

■ FEATURES OF 4GR-FSE ENGINE

The 4GR-FSE engine has achieved the following performance through the use of the items listed below.

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

Item		(1)	(2)	(3)	(4)	(5)
Engine Proper	A steel laminate type cylinder head gasket is used.	○				
	An upright intake port is used.	○		○		
	A taper squish shape is used for the combustion chamber.	○				○
	A cylinder block made of aluminum alloy is used.			○		
	The skirt portion of the piston has a resin coating applied to reduce friction.	○	○			○
	An oil pan (oil pan No.1) made of aluminum alloy is used.		○	○		
Valve Mechanism	A Dual VVT-i (Variable Valve Timing-intelligent) system is used.	○				○
	Hydraulic lash adjusters are used.	○	○		○	
	A timing chain and chain tensioner are used.	○	○	○		
	Roller rocker arms are used.	○				
Lubrication System	An oil filter with a replaceable element is used.				○	
Cooling System	The engine coolant that is used is the TOYOTA Genuine SLLC (Super Long Life Coolant).				○	
Intake and Exhaust System	A cable-less type throttle body is used.			○	○	
	An intake air surge tank made of plastic is used.			○		
	A stainless steel exhaust manifold is used.			○		○
	An ultra thin-wall, high-cell density ceramic type TWC (Three-Way Catalytic Converter) is used.					○
Fuel System	D-4 (Direct injection 4-stroke gasoline engine) system is used.	○				○
	A slit nozzle type high pressure injector is used.	○				○
	Quick connectors are used to connect the fuel hose with the fuel pipe.				○	
	A quick turn type fuel cap is used.				○	
Ignition System	The DIS (Direct Ignition System) makes ignition timing adjustment unnecessary.	○			○	○
	Long-reach type iridium-tipped spark plugs are used.	○			○	○
Charging System	A segment conductor type alternator is used.	○		○		
	A alternator pulley with a one way clutch is used.	○				○
Starting System	A PS (Planetary reduction-Segment conductor motor) type starter is used.			○		

(Continued)

Item		(1)	(2)	(3)	(4)	(5)
Serpentine Belt Drive System	A serpentine belt drive system is used.			○	○	
Engine Control System	MRE (Magnetic Resistance Element) type VVT sensors are used.	○				
	The ETCS-i (Electronic Throttle Control System-intelligent) system is used.	○				○
	An ACIS (Acoustic Control Induction System) is used.	○				
	Electronically operated SCVs (Swirl Control Valve) are used.	○				○
	The cranking holding function is used.	○				
	A charging control system is used.					○