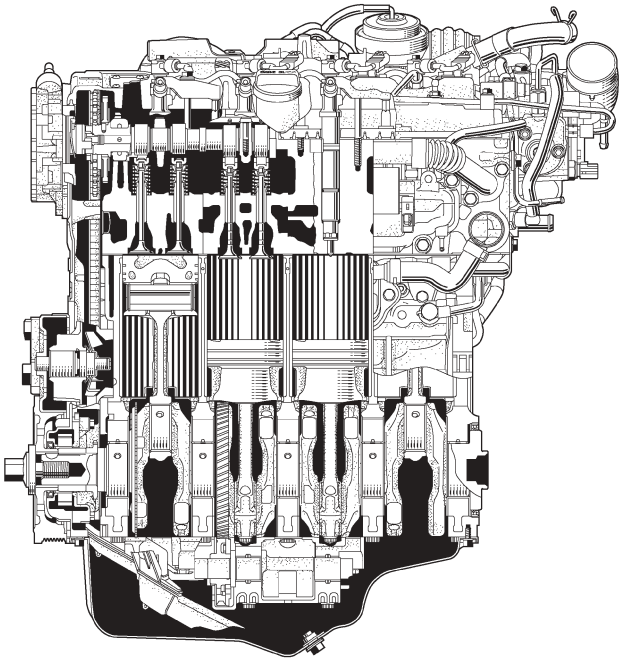
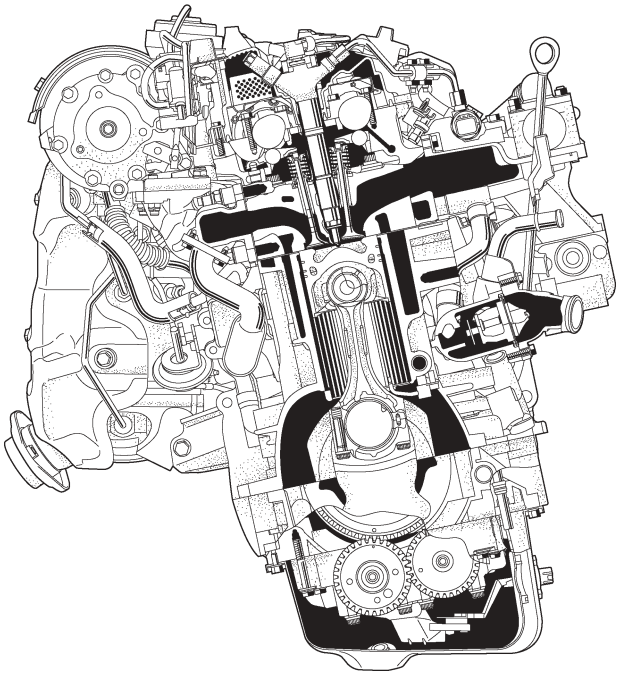
2AD-FHV ENGINE

■ DESCRIPTION

The newly developed 2AD-FHV TOYOTA D-4D (Direct injection 4 stroke common-rail Diesel engine) is in-line 4-cylinder, 2.2 liter, 16-valve DOHC turbocharged with intercooler diesel engine.
This is the engine that has been changed based on the 2AD-FTV engine to realize higher performance. In addition, this engine uses D-CAT (Diesel Clean Advanced Technology) system for clean emission.



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▶ Engine Specifications ◀

No. of Cyls. & Arrangement			4-cylinder, In-line
Valve Mechanism			16-valve DOHC, Chain and Gear Drive
Combustion Chamber			Direction Injection Type
Manifolds			Cross-flow
Fuel System			Common-rail Type
Displacement cm^3 (cu. in.)			2231 (136.1)
Bore x Stroke mm (in.)			86.0 x 96.0 (3.39 x 3.78)
Compression Ratio			15.8 : 1
Max. Output (EEC)			130 kW @ 3600 rpm
Max. Torque (EEC)			400 N·m @ 2000 – 2600 rpm
Oil Capacity		Dry	6.7 Liters (7.1 US qts, 5.9 Imp. qts)
		With Oil Filter	5.9 Liters (6.2 US qts, 5.2 Imp. qts)
		Without Oil Filter	5.5 Liters (5.8 US qts, 4.8 Imp. qts)
Oil Grade			ACEA B1, API CF-4 or CF
Engine Coolant	Type		TOYOTA Genuine Super Long Life Coolant or the following*1
	Capacity	With Combustion Type Power Heater	7.7 Liters (8.1 US qts, 6.8 Imp. qts)
		Without Combustion Type Power Heater	7.3 Liters (7.7 US qts, 6.4 Imp. qts)
Firing Order			1 – 3 – 4 – 2
Fuel Cetane Number			48 or higher
Emission Regulation			EURO IV
Engine Service Mass*2 (Reference) kg (lb)			168 (370)

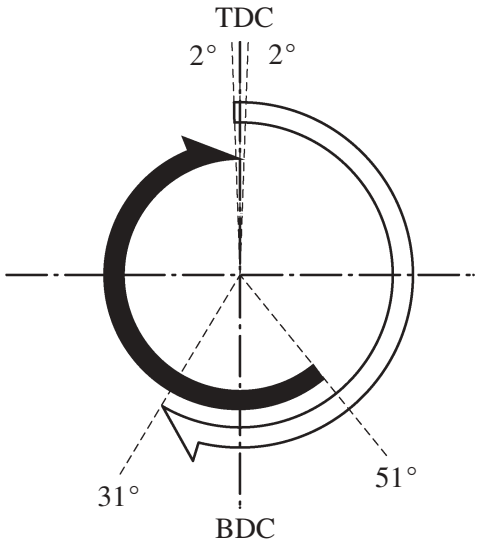
*1: Similar high quality ethylene glycol based on non-silicate, non-amine, non-nitrite, and non-borate coolant with long-life hybrid organic acid technology. (Coolant with hybrid organic acid technology consists of the combination of low phosphates and organic acids.)

*2: Weight shows the figure with the oil and engine coolant fully filled.

EG

▶ Valve Timing ◀

: Intake Valve Opening Angle
: Exhaust Valve Opening Angle



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Intake Valve	Open	21° BTDC
	Close	31° ABDC
Exhaust Valve	Open	51° BBDC
	Close	2° ATDC