

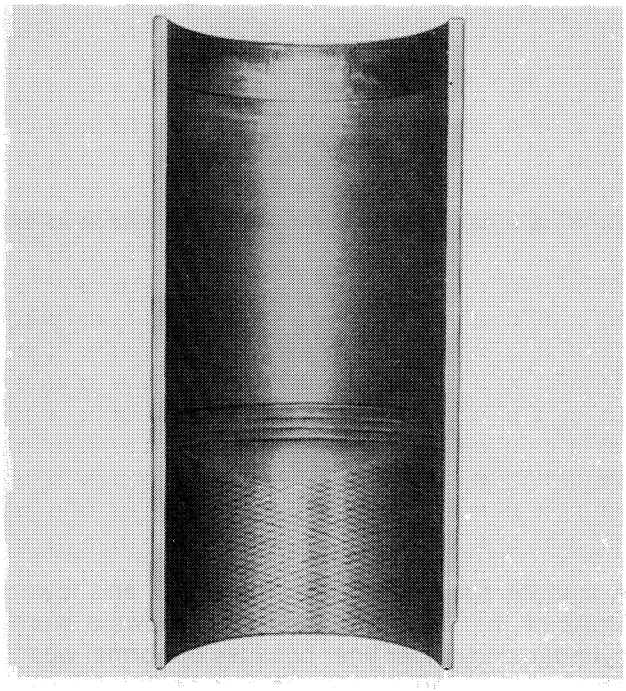
WARNING: *This safety symbol is used in this manual to indicate important safety messages.*
When you see this symbol, read the message carefully. It is shown when possible injury or death can be caused.

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STEP 11 (Cont)

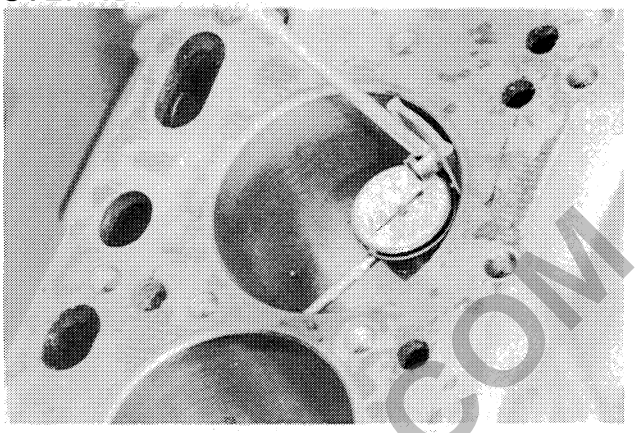
Dusted Cylinder



A dusting failure will cause the following:
1. Lower area of piston wall will show wear.
2. Too much piston ring groove wear.
3. Too much piston ring side clearance.
4. Washed away areas of the piston ring lands where the aluminum will be gone.
5. Piston rings will have too much face contact and wear which can be seen as a reduction in radial width and an increase in end gap.
6. Chrome piston rings will show wear through the face. The chrome will be worn off and base iron can be seen.
7. The cylinder heads can have smooth intake ports and worn valve guides.

All of these conditions are caused by dirt which is mixed with the intake air. If these conditions are present, machine the cylinders or replace the cylinder liners and replace the pistons and piston rings.

STEP 12



Measure the cylinder or cylinder liner bores for taper as follows:
1. Measure the bore parallel to the crankshaft at the top end of the ring travel zone.
2. Measure the bore in the same position at the bottom end of the ring travel zone.
3. Measure the bore at right angles to the crankshaft at the top end of the ring travel zone.
4. Measure the bore in the same position at the bottom end of the ring travel zone.

Compare the results of measurements (1) and (3) with (2) and (4) to find out if the bore has worn tapered. To measure, use an inside micrometer, bore gauge or a taper gauge. If taper is more than 0.005 inch (0.127 mm) machine the cylinders or replace the cylinder liners and replace the pistons and piston rings.

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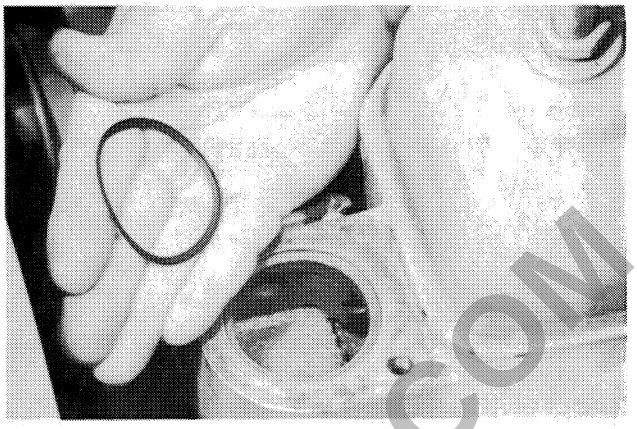
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STEP 57



Remove the thermostat from the cylinder head.

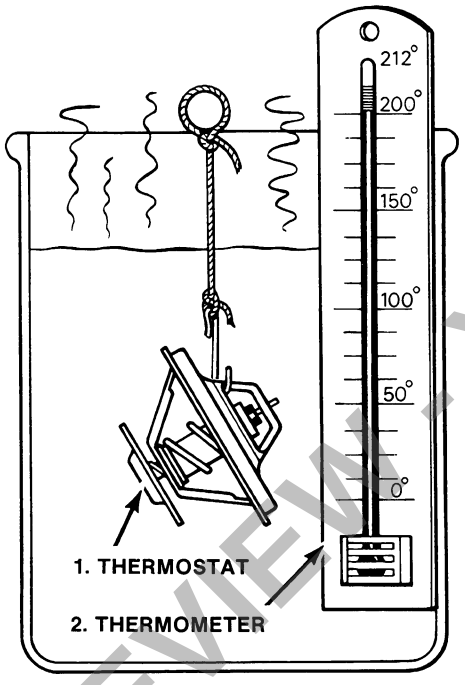
STEP 58



Remove the gasket from the cylinder head.

Thermostat Inspection

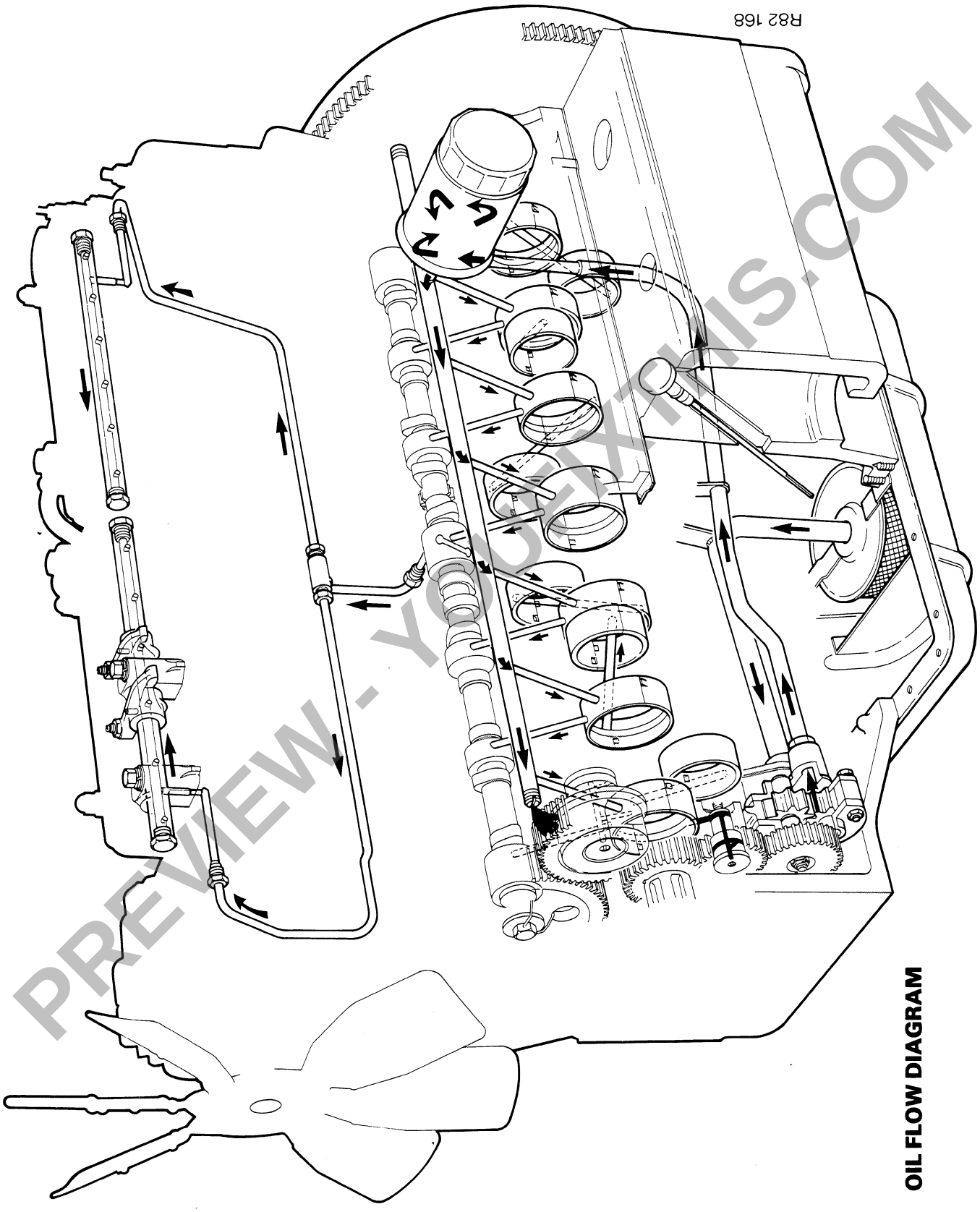
STEP 59



Check the thermostat for correct operation by putting the thermostat in a container of hot, approximately 176° F (80° C), water. The thermostat opens at 174° F (79° C) and will fully open at 201° F (94° C). The thermostat must be changed if the thermostat valve does not move or if the thermostat valve starts to open at too high or too low a temperature.

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OIL FLOW DIAGRAM

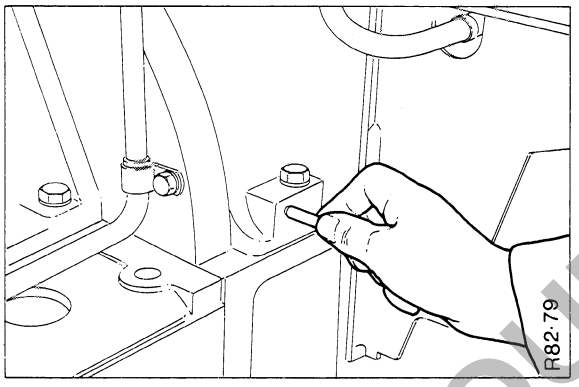
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THE FUEL INJECTION PUMP

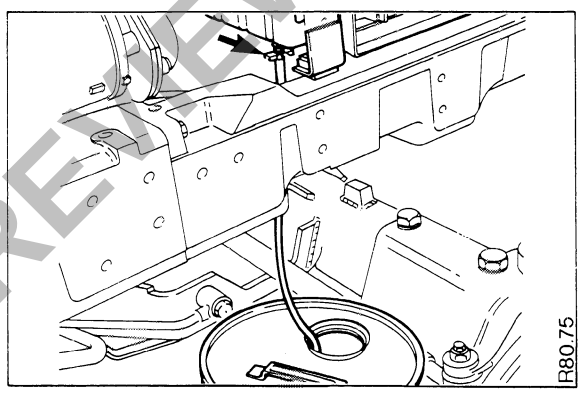
The only maintenance needed is to change the oil in the case when changing the engine oil. Settings for maximum speed and idling speed are set before delivery of the tractor. DO NOT try to make any repairs or adjustments without the correct equipment. If the pump has a defect contact your diesel equipment dealer for repairs.

REMOVING THE PUMP

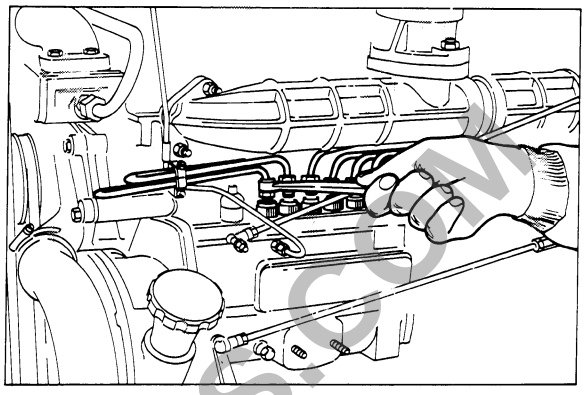
STEP 1. Remove the front rocker cover and rotate the engine crankshaft until the inlet valve of No. 1 cylinder closes.



STEP 2. Get a short piece of 8mm diameter rod and grind a chamfer on one end, see page 5. Remove the plastic plug from the TDC hole in the left-hand side of the clutch housing. Put the chamfered end of the rod in the TDC hole and press against the other end. Loosen the injectors to relieve compression. Turn the engine by hand until the rod enters a hole in the flywheel.

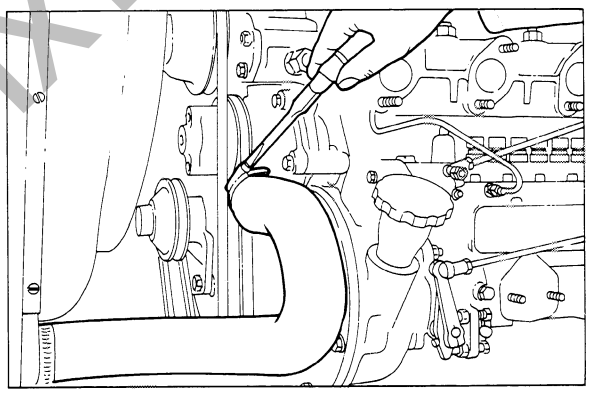


STEP 3. Drain the engine coolant.

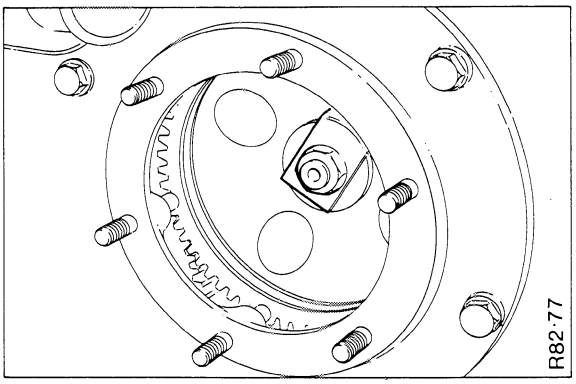


STEP 4. Disconnect the injector pipes and the inlet pipe from the pump.

STEP 5. Disconnect the stop and speed controls from the pump.



STEP 6. Remove the bottom hose from the radiator.



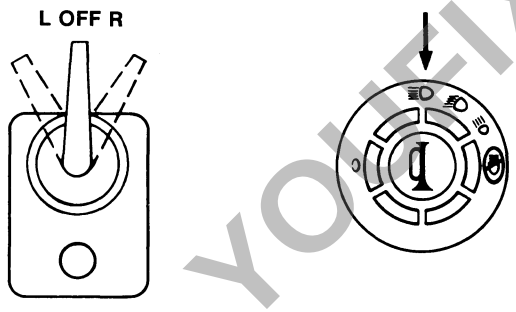
STEP 7. Remove the small round cover from the front left-hand side of the timing gear cover.

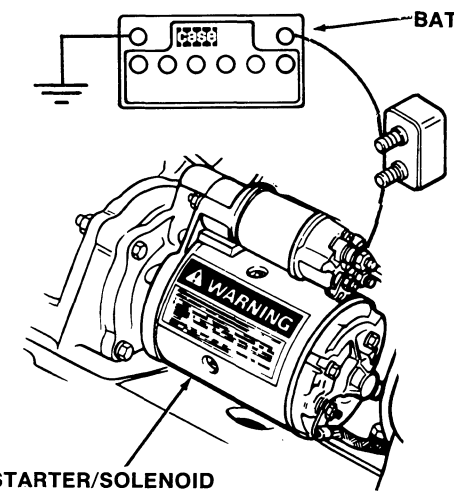
8mm = 5/16 in

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STEP	PROCEDURE	RESULT/ACTION
8A	1490, 1690 TRACTORS (HIGH PLATFORM) **CHECKING THE TURN SIGNAL OPERATION** **NOTE:** *The key switch must be in the "ACC" position, and the head lamp lamp switch must be in the fourth position.*	a. If no lamps illuminate: Continue to Step 8B b. If only some lamps illuminate: Continue to Step 8B c. If all the lamps operate correctly: Testing Finished
8B	Check the connections at the batteries, the starter ground, and the solenoid "BAT" terminal for good clean and tight connections. Make sure the battery is fully charged.	a. Repair the connections and charge the battery if necessary and Go back to Step 8A b. If the connections were good and the battery was fully charged Continue to Step 8C

	LEFT LAMP - FLASH RATE	RIGHT LAMP - FLASH RATE
POSITION 1	ON FLASHING 80-110 c/m	ON STEADY
POSITION 2	ON FLASHING 60-85 c/m	ON FLASHING 60-85 c/m
POSITION 3	ON STEADY	ON FLASHING 80-110 c/m





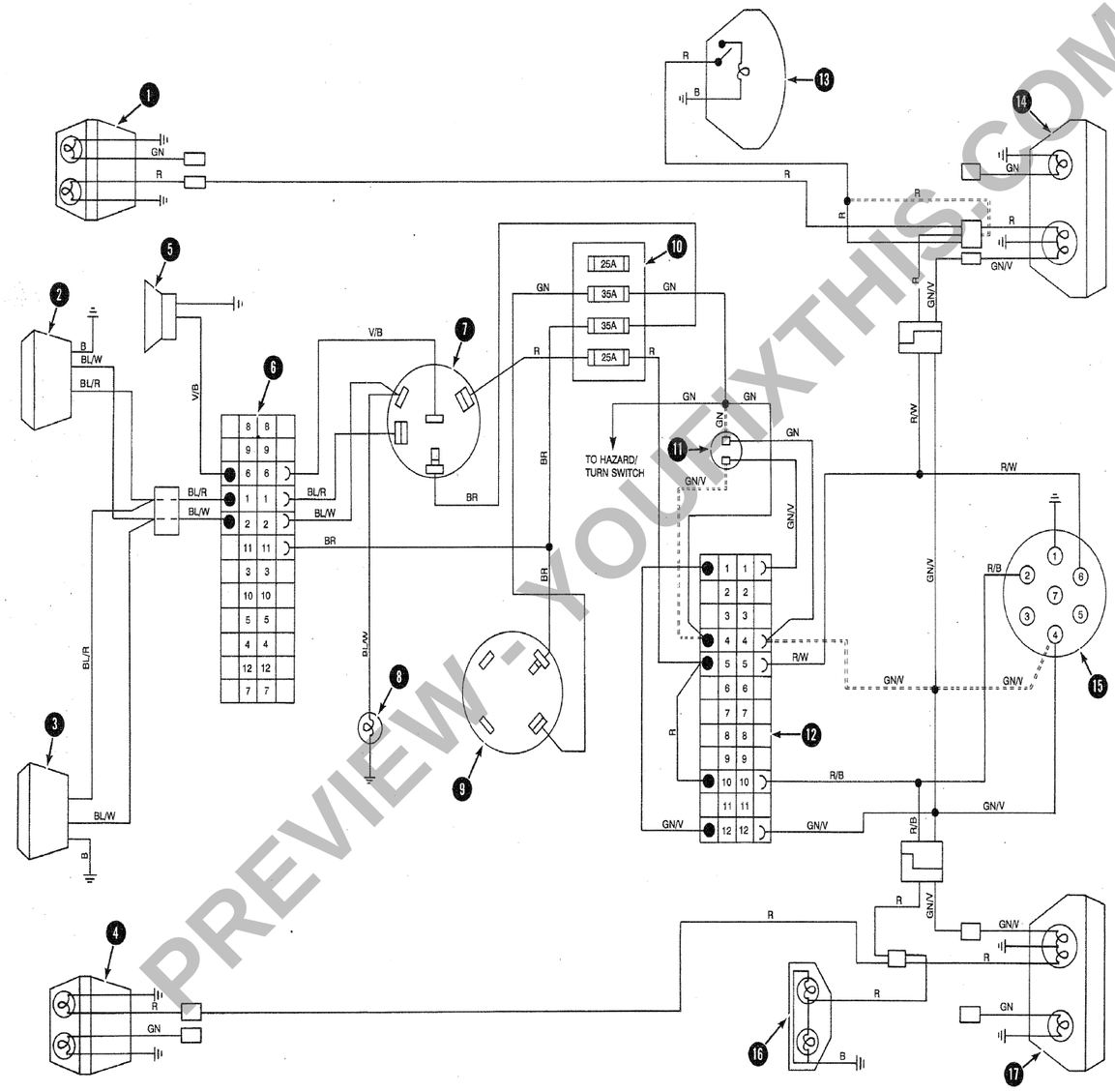
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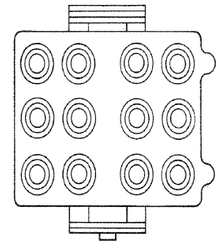
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LEGEND TO WIRING DIAGRAM

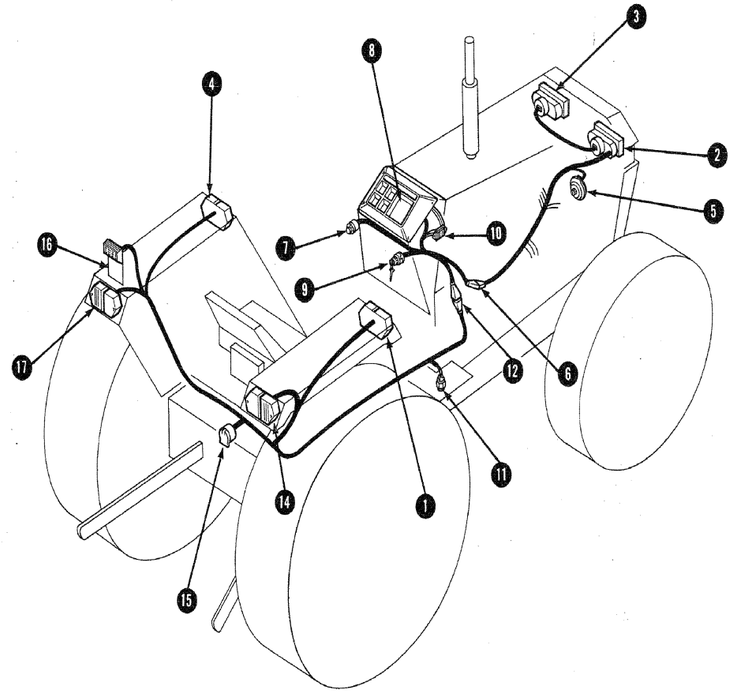
Lighting and Horn

1. Right Front Turn Indicator and Side Lamp
2. Right Headlamp
3. Left Headlamp
4. Left Front Turn Indicator and Side Lamp
5. Horn
6. Multi-connector - Instrument Panel Harness, Right Hand
7. Combination Lamp and Horn Switch
8. Main Headlamp Beam Warning Lamp
9. Key Switch
10. Fuse Panel - Instrument Panel
11. Stop Lamp Switch
12. Multi-connector - Instrument Panel Harness, Left Hand
13. Worklamp
14. Right Rear Turn Indicator, Stop and Rear Lamps
15. 7 Pin Trailer Socket
16. Registration Plate Lamp
17. Left Rear Turn Indicator, Stop and Rear Lamps





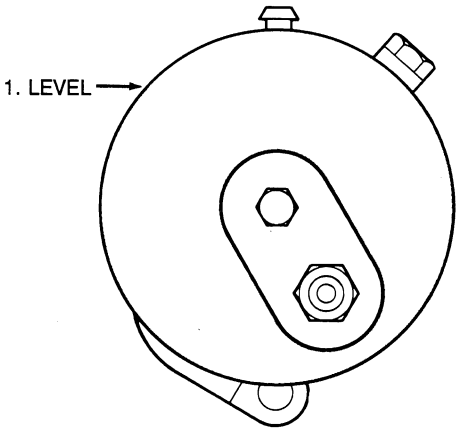
MULTI-CONNECTOR 6 AND 12



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STEP 55



Check the level of oil in the steering system reservoir and add to the fill plug hole if necessary. Install the fill plug.

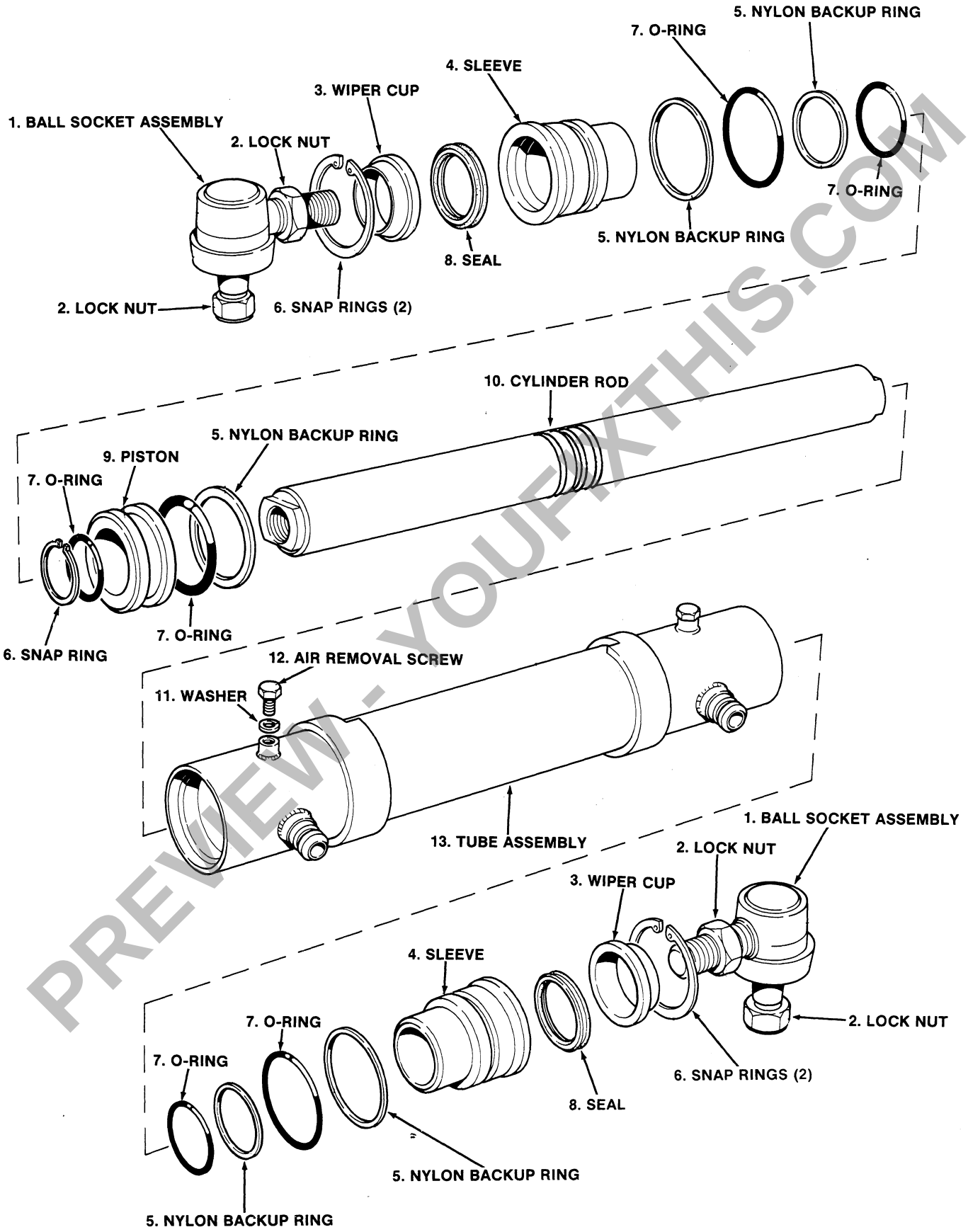
STEP 56

Start the engine then turn the front wheels to full right hand lock. Stop the engine then again check the oil level in the steering system reservoir. Add oil to the level of the fill plug hole. Install the fill plug then start the engine and check for oil leaks.

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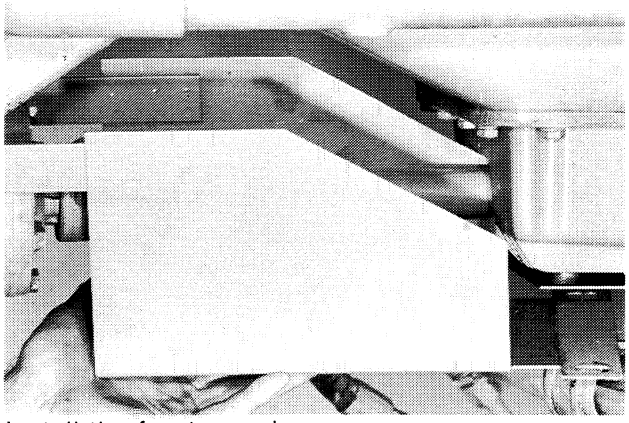
SERVICING THE STEERING CYLINDER ASSEMBLY



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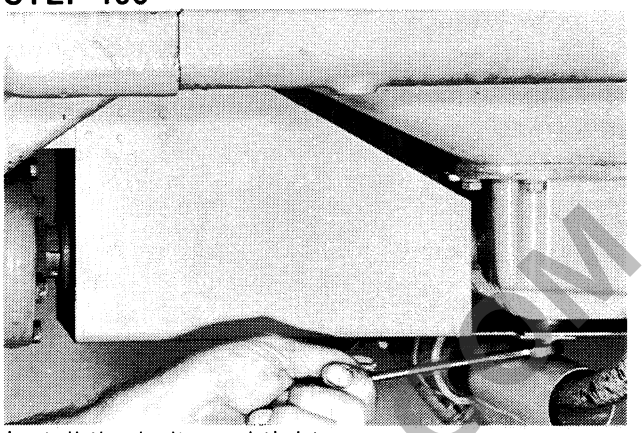
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STEP 195



Install the front guard.

STEP 196



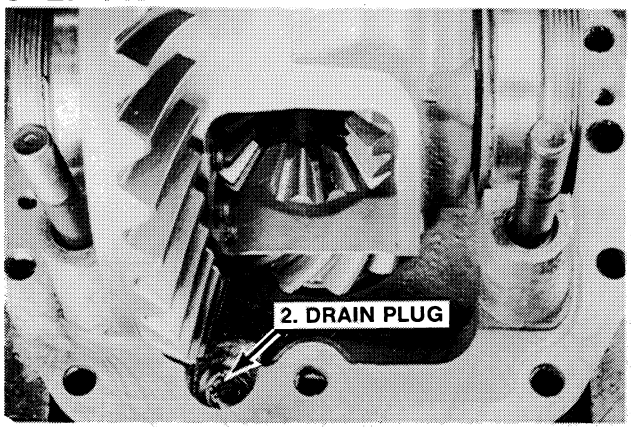
Install the bolts and tighten.

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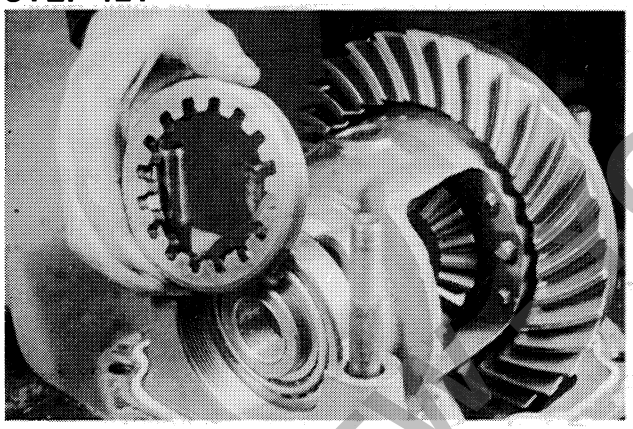
Installing The Differential And Bevel Wheel Assembly Into The Carrier Housing

STEP 120



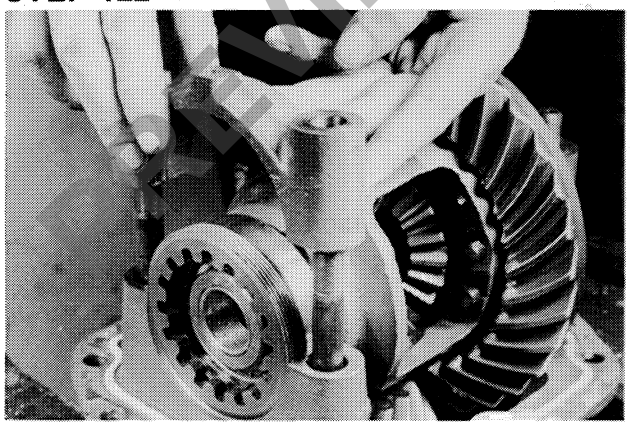
Install the bearing cups on the differential bearings. Install the differential and bevel wheel assembly into the carrier. Make sure that the bevel wheel is on the same side as the drain plug.

STEP 121



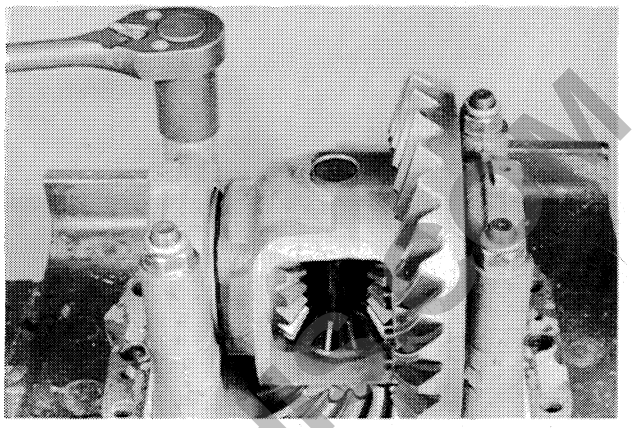
Install the bearing adjusting nuts each side.

STEP 122



Align the marks made on the carrier caps. Install the caps. Make sure the nuts engage the threads correctly in cap and housing.

STEP 123



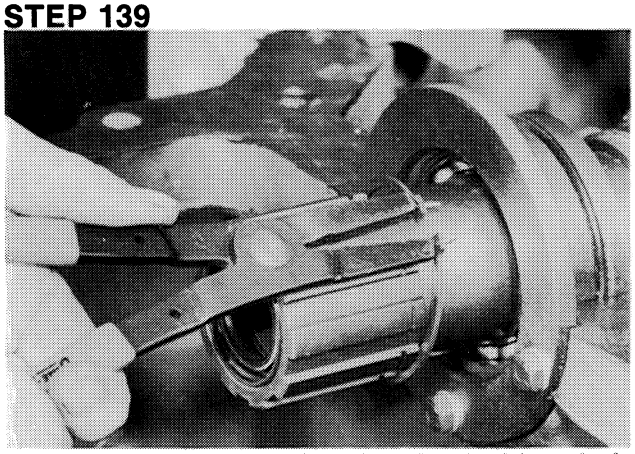
Install new lock nuts. Tighten the nuts to 198 Nm (146 lb ft).

IMPORTANT: *Make sure there is a clearance between the bevel wheel and the pinion gear before tightening the cap nuts.*

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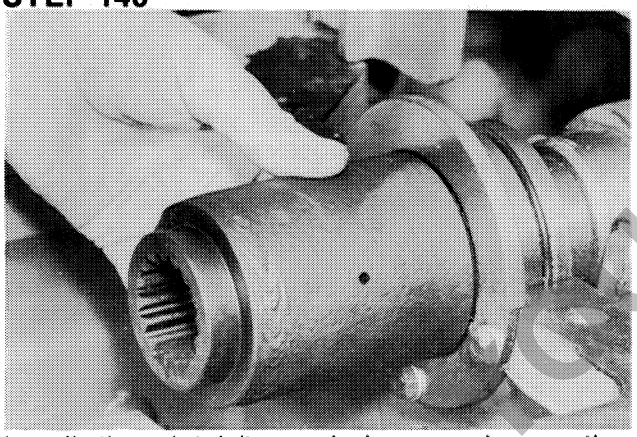
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STEP 139



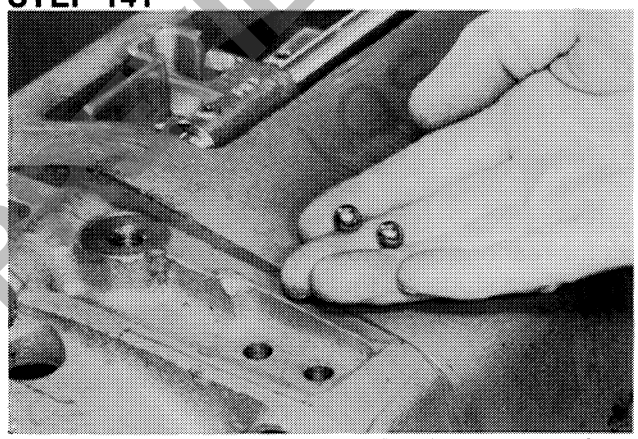
Remove the snap ring on the clutch drive shaft from the groove and slide the snap ring back on the shaft.

STEP 140



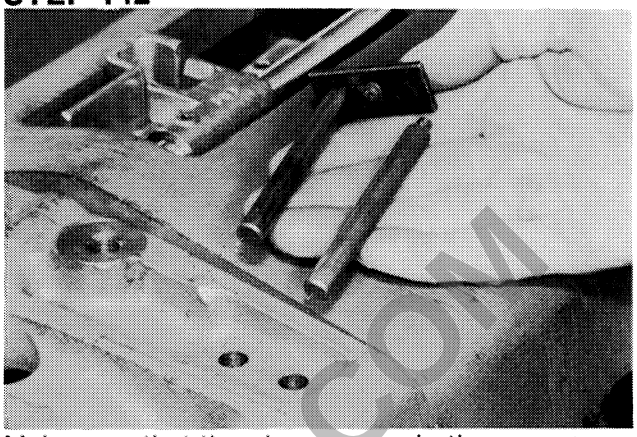
Install the clutch/transmission coupler on the clutch drive shaft and slide the coupler on the drive shaft toward the snap ring. The larger OD end of the coupler must go on the clutch drive shaft.

STEP 141



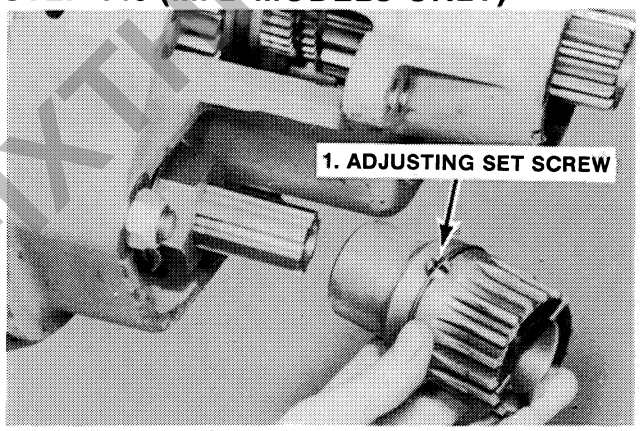
Make sure that the steel balls for the starter safety switch are in the passages in the transmission housing.

STEP 142



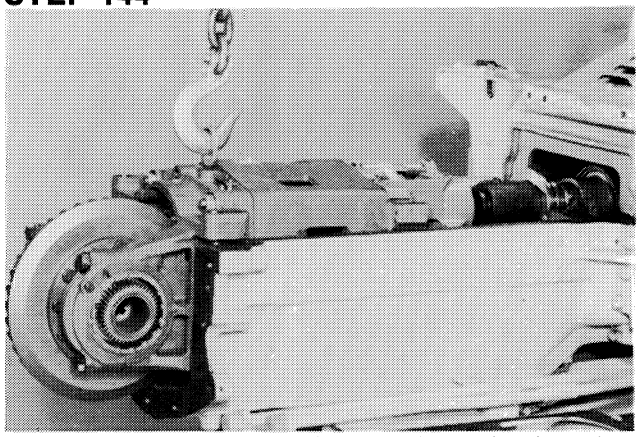
Make sure that the plungers are in the passages.

STEP 143 (MFD MODELS ONLY)



Install the transfer gearbox coupler on the transmission pinion shaft. The splined end of the coupler must be toward the transfer gearbox. The adjusting set screw in the coupler must be on the RH side of the tractor.

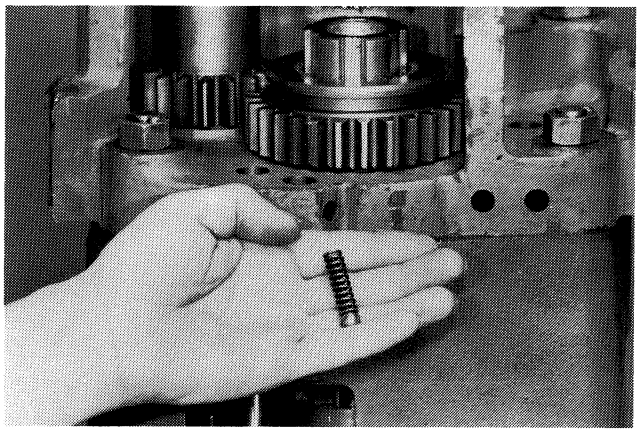
STEP 144



Install the gearbox and differential housing into the transmission housing.

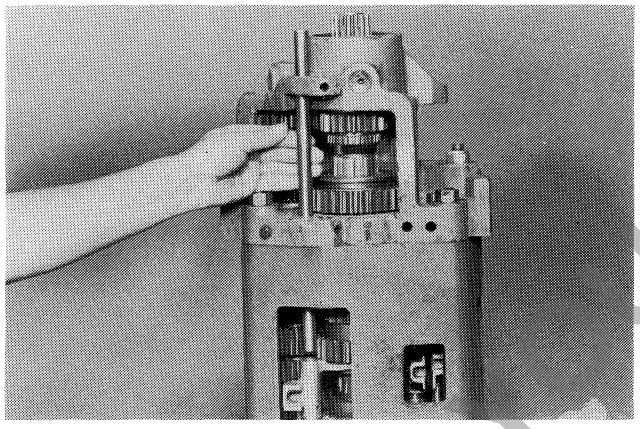
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STEP 63



Remove the detent spring and ball.

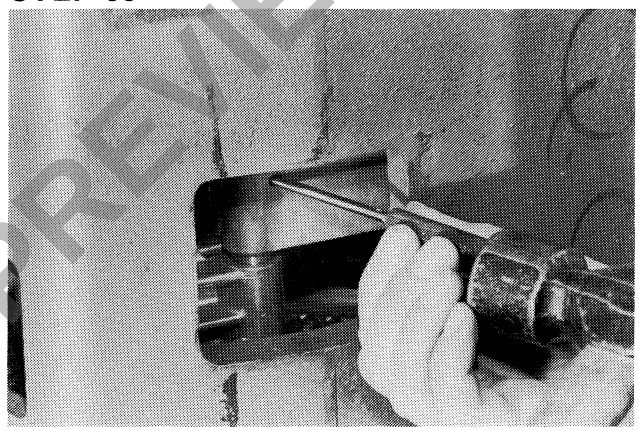
STEP 64



Remove the high/low shift rail.

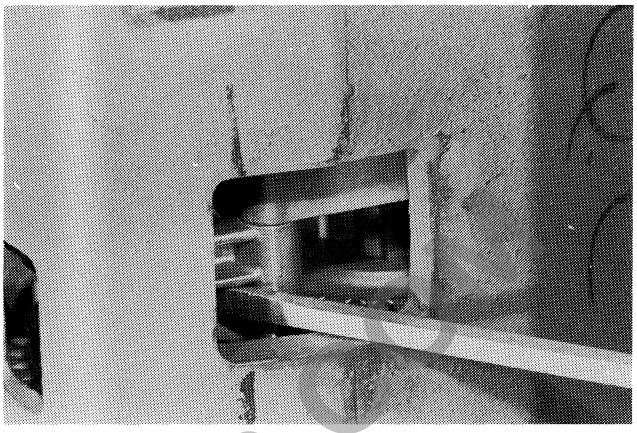
NOTE: *Also remove the 1490 high/low shift stop or the 1690 high/low shift lever.*

STEP 65



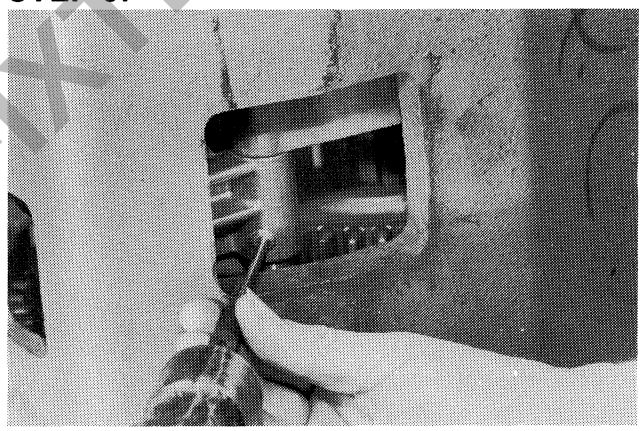
Remove the roll pin from the second/third shift fork.

STEP 66



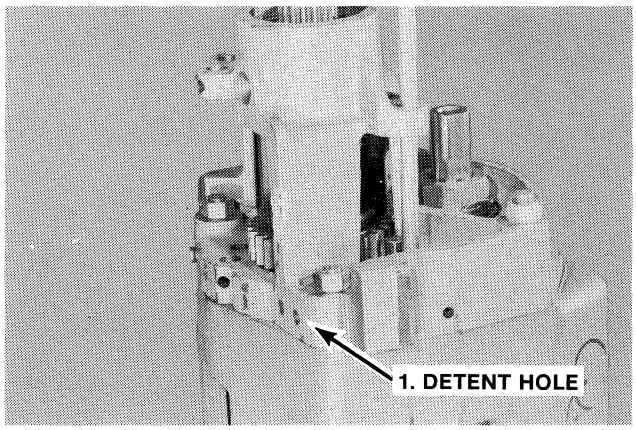
Move the second/third shift lever toward the front of the transmission. The first/reverse shift lever must be in neutral (center detent).

STEP 67



Remove the roll pin from the shift lever.

STEP 68

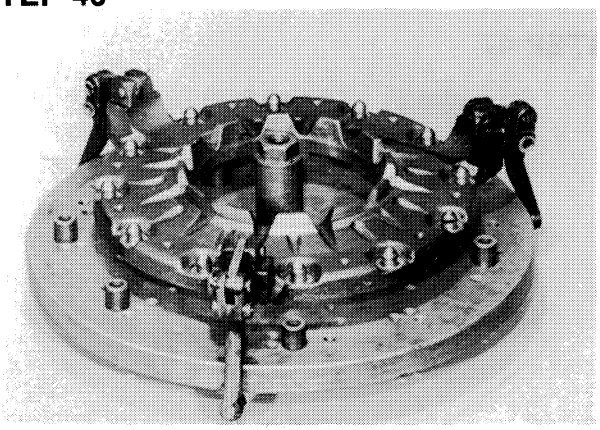


Use a soft metal rod to move the second/third shift rail toward the rear of the transmission. Push the rail just past the detent hole.

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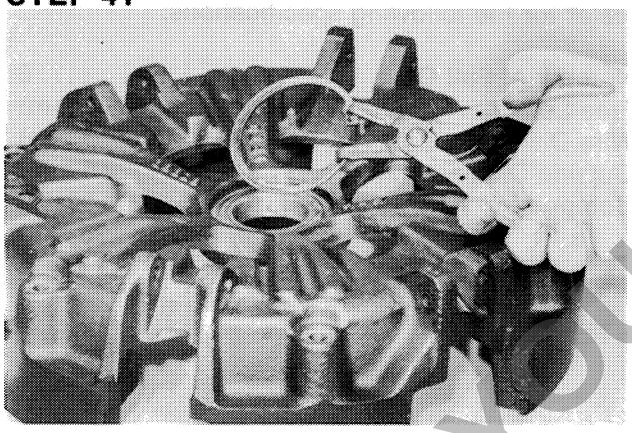
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STEP 40



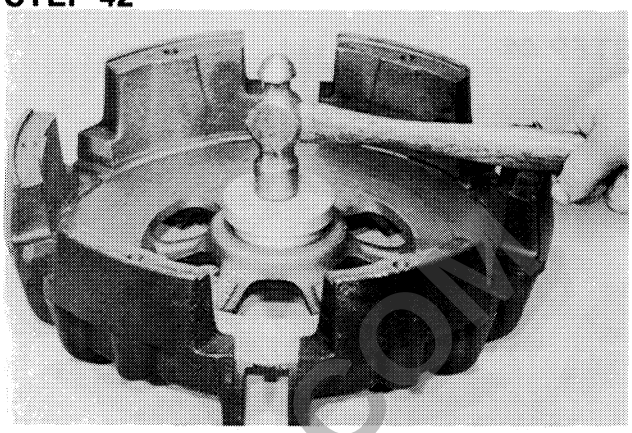
Remove the PTO pressure plate.

STEP 41



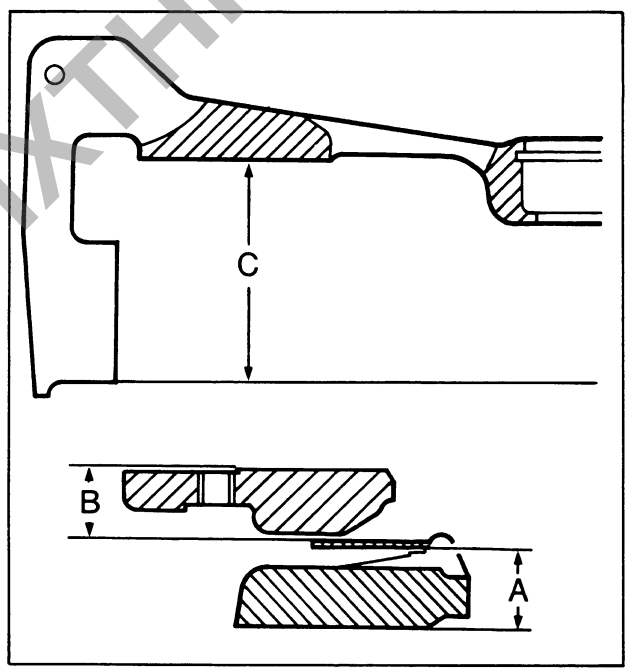
Remove the snap ring from the clutch cover.

STEP 42



Remove the bearing from the clutch cover.

STEP 43



If necessary the pressure plates and the clutch cover can be ground to the following specifications:

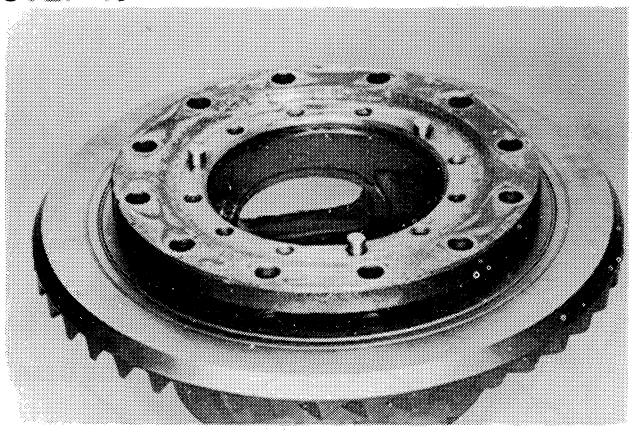
A. PTO Pressure Plate
Minimum Thickness ... 1.106 inch (28.12 mm)
B. Transmission Pressure
Plate Minimum Thickness ..... 0.916 inch (23.26 mm)
C. Maximum Depth of
the Clutch Cover ..... 2.886 inch (73.33 mm)

NOTE: *The maximum material removed either plate or the cover must not be more than 0.040 inch (1.02 mm).*

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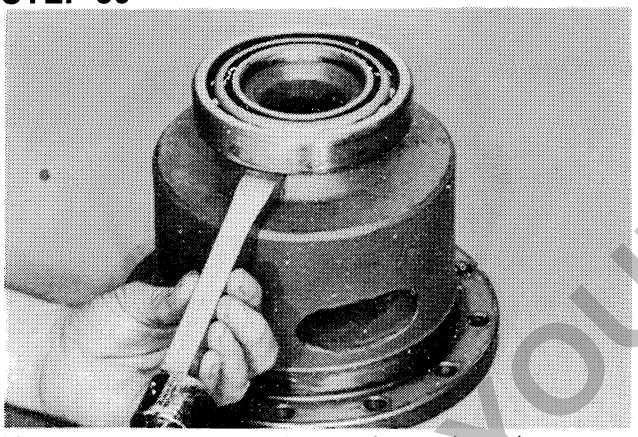
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STEP 49



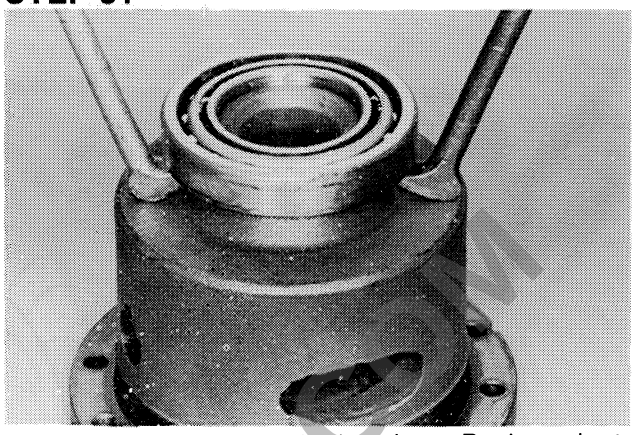
Remove the ring gear from the differential carrier.

STEP 50



Use a wedge to move the carrier and carrier cover bearings away from the shoulder.

STEP 51



Use prybars to remove the bearings. Push against the inner race only.

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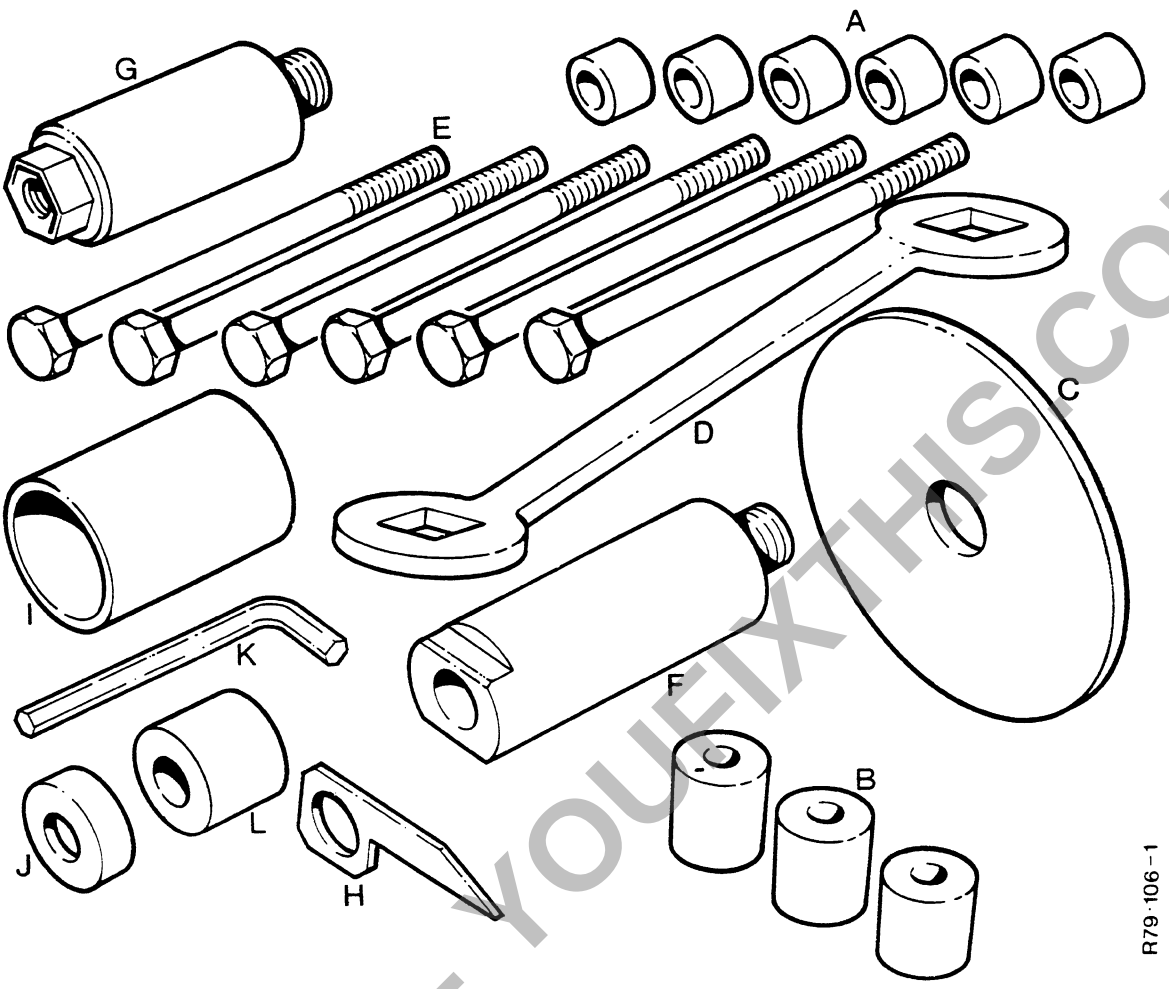


FIGURE 2. CLUTCH KIT No. 8 DB. 8832
Adaptor kit for Laycock 12 inch dual clutch

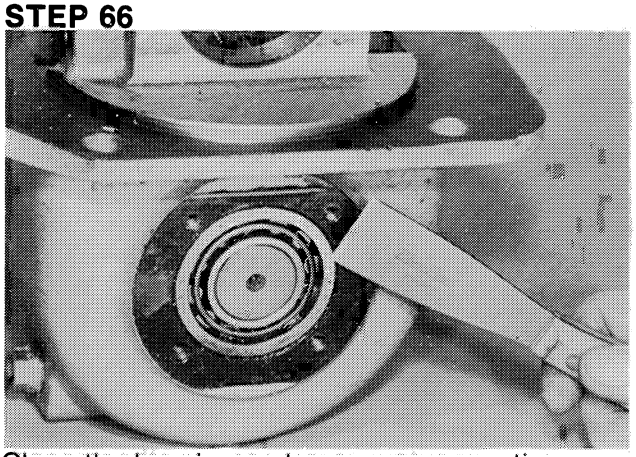
A. *DB. 8832/2 Spacers (6)*
B. *STM. 6023 Code 33 spacers (3)*
C. *DB. 920204 Actuator plate*
D. *18G. 619A/1 Wrench*
E. *DB. 8832/5 Setscrews (6)*
F. *DB. 8832/4 Centre post adaptor PTO*
G. *DB. 8832/1 Centre post adaptor transmission*
H. *DB. 8832/6 Gauge finger (Long)*
I. *DB. 8832/12 Location collar*
J. *DB. 1248 spacer*
K. *Allen Key $\frac{3}{16}$ in A/F*
†L. *STM 6023 Code 4 spacer*

NOTE: *Item I is not used when servicing the clutch on a 1690 tractor, the centering sleeve, shown in Figure 3 is used instead. This item is not included in the kit.*

† Amended September 1980

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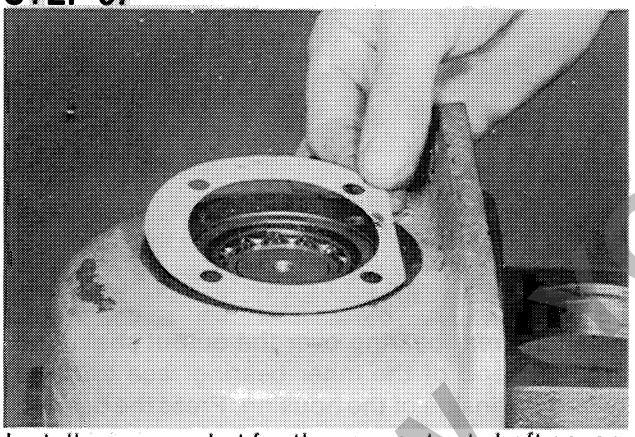
STEP 66



Clean the housing and rear cover mounting surfaces.

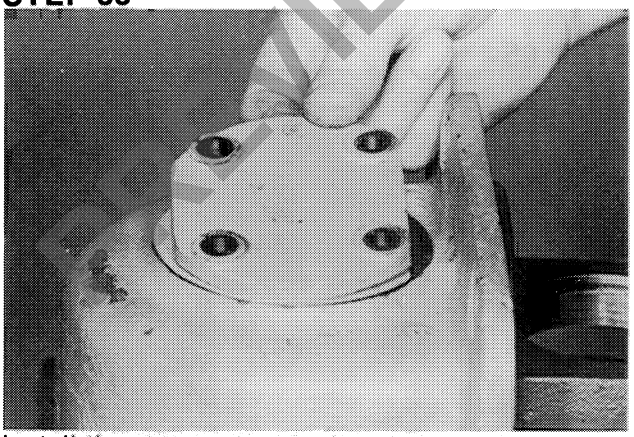
NOTE: *This operation must be done before any component is installed in the housing.*

STEP 67



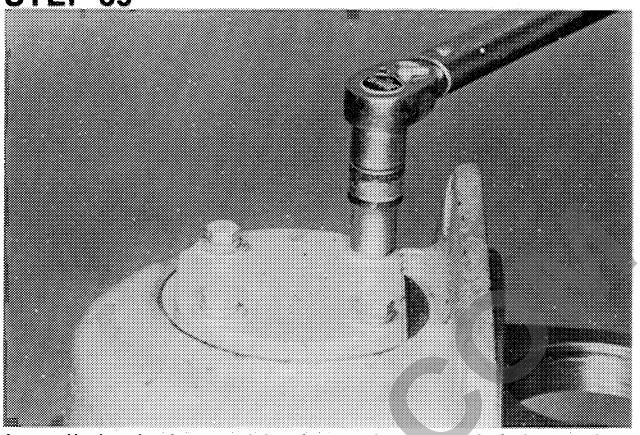
Install a new gasket for the rear output shaft cover.

STEP 68



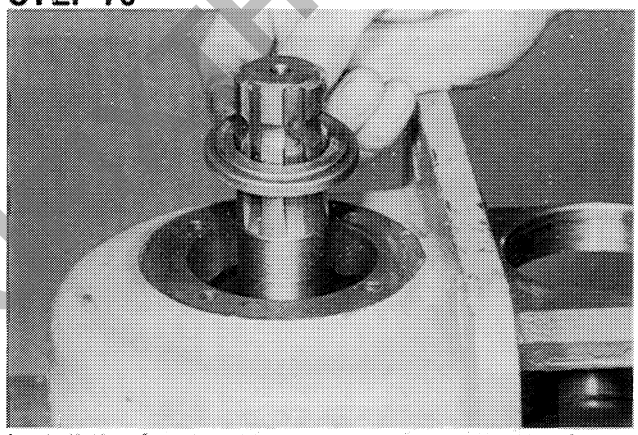
Install the rear cover.

STEP 69



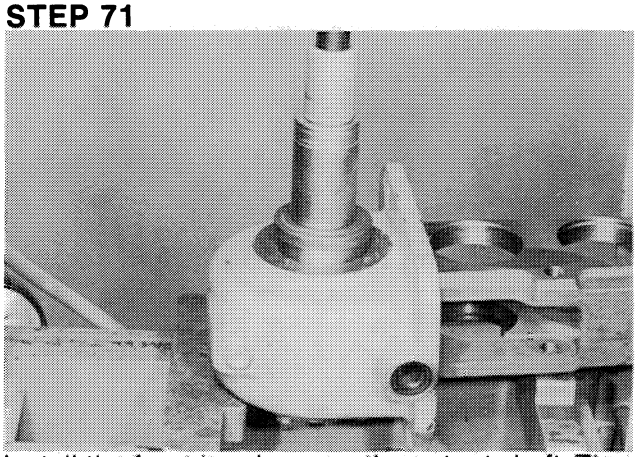
Install the bolts and lock washers and tighten the bolts to a torque of 20 lb ft (27 Nm).

STEP 70



Install the front output gear spacer over the front end of the output shaft. The large OD side of the spacer must be toward the inside of the housing.

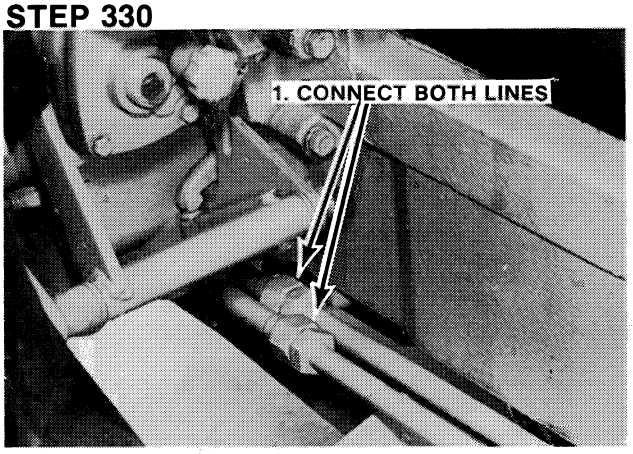
STEP 71



Install the front bearing over the output shaft. The large OD end of the inner bearing race must be toward the inside of the housing. Press the bearing into the bore until the outer edge of the outer bearing race is aligned with the outer face of the housing.

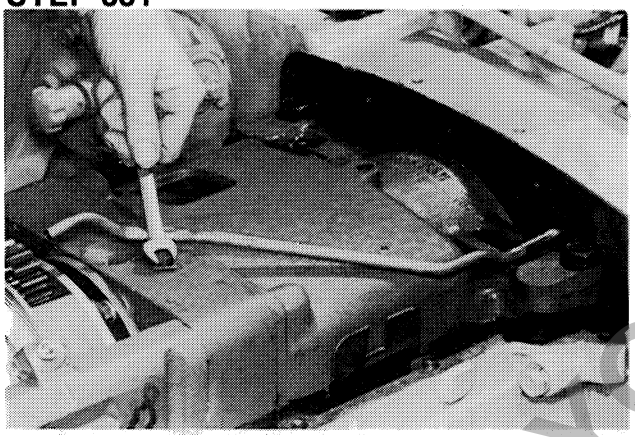
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STEP 330



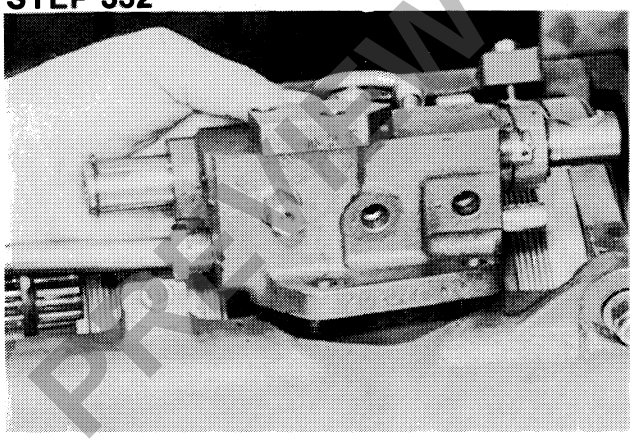
Connect the hydraulic lines.

STEP 331



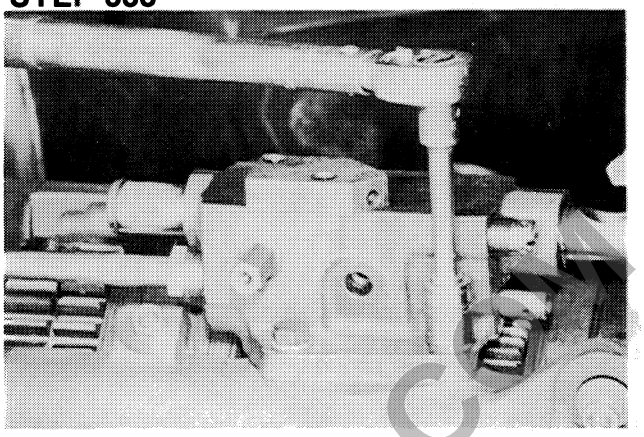
Install the rear lubrication line.

STEP 332



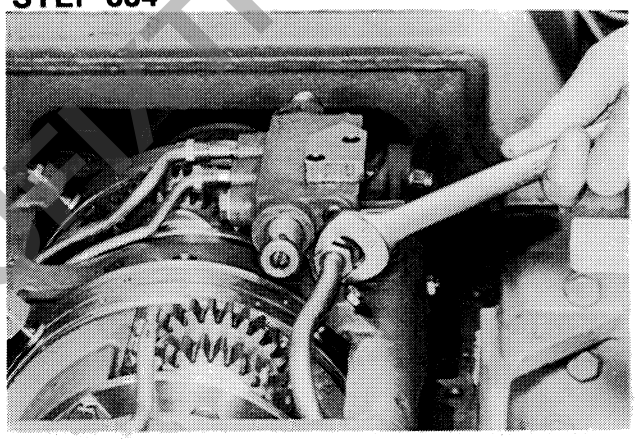
Install the control valve.

STEP 333



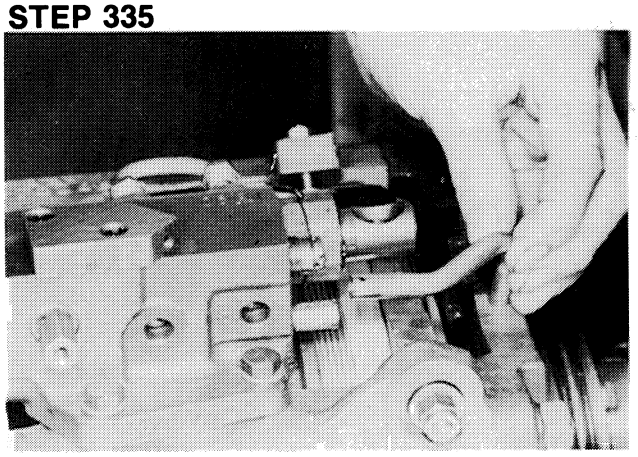
Install and tighten the mounting bolts for the control valve to a torque of 35 to 42 lb ft (47 to 57 Nm)(4.7 to 5.7 kgm).

STEP 334



Connect the control valve supply line.

STEP 335



Install the front lubrication line.

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Section

6245

REVERSIBLE SHAFT PTO
1390, 1490 and 1690 Tractors

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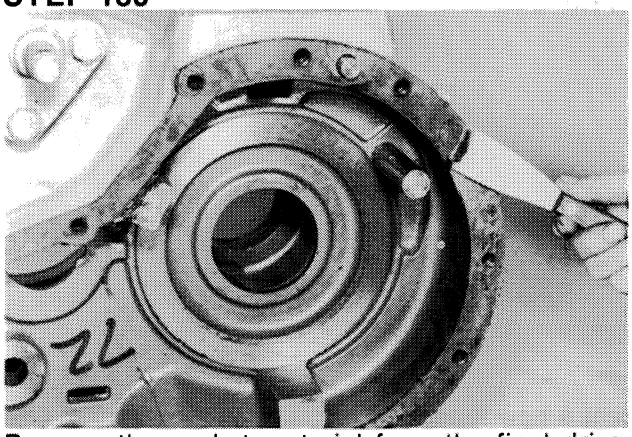
CASE CORPORATION

Pub 9-43555

Printed in U.S.A.
May, 1982

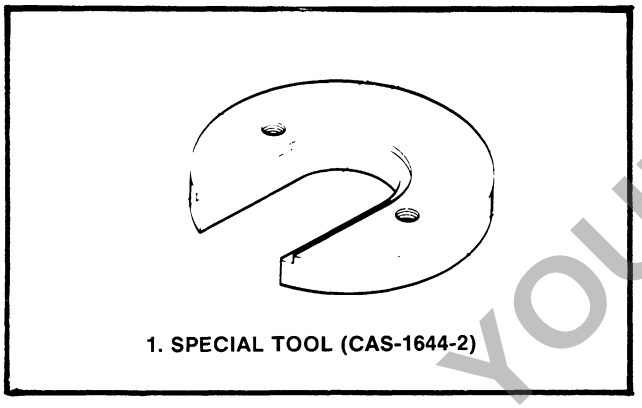
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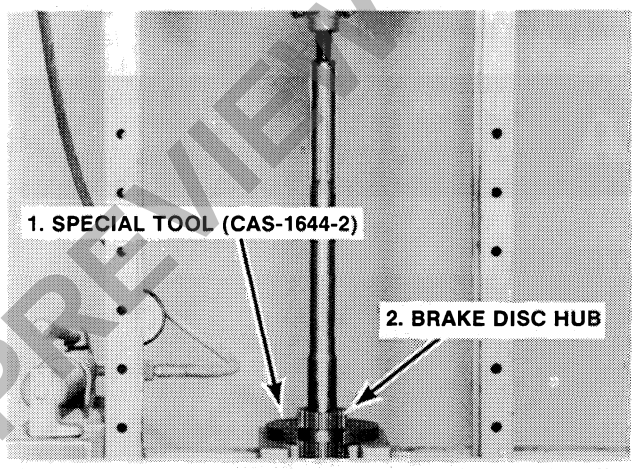
STEP 130



Remove the gasket material from the final drive housing and the brake housing.

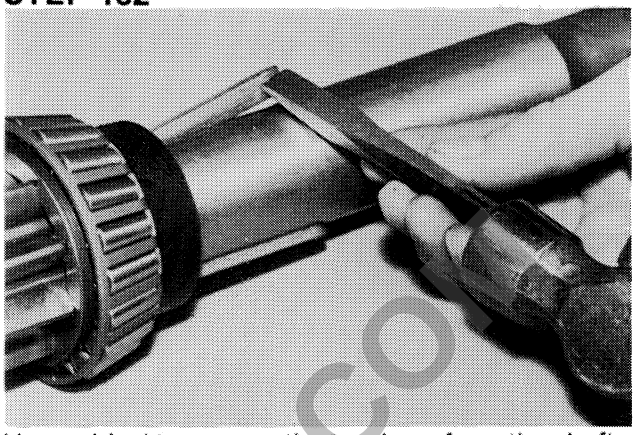
STEP 131





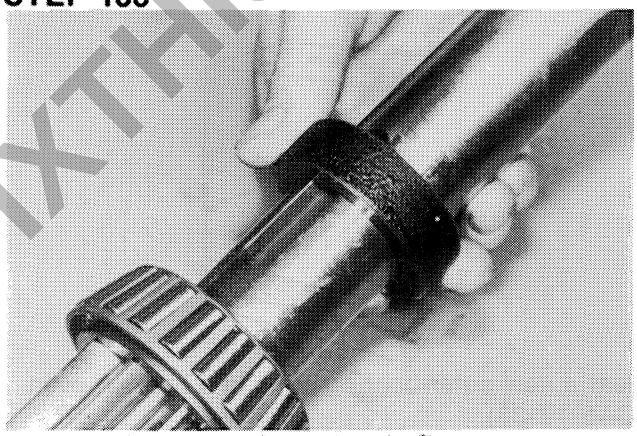
Use special tool (CAS-1644-2) and a hydraulic press to remove the brake disc hub from the axle drive shaft. The special tool must engage the groove in the brake disc hub. The machined radius of the special tool must be against the narrower section of splines of the hub. Press the shaft through the hub.

STEP 132



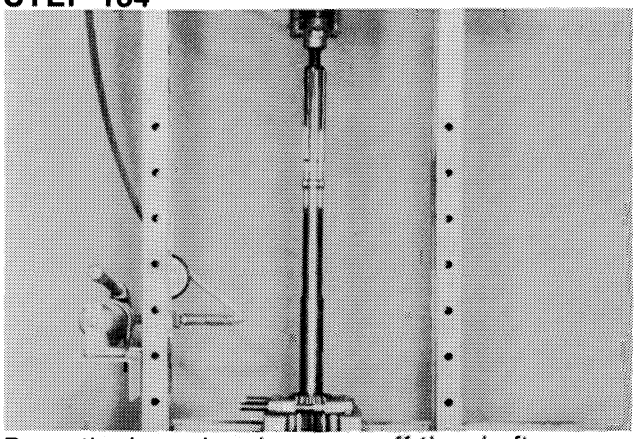
Use a chisel to remove the two keys from the shaft.

STEP 133



Remove the spacer from the shaft.

STEP 134

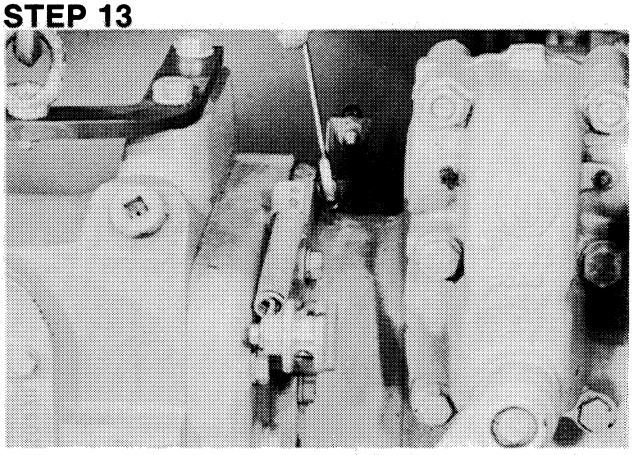


Press the inner bearing cone off the shaft.

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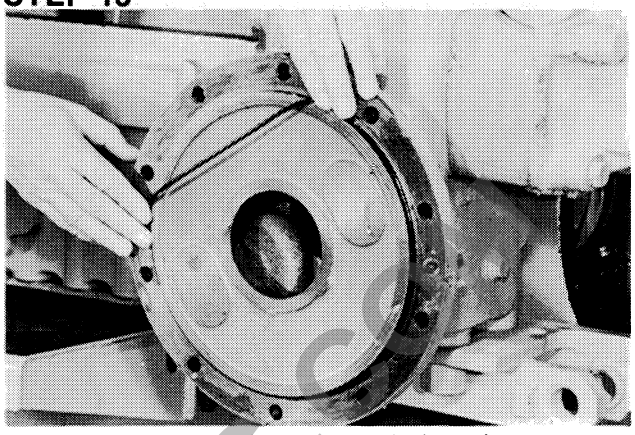
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STEP 13



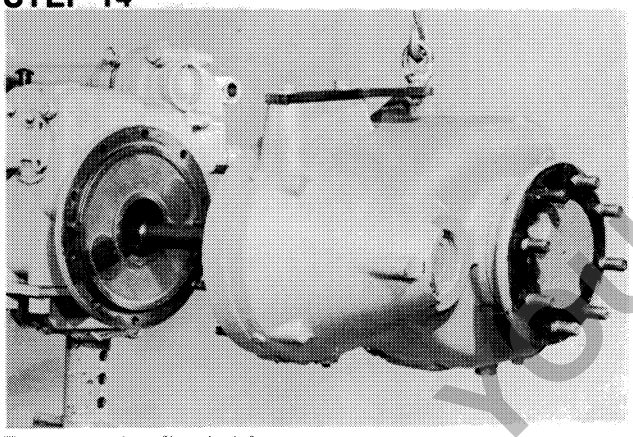
Remove the final drive mounting nuts and bolts.

STEP 15



Remove the o-ring from the axle housing.

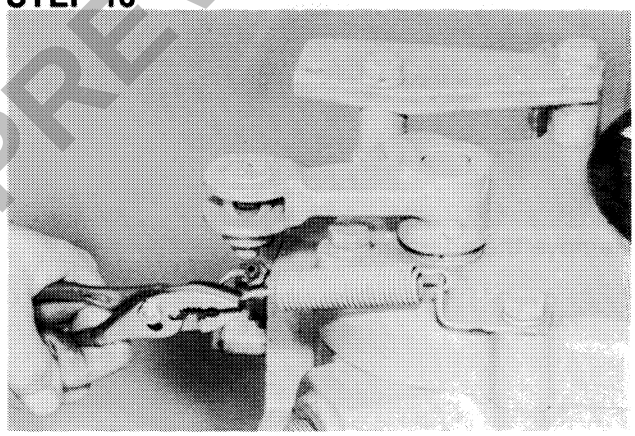
STEP 14



Remove the final drive.

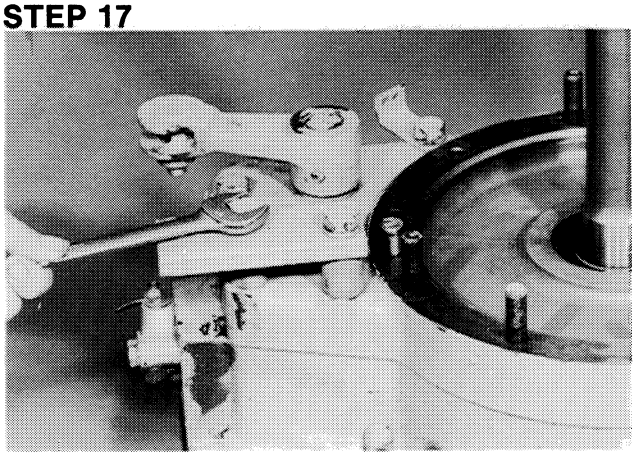
Disassembling The Brake

STEP 16



Remove the parking brake lever return spring.

STEP 17



Remove the brake cover bolts.

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Section

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HYDRAULIC SYSTEM
SELECTOR DIAL MECHANISM

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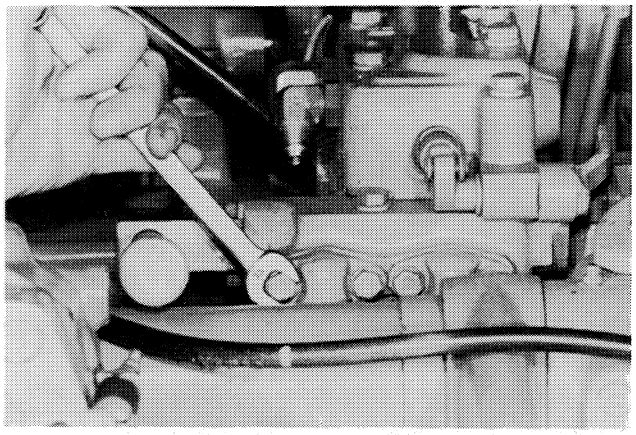
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Printed in U.S.A.
August, 1983

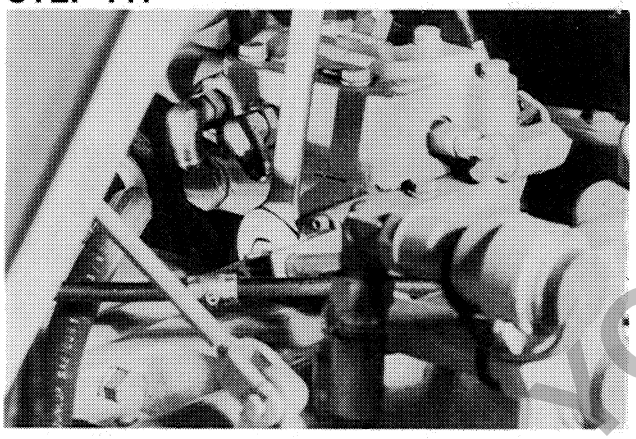
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STEP 140



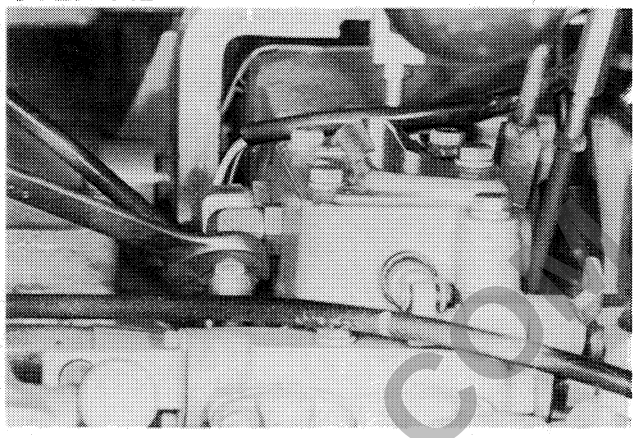
Install the bolts in the filter tube and the pump supply tube and tighten.

STEP 141



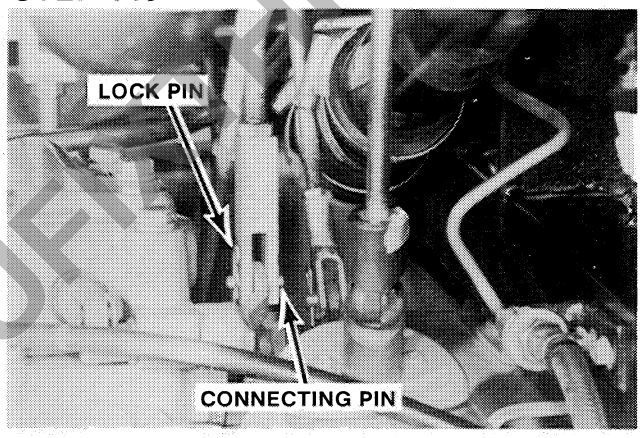
Install the hitch supply tube and tighten.

STEP 142



Install the remote hoses and tighten.

STEP 143

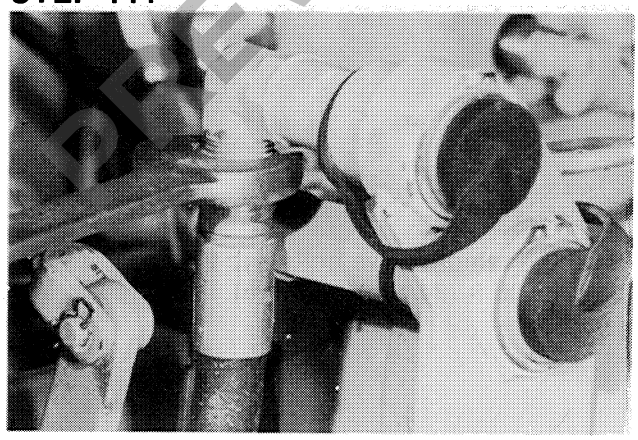


Install the remote valve connecting pin and the lock pin.

NOTE: *All linkage installation shown is on the high platform tractors. For linkage removal on low profile tractors see Steps 234 through 242.*

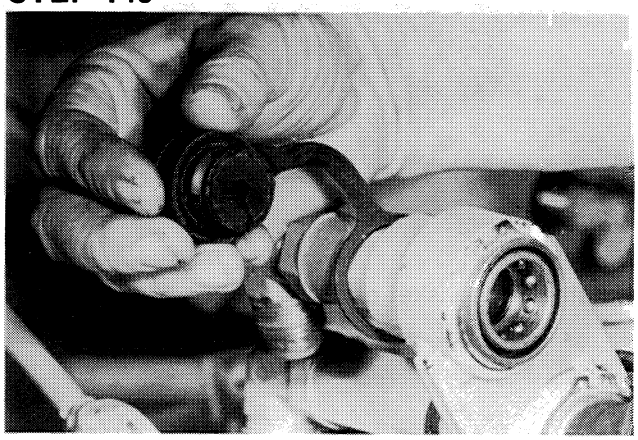
Remote Coupler Removal

STEP 144



Disconnect the remote coupler hose.

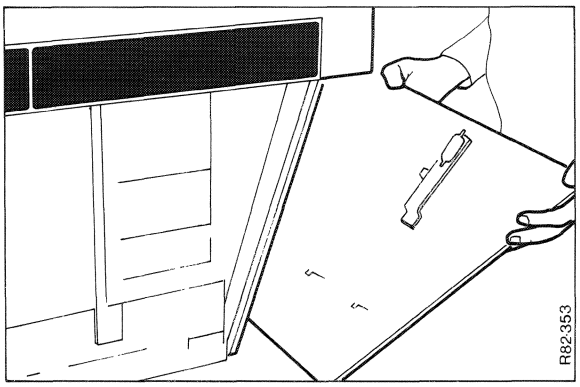
STEP 145



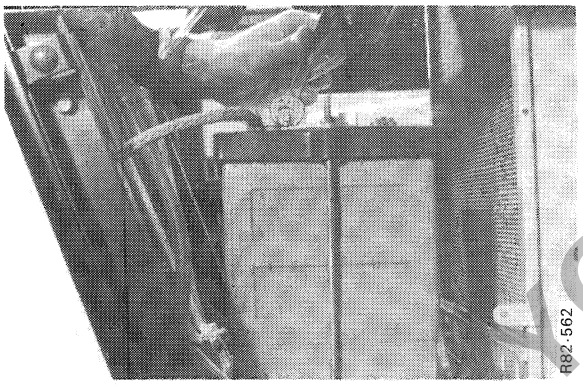
Remove the remote coupler plug.

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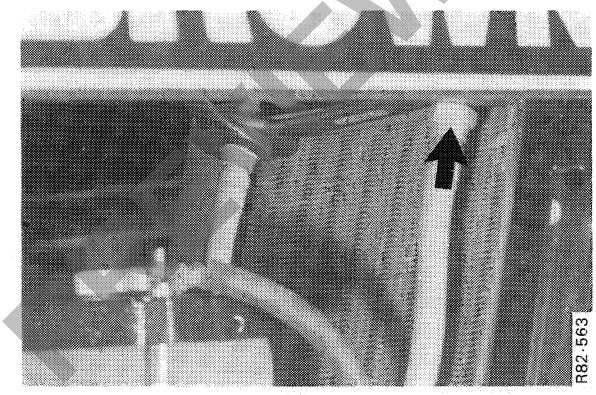
REMOVING THE OIL COOLER



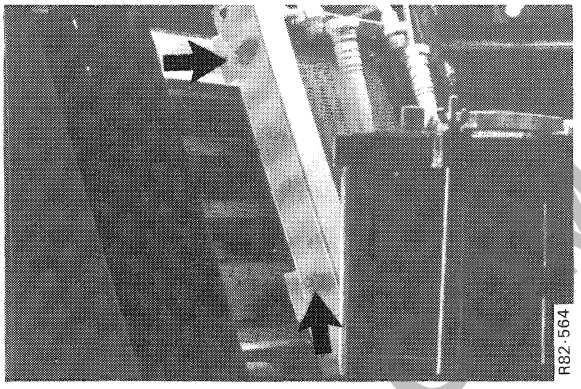
STEP 1. Open the engine cover and remove the side panels, and front panel, according to model.



STEP 2. Disconnect the battery ground cable.

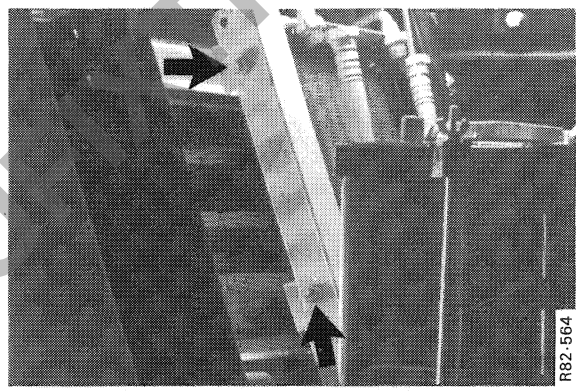


STEP 3. Clean the area around the oil cooler. Disconnect the pipes from the oil cooler.

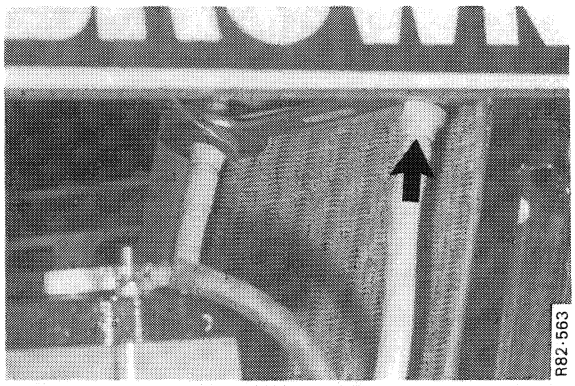


STEP 4. Disconnect the cooler from the support bracket.

INSTALLING THE OIL COOLER



STEP 1. Connect the cooler to the bracket.



STEP 2. Connect the pipes to the cooler.

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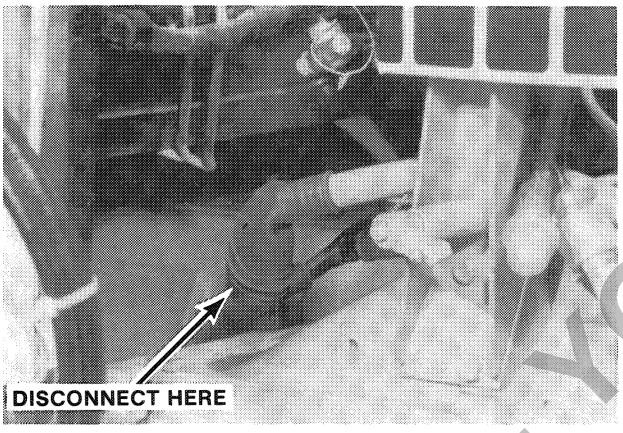
STEP 102



Raise the cab off the cab mount brackets.

NOTE: *Do not remove the cab from the tractor.*

STEP 103



Disconnect the electrical harness.

STEP 104



Remove the cab and lower to the floor.

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