

REPAIR

If the injection pump is suspected of being faulty, it should be repaired by an authorized Diesel Service Station only.

NOTE: If repair is within New Holland warranty period, replace injection pump with a new pump from the "New Holland Parts Department".

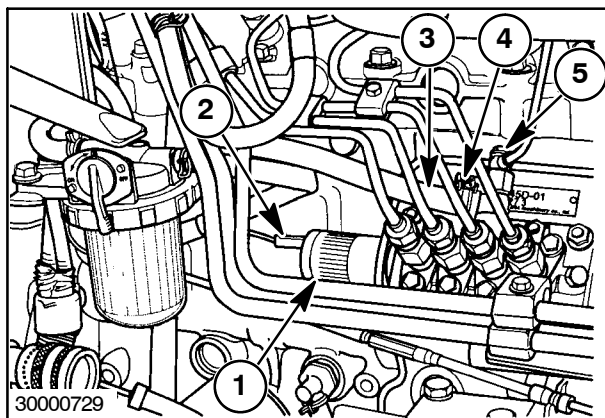
INSTALLATION

Installation generally follows removal procedures in reverse. If the pump is being replaced or if the timing is unknown, proceed to "Timing and Governor Adjustment", later in this section.

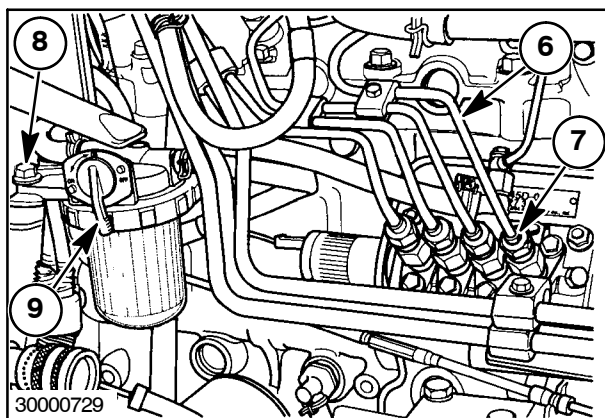
1. Attach the pump rack to the governor linkage.
2. Install injection pump assembly with shims into engine housing.
3. Install the pump mounting nuts and bolts and tighten to 13 - 17 N·m (9.4 - 12.3 ft lbs).
4. Install fuel solenoid, 1, into rear of injector housing and connect the electrical lead, 2.
5. Connect the fuel inlet line, 3, by tightening clamp screw, 4.
6. Install the fuel return line by installing bolt, 5.
7. Install injector lines, 6, by tightening nuts, 7, at the pump and nuts at the injectors.
8. If removed, reinstall the fuel filter onto its bracket by tightening two nuts, 8.
9. Turn the fuel select, 9, to the on position.

After installation bleed air from the fuel system. See "Bleeding the Fuel System", later in this section.

NOTE: It may be necessary to verify pump timing. Spill-time the pump as outlined in "Spill-Timing Procedure", discussed in this section.



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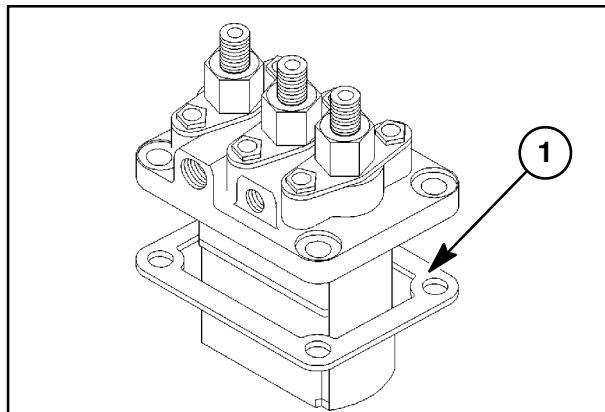
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TIMING AND GOVERNOR ADJUSTMENTS

INSTALLATION (New Pump or Drive Component)

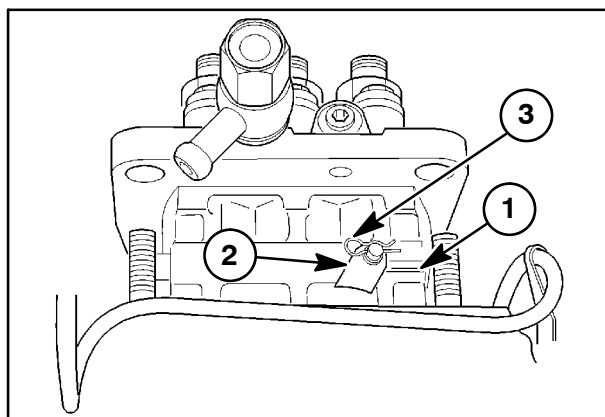
NOTE: Installation of a new pump is the same as installation of an original pump. When installing a new pump, however, checking the timing is required.

1. Position the pump in the block using a new shim gasket, 1, of 0.3 mm (0.012") thickness, or original shim pack from removed pump.



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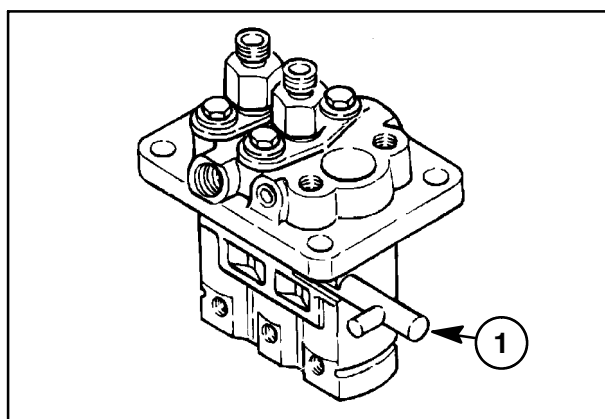
2. Connect the governor link, 2, to the pump control rack, 1, and secure with snap pin, 3.



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NOTE: Check the control rack, 1, for any binding conditions by moving the control lever back and forth. Lubricate control rack with clean engine oil before installation.

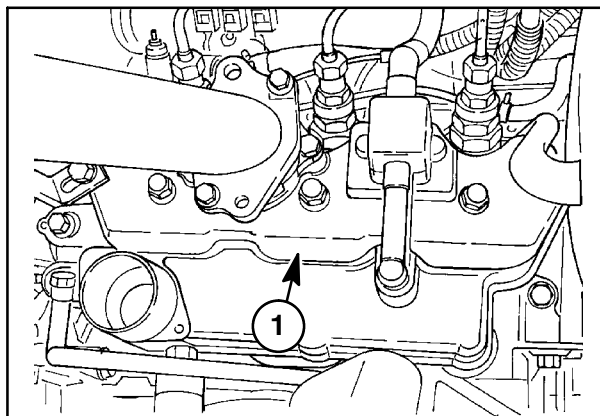
3. Install the mounting bolts and tighten to 13 - 17 N·m (9.4 - 12.3 ft lbs).
4. Connect the fuel inlet line.
5. Connect the fuel injection lines.
6. Connect the fuel return line to the number three injector (three cylinder engines) or number four injector (four-cylinder engines).
7. Spill-time the pump.



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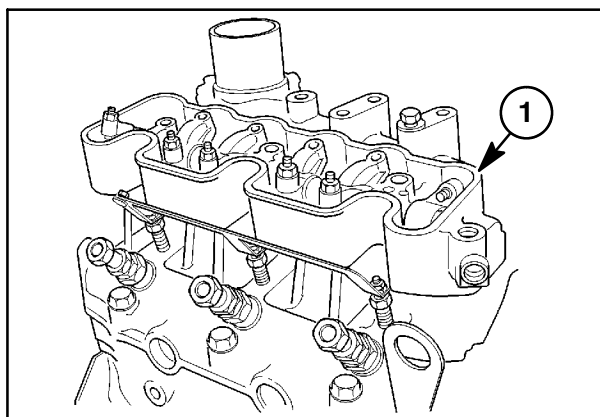
SPILL-TIMING PROCEDURE

1. Remove the valve cover, 1, from the top of the engine, by loosening bolts.
2. Find top dead center of the No. 1 cylinder (No. 1 cylinder is the closest to the engine fan). No. 1 cylinder must be on the compression stroke. (Intake and exhaust rocker arms will be loose.)



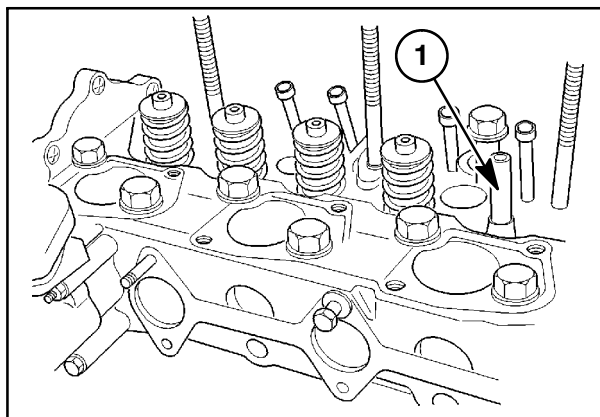
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3. Remove the rocker arm housing and rocker arm assembly, 1, from the engine.



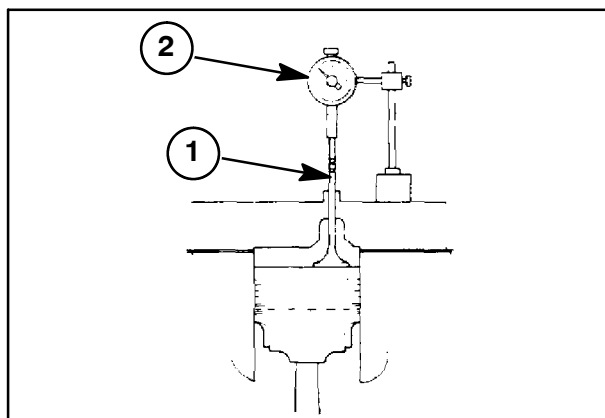
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4. Remove the keepers and spring from No. 1 cylinder intake valve, 1.



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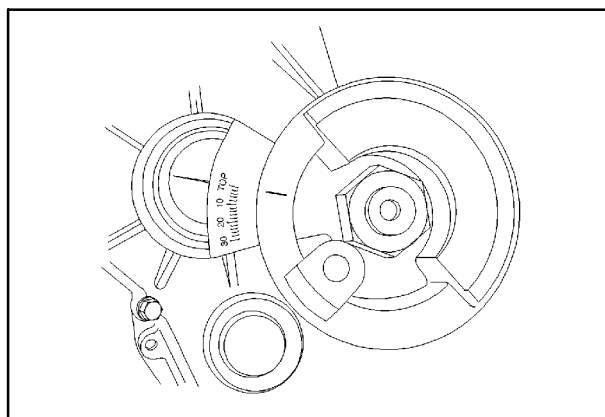
5. To verify true top dead center of piston travel, install a dial indicator, 2, on the valve stem (No. 1 cylinder), 1. Be sure the valve stem is sitting on top of the piston. Rotate the crankshaft until the indicator needle reverses direction. The point the needle reverses direction is true top dead center.



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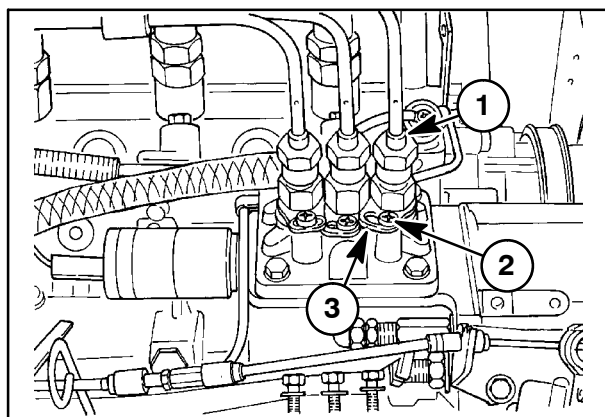
6. Verify that the timing mark on the crankshaft pulley is in line with the "TOP" mark on the timing scale. If the mark on the crankshaft pulley is not in line with the "TOP" mark, verify piston top dead center by repeating step 5. If the pulley mark is slightly off, remark the pulley and proceed.

NOTE: Color the timing mark on the crankshaft pulley and appropriate marks on the timing scale to increase visibility.



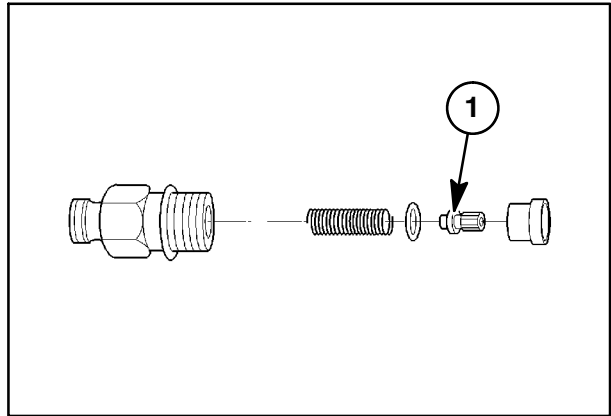
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7. Reinstall the valve spring, keepers, rocker arm assembly, housing and valve cover.
8. Shut off the fuel supply to the injection pump at the fuel filter.
9. Remove the No. 1 injection line from the number 1 injector, 1.
10. Remove the lock screw, 2, and remove the injector locking plate, 3.



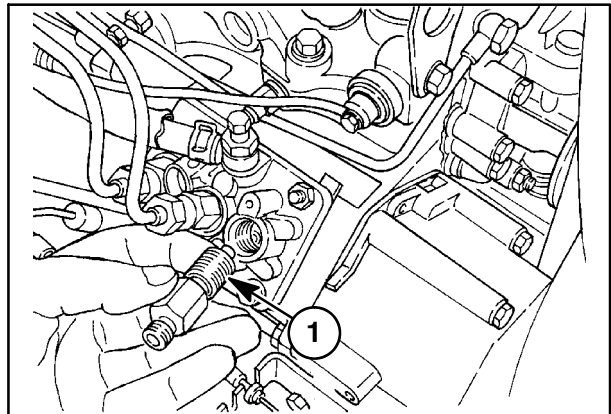
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11. Remove only the delivery valve piston, 1, from the No. 1 delivery valve.



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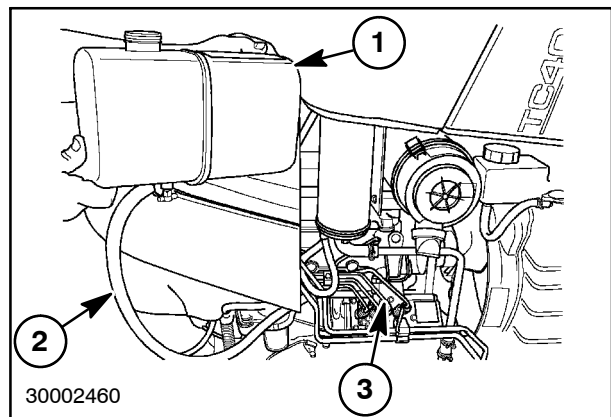
12. Reinstall the holder, 1, with spring into the injection pump and tighten securely. Insert a small diameter wire down through the holder, 1, and bend a hook on the end of the wire to hold the spring, washer, and the valve in the holder, while re-installing in the injection pump. Remove the wire just prior to the holder being seated in the pump.



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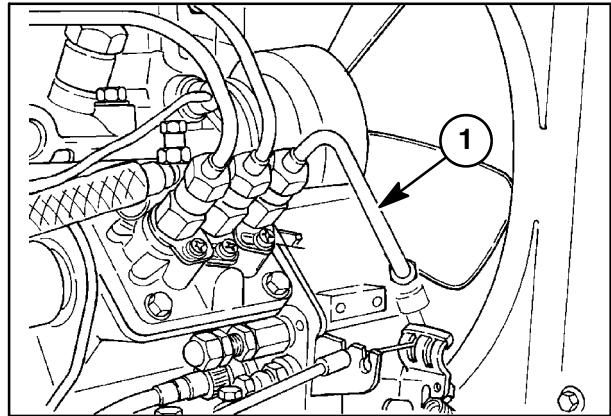
NOTE: A remote fuel supply and fuel line must be used to check spill timing. The fuel tank on the tractor and the mechanical fuel pump will not allow free gravity flow of fuel to the injection pump. Fabricate fuel tank locally.

13. Use a remote fuel tank, 1, and fuel line, 2, for the spill timing. Disconnect the fuel supply line at the injection pump, 3.
14. Connect the remote fuel line, 2, to the injection pump, 3. Put fuel in the remote tank, 1, and turn on the fuel shutoff on the remote tank.



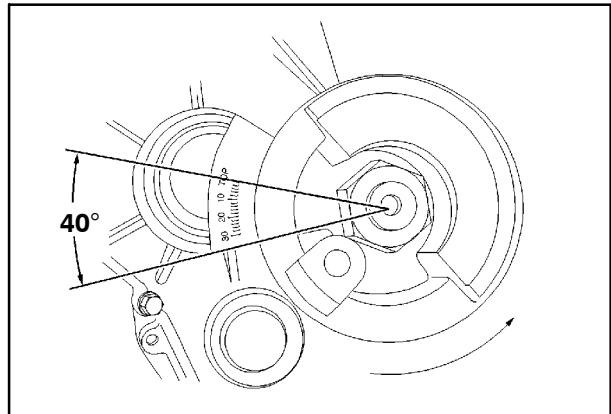
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15. Fabricate a spill tube, 1, from a discarded injection line and install the tube on the No. 1 port on the injection pump.
16. The fuel shut-off solenoid has to be removed from the injection pump, if installed.



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17. Rotate the crankshaft counterclockwise (viewed from the front of the engine) approximately 40°.
18. Turn on the fuel supply to the injection pump. Fuel should flow out of the spill tube on the No. 1 cylinder port.

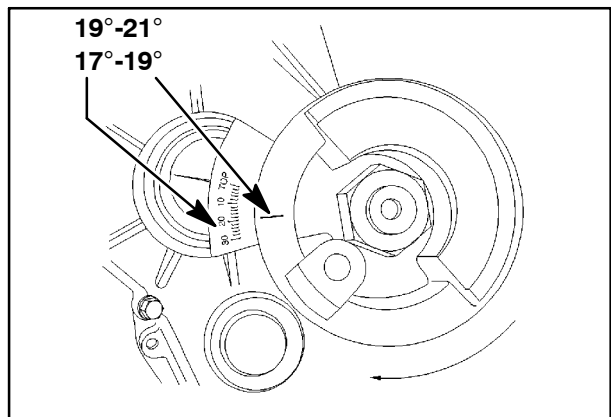


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19. Rotate the crankshaft clockwise. When the timing mark on the crankshaft pulley is in line with the below degree marks on the scale, fuel should stop flowing from the spill tube.

Engine Model	Degree
N843L/TC35, TC35D	17 - 19° BTDC
N844/TC40, TC40D	19 - 21° BTDC
N844L, TC45, TC45D	17 - 19° BTDC

* BTDC - Before Top Dead Center



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20. If fuel does not stop flowing at the appropriate timing mark, the injection pump timing must be adjusted by adding or removing shims located between the injection pump and the engine block.

21. Adding shims will retard the pump timing and removing shims will advance the pump timing.

NOTE: A shim thickness of 0.1 mm (0.004") will change the pump timing by approximately 1°.

22. Assemble all components that were removed from the engine and fuel system.

23. Disconnect the remote fuel line and tank, and reconnect the fuel supply line to the injection pump.

