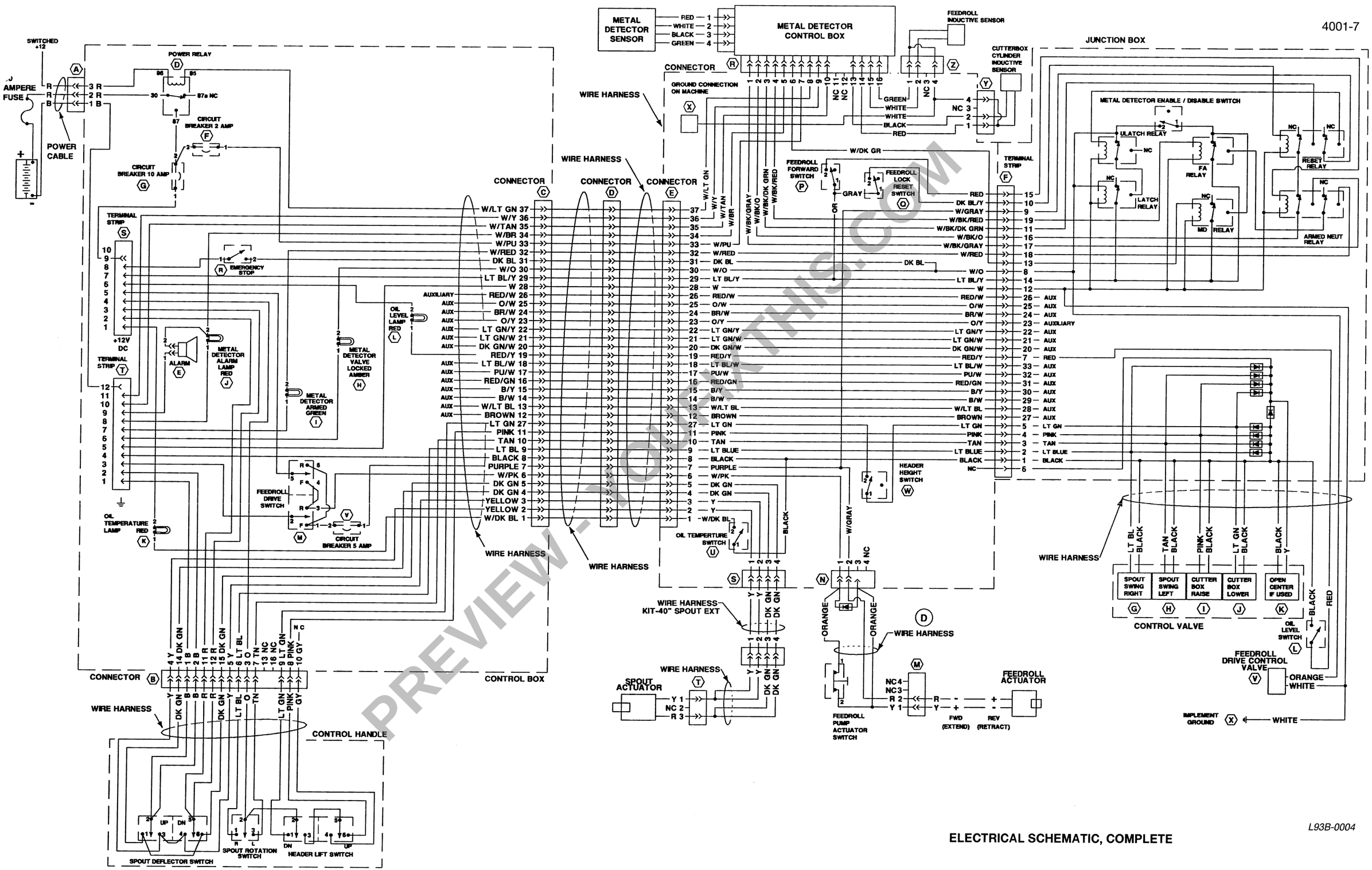
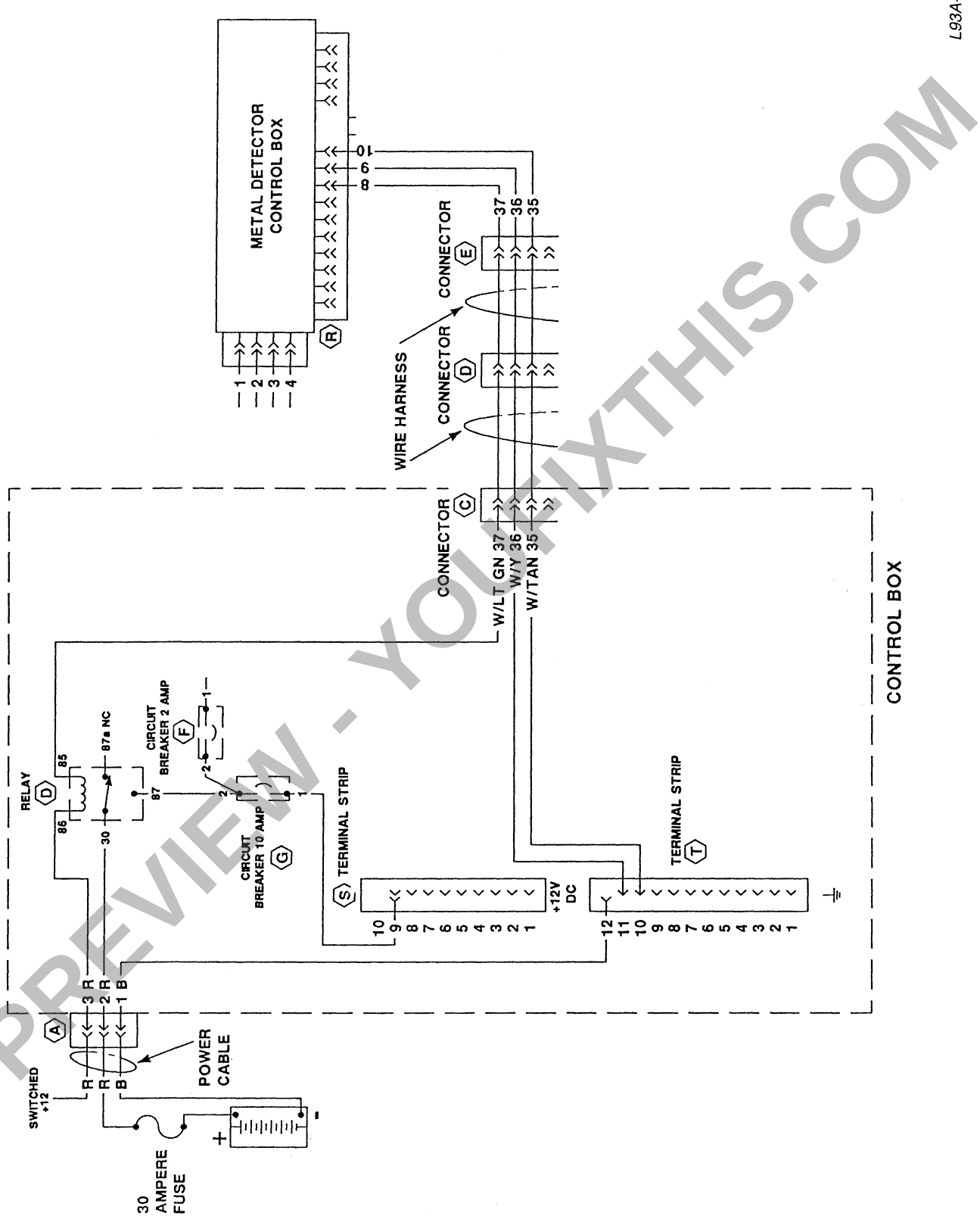


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ELECTRICAL SCHEMATIC, COMPLETE

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GENERAL SERVICE PROCEDURES

⚠ WARNING

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

- **Put the tongue in position for access to the components.**
- **Raise the cutterbox.**
- **Disengage all power.**
- **Stop the tractor engine.**
- **Look and Listen! Make sure all moving parts have stopped.**
- **Install a tongue locking pin on each side of the tongue. Install spring pins in the tongue locking pins.**
- **Put the cutterbox safety stop in the engaged position.**

Bearing Replacement

Sealed ball bearings are used on several shafts and are usually held in position with bearing flanges. The bearings are held in position on the shaft by a locking collar. The locking collar has an eccentric counterbore. The 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 binding action that increases with use. A set screw in the locking collar applies additional locking.

1. Loosen the 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.

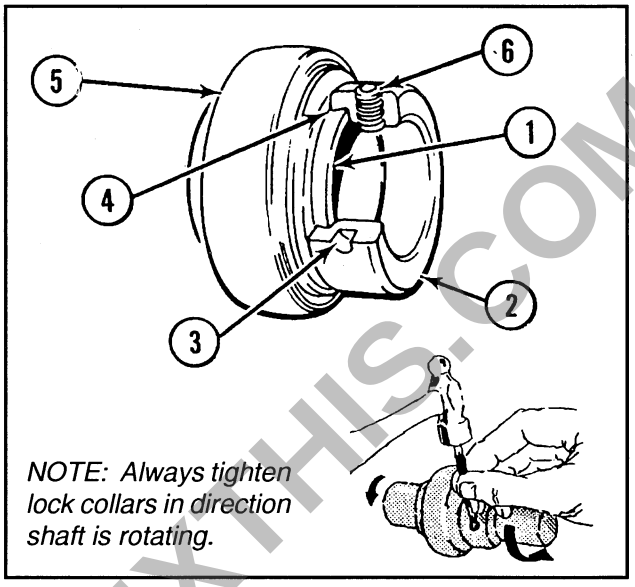
3. Remove the locking collar.

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.



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

L89A-0001

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

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

8. Install the bolts for the bearing flanges. Make sure 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 on 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.

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STANDARD TORQUE SPECIFICATIONS

U.S. Standard Hardware

Use the torques in this chart when special torques are not given. These torques apply to fasteners with both UNC and UNF threads as received from suppliers, dry, or when lubricated with engine oil. These values do not apply if special graphites, molydisulfide greases, or other extreme pressure lubricants are used.

Grade 5 Bolts, Nuts, and Studs



Size	Pound-Feet (LB·FT)	Newton metres (N·m)
1/4-20	8.4	11
1/4-28	9.7	13
5/16-18	17	24
5/16-24	19	26
3/8-16	31	42
3/8-24	35	47
7/16-14	49	67
7/16-20	55	75
1/2-13	76	105
1/2-20	85	115
9/16-12	110	150
9/16-18	120	165
5/8-11	150	205
5/8-18	170	230
3/4-10	265	360
3/4-16	295	405
7/8-9	430	585
7/8-14	475	640
1-8	645	875
1-12	705	955
1-1/8-7	795	1080
1-1/8-12	890	1210
1-1/4-7	1120	1520
1-1/4-12	1240	1680
1-3/8-6	1470	1990
1-3/8-12	1670	2270
1-1/2-6	1950	2640
1-1/2-12	2190	2970

Grade 8 torques are only used where specifically called out. Otherwise all fasteners on this machine, both grade 5 and 8, are tightened to grade 5 torques.

Grade 8 Bolts, Nuts, and Studs



Size	Pound-Feet (LB·FT)	Newton metres (N·m)
1/4-20	12	16
1/4-28	14	18
5/16-18	25	33
5/16-24	27	37
3/8-16	44	59
3/8-24	49	67
7/16-14	70	95
7/16-20	78	105
1/2-13	105	145
1/2-20	120	165
9/16-12	155	210
9/16-18	170	235
5/8-11	210	285
5/8-18	240	325
3/4-10	375	510
3/4-16	420	570
7/8-9	605	820
7/8-14	670	905
1-8	910	1230
1-12	995	1350
1-1/8-7	1290	1750
1-1/8-12	1440	1960
1-1/4-7	1820	2460
1-1/4-12	2010	2730
1-3/8-6	2380	3230
1-3/8-12	2710	3680
1-1/2-6	3160	4290
1-1/2-12	3560	4820

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TROUBLESHOOTING CHARTS

⚠ WARNING

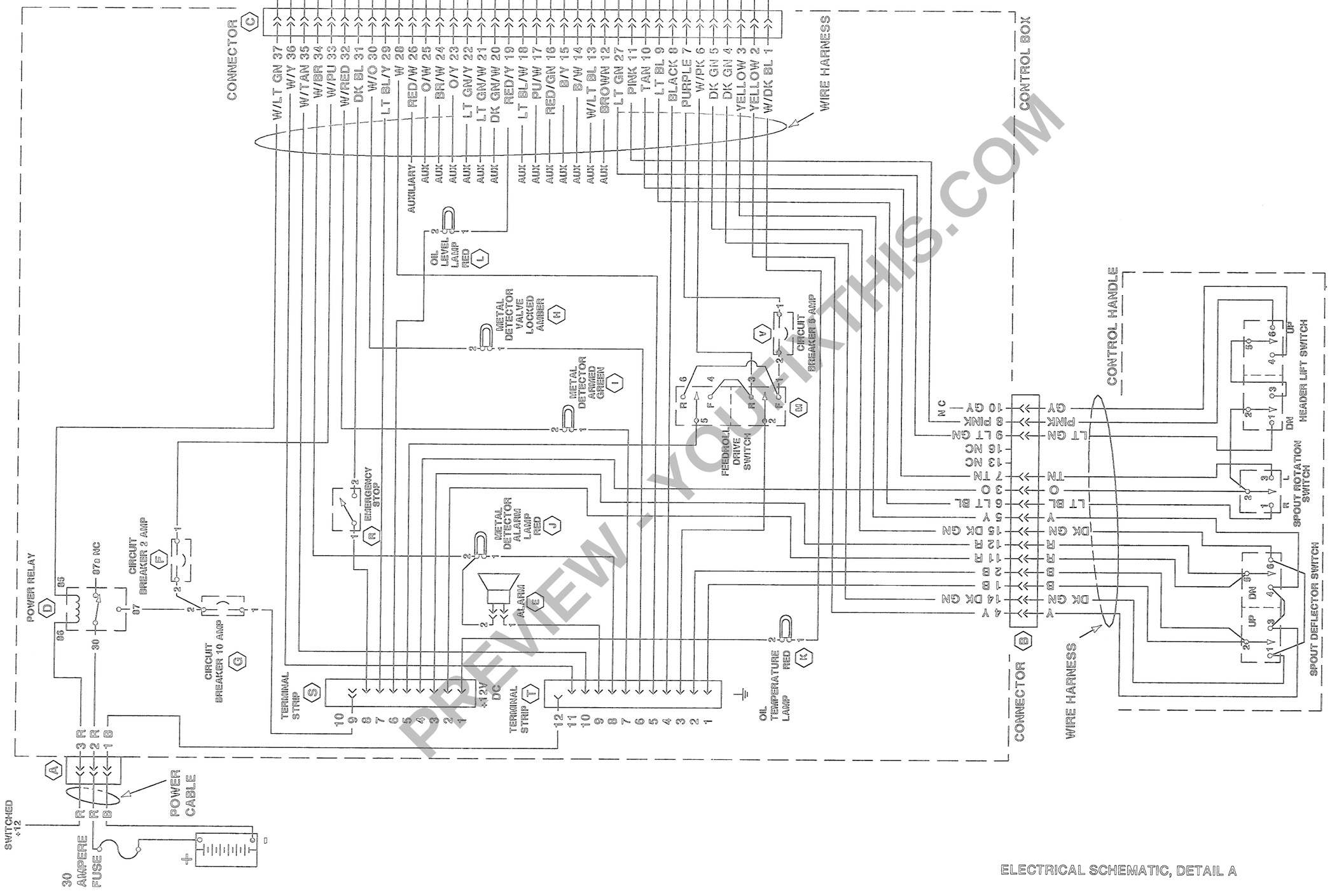
Before doing any maintenance or service work on the machine, you must:

- **Put the tongue in position for access to the components.**
- **Raise the cutterbox.**
- **Disengage all power.**
- **Stop the tractor engine.**
- **Look and Listen! Make sure all moving parts have stopped.**
- **Install a tongue locking pin on each side of the tongue. Install spring pins in the tongue locking pins.**
- **Put the cutterbox safety stop in the engaged position.**

PROBLEM	POSSIBLE CAUSE	CORRECTION
Cutterbox will not raise or raises slowly	Tractor remote not engaged or engaged in wrong direction	Check tractor hydraulic connections. Engage correct tractor hydraulic remote valve and lock in position. Make sure the hydraulic pressure is flowing in the correct direction. See Tractor Connections in Section 2001.
	Mechanical problem	Check binding, damage, and obstructions.
	Cutterbox raise solenoid valve not being energized	Check the coil and circuit for the cutterbox raise solenoid valve. See Checking the Coil and Circuit for a Solenoid Valve in this section.
	Problem in the hydraulic system	See Troubleshooting Tractor Supplied Hydraulic Systems in Section 8001.
	Open center solenoid valve not being energized, if equipped	Check the coil and circuit of the open solenoid valve. See Checking the Coil and Circuit for a Solenoid Valve in This Section.
	Tractor remote flow is low	Adjust tractor flow control to increase flow.

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ELECTRICAL SCHEMATIC, DETAIL A

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11. Adjust a multimeter to indicate volts DC. Connect the negative (-) lead of the multimeter to a good ground connection on the tractor chassis. Connect the positive (+) lead to terminal number 37 in connector C on the control box. The multimeter must indicate system voltage.

NOTE: If the test connection is made to the machine frame, make sure the ground connections between the machine frame and tractor chassis are good.

If the indication is correct, continue the test. If the indication is not correct, there is a problem in the power relay or in the wires for the power relay. Check the continuity in the wires connected to terminals 85 and 86 on the power relay. If the wires are good, replace the relay.

12. Put the tractor ignition switch in the OFF position.

13. Adjust the multimeter to indicate ohms (Ω) or continuity. Keep the negative (-) lead connected to the ground connection. Touch the positive lead to terminal number 35 and then to terminal 36 in connector C on the control box. The multimeter must indicate continuity at both terminals.

If the indication is correct, go to the next step. If the multimeter does not indicate continuity, check for an open circuit in the ground circuit. Check the wires between terminals 35 and 36 in connector C and ground terminal strip T in the control box. Also check the continuity in the wire between terminal strip T and Connector A in the control box. Repair the ground circuit as necessary.

14. Disconnect connector R from the metal detector. Adjust the multimeter to indicate ohms (Ω) or continuity. Use the multimeter to check for continuity between connectors C and R on the wiring harnesses. Check for continuity between the following terminals.

a. Terminal 37 on connector C and terminal 8 on connector R.

b. Terminal 36 on connector C and terminal 9 on connector R.

c. Terminal 35 on connector C and terminal 10 on connector R.

If the multimeter did not indicate continuity in a wire, repair or replace the wire. If the multimeter indicated continuity in all three wires, the wiring harnesses are good. Use the multimeter to check the circuit in the metal detector box. Connect one lead of the multimeter to terminal 8 in connector R in the metal detector control box. Touch the other lead of the multimeter to terminal 9 and then terminal 10. The multimeter must indicate continuity at both terminals.

If the indication is correct, connect connector R and continue the test at the next step. If the indication is not correct, replace the metal detector control box.

15. Connect connector C.

16. Remove the cover from the control box.

NOTE: Caution must be taken when removing control box cover as unprotected terminals for (+12) and GRD are present.

17. Put the tractor ignition switch in the ON position.

18. Adjust the multimeter to indicate volts DC. Connect the negative (-) lead to a good ground connection on the tractor chassis. Connect the positive (+) lead to terminal 87 on the power relay. The multimeter must indicate system voltage.

If the multimeter did not indicate voltage, replace the power relay. If the indication was correct, the problem is in the circuit between the power relay and terminal strip S. Check the two wires and replace as necessary. If the wires are good, replace the 10 ampere circuit breaker. Install the cover on the control box.

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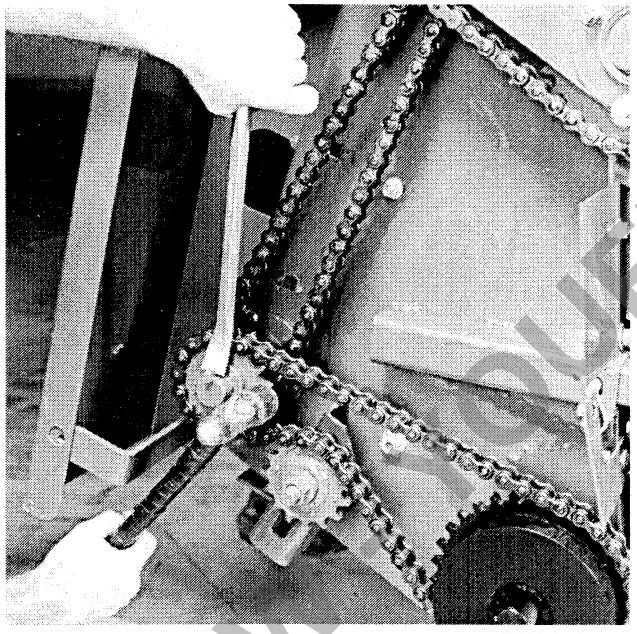
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Gib Key Removal and Installation

The gib key, a tapered key with a tang on the thick end, is a combination locking device and hub retainer. The hub must have a matching tapered keyway to use with the gib key. The gib key will lock the hub in place and keep the hub from moving. No other locking device such as a set screw is needed.

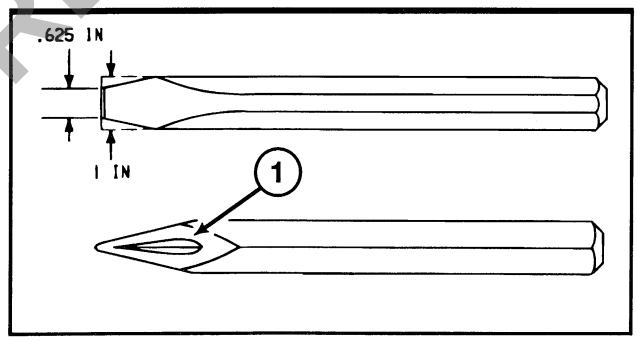
1. Remove paint from shaft on both sides of hub.

2. Apply pressure between gib key and the hub using a pinch bar. While holding pressure on the gib key, drive hub away from the gib key by striking hub with a hammer.



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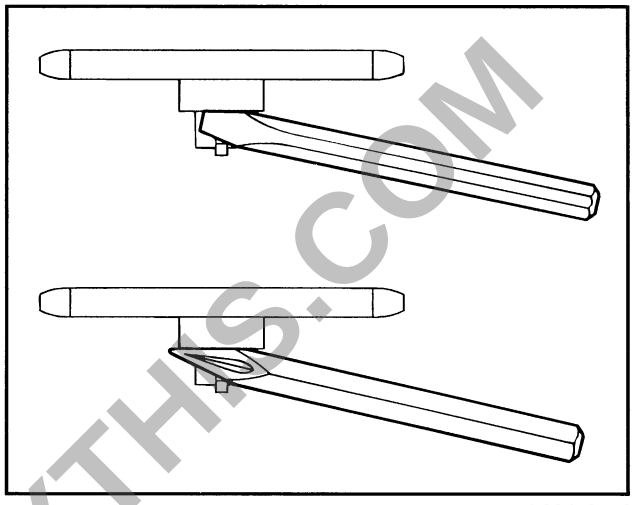
To remove gib keys from restricted access locations, construct a special tool. Beginning with a 1IN wide cold chisel, grind the width of the chisel as shown in the following diagram. Grind a slot in each side of the head of the cold chisel. The slot is used to keep the cold chisel from slipping.



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1. Slot

Insert chisel between the gib key head and the hub and drive against the chisel with a hammer. Use the narrow side of the chisel for smaller gib keys and the wide side of the chisel for larger gib keys.



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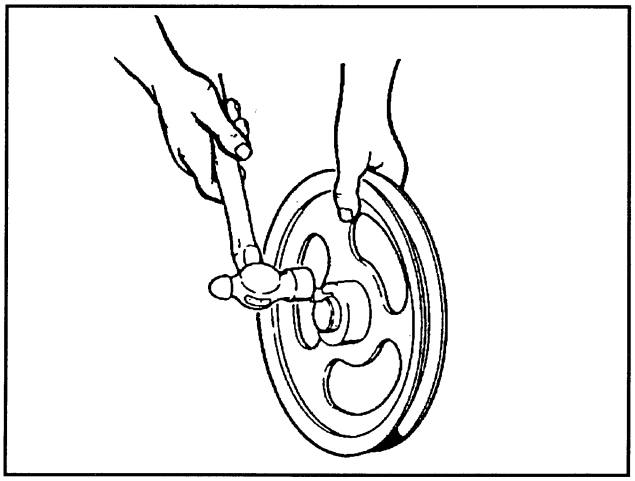
3. After the hub and the gib key loosen, remove the gib key by prying with the bar. Then remove the hub from the shaft.

4. Coat the shaft and the gib key with antiseize compound or grease to prevent seizing or rusting between the hub and the shaft.

5. Align sheave or sprocket and place the gib key in the keyway. Make sure the taper in the hub is in the same direction as that of the gib key.

6. Hold the sheave or sprocket in position on shaft so the hub cannot move. Hit the gib key with a hammer until the gib key is seated.

NOTE: The gib key does not have to be driven extremely hard into the hub to seat the gib key.



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Metric Hardware

Use the following torques when special torques are not given. These values apply to fasteners with coarse threads as received from supplier, plated or unplated, or when lubricated with engine oil. These values do not apply if graphite or molydisulfide grease or oil are used.

Grade 8.8 Bolts, Nuts, and Studs

8.8

Size	Pound-Feet (LB·FT)	Newton metres (N·m)
M5 x 0.8	4.8	6
M6 x 1	8	11
M8 x 1.25	19	26
M8 x 1	21	28
M10 x 1.5	39	52
M10 x 0.75	45	61
M12 x 1.75	67	91
M12 x 1.5	70	95
M12 x 1	77	105
M14 x 2	105	145
M14 x 1.25	115	155
M16 x 2	165	225
M16 x 1.5	180	240
M18 x 2.5	230	310
M18 x 1.5	260	350
M20 x 2.5	325	440
M20 x 1.5	480	650
M24 x 3	560	760
M24 x 2	610	830
M30 x 3.5	1120	1510
M30 x 2	1240	1680
M36 x 3.5	1950	2650
M36 x 2	2190	2960

Grade 10.9 torques are only used where specifically called out. Otherwise all fasteners on this machine, both grade 8.8 and 10.9, are tightened to grade 8.8 torques.

Grade 10.9 Bolts, Nuts, and Studs

10.9

Size	Pound-Feet (LB·FT)	Newton metres (N·m)
M5 x 0.8	6.7	9
M6 x 1	11	15
M8 x 1.25	27	36
M8 x 1	29	39
M10 x 1.5	53	72
M10 x 0.75	62	85
M12 x 1.75	93	125
M12 x 1.5	97	130
M12 x 1	105	145
M14 x 2	150	200
M14 x 1.25	160	215
M16 x 2	230	315
M16 x 1.5	245	335
M18 x 2.5	300	405
M18 x 1.5	355	485
M20 x 2.5	450	610
M20 x 1.5	665	900
M24 x 3	780	1050
M24 x 2	845	1150
M30 x 3.5	1550	2100
M30 x 2	1710	2320
M36 x 3.5	2700	3660
M36 x 2	3020	4100

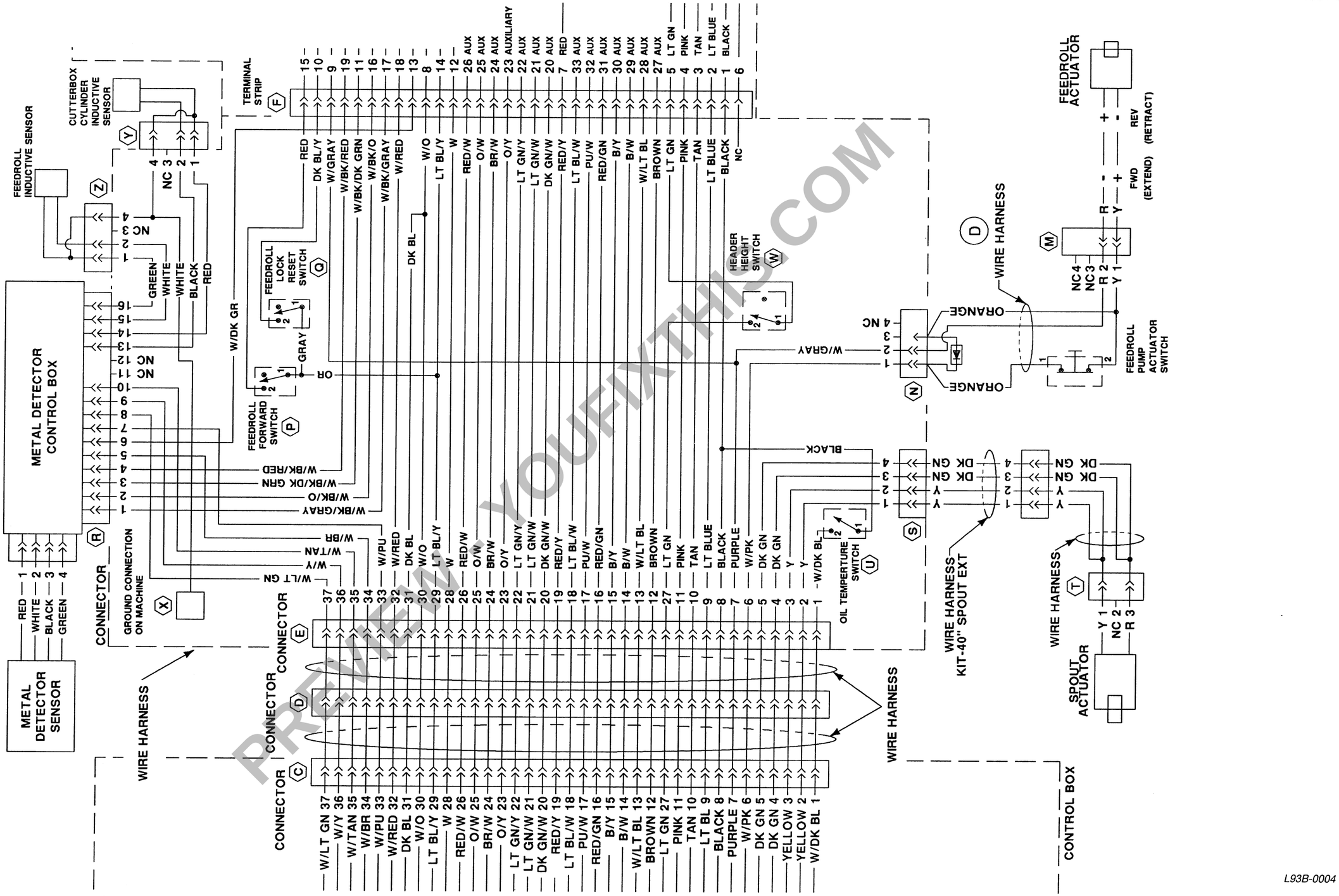
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PROBLEM	POSSIBLE CAUSE	CORRECTION
Cutterbox will not lower or lowers slowly	Cutterbox safety stop engaged	Put the cutterbox safety stop in the storage position.
	No attachment on cutterbox	Adjust the pressure reducing valve to raise pressure enough to lower the cutterbox.
	Tractor not running	Start tractor. Tractor must supply hydraulic pressure to pilot operated check valve to lower cutterbox.
	Flow control valve closed	Open the flow control valve. See Control Valve Component Identification in Section 8001.
	Mechanical problem	Check binding, damage, and obstructions.
	Tractor remote not engaged or engaged in wrong direction	Check tractor hydraulic connections. Engage correct tractor hydraulic remote valve and lock in position. Make sure the hydraulic pressure is flowing in the correct direction. See Tractor Connections in Section 2001.
	Header height switch adjustment too high	Adjust header height switch. See Adjusting the Switches in this section.
	Header height switch bad	Check the header height switch and circuit. See Checking the Circuit for the Header Height Switch in this section.
	Cutterbox lower solenoid valve not being energized	Check the coil and circuit for the cutterbox lower solenoid valve. See Checking the Coil and Circuit for a Solenoid Valve in this section.
	Open center solenoid valve not being energized, if equipped	Check the coil and circuit of the open solenoid valve. See Checking the Coil and Circuit for a Solenoid Valve in This Section.
	Problem in the hydraulic system	See Troubleshooting Tractor Supplied Hydraulic Systems in Section 8001.

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Checking the Coil and Circuit for a Solenoid Valve

Solenoid Valves on the Control Valve

WARNING

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

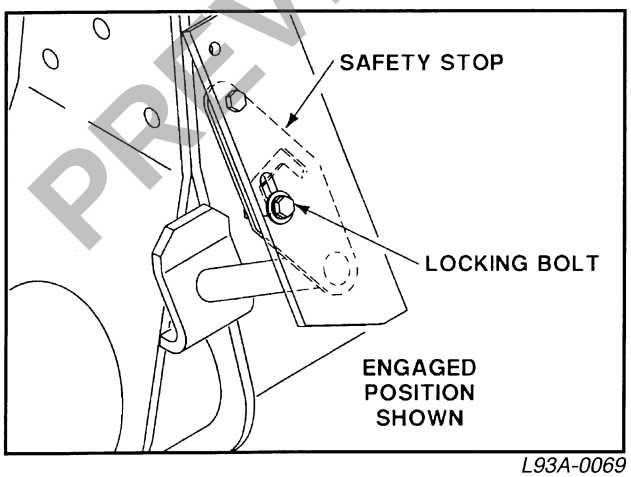
- **Put the tongue in position for access to the components.**
- **Raise the cutterbox.**
- **Disengage all power.**
- **Stop the tractor engine.**
- **Look and Listen! Make sure all moving parts have stopped.**
- **Install a tongue locking pin on each side of the tongue. Install spring pins in the tongue locking pins.**
- **Put the cutterbox safety stop in the engaged position.**

NOTE: The following information is for the solenoid valves on the control valve. To check the solenoid valve on the feedroll drive control valve, see Solenoid Valves on Feedroll Drive Control Valve in this section.

1. Park the machine on a solid level surface. Stop the engine.

2. Install a tongue locking pin on each side of the tongue. Install the spring pins in the tongue locking pins.

3. Put the cutterbox safety stop in the engaged position.

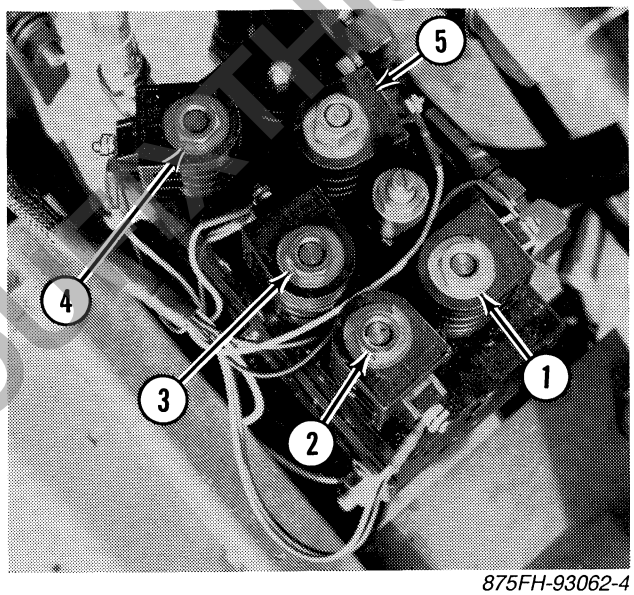


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4. Check the 10 ampere circuit breaker on the side of the control box. Make sure the circuit breaker is not tripped.

NOTE: To prevent damage to the electronics, the power to the control box MUST BE DISCONNECTED before resetting the circuit breaker.

5. Make sure the correct wires are connected to the coil. Polarity identification (+ and -) at a coil is not necessary. Check the connections at the coils for corrosion and damage. Also check the terminals at connectors in the wiring harnesses between the solenoid valves and the switches in the control handle. See the wiring schematics in this section. See Connector Terminal Numbers in this section for the location of the numbers on the connectors.



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1. Spout Swing Right (CW) Solenoid Valve
2. Spout Swing Left (CCW) Solenoid Valve
3. Cutterbox Lower Solenoid Valve
4. Cutterbox Raise Solenoid Valve
5. Open Center Solenoid Valve, If Equipped.

6. Disconnect the wires from the coil on the solenoid valve.

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ACTUATORS

Feedroll Actuator

The feedroll actuator is connected to the arm on the left side of the feedroll pump. The feedroll actuator is used to control the displacement of the feedroll pump. The F-N-R switch in the control box is used to control the feedroll drive actuator.

There are no service parts available for the feedroll actuator. If there is a problem, the complete feedroll actuator must be replaced. After replacing the feedroll actuator, check the adjustment of the feedroll pump actuator switch. See Adjusting the Switches in this section.

Spout Deflector Actuator

The spout deflector actuator is located at the upper end of the spout and is used to control the direction of the deflector. The spout deflector switch in the control handle is used to control the spout deflector actuator.

Disassembly

1. Remove the four screws from the front housing.

2. Remove the cover tube, the flange, and the flange gasket. Discard the flange gasket.

3. Remove and discard the O-ring and the seal from the end of the cover tube.

4. Remove the screw from the rear housing.

5. Carefully separate the rear housing from the front housing. Remove and discard the housing gasket.

6. Remove the intermediate gear and two washers.

7. Remove the outer washer from the drive screw.

8. Drive the pin from the collar.

9. Remove the collar. Remove the remainder of the clutch assembly between the collar and the snap ring. Be careful not to drop the balls.

10. Remove the snap ring and the inner washer from the drive screw.

11. Remove the drive screw.

12. Remove the bolts from the motor. Remove the motor and the motor gasket from the front housing. Discard the motor gasket.

13. Remove and discard the seal and the O-ring from the cover tube.

Assembly

1. If a new clutch is being installed, discard all of the old clutch assembly.

2. If a new intermediate gear is being installed, discard the old intermediate gear. Also discard the washer from each side of the old intermediate gear.

3. Install the motor and the new motor gasket on the front housing. Install the bolts and the nuts for the motor. Tighten the nuts to 70 LB·INCHES (7.9 N·m).

4. Apply grease to the drive screw. Install the drive screw in the front housing.

5. Install the inner washer and the snap ring on the drive screw.

6. Install the drive washer.

7. Install the three Belleville springs. The large diameter must be away from the front housing on the two outer Belleville springs. The large diameter must be toward the front housing on the middle Belleville spring.

8. Install the clutch plate and the balls.

9. Install the drive gear and then the collar. Make sure the balls are in the sockets.

10. Align the hole in the collar with the hole in the drive screw. Install the pin.

NOTE: The pin must be tight in the collar and the drive screw. If the pin is not tight, replace parts as necessary so the pin is tight.

11. Install the outer washer on the drive screw.

12. Install the thick washer on the support pin of the front housing. Install the intermediate gear on the support pin. The small diameter gear must be toward the front housing. Install the thin washer.

13. Install the new housing gasket and the rear housing on the front housing.

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PROBLEM	POSSIBLE CAUSE	CORRECTION
Cutterbox will not stay in the raised position	Problem in the hydraulic system	See Troubleshooting Tractor Supplied Hydraulic Systems in Section 8001.
Spout will not rotate in either direction	Mechanical problem	Check drive system for binding, damage, and obstructions.
	Tractor remote not engaged	Engage correct tractor hydraulic remote valve and lock in position.
	Neither spout rotation solenoid valve being energized	Check the coil and circuit for both spout rotation solenoid valves. See Checking the Coil and Circuit for a Solenoid Valve in this section.
	Problem in the hydraulic system	See Troubleshooting Tractor Supplied Hydraulic Systems in Section 8001.
	Mechanical problem	Check drive system for binding, damage, and obstructions.
Spout rotates in only one direction	Spout rotation solenoid valve not being energized	Check the coil and circuit for the spout rotation solenoid valve. See Checking the Coil and Circuit for a Solenoid Valve in this section.
	Problem in the hydraulic system	See Troubleshooting Tractor Supplied Hydraulic Systems in Section 8001.
	Spout rotation solenoid valve still being energized	Check the coil and circuit for the spout rotation solenoid valve. See Checking the Coil and Circuit for a Solenoid Valve in this section.
Spout continues to rotate after spout rotation switch is released	Spool in solenoid valve not returning to neutral	See Troubleshooting Tractor Supplied Hydraulic Systems in Section 8001.

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SAFETY PRECAUTIONS

Understand that your safety and the safety of other persons is measured by how you service and operate this machine. Know the positions and operations of all controls before you try to operate this machine. MAKE SURE YOU CHECK ALL CONTROLS IN A SAFE AREA BEFORE STARTING YOUR WORK.

READ THIS MANUAL COMPLETELY and make sure you understand the controls. All equipment has a limit. Make sure you understand the speed, brakes, steering, stability, and load characteristics of this machine and your power unit before you start to operate this machine.

The safety information given in this manual does not replace safety codes, insurance needs, state and local laws. Make sure your machine has the correct equipment needed by the local laws and regulations.

THIS SAFETY ALERT SYMBOL INDICATES IMPORTANT SAFETY MESSAGES IN THIS MANUAL. WHEN YOU SEE THIS SYMBOL, CAREFULLY READ THE MESSAGE THAT FOLLOWS AND BE ALERT TO THE POSSIBILITY OF PERSONAL INJURY OR DEATH.

Read and understand all operating instructions and precautions before attempting to operate or adjust the forage harvester or head attachments.

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

- **Put the tongue in position for access to the components.**
- **Raise the cutterbox.**
- **Disengage all power.**
- **Stop the tractor engine.**
- **Look and Listen! Make sure all moving parts have stopped.**
- **Install a tongue locking pin on each side of the tongue. Install the spring pins in the tongue locking pins.**
- **Put the cutterbox safety stop in the engaged position.**

DO NOT attempt to check, service, or make adjustments until the cutting cylinder has STOPPED ROTATING. Let the cutting cylinder coast to a stop!

When working around the cutting cylinder, be extremely careful that parts of the body (fingers, hands, arms, etc.) DO NOT come in contact with the cutting edge of the knives. Even a knife too dull to cut forage properly can cut off fingers. Make sure that wrenches are properly seated on the bolt heads and nuts when loosening or tightening knives.

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DIVISION 1

1

SECTION INDEX

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Maintenance and Lubrication	1003
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Start -Up Procedure

The metal detector system conducts a self-diagnostic check of all logic circuits when the tractor ignition switch is turned on. This self-diagnostic check takes approximately 6 to 10 seconds. The feedrolls will be locked by the hydraulic valve during the self-diagnostic check procedure. The operator must wait to unlock the feedrolls until the self-diagnostic check procedure is completed, at which time the metal detection lamp will stop flashing and the audible alarm will stop sounding.

When the metal detection lamp stops flashing, the feedrolls must be unlocked. Press and hold the F-N-R switch in REVERSE position to move the pump arm from forward to reverse. The hydraulic valve will unlock the feedrolls and allow the feedrolls to start rotating in reverse. The feedrolls locked indicator lamp will not be illuminated. Then put the F-N-R switch in FORWARD position. The feedroll forward lamp will be illuminated.

NOTE: If the feedroll forward lamp is not illuminated, the feedrolls will not stop when metal is detected during operation.

The feedrolls will start rotating forward at the speed set by the length of cut stop.

NOTE: If power was shut off with the pump arm in reverse, the pump arm must be moved into forward by putting the F-N-R switch in the FORWARD position. Then press and hold the F-N-R switch in the REVERSE position to unlock the feedrolls.

NOTE: If the self diagnostics check fails, the metal detection lamp will continue to flash and the audible alarm will continue to sound.

Metal Detection

If metal is detected by the system, the feedrolls will lock, the metal detection lamp will flash, the audible alarm will sound an intermittent alarm, and the feedroll locked indicator lamp will be illuminated.

When metal is detected, do the following:

1. Stop forward travel of the machine.

2. Press and hold the F-N-R switch in the REVERSE position to unlock the hydraulic valve. Operate the feedrolls in reverse until crop is out of the feedrolls.

3. Disengage the PTO.

4. Shut off the tractor, and wait until all movement has stopped.

⚠ WARNING

Be sure all movement has stopped before searching for metal.

5. Search for, and remove the metal.

NOTE: Small pieces of metal like nails and short pieces of wire are very difficult to find when mixed with crop. It is sometimes easier to discard the material in the feedrolls when metal is detected, rather than spending a great deal of time looking for a small piece of metal.

If the metal detector is stopping the feedrolls because of " false trips" or "nuisance trips", adjust the metal detector sensitivity. See Metal Detector Sensitivity Adjustment in this section.

6. Start tractor, and engage PTO at idle.

7. Unlock the feedroll drive motor as described under Start-up Procedure.

8. With feedrolls running in reverse or stopped in neutral, increase tractor engine speed to rated speed.

9. Put the F-N-R Switch into the detented FORWARD position. With feedrolls rotating forward, slowly move machine forward to feed accumulated material into the machine. Then proceed at normal speed.

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4. Check the 10 ampere circuit breaker on the side of the control box. Make sure the circuit breaker is not tripped.

Note: To prevent damage to the electronics, the power to the control box MUST BE DISCONNECTED before resetting the circuit breaker.

5. If the oil level lamp is illuminated when the oil level is above the oil level switch, do the following:

a. Put the tractor ignition switch in the ON position.

b. Disconnect the black ground wire from the oil level switch.

If the oil level lamp is still illuminated, there is a short circuit to ground in the power circuit. Check the wires between the oil level switch and the oil level lamp. Repair or replace the wires as necessary.

c. Remove the switch assembly from the expansion reservoir noting that the switch is installed with the float turned down. Check continuity to make sure that the switch is open when the float is at the highest position, and closed when the switch is at the lowest position. If the switch is closed when the float is at the highest position, the switch must be replace.

6. If the oil level lamp does not illuminate when the oil level is below the oil level switch, do the following:

a. Install the bulb from the oil temperature lamp into the oil level lamp. Put the tractor ignition switch in the ON position. If the lamp does not illuminate, continue the test. If the lamp illuminates, the bulb was bad. Replace the bulb.

b. Connect a jumper wire to the two terminals on the oil level switch. If the oil level lamp illuminates, the oil level switch is bad and must be replaced. If the oil level lamp does not illuminate, continue the test.

c. Adjust a multimeter to indicate volts DC. Connect the positive (+) lead of the multimeter to the terminal for the red wire on the oil level switch. Connect the negative (-) lead to a good ground connection on the tractor chassis. The multimeter must indicate voltage.

NOTE: If the test connection is made to the machine frame, make sure the ground connections between the machine and the tractor chassis are good.

If the multimeter indicates voltage, the power circuit is good and the problem is in the ground circuit. Check for an open circuit in the wires between the oil level switch and terminal 4 of terminal strip T in the control box.

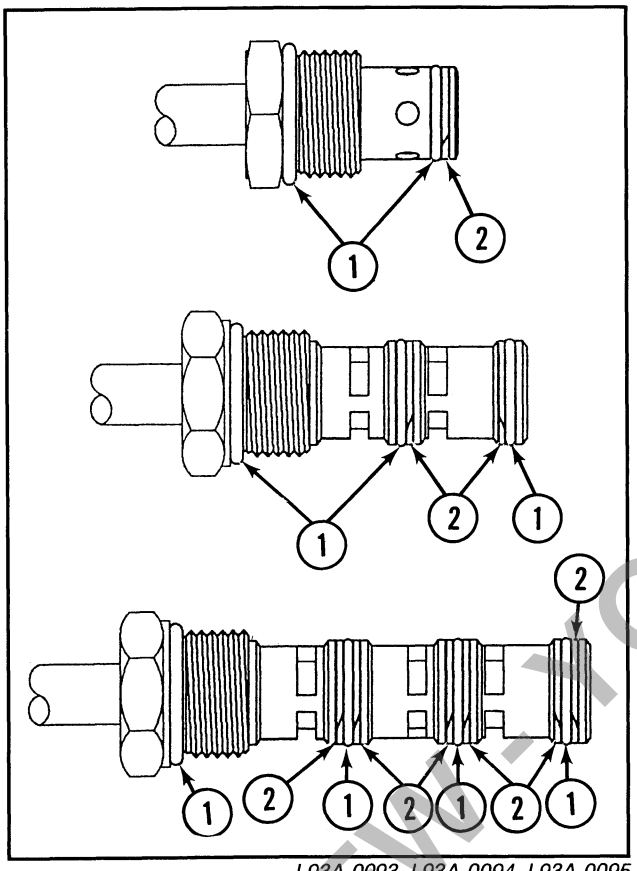
If the multimeter does not indicate voltage, the problem is in the power circuit. Check for an open circuit in the wires between the oil level switch and terminal 6 of terminal strip S in the control box.

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12. Inspect the O-rings and the backup rings on the cartridge for cuts. Replace any O-ring or backup rings that are cut or damaged. If an O-ring or a backup ring is cut, check the bore for damage. Make sure the O-rings and backup rings are installed correctly on the new cartridge.

NOTE: All of the backup rings are split for easy installation.



L93A-0093, L93A-0094, L93A-0095

1. O-Ring
2. Backup Ring

13. Start the cartridge into the valve body. Use the deep well socket to tighten the cartridge. Be careful not to bend the stem of the cartridge. Carefully tighten the cartridge to 30 LB·FT (41 N·m). Tightening the cartridge too much can cause a malfunction because of distortion in the cartridge.

14. Install the coil and the nut on the cartridge. Tighten the nut to 5 LB·FT or 60 LB·INCHES (7 N·m). Tightening the nut too much can cause a malfunction because of distortion in the coil and the stem of the cartridge.

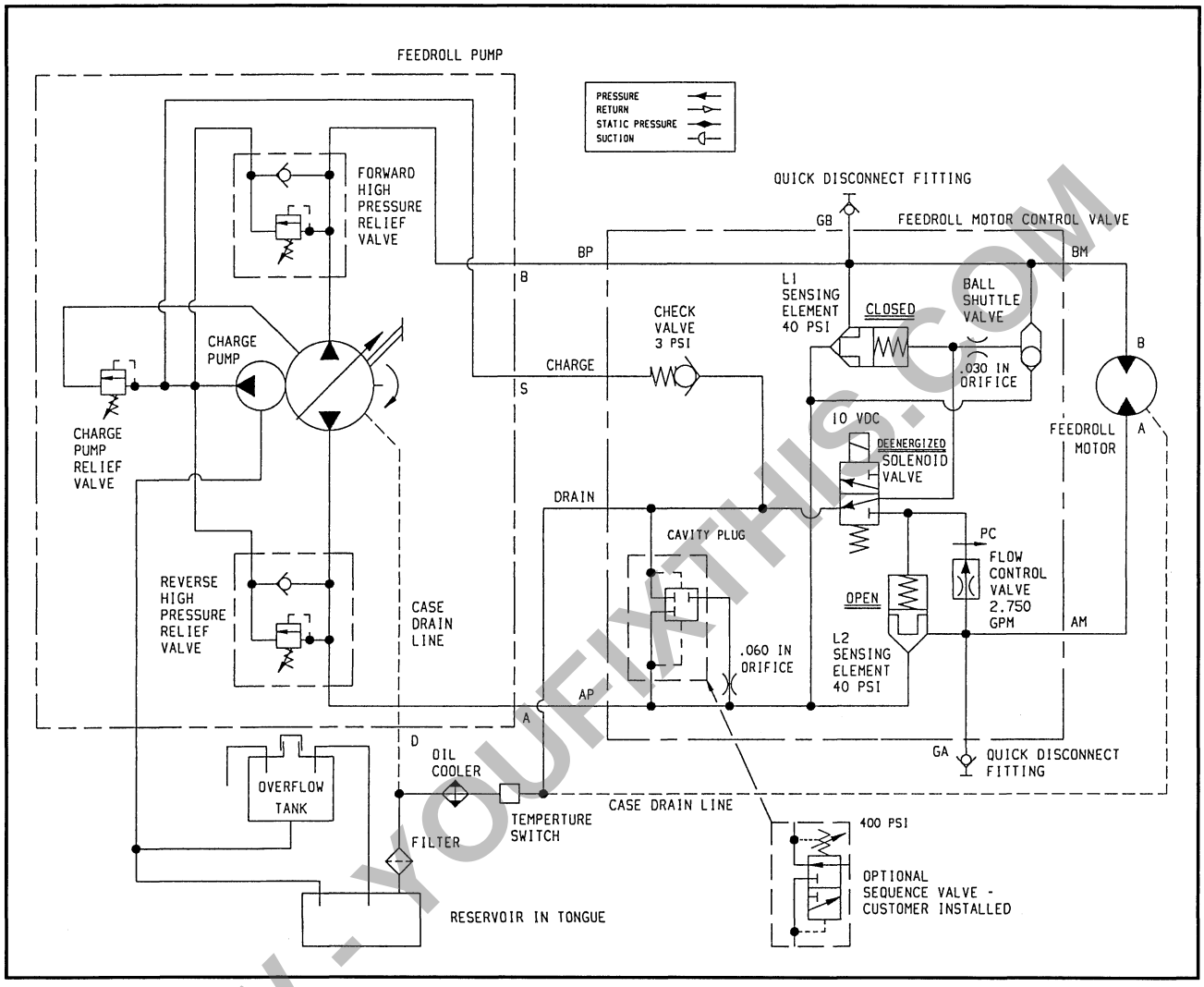
15. Connect the two wires to the coil.

NOTE: Polarity identification (+ and -) is not necessary for the two wires on the same coil. If more than one coil has been removed, make sure the wires are being installed on the correct coil.

16. Check the operation of the solenoid valve. If the problem is not corrected, the problem can be caused by damage to the cartridge that cannot be found by visually inspecting the cartridge. The cartridges can be checked by changing the location of two cartridges that are interchangeable and then checking the operation. The cartridges for the two solenoid valves in the cutterbox lift circuit are interchangeable with each other. The cartridges for the two solenoid valves in the spout swing circuit are interchangeable with each other. Use the steps in this procedure to remove the cartridges that are interchangeable. Install the cartridges in the opposite ports and install the coils. Make sure the cartridges and the nuts are tightened to the correct torque. Check the operation of both of the solenoid valves. If the problem has not been corrected, the problem is not in a cartridge. If the problem has been moved to the opposite function in the circuit, replace the cartridge that you inspected.

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L94A-0104

FEEDROLL DRIVE SCHEMATIC WITH OPTIONAL OIL COOLER

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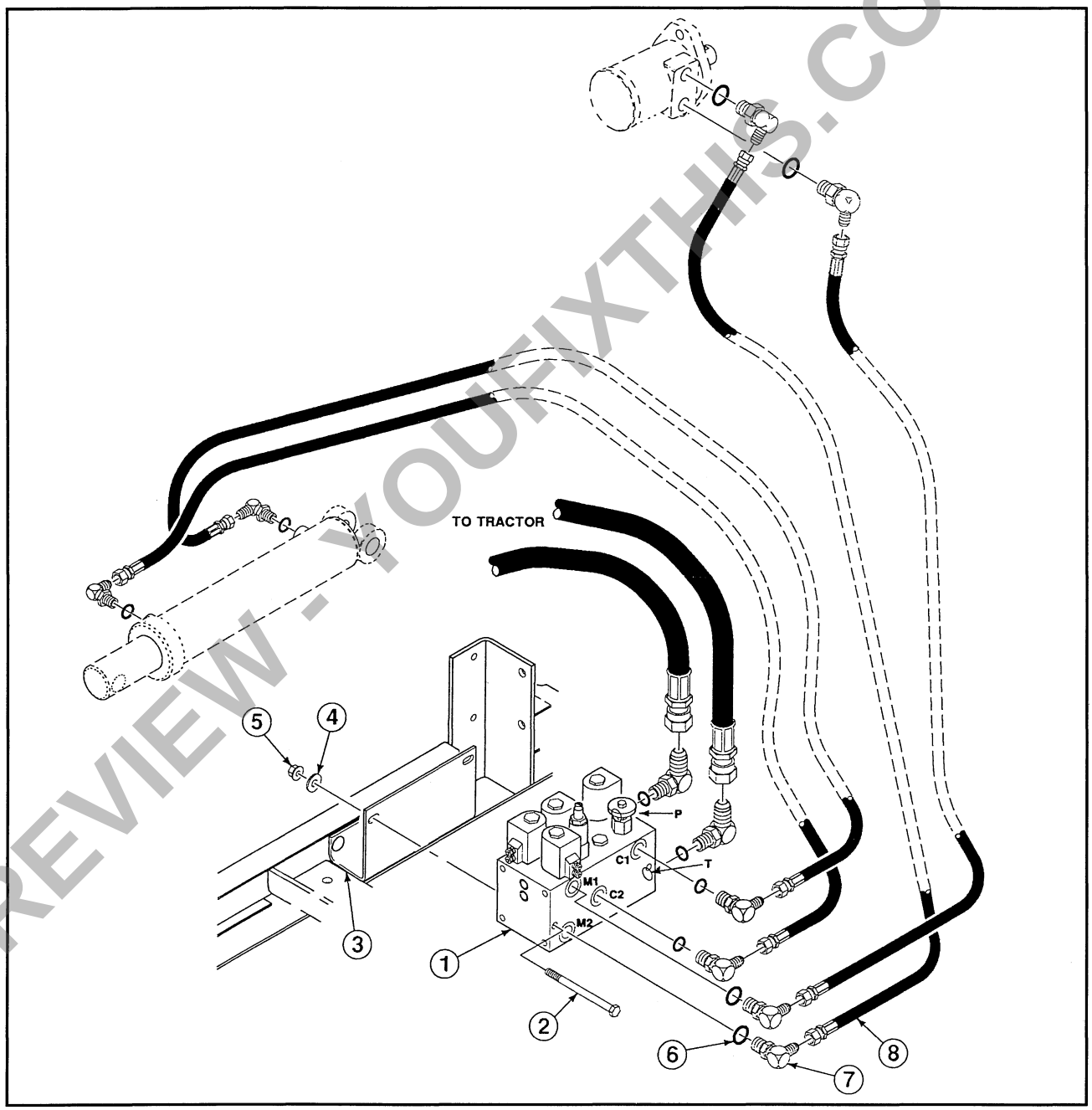
5. Check the level of the hydraulic fluid in the reservoir and add hydraulic fluid as necessary.

6. Start the tractor. Rotate the spout at least five revolutions in both directions to remove the air from the circuit.

7. Raise the cutterbox off the cutterbox safety stop. Stop the tractor engine.

8. Put the cutterbox safety stop in the storage position.

9. Start the tractor. Raise and lower the cutterbox at least five times to remove the air from the circuit. Stop the tractor engine.



L93A-0060

1. Control Valve
2. Bolt
3. Mounting Bracket
4. Hardened Washer
5. Nut
6. O-Ring
7. Elbow
8. Hose

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AXLE ADJUSTMENTS

Axle Height Adjustment

⚠ WARNING

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

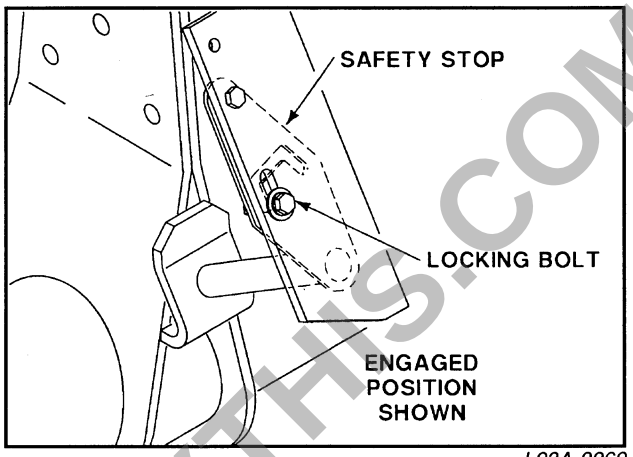
- **Put the tongue in position for access to the components.**
- **Raise the cutterbox.**
- **Disengage all power.**
- **Stop the tractor engine.**
- **Look and Listen! Make sure all moving parts have stopped.**
- **Install a tongue locking pin on each side of the tongue. Install spring pins in the tongue locking pins.**
- **Put the cutterbox safety stop in the engaged position.**

The axles on both sides of the machine can be rotated 180° to change the machine frame to ground clearance. Both axles must be adjusted equally so the machine frame is level. The raised position is recommended for normal operation of all head attachments. Rotating the axles lowers the machine 3.94 IN (100 mm). To adjust the axles, do the following:

1. Park the machine on a solid level surface. Stop the tractor engine. Do not disconnect the tractor from the machine during this procedure.

2. Install a tongue locking pin on each side of the tongue. Install the spring pins in the locking pins.

3. Put the cutterbox safety stop in the raised position.



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4. Put blocks in front of and in back of the tire on the opposite axle.

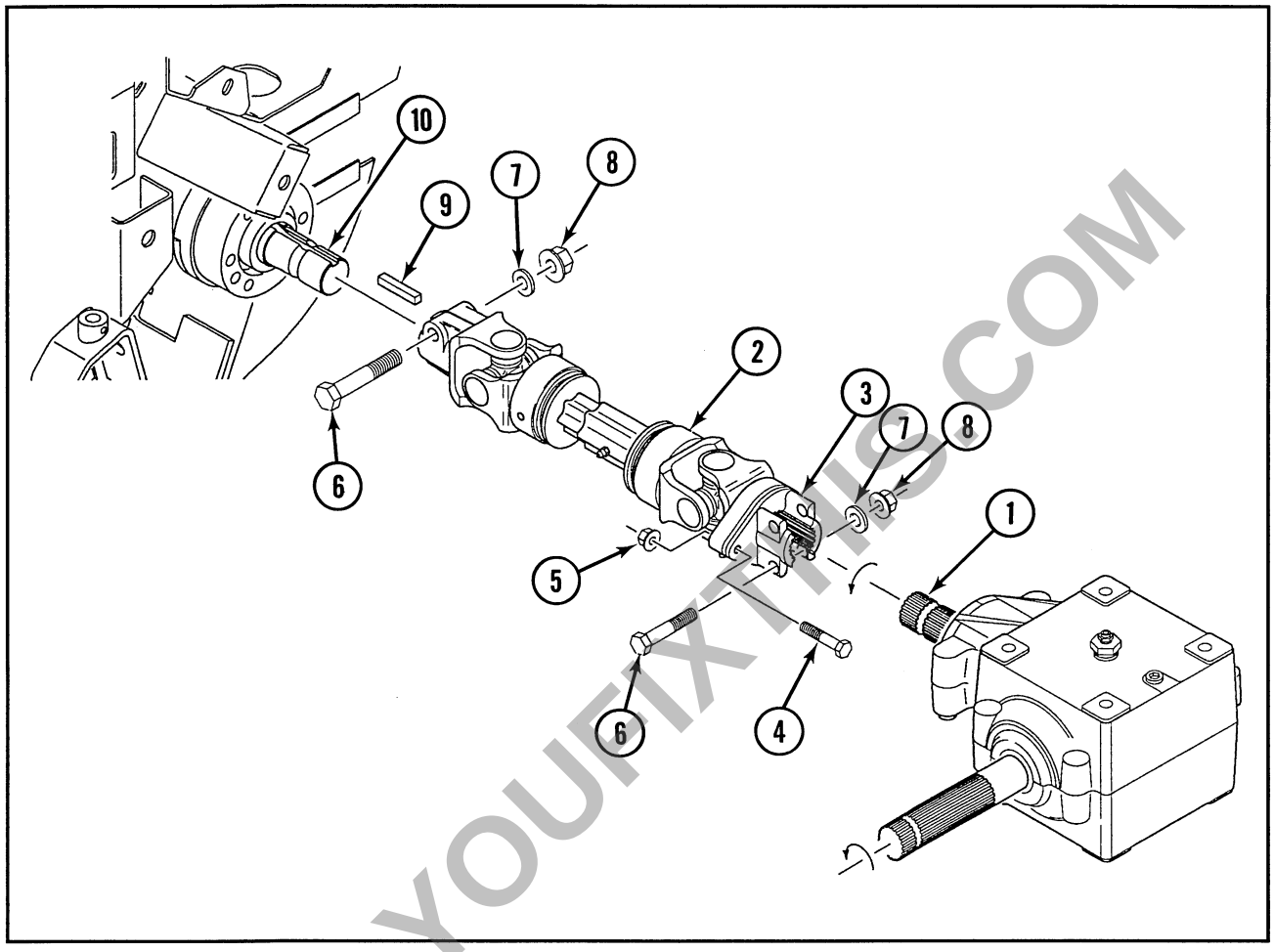
5. Before adjusting the axles, determine the type of axle at the left side of the machine. If an axle plate is used, the left wheel will have to be removed to make the adjustment. Before raising the left side of the machine, slightly loosen the wheel bolts for the left wheel. If the machine has an optional tube axle, the left wheel will not have to be removed.

6. Put a jack with at least 2000 LB (907 kg) of lifting capacity as near to the end of the axle as possible.

7. Raise the machine enough so the wheel can be removed. Put a support stand that has a capacity of at least 2000 LB (907 kg) under the axle. Lower the machine onto the support stand.

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1. Gearbox Shaft
2. Cutterbox Drive Shaft
3. Shear Bolt Clutch
4. Shear Bolt (3/8-16x2 1/2 HFS GR 8)
5. 3/8-16 HFTLN
6. Bolt
7. Hardened Washer
8. Locking Nut
9. Key
10. Cutterbox Shaft

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