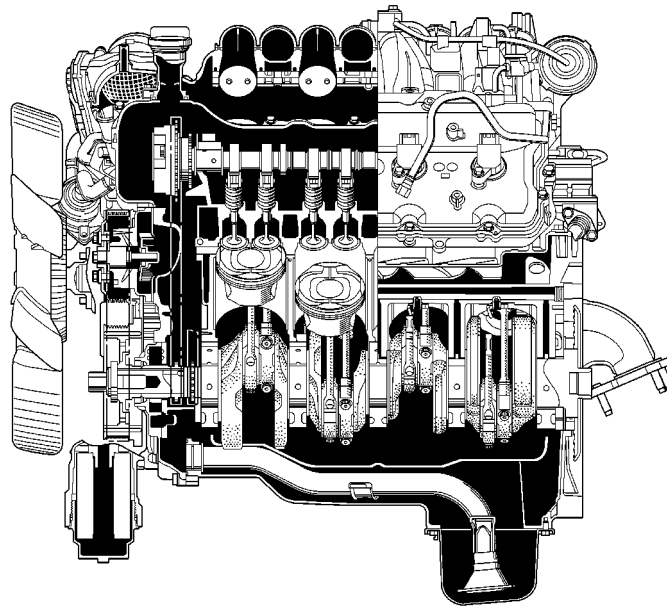


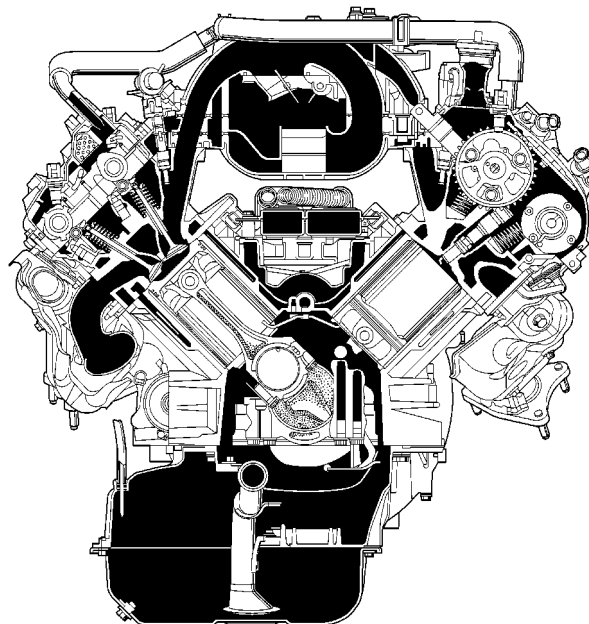
3UR-FE ENGINE

■ DESCRIPTION

The 3UR-FE engine is a 5.7-liter, 32-valve DOHC V8. This engine uses the Dual VVT-i (Variable Valve Timing-intelligent) system, DIS (Direct Ignition System), ACIS (Acoustic Control Induction System), ETCS-i (Electronic Throttle Control System-intelligent), and air injection system. These control functions achieve improved engine performance, fuel economy, and clean emissions.



04E1EG01Z



04E1EG02Z



► Engine Specifications ◀

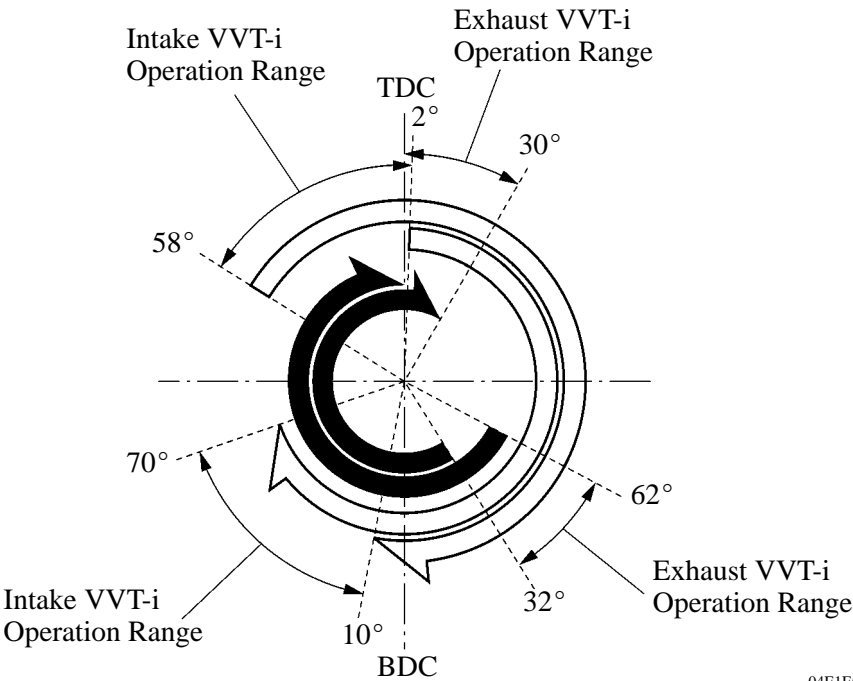
No. of Cyls. & Arrangement			8-cylinder, V Type
Valve Mechanism			32-valve DOHC, Chain Drive (with Dual VVT-i)
Combustion Chamber			Pentroof Type
Manifolds			Cross-flow
Fuel System			SFI
Ignition System			DIS
Displacement		cm ³ (cu. in.)	5663 (345.6)
Bore × Stroke		mm (in.)	94.0 × 102.0 (3.70 × 4.02)
Compression Ratio			10.2 : 1
Max. Output (SAE-NET)* ¹			284 kW @ 5600 rpm (381 HP @ 5600 rpm)
Max. Torque (SAE-NET)* ¹			544 N·m @ 3600 rpm (401 ft·lbf @ 3600 rpm)
Valve Timing	Intake	Open	–2° to 58° BTDC
		Close	70° to 10° ABDC
	Exhaust	Open	62° to 32° BBDC
		Close	0° to 30° ATDC
Firing Order			1–8–7–3–6–5–4–2
Oil Grade			ILSAC
Octane Rating			87 or higher
Research Octane Number (RON)			91 or higher
Tailpipe Emission Regulation			LEVII-ULEV, SFTP
Evaporative Emission Regulation			LEVII, ORVR
Engine Service Mass* ² (Reference)		kg (lb)	219.3 (483.5)

*¹: Maximum output and torque ratings are determined by revised SAE J1349 standard.

*²: The figure shown is the weight of the part without coolant and oil.

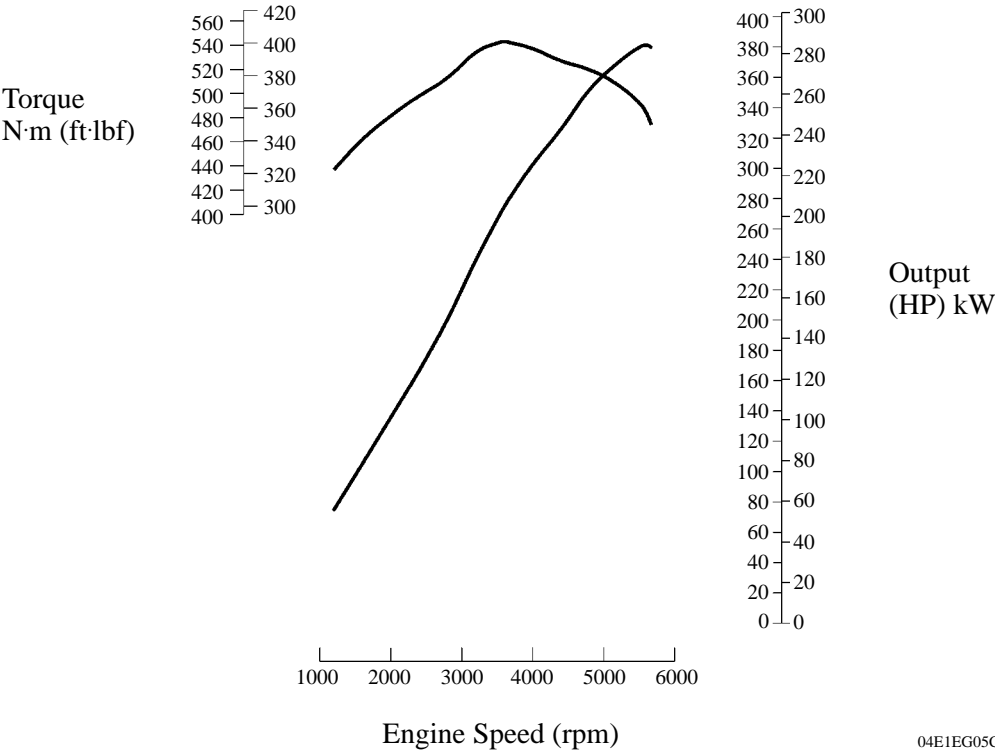
► Valve Timing ◀

 : Intake Valve Opening Angle
 : Exhaust Valve Opening Angle



04E1EG03C

► Performance Curve ◀



04E1EG05C

■ FEATURES OF 3UR-FE ENGINE

The 3UR-FE 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 taper squish shape is used for the combustion chamber.	○				○
	An aluminum alloy cylinder block containing an engine coolant distribution pathway is used.	○		○		
	Spiny-type liners are used in the cylinder bores.	○		○		
	Water jacket spacers are used.	○				
	The piston skirt is coated with resin.	○	○			○
	A No. 1 oil pan made of aluminum alloy is used.	○	○	○		
Valve Mechanism	Timing chains and chain tensioners are used.	○		○		
	Hydraulic lash adjusters are used.	○	○		○	○
	Roller rocker arms are used.	○				○
Lubrication System	An oil filter with a replaceable element is used.				○	
	A water-cooled type oil cooler is used.*	○				
Cooling System	TOYOTA Genuine SLLC (Super Long Life Coolant) is used.				○	
Intake and Exhaust System	A carbon filter is used in the air cleaner cap.					○
	A linkless-type throttle body is used.	○		○		
	An intake manifold made of plastic is used.	○		○		
	Stainless steel exhaust manifolds are used.	○		○		○
	Ceramic type TWCs (Three-Way Catalytic converters) are used.					○
Fuel System	12-hole type fuel injectors are used to improve the atomization of fuel.	○				○
	A fuel delivery pipe with an integrated pulsation damper function is used.			○		
Ignition System	The DIS (Direct Ignition System) makes ignition timing adjustment unnecessary.	○			○	○
	Long-reach type iridium-tipped spark plugs are used.	○			○	○

*: Optional Equipment

(Continued)

Item		(1)	(2)	(3)	(4)	(5)
Charging System	A segment conductor type generator is used.	○		○		
Starting System	A planetary reduction type starter is used.			○		
Serpentine Belt Drive System	A serpentine belt drive system is used.			○	○	
Blowby Gas Ventilation System	A separator case is provided between the cylinder block and the intake manifold.	○				○
Engine Control System	MRE (Magnetic Resistance Element) type crankshaft position, camshaft position, and VVT sensors are used.	○				
	The ETCS-i (Electronic Throttle Control System-intelligent) is used.	○				○
	The Dual VVT-i (Variable Valve Timing-intelligent) system is used.	○				○
	The ACIS (Acoustic Control Induction System) is used.	○				○
	An air injection system is used.					○
	The starter control (cranking hold function) is used.	○				
	An evaporative emission control system is used.					○