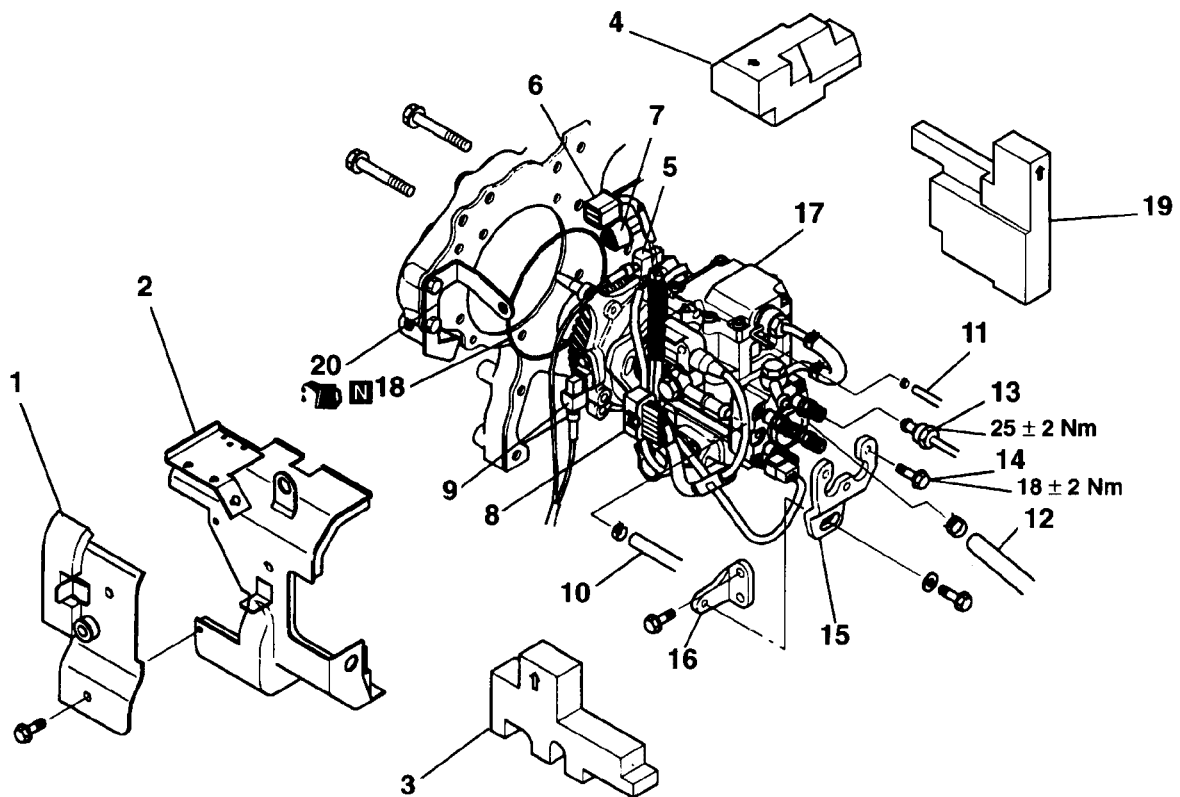


## 12. INJECTION PUMP ASSEMBLY

### REMOVAL AND INSTALLATION



4ME0567

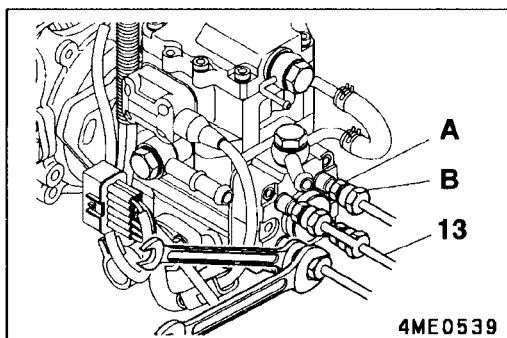
#### Removal steps

1. Injection pump cover B
2. Injection pump cover A
3. Rubber spacer
4. Rubber spacer
5. Harness
6. Harness
7. Harness
8. Harness
9. Harness
10. Fuel return hose

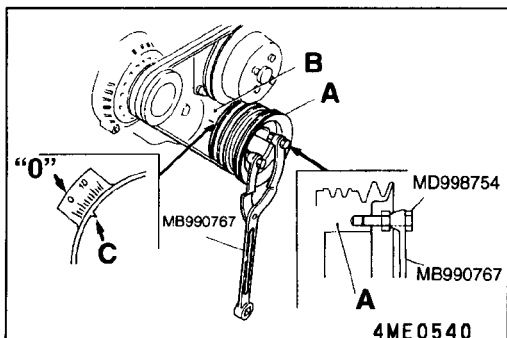
11. Fuel leak-off hose
12. Fuel suction hose
13. Injection pipe
14. Bolt
15. Pump stay
16. Pump stay
17. Injection pump assembly
18. O-ring
19. Rubber spacer
20. Stay

#### Caution

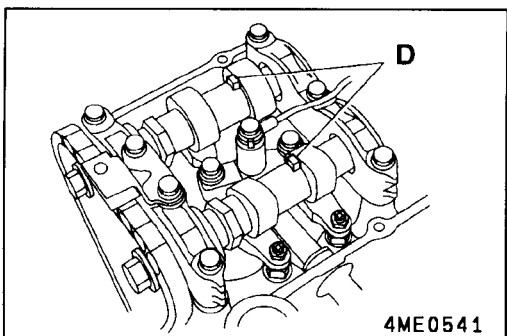
1. Fuel is highly flammable. Keep it away from flames and sources of heat.
2. Be sure to wipe up spilt fuel completely. It could catch fire.
3. Have the injection pump assembly 17 serviced at an appropriate Zexel service station.
4. Dust particles entering the injection pump assembly 17 can seriously affect the engine performance. To prevent it, fully cover the openings left after the removal of parts such as pipes and hoses.
5. Before installing the injection pipe 13, check to ensure that the pipe seating surface is free from any damage and unevenness.

**REMOVAL SERVICE POINT****◀A▶ INJECTION PIPE REMOVAL**

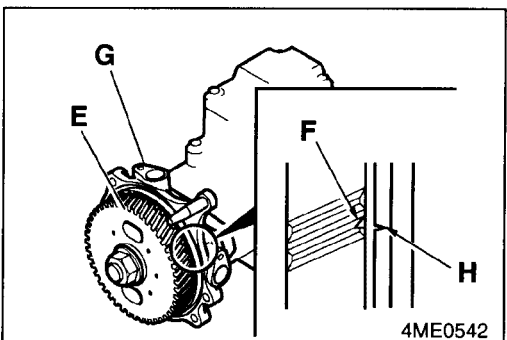
Loosen the union nut **B** of the fuel injection pipe **13** while locking the delivery valve holder **A** to prevent it from rotating together.

**INSTALLATION SERVICE POINTS****▶A◀ INJECTION PUMP ASSEMBLY INSTALLATION**

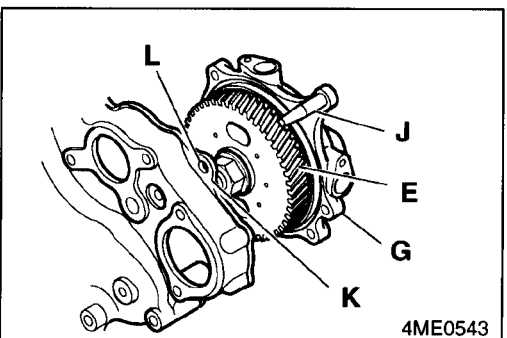
- (1) Turn the crankshaft pulley **A** clockwise with the specified special tool to place the No.1 piston at the TDC on the compression stroke. Align the notch **C** in the crankshaft pulley with the timing mark "0" on the timing gear case **B**.

**Caution**

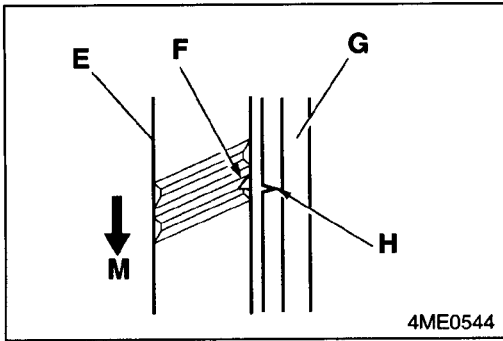
1. If the dent **D** on the camshaft faces upward, the No.1 piston is at the TDC on the compression stroke. If not, rotate the crankshaft pulley **A** one more turn in normal direction.
2. Never rotate the crankshaft pulley **A** in reverse direction (counterclockwise). It may cause damage to the timing chain tensioner.  
If the crankshaft is accidentally rotated in reverse direction, remove and reinstall the tensioner according to the correct installation procedure.



- (2) Align the notch **F** on the injection pump gear **E** with the mating mark "H" on the flange plate **G**.

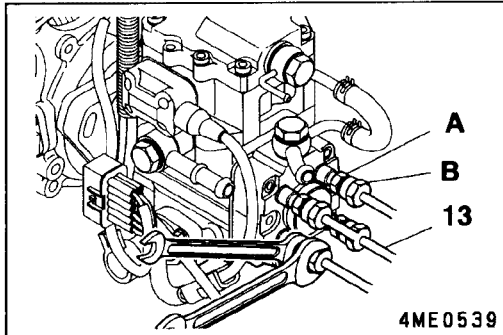


- (3) Align the guide bar **J** of the flange plate **G** with the guide hole **L** of the front plate **K** and insert the injection pump assembly into the front plate just before the injection pump gear **E** meshes with the idler gear.



- (4) Confirm that the notch **F** on the injection pump gear **E** is aligned with the mating mark "**H**" on the flange plate **G**. Then push the injection pump assembly further into the front plate.

When meshing the gears, the notch **F** on the gear should move in the direction **M**.

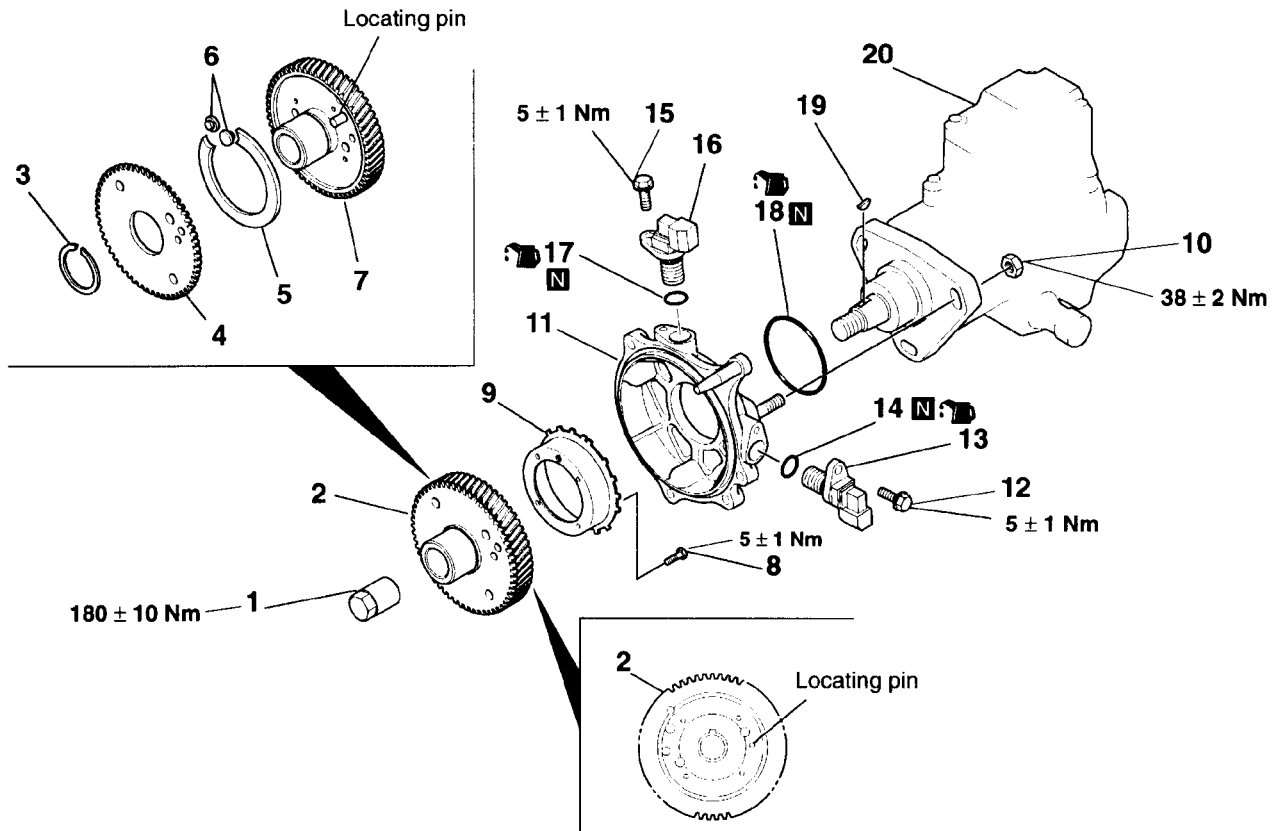


#### ►B◄ INJECTION PIPE INSTALLATION

Tighten the union nut **B** of the fuel injection pipe **13** while locking the delivery valve holder **A** to prevent it from rotating together.

## 13. INJECTION PUMP GEAR

### REMOVAL AND INSTALLATION



4ME0568

#### Removal steps

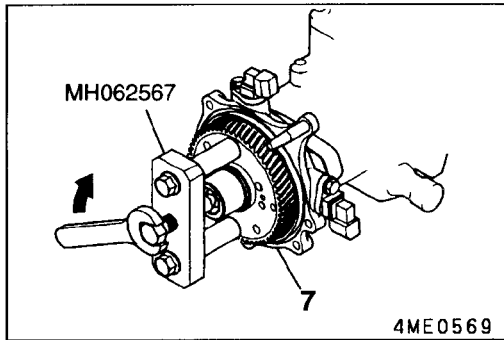
- B◄
1. Nut
  2. Injection pump gear assembly
  3. Snap ring
  4. Injection pump sub gear
  5. Spring
  6. Pin
  7. Injection pump gear
  8. Bolt
  9. Sensor plate
  10. Nut

◄A►

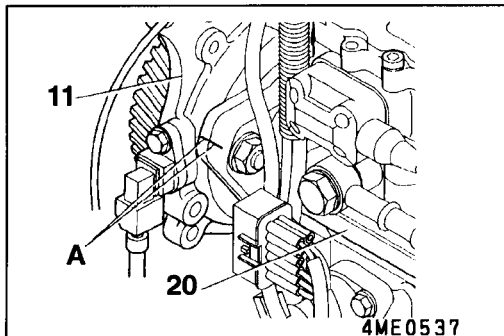
- A◄
11. Flange plate
  12. Bolt
  13. Engine speed sensor II (Backup)
  14. O-ring
  15. Bolt
  16. Engine speed sensor I (Main)
  17. O-ring
  18. O-ring
  19. Key
  20. Injection pump

#### Caution

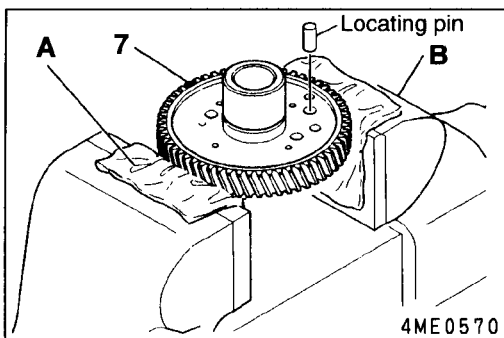
Have the injection pump 20 serviced at an appropriate Zexel service station.

**REMOVAL SERVICE POINT****◀A▶ INJECTION PUMP GEAR REMOVAL**

Using the special tool, remove the injection pump gear 7.

**INSTALLATION SERVICE POINTS****▶A◀ FLANGE PLATE INSTALLATION**

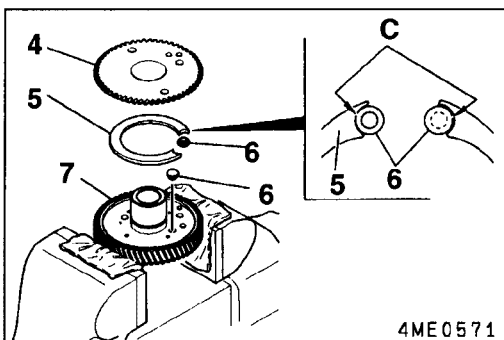
Install the flange plate 11 while aligning the mating marks A on the flange plate and the injection pump 20.

**▶B◀ INJECTION PUMP GEAR ASSEMBLY INSTALLATION**

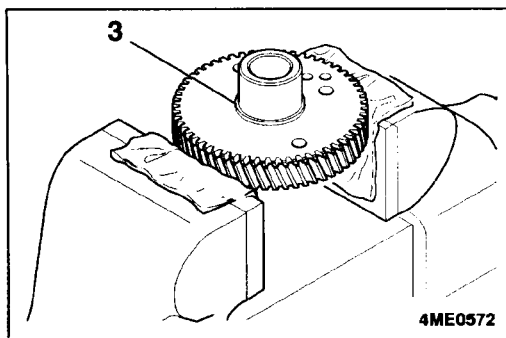
- (1) Clamp the injection pump gear 7 in a vice B. Protect the gear teeth with pieces of waste cloth A or the like as shown.
- (2) Remove the locating pin from the pump gear 7.

**Caution**

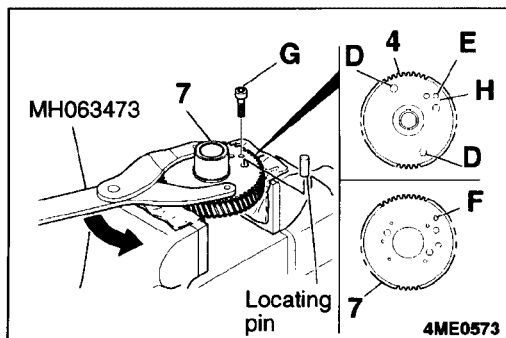
1. Check the removed locating pin for deformation or damage before using it again.
2. Replace the locating pin if deformed or damaged.



- (3) Install the injection pump sub gear 4, spring 5 and pins 6 onto the injection pump gear 7 as shown.
- (4) Hook each pin 6 on the spring 5 at C.



(5) Fit the snap ring 3 onto the injection pump gear.



- (6) Fit the special tool in the hole D in the sub gear 4. Turning the sub gear with the special tool counter-clockwise, align the hole E in the sub gear 4 with the hole F in the pump gear 7, then install the bolt G.
- (7) In that state, strike the locating pin into the hole H in the sub gear 4, then remove the bolt G.

# 14. ROCKER COVER, CAMSHAFT HOLDER ASSEMBLY AND CAMSHAFT

## REMOVAL AND INSTALLATION

