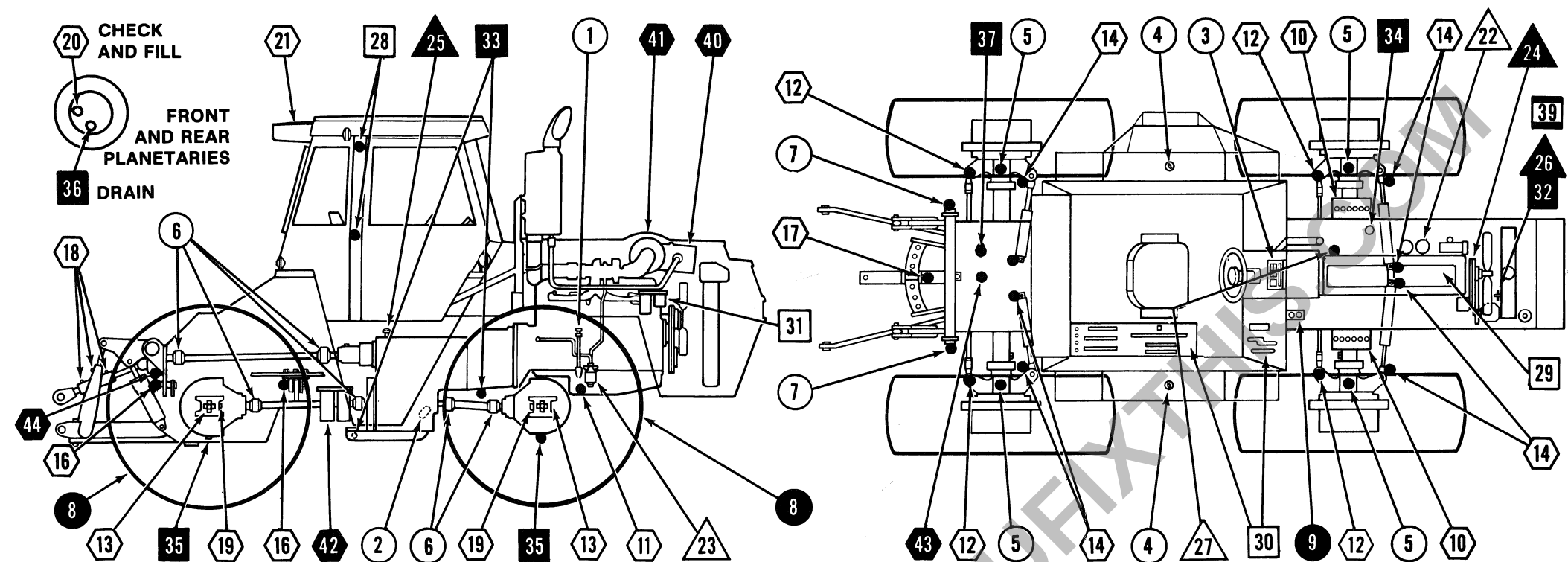
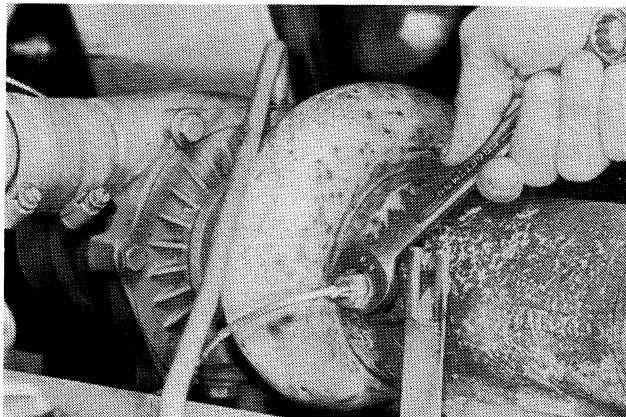




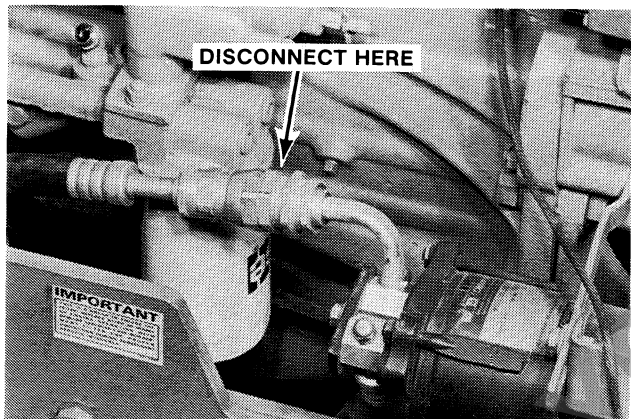
LUBRICATION POINTS	APPROXIMATE CAPACITIES			AMBIENT AIR TEMPERATURE RANGES		
	U.S. MEASURE	METRIC MEASURE	IMPERIAL MEASURE	32° F (0° C) and Above	10° to 50° F (-12° to 10° C)	Use Only Below 40° F (4° C)
Engine Crankcase	28.4 Qts.	27 Litres	24 Qts.	SAE30	SAE 20W	SAE 10W
Transmission Hydraulic System Refill (No PTO And Hitch)	46 Qts.	43.5 Litres	38 Qts.	CASE HDM		
Transmission Hydraulic System Refill (With PTO And Hitch)	48 Qts.	45.4 Litres	40 Qts.			
Fuel Tanks (Each Tank)	75 Gals.	284 Litres	63 Gals.	Use A Good Grade Number 2 Diesel Fuel		
Cooling System	44 Qts.	42 Litres	37 Qts.	Use a Good "High Boiling Point" Type Ethylene Glycol At All Times of the Year. Use Case Cooling System Treatment as Specified in this Manual.		
Differential Housing (Each - Front and Rear)	22 Quarts	20.8 Litres	18.5 Quarts	USE CASE LOADGARD - GL 5 85W/140 EP Gear Lubricant		
Planetary Housings (Each - Front and Rear)	9 Quarts	8.5 Litres	7.5 Quarts			
Hydraulic Brake Cylinder	1/2 Inch (12.7 mm) Below Opening			IMPORTANT: Use Only SAE J1703 (DOT 3) Hydraulic Brake Fluid.		
All Pressure Fittings	As Many Strokes As Needed Use a good No. 1 or No. 2 EP grease with Lithium or Moly Base.			AMBIENT AIR TEMPERATURE RANGES		
				32° F (0° C) and Above	Below 32° F (0° C)	
				Use a Good No. 2 EP Gun Grease	Use a Good No. 1 EP Gun Grease	

STEP 13



Remove the pyrometer sensing unit.

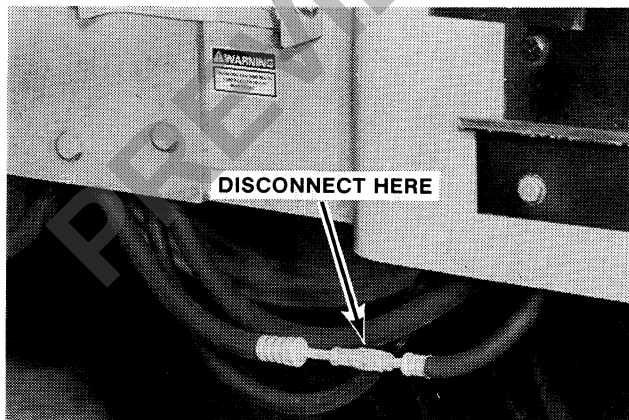
STEP 14



Disconnect the low pressure air conditioner hose at the coupler.

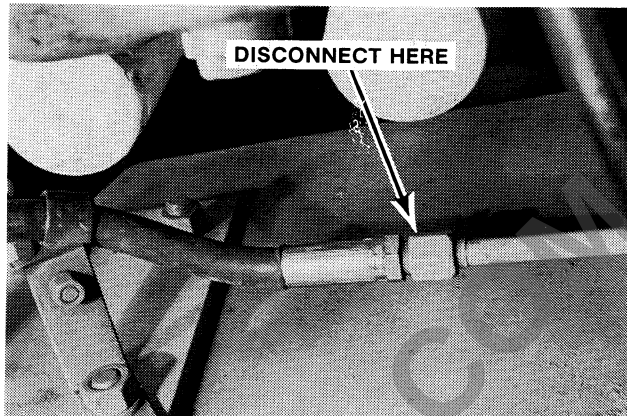
NOTE: Disconnecting the air conditioner hoses at the coupler will prevent the loss of refrigerant.

STEP 15



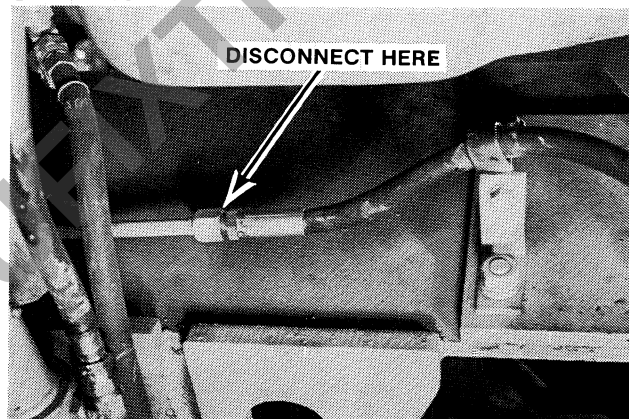
Disconnect the air conditioner hose from the cab to the receiver-drier.

STEP 16



Disconnect the RH oil cooler hose at the inside of the RH side rail.

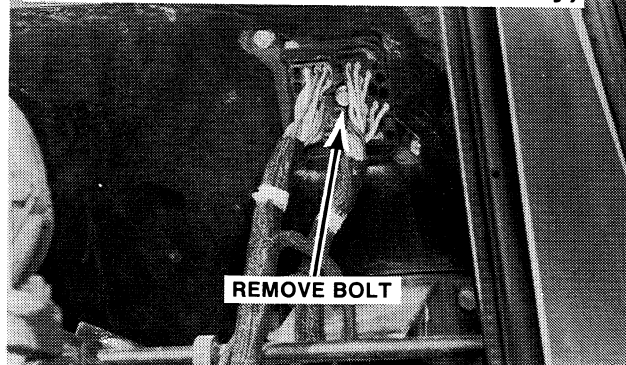
STEP 17



Disconnect the LH oil cooler hose at the inside of the LH side rail.

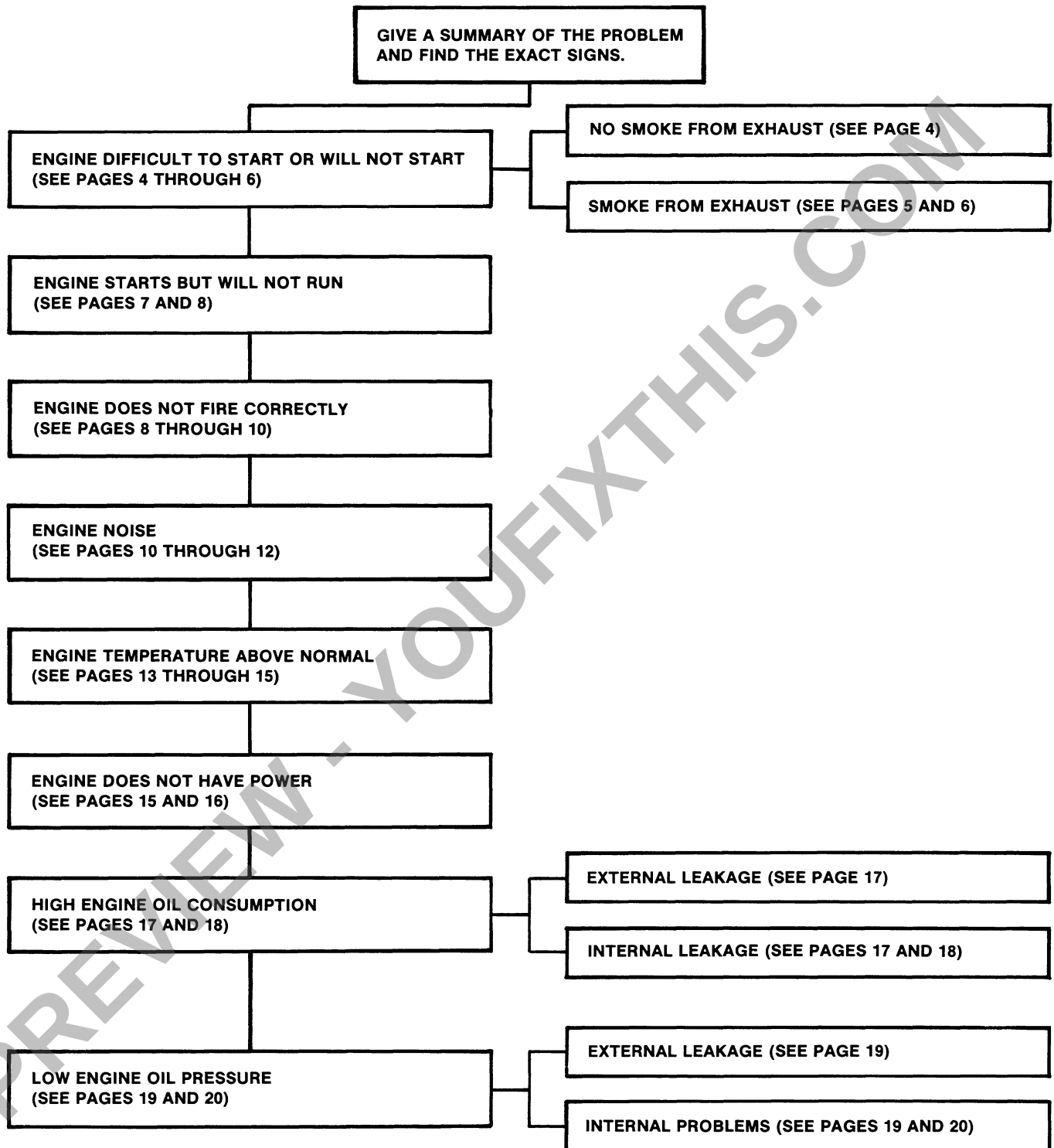
STEP 18

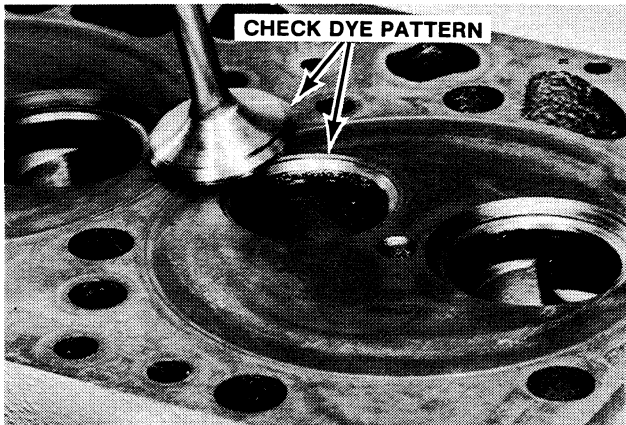
(For 70 and 90 Series Tractors Only)



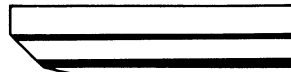
Remove the retaining bolt for the wiring harness connector.

ENGINE TROUBLESHOOTING CHART

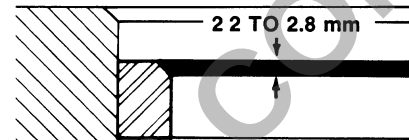


STEP 44

Remove the valve and look at the contact area on the face of the valve and the valve seat. The blue dye will be gone from the face of the valve where the valve made contact with the valve seat.

STEP 45

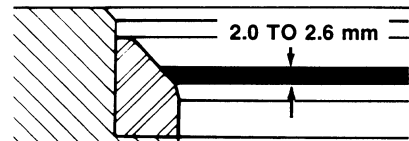
INTAKE VALVE



INTAKE VALVE SEAT



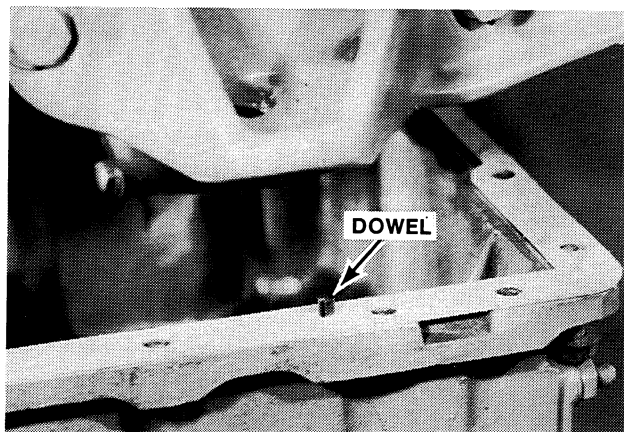
EXHAUST VALVE



EXHAUST VALVE SEAT

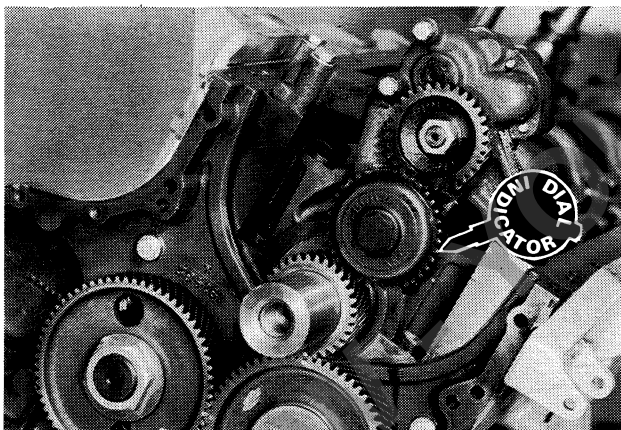
Correct refacing of valves and valve seats will give a dye pattern as shown.

NOTE: If the dye pattern is other than the pattern shown, check the diagnosis of different dye patterns on the following pages.

STEP 3

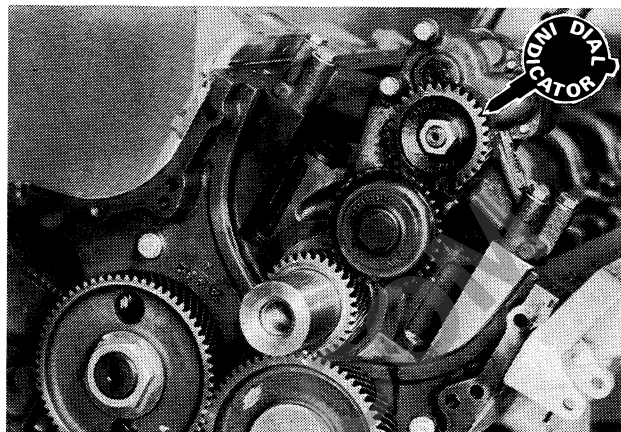
Lower the oil pan to prevent hitting the oil supply and return tubes.

NOTE: The oil pan has dowels that engage the engine block

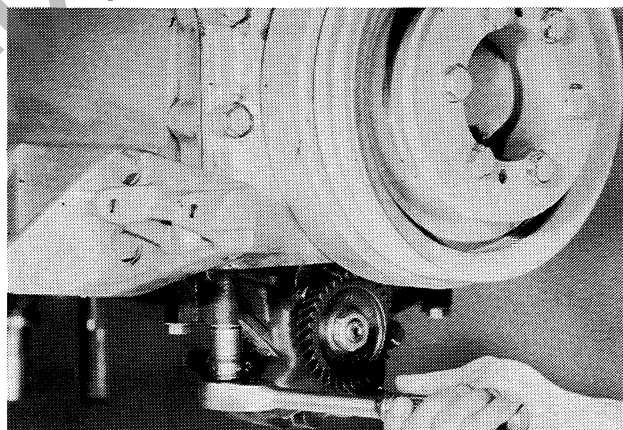
STEP 4

Put a dial indicator on the oil pump idler gear. Check the backlash between the idler gear and the crankshaft gear. The backlash must be 0.05 to 0.23 mm. Replace the oil pump if the backlash is more than 0.23 mm.

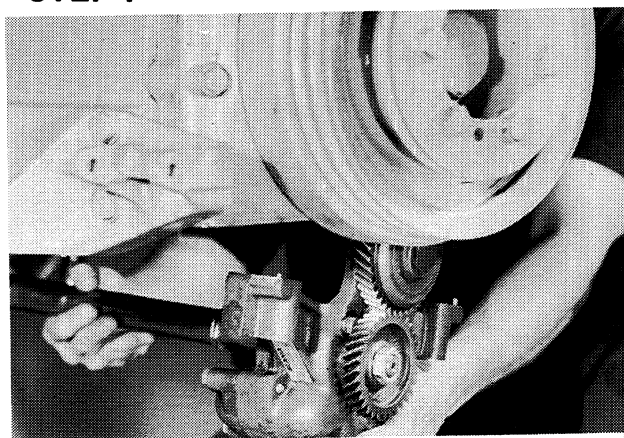
NOTE: See Section 2215 for removing the timing gear cover

STEP 5

Put a dial indicator on the oil pump drive gear. Check the backlash between the oil pump drive gear and the idler gear. The backlash must be 0.01 to 0.11 mm. Replace the oil pump if the backlash is more than 0.11 mm.

STEP 6

Remove the oil pump retaining bolts

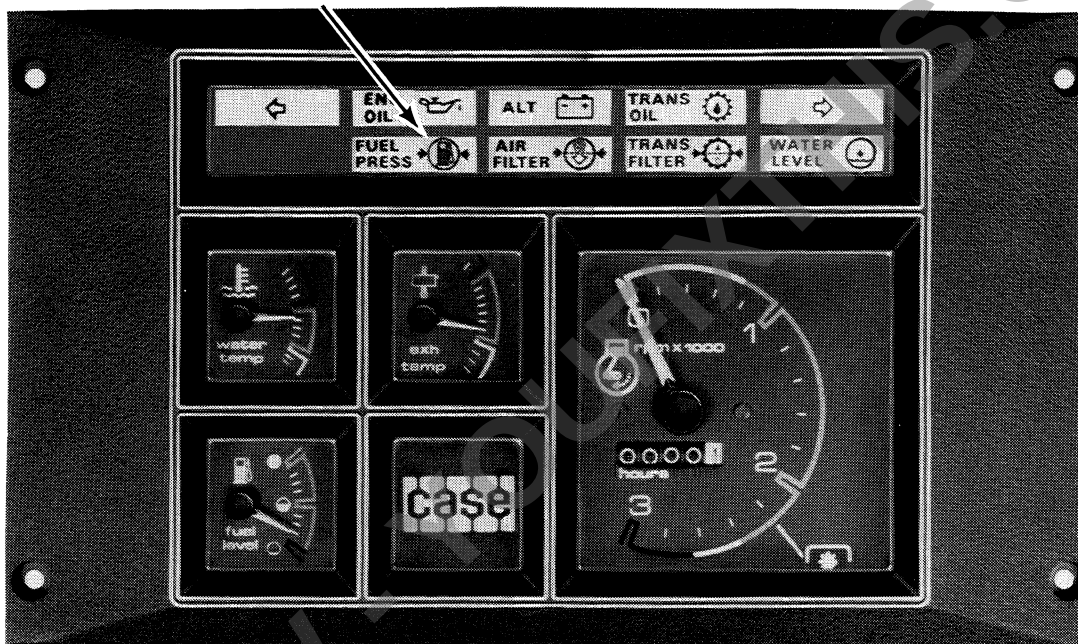
STEP 7

Remove the oil pump

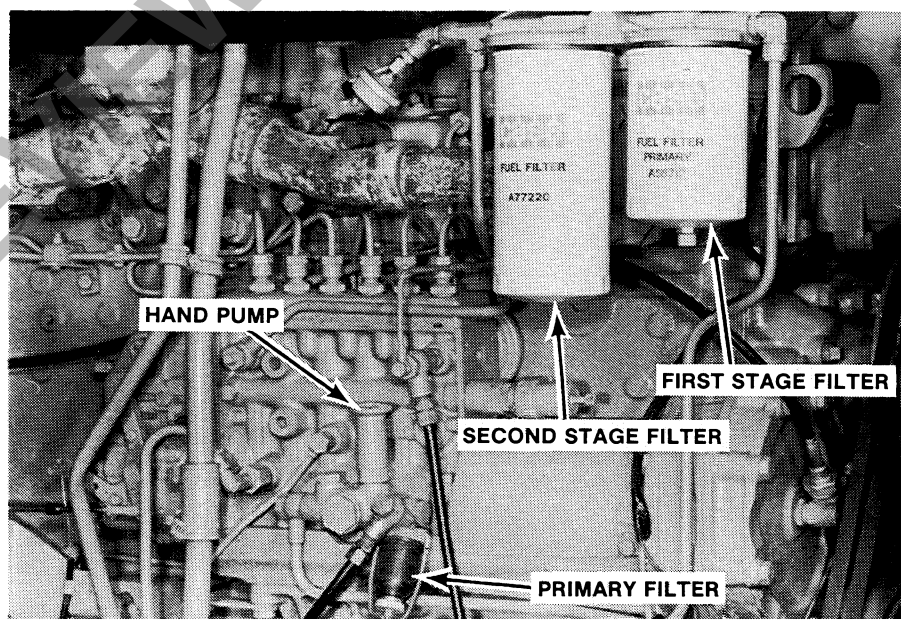
SPECIFICATIONS

Filter Replacement (First and Second Stage)	Replace when the FUEL PRESSURE warning lamp on the instrument cluster is illuminated
Primary Fuel Filter Service Interval	When the first and second stage filters are changed
First Stage Filter	Full flow, turn on type
Second Stage Filter	Full flow, turn on type
Fuel System Relief Valve Operating Pressure	7.25 PSI (50.1 kPa) (5.01 bar)
Fuel Tank Capacity	75 U.S. Gallons (284 litres) each tank, 150 U.S. Gallons (568 litres) total

FUEL PRESSURE WARNING LAMP



INSTRUMENT CLUSTER

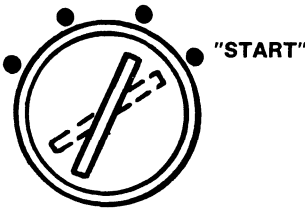


Before making any of the tests in this section, make sure that both tractor batteries are fully charged. Inspect the battery cable connections at the battery posts. If there is any corrosion or the connections are dirty, clean the battery posts and cable connections with a wire brush. Make sure the connections are tight when the cables are installed again. See Section 4235 to test and service the batteries, if necessary.

STARTING SYSTEM CHECKS

STEP 1A

PROCEDURE	RESULT
Check starter functions: a. Pull engine stop control out. b. Turn key switch to the "START" position. c. Check starter operation.	a. Starter turns engine over: Good, <div>Testing finished</div> b. Starter does not turn engine over correctly or keeps operating after key switch is released: Bad, <div>Continue to Step 1B</div>



STEP 1B

- Use the following list of starting circuit problems to find out which procedure to use:
- a. Starter operates, but does not turn engine over ... Continue to Step 2A.
 - b. Starter operates, but turns engine over very slowly ... Continue to Step 3A.
 - c. Starter solenoid makes a buzzer sound ... Continue to Step 4A.
 - d. Starter solenoid does not engage (no sound) ... Continue to Step 5A.
 - e. Starter solenoid engages, but starter does not turn ... Continue to Step 6A.
 - f. Starter keeps operating after key switch is released ... Continue to Step 7A.

TROUBLESHOOTING ENGINE OIL PRESSURE SWITCHES
40 PSI Switch Wire - Dk. Blue/White
Circuit 39 to Engine Firewall Connector Pin M to Cluster Pin 2
15 PSI Switch Wire - Dk. Blue
Circuit 31 to Engine Firewall Connector J to Cluster Pin 10

PROBLEM: Engine oil LED illuminates with key switch ON, tractor running

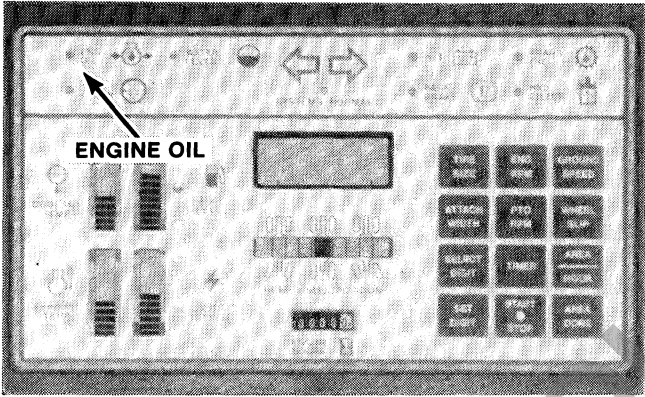
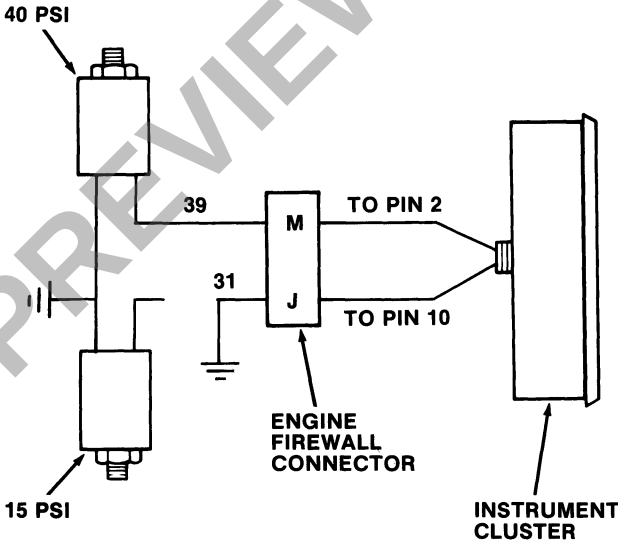
PROCEDURES	RESULTS
<p>A Make sure the oil is at the correct level If low add the correct amount</p> 	<p>A If indicator LED does not illuminate</p> <div>End of Test</div> <p>If indicator LED does illuminate</p> <div>Go to B</div>
<p>B Disconnect the Dk Blue wire (circuit 31) going to the 15 PSI switch With the engine running, connect the Dk Blue wire to ground</p> 	<p>B If the indicator LED does not illuminate, check for an open circuit between the disconnected wire and pin 10, repair as required</p> <div>Go Back to A</div> <p>If the indicator LED illuminates</p> <div>Go to C</div>

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Checking Pinion Clearance	10
Solenoid Switch Tests	11

STARTER OR TURNING MOTOR SPECIFICATIONS DELCO-REMY

PART NUMBER		NO LOAD TEST					
			AMPERES		RPM		PINION
CASE	DELCO	VOLTS	MIN.*	MAX.*	MIN.	MAX.	CLEARANCE
A34442	1114125	9	140	215	4000	7000	.33" to .39"
A36583	1107583	9	50	80	5500	9000	.010" to .140"
A36582	1107584	9	50	80	5500	9000	.010" to .140"
A38413	1107874	9	40	140	8000	13000	.010" to .140"
A39839	1109143	9	40	140	8000	13000	.010" to .140"
A51873	1109190	9	50	80	5500	9000	.010" to .140"
A59217	1113689	9	130	160	5000	7000	.010" to .140"
A59670	1113688	9	75	105	5000	7000	.010" to .140"
A59671	1108426	9	35	75	6000	9000	.010" to .140"
A64906	1113405	9	75	105	5000	7000	.010" to .070"
A64907	1113399	9	130	160	5000	7000	.010" to .070"
A75864	1114704	9	140	215	4000	7000	.33" to .39"
D45731	1108688	9	40	140	8000	13000	.10" to .140"
A149056	1113399	9	130	160	5000	7000	.010" to .070"

*Includes solenoid switch

TEST C - CHECK FRONT SENSOR VARIABLE VOLTAGE

NOTE: The results of test "B" must be good before doing test "C".

STEP 26



Turn the key switch on and start the tractor engine.

STEP 27



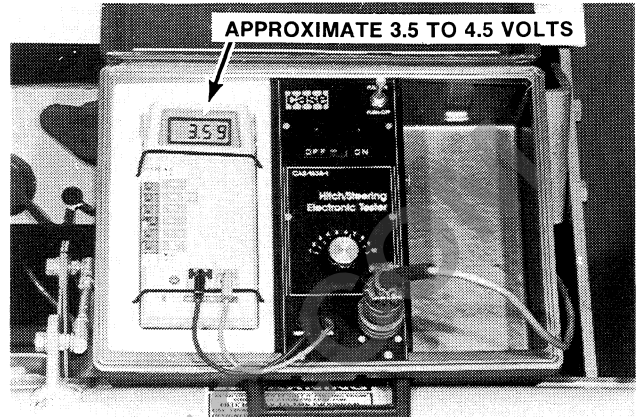
Turn the rotary switch to position 7. Move the slide switch to "ON".

STEP 28



Move the steering mode switch to "4-WHEEL" position.

STEP 29



Turn the steering wheel slowly from LH stop to RH stop. The voltage reading must be a constant increase from approximately 3.5 to 4.5 volts. If the voltage reading is correct, continue to test D.

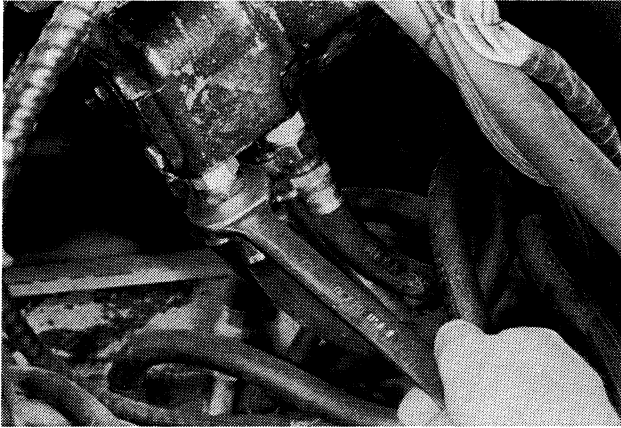
If the reading is erratic while steering, do the following:

1. Make sure the sensor set screw and mounting bolts are tight.
2. If the set screw and mounting bolts are tight. Replace the front sensor. See "Removing and Installing Wheel Sensors" in this Section.

If there is NO voltage reading continue to Step 30.

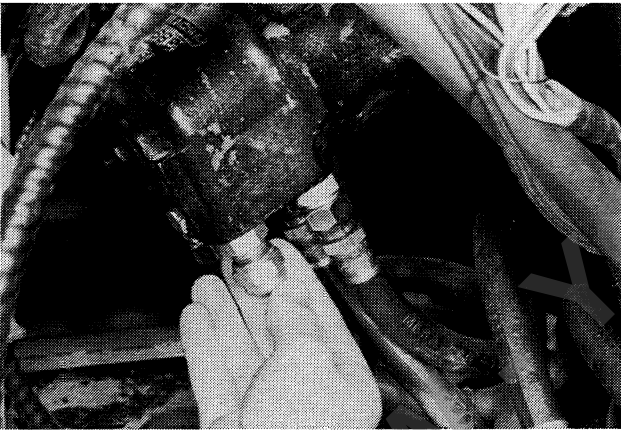
STEERING GEAR PUMP (P3) FLOW TEST

STEP 6



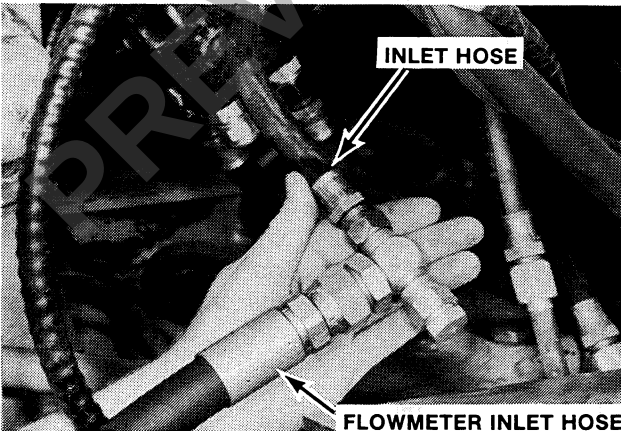
Remove the inlet hose from the front steering control valve (CV8).

STEP 7



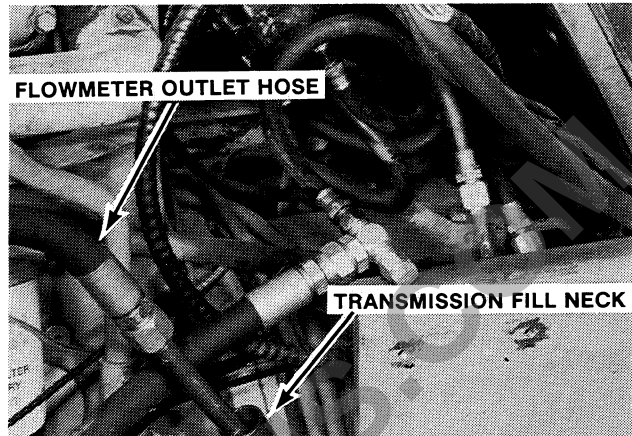
Install a cap on the disconnected fitting of the front steering control valve (CV8).

STEP 8



Connect the inlet of the flowmeter to the disconnected inlet hose.

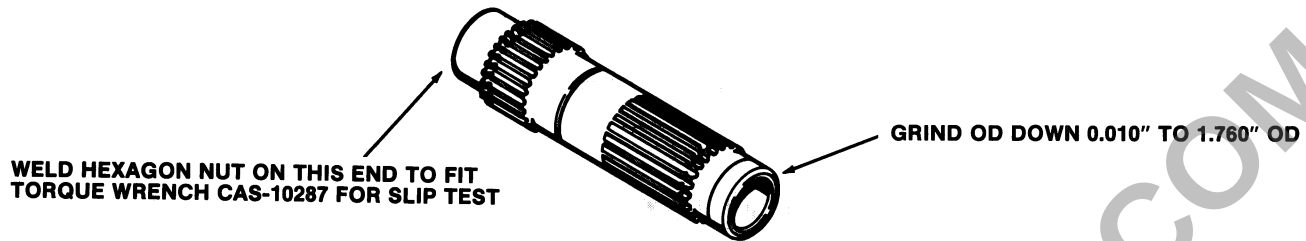
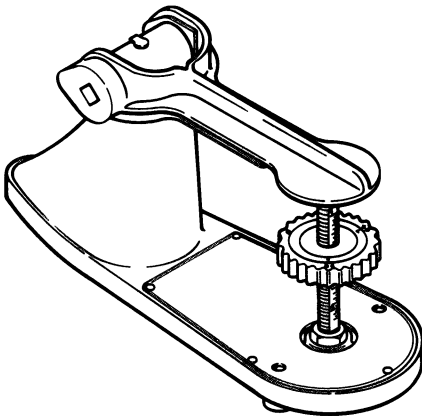
STEP 9



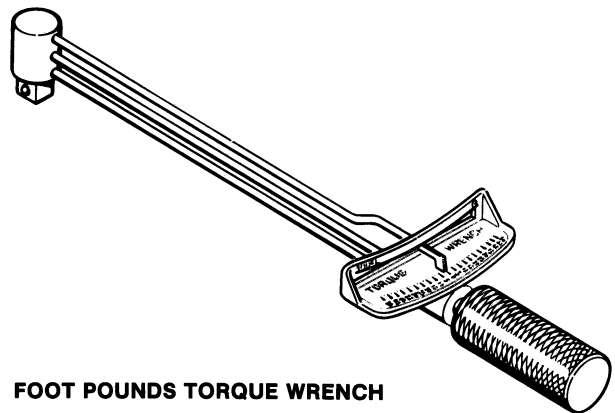
Remove the transmission fill cap and install the outlet hose of the flowmeter in the transmission fill neck.

SPECIAL TOOLS

A148351 PINION SHAFT



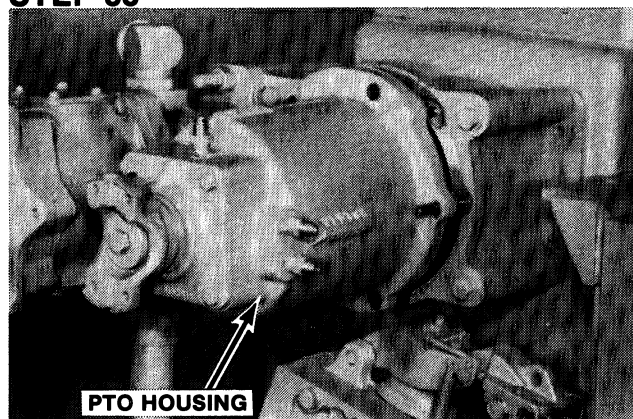
CAS-1357 SPRING TESTER



FOOT POUNDS TORQUE WRENCH

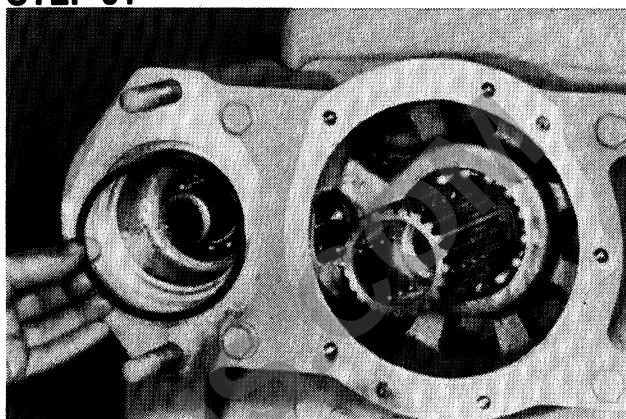
Removing and Disassembling the Pump Drive

STEP 88



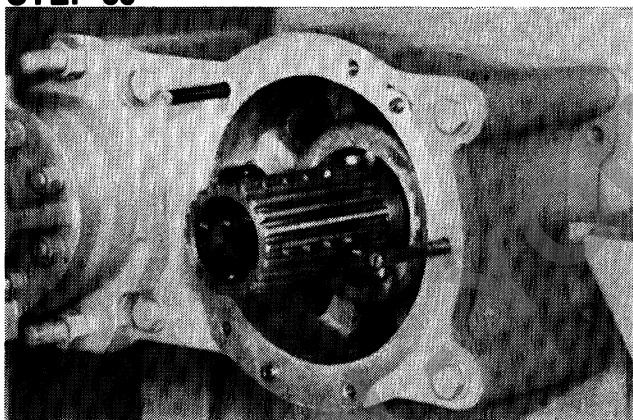
See Section 6245 to remove the PTO clutch and brake housing

STEP 91



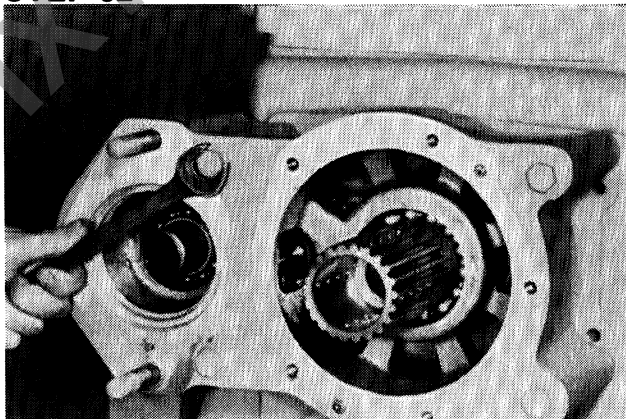
Remove the o-ring from the pump drive housing.

STEP 89



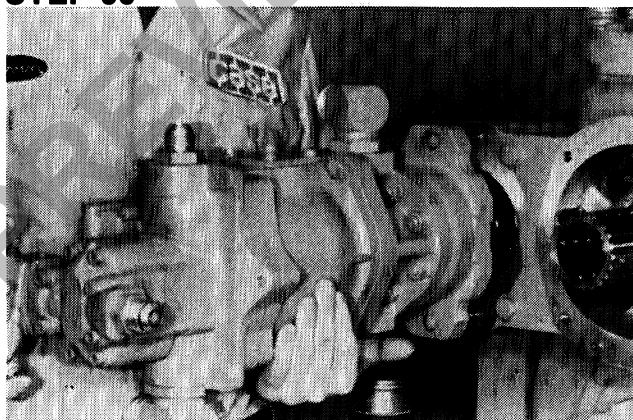
PTO clutch and brake housing removed

STEP 92



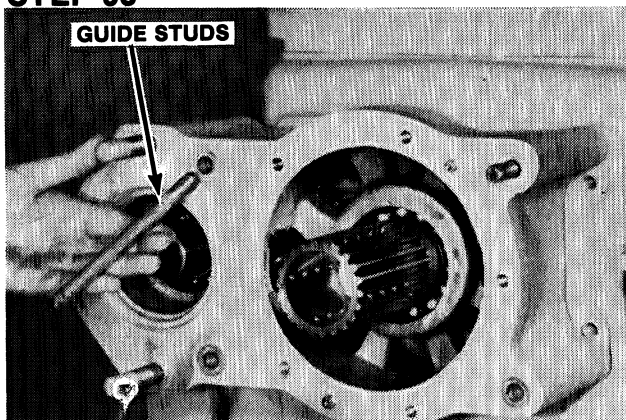
Remove the four bolts for the pump drive housing

STEP 90



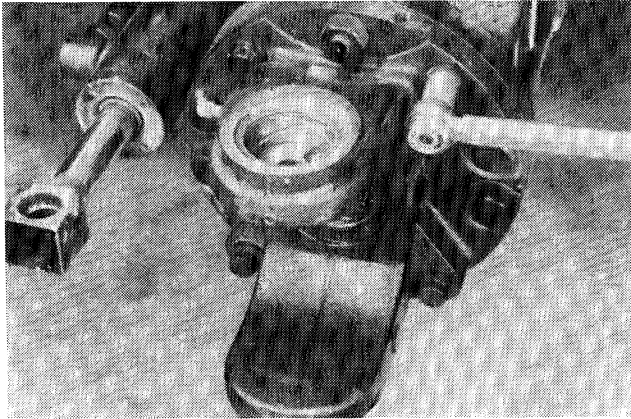
Remove the triple hydraulic pump assembly. See Section 8225

STEP 93



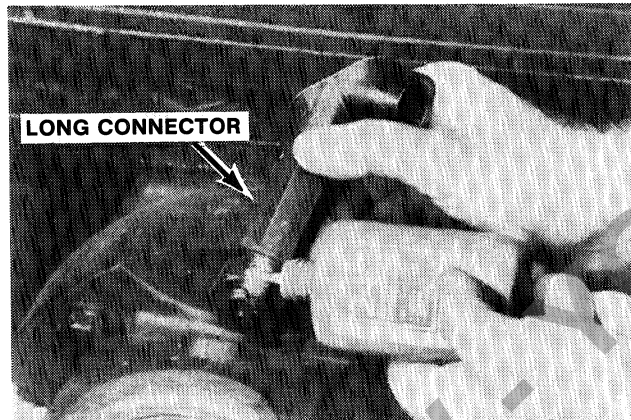
Install guide studs to make removal of the pump drive housing easier

STEP 79



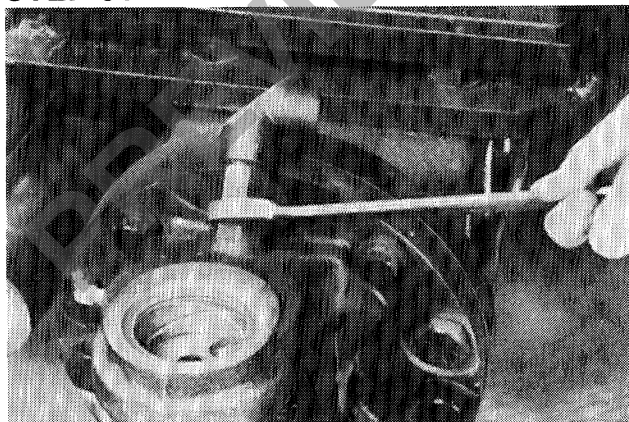
Install the remainder of the hex head retaining bolts and the nut. Tighten the trunnion retaining bolts and nut to a torque of 380 to 455 lb ft (516 to 616 Nm) (51.6 to 61.6 kgm).

STEP 80 LH SIDE ONLY



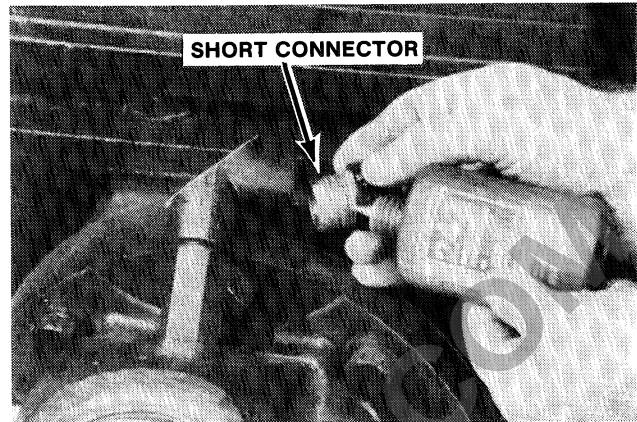
Apply Loctite Number 242 to the threads on the long connector and elbow assembly.

STEP 81



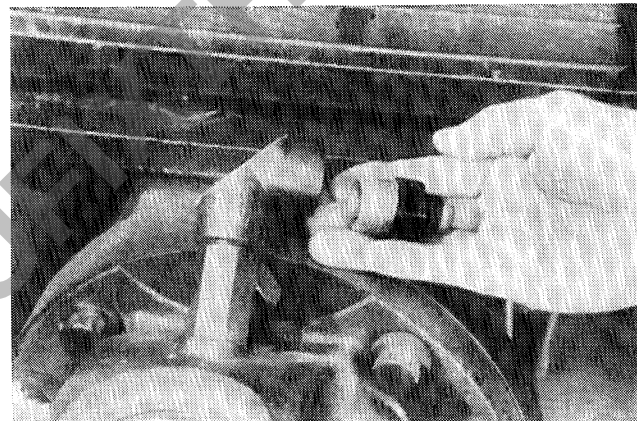
Install the long connector and elbow assembly in the trunnion.

STEP 82



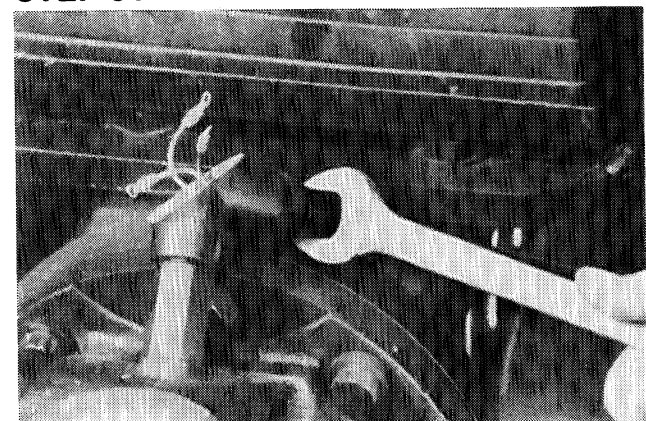
Apply Loctite Number 242 to the threads on the short connector.

STEP 83



Install the short connector in the 90 degree conduit elbow.

STEP 84



Connect the electrical conduit to the short connector. Make sure that all three sensor wires extend through the short connector and the 90 degree conduit elbow.

BRAKE PEDAL SYSTEM

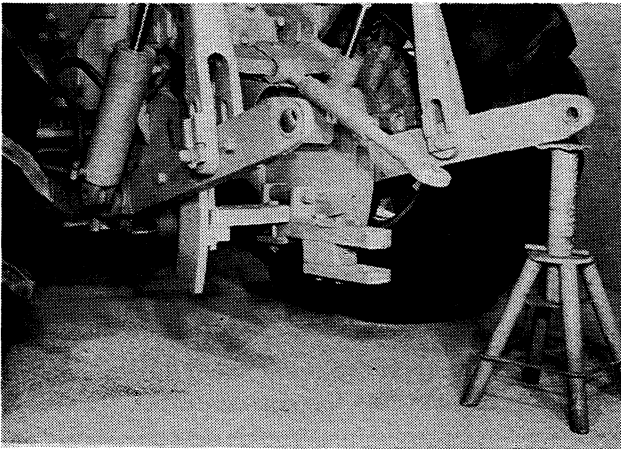
- 1 Pivot shaft for the brake pedal
- 2 Pivot shaft spacer
- 3 Brake pedal assembly
4. Pivot bearings for the brake pedal
- 5 Retaining bolt for the pivot bearings - 5/16 x 1-1/2 inch NC hex
- 6 Lock washers - 5/16 inch
- 7 Retaining nuts - 5/16 inch NC hex
- 8 Lock nut - 5/8 inch NC hex. Tighten the lock nut until side movement of brake pedal is removed. Make sure that the brake pedal will move up and down freely. Do not tighten the nut too much.
- 9 Control mounting bracket
- 10 Retaining bolts for control mounting bracket - 3/8 x 1 inch NC hex
- 11 Lock washers - 3/8 inch
- 12 Retaining nuts - 3/8 inch NC hex
- 13 Foot pad for brake pedal.
- 14 Return spring clip
- 15 Retaining bolt for the return spring clip - 3/8 x 1-1/8 inch NC hex
- 16 Lock washers - 3/8 inch
- 17 Retaining nut - 3/8 inch NC hex
- 18 Return spring for the brake pedal. Check the spring for the following specifications:
 Free Length of Coils 1 93 inch (49 mm)
 Number of Coils 20
 Free Length - Inside of Coils .. 2 7 inch (68 mm)
 OD 0 75 inch (19 mm)
 Wire Diameter 0 092 inch (2 34 mm)
 Tension per Inch (25 mm) 18 lb (80 N)(8 kg)
- 19 Jam nut for upper stop bolt - 3/8 inch NC. Install the nut on the stop bolt (20) approximately half way on the bolt threads.
- 20 Upper stop bolt for the brake pedal - 3/8 x 3-3/4 inch NC hex
- 21 Jam nut for lower stop bolt - 3/8 inch NC hex. Install the nut all of the way on the bolt threads.
- 22 Lower stop bolt for the brake pedal - 3/8 x 1-3/4 inch NC hex
- 23 Brake valve assembly
- 24 Brake valve adapter
25. Retaining bolts for the brake valve assembly - 3/8 x 1-1/2 inch NC hex
- 26 Lock washers - 3/8 inch
- 27 Retaining bolts for the brake valve adapter - 3/8 x 1-1/2 inch NC hex
- 28 Lock washers - 3/8 inch
- 29 Yoke pin to connect brake yoke rod (32) to the brake pedal assembly (3) - 3/8 inch diameter
- 30 Cotter pin - 3/32 x 3/4 inch
- 31 Jam nut for brake yoke rod - 3/8 inch NC hex. Install the nut approximately half way on the brake yoke rod.
- 32 Brake yoke rod. See Section 7220 in this service manual for installation and adjustment of the brake yoke rod.
- 33 Adapter fitting - 1/4 inch tube x 5/16 inch tube
- 34 Upper brake valve tube
- 35 Tube clamp spacer
- 36 Tube clamp
- 37 Lock washer - 3/8 inch
- 38 Retaining bolt for brake tube clamp - 3/8 x 1-1/2 inch NC hex
- 39 Center hose
- 40 Center tube
- 41 Tube clamp spacers
- 42 Tube clamps
- 43 Retaining screw for front tube clamp - 3/8 x 1 inch hex, self-tapping
- 44 Retaining bolt for rear tube clamp - 3/8 x 1-3/8 inch NC hex
- 45 Lock washer - 3/8 inch
- 46 Retaining nut - 3/8 inch NC hex
- 47 Lower brake hose assembly
- 48 Brake actuator cylinder

Air Removal

To remove air from the brake hydraulic system, open the air removal screw on the brake actuator cylinder and push the brake pedal down. Close the air removal screw before releasing the brake pedal. Repeat this procedure until there are no air bubbles seen in the brake fluid released from the air removal screw.

NOTE: Make sure to keep the brake fluid level full in the brake valve during the air removal procedure. Be sure to fill the reservoir after the final application.

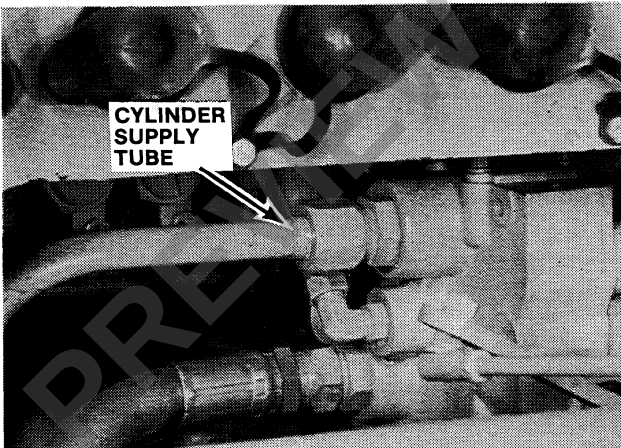
(Problem Continued)



2. Put a support under one of the hitch arms.



3. Stop the tractor engine.

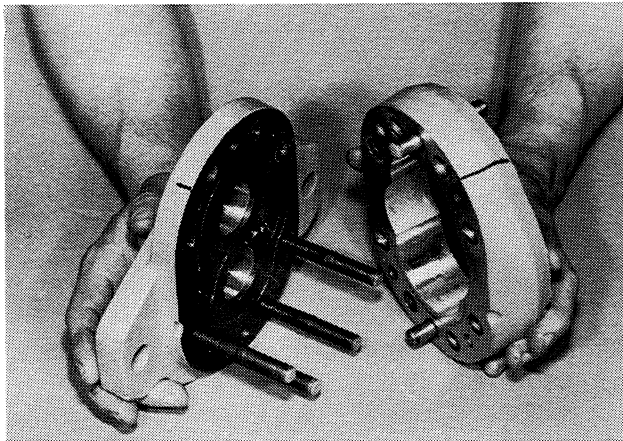


4. Disconnect the supply tube for the hitch cylinders from the hitch control valve (CV4).

(Continued on Next Page)

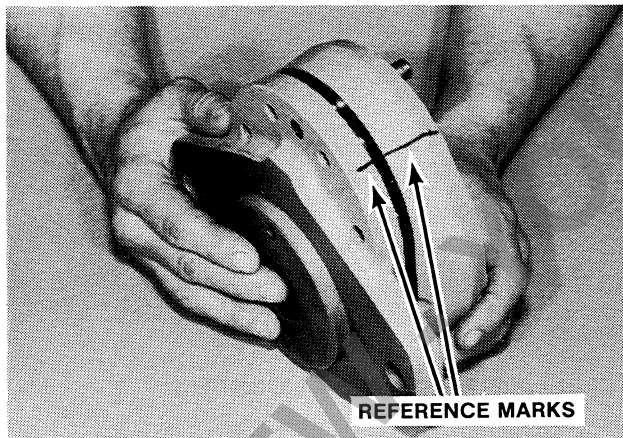
IMPORTANT: Make sure that all parts are clean before the pump is assembled again. Apply clean hydraulic oil to all moving parts before assembly.

STEP 40



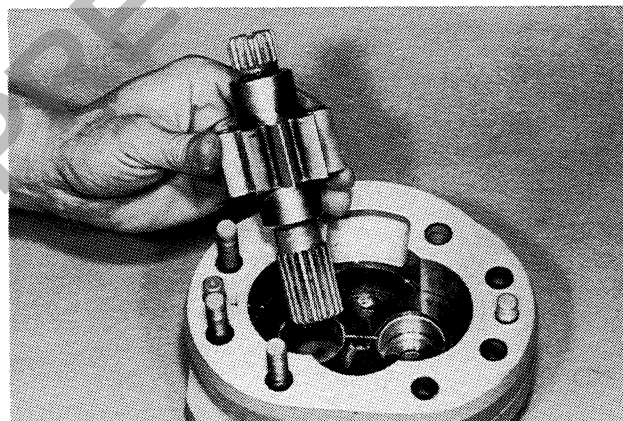
Install the front cover to the pump body.

STEP 41



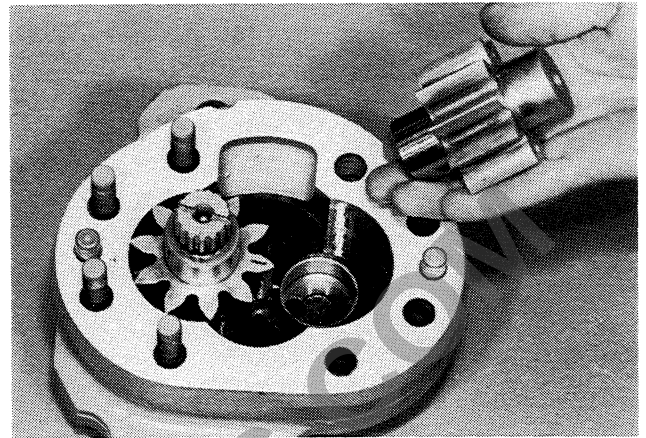
Make sure that the reference marks align on the two parts.

STEP 42



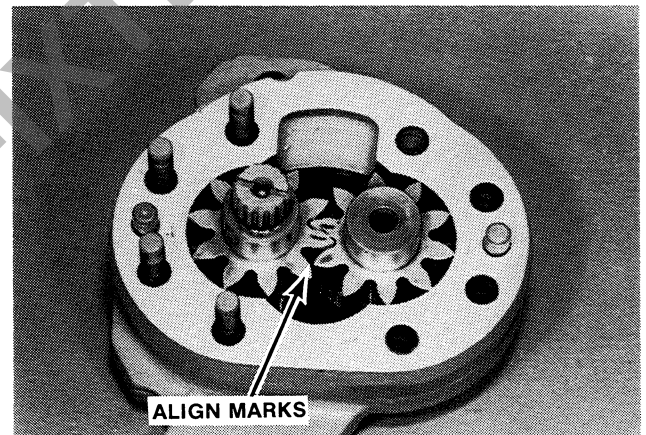
Install the drive gear.

STEP 43



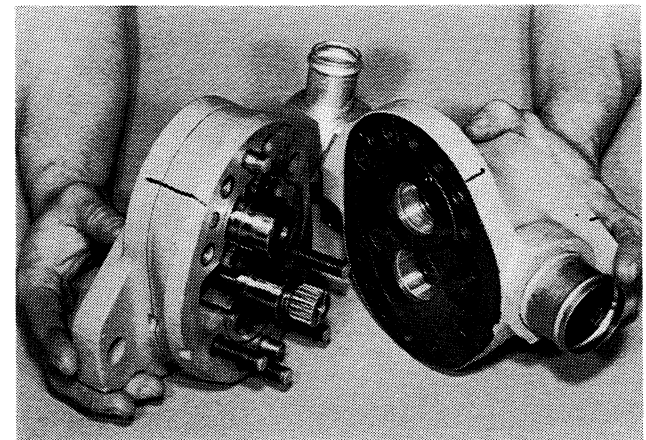
Install the idler gear so that the reference marks on the gear teeth align. See Step 44.

STEP 44



Align the reference marks on the idler gear and the drive gear.

STEP 45

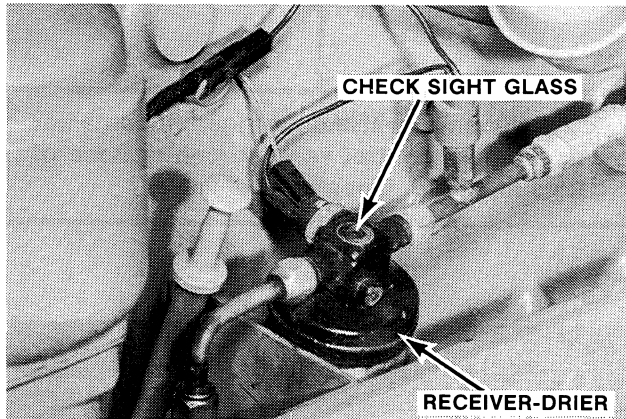
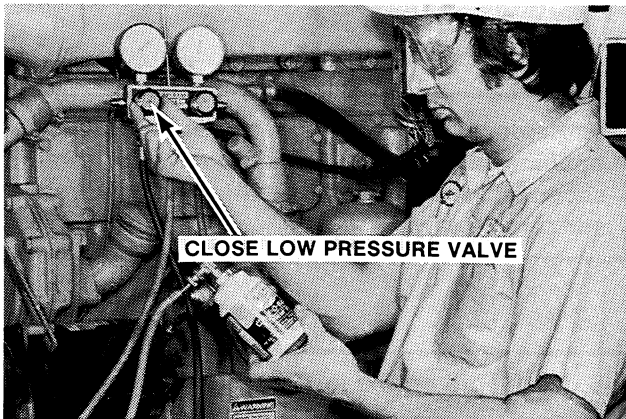
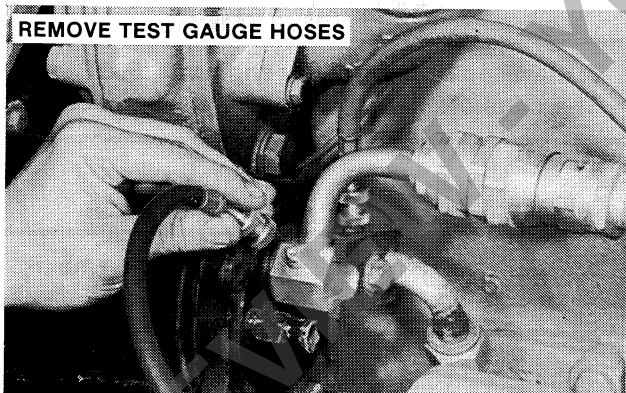
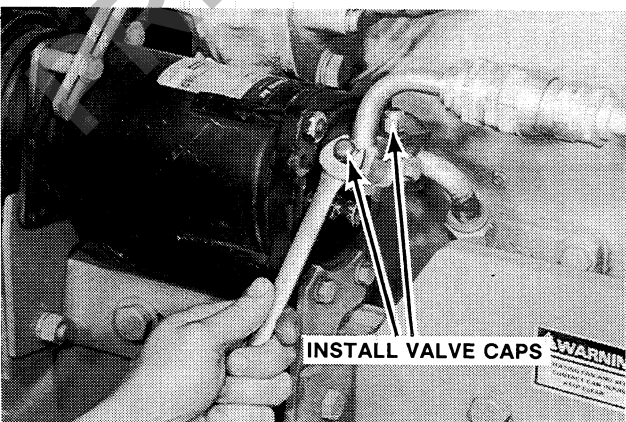


Install the rear cover to the pump body.

UPPER LIFT LINK AND SWAY BLOCKS

NOTE: Apply Number 2 Molydisulfide lubricant on the threads of the turnbuckle and the threads of the upper links when assembling.

1. Upper pivot mounts for pivot plate.
2. Bolts for upper pivot mounts - 3/4 x 1-1/2" NC (Grade 5).
3. Lock washers - 3/4".
4. Pivot pins for upper pivot plate.
5. Retaining lock bolts for pivot pins - 1/2 x 1-1/4" NC (Grade 8).
6. Hardened washers - 1/2 x 1 x 1/4" (12.7 x 25.4 x 6.35 mm).
7. Spacer - 1/2 x 7/8 x 1/8" (12.7 x 22.22 x 3.17 mm).
8. Upper pivot plates.
9. Turnbuckle clevis yoke.
10. Clevis pin - 1-1/4 x 4-1/4" (31.75 x 107.95 mm).
11. Snap ring for clevis pin.
12. Cotter pin for clevis pin.
13. Turnbuckle jam nut - 1-1/2"-12.
14. Adjustment turnbuckle.
15. Ball end of upper lift link.
16. Lubrication fitting for turnbuckle.
17. Bushing for pivot plates.
18. Roll pin for sway block spacers.
19. Sway blocks for lower hitch arms.
20. Sway block spacers.
21. Retaining bolts for sway blocks - 3/4 x 2-1/2" NC (Grade 5).
22. Lock washers - 3/4".



(Adding refrigerant continued)

10. Check sight glass, no bubbles must show.

11. To check for complete charge, close low pressure valve.

A. Low pressure gauge - 7 to 30 PSI (48 to 207 kPa)(0.48 to 2.07 bar).

B. High pressure gauge - see chart at the bottom of page.

The given low pressure range is the necessary range for a normal system.

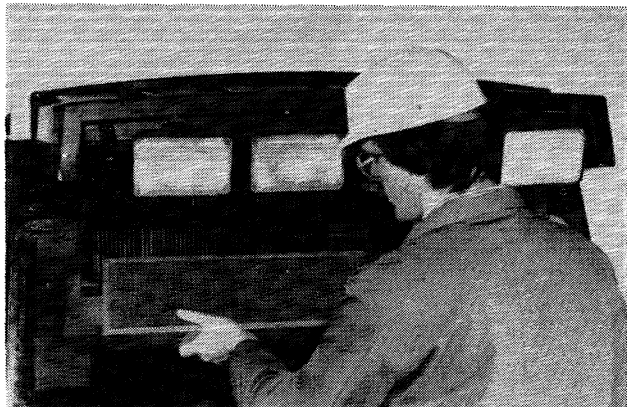
12. Close the control valve on the refrigerant container.

13. Remove test gauge hoses and install service valve caps.

PRESSURE - TEMPERATURE CHART

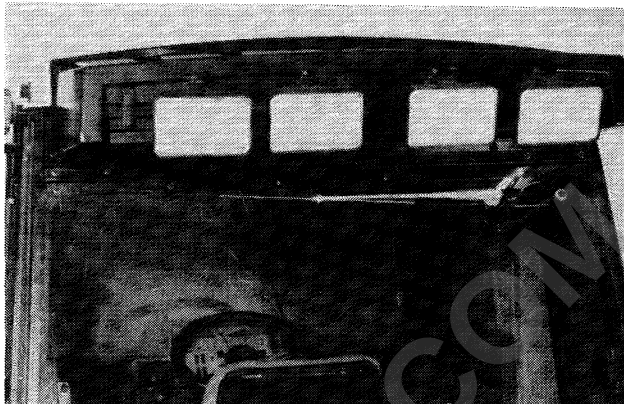
AMBIENT TEMPERATURE	NORMAL HIGH PRESSURE
80°F (26°C)	150-170 PSI (1034 to 1172 kPa)(10.3 to 11.7 bar)
90°F (32°C)	175-195 PSI (1207 to 1345 kPa)(12.1 to 13.5 bar)
95°F (35°C)	185-205 PSI (1276 to 1414 kPa)(12.8 to 14.1 bar)
100°F (38°C)	210-230 PSI (1448 to 1586 kPa)(14.5 to 15.9 bar)
105°F (41°C)	230-250 PSI (1586 to 1724 kPa)(15.9 to 17.2 bar)
110°F (44°C)	250-270 PSI (1724 to 1862 kPa)(17.2 to 18.6 bar)

STEP 45



Install the air filter element into the air filter housing with the arrows up.

STEP 47



Air filter housing assembled.

STEP 46



Close the air filter housing door and secure the latches.

NOTE: The Case Company reserves the right to make improvements in design or changes in specifications at any time without incurring any obligation to install them on units previously sold.

Transmission Oil Monitor With Automatic Shut-Down System

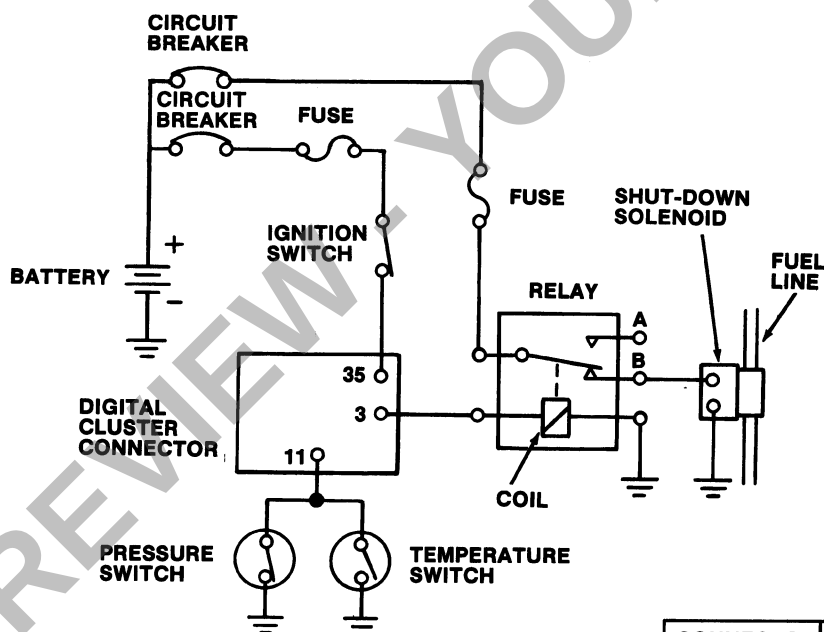
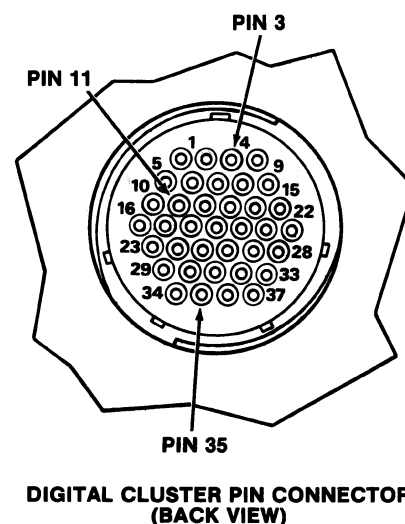
The automatic shut-down system is an option. If the tractor has this option it will be equipped with a shut-down relay and shut-down solenoid. The shut-down system monitors three critical systems and the transmission oil is one of them. The other two are engine oil and coolant temperature. If the predetermined limit for any one of these systems is exceeded, the tractor fuel supply shuts OFF. The operation of the shut-down relay and solenoid cuts off the fuel supply 30 seconds after the warning alarm sounds.

If equipped with an automatic shut-down, cluster connector PIN 3 is normally powered. The power from PIN 3 is directed to the shut-down relay coil. Since the coil is energized, the relay contact maintains its connection to terminal B. Battery power is supplied through the circuit breaker, 25 amp fuse, and relay contact to the shut-down solenoid. Since the solenoid is energized, the valve in the solenoid is held open. The open valve allows fuel to flow through the line.

Activation of the Shut-Down System

As stated earlier, when the pressure switch or temperature switch close, a ground signal goes through the closed switch to PIN 11. When PIN 11 receives a ground signal, power at PIN 3 is cut off. When PIN 3 loses power, the shut-down relay coil de-energizes. The relay contact springs back to terminal A. When the relay contact is at position A, there is an open circuit from the battery to the shut-down solenoid. Since the line to power the solenoid is open, the solenoid de-energizes. The solenoid valve shuts and stops fuel flow. The tractor shuts down. See Section 4205 for Complete Troubleshooting of the Instrument Cluster.

During start up in cold temperatures of 32° F (0° C) or lower, the engine can stop after 30 seconds if the tractor is equipped with an automatic shutdown kit. Shutdown can occur if engine or transmission oil pressure does not reach safe switch operating pressure within the 30 seconds required to prevent shutdown. To prevent shutdown, turn the key switch OFF then ON quickly to reset the system for an additional 30 seconds.



CONNECTOR PIN	FUNCTION
11	PRESSURE AND TEMPERATURE SWITCHES
35	12 VOLT POWER FROM BATTERY
3	POWER FOR ENGINE SHUT-DOWN

HAND SIGNALS

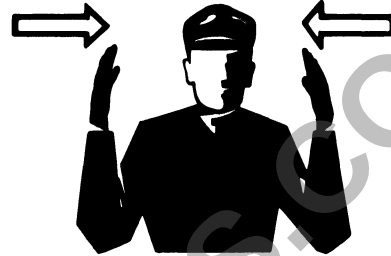
For communication under noise conditions and special operations the American Society of Agricultural Engineers has made standard agricultural hand signals. You will find that the hand signals can decrease time loss and prevent accidents

Start the Engine



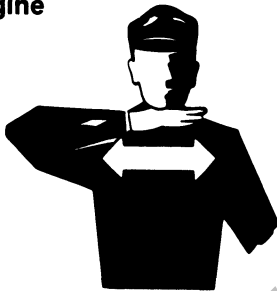
Start the engine Move arm in a circle at belt level

This Far To Go



This far to go. Put your hands in front of your face with the back of your hands outward Move your hands in or out as an indication how far to go

Stop the Engine



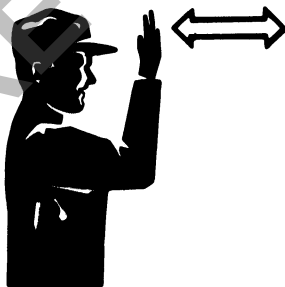
Stop the engine Move your right arm across your neck from left to right.

Move Out

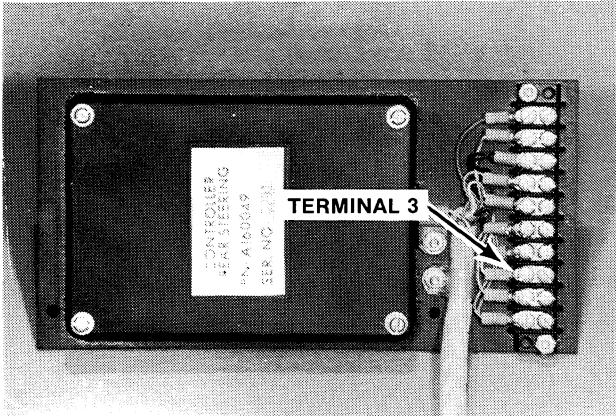


Move out Face in the needed direction of movement Put your arm straight out behind you. Then, swing your arm over your head and forward until your arm is straight out in front of you with the back of your hand up.

Move Toward Me - Follow Me



Move toward me or follow me. Look toward person or vehicle you need to move. Hold one hand in front of you with the back of the hand toward the vehicle and move your arm from the elbow to the fingers backward and forward.

STEP 30

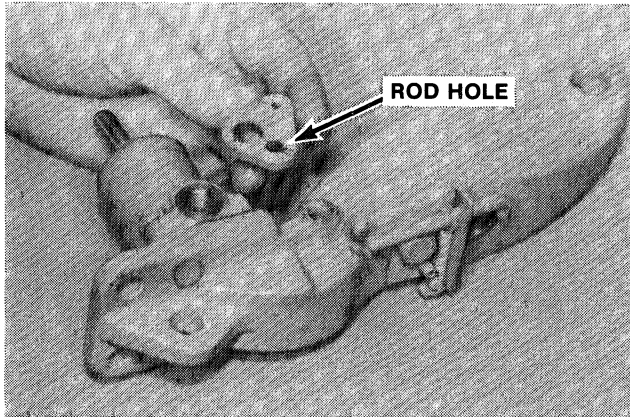
Check the voltage at controller terminal number 3.

1. If the voltage reading is 7 to 9 volts check front sensor wiring for open circuits or short circuits. See Section 4225 in this service manual. If the wiring is correct the problem is in the front sensor.
2. If the voltage reading is NOT 7 to 9 volts the problem is in the controller or steering mode switch.

STEP 31

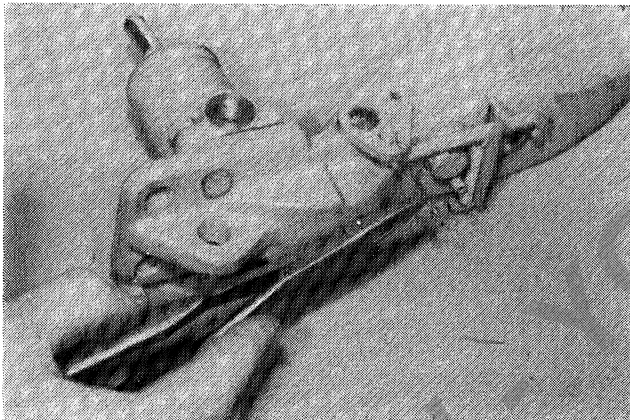
Make the necessary repairs and repeat the test in Steps 26 through 29.

STEP 59



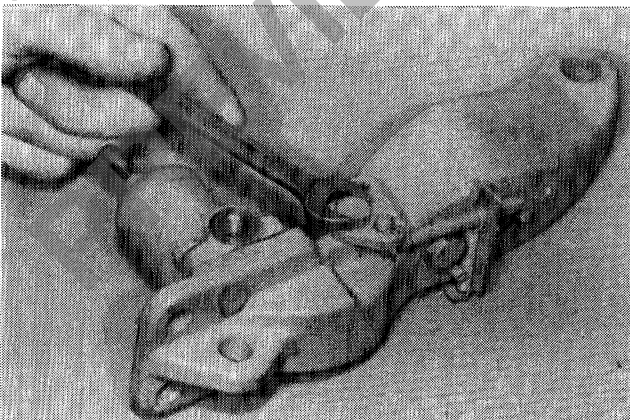
Install the adjuster cam lever over the ratchet rod. Make sure that the end of the ratchet rod goes through the ratchet rod hole in the adjuster cam lever.

STEP 60



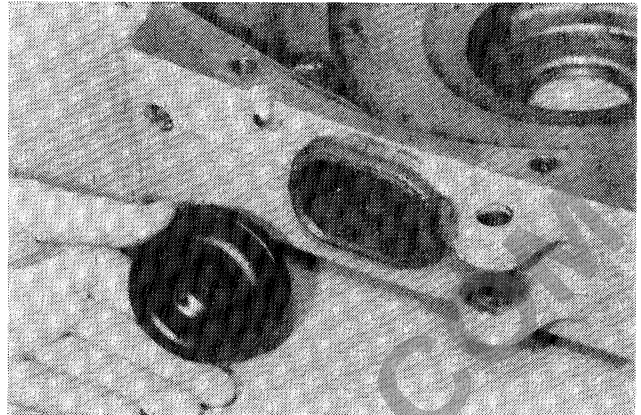
Install the cotter pin to connect the ratchet rod to the adjuster cam lever.

STEP 61



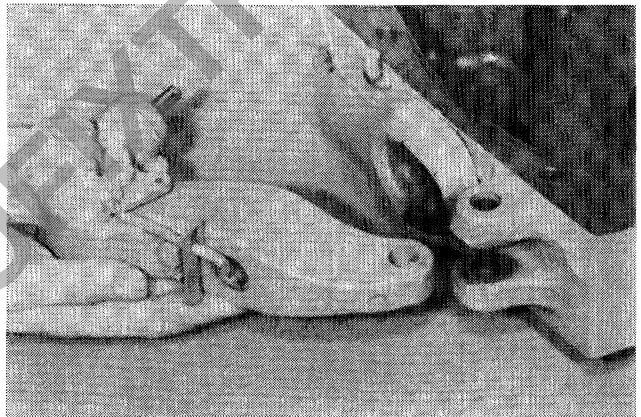
Install and tighten the pivot bolt for the adjuster cam lever.

STEP 62



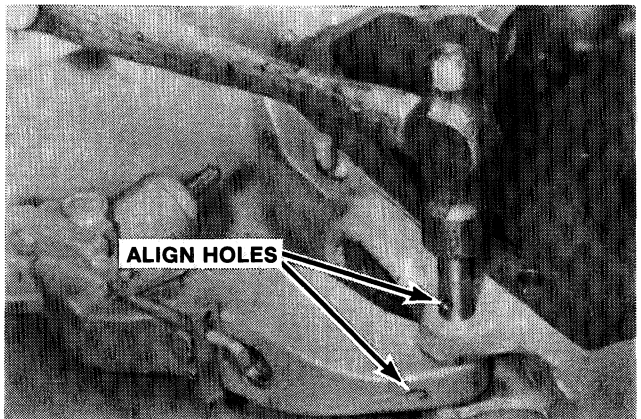
Install a new rubber dust cover on the brake housing.

STEP 63



Install the brake lever assembly to the brake housing.

STEP 64



Install the brake lever pin. Make sure to align the hole in the pin and the hole in the brake lever assembly.

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