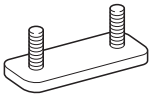
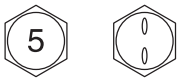
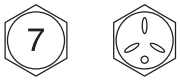
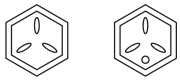
STANDARD BOLT

HOW TO DETERMINE BOLT STRENGTH

Bolt Type

Hexagon Head Bolt			Stud Bolt	Weld Bolt	Class
Normal Recess Bolt		Deep Recess Bolt			
	No Mark 	No Mark 	No Mark 		4T
					5T
	w/ Washer 	w/ Washer 			6T
					7T
					8T
					9T
					10T
					11T

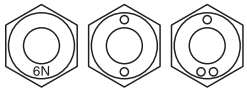
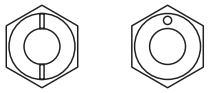
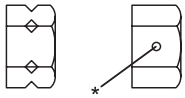
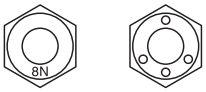
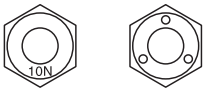
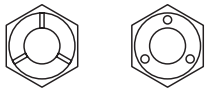
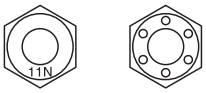
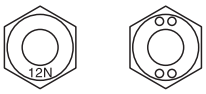
SS

SPECIFIED TORQUE FOR STANDARD BOLTS

Class	Diameter (mm)	Pitch (mm)	Specified torque					
			Hexagon head bolt			Hexagon flange bolt		
			N*m	kgf*cm	ft.*lbf	N*m	kgf*cm	ft.*lbf
4T	6	1	5	55	48 in.*lbf	6	60	52 in.*lbf
	8	1.25	12.5	130	9	14	145	10
	10	1.25	26	260	19	29	290	21
	12	1.25	47	480	35	53	540	39
	14	1.5	74	760	55	84	850	61
	16	1.5	115	1,150	83	-	-	-
5T	6	1	6.5	65	56 in.*lbf	7.5	75	65 in.*lbf
	8	1.25	15.5	160	12	17.5	175	13
	10	1.25	32	330	24	36	360	26
	12	1.25	59	600	43	65	670	48
	14	1.5	91	930	67	100	1,050	76
	16	1.5	140	1,400	101	-	-	-
6T	6	1	8	80	69 in.*lbf	9	90	78 in.*lbf
	8	1.25	19	195	14	21	210	15
	10	1.25	39	400	29	44	440	32
	12	1.25	71	730	53	80	810	59
	14	1.5	110	1,100	80	125	1,250	90
	16	1.5	170	1,750	127	-	-	-
7T	6	1	10.5	110	8	12	120	9
	8	1.25	25	260	19	28	290	21
	10	1.25	52	530	38	58	590	43
	12	1.25	95	970	70	105	1,050	76
	14	1.5	145	1,500	108	165	1,700	123
	16	1.5	230	2,300	166	-	-	-
8T	8	1.25	29	300	22	33	330	24
	10	1.25	61	620	45	68	690	50
	12	1.25	110	1,100	80	120	1,250	90
9T	8	1.25	34	340	25	37	380	27
	10	1.25	70	710	51	78	790	57
	12	1.25	125	1,300	94	140	1,450	105
10T	8	1.25	38	390	28	42	430	31
	10	1.25	78	800	58	88	890	64
	12	1.25	140	1,450	105	155	1,600	116
11T	8	1.25	42	430	31	47	480	35
	10	1.25	87	890	64	97	990	72
	12	1.25	155	1,600	116	175	1,800	130

HOW TO DETERMINE NUT STRENGTH

Nut Type

Present Standard Hexagon Nut	Old Standard Hexagon Nut		Class
	Cold Forging Nut	Cutting Processed Nut	
No Mark 			4N
No Mark (w/ Washer) 	No Mark (w/ Washer) 	No Mark 	5N (4T)
			6N
			7N (5T)
			8N
		No Mark 	10N (7T)
			11N
			12N

HINT:

- *: Nut with 1 or more marks on one side surface of the nut.
- Use the nut with the same number of the nut strength classification or greater than the bolt strength classification number when tightening parts with a bolt and nut.

Example:

- Bolt = 4T
- Nut = 4N or more

1GR-FE ENGINE CONTROL SYSTEM

SERVICE DATA

SS

Camshaft timing oil control valve assembly	OCV OFF	Standard		Normal engine speed
	OCV ON			Rough idle or engine stalled
Throttle body	Throttle POS value	Standard		60 % or more
	Resistance	1 (M-) - 2 (M+)	Standard	0.3 to 100 Ω at 20°C (68°F)
Accelerator pedal position sensor (ACCEL POS#1)	Voltage	Accelerator pedal released	Standard	0.5 to 1.1 V
		Accelerator pedal depress		2.5 to 4.5 V
Accelerator pedal position sensor (ACCEL POS#2)	Voltage	Accelerator pedal released	Standard	1.2 to 2.0 V
		Accelerator pedal depress		3.4 to 5.0 V
Camshaft timing oil control valve assembly	Resistance	1 (+B) - 2 (GND)	Standard	6.9 to 7.9 Ω at 20°C (68°F)
Mass air flow meter			Standard	0.72 g/sec
Engine coolant temperature sensor	Resistance	1 (E2) - 2 (THW)	Standard	2.32 to 2.59 kΩ at 20°C (68°F)
				0.310 to 0.326 kΩ at 80°C (176°F)
Knock sensor	Resistance	1 (Ground) - 2 (Out put)		120 to 180 kΩ at 20°C (68°F)
Circuit opening relay	Resistance	3 - 5	Standard	10 kΩ or higher
				Below 1 Ω
		1 - 2		Below 1 Ω (Apply battery voltage to terminals 1 and 2)
EFI relay	Resistance	3 - 5	Standard	10 kΩ or higher
				Below 1 Ω (Apply battery voltage to terminals 1 and 2)
Crankshaft position sensor	Resistance	1 - 2	Standard	1,850 to 2,450 Ω at 20°C (68°F)
Fuel pump relay	Resistance	1 - 2	Standard	Below 1 Ω
		3 - 4		Below 1 Ω
		3 - 5		10 kΩ or higher
		3 - 4		10 kΩ or higher (Battery voltage applied to terminal 1 and 2)
		3 - 5		Below 1 Ω (Battery voltage applied to terminal 1 and 2)

TORQUE SPECIFICATIONS

Part Tightened	N*m	kgf*cm	ft.*lbf
Throttle with motor body assembly x Intake air surge tank	11	112	9
Air cleaner assembly x Cylinder head cover sub-assembly	8.0	82	71 in.*lbf
Air cleaner assembly x Intake air surge tank	8.0	82	71 in.*lbf
V-bank cover x Air cleaner assembly	7.5	76	66 in.*lbf
V-bank cover x Intake air surge tank	7.5	76	66 in.*lbf
Knock sensor x Cylinder block sub-assembly	20	204	15
Water outlet pipe No. 1 x Cylinder block sub-assembly	9.0	92	80 in.*lbf
Camshaft timing oil control valve x Cylinder head	9.0	92	80 in.*lbf
E.F.I. engine coolant temperature sensor x Cylinder block	20	204	15
Manifold stay x Exhaust manifold	40	408	30
Manifold stay x Transmission	40	408	30
Cool air inlet No. 1 x Body	12	122	9.0
ECM bracket x ECM	3	32	28 in.*lbf
ECM bracket No. 2 x ECM	3	32	28 in.*lbf
ECM x Body	13	133	10

1GR-FE ENGINE MECHANICAL

SERVICE DATA

Ignition timing		Terminals TC and CG of DLC3 connected	8 to 12° BTDC @ idle (Transmission in neutral position)
		Terminals TC and CG of DLC3 disconnected	7 to 24° BTDC @ idle (Transmission in neutral position)
Idle speed			650 to 750 rpm (Transmission in neutral position)
Compression		Compression pressure	1,300 kPa (13.3 kgf/cm^2, 189 psi) or more
		Minimum pressure	1,000 kPa (10.2 kgf/cm^2, 145 psi)
		Difference between each cylinder	100 kPa (1.0 kgf/cm^2, 15 psi) or less
Valve clearance	Intake	(cold)	0.15 to 0.25 mm (0.006 to 0.010 in.)
	Exhaust		0.29 to 0.39 mm (0.011 to 0.015 in.)
Intake manifold	Intake air surge tank side warpage	Maximum	0.8 mm (0.031 in.)
	Cylinder head side warpage		0.2 mm (0.008 in.)
Exhaust manifold	Warpage	Maximum	0.7 mm (0.028 in.)
Camshaft timing gear assembly	Diameter (with chain)	Large gear	115.5 mm (4.547 in.)
		Small gear	73.1 mm (2.878 in.)
Camshaft timing gear or sprocket	Diameter (with chain)		73.1 mm (2.878 in.)
Crankshaft timing gear or sprocket	Diameter (with chain)		61.0 mm (2.402 in.)
Idle sprocket	Diameter (with chain)		61.0 mm (2.402 in.)
Cylinder head set bolt	Outer diameter	Standard	10.85 to 11.00 mm (0.4272 to 0.4331 in.)
		Minimum	10.7 mm (0.421 in.)
Chain sub-assembly	Length	Maximum	146.8 mm (5.780 in.)
No. 2 chain sub-assembly	Length	Maximum	146.8 mm (5.780 in.)
Idle gear shaft	Diameter		22.987 to 23.000 mm (0.9050 to 0.9055 in.)
	Internal diameter		23.02 to 23.03 mm (0.9063 to 0.9067 in.)
	Oil clearance	Standard	0.020 to 0.043 mm (0.0008 to 0.0017 in.)
		Maximum	0.093 mm (0.0037 in.)
Chain tensioner assembly No. 2	Wear	Maximum	1.0 mm (0.039 in.)
Chain tensioner assembly No. 3	Wear	Maximum	1.0 mm (0.039 in.)
Chain tensioner slipper	Wear	Maximum	1.0 mm (0.039 in.)
Chain vibration damper No. 1	Wear	Maximum	1.0 mm (0.039 in.)
Chain vibration damper No. 2	Wear	Maximum	1.0 mm (0.039 in.)
Cylinder head sub-assembly	Warpage	Maximum	0.10 mm (0.0039 in.)
Intake valve	Valve stem diameter		5.470 to 5.485 mm (0.2154 to 0.2159 in.)
	Valve face angle		45.5°
	Margin thickness	Standard	1.0 mm (0.039 in.)
		Minimum	0.5 mm (0.020 in.)
	Overall length	Standard	106.95 mm (4.2106 in.)
		Minimum	106.70 mm (4.2008 in.)

Exhaust valve	Valve stem diameter			5.465 to 5.480 mm (0.2152 to 0.2158 in.)
	Valve face angle			45.5°
	Margin thickness		Standard	1.0 mm (0.039 in.)
			Minimum	0.5 mm (0.020 in.)
	Overall length		Standard	105.80 mm (41654 in.)
			Minimum	105.55 mm (4.1555 in.)
Inner compression spring	Deviation		Maximum	2.0 mm (0.079 in.)
	Free length		Maximum	47.80 mm (1.8819 in.)
	Tension	at 33.3 mm (1.311 in.)		186.2 to 205.8 N (19.0 to 21.0 kgf, 41.9 to 46.3 lbf)
Intake valve guide bush	Inside diameter			5.51 to 5.53 mm (0.2169 to 0.2177 in.)
	Oil clearance		Standard	0.025 to 0.060 mm (0.0010 to 0.0024 in.)
			Maximum	0.08 mm (0.0031 in.)
	Bore diameter			10.295 to 10.315 mm (0.4053 to 0.4061 in.)
	Protrusion height			9.3 to 9.7 mm (0.366 to 0.382 in.)
Exhaust valve guide bush	Inside diameter			5.51 to 5.53 mm (0.2169 to 0.2177 in.)
	Oil clearance		Standard	0.030 to 0.065 mm (0.0012 to 0.0026 in.)
			Maximum	0.10 mm (0.0039 in.)
	Bore diameter			10.295 to 10.315 mm (0.4053 to 0.4061 in.)
	Protrusion height			9.3 to 9.7 mm (0.366 to 0.382 in.)
Valve lifter	Diameter			30.966 to 30.976 mm (1.2191 to 1.2195 in.)
	Bore diameter			31.009 to 31.025 mm (1.2208 to 1.2215 in.)
	Oil clearance		Standard	0.033 to 0.059 mm (0.0013 to 0.0023 in.)
			Maximum	0.08 mm (0.0031 in.)
No. 1 camshaft	Journal diameter		No. 1 journal	35.971 to 35.985 mm (1.4162 to 1.4167 in.)
			Other journals	22.959 to 22.975 mm (0.9039 to 0.9045 in.)
	Circle runout		Maximum	0.06 mm (0.0024 in.)
	Cam lobe height		Standard	44.168 to 44.268 mm (1.7389 to 1.7428 in.)
			Minimum	44.018 mm (1.7330 in.)
	Oil clearance	No. 1 journal	Standard	0.008 to 0.038 mm (0.0003 to 0.0015 in.)
			Other journals	0.025 to 0.062 mm (0.0010 to 0.0024 in.)
		No. 1 journal	Maximum	0.07 mm (0.0028 in.)
			Other journals	0.10 mm (0.0039 in.)
	Thrust clearance		Standard	0.04 to 0.09 mm (0.016 to 0.035 in.)
			Maximum	0.11 mm (0.0043 in.)
No. 2 camshaft	Journal diameter		No. 1 journal	35.971 to 35.985 mm (1.4162 to 1.4167 in.)
			Other journals	22.959 to 22.975 mm (0.9039 to 0.9045 in.)
	Circle runout		Maximum	0.06 mm (0.0024 in.)
	Cam lobe height		Standard	44.580 to 44.680 mm (1.7551 to 1.7591 in.)
			Minimum	44.430 mm (1.7492 in.)
	Oil clearance	No. 1 journal	Standard	0.040 to 0.079 mm (0.0016 to 0.0031 in.)
			Other journals	0.025 to 0.062 mm (0.0010 to 0.0024 in.)
			Maximum	0.10 mm (0.0039 in.)
	Thrust clearance		Standard	0.04 to 0.09 mm (0.016 to 0.035 in.)
			Maximum	0.11 mm (0.0043 in.)

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No. 3 camshaft sub-assembly	Journal diameter		No. 1 journal	35.971 to 35.985 mm (1.4162 to 1.4167 in.)
			Other journals	22.959 to 22.975 mm (0.9039 to 0.9045 in.)
	Circle runout		Maximum	0.06 mm (0.0024 in.)
	Cam lobe height		Standard	44.168 to 44.268 mm (1.7389 to 1.7428 in.)
			Minimum	44.018 mm (1.7330 in.)
	Oil clearance	No. 1 journal	Standard	0.008 to 0.038 mm (0.0003 to 0.0015 in.)
			Other journals	0.025 to 0.062 mm (0.0010 to 0.0024 in.)
			Maximum	0.10 mm (0.0039 in.)
	Thrust clearance		Standard	0.04 to 0.09 mm (0.016 to 0.035 in.)
			Maximum	0.11 mm (0.0043 in.)
No. 4 camshaft sub-assembly	Journal diameter		No. 1 journal	35.971 to 35.985 mm (1.4162 to 1.4167 in.)
			Other journals	22.959 to 22.975 mm (0.9039 to 0.9045 in.)
	Circle runout		Maximum	0.06 mm (0.0024 in.)
	Cam lobe height		Standard	44.580 to 44.680 mm (1.7551 to 1.7591 in.)
			Minimum	44.430 mm (1.7492 in.)
	Oil clearance	No. 1 journal	Standard	0.040 to 0.079 mm (0.0016 to 0.0031 in.)
			Other journals	0.025 to 0.062 mm (0.0010 to 0.0024 in.)
			Maximum	0.10 mm (0.0039 in.)
	Thrust clearance		Standard	0.04 to 0.09 mm (0.016 to 0.035 in.)
			Maximum	0.11 mm (0.0043 in.)
Ring pin for cylinder head sub-assembly and cylinder head LH	Protrusion height			2.7 to 3.3 mm (0.106 to 0.130 in.)
Straight pin for cylinder head sub-assembly and cylinder head LH	Protrusion height		A	17.5 to 19.5 mm (0.689 to 0.768 in.)
			B	7.5 to 8.5 mm (0.295 to 0.335 in.)
			C	7.0 to 9.0 mm (0.276 to 0.354 in.)
Tight plug for cylinder head sub-assembly and cylinder head LH	Depth			1.5 mm (0.059 in.)
Connecting rod	Thrust clearance		Standard	0.15 to 0.30 mm (0.0059 to 0.0118 in.)
			Maximum	0.35 mm (0.0138 in.)
	Oil clearance		Standard	0.026 to 0.046 mm (0.0010 to 0.0018 in.)
			Maximum	0.066 mm (0.0025 in.)
Crankshaft thrust clearance			Standard	0.04 to 0.24 mm (0.0016 to 0.0094 in.)
			Maximum	0.30 mm (0.0118 in.)
Cylinder block warpage			Maximum	0.05 mm (0.0020 in.)
Cylinder bore diameter			Standard	94.000 to 94.012 mm (3.7008 to 3.7013 in.)
			Maximum	94.132 mm (3.7060 in.)
Piston	Diameter			93.910 to 93.940 mm (3.6972 to 3.6984 in.)
	Oil clearance		Standard	0.060 to 0.102 mm (0.0031 to 0.0040 in.)
			Maximum	0.13 mm (0.0051 in.)
Connecting rod out-of alignment			Maximum	0.05 mm (0.0020 in.) per 100 mm (3.94 in.)
Connecting rod twist			Maximum	0.15 mm (0.0059 in.) per 100 mm (3.94 in.)
Connecting rod bushing	Internal diameter			22.005 to 22.014 mm (0.8662 to 0.8665 in.)
Piston pin	Diameter			21.997 to 22.006 mm (0.8660 to 0.8664 in.)
Oil clearance			Standard	0.005 to 0.011 mm (0.0002 to 0.0004 in.)
			Maximum	0.050 mm (0.0020 in.)
Piston ring	Groove clearance		No. 1	0.02 to 0.07 mm (0.0008 to 0.0028 in.)
			No. 2	0.02 to 0.06 mm (0.0008 to 0.0024 in.)
			Oil	0.07 to 0.15 mm (0.0028 to 0.0060 in.)

Piston pin	Internal diameter			22.001 to 22.010 mm (0.8662 to 0.8665 in.)
Piston ring	End gap	No. 1	Standard	0.30 to 0.40 mm (0.0118 to 0.0157 in.)
		No. 2		0.40 to 0.50 mm (0.0157 to 0.0197 in.)
		Oil (Side rail)		0.10 to 0.40 mm (0.0039 to 0.0157 in.)
		No. 1	Maximum	1.0 mm (0.039 in.)
		No. 2		1.1 mm (0.043 in.)
		Oil (Side rail)		1.0 mm (0.039 in.)
Connecting rod bolt	Diameter		Standard	7.2 to 7.3 mm (0.283 to 0.287 in.)
			Minimum	7.0 mm (0.276 in.)
	Thrust clearance		Standard	0.15 to 0.30 mm (0.0059 to 0.0118 in.)
			Minimum	0.35 mm (0.0138 in.)
Crankshaft bearing cap set bolt	Diameter		Standard	10.0 to 10.2 mm (0.393 to 0.402 in.)
Crankshaft	Circle runout		Maximum	0.06 mm (0.0024 in.)
Main journal	Diameter			71.988 to 72.000 mm (2.8342 to 2.8346 in.)
Main journal	Taper and out-of-round		Maximum	0.02 mm (0.0008 in.)
Crank pin	Diameter			55.992 to 56.000 mm (2.2044 to 2.2047 in.)
Crank pin	Taper and out-of-round		Maximum	0.02 mm (0.0008 in.)
Crankshaft	Oil clearance		Standard	0.018 to 0.030 mm (0.0007 to 0.0012 in.)
			Maximum	0.046 mm (0.0018 in.)
	Thrust clearance			0.04 to 0.24 mm (0.0016 to 0.0094 in.)
			Maximum	0.30 mm (0.0018 in.)
Straight pin	Protrusion	Pin A	Standard	22.5 to 23.5 mm (0.886 to 0.925 in.)
		Pin B		10.5 to 11.5 mm (0.413 to 0.453 in.)
		Pin C		8.5 to 9.5 mm (0.335 to 0.374 in.)
		Pin D		5.5 to 6.5 mm (0.217 to 0.256 in.)

TORQUE SPECIFICATIONS

Part Tightened		N*m	kgf*cm	ft.*lbf
No. 1 Engine under cover sub-assembly x Frame assembly		29	296	21
Camshaft bearing cap x Cylinder head sub-assembly	10 mm (0.39 in.) head	9.0	92	80 in.*lbf
	12 mm (0.47 in.) head	24	245	18
No. 1 chain tensioner x Cylinder head sub-assembly		10	102	7
No. 2 chain tensioner x Cylinder head sub-assembly		19	194	14
No. 3 chain tensioner x Cylinder head sub-assembly		19	194	14
Camshaft timing gear assembly x Camshaft		100	1,020	74
Camshaft timing gear or sprocket x Camshaft		100	1,020	74
Timing chain cover plate x Timing chain or belt cover sub-assembly		9.0	92	80 in.*lbf
Ignition coil assembly x Cylinder head cover sub-assembly		10	102	7
V-bank cover x Intake air surge tank		7.5	76	66 in.*lbf
Engine hanger No. 1 x Cylinder head sub-assembly RH		33	336	24
Engine hanger No. 2 x Cylinder head sub-assembly LH		33	336	24
Spark plug x Cylinder head sub-assembly		20	204	15
Oil filler cap housing x Cylinder head cover sub-assembly LH		9.0	92	80 in.*lbf
Camshaft timing oil control valve assembly x Cylinder head cover sub-assembly		9.0	92	80 in.*lbf
Oil filter bracket sub-assembly x Timing chain or belt cover sub-assembly		19	194	14
No. 1 engine mounting bracket front RH x Cylinder block sub-assembly		43	435	31
No. 1 engine mounting bracket front LH x Cylinder block sub-assembly		43	435	31
No. 1 engine mounting insulator front RH x Frame assembly		38	387	28
No. 1 engine mounting insulator front LH x Frame assembly		38	387	28
Engine wire No. 2 (ground cable) x Cylinder block sub-assembly		13	133	9
Hood sub-assembly x Hood hinge assembly RH and LH		18	184	13
Knock sensor x Cylinder block sub-assembly		20	204	15
No. 1 water outlet pipe x Cylinder block sub-assembly		10	102	7
Cylinder head sub-assembly RH x Cylinder block sub-assembly	1st	36	367	27
	2nd	Turn 180°	Turn 180°	Turn 180°
Cylinder head sub-assembly LH x Cylinder block sub-assembly	Recessed head 1st	36	367	27
	2nd	Turn 180°	Turn 180°	Turn 180°
	14 mm (0.55 in.) head	30	306	22
No. 1 chain vibration damper x Cylinder block sub-assembly		19	194	14
No. 1 idle gear x Cylinder block sub-assembly		60	612	44
Timing chain or belt cover sub-assembly x Cylinder head and block		23	235	17
Water pump assembly x Timing chain or belt cover sub-assembly	Bolt A	9.0	92	80 in.*lbf
	Bolt B	23	235	17
Oil pan stud bolt x Oil pan sub-assembly		4.0	41	35 in.*lbf
Oil pan sub-assembly x Cylinder block and timing chain or belt cover	10 mm (0.39 in.) head	10	102	7
	12 mm (0.47 in.) head	21	214	16
Oil strainer sub-assembly x Oil pan sub-assembly		9.0	92	80 in.*lbf

Part Tightened		N*m	kgf*cm	ft.*lbf
No. 2 oil pan sub-assembly x Oil pan sub-assembly	Nut	1.0	102	7
	Bolt	9.0	92	80 in.*lbf
Oil pan drain plug x No. 2 oil pan sub-assembly		40	408	30
Crankshaft pulley x Crankshaft		250	2,549	185
Cylinder head cover sub-assembly x Cylinder head sub-assembly RH	Nut	9.0	92	80 in.*lbf
	Bolt A	10	102	7
	Bolt B	9.0	92	80 in.*lbf
Cylinder head cover sub-assembly LH x Cylinder head sub-assembly LH	Nut	9.0	92	80 in.*lbf
	Bolt A	10	102	7
	Bolt B	9.0	92	80 in.*lbf
Ventilation valve x Cylinder head cover sub-assembly LH		27	275	20
Oil control valve filter plug x Cylinder head sub-assembly		62	632	46
Crankshaft position sensor x Cylinder block sub-assembly		10	102	7.4
VVT sensor x Timing chain or belt cover sub-assembly		8.0	82	71 in.*lbf
Cylinder block water drain cock sub-assembly x Cylinder block sub-assembly		25	255	18
Oil level gauge guide x Cylinder head sub-assembly		9.0	92	80 in.*lbf
Oil pan sub-assembly x Transmission		37	377	27
No. 1 idler pulley sub-assembly x Timing chain or belt cover sub-assembly		54	551	40
No. 2 idler pulley sub-assembly x Timing chain or belt cover sub-assembly		39	398	29
V-ribbed belt tensioner assembly x Cylinder block sub-assembly		36	367	27
Vane pump assembly x Cylinder block sub-assembly		43	438	32
Intake air surge tank x Intake manifold		28	286	21
Surge tank stay x Intake air surge tank and cylinder head		21	214	15
Throttle body bracket x Throttle body with motor and cylinder head		21	214	15
Oil baffle plate x Surge tank stay No. 1		9.0	92	80 in.*lbf
Ground cable x Cylinder head sub-assembly		8.0	82	71 in.*lbf
Water by-pass joint RR x Cylinder head sub-assembly		9.0	92	80 in.*lbf
Intake manifold x Cylinder head sub-assembly		26	265	19
Exhaust manifold sub-assembly RH x Cylinder head sub-assembly RH		30	306	22
Exhaust manifold sub-assembly LH x Cylinder head sub-assembly LH		30	306	22
Manifold stay x Exhaust manifold sub-assembly RH and transmission		40	408	30
No. 2 manifold stay x Exhaust manifold sub-assembly LH and transmission		40	408	30
No. 1 cool air inlet x Body		12	122	9
Drive plate and ring gear sub-assembly x Crankshaft		83	846	61
Flywheel x Crankshaft		83	846	61
Stud bolt x Cylinder head sub-assembly and cylinder head LH	A	4.0	41	35 in.*lbf
	B	9.0	92	80 in.*lbf
	C	4.0	41	35 in.*lbf
Union x Cylinder head sub-assembly and cylinder head LH		15	150	11
With Head taper screw plug x Cylinder head sub-assembly and cylinder head LH		80	816	59
Connecting rod cap x Connecting rod	1st	25	250	18
	2nd	Turn 90°	urn 90°	urn 90°
Main bearing cap x Cylinder block sub-assembly	12 pointed head 1st	61	622	45
	2nd	urn 90°	urn 90°	urn 90°
	12 mm head	25	255	18

Part Tightened		N*m	kgf*cm	ft.*lbf
Stud bolt x Cylinder block sub-assembly	A	11	112	8.1
	B	4.5	46	40 in.*lbf
	C	4.0	41	35 in.*lbf
	D	4.0	41	35 in.*lbf
No. 1 sub-assembly oil nozzle x Cylinder block sub-assembly		9.0	92	80 in.*lbf
Negative battery terminal		3.9	40	35 in.*lbf
Exhaust front pipe x Exhaust manifold		54	554	40
Exhaust center pipe x Exhaust front		43	438	32
No. 2 front exhaust pipe x Exhaust manifold	Nut	54	554	40
	Bolt	48	489	35
Exhaust pipe stopper bracket x Frame assembly		19	193	14
Ground wire x Body		8.4	85	74 in.*lbf
Rear engine oil seal retainer x Cylinder block sub-assembly	Nut	9.0	92	80 in.*lbf
	Bolt	10	102	7.4
Water inlet x Cylinder head sub-assembly		9.0	92	80 in.*lbf
Thermostat water inlet sub-assembly x Water inlet		9.0	92	80 in.*lbf
Engine oil pressure switch x Oil filter bracket sub-assembly		15	153	11
Oil filter union x Oil filter bracket		30	306	22
Oil filter sub-assembly x Oil filter bracket		18	184	13
Water temperature sensor x Water by-pass joint RR		20	200	14

1GR-FE FUEL

SERVICE DATA

Fuel pressure			281 to 287 kPa (2.87 to 2.93 kgf*cm^2, 40.8 to 41.7 psi)
Fuel pressure			147 kPa (1.5 kgf*cm^2, 21 psi) or more
Fuel injector	Resistance	at 20°C (68°F)	11.6 to 12.4 Ω
	Injection volume		76 to 91 cm^2 (4.6 to 5.5 cu in.) per 15 seconds
	Difference between each cylinder		15 cm^3 (0.9 cu in.) or less
	Fuel leakage		1 drop or less every 12 minutes
Fuel pump resister	Resistance	at 20°C (68°F)	0.941 to 0.999 Ω
Fuel Pump	Resistance	at 20°C (68°F)	0.2 to 3.0 Ω

TORQUE SPECIFICATIONS

Part Tightened	N*m	kgf*cm	ft.*lbf
Fuel tank band x Body	40	408	30
No. 1 fuel tank protector sub-assembly x Fuel tank band	20	204	15
Fuel tank protector bracket x Body	5.5	56	49 in.*lbf
Fuel delivery pipe sub-assembly x Intake manifold	15	153	11
Intake air surge tank x Intake manifold	28	286	21
Intake air surge tank x Throttle body bracket	21	214	16
Intake air surge tank x No. 1 surge tank stay	21	214	16
Intake air surge tank x No. 2 surge tank stay	21	214	16
Fuel pressure regulator assembly x Fuel delivery pipe sub-assembly	9.0	92	80 in.*lbf
Negative battery terminal	3.9	40	35 in.*lbf
No. 1 surge tank stay x Oil baffle plate	9.0	92	80 in.*lbf
Fuel pump resister x Body	8.5	87	75 in.*lbf
No. 3 fuel tank protector x Fuel tank	5.0	51	44 in.*lbf

1GR-FE EMISSION CONTROL

SERVICE DATA

Air-fuel ratio compensation system	Voltage	Standard	B2 - B22 (A1A+) - B3 - 1 (E1)	3.3 V
			B2 - 23 (A2A+) - B3 - 1 (E1)	3.3 V
			B2 - 22 (A1A-) - B3 - (E1)	2.9 V
			B2 - 31 (A2A-) - B3 - (E1)	2.9 V
Fuel cut off rpm	Cut off			2,500 rpm
	Return			1,200 rpm
Lead detection pump	Voltage	Standard	A23 (VC) - A28 (E2)	4.5 to 5.5 V
			E22 (PPMP) - A28 (E2)	1.425 to 4.150 V
vacuum Switching Valve	Resistance	Standard	1 - Body	10 MΩ or higher at 20°C (68°F)
			2 - Body	10 MΩ or higher at 20°C (68°F)
Air fuel ratio sensor (Bank 1, Bank 2)	Resistance	Standard	1 (HT) - 2 (+B)	1.8 to 3.4 Ω at 20°C (68°F)
			1 (HT) - 4 (E1)	10 kΩ or higher
Heated oxygen sensor No. 2 (Bank 1, Bank 2)	Resistance	Standard	1 (HT) - 2 (+B)	11 to 16 Ω at 20°C (68°F)
			1 (HT) - 4 (E1)	10 kΩ or higher

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TORQUE SPECIFICATIONS

Part Tightened	N*m	kgf*cm	ft.*lbf
Duty vacuum switching valve x Intake air surge tank	9.0	92	80 in.*lbf
Ventilation valve x Cylinder head cover	27	275	20
Heated oxygen sensor x Exhaust pipe	44	449	33
Air fuel ratio sensor x Exhaust manifold	44	449	33
Negative battery terminal	3.9	40	35 in.*lbf
Charcoal canister x Body	20	204	15

1GR-FE INTAKE

SERVICE DATA

No. 1 vacuum switching valve assembly	Resistance	Standard	1 - 2	33 to 39 Ω at 20°C (68°F)
			1 - Body	10 kΩ or higher
			2 - Body	10 kΩ or higher

TORQUE SPECIFICATIONS

Part Tightened	N*m	kgf*cm	ft.*lbf
No. 1 vacuum switching valve assembly x Intake air surge tunk	9.0	92	80 in.*lbf
V-bank cover x Air cleaner assembly	7.5	76	66 in.*lbf
Air cleaner assembly x Intake air surge tunk	8.0	82	71 in.*lbf
Negative battery terminal	3.9	40	35 in.*lbf

1GR-FE EXHAUST

SERVICE DATA

Compression spring	Length	Minimum	40.5 mm (1.594 in.)

TORQUE SPECIFICATIONS

Part Tightened		N*m	kgf*cm	ft.*lbf
Exhaust pipe assembly front x Exhaust manifold		54	554	40
Exhaust front pipe assembly No. 2 x Exhaust pipe assembly center	Bolt	48	489	35
	Nut	54	554	40
Exhaust pipe assembly center x Tail pipe		48	490	35
Heated oxygen sensor x Exhaust pipe assembly front		43	438	32
Heated oxygen sensor x Exhaust front pipe assembly No. 2		43	438	32
Negative battery terminal		3.9	40	35 in.*lbf
Exhaust pipe stopper bracket x Body		19	193	14

1GR-FE COOLING

SERVICE DATA

Water inlet with thermostat	Valve opening temperature		80 to 84 °C (176 to 183 °F)
	Valve lift		8 mm (0.31 in.) or more at 95 °C (203 °F)
Radiator cap	Relief valve opening pressure	Standard	93 to 123 kPa (0.95 to 1.25 kgf/cm^2, 13.5 to 17.8 psi)
		Minimum	78 kPa (0.8 kgf/cm^2, 11.4 psi)

TORQUE SPECIFICATIONS

Part Tightened		N*m	kgf*cm	ft.*lbf
Cylinder block water drain cock plug x Cylinder block water drain cock		13	130	9
Water pump assembly x Timing chain or belt cover sub-assembly	Bolt A	9.0	92	80 in.*lbf
	Bolt B	23	235	17
Idler pulley sub-assembly No. 2 x Timing chain or belt cover sub-assembly		39	398	29
Water inlet x Timing chain or belt cover sub-assembly		9.0	92	80 in.*lbf
Fan shroud x Radiator		5.0	51	44 in.*lbf
Fan x Fluid coupling		9.0	92	80 in.*lbf
Fan with fluid coupling x Water pump		21	214	15
Reserve tank x Radiator		5.0	51	44 in.*lbf
V-bank cover x Intake air surge tank		7.5	76	66 in.*lbf
Engine under cover sub-assembly No. 1 x Frame assembly		29	296	21
Water inlet with thermostat x Water inlet		9.0	92	80 in.*lbf
Radiator x Radiator support		21	184	44
Negative battery terminal		3.9	40	35 in.*lbf

1GR-FE LUBRICATION

SERVICE DATA

Oil pressure		at idle speed	29 kPa (0.3 kgf/cm^2, 4.2 psi) or more
		at 3,000 rpm	294 to 588 kPa (3.0 to 6.0 kgf/cm^2, 43 to 85 psi)
Oil pump	Tip clearance	Standard	0.06 to 0.16 mm (0.0024 to 0.0063 in.)
		Maximum	0.16 mm (0.0063 in.)
	Side clearance	Standard	0.03 to 0.09 mm (0.0012 to 0.0035 in.)
		Maximum	0.09 mm (0.0035 in.)
	Body clearance	Standard	0.250 to 0.325 mm (0.0098 to 0.0128 in.)
		Maximum	0.325 mm (0.0128 in.)

TORQUE SPECIFICATIONS

Part Tightened	N*m	kgf*cm	ft.*lbf
Oil pressure switch x Oil filter bracket sub-assembly	15	153	11
Oil pan drain plug x Oil pan sub-assembly No. 2	40	408	30
Timing chain or belt cover sub-assembly x Cylinder head and block	23	235	17
Oil filter bracket sub-assembly x Timing chain or belt cover sub-assembly	19	194	14
V-bank cover x Intake air surge tank	7.5	76	66 in.*lbf
Oil pump relief valve x Oil pump cover	49	500	36
Oil pump cover x Timing chain or belt cover sub-assembly	9.0	92	80 in.*lbf
Oil cooler assembly x Oil filter bracket sub-assembly	68	693	50
Oil filter sub-assembly	18	184	13

1GR-FE IGNITION

SERVICE DATA

Spark plug	Recommended spark plug	DENSO mad	K20HR-U11
		NGK made	LFR6C-11
	Electrode gap		1.0 to 1.1 mm (0.039 to 0.043 in.)
	Maximum electrode gap		1.46 mm (0.057 in.)
Crankshaft position sensor	Resistance	at 20°C (68°F)	1,850 to 2,450 Ω

TORQUE SPECIFICATIONS

Part Tightened	N*m	kgf*cm	ft.*lbf
Ignition coil x Cylinder head cover	10	102	7.4
V-bank cover x Intake air surge tank sub-assembly and Air cleaner assembly	7.5	76	66 in.*lbf
Negative battery terminal	3.9	40	35 in.*lbf

1GR-FE STARTING

SERVICE DATA

Starter	Current	Standard		100A or less at 11.5 V
Starter armature assembly	Circle runout	Maximum		0.05 mm (0.0020 in.)
	Commutator diameter	Standard		35.0 mm (1.378 in.)
		Minimum		34.0 mm (1.339 in.)
	Undercut depth	Standard		0.7 mm (0.028 in.)
		Minimum		0.2 mm (0.008 in.)
	Commutator resistance	Standard		Below 1 Ω
Starter yoke	Resistance	Standard	Lead wire-brush	Below 1 Ω
	Shunt coil resistance		Terminal A - B	1.5 to 1.9 Ω at 20°C (68°F)
Brush	Length	Standard		15.0 mm (0.591 in.)
		Minimum		9.0 mm (0.354 in.)
Starter brush holder assembly	Brush spring lead	Standard		21.5 to 27.5 N (2.2 to 2.8 kgf, 4.8 to 6.2 lbf)
		Minimum		12.7 N (1.3 kgf, 2.9 lbf)
Starter relay assembly	Resistance	Standard	3 - 5	10 kΩ or higher
				Below 1 Ω (apply battery voltage to terminal 1 and 2)
Ignition switch assembly	Resistance	Standard		10 kΩ or higher (Lock)
			1 (AM1) - 3 (ACC)	Below 1 Ω (ACC)
			1 (AM1) - 3 (ACC) - 4 (IG1)	Below 1 Ω (ON)
			7 (IG2) - 8 (AM2)	Below 1 Ω (ON)
			1 (AM1) - 2 (ST1) - 4 (IG1)	Below 1 Ω (START)
			6 (ST2) - 7 (IG2) - 8 (AM2)	Below 1 Ω (START)

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TORQUE SPECIFICATIONS

Part Tightened	N*m	kgf*cm	ft.*lbf
Starter assembly x Transmission housing	37	377	27
Starter assembly x Terminal 30	5.9	60	52
Commutator end frame x Brush holder	3.8	39	34 in.*lbf
Starter drive housing assembly x Magnetic Starter Switch	9.3	95	82 in.*lbf
Commutator end frame x Starter drive housing assembly	9.3	95	82 in.*lbf
Lead wire x Terminal C of starter	5.9	60	52 in.*lbf
Engine wire x Cylinder block	13	133	10
No. 2 exhaust manifold stay x Transmission housing and Exhaust manifold	3.9	40	35 in.*lbf
Wire harness x Cylinder block	13	133	10

1GR-FE CHARGING

SERVICE DATA

Battery	Voltage		Standard	12.6 to 12.9 V at 20°C (68°F)
Charging circuit without load	Amperage			10A or less
	Voltage			13.2 to 14.8 V
Generator (DENSO made)	Generator brush holder assembly	Brush length	Standard	10.5 mm (0.413 in.)
			Minimum	4.5 mm (0.177 in.)
	Generator rotor assembly	Resistance	Standard	2.3 to 2.7 Ω at 20°C (68°F)
		Slip ring diameter	Standard	14.2 to 14.4 mm (0.559 to 0.567 in.)
			Minimum	14.0 mm (0.551 in.)

TORQUE SPECIFICATIONS

Part Tightened	N*m	kgf*cm	ft.*lbf
Generator assembly x V-ribbed belt tensioner and cylinder head	43	438	32
Generator assembly x Wire harness clamp bracket	8.0	82	71 in.*lbf
Generator assembly x Terminal B	10	100	7
Wire harness stay x Body	5.8	59	51 in.*lbf
V-bank cover x Intake air surge tank sub-assembly and Air cleaner assembly	7.5	76	66 in.*lbf
Engine under cover sub-assembly No. 1 x Frame assembly	29	296	21
Retainer plate x Drive end frame assembly generator (Denso made)	26	27	23 in.*lbf
Generator coil assembly x Drive frame assembly generator (Denso made)	5.8	59	51 in.*lbf
Generator brush holder assembly x Generator coil assembly (Denso made)	1.8	18	16 in.*lbf
Generator rear end cover x Generator coil assembly (Denso made)	4.6	47	41 in.*lbf
Generator pulley x Generator rotor assembly (Denso made)	111	1,125	81

A750E AUTOMATIC TRANSMISSION

SERVICE DATA

Line pressure Engine idling	D position	356 to 426 kPa (3.6 to 4.3 kgf*cm^2, 52 to 62 psi)
	R position	500 to 600 kPa (5.1 to 6.1 kgf*cm^2, 73 to 87 psi)
Line pressure AT stall (Throttle valve fully opened)	D position	1,367 to 1,477 kPa (14.0 to 15.1 kgf*cm^2, 198 to 214 psi)
	R position	1,278 to 1,506 kPa (13.0 to 15.4 kgf*cm^2, 185 to 218 psi)
Engine stall revolution	D positions	2,250 to 2,550 rpm
Time lag	N → D position	Less than 1.2 seconds
	N → R position	Less than 1.5 seconds
Engine idle speed (A/C OFF)	N position	650 to 750 rpm
Drive plate runout	Max.	0.20 mm (0.0079 in.)
Torque converter runout	Max.	0.30 mm (0.0118 in.)
Torque converter clutch installation distance		23.28 mm (0.9166 in.) or more
Shift schedule		
D position		
(Throttle valve fully opened)	1 → 2	32 to 40 mph (52 to 64 km/h)
	2 → 3	60 to 67 mph (97 to 108 km/h)
	3 → 4	89 to 97 mph (143 to 156 km/h)
	4 → 5	116 to 125 mph (187 to 201 km/h)
	5 → 4	111 to 119 mph (179 to 191 km/h)
	4 → 3	81 to 88 mph (130 to 141 km/h)
	3 → 2	54 to 58 mph (87 to 94 km/h)
	2 → 1	25 to 29 mph (41 to 46 km/h)
(Throttle valve fully closed)	4 → 5	30 to 34 mph (48 to 54 km/h)
	5 → 4	18 to 21 mph (29 to 34 km/h)
4 position		
(Throttle valve fully opened)	1 → 2	32 to 40 mph (52 to 64 km/h)
	2 → 3	60 to 67 mph (97 to 108 km/h)
	3 → 4	89 to 97 mph (143 to 156 km/h)
	5 → 4	124 to 132 mph (200 to 213 km/h)
	4 → 3	81 to 88 mph (130 to 141 km/h)
	3 → 2	54 to 58 mph (87 to 94 km/h)
	2 → 1	25 to 29 mph (41 to 46 km/h)
3 position		
(Throttle valve fully opened)	1 → 2	32 to 40 mph (52 to 64 km/h)
	2 → 3	60 to 67 mph (97 to 108 km/h)
	4 → 3	87 to 94 mph (140 to 151 km/h)
	3 → 2	54 to 58 mph (87 to 94 km/h)
	2 → 1	25 to 29 mph (41 to 46 km/h)
2 position		
(Throttle valve fully opened)	1 → 2	32 to 40 mph (52 to 64 km/h)
	3 → 2	58 to 64 mph (93 to 103 km/h)
	2 → 1	25 to 29 mph (41 to 46 km/h)
L position		
(Throttle valve fully opened)	2 → 1	25 to 29 mph (41 to 46 km/h)

Lock-up point Throttle valve opening 5%		
D position 5th gear	Lock-up ON	47 to 51 mph (75 to 82 km/h)
	Lock-up OFF	42 to 46 mph (68 to 74 km/h)
4 position 4th gear	Lock-up ON	45 to 48 mph (72 to 78 km/h)
	Lock-up OFF	40 to 43 mph (64 to 70 km/h)

AUTOMATIC TRANSMISSION UNIT

1st and reverse return spring free length	Standard: 23.74 mm (0.9347 in.)
Rear planetary gear pinion thrust clearance	Standard: 0.2 to 0.6 mm (0.008 to 0.024 in.)
Rear planetary gear bushing inside diameter	Standard: 20.075 mm (0.7904 in.)
1st and reverse brake pack clearance	0.8 to 1.1 mm (0.031 to 0.043 in.)
Flange thickness (1st and reverse brake)	Mark 0: 0 mm (0 in.) Mark 2: 0.2 mm (0.008 in.) Mark 4: 0.4 mm (0.016 in.) Mark 6: 0.6 mm (0.024 in.) Mark 8: 0.8 mm (0.031 in.) Mark 10: 1.0 mm (0.039 in.) Mark 12: 1.2 mm (0.047 in.) Mark 14: 1.4 mm (0.055 in.)
Intermediate shaft run out	Standard: 0.08 mm (0.003 in.)
Intermediate shaft diameter	Standard A: 25.962 to 25.975 mm (1.022 to 1.023 in.) Standard B: 25.962 to 25.975 mm (1.022 to 1.023 in.) Standard C: 32.062 to 32.075 mm (1.262 to 1.263 in.) Standard D: 32.062 to 32.075 mm (1.262 to 1.263 in.)
Rear planetary ring gear flange bushing inside diameter	Standard: 32.18 mm (1.2667 in.)
Center planetary gear pinion thrust clearance	Standard: 0.12 to 0.68 mm (0.005 to 0.027 in.)
Brake piston return spring No.2 free length	Standard: 17.45 mm (0.687 in.)
Brake piston return spring free length	Standard: 17.05 mm (0.671 in.)
Front planetary gear pinion thrust clearance	Standard: 0.20 to 0.60 mm (0.008 to 0.024 in.)
Front planetary gear bushing inside diameter	Standard: 57.48 mm (2.263 in.)
Brake piston No.1 piston stroke	0.42 to 0.72 mm (0.017 to 0.028 in.)
Flange thickness (brake piston No.1)	Mark 0: 2.0 mm (0.079 in.) Mark 1: 2.2 mm (0.087 in.) Mark 2: 2.4 mm (0.094 in.) Mark 3: 2.6 mm (0.102 in.)
Brake piston return spring No.3 free length	Standard: 15.72 mm (0.619 in.)
Snap ring and race clearance	0.05 to 0.33 mm (0.002 to 0.013 in.)
Flange thickness	No. 1: 3.7 mm (0.146 in.)
	No. 2: 3.8 mm (0.150 in.)
	No. 3: 3.9 mm (0.154 in.)
	No. 4: 4.0 mm (0.158 in.)
	No. 5: 4.1 mm (0.161 in.)
	No. 6: 4.2 mm (0.165 in.)

OIL PUMP

Body clearance	Standard: 0.10 to 0.17 mm (0.0039 to 0.0067 in.)
	Maximum: 0.17 mm (0.0067 in.)
Tip clearance	Standard: 0.07 to 0.15 mm (0.0028 to 0.0059 in.)
	Maximum: 0.15 mm (0.0059 in.)
Side clearance	Standard: 0.02 to 0.05 mm (0.0008 to 0.0020 in.)
	Maximum: 0.05 mm (0.0020 in.)

Drive and driven gear thickness	Mark 0: 10.740 to 10.749 mm (0.4228 to 0.4232 in.)
	Mark 1: 10.750 to 10.759 mm (0.4232 to 0.4236 in.)
	Mark 2: 10.760 to 10.769 mm (0.4236 to 0.4240 in.)
	Mark 3: 10.770 to 10.779 mm (0.4240 to 0.4244 in.)
	Mark 4: 10.780 to 10.789 mm (0.4244 to 0.4248 in.)
Starter shaft bushing inside diameter	Standard (Front side): 21.577 mm (0.850 in.)
	Standard (Rear side): 32.08 mm (1.263 in.)
Front oil pump body inside diameter	38.188 mm (1.504 in.)

CLUTCH DRUM AND INPUT SHAFT

Direct clutch	
Pack clearance	0.50 to 0.80 mm (0.020 to 0.032 in.)
Clutch piston return spring free length	Standard: 19.51 mm (0.768 in.)
Flange thickness	No. 0: 3.0 mm (0.118 in.)
	No. 1: 3.1 mm (0.122 in.)
	No. 2: 3.2 mm (0.126 in.)
	No. 3: 3.3 mm (0.130 in.)
	No. 4: 3.4 mm (0.134 in.)
	No. 5: 3.5 mm (0.138 in.)
	No. 6: 3.6 mm (0.142 in.)
	No. 7: 3.7 mm (0.146 in.)
	No. 8: 3.8 mm (0.150 in.)
Reverse clutch	
Reverse clutch hub busing inside diameter	Standard: 35.812 to 35.837 mm (1.4099 to 1.4109 in.)
	Maximum: 35.887 mm (1.4129 in.)
Pack clearance	0.50 to 0.80 mm (0.020 to 0.032 in.)
Clutch piston return spring free length	Standard: 21.04 mm (0.828 in.)
Flange thickness	No. 0: 2.8 mm (0.110 in.)
	No. 1: 2.9 mm (0.114 in.)
	No. 2: 3.0 mm (0.118 in.)
	No. 3: 3.1 mm (0.122 in.)
	No. 4: 3.2 mm (0.126 in.)
	No. 5: 3.3 mm (0.130 in.)
	No. 6: 3.4 mm (0.134 in.)
	No. 7: 3.5 mm (0.138 in.)
	No. 8: 3.6 mm (0.142 in.)
	No. 9: 3.7 mm (0.146 in.)
	No. A: 3.8 mm (0.150 in.)
Froward clutch	
Forward clutch hub bushing inside diameter	Standard: 26.037 to 26.062 mm (1.0251 to 1.0261 in.)
	Maximum: 26.112 mm (1.028 in.)
Pack clearance	0.60 to 0.90 mm (0.024 to 0.035 in.)
Clutch piston return spring free length	Standard: 26.74 mm (1.053 in.)

Flange thickness	No. 0: 3.0 mm (0.118 in.)
	No. 1: 3.1 mm (0.122 in.)
	No. 2: 3.2 mm (0.126 in.)
	No. 3: 3.3 mm (0.130 in.)
	No. 4: 3.4 mm (0.134 in.)
	No. 5: 3.5 mm (0.138 in.)
	No. 6: 3.6 mm (0.142 in.)
	No. 7: 3.7 mm (0.146 in.)
	No. 8: 3.8 mm (0.150 in.)
	No. 9: 3.9 mm (0.154 in.)
	No. A: 4.0 mm (0.158 in.)

ACCUMULATOR

Spring	Free Length/Outer diameter	Color
B-3	70.5 mm (2.776 in.)/19.7 mm (0.776 in.)	Purple
C-2	62.0mm (2.441)/15.9 mm (0.626 in.)	White
C-1 (Inner)	30.4 mm (1.197 in.)/11.4 mm (0.449 in.)	Pink
C-1 (Outer)	48.76 mm (1.920 in.)/16.6 mm (0.654 in.)	Light green
C-3 (Inner)	44.0 mm (1.732 in.)/14.0 mm (0.551 in.)	Yellow
C-3 (Outer)	73.35 mm (2.888 in.)/19.9 mm (0.784 in.)	Red

TORQUE SPECIFICATIONS

Automatic Transmission Assembly

Part tightened	N*m	kgf*cm	ft.*lbf
Park/neutral position switch Bolt	13	129	9.4
Park/neutral position switch Nut	6.9	70	61 in.*lbf
Transmission control cable x Automatic transmission	14	143	10
Engine mounting insulator rear No.1 x Automatic transmission	65	663	48
Automatic transmission x Engine (17 mm head)	71	720	53
Automatic transmission x Engine (14 mm head)	37	380	27
Torque converter clutch x Drive plate	48	489	35
Transmission control cable bracket x Automatic transmission	14	143	10
Oil cooler tube clamp bolt A	14	138	10
Oil cooler tube clamp bolt B	5.5	56	49 in.*lbf
Oil cooler tube outlet x Automatic transmission	34	350	25
Oil cooler tube inlet x Automatic transmission	34	350	25
Speed sensor x Automatic transmission	5.4	55	48 in.*lbf
Drain plug x Oil pan	28	285	21
Transmission wire set bolt x Automatic transmission	5.4	55	48 in.*lbf
Transmission wire clamp x Valve body (A)	10	100	7
Transmission wire clamp x Valve body (B)	11	112	8
Oil strainer x Valve body	10	100	7
Oil pan x Transmission case	4.4	45	39 in.*lbf
Shift solenoid valve S1 x Valve body	6.4	65	56 in.*lbf
Shift solenoid valve S2 x Valve body	10	100	7
Shift solenoid valve SR x Valve body	6.4	65	56 in.*lbf
Shift solenoid valve SLU, SL2 x Valve body	6.4	65	56 in.*lbf
Shift solenoid valve SLT, SL1 x Valve body	6.4	65	56 in.*lbf
Valve body x Transmission case	11	112	8
Floor shift assembly x Body	14	143	10
Overflow plug x Automatic transmission	20	204	15
Refill plug x Automatic transmission	39	400	29
Transmission control cable assembly x Body	5.5	56	49 in.*lbf
Frame crossmember x Body	72	734	53
Frame crossmember x Engine mounting insulator rear	19	189	14
Front suspension member bracket LH x Body	33	336	24
Front suspension member bracket RH x Body	33	336	24
No. 2manifold stay x Transmission case	40	408	30
Manifold stay x Transmission case	40	408	30
Negative battery terminal x Battery	3.9	40	35 in.*lbf
Drive plate x Crankshaft	83	846	61

Automatic Transmission Unit

Part tightened	N*m	kgf*cm	ft.*lbf
Transmission housing x Transmission case (14 mm)	34	345	25
Transmission housing x Transmission case (17 mm)	57	581	42
Automatic transaxle breather tube x Transmission case	5.4	55	48 in.*lbf
Transmission wire x Transmission case	5.4	55	48 in.*lbf
Oil cooler tube union x Transmission case	29	296	21
Transmission control shaft lever LH	16	163	12
Transmission revolution sensor x Transmission case	5.4	55	48 in.*lbf
Extension housing assembly x Transmission case	34	345	25

Part tightened	N*m	kgf*cm	ft.*lbf
Oil pan x Transmission case	4.4	45	39 in.*lbf
Valve body oil strainer assembly x Transmission valve body assembly	10	100	7
Transmission valve body assembly x Transmission case	11	112	8
Parking lock pawl bracket x Transmission case	7.4	75	65 in.*lbf
Oil pump x Transmission case	21	214	15
Oil pump body x Stator shaft assembly	12	122	9
Lock plate x Transmission valve body assembly	6.4	65	57 in.*lbf
Shift solenoid valve SR x Transmission valve body assembly	6.4	65	57 in.*lbf
Shift solenoid valve S1 x Transmission valve body assembly	6.4	65	57 in.*lbf
Shift solenoid valve S2 x Transmission valve body assembly	10	100	7
ATF Temperature sensor x Transmission valve body assembly (12 mm)	10	100	7
ATF Temperature sensor x Transmission valve body assembly (36 mm)	11	112	8
Drain plug x Oil pan	28	285	21
Park/neutral position switch for Bolt	13	129	9.4
Park/neutral position switch for Nut	6.9	70	61 in.*lbf

A750F AUTOMATIC TRANSMISSION

SERVICE DATA

Line pressure Engine idling	D position	356 to 426 kPa (3.6 to 4.3 kgf*cm^2, 52 to 62 psi)
	R position	500 to 600 kPa (5.1 to 6.1 kgf*cm^2, 73 to 87 psi)
Line pressure AT stall (Throttle valve fully opened)	D position	1,367 to 1,477 kPa (14.0 to 15.1 kgf*cm^2, 198 to 214 psi)
	R position	1,278 to 1,506 kPa (13.0 to 15.4 kgf*cm^2, 185 to 218 psi)
Engine stall revolution	D positions	2,250 to 2,550 rpm
Time lag	N → D position	Less than 1.2 seconds
	N → R position	Less than 1.5 seconds
Engine idle speed (A/C OFF)	N position	650 to 750 rpm
Drive plate runout	Max.	0.20 mm (0.0079 in.)
Torque converter runout	Max.	0.30 mm (0.0118 in.)
Torque converter clutch installation distance		23.28 mm (0.9166 in.) or more
Shift schedule		
D position		
(Throttle valve fully opened)	1 → 2	32 to 40 mph (52 to 64 km/h)
	2 → 3	60 to 67 mph (97 to 108 km/h)
	3 → 4	89 to 97 mph (143 to 156 km/h)
	4 → 5	116 to 125 mph (187 to 201 km/h)
	5 → 4	111 to 119 mph (179 to 191 km/h)
	4 → 3	81 to 88 mph (130 to 141 km/h)
	3 → 2	54 to 58 mph (87 to 94 km/h)
	2 → 1	25 to 29 mph (41 to 46 km/h)
(Throttle valve fully closed)	4 → 5	30 to 34 mph (48 to 54 km/h)
	5 → 4	18 to 21 mph (29 to 34 km/h)
4 position		
(Throttle valve fully opened)	1 → 2	32 to 40 mph (52 to 64 km/h)
	2 → 3	60 to 67 mph (97 to 108 km/h)
	3 → 4	89 to 97 mph (143 to 156 km/h)
	5 → 4	124 to 132 mph (200 to 213 km/h)
	4 → 3	81 to 88 mph (130 to 141 km/h)
	3 → 2	54 to 58 mph (87 to 94 km/h)
	2 → 1	25 to 29 mph (41 to 46 km/h)
3 position		
(Throttle valve fully opened)	1 → 2	32 to 40 mph (52 to 64 km/h)
	2 → 3	60 to 67 mph (97 to 108 km/h)
	4 → 3	87 to 94 mph (140 to 151 km/h)
	3 → 2	54 to 58 mph (87 to 94 km/h)
	2 → 1	25 to 29 mph (41 to 46 km/h)
2 position		
(Throttle valve fully opened)	1 → 2	32 to 40 mph (52 to 64 km/h)
	3 → 2	58 to 64 mph (93 to 103 km/h)
	2 → 1	25 to 29 mph (41 to 46 km/h)
L position		
(Throttle valve fully opened)	2 → 1	25 to 29 mph (41 to 46 km/h)

Lock-up point Throttle valve opening 5%		
D position 5th gear	Lock-up ON	47 to 51 mph (75 to 82 km/h)
	Lock-up OFF	42 to 46 mph (68 to 74 km/h)
4 position 4th gear	Lock-up ON	45 to 48 mph (72 to 78 km/h)
	Lock-up OFF	40 to 43 mph (64 to 70 km/h)

AUTOMATIC TRANSMISSION UNIT

1st and reverse return spring free length	Standard: 23.74 mm (0.9347 in.)
Rear planetary gear pinion thrust clearance	Standard: 0.2 to 0.6 mm (0.008 to 0.024 in.)
Rear planetary gear bushing inside diameter	Standard: 20.075 mm (0.7904 in.)
1st and reverse brake pack clearance	0.8 to 1.1 mm (0.031 to 0.043 in.)
Flange thickness (1st and reverse brake)	Mark 0: 0 mm (0 in.) Mark 2: 0.2 mm (0.008 in.) Mark 4: 0.4 mm (0.016 in.) Mark 6: 0.6 mm (0.024 in.) Mark 8: 0.8 mm (0.031 in.) Mark 10: 1.0 mm (0.039 in.) Mark 12: 1.2 mm (0.047 in.) Mark 14: 1.4 mm (0.055 in.)
Intermediate shaft run out	Standard: 0.08 mm (0.003 in.)
Intermediate shaft diameter	Standard A: 25.962 to 25.975 mm (1.022 to 1.023 in.) Standard B: 25.962 to 25.975 mm (1.022 to 1.023 in.) Standard C: 32.062 to 32.075 mm (1.262 to 1.263 in.) Standard D: 32.062 to 32.075 mm (1.262 to 1.263 in.)
Rear planetary ring gear flange bushing inside diameter	Standard: 32.18 mm (1.2667 in.)
Center planetary gear pinion thrust clearance	Standard: 0.12 to 0.68 mm (0.005 to 0.027 in.)
Brake piston return spring No.2 free length	Standard: 17.45 mm (0.687 in.)
Brake piston return spring free length	Standard: 17.05 mm (0.671 in.)
Front planetary gear pinion thrust clearance	Standard: 0.20 to 0.60 mm (0.008 to 0.024 in.)
Front planetary gear bushing inside diameter	Standard: 57.48 mm (2.263 in.)
Brake piston No.1 piston stroke	0.42 to 0.72 mm (0.017 to 0.028 in.)
Flange thickness (brake piston No.1)	Mark 0: 2.0 mm (0.079 in.) Mark 1: 2.2 mm (0.087 in.) Mark 2: 2.4 mm (0.094 in.) Mark 3: 2.6 mm (0.102 in.)
Brake piston return spring No.3 free length	Standard: 15.72 mm (0.619 in.)

OIL PUMP

Body clearance	Standard: 0.10 to 0.17 mm (0.0039 to 0.0067 in.)
	Maximum: 0.17 mm (0.0067 in.)
Tip clearance	Standard: 0.07 to 0.15 mm (0.0028 to 0.0059 in.)
	Maximum: 0.15 mm (0.0059 in.)
Side clearance	Standard: 0.02 to 0.05 mm (0.0008 to 0.0020 in.)
	Maximum: 0.05 mm (0.0020 in.)
Drive and driven gear thickness	Mark 0: 10.740 to 10.749 mm (0.4228 to 0.4232 in.)
	Mark 1: 10.750 to 10.759 mm (0.4232 to 0.4236 in.)
	Mark 2: 10.760 to 10.769 mm (0.4236 to 0.4240 in.)
	Mark 3: 10.770 to 10.779 mm (0.4240 to 0.4244 in.)
	Mark 4: 10.780 to 10.789 mm (0.4244 to 0.4248 in.)
Starter shaft bushing inside diameter	Standard (Front side): 21.577 mm (0.850 in.)
	Standard (Rear side): 32.08 mm (1.263 in.)
Front oil pump body inside diameter	38.188 mm (1.504 in.)

CLUTCH DRUM AND INPUT SHAFT

Direct clutch

SS

Pack clearance	0.50 to 0.80 mm (0.020 to 0.032 in.)
Clutch piston return spring free length	Standard: 19.51 mm (0.768 in.)
Flange thickness	No. 0: 3.0 mm (0.118 in.)
	No. 1: 3.1 mm (0.122 in.)
	No. 2: 3.2 mm (0.126 in.)
	No. 3: 3.3 mm (0.130 in.)
	No. 4: 3.4 mm (0.134 in.)
	No. 5: 3.5 mm (0.138 in.)
	No. 6: 3.6 mm (0.142 in.)
	No. 7: 3.7 mm (0.146 in.)
	No. 8: 3.8 mm (0.150 in.)
Reverse clutch	
Reverse clutch hub busing inside diameter	Standard: 35.812 to 35.837 mm (1.4099 to 1.4109 in.)
	Maximum: 35.887 mm (1.4129 in.)
Pack clearance	0.50 to 0.80 mm (0.020 to 0.032 in.)
Clutch piston return spring free length	Standard: 21.04 mm (0.828 in.)
Flange thickness	No. 0: 2.8 mm (0.110 in.)
	No. 1: 2.9 mm (0.114 in.)
	No. 2: 3.0 mm (0.118 in.)
	No. 3: 3.1 mm (0.122 in.)
	No. 4: 3.2 mm (0.126 in.)
	No. 5: 3.3 mm (0.130 in.)
	No. 6: 3.4 mm (0.134 in.)
	No. 7: 3.5 mm (0.138 in.)
	No. 8: 3.6 mm (0.142 in.)
	No. 9: 3.7 mm (0.146 in.)
	No. A: 3.8 mm (0.150 in.)
Froward clutch	
Forward clutch hub bushing inside diameter	Standard: 26.037 to 26.062 mm (1.0251 to 1.0261 in.)
	Maximum: 26.112 mm (1.028 in.)
Pack clearance	0.60 to 0.90 mm (0.024 to 0.035 in.)
Clutch piston return spring free length	Standard: 26.74 mm (1.053 in.)
Flange thickness	No. 0: 3.0 mm (0.118 in.)
	No. 1: 3.1 mm (0.122 in.)
	No. 2: 3.2 mm (0.126 in.)
	No. 3: 3.3 mm (0.130 in.)
	No. 4: 3.4 mm (0.134 in.)
	No. 5: 3.5 mm (0.138 in.)
	No. 6: 3.6 mm (0.142 in.)
	No. 7: 3.7 mm (0.146 in.)
	No. 8: 3.8 mm (0.150 in.)
	No. 9: 3.9 mm (0.154 in.)
	No. A: 4.0 mm (0.158 in.)

ACCUMULATOR

Spring	Free Length/Outer diameter	Color
B-3	70.5 mm (2.776 in.)/19.7 mm (0.776 in.)	Purple
C-2	62.0mm (2.441)/15.9 mm (0.626 in.)	White
C-1 (Inner)	30.4 mm (1.197 in.)/11.4 mm (0.449 in.)	Pink
C-1 (Outer)	48.76 mm (1.920 in.)/16.6 mm (0.654 in.)	Light green
C-3 (Inner)	44.0 mm (1.732 in.)/14.0 mm (0.551 in.)	Yellow

Spring	Free Length/Outer diameter	Color
C-3 (Outer)	73.35 mm (2.888 in.)/19.9 mm (0.784 in.)	Red

TORQUE SPECIFICATIONS

Automatic Transmission Assembly

Part tightened	N*m	kgf*cm	ft.*lbf
Park/neutral position switch Bolt	13	129	9.4
Park/neutral position switch Nut	6.9	70	61 in.*lbf
Transmission control cable x Automatic transmission	14	143	10
Engine mounting insulator rear No.1 x Automatic transmission	65	663	48
Automatic transmission x Engine (17 mm head)	71	720	53
Automatic transmission x Engine (14 mm head)	37	380	27
Torque converter clutch x Drive plate	48	489	35
Transmission control cable bracket x Automatic transmission	14	143	10
Oil cooler tube clamp bolt A	14	138	10
Oil cooler tube clamp bolt B	5.5	56	49 in.*lbf
Oil cooler tube outlet x Automatic transmission	34	350	25
Oil cooler tube inlet x Automatic transmission	34	350	25
Speed sensor x Automatic transmission	5.4	55	48 in.*lbf
Drain plug x Oil pan	28	285	21
Transmission wire set bolt x Automatic transmission	5.4	55	48 in.*lbf
Transmission wire clamp x Valve body (A)	10	100	7
Transmission wire clamp x Valve body (B)	11	112	8
Oil strainer x Valve body	10	100	7
Oil pan x Transmission case	4.4	45	39 in.*lbf
Shift solenoid valve S1 x Valve body	6.4	65	56 in.*lbf
Shift solenoid valve S2 x Valve body	10	100	7
Shift solenoid valve SR x Valve body	6.4	65	56 in.*lbf
Shift solenoid valve SLU, SL2 x Valve body	6.4	65	56 in.*lbf
Shift solenoid valve SLT, SL1 x Valve body	6.4	65	56 in.*lbf
Valve body x Transmission case	11	112	8
Floor shift assembly x Body	14	143	10
Overflow plug x Automatic transmission	20	204	15
Refill plug x Automatic transmission	39	400	29
Transmission control cable assembly x Body	5.5	56	49 in.*lbf
Frame crossmember x Body	72	734	53
Frame crossmember x Engine mounting insulator rear	19	189	14
Front suspension member bracket LH x Body	33	336	24
Front suspension member bracket RH x Body	33	336	24
No. 2 manifold stay x Automatic transmission	40	408	30
Manifold stay x Automatic transmission	40	408	30
Negative battery terminal x Battery	3.9	40	35 in.*lbf
Drive plate x Crankshaft	83	846	61
Propeller shaft heat insulator x Frame crossmember	16	160	12

Automatic Transmission Unit

Part tightened	N*m	kgf*cm	ft.*lbf
Transmission housing x Transmission case (14 mm)	34	345	25
Transmission housing x Transmission case (17 mm)	57	581	42
Automatic transaxle breather tube x Transmission case	5.4	55	48 in.*lbf
Transmission wire x Transmission case	5.4	55	48 in.*lbf
Oil cooler tube union x Transmission case	29	296	21
Transmission control shaft lever LH	16	163	12
Transmission revolution sensor x Transmission case	5.4	55	48 in.*lbf

Part tightened	N*m	kgf*cm	ft.*lbf
Transmission case adapter adapter x Transmission case	34	345	25
Oil pan x Transmission case	4.4	45	39 in.*lbf
Valve body oil strainer assembly x Transmission valve body assembly	10	100	7
Transmission valve body assembly x Transmission case	11	112	8
Parking lock pawl bracket x Transmission case	7.4	75	65 in.*lbf
Oil pump x Transmission case	21	214	15
Oil pump body x Stator shaft assembly	12	122	9
Lock plate x Transmission valve body assembly	6.4	65	57 in.*lbf
Shift solenoid valve SR x Transmission valve body assembly	6.4	65	57 in.*lbf
Shift solenoid valve S1 x Transmission valve body assembly	6.4	65	57 in.*lbf
Shift solenoid valve S2 x Transmission valve body assembly	10	100	7
ATF Temperature sensor x Transmission valve body assembly (36 mm)	11	112	8
ATF Temperature sensor x Transmission valve body assembly (12 mm)	10	100	7
Drain plug x Oil pan	28	285	21
Park/neutral position switch for Bolt	13	129	9.4
Park/neutral position switch for Nut	6.9	70	61 in.*lbf

CLUTCH

SERVICE DATA

Pedal height from asphalt sheet	-	183.5 to 193.5 mm (7.224 to 7.618 in.)
Clutch pedal free play	-	5.0 to 15.0 mm (0.197 to 0.591 in.)
Clutch pedal push rod play at pedal top	-	1.0 to 5.0 mm (0.039 to 0.197 in.)
Disc rivet head depth	Maximum	0.3 mm (0.012 in.)
Flywheel sub-assembly runout	Maximum	0.1 mm (0.004 in.)
Clutch release point from pedal full stroke end position	-	25 mm (0.984 in.) or more
Clutch cover	Minimum depth Minimum width	0.5 mm (0.020 in.) 6.0 mm (0.236 in.)
Clutch disc runout	Minimum	0.7 mm (0.028 in.)
Clutch start switch	ON (pushed) OFF (released)	Blow 1 Ω 10 kΩ or higher
Clutch start cancel switch Resistance	S/W OFF 2 - 4 2 - 4 (Apply battery voltage to terminals 1 and 3) S/W ON 2 - 4 (Apply battery voltage to terminals 1 and 3)	10 kΩ or higher 10 kΩ or higher Below 1 Ω

TORQUE SPECIFICATIONS

Part tightened	N*m	kgf*cm	ft.*lbf
Clutch pedal sub-assembly x Clutch pedal support	34	347	25
Clutch pedal support set bolt x Body for bolt	18	184	13
Clutch pedal support set bolt x Body for nut	14	145	10
Clutch master cylinder assembly x Clutch pedal support	12	122	8.9
Clutch master cylinder assembly x Clutch master cylinder to 2 way tube	15	155	11
Release cylinder bleeder plug x Clutch release cylinder assembly	11	110	8.0
Clutch release cylinder assembly x Transmission housing	12	120	8.7
Clutch release cylinder assembly x Clutch master cylinder to 2 way tube	15	153	11
Clutch release cylinder assembly x Clutch master cylinder to 2 way tube bracket	12	120	8.7
Clutch cover assembly x Flywheel sub-assembly	19	195	14
Release fork support x Transmission assembly	47	479	35
Clutch start switch assembly x Clutch pedal support	16	160	12
Clutch housing cover No. 1 x Transmission housing	12	120	8.7
Clutch line bracket x Transmission housing	19	194	14
Clutch accumulator x Transmission housing	12	120	8.7
Clutch accumulator x Flexible hose tube	15	155	11
Clutch pedal stopper bolt x Clutch pedal support	26	260	19
Clutch switch x Clutch pedal support	15	153	11

RA61F MANUAL TRANSMISSION

SERVICE DATA

Reverse idler gear thrust clearance	STD: MAX:	0.10 to 0.25 mm (0.0039 to 0.0098 in.) 0.25 mm (0.0098 in.)
Reverse idler gear radial clearance	STD: MAX:	0.015 to 0.050 mm (0.0006 to 0.0020 in.) 0.050 mm (0.0020 in.)
Slotted pin drive in depth	-	0 to 0.5 mm (0 to 0.050 in.)
Transmission case oil seal dimension A	-	60.0 to 60.8 mm (2.362 to 2.394 in.)
Preload	-	0.45 to 1.35 N*m (4.59 to 13.77 kgf*cm, 3.98 to 11.95 in.*lbf)
Manual Transmission extension housing oil seal dimension A	-	- 0.5 to 0.5 mm (- 0.197 to 0.197 in.)
6th gear thrust clearance	-	0.20 to 0.49 mm (0.0079 to 0.0193 in.)
3rd gear thrust clearance	-	0.09 to 0.52 mm (0.0035 to 0.0205 in.)
4th gear thrust clearance	-	0.12 to 0.38 mm (0.0047 to 0.0150 in.)
6th gear radial clearance	-	0.015 to 0.065 mm (0.0006 to 0.0026 in.)
3rd gear radial clearance	-	0.015 to 0.067 mm (0.0006 to 0.0026 in.)
4th gear radial clearance	-	0.015 to 0.067 mm (0.0006 to 0.0026 in.)
Input shaft runout	MAX:	0.03 mm (0.0012 in.)
Input shaft outer diameter	STD: A B C D E MIN: A B C D E	34.002 to 34.015 mm (1.3387 to 1.3392 in.) 44.985 to 45.000 mm (1.7711 to 1.7717 in.) 44.985 to 45.000 mm (1.7711 to 1.7717 in.) 41.985 to 42.000 mm (1.6530 to 1.6535 in.) 32.967 to 32.974 mm (1.2979 to 1.2982 in.) 34.002 mm (1.3387 in.) 44.985 mm (1.7711 in.) 44.985 mm (1.7711 in.) 41.985 mm (1.6530 in.) 32.967 mm (1.2979 in.)
6th gear inside diameter	STD: MAX:	51.015 to 51.040 mm (2.0085 to 2.0095 in.) 51.040 mm (2.0095 in.)
3rd gear inside diameter	STD: MAX:	51.015 to 51.040 mm (2.0085 to 2.0095 in.) 51.040 mm (2.0095 in.)
4th gear inside diameter	STD: MAX:	51.015 to 51.040 mm (2.0085 to 2.0095 in.) 51.040 mm (2.0095 in.)
Gear shift fork No. 2 or No. 3 claw and glove of the transmission hub sleeve No. 2 clearance	No. 2 shift fork No. 3 shift fork	0.28 to 0.84 mm (0.0110 to 0.0331 in.) 0.28 to 0.65 mm (0.0110 to 0.0256 in.)
6th gear synchronizer ring back and 6th gear spline end clearance	STD: MIN:	0.70 to 1.50 mm (0.0276 to 0.0591 in.) 0.70 mm (0.0276 in.)
3rd gear synchronizer ring back and 3rd gear spline end clearance	STD: Inner Middle Outer MIN: Inner Middle Outer	1.20 to 2.20 mm (0.0472 to 0.0866 in.) 0.60 to 1.80 mm (0.0236 to 0.0709 in.) 0.80 to 1.80 mm (0.0315 to 0.0709 in.) 1.20 mm (0.0472 in.) 0.60 mm (0.0236 in.) 0.80 mm (0.0315 in.)
4th gear synchronizer ring back and 4th gear spline end clearance	STD: MIN:	0.70 to 1.50 mm (0.0276 to 0.0591 in.) 0.70 mm (0.0276 in.)
3rd gear thrust washer thickness	STD: MIN:	7.12 to 7.18 mm (0.2803 to 0.2827 in.) 7.12 mm (0.2803 in.)
Input shaft front bearing snap ring	Mark A B C D E F	2.65 to 2.70 mm (0.1043 to 0.1063 in.) 2.70 to 2.75 mm (0.1063 to 0.1083 in.) 2.75 to 2.80 mm (0.1083 to 0.1102 in.) 2.80 to 2.85 mm (0.1102 to 0.1122 in.) 2.85 to 2.90 mm (0.1122 to 0.1142 in.) 2.90 to 2.95 mm (0.1142 to 0.1161 in.)

Clutch hub No. 2 setting shaft snap ring	Mark A B C D E F G	1.77 to 1.82 mm (0.0697 to 0.0717 in.) 1.82 to 1.87 mm (0.0717 to 0.0736 in.) 1.87 to 1.92 mm (0.0736 to 0.0756 in.) 1.92 to 1.97 mm (0.0756 to 0.0776 in.) 1.97 to 2.02 mm (0.0776 to 0.0795 in.) 2.02 to 2.07 mm (0.0795 to 0.0815 in.) 2.07 to 2.12 mm (0.0815 to 0.0835 in.)
Gear thrust washer shaft snap ring	Mark A B C D E F	2.07 to 2.12 mm (0.0815 to 0.0835 in.) 2.12 to 2.17 mm (0.0835 to 0.0854 in.) 2.17 to 2.22 mm (0.0854 to 0.0874 in.) 2.22 to 2.27 mm (0.0874 to 0.0894 in.) 2.27 to 2.32 mm (0.0894 to 0.0913 in.) 2.32 to 2.37 mm (0.0913 to 0.0933 in.)
Transmission clutch hub No. 3 shaft snap ring	Mark A B C D E F G	2.10 to 2.15 mm (0.0827 to 0.0847 in.) 2.15 to 2.20 mm (0.0847 to 0.0866 in.) 2.20 to 2.25 mm (0.0866 to 0.0886 in.) 2.25 to 2.30 mm (0.0886 to 0.0906 in.) 2.30 to 2.35 mm (0.0906 to 0.0925 in.) 2.35 to 2.40 mm (0.0925 to 0.0945 in.) 2.40 to 2.45 mm (0.0945 to 0.0965 in.)
Output shaft inside diameter	STD: MAX:	45.017 to 45.025 mm (1.7723 to 1.7726 in.) 45.025 mm (1.7726 in.)
Synchronizer ring back and gear spline end clearance	STD: MIN:	0.70 to 1.50 mm (0.0276 to 0.0591 in.) 0.70 mm (0.0276 in.)
Reverse gear thrust clearance	-	0.125 to 0.375 mm (0.0049 to 0.0148 in.)
1st gear thrust clearance	-	0.10 to 0.43 mm (0.0039 to 0.0169 in.)
2nd gear thrust clearance	-	0.10 to 0.43 mm (0.0039 to 0.0169 in.)
Reverse gear radial clearance	-	0.015 to 0.065 mm (0.0006 to 0.0026 in.)
1st gear radial clearance	-	0.015 to 0.067 mm (0.0006 to 0.0026 in.)
2nd gear radial clearance	-	0.015 to 0.067 mm (0.0006 to 0.0026 in.)
Counter gear runout	MAX:	0.03 mm (0.0012 in.)
Counter gear outer diameter	STD: A B C D E MIN: A B C D E	34.002 to 34.015 mm (1.3387 to 1.3392 in.) 36.985 to 37.000 mm (1.4561 to 1.4567 in.) 47.985 to 48.000 mm (1.8892 to 1.8898 in.) 53.985 to 54.000 mm (2.1254 to 2.1260 in.) 34.002 to 34.015 mm (1.3387 to 1.3392 in.) 34.002 mm (1.3387 in.) 36.985 mm (1.4561 in.) 47.985 mm (1.8892 in.) 53.985 mm (2.1254 in.) 34.002 mm (1.3387 in.)
Reverse gear inside diameter	STD: MAX:	51.015 to 51.040 mm (2.0085 to 2.0095 in.) 51.040 mm (2.0095 in.)
1st gear inside diameter	STD: MAX:	54.015 to 54.040 mm (2.1266 to 2.1276 in.) 54.040 mm (2.1276 in.)
2nd gear inside diameter	STD: MAX:	60.015 to 60.040 mm (2.3628 to 2.3638 in.) 60.040 mm (2.3638 in.)
Gear shift fork No. 4 claw and glove of the transmission hub sleeve No. 3 clearance	-	0.26 to 0.84 mm (0.0102 to 0.0331 in.)
Gear shift fork No. 1 claw and glove of the transmission hub sleeve No. 1 clearance	-	0.15 to 0.35 mm (0.0059 to 0.0138 in.)
Reverse gear synchronizer ring back and reverse gear spline end clearance	STD: MIN:	0.70 to 1.30 mm (0.0276 to 0.0512 in.) 0.70 mm (0.0276 in.)
1st gear synchronizer ring back and 1st gear spline end clearance	STD: Inner Middle Outer MIN: Inner Middle Outer	1.48 to 2.12 mm (0.0583 to 0.0835 in.) 0.68 to 1.92 mm (0.0268 to 0.0756 in.) 0.88 to 1.72 mm (0.0346 to 0.0677 in.) 1.48 mm (0.0583 in.) 0.68 mm (0.0268 in.) 0.88 mm (0.0346 in.)

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2nd gear synchronizer ring back and 2nd gear spline end clearance	STD: Inner Middle Outer MIN: Inner Middle Outer	1.48 to 2.12 mm (0.0583 to 0.0835 in.) 0.68 to 1.92 mm (0.0268 to 0.0756 in.) 0.88 to 1.72 mm (0.0346 to 0.0677 in.) 1.48 mm (0.0583 in.) 0.68 mm (0.0268 in.) 0.88 mm (0.0346 in.)
Counter gear rear bearing snap ring	Mark A B C D E F G H J K L M	2.35 to 2.40 mm (0.0925 to 0.0945 in.) 2.40 to 2.45 mm (0.0945 to 0.0965 in.) 2.45 to 2.50 mm (0.0965 to 0.0984 in.) 2.50 to 2.55 mm (0.0984 to 0.1004 in.) 2.55 to 2.60 mm (0.1004 to 0.1024 in.) 2.60 to 2.65 mm (0.1024 to 0.1043 in.) 2.65 to 2.70 mm (0.1043 to 0.1063 in.) 2.70 to 2.75 mm (0.1063 to 0.1083 in.) 2.75 to 2.80 mm (0.1083 to 0.1102 in. 2.80 to 2.85 mm (0.1102 to 0.1122 in.) 2.85 to 2.90 mm (0.1122 to 0.1142 in.) 2.90 to 2.95 mm (0.1142 to 0.1161 in.)
Clutch hub No. 1 shaft snap ring	Mark A B C D E F G	2.28 to 2.33 mm (0.0898 to 0.0917 in.) 2.33 to 2.38 mm (0.0917 to 0.0937 in.) 2.38 to 2.43 mm (0.0937 to 0.0957 in.) 2.43 to 2.48 mm (0.0957 to 0.0976 in.) 2.48 to 2.53 mm (0.0976 to 0.0996 in.) 2.53 to 2.58 mm (0.0996 to 0.1016 in.) 2.58 to 2.63 mm (0.1016 to 0.1035 in.)
Counter gear front bearing snap ring	Mark A B C D E F G H J K L M	2.35 to 2.40 mm (0.0925 to 0.0945 in.) 2.40 to 2.45 mm (0.0945 to 0.0965 in.) 2.45 to 2.50 mm (0.0965 to 0.0984 in.) 2.50 to 2.55 mm (0.0984 to 0.1004 in.) 2.55 to 2.60 mm (0.1004 to 0.1024 in.) 2.60 to 2.65 mm (0.1024 to 0.1043 in.) 2.65 to 2.70 mm (0.1043 to 0.1063 in.) 2.70 to 2.75 mm (0.1063 to 0.1083 in.) 2.75 to 2.80 mm (0.1083 to 0.1102 in.) 2.80 to 2.85 mm (0.1102 to 0.1122 in.) 2.85 to 2.90 mm (0.1122 to 0.1142 in.) 2.90 to 2.95 mm (0.1142 to 0.1161 in.)

TORQUE SPECIFICATIONS

Part tightened	N*m	kgf*cm	ft.*lbf
Transmission filler plug x Manual transmission	37	377	27
Manual transmission case cover x Manual transmission	12	117	8.5
Manual transmission x Engine for bolt A	72	730	53
Manual transmission x Engine for bolt B	37	380	28
Manual transmission x Engine mounting insulator rear No. 1	65	663	48
Frame crossmember sub-assembly No. 3 x Body	72	734	53
Frame crossmember sub-assembly No. 3 x Manual transmission	19	189	14
Manifold stay x Manual transmission	40	408	30
No. 2 manifold stay x Manual transmission	40	408	30
Battery x Negative battery terminal cable	3.9	40	35 in.*lbf
Gear shift fork No. 2 x Gear shift fork shaft No. 2	20	199	14
Gear shift fork No. 3 x Gear shift fork shaft No. 3	20	199	14
Transmission front case x Plug	39	400	29
Transmission front case x Interlock bracket	21	214	15
Transmission front case x Back-up light switch	44	449	33
Shift & select lever x Shift & select lever shaft	33	340	25
Transmission middle case x Drain plug	37	377	27
Transmission front case x Transmission middle case	40	408	30
Reverse idler gear shaft bolt x Reverse idler gear shaft	28	286	21
Transmission oil separator x Transmission middle case	8.5	87	75 in.*lbf
Bearing lock plate x Transmission rear case	11	115	8.3
Transmission rear case x Filler plug	37	377	27
Transmission rear case x Transmission middle case	40	408	30
Transmission rear case x Shift detent ball plug	25	250	18
Transmission rear case x Transmission case cover	18	184	13
Shift lever housing x Shift & select lever shaft	33	340	25
Floor shift control shift lever retainer sub-assembly x Transmission rear case	20	204	15
Front suspension member bracket LH x Body	33	336	24
Front suspension member bracket RH x Body	33	336	24
Accumulator to flexible hose tube x Flexible hose	15	153	11
Hose tube bracket x Manual transmission	19	194	14
Propeller shaft heat insulator x No. 3 frame crossmember sub-assembly	16	160	12

VF2A TRANSFER

SERVICE DATA

Rear output shaft		
Drive sprocket thrust clearance	Standard	0.10 to 0.25 mm (0.0039 to 0.0098 in.)
	Maximum	0.25 mm (0.0098 in.)
Output shaft rear journal surface diameter	(part A) Minimum	27.98 mm (1.1016 in.)
	(part B) Minimum	36.98 mm (1.4561 in.)
Drive sprocket radial clearance	Standard	0.010 to 0.055 mm (0.0004 to 0.0022 in.)
	Maximum	0.055 mm (0.0022 in.)
Front drive clutch sleeve to gear shift fork No. 1 clearance	Maximum	1.0 mm (0.039 in.)
High and low clutch sleeve to gear shift fork No. 2 clearance	Maximum	1.0 mm (0.039 in.)
Output shaft snap ring thickness	Mark K	2.00 to 2.05 mm (0.0787 to 0.0807 in.)
	Mark L	2.05 to 2.10 mm (0.0807 to 0.0827 in.)
	Mark A	2.10 to 2.15 mm (0.0827 to 0.0846 in.)
	Mark B	2.15 to 2.20 mm (0.0846 to 0.0866 in.)
	Mark C	2.20 to 2.25 mm (0.0866 to 0.0886 in.)
	Mark D	2.25 to 2.30 mm (0.0886 to 0.0906 in.)
	Mark E	2.30 to 2.35 mm (0.0906 to 0.0925 in.)
	Mark F	2.35 to 2.40 mm (0.0925 to 0.0945 in.)
	Mark G	2.40 to 2.45 mm (0.0945 to 0.0965 in.)
	Mark H	2.45 to 2.50 mm (0.0965 to 0.0984 in.)
	Mark J	2.50 to 2.55 mm (0.0984 to 0.1004 in.)
Input shaft		
Input shaft outside diameter	Minimum	47.59 mm (1.8736 in.)
Input shaft inside diameter	Maximum	39.14 mm (1.5409 in.)
Synchronizer ring back to input shaft spline clearance	Standard	1.05 to 1.85 mm (0.0413 to 0.0728 in.)
	Minimum	1.05 mm (0.0413 in.)
Input gear stopper shaft snap ring thickness	Mark A	2.10 to 2.15 mm (0.0827 to 0.0846 in.)
	Mark B	2.15 to 2.20 mm (0.0846 to 0.0866 in.)
	Mark C	2.20 to 2.25 mm (0.0866 to 0.0886 in.)
	Mark D	2.25 to 2.30 mm (0.0886 to 0.0906 in.)
	Mark E	2.30 to 2.35 mm (0.0906 to 0.0925 in.)
	Mark F	2.35 to 2.40 mm (0.0925 to 0.0945 in.)
	Mark G	2.40 to 2.45 mm (0.0945 to 0.0965 in.)
	Mark H	2.45 to 2.50 mm (0.0965 to 0.0984 in.)
	Mark J	2.50 to 2.55 mm (0.0984 to 0.1004 in.)
	Mark K	2.55 to 2.60 mm (0.1004 to 0.1024 in.)
	Mark L	2.60 to 2.65 mm (0.1024 to 0.1043 in.)
	Mark M	2.65 to 2.70 mm (0.1043 to 0.1063 in.)
	Mark N	2.70 to 2.75 mm (0.1063 to 0.1083 in.)
	Mark P	2.75 to 2.80 mm (0.1083 to 0.1102 in.)
	Mark Q	2.80 to 2.85 mm (0.1102 to 0.1122 in.)
	Mark R	2.85 to 2.90 mm (0.1122 to 0.1142 in.)
	Mark S	2.90 to 2.95 mm (0.1142 to 0.1161 in.)
	Mark T	2.95 to 3.00 mm (0.1161 to 0.1181 in.)
	Mark U	3.00 to 3.05 mm (0.1181 to 0.1201 in.)
Planetary gear		

Pinion gear thrust clearance	Standard	0.11 to 0.84 mm (0.0043 to 0.0331 in.)
	Maximum	0.84 mm (0.0331 in.)
Pinion gear radial clearance	Standard	0.009 to 0.038 mm (0.0004 to 0.0015 in.)
	Maximum	0.038 mm (0.0015 in.)
Input bearing shaft snap ring thickness	Mark 1	1.45 to 1.50 mm (0.0571 to 0.0591 in.)
	Mark 2	1.50 to 1.55 mm (0.0591 to 0.0610 in.)
	Mark 3	1.55 to 1.60 mm (0.0610 to 0.0630 in.)
	Mark 4	1.60 to 1.65 mm (0.0630 to 0.0650 in.)
	Mark 5	1.65 to 1.70 mm (0.0650 to 0.0669 in.)
Inner bearing press in depth	Standard	7.7 to 8.3 mm (0.303 to 0.327 in.)
Oil seal		
Oil seal drive in depth	Standard	-0.5 to 0.5 mm (-0.020 to 0.020 in.)

TORQUE SPECIFICATIONS

Transfer oil

Part tightened	N*m	kgf*cm	ft.*lbf
No. 1 transfer case plug (filler and drain) x Transfer assembly	37	377	27

Transfer case oil seal

Part tightened	N*m	kgf*cm	ft.*lbf
Lower transfer case protector x Transfer assembly	18	183	13

Extension housing oil seal

Part tightened	N*m	kgf*cm	ft.*lbf
Lower transfer case protector x Transfer assembly	18	183	13

Transfer assembly

Part tightened	N*m	kgf*cm	ft.*lbf
Transfer case plug x Front transfer case	19	190	14
Transfer oil pump body sub-assembly x Front transfer case	7.5	76	66 in.*lbf
Transfer oil separator sub-assembly x Front transfer case	7.5	76	66 in.*lbf
No. 1 transfer case plug (filler and drain) x Transfer assembly	37	377	27
Rear transfer case x Front transfer case	28	285	21
Transfer extension housing sub-assembly x Rear transfer case	12	22	9
Transfer output shaft companion flange (front and rear)	118	1,203	87
Transfer control shift lever retainer sub-assembly x Front transfer case	18	183	13
Transfer case cover sub-assembly x Front transfer case	18	183	13
Transfer bearing retainer sub-assembly x Front transfer case	12	117	8
Transfer indicator switch x Front transfer case	37	377	27
Transfer assembly x Transmission assembly	24	244	17
Lower transfer case protector x Transfer assembly	18	183	13

VF4B TRANSFER

SERVICE DATA

Rear output shaft

Drive sprocket thrust clearance	Standard	0.15 to 0.24 mm (0.0059 to 0.0094 in.)
	Maximum	0.24 mm (0.0094 in.)
Output shaft rear journal surface diameter	(part A) Minimum	27.98 mm (1.1016 in.)
	(part B) Minimum	31.98 mm (1.2591 in.)
	(part C) Minimum	34.98 mm (1.3772 in.)
	(part D) Minimum	36.98 mm (1.4559 in.)
Drive sprocket radial clearance	Standard	0.01 to 0.06 mm (0.0004 to 0.0024 in.)
	Maximum	0.06 mm (0.0024 in.)
Front drive clutch sleeve to center differential clearance	Maximum	0.84 mm (0.0331 in.)
High and low clutch sleeve to gear shift fork No. 2 clearance	Maximum	0.84 mm (0.0331 in.)

Input shaft

Input shaft outside diameter	Minimum	47.59 mm (1.8736 in.)
Input shaft inside diameter	Maximum	48.14 mm (1.8953 in.)
Input gear stopper shaft snap ring thickness	Mark A	2.10 to 2.15 mm (0.0827 to 0.0846 in.)
	Mark B	2.15 to 2.20 mm (0.0846 to 0.0866 in.)
	Mark C	2.20 to 2.25 mm (0.0866 to 0.0886 in.)
	Mark D	2.25 to 2.30 mm (0.0886 to 0.0906 in.)
	Mark E	2.30 to 2.35 mm (0.0906 to 0.0925 in.)
	Mark F	2.35 to 2.40 mm (0.0925 to 0.0945 in.)
	Mark G	2.40 to 2.45 mm (0.0945 to 0.0965 in.)
	Mark H	2.45 to 2.50 mm (0.0965 to 0.0984 in.)
	Mark J	2.50 to 2.55 mm (0.0984 to 0.1004 in.)
	Mark K	2.55 to 2.60 mm (0.1004 to 0.1024 in.)
	Mark L	2.60 to 2.65 mm (0.1024 to 0.1043 in.)
	Mark M	2.65 to 2.70 mm (0.1043 to 0.1063 in.)
	Mark N	2.70 to 2.75 mm (0.1063 to 0.1083 in.)
	Mark P	2.75 to 2.80 mm (0.1083 to 0.1102 in.)
	Mark Q	2.80 to 2.85 mm (0.1102 to 0.1122 in.)
	Mark R	2.85 to 2.90 mm (0.1122 to 0.1142 in.)
	Mark S	2.90 to 2.95 mm (0.1142 to 0.1161 in.)
	Mark T	2.95 to 3.00 mm (0.1161 to 0.1181 in.)
	Mark U	3.00 to 3.05 mm (0.1181 to 0.1201 in.)

Planetary gear

Pinion gear thrust clearance	Standard	0.11 to 0.84 mm (0.0043 to 0.0331 in.)
	Maximum	0.84 mm (0.0331 in.)
Pinion gear radial clearance	Standard	0.009 to 0.038 (0.0004 to 0.0015 in.)
	Maximum	0.038 mm (0.0015 in.)
Input bearing shaft snap ring thickness	Mark 1	1.45 to 1.50 mm (0.0571 to 0.0591 in.)
	Mark 2	1.50 to 1.55 mm (0.0591 to 0.0610 in.)
	Mark 3	1.55 to 1.60 mm (0.0610 to 0.0630 in.)
	Mark 4	1.60 to 1.65 mm (0.0630 to 0.0650 in.)
	Mark 5	1.65 to 1.70 mm (0.0650 to 0.0669 in.)
Inner bearing press in depth	Standard	7.7 to 8.3 mm (0.303 to 0.327 in.)

Oil seal

Oil seal drive in depth	Standard	-0.5 to 0.5 mm (-0.020 to 0.020 in.)

TORQUE SPECIFICATIONS

Transfer oil

Part tightened	N*m	kgf*cm	ft.*lbf
No. 1 transfer case plug (for filler and drain)	37	377	27

Transfer case oil seal

Part tightened	N*m	kgf*cm	ft.*lbf
Lower transfer case protector x Transfer assembly	18	183	13

Extension housing oil seal

Part tightened	N*m	kgf*cm	ft.*lbf
Lower transfer case protector x Transfer assembly	18	183	13

Transfer assembly

Part tightened	N*m	kgf*cm	ft.*lbf
Transfer case plug x Front transfer case	19	190	14
Transfer oil pump body sub-assembly x Front transfer case	7.5	76	66 in.*lbf
Transfer oil separator sub-assembly x Front transfer case	7.5	76	66 in.*lbf
No. 1 transfer case plug (for filler and drain)	37	377	27
Transfer shift fork shaft plug	19	190	14
Rear transfer case x Front transfer case	28	285	21
Transfer extension housing sub-assembly x Rear transfer case	12	122	9
Transfer output shaft companion flange (for front and rear)	118	1,203	87
Transfer control shift lever retainer sub-assembly x Front transfer case	18	183	13
Transfer case cover sub-assembly x Front transfer case	18	183	13
Transfer bearing retainer sub-assembly x Front transfer case	12	117	8
Transfer indicator switch x Front transfer case	37	377	27
Transfer assembly x Transmission assembly	24	244	17
Lower transfer case protector x Transfer assembly	18	183	13

Speedometer driven gear

Part tightened	N*m	kgf*cm	ft.*lbf
Vehicle speed sensor x Transfer extension housing sub-assembly	12	122	9

PROPELLER SHAFT

SERVICE DATA

Propeller shaft runout	Maximum	0.3 mm (0.012 in.)
Universal joint spider bearing axial play	Maximum	0 mm (0 in.)

TORQUE SPECIFICATIONS

Part Tightened	N*m	kgf*cm	ft.*lbf
Front propeller shaft assembly x Front differential carrier assembly	88	899	65
Front propeller shaft assembly x Transfer assembly	88	899	65
Rear propeller shaft assembly x Rear differential carrier assembly	88	899	65
Rear propeller shaft assembly x Transfer assembly	88	899	65

DRIVE SHAFT

TORQUE SPECIFICATIONS

Part Tightened	N*m	kgf*cm	ft.*lbf
Front lower ball joint attachment x Steering knuckle	160	1,631	118
Tie rod end sub-assembly x Steering knuckle	91	928	67
Front axle hub nut x Front drive shaft	235	2,396	174
Front speed sensor x Steering knuckle	13	127	9
Front speed sensor x Steering knuckle	8.3	85	73 in.*lbf
Front wheel	112	1,137	82
Battery negative terminal x Battery	3.9	40	35 in.*lbf

DIFFERENTIAL

SERVICE DATA

FRONT DIFFERENTIAL CARRIER

Companion flange vertical runout	Maximum: 0.10 mm (0.0039 in.)
Companion flange lateral runout	Maximum: 0.10 mm (0.0039 in.)
Drive pinion preload (at start of torque)	New bearing: 0.98 to 1.75 N*m (10to 16 kgf*cm, 8.7 to 14 in.*lbf) Reused bearing: 0.49 to 0.78 N*m (5 to 8 kgf*cm, 4.3 to 6.9 in.*lbf)
Total preload (Drive pinion preload plus)	0.22 to 0.85 N*m (6 to 9 kgf*cm, 1.9 to 7.7 in.*lbf)
Drive pinion to ring gear backlash	0.11 to 0.21 mm (0.0043 to 0.0083 in.)
Side gear backlash	0.15 mm (0.0059 in.)
Carrier oil seal drive in depth	3.9 to 4.8 mm (0.153 to 0.0189 in.)
Side oil seal drive in depth	LH side: -0.45 to 0.45 mm (-0.0177 to 0.0177in.) RH side: 4.8 to 5.8 mm (0.189 to 0.2284 in.)
w/A.D.D. type: Differential clutch sleeve to clutch sleeve fork clearance	Maximum: 0.35 m (0.0138 in.)
Side gear thrust washer thickness mm (in.)	1.48 to 1.52 (0.0583 to 0.0568) 1.53 to 1.57 (0.0602 to 0.0618) 1.58 to 1.62 (0.0622 to 0.0638) 1.63 to 1.67 (0.0642 to 0.0657) 1.68 to 1.72 (0.0661 to 0.0677) 1.73 to 1.77 (0.0681 to 0.0697) 1.78 to 1.82 (0.0701 to 0.0717) 1.83 to 1.87 (0.0720 to 0.0736) 1.88 to 1.92 (0.0740 to 0.0756)
Side bearing adjusting washer thickness mm (in.)	1.57 to 1.59 (0.0618 to 0.0626) 1.59 to 1.61 (0.0626 to 0.0634) 1.61 to 1.63 (0.0634 to 0.0642) 1.63 to 1.65 (0.0642 to 0.0650) 1.65 to 1.67 (0.0650 to 0.0657) 1.67 to 1.69 (0.0657 to 0.0665) 1.69 to 1.71 (0.0665 to 0.0673) 1.71 to 1.73 (0.0673 to 0.0681) 1.73 to 1.75 (0.0681 to 0.0689) 1.75 to 1.77 (0.0689 to 0.0697) 1.77 to 1.79 (0.0697 to 0.0705) 1.79 to 1.81 (0.0705 to 0.0713) 1.81 to 1.83 (0.0713 to 0.0720) 1.83 to 1.85 (0.0720 to 0.0728) 1.85 to 1.87 (0.0728 to 0.0736) 1.87 to 1.89 (0.0736 to 0.0744) 1.89 to 2.01 (0.0744 to 0.0791) 2.01 to 2.03 (0.0791 to 0.0799) 2.03 to 2.05 (0.0791 to 0.0807) 2.05 to 2.07 (0.0807 to 0.0815) 2.07 to 2.09 (0.0815 to 0.0822) 2.09 to 2.11 (0.0822 to 0.0830) 2.11 to 2.13 (0.0830 to 0.0839) 2.13 to 2.15 (0.0839 to 0.0846) 2.15 to 2.17 (0.0846 to 0.0854)

Drive pinion bearing adjusting washer thickness mm (in.)	1.69 to 1.71 (0.0665 to 0.0673) 1.72 to 1.74 (0.0677 to 0.0685) 1.75 to 1.77 (0.0689 to 0.0697) 1.78 to 1.80 (0.0700 to 0.0709) 1.81 to 1.83 (0.0713 to 0.0720) 1.84 to 1.86 (0.0724 to 0.0732) 1.87 to 1.89 (0.0736 to 0.0744) 1.90 to 1.92 (0.0748 to 0.0756) 1.93 to 1.95 (0.0760 to 0.0768) 1.96 to 1.98 (0.0772 to 0.0780) 1.99 to 2.01 (0.0783 to 0.0791) 2.02 to 2.04 (0.0795 to 0.0803) 2.05 to 2.07 (0.0807 to 0.0815) 2.08 to 2.10 (0.0819 to 0.0827) 2.11 to 2.13 (0.0831 to 0.0839) 2.14 to 2.16 (0.0843 to 0.0850) 2.17 to 2.19 (0.0854 to 0.0862) 2.20 to 2.22 (0.0866 to 0.0874) 2.23 to 2.25 (0.0878 to 0.0886) 2.26 to 2.28 (0.0890 to 0.0898) 2.29 to 2.31 (0.0902 to 0.0909) 2.32 to 2.34 (0.0913 to 0.0921)

SS

REAR DIFFERENTIAL

Companion flange vertical runout	Maximum: 0.10 mm (0.0039 in.)
Companion flange lateral runout	Maximum: 0.10 mm (0.0039 in.)
Drive pinion preload (at start of torque)	New bearing: 1.05 to 1.64 N*m (11to 17 kgf*cm, 9.3 to 15 in.*lbf) Reused bearing: 0.56 to 0.85 N*m (6 to 9 kgf*cm, 4.9 to 7.5 in.*lbf)
Total preload (Drive pinion preload plus)	0.39 to 0.59 N*m (4 to 6 kgf*cm, 3.4 to 5.2 in.*lbf)
Ring gear runout	Maximum: 0.07 mm (0.0028 in.)
Ring gear backlash	0.13 to 0.18 mm (0.0051 to 0.0071 in.)
Side gear backlash	0.05 to 0.20 mm (0.0020 to 0.0080 in.)
Differential case runout	Maximum: 0.07 mm (0.0028 in.)
Rear differential front oil seal drive in depth	0.55 to 1.45 mm (0.0213 to 0.0567 in.)
Differential lock type: Side gear thrust washer thickness mm (in.)	0.90 mm (0.059 in.) 1.00 mm (0.039 in.) 1.10 mm (0.043 in.) 1.20 mm (0.047 in.) 1.30 mm (0.051 in.)
Tooth contact pattern adjusting washer thickness mm (in.)	1.69 to 1.71 (0.0665 to 0.0673) 1.72 to 1.74 (0.0677 to 0.0685) 1.75 to 1.77 (0.0689 to 0.0709) 1.78 to 1.80 (0.0713 to 0.0720) 1.81 to 1.83 (0.0724 to 0.0732) 1.84 to 1.86 (0.0736 to 0.0744) 1.87 to 1.89 (0.0748 to 0.0756) 1.90 to 1.92 (0.0760 to 0.0768) 1.93 to 1.95 (0.0772 to 0.0780) 1.96 to 1.98 (0.0783 to 0.0791) 1.99 to 2.01 (0.0795 to 0.0803) 2.02 to 2.04 (0.0807 to 0.0815) 2.05 to 2.07 (0.0819 to 0.0827) 2.08 to 2.10 (0.0831 to 0.0839) 2.11 to 2.13 (0.0843 to 0.0839) 2.14 to 2.16 (0.0843 to 0.0850) 2.17 to 2.19 (0.0854 to 0.0862) 2.20 to 2.22 (0.0866 to 0.0874) 2.23 to 2.25 (0.0878 to 0.0886) 2.26 to 2.28 (0.0890 to 0.0898) 2.29 to 2.31 (0.0902 to 0.0909) 2.32 to 2.34 (0.0913 to 0.0921)

TORQUE SPECIFICATIONS

FRONT DIFFERENTIAL CARRIER

Part tightened	N*m	kgf*cm	ft.*lbf
Differential breather hose x Differential carrier	13	133	10
No. 3 differential support x No. 1 differential mount nut	87	887	64
No. 3 differential support x Differential carrier	108	1,100	80
No. 2 differential support x Differential carrier	160	1,630	118
No. 1 differential support x Differential carrier	186	1,900	137
Differential tube x Differential carrier	110	1,120	81
Differential tube x Differential vacuum actuator	21	210	15
Drive pinion companion flange x Drive pinion	370	3,770	273
Differential side bearing retainer x Differential carrier	50	510	37
Differential case x Differential rig gear	97	985	71
Differential carrier x Drain lug	65	660	48
Differential carrier x Filler plug	39	400	29

REAR DIFFERENTIAL CARRIER

Part tightened	N*m	kgf*cm	ft.*lbf
Axle housing x Drain plug Axle housing x Filler plug	49	500	36
Differential carrier x Propeller shaft	88	899	65
Drive pinion companion flange nut x Differential drive pinion	370	3,770	273
Bearing cap x Differential bearing adjusting nut lock	13	130	9
Differential case x Differential ring gear	97	985	71
RH differential case x LH differential case (Differential lock type)	47	480	35

AXLE

SERVICE DATA

Front axle hub bearing backlash	Maximum	0.05 mm (0.0020 in.)
Front axle hub bearing runout	Maximum	0.05 mm (0.0020 in.)
Rear axle shaft bearing backlash	Maximum	0.05 mm (0.0020 in.)
Rear axle shaft bearing runout	Maximum	0.05 mm (0.0020 in.)
Rear axle shaft runout	Maximum	1.5 mm (0.0591 in.)
Rear axle shaft flange runout	Maximum	0.05 mm (0.0020 in.)

TORQUE SPECIFICATIONS

Part Tightened	N*m	kgf*cm	ft.*lbf
Front wheel	112	1,137	82
Rear wheel	112	1,137	82
Front wheel adjusting nut x Front axle hub	275	2,804	203
Front axle with abs rotor bearing assembly x Steering knuckle	80	816	59
Front upper suspension arm x Steering knuckle	110	1,122	81
Front disc brake caliper assembly x Steering knuckle	123	1,254	91
Front brake tube bracket x Steering knuckle	29	296	21
Brake tube x Disc brake cylinder assembly	14 (15)	143 (155)	10 (11)
Battery negative terminal x Battery	3.9	40	35 in.*lbf
Rear axle shaft x Rear axle housing assembly	120	1,224	89
Parking brake cable x Parking brake plate	8.0	82	71 in.*lbf
Brake tube x Rear flexible hose	14 (15)	143 (155)	10 (11)

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SUSPENSION

SERVICE DATA

Vehicle height (See page SP-2)		
GSJ10L-GKASKA	A-B C-D	115.9 mm (4.56 in.) 81.4 mm (3.20 in.)
GSJ15L-GKFSKA	A-B C-D	87.0 mm (3.43 in.) 61.4 mm (2.42 in.)
GSJ15L-GKASKA	A-B C-D	87.0 mm (3.43 in.) 61.6 mm (2.43 in.)
Toe-in		
	A+B C-D Rack end length difference	0°05' +- 0°10' (0.08° +- 0.16°) 1.0 +- 2.0 mm (0.04 +- 0.08 in.) 1.0 mm (0.039 in.) or less
Wheel turning angle		
GSJ10L-GKASKA	Inside wheel - Outside wheel (Reference)	32°45' (30°45' to 33°45') 32.75°(30.75° to 33.75°) 28°56' (28.93°)
GSJ15L-GKFSKA	Inside wheel - Outside wheel (Reference)	33°10' (31°10' to 34°10') 33.17°(31.17° to 34.17°) 29°38' (29.63°)
GSJ15L-GKASKA	Inside wheel - Outside wheel (Reference)	33°10' (31°10' to 34°10') 33.17°(31.17° to 34.17°) 29°38' (29.63°)
Camber		
GSJ10L-GKASKA		-0°34' +- 30' (-0.57° +- 0.50°)
GSJ15L-GKFSKA		0°09' +- 30' (0.15° +- 0.50°)
GSJ15L-GKASKA		0°09' +- 30' (0.15° +- 0.50°)
Caster		
GSJ10L-GKASKA		3°34' +- 30' (3.57° +- 0.50°)
GSJ15L-GKFSKA		2°49' +- 30' (2.82° +- 0.50°)
GSJ15L-GKASKA		2°49' +- 30' (2.82° +- 0.50°)
Steering Axis Inclination (Reference)		
GSJ10L-GKASKA		12°55' +- 30' (12.92° +- 0.50°)
GSJ15L-GKFSKA		12°21' +- 30' (12.35° +- 0.50°)
GSJ15L-GKASKA		12°21' +- 30' (12.35° +- 0.50°)
Front upper suspension arm		
	Upper ball joint turning torque	4.5 N*m (46 kgf*cm, 40 in.*lbf) or less
Front lower suspension arm		
	Lower ball joint turning torque	3.0 N*m (31 kgf*cm, 27 in.*lbf) or less
Front stabilizer link assembly		
	Stabilizer link ball joint turning torque	0.05 to 1.96 N*m (0.5 to 20.0 kgf*cm, 0.4 to 17.3 in.*lbf)
Rear stabilizer link assembly		
	Stabilizer link ball joint turning torque	0.05 to 1.96 N*m (0.5 to 20.0 kgf*cm, 0.4 to 17.3 in.*lbf)

SS

TORQUE SPECIFICATIONS

Part Tightened	N*m	kgf*cm	ft.*lbf
Tie rod end lock nut	88	897	65
Front support to front shock absorber nut x Front shock absorber	25	255	18
Front shock absorber with coil spring x Frame assembly	64	653	47
Front stabilizer link assembly x Steering knuckle	70	714	52
Engine under cover sub-assembly x Frame assembly	29	296	21
Front wheel	112	1,137	82
Front shock absorber x Front lower suspension arm	135	1,377	100
Wire harness bracket x Frame assembly	5.8	59	51 in.*lbf
Front upper suspension arm x Steering knuckle	110	1,122	81
Skid control sensor wire x Front upper suspension arm	13	127	9
Front upper suspension arm x Frame assembly	115	1,173	85
Front lower ball joint attachment x Front lower suspension arm	140	1,428	103
Front lower ball joint attachment x Steering knuckle	160	1,631	118
Front lower suspension arm x Frame assembly	135	1,377	100
Front stabilizer bracket x Frame assembly	40	408	30
Front stabilizer link assembly x Front stabilizer bar	70	714	52
Front stabilizer link assembly x Steering knuckle	70	714	52
Rear shock absorber x Rear axle housing assembly	98	1,000	72
Rear brake tube flexible hose x Rear brake tube	14 (15)	143 (155)	10 (11)
Rear wheel	112	1,137	82
Rear shock absorber x Frame assembly	25	255	18
Rear upper control arm x Frame assembly	80	816	59
Rear upper control arm x Rear axle housing assembly	80	816	59
Parking brake cable x Frame assembly	13	127	9
Rear lower control arm x Frame assembly	130	1,326	96
Rear lower control arm x Rear axle housing assembly	130	1,326	96
Rear lateral control rod x Frame assembly	130	1,326	96
Rear lateral control rod x Rear axle housing assembly	130	1,326	96
Rear stabilizer bracket cover x Rear axle housing assembly	30	306	22
Rear stabilizer link assembly x Rear stabilizer bar	70	714	52
Rear stabilizer link assembly x Frame assembly	15	153	11

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TIRE AND WHEEL

SERVICE DATA

Cold tire inflation pressure	P265/70R17 113S	220 kPa (2.2 kgf/cm^2, 32 psi)
Tire runout		3.0 mm (0.118 in.) or less
Imbalance after adjustment	Steel wheel	12 g (0.026 lb) or less
	Aluminum wheel	6 g (0.013 lb) or less

BRAKE CONTROL

TORQUE SPECIFICATIONS

Part Tightened	N*m	kgf*cm	ft.*lbf
Front speed sensor x Steering knuckle	8.3	85	73 in.*lbf
Front wheel	112	1,137	82
Battery negative terminal x Battery	3.9	40	35 in.*lbf
Rear speed sensor x Rear axle housing	8.3	85	73 in.*lbf
Rear wheel	112	1,137	82
Yaw rate and deceleration sensor x Body	13	136	10

BRAKE

SERVICE DATA

Brake pedal height (from dash panel)		168.7 to 178.7 mm (6.642 to 7.035 in.)
Rod operating adapter length		201. 7 to 202.7 mm (7.941 to 7.980 in.)
Stop light switch clearance		0.5 to 2.6 mm (0.020 to 0.102 in.)
Brake pedal free play		1.0 to 6.0 mm (0.039 to 0.236 in.)
Brake pedal reserve distance from asphalt sheet at 490 N (50 kgf, 110.2 lbf)		More than 56mm (2.20 in.)
Front disc brake pad lining thickness	Standard Minimum	11.5 mm (0.453 in.) 1.0 mm (0.039 in.)
Front disc thickness	Standard Minimum	28.0 mm (1.102 in.) 26.0 mm (1.024 in.)
Front disc runout	Maximum	0.05 mm (0.0020 in.)
Rear disc brake pad lining thickness	Standard Minimum	10.0 mm (0.394 in.) 1.0 mm (0.039 in.)
Rear disc thickness	Standard Minimum	18.0 mm (0.709 in.) 16.0 mm (0.630 in.)
Rear disc runout	Maximum	0.20 mm (0.0079 in.)

TORQUE SPECIFICATIONS

Part Tightened	N*m	kgf*cm	ft.*lbf
Front disc brake bleeder plug x Disc brake cylinder assembly	11	110	8
Rear disc brake bleeder plug x Rear disc brake cylinder assembly	11	110	8
Rod operating adapter lock nut	26	260	19
Brake pedal x Brake pedal support sub-assembly	34	350	25
Brake pedal support sub-assembly x Hydraulic brake booster	14	145	10
Brake pedal support reinforcement x Reinforcement	20	204	15
Brake pedal support reinforcement x Brake pedal support sub-assembly	34	350	25
Battery negative terminal x Battery	3.9	40	35 in.*lbf
Brake booster accumulator assembly x Brake booster pump assembly	57	585	42
Master cylinder solenoid x Master cylinder body	32	325	24
Brake booster pump bracket x Master cylinder body	7.8	80	69 in.*lbf
Brake actuator bracket x Master cylinder body	7.8	80	69 in.*lbf
Pin x Brake booster pump assembly	7.8	80	69 in.*lbf
Brake booster pump (wire harness) x Master cylinder solenoid	2.9	30	26 in.*lbf
Brake actuator No. 1 tube x Brake booster pump assembly	14 (15)	143 (155)	10 (11)
Brake actuator No. 1 tube x Master cylinder body	14 (15)	143 (155)	10 (11)
Brake master cylinder reservoir sub-assembly x Master cylinder body	1.7	17	15 in.*lbf
Brake actuator No. 1 bracket x Master cylinder solenoid	7.8	80	69 in.*lbf
Brake tube x Hydraulic brake booster	14 (15)	143 (155)	10 (11)
Disc brake cylinder assembly x Steering knuckle	123	1,254	91
Brake tube x Disc brake cylinder assembly	14 (15)	143 (155)	10 (11)
Front wheel	112	1,137	82
Front flexible hose x Brake tube	14 (15)	143 (155)	10 (11)
Rear disc brake cylinder mounting x Rear axle housing assembly	105	1,071	78
Rear disc brake cylinder assembly x Rear disc brake cylinder mounting	88	897	65
Rear flexible hose x Rear disc brake cylinder assembly	31	316	23
Rear wheel	112	1,137	82
Rear flexible hose x Brake tube	14 (15)	143 (155)	10 (11)
Rear brake tube flexible hose x Brake tube	14 (15)	143 (155)	10 (11)

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PARKING BRAKE

SERVICE DATA

Parking brake lever travel at 200 N (20 kgf, 45 lbf)		5 to 7 clicks
Brake disc inside diameter	Standard Maximum	210 mm (8.268 in.) 211 mm (8.307 in.)
Parking brake shoe lining thickness	Standard Minimum	4.0 mm (0.157 in.) 1.0 mm (0.039 in.)
Parking brake shoe lever clearance		Less than 0.25 mm (0.0098 in.)
Parking brake switch	Released Pushed in	Below 1 Ω 10 kΩ or higher

TORQUE SPECIFICATIONS

Part Tightened	N*m	kgf*cm	ft.*lbf
Rear wheel	112	1,137	82
Parking brake lever x Body	13	127	9
Battery negative terminal x Battery	3.9	40	35 in.*lbf
Parking brake cable x Frame assembly	13	127	9
Parking brake cable x Parking brake plate	8.0	82	71 in.*lbf
Parking brake cable heat insulator x Frame assembly	13	127	9
Rear disc brake caliper assembly x Rear axle housing assembly	105	1,071	78

STEERING COLUMN

SERVICE DATA

Steering wheel free play	30 mm (1.18 in.)

TORQUE SPECIFICATIONS

Part Tightened	N*m	kgf*cm	ft.*lbf
Steering wheel set nut	50	510	37
Steering wheel pad set screw	8.8	90	78 n.*lbf
Steering column assembly set nut	21	214	15
Steering column assembly x Steering sliding w/ coupling yoke sub-assembly	26	265	19
Steering sliding w/ coupling yoke sub-assembly x Steering sliding yoke	36	367	27
Power steering gear box x intermediate shaft No. 2	36	367	27

POWER STEERING

SERVICE DATA

Power steering fluid	Fluid level rise	Maximum	5 mm (0.20 in.)
	Fluid pressure at idle speed with valve closed		8.800 kPa (89.7 kgf/cm^2, 1,276 psi)
Steering wheel	Steering effort at idle speed	Reference	6.0 N*m (60 kgf*cm, 53in.*lbf)
Power steering vane pump	Vane pump rotating torque		0.27 N*m (2.8 kgf*cm, 2.4 in.*lbf) or less
	Vane plate height	Minimum	7.6 mm (0.299 in.)
	Vane plate thickness	Minimum	1.405 mm (0.0553 in.)
	Vane plate length	Minimum	11.993 mm (0.4722 in.)
	Clearance between the rotor groove and plate	Maximum	0.025 mm (0.0010 in.)
	Spring free length	Minimum	29.2 mm (1.150 in.)
Power steering linK	Total preload (tie rod rotating torque)	Turning	0.29 to 1.96 N*m (2.9 to 20.0 kgf*cm, 2.57 to 17.35 in.*lbf)
	Total preload (control valve rotating torque)	Turning	0.8 to 1.6 N*m (8.2 to 16.3 kgf*cm, 7.1to 14.2 in.*lbf)

TORQUE SPECIFICATIONS

Part tightened	N*m	kgf*cm	ft.*lbf
Power steering vane pump			
Vane pump housing rear x Vane pump housing front	22	224	16
Pressure port union	69	704	51
Suction port union set bolt	9.0	92	80 in.*lbf
Vane pump assembly x Engine	21	214	15
Pressure feed tube assembly x Vane pump assembly	44 (42)	449 (428)	33 (31)

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Part tightened	N*m	kgf*cm	ft.*lbf
No. 1 Engine under cover Body	29	296	21
Rear Engine under cove x Body for 4WD	29	296	21
Power steering link assembly			
Control valve housing set bolt	18	184	13
Rack guide spring cap lock nut	69 (65)	700 (660)	51 (48)
Power steering rack x Rack end	103 (98)	1,050 (1,000)	76 (72)
Tie rod assembly lock nut	88	897	65
Turn pressure tube union nut	25 (23)	250 (235)	18 (17)
Power steering link assembly set bolt and nut	100	1,020	74
Pressure feed and return tubes x Control valve housing	25 (23)	250 (235)	18 (17)
Pressure feed tube clamp set bolt	28	286	21
Outlet return tube	44 (42)	499 (428)	33 (31)
Tie rod end x steering knuckle	49	500	36

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AIR CONDITIONING

SERVICE DATA

Refrigerant charge volume	570 to 630 g (20.11 to 22.22 oz.)
Magnetic clutch clearance	0.35 to 0.60 mm (0.014 to 0.024 in.)
Magnetic clutch relay	3 - 5 : 10kΩ or higher 3 - 5 : Below 1Ω(Apply battery voltage to terminals 1 and 2)
Heater blower relay	3 - 4 : Below 1Ω 3 - 4 : 10kΩ or higher (Apply battery voltage to terminals 1 and 2) 3 - 5 : 10kΩ or higher 3 - 5 : Below 1Ω(Apply battery voltage to terminals 1 and 2)

TORQUE SPECIFICATIONS

Part Tightened	N*m	kgf*cm	ft.*lbf
Negative battery terminal x Battery	3.9	40	35 in.*lbf

AIR CONDITIONING UNIT

Part Tightened	N*m	kgf*cm	ft.*lbf
No. 1 cooler evaporator x Cooler expansion valve x Air conditioning tube	3.5	36	31 in.*lbf
Air conditioning unit assembly x Instrument panel reinforcement	9.8	100	87 in.*lbf
Air conditioning unit assembly x Body	5.4	55	48 in.*lbf
Main body ECU (Driver side junction block x Instrument panel reinforcement	8.4	86	74 in.*lbf
Bracket x Main body ECU (Driver side junction block	8.4	86	74 in.*lbf
Steering intermediate shaft assembly x Thrust stopper	36	367	27

COMPRESSOR AND MAGNETIC CLUTCH

Part Tightened	N*m	kgf*cm	ft.*lbf
Magnet clutch hub x Cooler compressor assembly	18	184	13
Pressure relief valve x Cooler compressor assembly	8.0	82	71 in.*lbf
Cooler compressor assembly x Compressor bracket	24.5	250	18
Discharge hose sub-assembly x Cooler compressor assembly	9.8	100	87 in.*lbf
Suction hose sub-assembly x Cooler compressor assembly	9.8	100	87 in.*lbf
Suction hose sub-assembly x Timing chain cover	7.8	80	69
Battery hold down clamp x Battery	6.0	61	53 in.*lbf

CONDENSER

Part Tightened	N*m	kgf*cm	ft.*lbf
Cap x Modulator	2.9	30	25 in.*lbf
No. 1 cooler condenser cushion x Body	5.5	56	49 in.*lbf
Cooler condenser assembly x No. 1 cooler condenser cushion	5.5	56	49 in.*lbf
No. 2 cooler condenser cushion RH x Air conditioning tube assembly	5.4	55	48 in.*lbf
No. 2 cooler condenser cushion RH x Cooler condenser assembly	5.5	56	49 in.*lbf
No. 2 cooler condenser cushion LH x Cooler condenser assembly	5.5	56	49 in.*lbf
Cooler bracket x No. 2 cooler condenser cushion LH	5.4	55	48 in.*lbf
Air conditioning tube assembly x Cooler condenser assembly	5.4	55	48 in.*lbf
Discharge hose sub-assembly x Condenser assembly	5.4	55	48 in.*lbf

SUPPLEMENTAL RESTRAINT SYSTEM

TORQUE SPECIFICATIONS

Part Tightened	N*m	kgf*cm	ft.*lbf
Steering pad x Steering wheel assembly	8.8	90	78 in.*lbf
Steering wheel assembly x Steering column assembly	50	510	37
Front passenger airbag assembly x Instrument panel reinforcement	20	204	15
Curtain shield airbag assembly x Body	9.8	100	7
Center airbag sensor assembly x Body	17.5	179	13
Front airbag sensor x Body	9.0	92	80 in.*lbf
Side airbag sensor x Body	9.0	92	80 in.*lbf
Rear airbag sensor x Body	9.0	92	80 in.*lbf
Seat position sensor x Front seat assembly	8.0	82	71 in.*lbf

SEAT BELT

SERVICE DATA

FRONT SEAT INNER BELT ASSEMBLY:

Item	Tester Connection	Condition	Specified Condition
Standard resistance	10 - 11	Tongue plate fastened	Below 1 Ω
		Tongue plate released	10 kΩ or higher

TORQUE SPECIFICATIONS

FRONT PASSENGER SEAT BELT WARNING LIGHT:

Part Tightened	N*m	kgf*cm	ft.*lbf
Negative battery terminal x Battery	3.9	40	35 in.*lbf

FRONT SEAT INNER BELT ASSEMBLY:

Part Tightened	N*m	kgf*cm	ft.*lbf
Front seat inner belt assembly x Front seat adjuster sub-assembly	42	430	31
Negative battery terminal x Battery	3.9	40	35 in.*lbf

FRONT SEAT OUTER BELT ASSEMBLY:

Part Tightened	N*m	kgf*cm	ft.*lbf
Front shoulder belt anchor adjuster assembly x Access door panel sub-assembly	42	430	31
Front seat outer belt assembly x Access door panel sub-assembly (for Upper Stay of Retractor)	8.5	85	75 in.*lbf
Front seat outer belt assembly x Access door panel sub-assembly (for Lower Stay of Retractor)	42	430	31
Front seat outer belt assembly x Access door panel sub-assembly (for Through Anchor)	42	430	31
Negative battery terminal x Battery	3.9	40	35 in.*lbf

REAR SEAT INNER BELT ASSEMBLY:

Part Tightened	N*m	kgf*cm	ft.*lbf
Rear seat inner belt assembly x Body	42	430	31

REAR SEAT OUTER BELT ASSEMBLY:

Part Tightened	N*m	kgf*cm	ft.*lbf
Rear seat outer belt assembly x Body (for Upper Stay of Retractor)	8.5	85	75 in.*lbf
Rear seat outer belt assembly x Body (for Lower Stay of Retractor)	42	430	31
Rear seat outer belt assembly x Body (for Through Anchor)	42	430	31
Rear seat outer belt assembly x Body (for Anchor Plate)	42	430	31
Negative battery terminal x Battery	3.9	40	35 in.*lbf

REAR CENTER SEAT INNER BELT ASSEMBLY:

Part Tightened	N*m	kgf*cm	ft.*lbf
Rear center seat inner belt assembly x Body	42	430	31

REAR CENTER SEAT OUTER BELT ASSEMBLY:

Part Tightened	N*m	kgf*cm	ft.*lbf
Rear center seat outer belt assembly x Rear seatback frame sub-assembly	44	450	33

CRUISE CONTROL

TORQUE SPECIFICATIONS

Part Tightened	N*m	kgf*cm	ft.*lbft.*lbf
Cruise control main switch x Steering wheel	2.4	24	21 in.*lbf
Clutch switch assembly x Clutch pedal	15	155	11
Maine body ECU (Driver side j/b) x Instrument panel reinforcement assembly	8.4	86	74 in.*lbf
Instrument panel side bracket x Maine body ECU (Driver side j/b)	8.4	86	74 in.*lbf
Instrument panel side bracket x Body	8.4	86	74 in.*lbf
Negative battery terminal x Battery	3.9	40	35 in.*lbf

LIGHTING

SERVICE DATA

Headlight relay	3 - 5: 10 kΩ or higher 3 - 5: Below 1 Ω (Battery voltage applied to terminals 1 and 2)
Headlight dimmer relay	3 - 4: Below 1 Ω 3 - 4: 10 kΩ or higher (Battery voltage applied to terminals 1 and 2) 3 - 5: 10 kΩ or higher 3 - 5: Below 1 Ω (Battery voltage applied to terminals 1 and 2)
Taillight relay	3 - 5: 10 kΩ or higher 3 - 5: Below 1 Ω (Battery voltage applied to terminals 1 and 2)

TORQUE SPECIFICATIONS

Part Tightened	N*m	kgf*cm	ft.*lbf
Headlight assembly x Front combination light assembly	5.4	55	48 in.*lbf
Rear combination light assembly x Body	6.0	61	53 in.*lbf
Front door courtesy switch x Access door	7.0	71	62 in.*lbf
Access panel upper lock assembly x Access door	12	122	9
Access panel lower lock assembly x Access door	5.0	51	44 in.*lbf
Back door courtesy switch x Body	7.0	71	62 in.*lbf
Negative battery terminal x Battery	3.9	40	35 in.*lbf

WIPER AND WASHER

TORQUE SPECIFICATIONS

FRONT WIPER MOTOR

Part Tightened	N*m	kgf*cm	ft.*lbf
Front wiper motor x Front wiper link	7.5	76	66 in.*lbf
Front wiper motor and link x Cowl top panel outer	7.0	71	61 in.*lbf
Front wiper arm and blade assembly x Front wiper motor and link	25	255	18
Negative battery terminal x Battery	3.9	40	35 in.*lbf

REAR WIPER MOTOR

Part Tightened	N*m	kgf*cm	ft.*lbf
Rear wiper motor x Back door panel	5.5	56	49 in.*lbf
Rear wiper arm and blade assembly x Rear wiper motor	5.5	56	49 in.*lbf
Negative battery terminal x Battery	3.9	40	35 in.*lbf

WIPER SWITCH

Part Tightened	N*m	kgf*cm	ft.*lbf
Negative battery terminal x Battery	3.9	40	35 in.*lbf

WASHER MOTOR

Part Tightened	N*m	kgf*cm	ft.*lbf
Windshield washer jar assembly x Body	3.5	36	31 in.*lbf
Negative battery terminal x Battery	3.9	40	35 in.*lbf

DOOR LOCK

TORQUE SPECIFICATIONS

Part Tightened	N*m	kgf*cm	ft.*lbf
Front door lock x Front door panel	5.0	51	44 in.*lbf
Back door lock x Back door panel	5.0	51	44 in.*lbf
Negative battery terminal x Battery	3.9	40	35 in.*lbf

METER

TORQUE SPECIFICATIONS

Part Tightened	N*m	kgf*cm	ft.*lbf
Combination meter assembly x Instrument panel assembly	7.0	71	62 in.*lbf
Negative battery terminal x Battery	3.9	40	35 in.*lbf

AUDIO / VISUAL

SERVICE DATA

FRONT NO. 1 SPEAKER:

Item	Tester Connection	Specified Condition
Standard resistance	1 - 2	Approximately 4 Ω

FRONT NO. 2 SPEAKER:

Item	Tester Connection	Specified Condition
Standard resistance	3 - 4	Approximately 8 Ω

REAR SPEAKER:

Item	Tester Connection	Specified Condition
Standard resistance	1 - 2	Approximately 8 Ω

ROOF SPEAKER:

Item	Tester Connection	Specified Condition
Standard resistance	1 - 2	Approximately 4 Ω

STEERING PAD SWITCH:

Item	Tester Connection	Condition	Specified Condition
Standard resistance	12 (AU1) - 10 (EAU)	All switches released	Approximately 100 kΩ
		SEEK+ switch: pushed in	Below 2.5 Ω or less
		SEEK- switch: pushed in	Approximately 329 Ω
		VOL+ switch: pushed in	Approximately 1000 Ω
		VOL- switch: pushed in	Approximately 3110 Ω
	11 (AU2) - 10 (EAU)	All switches released	Approximately 100 kΩ
		MODE switch: pushed in	Below 2.5 Ω or less

WOOFER SPEAKER SWITCH:

Item	Tester Connection	Condition	Specified Condition
Standard resistance	3 (IN) - 4 (OUT)	OFF	10 kΩ or higher
		ON	Below 1 Ω

TORQUE SPECIFICATIONS

RADIO RECEIVER:

Part Tightened	N*m	kgf*cm	ft.*lbf
Radio bracket x Radio receiver assembly	2.5	25	22 in.*lbf
Radio receiver assembly x Instrument panel sub-assembly	2.5	25	22 in.*lbf
Negative battery terminal x Battery	3.9	40	35 in.*lbf

FRONT NO. 1 SPEAKER:

Part Tightened	N*m	kgf*cm	ft.*lbf
Front No. 1 speaker assembly x Front door panel sub-assembly	2.5	25	22 in.*lbf
Negative battery terminal x Battery	3.9	40	35 in.*lbf

FRONT NO. 2 SPEAKER:

Part Tightened	N*m	kgf*cm	ft.*lbf
Front No. 2 speaker assembly x Front speaker bracket	8.1	85	72 in.*lbf
Front speaker bracket x Instrument panel sub-assembly	2.5	25	22 in.*lbf
Negative battery terminal x Battery	3.9	40	35 in.*lbf

REAR SPEAKER:

Part Tightened	N*m	kgf*cm	ft.*lbf
Rear speaker assembly x Speaker mounting bracket	8.1	85	72 in.*lbf
Speaker mounting bracket x Body	8.1	85	72 in.*lbf
Negative battery terminal x Battery	3.9	40	35 in.*lbf

ROOF SPEAKER:

Part Tightened	N*m	kgf*cm	ft.*lbf
Negative battery terminal x Battery	3.9	40	35 in.*lbf

AMPLIFIER BOX SPEAKER ASSEMBLY:

Part Tightened	N*m	kgf*cm	ft.*lbf
Amplifier box speaker assembly x Body	8.1	85	72 in.*lbf
Negative battery terminal x Battery	3.9	40	35 in.*lbf

RADIO ANTENNA CORD:

Part Tightened	N*m	kgf*cm	ft.*lbf
Front No. 2 speaker assembly x Instrument panel sub-assembly	2.5	25	22 in.*lbf
Negative battery terminal x Battery	3.9	40	35 in.*lbf

RADIO ANTENNA HOLDER:

Part Tightened	N*m	kgf*cm	ft.*lbf
Radio antenna holder assembly x Body	8.4	85	74 in.*lbf
Negative battery terminal x Battery	3.9	40	35 in.*lbf

RADIO ANTENNA POLE:

Part Tightened	N*m	kgf*cm	ft.*lbf
Radio antenna pole x Radio antenna holder assembly	3.3	35	29 in.*lbf

STEREO JACK ADAPTER ASSEMBLY:

Part Tightened	N*m	kgf*cm	ft.*lbf
Negative battery terminal x Battery	3.9	40	35 in.*lbf

STEERING PAD SWITCH:

Part Tightened	N*m	kgf*cm	ft.*lbf
Steering pad switch x Steering wheel assembly	2.4	25	21 in.*lbf
Negative battery terminal x Battery	3.9	40	35 in.*lbf

WOOFER SPEAKER SWITCH:

Part Tightened	N*m	kgf*cm	ft.*lbf
Negative battery terminal x Battery	3.9	40	35 in.*lbf

PARK ASSIST / MONITORING

SERVICE DATA

CLEARANCE WARNING BUZZER:

Item	Tester Connection	Specified Condition
Standard resistance	1 - 2	Approximately 1 kΩ

ULTRASONIC SENSOR:

Item	Tester Connection	Specified Condition
Standard resistance	1 (E) - 2 (S)	8 to 12 kΩ

BACK SONAR SWITCH ASSEMBLY:

Item	Tester Connection	Condition	Specified Condition
Standard resistance	4 (ECU) - 6 (E)	OFF	Below 1 Ω
	3 (IG) - 6 (E)	ON	Below 1 Ω
	4 (ECU) - 6 (E)		Below 1 Ω

BACK SONAR SWITCH BULB:

Item	Specified Condition
Standard resistance	7 to 11 Ω at 20°C (68°F)

TORQUE SPECIFICATIONS

CLEARANCE WARNING ECU:

Part Tightened	N*m	kgf*cm	ft.*lbf
Clearance warning ECU assembly x Instrument panel upper bracket	12.5	125	9
Negative battery terminal x Battery	3.9	40	35 in.*lbf

CLEARANCE WARNING BUZZER:

Part Tightened	N*m	kgf*cm	ft.*lbf
Negative battery terminal x Battery	3.9	40	35 in.*lbf

ULTRASONIC SENSOR:

Part Tightened	N*m	kgf*cm	ft.*lbf
Negative battery terminal x Battery	3.9	40	35 in.*lbf

BACK SONAR SWITCH ASSEMBLY:

Part Tightened	N*m	kgf*cm	ft.*lbf
Negative battery terminal x Battery	3.9	40	35 in.*lbf

HORN

SERVICE DATA

HORN RELAY:

Item	Tester Connection	Specified Condition
Standard resistance	3 - 5	10 kΩ or higher
		Below 1 Ω (Battery voltage applied to terminals 1 and 2)

TORQUE SPECIFICATIONS

HORN RELAY:

Part Tightened	N*m	kgf*cm	ft.*lbf
Negative battery terminal x Battery	3.9	40	35

LOW PITCHED HORN:

Part Tightened	N*m	kgf*cm	ft.*lbf
Low pitched horn assembly x Body	9.8	100	7
Negative battery terminal x Battery	3.9	40	35

OTHER SYSTEM

SERVICE DATA

Inverter relay	3-5: 10 kΩ or higher 3-5: Below 1Ω (Battery voltage applied to terminals 1 and 2)

TORQUE SPECIFICATIONS

CLOCK

Part Tightened	N*m	kgf*cm	ft.*lbf
Negative battery terminal x Battery	3.9	40	35 in.*lbf

POWER OUTLET SOCKET

Part Tightened	N*m	kgf*cm	ft.*lbf
Negative battery terminal x Battery	3.9	40	35 in.*lbf

REAR POWER OUTLET SOCKET

Part Tightened	N*m	kgf*cm	ft.*lbf
Negative battery terminal x Battery	3.9	40	35 in.*lbf

VOLTAGE INVERTER

Part Tightened	N*m	kgf*cm	ft.*lbf
Voltage inverter x Body	8.5	87	75
Voltage inverter x Earth wire	6.9	70	61 in.*lbf
Negative battery terminal x Battery	3.9	40	35 in.*lbf

INVERTER MAIN SWITCH

Part Tightened	N*m	kgf*cm	ft.*lbf
Negative battery terminal x Battery	3.9	40	35 in.*lbf

WINDSHIELD / WINDOWGLASS

SERVICE DATA

Defogger relay	3 - 4: Below 1 Ω 3 - 4: 10 kΩ or higher (Battery voltage applied to terminals 1 and 2) 3 - 5: 10 kΩ or higher 3 - 5: Below 1 Ω (Battery voltage applied to terminals 1 and 2)

TORQUE SPECIFICATIONS

Part Tightened	N*m	kgf*cm	ft.*lbf
Power window regulator motor x Front door window regulator sub-assembly	5.4	55	48 in.*lbf
Back door glass x Back door hinge assembly	5.5	56	49 in.*lbf
Back window lock x Back door panel	5.0	51	44 in.*lbf
Spare disc wheel x Spare wheel carrier bracket sub-assembly	88	897	65
Negative battery terminal x Battery	3.9	40	35 in.*lbf

MIRROR

TORQUE SPECIFICATIONS

Part Tightened	N*m	kgf*cm	ft.*lbf
Outer rear view mirror x Front door panel	8.0	82	71 in.*lbf
Negative battery terminal x Battery	3.9	40	35 in.*lbf

INSTRUMENT PANEL

TORQUE SPECIFICATIONS

Part Tightened	N*m	kgf*cm	ft.*lbf
Front passenger airbag assembly x Instrument panel reinforcement	20	205	15
Combination meter assembly x Instrument panel assembly	7.0	71	62 in.*lbf
Negative battery terminal x Battery	3.9	40	35 in.*lbf

SEAT

TORQUE SPECIFICATIONS

FRONT SEAT ASSEMBLY:

Part Tightened	kgf*cm	N*m	ft.*lbf
Seat position sensor x Front seat adjuster sub-assembly (for Driver Side)	8.0	80	71 in.*lbf
Front seatback cover x Front seat adjuster sub-assembly (w/ Front Seat Side Airbag)	5.5	55	49 in.*lbf
Front seat armrest assembly x Front seat adjuster sub-assembly (for Driver Side)	38	385	28
Front seat assembly x Body	37	375	27
Negative battery terminal x Battery	3.9	40	35 in.*lbf

REAR SEAT ASSEMBLY (for LH Side):

Part Tightened	kgf*cm	N*m	ft.*lbf
Rear seatback lock assembly x Rear seatback frame sub-assembly	18	185	13
Rear seat cushion hinge sub-assembly x Rear seat cushion frame sub-assembly	18	185	13
Rear seatback assembly x Rear seatback hinge sub-assembly	37	375	27
Rear seat cushion assembly x Body	37	375	27

REAR SEAT ASSEMBLY (for RH Side):

Part Tightened	kgf*cm	N*m	ft.*lbf
Rear seatback lock assembly x Rear seatback frame sub-assembly	18	185	13
Rear seat cushion hinge sub-assembly x Rear seat cushion frame sub-assembly	18	185	13
Rear seatback assembly x Rear seatback hinge sub-assembly	37	375	27
Rear center seat outer belt assembly x Body (for Anchor Plate)	42	430	31
Rear seat cushion assembly x Body	37	375	27

ENGINE HOOD / DOOR

TORQUE SPECIFICATIONS

Part Tightened	N*m	kgf*cm	ft.*lbf
Hood hinge assembly x Hood sub-assembly	13	133	10
Hood lock assembly x Radiator support sub-assembly	8.0	82	71 in.*lbf
Front door upper hinge assembly x Body	26	265	19
Front door upper hinge assembly x Front door panel	26	265	19
Front door lower hinge assembly x Body	26	265	19
Front door lower hinge assembly x Front door panel	26	265	19
Access panel lock striker plate assembly x Access door panel	23	235	17
Front door outside handle frame sub-assembly x Front door panel	7.0	71	62 in.*lbf
Front door outside handle cover x Front door outside handle frame sub-assembly	5.5	56	49 in.*lbf
Front door window regulator sub-assembly x Front door panel	8.0	82	71 in.*lbf
Front door glass sub-assembly x Front door window regulator sub-assembly	8.0	82	71 in.*lbf
Front door lower frame bracket garnish x Front door panel	5.5	56	49 in.*lbf
Front door window frame rear lower x Front door panel	5.5	56	49 in.*lbf
Front door frame sub-assembly front lower x Front door panel	5.5	56	49 in.*lbf
Front door check assembly x Front door panel	5.5	56	49 in.*lbf
Front door check assembly x Body	30	306	22
Rear door upper hinge assembly x Body	26	265	19
Rear door upper hinge assembly x Access door panel	26	265	19
Rear door lower hinge assembly x Body	26	265	19
Rear door lower hinge assembly x Access door panel	26	265	19
Access panel upper lock striker assembly x Body	23	235	17
Access panel lock striker plate assembly x Body	23	235	17
Access panel lower lock stop x Access door panel	23	235	17
Access panel check assembly x Access door panel	5.5	56	49 in.*lbf
Access panel check assembly x Body	30	306	22
Access panel lock cancel lever assembly x Access door panel	5.0	51	44 in.*lbf
Access panel lock remote control assembly x Access door panel	12	122	9
Access panel inside handle sub-assembly x Access door panel	12	122	9
Front seat outer belt assembly (floor side) x Access door panel	42	428	31
Back door hinge assembly (door side) x Body	26	265	19
Back door hinge assembly (door side) x Back door panel	42	428	31
Back door lock striker plate assembly x Body	23	235	17
Back door side female stopper sub-assembly x Back door panel	7.0	71	62 in.*lbf
Back door damper stay lower bracket x Back door panel	20	199	14
Back door stay upper bracket LH x Back door panel	7.0	71	62 in.*lbf
Back door stay upper bracket RH x Back door panel	7.0	71	62 in.*lbf
Back door hinge assembly (glass side) x Back door panel	20	199	14
Spare wheel carrier bracket sub-assembly x Back door panel	48	489	35
Spare disc wheel x Spare wheel carrier bracket sub-assembly	88	897	65
Negative battery terminal x Battery	3.9	40	35 in.*lbf

EXTERIOR

TORQUE SPECIFICATIONS

FRONT BUMPER:

Part Tightened	N*m	kgf*cm	ft.*lbf
Front valance lower panel x Front bumper cover	8.0	80	71 in.*lbf
Front bumper extension x Body	65	665	48
Front bumper reinforcement x Front bumper extension	65	665	48
Front bumper upper retainer x Body	8.0	80	71 in.*lbf
Front bumper side support x Body	3.0	30	27 in.*lbf
Front bumper cover x Body (for Screw)	3.0	30	27 in.*lbf
Front bumper cover x Body (for Bolt)	8.0	80	71 in.*lbf
Radiator grille x Body	3.0	30	27 in.*lbf

REAR BUMPER:

Part Tightened	N*m	kgf*cm	ft.*lbf
Rear bumper bar bracket x Body	8.0	80	71 in.*lbf
Rear bumper side support sub-assembly x Body	8.0	80	71 in.*lbf
Rear bumper side stay x Body	8.0	80	71 in.*lbf
Rear bumper upper retainer x Body	3.0	30	27 in.*lbf
Rear bumper end retainer x Body	3.0	30	27 in.*lbf
Rear bumper cover x Body (for Bolt)	8.0	80	71 in.*lbf
Rear bumper cover x Body (for Screw)	3.0	30	27 in.*lbf
Negative battery terminal x Battery	3.9	40	35 in.*lbf

REAR SPOILER:

Part Tightened	N*m	kgf*cm	ft.*lbf
Rear spoiler cover x Back door panel sub-assembly	3.0	30	27 in.*lbf
Negative battery terminal x Battery	3.9	40	35 in.*lbf

FRONT DOOR GLASS WEATHERSTRIP:

Part Tightened	N*m	kgf*cm	ft.*lbf
Outer rear view mirror assembly x Front door panel sub-assembly	8.0	82	71 in.*lbf
Negative battery terminal x Battery	3.9	40	35 in.*lbf

ROOF DRIP SIDE FINISH MOULDING:

Part Tightened	N*m	kgf*cm	ft.*lbf
Front pillar outer garnish x Body	5.0	50	44 in.*lbf
Roof drip side finish moulding retainer x Body	5.0	50	44 in.*lbf

OUTSIDE MOULDING:

Part Tightened	N*m	kgf*cm	ft.*lbf
Spare tire x Spare wheel carrier bracket sub-assembly	88	897	65
Access door outside moulding sub-assembly x Body	5.0	50	44 in.*lbf
Front door outside moulding sub-assembly x Body	5.0	50	44 in.*lbf
Quarter outside moulding sub-assembly x Body	5.0	50	44 in.*lbf
Front fender moulding sub-assembly x Body	5.0	50	44 in.*lbf
Rocker panel moulding x Body	5.0	50	44 in.*lbf
Negative battery terminal x Battery	3.9	40	35 in.*lbf

FENDER PANEL MOULDING:

Part Tightened	N*m	kgf*cm	ft.*lbf
Quarter panel mudguard x Body	5.0	50	44 in.*lbf

Part Tightened	N*m	kgf*cm	ft.*lbf
Front fender mudguard x Body	5.0	50	44 in.*lbf
Negative battery terminal x Battery	3.9	40	35 in.*lbf

SIDE STEP:

Part Tightened	N*m	kgf*cm	ft.*lbf
No. 3 side step bracket x Side step sub-assembly	12.5	125	9
No. 2 side step bracket x Side step sub-assembly	12.5	125	9
No. 1 side step bracket x Side step sub-assembly	12.5	125	9
Side step sub-assembly x Body	20	200	14

BACK DOOR OUTSIDE GARNISH:

Part Tightened	N*m	kgf*cm	ft.*lbf
Spare tire x Spare wheel carrier bracket sub-assembly	88	897	65
Back door outside garnish sub-assembly x Back door panel sub-assembly	6.0	60	53 in.*lbf
Negative battery terminal x Battery	3.9	40	35 in.*lbf

FRONT DOOR BLACK OUT TAPE:

Part Tightened	N*m	kgf*cm	ft.*lbf
Negative battery terminal x Battery	3.9	40	35 in.*lbf

INTERIOR

TORQUE SPECIFICATIONS

ROOF HEADLINING:

Part Tightened	N*m	kgf*cm	ft.*lbf
Rear seat outer belt assembly x Body (for Anchor Plate)	42	430	31
Negative battery terminal x Battery	3.9	40	35 in.*lbf