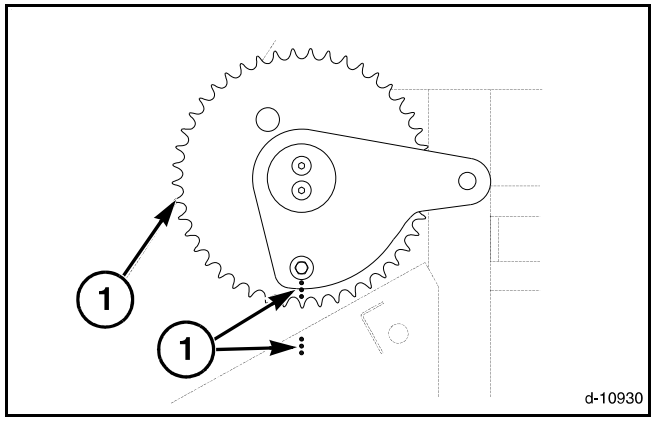

FIG. 266

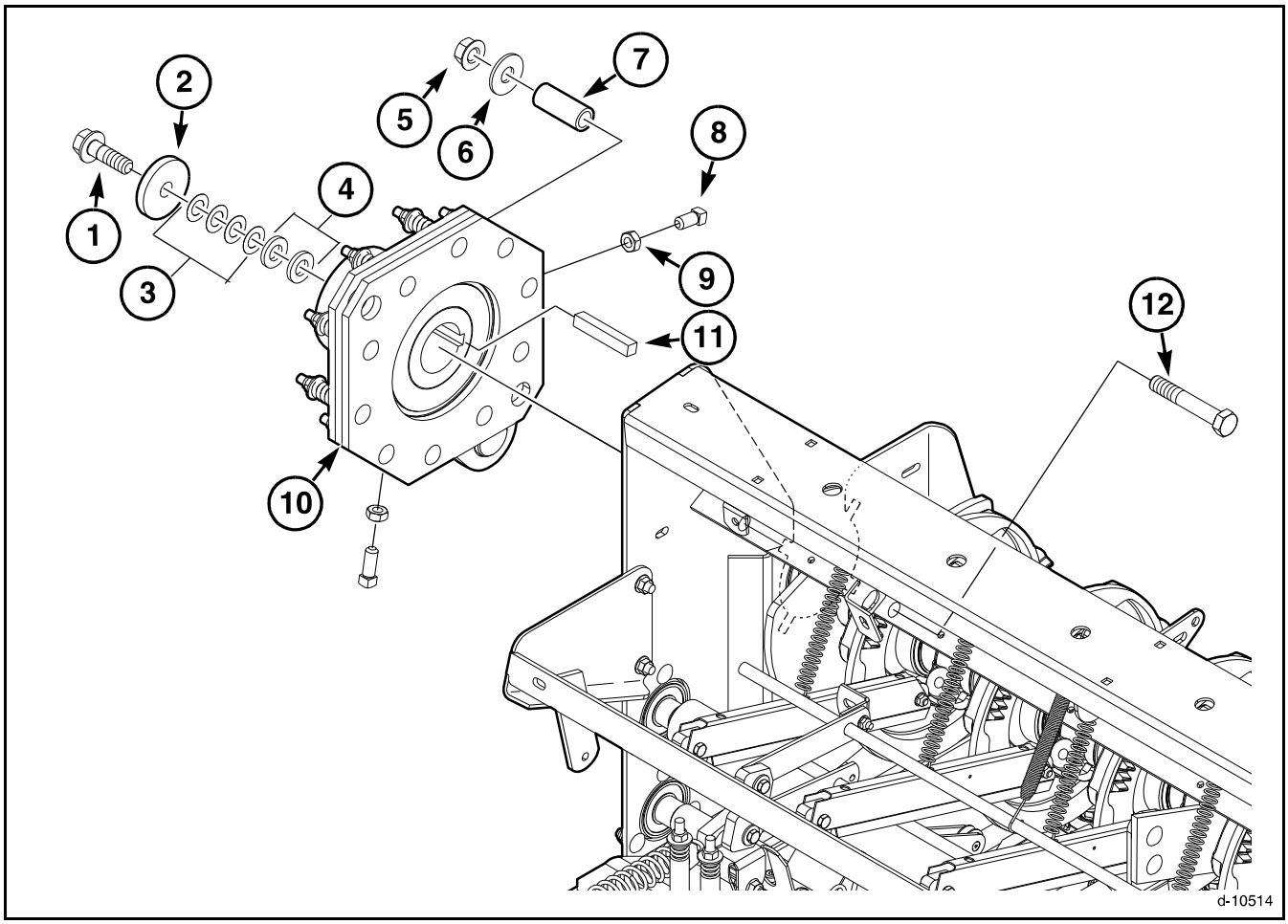

FIG. 288

FIG. 288: Knotter Brake

(1) Cap Screw
(2) Cap
(3) Shims-As required
(4) Flat Washers-As required
(5) Locknut
(6) Washer
(7) Spacer
(8) Set Screw (2)
(9) Jam Nut (2)
(10) Knotter Brake
(11) Key
(12) Cap Screw

FIG. 317: Remove the jam nut, cap screw, and twine holder springs.

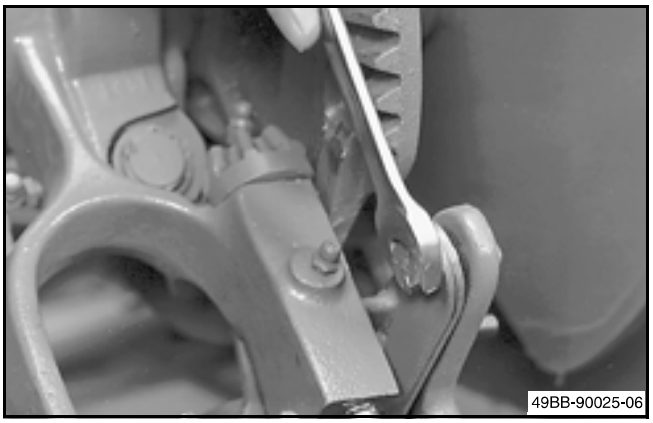

FIG. 317

FIG. 318: Drive the groove pin out of the twine disc gear.

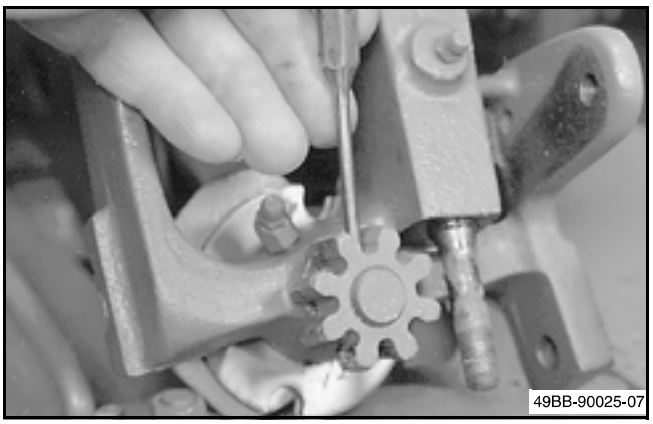

FIG. 318

FIG. 319: Remove the twine disc gear, the twine disc, and the disc cleaner.

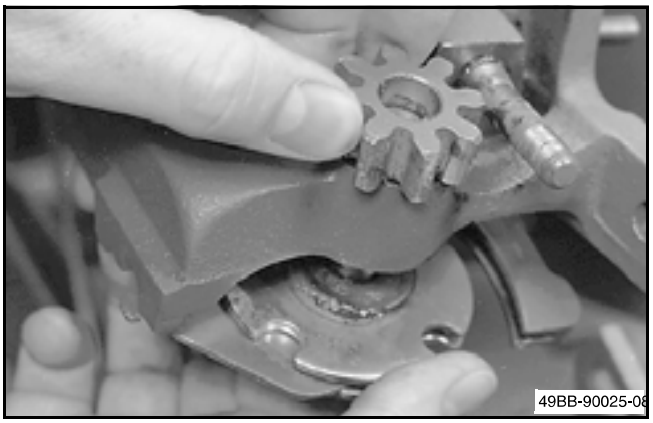

FIG. 319

FIG. 320: Drive the groove pin from the worm pinion gear.

FIG. 320

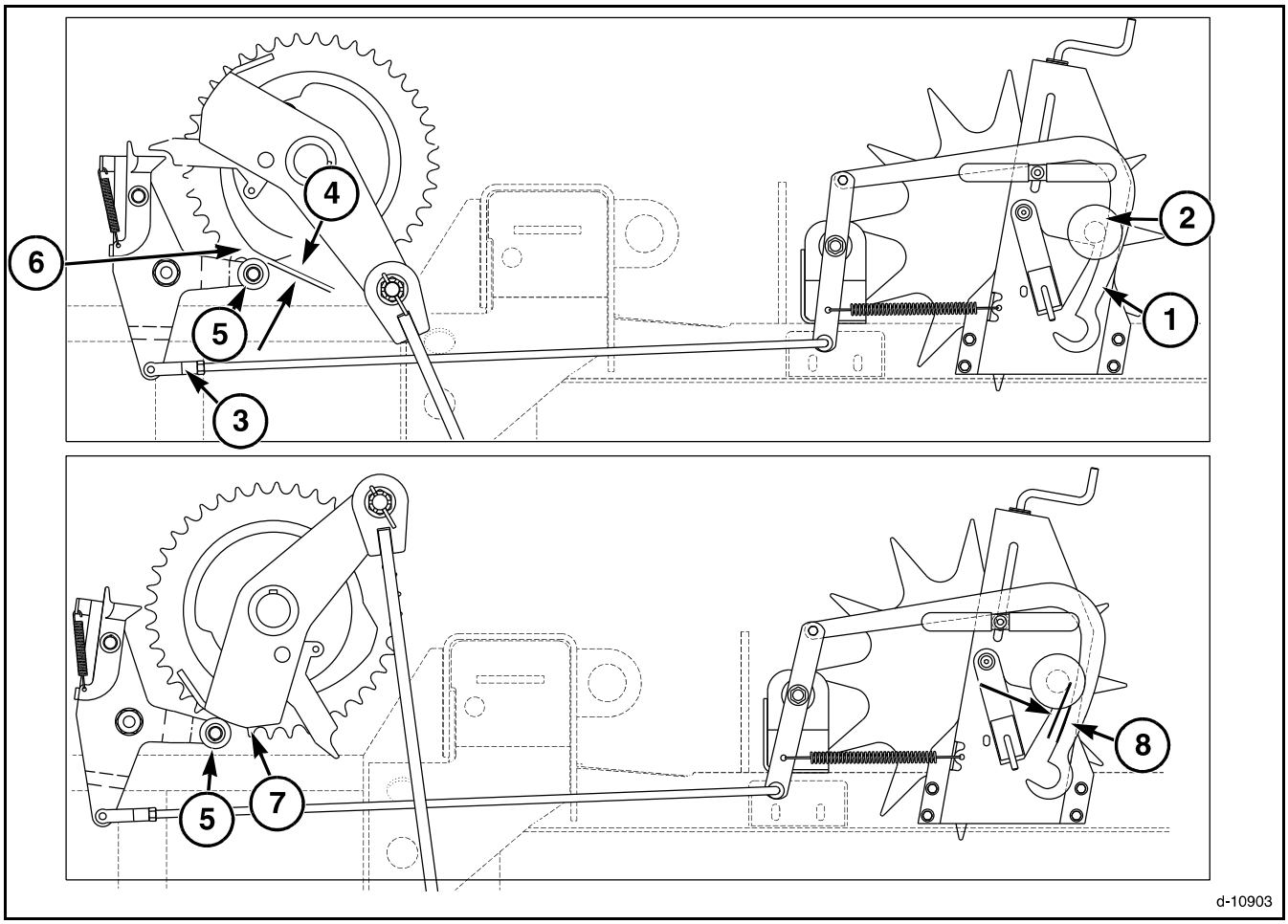

FIG. 348

FIG. 348: See the safety warnings at the beginning of this section and follow the procedures.

NOTE: The knotter trip arm adjustment controls when the knotter engages and also controls the bale length.

Make sure the knotter is in the home position.

Check that the trip arm (1) is in contact with the metering spool (2).

Rotate clevis (3) to obtain a clearance (4) of 3 to 7 mm (.118 to .276 in) between reset roller (5) and the external sprocket lobe (6) as shown.

Trip the knotter and rotate until the reset cam (7) on the knotter carriage arm is centered on reset roller and move the trip arm to rearmost position as shown.

The clearance (8) must be 5 mm (.197 in) minimum between trip arm and metering spool. This provides clearance so trip arm will reset each knotter cycle.

Raise and lower the trip arm to make sure the trip arm stays in alignment with the metering spool through the complete stroke. Bend the trip arm to get the correct alignment.

FIG. 372: Install the trip arm (1) above adjusting lever (2) and into shield wheel (3).

Tighten shield wheel nut to 285 Nm (210 lbf ft).

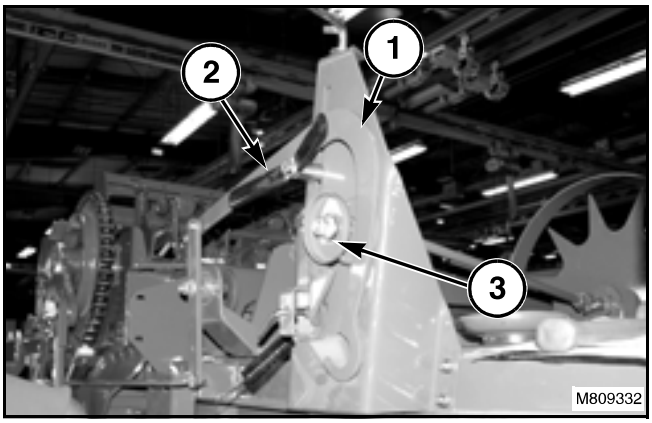

FIG. 372

FIGS. 373–374: Align holes of clevis rod (1) to knotter reset arm (2).

Install clevis pin and cotter pin.

Loosen adjustment nut (3) on rod.

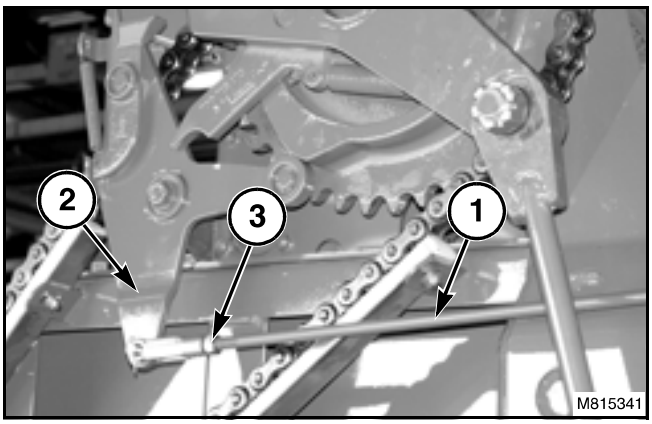

FIG. 373

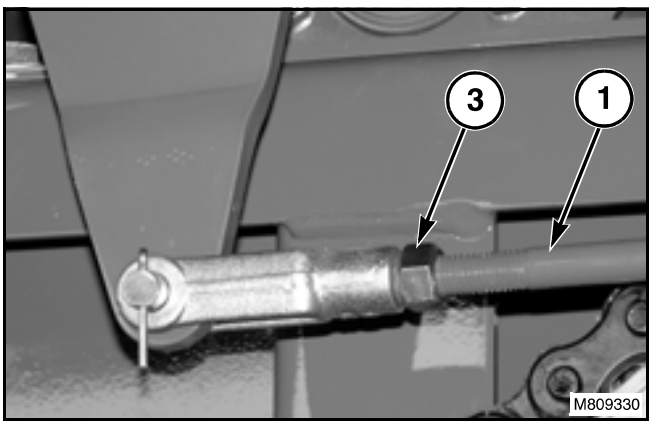

FIG. 374

NOTES

Knotter Lubrication System

Knotter Lubrication Pump

Power system..... Baler Control System

Enclosure rating..... IP 6K9K – Protected from water sprayed in all directions

Pump output..... 2.8 cc/min

Outlet connection..... 1/8 in NPT (female)

Maximum recommended operating pressure..... 248 bars (3597 psi)

Reservior capacity..... 2000 cc (2.1 qt)

Lubricant..... SAE 80 W 140, SAE 85 W 140 or API GL – 5

Temperature range..... -25 C to 70 C (-13 F to 158 F)

Pressure relief valve..... 259 to 293 bars (3756 to 4250 psi)

Braking System (If Equipped)

Parking..... manual control, mechanical actuated

Service

- Type..... acuated with tractor brakes hydraulic system
- Single axle drum size..... 406 X 120 mm (16 x 4.724 in)
- Tandem axle drum size..... 300 X 135 mm (11.81 x 5.31 in)

Tractor Requirements

Horsepower

- Minimum..... 90 kw (120 PTO hp)
- Recommended..... 112+ kw (150+ PTO hp)
- Baler with cutter (minimum)..... 134+ kw (180+ PTO hp)

Weight (minimum)

- Towing baler only..... 9589 kg (21140 lbs)
- Towing baler and accumulator..... 10200 kg (22500 lbs)

PTO Speed..... 1000 rpm

PTO..... ASABE Type 2, 1-3/8 inch 21 teeth, or ASABE Type 3, 1-3/4 inch 20 teeth

Hydraulics

- Single axle baler..... single remote for pickup lift
- Tandem axle baler..... dual remote for steering lock

Electrical system..... 12V DC/three pin cab plug with switched/unswitched and ground

Lights..... ASABE 7-pin connector outlet

70x80 Baler

MAIN DRIVE

PTO speed ..... 1000 rpm

PTO type

- Optional ..... ISO (ASABE) Type 2, 35 mm, 21 tooth
- Optional ..... ISO (ASABE) Type 3, 45 mm, 20 tooth

Driveline category ..... ISO 6

Drive protection ..... overrunning and slip clutches, and shearbolt

Flywheel brake ..... direct acting

Flywheel diameter ..... 750 mm (29.5 in)

Flywheel width ..... 113 mm (4.45 in)

Flywheel weight ..... 163 kg (359 lbs)

Gearbox

- Type ..... enclosed double reduction
- Gears ..... spiral bevel gear (1st set), spur gear (2nd set)
- Bearings ..... tapered and spherical roller bearings
- Lubrication ..... oil bath
- Temperature sensor alarm setting ..... 90 degrees C (194 degrees F)

HYDRAULIC SYSTEMS

Baler hydraulics

- Type ..... On board, open center
- Drive ..... Direct drive from gearbox
- Relief valve setting ..... 200 bar (2901 psi)
- Temperature sensor alarm setting ..... 107 degree C (225 degrees F)

Knotter blower (optional) hydraulics

- Type ..... On board
- Drive ..... Driven off baler hydraulic pump

PICKUP

Pickup outside width (less gauge wheels) ..... 2597 mm (102 in)

Pickup tinebar drive ..... cam and drive arms on right-hand and left-hand

Width tine to tine ..... 2046 mm (80.55 in)

Width inside ..... 2260 mm (88.98 in)

Overall width including tires ..... 2994 mm (118 in)

Number of bars ..... four, with center carrier

Number of tines 64

Tine spacing ..... 66 mm (2.60 in)

Tine bar bearings ..... sealed ball

Drive ..... RC60 roller chains

Protection ..... slip and overrunning clutches

Height control ..... gauge wheels (2) and adjustable control rod

R

T

Bale Accumulator

System Voltage

Minimum Voltage ..... +11.5 volts DC

Maximum Voltage ..... +16.0 volts DC

Hydraulics

Early Production Balers ..... tractor hydraulic circuit, the same circuit as the baler control valve

Late Production Balers ..... onboard hydraulic circuit, open center

Bale Weight Kit (Optional)

System ..... automatically weighs the bale on the left-hand side cart

Lubrication System

CLS (Centralized Lubrication System)..... One 12 point positive displacement grease divider valve

Other ..... one direct lubrication line

Lubrication

Grease fittings lubricant..... No. 2 multipurpose Lithium grease

Wheel bearing lubricant..... heavy duty wheel bearing grease