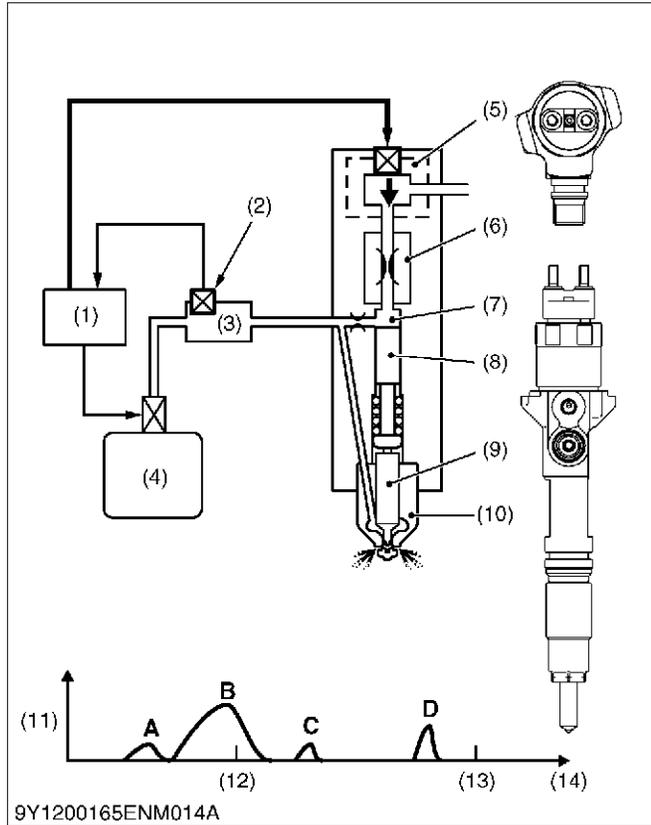


## [5] INJECTOR



The injectors inject high-pressure fuel from the rail into the combustion chamber of the engine, using signals from the engine ECU (1) to produce the ideal timing, amount of fuel, mixture and spray.

The injector injects a finely tuned spray in three pulses during the combustion stage.

### A: Pre-injection

First a small amount is injected, mitigating the effect of the initial burn and reducing NOx (oxides of nitrogen) and noise.

### B: Main injection

The main injection follows with the real burn, and in the last stage.

### C: After injection

Diffuse combustion is induced, thus reducing particulate matter (PM) generated by the main injection.

### D: Post injection

Post injection function is to send fuel to Diesel Oxidation Catalyst (DOC) including with Diesel Particulate Filter (DPF) assembly. This injection increases the exhaust temperature.

### Injector Architecture

Injectors consist of nozzle components (nozzle (10) and needle valve (9)), a TWV (two-way valve) (5), which controls the volume and mixture of fuel, a control chamber (7) with an intake orifice and discharge orifice (6), a command piston (8) and a nozzle spring.

- |                                 |                           |
|---------------------------------|---------------------------|
| (1) Engine ECU                  | <b>A: Pre-injection</b>   |
| (2) Rail Pressure Sensor        | <b>B: Main Injection</b>  |
| (3) Rail                        | <b>C: After Injection</b> |
| (4) Supply Pump                 | <b>D: Post Injection</b>  |
| (5) TWV (Two-way Valve)         |                           |
| (6) Discharge Orifice           |                           |
| (7) Control Chamber             |                           |
| (8) Command Piston              |                           |
| (9) Needle Valve                |                           |
| (10) Nozzle                     |                           |
| (11) Injection Amount           |                           |
| (12) T.D.C (Top Dead Center)    |                           |
| (13) B.D.C (Bottom Dead Center) |                           |
| (14) Crank Angle                |                           |

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