

SERVICE SPECIFICATIONS

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MAINTENANCE AND TUNE-UP

Drive belt tension w/Borroughs drive belt tension gauge No. BT-33-73F				
	New belt	125 ± 25 lb		
	Used belt	80 ± 20 lb		
Battery specific gravity When fully charged at 20°C (68°F)		1.25 – 1.27		
Coolant capacity	w/ heater or air conditioner	8.4 liters	8.9 US qts	7.4 Imp. qts
Engine oil capacity	Dry fill	4.8 liters	5.1 US qts	4.2 Imp. qts
	Drain and refill			
	w/ Oil filter change	4.6 liters	4.9 US qts	4.0 Imp. qts
	w/o Oil filter change	3.8 liters	4.0 US qts	3.3 Imp. qts
Spark plug				
Type	ND	W16EXR-U		
	NGK	BPR5EY		
Gap		0.8 mm	0.031 in.	
Ignition timing		5° BTDC @ Max. 950 rpm (w/ vacuum advancer OFF)		
Firing order		1 – 3 – 4 – 2		
Valve clearance (hot)	Intake	0.20 mm	0.008 in.	
	Exhaust	0.30 mm	0.012 in.	
Idle speed	M/T	700 rpm		
	A/T	750 rpm		
Idle mixture speed		See page A-3		
Intake manifold vacuum	at Idle speed	More than 400 mmHg (15.75 in.Hg)		
Fast idle speed		2,600 rpm (EGR system OFF, vacuum and choke opener system OFF)		
Compression pressure	STD	More than 12.0 kg/cm ² (171 psi)		
	Limit	10.0 kg/cm ² (142 psi)		
Differential of pressure between each cylinder		Less than 1.0 kg/cm ² (14 psi)		

ENGINE

Specifications

Carburetor	Part No.		21100-35010, 35050, 35060, 35080, 35090 35100, 35110, 35120, 35210, 35230, 35240 35250, 35260			
	Float level Raised position (float top to air horn)		9.8 mm		0.386 in.	
	Lowered position (float bottom to air horn)		48 mm		1.89 in.	
	Float lip clearance (at float lowered)		1 mm		0.04 in.	
	Throttle valve closed angle	Primary	9° from horizontal plane			
		Secondary	20° from horizontal plane			
	Throttle valve full open angle	Primary	90° from horizontal plane			
		Secondary	90° from horizontal plane			
	Secondary touch angle		59° from horizontal plane			
	Fast idle angle		22° from horizontal plane			
	Unloader angle		50° from horizontal plane			
	Idle mixture adjusting screw presetting		Screw out 4 turns			
	Idle mixture speed					
M/T		740 rpm				
A/T		790 rpm				
Accelerating pump stroke	Calif. A/T	3.8 mm	0.150 in. (21100 – 35230)			
	Others	3.2 mm	0.126 in.			
Distributor	Air gap		0.2 – 0.4 mm		0.008 – 0.016 in.	
	Distributor advance angle (Part No.)	Governor		Vacuum		
		Dis. rpm	Advance angle	mmHg	in.Hg	Advance angle
	(19100-35130)	550	Advance begins	Main		
		1,200	4.0°	60	2.36	Advance begins
		2,600	8.5°	180	7.09	11°
		Sub				
				200	7.87	Advance begins
			300	11.81	3.5°	
	High tension wire	Resistance	Limit	Less than 25 kΩ		
Ignition coil	Primary coil resistance		0.4 – 0.5 Ω (Type III) 0.8 – 1.1 Ω (Type IV)			
	Secondary coil resistance		8.5 – 11.5 Ω (Type III) 10.7 – 14.5 kΩ (Type IV)			
	Insulation resistance w/ 500 V megohm meter		More than 10 MΩ			

Specifications(Cont'd)

Spark plug	Type	ND NGK	W16EXR-U BPR5EY	
	Gap		0.8 mm	0.031 in.
Cylinder head	Head surface warpage	Limit	0.15 mm	0.0059 in.
	Maximum reface	Limit	0.20 mm	0.0079 in.
	Valve seat Refacing angle	IN EX	30°, 45°, 60° 30°, 45°, 65°	
	Contacting angle		45°	
	Contacting width		1.2 – 1.6 mm	0.047 – 0.063 in.
Valve guide bushing	Inner diameter	Intake Exhaust	8.01 – 8.03 mm 8.01 – 8.03 mm	0.3154 – 0.3161 in. 0.3154 – 0.3161 in.
	Outer diameter	STD	13.040 – 13.051 mm	0.5134 – 0.5138 in.
		O/S type 0.05	13.090 – 13.101 mm	0.5154 – 0.5158 in.
	Protrusion from cylinder head		19 mm	0.75 in.
	Replacing temperature (cylinder head side)		Normal temperature	
Valve	Valve overall length	STD Intake Exhaust	113.5 mm 112.4 mm	4.468 in. 4.425 in.
	Valve face angle	IN & EX	44.5°	
	Stem diameter	STD Intake Exhaust	7.970 – 7.985 mm 7.965 – 7.980 mm	0.3188 – 0.3145 in. 0.3136 – 0.3142 in.
	Stem end refacing	Limit IN & EX	0.5 mm	0.020 in.
	Stem oil clearance	STD Intake Exhaust	0.02 – 0.06 mm 0.03 – 0.07 mm	0.0008 – 0.0024 in. 0.0012 – 0.0026 in.
		Limit Intake Exhaust	0.08 mm 0.10 mm	0.0031 in. 0.0039 in.
	Valve head edge thickness	Limit	0.6 mm	0.024 in.
Valve spring	Free length		45.8 mm	1.803 in.
	Installed length		40.5 mm	1.594 in.
	Installed load	STD	25.0 kg	55.1 lb
		Limit	22.5 kg	49.6 lb
	Squareness	Limit	1.6 mm	0.063 in.
Rocker arm and shaft	Rocker shaft diameter		15.97 – 15.99 mm	0.6287 – 0.6295 in.
	Shaft to arm oil clearance	STD Limit	0.01 – 0.05 mm 0.08 mm	0.0004 – 0.0020 in. 0.0031 in.
Intake and exhaust manifold	Manifold surface warpage	Limit Intake Exhaust	0.20 mm 0.70 mm	0.0079 in. 0.0276 in.
Chain and sprocket	Crankshaft sprocket wear	Limit	59.4 mm	2.339 in.
	Camshaft sprocket wear	Limit	113.8 mm	4.480 in.
Tensioner and damper	Tensioner head thickness	Limit	11.0 mm	0.433 in.
	Damper No. 1 thickness	Limit	5.0 mm	0.197 in.
	Damper No. 2 thickness	Limit	4.5 mm	0.177 in.
Camshaft	Thrust clearance	STD Limit	0.08 – 0.18 mm 0.25 mm	0.0031 – 0.0071 in. 0.0098 in.
	Journal oil clearance	STD Limit	0.01 – 0.05 mm 0.1 mm	0.0004 – 0.0020 in. 0.004 in.
	Journal diameter	STD	32.98 – 33.00 mm	1.2984 – 1.2992 in.

Specifications(Cont'd)

Camshaft (cont'd)	Circle runout	Limit	0.2 mm	0.008 in.
	Cam height	Intake	42.63 — 42.72 mm	1.6783 — 1.6819 in.
		Exhaust	42.69 — 42.78 mm	1.6807 — 1.6842 in.
Cylinder block	Warpage	Limit	0.05 mm	0.0020 in.
	Cylinder bore	STD	92.00 — 92.03 mm	3.6220 — 3.6232 in.
	Cylinder bore wear	Limit	0.2 mm	0.008 in.
	Difference of bore limit between cylinder		Less than 0.03 mm (0.0012 in.)	
	Taper and out-of-round	Limit	0.02 mm	0.0008 in.
Piston and piston ring	Piston diameter	STD	91.938 — 91.968 mm	3.6196 — 3.6208 in.
		O/S type 0.50	92.438 — 92.468 mm	3.6393 — 3.6405 in.
		O/S type 1.00	92.938 — 92.968 mm	3.6590 — 3.6602 in.
	Piston to cylinder clearance		0.052 — 0.072 mm	0.0020 — 0.0028 in.
	Piston ring end gap (compression)	No. 1	0.24 — 0.36 mm	0.0094 — 0.0142 in.
		No. 2	0.18 — 0.39 mm	0.0071 — 0.0154 in.
	Ring to ring groove clearance Limit No. 1, No. 2		0.2 mm	0.008 in.
Connecting rod and bearing	Thrust clearance	STD	0.16 — 0.26 mm	0.0063 — 0.0102 in.
		Limit	0.30 mm	0.0118 in.
	Bearing oil clearance	STD	0.025 — 0.055 mm	0.0010 — 0.0022 in.
		Limit	0.8 mm	0.031 in.
	Pin to bushing oil clearance	STD	0.005 — 0.011 mm	0.0002 — 0.0004 in.
		Limit	0.015 mm	0.0006 in.
	Rod bend	Limit	0.05 mm	0.0020 in.
Crankshaft	Thrust clearance	STD	0.02 — 0.22 mm	0.0008 — 0.0087 in.
		Limit	0.30 mm	0.0118 in.
	Thrust washer thickness	STD	2.00 mm	0.0787 in.
		O/S type 0.125	2.06 mm	0.0811 in.
		O/S type 0.25	2.13 mm	0.0839 in.
	Main journal oil clearance	STD	0.016 — 0.05 mm	0.0006 — 0.0020 in.
		Limit	0.08 mm	0.0031 in.
	Main journal diameter	STD	59.98 — 60.00 mm	2.3614 — 2.3622 in.
		Bearing U/S type 0.25	59.70 — 59.71 mm	2.3504 — 2.3508 in.
		Bearing U/S type 0.25	0.25	
	Crank pin oil clearance	STD	0.02 — 0.05 mm	0.0008 — 0.0020 in.
		Limit	0.1 mm	0.004 in.
	Crank pin diameter	STD	52.99 — 53.00 mm	2.0862 — 2.0866 in.
		Bearing U/S type 0.25	52.70 — 52.71 mm	2.0748 — 2.0752 in.
		Bearing U/S type 0.25	0.25	
Flywheel	Circle runout	Limit	0.1 mm	0.004 in.
	Main journal taper and out-of-round	Limit	0.01 mm	0.0004 in.
	Crank pin journal taper and out-of-round	Limit	0.01 mm	0.0004 in.

Specifications(Cont'd)

Oil pump	Body clearance	STD	0.09 – 0.15 mm	0.0035 – 0.0059 in.
		Limit	0.2 mm	0.008 in.
	Tip clearance			
	Driven gear to crescent	STD	0.15 – 0.21 mm	0.0059 – 0.0083 in.
		Limit	0.3 mm	0.012 in.
	Drive gear to crescent	STD	0.22 – 0.25 mm	0.0087 – 0.0098 in.
		Limit	0.3 mm	0.012 in.
Side clearance	STD	0.03 – 0.09 mm	0.0012 – 0.0035 in.	
	Limit	0.15 mm	0.0059 in.	
Relief valve operating pressure			4.5 kg/cm ²	64 psi

Tightening Torque

Tightening part		kg-cm	ft-lb
Cylinder head x Cylinder block		720 — 880	53 — 63
Manifold x Cylinder head	Intake	180 — 260	13 — 19
	Exhaust	400 — 500	29 — 36
Crankshaft bearing cap x Cylinder block		950 — 1,150	69 — 83
Connecting rod cap x Connecting rod		540 — 660	40 — 47
Crankshaft pulley x Crankshaft		1,400 — 1,800	102 — 130
Flywheel x Crankshaft		1,000 — 1,200	73 — 86
Camshaft bearing cap x Cylinder head		170 — 230	13 — 16
Camshaft timing sprocket x Camshaft		700 — 900	51 — 65
Oil pan x Cylinder block		40 — 80	35 — 69 in.-lb
Thermo switch x Intake manifold		250 — 350	19 — 25

COOLING SYSTEM

Radiator	Relief valve opening pressure	STD	0.75 — 1.05 kg/cm ²	10.7 — 14.9 psi
		Limit	0.6 kg/cm ²	8.5 psi
Thermostat	Valve opening temperature			
	Starts to open at		88°C	190°F
	Fully opens at		100°C	212°F
	Valve opening travel		8 mm or more	0.31 in. or more

STARTING SYSTEM

Reduction type starter	Rated voltage and output power			12V, 1.0 kw		12V, 1.4 kw	
	No-load characteristic			Less than 90A		Less than 90A	
				More than 3,000 rpm		More than 3,500 rpm	
				at 11.5V		at 11.5V	
	Brush	Length	STD	13.5 mm	0.531 in.	←	
			Limit	10 mm	0.39 in.		
	Commutator	Outer diameter	STD	30 mm	1.18 in.	←	
			Limit	29 mm	1.14 in.		
		Mica depth	STD	0.45 – 0.75 mm 0.0177 – 0.0295 in.		←	
			Limit	0.2 mm 0.008 in.			

STARTING SYSTEM (Cont'd)

Reduction type starter (cont'd)	Runout Spring installed load	Limit	0.2 mm 0.008 in.	←
		STD	1,445 – 1,955 g	1,785 – 2,415 g
			3.2 – 4.3 lb	3.9 – 5.3 lb
		Limit	1,200 g 2.6 lb	←

CHARGING SYSTEM

Alternator			TIRRILL regulator type	IC regulator type
			40 A	40A, 55A, 60A
	Rated output			
	Brush exposed length	STD	12.5 mm 0.492 in.	←
		Limit	5.5 mm 0.217 in.	←
	Rotor coil resistance		3.9 – 4.1 Ω	2.8 – 3.0 Ω
Alternator regulator	Regulating voltage	TIRRILL regulator	13.8 – 14.8 V	14.0 – 14.7 V

CLUTCH AND MANUAL TRANSMISSION (4×2)**Specifications**

Clutch	Pedal height (from floor panel)		152 – 162 mm	5.98 – 6.38 in.	
	Pedal freeplay		5 – 15 mm	0.20 – 0.59 in.	
	Release fork end play		None adjustable type		
	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	Limit	0.6 mm	0.024 in.	
Manual transmission (G52)	Output shaft				
	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.	
	Gear thrust clearance				
	1st, 2nd & 3rd	STD	0.10 – 0.25 mm	0.0059 – 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.	
	Gear oil clearance				
	1st & counter 5th	STD	0.009 – 0.032 mm	0.00035 – 0.00126	
		Limit	0.032 mm	0.00126 in.	
	2nd & 3rd	STD	0.009 – 0.033 mm	0.00035 – 0.00130 in.	
		Limit	0.033 mm	0.00130 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.	
	Input shaft snap ring thickness				
		Part No.	Mark		
		90520-30214	0	2.05 – 2.10 mm	0.0807 – 0.0827 in.
		90520-30215	1	2.10 – 2.15 mm	0.0827 – 0.0846 in.
		90520-30216	2	2.15 – 2.20 mm	0.0846 – 0.0866 in.
		90520-30217	3	2.20 – 2.25 mm	0.0866 – 0.0886 in.
		90520-30218	4	2.25 – 2.30 mm	0.0886 – 0.0906 in.
	90520-30219	5	2.30 – 2.35 mm	0.0906 – 0.0925 in.	
Output shaft snap ring thickness					
Front	Part No.	Mark			
	90520-28012	C-1	1.75 – 1.80 mm	0.0689 – 0.0709 in.	
	90520-28245	D	1.80 – 1.85 mm	0.0709 – 0.0728 in.	
	90520-28010	D-1	1.85 – 1.90 mm	0.0728 – 0.0748 in.	
	90520-28246	E	1.90 – 1.95 mm	0.0748 – 0.0768 in.	

Specifications (Cont'd)

Manual transmission (G52) (Cont'd)			Mark		
			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.
	Rear	Part No.	Mark		
		90520-25005	A	2.67 — 2.72 mm	0.1051 — 0.1071 in.
		90520-25006	B	2.73 — 2.78 mm	0.1075 — 0.1094 in.
		90520-25009	C	2.79 — 2.84 mm	0.1098 — 0.1118 in.
		90520-25010	D	2.85 — 2.90 mm	0.1122 — 0.1142 in.
		90520-25011	E	2.91 — 2.96 mm	0.1146 — 0.1165 in.
		Part No.	Mark		
		90520-25012	F	2.97 — 3.02 mm	0.1169 — 0.1189 in.
		90520-25013	G	3.03 — 3.08 mm	0.1193 — 0.1213 in.
		90520-25014	H	3.09 — 3.14 mm	0.1217 — 0.1236 in.
		90520-25015	J	3.15 — 3.20 mm	0.1240 — 0.1260 in.
		90520-25016	K	3.21 — 3.26 mm	0.1264 — 0.1283 in.
		90520-25017	L	3.27 — 3.32 mm	0.1287 — 0.1307 in.
	Counter gear snap ring (Front Bearing)				
		Part No.	Mark		
		90520-23115	1	2.05 — 2.10 mm	0.0807 — 0.0827 in.
		90520-23089	2	2.10 — 2.15 mm	0.0827 — 0.0846 in.
		90520-23143	3	2.15 — 2.20 mm	0.0846 — 0.0866 in.
		90520-23090	4	2.20 — 2.25 mm	0.0866 — 0.0886 in.
		90520-23144	5	2.25 — 2.30 mm	0.0886 — 0.0906 in.
		90520-23145	6	2.30 — 2.35 mm	0.0906 — 0.0925 in.
Manual transmission (W42 & W52)	Output shaft				
	2nd and 3rd gear journal diameter	Limit	40.8 mm	1.606 in.	
	Flange thickness	Limit	4.80 mm	0.1890 in.	
	Runout	Limit	0.06 mm	0.0024 in.	
	1st gear bushing flange thickness	Limit	4.55 mm	0.1791 in.	
	5th gear bushing flange thickness	Limit	3.85 mm	0.1516 in.	
	Inner race outer diameter	1st	42.85 mm	1.6870 in.	
		5th	34.85 mm	1.3720 in.	
	Gear thrust clearance				
	1st, 2nd, 3rd & Reverse idle	STD	0.15 — 0.25 mm	0.0059 — 0.0098 in.	
		Limit	0.3 mm	0.012 in.	
	5th	STD	0.10 — 0.25 mm	0.0039 — 0.0098 in.	
		Limit	0.3 mm	0.012 in.	
	Gear oil clearance	1st	STD	0.009 — 0.053 mm	0.0004 — 0.0021 in.
			Limit	0.15 mm	0.0059 in.
		2nd & 3rd	STD	0.06 — 0.103 mm	0.0024 — 0.0041 in.
			Limit	0.20 mm	0.0079 in.

Specifications (Cont'd)

Manual transmission (W42 & W52) (Cont'd)	5th	STD	0.009 – 0.051 mm	0.0004 – 0.0020 in.
		Limit	0.15 mm	0.0059 in.
	Shift fork to hub sleeve clearance	Limit	1.0 mm	0.039 in.
	Synchronizer ring to gear clearance			
	1st & 2nd	STD	0.7 – 1.7 mm	0.028 – 0.067 in.
	3rd, 4th & 5th	STD	1.0 – 2.0 mm	0.039 – 0.079 in.
	1st & 2nd	Limit	0.5 mm	0.020 in.
	3rd, 4th & 5th	Limit	0.8 mm	0.031 in.
	Input shaft snap ring thickness			
	Part No.	Mark		
	90520-30214	0	2.05 – 2.10 mm	0.0807 – 0.0827 in.
	90520-30215	1	2.10 – 2.15 mm	0.0827 – 0.0846 in.
	90520-30216	2	2.15 – 2.20 mm	0.0846 – 0.0866 in.
	90520-30217	3	2.20 – 2.25 mm	0.0866 – 0.0886 in.
	90520-30218	4	2.25 – 2.30 mm	0.0886 – 0.0906 in.
	90520-30219	5	2.30 – 2.35 mm	0.0906 – 0.0925 in.
	Output shaft snap ring thickness			
	Front			
	Part No.	Mark		
	90520-30238	None	2.00 – 2.05 mm	0.0787 – 0.0807 in.
	90520-30214	0	2.05 – 2.10 mm	0.0807 – 0.0827 in.
	90520-30215	1	2.10 – 2.15 mm	0.0827 – 0.0846 in.
	90520-30216	2	2.15 – 2.20 mm	0.0846 – 0.0866 in.
	90520-30217	3	2.20 – 2.25 mm	0.0866 – 0.0886 in.
	90520-30218	4	2.25 – 2.30 mm	0.0886 – 0.0906 in.
	Rear			
	Part No.	Mark		
	90520-25277	1	1.89 – 1.94 mm	0.0744 – 0.0764 in.
	90520-25278	2	1.95 – 2.00 mm	0.0768 – 0.0787 in.
	90520-25279	3	2.01 – 2.06 mm	0.0791 – 0.0811 in.
	90520-25280	4	2.07 – 2.12 mm	0.0815 – 0.0835 in.
	90520-25281	5	2.13 – 2.18 mm	0.0839 – 0.0858 in.
	90520-25282	6	2.19 – 2.24 mm	0.0862 – 0.0882 in.
	90520-25283	7	2.25 – 2.30 mm	0.0886 – 0.0906 in.
	90520-25284	8	2.31 – 2.36 mm	0.0909 – 0.0929 in.
	90520-25285	9	2.37 – 2.42 mm	0.0933 – 0.0953 in.
	90520-25270	10	2.43 – 2.48 mm	0.0957 – 0.0976 in.
	90520-25271	11	2.49 – 2.54 mm	0.0980 – 0.1000 in.
	90520-25272	12	2.55 – 2.60 mm	0.1004 – 0.1024 in.
	90520-25273	13	2.61 – 2.66 mm	0.1028 – 0.1047 in.
	Countershaft snap ring thickness (Rear bearing)			
	Part No.	Mark		
	90520-18264	1	2.00 – 2.05 mm	0.0787 – 0.0807 in.
	90520-18265	2	1.80 – 1.85 mm	0.0709 – 0.0728 in.
	90520-18266	3	1.60 – 1.65 mm	0.0630 – 0.0650 in.
	90520-18275	4	1.40 – 1.45 mm	0.0551 – 0.0571 in.

Specifications (Cont'd)

Manual transmission (W42 & W52) (Cont'd)	Counter gear front bearing spacer thickness		Clearance between bearing and transmission case	
	Part No.	Mark		
	2.87 – 2.99 mm (0.1130 – 0.1177 in.)	90560-38331	•	1.95 – 2.05 mm 0.0768 – 0.0807 in.
	3.00 – 3.09 mm (0.1181 – 0.1217 in.)	90560-38332	••	2.10 – 2.20 mm 0.0827 – 0.0866 in.
	3.10 – 3.19 mm (0.1220 – 0.1256 in.)	90560-38333	•••	2.25 – 2.35 mm 0.0886 – 0.0925 in.
	3.20 – 3.29 mm (0.1260 – 0.1295 in.)	90560-38334	••••	2.40 – 2.50 mm 0.0945 – 0.0984 in.

Tightening Torque

Clutch	Tightening part		kg-cm	ft-lb
Manual transmission (G52, W42 and W52)	Clutch cover x Flywheel		150 – 220	11 – 15
	Clutch housing x Engine		500 – 800	37 – 57
	Master cylinder reservoir set bolt		200 – 300	15 – 21
	Release fork support x Clutch housing		300 – 450	22 – 32
	Center bearing retainer			
	x Intermediate plate	W42, 52	150 – 210	11 – 15
	Straight screw plug	G52	190	14
	(Intermediate plate)	W42, 52	190 – 310	14 – 22
	(Extension housing)	G52	190	14
	Extension housing	G52	380	27
	x Transmission case	W42, 52	400 – 550	29 – 40
	Restrict pin	G52	280	20
		W42, 52	370 – 450	27 – 33
	Shift lever retainer			
	x Extension housing	G52	185	13
		W42 & 52	150 – 220	11 – 15
	Front bearing retainer	G52	170	12
	x Transmission case	W42, 52	100 – 140	7 – 10
	Rear bearing retainer			
	x Intermediate plate	G52	185	13
	Reverse shift arm bracket	G52	185	13
	Counter gear rear lock nut	G52	1,200	87
	Reverse idler gear shaft stopper bolt	G52	175	13
	Clutch housing			
	x Transmission case	G52	380	27
	Shift lever housing bolt	G52	390	28

Specifications

Governor pressure									
Output shaft rpm	(Vehicle speed reference)								
1,000	(approx. 20 mph 32 km/h)			0.9 – 1.5 kg/cm ²				12 – 21 psi	
1,800	(approx. 35 mph 57 km/h)			1.6 – 2.2 kg/cm ²				23 – 31 psi	
3,500	(approx. 69 mph 111 km/h)			4.1 – 5.3 kg/cm ²				58 – 75 psi	
Line pressure (wheel locked)									
At idling		D range		4.0 – 4.5 kg/cm ²				57 – 64 psi	
		R range		5.8 – 6.8 kg/cm ²				82 – 97 psi	
At stall		D range		9.5 – 12.0 kg/cm ²				135 – 171 psi	
(Throttle valve fully opened)		R range		14.0 – 17.0 kg/cm ²				199 – 242 psi	
Engine stall revolution				1,850 ± 150 rpm					
Time lag	N range → D range			Less than 1.2 seconds					
	N range → R range			Less than 1.5 seconds					
Throttle cable adjustment (Throttle valve fully opened)									
Between boot end face and inner cable stopper				0 – 1 mm				0 – 0.04 in.	
Output shaft thrust play				0.3 – 0.9 mm				0.012 – 0.035 in.	
Oil pump input shaft thrust play				0.3 – 0.9 mm				0.012 – 0.035 in.	
Drive plate runout		Limit		Less than 0.20 mm (0.0079 in.)					
Torque converter runout		Limit		Less than 0.30 mm (0.0118 in.)					

Shift point schedule km/h (mph)	Tire size	Differential	D range (throttle valve fully open)						L range
		gear ratio	1 → 2	2 → 3	3 → 4	4 → 3	3 → 2	2 → 1	2 → 1
	E78-14	3.727	58-74 (36-46)	110-127 (68-79)	*2	*1	100-116 (62-72)	40-55 (25-34)	47-63 (29-39)
	ER78-14 205/70 SR14	3.727	57-72 (35-45)	105-121 (65-75)	*3	*1	96-111 (60-69)	39-53 (24-33)	45-60 (28-37)

*1 4 → 3 down shift possible up to maximum speed.

*2 No 3 → 4 shift up with throttle valve fully open. 3 → 4 shift up point with closed throttle valve is at 38 – 53 km/h (24 – 33 mph).

*3 No 3 → 4 shift up with throttle valve fully poen. 3 → 4 shift up point with closed throttle valve is at 37 – 51 km/h (23 – 32 mph).

—Note—

Tire size and tire inflation pressure should be as specified.

Specifications (Cont'd)

Valve body spring mm (in.)		Free length	Coil outer diamteer	No. coils	Wire diameter	
	Lower valve body					
	1-2 shift valve	34.62 (1.3630)	7.56 (0.2976)	13	0.56 (0.0220)	
	Pressure relief valve ball	32.14 (1.2654)	13.14 (0.5173)	9	2.03 (0.0799)	
	Primary regulator valve	73.32 (2.8866)	16.72 (0.6583)	15	1.59 (0.0626)	
	3-4 shift valve	33.65 (1.3248)	10.60 (0.4173)	14.5	1.10 (0.0433)	
	Check valve (for oil cooler)	33.32 (1.3118)	13.82 (0.5441)	7	1.32 (0.0520)	
	Damping ball	20.00 (0.7874)	4.95 (0.1949)	16	0.38 (0.0150)	
	Rear upper valve body					
	2-3 shift timing valve	35.10 (1.3819)	8.96 (0.3528)	12.5	0.76 (0.0299)	
	Sequence valve	37.55 (1.4783)	9.17 (0.3610)	14.5	1.17 (0.0461)	
	Governor modulator valve	36.07 (1.4201)	9.09 (0.3579)	12	0.71 (0.0280)	
	Low coast modulator valve	42.35 (1.6673)	9.24 (0.3638)	15	0.84 (0.0331)	
	Detent regulator valve	29.93 (1.1783)	8.85 (0.3484)	13.5	0.90 (0.0354)	
	Intermediate modulator valve	27.26 (1.0732)	9.04 (0.3559)	9.5	1.10 (0.0433)	
	Front upper valve body					
	Throttle valve	19.24 (0.7575)	8.58 (0.3378)	8	0.71 (0.0280)	
	Down shift plug	43.00 (1.6929)	10.89 (0.4287)	15.5	1.19 (0.0469)	
Secondary regulator valve	71.27 (2.8059)	17.43 (0.6862)	15	1.93 (0.0760)		
Clutch and brake return spring (C ₀ , C ₁ , C ₂)	Free length Coil outer diameter No. of coils		14.90 mm 7.7 mm 6	0.5866 in. 0.303 in.		
Clutch and brake return spring (B ₀ , B ₁ , B ₂ , B ₃)	Free length Coil outer diameter No. of coils		16.12 mm 8.0 mm 6	0.6346 in. 0.315 in.		
Clutch and brake disc	Thickness	Limit	More than 2.1 mm (0.083 in.)			
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	0.012 in.	
Clutch and brake piston stroke	Front clutch (C ₁)	STD	1.84 – 2.86 mm	0.0724 – 0.1126 in.		
	Rear clutch (C ₂)	STD	1.24 – 2.12 mm	0.0488 – 0.0835 in.		
	OD clutch (C ₀)	STD	1.55 – 2.28 mm	0.0610 – 0.0898 in.		
	No.1 brake (B ₁)	STD	0.65 – 1.30 mm	0.0256 – 0.0512 in.		
	No.2 brake (B ₂)	STD	1.24 – 2.12 mm	0.0488 – 0.0835 in.		
Brake clearance	No.3 brake (B ₃)	STD	0.72 – 2.50 mm	0.0283 – 0.0984 in.		
	OD brake (B ₀)	STD	0.35 – 1.60 mm	0.0138 – 0.0630 in.		

Specifications (Cont'd)

Accumulator piston mm (in.)			Length		Outer diameter	
	B ₂	Front	48.5 (1.764)		34.8 (1.266)	
	C ₂	Center	45.0 (1.637)		31.8 (1.252)	
	C ₁	Rear	49.5 (1.949)		31.8 (1.252)	
Accumulator piston spring mm (in.)			Free length	Coil outer diameter	No. coils	Wire diameter
	B ₂	Front	66.50 (2.6181)	17.91 (0.7051)	13.5	2.60 (0.1024)
	C ₂	Center	55.18 (2.1724)	15.87 (0.6248)	8.5	2.00 (0.0787)
	C ₁	Rear	68.56 (2.6992)	17.53 (0.6902)	15.5	2.03 (0.0799)
Bushing bore mm (in.)	Bushing name		Length	Finished bore		Bore limit
	Stator support	Front	9.70 (0.3819)	21.501 – 21.527 (0.8465 – 0.8475)		21.577 (0.8495)
		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)
	O/D sun gear	Front & Rear	9.70 (0.3819)	23.062 – 23.088 (0.9080 – 0.9090)		23.138 (0.9109)
	O/D 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 – 0.7096)		18.076 (0.7117)
	Extension housing		29.75 (1.1713)	38.000 – 38.025 (1.4961 – 1.4970)		38.075 (1.4990)

Tightening Torque (A43D)(4×2)

Tightening part		kg-cm	ft-lb
Engine x Transmission		500 – 800	37 – 57
Transmission housing	2 bolts	480 – 680	35 – 49
	4 bolts	270 – 420	20 – 30
Extension housing		270 – 420	20 – 30
Drive plate		800 – 900	57 – 64
Torque converter		150 – 220	11 – 15
Oil pump		180 – 250	14 – 18
Center support		240 – 280	18 – 20
Upper valve body x Lower valve body		50 – 60	44 – 52 in.-lb
Valve body		80 – 120	70 – 104 in.-lb
Oil strainer		50 – 60	44 – 52 in.-lb
Oil pan		40 – 50	35 – 43 in.-lb
Oil pump cover bolt		60 – 90	53 – 78 in.-lb
Cooler pipe union nut		300 – 400	21 – 29
Testing plug		60 – 90	53 – 78 in.-lb
Parking lock pawl bracket		60 – 90	53 – 78 in.-lb

PROPELLER SHAFT (4×2)

Specifications

Spider axial play			Less than 0.05 mm (0.0020 in.)	
Spider bearing selection (½ ton)				
Part No.	Mark			
37402-30010	Bearing cup outer diameter	None	29.008 – 29.021 mm	1.1420 – 1.1426 in.
	Bearing hole inner diameter	None	29.000 – 29.021 mm	1.1417 – 1.1426 in.
37402-30020	Bearing cup outer diameter	Red	29.028 – 29.041 mm	1.1428 – 1.1433 in.
	Bearing hole inner diameter	Drill mark	29.021 – 29.042 mm	1.1426 – 1.1434 in.
Snap ring thickness (½ ton)				
Part No.	Color			
90520-26233	None		1.475 – 1.525 mm	0.0581 – 0.0600 in.
90520-26234	Brown		1.525 – 1.575 mm	0.0600 – 0.0620 in.
90520-26235	Blue		1.575 – 1.625 mm	0.0620 – 0.0640 in.
Spider bearing selection (¾ ton and C&C)				
Part No.	Mark			
37402-25010	Bearing cup outer diameter	None	26.015 – 26.028 mm	1.0242 – 1.0247 in.
	Bearing hole inner diameter	None	26.000 – 26.021 mm	1.0236 – 1.0244 in.
37402-25020	Bearing cup outer diameter	Red	26.036 – 26.049 mm	1.0250 – 1.0255 in.
	Bearing hole inner diameter	Drill mark	26.021 – 26.042 mm	1.0244 – 1.0253 in.

Specifications (Cont'd)

Hole snap ring thickness (¾ ton and C&C)				
	Part No.	Color		
	90521-29070	None	2.375 – 2.425 mm	0.0935 – 0.0955 in.
	90521-29071	Brown	2.425 – 2.475 mm	0.0955 – 0.0974 in.
	90521-29072	Blue	2.475 – 2.525 mm	0.0974 – 0.0994 in.
Runout		Limit	0.8 mm	0.031 in.

Tightening Torque

Tightening part	kg-cm	ft-lb
Universal joint flange yoke x Companion flange	300 – 400	22 – 29
Center bearing bracket x Member	150 – 200	11 – 14
Intermediate shaft x Center bearing x Joint flange 1st	1,700 – 2,000	123 – 144
2nd	Loosen nut	
3rd ½ ton	250 – 350	19 – 25
¾ ton, C & C	300 – 400	22 – 28

FRONT AXLE AND SUSPENSION (4×2)

Specifications

Cold tire inflation pressure kg/cm ² (psi)	Model		Tire size				
	RN34L RN44L	Front	ER78—14 (B) 205/70 SR 14	1.4 (20)	*		
		Rear	ER78—14 (B) 205/70 SR 14	2.2 (32)			
	RN34L RN44L	Front	7.00—14—6PR	1.7 (24)	*		
		Rear	7.00—14—6PR	2.5 (36)			
	RN44L-KH RN44L-3W	Front	7.50—14—6PR	1.7 (24)	**		
		Rear	7.50—14—6PR	2.5 (36)			
	* Do not drive over 120 km/h (75 mph) with cargo above 400 kg (882 lb).						
	** Do not drive over 120 km/h (75 mph) with cargo above 600 kg(1,323 lb).						
Front wheel alignment	Toe-in		Bias tire	Inspection STD 5±4 mm (0.20±0.16 in.)	Adjustment STD 5±1 mm (0.20±0.04 in.)	Left right error	
			Radial tire	2±4 mm (0.08±0.16 in.)	2±1 mm (0.08±0.04 in.)		
	Camber			1° 5' ± 45'	1° 5' ± 30'	30'	
	Caster		½ ton	1° ± 45'	1° ± 30'	30'	
			¾ ton, C&C	30' ± 45'	30' ± 30'		
	King pin inclination			7° 10' ± 45'		±30'	
	Wheel angle		Inside	36° +1°			
			Outside	29° -2°			
	Side slip			Within ± 3.0 mm/m (0.118 in./3.3 ft)			
	— Note — Difference of camber and caster between left and right sides must be within 30'.						

Vehicle height mm (in.)	Model	Pay load	Tire size	Unloaded		Loaded	
				Front (A)	Rear (B)	Front (A)	Rear (B)
	RN34, RN44	1/2 ton	7.00-14-6PR	261.4 (10.291)	288.3 (11.350)	242.3 (9.539)	231.0 (9.094)
	RN34, RN44	1/2 ton	E78-14(B)	254.4 (10.016)	281.3 (11.075)	235.3 (9.264)	224.0 (8.819)
	RN34, RN44-SR-5	1/2 ton	ER78-14(B)	250.6 (9.866)	271.0 (10.669)	231.3 (9.106)	205.0 (8.071)
	RN34, RN44-SR-5 (OPT)	1/2 ton	205/70 SR 14	241.6 (9.512)	262.0 (10.315)	222.3 (8.752)	196.0 (7.717)
	RN44L-KH	3/4 ton	7.50-14-6PR	278.4 (10.961)	305.3 (12.020)	259.3 (10.209)	248.0 (9.764)
	RN44L-3W	C&C	7.50-14-6PR	278.4 (10.961)	305.3 (12.020)	259.3 (10.209)	248.0 (9.764)
Front axle and suspension	Wheel bearing preload (starting load at hub bolt) Ball joints vertical play Limit			0.6 – 1.8 kg 1.3 – 4.0 lb Max. 2.3 mm (0.091 in.)			

Tightening part	kg-cm	ft-lb
Upper arm shaft x Suspension member	700 — 900	51 — 65
Lower arm shaft x Suspension member	2,000 — 3,000	145 — 216
Lower arm x Torque arm	400 — 550	29 — 39
Anker arm x Adjust bolt lock nut	700 — 900	51 — 65
Upper ball joint x Steering knuckle	900 — 1,300	66 — 94
Lower ball joint x Steering knuckle	1,200 — 1,700	87 — 122
Lower ball joint x Lower arm	200 — 300	15 — 21
Upper ball joint x Upper arm	200 — 300	15 — 21
Steering knuckle x Disc brake caliper		
½ ton, ¾ ton	930 — 1,200	68 — 86
C&C	1,100 — 1,750	80 — 126
Steering knuckle x Knuckle arm	900 — 1,300	66 — 94
Wheel nut	900 — 1,200	66 — 86

REAR AXLE AND SUSPENSION (4×2)**Specifications**

7.5 in. Differential	Drive pinion bearing preload at Starting			
	New bearing		12 — 19 kg-cm	10.4—16.5 in.-lb
	Reused bearing		6 — 10 kg-cm	5.2 — 8.7 in.-lb
	Total preload at Starting		Add drive pinion bearing preload	
	New and reused bearing		4 — 6 kg-cm	3.5 — 5.2 in.-lb
	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 runout	Limit		
		Radial	0.10 mm	0.0039 in.
		Lateral	0.10 mm	0.0039 in.
	Ring gear installing temperature		90 — 110°C	194 — 230°F
	Side gear thrust washer thickness			
	Part No.			
	41361-30040		0.96 — 1.04 mm	0.0378 — 0.0409 in.
	41361-30050		1.06 — 1.14 mm	0.0417 — 0.0449 in.
	41361-30060		1.16 — 1.24 mm	0.0457 — 0.0488 in.
	41361-30070		1.26 — 1.34 mm	0.0496 — 0.0528 in.
	Drive pinion adjusting plate washer thickness			
	Part No.			
	90201-35434		2.23 — 2.25 mm	0.0878 — 0.0886 in.
	90201-35435		2.26 — 2.28 mm	0.0890 — 0.0898 in.
	90201-35436		2.29 — 2.31 mm	0.0902 — 0.0909 in.
	90201-35437		2.32 — 2.34 mm	0.0913 — 0.0921 in.
	90201-35396		2.35 — 2.37 mm	0.0925 — 0.0933 in.
	99201-35397		2.38 — 2.40 mm	0.0937 — 0.0945 in.
	90201-35398		2.41 — 2.43 mm	0.0949 — 0.0957 in.
	90201-35399		2.44 — 2.46 mm	0.0961 — 0.0969 in.
	90201-35400		2.47 — 2.49 mm	0.0972 — 0.0980 in.
	90201-35401		2.50 — 2.52 mm	0.0984 — 0.0992 in.
	90201-35402		2.53 — 2.55 mm	0.0996 — 0.1004 in.
	90201-35403		2.56 — 2.58 mm	0.1008 — 0.1016 in.
	90201-35404		2.59 — 2.61 mm	0.1020 — 0.1028 in.
	90201-35438		2.62 — 2.64 mm	0.1031 — 0.1039 in.
	90201-35439		2.65 — 2.67 mm	0.1043 — 0.1051 in.
	90201-35440		2.68 — 2.70 mm	0.1055 — 0.1063 in.
	90201-35441		2.71 — 2.73 mm	0.1067 — 0.1075 in.

Specifications (Cont'd)

8.0 in. Differential	Drive pinion bearing preload	at Starting		
		New bearing	19 — 26 kg-cm	16.5 — 22.6 in.-lb
		Reused bearing	9 — 13 kg-cm	7.8 — 11.3 in.-lb
	Total preload	at Starting	Add drive pinion bearing preload	
		New and reused bearing	4 — 6 kg-cm	3.5 — 5.2 in.-lb
	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	0.10 mm	0.0039 in.
	Companion flange runout	Limit		
		Radial	0.10 mm	0.0039 in.
		Lateral	0.10 mm	0.0039 in.
	Ring gear installing temperature		90 — 110°C	194 — 230°F
	Side gear thrust washer thickness			
		Part No.		
		41361-40021	1.57 — 1.63 mm	0.0618 — 0.0642 in.
		41362-40021	1.67 — 1.73 mm	0.0657 — 0.0681 in.
		41363-40021	1.77 — 1.83 mm	0.0697 — 0.0720 in.
	Drive pinion adjusting plate washer thickness			
		Part No.		
		90201-35497	1.69 — 1.71 mm	0.0665 — 0.0673 in.
		90201-35498	1.72 — 1.74 mm	0.0677 — 0.0685 in.
		90201-35499	1.75 — 1.77 mm	0.0689 — 0.0697 in.
		90201-35500	1.78 — 1.80 mm	0.0701 — 0.0709 in.
		90201-35501	1.81 — 1.83 mm	0.0713 — 0.0720 in.
		90201-35502	1.84 — 1.86 mm	0.0724 — 0.0732 in.
		90201-35503	1.87 — 1.89 mm	0.0736 — 0.0744 in.
		90201-35504	1.90 — 1.92 mm	0.0748 — 0.0756 in.
		90201-35505	1.93 — 1.95 mm	0.0760 — 0.0768 in.
		90201-35506	1.96 — 1.98 mm	0.0722 — 0.0780 in.
		90201-35507	1.99 — 2.01 mm	0.0783 — 0.0791 in.
		90201-35508	2.02 — 2.04 mm	0.0795 — 0.0803 in.
		90201-35509	2.05 — 2.07 mm	0.0807 — 0.0815 in.
		90201-35510	2.08 — 2.10 mm	0.0819 — 0.0827 in.
		90201-35511	2.11 — 2.13 mm	0.0831 — 0.0839 in.
		90201-35512	2.14 — 2.16 mm	0.0843 — 0.0850 in.
		90201-35513	2.17 — 2.19 mm	0.0854 — 0.0862 in.
		90201-35514	2.20 — 2.22 mm	0.0866 — 0.0874 in.
		90201-35515	2.23 — 2.25 mm	0.0878 — 0.0886 in.
		90201-35516	2.26 — 2.28 mm	0.0890 — 0.0898 in.
		90201-35517	2.29 — 2.31 mm	0.0902 — 0.0909 in.
		90201-35518	2.32 — 2.34 mm	0.0913 — 0.0921 in.

Specifications (Cont'd)

8.0 in. Differential (cont'd)	Drive pinion bearing preload adjusting shim thickness			
		Part No.		
		90564-30035	0.25 mm	0.0098 in.
		90564-30193	0.30 mm	0.0118 in.
		90564-30194	0.35 mm	0.0138 in.
		90564-30195	0.40 mm	0.0157 in.
		90564-30063	0.45 mm	0.0177 in.

Tightening Torque

Differential (7.5 in., 8.0 in.)	Tightening part		kg-cm	ft-lb
	Drive pinion x Companion flange	7.5 in.	1,100 – 2,400	80 – 173
		8.0 in.	1,700 – 2,100	123 – 151
	Ring gear x Differential case		920 – 1,050	67 – 75
	Differential carrier x Side bearing cap		700 – 900	51 – 65
	Differential carrier x Axle housing		200 – 300	15 – 21
Rear axle and suspension	Rear axle housing x Backing plate x Bearing retainer		600 – 800	44 – 57
	U-bolt nut		800 – 1,200	58 – 86
	Spring bracket pin		750 – 1,100	55 – 79
	Wheel nut		900 – 1,200	66 – 86

BRAKE (RN 4×2)

Specifications

Brake pedal	Pedal height (from floor panel)		157 – 167 mm	6.18 – 6.57 in.
	Pedal freeplay		3 – 6 mm	0.12 – 0.24 in.
	Pedal reserve distance (from floor panel) at 50kg (110 lb)		More than 75 mm (2.95 in.)	
Brake booster	Booster push rod to piston clearance			
	at Idling vacuum		0.1 – 0.5 mm	0.004 – 0.020 in.
	at No vacuum		0.60 – 0.65 mm	0.0236 – 0.0256 in.
Front brake (Disc)	w/ SST		0 mm	0 in.
	Disc thickness	Limit		
		RN ½ ton, ¾ ton	11.5 mm	0.453 in.
		RN C&C	19.0 mm	0.748 in.
	Disc runout		0.15 mm	0.0059 in.
	Pad thickness		1.0 mm	0.039 in.

Specifications (Cont'd)

Rear brake (Drum)	Drum inner diameter	Limit	256.0 mm	10.079 in.
	Lining thickness	Limit	1.0 mm	0.039 in.
Parking brake	Lever travel	at 20 kg (44 lb)	7 – 15 clicks	

Tightening Torque

Tightening part		kg-cm	ft-lb
Brake booster clevis lock nut		190 – 310	14 – 22
Brake booster x Pedal bracket		100 – 160	8 – 11
Master cylinder x Brake booster		100 – 160	8 – 11
Reservoir set bolt x Master cylinder		200 – 300	15 – 21
Outlet plug x Master cylinder	φ16 mm	350 – 550	26 – 39
	φ18 mm	530 – 840	39 – 60
Piston stopper bolt x Master cylinder		80 – 150	70 – 130 in.-lb
Union bolt x Master cylinder		400 – 700	29 – 50
P & B valve x Bracket (½ ton)		100 – 160	8 – 11
Brake tube union nut		130 – 180	10 – 13
Vacuum hose clamp x Dash panel		40 – 70	35 – 61 in.-lb
Check valve bracket x Dash panel		40 – 70	35 – 61 in.-lb
Disc brake caliper x Knuckle			
	½ ton, ¾ ton	930 – 1,200	68 – 86
	C & C	1,100 – 1,750	80 – 126
Flexible hose		200 – 270	15 – 19
Brake tube union nut		130 – 180	10 – 13
Bleeder plug		90 – 130	79 – 112 in.-lb
Disc brake dust cover x Knuckle	12 mm bolt	900 – 1,300	66 – 94
	8 mm bolt	100 – 160	8 – 11
Front disc x Front axle hub			
	½ ton, ¾ ton	400 – 550	29 – 39
	C&C	550 – 750	40 – 54
Cylinder guide plate x Disc brake mounting			
	C&C	400 – 600	29 – 44
Drum brake backing plate x Rear axle housing		600 – 800	44 – 57
Rear brake wheel cylinder x Backing plate			
	½ ton, ¾ ton	80 – 120	70 – 104 in.-lb
	C&C	100 – 190	8 – 13

Tightening Torque (Cont'd)

Tightening part		kg-cm	ft.-lb
Rear brake bleeder plug	½ ton, ¾ ton	90 – 130	79 – 112 in.-lb
	C&C	70 – 100	61 – 86 in.-lb
LSPV bracket x Frame	¾ ton, C&C	150 – 220	11 – 15
LSPV x LSPV bracket	¾ ton, C&C	100 – 160	8 – 11
LSPV spring x LSPV bracket	¾ ton, C&C	150 – 220	11 – 15
LSPV spring x Shackle	¾ ton, C&C	150 – 220	11 – 15
LSPV shackle lock nut	¾ ton, C&C	190 – 310	14 – 22
LSPV shackle x Shackle bracket			
	¾ ton, C&C	100 – 160	8 – 11
LSPV shackle bracket x Rear axle housing			
	¾ ton, C&C	150 – 220	11 – 15

STEERING (4×2)

Specifications

Steering	Steering wheel freeplay		Less than 30 mm (1.18 in.)	
	Intermediate shaft trunnion joint			
	radial play at main shaft housing		Max. 0.06 mm (0.0024 in.)	
	Trunnion joint bearing lock width			
	Part No. Punch mark			
	45224-30040	Yes	15.97 – 16.00 mm	0.6287 – 0.6299 in.
	45225-30040	No	16.00 – 16.03 mm	0.6299 – 0.6311 in.
	Sector shaft to bushing clearance		0.062 – 0.107 mm	0.0024 – 0.0042 in.
	Bushing bore		28.072 – 28.097 mm	1.1052 – 1.1062 in.
	Sector shaft to needle bearing clearance			
	Upper		Less than 0.030 mm (0.0012 in.)	
	Lower		Less than 0.030 mm (0.0012 in.)	
	Sector shaft outer diameter		27.990 – 28.010 mm	1.1020 – 1.1028 in.
	Sector shaft thrust clearance	Limit	0.05 mm	0.0020 in.
	Sector shaft thrust washer thickness			
	Part No.			
	45353-20010		1.95 mm	0.0768 in.
	45352-20010		2.00 mm	0.0787 in.
	45354-20010		2.05 mm	0.0807 in.
	45355-20010		2.10 mm	0.0827 in.
	45356-20010		2.15 mm	0.0846 in.
	Worm bearing preload	w/o Sector shaft	3 – 5 kg-cm	2.6 – 4.3 in.-lb
		w/ Sector shaft	6 – 8.5 kg-cm	5.2 – 7.4 in.-lb

Specifications (Cont'd)

Power steering	Maximum rise of oil level		Below 5 mm (0.20 in.)		
	Oil pressure at Idle speed		More than 72 kg/cm ² (1.024 psi)		
	Variation in vane pump discharge pressure (at 1,000 rpm and 3,000 rpm)		Less than 5 kg/cm ² (71 psi)		
	Drive belt tension (w/ Borroughs drive belt tension gauge No. BT-33-73F)				
	New belt		125 ± 25 lb		
	Used belt		80 ± 20 lb		
	Steering effort at Steering wheel		Less than 3.5 kg (7.7 lb)		
	Vane plate	Length	STD	15.00 mm	0.5906 in.
			Limit	14.97 mm	0.5894 in.
		Height	STD	8.2 mm	0.323 in.
			Limit	7.8 mm	0.307 in.
		Width	STD	1.8 mm	0.071 in.
			Limit	1.7 mm	0.067 in.
	Vane plate to vane plate groove clearance				
		Limit	0.06 mm	0.0024 in.	
	Shaft to bushing clearance	STD	0.010 – 0.030 mm	0.0004 – 0.0012 in.	
		Limit	0.07 mm	0.0028 in.	
	Flow control valve spring length	STD	50.0 mm	1.969 in.	
		Limit	47.0 mm	1.850 in.	
	Pump preload (at pump pulley) rotating		0.5 kg	1.1 lb	
	Cross shaft adjusting screw thrust clearance		0.03 – 0.05 mm	0.0012 – 0.0020 in.	
Ball clearance	STD	0.02 – 0.06 mm	0.0008 – 0.0024 in.		
	Limit	0.15 mm	0.0059 in.		
Worm shaft preload	at Starting				
	w/o Cross shaft	4.0 – 6.5 kg-cm	3.5 – 5.6 in.-lb		
	w/ Cross shaft	In addition to without cross shaft preload			
		2 – 3 kg-cm	1.7 – 2.6 in.-lb		
Tilt steering	Collar No. 1 outer diameter	Part No.			
		45813-22010	17.996 – 18.003 mm	0.7085 – 0.7088 in.	
		45813-22020	18.003 – 18.010 mm	0.7088 – 0.7091 in.	
		45813-22030	18.010 – 18.017 mm	0.7091 – 0.7093 in.	
		45813-22040	18.017 – 18.024 mm	0.7093 – 0.7096 in.	
	Collar No. 2 outer diameter	45813-22050	17.989 – 17.996 mm	0.7082 – 0.7085 in.	
		Part No.			
		45814-22010	17.982 – 18.000 mm	0.7080 – 0.7087 in.	
		45814-22020	18.000 – 18.018 mm	0.7087 – 0.7094 in.	

Specifications (Cont'd)

Tilt steering (cont'd)	Tilt steering support shim thickness			
	Part No.			
	45815-22010	0.2 mm	0.008 in.	
	45815-22020	0.5 mm	0.020 in.	
	45815-22030	0.8 mm	0.031 in.	
	45815-22040	1.4 mm	0.055 in.	
	45815-22050	1.8 mm	0.071 in.	

Tightening Torque

Steering	Tightening part	kg-cm		ft-lb	
	Steering wheel x Steering main shaft	300 — 400		22 — 28	
	Breakaway bracket x Instrument plane	190 — 310		14 — 22	
	Flexible coupling x Steering worm	200 — 300		15 — 21	
	Flexible coupling x Steering intermediate shaft	200 — 300		15 — 21	
	Sector shaft end cover x Gear housing	150 — 220		11 — 15	
	Steering upper bracket x Steering column	40 — 70		35 — 60 in.-lb	
	Worm bearing adjusting screw lock nut	2,300 — 2,600		167 — 188	
	Pitman arm x Sector shaft	1,100 — 1,250		80 — 90	
	Steering gear housing x Frame	500 — 600		37 — 43	
	Pitman arm x Relay rod	750 — 1,100		55 — 79	
	Relay rod x Tie rod	750 — 1,100		55 — 79	
	Relay rod x Idler arm	500 — 700		37 — 50	
	Idler arm support x Frame	500 — 600		37 — 43	
	Idler arm support x Idler arm	800 — 1,200		58 — 86	
	Knuckle arm x Tie rod	750 — 1,100		55 — 79	
	Tie rod end clamp	200 — 300		15 — 21	
	Shimmy damper x Relay rod	500 — 700		37 — 50	
	Shimmy damper x Frame	100 — 160		8 — 11	
Power steering	Pump pulley x Rotor shaft	450 — 550		33 — 39	
	Front housing x Rear housing	400 — 550		29 — 39	
	Worm bearing adjusting screw lock nut	450 — 550		33 — 39	
	Gear housing x Valve housing	400 — 550		29 — 39	
	End cover x Gear housing	400 — 550		29 — 39	
	Cross shaft adjusting screw lock nut	400 — 550		29 — 39	
	Pressure hose union nut	400 — 500		29 — 36	
	Return pipe union bolt	450 — 550		32 — 39	
	Gear housing x Frame	500 — 600		37 — 47	
	Cross shaft x Pitman arm	1,100 — 1,250		80 — 90	

Tightening Torque (Cont'd)

Tilt steering	Tightening part	kg-cm	ft-lb
	Tilt steering pawl set bolt	150 – 220	11 – 15
	Tilt lever retainer	150 – 220	11 – 15
	Castle nut (Support x Breakaway bracket)	150 – 220	11 – 15
	Support stopper bolt	80 – 120	70 – 104 in.-lb
	Upper bracket x Tilt steering support	60 – 90	53 – 78 in.-lb
	Breakaway bracket x Column tube	150 – 220	11 – 15
	Main shaft x Intermediate shaft	200 – 300	15 – 21

LUBRICANTS (4x2)

Item	Capacity			Classification
	Liters	US qts	Imp. qts	
Engine oil				API grade SF, multigrade viscosity and fuel-efficient oil
Dry fill	4.8	5.1	4.2	
Drain and refill				
w/ Oil filter change	4.6	4.9	4.0	
w/o Oil filter change	4.0	4.2	3.5	
Manual transmission oil				API GL-4 or GL-5 SAE75W-90 SAE 75W-90 or 80W-90
G52	2.2	2.3	1.9	
W42	2.7	2.9	2.4	
W52	2.6	2.7	2.3	
A/T fluid				ATF type F
Dry fill	6.5	6.9	5.7	
Drain and refill	2.4	2.5	2.1	
Differential oil				API GL-5 hypoid gear oil Above –18°C (0°F) SAE 90 Below –18°C (0°F) SAE 80W-90 or 80W
7.5 in.	1.7	1.8	1.5	
8.0 in.	1.8	1.9	1.6	
Power steering fluid				ATF type Dexron or Dexron II
Pump	300 cc	18.3 cu in.		
Total	850 cc	51.9 cu in.		
Steering gear box oil	380 – 400 cc	23.2 – 24.4 cu in.		API GL-4, SAE 90
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, DOT 3
Antifreeze		—		Anti-rust type ethylene-glycol base coolant

CLUTCH AND MANUAL TRANSMISSION (4×4)**Specifications**

Clutch	Pedal height (from floor panel)		152 – 162 mm	5.98 – 6.38 in.
	Pedal freeplay		5 – 15 mm	0.20 – 0.59 in.
	Release fork end play		None adjustable type	
	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	Limit	0.6 mm	0.024 in.
Manual transmission (L45, L52)	Gear thrust clearance 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.
	3rd gear to output shaft oil clearance	STD	0.0090 – 0.0325 mm	0.0004 – 0.0013 in.
		Limit	0.0325 mm	0.0013 in.
	2nd gear to output shaft oil clearance	STD	0.0090 – 0.0325 mm	0.0004 – 0.0013 in.
		Limit	0.0325 mm	0.0013 in.
	1st gear to roller and bushing oil clearance	STD	0.009 – 0.032 mm	0.0004 – 0.0013 in.
		Limit	0.032 mm	0.0013 in.
	Countershaft 5th gear to roller and shaft oil clearance (L52)	STD	0.009 – 0.032 mm	0.0004 – 0.0013 in.
		Limit	0.032 mm	0.0013 in.
	Reverse idler to shaft oil clearance	STD	0.040 – 0.082 mm	0.0016 – 0.0032 in.
		Limit	0.082 mm	0.0032 in.
	Shift fork to hub sleeve clearance	Limit	1.0 mm	0.039 in.
	Synchronizer ring to gear clearance	Limit	0.8 mm	0.031 in.
	Output shaft runout	Limit	0.05 mm	0.0020 in.
	Input shaft snap ring thrust clearance		0 – 0.10 mm	0 – 0.0039 in.
	Snap ring thickness	Part No. Mark		
		90520-30214 0	2.05 – 2.10 mm	0.0807 – 0.0827 in.
		90520-30215 1	2.10 – 2.15 mm	0.0827 – 0.0846 in.
		90520-30216 2	2.15 – 2.20 mm	0.0846 – 0.0866 in.
		90520-30217 3	2.20 – 2.25 mm	0.0866 – 0.0886 in.
		90520-30218 4	2.25 – 2.30 mm	0.0886 – 0.0906 in.
		90520-30219 5	2.30 – 2.35 mm	0.0906 – 0.0925 in.

Specifications (Cont'd)

Manual transmission (L45, L52) (cont'd)	Output shaft snap ring thrust clearance (for Rear)			0 — 0.10 mm	0 — 0.0039 in.
	Snap ring thickness	Part No.	Mark		
		90520-25005	A	2.67 — 2.72 mm	0.1051 — 0.1071 in.
		90520-25006	B	2.73 — 2.78 mm	0.1075 — 0.1094 in.
		90520-25009	C	2.79 — 2.84 mm	0.1098 — 0.1118 in.
		90520-25010	D	2.85 — 2.90 mm	0.1122 — 0.1141 in.
		90520-25011	E	2.91 — 2.96 mm	0.1146 — 0.1165 in.
		90520-25012	F	2.97 — 3.02 mm	0.1169 — 0.1189 in.
		90520-25013	G	3.03 — 3.08 mm	0.1193 — 0.1213 in.
		90520-25014	H	3.09 — 3.14 mm	0.1217 — 0.1236 in.
		90520-25015	J	3.15 — 3.20 mm	0.1240 — 0.1260 in.
		90520-25016	K	3.21 — 3.26 mm	0.1264 — 0.1283 in.
		90520-25017	L	3.27 — 3.32 mm	0.1287 — 0.1307 in.
	Output shaft snap ring thrust clearance (for Front)			0 — 0.10 mm	0 — 0.0039 in.
	Snap ring thickness	Part No.	Mark		
		90520-28012	C-1	1.75 — 1.80 mm	0.0689 — 0.0709 in.
		90520-28245	D	1.80 — 1.85 mm	0.0709 — 0.0728 in.
		90520-28010	D-1	1.85 — 1.90 mm	0.0728 — 0.0748 in.
		90520-28246	E	1.90 — 1.95 mm	0.0748 — 0.0768 in.
		90520-28011	E-1	1.95 — 2.00 mm	0.0768 — 0.0787 in.
		90520-28248	F	2.00 — 2.05 mm	0.0787 — 0.0807 in.
	Counter gear front bearing snap ring thrust clearance			0 — 0.10 mm	0 — 0.0039 in.
	Snap ring thickness	Part No.	Mark		
		90520-23115	1	2.05 — 2.10 mm	0.0807 — 0.0827 in.
		90520-23089	2	2.10 — 2.15 mm	0.0827 — 0.0846 in.
		90520-23143	3	2.15 — 2.20 mm	0.0846 — 0.0866 in.
		90520-23090	4	2.20 — 2.25 mm	0.0866 — 0.0886 in.
		90520-23144	5	2.25 — 2.30 mm	0.0886 — 0.0906 in.
		90520-23145	6	2.30 — 2.35 mm	0.0906 — 0.0925 in.
	Gear shift arm shoe end thickness			7.5 mm	0.295 in.
	Gear shift arm shoe to groove clearance				
			Limit	0.6 mm	0.024 in.

Tightening Torque

Clutch	Tightening part	kg-cm	ft-lb
	Clutch cover x Flywheel	150 — 220	11 — 15
	Clutch housing x Engine	500 — 800	37 — 57
	Master cylinder reservoir set bolt	200 — 300	15 — 21
	Release fork support x Clutch housing	300 — 450	22 — 32
Manual transmission (L45, L52)	Transmission case x Adapter	400 — 550	29 — 39
	Front bearing retainer x Transmission case	200 — 280	15 — 20
	Output shaft rear bearing retainer		
	x Transmission case	150 — 220	11 — 15
	Counter gear rear lock nut	1,100 — 1,400	80 — 101
	Case cover x Transmission case	150 — 220	11 — 15

TRANSFER (4×4)

Specifications

Output shaft bearing thrust clearance			Less than 0.1 mm (0.004 in.)	
Output shaft snap ring thickness				
	Part No.	Mark		
	90520-36250	0	2.40 — 2.45 mm	0.0945 — 0.0965 in.
	90520-36251	1	2.45 — 2.50 mm	0.0965 — 0.0984 in.
	90520-36252	2	2.50 — 2.55 mm	0.0984 — 0.1004 in.
	90520-36253	3	2.55 — 2.60 mm	0.1004 — 0.1024 in.
	90520-36254	4	2.60 — 2.65 mm	0.1024 — 0.1043 in.
	90520-36255	5	2.65 — 2.70 mm	0.1043 — 0.1063 in.
Output shaft runout		Limit	0.03 mm	0.0012 in.
Low gear to output shaft oil clearance		STD	0.010 — 0.055 mm	0.0004 — 0.0022 in.
		Limit	0.075 mm	0.0030 in.
Low gear thrust clearance		STD	0.10 — 0.25 mm	0.0039 — 0.0098 in.
		Limit	0.30 mm	0.0118 in.
Transfer drive gear to output shaft oil clearance		STD	0.009 — 0.051 mm	0.0004 — 0.0020 in.
		Limit	0.071 mm	0.0028 in.
Transfer drive gear thrust clearance		STD	0.09 — 0.27 mm	0.0035 — 0.0106 in.
		Limit	0.32 mm	0.0126 in.
Input shaft bearing thrust clearance			Less than 0.15 mm (0.0059 in.)	

Specifications (Cont'd)

Input shaft snap ring thickness			
	Part No.	Mark	
	90520-33168	1	2.05 – 2.10 mm
	90520-33170	3	2.15 – 2.20 mm
	90520-33172	5	2.25 – 2.30 mm
Counter shaft bearing thrust clearance			
Counter shaft snap ring thickness			
	Part No.	Mark	
	90520-30215	1	2.10 – 2.15 mm
	90520-30217	3	2.20 – 2.25 mm
Idler gear shaft bearing thrust clearance			
Idler gear shaft snap ring thickness			
	Part No.	Mark	
	90520-28242	A	1.50 – 1.55 mm
	90520-28243	B	1.60 – 1.65 mm
Shift fork to clutch sleeve clearance			
		Limit	1.0 mm

Tightening Torque

Tightening part	kg-cm	ft-lb
Adapter x Reduction case	300 – 450	22 – 32
Reduction case x Front case x Rear case	300 – 450	22 – 32
Rear case x Extension housing	300 – 450	22 – 32
Front case x Rear case	300 – 450	22 – 32
Reduction case x Front case	300 – 450	22 – 32
Reduction case x P.T.O. cover	50 – 90	44 – 78 in.-lb
Output shaft x Companion flange	1,100 – 1,400	80 – 101
Front drive gear bearing retainer x Front case	150 – 220	11 – 15

PROPELLER SHAFT (4×4)

Specifications

Spider axial play			Less than 0.05 mm (0.0020 in.)	
Spider bearing selection				
Part No.		Mark		
37402-30010	Bearing cup outer diameter	None	29.008 – 29.021 mm	1.1420 – 1.1426 in.
	Bearing hole inner diameter	None	29.000 – 29.021 mm	1.1417 – 1.1426 in.
37402-30020	Bearing cup outer diameter	Red	29.028 – 29.041 mm	1.1428 – 1.1433 in.
	Bearing hole inner diameter	Drill mark	29.021 – 29.042 mm	1.1426 – 1.1434 in.
Snap ring thickness	Part No.	Color		
	90520-26233	None	1.475 – 1.525 mm	0.0581 – 0.0600 in.
	90520-26234	Brown	1.525 – 1.575 mm	0.0600 – 0.0620 in.
	90520-26235	Blue	1.575 – 1.625 mm	0.0620 – 0.0640 in.
Runout		Limit	0.8 mm	0.031 in.

Tightening Torque

Tightening part	kg-cm	ft-lb
Propeller shaft x Transfer	300 – 400	22 – 29
Propeller shaft x Differential	300 – 400	22 – 29

FRONT AXLE AND SUSPENSION (RN 4×4)

Specifications

Cold tire inflation pressure kg/cm ² (psi)	Tire size		Low speed driving	High speed driving
	H78 – 15 (B) HR78 – 15 (B)	Front Rear	1.4 (20) 1.7 (24)	1.7 (24) 2.0 (28)
Front wheel alignment	Toe-in		Inspection STD 4±4 mm (0.16±0.16 in.)	Adjustment STD 4±1 mm (0.16±0.04 in.)
	H78–15(B) Bias tire HR78–15(B) Radial tire		1±4 mm (0.04±0.16 in.)	1±1 mm (0.04±0.04 in.)
	Camber		1° ± 45'	←
	Caster		3°30' ± 45'	←
	King pin inclination		9°30' ± 45'	
	Wheel angle		30°30' +1° 29° -2°	
	Side slip		within ± 3.0 mm/m (±0.118 in./3.3 ft)	
Front axle and suspension	Wheel bearing preload (starting load at hub bolt)		2.8 – 5.7 kg	6.2 – 12.6 lb
	Steering knuckle bearing preload (rotating)			
	at Knuckle arm end		1.8 – 3.8 kg	4.0 – 8.4 lb
	Steering knuckle preload adjusting shim thickness			
	Part No.			
	43236-60010		0.1 mm	0.004 in.
	43233-60011		0.2 mm	0.008 in.
	43234-60011		0.5 mm	0.020 in.
	43235-60010		1.0 mm	0.039 in.

Tightening Torque

Tightening part	kg-cm	ft-lb
Steering knuckle arm x Housing	850 – 1,100	62 – 79
Bearing cap x Housing	850 – 1,100	62 – 79
U-bolt nut	1,000 – 1,500	73 – 108
Spring bracket pin	750 – 1,100	55 – 79
Wheel nut	900 – 1,200	66 – 86
Hub x Flange	280 – 350	21 – 25
Adjusting nut	800 – 1,000	58 – 72

Specifications

8.0 in. Differential	Drive pinion bearing preload	at Starting		
	New bearing		19 – 26 kg-cm	16.5 – 22.6 in.-lb
	Reused bearing		9 – 13 kg-cm	7.8 – 11.3 in.-lb
	Total preload	at Starting	Add drive pinion bearing preload	
		New and reused bearing	4 – 6 kg-cm	3.5 – 5.2 in.-lb
	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	0.10 mm	0.0039 in.
	Companion flange runout	Limit		
		Radial	0.10 mm	0.0039 in.
		Lateral	0.10 mm	0.0039 in.
	Ring gear installing temperature		90 – 110°C	194 – 230°F
	Side gear thrust washer thickness			
		Part No.		
		41361-40021	1.57 – 1.63 mm	0.0618 – 0.0642 in.
		41362-40021	1.67 – 1.73 mm	0.0657 – 0.0681 in.
		41363-40021	1.77 – 1.83 mm	0.0697 – 0.0720 in.
	Drive pinion adjusting plate washer thickness			
		Part No.		
		90201-35497	1.69 – 1.71 mm	0.0665 – 0.0673 in.
		90201-35498	1.72 – 1.74 mm	0.0677 – 0.0685 in.
		90201-35499	1.75 – 1.77 mm	0.0689 – 0.0697 in.
		90201-35500	1.78 – 1.80 mm	0.0701 – 0.0709 in.
		90201-35501	1.81 – 1.83 mm	0.0713 – 0.0720 in.
		90201-35502	1.84 – 1.86 mm	0.0724 – 0.0732 in.
		90201-35503	1.87 – 1.89 mm	0.0736 – 0.0744 in.
		90201-35504	1.90 – 1.92 mm	0.0748 – 0.0756 in.
		90201-35505	1.93 – 1.95 mm	0.0760 – 0.0768 in.
		90201-35506	1.96 – 1.98 mm	0.0772 – 0.0780 in.
		90201-35507	1.99 – 2.01 mm	0.0783 – 0.0791 in.
	90201-35508	2.02 – 2.04 mm	0.0795 – 0.0803 in.	
	90201-35509	2.05 – 2.07 mm	0.0807 – 0.0815 in.	
	90201-35510	2.08 – 2.10 mm	0.0819 – 0.0827 in.	
	90201-35511	2.11 – 2.13 mm	0.0831 – 0.0839 in.	
	90201-35512	2.14 – 2.16 mm	0.0843 – 0.0850 in.	
	90201-35513	2.17 – 2.19 mm	0.0854 – 0.0862 in.	
	90201-35514	2.20 – 2.22 mm	0.0866 – 0.0874 in.	
	90201-35515	2.23 – 2.25 mm	0.0878 – 0.0886 in.	
	90201-35516	2.26 – 2.28 mm	0.0890 – 0.0898 in.	
	90201-35517	2.29 – 2.31 mm	0.0902 – 0.0909 in.	
	90201-35518	2.32 – 2.34 mm	0.0913 – 0.0921 in.	

Specifications (Cont'd)

8.0 in. Differential (cont'd)	Drive pinion bearing preload adjusting shim			
	thickness	Part No.		
		90564-30035	0.25 mm	0.0098 in.
		90564-30193	0.30 mm	0.0118 in.
		90564-30194	0.35 mm	0.0138 in.
		90564-30195	0.40 mm	0.0157 in.
		90564-30063	0.45 mm	0.0177 in.

Tightening Torque

Differential (8.0 in.)	Tightening part	kg-cm	ft-lb
	Drive pinion x Companion flange	1,700 – 2,100	123 – 151
	Ring gear x Differential case	920 – 1,050	67 – 75
	Differential carrier x Side bearing cap	700 – 900	51 – 65
	Differential carrier x Axle housing	200 – 300	15 – 21
Rear axle and suspension	Rear axle housing x Backing plate x Bearing retainer	600 – 800	44 – 57
	U-bolt nut	1,000 – 1,500	73 – 108
	Spring bracket pin	750 – 1,100	55 – 79
	Wheel nut	900 – 1,200	66 – 86

BRAKE (4×4)

Specifications

Brake pedal	Pedal height (from floor panel)		157 – 167 mm	6.18 – 6.57 in.
	Pedal freeplay		3 – 6 mm	0.12 – 0.24 in.
	Pedal reserve distance (from floor panel) at 50kg (110 lb)		More than 85 mm (3.35 in.)	
Brake booster	Booster push rod to piston clearance			
	at Idling vacuum		0.1 – 0.5 mm	0.004 – 0.020 in.
	at No vacuum		0.60 – 0.65 mm	0.0236 – 0.0256 in.
Front brake (Disc)	Disc thickness	Limit	11.5 mm	0.453 in.
	Disc runout	Limit	0.15 mm	0.0059 in.
	Pad thickness	Limit	1.0 mm	0.039 in.
Rear brake (Drum)	Drum inner diameter	Limit	256.0 mm	10.079 in.
	Lining thickness	Limit	1.0 mm	0.039 in.
Parking brake	Lever travel	at 20 kg (44 lb)	7 – 15 clicks	

Tightening Torque

Tightening part	kg-cm	ft-lb
Brake booster clevis lock nut	190 — 310	14 — 22
Brake booster x Pedal bracket	100 — 160	8 — 11
Master cylinder x Brake booster	100 — 160	8 — 11
Reservoir set bolt x Master cylinder	200 — 300	15 — 21
Outlet plug x Master cylinder	350 — 550	26 — 39
Piston stopper bolt x Master cylinder	80 — 150	70 — 130 in.-lb
Union bolt x Master cylinder	400 — 700	29 — 51
Brake tube union nut	130 — 180	10 — 13
Vacuum hose clamp x Dash panel	40 — 70	35 — 61 in.-lb
Check valve bracket x Dash panel	40 — 70	35 — 61 in.-lb
Disc brake caliper x Knuckle	750 — 1,050	55 — 75
Flexible hose	200 — 270	15 — 19
Brake tube union nut	130 — 180	10 — 13
Bleeder plug	90 — 130	79 — 112 in.-lb
Disc brake dust cover x Knuckle	400 — 550	29 — 39
Front disc x Front axle hub	400 — 550	29 — 39
Flexible hose bracket x Dust cover	100 — 160	8 — 11
Drum brake backing plate x Rear axle housing	600 — 800	44 — 57
Rear brake wheel cylinder x Backing plate	100 — 190	8 — 13
Rear brake bleeder plug	70 — 100	61 — 86 in.-lb
Bellcrank bracket x Backing plate	100 — 160	8 — 11
Bellcrank stopper bolt lock nut	40 — 70	35 — 60 in.-lb
LSPV bracket x Frame	150 — 220	11 — 15
LSPV x LSPV bracket	100 — 160	8 — 11
LSPV spring x LSPV bracket	150 — 220	11 — 15
LSPV spring x Shackle	150 — 220	11 — 15
LSPV shackle lock nut	190 — 310	14 — 22
LSPV shackle x Shackle bracket	100 — 160	8 — 11
LSPV shackle bracket x Rear axle housing	150 — 220	11 — 15

STEERING (4×4)**Specifications**

Steering	Steering wheel freeplay	Less than 30 mm (1.18 in.)	
	Intermediate shaft spider axial play	Less than 0.05 mm (0.0020 in.)	
	Snap ring thickness		
	Part No.	Mark	
	80521-22011	None	1.175 — 1.225 mm 0.0463 — 0.0482 in.
	80521-22012	Brown	1.225 — 1.275 mm 0.0482 — 0.0502 in.
	80521-22013	Blue	1.275 — 1.325 mm 0.0502 — 0.0522 in.

Specifications(Cont'd)

Steering (cont'd)	Sector shaft to bushing clearance	STD	0.01 — 0.06 mm	0.0004 — 0.0024 in.
		Limit	0.1 mm	0.004 in.
	Sector shaft thrust clearance	Limit	0.05 mm	0.0020 in.
	Sector shaft bushing bore	STD	32.00 — 32.03 mm	1.2598 — 1.2610 in.
		Limit	32.07 mm	1.2626 in.
	Sector shaft outer diameter	STD	31.970 — 31.992 mm	1.2587 — 1.2595 in.
		Limit	31.95 mm	1.2579 in.
	Worm bearing preload	at Starting		
		w/o Sector shaft	3.5 — 6.5 kg-cm	3.0 — 5.6 in.-lb
		w/ Sector shaft	In addition to without sector shaft preload	
	Sector shaft thrust washer thickness		4.5 kg-cm	3.9 in.-lb
	Sector shaft thrust washer thickness	Part No.		
		45352-36010	2.00 mm	0.0787 in.
	Sector shaft thrust washer thickness	45353-36010	2.05 mm	0.0807 in.
		45354-36010	2.10 mm	0.0827 in.
	Sector shaft thrust washer thickness	45355-36010	2.15 mm	0.0846 in.
		45356-36010	2.20 mm	0.0866 in.
	Gear housing end cover shim thickness			
	Gear housing end cover shim thickness	Part No.		
		45323-36010	0.05 mm	0.0020 in.
	Gear housing end cover shim thickness	45323-36070	0.06 mm	0.0024 in.
		45323-36020	0.07 mm	0.0028 in.
	Gear housing end cover shim thickness	45323-36030	0.08 mm	0.0031 in.
		45323-36080	0.09 mm	0.0035 in.
	Gear housing end cover shim thickness	45323-36040	0.10 mm	0.0039 in.
		45323-36050	0.20 mm	0.0079 in.
	Gear housing end cover shim thickness	45323-36060	0.50 mm	0.0197 in.
Power steering	Maximum rise of oil level		Below 5 mm (0.20 in.)	
	Oil pressure	at Idle speed	More than 62 kg/cm ² (882 psi)	
			Less than 5 kg/cm ² (71 psi)	
	Variation in vane pump discharge pressure (at 1,000 rpm and 3,000 rpm)			
	Drive belt tension (w/ Borroughs drive belt tension gauge No. BT-33-73F)			
		New belt	125 ± 25 lb	
		Used belt	80 ± 20 lb	

Specifications (Cont'd)

Power steering (cont'd)	Steering effort at Steering wheel		Less than 3.5 kg (7.7 lb)	
	Vane plate	Length	STD	15.00 mm 0.5906 in.
			Limit	14.97 mm 0.5894 in.
	Height	STD		8.2 mm 0.323 in.
		Limit		7.8 mm 0.307 in.
	Width	STD		1.8 mm 0.071 in.
		Limit		1.7 mm 0.067 in.
	Vane plate to vane plate groove clearance			
			Limit	0.06 mm 0.0024 in.
	Shaft to bushing clearance	STD		0.010 – 0.030 mm 0.0004 – 0.0012 in.
		Limit		0.07 mm 0.0025 in.
	Flow control valve spring length	STD		50.0 mm 1.969 in.
		Limit		47.0 mm 1.850 in.
	Pump preload (at pump pulley) rotating			0.5 kg 1.1 lb
	Cross shaft adjusting screw thrust clearance			0.03 – 0.05 mm 0.0012 – 0.0020 in.
	Ball clearance	STD		0.02 – 0.06 mm 0.0008 – 0.0024 in.
		Limit		0.15 mm 0.0059 in.
Tilt steering	Worm shaft preload	at Starting		
		w/o Cross shaft		4.0 – 6.5 kg-cm 3.5 – 5.6 in.-lb
		w/ Cross shaft		In addition to without cross shaft preload
				2 – 3 kg-cm 1.7 – 2.6 in.-lb
	Collar No. 1 outer diameter	Part No.		
		45813-22010		17.996 – 18.003 mm 0.7085 – 0.7088 in.
		45813-22020		18.003 – 18.010 mm 0.7088 – 0.7091 in.
		45813-22030		18.010 – 18.017 mm 0.7091 – 0.7093 in.
		45813-22040		18.017 – 18.024 mm 0.7093 – 0.7096 in.
	Collar No. 2 outer diameter	45813-22050		17.989 – 17.996 mm 0.7082 – 0.7085 in.
		Part No.		
		45814-22010		17.982 – 18.000 mm 0.7080 – 0.7087 in.
	Tilt steering support shim thickness	45814-22020		18.000 – 18.018 mm 0.7087 – 0.7094 in.
		Part No.		
		45815-22010		0.2 mm 0.008 in.
		45815-22020		0.5 mm 0.020 in.
		45815-22030		0.8 mm 0.031 in.
		45815-22040		1.4 mm 0.055 in.
		45815-22050		1.8 mm 0.071 in.

Tightening Torque

Steering	Tightening part	kg-cm	ft-lb
Steering	Steering wheel x Steering main shaft	300 – 400	22 – 28
	Breakaway bracket x Instrument panel	190 – 310	14 – 22
	Steering upper bracket x Steering column	40 – 70	35 – 60 in.-lb
	Worm gear end cover x Gear housing	300 – 450	22 – 32
	Sector shaft end cover x Gear housing	300 – 450	22 – 32
	Gear box x Bracket	500 – 650	37 – 47
	Steering gear housing bracket x Frame	500 – 650	37 – 47
	Pitman arm x Sector shaft	1,600 – 1,900	116 – 137
	Tie rod x Knuckle arm	750 – 1,100	55 – 79
	Tie rod end clamp	200 – 300	15 – 21
	Steering worm x Steering intermediate shaft	300 – 450	22 – 32
	Steering intermediate shaft x Main shaft	300 – 450	22 – 32
	Steering damper x Tie rod end	500 – 700	37 – 50
	Steering damper x Front axle housing	100 – 160	8 – 11
Power steering	Pump pulley x Rotor shaft	450 – 550	33 – 39
	Front housing x Rear housing	400 – 550	29 – 39
	Worm bearing adjusting screw lock nut	450 – 550	33 – 39
	Gear housing x Valve housing	400 – 550	29 – 39
	End cover x Gear housing	400 – 550	29 – 39
	Cross shaft adjusting screw lock nut	400 – 550	29 – 39
	Pressure hose union nut	400 – 500	29 – 36
	Return pipe union nut	400 – 500	29 – 36
	Gear housing x Bracket	500 – 650	37 – 47
	Cross shaft x Pitman arm	1,600 – 1,900	116 – 137
Tilt steering	Tilt steering pawl set bolt	150 – 220	11 – 15
	Tilt lever retainer	150 – 220	11 – 15
	Castle nut (Support x Breakaway bracket)	150 – 220	11 – 15
	Support stopper bolt	80 – 120	70 – 104 in.-lb
	Upper bracket x Tilt steering support	60 – 90	53 – 78 in.-lb
	Breakaway bracket x Column tube	150 – 220	11 – 15
	Main shaft x Intermediate shaft	220 – 300	15 – 21

LUBRICANTS (4×4)

Item	Capacity			Classification
	Liters	US qts	Imp. qts	
Engine oil				API grade SF, multigrade viscosity and fuel efficient oil
Dry fill	4.8	5.1	4.2	
Drain and refill				
w/ Oil filter change	4.6	4.9	4.0	
w/o Oil filter change	3.8	4.0	3.3	
Transmission oil				API GL-4 or GL-5 SAE 80W-90
L45	2.0	2.1	1.8	
L52	1.8	1.9	1.6	
Transfer oil	1.6	1.7	1.4	API GL-4 or GL-5, SAE 80W-90
Differential oil				API GL-5 hypoid gear oil Above −18°C (0°F) SAE 90 Below −18°C (0°F) SAE 80W-90 or 80W
Front	2.2	2.3	1.9	
Rear	2.2	2.3	1.9	
Steering gear box oil	580 cc	35.4 cu in.		API GL-4, SAE 90
Power steering fluid				ATF type Dexron or Dexron II
Pump	300 cc	18.3 cu in.		
Total	850 cc	51.9 cu in.		
Chassis grease				Lithium base, NLGI No. 1 Molybdenum disulphide lithium base, NLGI No. 2 Lithium base, NLGI No. 0
Propeller shaft (Except double cardan joint)				
Double cardan joint		—		
Drag link ends and steering intermediate shaft slide yoke				
Wheel bearing grease		—		Lithium base multipurpose, NLGI No. 2
Steering knuckle and front axle shaft grease		—		Molybdenum disulphide lithium base, NLGI No. 2
Brake fluid		—		SAE J1703, DOT 3
Antifreeze		—		Ethylene-glycol coolant















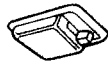






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ELECTRICAL WIRING DIAGRAMS

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TOYOTA TRUCK, PICKUP

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