1GD-FTV ENGINE MECHANICAL

■ GENERAL

1. Outline

- The 1GD-FTV TOYOTA Direct injection 4 stroke common-rail Diesel engine (D-4D) is an in-line 4-cylinder, 2.8-liter, 16-valve DOHC, turbocharged diesel engine. This engine uses the direct injection system and common-rail system to achieve high performance, clean emissions, low noise and low vibrations.
- An intercooler is provided. This lowers the intake air temperature and improves power output.

2. Specification

Engine Type			1GD-FTV
			w/ Variable Nozzle Vane Type Turbocharger
			w/ Solenoid Type Injector
No. of Cyls. & Arrangement			4-Cylinder, In-line
Valve Mechanism			16-Valve DOHC, Chain Drive
Combustion Chamber			Direct Injection Type
Manifolds			Cross-flow
Fuel System			Common-rail Type
Displacement			2755 cm^3 (168.1 cu. in.)
Bore × Stroke			92.0 mm × 103.6 mm (3.62 in. × 4.08 in.)
Compression Ratio			15.6 : 1
Max. Output (EEC)			111 kW @ 3600 rpm
Max. Torque (EEC)			300 N·m @ 1000 to 3400 rpm
Valve Timing	Intake	Open	6° BTDC
		Closed	29° ABDC
	Exhaust	Open	40° BBDC
		Closed	10° ATDC
Firing Order			1-3-4-2
Fuel Cetane Number			48 or higher
Emission Regulation			EURO 6
Engine Service Mass (Reference)*			287 kg (632.7 lb)

*: Weight shows the figure with the oil and water fully filled.

3. Main Features

This engine is able to achieve the following through the use of the items listed below:

(1) High performance and fuel economy
(2) Low noise and vibration
(3) Lightweight and compact design
(4) Good serviceability
(5) Clean emissions

Item	(1)	(2)	(3)	(4)	(5)
A cylinder head cover sub-assembly made of plastic is used.	-	○	○	-	-
An oil mist separator is used on the cylinder head cover sub-assembly.	-	-	-	-	○
A cylinder head sub-assembly made of aluminum alloy is used.	-	-	○	-	-
A tangential port and a helical port are used on the intake port.	○	-	-	-	○
A piston provided with a combustion chamber is used.	○	○	-	-	○
Connecting rod sub-assemblies made of high tension material.	○	○	○	-	-
A timing chain and a chain tensioner are used.	-	○	-	○	-
Valve lash adjuster assemblies are used.	-	○	-	○	-
Valve rocker arm sub-assemblies are used.	○	○	○	○	-
Toyota Genuine Super Long Life Coolant (SLLC) is used.	-	-	-	○	-
A serpentine belt drive system is used.	-	-	○	○	-
A diesel throttle valve is used.	○	○	-	-	○
A variable nozzle vane type turbocharger sub-assembly is used.	○	-	-	-	○
An intercooler assembly is used.	○	-	-	-	○
An HP5S type injection or supply pump assembly is used.	○	○	○	-	○
A common-rail type fuel injection system is used.	○	○	-	-	○
An injector assembly is provided in the bore center.	○	○	-	-	○
Compensation values and Quick Response (QR) codes are used.	○	-	-	○	○
An intake mass air flow meter sub-assembly is used.	○	-	-	-	○
A pilot injection control system is used.	-	○	-	-	○
An EGR system is used.	-	-	-	-	○
An EGR cooler with bypass is used.	-	-	-	-	○
An oxidation catalyst is used.	-	-	-	-	○
A DPF control is used.	-	-	-	-	○
An UREA SCR system is used.	-	-	-	-	○
An SCR catalyst is used.	-	-	-	-	○