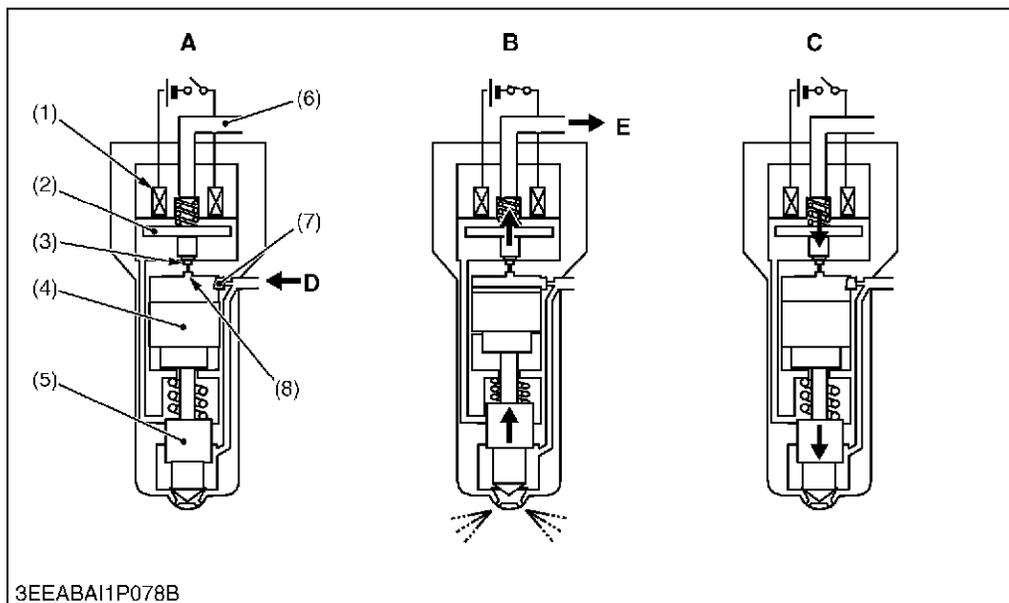


**Injector Operation**



- (1) Solenoid
- (2) TWV (Two-way Valve)
- (3) Discharge Orifice
- (4) Command Piston
- (5) Needle Valve
- (6) Leak Passage
- (7) Intake Orifice
- (8) Control Chamber

- A: Injection Stop**
- B: Injection Start**
- C: Injection Finish**
- D: From Rail**
- E: To Fuel Tank**

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The injector uses the signal output from the engine ECU to control the injection with the fuel pressure in the control chamber.

The system for controlling the pressure of the control chamber works by energizing the solenoid, which opens the passage of the chamber's discharge orifice and the fuel is injected due to the drop in pressure. When the current stops, the pressure in the control chamber returns to what it was and injection ceases.

**1) Injection Stop**

With no current to the solenoid (1), the TWV (2) cuts off the discharge orifice (3) passage, so rail pressure is applied to the control chamber (8) and the bottom of the needle valve (5). As the diameter of the command piston (4) on the control chamber side is larger than the diameter of the bottom of the needle valve, it works to push the needle valve down, which is compounded by the nozzle spring pushing it down, and the needle valve is closed.

**2) Injection Start**

When the solenoid (1) is energized, it draws the TWV (2) up, opening the passage of the discharge orifice (3), returning fuel in the control chamber (8) to the fuel tank via the leak passage (6) and dropping the pressure.

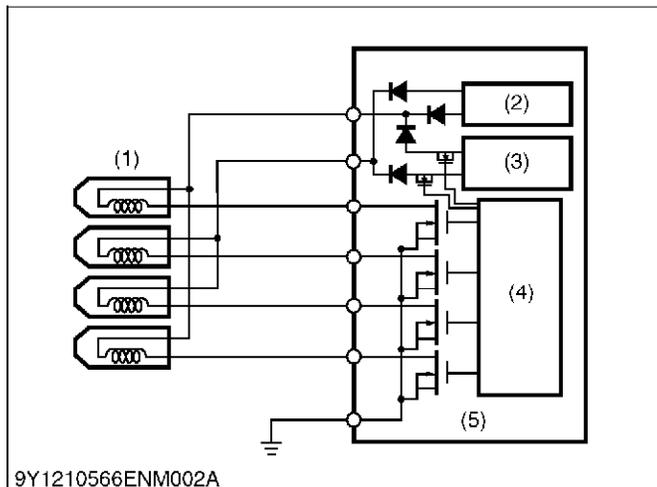
The drop in the pressure of the control chamber causes the pressure applied to the bottom of the needle valve (5) to become greater than the pressure on the control chamber side, and the needle valve compresses the nozzle spring and starts injecting fuel.

**3) Injection Finish**

When current to the solenoid (1) stops, the TWV (2) lowers and the discharge orifice (3) passage is closed.

When the passage of the discharge orifice closes, the fuel pressure in the control chamber (8) recovers to the rail pressure, so the needle valve (5) is pressed back via the command piston (4), stopping the injection.

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**Injector Drive Circuit**

To increase the responsiveness of the injector, the voltage that drives the injector is raised to a high voltage, accelerating the magnetization of the solenoid and increasing the responsiveness of the TWV.

The battery voltage is raised to about 110 V by a high voltage generating circuit (3) inside the engine ECU (5) and that voltage is supplied to the injector to actuate it.

- (1) Injector
- (2) Rated Amperage Circuit
- (3) High Voltage Generating Circuit
- (4) Control Circuit
- (5) Engine ECU

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