



How the Common Rail System Works:

The injectors that provide fuel to the cylinders are attached to a single tube (the common rail). They can deliver 1800-bar injection pressure, the highest in the industry, with multiple injection capacity in 0.4 milliseconds per combustion cycle, the shortest in the industry. DENSO's common rail system employs five injections:

- The pilot injection, occurring well before ignition, provides time for fuel and air to mix.
- The “pre” injection shortens the ignition delay during the main injection and, as a result, reduces the generation of nitrogen oxide (NOx), noise and engine vibration.
- The main injection provides the fuel for combustion and power.
- The “after” injection occurs a split second after the main injection and re-burns any remaining particulate matter (PM).
- The “post” injection helps manage the temperature of the exhaust gases, which makes the exhaust processing in the engine's after-treatment cycle more effective.



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