

ENGINE PERFORMANCE

Engine Control System - [2GR-FE] (Service Specifications) - Sienna

2GR-FE ENGINE CONTROL

SERVICE DATA

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Spark plug	Resistance	10 Mohms or more	
	Recommended spark plug	FK20HR11 DENSO made	
	Maximum electrode gap	1.4 mm (0.0551 in.) for used spark plug	
	Electrode gap	1.0 to 1.1 mm (0.0394 to 0.0433 in.) for new spark plug	
Camshaft timing oil control valve assembly	Resistance	1 - 2	6.9 to 7.9 ohms at 20 °C (68°F)
Throttle with motor body assembly	Resistance	1(M-) - 2(M+)	0.3 to 100 ohms at 20 °C (68°F)
Vacuum switching valve (for Engine Mounting)	Resistance	1 - 2	19 to 21 ohms at 20 °C (68°F)
Accel sensor out No. 1 standard voltage	Voltage	Accelerator pedal is released	0.5 to 1.1 V
		Accelerator pedal is depressed	2.5 to 4.5 V
Accel sensor out No. 2 standard voltage	Voltage	Accelerator pedal is released	1.2 to 2.0 V
		Accelerator pedal is depressed	3.4 to 4.8 V
Mass air flow meter	Resistance	1(THA) - 2(E2)	13.6 to 18.4 Kohms at -20 °C (4°F)
			2.21 to 2.69 Kohms at 20 °C (68°F)
			0.49 to 0.67 Kohms at 60 °C (140°F)
Crankshaft position sensor	Resistance	1 - 2	1630 to 2740 ohms at -10 to 50°C (14 to 122°F)
			2065 to 3225 ohms at 50 to 100°C (122 to 212°F)
Engine coolant temperature sensor	Resistance	1 - 2	2.32 to 2.59 ohms at 20 °C (68°F)
			0.310 to 0.326 ohms at 80°C (176°F)

			F)
Knock sensor	Resistance	1 - 2	120 to 280 kohms at 20 °C (68°F)
Air fuel ratio sensor (for Bank1)	Resistance	1(HA1A) - 2(+B)	1.6 to 3.2 ohms at 20°C (68°F)
		1(HA1A) - 4(A1A-)	10 kohms or higher
Air fuel ratio sensor (for Bank2)	Resistance	1(HA2A) - 2(+B)	1.6 to 3.2 ohms at 20°C (68°F)
		1(HA2A) - 4(A2A-)	10 kohms or higher
Heated oxygen sensor (for Bank1)	Resistance	1(HT1B) - 2(+B)	11 to 16 ohms at 20°C (68°F)
		1(HT1B) - 4(E2)	10 kohms or higher
Heated oxygen sensor (for Bank2)	Resistance	1(HT2B) - 2(+B)	11 to 16 ohms at 20°C (68°F)
		1(HT2B) - 4(E2)	10 kohms or higher
EFI MAIN relay	Resistance	3 - 5	10 kohms or higher (Battery voltage not applied)
			Below 1 ohms (Battery voltage applied to terminals 1 and 2)
C/OPN relay	Resistance	3 - 5	10 kohms or higher (Battery voltage not applied)
			Below 1 ohms (Battery voltage applied to terminals 1 and 2)
F/PMP relay	Resistance	3 - 4	Below 1 ohms (Battery voltage not applied)
			10 kohms or higher (Battery voltage applied to terminals 1 and 2)
		3 - 5	10 kohms or higher (Battery voltage not applied)
			Below 1 ohms (Battery voltage applied to terminals 1 and 2)
			10 kohms or higher (Battery voltage not applied)

IG2 relay (w/ Smart key system)	Resistance	3 - 5	applied) Below 1 ohms (Battery voltage applied to terminals 1 and 2)
Air fuel ratio sensor heater relay	Resistance	3 - 5	10 kohms or higher (Battery voltage not applied) Below 1 ohms (Battery voltage applied to terminals 1 and 2)

TORQUE SPECIFICATIONS

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Part Tightened		N*m	kgf*cm	ft.*lbf
Camshaft timing oil control valve assembly x Cylinder head		10	102	7
Throttle with motor body assembly x Intake air surge tank		10	102	7
Air cleaner and hose x Bracket		5.0	51	44 in.*lbf
Air cleaner inlet cover assembly seal x Body		6.0	61	53 in.*lbf
Duty vacuum switching valve x Bracket		4.0	41	35 in.*lbf
Transverse engine mounting bracket x Engine assembly	Bolt	64	653	47
	Nut	64	653	47
Transverse engine mounting bracket x Front engine mounting insulator assembly		87	887	64
Front engine mounting insulator assembly x Sub-frame		52	530	38
ECM x Body		8.0	82	71 in.*lbf
Accelerator pedal sensor assembly x Body		5.4	55	48 in.*lbf
VVT sensor x Cylinder head		10	102	7
Crankshaft position sensor x Cylinder block		10	102	7
Ignition coil assembly x Cylinder head		10	102	7
Spark plug x Cylinder head		18	184	13
Engine coolant temperature sensor x Cylinder block		20	200	14
Knock sensor x Cylinder block		20	204	15

Air fuel ratio sensor x Exhaust manifold	without SST	44	449	32
	with SST	40	408	30
Heated oxygen sensor x Front exhaust pipe	without SST	44	449	32
	with SST	40	408	30