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# SERVICE SPECIFICATIONS

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## MAINTENANCE

### Engine

<b>Drive belt tension</b>					
Alternator (V-ribbed)		New belt	175 ± 5 lb		
		Used belt	115 ± 20 lb		
PS pump and A/C compressor		New belt	125 ± 25 lb		
		Used belt	80 ± 20 lb		
<b>Coolant capacity w/ heater or air conditioner</b>					
2WD	w/o Rear heater		7.9 liters	8.3 US qts	7.0 Imp. qts
	w/ Rear heater		8.4 liters	8.9 US qts	7.4 Imp. qts
4WD	w/o Rear heater		7.0 liters	7.4 US qts	6.2 Imp. qts
	w/ Rear heater		7.5 liters	7.9 US qts	6.6 Imp. qts
<b>Engine oil capacity</b>		Drain and refill			
		w/ Oil filter change	3.5 liters	3.7 US qts	3.1 Imp. qts
Spark plug	Type	ND	P16R		
		NGK	BPR5EP11		
	Gap		1.1 mm	0.043 in.	
Firing order			1 — 3 — 4 — 2		
Idle speed		M/T	700 rpm		
		A/T	750 rpm		

### Chassis

<b>Front brake</b>					
Pad thickness	2WD	Limit	1.0 mm	0.039 in.	
	4WD	Limit	3.0 mm	0.118 in.	
Disc thickness	2WD	Limit	19.0 mm	0.748 in.	
	4WD	Limit	24.0 mm	0.945 in.	
Disc runout		Limit	0.15 mm	0.0059 in.	
<b>Rear brake</b>					
Lining thickness		Limit	1.0 mm	0.039 in.	
Drum inner diameter		Limit	256.0 mm	10.079 in.	
<b>Front axle and suspension</b>					
Ball joint vertical play	Lower	Limit	2.3 mm	0.091 in.	
	Upper	Limit	0 mm	0 in.	
Wheel bearing friction preload					
	2WD	at Rotating	350 — 870 g	0.8 — 1.9 lb	3.4 — 8.5 N
	4WD	at Starting	1.0 — 2.4 kg	2.2 — 5.3 lb	10 — 24 N
Steering wheel freeplay			Less than 30 mm (1.18 in.)		
<b>Torque specifications:</b>					
Front seat mounting bolts or nuts			375 kg-cm	27 ft-lb	37 N·m
Engine front mounting member x Body			400 kg-cm	29 ft-lb	39 N·m
Strut bar bracket (2WD) x Body			900 kg-cm	65 ft-lb	88 N·m
Stabilizer bar bracket x Body			900 kg-cm	65 ft-lb	88 N·m

## ENGINE MECHANICAL Specifications

Intake manifold vacuum	at Idle speed		400 mmHg (15.75 in.Hg, 53.3 kPa) or more	
Compression pressure	Engine revolution	at 250 rpm	STD Limit	
	Difference of pressure between each cylinder		12.5 kg/cm <sup>2</sup> (178 psi, 1,226 kPa) or more 9.0 kg/cm <sup>2</sup> 128 psi 883 kPa 1.0 kg/cm <sup>2</sup> (14 psi, 98 kPa) or less	
Cylinder head	Cylinder block side warp	Limit	0.15 mm 0.0059 in.	
	Manifold side warp	Limit	0.10 mm 0.0039 in.	
	Valve seat Refacing angle	Intake	30°, 45°, 60°	
		Exhaust	30°, 45°, 65°	
	Contacting angle		45°	
Contacting width		1.2 – 1.6 mm	0.047 – 0.063 in.	
Valve guide bushing	Inner diameter		8.010 – 8.030 mm 0.3154 – 0.3161 in.	
	Outer diameter	STD	13.040 – 13.051 mm 0.5134 – 0.5138 in.	
		O/S 0.05	13.090 – 13.101 mm 0.5154 – 0.5158 in.	
Valve	Valve overall length	STD	Intake 108.2 mm 4.260 in.	
			Exhaust 108.5 mm 4.272 in.	
		Limit	Intake 107.7 mm 4.240 in.	
			Exhaust 108.0 mm 4.252 in.	
	Valve face angle		IN & EX 44.5°	
	Stem diameter	Intake	7.970 – 7.985 mm 0.3138 – 0.3144 in.	
		Exhaust	7.965 – 7.980 mm 0.3136 – 0.3142 in.	
	Stem oil clearance	STD	Intake 0.025 – 0.060 mm 0.0010 – 0.0024 in.	
			Exhaust 0.030 – 0.065 mm 0.0012 – 0.0026 in.	
		Limit	Intake 0.10 mm 0.0039 in.	
			Exhaust 0.12 mm 0.0047 in.	
	Margin thickness	STD	Intake 1.0 – 1.4 mm 0.039 – 0.055 in.	
			Exhaust 1.3 – 1.7 mm 0.051 – 0.067 in.	
Limit		Intake 0.5 mm 0.020 in.		
		Exhaust 0.8 mm 0.031 in.		
Valve spring	Free length		47 mm 1.85 in.	
	Installed load at 40.6 mm (1.598 in.)		28.8 – 35.2 kg (63.5 – 77.6 lb, 282 – 345 N)	
		Squareness	Limit	2.0 mm 0.079 in.
Rocker arm and shaft	Rocker arm inside diameter	STD	18.500 – 18.515 mm 0.7283 – 0.7289 in.	
	Rocker shaft diameter	STD	18.474 – 18.487 mm 0.7273 – 0.7278 in.	
	Rocker arm to shaft oil clearance	STD	0.013 – 0.041 mm 0.0005 – 0.0016 in.	
		Limit	0.08 mm 0.0031 in.	
Push rod	Circle runout		0.30 mm 0.0118 in.	
Intake and exhaust manifold	Manifold surface warp	Limit IN & EX	0.4 mm 0.016 in.	
Air intake chamber	Air intake chamber surface warp	Limit	0.3 mm 0.012 in.	

## Specifications (Cont'd)

Chain and sprocket	Chain slack at 10 kg (22.0 lb, 98 N)	Limit	13.5 mm	0.531 in.	
	Chain elongation	Limit	291.4 mm	11.472 in.	
	Crankshaft sprocket wear	Limit	59 mm	2.32 in.	
	Camshaft sprocket wear	Limit	114 mm	4.49 in.	
Tension and damper	Tensioner head thickness	STD	15.0 mm	0.591 in.	
		Limit	12.5 mm	0.492 in.	
	Damper thickness	STD	6.6 mm	0.260 in.	
		Limit	5.0 mm	0.197 in.	
Valve lifter	Lifter diameter		21.387 – 21.404 mm	0.8420 – 0.8427 in.	
	Cylinder block lifter bore diameter		21.417 – 21.443 mm	0.8432 – 0.8442 in.	
	Oil clearance	STD	0.012 – 0.056 mm	0.0005 – 0.0022 in.	
		Limit	0.1 mm	0.004 in.	
	Leak down test at 20 kg (44.1 lb, 196 N)		7 – 50 seconds/1 mm	(0.04 in.)	
Camshaft	Thrust clearance	STD	0.07 – 0.22 mm	0.0028 – 0.0087 in.	
		Limit	0.3 mm	0.012 in.	
	Journal oil clearance	STD	0.025 – 0.081 mm	0.0010 – 0.0032 in.	
		Limit	0.10 mm	0.0039 in.	
	Journal diameter	STD	No. 1	46.459 – 46.475 mm	1.8291 – 1.8297 in.
			No. 2	46.209 – 46.225 mm	1.8192 – 1.8199 in.
			No. 3	45.959 – 45.975 mm	1.8094 – 1.8100 in.
			No. 4	45.709 – 45.725 mm	1.7996 – 1.8002 in.
			No. 5	45.459 – 45.475 mm	1.7897 – 1.7904 in.
	Bearing inside diameter	STD	No. 1	46.500 – 46.540 mm	1.8307 – 1.8323 in.
			No. 2	46.250 – 46.290 mm	1.8209 – 1.8224 in.
			No. 3	46.000 – 46.040 mm	1.8110 – 1.8126 in.
			No. 4	45.750 – 45.790 mm	1.8012 – 1.8028 in.
			No. 5	45.500 – 45.540 mm	1.7913 – 1.7929 in.
	Circle runout		Limit	0.06 mm	0.0024 in.
	Cam lobe height	STD	Intake	38.620 – 38.720 mm	1.5205 – 1.5244 in.
Exhaust			38.629 – 38.729 mm	1.5208 – 1.5248 in.	
Limit		Intake	38.26 mm	1.5063 in.	
		Exhaust	38.27 mm	1.5067 in.	
Cylinder block	Cylinder head surface warpage	Limit	0.05 mm	0.0020 in.	
	Cylinder bore diameter	STD	91.000 – 91.030 mm	3.5827 – 3.5839 in.	
		Limit	91.23 mm	3.5917 in.	
		O/S 0.50	Limit	91.73 mm	3.6114 in.
Piston and piston ring	Piston diameter	STD	90.925 – 90.955 mm	3.5797 – 3.5809 in.	
		O/S 0.50	91.425 – 91.455 mm	3.5994 – 3.6006 in.	
	Piston to cylinder clearance	STD	0.065 – 0.085 mm	0.0026 – 0.0033 in.	
	Ring to ring groove clearance		0.03 – 0.07 mm	0.0012 – 0.0028 in.	
	Piston ring end gap	STD	No. 1	0.23 – 0.48 mm	0.0091 – 0.0189 in.
			No. 2	0.16 – 0.44 mm	0.0063 – 0.0173 in.
			Oil	0.13 – 0.47 mm	0.0051 – 0.0185 in.
		Limit	No. 1	1.08 mm	0.0425 in.
No. 2	1.04 mm		0.0409 in.		
		Oil	1.07 mm	0.0421 in.	

Specifications (Cont'd)

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	STD	No. 6	1.486 – 1.490 mm	0.0585 – 0.0587 in.
			No. 7	1.490 – 1.494 mm	0.0587 – 0.0588 in.
			No. 8	1.494 – 1.498 mm	0.0588 – 0.0590 in.
	Bearing oil clearance	STD		0.020 – 0.051 mm	0.0008 – 0.0020 in.
		Limit		0.10 mm	0.0039 in.
	Rod bend	Limit	per 100 mm (3.94 in.)	0.05 mm	0.0020 in.
Rod twist	Limit	per 100 mm (3.94 in.)	0.05 mm	0.0020 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	STD		2.440 – 2.490 mm	0.0961 – 0.0980 in.
		O/S 0.125		2.503 – 2.553 mm	0.0985 – 0.1005 in.
		O/S 0.250		2.565 – 2.615 mm	0.1010 – 0.1030 in.
	Main journal oil clearance	STD		0.020 – 0.051 mm	0.0008 – 0.0020 in.
		Limit		0.10 mm	0.0039 in.
	Main journal diameter	STD		57.985 – 58.000 mm	2.2829 – 2.2835 in.
		U/S 0.25		57.745 – 57.755 mm	2.2734 – 2.2738 in.
	Main bearing center wall thickness	STD	No. 1	1.986 – 1.990 mm	0.0781 – 0.0783 in.
			No. 2	1.990 – 1.994 mm	0.0783 – 0.0785 in.
			No. 3	1.994 – 1.998 mm	0.0785 – 0.0787 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
Manifold x Cylinder head	500	36	49
Cylinder head x Cylinder block	12 mm bolt head	195	14
		14 mm bolt head	900
Valve rocker shaft x Cylinder head	240	17	24
Air intake chamber x Manifold	120	9	12
Exhaust pipe x Exhaust manifold	630	46	62
Camshaft thrust plate x Cylinder block	185	13	18
Vibration damper x Cylinder block	185	13	18
Camshaft sprocket x Camshaft	920	67	90
Chain tensioner x Cylinder block	185	13	18
Timing chain cover x Chain case	60	52 in.-lb	5.9
Crankshaft pulley x Crankshaft	1,600	116	157
Main bearing cap x Cylinder block	800	58	78
Connecting rod cap x Connecting rod	500	36	49

**Torque Specifications (Cont'd)**

Part tightened	kg-cm	ft-lb	N·m
Rear oil seal retainer x Cylinder block	120	9	12
Timing chain case x Cylinder block	185	13	18
Flywheel x Crankshaft	850	61	83
Drive plate x Crankshaft	750	54	74
Engine front mounting member x Body	400	29	39
Strut bar bracket (2WD) x Body	900	65	88
Stabilizer bar bracket (4WD) x Body	900	65	88

**EFI SYSTEM**  
**Specifications**

Fuel pressure regulator	Fuel pressure at No vacuum	2.3 – 2.7 kg/cm <sup>2</sup> (33 – 38 psi, 226 – 265 kPa)			
Cold start injector	Resistance Fuel leakage	3 – 5 Ω One drop or less of fuel per minute			
Injector	Resistance Injection volume Difference between each injector Fuel leakage	1.5 – 3.0 Ω 40 – 50 cc/15 sec (2.4 – 3.1 cu in./15 sec) 5 cc (0.3 cu in.) or less One drop or less of fuel per minute			
Auxiliary air valve	Resistance (EP – E1) Temperature w/ Valve closed	40 – 60 Ω About 80°C (176°F)			
Throttle body	Throttle valve fully closed angle	6°			
Throttle position sensor	Throttle opening angle (from Vertical)	Clearance between stop screw and lever	IDL – E1	PSW – E1	IDL – PSW
	—	0.57 mm 0.0224 in.	Continuity	No continuity	No continuity
	—	0.85 mm 0.0335 in.	No continuity	No continuity	No continuity
	Fully opened position	—	No continuity	Continuity	No continuity
	64° 68°	— —	No continuity No continuity	No continuity Continuity	No continuity No continuity
EFI main relay	Resistance	1 – 3	40 – 60 Ω		
		2 – 4	∞		
Circuit opening relay	Resistance	STA – E1	17 – 25 Ω		
		B – FC	88 – 112 Ω		
		B – FP	∞		
Solenoid resistor	Resistance	2 – 3 Ω each			
Cold start injector time switch	Resistance	STA – STJ	20 – 40 Ω	below 30°C (86°F)	
			40 – 60 Ω	above 40°C (104°F)	
		STA – Ground	20 – 40 Ω	below 30°C (86°F)	
			20 – 80 Ω	above 40°C (104°F)	
Air flow meter	Resistance	E2 – VS	20 – 400 Ω (Measuring plate fully closed)		
			20 – 1,000 Ω (Measuring plate fully open)		
		E2 – VC	100 – 300 Ω		
		E2 – +B	200 – 400 Ω		
		E1 – FC	∞ (Measuring plate closed)		
			0 (Measuring plate open)		
		E2 – THA	10 – 20 kΩ at –20°C (–4°F)		
			4 – 7 kΩ at 0°C (32°F)		
			2 – 2.7 kΩ at 20°C (68°F)		
			0.9 – 1.3 kΩ at 40°C (104°F)		
			0.4 – 0.7 kΩ at 60°C (140°F)		

Specifications (Cont'd)

Water temp. sensor	Resistance (THW – E2)		10 – 20 kΩ at –20°C (–4°F) 4 – 7 kΩ at 0°C (32°F) 2 – 3 kΩ at 20°C (68°F) 0.9 – 1.3 kΩ at 40°C (104°F) 0.4 – 0.7 kΩ at 60°C (140°F) 0.2 – 0.4 kΩ at 80°C (176°F)		
Computer	NOTE: 1. Perform all voltage and resistance measurements with the ECU connected. 2. Verify that the battery voltage is 11 V or above when the ignition switch is ON.				
Terminals voltage	Terminals	Condition		Voltage (V)	
	+B – E1 +B1	Ignition switch ON		10 – 14	
	BATT – E1	—		10 – 14	
	IDL – E1	Ignition switch ON	Throttle valve open	8 – 14	
	PSW – E1	Ignition switch ON	Throttle valve closed	8 – 14	
	IGT – E1	Idling		0.7 – 1.0	
	STA – E1	Cranking		6 – 12	
	No. 10 No. 20 – E1	Ignition switch ON		9 – 14	
	W – E2	No throttle and engine running		8 – 12	
	VC – E2	Ignition switch ON		6 – 10	
	VS – E2 E21	Ignition switch ON	Measuring plate fully closed	0.5 – 2.5	
		Idling	Measuring plate fully open	5 – 10	
	THA – E2	Ignition switch ON	Intake air temp. 20°C (68°F)	1 – 3	
	THW – E2	Ignition switch ON	Coolant temp. 80°C (176°F)	0.5 – 2.5	
	A/C – E1	Ignition switch ON	A/C ON	10 – 14	
	T – E1	Ignition switch ON	Check engine connector not short	10 – 14	
			Check engine connector short	0	
	Resistance	Terminals	Condition		Resistance (Ω)
		IDL – E1	Throttle valve open		∞
			Throttle valve fully closed		0
PSW – E1		Throttle valve fully open		0	
		Throttle valve fully closed		∞	
+B – E2		—		200 – 400	
VC – E2		—		100 – 300	
VS – E2		Measuring plate fully closed		20 – 400	
		Measuring plate fully open		20 – 1,000	
THA – E2		Intake air temp. 20°C (68°F)		2,000 – 3,000	
THW – E2	Coolant temp. 80°C (176°F)		200 – 400		
Fuel cut rpm (w/ Vehicle speed 0 km/h and coolant temp. 80°C (176°F))		Fuel cut rpm	2,200 rpm		
		Fuel return rpm	1,800 rpm		

## Torque Specifications

Part tightened	kg-cm	ft-lb	N·m
Fuel sender gauge	35	30 in.-lb	3.4
Fuel pump x Fuel tank	50	43 in.-lb	4.9
Fuel drain plug	130	9	13
Fuel tank band x Body	440	32	43
Cold start injector x Air intake chamber	60	52 in.-lb	5.9
Cold start injector pipe x Cold start injector	200	14	20
Cold start injector pipe x Delivery pipe	200	14	20
Fuel pressure regulator x Delivery pipe	60	52 in.-lb	5.9
Fuel inlet pipe x Delivery pipe	300	22	29
Fuel return pipe x Fuel pressure regulator	200	14	20
Throttle body x Air intake chamber	120	9	12

## COOLING SYSTEM

### Specifications

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

## Torque Specifications

Part tightened	kg-cm	ft-lb	N·m
Water pump x Cylinder block	185	13	18
Water pump x Timing gear case	185	13	18
Alternator adjusting bar x Cylinder block	400	29	39
Water inlet x Timing chain case	120	9	12

## LUBRICATION SYSTEM

### Specifications

Engine oil capacity		See page A-33	
Oil pressure	at Idle speed	0.3 kg/cm <sup>2</sup> (4.3 psi, 2.9 kPa) or more	
	at 3,000 rpm	2.5 — 5.0 kg/cm <sup>2</sup> (36 — 71 psi, 245 — 490 kPa)	
Oil pump	Body clearance	STD	0.10 — 0.15 mm      0.0039 — 0.0059 in.
		Limit	0.20 mm      0.0079 in.
	Tip clearance	STD	0.07 — 0.12 mm      0.0028 — 0.0047 in.
		Limit	0.20 mm      0.0079 in.
	Side clearance	STD	0.03 — 0.07 mm      0.0012 — 0.0028 in.
		Limit	0.15 mm      0.0059 in.
Relief valve operating pressure		3.6 — 4.4 kg/cm <sup>2</sup> (51 — 63 psi, 353 — 431 kPa)	

## Torque Specifications

Part tightened	kg-cm	ft-lb	N·m
Oil pump relief valve spring plug x Oil pump body	375	27	37
Oil pump cover x Oil pump body	80	69 in.-lb	7.8
Oil pump x Cylinder block	185	13	18
Oil pan x Cylinder block	130	9	13
Oil pan x Timing chain case	130	9	13
Oil pan x Rear oil seal retainer	130	9	13
Oil level sensor x Oil pan	55	48 in.-lb	5.4

## IGNITION SYSTEM

Ignition timing (w/ Terminals T — E1 short circuited)		12° BTDC @ Idle	
Spark plug		See page A-2	
Firing order		1 — 3 — 4 — 2	
High-tension cord	Resistance	Limit	25 kΩ per cord
Ignition coil	Primary coil resistance	1.2 — 1.5 Ω	
	Secondary coil resistance	7.5 — 10.5 kΩ	
IIA	Air gap	0.2 mm (0.008 in.) or more	
	Pickup coil resistance	140 — 180 Ω	
	Governor shaft thrust clearance	0.15 — 0.50 mm	0.0059 — 0.0197 in.
	Governor shaft thrust washer thickness	0.3 mm	0.012 in.
		0.4 mm	0.016 in.
0.5 mm		0.020 in.	
	0.6 mm	0.024 in.	

## STARTING SYSTEM

Starter	Rated voltage and output power		12V 1.4 kw		
	No-load characteristic	Current	90A or less at 11.5V		
		rpm	3,000 rpm or more		
	Brush length	STD	15.5 mm	0.610 in.	
		Limit	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	0.236 in.
			Limit	0.2 mm	0.008 in.
		Circle runout	Limit	0.05 mm	0.0020 in.
		Spring installed load		1.79 — 2.41 kg	3.9 — 5.3 lb 18 — 24 N

## CHARGING SYSTEM

Battery specific gravity	When fully charged at 20°C (68°F)	1.25 — 1.27		
Drive belt tension		See pge A-2		
Alternator	Rated output	12V 70A		
	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	Regulating voltage at 25°C (77°F)	13.5 — 15.1 V		

## CLUTCH

### Specifications

Pedal height (from asphalt sheet)		171 — 181 mm	6.73 — 7.13 in.
Push rod play at pedal top		1 — 5 mm	0.04 — 0.20 in.
Pedal freeplay		5 — 15 mm	0.20 — 0.59 in.
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	Limit	0.6 mm
	Width	Limit	5.0 mm
Flywheel runout	Limit	0.2 mm	0.008 in.

### Torque Specifications

Part tightened	kg-cm	ft-lb	N·m
Master cylinder union bolt	550	40	54
Clutch cover x Flywheel	195	14	19
Clutch line union	155	11	15
Bleeder plug	110	8	11
Flywheel set bolt	850	61	83

**MANUAL TRANSMISSION****Specifications**

<b>Output shaft</b>			
2nd gear journal diameter	Limit	37.984 mm	1.4954 in.
3rd gear journal diameter	Limit	34.984 mm	1.3773 in.
Flange thickness	Limit	4.80 mm	0.1890 in.
Runout	Limit	0.05 mm	0.0020 in.
Inner race flange thickness	Limit	3.99 mm	0.1571 in.
Inner race outer diameter	Limit	38.985 mm	1.5348 in.
<b>Gear thrust clearance</b>			
1st, 2nd & 3rd	STD	0.10 – 0.25 mm	0.0039 – 0.0098 in.
	Limit	0.25 mm	0.0098 in.
Counter 5th	STD	0.10 – 0.30 mm	0.0039 – 0.0118 in.
	Limit	0.30 mm	0.0118 in.
<b>Gear oil clearance</b>			
1st & counter 5th	STD	0.009 – 0.032 mm	0.0004 – 0.0013 in.
	Limit	0.032 mm	0.0013 in.
2nd & 3rd	STD	0.009 – 0.033 mm	0.0004 – 0.0013 in.
	Limit	0.033 mm	0.0013 in.
Shift fork to hub sleeve clearance	Limit	1.0 mm	0.039 in.
Synchronizer ring to gear clearance	STD	1.0 – 2.0 mm	0.039 – 0.079 in.
	Limit	0.8 mm	0.031 in.
<b>Input shaft snap ring thickness</b>			
	Mark		
	0	2.05 – 2.10 mm	0.0807 – 0.0827 in.
	1	2.10 – 2.15 mm	0.0827 – 0.0846 in.
	2	2.15 – 2.20 mm	0.0846 – 0.0866 in.
	3	2.20 – 2.25 mm	0.0866 – 0.0886 in.
	4	2.25 – 2.30 mm	0.0886 – 0.0906 in.
	5	2.30 – 2.35 mm	0.0906 – 0.0925 in.
<b>Output shaft snap ring thickness</b>			
Front	Mark		
	C-1	1.75 – 1.80 mm	0.0689 – 0.0709 in.
	D	1.80 – 1.85 mm	0.0709 – 0.0728 in.
	D-1	1.85 – 1.90 mm	0.0728 – 0.0748 in.
	E	1.90 – 1.95 mm	0.0748 – 0.0768 in.
	E-1	1.95 – 2.00 mm	0.0768 – 0.0787 in.
	F	2.00 – 2.05 mm	0.0787 – 0.0807 in.
	F-1	2.05 – 2.10 mm	0.0807 – 0.0827 in.

## Specifications (Cont'd)

Output shaft snap ring thickness			
Rear	Mark		
	A	2.67 – 2.72 mm	0.1051 – 0.1071 in.
	B	2.73 – 2.78 mm	0.1075 – 0.1094 in.
	C	2.79 – 2.84 mm	0.1098 – 0.1118 in.
	D	2.85 – 2.90 mm	0.1122 – 0.1142 in.
	E	2.91 – 2.96 mm	0.1146 – 0.1165 in.
	F	2.97 – 3.02 mm	0.1169 – 0.1189 in.
	G	3.03 – 3.08 mm	0.1193 – 0.1213 in.
	H	3.09 – 3.14 mm	0.1217 – 0.1236 in.
	J	3.15 – 3.20 mm	0.1240 – 0.1260 in.
	K	3.21 – 3.26 mm	0.1264 – 0.1283 in.
	L	3.27 – 3.32 mm	0.1287 – 0.1307 in.
Counter gear snap ring thickness			
Front bearing	Mark		
	1	2.05 – 2.10 mm	0.0807 – 0.0827 in.
	2	2.10 – 2.15 mm	0.0827 – 0.0846 in.
	3	2.15 – 2.20 mm	0.0846 – 0.0866 in.
	4	2.20 – 2.25 mm	0.0866 – 0.0886 in.
	5	2.25 – 2.30 mm	0.0886 – 0.0906 in.
	6	2.30 – 2.35 mm	0.0906 – 0.0925 in.

## Torque Specifications

Part tightened	kg-cm	ft-lb	N·m
Straight screw plug	190	14	19
Extension housing x Transmission case (2WD)	380	27	37
Transfer adaptor x Transmission case (4WD)	380	27	37
Front bearing retainer x Transmission case	170	12	17
Rear bearing retainer x Intermediate plate	185	13	18
Reverse shift arm bracket	185	13	18
Counter gear rear lock nut	1,200	87	118
Reverse idler gear shaft stopper bolt	175	13	17
Clutch housing x Transmission case	380	27	37
Shift lever shaft housing x Transmission case	170	12	17
Shift outer lever lock pin nut	120	9	12
Select outer lever lock pin nut	80	69 in.-lb	7.8
Shift fork x Shift fork shaft	200	14	20
Back-up light switch	380	27	37



Specifications (Cont'd)

Valve body spring mm (in.) (cont'd)	Spring		Free length	Coil outer diameter	No. coils	Wire diameter	Color
	Rear upper valve body						
	2-3 shift valve		35.10 (1.3819)	8.96 (0.3528)	12.5	0.76 (0.0299)	White
	Sequence valve		37.55 (1.4783)	9.20 (0.3622)	14	1.20 (0.0472)	Red
	Low coast modulator valve		42.35 (1.6673)	9.24 (0.3638)	15	0.84 (0.0331)	None
	Detent regulator valve		32.08 (1.2630)	8.85 (0.3484)	13.5	0.90 (0.0354)	None
	Intermediate modulator valve		27.26 (1.0732)	9.04 (0.3559)	9.5	1.10 (0.0433)	Green
	Front upper valve body						
	Throttle valve		21.94 (0.8638)	8.58 (0.3378)	8	0.71 (0.0280)	None
	Down-shift plug		39.76 (1.5654)	10.83 (0.4264)	11.5	1.20 (0.0472)	Purple
Secondary regulator valve		71.27 (2.8059)	17.43 (0.6862)	15	1.93 (0.0760)	Green	
Oil pump	Side clearance		STD	0.02 – 0.05 mm		0.0008 – 0.0020 in.	
			Limit	0.1 mm		0.004 in.	
	Body clearance		STD	0.07 – 0.15 mm		0.0028 – 0.0059 in.	
			Limit	0.3 mm		0.012 in.	
	Tip clearance	Driven gear	STD	0.11 – 0.14 mm		0.0043 – 0.0055 in.	
			Limit	0.3 mm		0.0012 in.	
Clutch and brake piston stroke	Front clutch (C <sub>1</sub> )		STD	1.32 – 2.66 mm		0.0520 – 0.1047 in.	
	Rear clutch (C <sub>2</sub> )		STD	1.06 – 2.14 mm		0.0417 – 0.0843 in.	
	OD clutch (C <sub>0</sub> )		STD	1.77 – 2.58 mm		0.0697 – 0.1016 in.	
	No. 1 brake (B <sub>1</sub> )	2WD	STD	0.78 – 1.50 mm		0.0307 – 0.0591 in.	
		4WD	STD	0.80 – 1.73 mm		0.0315 – 0.0681 in.	
	No. 2 brake (B <sub>2</sub> )		STD	1.01 – 2.25 mm		0.0398 – 0.0886 in.	
Brake clearance	No. 3 brake (B <sub>3</sub> )		STD	0.61 – 2.64 mm		0.0240 – 0.1039 in.	
	OD brake (B <sub>0</sub> )		STD	0.65 – 2.21 mm		0.0256 – 0.0870 in.	
Accumulator piston mm (in.)			Length		Outer diameter		
	B <sub>2</sub>	Front	48.5 (1.909)		34.8 (1.370)		
	C <sub>2</sub>	Center	45.0 (1.772)		31.8 (1.252)		
	C <sub>1</sub>	Rear	49.5 (1.949)		31.8 (1.252)		
Accumulator piston spring mm (in.)			Free length	Coil outer diameter	No. coils	Wire diameter	Color
	B <sub>2</sub>	Front	55.18 (2.1724)	18.32 (0.7213)	11.0	2.6 (0.102)	Light Green
			35.13 (1.3831)	16.16 (0.6362)	6.0	1.3 (0.051)	Red
	C <sub>2</sub>	Center	59.82 (2.3551)	16.57 (0.6524)	12.5	2.7 (0.106)	Green
	C <sub>1</sub>	Rear	64.68 (2.5465)	17.50 (0.6890)	18.5	2.0 (0.079)	None

## Specifications (Cont'd)

Bushing bore mm (in.)	Bushing		Length	Finished bore	Bore limit
	Stator support	Front		9.70 (0.3819)	21.501 – 21.527 (0.8465 – 0.8475)
Rear			17.45 (0.6870)	21.501 – 21.527 (0.8465 – 0.8475)	21.577 (0.8495)
Oil pump body			13.46 (0.5299)	38.113 – 38.138 (1.5005 – 1.5015)	38.188 (1.5035)
OD sun gear	Front & Rear		9.70 (0.3819)	23.062 – 23.088 (0.9080 – 0.9090)	23.138 (0.9109)
OD input shaft			9.00 (0.3543)	11.200 – 11.221 (0.4409 – 0.4418)	11.271 (0.4437)
Sun gear	Front & Rear		13.50 (0.5315)	21.501 – 21.527 (0.8465 – 0.8475)	21.577 (0.8495)
Center support			60.07 (2.3650)	36.386 – 36.411 (1.4325 – 1.4335)	36.461 (1.4355)
Transmission case			13.46 (0.5299)	38.113 – 38.138 (1.5005 – 1.5015)	38.188 (1.5035)
Output shaft			9.70 (0.3819)	18.001 – 18.026 (0.7087 – 0.7097)	18.076 (0.7117)
Extension housing			29.75 (1.1713)	38.010 – 38.035 (1.4965 – 1.4974)	38.085 (1.4994)

## Torque Specifications

Part tightened		kg-cm	ft-lb	N·m
Engine x Transmission		650	47	64
Transmission housing	12 mm	580	42	57
	10 mm	345	25	34
Extension housing x Transmission (2WD)		345	25	34
Transfer adaptor x Transmission (4WD)		345	25	34
Transfer x Transmission (4WD)		380	27	37
Transmission mounting through bolt		500	36	49
Drive plate x Crankshaft		750	54	74
Torque converter x Drive plate		280	20	27
Oil pump		215	16	21
Center support		260	19	25
Upper valve body x Lower valve body		55	48 in.-lb	5.4
Valve body		100	7	10
Oil strainer		55	48 in.-lb	5.4
Oil pan		45	39 in.-lb	4.4
Oil pump cover bolt		75	65 in.-lb	7.4
Cooler pipe union nut		350	25	34
Testing plug		75	65 in.-lb	7.4
Stiffener plate		375	27	37
Parking lock pawl bracket		75	65 in.-lb	7.4
Exhaust pipe x Exhaust manifold		630	46	62
Neutral start switch (bolt)		55	48 in.-lb	5.4
Neutral start switch (nut)		70	61 in.-lb	6.9
Propeller shaft x Rear differential	2WD	430	31	42
	4WD	750	54	74

**TRANSFER**  
**Specifications**

Oil pump body	Body clearance	STD	0.07 — 0.17 mm	0.0028 — 0.0067 in.	
		Limit	0.40 mm	0.0157 in.	
	Tip clearance	STD	0.10 — 0.22 mm	0.0039 — 0.0087 in.	
		Limit	0.40 mm	0.0157 in.	
	Side clearance	STD	0.03 — 0.13 mm	0.0012 — 0.0051 in.	
		Limit	0.40 mm	0.0157 in.	
Front output assembly	Drive sprocket thrust clearance	STD	0.10 — 0.25 mm	0.0039 — 0.0098 in.	
		Limit	0.40 mm	0.0157 in.	
	Driven sprocket oil clearance	STD	0.010 — 0.057 mm	0.0004 — 0.0022 in.	
		Limit	0.15 mm	0.0059 in.	
	Front output shaft journal diameter	Limit	36.930 mm	1.4539 in.	
	Synchronizer ring to sprocket clearance	STD	1.1 — 1.9 mm	0.043 — 0.075 in.	
		Limit	0.8 mm	0.031 in.	
	No.1 shift fork to No.2 hub sleeve clearance	Limit	1.0 mm	0.039 in.	
		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.	
		7	2.25 — 2.30 mm	0.0886 — 0.0906 in.	
		8	2.30 — 2.35 mm	0.0906 — 0.0925 in.	
	9	2.35 — 2.40 mm	0.0925 — 0.0945 in.		
	10	2.40 — 2.45 mm	0.0945 — 0.0965 in.		
	11	2.45 — 2.50 mm	0.0965 — 0.0984 in.		
	12	2.50 — 2.55 mm	0.0984 — 0.1004 in.		
Rear output assembly	Drive sprocket thrust clearance	STD	0.10 — 0.25 mm	0.0039 — 0.0098 in.	
		Limit	0.40 mm	0.0157 in.	
	Drive sprocket oil clearance	STD	0.010 — 0.057 mm	0.0004 — 0.0022 in.	
		Limit	0.15 mm	0.0059 in.	
	Rear output shaft journal outer diameter	Part			
		A	Limit	27.930 mm	1.0996 in.
		B	Limit	38.900 mm	1.5315 in.
		C	Limit	36.930 mm	1.4539 in.
	No.1 shift fork to No.1 hub sleeve clearance	Limit	1.0 mm	0.039 in.	
		Limit	1.0 mm	0.039 in.	

## Specifications (Cont'd)

Input shaft	Input shaft journal outer diameter				
	Part A	Limit	47.540 mm	1.8716 in.	
Planetary gear	Pinion gear thrust clearance	STD	0.20 — 0.75 mm	0.0079 — 0.0295 in.	
		Limit	1.00 mm	0.0394 in.	
	Pinion gear oil clearance	STD	0.009 — 0.038 mm	0.0004 — 0.0015 in.	
		Limit	0.08 mm	0.0031 in.	
	Outer bearing snap ring thickness	Mark			
		1		1.45 — 1.50 mm	0.0571 — 0.0591 in.
		2		1.50 — 1.55 mm	0.0591 — 0.0610 in.
3			1.55 — 1.60 mm	0.0610 — 0.0630 in.	
4			1.60 — 1.65 mm	0.0630 — 0.0650 in.	
5		1.65 — 1.70 mm	0.0650 — 0.0669 in.		
	Inner bearing depth		5.5 — 6.1 mm	0.217 — 0.240 in.	
The detent plate H4 stopper surface to shift lever clearance					
		Limit	1 mm	0.04 in.	
Speed sensor	Switch resistance	1 — 2	360 ± 30 Ω (While rotating the output shaft)		
No. 1 and No. 2 VSV	Switch resistance	1 — 2	39 ± 3 Ω		
4WD control computer	Connector voltage	Terminals	Condition		Voltage value
			1 — 10	Turn 4WD control switch on	
		Turn 4WD control switch off		No voltage	
		4 — 10	Transfer gear 2WD position		Battery voltage
			Transfer gear 4WD position		No voltage
		5 — 10	Turn ignition switch on		Battery voltage
		6 — 10	Transfer gear 2WD position		Battery voltage
			Transfer gear 4WD position		No voltage
	10 — 11	Transfer gear 2WD position		No voltage	
		Transfer gear 4WD position		Battery voltage	
	Wire harness resistance	Terminals		Resistance value	
		4 — 10		about 35 Ω	
		8 — 9		about 360 Ω	
		10 — 11		about 35 Ω	
Wire harness continuity	10 — Body ground		Continuity		

## Specifications (Cont'd)

Diaphragm cylinder body		Condition	No charge
	Diaphragm cylinder body air thickness	Vacuum in diaphragm 500 mmHg (19.7 in.Hg, 66.7 kPa) for 30 seconds	
Vacuum tank and line	Vacuum tank air thickness	Vacuum in vacuum tank 500 mmHg (19.7 in.Hg, 66.7 kPa) for 30 seconds	No charge
	Vacuum line air pressure	Engine idling	About 400 mmHg (15.75 in.Hg, 53.3 kPa)

## Torque Specifications

Part tightened	kg-cm	ft-lb	N·m
Diaphragm cylinder x Rear case	175	13	17
Diaphragm cylinder cover	175	13	17
Oil pump cover	75	65 in.-lb	7.4
Straight screw plug for oil pump body	175	13	17
Straight screw plug for high and low shift fork shaft	175	13	17
Straight screw plug for front drive shift fork shaft	175	13	17
Oil receiver	50	43 in.-lb	4.9
Oil strainer	50	43 in.-lb	4.9
Rear case x Front case	380	27	37
Extension housing x Rear case	115	8	11
Companion flange lock nut	1,250	90	123
Oil pump body x Front case	115	8	11
Speed sensor x Rear case	115	8	11
Engine rear mounting x Transfer	290	21	28
Transfer x Transmission adaptor	380	27	37
Engine rear mounting	500	36	49
Exhaust front pipe x Exhaust manifold	630	46	62

## PROPELLER SHAFT

### Specifications

Spider bearing axial play		0 mm	0 in.
Runout	Limit	0.8 mm	0.031 in.

### Torque specifications

Part tightened		kg-cm	ft-lb	N·m
(2WD)				
Propeller shaft x Differential	M/T	750	54	74
	A/T	430	31	42
(4WD)				
Front propeller shaft x Front differential		430	31	42
Rear propeller shaft x Rear differential		750	54	74
Rear propeller shaft x Transfer		750	54	74

## FRONT AXLE AND SUSPENSION

### Specifications (2WD)

Cold tire inflation pressure	Tire size		Inflation pressure	
			kg/cm <sup>2</sup> (psi, kPa)	
			Front	Rear
	175R14 6PRLT		2.8 (41, 280)	2.8 (41, 280)
	P195/75 R14		2.4 (35, 240)	2.4 (35, 240)
Front wheel alignment			Inspection STD	Adjustment STD
	Toe-in		0 ± 2 mm (0 ± 0.08 in.)	0 ± 1 mm (0 ± 0.04 in.)
	Camber		-5' ± 45'	-5' ± 30'
	Left-right error		30' or less	30' or less
	Steering axis inclination		10°35' ± 45'	—
	Left-right error		30' or less	
	Caster		2°30' ± 45'	2°30' ± 30'
	Left-right error		30' or less	30' or less
Side slip			3.0 mm/m (0.118 in./3.3 ft) or less	
Wheel angle		Inside wheel	37°00' <sup>+1°</sup> <sub>-2°</sub>	
		Outside wheel	33°00'	
		at 20° outside wheel	22°00' inside wheel	
Disc wheel lateral runout	Limit	1.2 mm	0.047 in.	
Wheel bearing preload (starting load at hub bolt)		Add oil seal frictional force 350 — 870 g	0.8 — 1.9 lb	3.4 — 8.5 N
Hub axial play	Limit	0.05 mm	0.0020 in.	
Upper ball joint vertical play	Limit	2.3 mm	0.091 in.	
Lower ball joint vertical play	Limit	0 mm	0 in.	
Ball joint turning torque	Lower ball joint	15 — 30 kg-cm	13 — 26 in.-lb	1.5 — 2.9 N·m
	Upper ball joint	10 — 35 kg-cm	9 — 30 in.-lb	1.0 — 3.4 N·m

Specifications (4WD)

Cold tire inflation pressure	Tire size	Inflation pressure	
		Front	Rear
	P205/75 R14	2.4 (35, 240)	2.4 (35, 240)
Chassis ground clearance		Front mm (in.)	Rear mm (in.)
	YR31LG	256 (10.09)	284 (11.17)
	YR32LV	253 (9.44)	305 (11.99)
Front wheel alignment		Inspection STD	Adjustment STD
	Toe-in	0 ± 2 mm (0 ± 0.08 in.)	0 ± 1 mm (0 ± 0.04 in.)
	Camber	0°10' ± 45'	0°10' ± 30'
	Left-right error	30' or less	30' or less
	Steering axis inclination	12° 25' ± 45'	—
	Left-right error	30' or less	—
	Caster	2°50' ± 45'	2°50' ± 30'
	Left-right error	30' or less	30' or less
Slide slip	3.0 mm/m (0.118 in./3.3 ft) or less		
Wheel angle			
Max. Inside wheel	34°00' <sup>+0°</sup> / <sub>-3°</sub>		
Outside wheel	32°00'		
At 20° (Outside wheel)	20°50' (Inside wheel)		
Disc wheel lateral runout	Limit	1.2 mm	0.047 in.
Wheel bearing preload		2.1 — 3.6 kg	4.6 — 7.9 lb
(rotating load at hub bolt)			21 — 35 N
Free wheeling hub ring oil clearance		0.3 mm	0.012 in.
Automatic locking hub brake shoe thickness	Minimum	1.5 mm	0.059 in.
Drive shaft thrust clearance	STD	0.075 — 0.690 mm	0.0030 — 0.0272 in.
	Limit	1.0 mm	0.039 in.
Drive shaft thrust clearance adjusting shim thickness		1.80 mm	0.0709 in.
		2.25 mm	0.0886 in.
Drive shaft standard length		378.0 ± 1.5 mm	14.882 ± 0.059 in.
Drive shaft grease capacity	Inboard joint	195 — 205 g	0.42 — 0.45 lb
	Outboard joint	215 — 225 g	0.47 — 0.50 lb

## Specifications (4WD) (Cont'd)

Front differential rear oil seal drive in depth	2.0mm	0.079 in.
Front differential drive pinion bearing preload (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
Front differential side gear shaft deviation		
Maximum longitudinal deviation	0.20 mm	0.0079 in.
Maximum lateral deviation	0.20 mm	0.0079 in.
Front differential companion flange deviation		
Maximum longitudinal deviation	0.10 mm	0.0039 in.
Maximum lateral deviation	0.10 mm	0.0039 in.
Front differential ring gear runout	0.07 mm	0.0028 in.
Front differential ring gear backlash	0.13 — 0.18 mm	0.0051 — 0.0071 in.
Front differential preload (starting)	Total preload	Add drive pinion preload
		3 — 5 kg-cm 2.6 — 4.3 in.-lb 0.3 — 0.5 N·m
Front differential case runout	0.07 mm	0.0028 in.
Front differential side gear backlash	0.05 — 0.20 mm	0.0020 — 0.0079 in.
Front differential side gear backlash thrust washer thickness	0.92 — 0.98 mm	0.0362 — 0.0386 in.
	0.97 — 1.03 mm	0.0382 — 0.0406 in.
	1.02 — 1.08 mm	0.0401 — 0.0426 in.
	1.07 — 1.13 mm	0.0421 — 0.0445 in.
	1.12 — 1.18 mm	0.0441 — 0.0465 in.
	1.17 — 1.23 mm	0.0461 — 0.0484 in.
	2.21 — 2.23 mm	0.0870 — 0.0878 in.
	2.24 — 2.26 mm	0.0881 — 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	0.1095 — 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.
Front differential backlash or side bearing preload thrust washer thickness		

**Specifications (4WD) (Cont'd)**

Front differential backlash or side bearing preload thrust washer thickness (cont'd)	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.		
	Front differential drive pinion plate washer thickness	2.26 — 2.28 mm	0.0890 — 0.0898 in.	
		2.29 — 2.31 mm	0.0902 — 0.0909 in.	
		2.32 — 2.34 mm	0.0913 — 0.0921 in.	
		2.35 — 2.37 mm	0.0925 — 0.0933 in.	
		2.38 — 2.40 mm	0.0937 — 0.0945 in.	
		2.41 — 2.43 mm	0.0949 — 0.0957 in.	
2.44 — 2.46 mm		0.0961 — 0.0969 in.		
2.47 — 2.49 mm		0.0972 — 0.0980 in.		
2.50 — 2.52 mm		0.0984 — 0.0992 in.		
2.53 — 2.55 mm		0.0996 — 0.1004 in.		
2.56 — 2.58 mm		0.1008 — 0.1016 in.		
2.59 — 2.61 mm		0.1020 — 0.1028 in.		
2.62 — 2.64 mm		0.1031 — 0.1039 in.		
2.65 — 2.67 mm	0.1043 — 0.1051 in.			
2.68 — 2.70 mm	0.1055 — 0.1063 in.			
Lower ball joint vertical play	0 mm	0 in.		
Upper ball joint vertical play	2.3 mm	0.091 in.		
Lower ball joint turning torque	15 — 30 kg-cm	13 — 26 in.-lb	1.5 — 2.9 N·m	

**Torque Specifications (2WD)**

Part tightened	kg-cm	ft-lb	N·m
Tie rod clamp bolt	195	14	19
Knuckle stopper bolt lock nut	350	25	34
Steering knuckle x Upper ball joint	800	58	78
Steering knuckle x Lower ball joint	1,050	76	103
Steering knuckle x Knuckle arm x Dust cover	1,060	77	104
Upper ball joint x Upper arm	300	22	29
Lower ball joint x Lower arm	680	49	67
Shock absorber x Lower arm	180	13	18
Shock absorber upper mounting lock nut	260	19	25
Lower arm x Body (Adjusting cam nut)	2,100	152	206
Upper arm shaft x Rear side nut	975	71	96
Upper arm shaft x Front side nut	800	58	78
Upper arm x Torque arm	480	35	47
Upper arm x Frame front side	900	65	88
Upper arm x Frame rear side	1,550	112	152

**Torque Specifications (2WD) (Cont'd)**

Part tightened	kg-cm	ft-lb	N·m
Strut bar x Lower arm	680	49	67
Strut bar x Strut bar bracket (Rear nut)	1,230	89	121
Stabilizer bar bracket x Body	195	14	19
Tie rod clamp bolt	195	14	19
Disc brake caliper x Steering knuckle	1,060	77	104
Wheel hub nut	1,050	76	103

**Torque Specifications (4WD)**

Part tightened	kg-cm	ft-lb	N·m
Knuckle stopper bolt lock nut	350	25	34
Tie rod clamp bolt	195	14	19
Free wheeling hub body x Drive shaft	185	13	18
Free wheeling hub cover x Free wheeling hub body	100	7	10
Axle hub bearing preload lock nut	480	35	47
Free wheeling hub body x Axle hub	315	23	31
Steering knuckle x Upper suspension arm	1,150	83	113
Stabilizer bar bracket x Lower suspension arm	195	14	19
Lower suspension arm x Front shock absorber	970	70	95
Steering knuckle x Tie rod	930	67	91
Lower suspension arm x Lower ball joint	1,150	83	113
Drive shaft x Front differential	700	50	69
Torsion bar spring lock nut	800	58	78
Lower ball joint x Steering knuckle	590	43	58
Lower suspension arm x Body	2,100	152	206
Torque arm x Upper suspension arm	1,250	90	123
Upper suspension arm x Body	1,550	112	152
Stabilizer bar bracket x Body	195	14	19
Differential carrier x Carrier cover	475	34	47
Differential carrier x Differential tube	900	65	88
Ring gear x Differential case	985	71	97
Drive pinion x Companion flange	See page FA-71		
Differential support x Differential tube	730	53	72
Support bolt	690	50	68

## REAR AXLE AND SUSPENSION

## Specifications

Rear axle shaft	Rear axle shaft bearing inner retainer installation temperature		150°C	302°F
	Rear axle shaft runout	Limit	1.5 mm	0.059 in.
	Rear axle shaft flange runout	Limit	0.1 mm	0.004 in.
Differential	Drive pinion bearing preload (starting)			
	New bearing		12 — 19 kg-cm (10.4 — 10.5 in.-lb, 1.2 — 1.9 N·m)	
	Reused bearing		6 — 10 kg-cm (5.2 — 8.7 in.-lb, 0.6 — 1.0 N·m)	
	Total preload (starting)		Add drive pinion bearing preload	
			4 — 6 kg-cm    3.4 — 5.2 in.-lb    0.4 — 0.6 N·m	
	Drive pinion to ring gear backlash		0.13 — 0.18 mm	0.0051 — 0.0071 in.
	Pinion gear to side gear backlash		0.05 — 0.20 mm	0.0020 — 0.0079 in.
	Ring gear runout	Limit	0.07 mm	0.0028 in.
	Companion flange deviation	Limit		
		Radial	0.10 mm	0.0039 in.
		Lateral	0.10 mm	0.0039 in.
	Ring gear installation temperature		90 — 110°C	194 — 230°F
	Oil seal drive in depth		1.5 mm	0.059 in.
	Side gear thrust washer thickness		0.96 — 1.04 mm	0.0378 — 0.0409 in.
			1.06 — 1.14 mm	0.0417 — 0.0449 in.
			1.16 — 1.24 mm	0.0457 — 0.0488 in.
			1.26 — 1.34 mm	0.0496 — 0.0528 in.
	Drive pinion adjusting plate washer thickness		2.23 — 2.25 mm	0.0878 — 0.0886 in.
			2.26 — 2.28 mm	0.0890 — 0.0898 in.
			2.29 — 2.31 mm	0.0902 — 0.0909 in.
		2.32 — 2.34 mm	0.0913 — 0.0921 in.	
		2.35 — 2.37 mm	0.0925 — 0.0933 in.	
		2.38 — 2.40 mm	0.0937 — 0.0945 in.	
		2.41 — 2.43 mm	0.0949 — 0.0957 in.	
		2.44 — 2.46 mm	0.0961 — 0.0969 in.	
		2.47 — 2.49 mm	0.0972 — 0.0980 in.	
		2.50 — 2.52 mm	0.0984 — 0.0992 in.	
		2.53 — 2.55 mm	0.0996 — 0.1004 in.	
		2.56 — 2.58 mm	0.1008 — 0.1016 in.	
		2.59 — 2.61 mm	0.1020 — 0.1028 in.	
		2.62 — 2.64 mm	0.1031 — 0.1039 in.	
		2.65 — 2.67 mm	0.1043 — 0.1051 in.	
		2.68 — 2.70 mm	0.1055 — 0.1063 in.	
		2.71 — 2.73 mm	0.1067 — 0.1075 in.	



## BRAKE SYSTEM

### Specifications

Brake pedal	Pedal height (from asphalt sheet)		148 — 158 mm	5.83 — 6.22 in.	
	Pedal freeplay		1 — 3.5 mm	0.04 — 0.138 in.	
	Pedal reserve distance at 50 kg (110.2lb, 490 N)		More than 60 mm (2.36 in.)		
Brake booster	Booster push rod to piston clearance w/ SST		0 mm	0 in.	
Front brake	Pad thickness	STD	10.0 mm	0.394 in.	
		Limit	2WD 4WD	1.0 mm 3.0 mm	0.039 in. 0.118 in.
	Disc thickness	STD	2WD 4WD	20.0 mm 25.0 mm	0.787 in. 0.984 in.
		Limit	2WD 4WD	19.0 mm 24.0 mm	0.748 in. 0.945 in.
	Disc runout	Limit		0.15 mm	0.0059 in.
	Rear brake	Drum inner diameter	STD	254.0 mm	10.000 in.
Limit			256.0 mm	10.079 in.	
Lining thickness		STD	5.0 mm	0.197 in.	
		Limit	1.0 mm	0.039 in.	
Shoe to parking brake shoe lever clearance			0 — 0.35 mm	0 — 0.0138 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.	
Drum to shoe clearance		0.9 mm	0.035 in.		
		0.6 mm	0.024 in.		
Parking brake	Lever travel at 20 kg (44.1 lb, 196 N) YR22, 31, 32 series YR29 series		7 — 9 clicks		
			6 — 8 clicks		

## Torque Specifications

Part tightened		kg-cm	ft-lb	N·m
Bleeder plug		85	74 in.-lb	8.3
(on front cylinder and LSP & BV)		110	8	11
(on rear wheel cylinder)		130	9	13
Master cylinder x Brake booster		100	7	10
Piston stopper bolt x Master cylinder		550	40	54
Master cylinder union bolt		260	19	25
Brake booster clevis lock nut		130	9	13
Brake booster x Pedal bracket		200	14	20
Disc brake cylinder x Torque plate	2WD	370 ± 50	27 ± 4	36 ± 5
	4WD	1,060	77	104
Torque plate x Steering knuckle	2WD	850 ± 100	61 ± 7	83 ± 10
	4WD	900	65	88
Rotor disc x Front axle hub	2WD	650 ± 100	47 ± 7	64 ± 10
	4WD	310	22	30
Flexible hose x Brake cylinder	2WD	235	17	23
	4WD	155	11	15
Brake tube union nut		670	48	66
Drum brake backing plate x Rear axle housing		100	7	10
Rear brake wheel cylinder x Backing plate		195	14	19
LSP & BV bracket x Frame		130	9	13
LSP & BV x LSP & BV bracket		185	13	18
LSP & BV spring x LSP & BV bracket		185	13	18
LSP & BV spring x Shackle No. 1		250	18	25
LSP & BV shackle lock nut		130	9	13
LSP & BV shackle x Shackle bracket		195	14	19
LSP & BV shackle bracket x Rear axle housing				

**STEERING  
Specifications**

Steering	Steering wheel freeplay	30 mm (1.18 in.) or less		
Tilt steering	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.	
	Tilt steering support shim thickness	0.2 mm	0.008 in.	
		0.5 mm	0.020 in.	
		0.8 mm	0.031 in.	
1.4 mm		0.055 in.		
1.8 mm		0.071 in.		
Steering gear housing	Steering rack runout	Maximum	0.3 mm	
	Total preload	at Turning	0.012 in. 5 – 13 kg-cm 4.3 – 11.3 in.-lb 0.7 – 1.3 N-m	
Power steering	Drive belt tension			
	Nippondenso BTG-20 or Borroughs gauge No. BT-33-73F			
		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	More than 75 kg/cm <sup>2</sup> (1,067 psi, 7,355 kPa)	
	Variation in vane pump discharge pressure (at 1,000 rpm and 3,000 rpm)		Less than 5 kg/cm <sup>2</sup> (71 psi, 490 kPa)	
	Steering effort	at Steering wheel	Less than 4 kg (8.8 lb, 39 N)	
	Shaft to bushing clearance	STD	0.010 – 0.030 mm	0.0004 – 0.0012 in.
		Limit	0.07 mm	0.0028 in.
	Vane plate Height	STD	8.2 mm	0.323 in.
		Limit	7.8 mm	0.307 in.
	Thickness	STD	1.8 mm	0.071 in.
		Limit	1.7 mm	0.067 in.
	Length	STD	15.00 mm	0.5906 in.
		Limit	14.97 mm	0.5894 in.
	Rotor to cam ring difference	Limit	0.06 mm	0.0024 in.
	Vane plate to vane plate groove clearance			
		Limit	0.06 mm	0.0024 in.
	Vane 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	50.0 mm	1.969 in.	
	Limit	47.0 mm	1.850 in.	
Pump rotating torque		Less than 2.8 kg-cm (2.4 in.-lb, 0.3 N-m)		

## Specifications (Cont'd)

Power steering (cont'd)	Steering rack runout	Maximum	0.3 mm	0.012 in.
	Total preload	at Turning	9 — 13 kg-cm	7.8 — 11.3 in.-lb 0.9 — 1.3 N-m
Bevel gear housing	No. 1 bevel gear preload	at Turning	0.8 — 1.5 kg-cm	0.7 — 1.3 in.-lb 0.08 — 0.15 N-m
	Total preload	at Turning	1.5 — 4.0 kg-cm	1.3 — 3.5 in.-lb 0.15 — 0.39 N-m
	Thrust washer thickness	Mark		
		2	1.875 — 1.925 mm	0.0738 — 0.0758 in.
		3	1.925 — 1.975 mm	0.0758 — 0.0778 in.
		4	1.975 — 2.025 mm	0.0778 — 0.0797 in.
		5	2.025 — 2.075 mm	0.0797 — 0.0817 in.
		6	2.075 — 2.125 mm	0.0817 — 0.0837 in.
		7	2.125 — 2.175 mm	0.0837 — 0.0856 in.
	8	2.175 — 2.225 mm	0.0856 — 0.0876 in.	

## Torque Specifications

Tilt steering	Part tightened	kg-cm	ft-lb	N-m	
	Pawl set bolt	195	14	19	
	Tilt lever retainer				
		Bolt	195	14	19
		Nut	225	16	22
	Tilt steering support stopper bolt	110	8	11	
	Tilt lever x Tilt lever retainer	55	48 in.-lb	5.4	
	Upper bracket x Tilt steering support	80	69 in.-lb	7.9	
	Column tube x Column bracket	195	14	19	
	Main shaft x Intermediate shaft	250	18	25	
	Intermediate shaft x Bevel gear shaft	250	18	25	
	Column bracket x Body	260	19	25	
	Column tube x Body	330	24	32	
	Column hole cover x Body	195	14	19	
	Main shaft x Steering wheel	350	25	34	
Steering gear housing	Pinion bearing adjusting screw	250	18	25	
	Pinion bearing adjusting screw lock nut	1,150	83	113	
	Rack guide spring cap lock nut	700	51	69	
	Steering rack x Rack end	850	61	83	
	Gear housing x Body	770	56	76	
	Gear housing x Torque shaft	360	26	35	
	Tie rod x Knuckle arm	600	43	59	
	Tie rod end clamp	195	14	19	
Power steering	Pressure port union x Rear housing	700	51	69	
	Front housing x Rear housing	470	34	46	
	Union x Rear housing	130	9	13	
	Air control valve x Rear housing	370	27	36	
	PS pump x Bracket	400	29	39	
	Pressure tube x PS pump	450	33	44	
	Pump pulley x Rotor shaft	440	32	43	
	Cylinder housing x Cylinder end stopper	800	58	78	

**Torque Specifications (Cont'd)**

Power steering (cont'd)	Part tightened	kg-cm	ft-lb	N·m
	Bearing guide nut x Control valve housing	250	18	25
	Cylinder housing x Control valve housing	185	13	18
	Rack guide spring cap lock nut	700	51	69
	Steering rack x Rack end	1,050	76	103
	Turn pressure tube x Control valve housing	250	18	25
	Turn pressure tube x Cylinder housing	250	18	25
	Gear housing x Body	770	56	76
	Return and pressure line x Gear housing	450	33	44
	Tie rod x Knuckle arm 2WD	600	43	59
	4WD	930	67	91
	Tie rod end clamp	195	14	19
	Torque shaft x Pinion shaft	360	26	35
Bevel gear housing	Plate x Bevel gear housing	80	69 in.-lb	7.8
	Adjusting bolt lock nut	100	7	10
	Adjusting screw lock nut	1,100	80	108
	Bevel gear housing x Housing cover	80	69 in.-lb	7.8
	Bevel gear housing bracket x Body	400	29	39
	Bevel gear shaft x Torque shaft	360	26	35
	Bevel gear shaft x Steering main shaft	250	18	25

**BODY****Torque Specifications**

Part tightened	kg-cm	ft-lb	N-m	
<b>SEAT</b>				
<b>Front Seat</b>				
Armrest x Seat back	375	27	37	
Seat back x Seat cushion	400	29	39	
Seat back x Seat reclining	375	27	37	
Seat cushion x Seat reclining	375	27	37	
Seat track x Seat cushion	185	13	18	
Seat track x Body	375	27	37	
<b>Rear No. 1 Seat</b>				
<b>(Standard Seat)</b>				
Armrest x Seat back	375	27	37	
Seat back x Seat reclining	375	27	37	
Seat cushion x Seat reclining	375	27	37	
Seat track x Seat cushion	185	13	18	
Seat track x Seat leg	375	27	37	
Seat leg x Seat cushion lock	210	15	21	
Seat cushion lock striker x Body	185	13	18	
<b>(Swivel Seat)</b>				
Armrest x Seat back	375	27	37	
Seat back x Seat reclining	375	27	37	
Seat cushion x Seat reclining	375	27	37	
Seat turn table x Seat cushion	375	27	37	
Seat leg x Seat turn table	375	27	37	
Seat leg x Body	375	27	37	
<b>Rear No. 2 Seat</b>				
Seat back lock x Seat back	210	15	21	
Seat back x Seat hinge	375	27	37	
Seat cushion x Seat hinge	375	27	37	
Seat cushion lock x Seat cushion	210	15	21	
Seat cushion lock striker x Body	185	13	18	
<b>SEAT BELT</b>				
<b>Front Seat</b>				
ELR x Body	Lower side	440	32	43
Outer belt shoulder anchor x Body		440	32	43
Outer belt lower anchor x Body		440	32	43
Inner belt x Seat cushion	Driver's side	440	32	43
Inner belt x Body	Passenger's side	440	32	43
<b>Rear No. 1 Seat Belt</b>				
<b>(Standard Seat)</b>				
ALR x Body	Lower side	440	32	43
Seat belt hook x Body		440	32	43
<b>(Swivel Seat)</b>				
ALR x Seat cushion		440	32	43
Seat belt anchor x Seat cushion		440	32	43
<b>Rear No. 2 Seat Belt</b>				
ALR x Seat cushion	Lower side	440	32	43
Seat belt hook x Body		440	32	43

## LUBRICANT

Item	Capacity			Classification
	Liters	US qts	Imp. qts	
Engine oil				API grade SF or SF/CC, multigrade, fuse-efficient and recommended viscosity oil
Dry fill	4.2	4.4	3.7	
Drain and refill				
w/Oil filter change	3.5	3.7	3.1	
w/o Oil filter change	3.0	3.2	2.6	
Manual transmission oil				API GL-4 or GL-5, SAE 75W-90
2WD	2.2	2.3	1.9	
4WD	2.6	2.7	2.3	
Automatic transmission fluid				ATF DEXRON® II
Dry fill	6.5	6.9	5.7	
Drain and refill	2.5	2.6	2.2	
Transfer oil	1.2	1.3	1.1	API GL-4 or GL-5, SAE 75W-90
Front differential oil	1.2	1.3	1.1	Hypoid gear oil API grade GL-5 Above -18°C (0°F) SAE90 Below -18°C (0°F) SAE80W or 80W-90
Rear differential oil				Hypoid gear oil API grade GL-5 Above -18°C (0°F) SAE90 Below -18°C (0°F) SAE80W or 80W-90
2WD	1.45	1.5	1.3	
4WD	1.85	2.0	1.6	
Power steering fluid				ATF DEXRON® or DEXRON® II
Reservoir tank	350 cc	21.4 cu in.		
Total	785 cc	48.0 cu in.		
Steering gear housing grease		—		Molybdenum disulphide lithium base, NLGI No. 2
Ball joint grease		—		Molybdenum disulphide lithium base, NLGI No. 1 or No. 2
Wheel bearing grease		—		Lithium base multipurpose, NLGI No. 2
Brake fluid		—		SAE J1703, DOT3