ENGINE REMOVAL AND INSTALLATION

⚠ DANGER

Before doing any maintenance or service work on the tractor or the header you must:

Put all controls in NEUTRAL.
Apply the parking brake.
Lower the header to the floor.
Center and lock the steering wheel.
Stop the engine.
Make sure all moving parts have stopped.

Removal

NOTE: Fasten identification tags to all of the wires during removal.

1. Park the machine on a level surface and lower the header to the floor.

2. Stop the engine and apply the parking brake. Make sure the steering wheel is centered and locked.

3. Close the fuel shutoff in the sediment bowl on the bottom of the fuel tank.

4. Open the left side cover of the engine compartment. Connect lifting equipment to the left side cover. Disconnect the support strut. Remove the bolts from the three hinges. Remove the left side cover.

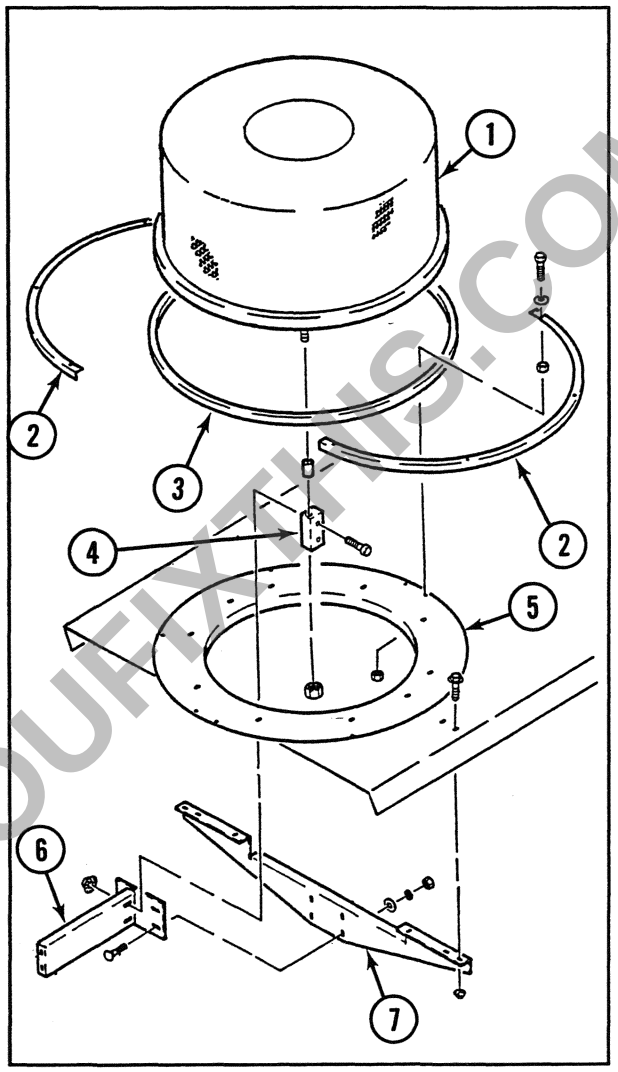
5. Repeat the procedure for the right side cover.

6. Disconnect the cable clamps from the negative battery post of both batteries.

7. Loosen the clamp and remove the air cleaner hose from the turbocharger. Put a cover over the opening in the turbocharger.

8. Disconnect the air duct tube and the small air hose from the top of the fan shroud.

9. Remove the two half rings for the rotary screen assembly from the hood.



L90A -0341

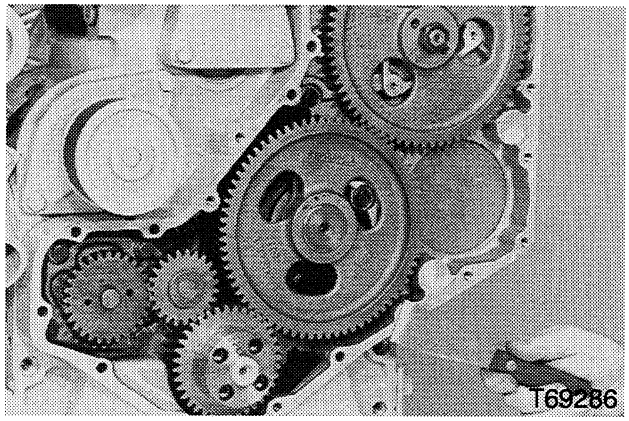
1. Rotary Screen Assembly
2. Half Ring
3. Foam Ring
4. Mounting Block
5. Flange Ring
6. Mounting Bracket
7. Stiffener

10. Remove the bolts and nuts that fasten the mounting block for the rotary screen assembly to the rotary screen mounting bracket. Remove the rotary screen assembly. Be careful not to damage the rotary screen.

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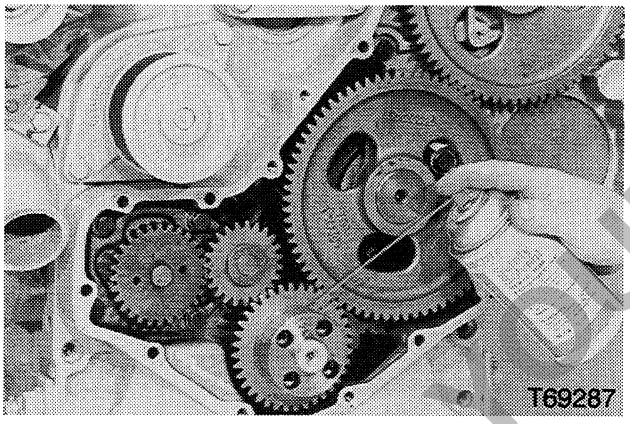
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STEP 7



Clean the mounting surfaces of all foreign material.

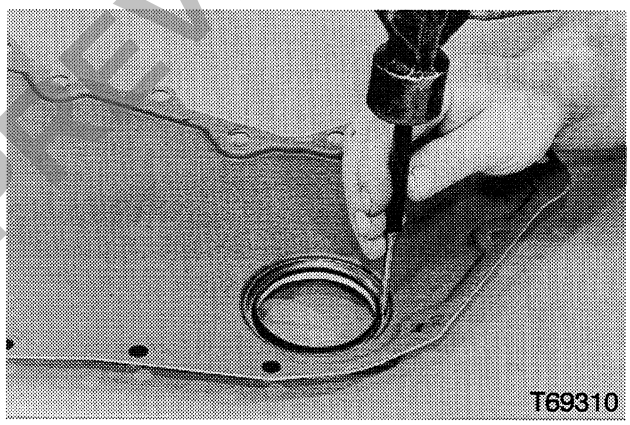
STEP 8



Clean the crankshaft seal surface with Loctite safety solvent.

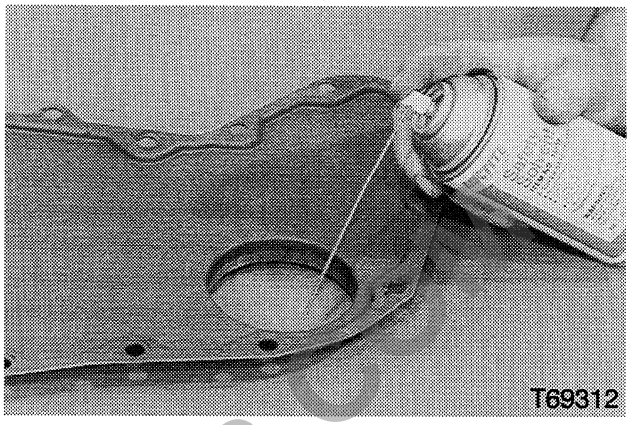
IMPORTANT: *The seal surface on the crankshaft must be free of all oil and grease to prevent damage to the oil seal.*

STEP 9



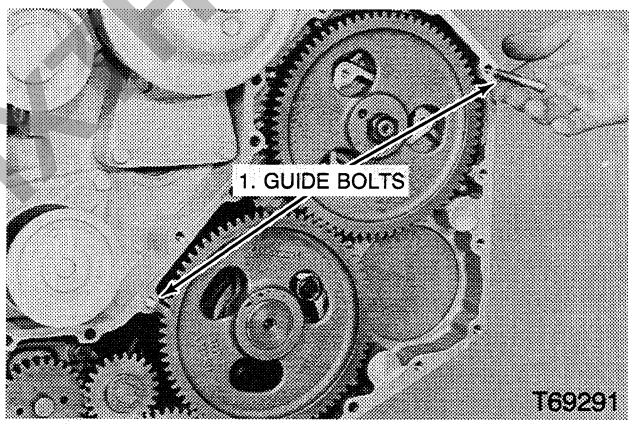
Remove the seal from the front cover.

STEP 10



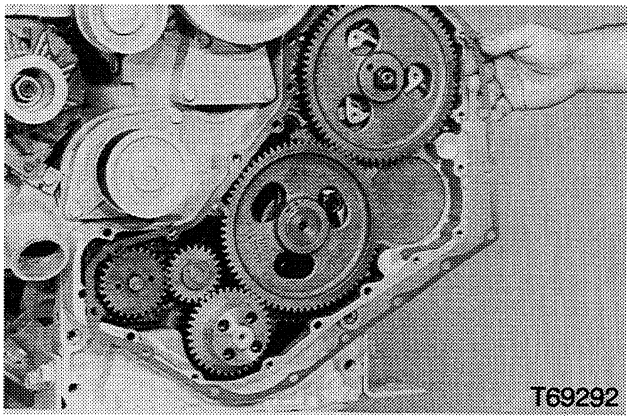
Clean the seal surface with Loctite safety solvent.

STEP 11



Install two guide bolts (M8 x 1.25 x 75 mm).

STEP 12



Install a new front cover gasket.

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SAFETY RULES

The manufacturer of this product is concerned about your safety and is committed to the prevention of accidents. A major factor in prevention of accidents is safe and proper use of the equipment. Be sure you or anyone who does any maintenance or service work on this machine reads and understands this manual prior to doing any maintenance or service work on this machine.

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 service the machine.

Caution others, especially children, about climbing on the machine or being too close while machine is operating.

Emphasize the importance of safety when working around and operating the machine.

Always remain seated and have seat belt fastened while operating machine.

Make sure all safety shields are in place before operating the machine.

Place all control levers in neutral. Engage parking brake control lever, center and lock steering wheel, and shut off engine before:

1. **Leaving the operator's seat**
2. **Refueling**
3. **Lubricating**
4. **Cleaning the reel or hay conditioner**
5. **Adjusting the machine**

Never stand behind tractor while the header is running.

Do not ride on the machine at any time.

Never carry riders.

Never operate machine at high speeds in crowded places.

Never suddenly reverse wheels to stop or backup.

Always lower header to ground when parking.

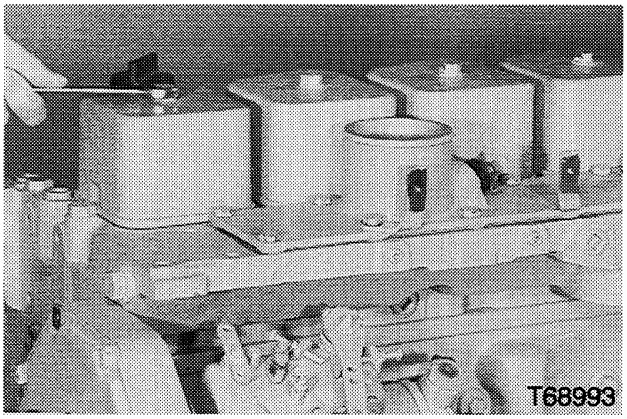
Always apply parking brake when parking.

Always travel with header as low as possible.

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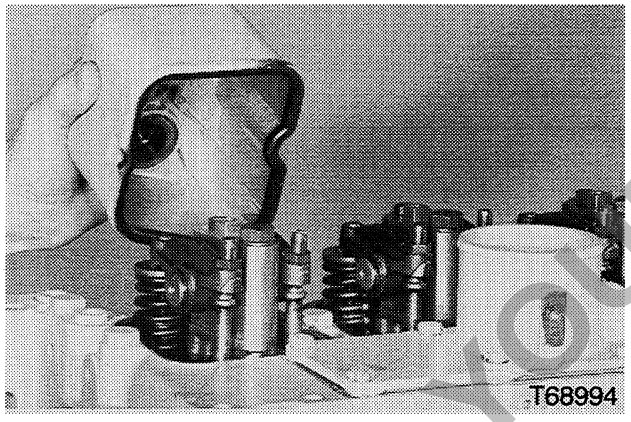
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STEP 299



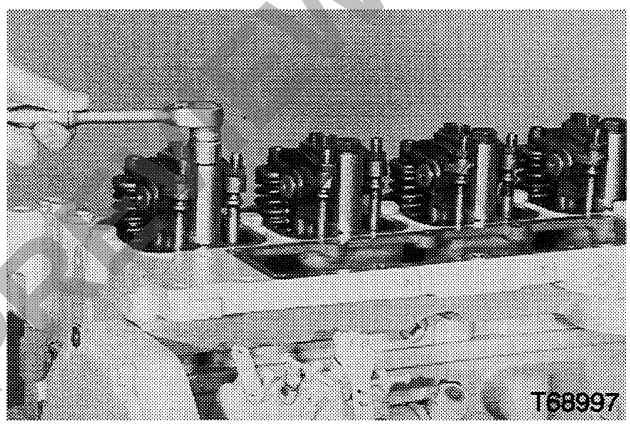
Remove the bolts from the cylinder head covers.

STEP 300



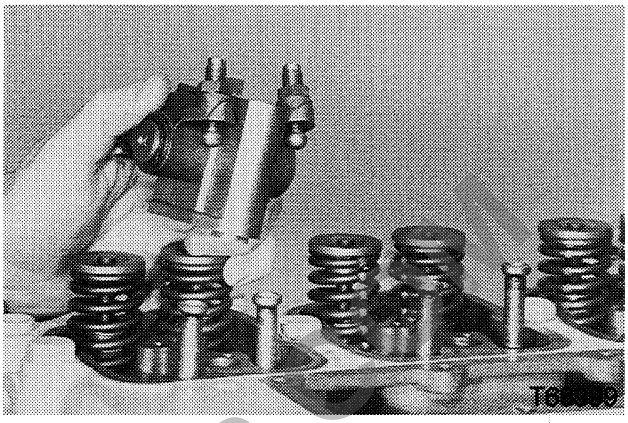
Remove the cylinder head covers.

STEP 301



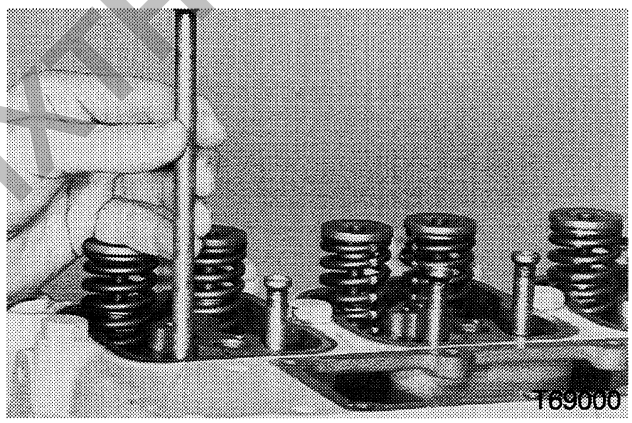
Remove the bolts from the rocker arm assemblies.

STEP 302



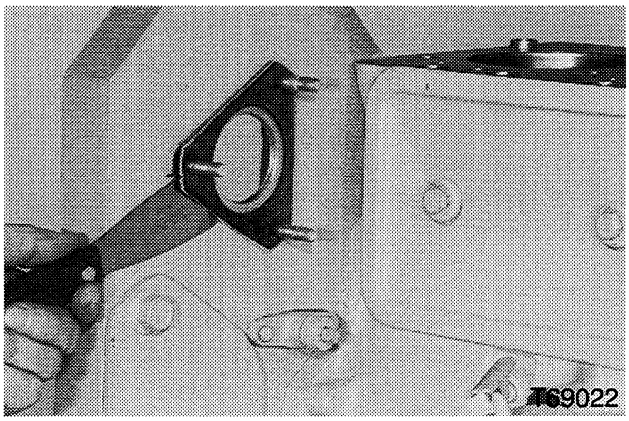
Remove the rocker arm assemblies.

STEP 303



Remove the push rods.

STEP 304

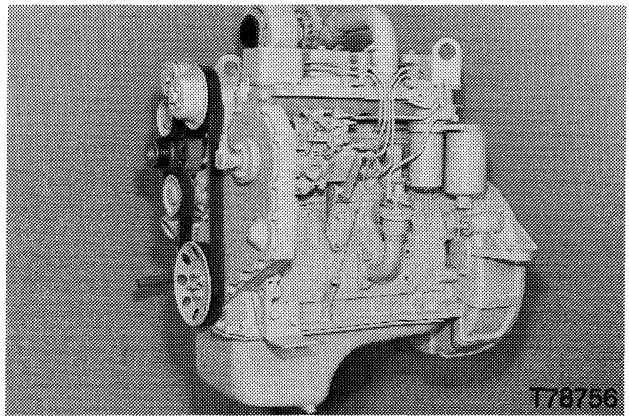


Remove the gasket and clean the surface of all foreign material.

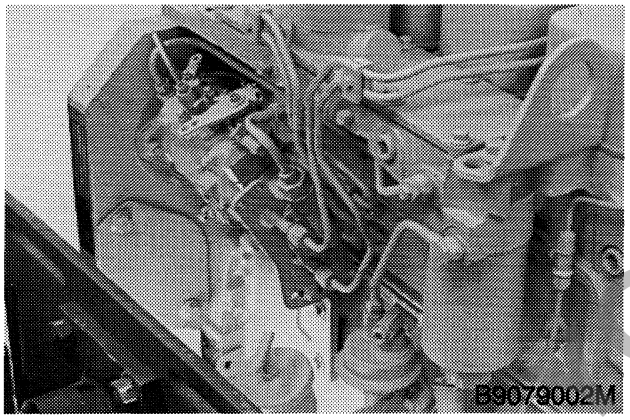
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FILTER REPLACEMENT

NOTE: *Some engines have two fuel filters while others have single fuel filters. See the following photographs.*

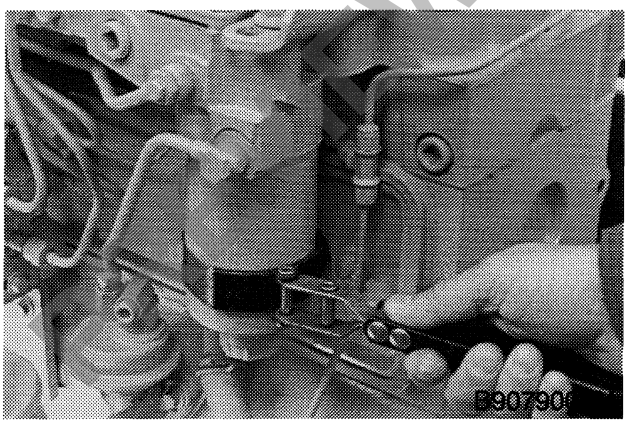


Case engine with two fuel filters



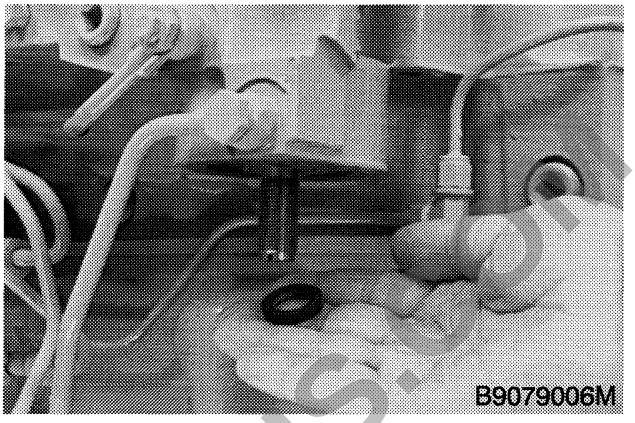
Case engine with single fuel filter

STEP 1



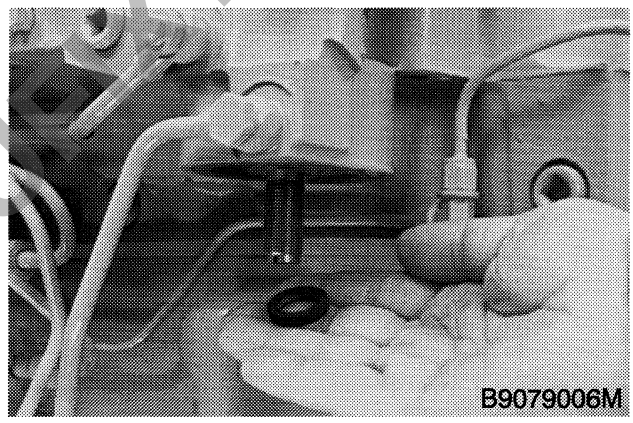
Use a strap or clamp wrench to remove the filter or filters.

STEP 2



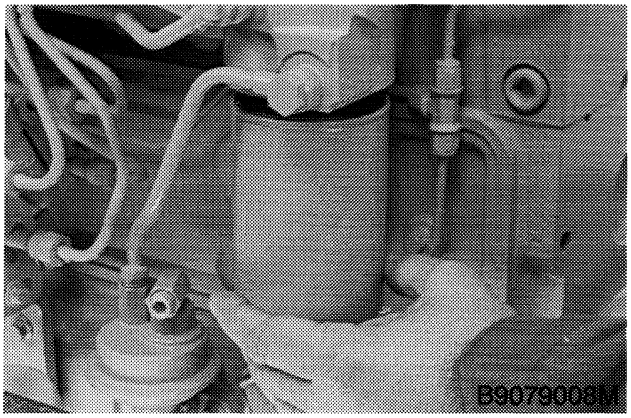
Remove and discard the rubber seals from the filter head.

STEP 3



Lubricate the new rubber seals with clean engine oil. Install the rubber seals on the filter head.

STEP 4

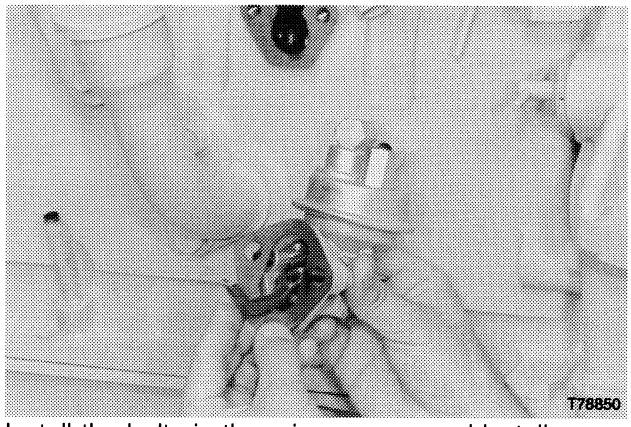


Lubricate the gasket on the new filter with clean engine oil. Turn the filter clockwise until the gasket makes contact with the filter head. Use your hands to tighten the filter an additional 1/2 to 3/4 of a turn.

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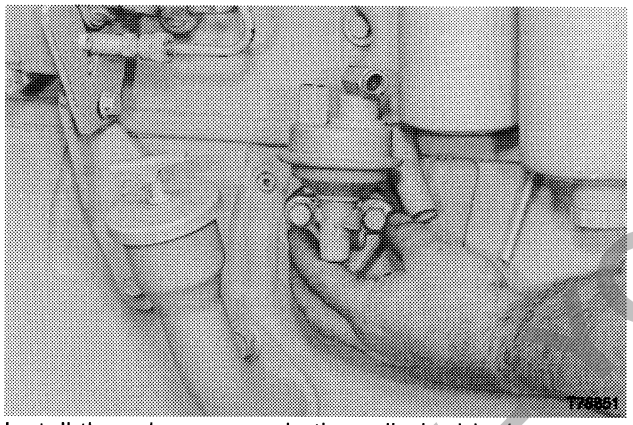
Installation

STEP 7



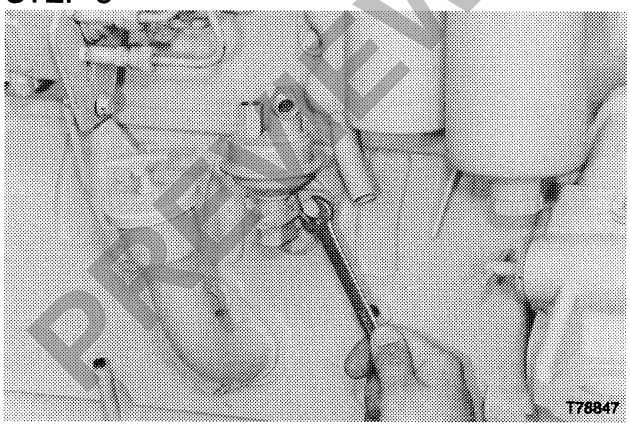
Install the bolts in the primer pump and install a new gasket over the bolts.

STEP 8



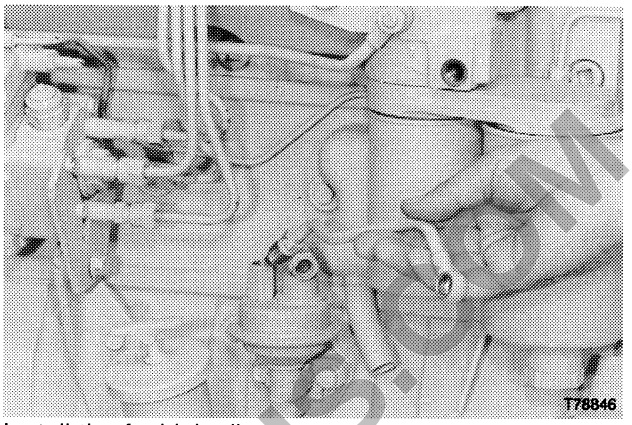
Install the primer pump in the cylinder block.

STEP 9



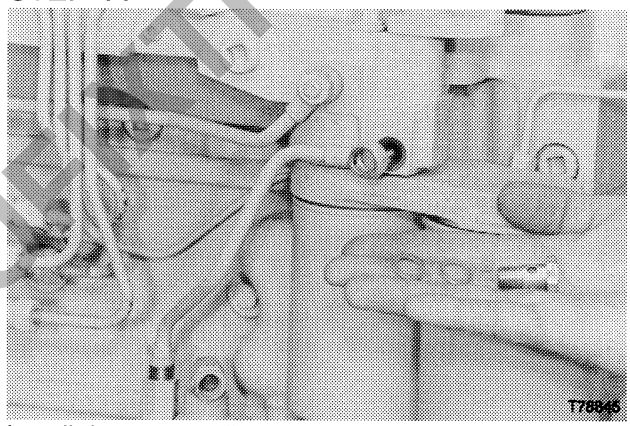
Tighten the bolts that hold the primer pump to the cylinder block.

STEP 10



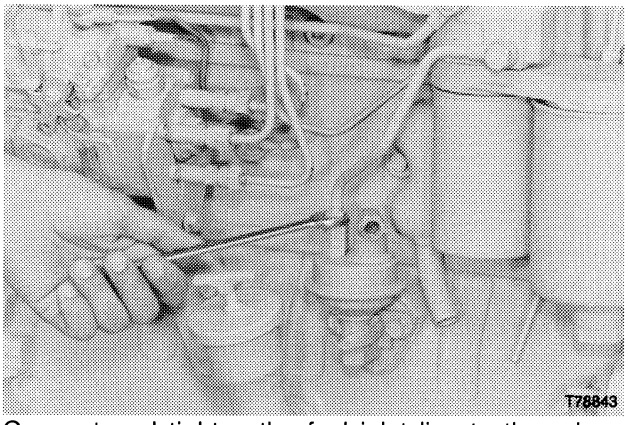
Install the fuel inlet line.

STEP 11



Install the new sealing washers and fitting on the fuel inlet line. There must be a sealing washer on each side of the fuel inlet line.

STEP 12



Connect and tighten the fuel inlet line to the primer pump.

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DIVISION 5

INDEX

SECTION TITLE	SECTION NUMBER
Removal and Installation of Steering Components	5001
Steering Troubleshooting	5002

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BRAKE DISC AND SPROCKET

⚠ DANGER

Before doing any maintenance or service work on the tractor or the header you must:

Put all controls in NEUTRAL.
Apply the parking brake.
Lower the header to the floor.
Center and lock the steering wheel.
Stop the engine.
Make sure all moving parts have stopped.

Removal

NOTE: The procedure is the same for the brake disc and sprocket in either chain case.

1. Park the machine on a level surface and lower the header to the floor.

2. Stop the engine and apply the parking brake. Make sure the steering wheel is centered and locked.

3. Remove the upper access cover (1) from the outside of the chain case (2).

4. Loosen the two cap screws (3) in the cover cam (4).

5. Loosen the nut (5) on the special bolt (6) in the cover cam (4). Loosen the nut (5) only enough so the cover cam (4) will rotate.

6. Rotate the cover cam (4) and the tensioner sprocket (7) to relieve the tension on the upper drive chain (8).

NOTE: When rotating the cover cam (4) on the right chain case (2), be careful not to damage the end of the sensor (9).

7. Loosen the self-locking nuts (10) that fasten the mounting bracket (11) for the brake assembly (12) to the chain case (2).

8. Slide the mounting bracket (11) rearward to remove the brake assembly (12) from the brake disc and sprocket.

9. Remove the snap ring (14) from the output shaft of the ground drive motor (15).

10. Remove the upper drive chain (8) from the brake disc and sprocket (13). Slide the brake disc and sprocket (13) from the shaft of the ground drive motor (15).

If the upper drive chain (8) cannot be removed from the brake disc and sprocket (13) continue with the procedure.

11. Loosen the self-locking nuts (16) on the carriage bolts (17) that fasten the ground drive motor (15) to the chain case (2).

12. Hold the ground drive motor (15) and carefully remove the self-locking nuts (16) and the lock washers (18) and the carriage bolts (17). Be careful not to let the carriage bolts (17) drop inside the chain case (2).

13. Pull the shoulder of the ground drive motor (15) out of the opening in the chain case (2). Lower the ground drive motor (15) so the upper drive chain (8) can be removed from the brake disc and sprocket (13).

14. Remove the upper drive chain (8) from the brake disc and sprocket (13).

15. Slide the brake disc and sprocket (13) from the shaft of the ground drive motor (15).

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FLUSHING THE HYDRAULIC SYSTEM

Park the machine on a level surface and lower the header to the floor.

2. Stop the engine and apply the parking brake. Make sure the steering wheel is centered and locked.

3. Clean the area around the filler cap and the breather filter in the top of the hydraulic reservoir.

4. Replace the breather filter.

5. Remove the filler cap.

6. The hydraulic reservoir holds approximately 23 U.S. gallons (87 liters) of oil. Put a container for the oil under the hydraulic reservoir.

7. Remove the drain plug from the bottom of the hydraulic reservoir and drain the oil.

If the machine has a double windrow attachment, there is no drain plug in the hydraulic reservoir. Remove the suction hose for the conveyor drive pumps from the bottom of the reservoir to drain the oil.

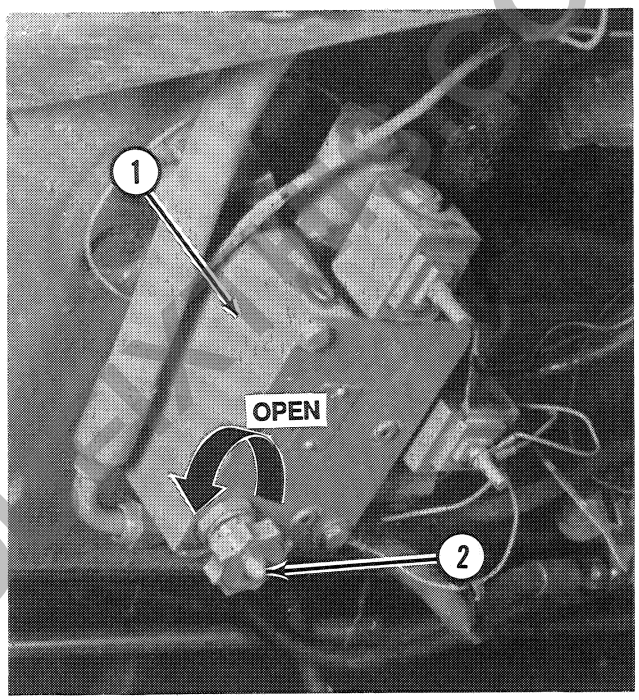
8. Disconnect the hoses from the bottom of the hydraulic reservoir and drain the oil from the hoses.

9. Disconnect the hoses from the oil cooler and drain the oil cooler.

⚠ DANGER

If the header has been raised using the flotation circuit, the header is being supported by the pressure in the flotation circuit. The header will fall suddenly when any of the connections in the flotation circuit are disconnected or the dump valve is opened.
Before disconnecting any of the connections or the opening the dump valve, lower the header to the floor or onto the safety stops.
A falling header can result in injury or death.

10. Make sure the header is on the floor or is supported by the safety stops. Find the knob for the dump valve on the flotation control valve. Turn the knob all the way counterclockwise to relieve the hydraulic pressure in the flotation circuit. Make sure the flotation pressure gauge indicates 0 psi (0 kPa).



840T-87032-1

FLOTATION PRESSURE GUAGE

1. Header Lift and Flotation Valve
2. Knob for Dump Valve

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DANGER

If the header has been raised using the flotation circuit, the header is being supported by the pressure in the flotation circuit. The header will fall suddenly when any of the connections in the flotation circuit are disconnected or the dump valve is opened.

Before disconnecting any of the connections or the opening the dump valve, lower the header to the floor or onto the safety stops.

A falling header can result in injury or death.

WARNING

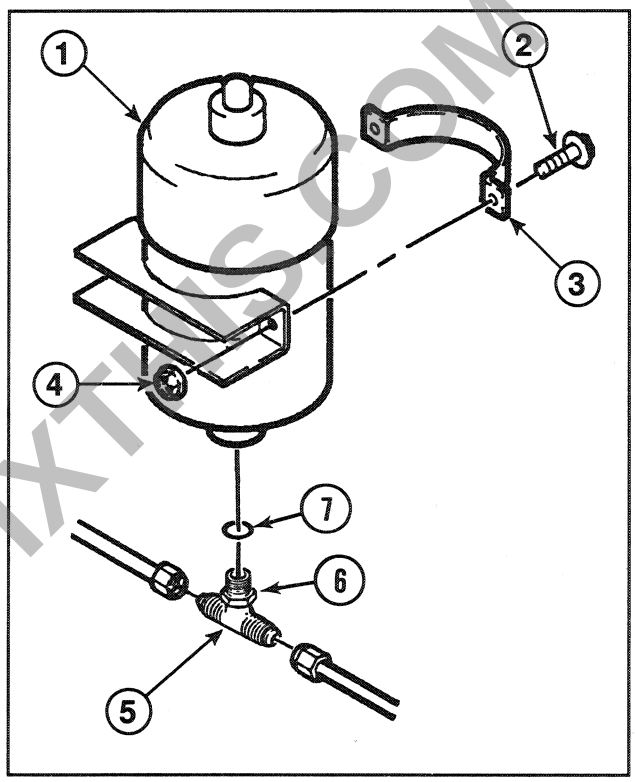
Hydraulic pressure escaping under pressure can have sufficient force to penetrate the skin, causing serious injury.

The accumulator and the weight of the header can apply a great amount of pressure to the header flotation circuit. Relieve all pressure in the header flotation circuit before disconnecting any of the connections. Make sure the header is on the floor or is supported by the safety stops. Relieve the pressure applied by the accumulator by turning the knob for the dump valve on the flotation control valve all the way counterclockwise. Make sure the flotation pressure gauge indicates 0 psi (0 kPa). Before applying pressure to the circuit, make sure all connections are tight and the hydraulic hoses and hydraulic lines have not been damaged.

If injured by escaping fluid, see a doctor at once. If not treated immediately, serious infection or reaction can develop.

4. Remove the access cover at the front of the tractor.

5. Clean the area around the tee in the bottom of the accumulator.



L90A -0189

ACCUMULATOR CONNECTIONS

1. Accumulator
2. Bolt
3. Clamp
4. Self Locking Nut
5. Tee
6. O-ring Jam Nut
7. O-ring

6. Loosen the O-ring jam nut on the tee.

7. Remove the clamp from the accumulator.

8. Turn the accumulator to disconnect the accumulator from the tee fitting. Remove the accumulator.

9. Remove and discard the O-ring from the accumulator.

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DISCHARGING THE AIR CONDITIONING SYSTEM

The air conditioning system must be discharged before beginning the removal of any component on the air conditioning system.

⚠ Danger

When refrigerant comes in contact with an open flame, it forms phosgene gas. Never breathe these fumes.

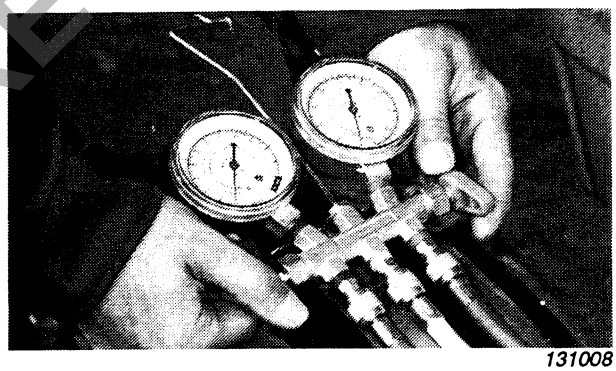
⚠ Warning

The refrigerant discharged from the air conditioning system does not have the oxygen you need to breathe. Make sure that the repair area has hood ventilation. Breathing a large amount of refrigerant can cause personal injury.

⚠ Warning

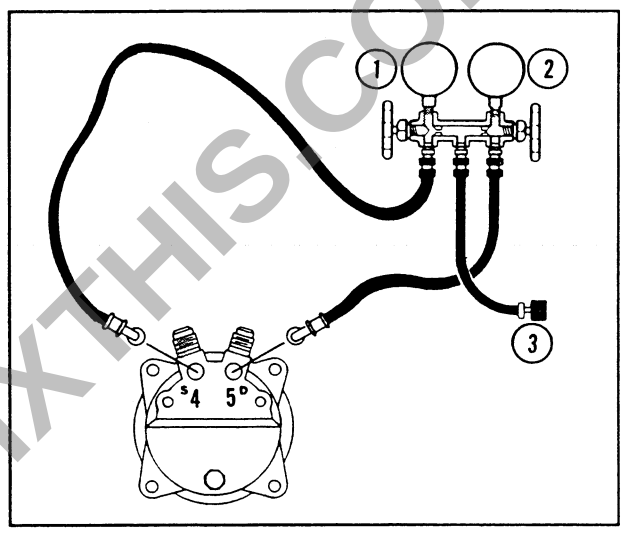
Always wear safety goggles when working with refrigerant. Liquid refrigerant in your eyes can cause blindness. If you get any near your eyes, rinse them immediately with mineral oil to absorb the refrigerant. Follow by flooding your eyes with a weak solution of boric acid and contact a doctor immediately.

1. Make sure each valve in the gauge manifold is closed.



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2. Connect the charge-discharge hose of the gauge manifold to the hose from the refrigerant recovery and recycling station. See Special Tools in this section for the refrigerant recovery and recycling station. Follow the instructions provided with the refrigerant recovery and recycling station.



L90A-0280

1. Low Pressure Gauge
2. High Pressure Gauge
3. Charge-Discharge Hose
4. Low Pressure Port
5. High Pressure Port

3. Remove the cap from the high pressure port.

4. Connect the hose from the high pressure gauge to the high pressure port.

5. Remove the cap from the low pressure port.

6. Connect the hose from the low pressure gauge to the low pressure port.

7. Open the valve for the low pressure gauge a small amount to slowly release the refrigerant.

NOTE: Important! The refrigerant must be release slowly to prevent removing the oil in the compressor with the refrigerant.

8. Open the valve for the high pressure gauge a small amount to release the refrigerant.

9. When the low pressure gauge and high pressure gauge indicate zero, the air conditioning system is discharged.

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Section 2002

ENGINE ACCESSORIES

TABLE OF CONTENTS

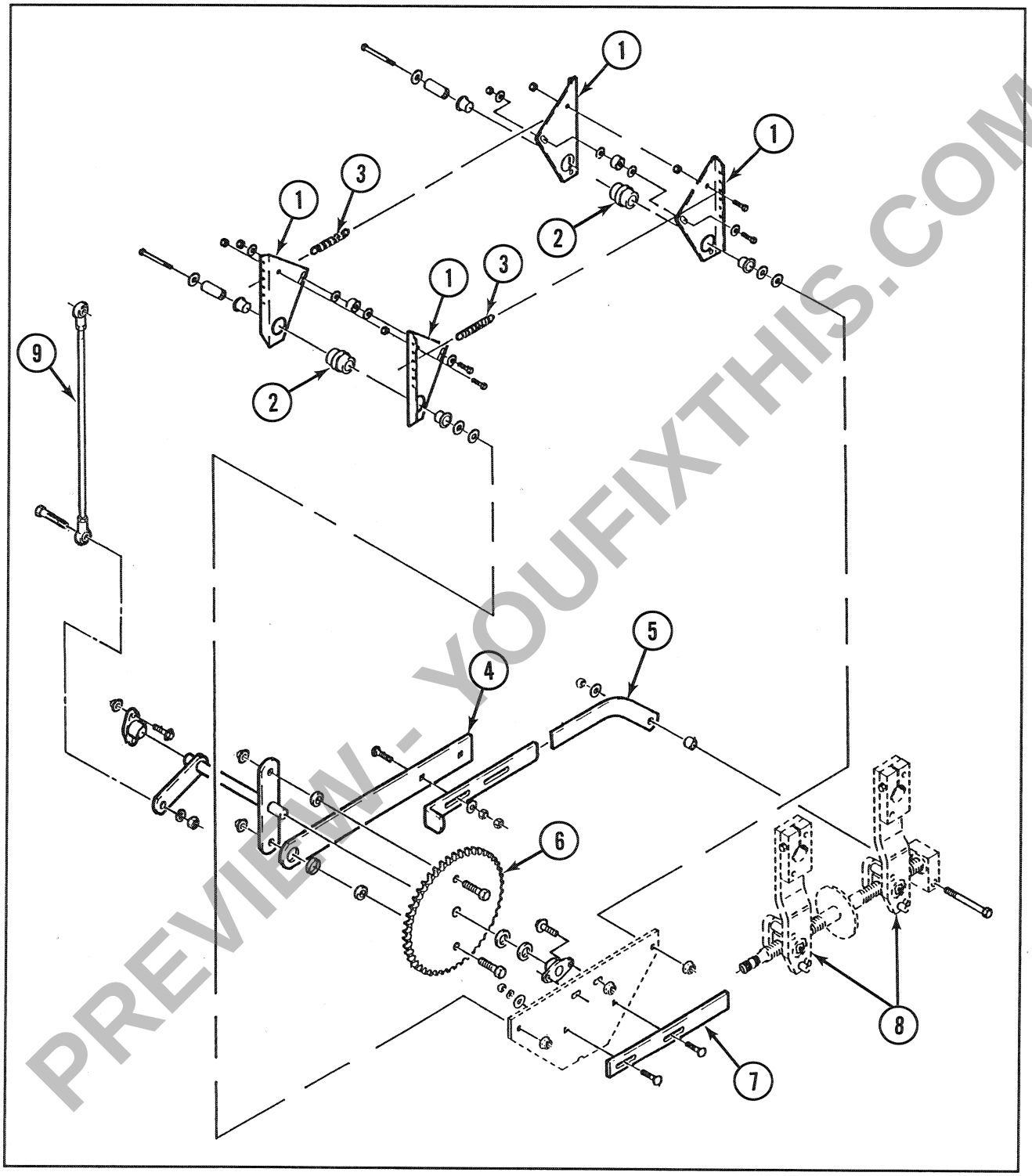
Air Cleaner System 2002-2
Filter Elements 2002-2
Air Cleaner and Precleaner 2002-2
Service Interval 2002-3
Primary Element 2002-3
Cleaning the Primary Element 2002-4
Secondary Element 2002-4
Rotary Screen 2002-6
Removal and Installation 2002-6
Disassembly and Assembly 2002-8
Replacing the Foam Ring 2002-9
Turbocharger Removal and Installation 2002-10

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TRAVEL CONTROL LINKAGE



L90A -0240

TRAVEL CONTROL LINKAGE

1. Pivot Arm
2. Pivot Roller
3. Spring
4. Ground Speed Arm
5. Speed Link
6. Detent Sprocket
7. Stop Plate
8. Steering Arms
9. Link Rod - Connected to Travel Control Arm

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INSTALLATION

1. If a new header drive motor is being installed, remove the fittings from the old header drive motor. Install a new O-ring on the fitting that requires an O-ring. Install the fittings in the new header drive motor.

2. Install the key in shaft of the header drive motor.

3. Apply antiseize compound to the shaft of the header drive motor.

4. Align the key on the shaft with the keyway in the coupling. Install the header drive motor. Make sure the key stays in the keyway.

5. Install the bolts, special washers, lock washers, and the nuts.

6. Start the vacuum pump, if used.

7. Connect the hoses to the header drive motor.

8. Disconnect the vacuum pump, if used.

9. Loosen the fittings for the two closed loop lines to the header drive motor. The closed loop lines are the two large hoses. Loosen the fittings just enough to let oil flow from the fittings.

10. Make sure the header drive lever is all the way back. Start the engine and look at the fittings. When there is no air in the oil flowing from the fittings, stop the engine.

⚠ WARNING

Make sure all persons are clear of the moving parts of the header.

11. Tighten the fittings.

DISASSEMBLY

1. Clean the outside of the header drive motor.

2. Remove the snap ring (1) from the housing (2).

3. Make alignment marks on the housing and the backplate.

4. Fasten the housing (2) in a vise so the back plate(3) is up.

5. Remove the cap screws (4) from the back plate (3).

6. Hit the ears on the back plate (3) with a soft hammer to rotate the back plate (3) in the housing (2). Rotate the back plate (3) both directions to loosen the back plate (3) in the housing (2). Use the soft hammer to drive the back plate (3) from the housing (2).

7. Remove the O-ring (5) from the back plate.

8. Remove the two thrust washers (6) and the small thrust bearing (7) from the back plate (3).

9. Remove the connector plate (8), the piston assemblies (9), and the guide (10) from the housing (2).

10. Remove the pilot (11), the pivot (12), and the spring (13).

11. Remove the cylinder block assembly and the and the shaft assembly from the housing.

12. Remove the pistons (14) from the cylinder block (15).

13. Remove the spacer (16) and the pivot (17) from the shaft (18).

14. Remove the cylinder block (15) and the key (19) from the shaft (18). The retaining ring (20) does not have to be removed from the shaft (18).

15. Remove the piston race assembly (21) from the shaft (18).

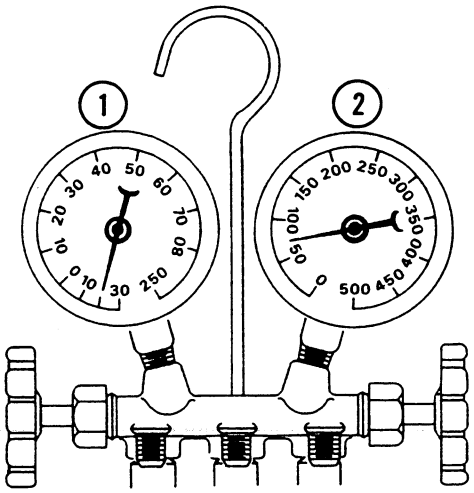
16. Remove the large thrust bearing (22) and the bearing race (23) from the housing (2).

17. Remove the seal (24) from the housing (2).

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Problem - No Cooling



L90A-0286

1. LOW PRESSURE GAUGE READING IN A VACUUM
2. HIGH PRESSURE GAUGE READING BELOW PRESSURE - TEMPERATURE CHART

Indications of Low Refrigerant Charge

a. Sight glass clear- no bubbles.

b. Discharge air from evaporator warm.

1. See the Visual and Leak Test in this section. It can be necessary to add some refrigerant charge, see Section 9002.
2. Discharge system of refrigerant, see Section 9002.
3. Repair system leaks as necessary. See Air and Moisture Removal in Section 9002.
4. Check compressor oil level, see Section 9002.
5. Remove air and moisture from the system, see Section 9002.
6. Charge system with new refrigerant, see Section 9002.

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MAINTENANCE

⚠ DANGER

Before doing any maintenance or service work on the tractor or the header you must:

Put all controls in NEUTRAL.
Apply the parking brake.
Lower the header to the floor.
Center and lock the steering wheel.
Stop the engine.
Make sure all moving parts have stopped.

Drive Belts

Keeping the proper tension on the drive belts will increase the life and efficiency of the drive belts. All belts will stretch when new and will need frequent adjustment until broken in. A loose drive belt will not always slip noticeably. Check the drive belt to make sure the drive belt is not becoming too hot. Also check the groove in the groove in the sheave for excessive wear.

A slight raveling of the belt DOES NOT indicate an early failure. Trim off the raveling if the cover is peeling at the lap. BELT DRESSINGS MUST NOT BE USED. A belt dressing can give more grip temporarily but will soften the cover and shorten the life of the drive belt.

Protect the drive belts as much as possible to keep the drive belts clean. Clean drive belts with a clean cloth and household detergent to remove oil, grease and dirt. Never dip or soak drive belts in solvents as the solvent will soften the cover.

Bearing Replacement (Eccentric Self-Locking Collar)

See Section 1003.

Gib Key Installation and Removal

See Section 1003.

Bolt Torque Values

All bolts used on the machine are Grade 5 plated bolts unless otherwise specified. All Grade 5 bolts are identified with three radial dashes on the bolt head. All Grade 8 bolts are identified with five radial dashes on the bolt head. DO NOT tighten the bolts too much. Tightening the bolts too much can cause failure during operation.

See the torque charts in Section 1002 for standard torque values. Special torque settings are listed in the text.

Roller Chains

The auger drive chains are permanently lubricated and sealed with O-rings. Apply only enough lubricant the outside of the auger drive chains to prevent external rusting. DO NOT apply too much lubricant. Excess lubrication can get on drive belts which must be kept free of oil. Use clean 30W engine oil or a spray lubricant that is designed for O-ring chain. Some spray lubricants contain solvents that can damage the O-rings.

The reel drive chain is not permanently lubricated. Lubricate the reel drive chain daily. DO NOT apply too much lubricant. Excess lubrication can get on drive belts which must be kept free of oil.

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