

SERVICE SPECIFICATIONS

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SERVICE SPECIFICATIONS — Maintenance

MAINTENANCE

Engine

Drive belt tension Alternator	3S-FE	w/ A/C	New belt	175 ± 5 lb		
			Used belt	130 ± 10 lb		
		w/o A/C	New belt	125 ± 25 lb		
			Used belt	95 ± 20 lb		
	2VZ-FE		New belt	175 ± 5 lb		
			Used belt	115 ± 20 lb		
			New belt	125 ± 10 lb		
			Used belt	80 ± 20 lb		
PS pump						

Coolant capacity 1w/ Heater)							
3S-FE	M/T	6.4 liters	6.8 US qts	5.6 Imp. qts			
		A/T (2WD)	6.3 liters	6.7 US qts	5.5 Imp. qts		
		A/T (4WD)	6.8 liters	7.2 US qts	6.0 Imp. qts		
	2VZ-FE	M/T	9.5 liters	10.0 US qts	8.4 Imp. qts		
		A/T	9.4 liters	9.9 US qts	8.3 Imp. qts		
			3.9 liters	4.1 US qts	3.4 Imp. qts		
Engine oil capacity (Drain and refill with oil filter change)							

Spark plug Type	3S-FE	ND	Q16R-U11		
		NGK	BCPR5EY11		
2VZ-FE	ND	PO20R			
	NGK	BCPR6E11			
Gap			1.1 mm	0.43 in.	
Firing order	3S-FE		1 — 3 — 4 — 2		
Valve clearance	2VZ-FE		1 — 2 — 3 — 4 — 5 — 6		
	3S-FE	Intake	0.19 — 0.29 mm	0.007 — 0.011 in.	
		Exhaust	0.28 — 0.38 mm	0.011 — 0.015 in.	
	2VZ-FE	Intake	0.13 — 0.23 mm	0.005 — 0.009 in.	
		Exhaust	0.27 — 0.37 mm	0.011 — 0.015 in.	

Chassis

Front and rear brake						
Pad thickness		Limit		1.0 mm	0.039 in.	
Disc thickness	Front	Limit		24.0 mm	0.945 in.	
Disc runout	Rear	Limit		9.0 mm	0.354 in.	
Parking brake	Front	Limit		0.07 mm	0.0028 in.	
Lining thickness	Rear	Limit		0.15 mm	0.0059 in.	
Drum inside diameter						
Front axle and suspension						
Ball joint vertical play		Limit		1.0 mm	0.039 in.	
Steering wheel freeplay	Drum brake	Limit		230.9 mm	9.079 in.	
Torque specifications	Disc brake	Limit		171.0 mm	6.732 in.	
Front seat mount bolts						
Strut/stabilizer bar bracket x Body						
Engine mounting center member x Body		Limit		0 mm	0 in.	
Front suspension lower crossmember x Body				30 mm (1.18 in.) or less		
Rear suspension lower crossmember x Body						
				375 kg-cm	27 ft-lb	37 N·m
				620 kg-cm	45 ft-lb	61 N·m
				400 kg-cm	29 ft-lb	39 N·m
				2,110 kg-cm	153 ft-lb	207 N·m
		2WD		710 kg-cm	51 ft-lb	70 N·m
		4WD		1,620 kg-cm	117 ft-lb	159 N·m

SERVICE SPECIFICATIONS — Engine Mechanical (3S-FE)

ENGINE MECHANICAL (3S-FE)

Specifications

Idle speed				700 ± 50 rpm
Intake manifold vacuum		at idle speed		450 mmHg (17.72 in. Hg, 60.0 kPa) or more
Compression pressure		at 250 rpm	STD Limit	12.5 kg/cm ² (178 psi, 1,228 kPa) or more 10.0 kg/cm ² 142 psi 981 kPa
		Difference of pressure between each cylinder		1.0 kg/cm ² (14 psi, 98 kPa) or less
Cylinder head	Cylinder block side warpage	Limit		0.05 mm 0.0020 in.
	Manifold side warpage	Limit		0.08 mm 0.0031 in.
	Valve seat Refacing angle			30°, 45°, 75°
	Contacting angle			45°
	Contacting width			1.0 — 1.4 mm 0.039 — 0.055 in.
Valve guide bushing	Inside diameter			6.010 — 6.030 mm 0.2366 — 0.2374 in.
	Outside diameter	STD O/S 0.05		11.048 — 11.059 mm 0.4350 — 0.4354 in. 11.098 — 11.109 mm 0.4369 — 0.4374 in.
Valve	Valve overall length	STD	Intake Exhaust	100.60 mm 3.9606 in. 100.45 mm 3.9547 in.
		Limit	Intake Exhaust	100.1 mm 3.941 in. 100.0 mm 3.937 in.
	Valve face angle			44.5°
	Stem diameter		Intake Exhaust	5.970 — 5.985 mm 0.2350 — 0.2356 in. 5.965 — 5.980 mm 0.2348 — 0.2354 in.
	Stem oil clearance	STD	Intake Exhaust	0.025 — 0.060 mm 0.0010 — 0.0024 in. 0.030 — 0.065 mm 0.0012 — 0.0026 in.
		Limit	Intake Exhaust	0.08 mm 0.0031 in. 0.10 mm 0.0039 in.
	Margin thickness	STD		0.8 — 1.2 mm 0.031 — 0.047 in.
		Limit		0.5 mm 0.020 in.
Valve spring	Free length			45.0 mm 1.772 in.
	Installed load		at 34.7 mm (1.366 in.)	16.7 — 19.3 kg (36.8 — 42.5 lb, 164 — 189 N)
	Squareness	Limit		2.0 mm 0.075 in.
Valve lifter	Lifter diameter			27.975 — 27.985 mm 1.1014 — 1.1018 in.
	Cylinder head lifter bore diameter			28.000 — 28.021 mm 1.1024 — 1.1032 in.
	Oil clearance	STD		0.015 — 0.046 mm 0.0005 — 0.0018 in.
		Limit		0.07 mm 0.0028 in.
Manifold	Manifold surface warpage	Limit		0.30 mm 0.0118 in.
Camshaft and gear	Thrust clearance	STD	Intake Exhaust	0.045 — 0.100 mm 0.0018 — 0.0039 in. 0.030 — 0.085 mm 0.0012 — 0.0033 in.
		Limit	Intake Exhaust	0.12 mm 0.0047 in. 0.10 mm 0.0039 in.
	Journal oil clearance	STD		0.025 — 0.062 mm 0.0010 — 0.0024 in.
		Limit		0.10 mm 0.0039 in.
	Journal diameter			26.959 — 26.975 mm 1.0614 — 1.0620 in.
	Circle runout	Limit		0.04 mm 0.0016 in.

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SERVICE SPECIFICATIONS — Engine Mechanical (3S-FE)

Specifications (Cont'd)

Camshaft and gear (cont'd)	Cam lobe height	STD	Intake	34.910 — 35.010 mm	1.3744 — 1.3783 in.
			Exhaust	35.560 — 35.660 mm	1.4000 — 1.4039 in.
		Limit	Intake	34.80 mm	1.3701 in.
			Exhaust	35.45 mm	1.3957 in.
	Camshaft gear backlash	STD		0.020 — 0.200 mm	0.0008 — 0.0079 in.
		Limit		0.30 mm	0.0188 in.
	Camshaft gear spring end free distance			22.5 — 22.9 mm	0.886 — 0.902 in.
Idle pulley tension spring	Free length			46.1 mm	1.815 in.
	Installed load	at 51.9 mm (2.043 in.)		6.0 — 7.0 kg (13.2 — 15.4 lb, 59 — 69 N)	
Cylinder block	Cylinder head surface warpage	Limit		0.05 mm	0.0020 in.
	Cylinder bore diameter	Mark 1		86.000 — 86.010 mm	3.3858 — 3.3862 in.
		Mark 2		86.010 — 86.020 mm	3.3862 — 3.3866 in.
		Mark 3		86.020 — 86.030 mm	3.3866 — 3.3870 in.
		Limit		86.23 mm	3.3949 in.
Piston and piston ring	Piston diameter	Mark 1		85.945 — 85.955 mm	3.3836 — 3.3840 in.
		Mark 2		85.955 — 85.965 mm	3.3840 — 3.3844 in.
		Mark 3		85.965 — 85.975 mm	3.3844 — 3.3848 in.
	Piston oil clearance	STD		0.045 — 0.065 mm	0.0018 — 0.0026 in.
		Limit		0.085 mm	0.0033 in.
	Ring to ring groove clearance			0.030 — 0.070 mm	0.0012 — 0.0028 in.
	Piston ring end gap	STD	No.1	0.270 — 0.500 mm	0.0106 — 0.0197 in.
			No.2	0.270 — 0.510 mm	0.0106 — 0.0201 in.
			Oil	0.200 — 0.550 mm	0.0079 — 0.0217 in.
		Limit	No.1	1.10 mm	0.0433 in.
			No.2	1.11 mm	0.0437 in.
			Oil	1.15 mm	0.0453 in.
Connecting rod	Thrust clearance	STD		0.160 — 0.312 mm	0.0063 — 0.0123 in.
		Limit		0.35 mm	0.0138 in.
	Connecting rod bearing center wall thickness	Mark 1		1.484 — 1.488 mm	0.0584 — 0.0586 in.
		Mark 2		1.488 — 1.492 mm	0.0586 — 0.0587 in.
		Mark 3		1.492 — 1.496 mm	0.0587 — 0.0589 in.
	Connecting rod oil clearance	STD	STD	0.024 — 0.055 mm	0.0009 — 0.0022 in.
			U/S 0.25	0.023 — 0.069 mm	0.0009 — 0.0027 in.
		Limit		0.08 mm	0.0031 in.
	Rod bending per 100 mm (3.94 in.)	Limit		0.05 mm	0.0020 in.
	Rod twist per 100 mm (3.94 in.)	Limit		0.15 mm	0.0059 in.
Crankshaft	Thrust clearance	STD		0.020 — 0.220 mm	0.0008 — 0.0087 in.
		Limit		0.30 mm	0.0118 in.
	Thrust washer thickness			2.440 — 2.490 mm	0.0961 — 0.0980 in.

SERVICE SPECIFICATIONS — Engine Mechanical (3S-FE)

Specifications (Cont'd)

Crankshaft (cont'd)	Main journal oil clearance					
	STD	No.3	STD	0.025 — 0.044 mm	0.0010 — 0.0017 in.	
			U/S 0.25	0.027 — 0.067 mm	0.0011 — 0.0026 in.	
		Others	STD	0.015 — 0.034 mm	0.0006 — 0.0013 in.	
			U/S 0.25	0.019 — 0.059 mm	0.0007 — 0.0023 in.	
	Limit			0.08 mm	0.0031 in.	
	Main journal diameter		STD	54.988 — 55.003 mm	2.1649 — 2.1655 in.	
			U/S 0.25	54.745 — 54.755 mm	2.1553 — 2.1557 in.	
	Main bearing center wall thickness					
		No.3	Mark 1	1.992 — 1.995 mm	0.0784 — 0.0785 in.	
			Mark 2	1.995 — 1.998 mm	0.0785 — 0.0787 in.	
			Mark 3	1.998 — 2.001 mm	0.0787 — 0.0788 in.	
			Mark 4	2.001 — 2.004 mm	0.0788 — 0.0789 in.	
			Mark 5	2.004 — 2.007 mm	0.0789 — 0.0790 in.	
		Others	Mark 1	1.997 — 2.000 mm	0.0786 — 0.0787 in.	
			Mark 2	2.000 — 2.003 mm	0.0787 — 0.0789 in.	
			Mark 3	2.003 — 2.006 mm	0.0789 — 0.0790 in.	
			Mark 4	2.006 — 2.009 mm	0.0790 — 0.0791 in.	
			Mark 5	2.009 — 2.012 mm	0.0791 — 0.0792 in.	
	Crank pin diameter		STD	47.985 — 48.000 mm	1.8892 — 1.8898 in.	
			U/S 0.25	47.745 — 47.755 mm	1.8797 — 1.8801 in.	
	Circle runout		Limit	0.06 mm	0.0024 in.	
	Main journal taper and out-of-round		Limit	0.02 mm	0.0008 in.	
	Crank pin journal taper and out-of-round		Limit	0.02 mm	0.0008 in.	

Torque Specifications

Part tightened	kg-cm	ft-lb	N-m
Oil pump pulley x Oil pump drive shaft	290	21	28
No. 1 idler pulley x Cylinder head	425	31	42
No. 2 idler pulley x Cylinder block	425	31	42
Camshaft timing pulley x Camshaft	550	40	54
Crankshaft pulley x Crankshaft	1,100	80	106
Cylinder head x Cylinder block	500	36	49
	1st		
	2nd		
Spark plug tube x Cylinder head	400	29	39
Camshaft bearing cap x Cylinder head	190	14	19
Cylinder head cover x Cylinder head	230	17	23
Intake manifold x Cylinder head	195	14	19
Intake manifold stay x Cylinder head	195	14	19
Intake manifold stay x Cylinder block	195	14	19
EGR valve x Intake manifold	425	31	42
EGR pipe x Cylinder head	130	9	13
Water outlet x Cylinder head	600	43	59
Exhaust manifold x Catalytic converter	150	11	15
Exhaust manifold x Cylinder head	300	21	29
Engine hanger x Cylinder head	500	36	49
Alternator bracket x Cylinder head	425	31	42
	425	31	42

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SERVICE SPECIFICATIONS - Engine Mechanical (3S-FE)

Torque Specifications (Cont'd)

Part tightened	kg-cm	ft-lb	N-m	
Main bearing cap X Cylinder block	600	43	59	
Connecting rod cap x Connecting rod	500	36	49	
Rear oil seal retainer x Cylinder block	95	82 in.-lb	9.3	
Rear end plate X Cylinder block	95	82 in.-lb	9.3	
Flywheel x Crankshaft (M/T)	900	65	88	
Drive plate x Crankshaft (A/T)	850	61	83	
Suspension lower crossmember x Body	2,125	154	208	
Suspension lower crossmember x Engine mounting center member	400	29	39	
Engine mounting center member x Body	400	29	39	
Engine mounting center member x Engine mounting insulator				
	Nuts	490	35	48
	Bolts	740	54	73
Engine RH mounting bracket x Cylinder block	530	38	52	
Engine RH mounting insulator x Engine mounting bracket	530	38	52	
Engine RH mounting insulator x Body (2WD)	Bolt	650	47	64
Engine RH mounting insulator x Body (4WD)	Nut	900	65	88
Engine RH mounting stay x Engine mounting insulator		890	64	87
Engine RH mounting stay x Alternator bracket		740	54	73
Engine LH mounting bracket x Transaxle		740	54	73
Engine LH mounting insulator x Engine mounting insulator		530	38	52
Engine LH mounting insulator x Body		530	38	52
Engine LH mounting stay x Engine mounting insulator (4/T)		890	64	87
Engine LH mounting stay x Transaxle (A/T)		210	15	21
Engine front mounting bracket x Transaxle		210	15	21
Engine front mounting insulator x Engine mounting bracket		790	57	77
Engine center mounting bracket x Cylinder block (2WD)		890	64	87
Engine rear mounting x Transaxle		490	35	48
Engine rear mounting insulator x Engine mounting bracket		790	57	77
Engine front pipe x Catalytic converter		890	64	87
Exhaust front pipe x Exhaust center pipe		630	46	62
		440	32	43

SERVICE SPECIFICATIONS — Engine Mechanical (2VZ-FE)

ENGINE MECHANICAL (2VZ-FE)

Specifications

Idle speed				700 ± 50 rpm	
Intake manifold vacuum		at idle speed		440 mmHg (17.32 in. Hg, 58.6 kPa) or more	
Compression pressure		at 250 rpm	STD Limit	12.5 kg/cm ² (178 psi, 1,226 kPa) or more 10.0 kg/cm ² 142 psi 981 kPa	
		Difference of pressure between each cylinder		1.0 kg/cm ² (14 psi, 98 kPa) or less	
Cylinder head	Cylinder block side warpage	Limit		0.10 mm	0.0039 in.
	Valve seat	Refacing angle		30°, 45°, 60°	
		Contacting angle		45°	
		Contacting width		1.0 — 1.4 mm	0.039 — 0.055 in.
Valve guide bushing	Inside diameter			6.010 — 6.030 mm	0.2366 — 0.2374 in.
	Outside diameter	STD O/S 0.05		11.048 — 11.059 mm	0.4350 — 0.4354 in.
				11.098 — 11.109 mm	0.4369 — 0.4374 in.
Valve	Valve overall length	STD	Intake Exhaust	96.1 mm 96.2 mm	3.783 in. 3.787 in.
		Limit	Intake Exhaust	95.6 mm 95.7 mm	3.764 in. 3.768 in.
	Valve face angle			44.5°	
	Stem diameter		Intake Exhaust	5.970 — 5.985 mm 5.965 — 5.980 mm	0.2350 — 0.2356 in. 0.2348 — 0.2354 in.
	Stem oil clearance	STD	Intake Exhaust	0.025 — 0.060 mm 0.030 — 0.065 mm	0.0010 — 0.0024 in. 0.0012 — 0.0026 in.
		Limit	Intake Exhaust	0.08 mm 0.10 mm	0.0031 in. 0.0039 in.
	Margin thickness	STD Limit		1.0 mm 0.5 mm	0.039 in. 0.020 in.
Valve spring	Free length			42.6 mm	1.677 in.
	Installed tension	at 33.8 mm (1.331 in.)		18.6 — 21.4 kg (41.0 — 47.2 lb, 182 — 210 N)	
	Squareness	Limit		2.0 mm	0.075 in.
Valve lifter	Lifter diameter			27.975 — 27.985 mm	1.1014 — 1.1018 in.
	Cylinder head lifter bore diameter			28.000 — 28.021 mm	1.1024 — 1.1032 in.
	Oil clearance	STD Limit		0.015 — 0.046 mm 0.07 mm	0.0006 — 0.0018 in. 0.0028 in.
Manifold	Warpage	Limit	Intake Exhaust	0.10 mm 1.00 mm	0.0039 in. 0.0394 in.
Air intake chamber	Warpage	Limit		0.10 mm	0.0039 in.
Camshaft	Thrust clearance	STD Limit		0.030 — 0.080 mm 0.12 mm	0.0012 — 0.0031 in. 0.0047 in.
	Journal oil clearance	STD Limit		0.035 — 0.072 mm 0.10 mm	0.0014 — 0.0028 in. 0.0039 in.
	Journal diameter			26.949 — 26.965 mm	1.0610 — 1.0616 in.
	Circle runout	Limit		0.06 mm	0.0024 in.

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SERVICE SPECIFICATIONS — Engine Mechanical (2VZ—FE)

Specifications (Cont'd)

Camshaft (cont'd)	Cam lobe height	STD	Intake	39.510 — 39.610 mm	1.5555 — 1.5594 in.
			Exhaust	38.960 — 35.060 mm	1.5339 — 1.5378 in.
		Limit	Intake	39.36 mm	1.5496 in.
			Exhaust	38.81 mm	1.5279 in.
	Camshaft gear backlash	STD		0.020 — 0.200 mm	0.0008 — 0.0079 in.
		Limit		0.30 mm	0.0188 in.
	Camshaft gear spring end free distance			18.2 — 18.8 mm	0.712 — 0.740 in.
Timing belt tensioner	Protrusion (from housing end)			10.5 — 11.5 mm	0.413 — 0.453 in.
Cylinder block	Cylinder head surface warpage		Limit	0.05 mm	0.0020 in.
	Cylinder bore diameter	STD	Mark 1	87.500 — 87.510 mm	3.4449 — 3.4453 in.
			Mark 2	87.510 — 87.520 mm	3.4453 — 3.4457 in.
			Mark 3	87.520 — 87.530 mm	3.4457 — 3.4461 in.
		Limit	STD	87.73 mm	2.4539 in.
			O/S 0.50	88.23 mm	3.4736 in.
Piston and piston ring	Piston diameter	STD	Mark 1	87.445 — 87.455 mm	3.4427 — 3.4431 in.
			Mark 2	87.455 — 87.465 mm	3.4431 — 3.4435 in.
			Mark 3	87.465 — 87.475 mm	3.4435 — 3.4439 in.
		O/S 0.50		87.945 — 87.975 mm	3.4624 — 3.4636 in.
	Piston oil clearance	STD		0.045 — 0.065 mm	0.0018 — 0.0026 in.
		Limit		0.085 mm	0.0033 in.
	Piston ring groove clearance		No.1	0.010 — 0.080 mm	0.0004 — 0.0031 in.
			No.2	0.030 — 0.070 mm	0.0012 — 0.0028 in.
	Piston ring end gap	STD	No.1	0.300 — 0.520 mm	0.0118 — 0.0205 in.
			No.2	0.350 — 0.600 mm	0.0138 — 0.0236 in.
			Oil	0.200 — 0.550 mm	0.0079 — 0.0217 in.
		Limit	No.1	1.12 mm	0.0441 in.
			No.2	1.20 mm	0.0472 in.
			Oil	1.15 mm	0.0453 in.
Connecting rod	Thrust clearance	STD		0.150 — 0.330 mm	0.0059 — 0.0130 in.
		Limit		0.38 mm	0.0150 in.
	Connecting rod oil clearance	STD	STD	0.028 — 0.065 mm	0.0011 — 0.0026 in.
			U/S 0.25	0.027 — 0.080 mm	0.0011 — 0.0031 in.
		Limit		0.08 mm	0.0031 in.
	Connecting rod bearing center wall thickness		Mark 1	1.484 — 1.488 mm	0.0584 — 0.0586 in.
			Mark 2	1.488 — 1.492 mm	0.0586 — 0.0587 in.
			Mark 3	1.492 — 1.496 mm	0.0587 — 0.0589 in.
	Rod bending per 100 mm (3.94 in.)	Limit		0.05 mm	0.0020 in.
	Rod twist per 100 mm (3.94 in.)	Limit		0.15 mm	0.0059 in.
	Connecting rod bolt outer diameter	STD		7.860 — 8.000 mm	0.3094 — 0.3150 in.
		Limit		7.60 mm	0.2992 in.
Crankshaft	Thrust clearance	STD		0.020 — 0.220 mm	0.0008 — 0.0087 in.
		Limit		0.30 mm	0.0118 in.
	Thrust washer thickness			2.440 — 2.490 mm	0.0961 — 0.0980 in.

SERVICE SPECIFICATIONS — Engine Mechanical (2VZ-FE)

Specifications (Cont'd)

Crankshaft (cont'd)	Main journal oil clearance	STD	STD	0.029 — 0.056 mm	0.0011 — 0.0022 in.
			U/S 0.25	0.028 — 0.080 mm	0.0011 — 0.0031 in.
		Limit		0.08 mm	0.0031 in.
	Main journal diameter	STD		63.985 — 64.000 mm	2.5191 — 2.5197 in.
		U/S 0.25		63.745 — 63.755 mm	2.5096 — 2.5100 in.
	Main bearing center wall thickness	Mark 1		1.989 — 1.992 mm	0.0783 — 0.0784 in.
		Mark 2		1.992 — 1.995 mm	0.0784 — 0.0785 in.
		Mark 3		1.995 — 1.998 mm	0.0785 — 0.0787 in.
		Mark 4		1.998 — 2.001 mm	0.0787 — 0.0788 in.
		Mark 5		2.001 — 2.004 mm	0.0788 — 0.0789 in.
	Crank pin diameter	STD		47.987 — 48.000 mm	1.8892 — 1.8898 in.
		U/S 0.25		47.745 — 47.755 mm	1.8797 — 1.8801 in.
	Circle runout	Limit		0.06 mm	0.0024 in.
	Main journal taper and out-of-round	Limit		0.02 mm	0.0008 in.
	Crank pin taper and out-of-round	Limit		0.02 mm	0.0008 in.

Torque Specifications

Part tightened	kg-cm	ft-lb	N-m
No. 1 idler pulley x Cylinder block	350	25	34
No. 2 idler pulley x No. 2 idler pulley bracket .	400	29	39
Camshaft timing pulley x Camshaft	1,100	80	108
Crankshaft pulley x Crankshaft	2,500	181	245
Timing belt tensioner x Oil pump	270	20	26
Engine RH mounting bracket x Cylinder block	410	30	39
Cylinder head x Cylinder block 12-sided bolt	350	25	34
1st			
2nd	90° turns		
3rd	90° turns		
Recessed head bolt	185	13	18
LH engine hanger x LH Cylinder head	380	27	37
Camshaft bearing cap x Cylinder head	160	12	16
Cylinder head cover x Cylinder head	60	52 in.-lb	5.9
No. 3 timing belt cover x Cylinder head	75	65 in.-lb	7.4
No. 3 timing belt cover x Cylinder block	75	65 in.-lb	7.4
Exhaust manifold x Cylinder head	400	29	39
Intake manifold x Cylinder head	180	13	18
No. 2 idler pulley bracket stay x Cylinder head	185	13	18
No. 2 idler pulley bracket stay x No. 2 idler pulley bracket	185	13	18
Water by-pass outlet x Cylinder head	185	13	18
Water outlet x Cylinder head	200	14	20
Air intake chamber x Intake manifold	85	73 in.-lb	8.3
Air intake chamber stay x Air intake chamber	440	32	43
Air intake chamber stay x Cylinder head	380	27	37
Crossover pipe x Exhaust manifold	380	27	37
Crossover pipe x Cylinder head	380	27	37
Crossover pipe x Cylinder block	400	29	39
EGR valve x Air intake chamber	350	25	34
	350	25	34
	185	13	18

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SERVICE SPECIFICATIONS - Engine Mechanical (2112-FE)

Torque Specifications (Cont'd)

Part tightened		kg-cm	ft-lb	N-m
EGR pipe x EGR valve		185	13	18
EGR pipe x RH exhaust manifold		800	58	78
Main bearing cap x Cylinder block				
	1st	625	45	61
	2nd	90° turns		
Connecting rod cap x Connecting rod	1st	250	18	25
Rear oil seal retainer x Cylinder block	2nd	90° turns		
No. 2 idler pulley bracket x Cylinder block		80	69 in.-lb	7.8
Water by-pass pipe x Cylinder block		380	27	37
Rear end plate x Cylinder block		85	74 in.-lb	8.3
Flywheel x Crankshaft		75	65 in.-lb	7.4
Drive plate x Crankshaft		850	61	83
Engine RH mounting insulator x Engine mounting bracket		850	61	83
Engine RH mounting insulator x Body Bolt		530	38	52
Nut		650	47	64
Engine LH mounting insulator x Engine mounting bracket		900	65	88
Engine LH mounting insulator x Body		530	38	52
No. 1 engine RH mounting stay x Air intake chamber		890	64	87
No. 1 engine RH mounting stay x Engine RH mounting insulator		530	38	52
No. 2 engine RH mounting stay x Alternator		530	38	52
No. 2 engine RH mounting stay x Engine RH mounting insulator		530	38	52
Engine LH mounting stay x Transaxle M/T		530	38	52
		670	48	66
	Bolt	195	14	19
	Nut	530	38	52
	A/T 12 mm nut	210	15	21
	14 mm nut	530	38	52
Engine LH mounting stay x Engine mounting insulator		530	38	52
Engine front mounting insulator x Cylinder block		530	38	52
Engine front mounting insulator x Transaxle		790	57	77
Engine front mounting insulator x Engine mounting bracket		890	64	87
Engine center mounting bracket x Cylinder block		530	38	52
Engine rear mounting insulator x Transaxle		790	57	77
Engine rear mounting insulator x Engine mounting bracket		890	64	87
Engine mounting center member x Body		400	29	39
Engine mounting center member x Engine front mounting insulator		740	54	73
Engine mounting center member x Engine rear mounting insulator		740	54	73
Exhaust front pipe x Exhaust manifold		740	54	73
Exhaust front pipe x Catalytic converter		740	54	73
Suspension lower crossmember x Body		630	46	62
Suspension lower crossmember x Engine mounting center member		440	32	43
		2,110	153	207
		400	29	39

SERVICE SPECIFICATIONS — EFI System (3S-FE)

EFI SYSTEM (3S-FE)

Specifications

Fuel pressure regulator	Fuel pressure at No vacuum	2.7 — 3.1 kg/cm ² (38 — 44 psi, 265 — 304 kPa)		
Cold start injector	Resistance Fuel leakage	2 — 4 Ω One drop or less per minute		
Injector	Resistance Injection volume Difference between each injector Fuel leakage	Approx. 13.8 Ω 45 — 55 cc (2.7 — 3.4 cu in.)/1.5 sec. 5 cc (0.31 cu in.) or less One drop or less per minute		
Throttle body	Throttle body fully closed angle	6°		
Throttle position sensor (w/o ECT)	Throttle opening angle (from Vertical)	Clearance between stop screw and lever	IDL — E1	PS1N — E1
	— — Throttle valve fully opened 71° 81° 7.5° or less	0.50 mm 0.020 in. 0.90 mm 0.035 in. — — —	Continuity No continuity No continuity No continuity No continuity Continuity	No continuity No continuity Continuity No continuity Continuity No continuity
Throttle position sensor (W/ECT)	Clearance between stop screw and lever		Between terminals	Resistance
	0 mm 0 in. 0.50 mm 0.020 in. 0.70 mm 0.028 in. Throttle valve fully opened position —		VTA — E2 IDL — E2 IDL — E2 VTA — E2 VC — E2	0.2 — 0.8 k Ω 2.3 k Ω or less Infinity 3.3 — 10 k Ω 3 — 7 k Ω
ISC valve	Resistance +B — ISC1 or ISC2	16.0 — 17.0 Ω		
Cold start injector time switch	Resistance STA — E1 below 30°C (86°F) above 40°C (104°F) STA — Ground	20 — 40 Ω 40 — 60 Ω 20 — 80 Ω		
Air flow meter	Resistance VS — E2 VC — E2 FC — E1 THA — E2 at -20° C (-4° F) at 0° C (32° F) at 20° C (68° F) at 40° C (104° F) at 60° C (140° F)	200 — 600 Ω (Measuring plate fully closed) 20 — 1,200 Ω (Measuring plate fully open) 3,000 — 7,000 Ω Infinity (Measuring plate fully closed) Zero (Others) 10 — 20 k Ω 4 — 7 k Ω 2 — 3 k Ω 0.9 — 1.3 k Ω 0.4 — 0.7 k Ω		
Water temp. sensor	Resistance at -20° C (-4° F) at 0° C (32° F) at 20° C (68° F) at 40° C (104° F) at 60° C (140° F) at 80° C (176° F)	10 — 20 k Ω 4 — 7 k Ω 2 — 3 k Ω 0.9 — 1.3 k Ω 0.4 — 0.7 k Ω 0.2 — 0.4 k Ω		

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SERVICE SPECIFICATIONS — EFI System (3S-FE)

Specifications (Cont'd)

EGR gas temp. sensor (CALIF.. only)

Resistance

at 50°C (122°F)

at 100°C (212°F)

at 150°C (302°F)

69.40 — 88.50 kΩ

11.89 — 14.37 kΩ

2.79 — 3.59 kΩ

ECU

HINT

Perform all voltage and resistance measurements with the ECU connected.

Verify that the battery voltage is 11 V or above with the ignition switch is ON.

Voltage

Terminals

Condition

STD voltage (V)

+B — E1

+B1 — E1

EG SW ON

10 — 14

BATT — E1

10 — 14

*1IDL — E1

Throttle valve open

8 — 14

*1PSW — E1

Throttle valve fully closed

4 — 6

*2IDL — E2

Throttle valve open

8 — 14

*2VTA — E2

Throttle valve fully closed

0.1 — 1.0

Throttle valve open

4 — 6

VC — E2

—

4 — 6

VS — E2

Measuring plate fully closed

4.0 — 5.5

Measuring plate fully open

0 — 1

Idling

2.0 — 4.0

3,000 rpm

1.0 — 2.0

No. 10 — E01

No. 20 — E02

IG SW ON

10 — 14

THA — E2

IG SW ON

Intake air temp. 20°C (68°F)

1 — 3

THW — E2

Coolant temp. 80°C (176°F)

0.1 — 1.0

STA — E1

Cranking

6 — 14

IGT — E1

Cranking or idling

0.7 — 1.0

ISC1 — E1

ISC2 — E1

IG SW ON

9 — 14

W — E1

No trouble ("CHECK" engine warning light off) and engine running

10 — 14

*3A/C — E1

Air conditioning ON

8 — 14

*3ACT — E1

Heater blower SW ON

4 — 6

T — E1

IG SW ON

Check connector TE 1 — E 1 not connected

10 — 14

Check connector TE1 — E1 connected

0.5 or less

NSW — E1

Shift position P or N range

0 — 2

Ex. shift position P or N range

6 — 14

STP — E1

Stop light SW ON (Brake pedal depressed) or defogger SW ON

10 — 14

*1 W/O ECT *2 W/ EGT *3
A/C

Specifications (Cont'd)

ECU (cont'd)	Resistance		
	Terminals	Condition	STD resistance (Ω)
*1IDL — E1		Throttle valve open	Infinity
		Throttle valve fully closed	0
*1PSW — E1		Throttle valve fully open	0
		Throttle valve fully closed	Infinity
*2IDL — E2		Throttle valve open	Infinity
		Throttle valve fully closed	2,300 or less
*2VTA — E2		Throttle valve fully open	3,300 — 10,000
		Throttle valve fully closed	200 — 800
VC — E2		—	3,000 — 7,000
VS — E2		Measuring plate fully closed	200 — 600
		Measuring plate fully open	20 — 1,200
THA — E2		Intake air temp. 20°C (68°F)	2,000 — 3,000
THW — E2		Coolant temp. 80°C (176°F)	200 — 400
G NE — G⊖		—	140 — 180
ISC1 +B ISC2 +B1			16.0 — 17.0

* 1 w/o ECT *2 w/ ECT

Torque Specifications

Part tightened		kg-cm	ft-lb	N-m
Fuel line	Union bolt type	300	22	29
	Flare nut type	310	22	30
Fuel sender gauge	2WD	20	17 in.-lb	2.0
Fuel pump X Fuel tank	4WD	15	13 in.-lb	1.5
	2WD	35	30 in.-lb	3.4
	4WD	30	26 in.-lb	2.9
Fuel evaporation vent tube x Fuel tank 4WD		15	13 in.-lb	1.5
Fuel inlet pipe x Fuel tank	2WD	20	17 in.-lb	2.0
	4WD	30	26 in.-lb	2.9
Fuel tank band x Body	2WD	400	29	39
Cold start injector x Air intake chamber	4WD	220	16	22
Cold start injector pipe x Cold start injector		95	82 in.-lb	9.3
Cold start injector pipe x Delivery pipe		180	13	18
Fuel pressure regulator X Delivery pipe		180	13	18
Fuel return pipe x Fuel pressure regulator		55	48 in.-lb	5.4
Delivery pipe x Cylinder head		180	13	18
Throttle body x Air intake chamber		130	9	13
		195	14	19

COOLING SYSTEM

Specifications

Engine coolant capacity			See page A-2
Radiator	Relief valve opening pressure	STD Limit	0.75 — 1.05 kg/cm ² (10.7 — 14.9 psi, 74 — 103 kPa) 0.6 kg/cm ² 8.5 psi 59 kPa
Thermostat	Valve opening temperature Valve lift at 95°C (203°F)	3S-FE 2VZ-FE	80 — 84°C 176 — 183°F 8 mm (0.31 in.) or more 8.5 mm (0.35 in.) or more

Torque Specifications (3S-FE)

Part tightened	kg-cm	ft-lb	N-m
Engine coolant x Drain plug	130	9	13
Water pump x Water pump cover	90	78 in.-lb	8.8
Water pump x Cylinder head	95	82 in.-lb	9.3
Water by-pass pipe X Water pump	95	82 in.-lb	9.3
Water inlet housing x Water pump	90	78 in.-lb	8.8
Oil cooler x Radiator tower tank	220	16	22

Torque Specifications (2VZ-FE)

Part tightened	kg-cm	ft-lb	N-m
Cylinder block x Drain plug	300	22	29
Water pump x Cylinder block	200	14	20
Water inlet x Water pump	200	14	20
Water inlet pipe x Alternator belt adjusting bar	200	14	20

LUBRICATION SYSTEM (3S-FE)

Specifications

Engine coolant capacity			See page A-20
Oil pressure	at Idling at 3,040 rpm		0.3 kg/cm ² (4.3 psi, 29 kPa) or more 2.5 — 5.0 kg/cm ² (36 — 71 psi, 245 — 490 kPa)
Oil pump	Body clearance .	STD Limit	0.10 — 0.16 mm 0.0039 — 0.0063 in.
			0.20 mm 0.0079 in.
	Tip clearance	STD Limit	0.04 — 0.16 mm 0.0016 — 0.0063 in.
			0.20 mm 0.0079 in.

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SERVICE SPECIFICATIONS - EFI System (2VZ-FE)

EFI SYSTEM (2VZ-FE)

Specifications

Fuel pressure regulator	Fuel pressure at No vacuum	2.7 – 3.1 kg/cm ² (38 – 44 psi, 265 – 304 kPa)		
Cold start injector	Resistance Fuel leakage	2 – 4 Ω One drop or less per minute		
Injector	Resistance Injection volume Difference volume between each injector Fuel leakage	Approx. 13.8 Ω 45 – 55 cc (2.7 – 3.4 cu in.)/15 sec 5 cc (0.31 cu in.) or less One drop or less per minute		
Air flow meter	Resistance VS — E2 VC — E2 FC — E1 THA — E2 at -20°C (-4°F) at 0°C (32°F) at 20°C (68°F) at 40°C (104°F) at 60°C (140°F)	200 – 600 Ω (Measuring plate fully closed) 20 – 1,200 Ω (Measuring plate fully open) 200 – 400 Ω Infinity (Measuring plate fully closed) Zero (Others) 10 – 20 kΩ 4 – 7 kΩ 2 – 3 kΩ 0.9 – 1.3 kΩ 0.4 – 0.7 kΩ		
Throttle position sensor	Clearance between stop screw and lever		Between terminals	Resistance
	0 mm	0 in.	VTA — E2	0.3 – 6.3 kΩ
	0.30 mm	0.0118 in.	IDL — E2	2.3 kΩ or less
	0.70 mm	0.0276 in.	IDL — E2	Infinity
	Throttle valve fully opened position		VTA — E2	3.5 – 10.3 kΩ
	—		VC — E2	4.25 – 8.25 kΩ
ISC valve	Resistance B1 — S1 or S3 B2 — S2 or S4	10 – 30 Ω 10 – 30 Ω		
Cold start injector time switch	Resistance STA — STJ below 15°C (59°F) above 30°C (86°F) STA — Ground	25 – 45 Ω 65 – 85 Ω 25 – 85 Ω		
Water temp. sensor	Resistance at -20°C (-4°F) at 0°C (32°F) at 20°C (68°F) at 40°C (104°F) at 60°C (140°F) at 80°C (176°F)	10 – 20 kΩ 4 – 7 kΩ 2 – 3 kΩ 0.9 – 1.3 kΩ 0.4 – 0.7 kΩ 0.2 – 0.4 kΩ		
EGR gas temp. sensor (CALIF. only)	Resistance at 50°C (122°F) at 100°C (212°F) at 150°C (302°F)	69.40 – 88.50 kΩ 11.89 – 14.37 kΩ 2.79 – 3.59 kΩ		
Fuel pressure VSV	Resistance	33 – 39 Ω		

SERVICE SPECIFICATIONS - EFI System (2VZ-FE)

Specifications (Cont'd)

Oxygen sensor	Heater resistance	5.1 - 6.3 Ω		
ECU	HINT: • Perform all voltage and resistance measurements with the ECU connected. • Verify that the battery voltage is 11 V or above with the ignition switch is ON.			
	Voltage			
	Terminals	Condition	STD voltage (V)	
	BATT — E1		10 — 14	
	IG SW — E1	IG SW ON		
	M-REL — E1			
	+B +B1 — E1			
	IDL — E2	IG SW ON	Throttle valve open	4 — 6
	VTA — E2		Throttle valve fully closed	0.1 — 1.0
			Throttle valve open	3.2 — 4.2
	VC — E2			4 — 6
	VS — E2		Measuring plate fully closed	3.7 — 4.3
			Measuring plate fully open	0.2 — 0.5
		Idling	1.6 — 4.1	
	3,000 rpm		1.0 — 2.0	
	No. 10 No. 20 — E01 No. 30 — E02	IG SW ON		10 — 14
	THA — E2	IG SW ON	Intake air temp. 20°C (68°F)	1 — 3
	THW — E2		Coolant temp. 60°C (176°F)	0.1 — 1.0
	STA — E1	Cranking		6 — 14
	IGT — E1	Cranking or idling		0.7 — 1.0
	ISC1 ISC2 — E1 ISC3 ISC4	IG SW ON		9 — 14
	W — E1	No trouble ("CHECK" engine warning light off) and engine running		10 — 14
	*1A/C — E1	IG SW ON	Air conditioning ON	10 — 14
	*1ACT — E1		Heater blower SW ON	4 — 6
	T — E1		Check connector TE1 — E1 not connected	4 — 6
			Check connector TE1 — Et connected	0.5 or less
	*2NSW — E1		Shift position P or N range	0 — 2
			Ex shift position P or N range	10 — 14
	*2BK — E1	Stop light SW ON (Brake pedal depressed)		10 — 14

*1 w/o ECT *2 w/ ECT

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SERVICE SPECIFICATIONS - EFI System (2VZ-FE)

Specifications (Cont'd)

ECU (cont'd)	Resistance		
	Terminals	Condition	STD resistance (fl)
IDL — E2		Throttle valve open	Infinity
		Throttle valve fully closed	2,300 or less
VTA — E2		Throttle valve fully open	3,500 — 10,300
		Throttle valve fully closed	300 — 6,300
VC — E2			200 — 400
VS — E2		Measuring plate fully closed	200 — 600
		Measuring plate fully open	20 — 1,200
THA — E2		Intake air temp. 20°C (68°F)	2,000 — 3,000
THW — E2		Coolant temp. 60°C (176°F)	200 — 400
G1 G2 — G⊖ NE		—	140 — 180
ISC1 ISC2 — +B ISC3 — +B1 ISC4		—	10 — 30

Torque Specifications

Part tightened		kg-cm	ft.-lb	N-m
Fuel line	Union bolt type	300	22	29
	Flare nut type	310	22	30
Fuel pump x Fuel tank		40	35 in.-lb	3.9
Fuel inlet pipe x Fuel tank		20	17 in.-lb	2.0
Fuel tank band x Body		400	29	39
Cold start injector x Air intake chamber		55	48 in.-lb	5.4
Cold start injector tube x Cold start injector		200	14	20
Cold start injector tube x Delivery pipe		200	14	20
Fuel pressure regulator x Delivery pipe		250	18	25
Delivery pipe x Intake manifold		130	9	13
No. 2 fuel pipe x Delivery pipe		300	21	29
Air intake chamber x Intake manifold		400	29	39
EGR pipe nut		800	58	78
No. 1 engine hanger		380	27	37
Air intake chamber stay		380	27	37
No. 1 RH engine mounting stay x Air intake chamber		530	38	52
No. 1 RH engine mounting stay x RH engine mounting insulator		530	38	52
Throttle body x Air intake chamber		130	9	13
ISC valve x Air intake chamber		130	9	13

COOLING SYSTEM

Specifications

Engine coolant capacity			See page A-2
Radiator	Relief valve opening pressure	STD Limit	0.75 — 1.05 kg/cm ² (10.7 — 14.9 psi, 74 — 103 kPa) 0.6 kg/cm ² 8.5 psi 59 kPa
Thermostat	Valve opening temperature Valve lift at 95°C (203°F)	3S-FE 2VZ-FE	80 — 84°C 176 — 183°F 8 mm (0.31 in.) or more 8.5 mm (0.35 in.) or more

Torque Specifications (3S-FE)

Part tightened	kg-cm	ft-lb	N-m
Engine coolant x Drain plug	130	9	13
Water pump x Water pump cover	90	78 in.-lb	8.8
Water pump x Cylinder head	95	82 in.-lb	9.3
Water by-pass pipe X Water pump	95	82 in.-lb	9.3
Water inlet housing x Water pump	90	78 in.-lb	8.8
Oil cooler x Radiator tower tank	220	16	22

Torque Specifications (2VZ-FE)

Part tightened	kg-cm	ft-lb	N-m
Cylinder block x Drain plug	300	22	29
Water pump x Cylinder block	200	14	20
Water inlet x Water pump	200	14	20
Water inlet pipe x Alternator belt adjusting bar	200	14	20

LUBRICATION SYSTEM (3S-FE)

Specifications

Engine coolant capacity			See page A-20
Oil pressure	at Idling at 3,040 rpm		0.3 kg/cm ² (4.3 psi, 29 kPa) or more 2.5 — 5.0 kg/cm ² (36 — 71 psi, 245 — 490 kPa)
Oil pump	Body clearance .	STD Limit	0.10 — 0.16 mm 0.0039 — 0.0063 in.
			0.20 mm 0.0079 in.
	Tip clearance	STD Limit	0.04 — 0.16 mm 0.0016 — 0.0063 in.
			0.20 mm 0.0079 in.

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SERVICE SPECIFICATIONS – Lubrication System (3S-FE)

Torque Specifications

Part tightened	kg-cm	ft.-lb	N-m
Engine oil drain plug	400	29	39
Oil pump body cover x Oil pump body	95	82 in.-lb	9.3
Oil pump x Cylinder block	95	82 in.-lb	9.3
Oil strainer x Cylinder block	55	48 in.-lb	5.4
Oil strainer x Oil pump	55	48 in.-lb	5.4
Oil pan x Cylinder block	55	48 in.-lb	5.4
Oil pan x Oil pump	55	48 in.-lb	5.4
Stiffener plate x Cylinder block	55	48 in.-lb	5.4
Stiffener plate x Transaxle case	380	27	37
	380	27	37

LUBRICATION SYSTEM (2VZ-FE)

Specifications

Engine coolant capacity			See page A-20	
Oil pressure	at idling		0.3 kg/cm ² (4.3 psi, 29 kPa) or more	
	at 3,000 rpm		3.0 — 5.5 kg/cm ² (43 — 78 psi, 294 — 539 kPa)	
Oil pump	Body clearance	STD	0.100 — 0.175 mm	0.0039 — 0.0069 in.
		Limit	0.30 mm	0.0118 in.
	Side clearance	STD	0.030 — 0.090 mm	0.0012 — 0.0035 in.
		Limit	0.15 mm	0.0059 in.
	Tip clearance	STD	0.110 — 0.240 mm	0.0043 — 0.0094 in.
		Limit	0.35 mm	0.0138 in.

Torque Specifications

Part tightened	kg-cm	ft.-lb	N-m
Oil pan x Drain plug	250	18	25
Oil pump. x Cylinder block	12 mm bolt head	14	20
Oil strainer x Main bearing cap	14 mm bolt head	30	41
Oil strainer x Oil pump	70	61 in.-lb	6.9
Oil pan x Cylinder block	70	61 in.-lb	6.9
Oil pan x Oil pump	60	52 in.-lb	5.9
Oil pan X Rear oil seal retainer	60	52 in.-lb	5.9
Stiffener plate x Cylinder block	60	52 in.-lb	5.9
Stiffener plate x Transaxle case	60	52 in.-lb	5.9
	530	38	52
	380	27	37

A-18

SERVICE SPECIFICATIONS – Lubrication System (2VZ-FE)

Torque Specifications

Part tightened	kg-cm	ft.-lb	N-m
Engine oil drain plug	400	29	39
Oil pump body cover x Oil pump body	95	82 in.-lb	9.3
Oil pump x Cylinder block	95	82 in.-lb	9.3
Oil strainer x Cylinder block	55	48 in.-lb	5.4
Oil strainer x Oil pump	55	48 in.-lb	5.4
Oil pan x Cylinder block	55	48 in.-lb	5.4
Oil pan x Oil pump	55	48 in.-lb	5.4
Stiffener plate x Cylinder block	55	48 in.-lb	5.4
Stiffener plate x Transaxle case	380	27	37
	380	27	37

LUBRICATION SYSTEM (2VZ-FE)

Specifications

Engine coolant capacity			See page A-20	
Oil pressure	at idling		0.3 kg/cm ² (4.3 psi, 29 kPa) or more	
	at 3,000 rpm		3.0 — 5.5 kg/cm ² (43 — 78 psi, 294 — 539 kPa)	
Oil pump	Body clearance	STD	0.100 — 0.175 mm	0.0039 — 0.0069 in.
		Limit	0.30 mm	0.0118 in.
	Side clearance	STD	0.030 — 0.090 mm	0.0012 — 0.0035 in.
		Limit	0.15 mm	0.0059 in.
	Tip clearance	STD	0.110 — 0.240 mm	0.0043 — 0.0094 in.
		Limit	0.35 mm	0.0138 in.

Torque Specifications

Part tightened	kg-cm	ft.-lb	N-m
Oil pan x Drain plug	250	18	25
Oil pump. x Cylinder block	12 mm bolt head	14	20
Oil strainer x Main bearing cap	14 mm bolt head	30	41
Oil strainer x Oil pump	70	61 in.-lb	6.9
Oil pan x Cylinder block	70	61 in.-lb	6.9
Oil pan x Oil pump	60	52 in.-lb	5.9
Oil pan X Rear oil seal retainer	60	52 in.-lb	5.9
Stiffener plate x Cylinder block	60	52 in.-lb	5.9
Stiffener plate x Transaxle case	60	52 in.-lb	5.9
	530	38	52
	380	27	37

IGNITION SYSTEM

Ignition timing		10° BTDC @ Idle (w/ Terminals TE1 and E1 connected)
Firing order	3S-FE	1 — 3 — 4 — 2
	2VZ-FE	1 — 2 — 3 — 4 — 5 — 6
Spark plug		See page A-2
High-tension cord	Resistance	25 k Ω per cord
Ignition coil	Primary coil resistance	3S-FE 0.38 — 0.46 Ω
		2VZ-FE 0.41 — 0.50 Ω
	Secondary coil resistance	3S-FE 7.7 — 10.4 k Ω
		2VZ-FE 10.2 — 13.8 k Ω
Distributor	Air gap	0.2 mm (0.008 in.) or more
	Signal generator (pickup coil) resistance	140 — 180 Ω

STARTING SYSTEM

Starter	Rated voltage and output power		12 V 1.0 kW		12 V 1.4 kW	
	No-load characteristic	Current	90 A or less at 11.5 V		—	
		rpm	3,000 rpm or more		3,500 rpm or more	
Brush length	STD		13.5 mm	0.531 in.	15.5 mm	0.610 in.
	Limit		8.5 mm	0.335 in.	10.0 mm	0.394 in.
Commutator						
Outer diameter	STD		30 mm	1.18 in.	—	
	Limit		29 mm	1.14 in.	—	
Undercut depth	STD		0.6 mm	0.024 in.	—	
	Limit		0.2 mm	0.008 in.	—	
Circle runout	Limit		0.05 mm	0.0020 in.	—	
Spring installed load	STD		1.79 — 2.41 kg (3.9 — 5.3 lb, 17 — 24 N)		—	

CHARGING SYSTEM

Drive belt tension		See page A-2
Battery specific gravity When fully charged at 20°C (68°F)		1.25 — 1.27
Alternator	Rated output	12 V — 70 A
	Rotor coil resistance	2.8 — 3.0 Ω
	Slip ring diameter	STD 14.2 — 14.4 mm 0.559 — 0.567 in.
		Limit 12.8 mm 0.504 in.
	Brush exposed length	STD 10.5 mm 0.413 in.
		Limit 1.5 mm 0.059 in.
Alternator regulator (ICS)	Regulating voltage	at 25°C (77°F) 13.9 — 15.1 V
		at 115°C (239°F) 13.5 — 14.3 V

IGNITION SYSTEM

Ignition timing		10° BTDC @ Idle (w/ Terminals TE1 and E1 connected)
Firing order	3S-FE	1 — 3 — 4 — 2
	2VZ-FE	1 — 2 — 3 — 4 — 5 — 6
Spark plug		See page A-2
High-tension cord	Resistance	25 k Ω per cord
Ignition coil	Primary coil resistance	3S-FE 0.38 — 0.46 Ω
		2VZ-FE 0.41 — 0.50 Ω
	Secondary coil resistance	3S-FE 7.7 — 10.4 k Ω
		2VZ-FE 10.2 — 13.8 k Ω
Distributor	Air gap	0.2 mm (0.008 in.) or more
	Signal generator (pickup coil) resistance	140 — 180 Ω

STARTING SYSTEM

Starter	Rated voltage and output power		12 V 1.0 kW		12 V 1.4 kW	
	No-load characteristic	Current rpm	90 A or less at 11.5 V 3,000 rpm or more		— 3,500 rpm or more	
Brush length	STD	Limit	13.5 mm	0.531 in.	15.5 mm	0.610 in.
		Limit	8.5 mm	0.335 in.	10.0 mm	0.394 in.
Commutator Outer diameter	STD	Limit	30 mm	1.18 in.	—	—
		Limit	29 mm	1.14 in.	—	—
Undercut depth	STD	Limit	0.6 mm	0.024 in.	—	—
		Limit	0.2 mm	0.008 in.	—	—
Circle runout	Limit		0.05 mm	0.0020 in.	—	—
Spring installed load	STD		1.79 — 2.41 kg (3.9 — 5.3 lb, 17 — 24 N)		—	—

CHARGING SYSTEM

Drive belt tension		See page A-2
Battery specific gravity When fully charged at 20°C (68°F)		1.25 — 1.27
Alternator	Rated output	12 V — 70 A
	Rotor coil resistance	2.8 — 3.0 Ω
	Slip ring diameter	STD 14.2 — 14.4 mm
		Limit 12.8 mm
	Brush exposed length	STD 10.5 mm
		Limit 1.5 mm
Alternator regulator (ICS)	Regulating voltage	at 25°C (77°F) 13.9 — 15.1 V
		at 115°C (239°F) 13.5 — 14.3 V

IGNITION SYSTEM

Ignition timing		10° BTDC @ Idle (w/ Terminals TE1 and E1 connected)
Firing order	3S-FE	1 — 3 — 4 — 2
	2VZ-FE	1 — 2 — 3 — 4 — 5 — 6
Spark plug		See page A-2
High-tension cord	Resistance	25 k Ω per cord
Ignition coil	Primary coil resistance	3S-FE 0.38 — 0.46 Ω
		2VZ-FE 0.41 — 0.50 Ω
	Secondary coil resistance	3S-FE 7.7 — 10.4 k Ω
		2VZ-FE 10.2 — 13.8 k Ω
Distributor	Air gap	0.2 mm (0.008 in.) or more
	Signal generator (pickup coil) resistance	140 — 180 Ω

STARTING SYSTEM

Starter	Rated voltage and output power		12 V 1.0 kW		12 V 1.4 kW	
	No-load characteristic	Current rpm	90 A or less at 11.5 V 3,000 rpm or more		— 3,500 rpm or more	
Brush length	STD	Limit	13.5 mm	0.531 in.	15.5 mm	0.610 in.
		Limit	8.5 mm	0.335 in.	10.0 mm	0.394 in.
Commutator Outer diameter	STD	Limit	30 mm	1.18 in.	—	
		Limit	29 mm	1.14 in.	—	
Undercut depth	STD	Limit	0.6 mm	0.024 in.	—	
		Limit	0.2 mm	0.008 in.	—	
Circle runout	Limit		0.05 mm	0.0020 in.	—	
Spring installed load	STD		1.79 — 2.41 kg (3.9 — 5.3 lb, 17 — 24 N)		—	

CHARGING SYSTEM

Drive belt tension		See page A-2
Battery specific gravity When fully charged at 20°C (68°F)		1.25 — 1.27
Alternator	Rated output	12 V — 70 A
	Rotor coil resistance	2.8 — 3.0 Ω
	Slip ring diameter	STD 14.2 — 14.4 mm
		Limit 12.8 mm
	Brush exposed length	STD 10.5 mm
		Limit 1.5 mm
Alternator regulator (ICS)	Regulating voltage	at 25°C (77°F) 13.9 — 15.1 V
		at 115°C (239°F) 13.5 — 14.3 V

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SERVICE SPECIFICATIONS – Lubricant

LUBRICANT

Item	Ca pa city			Classification
	Liters	US qts	Imp. qts	
Engine oil				API grade SG, multigrade, recommended viscosity and fuel-efficient oil
Dry fill				
3S-FE	4.5	4.8	4.0	
2VZ-FE	4.6	4.8	4.0	
Drain and refill				
w/ Oil filter change				
3S-FE	4.1	4.3	3.6	
2VZ-FE	3.9	4.1	3.4	
w/o Oil filter change	3.7	3.9	3.3	

SERVICE SPECIFICATIONS

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SERVICE SPECIFICATIONS — Clutch

CLUTCH**Specifications**

Pedal height (from asphalt sheet)		181 — 191 mm	7.13 — 7.52 in.
Push rod play at pedal top		1.0 — 5.0 mm	0.039 — 0.197 in.
Pedal freeplay		5 — 15 mm	0.20 — 0.59 in.
Clutch release point (from pedal stroke end)		25 mm (0.98 in.) or more	
Disc rivet head depth	Limit	0.3 mm	0.012 in.
Disc runout	Limit	0.8 mm	0.031 in.
Diaphragm spring out of alignment	Limit	0.5 mm	0.020 in.
Diaphragm spring finger wear Depth Width	Limit	0.6 mm	0.024 in.
Flywheel runout	Limit	5.0 mm	0.197 in.
	Limit	0.1 mm	0.004 in.

Torque Specifications

Part tightened	kg-cm	ft-lb	N-m
Clutch cover x Flywheel	195	14	19
Master cylinder set nut	130	9	13
Release cylinder set bolt	120	8	12
Reservoir tank x Master cylinder	250	18	25
Clutch line union	155	11	15
Bleeder plug	110	8	11
Release fork support	480	35	47

MANUAL TRANSAXLE (S51)**Specifications**

Input shaft			
Roller bearing journal diameter	Limit	29.970 mm	1.1799 in.
3rd gear journal diameter	Limit	33.090 mm	1.3028 in.
4th gear journal diameter	Limit	32.470 mm	1.2783 in.
5th gear journal diameter	Limit	26.970 mm	1.0618 in.
Runout	Limit	0.05 mm	0.0020 in.
Output shaft			
Roller bearing journal diameter			
1 st gear journal diameter	Limit	31.970 mm	1.2587 in.
2nd gear journal diameter	Limit	37.970 mm	1.4949 in.
Runout	Limit	31.970 mm	1.2587 in.
Gear thrust clearance	Limit	0.05 mm	0.0020 in.
1st	STD	0.10 — 0.29 mm	0.0039 — 0.0114 in.
	Limit	0.35 mm	0.0138 in.
2nd	STD	0.20 — 0.44 mm	0.0079 — 0.0173 in.
	Limit	0.50 mm	0.0197 in.
3rd	STD	0.10 — 0.25 mm	0.0039 — 0.0098 in.
	Limit	0.30 mm	0.0118 in.
4th	STD	0.20 — 0.45 mm	0.0079 — 0.0177 in.
	Limit	0.50 mm	0.0197 in.
5th	STD	0.20 — 0.40 mm	0.0079 — 0.0157 in.
	Limit	0.45 mm	0.0177 in.

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SERVICE SPECIFICATIONS — Manual Transaxle (S51)

CLUTCH

Specifications

Pedal height (from asphalt sheet)		181 — 191 mm	7.13 — 7.52 in.
Push rod play at pedal top		1.0 — 5.0 mm	0.039 — 0.197 in.
Pedal freeplay		5 — 15 mm	0.20 — 0.59 in.
Clutch release point (from pedal stroke end)		25 mm (0.98 in.) or more	
Disc rivet head depth	Limit	0.3 mm	0.012 in.
Disc runout	Limit	0.8 mm	0.031 in.
Diaphragm spring out of alignment	Limit	0.5 mm	0.020 in.
Diaphragm spring finger wear Depth Width	Limit	0.6 mm	0.024 in.
Flywheel runout	Limit	5.0 mm	0.197 in.
	Limit	0.1 mm	0.004 in.

Torque Specifications

Part tightened	kg-cm	ft-lb	N-m
Clutch cover x Flywheel	195	14	19
Master cylinder set nut	130	9	13
Release cylinder set bolt	120	8	12
Reservoir tank x Master cylinder	250	18	25
Clutch line union	155	11	15
Bleeder plug	110	8	11
Release fork support	480	35	47

MANUAL TRANSAXLE (S51)

Specifications

Input shaft			
Roller bearing journal diameter	Limit	29.970 mm	1.1799 in.
3rd gear journal diameter	Limit	33.090 mm	1.3028 in.
4th gear journal diameter	Limit	32.470 mm	1.2783 in.
5th gear journal diameter	Limit	26.970 mm	1.0618 in.
Runout	Limit	0.05 mm	0.0020 in.
Output shaft			
Roller bearing journal diameter			
1 st gear journal diameter	Limit	31.970 mm	1.2587 in.
2nd gear journal diameter	Limit	37.970 mm	1.4949 in.
Runout	Limit	31.970 mm	1.2587 in.
Gear thrust clearance	Limit	0.05 mm	0.0020 in.
1st	STD	0.10 — 0.29 mm	0.0039 — 0.0114 in.
	Limit	0.35 mm	0.0138 in.
2nd	STD	0.20 — 0.44 mm	0.0079 — 0.0173 in.
	Limit	0.50 mm	0.0197 in.
3rd	STD	0.10 — 0.25 mm	0.0039 — 0.0098 in.
	Limit	0.30 mm	0.0118 in.
4th	STD	0.20 — 0.45 mm	0.0079 — 0.0177 in.
	Limit	0.50 mm	0.0197 in.
5th	STD	0.20 — 0.40 mm	0.0079 — 0.0157 in.
	Limit	0.45 mm	0.0177 in.

SERVICE SPECIFICATIONS — Manual Transaxle (S51)

Specifications (Cont'd)

Gear oil clearance 1 st, 2nd, 3rd & 4th	STD	0.009 — 0.053 mm	0.0004 — 0.0021 in.
	Limit	0.070 mm	0.0028 in.
5th	STD	0.009 — 0.050 mm	0.0004 — 0.0020 in.
	Limit	0.070 mm	0.0028 in.
Shift fork to hub sleeve clearance	Limit	1.0 mm	0.039 in.
Synchronizer ring to gear clearance	Limit	0.6 mm	0.024 in.
Input shaft snap ring thickness			
No.2 clutch hub	Mark		
	1	1.95 — 2.00 mm	0.0768 — 0.0787 in.
	2	2.00 — 2.05 mm	0.0787 — 0.0807 in.
	3	2.05 — 2.10 mm	0.0807 — 0.0827 in.
	4	2.10 — 2.15 mm	0.0827 — 0.0846 in.
	5	2.15 — 2.20 mm	0.0846 — 0.0866 in.
	6	2.20 — 2.25 mm	0.0866 — 0.0886 in.
No.3 clutch hub	Mark		
	1	1.60 — 1.65 mm	0.0630 — 0.0650 in.
	2	1.65 — 1.70 mm	0.0650 — 0.0699 in.
	3	1.70 — 1.75 mm	0.0669 — 0.0689 in.
	4	1.75 — 1.80 mm	0.0689 — 0.0709 in.
	5	1.80 — 1.85 mm	0.0709 — 0.0728 in.
	6	1.85 — 1.90 mm	0.0728 — 0.0748 in.
	7	1.90 — 1.95 mm	0.0748 — 0.0768 in.
	8	1.95 — 2.00 mm	0.0768 — 0.0787 in.
	9	2.00 — 2.05 mm	0.0787 — 0.0807 in.
	10	2.05 — 2.10 mm	0.0807 — 0.0827 in.
	11	2.10 — 2.15 mm	0.0827 — 0.0846 in.
	12	2.15 — 2.20 mm	0.0846 — 0.0866 in.
	13	2.20 — 2.25 mm	0.0866 — 0.0886 in.
	14	2.25 — 2.30 mm	0.0886 — 0.0906 in.
	15	2.30 — 2.35 mm	0.0906 — 0.0925 in.
Rear bearing	Mark		
	A	2.15 — 2.20 mm	0.0846 — 0.0866 in.
	B	2.20 — 2.25 mm	0.0866 — 0.0886 in.
	C	2.25 — 2.30 mm	0.0886 — 0.0906 in.
	D	2.30 — 2.35 mm	0.0906 — 0.0925 in.
	E	2.35 — 2.40 mm	0.0925 — 0.0945 in.
Output shaft snap ring thickness			
No.1 clutch hub	Mark		
	1	2.50 — 2.55 mm	0.0984 — 0.1004 in.
	2	2.55 — 2.60 mm	0.1004 — 0.1024 in.
	3	2.60 — 2.65 mm	0.1024 — 0.1043 in.
	4	2.65 — 2.70 mm	0.1043 — 0.1063 in.
	5	2.70 — 2.75 mm	0.1063 — 0.1083 in.
	6	2.75 — 2.80 mm	0.1083 — 0.1102 in.

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SERVICE SPECIFICATIONS — Manual Transaxle (S51)

Specifications (Cont'd)

Side bearing preload (at starting)		10 — 16 kg-cm	8.7 — 13.9 in.-lb	1.0 — 1.6 N-m
Side bearing adjusting shim thickness	Mark			
	1	1.90 mm	0.0748 in.	
	2	1.95 mm	0.0768 in.	
	3	2.00 mm	0.0787 in.	
	4	2.05 mm	0.0807 in.	
	5	2.10 mm	0.0827 in.	
	6	2.15 mm	0.0846 in.	
	7	2.20 mm	0.0866 in.	
	8	2.25 mm	0.0886 in.	
	9	2.30 mm	0.0906 in.	
	10	2.35 mm	0.0925 in.	
	11	2.40 mm	0.0945 in.	
	12	2.45 mm	0.0965 in.	
	13	2.50 mm	0.0984 in.	
	14	2.55 mm	0.1004 in.	
	15	2.60 mm	0.1024 in.	
	16	2.65 mm	0.1043 in.	
	17	2.70 mm	0.1063 in.	
	18	2.75 mm	0.1083 in.	
	19	2.80 mm	0.1102 in.	
Shift lever preload		50 — 100 g	0.1 — 0.2 lb	0.5 — 1.0 N
Shift lever seat shim thickness	Mark			
	A or 3	0.3 mm	0.012 in.	
	B or 4	0.4 mm	0.016 in.	
	C or 5	0.5 mm	0.020 in.	
	D or 6	0.6 mm	0.024 in.	
	E or 7	0.7 mm	0.028 in.	
	F or 8	0.8 mm	0.031 in.	
	G or 9	0.9 mm	0.035 in.	
	H or 10	1.0 mm	0.039 in.	
	K or 11	1.1 mm	0.043 in.	
	L or 12	1.2 mm	0.047 in.	

Torque Specifications

Part tightened	kg-cm	ft-lb	N-m
Transmission case x Transaxle case	300	22	29
Transmission case x Case cover	300	22	29
Transmission case protector	185	13	18
Rear bearing retainer	210	15	21
Output shaft front bearing lock plate	185	13	18
Input shaft oil receiver	75	65 in.-lb	7.4
5th driven gear lock nut	1,250	90	123
Reverse idler shaft lock bolt	300	22	29
Control shaft cover	375	27	37
Reverse shift arm bracket	185	13	18
No.3 shift fork x Shift fork shaft	185	13	18

SERVICE SPECIFICATIONS — Manual Transaxle (S51)

Torque Specifications (Cont'd)

Part tightened	kg-cm	ft-lb	N·m
No. 1 lock ball assembly lock nut	375	27	37
No. 2 lock ball assembly	230	17	23
Filler plug	500	36	49
Drain plug	500	36	49
Back-up light switch	450	33	44
Side bearing retainer	185	13	18
Clutch release bearing retainer	75	65 in.-lb	7.4
Straight screw plug (Shit fork shaft)	130	9	13
(Reverse restrict piny	130	9	13
Transaxle x Engine (10 mm bolt)	650	47	64
(12 mm bolt)	470	34	46
Left engine mounting	530	38	52
Drive shaft center bearing bracket	330	24	32
Drive shaft X Side gear shaft	370	27	36
Steering knuckle x Lower arm	1,150	83	113
Engine mounting center member x Body	400	23	39
Engine mounting center member x Engine Mounting	440	32	43
Engine mounting center member x Lower crossmember	400	29	39
Lower cross member x Body	2,110	153	207

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SERVICE SPECIFICATIONS – Manual Transaxle (E56F5)

MANUAL TRANSAXLE (E56F5)**Specifications**

TRANSMISSION ASSEMBLY			
Input shaft			
Roller bearing journal diameter	Limit	32.930 mm	1.2964 in.
3rd gear journal diameter	Limit	35.950 mm	1.4154 in.
4th gear journal diameter	Limit	35.950 mm	1.4154 in.
Runout	Limit	0.060 mm	0.0024 in.
Output shaft			
1 st gear journal diameter	Limit	44.950 mm	1.7697 in.
2nd gear bushing diameter	Limit	43.950 mm	1.7303 in.
Runout	Limit	0.060 mm	0.0024 in.
Gear thrust clearance			
1st	STD	0.10 – 0.35 mm	0.0039 – 0.0138 in.
	Limit	0.40 mm	0.0157 in.
2nd	STD	0.10 – 0.45 mm	0.0039 – 0.0177 in.
	Limit	0.50 mm	0.0197 in.
3rd	STD	0.10 – 0.35 mm	0.0039 – 0.0138 in.
	Limit	0.40 mm	0.0157 in.
4th	STD	0.10 – 0.55 mm	0.0039 – 0.0217 in.
	Limit	0.60 mm	0.0236 in.
5th	STD	0.10 – 0.57 mm	0.0039 – 0.0224 in.
	Limit	0.65 mm	0.0256 in.
Gear oil clearance			
1 st and 4th gear	STD	0.009 – 0.051 mm	0.0004 – 0.0020 in.
	Limit	0.080 mm	0.0031 in.
2nd and 3rd gear	STD	0.009 – 0.053 mm	0.0004 – 0.0021 in.
	Limit	0.080 mm	0.0031 in.
5th gear	STD	0.009 – 0.050 mm	0.0004 – 0.0020 in.
	Limit	0.070 mm	0.0028 in.
Shift fork to hub sleeve clearance	Limit	1.0 mm	0.039 in.
Synchronizer ring to gear clearance	Limit	0.6 mm	0.024 in.
Oil pump assembly			
Rotor body clearance			
	STD	0.10 – 0.16 mm	0.0039 – 0.0063 in.
	Limit	0.30 mm	0.0118 in.
Rotor tip clearance			
	STD	0.08 – 0.15 mm	0.0031 – 0.0059 in.
	Limit	0.30 mm	0.0118 in.
Side clearance			
	STD	0.03 – 0.08 mm	0.0012 – 0.0031 in.
	Limit	0.15 mm	0.0059 in.
Input shaft snap ring thickness			
No.2 clutch hub			
	Mark		
	H	2.30 – 2.35 mm	0.0906 – 0.0925 in.
	J	2.35 – 2.40 mm	0.0925 – 0.0945 in.
	K	2.40 – 2.45 mm	0.0945 – 0.0965 in.
	L	2.45 – 2.50 mm	0.0965 – 0.0984 in.
	M	2.50 – 2.55 mm	0.0984 – 0.1004 in.
	N	2.55 – 2.60 mm	0.1004 – 0.1024 in.
	P	2.60 – 2.65 mm	0.1024 – 0.1043 in.

Specifications (Cont'd)

Input shaft snap ring thickness (cont'd)			
4th gear and rear bearing	Mark		
	1	2.35 – 2.40 mm	0.0925 – 0.0945 in.
	2	2.40 – 2.45 mm	0.0945 – 0.0965 in.
	3	2.45 – 2.50 mm	0.0965 – 0.0984 in.
	4	2.50 – 2.55 mm	0.0984 – 0.1004 in.
	5	2.55 – 2.60 mm	0.1004 – 0.1024 in.
	6	2.60 – 2.65 mm	0.1024 – 0.1043 in.
	7	2.65 – 2.70 mm	0.1043 – 0.1063 in.
	8	2.70 – 2.75 mm	0.1063 – 0.1083 in.
DIFFERENTIAL ASSEMBLY			
Differential side bearing preload (at starting)			
	New bearing	3.2 – 6.3 kg	7.1 – 13.9 lb 31.4 – 61.8 N
	Reused bearing	2.0 – 4.0 kg	4.4 – 8.8 lb 19.6 – 39.2 N
No. 1 case bushing inner diameter	STD	104.000 – 104.035 mm	4.0945 – 4.0959 in.
	Limit	104.060 mm	4.0968 in.
No.2 case bushing inner diameter	STD	97.000 – 97.035 mm	3.8189 – 3.8203 in.
	Limit	97.060 mm	3.8213 in.
Front case outer diameter			
No. 1 case side	STD	103.929 – 103.964 mm	4.0917 – 4.0931 in.
	Limit	103.850 mm	4.0886 in.
No.2 case side	STD	96.929 – 96.964 mm	3.8161 – 3.8175 in.
	Limit	96.850 mm	3.8130 in.
Conical spring washer height			
For No. 1 case	STD	1.85 – 2.05 mm	0.073 – 0.081 in.
	Limit	1.75 mm	0.069 in.
For No.2 case	STD	2.60 – 2.80 mm	0.102 – 0.110 in.
	Limit	2.50 mm	0.098 in.
Differential No. 1 case backlash		0.05 – 0.20 mm	0.0020 – 0.0079 in.
Front differential case backlash		0.05 – 0.20 mm	0.0020 – 0.0079 in.
Differential No.2 case thrust clearance		0.14 – 0.21 mm	0.006 – 0.008 in.
Front differential case thrust clearance		0.155 – 0.250 mm	0.0061 – 0.0098 in.
Thrust washer thickness			
For No. 1 case side gear		0.80 mm	0.0315 in.
		0.85 mm	0.0335 in.
		0.90 mm	0.0354 in.
		0.95 mm	0.0374 in.
		1.00 mm	0.0394 in.
		1.05 mm	0.0413 in.
		1.10 mm	0.0433 in.
		1.15 mm	0.0453 in.
		1.20 mm	0.0472 in.
		1.25 mm	0.0492 in.
		1.30 mm	0.0512 in.
		1.35 mm	0.0531 in.
		1.40 mm	0.0551 in.

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SERVICE SPECIFICATIONS — Manual Transaxle (E56F5)

Specifications (Cont'd)

Thrust washer thickness (cont'd)			
For front case side gear	Mark		
	B	1.00 mm	0.0394 in.
	C	1.05 mm	0.0413 in.
	D	1.10 mm	0.0433 in.
	E	1.15 mm	0.0453 in.
	F	1.20 mm	0.0472 in.
	G	1.25 mm	0.0492 in.
For No-2 case side gear	Mark		
	A	0.95 mm	0.0374 in.
	B	1.00 mm	0.0394 in.
	C	1.05 mm	0.0413 in.
	D	1.10 mm	0.0433 in.
	E	1.15 mm	0.0453 in.
	F	1.20 mm	0.0472 in.
	G	1.25 mm	0.0492 in.
	H	1.30 mm	0.0512 in.
	J	1.35 mm	0.0531 in.
	K	1.40 mm	0.0551 in.
For No. 2 case and front case		0.80 mm	0.0315 in.
		0.85 mm	0.0335 in.
		0.90 mm	0.0354 in.
		0.95 mm	0.0374 in.
		1.00 mm	0.0394 in.
		1.05 mm	0.0413 in.
		1.10 mm	0.0433 in.
		1.15 mm	0.0453 in.
		1.20 mm	0.0472 in.
		1.25 mm	0.0492 in.
		1.30 mm	0.0512 in.
		1.35 mm	0.0531 in.
		1.40 mm	0.0551 in.
Shim thickness			
For differential side bearing preload	Mark		
	0	2.00 mm	0.0787 in.
	1	2.05 mm	0.0807 in.
	2	2.10 mm	0.0827 in.
	3	2.15 mm	0.0846 in.
	4	2.20 mm	0.0866 in.
	5	2.25 mm	0.0886 in.
	6	2.30 mm	0.0906 in.
	7	2.35 mm	0.0925 in.
	8	2.40 mm	0.0945 in.
	9	2.45 mm	0.0965 in.
	A	2.50 mm	0.0984 in.
	B	2.55 mm	0.1004 in.
	C	2.60 mm	0.1024 in.

SERVICE SPECIFICATIONS — Manual Transaxle (E56F5)

Specifications (Cont'd)

Shim thickness (cont'd)					
For differential side bearing preload (cont'd)					
	Mark				
	D	2.65 mm		0.1043 in.	
	E	2.70 mm		0.1063 in.	
	F	2.75 mm		0.1083 in.	
	G	2.80 mm		0.1102 in.	
	H	2.85 mm		0.1122 in.	
TRANSFER ASSEMBLY					
Ring gear runout	Limit	0.1 mm		0.004 in.	
Ring gear mounting case runout	Limit	0.1 mm		0.004 in.	
Ring gear backlash		0.13 – 0.18 mm		0.0051 – 0.0071 in.	
Driven pinion preload (at starting)					
	New bearing	1.8 – 2.9 kg	4.0 – 6.4 lb	17.6 – 28.4 N	
	Reused bearing	0.9 – 1.4 kg	2.0 – 3.1 lb	8.8 – 13.7 N	
Transfer total ppreload (at starting)					
(Add driven pinion preload)					
	New bearing	1.3 – 1.4 kg	2.9 – 3.1 lb	12.7 – 13.7 N	
	Reused bearing	0.5 – 0.9 kg	1.1 – 2.0 lb	4.9 – 8.8 N	
Adjusting shim thickness					
For ring gear backlash	Mark				
	1	2.13 mm		0.0839 in.	
	2	2.16 mm		0.0850 in.	
	3	2.19 mm		0.0862 in.	
	4	2.22 mm		0.0874 in.	
	5	2.25 mm		0.0886 in.	
	6	2.28 mm		0.0898 in.	
	7	2.31 mm		0.0909 in.	
	8	2.34 mm		0.0921 in.	
	9	2.37 mm		0.0933 in.	
	10	2.40 mm		0.0945 in.	
	11	2.43 mm		0.0957 in.	
	12	2.46 mm		0.0968 in.	
	13	2.49 mm		0.0980 in.	
	14	2.52 mm		0.0992 in.	
	15	2.55 mm		0.1004 in.	
	16	2.58 mm		0.1016 in.	
	17	2.61 mm		0.1028 in.	
	18	2.64 mm		0.1039 in.	
	19	2.67 mm		0.1051 in.	
	20	2.70 mm		0.1063 in.	
	21	2.73 mm		0.1075 in.	
	22	2.76 mm		0.1087 in.	
	23	2.79 mm		0.1098 in.	
	24	2.82 mm		0.1110 in.	

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SERVICE SPECIFICATIONS – Manual Transaxle (E56F5)

Specifications (Cont'd)

Adjusting shim thickness (cont'd)			
For tooth contact			
Mark			
A	0.30 mm		0.0118 in.
B	0.33 mm		0.0130 in.
C	0.36 mm		0.0142 in.
D	0.39 mm		0.0154 in.
E	0.42 mm		0.0165 in.
F	0.45 mm		0.0177 in.
G	0.48 mm		0.0189 in.
H	0.51 mm		0.0201 in.
J	0.54 mm		0.0213 in.
K	0.57 mm		0.0224 in.

Torque Specifications

Part tightened	kg-cm	ft-lb	N-m
Oil pump x Cover	105	8	10
Ring gear x Differential case	985	71	97
Ring bearing retainer x Transmission case	430	31	42
Transmission case x Transaxle case	300	22	29
Oil pump assembly x Transaxle case	175	13	17
Shift fork x Shaft	240	17	24
Oil pipe X Housing	175	13	17
Transmission case x Transmission case cover	300	22	29
Shift and select lever shaft assembly x Transmission case			
Belicrank x Transmission case	200	14	20
Back-up light switch X Transmission case	200	14	20
Driven pinion x Bearing cage	410	30	40
Ring gear x Ring gear mounting case	See page MT-180		
Driven pinion cage x Transfer case	985	71	97
Transfer left case x Transfer right case	400	29	39
Transfer left case x Inspection hole cover	450	33	44
Differential lock sleeve x Shift fork	160	12	16
Transfer right case x Transfer case cover	160	12	16
Driven pinion cage x Extension housing	175	13	17
Extension housing x Dynamic damper	260	19	25
Transaxle assembly x Transfer assembly	260	19	25
Differential lock indicator switch X Transfer left case	700	51	69
Output shaft assembly x Lock nut	400	29	39
Transfer left case x Plug (Large)	400	29	39
Transfer left case x Plug (Small)	1,250	90	123
Transmission case x Plug	400	29	39
Transfer left case X Drain plug	250	18	25
Reverse idler gear retaining bolt	250	18	25
Oil cooler pipe elbow X Transaxle	400	29	39
Oil cooler pipe x Elbow	300	22	29
	275	20	27
	350	25	34

Torque Specifications (Cont'd)

Part tightened	kg-cm	ft-lb	N-m
Shift and select lever X Transmission case	200	14	20
Lock bolt x Transmission case	500	36	49
Engine front mounting X Transaxle	790	57	77
Stiffener plate	380	27	37
Engine rear end plate	250	18	25
Engine mounting left bracket x Transaxle	95	82 in.-lb	9.3
Transfer right case x Actuator bracket	380	27	37
Transaxle assembly x Engine	380	27	37
M12 bolt	650	47	64
M10 bolt	470	34	46

MANUAL TRANSAXLE (E52)

Specifications

Input shaft _			
3rd and 4th gear journal diameter	Limit	35.950 mm	1.4154 in.
5th gear journal diameter	Limit	32.930 mm	1.2965 in.
Runout	Limit	0.05 mm	0.0020 in.
Output shaft			
Roller bearing journal diameter	Limit	32.070 mm	1.2626 in.
1 st and 2nd gear journal diameter	Limit	38.950 mm	1.5335 in.
Runout	Limit	0.06 mm	0.0024 in.
Gear thrust clearance			
1st	STD	0.10 — 0.35 mm	0.0039 — 0.0138 in.
	Limit	0.40 mm	0.0157 in.
2nd	STD	0.10 — 0.45 mm	0.0039 — 0.0177 in.
	Limit	0.50 mm	0.197 in.
3rd	STD	0.10 — 0.35 mm	0.0039 — 0.0138 in.
	Limit	0.40 mm	0.0157 in.
4th	STD	0.10 — 0.55 mm	0.0039 — 0.0217 in.
	Limit	0.60 mm	0.0236 in.
5th	STD	0.10 — 0.57 mm	0.0039 — 0.0224 in.
	Limit	0.65 mm	0.0256 in.
Gear oil clearance			
1 st and 4th	STD	0.009 — 0.051 mm	0.0004 — 0.0020 in.
	Limit	0.070 mm	0.0028 in.
2nd and 3rd	STD	0.0090 — 0.053 mm	0.0004 — 0.0021 in.
	Limit	0.070 mm	0.0028 in.
5th	STD	0.009 — 0.050 mm	0.0004 — 0.0020 in.
	Limit	0.070 mm	0.0028 in.
Reverse idler	STD	0.056 — 0.090 mm	0.0022 — 0.0035 in.
	Limit	0.120 mm	0.0047 in.
Shift fork to hub sleeve clearance	Limit	1.0 mm	0.039 in.
Synchronizer ring to gear clearane	Limit	0.6 mm	0.024 in.
Output shaft bearing preload (at starting)	New bearing	8 — 16 kg-cm	
		(6.9 — 13.9 in.-lb, 0.8 — 1.6 N-m)	
	Reused bearing	5 — 10 kg-cm	
		(4.3 — 8.7 in.-lb, 0.5 — 1.0 N-m)	

Torque Specifications (Cont'd)

Part tightened	kg-cm	ft-lb	N-m
Shift and select lever X Transmission case	200	14	20
Lock bolt x Transmission case	500	36	49
Engine front mounting X Transaxle	790	57	77
Stiffener plate	380	27	37
Engine rear end plate	250	18	25
Engine mounting left bracket x Transaxle	95	82 in.-lb	9.3
Transfer right case x Actuator bracket	380	27	37
Transaxle assembly x Engine	380	27	37
M12 bolt	650	47	64
M10 bolt	470	34	46

MANUAL TRANSAXLE (E52)

Specifications

Input shaft			
3rd and 4th gear journal diameter	Limit	35.950 mm	1.4154 in.
5th gear journal diameter	Limit	32.930 mm	1.2965 in.
Runout	Limit	0.05 mm	0.0020 in.
Output shaft			
Roller bearing journal diameter	Limit	32.070 mm	1.2626 in.
1 st and 2nd gear journal diameter	Limit	38.950 mm	1.5335 in.
Runout	Limit	0.06 mm	0.0024 in.
Gear thrust clearance			
1st	STD	0.10 — 0.35 mm	0.0039 — 0.0138 in.
	Limit	0.40 mm	0.0157 in.
2nd	STD	0.10 — 0.45 mm	0.0039 — 0.0177 in.
	Limit	0.50 mm	0.197 in.
3rd	STD	0.10 — 0.35 mm	0.0039 — 0.0138 in.
	Limit	0.40 mm	0.0157 in.
4th	STD	0.10 — 0.55 mm	0.0039 — 0.0217 in.
	Limit	0.60 mm	0.0236 in.
5th	STD	0.10 — 0.57 mm	0.0039 — 0.0224 in.
	Limit	0.65 mm	0.0256 in.
Gear oil clearance			
1 st and 4th	STD	0.009 — 0.051 mm	0.0004 — 0.0020 in.
	Limit	0.070 mm	0.0028 in.
2nd and 3rd	STD	0.0090 — 0.053 mm	0.0004 — 0.0021 in.
	Limit	0.070 mm	0.0028 in.
5th	STD	0.009 — 0.050 mm	0.0004 — 0.0020 in.
	Limit	0.070 mm	0.0028 in.
Reverse idler	STD	0.056 — 0.090 mm	0.0022 — 0.0035 in.
	Limit	0.120 mm	0.0047 in.
Shift fork to hub sleeve clearance	Limit	1.0 mm	0.039 in.
Synchronizer ring to gear clearane	Limit	0.6 mm	0.024 in.
Output shaft bearing preload (at starting)	New bearing	8 — 16 kg-cm (6.9 — 13.9 in.-lb, 0.8 — 1.6 N-m)	
	Reused bearing	5 — 10 kg-cm (4.3 — 8.7 in.-lb, 0.5 — 1.0 N-m)	

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SERVICE SPECIFICATIONS — Manual Transaxle (E52)

Specifications (Cont'd)

Side bearing preload (at starting)	New bearing	Output shaft bearing preload +1.9 — 3.7 kg-cm (1.6 — 3.2 in.-lb, 0.2 — 0.4 N-m)	
	Reused bearing	Output shaft bearing preload +1.2 — 2.3 kg-cm (1.0 — 2.0 in.-lb, 0.1 — 0.2 N-m)	
Speedometer driven gear oil seal drive in depth		33 mm	1.30 in.
Oil pump			
Body clearance	STD	0.10 — 0.16 mm	0.004 — 0.006 in.
	Limit	0.30 mm	0.012 in.
Tip clearance	STD	0.08 — 0.15 mm	0.003 — 0.006 in.
	Limit	0.30 mm	0.012 in.
Side clearance	STD	0.03 — 0.08 mm	0.001 — 0.003 in.
	Limit	0.15 mm	0.006 in.
Tight plug drive in depth		0.20 — 0.90 mm	0.008 — 0.035 in.
Control shaft cover oil seal drive on depth		0.5 ± 0.5 mm	0.020 ± 0.020 in.
Input shaft snap ring thickness			
No. 2 clutch hub	Mark		
	H	2.30 mm	0.0906 in.
	J	2.35 mm	0.0925 in.
	K	2.40 mm	0.0945 in.
	L	2.45 mm	0.0965 in.
	M	2.50 mm	0.0984 in.
	N	2.55 mm	0.1004 in.
	P	2.60 mm	0.1024 in.
Input rear bearing	Mark		
	1	2.35 mm	0.0925 in.
	2	2.40 mm	0.0945 in.
	3	2.45 mm	0.0965 in.
	4	2.50 mm	0.0984 in.
	5	2.55 mm	0.1004 in.
	6	2.60 mm	0.1024 in.
	7	2.65 mm	0.1043 in.
	8	2.70 mm	0.1063 in.
Output shaft snap ring thickness			
No. 1 clutch hub	Mark		
	A	2.80 mm	0.1102 in.
	B	2.85 mm	0.1122 in.
	C	2.90 mm	0.1142 in.
	D	2.95 mm	0.1161 in.
	E	3.00 mm	0.1181 in.
	F	3.05 mm	0.1201 in.
	G	3.10 mm	0.1220 in.

SERVICE SPECIFICATIONS — Manual Transaxle (E52)

Specifications (Cont'd)

Output shaft snap ring thickness (cont'd)			
No. 3 clutch hub	Mark		
	Q	2.25 mm	0.0886 in.
	R	2.30 mm	0.0906 in.
	S	2.35 mm	0.0925 in.
	T	2.40 mm	0.0945 in.
	U	2.45 mm	0.0965 in.
	V	2.50 mm	0.0984 in.
	W	2.55 mm	0.1004 in.
	X	2.60 mm	0.1024 in.
	Y	2.65 mm	0.1043 in.
Output shaft rear bearing adjusting shim thickness			
	Mark		
	0	1.30 mm	0.0512 in.
	1	1.35 mm	0.0531 in.
	2	1.40 mm	0.0551 in.
	3	1.45 mm	0.0571 in.
	4	1.50 mm	0.0591 in.
	5	1.55 mm	0.0610 in.
	6	1.60 mm	0.0630 in.
	7	1.65 mm	0.0650 in.
	8	1.70 mm	0.0669 in.
	9	1.75 mm	0.0689 in.
	A	1.80 mm	0.0709 in.
	B	1.85 mm	0.0728 in.
	C	1.90 mm	0.0748 in.
	D	1.95 mm	0.0768 in.
	E	2.00 mm	0.0787 in.
	F	2.05 mm	0.0807 in.
	G	2.10 mm	0.0827 in.
	H	2.15 mm	0.0846 in.
	J	2.20 mm	0.0866 in.
	K	2.25 mm	0.0886 in.
	L	2.30 mm	0.0906 in.
	M	2.35 mm	0.0925 in.
	N	2.40 mm	0.0945 in.
	P	2.45 mm	0.0965 in.
	Q	2.50 mm	0.0984 in.
Differential pinion to side gear backlash		0.05 — 0.20 mm	0.0020 — 0.0079 in.
Differential runout	Limit	0.07 mm	0.0028 in.
Differential side gear thrust washer thickness		0.80 mm	0.0315 in.
		0.90 mm	0.0354 in.
		1.00 mm	0.0394 in.
		1.10 mm	0.0433 in.
		1.20 mm	0.0472 in.
		1.30 mm	0.0512 in.
		1.40 mm	0.0551 in.

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SERVICE SPECIFICATIONS – Manual Transaxle (E52)

Specifications (Cont'd)

Differential side bearing adjusting shim thickness			
	Mark		
	0	2.00 mm	0.0787 in.
	1	2.05 mm	0.0807 in.
	2	2.10 mm	0.0827 in.
	3	2.15 mm	0.0846 in.
	4	2.20 mm	0.0866 in.
	5	2.25 mm	0.0886 in.
	6	2.30 mm	0.0906 in.
	7	2.35 mm	0.0925 in.
	8	2.40 mm	0.0945 in.
	9	2.45 mm	0.0965 in.
	A	2.50 mm	0.0984 in.
	B	2.55 mm	0.1004 in.
	C	2.60 mm	0.1024 in.
	D	2.65 mm	0.1043 in.
	E	2.70 mm	0.1063 in.
	F	2.75 mm	0.1083 in.
	G	2.80 mm	0.1102 in.
	H	2.85 mm	0.1122 in.

Torque Specifications

Part tightened	kg-cm	ft-lb	N·m
Transaxle case X Transaxle case receiver	75	65 in.-lb	7.4
Transaxle case x Transmission case	300	22	29
Transaxle case x Case cover	550	40	54
Transaxle case x Oil pump	175	13	17
Transmission case x Case cover	300	22	29
Transmission case x Rear bearing retainer	430	31	42
Oil pump x Cover	105	8	10
Shift and select lever lock bolt	500	36	49
Reverse shift arm bracket	175	13	17
Straight screw plug	250	18	25
Reverse restrict pin holder	130	9	13
Ring gear X Differential case	1,260	91	124
Differential case No. 1 X No. 2	640	46	63
5th driven gear lock nut	1,250	90	123
Reverse idler shaft lock bolt	300	22	29
Control shaft x Lock bolt	200	14	20
Shift fork X Lock bolt	240	17	24
Back-up light switch	410	30	40
Filler plug	500	36	49
Drain plug	500	36	49
Elbow X Transaxle	275	20	27

SERVICE SPECIFICATIONS – Manual Transaxle (E52)

Specifications (Cont'd)

Part tightened	kg-cm	ft-lb	N·m
oil cooler tube x Elbow	350	25	34
Selecting bellcrank set bolt	200	14	20
Transaxle X Engine	650	47	64
Transaxle X Engine 12 mm bolt	470	34	46
10 mm bolt	530	38	52
Transaxle X Engine front mounting	800	58	78
Insulator x Engine front mounting	380	27	37
Transaxle X Stiffener plate	530	38	52
Transaxle X Engine mounting left stay	530	38	52
Engine left mounting x Left stay	530	38	52
Engine mounting bracket X Body bracket	250	18	25
Transaxle x Rear end plate	250	18	25
Transaxle x Case protector	250	18	25
Lower arm x Body	2,110	153	207
Stabilizer bar x Body	1,300	94	127
Drive shaft X Side gear shaft	660	48	65
Ball joint X Steering knuckle	1,150	83	113
Tie rod end x Steering knuckle	500	36	49
Drive shaft x Axle hub	1,900	137	186
Center member x Body	400	29	39
Center member X Engine mounting	440	32	43
Lower crossmember X Body	2,110	153	207
Clutch release cylinder x Transaxle	120	9	12

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SERVICE SPECIFICATIONS — Automatic Transaxle AI 40E)

AUTOMATIC TRANSAXLE (A140E)

Specifications

Line pressure (wheel locked)										
Engine idling		D range		3.7 — 4.3 kg/cm ²		53 — 61 psi		363 — 422 kPa		
		R range		5.4 — 7.2 kg/cm ²		77 — 102 psi		530 — 706 kPa		
		D range		9.2 — 10.7 kg/cm ²		131 — 152 psi		902 — 1,049 kPa		
At stall (Throttle valve fully opened)		R range		14.4 — 16.8 kg/cm ²		205 — 239 psi		1,412 — 1,648 kPa		
Engine stall revolution				2,200 ± 150 rpm						
		N range →		D range		Less than 1.2 seconds				
Time lag		N range →		R range		Less than 1.5 seconds				
Engine idle speed (A/C OFF)		N range		700 rpm						
Throttle cable adjustment (Throttle valve fully opened)				Between boot end face and inner cable stopper						
				0 — 1 mm		0 — 0.04 in.				
Shift schedule			Throttle valve fully open [] Fully closed						km/h (mph)	
			1 — 2	2 — 3	3 — O/D	3 — O/D	O/D — 3	O/D — 3	3 — 2	2 — 1
	D range	NORM	51-56 (32-35)	97-107 (60-66)	145-155 (90-96)	31-36 (19-22)	22-26 (14-16)	135-145 (84-90)	90-100 (56-62)	41-46 (25-29)
		PWR	60-65 (37-40)	112-122 (70-76)	148-158 (92-98)	34-39 (21-24)	22-26 (14-16)	138-148 (86-92)	105-115 (65-71)	41-46 (25-29)
	2 range	NORM	51-56 (32-35)	—	—	—	—	—	—	41-46 (25-29)
		PWR	—	—	—	—	—	—	—	—
Lock-up point			Throttle valve opening 5 %						km/h (mph)	
			Lock-up ON			Lock-up OFF				
	D range	NORM	2nd	3rd	O/D	2nd	3rd	O/D		
		PWR	—	—	—	—	—	—		
		</								

SERVICE SPECIFICATIONS — Automatic Transaxle (AI 40E)

Specifications (Cont'd)

Direct clutch	Piston stroke	Maximum	1.11 — 1.44 mm	0.0473 — 0.0567 in.		
	Drum bushing inside diameter		47.07 mm	1.8531 in.		
	Flange thickness		2.60 mm	0.1024 in.		
			3.00 mm	0.1181 in.		
Forward clutch	Piston stroke		1.41 — 1.82 mm	0.0555 — 0.0717 in.		
	Flange thickness		3.00 mm	0.1181 in.		
			3.37 mm	0.1327 in.		
Front planetary gear	Planetary pinion gear thrust clearance	Standard clearance STD	0.20 — 0.50 mm	0.0079 — 0.0197 in.		
	Ring gear flange bushing inside diameter		19.025 — 19.050 mm	0.7490 — 0.7500 in.		
Rear planetary gear	Planetary pinion gear thrust clearance	Standard clearance	0.20 — 0.50 mm	0.0079 — 0.0197 in.		
Overdrive unit	Direct clutch piston stroke	Maximum	1.21 — 1.91 mm	0.0476 — 0.0752 in.		
	Direct clutch bushing inside diameter		22.09 mm	0.8697 in.		
	Counter drive gear preload	at Starting	920 — 1,530 g 2.0 — 3.4 lb 9 — 15 N			
	Planetary pinion gear thrust clearance	STD	0.20 — 0.50 mm	0.0079 — 0.0197 in.		
Valve body spring	Spring		Free length mm (in.)	Coil outer diameter mm (in.)	Total No. of coifs	Color
	(Upper valve body)					
	Throttle modulator valve		21.70 (0.8543)	9.50 (0.3740)	9.5	None
	Accumulator control valve		28.06 (1.1047)	10.60 (0.4173)	13.0	Yellow
	Low coast modulator valve		21.60 (0.8504)	7.90 (0.3110)	11.5	None
	Down shift plug		29.76 (1.1717)	8.73 (0.3437)	13.5	Yellow
	2nd coast modulator valve		20.93 (0.8240)	8.50 (0.3346)	10.0	Light Green
	Throttle valve		30.70 (1.2087)	9.20 (0.3622)	9.5	None
	Cut-back valve		21.80 (0.8583)	6.00 (0.2362)	13.5	None
	Lock-up relay valve		26.56 (1.0457)	10.20 (0.4016)	11.5	Green
	(Lower valve body)					
	Primary regulator valve		66.65 (2.6240)	18.60 (0.7323)	12.5	None
	1-2 shift valve		29.27 (1.1524)	9.70 (0.3819)	10.5	None
	2-3 shift valve		29.27 (1.1524)	9.70 (0.3819)	10.5	None
	3-4 shift valve		29.27 (1.1524)	9.70 (0.3819)	10.5	None
	Lock-up signal valve		30.00 (1.1811)	8.20 (0.3228)	11.5	None
	Secondary regulator valve		43.60 (1.7165)	10.90 (0.4291)	11.5	None
	Pressure relief valve		11.20 (0.4409)	6.40 (0.2520)	7.5	None
	Cooler by-pass valve		19.90 (0.7835)	11.00 (0.4331)	8.5	None

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SERVICE SPECIFICATIONS — Automatic Transaxle (A140E)

Specifications (Cont'd)

Valve body Retainer	Retainer		Height mm (in.)	Width mm (in.)	Thickness (mm (in.))	
	(Upper valve body)					
	Throttle modulator valve		9.2 (0.362)	5.0 (0.197)	3.2 (0.126)	
	Accumulator control valve		11.5 (0.453)	5.0 (0.197)	3.2 (0.126)	
	Cut-back valve		9.2 (0.362)	5.0 (0.197)	3.2 (0.126)	
	Lock-up relay valve		15.0 (0.591)	5.0 (0.197)	3.2 (0.126)	
	2nd coast modulator valve		15.0 (0.591)	5.0 (0.197)	3.2 (0.126)	
	(Lower valve body)					
	Primary regualtor valve		9.2 (0.362)	5.0 (0.197)	3.2 (0.126)	
	2-3 shift valve		8.0 (0.315)	6.0 (0.236)	3.2 (0.126)	
	1-2 shift valve		9.2 (0.362)	5.0 (0.197)	3.2 (0.126)	
	3-4 shift valve		8.0 (0.315)	6.0 (0.236)	3.2 (0.126)	
	Secondary regulator valve		13.0 (0.512)	6.0 (0.236)	3.2 (0.126)	
	Lock-up signal valve		15.0 (0.591)	5.0 (0.197)	3.2 (0.126)	
Accumulator spring	Spring		Free length mm (in.)	Coil outer diameter mm (in.)	Total No. of coils	Color
	C ₁	Inner	48.00 (1.8898)	13.58 (0.5346)	10.5	None
		Outer	81.09 (3.1925)	18.63 (0.7335)	17.0	Yellow Green
	C ₂		72.18 (2.8417)	17.58 (0.6921)	16.5	Yellow
	B ₂		66.68 (2.6252)	16.36 (0.6441)	14.5	Orange
Differential	Drive pinion preload (at starting)					
	New bearing		10 — 16 kg-cm	8.7 — 13.9 in.-lb	1.0 — 1.6 N-m	
	Reused bearing		5 — 8 kg-cm	4.3 — 6.9 in.-lb	0.5 — 0.8 N-m	
	Total preload (at starting)		Add drive pinion preload			
	New bearing		2.9 — 4.0 kg-cm	2.5 — 3.5 in.-lb	0.3 — 0.4 N-m	
	Reused bearing		1.5 — 2.0 kg-cm	1.3 — 1.7 in.-lb	0.1 — 0.2 N-m	
	Pinion to side gear backlash		0.05 — 0.20 mm		0.0020 — 0.0079 in.	
	Side gear thrust washer thickness		0.95 mm		0.0374 in.	
			1.00 mm		0.0394 in.	
			1.05 mm		0.0413 in.	
			1.10 mm		0.0433 in.	
			1.15 mm		0.0453 in.	
			1.20 mm		0.0472 in.	
	Side bearing adjusting shim thickness		1.90 mm		0.0748 in.	
			1.95 mm		0.0768 in.	
			2.00 mm		0.0787 in.	
			2.05 mm		0.0807 in.	
			2.10 mm		0.0827 in.	
			2.15 mm		0.0846 in.	
			2.20 mm		0.0866 in.	
			2.25 mm		0.0886 in.	
			2.30 mm		0.0906 in.	
			2.35 mm		0.0925 in.	
			2.40 mm		0.0945 in.	
			2.45 mm		0.0965 in.	
			2.50 mm		0.0984 in.	
			2.55 mm		0.1004 in.	

SERVICE SPECIFICATIONS – Automatic Transaxle (AI 40E)

Specifications (Cont'd)

Differential (cont'd)	Side bearing adjusting shim thickness (cont'd)	2.60 mm	0.1024 in.
		2.65 mm	0.1043 in.
		2.70 mm	0.1063 in.
		2.75 mm	0.1083 in.
		2.80 mm	0.1103 in.

Torque Specifications

Part tightened	kg-cm	ft-lb	N-m
Transaxle case x Engine	650	47	64
12 mm			
10 mm	470	34	46
Drive plate x Crank shaft	850	61	83
Torque converter X Drive plate	280	20	27
Oil pump x Transaxle case	225	16	22
Oil pump body X Stator shaft	100	7	10
Second coast brake band guide	55	48 in.-lb	5.4
Upper valve body x Lower valve body	55	48 in.-lb	5.4
Valve body	100	7	10
Accumulator cover	100	7	10
Oil strainer	100	7	10
Oil pan	100	7	10
Oil pan drain plug	50	43 in.-lb	4.9
Cooler pipe union nut	500	36	49
Testing plug	350	25	34
Parking lock pawl bracket	75	65 in.-lb	7.4
Overdrive case x Transaxle case	75	65 in.-lb	7.4
Neutral start switch bolt	250	18	25
Neutral start switch nut	55	48 in.-lb	5.4
	70	61 in.-lb	6.9

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SERVICE SPECIFICATIONS — Automatic Transaxle (A140L)

AUTOMATIC TRANSAXLE (A140L)

Specifications

Governor pressure											
Drive pinion rpm		(Vehicle speed reference)									
1,000		{approx. 30 km/h 19 mph}		0.6 — 1.4 kg/cm ²		9 — 20 psi		59 — 137 kPa			
1,800		{approx. 55 km/h 34 mph}		1.5 — 2.3 kg/cm ²		21 — 31 psi		147 — 216 kPa			
3,500		{approx. 106 km/h 66 mph}		4.2 — 5.0 kg/cm ²		60 — 71 psi		412 — 490 kPa			
Line pressure (wheel locked)											
Engine idling		D range		3.7 — 4.3 kg/cm ²		53 — 61 psi		363 — 422 kPa			
		R range		5.4 — 7.2 kg/cm ²		77 — 102 psi		530 — 706 kPa			
At stall		D range		9.2 — 107 kg/cm ²		131 — 152 psi		902 — 1,049 kPa			
(Throttle valve fully opened)		R range		14.4 — 16.8 kg/cm ²		205 — 239 psi		1,412 — 1,648 kPa			
Engine stall revolution				2,200 ± 150 rpm							
Time lag N range —		D range		Less than 1.2 seconds							
N range —		R range		Less than 1.5 seconds							
Engine idling speed (A/C OFF)		N range		700 rpm							
Throttle cable adjustment (Throttle valve fully opened)				Between boot end face and inner cable stopper							
				0 — 1 mm				0 — 0.04 in.			
Shift schedule	Differential gear ratio	D range (throttle valve fully open)							km/h (mph)		L range
		1 — 2	2 — 3	3 — O/D	Lock-up ON	Lock-up OFF	O/D — 3	3 — 2	2 — 1	2 — 1	
	3.736	51-67 (32-42)	99-114 (62-71)	—*1	—*2	—*3	—*4	94-113 (58-70)	39-49 (24-30)	38-50 (24-31)	
*1 3 — O/D up-shift point with closed accelerator pedal is at 32 — 45 km/h (20 — 28 mph). *2 Lock-up "ON" point with closed accelerator pedal is at 64 — 73 km/h (40 — 45 mph). *3 Lock-up "OFF" point with closed accelerator pedal is at 60 — 68 km/h (37 — 42 mph). *4 O/D — 3 down-shift is possible up to maximum speed.											
Second coast brake	Same the A140E automatic transaxle specifications (see page A-16)										
Oil pump	1										
Direct clutch	Same the A140E automatic transaxle specifications (see page A-17)										
Forward clutch	1										
Front planetary gear	1										
Rear plane-tary gear	1										
Overdrive unit	1										

SERVICE SPECIFICATIONS — Automatic Transaxle (A140L)

Specifications (Cont'd)

Valve body spring	Spring	Free length mm (in.)	Coil outer diameter mm (in.)	Total No. of coils	Color
	(Upper valve body)				
	Throttle modulator valve	21.70 (0.8543)	9.50 (0.3740)	9.5	None
	Accumulator control valve	28.06 (1.1047)	10.60 (0.4173)	13.0	Yellow
	Low coast modulator valve	23.40 (0.9213)	7.90 (0.3110)	11.5	Red
	Down shift plug	29.76 (1.1717)	8.73 (0.3437)	13.5	Yellow
	2nd coast modulator valve	20.93 (0.8240)	8.50 (0.3346)	10.0	Light Green
	Throttle valve	30.70 (1.2087)	9.20 (0.3622)	9.5	None
	Lock-up relay valve	26.56 (1.0457)	10.20 (0.4016)	11.5	Green
	(Lower valve body)				
	Primary regulator valve	66.65 (2.6240)	18.60 (0.7323)	12.5	None
	1-2 shift valve	27.17 (1.0697)	6.39 (0.2516)	15.5	Yellow
	Detent regulator valve	30.64 (1.2063)	7.90 (0.3110)	12.5	Blue
	2-3 shift valve	27.74 (1.0921)	8.30 (0.3268)	11.0	None
	3-4 coast shift valve	21.10 (0.8307)	10.90 (0.4291)	8.5	White
	Lock-up signal valve	38.65 (1.5217)	8.15 (0.3209)	12.25	Pink
	O/D sequence valve	30.90 (1.2165)	7.00 (0.2756)	18.5	None
	Secondary regulator valve	43.60 (1.7165)	10.90 (0.4291)	11.5	None
	Pressure relief valve	11.20 (0.4409)	6.40 (0.2520)	7.5	None
	Cooler by-pass valve	19.90 (0.7835)	11.00 (0.4331)	8.5	None
Valve body retainer	Retainer	Height mm (in.)	Width mm (in.)	Thickness mm (in.)	
	(Upper valve body)				
	Throttle modulator valve	9.2 (0.362)	5.0 (0.197)	3.2 (0.126)	
	Accumulator control valve	11.5 (0.453)	5.0 (0.197)	3.2 (0.126)	
	Cut-back valve	9.2 (0.362)	5.0 (0.197)	3.2 (0.126)	
	Lock-back relay valve	15.0 (0.591)	5.0 (0.197)	3.2 (0.126)	
	2nd coast modulator valve	15.0 (0.591)	5.0 (0.197)	3.2 (0.126)	
	(Lower valve body)				
	Secondary regulator valve	11.5 (0.453)	5.0 (0.197)	3.2 (0.126)	
	Low coast shift valve	9.2 (0.362)	5.0 (0.197)	3.2 (0.126)	
	O/D sequence valve	9.2 (0.362)	5.0 (0.197)	3.2 (0.126)	
	Intermediate shift valve	11.5 (0.453)	5.0 (0.197)	3.2 (0.126)	
	3-4 coast shift valve	6.0 (0.236)	8.0 (0.315)	3.2 (0.126)	
	3-4 shift valve	6.0 (0.236)	8.0 (0.315)	3.2 (0.126)	
	2-3 shift valve.	6.0 (0.236)	8.0 (0.315)	3.2 (0.126)	
	Detent regulator valve	6.0 (0.236)	8.0 (0.315)	3.2 (0.126)	
	1-2 shift lower valve	11.5 (0.453)	5.0 (0.197)	3.2 (0.126)	
	Primary regulator valve	9.2 (0.362)	5.0 (0.197)	3.2 (0.126)	
		9.2 (0.362)	5.0 (0.197)	3.2 (0.126)	
Accumulator spring	Same the A140E automatic transaxle (See page A-18)				
Differential	†				

Torque Specifications

Same the A140E automatic transaxle. (See page A-19)

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SERVICE SPECIFICATIONS - Automatic Transaxle (A540E)

AUTOMATIC TRANSAXLE (A540E)

Specifications

Line pressure (wheel locked)											
Engine idling			D range	3.6 — 4.2 kg/cm ²	53 — 61 psi	363 — 412 kPa					
			R range	5.7 — 6.6 kg/cm ²	81 — 94 psi	559 — 647 kPa					
At stall			D range	7.5 — 8.7 kg/cm ²	107 — 124 psi	735 — 853 kPa					
Engine stall revolution			R range	11.8 — 13.8 kg/cm ²	168 — 196 psi	1,157 — 1,353 kPa					
Time lag N range —			2VZ-FE	2,450 ± 150 rpm							
			D range	Less than 1.2 seconds							
N range —			R range	Less than 1.5 seconds							
Engine idle speed (A/C OFF)			N range	700 rpm							
Throttle cable adjustment (Throttle valve fully opened)				Between boot end face and inner cable stopper							
				0 — 1 mm	0 — 0.04 in.						
Shift schedule			Throttle valve fully open [Fully closed] km/h (mph)								
			1 — 2	2 — 3	3 — O/D	[3 — O/D]	[O/D — 3]	O/D — 3	3 — 2	2 — 1	
	D range	NORM	55-60 (34-37)	100-109 (62-68)	154-164 (96-102)	35-39 (22-24)	19-24 (12-15)	148-157 (92-98)	88-97 (55-60)	48-53 (30-33)	
		PWR	61-66 (38-41)	116-125 (72-78)	181-191 (112-119)	35-39 (22-24)	19-24 (12-15)	172-182 (107-113)	107-115 (66-71)	48-53 (30-33)	
	2 range	NORM	61-66 (38-41)	—	—	—	—	—	—	48-53 (30-33)	
		PWR	—	—	—	—	—	—	—	—	
	L range	NORM	—	—	—	—	—	—	—	51-56 (32-35)	
		PWR	—	—	—	—	—	—	—	—	
	Lock-up point			Throttle valve opening 5% km/h (mph)							
				Lock-up ON				Lock-up OFF			
D range		NORM	2nd	*3rd	O/D	2nd	*3rd	O/D			
		PWR	—	77-82 (48-51)	64-69 (40-43)	—	68-73 (42-45)	61-66 (38-41)			
		NORM	—	77-82 (48-51)	64-69 (40-43)	—	68-73 (42-45)	61-66 (38-41)			
		PWR	—	77-82 (48-51)	64-69 (40-43)	—	68-73 (42-45)	61-66 (38-41)			
		* O/D switch OFF									
Second coast brake		Piston stroke			2.0 — 3.5 mm	0.079 — 0.138 in.					
		Piston rod length			95.2 mm	3.748 in.					
					96.3 mm	3.791 in.					
Oil pump	Body clearance	STD	0.07 — 0.15 mm	0.0028 — 0.0059 in.							
	Tip clearance	Maximum	0.3 mm	0.012 in.							
	Side clearance	STD	0.11 — 0.14 mm	0.0043 — 0.0055 in.							
	Pump body bushing inside diameter	Maximum	0.3 mm	0.012 in.							
	Stator shaft bushing inside diameter	STD	0.02 — 0.05 mm	0.0008 — 0.0020 in.							
	Front side	Maximum	0.1 mm	0.004 in.							
	Rear side	Maximum	38.18 mm	1.5031 in.							
		Maximum	21.57 mm	0.8492 in.							
		Maximum	27.07 mm	1.0657 in.							

SERVICE SPECIFICATIONS — Automatic Transaxle (A540E)

Specifications (Cont'd)

Direct clutch	Piston stroke		0.91 — 1.35 mm	0.0358 — 0.0531 in.	
	Drum bushing inside diameter	Maximum	48.27 mm	1.9004 in.	
	Flange thickness		2.70 mm	0.1063 in.	
			3.00 mm	0.1181 in.	
Forward clutch	Piston stroke		1.41 — 1.82 mm	0.0555 — 0.0717 in.	
	Flange thickness		3.00 mm	0.1181 in.	
			3.37 mm	0.1327 in.	
Front planetary gear	Sun gear bushing inside diameter	Maximum	22.59 mm	0.8894 in.	
	Ring gear flange bushing inside diameter				
		Maximum	30.08 mm	1.1842 in.	
	Planetary pinion gear thrust clearance				
		STD	0.16 — 0.56 mm	0.0063 — 0.0220 in.	
		Maximum	0.61 mm	0.024 in.	
Rear planetary gear	Planetary pinion gear thrust clearance				
		STD	0.16 — 0.56 mm	0.0063 — 0.0220 in.	
		Maximum	0.61 mm	0.024 in.	
First and reverse brake	Pack clearance		0.85 — 2.05 mm	0.033 — 0.081 in.	
Overdrive unit	Direct clutch piston stroke		1.75 — 2.49 mm	0.0689 — 0.0980 in.	
	Direct clutch bushing inside diameter				
		Maximum	22.13 mm	0.8713 in.	
	Counter drive gear preload	at Starting	940 — 1,560 g 2.1 — 3.4 lb 9.2 — 15.3 N		
	Planetary pinion gear thrust clearance				
		STD	0.16 — 0.56 mm	0.0063 — 0.0220 in.	
		Maximum	0.61 mm	0.024 in.	
Valve body spring	Spring	Free length mm (in.)	Coil outer diameter mm (in.)	Total No. of coils	Color
	(Upper valve body)				
	Second coast modulator valve	27.5 (1.083)	8.9 (0.350)	14.6	Brown
	B, orifice control valve	24.8 (0.976)	8.0 (0.315)	12.0	White
	Down-shift plug	29.8 (1.173)	8.7 (0.343)	13.5	Yellow
	Throttle valve	30.7 (1.209)	9.2 (0.362)	9.5	Purple
	Throttle modulator valve	21.7 (0.854)	9.5 (0.374)	9.5	Orange
	Cut-back valve	21.8 (0.858)	6.0 (0.236)	13.5	Red
	No. 1 accumulator control valve	28.1 (1.106)	10.6 (0.417)	13.0	Yellow
	Lock-up relay valve	26.6 (1.047)	10.2 (0.402)	11.5	Green
	(Lower valve body)				
	Pressure relief valve	11.2 (0.441)	6.4 (0.252)	7.5	None
	Check valve	19.9 (0.783)	11.0 (0.433)	8.5	None
	Secondary regulator valve	38.5 (1.516)	8.4 (0.331)	17.0	Purple
	No. 2 accumulator control valve	23.0 (0.906)	6.3 (0.248)	12.0	Gray
	Second lock valve	20.7 (0.815)	6.1 (0.240)	12.0	Orange
	3-4 shift valve	29.2 (1.150)	8.9 (0.350)	12.0	Light green
	Low coast modulator valve	20.2 (0.795)	7.9 (0.311)	11.9	Purple
	1-2 shift valve	29.2 (1.150)	8.9 (0.350)	12.0	Light green
	2-3 shift valve	28.0 (1.102)	9.4 (0.370)	10.3	None
	Primary regulator valve	64.2 (2.528)	18.6 (0.732)	12.5	None

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SERVICE SPECIFICATIONS — Automatic Transaxle (A540E)

Specifications (Cont'd)

Valve body retainer	Retainer		Height mm (in.)	Width mm (in.)	Thickness (mm (in.))	
	(Upper valve body)					
	Lock-up relay valve		6.5 (0.256)	5.0 (0.197)	3.2 (0.126)	
	Throttle modulator valve		6.5 (0.256)	5.0 (0.197)	3.2 (0.126)	
	Second coast modulator valve		6.5 (0.256)	5.0 (0.197)	3.2 (0.126)	
	Cut-back valve		9.2 (0.362)	5.0 (0.197)	3.2 (0.126)	
	No. 1 accumulator control valve		6.5 (0.256)	5.0 (0.197)	3.2 (0.126)	
	B, orifice control valve		11.5 (0.453)	5.0 (0.197)	3.2 (0.126)	
	(Lower valve body)					
	Primary regulator valve		9.2 (0.362)	5.0 (0.197)	3.2 (0.126)	
	Secondary regulator valve		15.0 (0.591)	5.0 (0.197)	3.2 (0.126)	
	No. 2 accumulator control valve		9.2 (0.362)	5.0 (0.197)	3.2 (0.126)	
	Second lock valve		11.5 (0.453)	5.0 (0.197)	3.2 (0.126)	
	Low coast modulator valve		11.5 (0.453)	5.0 (0.197)	3.2 (0.126)	
	1-2 shift valve		6.5 (0.256)	5.0 (0.197)	3.2 (0.126)	
	2-3 shift valve		9.2 (0.362)	5.0 (0.197)	3.2 (0.126)	
3-4 shift valve		6.5 (0.256)	5.0 (0.197)	3.2 (0.126)		
Accumulator spring	Spring		Free length mm (in.)	Coil outer diameter mm (in.)	Total No. of coils	Color
	C ₁	Inner	43.4 (1.709)	17.8 (0.701)	9.0	Light Green
		Outer	71.2 (2.803)	24.4 (0.961)	11.5	Blue
	C ₂		51.0 (2.008)	18.0 (0.709)	10.2	Red
	C ₃ (O/D case)	Inner	47.5 (1.870)	18.9 (0.744)	9.5	White
		Outer	59.3 (2.335)	25.5 (1.004)	9.5	Gray
	B ₂		58.5 (2.303)	15.2 (0.598)	15.9	Orange
B ₃ (Valve body)		62.2 (2.449)	14.8 (0.583)	17.0	None	
Differential	Drive pinion preload (at starting)					
	New bearing		10 — 16 kg-cm	8.7 — 13.9 in.-lb	1.0 — 1.6 N-m	
	Reused bearing		5 — 8 kg-cm	4.3 — 6.9 in.-lb	0.5 — 0.8 N-m	
	Total preload (at starting)		Add drive pinion preload			
	New bearing		2.8 — 4.4 kg-cm	2.4 — 3.8 in.-lb	0.3 — 0.4 N-m	
	Reused bearing		1.4 — 2.2 kg-cm	1.2 — 1.9 in.-lb	0.1 — 0.2 N-m	
	Pinion to side gear backlash		0.05 — 0.20 mm		0.0020 — 0.0079 in.	
	Side gear thrust washer thickness		0.80 mm		0.0315 in.	
			0.90 mm		0.0354 in.	
			1.00 mm		0.0394 in.	
			1.10 mm		0.0433 in.	
			1.20 mm		0.0472 in.	
			1.30 mm		0.0512 in.	
			1.40 mm		0.0551 in.	
	Side bearing adjusting shim thickness					
	Mark					
	0		2.00 mm	0.0787 in.		
	1		2.05 mm	0.0807 in.		
	2		2.10 mm	0.0827 in.		
	3		2.15 mm	0.0846 in.		
4		2.20 mm	0.0866 in.			
5		2.25 mm	0.0886 in.			

SERVICE SPECIFICATIONS – Automatic Transaxle (A540E)

Specifications (Cont'd)

Differential (cont'd)	Side bearing adjusting shim thickness (cont'd)	Mark		
		6	2.30 mm	0.0906 in.
		7	2.35 mm	0.0925 in.
		8	2.40 mm	0.0945 in.
		9	2.45 mm	0.0965 in.
		A	2.50 mm	0.0984 in.
		B	2.55 mm	0.1004 in.
		C	2.60 mm	0.1024 in.
		D	2.65 mm	0.1043 in.
		E	2.70 mm	0.1063 in.
		F	2.75 mm	0.1083 in.
		G	2.80 mm	0.1103 in.
		H	2.85 mm	0.1122 in.

Torque Specifications

Part tightened	kg-cm	ft-lb	N-m
Oil cooler pipe union	275	20	27
Oil pan	50	43 in.-lb	4.9
Valve body x Transaxle case	110	8	11
Accumulator x Cover	100	7	10
Oil pump x Transaxle case	225	16	22
O/D case X Transaxle case	250	18	25
Differential LH side bearing retainer	195	14	19
Differential RH retainer	195	14	19
Differential carrier cover	400	29	39
Oil pump body x Stator shaft	100	7	10
Upper valve body x Lower valve body	67	58 in.-lb	6.6
Differential left case x Right case	640	46	63
Ring gear x Differential case	1,260	91	124

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SERVICE SPECIFICATIONS - Automatic Transaxle (A540H)

AUTOMATIC TRANSAXLE (A540H)

Specifications

Line pressure (wheel locked)		
Engine idling	D range	3.6 — 4.2 kg/cm ² 53 — 61 psi 353 — 412 kPa
	R range	6.6 — 7.7 kg/cm ² 94 — 110 psi 647 — 755 kPa
At stall	D range	7.5 — 8.7 kg/cm ² 107 — 124 psi 735 — 853 kPa
	R range	13.5 — 15.8 kg/cm ² 192 — 225 psi 1,324 — 1,549 kPa
Engine stall revolution	3S-FE	2,320 ± 150 rpm
Time lag	N range — D range	Less than 1.2 seconds
	N range — R range	Less than 1.5 seconds
Engine idle speed (A/C OFF)	N range	700 rpm
Throttle cable adjustment (Throttle valve fully opened)		Between boot end face and inner cable stopper
		0 — 1 mm 0 — 0.04 in.

Center differential control pressure (D range)

Solenoid valve		Engine R.P.M.	Pressure		
No. 1	No. 2				
ON	ON	Idling	3.6 — 4.2 kg/cm ²	53 — 60 psi	353 — 412 kPa
		Stall	7.4 — 8.8 kg/cm ²	107 — 125 psi	726 — 863 kPa
OFF	ON	Idling	1.7 — 2.4 kg/cm ²	24 — 34 psi	167 — 235 kPa
		Stall	4.3 — 5.1 kg/cm ²	61 — 73 psi	422 — 500 kPa
ON	OFF	Idling	0.7 — 1.4 kg/cm ²	10 — 20 psi	69 — 137 kPa
		Stall	2.5 — 3.2 kg/cm ²	36 — 46 psi	245 — 314 kPa
OFF	OFF	Idling	Under 0.1 kg/cm ²	Under 1 psi	Under 10 kPa
		Stall			

Shift schedule			Throttle valve fully open [Fully closed] km/h (mph)							
			1 — 2	2 — 3	3 — O/D	3 — O/D	O/D — 3	O/D — 3	3 — 2	2 — 1
	D range	NORM	41-45 (25-28)	79-85 (49-53)	117-123 (73-76)	25-29 (16-18)	15-19 (9-12)	109-116 (68-72)	75-79 (47-49)	35-39 (22-24)
		PWR	48-52 (30-32)	90-97 (56-60)	126-133 (78-83)	27-31 (17-19)	15-19 (9-12)	112-118 (70-73)	85-91 (53-57)	41-44 (25-27)
	2 range	NORM	41-45 (25-28)	—	—	—	—	—	—	35-39 (22-24)
	L range	NORM	—	—	—	—	—	—	—	37-41 (23-25)
Lock-up point			Throttle valve opening 5% km/h (mph)							
			Lock-up ON				Lock-up OFF			
			2nd	*3rd	O/D	2nd	*3rd	O/D		
	D range	NORM	—	49-53 (30-33)	57-61 (35-38)	—	37-41 (23-25)	47-51 (29-32)		
		PWR	—	59-63 (37-39)	66-70 (41-43)	—	47-51 (29-32)	57-61 (35-38)		
			* O/D switch OFF							

SERVICE SPECIFICATIONS — Automatic Transaxle (A540H)

Specifications (Cont'd)

Second coast brake	Same the A540E automatic transaxle (See page A-22)		
Oil pump	†		
Direct clutch	Piston stroke	1.11 — 1.47 mm	0.0437 — 0.0579 in.
	Drum bushing inside diameter Maximum	48.27 mm	1.9004 in.
	Flange thickness	2.70 mm	0.1063 in.
		3.00 mm	0.1181 in.
Forward clutch	Same the A540E automatic transaxle (See page A-23)		
Front planetary gear	†		
Rear planetary gear	†		
First and reverse brake	Pack clearance	1.04 — 2.18 mm	0.0409 — 0.0850 in.
Over drive unit	Same the A540E automatic transaxle (See page A-23)		
Valve body spring	†		
Valve body retainer	Same the A540E automatic transaxle (See page A-24)		
Accumulator spring	†		
Differential	Drive pinion preload (at starting)		
	New bearing	10 — 16 kg-cm	8.7 — 13.9 in.-lb 1.0 — 1.6 N-m
	Reused bearing	5 — 8 kg-cm	4.3 — 6.9 in.-lb 0.5 — 0.8 N-
	Total preload (at starting)		
	New bearing	2.3 — 3.7 kg-cm	2.0 — 3.2 in.-lb 0.2 — 0.4 N-m
	Reused bearing	1.2 — 1.9 kg-cm	1.0 — 1.6 in.-lb 0.1 — 0.2 N-m
	Pinion to side gear backlash	0.05 — 0.20 mm	0.0020 — 0.0079 in.
	Side gear thrust washer thickness		
	Mark		
	A	1.00 mm	0.0394 in.
	B	1.05 mm	0.0413 in.
	C	1.10 mm	0.0433 in.
	D	1.15 mm	0.0453 in.
	E	1.20 mm	0.0472 in.
	F	1.25 mm	0.0492 in.
	G	1.30 mm	0.0512 in.
	Side bearing adjusting shim thickness		
	Mark		
	0	2.00 mm	0.0787 in.
	1	2.05 mm	0.0807 in.
	2	2.10 mm	0.0827 in.
	3	2.15 mm	0.0846 in.
	4	2.20 mm	0.0866 in.
	5	2.25 mm	0.0886 in.
	6	2.30 mm	0.0906 in.
	7	2.35 mm	0.0925 in.
	8	2.40 mm	0.0945 in.
	9	2.45 mm	0.0965 in.

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SERVICE SPECIFICATIONS — Automatic Transaxle (A540H)

Specifications (Cont'd)

Differential (cont'd)	Side bearing adjusting shim thickness leont'dy	Mark				
		A	2.50 mm	0.0984 in.		
		B	2.55 mm	0.1004 in.		
		C	2.60 mm	0.1024 in.		
		D	2.65 mm	0.1043 in.		
		E	2.70 mm	0.1063 in.		
		F	2.75 mm	0.1083 in.		
		G	2.80 mm	0.1103 in.		
		H	2.85 mm	0.1122 in.		
		Differential end play		0.18 — 0.82 mm	0.0071 — 0.0323 in.	
Transfer	Driven pinion preload (at starting)		0.9 — 1.4 kg	2.0 — 3.1 lb	8.8 — 13.7 N	
	Total preload (at starting)		0.5 — 0.9 kg	1.1 — 2.0 lb	4.9 — 8.8 N	
	Ring gear backlash		0.13 — 0.18 mm	0.0051 — 0.0071 in.		
	Driven pinion bearing cage					
	Driven pinion preload (at starting)					
	New bearing		1.8 — 2.9 kg	4.0 — 6.4 lb	18 — 28 N	
	Reused bearing		0.9 — 1.4 kg	2.0 — 3.1 lb	9 — 13 lb	
	Center differential side gear backlash		0.05 — 0.20 mm	0.0020 — 0.0079 in.		
	Center differential left side gear					
	thrust washer thickness	Mark				
		A	1.00 mm	0.0394 in.		
		B	1.05 mm	0.0413 in.		
		C	1.10 mm	0.0433 in.		
		D	1.15 mm	0.0453 in.		
		E	1.20 mm	0.0472 in.		
		F	1.25 mm	0.0492 in.		
		G	1.30 mm	0.0512 in.		
		H	1.35 mm	0.0531 in.		
		J	1.40 mm	0.0551 in.		
	Center differential side gear thrust clearance		0.18 — 0.63 mm	0.0071 — 0.0248 in.		
	Center differential right side gear	Mark				
	thrust washer thickness	A	1.00 mm	0.0394 in.		
		B	1.05 mm	0.0413 in.		
		C	1.10 mm	0.0433 in.		
		D	1.15 mm	0.0453 in.		
		E	1.20 mm	0.0472 in.		
		F	1.25 mm	0.0492 in.		
		G	1.30 mm	0.0512 in.		
		H	1.35 mm	0.0531 in.		
		J	1.40 mm	0.0551 in.		
		K	1.45 mm	0.0571 in.		
		L	1.50 mm	0.0591 in.		
	Transfer lower valve body spring		Free length mm (in.)	Coil outer diameter mm (in.)	Total No. of coils	Color
	Transfer clutch modulator valve		32.3 (1.272)	7.6 (0.299)	16	None
	No. 2 low-high shift valve		28.9 (1.138)	7.0 (0.276)	14	None
	No. 1 low-high shift valve		28.9 (1.138)	7.0 (0.276)	14	None

SERVICE SPECIFICATIONS – Automatic Transaxle (A540H)

Specifications (Cont'd)

Transfer (cont'd)	Transfer lower valve body retainer	Height mm (in.)	Width mm (in.)	Thickness mm (in.)
	Transfer clutch modulator valve	6.5 (0.256)	5.0 (0.197)	3.2 (0.126)
	No. 2 low-high shift valve	†	†	†
	No. 1 low-high shift valve	†	†	†
Center differential plate washer	Mark			
	71	2.13 mm	0.0839 in.	
	72	2.16 mm	0.0850 in.	
	73	2.19 mm	0.0862 in.	
	74	2.22 mm	0.0874 in.	
	75	2.25 mm	0.0886 in.	
	76	2.28 mm	0.0898 in.	
	77	2.31 mm	0.0909 in.	
	78	2.34 mm	0.0921 in.	
	79	2.37 mm	0.0933 in.	
	80	2.40 mm	0.0945 in.	
	81	2.43 mm	0.0957 in.	
	82	2.46 mm	0.0969 in.	
	83	2.49 mm	0.0980 in.	
	84	2.52 mm	0.0992 in.	
	85	2.55 mm	0.1004 in.	
	86	2.58 mm	0.1016 in.	
	87	2.61 mm	0.1028 in.	
	88	2.64 mm	0.1039 in.	
	89	2.67 mm	0.1051 in.	
	90	2.70 mm	0.1063 in.	
	91	2.73 mm	0.1075 in.	
	92	2.76 mm	0.1087 in.	
	93	2.79 mm	0.1098 in.	
	94	2.82 mm	0.1110 in.	
	Mark			
	A	0.30 mm	0.0118 in.	
	B	0.33 mm	0.0130 in.	
	C	0.36 mm	0.0142 in.	
	D	0.39 mm	0.0154 in.	
	E	0.42 mm	0.0165 in.	
	F	0.45 mm	0.0177 in.	
	G	0.48 mm	0.0189 in.	
	H	0.51 mm	0.0201 in.	
	J	0.54 mm	0.0213 in.	
	K	0.57 mm	0.0224 in.	
	Ring gear adjusting shim			

Torque Specifications

Part tightened	kg-cm	ft-lb	N-m
Oil cooler pipe union and elbow	275	20	27
Oil pan	50	43 in.-lb	4.9
Valve body x Transaxle case	110	8	11
Accumulator x Cover	100	7	10

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SERVICE SPECIFICATIONS – Automatic Transaxle (A540H)

Torque Specifications (Cont'd)

Part tightened	kg-cm	ft-lb	N-m
Oil pump X Transaxle case	225	16	22
O/D case x Transaxle case	250	18	25
Differential LH side bearing retainer	195	14	19
Differential carrier cover	400	29	39
Oil pump body x Stator shaft	100	7	10
Upper valve body x Lower valve body	67	58 in.-lb	6.6
Front differential right case x Front differential left case	340	25	33
Ring gear X Ring gear mounting case	1,260	91	124
Transfer right case retainer x Transfer right case	300	22	29
Transfer right case X Adjusting nut lock plate lock bolt	73	63 in.-lb	7.2
Transfer right case x Transfer left case	450	33	44
Transfer right case x Mode select lever and rod	55	48 in.-lb	5.4
Transfer right case x Oil strainer (A)	115	8	11
Transfer left case X Rear wheel speed sensor (B)	55	48 in.-lb	5.4
Transfer left case X Transfer inspection hole cover	55	48 in.-lb	5.4
Transfer left case x Drain plug	160	12	16
Transfer left case x Driven pinion bearing cage	400	29	39
Driven pinion bearing cage x Transfer extension housing	400	29	39
Transfer extension housing X Dynamic damper	260	19	25
Transfer ring gear X Ring gear mounting case	260	19	25
Center differential control solenoid x Transfer valve body	80	69 in.-lb	7.8
Transfer valve body x Transfer left case	985	71	97
Neutral start switch bolt	145	10	14
Neutral start switch nut	110	8	11
Transfer assembly X Transaxle case	55	48 in.-lb	5.4
	70	61 in.-lb	6.9
	700	51	69

PROPELLER SHAFT

Specifications

Bearing axial play		0.05 mm	0.0020 in.
Front propeller shaft runout	Limit	0.8 mm	0.0315 in.
Intermediate shaft runout	Limit	0.8 mm	0.0315 in.
Rear propeller shaft runout	Limit	0.8 mm	0.0315 in.
Intermediate shaft flange runout	Limit	0.1 mm	0.0039 in.

Torque Specifications

Part tightened	kg-cm	ft-lb	N-m
Propeller shaft x Differential	750	54	74
Intermediate shaft x Propeller shaft	750	54	74
Center support bearing x Body	375	27	37
Intermediate shaft x Center bearing x Joint flange			
1st	1,850	134	181
2nd	Loosen nut		
3rd	700	51	69
Cross groove joint set bolt	275	20	27

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SERVICE SPECIFICATIONS – Propeller Shaft

Torque Specifications (Cont'd)

Part tightened	kg-cm	ft-lb	N-m
Oil pump X Transaxle case	225	16	22
O/D case x Transaxle case	250	18	25
Differential LH side bearing retainer	195	14	19
Differential carrier cover	400	29	39
Oil pump body x Stator shaft	100	7	10
Upper valve body x Lower valve body	67	58 in.-lb	6.6
Front differential right case x Front differential left case	340	25	33
Ring gear X Ring gear mounting case	1,260	91	124
Transfer right case retainer x Transfer right case	300	22	29
Transfer right case X Adjusting nut lock plate lock bolt	73	63 in.-lb	7.2
Transfer right case x Transfer left case	450	33	44
Transfer right case x Mode select lever and rod	55	48 in.-lb	5.4
Transfer right case x Oil strainer (A)	115	8	11
Transfer left case X Rear wheel speed sensor (B)	55	48 in.-lb	5.4
Transfer left case X Transfer inspection hole cover	55	48 in.-lb	5.4
Transfer left case x Drain plug	160	12	16
Transfer left case x Driven pinion bearing cage	400	29	39
Driven pinion bearing cage x Transfer extension housing	400	29	39
Transfer extension housing X Dynamic damper	260	19	25
Transfer ring gear X Ring gear mounting case	260	19	25
Center differential control solenoid x Transfer valve body	80	69 in.-lb	7.8
Transfer valve body x Transfer left case	985	71	97
Neutral start switch bolt	145	10	14
Neutral start switch nut	110	8	11
Transfer assembly X Transaxle case	55	48 in.-lb	5.4
	70	61 in.-lb	6.9
	700	51	69

PROPELLER SHAFT

Specifications

Bearing axial play		0.05 mm	0.0020 in.
Front propeller shaft runout	Limit	0.8 mm	0.0315 in.
Intermediate shaft runout	Limit	0.8 mm	0.0315 in.
Rear propeller shaft runout	Limit	0.8 mm	0.0315 in.
Intermediate shaft flange runout	Limit	0.1 mm	0.0039 in.

Torque Specifications

Part tightened	kg-cm	ft-lb	N-m
Propeller shaft x Differential	750	54	74
Intermediate shaft x Propeller shaft	750	54	74
Center support bearing x Body	375	27	37
Intermediate shaft x Center bearing x Joint flange			
1st	1,850	134	181
2nd	Loosen nut		
3rd	700	51	69
Cross groove joint set bolt	275	20	27

FRONT AXLE AND SUSPENSION

Specifications

Cold tire inflation pressure	(FWD/SV21 and 4WD) (FWD/VZV21)	2.1 kg/cm ² 2.2 kg/cm ²	30 psi 31 psi	206 kPa 216 kPa
Chassis ground clearance		Sedan	Wagon	
	(FWD/SV21)	233 mm (9.17 in.)	231 mm (9.09 in.)	
	(4WD) (F1ND/VZV21)	233 mm (9.17 in.) 227 mm (8.94 in.)	— 255 mm (8.86 in.)	
Front wheel alignment		Inspection STD	Adjustment STD	
	Toe-in	1 ± 2 mm (0.04 ± 0.08 in.)	1 ± 1 mm (0.04 ± 0.04 in.)	
	Camber	Sedan Wagon Left-right error	0°35' ± 45' 0°30' ± 45' 30'	—
	Steering axis inclination	Sedan Wagon Left-right error	12°45' ± 45' 12°50' ± 45' 30'	—
	Caster	Sedan Wagon Left-right error	1°40' ± 45' 1°00' ± 45' 30'	1°40' ± 30' 1°00' ± 30' 30'
	Side slip	Less than 3.0 mm/m (0.118 in./3.3 ft)		
	Wheel angle (FWD/SV21 and 4WD) (FWD/VZV21)	Inside wheel (Max.)	Outside wheel (Max.)	
		37°30' ± 1°00' 35°45'	30°45' 29°45'	
		Inside wheel at 20° outside wheel		
		22°00'		
Front axle and suspension	Wheel lateral runout	Limit	Less than 1.0 mm (0.039 in.)	
	Tie rod end left-right error	Limit	Less than 1.5 mm (0.059 in.)	
	Hub bearing axial direction play		0.05 mm	0.0020 in.
	Ball joint vertical play		0 mm	0 in.
	Ball joint rotation condition		10 — 33 kg-cm	9 — 29 in.-lb 1.0 — 3.2 N-m
	Drive shaft standard length (FWD/SV21 /TOYOTA type/LH)		558.7 ± 5.0 mm	21.996 ± 0.197 in.
	(FWD/SV21 /TOYOTA type/RH)		845.2 ± 5.0 mm	33.276 ± 0.197 in.
	(FWD/SV21 /GKN type/LH)		652.0 ± 6.0 mm	25.669 ± 0.236 in.
	(FWD/SV21 /GKN type/RH)		937.0 ± 6.0 mm	36.890 ± 0.236 in.
	(FVIJD/VZV21)		406.0 ± 5.0 mm	15.984 ± 0.197 in.
	(4WD/M/T/LH)		512.5 ± 5.0 mm	20.177 ± 0.197 in.
	(4WD/A/T/LH)		512.5 ± 5.0 mm	20.177 ± 0.197 in.
	(4WD/M/T/RH)		515.7 ± 5.0 mm	20.303 ± 0.197 in.

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SERVICE SPECIFICATIONS – Front Axle and Suspension

Torque Specifications

Part tightened	kg-cm	ft-lb	N-m
Tie rod end lock nut	570	41	56
Shock absorber X Steering knuckle Tie rod end x Steering knuckle	3,100	224	304
Ball joint x Lower suspension arm	500	36	49
Disc brake caliper X Steering knuckle	1,250	90	123
Hub bearing lock nut	1,190	86	117
Center drive shaft bearing lock nut	1,900	137	186
Ball joint x Steering knuckle	330	24	32
Drive shaft x Side gear shaft (FWD/VZV21 and 4WD)	1,150	83	113
Drive shaft x Center drive shaft (FWD/VZV21) ,	660	48	65
Center drive shaft bearing bracket installation bolt (FWD 1)	660	48	65
Drive shaft bearing bracket bolt (GKN)			
(TOYOTA)	650	47	64
Drive shaft bearing bracket x Bracket stay VZV2	330	24	32
Piston rod x Suspension support	650	47	64
Suspension support x Body	650	47	64
Disc brake hose union bolt	475	34	47
Suspension lower crossmember x Body	650	47	64
Stabilizer bar x Lower suspension arm	310	22	30
Lower arm shaft x Lower suspension arm	2,110	153	207
Lower arm shaft x Body	2,160	156	212
Stabilizer bar bracket x Body	2,160	156	212
Engine center mounting member X Body	2,110	153	207
Engine center mounting member x Engine mountings	1,300	94	127
	400	29	39
	440	32	43

SERVICE SPECIFICATIONS — Rear Axle and Suspension

REAR AXLE AND SUSPENSION

Specifications

Cold tire inflation pressure	(FWD/SV21 and 4WD) (FWD/VZV21)	2.1 kg/cm ² 1.9 kg/cm ²	30 psi 27 psi	206 kPa 186 kPa
Chassis ground clearance		Sedan	Wagon	
	(FWD SV21)	260 mm (10.24 in.)	290 mm (11.42 in.)	
	(4WD) (FWD/VZV21)	256 mm (10.08 in.) 254 mm (10.00 in.)	— 284 mm (11.18 in.)	
Rear wheel alignment		Inspection STD	Adjustment STD	
	Toe-in	(FWD/SV21) (FWD/VZV21) (4WD)	4 ± 2 mm (0.16 ± 0.08 in.) 4 ± 2 mm (0.16 ± 0.08 in.) 3 ± 2 mm (0.12 ± 0.08 in.)	4 ± 1 mm (0.16 ± 0.04 in.) 4 ± 1 mm (0.16 ± 0.04 in.) 3 ± 1 mm (0.12 ± 0.04 in.)
	Camber (FWD /Sedan) (FWD/Wagon) (4WD) Left-right error		-35' ± 30' - 5' ± 30' -30' ± 30' 30'	—
Rear axle and suspension	Wheel lateral runout	Less than 1.0 mm (0.039 in.)		
	Hub bearing axial direction Limit	0.05 mm 0.0020 in.		
Differential	Drive pinion bearing preload at Starting	10 — 16 kg-cm (8.7 — 13.9 in.-lb, 1.0 — 1.6 N-m)		
	New bearing	5 — 8 kg-cm (4.3 — 6.9 in.-lb, 0.5 — 0.8 N-m)		
	Reused bearing	Add drive pinion bearing preload 3 — 5 kg-cm (2.6 — 4.3 in.-lb, 0.3 — 0.5 N-m)		
	Total preload at Starting	0.13 — 0.18 mm 0.0051 — 0.0071 in.		
	Drive pinion to ring gear backlash	0.05 — 0.20 mm 0.0020 — 0.0079 in.		
	Pinion gear to side gear backlash	0.07 mm 0.0028 in.		
	Ring gear runout Limit	0.1 mm 0.004 in.		
	Companion flange runout	0.1 mm 0.004 in.		
	Limit Lateral runout	90 — 110°C 194 — 230°F		
	Radial runout	2.0 mm 0.079 in.		
	Ring gear installing temperature	Flash the carrier end surface		
	Drive pinion oil seal drive in depth	0.95 mm 0.0374 in.		
	Side gear oil seal drive in depth	1.00 mm 0.0394 in.		
	Side gear thrust washer thickness	1.05 mm 0.0413 in.		

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SERVICE SPECIFICATIONS — Rear Axle and Suspension

Specifications (Cont'd)

Differential (cont'd)	Drive pinion adjusting plate washer thickness	2.27 mm	0.0894 in.
		2.30 mm	0.0906 in.
		2.33 mm	0.0917 in.
		2.36 mm	0.0929 in.
		2.39 mm	0.0941 in.
		2.42 mm	0.0953 in.
		2.45 mm	0.0965 in.
		2.48 mm	0.0976 in.
		2.51 mm	0.0988 in.
		2.54 mm	0.1000 in.
		2.57 mm	0.1012 in.
		2.60 mm	0.1024 in.
		2.63 mm	0.1035 in.
		2.66 mm	0.1047 in.
		2.69 mm	0.1059 in.
	Side bearing adjusting plate, thickness	2.21 — 2.23 mm	0.0870 — 0.0878 in.
		2.24 — 2.26 mm	0.0882 — 0.0890 in.
		2.27 — 2.29 mm	0.0894 — 0.0902 in.
		2.30 — 2.32 mm	0.0906 — 0.0913 in.
		2.33 — 2.35 mm	0.0917 — 0.0925 in.
		2.36 — 2.38 mm	0.0929 — 0.0937 in.
		2.39 — 2.41 mm	0.0941 — 0.0949 in.
		2.42 — 2.44 mm	0.0953 — 0.0961 in.
		2.45 — 2.47 mm	0.0965 — 0.0972 in.
		2.48 — 2.50 mm	0.0976 — 0.0984 in.
		2.51 — 2.53 mm	0.0988 — 0.0996 in.
		2.54 — 2.56 mm	0.1000 — 0.1008 in.
		2.57 — 2.59 mm	0.1012 — 0.1020 in.
		2.60 — 2.62 mm	0.1024 — 0.1031 in.
		2.63 — 2.65 mm	0.1035 — 0.1043 in.
		2.66 — 2.68 mm	0.1047 — 0.1055 in.
		2.69 — 2.71 mm	0.1059 — 0.1067 in.
		2.72 — 2.74 mm	0.1071 — 0.1079 in.
		2.75 — 2.77 mm	0.1083 — 0.1091 in.
		2.78 — 2.80 mm	0.1094 — 0.1102 in.
		2.81 — 2.83 mm	0.1106 — 0.1114 in.
		2.84 — 2.86 mm	0.1118 — 0.1126 in.
		2.87 — 2.89 mm	0.1130 — 0.1138 in.
		2.90 — 2.92 mm	0.1142 — 0.1150 in.
		2.93 — 2.95 mm	0.1154 — 0.1161 in.
		2.96 — 2.98 mm	0.1165 — 0.1173 in.
		2.99 — 3.01 mm	0.1177 — 0.1185 in.
		3.02 — 3.04 mm	0.1189 — 0.1197 in.
		3.05 — 3.07 mm	0.1201 — 0.1209 in.
		3.08 — 3.10 mm	0.1213 — 0.1220 in.
		3.11 — 3.13 mm	0.1224 — 0.1232 in.
		3.14 — 3.16 mm	0.1236 — 0.1244 in.
		3.17 — 3.19 mm	0.1248 — 0.1256 in.
		3.20 — 3.22 mm	0.1260 — 0.1268 in.

SERVICE SPECIFICATIONS — Rear Axle and Suspension

Torque Specifications

Part tightened		kg-cm	ft-lb	N-m
Axle bearing lock nut		1,250	90	123
Axle carrier x Shock Absorber		2,300	166	226
Axle hub x Axle carrier		820	59	80
Strut rod X Axle carrier		1,150	83	113
No. 1 and No. 2 suspension arm x Axle carrier	(2WD)	1,850	134	181
Drive shaft x Side gear shaft	(4WD)	1,250	90	123
Piston rod X Suspension support	(4WD)	700	51	69
Suspension support x Body		500	36	49
No. 1 suspension Arm x Body		400	29	39
No. 2 suspension arm x Body		1,150	83	113
Strut rod X Body		1,150	83	113
Stabilizer bar X Stabilizer bar link		1,150	83	113
Shock absorber X Stabilizer bar link		1,150	83	113
Stabilizer bar bracket x Body		650	47	64
Fuel tank band X Body		650	47	64
Hub nut		195	14	19
		400	29	39
		1,050	76	103
(4WD)				
Differential x Support member	(Under side)	970	70	95
	(Rear side)	1,500	108	147
Carrier x Carrier cover		475	34	47
Carrier X Drain plug		500	36	49
Carrier x Filler plug		400	29	39
Carrier x Side bearing cap		800	58	78
Ring gear x Differential case		985	71	97
Drive pinion x Companion flange		See page RA-39		
Companion flange x Propeller shaft		750	54	74

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SERVICE SPECIFICATIONS — Brake System

BRAKE SYSTEM

Specifications

Brake pedal	Pedal height (from asphalt sheet) Pedal freeplay Pedal reserve distance at 50 kg (110.2 lb, 490 N)		177.5 — 187.5 mm 3 — 6 mm More than 85 mm (3.35 in.)	6.988 — 7.382 in. 0.12 — 0.24 in.
Brake booster	Booster push rod to piston clearance w/ SST		0 mm	0 in.
Front brake	Disc thickness	STD	25.0 mm	0.984 in.
		Limit	24.0 mm	0.945 in.
	Disc runout	Limit	0.07 mm	0.0028 in.
	Pad thickness	STD	10.0 mm	0.394 in.
		Limit	1.0 mm	0.039 in.
Rear brake (Drum)	Drum inside diameter	STD	200.0 mm	7.874 in.
		Limit	201.0 mm	7.913 in.
	Lining thickness	STD	4.0 mm	0.157 in.
		Limit	1.0 mm	0.039 in.
Rear brake (Disc)	Pad thickness	STD	10.0 mm	0.394 in.
		Limit	1.0 mm	0.039 in.
	Disc thickness	STD	10.0 mm	0.394 in.
		Limit	9.0 mm	0.354 in.
	Disc runout	Limit	0.15 mm	0.0059 in.
Parking brake (Drum)	Lever travel at 20 kg (44.1 lb, 196 N)		5 — 8 clicks	
	Shoe to parking brake shoe lever clearance		0 — 0.35 mm	0 — 0.138 in.
	Parking brake shoe lever shim thickness		0.2 mm	0.008 in.
			0.3 mm	0.012 in.
			0.4 mm	0.016 in.
			0.5 mm	0.020 in.
			0.6 mm	0.024 in.
			0.9 mm	0.035 in.
	Drum to shoe clearance		0.6 mm	0.024 in.
Parking brake (Disc)	Rear disc inner diameter	STD	170 mm	6.69 in.
		Limit	171 mm	6.73 in.
	Limit thickness	STD	2.0 mm	0.079 in.
		Limit	1.0 mm	0.039 in.
	Lever travel at 20 kg 144.1 lb, 196 N)		5 — 8 clicks	
	Clearance between rear shoe and lever		0 — 0.35 mm	0 — 0.0138 in.
	Parking brake shoe lever shim thickness		0.3 mm	0.012 in.
			0.6 mm	0.024 in.
			0.9 mm	0.035 in.

SERVICE SPECIFICATIONS – Brake System

Torque Specifications

Part tightened	kg-cm	ft-lb	N-m
Master cylinder X Piston stopper bolt	100	7	10
Master cylinder x Reservoir	17.5	15.2 in.-lb	1.7
Master cylinder x Brake booster	130	9	13
Brake tube union nut	155	11	15
Brake booster clevis lock nut	260	19	25
Brake booster x Pedal bracket	130	18	25
Front disc brake cylinder installation bolt	400	29	39
Front disc brake torque plate X Steering knuckle	1,090	79	107
Front disc brake cylinder x Flexible hose	310	22	30
Rear drum brake wheel cylinder x Backing plate	100	7	10
Parking brake cable bracket x Backing plate	80	69 in.-lb	7.8
Bleeder plug	85	74 in.-lb	8.3
Rear disc brake cylinder installation bolt	200	14	20
Rear disc brake torque plate X Dust cover	475	34	47
Rear disc brake cylinder X Flexible hose	310	22	30
Rear disc brake main pin x Torque plate	270	20	26
Rear disc brake torque plate x Rear axle carrier	475	34	47
A.B.S. actuator x Proportioning valve bracket (w/o LSPV)	90	78 in.-lb	8.8
A.B.S. actuator x 3-way union (w/ LSPV)	90	78 in.-lb	8.8
Proportioning valve installation bolt (w/o LSPV)	90	78 in.-lb	8.8
A.B.S. actuator x 3-way union	160	12	16
A.B.S. actuator bracket x Body	530	38	52
(Front LH bolt)	195	14	19
(Others)	80	69 in.-lb	7.8
Front speed sensor installation bolt	140	10	14
Front sensor rotor x Axle hub	80	69 in.-lb	7.8
Rear speed sensor installation bolt	195	14	19
(2WD)	820	59	80
(4WD)	32.5	28 in.-lb	3.2
Rear axle hub installation bolt	32.5	28 in.-lb	3.2
Deceleration sensor x Computer bracket	55	48 in.-lb	5.4
(For 4WD)			
A.B.S. computer x Computer bracket			
A.B.S. computer bracket x Body			

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SERVICE SPECIFICATIONS — Steering

STEERING

Specifications

Steering column	Steering wheel freeplay		30 mm (1.18 in.) or less	
	Collar No. 1 outer diameter		17.989 — 17.996 mm	0.7082 — 0.7085 in.
			17.996 — 18.003 mm	0.7085 — 0.7088 in.
			18.003 — 18.010 mm	0.7088 — 0.7091 in.
			18.010 — 18.017 mm	0.7091 — 0.7093 in.
			18.017 — 18.024 mm	0.7093 — 0.7096 in.
	Collar No. 2 outer diameter		17.982 — 18.000 mm	0.7080 — 0.7087 in.
			18.000 — 18.018 mm	0.7087 — 0.7094 in.
	Support shim thickness	Mark		
		None	0.17 — 0.23 mm	0.0067 — 0.0091 in.
		5	0.45 — 0.55 mm	0.0177 — 0.0217 in.
		8	0.75 — 0.85 mm	0.0295 — 0.0335 in.
		14	1.35 — 1.45 mm	0.0531 — 0.0571 in.
		18	1.75 — 1.85 mm	0.0689 — 0.0728 in.
Power steering	Drive belt tension	New belt	125 ± 25 lb	
		Used belt	80 ± 20 lb	
	Maximum rise of oil level		Below 5 mm (0.20 in.)	
	Oil pressure at idle speed	(SV series)	65 kg/cm ² (924 psi, 6,374 kPa) or more	
		(VZV series)	75 kg/cm ² (1,067 psi, 7,355 kPa) or more	
	Steering effort	Maximum	70 kg-cm (61 in.-lb, 6.9 N-m)	
	Rotor shaft bushing oil clearance	STD	0.01 — 0.03 mm	0.0004 — 0.0012 in.
		Maximum	0.07 mm	0.0028 in.
	Vane plate to rotor groove clearance	Maximum	0.03 mm	0.0012 in.
	Vane plate	Minimum height	8.0 mm	0.315 in.
		Minimum thickness	1.77 mm	0.0697 in.
		Minimum length	14.97 mm	0.5894 in.
	Vane plate length Rotor and cam ring mark	None	14.996 — 14.998 mm	0.5904 — 0.5905 in.
		1	14.994 — 14.996 mm	0.5903 — 0.5904 in.
		2	14.992 — 14.994 mm	0.5902 — 0.5903 in.
		3	14.990 — 14.992 mm	0.59016 — 0.59024 in.
		4	14.988 — 14.990 mm	0.5901 — 0.5902 in.
	Flow control valve spring length	STD	38 mm	1.49 in.
		Minimum	36 mm	1.42 in.
	PS pump rotating torque		2.8 kg-cm (2.4 in.-lb, 0.3 N-m) or less	
	Steering rack runout	Maximum	0.3 mm	0.012 in.
	Control valve bearing preload	at Turning	4.5 — 6.5 kg-cm	
			(3.9 — 5.6 in.-lb, 0.4 — 0.6 N-m)	
	Total preload	at Turning	9 — 12 kg-cm	
			(7.8 — 10.4 in.-lb, 0.9 — 1.2 N-m)	

SERVICE SPECIFICATIONS – Steering

Torque Specifications

Steering column	Part tightened	kg-cm	ft-lb	N-m
	Upper tube x Upper bracket	185	13	18
	Tilt lever retainer x Breakaway bracket	195	14	19
	Serration bolt	195	14	19
	Upper bracket x Column cover support	110	8	11
	Column tube x Breakaway bracket	185	13	18
	Main shaft X Intermediate shaft	260	19	25
	Column tube X Thrust stopper	130	9	13
	Breakaway bracket x Body	260	19	25
	Column tube x Body	260	19	25
	Column support bolt .	120	9	12
	Universal joint	360	26	35
	Steering wheel x Main shaft	350	25	34
Power steering (2WD/SV21)	Pressure port union X Front housing	700	51	69
	Suction port union x Front housing	130	9	13
	Air control valve x Front housing	370	27	36
	PS pump shaft x Drive pulley	440	32	43
	PS pump x Pump bracket	(Adjusting bolt) 400	29	39
		(Through bolt) 440	32	43
	PS pump x Pressure tube	525	38	51
	Control valve housing X Cylinder housing	315	23	31
	Bearing guide lock nut	570	41	56
	Rack guide spring cap lock nut	570	41	56
	Rack x Rack end	730	53	72
	Turn pressure tube x Gear housing	200	14	20
	Gear housing x Body	600	43	59
	Pressure tube x Gear housing	450	33	44
	Return tube x Gear housing	450	33	44
	Tie rod end X Knuckle arm	500	36	49
	Tie rod end lock nut	570	41	56
Power steering (2WD/VZV21)	PS pump x Pressure hose	525	38	51
	Pressure hose x Flexible nut	370	27	36
	PS pump x Bracket	Upper 410	30	40
		Lower 400	29	39
	Tie rod end x Knuckle arm	500	36	49
	Lower crossmember	2,110	153	207
	Pressure port union X Front housing	700	51	69
	Suction port union X Front housing	130	9	13
	PS pump shaft x Drive pulley	440	32	43
	Control valve housing X Cylinder housing	315	23	31
	Bearing guide lock nut	570	41	56
	Rack guide spring cap lock nut	570	41	56
	Rack x Rack end	730	53	72
	Turn pressure tube x Gear housing	200	14	20
	Gear housing X Pressure and return line	450	33	44
	Universal joint	360	26	35
	Gear housing X Body	600	43	59
	Engine rear mount bracket	530	38	52

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SERVICE SPECIFICATIONS – Steering

Torque Specifications (Cont'd)

Power steering (2WD/VZV21) (cont'd)	Part tightened		kg-cm	ft-lb	N-m
	Center member	Center	490	35	48
		Others	400	29	39
	Front exhaust pipe	Front nut	630	46	62
		Front bolt	210	15	21
		Rear	440	32	43
Power steering (4WD)	Pressure port union x Front housing		700	51	69
	Suction port union x Front housing		130	9	13
	PS pump shaft X Drive pulley		440	32	43
	PS pump x Pressure hose		525	38	51
	PS pump x Bracket				
		Upper	440	32	43
		Lower	400	29	39
	Rear pump stay X Pump bracket		400	29	39
	Lower crossmember		2,110	153	207
	Pressure hose X Pressure tube		370	27	36
	Control valve housing X Cylinder housing		315	23	31
	Bearing guide lock nut		570	41	56
	Rack –guide spring cap lock nut		570	41	56
	Rack X Rack end		730	53	72
	Turn pressure tube x Gear housing		200	14	20
	Gear housing X Body		600	43	59
	Engine rear mount bracket		530	38	52
	Gear housing X Return line		450	33	44
	Gear housing X Pressure line		450	33	44
	Center member x Body		400	29	39
	Universal joint		400	29	39
	Tie rod end lock nut		360	26	35
	Propeller shaft x Intermediate shaft		500	36	49
	Front exhaust pipe		750	54	74
		Front	630	46	62
		Rear	440	32	43

SERVICE SPECIFICATIONS – Body

BODY**Torque Specifications**

Part tightened	kg-cm	ft-lb	N-m
Front Seat			
Seat back x Seat adjuster	185	13	18
Seat cushion x Seat- adjuster	185	13	18
Seat adjuster x Body	375	27	37
Rear Seat (Sedan Fixed Type)			
Seat back x Body .	150	11	15
Rear Seat (Sedan Separate Type)			
Seat back side hinge x Seat back	185	13	18
Seat back side hinge x Body	185	13	18
Seat back center hinge x Seat back	80	69 in.-lb	7.8
Seat back center hinge x Body	80	69 in.-lb	7.8
Side seat back x Body Rear Seat (Station Wagon)	150	11	13
Seat back side hinge x Seat back			
Seat back side hinge x Body	185	13	18
Seat back center hinge x Seat back	185	13	18
Seat back center hinge x Body	80	69 in.-lb	7.8
Side seat back x Body	80	69 in.-lb	7.8
Seat cushion x Body	150	11	15
Front Seat Belt (w/Automatic Shoulder Belt)	185	13	18
Guide rail x Body			
Shoulder belt x Guide rail	80	69 in.-lb	7.8
ELR x Parking brake bracket	80	69 in.-lb	7.8
Inner lap belt x Bracket	150	11	15
Outer lap belt x Body	185	13	18
Bracket x Seat			
Slide anchor plate x Belt anchor base	80	69 in.-lb	7.8
Belt anchor base x Body	200	14	20
Front Seat Belt (w/o Automatic Shoulder Belt)	195	14	19
Shoulder belt anchor x Body	440	32	43
Shoulder belt lower side x Body	440	32	43
ELR upper side x Body	440	32	43
Inner belt x Bracket			
Bracket x Seat	440	32	43
Slide anchor plate x Belt anchor base	440	32	43
Belt anchor base x Body	80	69 in.-lb	7.8
Rear Seat Belt	440	32	43
Shoulder belt anchor x Body	195	14	19
Shoulder belt lower side x Body	440	32	43
ELR x Body (Sedan)	440	32	43
ELR upper side x Body (Station Wagon)			
ELR lower side x Body jStation Wagon)	440	32	43
Inner seat belt x Body	440	32	43
CRS tether anchor x Body	440	32	43
	440	32	43
	80	69 in.-lb	7.8
	440	32	43
	440	32	43
	210	15	21

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SERVICE SPECIFICATIONS – Lubricant

LUBRICANT

Item		Capacity			Classification
		Liters	US qts	Imp. qts	
Manual transaxle oil	S51 (w/ Differential oil)	2.6	2.7	2.3	ATF DEXRON [®] 11
	E56F5 (w/ Differential and transfer)	5.0	5.3	4.4	Transaxle oil E50 (08885–80206) or equivalent Recommended oil Oil grade: AN GL–5 Viscosity : SAE 75W–90 or 80W–90 SAE 90W [above –18°C (0°F)] SAE 80W [below –18°C (0°F)]
	E52	4.2	4.4	3.7	API GL–4 or GL–5 SAE 75W–90 or 80W–90
Automatic transaxle fluid (w/o Differential oil)	AI 40L Dry fill	5.7	6.0	5.0	ATF DEXRON II
	Drain and refill	2.5	2.6	2.2	
	AI 40E Dry fill	5.3	5.6	4.7	
	Drain and refill	2.5	2.6	2.2	
	A540E Dry fill	5.9	6.2	5.2	ATF type T (08886–00405) or equivalent
	Drain and refill	2.5	2.6	2.2	
	A540H Dry fill	7.0	7.4	6.2	
	Drain and refill	3.3	3.5	2.9	
Differential oil (w/ Automatic transaxle) SV21 series		1.6	1.7	1.4	ATF DEXRON II
VZV21 series		1.0	1.1	0.9	
Transfer oil (A540H)		0.7	0.74	0.62	Transaxle oil E50 (08885–80206) or equivalent Recommended oil Oil grade: API GL–5 Viscosity : SAE 75W–90 or 80W–90 SAE 90W [above –18°C (0°F)] SAE 80W [below –18°C (0°F)]
Rear differential oil		1.1	1.2	1.0	API grade GL–5 Hypoid gear oil Viscosity: Above –18°C (0°F) SAE 90 Below –18°C (0°F) SAE 80W–90
Power steering fluid		800cc 48.8 cu in.			ATF DEXRON II
Steering gear housing grease		—			Molybdenum disulphide lithium base, NLGI No. 2
Wheel bearing grease		—			Lithium base multipurpose, NLGI No. 2
Brake fluid					SAE J 1703 or FMVSS No. 116, DQT3