### Homogeneous Combustion

• By injecting fuel during the first half of the intake stroke, the engine creates a more homogeneous air-fuel mixture. In addition, by utilizing the heat of evaporation of the injected fuel to cool the compressed air, the engine has increased its charging efficiency and produces a higher power output.

#### Air-Fuel Ratio Control

| | |
|---|---|
| Air-Fuel Ratio Control | The system determines the fuel injection volume based on the engine speed and the intake air volume (which is detected by the airflow meter). After the engine is started, feedback control is effected on the air-fuel ratio based on signals from the air-fuel ratio sensor. |

#### Control and Combustion Classification

| | | State of Combustion | Injection Timing | Control Condition |
|---|---|---|---|---|
| (1) | Lean Air-Fuel Ratio Control | weak stratification combustion | compression stroke | At the time of starting between the colds |
| (2) | Stoichiometric Air-Fuel Ratio Control | homogeneous combustion | intake stroke | Except (1) and (3) |
| (3) | Air-Fuel Ratio Feedback Control Prohibition | homogeneous combustion | intake stroke | High load driving (large) |
| | | | | At the time of low engine coolant temperature |

### Fuel Cut

• The system temporarily stops the injection of fuel to protect the engine and improve fuel economy.

#### The following are the three types of fuel cutoff

| | |
|---|---|
| Deceleration Fuel Cutoff | Stops the injection of fuel when the engine speed is higher than the specified value during deceleration (throttle OFF detected by ECM). This prevents the TWC (Three-Way Catalyst) from overheating due to misfiring and improves fuel economy. The fuel cutoff and resumption speeds are higher when the coolant temperature is low. |
| Engine Speed Fuel Cutoff | Stops the injection of fuel when the engine speed is higher than the specified value to prevent over-revolution. |
| N → D Shift Fuel Cutoff | Stops the injection of fuel for a prescribed length of time when shifting from N→ D, if the engine speed is higher than the specified value to reduce shift shock. |

## Fuel Pump Control (For High Pressure Side)

● The system varies the high fuel pressure between 4 and 13 MPa to suit the driving conditions, in order to reduce friction loss.

● When the engine is started, the solenoid spill valve opens, allowing the fuel to be sent to the delivery pipe at the pressure regulator pressure (400 kPa).