
SERVICE SPECIFICATIONS

	Page
ENGINE MECHANICAL	
1G-E	A-2
1G-GE	A-5
EFI SYSTEM	
1G-E	A-9
1G-GE	A-12
COOLING SYSTEM	
1G-E	A-15
1G-GE	A-15
LUBRICATION SYSTEM	A-15
IGNITION SYSTEM	
1G-E	A-16
1G-GE	A-17
STARTING SYSTEM	A-17
CHARGING SYSTEM	A-17

ENGINE MECHANICAL (1G-E)**Specifications**

Drive belt deflection or tension		with 10 kg (22.1 lb, 98 N)		W/SST (Reference)	
Fan pulley – Alternator	New belt	10 – 12 mm	0.39 – 0.47 in.	55 – 65 kg	
	Used belt	13 – 15 mm	0.51 – 0.59 in.	25 – 40 kg	
Crankshaft – Power steering pump	New belt	12 – 15 mm	0.47 – 0.59 in.	45 – 55 kg	
	Used belt	15 – 23 mm	0.59 – 0.91 in.	20 – 35 kg	
Crankshaft – A/C compressor	New belt	7 – 8.5 mm	0.28 – 0.33 in.	53 – 77 kg	
	Used belt	9 – 11 mm	0.35 – 0.43 in.	30 – 40 kg	
Engine oil capacity	Dry fill	5.0 liters	5.3 USqts	4.4 Imp.qts	
	Drain and refill				
	w/ Oil filter change	4.3 liters	4.5 USqts	3.8 Imp.qts	
	w/o Oil filter change	3.8 liters	4.0 USqts	3.3 Imp.qts	
High tension cord	Resistance	Less than 25 k Ω per cord			
Spark plug	Limit				
Type	ND	W20EXR-U			
	NGK	BPR6EY			
Gap		0.8 mm	0.031 in.		
Ignition timing	T/M in N range	10° BTDC @ Max. 1,000 rpm (w/ vacuum retard OFF)			
DP Setting speed		1,500 \pm 300 rpm			
Firing order		1 – 5 – 3 – 6 – 2 – 4			
Idle speed		800 \pm 50 rpm			
Idle CO concentration		1.0 \pm 0.5 %			
Intake manifold vacuum	at Idle speed	More than 350 mmHg (13.78 in.Hg, 46.7 kpa)			
Compression pressure	at 250 rpm	12.0 kg/cm ²	171 psi	1,180 kpa	
	STD	9.0 kg/cm ²	128 psi	883 kpa	
Differential of pressure between each cylinder	Limit	Less than 1.0 kg/cm ² (14 psi, 78 kpa)			
Cylinder head	Head surface warpage	Limit	0.08 mm	0.0031 in.	
	Camshaft housing surface warpage	Limit	0.10 mm	0.0039 in.	
	Manifold surface warpage	Limit	0.10 mm	0.0039 in.	
	Valve seat	Refacing angle	Intake	30°, 45°, 60°	
			Exhaust	30°, 45°, 60°	
		Contacting angle	45°		
	Contacting width	1.2 – 1.6 mm	0.047 – 0.063 in.		
Valve guide bushing	Inner diameter		7.01 – 7.03 mm	0.2760 – 0.2768 in.	
	Outer diameter	STD type	11.540 – 11.551 mm	0.4543 – 0.4548 in.	
		O/S type 0.05	11.590 – 11.601 mm	0.4563 – 0.4567 in.	
Replacing temperature (cylinder head side)		80 – 100°C	176 – 212 °F		
Valve	Valve overall length	STD	109.4 mm	4.307 in.	
	Valve face angle		IN. & EX. 45.5°		
	Stem diameter		Intake	6.970 – 6.985 mm	0.2744 – 0.2750 in.
			Exhaust	6.965 – 6.980 mm	0.2742 – 0.2748 in.
	Stem oil clearance	STD	Intake	0.025 – 0.060 mm	0.0010 – 0.0024 in.
			Exhaust	0.030 – 0.065 mm	0.0012 – 0.0026 in.
		Limit	Intake	0.08 mm	0.0031 in.
			Exhaust	0.10 mm	0.0039 in.
	Stem end refacing	Limit	IN. & EX.	0.5 mm	0.020 in.
	Valve head edge thickness	Limit	Intake	0.5 mm	0.020 in.
Exhaust			1.0 mm	0.039 in.	

Specifications (1G-E) (Cont'd)

Valve spring	Free length	Outer	48.2 mm	1.898 in.	
		Inner	44.8 mm	1.764 in.	
	Installed tension				
	at 38.0 mm (1.496 in.)	Outer	26.9 kg	59.3 lb 264 N	
	at 35.5 mm (1.398 in.)	Inner	8.5 kg	18.7 lb 83 N	
Squareness	Limit	Outer	1.7 mm	0.067 in.	
		Inner	1.6 mm	0.063 in.	
Lash adjuster	Leak down test at 20 kg (44.1 lb, 196 N)		2 – 7 seconds/1mm (0.04 in.)		
Camshaft	Thrust clearance	STD	0.08 – 0.18 mm	0.0031 – 0.0071 in.	
		Limit	0.3 mm	0.012 in.	
	Journal oil clearance	STD	0.037 – 0.073 mm	0.0015 – 0.0029 in.	
		Limit	0.1 mm	0.004 in.	
	Journal diameter	STD	29.979 – 29.995 mm	1.1803 – 1.1809 in.	
	Circle runout	Limit	0.04 mm	0.0016 in.	
	Cam lobe height	STD	Intake	39.237 – 39.337 mm	1.5448 – 1.5487 in.
			Exhaust	39.239 – 39.339 mm	1.5448 – 1.5488 in.
Limit		Intake	39.087 mm	1.5389 in.	
		Exhaust	39.089 mm	1.5389 in.	
Camshaft housing	Cylinder head surface warpage	Limit	0.08 mm	0.0031 in.	
Intake and exhaust manifold	Manifold surface warpage	Limit	Intake	0.1 mm	
			Exhaust	0.5 mm	
			0.004 in.	0.020 in.	
Air intake chamber	Intake manifold surface warpage	Limit	0.1 mm	0.004 in.	
Idler pulley tension spring	Free length		36.3 mm	1.429 in.	
	Installed tension	at 46.5 mm (1.83 in.)	3.33 kg	7.3 lb 33 N	
Cylinder block	Warpage	Limit	0.05 mm	0.0020 in.	
	No. 1 and No. 6 cylinders				
	Cylinder bore	STD	74.99 – 75.02 mm	2.9524 – 2.9535 in.	
	Cylinder bore wear	Limit	On standard sized piston	75.22 mm	2.9614 in.
			On oversize piston (O/S 0.50)	75.72 mm	2.9811 in.
			(O/S 0.75)	75.97 mm	2.9909 in.
			(O/S 1.00)	76.22 mm	3.0008 in.
	No. 2 – No. 5 cylinders				
	Cylinder bore	STD	75.00 – 75.03 mm	2.9524 – 2.9535 in.	
	Cylinder bore wear	Limit	On standard sized piston	75.23 mm	2.9618 in.
			On oversize piston (O/S 0.50)	75.73 mm	2.9815 in.
			(O/S 0.75)	75.98 mm	2.9913 in.
			(O/S 1.00)	76.23 mm	3.0012 in.

Specifications (1G-E) (Cont'd)

Piston and piston ring	Piston diameter	STD	74.955 – 74.985 mm	2.9510 – 2.9522 in.	
		O/S type 0.50	75.455 – 75.485 mm	2.9707 – 2.9718 in.	
		O/S type 0.75	75.705 – 75.735 mm	2.9805 – 2.9817 in.	
		O/S type 1.00	75.955 – 75.985 mm	2.9903 – 2.9915 in.	
	Piston to cylinder clearance	No. 1 and No. 6		0.025 – 0.045 mm	0.0010 – 0.0018 in.
		No. 2 – No. 5		0.035 – 0.055 mm	0.0014 – 0.0022 in.
	Piston ring end gap	No. 1	STD	0.15 – 0.42 mm	0.0059 – 0.0165 in.
			Limit	1.02 mm	0.0402 in.
		No. 2	STD	0.15 – 0.42 mm	0.0059 – 0.0165 in.
			Limit	1.02 mm	0.0402 in.
		Oil	STD	0.20 – 0.82 mm	0.0079 – 0.0323 in.
Limit			1.42 mm	0.0559 in.	
Ring groove clearance	No. 1		0.04 – 0.08 mm	0.0016 – 0.0031 in.	
	No. 2		0.03 – 0.07 mm	0.0012 – 0.0028 in.	
Piston pin installing temperature			40 – 50°C	104 – 122°F	
Connecting rod and bearing	Thrust clearance	STD	0.110 – 0.246 mm	0.0043 – 0.0097 in.	
		Limit	0.3 mm	0.012 in.	
	Bearing oil clearance	STD	0.016 – 0.047 mm	0.0006 – 0.0019 in.	
		Limit	0.08 mm	0.0031 in.	
	Pin to bushing oil clearance	STD	0.004 – 0.008 mm	0.0002 – 0.0003 in.	
		Limit	0.015 mm	0.0006 in.	
	Piston pin diameter		17.999 – 18.011 mm	0.7086 – 0.7091 in.	
Rod bend Limit per 100 mm (3.94 in.)		0.05 mm	0.0020 in.		
Rod twist Limit per 100 mm (3.94 in.)		0.15 mm	0.0059 in.		
Crankshaft	Thrust clearance	STD	0.020 – 0.222 mm	0.0008 – 0.0087 in.	
		Limit	0.3 mm	0.012 in.	
	Thrust washer thickness	STD	1.940 – 1.990 mm	0.0764 – 0.0783 in.	
	Main journal oil clearance	STD	0.026 – 0.053 mm	0.0010 – 0.0021 in.	
		Limit	0.08 mm	0.0031 in.	
	Main journal diameter	STD	54.985 – 55.000 mm	2.1648 – 2.1654 in.	
	Crank pin oil clearance	STD	0.016 – 0.047 mm	0.0006 – 0.0019 in.	
		Limit	0.08 mm	0.0031 in.	
	Crank pin diameter	STD	41.985 – 42.000 mm	1.6529 – 1.6535 in.	
	Circle runout	Limit	0.06 mm	0.0024 in.	
Main journal taper and out-of-round	Limit	0.02 mm	0.0008 in.		
Crank pin journal taper and out-of-round	Limit	0.02 mm	0.0008 in.		
Flywheel	Runout	Limit	0.1 mm	0.004 in.	

ENGINE MECHANICAL (1G-GE)

Specifications

Drive belt deflection or tension		with 10 kg (22.1 lb, 98 N)		W/SST (Reference)	
Fan pulley — Alternator	New belt	11 — 13 mm	0.43 — 0.51 in.	55 — 65 kg	
	Used belt	14 — 20 mm	0.55 — 0.79 in.	25 — 40 kg	
Crankshaft — Power steering pump	New belt	6 — 7 mm	0.24 — 0.28 in.	40 — 60 kg	
	Used belt	7 — 10 mm	0.28 — 0.39 in.	20 — 40 kg	
Crankshaft — A/C compressor	New belt	7 — 8.5 mm	0.28 — 0.33 in.	53 — 77 kg	
	Used belt	8.5 — 9.5 mm	0.33 — 0.37 in.	30 — 40 kg	
Engine oil capacity	Dry fill	4.7 liters	5.0 USqts	4.1 Imp.qts	
	Drain and refill				
	w/ Oil filter change	4.3 liters	4.5 USqts	3.8 Imp.qts	
	w/o Oil filter change	3.7 liters	3.9 USqts	3.3 Imp.qts	
High tension cord	Resistance	Limit Less than 25 k Ω per cord			
Spark plug	Type	ND	Q20 R-U11		
		NGK	BCPR 6EY11		
Gap		1.1 mm	0.043 in.		
Ignition timing	T/M in N range	10° ± 1° BTDC (Service connector T ₁ — E ₁ short)			
Firing order		1 — 5 — 3 — 6 — 2 — 4			
Valve clearance (Cold)	Intake	0.15 — 0.25 mm	0.0059 — 0.0098 in.		
	Exhaust	0.20 — 0.30 mm	0.0079 — 0.0118 in.		
Idle speed		800 ± 50 rpm			
Idle CO concentration		1.0 ± 0.5 %			
Intake manifold vacuum	at Idle speed	More than 400 mmHg (15.75 in.Hg, 53.3 kpa)			
Compression pressure	at 250 rpm	STD	General	12.5 kg/cm ² 178 psi 1,226 kPa	
		Limit		10.0 kg/cm ² 142 psi 981 kPa	
Differential of pressure between each cylinder		Less than 1.0 kg/cm ² (14 psi, 98 kpa)			
Cylinder head	Head surface warpage	Limit	0.2 mm	0.008 in.	
	Manifold surface warpage	IN	Limit	0.2 mm	
		EX	Limit	0.3 mm	0.0012 in.
	Valve seat	Refacing angle	IN	30°, 45°, 60°	
			EX	30°, 45°, 75°	
		Contacting angle	45°		
Contacting width	1.0 — 1.4 mm		0.039 — 0.055 in.		
Valve guide bushing	Inner diameter	6.000 — 6.018 mm		0.2362 — 0.2369 in.	
	Outer diameter	STD	11.033 — 11.044 mm		0.4344 — 0.4348 in.
		O/S type 0.05	11.083 — 11.095 mm		0.4363 — 0.4368 in.
	Replacing temperature (Cylinder head side)	110 — 130°C		230 — 266 °F	

Specifications (1G-GE) (Cont'd)

Valve	Valve overall length	STD Intake	94.20 mm	3.7087 in.		
		Exhaust	94.25 mm	3.7106 in.		
		Limit Intake	93.70 mm	3.6890 in.		
		Exhaust	93.75 mm	3.6909 in.		
	Valve face angle		45.5°			
	Stem diameter	Intake	5.960 – 5.975 mm	0.2346 – 0.2352 in.		
		Exhaust	5.955 – 5.970 mm	0.2344 – 0.2350 in.		
	Stem Oil clearance	STD Intake	0.025 – 0.058 mm	0.0010 – 0.0024 in.		
		Exhaust	0.030 – 0.063 mm	0.0012 – 0.0025 in.		
		Limit Intake	0.08 mm	0.0031 in.		
Exhaust		0.10 mm	0.0039 in.			
Valve head edge thickness	Limit Intake	0.5 mm	0.020 in.			
	Exhaust	0.5 mm	0.020 in.			
Valve spring	Free length		43.85 mm	1.7264 in.		
	Installed tension at 34.7 mm (1.366 in.)		17.5 kg 38.6 lb 172 N			
	Squareness	Limit	2.0 mm	0.079 in.		
Valve lifter	Outer diameter	STD	27.975 – 27.985 mm	1.1014 – 1.1018 in.		
		Limit	0.06 mm	0.0024 in.		
	Lifter-to-cylinder head oil clearance	STD	0.015 – 0.046 mm	0.0006 – 0.0018 in.		
Intake, exhaust manifold and air control valve	Warpage	Intake	Limit	0.3 mm	0.008 in.	
		Exhaust	Limit	3.0 mm	0.012 in.	
		Air control valve	Limit	0.3 mm	0.008 in.	
Camshaft	Thrust clearance	STD	0.10 – 0.24 mm	0.0040 – 0.0094 in.		
		Limit	0.3 mm	0.012 in.		
	Journal oil clearance	STD	0.025 – 0.062 mm	0.0010 – 0.0024 in.		
		Limit	0.08 mm	0.0031 in.		
	Journal diameter	STD	26.959 – 26.975 mm	1.0614 – 1.0620 in.		
	Circle runout	Limit	0.03 mm	0.0016 in.		
	Cam height IN & EX	STD	35.51 – 35.61 mm	1.3980 – 1.4020 in.		
Limit		35.40 mm	1.3937 in.			
Cylinder block	Warpage	Limit	0.05 mm	0.0020 in.		
	No. 1 and No. 6	Cylinder bore	STD	74.99 – 75.02 mm	2.9524 – 2.9535 in.	
		Cylinder bore wear	Limit	0.2 mm	0.008 in.	
			On standard sized piston	Limit	75.22 mm	2.9614 in.
			On oversized piston (O/S 0.5)	Limit	75.72 mm	2.9811 in.
	No. 2 – No. 5	Cylinder bore	STD	75.00 – 75.03 mm	2.9524 – 2.9535 in.	
		Cylinder bore wear	Limit	0.2 mm	0.008 in.	
			On standard sized piston	Limit	75.23 mm	2.9618 in.
			On oversized piston (O/S 0.5)	Limit	75.73 mm	2.9815 in.

Specifications (1G-GE) (Cont'd)

Piston and piston ring	Piston diameter	STD	74.96 – 74.99 mm	2.9512 – 2.9528 in.
		O/S type 0.50	75.46 – 75.49 mm	2.9709 – 2.9720 in.
	Piston to cylinder clearance			
		No. 1 and No. 6	0.020 – 0.040 mm	0.0008 – 0.0016 in.
		No. 2 – No. 5	0.030 – 0.050 mm	0.0012 – 0.0020 in.
	Piston ring end gap			
		No. 1	0.25 – 0.49 mm	0.0098 – 0.0193 in.
		No. 2	0.20 – 0.47 mm	0.0079 – 0.0185 in.
		Oil	0.20 – 0.82 mm	0.0079 – 0.0323 in.
		No. 1 Limit	1.09 mm	0.0429 in.
		No. 2 Limit	1.07 mm	0.0421 in.
	Oil Limit	1.42 mm	0.0559 in.	
	Ring to ring groove clearance limit			
	No. 1	0.04 – 0.08 mm	0.0016 – 0.0031 in.	
	No. 2	0.03 – 0.07 mm	0.0012 – 0.0028 in.	
	Piston pin installing temperature		70 – 80°C	158 – 176°F
Connecting rod and bearing	Thrust clearance	STD	0.200 – 0.402 mm	0.0079 – 0.0158 in.
		Limit	0.45 mm	0.0177 in.
	Bearing oil clearance	STD	0.016 – 0.047 mm	0.0006 – 0.0019 in.
		Limit	0.07 mm	0.0028 in.
	Pin to bushing oil clearance	STD	0.004 – 0.008 mm	0.0002 – 0.0003 in.
		Limit	0.015 mm	0.0006 in.
	Rod bend	Limit	0.05 mm	0.0020 in.
Rod twist	Limit	0.15 mm	0.0059 in.	
Crankshaft	Thrust clearance	STD	0.020 – 0.222 mm	0.0008 – 0.0087 in.
		Limit	0.30 mm	0.0118 in.
	Thrust washer thickness	STD	1.940 – 1.990 mm	0.0764 – 0.0783 in.
	Main journal oil clearance	STD	0.026 – 0.053 mm	0.0010 – 0.0021 in.
		Limit	0.08 mm	0.0031 in.
	Main journal diameter	STD	54.985 – 55.000 mm	2.1648 – 2.1654 in.
	Crank pin oil clearance	STD	0.016 – 0.047 mm	0.0006 – 0.0019 in.
		Limit	0.07 mm	0.0028 in.
	Crank pin diameter	STD	41.985 – 42.000 mm	1.6529 – 1.6535 in.
	Circle runout	Limit	0.06 mm	0.0024 in.
Main journal taper and out-of-round	Limit	0.02 mm	0.0008 in.	
Crank pin journal taper and out-of-round	Limit	0.02 mm	0.0008 in.	

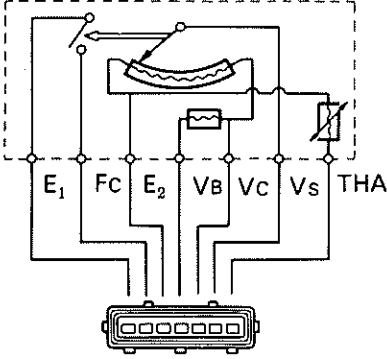
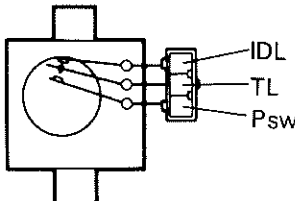
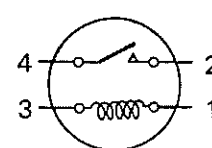
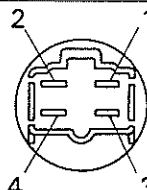
Tightening Torque (1G-E)

Tightening part	kg-cm	ft-lb	N·m	
Camshaft housing x Cylinder head	150	11	15	
Camshaft bearing cap x Camshaft housing	150	11	15	
Camshaft pulley x Camshaft	550	40	54	
Cylinder head x Cylinder block	650	47	64	
Manifold x Cylinder head	Intake	230	17	23
	Exhaust	200	14	20
Air intake chamber x Intake manifold	230	17	23	
Distributor x Camshaft housing	200	14	20	
Timing belt case x Cylinder block	12 mm nut & bolt head	185	13	18
	14 mm bolt head	250	18	25
No. 1 idler pulley x Timing belt case	220	16	22	
No. 2 idler pulley x Timing belt case	370	27	36	
Camshaft x Camshaft timing pulley	550	40	54	
Crankshaft bearing cap x Cylinder block	600	43	59	
Connecting rod cap x Connecting rod	500	36	49	
Crankshaft pulley x Crankshaft	1,800	130	177	
Flywheel x Crankshaft	750	54	74	
Oil strainer x Cylinder block	Nut	185	13	18
	Bolt	85	74 in.-lb	8.3
Oil pan x Cylinder block	55	48 in.-lb	5.4	

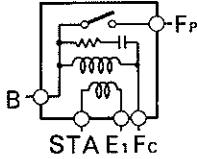
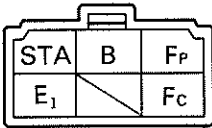
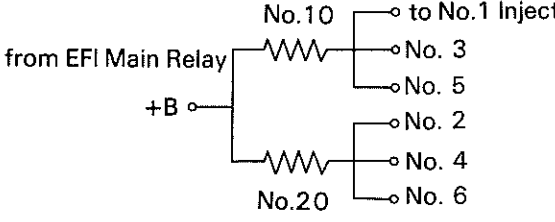
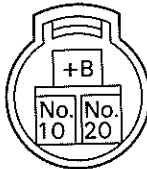
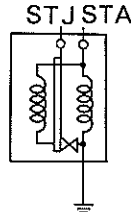

Tightening Torque (1G-GE)

Tightening part	kg-cm	ft-lb	N·m	
Cylinder head bolt	650	47	64	
Cylinder head x Camshaft bearing cap	190	14	19	
Cylinder head x Spark plug	180	13	18	
Cylinder head x Air control valve x Intake manifold	230	17	23	
Cylinder head x Exhaust manifold	260	19	25	
Timing belt case x Cylinder block	12 mm nut & bolt head	185	13	18
	14 mm bolt head	250	27	37
No. 1 idler pulley x Timing belt case	220	16	22	
No. 2 idler pulley x Timing belt case	370	27	36	
Cylinder block x Crankshaft bearing cap	600	43	59	
Camshaft x Camshaft timing pulley	400 – 550	29 – 39	40 – 53	
Crankshaft x Crankshaft pulley	1,800	130	177	
Crankshaft x Flywheel	750	54	74	
Connecting rod cap x Connecting rod	500	36	49	
Oil strainer x Cylinder block	Nut	185	13	18
	Bolt	85	74 in.-lb	8.3
Oil pan x Cylinder block	55	48 in.-lb	5.4	

EFI SYSTEM (1G-E)

Pressure regulator	Fuel pressure	at No vacuum	2.3 – 2.7 kg/cm ² 36 – 38 psi 245 – 265 kPa	
Cold start injector	Resistance Leakage		3 – 5 Ω Less than one drop of fuel per minute	
Injector	Resistance Injection volume Difference between each injector Leakage		1.5 – 3.0 Ω 1G-E 30 – 40 cc/15 sec. (1.8 – 2.4 cu in.) 1G-GE 40 – 50 cc/15 sec. (2.4 – 3.1 cu in.) Less than 6 cc (0.37 cu in.) Less than one drop of fuel per minute	
Air flow meter	Resistance	Vs – E ₂	 <p> Vc – E₂ VB – E₂ Fc – E₁ THA – E₂ </p>	
			20 – 100 Ω (Measuring plate fully closed) 20 – 1,000 Ω (Measuring plate fully closed to fully open position) 100 – 300 Ω 200 – 400 Ω ∞ (Measuring plate closed) 0 (Measuring plate open) 10 – 20 kΩ (–20°C, –4°F) 4 – 7 kΩ (0°C, 32°F) 2 – 3 kΩ (20°C, 68°F) 0.9 – 1.3 kΩ (40°C, 104°F) 0.4 – 0.7 kΩ (60°C, 140°F)	
Throttle position sensor	Throttle opening angle (from vertical)	Clearance between stop screw and lever	IDL – TL	Psw – TL
	Less than 7.5° 51° from vertical 61° from vertical	0.44 mm 0.0173 in. 0.66 mm 0.0260 in. — — —	Continuity No continuity Continuity No continuity No continuity	No continuity No continuity No continuity No continuity Continuity
				
EFI main relay	Resistance	1 – 3 2 – 4	40 – 60 Ω ∞	
	 			

EFI SYSTEM (1G-E) (Cont'd)

<p>Circuit opening relay</p>	<p>Resistance</p> <p>STA - E₁ B - Fc B - FP</p>	<p>30 - 60 Ω 80 - 120 Ω ∞</p>
<div style="display: flex; justify-content: space-around; align-items: center;">   </div>		
<p>Resistor</p>	<p>Resistance</p>	<p>2 Ω each</p>
<div style="display: flex; justify-content: space-around; align-items: center;">   </div>		
<p>Start injector time switch</p>	<p>Resistance</p> <p>STJ - STA STA - BODY</p>	<p>25 - 50 Ω (below 15°C, 59°F) 60 - 85 Ω (above 30°C, 86°F) 25 - 85 Ω</p>
<div style="display: flex; justify-content: space-around; align-items: center;">   </div>		
<p>Temperature sensor</p>	<p>Resistance</p>	<p>10 - 20 kΩ (-20°C, -4°F) 4 - 7 kΩ (0°C, 32°F) 2 - 3 kΩ (20°C, 68°F) 0.9 - 1.3 kΩ (40°C, 104°F) 0.4 - 0.7 kΩ (60°C, 140°F) 0.2 - 0.4 kΩ (80°C, 176°F)</p>

EFI SYSTEM (1G-E) (Cont'd)


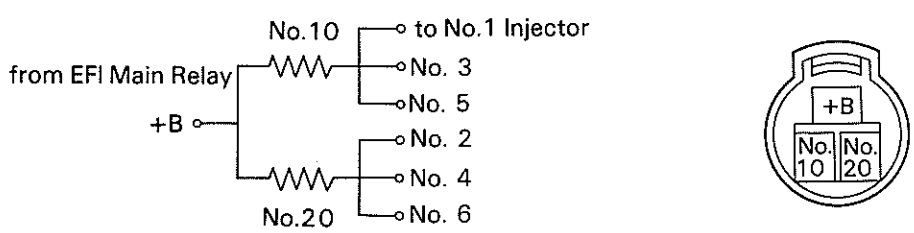

- NOTE:** 1. Perform all voltage and resistance measurements with the computer connected.
 2. Verify that the battery voltage is 11 V or above when the ignition switch is ON.

Computer (Voltage)	Terminals	STD voltage	Condition	
	+B - E ₁	10 - 13	—	
	IDL - E ₁	8 - 13	IG S/W ON	Throttle valve fully closed
	Psw - E ₁			Throttle valve fully open
	TL - E ₁	8 - 13	IG S/W ON	
	V _B - E ₂	8 - 12	IG S/W ON	—
	V _C - E ₁	4 - 9		—
	V _S - E ₂	0.5 - 2.5		Measuring plate fully closed
		5 - 8		Measuring plate fully open
		0.5 - 2.5	Idling	
	THW - E ₁	0.5 - 2.5	IG S/W ON	Coolant temperature 80°C (176°F)
	THA - E ₂	2 - 6		Intake air temperature 20°C (68°F)
	STA - E ₁	6 - 12	IG S/W ST position	
	No. 10 - E ₁ No. 20 - E ₁	10 - 13	IG S/W ON	
	IG - E ₁	10 - 13	Engine running	
Computer (Resistance)	Terminals	Condition		Resistance (Ω)
	IDL - TL	Throttle valve open		∞
		Throttle valve fully closed		0
	Psw - TL	Throttle valve open		0
		Throttle valve fully closed		∞
	V _C - E ₂	—		100 - 300
	V _S - E ₂	Measuring plate fully closed		20 - 400
		Measuring plate fully open		20 - 100
	V _B - E ₂	—		200 - 400
	THA - E ₂	Intake air temperature 20°C (68°F)		2000 - 3000
Computer (Fuel Cut rpm)	Fuel cut rpm	Cut	1,400 - 1,800 rpm (A/C OFF) 2,100 rpm (A/C ON)	
Connectors of Computer				

EFI SYSTEM (1G-GE)

Pressure regulator	Fuel pressure	w/No vacuum	2.3 – 2.7 kg/cm ² 36 – 38 psi 245 – 265	
Cold start injector	Resistance Leakage		3 – 5 Ω Less than one drop of fuel per minute	
Injector	Resistance Injection volume Difference between each injector Leakage		1.5 – 3.0 Ω 40 – 50 cc/15 sec (2.4 – 3.1 cu in.) Less than 6 cc (0.37 cu in.) Less than one drop of fuel per minute	
Air flow meter	Resistance	V _s – E ₂ V _c – E ₂ F _c – E ₁ THA – E ₂	20 – 600 Ω (Measuring plate fully closed) 20 – 1,200 Ω (Measuring plate fully open) 200 – 400 Ω ∞ (Measuring plate closed) 0 (Measuring plate open) 10 – 20 kΩ (–20°C, –4°F) 4 – 7 kΩ (0°C, 32°F) 2 – 3 kΩ (20°C, 68°F) 0.9 – 1.3 kΩ (40°C, 104°F) 0.4 – 0.7 kΩ (60°C, 140°F)	
ISC valve	Resistance	B ₁ – S ₁ or S ₃ B ₂ – S ₂ or S ₄	10 – 30 Ω 10 – 30 Ω	
Throttle position sensor	Throttle opening angle (from vertical position)	Clearance between stop screw and lever	IDL – E ₁	Psw – E ₁
	— — Less than 16.3° 70° 80°	0.30 mm (0.0118 in.) 0.50 mm (0.0197 in.) — — —	Continuity No continuity Continuity No continuity No continuity	No continuity No continuity No continuity No Continuity Continuity
EFI main relay	Resistance	1 – 3 2 – 4	40 – 60 Ω ∞	

EFI SYSTEM (1G-GE) (Cont'd)

Circuit opening relay	Resistance	STA - E ₁ B - Fc B - Fp ∞	30 - 60 Ω 80 - 120 Ω ∞
			
Resistor	Resistance		2 Ω each
			
Start injector time switch	Resistance	STJ - STA STA - BODY	25 - 50 Ω (below 15°C, 59°F) 60 - 85 Ω (above 30°C, 86°F) 25 - 85 Ω
			
Temperature sensor	Resistance		10 - 20 kΩ (-20°C, -4°F) 4 - 7 kΩ (0°C, 32°F) 2 - 3 kΩ (20°C, 68°F) 0.9 - 1.3 kΩ (40°C, 104°F) 0.4 - 0.7 kΩ (60°C, 140°F) 0.2 - 0.4 kΩ (80°C, 176°F)

EFI SYSTEM (1G-GE) (Cont'd)

NOTE: 1. Perform all voltage and resistance measurements with the computer connected. 2. Verify that the battery voltage is 11 V or above when the ignition switch is ON.				
ECU (Voltage)	Terminals	STD voltage	Condition	
	Batt - E ₁	10 - 14	—	
	+B - E ₁		Ignition switch ON	
	IG S/W - E ₁			
	M-REL - E ₁			
	IDL - E ₁	4 - 6		Ignition S/W ON
	P _{sw} - E ₁	4 - 6	Throttle valve fully closed	
	V _c - E ₂	4 - 6	Ignition S/W ON	—
	V _s - E ₂	4 - 5		Measuring plate fully closed
		0.02 - 0.08		Measuring plate fully open
		2.0 - 4.0		Idling
		0.3 - 1.0	3,000 rpm	—
	THA - E ₂	1.0 - 2.0	IG S/W ON	Intake air temperature 20°C (68°F)
	THW - E ₂	0.1 - 0.5	IG S/W ON	Coolant temperature 80° (176°F)
	STA - E ₁	6 - 12	Ignition switch ST position	
	No. 10 No. 20 - E ₁	9 - 14	Ignition switch ON	
	IGt - E ₁	0.7 - 1.0	Idling	
	ISC ₁ - E ₁ ISC ₄	9 - 14	Ignition switch ON	
		9 - 14	After engine off 2 - 3 secs	
	T - E ₁	4 - 6	Ignition S/W ON	Service connector T ₁ ↔ E ₁ not short
		0		Service connector T ₁ ↔ E ₂ short
	A/C - E ₁	10 - 13	Ignition S/W ON	A/C switch ON
		0		A/C switch OFF
V _F - E ₁	0 ↔ 5	Engine start (Throttle valve open)		
W - E ₁	0	Ignition switch ON		
	10 - 13	Engine start		
ECU (Resistance)	Terminals	Condition	Resistance (Ω)	
	IDL - E ₁	Throttle valve open	∞	
		Throttle valve fully closed	0	
	P _{sw} - E ₁	Throttle valve open	0	
		Throttle valve fully closed	∞	
	V _c - E ₂	—	200 - 400	
	V _s - E ₂	Measuring plate fully closed	20 - 600	
		Measuring plate fully open	20 - 1,200	
	THA - E ₂	Intake air temperature 20°C (68°F)	2,000 - 3,000	
	G - G ⊖	—	140 - 180	
	Ne - G ⊖	—		
ISC ₁ , ISC ₂ - +B ISC ₃ , ISC ₄	—	10 - 30		

EFI SYSTEM (1G-GE) (Cont'd)

ECU (Fuel cut rpm)	Fuel cut rpm	Cut	1,600 – 2,300 rpm (A/C OFF) 2,300 rpm (A/C ON)																																																							
<table border="1" style="width:100%; border-collapse: collapse; text-align: center;"> <tr> <td colspan="2">E₀₁</td> <td>NO. 10</td> <td>STA</td> <td>✕</td> <td>*</td> <td>ISC 1</td> <td>ISC 2</td> <td>G_⊖</td> <td>G₁</td> <td>G₂</td> <td>Ne</td> <td>Acc₁</td> <td>IGf</td> <td>THW</td> <td>✕</td> <td>✕</td> <td>✕</td> <td>M-REL</td> <td>✕</td> <td>SPD</td> <td>W</td> <td>THA</td> <td>Vs</td> <td>Vc</td> <td>Batt</td> <td>IG S/W</td> </tr> <tr> <td colspan="2">E₀₂</td> <td>NO. 20</td> <td>IGt</td> <td>E₁</td> <td>S/TH</td> <td>ISC 3</td> <td>ISC 4</td> <td>V_F</td> <td>T</td> <td>P_{sw}</td> <td>IDL</td> <td>Acc₂</td> <td>✕</td> <td>E₂</td> <td>E₂₂</td> <td>E₁₁</td> <td>✕</td> <td>✕</td> <td>A/C</td> <td>✕</td> <td>✕</td> <td>✕</td> <td>✕</td> <td>✕</td> <td>✕</td> <td>+B</td> <td>+B</td> </tr> </table>				E ₀₁		NO. 10	STA	✕	*	ISC 1	ISC 2	G _⊖	G ₁	G ₂	Ne	Acc ₁	IGf	THW	✕	✕	✕	M-REL	✕	SPD	W	THA	Vs	Vc	Batt	IG S/W	E ₀₂		NO. 20	IGt	E ₁	S/TH	ISC 3	ISC 4	V _F	T	P _{sw}	IDL	Acc ₂	✕	E ₂	E ₂₂	E ₁₁	✕	✕	A/C	✕	✕	✕	✕	✕	✕	+B	+B
E ₀₁		NO. 10	STA	✕	*	ISC 1	ISC 2	G _⊖	G ₁	G ₂	Ne	Acc ₁	IGf	THW	✕	✕	✕	M-REL	✕	SPD	W	THA	Vs	Vc	Batt	IG S/W																																
E ₀₂		NO. 20	IGt	E ₁	S/TH	ISC 3	ISC 4	V _F	T	P _{sw}	IDL	Acc ₂	✕	E ₂	E ₂₂	E ₁₁	✕	✕	A/C	✕	✕	✕	✕	✕	✕	+B	+B																															

* Although, this position is connected, it is not related to the computer's function.

COOLING SYSTEM (1G-E)

Coolant capacity w/heater or air conditioner		7.3 liters	7.7 US qts	6.4 Imp. qts	
Radiator	Relief valve opening pressure	STD	0.75 – 1.05 kg/cm ²	10.7 – 14.9 psi	74 – 103 kPa
	Limit		0.6 kg/cm ²	8.5 psi	59 kPa
Thermostat	Valve opening temperature				
	Start to open at		80 – 84°C		176 – 183°F
	Fully opens at		95°C		212°F
	Valve opening travel at 100°C (212°F)		8 mm		0.31 in.

COOLING SYSTEM (1G-GE)

Coolant capacity w/heater or air conditioner		6.8 liters	7.2 US qts	6.0 Imp. qts	
Radiator	Relief valve opening pressure	STD	0.75 – 1.05 kg/cm ²	(10.7 – 14.9 psi, 74 – 103 kPa)	
	Limit		0.6 kg/cm ²	8.5 psi	59 kPa
Thermostat	Valve opening temperature				
	Start to open at		86 – 90°C		187 – 194°F
	Fully opens at		100°C		212°F
	Valve opening travel		8 mm or more		0.31 in. or more

LUBRICATION SYSTEM

Oil pressure (1G-E)	at Idle speed	More than 0.3 kg/cm ² (4.3 psi, 29 kPa)		
	at 3,000 rpm	2.5 – 5.0 kg/cm ² (36 – 71 psi, 245 – 490 kPa)		
Oil pressure (1G-GE)	at Idle speed	More than 0.6 kg/cm ² (8.5 psi, 59 kPa)		
	at 3,000 rpm	2.5 – 5.0 kg/cm ² (36 – 71 psi, 245 – 490 kPa)		
Oil pump	Body clearance	STD	0.10 – 0.16 mm	0.0039 – 0.0063 in.
		Limit	0.2 mm	0.008 in.
	Side clearance	STD	0.03 – 0.09 mm	0.0012 – 0.0035 in.
		Limit	0.15 mm	0.0059 in.
	Tip clearance	STD	0.04 – 0.16 mm	0.0016 – 0.0063 in.
		Limit	0.2 mm	0.008 in.

IGNITION SYSTEM (1G-E)

Ignition timing	T/M in N range	10° BTDC @ Max. 1,000 rpm (w/vacuum retard OFF)			
Spark plug	Type	ND	W20EXR-U		
	Gap	NGK	BPR6EY 0.8 mm 0.031 in.		
High tension wire	Resistance	Limit	Less than 25 k Ω per cord		
Ignition coil	Primary coil resistance	1.3 – 1.6 Ω			
	Secondary coil resistance	10.7 – 14.5 k Ω			
	Resistor resistance	1.1 – 1.3 Ω			
Distributor	Air gap	0.2 – 0.4 mm		0.008 – 0.016 in.	
	Pickup coil resistance	140 – 180 Ω			
	Distributor advance angle (Part No.)	Governor		Vacuum	
		Dis. rpm	Advance angle	mmHg in. Hg	Advance angle
	(19100-70110)	500	Advance begins	160 6.30	Advance begins
		715	1.9°	266 10.47	3.5°
		1,000	5.0°	400 14.75	7.0°
1,530		5.7°			
2,500		8.0°			
3,000		7.5°			
(19100-70120)	700	Advance begins	110 4.33	Advance begins	
	1,012	1.8°	236 9.29	4.8°	
	1,400	4.8°	400 15.74	9.0°	
	2,400	7.5°			
	3,000	6.9°			

IGNITION SYSTEM (1G-GE)

Ignition timing	T/M in N range		10 ± 1° BTDC (Service connector T-E ₁ short)
Spark plug	Type	ND NGK	Q20R-U11 BCPR 6EY11
	Gap		1.1 mm 0.043 in.
High tension	Resistance	Limit	Less than 25 kΩ per cord
Ignition coil	Primary coil resistance		0.2 – 0.3 Ω
	Secondary coil resistance		9.2 – 12.4 kΩ
Distributor	Pickup coil resistance	G ₁ – G ⊖	140 – 180 Ω
		G ₂ – G ⊖	140 – 180 Ω
		Ne – G ⊖	140 – 180 Ω

STARTING SYSTEM

Starter	Rated voltage and output power		12V, 1.0 kW	
	No-load characteristic		Ampere	Less than 90 A at 11.5 V
			rpm	More than 3,000 rpm
	Brush	Length	STD	13.5 mm 0.531 in.
			Limit	10 mm 0.39 in.
	Spring installed load		STD	1.45 – 1.95 kg 3.2 – 4.3 lb
			Limit	1.20 kg 2.6 lb
	Commutator	Outer diameter	STD	30 mm 1.18 in.
			Limit	29 mm 1.14 in.
		Undercut depth	STD	0.5 – 0.8 mm 0.020 – 0.031 in.
			Limit	0.2 mm 0.008 in.
		Circle runout	Limit	0.4 mm 0.016 in.

CHARGING SYSTEM

Battery specific gravity		When fully charged at 20°C (68°F)	1.25 – 1.27	
Alternator	Rated output		12 V 60 A	
	Rotor coil resistance		Less than 3 Ω	
	Brush exposed length	STD	10.5 mm 0.413 in.	
Limit		4.5 mm 0.177 in.		
Alternator regulator (IC)	Regulating voltage		13.9 – 15.1 V	

