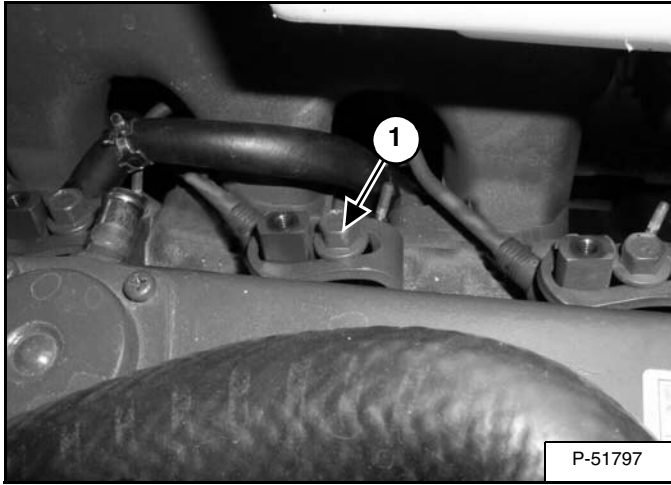


## ENGINE COMPONENTS AND TESTING (CONT'D)

### Fuel Injector Removal And Installation (Cont'd)

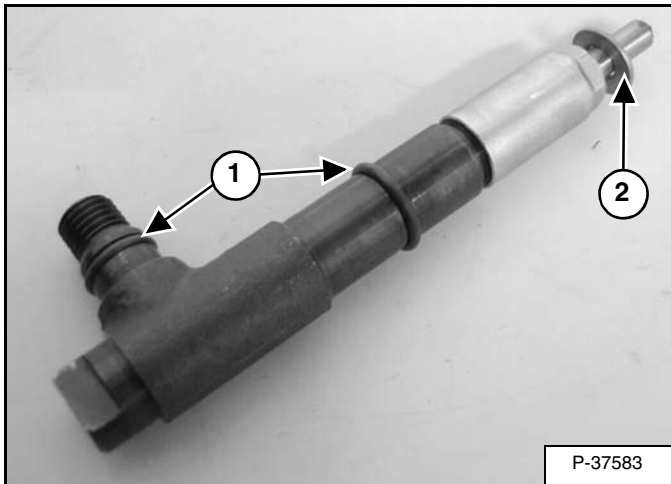
Figure 70-70-29



Remove the injector nozzle holder bolt (Item 1) [Figure 70-70-29] from the cylinder head.

Pull on the injector nozzle to remove the injector nozzle from the cylinder head.

Figure 70-70-30



[Figure 70-70-30] shows the injector nozzle removed from the cylinder. Inspect the injector and replace if necessary.

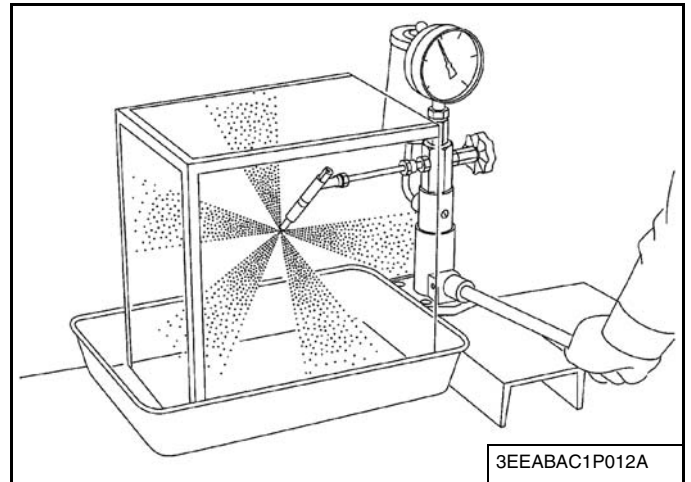
Check and replace the injector nozzle O-rings (Item 1) and the nozzle washer (Item 2) before installing new or used injectors. [Figure 70-70-30].

### Checking Nozzle Injection Pressure

The tool listed will be needed to do the following procedure:

OEM1064 - Injector Nozzle Tester

Figure 70-70-31



Set the injection nozzle to the nozzle tester.

Slowly move the tester handle to measure the pressure at which fuel begins jetting out from the nozzle.

If the measurement is not within the factory specifications, replace the injection nozzle assembly.

**NOTE: Injection nozzle gasket must be replaced when the injection nozzle is removed for checking.**

Injection pressure	Factory spec.	18.6 - 20.1 MPa 190 - 205 kgf/cm <sup>2</sup> 2702 - 2916 PSI

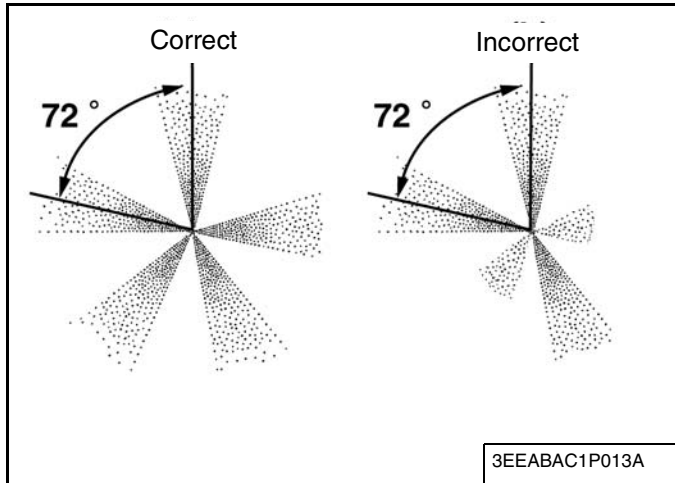
## ENGINE COMPONENTS AND TESTING (CONT'D)

### Nozzle Spraying Condition

The tool listed will be needed to do the following procedure:

OEM1064 - Injector Nozzle Tester

Figure 70-70-32



Set the injection nozzle to a nozzle tester, and check the nozzle spraying condition.

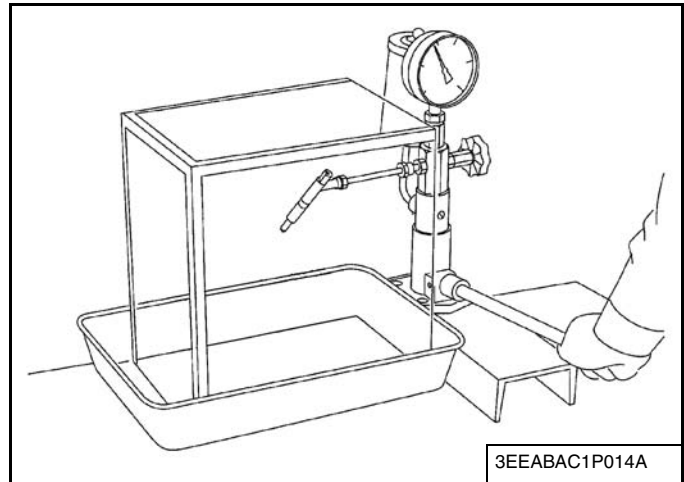
If the spraying condition is defective, replace the injection nozzle assembly.

### Valve Seat Tightness

The tool listed will be needed to do the following procedure:

OEM1064 - Injector Nozzle Tester

Figure 70-70-33



Set the injection nozzle to a nozzle tester.

Raise the fuel pressure, and keep at 16.67 MPa (170 kg/cm<sup>2</sup>, 2418 PSI) for 10 seconds.

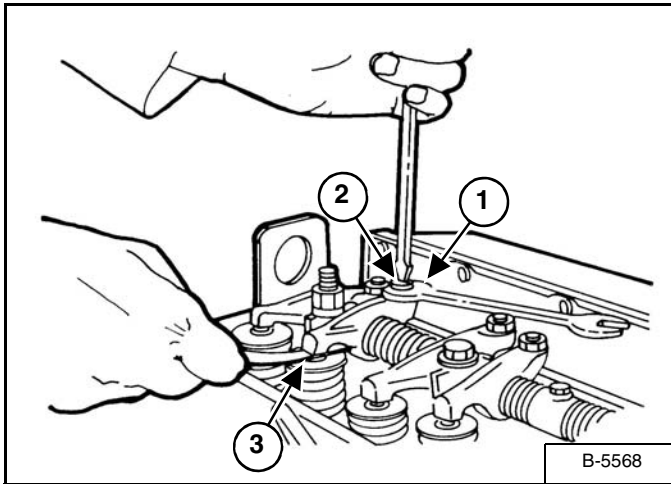
If any fuel leak is found, replace the injection nozzle assembly.

Valve seat tightness	Factory spec.	No fuel leak at 16.67 MPa 170 kg/cm <sup>2</sup> 2418 PSI
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## ENGINE COMPONENTS AND TESTING (CONT'D)

### Valve Clearance Adjustment

Figure 70-70-34



Adjust the valve clearance as follows:

Loosen the lock nut (Item 1) [Figure 70-70-34].

Turn the adjustment screw (Item 2) [Figure 70-70-34] until the correct clearance is obtained.

**NOTE:** The clearance is measured between the rocker arm and valve stem tip (Item 3) [Figure 70-70-34].

Figure 70-70-35

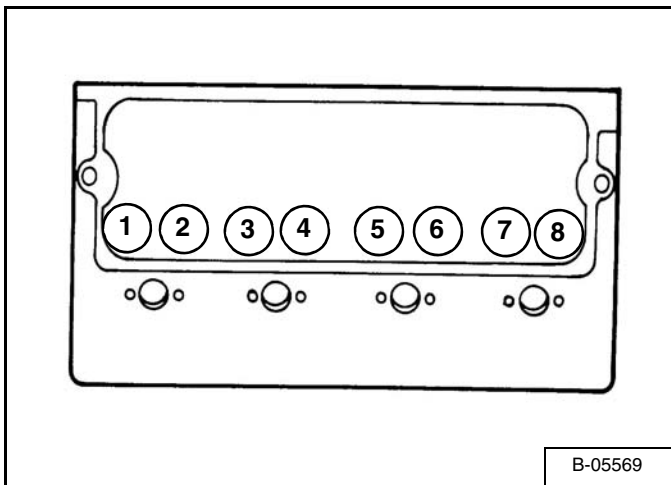


Figure 70-70-36

Cylinder Number	1		2		3		4	
Valve Number	1	2	3	4	5	6	7	8
Valve I=Intake E=Exhaust	I	E	I	E	I	E	I	E

Adjust the valve clearance as follows:

0.0071 - 0.0087 in. (0,18 - 0,22 mm) Intake & Exhaust

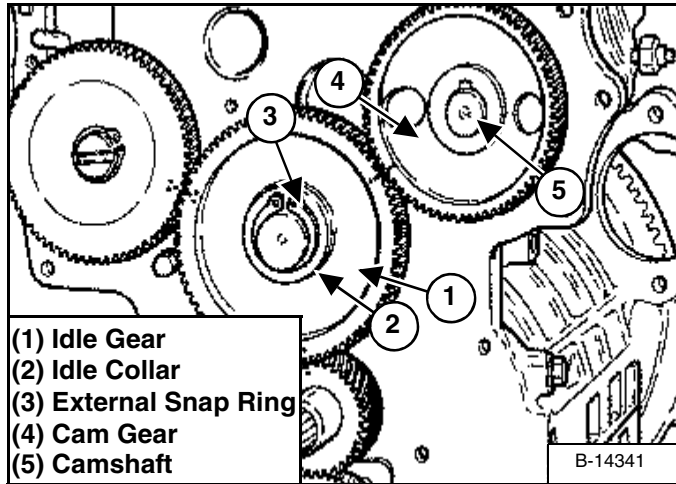
Use the following sequence to set the valves [Figure 70-70-35] & [Figure 70-70-36]:

1. With the rocker arm rocking (valves 7 & 8) on No. 4 cylinder set clearance at No. 1 cylinder (valves 1 & 2).
2. With the rocker arm rocking (valves 3 & 4) on No. 2 cylinder set clearance at No. 3 cylinder (valves 5 & 6).
3. With the rocker arm rocking (valves 1 & 2) on No. 1 cylinder set clearance at No. 4 cylinder (valves 7 & 8).
4. With the rocker arm rocking (valves 5 & 6) on No. 3 cylinder set clearance at No. 2 cylinder (valves 3 & 4).

## ENGINE COMPONENTS AND TESTING (CONT'D)

### Valve Timing, Checking

Figure 70-70-5



Stop the engine and open the rear door.

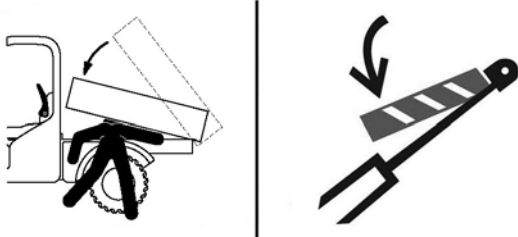
Remove the engine. (See Removal And Installation on Page 70-80-1.)

Remove the timing gearcase cover. (See Timing Gearcase Cover Removal And Installation on Page 70-100-10.)

Make sure the timing marks are in correct alignment [Figure 70-70-5].

## ENGINE

### Removal And Installation



P-90784

#### AVOID DEATH

**Never reach under or work under raised cargo box unless supported by an approved support.**

D-1011-0709

Raise the cargo box and install the approved box lift support device. (See Installing The Cargo Box Support Device on Page 10-21-1.)

Lift and block the machine. (See Procedure For Jackstand Placement On The Axle on Page 10-10-1.)

Disconnect the negative battery cable. (See BATTERY on Page 60-20-1.)

Remove the cab. (See OPERATOR CAB on Page 50-10-1.)

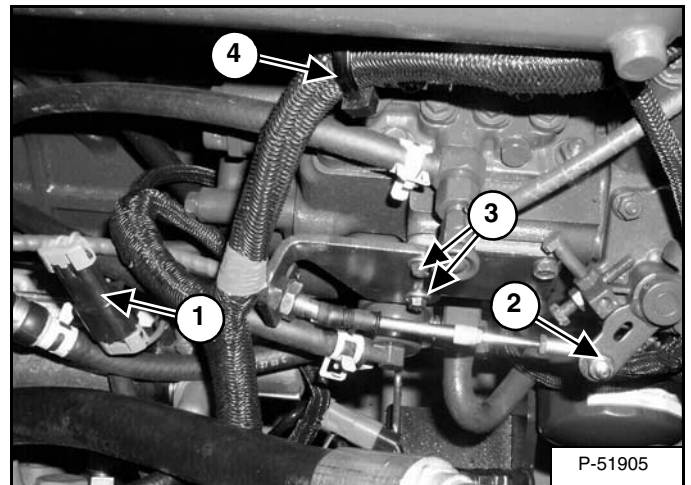
Drain the hydraulic reservoir. (See Replacing Hydraulic Fluid on Page 10-120-2.)

Drain the engine coolant from the radiator. (See Removing & Replacing Coolant on Page 10-90-2.)

Remove the control valve. (See Removal And Installation on Page 20-40-1.)

Remove the pilot valve. (See Removal And Installation on Page 20-70-1.)

Figure 70-80-1



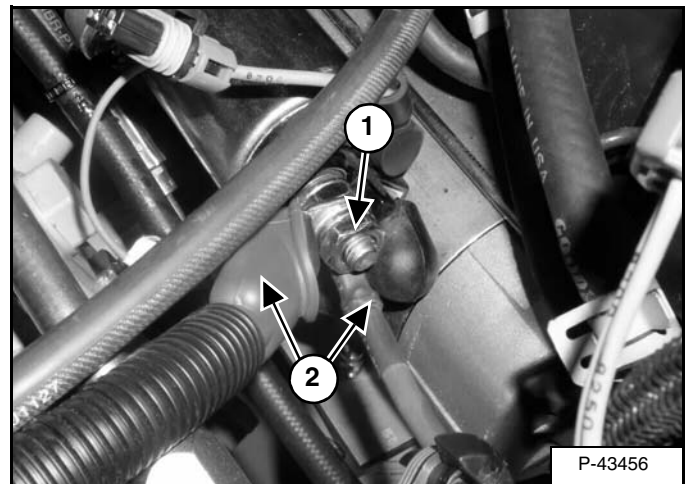
Disconnect the starter solenoid connector (Item 1) [Figure 70-80-1].

Disconnect the engine speed control cable (Item 2) [Figure 70-80-1] from the fuel lever.

Remove the engine speed control cable mount plate (Item 3) [Figure 70-80-1] from the injection pump.

Remove the tie-strap (Item 4) [Figure 70-80-1] from the wire harness.

Figure 70-80-2



Remove the nut (Item 1) [Figure 70-80-2] from the starter solenoid.

Remove the battery and alternator cables from the starter solenoid (Item 2) [Figure 70-80-2].