2. Features of 2TR-FE Engine

The 2TR-FE engine has achieved the following performance through the adoption 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 cylinder head cover made of plastic is used.			○		
	The taper squish shape is used for the piston head.	○				○
	2 balance shafts are used.		○			
	An oil pan No.1 made of aluminum alloy is used.		○	○		
Valve Mechanism	A valve mechanism in which the camshafts actuate the roller rocker arms in order to open and close the valves, has been adopted.	○				○
	Hydraulic lash adjuster is used.	○	○		○	
	The VVT-i system is used.	○				○
	A timing chain and chain tensioner are used.	○		○	○	
Cooling System	The water bypass pipe made of plastic is used.			○		
Intake and Exhaust System	Intake manifold made of plastic is used.			○		
	A stainless steel exhaust manifold is used.			○		
	A TWC (Three Way Catalytic Converter) is used. *					○
	The link-less type throttle body is used.			○	○	
Fuel System	Long nozzle, 12-hole type (unleaded gasoline models) or 4-hole type (leaded gasoline models) fuel injectors with a high atomizing performance are used.	○				○
Ignition System	The long-reach type spark plugs are used.	○				○
	The DIS (Direct Ignition System) makes ignition timing adjustment unnecessary.	○		○	○	○
Charging System	A segment conductor type alternator is used.	○		○		
Starting System	The PS (Planetary reduction-Segment conductor motor) type starter is used.	○		○		
Engine Control System	The ETCS-i is used.	○				○
	The flat type knock sensor is used.	○				
	The no-contact sensor is used in the throttle position sensor and accelerator pedal position sensor.	○				
	The use of an air fuel ratio sensor allows for precise control.*					○
	An Air Injection system has been adopted. *					○

*: for Unleaded Gasoline Models