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The following pages are the collation of the contents pages from each section and chapter of the TZ18DA, TZ22DA, TZ24DA, TZ25DA Repair manual. Complete Repair part # 87350100.

The sections used through out all New Holland product Repair manuals may not be used for each product. Each Repair manual will be made up of one or several books. Each book will be labeled as to which sections are in the overall Repair manual and which sections are in each book.

The sections listed above are the sections utilized for the TZ18DA, TZ22DA, TZ24DA, TZ25DA Tractors.

SECTION 00 - GENERAL INFORMATION

Chapter 1 - General Information

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SAFETY

PRECAUTIONARY STATEMENTS

A careful operator is the best operator. Most accidents can be avoided by observing certain precautions. To help prevent accidents, read the following precautions before operating this equipment. Equipment should be operated only by those who are responsible and instructed to do so.

Carefully review the procedures given in this manual with all operators. It is important that all operators be familiar with and follow safety precautions.

THE TRACTOR

1. Read the Operator's Manual carefully before using the tractor. Lack of operating knowledge can lead to accidents.
2. Use an approved roll bar and seat belt for safe operation. Overturning a tractor without a roll bar can result in death or injury. If your tractor is not equipped with a roll bar and seat belt, see your New Holland Dealer.
3. Always use the seat belt. The only instance when the seat belt should not be used is if the roll bar has been removed from the tractor.
4. If a front end loader is to be installed, always use a FOPS (Falling Object Protective Structure) canopy to avoid injury from falling objects.
5. Use the handholds and step plates when getting on and off the tractor to prevent falls. Keep steps and platform cleared of mud and debris.
6. Do not permit anyone but the operator to ride on the tractor. There is no safe place for extra riders.
7. Keep all safety decals clean of dirt and grime, and replace all missing, illegible, or damaged safety decals. See the list of decals in the Decal section of this manual.
3. Keep the tractor and equipment, particularly brakes and steering, maintained in a reliable and satisfactory condition to ensure your safety and comply with legal requirements.
4. Keep open flame or cold weather starting aids away from the battery to prevent fires or explosions. Use jumper cables according to instructions to prevent sparks which could cause explosion.
5. Stop the engine before performing any service on the tractor.
6. Escaping hydraulic/diesel fluid under pressure can penetrate the skin causing serious injury. If fluid is injected into the skin, obtain medical attention immediately or gangrene may result.
 - DO NOT use your hand to check for leaks. Use a piece of cardboard or paper to search for leaks.
 - Stop the engine and relieve pressure before connecting or disconnecting lines.
 - Tighten all connections before starting the engine or pressurizing lines.
7. Do not modify or permit anyone else to modify or alter this tractor or any of its components or functions without first consulting a New Holland Dealer.

SERVICING THE TRACTOR

1. The cooling system operates under pressure which is controlled by the radiator cap. It is dangerous to remove the cap while the system is hot. Always turn the cap slowly to the first stop and allow pressure to escape before removing the cap entirely.
2. Keep any type of open flame away from the tractor and do not smoke while refueling. Wait for the engine to cool before refueling.
8. The fuel oil in the injection system is under high pressure and can penetrate the skin. Unqualified persons should not remove or attempt to adjust a pump, injector, nozzle, or any other part of the fuel injection system. Failure to follow these instructions can result in serious injury.
9. Continuous long-term contact with used engine oil may cause skin cancer. Avoid prolonged contact with used engine oil. Wash skin promptly with soap and water.

10. Some components of your tractor, such as gaskets and friction surfaces (brake linings, clutch linings, etc.) may contain asbestos. Breathing asbestos dust is dangerous to your health. You are advised to have any maintenance or repair on such components carried out by an authorized New Holland Dealer. However, if service operations are to be undertaken on parts that contain asbestos, the essential precautions listed below must be observed:

- Work out of doors or in a well ventilated area.
- Dust found on the tractor or produced during work on the tractor should be removed by extraction, not by blowing.
- Dust waste should be dampened, placed in a sealed container, and marked to ensure safe disposal.
- If any cutting, drilling, etc. is attempted on materials containing asbestos, the item should be dampened and only hand tools or low speed power tools used.

OPERATING THE TRACTOR

1. Before starting the tractor, apply the parking brake, place the PTO lever in the "OFF" position, the lift control lever in the down position, the remote control valve levers in the neutral position, and the transmission in neutral.
2. Always sit in the tractor seat when starting the engine or operating controls. Do not start the engine or operate controls while standing beside the tractor.
3. Do not bypass the neutral start switches. Consult your New Holland Dealer if your neutral start controls malfunction. Use jumper cables only in the recommended manner. Improper use can result in tractor runaway.
4. Avoid accidental contact with the gear shift lever while the engine is running, as this can cause unexpected tractor movement.
5. Before getting off the tractor, disengage the PTO, turn the engine off, and apply the parking brake. Never get off the tractor while it is in motion.
6. Do not park the tractor on a steep incline.
7. Do not operate the tractor engine in an enclosed building without adequate ventila-

tion. Exhaust fumes can cause death or illness.

8. If the power steering or engine ceases operating, stop the tractor immediately.
9. Pull only from the drawbar or the lower link drawbar in the down position. Use only a drawbar pin that locks in place. Pulling from the tractor rear axle or any point above the axle may cause the tractor to upset.
10. If the front end of the tractor tends to rise when heavy implements are attached to the three-point hitch, install front end or front wheel weights. Do not operate the tractor with a light front end.
11. Always set the hydraulic selector lever in position control when attaching or transporting equipment. Ensure hydraulic couplers are properly mounted and will disconnect safely in case of accidental detachment of implement.
12. Do not leave equipment in the raised position.
13. Use the flasher/turn signal lights and SMV signs when traveling on public roads both day and night (unless prohibited by law).
14. When operating at night, adjust lights to prevent blinding oncoming drivers.

DRIVING THE TRACTOR

1. Watch where you are going, especially at row ends, on roads, around trees and low hanging obstacles.
2. To avoid upsets, drive the tractor with care and at a safe speed. Use extra caution when operating over rough ground, when crossing ditches or slopes, and when turning corners.
3. To provide two-wheel braking, one pedal actuates both brakes.
4. Do not coast or free wheel down hills. Use the same gear when going downhill as is used when going uphill.
5. Any towed vehicle with a total weight exceeding that of the towing tractor should be equipped with brakes for safe operation.
6. If the tractor becomes stuck or the tires become frozen to the ground, back up the tractor to prevent upset.

7. Always check overhead clearance, especially when transporting the tractor.
8. When operating at night, adjust lights to prevent blinding oncoming drivers.

OPERATING THE PTO

1. When operating PTO driven equipment, shut off the engine and wait until the PTO stops before getting off the tractor and disconnecting the equipment.
2. Do not wear loose clothing when operating the power take-off or when near rotating equipment.
3. When operating stationary PTO driven equipment, always place both gear shift levers in neutral, apply the tractor parking brake, and block the rear wheels front and back.
4. To avoid injury, do not clean, adjust, unclog, or service PTO driven equipment when the tractor engine is running.
5. Ensure the PTO master shield is installed at all times. Always replace the PTO shield cap when the PTO is not in use.

DIESEL FUEL

1. UNDER NO CIRCUMSTANCES should gasoline, alcohol, or blended fuels be added to diesel fuel. These combinations can create an increased fire or explosive hazard. Such blends are more explosive than pure gasoline in a closed container such as a fuel tank. **DO NOT USE THESE BLENDS.**
2. Never remove the fuel cap or refuel with the engine running or hot.
3. Do not smoke while refueling or when standing near fuel.
4. Maintain control of the fuel filler pipe nozzle when filling the tank.

5. Do not fill the fuel tank to capacity. Allow room for expansion.
6. Wipe up spilled fuel immediately.
7. Always tighten the fuel tank cap securely.
8. If the original fuel tank cap is lost, replace it with a New Holland approved cap. A non-approved, proprietary cap may not be safe.
9. Keep equipment clean and properly maintained.
10. Do not drive equipment near open fires.
11. Never use fuel for cleaning purposes.
12. Arrange fuel purchases so that winter grade fuels are not held over and used in the spring.

SAFETY FRAME (ROPS)

Your New Holland tractor is equipped with a safety frame. It must be maintained in a serviceable condition. Be careful when driving through doorways or working in confined spaces with low headroom.

UNDER NO CIRCUMSTANCES should you:

- modify, drill, or alter the safety frame in any way. Doing so may render you liable to legal prosecution.
- attempt to straighten or weld any part of the main frame or retaining brackets which have suffered damage. Doing so may weaken the structure and endanger your safety.
- secure any parts on the main frame or attach your safety frame with anything other than the special high tensile bolts and nuts specified.
- attach chains or ropes to the main frame for pulling purposes.
- take unnecessary risks even though your safety frame affords you the maximum protection possible.



WHEN YOU SEE THIS SYMBOL

IT MEANS:

ATTENTION!

BECOME ALERT!

YOUR SAFETY IS INVOLVED!

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Chapter 1 - Engine Systems

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OVERHAUL

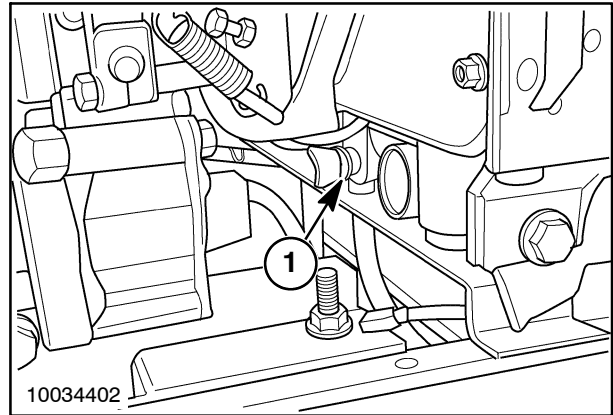
ENGINE ACCESS

Disassembly

1. Remove the engine compartment side panels.
2. Open the radiator drain, 1, and drain the coolant from the radiator.

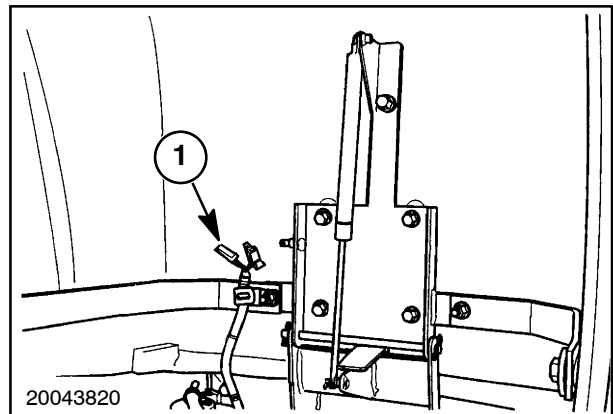
NOTE: The cooling system capacity is 3.5 L (3.69 qt.).

3. Remove the radiator assembly. See "Radiator Removal", discussed later in this section.



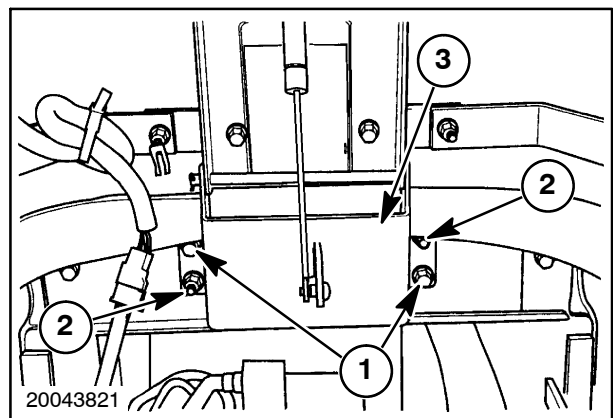
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4. Disconnect the electrical connector, 1, joining the headlamp wiring harness to the main harness.



5

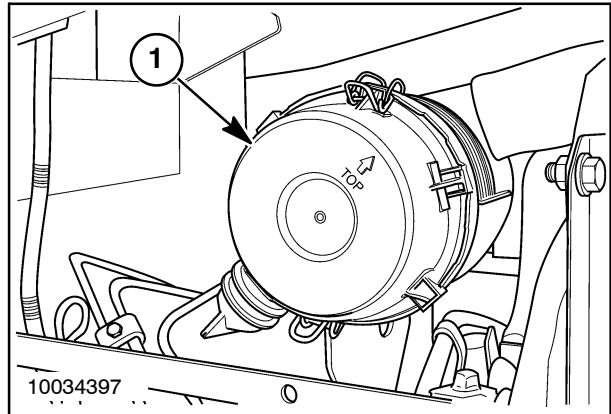
5. Remove the two bolts, 1, and two hex nuts, 2, securing the hood hinge bracket, 3, to the firewall support, and carefully remove the hood with the hinge bracket attached.



6

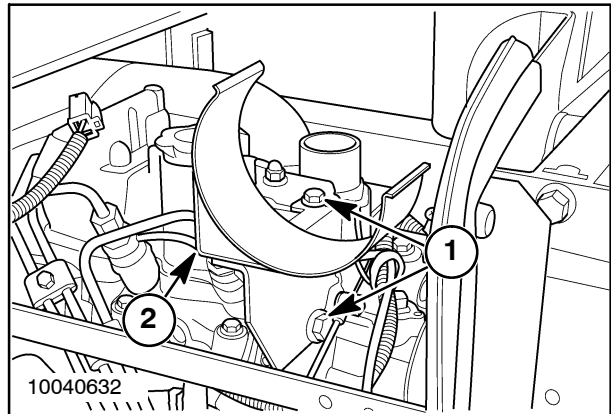
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6. Remove the complete air cleaner assembly, 1, along with the air hoses.



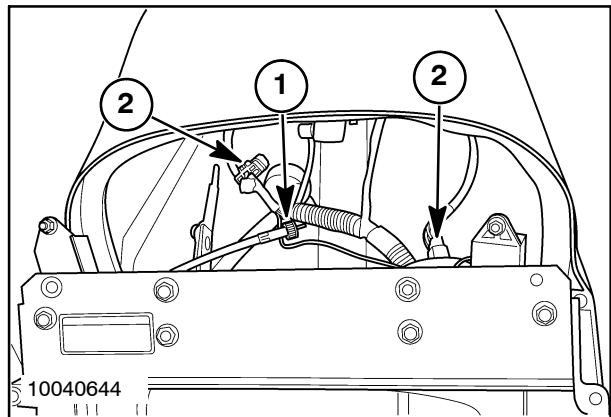
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7. Remove the two bolts, 1, securing the air cleaner mounting bracket, 2, to the engine. Remove the bracket.
8. Remove the two hex-head bolts securing the upper panel to the rear of the transverse support crossmember.
9. Disconnect the two relays mounted on the upper panel from the electrical harness. (The electrical connectors are located on the bottom of the relays.) Remove the upper panel.
10. Remove the steering wheel hub cover, and the locking nut and lockwasher beneath the cover. Slide the steering wheel off of the steering column.



8

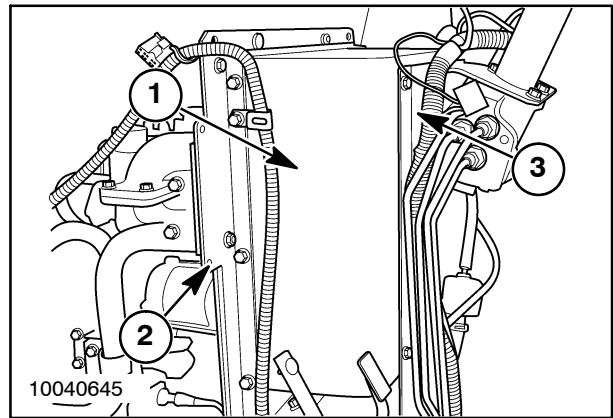
11. Remove the control knob from the hand throttle lever.
12. Remove the four bolts securing the forward cowling to the cowling support frame. Slide the cowling upward to gain access to the wiring behind the instrument panel.
13. Disconnect the tachometer cable, 1, behind the instrument panel. Loosen the knurled locking ring and pull the cable straight out of the receiver.
14. Separate the electrical connectors, 2, found in the wiring harness on each side of the steering column. Detach the two round electrical connectors from the rear of the instrument panel.
15. Disconnect the harness electrical connector on the bottom of the ignition switch.
16. Slide the cowling up and over the steering column and throttle lever to remove it.



9

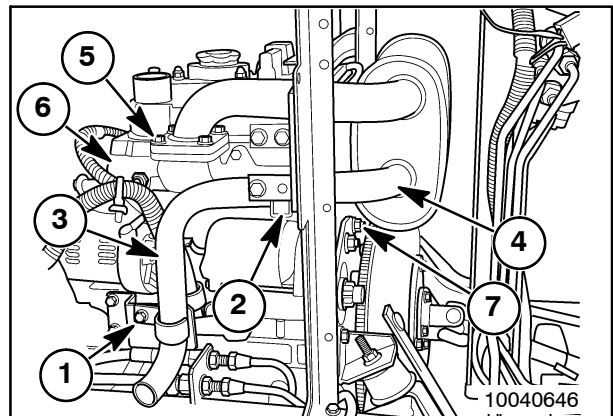
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17. Remove the eight hex-head bolts securing the firewall box, 1, to the cowling support frame, 2, and the four bolts securing the firewall box to the steering column support, 3.
18. Carefully slide the firewall box upward from between the two support structures and remove the box.



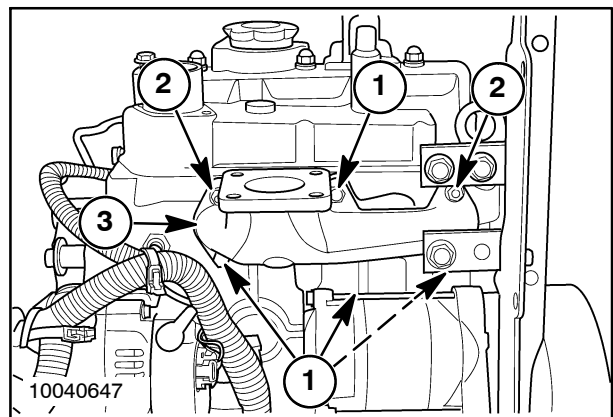
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19. Remove the exhaust pipe bracket, 1. Loosen the connecting clamp, 2, and separate and remove the exhaust pipe extension, 3, from the muffler outlet pipe, 4.
20. Remove the four bolts attaching the exhaust pipe flange, 5, to the exhaust manifold outlet, 6, and the two flanged hex nuts securing the muffler to the mounting studs on the rear transverse engine plate, 7.
21. Remove the exhaust muffler assembly, retaining the metal gasket for the connecting flange on the exhaust manifold.



11

22. Remove the four hex-head bolts, 1, and two flanged hex nuts, 2, securing the exhaust manifold, 3, to the LH side of the engine. Remove the manifold and its metal gasket.



12

FUEL INJECTOR AND GLOW PLUG

Removal

1. Clean all dirt and oil from the injectors and surrounding area.
2. Disconnect the fuel lines, 1, from the injectors and from the injector pump, and remove the lines as an assembly. Cap all openings.
3. Disconnect the electrical connector, 2, joining the wiring harness to the lead from the glow plug connector bar at the #3 (rearmost) injector.
4. Loosen the three hex nuts on the ends of the glow plugs and remove the connector bar, 3, and wiring lead.
5. Close the fuel filter shutoff valve and disconnect the fuel return hose, 4, from the #3 injector. Plug the hose and cap the connection on the injector.
6. Disconnect the fuel supply hose, 5, from the fuel injection pump. Plug the hose and cap the connection on the injection pump, 6.
7. Loosen and separate the connections on top of all three injectors and on the injector pump, and remove the fuel leak-off line, 7, as a unit.
8. Remove the three fuel injector assemblies, 8.

NOTE: Ensure that the sealing washer is removed from the seating bore along with each injector assembly.

NOTE: Fuel shutoff solenoid has to be removed before injection pump can be removed.

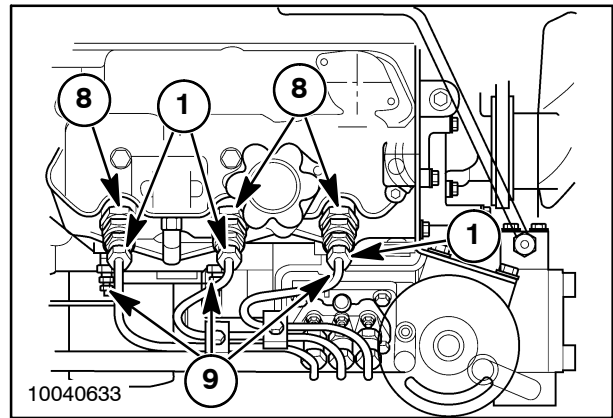
9. Remove the injection pump mounting bolts and nuts, and slide the injection pump away from the engine block far enough to remove the spring pin, 1, and separate the governor link, 2, from the pump control rack, 3.

NOTE: Separate the mounting bracket for the external oil tube from the upper rear mounting nut on the injection pump cover at this time.

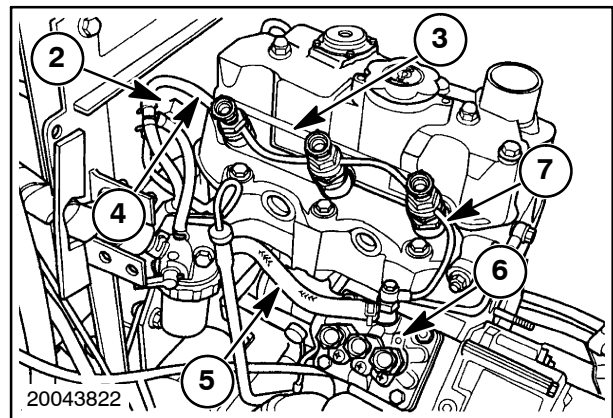
10. Carefully slide the injection pump out of the engine block and set aside.

NOTE: If there are shims between the pump mounting flange and the engine block, carefully remove the shims and retain them for installation.

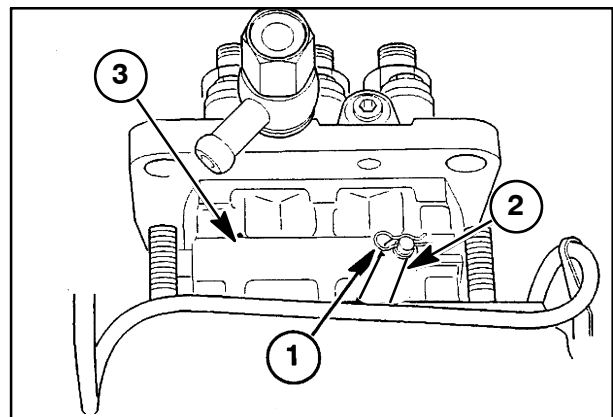
11. Remove the three glow plugs, (9, Figure 13), from beneath the three injector ports.



13



14

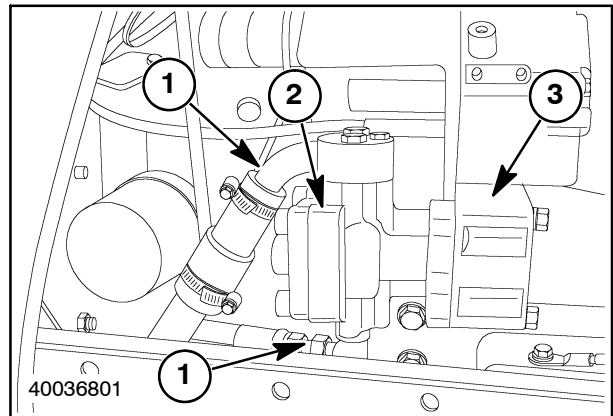


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HYDRAULIC PUMP

Removal

1. Drain the hydraulic oil from the transmission case into a suitable container.
2. Disconnect the oil lines, 1, from the top and bottom of the hydraulic pump, 2.
3. Remove the four bolts securing the hydraulic pump to the front gear cover, 3, and remove the pump.
4. Cap or plug any openings.

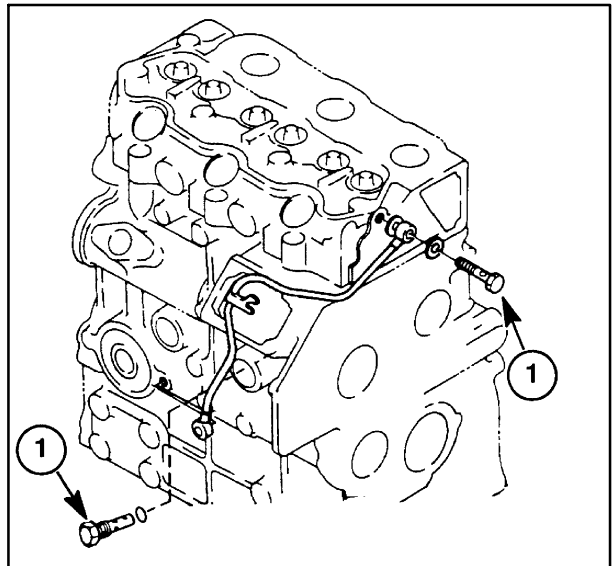


16

FAN, WATER PUMP AND EXTERNAL OIL TUBE

Removal

1. Remove the fan and water pump assembly. See "Water Pump and Thermostat Removal", discussed later in this section.
2. Remove the external oil transfer tube banjo bolts, 1, from the front of the cylinder head and the RH side of the engine block, and remove the external oil transfer tube.

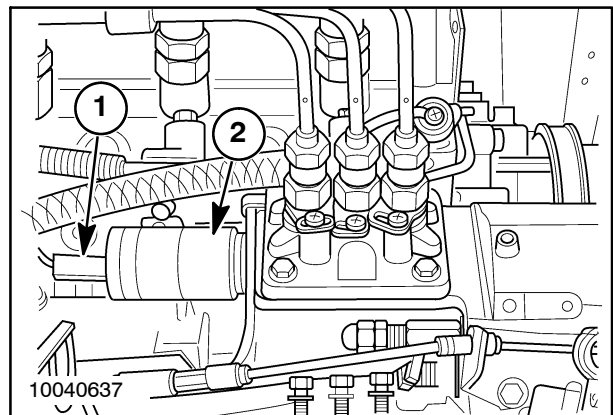


17

FUEL SHUTOFF SOLENOID

Removal

1. Remove the wire connector, 1, and unscrew the fuel shutoff solenoid, 2, from the rear of the injection pump.



18



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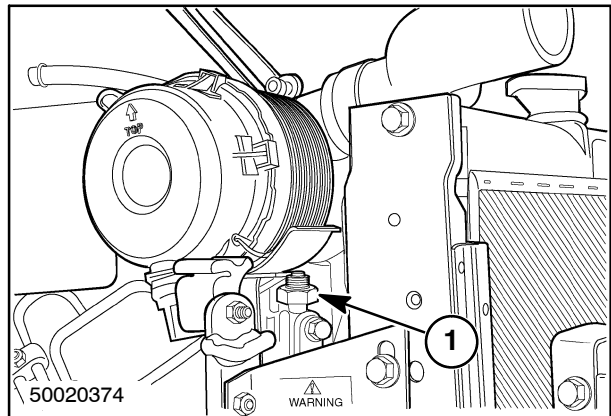
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OIL PRESSURE SWITCH

Removal

1. Disconnect and remove the oil pressure switch, 1, from the upper RH side of the engine block, immediately forward of the #1 injector.

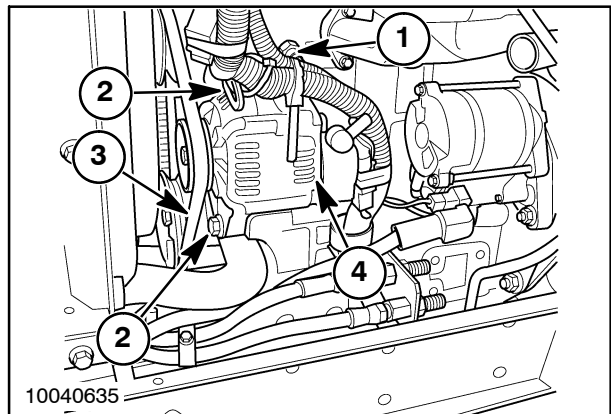


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TEMPERATURE SENDING SWITCH AND ALTERNATOR

Removal

1. Detach the electrical connector from the temperature sending switch, 1, on the LH side of the engine block above the alternator.
2. Loosen and remove the temperature sending switch.
3. Loosen the alternator mounting bolts, 2, and remove the V-belt, 3, from the drive pulley.
4. Disconnect the wires at the rear of the alternator.
5. Remove the mounting bolts and the alternator, 4.

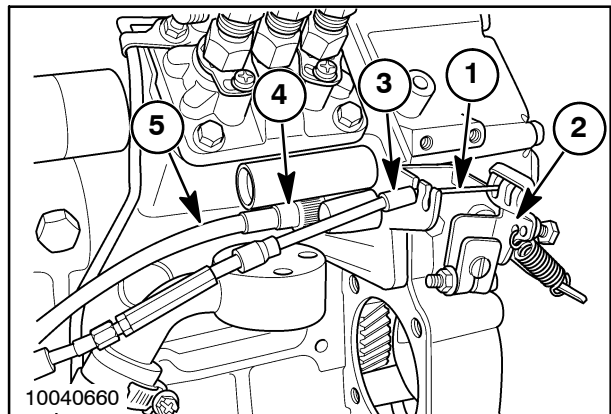


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THROTTLE CABLE

Disconnection

1. Disconnect the throttle cable, 1, from the governor lever, 2, and bracket, 3.
2. Loosen the knurled locking ring, 4, and pull the tachometer cable, 5, straight out of its receiver, on the rear of the timing gear cover below the injection pump.



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