STEERING

SERVICE DATA

SS0AU–01

DRIVE BELT		
1RZ, 1RZ–E, 2L, 2L–T, 3L LHD Engines:		
Drive belt deflection	New belt	7 – 9 mm (0.28 – 0.35 in.)
Drive belt deflection	Used belt	9 – 12 mm (0.35 – 0.47 in.)
2RZ–FE, 3RZ–FE Engines:		
Drive belt deflection	New belt	4.5 – 5.5 mm (0.18 – 0.22 in.)
Drive belt deflection	Used belt	6 – 7.5 mm (0.24 – 0.30 in.)
3RZ–F Engine:		
Drive belt deflection	New belt	5 – 6.5 mm (0.20 – 0.26 in.)
Drive belt deflection	Used belt	7 – 9 mm (0.28 – 0.35 in.)
2L, 2L–T, 3L, 5L, RHD Engines:		
Drive belt deflection	New belt	8 – 10 mm (0.32 – 0.39 in.)
Drive belt deflection	Used belt	10 – 15 mm (0.39 – 0.59 in.)
1RZ, 1RZ–E, 2L, 2L–T, 3L, 5L Engines:		
*Drive belt tension	New belt	441 – 539 N (45 –55 kgf)
*Drive belt tension	Used belt	196 – 343 N (20 – 35 kgf)
2RZ–FE, 3RZ–FE, 3RZ–F Engines:		
* Drive belt tension	New belt	539 – 637 N (55 – 65 kgf)
* Drive belt tension	Used belt	245 – 392 N (25 – 40 kgf)
POWER STEERING FLUID		
Oil level rise	Maximum	5 mm (0.20 in.)
1RZ, 1RZ–E Engines:		
Oil pressure at idle speed with valve closed	Minimum	7,355 kPa (75 kgf/cm^2, 1,067 psi)
2RZ–FE, 3RZ–FE, 3RZ–F, 2L, 2L–T, 3L, 5L Engines:		
Oil pressure at idle speed with valve closed	Minimum	8,336 kPa (85 kgf/cm^2, 1,209 psi)
STEERING WHEEL		
Steering wheel free play	Maximum	30 mm (1.18 in.)
Steering effort at idle speed	Reference	5.9 N·m (60 kgf·cm, 52 in.·lbf)
PS VANE PUMP (1RZ, 1RZ–E, 2L, 2L – T, 3L, 5L)		
Pump rotating torque	Maximum	0.28 N·m (2.8 kgf·cm, 2.4 in.·lbf)
Pump shaft and front housing bushing oil clearance	STD	0.03 – 0.05 mm (0.0012 – 0.0020 in.)
	Maximum	0.07 mm (0.0028 in.)
Vane plate height	Minimum	8.6 mm (0.339 in.)
Vane plate thickness	Minimum	1.397 mm (0.05500 in.)
Vane plate length	Minimum	14.991 mm (0.59016 in.)
Vane plate and pump rotor groove clearance	Maximum	0.033 mm (0.0013 in.)
Vane plate length	Pump rotor and cam ring mark	
	None	14.999 – 15.001 mm (0.59051 – 0.59059 in.)
	1	14.997 – 14.999 mm (0.59043 – 0.59051 in.)
	2	14.995 – 14.997 mm (0.59035 – 0.59043 in.)
	3	14.993 – 14.995 mm (0.59027 – 0.59035 in.)
	4	14.991 – 14.993 mm (0.59020 – 0.59027 in.)

*: For use with belt tension gauge

Flow control valve spring length	Minimum	33.2 mm (1.307 in.)
PS VANE PUMP (2RZ–FE, 3RZ–FE, 3RZ–F)		
Pump rotating torque	Maximum	0.25 N·m (2.5 kgf·cm, 2.2 in.·lbf)
Pump shaft and front housing bushing oil clearance	STD	0.03 – 0.05 mm (0.0012 – 0.0020 in.)
	Maximum	0.07 mm (0.0028 in.)
Vane plate height	Minimum	8.6 mm (0.339 in.)
Vane plate thickness	Minimum	1.397 mm (0.05500 in.)
Vane plate length	Minimum	14.991 mm (0.59016 in.)
Vane plate and pump rotor groove clearance	Maximum	0.033 mm (0.0013 in.)
Vane plate length	Pump rotor and cam ring mark	
	None	14.999 – 15.001 mm (0.59051 – 0.59059 in.)
	1	14.997 – 14.999 mm (0.59043 – 0.59051 in.)
	2	14.995 – 14.997 mm (0.59035 – 0.59043 in.)
	3	14.993 – 14.995 mm (0.59027 – 0.59035 in.)
	4	14.991 – 14.993 mm (0.59020 – 0.59027 in.)
Flow control valve spring length	Minimum	33.2 mm (1.307 in.)
MANUAL STEERING GEAR (2WD)		
Sector shaft thrust clearance	Maximum	0.05 mm (0.0020 in.)
Thrust washer thickness		1.95 mm (0.0768 in.)
		2.00 mm (0.0787 in.)
		2.05 mm (0.0807 in.)
		2.10 mm (0.0827 in.)
		2.15 mm (0.0847 in.)
Sector shaft end cover bushing inner diameter	STD	32.025 – 32.050 mm (1.2608 – 1.2618 in.)
Worm bearing preload (at Starting)		0.3 – 0.5 N·m (3.5 – 5.0 kgf·cm, 3.0 – 4.3 in.·lbf)
Total preload (at Starting)		0.8 – 1.0 N·m (8 – 10.5 kgf·cm, 6.9 – 9.1 in.·lbf)
MANUAL STEERING GEAR (4WD and PRERUNNER)		
Sector shaft thrust clearance	Maximum	0.05 mm (0.0020 in.)
Thrust washer thickness		1.95 mm (0.0768 in.)
		2.00 mm (0.0787 in.)
		2.05 mm (0.0807 in.)
Sector shaft end cover bushing inner diameter	STD	36.025 – 36.065 mm (1.4183 – 1.4199 in.)
Worm bearing preload (at Starting)		0.3 – 0.5 N·m (3.5 – 5.0 kgf·cm, 3.0 – 4.3 in.·lbf)
Total preload (at Starting)		0.8 – 1.1 N·m (8 – 11 kgf·cm, 6.9 – 9.5 in.·lbf)
PS GEAR (2WD)		
Worm gear valve body ball clearance		0.15 mm (0.0059 in.)
Sector shaft adjusting screw thrust clearance	STD	0.03 – 0.05 mm (0.0012 – 0.0020 in.)
Sector shaft adjusting screw thrust clearance	Maximum	0.05 mm (0.0020 in.)
Worm gear preload		0.3 – 0.5 N·m (3 – 5.5 kgf·cm, 2.6 – 4.8 in.·lbf)
Total preload		0.5 – 0.9 N·m (5 – 9.5 kgf·cm, 4.3 – 8.3 in.·lbf)
PS GEAR (4WD and PRERUNNER)		
Worm gear valve body ball clearance		0.15 mm (0.0059)
Sector shaft adjusting screw thrust clearance	STD	0.03 – 0.05 mm (0.0012 – 0.0020 in.)
Sector shaft adjusting screw thrust clearance	Maximum	0.05 mm (0.0020 in.)
Worm gear preload		0.3 – 0.5 N·m (3 – 5.5 kgf·cm, 2.6 – 4.8 in.·lbf)
Total preload		0.5 – 0.9 N·m (5 – 9.5 kgf·cm, 4.3 – 8.3 in.·lbf)

STEERING LINKAGE (2WD)	
Tie rod length Approximately	332.0 mm (13.071 in.)
STEERING LINKAGE (4WD and PRERUNNER)	
Tie rod length Approximately	329.2 mm (12.961 in.)
IDLER ARM (2WD)	
Idler arm rotating torque	0.5 – 2.9 N·m (5 – 30 kgf·cm, 5 – 26 in.·lbf)
IDLER ARM (4WD and PRERUNNER)	
Idler arm rotating torque	0.5 – 2.9 N·m (5 – 30 kgf·cm, 5 – 26 in.·lbf)

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TORQUE SPECIFICATION

Part tightened		N·m	kgf·cm	ft·lbf
STEERING COLUMN				
Non–tilt steering column:				
Column tube support x Column tube		20	204	15
Tilt steering column:				
Tilt lever assembly set bolt		12	125	9
Tilt support No.1 reinforce set bolt		5.4	55	48 in.·lbf
Steering support x Column tube		9.5	97	84 in.·lbf
Sliding yoke x Main shaft assembly		35	360	26
Steering column assembly set bolt and nut		26	260	19
Sliding yoke x No.2 intermediate shaft assembly		35	360	26
No.2 intermediate shaft assembly x Worm assembly	2WD	35	360	26
No.2 intermediate shaft assembly x Worm gear valve body assembly	4WD	35	360	26
Sliding with shaft yoke x No.2 intermediate shaft assembly		35	360	26
Column hole cover		8	80	69 in.·lbf
Steering wheel set nut		34	350	25
Steering wheel pad set screw (Torx screw)		9.0	90	78 in.·lbf
PS VANE PUMP (1RZ, 1RZ–E)				
Union bolt x Pressure feed tube		47	480	35
Power steering idle pulley set nut		39	400	29
PS vane pump pulley set nut		43	440	32
PS vane pump assembly set bolt		58	590	42
Suction port union set bolt		13	130	9
Pressure port union x Front housing		83	850	61
PS VANE PUMP (2RZ–FE, 3RZ–FE, 3RZ–F)				
Power steering idle pulley set nut		47	480	35
Union bolt x Pressure feed tube	2RZ–FE, 3RZ–FE	39	400	29
PS vane pump assembly set bolt		39	400	29
PS vane pump pulley set nut		43	440	32
Oil reservoir set bolt	Front	13	130	9
	Rear	24	240	17
Pressure port union x Front housing		83	850	61
Fornt housing x Rear housing		24	240	17
Pressure feed tube x PS vane pump assembly	3RZ–F	36 (44)	365 (450)	26 (33)
PS VANE PUMP (2L, 2L–T, 3L LHD)				
Pressure feed tube x PS vane pump assembly		36 (44)	365 (450)	26 (33)
Power steering idle pulley set nut		49	500	36
PS vane pump pulley set nut		43	440	32
PS vane pump assembly set bolt		61	625	45
Through bolt x Nut		64	650	47
Suction port union set bolt		13	130	9
Pressure port union x Front housing		83	850	61
Front housing x Rear housing		24	240	17

( ): For use without SST

PS VANE PUMP (2L, 2L–T, 3L, 5L, RHD)			
Pressure feed tube x PS vane pump assembly	36 (44)	365 (450)	26 (33)
PS vane pump set bolt	48	490	35
PS vane pump set nut	64	650	47
PS vane pump pulley set nut	43	440	32
Sution port union set bolt	13	130	9
Pressure port union x Front housing	83	850	61
Front housing x Rear housing	24	240	17
MANUAL STEERING GEAR (2WD)			
Pitman arm x Sector shaft	123	1,250	90
Bleeder plug	7.4	75	65 in.-lbf
Manual steering gear set bolt and nut	118	1,200	87
Sector shaft adjusting screw lock nut	27	275	20
Sector shaft end cover set bolt	18	185	13
Worm bearing adjusting screw lock nut	109 (147)	1,100 (1,500)	80 (109)
Strut bar assembly set bolt	95	970	70
Strut bar assembly set nut	123	1,250	90
MANUAL STEERING GEAR (4WD and PRERUNNER)			
Pitman arm x Sector shaft	177	1,800	130
Bleeder plug	20	200	14
Manual steering gear set bolt and nut	142	1,450	105
Sector shaft adjusting screw lock nut	44	450	33
Sector shaft end cover set bolt	98	1,000	72
Worm bearing adjusting screw lock nut	109 (147)	1,100 (1,500)	80 (109)
PS GEAR (2WD)			
Pitman arm x Sector shaft	177	1,800	130
Tube clamp set bolt	13	135	10
Pressure feed tube x PS gear assembly	36 (44)	365 (450)	26 (33)
Return tube x PS gear assembly	40 (49)	406 (500)	29 (36)
PS gear assembly set bolt and nut	118	1,200	130
Adjusting screw lock nut	46	470	34
Side cover set bolt	46	470	34
Power piston plunger guide nut	20	205	15
Worm gear valve body assembly x Gear housing	46	470	34
Strut bar assembly set bolt	95	970	70
Strut bar assembly set nut	123	1,250	90
PS GEAR (4WD and PRERUNNER)			
Pitman arm x Sector shaft	177	1,800	130
Tube clamp set bolt	13	135	10
Pressure feed tube x PS gear assembly	36 (44)	365 (450)	26 (33)
Return tube x PS gear assembly	40 (49)	406 (500)	29 (36)
PS gear assembly set bolt and nut	142	1,450	105
Adjusting screw lock nut	46	470	34
Side cover set bolt	61	620	45

( ): For use without SST

Power piston plunger guide nut	20	205	15
Worm gear valve body assembly x Gear housing	61	620	45
STEERING LINKAGE (2WD)			
Pitman arm x Sector shaft Manual steering gear	123	1,250	90
Pitman arm x Sector shaft PS gear	177	1,800	130
Pitman arm x Relay rod	90	920	67
Tie rod clamp bolt	25	260	19
Tie rod assembly x Relay rod	90	920	67
Tie rod assembly x Knuckle arm	90	920	67
Idler arm assembly set bolt and nut	118	1,200	105
Relay rod x Idler arm assembly	59	600	43
Strut bar assembly set bolt	95	970	70
Strut bar assembly set nut	123	1,250	90
STEERING LINKAGE (4WD PRERUNNER)			
Pitman arm x Sector shaft	177	1,800	130
Pitman arm x Relay rod	90	920	67
Tie rod clamp bolt	22	225	16
Tie rod assembly x Relay rod	90	920	67
Tie rod assembly x Knuckle arm	90	920	67
Idler arm assembly set bolt and nut	142	1,450	105
Relay rod x Idler arm assembly	59	600	43
Steering damper set bolt and nut	25	260	19
Relay rod x Steering damper	59	600	43
IDLER ARM (2WD)			
Idler arm x Idler arm bracket	78	800	58
IDLER ARM (4WD and PRERUNNER)			
Idler arm x Idler arm bracket	78	800	58