■ FEATURES OF 1GR-FE ENGINE

The 1GR-FE engine has achieved the following performance features as a result of 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 emissions and fuel economy

Item		(1)	(2)	(3)	(4)	(5)	New	Previous
Engine Proper	Upright intake ports are used.	○		○			○	○
	A taper squish shape is used for the combustion chamber.	○				○	○	○
	A steel laminate type cylinder head gasket is used.	○					○	○
	A cylinder block sub-assembly made of aluminum alloy is used.			○			○	○
	A cylinder block water jacket spacer is used.	○					○	
	The skirt portion of the piston has a resin coating applied to reduce friction.	○	○			○	○	○
	A No. 1 oil pan made of aluminum alloy is used.		○	○			○	○
Valve Mechanism	A Dual Variable Valve Timing-intelligent (Dual VVT-i) system is used.	○				○	○	
	A VVT-i system is used.	○				○		○
	A valve lash adjuster assembly is used.	○	○		○	○	○	
	A valve rocker arm sub-assembly is used.	○				○	○	
	A shimless type valve lifter is used.	○		○				○
	Timing chains and chain tensioners are used.	○	○	○			○	○
Lubrication System	An oil filter with a replaceable element is used.				○		○	
Cooling System	Toyota genuine Super Long Life Coolant (SLLC) is used.				○		○	○
Intake and Exhaust System	A linkless-type throttle body is used.			○	○		○	○
	An intake air surge tank made of plastic is used.			○			○	○
	Stainless steel exhaust manifolds are used.			○			○	○
Fuel System	12-hole type fuel injector sub-assemblies are used to improve the atomization of fuel.	○				○	○	○
	A fuel delivery pipe sub-assembly that is made of plastic is used.			○			○	○
Ignition System	The Direct Ignition System (DIS) makes ignition timing adjustment unnecessary.	○			○	○	○	○
	Long-reach type iridium-tipped spark plugs are used.	○			○	○	○	

(Continued)

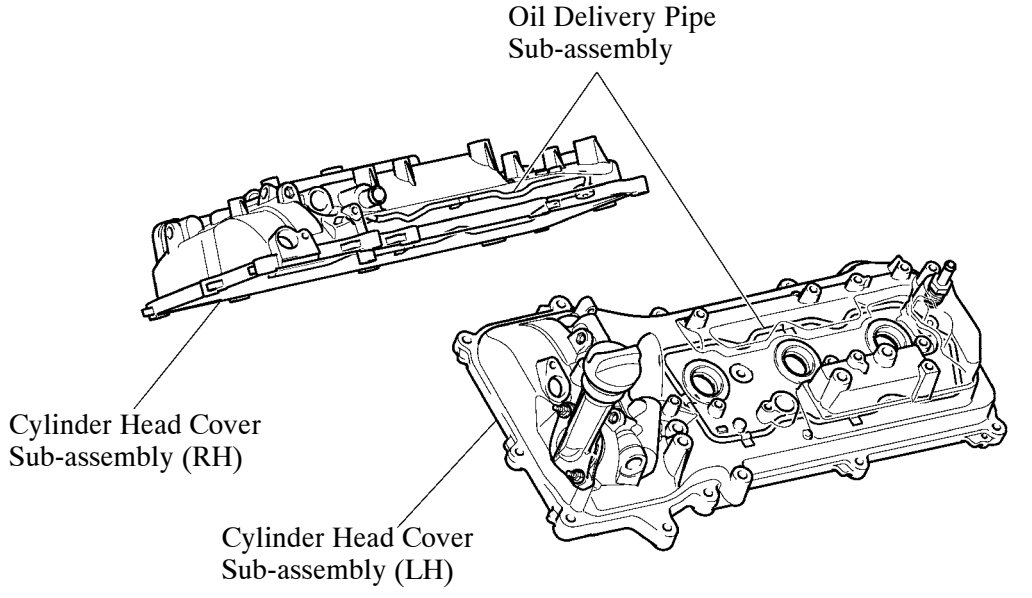
Item		(1)	(2)	(3)	(4)	(5)	New	Previous
Charging System	A segment conductor type generator is used.	○		○			○	○
	A generator pulley with a clutch is used.					○	○	
Serpentine Belt Drive System	A serpentine belt drive system is used.			○	○		○	○
Engine Control System	Magnetic Resistance Element (MRE) type VVT sensors are used.	○					○	○
	An air injection system is used.					○	○*	
	The Electronic Throttle Control System-intelligent (ETCS-i) is used.	○				○	○	○
	An evaporative emission control system is used.					○	○	○

*: Models compliant with EURO 5 emission regulations

■ ENGINE PROPER

1. Cylinder Head Cover Sub-assembly

An oil delivery pipe sub-assembly is installed inside each cylinder head cover sub-assembly. This ensures lubrication to the sliding parts of the valve rocker arm sub-assembly, achieving reliability.



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